PREMOTEC

PRODUCT SPECIFICATION FOR DC MOTOR

MODEL: **CL40 Motor**

1. TYPE INDICATION

1.1	Spark suppression	Zenerdiodes parallel to rotorcoils
1.2	Direction of rotation	Reversible
1.3	Rotor	Ironless (9x56x2x140µm])
1.4	Nominal voltage	18 V DC
1.5	Nominal speed	3050 rpm
1.6	Nominal load	22 mNm
1.7	Remarks	General purpose

2 ELECTRICAL DATA

2.1	EMF at 3000 rpm	13.2 V ± 10%
2.2	Voltage constant	4.40 mV/rpm ± 10%
2.3	Torque constant	42.0 mNm/A ± 10%
2.4	Terminal resistance	8.4 Ohm ± 8%
2.5	Rotor inductance at 1kHz	1.33 mH

3 THERMAL DATA

3.1	Thermal coefficient of:	
3.1.1	Motor EMF	-0.12 %/K
3.1.2	Resistance	0.4 %/K
3.2	Thermal resistances:	
3.2.1	From winding to housing (Rth1)	5.5 K/W
3.2.2	From housing to ambient (Rth2)	13.0 K/W
3.2.3	From winding to ambient	18.5 K/W
3.3	Thermal time constant of motor without heatsink in free air	20 minutes

4 ELECTROMECHANICAL DATA

4.1	No load	
4.1.1	Voltage	18 V
4.1.2	Speed	4050 rpm ± 10%
4.1.3	Current	33 mA max.
		22 mA typical
4.1.4	Starting voltage	0.31 V max.
4.2	Loaded	
4.2.1	Voltage	18 V
4.2.2	Torque	22 mNm
4.2.3	Speed	3050 rpm
4.2.4	Current	0.544 A

	Motor assy	9904 120 16705	99-07-08 KD 09-02-25 WR ---------- --
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4.3	Starting torque	89	mNm ± 20%
4.4	Starting current	2.13	A ± 8%
4.5	Speed/torque gradient	45.5	rpm/mNm
4.6	Mechanical time constant	19 ms	typical
4.7	Typical performance curves	See sheet 112-2	
4.8	Insulation resistance between winding and housing according to IEC 335-1 (500 V DC)	>2	MOhm

5 MECHANICAL DATA

5.1	Weight	190 g
5.2	Housing	steel
5.3	Operation position	All positions permitted
5.4	Brushes	Precious metal
5.5	Bearings	Slide
5.6	Rotor inertia	4.0×10^{-6} kgm^2

6 NOISE AND VIBRATION

6.1	Measuring conditions	Motor on vibration isolator (foam)
6.1.1	Motor position	Shaft horizontal
6.1.2	Noise level of measuring room	max. 30 dBA
6.1.3	Microphone position	10 cm above middle of motor housing
6.1.4	Load	None
6.1.5	Speed	3000 rpm
6.2	Noise level	51 dBA max.

7 LIFE

7.1	Conditions for continuous running with radial load	
7.1.1	Voltage	18 V
7.1.2	Current	0.544 A
7.1.3	Torque	22 mNm (approx.)
7.1.4	Speed	3050 rpm (approx.)
7.1.5	Radial force	5 N, 10 mm from mounting surface
7.1.6	Axial force	None
7.1.7	Motor position	All positions permitted
7.1.8	Ambient temperature	22 ± 5 ℃
7.1.9	Cycle	3 hours ON 1 hour OFF
7.2	Life B10 value	1000 hours min. running hours

7.3 Criteria for approval: Motor function remains intact.
If the *Warning signal* level (see below) is reached in the life test setup, the motor is regular tested for the criteria 7.3.1 to 7.3.5 that prescribe when motor life is finished

Warning signal: The motor is build out from the life test setup if as warning signal the motor current deviates ± 20% of the initial value as described in item 7.1.2 or the audible noise is dramatically increased or if significantly interruptions occur in the commutation wave form.

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7.3.1	EMF at 3000 rpm	-10% of zero hour value	
7.3.2	Commutation wave form	No blocked interruptions;	
7.3.3	No load current	2 times the no load current from item 4.1.3	
7.3.4	Noise level	60	dBA max.
7.3.5	Bearings	Bearing function and bearing preload remains intact	

8 TEMPERATURES

8.1	Ambient temperature	-10 to 60	℃
8.2	Max. housing temperature	80	℃
8.3	Storage temperature	-40 to 70	℃

9 LIMITING VALUES

9.1 The following maximum values can be applied continuously, however they reduce the life of the motor considerably.

9.1.1	Voltage	22	V
9.1.2	Load	26	mNm
9.1.3	Current	0.640	A
9.1.4	Peak current	2.1	A
9.1.5	Speed	3774	rpm
9.1.6	Output power	10.3	W
9.1.7	Radial force	7N, 10 mm from mounting surface	
9.1.8	Axial force	0.5	N
9.1.9	Locked rotor	7.1	V (ambient temp. max 40 ℃)

9.2 The following maximum values should never be exceeded.

9.2.1	Voltage	24	V
9.2.2	Load	35	mNm
9.2.3	Peak current	2.7	A
9.2.4	Maximum speed	5000	rpm
9.2.5	Output power	14	W
9.2.6	Axial force	50	N
9.2.7	Radial force	50	N
9.2.8	Winding temperature	120	℃
9.2.9	Locked rotor at 18 V and 40 ℃ winding start temp.	16	s

10 REMARKS

Unless otherwise specified, the measurements have to be executed under the following conditions:

10.1	Motor temperature	22 ± 5	℃
10.2	Atmospheric pressure	0.86 – 1.06x10^5	Pa
10.3	Relative humidity	45 – 75	%
10.4	Radial force	None	
10.5	Axial force	None	

11 GENERAL SPECIFICATIONS

Unless otherwise specified, general requirements are specified in reference sheet PN40-01-98

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