



Order no.: 1 987 721 540

Order no.: 1 987 721 076



Order no.: 1 987 721 029



Order no.: 1 987 721 021



Order no.: 1 987 721 074

D.C. motors with and without transmissions, blowers and pumps



The proper drive for your projects

Bosch electric motors for industrial applications

Bosch provides a wide range of technically and economically interesting product solutions. Take advantage of our engineers' experience gathered from application in millions of automobiles and from many other industrial uses.

The ideal contact person can be found on the last page of the catalogue.



Electric motors

2006 | 2007



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Automotive Aftermarket
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Token fee: € 5,00

www.bosch-elektromotoren.de

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The right drive for your projects – Bosch electric motors



Electric motors from Bosch encourage movement in product development

With its competence, Bosch, as the leading global developer and manufacturer of automotive technology, has proved itself millions of times over in mobile applications. As a development partner to various industrial branches, Bosch is aligned to the requirements of its customers. Thus, Bosch electric motors are also the ideal solution for many applications outside of the automobile. The total of its advantages are immediately obvious, where quality, reliability and inexpensive prices through high-volume production are called for.

Industrial customers in particular, expect to have competent contact partners at their suppliers. To this end, an independent engineering team has been set up. Bosch engineers will advise and support you in the application engineering for D.C. motors, blowers and pumps. The proper contact person can be found on the last page of the catalogue.

www.bosch-elektromotoren.de

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Electric motors

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Notes

This catalog lists the standard parts supplied, with all the technical information normally required by design engineers to select the best motor for their particular requirements. These motors were originally designed for use in motor vehicles.

We recommend that Bosch be consulted first before you use motors for any applications other than those specified, particularly in the case of other requirements, loads, or environmental conditions.
Please use the "Inquiry Sheet" for this purpose.

Subject to change.

The current drawings quoted shall prevail.

Unlimited service – Bosch electric motors



The worldwide competent partner for industrial applications

As the largest manufacturer of electric motors in Europe, Bosch provides its customers with a comprehensive range of products including brushless D.C. motors and brush-type D.C. motors.

Bosch electric motors are developed for the automotive industry and installed into automobiles and commercial vehicles as drives for wiping systems, engine cooling and passenger compartment air-conditioning as well as for the adjustment of windows, sliding roofs and seats.

The Bosch electric motors referred to here are permanent-magnet-excited D.C. motors. They excel on account of an excellent power/weight ratio,

a broad working range and through outstanding flexibility for adaptation to different requirements and installation situations. In addition to this they are extremely quiet and very robust (see D.C. motors without transmission).

Bosch plants around the globe operate according to the stringent, internationally-binding Bosch quality guidelines, which only permit products for series production that have been well-proven in tough endurance tests. For several years now, Bosch has also extremely successfully provided its products to customers outside the automobile industry.



Bosch worldwide production sites:

- Toluca, Mexico
- Albion, USA
- Campinas, Brazil
- Castellet, Spain
- Bühl, Germany
- Miskolc, Hungary
- Brits, South Africa
- Changsha, China
- Penang, Malaysia
- Suzhou, China
- Buyong, Korea
- Clayton, Australia

Customer orientation in development, production and sales

Innovative technology from the automobile industry

- **Many million times well proven and reliable Bosch quality** – As a leading developer and manufacturer of automotive technology Bosch is also a mobile and experienced partner outside the automobile industry.
- **Bosch electric motors operate absolutely reliably** – They are available in a light and compact design, have a high output and long service life.
- **Price and performance, that match up** – High-volume production results in inexpensive prices.

Individual solutions for your application

- **The right solution for every requirement** – Due to a variety of different designs and sizes, the Bosch range of electric motors provides a great deal of flexibility for installation and use.
Bosch electric motors operate in a D.C. voltage range of 12 to 24 Volt. They are also optionally available with and without Hall elements.
- **Successful application examples** – Power-operated hospital beds, wheel chairs, garage-door drives, lawnmowers, locking systems and output systems, electric mopeds and lots more.

Professional customer service

- **Engineering team for new developments** – Right from the very start, Bosch engineers provide their support and advice in the application engineering for D.C. motors, blowers or pumps.
- **All-encompassing customer orientation** – Bosch guarantees worldwide uniform production and quality standards, and availability of its products.
- **Technical information** – Comprehensive information on Bosch electric motors is available in our catalogue or on the available CD-ROM. Apart from this, you can also find all technical details online at www.bosch-elektromotoren.de.

Parameter explanation

Nominal values

Nominal value

Value of a variable (e.g. voltage, current, resistance ...) according to which a motor, blower, or pump, or its characteristics and parts are specified or according to which they are designated.

Power consumption P_1

$$P_1 = U \cdot I$$

P_1 Power consumption in W

U Voltage in V

I Current in A

Output power P_2

For motors the output power P_2 is always given.

$$P_2 = 2 \cdot \frac{\pi}{60} \cdot M \cdot n$$

P_2 Output power in W

M Torque in Nm

n Rotational speed in min^{-1}

Efficiency η

Efficiency refers to the relationship between mechanical output P_2 and electrical power input P_1 .

$$\eta_2 = \frac{P_2}{P_1}$$

Example

Theoretically, a nominal voltage of 24 V and a rated current of 35 A result in a power input of P_1 :

$$P_1 = U_N \cdot I_N; P_1 = 24 \text{ V} \cdot 35 \text{ A}; P_1 = 840 \text{ W.}$$

This power consumption P_1 and the output P_{2N} (see Fig. page 7) determined from the characteristic-curves chart are used to calculate the efficiency η :

$$\eta = \frac{P_{2N}}{P_1} = \frac{600 \text{ W}}{840 \text{ W}} = 0.71 = 71 \%$$

Rated torque M_N

The motor's rated torque is calculated from:

$$M_N = \frac{60}{2\pi} \cdot \frac{P_{2N}}{n_N}$$

M_N Rated torque in Nm

P_{2N} Rated power output in W

n_N Rated speed in min^{-1}

Rated speed n_N

Rated speed refers to the speed of a motor supplied with rated voltage and driven at a rated output.

Direction of rotation

When looking at the motor's shaft end, clockwise operation is deemed to be right-handed rotation. For motors with two shaft ends, the shaft end opposite the commutator determines the direction of rotation.

Short-circuit values

The current consumed by the motor in case of short-circuit (when armature is braked to stand-still), is the maximum current I_{max} .

When a short circuit occurs, the maximum torque M_A (breakaway torque) is effective.

IP degrees of protection

Valid for electrical equipment of road vehicles as under IEC 60529 and DIN 40050, Part 9.

- Protection of electrical equipment within housing against influence of solid foreign bodies including dust.
- Protection of electrical equipment within housing against ingress of water.
- Protection of people against touching hazardous parts¹ within housing.

¹ Moving mechanical parts.

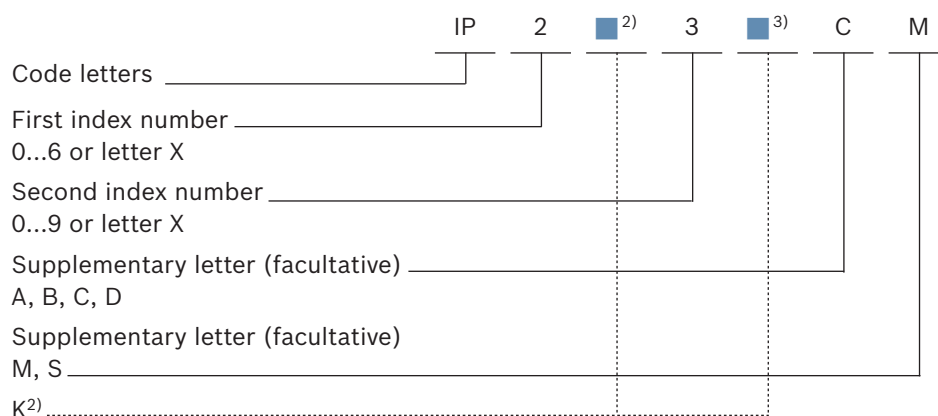
Fastening

- Housing fastening: By means of screws on the motor or transmission housing. Blowers are fastened in a similar manner, either to the drive motor or the air shroud.
- Flange mounting: The motor's drive-end support has a two or three-hole flange, or the front side contains three or four threaded holes for fastening.

Cooling

- Internal natural cooling: open-type design, without fan.
- Internal natural cooling: open-type design, with separate fan.
- Internal forced-air cooling: open-type design, with externally-driven fan.
- Surface natural cooling: closed design, without fan.
- Surface natural cooling: closed design, with separate fan.

IP-code structure



If an index number is not given, then the letter "X" must be substituted (i.e. "XX", if both index numbers are missing). Additional and/or supplementary letters can be omitted without any substitution.

²⁾ The supplementary letter "K" is placed either immediately after the first index numbers 5 and 6 or immediately after the second index numbers 4, 6 and 9.

³⁾ During the water test for example: IP16KB protection against ingress of solid foreign bodies with a diameter ≥ 50 mm, protection against powerful spray water at high pressure, protection against being touched by fingers.

Explanations of IP code

1. Index number and supplementary letter K	Protection of electrical equipment against ingress of foreign bodies	People	2. Index number and supplementary letter K	Protection of electrical equipment against ingress of water	Letter (facultative)	Protection of people in event of contact with hazardous parts	Letter (facultative)	
0	Not protected	Not protected	0	Not protected	A	Protection against contact with back of hand	M	Motion of moving parts ³⁾
1	Protection against foreign bodies $\varnothing \geq 50$ mm	Protection against contact with back of hand	1	Protection against vertical droplets	B	Protection against contact with fingers	S	Standstill of moving parts ³⁾
2	Protection against foreign bodies $\varnothing \geq 12.5$ mm	Protection against contact with fingers	2	Protection against droplets, 15° Inclination	C	Protection against contact with tools		
3	Protection against foreign bodies $\varnothing \geq 2.5$ mm	Protection against contact with tools	3	Protection against spray water	D	Protection against contact with wire		
4	Protection against foreign bodies $\varnothing \geq 1.0$ mm	Protection against contact with wire	4	Protection against spray water				
5K	Dust-protected	Protection against contact with wire	4K	Protection against spray water with increased pressure				
6K	Dust-proof	Protection against contact with wire	5	Protection against spray water				
			6	Protection against powerful spray water				
			6K	Protection against powerful spray water with increased pressure				
			7	Protection against temporary immersion				
			8	Protection against permanent immersion				
			9K	Protection against high pressure/ vapor pressure cleaning				

Operating modes (VDE 0530)

Continuous operation S 1

Operation with constant load condition, the duration of which is sufficient to reach the thermal steady-state condition.

Parameters for curve inspection

P_1	Power input
P_V	Power loss
ϑ	Temperature
ϑ_{\max}	Highest temperature
t_B	Load period
t_r	Relative on period (as percentage)
t_S	Duration
t_{St}	Standstill period

Short-term operation S 2

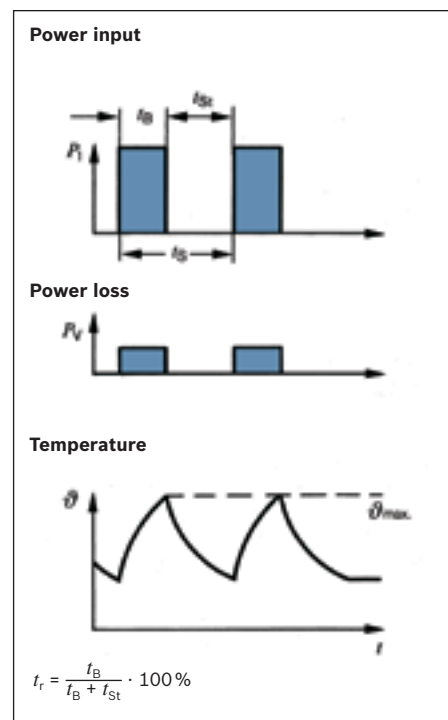
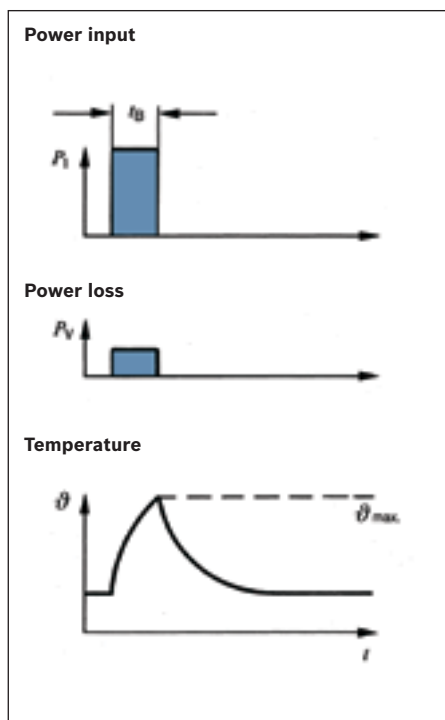
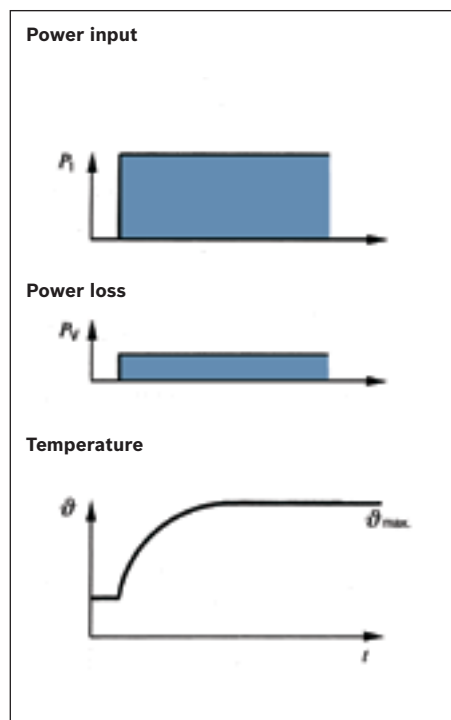
Operation with constant load condition, which does not last long enough however to enable the thermal steady-state condition to be reached, and a subsequent pause, which lasts long enough for the motor temperature not to deviate more than 2 K from the coolant temperature.

Example: S 2 – 60 min
(The stated time refers to 60 minutes of operation at normal rating)

Intermittent operation S 3

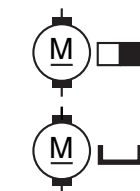
Operation, comprised of a sequence of similar cycles, each of which encompasses a time with constant load and a pause, whereby the startup current does not exert any perceptible influence on heating.

Example: S 3 – 10 %
(Stated percentage refers to on period)



Symbols

Permanent-
(magnet)
excited
D.C. motor



Interference-
suppression
component
Throttle



Interference-
suppression
component
Capacitor



Varistor disk



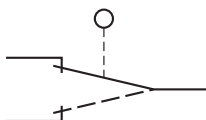
Resistance



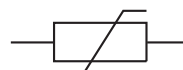
Thermoswitch



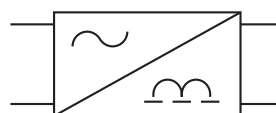
Limit shutoff



Varistor
(voltage-dependent resistor)



Bridge rectifier



Characteristic curves

With a specified working point of 160 Ncm one plots a vertical line to the torque axis. The intersecting points of these vertical lines with the various characteristic curves result in the operating data for the rated speed n_N , rated current I_N and mechanical output P_{2N} .

Explanation of characteristic curve evaluation

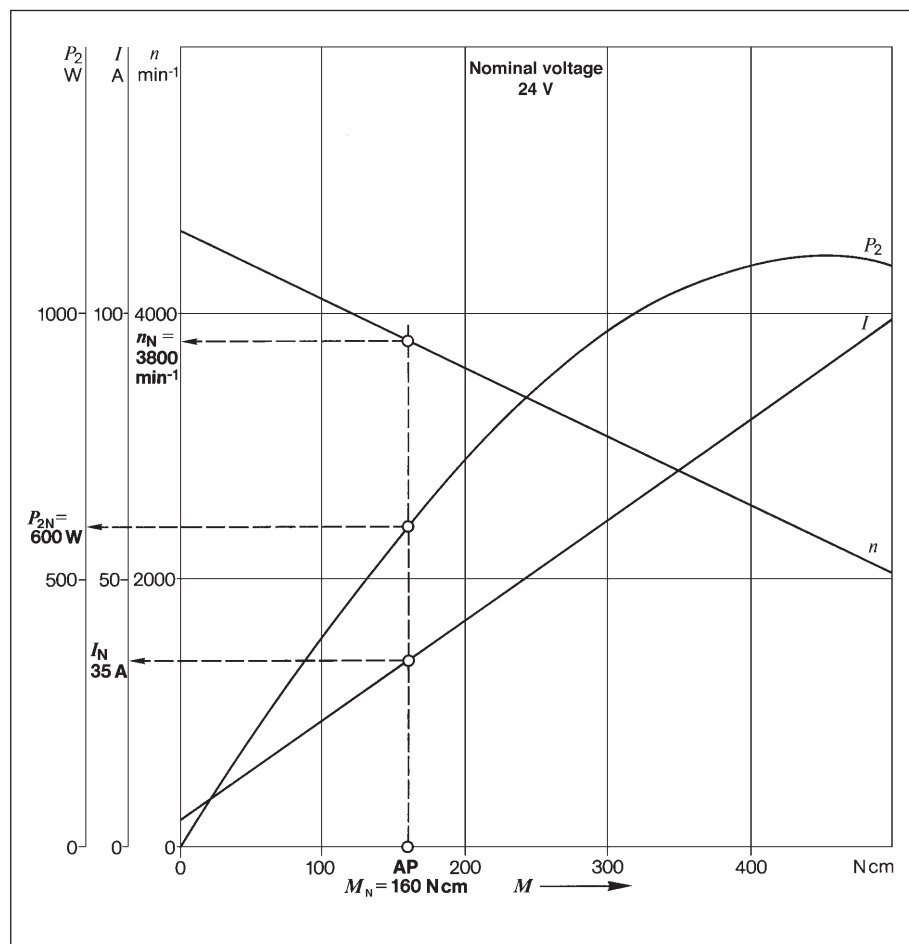
AP Working point
 M Torque
 P_2 Power input
 I Current
 n Rotational speed

Example:

Given: $M_N = 160$ Ncm.

Found: $n_N = 3,800$ min⁻¹.

$P_{2N} = 600$ W and $I_N = 35$ A.



CE-Identification and manufacturer declaration in accordance with EU directive

As under the EU Directive all electrically-powered machines, devices and systems, which are manufactured, imported and sold within the borders of the European Union must have a CE-label attached to them.

The EU Directive also includes the following individual guidelines, which are of significance for motor users.

1. Machine Directive

It is valid for self-contained operational machines or any interlinking of machines to form integral systems.

It is not valid for machine components however, such as, for example, electrical control systems or electric motors which have no independent function.

The entire machine or system must always comply with the Directive.

2. Low-voltage Directive

It is valid and is to be applied for all electric motors as from a low-voltage limit of 75 V for D.C. voltage and 50 V for A.C. voltage and higher. Because the electric motors listed in this catalogue are designed for rated voltages of up to maximum 24 V, they are not governed by this Directive.

3. EMC Directive

This Directive is valid for all electrical and electronic devices, installations and systems. However, this Directive is also valid for complex components such as, e.g. electric motors, although this only applies where they are openly available for purchase by the public. The electric motors listed in this catalogue are solely shipped as supplied parts or replacement parts, and are not subject to § 5 paragraph 5 of the EMC Act regarding a mandatory CE label.

The limits for the relaying and the radiation of high-frequency interference are specified in EN 55014 of the EMC Act. Because of the previously-mentioned reasons, Bosch electric motors are on no account subject to mandatory CE labeling.

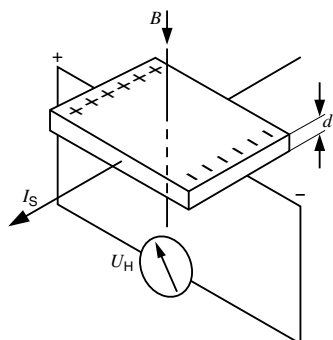
We will gladly assist you with information in all matters relating to the acceptance of your application.

Motors with Hall sensor

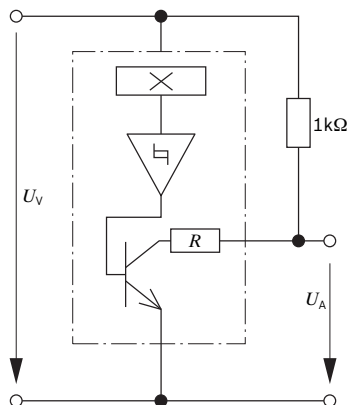
Hall effect

Hall effect.

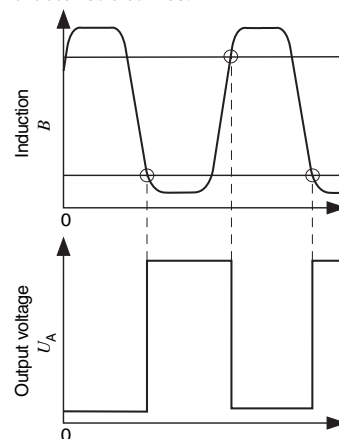
d Thickness of chip.



Circuit.



Characteristic curves.



If a current I_S flows through a chip, a Hall voltage U_H is generated transverse to the direction of the current, the size of which is proportional to the magnetic induction B (vertical to I_S) and the current I_S . The Hall voltage U_H is made up of:

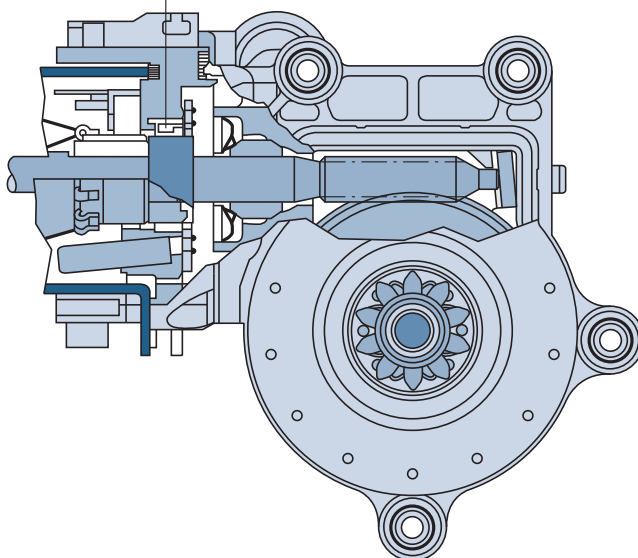
$$U_H = R_H \cdot \frac{I_S \cdot B}{d}$$

R_H Hall-constant factor

Since the resulting Hall voltages are extremely small, they are amplified. When using silicon Hall elements, the circuit for signal processing (e.g. a Schmitt trigger with subsequent driver) are integrated directly onto the same chip. This component is then designated a Hall-IC. The output is a transistor with open collector, with which a switching function is realized.

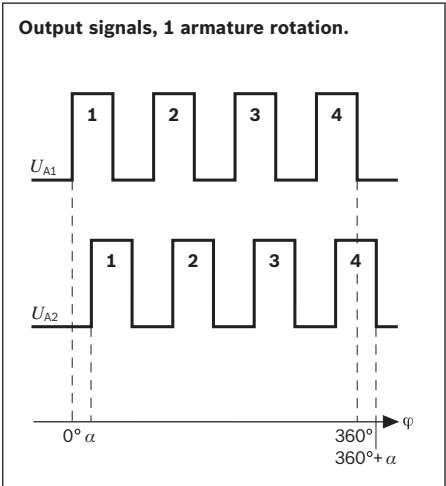
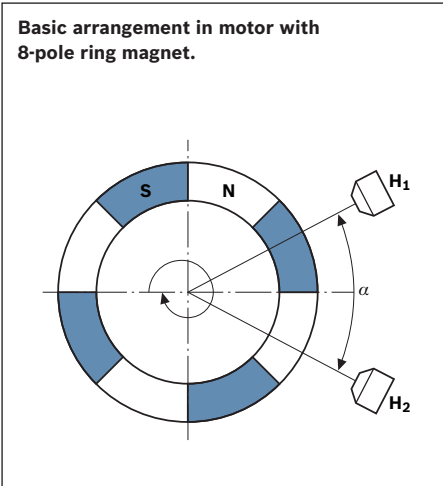
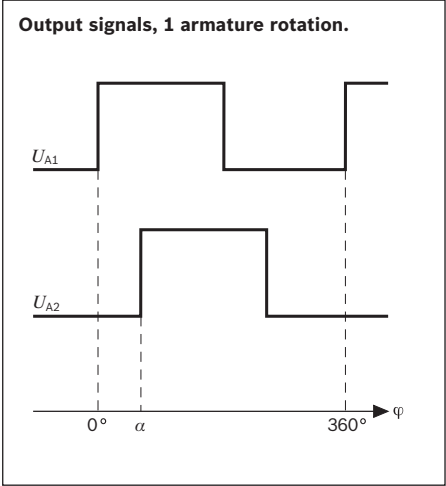
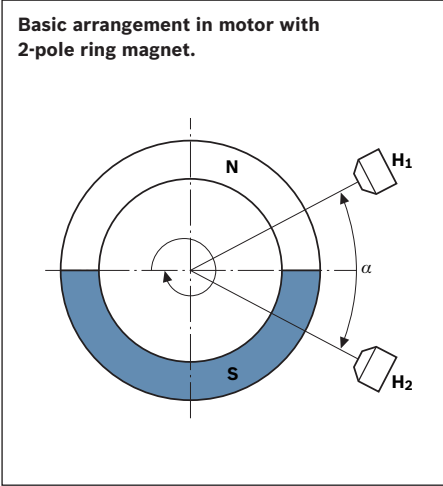
Permanently connected to the armature shaft is a magnetic ring, the magnetic field of which permeates the Hall element. When the armature shaft rotates, the magnetomotive-force direction in the Hall element changes. The output transistor is then either switched through or open.

Hall sensor IC



Hall-effect applications in D.C. motors

By counting the generated output-voltage pulses, one can determine the number of rotations and thus the speed. If the rotational motion is converted into a linear motion, it then becomes possible to monitor the adjustment travel exactly. If there are two Hall generators installed offset to each other at a specific angle α in a motor, then the direction of rotation can also be determined.



Basic arrangement in motor

- H_1, H_2 Hall generator
- N North pole
- S South pole
- α Angle between the two Hall generators

Output signals

- U_{A1} Output voltage of first Hall generator
- U_{A2} Output voltage of second Hall generator
- α Angle between the two Hall generators
- φ Rotational angle

D.C. motors without transmission



Product features

- Wide range of permanent-magnet D.C. motor products
- D.C. voltage range from 12 to 24 Volt
- Speed range from 1,750 to 9,500 min⁻¹
- Available with and without Hall elements

Advantages for your application

- Robust and reliable quality, well-proven in many millions of motor vehicles
- High reliability and service life
- A multitude of different sizes and designs for greater flexibility
- Favorable price/performance ratio

The Bosch D.C. motors without transmission referred to here are permanent-magnet D.C. motors developed for use in motor vehicles. They excel on account of an excellent power/weight ratio, and a broad working range in different requirements and installation situations.

Bosch electric motors without transmission are typically used in motor vehicles as a motor for heater or air-conditioning devices or for power-seat adjustment. The installation position can vary arbitrarily from horizontal to vertical. Bosch electric motors without transmission, are also the suitable solution for many applications outside the automobile.

Application examples

Automotive technology:

Heater and air-conditioning blowers, engine cooling, power-seat adjustment

Industrial applications:

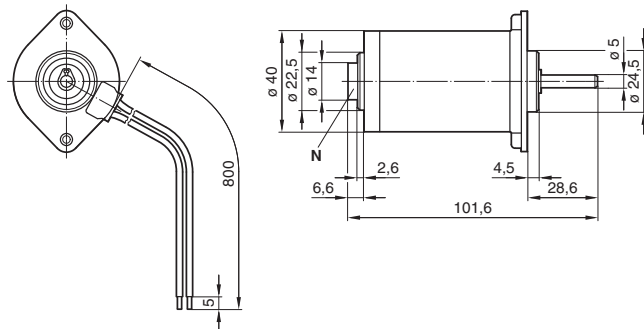
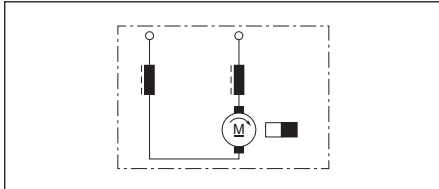
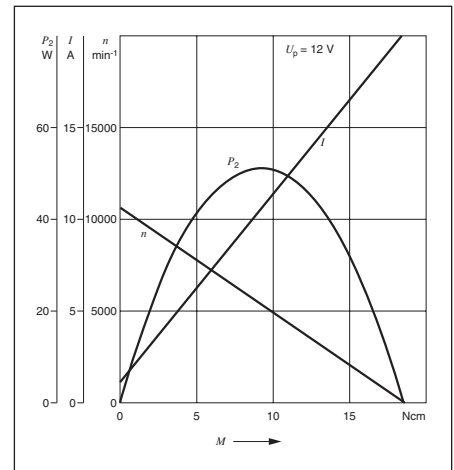
Electric mopeds, sweeping machines, hospital wheelchairs, adjustable office desks, window adjustment, hoisting winches and lots more.



APG**12 V 20 W**

Part number	0 130 002 211
Nominal voltage	U_N 12 V
Nominal power	P_N 20 W
Nominal current	I_N 2,8 A
Nominal speed	n_N 9500 min ⁻¹
Nominal torque	M_N 2 Ncm
Breakaway torque	M_A 20 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 54 A ¹⁾
Weight	approx. 0,30 kg

1) Bearings excluded

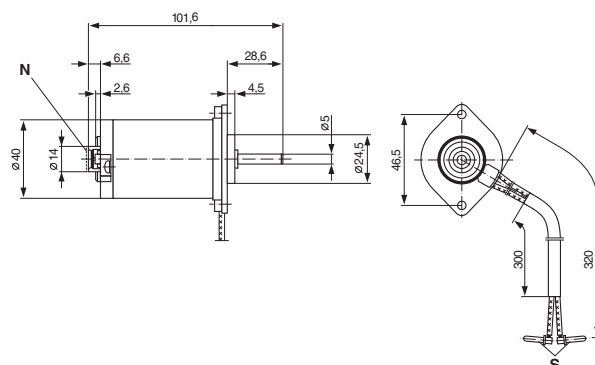
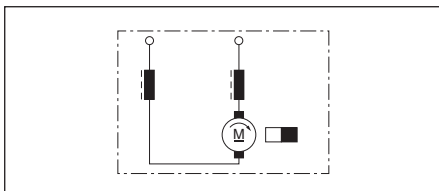
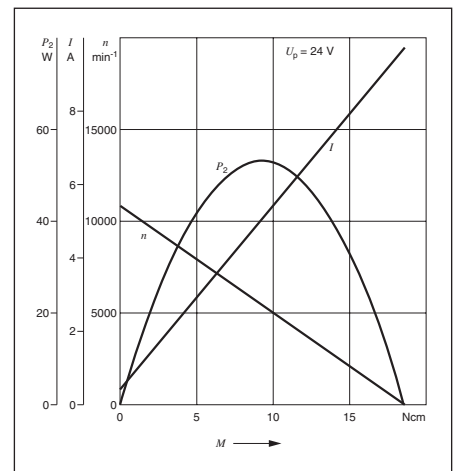


N Cap supplied separately (part number 3 130 508 003)

APG**24 V 20 W**

Part number	0 130 002 092
Nominal voltage	U_N 24 V
Nominal power	P_N 20 W
Nominal current	I_N 1,7 A
Nominal speed	n_N 9500 min ⁻¹
Nominal torque	M_N 2 Ncm
Breakaway torque	M_A 20 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 54 A ¹⁾
Weight	approx. 0,30 kg

1) Bearings excluded

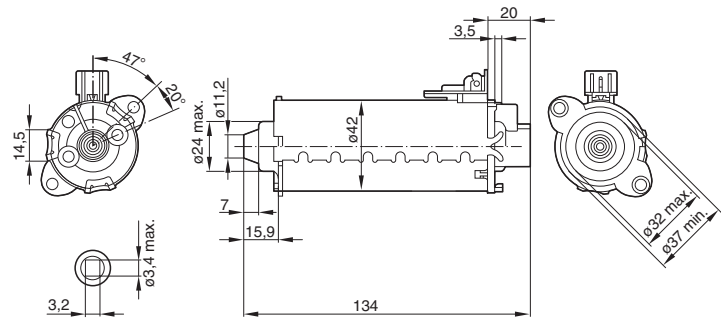
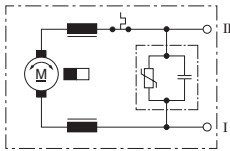
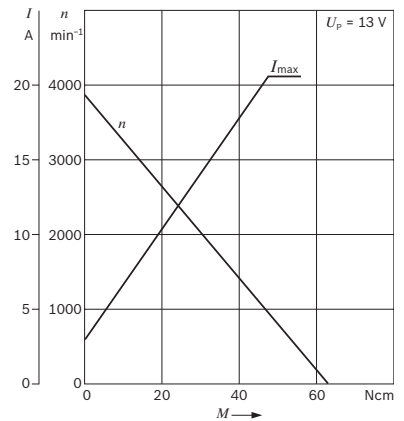


N Cap supplied separately (part number 3 130 508 003)
 S Round plug, Kostal (part number 1 02 24 32944 0)

API**12 V 46 W**

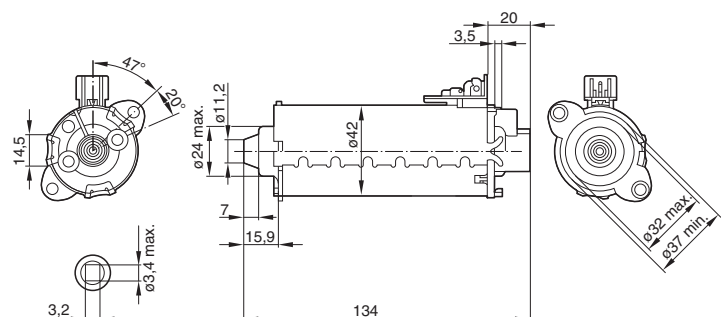
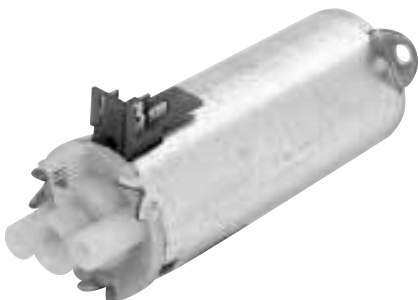
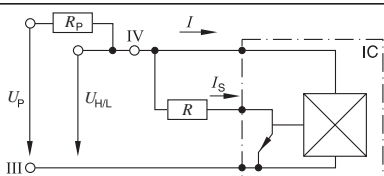
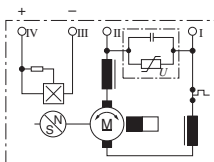
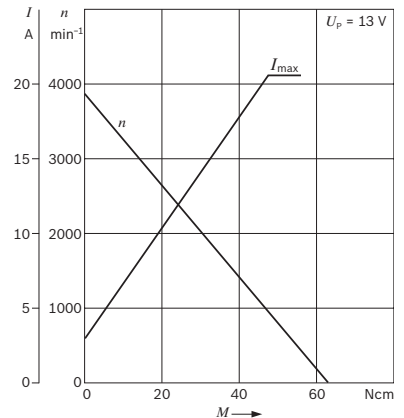
Part number	0 130 002 529
Nominal voltage	U_N 12 V
Nominal power	P_N 46 W
Nominal current	I_N 9,0 A
Nominal speed	n_N 2900 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 63 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,44 kg

Clockwise: I to term (+), II to term (-)
 Counterclockwise: I to term (-), II to term (+)

**API****with Hall sensor****12 V 46 W**

Part number	0 130 002 530
Nominal voltage	U_N 12 V
Nominal power	P_N 46 W
Nominal current	I_N 9,0 A
Nominal speed	n_N 2900 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 63 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,44 kg

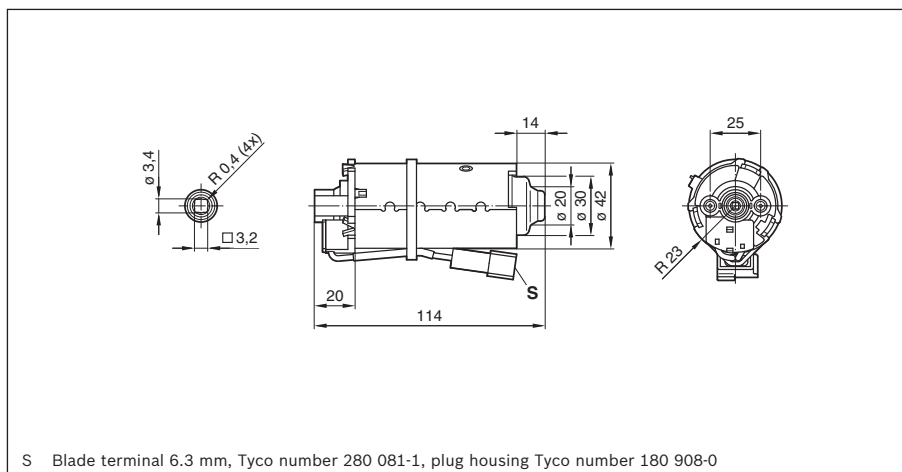
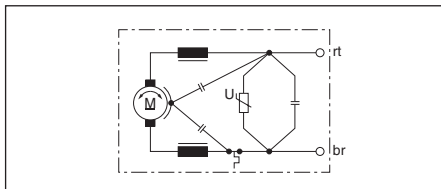
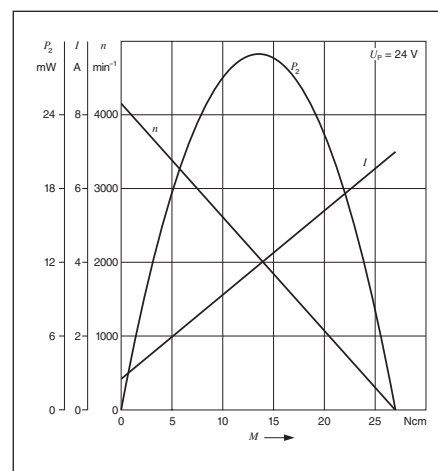
Clockwise: I to term (+), II to term (-)
 Counterclockwise: I to term (-), II to term (+)



API**24 V 25 W**

Part number	0 130 002 562
Nominal voltage	U_N 24 V
Nominal power	P_N 25 W
Nominal current	I_N 2,7 A
Nominal speed	n_N 2950 min ⁻¹
Nominal torque	M_N 8 Ncm
Breakaway torque	M_A 27 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,50 kg

Clockwise:
red (rt) to term (+), brown (br) to term (-)
Counterclockwise:
red (rt) to term (-), brown (br) to term (+)

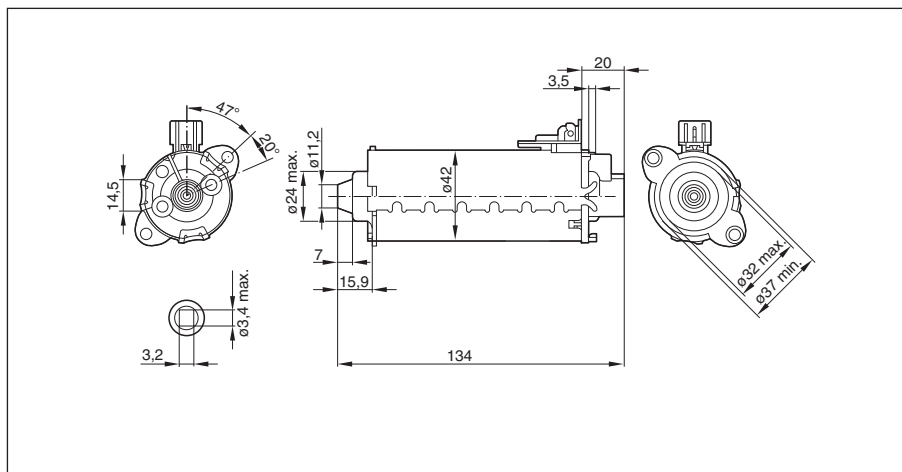
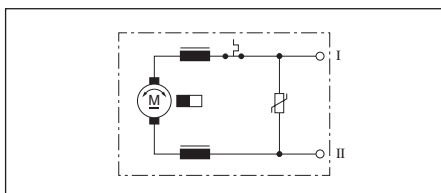
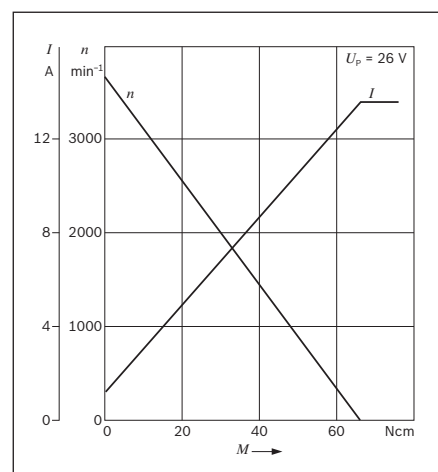


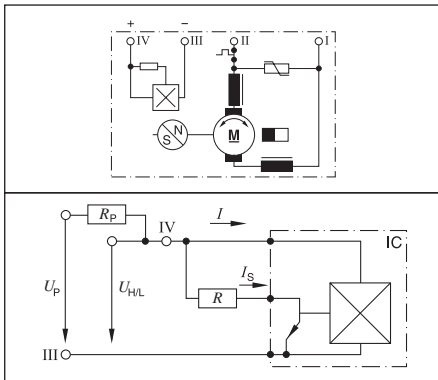
S Blade terminal 6.3 mm, Tyco number 280 081-1, plug housing Tyco number 180 908-0

API**24 V 46 W ¹⁾**

Part number	0 130 002 671
Nominal voltage	U_N 24 V
Nominal power	P_N 46 W
Nominal current	I_N 4,5 A
Nominal speed	n_N 2900 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 63 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,44 kg

¹⁾ On request
Clockwise: I to term (+) II to term (-)
Counterclockwise: I to (-) II to (+)



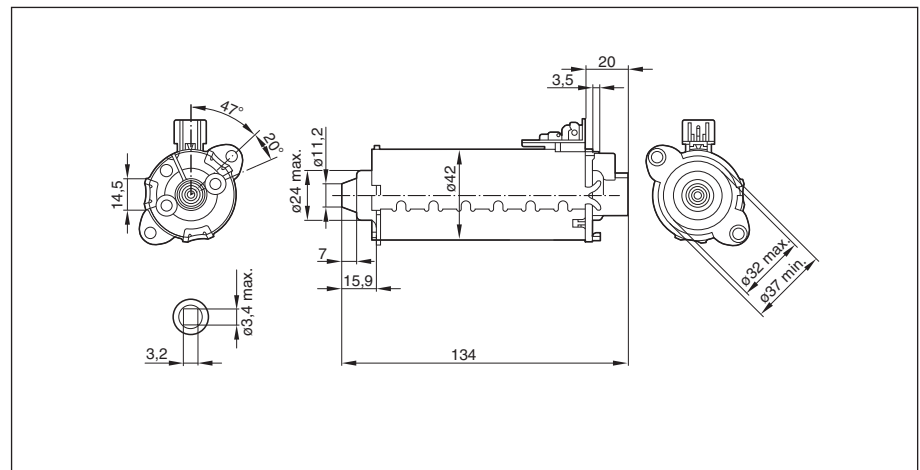
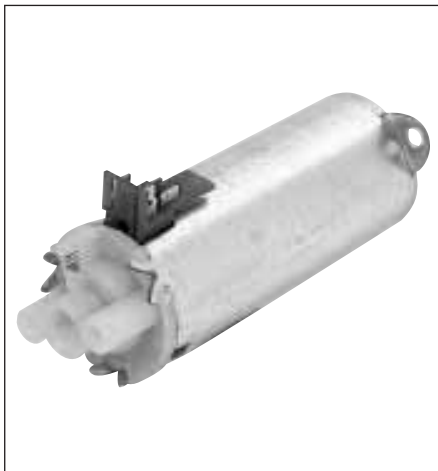
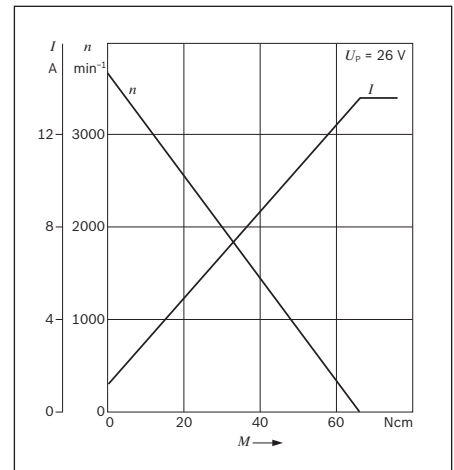
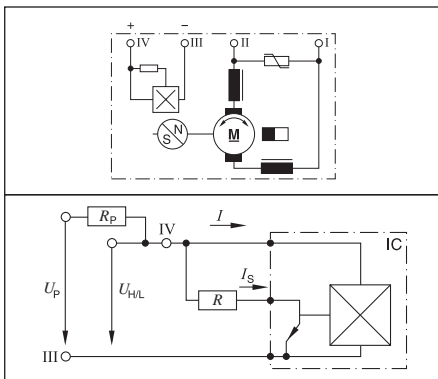
API**with Hall sensor****24 V 46 W ¹⁾**

Part number	0 130 002 672
Nominal voltage	U_N 24 V
Nominal power	P_N 46 W
Nominal current	I_N 4,5 A
Nominal speed	n_N 2900 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 63 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,44 kg

¹⁾ On request

Clockwise: I to term (+) II to term (-)

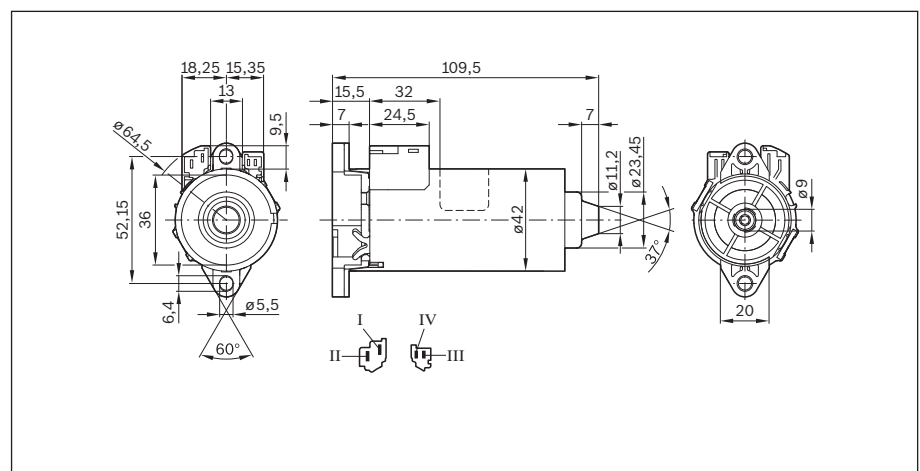
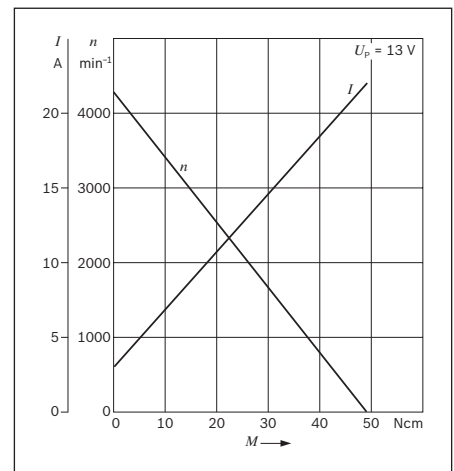
Counterclockwise: I to term (-) II to term (+)

**API****with Hall sensor****12 V 34.5 W**

Part number	0 130 002 632
Nominal voltage	U_N 12 V
Nominal power	P_N 34,5 W
Nominal current	I_N 6,8 A
Nominal speed	n_N 3360 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 49 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,45 kg

Clockwise: I to term (+), II to term (-)

Counterclockwise: I to term (-), II to term (+)

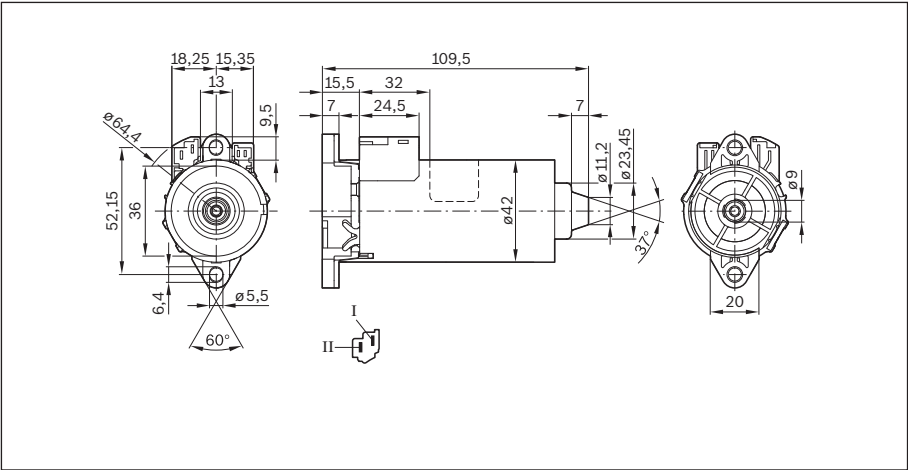
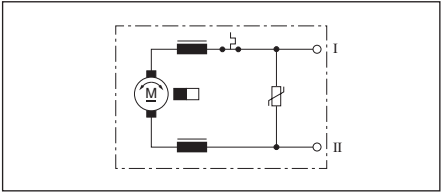
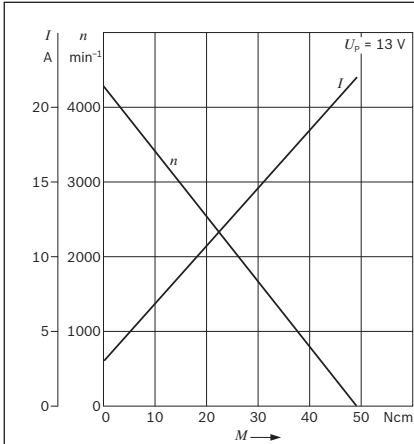


API

12 V 34.5 W

Part number	0 130 002 633
Nominal voltage	U_N 12 V
Nominal power	P_N 34,5 W
Nominal current	I_N 6,8 A
Nominal speed	n_N 3360 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 49 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,45 kg

Clockwise: I to term (+), II to term (-)
Counterclockwise: I to term (-), II to term (+)



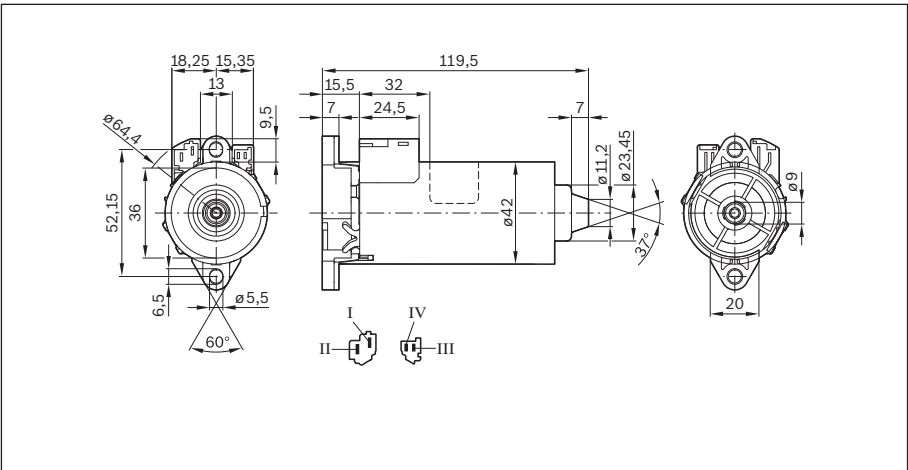
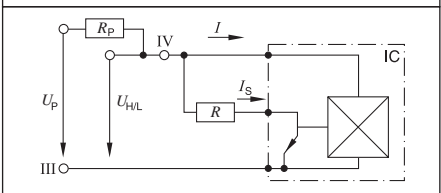
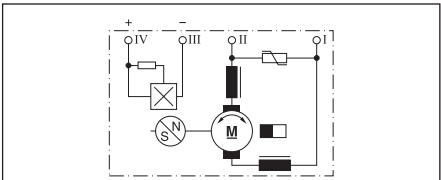
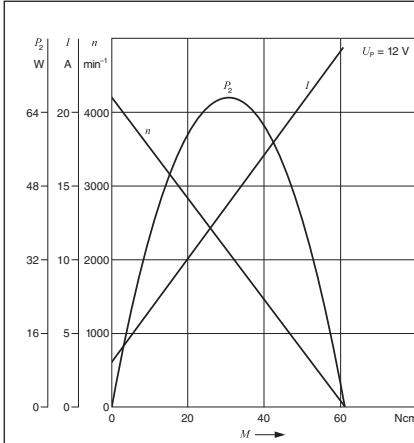
API

with Hall sensor

12 V 36.4 W

Part number	0 130 002 634
Nominal voltage	U_N 12 V
Nominal power	P_N 36,4 W
Nominal current	I_N 6,3 A
Nominal speed	n_N 3480 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 62 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,53 kg

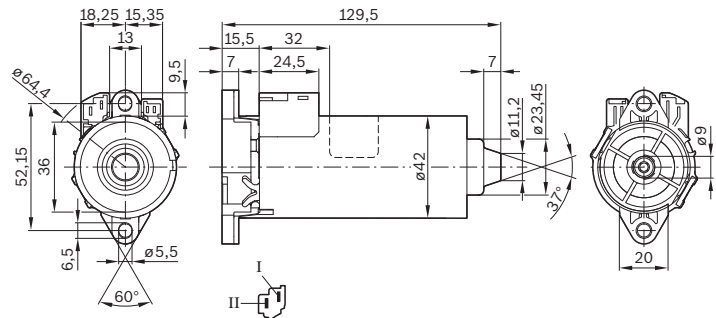
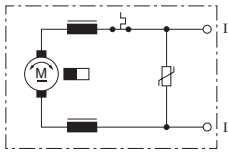
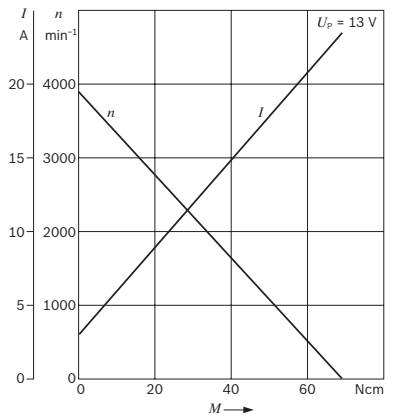
Clockwise: I to term (+), II to term (-)
Counterclockwise: I to term (-), II to term (+)



API**12 V 29.2 W**

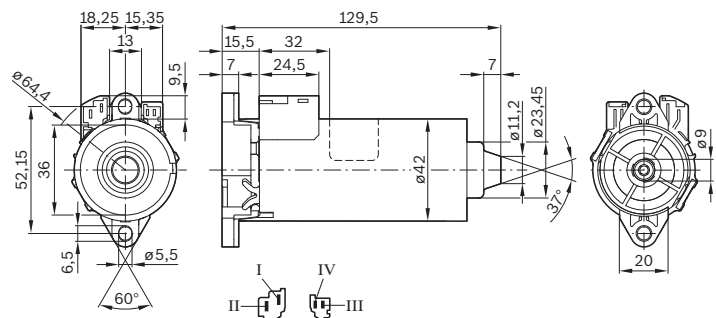
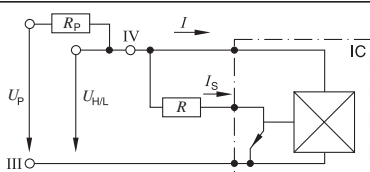
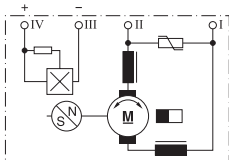
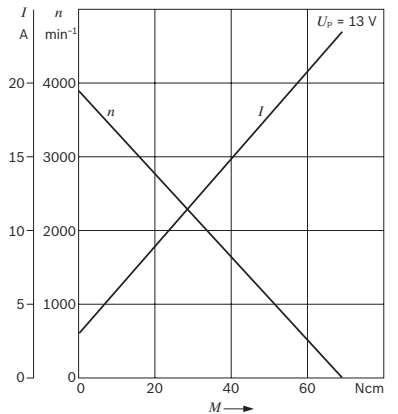
Part number	0 130 002 636
Nominal voltage	U_N 12 V
Nominal power	P_N 29,2 W
Nominal current	I_N 5,8 A
Nominal speed	n_N 2790 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 69 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,60 kg

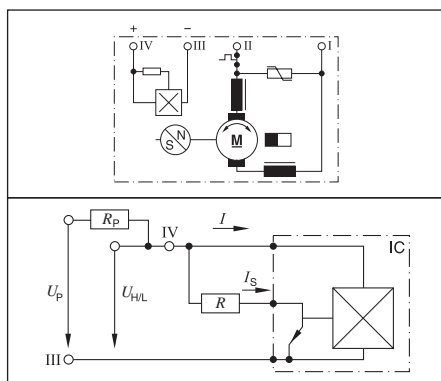
Clockwise: I to term (+), II to term (-)
 Counterclockwise: I to term (-), II to term (+)

**API****with Hall sensor****12 V 29.2 W**

Part number	0 130 002 613
Nominal voltage	U_N 12 V
Nominal power	P_N 29,2 W
Nominal current	I_N 5,8 A
Nominal speed	n_N 2790 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 69 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,60 kg

Clockwise: I to term (+) II to term (-)
 Counterclockwise: I to term (-) II to term (+)



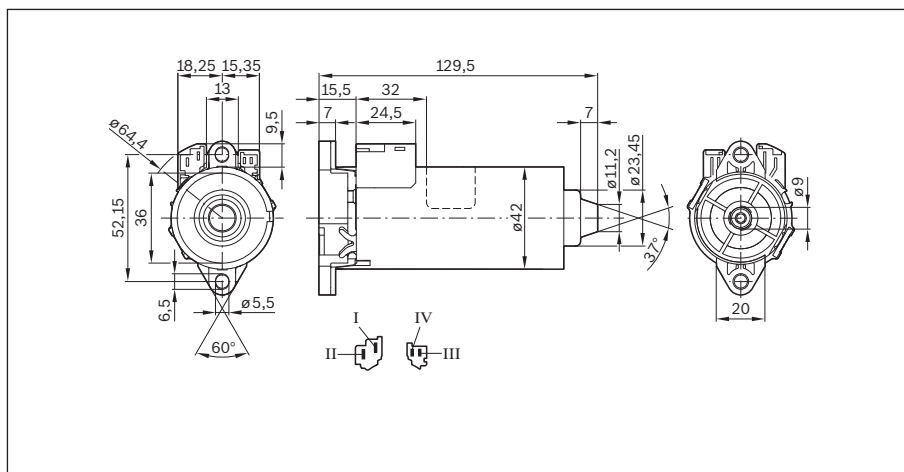
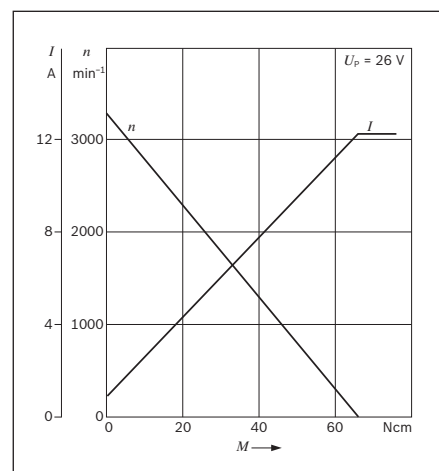
API**with Hall sensor****24 V 29.2 W ¹⁾**

Part number	0 130 002 673
Nominal voltage	U_N 24 V
Nominal power	P_N 29,2 W
Nominal current	I_N 2,9 A
Nominal speed	n_N 2790 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 69 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,60 kg

¹⁾ On request

Clockwise: I to term (+) II to term (-)

Counterclockwise: I to term (-) II to term (+)

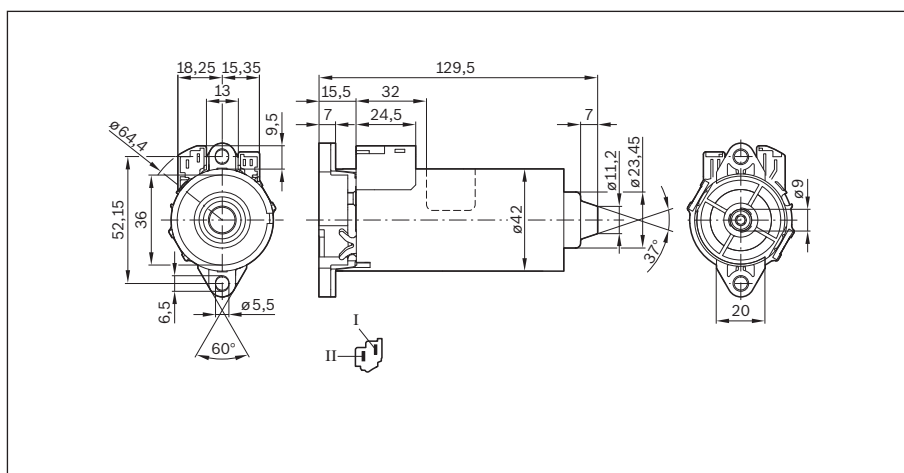
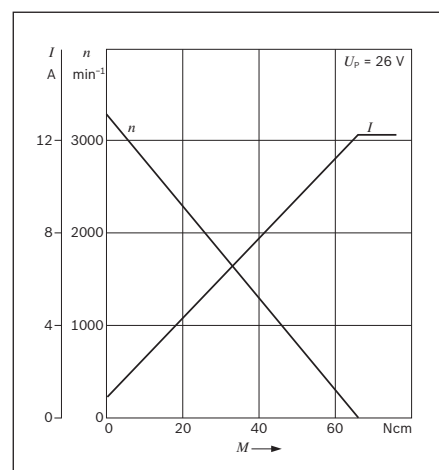
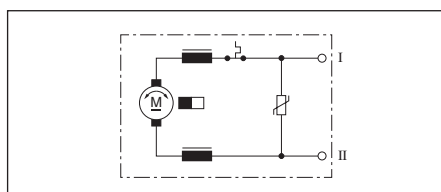
**API****24 V 29.2 W ¹⁾**

Part number	0 130 002 674
Nominal voltage	U_N 24 V
Nominal power	P_N 29,2 W
Nominal current	I_N 2,9 A
Nominal speed	n_N 2790 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 69 Ncm
Direction of rotation	L/R
Type of duty	S 3 - 15 %
Degree of protection	IP 50
Weight	approx. 0,60 kg

¹⁾ On request

Clockwise: I to term (+) II to term (-)

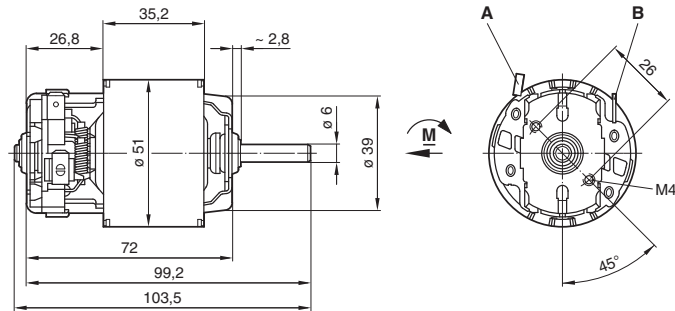
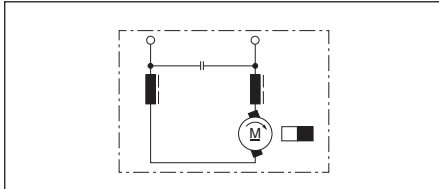
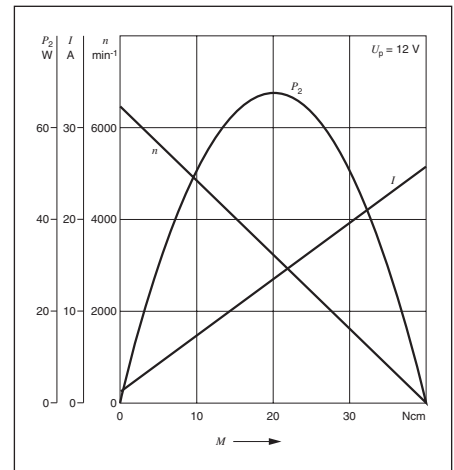
Counterclockwise: I to term (-) II to term (+)



BPA

12 V 34 W

Part number	0 130 007 343
Nominal voltage	U_N 12 V
Nominal power	P_N 34 W
Nominal current	I_N 5,5 A
Nominal speed	n_N 5425 min ⁻¹
Nominal torque	M_N 6 Ncm
Breakaway torque	M_A 40 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,40 kg

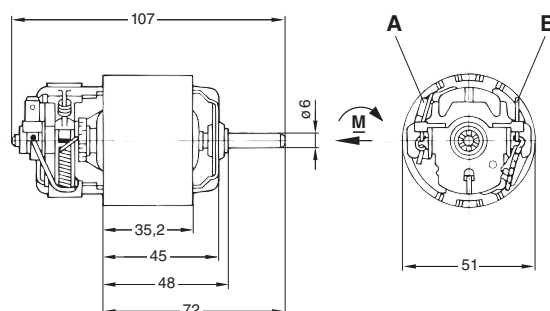
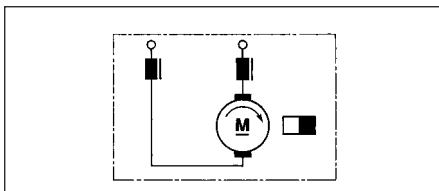
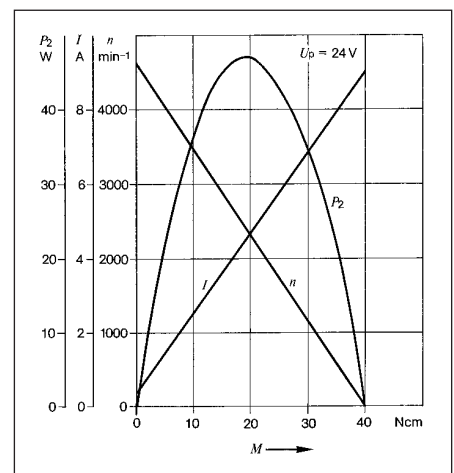


A (-) Receptacle for blade terminal 6.3 x 0.8
B (+) Blade terminal 6.3 x 0.8

BPA

24 V 25 W

Part number	0 130 007 051
Nominal voltage	U_N 24 V
Nominal power	P_N 25 W
Nominal current	I_N 1,8 A
Nominal speed	n_N 4000 min ⁻¹
Nominal torque	M_N 6 Ncm
Breakaway torque	M_A 40 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,40 kg

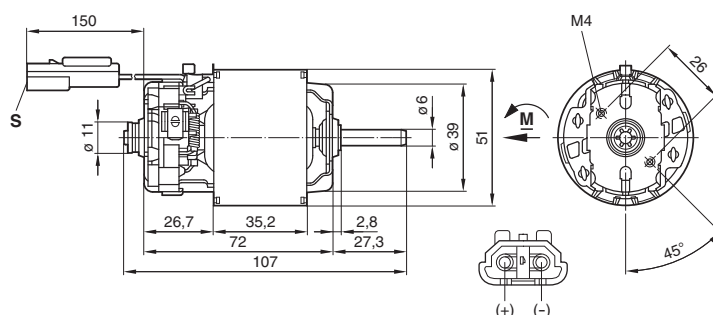
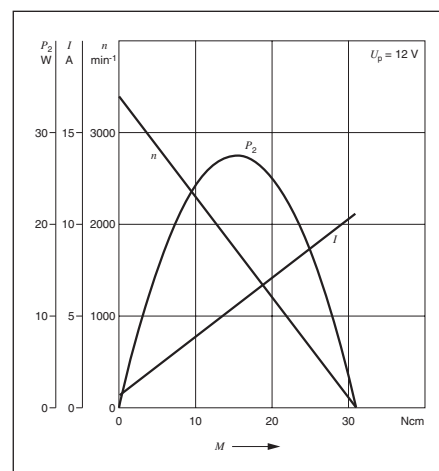
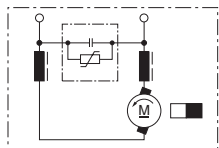


A (-) Receptacle for blade terminal 6.3 x 0.8
B (+) Blade terminal 6.3 x 0.8

BPA

12 V 14 W

Part number	0 130 007 342
Nominal voltage	U_N 12 V
Nominal power	P_N 14 W
Nominal current	I_N 2,5 A
Nominal speed	n_N 2860 min ⁻¹
Nominal torque	M_N 4,6 Ncm
Breakaway torque	M_A 31 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,40 kg

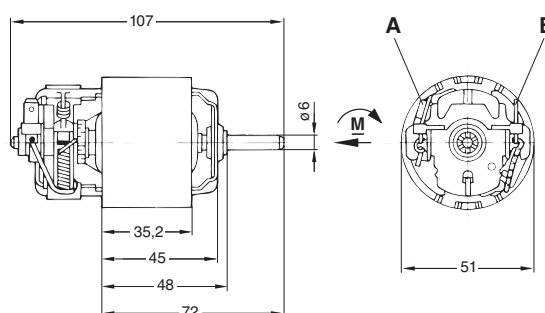
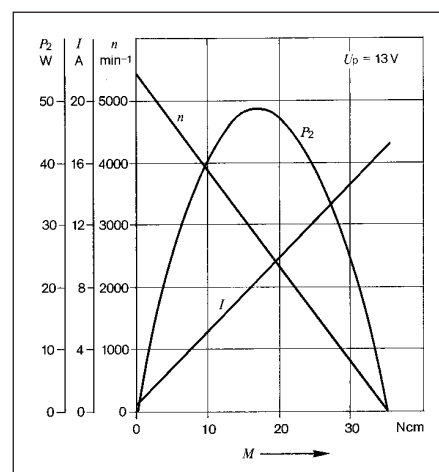
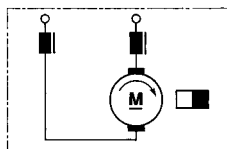


S Round plug Ø 2.5 mm.
Connections: (+) green, (-) black.

BPA

12 V 28 W

Part number	0 130 007 027
Nominal voltage	U_N 12 V
Nominal power	P_N 28 W
Nominal current	I_N 4,0 A
Nominal speed	n_N 4500 min ⁻¹
Nominal torque	M_N 6 Ncm
Breakaway torque	M_A 35 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,40 kg

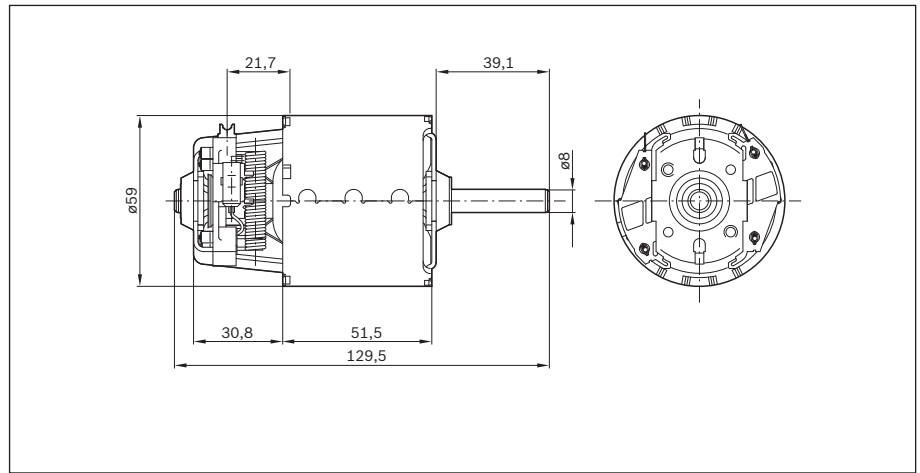
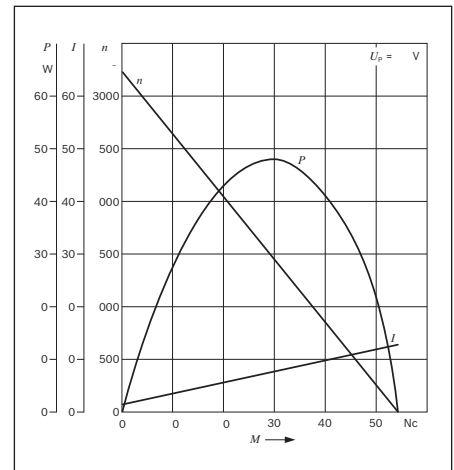
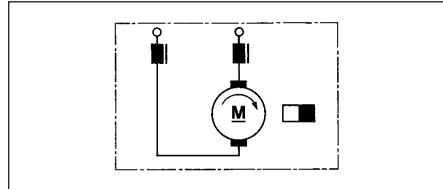


A (-) Receptacle for blade terminal 6.3 x 0.8
B (+) Blade terminal 6.3 x 0.8

CPB

12 V 24 W

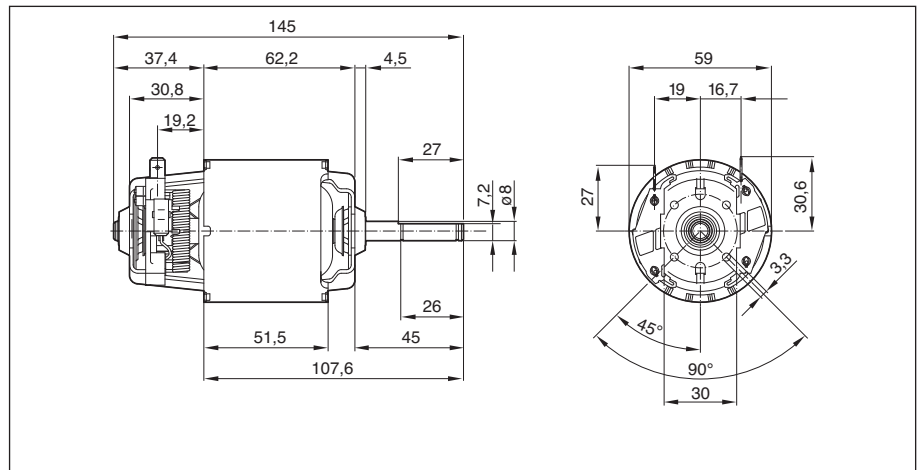
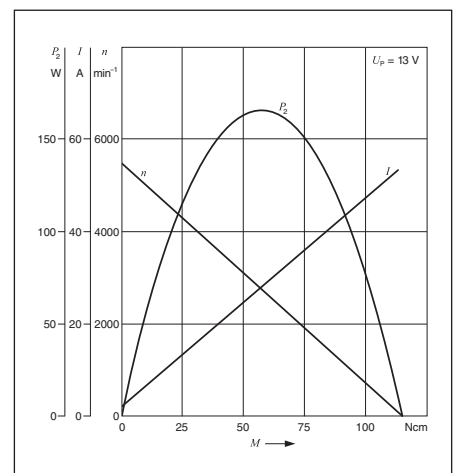
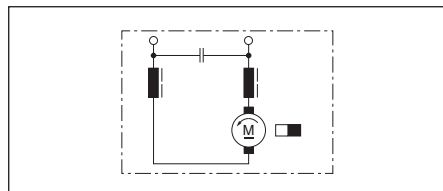
Part number	F 006 B10 148
Nominal voltage	U_N 12 V
Nominal power	P_N 24 W
Nominal speed	n_N 2950 min ⁻¹
Nominal torque	M_N 7 Ncm
Breakaway torque	M_A 26 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,50 kg



CPB

12 V 99 W

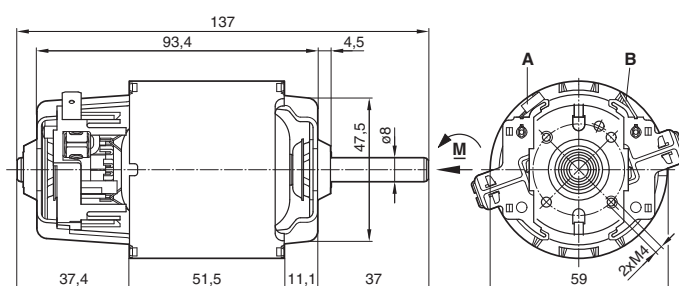
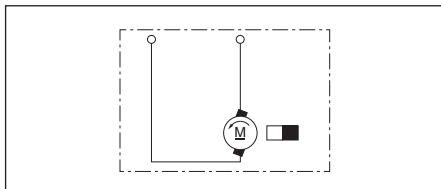
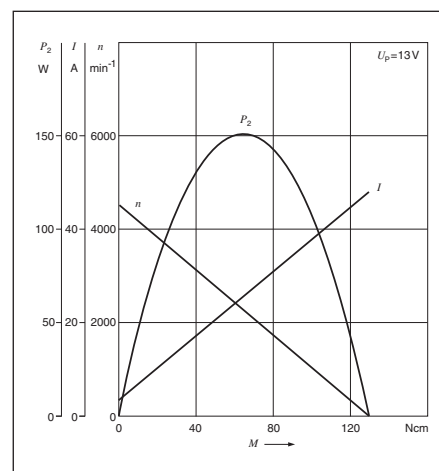
Part number	0 130 063 075
Nominal voltage	U_N 12 V
Nominal power	P_N 99 W
Nominal current	I_N 13,0 A
Nominal speed	n_N 3800 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 108 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,72 kg



CPB

12 V 86 W

Part number	0 130 063 076
Nominal voltage	U_N 12 V
Nominal power	P_N 86 W
Nominal current	I_N 12,0 A
Nominal speed	n_N 3300 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 118 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,80 kg

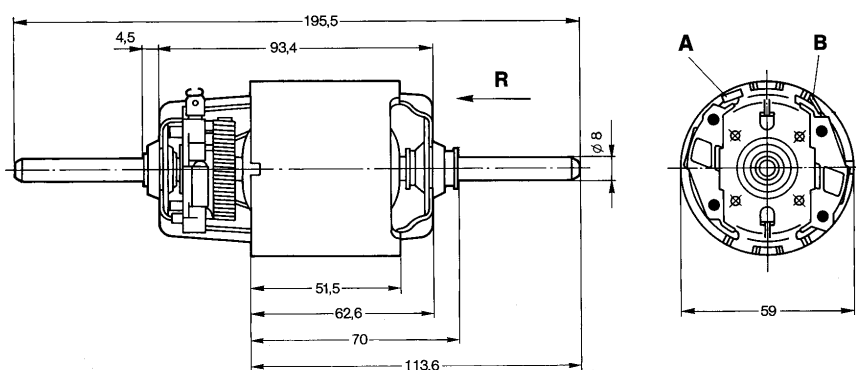
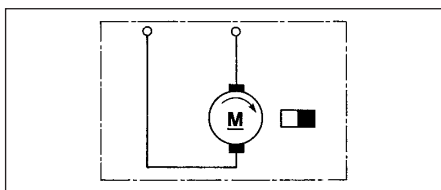
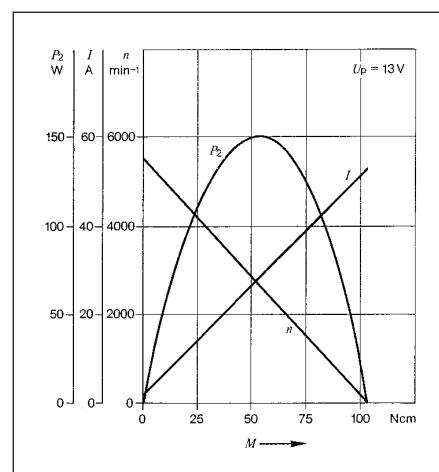


A (-) Receptacle for blade terminal 6.3 x 0.8
B (+) Blade terminal 6.3 x 0.8

CPB

12 V 75 W

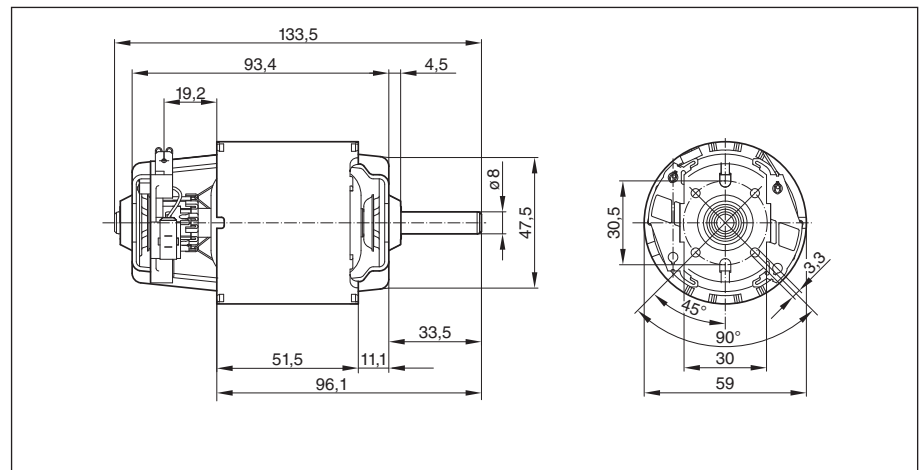
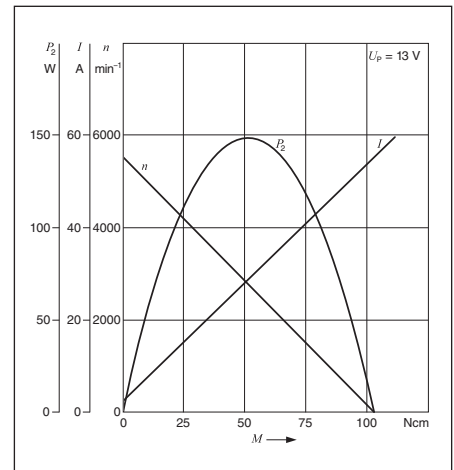
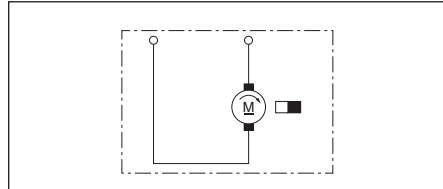
Part number	0 130 063 012
Nominal voltage	U_N 12 V
Nominal power	P_N 75 W
Nominal current	I_N 12,0 A
Nominal speed	n_N 4800 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 105 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,75 kg



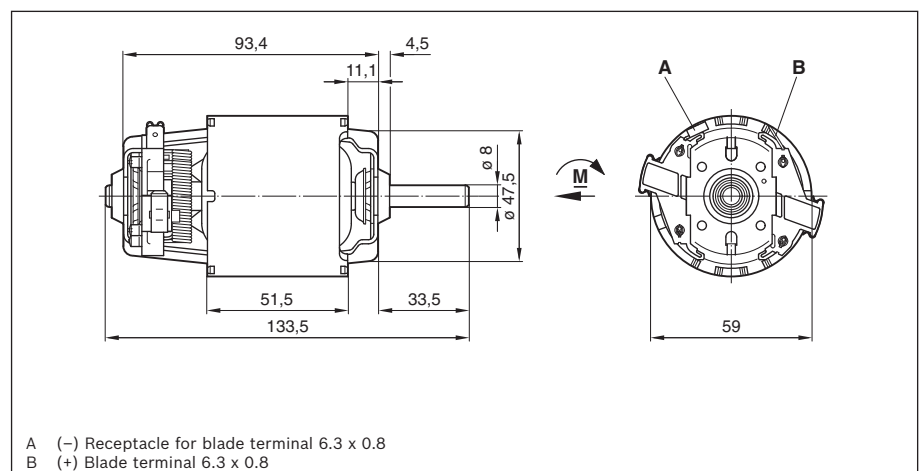
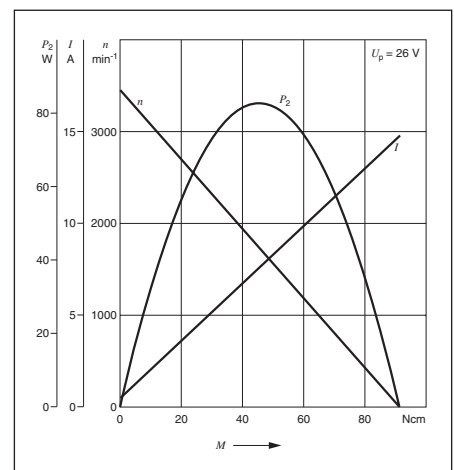
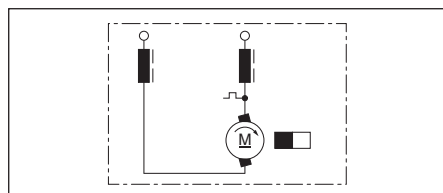
A (-) Receptacle for blade terminal 6.3 x 0.8
B (+) Blade terminal 6.3 x 0.8
R Clockwise

CPB**12 V 84 W**

Part number	0 130 063 040
Nominal voltage	U_N 12 V
Nominal power	P_N 84 W
Nominal current	I_N 12,0 A
Nominal speed	n_N 4000 min ⁻¹
Nominal torque	M_N 20 Ncm
Breakaway torque	M_A 97 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,70 kg

**CPB****24 V 44 W**

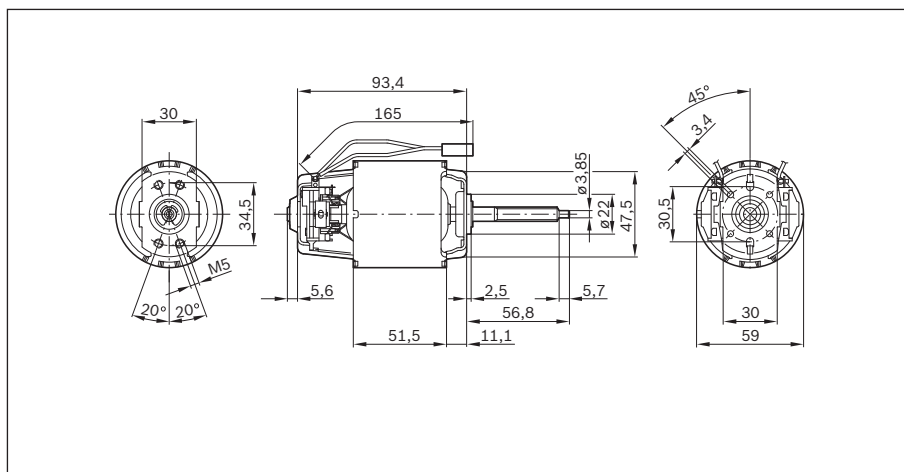
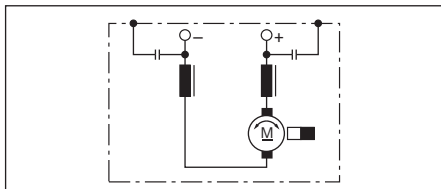
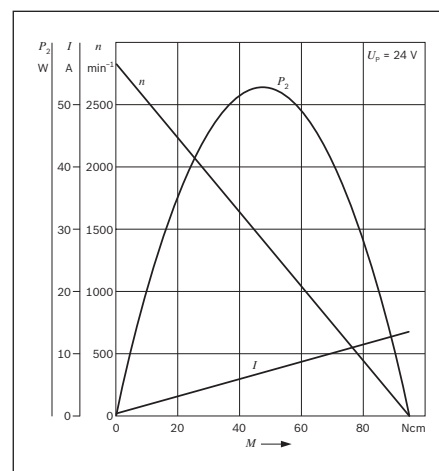
Part number	0 130 063 042
Nominal voltage	U_N 24 V
Nominal power	P_N 44 W
Nominal current	I_N 2,5 A
Nominal speed	n_N 3000 min ⁻¹
Nominal torque	M_N 12 Ncm
Breakaway torque	M_A 84 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,70 kg



CPB

24 V 36 W

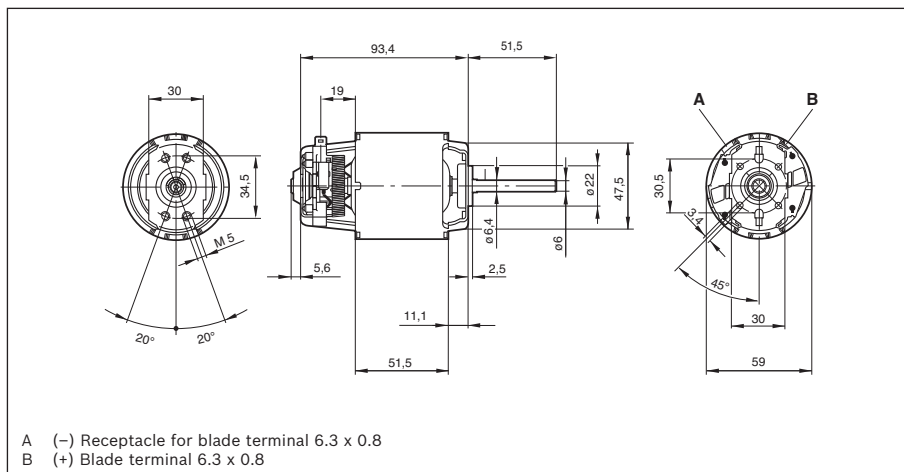
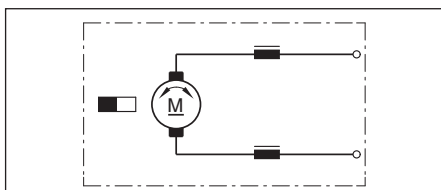
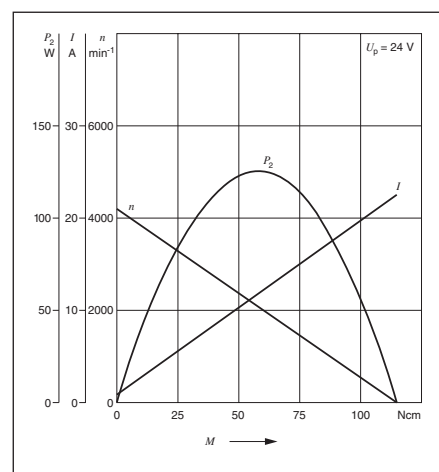
Part number	F 006 MG0 30B
Nominal voltage	U_N 24 V
Nominal power	P_N 120 W
Nominal current	I_N 2,5 A
Nominal speed	n_N 2300 min ⁻¹
Nominal torque	M_N 50 Ncm
Breakaway torque	M_A 450 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,67 kg



CPB

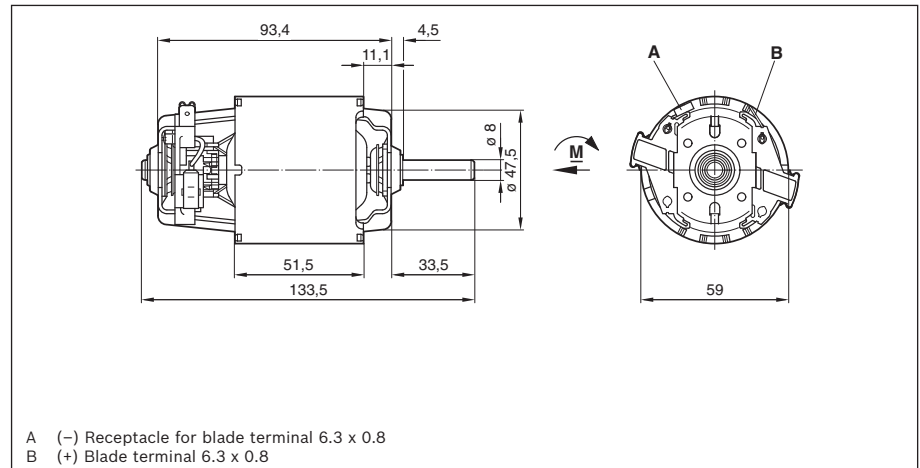
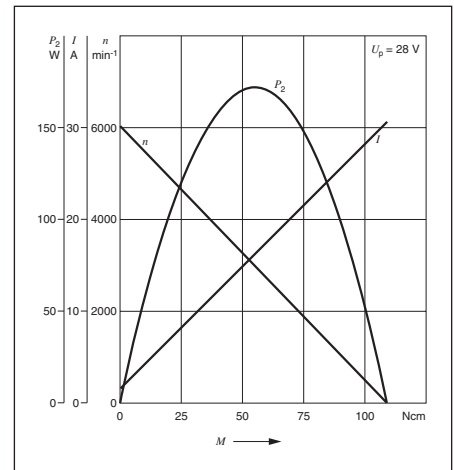
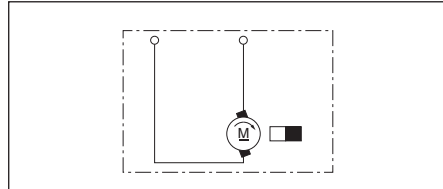
24 V 57 W

Part number	0 130 063 092
Nominal voltage	U_N 24 V
Nominal power	P_N 57 W
Nominal current	I_N 3,5 A
Nominal speed	n_N 3650 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 112 Ncm
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,70 kg

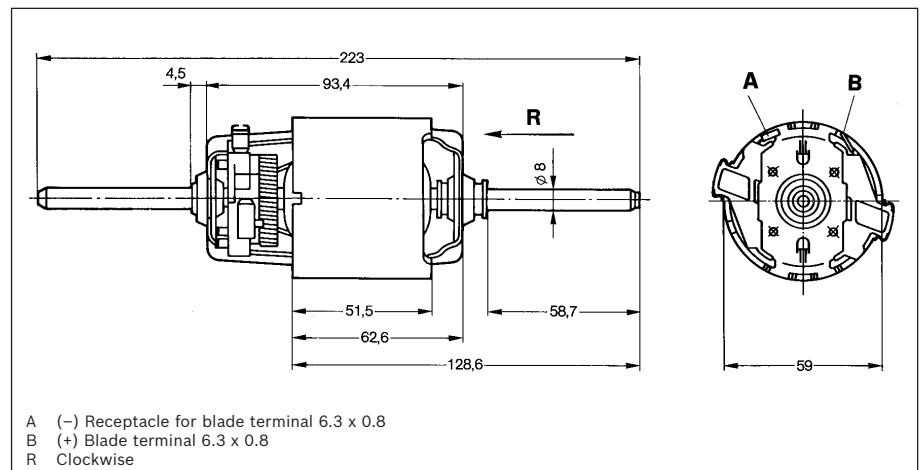
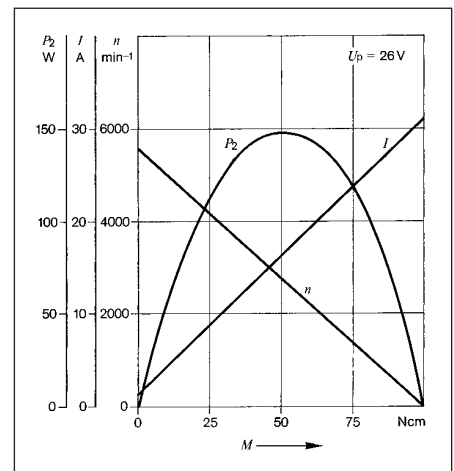
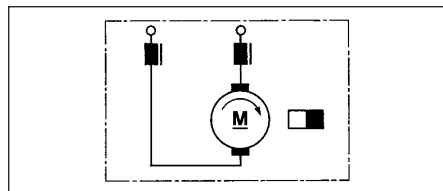


CPB**24 V 67 W**

Part number	0 130 063 059
Nominal voltage	U_N 24 V
Nominal power	P_N 67 W
Nominal current	I_N 6,0 A
Nominal speed	n_N 4300 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 95 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,70 kg

**CPB****24 V 75 W**

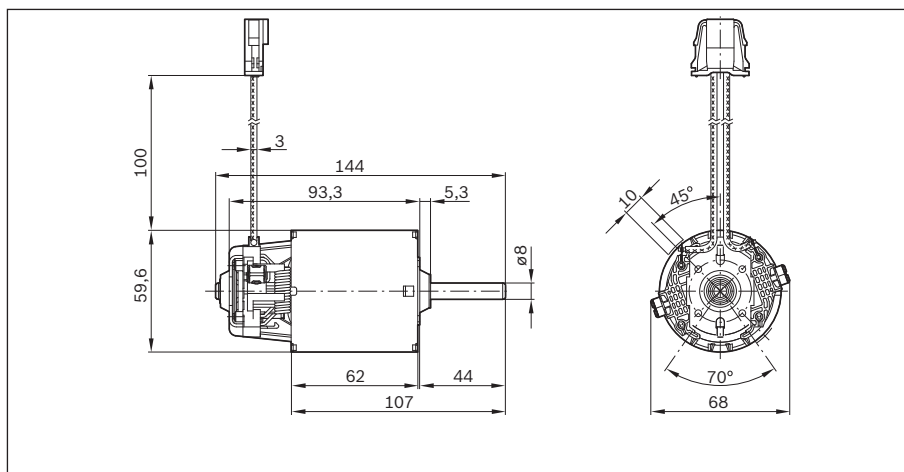
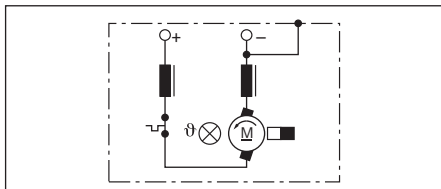
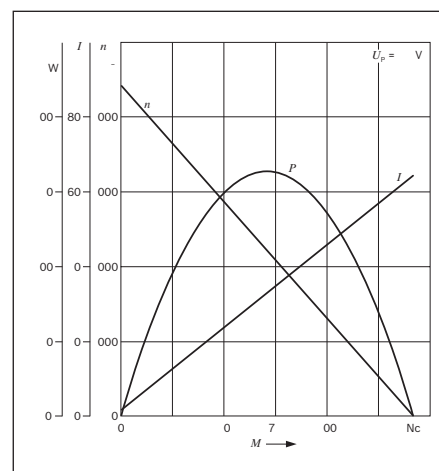
Part number	0 130 063 029
Nominal voltage	U_N 24 V
Nominal power	P_N 75 W
Nominal current	I_N 6,0 A
Nominal speed	n_N 4600 min ⁻¹
Nominal torque	M_N 15 Ncm
Breakaway torque	M_A 100 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,80 kg



CPR

12 V 102 W

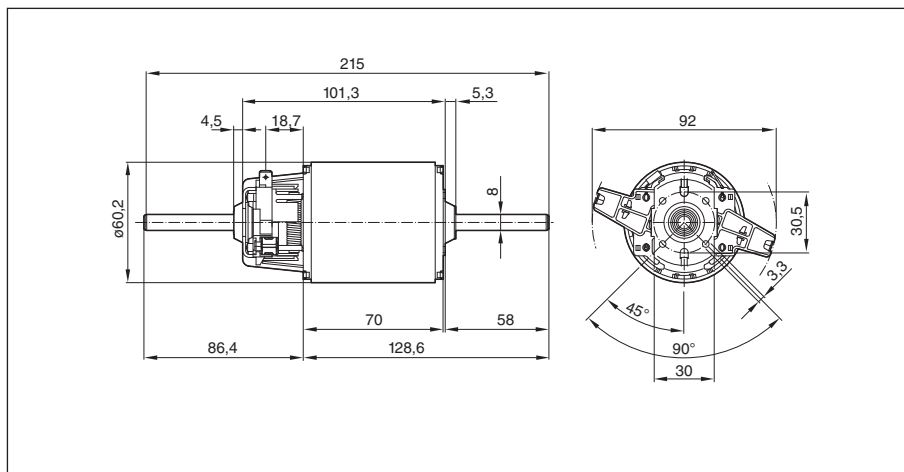
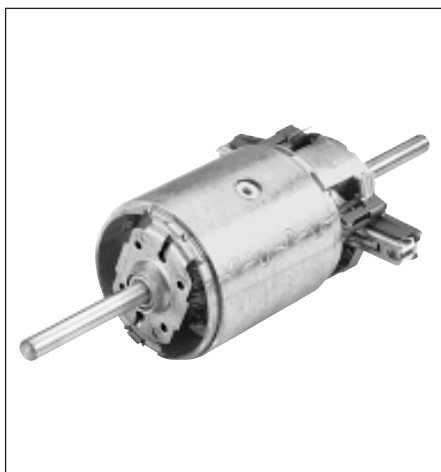
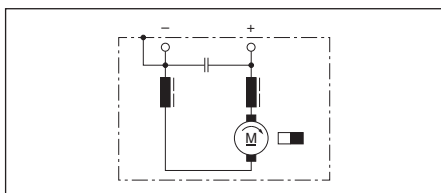
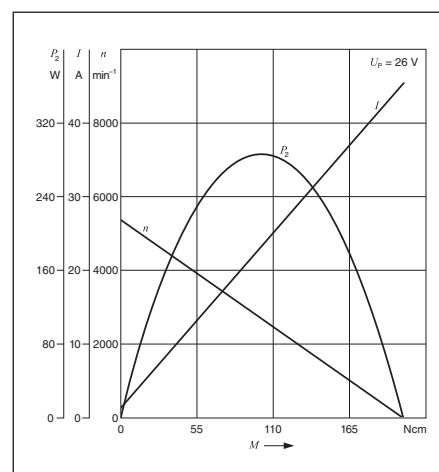
Part number	0 130 063 604
Nominal voltage	U_N 12 V
Nominal power	P_N 102 W
Nominal current	I_N 17,0 A
Nominal speed	n_N 3500 min ⁻¹
Nominal torque	M_N 28 Ncm
Breakaway torque	M_A 140 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,75 kg



CPR

24 V 123 W

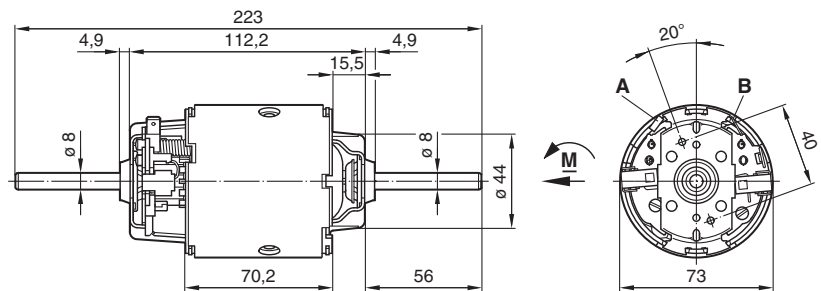
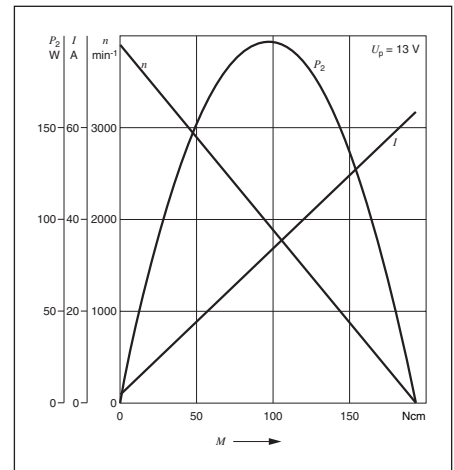
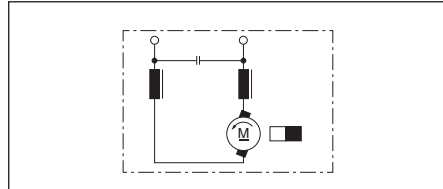
Part number	0 130 063 602
Nominal voltage	U_N 24 V
Nominal power	P_N 123 W
Nominal current	I_N 7,5 A
Nominal speed	n_N 4300 min ⁻¹
Nominal torque	M_N 27,5 Ncm
Breakaway torque	M_A 188 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,72 kg



DPD

12 V 80 W

Part number	0 130 111 003
Nominal voltage	U_N 12 V
Nominal power	P_N 80 W
Nominal current	I_N 9,6 A
Nominal speed	n_N 3100 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 178 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,30 kg

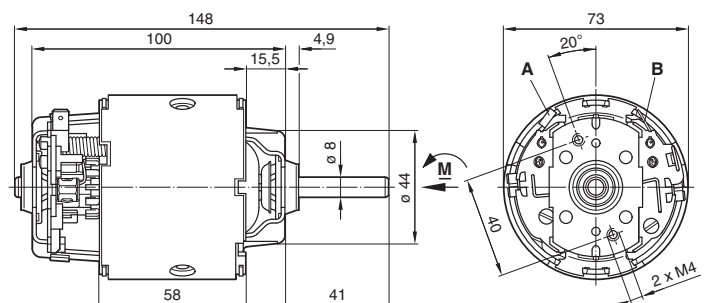
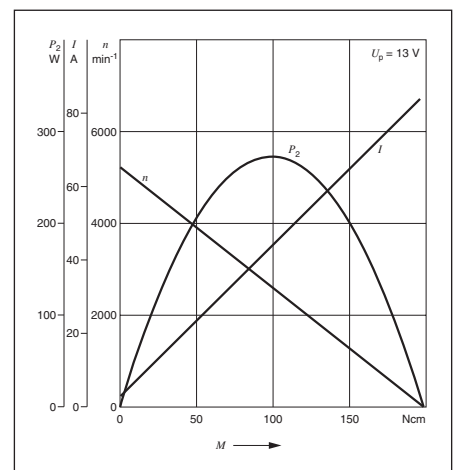
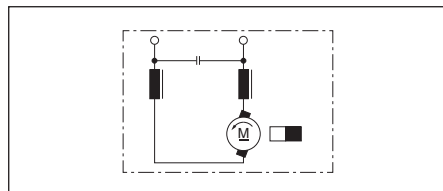


A Receptacle for blade terminal 6.3 x 0.8
B Blade terminal 6.3 x 0.8

DPD

12 V 120 W

Part number	0 130 111 171
Nominal voltage	U_N 12 V
Nominal power	P_N 120 W
Nominal current	I_N 15,0 A
Nominal speed	n_N 4600 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 198 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,10 kg

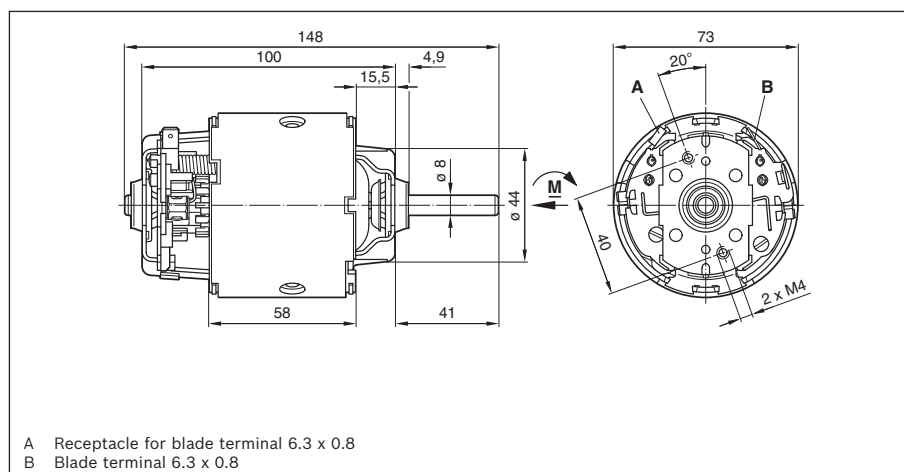
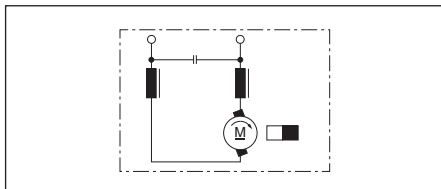
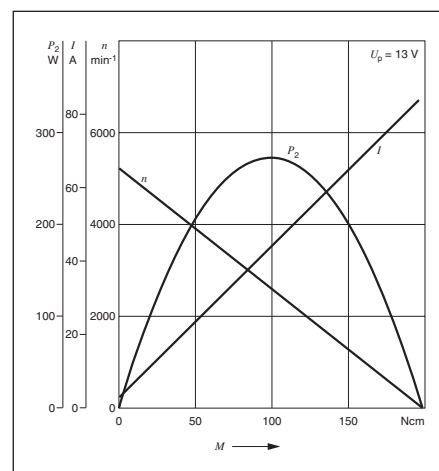


A Receptacle for blade terminal 6.3 x 0.8
B Blade terminal 6.3 x 0.8

DPD

12 V 120 W

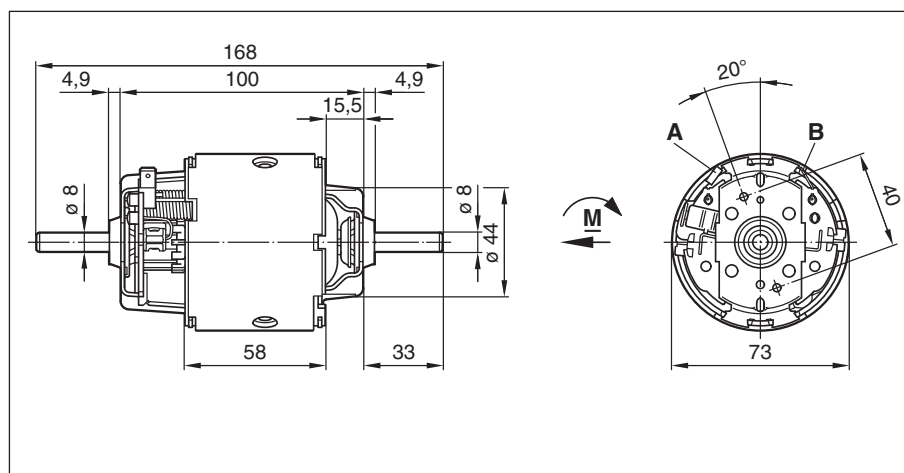
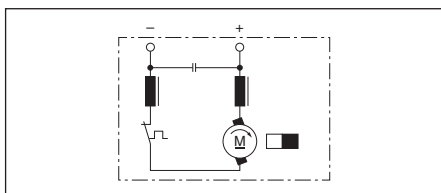
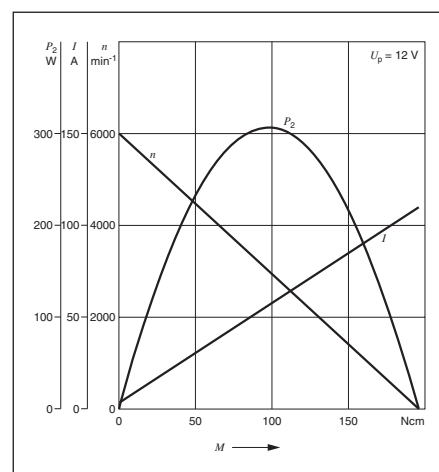
Part number	0 130 111 159
Nominal voltage	U_N 12 V
Nominal power	P_N 120 W
Nominal current	I_N 15,0 A
Nominal speed	n_N 4600 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 198 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,10 kg



DPD

12 V 140 W

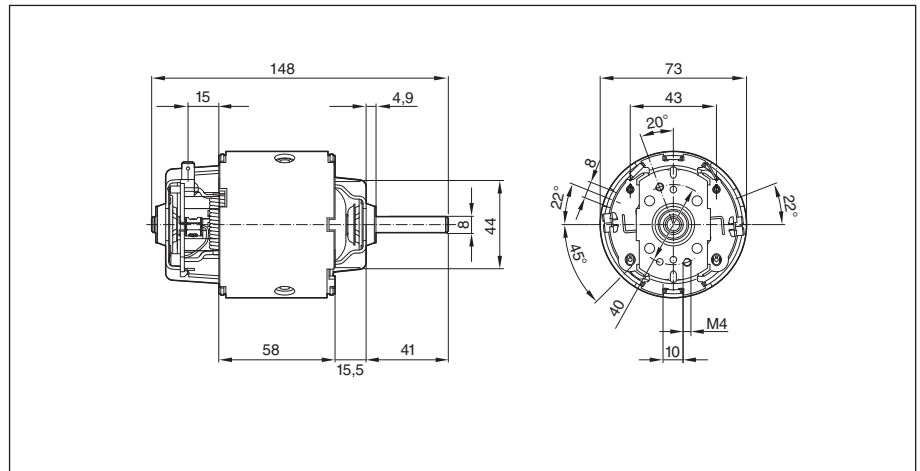
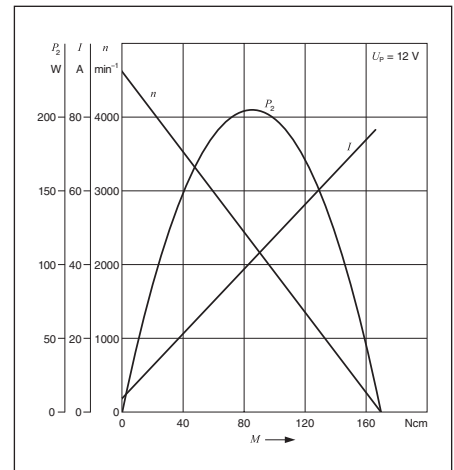
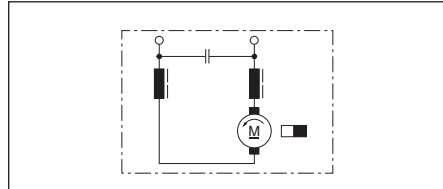
Part number	0 130 111 110
Nominal voltage	U_N 12 V
Nominal power	P_N 140 W
Nominal current	I_N 17,0 A
Nominal speed	n_N 5250 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 194 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,10 kg



DPD

12 V 150 W

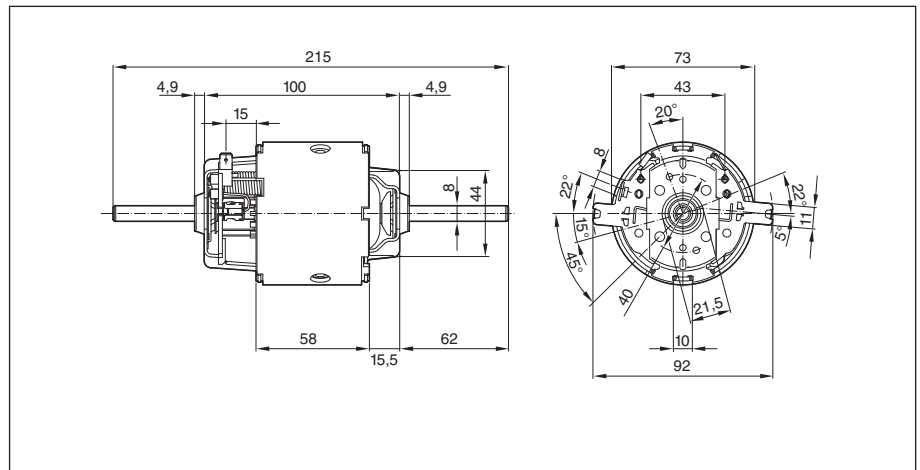
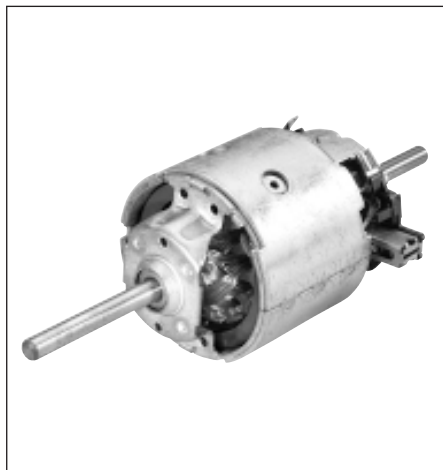
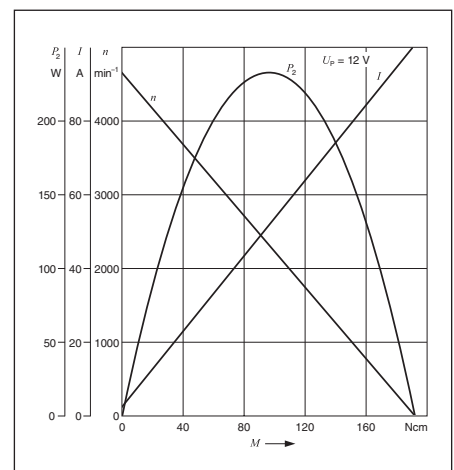
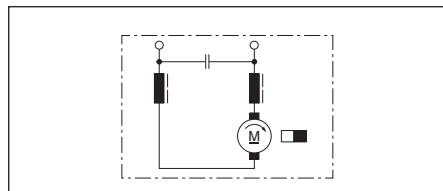
Part number	0 130 111 189
Nominal voltage	U_N 12 V
Nominal power	P_N 150 W
Nominal current	I_N 21,0 A
Nominal speed	n_N 3500 min ⁻¹
Nominal torque	M_N 40 Ncm
Breakaway torque	M_A 170 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,12 kg



DPD

12 V 160 W

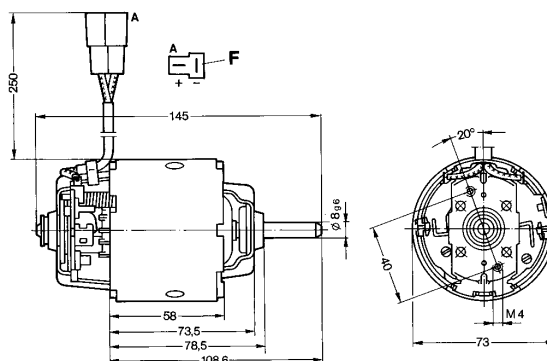
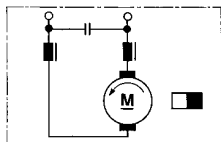
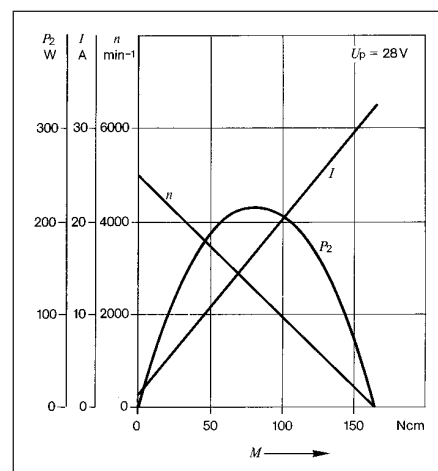
Part number	0 130 111 136
Nominal voltage	U_N 12 V
Nominal power	P_N 160 W
Nominal current	I_N 18,0 A
Nominal speed	n_N 3700 min ⁻¹
Nominal torque	M_N 40 Ncm
Breakaway torque	M_A 190 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,12 kg



DPD

24 V 100 W

Part number	0 130 111 101
Nominal voltage	U_N 24 V
Nominal power	P_N 100 W
Nominal current	I_N 7,5 A
Nominal speed	n_N 4000 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 155 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,10 kg

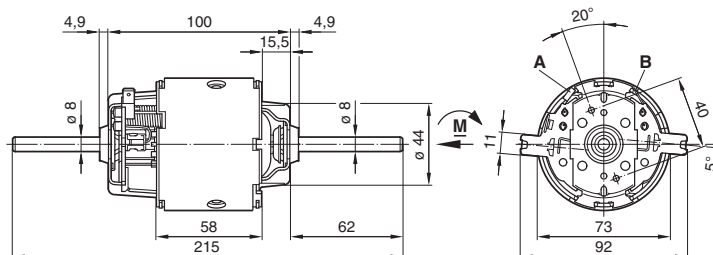
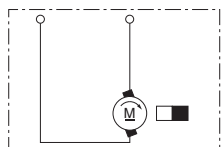
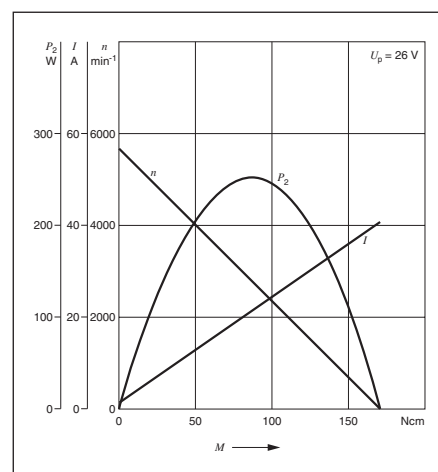


F Blade terminal 6.3-2.5; blade terminal housing Tyco No. 280 081-2.

DPD

24 V 104 W

Part number	0 130 111 130
Nominal voltage	U_N 24 V
Nominal power	P_N 104 W
Nominal current	I_N 7,0 A
Nominal speed	n_N 4950 min ⁻¹
Nominal torque	M_N 20 Ncm
Breakaway torque	M_A 170 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,10 kg

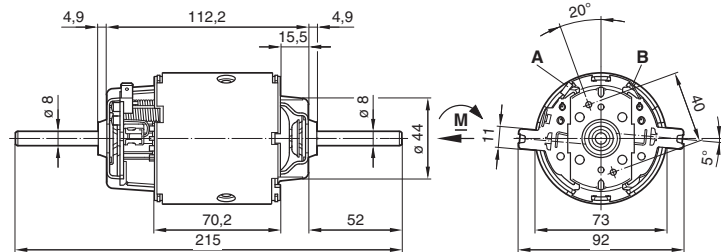
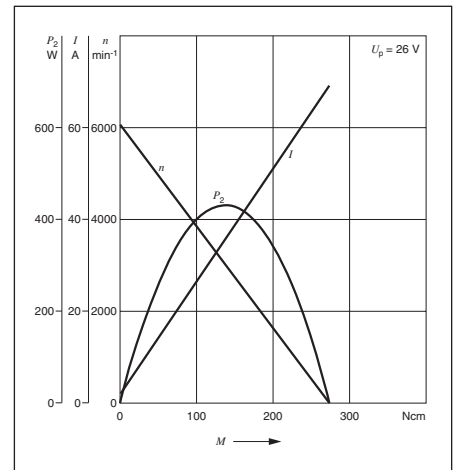
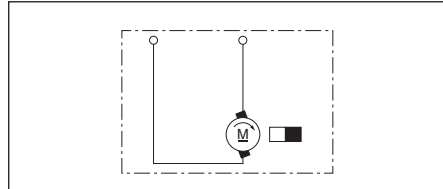


A Receptacle for blade terminal 6.3 x 0.8
B Blade terminal 6.3 x 0.8

DPD

24 V 170 W

Part number	0 130 111 042
Nominal voltage	U_N 24 V
Nominal power	P_N 170 W
Nominal current	I_N 10,0 A
Nominal speed	n_N 5400 min ⁻¹
Nominal torque	M_N 30 Ncm
Breakaway torque	M_A 270 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,30 kg



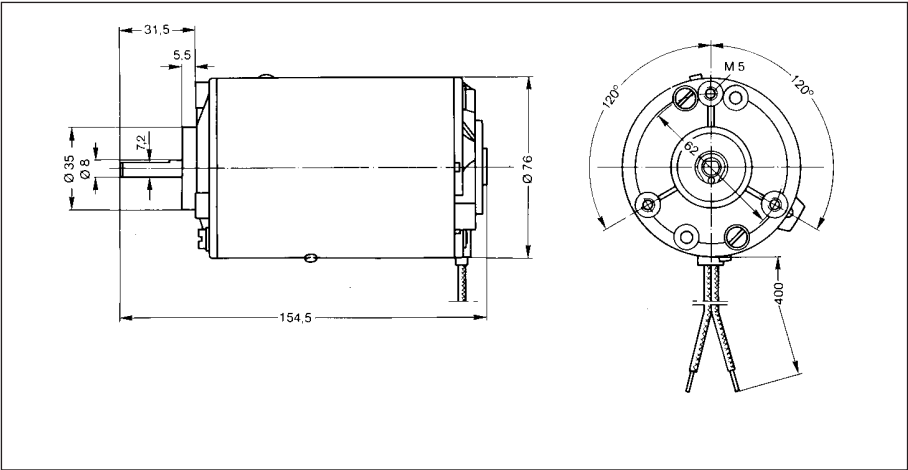
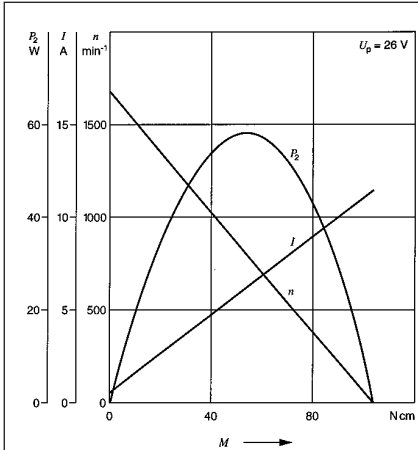
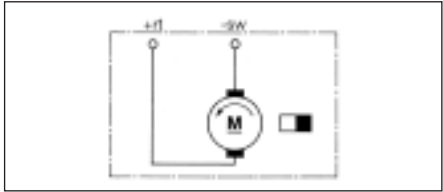
- A Receptacle for blade terminal 6.3 x 0.8
B Blade terminal 6.3 x 0.8

DPB

24 V 32 W

Part number	0 130 110 003
Nominal voltage	U_N 24 V
Nominal power	P_N 32 W
Nominal current	I_N 2,5 A
Nominal speed	n_N 1300 min ⁻¹
Nominal torque	M_N 24 Ncm
Breakaway torque	M_A 110 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 44
Weight	approx. 1,80 kg

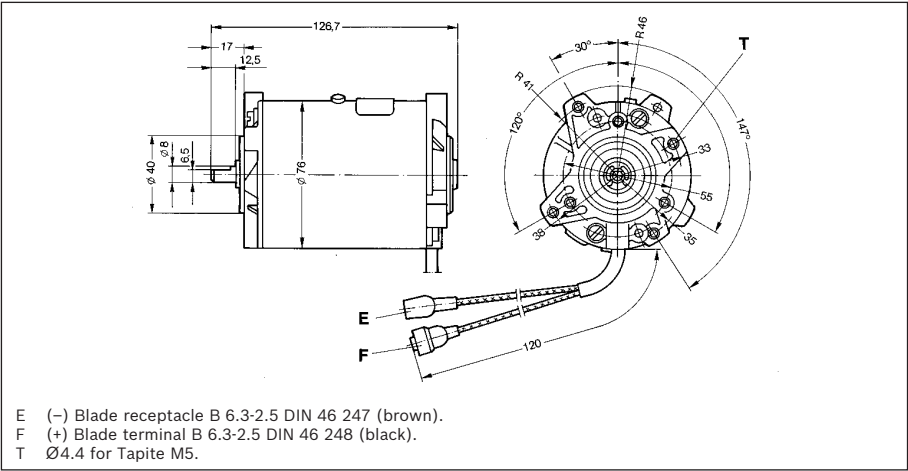
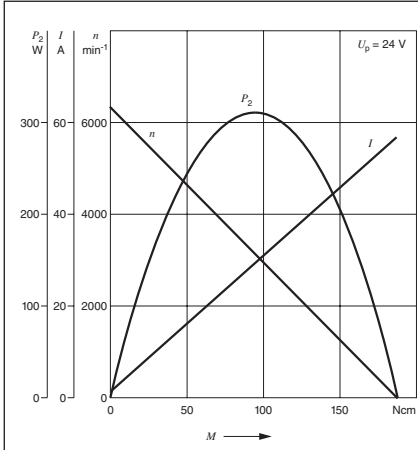
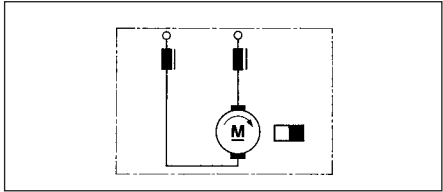
Connections: (+) red, (-) black.



DPB

24 V 50 W

Part number	0 130 110 005
Nominal voltage	U_N 24 V
Nominal power	P_N 50 W
Nominal current	I_N 4,4 A
Nominal speed	n_N 6000 min ⁻¹
Nominal torque	M_N 10 Ncm
Breakaway torque	M_A 160 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 44
Weight	approx. 1,50 kg

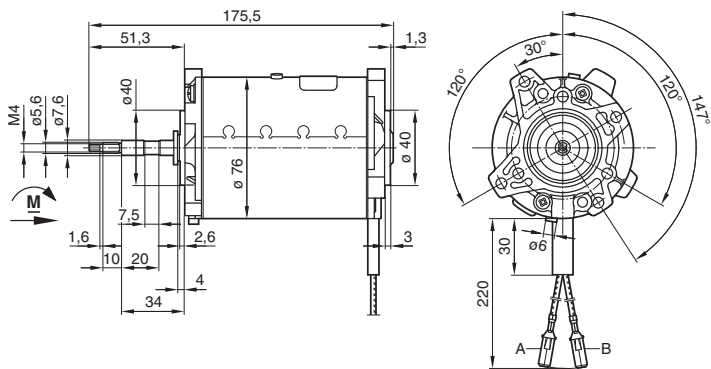
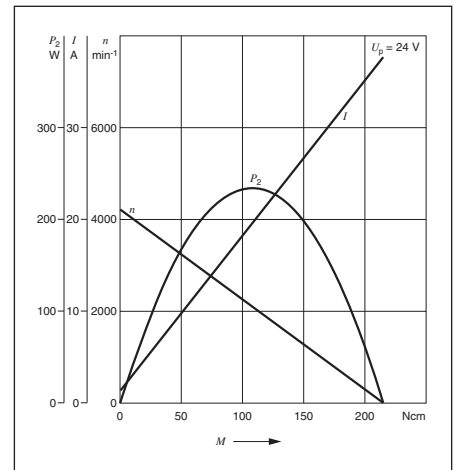
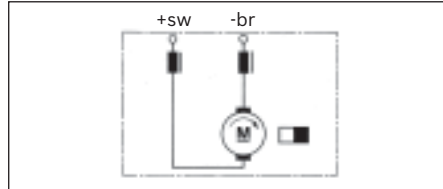


E (-) Blade receptacle B 6.3-2.5 DIN 46 247 (brown).
F (+) Blade terminal B 6.3-2.5 DIN 46 248 (black).
T Ø4.4 for Tapite M5.

DPB

24 V 73 W

Part number	0 130 110 002
Nominal voltage	U_N 24 V
Nominal power	P_N 73 W
Nominal current	I_N 4,4 A
Nominal speed	n_N 4000 min ⁻¹
Nominal torque	M_N 17,5 Ncm
Breakaway torque	M_A 212 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 54 A
Weight	approx. 1,80 kg



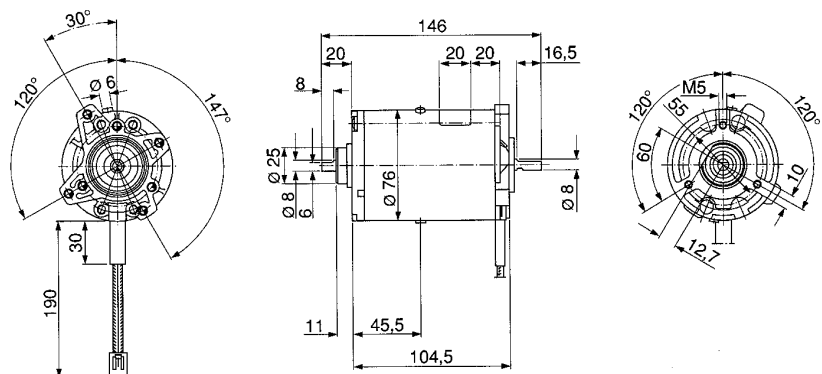
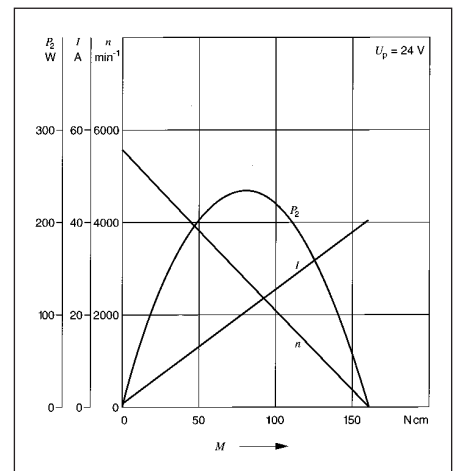
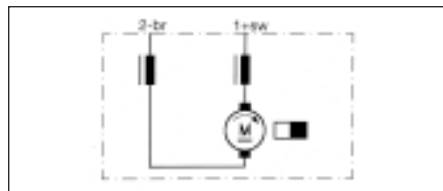
- A (-) Blade terminal 6.3-2.5 DIN 46 343 (brown).
B (+) Blade terminal 6.3-2.5 DIN 46 343 (black).

DPB

24 V 100 W

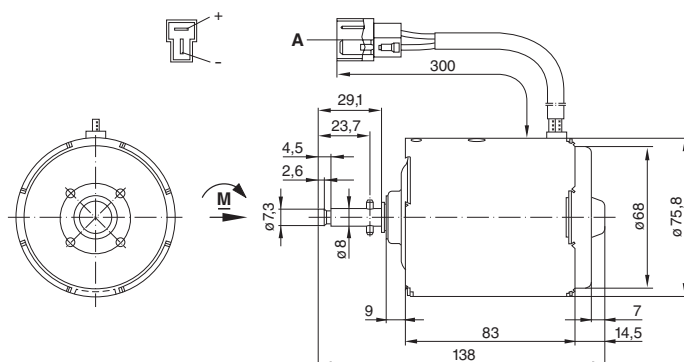
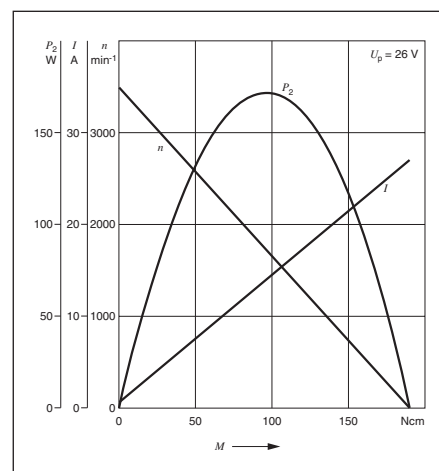
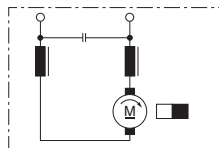
Part number	0 130 110 019
Nominal voltage	U_N 24 V
Nominal power	P_N 100 W
Nominal current	I_N 5,5 A
Nominal speed	n_N 4500 min ⁻¹
Nominal torque	M_N 20 Ncm
Breakaway torque	M_A 170 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 44
Weight	approx. 1,40 kg

Connections: (+) black, (-) brown.



24 V 59 W

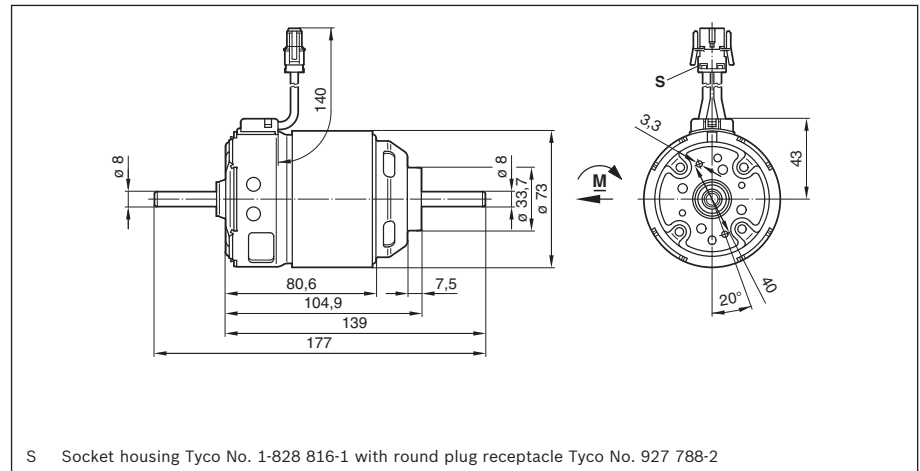
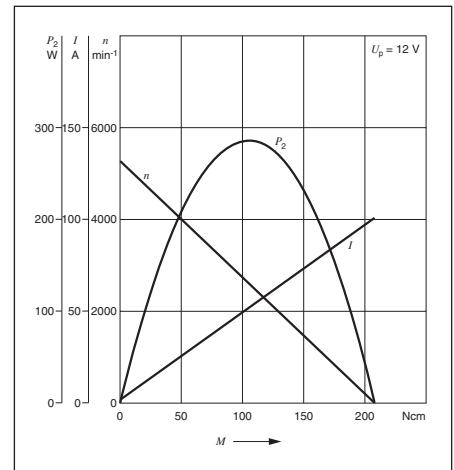
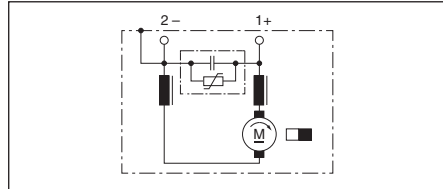
Part number	0 130 107 100
Nominal voltage	U_N 24 V
Nominal power	P_N 59 W
Nominal current	I_N 4,5 A
Nominal speed	n_N 2800 min ⁻¹
Nominal torque	M_N 20 Ncm
Breakaway torque	M_A 176 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg



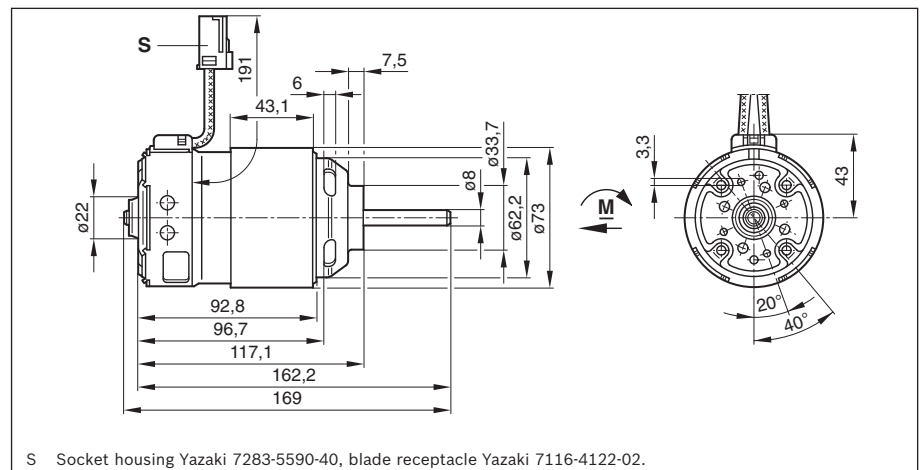
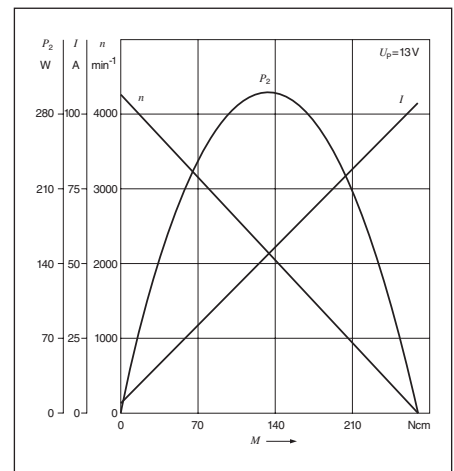
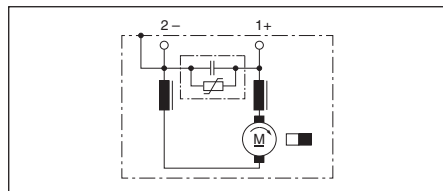
A Blade terminal 6.3-2.5 DIN 46 343 – Bz.

DPL**12 V 115 W**

Part number	0 130 101 103
Nominal voltage	U_N 12 V
Nominal power	P_N 115 W
Nominal current	I_N 16,0 A
Nominal speed	n_N 4400 min ⁻¹
Nominal torque	M_N 25 Ncm
Breakaway torque	M_A 208 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,40 kg

**DPL****12 V 119 W**

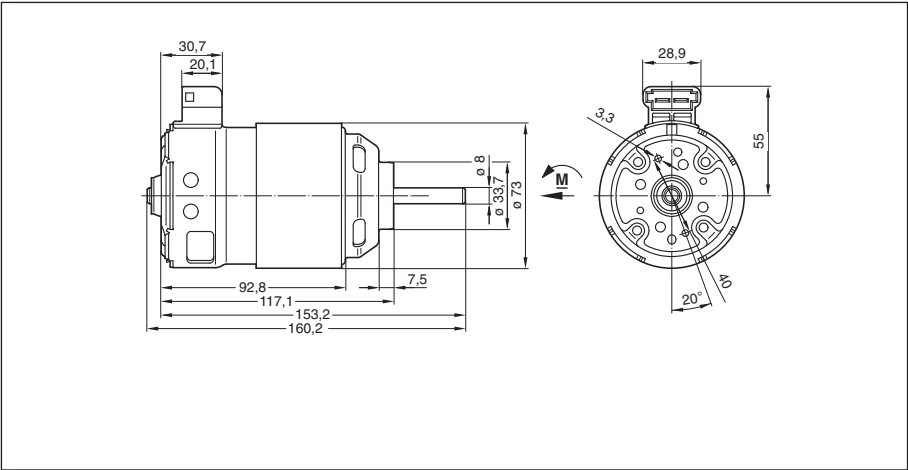
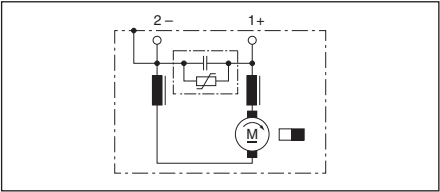
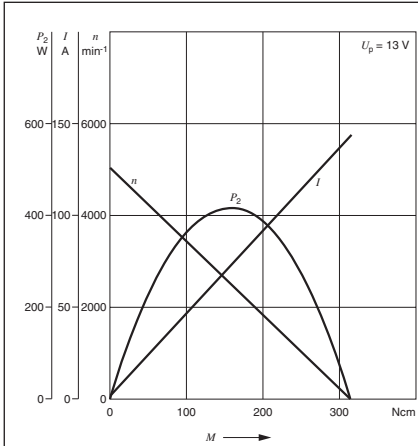
Part number	0 130 101 108
Nominal voltage	U_N 12 V
Nominal power	P_N 119 W
Nominal current	I_N 14,0 A
Nominal speed	n_N 3800 min ⁻¹
Nominal torque	M_N 30 Ncm
Breakaway torque	M_A 270 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,40 kg



DPL

12 V 141 W

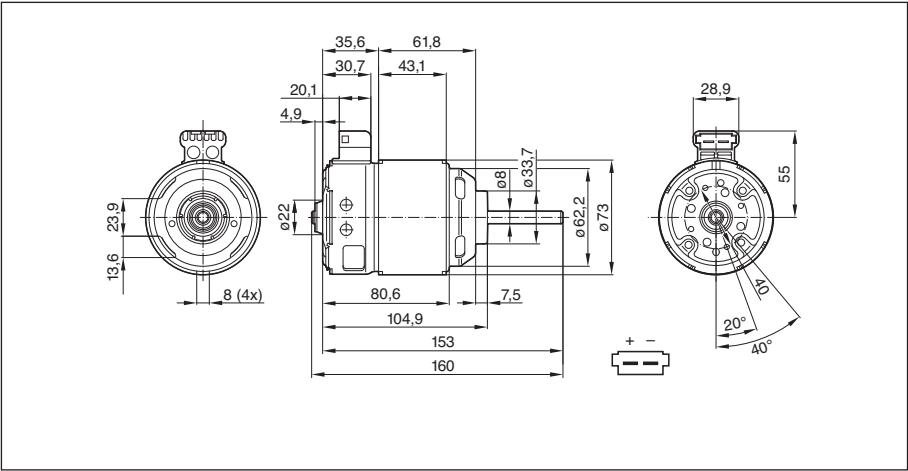
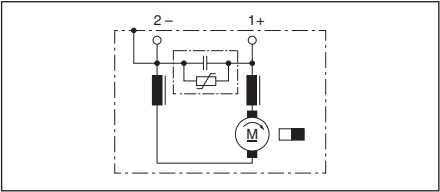
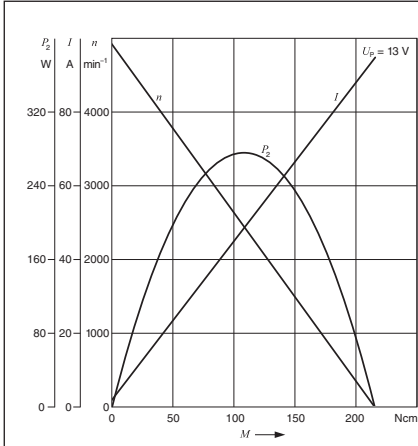
Part number	0 130 101 102
Nominal voltage	U_N 12 V
Nominal power	P_N 141 W
Nominal current	I_N 16,0 A
Nominal speed	n_N 4500 min ⁻¹
Nominal torque	M_N 30 Ncm
Breakaway torque	M_A 307 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,40 kg



DPL

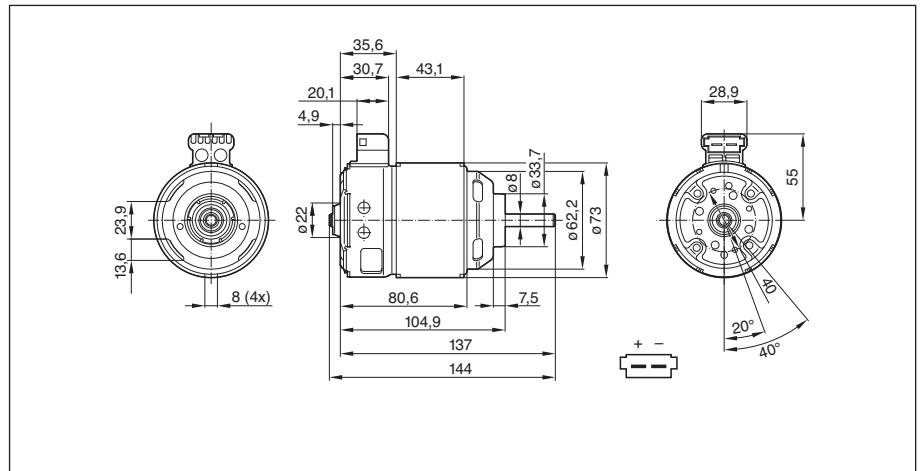
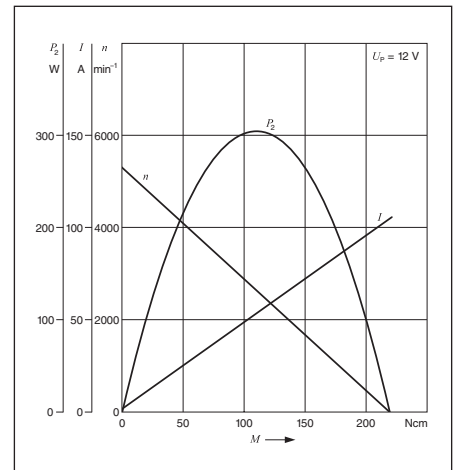
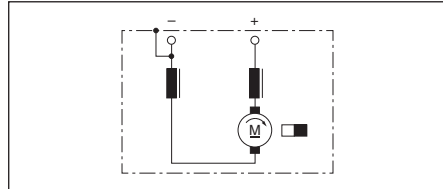
12 V 138 W

Part number	0 130 101 112
Nominal voltage	U_N 12 V
Nominal power	P_N 138 W
Nominal current	I_N 14,0 A
Nominal speed	n_N 4400 min ⁻¹
Nominal torque	M_N 30 Ncm
Breakaway torque	M_A 215 Ncm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,20 kg

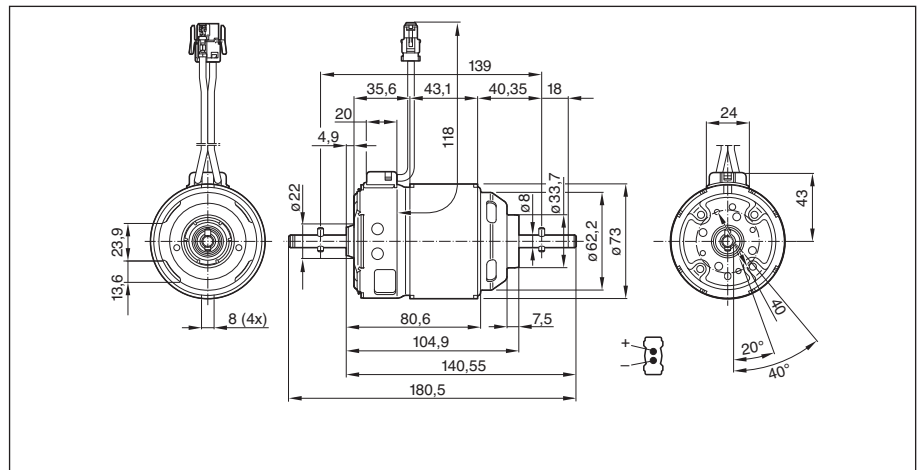
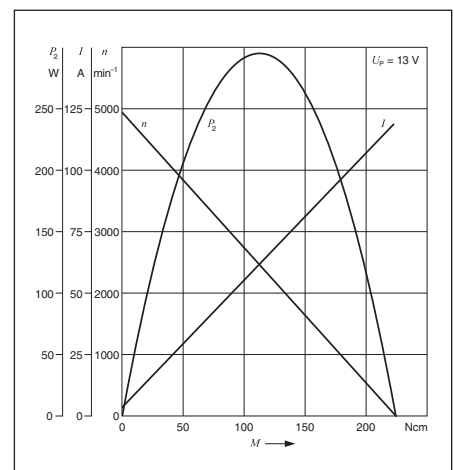
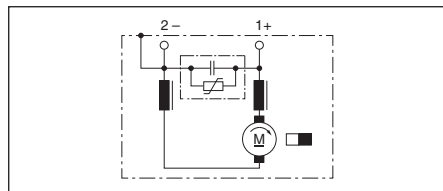


DPL**12 V 131 W**

Part number	0 130 101 117
Nominal voltage	U_N 12 V
Nominal power	P_N 131 W
Nominal current	I_N 13,0 A
Nominal speed	n_N 4200 min ⁻¹
Nominal torque	M_N 30 Ncm
Breakaway torque	M_A 220 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,20 kg

**DPL****12 V 138 W**

Part number	0 130 101 123
Nominal voltage	U_N 12 V
Nominal power	P_N 138 W
Nominal current	I_N 16,0 A
Nominal speed	n_N 4400 min ⁻¹
Nominal torque	M_N 30 Ncm
Breakaway torque	M_A 225 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,40 kg

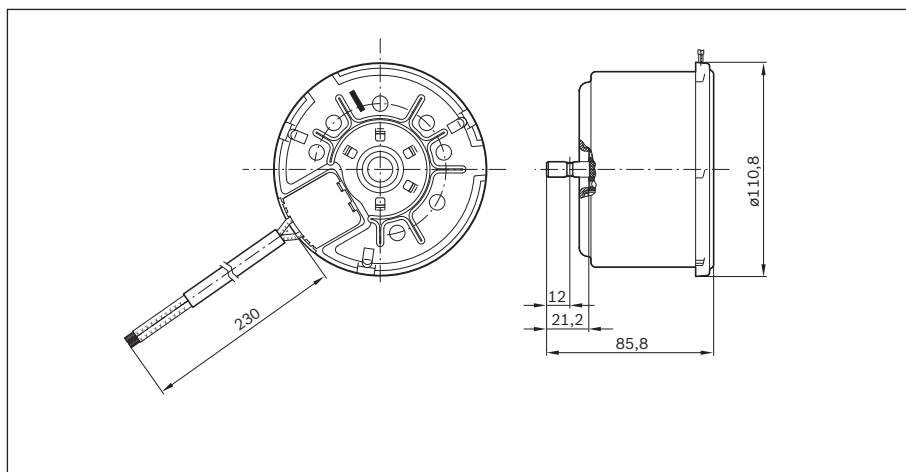
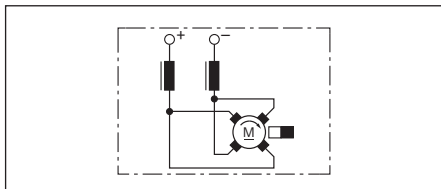
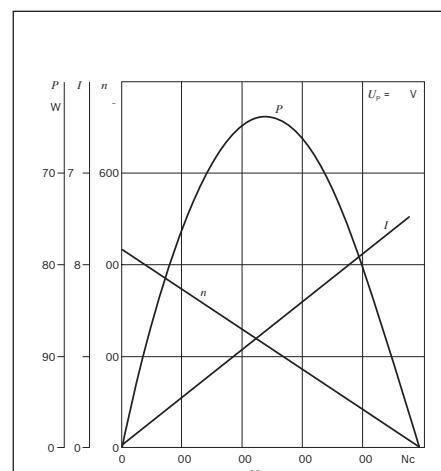


GPB

24 V 175 W

Part number	F 006 KM0 60F
Nominal voltage	U_N 24 V
Nominal power	P_N 175 W
Nominal current	I_N 10,5 A
Nominal speed	n_N 2200 min ⁻¹
Nominal torque	M_N 75 Ncm
Breakaway torque	M_A 480 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 03
Weight	approx. 1,50 kg

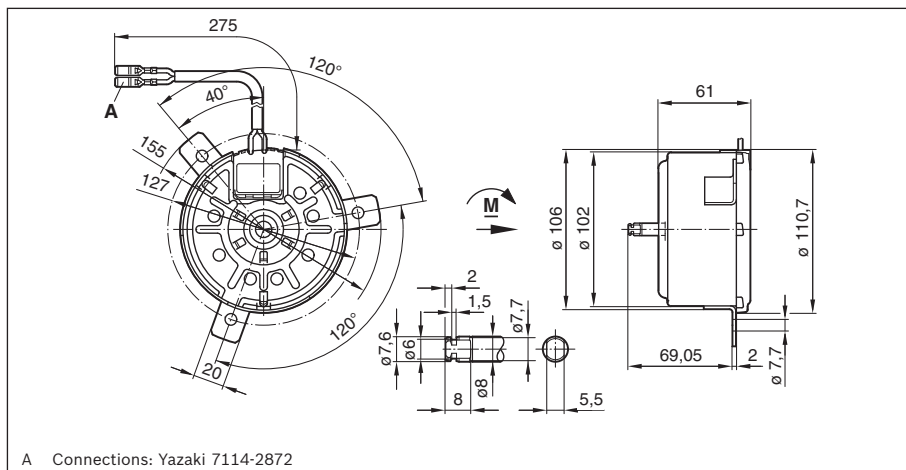
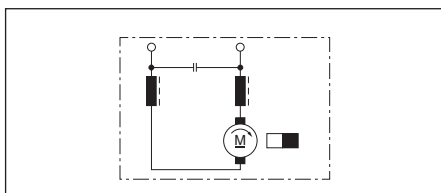
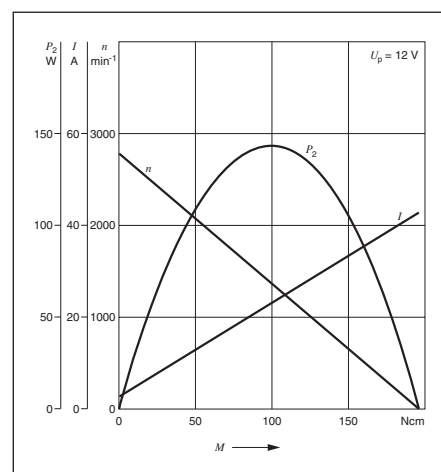
Clockwise: I to (+) II to (-)
Counterclockwise: I to (-) II to (+)



GPB

12 V 84 W

Part number	0 130 303 003
Nominal voltage	U_N 12 V
Nominal power	P_N 84 W
Nominal current	I_N 11,0 A
Nominal speed	n_N 2300 min ⁻¹
Nominal torque	M_N 35 Ncm
Breakaway torque	M_A 197 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 03
Weight	approx. 1,30 kg

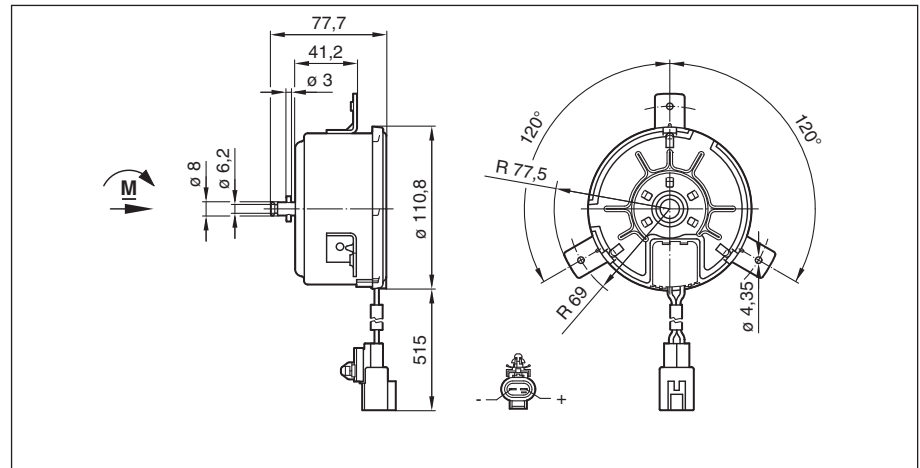
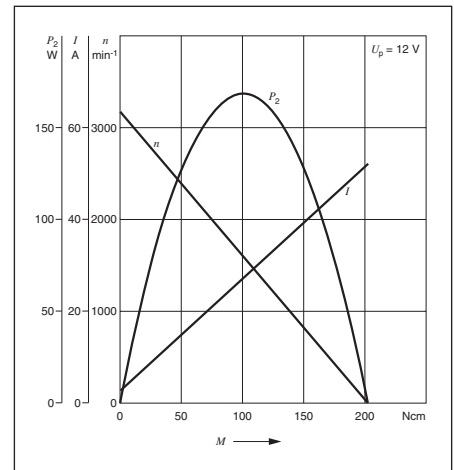
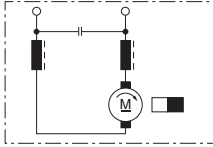


A Connections: Yazaki 7114-2872

GPB

12 V 99 W

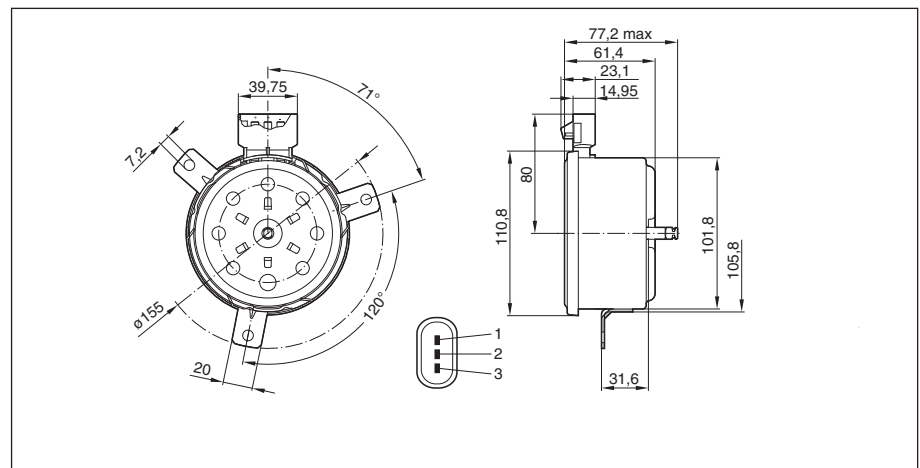
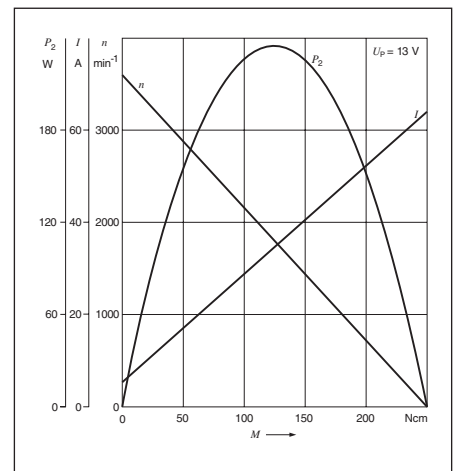
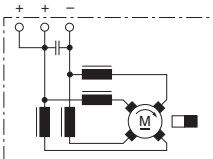
Part number	0 130 303 001
Nominal voltage	U_N 12 V
Nominal power	P_N 99 W
Nominal current	I_N 12,0 A
Nominal speed	n_N 2700 min ⁻¹
Nominal torque	M_N 35 Ncm
Breakaway torque	M_A 200 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 03
Weight	approx. 1,30 kg



GPB

12 V 146 W

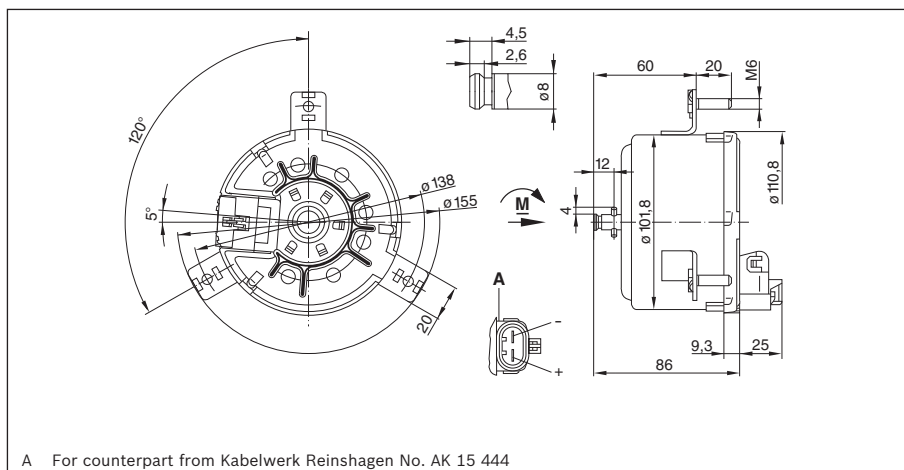
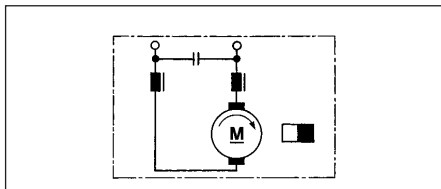
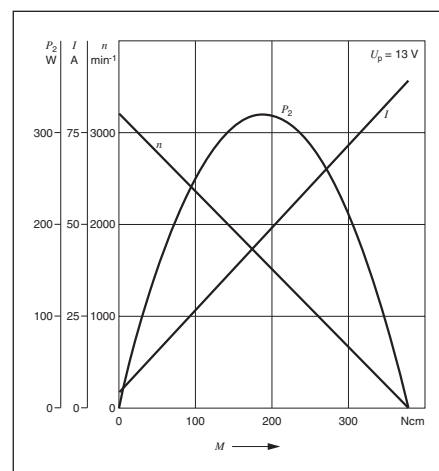
Part number	0 130 303 015
Nominal voltage	U_N 12 V
Nominal power	P_N 146 W
Nominal current	I_N 17,0 A
Nominal speed	n_N 2900 min ⁻¹
Nominal torque	M_N 48 Ncm
Breakaway torque	M_A 250 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 03
Weight	approx. 1,50 kg



GPB

12 V 147 W

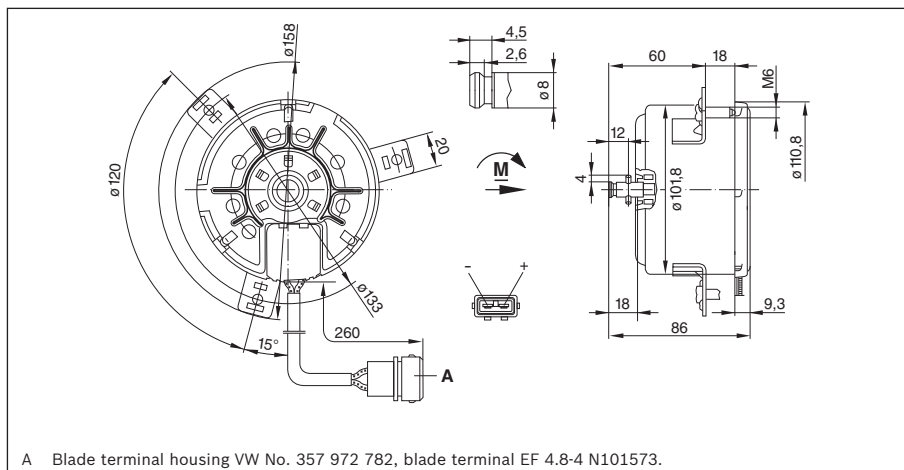
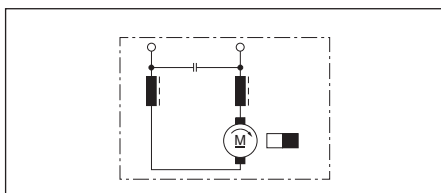
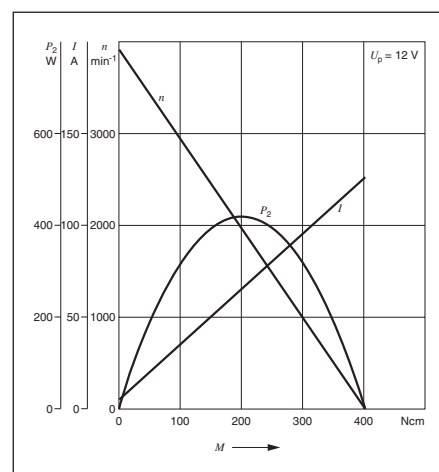
Part number	3 137 227 713
Nominal voltage	U_N 12 V
Nominal power	P_N 147 W
Nominal current	I_N 16,0 A
Nominal speed	n_N 2800 min ⁻¹
Nominal torque	M_N 50 Ncm
Breakaway torque	M_A 378 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 03
Weight	approx. 1,50 kg



GPB

12 V 181 W

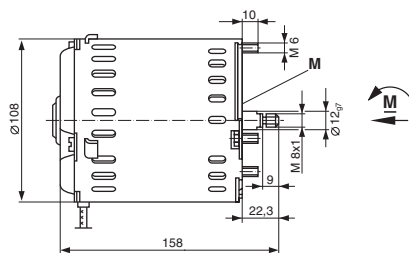
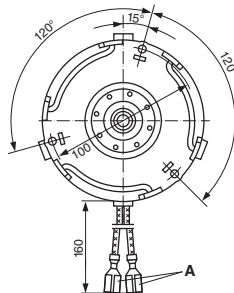
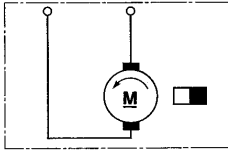
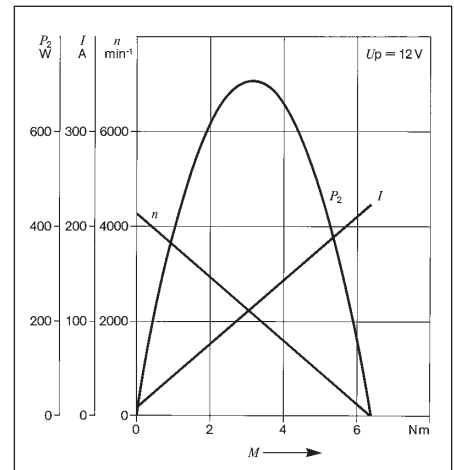
Part number	3 137 227 744
Nominal voltage	U_N 12 V
Nominal power	P_N 181 W
Nominal current	I_N 20,0 A
Nominal speed	n_N 3450 min ⁻¹
Nominal torque	M_N 50 Ncm
Breakaway torque	M_A 400 Ncm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 03
Weight	approx. 1,50 kg



GPA

12 V 400 W

Part number	0 130 302 003
Nominal voltage	U_N 12 V
Nominal power	P_N 400 W
Nominal current	I_N 50,0 A
Nominal speed	n_N 3400 min ⁻¹
Nominal torque	M_N 1,2 Nm
Breakaway torque	M_A 6,4 Nm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 20
Weight	approx. 3,10 kg



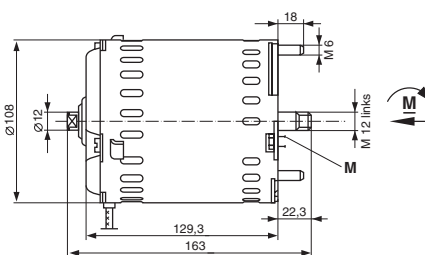
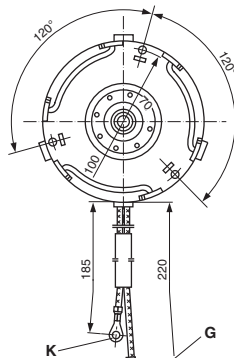
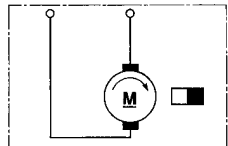
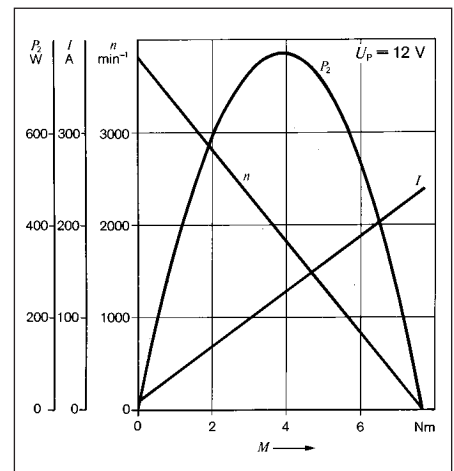
A Blade receptacle 9.6 x 6 DIN 46 247.

M When mounting, clamp ball-bearing inner ring with ring (part number 3 130 202 004, not in scope of delivery).

GPA

12 V 400 W

Part number	0 130 302 002
Nominal voltage	U_N 12 V
Nominal power	P_N 400 W
Nominal current	I_N 55,0 A
Nominal speed	n_N 3200 min ⁻¹
Nominal torque	M_N 1,2 Nm
Breakaway torque	M_A 7,7 Nm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 20
Weight	approx. 3,10 kg

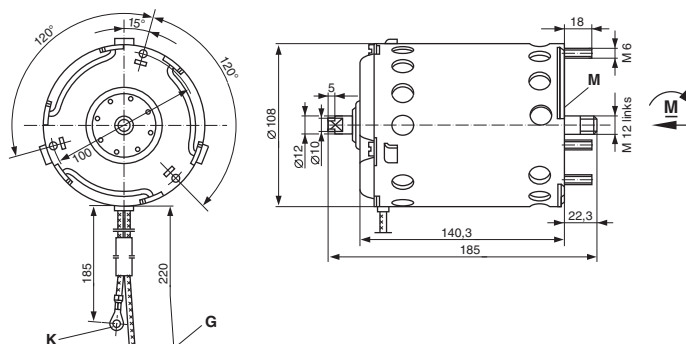
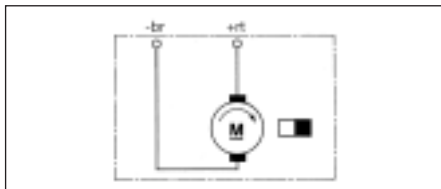
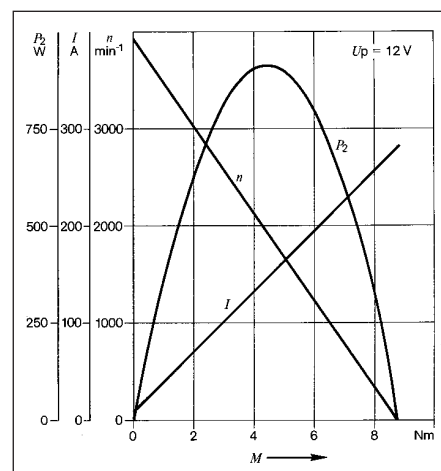


G (+) for blade terminal 9.5 x 1.2 (red).

K (-) cable lug A4 x 3.4 DIN 46 225 (brown).

M When mounting, clamp ball-bearing inner ring with ring (part number 3 130 202 004, not in scope of delivery).

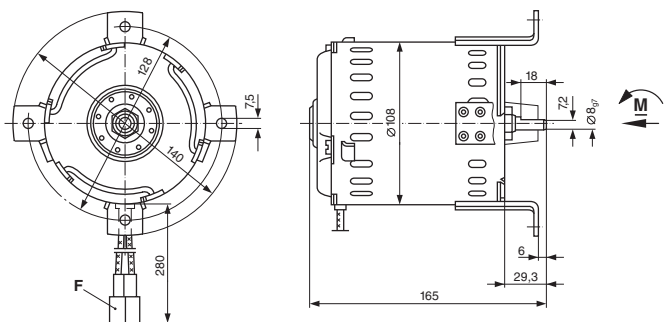
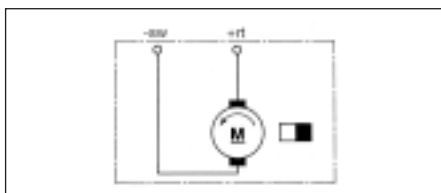
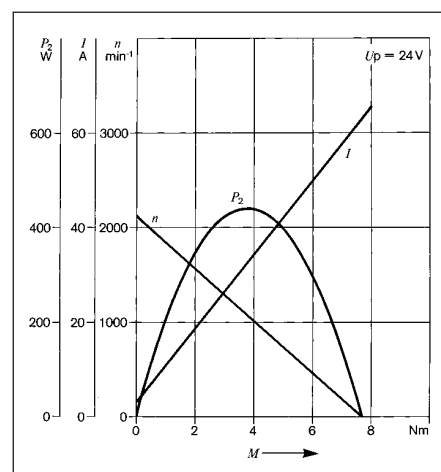
Part number	0 130 302 009	
Nominal voltage	U_N	12 V
Nominal power	P_N	630 W
Nominal current	I_N	75,0 A
Nominal speed	n_N	3000 min ⁻¹
Nominal torque	M_N	2 Nm
Breakaway torque	M_A	9 Nm
Direction of rotation	R	
Type of duty	S 1	
Degree of protection	IP 10	
Weight	approx. 3,80 kg	



G (+) for blade terminal 9.5 x 1.2 (red).
K (-) cable lug A4 x 3.4 DIN 46 225 (brown).
M When mounting, clamp ball-bearing inner ring with ring (part number 3 130 202 004, not in scope of delivery).

GPA

Part number	0 130 302 012
Nominal voltage	U_N 24 V
Nominal power	P_N 255 W
Nominal current	I_N 14,0 A
Nominal speed	n_N 1750 min ⁻¹
Nominal torque	M_N 1,4 Nm
Breakaway torque	M_A 8 Nm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 20
Weight	approx. 3,80 kg

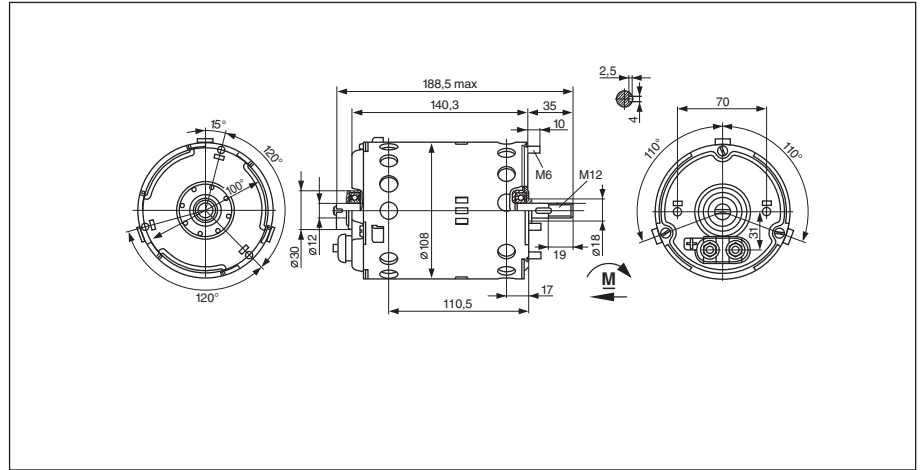
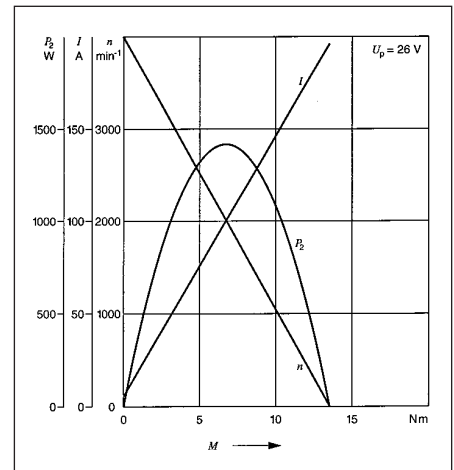
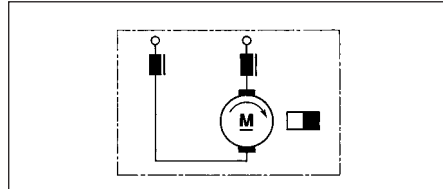


F Blade terminal housing Tyco No. 180 908.

GPA

24 V 650 W

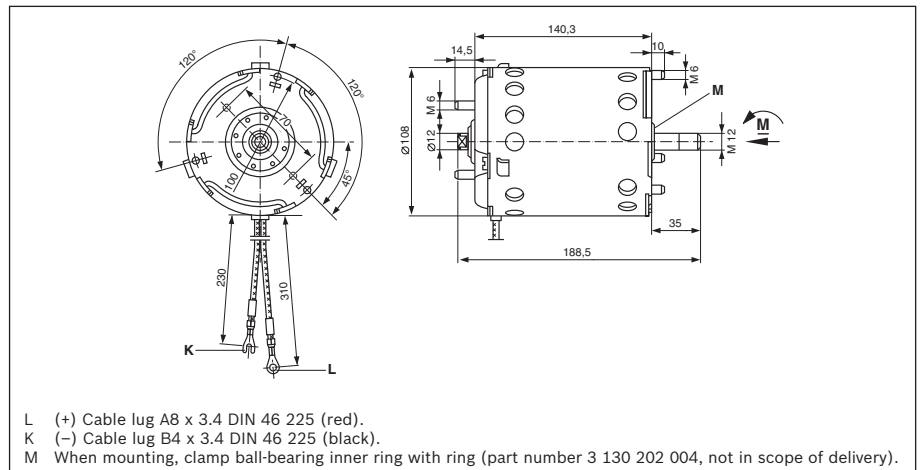
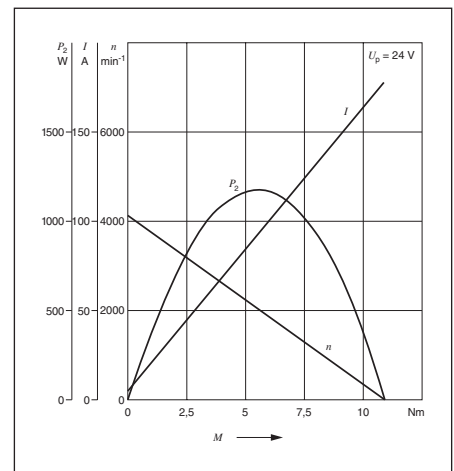
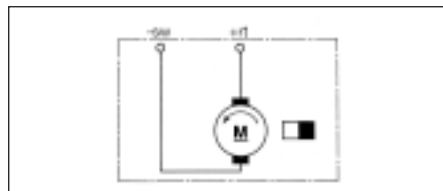
Part number	0 130 302 015
Nominal voltage	U_N 24 V
Nominal power	P_N 650 W
Nominal current	I_N 35,0 A
Nominal speed	n_N 3100 min ⁻¹
Nominal torque	M_N 2 Nm
Breakaway torque	M_A 12 Nm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 3,80 kg



GPA

24 V 750 W

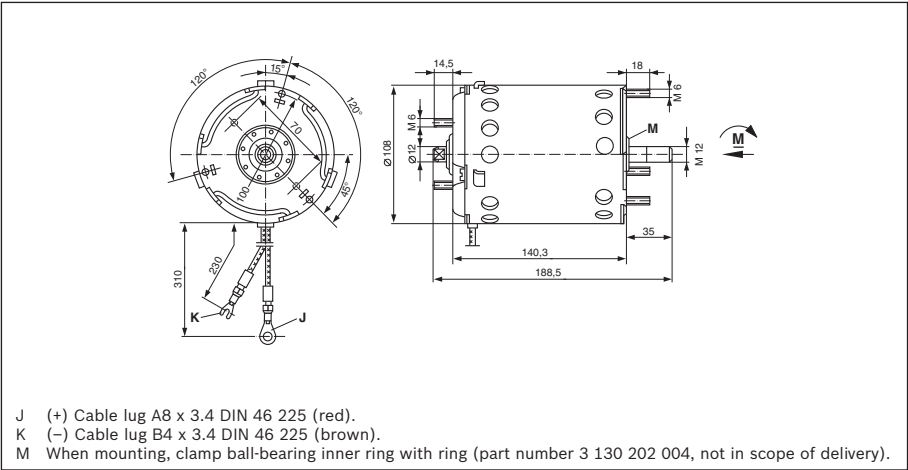
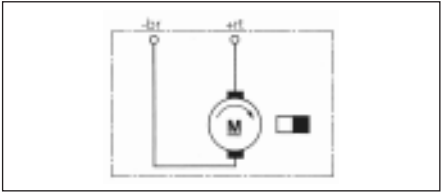
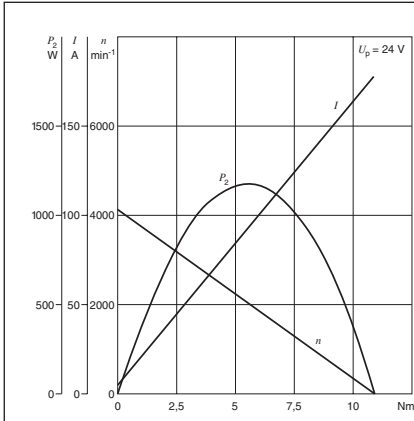
Part number	0 130 302 001
Nominal voltage	U_N 24 V
Nominal power	P_N 750 W
Nominal current	I_N 40,0 A
Nominal speed	n_N 3300 min ⁻¹
Nominal torque	M_N 2,2 Nm
Breakaway torque	M_A 11 Nm
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 3,80 kg



GPA

24 V 750 W

Part number	0 130 302 013
Nominal voltage	U_N 24 V
Nominal power	P_N 750 W
Nominal current	I_N 40,0 A
Nominal speed	n_N 3300 min ⁻¹
Nominal torque	M_N 2,2 Nm
Breakaway torque	M_A 11 Nm
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 3,80 kg

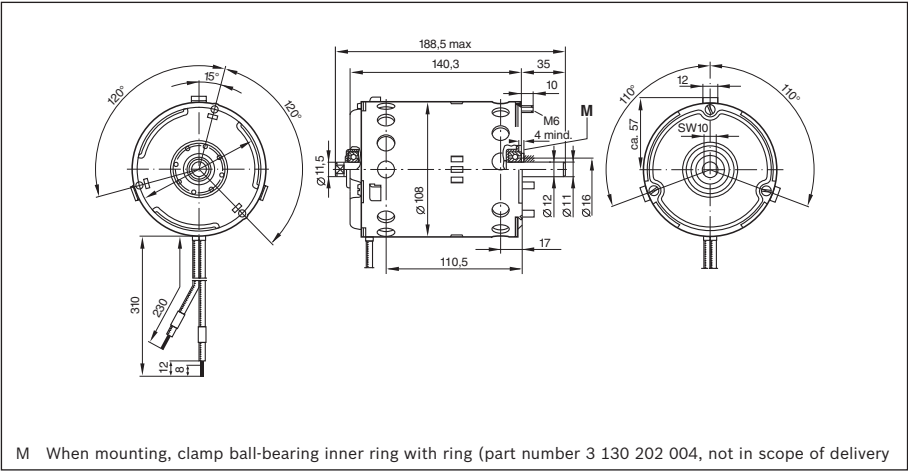
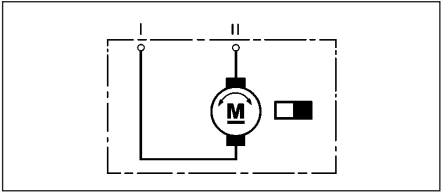
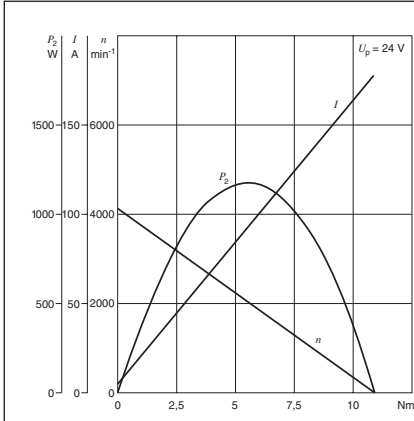


J (+) Cable lug A8 x 3.4 DIN 46 225 (red).
K (-) Cable lug B4 x 3.4 DIN 46 225 (brown).
M When mounting, clamp ball-bearing inner ring with ring (part number 3 130 202 004, not in scope of delivery).

GPA

24 V 750 W

Part number	0 130 302 014
Nominal voltage	U_N 24 V
Nominal power	P_N 750 W
Nominal current	I_N 40,0 A
Nominal speed	n_N 3300 min ⁻¹
Nominal torque	M_N 2,2 Nm
Breakaway torque	M_A 11 Nm
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 3,80 kg



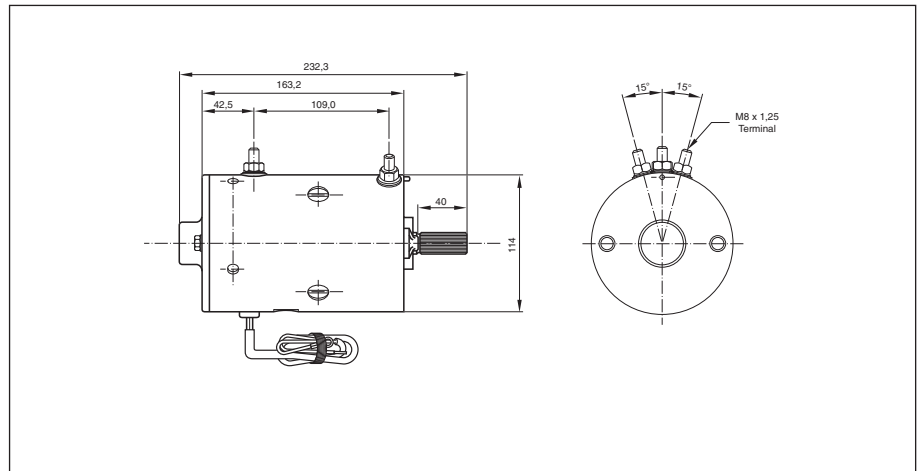
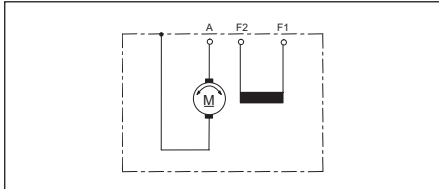
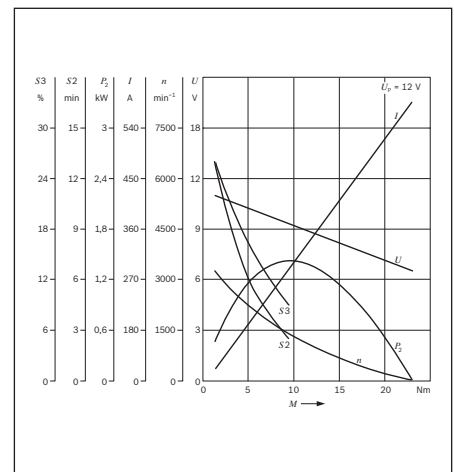
M When mounting, clamp ball-bearing inner ring with ring (part number 3 130 202 004, not in scope of delivery)

Inverse speed motor

Grounded frame

12 V 1.2 kW

Part number	F 000 MM0 618
Nominal voltage	U_N 12 V
Nominal power	P_N 1200 W
Nominal current	I_N 195 A
Nominal speed	n_N 2100 min ⁻¹
Nominal torque	M_N 5,4 Nm
Breakaway torque	M_A 24 Nm
Direction of rotation	L/R
Type of duty	S 2 - 6 min
Degree of protection	IP 44
Weight	approx. 7,00 kg

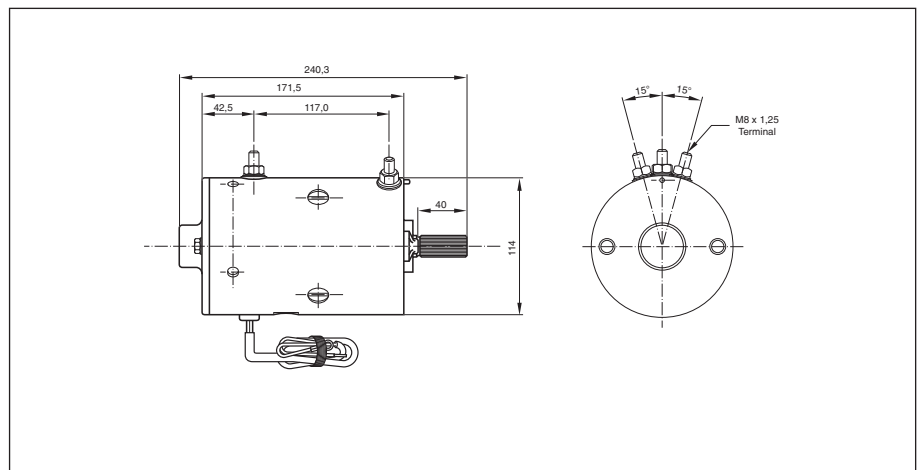
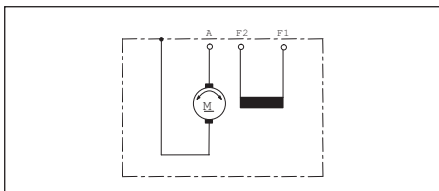
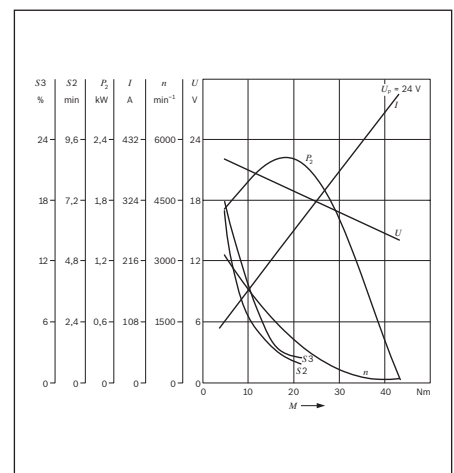


Inverse speed motor

Grounded frame

24 V 1.7 kW

Part number	F 000 MM0 617
Nominal voltage	U_N 24 V
Nominal power	P_N 1700 W
Nominal current	I_N 110 A
Nominal speed	n_N 3200 min ⁻¹
Nominal torque	M_N 5,4 Nm
Breakaway torque	M_A 24 Nm
Direction of rotation	L/R
Type of duty	S 2 - 7 min
Degree of protection	IP 44
Weight	approx. 7,00 kg

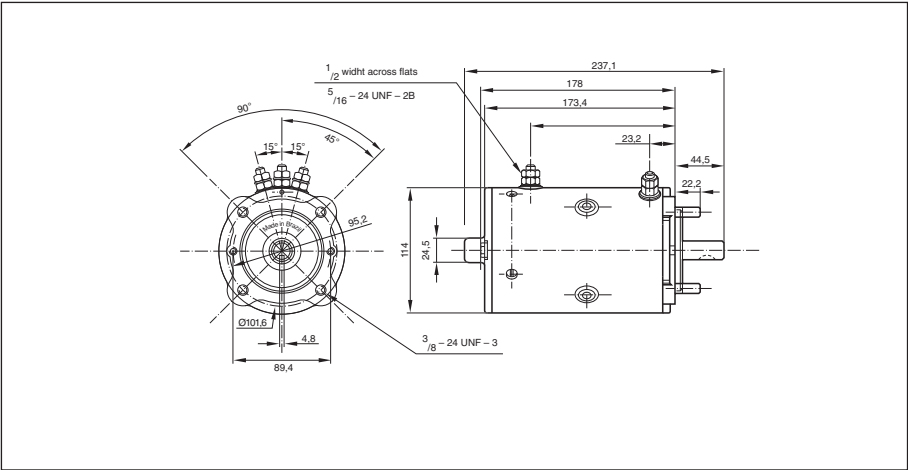
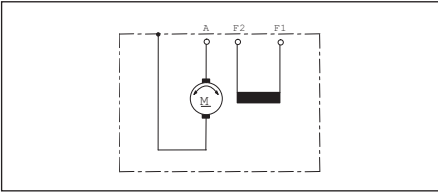
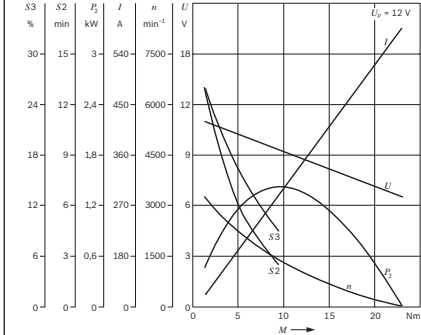


Inverse speed motor

Grounded frame with flange

12 V 1.2 kW

Part number	F 000 MM0 616
Nominal voltage	U_N 12 V
Nominal power	P_N 1200 W
Nominal current	I_N 195 A
Nominal speed	n_N 2100 min ⁻¹
Nominal torque	M_N 5,4 Nm
Breakaway torque	M_A 24 Nm
Direction of rotation	L/R
Type of duty	S 2 - 6 min
Degree of protection	IP 44
Weight	approx. 7,00 kg

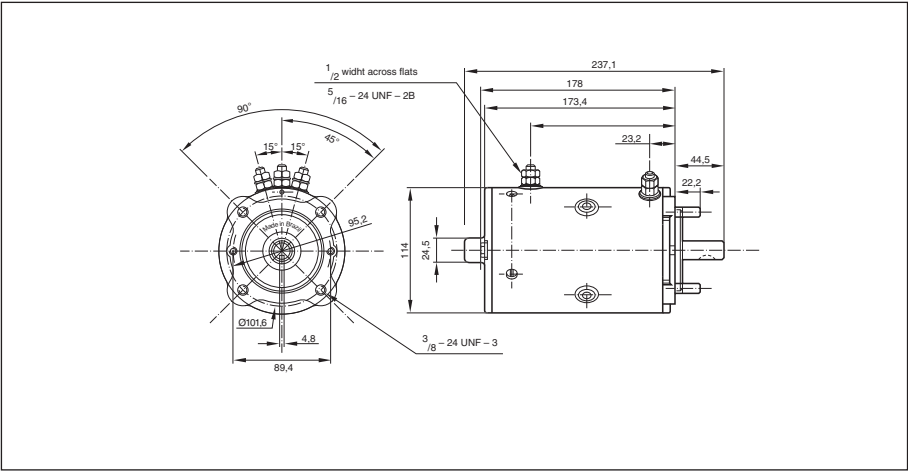
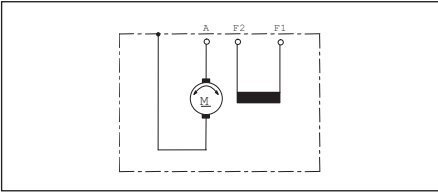
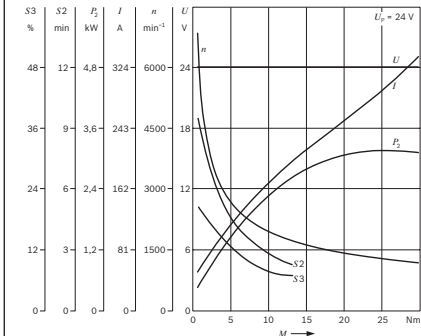


Inverse speed motor

Grounded frame with flange

24 V 1.7 kW

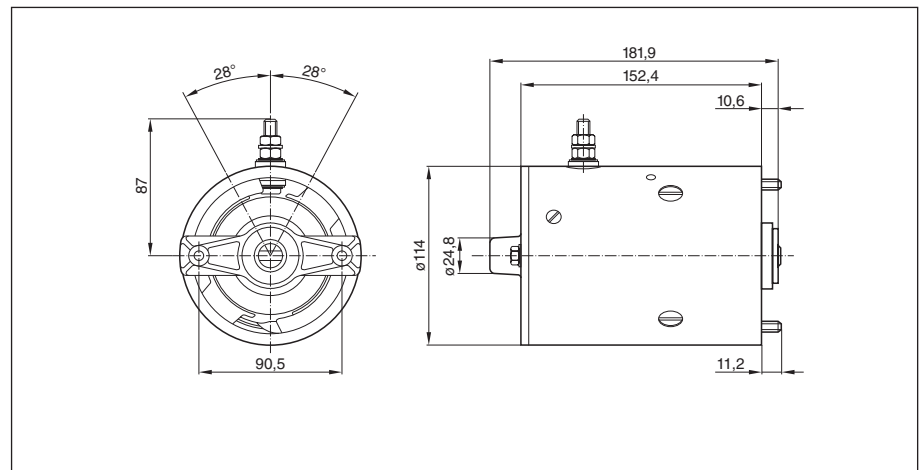
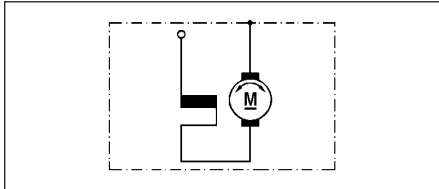
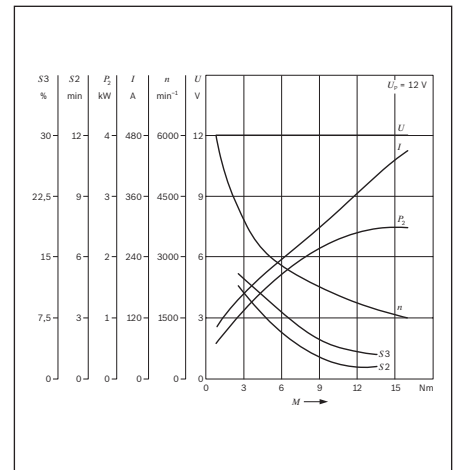
Part number	F 000 MM0 619
Nominal voltage	U_N 24 V
Nominal power	P_N 1700 W
Nominal current	I_N 110 A
Nominal speed	n_N 3200 min ⁻¹
Nominal torque	M_N 5,4 Nm
Breakaway torque	M_A 24 Nm
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 44
Weight	approx. 7,00 kg



Inverse speed motor

12 V 1.6 kW

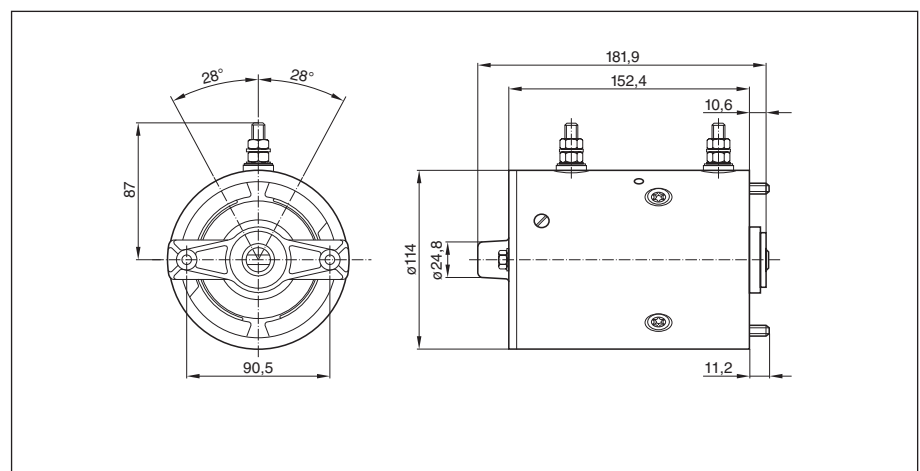
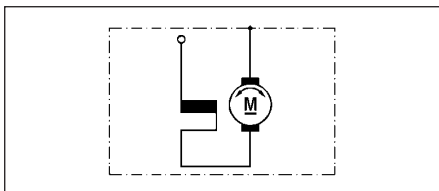
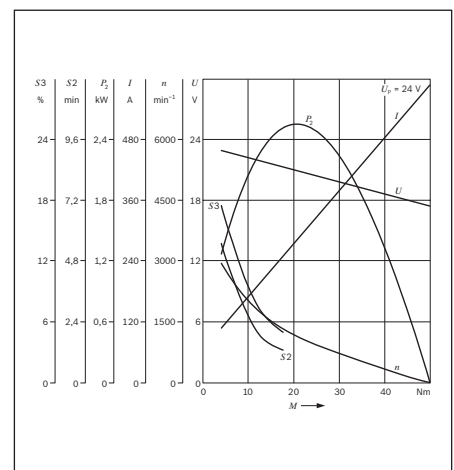
Part number	F 000 MM0 001
Nominal voltage	U_N 12 V
Nominal power	P_N 1600 W
Nominal current	I_N 220 A
Nominal speed	n_N 3000 min ⁻¹
Nominal torque	M_N 5,1 Nm
Direction of rotation	L/R
Type of duty	S 2 - 2,8 min
Degree of protection	IP 00
Weight	approx. 7,50 kg



Inverse speed motor

24 V 2.38 kW

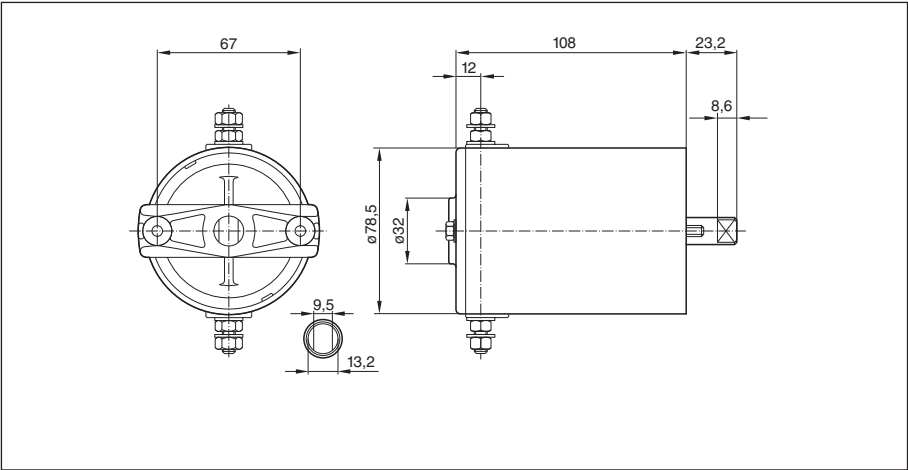
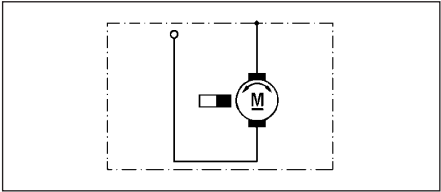
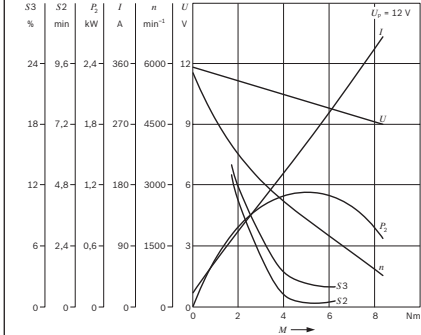
Part number	F 000 MM0 003
Nominal voltage	U_N 24 V
Nominal power	P_N 2380 W
Nominal current	I_N 140 A
Nominal speed	n_N 3250 min ⁻¹
Nominal torque	M_N 7 Nm
Direction of rotation	L/R
Type of duty	S 2 - 4 min
Degree of protection	IP 00
Weight	approx. 7,00 kg



Permanent-magnet motor
without flange

12 V 0.9 kW

Part number	F 000 MM0 805
Nominal voltage	U_N 12 V
Nominal power	P_N 900 W
Nominal current	I_N 150 A
Nominal speed	n_N 4000 min ⁻¹
Nominal torque	M_N 2,66 Nm
Breakaway torque	M_A 10 Nm
Direction of rotation	L/R
Type of duty	S 2 - 2,4 min
Degree of protection	IP 00
Weight	approx. 2,10 kg



[illegible]

D.C. motors with transmission



Product features

- Wide range of permanently-excited motor-and-gear assemblies
- D.C. voltage range from 12 to 24 Volt
- Available with and without self-locking feature
- Breakaway torques from 1 Nm to 70 Nm
- Speed range from 16 to 700 min⁻¹
- Available with and without Hall elements

Advantages for your application

- A multitude of different sizes and designs for greater flexibility
- Robust and reliable quality, well-proven millions of times over in automobiles
- High reliability
- Favorable price/performance ratio

Bosch electric motors with transmission provide fitting solutions for almost every application. They provide a wide range of performance and are highly versatile in their application. The new generation of Bosch adjustment motors have a compact design and have been optimized in terms of installation space and weight. In addition to this, they are exceptionally quiet and highly robust.

The desired speed can easily be regulated by changing the voltage. The direction of rotation can be inverted by changing over \pm . Maximum torque is available during the startup phase.

Application examples

Automotive technology:

Flap positioning for climate control, air proportioning and distribution, wiper motors, power-window motors, seat-adjustment motors, adjustment motors

Industrial applications:

Control motors, garage-door drives, locking systems, medical technology etc.



The VMC flap actuators generation from Bosch



Advantages for your application

- Compact and space-saving adjuster drive
- Robust and reliable quality, well-proven millions of times over in automobiles
- Favorable price/performance ratio

As comfort requirements on air conditioners increase and the resulting number of air flaps also increase, the number of air-flap actuators also rises. Modern vehicles are equipped with 4–16 air-flap actuators.

Technology

The flap actuator consists of a permanently-excited D.C. motor and a transmission. The mechanical angle of rotation can be limited by means of stops attached to the housing. The electrical connector is designed for the AMP Micro Quadlock system.

VMC modular system with:

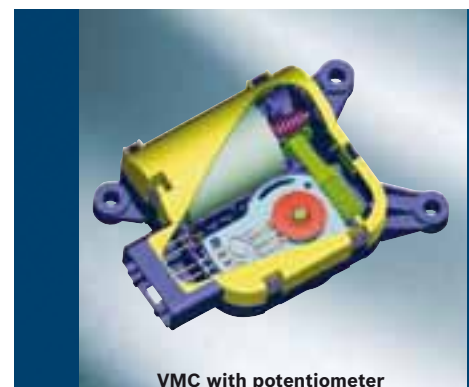
- Standard on/off switching
- Integrated potentiometer
- Automatic limit stop
- Output consumption for different positioning elements

In many applications outside the automobile too, exact flap and valve positioning is required. This is why Bosch VMC motors are ideal for your concept.

Application examples

The VMC air-flap positioner is used for positioning flaps during climate control in automobiles. It is also ideally suited for industrial applications such as valve positioning for water, oil, gas or for instance, for proportioning air quantities in solariums.

Bring your idea and application along to us. Together we will get your project moving – with electric motors from Bosch.



VMC with potentiometer

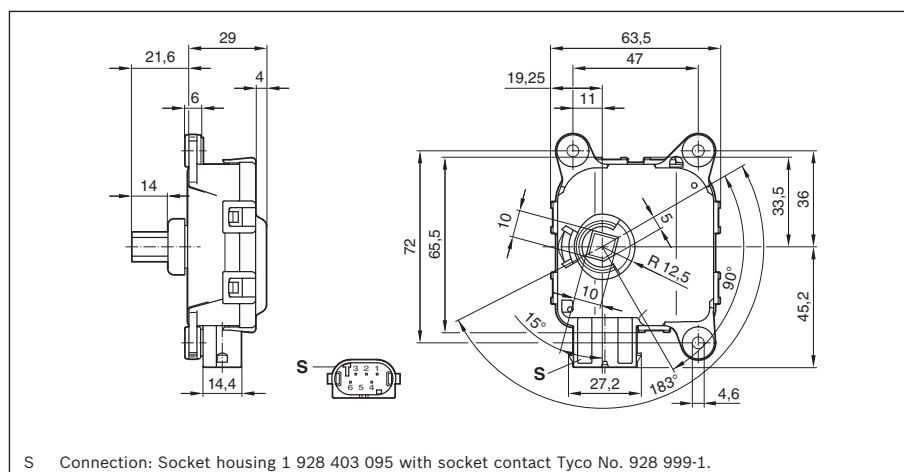
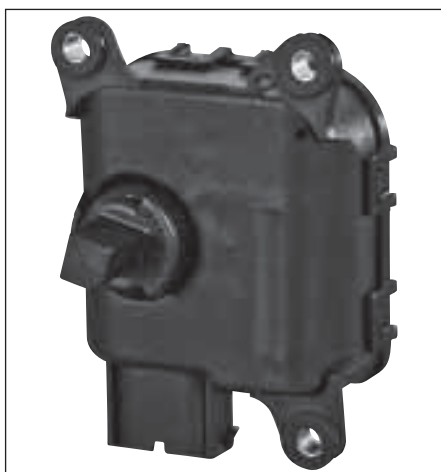
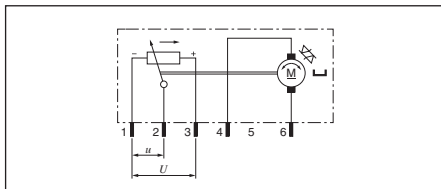
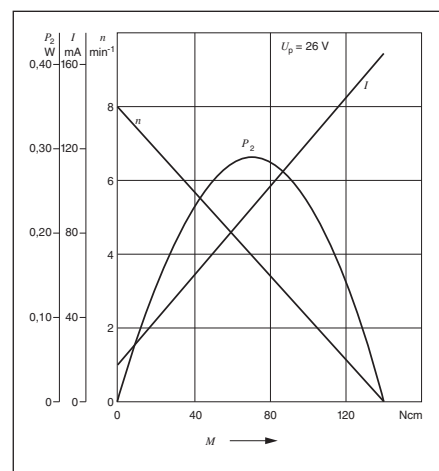
VMC

with potentiometer

24 V 0.22 W

Part number	0 132 801 141
Nominal voltage	U_N 24 V
Nominal power	P_N 0,22 W
Nominal current	I_N ≤ 55 mA
Maximum current	I_{max} 250 mA
Nominal speed	n_N 6 min ⁻¹
Rated torque	M_N 40 Ncm
Breakaway torque	M_A ≥ 100 Ncm
Reduction	i 405 : 1
Direction of rotation	L/R
Shaft load max. axial	F_a ≤ 30 N
Shaft load max. radial	F_r ≤ 50 N
Type of duty	S 1
Degree of protection	IP 54
Weight	approx. 0,12 kg

Clockwise: 4 to (+), 6 to (-)
Counterclockwise: 6 to (+), 4 to (-)

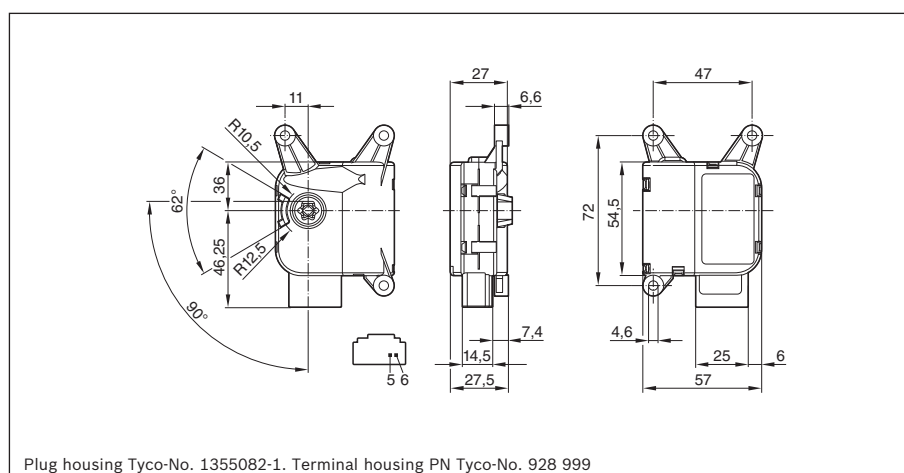
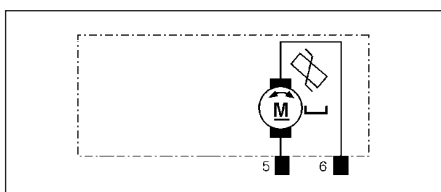
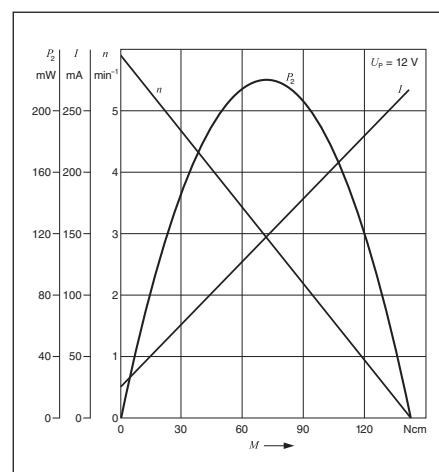


S Connection: Socket housing 1 928 403 095 with socket contact Tyco No. 928 999-1.

VMC

12 V 0.16 W

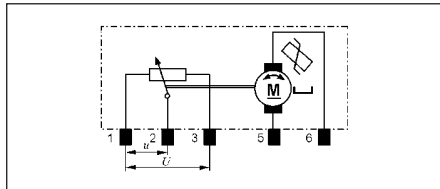
Part number	0 132 801 346
Nominal voltage	U_N 12 V
Nominal power	P_N 0,16 W
Nominal current	I_N ≤ 150 mA
Maximum current	I_{max} ≤ 270 mA
Nominal speed	n_N 4,5 min ⁻¹
Rated torque	M_N 35 Ncm
Breakaway torque	M_A ≥ 120 Ncm
Reduction	i 450 : 1
Direction of rotation	L/R
Shaft load max. axial	F_a ≤ 30 N
Shaft load max. radial	F_r ≤ 50 N
Type of duty	S 1
Degree of protection	IP 50
Weight	approx. 0,09 kg



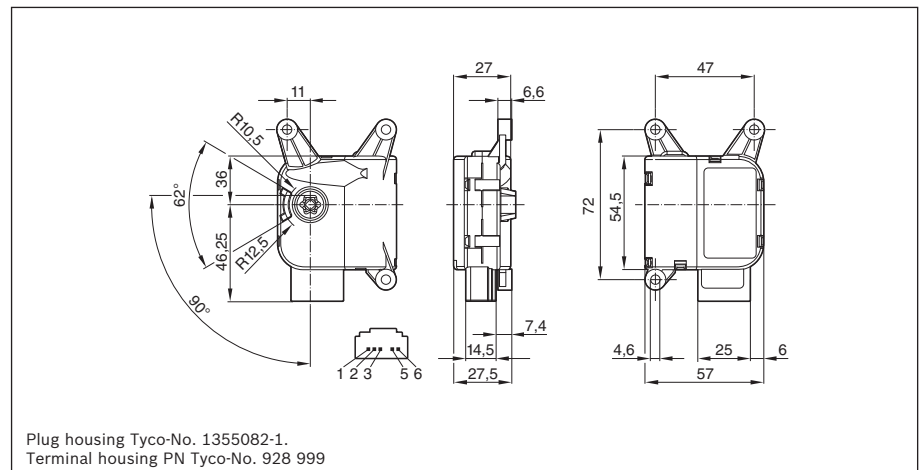
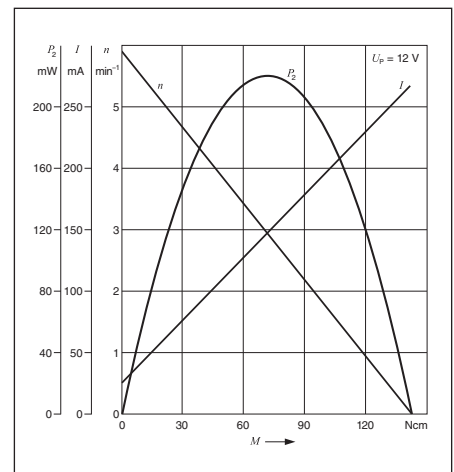
Plug housing Tyco-No. 1355082-1. Terminal housing PN Tyco-No. 928 999

VMC**with potentiometer****12 V 0,16 W**

Design, technical data, overall dimensions, and sequence chart are identical to the motor 0 132 801 346, but with an additional potentiometer to adjust the different angel positions exactly (see connection diagram).

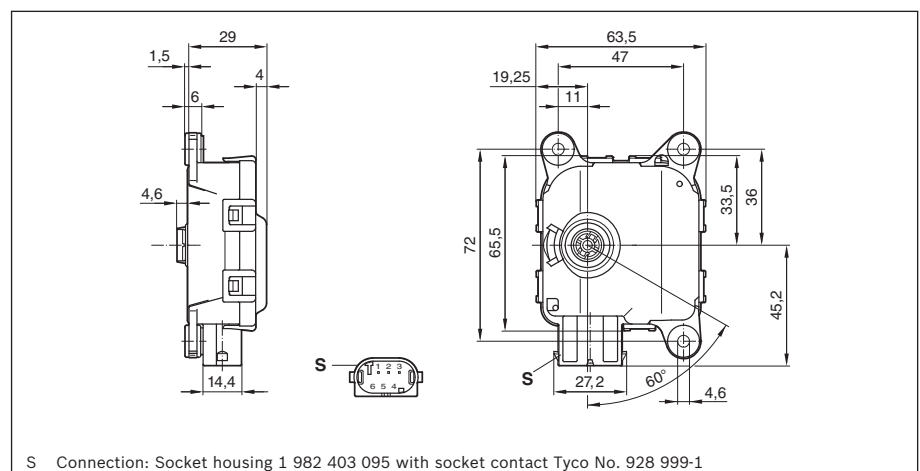
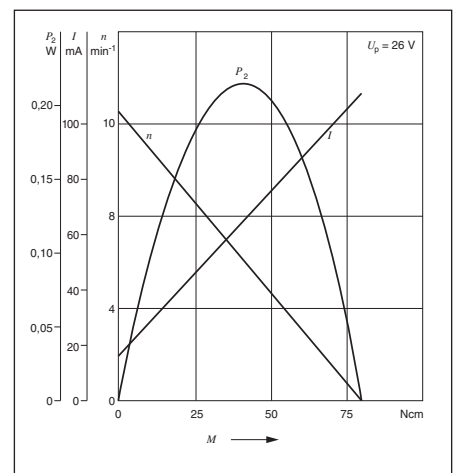
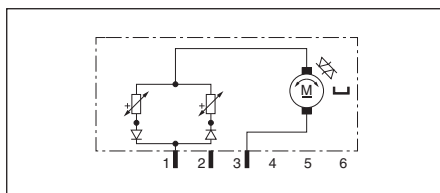


Angle of rotation mechanical	electrical	Part number
360°	120°	0 132 801 347
360°	150°	0 132 801 348
360°	180°	0 132 801 349
360°	250°	0 132 801 350
360°	340°	0 132 801 351

**VMC****24 V 0,26 W**

Part number	0 132 801 143
Nominal voltage	U_N 24 V
Nominal power	P_N 0,26 W
Nominal current	$I_N \leq 100$ mA
Maximum current	I_{max} 200 mA
Nominal speed	n_N 7 min ⁻¹
Rated torque	M_N 35 Ncm
Breakaway torque	$M_A \geq 70$ Ncm
Reduction	i 310 : 1
Direction of rotation	L/R
Shaft load max. axial F_a	≤ 30 N
Shaft load max. radial F_r	≤ 50 N
Type of duty	S 1
Degree of protection	IP 40
Weight	approx. 0,12 kg

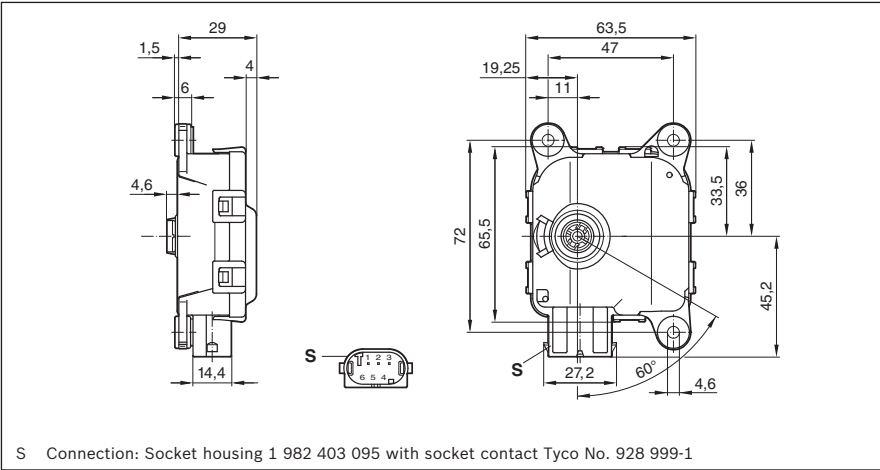
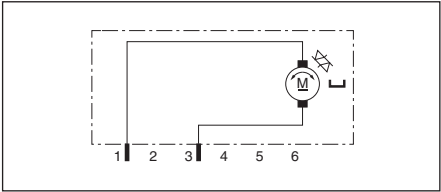
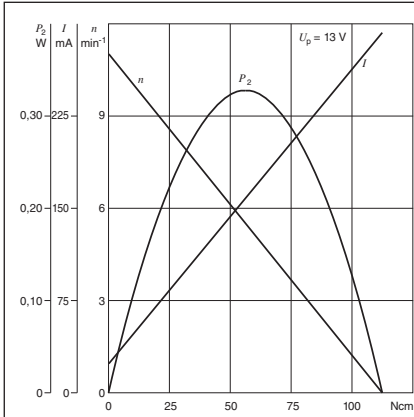
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Counterclockwise: 1 to (-), 3 to (+)



VMC

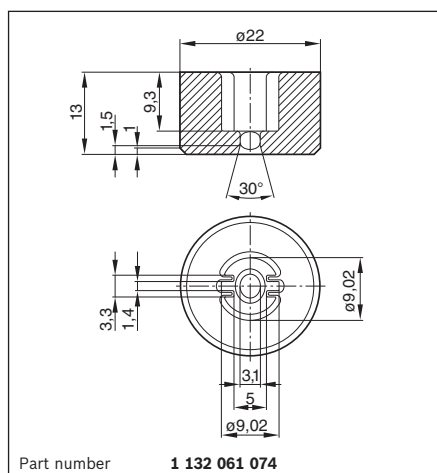
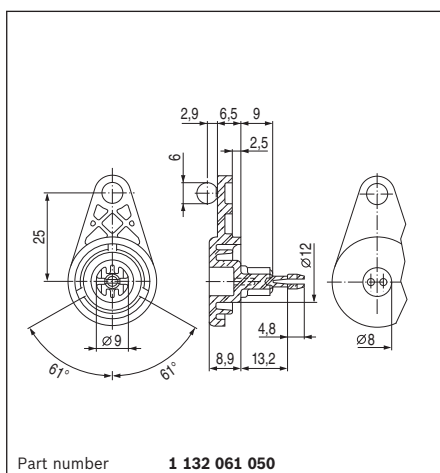
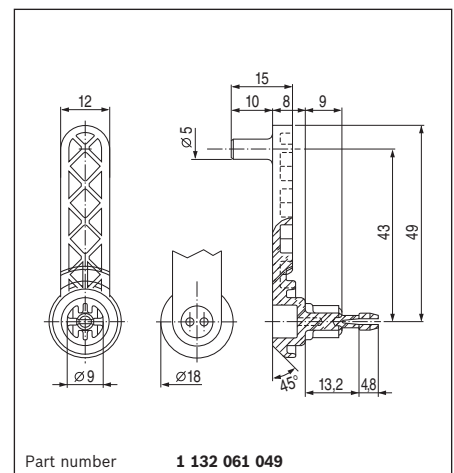
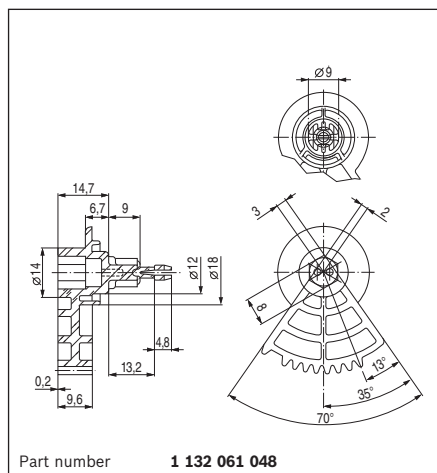
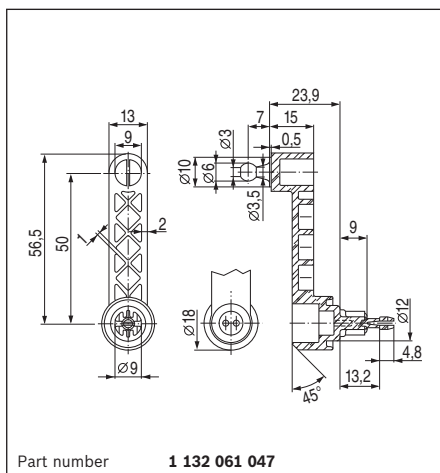
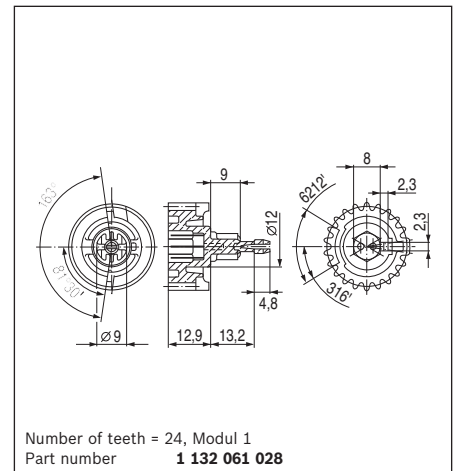
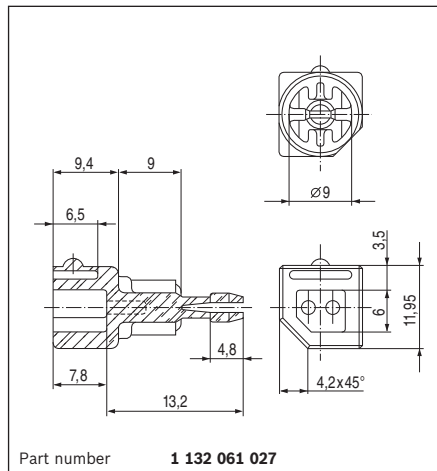
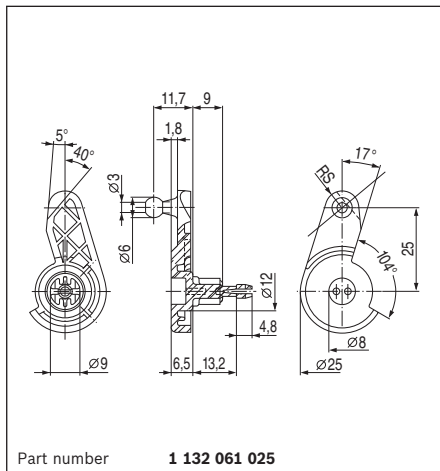
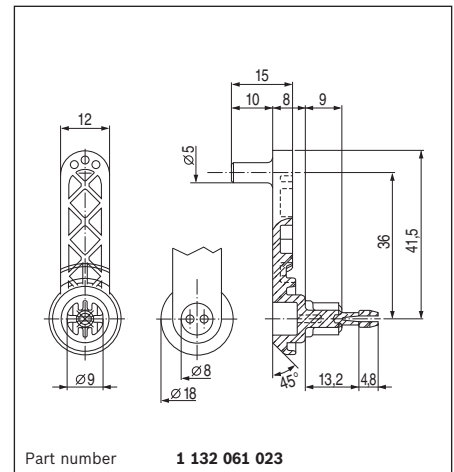
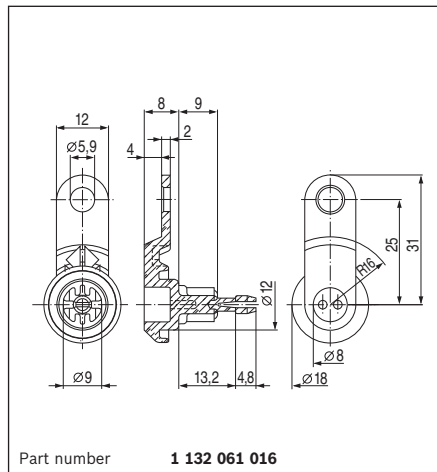
12 V 0,29 W

Part number	0 132 801 142
Nominal voltage	U_N 12 V
Nominal power	P_N 0,29 W
Nominal current	$I_N \leq 180$ mA
Maximum current	I_{max} 400 mA
Nominal speed	n_N 7 min ⁻¹
Rated torque	M_N 40 Ncm
Breakaway torque	$M_A \geq 90$ Ncm
Reduction	i 310 : 1
Direction of rotation	L/R
Shaft load max. axial	$F_a \leq 30$ N
Shaft load max. radial	$F_r \leq 50$ N
Type of duty	S 1
Degree of protection	IP 40
Weight	approx. 0,12 kg
Clockwise: 1 to (+), 3 to (-)	
Counterclockwise: 1 to (-), 3 to (+)	



Adjusting elements

for VMC motors
0 132 801 142, ..143



AHC

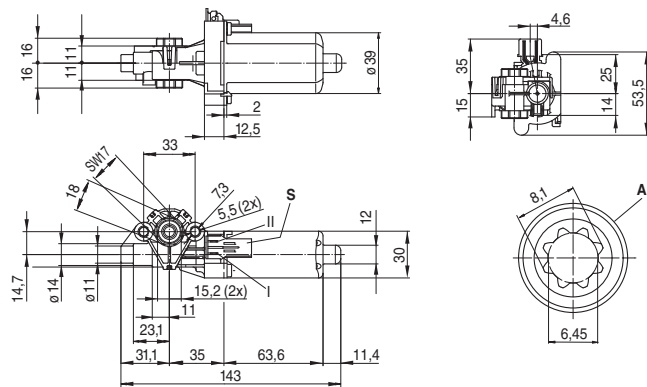
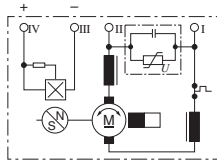
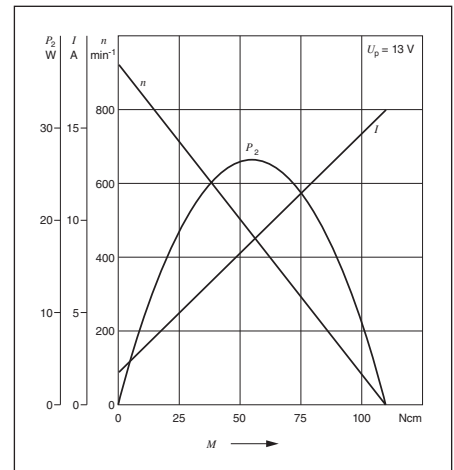
AHC

with Hall sensor

12 V 21 W

Part number	0 390 201 902
mirror-image	0 390 201 914
Nominal voltage	U_N 12 V
Nominal power	P_N 21 W
Nominal current	I_N 6 A
Maximum current	I_{\max} 17 A
Nominal speed	n_N 675 min ⁻¹
Nominal torque	M_N 30 Ncm
Breakaway torque	M_A 100 Ncm
Reduction	i 27 : 4
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,33 kg

Clockwise: I to (+), II to (-)
Counterclockwise: I to (-), II to (+)
1) On request



A Inner spur gear, number of teeth 8, module 0.8
S Matching plug housing Tyco No. 968 182-1

AHC

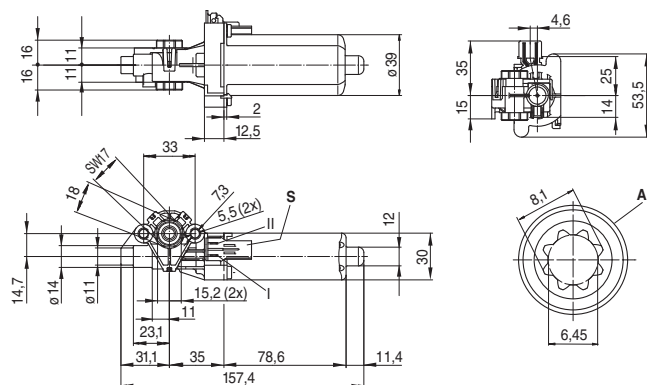
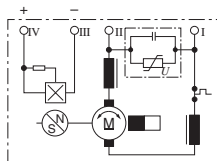
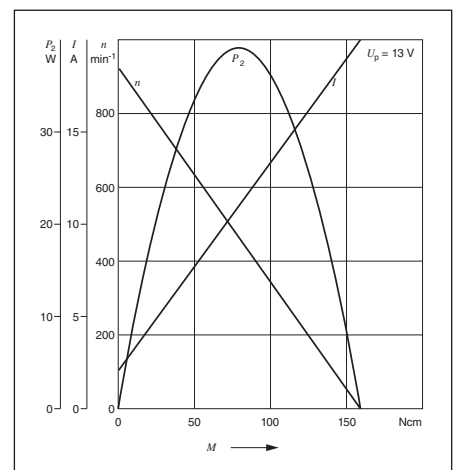
with Hall sensor

12 V 29 W ¹⁾

Part number	0 390 201 903
mirror-image	0 390 201 915
Nominal voltage	U_N 12 V
Nominal power	P_N 29 W
Nominal current	I_N 7,5 A
Maximum current	I_{\max} 22 A

Nominal speed	n_N	700 min ⁻¹
Nominal torque	M_N	40 Ncm
Breakaway torque	M_A	140 Ncm
Reduction	i	27 : 4
Direction of rotation		L/R
Type of duty		S 2 - 5 min
Degree of protection		IP 50
Weight		approx. 0,40 kg

Clockwise: I to (+), II to (-)
 Counterclockwise: I to (-), II to (+)
 A square-wave period is generated for each turn of the armature.
 1) On request



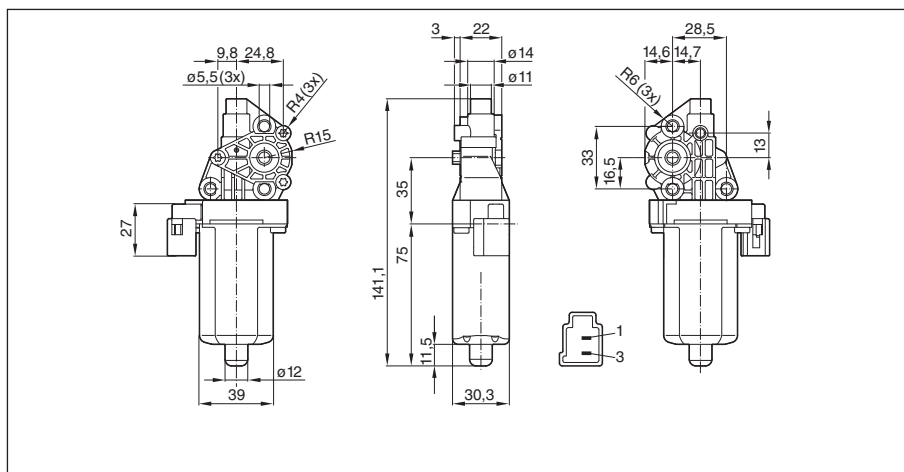
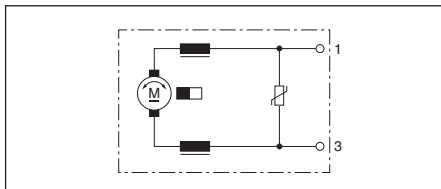
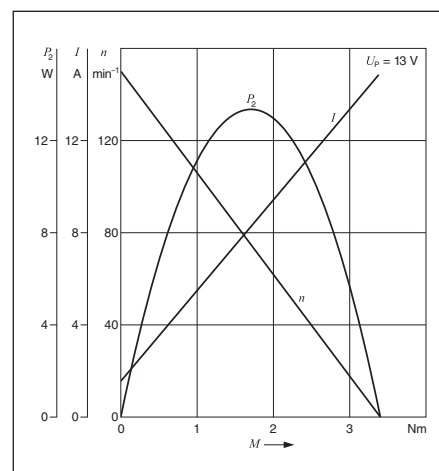
A Inner spur gear, number of teeth 8, module 0.8
S Matching plug housing Tyco-No. 968 182-1

AHC

12 V 10 W

Part number	0 390 201 997
Nominal voltage	U_N 12 V
Nominal power	P_N 10 W
Nominal current	I_N 5 A
Maximum current	I_{max} 15 A
Nominal speed	n_N 115 min ⁻¹
Nominal torque	M_N 0,85 Nm
Breakaway torque	M_A 3,4 Nm
Reduction	i 29 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,55 kg

Clockwise: (+) to 3
Counterclockwise: (+) to 1

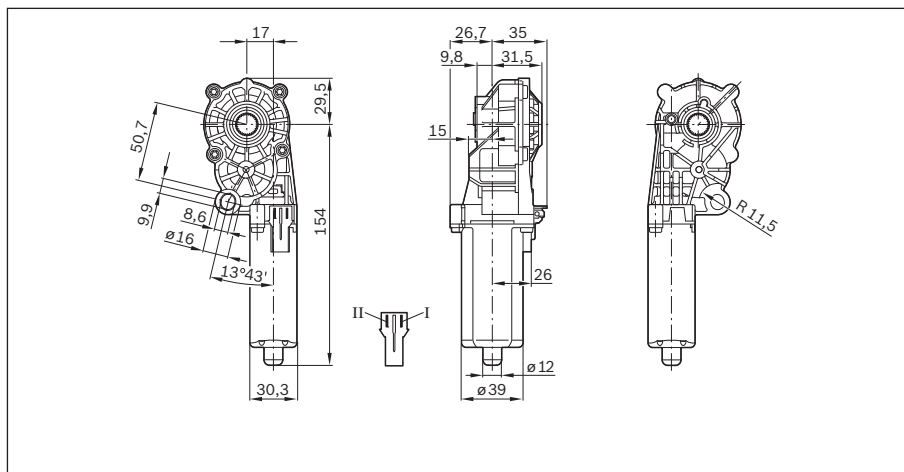
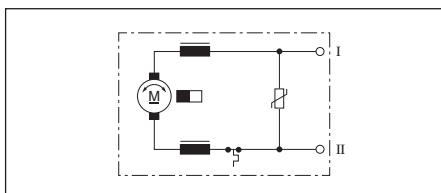
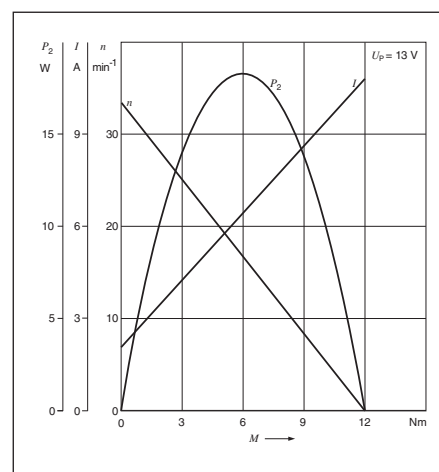


AHC

12 V 10.4 W

Part number	0 390 201 964
Nominal voltage	U_N 12 V
Nominal power	P_N 10,4 W
Nominal current	I_N 5 A
Maximum current	I_{max} 17 A
Nominal speed	n_N 22 min ⁻¹
Nominal torque	M_N 4,5 Nm
Breakaway torque	M_A 12 Nm
Reduction	i 119,5 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,62 kg

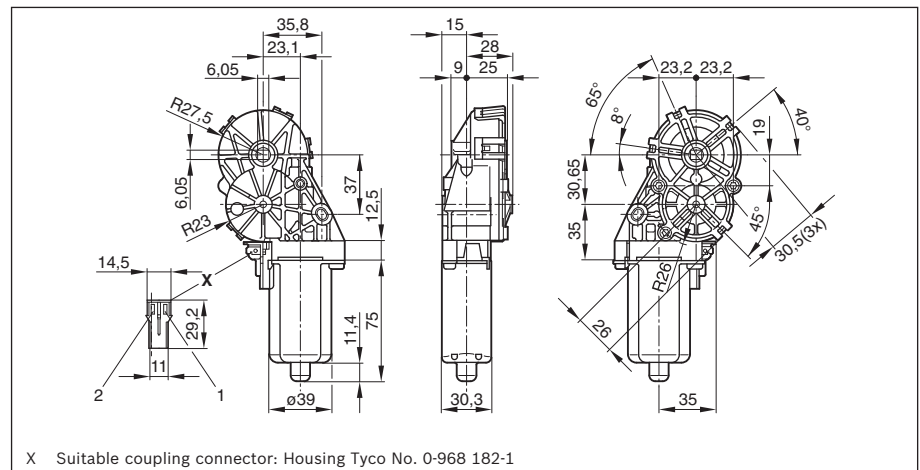
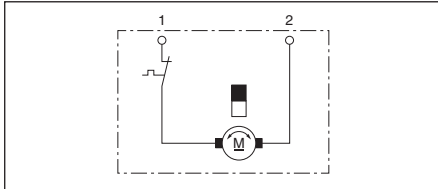
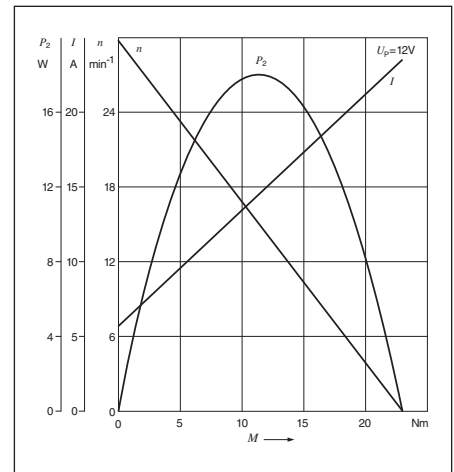
Clockwise: (+) to I
Counterclockwise: (+) to II



AHC

12 V 8 W

Part number	0 390 201 918
Nominal voltage	U_N 12 V
Nominal power	P_N 8 W
Nominal current	I_N 8 A
Maximum current	I_{max} 23,5 A
Nominal speed	n_N 26 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 23 Nm
Reduction	i 185,5 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,45 kg

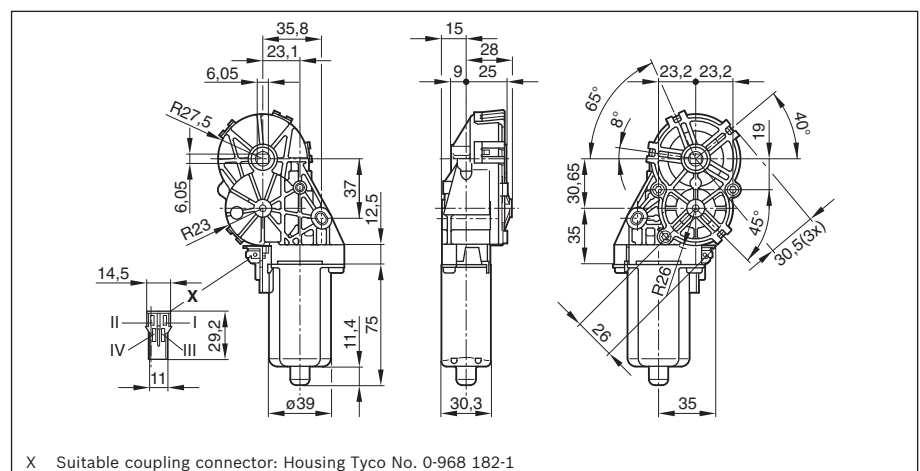
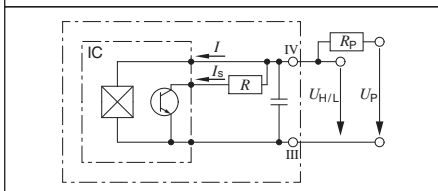
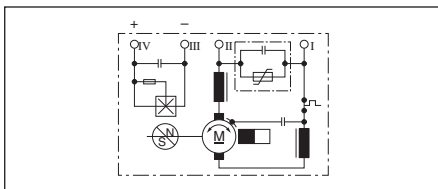
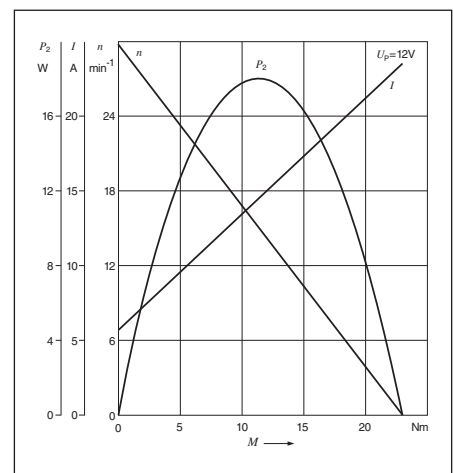


AHC

with Hall sensor

12 V 8 W

Part number	0 390 201 925
Nominal voltage	U_N 12 V
Nominal power	P_N 8 W
Nominal current	I_N 8 A
Maximum current	I_{max} 23,5 A
Nominal speed	n_N 26 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 23 Nm
Reduction	i 185,5 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,45 kg

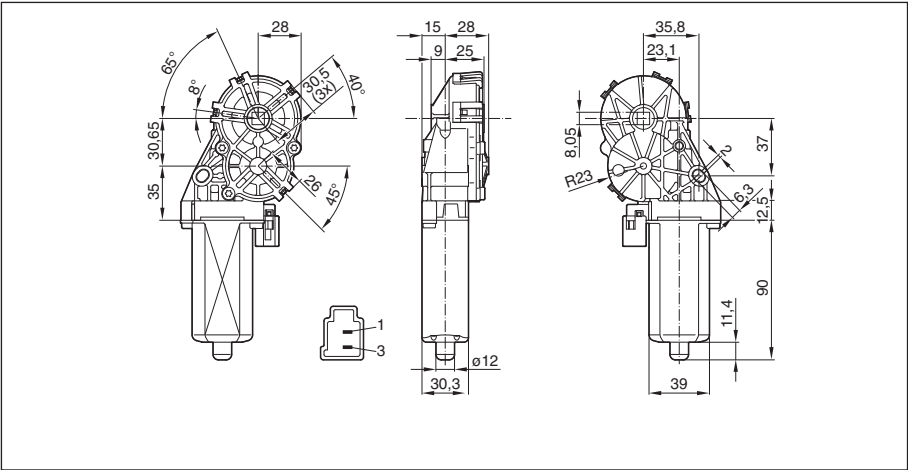
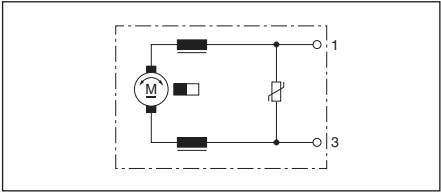
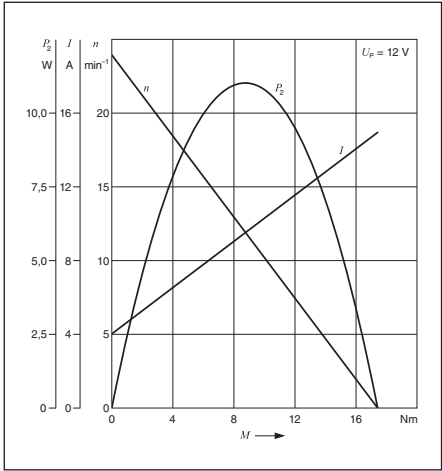


AHC

12 V 6,3 W

Part number	0 390 201 973
Nominal voltage	U_N 12 V
Nominal power	P_N 6,3 W
Nominal current	I_N 6 A
Maximum current	I_{max} 15 A
Nominal speed	n_N 20 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 17,5 Nm
Reduction	i 185,5 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,49 kg

Clockwise: (+) to 1
Counterclockwise: (+) to 3



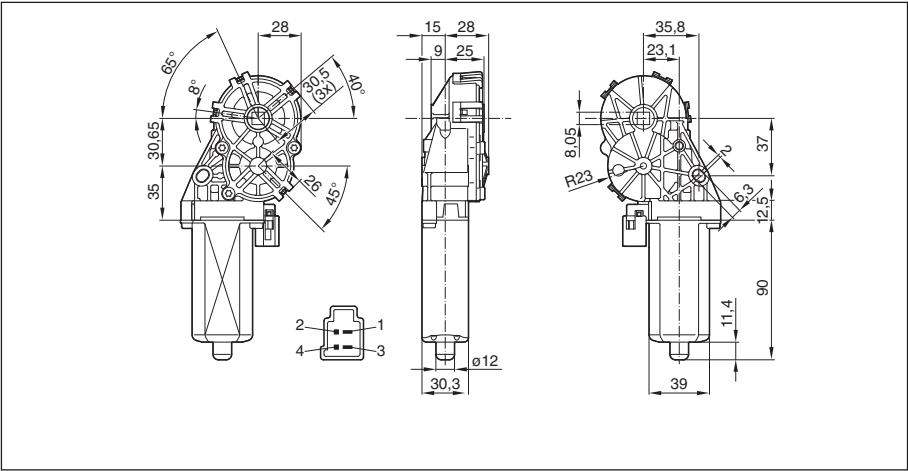
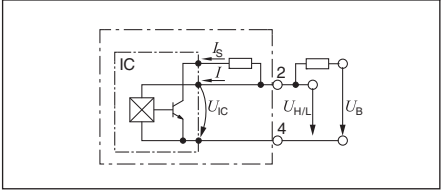
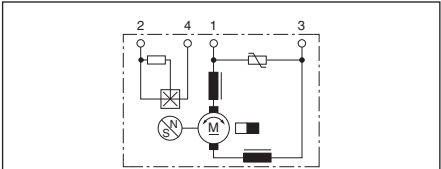
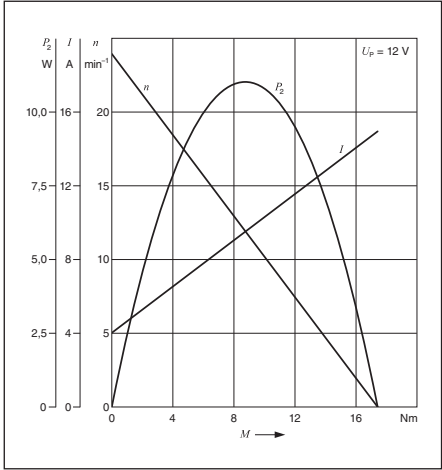
AHC

with Hall sensor

12 V 6,3 W

Part number	0 390 201 972
Nominal voltage	U_N 12 V
Nominal power	P_N 6,3 W
Nominal current	I_N 6 A
Maximum current	I_{max} 15 A
Nominal speed	n_N 20 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 17,5 Nm
Reduction	i 185,5 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,49 kg

Clockwise: (+) to 1
Counterclockwise: (+) to 3

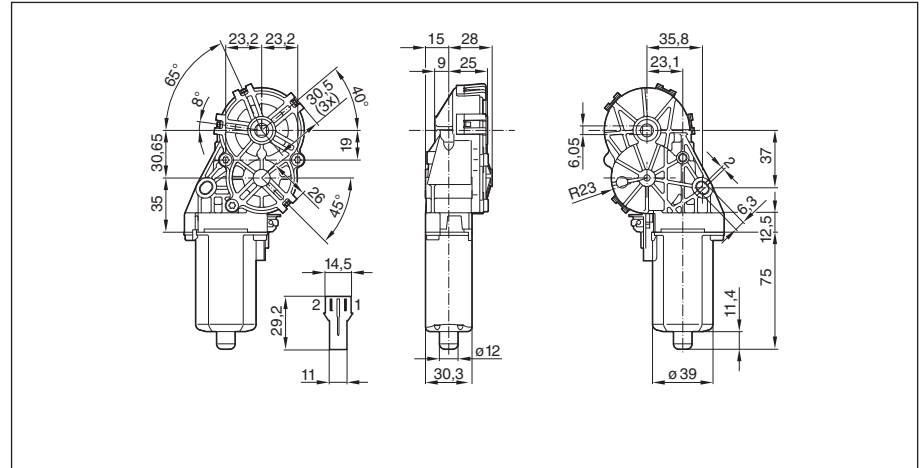
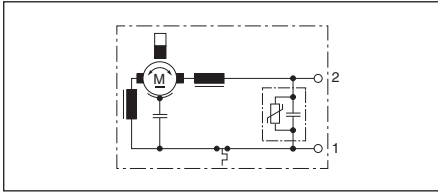
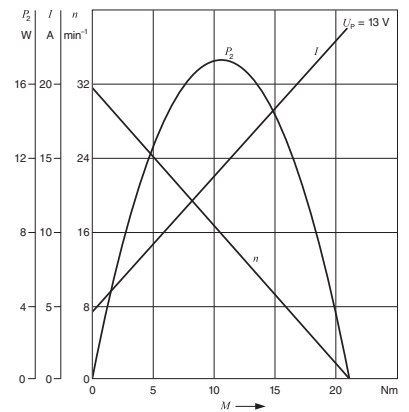


AHC

12 V 8 W

Part number	0 390 201 944
Nominal voltage	U_N 12 V
Nominal power	P_N 8 W
Nominal current	I_N 8 A
Maximum current	I_{max} 24 A
Nominal speed	n_N 26 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 21 Nm
Reduction	i 185,5 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,45 kg

Clockwise: (+) to 1
Counterclockwise: (+) to 2

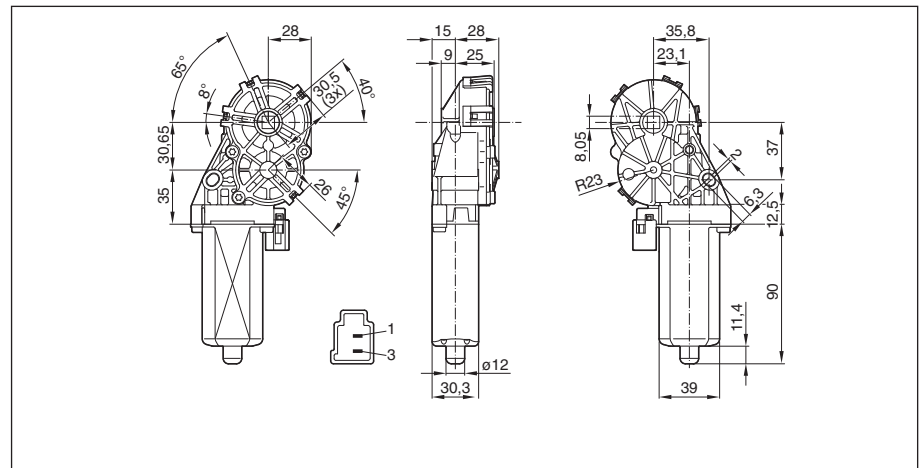
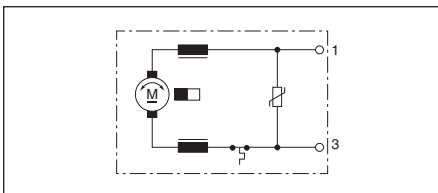
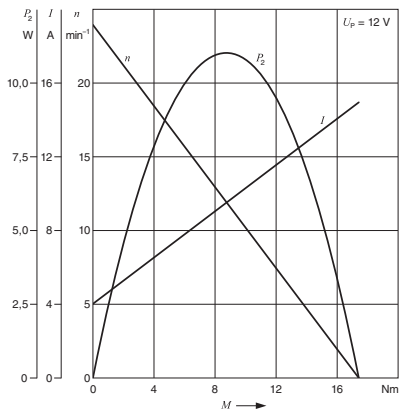


AHC

12 V 6,3 W

Part number	0 390 201 999
Nominal voltage	U_N 12 V
Nominal power	P_N 6,3 W
Nominal current	I_N 6 A
Maximum current	I_{max} 15 A
Nominal speed	n_N 20 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 17,5 Nm
Reduction	i 185,5 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,49 kg

Clockwise: (+) to 1
Counterclockwise: (+) to 3

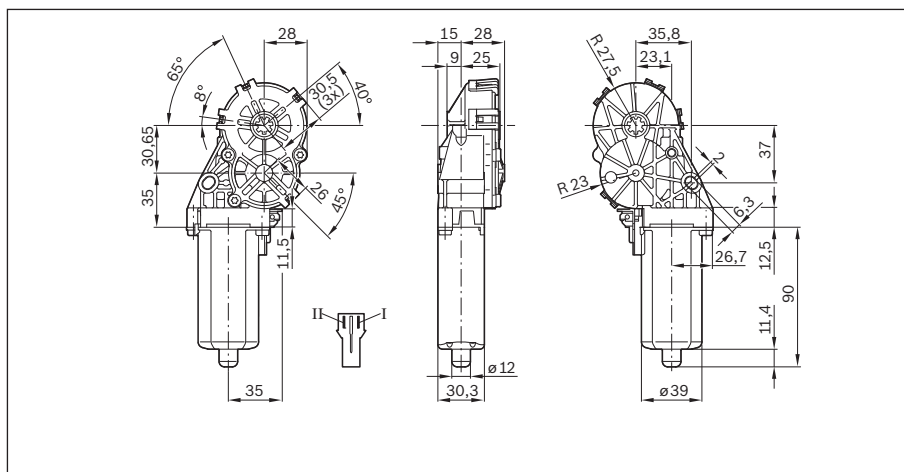
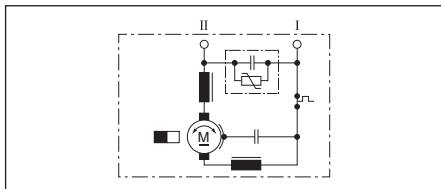
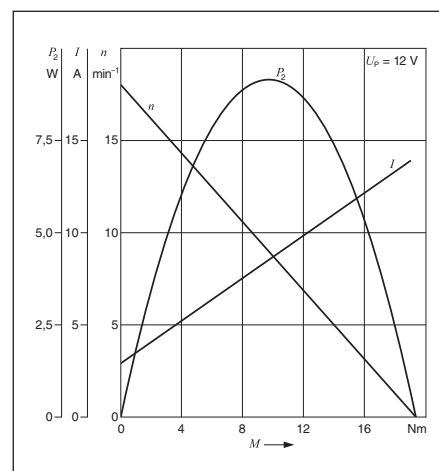


AHC

12 V 5 W

Part number	0 390 203 224
Nominal voltage	U_N 12 V
Nominal power	P_N 5 W
Nominal current	I_N 4,5 A
Maximum current	I_{max} 14 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

Clockwise: (+) to II
Counterclockwise: (+) to I

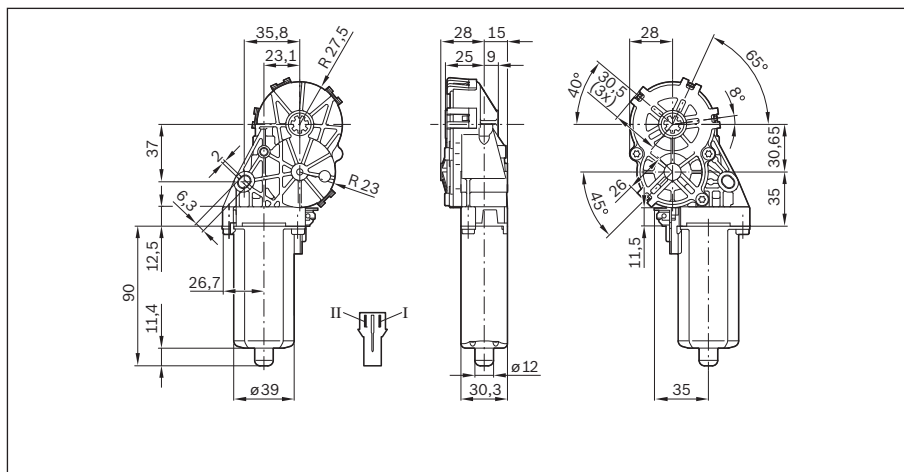
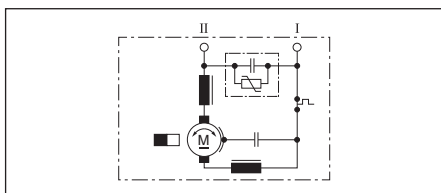
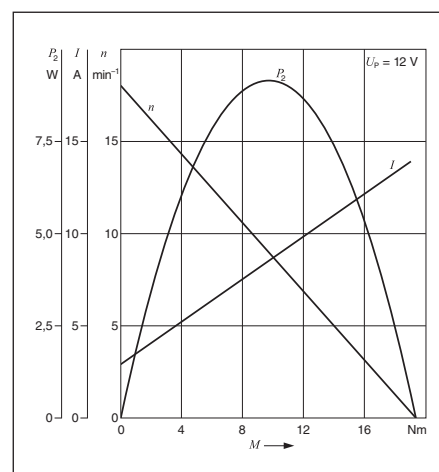


AHC

12 V 5 W

Part number	0 390 203 225
Nominal voltage	U_N 12 V
Nominal power	P_N 5 W
Nominal current	I_N 4,5 A
Maximum current	I_{max} 14 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

Clockwise: (+) to II
Counterclockwise: (+) to I

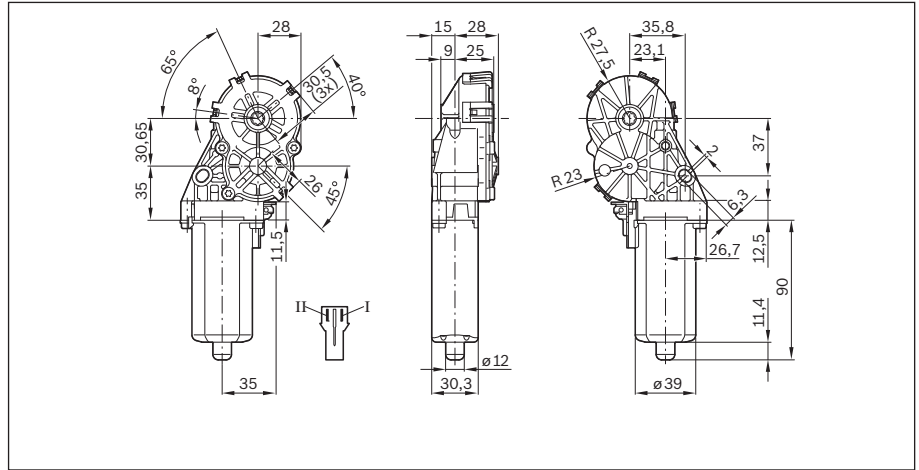
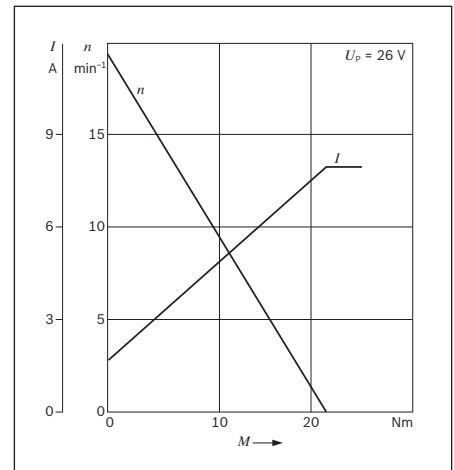
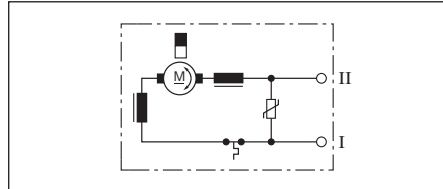


AHC

24 V 5 W

Part number	0 390 203 310
Nominal voltage	U_N 24 V
Nominal power	P_N 5 W
Nominal current	I_N 2,3 A
Maximum current	I_{\max} 7 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

On request

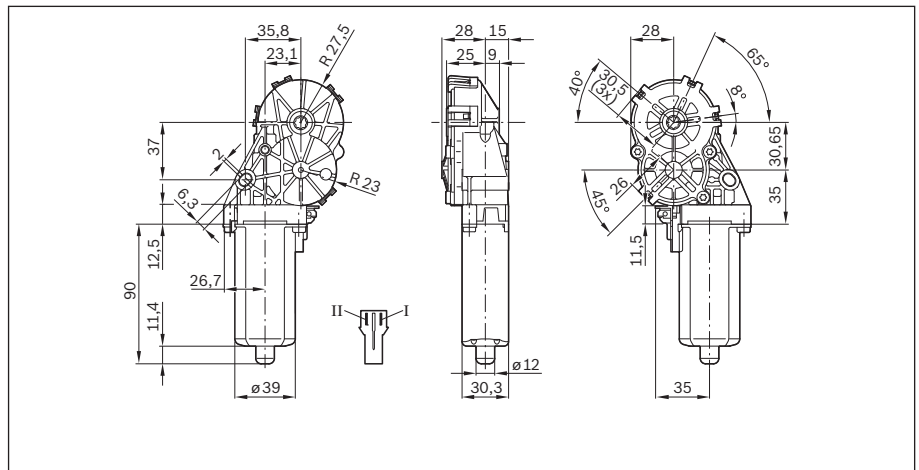
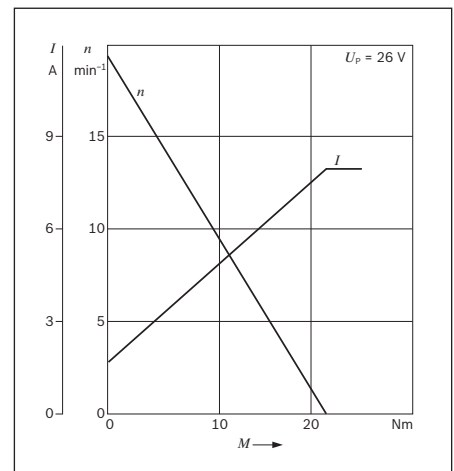
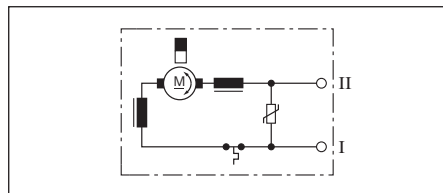


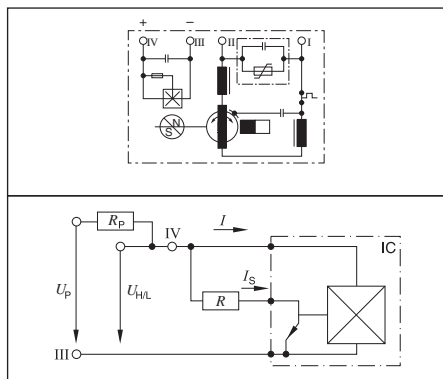
AHC

24 V 5 W

Part number	0 390 203 311
Nominal voltage	U_N 24 V
Nominal power	P_N 5 W
Nominal current	I_N 2,3 A
Maximum current	I_{\max} 7 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

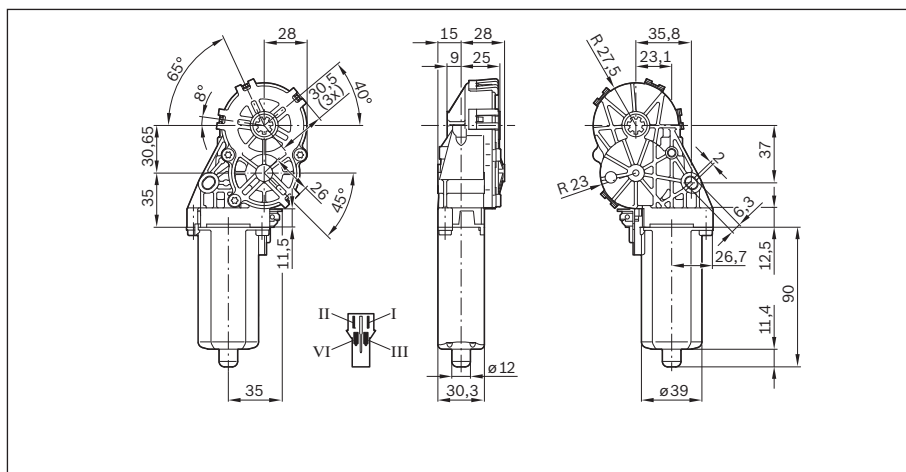
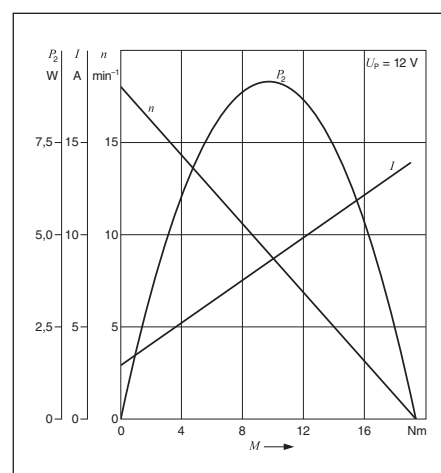
On request



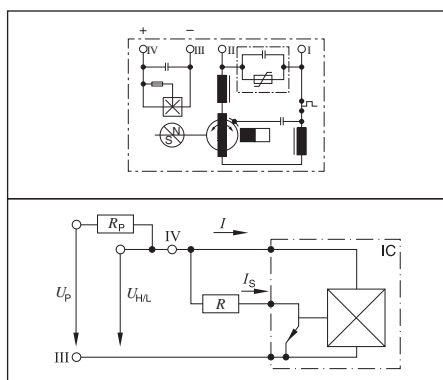


Part number	0 390 203 226
Nominal voltage	U_N 12 V
Nominal power	P_N 5 W
Nominal current	I_N 4,5 A
Maximum current	I_{\max} 14 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

Clockwise: (+) to II
Counterclockwise: (+) to I

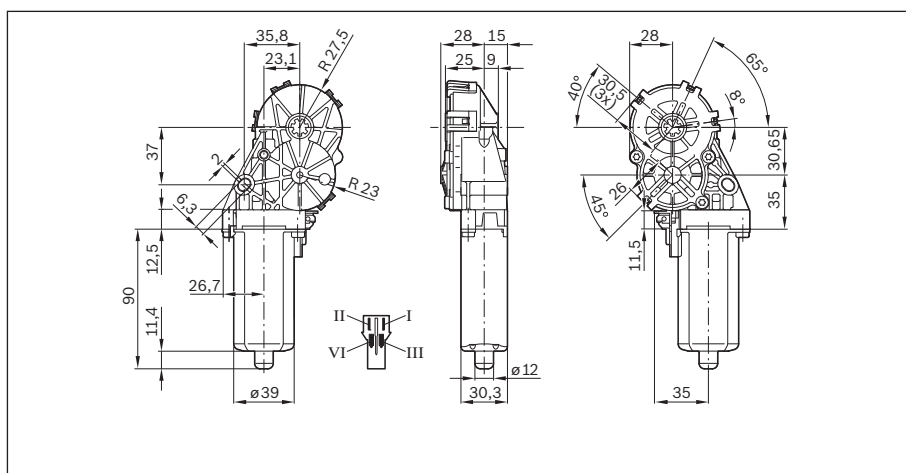
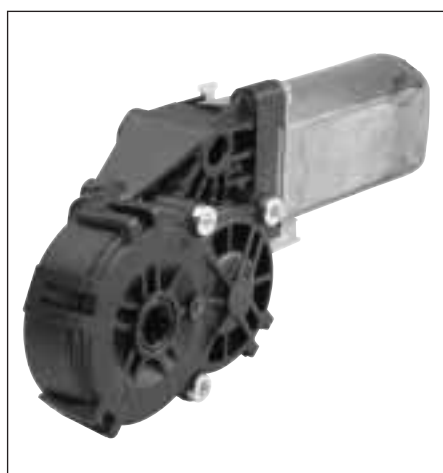
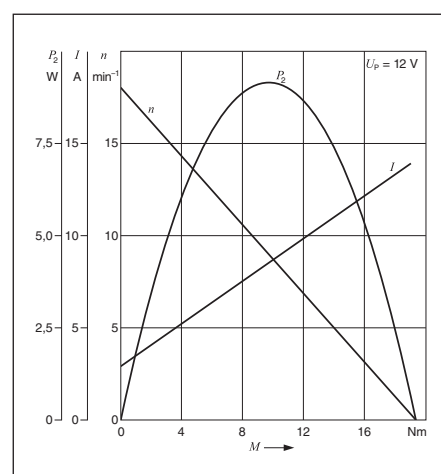


AHC



Part number	0 390 203 227
Nominal voltage	U_N 12 V
Nominal power	P_N 5 W
Nominal current	I_N 4,5 A
Maximum current	I_{\max} 14 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

Clockwise: (+) to II
Counterclockwise: (+) to I

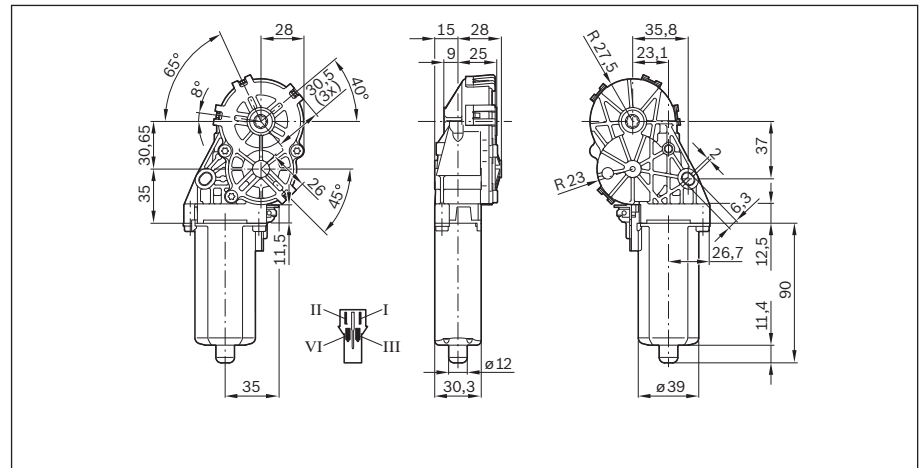
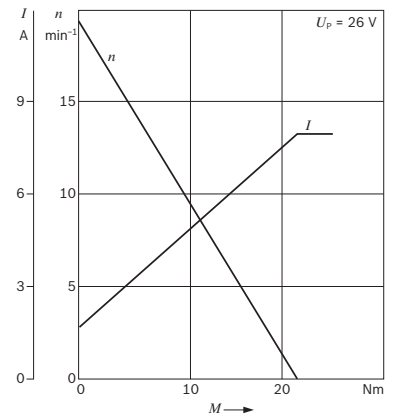


AHC

24 V 5 W

Part number	0 390 203 312
Nominal voltage	U_N 24 V
Nominal power	P_N 5 W
Nominal current	I_N 2,3 A
Maximum current	I_{max} 7 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

On request

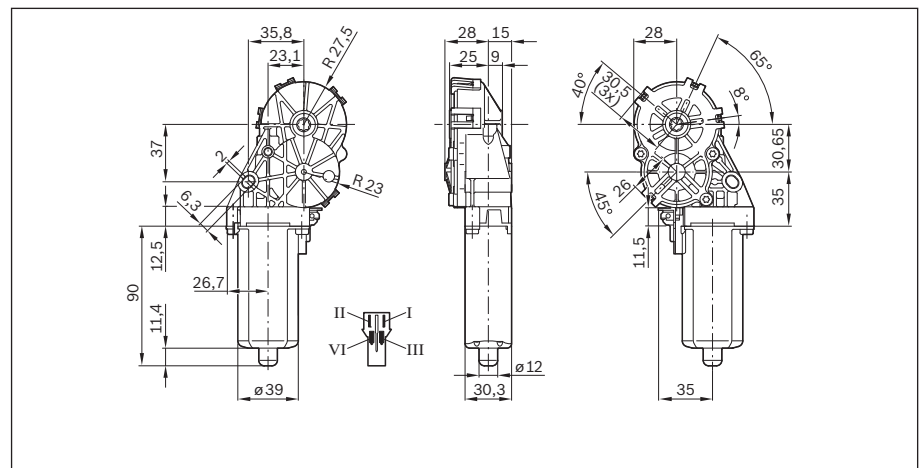
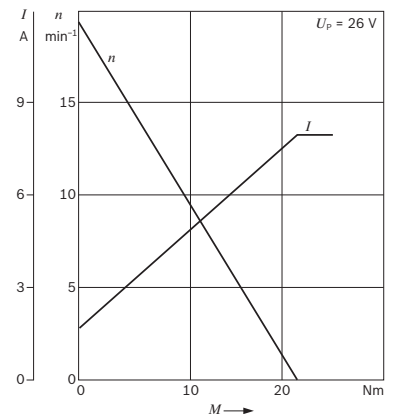


AHC

24 V 5 W

Part number	0 390 203 313
Nominal voltage	U_N 24 V
Nominal power	P_N 5 W
Nominal current	I_N 2,3 A
Maximum current	I_{max} 7 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 19,4 Nm
Reduction	i 217 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 50
Weight	approx. 0,50 kg

On request



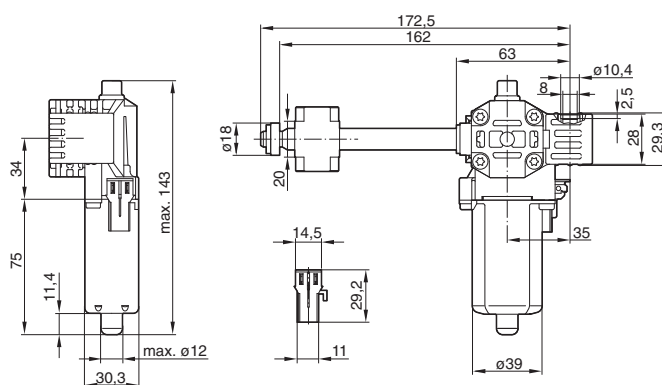
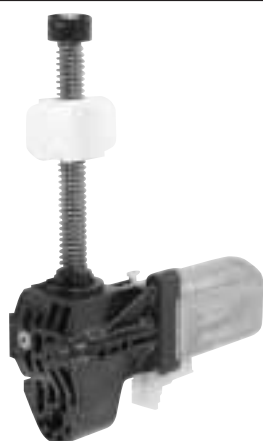
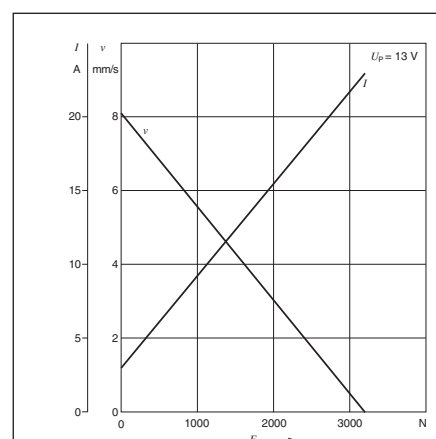
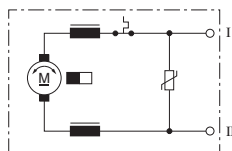
AHC

Actuator motor with spindle

12 V

Part number	0 390 201 941
Nominal voltage	U_N 12 V
Nominal current	I_N 6 A
Maximum current	I_{\max} 23 A
Nominal force	500 N
Maximum force	F_{\max} 3200 N
Adjustment speed	v_N 7 mm/s
Degree of protection	IP 50
Weight	approx. 0,54 kg

Clockwise: (+) to I
Counterclockwise: (+) to II



AHC

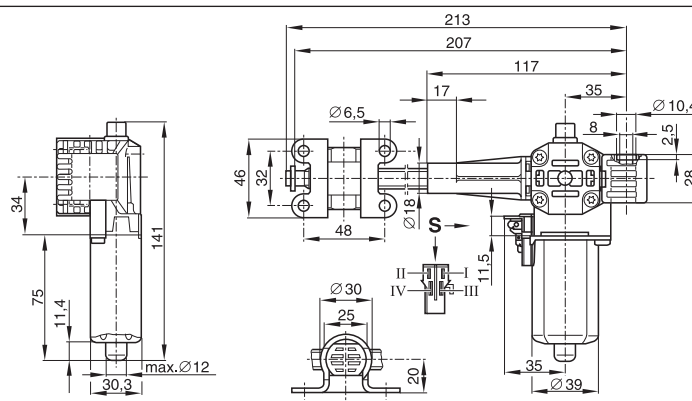
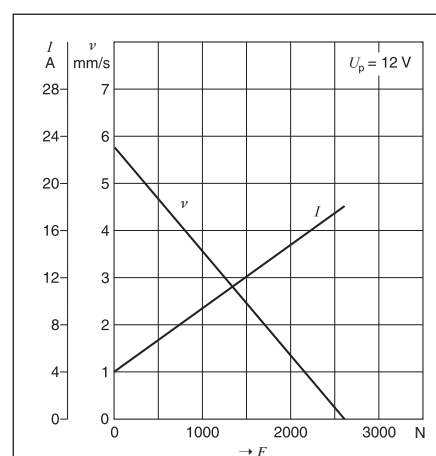
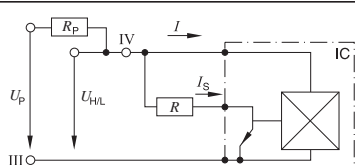
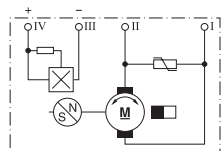
with Hall sensor

Actuator motor with spindle

12 V

Part number	0 390 201 927
Nominal voltage	U_N 12 V
Nominal current	I_N 4 A
Maximum current	I_{\max} 17 A
Nominal force	500 N
Maximum force	F_{\max} 2800 N
Adjustment speed	v_N 4 mm/s
Degree of protection	IP 50
Weight	approx. 0,55 kg

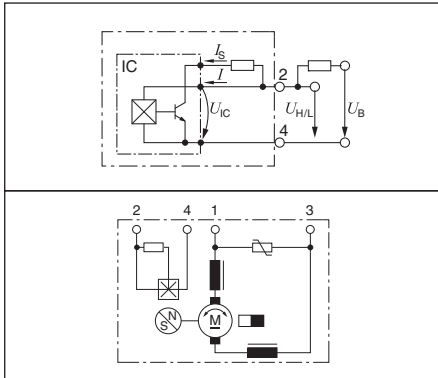
A square-wave period is generated for each turn of the armature.



AHC

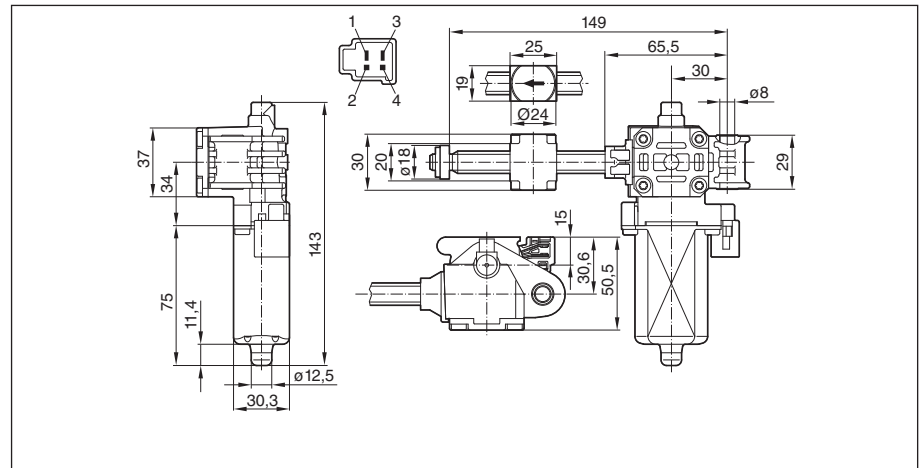
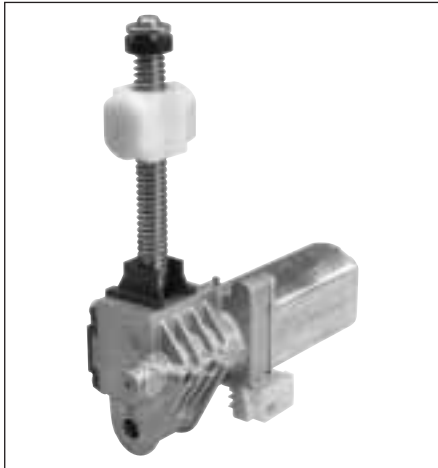
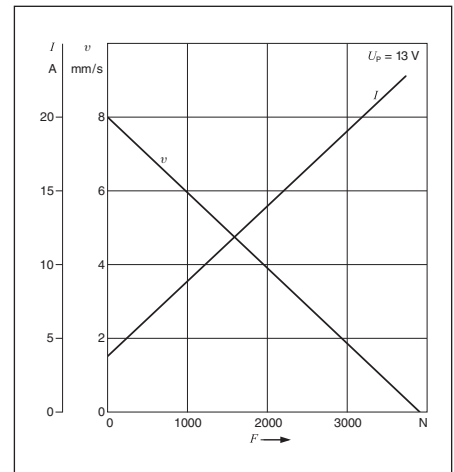
with Hall sensor

Actuator motor with spindle



12 V

Part number	0 390 201 989
Nominal voltage	U_N 12 V
Nominal current	I_N 8,5 A
Maximum current	I_{max} 24 A
Nominal force	1000 N
Maximum force	F_{max} 3000 N
Adjustment speed	v_N 6 mm/s
Degree of protection	IP 50
Weight	approx. 0,57 kg

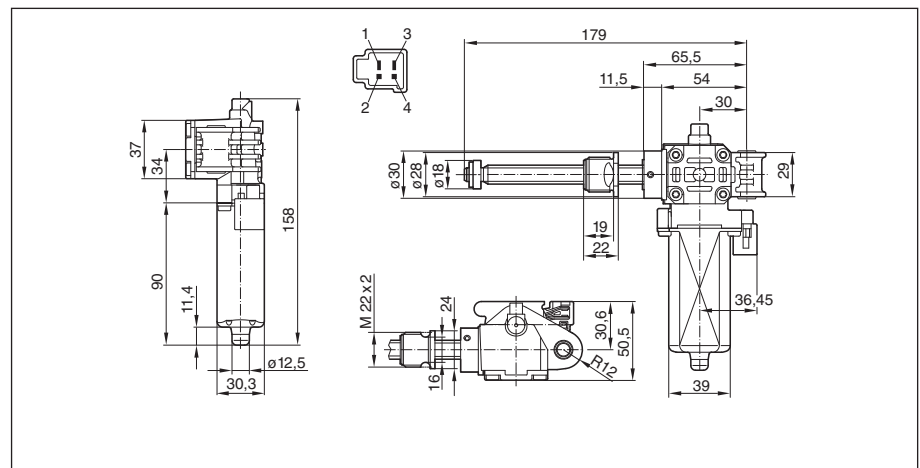
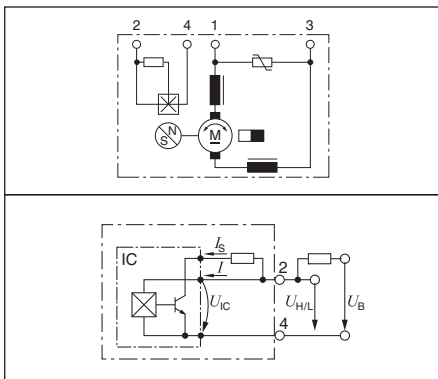
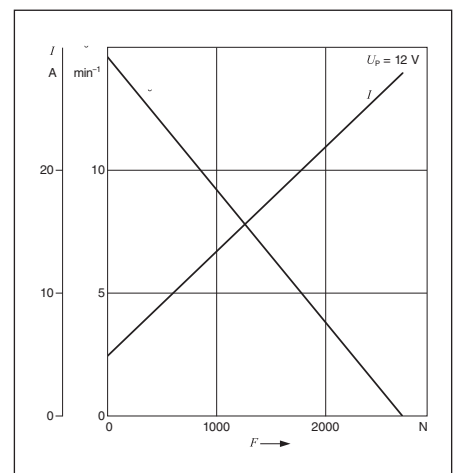


AHC

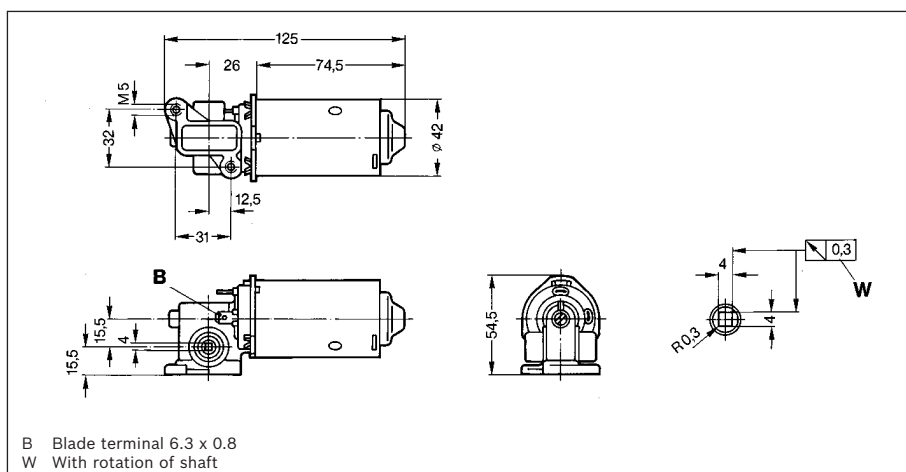
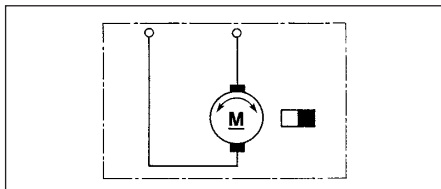
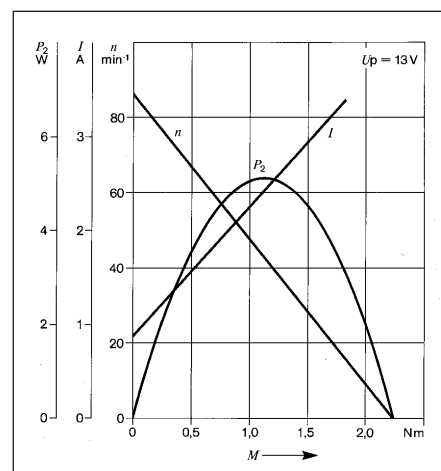
Actuator motor with spindle

12 V

Part number	0 390 203 229
Nominal voltage	U_N 12 V
Nominal current	I_N 13 A
Maximum current	I_{max} 28 A
Nominal force	1000 N
Maximum force	F_{max} 2500 N
Adjustment speed	v_N 9 mm/s
Degree of protection	IP 50
Weight	approx. 0,64 kg

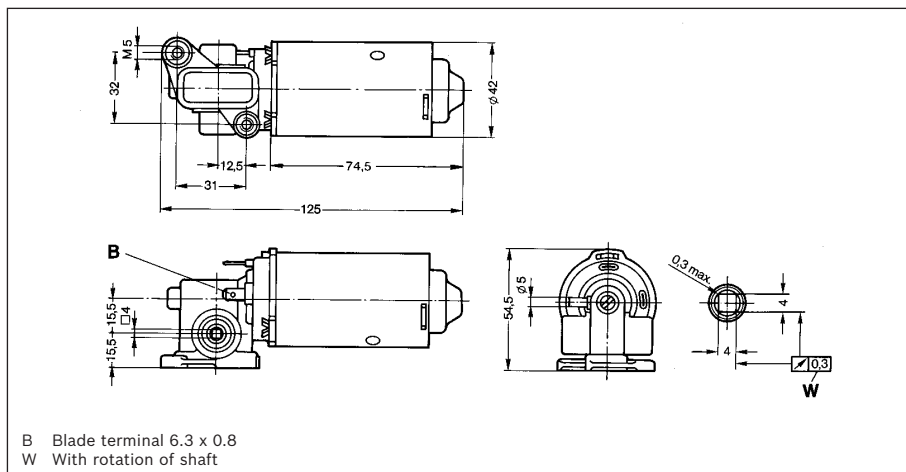
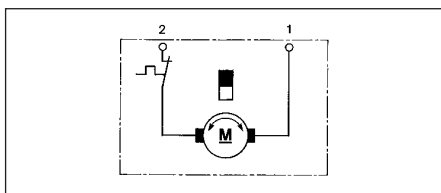
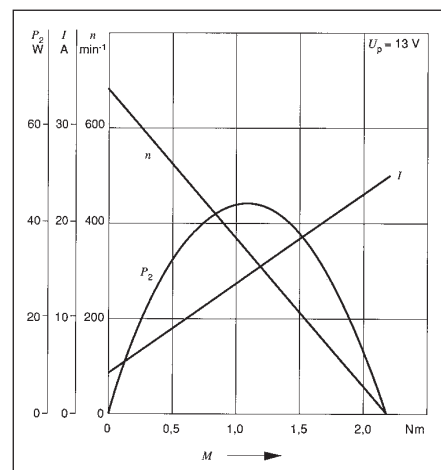


Part number	0 390 206 692
Nominal voltage	U_N 12 V
Nominal power	P_N 4 W
Nominal current	I_N 1,7 A
Maximum current	I_{\max} 3,8 A
Nominal speed	n_N 65 min ⁻¹
Nominal torque	M_N 0,6 Nm
Breakaway torque	M_A 2,2 Nm
Reduction	i 33 : 1
Direction of rotation	L/R
Type of duty	S 2 - 20 min
Degree of protection	IP 20
Weight	approx. 0,42 kg



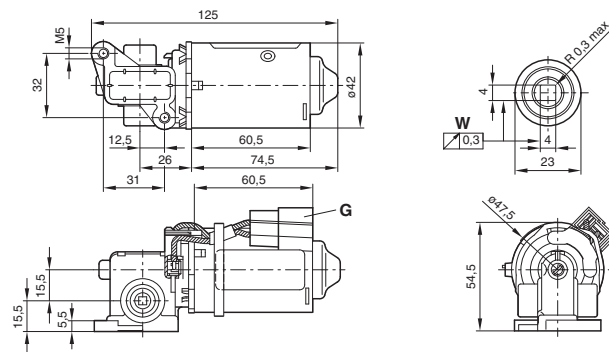
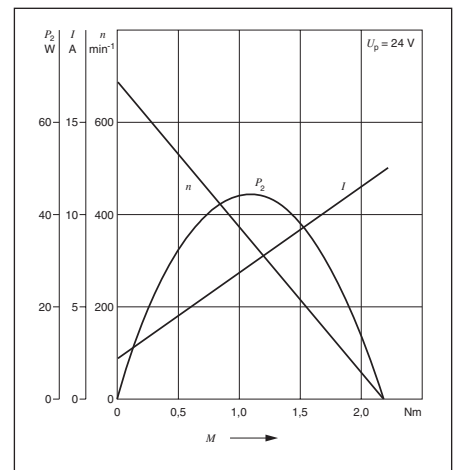
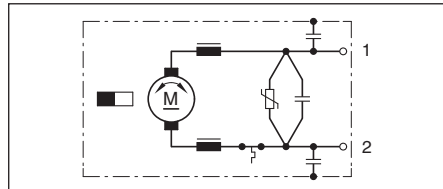
AHP

Part number	0 390 206 693
Nominal voltage	U_N 12 V
Nominal power	P_N 35 W
Nominal current	I_N 9 A
Maximum current	I_{\max} 24 A
Nominal speed	n_N 550 min ⁻¹
Nominal torque	M_N 0,6 Nm
Breakaway torque	M_A 2,2 Nm
Reduction	i 33 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,42 kg



24 V 35 W

Part number	0 390 202 600
Nominal voltage	U_N 24 V
Nominal power	P_N 35 W
Nominal current	I_N 4,5 A
Maximum current	I_{\max} 12 A
Nominal speed	n_N 550 min ⁻¹
Nominal torque	M_N 0,6 Nm
Breakaway torque	M_A 2,2 Nm
Reduction	i 33 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,42 kg

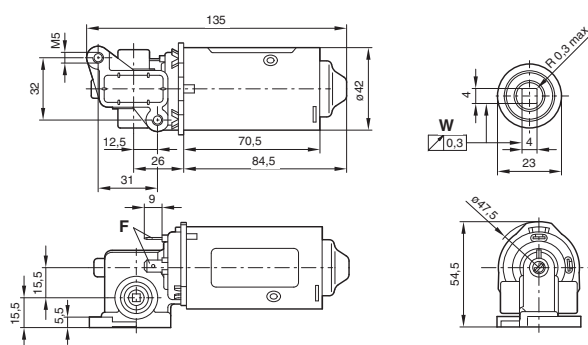
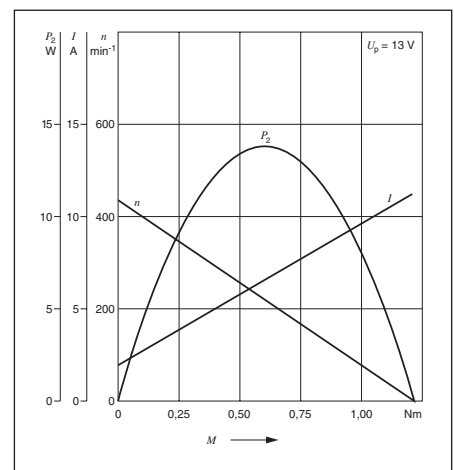
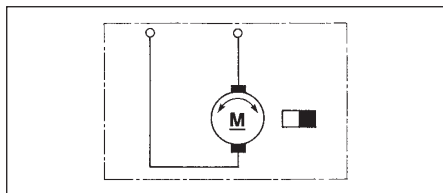


G Blade terminal housing Tyco No. 180 908-0
W With rotation of shaft
Blade terminal 6.3 mm Tyco No. 160 869-2

AHP

12 V 9,2 W

Part number	0 390 206 634
Nominal voltage	U_N 12 V
Nominal power	P_N 9,2 W
Nominal current	I_N 4 A
Maximum current	I_{\max} 11,5 A
Nominal speed	n_N 350 min ⁻¹
Nominal torque	M_N 0,25 Nm
Breakaway torque	M_A 1,2 Nm
Reduction	i 33 : 3
Direction of rotation	L/R
Type of duty	S 2 - 20 min
Degree of protection	IP 20
Weight	approx. 0,42 kg

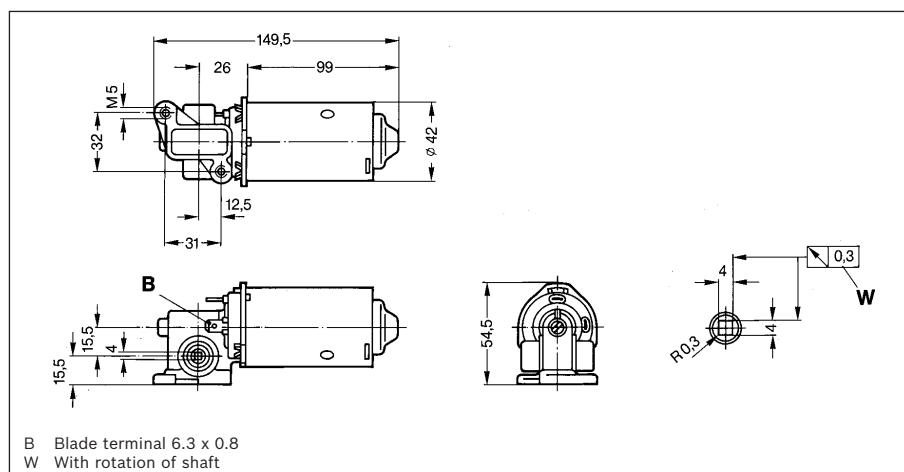
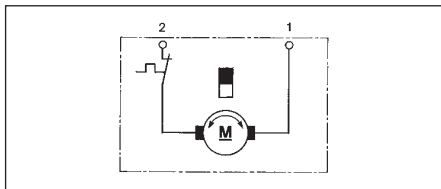
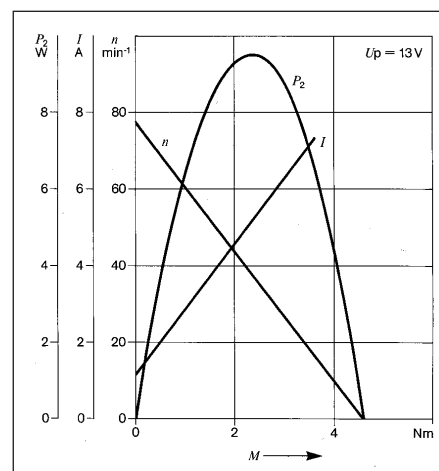


F Blade terminal 6.3 x 0.8
W With rotation of shaft

AHP

12 V 6,2 W

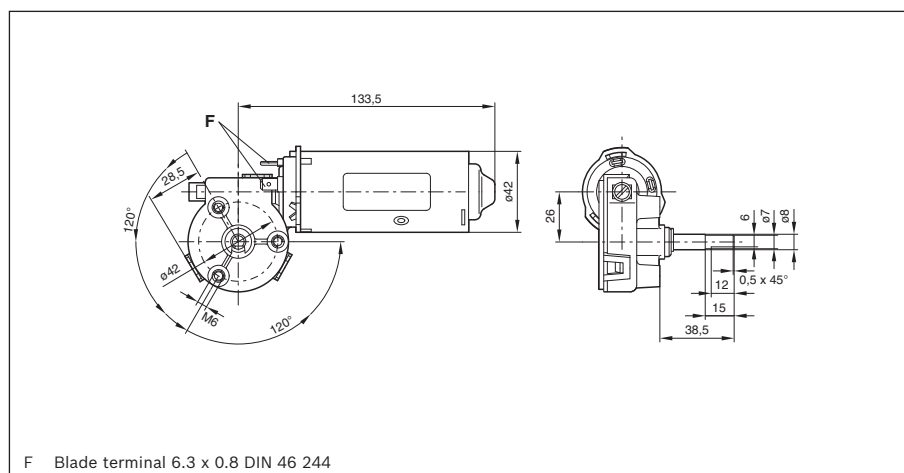
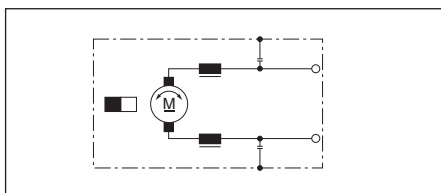
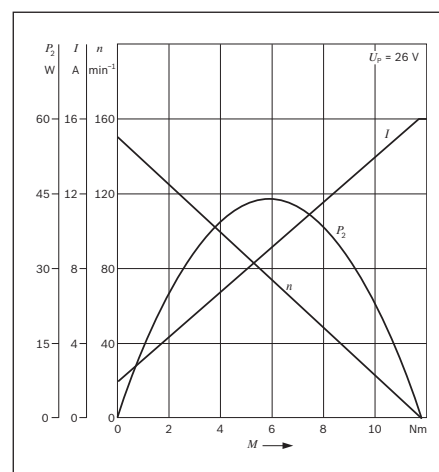
Part number	0 390 206 682
Nominal voltage	U_N 12 V
Nominal power	P_N 6,2 W
Nominal current	I_N 2,8 A
Maximum current	I_{max} 9 A
Nominal speed	n_N 60 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 4,5 Nm
Reduction	i 33 : 1
Direction of rotation	L/R
Type of duty	S 2 - 20 min
Degree of protection	IP 20
Weight	approx. 0,49 kg



AHP

24 V 12 W

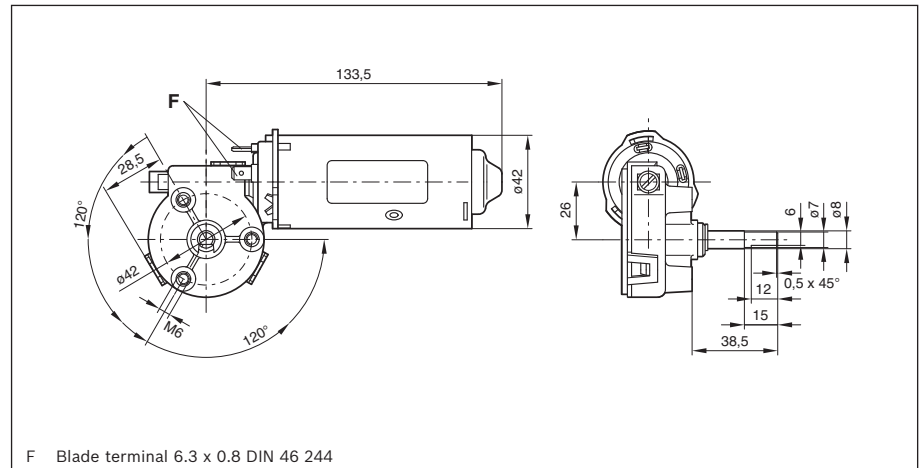
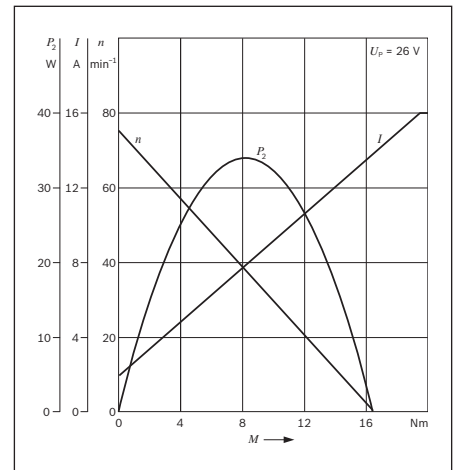
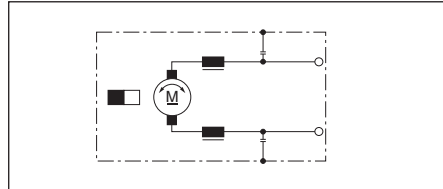
Part number	0 390 207 605
Nominal voltage	U_N 24 V
Nominal power	P_N 12 W
Nominal current	I_N 3,5 A
Maximum current	I_{max} 16 A
Nominal speed	n_N 140 min ⁻¹
Nominal torque	M_N 0,8 Nm
Breakaway torque	M_A 11,6 Nm
Reduction	i 61 : 2
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,63 kg



AHP**24 V 12 W**

Part number	0 390 207 606
Nominal voltage	U_N 24 V
Nominal power	P_N 12 W
Nominal current	I_N 3,5 A
Maximum current	I_{max} 16 A
Nominal speed	n_N 75 min ⁻¹
Nominal torque	M_N 1,4 Nm
Breakaway torque	M_A 17,2 Nm
Reduction	i 61 : 1
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,63 kg

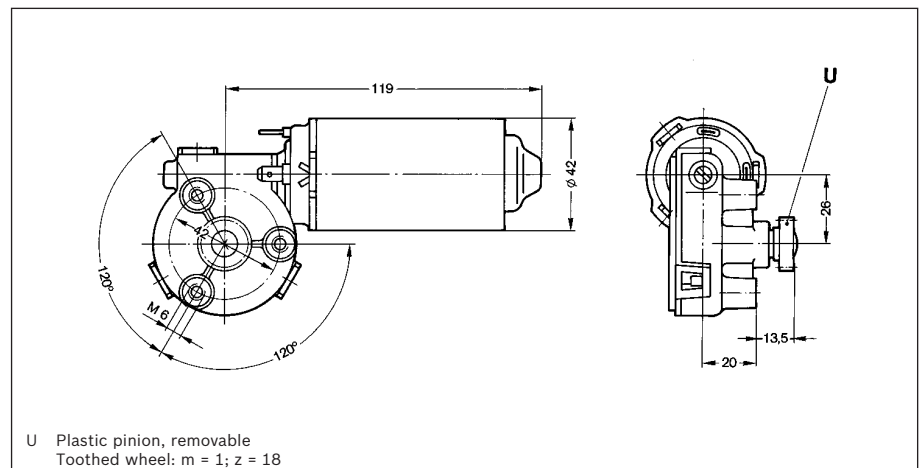
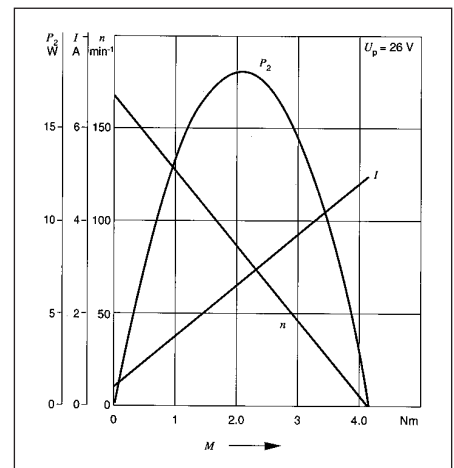
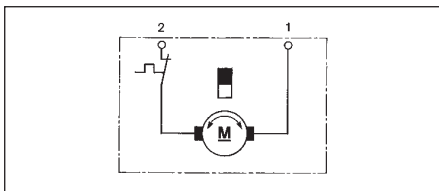
On request



F Blade terminal 6.3 x 0.8 DIN 46 244

AHP**24 V 12 W**

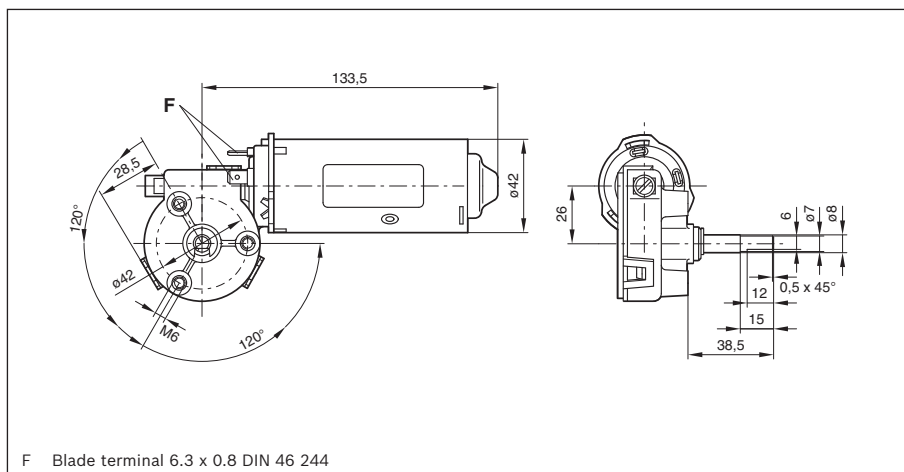
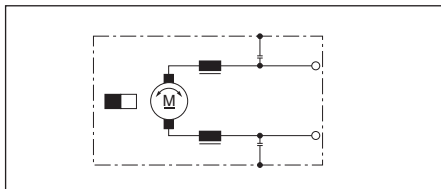
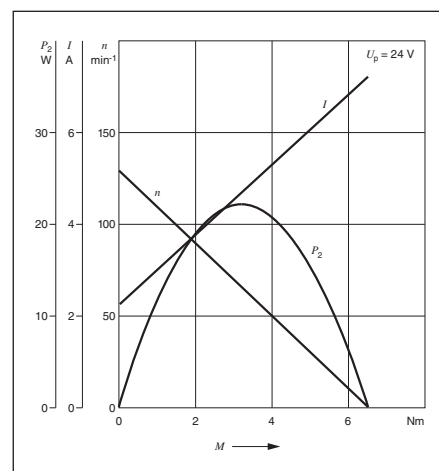
Part number	0 390 207 698
Nominal voltage	U_N 24 V
Nominal power	P_N 12 W
Nominal current	I_N 1,5 A
Maximum current	I_{max} 5 A
Nominal speed	n_N 125 min ⁻¹
Nominal torque	M_N 0,9 Nm
Breakaway torque	M_A 3,6 Nm
Reduction	i 61 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,51 kg

U Plastic pinion, removable
Toothed wheel: $m = 1$; $z = 18$

AHP

24 V 8 W

Part number	0 390 207 697
Nominal voltage	U_N 24 V
Nominal power	P_N 8 W
Nominal current	I_N 3 A
Maximum current	I_{max} 7,2 A
Nominal speed	n_N 120 min ⁻¹
Nominal torque	M_N 0,5 Nm
Breakaway torque	M_A 6,2 Nm
Reduction	i 61 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,63 kg

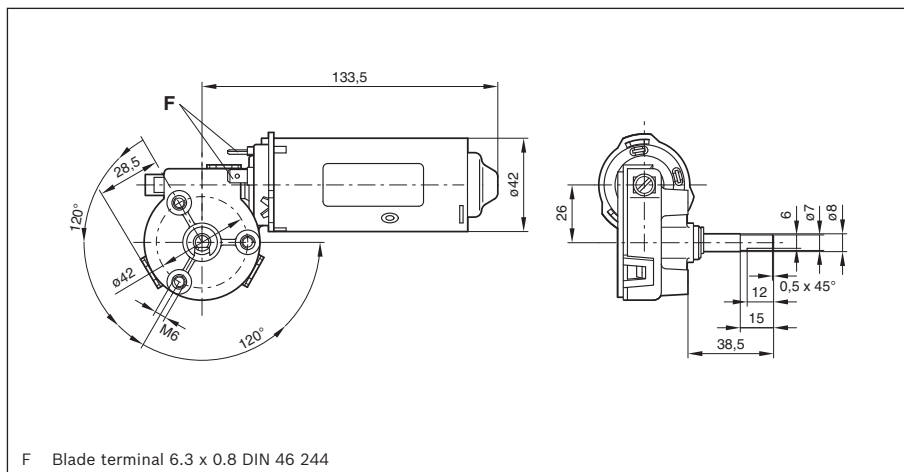
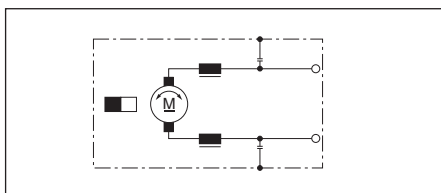
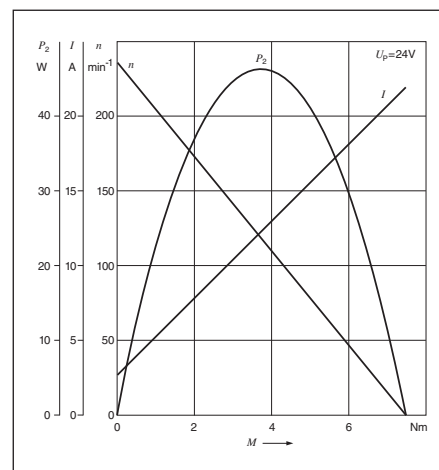


F Blade terminal 6.3 x 0.8 DIN 46 244

AHP

24 V 11.5 W

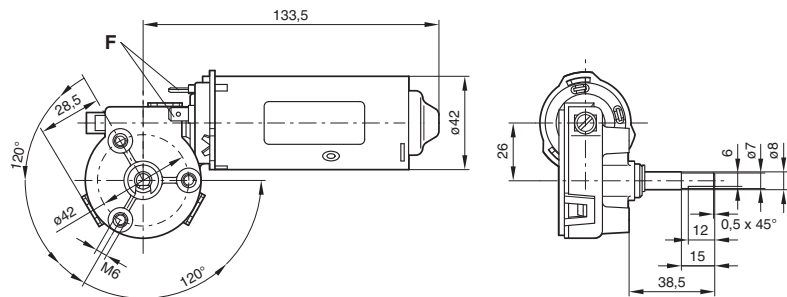
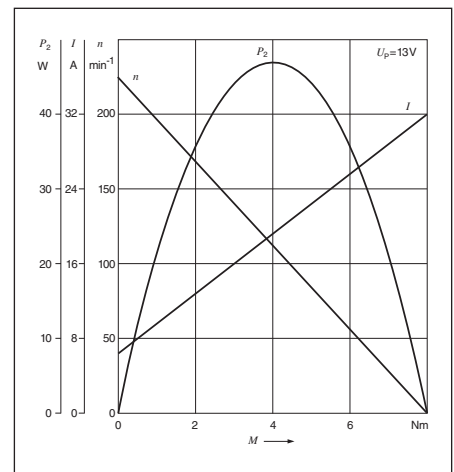
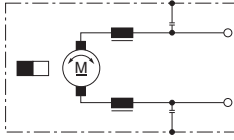
Part number	0 390 207 696
Nominal voltage	U_N 24 V
Nominal power	P_N 11,5 W
Nominal current	I_N 4 A
Maximum current	I_{max} 22 A
Nominal speed	n_N 220 min ⁻¹
Nominal torque	M_N 0,5 Nm
Breakaway torque	M_A 7,5 Nm
Reduction	i 61 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,63 kg



F Blade terminal 6.3 x 0.8 DIN 46 244

12 V 11 W

Part number	0 390 206 616
Nominal voltage	U_N 12 V
Nominal power	P_N 11 W
Nominal current	I_N 8 A
Maximum current	I_{\max} 32 A
Nominal speed	n_N 210 min ⁻¹
Nominal torque	M_N 0,5 Nm
Breakaway torque	M_A 8 Nm
Reduction	i 61 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,63 kg

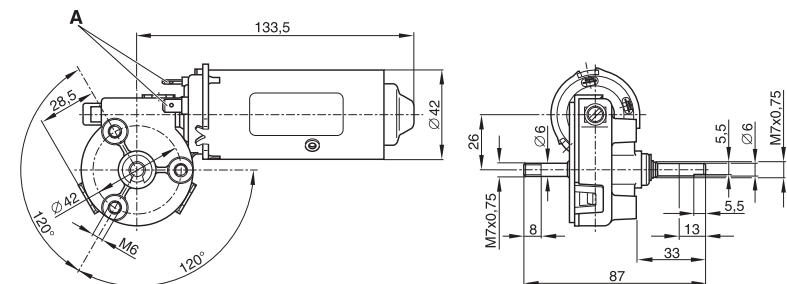
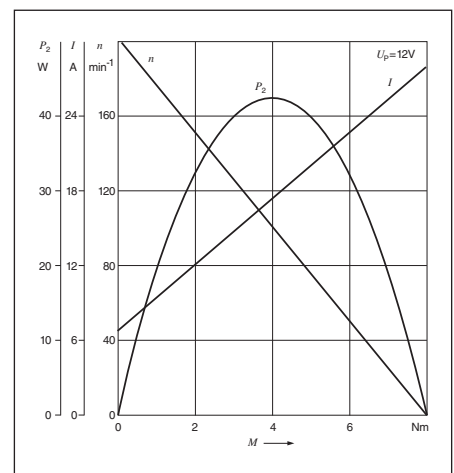
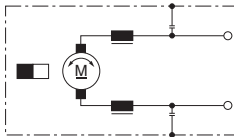


F Blade terminal 6.3 x 0.8 DIN 46 244

AHP

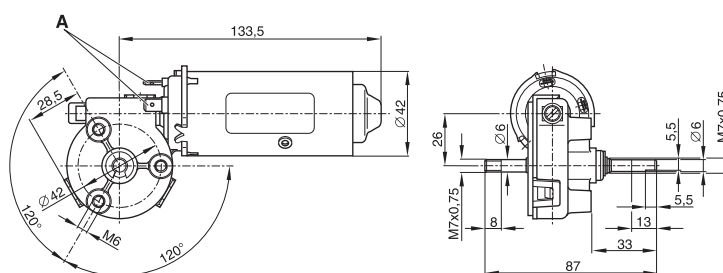
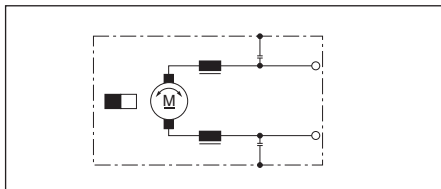
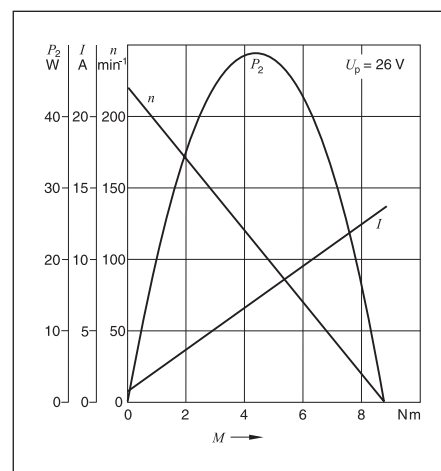
12 V 10 W

Part number	0 390 206 617
Nominal voltage	U_N 12 V
Nominal power	P_N 10 W
Nominal current	I_N 8 A
Maximum current	I_{\max} 28 A
Nominal speed	n_N 190 min ⁻¹
Nominal torque	M_N 0,5 Nm
Breakaway torque	M_A 8 Nm
Reduction	i 61 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,63 kg



A Blade terminal 6.3 x 0.8 DIN 46 244

Part number	0 390 207 604
Nominal voltage	U_N 24 V
Nominal power	P_N 10 W
Nominal current	I_N 2 A
Maximum current	I_{\max} 14 A
Nominal speed	n_N 190 min ⁻¹
Nominal torque	M_N 0,5 Nm
Breakaway torque	M_A 8 Nm
Reduction	i 61 : 3
Direction of rotation	L/R
Type of duty	S 2 - 10 min
Degree of protection	IP 20
Weight	approx. 0,63 kg

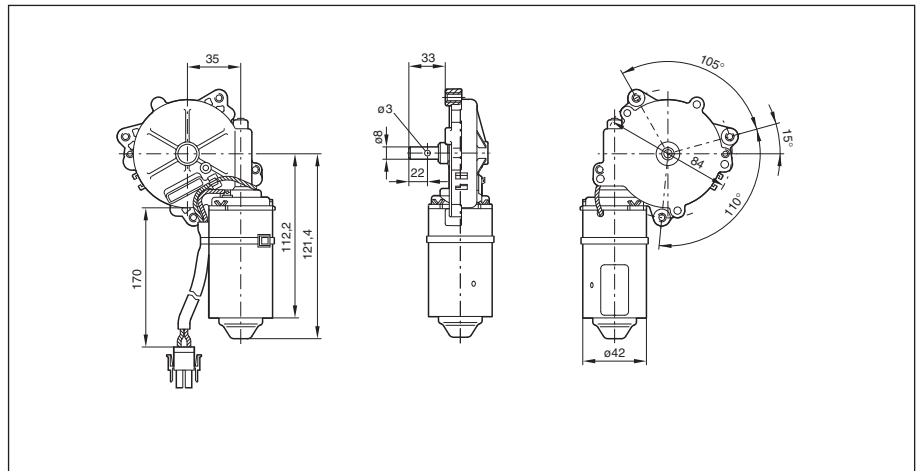
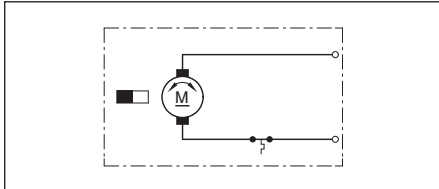
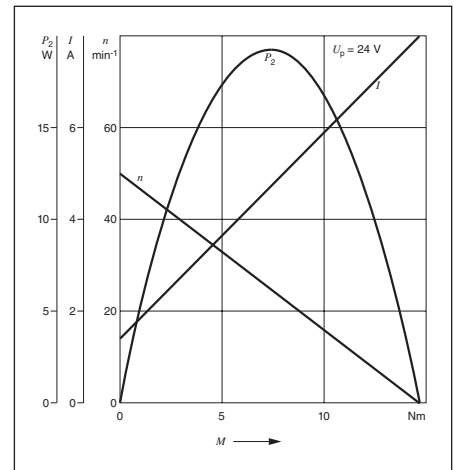


A Blade terminal 6.3 x 0.8 DIN 46 244

ADP

24 V 8 W

Part number	0 390 207 405
Nominal voltage	U_N 24 V
Nominal power	P_N 8 W
Nominal current	I_N 1,5 A
Maximum current	I_{max} 8 A
Nominal speed	n_N 45 min ⁻¹
Nominal torque	M_N 1,8 Nm
Breakaway torque	M_A 9 Nm
Reduction	i 89 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 0,70 kg

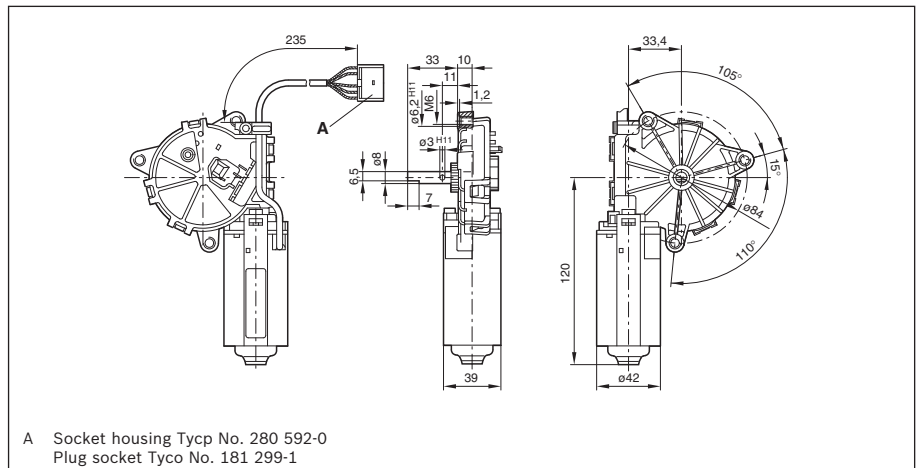
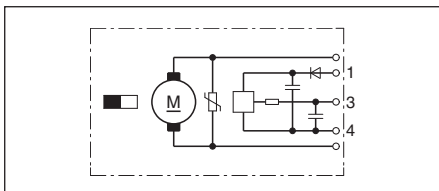
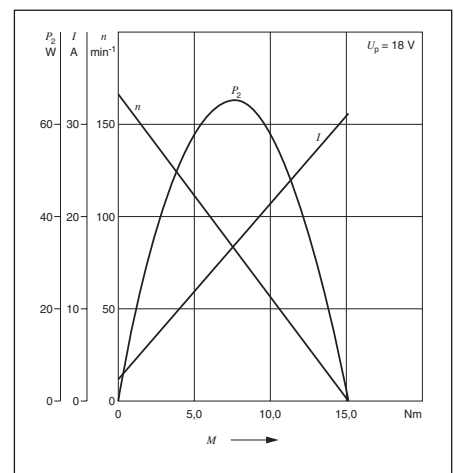


ADP

Electronic speed detection
with Hall sensor.

18 V 23 W

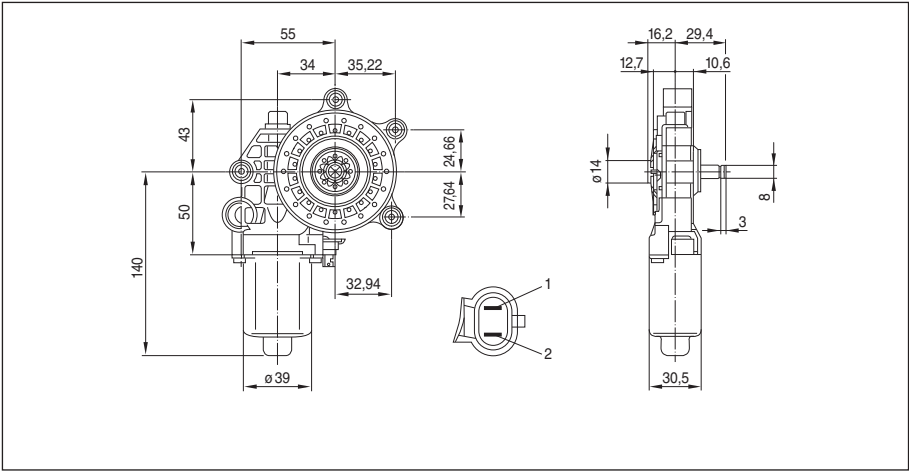
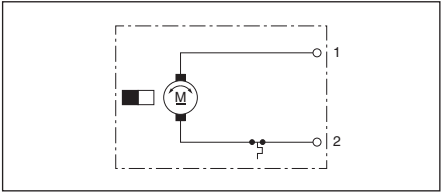
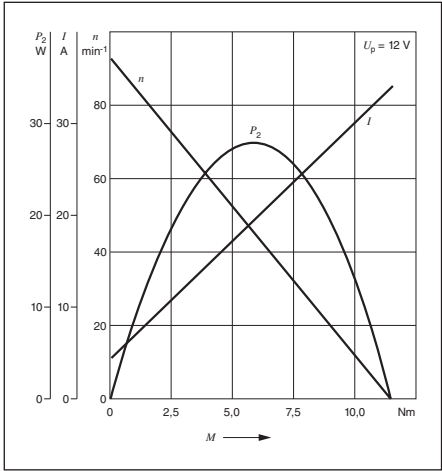
Part number	0 390 207 406
Nominal voltage	U_N 18 V
Nominal power	P_N 23 W
Nominal current	I_N 5 A
Maximum current	I_{max} 31 A
Nominal speed	n_N 150 min ⁻¹
Nominal torque	M_N 1,5 Nm
Breakaway torque	M_A 15 Nm
Reduction	i 84 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 0,70 kg



FPC

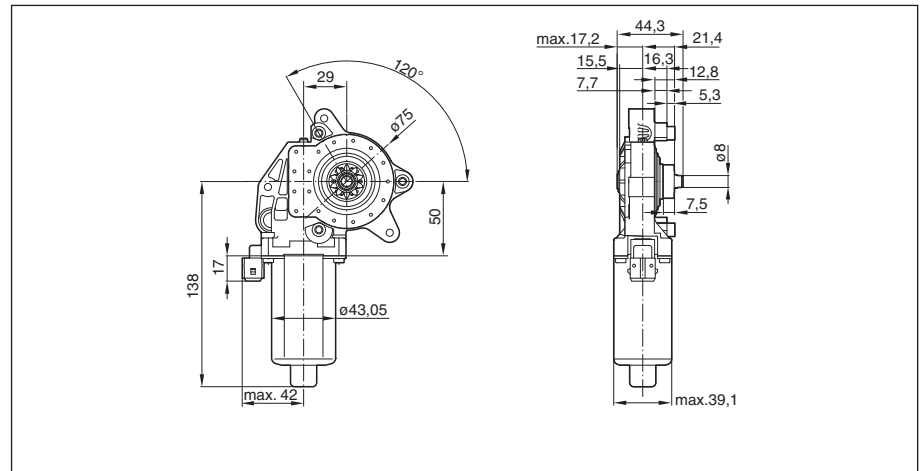
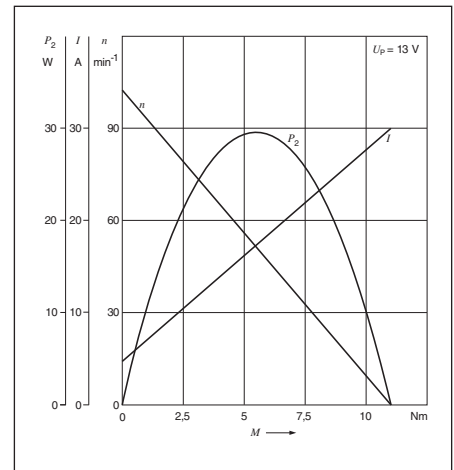
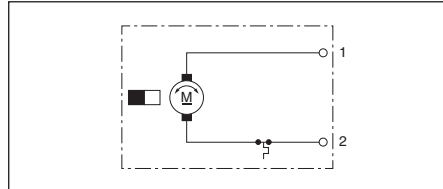
12 V 9 W

Part number	0 130 822 003
mirror-image	0 130 822 004
Nominal voltage	U_N 12 V
Nominal power	P_N 9 W
Nominal current	I_N 7 A
Maximum current	I_{max} 27 A
Nominal speed	n_N 82 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 11 Nm
Reduction	i 72 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 53
Weight	approx. 0,50 kg



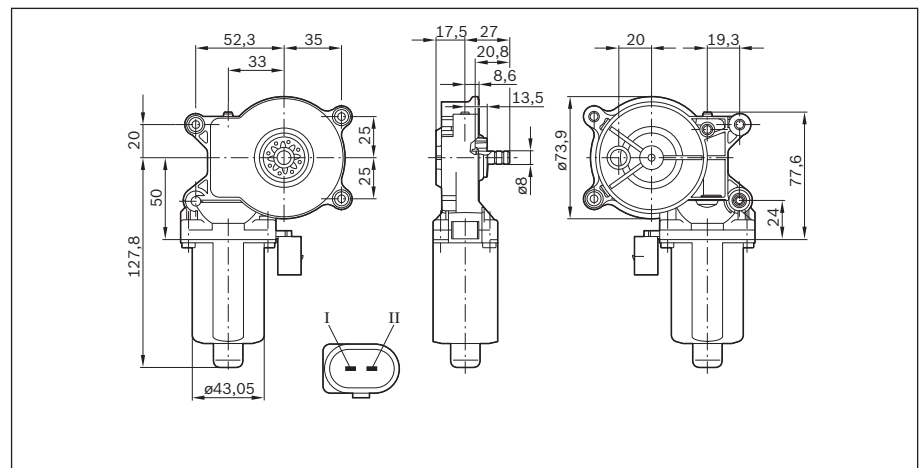
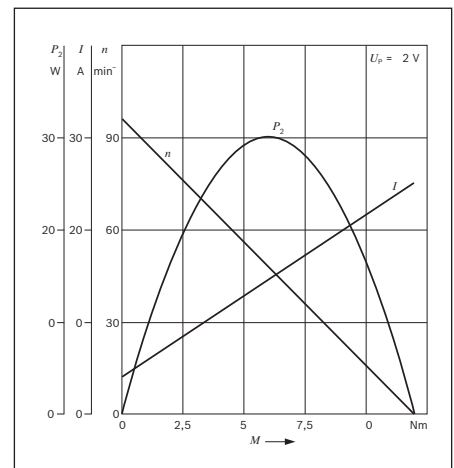
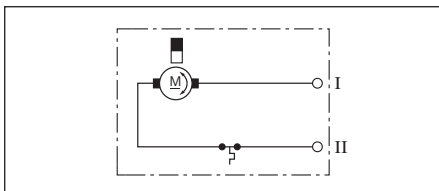
12 V 9,7 W

Part number	0 130 821 666
mirror-image	0 130 821 667
Nominal voltage	U_N 12 V
Nominal power	P_N 9,7 W
Nominal current	I_N 7 A
Maximum current	I_{\max} 30 A
Nominal speed	n_N 93 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 11 Nm
Reduction	i 62 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 53
Weight	approx. 0,63 kg

**FPG**

12 V 8.9 W

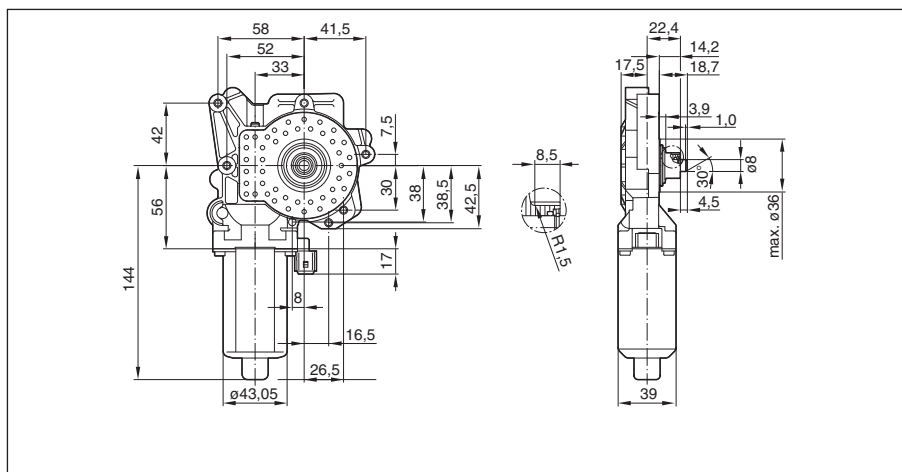
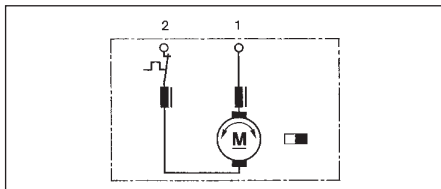
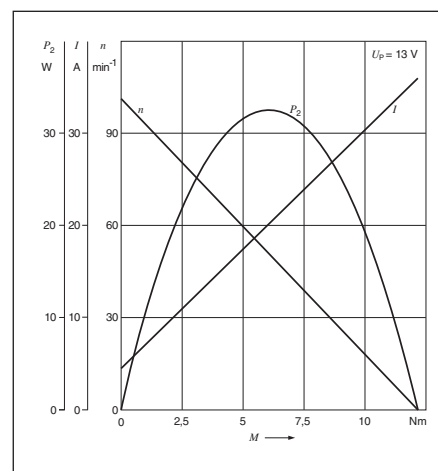
Part number	0 130 821 530
mirror-image	0 130 821 531
Nominal voltage	U_N 12 V
Nominal power	P_N 8,9 W
Nominal current	I_N 6 A
Maximum current	I_{\max} 25 A
Nominal speed	n_N 85 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 12 Nm
Direction of rotation	L/R
Degree of protection	IP 5X
Weight	approx. 0,56 kg



FPG

12 V 9,7 W

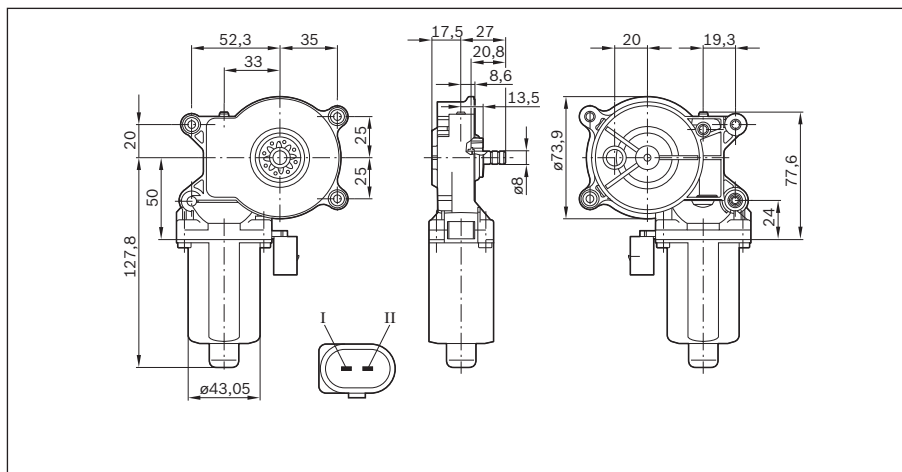
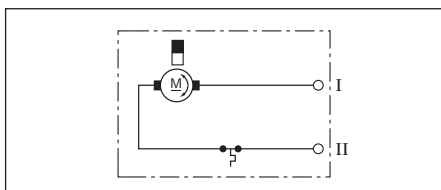
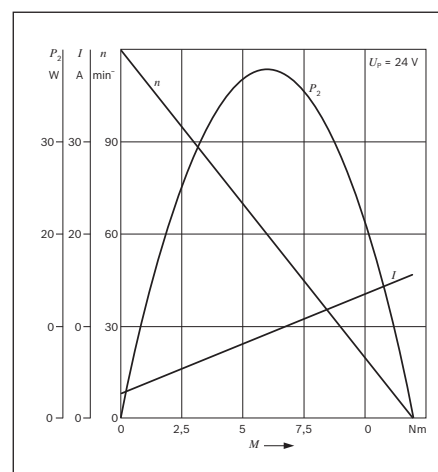
Part number	0 130 821 682
mirror-image	0 130 821 683
Nominal voltage	U_N 12 V
Nominal power	P_N 9,7 W
Nominal current	I_N 9 A
Maximum current	I_{max} 36 A
Nominal speed	n_N 93 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 12,2 Nm
Reduction	i 73 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 53
Weight	approx. 0,62 kg



FPG

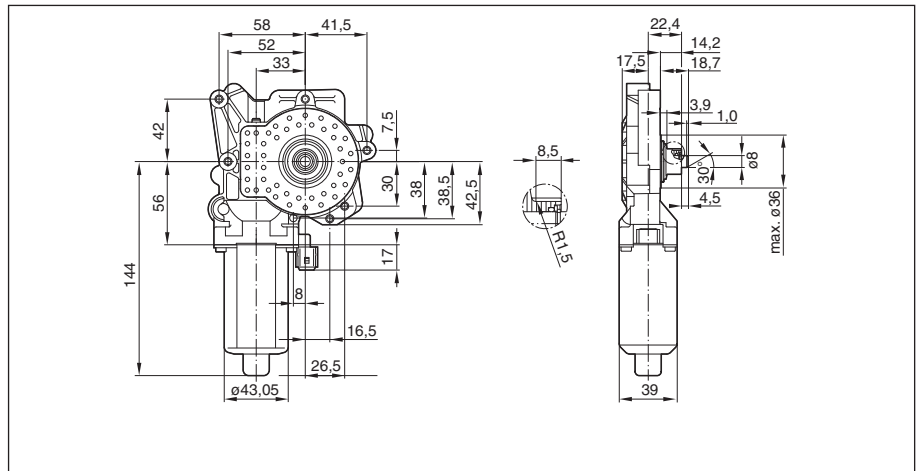
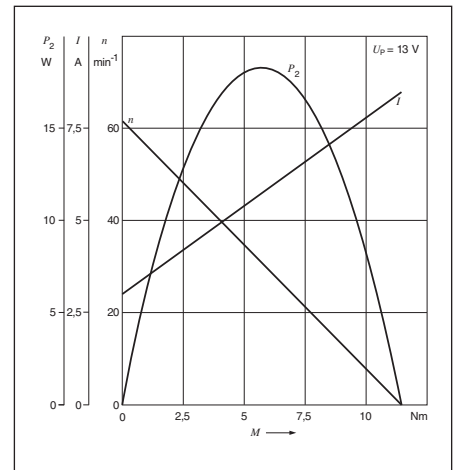
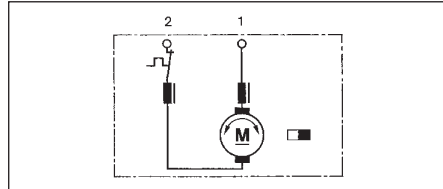
24 V 11.6 W

Part number	0 130 821 542
mirror-image	0 130 821 543
Nominal voltage	U_N 24 V
Nominal power	P_N 11,6 W
Nominal current	I_N 4 A
Maximum current	I_{max} 15,5 A
Nominal speed	n_N 110,5 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 12 Nm
Direction of rotation	L/R
Degree of protection	IP 5X
Weight	approx. 0,56 kg



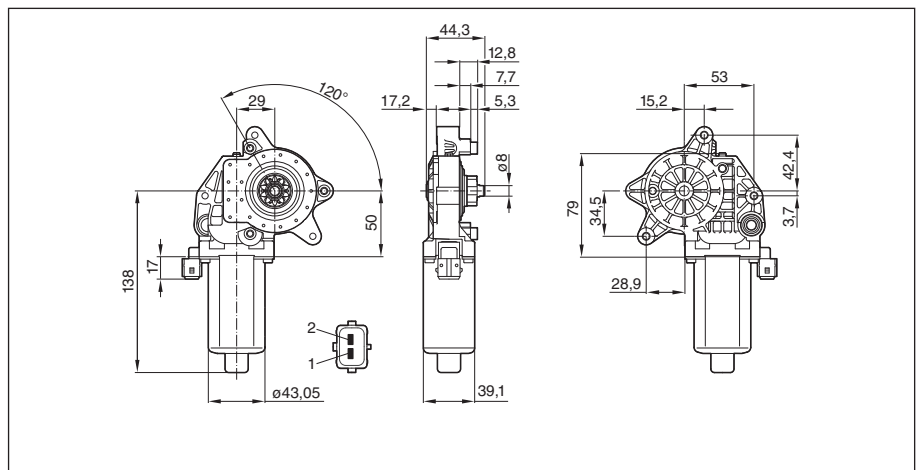
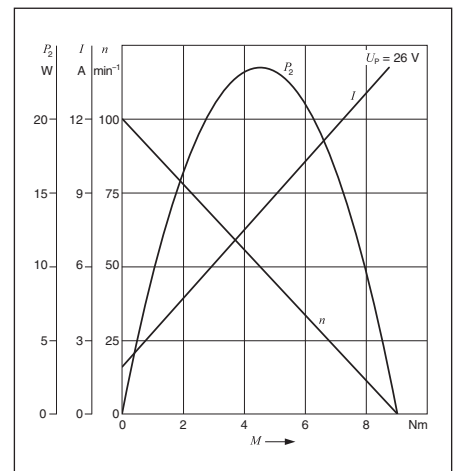
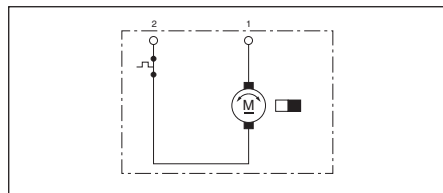
24 V 9,7 W

Part number	0 130 821 916
mirror-image	0 130 821 917
Nominal voltage	U_N 24 V
Nominal power	P_N 9,7 W
Nominal current	I_N 3,5 A
Maximum current	I_{\max} 8 A
Nominal speed	n_N 56 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 11,3 Nm
Reduction	i 73 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 53
Weight	approx. 0,65 kg

**FPG**

24 V 8,9 W

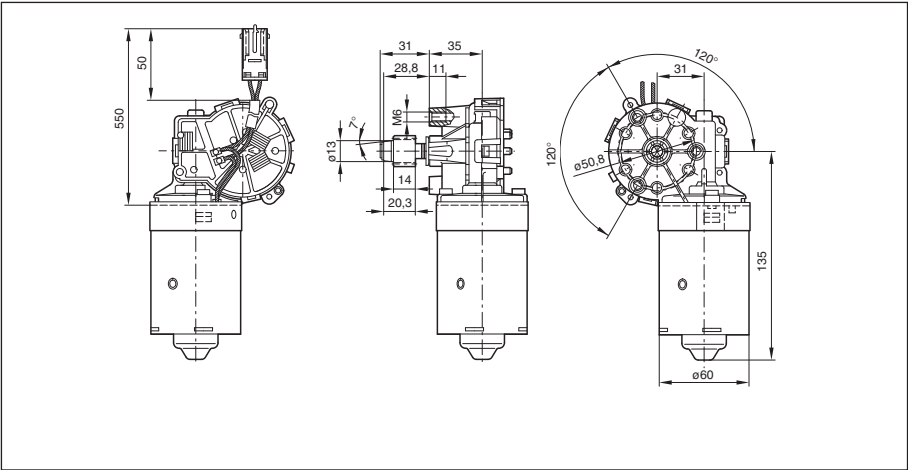
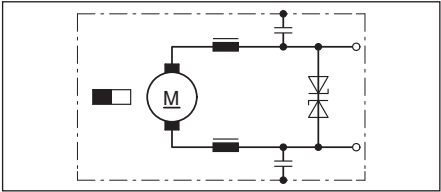
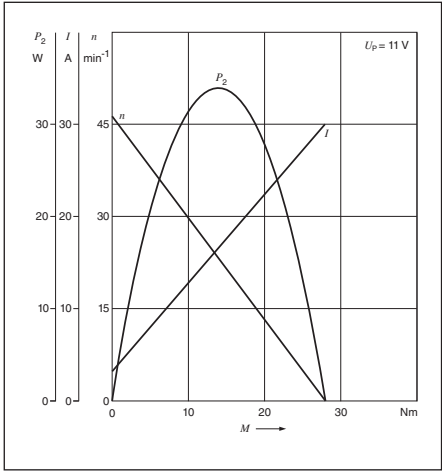
Part number	0 130 821 782
mirror-image	0 130 821 783
Nominal voltage	U_N 24 V
Nominal power	P_N 8,9 W
Nominal current	I_N 3 A
Maximum current	I_{\max} 14 A
Nominal speed	n_N 85 min ⁻¹
Nominal torque	M_N 1 Nm
Breakaway torque	M_A 9 Nm
Reduction	i 73 : 1
Direction of rotation	L/R
Type of duty	S 2 - 5 min
Degree of protection	IP 53
Weight	approx. 0,60 kg



CHP

12 V 20 W

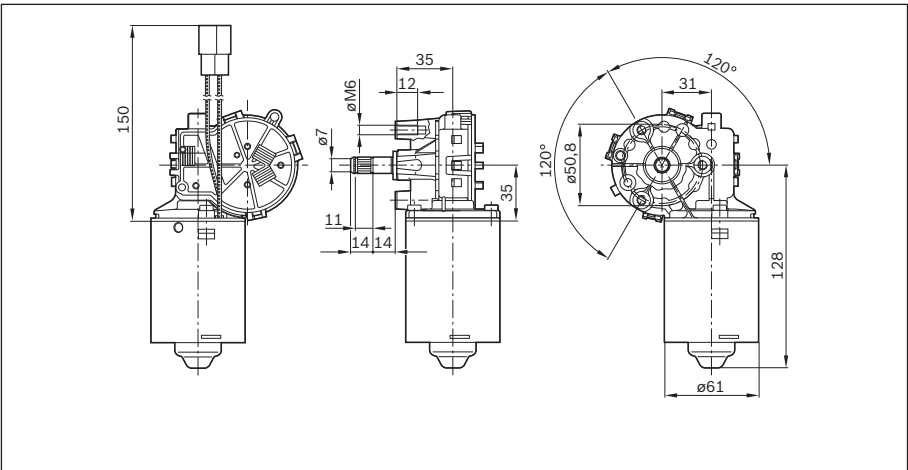
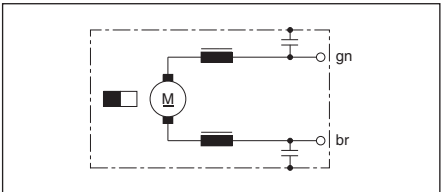
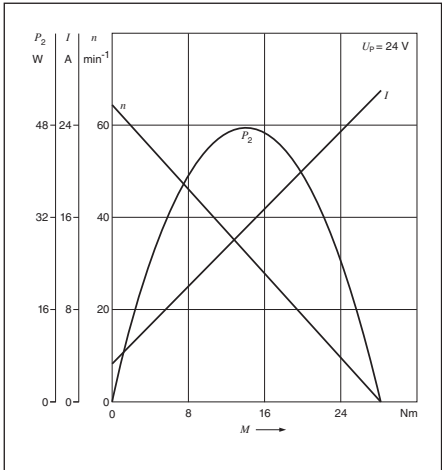
Part number	0 390 251 690
Nominal voltage	U_N 12 V
Nominal power	P_N 20 W
Nominal current	I_N 8 A
Maximum current	I_{max} 30 A
Nominal speed	n_N 38 min ⁻¹
Nominal torque	M_N 5 Nm
Breakaway torque	M_A 25 Nm
Reduction	i 55 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg



CHP

24 V 27,5

Part number	F 006 B20 097
Nominal voltage	U_N 24 V
Nominal power	P_N 27,5 W
Nominal current	I_N 7,5 A
Maximum current	I_{max} 27 A
Nominal speed	n_N 53 min ⁻¹
Nominal torque	M_N 5 Nm
Breakaway torque	M_A 26 Nm
Reduction	i 69 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg
On request	

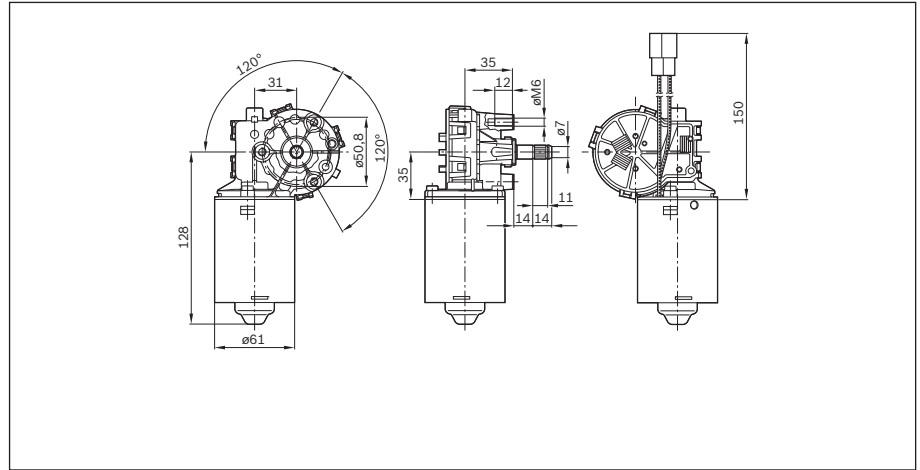
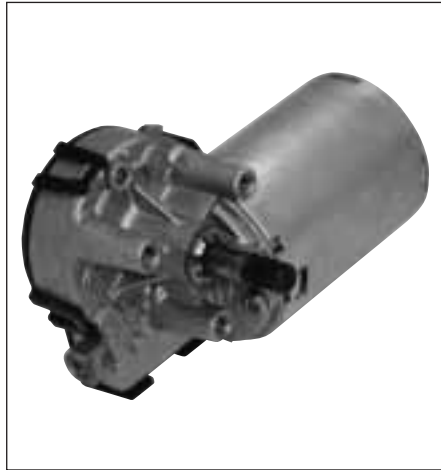
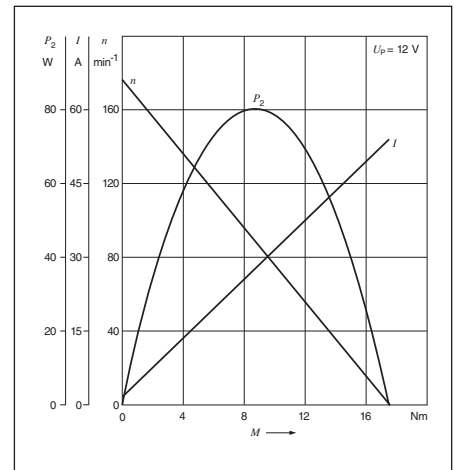
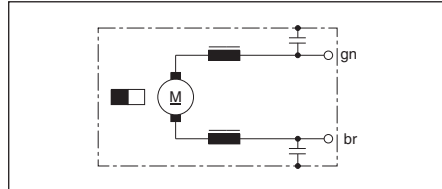


CHP

12 V 40 W

Part number	F 006 B20 093
Nominal voltage	U_N 12 V
Nominal power	P_N 40 W
Nominal current	I_N 10 A
Maximum current	I_{max} 60 A
Nominal speed	n_N 151 min ⁻¹
Nominal torque	M_N 2,5 Nm
Breakaway torque	M_A 17 Nm
Reduction	i 52 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg

On request

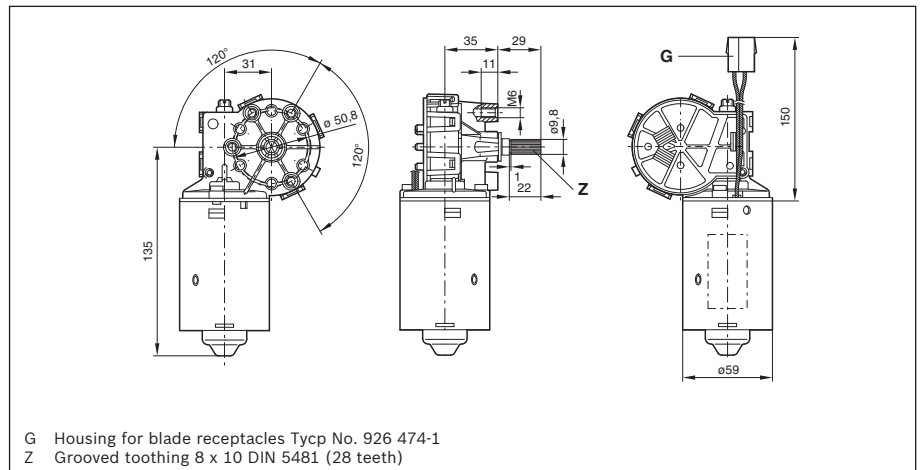
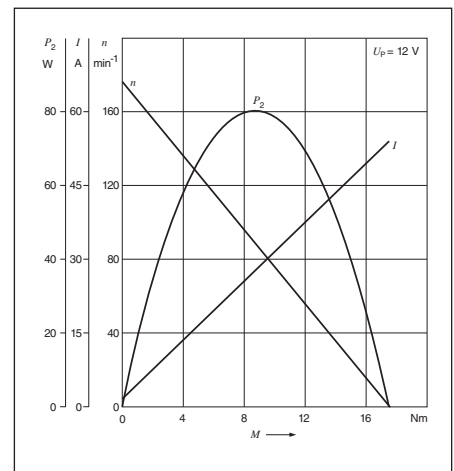
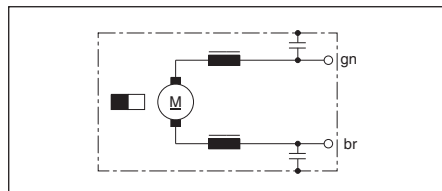


CHP

12 V 40 W

Part number	0 390 251 684
Nominal voltage	U_N 12 V
Nominal power	P_N 40 W
Nominal current	I_N 10 A
Maximum current	I_{max} 60 A
Nominal speed	n_N 151 min ⁻¹
Nominal torque	M_N 2,5 Nm
Breakaway torque	M_A 17 Nm
Reduction	i 52 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg

Clockwise: Green (+)



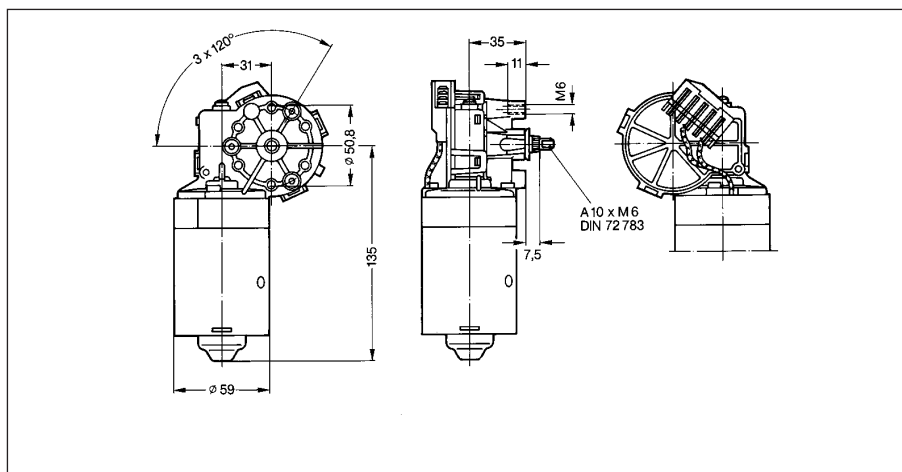
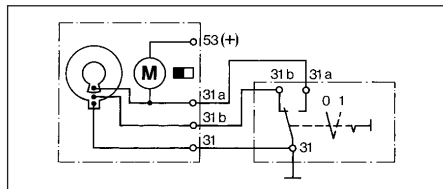
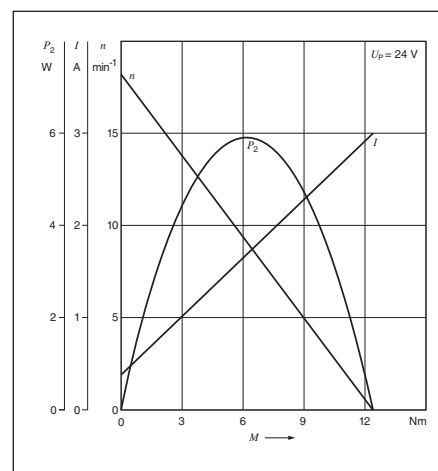
G Housing for blade receptacles Typ No. 926 474-1
 Z Grooved toothed gear 8 x 10 DIN 5481 (28 teeth)

CHP

24 V 2,5 W

Part number	0 390 257 697
Nominal voltage	U_N 24 V
Nominal power	P_N 2,5 W
Nominal current	I_N 0,7 A
Maximum current	I_{max} 3 A
Nominal speed	n_N 16 min ⁻¹
Nominal torque	M_N 1,5 Nm
Breakaway torque	M_A 9 Nm
Reduction	i 55 : 1
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg

(+) to 53 (green)

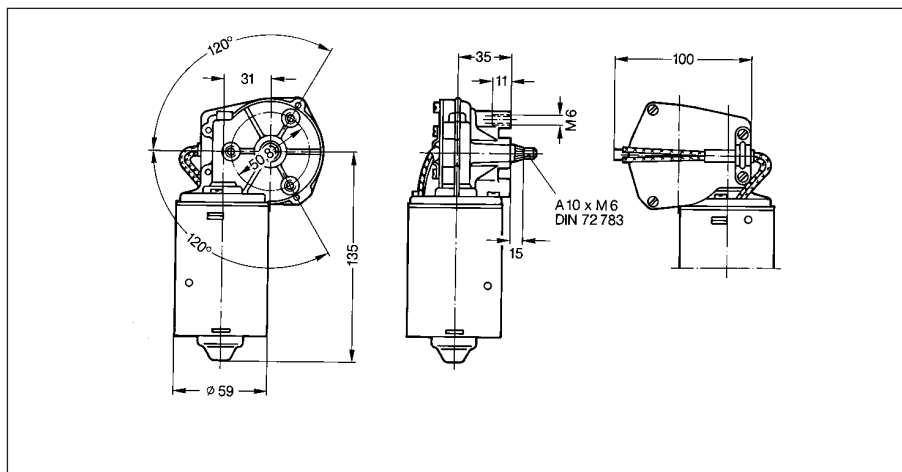
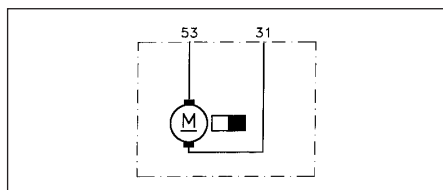
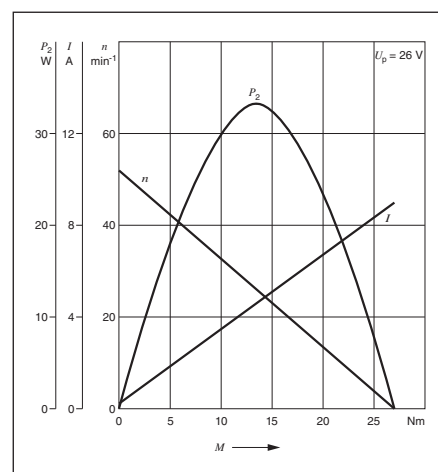


CHP

24 V 21 W

Part number	0 390 257 699
Nominal voltage	U_N 24 V
Nominal power	P_N 21 W
Nominal current	I_N 2 A
Maximum current	I_{max} 9 A
Nominal speed	n_N 40 min ⁻¹
Nominal torque	M_N 5 Nm
Breakaway torque	M_A 25 Nm
Reduction	i 55 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg

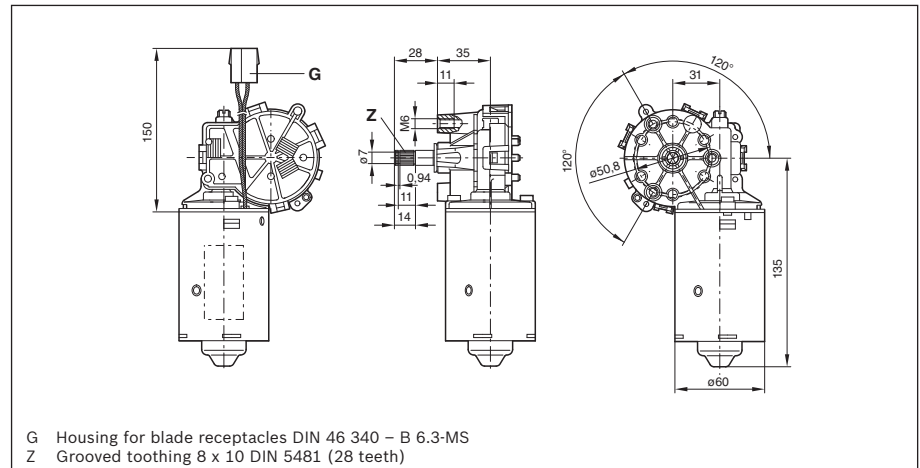
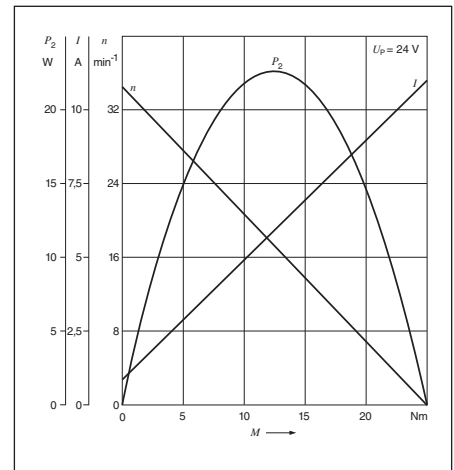
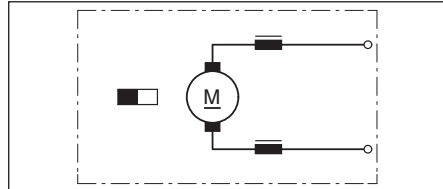
53 green, 31 brown.



CHP

24 V 12 W

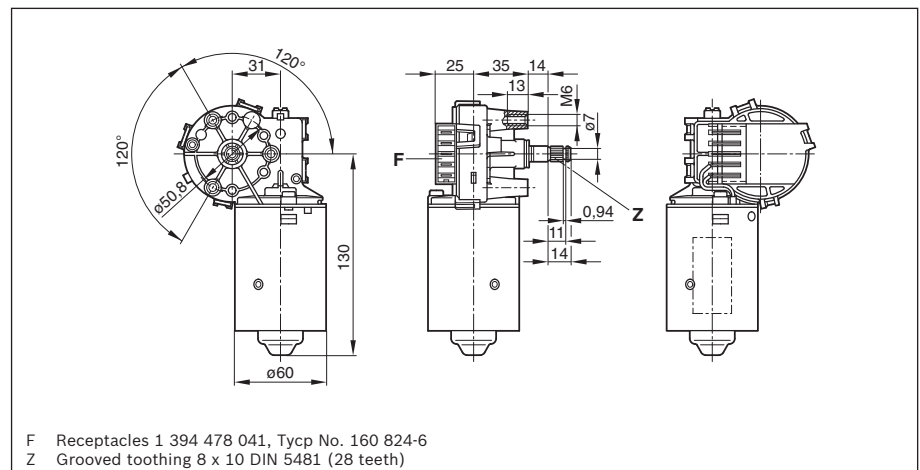
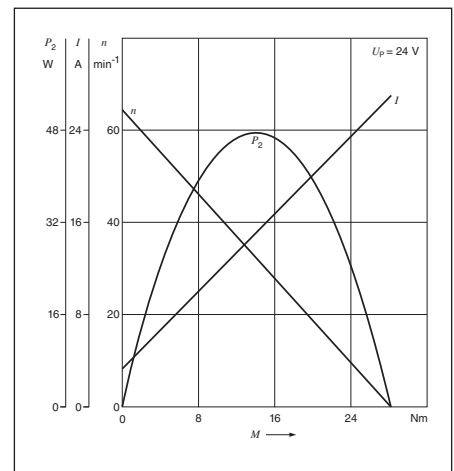
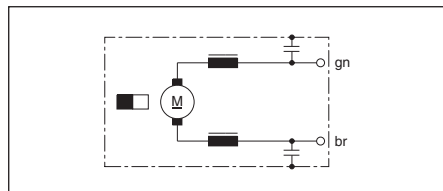
Part number	0 390 257 689
Nominal voltage	U_N 24 V
Nominal power	P_N 12 W
Nominal current	I_N 2,5 A
Maximum current	I_{max} 11 A
Nominal speed	n_N 29 min ⁻¹
Nominal torque	M_N 4 Nm
Breakaway torque	M_A 22 Nm
Reduction	i 55 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg



CHP

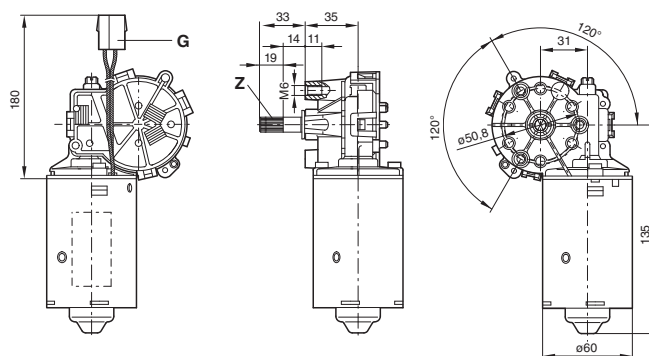
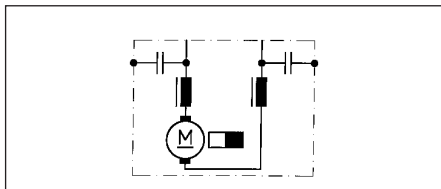
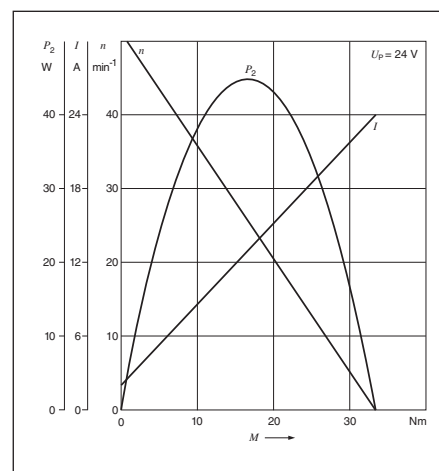
24 V 27,5 W

Part number	0 390 257 685
Nominal voltage	U_N 24 V
Nominal power	P_N 27,5 W
Nominal current	I_N 7,5 A
Maximum current	I_{max} 27 A
Nominal speed	n_N 53 min ⁻¹
Nominal torque	M_N 5 Nm
Breakaway torque	M_A 26 Nm
Reduction	i 69 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg



24 V 26 W

Part number	0 390 257 690
Nominal voltage	U_N 24 V
Nominal power	P_N 26 W
Nominal current	I_N 6 A
Maximum current	I_{\max} 24 A
Nominal speed	n_N 42 min ⁻¹
Nominal torque	M_N 6 Nm
Breakaway torque	M_A 30 Nm
Reduction	i 55 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg

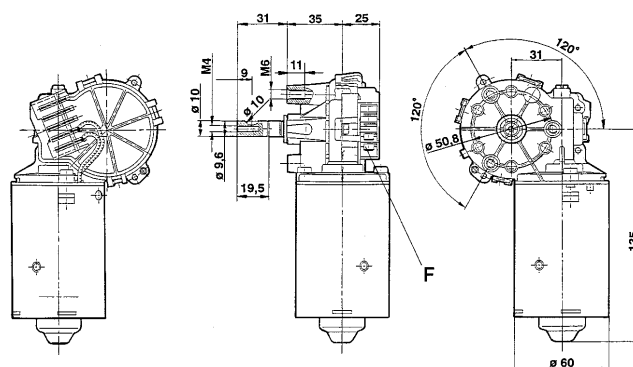
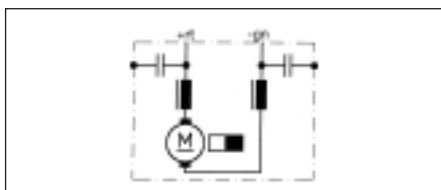
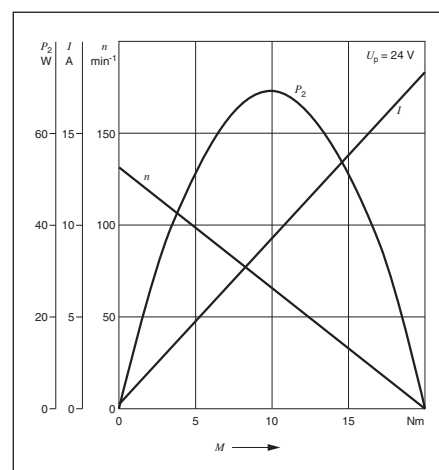


G Housing for blade receptacles DIN 46 340-B 6.3-MS
Z Grooved toothing 8 x 10 DIN 5481 (28 teeth)

CHP

24 V 35 W

Part number	0 390 257 694
Nominal voltage	U_N 24 V
Nominal power	P_N 35 W
Nominal current	I_N 3,7 A
Maximum current	I_{\max} 17,5 A
Nominal speed	n_N 112 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 20 Nm
Reduction	i 52 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg

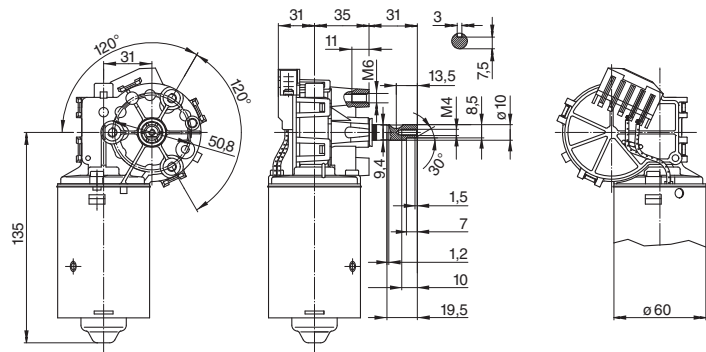
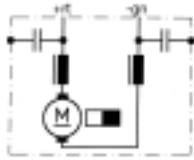
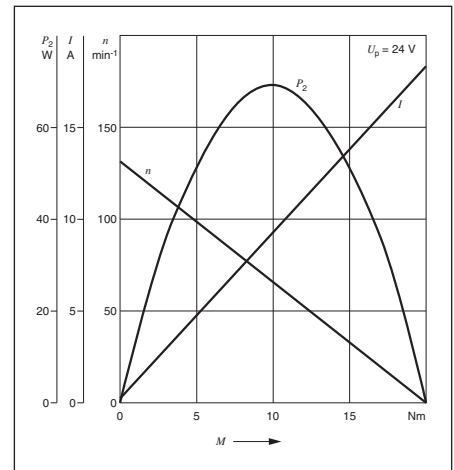


F Blade terminal 6.3 x 0.8

24 V 35 W

Part number	0 390 257 687
Nominal voltage	U_N 24 V
Nominal power	P_N 35 W
Nominal current	I_N 3,7 A
Maximum current	I_{\max} 17,5 A
Nominal speed	n_N 112 min ⁻¹
Nominal torque	M_N 3 Nm
Breakaway torque	M_A 20 Nm
Reduction	i 52 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg

Clockwise: (-) at gn terminal (green)
Counterclockwise: (+) to red, (-) to green.

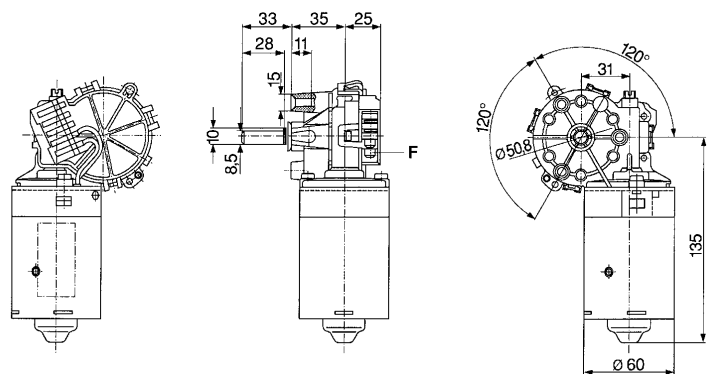
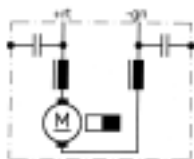
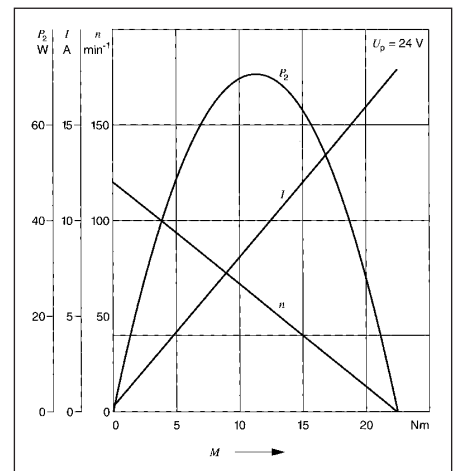


CHP

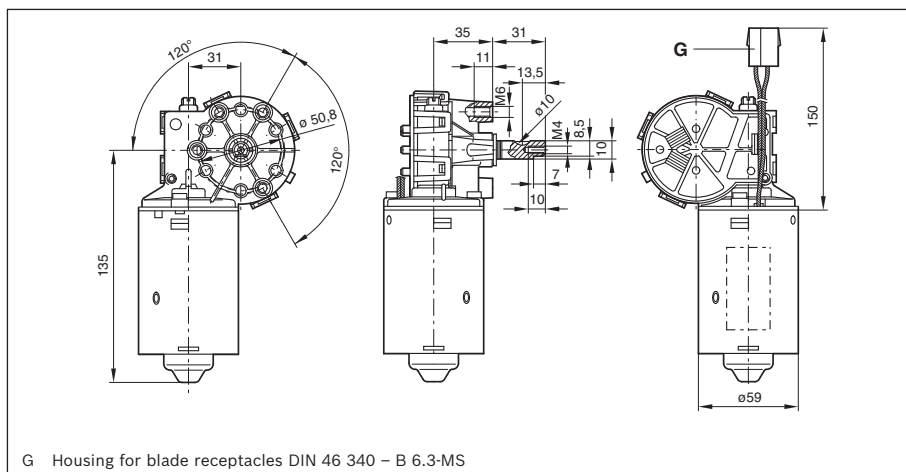
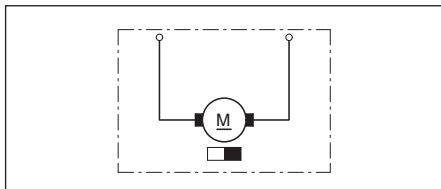
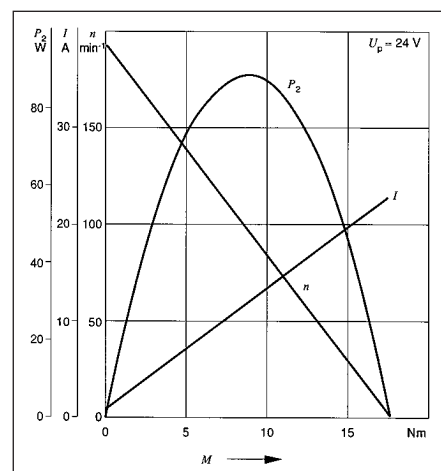
24 V 42 W

Part number	0 390 257 693
Nominal voltage	U_N 24 V
Nominal power	P_N 42 W
Nominal current	I_N 3,5 A
Maximum current	I_{\max} 16 A
Nominal speed	n_N 90 min ⁻¹
Nominal torque	M_N 4,5 Nm
Breakaway torque	M_A 19 Nm
Reduction	i 52 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg

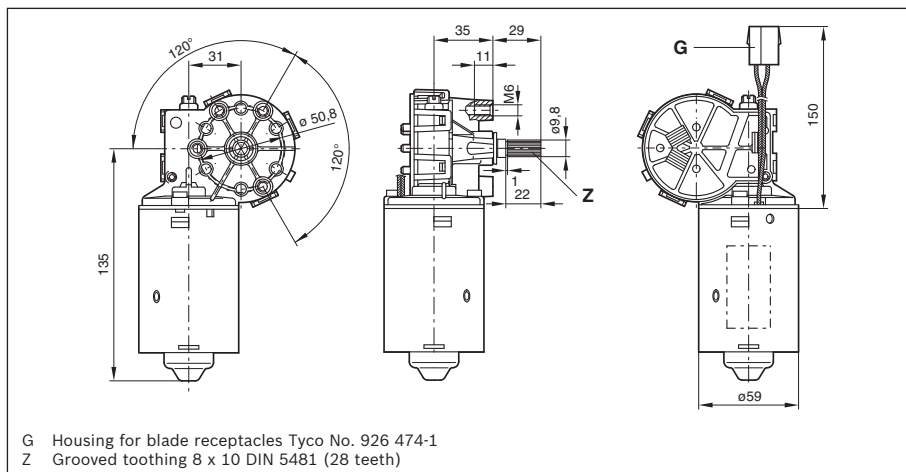
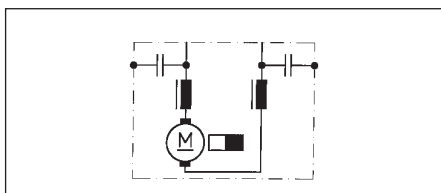
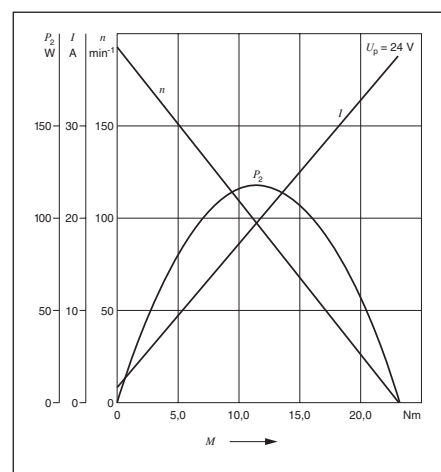
Clockwise: (-) at gn terminal (green)
Counterclockwise: (+) to red, (-) to green.



F Blade terminal 6.3 x 0.8



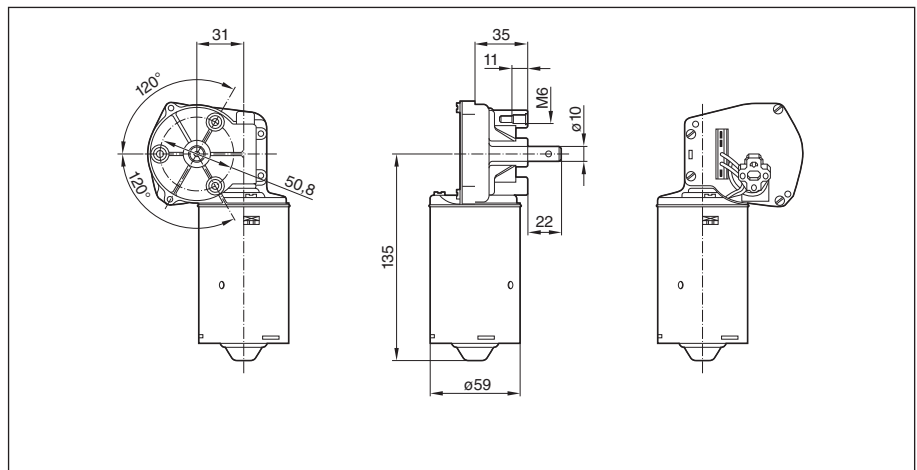
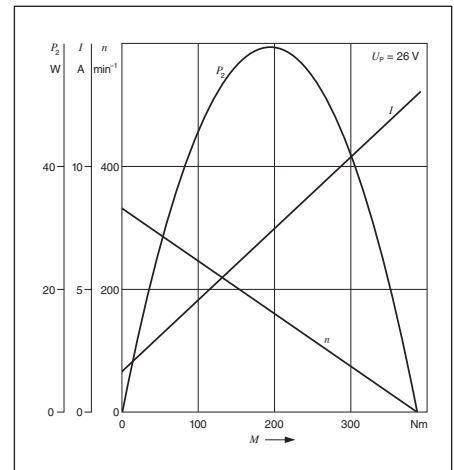
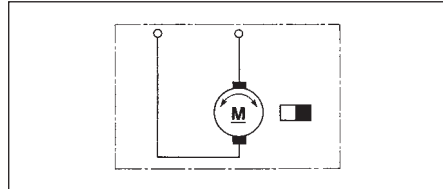
CHP



CHP

24 V 21,7 W

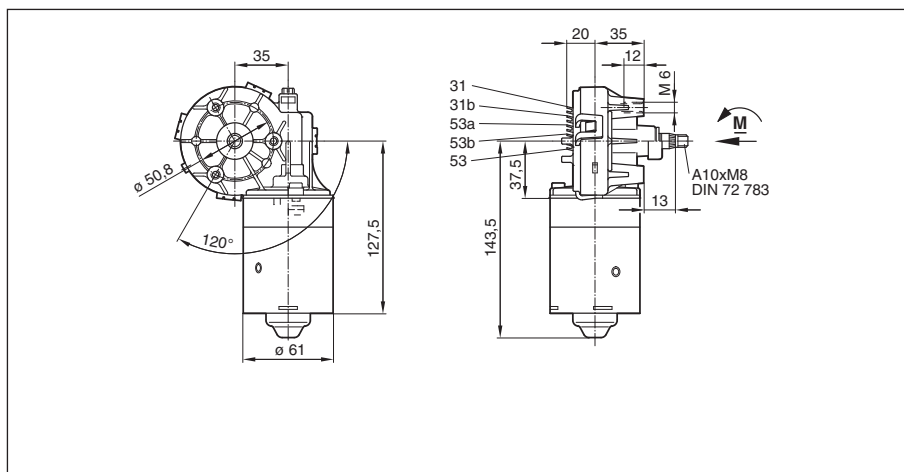
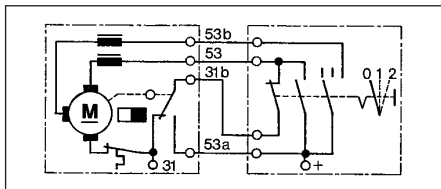
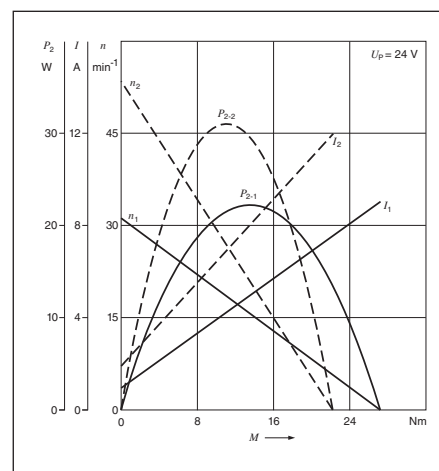
Part number	9 390 453 009
Nominal voltage	U_N 24 V
Nominal power	P_N 21,7 W
Nominal current	I_N 4 A
Maximum current	I_{max} 13 A
Nominal speed	n_N 260 min ⁻¹
Nominal torque	M_N 0,8 Nm
Breakaway torque	M_A 3,8 Nm
Reduction	i 38 : 4
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,03 kg



CEP

24 V 12/16,5 W

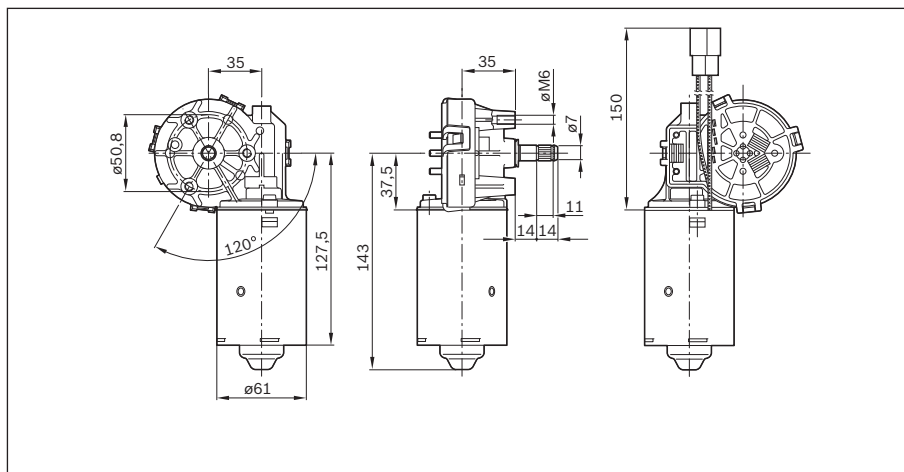
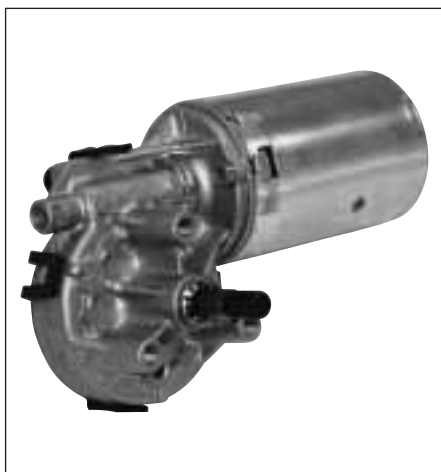
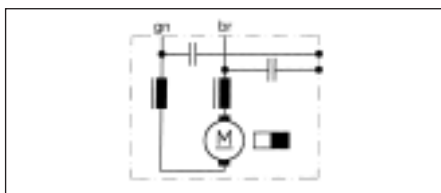
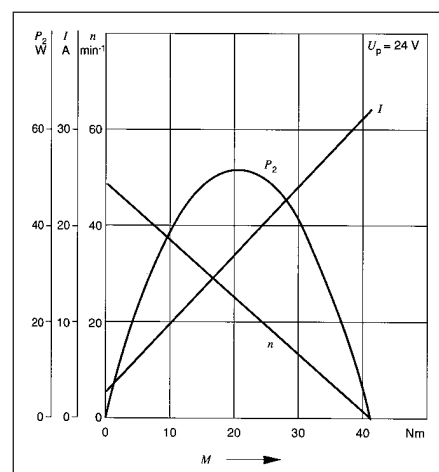
Part number	0 390 242 301
Nominal voltage	U_N 24 V
Nominal power	P_N 12/16,5 W
Nominal current	I_N 2,5/3,5 A
Maximum current	I_{max} 9/12 A
Nominal speed	n_N 26/45 min ⁻¹
Nominal torque	M_N 4,5/3,5 Nm
Breakaway torque	M_A 23/20 Nm
Reduction	i 63 : 1
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg



CEP

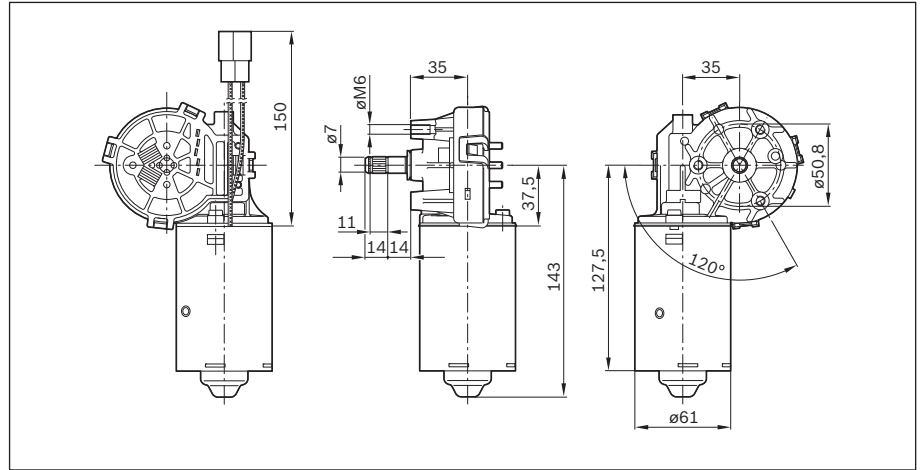
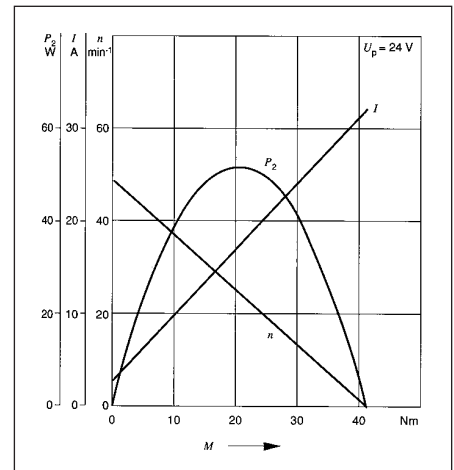
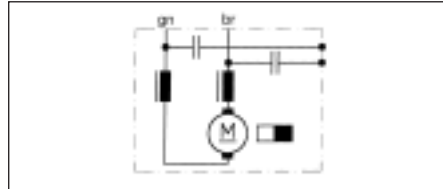
24 V 26 W

Part number	F 006 B20 106
Nominal voltage	U_N 24 V
Nominal power	P_N 26 W
Nominal current	I_N 7 A
Maximum current	I_{max} 32 A
Nominal speed	n_N 42 min ⁻¹
Nominal torque	M_N 6 Nm
Breakaway torque	M_A 40 Nm
Reduction	i 79 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg

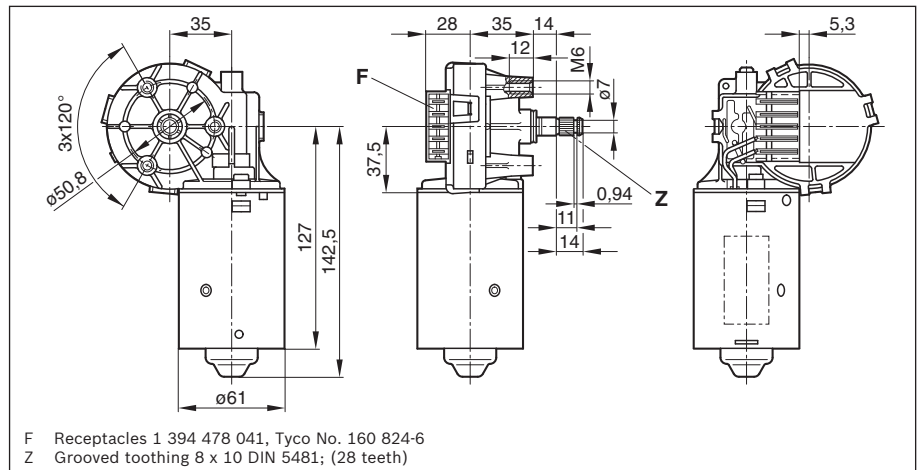
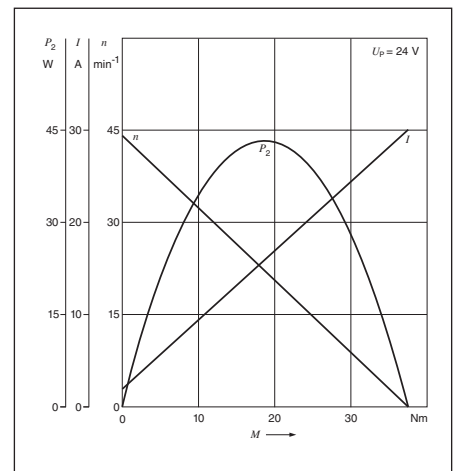
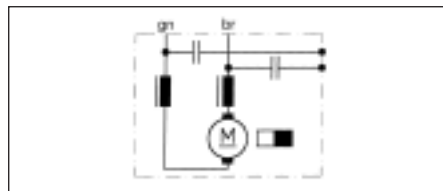


CEP**24 V 26 W**

Part number	F 006 B20 111
Nominal voltage	U_N 24 V
Nominal power	P_N 26 W
Nominal current	I_N 7 A
Maximum current	I_{max} 32 A
Nominal speed	n_N 42 min ⁻¹
Nominal torque	M_N 6 Nm
Breakaway torque	M_A 40 Nm
Reduction	i 79 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg

**CEP****24 V 23 W**

Part number	0 390 257 652
Nominal voltage	U_N 24 V
Nominal power	P_N 23 W
Nominal current	I_N 6,5 A
Maximum current	I_{max} 30 A
Nominal speed	n_N 37 min ⁻¹
Nominal torque	M_N 6 Nm
Breakaway torque	M_A 33 Nm
Reduction	i 79 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,30 kg



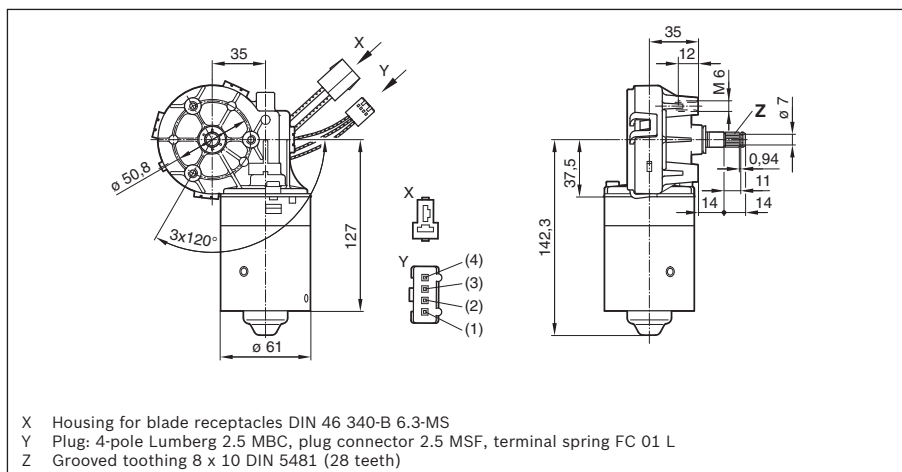
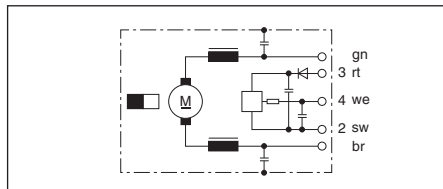
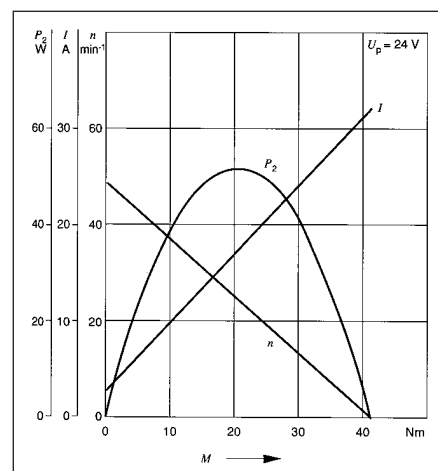
CEP

Electronic speed detection with Hall sensor.

24 V 26 W

Part number	0 390 257 651
Nominal voltage	U_N 24 V
Nominal power	P_N 26 W
Nominal current	I_N 7 A
Maximum current	I_{max} 32 A
Nominal speed	n_N 42 min ⁻¹
Nominal torque	M_N 6 Nm
Breakaway torque	M_A 40 Nm
Reduction	i 79 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,20 kg

Clockwise: (+) to green, (-) to brown.
 Counterclockwise: (+) to brown, (-) to green.
 A square-wave period is generated for each turn of the armature.



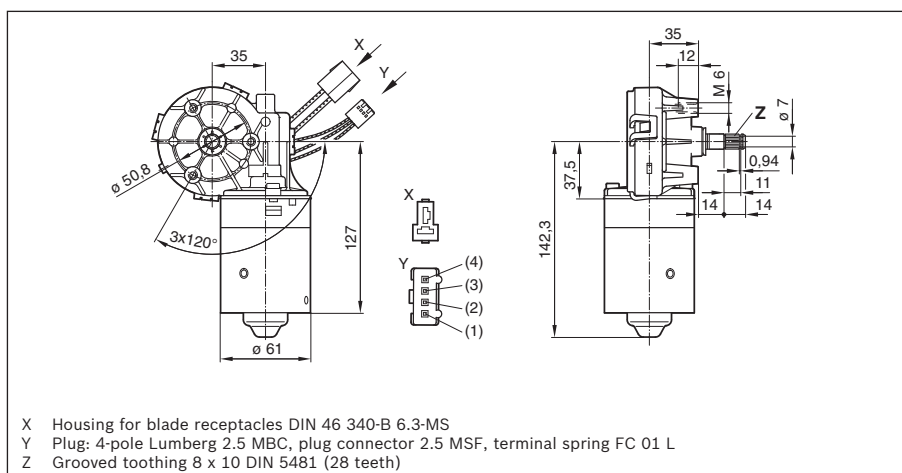
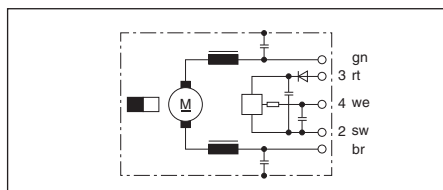
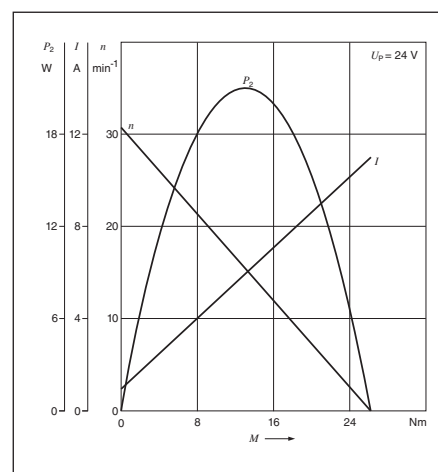
CEP

Electronic speed detection with Hall sensor.

24 V 10,5 W

Part number	0 390 257 653
Nominal voltage	U_N 24 V
Nominal power	P_N 10,5 W
Nominal current	I_N 2,5 A
Maximum current	I_{max} 11 A
Nominal speed	n_N 26 min ⁻¹
Nominal torque	M_N 4 Nm
Breakaway torque	M_A 22 Nm
Reduction	i 63 : 1
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg

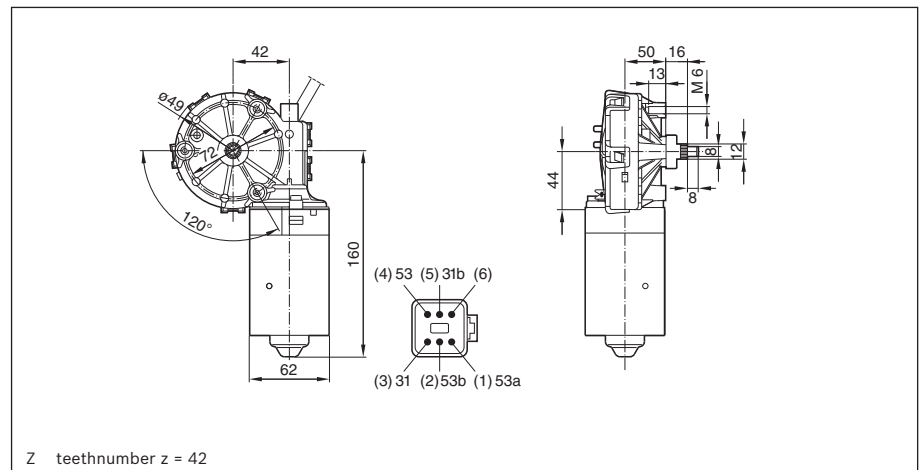
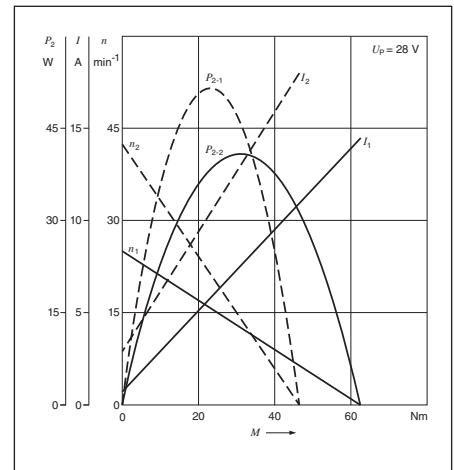
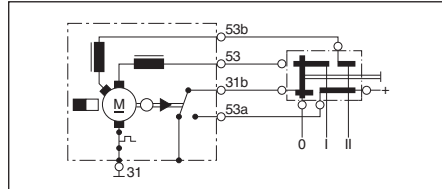
Clockwise: (+) to green, (-) to brown.
 Counterclockwise: (+) to brown, (-) to green.
 A square-wave period is generated for each turn of the armature.



CDP

24 V 22/29 W

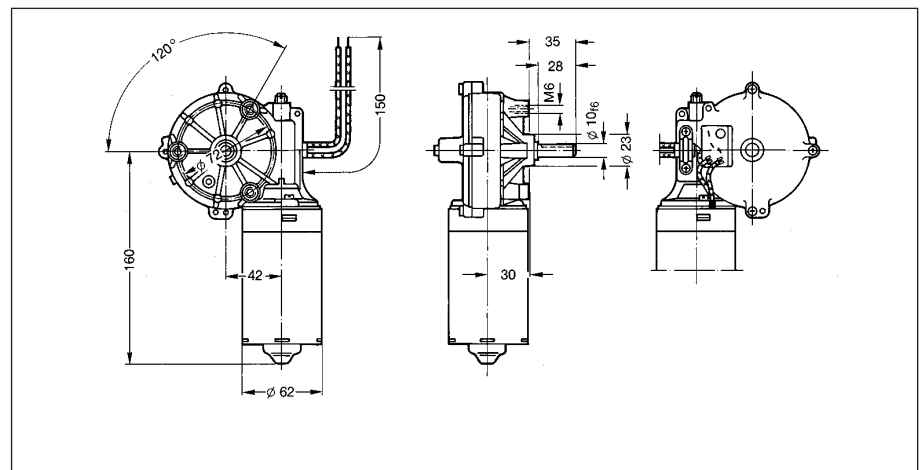
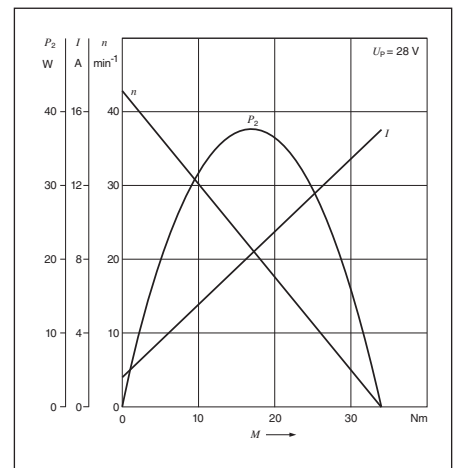
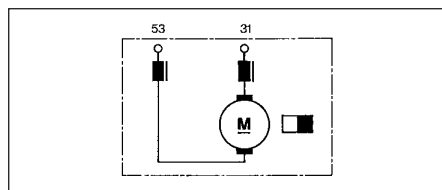
Part number	0 390 242 409
Nominal voltage	U_N 24 V
Nominal power	P_N 22/29 W
Nominal current	I_N 4,5/5,5 A
Maximum current	I_{max} 17/18 A
Nominal speed	n_N 21/35 min ⁻¹
Nominal torque	M_N 10/8 Nm
Breakaway torque	M_A 50/41 Nm
Reduction	i 77 : 1
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,40 kg



CDP

24 V 22 W

Part number	0 390 242 401
Nominal voltage	U_N 24 V
Nominal power	P_N 22 W
Nominal current	I_N 4 A
Maximum current	I_{max} 15 A
Nominal speed	n_N 35 min ⁻¹
Nominal torque	M_N 6 Nm
Breakaway torque	M_A 30 Nm
Reduction	i 108 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,30 kg

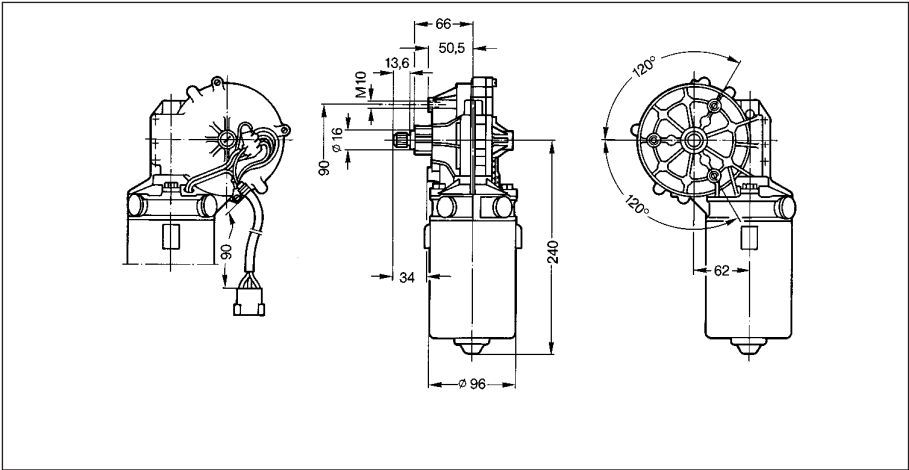
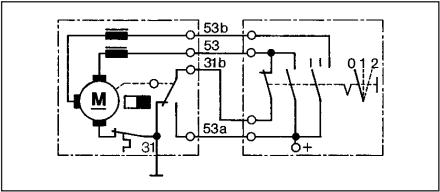
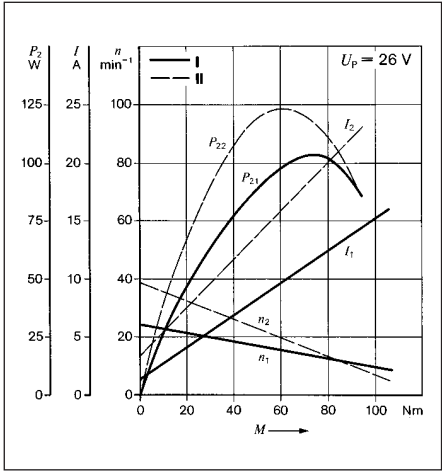


EDP

24 V 32/39 W

Part number	0 390 442 451
Nominal voltage	U_N 24 V
Nominal power	P_N 32/39 W ¹⁾
Nominal current	I_N 3/4 A
Maximum current	I_{max} 26/30 A
Nominal speed	n_N 21/36 min ⁻¹
Nominal torque	M_N 15/10 Nm
Breakaway torque	M_A 105/80 Nm
Reduction	i 96 : 2
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 4,40 kg

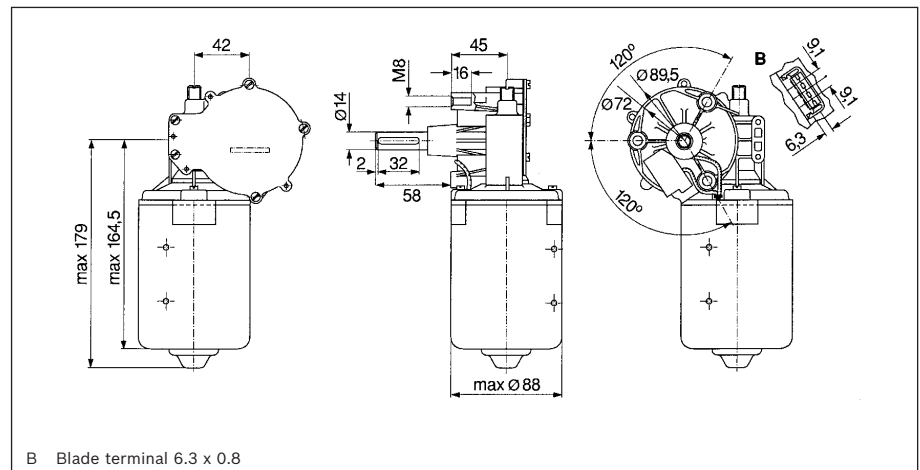
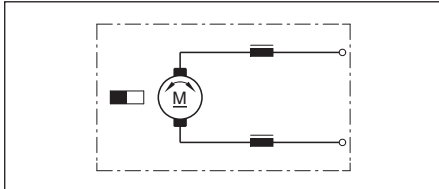
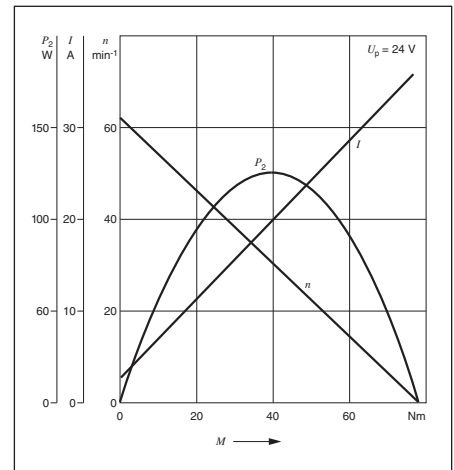
¹⁾ Level I/level II



EFP

24 V 56 W

Part number	0 390 442 409
Nominal voltage	U_N 24 V
Nominal power	P_N 56 W
Nominal current	I_N 9 A
Maximum current	I_{max} 36 A
Nominal speed	n_N 60 min ⁻¹
Nominal torque	M_N 10 Nm
Breakaway torque	M_A 70 Nm
Reduction	i 80 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 33
Weight	approx. 2,90 kg

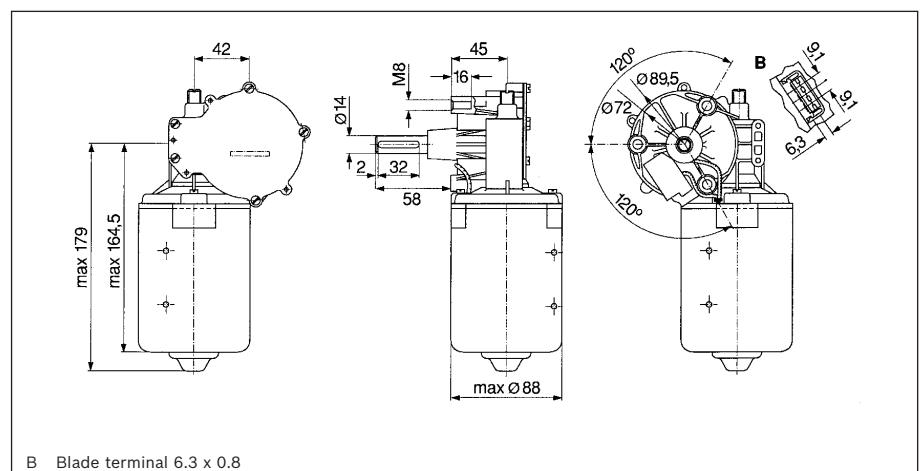
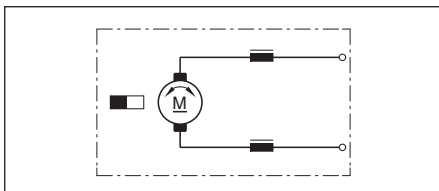
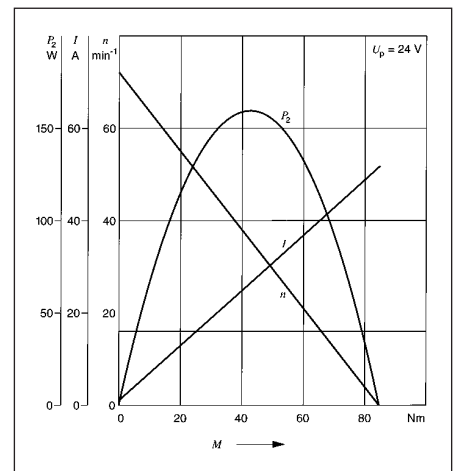


B Blade terminal 6.3 x 0.8

EFP

24 V 67 W

Part number	0 390 442 410
Nominal voltage	U_N 24 V
Nominal power	P_N 67 W
Nominal current	I_N 10 A
Maximum current	I_{max} 42 A
Nominal speed	n_N 75 min ⁻¹
Nominal torque	M_N 10 Nm
Breakaway torque	M_A 70 Nm
Reduction	i 80 : 2
Direction of rotation	L/R
Type of duty	S 1
Degree of protection	IP 33
Weight	approx. 2,90 kg



B Blade terminal 6.3 x 0.8

Blowers with D.C. motors



Product features

- Wide range of blowers
- D.C. voltage range 12 V and 24 V
- Axial and radial-type blowers available
- RPM control

Advantages for your application

- Low noise development
- High efficiency
- Low weight
- Favorable price/performance ratio

As the largest manufacturer of electric motors in Europe, Bosch provides a comprehensive range of blower and engine-cooling products for every output range. Our blower range consists of single or multiple-stage suction or pressure blowers. The delivery range encompasses radial and axial-type blowers for 12 V and 24 V. The blowers are designed for operating mode S1 (continuous operation). The modules are available with brush-type motors or as brushless drives. The compact design of the modules means that they can be easily installed in areas where space is at a premium.

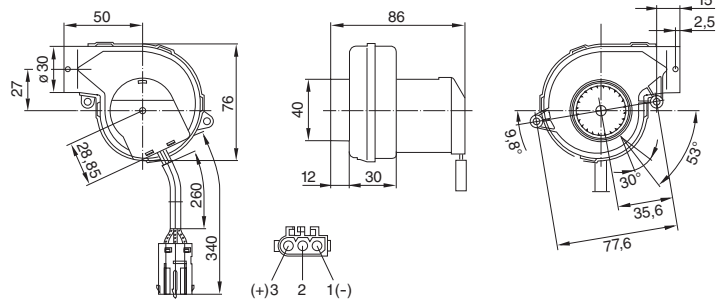
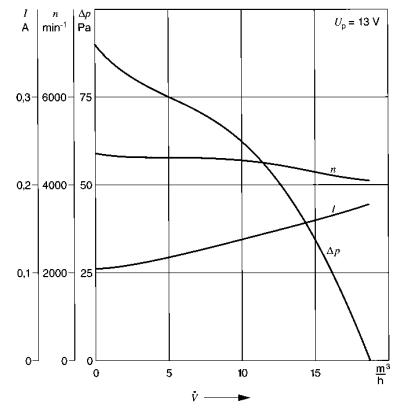
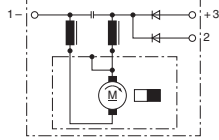
Application examples

Heating, ventilation, air-conditioning and engine cooling, cooler blowers in general



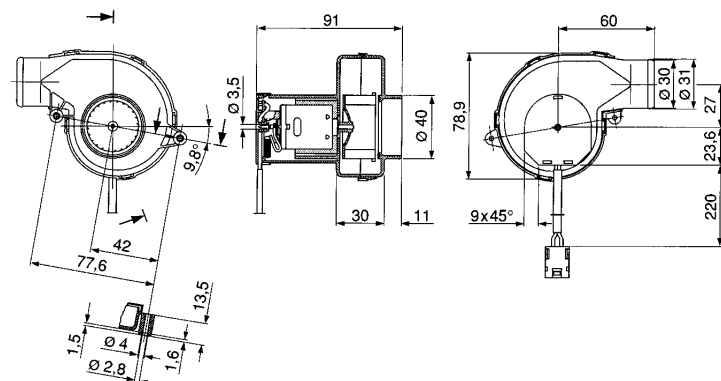
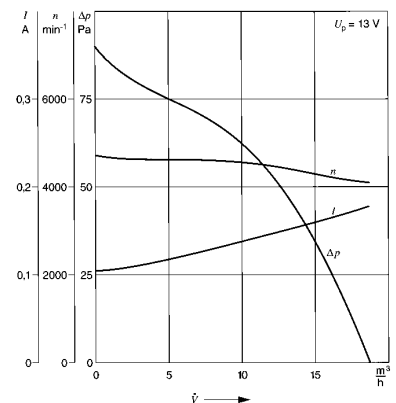
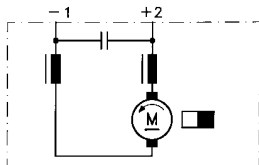
12 V radial

Part number	0 130 002 830
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 10 m ³ ·h ⁻¹
Differential pressure	Δp 62,5 Pa
Speed	n_N 4600 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 0,12 kg

**APK**

12 V radial

Part number	0 130 002 828
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 10 m ³ ·h ⁻¹
Differential pressure	Δp 60,0 Pa
Speed	n_N 4700 min ⁻¹
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 0,11 kg

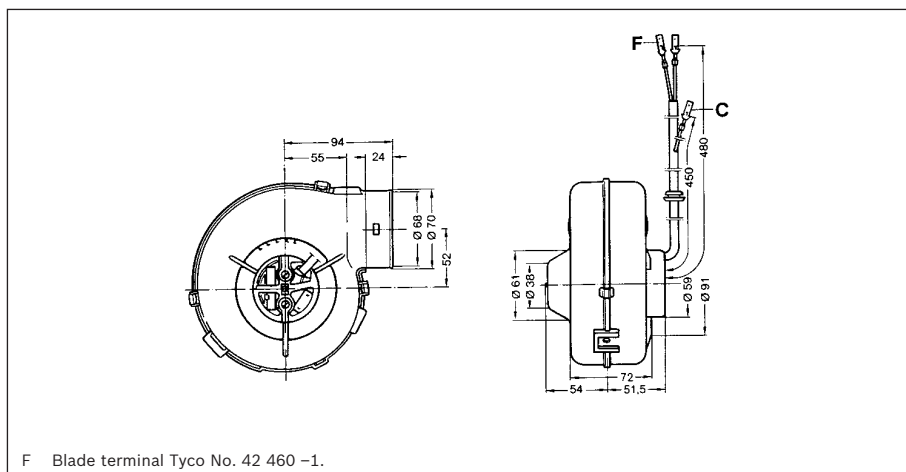
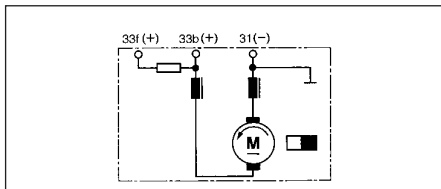
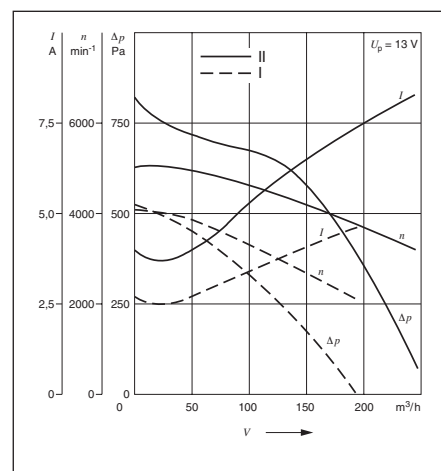


BPA

12 V radial

Part number	0 130 007 804
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 190 m ³ ·h ⁻¹
Differential pressure	Δp 400 Pa
Speed level I	2000...2500 min ⁻¹
Speed level II	3000...4000 min ⁻¹
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 0,64 kg

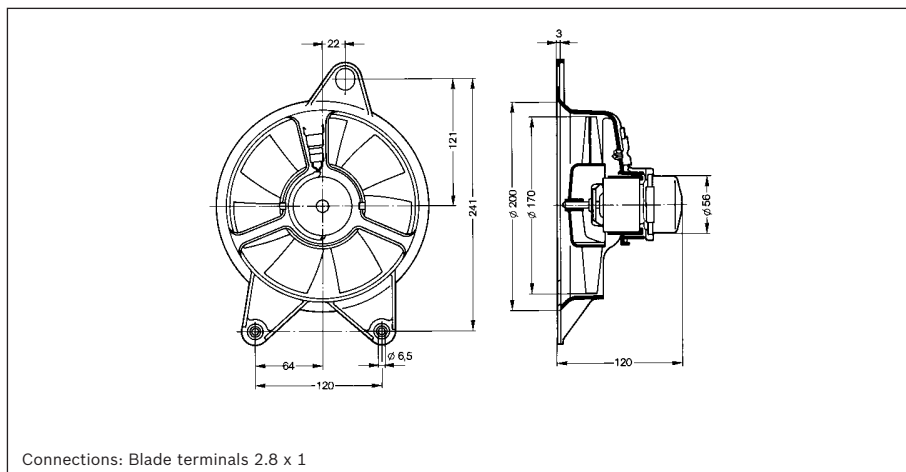
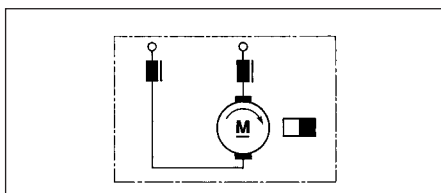
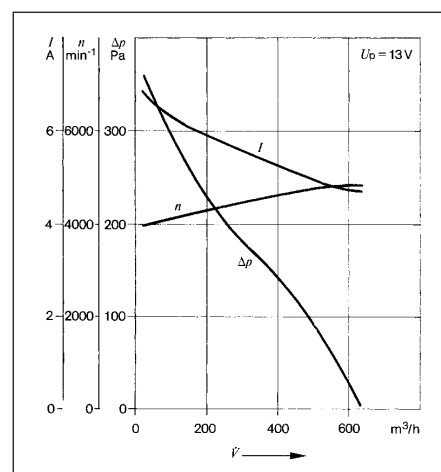
Connections: 33f black-red, 33b black-yellow, 31 brow



BPA

12 V axial

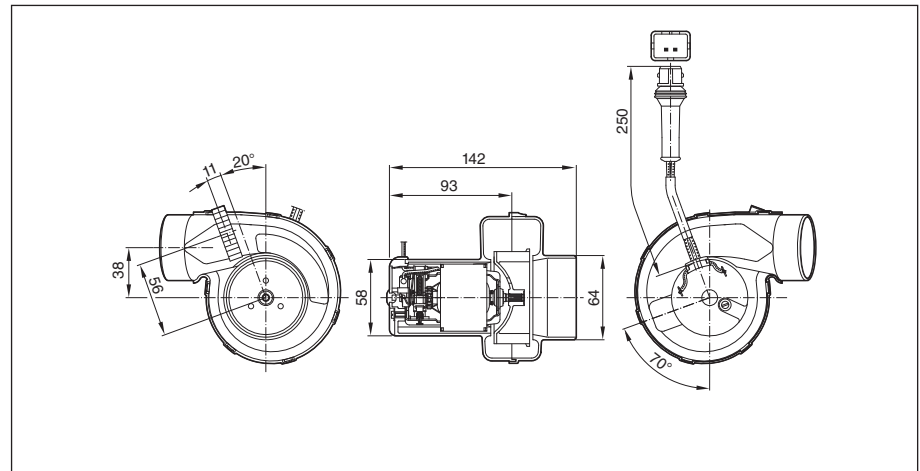
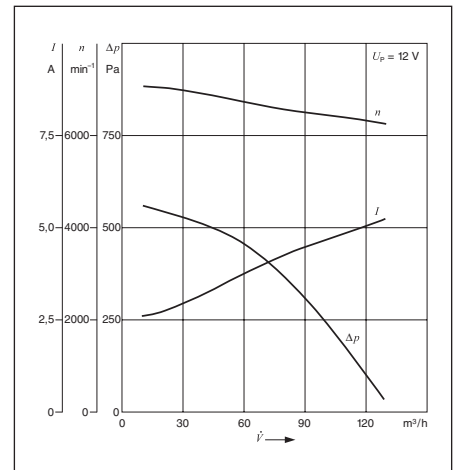
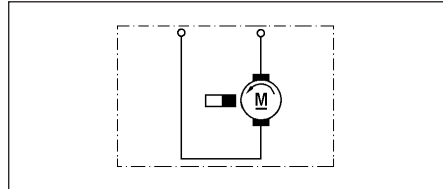
Part number	0 130 007 304
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 400 m ³ ·h ⁻¹
Differential pressure	Δp 150 Pa
Speed	n_N 4500 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 0,72 kg



BPA

12 V radial

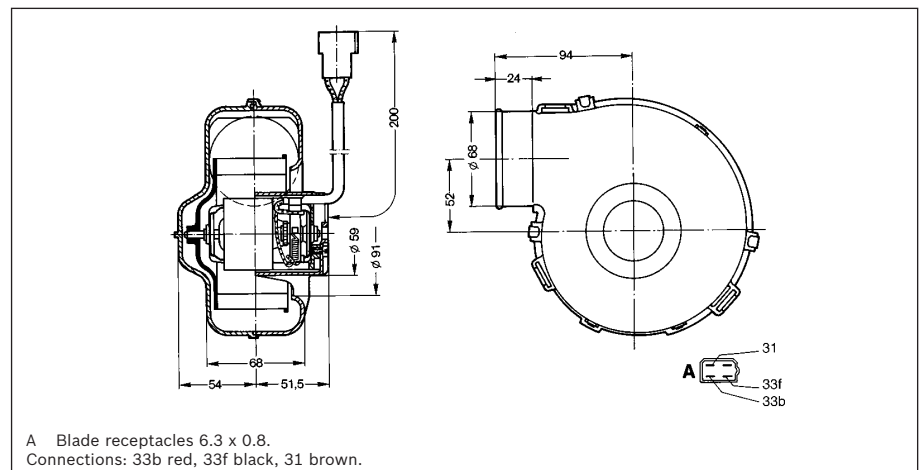
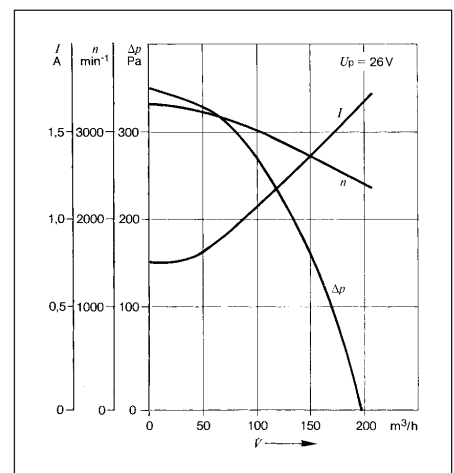
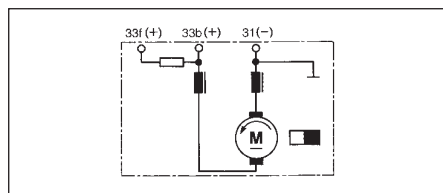
Part number	0 130 007 810
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 400 m ³ ·h ⁻¹
Differential pressure	Δp 250 Pa
Speed	n_N 6500 min ⁻¹
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 13
Weight	approx. 0,56 kg



BPA

24 V radial

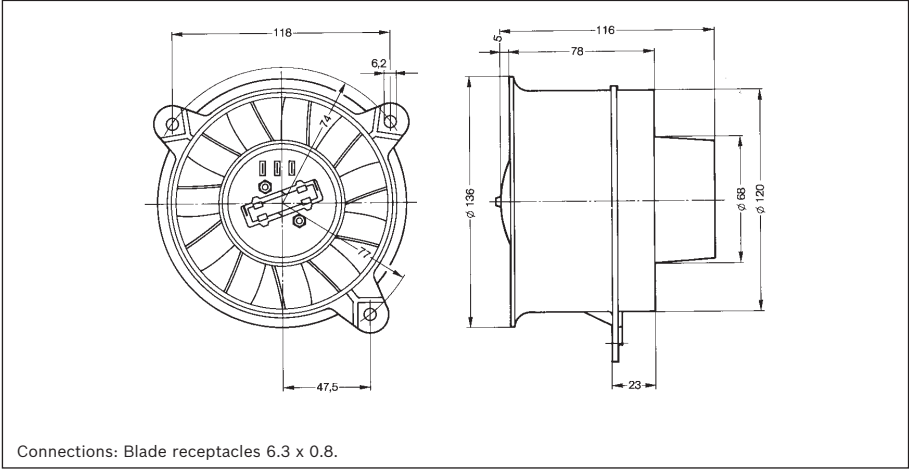
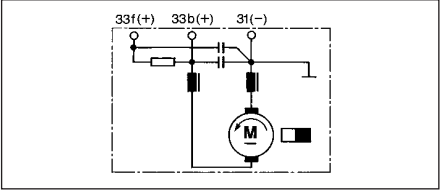
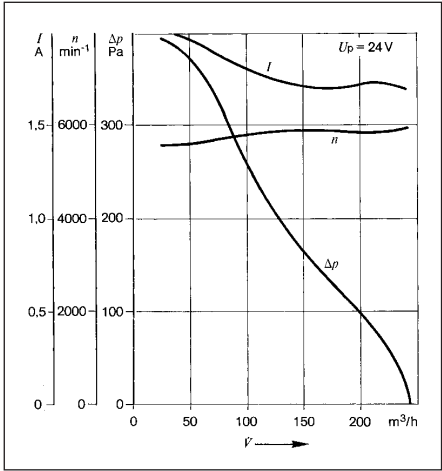
Part number	0 130 007 803
Nominal voltage	U_N 24 V
Volumetric flow	\dot{V} 100 m ³ ·h ⁻¹
Differential pressure	Δp 150 Pa
Speed level I	n_{NI} 1800 min ⁻¹
Speed level II	2300...2800 min ⁻¹
Direction of rotation	L
Type of duty	S 1
Degree of protection	IP 13
Weight	approx. 0,75 kg



BPA

24 V axial

Part number	0 130 007 802	
Nominal voltage	U_N	24 V
Volumetric flow	\dot{V}	150 m ³ ·h ⁻¹
Differential pressure	Δp	150 Pa
Speed level I	n_{NI}	3900 min ⁻¹
Speed level II		5850...6550 min ⁻¹
Direction of rotation	L	
Type of duty	S 1	
Degree of protection	IP 12	
Weight	approx. 0,61 kg	

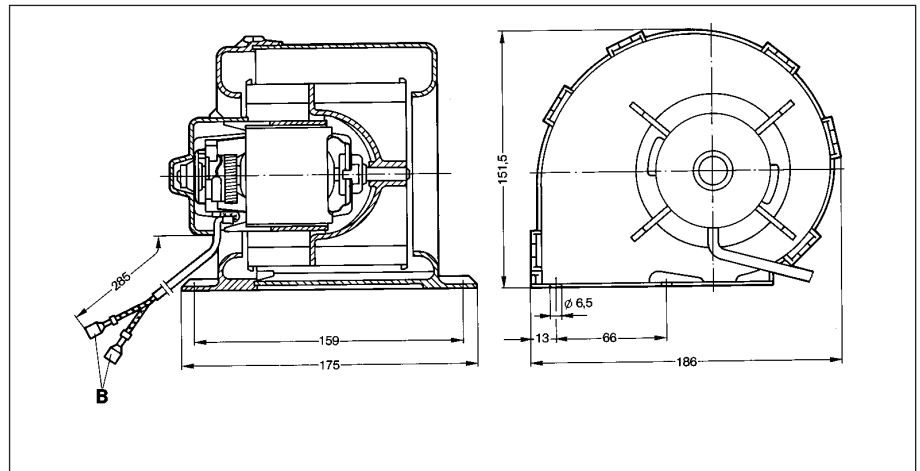
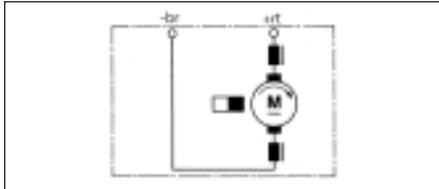
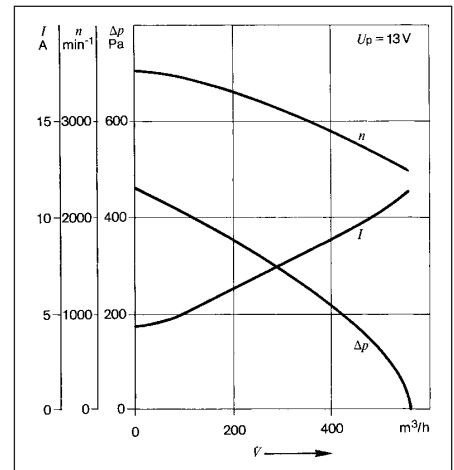


CPB

12 V radial

Part number	0 130 063 805
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 400 m ³ ·h ⁻¹
Differential pressure	Δp 200 Pa
Speed	n_N 2350...2900 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 13
Weight	approx. 1,30 kg

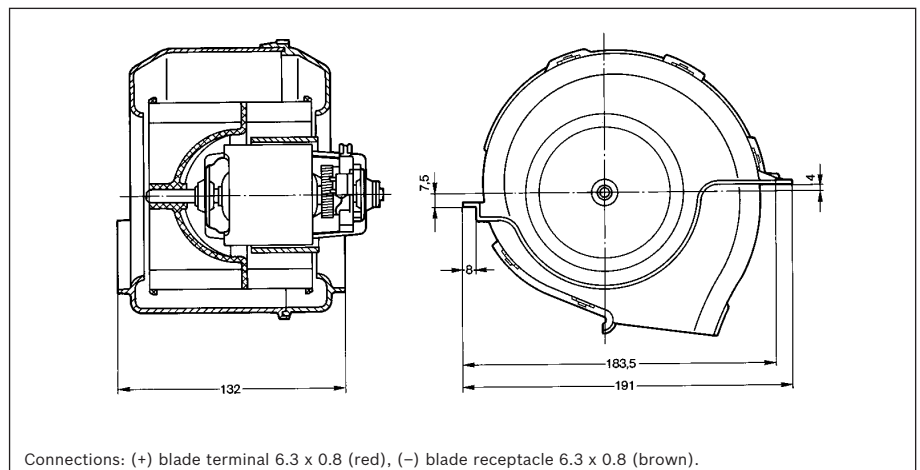
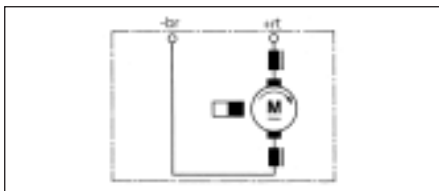
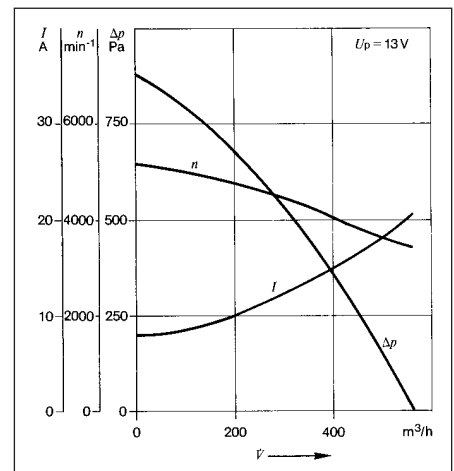
Connections: (+) blade terminal 6.3 x 0.8 (red), (-) blade terminal 6.3 x 0.8 (brown).



CPB

12 V radial

Part number	0 130 063 804
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 400 m ³ ·h ⁻¹
Differential pressure	Δp 350 Pa
Speed	n_N 3250...3800 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 10
Weight	approx. 1,00 kg



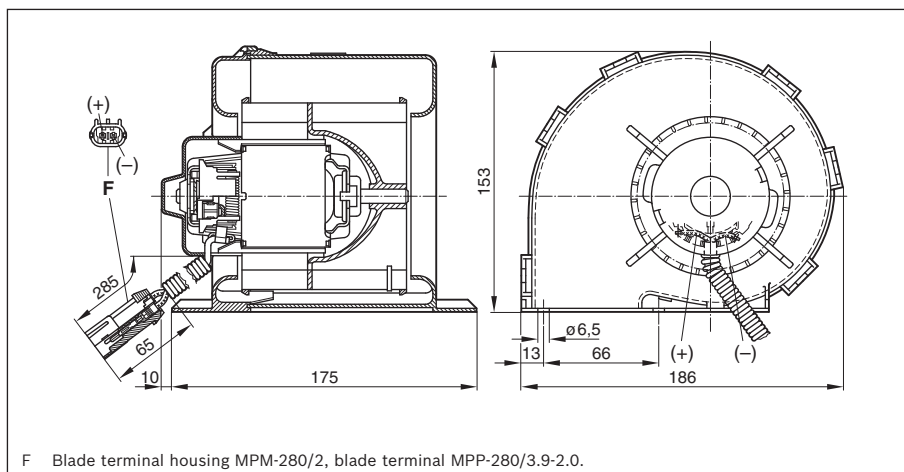
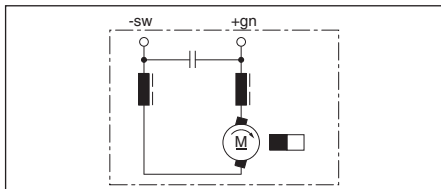
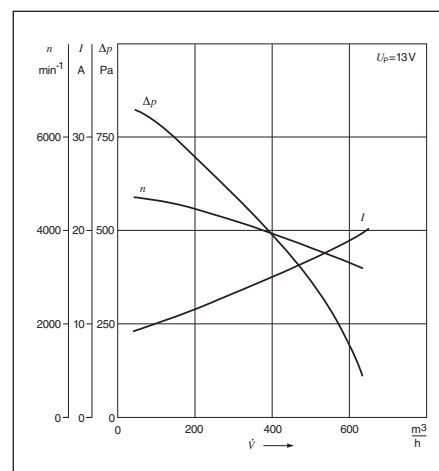
Connections: (+) blade terminal 6.3 x 0.8 (red), (-) blade receptacle 6.3 x 0.8 (brown).

CPB

12 V radial

Part number	0 130 063 810
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 400 m ³ ·h ⁻¹
Differential pressure	Δp 470 Pa
Speed	n_N 3510...4200 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 13
Weight	approx. 1,13 kg

Connections: (+) green, (-) black.

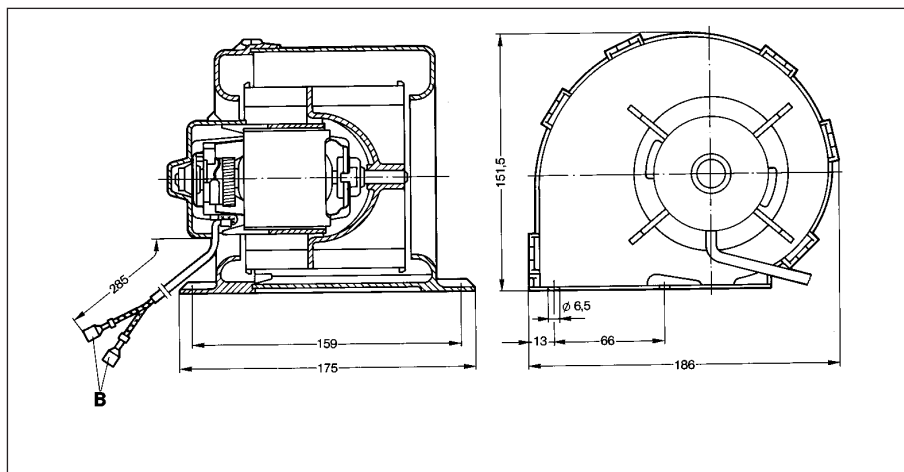
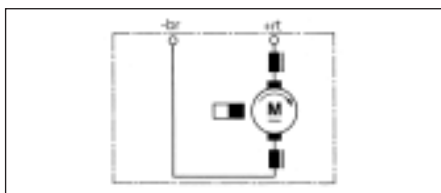
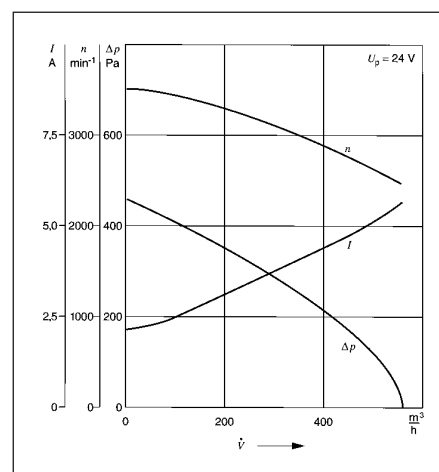


CPB

24 V radial

Part number	0 130 063 809
Nominal voltage	U_N 24 V
Volumetric flow	\dot{V} 400 m ³ ·h ⁻¹
Differential pressure	Δp 200 Pa
Speed	n_N 2350...2900 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 13
Weight	approx. 1,13 kg

Connections: (+) blade terminal 6.3 x 0.8 (red), (-) blade terminal 6.3 x 0.8 (brow)

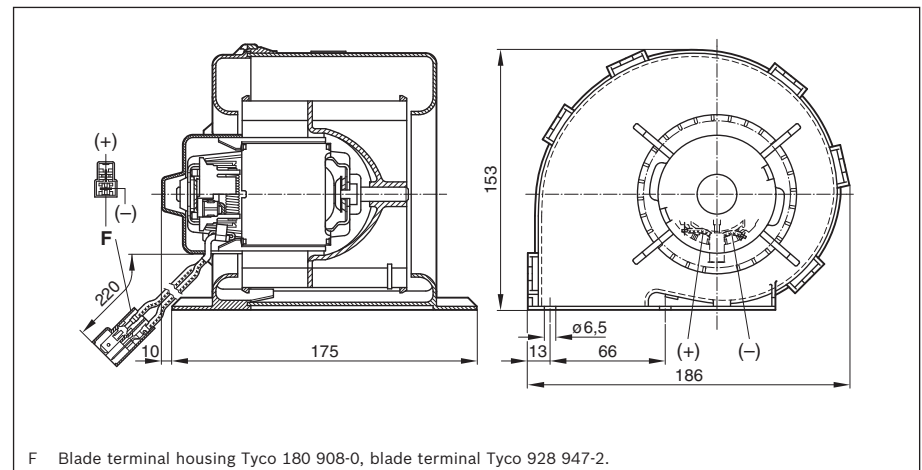
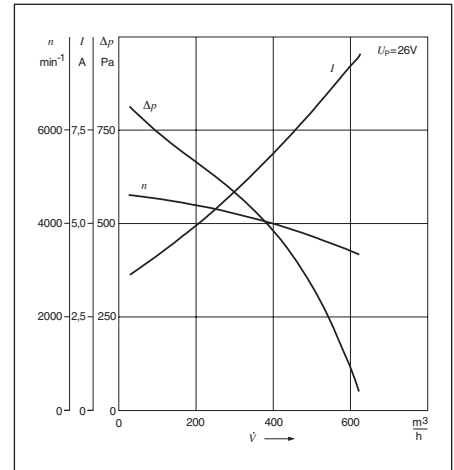
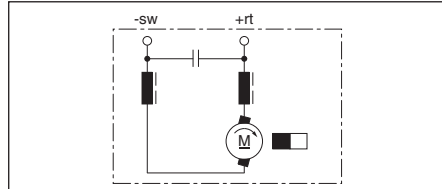


CPC

24 V radial

Part number	0 130 063 814
Nominal voltage	U_N 24 V
Volumetric flow	\dot{V} 400 m ³ ·h ⁻¹
Differential pressure	Δp 500 Pa
Speed	n_N 3700...4200 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 13
Weight	approx. 1,30 kg

Connections: (+) red, (-) brown.

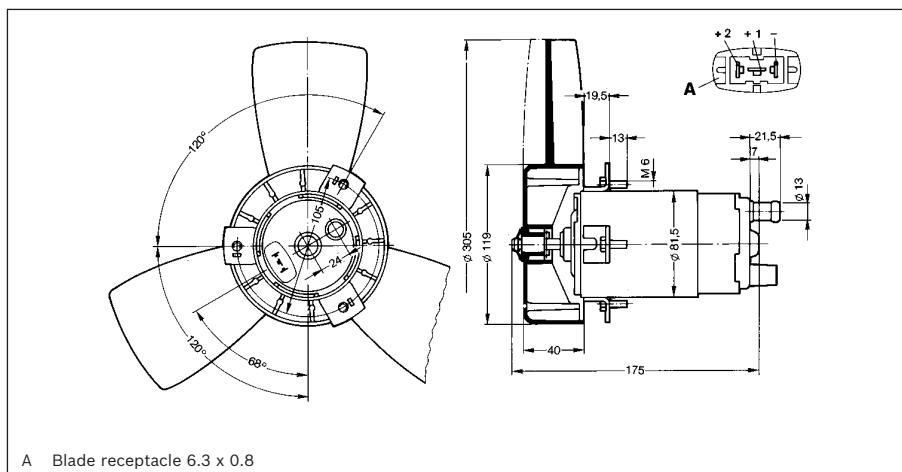
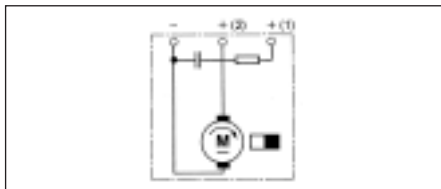
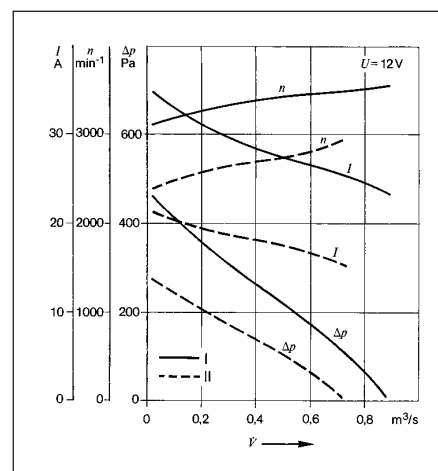


F Blade terminal housing Tyco 180 908-0, blade terminal Tyco 928 947-2.

DPE

12 V axial

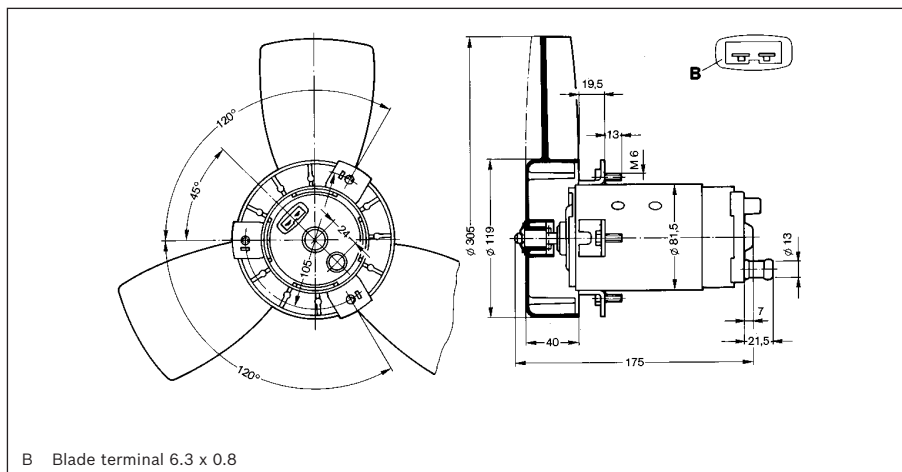
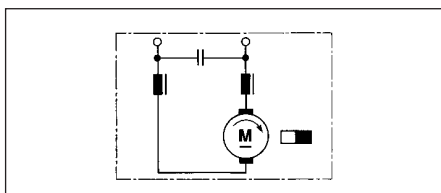
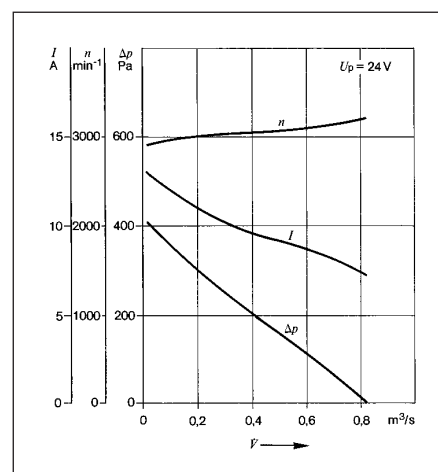
Part number	0 130 109 207
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,55 m ³ ·s ⁻¹
Differential pressure	Δp 200 Pa
Speed level I	$n_{NI} \geq 2800$ min ⁻¹
Speed level II	$n_{NII} \geq 3400$ min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,50 kg



DPE

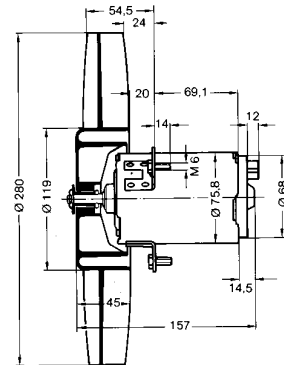
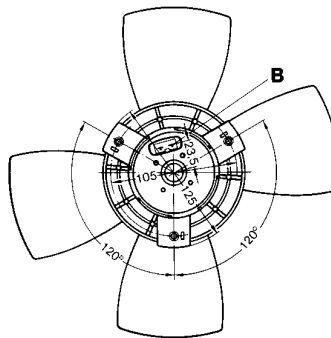
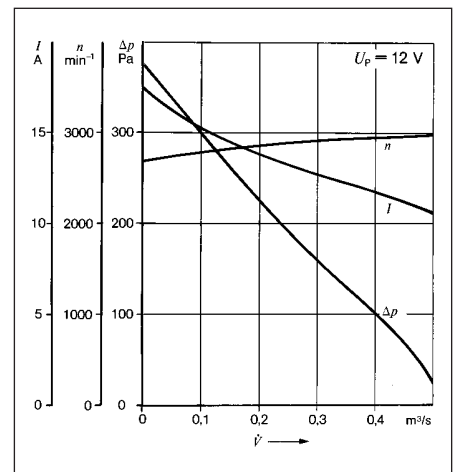
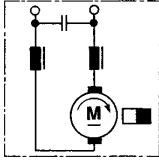
24 V axial

Part number	0 130 109 213
Nominal voltage	U_N 24 V
Volumetric flow	\dot{V} 0,36 m ³ ·s ⁻¹
Differential pressure	Δp 200 Pa
Speed	$n_N \geq 3100$ min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,50 kg



12 V axial

Part number	0 130 107 077
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,37 m ³ .s ⁻¹
Differential pressure	Δp 118 Pa
Speed	n_N \geq 2700 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,60 kg

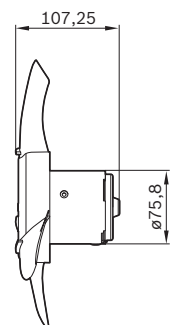
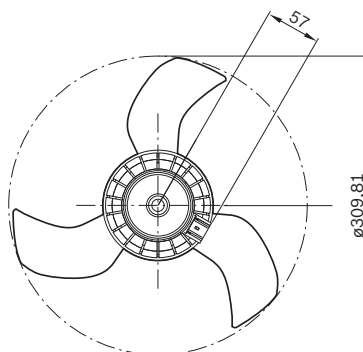
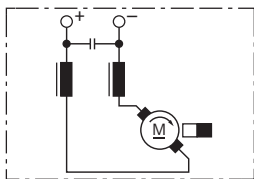


B Blade terminal 6.3 x 0.8

DPG

12 V

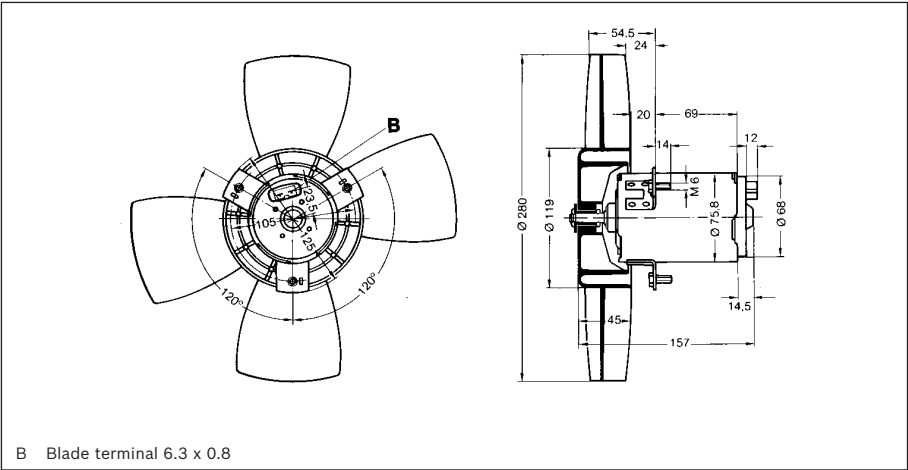
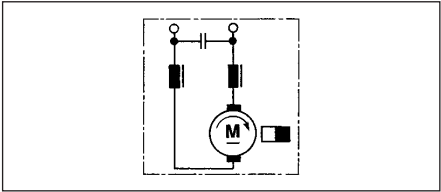
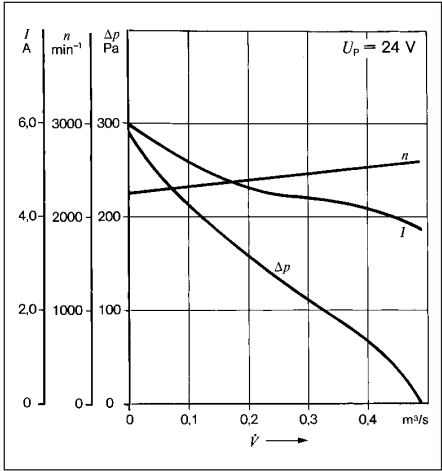
Part number	F 006 B10 134
Nominal voltage	U_N 13 V
Volumetric flow	\dot{V} 0,419 m ³ .s ⁻¹
Differential pressure	Δp 105 Pa
Speed	n_N \geq 2990 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,10 kg



DPG

24 V axial

Part number	0 130 107 212
Nominal voltage	U_N 24 V
Volumetric flow	\dot{V} 0,24 m ³ .s ⁻¹
Differential pressure	Δp 105 Pa
Speed	n_N \geq 2300 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,80 kg

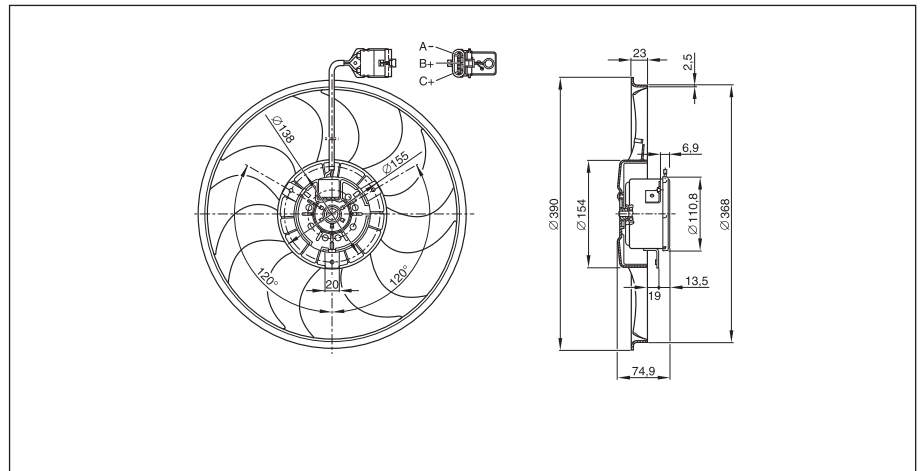
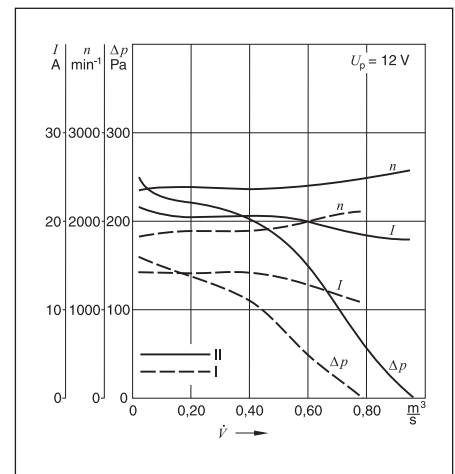
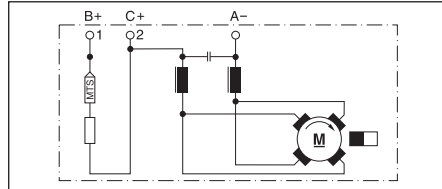


B Blade terminal 6.3 x 0.8

GPB

12 V axial

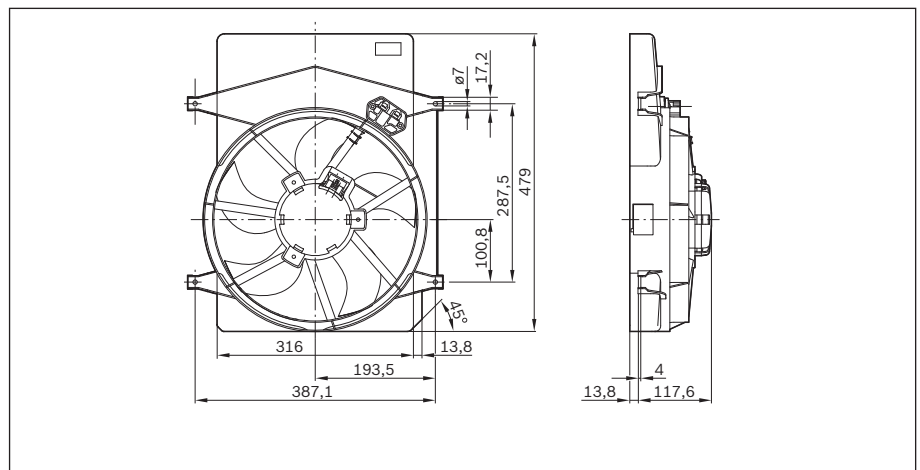
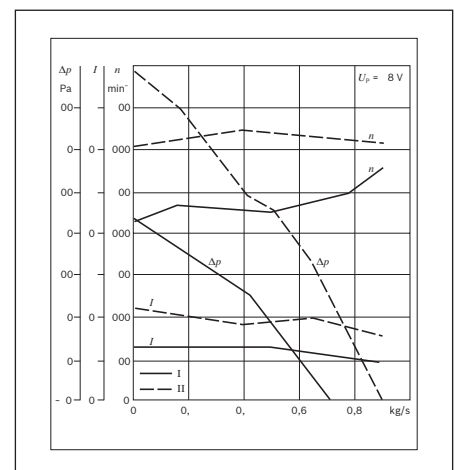
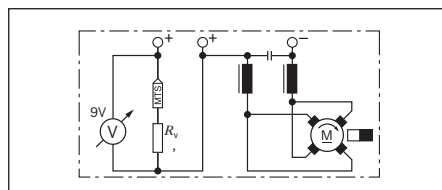
Part number	0 130 303 245
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,53 m ³ ·s ⁻¹
Differential pressure	Δp 140 Pa
Speed level I	n_{NI} 1900 min ⁻¹
Speed level II	n_{NII} 2400 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 1,80 kg



GPB

24 V 260 W

Part number	F 006 D10 029
Nominal voltage	U_N 24 V
Nominal power	P_N 260 W
Nominal current	I_N 11,0 A
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 03
Weight	approx. 2,50 kg

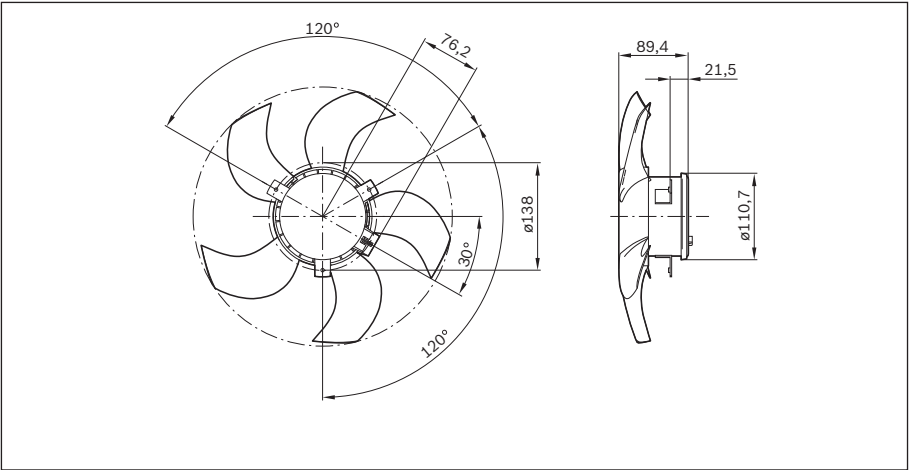
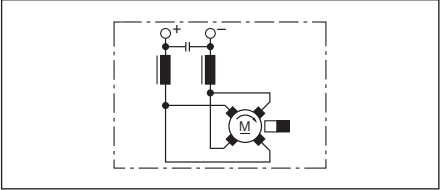


GPB

12 V axial

Part number	F 006 B10 132	
Nominal voltage	U_N	12 V
Volumetric flow	\dot{V}	0,44 m ³ .s ⁻¹
Differential pressure	Δp	190 Pa
Speed	n_N	3400 rpm ⁻¹
Direction of rotation	R	
Type of duty	S 1	
Degree of protection	IP 23	
Weight	approx. 2,30 kg	

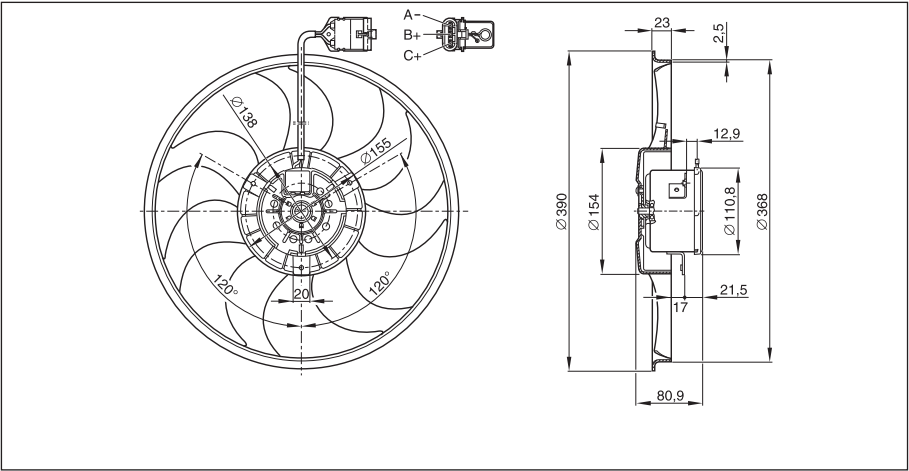
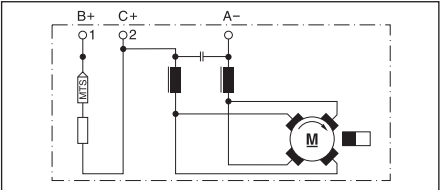
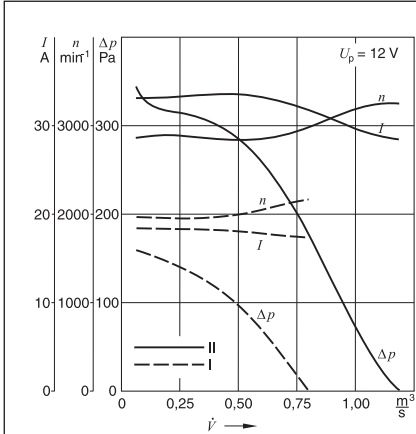
Connections: (+) red, (-) brown.



GPB

12 V axial

Part number	0 130 303 246	
Nominal voltage	U_N	12 V
Volumetric flow	\dot{V}	0,6 m ³ .s ⁻¹
Differential pressure	Δp	200 Pa
Speed level I	n_{NI}	1900 min ⁻¹
Speed level II	n_{NII}	2700 min ⁻¹
Direction of rotation	R	
Type of duty	S 1	
Degree of protection	IP 23	
Weight	approx. 2,20 kg	

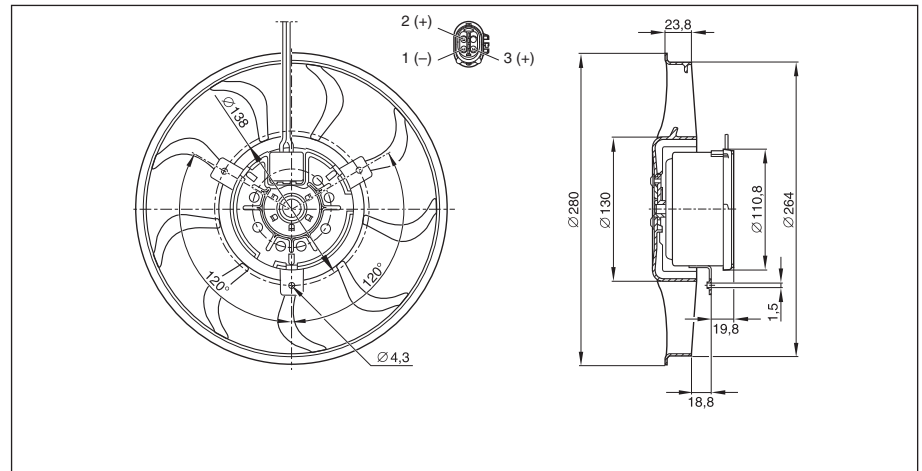
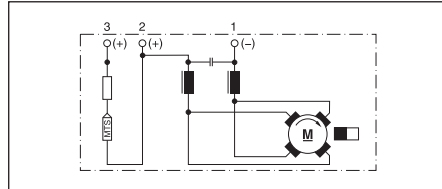


GPB

12 V axial

Part number	0 130 303 233
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,25 m ³ .s ⁻¹
Differential pressure	Δp 200 Pa
Speed level I	n_{NI} 1800 min ⁻¹
Speed level II	n_{NII} 2900 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,90 kg

Connections: 1 black, 2 white, 3 green.

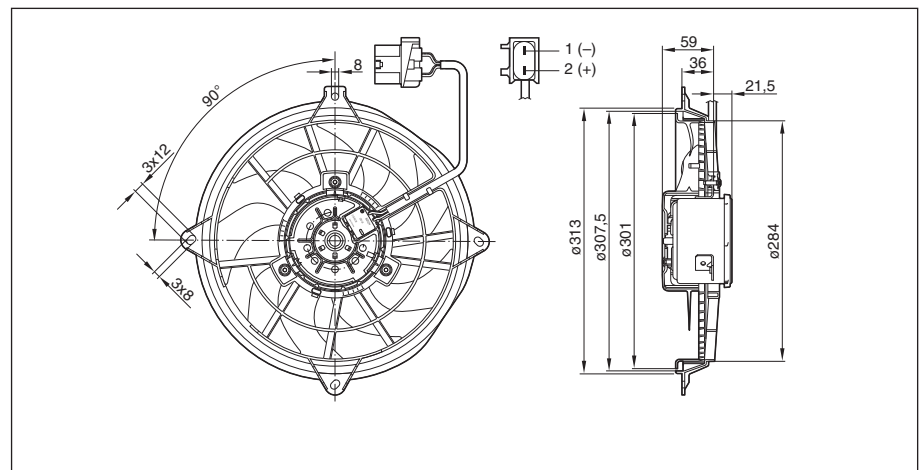
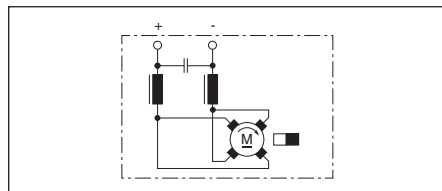


GPB

12 V axial

Part number	0 130 303 897
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,44 m ³ .s ⁻¹
Differential pressure	Δp 190 Pa
Speed	n_N 3400 rpm ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,30 kg

Connections: 1 brown, 2 red.

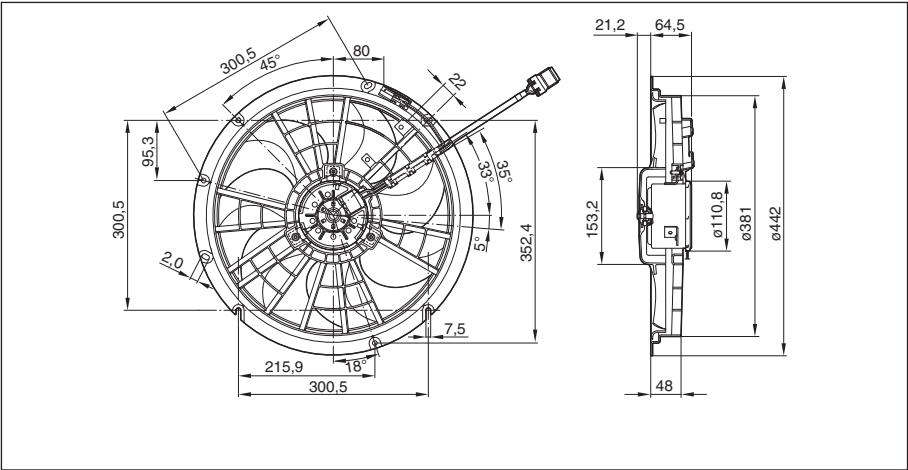
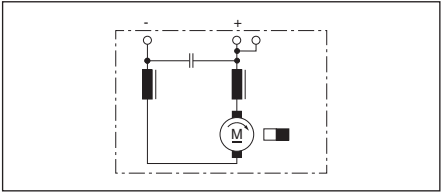
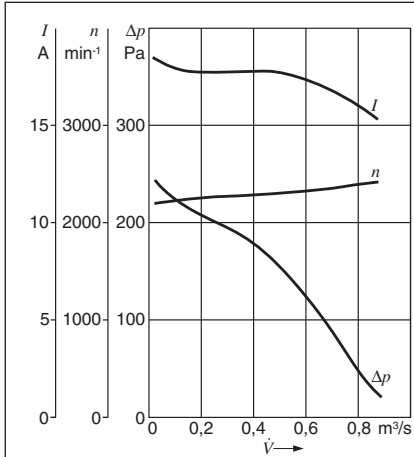


GPB

12 V axial

Part number	0 130 303 805
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,6 m ³ .s ⁻¹
Differential pressure	Δp 100 Pa
Speed	n_N 2200 rpm ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,70 kg

(-) brown, (+) red.

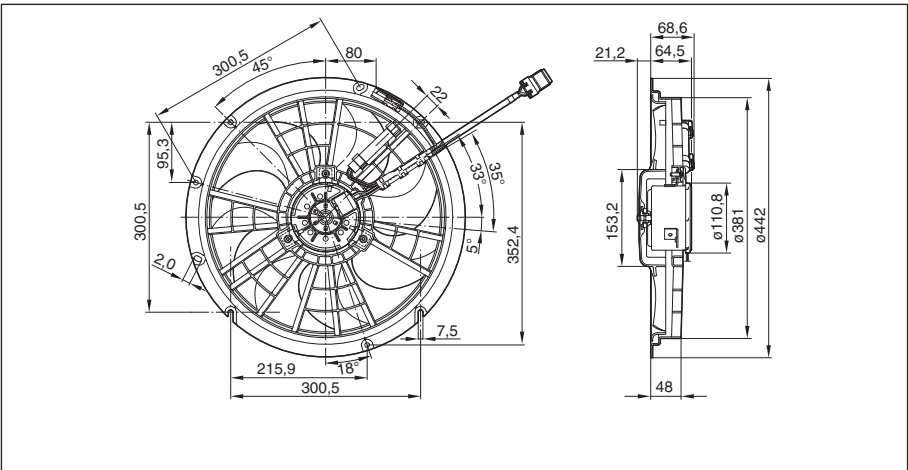
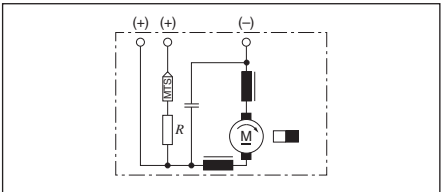
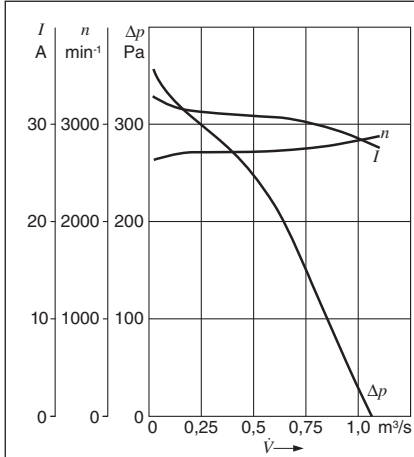


GPB

12 V axial

Part number	0 130 303 806
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,55 m ³ .s ⁻¹
Differential pressure	Δp 200 Pa
Speed level I	n_{NI} 2200 min ⁻¹
Speed level II	n_{NII} 2650 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,70 kg

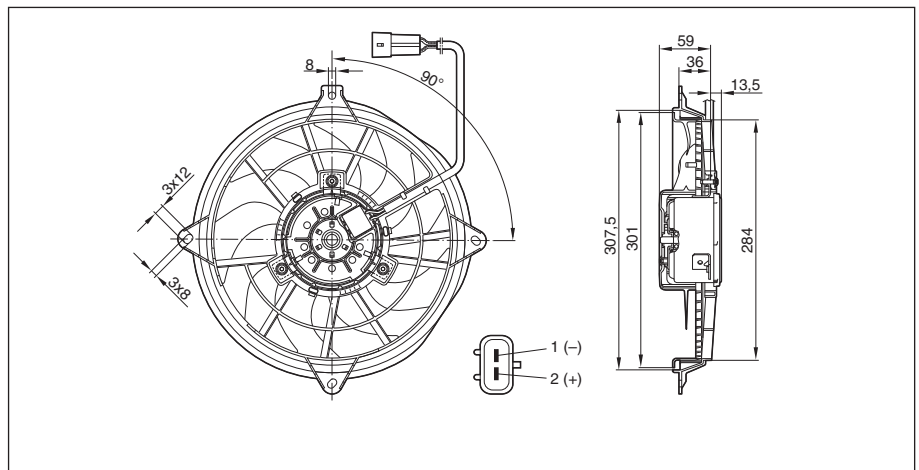
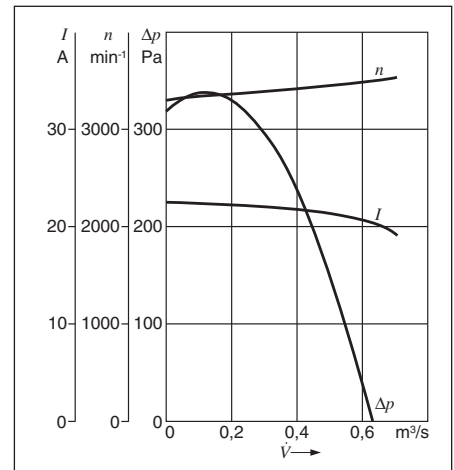
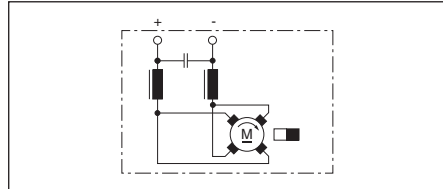
Connections: (+) Stage I green, (+) Stage II red, (-) brown.



GPB**12 V axial**

Part number	0 130 303 902
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,41 m ³ ·s ⁻¹
Differential pressure	Δp 160 Pa
Speed	n_N 3200 rpm ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,90 kg

Connections: 1 brown, 2 black.

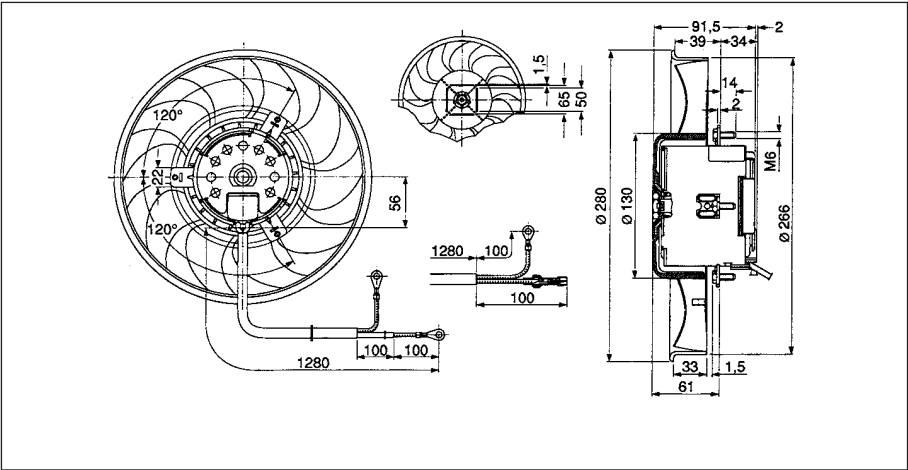
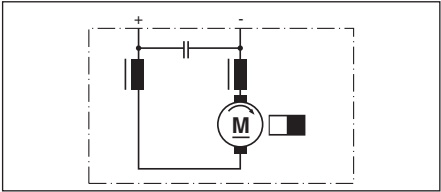
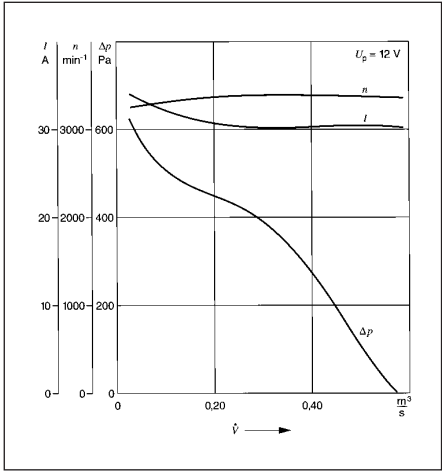


GPD

12 V axial

Part number	0 130 305 206
Nominal voltage	U_N 12 V
Volumetric flow	\dot{V} 0,4 m ³ .s ⁻¹
Differential pressure	Δp 260 Pa
Speed	n_N 3400 min ⁻¹
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 23
Weight	approx. 2,90 kg

Connections: (-) brown, (+) black red.



[illegible]

Brushless D.C. motors as blower drives

Developed for use as engine cooling blowers in the vehicle



Product features

- Short installation length
- High output
- High efficiency
- RPM control
- Soft start
- Lock-up detection
- Broad ambient-temperature range
- Integrated power electronics
- High continuous output
- Long service life
- Diagnosis capability

Design

Electronically commutated, brushless D.C. external-rotor motor with permanent excitation and integrated control electronics (BLDC motor).

Description of operation

The motor speed can be continuously adjusted and regulated in a range between 625...2,500 min⁻¹. To do so, a pulse-width-modulated signal has to be generated.

A microcontroller evaluates the input signal and adjusts the set value for the speed.

Commutation of the coil currents is by means of an integrated inverter. The motor is configured for a single direction of rotation. It is not protected against reverse polarity.

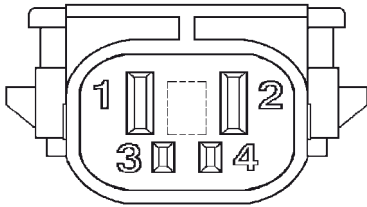
The motor housing is connected internally to the negative terminal of the voltage supply.

Overrun cut-off

- for blocked motor
- outside permissible operating-voltage range



QBA



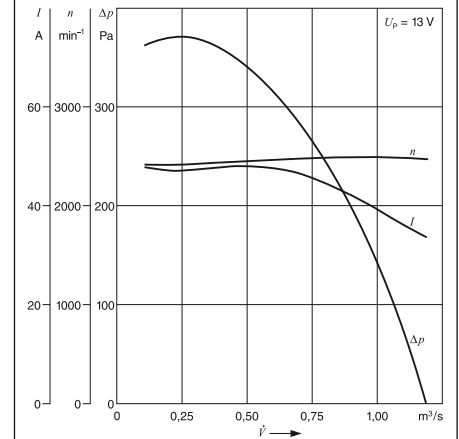
- 1 Minus
- 2 Plus
- 3 Control line
- 4 Signal wire for PWM signal

12 V

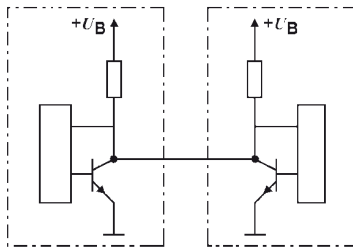
Rated voltage	U_N	12 V
Operating voltage	U_B	8.5...16.2 V
Maximum current ¹	I_{\max}	48 A \pm 2 A
Max. volumetric flow	\dot{V}_{\max}	0.85 m ³ · s ⁻¹
Max. pressure difference	Δp_{\max}	220 Pa
Rotational-speed range	n	625...2,500 min ⁻¹
RPM control		PWM signal ²
Direction of rotation		R
Operating mode		S 1
Weight		approx. 4.6 kg
Order number		0 130 706 816

¹ Internal current limitation

² Pulse-width modulation



Connection diagram for PWM signal wire

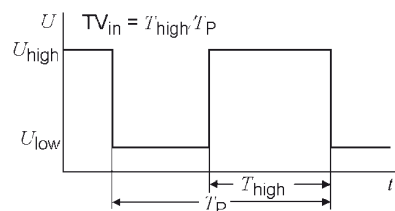


Duty cycle TV_{in} of the PWM signal

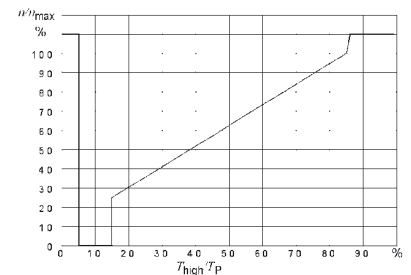
T_P : Period of PWM signal

T_{high} : Duration of high level

$U_{high} \geq 5.66 \text{ V}; U_{low} \leq 1.80 \text{ V}$



Relative change in speed



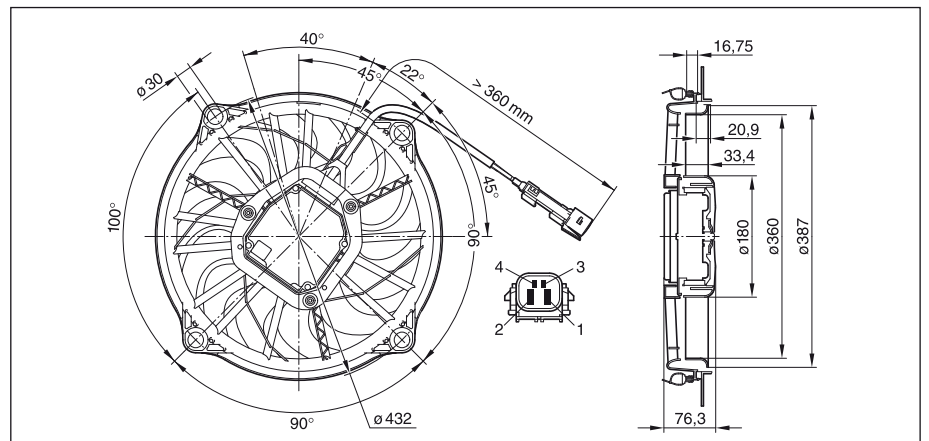
Set-value signal

Pulse-width-modulated signal (PWM signal) with a duty cycle of 5...50 Hz and a high level dependent on the operating voltage.

The set value of the speed is defined by the duty cycle $TV_{in} = T_{high}/T_P$.

Control line Pin 3 on	Speed n
$0 \leq TV \leq 5 \%$	Uncontrolled n_{\max}
$5 \leq TV \leq 12 \%$	Motor off
$12 \leq TV \leq 15 \%$	Minimum n_{\min}
$15 \leq TV \leq 85 \%$	Controlled
$85 \leq TV \leq 100 \%$	Uncontrolled n_{\max}
100 % constant	Uncontrolled n_{\max}

Control line Pin 3 off	Speed n
$0 \leq TV \leq 5 \%$	Motor off
$5 \leq TV \leq 12 \%$	Motor off
$12 \leq TV \leq 15 \%$	Minimum n_{\min}
$15 \leq TV \leq 85 \%$	Controlled
$85 \leq TV \leq 100 \%$	Uncontrolled n_{\max}
100 % constant	Motor off



Water pressure pumps with D.C. motors

Application

The main application is for vehicle washer-pump assemblies. Please contact us if the pumps are to be used for fluids other than water.

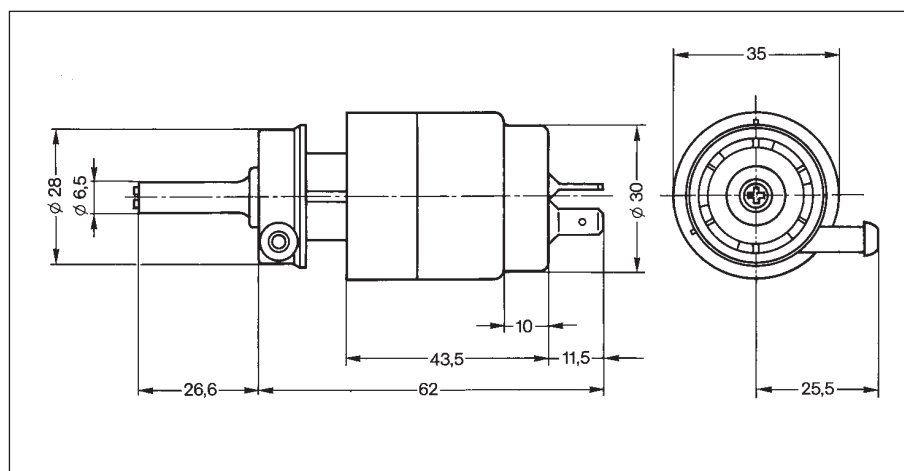
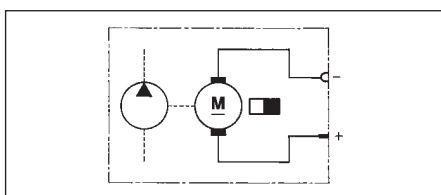
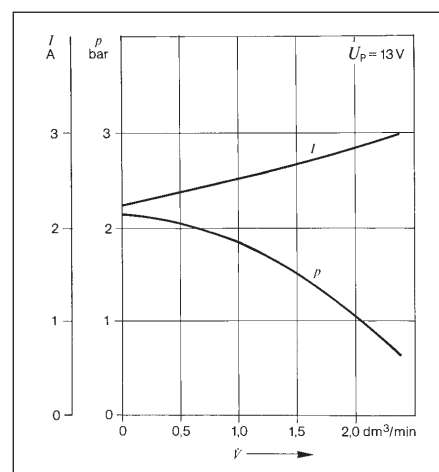
Type

Water pumps are centrifugal pumps with permanent-magnet DC motors.

PAC

12 V

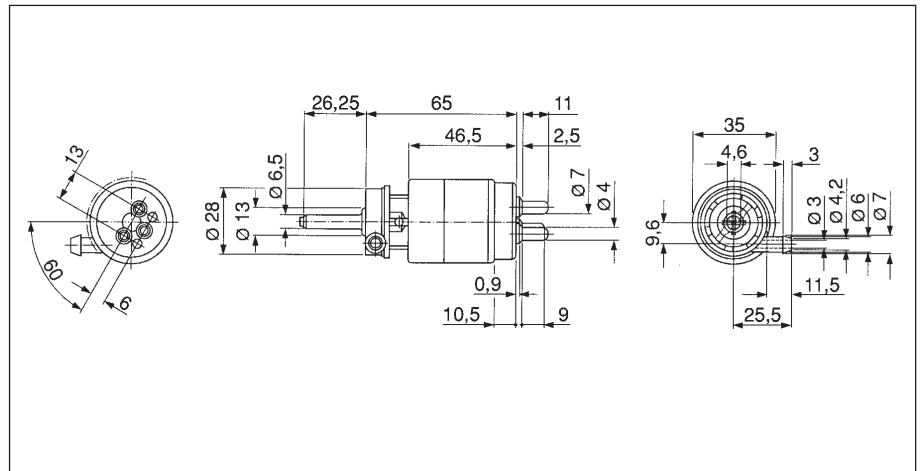
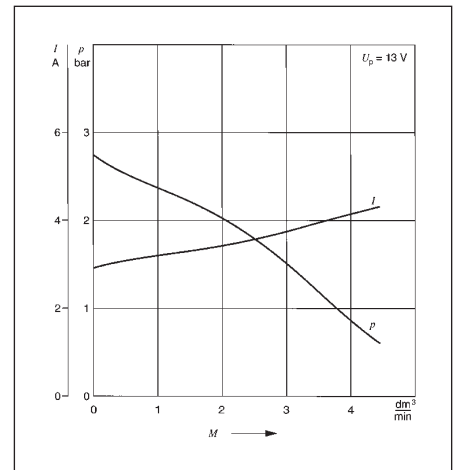
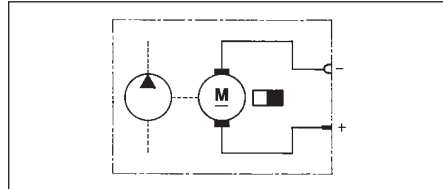
Part number	0 392 003 501
Nominal voltage	U_N 12 V
Delivery	\dot{V} 0,75 dm ³ ·min ⁻¹
Delivery pressure	p 1,5 bar
Direction of rotation	L
Type of duty	S 2 - 1,5 min
Degree of protection	IP 54A
Weight	approx. 0,09 kg



PAC

12 V

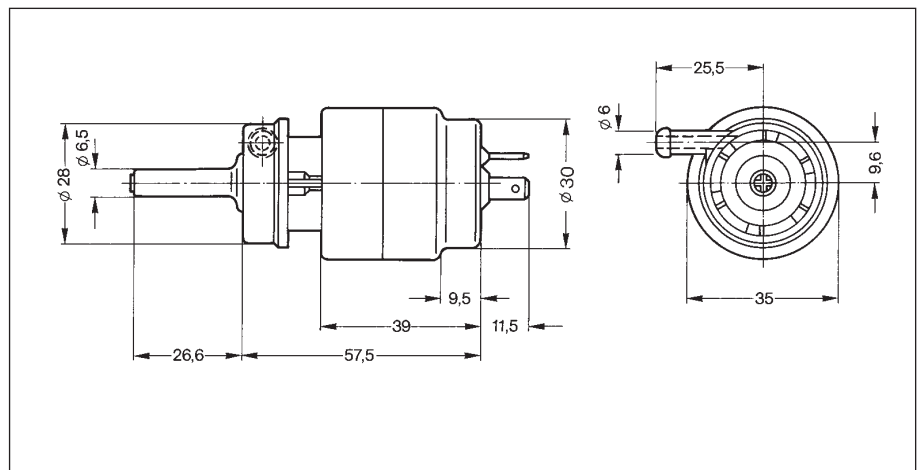
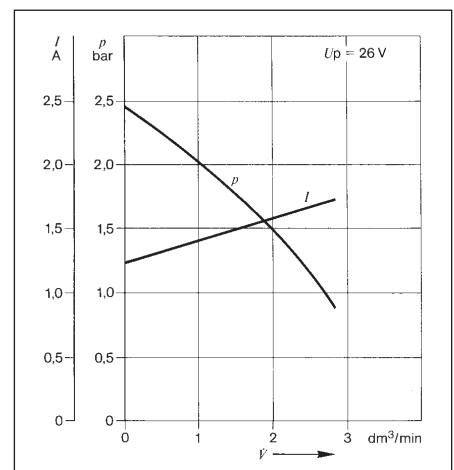
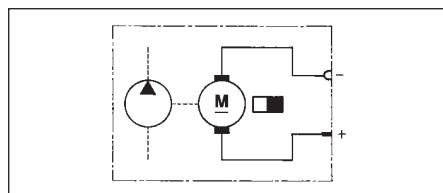
Part number	0 392 040 008
Nominal voltage	U_N 12 V
Delivery	\dot{V} 2 dm ³ ·min ⁻¹
Delivery pressure	p 2,0 bar
Direction of rotation	R
Type of duty	S 2 - 1,5 min
Degree of protection	IP 54A
Weight	approx. 0,10 kg



PAC

24 V

Part number	0 392 040 001
Nominal voltage	U_N 24 V
Delivery	\dot{V} 0,75 dm ³ ·min ⁻¹
Delivery pressure	p 1,5 bar
Direction of rotation	L
Type of duty	S 2 - 2 min
Degree of protection	IP 54A
Weight	approx. 0,09 kg



Water-circulation pumps with D.C. motors

Application

If the pumps are to be used for fluids other than water, please consult us first.

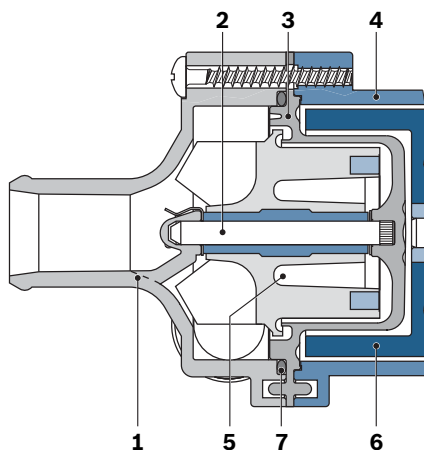
Version

Rotary pumps with solenoid-operated coupling, no sealing between motor and pump unit, and therefore leak-proof.

Note

Operation of these water pumps is not regenerative.

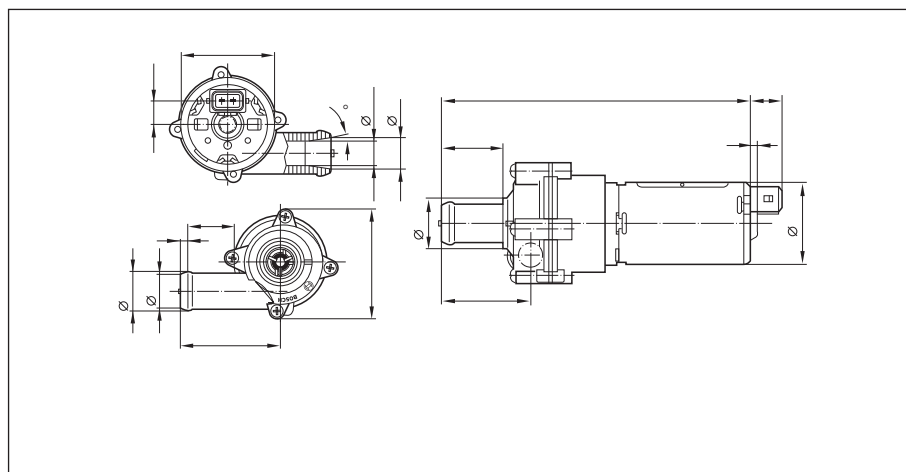
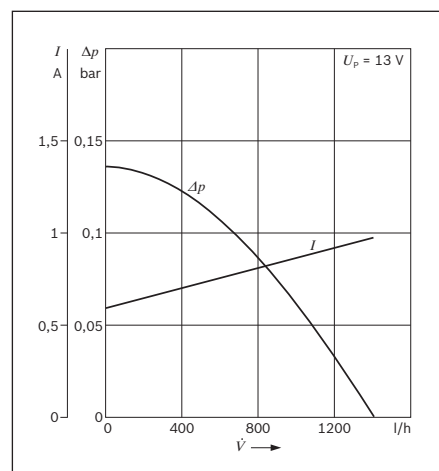
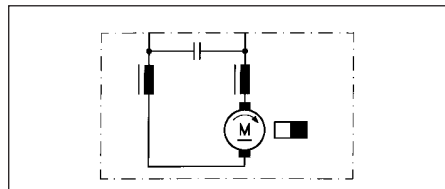
1 Pump housing made of polyamide ww. polyetherimide, **2** Bearing bolt made of stainless steel, **3** Pump housing made of polyphenylene sulfide, **4** Pump housing made of polyamide, **5** Impellor made of plasto ferrite, **6** Solenoid-operated coupling made of plasto ferrite, **7** O-ring made of soft rubber.



PAA

12 V

Part number	0 392 020 024
Nominal voltage	U_N 12 V
Delivery	\dot{V} 530 dm ³ ·h ⁻¹
Delivery pressure	p 0,1 bar
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 4 K 0
Weight	approx. 0,4 kg

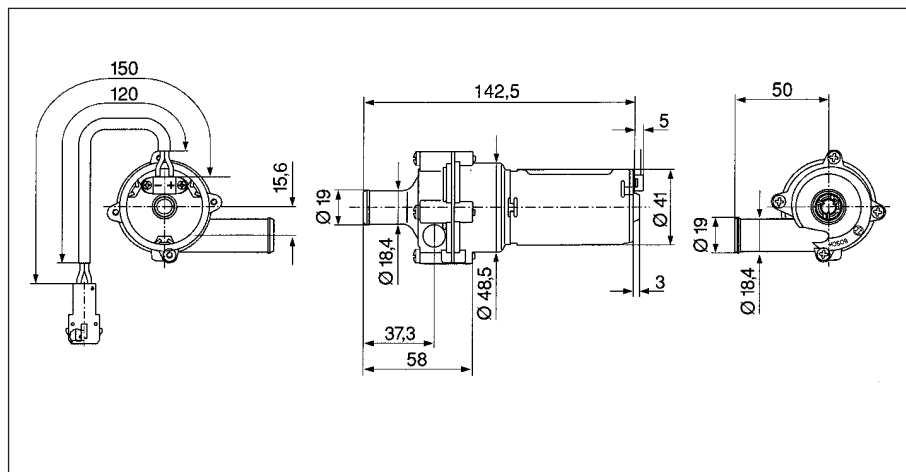
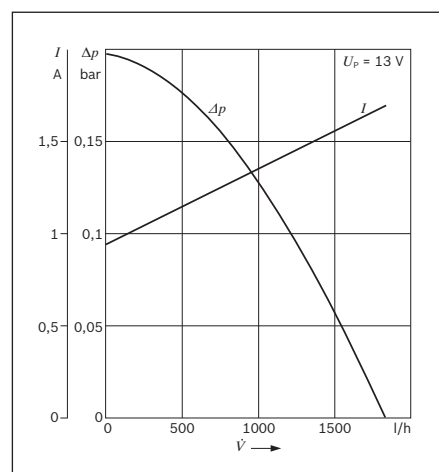
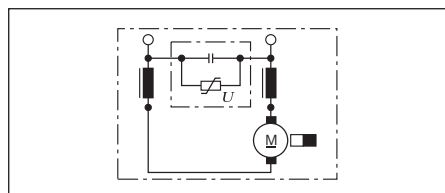


PAA

12 V

Part number	0 392 020 064
Nominal voltage	U_N 12 V
Delivery	\dot{V} 1200 dm ³ ·h ⁻¹
Delivery pressure	p 0,1 bar
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 5 K 4 ¹⁾
Weight	approx. 0,5 kg

¹⁾ Applies only with receptacle housing in place

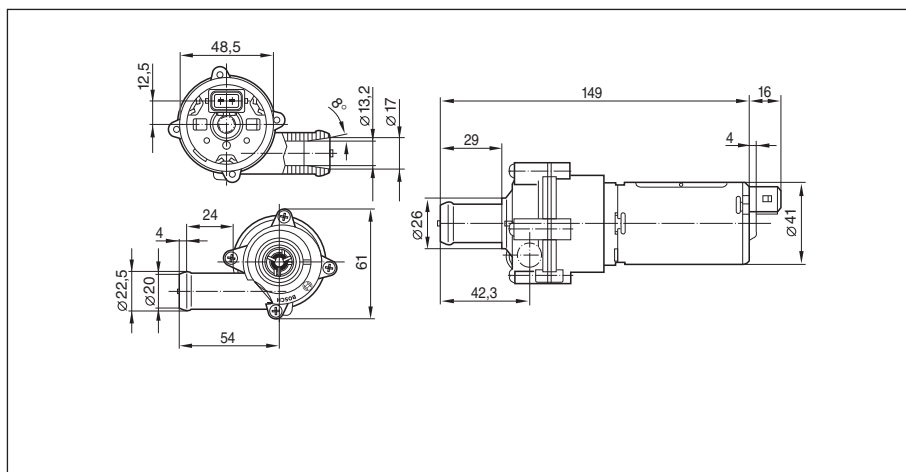
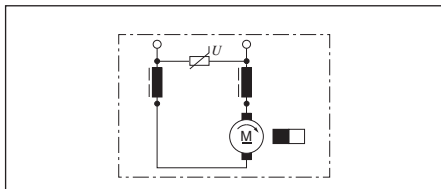
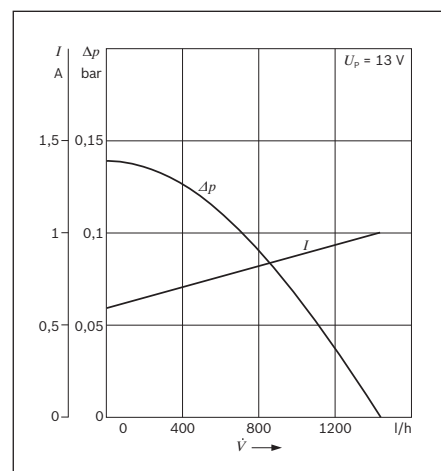


PAA

12 V

Part number	0 392 020 039
Nominal voltage	U_N 12 V
Delivery	\dot{V} 530 dm ³ ·h ⁻¹
Delivery pressure	p 0,1 bar
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 4 K 0
Weight	approx. 0,4 kg

¹⁾ Applies only with receptacle housing in place

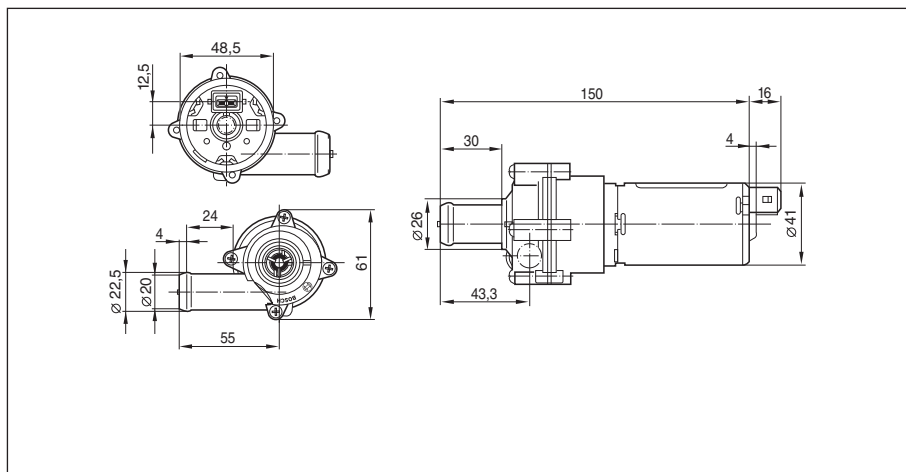
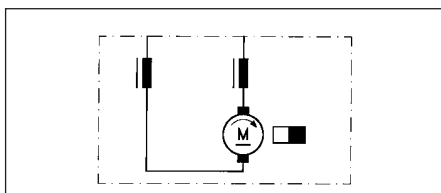
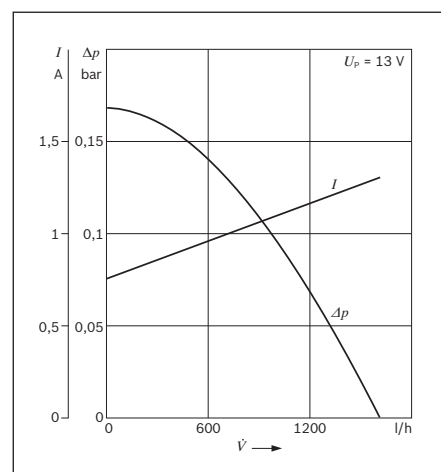


PAA

12 V

Part number	0 392 020 034
Nominal voltage	U_N 12 V
Delivery	\dot{V} 750 dm ³ ·h ⁻¹
Delivery pressure	p 0,1 bar
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 5 K 4 ¹⁾
Weight	approx. 0,4 kg

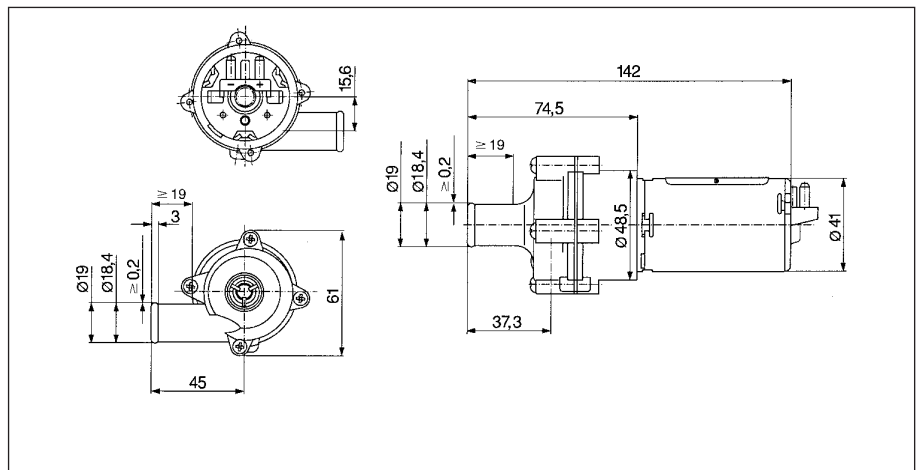
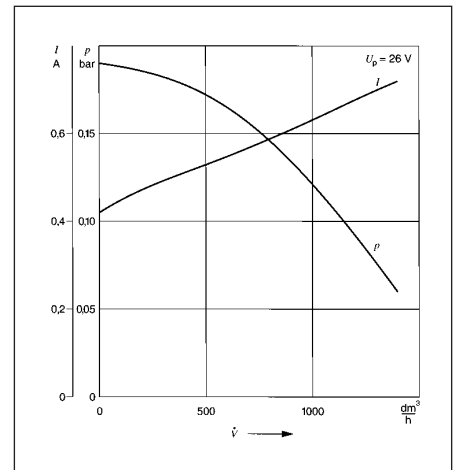
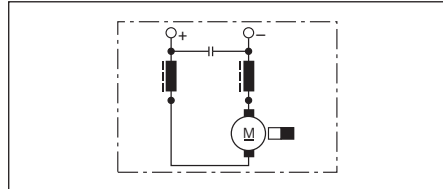
¹⁾ Applies only with receptacle housing in place



PAA**24 V**

Part number	0 392 020 027
Nominal voltage	U_N 24 V
Delivery	\dot{V} 1200 dm ³ ·h ⁻¹
Delivery pressure	p 0,1 bar
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 5 K 4 ¹⁾
Weight	approx. 0,5 kg

¹⁾ Applies only with receptacle housing in place

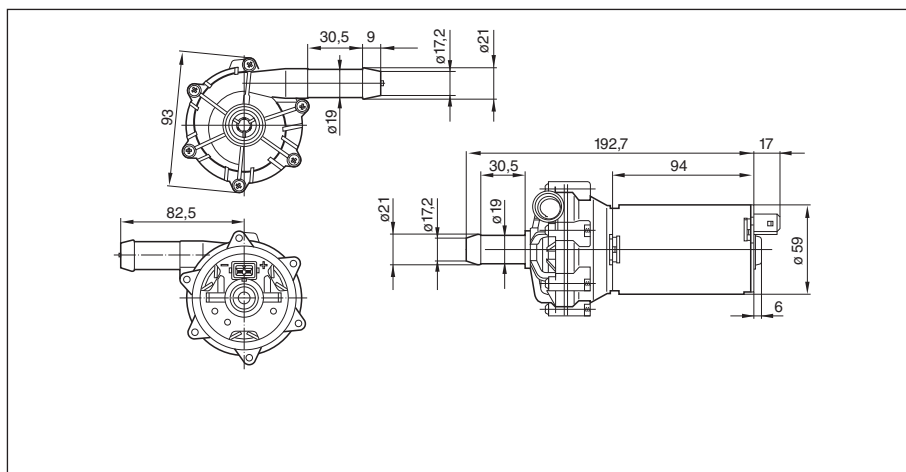
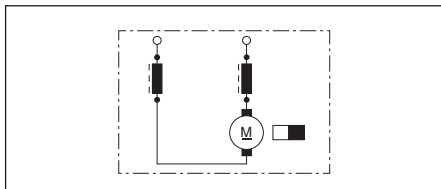
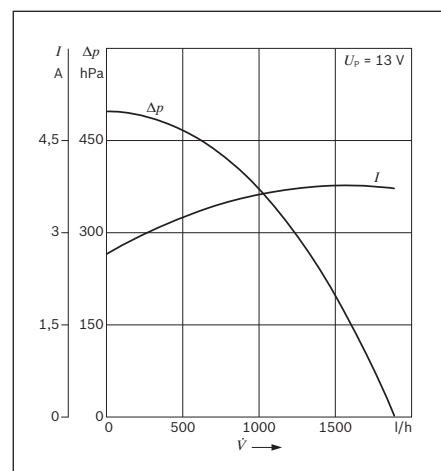


PCA

12 V

Part number	0 392 022 002
Nominal voltage	U_N 12 V
Delivery	\dot{V} 1200 dm ³ ·h ⁻¹
Delivery pressure	p 0,3 bar
Direction of rotation	R
Operating mode	S 1
Degree of protection	IP 5 K 4 ¹⁾
Weight	approx. 1,0 kg

¹⁾ Applies only with receptacle housing in place

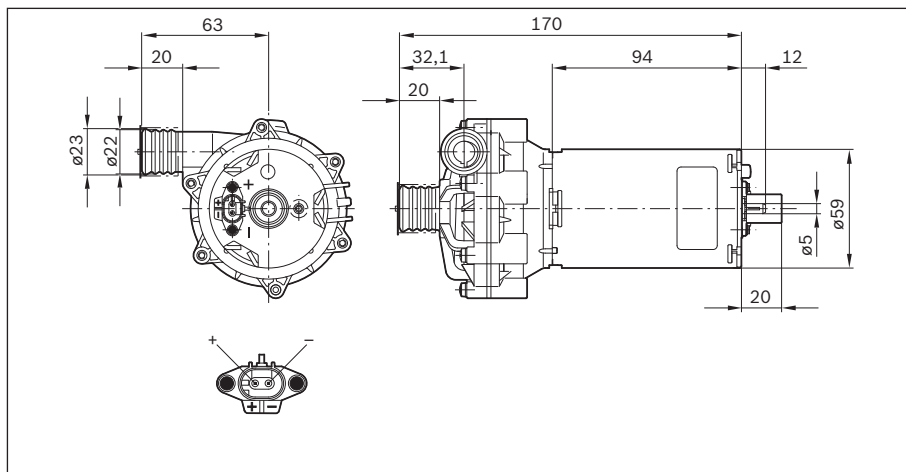
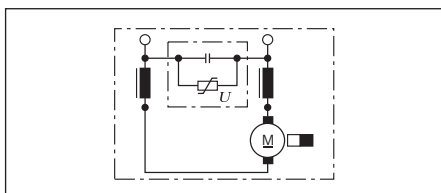
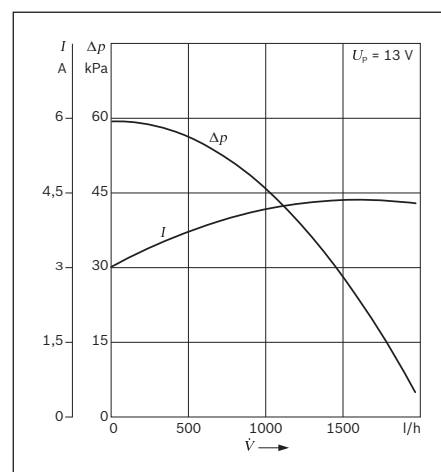


PCA

12 V

Part number	0 392 022 010
Nominal voltage	U_N 12 V
Delivery	\dot{V} 1400 dm ³ ·h ⁻¹
Delivery pressure	p 0,3 bar
Direction of rotation	R
Operating mode	S 1
Degree of protection	IP 5 K 4 ¹⁾
Weight	approx. 1,1 kg

¹⁾ Applies only with receptacle housing in place



This image shows a full page of blank, lined paper. It features approximately 28 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.

PAD Water-circulation pumps with brushless drive



Water circulation pumps with brushless drive

Advantages for your application

The essential advantages of the PAD auxiliary water pump in comparison to pumps, which are driven by carbon-brush mechanically-commutated electric motors, are:

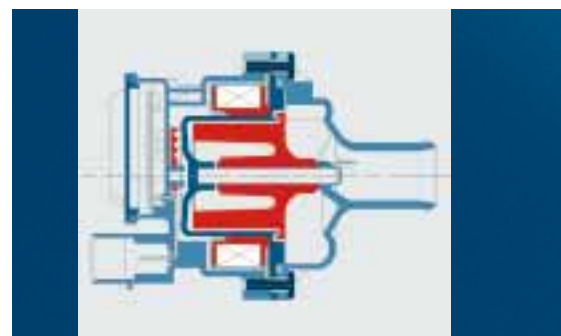
- A reduction in installation length of up to approx. one third
- Approx. half the weight
- High delivery rate
- Longer service life
- Better efficiency
- Quieter operation

The PAD is a rotary pump. The stator and electronics are mechanically fully-separated from the rotor in the dry motor housing. The electronics and the stator winding generate an alternating electrical magnetic field, which in turn drives the rotor. The rotor, as part of the pump wheel, is seated in the separate pump housing. The non-contact torque transmission serves to ensure that throughout the entire service life coolant does not come into contact with the electronics.

Application examples

For versatile applications Bosch offers auxiliary water pumps with electronically commutated drive motors:

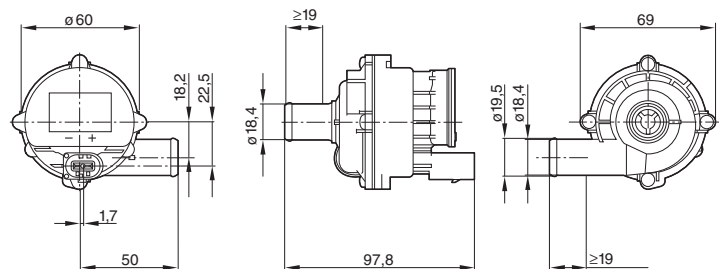
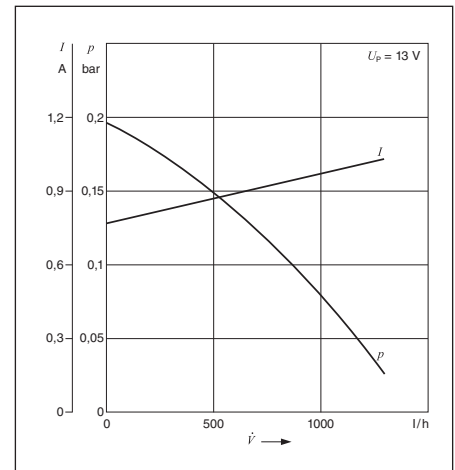
- Heater circuit
- Auxiliary heater
- Charge-air cooling
- Generator cooling
- Turbocharger cooling
- Fuel cooling
- After-run cooling of combustion engines
- Thermal management of electric vehicles
- Battery and electronic cooling



PAD**Water-circulating pump
driven by brushless motor****12 V**

Part number	0 392 023 004
Nominal voltage	U_N 12 V
Delivery quantity	\dot{V} 900 dm ³ ·h ⁻¹
Delivery pressure	p 0,1 bar
Direction of rotation	R
Type of duty	S 1
Degree of protection	IP 69 K
Weight	approx. 0,3 kg

Circuit diagram for connection please contact us



Bi-pressure pump

Application

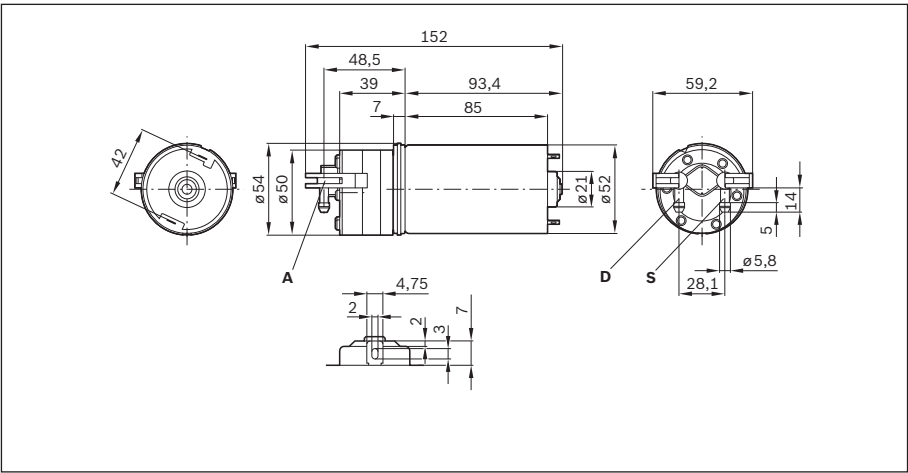
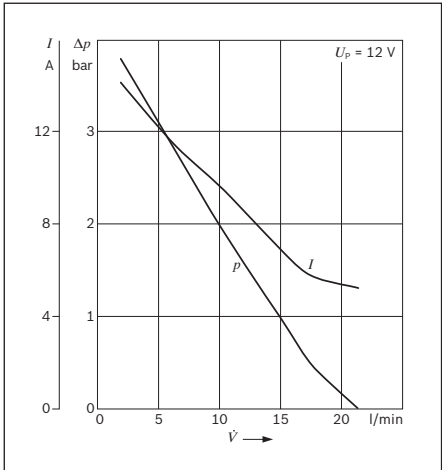
- Example applications in automotive engineering:
- Individual comfort seat adjustment
 - Raising and lowering headrests
 - Central locking
 - Closing assistance for doors and trunk lids
 - Operation of pneumatic actuators

Bi-pressure pump

Air pump for mobile and stationary pressure supply

Bi-pressure pump

Part number	1 137 222 030
Nominal voltage	U_N 12 V
Delivery	\dot{V} 16 dm ³ .min ⁻¹
Delivery pressure	p 1 bar
Direction of rotation	R/L
Type of duty	S 3 - 6 %
Weight	approx. 0,8 kg



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Solenoid valves

Valves for water-quantity control

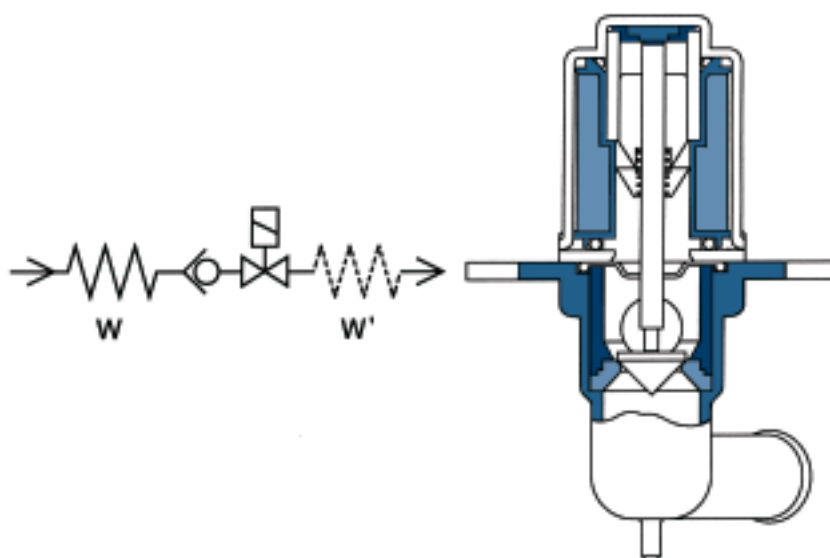
Application

Heater control for passenger cars and commercial vehicles.

Valve models

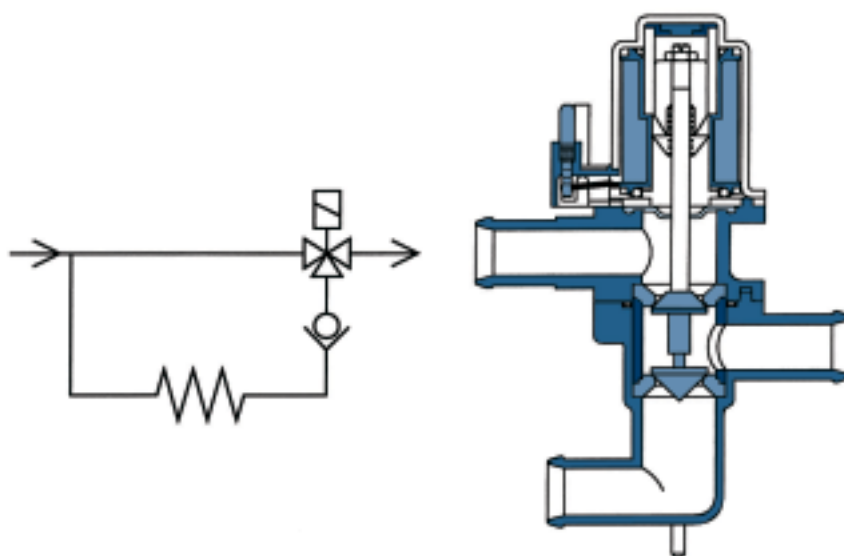
The lower valve cone is designed as a non-return valve. The valves are open when de-energized.

Shutoff- or pulse valve



W and W' heat exchanger optionally upstream or downstream of valve

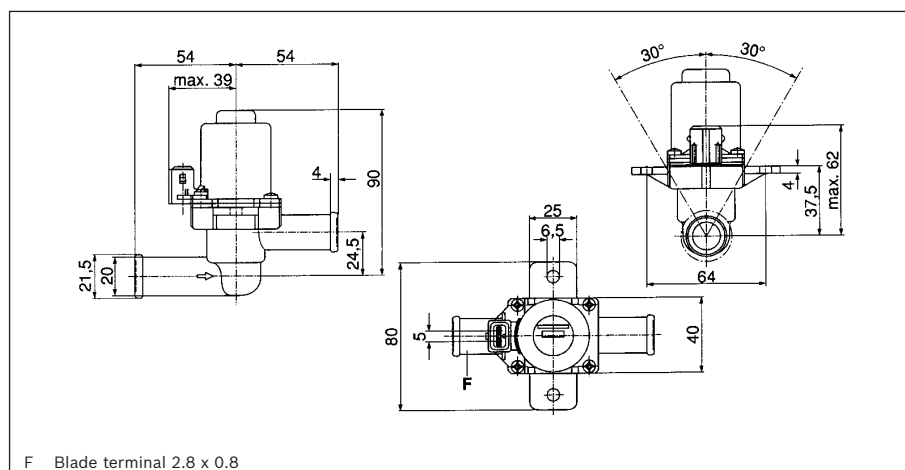
Changeover valve or pulse valve



Shutoff or timing valves

12 V

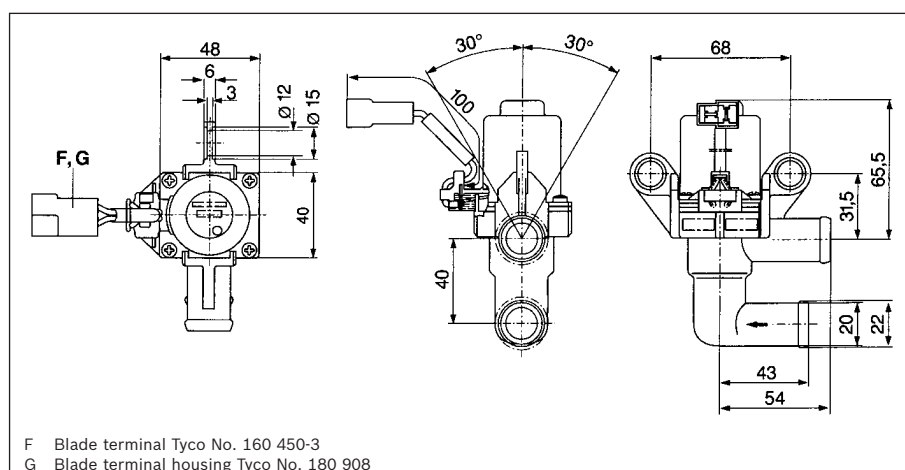
Part number	1 147 412 020
Nominal voltage	U_N 12 V
Nominal resistance	R_{20} 12,4 Ω
Pressure drop	Δp 0,25 bar
at a throughput of	\dot{V} 2000 dm ³ ·min ⁻¹
Switchable pressure difference	Δp 1,6 bar
Switching times	≤ 150 ms
Duty cycle	0 ... 100 %
Degree of protection	IP 54
Weight	approx. 390,0 g



Shutoff or timing valves

24 V

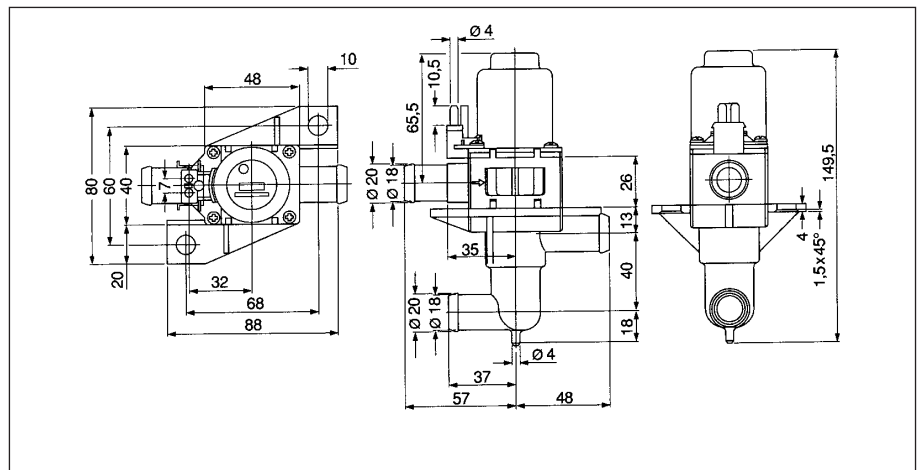
Part number	1 147 412 033
Nominal voltage	U_N 24 V
Nominal resistance	R_{20} 48 Ω
Pressure drop	Δp 0,4 bar
at a throughput of	\dot{V} 2000 dm ³ ·min ⁻¹
Switchable pressure difference	Δp 1,6 bar
Switching times	≤ 150 ms
Duty cycle	0 ... 100 %
Degree of protection	IP 54
Weight	approx. 410,0 g



Switching or timing valves

12 V

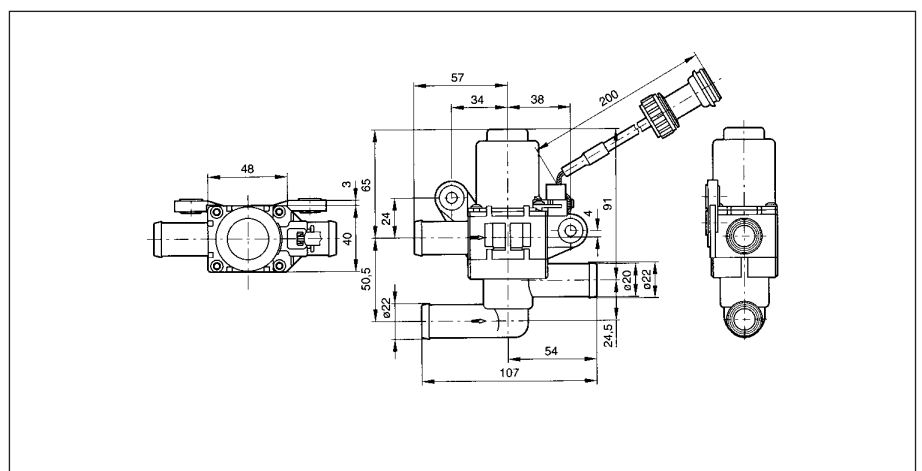
Part number	1 147 412 049
Nominal voltage	U_N 12 V
Nominal resistance	R_{20} 12,4 Ω
Pressure drop	Δp 0,5 bar
at a throughput of	\dot{V} 2000 dm ³ ·min ⁻¹
Switchable pressure difference	Δp 0,6 bar
Switching times	≤ 150 ms
Duty cycle	0 ... 100 %
Degree of protection	IP 50
Weight	approx. 480,0 g



Switching or timing valves

24 V

Part number	1 147 412 094
Nominal voltage	U_N 24 V
Nominal resistance	R_{20} 48 Ω
Pressure drop	Δp 0,5 bar
at a throughput of	\dot{V} 2000 dm ³ ·min ⁻¹
Switchable pressure difference	Δp 0,6 bar
Switching times	≤ 150 ms
Duty cycle	0 ... 100 %
Degree of protection	IP 54
Weight	approx. 500,0 g



[illegible]

Part numbers

Part number	page	Part number	page	Part number	page
0 130 002 092	11	0 130 063 810	100	0 130 303 805	108
0 130 002 211	11	0 130 063 814	101	0 130 303 806	108
0 130 002 525	12	0 130 101 102	36	0 130 303 897	107
0 130 002 527	12	0 130 101 103	35	0 130 303 902	109
0 130 002 529	13	0 130 101 108	35	0 130 305 206	110
0 130 002 530	13	0 130 101 112	36	0 130 706 816	113
0 130 002 562	14	0 130 101 117	37	0 130 821 530	77
0 130 002 613	17	0 130 101 123	37	0 130 821 531	77
0 130 002 632	15	0 130 107 077	103	0 130 821 542	78
0 130 002 633	16	0 130 107 100	34	0 130 821 543	78
0 130 002 634	16	0 130 107 212	104	0 130 821 666	77
0 130 002 636	17	0 130 109 207	102	0 130 821 667	77
0 130 002 671	14	0 130 109 213	102	0 130 821 682	78
0 130 002 672	15	0 130 110 002	33	0 130 821 683	78
0 130 002 673	18	0 130 110 003	32	0 130 821 782	79
0 130 002 674	18	0 130 110 005	32	0 130 821 783	79
0 130 002 828	95	0 130 110 019	33	0 130 821 916	79
0 130 002 830	95	0 130 111 003	27	0 130 821 917	79
0 130 007 027	20	0 130 111 042	31	0 130 822 003	76
0 130 007 051	19	0 130 111 101	30	0 130 822 004	76
0 130 007 304	96	0 130 111 110	28	0 132 801 141	52
0 130 007 342	20	0 130 111 130	30	0 132 801 142	54
0 130 007 343	19	0 130 111 136	29	0 132 801 143	53
0 130 007 802	98	0 130 111 159	28	0 132 801 346	52
0 130 007 803	97	0 130 111 171	27	0 132 801 347	53
0 130 007 804	96	0 130 111 189	29	0 132 801 348	53
0 130 007 810	97	0 130 302 001	43	0 132 801 349	53
0 130 063 012	22	0 130 302 002	41	0 132 801 350	53
0 130 063 029	25	0 130 302 003	41	0 132 801 351	53
0 130 063 040	23	0 130 302 009	42	0 390 201 900	56
0 130 063 042	23	0 130 302 012	42	0 390 201 901	56
0 130 063 059	25	0 130 302 013	44	0 390 201 902	57
0 130 063 075	21	0 130 302 014	44	0 390 201 903	57
0 130 063 076	22	0 130 302 015	43	0 390 201 912	56
0 130 063 092	24	0 130 303 001	39	0 390 201 913	56
0 130 063 602	26	0 130 303 003	38	0 390 201 914	57
0 130 063 604	26	0 130 303 015	39	0 390 201 915	57
0 130 063 804	99	0 130 303 233	107	0 390 201 918	59
0 130 063 805	99	0 130 303 245	105	0 390 201 925	59
0 130 063 809	100	0 130 303 246	106	0 390 201 927	66

Part number	page	Part number	page	Part number	page
0 390 201 941	66	0 390 257 685	83	3 137 227 744	40
0 390 201 944	61	0 390 257 687	85	9 390 453 009	87
0 390 201 964	58	0 390 257 688	86	F 000 MM0 001	47
0 390 201 972	60	0 390 257 689	83	F 000 MM0 003	47
0 390 201 973	60	0 390 257 690	84	F 000 MM0 616	46
0 390 201 989	67	0 390 257 691	86	F 000 MM0 617	45
0 390 201 997	58	0 390 257 693	85	F 000 MM0 618	45
0 390 201 999	61	0 390 257 694	84	F 000 MM0 619	46
0 390 202 600	69	0 390 257 697	82	F 000 MM0 805	48
0 390 203 224	62	0 390 257 699	82	F 006 B10 132	106
0 390 203 225	62	0 390 442 409	93	F 006 B10 134	103
0 390 203 226	64	0 390 442 410	93	F 006 B10 148	21
0 390 203 227	64	0 390 442 451	92	F 006 B20 093	81
0 390 203 229	67	0 392 003 501	114	F 006 B20 097	80
0 390 203 310	63	0 392 020 024	117	F 006 B20 106	88
0 390 203 311	63	0 392 020 027	119	F 006 B20 111	89
0 390 203 312	65	0 392 020 034	118	F 006 D10 029	105
0 390 203 313	65	0 392 020 039	118	F 006 KM0 60F	38
0 390 206 616	73	0 392 020 064	117	F 006 MG0 30B	24
0 390 206 617	73	0 392 022 002	120		
0 390 206 634	69	0 392 022 010	120		
0 390 206 682	70	0 392 023 004	123		
0 390 206 692	68	0 392 040 001	115		
0 390 206 693	68	0 392 040 008	115		
0 390 207 405	75	1 132 061 016	55		
0 390 207 406	75	1 132 061 023	55		
0 390 207 604	74	1 132 061 025	55		
0 390 207 605	70	1 132 061 027	55		
0 390 207 606	71	1 132 061 028	55		
0 390 207 696	72	1 132 061 047	55		
0 390 207 697	72	1 132 061 048	55		
0 390 207 698	71	1 132 061 049	55		
0 390 242 301	88	1 132 061 050	55		
0 390 242 401	91	1 132 061 074	55		
0 390 242 409	91	1 137 222 030	124		
0 390 251 684	81	1 147 412 020	127		
0 390 251 690	80	1 147 412 033	127		
0 390 257 651	90	1 147 412 049	128		
0 390 257 652	89	1 147 412 094	128		
0 390 257 653	90	3 137 227 713	40		

Should you have any special requests, which go beyond the range of motors we have on offer, please note these on the following data sheet. In the event of any modifications, please state the known product here.

Bosch-

Order no.:

Please use this printed data sheet as a master copy and return the filled out copy.

Please select address (from list opposite):

Sender (customer):

Your reference/dated	Our dept./person in charge	Telephone (extension)	Date
Project, application:			

Annual requirement	1. Year:	2. Year:
Rated voltage		V
Rated speed		min ⁻¹
Rated torque		Ncm
Starting torque		Ncm
Operating mode:	Continuous service	<input type="checkbox"/>
	Short-time service	<input type="checkbox"/>
	Operating time	min
	Number of cycles	h ⁻¹
Service life		h
Endurance-test condition at		
Ambient temperature	max.	°C
	min.	°C

Direction of rotation (viewed towards drive shaft end)	Right	<input type="checkbox"/>
	Left	<input type="checkbox"/>
Installation space		
Installation length		
Shaft end	as for series motor	<input type="checkbox"/>
	as under	
Ball bearing in drive		<input type="checkbox"/>
Performance specification		<input type="checkbox"/>
Customer drawing		<input type="checkbox"/>
Degree of protection		