



# > MaalonDrive®

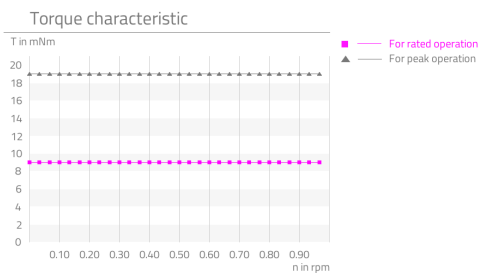
## Space 10mm - Type 2

### Attributes

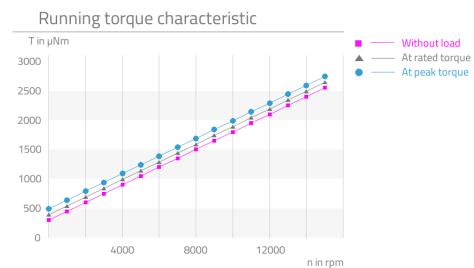
Highlights	Description
<ul style="list-style-type: none"> <li>▪ <b>High repeatability</b></li> <li>▪ <b>Dry lubrication due to coatings</b></li> <li>▪ <b>Zero backlash at ultra high resolution</b></li> <li>▪ <b>Suitable in wide temperature range</b></li> <li>▪ <b>Preloaded ball bearing</b></li> </ul>	<p>Robust and especially compact design: Thanks to the dry lubrication and the materials that are used, the compact MaalonDrive® Space 10mm - type 2 is especially well suited for applications in extreme environmental conditions. At the heart of this precise and reliable micro positioning system is a high-reduction and zero-backlash MaalonDrive® gear with a reduction ratio of 1000:1 in a single stage. The system is driven by a DC motor with rated voltage of 6V and is equipped with a preloaded ball bearing on the output side to which the application can be directly connected.</p>

### Technical parameter

P-019



P-029



# Technical Supply Specifications: MaalonDrive® Space 10mm - Type 2



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Nr.	Parameter	Symbol	Value	Hint
P-001	Vacuum suitable		UHV	
P-003	Ratio	i	1000 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		20 arcsec	
P-009	Repeatability bidirectional		40 arcmin	
P-010	Accuracy		15 arcmin	
P-011	Transmission accuracy		30 arcmin	
P-013	Torsional stiffness		3.80 $\frac{\text{Nm}}{\text{rad}}$	
P-014	Lost motion		40 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	1000 rpm	
P-022	Maximum input speed	n	1000 rpm	
P-023	Rated output speed	n	1 rpm	
P-024	Maximum output speed	n	1 rpm	
P-026	No-load starting torque	T	180 $\mu\text{Nm}$	
P-027	No-load running torque	T	300 $\mu\text{Nm}$	
P-028	Rated running torque	T	1890 $\mu\text{Nm}$	
P-034	Lifetime for rated operation		200 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	2.22 $\text{N}/\mu\text{m}$	
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	
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	50 N	

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Nr.	Parameter	Symbol	Value	Hint
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	$655 \cdot 10^{-4}$ gcm <sup>2</sup>	
P-056	Weight	m	15.159 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-30 °C	
P-058	Min. permissible ambient temperature (operating)	T	-30 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	85 °C	
P-060	Max. permissible ambient temperature (operating)	T	85 °C	1)

Additional technical data:

- motor winding coated with epoxy resin, lubrication collector base Braycote 600 EF

## Motor data: DC-Motor 1016L006G K440 with lubrication for high vacuum

Nr.	Parameter	Symbol	Value	Hint
P-100	Motortype		DC	
P-102	Maximum speed of motor	n	22000 rpm	
P-104	Speed constant of motor	K <sub>n</sub>	3173 rpm/V	
P-106	Stall torque of motor	T	0.9 mNm	
P-107	Torque constant of motor	K <sub>m</sub>	3.01 mNm/A	
P-108	No-load current of motor	I	10 mA	
P-110	Max. continuous current of motor	I	170 mA	
P-111	Rated voltage of motor	U	6 V	
P-112	Phase resistance of motor	R	19.3 ohm	
P-113	Inductance of motor	L	0.09 mH	
P-114	Amplitude BEMF of motor	U	0.315 mV/rpm	
P-118	Max. coil temperature of motor	T	85 °C	1)
P-119	Thermal resistance of motor between coil and housing	R <sub>th1</sub>	26 K/W	
P-120	Thermal resistance of motor between housing and air	R <sub>th2</sub>	56 K/W	
P-121	Thermal time constant of the coil of the motor	τ <sub>w1</sub>	3100 ms	
P-122	Thermal time constant of the housing of the motor	τ <sub>w2</sub>	260000 ms	

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## Material information

Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		MoS <sub>2</sub> (drylubrication)	
P-902	Lubrication of input bearing gearbox		dry, coated with MoS <sub>2</sub>	
P-903	Lubrication of gear component set		DICRONITE®/MoS <sub>2</sub> (drylubrication)	
P-904	Lubrication of bearing motor		dry, coated with MoS <sub>2</sub>	
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		1.4108	
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, nickel-plated	

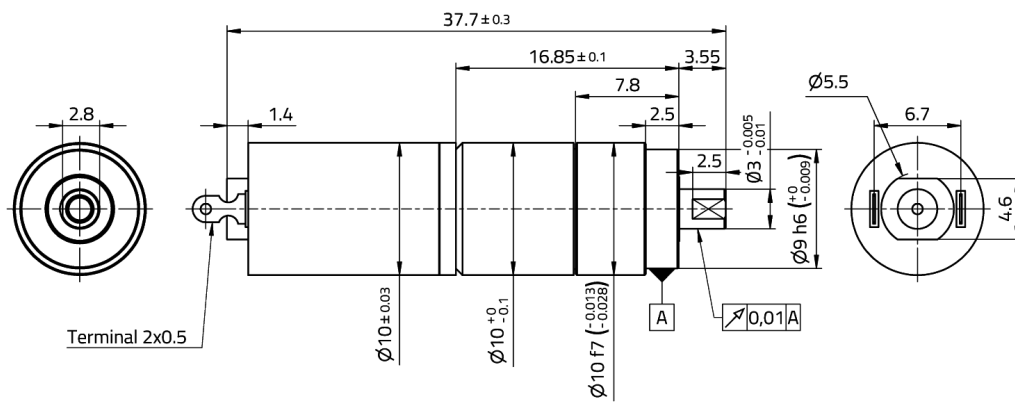
1) Short-time

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## Technical drawing



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