

## Lead Screw Stepper Motors



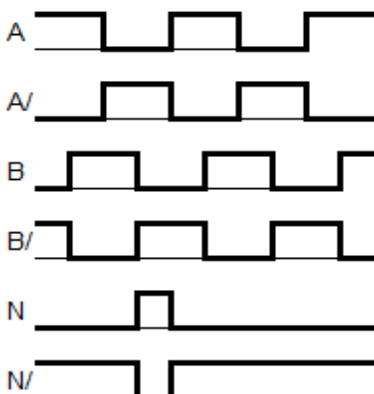
- 2-phase hybrid motor (bipolar)
- with stranded wires
- exact lead screw assembly by H7 fit
- lead screw assembly possible on both sides
- optional with encoder

**Part number** (not configurable, only for illustration)

MOT - ST - 28 - L - A - A

Specification	
A	medium (M) standard
B	short (S)
Options	
A	without
C	incremental encoder
Motor connection	
L	stranded wire
Flange dimension	
28	28mm (NEMA11)
42	42mm (NEMA17)
56	56mm (NEMA23)
Type	
ST	stepper motor
Product Type	
MOT	Motor

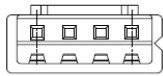
Technical data							
Flange dimension		28	28	42	42	56	56
Specification		S	M	S	M	S	M
Max. voltage	[VDC]	60	60	60	60	60	60
Nominal voltage	[VDC]	24-48	24-48	24-48	24-48	24-48	24-48
Nominal current	[A]	0,67	1,0	1,4	1,8	2,8	4,2
Holding torque	[Nm]	0,06	0,12	0,2	0,5	1,0	2,0
Detent torque	[Nm]	0,0025	0,004	0,006	0,022	0,03	0,068
Step angle	[°]	1,8±5%	1,8±5%	1,8±5%	1,8±5%	1,8±5%	1,8±5%
Resistance/Phase	[Ω]	5,60±15%	2,30±15%	2,0±15%	1,75±15%	0,75±15%	0,50±10%
Inductivity/Phase	[mH]	4,00±20%	1,80±20%	3,0±20%	3,30±20%	2,60±20%	2,20±20%
Rotor inertia	[kgcm <sup>2</sup> ]	0,009	0,018	0,036	0,082	0,27	0,48
Shaft load, axial	[N]	50	50	100	100	500	500
Shaft load, radial	[N]	-	-	-	-	-	-

Encoder		
Operating voltage	[VDC]	5
Impulse / turn		500
Zero impulse / index		yes
Line driver		RS422 protocol
Signal sequence (motor rotation clockwise)	CW	 <p>The diagram shows six digital signals over time. A and A' are complementary square waves. B and B' are complementary square waves, phase-shifted relative to A. N is a single narrow pulse. N' is a single narrow negative-going pulse.</p>

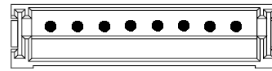
Motor weight							
Stranded wire	[kg]	0,11	0,25	0,21	0,34	0,63	1,00
Encoder	[kg]	0,13	0,27	0,23	0,36	0,65	1,02

Operating data		
Ambient temperature	[°C]	-10 ...+50
Max. allowable temperature increase	[°C]	80
Insulation class		B
Air humidity (non-condensing)	[%]	85
IP rating - motor housing		IP40
CE conformity		EMV guideline

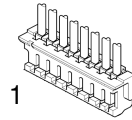
**Pin assignment stepper motor**  
Flange dimension 28,42,56 (NEMA11,17,23)



4 1



1 8



1 8

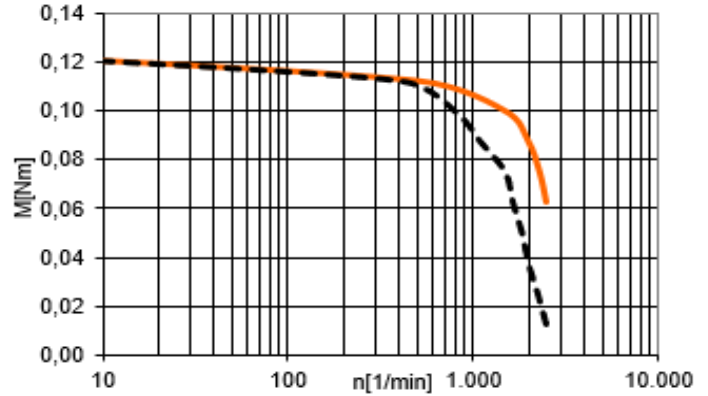
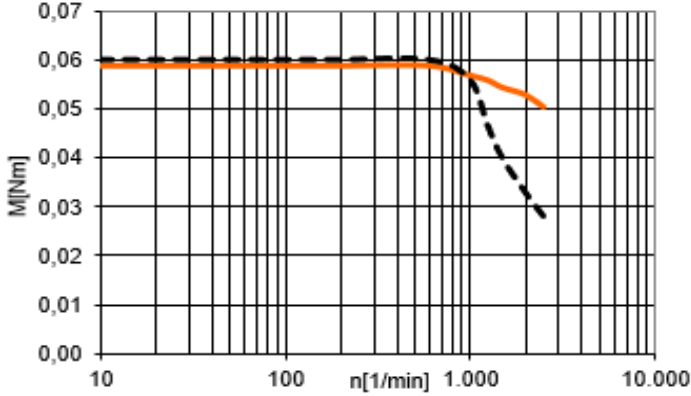
Motor bipolar		Motor cable
JST XHP-4		wire* / cable
PIN	Signal	colour
1	A	white
2	A/	brown
3	B	blue
4	B/	black

\*\* wire length approx. 300mm

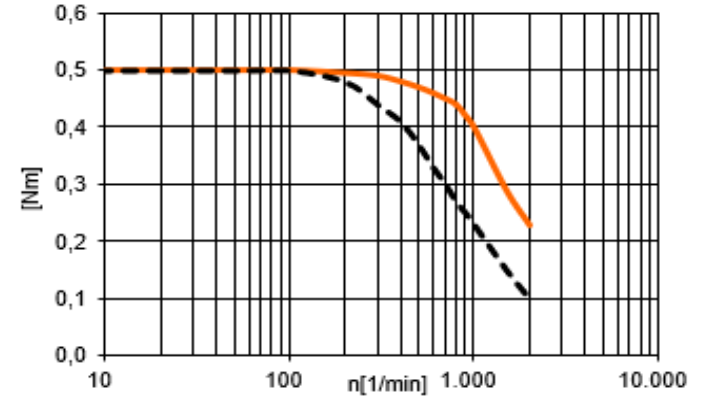
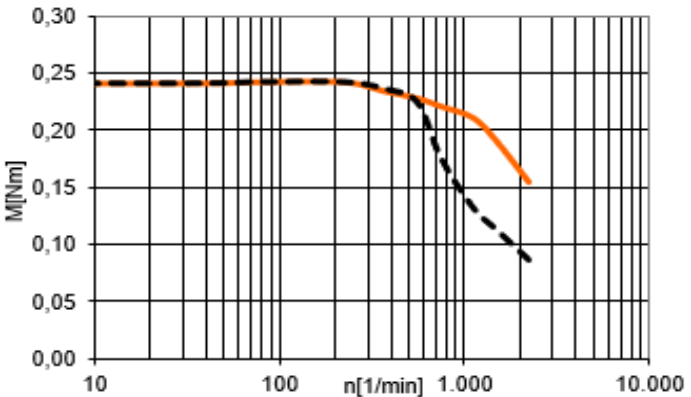
Encoder connector		Encoder plug
JST / B8B-ZR-SM4-TF		JST / ZHR-8
PIN	Signal	colour
1	GND	blue
2	5V DC	red
3	A	white
4	A/	brown
5	B/	green
6	B	yellow
7	I/	grey
8	I	pink

Cables						
Part number	Outer jacket	Type	Cable length		Plug	
<b>Motor (extension)</b> cable Ø: 5,5 mm / bending radius moved < 10m travel distance: min. 5 x d						
MAT90490015-3	TPE	CF9.INI		3	straight	
MAT90490015-5	TPE	CF9.INI		5	straight	
<b>Encoder</b> cable Ø: 7,5 mm / bending radius moved < 10m travel distance: min. 6,8 x d						
MAT90476558-3	TPE	CF11		3	straight	
MAT90476558-5	TPE	CF11		5	straight	

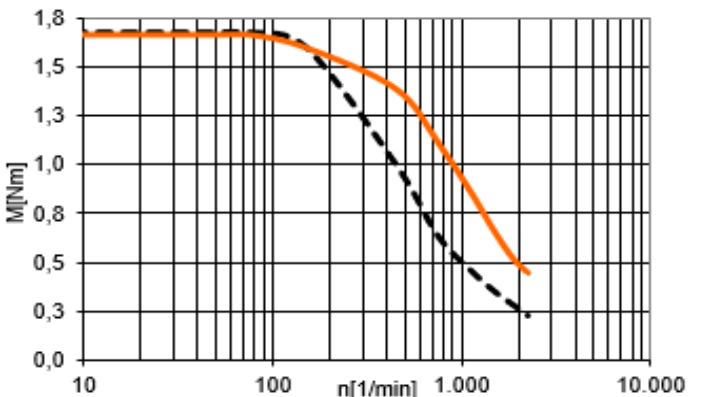
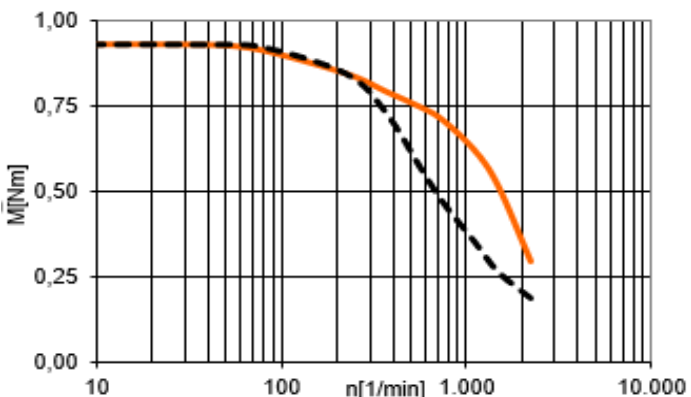
**Flange Dimension/Motor Model 28 (NEMA11)**  
**Specification S** **Specification M**



**Flange Dimension/Motor Model 42 (NEMA17)**  
**Specification S** **Specification M**

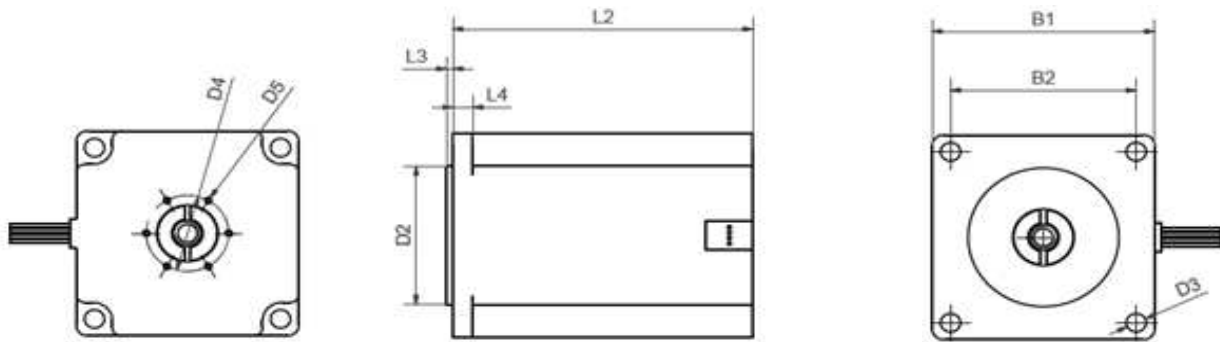


**Flange Dimension/Motor Model 56 (NEMA23)**  
**Specification S** **Specification M**

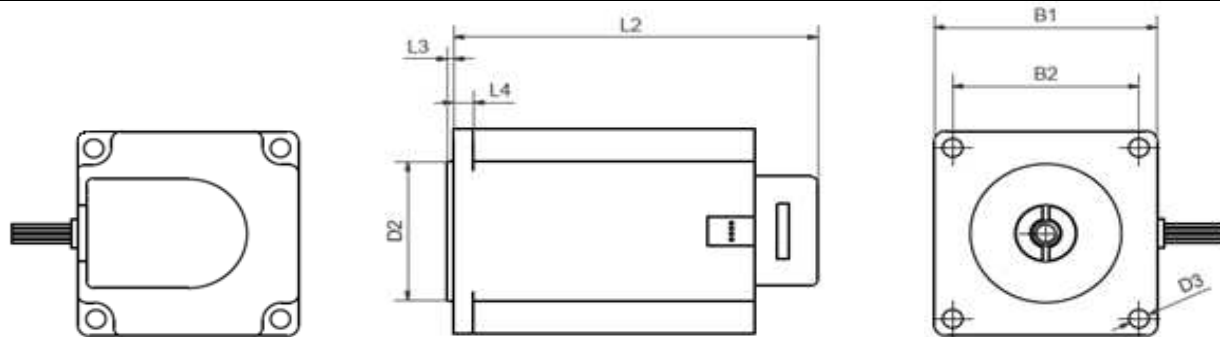


----- 24VDC      ———— 48 VDC      characteristic based on quarter step mode

## Dimensions MOT-ST-...-L-A-A



## MOT-ST-...-L-C-A



Model		B1 [mm]	B2 [mm]	D2 Ø [mm]	D3 Ø [mm]	D4 Ø [mm]	D5 Ø [mm]	L2 [mm]	L3 [mm]	L4 [mm]
<b>Without Encoder</b>	Specification	[mm]	[mm] ±0,2	Ø [mm] ±0,025	Ø [mm]	Ø [mm]	Ø [mm]	[mm] ±1	[mm]	[mm]
MOT-ST-28-L-A-B	S	28,2	23,00	22,00	M2,5	-	-	31,5	2,0	0
MOT-ST-28-L-A-A	M	28,2	23,00	22,00	M2,5	19,05	2x M2,5-2	51	2,0	0
MOT-ST-42-L-A-B	S	42,3	31,00	22,00	M3	-	-	30,5	2,0	0
MOT-ST-42-L-A-A	M	42,3	31,00	22,00	M3	19,05	2x M2,5-2	49	2,0	0
MOT-ST-56-L-A-B	S	56,4	47,14	38,10	5	-	-	50	1,6	5
MOT-ST-56-L-A-A	M	56,4	47,14	38,10	5	20,9	6x M2-2	76	1,6	5

With Encoder		B1 [mm]	B2 [mm]	D2 Ø [mm]	D3 Ø [mm]	D4 Ø [mm]	D5 Ø [mm]	L2 [mm]	L3 [mm]	L4 [mm]
	Specification	[mm]	[mm] ±0,2	Ø [mm] ±0,025	Ø [mm]	Ø [mm]	Ø [mm]	[mm] ±1	[mm]	[mm]
MOT-ST-28-L-C-B	S	28,2	23,00	22,00	M2,5	-	-	47,2	2,0	0
MOT-ST-28-L-C-A	M	28,2	23,00	22,00	M2,5	-	-	66,2	2,0	0
MOT-ST-42-L-C-B	S	42,3	31,00	22,00	M3	-	-	46,2	2,0	0
MOT-ST-42-L-C-A	M	42,3	31,00	22,00	M3	-	-	65	2,0	0
MOT-ST-56-L-C-B	S	56,4	47,14	38,10	5	-	-	65,7	1,6	5
MOT-ST-56-L-C-A	M	56,4	47,14	38,10	5	-	-	92	1,6	5

Component part						
Spindle type						
Part number	Specification	Thread type	Spindle Ø [mm]	Pitch [mm]	Max. length [mm]	Material
PTGSG-MOT-M5X0,8-R-XXX-ES	28 (NEMA11 S+M)	M5	5	0,8	250	stainless steel
PTGSG-MOT-08X1,5-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	TR	8	1,5	300	stainless steel
PTGSG-MOT-10X2-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	TR	10	2	500	stainless steel
PTGSG-MOT-12X3-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	TR	12	3	500	stainless steel
PTGSG-MOT-12X6P3-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	TR	12	6P3	500	stainless steel
PTGSG-MOT-05X5-R-XXX-ES	28 (NEMA11 S+M)	SG	5	5	250	stainless steel
PTGSG-MOT-06.35X12.7-R-XXX-ES	28 (NEMA11 S+M)	SG	6,35	12,7	300	stainless steel
PTGSG-MOT-08X15-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	SG	8	15	300	stainless steel
PTGSG-MOT-10X12-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	SG	10	12	500	stainless steel
PTGSG-MOT-10X50-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	SG	10	50	500	stainless steel
PTGSG-MOT-12X25-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	SG	12	25	500	stainless steel

Dryspin technology						
Part number	Specification	Thread type	Spindle Ø [mm]	Pitch [mm]	Max. length [mm]	Material
DST-LS-MOT-6.35X2.54-R-XXX-ES	28 (NEMA11 S+M)	DST	6,35	2,54	300	stainless steel
DST-LS-MOT-6.35X25.4-R-XXX-ES	28 (NEMA11 S+M)	DST	6,35	25,4	300	stainless steel
DST-LS-MOT-10X12-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	DST	10	12	500	stainless steel
DST-LS-MOT-10X25-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	DST	10	25	500	stainless steel
DST-LS-MOT-10X50-R-XXX-ES	42 (NEMA 17 M) 56 (NEMA 23 S+M)	DST	10	50	500	stainless steel

XXX: length of spindle

Spindle securing required via adhesive bond (Loctite 648)!

Curing time: after 6 hour approx. 50%, after 24 hour 100%

**If required from the factory, please order with the following assembly number:**

Installation in front: MONT004F000 (flange side)

Installation at the back: MONT004B000 (assembly not possible by motor with encoder)