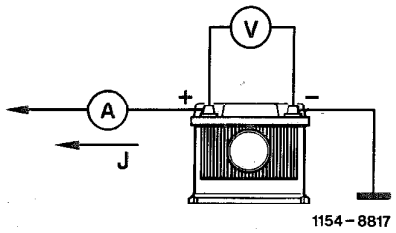
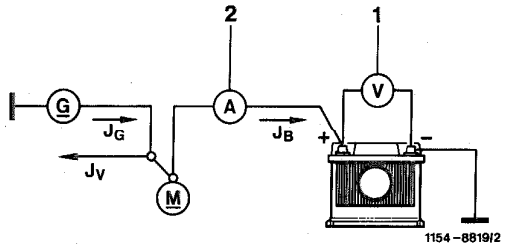
A. With engine switched off



Electrical wiring	check battery and alternator connections as well as ground strap between engine and body for tight seat and proper condition.
Poly-V-belt tension (engine 103) or V-belt tension (engines 116/117)	check
Charge indicator lamp	Key position 2 = indicator lamp On Key position 0 and 1 = indicator lamp Off
Battery acid density	Nominal values: Standard at least 1.24 kg/dm^3 Tropics at least 1.19 kg/dm^3
Battery voltage (V)	12 V
Discharge current (A)	Especially if suspecting discharge (all users switched off) observe clock and users with closed-circuit current consumption (see table).

Closed-circuit current consumption (steady power consumption of electronic components in the switched-off condition)	User	Ampere ⩽
	ASD	0.001
	Dome lamp with delay	0.001
	EDW system	0.002
	Electronic antenna	0.002
	Electronic radio	0.003
	Trip computer	0.005
	Seat adjustment memory	0.001 per seat
	Auxiliary heater	0.004
	Telephone system	0.004
	Supply pump central locking system	0.001

B. With engine running



J_B Charge current
J_G Alternator current
J_V User current

Indicator lamp . . . . . check function at idle speed with increasing engine speed (up to approx. 3000/min). Indicator lamp must go out.

Regulated voltage (1) . . . . . run engine with 3000/min. Battery only loaded with positive user (e.g. ignition). After approx. 2 minutes running time, read off regulated voltage.

Nominal value 13.0–14.5 volts

As a prerequisite for measuring the regulated voltage, check acid density of the battery in all cells. If the charge condition of the battery is lower than 1.24 kg/dm^3 or 1.19 kg/dm^3, the regulator does not operate in the regulating range during the test period, but fully excites the alternator, i.e. a defective regulator with permanent full excitation is not recognized.

Charge current (2) . . . . . run engine at idle speed to reach the corresponding alternator speed (see table).

Load battery with users or load resistors until the max. charge current is reached. The regulated voltage may not drop below 12.7 volts during this.

Note: If measurement is made on the battery according to the connection diagram, the user current, e.g. ignition, fuel pump, must be added to the measured battery current.

When using DC tongs the entire charge current can be measured on the alternator.

Current consumption at 13 V ± 0.2 V	User	Ampere approx.
	Ventilation blower interior temperature sensor	0.15
	Heated windshield washer nozzle per nozzle (up to 08/87)	0.2
	CIS-E injection system with idle speed control Engine 103 Engines 116/117	 1.5 2.0
	Fuel pump	7.0–10
	On vehicles with 2 pumps per pump	3.5–5
	Ignition Engine 103 Engines 116/117	 8.0 11.0

Charge current of alternator

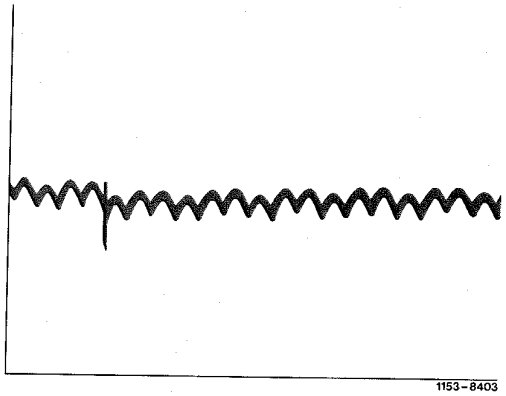
Engine	Alternator rated output at 14 volt Ampere	Engine speed = alternator speed of 6300/min	Transmission ratio engine to alternator
103.941/981	80	2230	2.82
110.924/987	55	2930	2.15
110.926/989[1])	65	2930	2.15
110.926/989[6])	65	2650	2.38
110.926/989[5])	80	2930	2.15
110.926/989[7])	80	2650	2.38
116.961	70	2720	2.32
116.961[3])/963[2])	70	2160	2.91
116.963[4])[7])	80	2160	2.91
116.965	80	2160	2.91
117.961	70	2440	2.58
117.963[2])	70	2160	2.91
117.963[4])[7])	80	2160	2.91
117.965/968	80	2160	2.91
603.961 (USA) (J)	70	2180	2.89
617.951 (USA) (J)	55	2900	2.17

[1]) As of March 1980
[2]) As of September 1981
[3]) (J) (USA) 1981
[4]) As of February 1982 (only vehicles with air conditioning/autom. climate control)
[5]) As of August 1982 (only vehicles with air conditioning/autom. climate control)
[6]) As of March 1982
[7]) As of August 1983 (series production)

C. Checking diodes with engine running

Diodes ..... Evaluate harmonics of regulated voltage (voltage curve) with oscilloscope. For this purpose load battery with high headlamp beam at 3000/min engine speed.

Diodes in order (voltage peaks possible – but without significance)



Diodes defective (example)