



Vehicle

VW-delivery van with continuous electrically controlled acceleration and electric reversing switch, without gearshift

- equipped with quick exchange device of the traction battery which can be replaced within 2 minutes (developed by GES-Gesellschaft für elektrischen Straßenverkehr)
- equipped with receptacle plug for charging the traction battery with a stationary charger

Max. permissible total-weight

3075 kg

Payload

800 kg

Max. speed

70 km/h

Acceleration

0 to 50 km/h in 14 s (fully loaded)

Tractive effort at starting (max. tractive effort)

5.0 kN

Climbing ability

16% gradient (fully loaded)

Brakes

Priority electric brake with regenerative power feedback to the traction battery, plus standard hydraulic brake

Tires

185 R-14 C

Gear ratio

1:11.07

Range

50-80 km on one battery charge

Electrical equipment

Traction motor

1 GV 1161-Z

Chopper regulator

6 RB 1000-1AA

Traction battery

WT6-144 V; 150 or 180 Ah (at 5-hour discharge rate)

Auxiliary supply system

12 V/45 Ah maintenance-free lead-acid battery, charged via a 144 V d.c./14 V d.c. static converter rated at 40 A

Development and supply

Vehicle

Volkswagenwerk AG

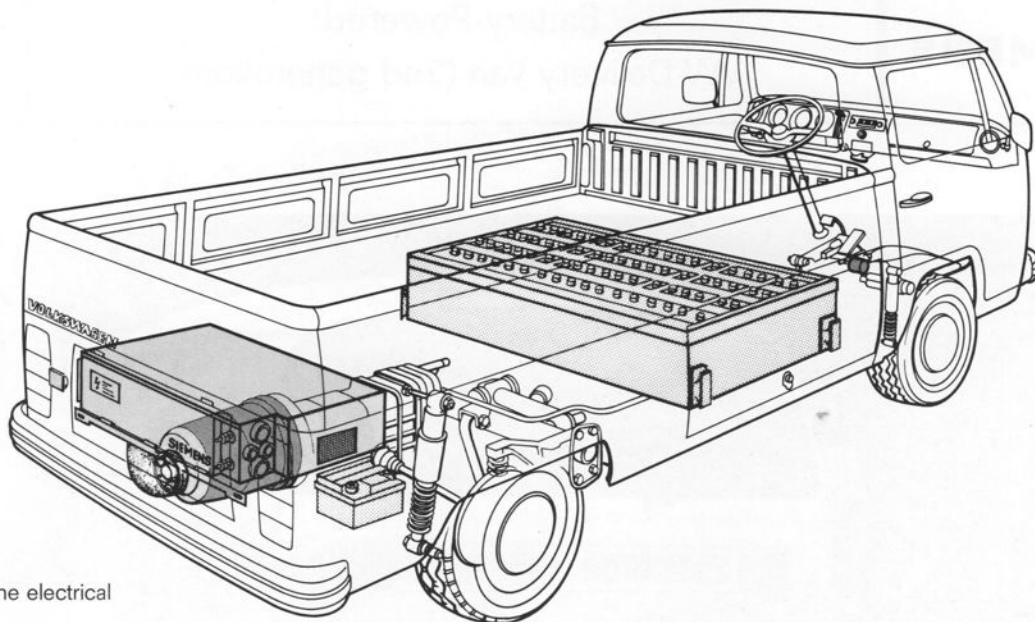
Electrical equipment

Siemens AG

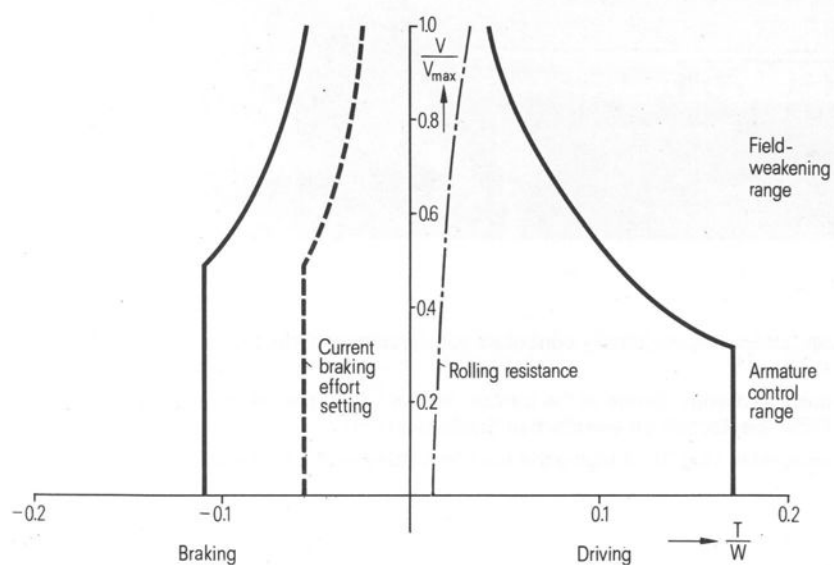
Traction battery

Varta AG, Hoppecke, Hagen

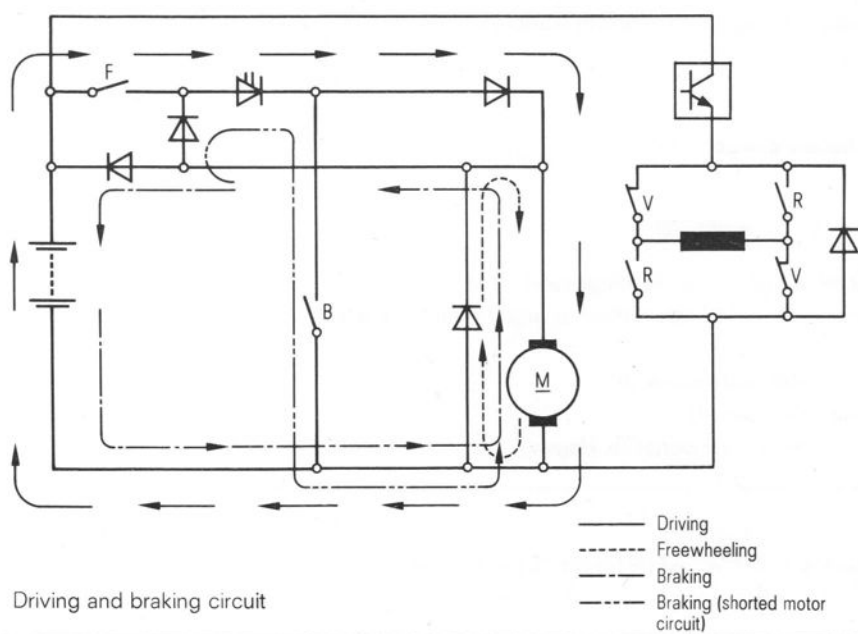
Reference Wagner, R.: Antriebstechnik für Elektroautos, ETZ-A Vol. 94 (1973) No. 11, pp. 681-694



Underfloor layout of the electrical propulsion system



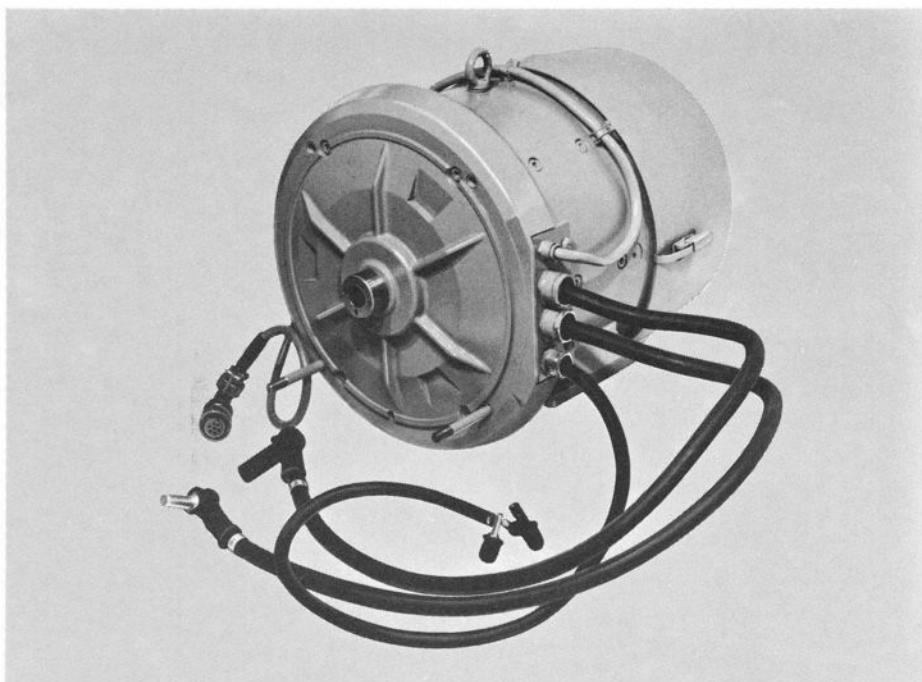
Tractive effort/speed diagram for driving and braking



Driving and braking circuit

Separately excited d.c. traction motor with a high specific rating of 0.36 kW/kg

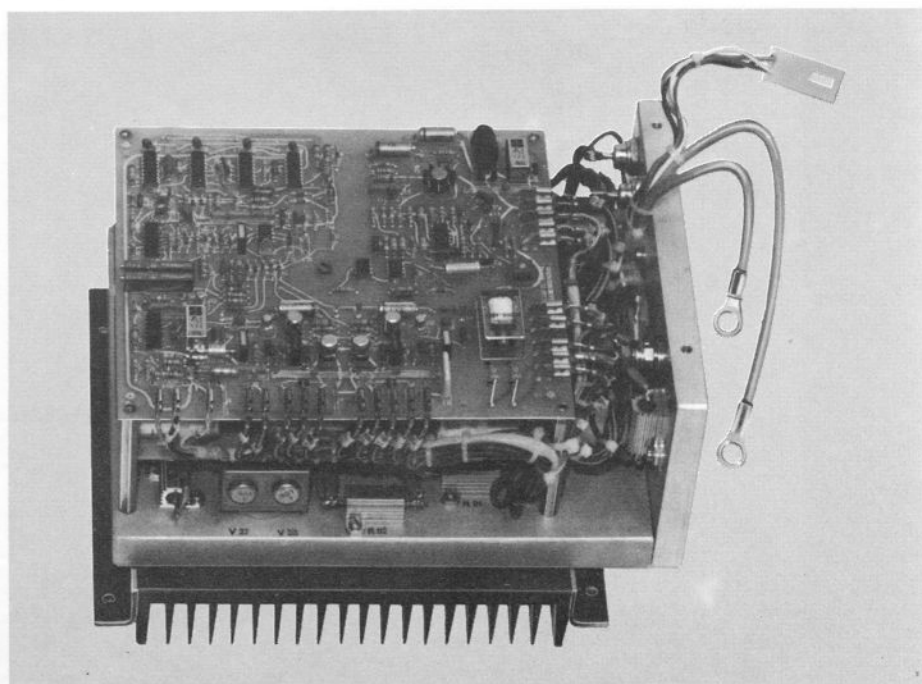
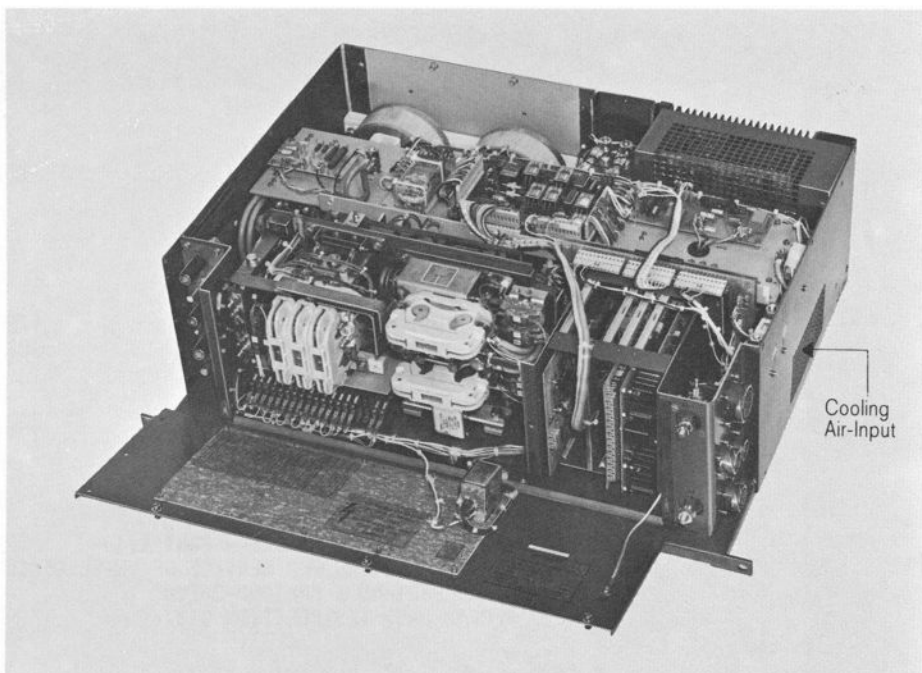
Voltage	144 V
Continuous rating	17 kW
Max. rating	32 kW
Max. RPM	6700
Separate ventilation	0.1 m ³ /s
Weight	90 kg approx.



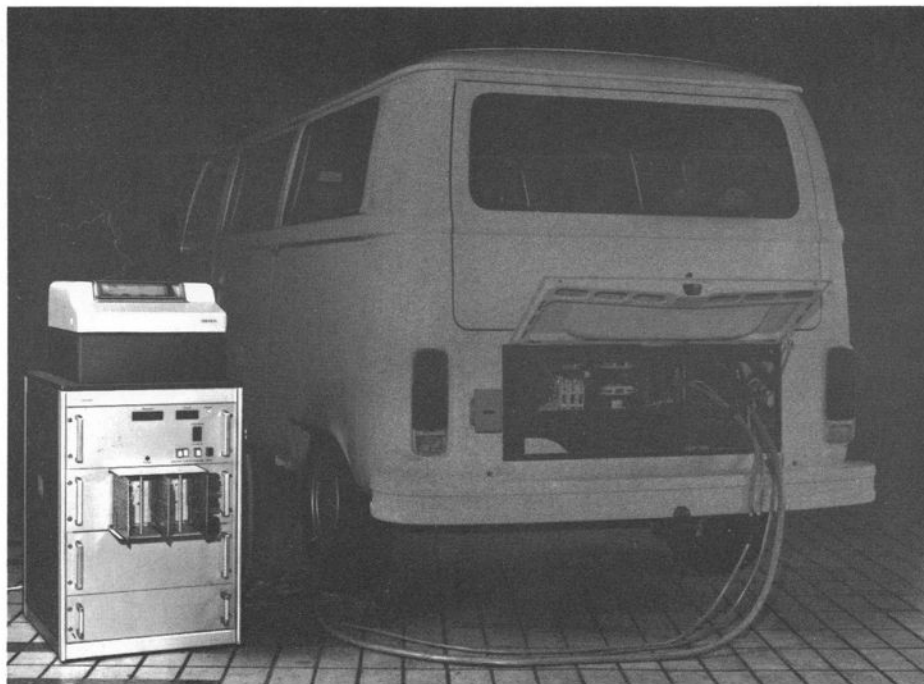
Compact chopper with integrated d.c./d.c. static converter and 12 V d.c. battery charger. The main, driving and braking contactors, the static armature and fieldweakening controllers and the electronic control and regulation system are all built-in in one unit. Rating: 45 kW, Weight: approx. 80 kg

The forced air for the traction motor is pulled through a cooling channel (input is shown at the choppers right side), which accomodates the heat sinks for the power semiconductors. This method prevents the interior from dust and dirt. Therefore, the chopper is able for a continuous operation in the armature control range.

Easy maintenance and service is facilitated by a diagnostic box. The power and control connections as well as the modules are clearly marked and provision is made for non interchangeable insertion. The interchangeable modules can be replaced without reajustement.



The 40 A transistorized d.c./d.c. static converter with charger characteristic applies modern 20 kHz technology for supplying the 12 V to the auxiliary system from the traction battery.



The diagnostic box used for periodic checking of the traction equipment incorporates a Siemens 310 process computer.

Values measured: current, voltage, resistance, time (e.g. contactor operating times)

Automatic testing of

- all power semiconductors
- all functions of each individual module
- all contactors, relays and protection devices (excluding fuses) by simulated inputs
- insulation resistance of the traction battery

Recording of the test results by means of a data plotter.

Vehicle hooked up with diagnostic test unit.

Sample of the test plotter for the VW-maintenance shops

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018 o.K.
019 o.K.
020 o.K.
021 TWO-STEP-GOVERNOR, INPUT 32
    B 20 SWITCHES FROM L-H AT .175 V
    B 20 SWITCHES FROM H-L AT .083 V
    INPUT B 32
    OUTPUT Z:32 SWITCHES
    B22 = 15 V D32 = 0V B32 .200 V
    OUTPUT Z28 DOES NOT SWITCH
022 o.K.

    EXCHANGE ANALOG MODULE - PART A24 -
    SEE REGULATIONS FOR SERVICE OF VW-ELECTRIC DELIVERY VAN
    SPARE-PART-NO.: 6RB1000-3AE00
    REPEAD FROM TESTPOSITION 011

023 o.K.
024 o.K.
025 o.K.
026 o.K.
027 o.K.
028 o.K.
029 FORWARD-REVERSE-SWITCH
    CONTACT DOES NOT SWITCH
    OR IGNITION KEY IN OFF-POSITION

    EXCHANGE FORWARD-REVERSE SWITCH
    SEE REGULATIONS FOR SERVICE OF VW-ELECTRIC DELIVERY VAN
    SPARE-PART-NO.: 211 90701
    REPEAD TESTPOSITION 029

030 o.K.
  
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