

### 3. Electrical system

31 Battery  
Specifications

The voltage of the electrical system is 12V (12.5 - 12.7Volt).

Specifications. Applies to model years 1996 - 1999

Battery data:	Cold start current (DIN)	Capacity	Rec. charge current	1998- Cold start current SAE	Rec. charge current
Battery capacity, petrol engines -25°C .	280 A	62 Ah	4 A	420 A	4 A
Battery capacity, petrol engines -30°C .	420 A	72 Ah	7 A	520 A	5 A
Battery capacity, petrol engines Nov 1998-1999 .....	-	50 / 55Ah <sup>1</sup>	-	520 A	5 A
Battery capacity, diesel engines .....	420 A	72 Ah	7 A	600 A	6 A
Battery capacity, diesel engines Nov 98-99 .....	-	65 Ah	-	600 A	6 A
Recommended charge current .....	A	5	5		
Battery voltage .....	V	12	12		
Starting voltage .....	V	9.5	9.5		
Electrolyte specific gravity:					
Fully charged battery at 20°C .		1.28	1.28		
Charge up at .....		1.21	1.21		

<sup>1</sup> 55 Ah from May 99-.

### 3. Electrical system

#### Specifications

#### Specifications. Applies to model years: 2000-

Battery data:	Cold start current (DIN)	Capacity	Rec. charge current	Cold start current SAE	Rec. charge current
Battery capacity, petrol engines -25°C .....	280 A	62 Ah		420 A	4 A
Battery capacity, petrol engines -30°C .....	420 A	72 Ah		520 A	5 A
Battery capacity, petrol engines .....	-	55Ah		520 A	5 A
Battery capacity, diesel engines .....	-	65 Ah		600 A	6 A
Battery voltage .....		12 V	12 V		
Starting voltage .....		9.5 V	9.5 V		
Electrolyte specific gravity:					
Fully charged battery at 20°C .....		1.28	1.28		
Charge up at .....		1.21	1.21		

Electrolyte specific gravity: 1.28 at 20°C. Fully charged battery.

Electrolyte specific gravity: 1.21 at 20°C. Charging is required.

#### Tightening torques

Screws, battery shelf .....	16 Nm
Battery terminals .....	8 Nm
Ground terminal (extra) on the bodywork .....	23 Nm

32 Generator (GEN)

Specifications

**Generator (GEN) -1999**

Generators:	D4192TX	D4192 +AC	B4164S B4184S B4204S +AC +/- Jan 97	B4164S B4184S B4204S all others	B4194T B4204T	B4184SM B4184SJ
Manufacturer:	Valeo	Valeo	Nippon Denso	Bosch	Valeo	Melco
Type .....	14V 80A	14V 110A	14V 100A	14V 80A	14V 120A	13.5 V 100A
Maximum current ..... A	85	112	100	80	145	100
-maximum output ..... W	1140	1540	1400	1120	1950	1350
-maximum speed ..... r/s (rpm)		300 (18000)	300	300	300	300
Diameter, slip rings:						
-new ..... mm	14.3	14.3	14.4	15.4	14.3	22.7
-minimum .. mm	12.5	12.5	12.8	14.0	12.5	22.1
Maximum permitted radial runout:						
-slip rings .. mm	0.02	0.02	0.04	0.03	0.02	0.05
-rotor ..... mm	0.04	0.04	0.08	0.05	0.04	0.05
Carbon brushes:						
-spring tension ..... N	2.8	2.8	1.5 - 3.2	1.0	2.8	4.6 - 5.8
-minimum length ..... mm	5.5	5.5	5.5	5.0	5.5	5.0

**3. Electrical system**  
**Specifications**

**Generator 2000-**

Generator:	D4192TX	Petrol engine Except B4184SM/SJ	Petrol engine Except B4184SM/SJ 2002-	B4184SM B4184SJ	
Manufacturer:	Valeo	Denso	Bosch	Melco	
Type .....	14V/ 120A	14V/ 120A	14V/140A	13.5V/ 100A	
Maximum current: ..	A 120	120	140	100	
-maximum output ..	W 1620	1730	2175	1350	
-maximum speed ..	r/s 300 (rpm) (18000)	300 (18000)	300 (18000)	300 (18000)	
Diameter, slip rings:					
-new .....	mm	14.3	15.4	15.4	22.7
-minimum .....	mm	12.5	14.0	14.0	22.1
Maximum permitted radial runout:					
-slip rings .....	mm	0.02	0.03	0.03	0.05
-rotor .....	mm	0.04	0.05	0.05	0.05
Carbon brushes:					
-spring tension ...	N	2.8	1.0	1.0	4.6-5.8
-minimum length ..	mm	5.5	5.0	5.0	5.0

**Tightening torques: -1999**

Mechanical component:	Nm
Guide screw: B4184SM/SJ .....	44
Clamp screw: B4184SM/SJ .....	23
Guide screw: Diesel (SO) <sup>1</sup> .....	42
Adjusting mechanical screws (Diesel) .....	22
Terminal screws: M10 .....	42
M8 .....	22
Terminal screws (Petrol) .....	27
Pulley nut: Valeo .....	75
Turbocharger / Petrol Valeo (B4194TX) .....	75
Nippon Denso .....	110
Bosch .....	65
B4184SM/SJ .....	118

<sup>1</sup> SO = Single option - only alternative.

**Tightening torques: 2000-**

Mechanical component:	Nm
Guide bolt: B4184SM/SJ .....	44
Clamp screw: B4184SM/SJ .....	23
Guide screw: Diesel (SO) <sup>1</sup> .....	42
Adjusting mechanical screws (Diesel) .....	22
Terminal screws: M10 .....	42
M8 .....	22
Terminal screws (Petrol) .....	27
Pulley nut: Valeo .....	75
Denso .....	80
B4184SM/SJ .....	118
Bosch .....	65

<sup>1</sup> SO = Single option = only alternative.

**Test values -1999**

Electrical data:	D4192T	D4192T +AC	Petrol +AC Except B4184 SM/SJ	Petrol Except B4184 SM/SJ	B4194T B4204T	B4184SM B4184SJ
	80 A	110 A	100 A	80 A	120 A	100A
Resistance:						
-Rotor .. Ω	2.8	2.8	2.3	2.6	2.7	2.3
-Stator .. Ω	38 - 41	28-31	0.03	0.027	21-23	0.06-0.07
<sup>1</sup> .....						
Current at 13.5V:						
1500rpm A	28	26	-	-	17	46
1800rpm A	-	-	-	45	45	60
2000rpm A	54	57	53	-	60	67
3000rpm A	69	84	-	-	90	86
4000rpm A	75	94	-	-	109	96
6000rpm A	80	105	103	80	121 <sup>2</sup>	104

<sup>1</sup> Per phase. Use a low ohmmeter.

<sup>2</sup> Minimum output

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#### Specifications

#### Test values 2000-

Electrical data:		D4192TX	Petrol Except B4184SM/SJ	Petrol Except B4184SM/SJ	B4184SM B4184SJ
		120 A	120 A	140A	100 A
Resistance:					
-Rotor .....	$\Omega$	2.8	2.6	2.6	2.3
-Stator 1 <sup>1</sup> .....	$\Omega$	28-31	0.027	0.06	0.06-0.07
Current at 13.5V:					
1500rpm	A	17	40	130	46
1800rpm	A	45	65	134	60
2000rpm	A	60	79	138	67
3000rpm	A	90	107	142	86
4000rpm	A	109	117	145	96
6000rpm	A	121	125	145	104

<sup>1</sup> Per phase. Use a low ohmmeter.

**Charge regulator -1999**

Test environment:	In the car:	Test bench:
Battery charging .....	75 %	100 %
Air temperature .....	+25 °C	+25 °C
Temperature, regulator warm .....	+60 - 80 °C	+60 - 80 °C
Test values:	In the car:	Test bench:
Generator speed .....	r/s (rpm) 100 (6000)	100 (6000)
Engine speed:		
Diesel .....	r/s (rpm) 50 (3000)	-
Petrol .....	r/s (rpm) 40 (2400)	-
Control voltage between B+ and D- on the generator:		
Valeo / Nippon .....	V 13.8 - 14.6	14.1 - 14.9
Melco .....	V 13.0 - 14.2	13.3 - 14.5
Bosch .....	V 13.8 - 14.6	13.7 - 14.5
Control tolerance:	In the car:	Test bench:
Load the generator (GEN) with 0.85 Amp rated output. Permitted voltage drop compared to previous reading. ....	-	0 - 0.3 V

**Charge regulator 2000-**

Test environment:	In the car:	Test bench:
Battery charging .....	75 %	100 %
Air temperature .....	+25 °C	+25 °C
Temperature, regulator warm .....	+60 - 80 °C	+60 - 80 °C
Test values:	In the car:	Test bench:
Generator speed .....	r/s (rpm) 100 (6000)	100 (6000)
Engine speed:		
Diesel .....	r/s (rpm) 40 (2400)	-
Petrol .....	r/s (rpm) 40 (2400)	-
Control voltage between B+ and engine ground on the generator:		
Denso / Valeo .....	V 13.5 - 14.5	14.1 - 14.9
Bosch .....	V 13.5 - 14.5	14.35 - 14.65

3. Electrical system

33 Starter motor

33 Starter motor

Specifications

Mechanical and electrical data:	M56 AW50-42LE AW55-50		JB3, JC5		F5M42 B4184SM B4184SJ
	-30°	-25°	-30°	-25°	
Type .....	12V 1.4kW	12V 1.1kW	12V 1.4kW	12V 1.1kW	12V 1.2kW
Manufacturer-No. ....	00011 08166	00011 07076	00011 08173	00011 07067	M000T 81284
Direction of rotation .	R (Applies to all)				
Mechanical test values:					
Axial clearance .... mm	0.2 - 0.7	0.2 - 0.7	0.2 - 0.7	0.2 - 0.7	0.5 - 2.0
Brake torque ..... Nm	0.6 - 11	0.6 - 11	0.6 - 11	0.6 - 11	8.73
Pinion gear:					
Distance from ring gear .... mm	0.7 - 4.5	1.0 - 4.8	1.0 - 4.8	1.0 - 4.8	-
Module ..... mm	2.11	2.11	2.11	2.11	2.54
Free wheel torque ..... Nm	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	0.12 - 0.18	-
Travel ..... mm	0.3 - 0.5	0.3 - 0.5	0.3 - 0.5	0.3 - 0.5	0.2 - 0.5
Commutator:					
Minimum diameter .... mm	32.1	32.1	32.1	32.1	28.8
Carbon brushes:					
Number of brushes ....	4	4	4	4	4
Brush-spring-tension .....	-	-	-	-	11.8 - 23.5
Minimum length ..... mm	6.1	6.1	6.1	6.1	7
Maximum radial play:					
Rotor ..... mm	0.05	0.05	0.05	0.05	
Commutator .....	0.01	0.01	0.01	0.01	

Mechanical and electrical data:	M56 AW50-42LE AW55-50		JB3, JC5		F5M42 B4184SM B4184SJ
	-30°	-25°	-30°	-25°	
Electrical test values:					
Unloaded:					
12.0V and 70A ..... rpm	3000	3300	3000	3300	
Loaded (locked):					
4.0V ..... A	650 - 750	460 - 540	460 - 540	460 - 540	
Lowest engagement voltage ..... V	7.4	7.4	7.4	7.4	4.0
Gear ratios:					5.67:1

### Specifications

Starter motor data:	MT -25°	MT -30°	MT
Type .....	D6RA63	D7R16	D7R18 (Diesel) <sup>1</sup>
Manufacturer .....	Valeo	Valeo	Valeo
Power ..... kW	1.25	1.7	1.7
Number of brushes .....	2	4	4
Minimum length, brushes ..... mm	10	6	6
Brush spring tension ..... N	15	24	24
Rotor axial clearance ..... mm	0.5 - 0.6	0.5 - 0.6	0.5 - 0.6
Commutator axial minimum thickness ..... mm	0.7	1.4	1.4
Solenoid switching - voltage ..... V	7.0	7.0	7.0
Gear ratios, engine / pinion .....	5.54:1	4.5:1	4.5:1
Relay coil total resistance ..... Ω	1,275	1,275	1,275

<sup>1</sup> Differs from D7R16 in the front section and drainage hole.

### 3. Electrical system

#### Specifications

Maximum radial runout:	
Commutator .....	0.015 mm

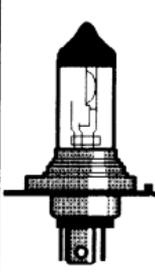
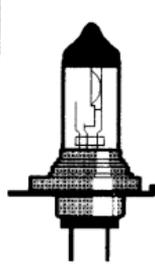
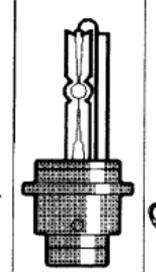
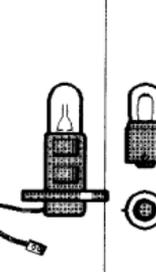
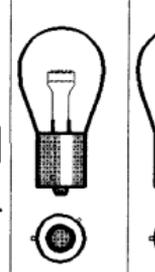
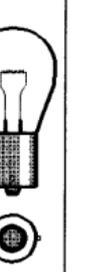
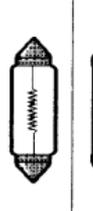
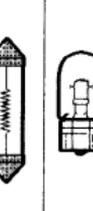
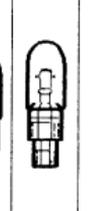
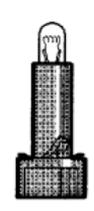
#### Test values

Unloaded starter motor:				Melco
- test environment .....	V/A	12/≤50	12/≤90	11/90
- minimum speed .....	rpm	3000	3800	2800
Loaded starter motor:				
- test environment .....	V/A	8.1/≤350	8/≤400	75/300
- minimum speed .....	rpm	1200	1300	890
Locked starter motor:				
- test environment .....	V/A	6.5/≤600	4.5/≤750	4/≤650
- minimum speed .....	rpm	0	0	0

#### Tightening torques

Mechanical component:	Other	B4184SM B4184SJ
Screws, starter motor support on the engine .....	50 Nm	30 Nm
Screws, starter motor to gearbox .....	50 Nm	50 Nm
Terminal nut, cable, starter motor relay .....	13 Nm	11 Nm

### 35 Lighting Specifications

							
<b>1A</b>	<b>1B</b>	<b>1C</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5A</b>	
							
<b>5B</b>	<b>6A</b>	<b>6B</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>

H3501498

#### Bulbs

Lamp function:	Power:	Lamp type:	No:
Headlamp with Xenon bulb. <b>WARNING: High voltage!</b> Replace the bulb using the method described in VADIS, function group: 3 (35).	35	D2R P32d-3	1C
Headlamps with twin reflectors and high beam bulb beside the low beam Xenon bulb	55	H7 PX26d	1B
Headlamp, Halogen	60/55	H4 P43t-38	1A
Fog lamps	55	H3 PK22,5	2
Front parking lamps	4	BA 9s	3
Indicator lamps, front and rear (orange)	21	BAU 15s	4
Side indicator lamps (white or orange)	5	W2.1x9.5d	7
Tail lamps	5	BA 15s	5B

### 3. Electrical system

#### *Specifications*

Lamp function:	Power:	Lamp type:	No:
Stop (brake) lamps	21	BA 15s	5A
Reversing lamp and rear fog lamp	21	BA 15s	5A
Number plate lighting, S40	5	W2.1x9.5d	7
Number plate lighting, V40	5	SV 8.5	6A
Sidemarkers lamps, front and rear	3	W2.1x9.5d	7
Interior lighting	5	SV 5.5	6B
Courtesy lighting, driver's position	10	SV 8.5	6A
Vanity mirror lighting (2x)	1.2	SV 5.5	6B
Rear reading lamps	5	W2.1x9.5d	7
Cargo compartment lighting	10	SV 8.5	6A
Lighting, Heater controls ECC	1.2	W2x4.6d	8
Glove compartment lighting	5	SV 8.5	6A
Instrument lighting	3	Special W2x4.6d	10B
Instrument lighting centre console	5	B10d	10
Light switch illumination	1.2	Special W2x4.6d	11
Lighting, indicator and warning lamps	1.2	W2x4.6d	8
Indicator lamp, headlamps	1.2	Special W2x4.6d	9
Cigarette lighter lamp	1.2	W2x4.6d	8
Gear selector lamp, automatic gearbox	1.2	W2x4.6d	8
Instrument lighting, display Note! From model year: 2003-, non-replaceable diode bulbs	3	W2x4.6d	8

37 Fuses  
Specifications

Supplied by:

30 = Battery voltage.

75 = Accessories.

15/1 = Connected to IG1 (connected at start).

15/2 = Connected to IG2 (disconnected at start).

Fuses in passenger compartment: 11 B. Applies to model years 1996 - 1999

Fuse No:	A:	Supplied by:	Function:
1	25	30	Blower fan, Electronic climat control module, Airco module, Auxiliary heater (Melco)
2	20	30	Reserve
3	10	75	Reserve
4	10	15/1	Transmission control module, Spin control module, Reverse lights, Bulb failure unit, Switch illumination
5	10	15/2	Reserve
6	20	15/2	Seat heater, Illumination light switch
7	10	15/1	Direction indicators, Light switch, Cruise control
8	20	30	Hazard warning lights
9	15	75	Electric windows, Electric mirrors, Audio system
10	10	75	Rear wiper
11	10	15/1	SRS, Engine control module, Combined instrument
12	15	15/2	Sun roof, Head lights, Illumination switch heated window rear, Main beam warning light
13	15	30	ODB II socket, Parking lights, 12 volt accessory socket / cigarette lighter
14	20	75	Front wipers/washer, Headlamp wipers, Rear washer, Intermitting rear wiper
Accessories			
5A (2X)		Tow hitch, tail lamps (right side)	
3A (2X)		RTI, behind radio	
3A		CD player	
3A		TILT sensor, (alarm) behind cigarette lighter	

### 3. Electrical system

#### Specifications

#### **Fuses in passenger compartment: 11B. Applies to model years 2000**

Fuse No:	A:	Supplied by:	Function:
1	25	30	Blower fan, Electronic climat control module, Airco module, Accessory
2	20	30	Cigarette lighter, 12V supply rear
3	10	75	Electronic windows, mirrors, retracting mirrors. VGLA module. Power passenger compartment
4	10	15/1	ABS control module, (CEM) central electronic module
5	20	15/2	Heated seats, accessory
6	15	15/2	Turn signal. Reversing lights. CEM. Switch illumination
7	10	15/1	Cruise control. Lighting switch. Shiftlock. VGLA model, seat belt switch
8	15	30	Hazard warning lights. Central door lock
9	15	75	Audio system. 12 V supply, cigarette lighter
10	20	75	Windscreen washer, windscreen wiper, headlamp wiper
11	10	15/1	Engine control module (ECM), Transmission control module (TCM), Supplemental Restraint System Module (SRS). Anti-spin. Immobiliser. Combined instrument panel. CEM.
12	15	15/2	Sun roof. Siren. Heated window rear. Seat belt reminder. Blower fan
13	15	30	Brake light. Data link connector (DLC)
14	20	75	Rear washer/wiper. Windscreen wiper front. Headlamp wiper
<b>Accessories</b>			
5A (2X)		Tow hitch, tail lamps (right side)	
3A (2X)		RTI, behind radio	
3A		CD player	
3A		TILT sensor, (alarm) behind cigarette lighter	

**Fuses in passenger compartment: 11B. Applies to model year 2001–**

Fuse No:	A:	11/B Function:
1	25	Blower fan, AC, ECU, accessory
2	20	Cigarette lighter. 12V supply
3	10	Retracting door mirrors, power window relay, power passenger seat control module, VGLA (EU, OS)
4	10	ABS control module, central electronic module
5	20	Heated seats
6	15	Indicator lamp, reversing lamp. CEM MY2001-2002
7	10	Lighting switch MY2001-2002. Cruise control. VGLA, ECU, shiftlock, Reverse light. Bifuel including control module
8	15	Hazard warning signal flasher,VGLA flasher
9	15	Radio, subwoofer (V40). Accesory relay (USA, CAN, AUS)
10	20	Windscreen washer, windscreen wiper, headlamp wiper
11	10	Engine control module (ECM). Transmission control module (TCM), Supplemental Restraint System Module (SRS), Anti-spin,limmobiliser, Combined instrument panel. Relay Melco 2. Control unit( DSA)
12	15	Central electronic module (CEM) MY2003-, Siren, seat belt reminder, sunroof, rear demister relay, blower fan relay
13	15	Brake light, data link connector (DLC). CEM
14	20	Rear washer pump motor (V40), rear windscreen wiper (V40), windscreen wiper, headlamp wiper
Accessories:		
5A (2X)	Tow hitch, by tail lamps (right-hand side)	
3A (2X)	RTI, behind the radio	
3A	CD player	
3A	TILT sensor, (alarm), behind the cigarette lighter	
15/25A	Parking heater	

### 3. Electrical system

#### Specifications

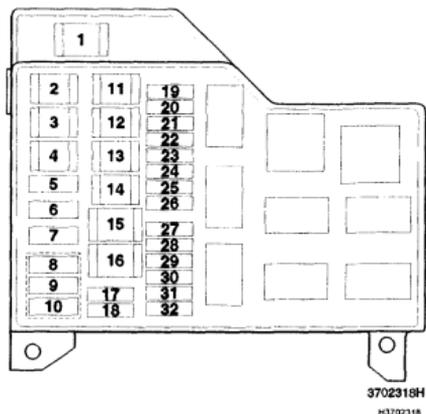
#### **Fuses in the engine compartment: 11A. Applies to model years 1996 — 1999**

Fuse No:	A:	Function:
1	120	Main fuse to fuses 11/A 2-7, Glow plugs, Alternator (Diesel)
2	40	Supply, fuses 11B: 1,2,8 and 13 (passenger compartment)
3	25	Rear window heater, Side mirror heaters
4	20	Headlights single, Fog lights, Horn (Diesel, petrol)
	30	Headlights dual (Diesel)
5	10	Interior lights, Lock and alarm module, Ultrasonic/ glassbreak module, Audio system, electric antenna, Key-in reminder, Combined instrument, Engine control module (Melco)
6	20	Central doorlock module, Electric child lock
7	20	Auxiliary heater. Melco
8	20	Electrically operated drivers seat, Alternator. Melco
9	15	Airco compressor, Airco condensor fan (turbo)
10	15	Brake lights, Engine control module Melco
11	40	Ignition switch for fuses 11B: 3-7, 9-12 and 14, Starter motor
11	50	Thermoplungers (Diesel)
12	50	ABS
13	20	Immobiliser, Engine control module (ECM), Injection system and fuel pump, Fuel heater, Fuel pump
14	20/30	Headlights single(20 A) / Headlights dual (30 A)
14	40	Ignition switch for fuses 11B: 3-7, 9-12 and 14 (Diesel), Starter motor (Diesel)
15	30	Engine cooling fan (FC), Airco condenser fan (Diesel)
16	30	Electric windows, 12 volt accessory socket
17	15	Fuel pump (FP) (petrol engines)
18	10	Heated oxygen sensor (HO2S) preheating (x2), Vacuum pump (turbo automatic transmission)
19	-	Main headlights
20	-	Reserve
21	25	Power passenger seat control.
22	20	Fog lights (Diesel), Horn (Diesel)
22	10	Vaccum pump (turbo automatic transmission)
23	10	ABS

**Fuses in the engine compartment: 11A. Applies to model year 2000**

Fuse No:	A:	Function:
1	120	Main fuse to fuses 11/A 2-7, Glow plugs (Diesel)
2	40	Supply, fuses 11B: 1,2,8 and 13 (passenger compartment)
3	25	Rear window heater, Side mirror heaters
4	20	Electrically operated seats
5	10	Interior lights, Lock and alarm module, Ultrasonic/ glassbreak module, Audio system, electric antenna, Key-in reminder, Combined instrument, Engine control module (Melco)
6	20	Lock and alarm module, Electric child lock
7	15	Airco compressor, Airco condensor fan (turbo), Melco
8	20	Fog lights
9	15	Dipped beam left
10	15	Dipped beam right
11	40	Thermoplungers
12	50	ABS
13	20	Immobiliser, Engine control module (ECM), Injection system and fuel pump, Fuel heater(Diesel)
14	40	Ignition switch for fuses 11B: 3-7, 9-12 and 14, Starter motor
15	30	Engine cooling fan (FC), Airco condenser fan (Diesel)
16	30	Electric windows
17	15	Horn, Siren
18	10	Parking lights
19	15	Main headlights
20	15	Fuel Pump
21	10	Engine components
22	15	Vaccum pump (turbo automatic transmission), Alternator. Melco
23	10	Position lights, headlamp leveling system

### 3. Electrical system Specifications



#### Fuses in the engine compartment: 11A. Applies to model year 2001–

Fuse No:	A:	Function:
1	120	Main fuse for 11/A no. 2 - 10. Glow plug relay, Generator (GEN) Diesel
2	40	Supply voltage to fuses 11/B: 1, 2, 8 and 13
3	30	Relay for coolant heater 1 Diesel. Thermo plunger
4	30	Relay for coolant heater 2 Diesel. Thermo plunger
5	25	Heated rear window, heated door mirrors. Control unit power windows, door mirrors
6	25	Power driver's seat
7	25	Power passenger seat
8	10	Climate control module, engine management system Melco 1-2, interior lighting, cargo compartment lighting, key warning, siren, combined instrument panel, power antenna, VGLA (USA)
9	20	Central locking, alarm, VGLA ultra sonic model
10	15	Audio system.
11	20	Immobiliser control module. engine relays
12	30	Power windows, power mirrors
13	30	Engine cooling fan
14	40	Solenoid starter motor. Ignition lock. Power supply to fuses 11/B: 3 -7, 9 - 12 and 14
15	50	ABS
16	-	Spare
17	15	Fuel pump (FP) (petrol engines), Diesel: fuel heater. Relay Bi-Fuel
18	10	Sensor motor. Magnetic clutch A/C (diesel engines). Emission control system. Engine control system. Relay vacuum pump AT

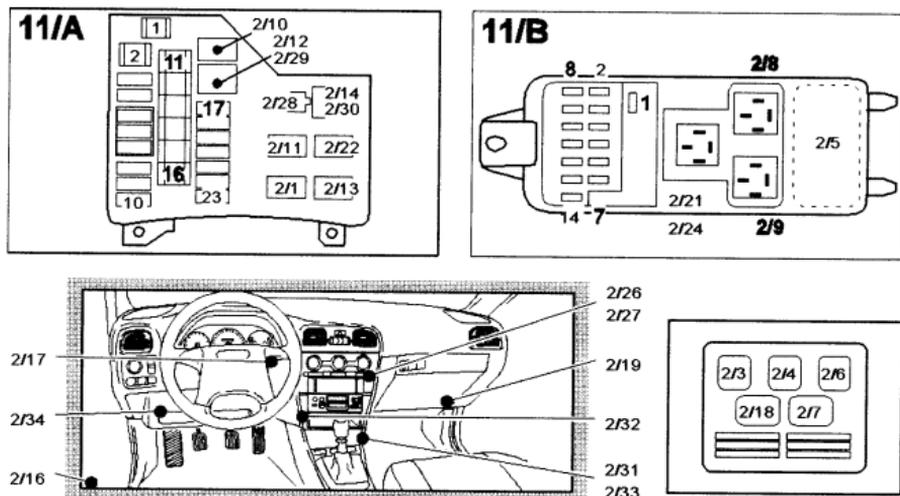
3. Electrical system  
Specifications

Fuse No:	A:	Function:
19	20	Fog lamps
20	-	Amplifier
21	15	Low beam, left, Xenon
22	15	Low beam, right, Xenon
23	10	Parking lamps
24	10	Side lamps, headlamp range adjustment. Tail lamp, number plate lighting. Engine control system
25	10	Transmission control module (TCM) AT. Fuel shut-off valve, Bi-Fuel Bi-Fuel: relay 2/50, control module 4/75
26	10	Generator Melco 1, 2
27	15	Accessory socket, rear
28	15	High beam
29	15	Horn
30	15	Petrol engines without turbocharger (TC): Magnetic clutch A/C, Airco condenser fan A/C
30	15	Magnetic clutch A/C, Airco condenser fan, Airco compressor. (Turbocharged petrol engines: 20A)
31	15	VAC pump (AT)
32		Reserve

### 3. Electrical system

#### Location of relays

#### Location of relays



H3902144

#### Location of relays. Applies to model years 1996 — 2000

Engine compartment:		Passenger compartment:	
Located in the central electronic module		Located in the central electronic module	
No	Designation	No	Designation
2/10	Air conditioning (A/C) compressor	2/8	Heater system
2/12	Engine cooling fan (FC) controlled by the air conditioning (A/C) system	2/9	Rear windshield heater element, mirrors
2/29	Twin headlamps (B4194T)	2/21	Indicator lamps
2/11	Engine cooling fan (step 1 B4194T)	2/5	Delay relay
2/28	Engine cooling fan (step 2 B4194T)	2/24	Indicator lamps (for tow hitch)
2/1	Headlamps, high / low beam	-	-
2/14	Fuel injection system relay	-	-
2/30	Control relay for injection (B4184SM)	-	-
2/22	Alarm (horn)	-	-
2/13	Air conditioning (A/C) compressor condenser fan	-	-

#### Location of relays. Applies to model years 1996 — 2000

Engine compartment		Passenger compartment	
Located outside the central electronic module.		Located outside the central electronic module.	
2/15	Air pump -'97 + automatic	2/3	Central locking system

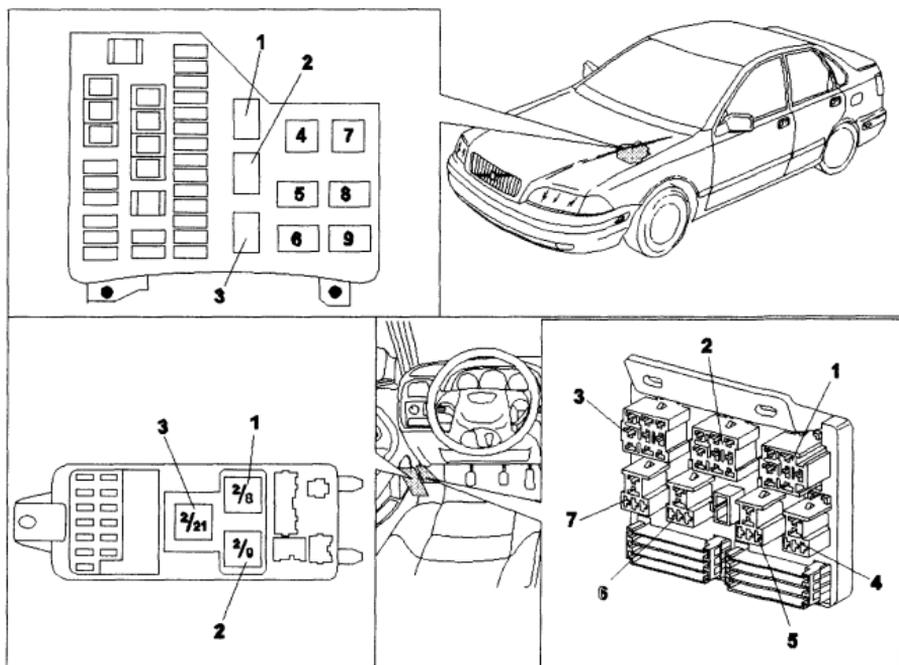
### 3. Electrical system

#### Location of relays

2/20	Glow plug (diesel)	2/4	Central locking, rear doors
		2/6	Tailgate washer (5 door)
		2/18	Power window motor
		2/7	Starter motor
		2/17	Windscreen washer unit, front (in switch)
		2/16	Power windows, auto-down
		2/19	Maximum blower fan speed
		2/26	Cooling fan parking heater
		2/27	Blower fan parking heater
		2/31	Fuel pump (FP) (B4184SM)
		2/32	Key in
		2/33	System relay (B4184SM)
		2/34	Spotlights
Accessories:			
Relay, rear fog lamp (with tow hitch)		Tow hitch, tail lamps (right or left sides)	

### 3. Electrical system

#### Location of relays



H3703121

#### Location of relays. Applies to model year 2001-

Engine compartment:		Passenger compartment:	
Located in the fuse box engine compartment.		Located in the fuse box coupé.	
No	Designation	No	Designation
1	2/11 Engine cooling fan, speed 1		
2	2/10 A/C compressor	1	2/8 Blower fan.
3	2/13 AC condenser fan, EMS 2000 Turbo, Melco 1	2	2/9 Heated rear window and door mirrors.
4	2/28 Engine cooling fan, speed 2, EMS 2000, Turbo, Diesel	3	2/21 Indicator lamps.
4	2/30 Fuel injection / ignition Melco 1		
-	-		
6	2/34 Vacuum pump , automatic gearbox 2000. Coolant heater Diesel		
6	2/32 Relay fuel throttle		
6	2/50 Relay Bi-Fuel		
6	2/12 Engine cooling fan A/C, Melco 1		

### 3. Electrical system

#### *Location of relays*

6	2/37 Coolant heater 1 Diesel engine		
7	2/14 Main relay engine management system		
8	2/35 Horn relay		
9	2/31 Fuel pump (FP) Melco 1, 2. Coolant heater Diesel		
9	2/38 Coolant heater 2 Diesel engine		
<b>Engine compartment:</b> Other relays Located outside the central electrical unit.		<b>Passenger compartment:</b> Located outside the fuse box coupé	
2/36	Glow plug diesel engine. (engine compartment).	3	4/35 ECU seat belt reminder, key in reminder.
2/19	Maximum speed electronic climate control (ECC). (passenger compartment)	4	2/7 Starter motor and park / neutral position (PNP) switch.
2/23	Shiftlock. (passenger compartment)	5	2/18 Power windows.
		6	2/41 Cigarette lighter (USA, CDN, AUS).
		7	2/51 Key in reminder

### 3. Electrical system

#### Location of relays

Aerial ring immobiliser .....	3-7 $\Omega$
Outside temperature sensor .....	339-17385 $\Omega$
(50°C:339 $\Omega$ , 20°C:1125 $\Omega$ , 0°C:3200 $\Omega$ , -10°C:5435 $\Omega$ , -20°C:9570 $\Omega$ , -30°C:17385 $\Omega$ )	
Fuel gauge .....	0-60 litre 6-120 $\Omega$

Consumption values in Watts. Measured at voltage: 12-13.5 V. All values are reference values. More information can be found in VADIS.	
	Power / Watts
Door mirror .....	20
Rear windscreen heating S40 .....	175-250
Rear windscreen heating V40 .....	185-260
Additional electrical vacuum pump, brakes .....	To 2000 model year inclusive: 27 After model year 2001: 100
Fuel pump in the fuel tank .....	66
Fuel pump. Model year 2001- .....	113
Fuel pump (FP) turbocharger / USA. Model year 2001- .....	138
Sunroof motor .....	72
Seat heater pad .....	30-55
Front windscreen wipers .....	30-96
Tailgate wiper V40 .....	20-72
Central locking system (when locking) .....	115-180
Horn 98 .....	114-204
Cigarette lighter .....	70-110
Circulation valve .....	1-30
Power window motor .....	48
Front fog lamps .....	108-144