



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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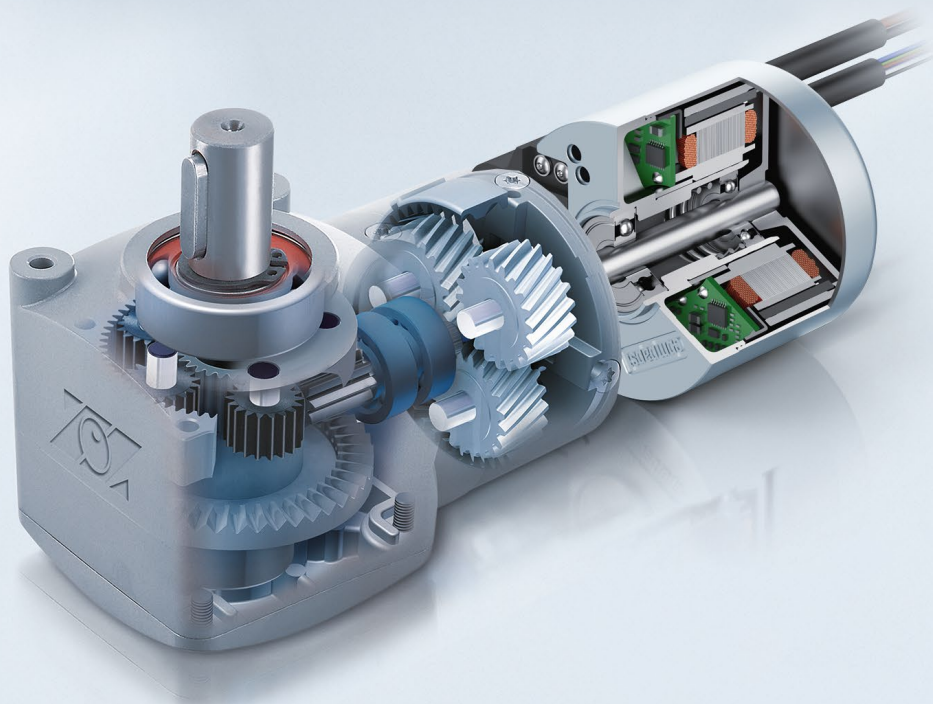
Brushless external rotor motor VD/VDC series

Drive solutions | Industrial drive engineering 2017-05

ebmpapst

The engineer's choice





Modular drive systems.
Motors with integrated logic and power
electronics – optional gearhead.

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About ebm-papst.

As technological leader for ventilation and drive engineering, ebm-papst is in demand as an engineering partner in many industries. With over 15,000 different products, we provide the right solution for just about any challenge. Our fans and drives are reliable, quiet and energy-efficient.

Six reasons that make us the ideal partner:

Our systems expertise.

You want the best solution for every project. The interrelationships between ventilation and drive engineering must thus be considered as a whole. And that's what we do – with **motor technology** that sets standards, sophisticated **electronics** and **aerodynamic designs** – all from a single source and perfectly matched. These system solutions release unique synergies worldwide. And in particular – they relieve you of a lot of work, so that you can concentrate on your core competency.

The ebm-papst spirit of invention.

In addition to our wide range of products, we are always able to develop customized solutions for you. A diversified team of 600 engineers and technicians works at our three locations in Germany: Mulfingen, Landshut and St. Georgen. Contact us to discuss your next project.

Our lead in technology.

As pioneer and trail-blazer for developing highly efficient EC technology, we are way ahead of other motor manufacturers. Almost all our products are also available with GreenTech EC technology. The list of benefits is long: higher efficiency, maintenance-free, longer service life, sound reduction, intelligent control characteristics and unrivalled energy efficiency with savings of up to 80 % compared to conventional AC technology. Let our technology be your competitive advantage as you lead in your industry.

Closeness to our customers.

ebm-papst has 25 production locations worldwide (including facilities in Germany, China and the USA), together with 49 sales offices, each of which has a dense network of sales representatives. You will always have a local contact, someone who speaks your language and knows your market.

Our standard of quality.

Of course you can rely on the highest standards of quality with our products. Our quality management is uncompromising, at every step in every process. This is underscored by our certification according to international standards including DIN EN ISO 9001, TS declaration of conformity and DIN EN ISO 14001.

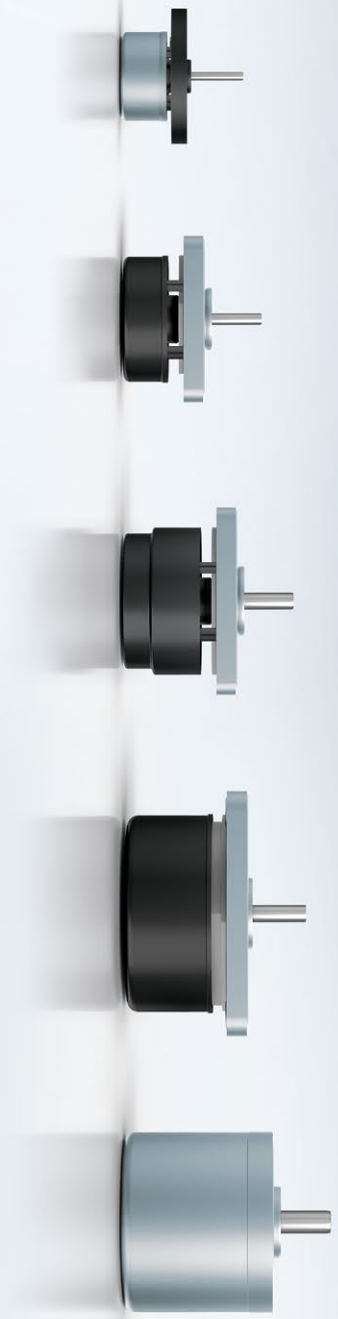
Our sustainable approach.

Assuming responsibility for the environment, for our employees and for society is an integral part of our corporate philosophy. We develop products with an eye to maximum environmental compatibility, in particular resource-preserving production methods. We promote environmental awareness among our young staff and are actively involved in sports, culture and education. That's what makes us a leading company – and an ideal partner for you.

Our success story to becoming market leader and technological innovator.

- 1963** Elektrobau Mulfingen **GmbH & Co. KG founded by** Gerhard Sturm and Heinz Ziehl.
- 1965** Development of the first compact fan in the field of EC-/DC-technology.
- 1966** The ebm-papst success story started to take off with the release of the new 68 motor.
- 1972** The first foreign subsidiary was founded in Sweden.
- 1988** Gerhard Sturm receives the German Cross of Merit.
- 1990** The sixty millionth external rotor fan was produced.
- 1992** Acquisition of **PAPST Motoren GmbH** in St. Georgen.
- 1997** Purchase of the **Landshut** plant (mvl).
- 2003** Change of name to **ebm-papst**.
- 2007** Introduction of the gearhead "**EtaCrown®**".
- 2010** **GreenTech** – our symbol for energy-efficiency and resource conservation.
- 2012** Introduction of a new generation control electronics (**K4**) for BLDC motors.
- 2013** ebm-papst acquires the gear specialist, **Zeitlauf**, and wins the **German Sustainability Award**.
- 2014** Launch of the BLDC internal rotor motor, **ECI 80**.
- 2015** Introduction of the overload-capable planetary gear "**Optimax 63**".
- 2016** Expansion of the electronic production plant, St. Georgen Hagenmoos.





Overview of VD/VDC motors.

Brushless external rotor motors VD/VDC		VD-25.07 (p. 14)	VD-35.06 (p. 16)	VD-45.10 (p. 18)	VD-54.14 (p. 20)	VD-49.15 (p. 22)	VDC-43.10 (p. 24)	VDC-54.14 (p. 26)	VDC-49.15 (p. 28)	VDC-49.15 (p. 30)	VDC-49.15 (p. 30)
U _N	V DC	24	24	24	24	24	24	24	24	24	48
M _N	mNm	8	20	54	150	235	45	130	150	235	300
P	W	5	8	21	57	110	19	47.6	63	100	125
n _N	rpm	6 000	3 700	3 700	3 700	4 500	4 000	3 500	4 000	4 000	4 000
l	mm	23.6	29.3	40.8	43.3	52	40	42	52	52	52
d	mm	32	44	52.8	68.4	63	52.8	68.3	63	63	63
Control electronics (integrated) (from page 10)											
K1 (Hall sensor system)		•	•	•	•	•					
K3 (speed)							•	•	•		
K4 (position)										○	○
Control electronics (external) (from page 34)											
VTD-XX.XX-K3		•	•	•	•	•					
VTD-XX.XX-K4S					•	•					
VTD-60.13-K5 SB				•	•	•					
Gearheads (from page 42)											
NoiselessPlus 63 (planetary gearhead) (p. 44)						•					
Performax® 63 (planetary gearhead) (p. 46)						•				•	•
Performax®Plus 63 (planetary gearhead) (p. 48)						•					
EtaCrown® 75 (crown gearhead) (p. 50)						•				•	•
EtaCrown®Plus 63 (crown gearhead) (p. 52)						•				•	•
Compactline 90 (spur gearhead) (p. 54)						•		•			
Compactline 91 (spur gearhead) (p. 56)				•	•	•	•	•	•	•	•
Compactline 92 (spur gearhead) (p. 58)					•	•		•			
Flatline 85 (spur gearhead) (p. 60)					•	•		•	•	•	•
Subject to alterations		• Standard type ○ Preferred type: ready to ship in 48 hours									

With our **preferred type** products, we offer a selection of motors and gear motors which are available and ready to ship within 48 hours. Preferred type products can be ordered with a maximum order quantity of 20 products per order.

With **standard type** products, we refer to a wide range of motors and gear motors which can be ordered using the stated order numbers with standard delivery times.

Further products for your project requirements are available **on request**. These products are generally available but cannot be ordered by means of an allocated material number. We reserve the right to make changes to the necessary order numbers after technical and economic evaluation of the requirement.

VD/VDC motors.



VD-25.07-K1	14
VD-35.06-K1	16
VD-43.10-K1	18
VD-54.14-K1	20
VD-49.15-K1	22
VDC-43.10-K3	24
VDC-54.14-K3	26
VDC-49.15-K3	28
VDC-49.15-K4	30

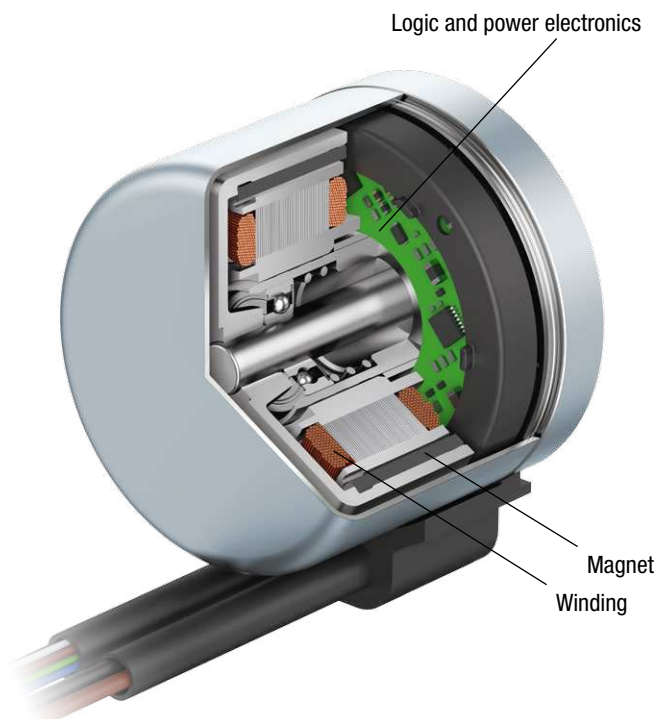
Information for VD/VDC motors.

Key figures

- 3-phase, electronically commutated external rotor motor
 - Output range between 5 and 125 watts
 - High power density realized in a compact design
 - Very quiet operation across the entire speed range
 - High overload capacity
 - Very high power density
 - Rigid speed / torque curve
 - Extremely wide speed control range
 - Robust housing and bearings
 - Protection class IP 54 as per EN 60 034-5: up to IP 65
- Various motor types which can be combined with planetary, crown and spur gearheads

Approvals

- Support with the accreditation of products in different economic areas and markets
- As an experienced and competent partner we would be happy to support you
- Possible approvals include CE, CCC, UL, CSA, EAC
- Additional approvals on request



The data in this catalog contain product specifications, but are not a guarantee of particular properties.

All information is based on the measuring conditions mentioned below. Operation of motors using reference electronics at an **ambient temperature of max. 40°C** when attached (thermally conductive) to a free-standing steel plate of the following size:
Steel plate 105 x 105 x 10 mm

The **nominal operating point** is the basis for the electromagnetic design of the motor from the point of view of the maximum possible continuous output of the motor and is specified by the nominal values described here.

The values mentioned are typical values for the design in question and are also subject to the tolerances included in the specifications or drawings. Unless otherwise stated, the supplements and safety notes contained in the relevant operating and assembly instructions must be kept at all times. Subject to availability and technical alterations.

Nominal output power P_N [W]

The output power which the motor can produce continuously; it is calculated from nominal torque and nominal speed. For the electromagnetic design of the motor the determination of the nominal operating point is based on the fact that the nominal output power is close the maximum output power of the motor.

Nominal voltage U_{BN} , U_N , U_B [V DC]

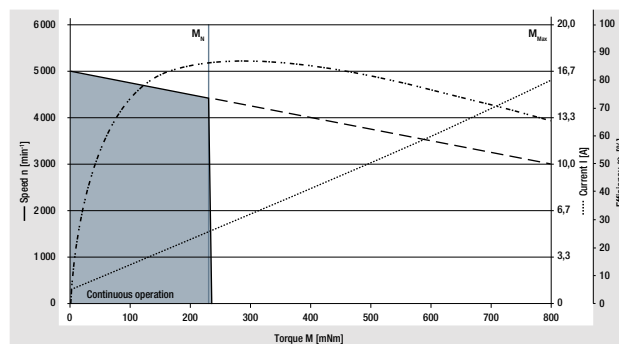
The DC voltage (i.e. DC voltage range) that is applied to the commutation electronics as a system supply voltage. All nominal values listed in the technical tables of the individual motors refer to this voltage. Motor applications are, however, not restricted to this voltage.

Nominal speed n_N [rpm]

The speed at which the motor may be operated continuously while delivering nominal torque at an ambient temperature of 40°C and nominal output torque. It is an operating point on the max. motor curve based on an ideal electronics with negligible losses.

Nominal torque M_N [mNm]

The torque that the motor can deliver continuously at an ambient temperature of 40°C and nominal speed.



The illustrated curves are idealized representations based on the figures in the tables.

Nominal current I_{BN}

The current that is drawn from the system supply when the motor delivers nominal torque at nominal speed.

Speed at no-load operation n_L [rpm]

The speed that takes effect at the nominal voltage and with unloaded motor. The theoretical possible speed at no-load operation can, in some cases, be limited by the mechanical ceiling speed.

No-load current I_{BL} [A]

Is established with nominal voltage and unloaded motor; is largely influenced by the bearing friction. For drive systems that have a separate supply for power and logic, the no-load current is called I_L . This no-load current is the sum of the power supply (I_{zK}) and the low-power logic supply (I_b).

Permanent stall torque M_{BN0} [mNm]

Is the maximum permissible torque with which the motor may be permanently loaded when the rotor is locked.

Permissible eff. continuous stall current I_{noeff} [A]

Is the maximum permissible current which at a stalled motor is allowed to flow into the motor lead as an effective value.

Definitions for VD/VDC motors.

Continuous stall power P_{Bn0} [W]

Is an approximate value for the voltage-independent maximum permitted output ($P=U \times I$) that can be taken from the DC voltage source in holding status.

Permissible peak torque short-term M_{max} [mNm]

Is the torque which the motor can usually deliver in a short time.

Permissible peak current, motor lead I_{max} [A]

Is the current that must flow in to the motor lead as a peak value to achieve the short-time peak torque.

Induced voltage U_{max} [V/1 000 rpm]

Maximum value of the induced voltage between two motor leads at 1 000 rpm. It is a dimension for the electromagnetic utilization of the motor.

Connection resistance R_v [Ohm]

The winding resistance that is measured at 20°C between any two of three winding terminations.

Connection inductance L_v [mH]

The average inductance that is measured at 20°C between any two of three winding terminations using a sinusoidal wave measuring frequency of 1 kHz.

Rotor moment of inertia J_r [kgm²x10⁻⁶]

The mass moment of inertia of the rotor and necessary dimension for the dynamic characteristics of the motor.

Protection class

Information on the protection class; it describes protection against foreign particles (Point 1) and water (Point 2).

Permissible ambient temperature range T_v [°C]

Defines the minimum and maximum permissible ambient temperature to which the mentioned performance values apply when the motor is in operation. The permissible winding temperature in the motor (115°C for insulation Class E, as per EN 60 034-1) </1125 should not be exceeded.

Weight [kg]

Weight of the delivered unit without additional units or packaging.

Max. shaft load F_{radial}/F_{axial} [N]

The permissible forces are divided into radial and axial load values. They are based on the maximum permissible values for the motor bearing during operation at normal rating and a defined service life expectancy L_{10} .

Service life L_{10}

The values for the L_{10} service life specified in conjunction with the permitted bearing loads have been calculated to DIN ISO 281. In addition to the specified values, this calculation is based on operation of the motor at nominal conditions (nominal torque, nominal speed) and an ambient temperature of max. 40°C. Therefore, the service life information is explicitly not a guarantee of service life, but strictly a theoretical quality figure.

Max. reverse voltage [V DC]

When the braking function is activated and when the set value step change is negative, the motor operates in controlled braking mode. In this operating state, the large part of the braking energy is fed back to the intermediate circuit until the max. reverse voltage is reached and the electronics prevent a further increase beyond this value by chopped braking. This behavior should be given special consideration when selecting the system supply.

Set value input

Speed setting via an analogue interface for DC voltage.

Depending on the drive design, the set speed can be configured in a range from 0 ... n_{max} , where the minimum possible speed value (with limited control quality) is about 0 rpm (sine commutation)

or approx. 50 to 100 rpm (block commutation). (Relevant only for drives with integrated operating electronics).

Recommended speed range [rpm]

Speed control range within which the speed control accuracy stipulated in the system specification is complied with.

Starting torque [mNm]

Is the torque that can be delivered over a short time when the motor is started based on the electromagnetic motor characteristics and the set current limitation.

Effective torque M_{eff} [mNm]

For cycle operation (e.g. "S5" operating mode – intermittent duty with the effect of the startup losses and the losses due to electrical braking on the heating), the effective torque corresponding to continuous operation ("S1" operating mode) is determined according to the following formula:

$$M_{\text{eff}} = \sqrt{\frac{M_A^2 \cdot t_A + M_L^2 \cdot t_b + M_{Br}^2 \cdot t_{Br}}{t_A + t_b + t_{Br} + t_{St}}}$$

M_A	Starting torque	M_{Br}	Braking
t_A	Acceleration time	t_{Br}	Braking time
M_L	Load torque	t_{St}	Standstill time
t_b	Load period		

At an ambient temperature of 40°C this effective torque must not be greater than the nominal torque M_N listed in the catalog for the selected motor. For intermittent operation (operating mode S3 with t_r = relative on period) the following permissible load moment applies:

$$M_L = M_N \cdot \sqrt{\frac{100}{t_r}}$$

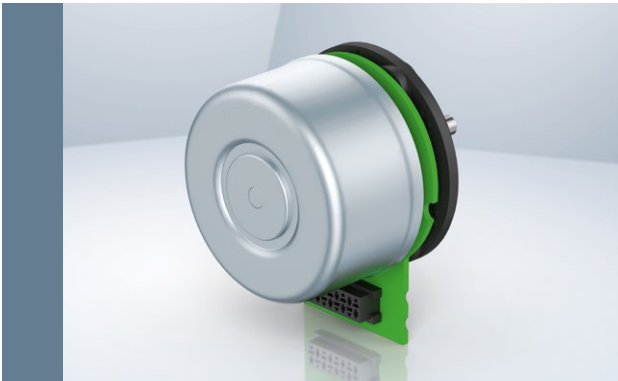
System selection

When selecting a motor and operating for a drive system, consideration should be given to the fact that the values permitted for the motor should not be exceeded by the electronics. Likewise, the relationship shown in the commutation sequences between the sequence of Hall signals and the corresponding switching times and switching states of the output stage at the phase supply lines must be observed in order to attain optimum operation of the motor.

Please contact the manufacturer if the products are operated or stored under non standard environmental conditions.

VD motor.

VD-25.07-K1



- 3-phase external rotor motor with EC technology
- Basic motor with electronic module K1 for operation on external control electronics
- Very good synchronization characteristics
- Long lifetime by using precision ball bearings
- Insulation class E
- Electrical connection via socket directly on the circuit board
- Alternative windings / motor part sets on request

Nominal data

Type		VD-25.07-K1-B01
Nominal voltage (U_N)	V DC	24
Nominal speed (n_N)*	rpm	6 000
Nominal torque (M_N)*	mNm	8.00
Nominal current (I_N)*	A	0.40
Nominal output power (P_N)*	W	5.00
Starting torque (M_{max})	mNm	40.0
Permissible peak current (I_{max})**	A	1.80
Speed at no-load operation (n_L)	rpm	8 500
No-load current (I_L)	A	0.095
Recommended speed control range	rpm	300 ... 8 500
Rotor moment of inertia (J_R)	kgm ² x10 ⁻⁶	4.30
Motor constant (K_E)	mVs/rad	26.6
Connection resistance (R_V)	Ω	14.8
Connection inductance (L_V)	mH	8.00
Overload protection		To be implemented via the control electronics
Permissible ambient temperature range (T_U)	$^{\circ}\text{C}$	0 ... +40
Weight	kg	0.055
Order no.	IP 00	937 2507 000

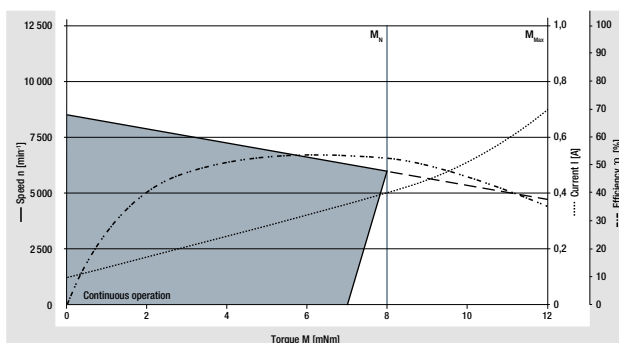
Subject to alterations

* At T_U max. 40 $^{\circ}\text{C}$

** Permissible time for peak current: max. 1 sec. – to be repeated only after complete cool down

Characteristic curve

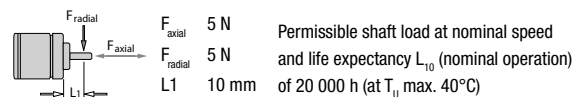
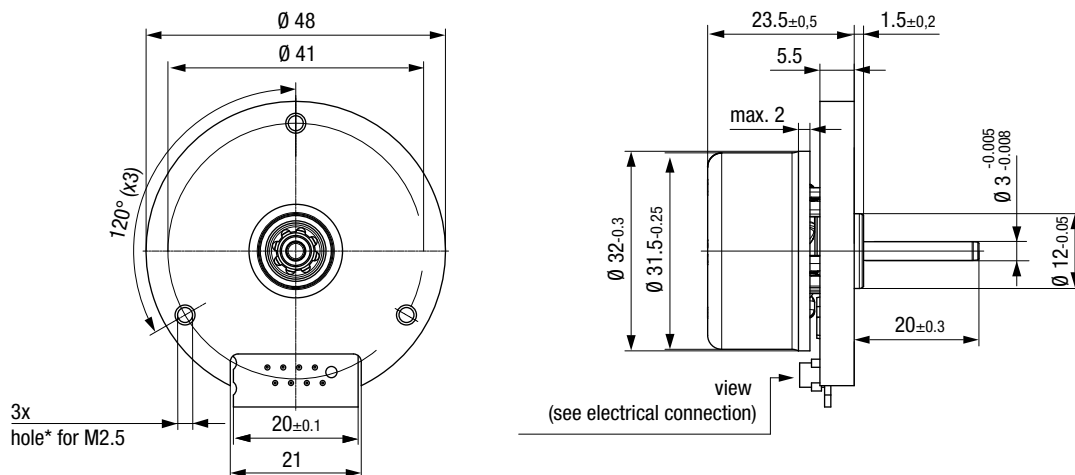
VD-25.07-K1-B01 (at 25 $^{\circ}\text{C}$)



¹⁾ Nominal data, see table

Technical drawing

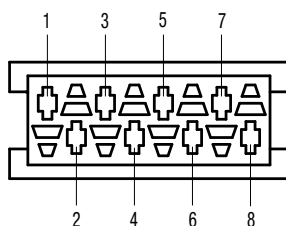
All dimensions in mm



* For thread-rolling screws according to DIN 7500

Electrical connection

Supply wire	
No.	Function
6	Phase U
7	Phase V
8	Phase W

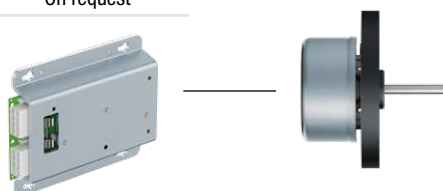


Signal wire	
No.	Function
1	GND
2	Hall C
3	+ U_B
4	Hall B
5	Hall A

Modular construction kit

Recommended external control electronics	
VTD-XX.XX-K3	On request

Basic motor



For motor-gearbox combinations, depending on the choice of the single components, the maximum allowable torque (gearbox) can be exceeded or respectively not reached.

VD motor.

VD-35.06-K1



- 3-phase external rotor motor with EC technology
- Basic motor with electronic module K1 for operation on external control electronics
- Very good synchronization characteristics
- Long lifetime by using precision ball bearings
- Insulation class E
- Electrical connection via the circuit board edge plug
- Alternative windings / motor part sets on request

Nominal data

Type		VD-35.06-K1-B01	VD-35.06-K1-B00
Nominal voltage (U_N)	V DC	24	
Nominal speed (n_N)*	rpm	7 500	3 700
Nominal torque (M_N)*	mNm	20.0	20.0
Nominal current (I_N)*	A	1.25	0.80
Nominal output power (P_N)*	W	16.0	8.00
Starting torque (M_{max})	mNm	69.0	
Permissible peak current (I_{max})**	A	4.00	2.50
Speed at no-load operation (n_L)	rpm	11 000	7 100
No-load current (I_L)	A	0.25	0.16
Recommended speed control range	rpm	300 ... 11 000	300 ... 7 100
Rotor moment of inertia (J_R)	kgm ² x10 ⁻⁶	16.0	
Motor constant (K_E)	mVs/rad	20.9	33.6
Connection resistance (R_V)	Ω	3.70	9.40
Connection inductance (L_V)	mH	2.50	6.40
Overload protection		To be implemented via the control electronics	
Permissible ambient temperature range (T_U)	$^{\circ}\text{C}$	0 ... +40	
Weight	kg	0.12	
Order no.	IP 00	937 3506 000	937 3506 010

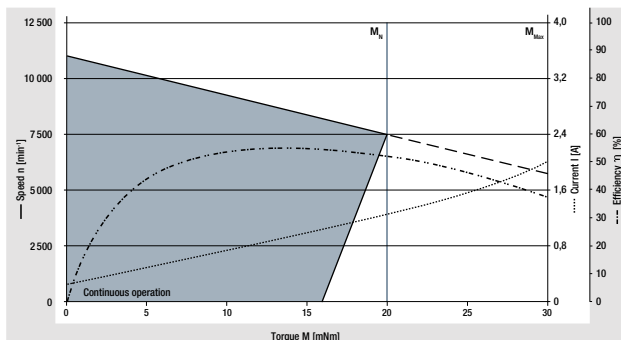
Subject to alterations

* At T_U max. 40 $^{\circ}\text{C}$

** Permissible time for peak current: max. 1 sec. – to be repeated only after complete cool down

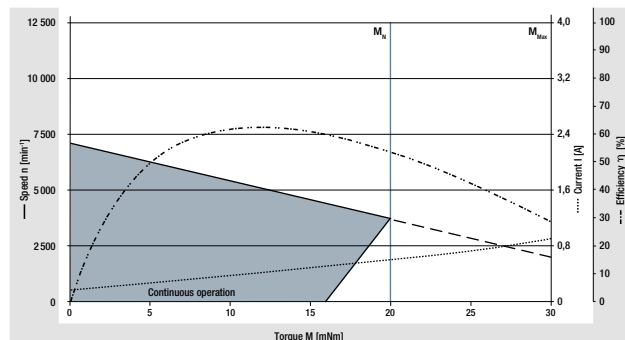
Characteristic curve

VD-35.06-K1-B01 (at 25 $^{\circ}\text{C}$)



¹⁾ Nominal data, see table

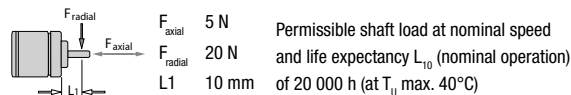
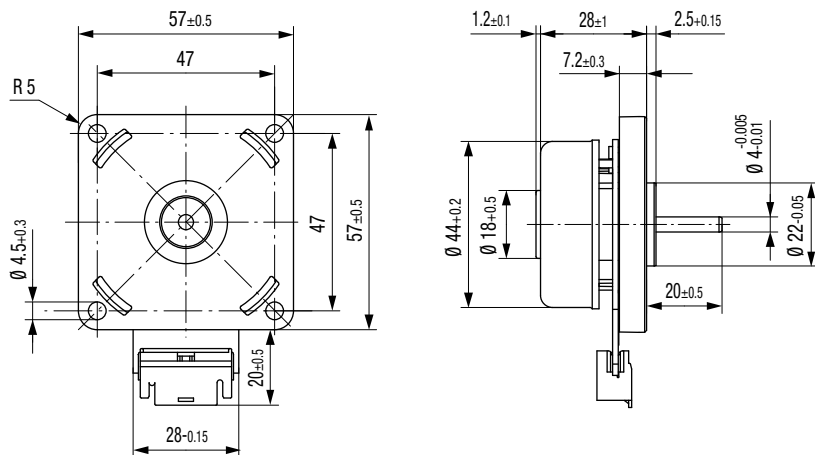
VD-35.06-K1-B00 (at 25 $^{\circ}\text{C}$)



¹⁾ Nominal data, see table

Technical drawing

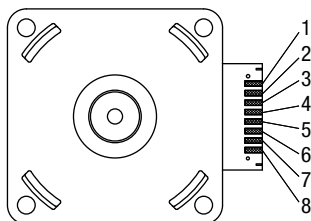
All dimensions in mm



Electrical connection

Supply wire

No.	Function
6	Phase W
7	Phase V
8	Phase U



Signal wire

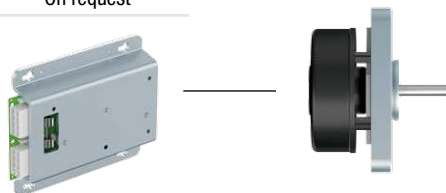
No.	Function
1	+ U_B
2	GND
3	Hall C
4	Hall B
5	Hall A

Modular construction kit

Recommended external control electronics

VTD-XX.XX-K3	On request
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Basic motor



Accessories

Rotor protection cap	(page 66)
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VD motor.

VD-43.10-K1



- 3-phase external rotor motor with EC technology
- Basic motor with electronic module K1 for operation on external control electronics
- Very good synchronization characteristics
- Long lifetime by using precision ball bearings
- Insulation class E
- Electrical connection via the circuit board edge plug
- Alternative windings / motor part sets on request

Nominal data

Type		VD-43.10-K1-B01	VD-43.10-K1-B00
Nominal voltage (U_N)	V DC	24	
Nominal speed (n_N)*	rpm	7 900	3 700
Nominal torque (M_N)*	mNm	53.0	54.0
Nominal current (I_N)*	A	2.70	1.60
Nominal output power (P_N)*	W	44.0	21.0
Starting torque (M_{max})	mNm	110	
Permissible peak current (I_{max})**	A	6.50	4.20
Speed at no-load operation (n_L)	rpm	10 200	8 000
No-load current (I_L)	A	0.27	0.18
Recommended speed control range	rpm	300 ... 10 200	300 ... 8 000
Rotor moment of inertia (J_R)	kgm ² x10 ⁻⁶	40.0	
Motor constant (K_E)	mVs/rad	19.4	29.3
Connection resistance (R_V)	Ω	0.96	2.30
Connection inductance (L_V)	mH	1.55	3.50
Overload protection		To be implemented via the control electronics	
Permissible ambient temperature range (T_U)	°C	0 ... +40	
Weight	kg	0.24	
Order no.	IP 00	937 4310 000	937 4310 010

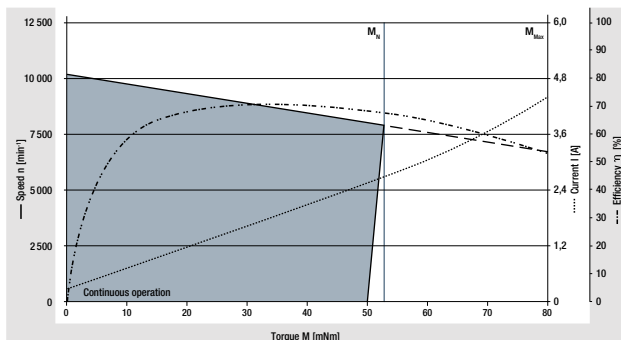
Subject to alterations

* At T_U max. 40°C

** Permissible time for peak current: max. 1 sec. – to be repeated only after complete cool down

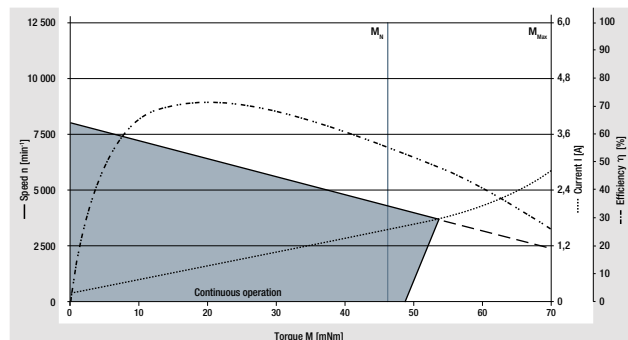
Characteristic curve

VD-43.10-K1-B01 (at 25°C)



¹⁾ Nominal data, see table

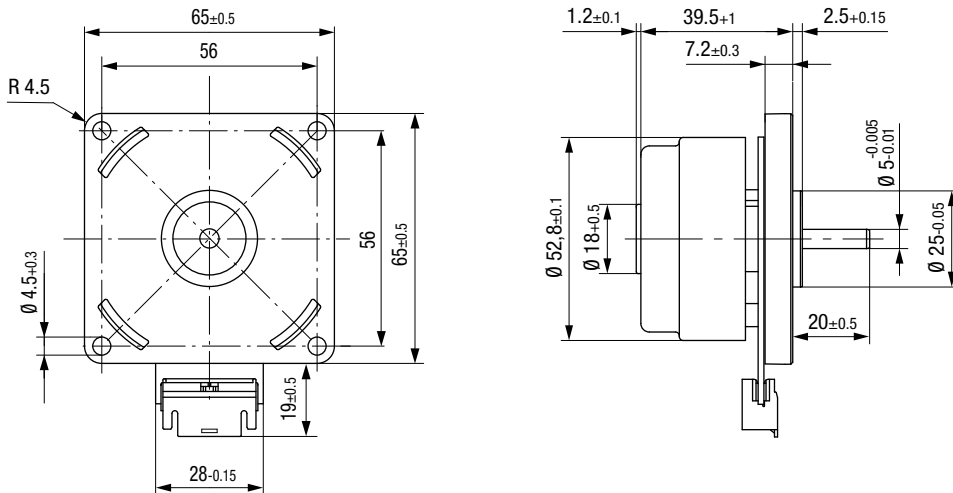
VD-43.10-K1-B00 (at 25°C)



¹⁾ Nominal data, see table

Technical drawing

All dimensions in mm

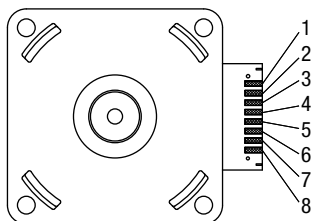


	F_{axial} 9 N	Permissible shaft load at nominal speed and life expectancy L_{10} (nominal operation) of 20 000 h (at T_u max. 40°C)
	F_{radial} 35 N	
	L1 10 mm	

Electrical connection

Supply wire

No.	Function
6	Phase W
7	Phase V
8	Phase U



Signal wire

No.	Function
1	+ U_B
2	GND
3	Hall C
4	Hall B
5	Hall A

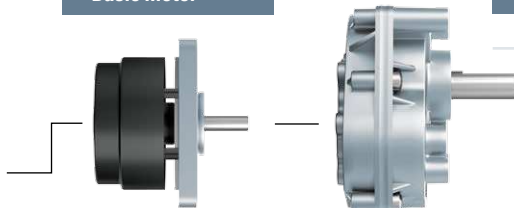
Modular construction kit

Recommended external control electronics

VTD-XX.XX-K3	On request
VTD-60.13-K5SB	On request



Basic motor



Spur gearheads

Compactline 91 (page 56)

Accessories

rotor protection cap	(page 66)
Connection cables	(page 67)

VD motor.

VD-54.14-K1



- 3-phase external rotor motor with EC technology
- Basic motor with electronic module K1 for operation on external control electronics
- Very good synchronization characteristics
- Long lifetime by using precision ball bearings
- Insulation class E
- Electrical connection via the circuit board edge plug

Nominal data

Type		VD-54.14-K1-B01	VD-54.14-K1-B00
Nominal voltage (U_N)	V DC	24	
Nominal speed (n_N)*	rpm	5 600	3 700
Nominal torque (M_N)*	mNm	150	
Nominal current (I_N)*	A	5.10	3.60
Nominal output power (P_N)*	W	88.0	57.0
Starting torque (M_{max})	mNm	400	
Permissible peak current (I_{max})**	A	15.0	10.0
Speed at no-load operation (n_L)	rpm	7 100	5 200
No-load current (I_L)	A	0.41	0.26
Recommended speed control range	rpm	300 ... 7 100	300 ... 5 200
Rotor moment of inertia (J_R)	kgm ² x10 ⁻⁶	145	
Motor constant (K_E)	mVs/rad	29.2	41.8
Connection resistance (R_V)	Ω	0.49	0.96
Connection inductance (L_V)	mH	1.00	2.00
Overload protection		To be implemented via the control electronics	
Permissible ambient temperature range (T_U)	$^{\circ}\text{C}$	0 ... +40	
Weight	kg	0.52	
Order no.	IP 00	937 5414 000	937 5414 010

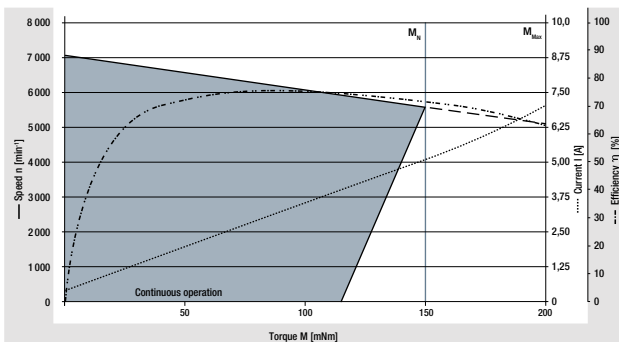
Subject to alterations

* At T_U max. 40°C

** Permissible time for peak current: max. 1 sec. – to be repeated only after complete cool down

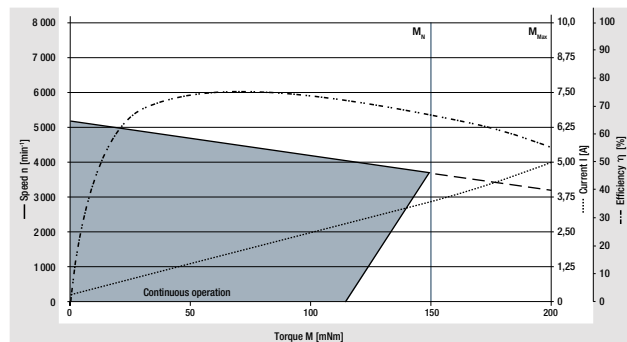
Characteristic curve

VD-54.14-K1-B01 (at 25°C)



¹⁾ Nominal data, see table

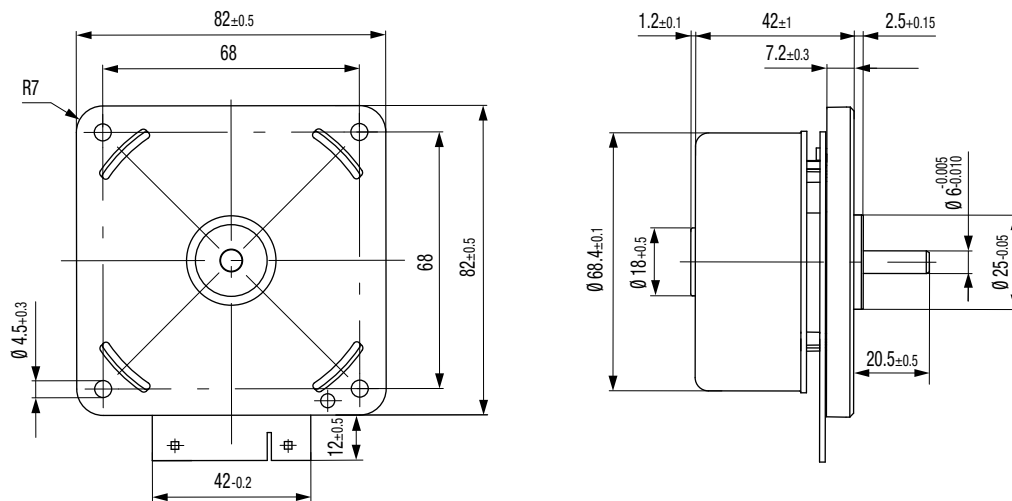
VD-54.14-K1-B00 (at 25°C)



¹⁾ Nominal data, see table

Technical drawing

All dimensions in mm

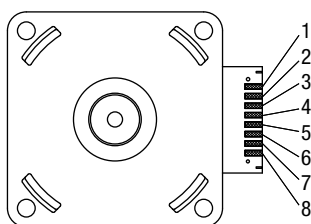


	F_{axial} 9 N	Permissible shaft load at nominal speed and life expectancy L_{10} (nominal operation) of 20 000 h (at T_u max. 40°C)
	F_{radial} 60 N	
	L1 10 mm	

Electrical connection

Supply wire

No.	Function
6	Phase W
7	Phase V
8	Phase U



Signal wire

No.	Function
1	+ U_B
2	GND
3	Hall C
4	Hall B
5	Hall A

Modular construction kit

Recommended external control electronics

VTD-XX.XX-K3	Speed (page 34)
VTD-XX.XX-K4S	Position (page 36)
VTD-60.13-K5SB	Position (page 38)

Basic motor



Spur gearheads

- Compactline 90 (page 54)
- Compactline 91 (page 56)
- Compactline 92 (page 58)

Spur gearheads

- Flatline 85 (page 60)

Accessories

Rotor protection cap	(page 66)
Connection cables	(page 67)

VD motor.

VD-49.15-K1



- 3-phase external rotor motor with EC technology
- High poled motor structure for optimum power density
- Basic motor with electronic module K1 for operation on external control electronics
- Very good synchronization characteristics
- Robust mechanical design in IP 54 for industrial applications
- Long lifetime by using precision ball bearings
- Insulation class E
- Electrical connection via cable

Nominal data

Type		VD-49.15-K1-B00	VD-49.15-K1-D00
Nominal voltage (U_N)	V DC	24	48
Nominal speed (n_N)*	rpm	4 500	5 300
Nominal torque (M_N)*	mNm	235	245
Nominal current (I_N)*	A	6.10	3.40
Nominal output power (P_N)*	W	110	135
Starting torque (M_{max})	mNm	1 150	1 300
Permissible peak current (I_{max})**	A	30.0	18.5
Speed at no-load operation (n_L)	rpm	6 000	
No-load current (I_L)	A	0.47	0.36
Recommended speed control range	rpm	0 ... 6 000	
Rotor moment of inertia (J_R)	kgm ² x10 ⁻⁶	108	
Motor constant (K_E)	mVs/rad	41.0	80.7
Connection resistance (R_V)	Ω	0.23	0.62
Connection inductance (L_V)	mH	0.17	0.62
Overload protection		To be implemented via the control electronics	
Permissible ambient temperature range (T_U)	$^{\circ}\text{C}$	0 ... +40	
Weight	kg	0.59	
Order no. (cable type)***	IP 54	937 4915 000	937 4915 001

Subject to alterations

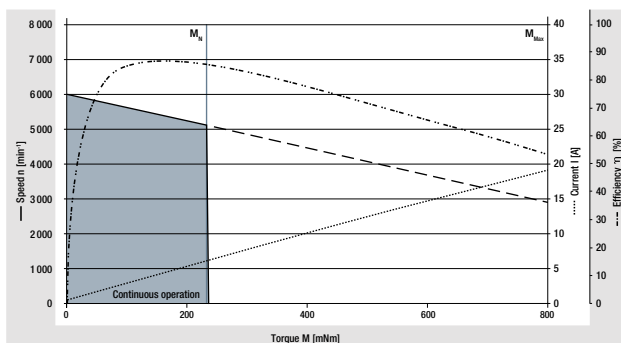
* At T_U max. 40 $^{\circ}\text{C}$

** Permissible time for peak current: max. 1 sec. – to be repeated only after complete cool down

*** Classification of protection class refers to installed state with sealing on the flange side

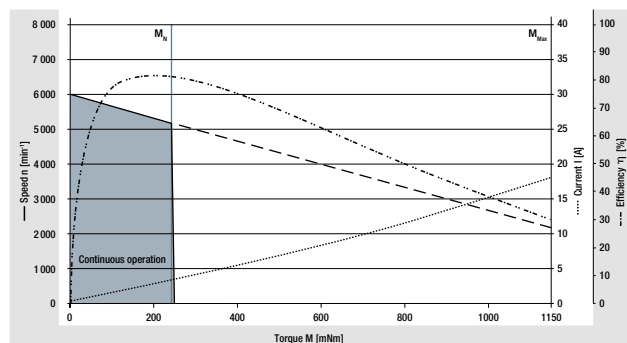
Characteristic curve

VD-49.15-K1-B00 (at 25 $^{\circ}\text{C}$)



¹⁾ Nominal data, see table

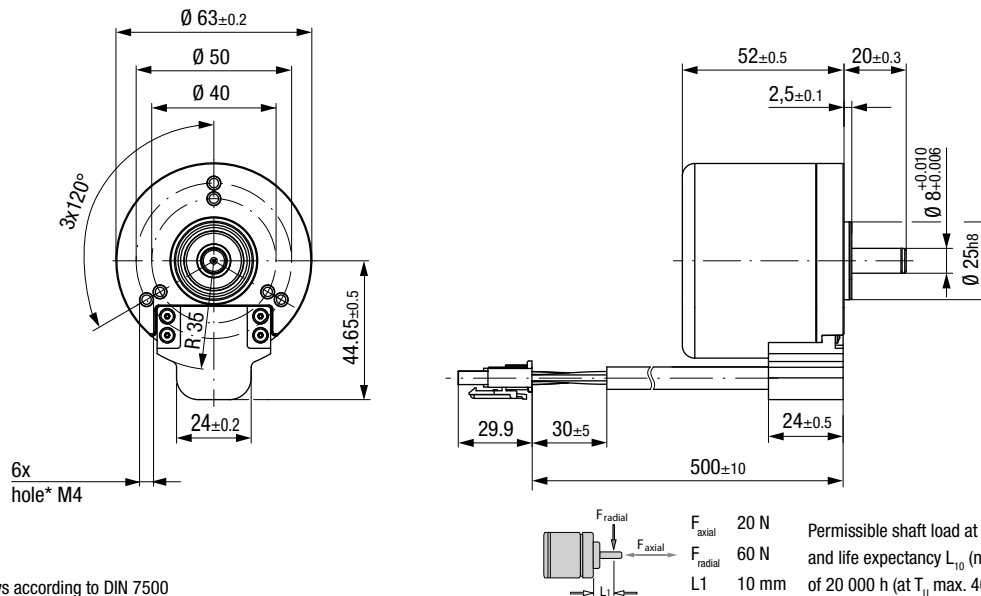
VD-49.15-K1-D00 (at 25 $^{\circ}\text{C}$)



¹⁾ Nominal data, see table

Technical drawing

All dimensions in mm

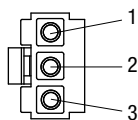


* For thread-rolling screws according to DIN 7500

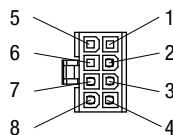
Electrical connection

Supply wire

No.	Color	Function
1	yellow	Phase W
2	violet	Phase V
3	brown	Phase U



Molex plug no. 39-03-6035



Molex plug no. 39-01-2085

Signal wire

No.	Color	Function
1	–	–
2	red	+12 V
3	white	Hall B
4	green	Hall A
5	–	–
6	–	–
7	black	GND
8	gray	Hall C

Modular construction kit

Recommended external control electronics

VTD-XX.XX-K3	Speed (page 34)
VTD-XX.XX-K4S	Position (page 36)
VTD-60.13-K5SB	Position (page 38)

Basic motor



Planetary gearheads

- NoiselessPlus 63 (page 44)
- Performax® 63 (page 46)
- Performax®Plus 63 (page 48)

Crown gearheads

- EtaCrown® 75 (page 50)
- EtaCrown®Plus 63 (page 52)

Spur gearheads

- Compactline 91 (page 56)
- Flatline 85 (page 60)

VDC motor.

VDC-43.10-K3

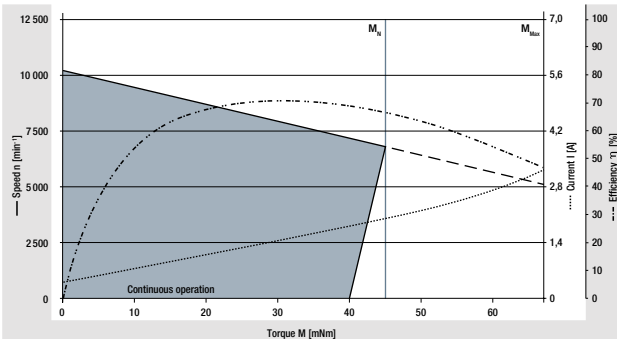


- 3-phase external rotor motor with EC technology
- Drive with completely integrated K3 operation and control electronics
- Integrated speed control function
- Interface with analog and digital control inputs
- Very good synchronization characteristics
- Long lifetime by using precision ball bearings
- Electrical connection via the circuit board edge plug

Nominal data			
Type		VDC-43.10-K3-B01	VDC-43.10-K3-B00
Nominal voltage (U_N)	V DC	24	
Nominal speed (n_N)*	min ⁻¹	6 800	4 000
Nominal torque (M_N)*	mNm	45	
Nominal current (I_N)*	A	2.00	1.25
Nominal output power (P_N)*	W	32.0	18.8
Starting torque (M_{max})	mNm	67	
Speed at no-load operation (n_l)	min ⁻¹	10 200	4 100
No-load current (I_l)	A	0.40	0.14
Recommended speed control range	min ⁻¹	300 ... 10 000	300 ... 4 000
Rotor moment of inertia (J_R)	kgm ² x10 ⁻⁶	40	
Overload protection		integrated	
Permissible ambient temperature range (T_U)	°C	0 ... +40	
Weight	kg	0.24	
Order no.	IP 00	937 4310 600	937 4310 610
Subject to alterations	* At T_U max. 40°C		

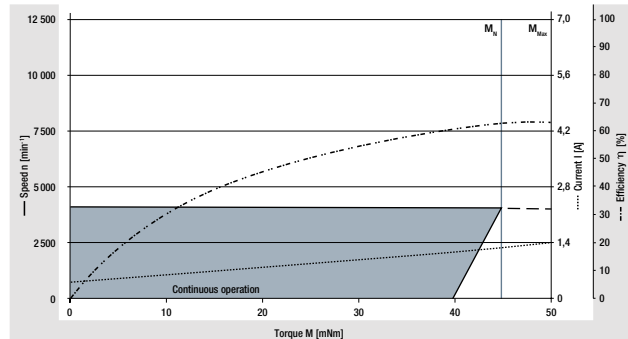
Characteristic curve

VDC-43.10-K3-B01 (at 25°C)



¹⁾ Nominal data, see table

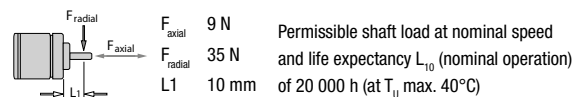
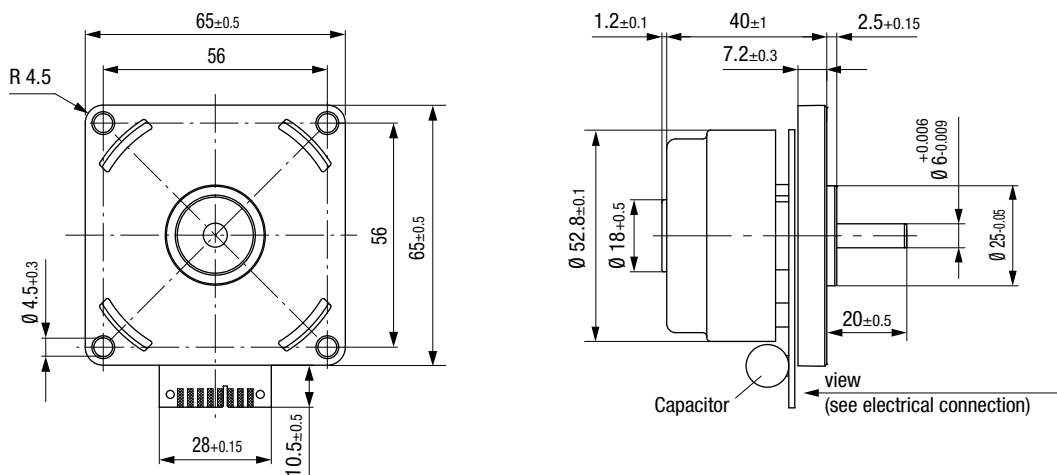
VDC-43.10-K3-B00 (at 25°C)



¹⁾ Nominal data, see table

Technical drawing

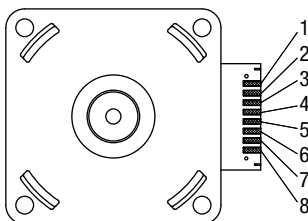
All dimensions in mm



Electrical connection

Supply wire

No.	Configuration
7	GND
8	U_B



Signal wire

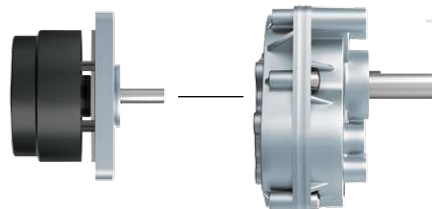
Nr.	Configuration	Function
1	OUT	Pulse output (speed)
2	D-IN-A	Input
3	D-IN-B	Input
4	C	-
5	A-IN	0 ... 10V (differential)
6	A-GND	GND for analog IN for differential

Modular construction kit

Accessories

Connection cables (page 67)

Basic motor



Spur gearheads

Compactline 91 (page 56)