

DC Disc Motors

Drives for the hard to please

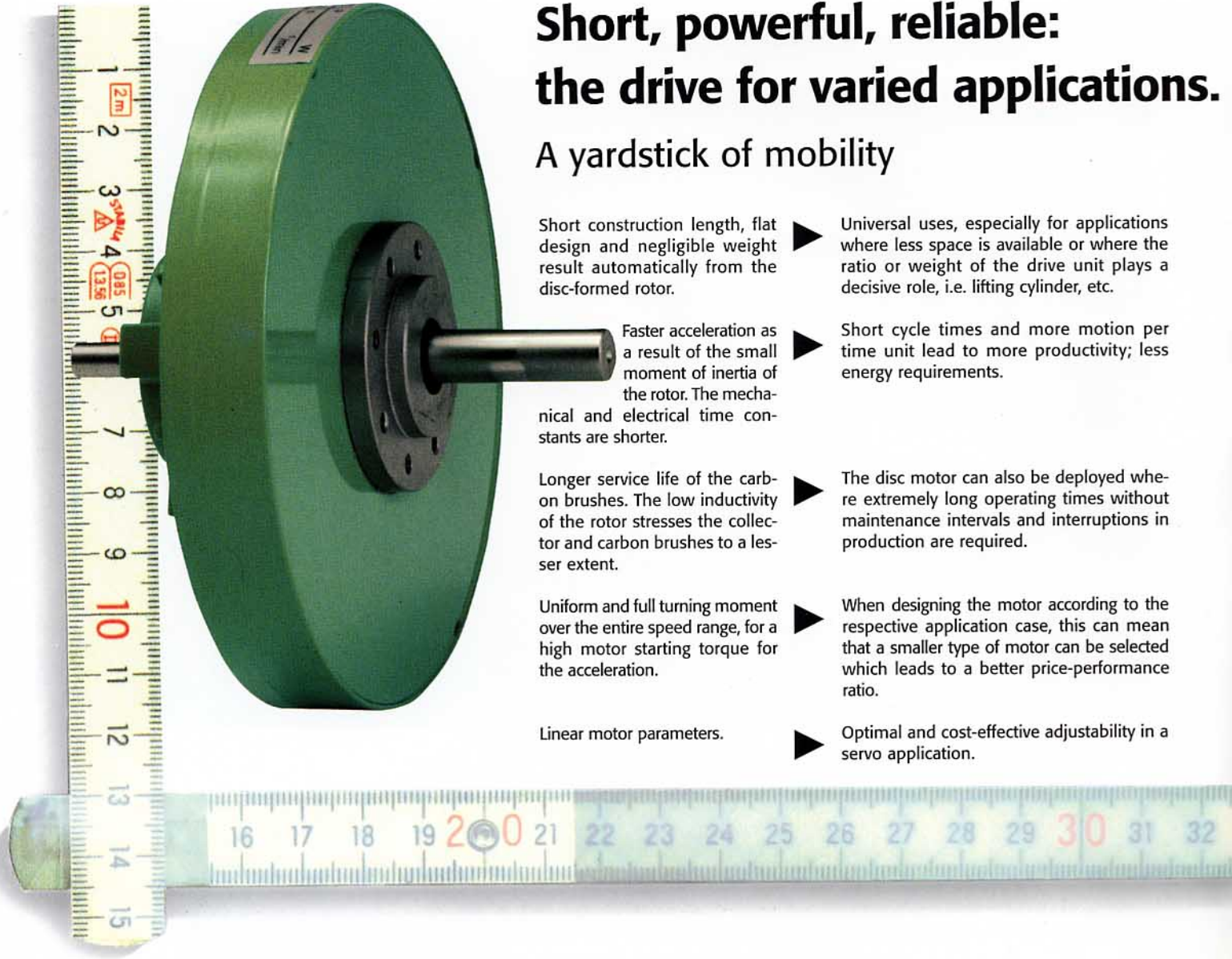
HEINZMANN®



Electromagnetic Drives

Short, powerful, reliable: the drive for varied applications.

A yardstick of mobility



Short construction length, flat design and negligible weight result automatically from the disc-formed rotor.

▶ Universal uses, especially for applications where less space is available or where the ratio or weight of the drive unit plays a decisive role, i.e. lifting cylinder, etc.

Faster acceleration as a result of the small moment of inertia of the rotor. The mechanical and electrical time constants are shorter.

▶ Short cycle times and more motion per time unit lead to more productivity; less energy requirements.

Longer service life of the carbon brushes. The low inductivity of the rotor stresses the collector and carbon brushes to a lesser extent.

▶ The disc motor can also be deployed where extremely long operating times without maintenance intervals and interruptions in production are required.

Uniform and full turning moment over the entire speed range, for a high motor starting torque for the acceleration.

▶ When designing the motor according to the respective application case, this can mean that a smaller type of motor can be selected which leads to a better price-performance ratio.

Linear motor parameters.

▶ Optimal and cost-effective adjustability in a servo application.



Heinzman DC disc motors provide the drive for a multitude of technical processes and can be found in almost every field of day-to-day life.

They are small:
And thanks to their compact design they can be integrated at the right location without taking up too much space.

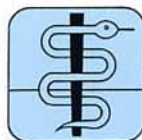


They are powerful, reliable and economical:
With a high number of revolutions they demonstrate in continuous operation, that power need not be expensive.



They are technically perfect:
As the sum of the experience of a longstanding specialist and innovative willingness of a market competent firm are merged in each of our motors.

They are the driving force in most fields:
Mechanical engineering, medicine, machine tools, processing centres, handling devices, robotics, textile machines, traffic industry.



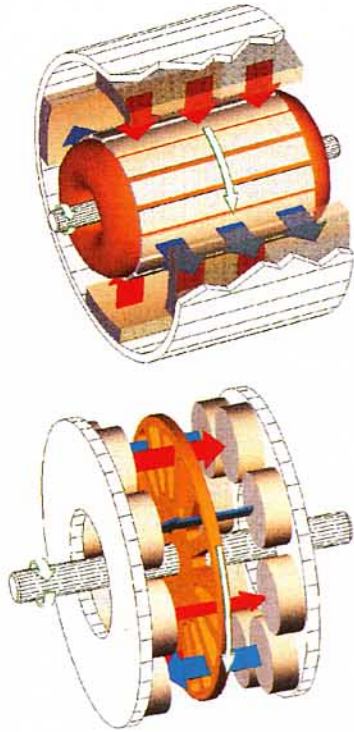
Design and Operation

Magnetic System

As with all electric motors, the turning motion of the DC disc motor is achieved through the interaction of the magnetic field of the rotor with that of the stator winding. Contrary to the conventional slot-wound motors, the magnetic field is built in the axial direction. According to the design, a magnetic ring, or also single magnets can be arranged on both sides of the rotor on flux return paths. In this way a magnetic circle is built in whose air gap the disc rotor rotates.

Rotor:

It consists mainly of active winding of lacquer insulated copper round wires and consists of many identical single coils arranged symmetrically. This winding receives the current via several carbon brushes, running on the drum collector. The high mechanical and thermal stability of the winding is achieved through casting in Duroplast.

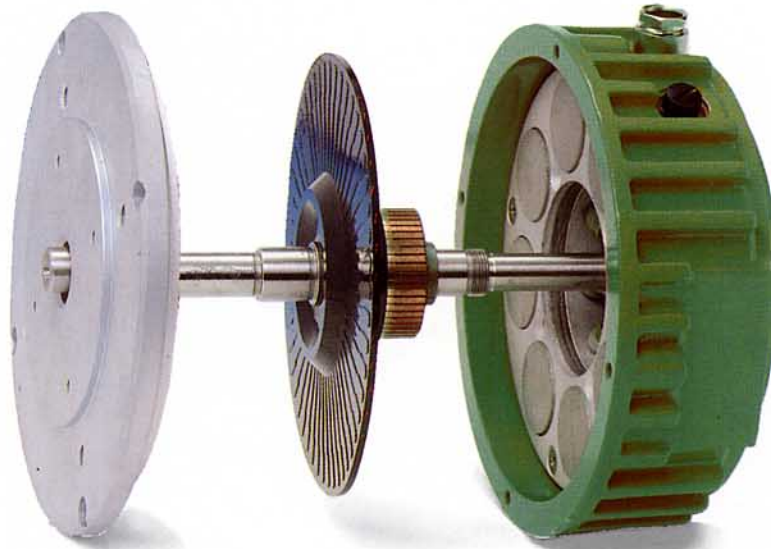


Schematic diagram of the magnetic system of a conventional motor

What is a DC disc motor ...?












The term itself is self explanatory: An iron-free rotor constructed in the form of very thin discs gives this motor its name. It takes a very special place within the group of direct current motors and is also termed an axial-field motor.

Schematic diagram of the magnetic system of a DC disc motor



The family of the DC disc motors from HEINZMAN. Long experience from a multitude of applications stands for this motor program which covers the rated power range from 5 to 1200 W.



| General range of application | Motor | Degree of protection | Servo components | Drive side shaft flange | Rated speed (rpm) | | | |
|---|---|---|---|------------------------------------|-------------------|----|--|--|
| Pump drives Medicine |  SL 80-F | IP 44 (IP 55 possible) – other ratings on request | Tacho generator, Encoder, Brake, Gear box | Ø 6 x 48 Special flange | 1000 – 6000 | 12 | | |
| | | | | Range of rated power 5 – 40 W | | | | |
| Linear actuators |  SL 100-F | | | Ø 7 x 21 Special flange | 1000 – 6000 | 12 | | |
| | | | | Range of rated power 5 | | | | |
| Centrifuges Coiling machine Lacquer coating of wafers |  SL 110-1NFB | | | Ø 12 x 88 Special flange | 2000 – 6000 | 12 | | |
| | | | | Range of rated power | | | | |
| Battery powered transport equipment |  SL 110-2NFB | | | Pinion shaft and Special flange | 2000 – 6000 | 12 | | |
| | | | | Range of rated power | | | | |
| Actuators |  SL 120-F | | | Ø 7 x 21 Special flange | 1000 – 8000 | 12 | | |
| | | | | Range of rated power | | | | |
| Handling equipment Traction drives Battery powered small vehicles |  SL 120-1NFB | | | DIN 42016 – BF 45-9 | 1000 – 5000 | 12 | | |
| | | | | Range of rated power | | | | |
| Handling equipment Traction drives Battery powered small vehicles |  SL 120-2NFB | DIN 42016 – BF 45-9 Special flange | 1000 – 5000 | 12 | | | | |
| | | | | Range of rated power | | | | |
| Handling equipment |  SL 120-2SE | Ø 12 x 28 Special flange | 1000 – 5000 | 12 | | | | |
| | | | | Range of rated power | | | | |
| Handling equipment Robots Traction drives Machine tools |  SL 140-2SC | Ø 14 x 30 DIN 42948 – C 140 | 1000 – 5000 | 24 | | | | |
| | | | | Range of rated power | | | | |
| Positioning drives Traction drives |  SL 160-2NFB | Ø 14 x 30 DIN 42948-C140 | 1000 – 5000 | 24 | | | | |
| | | | | Range of rated power | | | | |
| Machine tools Robots |  SL 180-2SC | Ø 24 x 50 DIN 42948 – C 200 | 1000 – 5000 | 48 | | | | |
| | | | | Range of rated power | | | | |

Rated power range in Watts

5

10

30

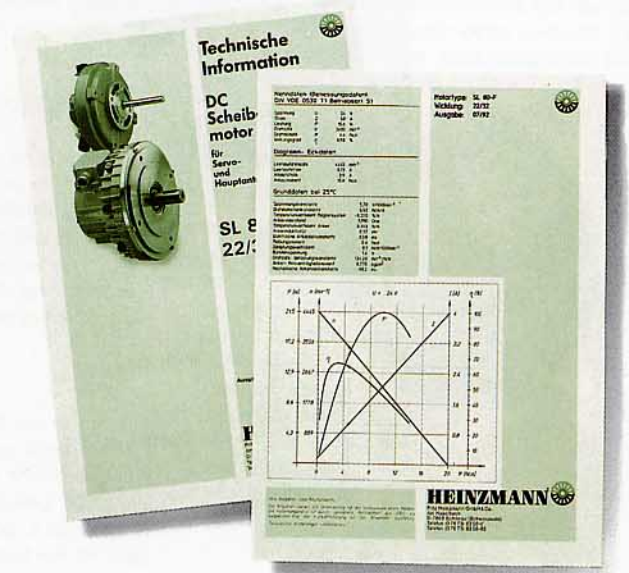
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| Rated power (DC) | Standard length in mm (without shaft and attached options) | Weight in kg | ø in mm, Housing-outside |
|------------------|--|--------------|--------------------------|
| 72 | 50 | 0.6 | 96 |
| 72 | 45 | 0.8 | 108 |
| 50 - 100 W | | | |
| 72 | 58 | 0.9 | 116 |
| 50 - 270 W | | | |
| 72 | 63 | 1.1 | 116 |
| 50 - 350 W | | | |
| 72 | 49 | 1.0 | 125 |
| 40 - 150 W | | | |
| 72 | 53 | 1.2 | 130 |
| 50 - 160 W | | | |
| 72 | 53 | 1.3 | 130 |
| 80 - 250 W | | | |
| 72 | 57 | 2.7 | 133 |
| 100 - 250 W | | | |
| 120 | 71 | 5.5 | 161 |
| 200 - 450 W | | | |
| 120 | 74 | 6.7 | 180 |
| 400 - 750 W | | | |
| 210 | 151 | 10.4 | 210 |
| 400 - 1200 W | | | |

100 300 500 1000

Technical Data Sheets

Detailed technical data sheets for the individual types of motor are available.



Simply complete the form below and return it to us with your name and address.



The programme overview (left) and the selection code enables you to easily preselect your Heinzmann motor. If the specified technical version does not meet your requirements, Heinzmann specialises in solving problems in drive control.

Features/options can be carried out as follows:

- Drive side (shaft, flange) according to your specification.
- Second shaft end on rear side.
- Higher degrees of protection to DIN IEC 34-5.
- Increased concentric running to DIN 42 955 R.
- Integration into machining elements.
- Special brushes for even longer life.
- Tropicalisation.

And more - Please contact us for further details.

From the DC disc motor to the servo packet

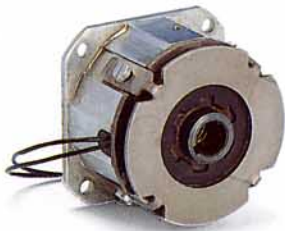
THE HEINZMANN SERVO MOTOR

Through the incorporation of servo components at the factory the DC disc motor is transformed to a compact servo drive. According to the type of application the servo motors are delivered with tachogenerators, encoders, brakes and gear boxes.



TACHO GENERATOR

For operation with speed regulation, HEINZMANN DC disc motors are equipped with high quality tachogenerators. These transform without external power supply the number of revolutions of the motor into a proportional direct current which is then fed to a servo regulator.



BRAKES

The motor can be equipped with a normal off or normal on brake. Normal off brakes work according to the loaded spring principle (also called holding brake), fulfil the function of a safety brake. In a voltage-free state of the brakes the motor is mechanically held in the rest position. A normal on brake on the other hand is used to brake rotating masses. All braking systems can be optimally matched to the task at hand.



SHAFT ENCODER

Shaft encoders are employed for digitally controlled storage control circuits. They transform the rotation of the motor shaft into digital signals. Depending on the requirements and reproducibility of a position, all commercially available encoders are used with relative and absolute as well as direction identification codes.

SERVO REGULATOR

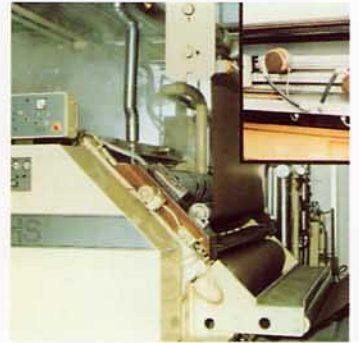
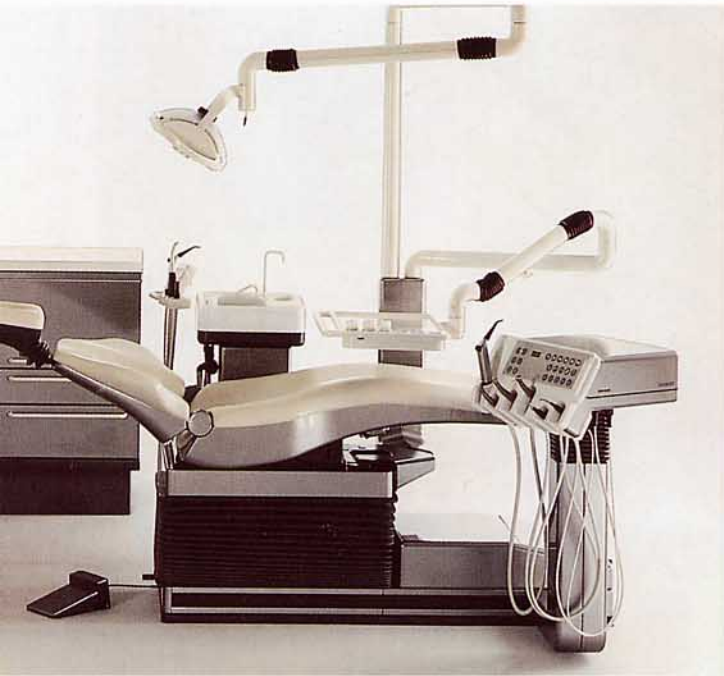
In order to complete the servo package, HEINZMANN also supplies servo regulators and power supply units. The servo regulators cover the power range of the motors and are available in different designs as 1Q to 4Q regulators. Further information is given in the special data sheets.



GEAR BOX

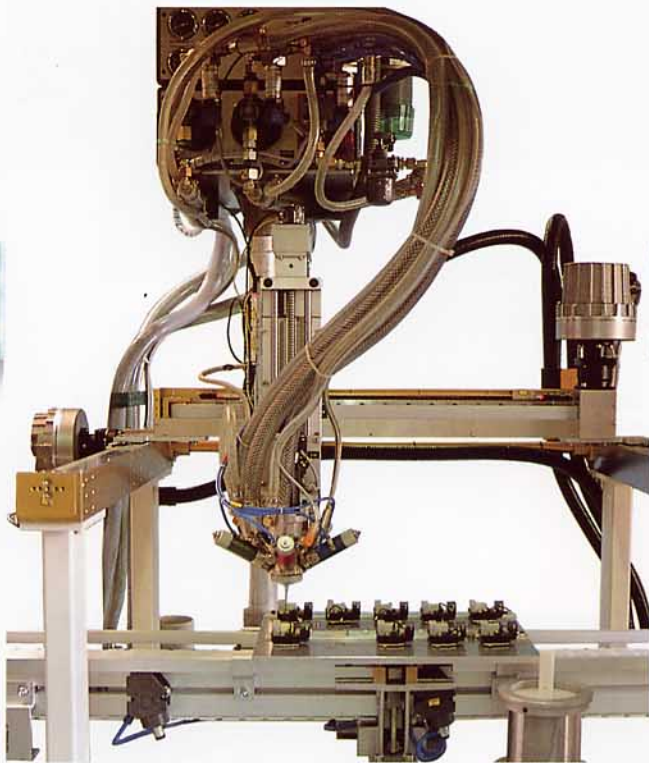
HEINZMANN motors are equipped with gear boxes for the matching of the moment of inertia, speed and torque. Depending on the application, epicyclic, spur and special gears are used. Thus in conjunction with the disc motor this yields a compact unit.



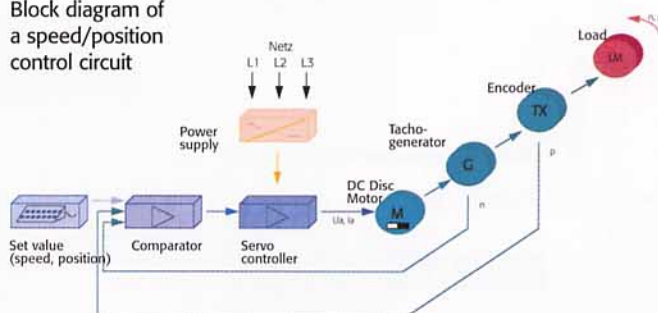


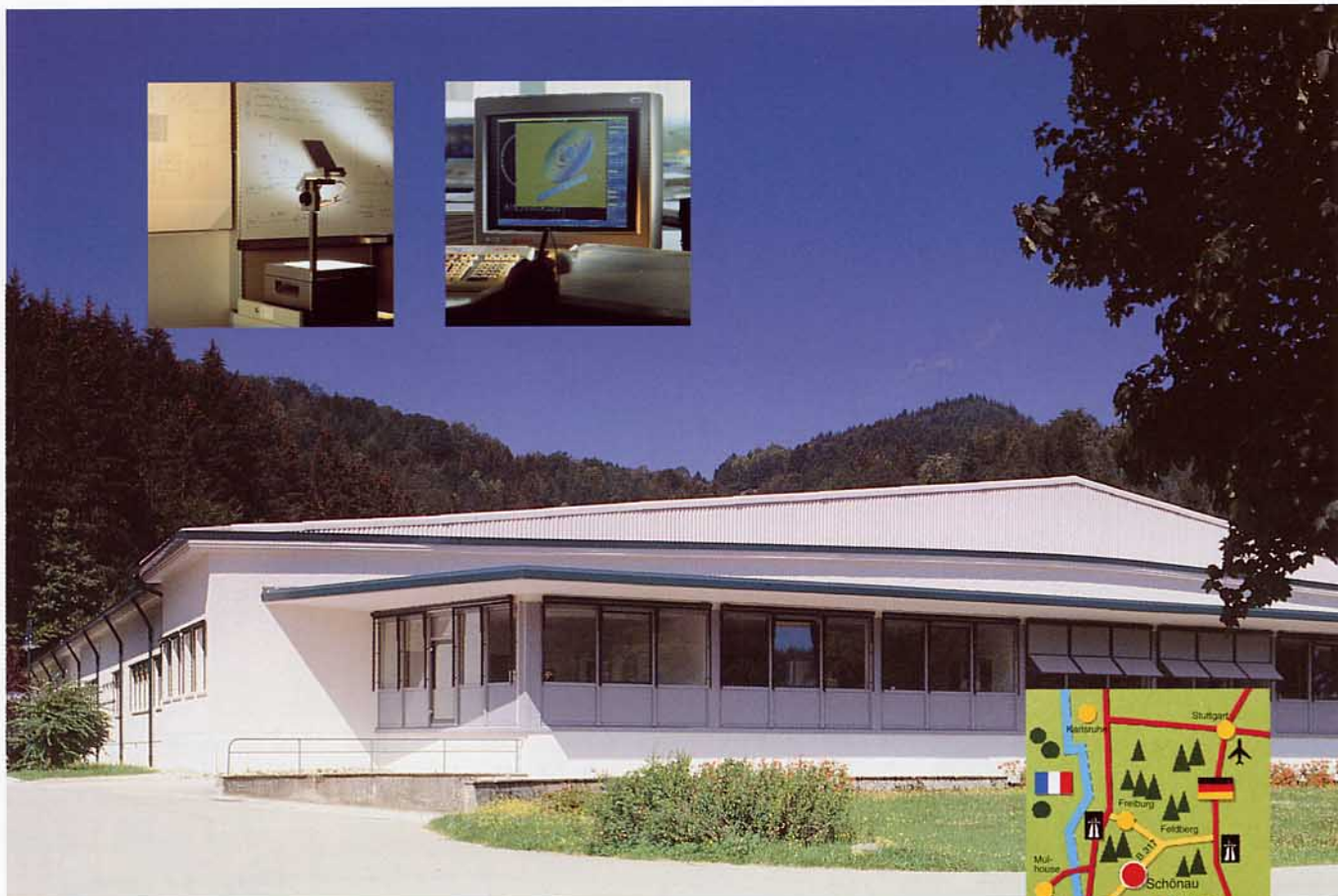
From a robot drive to machine tools, in textile and handling applications, in mobile stair climbers and wheel chairs, in laboratories and

pick and plant equipment, HEINZ-MANN motors do their job in a dynamic, powerful and reliable way.



Block diagram of a speed/position control circuit





A highly motivated team of experienced designers, engineers and experts produce not only motors but also ideas and application expertise to a multitude of customers worldwide.

Our factory in Schönau in the southern part of the black forest region of Germany, is both up to date and well integrated into the natural environment. It is a symbol of a company culture which is based on modern technology and solid tradition.

Also from HEINZMANN:
Speed Governors
for combustion engines.



Also from HEINZMANN:
Hub Wheel
Motors for direct drive.



Also from HEINZMANN:
Conventional
Electric Motors
for universal use.



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