

# > MaalonDrive®

## SpecialShaft 10mm - Type 7

### Attributes

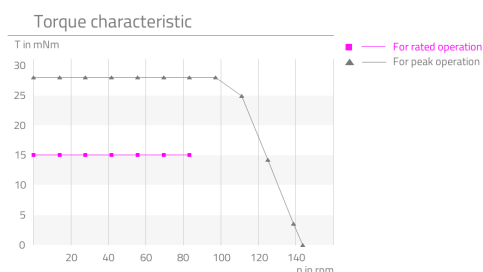
Highlights	Description
<ul style="list-style-type: none"><li>▪ <b>Zero backlash at high adjustment speed</b></li><li>▪ <b>Custom designed output shaft</b></li><li>▪ <b>Easy controllability</b></li><li>▪ <b>Vacuum suitable lubrication</b></li><li>▪ <b>Preloaded ball bearing</b></li></ul>	<p>The MaalonDrive® SpecialShaft 10mm - type 7 micro positioning system is characterised by an application-specific geometry of the output shaft and, as a result, can be optimally integrated in the application. The combination of a zero-backlash and high-reduction MaalonDrive® gear with a reduction ratio of 120:1 with an EC motor with rated voltage of 6V and an integrated encoder with a resolution of 4096 pulses per rotation results in a high-performance micro positioning system. Preloaded ball bearings are mounted on the output side, allowing the application to be directly connected.</p>

## Technical parameter

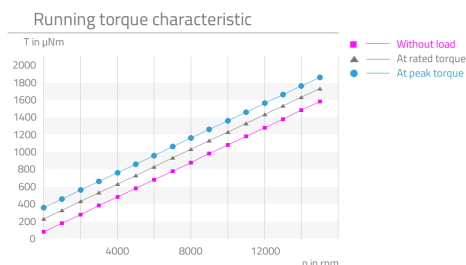
The stated values are based on calculations and measurements by Micromotion GmbH, carried out according to the current state of the art. You can find our definitions at [www.micromotion-drives.com](http://www.micromotion-drives.com).

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	120 : 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		0.00073 °	
P-013	Torsional stiffness		2.77 $\frac{\text{Nm}}{\text{rad}}$	
P-014	Lost motion		30 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	15 mNm	
P-017	Peak torque	T	28 mNm	
P-018	Momentary peak torque	T	70 mNm	
P-021	Rated input speed	n	10000 rpm	
P-022	Maximum input speed	n	50000 rpm	
P-023	Rated output speed	n	83.3333 rpm	
P-024	Maximum output speed	n	416.667 rpm	
P-026	No-load starting torque	T	120 µNm	

# Technical Supply Specifications: MaalonDrive® SpecialShaft 10mm - Type 7



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Nr.	Parameter	Symbol	Value	Hint
P-027	No-load running torque	T	80 µNm	
P-028	Rated running torque	T	1880 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	1.91 N/µm	
P-038	Axial stiffness	c	40 N/µm	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	50 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	15 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	6 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	6 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	
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	717 * 10 <sup>-6</sup> gcm <sup>2</sup>	
P-056	Weight	m	16 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-40 °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: EC-Motor 1028S006B

(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	79000 rpm	1)
P-104	Speed constant of motor	Kn	5426 rpm/V	
P-106	Stall torque of motor	T	9.72 mNm	

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Nr.	Parameter	Symbol	Value	Hint
P-107	Torque constant of motor	Km	1.76 $\frac{\text{mNm}}{\text{A}}$	
P-108	No-load current of motor	I	121 mA	
P-110	Max. continuous current of motor	I	1160 mA	2)
P-111	Rated voltage of motor	U	6 V	
P-112	Phase resistance of motor	R	1.08 ohm	
P-113	Inductance of motor	L	0.024 mH	
P-114	Amplitude BEMF of motor	U	0.184 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>	6.6 $\frac{\text{K}}{\text{W}}$	1)
P-120	Thermal resistance of motor between housing and air	R <sub>th2</sub>	42.4 $\frac{\text{K}}{\text{W}}$	
P-121	Thermal time constant of the coil of the motor	T <sub>w1</sub>	4200 ms	1)
P-122	Thermal time constant of the housing of the motor	T <sub>w2</sub>	152000 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		4096	
P-202	Channels of encoder		SSI	
P-203	Frequency range of encoder	f	2000 kHz	
P-204	Operating voltage of encoder	U	5 ±0.5 V	
P-205	Rated current consumption of encoder	I	Max. 23	
P-206	Output current of encoder	I	4 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		Braycote601EF	
P-903	Lubrication of gear component set		Braycote601EF	
P-908	Material of gear component set		NiFe	

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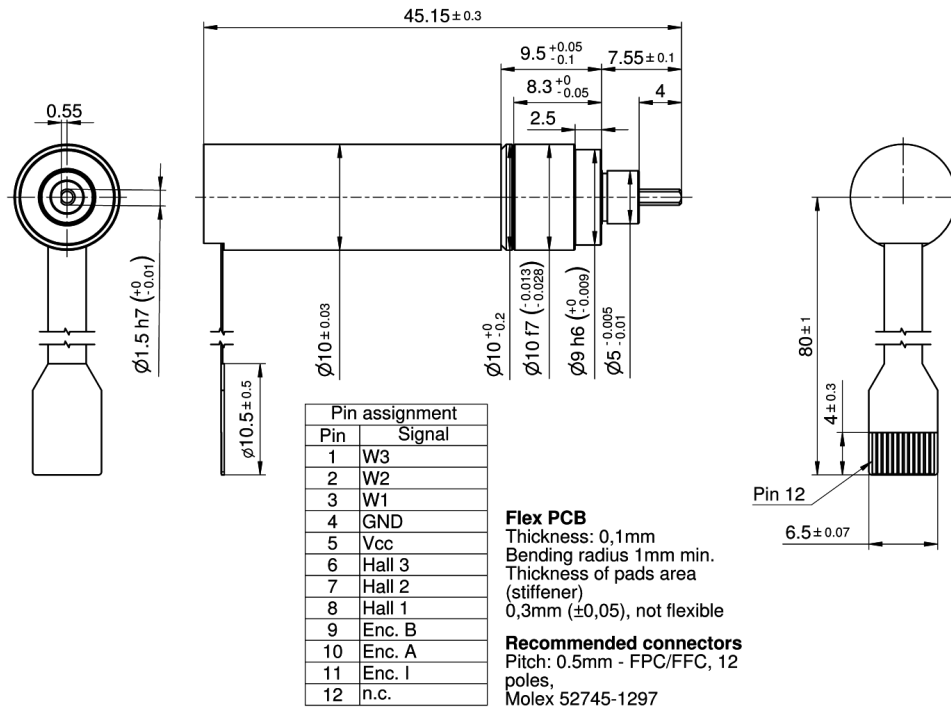


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Nr.	Parameter	Symbol	Value	Hint
P-909	Material of output bearing gearbox		1.4108 DIN EN	
P-912	Material of gearbox output side		1.4305 DIN EN	
P-914	Material of motor housing		Aluminium	

2) Curve measured with nominal voltage and load inertia  $6 \cdot 10^{-9} \text{ kg/m}^2$  in  $\frac{1}{2}$  micro steps.

## Technical drawing



Micromotion GmbH | Hoenbergstraße 14 | 65555 Limburg  
+49(0)6431-59618-25 | sales@micromotion.de | www.micromotion-drives.com