



## Attributes

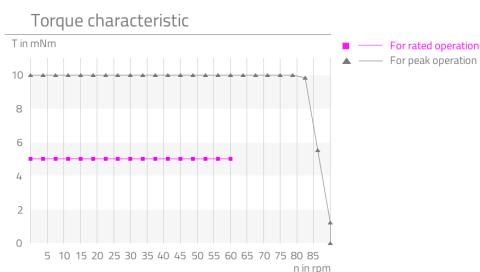
Highlights	Description
<ul style="list-style-type: none"><li>▪ <b>Robust control without feedback system</b></li><li>▪ <b>Integrated tool fitting</b></li><li>▪ <b>Integrated vacuum supply for tool</b></li><li>▪ <b>Connecting cable assembled</b></li><li>▪ <b>Extreme dynamic</b></li></ul>	<p>The MaalonDrive® ToolFit 10mm - type 2 is a highly dynamic micro positioning system for precise pick-and-place applications. The robust bearing of the output shaft and the ability to use a gripper tool directly in the input shaft characterise this micro actuator solution. A stable operating behaviour is achieved by the stepper motor with 20 steps per rotation, thereby allowing the unit to easily be operated in an open loop control. A zero-backlash MaalonDrive® gear with a reduction ratio of 160:1 forms the core of the unit. In addition, a tool holder is integrated, thereby allowing the drive to be integrated in the existing design easily and in a space-saving manner.</p>

## Technical parameter

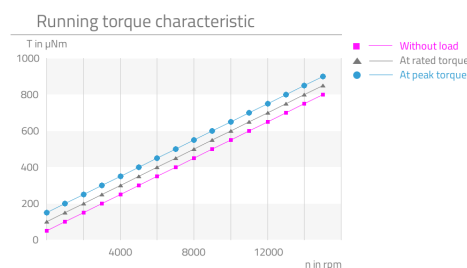
The stated values are based on calculations and measurements by Micromotion GmbH, carried out according to the current state of the art. You can find our definitions at [www.micromotion-drives.com](http://www.micromotion-drives.com).

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

P-019 Curve measured with 5x nominal voltage and load inertia  $6 \cdot 10E-9$  kg/m<sup>2</sup> in  $\frac{1}{4}$  micro steps.



P-029 Curve measured with 5x nominal voltage and load inertia  $6 \cdot 10E-9$  kg/m<sup>2</sup> in  $\frac{1}{4}$  micro steps.



Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	160 : 1	
P-004	Self-locking		yes	
P-008	Repeatability unidirectional		35.25 arcsec	
P-009	Repeatability bidirectional		20.675 arcmin	
P-010	Accuracy		13.35 arcmin	
P-011	Transmission accuracy		26.7 arcmin	
P-012	Resolution		0.1125 °	
P-013	Torsional stiffness		8.25 <sup>Nm</sup> /rad	
P-014	Lost motion		12 arcmin	
P-015	Backlash		0 arcmin	
P-016	Rated torque	T	5 mNm	
P-017	Peak torque	T	10 mNm	
P-018	Momentary peak torque	T	23 mNm	
P-021	Rated input speed	n	10000 rpm	
P-022	Maximum input speed	n	21000 rpm	
P-023	Rated output speed	n	62.5 rpm	
P-024	Maximum output speed	n	131.25 rpm	
P-026	No-load starting torque	T	75 μNm	
P-027	No-load running torque	T	50 μNm	

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



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Nr.	Parameter	Symbol	Value	Hint
P-028	Rated running torque	T	600 µNm	
P-034	Lifetime for rated operation		1000 h	
P-035	Radial backlash output shaft		0 µm	
P-036	Axial backlash output shaft		0 µm	
P-037	Radial stiffness	c	11.32 N/µm	
P-038	Axial stiffness	c	40 N/µm	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	135 N	
P-040	Max. radial load on output shaft (non-operating, impulsive load)	F	45 N	
P-041	Max. radial load on output shaft (operating, constant load)	F	32 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	32 N	
P-043	Max. axial load on output shaft (non-operating, constant load)	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	923 * 10 <sup>-4</sup> gcm <sup>2</sup>	
P-056	Weight	m	20 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-35 °C	
P-058	Min. permissible ambient temperature (operating)	T	-20 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	130 °C	
P-060	Max. permissible ambient temperature (operating)	T	70 °C	
P-061	Tool fitting		Ø3.17G6 – 8 deep	
P-062	Connecting for vacuum supply		Ø2.2	

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Additional technical data:

- cycle time by angle of rotation 15°: 50 ms, magnetic index and ribbon cable M3 HiFlex 4Pol 1.27mm AWG28  
L=280mm with connector: Molex  
39-01-2040 04Pol 2R Male

## Motor data: Stepper AM 1020-2R-A0.25

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

Nr.	Parameter	Symbol	Value	Hint
P-100	Motortype		Stepper	
P-102	Maximum speed of motor	n	21000 rpm	
P-103	Resonance frequency of motor	f	140 Hz	
P-105	Holding torque of motor (unpowered)	T	0.2 mNm	
P-109	Rated current of motor	I	250 mA	
P-111	Rated voltage of motor	U	2 V	
P-112	Phase resistance of motor	R	8 ohm	
P-113	Inductance of motor	L	2.4 mH	
P-114	Amplitude BEMF of motor	U	0.6 mV/rpm	
P-115	Full step angle of motor		18 °	
P-116	Angular accuracy of step of motor		±1.8 °	
P-117	Electrical time constant of motor	t	0.32 ms	
P-118	Max. coil temperature of motor	T	130 °C	
P-119	Thermal resistance of motor between coil and housing	R <sub>th1</sub>	3.9 <sup>°/W</sup>	
P-120	Thermal resistance of motor between housing and air	R <sub>th2</sub>	53.8 <sup>°/W</sup>	
P-121	Thermal time constant of the coil of the motor	τ <sub>w1</sub>	3200 ms	
P-122	Thermal time constant of the housing of the motor	τ <sub>w2</sub>	200000 ms	
P-123	Insulation voltage of motor	U	200 V	

## Material information

Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		Longtime PD2/ Molykote BR 2 plus	
P-903	Lubrication of gear component set		Molykote BR 2 plus	
P-904	Lubrication of bearing motor		Synthetic light ester oil	
P-908	Material of gear component set		NiFe	

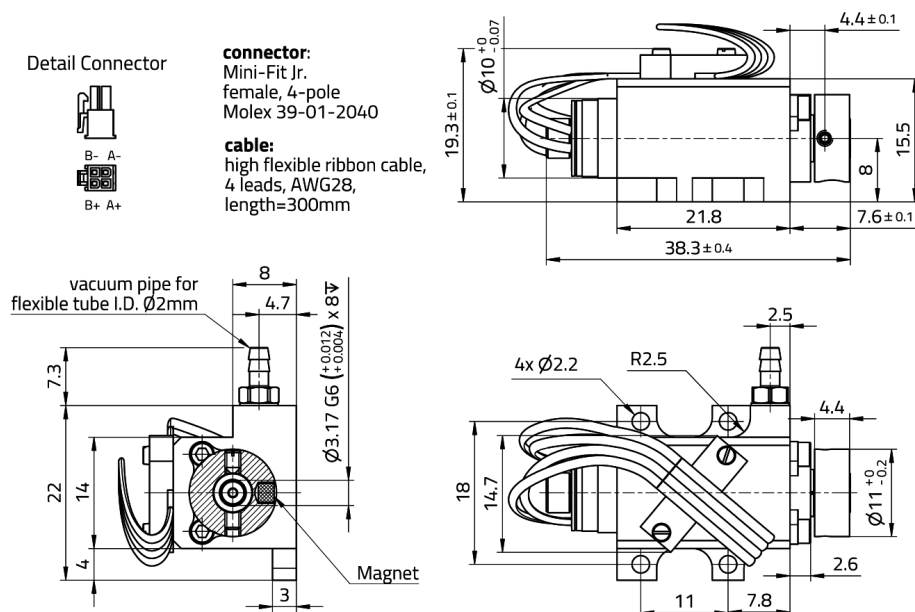
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Nr.	Parameter	Symbol	Value	Hint
P-909	Material of output bearing gearbox		1.4108 DIN EN	
P-911	Material of bearing motor		Stainless steel	
P-912	Material of gearbox output side		1.4305 DIN EN	
P-914	Material of motor housing		Anodized aluminum	

## Technical drawing



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