

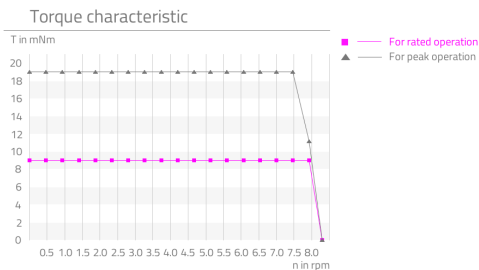


## Attributes

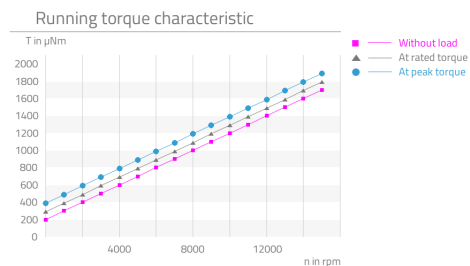
Highlights	Description
<ul style="list-style-type: none"> <li>▪ <b>High repeatability</b></li> <li>▪ <b>Zero backlash with ultra high transmission ratio</b></li> <li>▪ <b>Easy controllability</b></li> <li>▪ <b>Preloaded ball bearing</b></li> <li>▪ <b>Lifetime lubrication</b></li> </ul>	<p>The MaalonDrive® HighVac 10mm - type 8 micro positioning system, designed for use in high-vacuum environments and lubricated with Braycote, is characterised, in particular, by its high positioning resolution. The combination of a zero-backlash MaalonDrive® gear with a reduction ratio of 1000:1 and a DC motor with rated voltage of 6V results in a high-performance micro actuator. On the output side, the zero-backlash MaalonDrive® gear is equipped with a preloaded ball bearing by means of which the application can be directly connected.</p>

## Technical parameter

P-019



P-029



# Technical Supply Specifications: MaalonDrive® HighVac 10mm - Type 8



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Nr.	Parameter	Symbol	Value	Hint
P-001	Vacuum suitable		HV	
P-003	Ratio	i	1000 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		15 arcsec	
P-009	Repeatability bidirectional		30 arcmin	
P-010	Accuracy		15 arcmin	
P-011	Transmission accuracy		30 arcmin	
P-012	Resolution		0.00141 °	
P-013	Torsional stiffness		3.80 $\frac{\text{Nm}}{\text{rad}}$	
P-014	Lost motion		30 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	9 mNm	
P-017	Peak torque	T	19 mNm	
P-018	Momentary peak torque	T	47 mNm	
P-021	Rated input speed	n	10000 rpm	
P-022	Maximum input speed	n	14000 rpm	
P-023	Rated output speed	n	10 rpm	
P-024	Maximum output speed	n	14 rpm	
P-026	No-load starting torque	T	300 $\mu\text{Nm}$	
P-027	No-load running torque	T	200 $\mu\text{Nm}$	
P-028	Rated running torque	T	1440 $\mu\text{Nm}$	
P-034	Lifetime for rated operation		500 h	
P-035	Radial backlash output shaft		0 $\mu\text{m}$	
P-036	Axial backlash output shaft		0 $\mu\text{m}$	
P-037	Radial stiffness	c	2.31 $\text{N}/\mu\text{m}$	
P-038	Axial stiffness	c	40 $\text{N}/\mu\text{m}$	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	55 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	20 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	7 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	7 N	
P-043	Max. axial load on output shaft (non-operating, constant	F	150 N	

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Nr.	Parameter	Symbol	Value	Hint
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	50 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	380 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	127 N	
P-055	Moment of inertia	I	$1155 * 10^{-4}$ gcm <sup>2</sup>	
P-056	Weight	m	20 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-20 °C	
P-058	Min. permissible ambient temperature (operating)	T	-10 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	85 °C	
P-060	Max. permissible ambient temperature (operating)	T	65 °C	

## Motor data: DC-Motor RE 10 6V 1.5W

Nr.	Parameter	Symbol	Value	Hint
P-100	Motortype		DC	
P-102	Maximum speed of motor	n	14000 rpm	
P-104	Speed constant of motor	K <sub>n</sub>	2100 rpm/V	
P-106	Stall torque of motor	T	3.01 mNm	
P-107	Torque constant of motor	K <sub>m</sub>	4.56 mNm/A	
P-108	No-load current of motor	I	10.8 mA	
P-110	Max. continuous current of motor	I	339 mA	
P-111	Rated voltage of motor	U	6 V	
P-112	Phase resistance of motor	R	9.09 ohm	
P-113	Inductance of motor	L	0.077 mH	
P-114	Amplitude BEMF of motor	U	0.476 mV/rpm	
P-118	Max. coil temperature of motor	T	85 °C	
P-119	Thermal resistance of motor between coil and housing	R <sub>th1</sub>	9 K/W	
P-120	Thermal resistance of motor between housing and air	R <sub>th2</sub>	37.5 K/W	
P-121	Thermal time constant of the coil of the motor	τ <sub>w1</sub>	2220 ms	
P-122	Thermal time constant of the housing of the motor	τ <sub>w2</sub>	135000 ms	

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## Encoder data

Nr.	Parameter	Symbol	Value	Hint
P-201	Impulses per revolution of encoder		256	
P-202	Channels of encoder		A, A\, B, B\	
P-203	Frequency range of encoder	f	320 kHz	
P-204	Operating voltage of encoder	U	5 ±0.2 V	
P-206	Output current of encoder	I	5 mA	
P-207	Signal/phase shifting of encoder		90±45 °	

## Material information

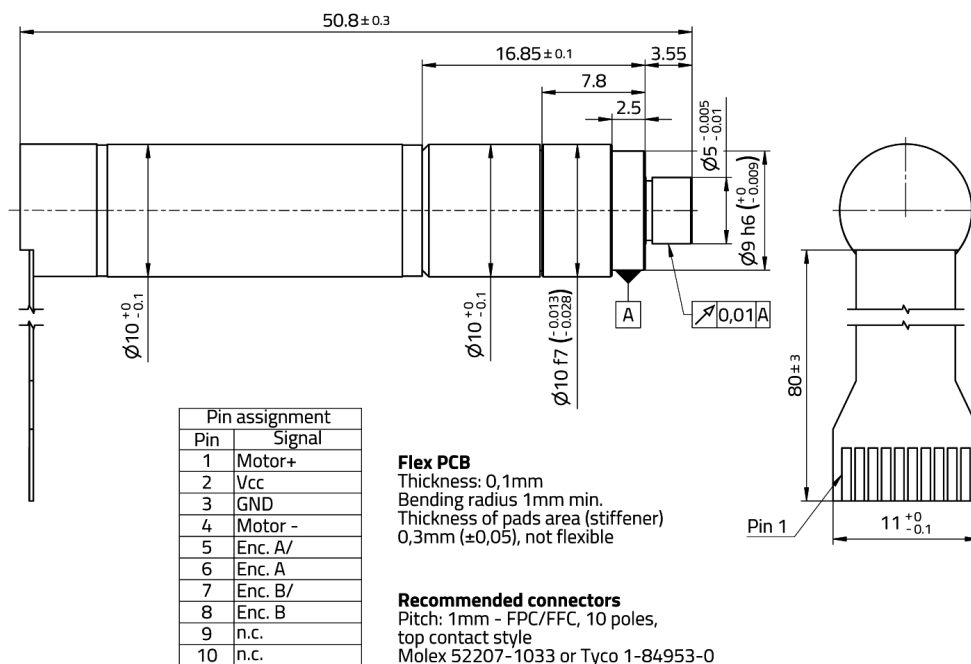
Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		FomblinGRM60	
P-902	Lubrication of input bearing gearbox		FomblinGRM60	
P-903	Lubrication of gear component set		Fomblin GRM60	
P-908	Material of gear component set		NiFe	
P-909	Material of output bearing gearbox		1.4108 DIN EN	
P-910	Material of input bearing gearbox		1.4108 DIN EN	
P-911	Material of bearing motor		Sintered bronze	
P-912	Material of gearbox output side		1.4305 DIN EN	
P-913	Material of gearbox input side		1.4301 DIN EN	
P-914	Material of motor housing		Steel, black coated	

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## Technical drawing



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