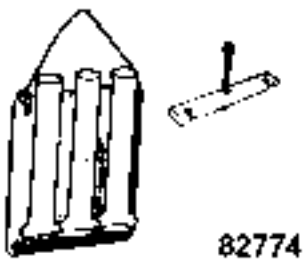
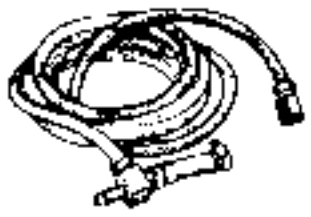
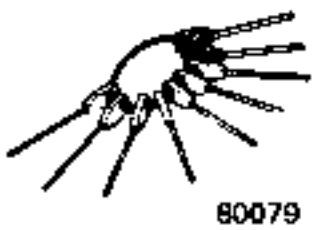
Illustration	Methods ref.	Part no.	Description
 85654	**Mot. 453-01**	00 00 045 301	Set of hose clamps
 82284	**Mot. 843**	00 00 084 300	Injection operating and checking kit 0-6 bar pressure gauge
 82774	**Mot. 845**	00 00 084 500	100 ml flask
 84868	**Mot. 904**	00 00 090 400	By-pass tube for measuring fuel feed pressure
 80079	M.S. 787	00 00 078 700	Set of carburettor adjustment gauge rods
 89024	M.S.1048	00 00 104 800	Testing terminal holder
	**XR 25**	00 00 101 900	Microprocessor system checking kit

Description	Part number	
Mitivac vacuum/ pressure test kit	77 01 385 051	See MR 500**
2000 ml flask Multimeter		See MR 500**
SOLEX butterfly angle setting tool	77 01 381 152	

Vehicle	Type	Engine	Transmission	Injection diagram page	Setting values page
		F3N Engine			
Renault 5	C 409	F3N . 702	BM	17-10	12-2 - 12-3
Renault 9	L 42 E	F3N . 708	BM	17-11	12-2 - 12-3
Renault 11	B.C. 37 E	F3N . 708	BM	17-11	12-2 - 12-3
Renault 21	K.L. 48 E	F3N . 722	BM	17-11	12-2 - 12-3
		J7R Engine			
Renault 21	L.K. 483	J7R . 750	BM	17-12	12-4 - 12-5
		J7R . 751	TA	17-12	12-4 - 12-5
Renault 21 Turbo	L 485	J7R . 752	BM	17-13	12-6 - 12-7
Renault 25	B 29 H	J7R . 722	BM	17-14	12-4 - 12-5
Espace	J 116	J7R . 760	BM	17-15	12-4 - 12-5
		J7T Engine			
Renault 21	L.K. 48 K	J7T . 754	BM	17-16 - 17-17	12-12 - 12-13
		J7T . 755	TA	17-16 - 17-17	12-12 - 12-13
Renault 25	B 29 E	J7T . 706	BM	17-18 - 17-19	12-8 - 12-9
		J7T . 707	TA	17-18 - 17-19	12-8 - 12-9
		J7T . 714	BM	17-18	12-8 - 12-9
		J7T . 715	TA	17-18	12-8 - 12-9
		J7T . 730	BM	17-20	12-10 - 12-11
		J7T . 731	TA	17-20	12-10 - 12-11
	B 29 B	J7T . 732	BM	17-21	12-12 - 12-13
		J7T - 733	TA	17-21	12-12 - 12-13
Espace	J 117	J7T . 770	BM	17-22	12-12 - 12-13
		Z7U Engine			
Renault 25	B 295	Z7U . 702	BM	17-23	12-14 - 12-15
Renault Alpine	D 501	Z7U . 730	BM	17-23	12-14 - 12-15
	D 501 Switz.	Z7U . 734	BM	17-24	12-16 - 12-17
	D 502	Z7U . 734	BM	17-24	12-16 - 12-17
		Z7W engine			
Renault 25	B 293	Z7W . 700	BM	17-25	12-18 - 12-19
	B 29 F	Z7W . 706	BM	17-26	12-20 - 12-21

BM = Manual gearbox
TA = Automatic transmission

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
C 409 B-C 37E L 42 E K-L 48E	F3N F3N F3N	702 708 722	81	83,5	1721	9,5	Manual	Renix multipoint + mixture regulation	Ignition power module + pinking sensor

Engine	Idling setting		Fuel grade	
	Speed (rpm)	Richness (CO)	Special point	Octane rating
F3N 702 F3N 708 F3N 722	750 - 850* (not adjustable)	0,5 % max (not adjustable)	Unleaded petrol	I.O.91 min

* For a coolant temperature of between 80 and 100 °C

Type of fuel supply	Regulated multipoint injection
Fuel pump: located on rear righthand crossmember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum: 2.5 ± 0.2 bars - at 500 mbar vacuum: 2.0 ± 0.2 bars
Electromagnetic injectors	Computer-operated only: Voltage: 12 volts Resistance: 2.5 ± 0.5 ohms
Throttle casing	WEBER: dual barrel Ø 32 x 36 CFR Mark: 2
No load/full load switch with three wires	A: idling: throttle opening < 1° B: partial load: throttle opening > 1° C: full load: throttle opening > 70°
Idling speed regulation valve	Bosch, voltage 12 volts

Specifications and setting values

Computer	Renix No.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compt. (in passenger compt. under glove box for C409)	S 100 812 101 S 100 812 101 S 100 812 101	77 00 735 559 77 00 735 559 77 00 735 559	77 00 736 401 77 00 740 149 77 00 745 344	210 - 3 (A) 211 - 3 (B) 213 - 3 215 - 3

(A) Without fuel anti-evaporation system
(B) With fuel anti-evaporation system

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	Type: BOSCH At 800°C: - rich mixture : 625 to 1 100 mV - lean mixture : 0 to 150 mV
Catalytic converter (under floor)	Type: three-purpose Mark: CO.5
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system (depending on country)	With GM canister (B)
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
LK 483	J7R	750	88	82	1995	10	BM (A) TA (B)	Renix multipoint	Ignition power module with pinking sensor
	J7R	751							
B 29 H	J7R	722					BM (C)		
J 116	J7R	760					BM (D)		

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
J7R 750 J7R 751 J7R 722 J7R 760	775 ± 50*	1,5 ± 0,5	4-star (Super)	O.R 98

* For a coolant temperature between 80 and 100°C

Type of fuel supply	Multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum: 2.5 ± 0.2 bars - at 500 mbar vacuum: 2.0 ± 0.2 bars
Electromagnetic injectors	Computer-operated only Voltage: 12 volts Resistance: 2.5 ± 0.5 ohms
Throttle casing	Solex: single barrel Ø 50 mm Mark: 863 BM; 864 TA
No load/ full load switch with three wires	A : idling: throttle opening < 1° B : part load: throttle opening > 1° C : full load: throttle opening > 70°
Idling speed regulation valve	Bosch, voltage: 12 volts

BM: Manual gearbox TA: Automatic transmission

Specifications and setting values

Computer	Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compartment or passenger compt. for J116	S 100 805 101 S 100 805 201 S 100 816 101 S 100 806 102	77 00 731 803 77 00 731 804 77 00 737 453 77 00 741 999	77 00 733 848 77 00 733 984 77 00 738 059 77 00 742 312	20 - 3 (A) 23 - 3 (B) 24 - 3 (C) 24 - 3 or 26 - 3 (D)

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	
Catalytic converter (under floor)	
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system	
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic Capacity (cc)	C/R			
L 485	J7R	752	88	82	1995	8	BM	Renix multipoint	Ignition power module

BM = Manual gearbox

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
J7R 752	800 ± 25* (not adjustable)	1,5 ± 0,5 %	4-star (Super)	O.R. 98

* For a coolant temperature of between 80 and 100°C

Type of fuel supply	Multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum : 2.5 ± 0.2 bars - at 500 mbar vacuum : 2.0 ± 0.2 bars
Electromagnetic injectors	Computer-operated only: - voltage: 12 volts - resistance: 2.5 ±0.5 ohms
Throttle casing	SOLEX: single barrel Ø 50 mm Mark: 875
Load potentiometer	A: Idling: XR25 value = 5 to 15 B: Part load: XR25 value = 20 to 190 C: Full load: XR25 value = 225 min.
Idling speed regulating valve	BOSCH, voltage: 12 volts

Specifications and setting values

Computer	Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compartment	S 100 805 102	77 00 731 805	77 00 733 985	25 - 3

NOTE: The computer controls a boost pressure regulator.

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	
Catalytic converter	
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system	
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
B 29E (1) B 29E (2) B 29E (3) B 29E (4)	J7T J7T J7T J7T	706 707 714 715	88	89	2165	9,9	BM TA BM TA	Rénix multipoint	Ignition power module + pinking sensor

(1) & (2) : Europe
(3) & (4) : Switzerland

BM = Manual gearbox
TA = Automatic transmission

Engine	Idling speed setting		Fuel	
	Speed (rpm.)	Mixture (CO)	Special point	Octane rating
J7T 706 J7T 707 J7T 714 J7T 715	800 ± 25* 800 ± 25* (N) 800 ± 50* 800 ± 50* (N)	1,5 ± 0,5 1,5 ± 0,5 1,5 ± 0,5 (5) 1,5 ± 0,5 (5)	4-star (Super)	O.R.98

(N) Neutral; (5) Without air injection (hoses on system injecting warm air into exhaust clamped)
* For a coolant temperature between 80 and 100°C

Type of fuel supply	Regulated multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above the fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum: 2.5 ± 0.2 bars - at 500 mbar vacuum: 2.0 ± 0.2 bars
Electromagnetic injectors	Computer-operated only: Voltage: 12 volts Resistance: 2.5 ± 0.5 ohms
Throttle casing (dual barrel)	WEBER : 34 C FRA (A) | 34 C FR (B) Mark 0 (1) 2 (3) | 2 (1) 1 (2) 3 (4) | 3 (2)
(A) No load/full load switch - 2 wires (B) No load/ full load switch - 3 wires	A : Idling: throttle opening < 1° B : Part load: throttle opening > 1° C : Full load: throttle opening > 70°
Idling speed regulating valve (B)	BOSCH: voltage 12 volts

Specifications and setting values

Computer		Renix no.	Approval no	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compartment	(1)	S 100 800 101	77 00 723 126	77 00 723 098	01 - 3 (A)
	(1)	S 100 800 104	77 00 723 126	77 00 726 991	03 - 3 (B)
	(2)	S 100 800 201	77 00 723 127	77 00 723 099	02 - 3 (A)
	(2)	S 100 800 204	77 00 723 127	77 00 726 992	04 - 3 (B)
	(3)	S 100 800 103	77 00 726 383	77 00 726 381	05 - 3 (C)
	(4)	S 100 800 203	77 00 726 384	77 00 726 382	06 - 3 (C)

(A) Without idling regulation
(B) With idling regulation
(C) EGR without idling regulation

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bosch : type CTN

Oxygen sensor	
Catalytic converter	
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R. and system injecting warm air into exhaust	J7T 714 and J7T 715 engines
Anti-evaporation system	
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
B 29E	J7T J7T	730 731	88	89	2165	9,9	BM (1) TA (2)	Rénix multipoint	Ignition power module + pinking sensor

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
J7T 730 J7T 731	800 ± 25* 800 ± 25* (lever in N) (not adjustable)	1,5 ± 0,5	4-star (Super)	O.R, 98

*For a coolant temperature between 80 and 100°C.

Type of fuel supply	Multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum : 2.5 ± 0.2 bars - at 500 mbar vacuum: 2.0 ± 0.2 bars
Electromagnetic injectors	Computer-operated only: Voltage: 12 volts Resistance: 2.5 ± 0.5 ohms
Throttle casing	SOLEX: single barrel Ø 50 mm Mark: 863 BM; 864 TA
No load/ full load switch with 3 wires	A: idling: throttle opening < 1° B: part load: throttle opening > 1° C: full load: throttle opening > 70°
Idling speed regulating valve	BOSCH, voltage 12 volts

BM = Manual gearbox TA = Automatic transmission

Specifications and setting values

Computer	Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compartment (1)	S 100 806 101	77 00 734 611	77 00 736 391	07 - 3
(2)	S 100 806 201	77 00 734 612	77 00 736 392	08 - 3

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	
Catalytic converter	
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system	
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
LK 48 K	J7T	754	88	89	2165	9,2	BM (1)	Renix multipoint + Mixture regulation	Ignition power module + pinking sensor
	J7T	755					TA (2)		
B 29 B	J7T	732					BM (3)		
	J7T	733					TA (4)		
J 117	J7T	770					BM (5)		
	J7T	770					BM 4x4 (6)		

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
J7T 754 J7T 755 J7T 732 J7T 733 J7T 770	800 ± 25* (not adjustable)	0,5 % max (not adjustable)	Unleaded petrol	O.R. 91

* For a coolant temperature of between 80 and 100°C. Automatic transmission: lever in N.

Type of fuel supply	Regulated multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum: 2.5 ± 0.2 bars - at 500 mbar vacuum: 2.0 ± 0.2 bars
Electromagnetic injectors	Computer-operated only: voltage: 12 volts resistance: 2.5 ± 0.5 ohms
Throttle casing	SOLEX: single barrel Ø 50 mm Mark: 863 BM; 864 TA
No load/ full load switch with 3 wires	A: idling: throttle opening less than 1° B: part load: throttle opening > 1° C: full load: throttle opening > 70°
Idling speed regulating valve	BOSCH, voltage: 12 volts

BM = Manual gearbox TA = Automatic transmission

Specifications and setting values

Computer		Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix	(1)	S 100 810 101	77 00 735 562	77 00 736 398	32 - 3
housed in engine	(2)	S 100 810 201	77 00 735 563	77 00 736 399	33 - 3
compartment	(3)	S 100 807 101	77 00 734 613	77 00 736 393	30 - 3
	(4)	S 100 807 201	77 00 734 614	77 00 736 394	31 - 3
In passenger	(5)	S 100 807 101	77 00 734 613	77 00 736 393	30 - 3
compartment	(6)	S 100 807 103	77 00 742 317	77 00 742 314	38 - 3

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	Make: BOSCH At 800 °C: - rich mixture : 625 to 1 100 mV - lean mixture : 0 to 150 mV
Catalytic converter (under floor)	Type: Three-purpose Mark: CO1
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system	With GM canister for certain countries
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
B 295 (1)	Z7U	702	91	63	2458	8,6	BM	Rénix multipoint	Ignition power module + pinking sensor
D 501 (2)	Z7U	730					BM		
D 501 (3)	Z7U	730					BM		

BM = Manual gearbox

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
Z7U 702 Z7U 730	700 ± 25 *	1 ± 0,25 %	4-star (Super)	O.R. 98

* For a coolant temperature between 80 and 100°C

Type of fuel supply	Multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum: 3.0 ± 0.2 bars - at 500 mbars vacuum: 2.5 ± 0.2 bars
Electromagnetic injectors	Computer-operated only: Voltage: 12 volts Resistance: 2.5 ± 0.5 ohms
Throttle casing	SOLEX: single barrel Ø 55 mm Mark: 837
No load/ full load switch with 3 wires	A : idling: throttle opening < 1° B : part load: throttle opening > 1° C : full load: throttle opening > 70°
Idling speed regulating valve	BOSCH, voltage 12 volts

Specifications and setting values

Computer	Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compartment (1) or passenger compt. (2) and (3). (1)	S 100 802 101	77 00 726 993	77 00 727 574	100 - 3
(2)	S 100 802 102	60 01 007 574	60 01 007 988	101 - 3
(3)	S 100 802 103	60 01 007 574	60 01 022 158	104 - 3

(3) Assembly with threaded injector galleries, rigid pipes and BOSCH pulse damper.

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	
Catalytic converter	
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system	
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
D 501	Z7U	734	91	63	2458	8	BM	Renix multipoint	Ignition power module + pinking sensor
D 502	Z7U	734							

BM = Manual gearbox

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
Z7U 734	700 ± 50 * (not adjustable)	0,5 % max (not adjustable)	Eurosuper unleaded petrol	O.R.95

*For a coolant temperature between 80 and 100°C

Type of fuel supply	Regulated multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum: 3.0 ±0.2 bars - at 500 mbar vacuum: 2.5 ±0.2 bars
Electromagnetic injectors	Computer-operated only: Voltage: 12 volts Resistance: 2.5± 0.5 ohms
Throttle casing	SOLEX: single barrel Ø 55 mm Mark: 837
No load/ full load switch with 3 wires	A: Idling: Throttle opening < 1° B: Part load: Throttle opening > 1° C: Full load: throttle opening > 70°
Idling speed regulating valve	BOSCH: voltage, 12 volts

Specifications and setting values

Computer	Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix	S 101 100 202	60 01 009 843	60 01 009 842	102 - 3
In passenger compt.	S 101 100 106	60 01 009 843	60 01 021 952	105 - 3 (1)

(1) Assembly with threaded injector galleries, rigid pipes, BOSCH pulse damper and canister.

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	Make: BOSCH electrically heated At 800°C: - rich mixture : 625 to 1 100 mV - poor mixture 0 to 150 mV
Catalytic converter (under floor)	Type: Three-purpose Mark: Ø CO4
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system (depending on country)	Canister: GM
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
B 293	Z7W	700	91	73	2849	9,5	BM	Rénix multipoint	Ignition power module with pinking sensor

BM = Manual gearbox

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
Z7W 700	700 ± 25 * (not adjustable)	1,5 ± 0,5 %	Eurosuper unleaded or 4-star (Super) leaded	O.R. 95 O.R. 98

* For a coolant temperature between 80 and 100°C

Type of fuel supply	Regulated multipoint injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum : 3.0 ± 0.2 bars - at 500 mbars vacuum: 2.5 ± 0.2 bars
Electromagnetic injectors	Computer-operated only: Tension: 12 volts Resistance: 2.5 ± 0.5 volts
Throttle casing	SOLEX: single barrel Ø 55 mm Mark: 919
Load potentiometer	A: Idling: XR25 value = 5 to 10 B: Part load: XR25 value = 15 to 190 C: Full load: XR25 value = 235 ± 15
Idling speed regulating valve	BOSCH: voltage, 12 volts

Specifications and setting values

Computer	Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compartment	S 101 260 101	77 00 740 745	77 00 739 226	110 - 3

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	
Catalytic converter	
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system	
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Specifications and setting values

Vehicle	Engine						Gearbox	Injection type	Ignition type
	Type	Suffix	Bore (mm)	Stroke (mm)	Cubic capacity (cc)	C/R			
B 29 F	Z7W	706	91	73	2849	9,5	BM	Renix multipoint + Mixture regulation	Ignition power module + pinking sensor

BM = Manual gearbox

Engine	Idling speed setting		Fuel	
	Speed (rpm)	Mixture (CO)	Special point	Octane rating
Z7W 706	800 ± 50* (not adjustable)	0,5 max (not adjustable)	Eurosuper unleaded	O.R. 95

* For a coolant temperature between 80 and 100°C

Type of fuel supply	Regulated multi-point injection
Fuel pump: located on rear righthand sidemember	Voltage : 12 volts Pressure : 3 bars Delivery : 130 l/h
Fuel filter: located above fuel pump	Replace every 30 000 miles (50 000 km)
Pressure regulator	Pressure: - at zero vacuum : 3.0± 0.2 bars - at 500 mbars vacuum : 2.5± 0.2 bars
Electromagnetic injectors	Computer-operated only: - Voltage: 12 volts - Resistance: 2.5± 0.5 ohms
Throttle casing	SOLEX: single barrel Ø 55 mm Mark 919
Load potentiometer	A: Idling: XR25 value: 5 to 10 B: Part load: XR25 value: 15 to 190 C: Full load: XR25 value: 235 15
Idling speed regulating valve	BOSCH, voltage: 12 volts

Specifications and setting values

Computer	Renix no.	Approval no.	RNUR no.	Diagnostic code
Renix or Bendix housed in engine compartment	S 101 260 102	77 00 740 746	77 00 739 228	120 - 3

Air temperature sensor	Bendix : type CTP
Coolant temperature sensor	Bendix : type CTP

Oxygen sensor	Make: BOSCH electrically heated At 800°C: - rich mixture : 625 to 1 100 mV - lean mixture : 0 to 150 mV
Catalytic converter (under floor)	Type: Three-purpose Mark: ◊ CO 8
Air filter with paper cartridge	Replace every 12 000 miles (20 000 km)
E.G.R.	
Anti-evaporation system (depending on country)	Canister: GM
Ignition	Curves: integral with injection computer Ignition power module with pinking sensor

Foreword

This system is of the PRESSURE-SPEED TYPE: the amount of fuel injected into the engine is a linear function of the pressure in the inlet manifold and the engine speed.

The pressure in the inlet manifold determines the basic injection time. This figure is then corrected to suit the engine breathing and mixture requirements under given operating conditions (pressure-speed).

The correction coefficients take the form of a block diagram on which the pressure increments are plotted against the speed increments.

A second series of corrections integrates the slow moving parameters: coolant temperature, air temperature, battery voltage and atmospheric pressure. Injection is of the simultaneous 4/4 type. All four injectors operate once simulataneously per engine revolution.

The injection system also calculates the ignition advance and operates the ignition power module. The advance curve is of the cartographic type, overlaying the injection curve. The ignition advance can be corrected to suit engine operating conditions, i.e.: coolant temperature, air temperature, acceleration feedback signals and pinking sensor.

The injection system component units

I **LOCATION OF THE COMPONENTS**

II **FUEL CIRCUIT**

- Electric fuel pump
- Fuel pressure regulator
- Pulse damper
- Fuel filter

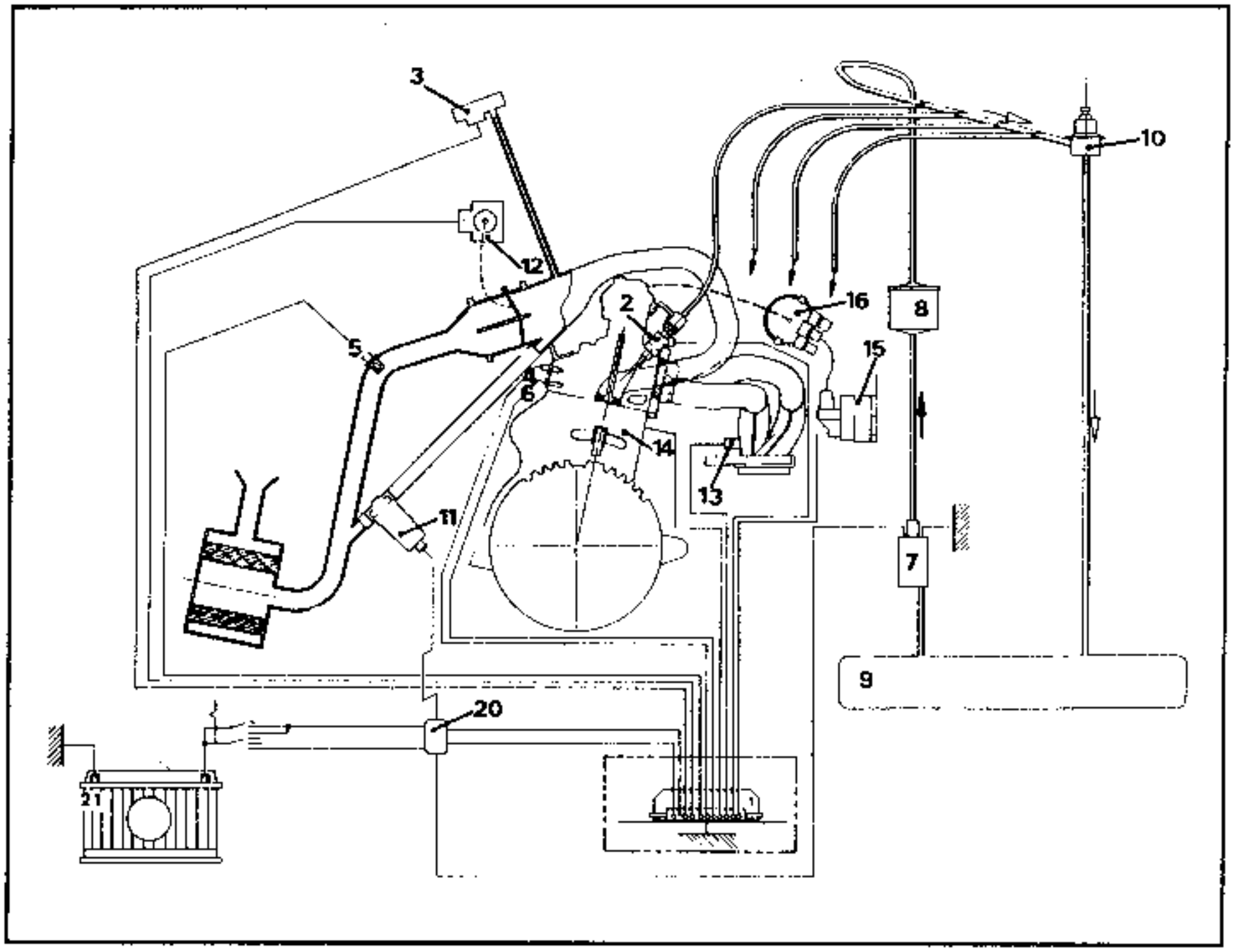
III **INJECTION COMPUTER AND PERIPHERAL UNITS**

- Injection and ignition computer
- Coolant temperature sensor
- Air temperature sensor
- Flywheel with sensor target
- Speed and position sensor
- Pressure sensor
- No load/full load switch or throttle position potentiometer
- Idling mixture potentiometer or oxygen sensor (Lambda sensor)
- Idling regulating valve
- Pinking sensor
- Vehicle speed sensor

IV **POWER**

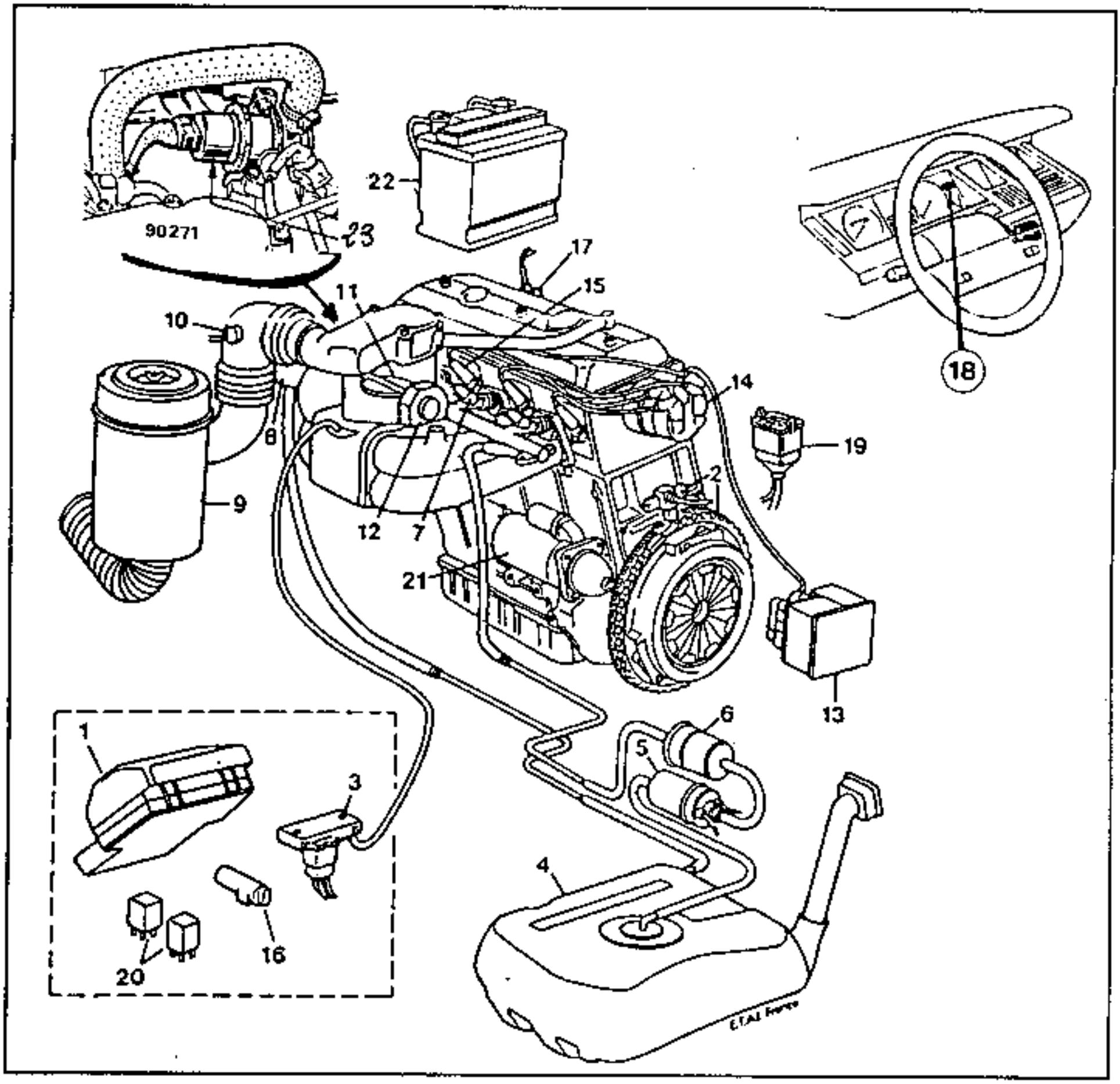
- Ignition power module
- Electromagnetic injector

I - LOCATION OF THE COMPONENTS



1 - Injection and ignition computer
2 - Injector
3 - Absolute pressure sensor
4 - Coolant temperature sensor
5 - Air temperature sensor
6 - Pinking sensor
7 - Electric fuel pump
8 - Fuel filter
9 - Fuel tank
10 - Fuel pressure regulator
11 - Idling regulating valve
12 - No load/full load switch
13 - Lambda sensor
14 - Speed sensor
15 - Ignition power module
16 - High tension distributor
20 - Relay assembly
21 - Feed battery

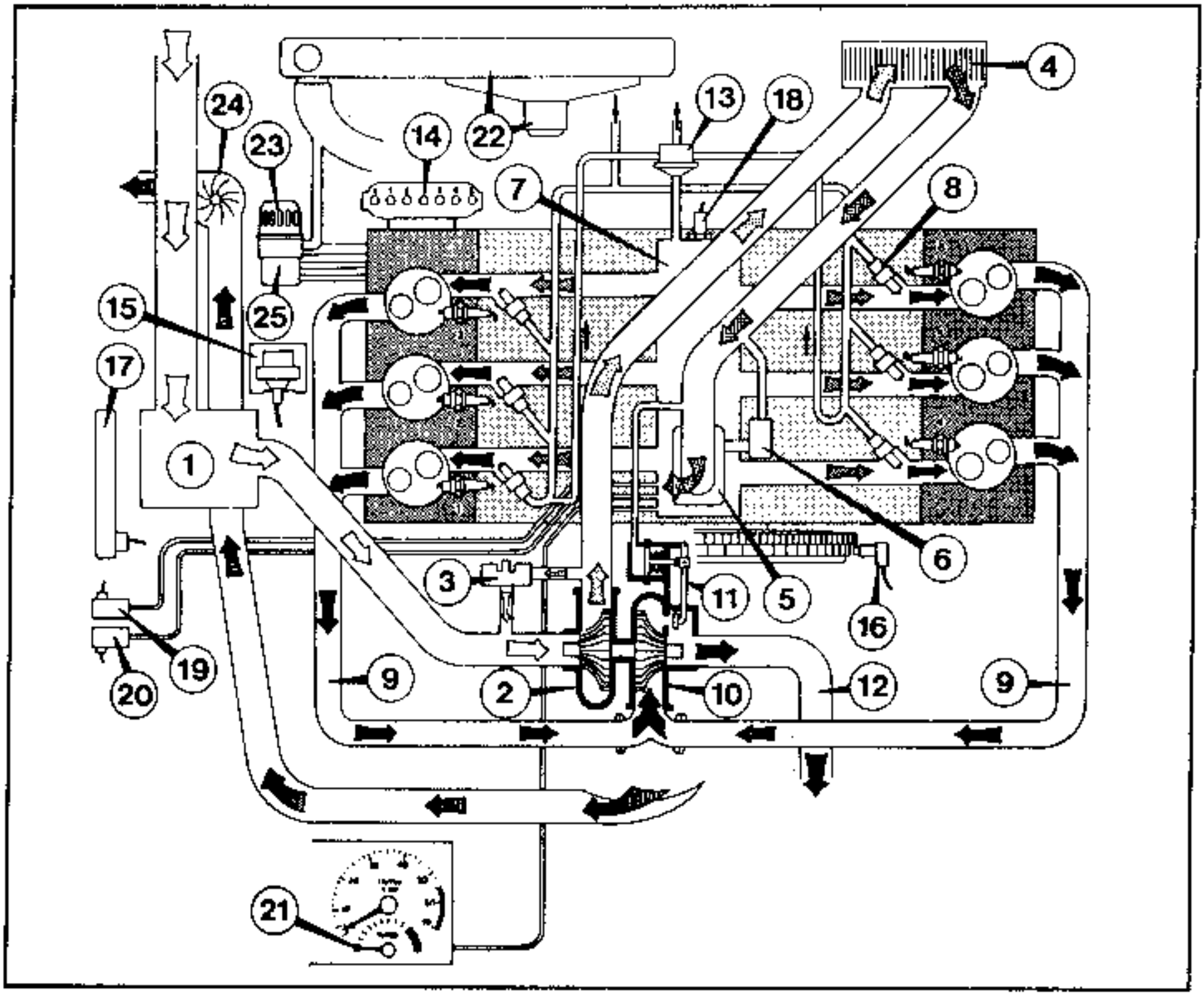
I - LOCATION OF THE COMPONENTS



1 - Control computer
2 - Position/speed sensor and target
3 - Pressure sensor
4 - Fuel tank
5 - Electric fuel pump
6 - Fuel filter
7 - Electromagnetic injectors
8 - Fuel pressure regulator
9 - Air filter
10 - Air temperature sensor
11 - Throttle casing
12 - No load/full load switch
13 - Ignition module and high tension coil
14 - Ignition distributor
15 - Spark plugs
16 - Idling mixture potentiometer
17 - Coolant temperature sensor
18 - Diagnostic warning light
19 - Diagnostic plug
20 - Relay
21 - Starter
22 - Battery
23 - Idling regulation valve

NOTE: The pinking sensor, which is not shown in this diagram, is housed in the centre of the air distributor, between cylinders No. 2 and No. 3.

I - LOCATION OF THE COMPONENTS



Air at atmospheric pressure
Compressed inlet air
Cooled compressed inlet air
Air-fuel mixture
Exhaust gas
Hot air under bonnet

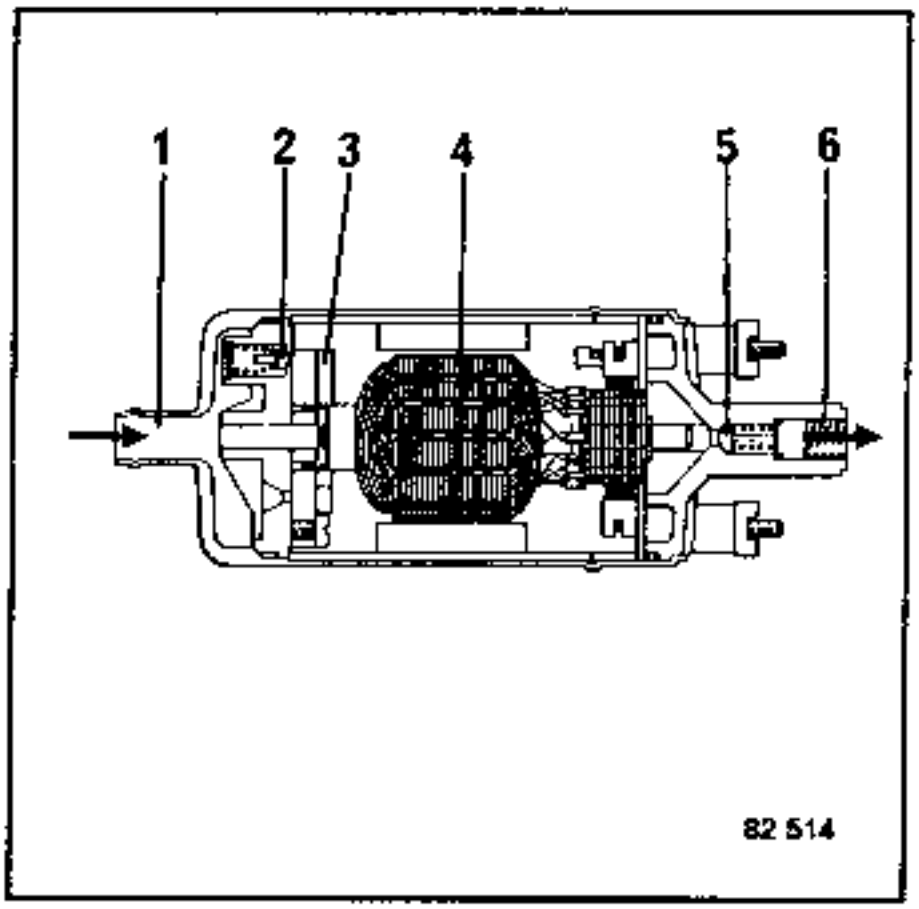
1 - Air filter
2 - Compressor
3 - By-pass valve
4 - Air-to-air intercooler
5 - Throttle casing
6 - Idling regulating solenoid valve
7 - Inlet manifold
8 - Injectors
9 - Exhaust manifolds
10 - Turbine
11 - Boost pressure regulator
12 - Exhaust downpipe
13 - Fuel pressure regulator
14 - Ignition distributor
15 - Ignition power module and coil
16 - Position/speed sensor
17 - Injection and ignition computer
18 - Pinking sensor
19 - Injection system pressure sensor
20 - Safety pressostat
21 - Boost pressure gauge
22 - Cooling radiator and fan
23 - Oil filter
24 - Hot air extractor fan
25 - Oil-to-water intercooler

II - **FUEL CIRCUIT**

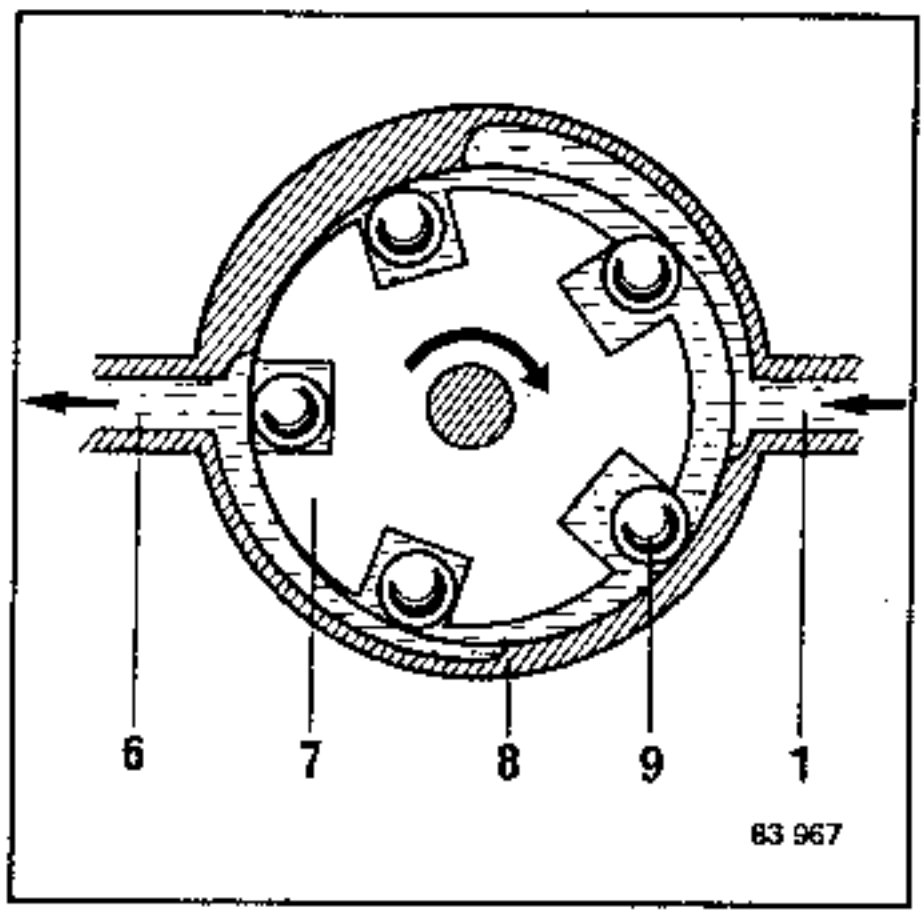
The electric fuel pump

The pump is of the multi-cell roller type driven by a field-type electric motor. It has a safety valve which opens when the pressure inside the pump is too high. At the outlet there is a non-return valve which maintains the fuel pressure so that the system does not become unprimed when the engine is stationary.

The function of the pump is to supply fuel under pressure to the injectors. Its delivery is considerably greater than the maximum engine consumption so that the pressure in the fuel system is always maintained. The fuel excess is passed back to tank through the regulator. This pump is mounted near the tank and its supply terminals are marked + and - to ensure that it turns in the correct direction.



1 – Intake side
2 – Safety valve
3 – Roller-type multi-cell pump
4 – Electric motor armature
5 – Non-return valve
6 – Delivery side



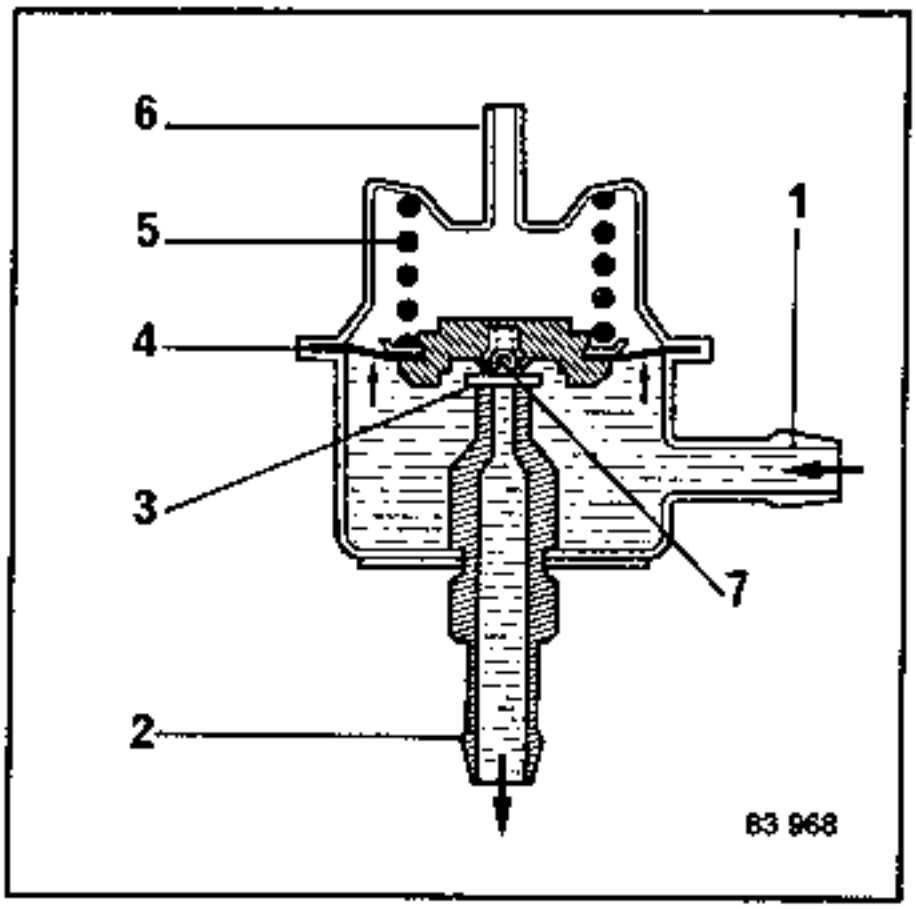
1 – Intake side
6 – Delivery side
7 – Pump rotor
8 – Pump housing
9 – Roller

II - FUEL CIRCUIT (continued)

Fuel pressure regulator

The pressure regulator controls the amount of fuel returned to the tank to maintain a constant pressure irrespective of the injector delivery.

The pressure in the injection pipes is corrected to suit the vacuum in the inlet manifold so that the injectors operate at constant pressure.



1 - Fuel connection
2 - Return to tank
3 - Valve-holder
4 - Diaphragm
5 - Compression spring
6 - Connection to inlet manifold
7 - Valve

The spring compartment is connected to the inlet manifold by a pipe.

The difference between the pressure in the manifold and the fuel pressure is therefore maintained constant. The pressure drop at the injectors is therefore the same irrespective of the engine load.

For example: At idling speed for a spring set at **2.5 bars**
- vacuum **700 mbars**
Fuel pressure = 2.5 - 0.7 = 1.8 bars.
The injectors will operate at
1.8 - (-0.7) = 2.5 bars.

Fuel filter

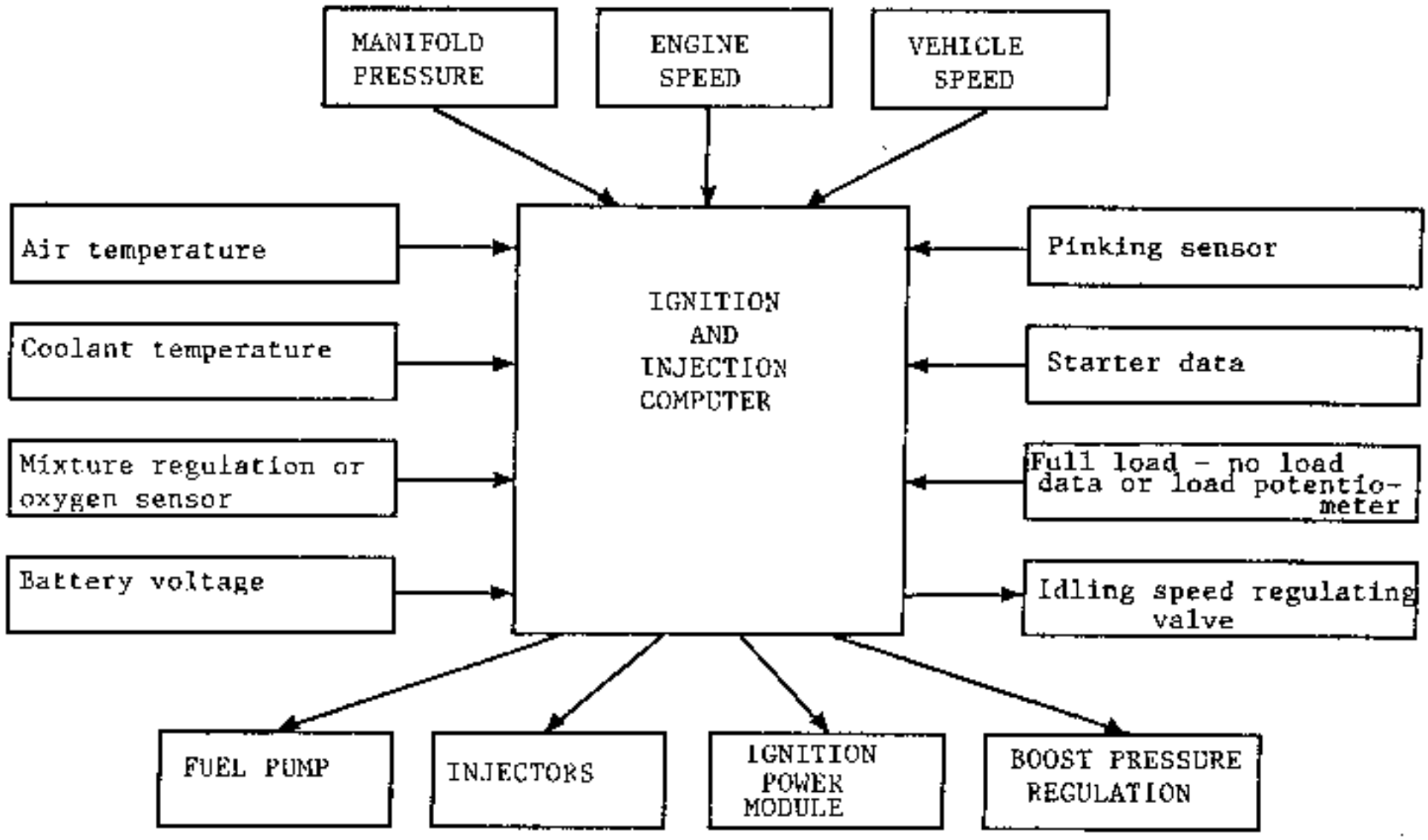
The role of the fuel filter, which is mounted on the output side of the fuel pump, is to trap any impurities in the fuel which could interfere with the correct operation of the injectors or regulator.

An arrow on the filter shows the correct way round. The filter must be replaced at regular intervals.

Pulse damper

The pulse damper is located between the fuel pump and fuel filter or at the end of the injector gallery. Its role is to reduce pressure variations and thus to decrease the amount of noise produced and transmitted by the pipes.

III – INJECTION COMPUTER AND ITS PERIPHERAL UNITS



Injection and ignition computer

The computer is mounted on a printed circuit. It is a digital unit and its main component is the microprocessor.

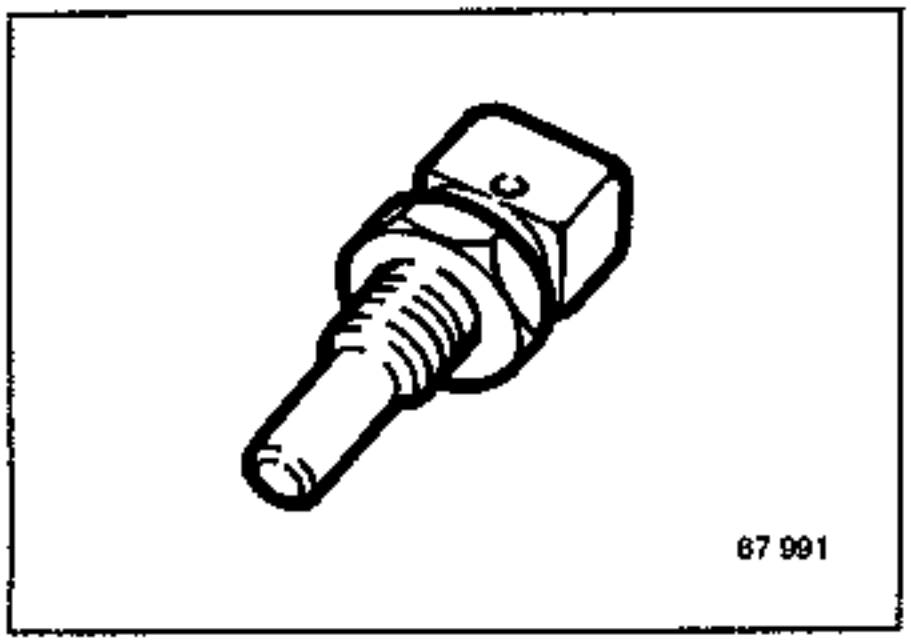
The injection computer also incorporates the two electronic ignition integrated circuits which act as microprocessor peripheral units.

The injection computer is housed in a splashproof casing mounted in the engine compartment.

III - INJECTION COMPUTER AND PERIPHERAL UNITS (continued)

Coolant temperature sensor

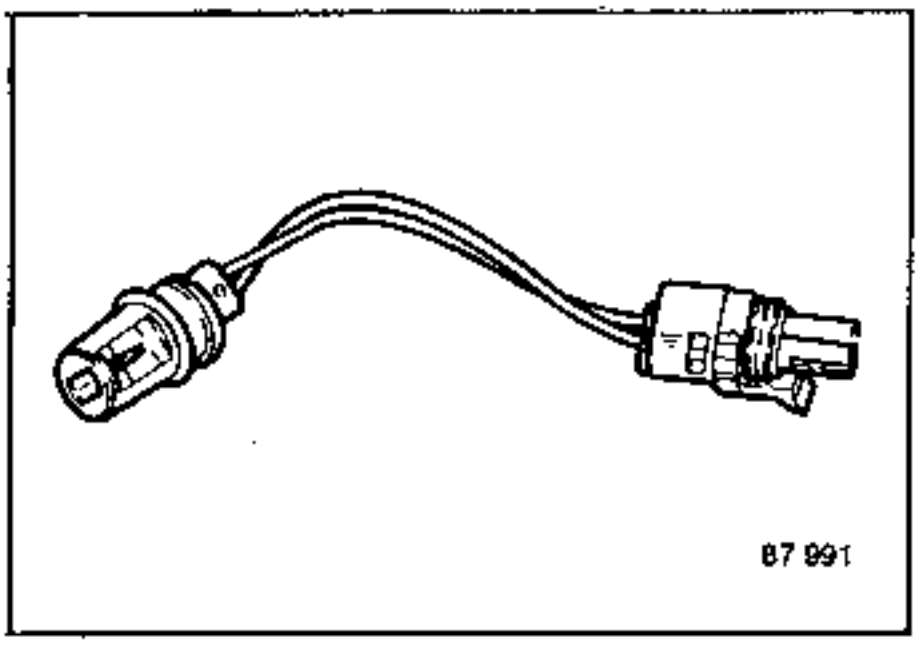
The coolant temperature sensor is mounted on the water pump. It is a thermistor which transmits an electrical image of the coolant temperature to the computer so that the necessary mixture and advance corrections can be determined.



Air temperature sensor

The air temperature sensor operates in a similar manner to the coolant temperature sensor. It is mounted on the input side of the throttle casing or on the casing itself and provides an electrical image of the air temperature.

This gives the computer its information on the density of the air entering the engine. When the air temperature falls, its density increases and the computer increases the amount of fuel injected to re-establish the required air/fuel mixture ratio.



ATTENTION:

The air and coolant temperature sensors may be of the positive temperature coefficient type (CTP) or of the negative temperature coefficient type (CTN) depending on the engine and computer type mounted:

- CTP: the sensor's resistance increases as the temperature increases;
- CTN: the sensor's resistance decreases as the temperature increases.

It is important that the correct type of sensor is used with the correct computer (see the setting values table and service part numbers in the P.R.s).

If there is any doubt, check the temperature values with the XR25 test box **when the engine is cold.**

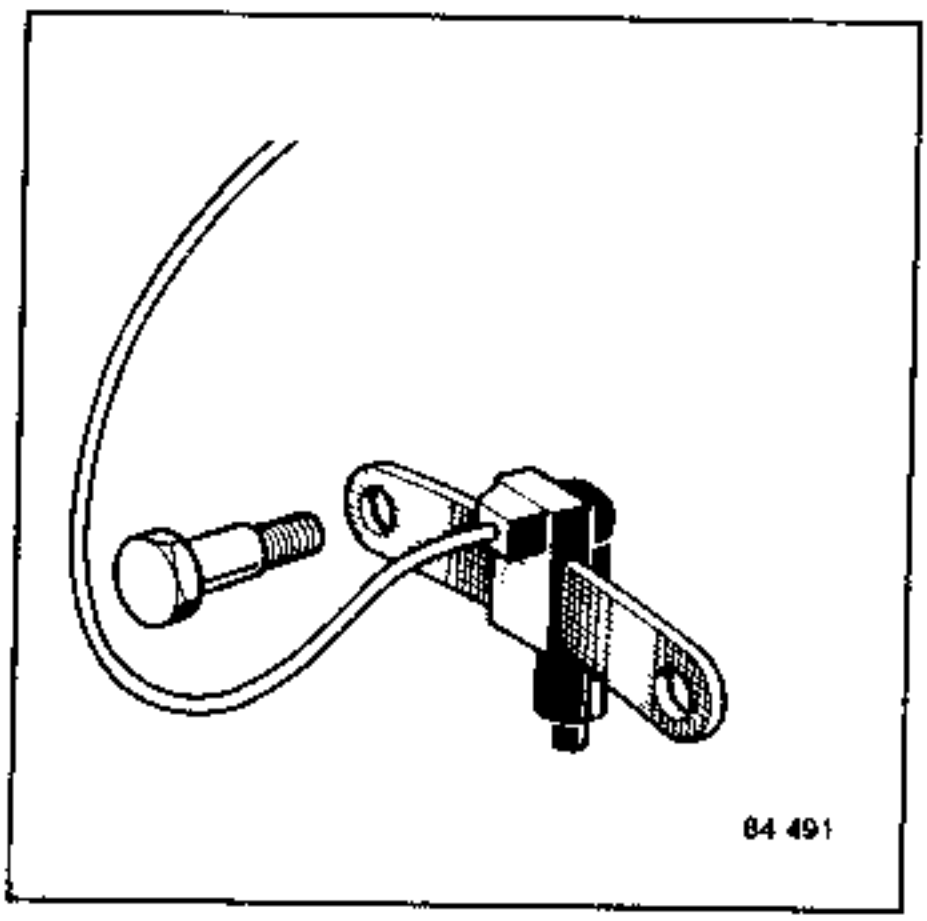
III - INJECTION COMPUTER AND PERIPHERAL UNITS (continued)

Position sensor

This marks:
- the position of top dead centre and bottom dead centre;
- the rotational speed of the engine.

It cannot be adjusted (it is pre-set on its mounting bar).

It must be secured to the clutch bell-housing using shouldered screws.

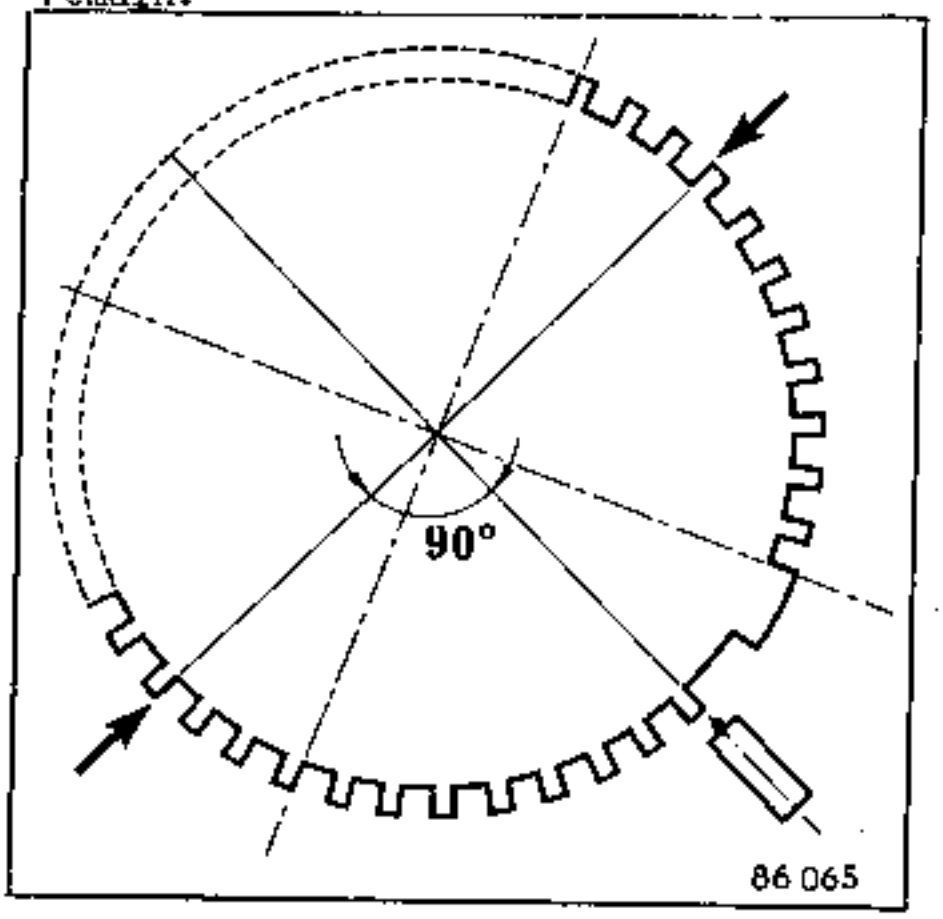


Role of the sensor target

- It helps to determine the angular speed of the engine.
- It marks and transmits data about the angular position of the flywheel.

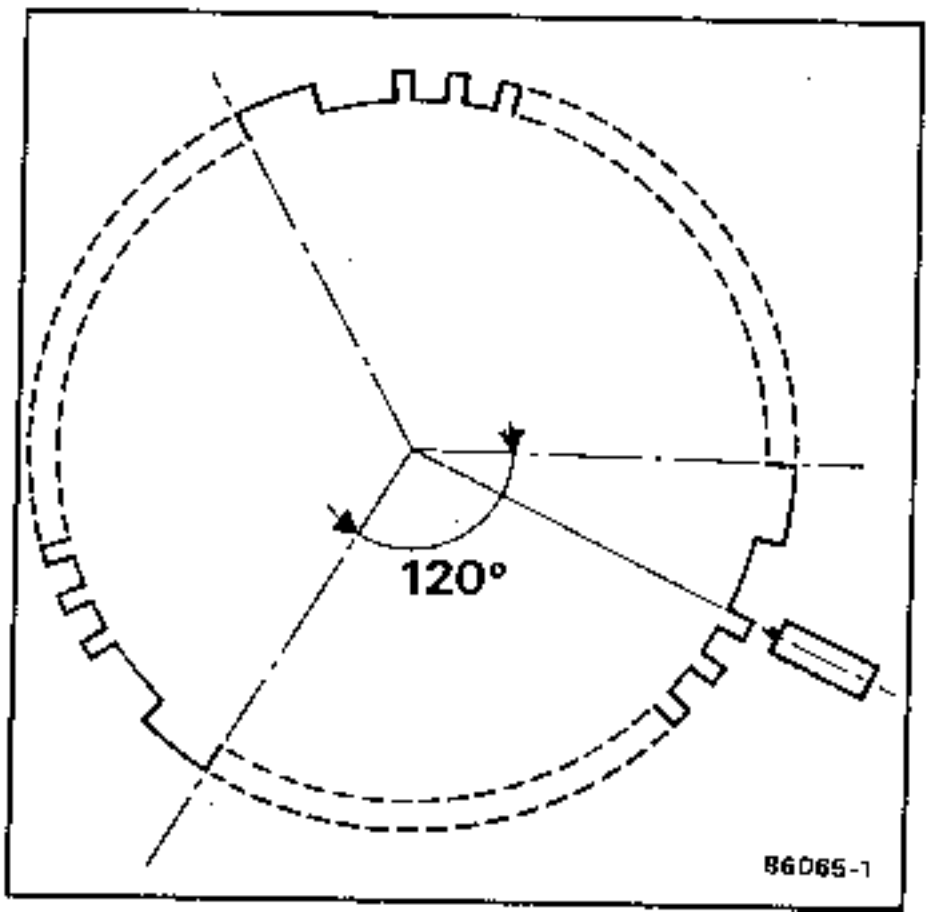
Flywheel (4-cylinder engine)

This has 44 evenly spaced teeth, two of which have been removed at each half turn to provide an absolute indication 90° before top and bottom dead centre. In fact, therefore, only 40 teeth remain.



Flywheel (6-cylinder engine)

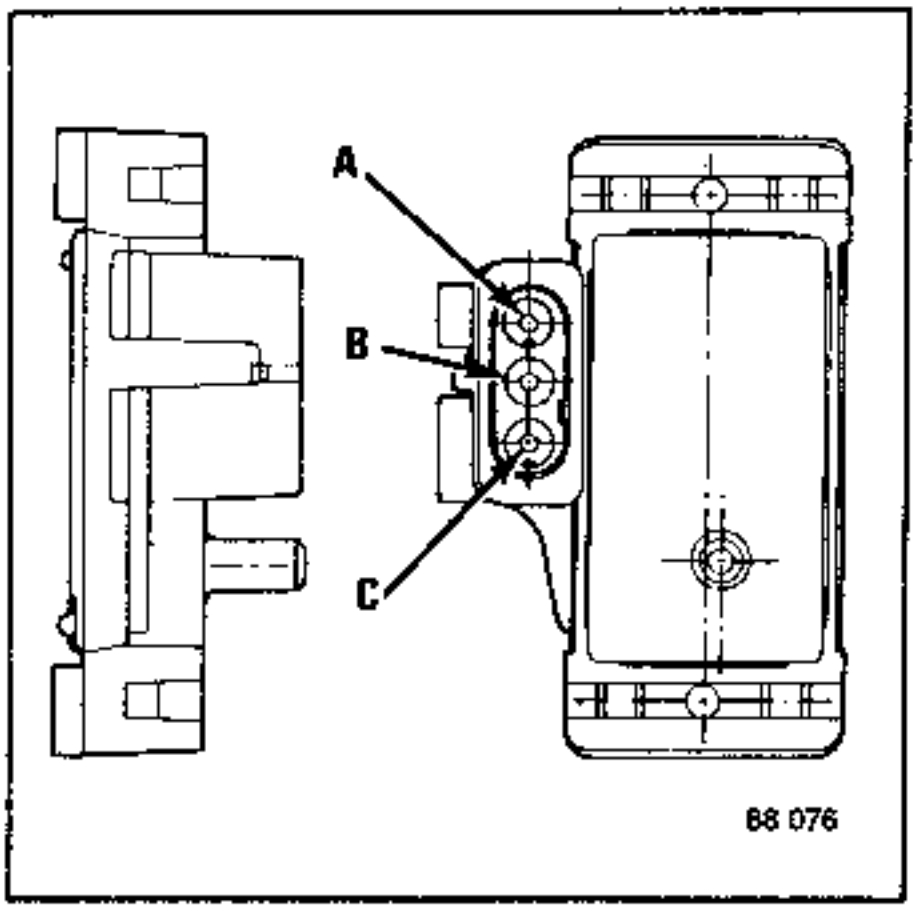
This has 66 evenly spaced teeth, two of which have been removed at each third of a turn. In reality, therefore, only 60 teeth remain.



III - INJECTION COMPUTER AND PERIPHERAL UNITS (continued)

Absolute pressure sensor

The pressure in the inlet manifold is measured by a sensor which provides an electrical image of this pressure. This signal is one of the main parameters used to calculate the injection time.



A - Earth B - Output voltage C - + 5 v

The sensor is of the piezo-resistance type. Pressure changes alter the resistance of the areas coated with silicone crystal.

By measuring these variations in resistances with a voltage of approximately 5 volts, an electrical image of the pressure is obtained.

No load/full load switch

This sensor, of the "all or nothing" type, informs the computer when the throttle is fully open and when it is fully closed.

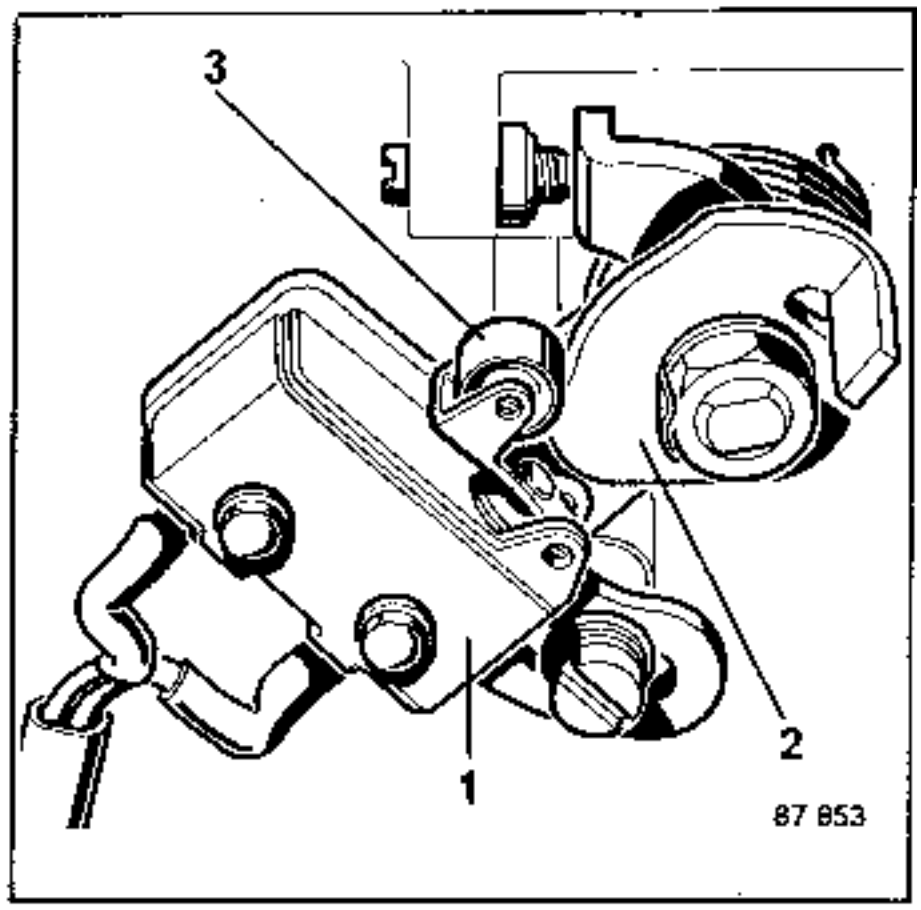
The signal is transmitted 10° before the throttle is fully open and 2° before it is fully closed.

The injectors thus supply the greater amount of fuel required by the air increase (at full throttle).

The no-load position provides the deceleration shut-off.

1st assembly

Cam switch with two lead output

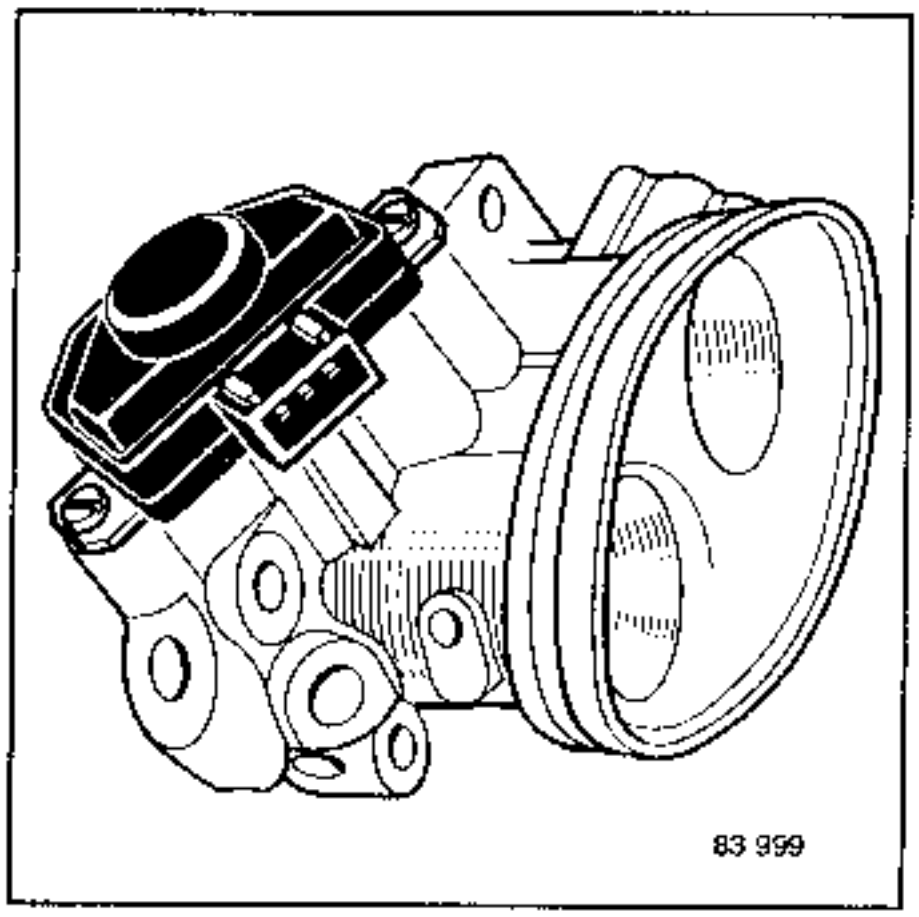


1 - Switch
2 - Cam
3 - Lever

III - INJECTION COMPUTER AND PERIPHERAL UNITS (continued)

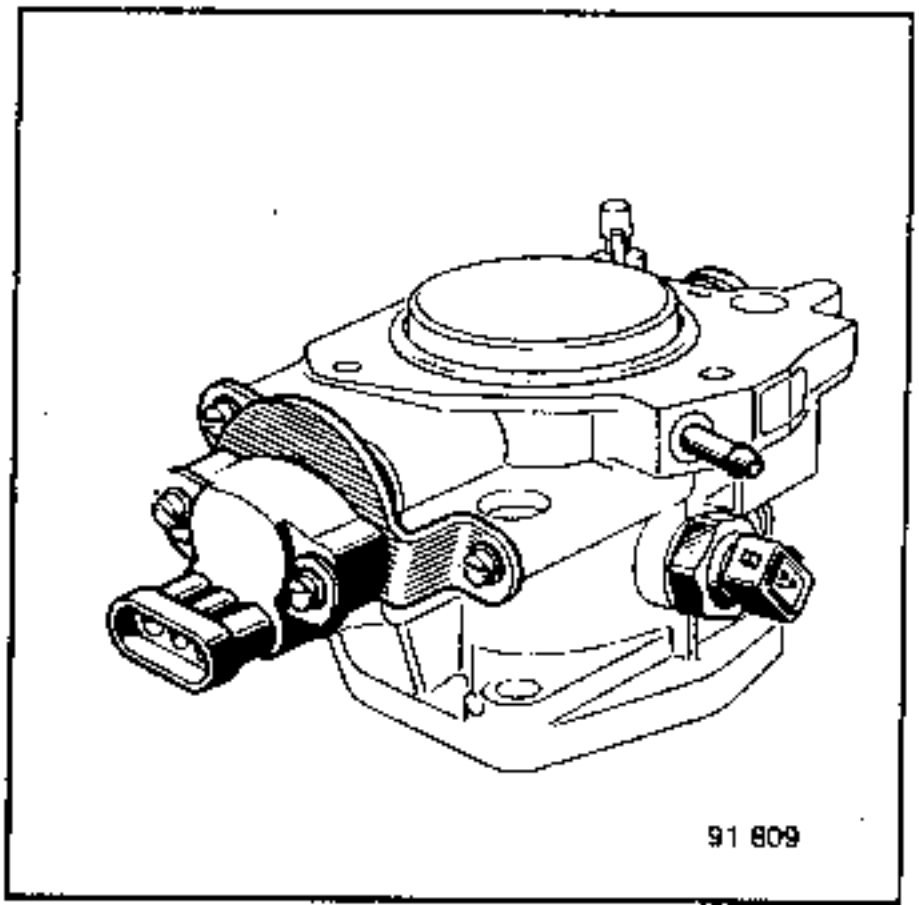
2nd assembly

Double switch with 3-lead output.



Load potentiometer

The load potentiometer replaces the "No load/full load" switch. It supplies precise information about the position of the throttle over its entire range of use, from the idling stop to the full load stop.

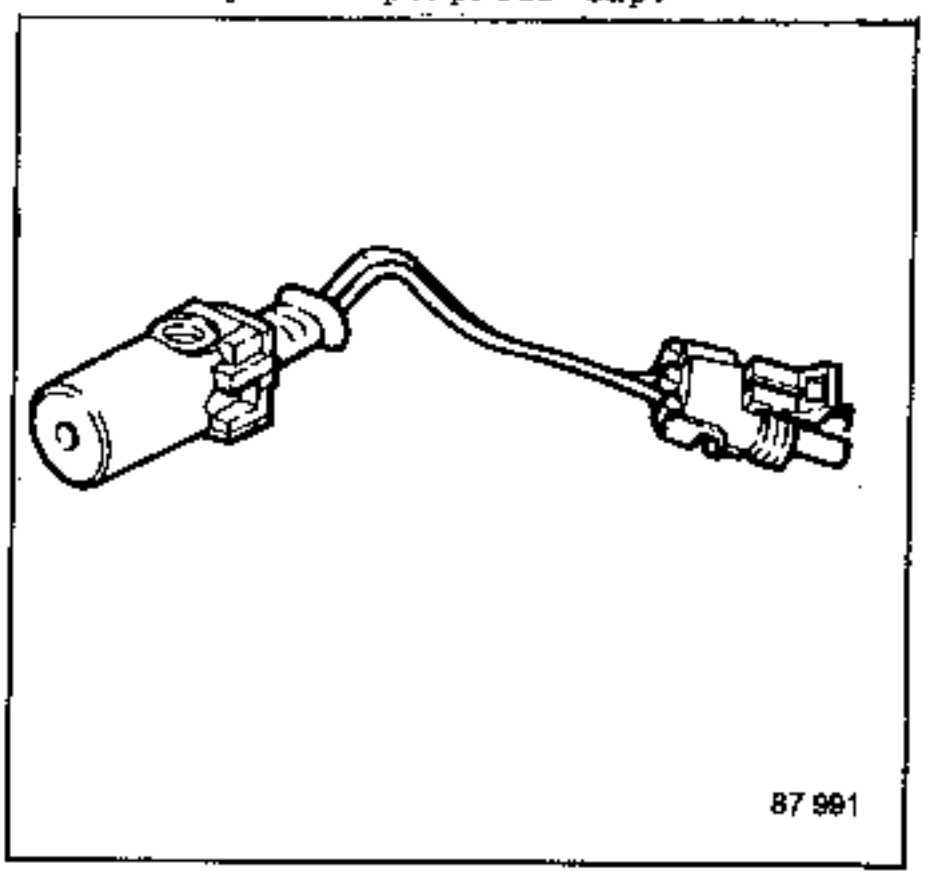


Idling speed mixture potentiometer

The mixture potentiometer meters the amount of fuel to suit the cool air delivery (for which there is no direct reading).

An additional function of this potentiometer is to allow for differences in the readings from the various system components (injectors, fuel regulator, pressure sensor, air sensor).

Access to its adjusting screw is blocked by a tamperproof cap.



III - INJECTION COMPUTER AND PERIPHERAL UNITS (continued)

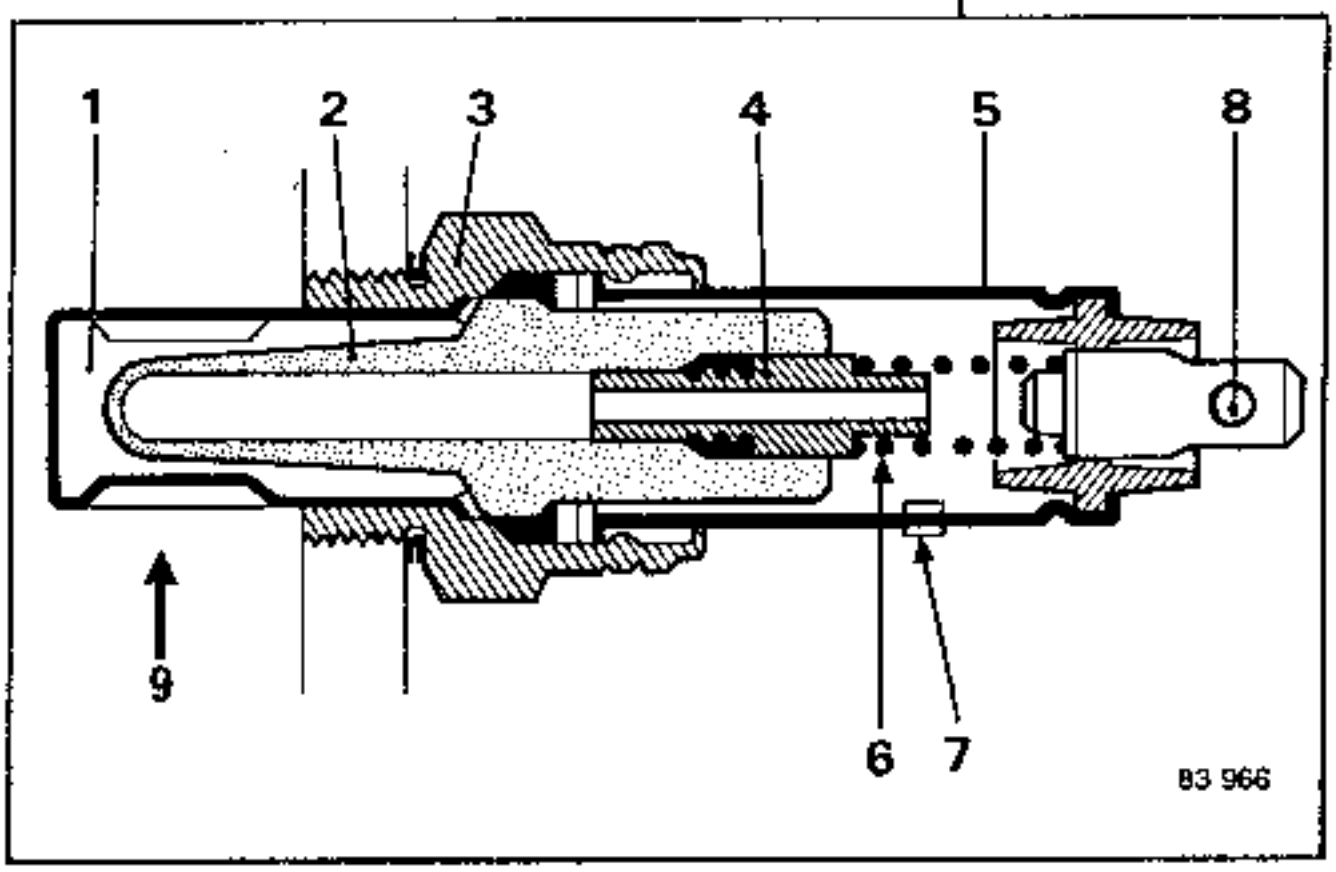
Oxygen sensor (Lambda sensor)

The oxygen sensor determines the ratio of oxygen in the exhaust gases, the value of which varies according to how rich the mixture is. The sensor has the special feature that a variation in the composition of the carburated mixture, by comparison with the stoechiometric ratio (Lambda = 1), is manifested as a variation in the output voltage.

The computer corrects the air-fuel ratio so that the carburated mixture is always as close as possible to the stoechiometric ratio (Lambda = 1), which, together with the use of catalytic converters, makes great advances in the reduction of pollutant gases discharged by the vehicle.

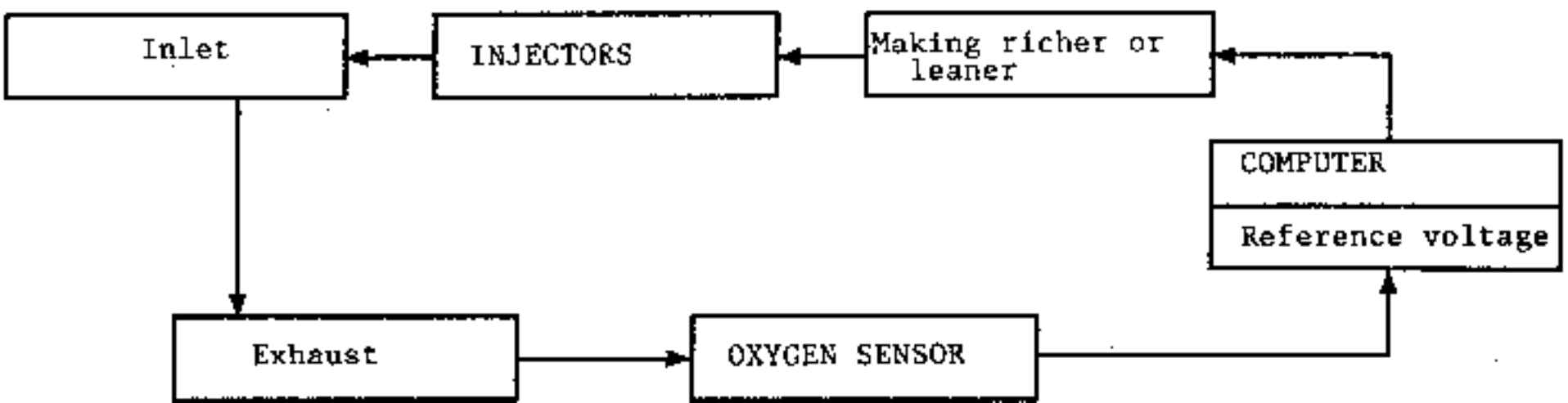
The operating principle is based on a special property of the ceramic used, namely that it can conduct oxygen ions from a temperature of approximately 250°C. If the oxygen content is not the same on both sides of the sensor, an electric voltage is established between the two limit surfaces by virtue of the property of the material used. This voltage enables the oxygen content either side of the sensor to be measured.

NOTE: The oxygen sensor may have a heater resistor supplied after the ignition switch. This reheating system enables the sensor to be primed more rapidly when the engine is started.



1 - Protective sheathing
2 - Ceramic sensor
3 - Base
4 - Contact pin
5 - Protective pin
6 - Contact spring
7 - Ventilation aperture
8 - Electrical connection
9 - Exhaust gas

OXYGEN OR LAMBDA SENSOR REGULATING PRINCIPLE



III - INJECTION COMPUTER AND PERIPHERAL UNITS (continued)

Idling speed regulating valve

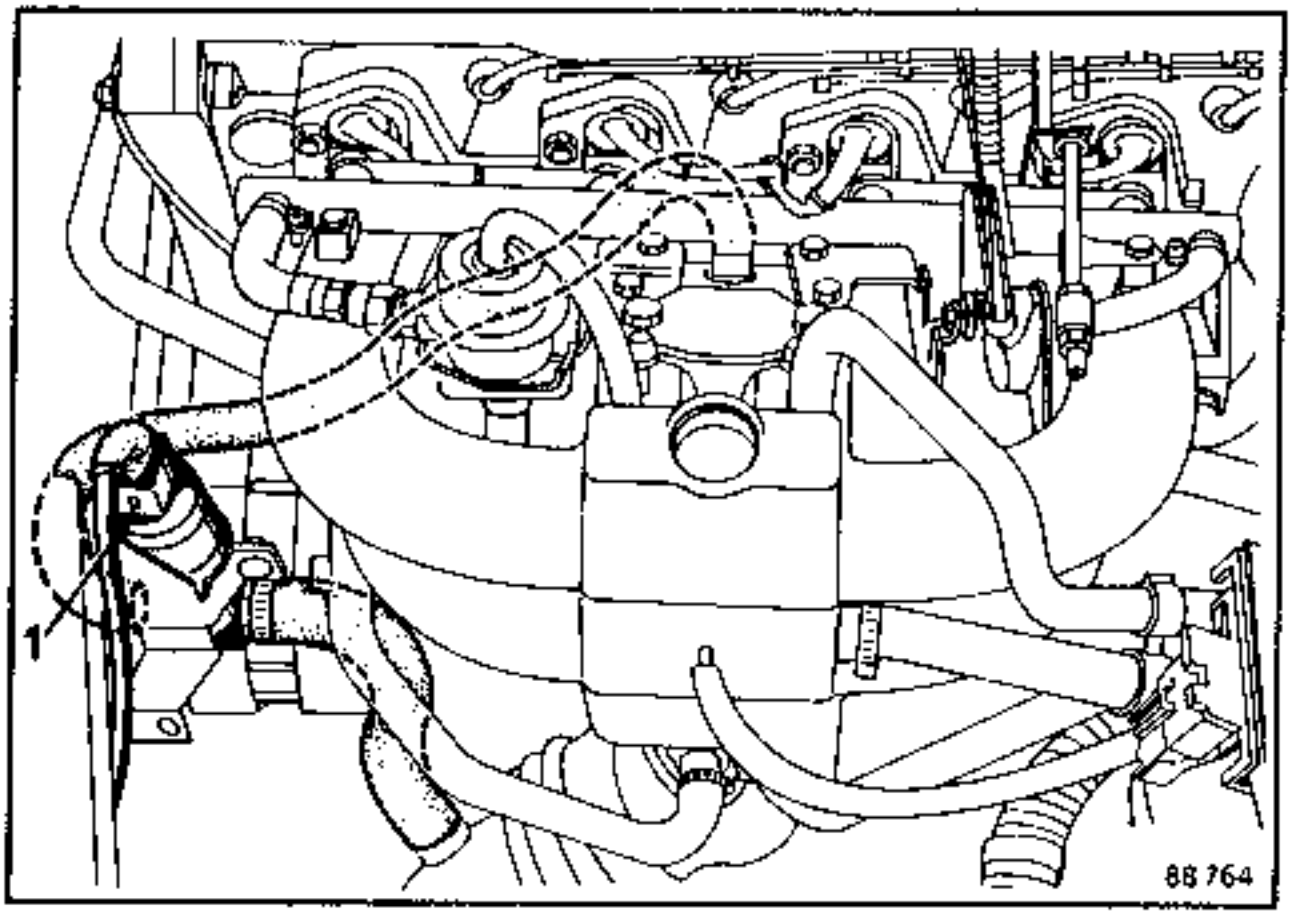
The regulating valve (1) comprises two coils supplied by complementary periodic signals which position the shut-off valve between the fully open position and the fully closed position of the air circuit (maximum rotation = 90°).

When the ignition is switched on and the engine is not running, the computer emits signals (sequential earthing times) which open the regulating valve (characteristic sound heard when it is switched on) and the valve stays open while the engine is being started.

As soon as the engine speed increases to above the regulating speed, the computer emits signals which close the regulating valve. Consequently, there is a position of equilibrium corresponding to the flow rate necessary for maintaining the engine at idling speed.

The adjustment system cannot be altered. The idling speed is determined by the computer (800 rpm with a warm engine for the J7T 706 engine, for example).

When starting from cold and when the engine is warming up the adjusted engine speed varies and may increase by between 1000 and 1100 rpm for a temperature between 0 and 20°C (coolant temperature sensor).

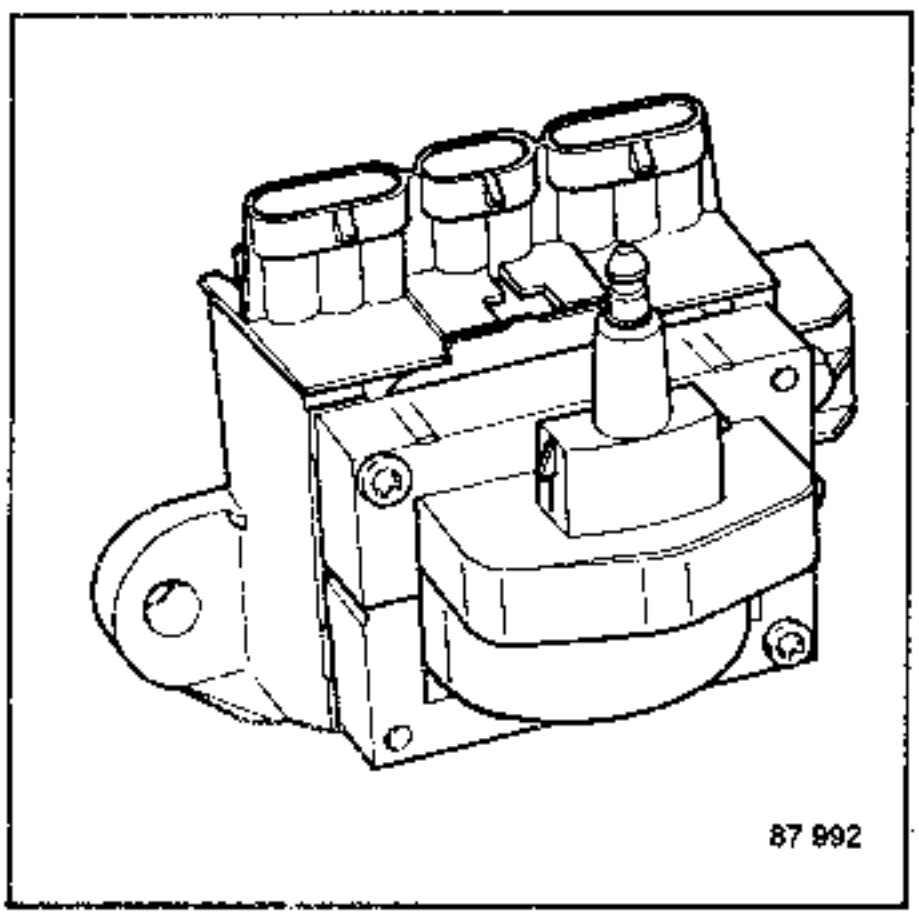


IV - POWER

Ignition power module

As the computer integrates the ignition function, the system includes an ignition module comprising a coil and a power control operated by the computer.

All the advantages of an integral electronic system (AEI) are obtained: the advance is provided by a power/speed type cartographic representation which accurately determines the requirements of the engine.



87 992

The ignition advance adjustment (anti-pinking function)

The high performance of today's supercharged engines requires combustion to occur at the very point of pinking (detonation). It is this phenomenon with which the ignition advance adjustment system is designed to cope.

Principle

In the cartographic representation of the ignition two zones are taken into account:

- a "non-critical" zone corresponding to low loads and low engine speeds;

- a "critical" zone corresponding to partial and high loads and high engine speeds.

When pinking occurs, one of two things may happen, depending on the engine's operating zone:

- in the non-critical zone, the system makes a rapid correction of -7° and returns in stages to the nominal value after about 10 seconds;

- within the critical zone there is a first phase which is essentially identical to the phase described previously, which returns the system to the nominal value of -1°, then there is a second phase, called the "slow correction phase" in which the nominal advance setting for the cylinder in question is returned to, a few seconds after pinking has occurred.

In addition, if the pinking sensor or its circuit fails (no further signals transmitted), the system operates in defect mode within the critical zone and retards the entire zone by -3° in relation to its nominal settings.

Although only one pinking sensor is used, the system is adjusted cylinder by cylinder.

Components of the system

The pinking sensor:
This is a piezo-electric component and its operating principle is based on the following observation:

an impact, ie. a variation in pressure, on a body with a crystalline structure produces a current. A cable consisting of two wires with screening transmits this current to the computer. If pinking occurs, extraneous vibrations of a given frequency appear and give rise to electrical pulses of the same frequency. Alerted in this manner, the computer retards the advance.

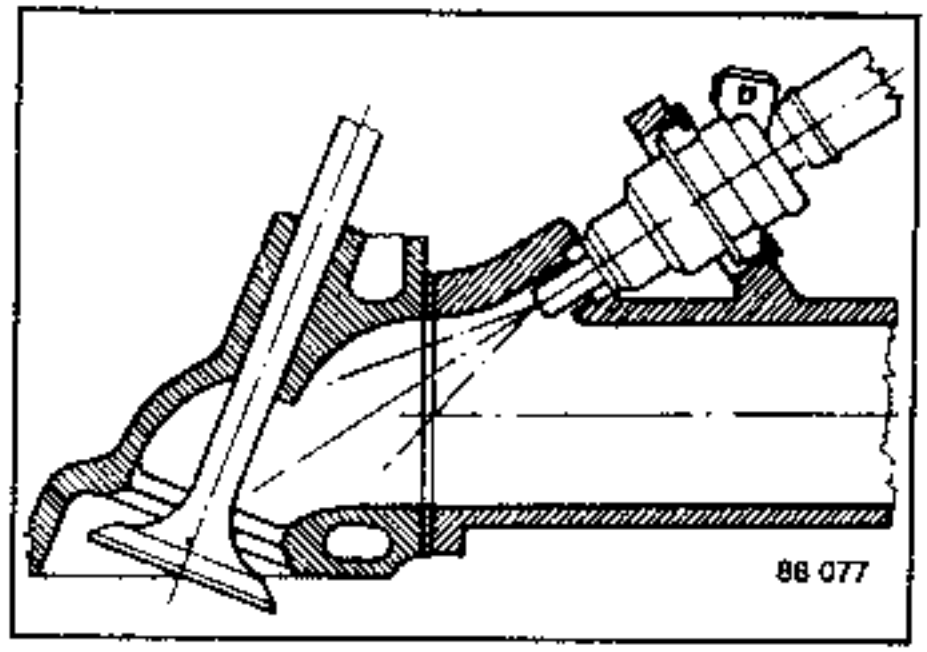
The computer:

- calculates the ignition advance according to the engine speed and load (cartographic calculation);
- detects pinking cylinder-by-cylinder via the sensor;
- makes corrections by storing the number of times pinking occurs in each cylinder.

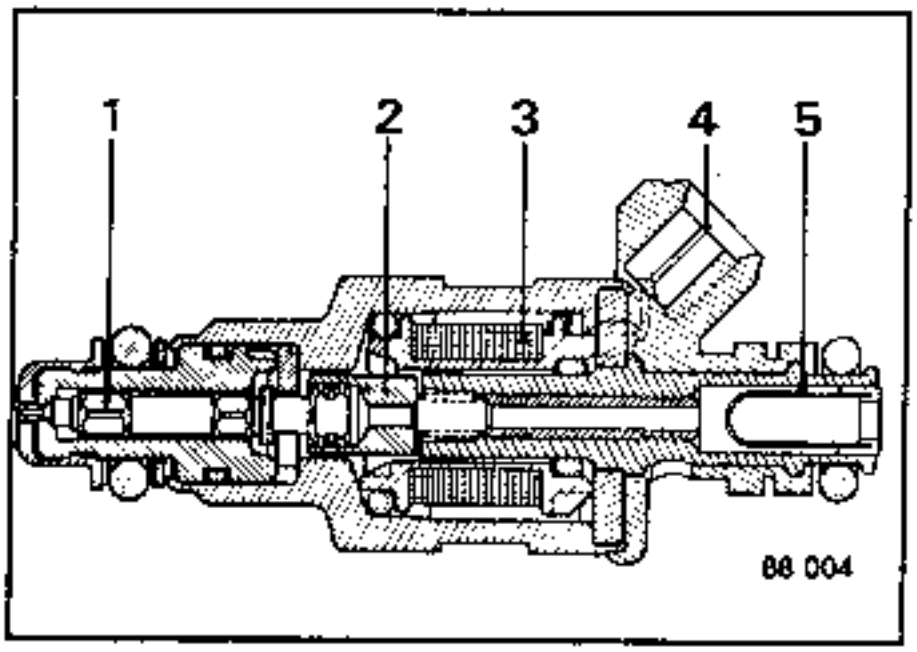
IV - POWER

Electromagnetic injector

The electromagnetic injector essentially consists of a body and a needle on which there is a magnetic core. This assembly is spring loaded against a seat in the injector body. At the rear of the injector body there is an electromagneitc coil and at the front a guide for the injector needle. The electrical signal from the computer sets up a magnetic field in the coil. The magnetic core is attracted then the needle lifts off its seat to allow pressurized fuel to pass. When the electrical signal is switched off, the spring returns the needle to its seat and the circuit is closed.



The injectors can thus operate as a group, simplifying the system. They inject twice per cycle i.e. once per engine revolution except on starting, to facilitate which a special procedure is used.



1 - Injector needle
2 - Magnetic core
3 - Magnetic coil
4 - Electrical connection
5 - Filter

Each cylinder has an injector mounted on its inlet duct into which it sprays fuel, upstream of the inlet valve.

Starting

When starting from cold, only a small proportion of the fuel injected is vapourised and participates in combustion.

The mixture is therefore enriched by increasing the amount of fuel injected.

When the engine starts, the starter relay sends an electrical signal to the computer to indicate that the engine is in the starting phase.

The computer adapts the injection times solely on the basis of coolant temperature.

It determines the coil energising period which will provide effective ignition and good starting.

However, a timer limits the injector energising time.

During this starting cycle, the injectors are energised every ½ an engine turn.

Then, when the ignition key is released or the engine speed exceeds 1000 rpm, the computer considers that the engine has started and returns to the normal procedure by injecting once every engine revolution.

Furthermore, when cold, the friction resistance is higher. To run the engine at idling speed more air is required.

Two systems are used:

a) Initial throttle opening
This additional air is controlled by the minimum opening of the throttle casing 2nd barrel. A cam operated by a thermostatic spring measuring the engine coolant temperature acts as a variable stop on the 2nd barrel.

The cam is totally retracted when the coolant temperature is higher than 70°.

b) Adjusting valve
This additional air is determined by the computer which positions the adjusting valve near the maximum opening position.

Vehicle speed data

A pulse generator on the instrument panel or on the speedometer cable informs the computer of the vehicle speed.

This data is used:
- to limit the turbo pressure at low vehicle speeds (L485)
- to prevent cutting out on deceleration when the vehicle is travelling at low speed or is stationary.

Cut-out on deceleration

To save fuel, fuel injection is shut off during the deceleration phase.

When the throttle is fully closed at an engine speed of more than 2000 rpm, the injectors receive no signals.

Injection recommences when the throttles open or when the engine speed falls to less than 1100 rpm.

Battery voltage correction

A car battery provides a nominal voltage of 12 volts. Depending on operating conditions, this voltage can vary between 8 and 16 volts and this affects the time the injectors are open. The time increases as the battery voltage falls.

To compensate for this change in the opening time, the actual injection time at the injectors is corrected to suit the battery voltage.

Full load - altitude correction

When the pressure in the inlet manifold is close to atmospheric pressure, the computer will modify the strength of the mixture fed to the engine (R) so that it changes gradually from the minimum specific consumption point (R = 1/18) to the power point (R = 1/13). The atmospheric pressure is stored in the computer. It is measured each time the engine is started and up-dated each time the throttle is fully opened or each time the pressure noted is higher than atmospheric pressure.
At high altitude the exhaust back pressure falls, the engine internal recirculation is reduced and for a constant manifold pressure the mixture will be weaker at low load and at idling speed. The atmospheric pressure reading provides a basis for the altitude correction.
NOTE: For turbo engines the atmospheric pressure is not re-adjusted when the engine is running.

Operation in defect mode

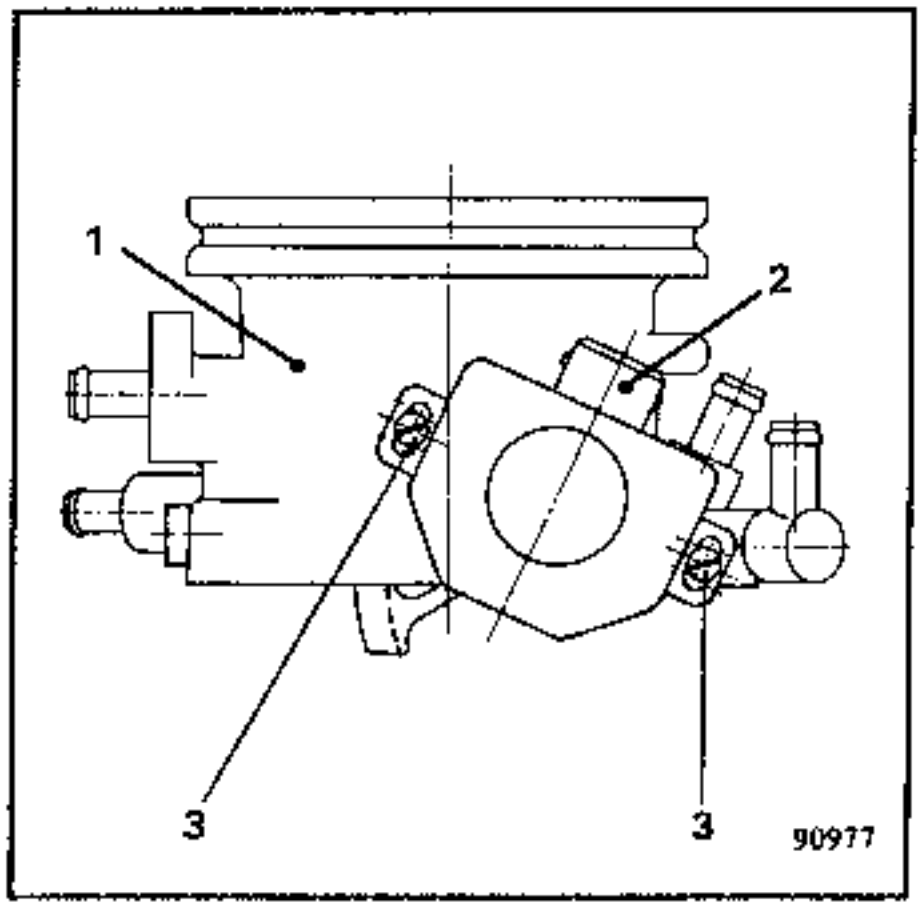
This function enables the injection computer to self-diagnose the system by measuring the size of the input signals. It informs the driver of an abnormal reading by switching on a warning light on the instrument panel and it memorises intermittent defects.
The warning light remains switched on until the battery or the computer is disconnected and the computer transmits a diagnostic code to show the operator which unit is defective.
If a defective reading is obtained, the computer operates in defect mode using plausible input values.

- Air temperature sensor: the temperature taken as a basis for calculation is 20°C.
- Coolant temperature sensor: at starter voltage the temperature is the same as for the air sensor.
- After starting: the temperature used for calculations is that of a hot engine (90° to 100°C) but the overall basic adjustment can be made richer.
- Mixture adjusting potentiometer: if this is disconnected, the reading used will be the mean potentiometer figure.

REPLACEMENT

The throttle casing is heated by the engine coolant.

When removing it, remember to clamp the coolant hoses using **Mot. 453-01** so as to avoid any loss of coolant.



1 - Throttle casing
2 - No load - full load switch terminals
3 - Adjusting screw

REPLACEMENT (continued)

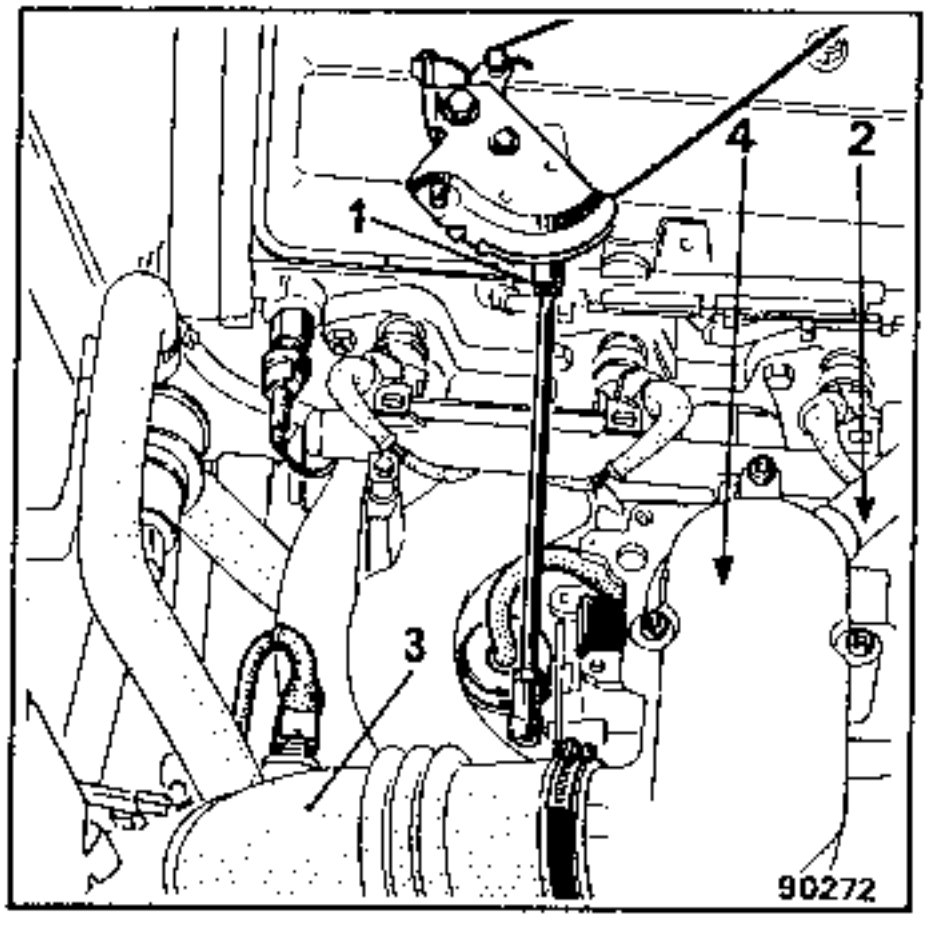
On the early J7T ... engines with the dual barrel WEBER throttle casing, the inlet manifold must be removed in order to remove the throttle casing.

SOLEX single barrel throttle casing

Disconnect:-
- the no load/full load switch connector
- the accelerator cable (1)
- the rebreathing hose (2)
- air inlet hose (3)
- cover (4) held by three screws
- the throttle casing itself.

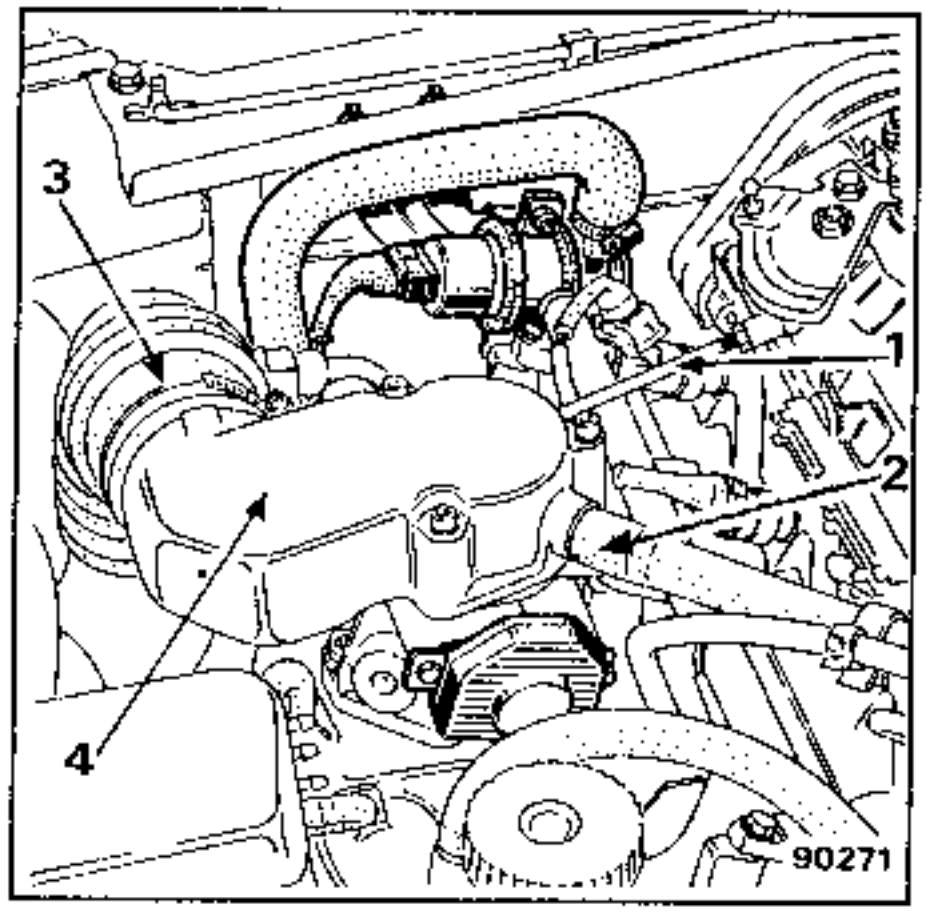
RENAULT 21

RENAULT 21

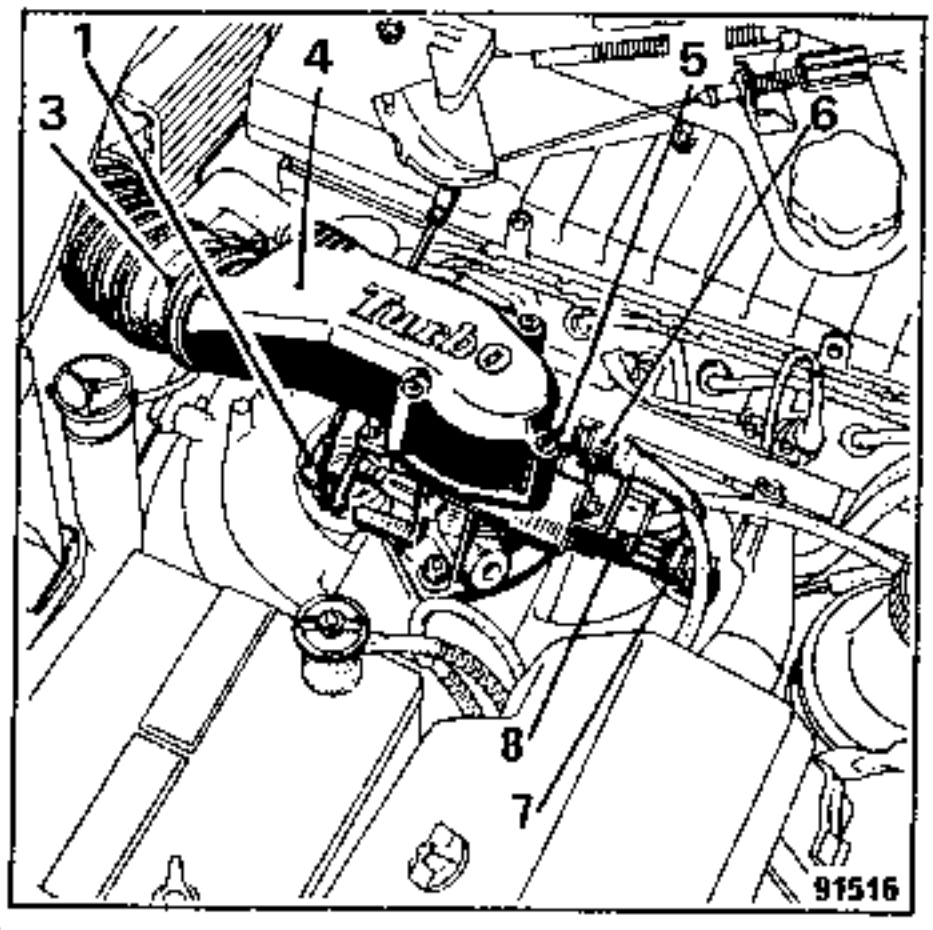


On reassembly, fit a new seal and check that the accelerator cable is correctly adjusted and works well. Also ensure that there is a good connection between the connector and the no load/full load switch.

RENAULT 25



RENAULT 21 TURBO L485

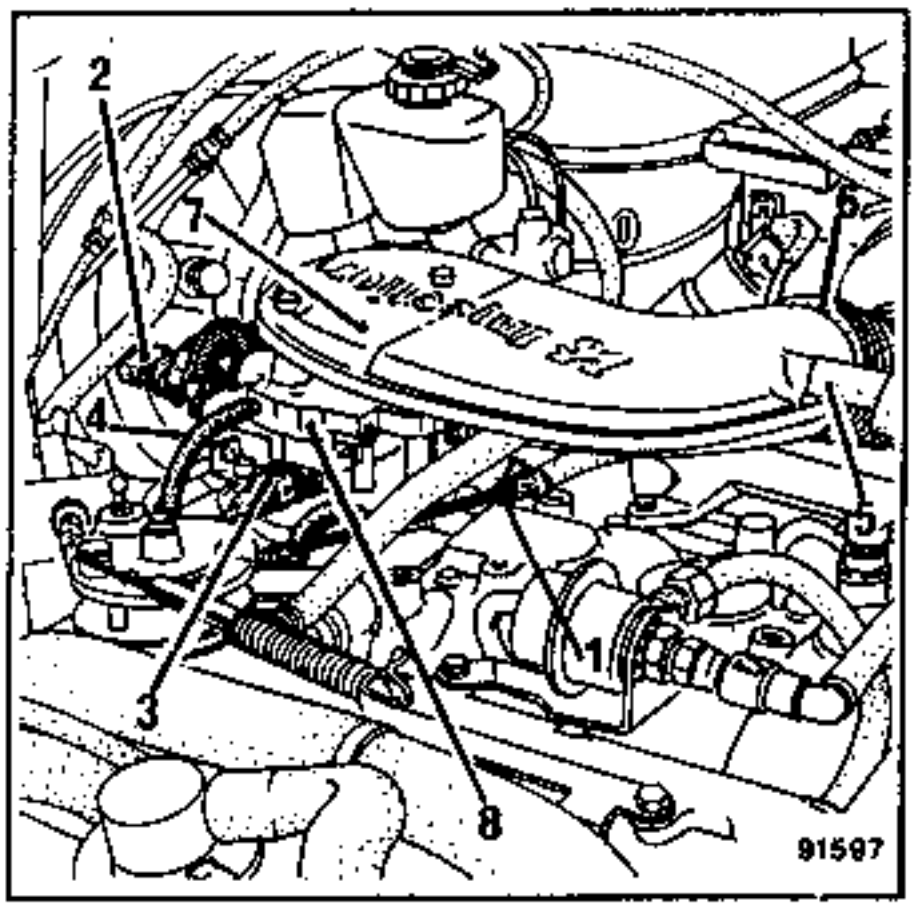


5 - Air temperature sensor
6 - Air temperature sensor connector
7 - Potentiometer connector
8 - Throttle casing potentiometer

REPLACING (continued)

Z7W engine

Disconnect:
- accelerator cable (1)
- throttle potentiometer connector (2) and air temperature sensor connector (3)
- canister bleeding signal (4) on vehicles fitted with the anti-evaporation system
- air intake ducts (5) and (6)
- cover (7) secured by three screws
- throttle casing (8) itself.



On reassembly:

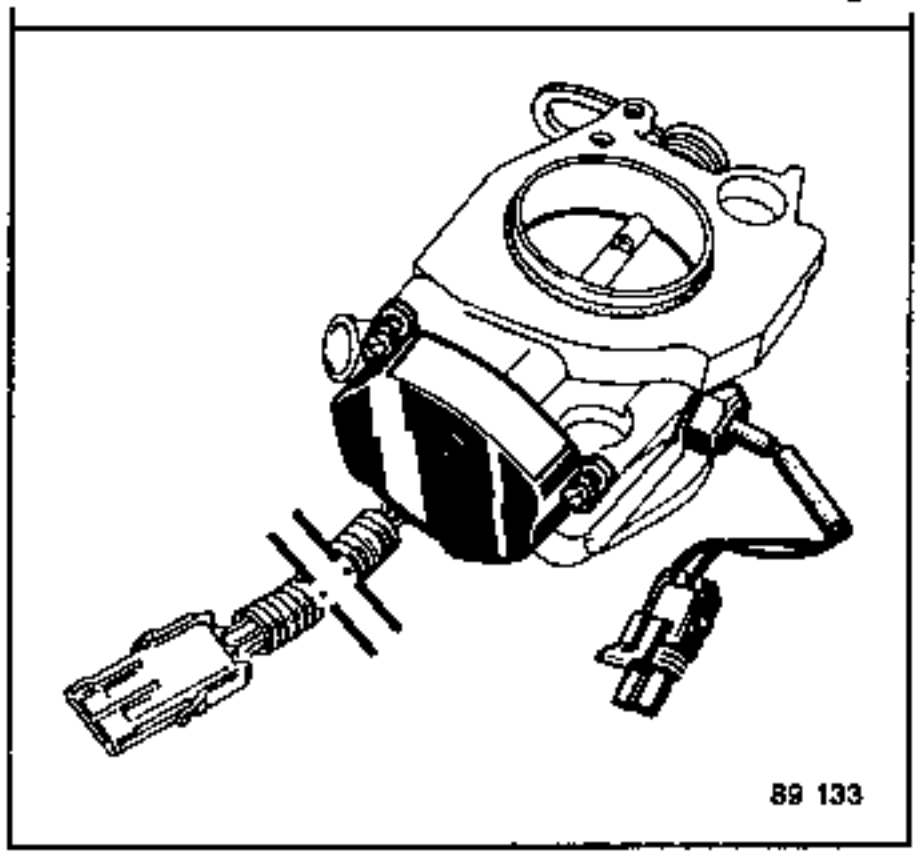
Fit new seals and ensure that the ducts are tightened correctly.

Z7U ... engine

Remove the inlet manifold between the air-to-air intercooler and the throttle casing.

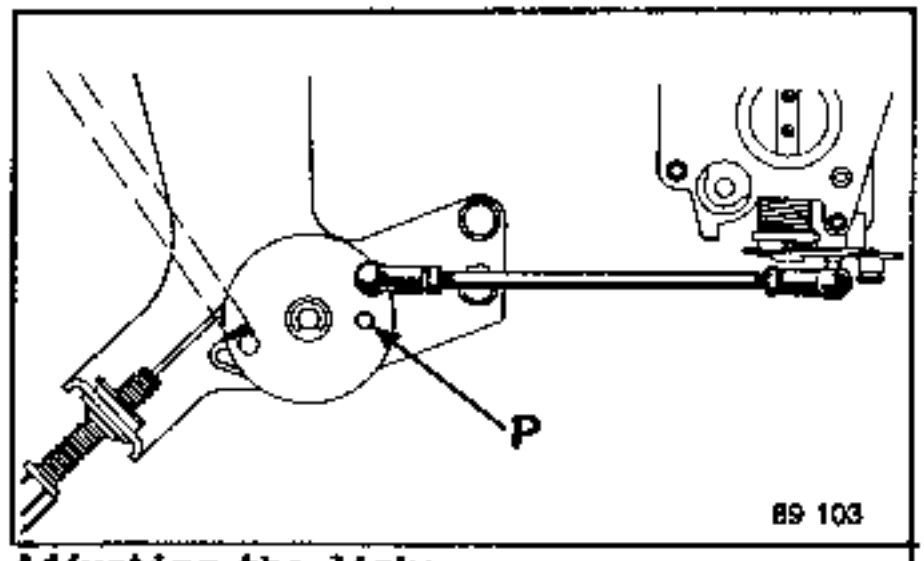
Disconnect the connectors from the no load/full load switch and the air temperature sensor.

Unscrew and remove the throttle casing.



On reassembly:

Fit the throttle casing in place and connect the connectors and the control link.



Adjusting the link:

Place a 5 mm diameter gauge (P) in the openings in the swivel lever and its mounting and align the link with the throttle butterfly set on the idling stop.

Check that it is operating properly and that the accelerator cable is correctly adjusted.

REPLACING

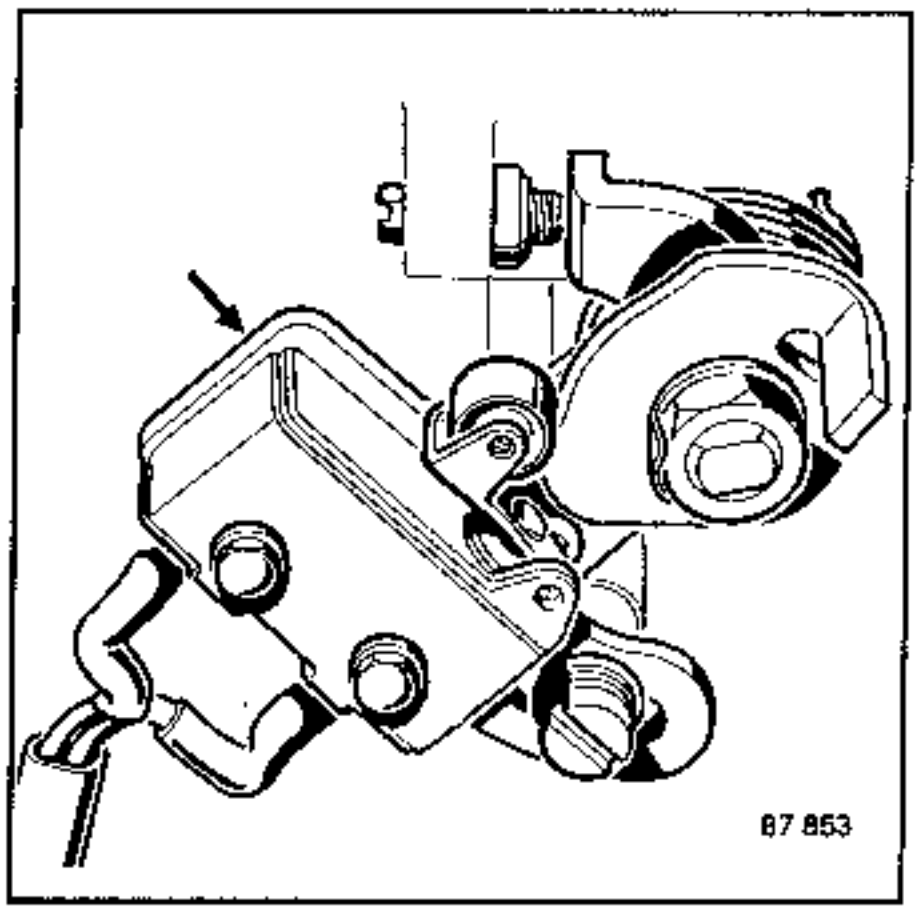
ESSENTIAL SPECIAL TOOLING
. **Mot. 453-01** Hose clamps

Disconnect the electric harness connector. Fit clamps **Mot. 453-01** to the coolant hoses.

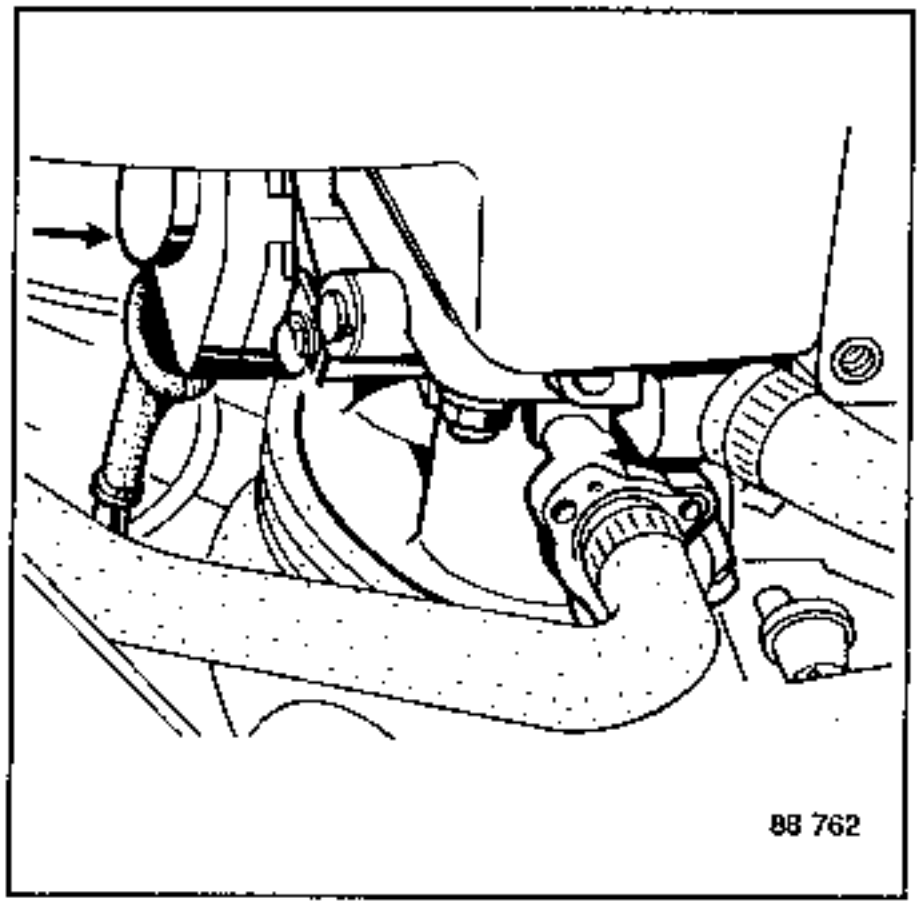
Remove:
- the inlet manifold (J7T 1st assembly)
- the throttle casing.

See the "Checking - Adjusting" section for the setting of the no load/full load switch.

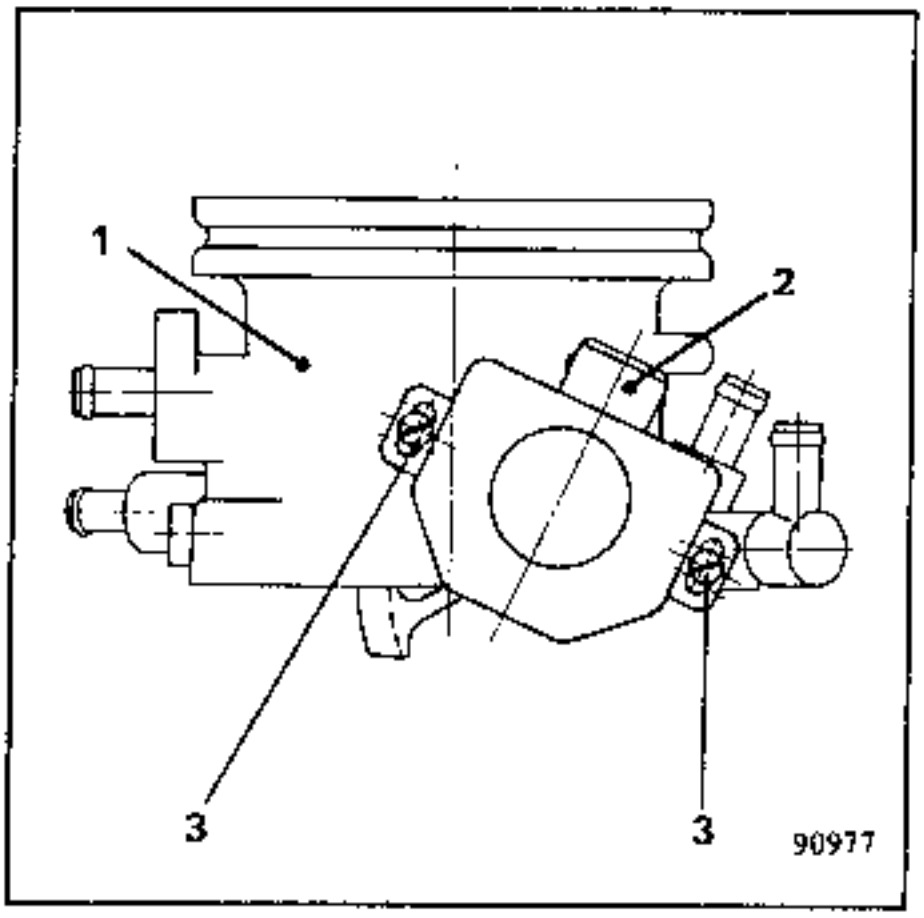
J7T engine - 1st type



F3N and J7T 2nd type engines

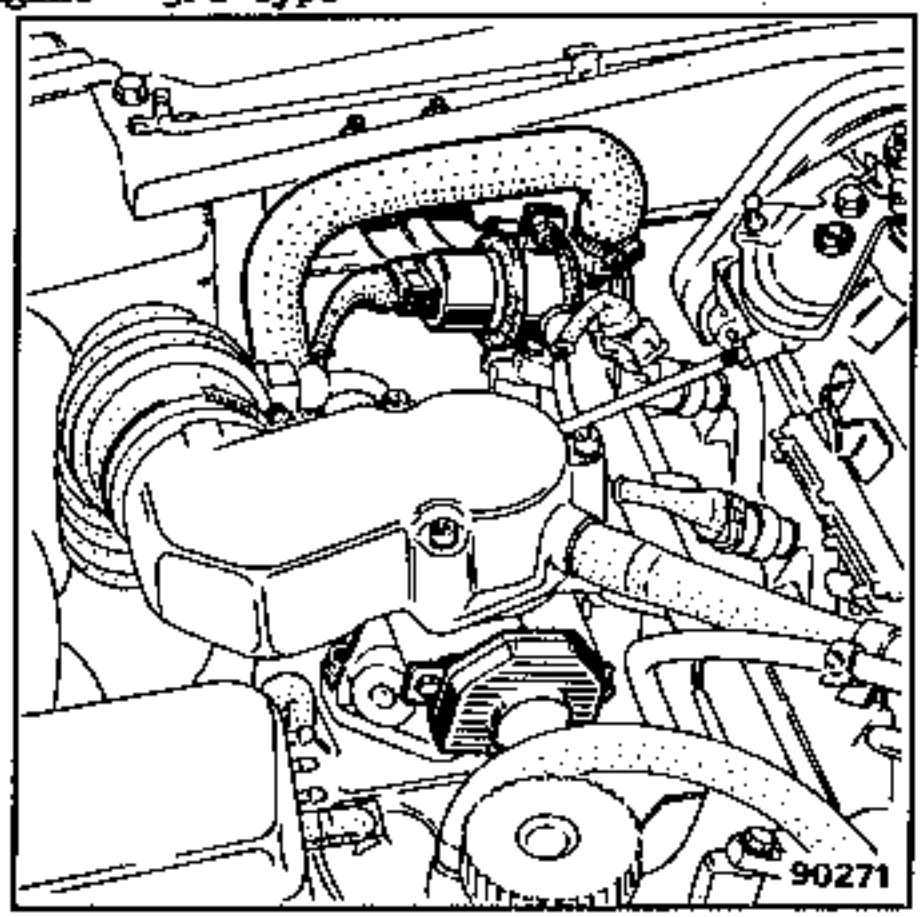


F3N engine

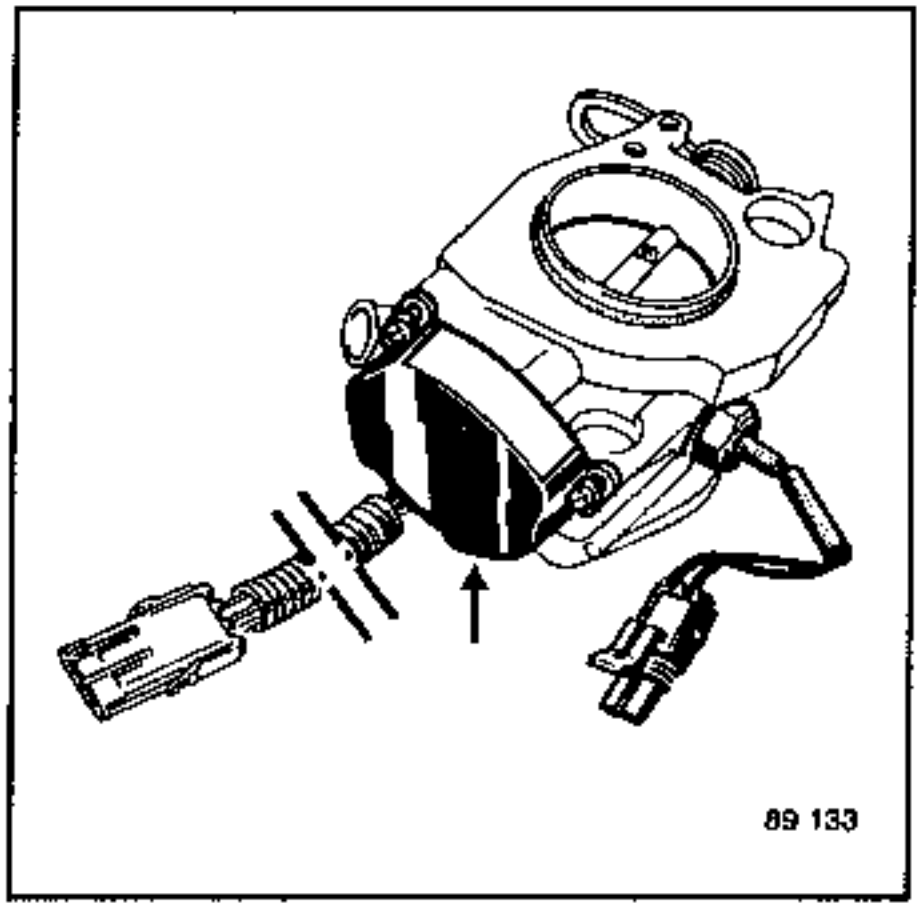


REPLACING (continued)

J7R ... engine (except L485) - J7T ... engine - 3rd type

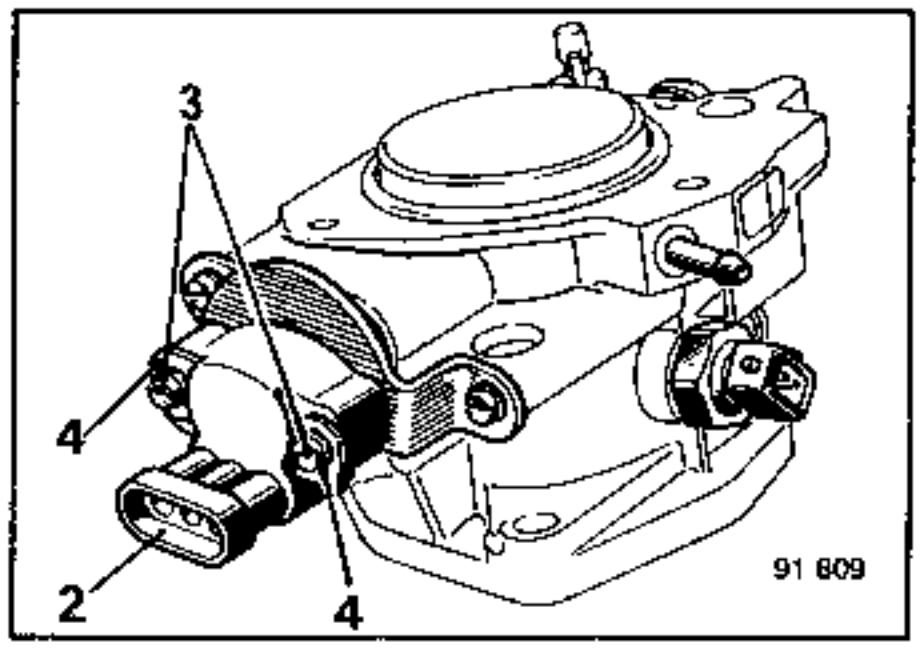


Z7U ... engine



REPLACING

J7R (L485) - Z7W engines



Disconnect connector (2).

Unscrew the two screws (3) securing the switch and take it out.

On reassembly:

Fit the switch in place, aligning its flat with the flat on the throttle spindle, then direct it as shown by the arrow until the no load switch clicks, and tighten the mounting screws.

NOTE: The potentiometer has thrust washers (4) which must be fitted in the correct location.

See the section "Checking and adjusting the injection system" for adjusting the potentiometer.

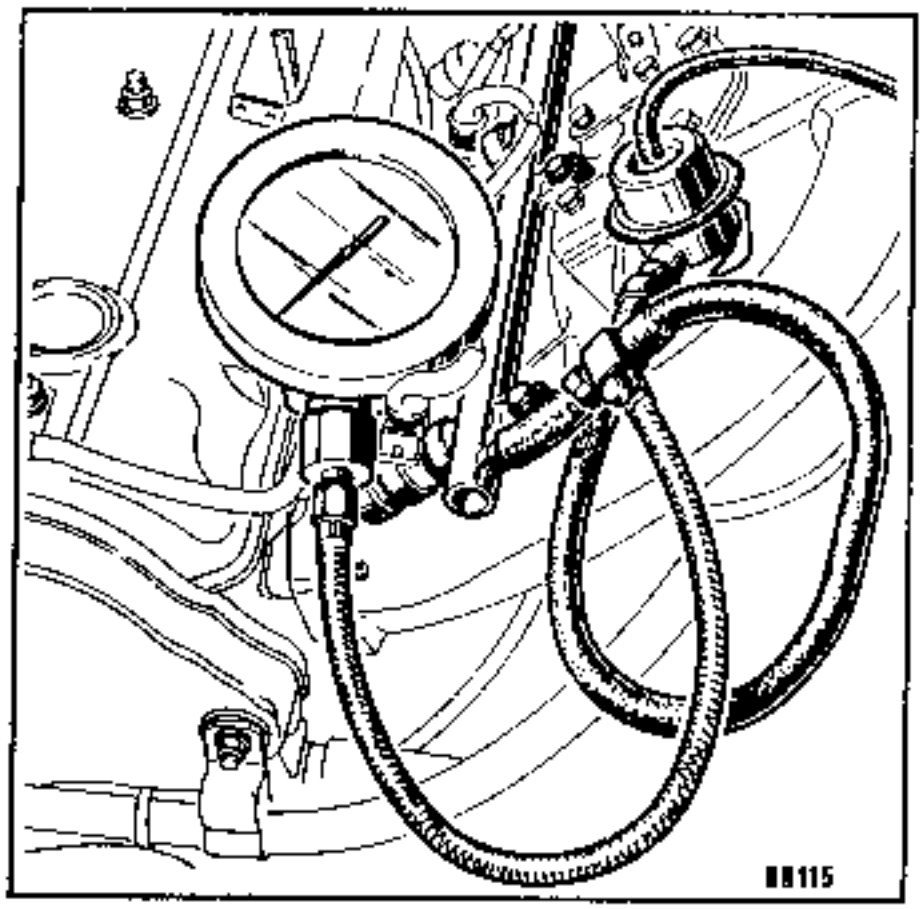
Checking the feed pressure and fuel pump delivery

ESSENTIAL SPECIAL TOOLING	
Mot. 843	0 to 6 bar pressure gauge
Mot. 845	100 ml flasks
Mot. 904	T-piece by-pass union for measuring pressure
1 manual vacuum pump	
1 2 000 ml flask	

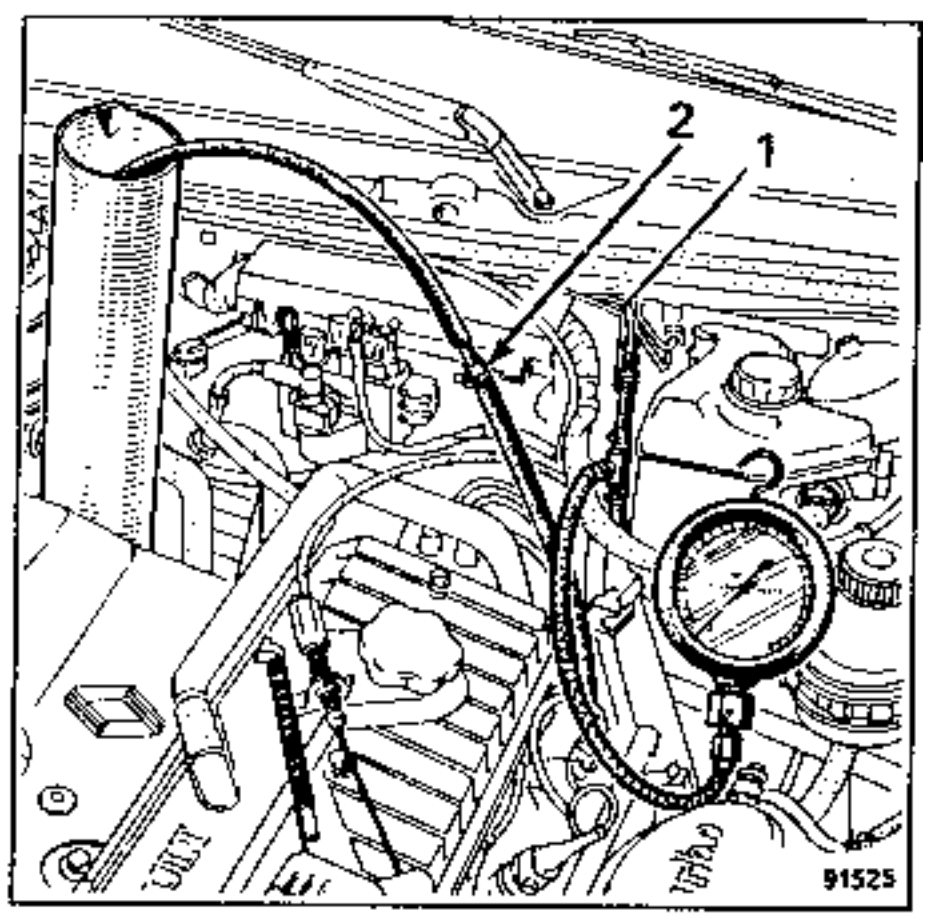
Checking the fuel pressure

Depending on accessibility, disconnect the inlet circuit from the injector gallery or from union (1) on the body and fit T-piece **Mot. 904** with a 0 to 6 bar pressure gauge from kit **Mot. 843.**

Example of a connection to the injector gallery



Example of a connection to the front bulkhead



Start the engine.

Check the pressure and compare it to the value given in the vehicle specifications section.

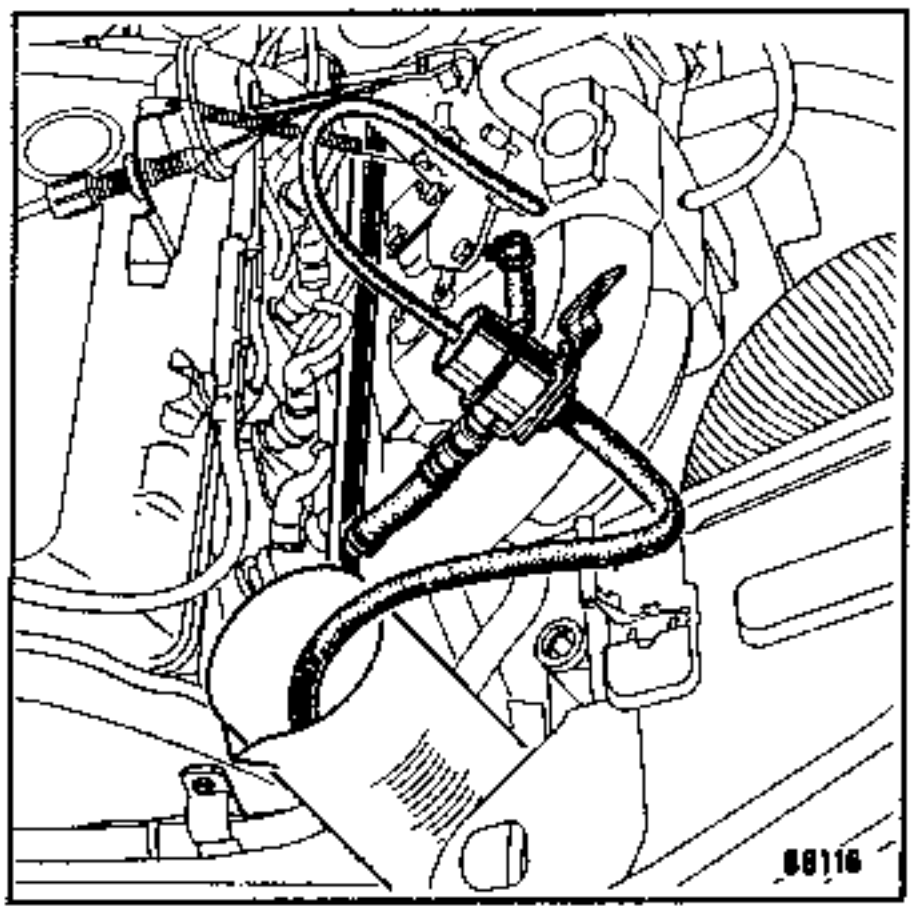
Apply a vacuum of approximately 500 mbars to the pressure regulator: the pressure should fall by the value displayed on the vacuum gauge.

Checking the pump pressure

Clamp the return-to-tank (for a few seconds): the pressure should be more than **5 bars**. If it is not, check the electric circuit, fuel pump and fuel filter.

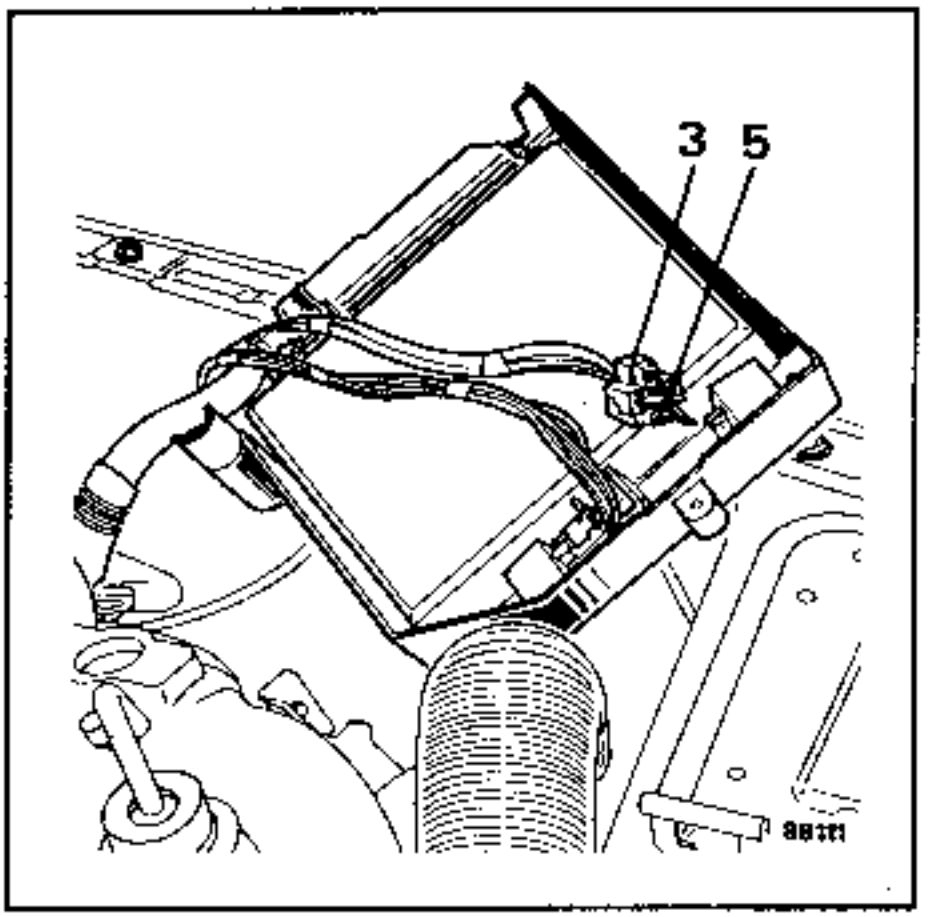
Checking the fuel pump delivery

Disconnect the return-to-tank hose from the pressure regulator and place it in a 2 000 ml graduated flask.



Start the fuel pump:

- Shunt terminals 3 and 5 (large leads) on the connector of fuel pump relay 493, with the computer disconnected.



Minimum delivery: 130 litres/hour - more than 1 litre per 30 seconds.

ATTENTION: If the delivery is weak, check the pump feed voltage (there is a drop in delivery of approximately 10% for a voltage drop of 1 volt).

For example:
Voltage 10 volts - pressure 3 bars - delivery 95 litres/hour.

Checking the injectors

Engine stopped

Disconnect the connectors.

Remove the injector gallery.

Free the assembly so that each injector can be placed in a 100 cc graduated flask **(Mot. 845)**.

On the J7 ... engine:
In certain cases, the clips holding the injectors are not strong enough to hold them when the fuel pressure is applied.

A retaining clamp therefore has to be made up (see diagram below) and fitted as soon as the injector gallery is removed from the manifold and before the electric fuel pump is activated.

On Z7U, Z7W ... engines:

Leave the clips holding the injectors on the gallery in place.

Start the fuel pump (see "Checking the fuel pump delivery").

No fuel should flow from the injectors.

Apply 12 volts to each injector and fuel should be sprayed into the flasks.

Retaining clamp fitted

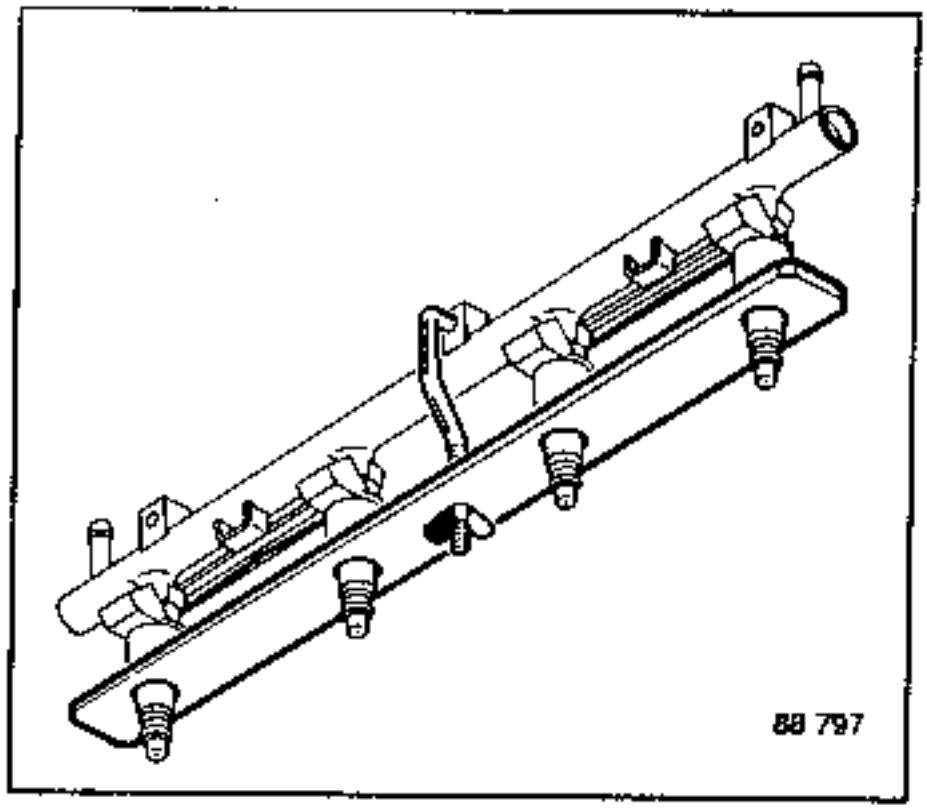
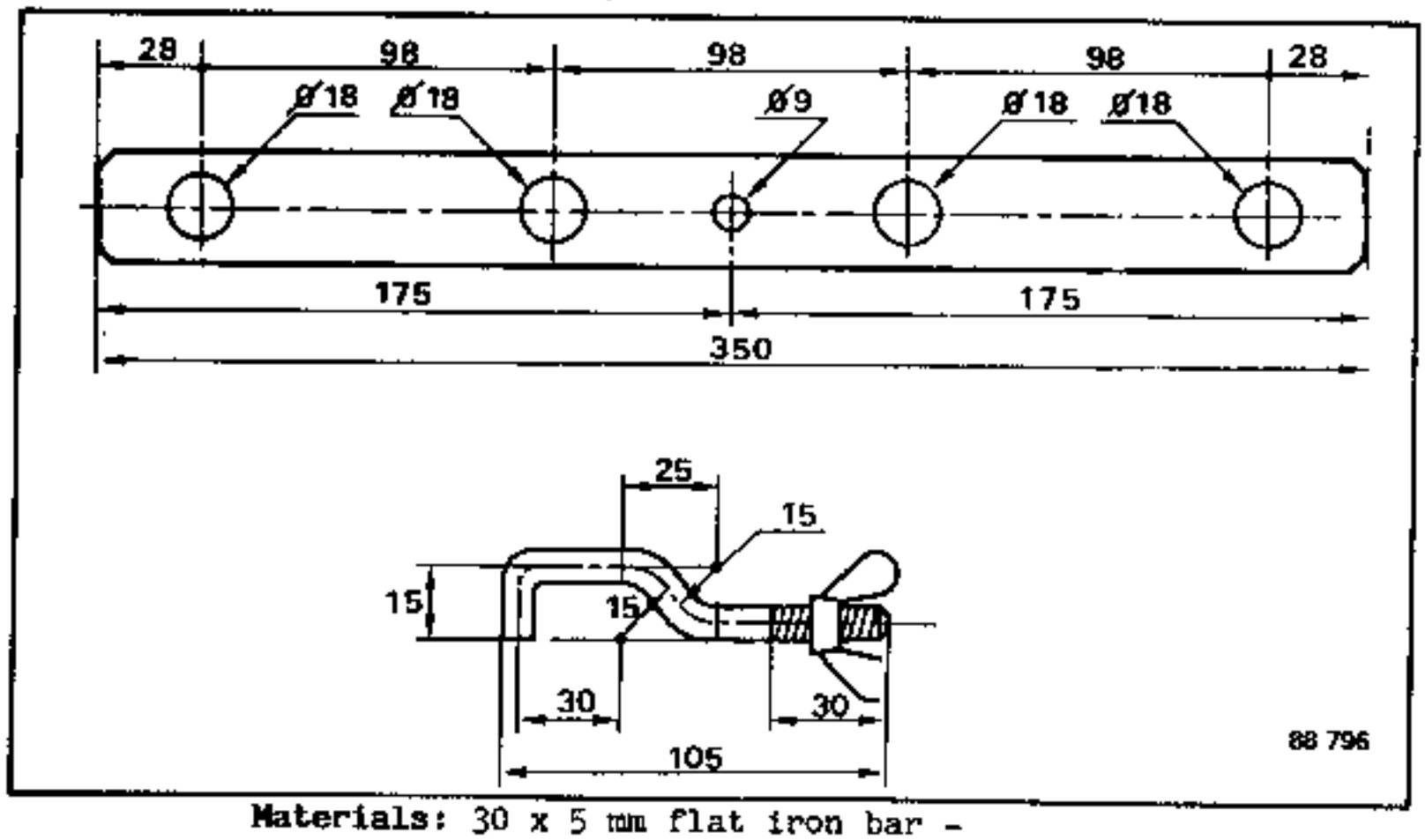


DIAGRAM SHOWING THE RETAINING CLAMP
(dimensions in mm)



Materials: 30 x 5 mm flat iron bar - length 350 mm
- drawn bar or threaded rod 8 mm dia. length 125 mm
- Butterfly nut 8mm dia. x 125

REPLACING

The filter must be replaced every 30 000 miles (50 000 km).

ESSENTIAL SPECIAL TOOLING
Mot. 453-01 Hose clamps

It is located next to the fuel pump.

Fit clamps **Mot. 453-01** to the flexible hoses.

Remove the clips and disconnect the filter inlet and outlet hoses.

Remove fuel filter (1).

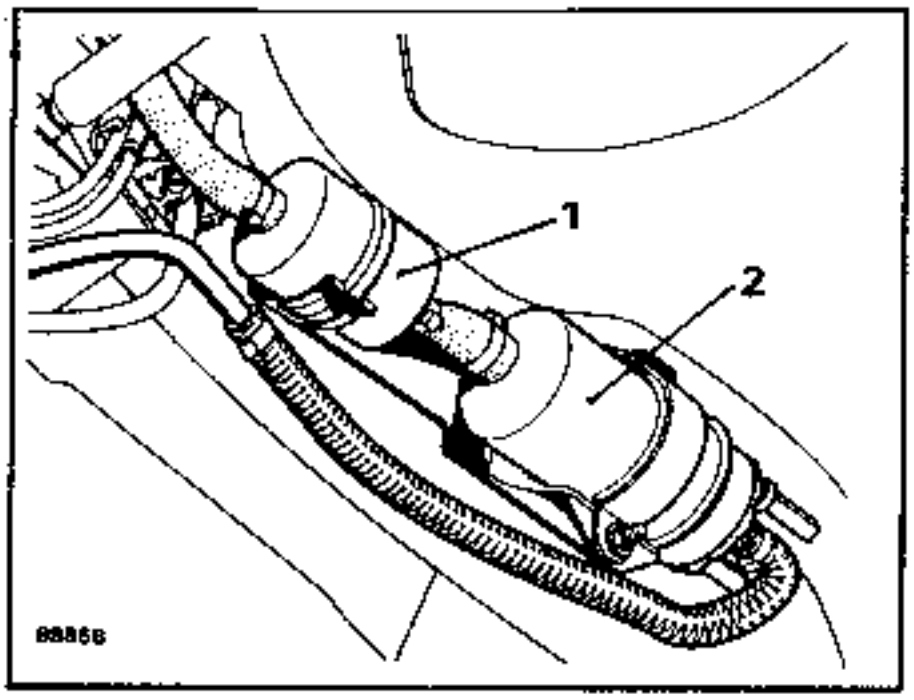
On reassembly, pay attention to the direction in which the fuel is flowing.

Reconnect the hoses.

Remove clamps **Mot. 453-01**.

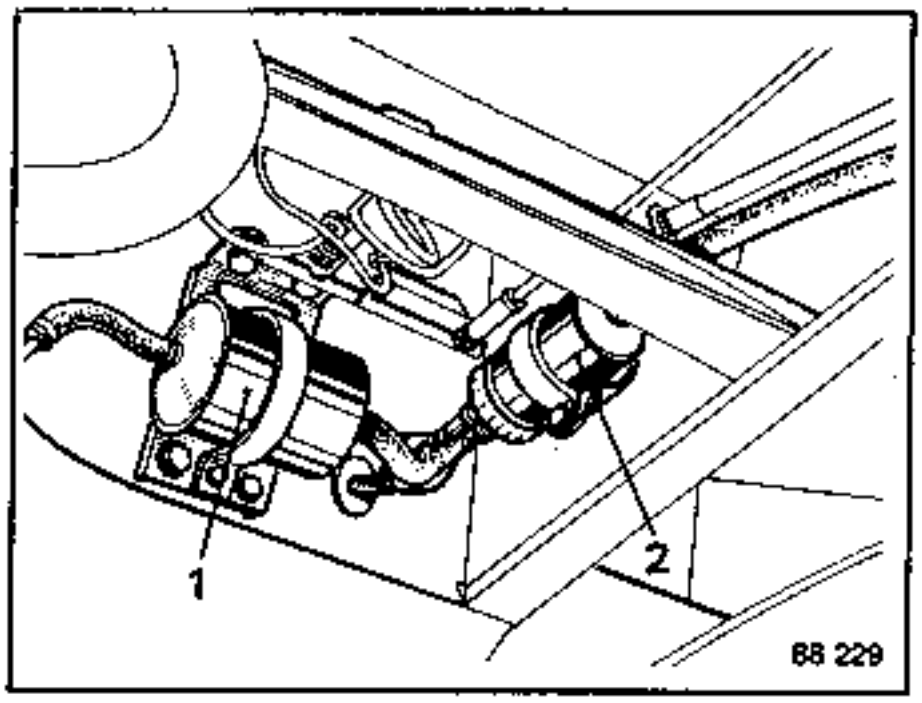
RENAULT 5

Filter (1) is on the rear righthand sidemember.



RENAULT 9 and 11

Filter (1) is on the rear righthand sidemember.



REPLACING

The filter must be replaced every 30 000 miles (50 000 km).

ESSENTIAL SPECIAL TOOLING	
Mot. 453-01	Hose clamps

REMOVAL

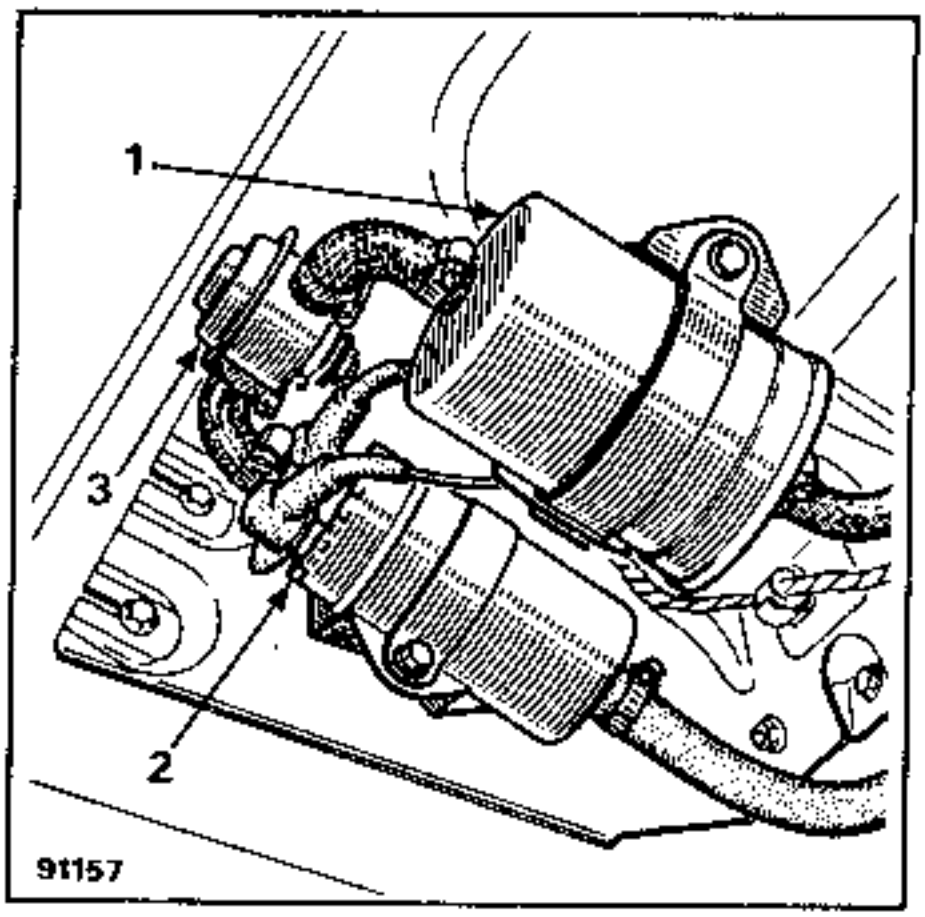
It is located on a plate with the fuel pump.

- Fit clamps **Mot. 453-01** to the flexible hoses and disconnect them.

- Remove the filter.

RENAULT 21

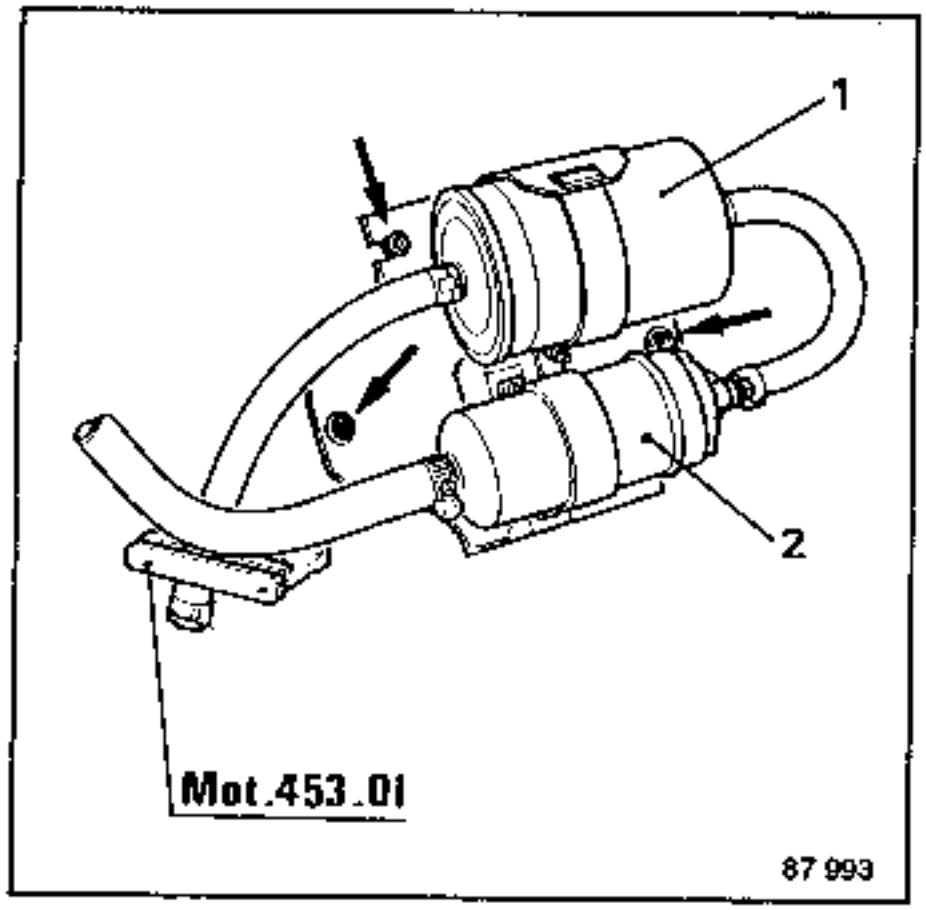
The fuel filter is on a plate next to the fuel pump in front of the rear cross-member.



1 - Fuel filter
2 - Fuel pump
3 - Pulse damper

RENAULT 25

The fuel filter is on a plate above the fuel pump on the rear righthand sidemember.



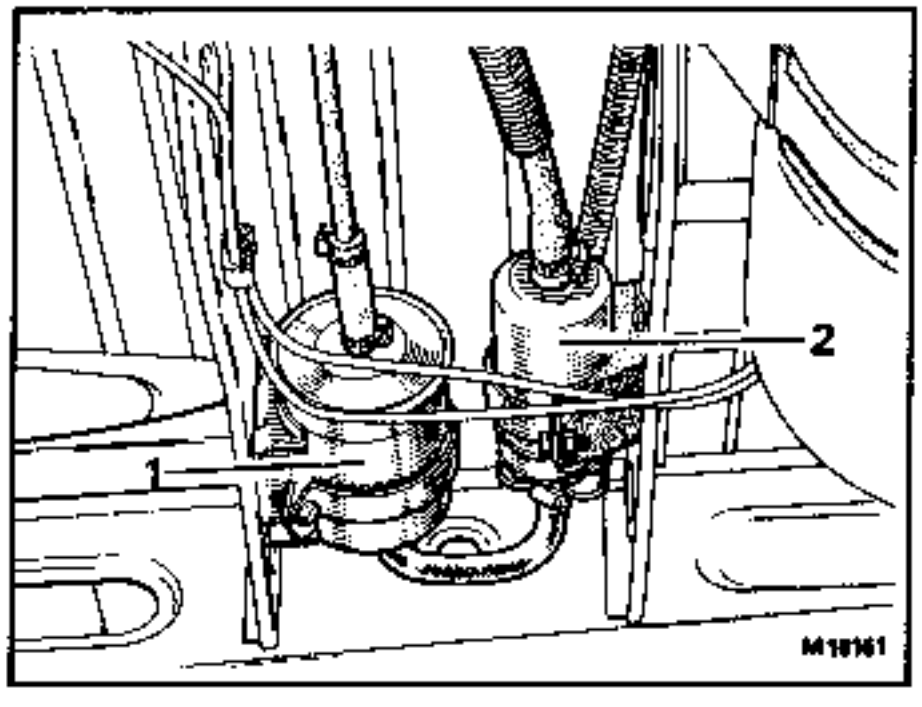
Remove:
- the two lower screws from the plate.

When the plate is removed, take off the fuel filter.

REPLACING (continued)

ESPACE

The fuel filter is on a plate next to the fuel pump between the righthand sidemembers, in front of the fuel tank.



1 - Fuel filter
2 - Fuel pump

On refitting:

- Ensure that the hose connections are in good condition.
- The direction in which the fuel is flowing is shown on the filter.
- Replace the clips.
- Remove clamps **Mot. 453-01.**

REPLACING

Note: See page 13-5 for removal and refitting of the fuel filter from the Renault 25.

RENAULT ALPINE V6 TURBO

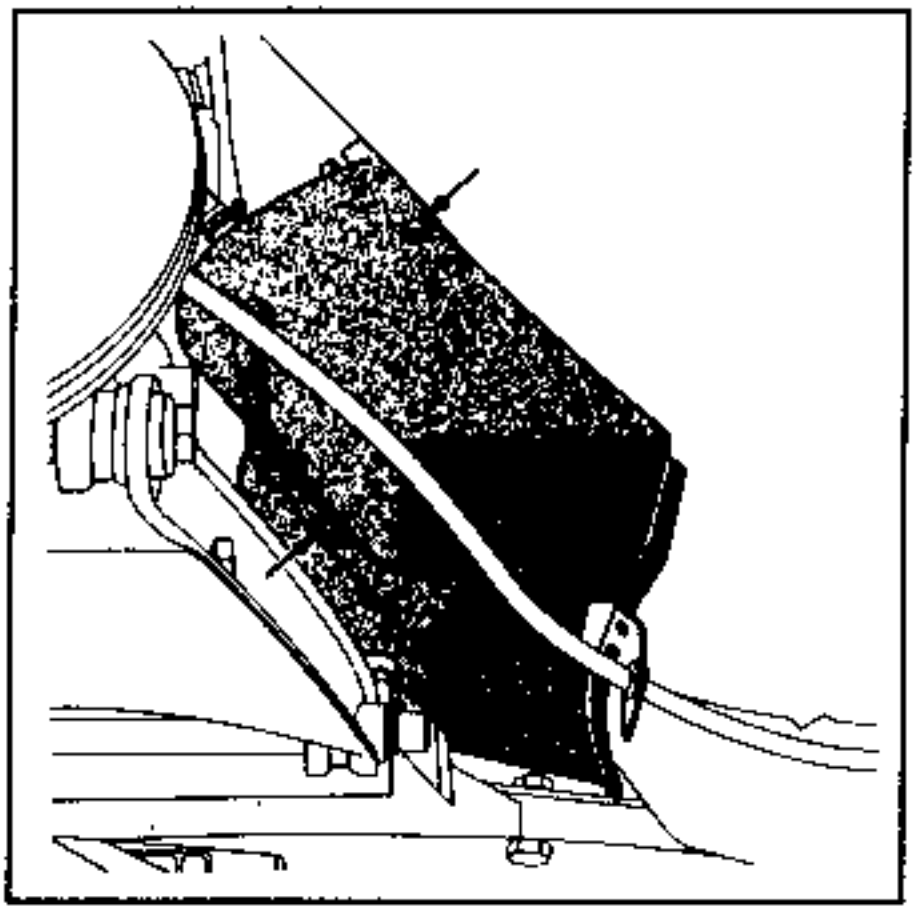
Replacing the fuel filter

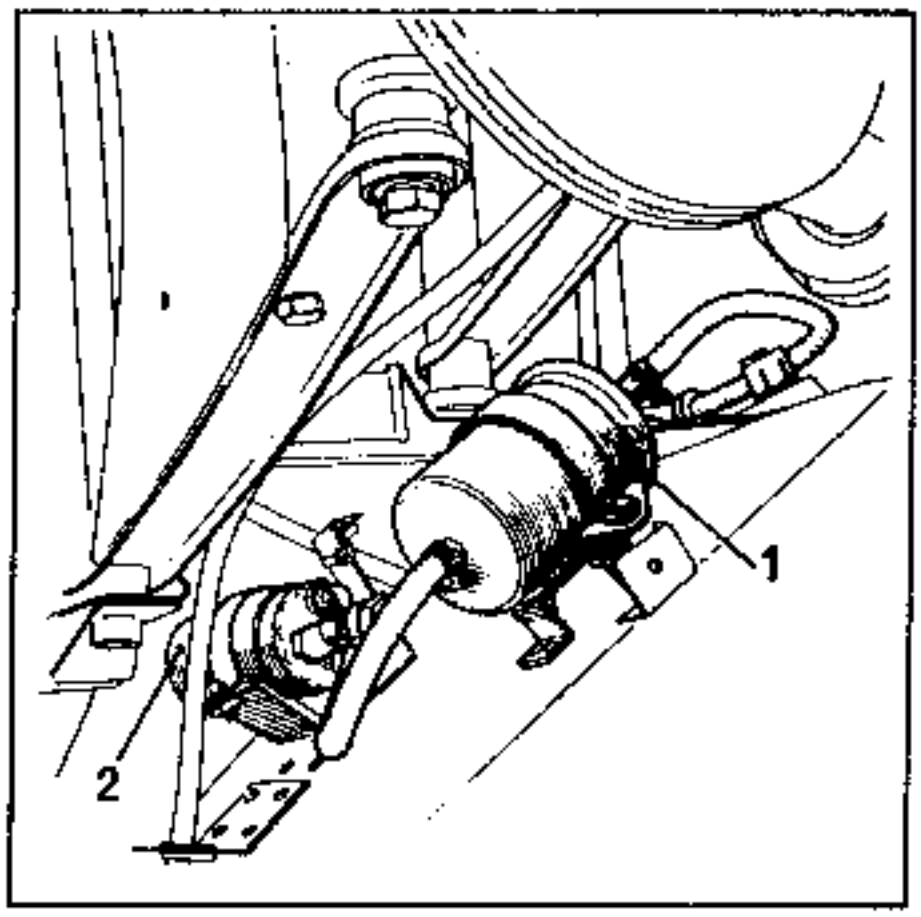
The fuel filter and pump are housed in the rear righthand wing. The rear righthand wheel must be removed to reach them.

Remove the protective cover.

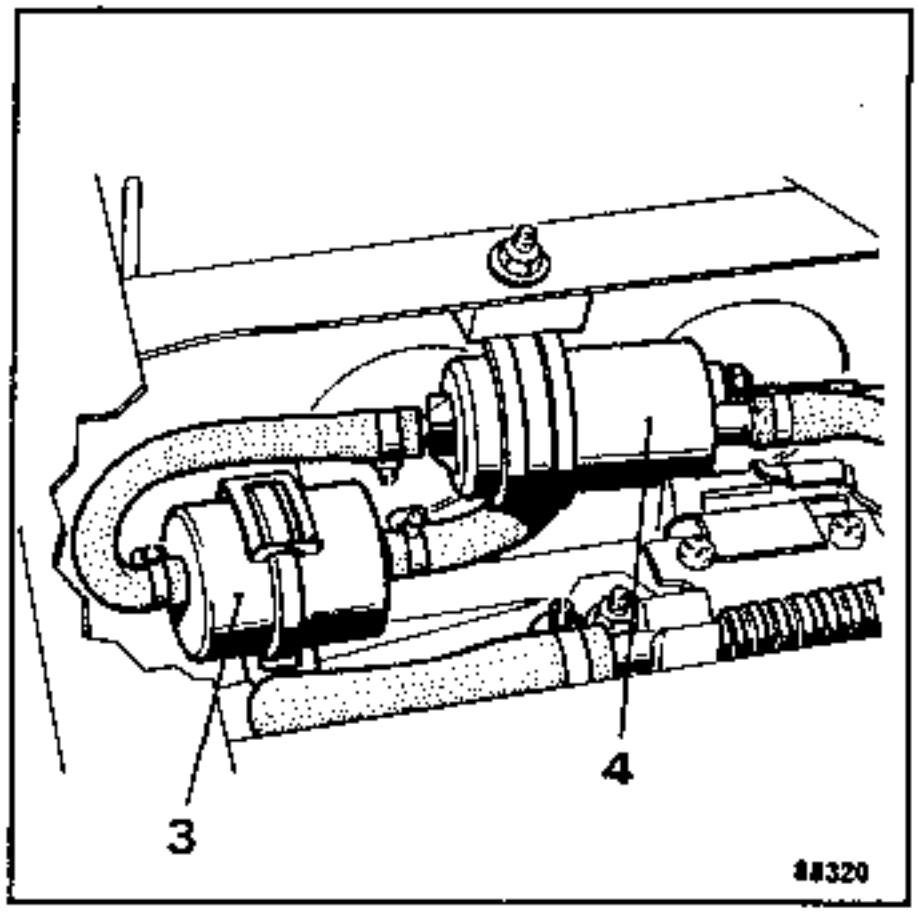
Remove the fuel filter.

On reassembly, fit the filter the correct way round, as indicated on the filter.





1 - Fuel filter
2 - Fuel pump



NOTE: Priming pump (4) and pre-filter (3) are housed at the front, under the fuel tank.

REPLACING

ESSENTIAL SPECIAL TOOLING	
Mot. 453-01	Hose clamps

Fit clamps **Mot. 453-01** to the fuel flexible inlet and outlet hoses.

Disconnect the electric leads.

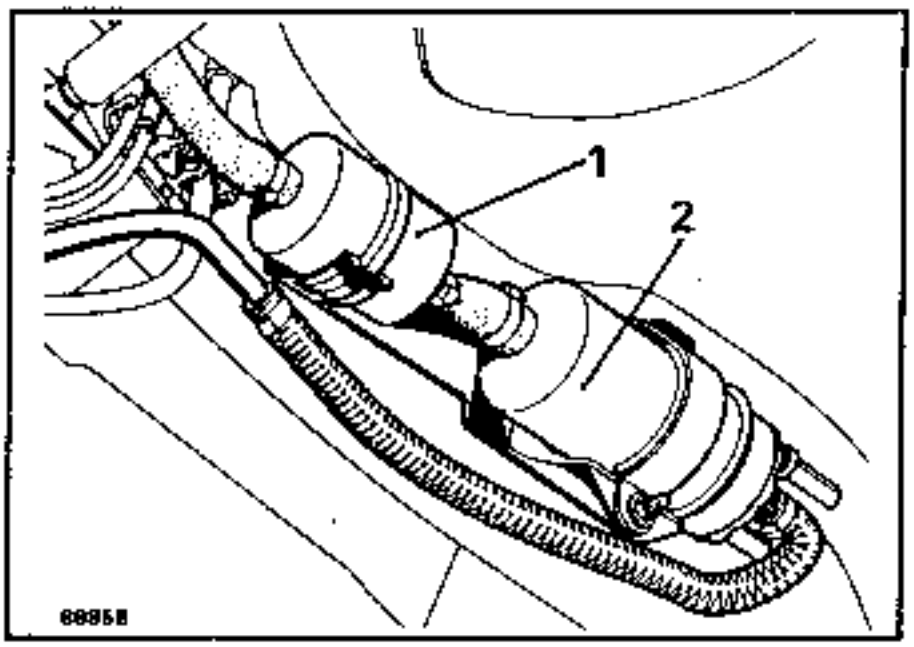
Unscrew clip (2) holding the fuel pump.

On refitting, ensure that the hoses and electric leads are connected properly (plus and minus are shown on the pump).

Remove clamps **Mot. 453-01**.

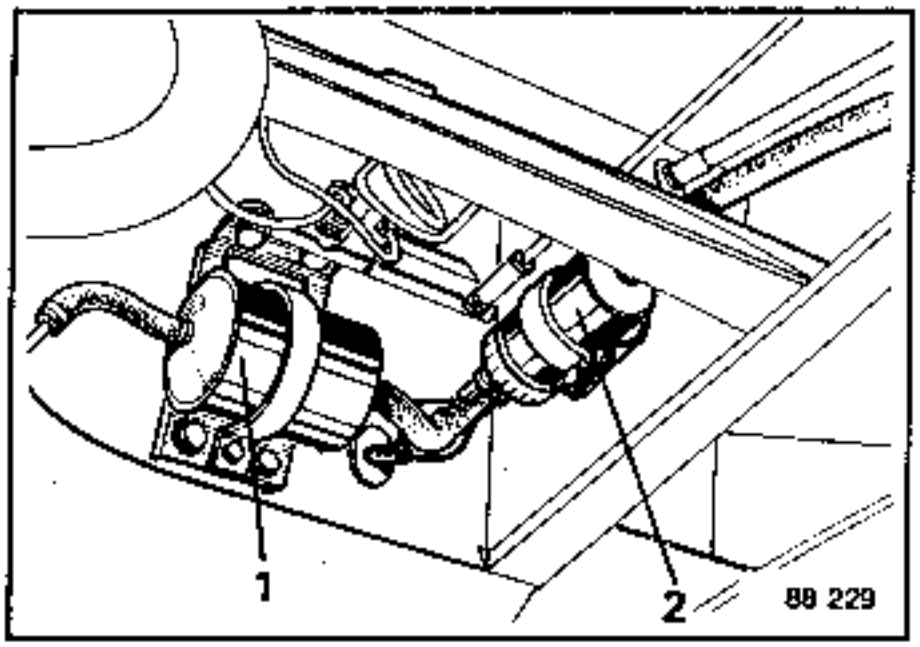
RENAULT 5

Pump (2) and filter (1) are located on the rear righthand sidemember.



RENAULT 9 and 11

Pump (2) is mounted on the crossmember and filter (1) on the rear righthand sidemember.



REPLACING

ESSENTIAL SPECIAL TOOLING	
Mot. 453-01	Hose clamps

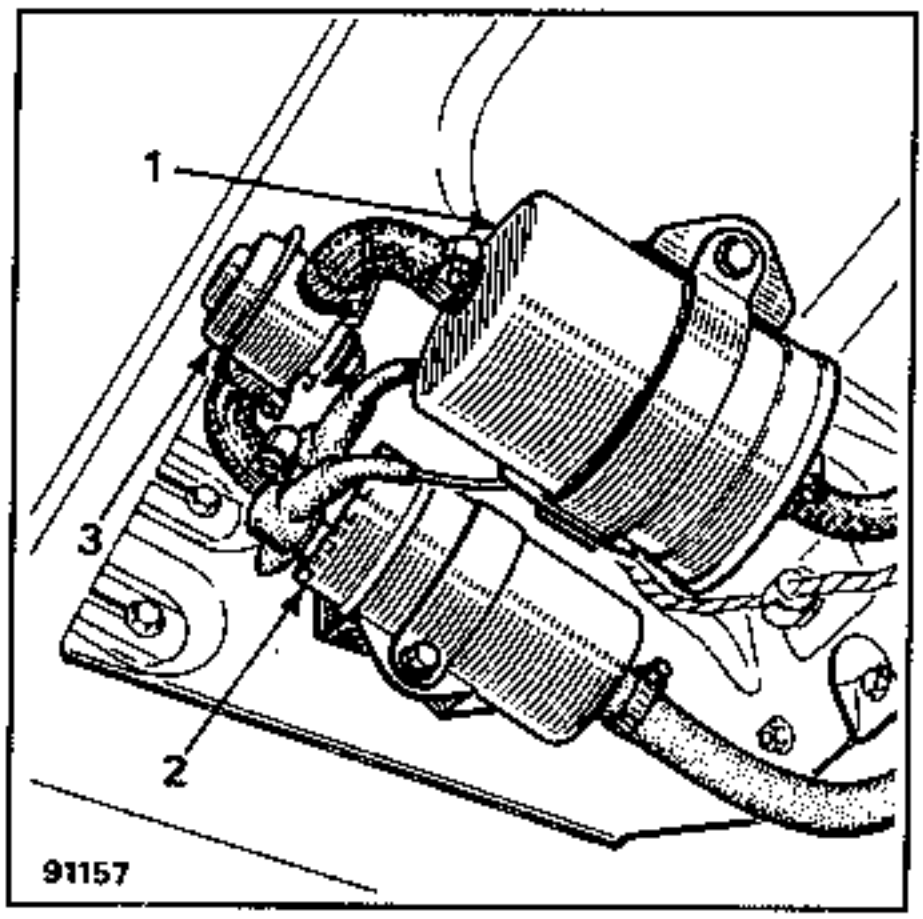
Removal

The pump is located on a plate with the fuel filter.

- Fit clamps **Mot. 453-01** to the flexible hoses and disconnect them.
- Disconnect the electric leads from the pump.
- Unscrew the clip securing the fuel pump.
- Take out the pump.

RENAULT 21

The fuel pump is on a plate in front of the rear crossmember.

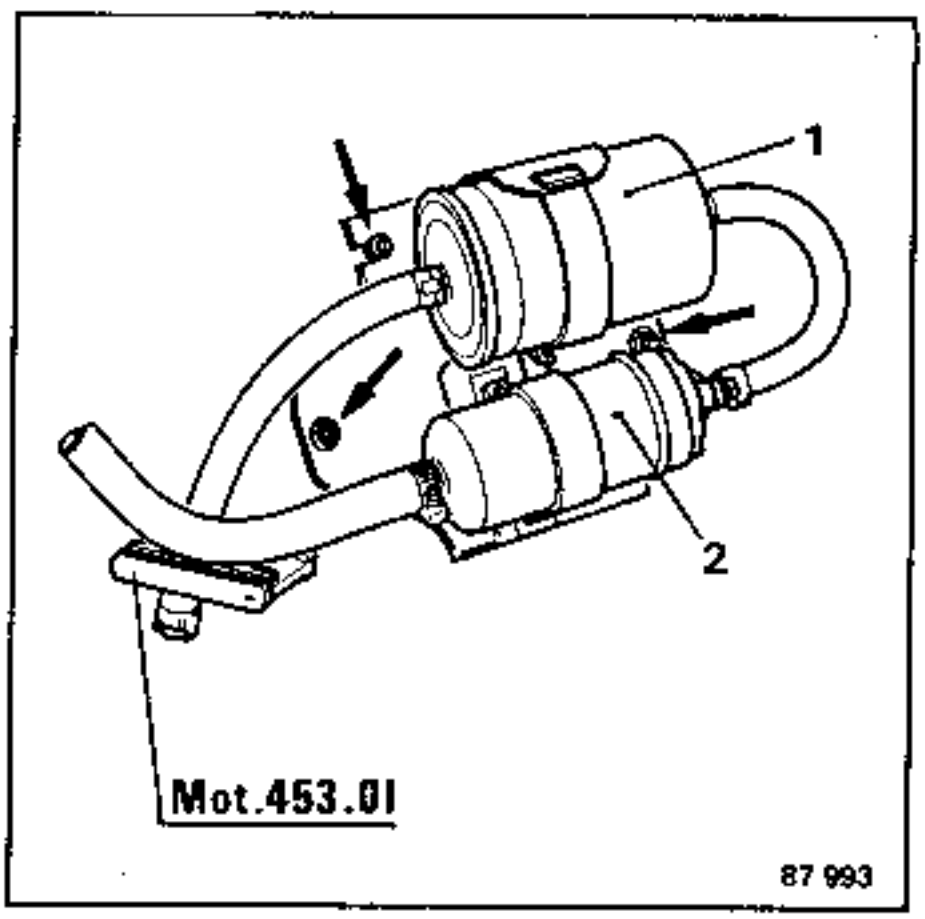


1 - Fuel filter
2 - Fuel pump
3 - Pulse damper

RENAULT 25

The fuel pump is on a plate on the rear righthand sidemember.

- Remove the two lower screws from the plate.

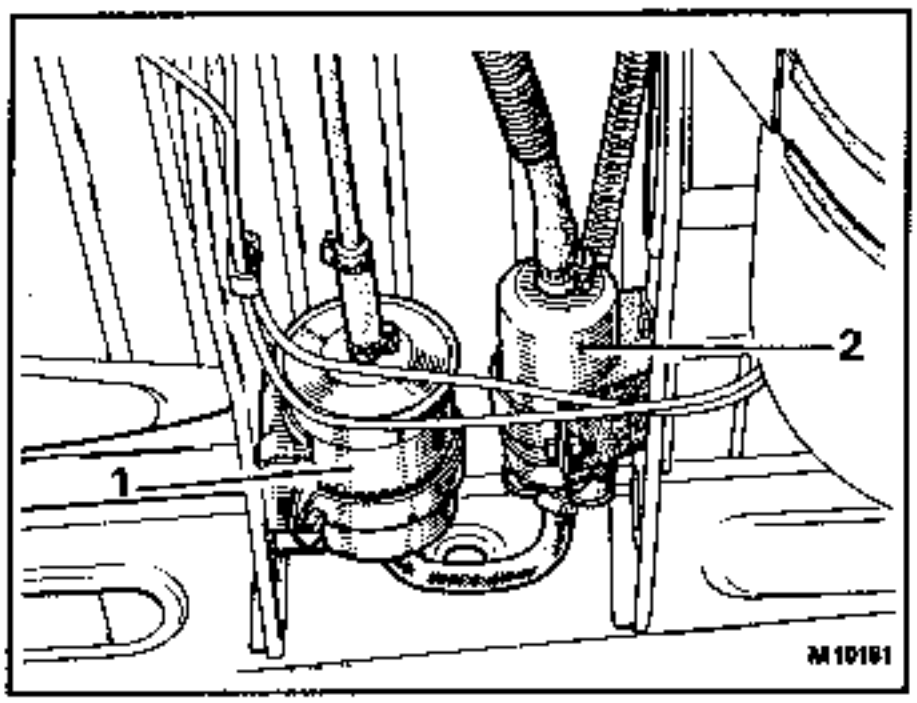


When the plate is removed, take off the pump.

REPLACING (continued)

ESPACE

The fuel pump is on a plate between the righthand sidemembers, in front of the fuel tank.



1 - Fuel filter
2 - Fuel pump

On refitting:

- Ensure that the hoses and electrical leads are connected properly (plus and minus are shown on the pump).

- Replace the clips.

- Remove clamps **Mot. 453-01.**

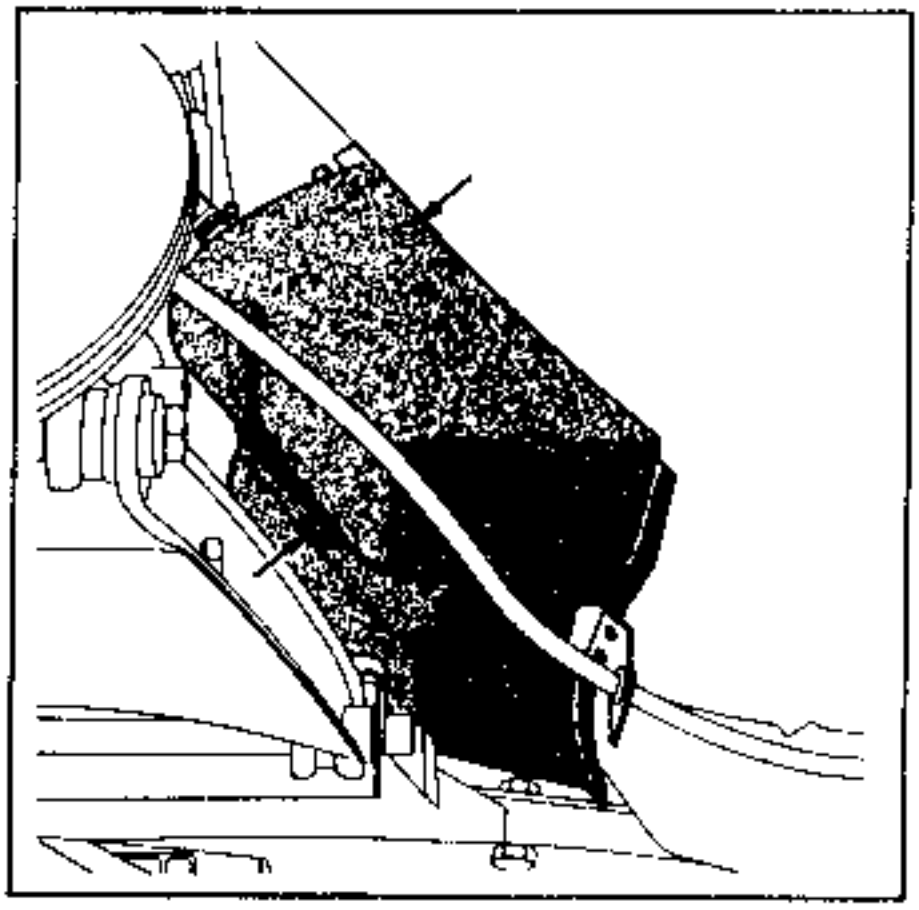
REPLACING

Note: See page 13-9 for the removal and refitting of the fuel pump on the Renault 25.

RENAULT ALPINE V6 TURBO

The fuel pump is housed in the rear righthand wing. The rear righthand wheel has to be removed to reach it.

Remove the protective cover.

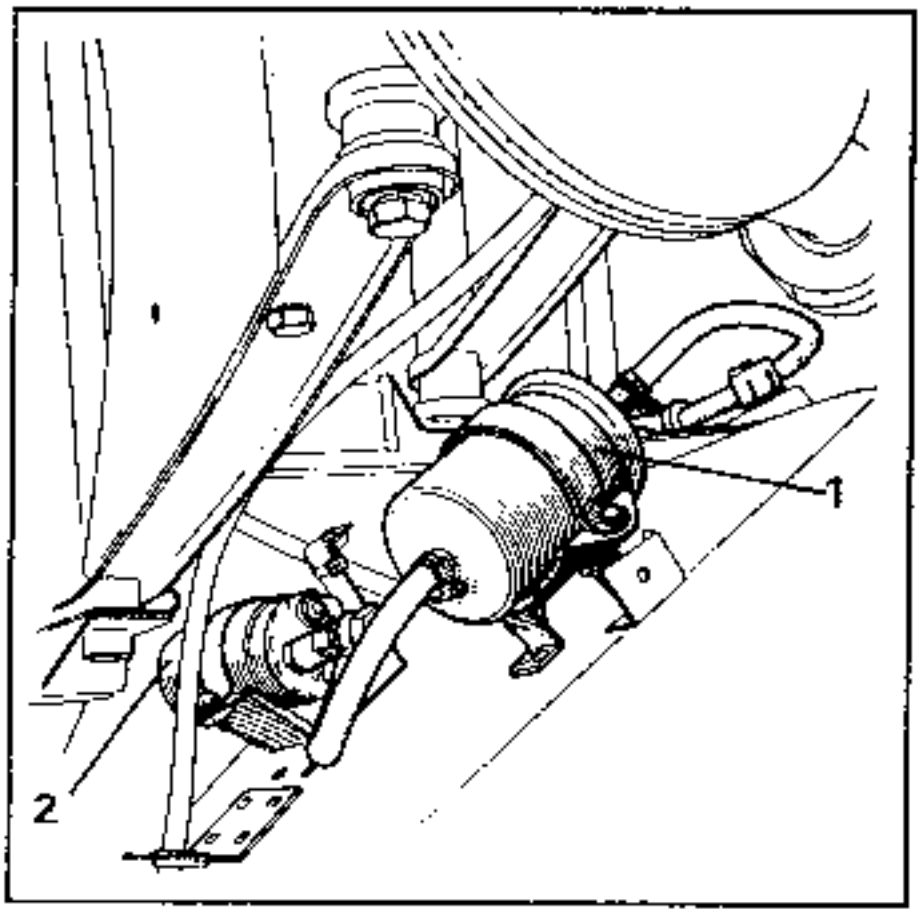


Removing the fuel pump

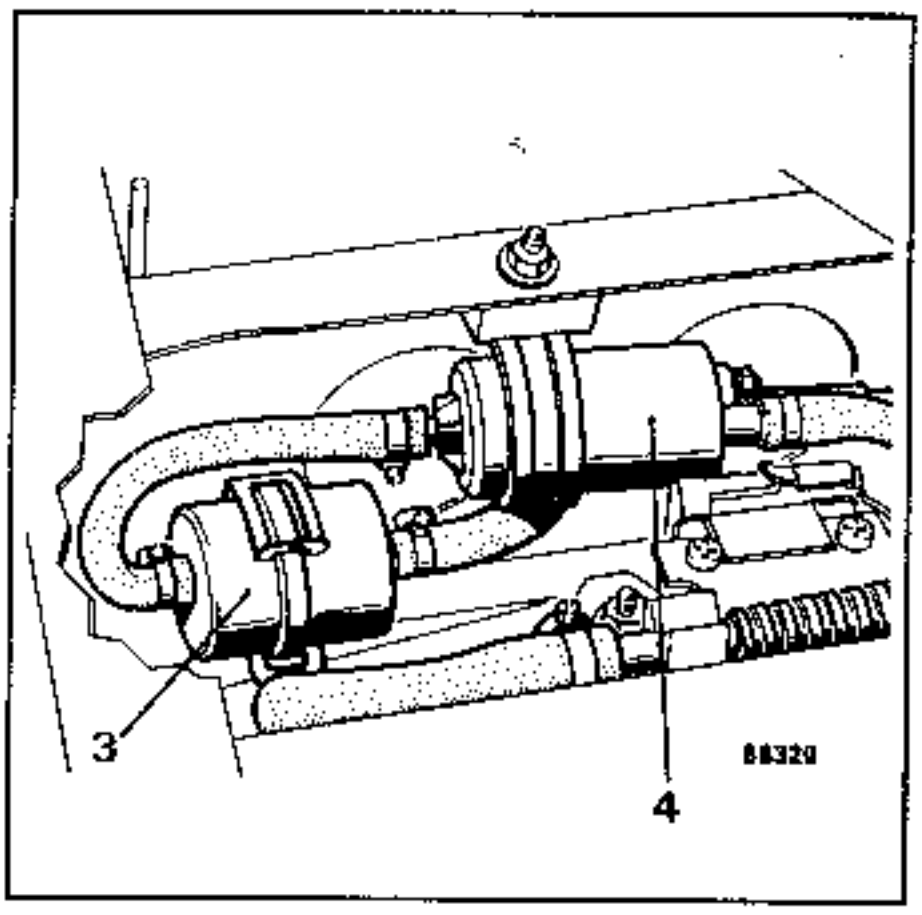
Disconnect the pipes.

Disconnect the electric leads.

Remove the clip and take out the pump. On refitting, ensure that the hoses and electric leads are connected properly (plus and minus are shown on the pump).



1 - Fuel filter
2 - Fuel pump



NOTE: Priming pump (4) and pre-filter (3) are housed at the front under the fuel tank.

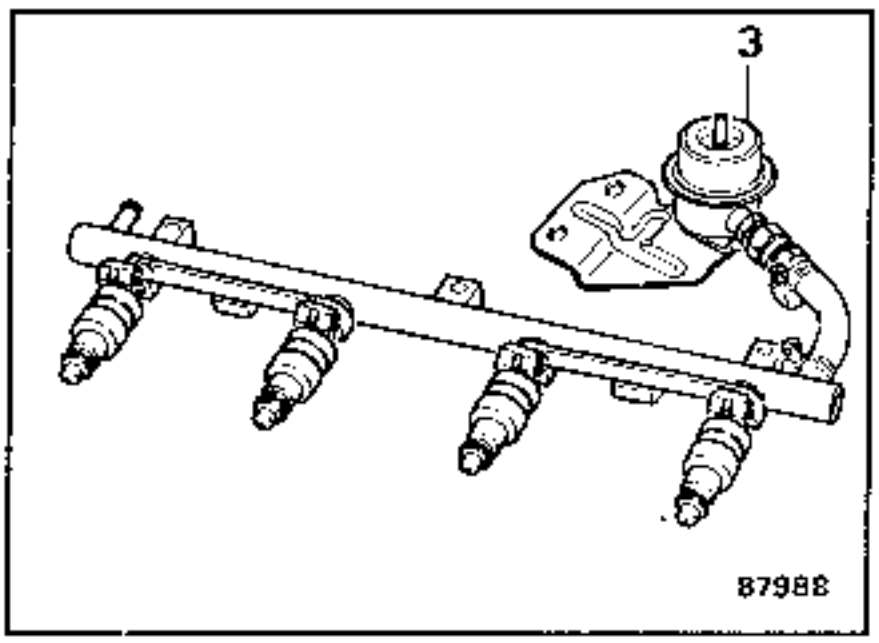
REMOVING-REFITTING

Fit clamps **Mot. 453-01** before disconnecting the fuel and vacuum lines.

F3N... and J7 .... engines

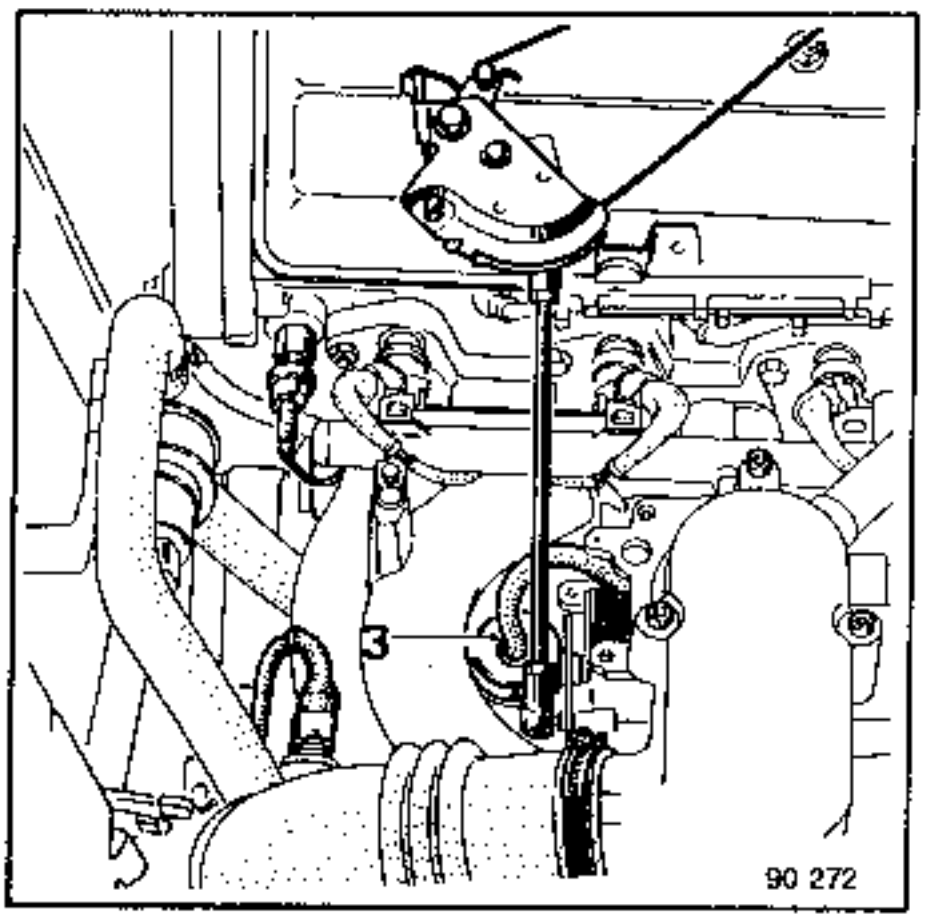
1st type

Remove:
- the screws from the mounting lug
- the mounting nut
- regulator (3).



2nd type

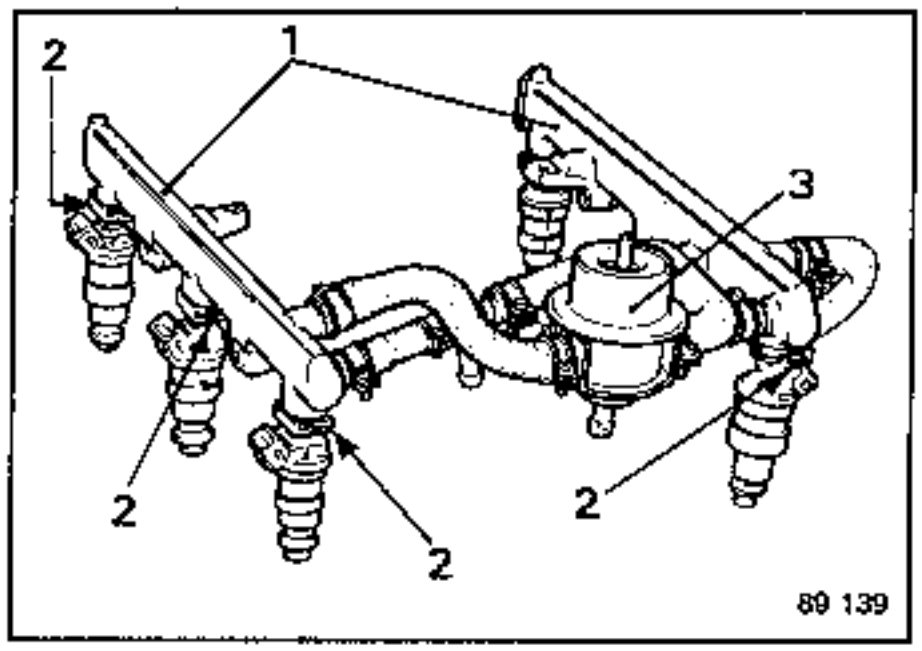
- Unscrew the three mounting screws under the air intake distributor.
- Take out the regulator.



3 - Pressure regulator

Z7 .... engine

Remove:
- the screws from the mounting lug
- the mounting nut
- regulator (3).



1 - Injector galleries
2 - Injector holding clips
3 - Fuel pressure regulator

Refitting

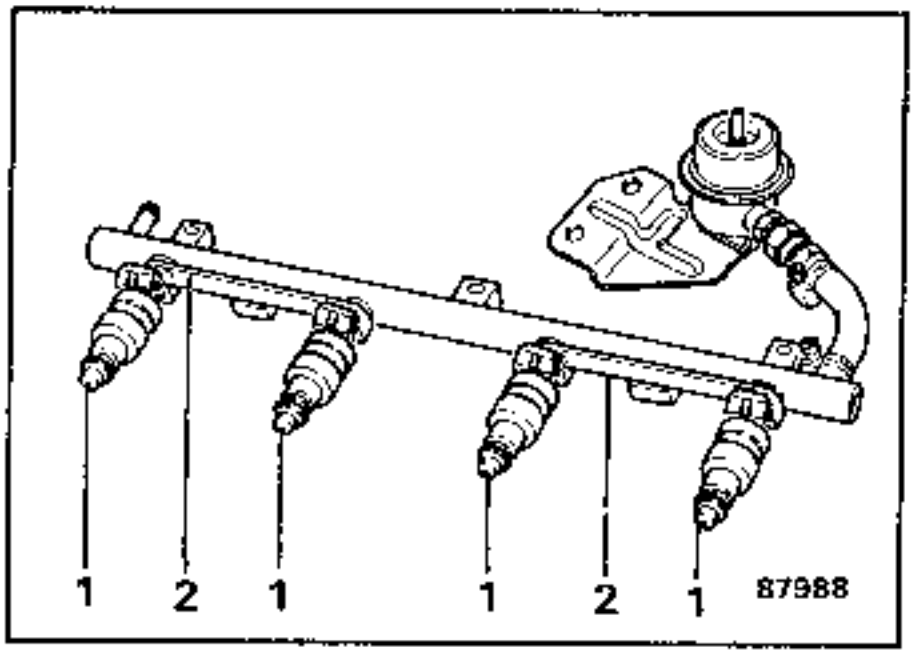
- Remove clamps **Mot. 453-01.**
- Ensure that there are no leaks from the circuit.

REMOVAL - REFITTING

F3N and J7 .... engines

Disconnect the connectors from the injectors and the fuel hoses on the gallery.

Unscrew the mounting screws.

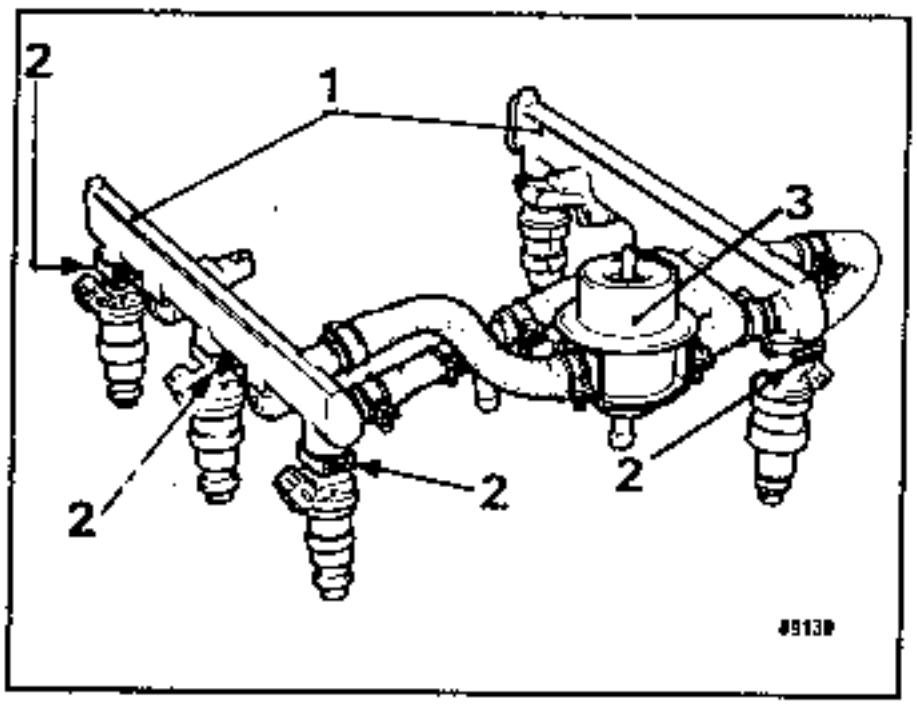


Z7 .... engines

Remove the air supply lines.

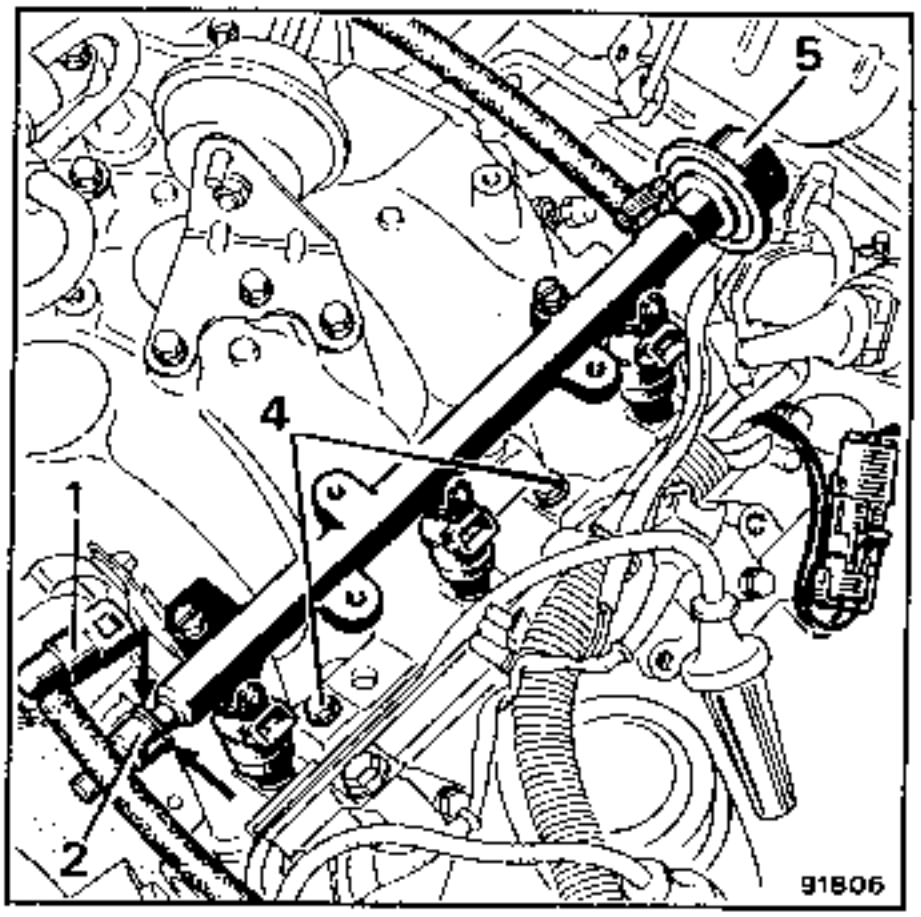
Disconnect the connectors from the injectors and the fuel hoses on each gallery, remove the mounting screws and then the galleries.

Z7U ... engines



1 - Injector gallery
2 - Injector holding clips
3 - Fuel pressure regulator

Z7W ... engines



1 - Connector
2 - Clip-on bush
4 - Gallery mounting screws
5 - Pulse damper

NOTE: The feed and return hoses have "rapid" type connectors of differing diameters.

To unclip them, press simultaneously in the direction shown by the arrows to free unions (1).

On reassembly:

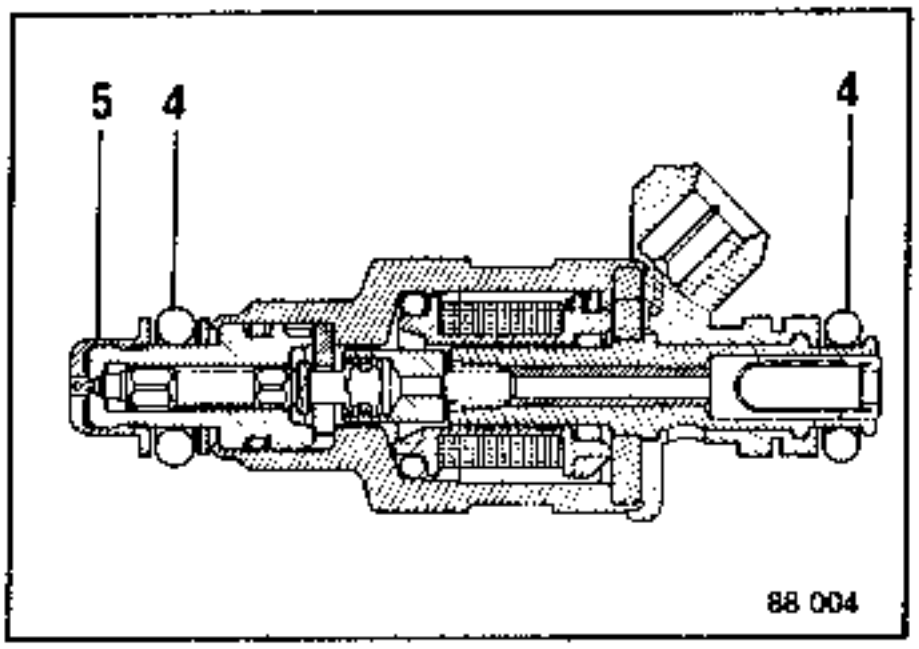
Lubricate the unions with silicone grease, turn bush (2) and engage union (1) and check that bush (2) is clipped in place correctly and that the circuit is leaktight.

REMOVAL - REFITTING

After removing the injector gallery, unfasten the retaining clips.

On reassembly, ensure that O-rings (4) and protector (5) are in good condition.

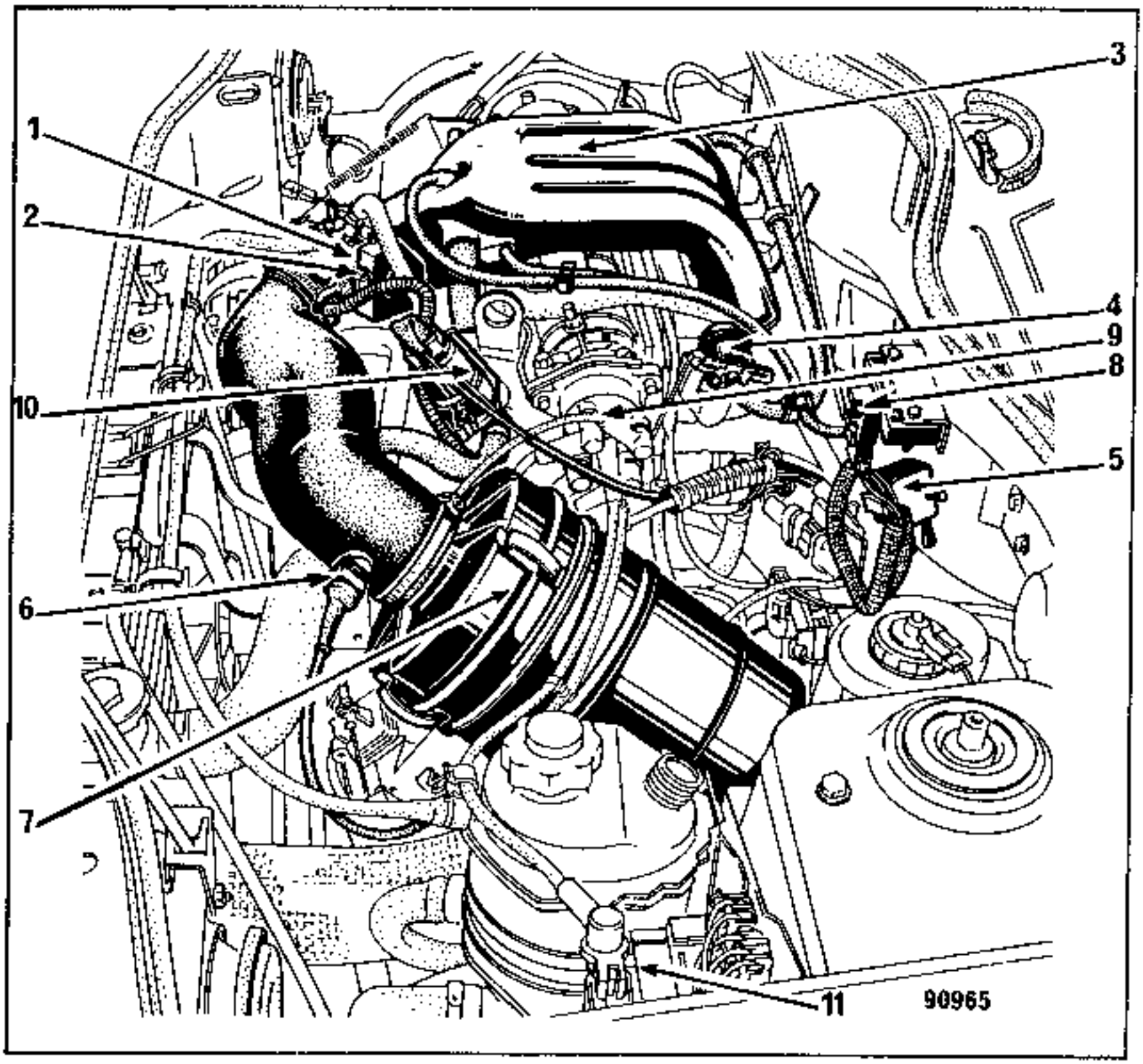
Replace O-rings (4) if necessary.



Set of O-rings part no. **77 01 030 449.**

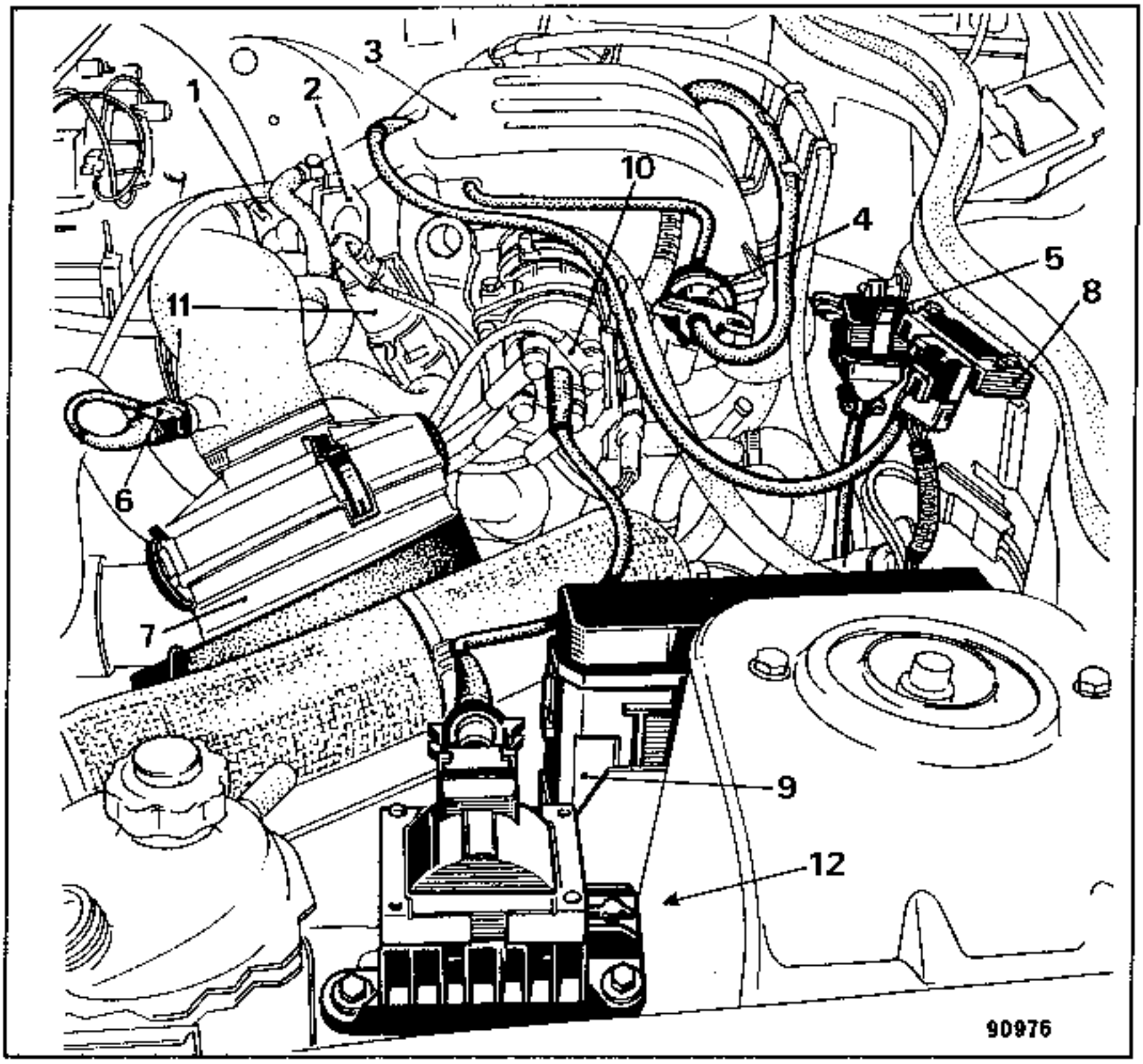
Fit the new O-rings using silicone grease (for example **Molykote Medium** 33).

RENAULT 5 : C 409



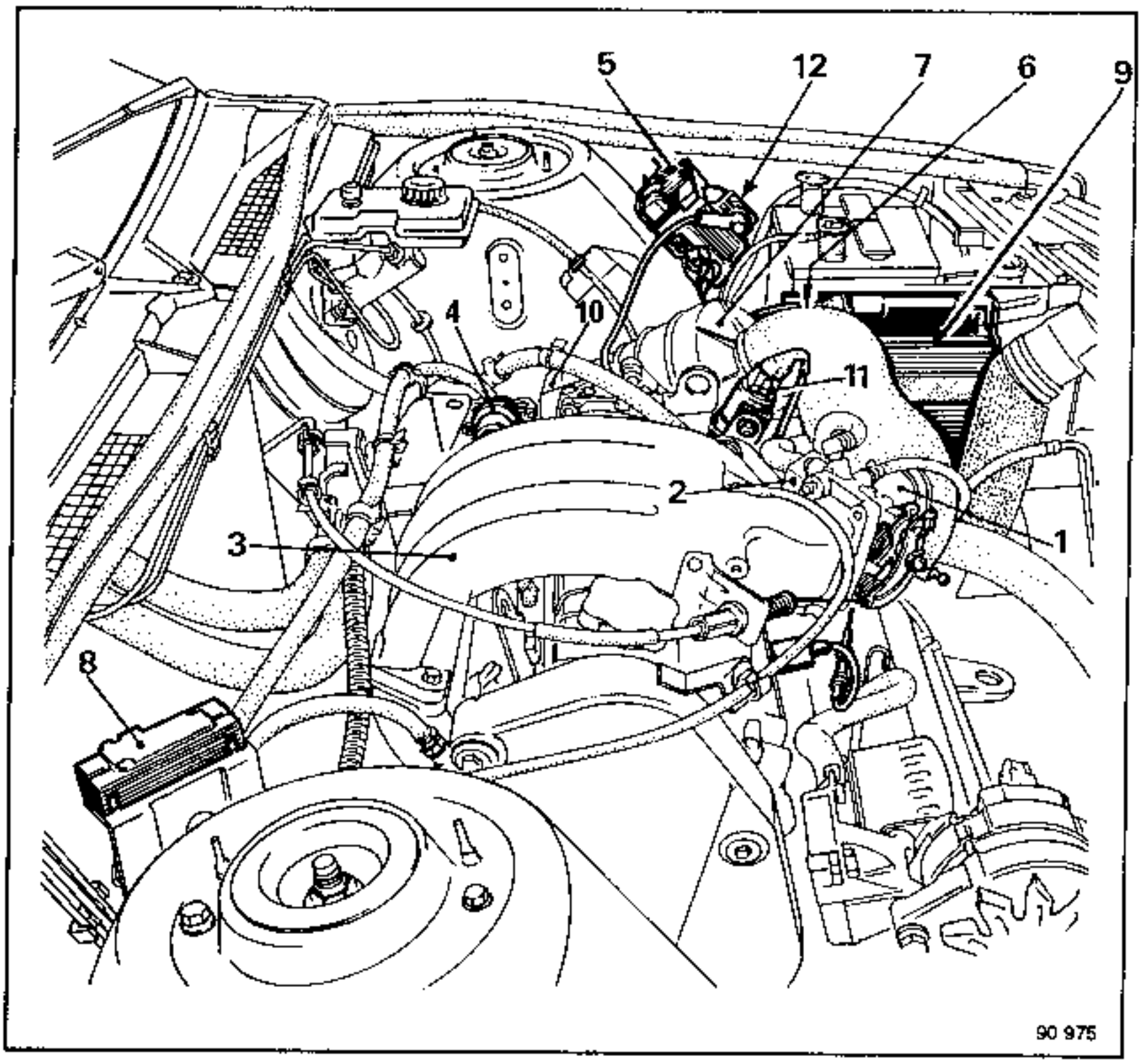
1 – Throttle casing
2 – No load/full load switch
3 – Intake air distributor
4 – Fuel pressure regulator
5 – Diagnostic plug
6 – Air temperature sensor
7 – Air filter
8 – Absolute pressure sensor
9 – Ignition distributor
10 – Idling speed regulating valve
11 – Ignition power module

RENAULT 9 . L42 E - RENAULT 11 : B-C 37 E



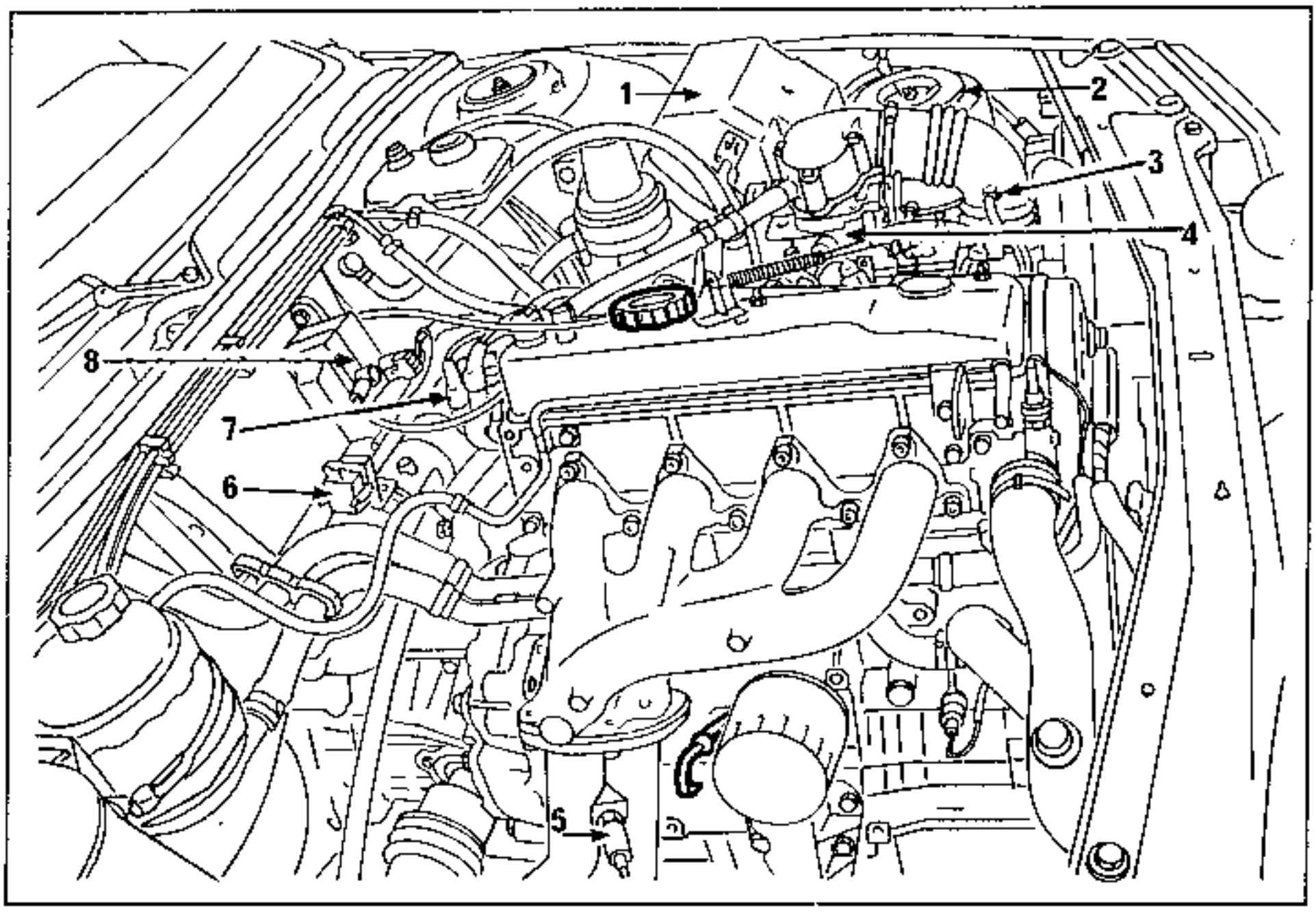
1 – Throttle casing
2 – No load/full load switch
3 – Intake air distributor
4 – Fuel pressure regulator
5 – Diagnostic plug
6 – Air temperature sensor
7 – Air filter
8 – Absolute pressure sensor
9 – Injection and ignition computer
10 – Ignition distributor
11 – Idling speed regulating valve
12 – Ignition power module and locking and injection relay

RENAULT 21 : K-L 48 E



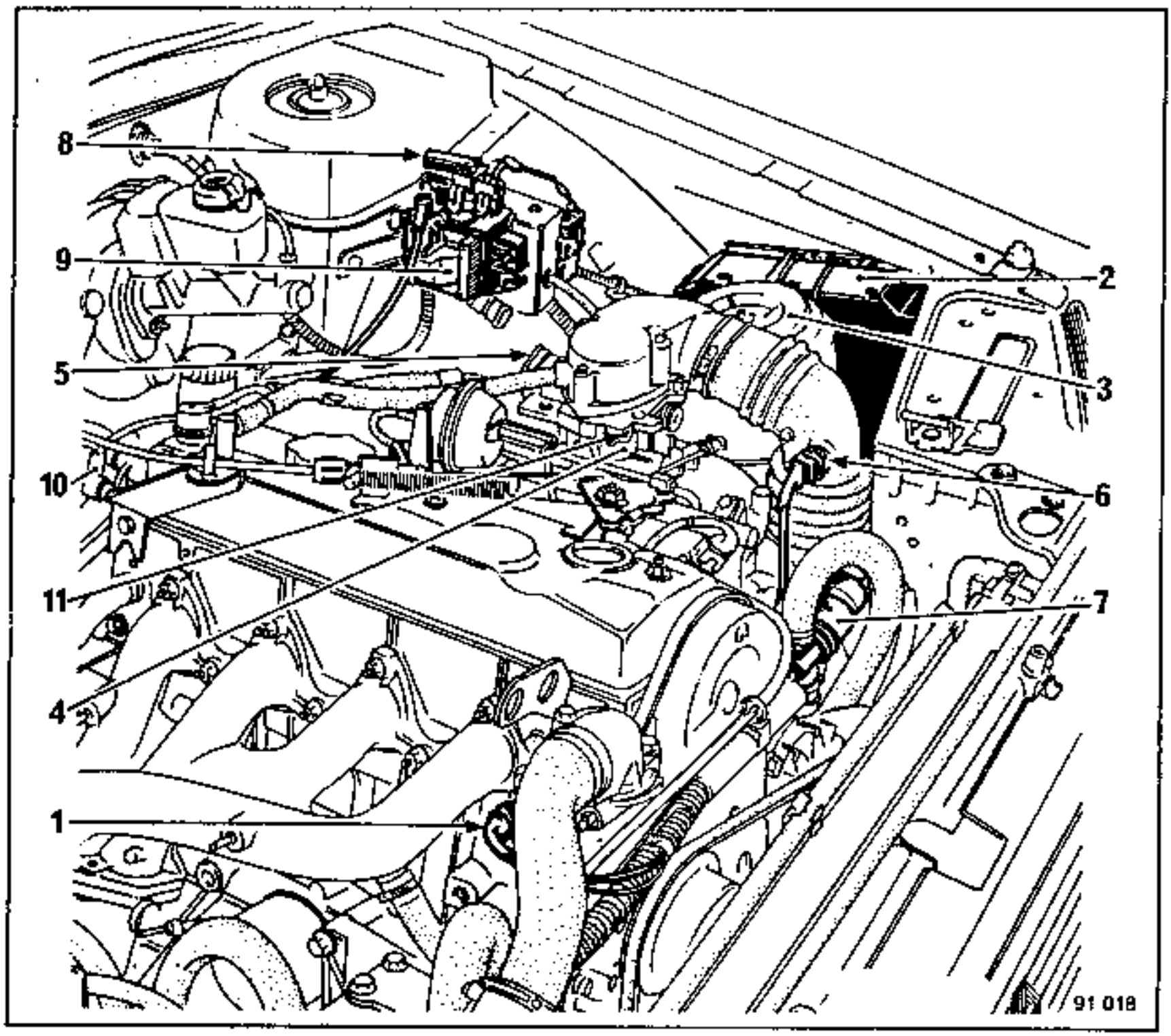
1 – Throttle casing
2 – No load/full load switch
3 – Intake air distributor
4 – Fuel pressure regulator
5 – Diagnostic plug
6 – Air temperature sensor
7 – Air filter
8 – Absolute pressure sensor
9 – Injection and injection computer
10 – Ignition distributor
11 – Idling speed regulating valve
12 – Ignition power module and locking and injection relay

RENAULT 21 : K-L 483 & K-L 48 K



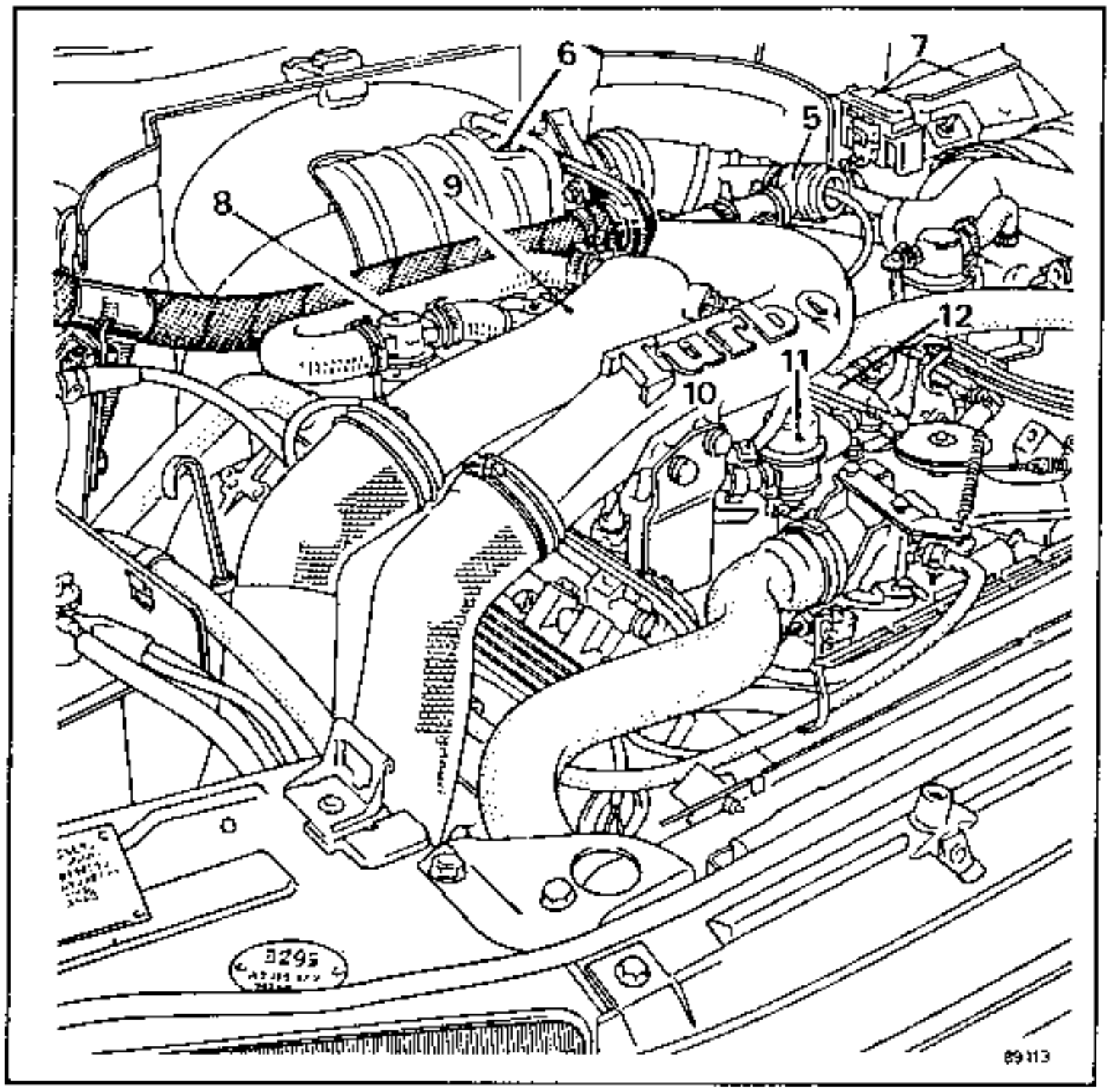
1 – Computer and protective casing (this casing also houses the absolute pressure sensor, injection relays and CO adjusting potentiometer [vehicles without catalytic converter]
2 – Air filter
3 – Air temperature sensor
4 – Throttle casing
5 – Oxygen or Lambda sensor (vehicles with catalytic converter)
6 – Diagnostic plug
7 – Ignition distributor
8 – Ignition power module

RENAULT 25 : B 29 H, B 29 E, B 29 B

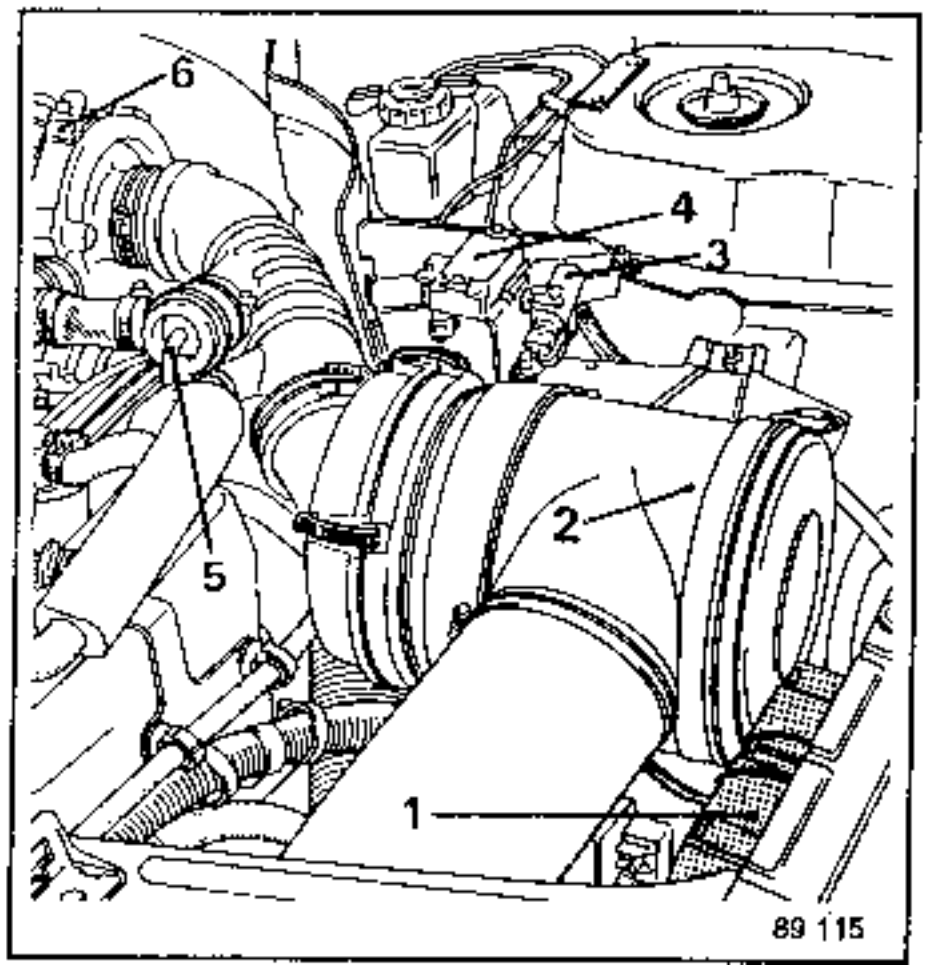


1 – Coolant temperature sensor
2 – Computer + protective casing
3 – Air filter
4 – Throttle casing
5 – No load - full load switch
6 – Air temperature sensor
7 – Idling speed regulating valve
8 – CO regulating potentiometer
9 – Ignition module
10 – Distributor
11 – Air flow regulating screw (by-pass)

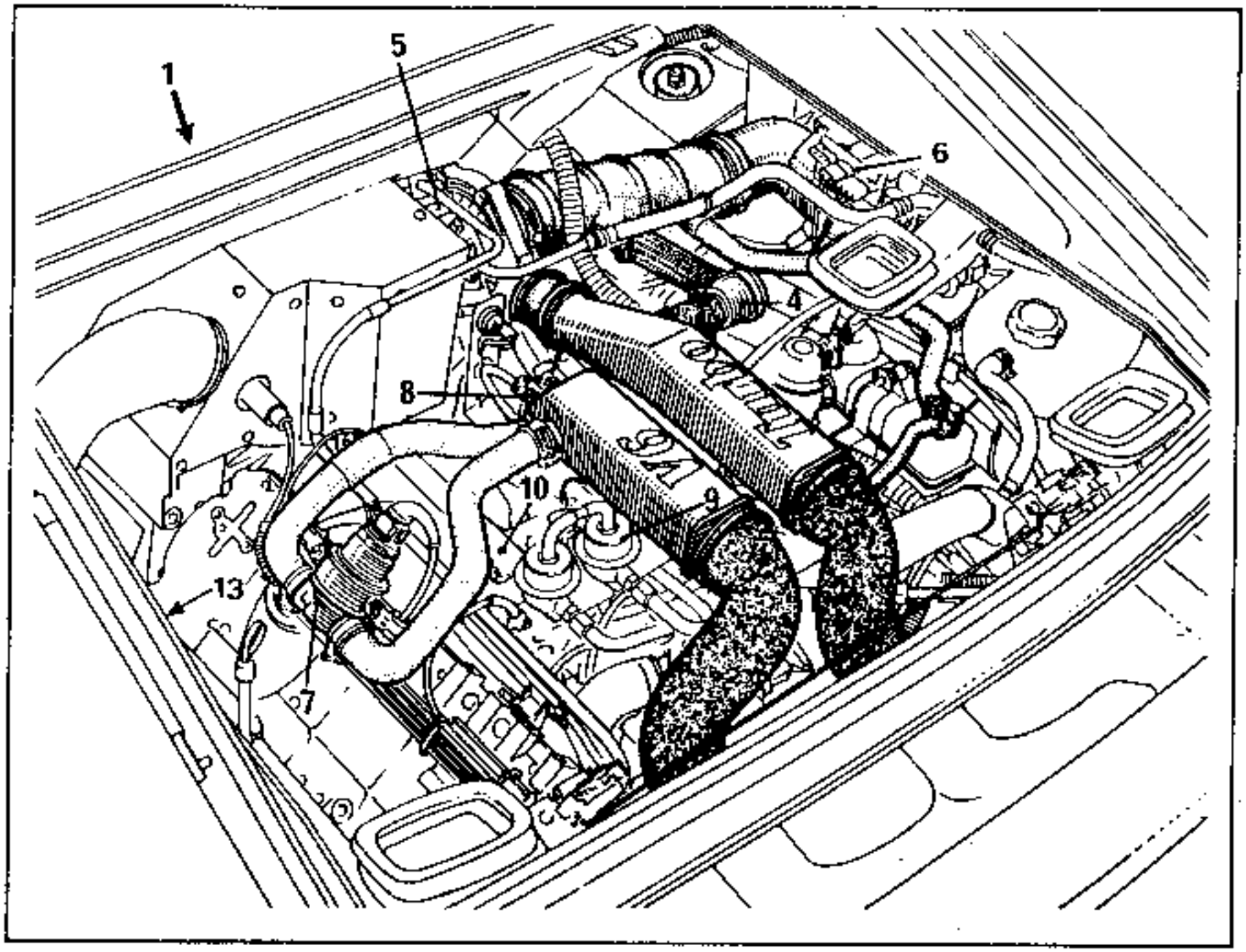
RENAULT 25 V6 TURBO (B 295)

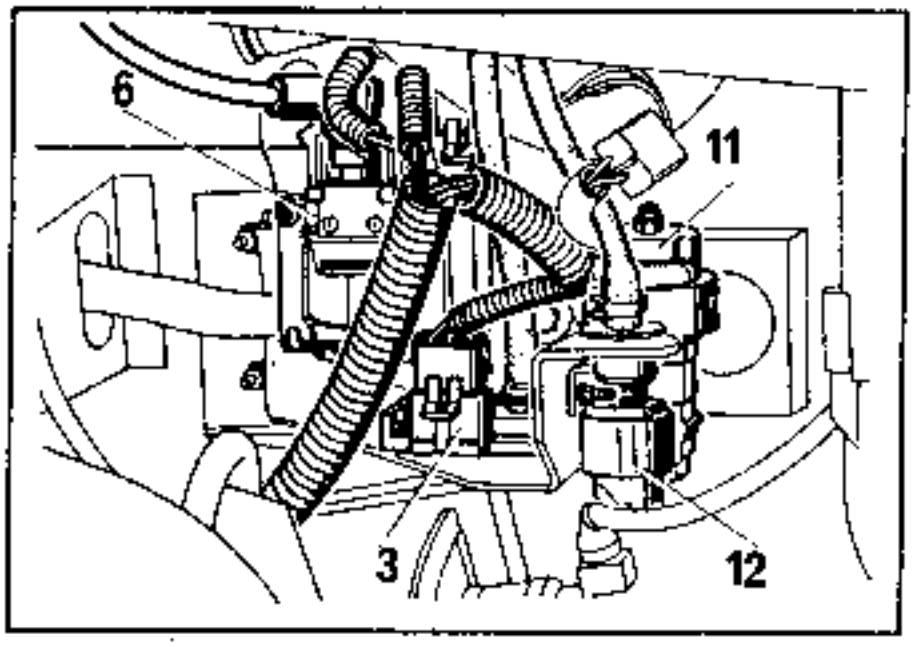


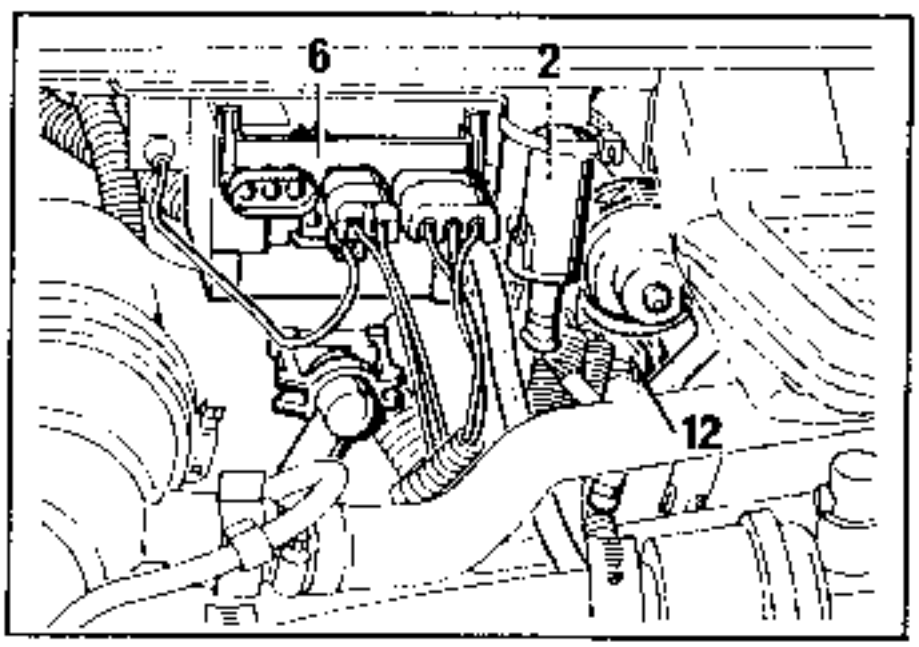
1 – Injection and ignition computer
2 – Air filter
3 – Idling CO regulating potentiometer
4 – Pressure sensor
5 – By-pass valve
6 – Turbocharger
7 – Ignition power module
8 – Idling speed regulating valve
9 – Throttle casing
10 – Injector
11 – Fuel pressure regulator
12 – Fuel feed gallery



RENAULT ALPINE V6 TURBO (D 501)

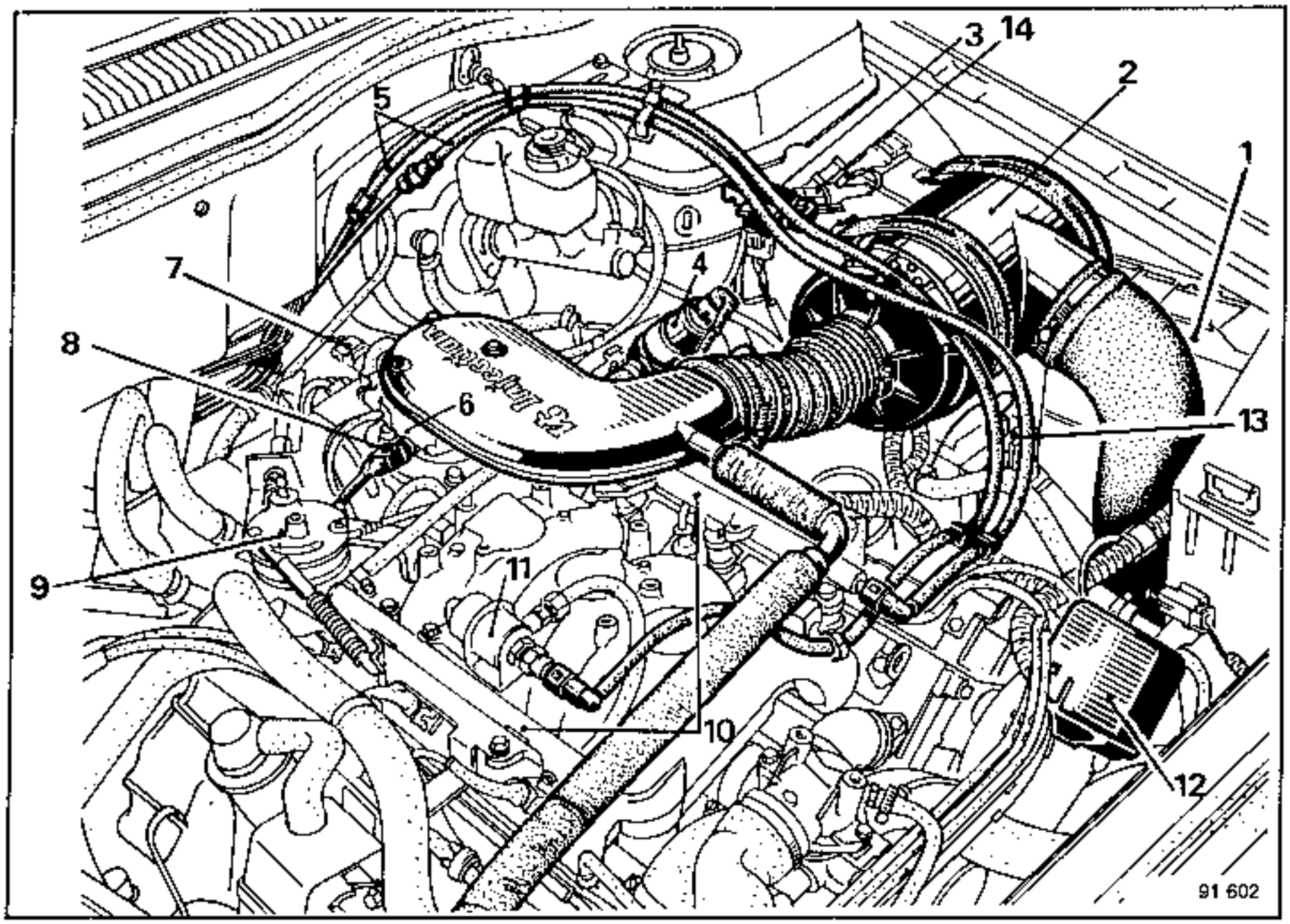






1 - Computer (housed in passenger compt. in centre of rear seatback)
2 - Idling CO regulating potentiometer
3 - Pressure sensor
4 - By-pass valve
5 - Turbocharger
6 - Ignition power module
7 - Idling regulation valve
8 - Throttle casing
9 - Fuel pressure regulator
10 - Fuel feed gallery
11 - Electric transmitter sending boost pressure data to instrument panel
12 - Safety pressostat
13 - Diagnostic plug

RENAULT 25 V6 (B 293, B 29 F)



1 – Injection & ignition computer & relay
2 – Air filter
3 – Absolute pressure sensor
4 – Idling speed regulating valve
5 – Fuel inlet and return pipes
6 – Throttle casing
7 – Throttle position potentiometer
8 – Air temperature sensor
9 – Accelerator control chamber
10 – Fuel supply galleries
11 – Fuel pressure regulator
12 – Ignition distributor
13 – Ignition power module
14 – Idling mixture regulating potentiometer

SPECIAL INSTRUCTIONS

Disconnect the computer systematically to check the injection system (except when using the XR25 - see below).

Disconnect the ignition power module feed (3-way connector) before performing any operation on the fuel system (risk of fire).

Before performing any checks ensure that:
- the incidents are not caused by a component outside the injection system (spark plugs, ignition module);
- there are no air leaks on the inlet and exhaust systems;
- the fuel is arriving at the injectors (check the pressure in the circuit and the fuel pump delivery);
- do not disconnect or connect any components without first switching off the ignition;
- with the engine stopped, when the ignition is switched on, the fuel pump should run for a few seconds;
- the diagnostic warning light should be illuminated when the engine is stopped and the ignition on (diagnostic plug cover closed).

NOTE: On vehicles with anti-pollution systems, the warning light is not operational (except on the B29 F and D 501).

At the end of any check, re-set the injection system (memory) by disconnecting the computer or battery.

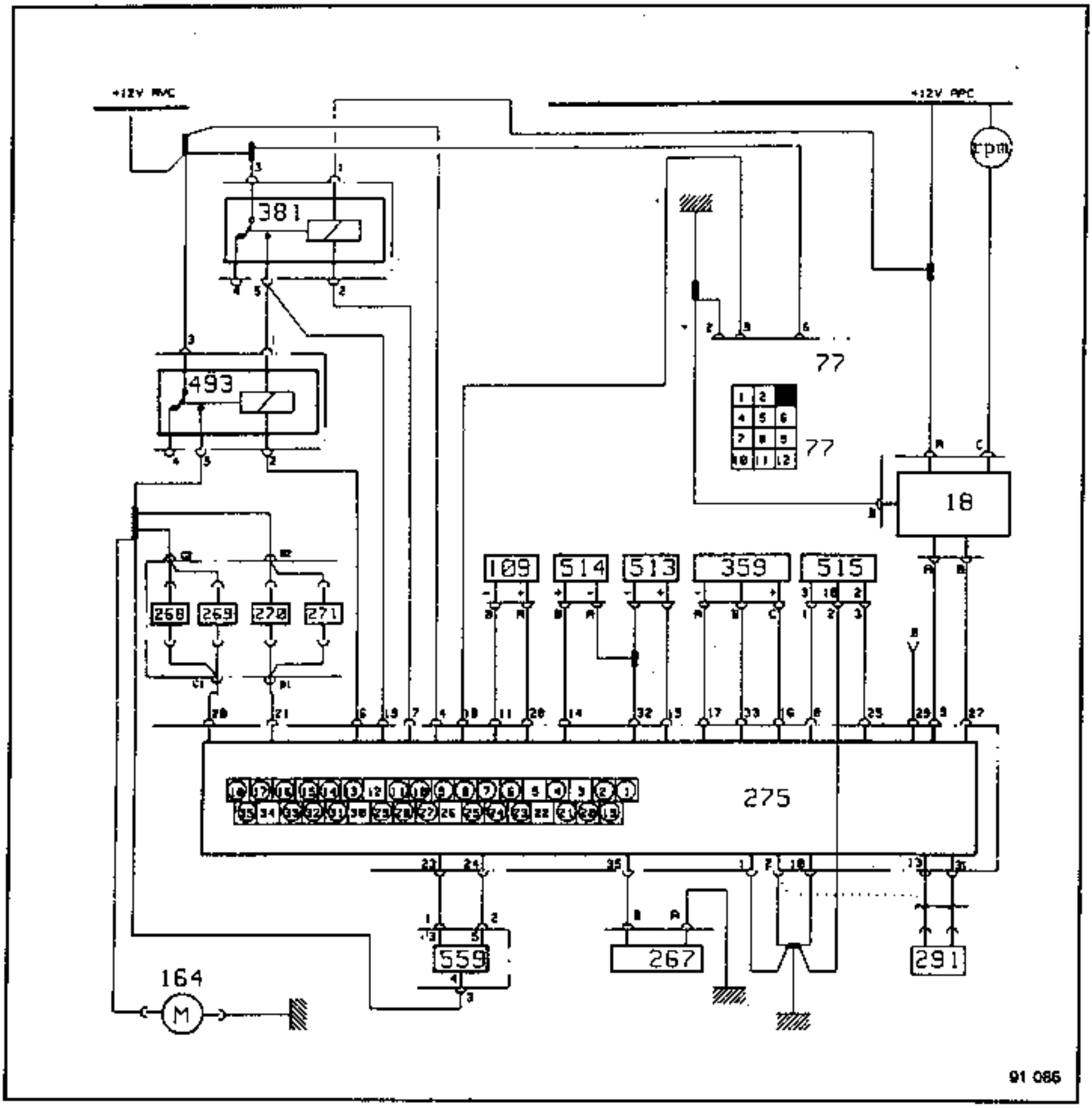
NOTE: Owing to the way in which certain components have developed and their very low level of consumption, some computers have to be switched off for approximately 15 minutes in order to allow their memories to be erased.

Disconnect the battery before charging it.

Disconnect the computer before performing any electric welding operations.

OPERATIONAL WIRING DIAGRAM

RENAULT 5 C 409

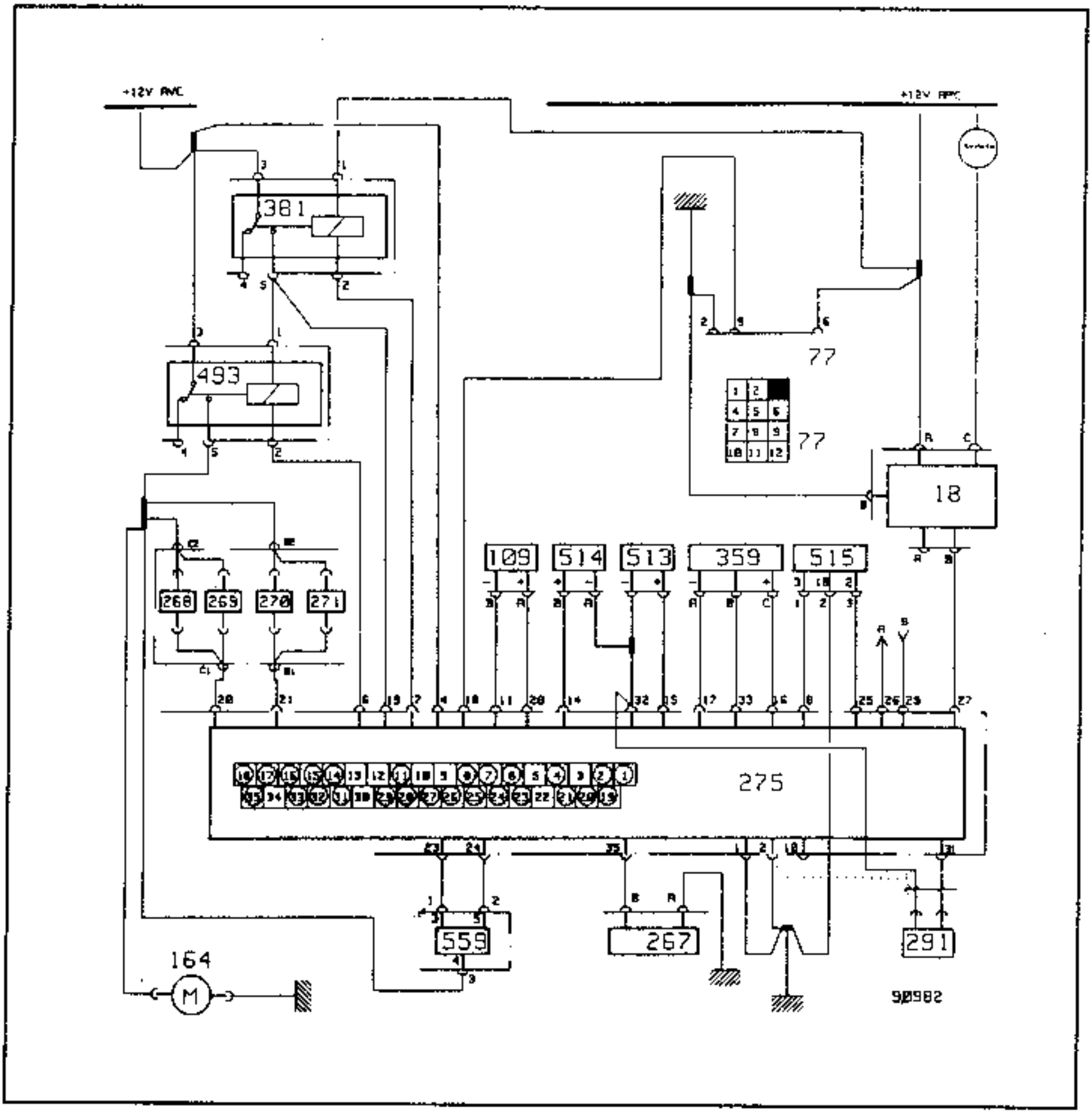


18	Ignition power module
77	Diagnostic base (seen from above)
109	Flywheel sensor
164	Fuel pump (motor)
267	Oxygen (or Lambda) sensor
268 - 271	Injectors
275	Injection and ignition computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Fuel pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch sensor
559	Idling speed regulating solenoid valve
	Connectors
B	Starter data

* NOTE: 2 leads on pin no. 5 of relay 381

Operating wiring diagram

(1) RENAULT 9 L 42 E - RENAULT 11 B-C 37 E (2) RENAULT 21 K-L 48 E

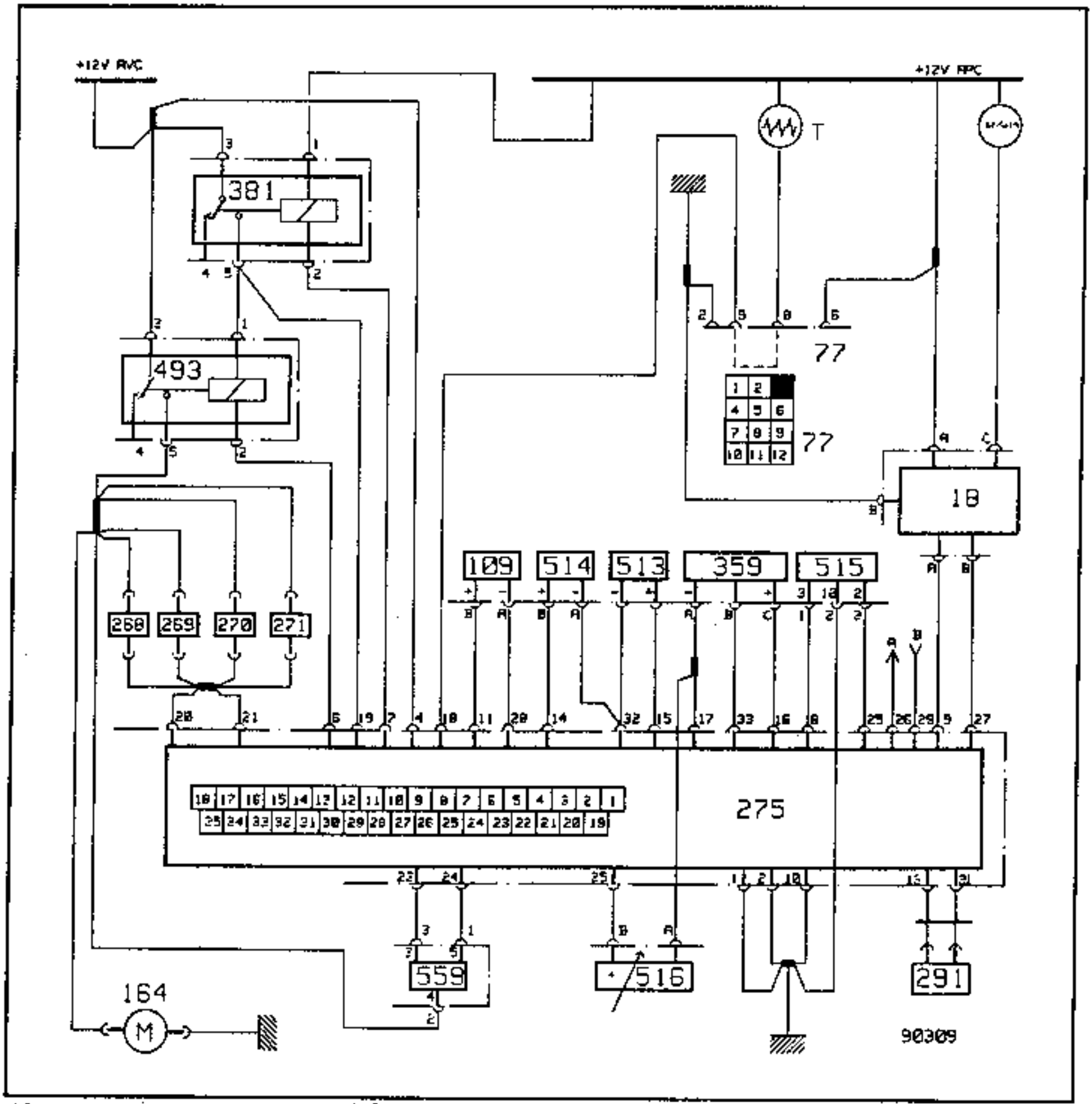


18	Ignition power module
77	Diagnostic base (seen from above)
109	Flywheel sensor
164	Fuel pump
267	Oxygen sensor (or Lambda)
268 - 271	Injectors
275	Injection and ignition compt.
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Fuel pump relay
513	Coolant temperature sensor
514	Air temperature sensore
515	No load/full load switch sensor
559	Idling speed regulating valve
⋀	Connectors
A	Flowmeter signal
B	Starter data

NOTE: 2 leads on pin no. 5 of relay and on terminal 32 of computer.

OPERATIONAL WIRING DIAGRAM

RENAULT 21 L-K 483

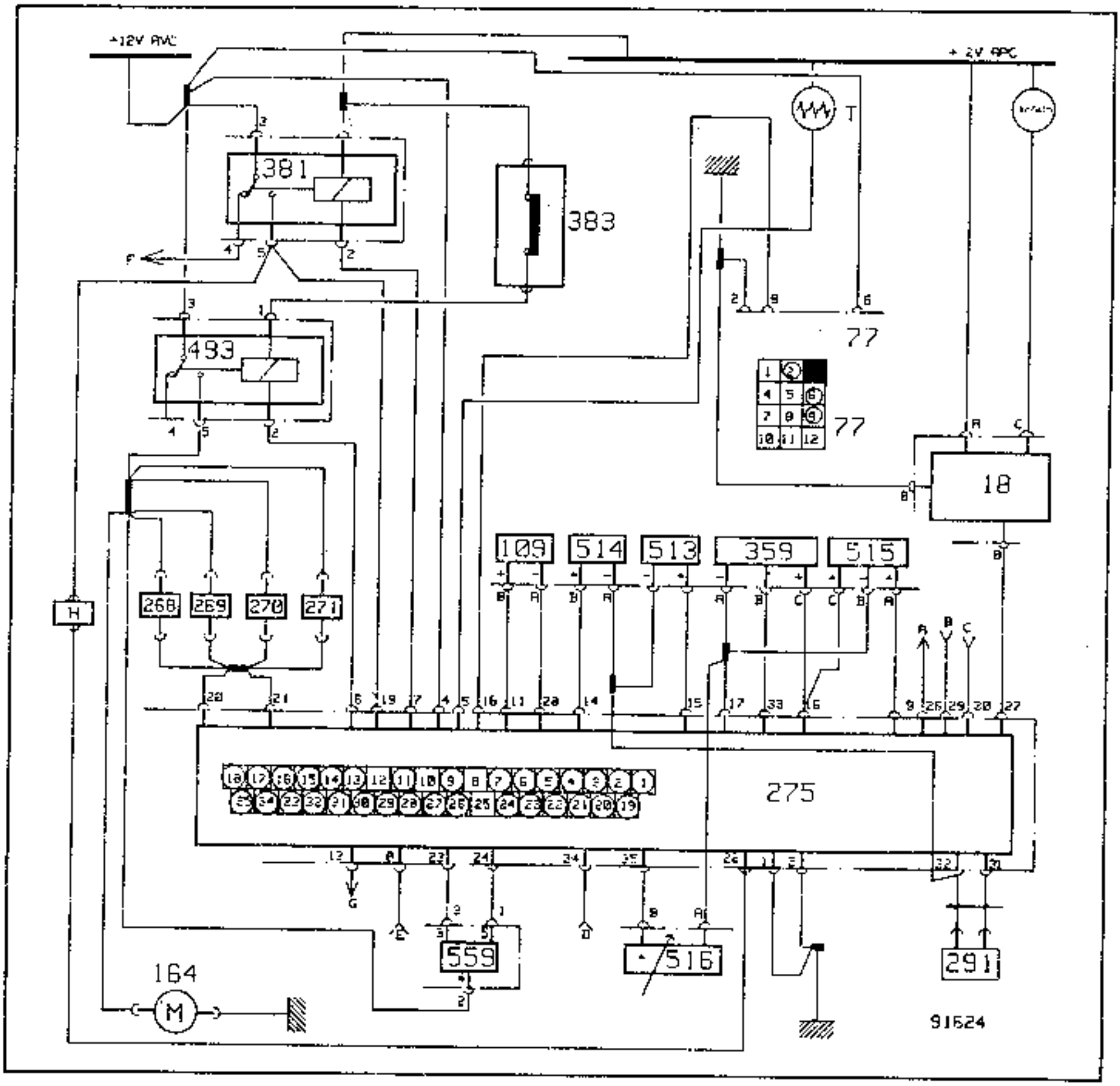


18	Ignition power module
77	Diagnostic base (from above
109	Flywheel sensor
164	Fuel pump (motor)
268 - 271	Injectors
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/ full load switch sensor
516	Regulating potentiometer
559	Idling regulating valve
⅄	Connectors
T	Diagnostic warning light
A	To flowmeter
B	Starter data

* **NOTE:** 2 leads on pin no. 5.

OPERATING WIRING DIAGRAM

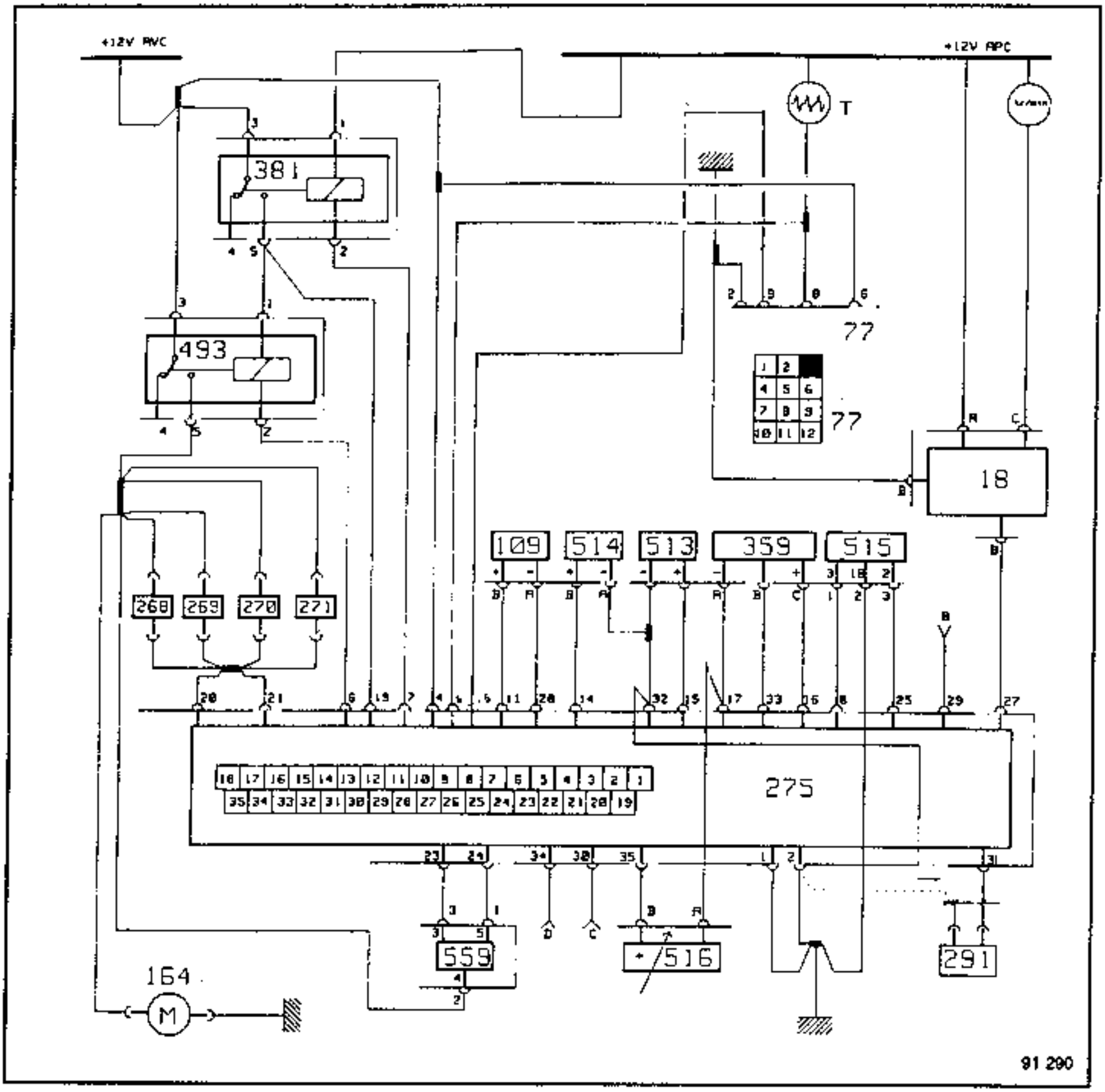
RENAULT 21 Turbo L 485



18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
268 - 271	Injectors
275	Computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
383	Safety pressostat
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	Throttle casing potentiometer
516	Regulating potentiometer
559	Idling speed regulating valve
⅄	Connectors
T	Diagnostic warning light
A	To flowmeter
B	Starter data
C	Heating/ventilation data - On/off
D	Heating/ventilation data - thermostat
E	Vehicle speed data
F	Turbocharger coolant pump
G	Air conditioning relay energ. control
H	Boost control valve
*NOTE	2 leads on pin no. 1 of relay 381

OPERATING WIRING DIAGRAM

RENAULT 25 B 29 H

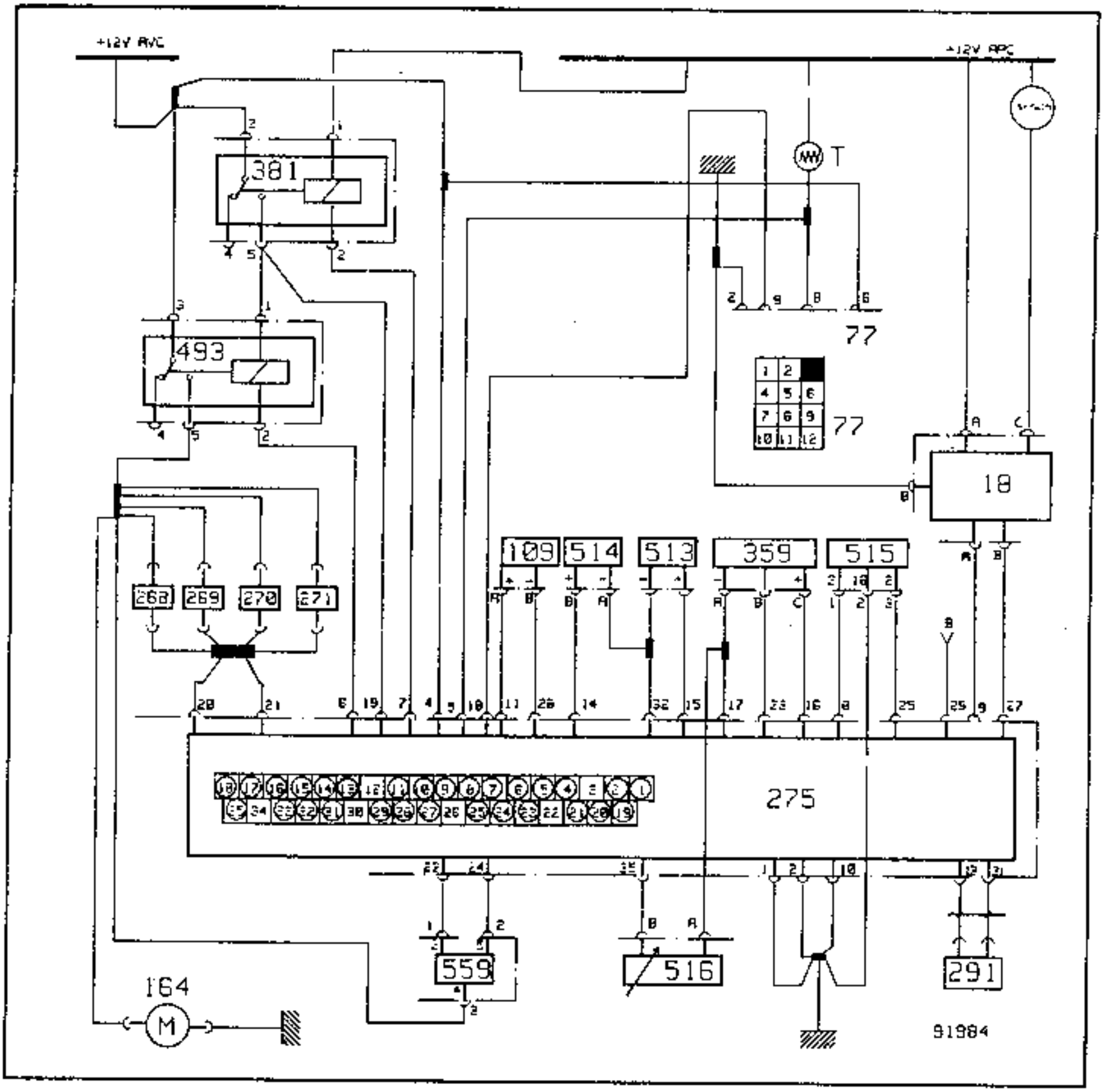


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
268 - 271	Injectors
275	Injection and ignition computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch sensor
516	Regulating potentiometer
559	Idling speed regulating valve
B	Starter data
C**	Air conditioning on/off data
D**	Air conditioning: magnetic clutch data
⅄	Connectors
T	Diagnostic warning light (operational)

NOTE: * 2 leads on pin no. 5 of relay 381
** With air conditioning option

OPERATING WIRING DIAGRAM

RENAULT ESPACE J116

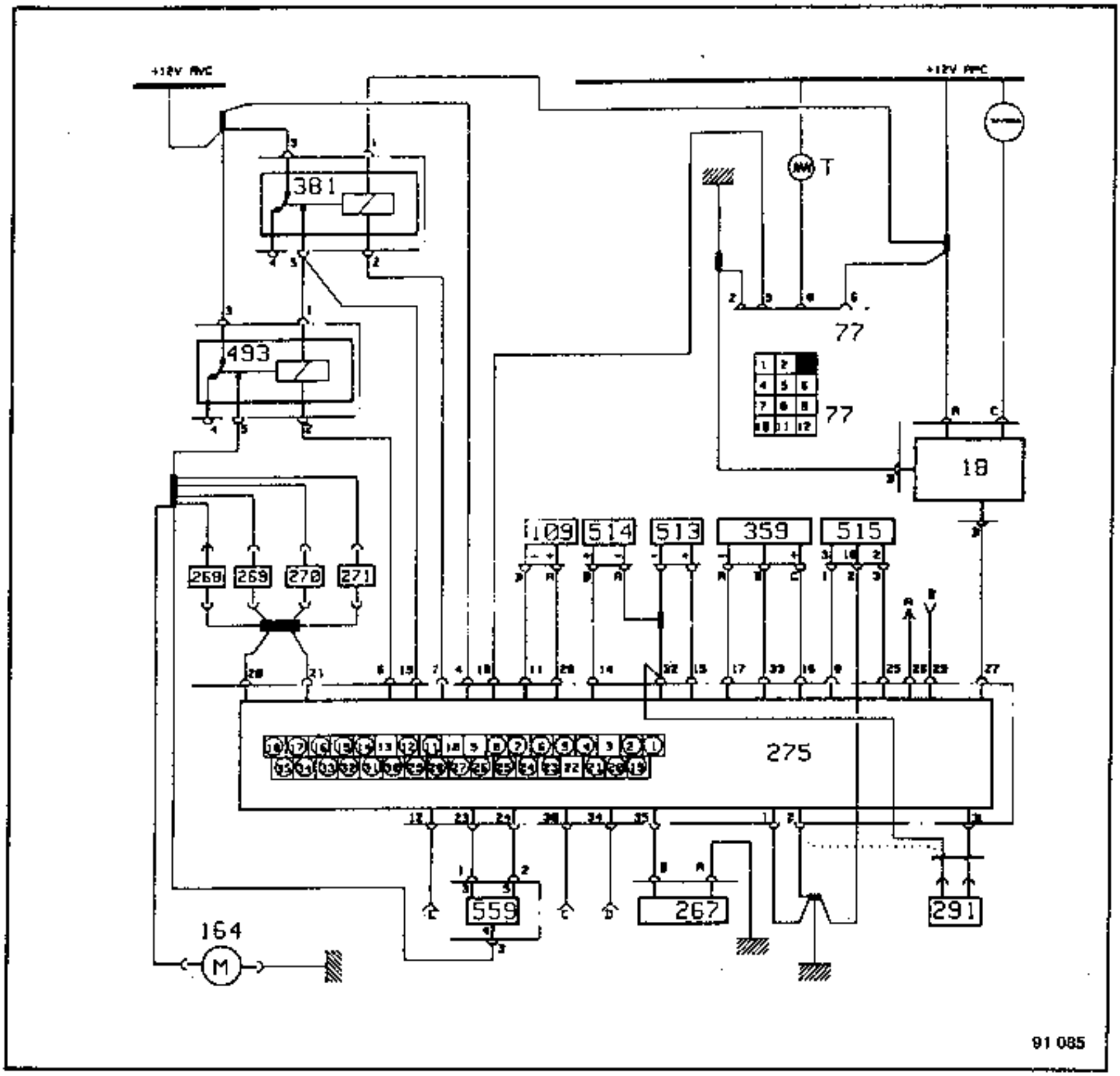


18	Ignition power module	514	Air temperature sensor
77	Diagnostic base (from above)	515	No load/full load switch sensor
109	Flywheel sensor	516	Regulating potentiometer
164	Fuel pump (motor)	559	Idling regulating valve
268 - 271	Injectors	B	Starter data
275	Injection and ignition computer	⅄	Connectors
291	Pinking sensor	T	Diagnostic warning light (operational
359	Pressure sensor		
381*	Feed relay		
493	Pump relay		
513	Coolant temperature sensor		

NOTE: * 2 leads on pin no. 5 of relay 381
** With air conditioning option

OPERATING WIRING DIAGRAM

RENAULT 21 L-K 48 K

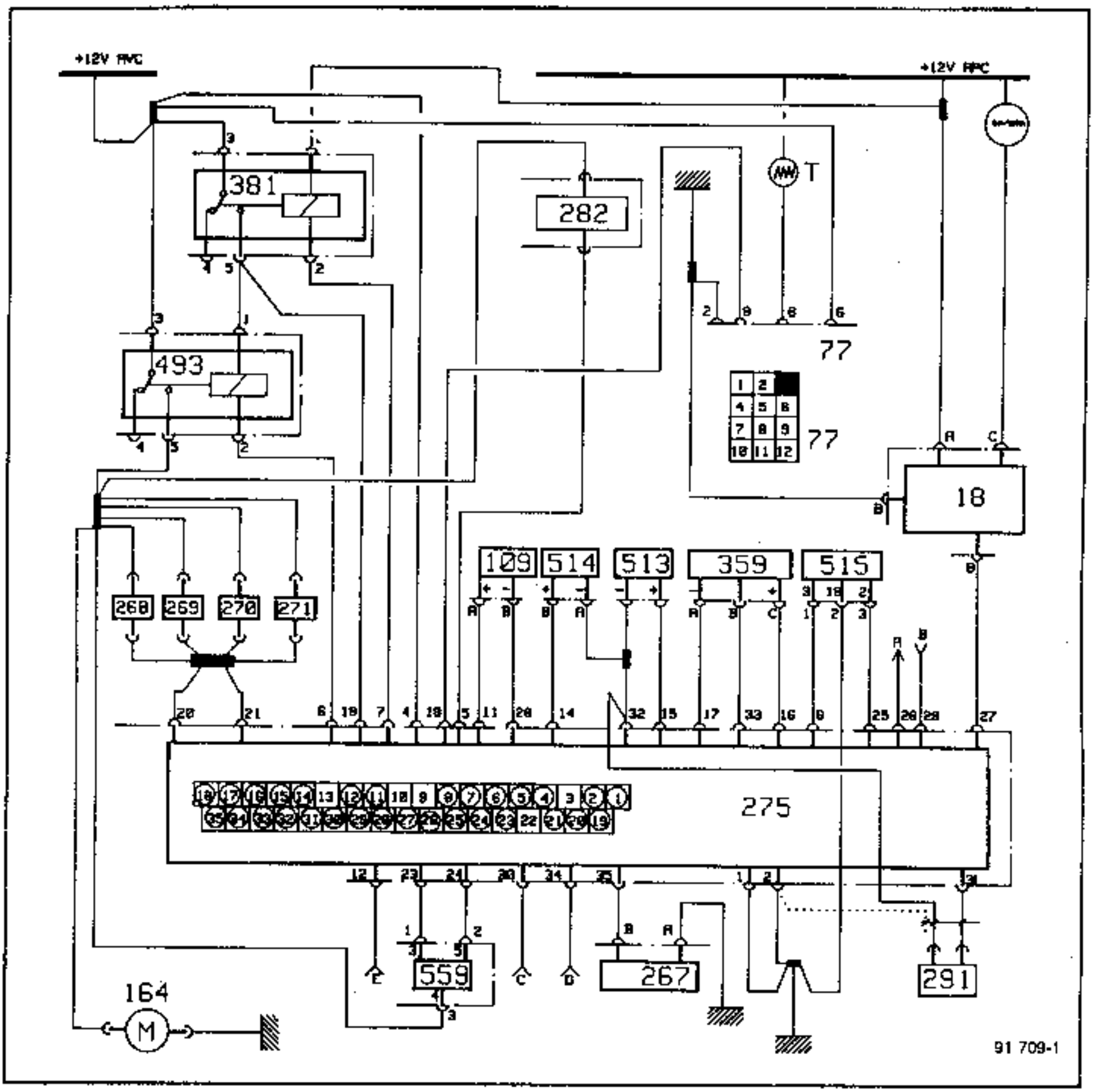


18	Ignition power module	**514**	Air temperature sensor
77	Diagnostic base (from above)	**515**	No load/full load switch sensor
109	Flywheel sensor	**559**	Idling speed regulating valve
164	Fuel pump (motor)	**A**	Flowmeter data
267	Oxygen (or Lambda) sensor	**B**	Starter data
268 - 271	Injectors	**C**	Air conditioning data
275	Injection and ignition computer	**D**	Air conditioning thermostat data
291	Pinking sensor	**E**	Park-Neutral data (blocking starting)
359	Pressure sensor		
381*	Feed relay	⅄	Connectors
493	Fuel pump relay	**T**	Diagnostic warning light (not operational for injection)
513	Coolant temperature sensor		

NOTE: * 2 leads on pin no. 5 of relay 381

OPERATING WIRING DIAGRAM

RENAULT 21 L-K 48 K

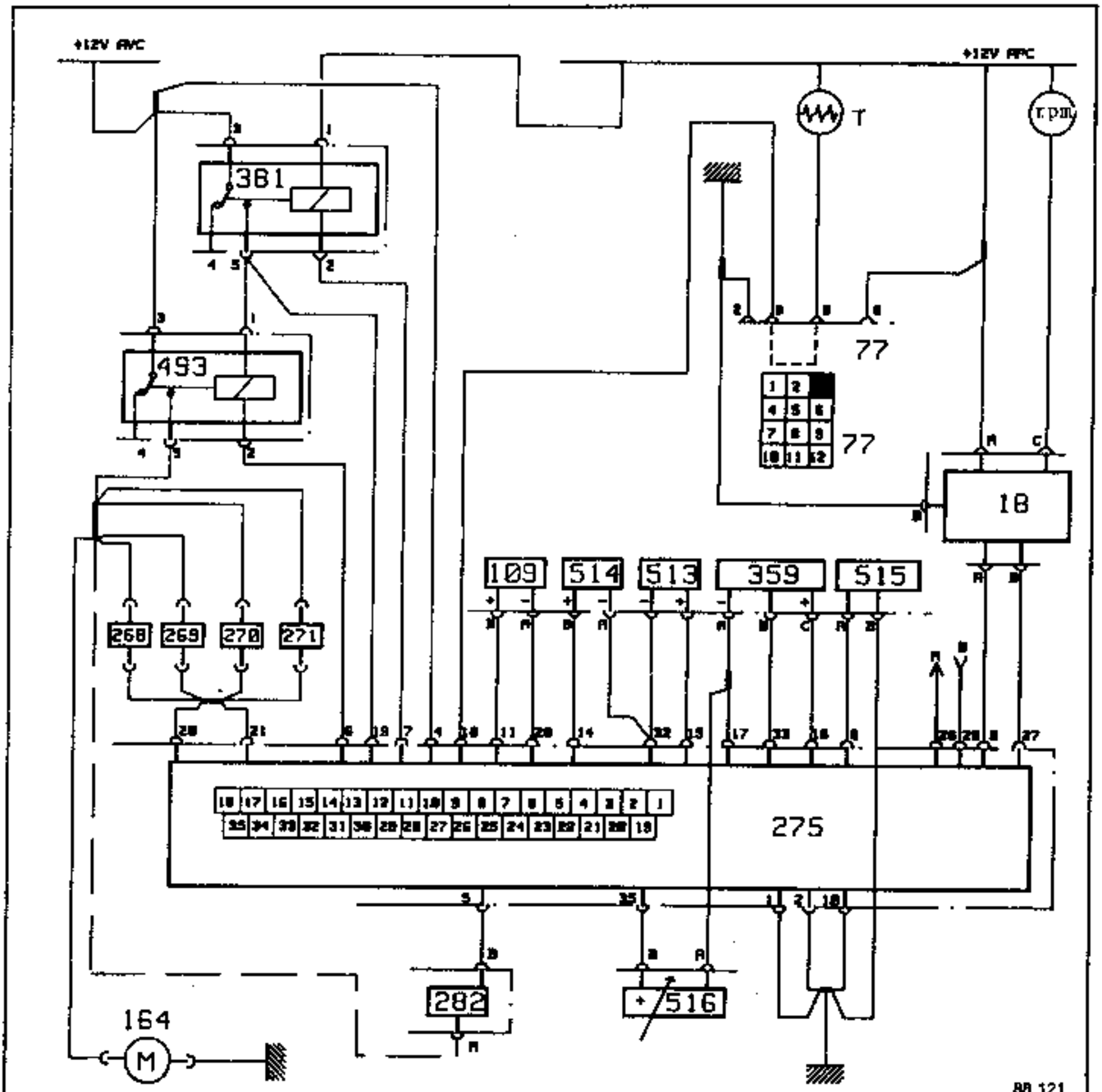


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
267	Oxygen sensor
268 - 271	Injectors
275	Injection and ignition computer
282	Canister bleeding solenoid valve (only for certain countries)
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Fuel pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch
559	Idling speed regulating valve
A	Flowmeter data
B	Starter data
C	Air conditioning data
D	Air conditioning thermostat data
E	Park-Neutral data (blocking starting
	Connectors
T	Diagnostic warning light (not operat

NOTE: *2 leads on pin no. 5 of relay 381

OPERATING WIRING DIAGRAM

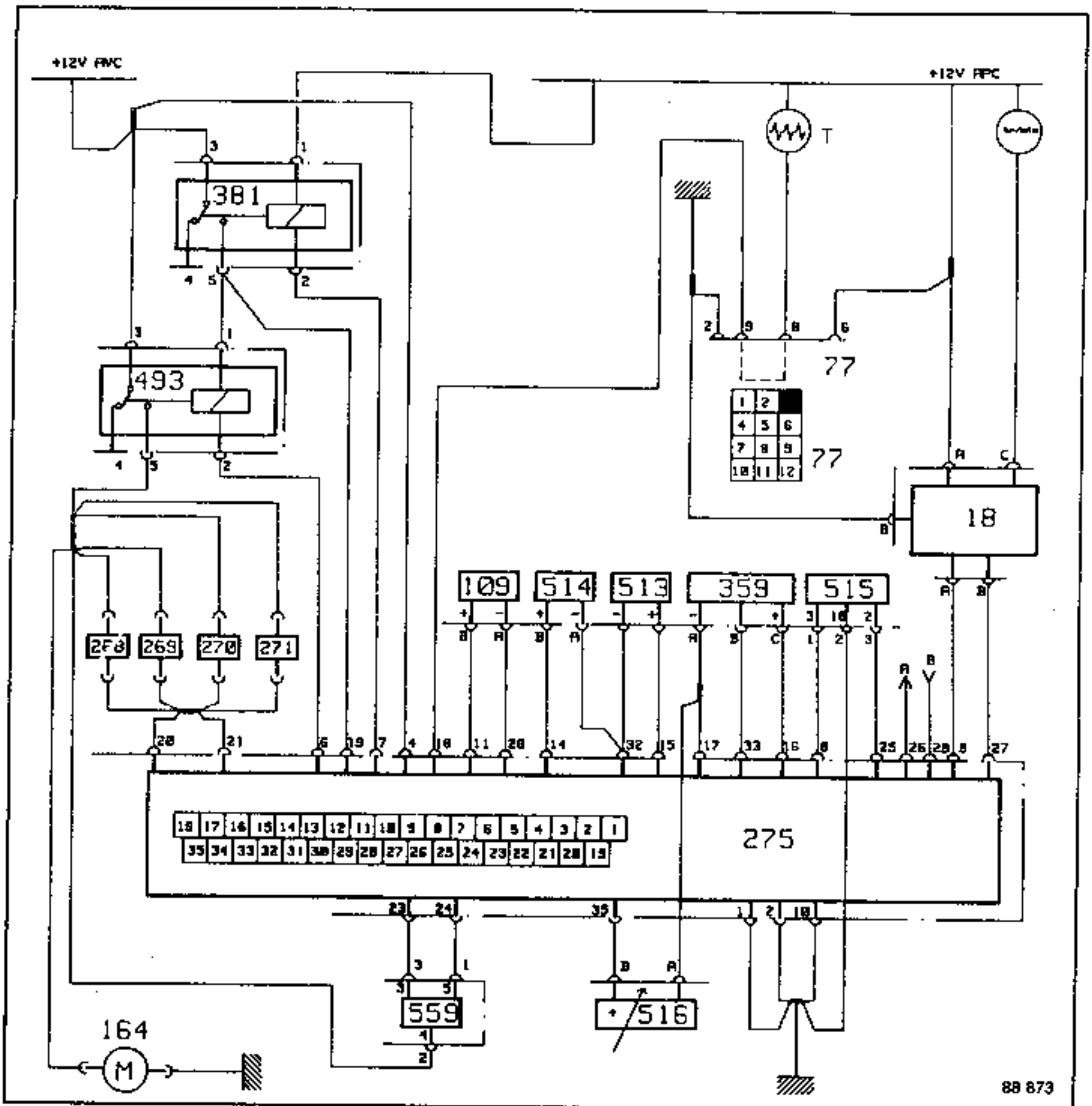
RENAULT 25 B 29 E (1) Europe (2) Switzerland



18	Ignition coil	515	No load/full load switch
77	Diagnostic plug	516	Idling speed potentiometer
109	Speed sensor	282	EGR anti-pollution valve (Switz)
164	Fuel pump		Connectors
268 - 271	Injectors	T	Electronic defect warning light
275	Computer	rpm	Rev. counter
359	Absolute pressure sensor	+APC	+ after ignition
381	Injection relay	+AVC	+ after ignition
493	Fuel pump relay	A	Flowmeter data
513	Coolant temperature sensor	B	Starter data
514	Inlet air temeprature sensor		

OPERATING WIRING DIAGRAM

RENAULT 25 B 29 E (with idling speed regulation)

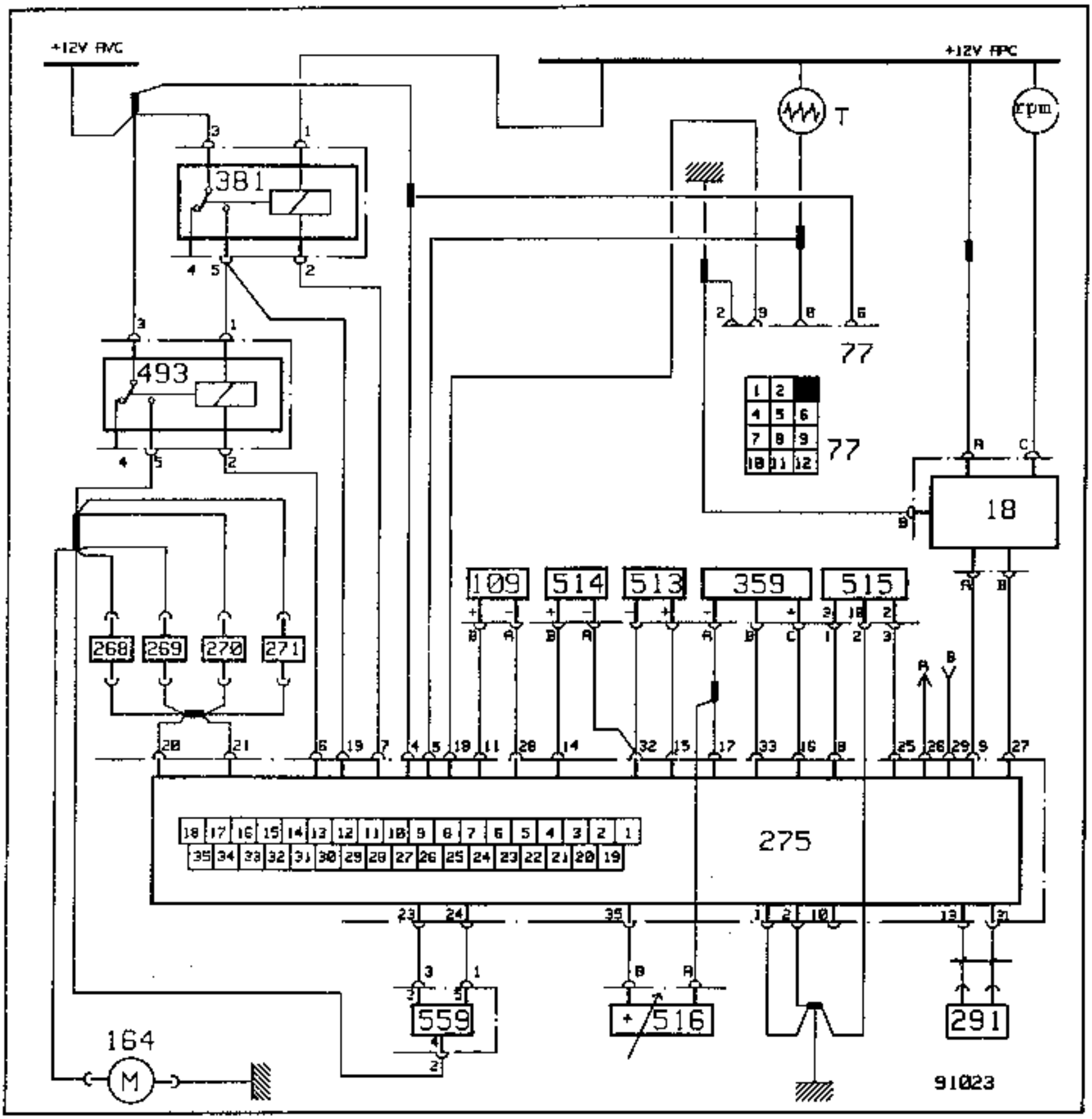


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
268 - 271	Injectors
275	Computer
359	Pressure sensor
381*	Feed relay
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch sensor
516	Regulating potentiometer
559	Idling speed regulating valve
⅄	Connectors
T	Diagnostic warning light
A	To flowmeter
B	Starter data

NOTE : 2 leads on pin no. 5

OPERATING WIRING DIAGRAM

RENAULT 25 B 29 E

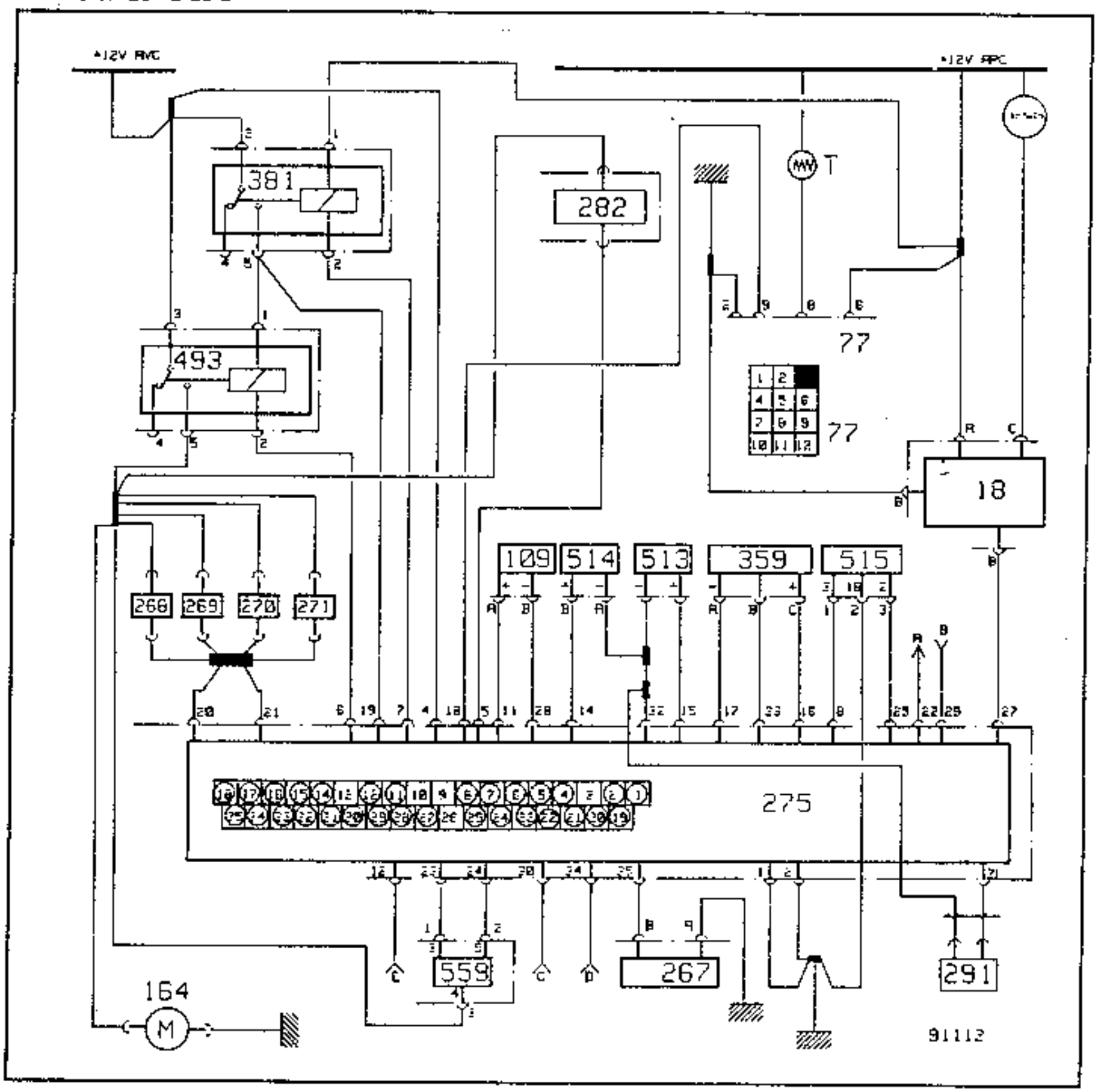


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
268 - 271	Injectors
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Pump relay
513	Coolant temeprature sensor
514	Air temperature sensor
515	No load/full load switch sensor
516	Regulating potentiometer
559	Idling speed regulating valve
	Connectors
T	Diagnostic warning light
A	To flowmeter
B	Starter data

*NOTE: 2 leads on pin no. 5

OPERATING WIRING DIAGRAM

RENAULT 25 B 29 B

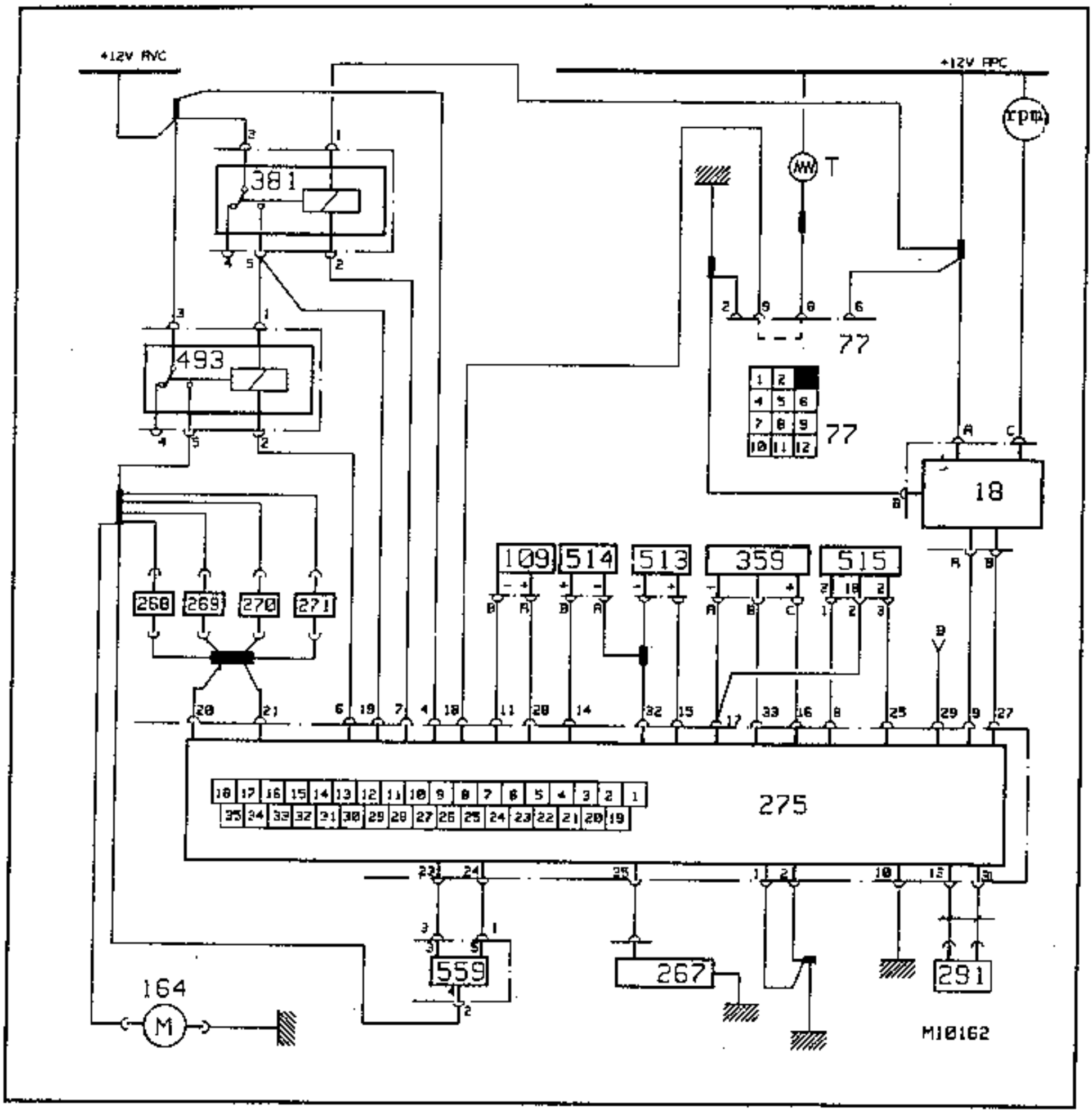


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
267	Oxygen sensor
268 - 271	Injectors
275	Injection and ignition computer
282	Canister bleeding valve (only for certain countries)
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Fuel pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch
559	Idling speed regulating valve
A	Flowmeter data
B	Starter data
C	Air conditioning data
D	Air conditioning thermostat data
E	Park-Neutral data (starter block.)
	Connectors
T	Diagnostic warning light (not operational)

NOTE: *2 leads on pin no. 5 of relay 381

OPERATING WIRING DIAGRAM

RENAULT ESPACE J 117 with anti-pollution system

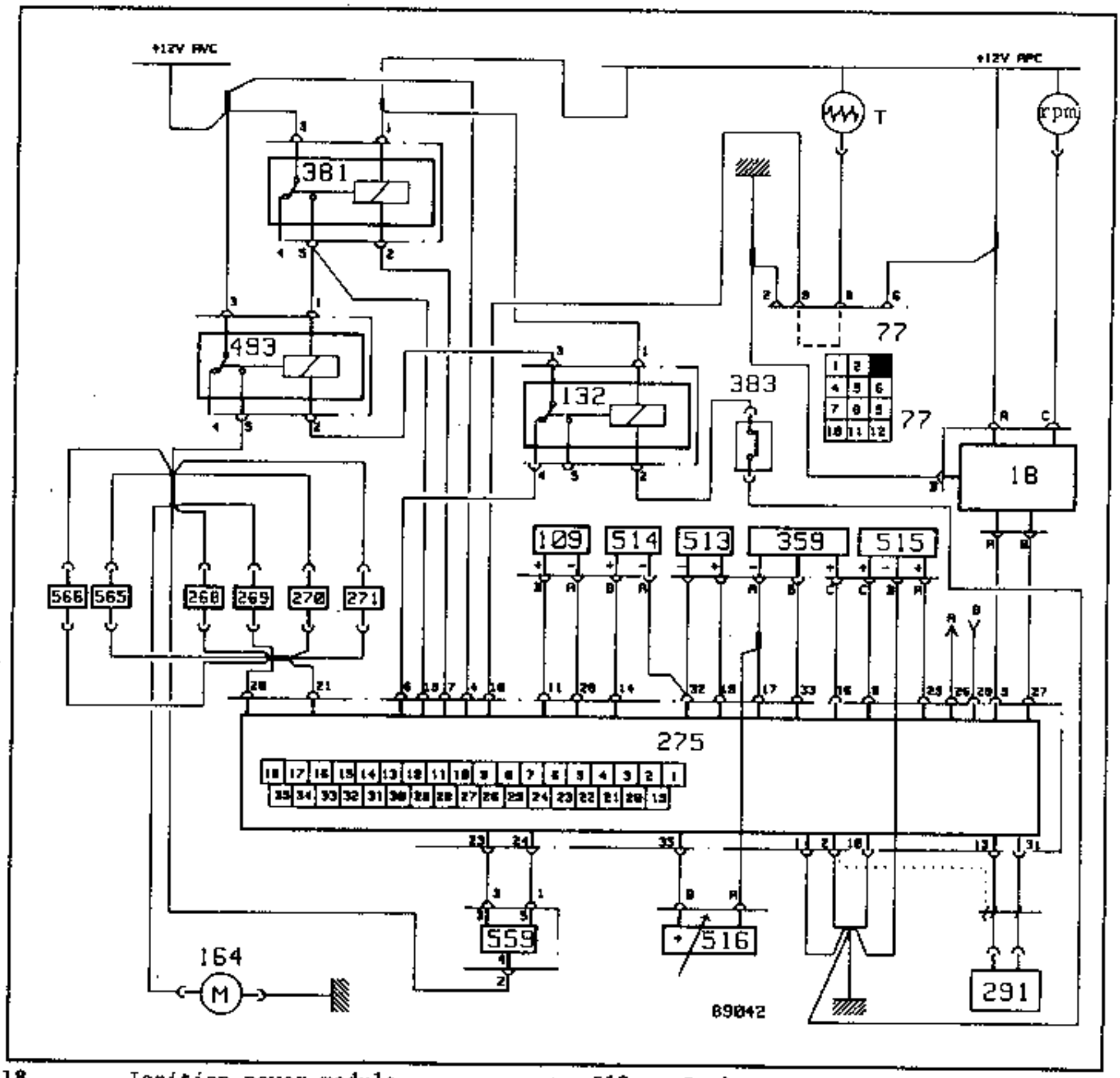


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
267	Oxygen sensor
268 - 271	Injectors
275	Injection and ignition computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Fuel pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch
559	Idling speed regulating valve
⅄	Connectors
T	Diagnostic warning light (not operational)
B	Starter data

*NOTE: 2 leads on pin no. 5 of relay 381

OPERATING WIRING DIAGRAM

(1) RENAULT 25 V6 Turbo B 295 (2) RENAULT ALPINE V6 Turbo D 501

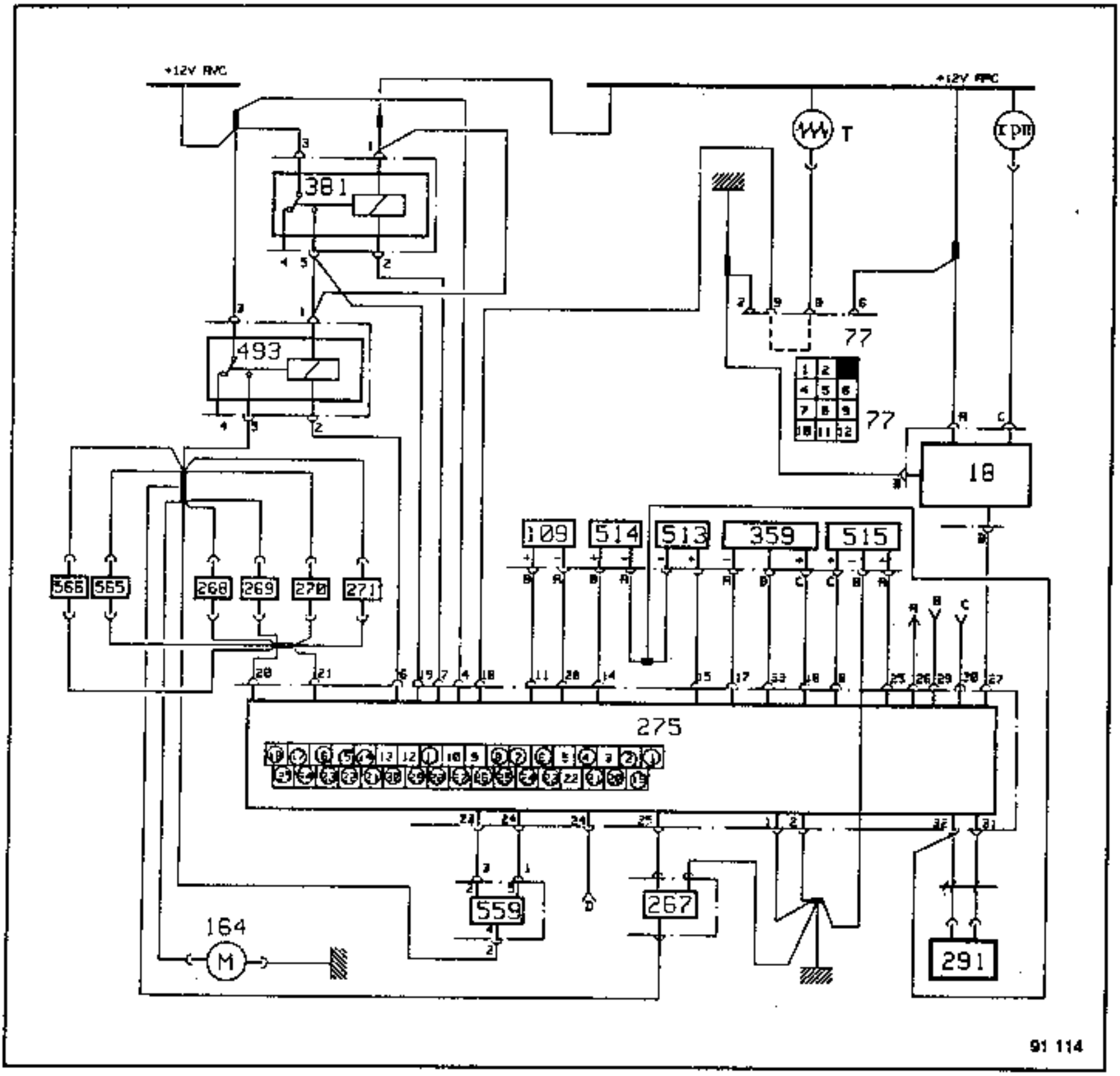


18	Ignition power module
77	Diagnostic base. (from above)
109	Flywheel sensor
132	Injection safety relay
164	Fuel pump (motor)
268 - 271	Injectors
275	Computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
383	Ignition cut-off pressostat
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch sensor
516	Regulating potentiometer
565 - 566	Injectors
⅄	Connectors
T	Diagnostic warning light
A	Flowmeter data
B	Starter data

NOTE: 2 leads on pin no. 5

OPERATING WIRING DIAGRAM

(1) RENAULT ALPINE V6 Turbo D 501 with anti-pollution system and D 502

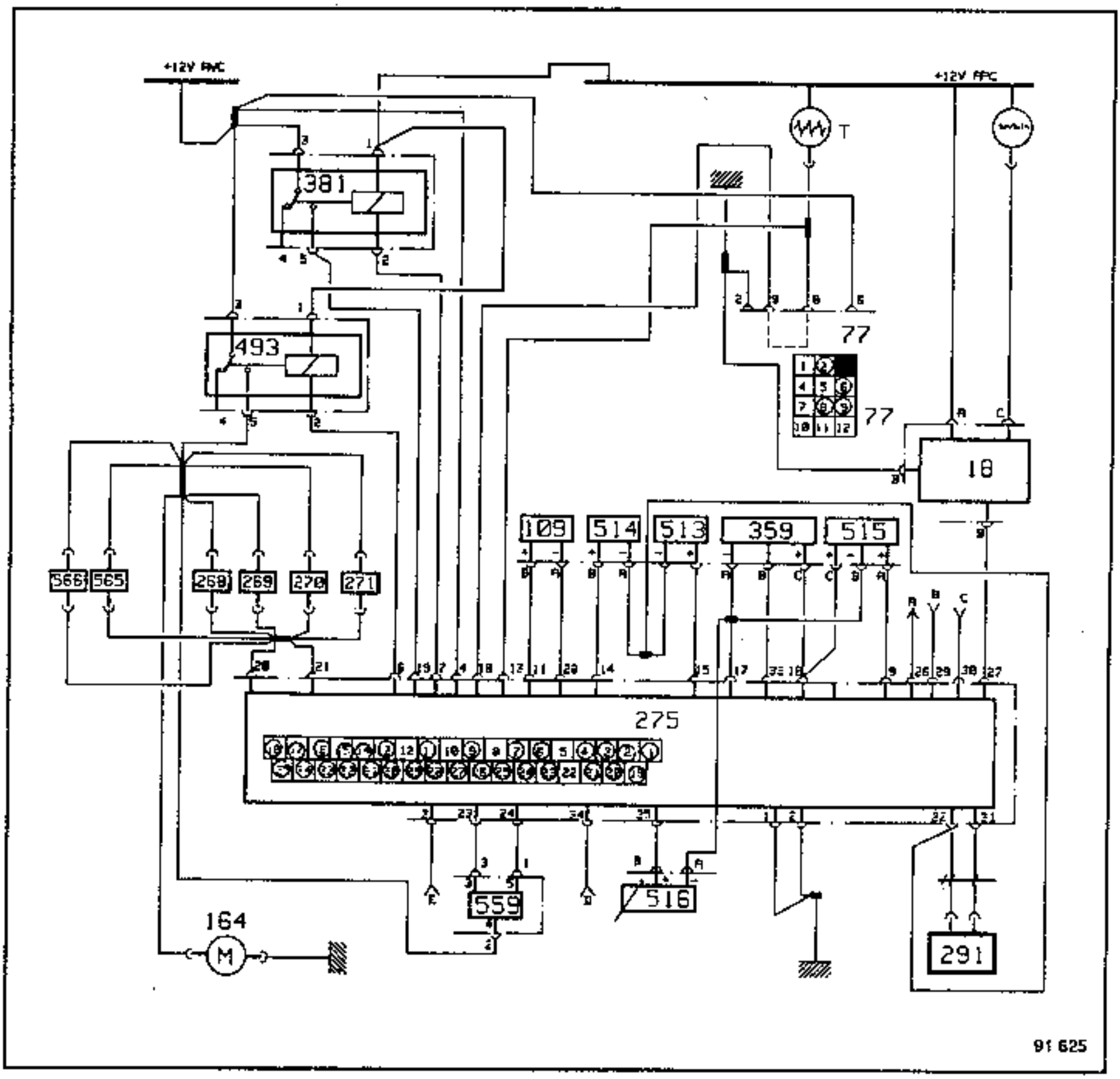


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
267	Oxygen (or Lambda) sensor
268 to 271	Injectors
275	Computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	No load/full load switch sensor
559	Idling speed regulating valve
565 - 566	Injectors
	Connectors
T	Diagnostic warning light
A	To flowmeter
B	Starter data
C	Air conditioning data
D	Air conditioning data

* **NOTE**: 2 leads on pin no. 1 of relay 381

OPERATING WIRING DIAGRAM

RENAULT 25 V6 B 293

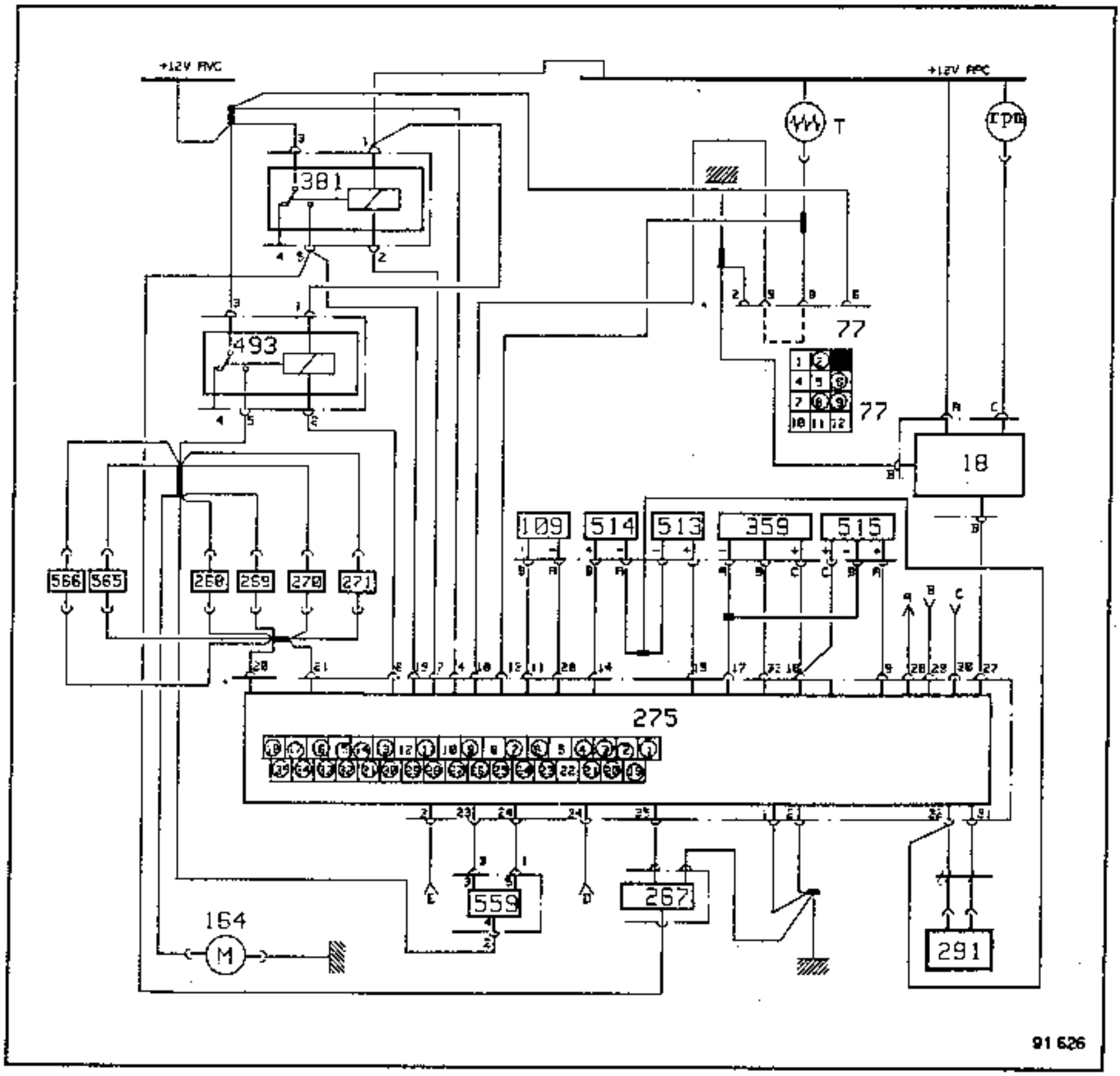


18	Ignition power module
77	Diagnostic base (from above)
109	Flywheel sensor
164	Fuel pump (motor)
268 - 271	Injectors
275	computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	Throttle position potentiometer (No load/full load)
516	Idling richness regulating potent.
559	Idling regulating valve
565-566	Injectors
	Connectors
T	Diagnostic warning light
A	To flowmeter
B	Starter data
C	Air conditioning on/off data
D	Air conditioning - clutch data
E	Vehicle speed data

NOTE:* 2 leads on pins 1 and 5 of relay 381

OPERATING WIRING DIAGRAM

RENAULT 25 V6 B 29 F



18	Ignition power module
77	Diagnostic base (from above)
109	flywheel sensor
164	Fuel pump (motor)
267	Oxygen (or Lambda) sensor
268 - 271	Injectors
275	Computer
291	Pinking sensor
359	Pressure sensor
381*	Feed relay
493	Pump relay
513	Coolant temperature sensor
514	Air temperature sensor
515	Potentiometer (no load/full load)
559	Idling regulating valve
565-566	Injectors
	Connectors
T	Diagnostic warning light
A	To flowmeter
B	Starter data
C	Air conditioning on/off data
D	Air conditioning - clutch data
E	Vehicle speed data

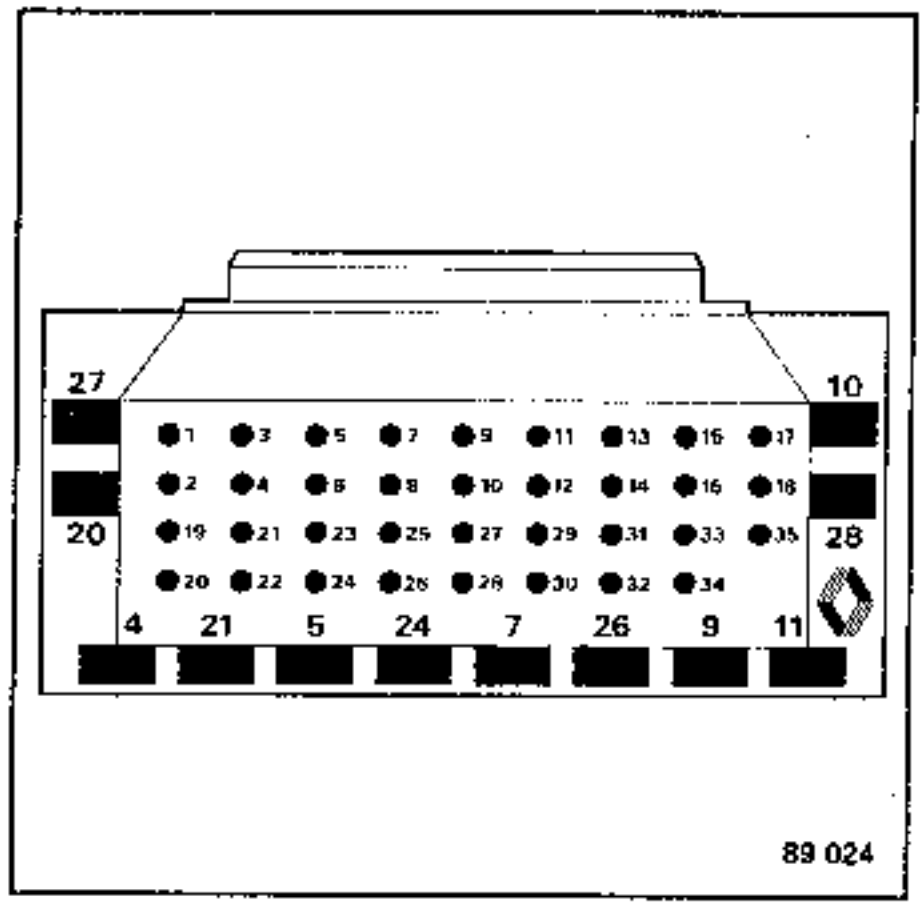
NOTE: *2 leads on pin 1 and 5 of relay 381

TOOLING

The XR25 test box has been developed for checking microprocessor systems. When connected to the diagnostic plug it enables the computer to be checked and diagnosed quickly by providing information about the condition of the computer and of most of its peripheral units.

XR 25 test box

M.S. 1048 terminal holder



The operational checking process can be split into three sections:

Checking the fuel system (see group 13)

Tooling required:
- 1 0-6 bar pressure gauge
- 1 T-piece union for 8mm Ø flexible hoses
- flexible fuel hose with internal diameter of 8 mm
- 1 manual vacuum pump
- 1 test harness (made up locally)
- 1 2000 ml flask
- 1 100 ml flask

Electrical test of the system components

Tooling required:
- 1 20 000 OHMS/VOLTS multimeter

Electrical test of injection harness

Tooling required:
- 1 20 000 OHMS/VOLTS multimeter
- 1 test terminal holder M.S. 1048

PRECAUTIONS:

The computer must be disconnected and no other checks can be carried out on the computer itself.

When performing electrical tests using a multimeter or shunting electrical terminals, ensure that no errors are made in the marking of the leads indicated in the tests.

A connection error may damage the components of the injection system.

Checking the intake system for leaks

If the idling speed is uneven (pumping), the condition of the hoses and unions on the intake system must be checked.

In addition, ensure that the no load-full load switch is operating correctly as this could cause similar defects.

ESSENTIAL SPECIAL TOOLING
M.S. 1048 Terminal holder for checking wiring harness using the XR25 or multimeter

DESCRIPTION

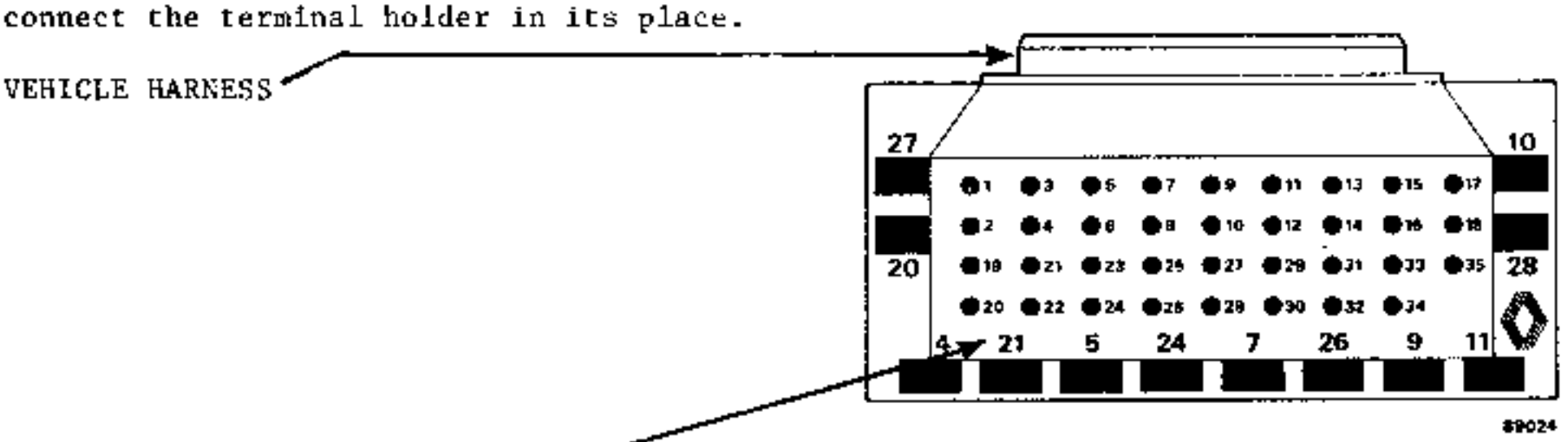
It consists of a base with 35 contact points, identical to the one for the injection computer and integral with a printed circuit equipped with electrical contacts numbered from 1 to 35.

Each number corresponds to an electrical connection on the vehicle wiring system as indicated in the operational wiring diagram.

By rapid access without identication errors, it enables all the electrical connections at the main injection connector to be tested.

Connection on the vehicle:

With the ignition switched off, disconnect the injection computer from its base and connect the terminal holder in its place.



Test method principle:

Place the probe tip of the XR25 or the multimeter in contact with the numbers indicated on the terminal holder and corresponding to the circuits to be checked, as indicated on the operating diagram.

In this way it is possible to check on the injection system whether or not there is continuity in the various circuits, whether or not there is any voltage and whether or not a lead is earthed directly or incorrectly.

Test apparatus which may be used:

- XR25: Measuring continuity using the buzzer
  Measuring voltage using the voltmeter

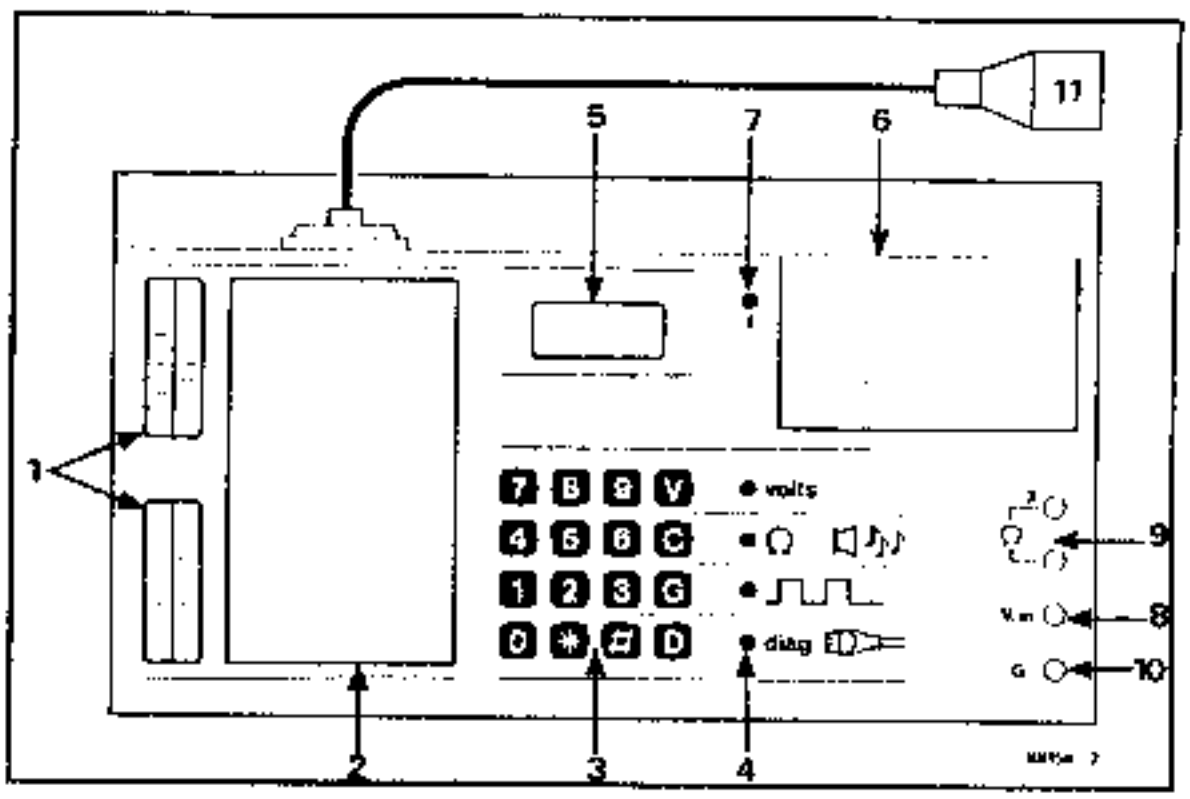
- Multimeter: Measuring resistance
  Measuring voltage

FUNCTION OF THE XR25 TEST BOX

The XR25 testbox is designed to analyse the diagnostic codes emitted by the electronic modules equipped with microprocessors such as those fitted to the Renix monopoint and multipoint electronic injection systems.
Each electronic module which can be tested is allocated a two-figure code number enabling the XR25 to select the corresponding analysis programme.

For the R injection system this code is 0 03.
The information required for the analysis of these computers is held in an interchangeable memory (cassettes enabling the test programme to be updated).

NOTE: The checks and information described below must be carried out using the XR25 equipped with cassette No. 6 or the following cassette and test card No. 87A.
Additional functions to fault-finding are also available:
- a digital voltmeter
- an audible and visual continuity detector
- a pulse sensor
- a pulse generator
- a self-test of the XR25 test box each time it is switched on.



DESCRIPTION

(1) "All or nothing" type of display of results (bar graphs).
(2) Test card
(3) Data input keyboard
(4) Warning lights reminding of test selected
(5) Display of numerical data (voltage...)
(6) Memory cassette for up-dating the XR25
(7) Tell-tale light indicating cassette is inserted.
(8) Voltmeter/pulse sensor input.
(9) Continuity/insulation check.
(10) Pulse generator
(11) Diagnostic plug

METHOD OF SELECTING THE FUNCTIONS

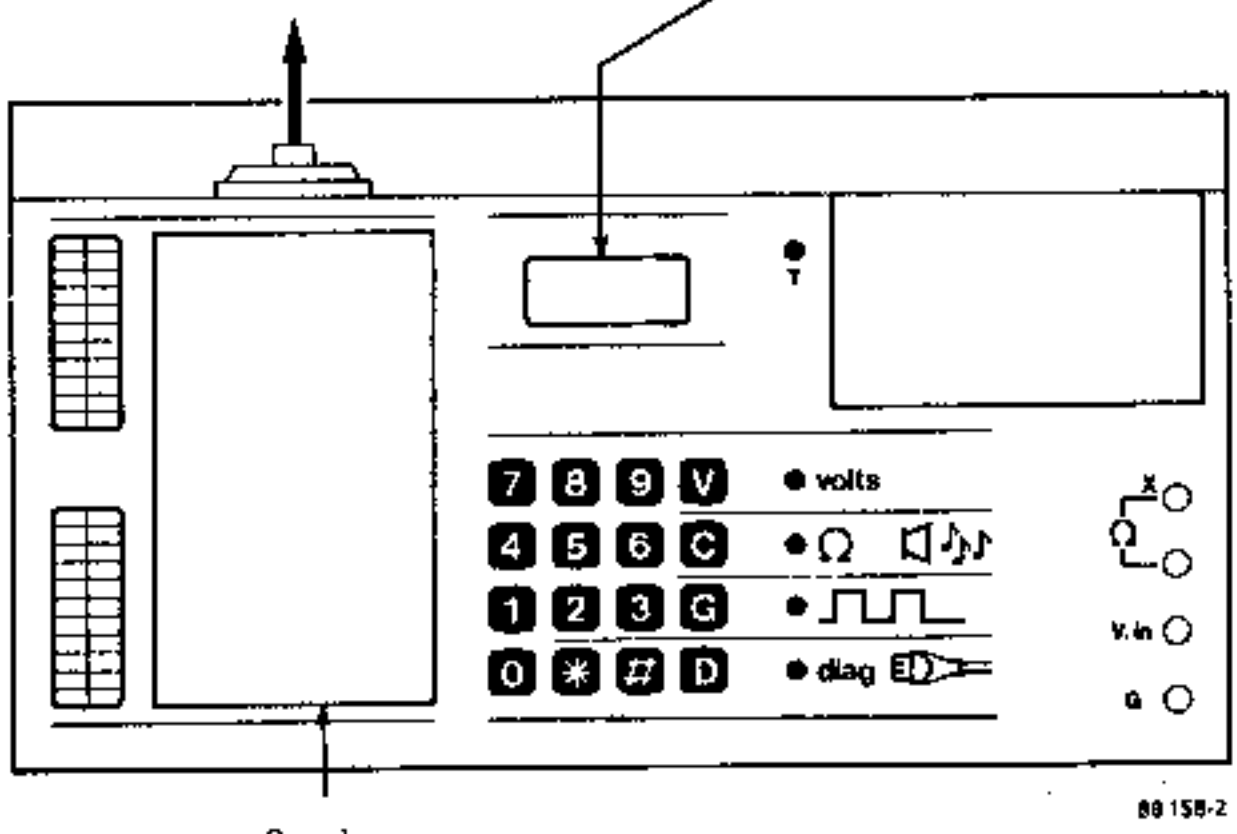
- Key D - Diagnosis
- Key V - Voltmeter
- Key G - Pulse sensor
- Key C - Continuity sensor
- Key G - Pulse generator

WIRING HARNESS SUPPLIED WITH THE XR25

- Main harness: diagnostic plug
- Extension harness for road tests
- Extension harness for voltmeter/ continuity sensor
- Harness for checking/adjusting the load potentiometer on automatic transmission
- 2-way harness

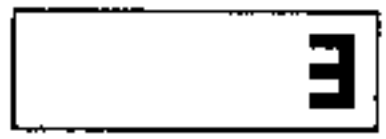
CONNECTION

Connect the diagnostic plug to the vehicle.
Switch on the ignition* (but do not start the engine).
Enter D 03 on the keyboard.



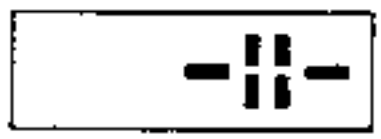
DISPLAYS

from 0 to 999



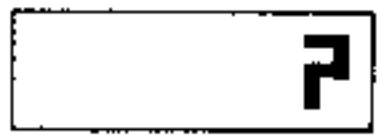
GOOD

NO DIAGNOSTIC SCREEN



NO DATA

NO DATA



ERROR OR WAIT FOR ORDER

Self-test of the displays

Each time the XR25 test box is switched on all the bar graphs and figures on the display should illuminate in succession.

* Diagnostic plug — With power supply for the XR25 before the ignition switch.
D 03 may be entered whether or not the vehicle's ignition is switched on.

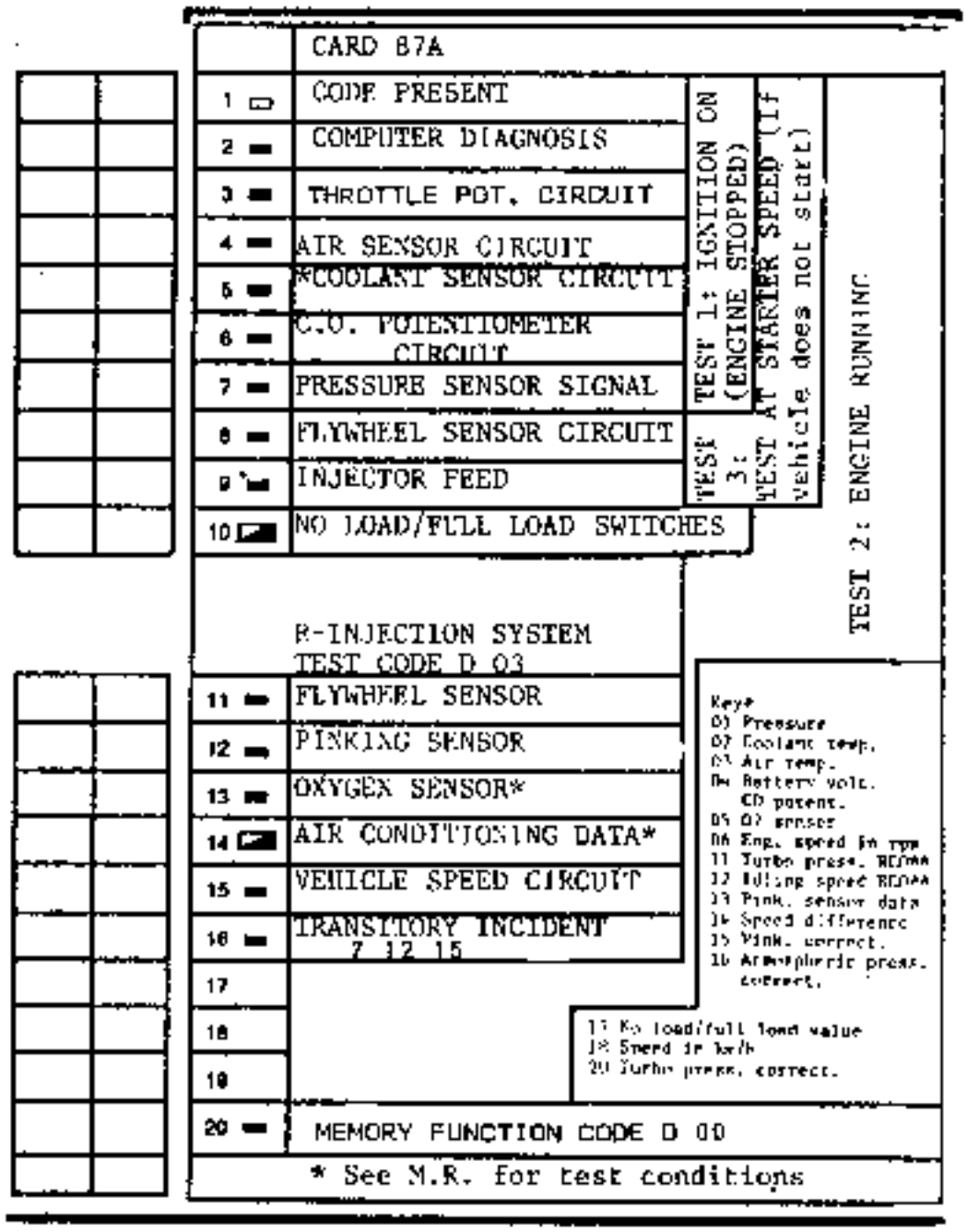
Diagnostic plug — With power supply for the XR25 after the ignition switch (If the ignition is switched off all the warning lights on the XR25 will be extinguished)
Switch on the ignition BEFORE entering D 03.
Every time the ignition is switched off, D 03 will have to be entered again when the ignition is switched back on again.

INTERPRETING THE BAR GRAPHS

The results shown by the bar graphs are of the ALL OR NOTHING type.

- Cut - short circuit
- Switch open-closed
- Signal present - absent
- Setting good - incorrect

Not all the bar graphs are necessarily used and depend
- on the type of equipment(page 32)
- on the type of computer (page 34 and 35)



** RCO = cyclic opening ratio

BAR GRAPHS	INTERPRETATION
EXTINGUISHED	No incident (or component not tested)
ILLUMINATED	Incident on harness or sensor tested
FLASHING	Transitory incident stored in computer (but good at time of check)
Special case	This sign on card 87A reminds you that to perform the test, this component must be de-activated: the bar graph will change when this has been done.
LEFTHAND SIDE ILLUMINATED	Lefthand column generally indicates: circuit cut/strong signal
RIGHTHAND SIDE ILLUMINATED	Righthand column generally indicates: short circuit/ weak signal

IDENTIFYING THE COMPUTERS
WHY THEY HAVE TO BE IDENTIFIED:
- To check whether the computer tested complies with the specifications of the computer which should be fitted to the vehicle: page 38.
- To know which are the significant bar graphs: page 36; and how to interpret them: pages 34 and 35.
- To remember which are the tests which can be performed using the # key: page 32.

- To remember which are the tests which can be performed using the # key: page 32.
- To know whether it is possible for the computer to memorise transitory incidents: pages 34 and 35.

Identification number given on XR25 central display

TESTS PERFORMED (depending on the number given on the XR25)	Key #	List of identification numbers									Units of measurement
		1 2	3 4	5 6	7 8 20 23 24 26 100 101 104	102 105	110 120	25		30 31 32 33 38 210 211 213 215	
Pressure sensor	01	X	X	X	X	X	X	X		X	Millibars
Coolant temperature	02	X	X	X	X	X	X	X		X	Degrees
Air temperature	03	X	X	X	X	X	X	X		X	Degrees
Feed voltage	04	X	X	X	X	X	X	X		X	Volts
CO potentiometer	05	X	X	X	X		X	X			Ohms
Oxygen sensor	05					X	X			X	Millivolts
Engine speed	06	X	X	X	X	X	X	X		X	rpm
Turbo pressure RCO	11							X			Millisecs
Idling regulating valve RCO	12		X		X	X	X	X		X	Millisecs
Pinking sensor data	13				X	X	X	X		X	None
Engine speed difference	14						X	X		X	Rpm
Pinking correction	15						X	X		X	None
Atmospheric pressure correction	16						X	X			Millibars
No load/full load potent. value	17						X	X			None
Vehicle speed	18						X	X			Km/h
Turbo pressure correction	20							X			Millisecs

MEANING OF THE BAR GRAPHS (depending on the number given on the XR25)

See page 34
These computers can store transitory incidents in their memory until the battery is disconnected.

See page 35
These computers do not store transitory incidents.

SIMPLE METHOD OF IDENTIFICATION

This can be useful as the list of identification numbers is up-dated (page 32).

1 – SWITCH ON THE IGNITION (but do not start the engine)

2 – Enter D03

3 – Disconnect the coolant temperature sensor for a few seconds (then reconnect it).

– WATCH bar graph No. 5 (lefthand side).

If it FLASHES*

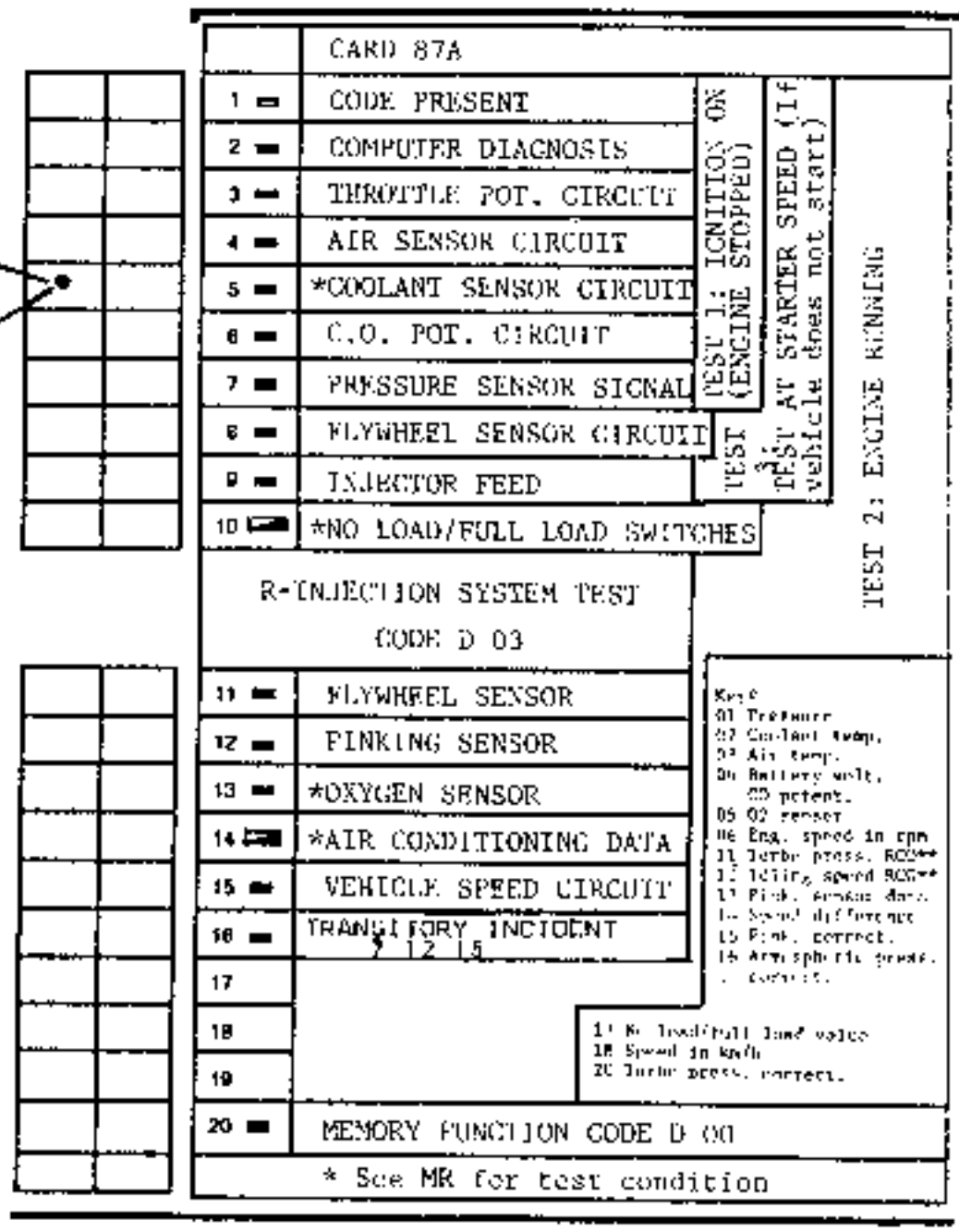
This computer stores transitory incidents

See page 34.

If it STAYS EXTINGUISHED

This computer does not store transitory incidents.

See page 35.

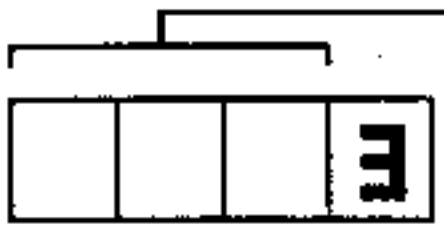


** RCO = cyclic opening ratio

*ERASURE of the internal memory of these computers:

Disconnect the vehicle's battery for approximately 5 seconds. If one or more of the bar graphs flash, when the battery is reconnected, disconnect the battery for approximately 15 minutes.

COMPUTERS WHICH STORE TRANSITORY INCIDENTS



XR25 centre display

List of identification numbers

1 2	3 4	5 6	7 8 20 23 24 26 100 101 104	102 105	110 120	25	

Notes concerning certain tests

Must always be illuminated if engine stopped. If it is EXTINGUISHED when engine running: computer not detecting any incidents. To use # key (if light extinguished), disconnect the coolant or CO potentiometer sensor.

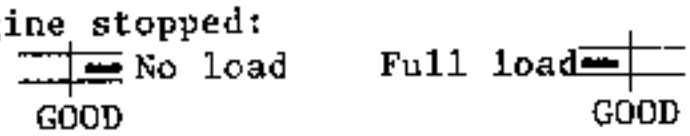
This test is only possible if the vehicle has a throttle butterfly potentiometer.

Computer 25/110/120: indicates that flywheel sensor connection is inverted (test with engine running).

Should go out when starter activated.

Incorrect if it illuminates when starter activated (this test does not work if the battery voltage is less than 11.5 volts).

Engine stopped:



On earlier computers: test only possible when engine running.

Perform road test and check using key #13: value should vary.

Road test with engine hot and using key #05: Value varies constantly.

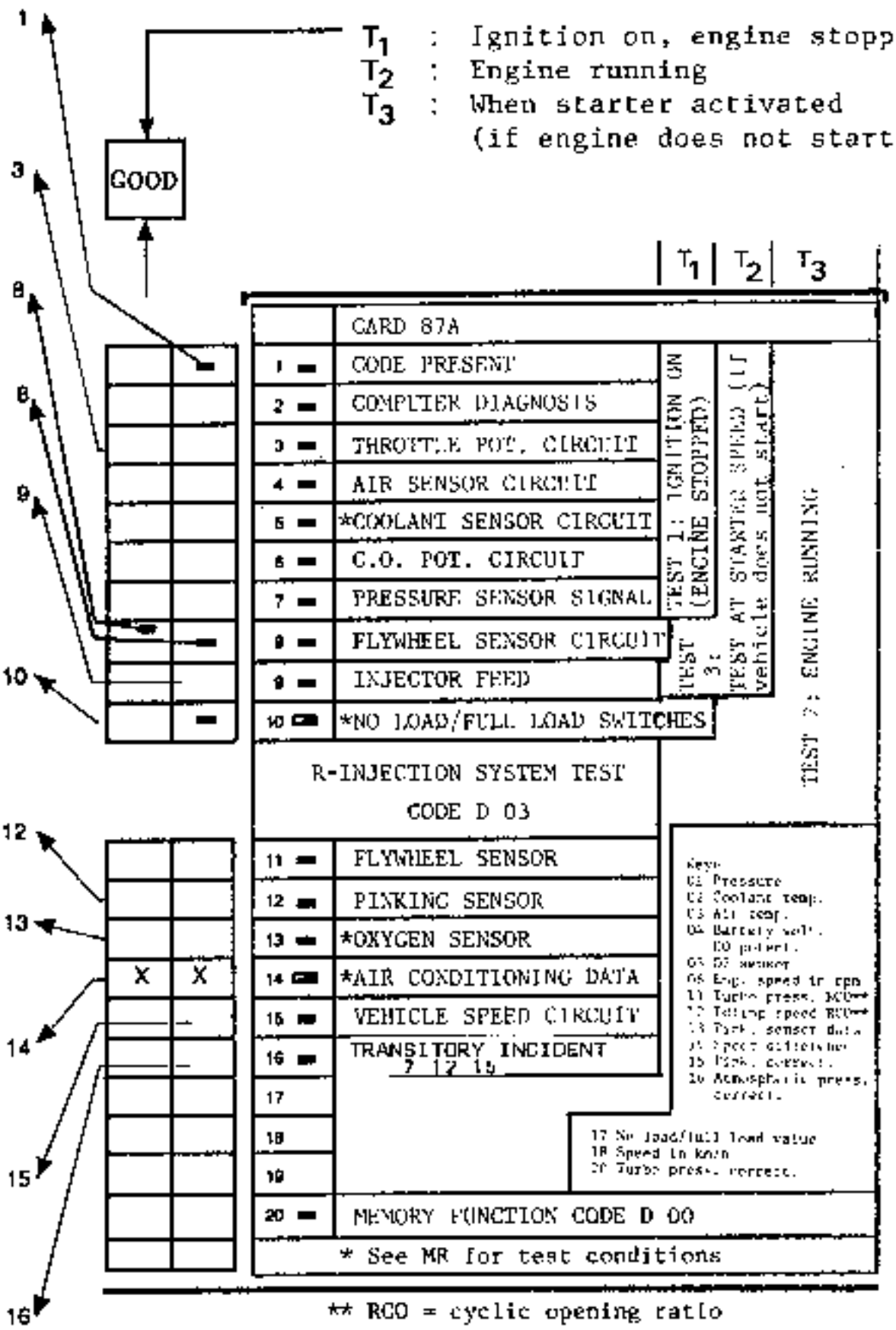
(EXTINGUISHED if no air conditioning). Activate the air conditioning controls: the bar graphs should alter.

EXTINGUISHED if computer does not have this data. Incorrect if it illuminates on a road test.

Future computer: indicates a transitory incident either on the pressure sensor, pinking sensor or vehicle speed sensor (lines 7-12-15)

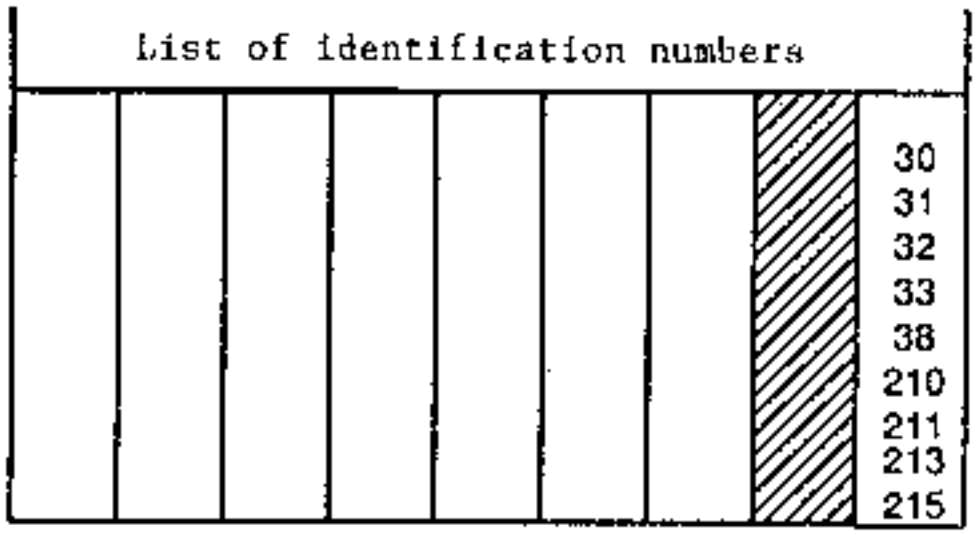
ORDER OF TESTS

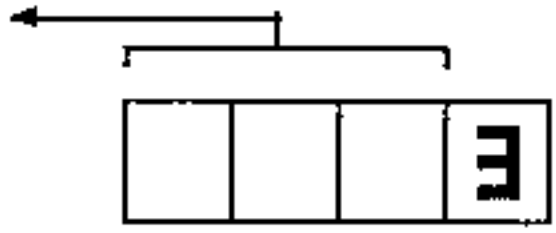
T_1 : Ignition on, engine stopped
T_2 : Engine running
T_3 : When starter activated (if engine does not start)



** RCO = cyclic opening ratio

COMPUTERS WHICH DO NOT STORE TRANSITORY INCIDENTS





XR25 centre display

T_1 : Ignition on, engine stopped
T_1, T_2, T_3 : Engine running
T_2 : When starter activated (if engine does not start)

Test not performed by these computers

GOOD

4 5 defective air circuit

4 5 defective air and coolant circuit

4 5 or 4 5

disconnect air temperature sensor if:

4 5 coolant circuit incorrect

4 5 coolant circuit good

should extinguish when starter activated

Engine stopped:
No load — GOOD
Full load — GOOD

Perform a road test and check by pressing key #13: value should vary

Road test with engine hot and by pressing key #13: value varies constantly.

(EXTINGUISHED if no air conditioning). Move the air conditioning controls and the bar graphs should alter.

		T_1	T_2	T_3
	CARD 87A			
1	CODE PRESENT	TEST 1: IGNITION ON (ENGINE STOPPED)	TEST AT STARTER SPEED (If vehicle does not start)	TEST 2: ENGINE RUNNING
2	COMPUTER DIAGNOSIS			
3	THROTTLE POT. CIRCUIT			
4	AIR SENSOR CIRCUIT			
5	*COOLANT SENSOR CIRCUIT			
6	C.O. POT. CIRCUIT			
7	PRESSURE SENSOR SIGNAL			
8	FLYWHEEL SENSOR CIRCUIT			
9	INJECTOR FEED			
10	*NO LOAD/FULL LOAD SWITCHES			
	R-INJECTION SYSTEM TEST CODE D 03			
11	FLYWHEEL SENSOR			
12	PINKING SENSOR			
13	*OXYGEN SENSOR			
14	*AIR CONDITIONING DATA			
15	VEHICLE SPEED CIRCUIT			
16	TRANSITORY INCIDENT 7 12 15			
17				
18				
19				
20	MEMORY FUNCTION CODE D 00			

Key#
01 Pressure
02 Coolant temp.
03 Air temp.
04 Battery volt. 02 potent.
05 02 sensor
06 Eng. speed in rpm
11 Turbo press. RCO**
13 Idling speed RCO**
17 Pinking sensor data
18 Speed difference
19 Pink. correct.
20 Atmospheric press. correct.

17) No load/full load value
18 Speed in km/h
20 Turbo press. correct.

* See MR for test conditions.

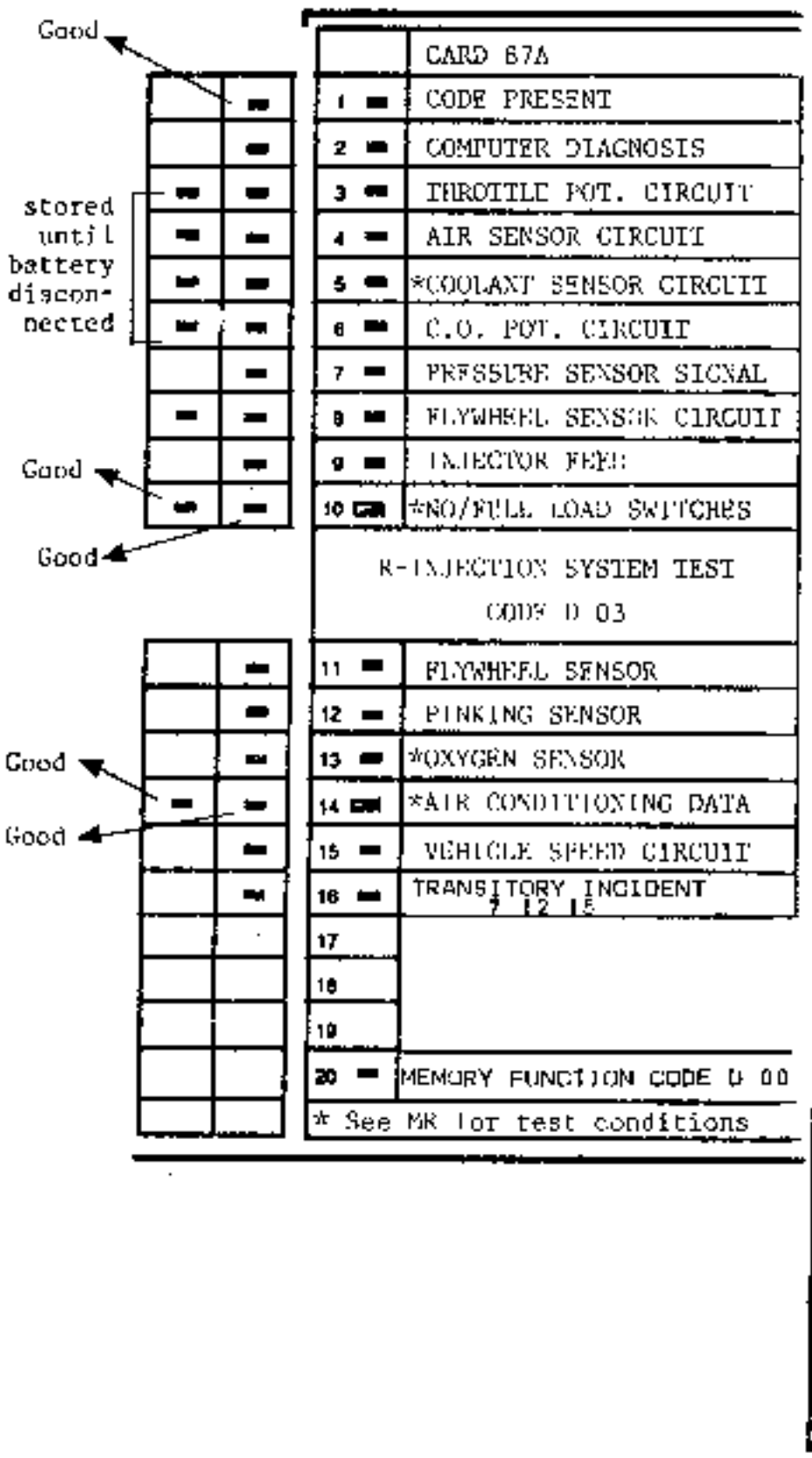
** RCO = cyclic opening ratio

EXAMPLES OF BAR GRAPH DISPLAYS

Maximum number of bar graphs which can illuminate according to the computer number

List of identification numbers

1 2	3 4	5 6	7 8 20 23 24 26 100 101 104	102 105	110 120	25	30 31 32 33 38 210 211 213 215



If the vehicle does not have the equipment indicated on one or more lines of the bar graph, the corresponding line will not illuminate.

USING THE XR25 MEMORY FUNCTION

This function enables the results (bar graphs and access by the # key) to be "held" at the moment desired by the user.

FOR EXAMPLE: In a road test, if the engine is behaving abnormally, the electrical data can be stored at that moment (see list on page 32).

The results can then be studied later when the vehicle is stationary.

NOTE: If the XR25 is supplied with power after the ignition switch: after data has been stored in the memory, do not switch off the ignition otherwise the stored data will be lost.

1st case - Engine running: if 1 is ILLUMINATED

Enter 0 ⟶ the instant the incident occurs (storage)

	CARD 87A
1	CODE PRESENT
2	COMPUTER DIAGNOSIS
3	THROTTLE POT. CIRCUIT
4	AIR SENSOR CIRCUIT
5	*COOLANT SENSOR CIRCUIT
6	C.O. POT. CIRCUIT
7	PRESSURE SENSOR SIGNAL
8	FLYWHEEL SENSOR CIRCUIT
9	INJECTOR FEED
10	*NO/FULL LOAD SWITCHES

*See MR for test condition

2nd case - Engine running: if 1 is EXTINGUISHED

Enter D 00 ⟶ then set up the conditions under which the incident occurs

	CARD 87A
1	CODE PRESENT
2	COMPUTER DIAGNOSIS
3	THROTTLE POT. CIRCUIT
4	AIR SENSOR CIRCUIT
5	*COOLANT SENSOR CIRCUIT
6	C.O. POT. CIRCUIT
7	PRESSURE SENSOR SIGNAL
8	FLYWHEEL SENSOR CIRCUIT
9	INJECTOR FEED
10	*NO/FULL LOAD SWITCHES

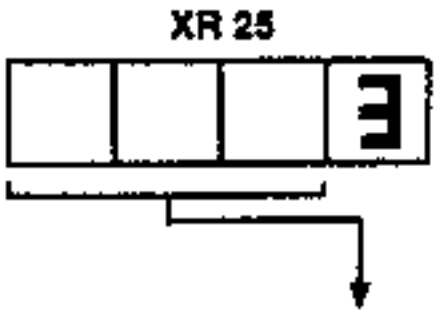
*See MR for test condition

The second case is only used on computers which do not transmit fault-finding data (bar graph 1 extinguished) when the engine is running.

Disconnecting the coolant sensor (or CO potentiometer sensor) will return the computer to the first case.

BAR GRAPH NUMBER 20 ILLUMINATES WHEN STORAGE IS COMPLETED

VEHICLE COMPUTER IDENTIFICATION



1	J7T 706	B 29 E05	
2	707	01	A
3	706	05	B
4	707	01	AB
5	714	05	C
6	715	01	AC
7	730	05	BF
8	731	01	ABF
20	J7R 750	L/K 48305	BF
23	751	L/K 48301	ABF
24	J7R 760	Espace J116	BF
24	J7R 722	B 29 H05	BF
25	J7R 752	L 48505	BFG
30	J7T 732	B 29 B05	BDF
30	J7T 770	Espace J117	BDF
31	733	B 29 B05	ABDF
32	754	L/K 48K05	BDF
33	755	L/K 48K01	ABDF
38	770	ESPACE	BDEF
100	Z7U 702	B 29 505	BF
101	732	D501 GTA	BF
102	Z7U 734	D501 GTA	BDF
104	732	D501 GTA	BF
105	734	D502 GTA	BDEF
110	Z7W 700	B 29 305	BF
120	Z7W 706	B 29 F05	BDF
210	F3N 702	C 40 905	BDF
210*	708	L 42E05	BDF
210*	708	B/C 37E05	BDF
210	722	L/K 48E05	BDF
211*	722	B/C 409	BDEF
211*	722	L/K 48E05	BDEF

A Automatic Transmission (TA)

B Idling Speed Regulation (RR)

C EGR Control

D Mixture Regulation

E Canister Control

F Pinking Sensor

G Boost Pressure Regulator

* The computers on these vehicles have been further developed (codes 211, 213 and 215)

OTHER FUNCTIONS

PULSE SENSOR

- This enables the duration of a pulse to be measured.

- Checks the ignition power module control signal sent by the computer (if there is no high tension).

- Enables the presence of an incorrect contact to be detected on a feed line or return to earth.

Connections: - Connect terminal V of the XR25 to the test point.

- Press key G.

Set up the conditions under which the incident occurs (move the wiring) and read the centre display (from 1 to 1999 milliseconds).

FREQUENCY GENERATOR

This enables the ignition power module to be checked if there is no high tension.

Connections: - Connect terminal G of the XR25 to input B of the ignition power module 2-way base.

- Press keys G and O (frequency generated: 2 pulses per second).

- Confirm that sparks are present on the high tension secondary winding.

VOLTMETER

This enables voltage to be measured.

- Press key V on the XR25.

- Use terminal V.

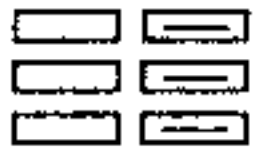
CONTINUITY SENSOR

This enables the continuity of wiring or of a coil to be checked.

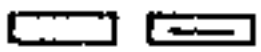
If the resistance of the component measured is less than 1000 ohms the buzzer will sound, connect the component to be tested between the Ω terminals of the XR25.

- Press key C.

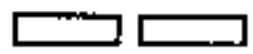
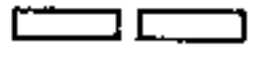
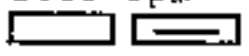
CHECKING FOR CONFORMITY

Function to be tested	Conditions	Selection on test box	Bar Graph Line No	Bar Graph display	Digital display remarks
Fitting of idling speed regulating valve	Engine stopped visual check				Flow towards manifold in direction shown by arrow on valve
Position of injection diagnosis	Engine stopped Ignition on	D03	L1 L8 L10	 L1=correct code L8=TDC code L10=no load position	XXXX xxx 3 (see vehicle specifications) 3 = injection diagnosis
Verification of no load/full load switch or Verification of throttle butterfly potentiometer	Engine stopped: Ignition on - no load - slight load - full load	#17	L10 L10 L10		XXXX See setting values in vehicle specifications
Verification of absolute pressure sensor	Engine stopped Ignition on	#01			XXXX depending on local barometric pressure
Verification of coolant temp. sensor	Engine cold - stopped - ignition on	#02			XXX Ambient temp. ± 5°C
Verification of air temperature sensor	Engine cold - stopped - ignition on	#03			XXX Ambient temp. ± 5°C
Battery voltage	Engine hot - idling	#04			Value read off XXX 13,2 - 14,4

CHECKING FOR CONFORMITY

Function to be tested	Conditions	Selection on test box	Bar Graph Line No	Bar Graph display	Digital display remarks
(L485) Verification of boost pressure guide valve (cyclic opening ratio - RCO)	- foot off - full throttle	#11		Valve knocks	XXX 0,65 83,33
Verification of coolant temperature sensor	Engine hot - idling - after cooling fan has cut in If display on test box returns to 0	#02 D03 #02			XXX 80°C - 110°C
Verification of idling regulation speed	Engine hot - idling No accessories switched on: For example: - cooling fan - headlights - wheels locked	#06 #12			Measure the speed XXX See engine specifications Measure cyclic opening ratio (R.C.O.) XXX 3 - 4 maximum
Verification of idling speed with air conditioning	Engine hot - idling - air conditioning control on "On" - compressor engaged	#06 #06	L14 L14	 	Measure speed XXX 900 to 1000 rpm Measure speed XXX 900 - 1000 rpm
Pinking sensor check Noise measurement	Engine hot unladen 3000 ± 500	#13	L12		Measure the min. and max. values over approx. 10 seconds XXX The value should not be zero and should vary

CHECKING FOR CONFORMITY

Function to be tested	Conditions	Selection on test box	Bar Graph Line No	Bar Graph display	Digital display remarks
Oxygen sensor check Note: Enter #05: value should vary and not be zero	Engine hot idling - wait for at least 10 min. - no accessories switched on	#02 #06	L13 L13 L13 L13		XX 80°C - 110°C XXX 700 to 800 rpm - No bar graph illuminated: oxygen sensor good - Lefthand bar graph illuminated (sensor operates on F and J type engines) - Righthand bar graph illuminated oxygen sensor defect - both bar graphs illuminated: oxygen sensor defect
Vehicle speed (only on B293, B29F and L485)	Vehicle moving	#18	L15		XXX Value read off should be vehicle speed
Boost pressure check (only for L485)	Road test (in 5th gear, full throttle between 2500 and 3500 rpm)	#01 #06 #11 #15 #16 #17 #18 #20	L20	Store in XR25 in region of 3000 rpm  (D 03 D00)	XXXX Read off the values stored: 1900 ± 50 mbars 3000 ± 500 rpm 0.65 to 83.3 msec 0 to 6 max 950 to 1025 mbars min 225 speed km/h 0 to 25.83 msec

NOTE: Relative boost pressure

For example: absolute pressure #01 1900 mbar
initialised atm.pressure #16 1008 mbar
boost pressure 895 mbar

The conformity is checked using the XR25 test box and cassette number 6 or the following one, with the corresponding magnetic card placed opposite the bar graphs. With the engine stopped, connect the test box to the vehicle's diagnostic plug.

NOTE:
Using this fault finding plan pre-supposes that the engine is in good condition and that the electrical system has been checked, and if necessary rectified.

1. Engine not starting or starting badly	2. Engine starts then stops	3. Uneven idling	4. Poor acceleration	5. Misfiring at all speeds	6. High fuel consumption	7. Low final power	8. CO % too high at idling	9. CO % too low at idling	10. Enging pinking	11. Idling speed too high	12. Idling speed too low(engine stalls)	CAUSE	REMEDY - CHECK
X	X											Relay assembly defective (3 sec. timer)	Check supply voltage
X	X				X							Electric fuel pump or priming pump not running	Check the fuel pressure. Is current arriving at the relay assembly and the fuel pump or primary pump. If yes, change pump.
		X	X			X				X		Idling switch or load potentiometer wrong setting or defect	Check the switch or load potentiometer setting, change it if necessary.
X		X	X					X		X		Air intake system leaking	Check the inlet manifold, all units on it and all hoses for leaks.
X		X			X	X		X				Injectors defective	Check the individual injectors by palpating them and shutting off their current supply (fall in speed).
X	X	X	X			X						Fuel pressure too low or non-existent Filter or pre-filter clogged	Check the pressure, the filter, the fuel lines, pressure regulator and pump. Replace clogged filter.
					X		X					Fuel pressure too high	Is the pipe between the pressure regulator and the inlet manifold connected? Fuel return pipe blocked or kinked. Pressure regulator defective.
X										X	X	Regulating valve not operating	Check operation of valve, if it is defective, change it.
X										X	X	Defective supply to regulating valve	Check electrical circuit and the computer spec. If defective or not to spec., change it.
						X						By-pass valve defective (Z7U engine)	Check for leaks, opening calibration. Change if defective.
		X		X								Flywheel sensor target defective	Check that notches and apertures on flywheel are evenly spaced and to specification.
X	X											Pressure sensor defective	Check hose connecting inlet manifold. Electrical check of sensor (+5 volts).

1	2	3	4	5	6	7	8	9	10	11	12	CAUSE	REMEDY - CHECK
X												Speed sensor defective	Check its resistance and air gap.
X	X			X								Ignition power module defective	Check module feed voltage and coil resistance.
	X					X	X	X				Air sensor defective	Check its resistance and circuit.
X					X		X	X				Coolant temperature sensor on engine defective	Measure its resistance and circuit.
		X	X			X	X					CO adjusting potentiometer or circuit defective	Check circuit and replace CO adjusting potentiometer if defective.
		X	X			X	X					Oxygen sensor inoperative	Check circuit and replace oxygen sensor if defective.
		X										Throttle butterfly does not close	Free butterfly, adjust accelerator linkage then adjust butterfly.
						X						Throttle butterfly does not open fully	Adjust throttle control.
				X								Poor central earthing, connector contacts defective	Check connections.
X	X	X	X	X	X	X	X	X	X	X	X	Wiring harness and connections cut	Repair cut.
X	X	X	X	X	X	X				X	X	Computer defective	Perform complete tests of injection electrical system before changing computer.
						X			X			Pinking sensor defective	Check signal #13 is emitted. If no engine signal, check continuity circuit. If sensor is defective change it.
						X			X			Fuel grade, TDC sensor	Check correction value # 15. If value very diff. from 0, check fuel grade, polarity of TDC sensor, cooling system, spark plugs, etc.
						X						Lack of boost pressure (L485)	Check reference value # 20. If max. value, check: solenoid valve operation and connection, wastegate static opening pressure.
					X				X			Boost pressure too high (L485)	Check reference value # 20. If min. value, check: solenoid valve operation and connection, wastegate static opening pressure.
X					X	X	X	X	X	X	X	Mixture richness not suited to engine temperature.	Check that coolant and air temperature sensors are to specification.

ESSENTIAL SPECIAL TOOLS
M.S. 787 Set of gauges Ohmmeter SOLEX angle measuring device

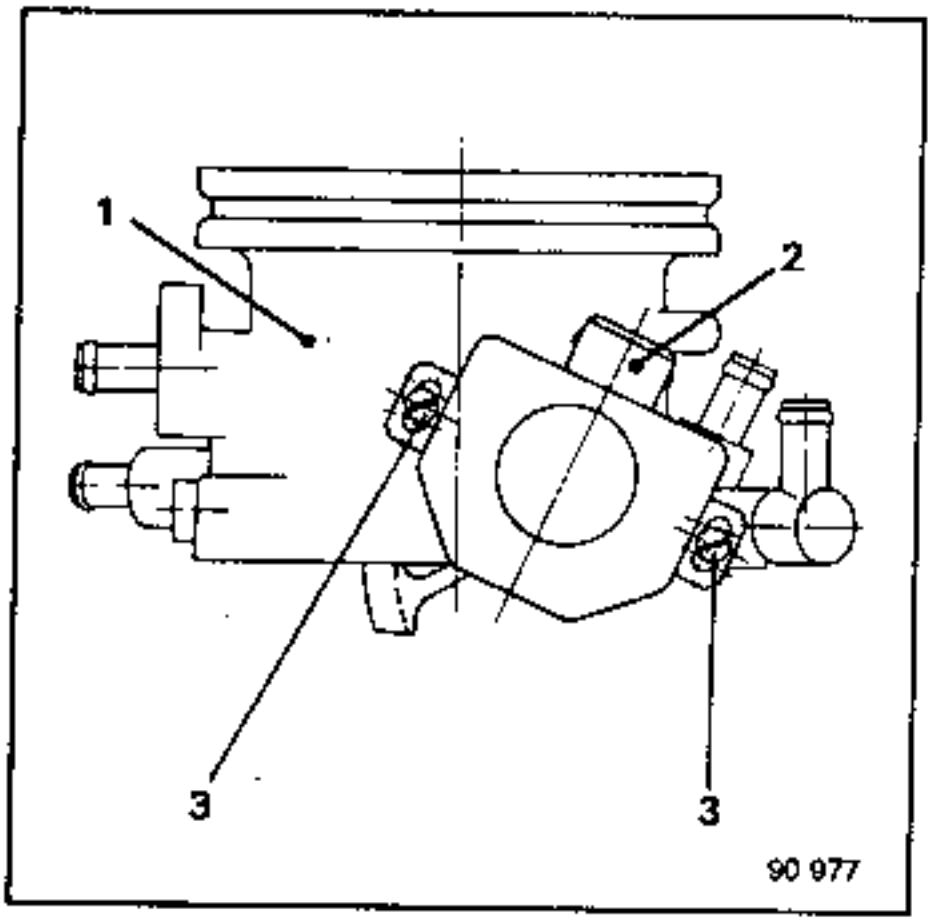
WEBER THROTTLE CASING
F3N engine

Checking and adjusting the no load/full load switch.

Using an ohmmeter, a set of gauges or an angle measuring device (if the casing is removed), check that the switch is positioned and operating correctly.

A Idling: foot off (throttle opening less than 1°);
B Part load: throttle opening greater than 1° (0.25 mm gauge on throttle stop);
C Full throttle (throttle opening greater than 70°).

Throttle opening	Resistance between terminals (Ω)	
	2 & 18	18 & 3
A	0	∞
B	∞	∞
C	∞	0



1 - Throttle casing
2 - No load/full load switch terminals
3 - Adjusting screw

WEBER THROTTLE CASING WITH COLD START DEVICE

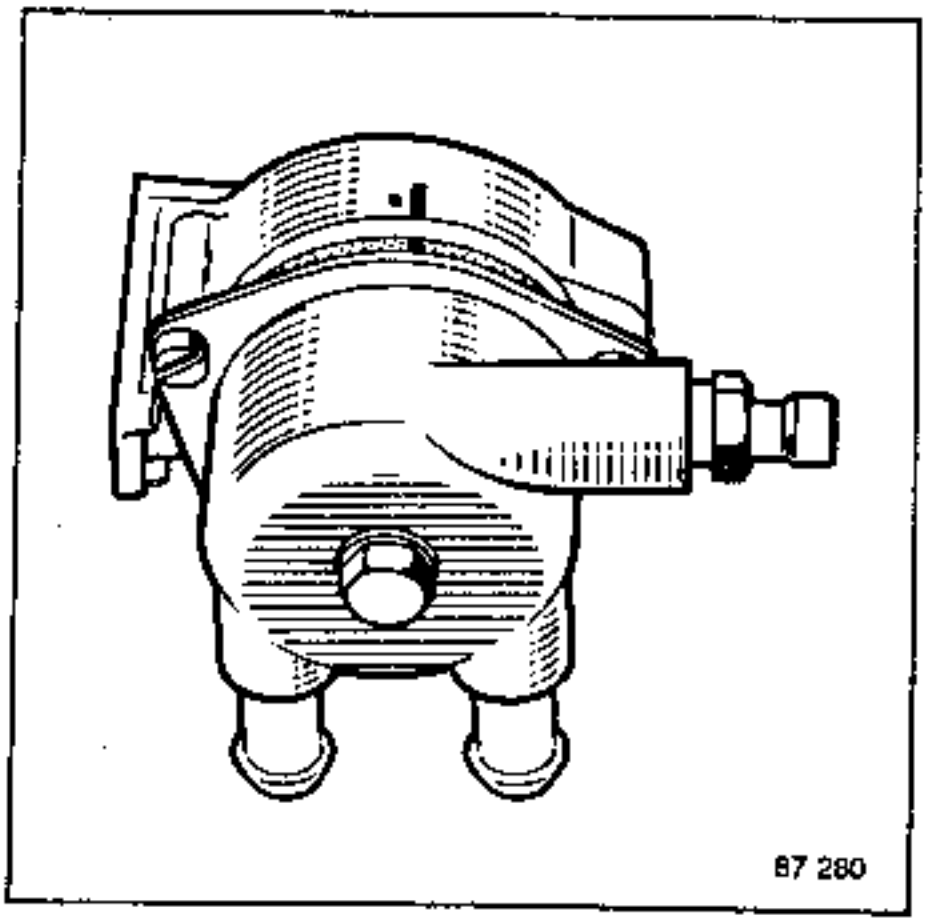
J7T engine

WEBER 34 CFRA 0/1	1st barrel	2nd barrel
Idling switch (opening direction)	2° ± 30'	
Full load switch (lower flap of throttle) (mm)		10 ± 1
Initial opening priming (mm)		2,05 ± 0,05
Initial opening at 20°C		15°30' + 30' - 0'

COLD START DEVICE

Setting the thermostatic unit

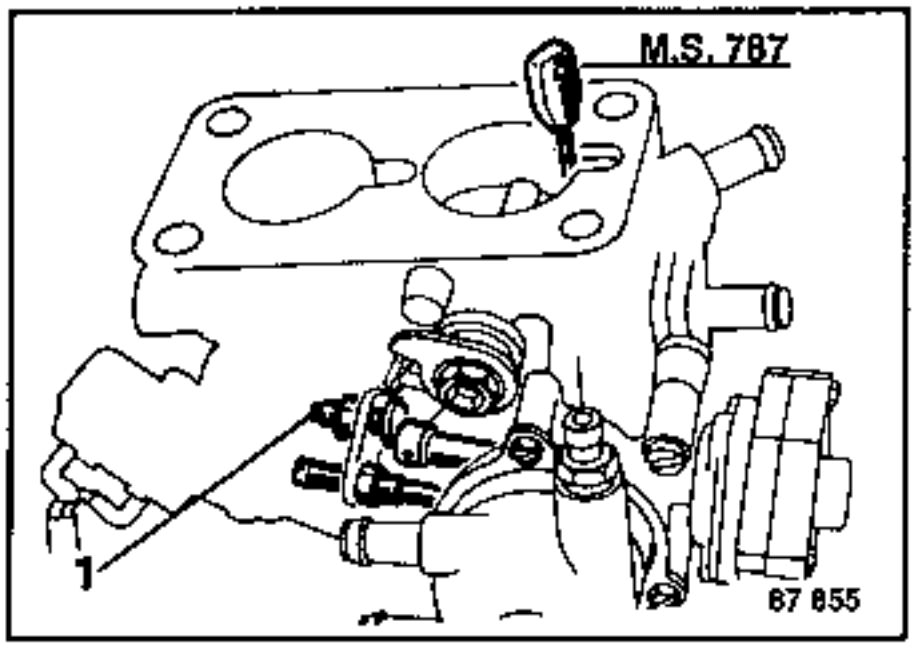
Align the marks.



Arming the initial opening

On the second barrel, place a gauge **M.S.787** on the upper flap of the butterfly.

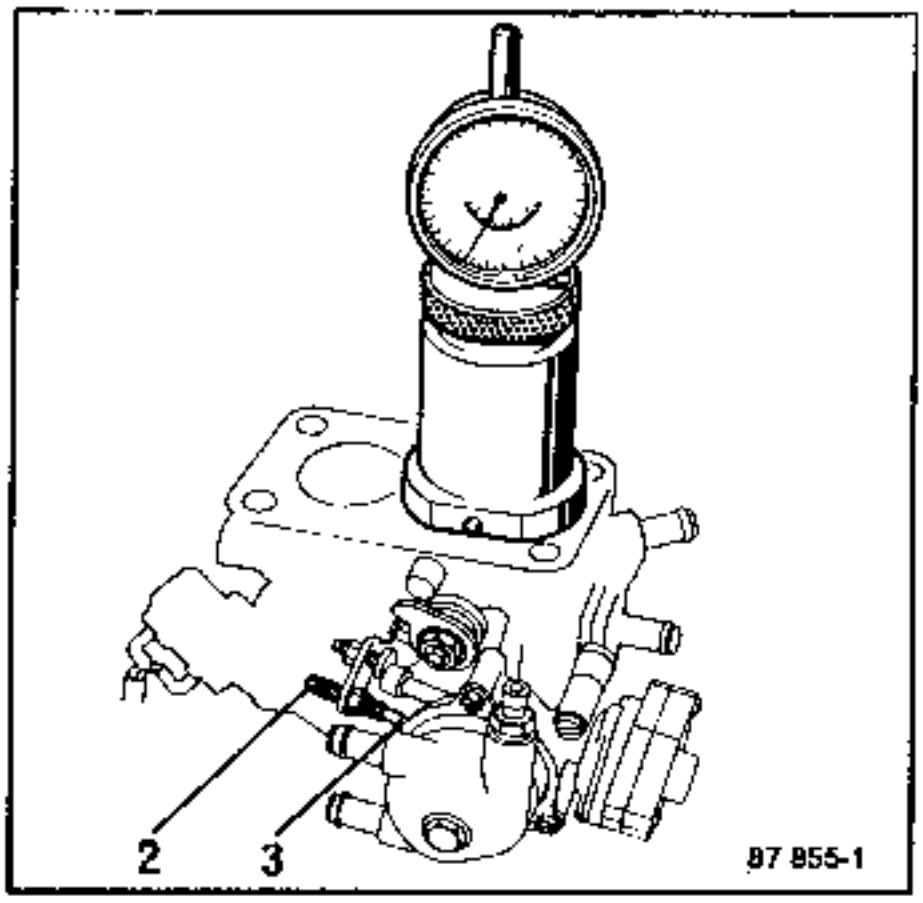
Move screw (1) to adjust.



Initial opening at 20°C

When the temperature is **20°C** or to improve the circulation of the coolant in the thermostatic capsule at **20°C**, measure the initial opening on the 2nd barrel by moving screw (2) so that it is contact with cam (3).

Move screw (2) to adjust.

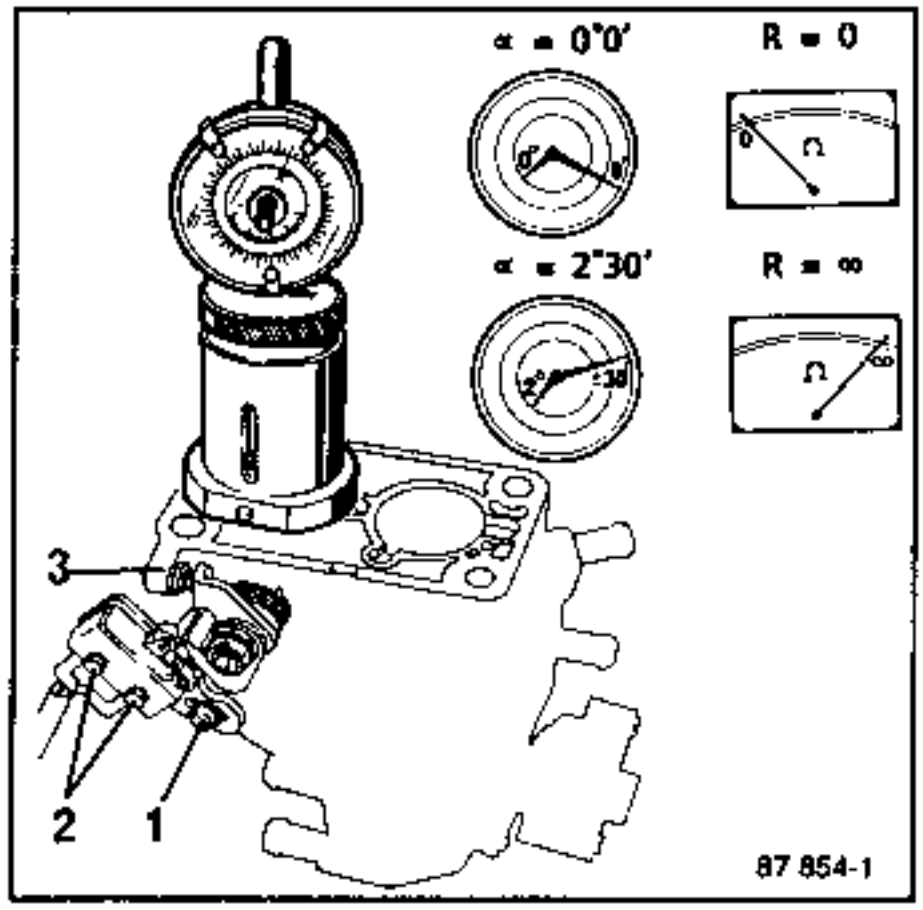


Setting the no load/full load switch

Connect an ohmmeter to the switch connector. Place the Solex measuring instrument on the 1st barrel.

Fit the angle measuring device to the instrument screen. Zero the angle measuring instrument.

- On idling stop R = 0 angle = 0°0'
- Open butterfly R = ∞ angle = 2° ±30'



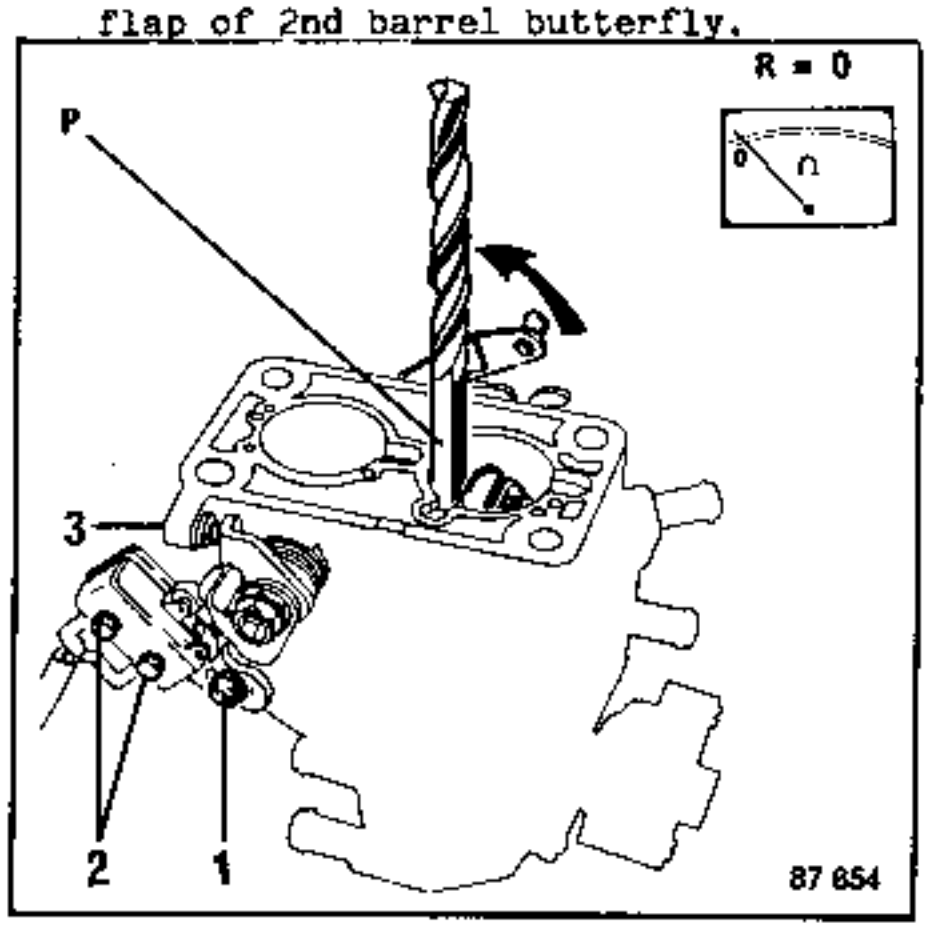
Adjusting

Loosen screw (1) and turn micrometer screw (3) to move the assembly along the gap.

NOTE: The switch can be set by moving the mounting screws (2).

The "full load" position is given as a checking value and depends on the shape of the cam.

- Full load position (in direction of opening)
  R = 0 gauge P = 10 1 mm on lower flap of 2nd barrel butterfly.



WEBER THROTTLE CASING with idling regulation

No load/full load switch adjustment

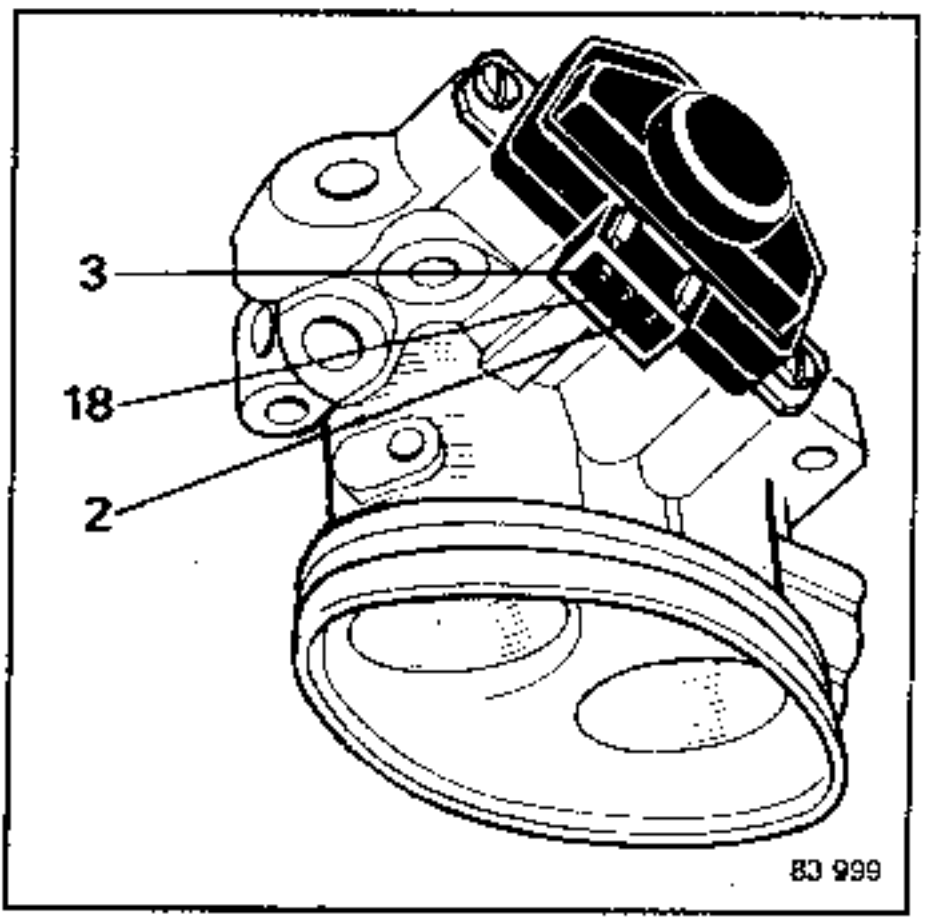
Using and ohmmeter, a set of gauges or an angle measuring device (if the casing is removed), check that the switch is in the correct position and operating correctly:

A Idling: foot off (throttle opening less than 1°)

B Part load: throttle opening greater than 1° (0.25 mm gauge on throttle stop)

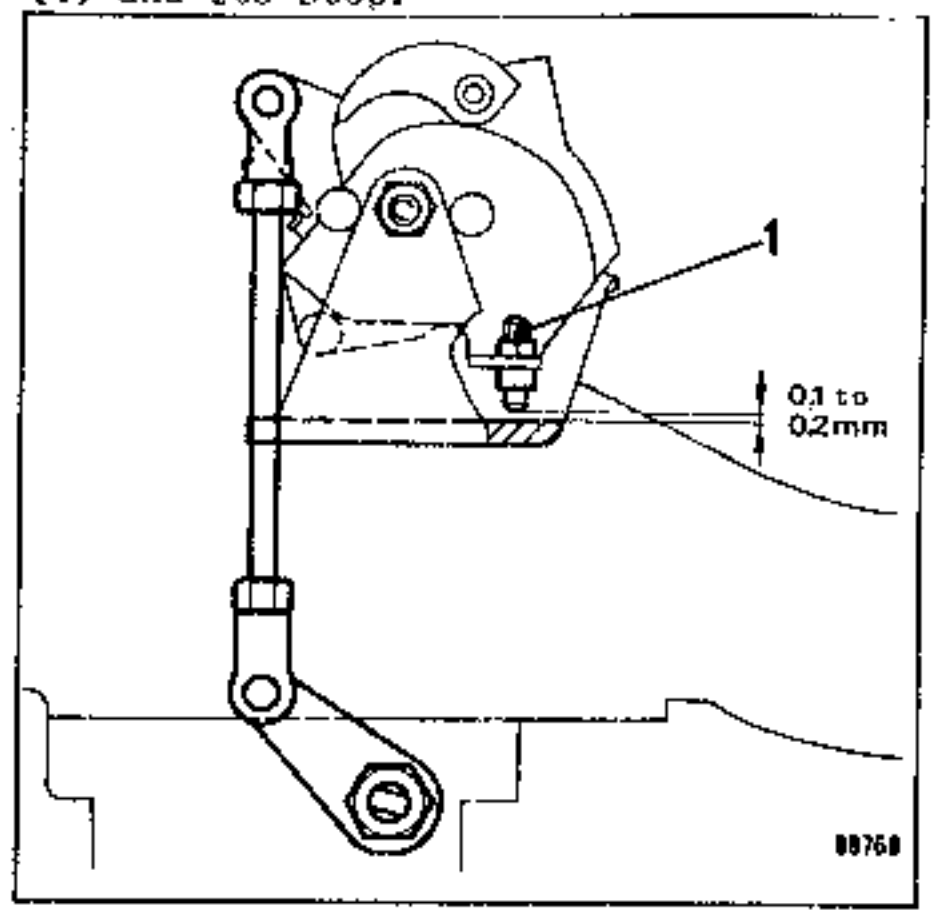
C Full throttle (throttle opening greater than 70°).

Throttle opening	Resistance between terminals (Ω)	
	2 & 18	18 & 3
A	0	∞
B	∞	∞
C	∞	0



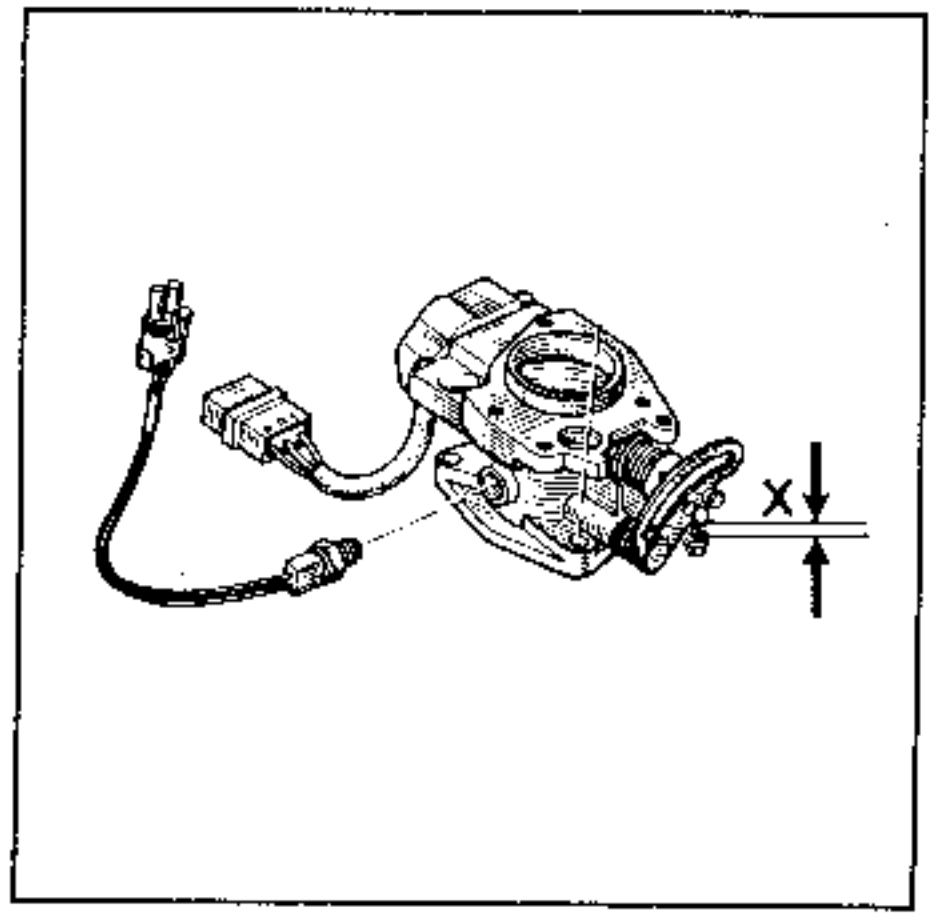
Adjusing the max. stop on the swivel lever (automatic transmission)

With the throttle casing fully open (accelerator cable slightly taut), adjust screw **(1)** so that there is a clearance of **0.1 to 0.2 mm** between screw **(1)** and its stop.



SOLEX THROTTLE CASING with stop on elongate sector

J7 ... - Z7U ... engines



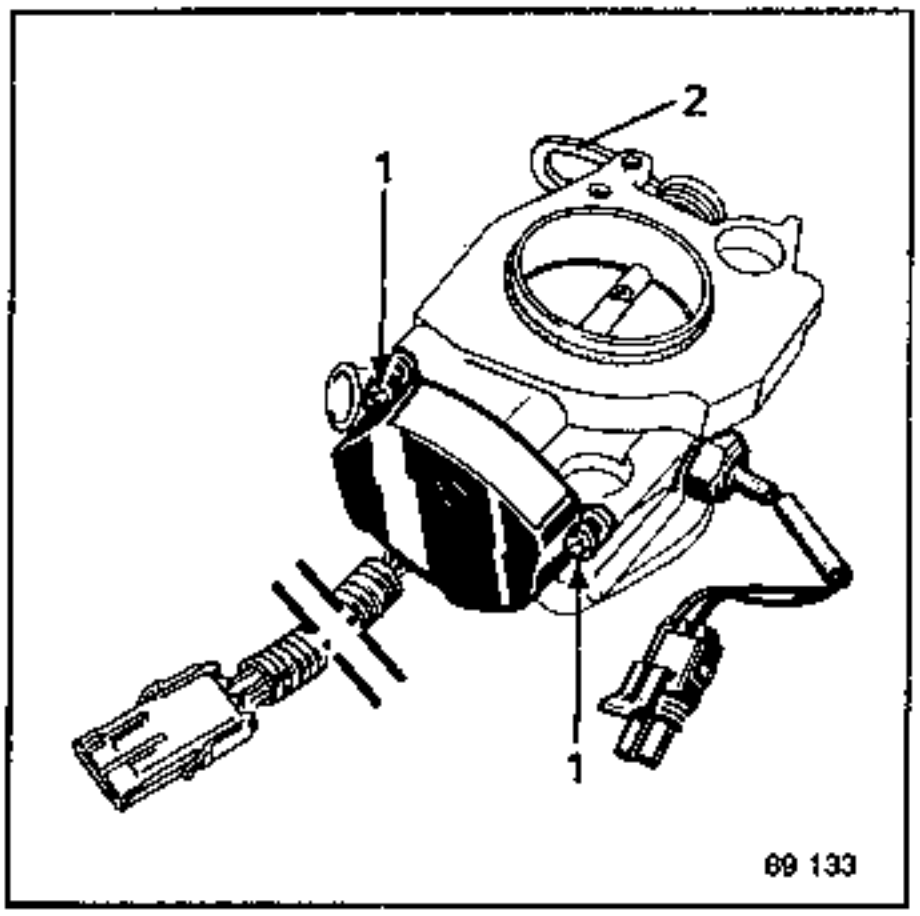
Adjusting the No load/full load switch with stop on control swivel lever (2)

Using an ohmmeter or a set of gauges, check that the switch is operating correctly:

A Idling: foot off (throttle opening less than (X) = 1 mm)

B Part load: throttle opening greater than X = 1.2 mm

C Full throttle: throttle opening greater than 70° (22 mm dia. gauge between throttle and barrel).



69 133

Throttle opening	Resistance between terminals (Ω)	
	2 18	18 3
A	0	∞
B	∞	∞
C	∞	0

NOTE: The switch is adjusted by moving it on the throttle casing after loosening screws (1).

SOLEX THROTTLE CASING
with idling stop on throttle spindle (1)

J7... - Z7U ... engines

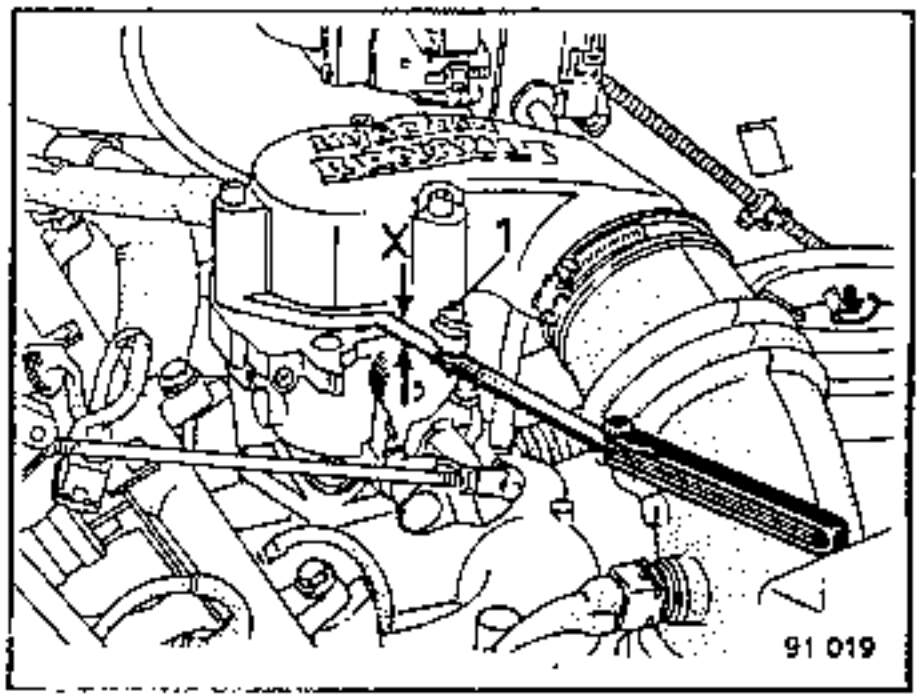
Adjusting the No load/full load switch

Using an ohmmeter or a set of gauges, check that the switch is operating correctly:

A Idling: foot off (throttle opening less than X = 0.2 mm)

B Part load: throttle opening greater than X = 0.3 mm

C Full throttle: throttle opening greater than 70° (22 mm dia. gauge between throttle and barrel).



91 019

Throttle opening	Resistance between terminals (Ω)	
	A B	B C
A	0	∞
B	∞	∞
C	∞	0

The switch can be checked and adjusted using the **XR25** with the ignition switched on:

A : idling bar graph **P.L.** illuminated
B : **P.L.**, **P.C.** bar graphs extinguised
C : **P.C.** bar graph illuminated.

NOTE: The adjustment is made by turning the screw on the throttle casing after loosening the screws.

SOLEX THROTTLE CASING
With load potentiometer

J7R 752, Z7W engines

ADJUSTING THE LOAD POTENTIOMETER

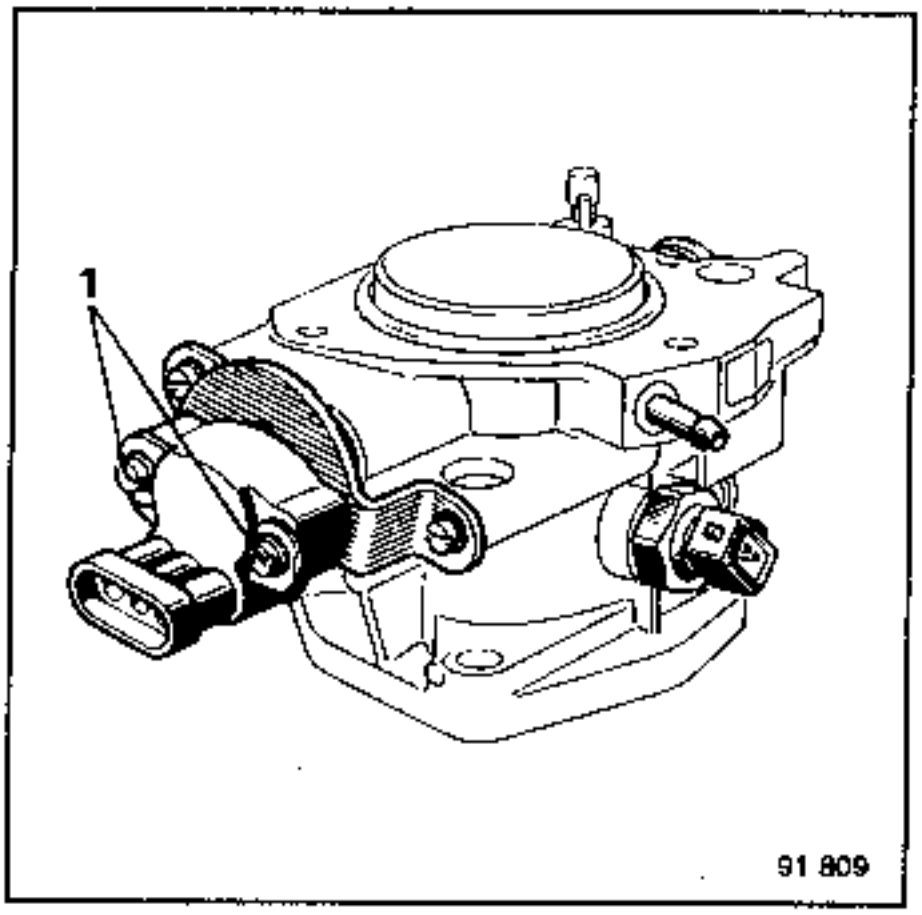
Use the XR25 test box with cassette no. 6 or the following one.

With the ignition on and engine stopped, enter D 03 #17 and read off the value on the centre display.

A Idling: the value should be
J7R... 10 ± 5
Z7W... $10 \pm \frac{0}{5}$

B Partial load: variable value between the idling and full throttle values

C Full throttle: the value should be:
J7R... 225
Z7W... 235 ± 15



The bar graphs on the XR25 can also be read off:

A : idling bar graph **P.L.** illuminated

B : bar graphs **P.L., P.C.** extinguished

C : bar graph **P.C.** illuminated.

NOTE: The adjustment is made by moving the screw on the throttle casing after loosening screws (1).

ADJUSTING THE AIR FLOW

Since model year 1987, the SOLEX throttle casings comprise an idling by-pass circuit.

Ajdusting the by-pass

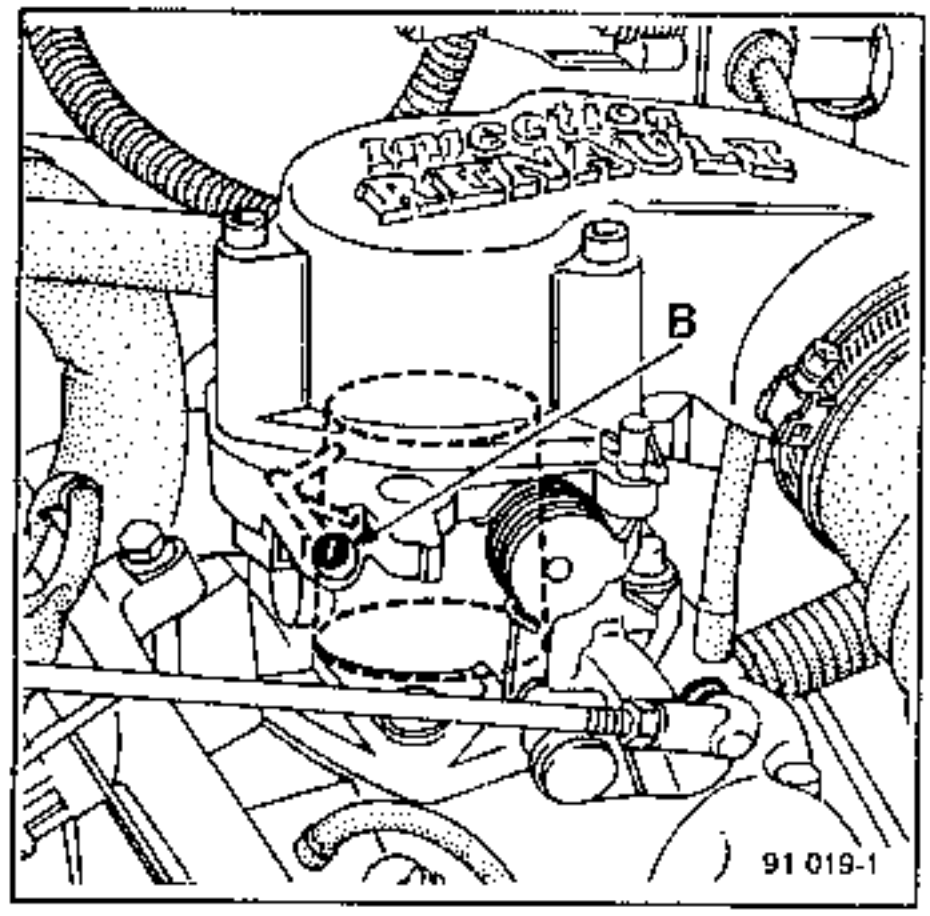
Connect the XR25 test box with cassette no. 6 or the following one (engine hot and idling and CO correctly adjusted).

Enter **D 03 # 12** and read off the value on the centre display.

Find the minimum value by unscrewing screw **(B)** until the idling speed increases.

Then tighten screw **(B)** until this value increases by **0.2 to 0.3 ms.**

For example: min. value: **2.9 ms**
adjust to **3.15 ± 0.05 ms.**



NOTE: On new vehicles screw **(B)** is completely tight.

Maintenance

On vehicles so equipped, adjust the by-pass, if necessary, whenever the engine is tuned.

REGULATING VALVE

Checking the operation of the shut-off valve

With the regulating valve removed, move the valve manually in both directions very quickly: the valve should open and close.

Checking its operation when activated (valve connector disconnected)

IMPORTANT: Never supply the connector with 12 volts at the computer end **(the computer will be destroyed immediately).**

Supply **12 volts** to terminal 4.

Earth the following for a short while:

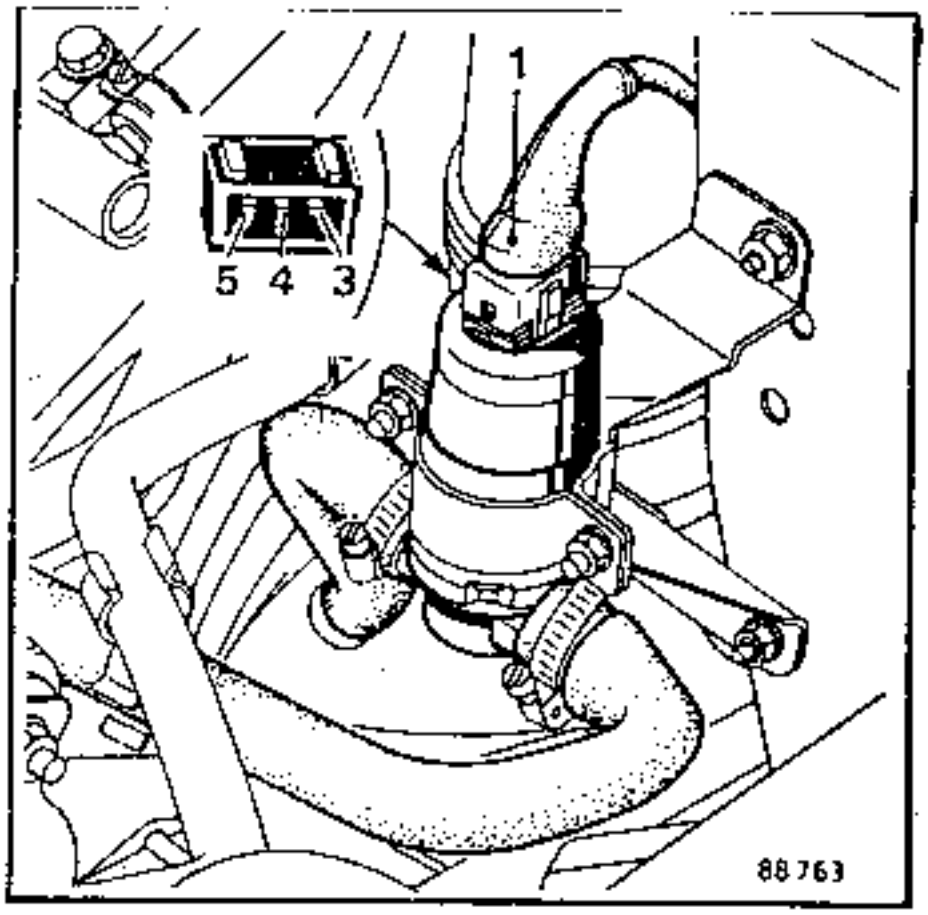
a) terminal 3:
the valve should close (if the engine is running its speed should drop clearly below normal idling speed)

b) terminal 5:
the valve should open (if the engine is running, its speed should increase to more than 2000 **rpm**).

Checking the feed with the engine running

Lift up rubber protector (1) and measure the voltage between the earth and the connector terminals.
Earth and terminal 4: **12 volts.**

Earth and terminal (3) or (5): depending on the apparatus, direct current between **0 and 12 volts** or alternating between **0 and 12 volts.**



Checking the sequential earth time (using the XR25 test box)

Use the **voltmeter/pulse sensor** output and code **G0.**

The total frequency time should be **10 ms.**

Example of reading on J7T engine:

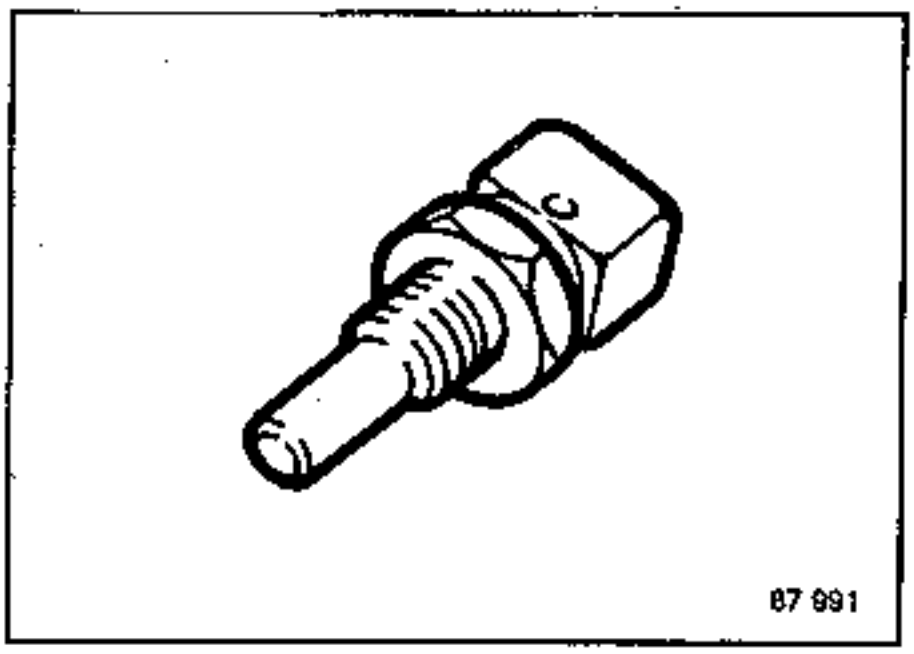
	Ignition on Engine stopped	Engine on idling
Terminal 5	1,8 ms	7 ms
Terminal 3	8,2 ms	3 ms
Total sequential time	10 ms	10 ms

NOTE: The sequential earth times may be measured directly on the XR25: enter **D03 12.**

ATTENTION: The display of values under these conditions does not mean that the computer is not incident-free.

Coolant temperature sensor

Measure the sensor resistance according to the temperature after allowing a period of at least 10 minutes for the sensor to stabilise, with the sensor removed.

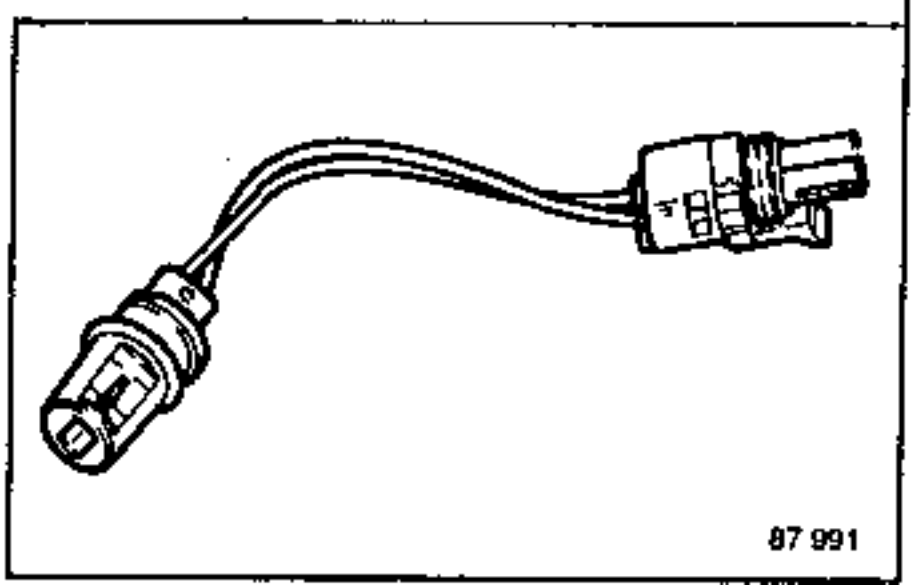


Temperature °C	20 ± 1	80 ± 1	90 ± 1
J7T 706, 707, 714, 715 (C.T.N. Bosch) engines			
Resistance Ω	2 200 to 2 800	280 to 370	
F3N, J7R, J7T, Z7U (C.T.P. Bendix) engines			
Resistance Ω	283 to 297	383 to 397	403 to 417
J7R 752, Z7W ... (C.T.N. Bendix) engines			
Resistance Ω	3 061 to 4 045	301 to 367	212 to 273

Air temperature sensor

Measure the resistance of the sensor according to the temperature of the ambient air. An accurate thermometer can be placed in the filter air inlet (for example the vehicle's clock/thermometer).

A resistance between 0°C and 40°C is practically linear.



Temperature °C	0 ± 1	20 ± 1	40 ± 1
F3N, J7R, J7T, Z7U (C.T.P.) engines			
Resistance Ω	254 to 266	283 to 297	315 to 329
J7R 752, Z7W ... (C.T.N.) engines			
Resistance Ω	7 469 to 11 970	3 061 to 4 045	1 289 to 1 654

C.T.P. : Positive temperature coefficient

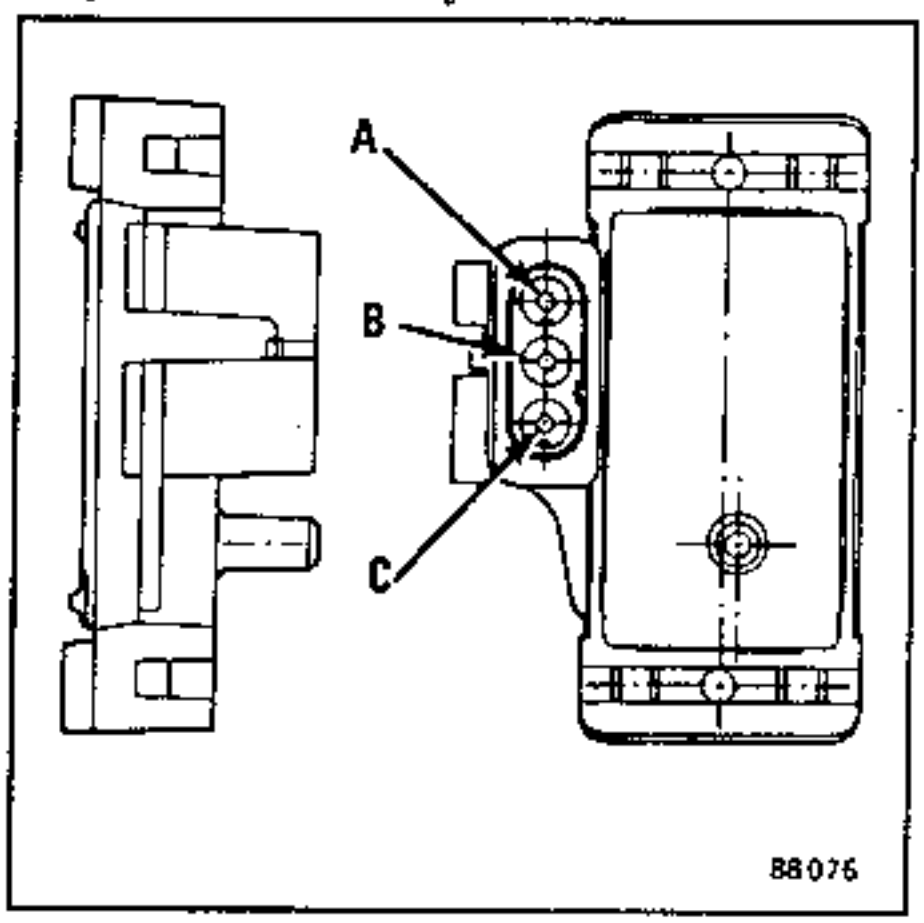
C.T.N. : Negative temperature coefficient

Absolute pressure coefficient

- Check the vacuum hose and its connections. Check that the **1.2 mm dia** restrictor is **fitted**.
  Do not pull the hose at the sensor end.
  Repair if necessary.
- Check the continuity between terminal A of the sensor connector and terminal 17 of the computer connector.

  Repair if necessary.
- Check the computer earth on terminals 1, 2 and 10 of the connector in relation to direct earth.

  Repair if necessary.

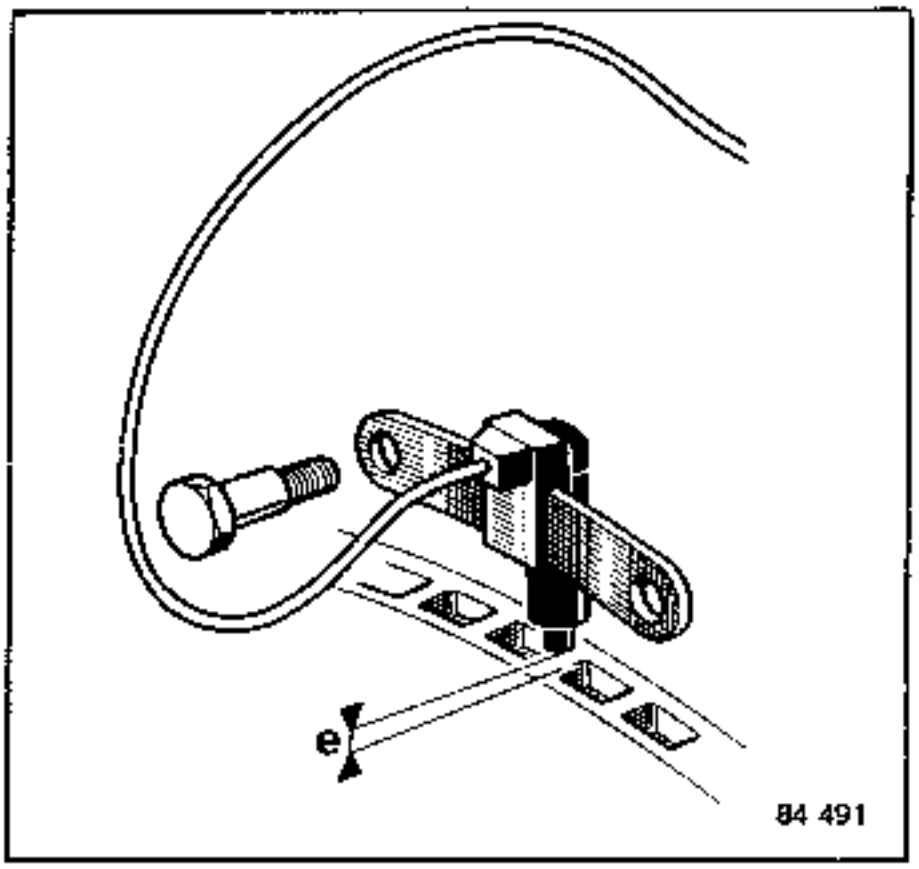


A - Earth
B - Output voltage
C - + 5 volts

Speed sensor

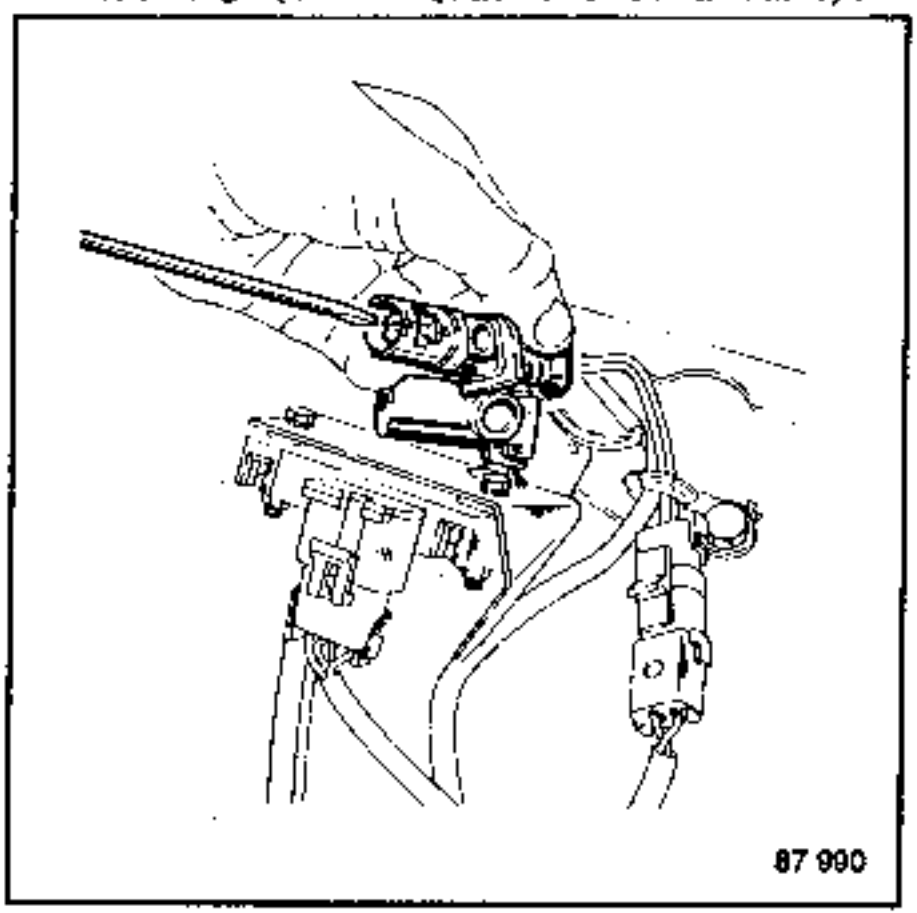
Measure the resistance on the sensor connector.
Resistance approximately 200 ohms

Check air gap (e) using a gauge rod. It should be 1 mm ± 0.5. If it is not, replace the sensor.



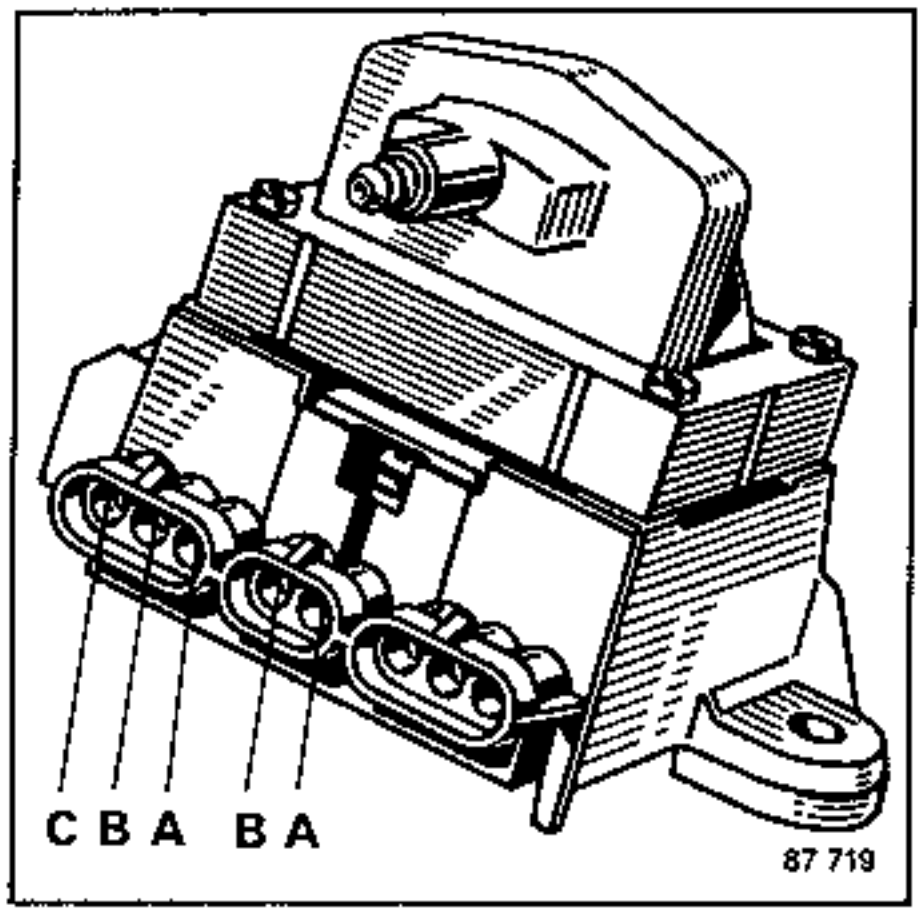
Idling mixture potentiometer

Measure the resistance of the potentiometer on its connector.
- Minimum resistance: 200 ohms (in anti-clockwise direction)
- Maximum resistance: 10 000 ohms (in clockwise direction)
- Maximum rotation of potentiometer: 270° ± 5 (three quarters of a turn).



Ignition power module

The injection unit contains the ignition advance curves and emits a 5 volt control signal to the ignition power module.



3-way connector

A - Battery +
B - Earth
C - Speedometer

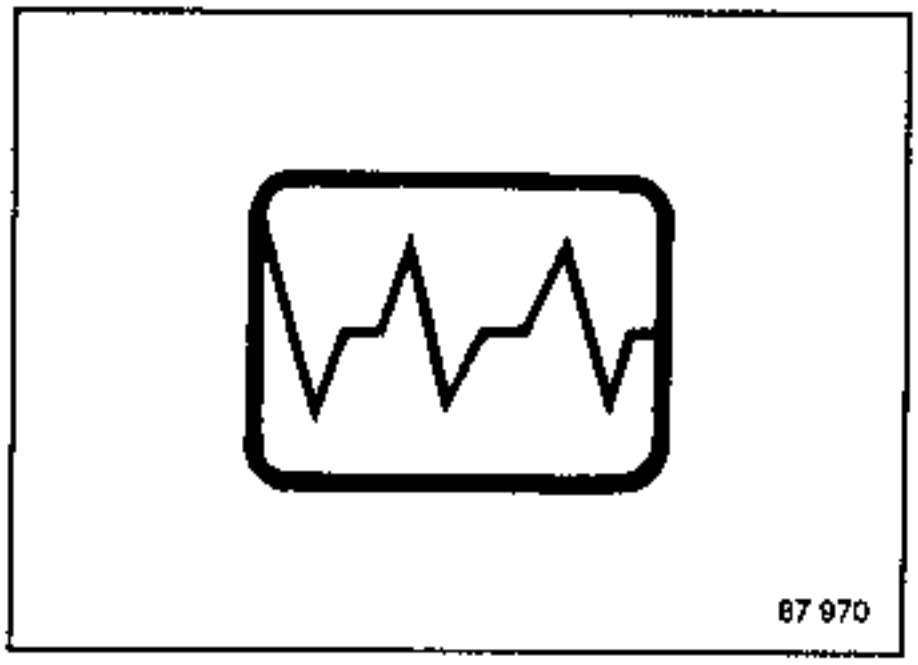
2-way connector

A - Control earth (1)
B - Control signal

(1) is not always used
see injection operating diagram

DIAGNOSTIC PLUG

Electronic incident warning light



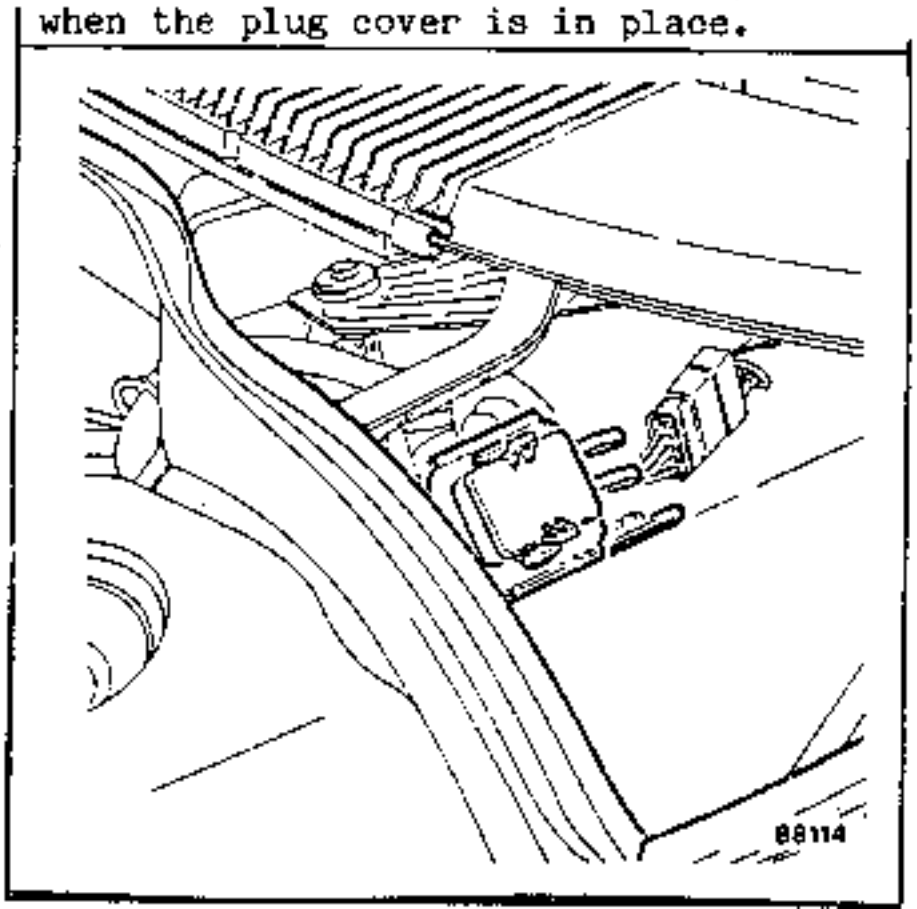
On most of the vehicles there is an electronic incident warning light on the instrument panel which indicates the following if it illuminates when the vehicle is moving:

- vehicle with manual gearbox: injection system incident;
- vehicle with automatic transmission: the warning light is common to the transmission and the injection system.

Disconnect the connector from the automatic transmission computer warning light:

- the warning light stays illuminated: injection system incident;
- the warning light goes out: automatic transmission incident.

NOTE: On diagnostic plugs fitted with a shunt the warning light can only function when the plug cover is in place.

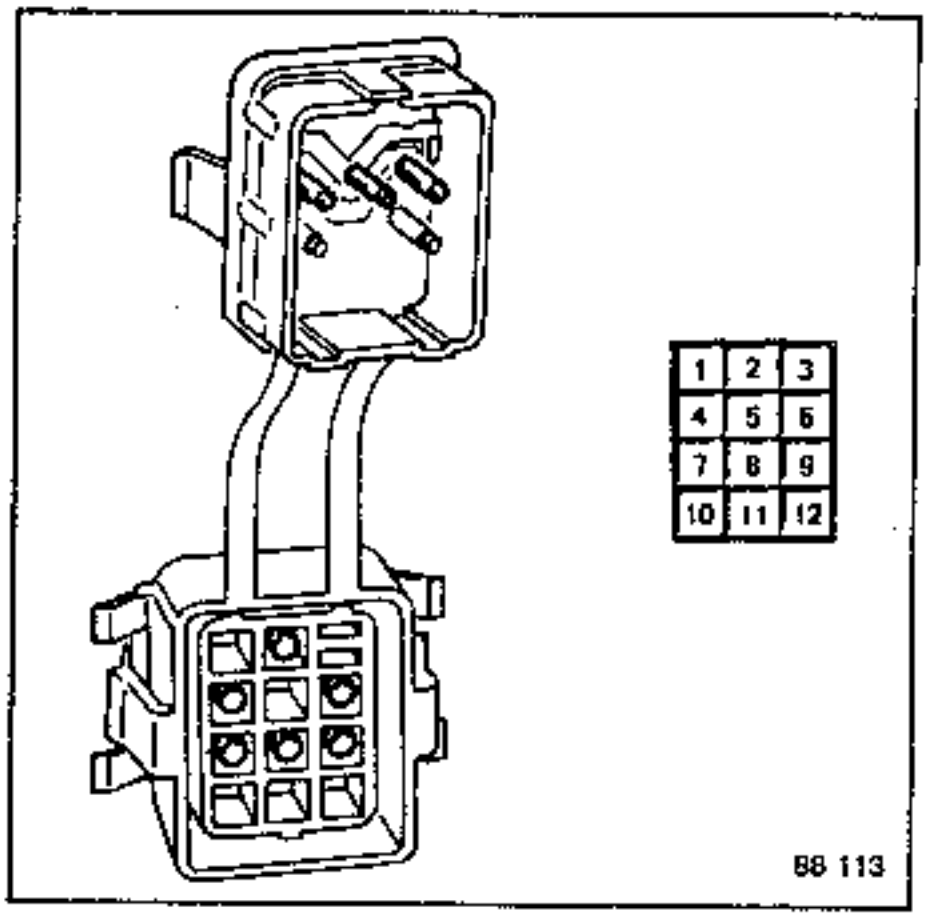


Checking the incident warning light

With the ignition on, engine stopped, the warning light should be illuminated; if it is not, shunt terminals 8 and 2 (earth) on the diagnostic plug, with the ignition switched on: the warning light should illuminate.

Depending on the type, the diagnostic plug cover may have a shunt between terminals:

- 7 automatic transmission diagnostic data
- 8 to incident warning light
- 9 injection fault-finding data



Allocation of the diagnostic plug terminals

1 "A4" automatic transmission fault-finding data
2 Earth
3 Foolproof device
4 Cruise control fault-finding data
5 Not used
6 + 12 volts before or after ignition
7 "M" automatic transmission fault-finding data
8 To electronic incident warning light
9 Injection fault-finding data
10, 11, 12 Not used

The diagnostic plug is for the connection of the **XR25** test box .

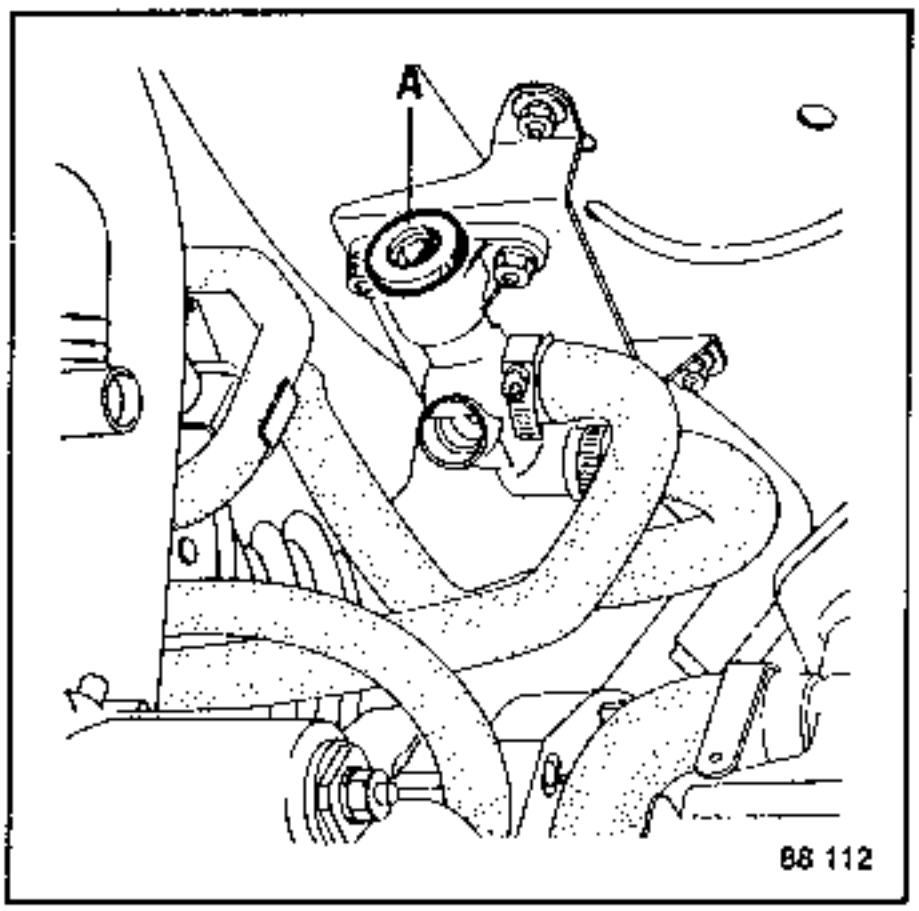
IDLING ADJUSTMENT

Adjustment using the exhaust gas analyser

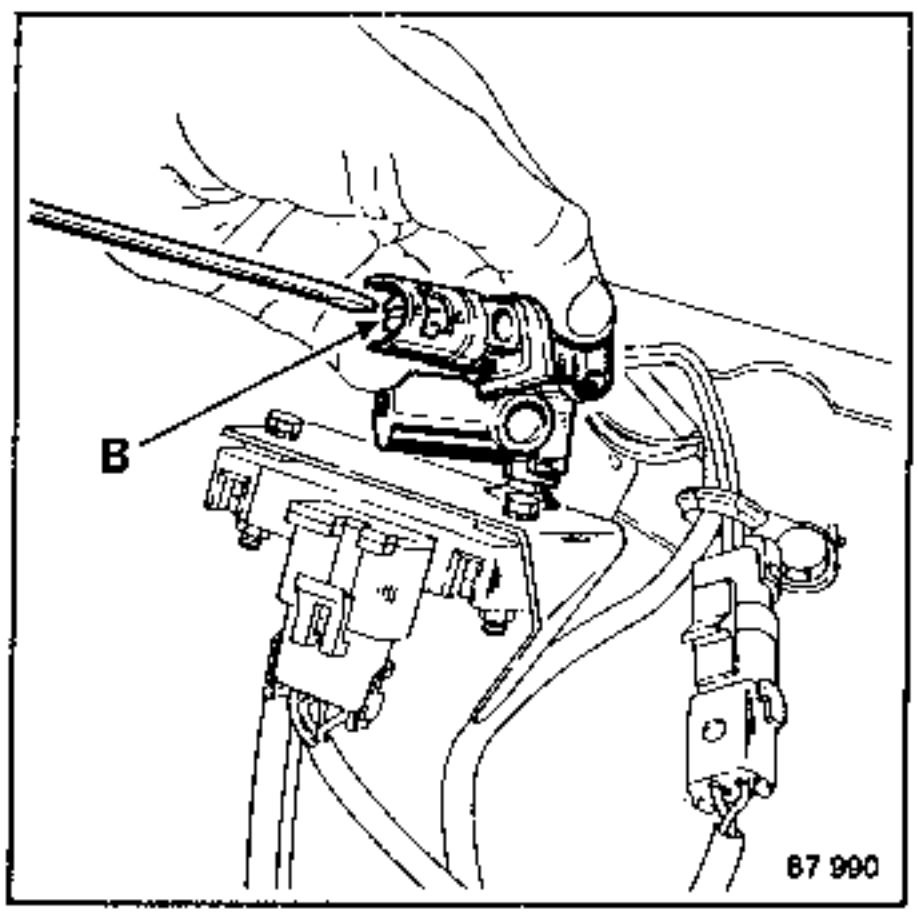
J7T engine on Renault 25 (without idling regulation)

Remove the tamperproof cap from screw (B) on the idling mixture potentiometer.

Turn screw (A) on the air by-pass to obtain the average idling speed given on the table for the vehicle in question.



Turn screw (B) to obtain the CO percentage given in the table.



Turn screw (A) to obtain the correct idling speed.

Repeat the last two operations so that the correct CO percentage and idling speed are obtained.

J7R.., J7T .., Z7U.., Z7W... engines (with idling regulation)

The volume regulating screw (idling speed) is no longer fitted.

No adjustment can be made to the idling speed.

With the engine hot, after the cooling fan has stopped rotating, adjust the CO percentage to the value given by moving screw (B).

When the CO percentage has been adjusted, fit a tamperproof cap to screw (B).

Tamperproof cap part no. 77 01 200 832.

NOTE: If the correct mixture cannot be obtained by turning screw (B) as far as it will go in both directions, disconnect the exhaust gas rebreathing hose from the rocker cover.

- If the mixture decreases by more than 1%, take this into account when adjusting the CO percentage and, if necessary, change the engine oil.

- Check the rocker arm clearance and sealing.

Checking the adjustment

With the engine hot, connect a rev counter (**XR25**).

Disconnect one injector: the engine speed should steady again at idling speed.

Disconnect another injector: the engine speed should again steady at idling speed.

F3N, J7R, J7T, Z7U and Z7W engines (with anti-pollution system, Lambda sensor and catalytic converter)

No adjustment can be made on these engines.

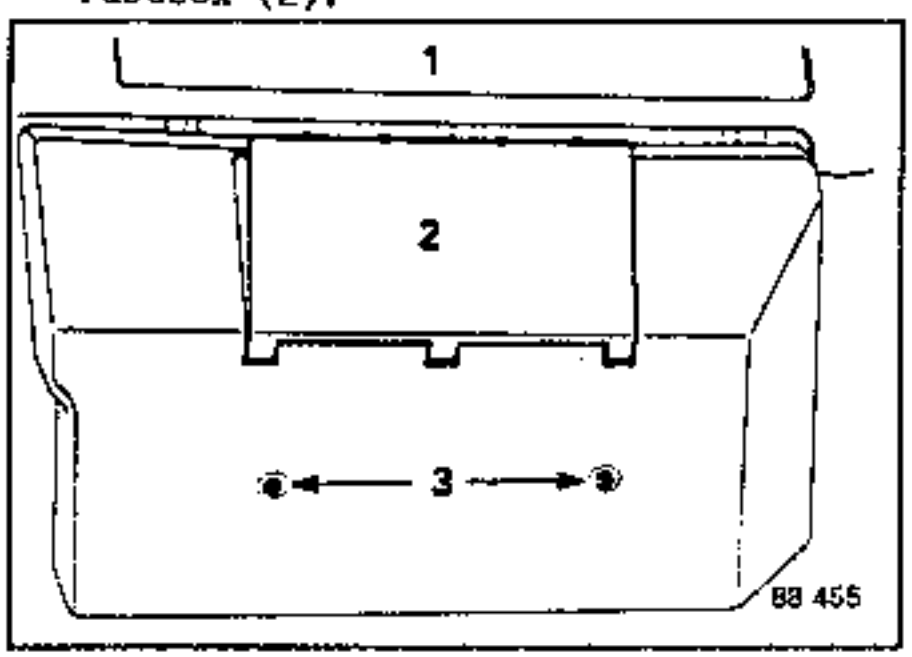
REPLACING

RENAULT 5 (lefthand drive)

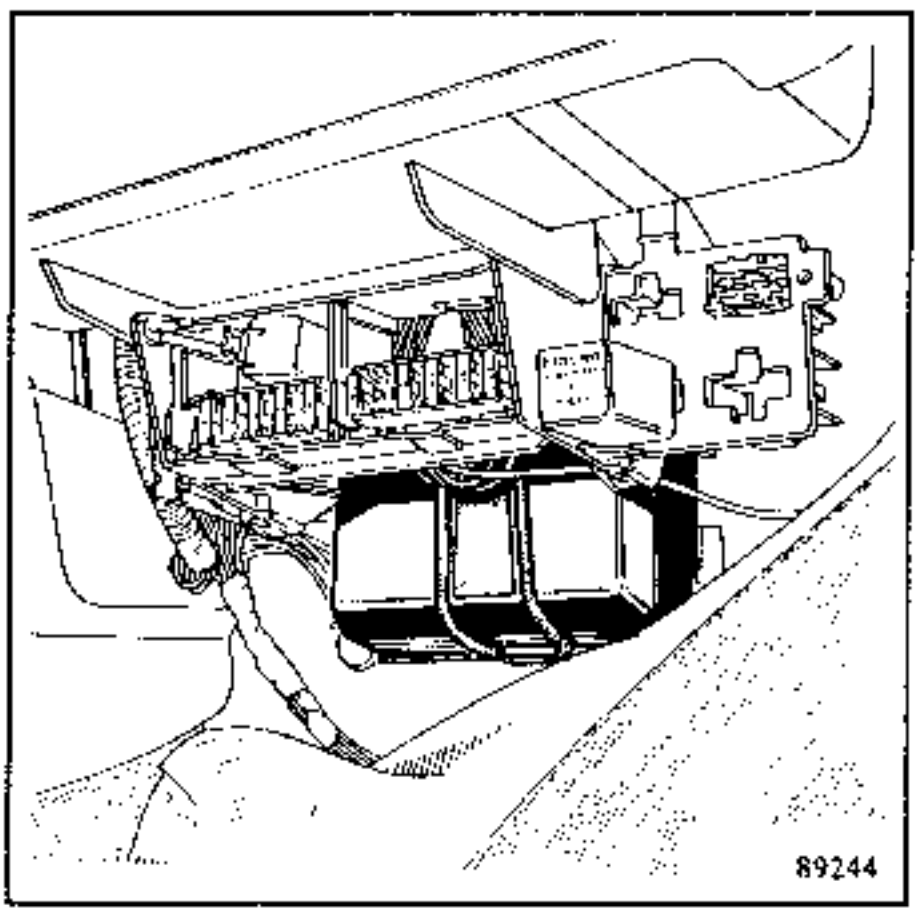
The computer is located in the passenger compartment, on the righthand side of the vehicle, under the glove box.

Disconnect the battery.

Remove:
- the lower part of the glove box (1);
- the two Torx screws (3) from under the fusebox (2).



- Free the trim.
- Unfasten the strap holding the computer and free it from its mounting plate.
- Unclip the connector connecting the computer to the vehicle harness.



On reassembly:

Fit the connectors correctly and position the computer correctly on its mounting plate.

REPLACING

RENAULT 9 and 11

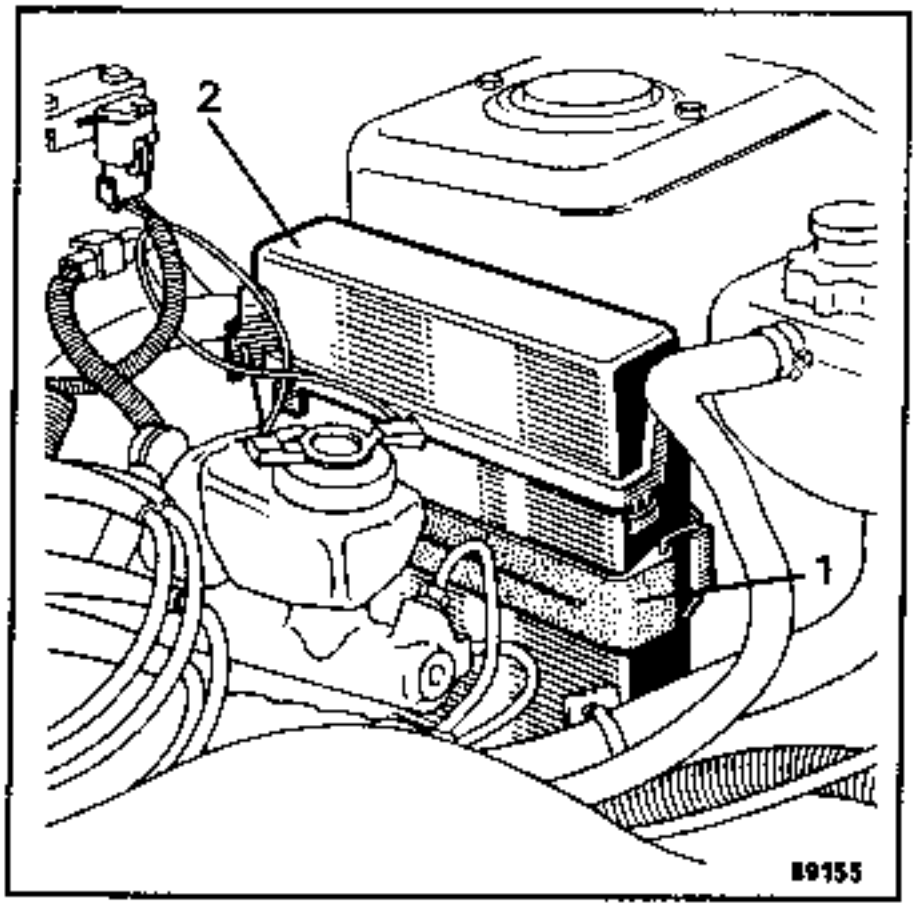
The computer is located in the engine compartment on the side of the lefthand shock absorber turret in a plastic splash-proof casing.

Unfasten the strap holding the computer in its mounting.

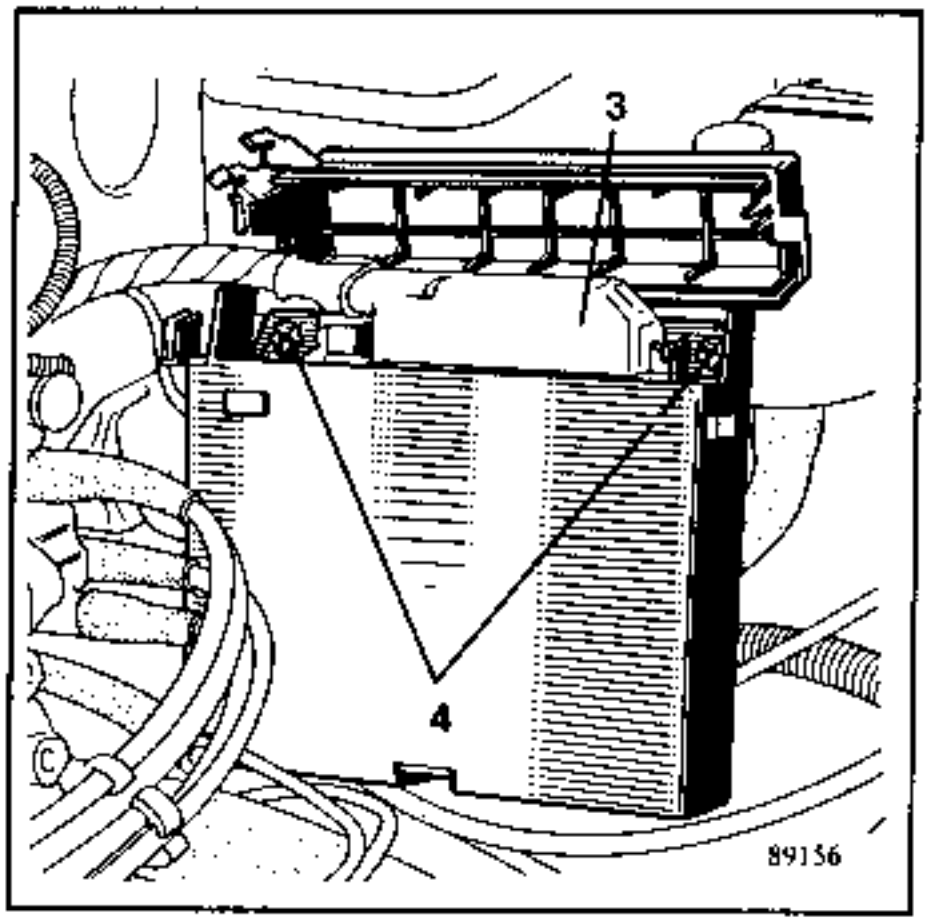
Unclip the casing cover.

Unfasten the computer multi-pin connector.

Remove the two screws holding the computer in its casing.



1 - Strap
2 - Cover
3 - Multi-pin connector
4 - Mounting screws



On reassembly:

Ensure that there is a perfect connection between the computer and the multi-pin connector.

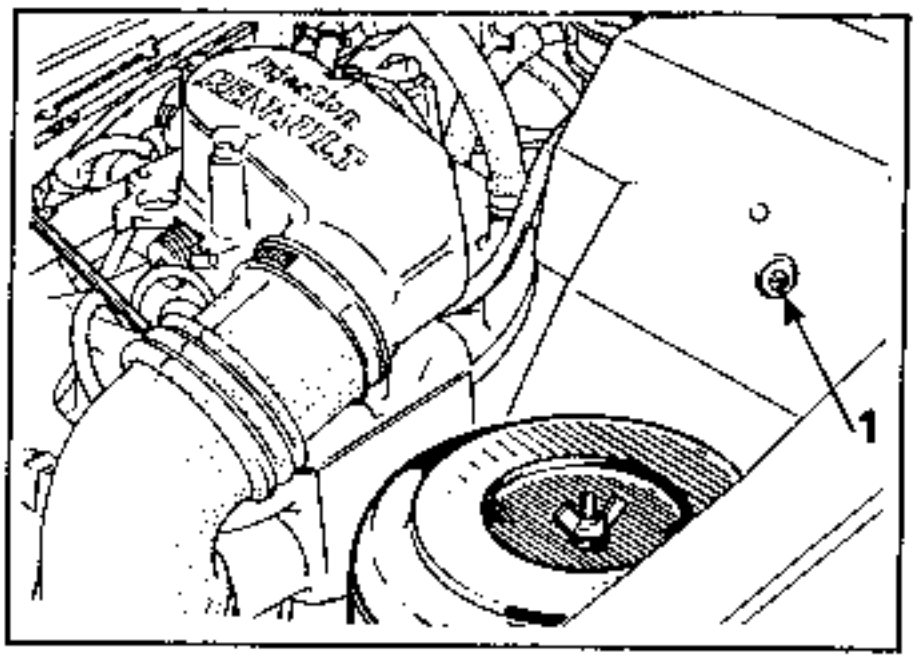
RENAULT 21 (see J7 ... engine)

REPLACING

RENAULT 21

Removal:

- Unscrew the screw from the protective casing (1).

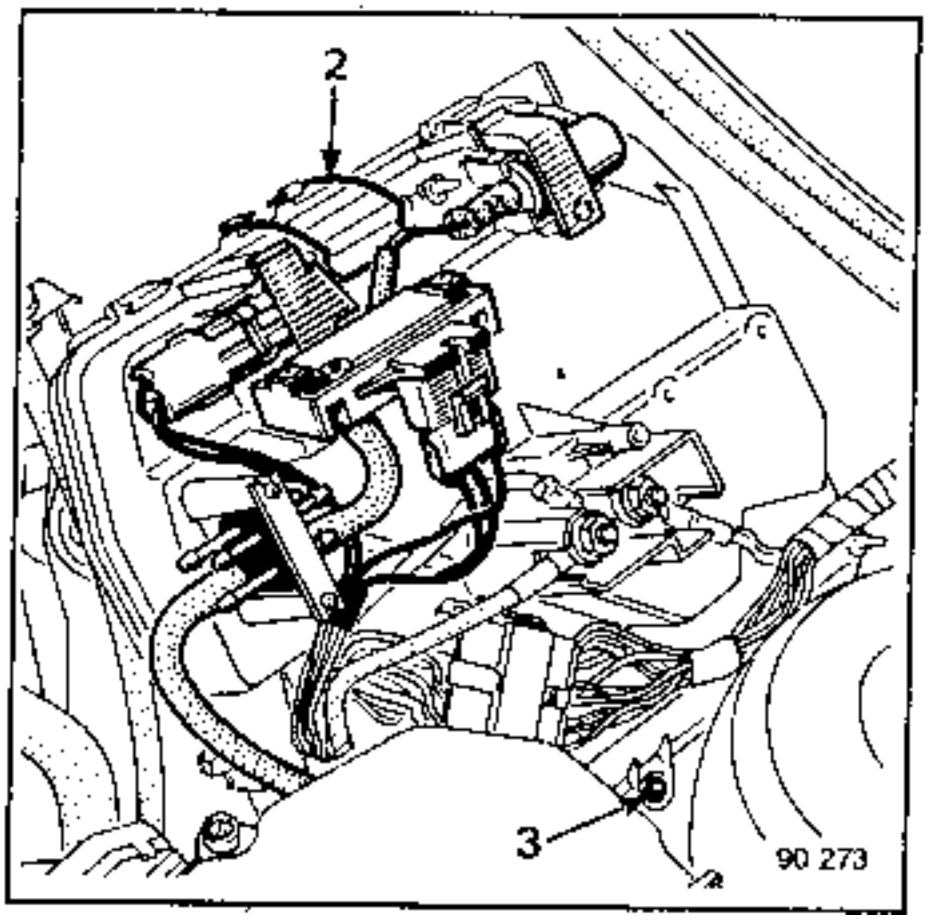


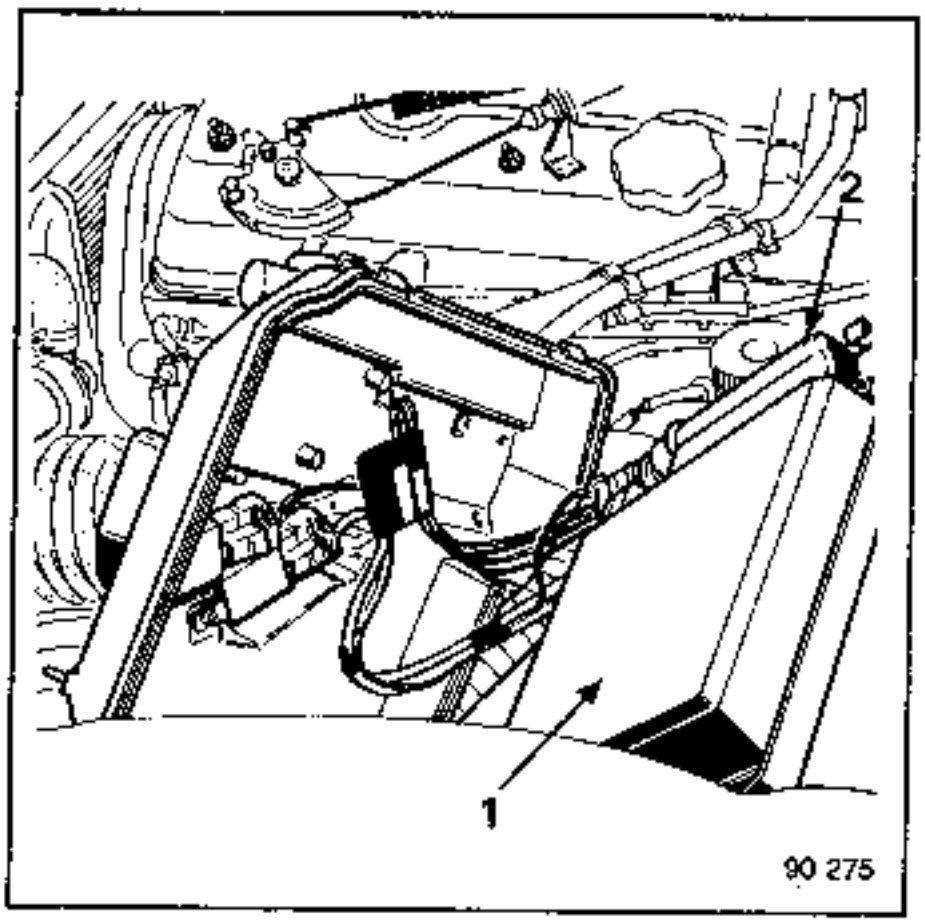
- Unfasten the pin securing the two parts of the plastic casing protecting the computer (2).

- Separate the two parts of the casing by unscrewing screw (3).

- Unfasten the connector connecting the harness to the computer

- Unscrew the screws holding the computer on its protective casing.





1 - Computer
2 - Connector

Refitting:

Reverse order to removal.

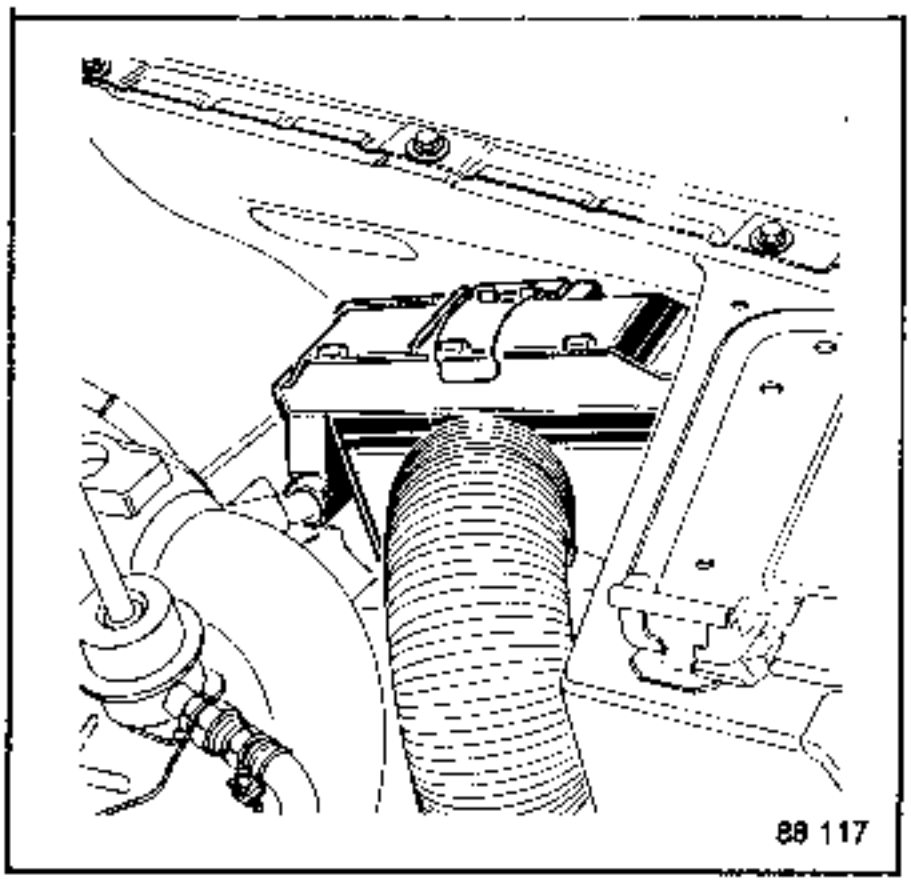
IMPORTANT: On reassembly, position the computer protective casing locating pins in the mounting before clipping the assembly securing pin in place.

REPLACING

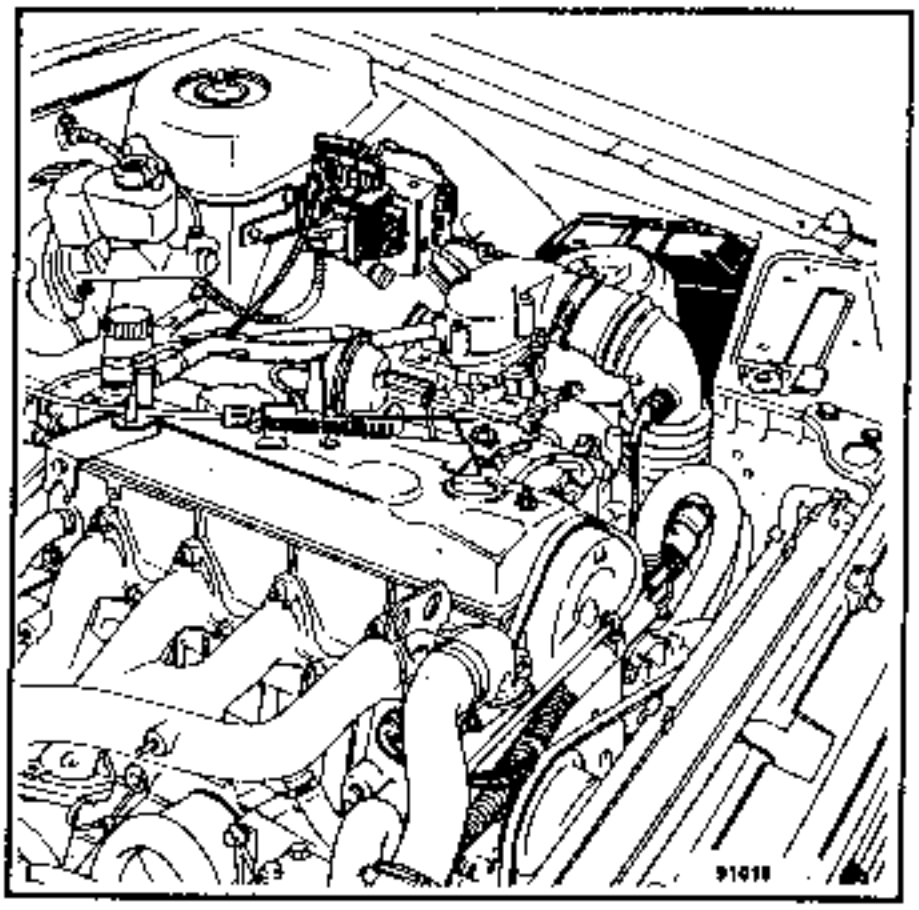
RENAULT 25

The computer is located in the engine compartment on the lefthand cowl side panel in a splash-proof casing.
Tilt the clip.
Take out the protective casing and open it.
Remove:
- the multipin connector from the computer and those from the relays;
- the mounting screws.

1st type



2nd type

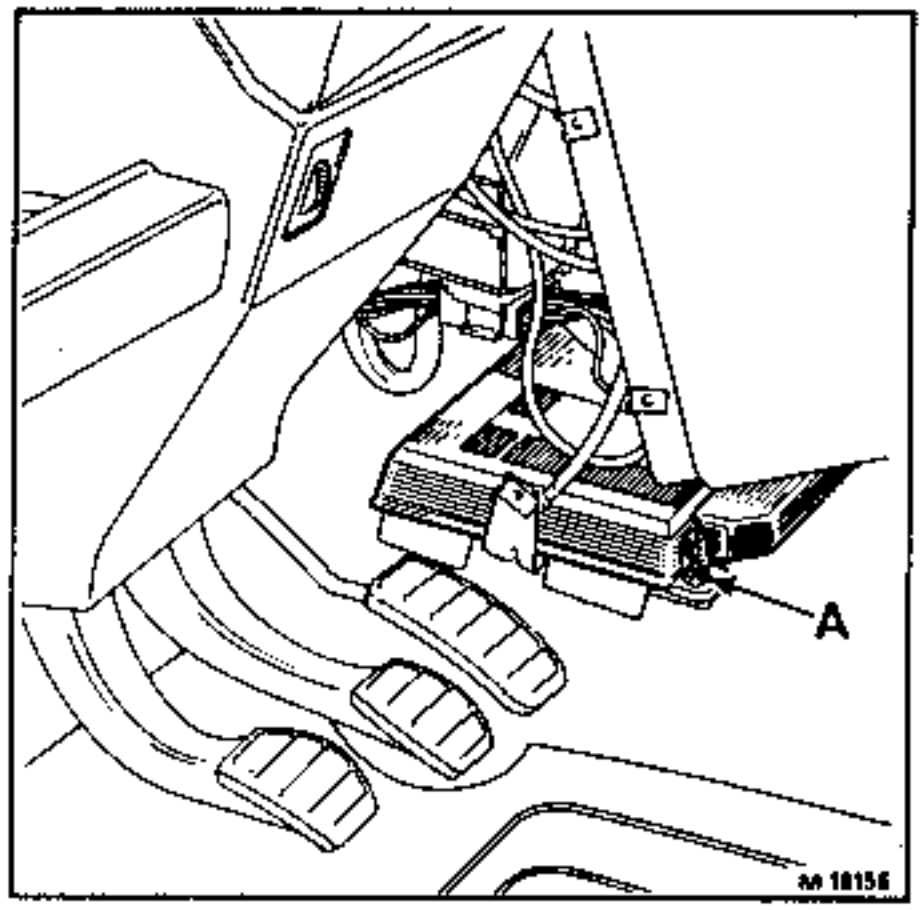


ESPACE

Remove the lefthand console flange.

The casing is held in place by two screws **(A)**.

Disconnect the connector and the casing can be removed from the rear.



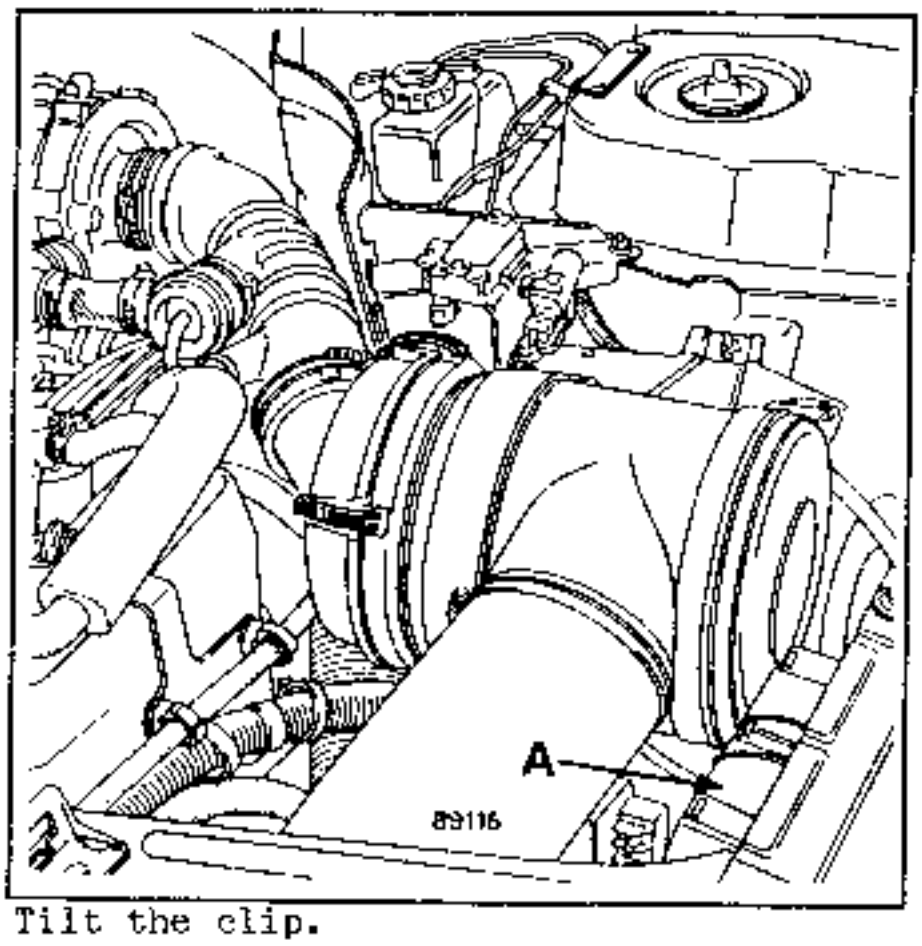
NOTE: The relays are under the lefthand headlight.

REPLACING

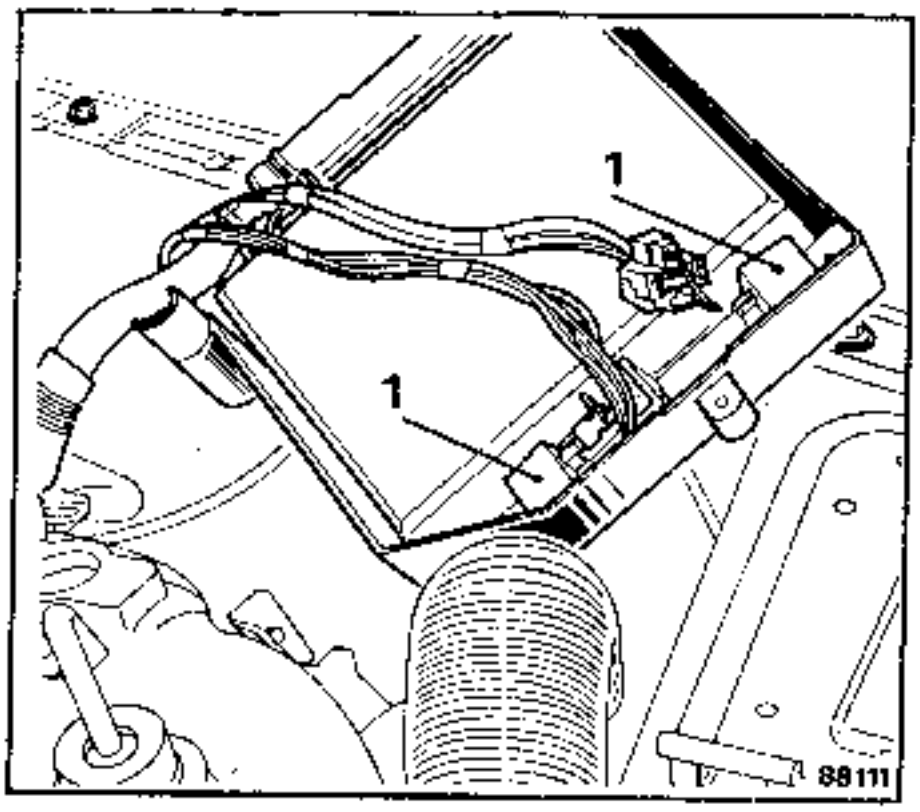
Z7U..., Z7W... engines on RENAULT 25

The computer is located in the engine compartment on the lefthand cowl side panel in a splashproof casing.

The air filter has to be removed to reach the computer **(A)**.



Tilt the clip.
Take out the protective casing and open it.
Remove:
- the multipin connector from the computer and those from the relays;
- the mounting screws.



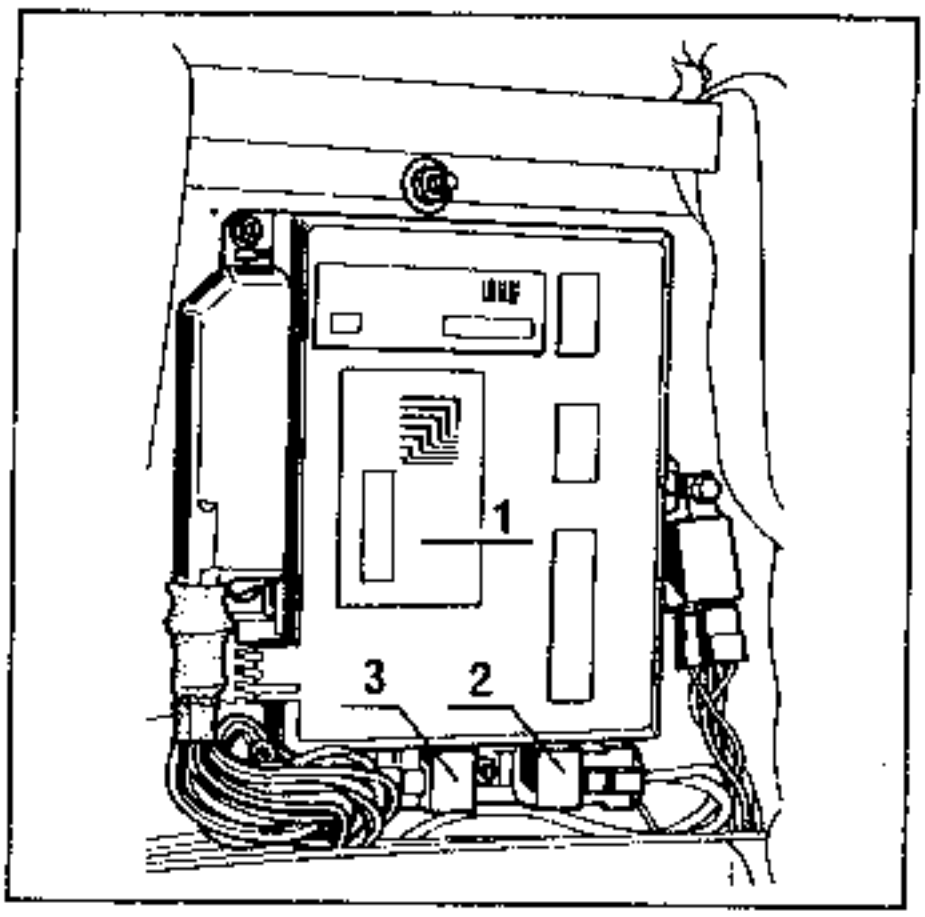
1 - Feed and injection relay

Z7U engine on Renault GTA

The computer is housed in the passenger compartment, in the centre of the rear seatback.

To reach it, unhook and raise the centre section of the rear seatback.

Remove the connector support plate.



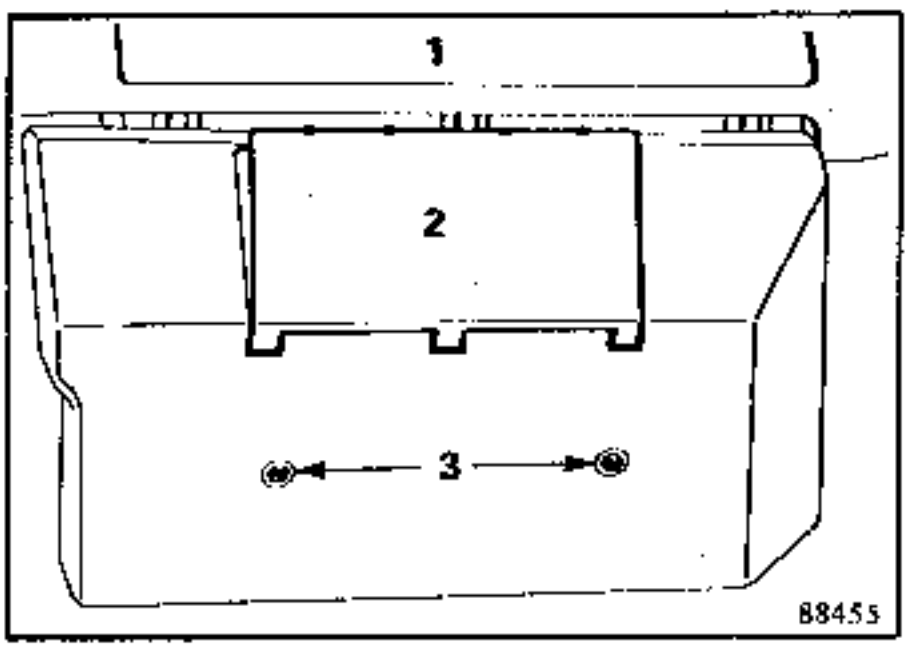
1 - Computer
2 - Feed relay
3 - Fuel pump relay

RENAULT 5 (lefthand drive)

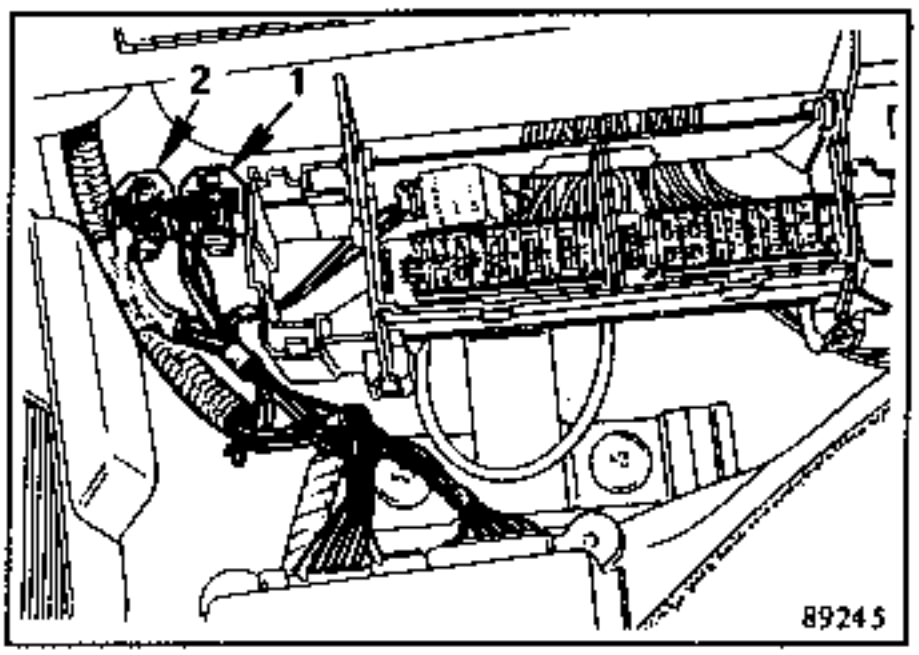
The injection relays are located in the passenger compartment, on the righthand side of the vehicle, under the glove box.

Disconnect the battery.

Remove:
- the under section of the glove box (1)
- under the fuse box (2) the two Torx screws (3).



Unscrew the screw holding the relay to the plate.



1 - Feed or locking relay
2 - Fuel pump relay

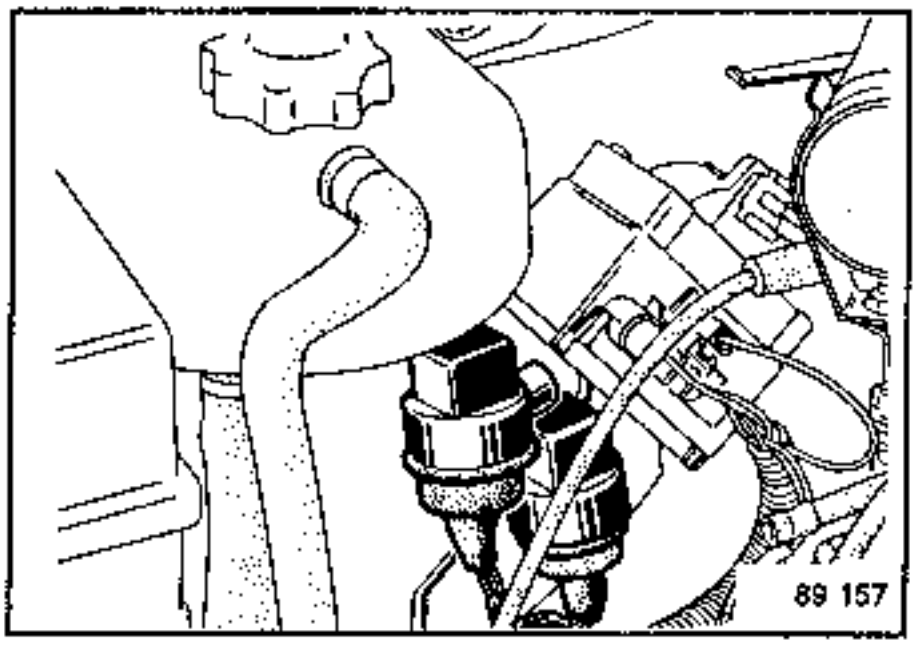
On reassembly:

Fit the connectors in place correctly.

RENAULT 9 AND 11 (lefthand drive)

The relays are located in the engine compartment, near the ignition power module.

The relays are of the type with a skirt which are held on their mountings by clips.

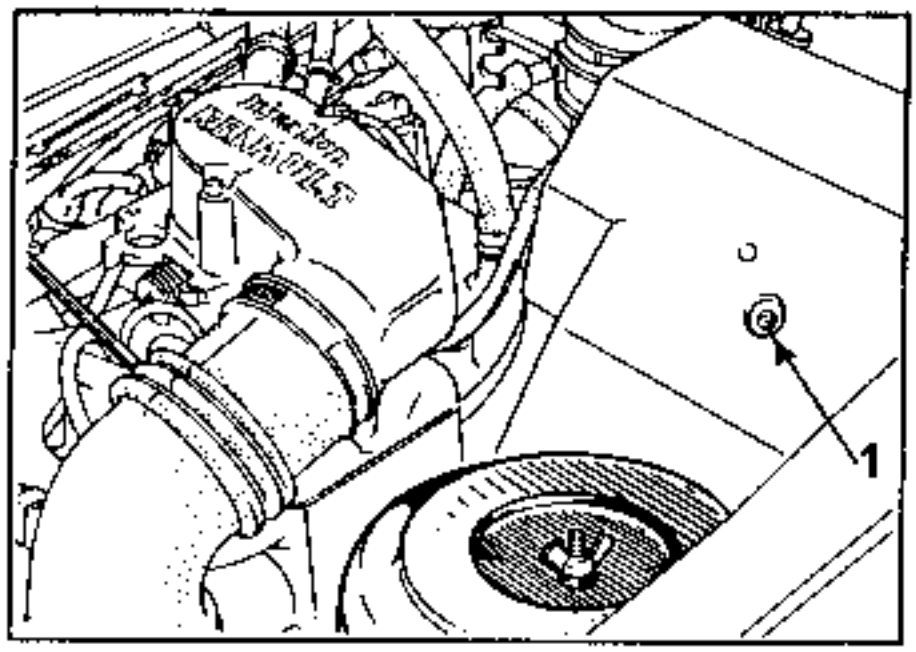


RENAULT 21 (see J7 ... engine)

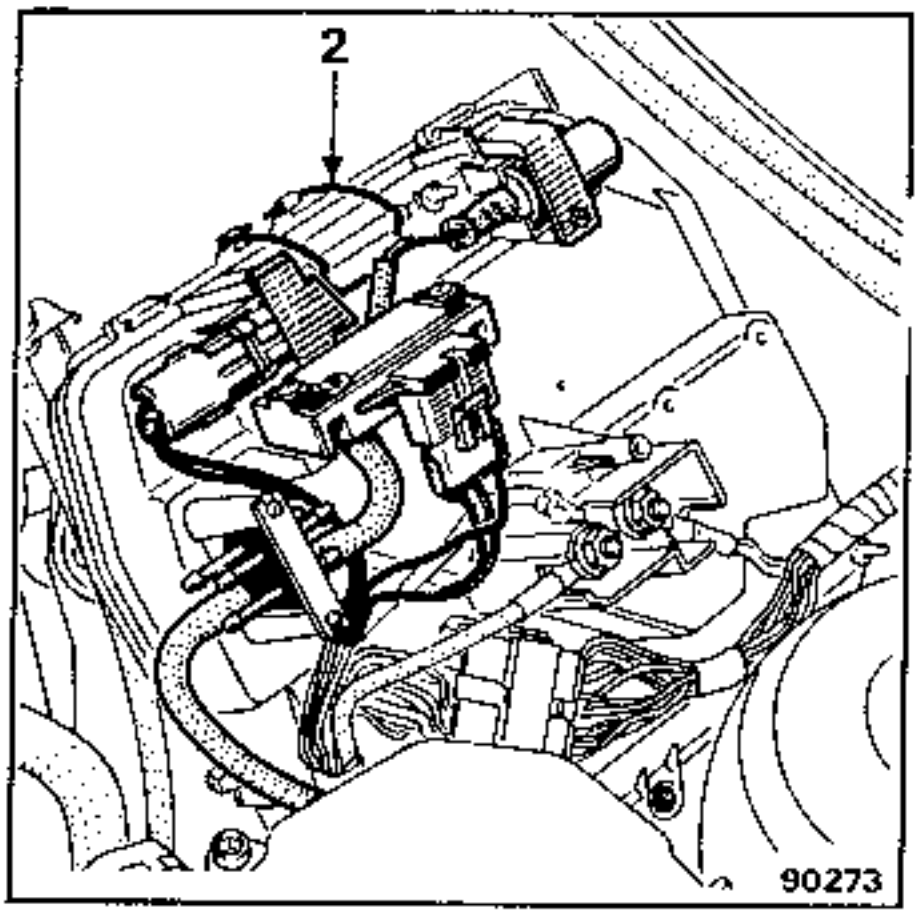
REPLACING

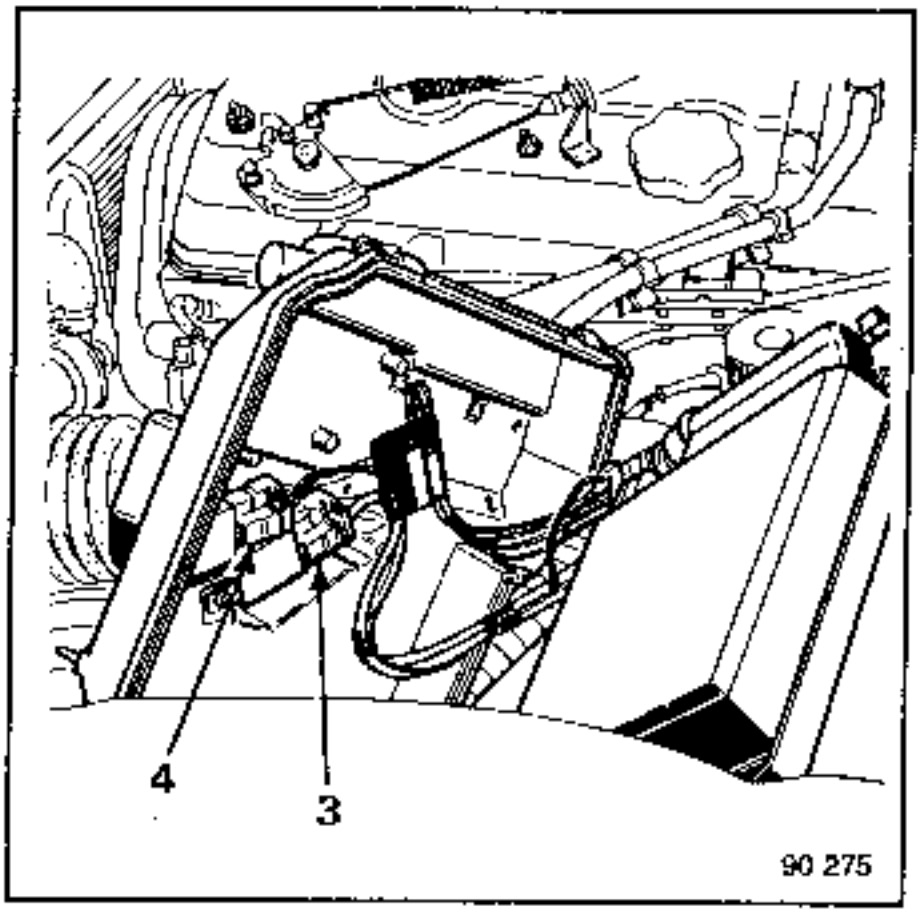
RENAULT 21

Removal:
- Unscrew screw **(1)** from the protective casing.



- Unfasten the pin securing the two sections of the computer plastic protective casing **(2)**.





The relays are located in the upper section of the plastic casing protecting the computer.

3 - Pump relay **(493)**
4 - Feed relay **(381)**

Refitting:

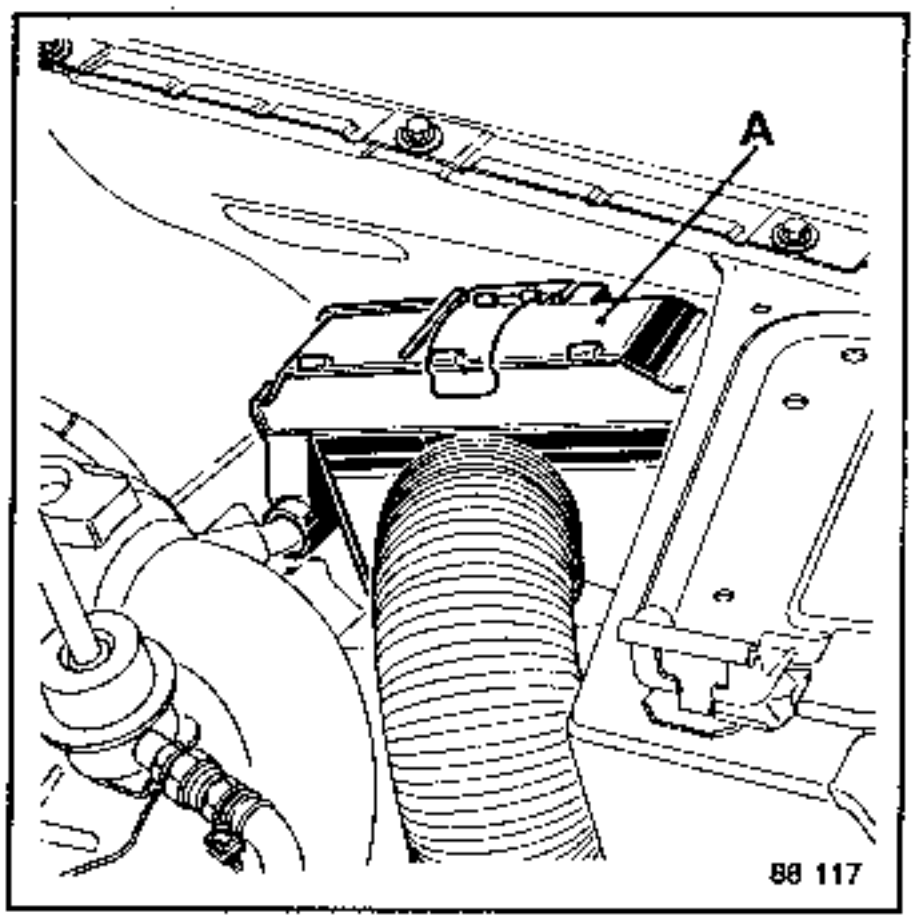
In the reverse order to removal.

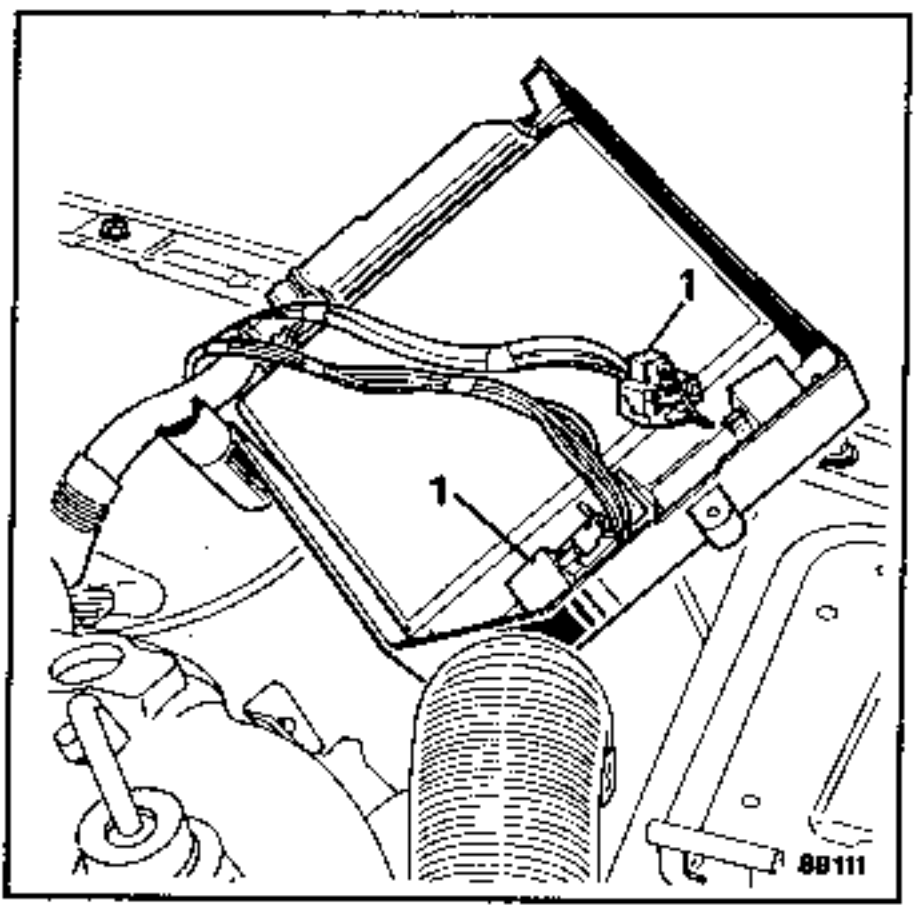
IMPORTANT:
On reassembly, position the computer protective casing locating pins on the mounting before clipping the assembly mounting pin in place.

REPLACING

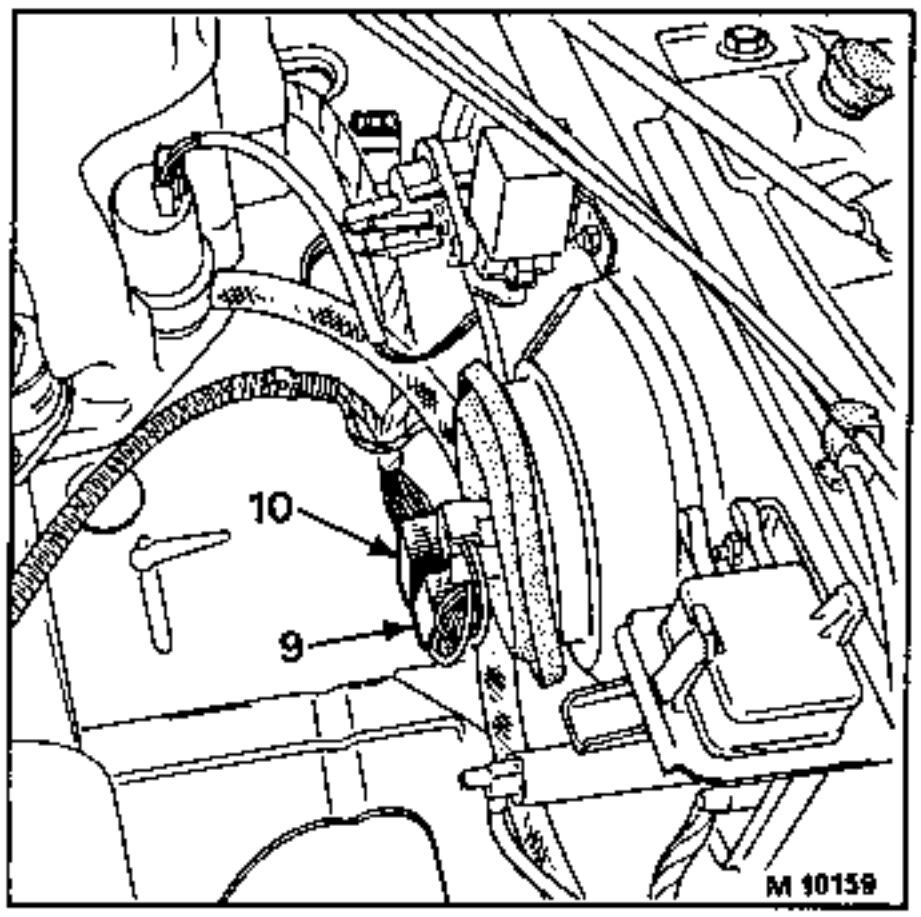
RENAULT 25

The injection relays are located in the engine compartment on the lefthand inner wing in a splashproof casing.
For Z-type engines, the air filter must be removed.
Tilt the clip.
Remove protective casing **(A)** and open it.
Remove:
- the connectors from the relays
- the mounting screws.





1 - Injection and feed relays



The relays are under the lefthand headlight.

9 - Fuel pump relay
10 - Injection relay

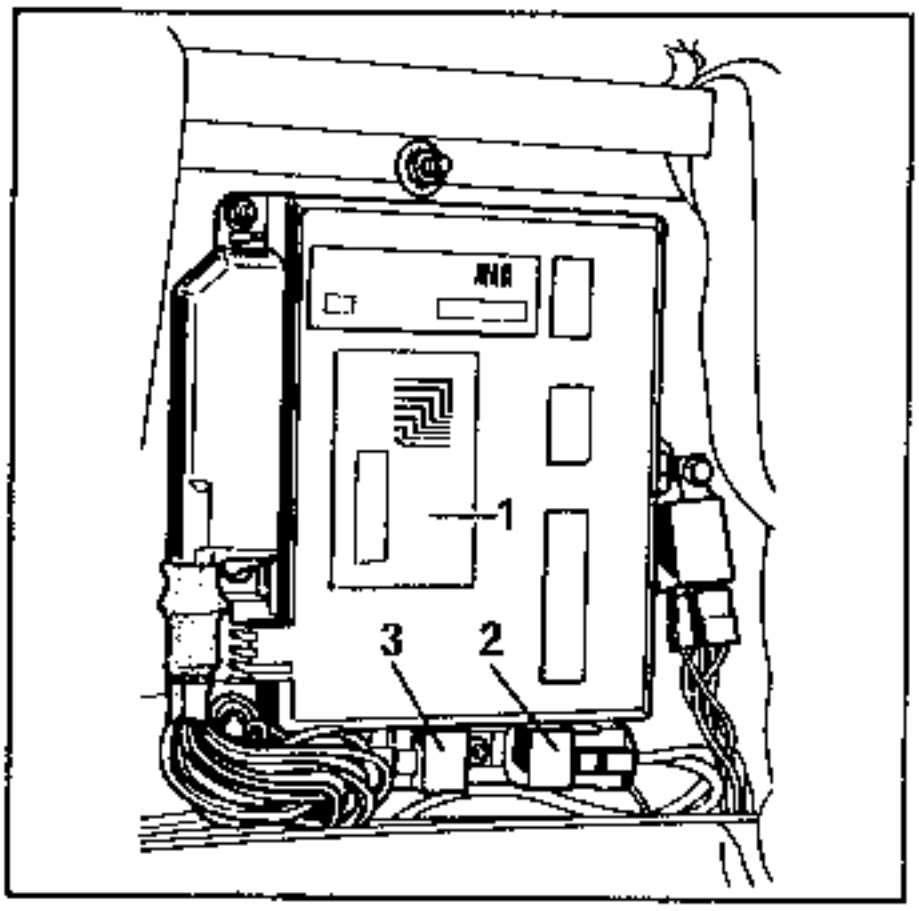
REPLACING

Z7U... engine on RENAULT GT

The computer is housed in the passenger compartment, in the centre of the rear seatback.

To reach it, unhook and raise the centre section of the rear seatback.

Remove the connector support plate.



1 - Computer
2 - Feed relay
3 - Fuel pump relay

REPLACING

Removal:

Disconnect the wiring harness connector.

Unscrew oxygen sensor (1) from the exhaust downpipe.

Clean the downpipe threads.

Refitting:

ATTENTION:
Put anti-seizing grease **MOLYKOTE CU 7439** on the sensor threads **only** and not on any other parts.

Screw the oxygen sensor manually into the exhaust downpipe.

Torque tighten it to **2.7 to 3.4 daNm.**

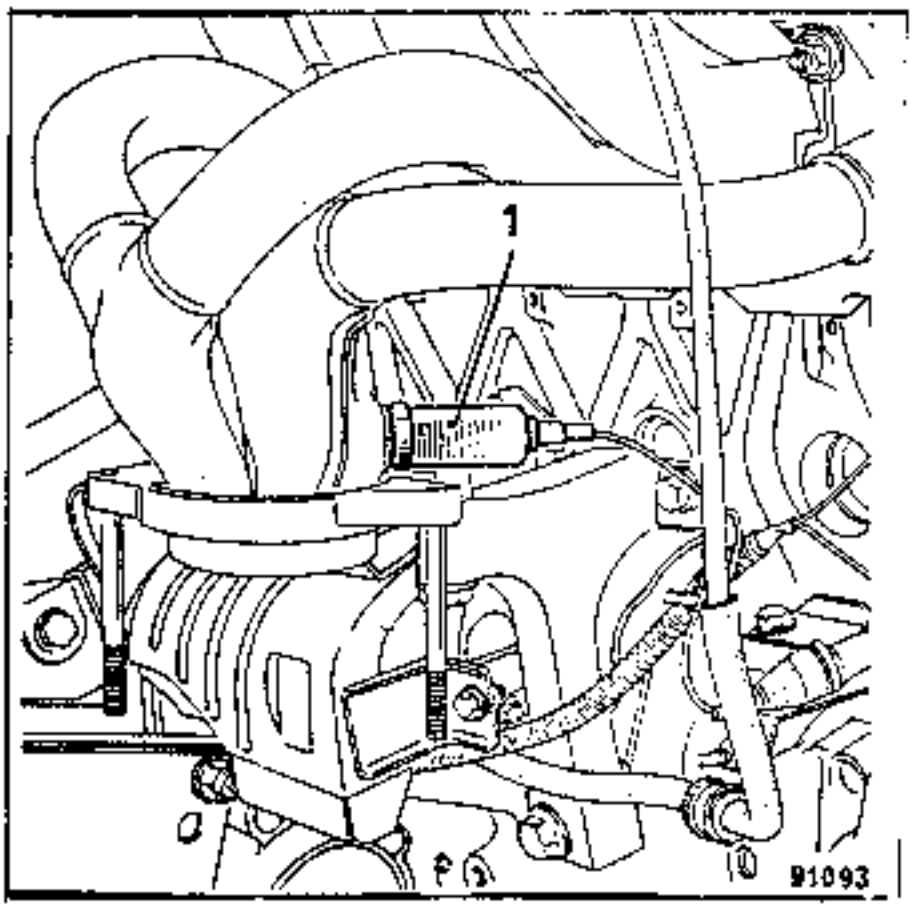
ATTENTION:
Make sure that the ends of the connection lead terminals are corrected inserted in the connector.

Reconnect the connector to the wiring harness.

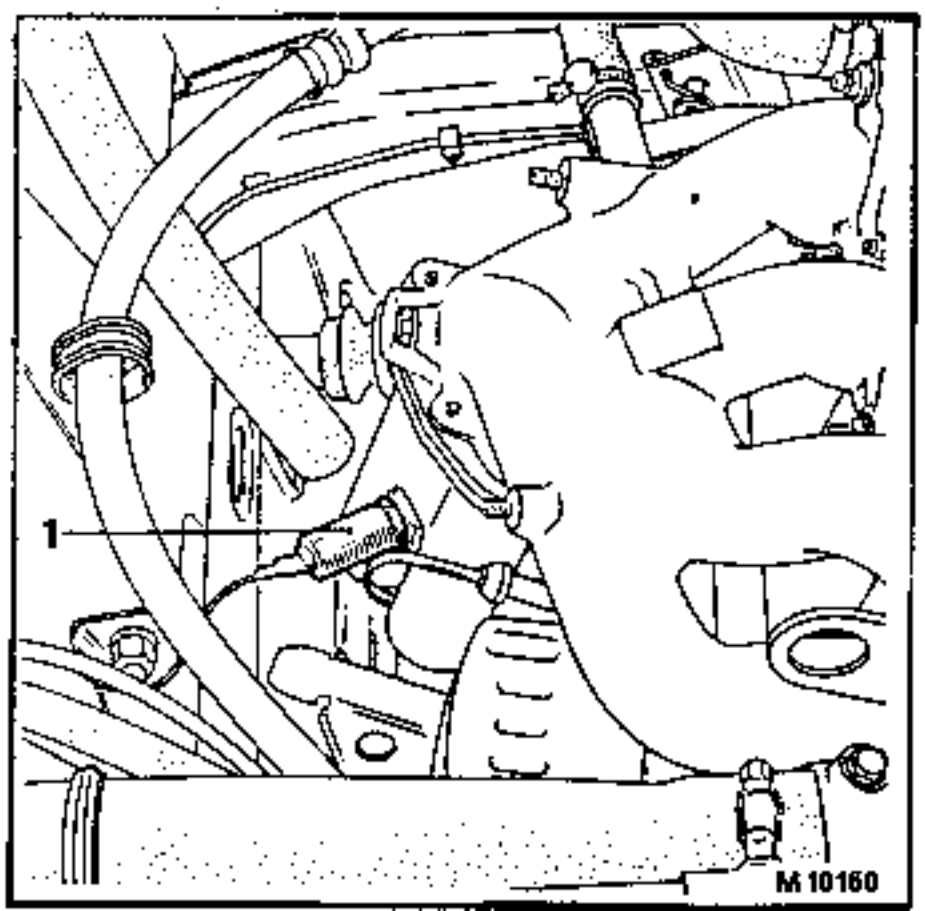
REMARK:

Only fit the rubber cover over the sensor to within 13 mm from the base. Similarly, the spiral wires of the oxygen sensor cannot be joined or soldered. If any of these wires break the sensor will have to be replaced.

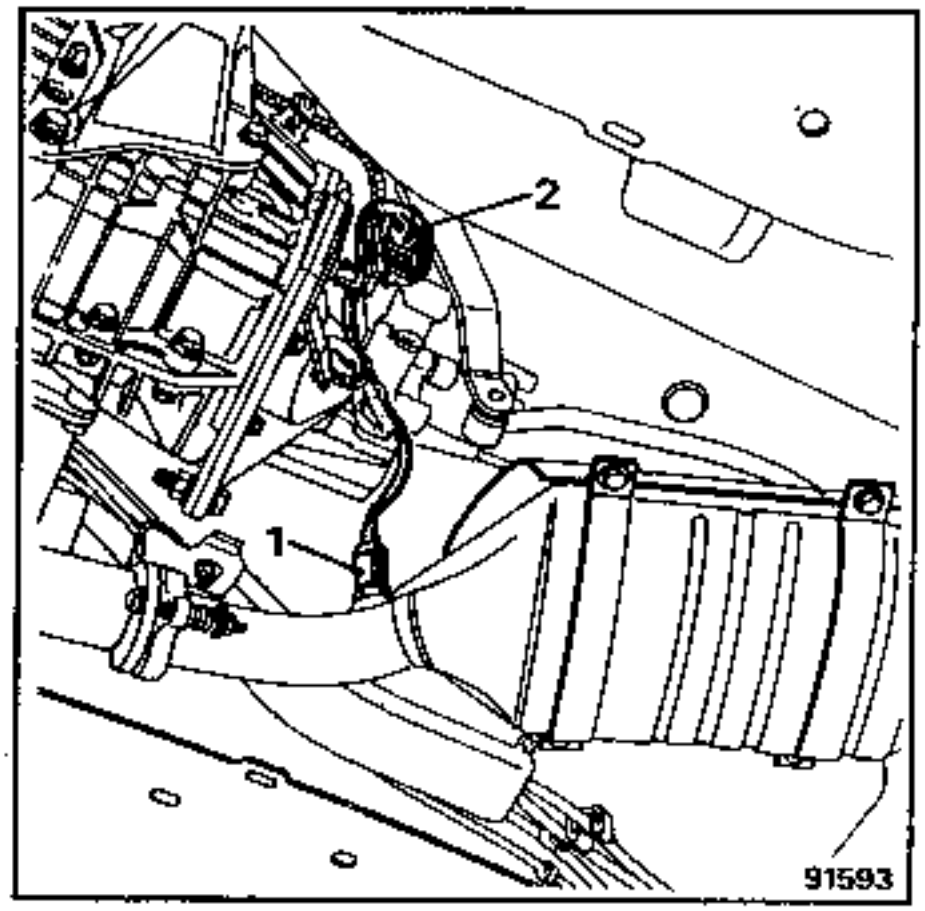
F3N ... engine



J7 ... engine

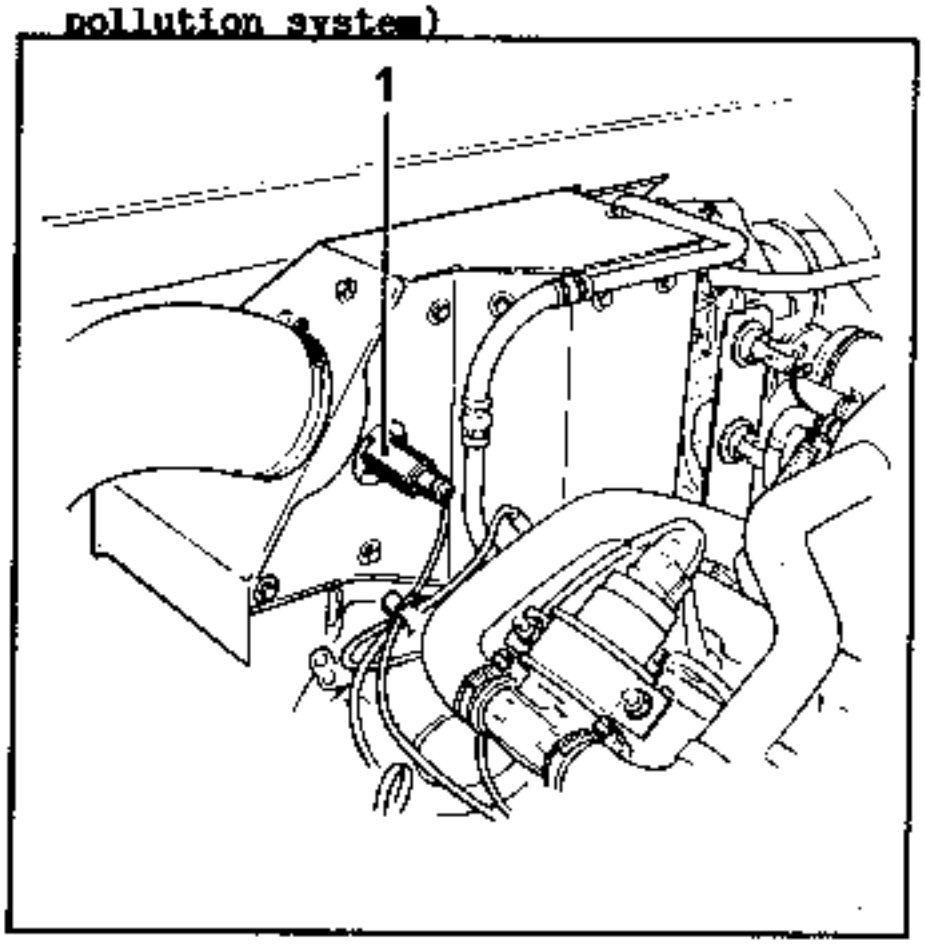


RENAULT 25 (B29 F)



The oxygen or Lambda sensor is implanted at the catalytic converter inlet, under the vehicle.

RENAULT V6 GT TURBO (D 501 with anti-pollution system)



REPLACING

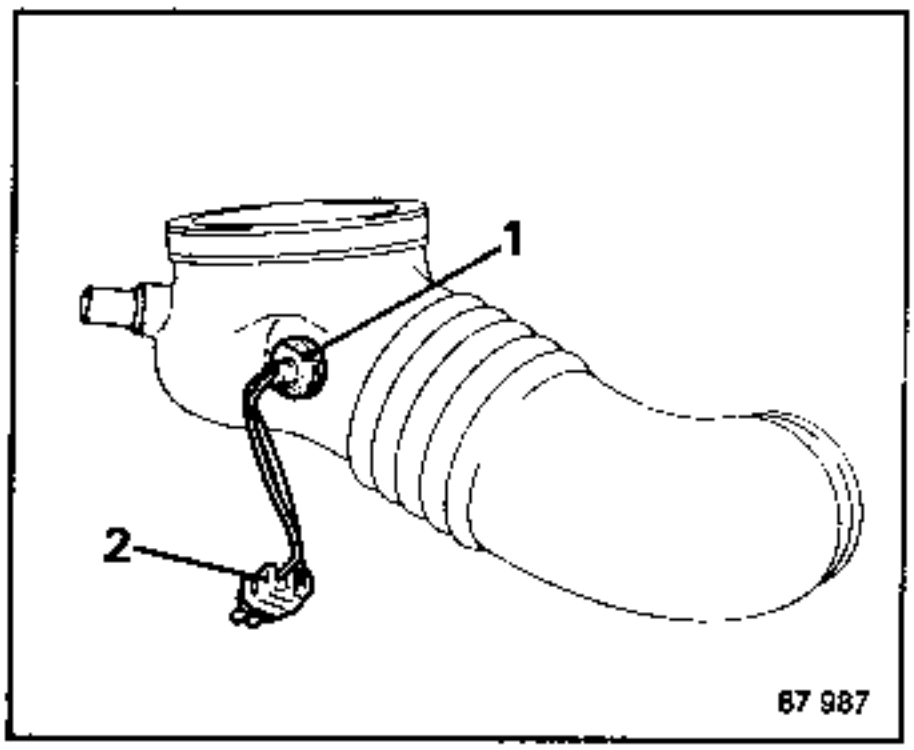
The sensor is on the air inlet circuit and is a press-fit on the rubber breather hose or is screwed onto the throttle casing cover.

Disconnect connector (2) from the wiring harness and remove sensor (1).

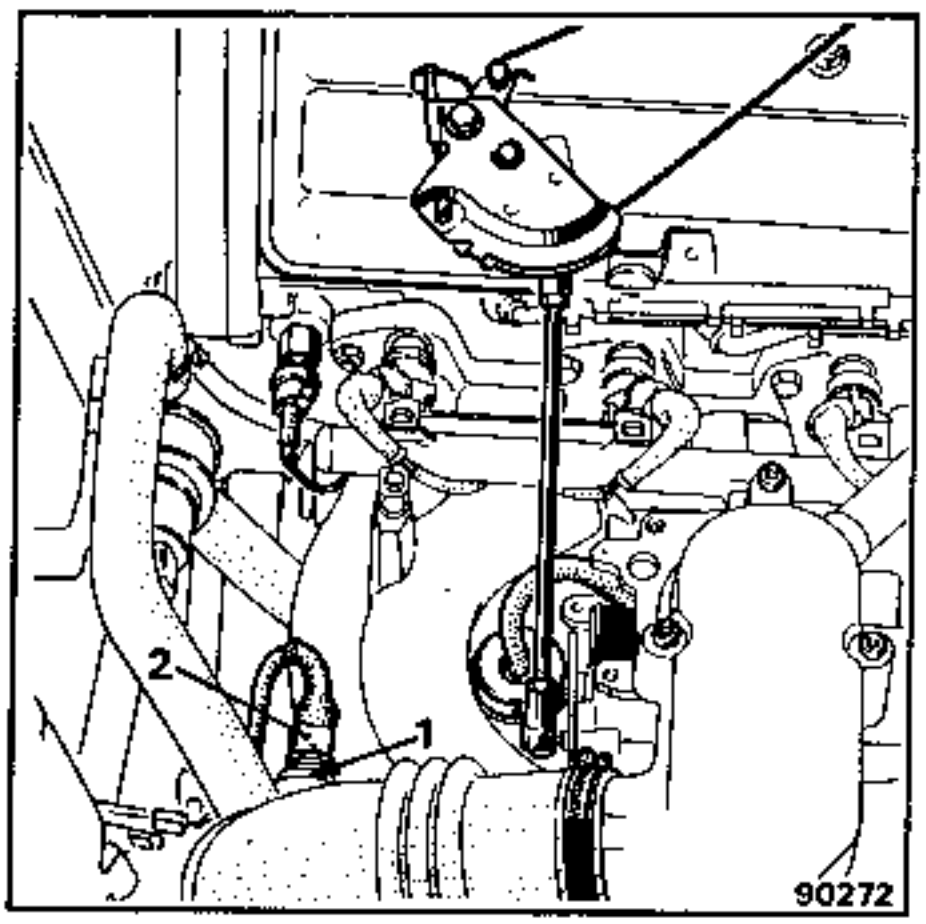
On reassembly:

Make sure that the sensor is correctly fitted and check that the connector is properly clipped in place.

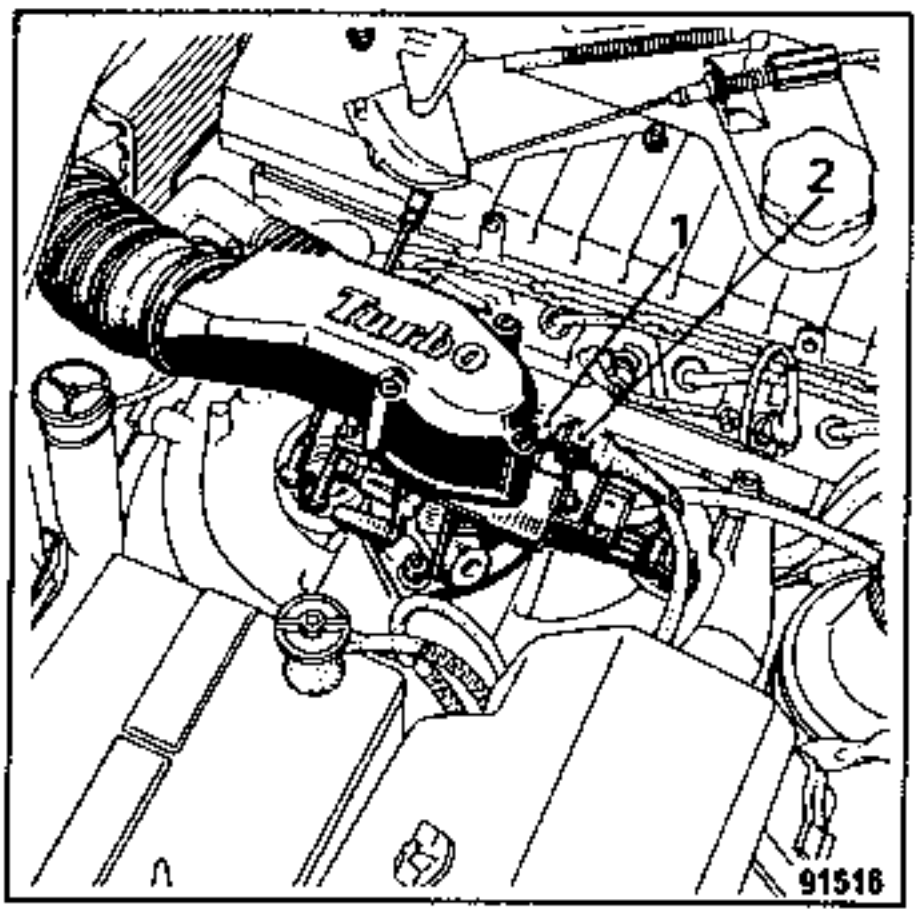
1st type, J7T... engine



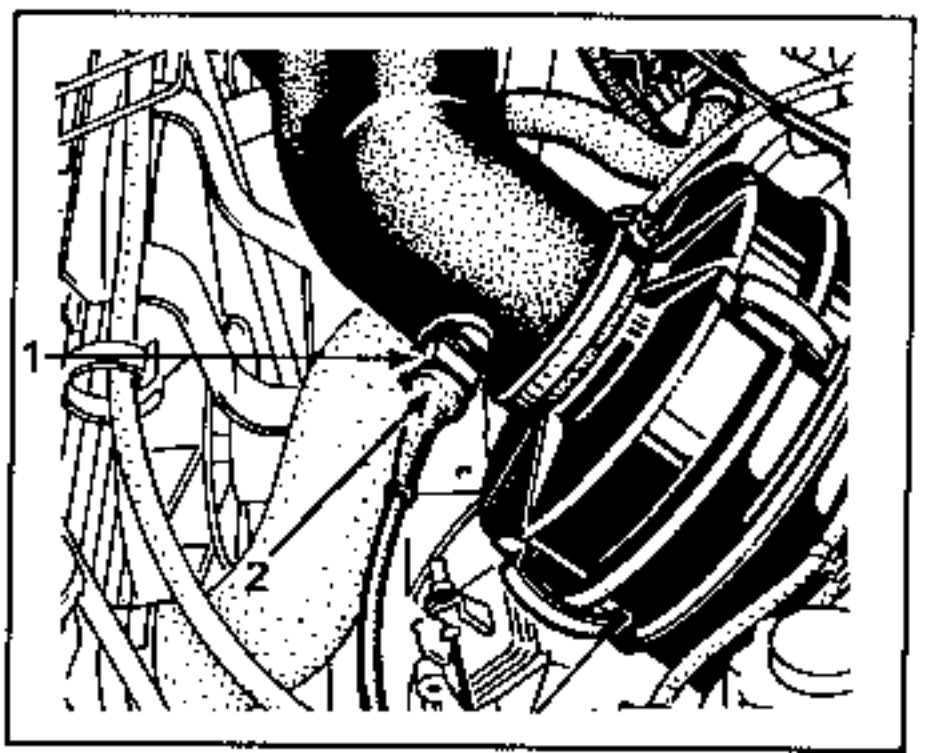
2nd type, J7R..., J7T engines



3rd type, J7R..., engines L485



F3N engine



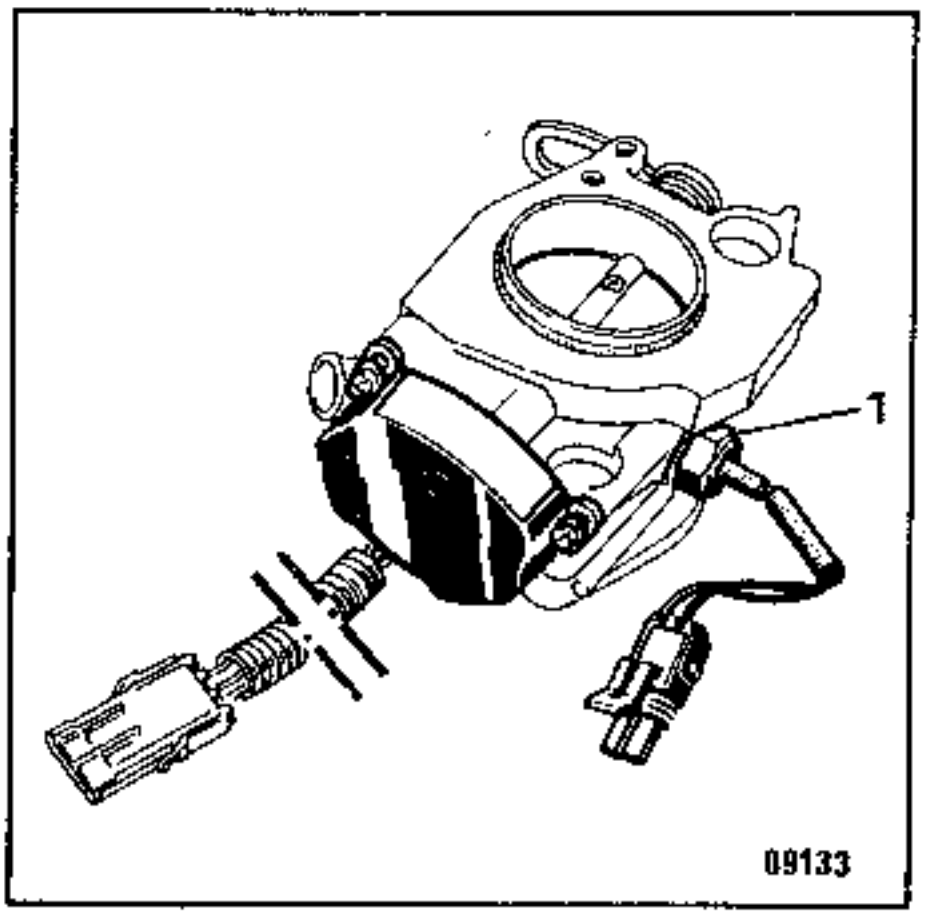
REPLACING

Disconnect the connector from the wiring harness and remove sensor (1).

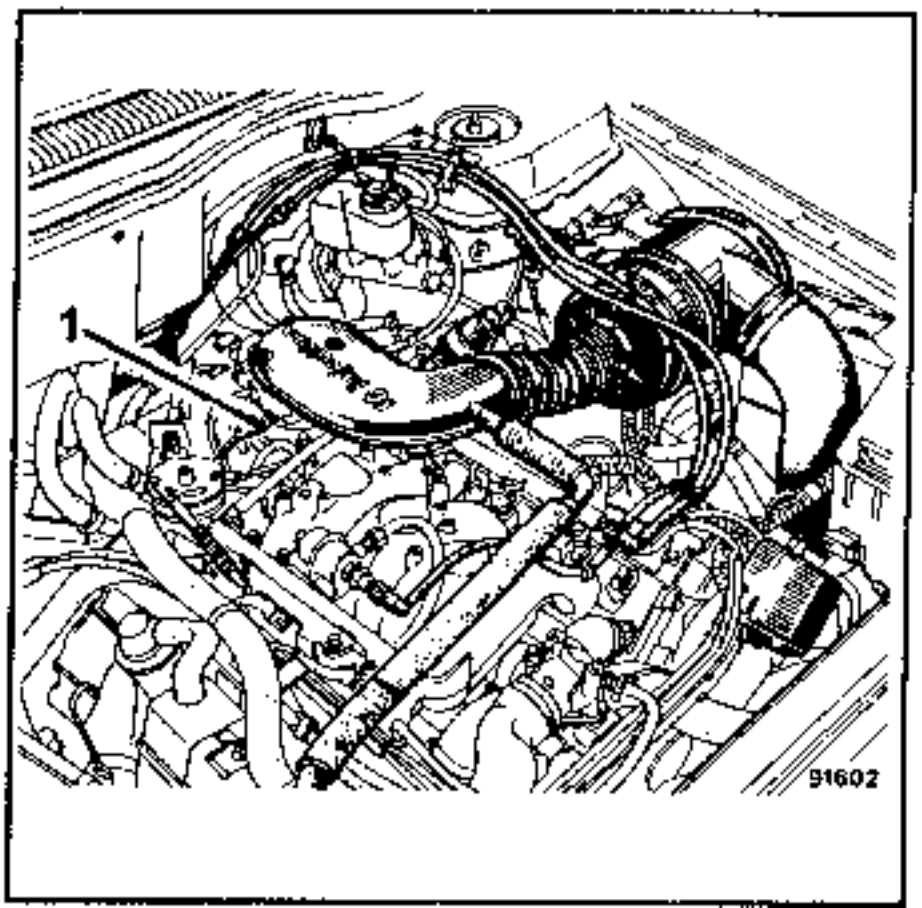
On reassembly:

Make sure that the sensor is correctly tightened and that the connector is properly clipped in place.

Z7U engine



Z7W engine



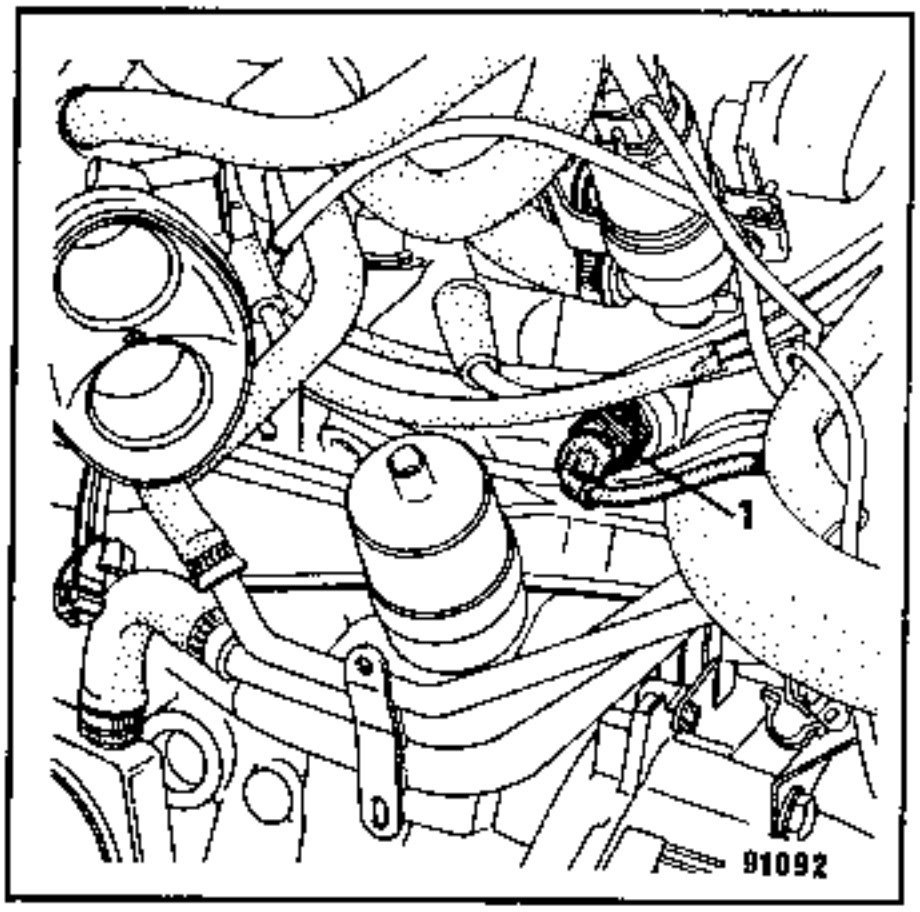
REPLACING

F3N ... engine

Precaution: Remove the sensor when the engine is **cold.**

Disconnect the connector connecting the sensor to the wiring harness.

Remove it by unscrewing it and blank off the aperture in the cylinder head quickly to prevent loss of coolant.



1 - Coolant temperature sensor

J7 ... engine

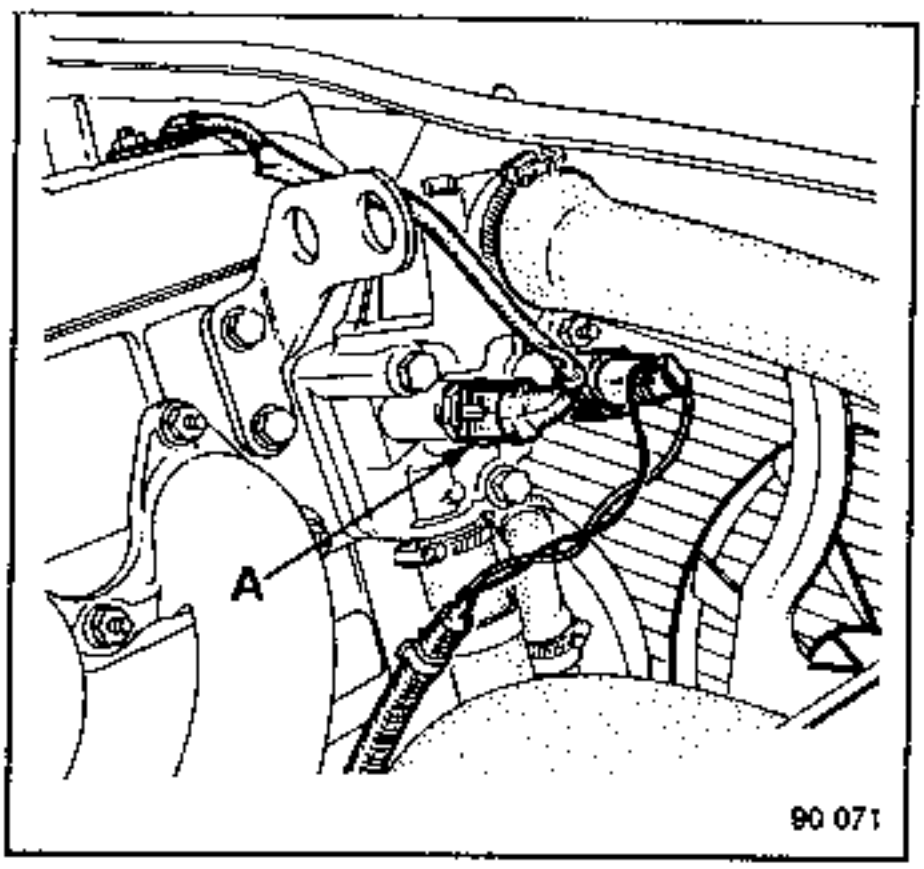
Precaution: Remove the sensor when the engine is **cold.**

Disconnect the connector from the wiring harness.

Unscrew the sensor and blank off the aperture in the coolant pump quickly to prevent loss of coolant.

On reassembly:

Ensure that the coolant system is leaktight and that the connector is properly clipped in place.



A - Coolant temperature sensor

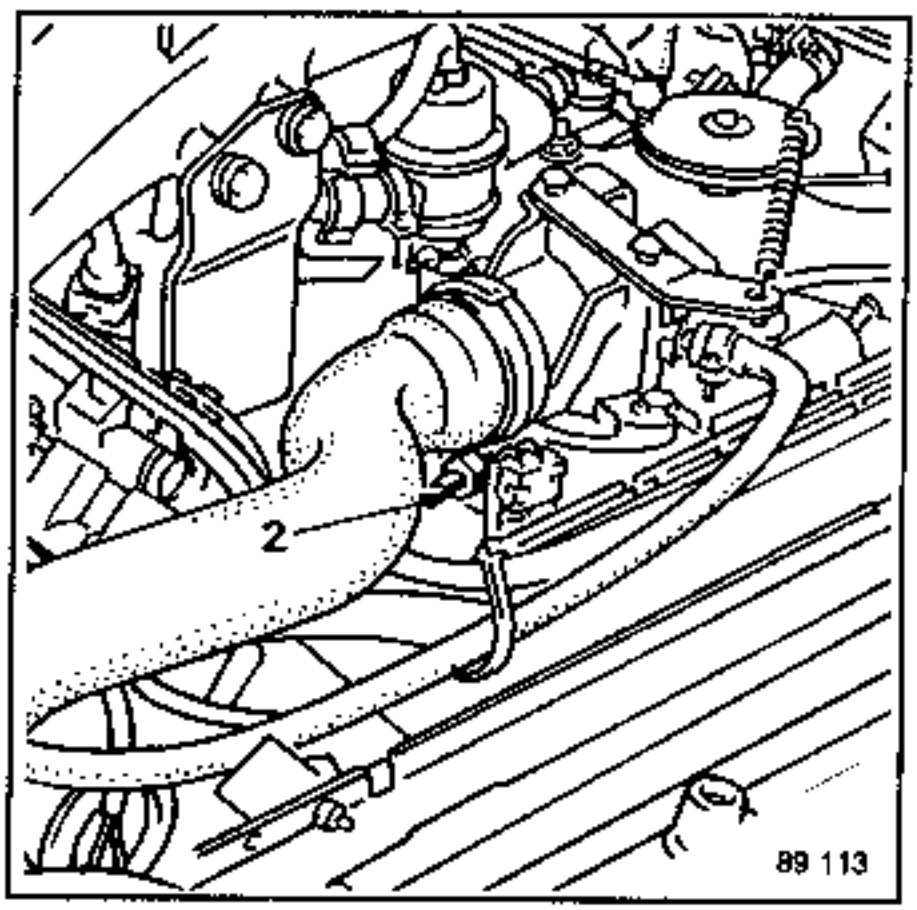
REPLACING

Precaution: Remove the sensor when the engine is **cold.**

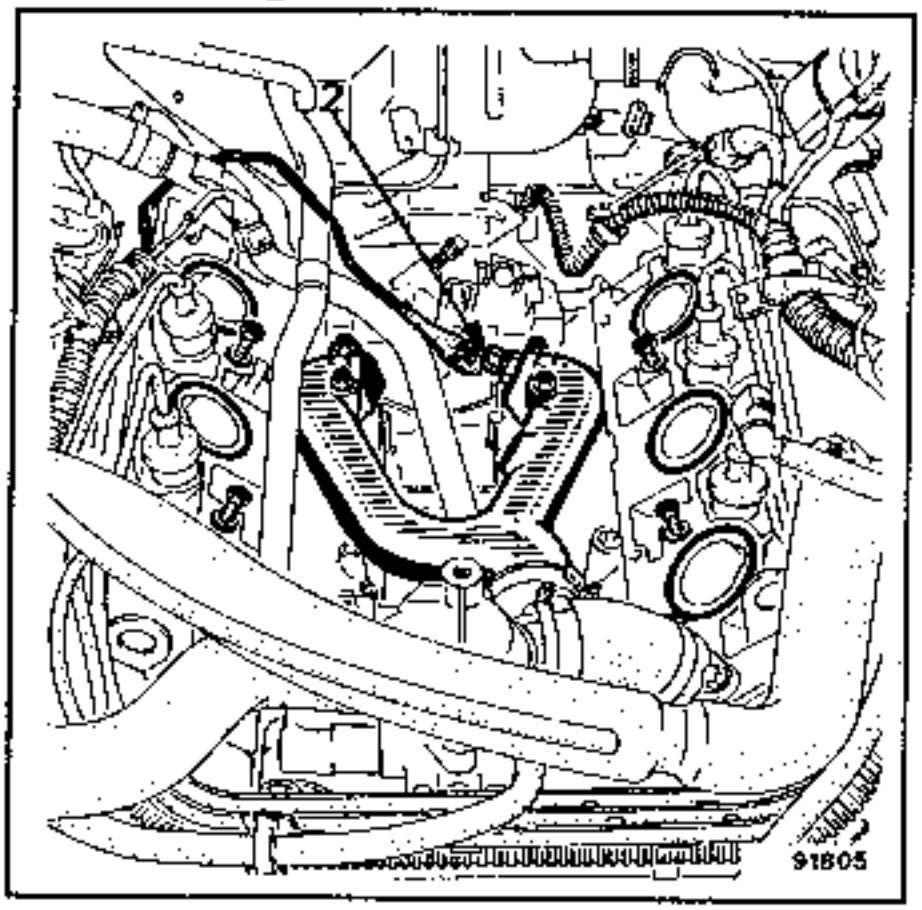
Disconnect the connector from the wiring harness.

Unscrew sensor **(2)** and blank off the aperture in the coolant pump rapidly to prevent loss of coolant.

Z7U ... engine



Z7W ... engine



NOTE: To reach the sensor, remove the throttle casing and the intermediate manifold.

On reassembly:

Remember to bleed the coolant system with the engine hot and to top up the coolant if necessary.

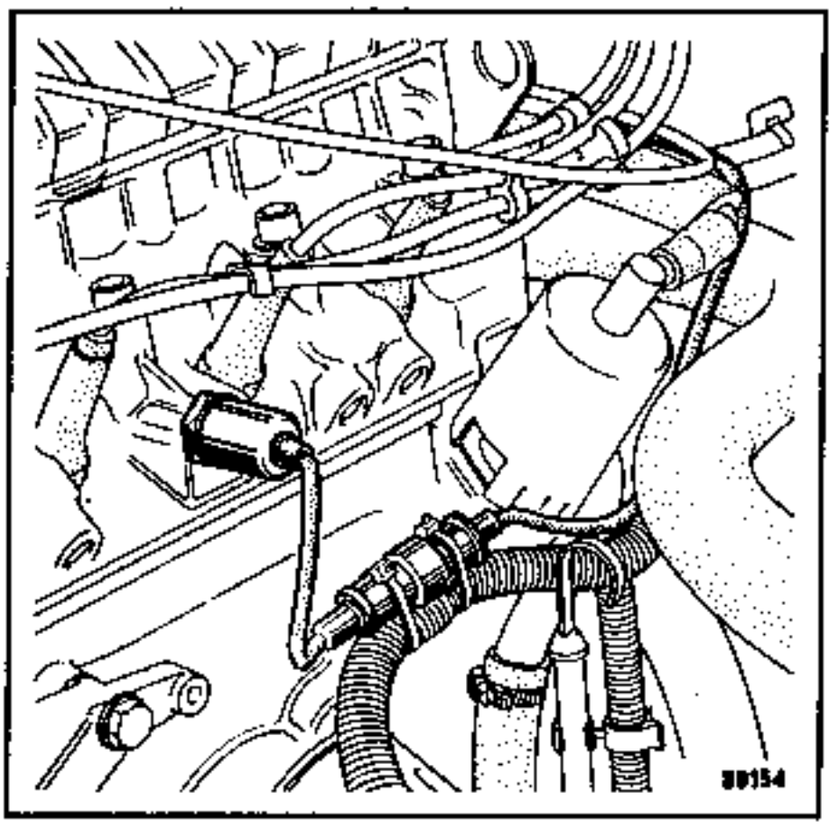
REPLACING

F3N ... engine

Removal:

Disconnect the connector from the wiring harness.

Remove the pinking sensor.



On reassembly:

Fit the connector correctly and secure it in place.

REPLACING

J7... engine

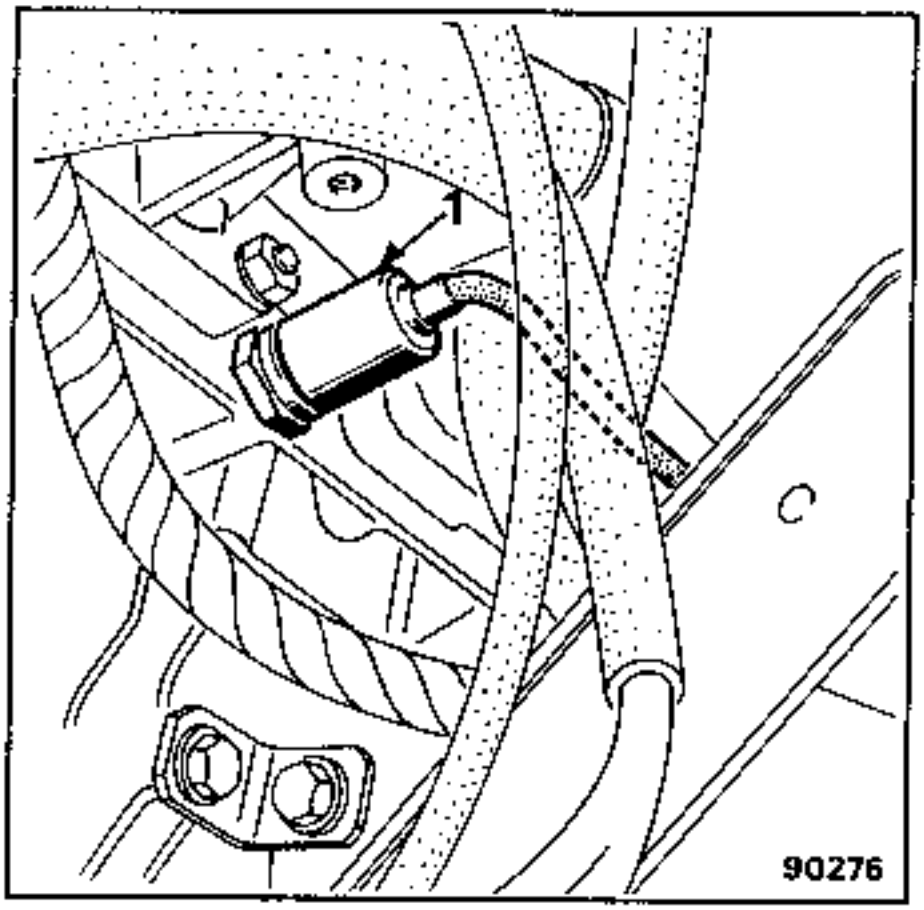
Removal:

Disconnect:
- the air temperature sensor
- the air duct connecting the air filter to the cover.

Remove the air filter.

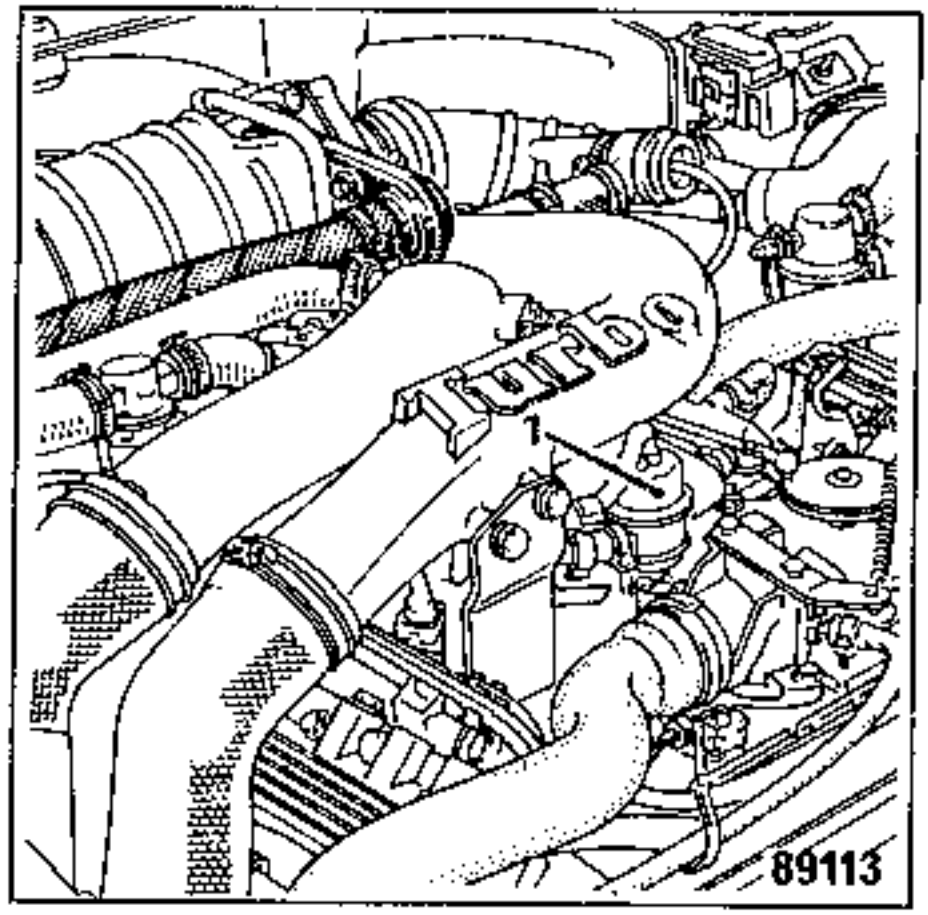
Disconnect the connector from the pinking sensor.

Loosen pinking sensor (1) using a 24 mm open-ended spanner, reaching it from under the air distributor.



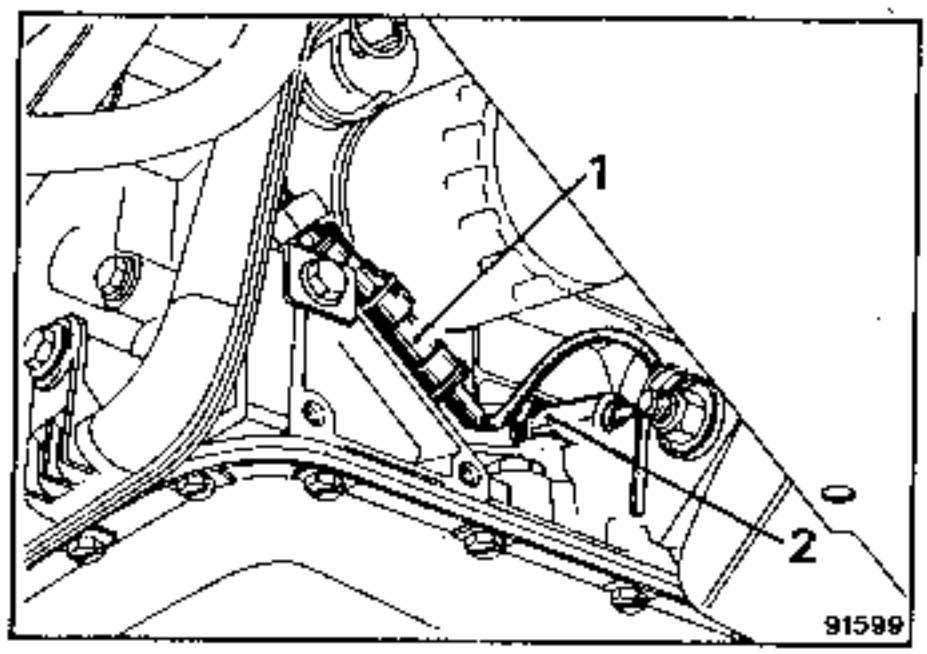
1 - Pinking sensor

Z7U ... engine



NOTE: The sensor is under the pressure regulator (1); remove the mounting screws from the pressure regulator mounting and free the assembly to reach the pinking sensor.

Z7W ... engine



Unfasten connector (1) connecting the pinking sensor to the wiring loom.

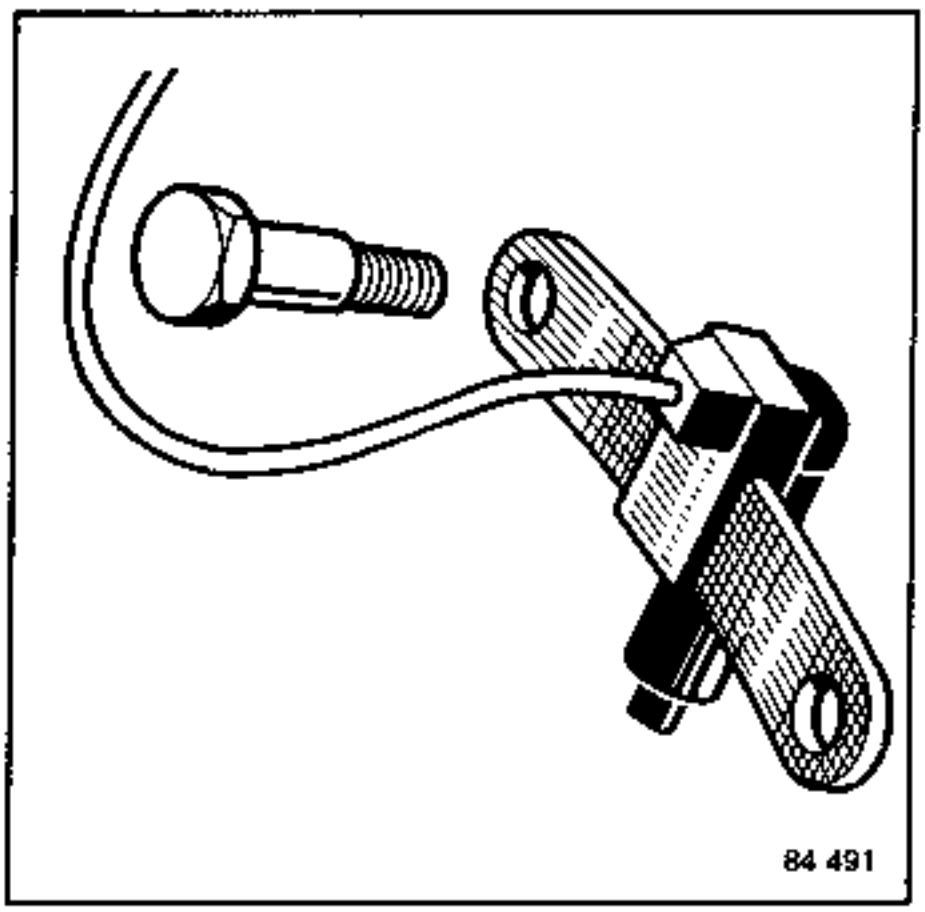
Remove pinking sensor (2).

REPLACING

P3N, J7..., Z7U ... engines (reached from underneath the vehicle)

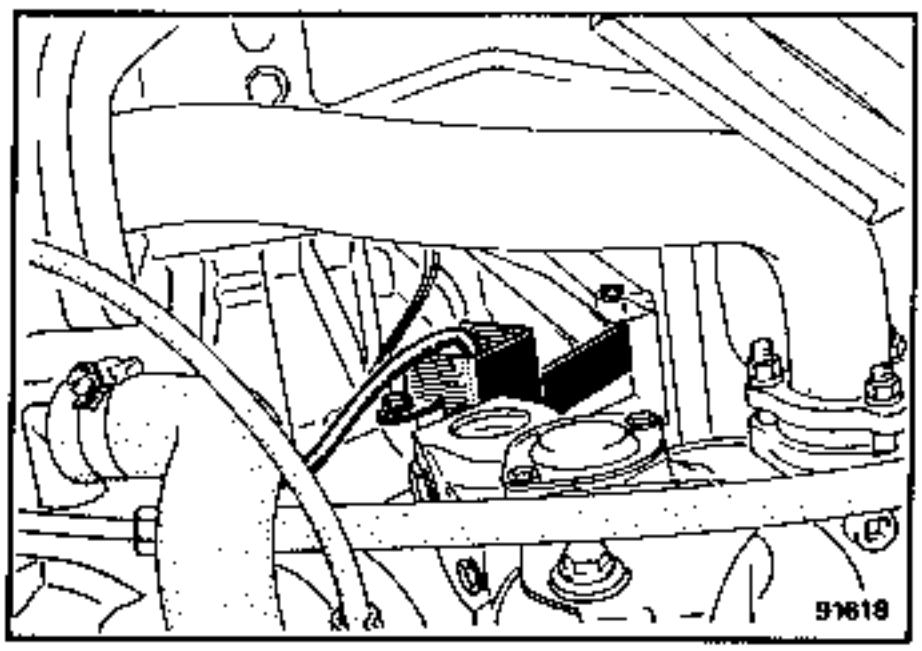
Disconnect the connector from the wiring harness. It cannot be adjusted.

Refit using shouldered screws and washers.



Z7W ... engine (reached from the engine compartment)

Remove the speed sensor and its protective shield.



Refit the speed sensor using shouldered screws.

REPLACING

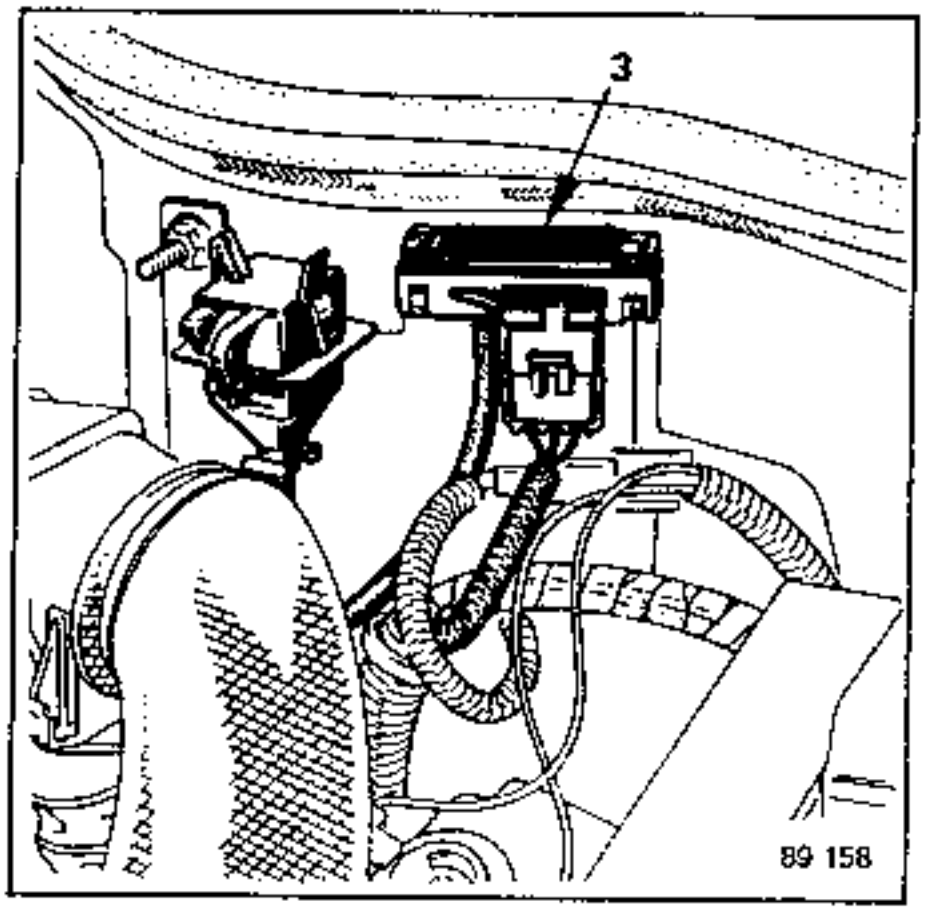
F3N engine

Disconnect the conncetor from the wiring harness.

Remove sensor (3) from its plate and disconnect the hose from the throttle casing.

Use a screwdriver as a lever to disconnect the hose at the sensor end.

Do not pull on the hose.



Z7... engine

Disconnect the connector from the wiring harness.

Remove the sensor from its plate and disconnect the hose from the inlet manifold.

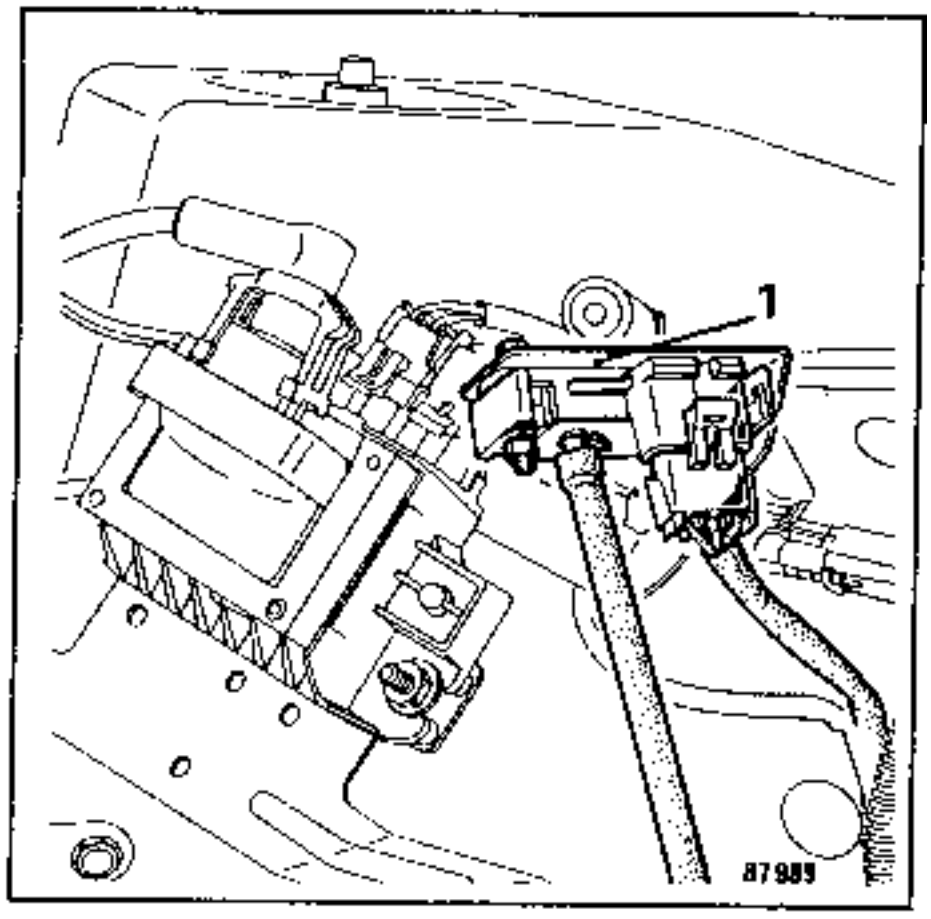
Use a screwdriver as a lever to disconnect the hose at the sensor end.

Do not pull on the hose.

ATTENTION: The feed hose is fitted with a restrictor:

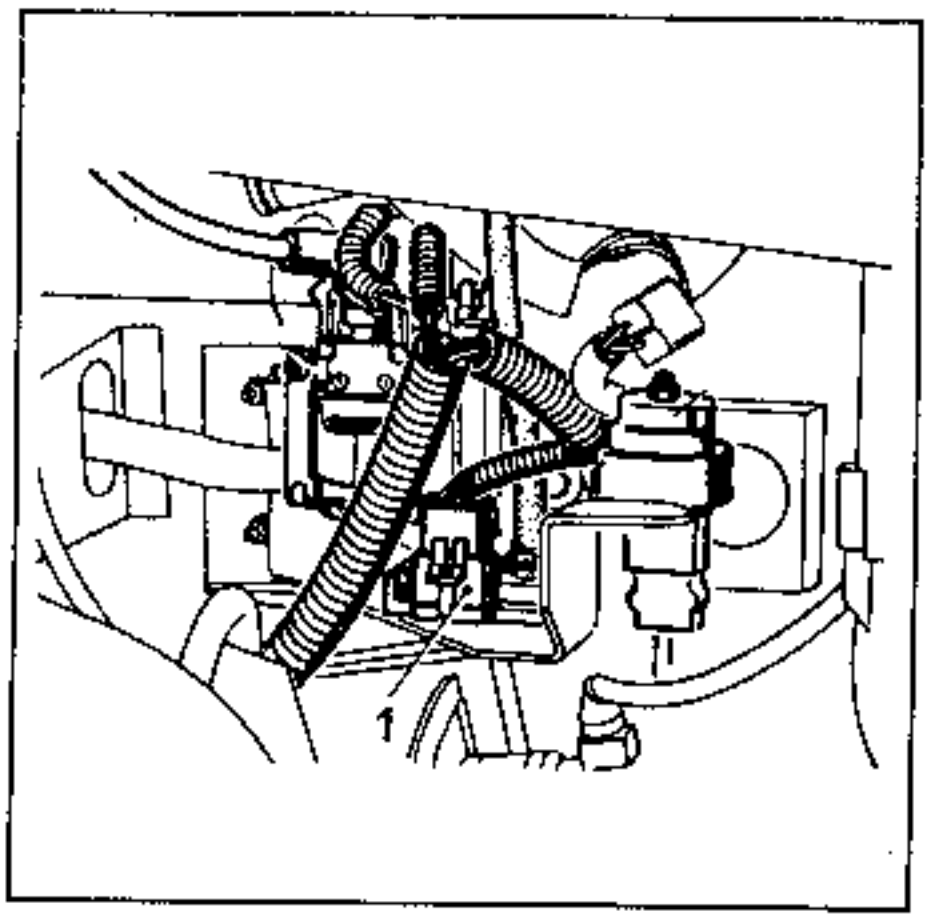
- **Z7U ...** engine: 1.2 mm dia. restrictor
- **Z7W ...** engine: 1.5 mm dia. restrictor

RENAULT 25



The pressure sensor **(1)** is in front of the lefthand cowl side panel.

RENAULT ALPINE V6 Turbo



RENAULT 25

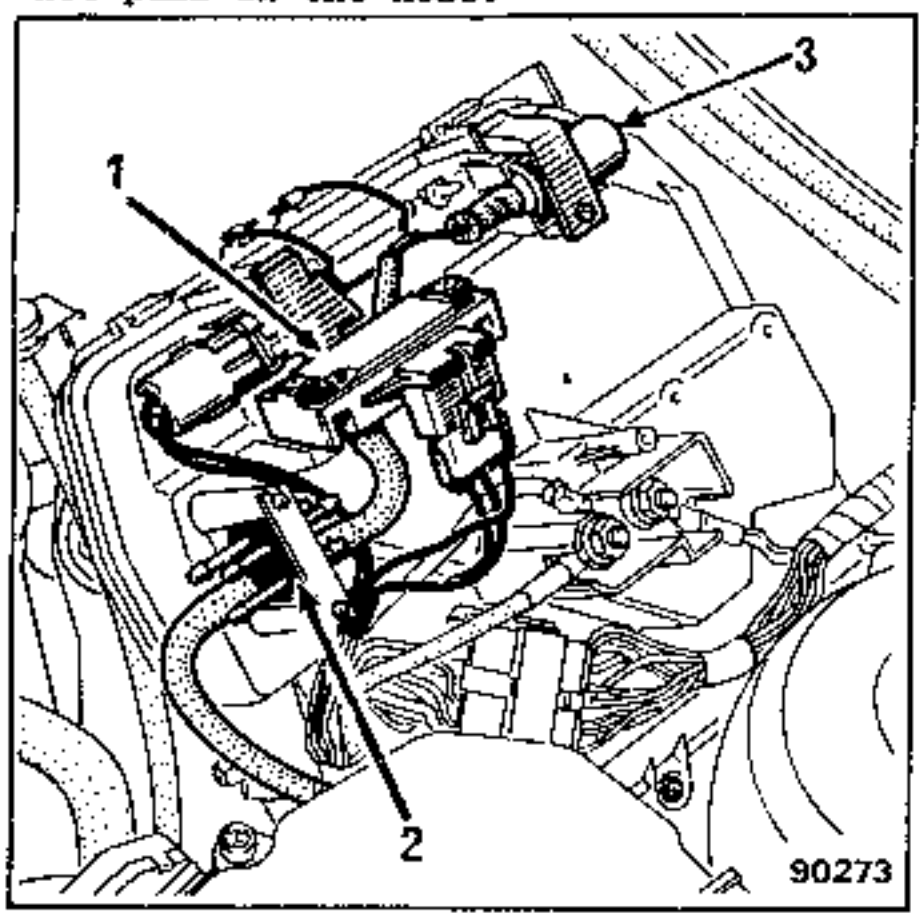
The pressure sensor **(1)** is on the rear righthand wing side.

REPLACING

REMOVAL FROM RENAULT 21

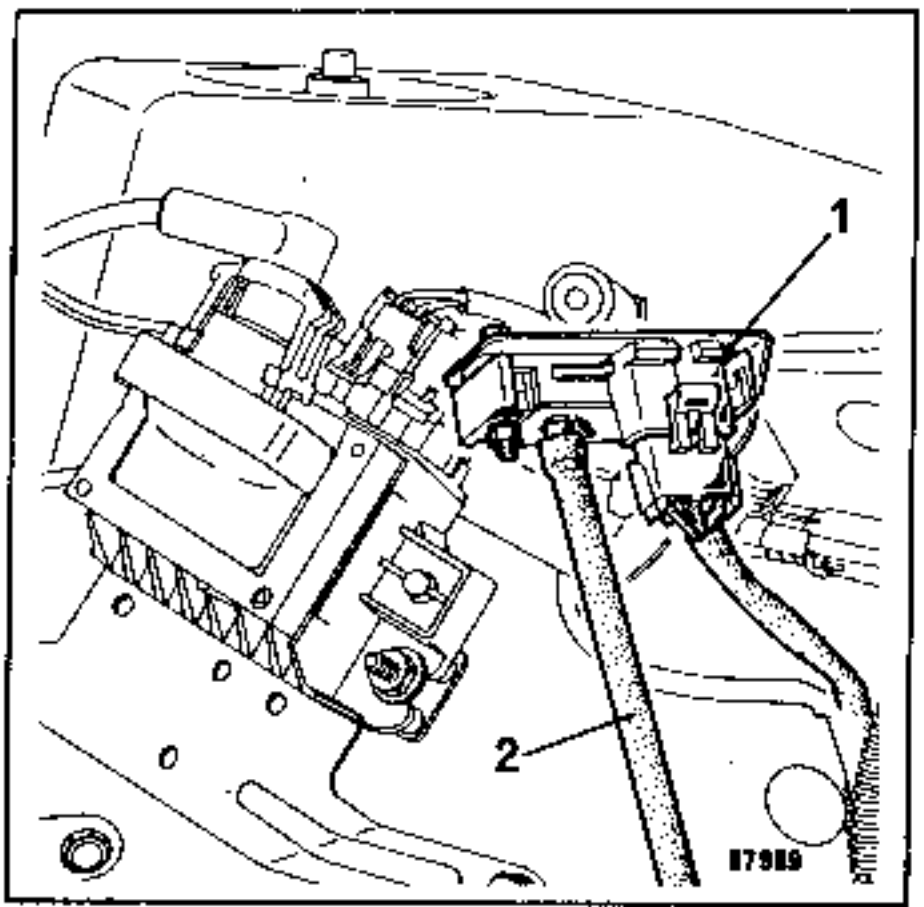
After removing the plastic casing protecting the computer and its housing, disconnect the connector connecting it to the wiring harness.

Remove the sensor from its mounting and use a screwdriver as a lever to disconnect the hose at the sensor end. **Do not pull on the hose.**

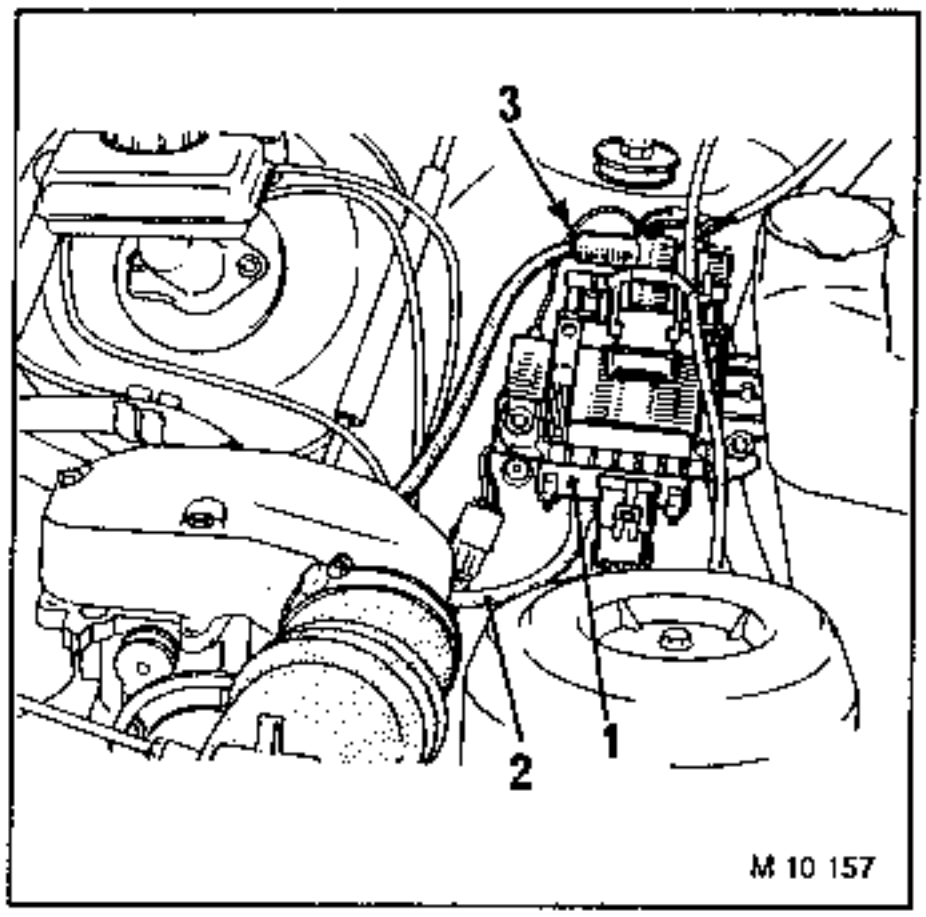


1 - Absolute pressure sensor
2 - Hose with restrictor
3 - Idling regulating potentiometer

RENAULT 25



ESPACE



NOTE: The hose connecting the pressure sensor and the manifold is fitted with a restrictor at the manifold end:

- **1.2 mm dia.: J7T engine** (down-draught throttle casing with double barrel)

- **1.5 mm dia.: J7R..., J7T... engines** (inversed, single barrel throttle casing).

REPLACING

Removal

Disconnect:
- The connector connecting the regulating valve to the wiring harness.

- The air hoses.

- The screws from the clip holding the regulating valve.

- Remove the retaining clip.

- Take out the regulating valve.

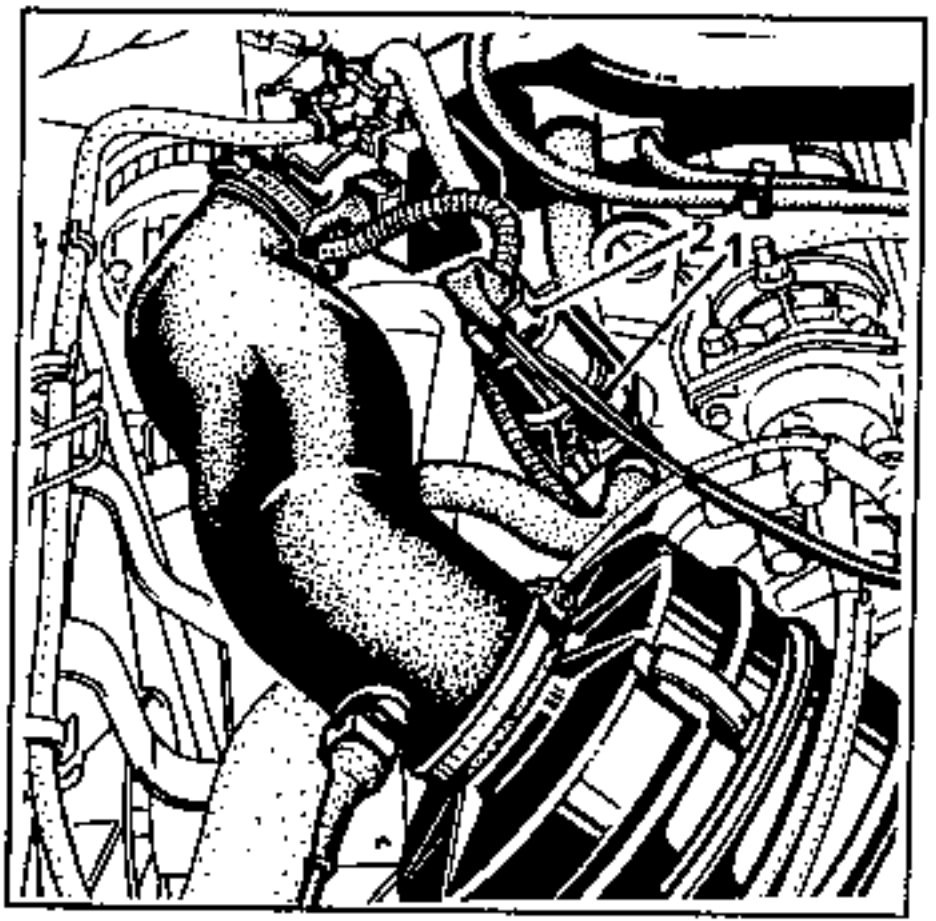
Refitting

IMPORTANT:

- Position the hoses so that they are not stressed when fitted.

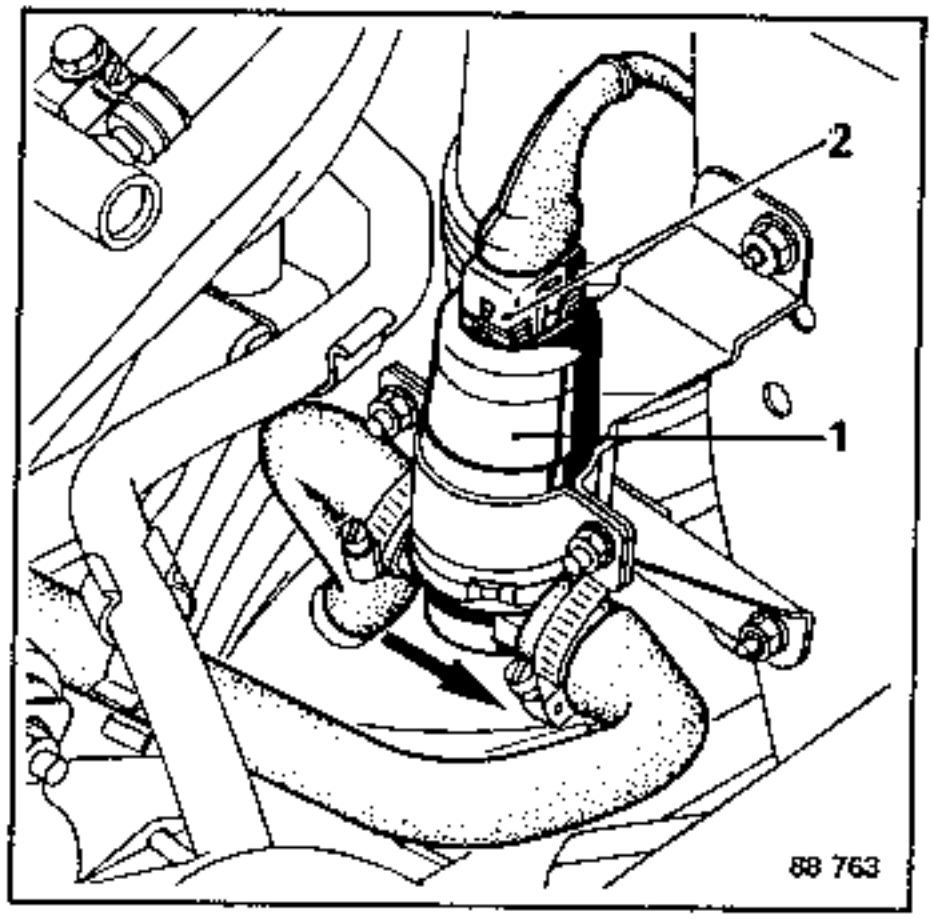
- Ensure that the valve is fitted the correct way round (arrow on base of valve indicates the direction of the air flow).

F3N ... engine



1st type (J7T... engine RENAULT 25)

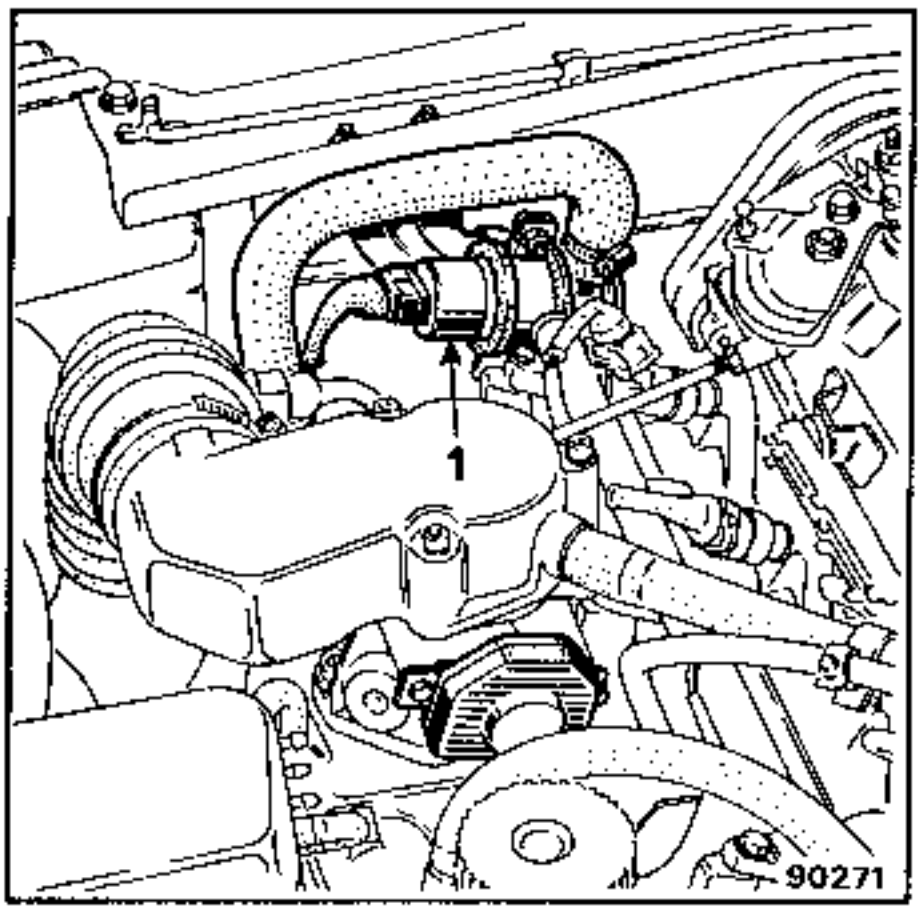
Regulating valve (1) is mounted on the surround of the lefthand headlight.



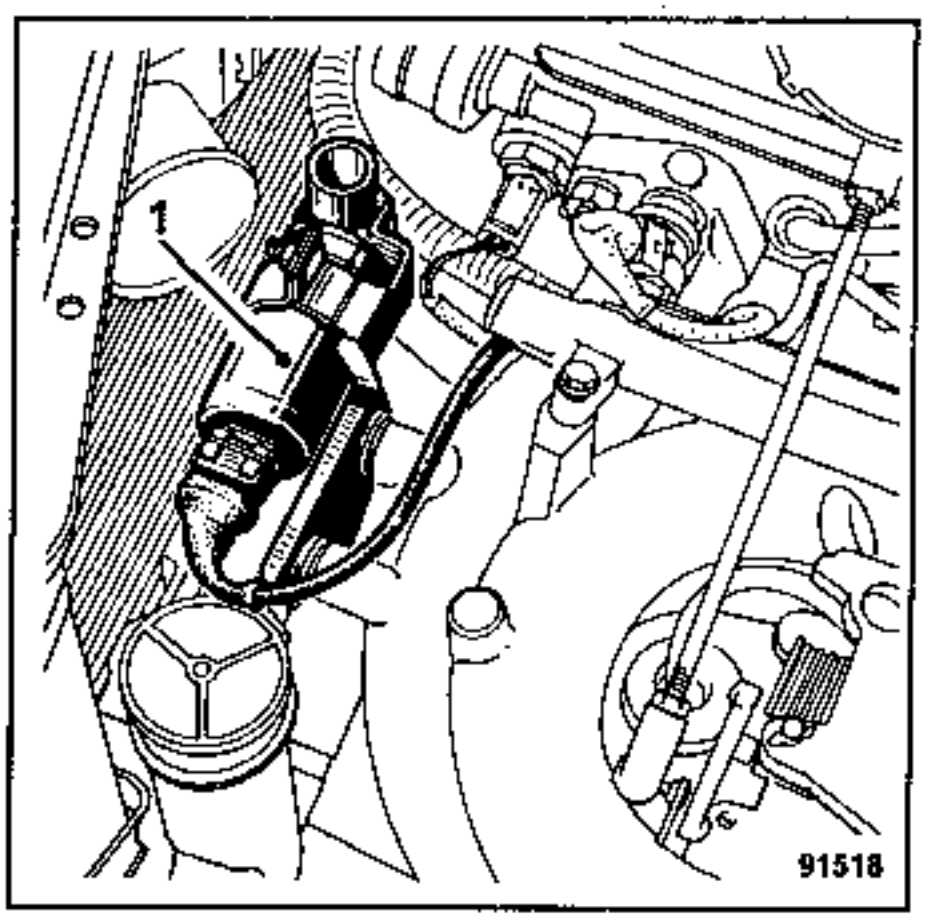
1 - Regulating valve
2 - Connector

2nd type (J7R..., J7T ... engines)

The regulating valve is mounted at the front of the engine, either on the crossmember or on the inlet manifold.



1 - Idling speed regulating valve



REPLACING THE REGULATING VALVE (1)

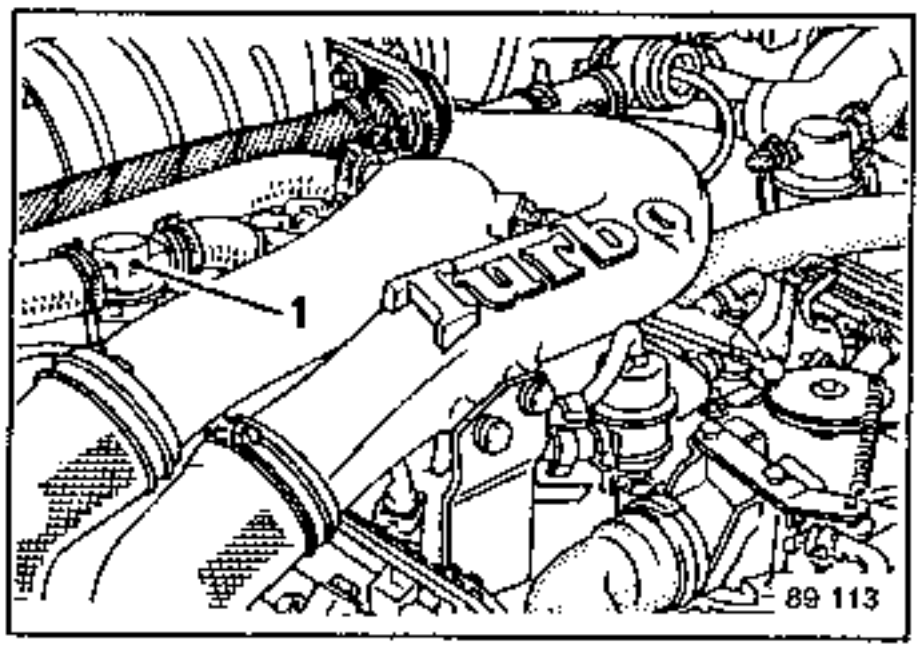
Disconnect:
- the electrical connector;
- the air inlet and outlet hoses;
- remove the retaining clip and take out the regulating valve.

On **reassembly:**

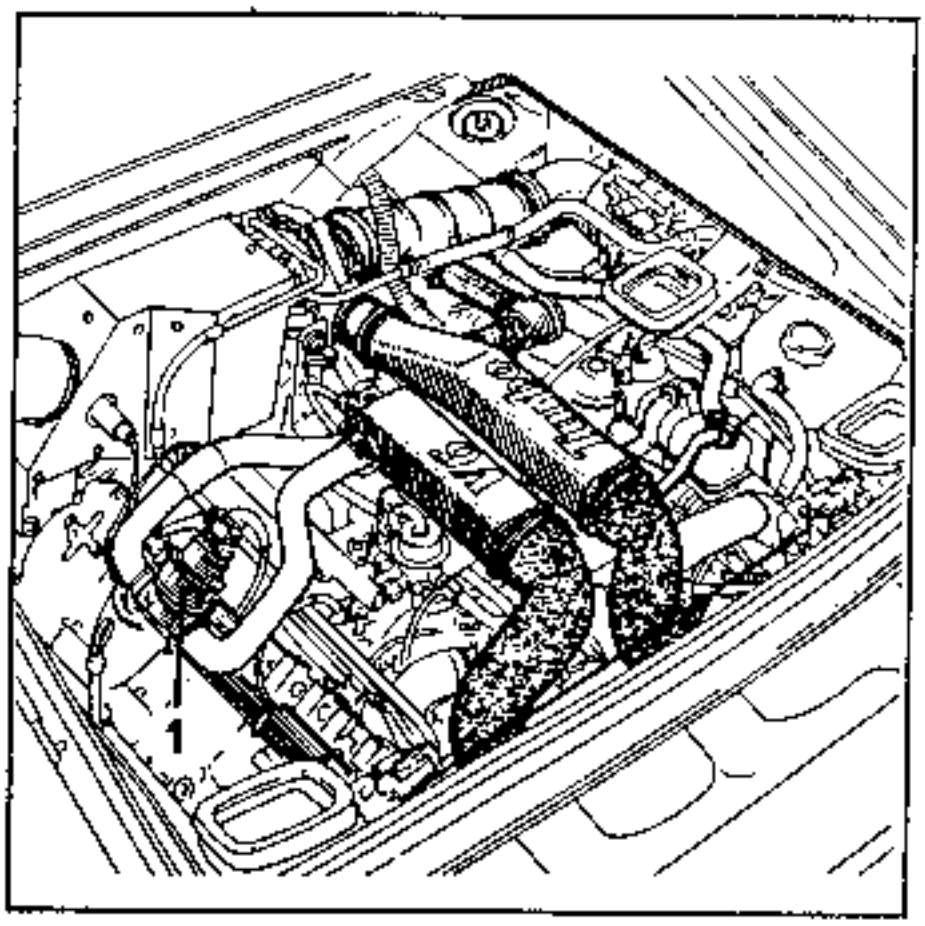
- Position the hoses so that they are fitted without stress.

- Ensure that the valve is fitted the correct way round (arrow on base of valve shows direction of air flow).

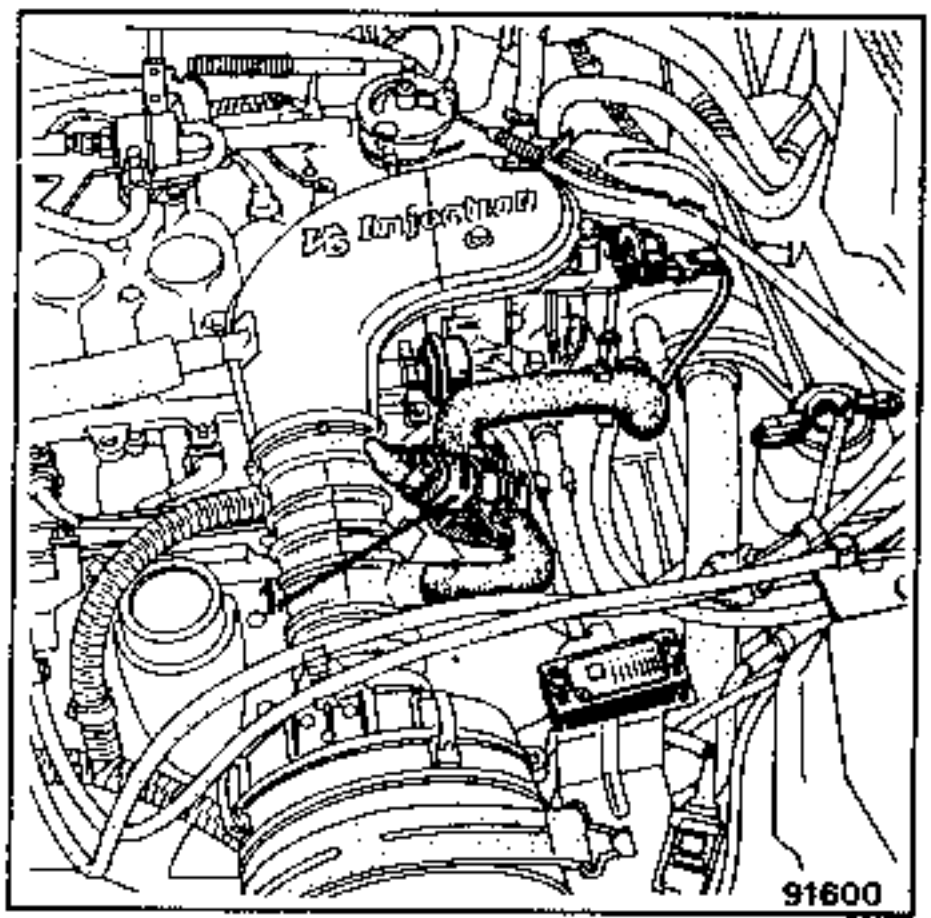
Z7U ... engine RENAULT 25 (B295)



Z7U... engine Renault GTA (D501)



Z7W ... engine Renault 25



REPLACING

Disconnect the connector from the wiring harness.

Unclip the assembly from its plate.

After replacement, adjust the idling (3) (mixture - speed) - see **"adjusting the idling speed"**.