

# Linear DC-Servomotors

for sin/cos control

9,2 N

## LM 2070 ... 12

Values at 22°C	LM 2070 ... 12		
Continuous force	$F_{e \max.}$	9,2	N
Peak force	$F_{p \max.}$	27,6	N
Continuous current	$I_{e \max.}$	0,79	A
Peak current	$I_{p \max.}$	2,4	A
Back-EMF constant	$k_E$	9,5	V/m/s
Force constant	$k_F$	11,64	N/A
Terminal resistance, phase-phase	$R$	10,83	$\Omega$
Terminal inductance, phase-phase	$L$	1 125	$\mu\text{H}$
Thermal resistance	$R_{th1} / R_{th2}$	3,1 / 9,3	K/W
Thermal time constant	$\tau_{w1} / \tau_{w2}$	30 / 1 200	s
Operating temperature range		-20 ... +125	°C
Magnetic pitch	$\tau_m$	24	mm
Rod bearings		polymer sleeves	
Housing material		metal, non-magnetic	
Direction of movement		electronically reversible	

	LM 2070-	040-12	080-12	120-12	160-12	220-12	
Stroke length	$S_{\max.}$	40	80	120	160	220	mm
Repeatability	$\sigma_r$	100	100	100	100	120	$\mu\text{m}$
Accuracy	$\sigma_a$	500	600	700	800	900	$\mu\text{m}$
Acceleration	$a_{e \max.}$	83,7	61,3	51,1	43,8	35,4	$\text{m/s}^2$
Speed	$v_{e \max.}$	1,8	2,2	2,5	2,6	2,8	m/s
Rod length	$L1$	134	182	218	254	314	mm
Rod mass	$m_m$	110	150	180	210	260	g
Total mass	$m_t$	248	288	318	348	398	g

**Note:** These motors are for operation with DC-voltage < 75 V DC. The given values are for free standing motors.  
Other rod lengths available on request.

### Motor characteristic curves

#### Trapezoidal motion profile ( $t_1 = t_2 = t_3$ )

Displacement distance: 40 mm  
Friction coefficient: 0,2  
Slope angle: 0°  
Rest time: 0,1 s

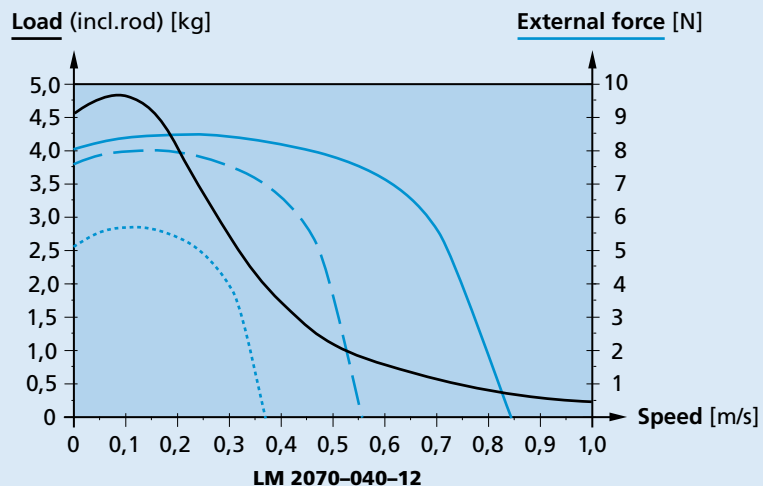
#### Load:

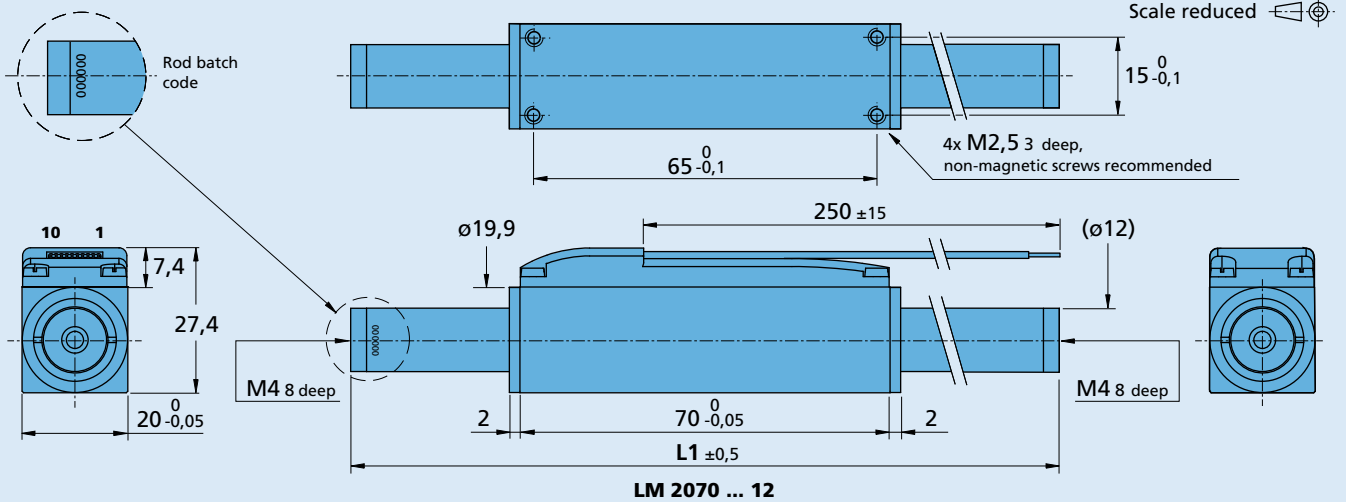
The max. applicable load (incl. rod) at a given speed with an external force of 0 N

#### External force:

The max. permissible external force at a given speed with a load (incl. rod) of:

- 0,5 kg ———
- 1,0 kg - - - - -
- 2,0 kg ⋯⋯⋯



**Dimensional drawing**

**Option, cable and connection information**

 Example product designation: **LM2070-040-12**

Option	Type	Description	Connection				
			-12/-12C		-02		
			No.	Function	No.	Function	Color
-12C	Connector 	Material PVC, 10 conductors, AWG 28 with connector A05a - TCO, pitch 2 mm	1	Phase C	1	Phase C	yellow
			2	Phase B	2	Sin +	green
			3	Phase A	3	U <sub>DD</sub> (+5V)	red
			4	GND	4	GND	black
			5	U <sub>DD</sub> (+5V)	5	Sin -	blue
			6	Sin +	6	Cos +	grey
			7	Sin -	7	Phase B	orange
			8	Cos +	8	Phase A	brown
			9	Cos -	9	Cos -	white
			10	N.C.	10	N.C.	purple
			<b>Standard cable</b>				
			Material PVC, 10 conductors, AWG 28, grid 1mm, wires tinned.				

**Product combination**

Drive Electronics	Cables / Accessories
	To view our large range of accessory parts, please refer to the "Accessories" chapter.