

# DC-Micromotors

## Graphite Commutation

40 mNm  
34 W

### Series 2657 ... CXR

Values at 22°C and nominal voltage		2657 W	012 CXR	024 CXR	048 CXR	
1	Nominal voltage	$U_N$	12	24	48	V
2	Terminal resistance	$R$	0,72	2,98	12,61	$\Omega$
3	Output power	$P_{2nom.}$	45,3	45,7	44,1	W
4	Efficiency, max.	$\eta_{max.}$	81	83	83	%
5	No-load speed	$n_0$	5 600	5 800	5 800	min <sup>-1</sup>
6	No-load current, typ. (with shaft $\varnothing$ 4 mm)	$I_0$	0,104	0,052	0,026	A
7	Stall torque	$M_H$	306,7	302,9	283,1	mNm
8	Friction torque	$M_R$	2	2	2	mNm
9	Speed constant	$k_n$	494	247	122	min <sup>-1</sup> /V
10	Back-EMF constant	$k_E$	2,024	4,05	8,205	mV/min <sup>-1</sup>
11	Torque constant	$k_M$	19,33	38,67	78,35	mNm/A
12	Current constant	$k_I$	0,052	0,026	0,013	A/mNm
13	Slope of n-M curve	$\Delta n / \Delta M$	18,4	19	19,6	min <sup>-1</sup> /mNm
14	Rotor inductance	$L$	90	365	1 500	$\mu$ H
15	Mechanical time constant	$\tau_m$	3,3	3,4	3,5	ms
16	Rotor inertia	$J$	17	17	17	gcm <sup>2</sup>
17	Angular acceleration	$\alpha_{max.}$	180	178	172	$\cdot 10^3$ rad/s <sup>2</sup>
18	Thermal resistance	$R_{th1} / R_{th2}$	4,4 / 12,6			K/W
19	Thermal time constant	$\tau_{w1} / \tau_{w2}$	28 / 810			s
20	Operating temperature range:					
	– motor		-30 ... +100			°C
	– winding, max. permissible		+125			°C
21	Shaft bearings		sintered bearings (standard)			ball bearings, preloaded (optional version)
22	Shaft load max.:					
	– with shaft diameter		4			mm
	– radial at 3 000 min <sup>-1</sup> (3 mm from bearing)		10			N
	– axial at 3 000 min <sup>-1</sup>		2			N
	– axial at standstill		50			N
23	Shaft play:					
	– radial	$\leq$	0,03			mm
	– axial	$\leq$	0,2			mm
24	Housing material		steel, zinc galvanized and passivated			
25	Mass		156			g
26	Direction of rotation		clockwise, viewed from the front face			
27	Speed up to	$n_{max.}$	7 000			min <sup>-1</sup>
28	Number of pole pairs		1			
29	Magnet material		NdFeB			
<b>Rated values for continuous operation</b>						
30	Rated torque	$M_N$	39	40	40	mNm
31	Rated current (thermal limit)	$I_N$	2,4	1,2	0,61	A
32	Rated speed	$n_N$	5 040	5 110	5 050	min <sup>-1</sup>

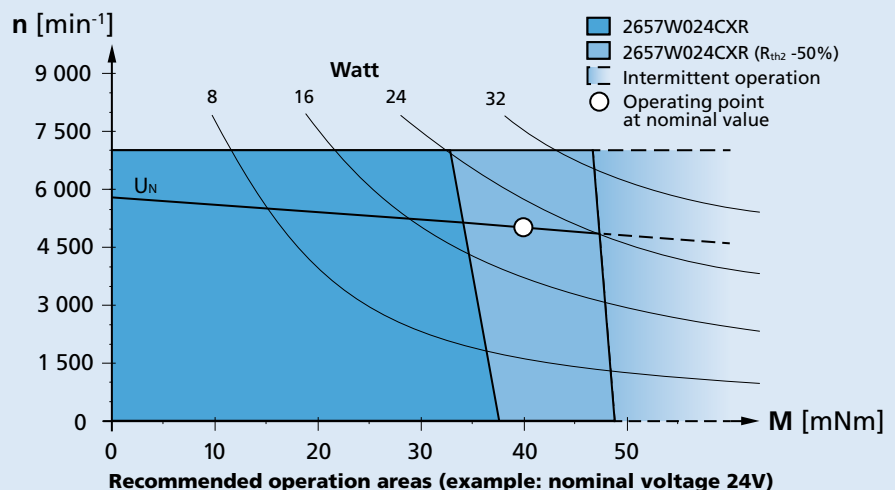
**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 25%.

**Note:**

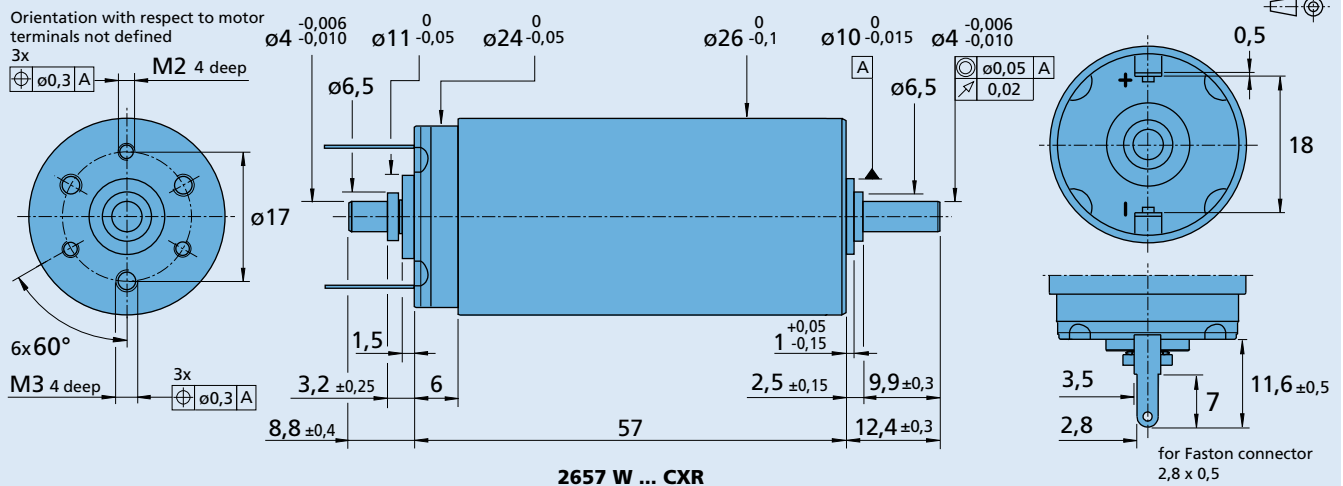
The diagram indicates the recommended speed in relation to the available torque at the output shaft for a given ambient temperature of 22°C.

The diagram shows the motor in a completely insulated as well as thermally coupled condition ( $R_{th2}$  50% reduced).

The nominal voltage ( $U_N$ ) curve shows the operating point at nominal voltage in the insulated and thermally coupled condition. Any points of operation above the curve at nominal voltage will require a higher operating voltage. Any points below the nominal voltage curve will require less voltage.



### Dimensional drawing



### Options

Example product designation: **2657W012CXR-275**

Option	Type	Description
U	Single Leads	For motors with single leads (PTFE), length 160 mm, red (+) / black (-)
158	Shaft end	No second shaft end
275	Ball bearings	Motor with 2 preloaded ball bearings.

### Product Combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
26A	HEDS 5500	SC 2402	MBZ
26/1	HEDM 5500	SC 2804	
26/1 S	IE3-1024	SC 5004	
30/1	IE3-1024 L	SC 5008	
30/1 S	HEDS 5540	MCDC 3003	
32A	HEDL 5540	MCDC 3006	
BS22-1.5			

# Planetary Gearheads

## 3,5 Nm

For combination with  
DC-Micromotors  
Brushless DC-Motors  
Stepper Motors

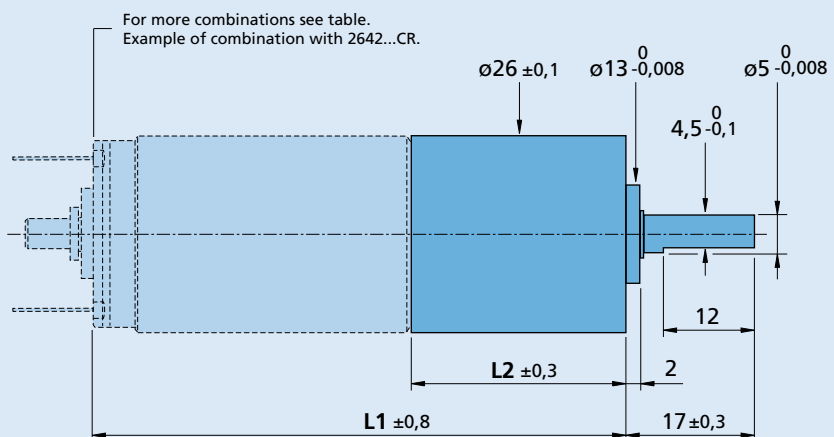
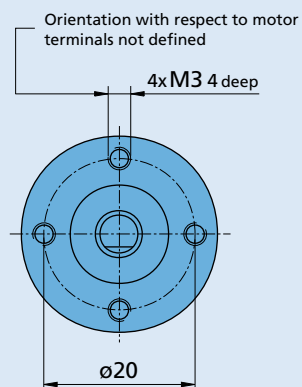
### Series 26/1

	26/1
Housing material	steel
Geartrain material <sup>1)</sup>	plastic/steel
Recommended max. input speed for:	
– continuous operation	4 000 min <sup>-1</sup>
Backlash, at no-load	≤ 1 °
Bearings on output shaft	ball bearings, preloaded
Shaft load, max.:	
– radial (10 mm from mounting face)	≤ 150 N
– axial	≤ 100 N
Shaft press fit force, max.	≤ 150 N
Shaft play	
– radial (10 mm from mounting face)	≤ 0,03 mm
– axial	≤ 0,1 mm
Operating temperature range	- 30 ... + 100 °C

Technical data		1	2	3	3	4	4	5
Number of gear stages								
Continuous torque	Nm	1,1	0,3	1	1,5	2,5	3,5	3,5
Intermittent torque	Nm	2,3	0,4	1,2	1,8	3,5	4,5	4,5
Mass without motor, ca.	g	93	116	139	139	162	162	185
Efficiency, max.	%	88	80	70	70	60	60	55
Direction of rotation, drive to output		=	=	=	=	=	=	=
Reduction ratio <sup>2)</sup> (rounded)		3,71:1	14:1	43:1	66:1	134:1	159:1 246:1	415:1 592:1 989:1 1 526:1
L2 [mm] = length without motor		28,4	36,4	44,4	44,4	52,4	52,4	60,5
L1 [mm] = length with motor		70,4	78,4	86,4	86,4	94,4	94,4	102,5
	2342S...CR	70,4	78,4	86,4	86,4	94,4	94,4	102,5
	2642W...CR	70,4	78,4	86,4	86,4	94,4	94,4	102,5
	2642W...CXR	70,4	78,4	86,4	86,4	94,4	94,4	102,5
	2657W...CR	85,4	93,4	101,4	101,4	109,4	109,4	117,5
	2657W...CXR	85,4	93,4	101,4	101,4	109,4	109,4	117,5
	2668W...CR	96,4	104,4	112,4	112,4	120,4	120,4	128,5
	2444S...B	72,4	80,4	88,4	88,4	96,4	96,4	104,5
	AM2224R3...30	59,3	67,3	75,3	75,3	83,3	83,3	91,4

<sup>1)</sup> Gearheads with ratios < 14:1 have all steel gears.

<sup>2)</sup> The reduction ratios are rounded, the exact values are available on request or at [www.faulhaber.com](http://www.faulhaber.com).



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