

3. Electrical system

31. Battery

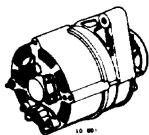
Battery capacity, K and U engines (-'92)	Ah	44
Battery capacity, D19T	Ah	60
Battery capacity, other engines	Ah	55
Recommended charging current	Ah	5
Battery voltage	V	12
Starting voltage	V	9.5
Bolts, battery tray	Nm	25



The electrical system voltage is 12V.

The relative density (s.g.) of the electrolyte (at 20°C) is 1.28 in a fully charged battery and 1.24 when recharging is necessary.

32. Alternator



General data

	Bosch	Bosch	Valeo Paris-Rh.	Valeo Par.-Rh.	Valec Paris-Rh.	Valeo	Valeo
Make	Bosch	Bosch	Paris-Rh.	Par.-Rh.	Paris-Rh.	Valeo	Valeo
Type with 3-groove pulley	K114V/70W	K114V28/70	A13N133	A13N166	A13N242		
Type with 6-groove pulley			A13N178	A13N231	A13N241	A13N164	A13V117
Max. current rating A	70	70	72	63	70	70	110
Max. output W	980	980	1050	800	1050	980	1500
Max. speed r/min	15,000	12,000	15,000	15,000	15,000	15,000	18,000
Reduction ratio, engine-alternator	1:2.15	1:2.15	1:2.15	1:2.15	1:2.15	1:2.15	1:2.15
Min. diameter of slip rings mm	27	27	27.8	28.8	27.8	28.8	14.4
Min. length of brushes mm	7	7	8	8	8	10.5	10.5
Tightening torques							
- attachment bolts Nm	5	5	5	5	5	5	5
- pulley nut Nm	50	50	50	50	50	55	55

Test values

Resistance, rotor winding Ohms	2.8	2.8	2.4	3.2	2.4	3.2	2.7
Resistance, stator ohms/phase	0.09	0.09	0.095	0.159	0.095	0.094	0.031*
Current rating at 14V:							
33 r/s (2000 r/min) A	47	47	43	38	43	45	57
50 r/s (3000 r/min) A	59	59	61	53	61	60	84
67 r/s (4000 r/min) A	64	64	66	57	66	65	94

* three-face-winding

Voltage regulator

Make	Bosch	Paris-Rhône Valeo	Paris-Rhône Valeo
Type (incorporated in alternator)	1197311008	YH 2925	YV1925*, YM 1601
Operation	Electronic	Electronic	Electronic
Test conditions, measured on battery:			
Control voltage, unloaded, at 13.3 r/s (800 r/min) and higher	V 13.5-15	13.5-15	13.5-15
Control voltage, loaded with 30A at 41.6 r/s (2,500 r/min) and higher	V 14-15	14-15	14-15

*On a Paris-Rhône alternator with a rotor winding of 3.2 ohms always fit voltage regulator YV1925

Tightening torques

	Nm
Alternator bracket to cylinder block	37
Alternator to bracket	50
Sliding link to cylinder block	32
Alternator to sliding link	12.5

33. Starter motor

Make	Paris-Rh.	Bosch	Bosch	Bosch	Valeo	Valeo
Type	D9E 771	EFR 12V	528	EF 1295	D6RA46	DR7R13
Output	kW 1.36	0.85	0.85	0.95	1.1	1.7
Number of brushes	4	4	4	4	2	4
Axial clearance, armature	mm 0.8	0.25-0.4	0.05-0.3	0.25-0.4	0.5	0.5
Brushing spring tension	N 15	14.5-17	15	14.5-17	15	18
Minimum commutator thickness	mm 2	Ø33.5	Ø33.5	Ø33.5	2.4	2.25
Minimum brush length	mm 6	9	9	9	5	13.7
Relay (solenoid) engaging voltage	V 7.5	8	6	8	8	6
Transmission ratio	:1 1	1	1	1	5.54	4.5
Retaining bolts (3x)	Nm 50	50	50	50	50	50

Test values

Unloaded starter motor

- test condition	V/A	12/≤60	12/≤60	12/≤60	12/≤60	12/≤39	12/≤50
- min. speed	r/min	6000	8000	8000	8000	3500	3000

Loaded starter motor

- test condition	V/A	9/≤200	9/≤265	9/≤265	9/≤275	8.1/≤380	9/≤360
- min. speed	r/min	2400	1350	1350	1800	1200	1300

Blocked starter motor

- test condition	V/A	6/≤480	6/≤390	6/≤390	6/≤410	5.5/≤554	6/≤700
- min. speed	r/min	0	0	0	0	0	0

35. Lighting

Bulbs

	Rating	Socket	Quantity
Headlights, halogen (H4)	60/55	P43t	2
Fog lights (H3)	55	PK22.5	2
Parking lights, front	4	BA 15s	2
Direction indicators, front/rear	21	BA 15s	4
Direction indicators, side repeaters	5	W2.1x9.5D	2
Parking-/day running lights	4/21	BAZ15d	2
Tail/brake lights	5/21	BAY 15d	4
High-level third brake light	21	BA 15s	1
Reversing lights + rear fog lamp	21	BA 15s	3
Rear number plate lighting	5	SV 8.5-8	2
Hazard warning switch	0.36	W 2x4.6D	1
Interior light	10	S 8.5-8	1
Courtesy lamp in centre dome	5	W2.1x9.5D	2
Reading lamps in grab handles	3	SV 7.8	2
Door keyhole light	-	LED	1
Heater control panel light	1.2	W 2x4.6D	2
Booster fan switch	1.2	TI 1/4	1
Glove-box lighting	5	SV 8.5 P	2
Ignition switch lights	1.2	W 2 x 4.6D	1
Instrument lighting	3	W 2.1x9.5D	3-4
Information Centre lighting	5	B10.d	1
Switch lighting, dashboard	1.2	W 2 x 4.6D	1
Seat belt lock, lighting.	-	LED	2
Engine compartment lighting	15	S 8.5	1
Boot lighting	5	SV 8.5 P	1-2
Warning lamps, instrument panel	1.2	B8.5d	18
Switch, seat heating	1.2	W2x4.6D	1
Cigar lighter/ashtray lighting	1.2	W2x4.6D	1
Selector lever lighting, AT/CVT	1.2	W2x4.6D	1
Clock	1.2	W2x4.6D	1