



## Attributes

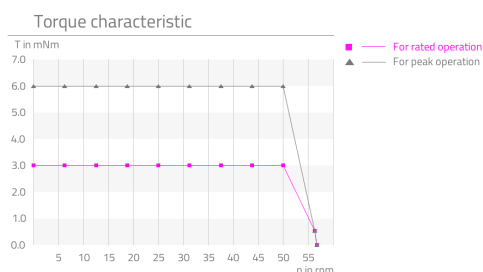
Highlights	Description
<ul style="list-style-type: none"><li>▪ <b>High repeatability</b></li><li>▪ <b>Vacuum suitable lubrication</b></li><li>▪ <b>Zero backlash with optimised fit between speed and resolution</b></li><li>▪ <b>Easy controllability</b></li><li>▪ <b>Preloaded ball bearing</b></li></ul>	<p>The MaalonDrive® HighVac 8mm - type 1 micro positioning system was designed for use in high-vacuum environments, is lubricated with Fomblin and is characterised, in particular, by its compact design and high positioning resolution. The combination of a zero-backlash MaalonDrive® gear with a reduction ratio of 160:1 with an EC motor with rated voltage of 6V results in a precise, high-performance micro drive system. The gear is equipped with a preloaded ball bearing and an output shaft with application-specific design.</p>

## Technical parameter

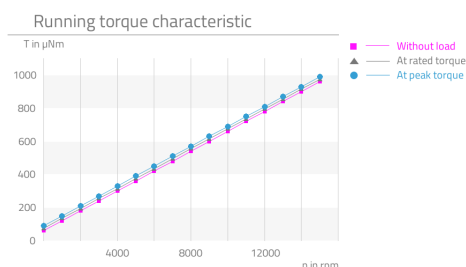
The stated values are based on calculations and measurements by Micromotion GmbH, carried out according to the current state of the art. You can find our definitions at [www.micromotion-drives.com](http://www.micromotion-drives.com).

For further information please contact [sales@micromotion.de](mailto:sales@micromotion.de).

P-019



P-029



Nr.	Parameter	Symbol	Value	Hint
P-001	Vacuum suitable		HV	
P-003	Ratio	i	160 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		22.5 arcsec	
P-009	Repeatability bidirectional		30 arcmin	
P-010	Accuracy		14 arcmin	
P-011	Transmission accuracy		28 arcmin	
P-012	Resolution		0.03516 °	
P-013	Torsional stiffness		2.29 $\frac{\text{Nm}}{\text{rad}}$	
P-014	Lost motion		22.5 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	3 mNm	
P-017	Peak torque	T	6 mNm	
P-018	Momentary peak torque	T	20 mNm	
P-021	Rated input speed	n	10000 rpm	
P-022	Maximum input speed	n	30000 rpm	
P-023	Rated output speed	n	62.5 rpm	
P-024	Maximum output speed	n	187.5 rpm	
P-026	No-load starting torque	T	90 µNm	

# Technical Supply Specifications: MaalonDrive® HighVac 8mm - Type 1



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Nr.	Parameter	Symbol	Value	Hint
P-027	No-load running torque	T	60 µNm	
P-028	Rated running torque	T	690 µNm	
P-034	Lifetime for rated operation		500 h	
P-035	Radial backlash output shaft		0 µm	
P-036	Axial backlash output shaft		0 µm	
P-037	Radial stiffness	c	0.87 N/µm	
P-038	Axial stiffness	c	18.5 <sup>N</sup> /µm	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	20 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	5 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	3 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	3 N	
P-043	Max. axial load on output shaft (non-operating, constant)	F	64 N	
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	20 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	185 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	66 N	
P-055	Moment of inertia	I	302 * 10 <sup>-4</sup> gcm <sup>2</sup>	
P-056	Weight	m	5 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	125 °C	
P-060	Max. permissible ambient temperature (operating)	T	100 °C	

Motor data: Brushless DC-Servomotor 0620K006B-K179B high vacuum  
(Data are provided by the manufacturer or are based on the data sheets of the manufacturer)

Nr.	Parameter	Symbol	Value	Hint
P-100	Motortype		EC	
P-102	Maximum speed of motor	n	100000 rpm	
P-104	Speed constant of motor	Kn	8761 <sup>rpm</sup> /V	

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Nr.	Parameter	Symbol	Value	Hint
P-106	Stall torque of motor	T	0.732 mNm	
P-107	Torque constant of motor	Km	1.09 $\frac{\text{mNm}}{\text{A}}$	
P-108	No-load current of motor	I	56 mA	
P-110	Max. continuous current of motor	I	311 mA	1)
P-111	Rated voltage of motor	U	6 V	
P-112	Phase resistance of motor	R	8.8 ohm	
P-113	Inductance of motor	L	0.028 mH	
P-114	Amplitude BEMF of motor	U	0.114 mV/rpm	
P-118	Max. coil temperature of motor	T	125 °C	
P-119	Thermal resistance of motor between coil and housing	R <sub>th1</sub>	13.2 $\frac{\text{K}}{\text{W}}$	
P-120	Thermal resistance of motor between housing and air	R <sub>th2</sub>	84.3 $\frac{\text{K}}{\text{W}}$	
P-121	Thermal time constant of the coil of the motor	T <sub>w1</sub>	1100 ms	
P-122	Thermal time constant of the housing of the motor	T <sub>w2</sub>	89000 ms	

## Encoder data

(Data are provided by the manufacturer or are based on the data sheets of the manufacturer)

Nr.	Parameter	Symbol	Value	Hint
P-201	Impulses per revolution of encoder		64	
P-202	Channels of encoder		A, B, I	
P-203	Frequency range of encoder	f	32 kHz	
P-204	Operating voltage of encoder	U	5 ±0.5 V	
P-205	Rated current consumption of encoder	I	9 mA	2)
P-207	Signal/phase shifting of encoder		90±45 °	
P-208	Signal build-up/decay time of encoder	t	60/60	

## Material information

Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		FomblinGRM60	
P-903	Lubrication of gear component set		FomblinGRM60	
P-904	Lubrication of bearing motor		FomblinGRM60	

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Nr.	Parameter	Symbol	Value	Hint
P-908	Material of gear component set		NiFe	
P-909	Material of output bearing gearbox		1.4108 DIN EN	
P-911	Material of bearing motor		Stainless steel	
P-912	Material of gearbox output side		1.4305 DIN EN	
P-914	Material of motor housing		Aluminium, black coated	

2) Supply = 5V; unloaded outputs

## Technical drawing

