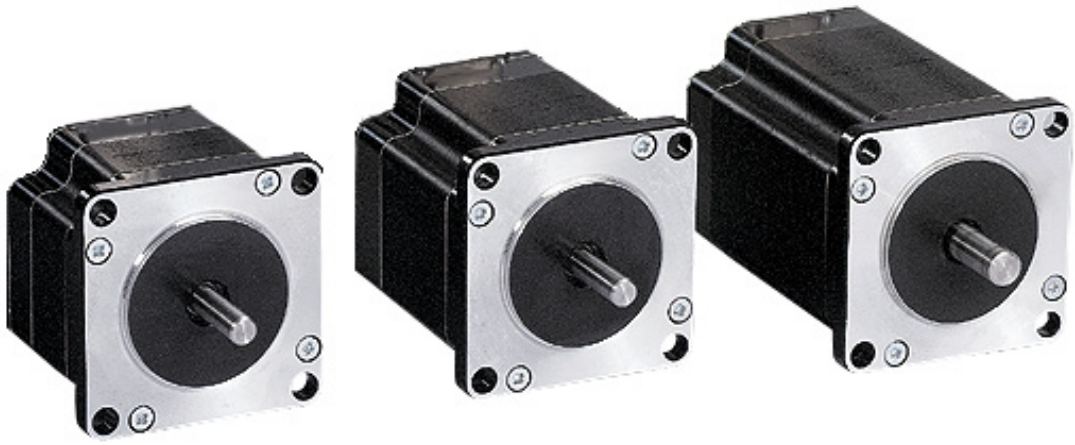
BERGER LAHR

2-PHASE STEPPING MOTOR

VRDM 26x



Document: 100000084
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Features common to all motor types

- Test voltage to DIN EN 60034 part 1
- Insulation class B
- Run-out and perpendicularity to DIN 42955 N
- Paint: black RAL 9005

Security

Please observe before installation, set-up, maintenance and repairs of the motors our security tips.

Should you not know these sheets, please ask for the data sheet “Security tips of the motors“

Motor specifications

The listet data in this table are motor-specified data.

A breakdown of the individual motors is given under the type code on page 8.

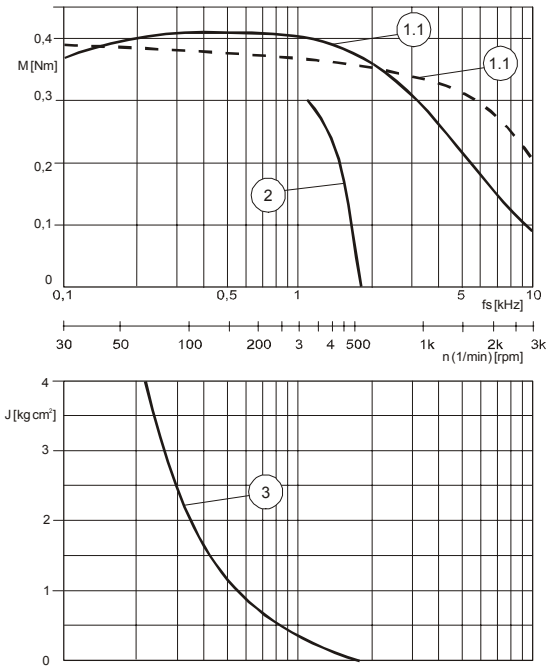
Motor type			**VRDM 264 / 50L**		**VRDM 266 / 50L**			**VRDM 268 / 50L**	
Winding			**5G4A**	**7G8A**	**7G8A**	**5G4A**	**3G8A**	**5G4A**	**3G8A**
Nominal voltage	U_N	V_{AC} [4]	25						
		V_{DC} [5]	35						
Max. torque	M_m	Nm	0.40		0.85	0.87	0.85	1.30	1.40
Holding torque	M_H	Nm	0.45		1.00			1.50	1.60
Rotor inertia	J_R	kgm^2	$0.009 \cdot 10^{-3}$		$0.022 \cdot 10^{-3}$			$0.038 \cdot 10^{-3}$	
Number of steps [1]	z		200 / 400						
Step angle [1]	α	°	1.8 / 0.9						
Systematic angle tolerance per step [2]	$\Delta\alpha_s$	‘	± 3						
Max. starting frequency FS [1]	f_{Aom} [4]	kHz	1.8	1.7	1.35	1.5	1.6	1.1	1.2
Max. starting frequency HS [1]	f_{Aom} [4]	kHz	3.4	3.2	2.6	2.9	3	2.1	2.1
Rated current / winding	I_W	A	2.1	1	1	2.1	3	2.1	3
Winding resistance / winding	R_W	Ω	1	4.75	6.7	1.4	0.8	2	1.1
Current rise constant	τ	ms	3.2		5.0			5.5	
Shaft load			See page 5						
Weight [3]	m	kg	0.5		0.7			1.05	
No. of wire connection			4	8	8	4	8	4	8

Terms and symbols taken from DIN 42021 part 2

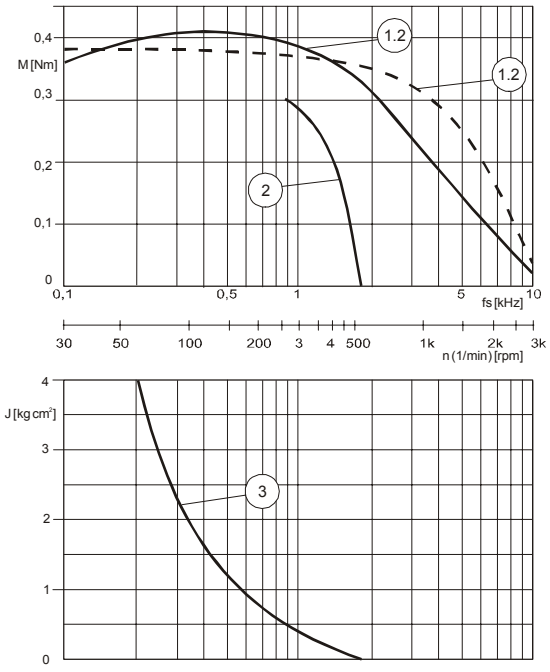
[1] With suitable power drive
[2] Measured at 200 or 400 steps / revolution; unit in minutes
[3] Weight of the motor with stranded wire connection
[4] maximal possible effective value
[5] DC line voltage

Characteristic curves VRDM 264

VRDM 264 / 50L 5G4A



VRDM 264 / 50L 7G8A



1.1 Pull-out torque
U_N = 35 V_{DC}
I_W = 2,1 A

1.2 Pull-out torque [1)]
U_N = 35 V_{DC}
I_W' = 1,4 A

2 Pull-in torque

3 Maximum load inertia

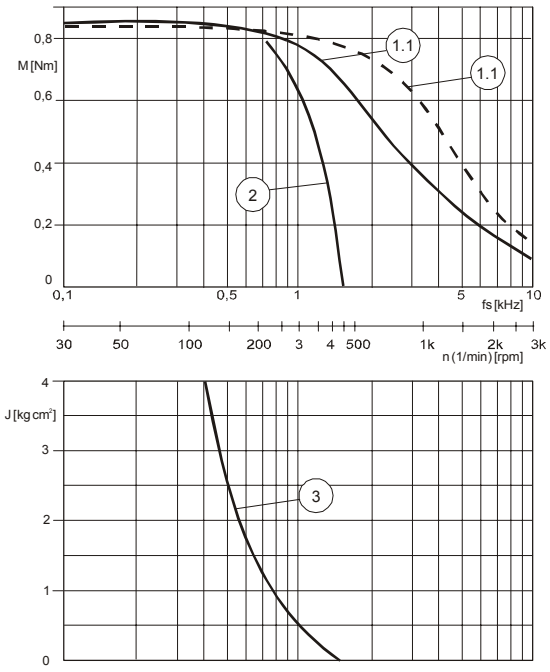
[1)] Measuring of characteristic curves with calculated current: I_W' = I_W $\sqrt{2}$ (bipolar parallel)
I_W' = current setting at drive

——— Measuring at fullstep (200 steps per revolution)

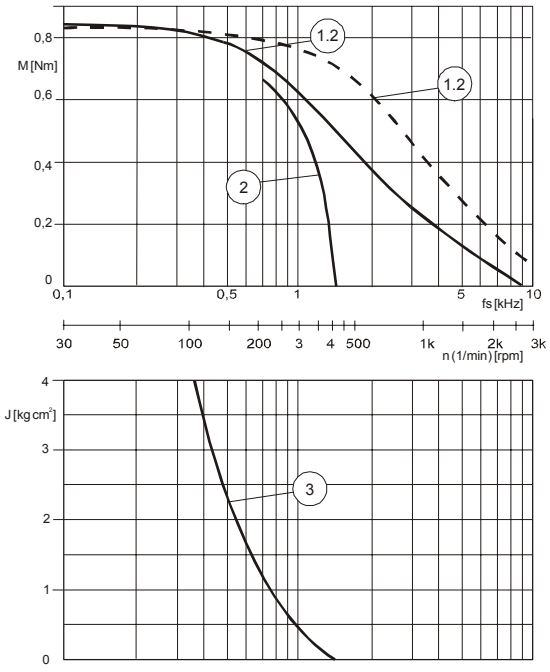
– – – Measuring at halfstep (400 steps per revolution)

Characteristic curves VRDM 266

VRDM 266 / 50L 5G4A



VRDM 266 / 50L 7G8A



1.1 Pull-out torque
U_N = 35 V_{DC}
I_W = 2,1 A

1.2 Pull-out torque [1)]
U_N = 35 V_{DC}
I_W' = 1,4 A

2 Pull-in torque

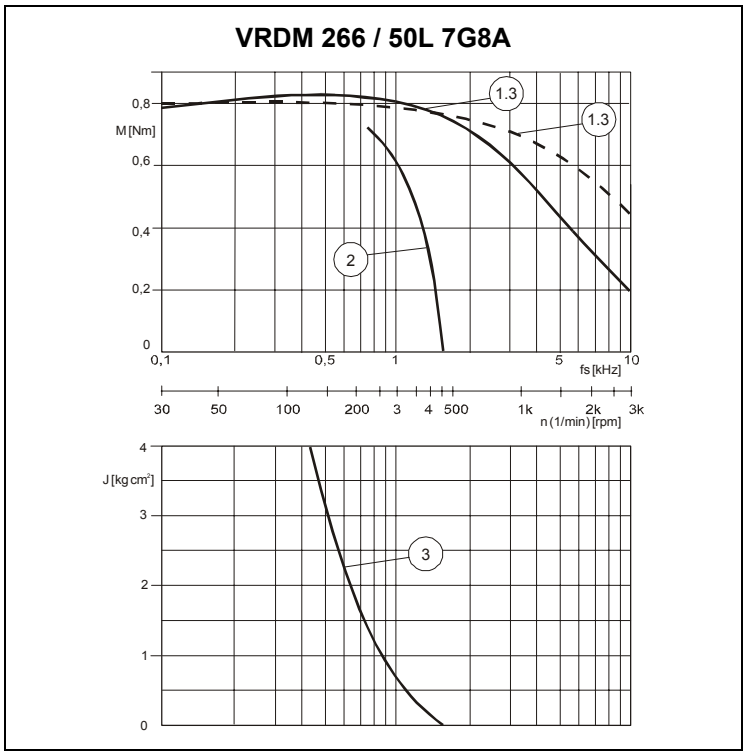
3 Maximum load inertia

[1)] Measuring of characteristic curves with calculated current: $I_W' = I_W \sqrt{2}$ (bipolar parallel)
I_W' = current setting at drive

——— Measuring at fullstep (200 steps per revolution)

– – – Measuring at halfstep (400 steps per revolution)

Characteristic curves VRDM 266



1.3 Pull-out torque [1)]
U_N = 35 V_{DC}
I_W' = 4,2 A

2 Pull-in torque

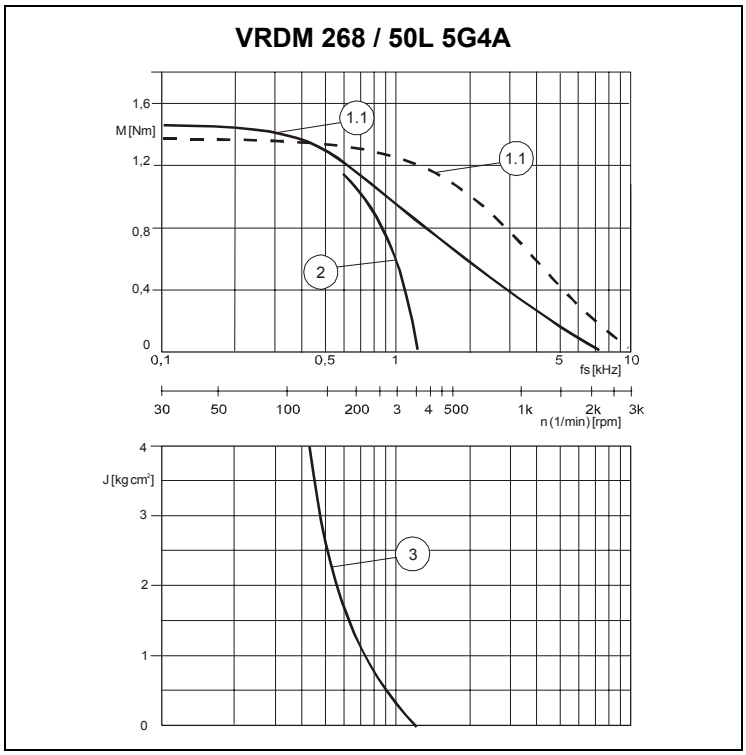
3 Maximum load inertia

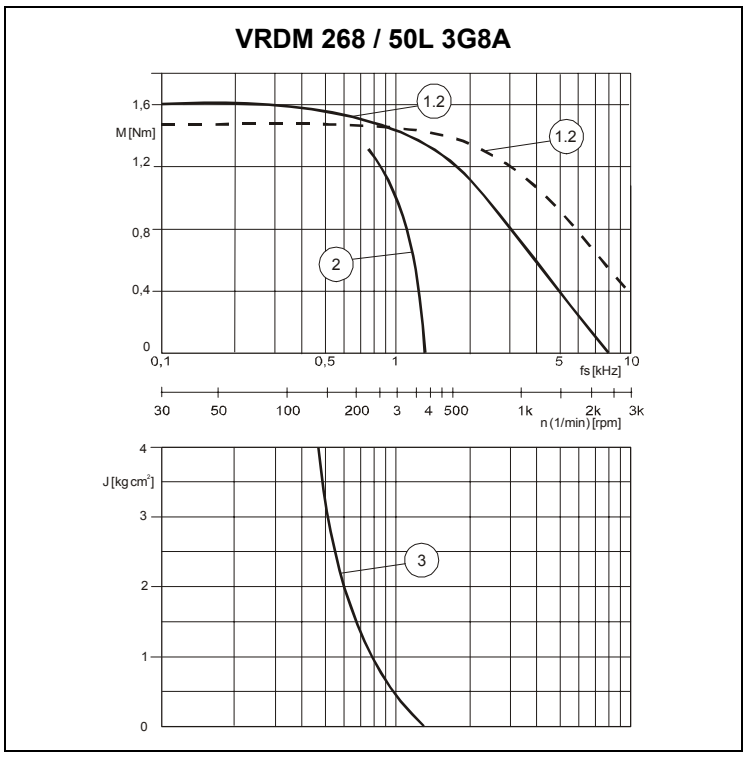
[1)] Measuring of characteristic curves with calculated current: I_W' = I_W √2 (bipolar parallel)
I_W' = current setting at drive

——— Measuring at fullstep (200 steps per revolution)

– – – Measuring at halfstep (400 steps per revolution)

Characteristic curves VRDM 268





1.1 Pull-out torque
U_N = 35 V_{DC}
I_W = 2,1 A

1.2 Pull-out torque [1)]
U_N = 35 V_{DC}
I_W' = 4,2 A

2 Pull-in torque

3 Maximum load inertia

[1)] Measuring of characteristic curves with calculated current: $I_W' = I_W \sqrt{2}$ (bipolar parallel)
I_W' = current setting at drive

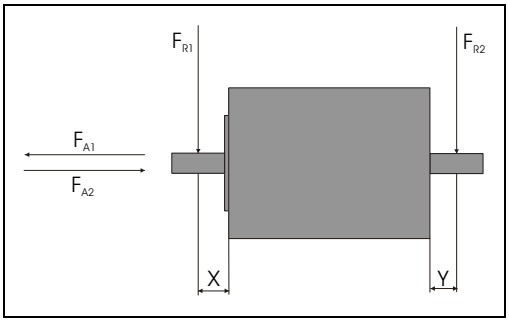
——— Measuring at fullstep (200 steps per revolution)

– – – Measuring at halfstep (400 steps per revolution)

Shaft load

The Motor must not be opened by the customer. If it is opened it will be partially demagnetuized with a consequent loss of power.

Please always observe our saftey information!



Conditions:

- Nominal bearing life [1] L_{10h} = 20.000 hours
- Speed n = 600 min^{-1}
- Ambient temperature = 40°C
  (≈ 80°C bearing temperature) =
- Rated torque = 100 % c.d.f.
- Point of application of forces X = 10.5 mm
  Y = 10 mm

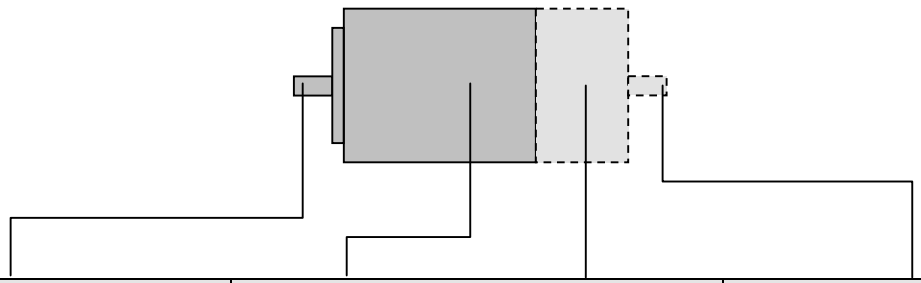
Motor		VRDM 264 / VRDM 266	VRDM 268
Max. radial force Front **F_{R1}**	100 % c.d.f.	24 N	50 N
Max. radial force 2nd shaft end **F_{R2}**	100 % c.d.f.	25 N [2]	
		40 N [3]	
Max. axial force Pull **F_{A1}**	100 % c.d.f.	100 N	
Max. axial force Push **F_{A2}**	100 % c.d.f.	8.4 N	

[1] In operation hours with a 10% probability of failure
[2] Motors with terminal box, receptacle or encoder
[3] Motors with stranded wires

- Axial and radial loading must not occur simultaneously.
- The shaft must be supported if components are pressed onto the shaft ends.

Degree of protection

The Degree of protection of your motor version is shown in the following diagram.



Front shaft exit	Type of connection		Options
	Stranded wires	Terminal box	2nd shaft end
IP 41	IP 41	IP 56	IP41

Ambient conditions

Climate:
(with reference to DIN 50019-R14)

Temperature (t): -25°C to +40°C
Atmospheric humidity (U): ≤ 75 % RH annual average / 95 % RH on 30 days / without condensation

Storage and transportation temperature:

-25°C to +70°C

Motor service life

Where motors are operated under technically correct conditions, the service life is largely depend on the service life of the bearing.
The following operating conditions may significantly reduce the service life of the motor:

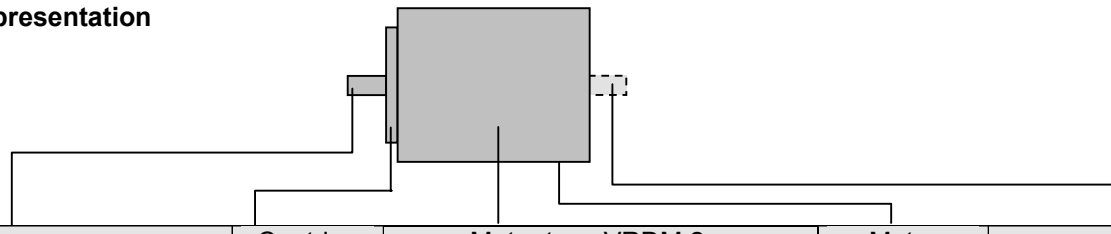
- Installation at altitudes over 1000 m above mean sea level
- Continuous operating temperatures greater than 80°C
- Angular travel less than 100°
- Operation with very high rotation accelerations
- Operation und vibration loads greater than 20 m/s²
- High cyclic frequencies
- Running with dry sealing rings
- Wetting seals with aggressive media

Motor versions

Our flexible modular system and the latest version management techniques enable us to supply the following versions. The dimensions and a detailed information are shown in the variants section on page 9.

Pease also see thy type code on page 8.

Schematic representation



Shaft version		Centring collar	Motor type VRDM 2xx Size	Length	Winding	Motor connection	Options
Surface-finished Cross-drilled hole	∅ 6,35 [1)] ∅ 8 [1)]	∅ 38,1mm	11	4	5G4x 7G8x	stranded wires terminal box	2nd shaft end
				6	3G8x 5G4x 7G8x		
				8	3G8x 5G4x		

[1)] ∅ 6,35 mm for VRDM 264 and VRDM 266; ∅ 8 mm for VRDM 268

Type code

Example: VRDM 2 6 8 / 50 L 3 G 8 A

VRDM	**X**	**X**	**X**	/	**50**	**L**	**X**	**X**	**X**	**X**

Number of phases

2

Size (flange)

6 (approx. 57 mm)

Length

4 overall approx. 42 mm
6 overall approx. 56 mm
8 overall approx. 79 mm

Number of pairs of poles

50

Laminated rotor

L

Winding identification

0;1 to 9
(The higher the no. the higher the no. of windings)

Winding circuit

G standard (**G**eneral) connection

Version of connection I

4 4 stranded wires
8 8 stranded wires

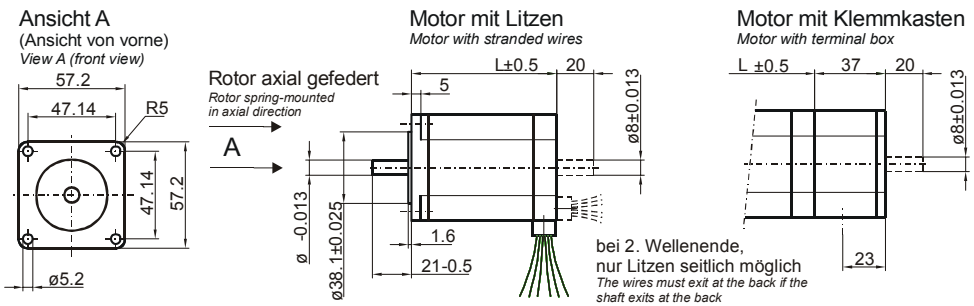
Version of connection II

A stranded wires

Please notice the new designation of product:

Old:	**New:**
VRDM 264 – L8A 1,0	VRDM 264 / 50L 7G8A
VRDM 264 – L4A 2,1	VRDM 264 / 50L 5G4A
VRDM 266 – L8A 1,0	VRDM 266 / 50L 7G8A
VRDM 266 – L8A 3,0	VRDM 266 / 50L 3G8A
VRDM 266 – L4A 2,1	VRDM 266 / 50L 5G4A
VRDM 268 – L8A 3,0	VRDM 268 / 50L 3G8A
VRDM 268 – L4A 2,1	VRDM 268 / 50L 5G4A

Variants



Dear Customer

This page shows the motor versions that can be supplied as standard.

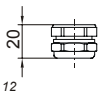
Motoranschluss
Motor connection

☐ Motor mit Litzen
Motor with stranded wires

- ☐ hinten *at back*
- ☐ seitlich *at side*
- ☐ Standard 400 mm
- ☐ Sonderlänge < 400 mm *other length*

☐ Motor mit Klemmkasten
Motor with terminal box

Kabelverschraubung
Pg13 für Kabel ø 6 bis ø 12
Cable gland PG 13 for cable diameter 6 to 12



Baugröße - Wicklung
Size - Winding version

Motor-Typ *Motor-type*	L ohne Bremse *Without brake*	Motorwicklung *Motor winding* 3G8x	5G4x	7G8x
VRDM 264	42	---	○	○
VRDM 266	56	○	○	○
VRDM 268	79	○	○	---

○ Variante möglich / *Variants possible*
--- Variante in Vorbereitung / *Variants in preparation*

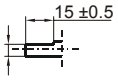
Wellenausführung
Shaft key

Welle vorne
Shaft at front

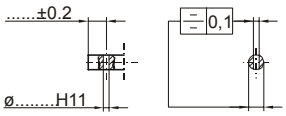
☐ ohne Bearbeitung
unfinished

☐ Fläche
Surface-finished

Ø 6,35: 4,5
Ø 8 : 6,5



☐ Querbohrung
Cross-drilled hole



Optionen
Options

2. Wellenende
2nd shaft end

☐ ohne 2. Wellenende
Without 2nd schaftr end

☐ mit 2. Wellenende
With 2nd shaft end

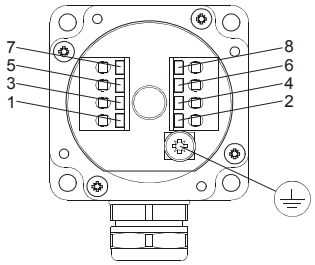
Wellendurchmesser
Shaft diameter

Ø 6,35: VRDM 264 und VRDM 266
Ø 8 : VRDM 268

Motor connection

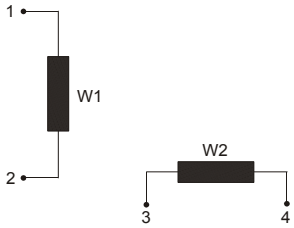
Motor with terminal box

Designation	Cable color
1	BR
2	BR-WH
3	RD
4	RD-WH
5	OR
6	OR-WH
7	YE
8	YE-WH



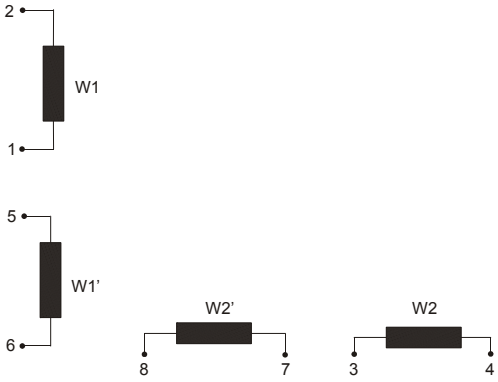
Motor with 4 wire connection

Designation	Cable color
1	BR
2	BR-WH
3	RD
4	RD-WH



Motor with 8 wire connection

Designation	Cable color
1	BR
2	BR-WH
3	RD
4	RD-WH
5	OR
6	OR-WH
7	YE
8	YE-WH



Notes:

- The protective earth (or shield tracer) must be connected to both the motor and the device
- The direction of rotation of the motor shaft can be inverted by swapping over two terminals (e.g. W1)
- Motors with stranded wires must be connected via the front flange with PE potential.