

# DC-Micromotors

## Graphite Commutation

125 mNm  
77,8 W

### Series 3272 ... CR

Values at 22°C and nominal voltage	3272 G	012 CR	018 CR	024 CR	036 CR	048 CR			
Nominal voltage	$U_N$		12	18	24	36	48	V	
Terminal resistance	$R$		0,205	0,418	0,82	1,67	3,35	$\Omega$	
Rotor inductance	$L$		46,2	92,7	185	371	739	$\mu\text{H}$	
Efficiency, max.	$\eta_{max}$		85	87	87	88	88	%	
No-load current, typ.	$I_0$		0,192	0,135	0,0958	0,0695	0,0479	A	
No-load speed	$n_0$		5 370	5 780	5 490	5 870	5 550	$\text{min}^{-1}$	
Stall torque	$M_H$		1 160	1 230	1 190	1 250	1 180	mNm	
Rotor inertia	$J$		67	60	63	62	60	$\text{gcm}^2$	
Friction torque	$M_R$		3,9	3,9	3,9	4	3,9	mNm	
Torque constant	$k_M$		20,8	29,5	41,6	59	83,3	$\text{mNm/A}$	
Speed constant	$k_n$		459	324	229	162	115	$\text{min}^{-1}/\text{V}$	
Slope of n-M curve	$\Delta n/\Delta M$		4,52	4,59	4,52	4,59	4,61	$\text{min}^{-1}/\text{mNm}$	
Thermal resistance:									
- winding to housing	$R_{th1}$	2,9						K/W	
- housing to ambient (external plastic flange)	$R_{th2p}$	8,6						K/W	
- housing to ambient (external metal flange)	$R_{th2m}$	1,6						K/W	
Thermal time constant:									
- winding	$\tau_{w1}$	50						s	
- housing (external plastic flange)	$\tau_{w2p}$	1 100						s	
- housing (external metal flange)	$\tau_{w2m}$	200						s	
Operating temperature range:									
- motor		-30 ... +125						$^{\circ}\text{C}$	
- winding, max. permissible		+155						$^{\circ}\text{C}$	
Shaft bearings								ball bearings, preloaded	
Shaft diameter								5	mm
Radial shaft load max.:									
- dynamic at 3 000 $\text{min}^{-1}$ (3 mm from bearing)		50						N	
Axial shaft load max.:									
- dynamic at 3 000 $\text{min}^{-1}$		5						N	
- static (shaft unsupported)		50						N	
- static (shaft supported)		2 000						N	
Shaft play, max.:									
- radial		0,015						mm	
- axial		0						mm	
Speed up to	$n_{max}$	6 000						$\text{min}^{-1}$	
Number of pole pairs								1	
Mass								312	g
Housing material								steel, nickel plated	
Magnet material								NdFeB	

#### Rated values for continuous operation

Rated torque	$M_N$		75,2	103	124	124	125	mNm
Rated current (thermal limit)	$I_N$		4	4	3,6	2,53	1,81	A
Rated speed	$n_N$		5 090	5 440	5 110	5 510	5 140	$\text{min}^{-1}$

**Note:** Rated values are calculated with nominal voltage and at a 22°C ambient temperature. The  $R_{th2}$  value has been reduced by 50%.

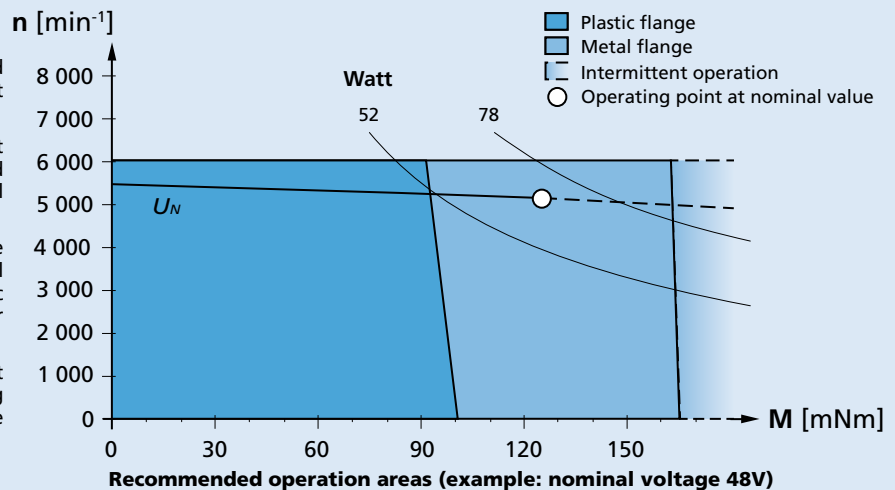
#### Note:

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

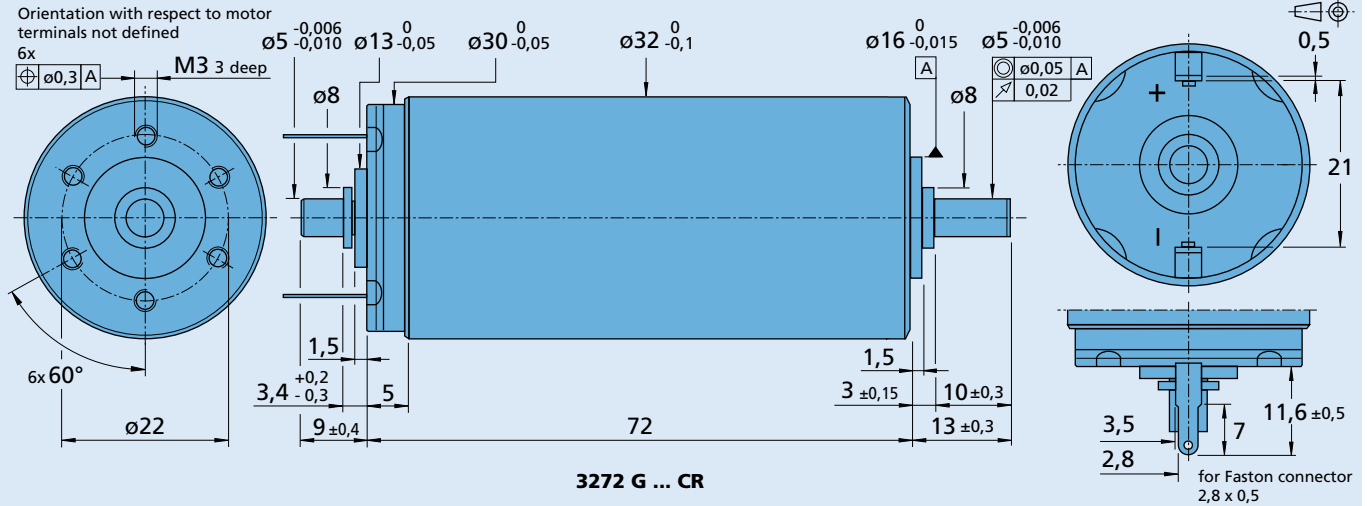
The diagram shows the motor in different conditions of thermal coupling, i.e. mounted respectively on a plastic flange and a metal flange.

The nominal voltage ( $U_N$ ) curve shows, up to the thermal limit, the operating point at nominal voltage for the motor mounted on a plastic flange. Higher torque can be achieved by further reducing the thermal resistance.

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: **3272G012CR-158**

Option	Type	Description
U	Single Leads	For motors with single leads (PTFE), length 160 mm, red (+) / black (-)
158	Shaft end	No second shaft end

### Product combination

Precision Gearheads / Lead Screws	Encoders	Drive Electronics	Cables / Accessories
32GPT	IE3-1024	SC 2402 P	MBZ
32/3R	IE3-1024 L	SC 2804 S	To view our large range of accessory parts, please refer to the "Accessories" chapter.
38/1	IERS3-500	SC 5004 P	
38/1 S	IERS3-500 L	SC 5008 S	
38/2	IER3-10000	MC 5004 P	
38/2 S	IER3-10000 L	MC 5005 S	
42GPT		MC 5010 S	
32L ... TL			
32L ... ML			
32L ... SB			
32L ... PB			