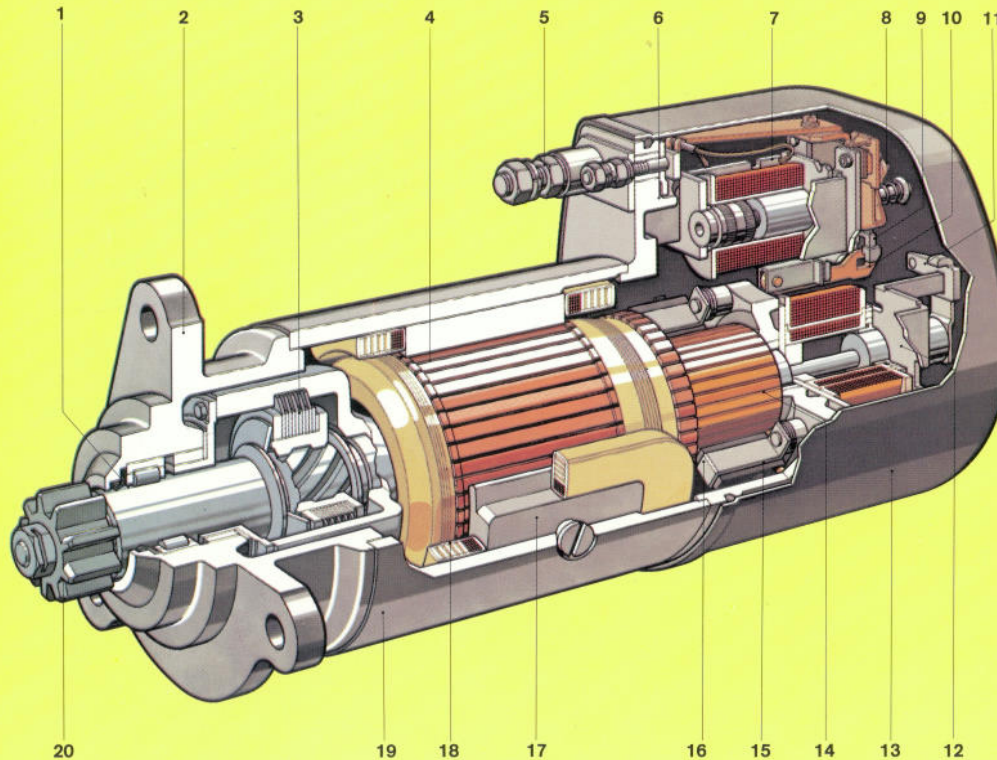


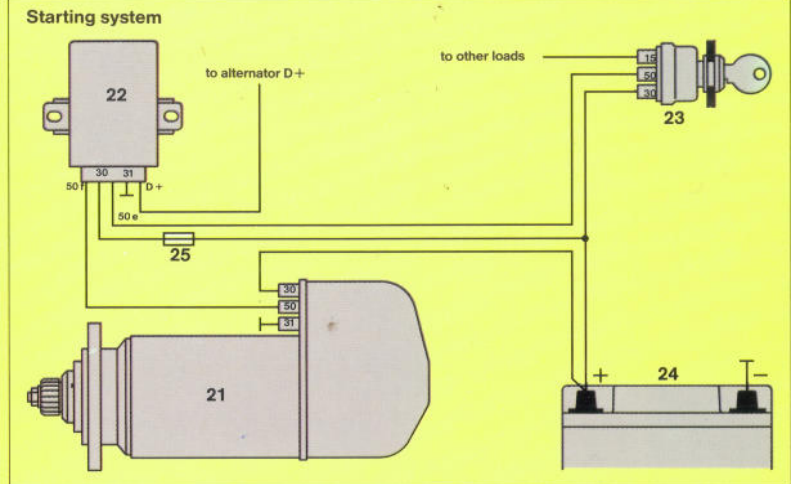
BOSCH Sliding gear starting motor type KB



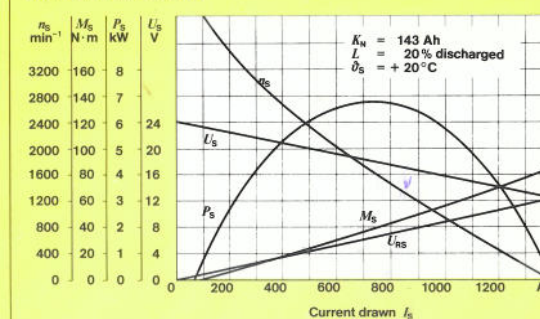
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Training Publication VDT-T 1/2-4 En



- 1 Drive spindle
- 2 Drive-end-bearing housing
- 3 Multi-plate overrunning clutch
- 4 Armature
- 5 Electrical connection
- 6 Commutator end shield
- 7 Control relay
- 8 Bridging contact member
- 9 Stop plate
- 10 Safety catch
- 11 Release lever
- 12 Solenoid switch, pull-in winding E, holding winding H
- 13 End cover
- 14 Commutator
- 15 Carbon brush
- 16 Brush holder
- 17 Pole shoe
- 18 Excitation winding, shunt winding N, series winding R
- 19 Stator frame
- 20 Pinion
- 21 Starting motor
- 22 Start-locking relay
- 23 Ignition/starting/driving switch
- 24 Battery
- 25 Fuse



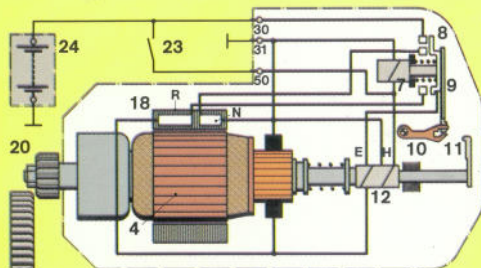
Characteristic curves



Explanation of formulae

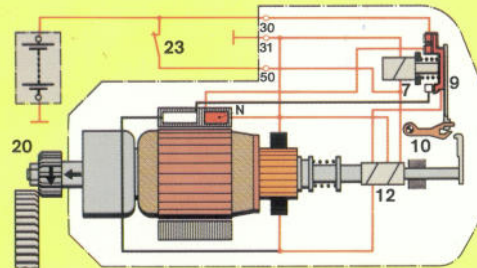
- I_s Current drawn by starting motor
- n_s Rotational speed of starting motor
- M_s Starting motor torque
- P_s Starting motor output
- U_s Voltage at starting motor terminals
- U_{rs} Ohmic voltage drop in the starting motor
- K_u Rated capacity of the battery
- L Charge condition of the battery
- θ_s Temperature of the system

Rest position



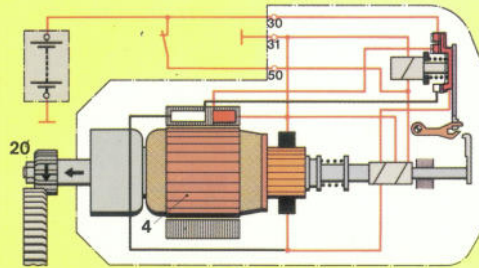
No current in starting motor.
Spring of the control relay presses the bridging contact member in rest position.

Switching stage 1a, tooth against tooth position



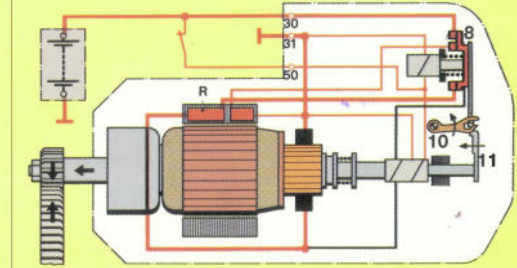
Driving switch on. Stop lies against safety catch. Control relay, solenoid switch and shunt winding are switched on. Pinion is pushed forwards but does not mesh. Starting procedure must be repeated.

Switching stage 1b, tooth in gap position



Switching procedure the same as switching stage 1a, pinion meshes in the ring gear.
Armature turns slowly.

Switching stage 2



Safety catch is raised by the release lever. Bridging contact member also switches on series winding (main current). Starting motor has full torque. Engine is cranked.