

> MaalonDrive® Hollow 10mm - Type 5



Attributes

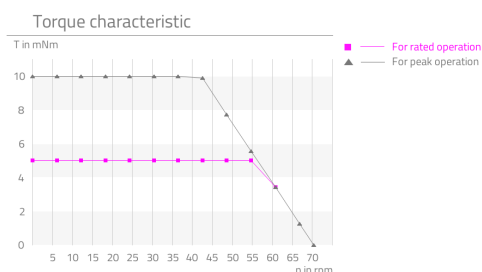
Highlights	Description
▪ High repeatability ▪ Hollow shaft thru center of rotational axis ▪ Zero backlash with optimised fit between speed and resolution ▪ Easy controllability ▪ Preloaded ball bearing	The MaalonDrive® Hollow 10mm - type 5 micro positioning system combines hollow shaft, tool holder directly in the output shaft, parallel-offset motor arrangement and housing flange in one system. Optical signals can be guided through the hollow shaft on the central rotary axis of the gear to save space. The toothing on the input shaft enables the positioning of a brushless DC motor with rated voltage of 6V and integrated encoder with a resolution of 256 pulses per rotation parallel to the hollow shaft. The possibilities of the hollow shaft can thereby be optimally utilised. At the heart of the MaalonDrive® Hollow 10mm - type 5 is a zero-backlash MaalonDrive® gear with a reduction ratio of 160:1.

Technical parameter

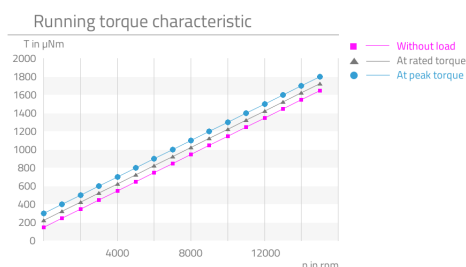
The stated values are based on calculations and measurements by Micromotion GmbH, carried out according to the current state of the art. You can find our definitions at www.micromotion-drives.com.

For further information please contact sales@micromotion.de.

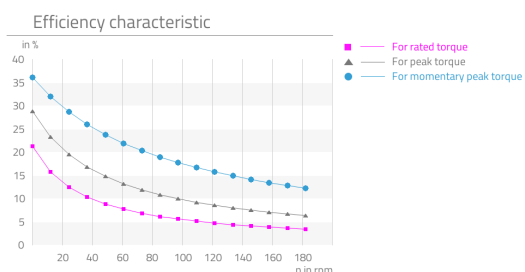
P-019



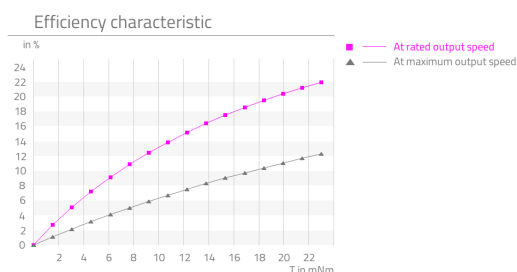
P-029



P-032



P-032



Nr.	Parameter	Symbol	Value	Hint
P-003	Ratio	i	82.2857 : 1	
P-004	Self-locking		yes	
P-006	Hollow shaft		ja	
P-008	Repeatability unidirectional		15 arcsec	
P-009	Repeatability bidirectional		20 arcmin	
P-010	Accuracy		12 arcmin	
P-011	Transmission accuracy		24 arcmin	
P-012	Resolution		0.06836 °	
P-013	Torsional stiffness		8.25 $\frac{\text{Nm}}{\text{rad}}$	
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	

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Nr.	Parameter	Symbol	Value	Hint
P-018	Momentary peak torque	T	23 mNm	
P-020	Torque constant gear	Km	15 µNm/mNm	
P-021	Rated input speed	n	5000 rpm	
P-022	Maximum input speed	n	15000 rpm	
P-023	Rated output speed	n	60.7639 rpm	
P-024	Maximum output speed	n	182.292 rpm	
P-025	Speed constant gear	Kn	0.1 µNm/rpm	
P-026	No-load starting torque	T	220 µNm	
P-027	No-load running torque	T	150 µNm	
P-028	Rated running torque	T	1145 µNm	
P-030	Efficiency for rated operation	η	5.15 %	
P-031	Efficiency for peak operation	η	3.65 %	
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	0.48 N/µm	
P-038	Axial stiffness	c	10 N/µm	
P-039	Max. radial load on output shaft (non-operating, constant load)	F	10 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	2 N	
P-042	Max. radial load on output shaft (operating, impulsive load)	F	2 N	
P-043	Max. axial load on output shaft (non-operating, constant load)	F	30 N	
P-044	Max. axial load on output shaft (non-operating, impulsive load)	F	10 N	
P-045	Max. axial load on output shaft (operating, constant load)	F	100 N	
P-046	Max. axial load on output shaft (operating, impulsive load)	F	38 N	
P-047	Max. radial load on input shaft (non-operating, constant load)	F	15 N	
P-048	Max. radial load on input shaft (non-operating, impulsive load)	F	6 N	
P-049	Max. radial load on input shaft (operating, constant load)	F	6 N	

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Nr.	Parameter	Symbol	Value	Hint
P-050	Max. radial load on input shaft (operating, impulsive load)	F	6 N	
P-051	Max. axial load on input shaft (non-operating, constant load)	F	64 N	
P-052	Max. axial load on input shaft (non-operating, impulsive load)	F	20 N	
P-053	Max. axial load on input shaft (operating, constant load)	F	185 N	
P-054	Max. axial load on input shaft (operating, impulsive load)	F	66 N	
P-055	Moment of inertia	I	$102.21 \cdot 10^{-4}$ gcm ²	
P-056	Weight	m	35 g	
P-057	Min. permissible ambient temperature (non-operating)	T	-20 °C	
P-058	Min. permissible ambient temperature (operating)	T	-20 °C	
P-059	Max. permissible ambient temperature (non-operating)	T	125 °C	
P-060	Max. permissible ambient temperature (operating)	T	100 °C	
P-061	Tool fitting		Ø3H6 4.5deep	
P-063	Kind of gear wheel input shaft		Spur gear DIN 867	
P-064	Module gear wheel input shaft		0.2 mm	
P-065	Number of teeth gear wheel input shaft		70	
P-066	Pitch diameter gear wheel input shaft		14 mm	
P-067	Pressure angle gear wheel input shaft		20 °	
P-068	Quality gear wheel input shaft		6f	
P-069	Material gear wheel input shaft		PEEK	
P-079	Kind of mating gear wheel input shaft		spur gear DIN 867	
P-080	Module mating gear wheel input shaft		0.2 mm	
P-081	Number of teeth mating gear wheel input shaft		36	
P-082	Pitch diameter mating gear wheel input shaft		7.2 mm	
P-083	Pressure angle mating gear wheel input shaft		20 °	
P-084	Quality mating gear wheel input shaft		6f	
P-085	Material mating gear wheel input shaft		AlMgSi coating chem. Ni 2 +2µm	

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Additional technical data:

- Tool holder

Motor data: EC-Motor EC 6 1.5W 6V

(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	7900 $\frac{\text{rpm}}{\text{V}}$	
P-106	Stall torque of motor	T	0.832 mNm	
P-107	Torque constant of motor	Km	1.21 $\frac{\text{mNm}}{\text{A}}$	
P-108	No-load current of motor	I	46.9 mA	
P-110	Max. continuous current of motor	I	314 mA	
P-111	Rated voltage of motor	U	6 V	
P-112	Phase resistance of motor	R	8.72 ohm	
P-113	Inductance of motor	L	0.065 mH	
P-114	Amplitude BEMF of motor	U	0.127 mV/rpm	
P-118	Max. coil temperature of motor	T	125 °C	
P-119	Thermal resistance of motor between coil and housing	R _{th1}	16.1 $\frac{\text{K}}{\text{W}}$	
P-120	Thermal resistance of motor between housing and air	R _{th2}	67.1 $\frac{\text{K}}{\text{W}}$	
P-121	Thermal time constant of the coil of the motor	T _{w1}	1690 ms	
P-122	Thermal time constant of the housing of the motor	T _{w2}	71800 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	64 kHz	
P-204	Operating voltage of encoder	U	5.3 ±0.3 V	
P-206	Output current of encoder	I	4 mA	
P-207	Signal/phase shifting of encoder		90±45 °	

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Material information

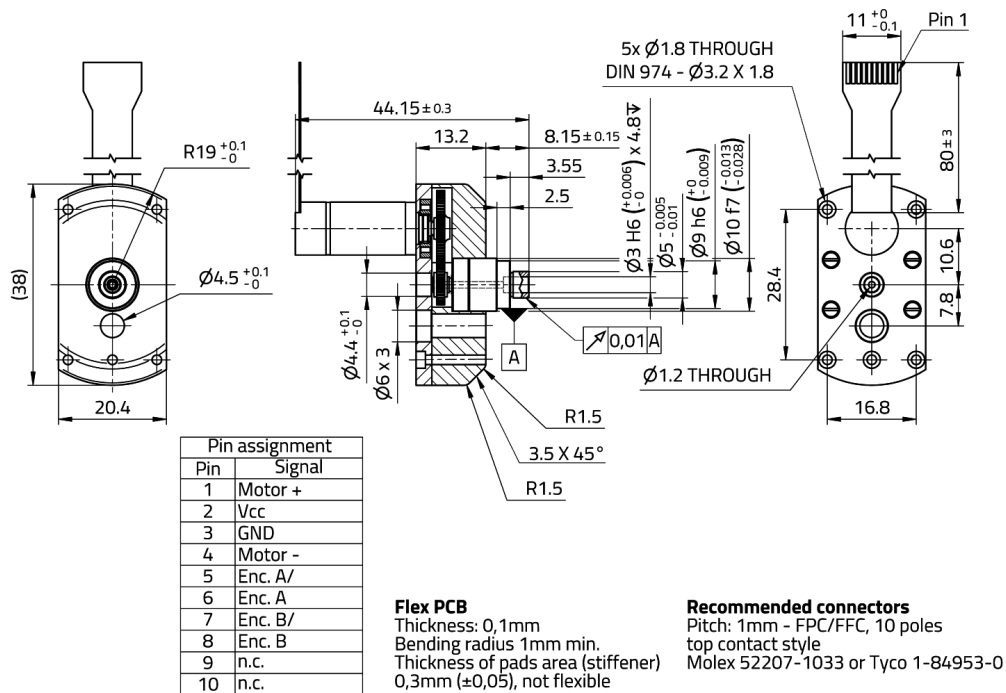
Nr.	Parameter	Symbol	Value	Hint
P-900	RoHS compliant		yes	
P-901	Lubrication of output bearing gearbox		Longtime PD2	
P-902	Lubrication of input bearing gearbox		Longtime PD2	
P-903	Lubrication of gear component set		Molykote BR 2 plus	
P-908	Material of gear component set		NiFe	
P-909	Material of output bearing gearbox		1.4108 DIN EN	
P-910	Material of input bearing gearbox		1.4108 DIN EN	
P-911	Material of bearing motor		Stainless steel	
P-912	Material of gearbox output side		1.4305 DIN EN	
P-913	Material of gearbox input side		1.4305 DIN EN	
P-914	Material of motor housing		Steel, black coated	

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Technical drawing



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