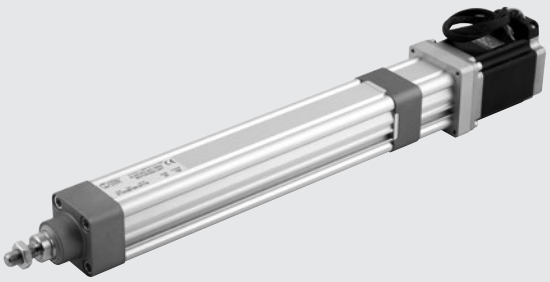
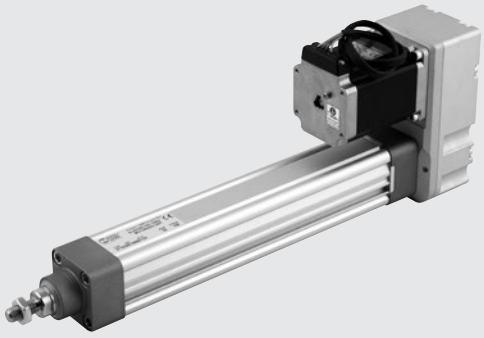
ELECTRIC CYLINDER
SERIES ELEKTRO ISO 15552

An electric cylinder with a connection interface in accordance with ISO 15552.
The piston rod extension is controlled by a system with a hardened screw and recirculating ball screw nut. The piston has a guide strip calibrated to reduce to a minimum play with the barrel and hence vibration during ball screw rotation.
The cylinder can be equipped with a built-in non-rotating system featuring two opposing slides that run in separate longitudinal slots in the barrel. The piston comes with magnets and the barrel has longitudinal slots for housing sensors. The piston rod has increased outside diameter and thickness to make it extra rigid and more resistant to radial and peak loads.
A system for greasing the screws is included. Numerous standard accessories for pneumatic cylinders, can be used for mounting the cylinder. Accessories made of aluminium, or made of steel for heavy-duty operations, can be used.
The motor can be selected from an optimised range, which encompasses both STEPPING and BRUSHLESS motors.
There is a version with a brake mounted on the motor.
Stepping motors are also available with a brake and encoder (all BRUSHLESS motors come with an encoder). It is important to remember that the brake is static type, so the motor must be stopped before the brake is engaged.
There is a version for in-line assembly, where the drive shaft is jointed directly onto the screw. There is also a geared motor version, where transmission is provided by pulleys and a cog belt with a transmission ratio of 1:1.
A planetary gearbox, in the case of a Ø 100 in-line cylinder, and pulleys with a non-unitary gear ratio, in the case of a Ø 80 and Ø 100 cylinder, can be used to increase the torque. Suitable motor drives are provided.
Special adaptor flanges and joints can be provided if the customer wishes to use a particular brand of motor.

in-line version



geared version



N.B.: A piston rod anti-rotation system must be used. If the piston rod is not fixed firmly to an element, a flange or to any other device preventing it from rotating, a cylinder in the anti-rotation version must be used.

TECHNICAL DATA		Ø 32	Ø 50	Ø 63 - 63 HD	Ø 80	Ø 100
Piston rod thread		M10x1.25	M16x1.5	M16x1.5	M20x1.5	
Environmental temperature range for STEPPING motors	°C	from -10 to +50				
BRUSHLESS motors	°C	from 0 to +40				
Electrical protection rating with STEPPING motors		IP20/IP40 or IP55 (see key to codes on page **A5**.32)			IP55	
BRUSHLESS motors		IP40 or IP65 (see key to codes on page **A5**.32)			IP65	
Maximum relative humidity of the air for IP55 STEPPING motor		90% with 40°C; 57% with 50°C (no condensate)				
IP65 BRUSHLESS motor		90% (no condensate)				
Minimum stroke for version with non-rotating		Twice the screw pitch (to guarantee ball lubrication)				
Minimum stroke for version without non-rotating	mm	80 (in order to re-grease the screw)			125 (in order to re-grease the screw)	
Maximum stroke	mm	1370	1500			
Positioning repeatability	mm	± 0.02				
Positioning accuracy	mm	± 0.2 **				
Overall radial oscillation of the piston rod (without load) for 100 mm of stroke	mm	0.4				
Versions		With or without piston rod non-rotating			With or without piston rod non-rotating; in line or geared motor; wth or without planetary gearbox	
Uncontrolled impact at the end of stroke		NOT ALLOWED (it provides an extra-stroke minimum 5 mm)				
Sensor magnet		YES				
Maximum angle of twist of the piston rod for non-rotating version		1°30′	1°	0°45′	0°35′	0°30′
Work position		Any				

** indicative average data that gets influenced by various factors such as the stroke, the type of motor, the cylinder version, etc ...

N.B.: On request available with:
- piston rod in stainless steel (Ø32, Ø50 in AISI 316; Ø63, Ø63HD, Ø80, Ø100 in AISI 304), with limitations to the maximum stroke;
- head-sleeve fixing screws in AISI 316 stainless steel;
- lubrication grease compatible with the food industry, certified NSF Cat. H1 (accidental contact with food).

METAL WORK PNEUMATIC

MECHANICAL FEATURES		Ø 32		Ø 50			Ø 63			Ø 63 HD		Ø 80			Ø 100	
Screw pitch (p)	mm	4	12	5	10	16	5	10	20	5	10	5	10	32	10	40
Screw diameter	mm	12	12	16	16	16	20	20	20	20	20	32	32	32	50	40
Static axial load (F_o)*	N	3300		4300			7500			12800		27150			36080	
Dynamic axial load (F)	N	5200	5600	10500	6670	4330	10010	12800	4880	17600	18980	30000	43000	26000	73000	43000
		Calculate mean axial load and the calculate life (see graphs on page **A5**.10)														
Maximum number of revs	1/min	4000		3000			2500			2500		2000			3000	2200
Maximum speed (V_{max})	mm/s	267	800	250	500	800	208	417	833	208	417	165	310	1100	500	1500

* **N.B.:** Static loads bearable without damage. Useful loads are shown in the diagrams on page **A5**.12 onwards.

WEIGHTS (ONLY CYLINDER)		Ø 32		Ø 50			Ø 63 - 63 HD			Ø 80			Ø 100	
Screw pitch (p)	mm	4	12	5	10	16	5	10	20	5	10	32	10	40
Weight at stroke 0	g	896	973	1990	2043	2086	2942	3209	3056	8658	8629	8650	15049	13719
Additional weight each mm of stroke	g	3.98	3.96	6.64	6.62	6.55	6.25	6.32	6.32	15.6	15.3	16	35.5	26
Weight of the in-line transmission (without motor)	g	300		900			1100			1700			2900	
Weight of the geared transmission (without motor)	g	1100		2000			3000			6300			8700	
Moving mass at stroke 0 (non-rotating version) Mx	g	270	353	586	629	703	956	1215	1067	3709	3730	3667	6630	6171
Additional moving mass each mm of stroke	g	1.25		1.84			1.98			4.9			15	9.6

N.B.: You get the total weight of a complete cylinder by adding: weight stroke 0 + stroke [mm] x weight for each mm of stroke + weight of the transmission + weight of the motor.

MASS MOMENTS OF INERTIA

		Ø 32		Ø 50			Ø 63 - 63 HD		
Screw pitch	mm	4	12	5	10	16	5	10	20 (only Ø63)
Transmission ratio (τ)		1:1	1:1	1:1	1:1	1:1	1:1	1:1	1:1
J0 at stroke 0	kgmm²	1.2407	2.4309	5.3455	6.1360	9.1113	12.4043	14.8767	23.5427
J1 each metre of stroke	kgmm²/m	12.2592	17.8468	35.2305	38.5264	49.1936	86.2990	96.6652	116.3671
J2 each kg of load	kgmm²/kg	0.4053	3.6476	0.6333	2.5332	6.4849	0.6333	2.5332	10.1327
J3 in-line transmission	kgmm²	5.2		5.2			36.2		
J3 geared transmission	kgmm²	53.2		126.5			237.7		

		Ø 80							
Screw pitch	mm	5		10			32		
Transmission ratio (τ)		1:1	1:1.25	1:1	1:1.25	1:1.5	1:1	1:1.5	
J0 at stroke 0	kgmm²	430		420.3			438.8		
J1 each metre of stroke	kgmm²/m	688		608			753		
J2 each kg of load	kgmm²/kg	0.6333		2.5330			25.9382		
J3 in-line transmission	kgmm²	148.2	-	148.2	-	-	148.2	-	
J3 geared transmission	kgmm²	1041.7	388.3	1041.7	388.3	1071.6	1041.7	1071.6	

		Ø 100					
Screw pitch	mm	10			40		
Transmission ratio (τ)		1:1	1:2	1:3 ●	1:1	1:2	1:3 ●
J0 at stroke 0	kgmm²	1357			1042.4		
J1 each metre of stroke	kgmm²/m	3984			1869.3		
J2 each kg of load	kgmm²/kg	2.5330			40.5284		
J3 in-line transmission	kgmm²	327.8	-	594.8	327.8	-	549.8
J3 geared transmission	kgmm²	1041.7	1161.1	-	1041.7	1161.1	-

● in line with gearbox

The total mass moment of inertia (Jtot) reduced for the motor is: Jtot = [J1 · Stroke [m] + J2 · (Load [kg] + Mx [kg]) + J0] · τ^2 + J3
Mx is defined in the weight table.

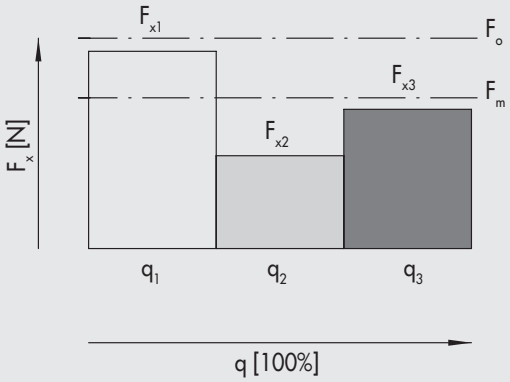
CALCULATION OF MEAN AXIAL LOAD F_m AND VERIFICATION

Peak axial load in a work cycle must not exceed the static axial load F_o. The peak value is usually achieved during upward acceleration in vertical installation. Exceeding this value leads to greater wear and hence shorter life of the recirculating ball screw.

Mean axial load F_m

$$F_m = \sqrt[3]{\sum F_x^3 \times \frac{V_x}{V_m} \times \frac{q}{100}} =$$

$$F_m = \sqrt[3]{F_{x1}^3 \times \frac{V_{x1}}{V_m} \times \frac{q_1}{100} + F_{x2}^3 \times \frac{V_{x2}}{V_m} + \frac{q_2}{100} + F_{x3}^3 \times \frac{V_{x3}}{V_m} \times \frac{q_3}{100} + \ldots}$$

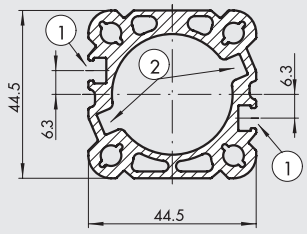


F_x = Axial load at stage x
F_m = Mean axial load during extension
F_o = Static axial load
q = Time segment
V_x = Speed in the phase x
V_m = Average speed

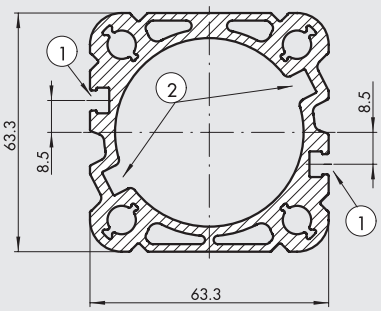
The mean axial load must not exceed the dynamic axial load: $F_m \leq F$
The graphs on page **A5**.10 show screw life as a function of F_m

BARREL CROSS SECTION

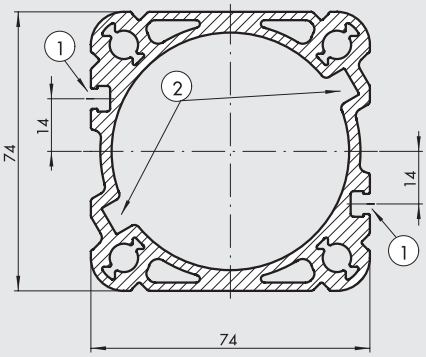
Ø 32



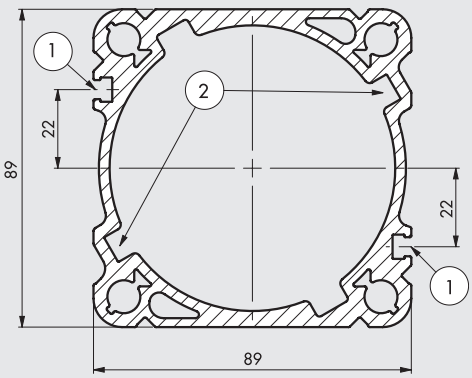
Ø 50



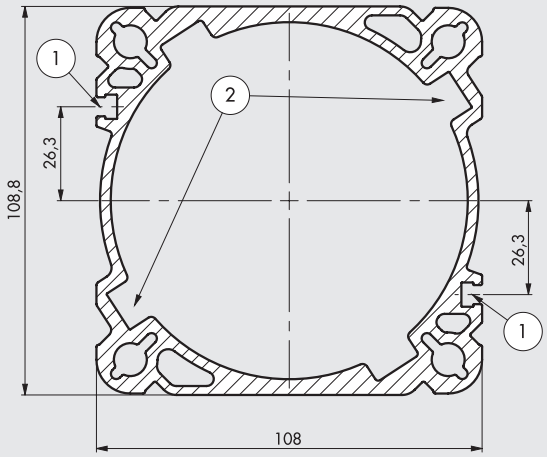
Ø 63



Ø 80



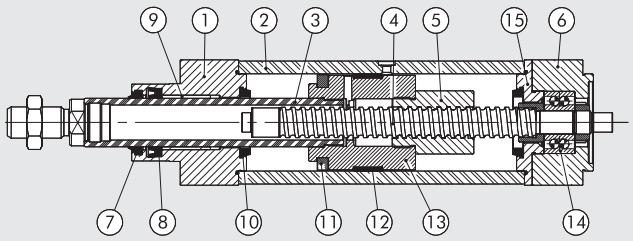
Ø 100



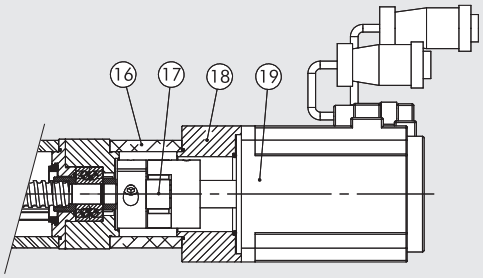
① Slots for sensors
② Slots for anti-rotation

COMPONENTS

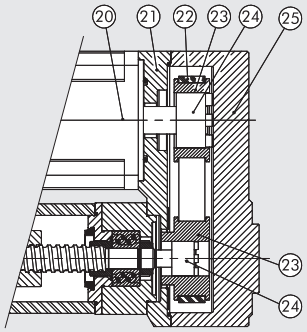
CYLINDER



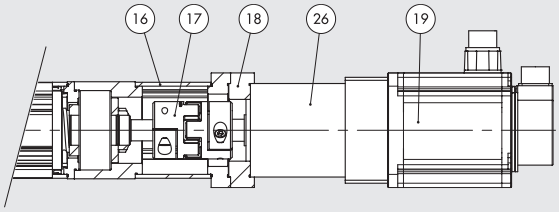
CYLINDER WITH IN-LINE MOTOR



CYLINDER WITH GEARED MOTOR



CYLINDER WITH MOTOR AND GEARBOX

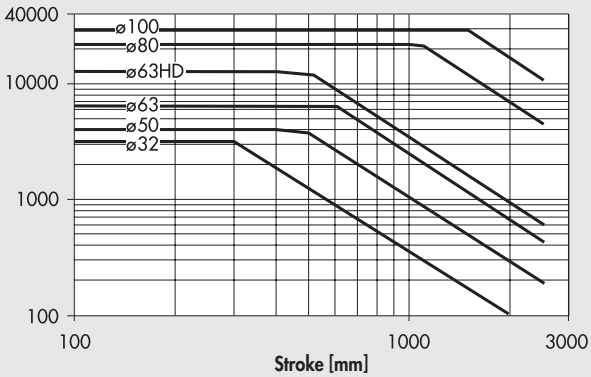


① FRONT CYLINDER HEAD: anodized aluminium
② BARREL: extruded and anodized aluminium alloy
③ PISTON ROD: grinded chromed steel
④ WORM SCREW: hardened steel
⑤ BALL SCREW NUT: steel
⑥ REAR CYLINDER HEAD: anodized aluminium
⑦ WIPER RING: polyurethane
⑧ PISTON ROD GASKET: NBR (IP55/ IP65 version only)
⑨ GUIDE BUSHING: steel strip with bronze and PTFE insert
⑩ BUFFER: technopolymer
⑪ MAGNET: plastoferrite
⑫ GUIDE STRIP: self-lubricated calibrated technopolymer
⑬ PISTON: aluminium
⑭ BEARING: oblique with two ball rings
⑮ BEARING LOCKING RING: anodized aluminium
⑯ BELL: extruded and anodized aluminium alloy
⑰ COUPLING
⑱ ADAPTOR PLATE: anodized aluminium
⑲ ELECTRIC MOTOR
⑳ ELECTRIC MOTOR
㉑ TRANSMISSION PLATE: anodized aluminium
㉒ DRIVE BELT
㉓ PULLEY: steel
㉔ SHRINK DISC
㉕ COVER: anodized aluminium
㉖ PLANETARY GEARBOX

PEAK LOADS

The following load conditions applied to the piston rod must be met.

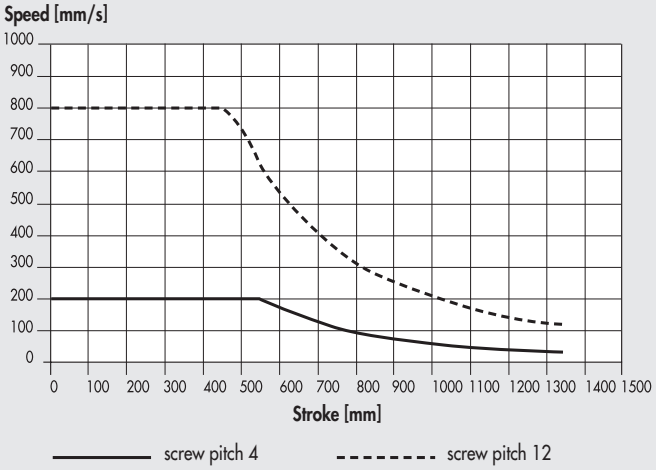
Axial load [N]



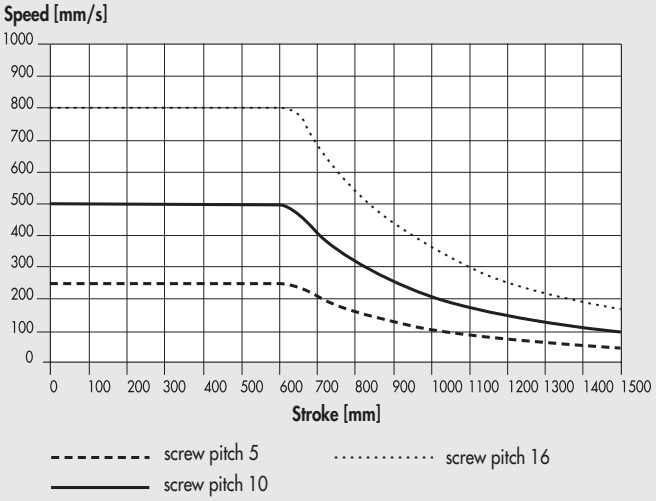
CRITICAL VELOCITY

The two variables (stroke and linear speed) must meet the conditions in the graph below, otherwise resonance could be generated and affect the system.

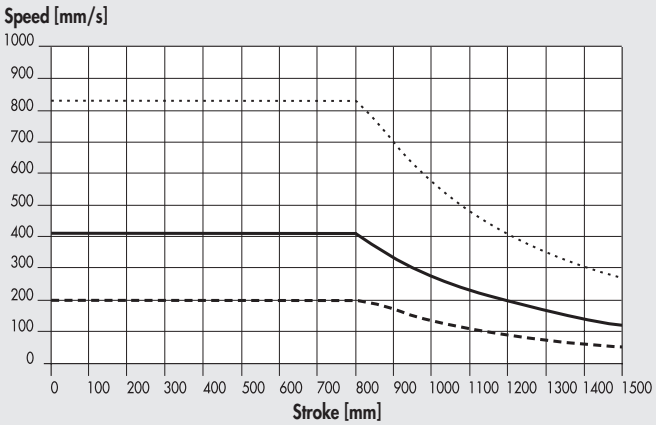
Ø 32



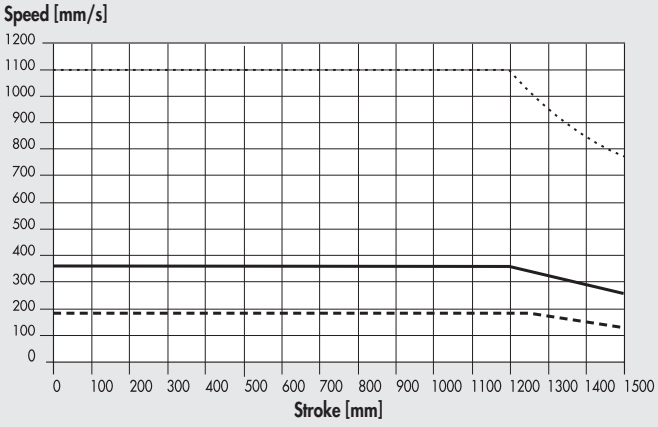
Ø 50



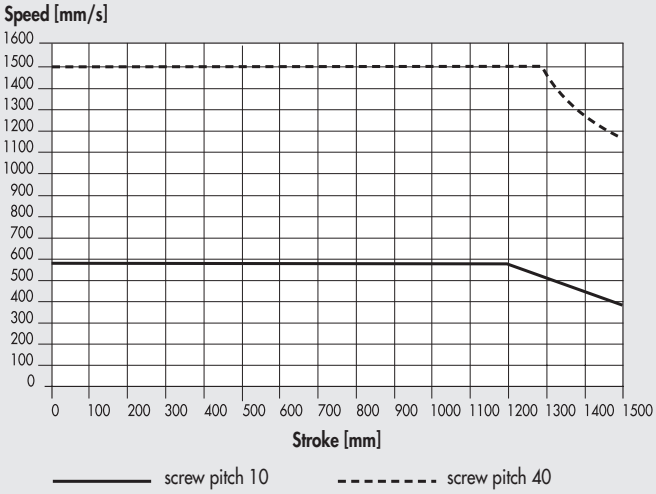
Ø 63 - Ø 63 HD



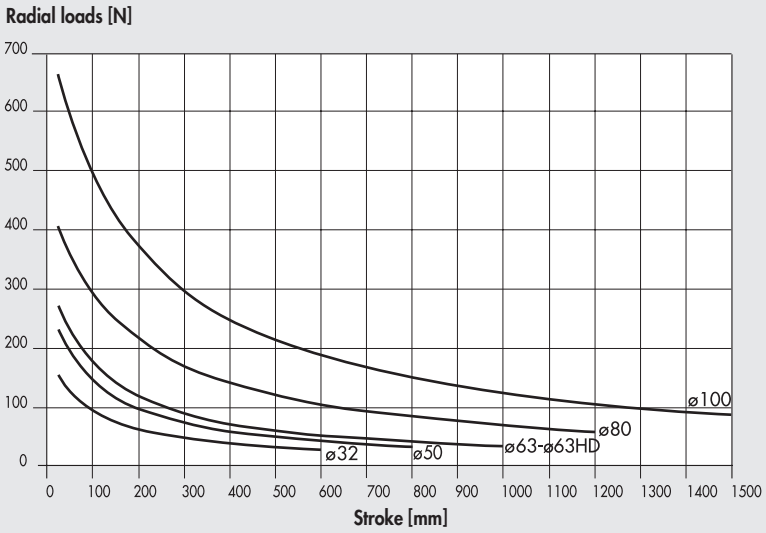
Ø 80



Ø 100



MAXIMUM RADIAL LOADS ON PISTON ROD



Radial loads can be applied to the piston rod.
They must not exceed the values in the adjacent chart, otherwise the guides on the rod and piston will be subjected to excessive wear.

PISTON ROD SPEED DEPENDING ON THE NUMBER OF SCREW TURNS

SCREW PITCH	TRANSMISSION RATIO	K (n/V)
4	1:1	15
5	1:1	12
	1:1.25	15
10	1:1	6
	1:1.25	7.5
	1:1.5	9
	1:2	12
	1:3	18
12	1:1	5
16	1:1	3.75
20	1:1	3
32	1:1	1.87
	1:1.5	2.81
40	1:1	1.5
	1:2	3
	1:3	4.5

The table shows the direct correspondence between the number of turns (1/min) and the translation speed of the stem (mm/s).
In any case all the other conditions and limitations of each specific cylinder will have to be complied.

Example:
V = 100 mm/s
pitch = 10
transmission ratio = 1:1.5
K = 9
n = V x K = 900 rpm

DRIVE TORQUE AS A FUNCTION OF THE AXIAL LOAD APPLIED TO THE PISTON ROD

SCREW PITCH	TRANSMISSION RATIO	h (C/F)
4	1:1	0.0008
5	1:1	0.0010
	1:1.25	0.0008
10	1:1	0.0020
	1:1.25	0.0016
	1:1.5	0.0013
	1:2	0.0010
	1:3	0.0007
12	1:1	0.0024
16	1:1	0.0032
20	1:1	0.0040
32	1:1	0.0064
	1:1.5	0.0043
40	1:1	0.0080
	1:2	0.0040
	1:3	0.0027

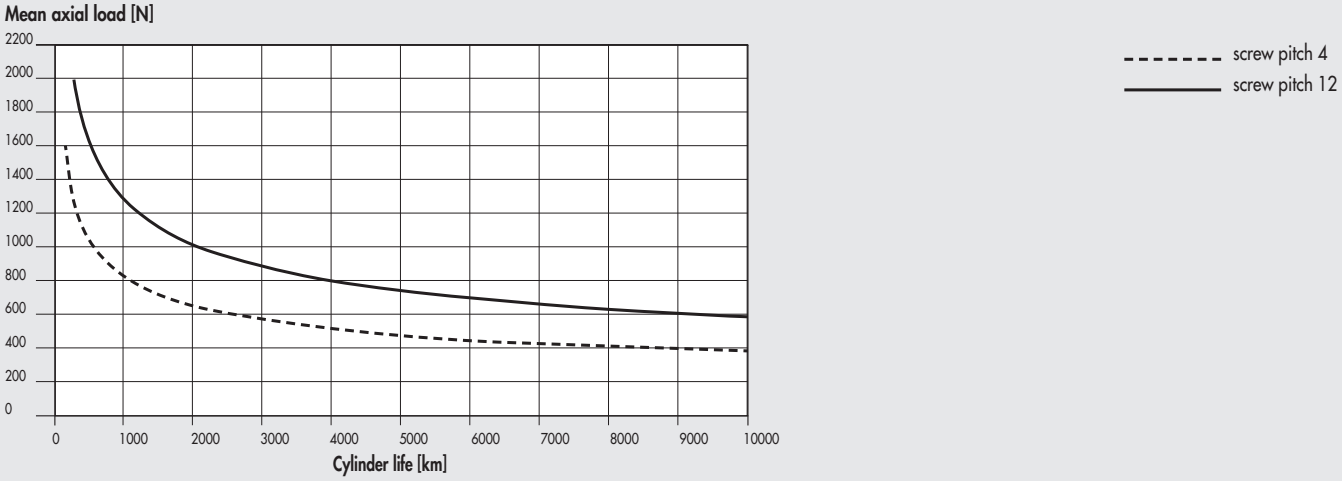
The friction generated in the mechanical system is taken into account.

Example:
F = 1000 N
pitch = 10
transmission ratio = 1:1.5
h = 0.0013
C = F x h = 1.3 Nm

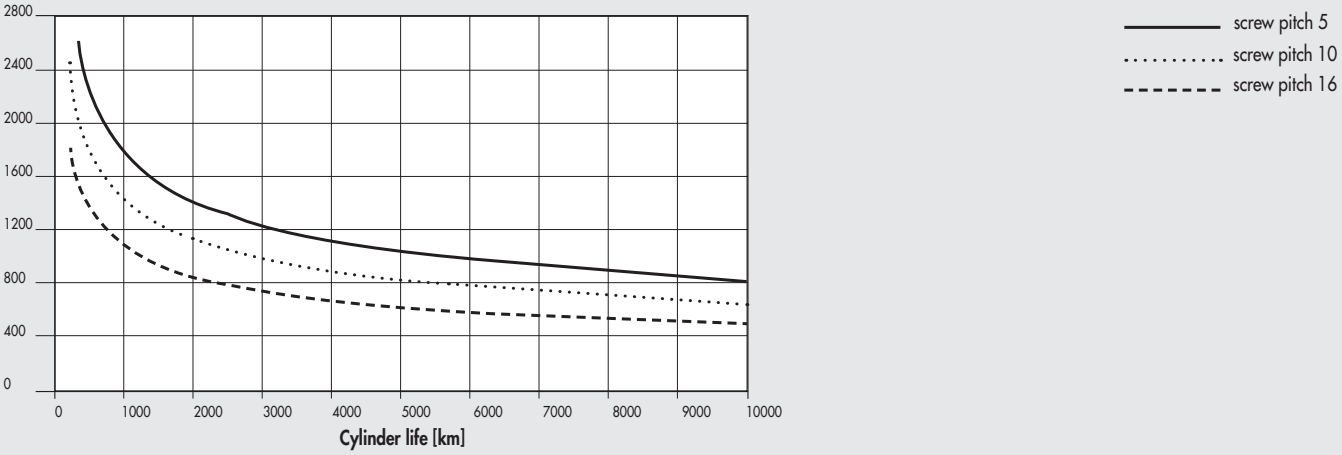
LIFE CHARACTERISTICS AS A FUNCTION OF THE MEAN AXIAL LOAD

Life characteristics can vary considerably from those indicated in the graphs due to different operating conditions (radial loads, temperature, lubrication status, etc.).

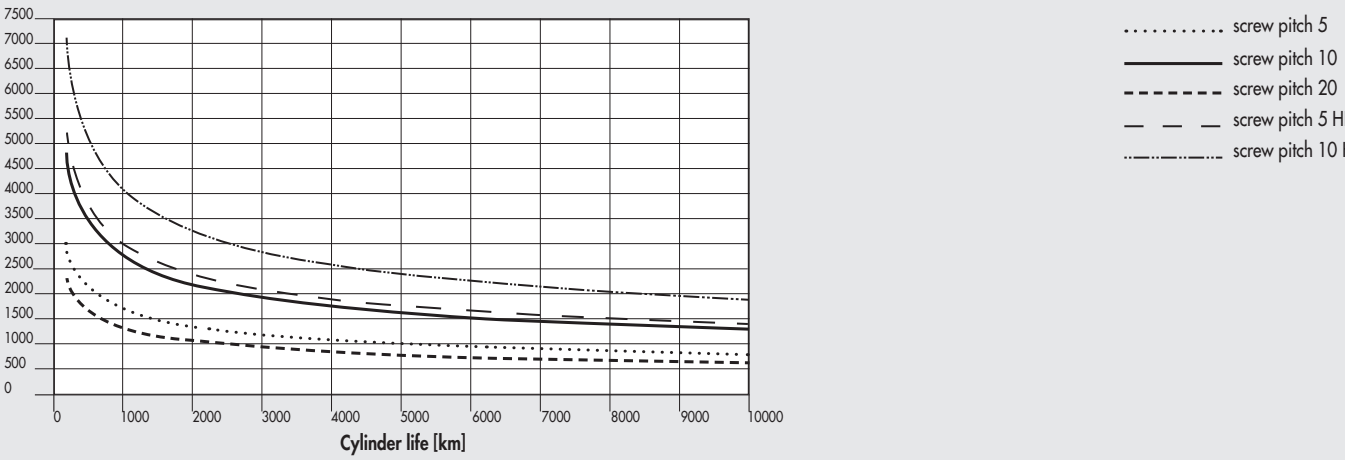
Ø 32



Ø 50

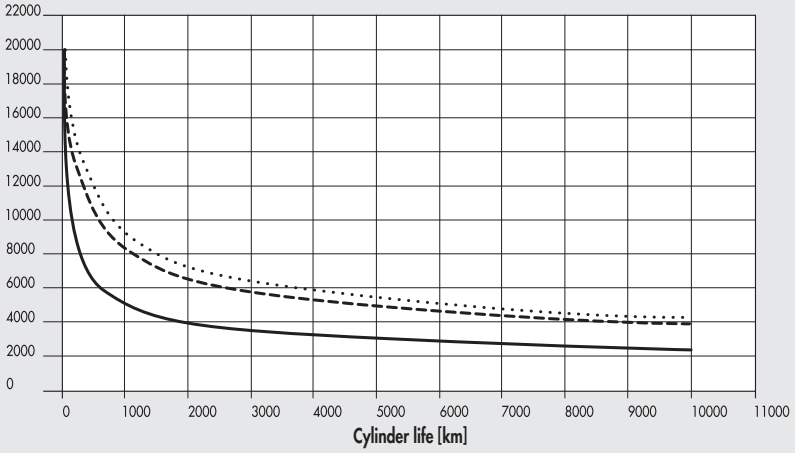


Ø 63 - Ø 63 HD



Ø 80

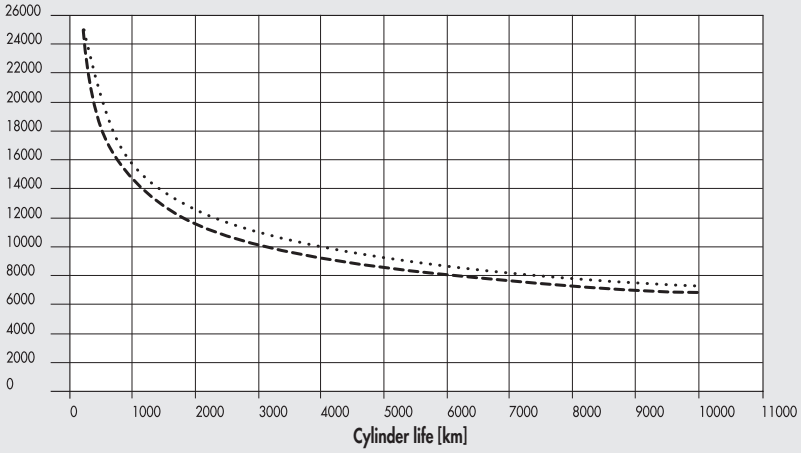
Mean axial load [N]



screw pitch 5
screw pitch 10
screw pitch 32

Ø 100

Mean axial load [N]



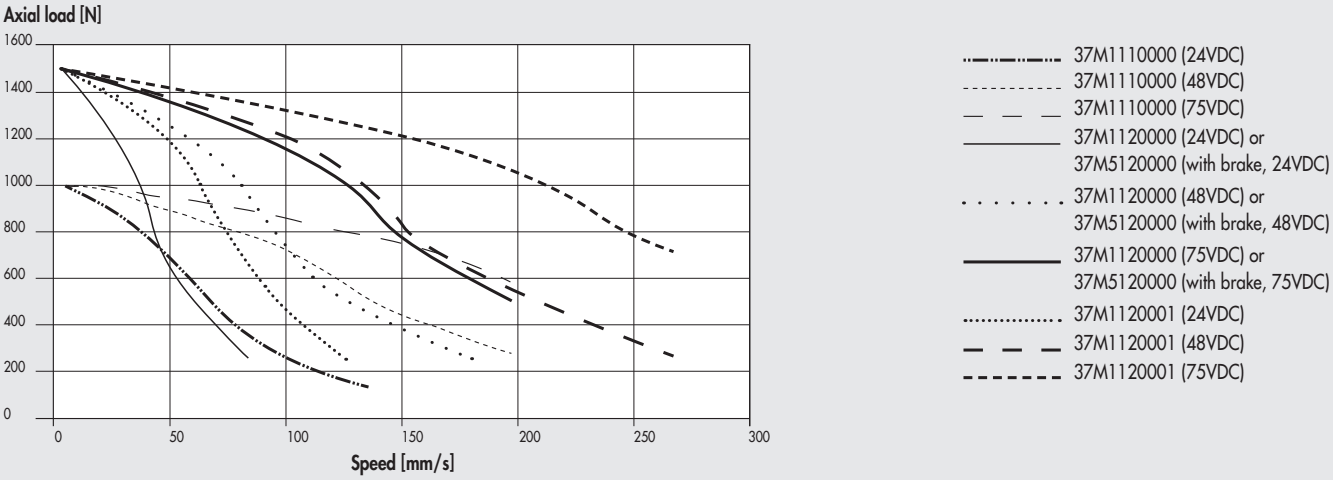
screw pitch 10
screw pitch 40

NOTES

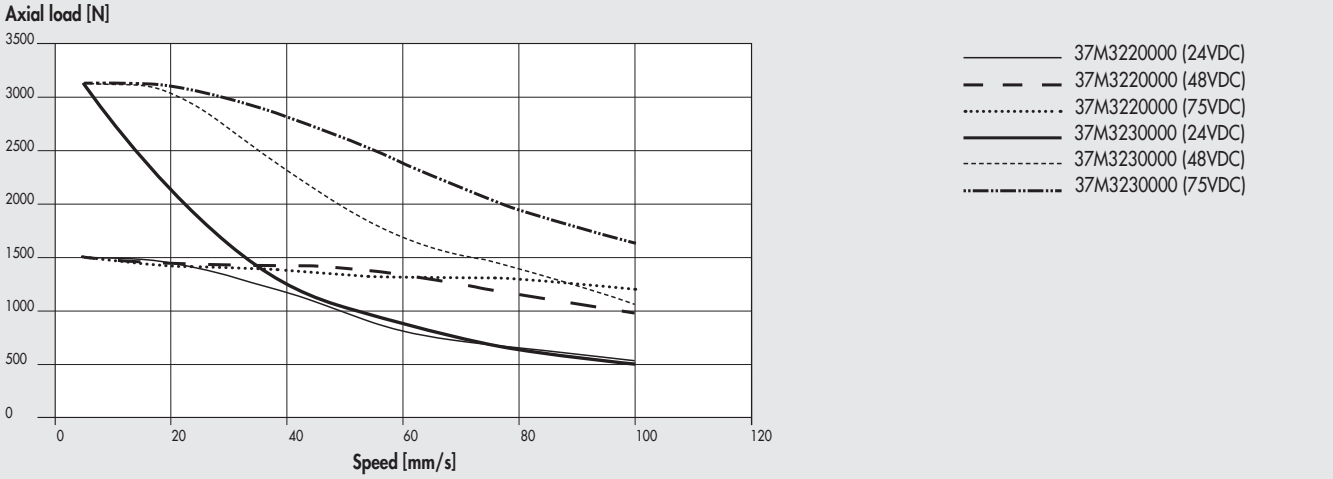
AXIAL LOAD CURVES AS A FUNCTION OF SPEED (CYLINDER COMPELTE WITH MOTOR AND DRIVE)

N.B.: The obtainable load values already take the efficiency of the system into account. For STEPPING motors, with the motor off, the drive current is automatically reduced by 50% to prevent overheating. Consequently, available axial load with the motor stopped is also reduced by 50%.

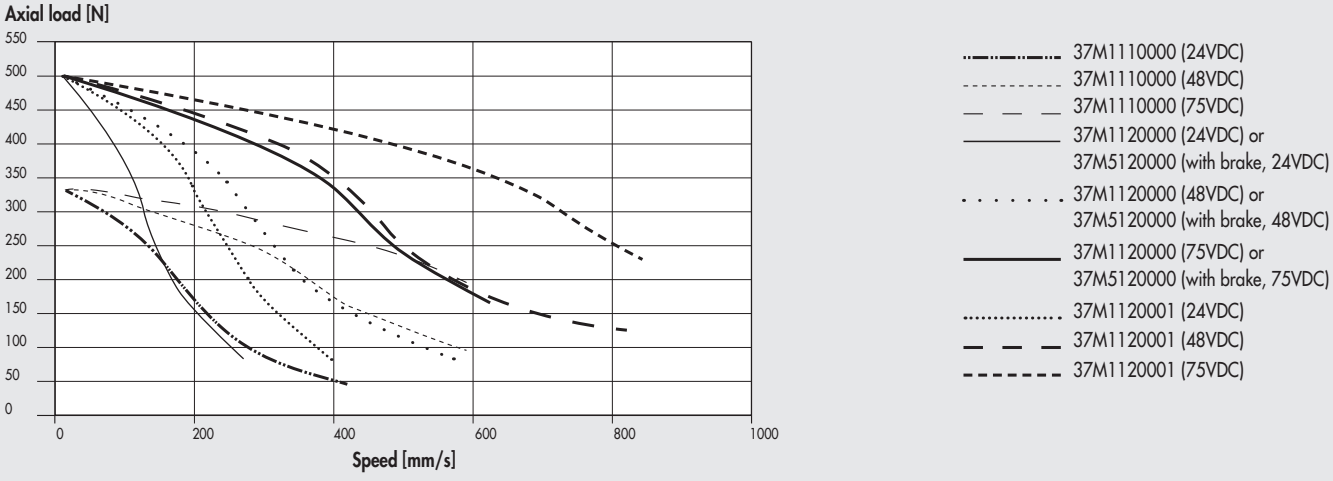
Ø 32 with pitch 4 screw, STEPPING motors and motor 1 STEPPING with BRAKE



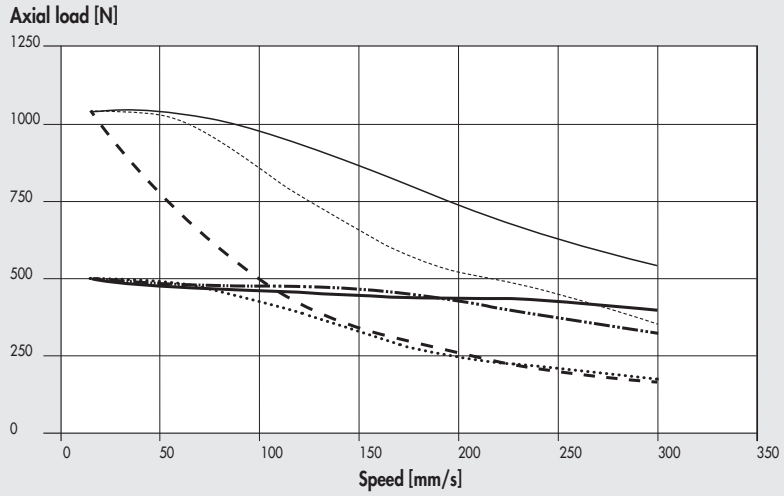
Ø 32 with pitch 4 screw, STEPPING motors with BRAKE + ENCODER



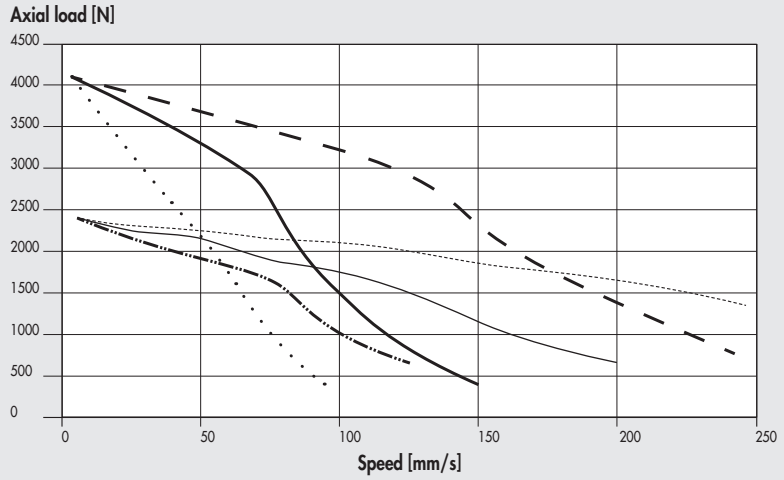
Ø 32 with pitch 12 screw, STEPPING motors and motor 1 STEPPING with BRAKE



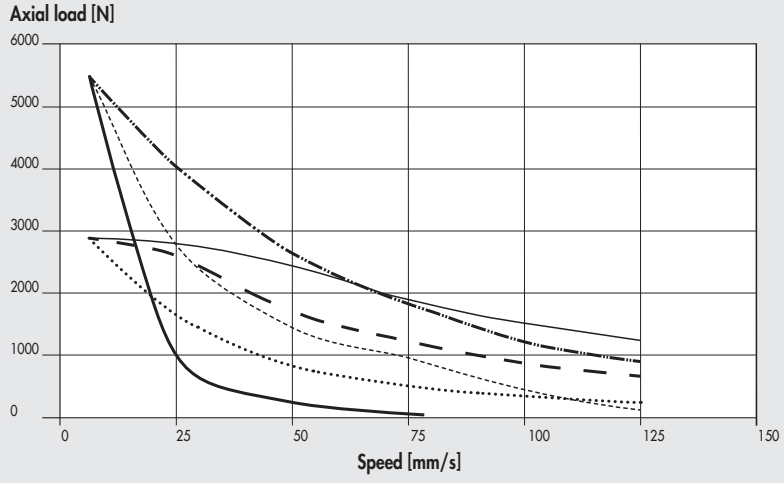
Ø 32 with pitch 12 screw, STEPPING motors with BRAKE + ENCODER



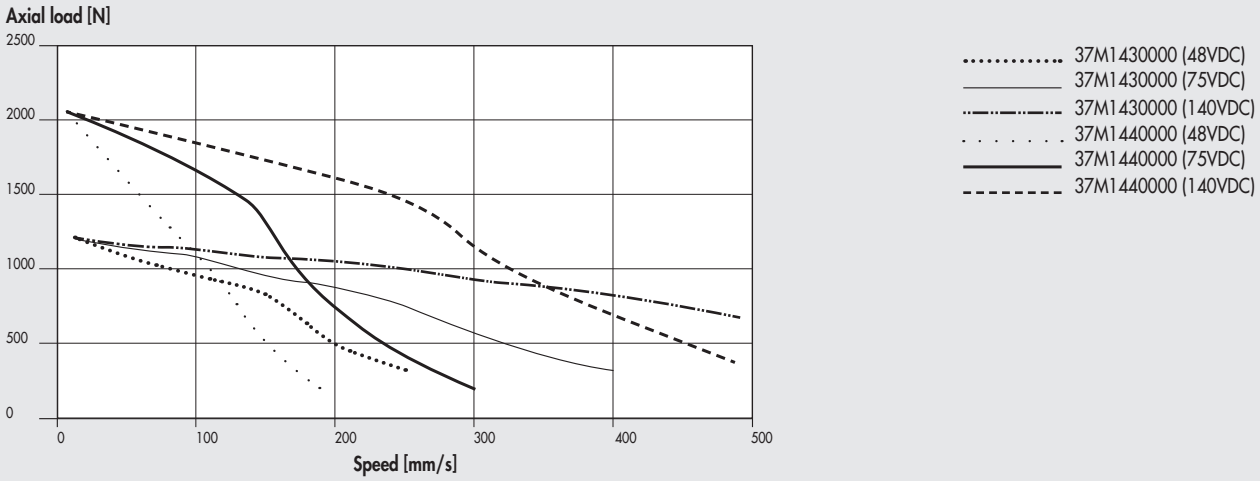
Ø 50 with pitch 5 screw, STEPPING motors



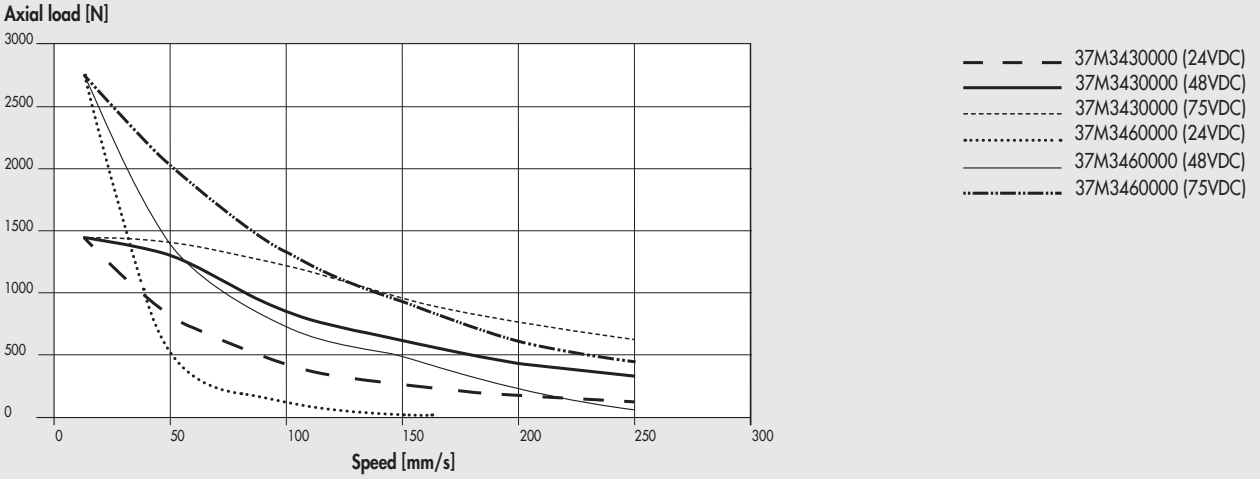
Ø 50 with pitch 5 screw, STEPPING motors with BRAKE + ENCODER



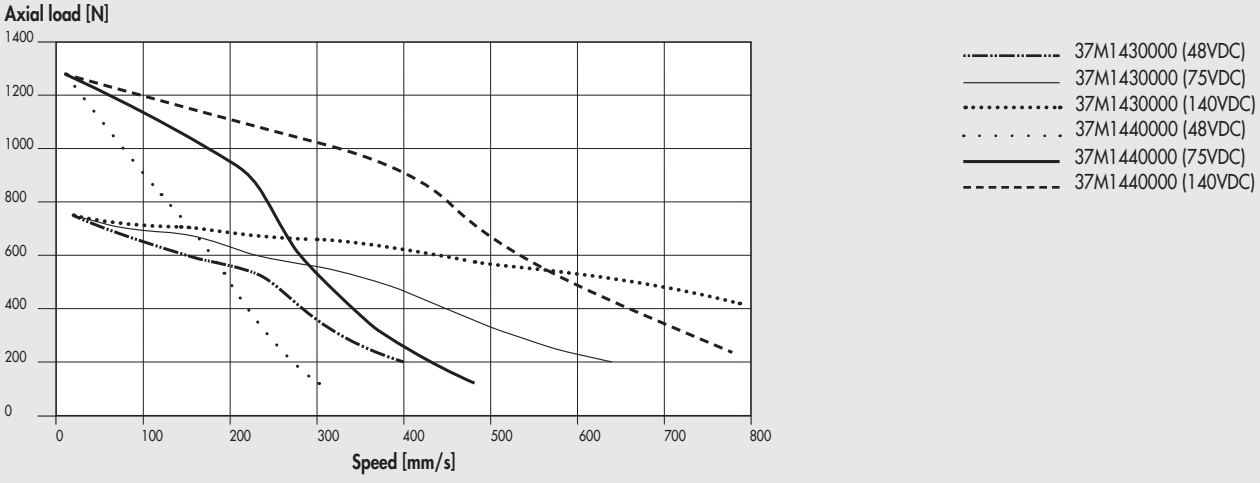
Ø 50 with pitch 10 screw, STEPPING motors



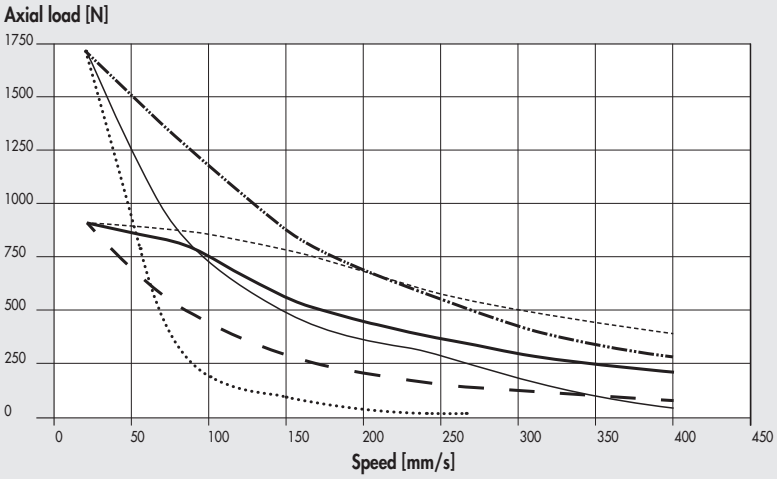
Ø 50 with pitch 10 screw, STEPPING motors with BRAKE + ENCODER



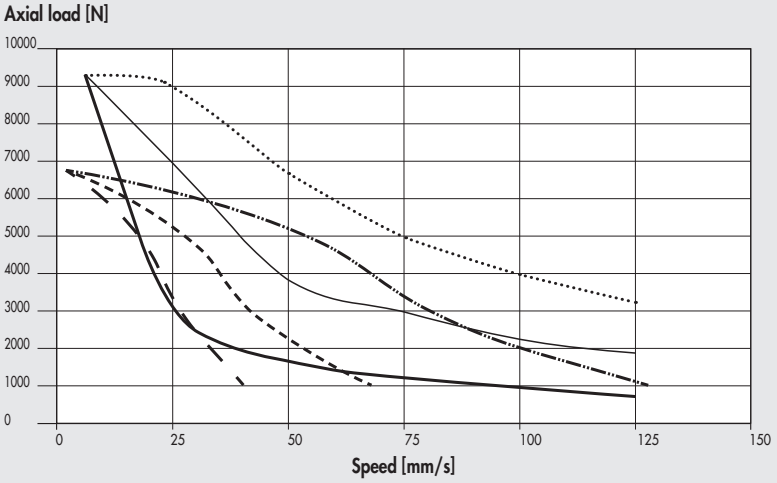
Ø 50 with pitch 16 screw, STEPPING motors



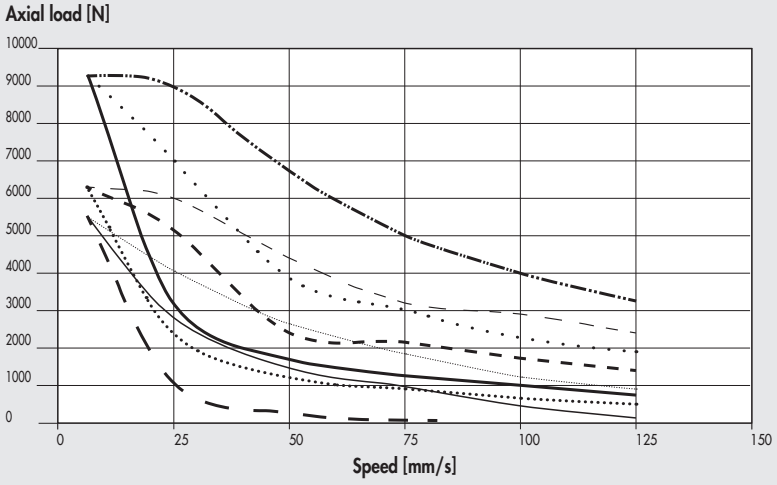
Ø 50 with pitch 16 screw, STEPPING motors with BRAKE + ENCODER



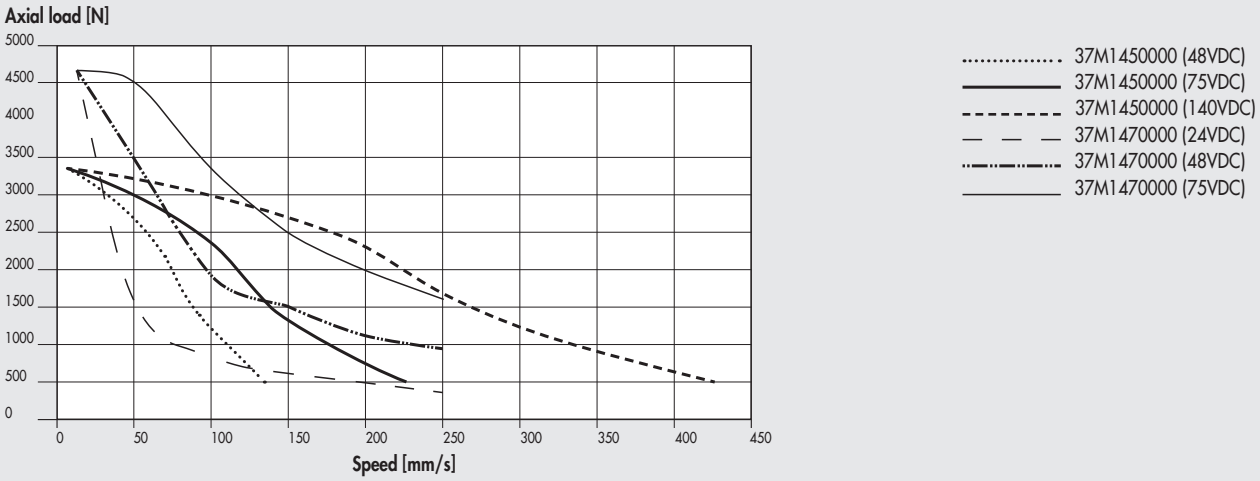
Ø 63 with pitch 5 screw, STEPPING motors



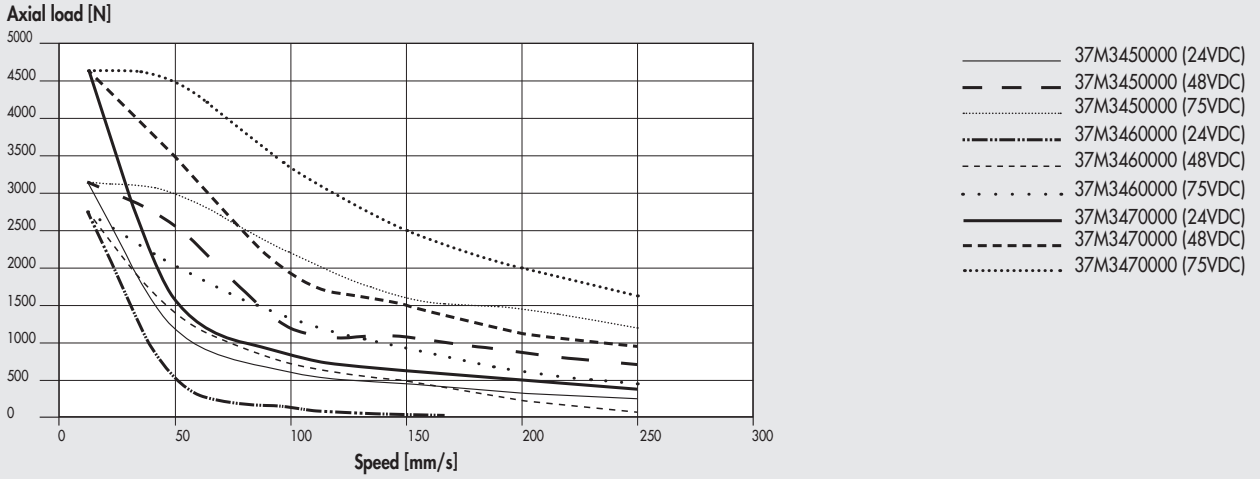
Ø 63 with pitch 5 screw, STEPPING motors with BRAKE + ENCODER



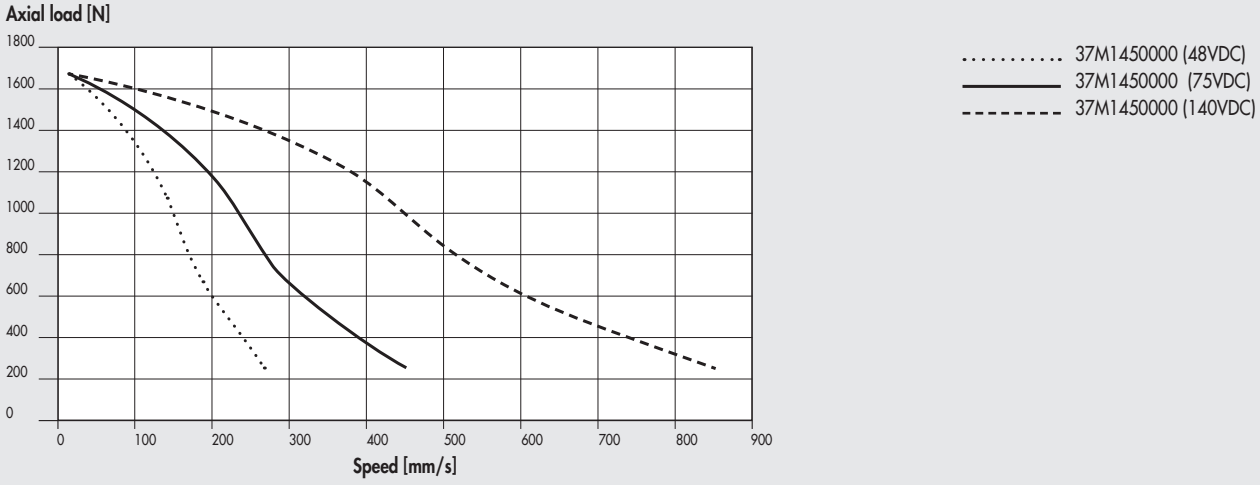
Ø 63 with pitch 10 screw, STEPPING motors



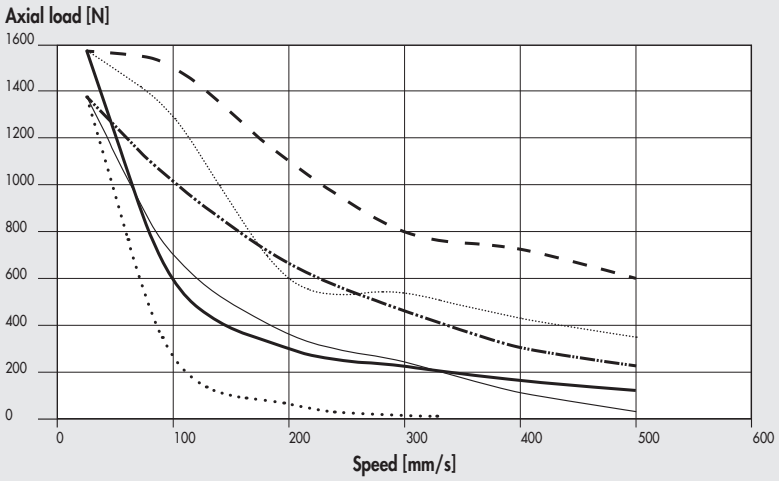
Ø 63 with pitch 10 screw, STEPPING motors with BRAKE + ENCODER



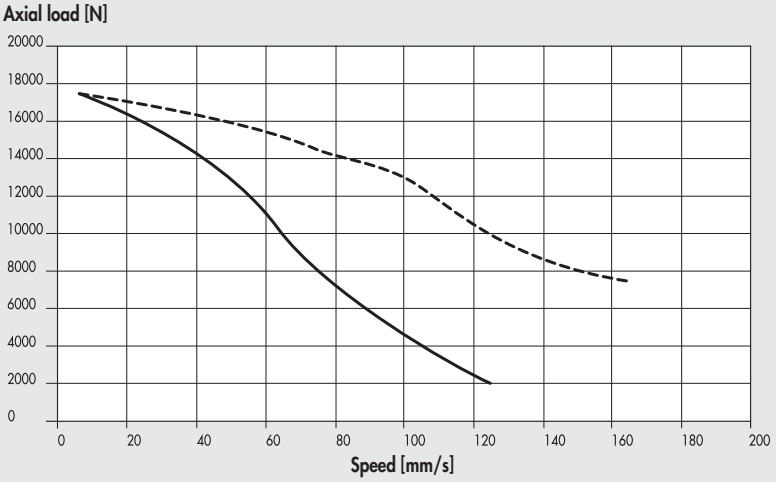
Ø 63 with pitch 20 screw, STEPPING motors



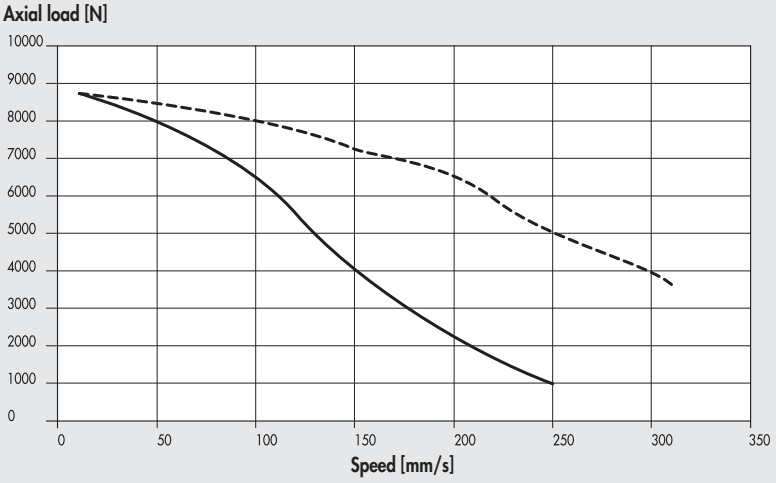
Ø 63 with pitch 20 screw, STEPPING motors with BRAKE + ENCODER



ø 80 with pitch 5 screw, STEPPING motors

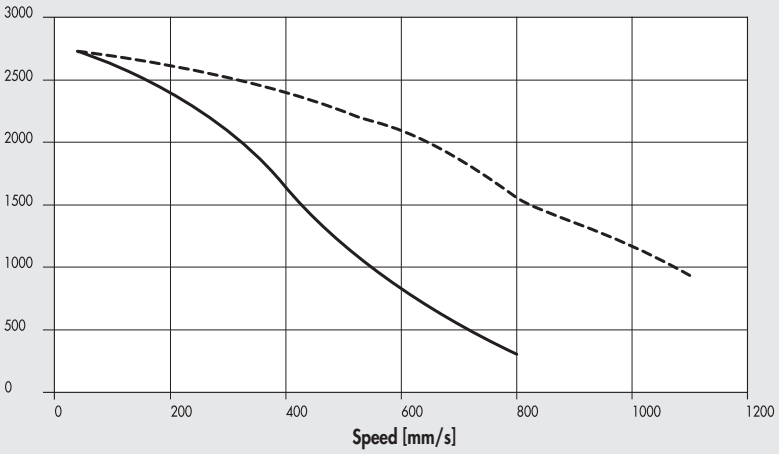


ø 80 with pitch 10 screw, STEPPING motors



Ø 80 with pitch 32 screw, STEPPING motors

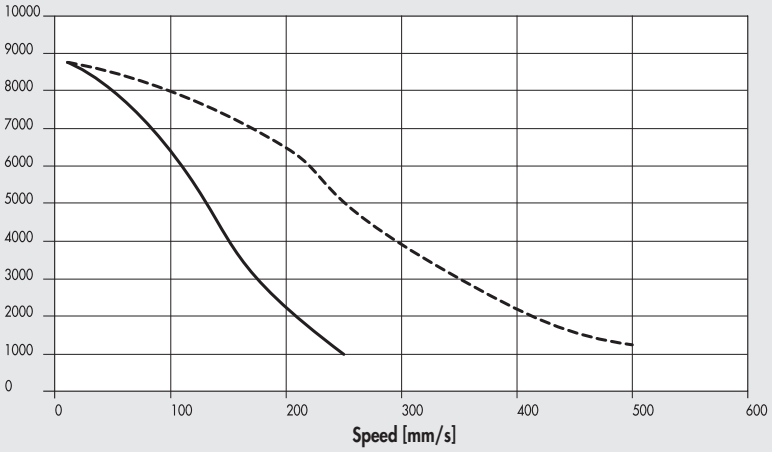
Axial load [N]



37M1890000 + 37D1362001 (230VAC)
37M1890000 + 37D1362001 (115VAC)

Ø 100 with pitch 10 screw, STEPPING motors

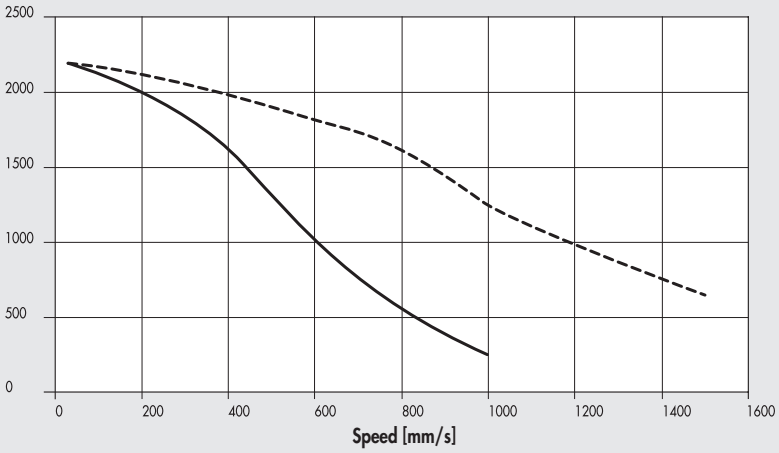
Axial load [N]



37M1890000 + 37D1362001 (230VAC)
37M1890000 + 37D1362001 (115VAC)

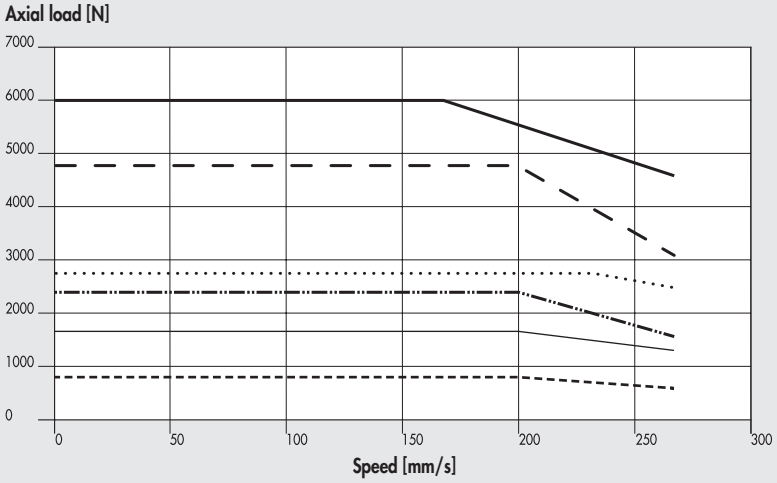
Ø 100 with pitch 40 screw, STEPPING motors

Axial load [N]



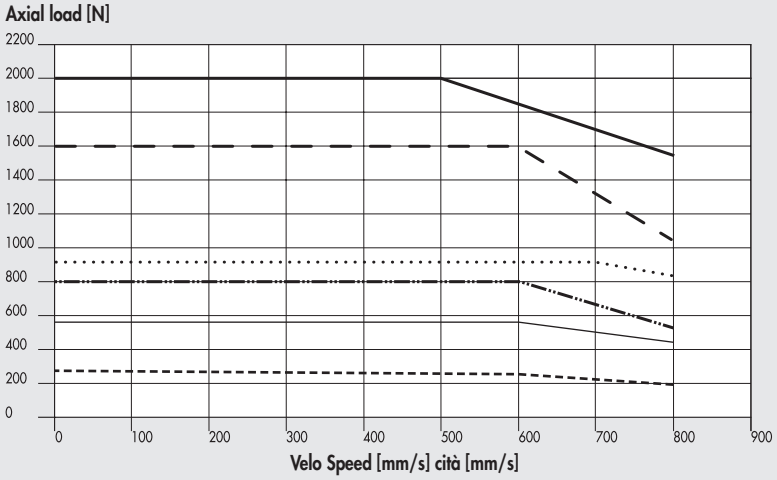
37M1890000 + 37D1362001 (230VAC)
37M1890000 + 37D1362001 (115VAC)

Ø 32 with pitch 4 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE



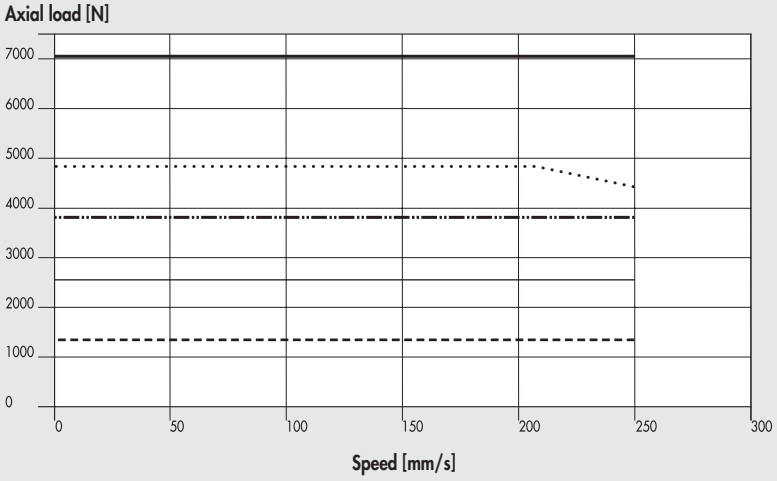
- Nominal 37M2200000/1 or 37M4200000/1 (with brake) + 37D2400008 / 37D2200001 (200W)
- Nominal 37M2220000/1 or 37M4220000/1 (with brake) + 37D2400008 / 37D2300001 (400W)
- Maximum 37M2200001 or 37M4200001 (with brake) + 37D2200001 (200W)
- Maximum 37M2200000 or 37M4200000 (with brake) + 37D2400008 (200W)
- Maximum 37M2220001 or 37M4220001 (with brake) + 37D2300001 (400W)
- Maximum 37M2220000 or 37M4220000 (with brake) + 37D2400008 (400W)

Ø 32 with pitch 12 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE



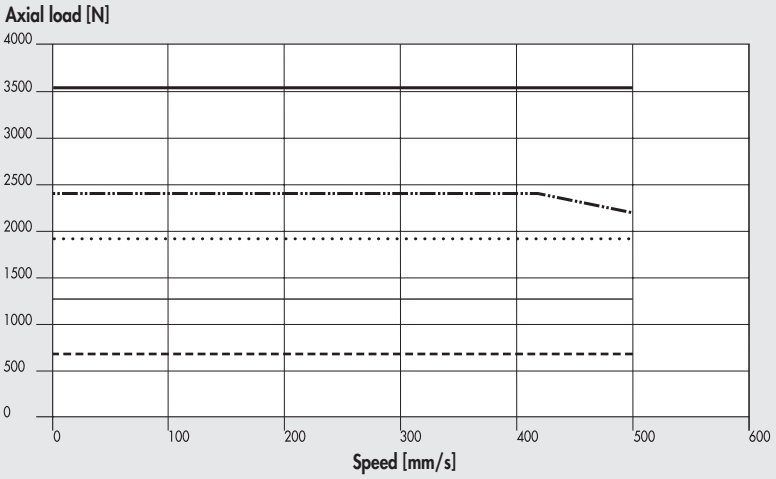
- Nominal 37M2200000/1 or 37M4200000/1 (with brake) + 37D2400008 / 37D2200001 (200W)
- Nominal 37M2220000/1 or 37M4220000/1 (with brake) + 37D2400008 / 37D2300001 (400W)
- Maximum 37M2200001 or 37M4200001 (with brake) + 37D2200001 (200W)
- Maximum 37M2200000 or 37M4200000 (con freno) + 37D2400008 (200W)
- Maximum 37M2220001 or 37M4220001 (with brake) + 37D2300001 (400W)
- Maximum 37M2220000 or 37M4220000 (with brake) + 37D2400008 (400W)

Ø 50 with pitch 5 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE



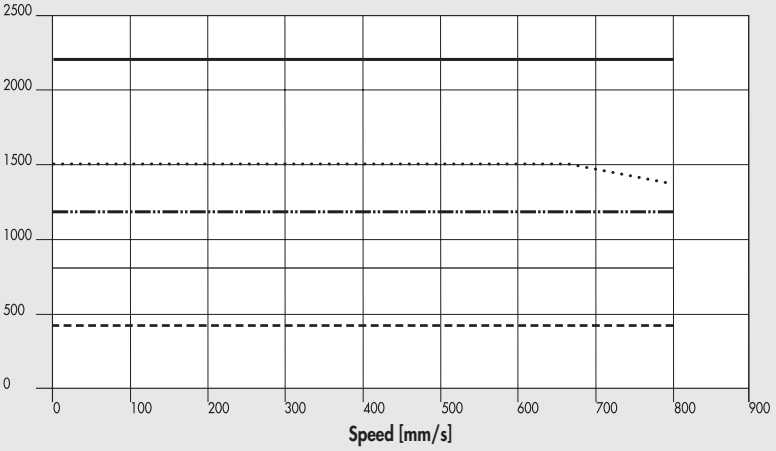
- Nominal 37M2220000/1 or 37M4220000/1 (with brake) + 37D2400008 / 37D2300001 (400W)
- Nominal 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008 / 37D2400007 (750W)
- Maximum 37M2220001 or 37M4220001 (with brake) + 37D2300001 (400W)
- Maximum 37M2220000 or 37M4220000 (with brake) + 37D2400008 (400W)
- Maximum 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008/37D2400007 (750W)

Ø 50 with pitch 10 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE



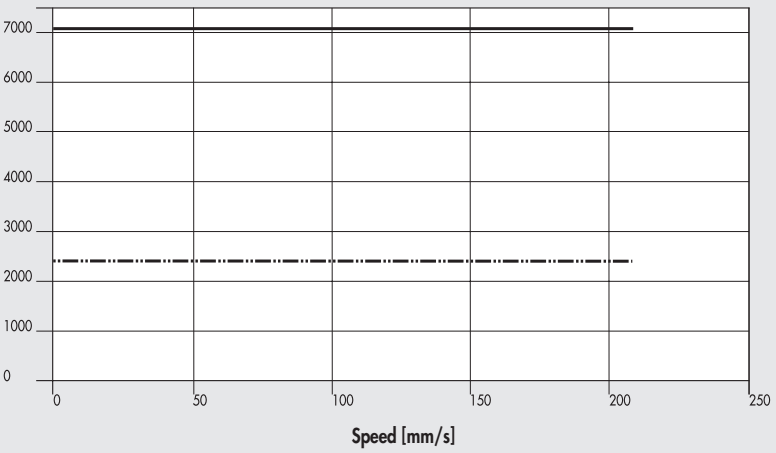
- Nominal 37M2220000/1 or 37M4220000/1 (with brake) + 37D2400008 / 37D2300001 (400W)
- Nominal 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008 / 37D2400007 (750W)
- Maximum 37M2220001 or 37M4220001 (with brake) + 37D2300001 (400W)
- Maximum 37M2220000 or 37M4220000 (with brake) + 37D2400008 (400W)
- Maximum 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008/37D2400007 (750W)

Ø 50 with pitch 16 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE



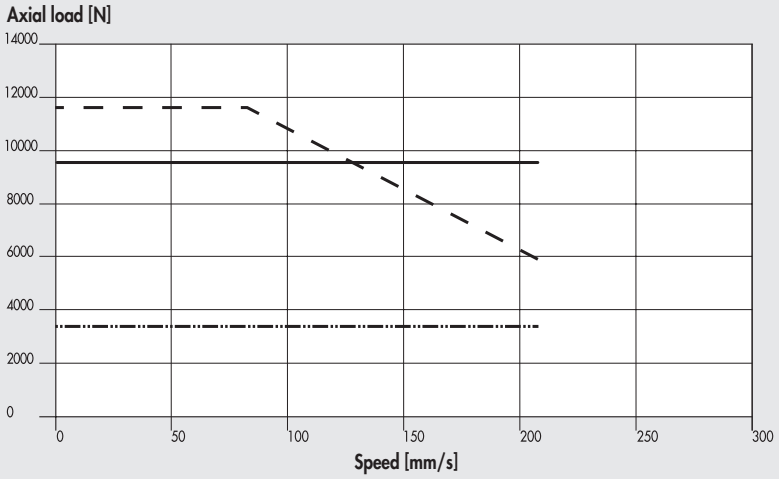
- Nominal 37M2220000/1 or 37M4220000/1 (with brake) + 37D2400008 / 37D2300001 (400W)
- Nominal 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008 / 37D2400007 (750W)
- Maximum 37M2220001 or 37M4220001 (with brake) + 37D2300001 (400W)
- Maximum 37M2220000 or 37M4220000 (with brake) + 37D2400008 (400W)
- Maximum 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008/37D2400007 (750W)

Ø 63 - Ø 63 HD with pitch 5 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (750 W)



- Nominal 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008 / 37D2400007 (750W)
- Maximum 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008/37D2400007 (750W)

Ø 63 HD with pitch 5 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (1000 W)

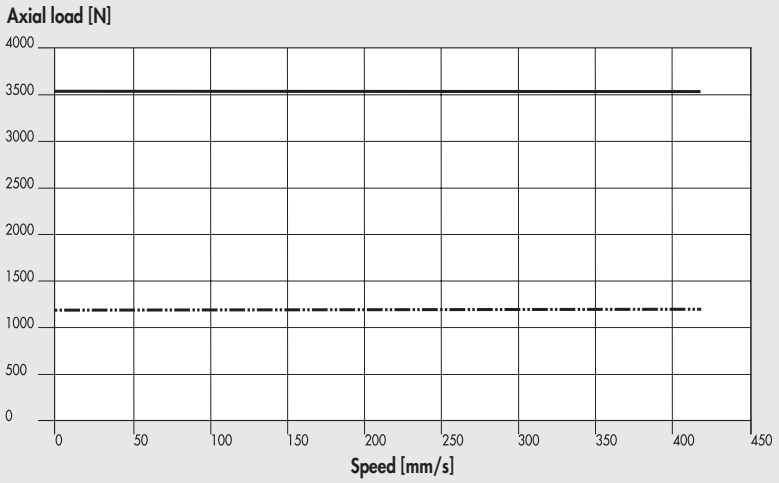


Nominal 37M2540000/37M2640000 or 37M4540000/37M4640000 (with brake) + 37D2400008/37D2400006 (1000W)

Maximum 37M2640000 or 37M4640000 (with brake) + 37D2400006 (1000W)

Maximum 37M2540000 or 37M4540000 (with brake) + 37D2400008 (1000W)

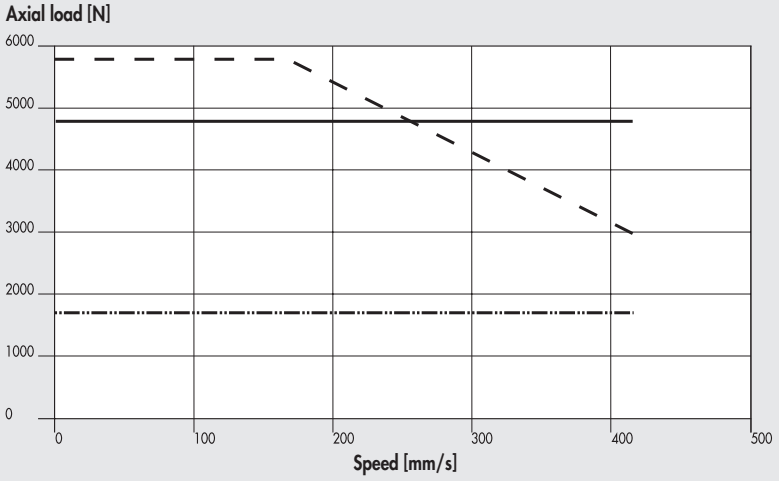
Ø 63 - Ø 63 HD with pitch 10 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (750 W)



Nominal 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008 / 37D2400007 (750W)

Maximum 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008/37D2400007 (750W)

Ø 63 HD with pitch 10 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (1000 W)

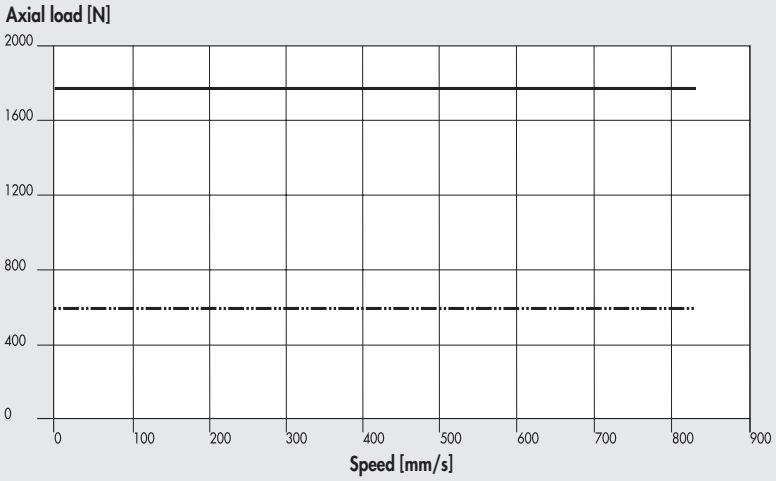


Nominal 37M2540000/37M2640000 or 37M4540000/37M4640000 (with brake) + 37D2400008/37D2400006 (1000W)

Maximum 37M2640000 or 37M4640000 (with brake) + 37D2400006 (1000W)

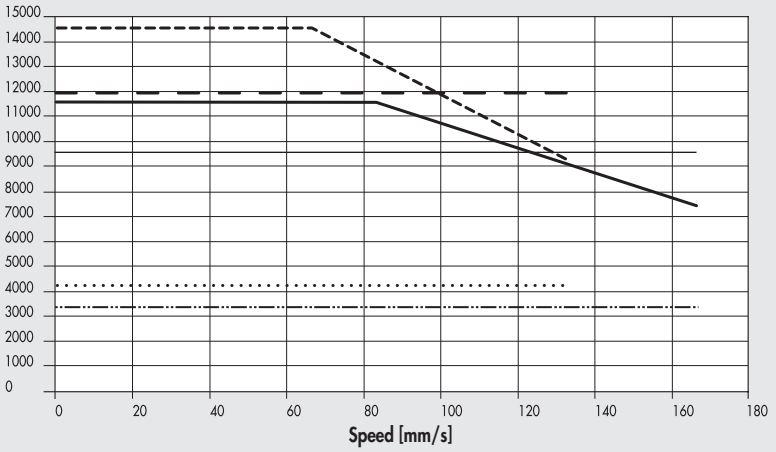
Maximum 37M2540000 or 37M4540000 (with brake) + 37D2400008 (1000W)

Ø 63 with pitch 20 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE



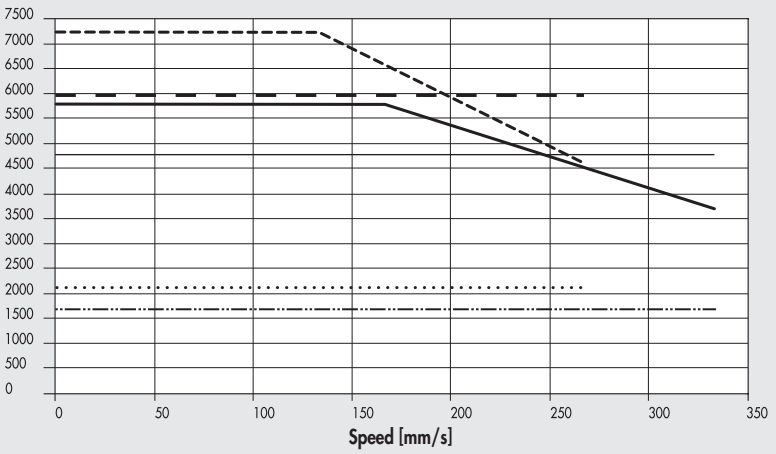
- Nominal 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008 / 37D2400007 (750W)
- Maximum 37M2330000/1 or 37M4330000/1 (with brake) + 37D2400008/37D2400007 (750W)

Ø 80 with pitch 5 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (1000W)



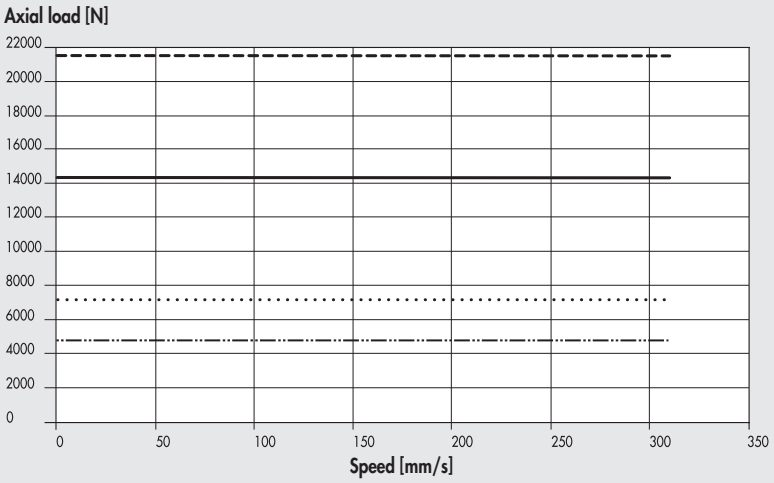
- Nominal 37M2540000/37M2640000 or 37M4540000/37M4640000 (with brake) + 37D2400008/37D2400006 (1000W) in-line version
- Nominal 37M2540000/37M2640000 or 37M4540000/37M4640000 (with brake) + 37D2400008/37D2400006 (1000W) geared version (1:1.25)
- Maximum 37M2640000 or 37M4640000 (with brake) + 37D2400006 (1000W) in-line version
- Maximum 37M2540000 or 37M4540000 (with brake) + 37D2400008 (1000W) in-line version
- Maximum 37M2640000 or 37M4640000 (with brake) + 37D2400006 (1000W) geared version (1:1.25)
- Maximum 37M2540000 or 37M4540000 (with brake) + 37D2400008 (1000W) geared version (1:1.25)

Ø 80 with pitch 10 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (1000W)



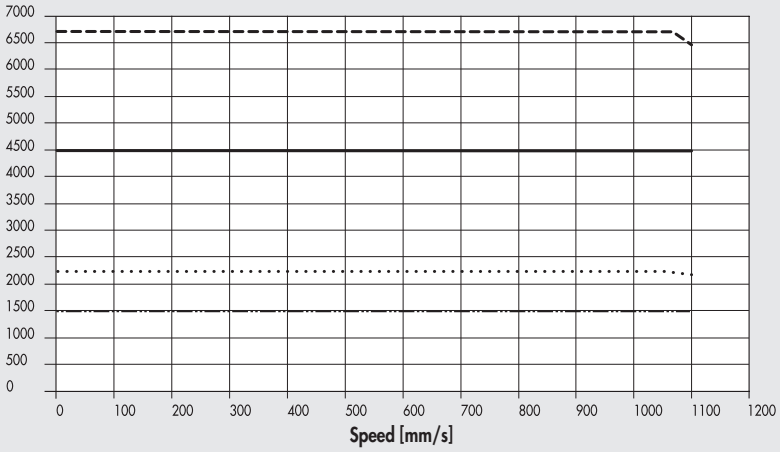
- Nominal 37M2540000/37M2640000 or 37M4540000/37M4640000 (with brake) + 37D2400008/37D2400006 (1000W) in-line version
- Nominal 37M2540000/37M2640000 or 37M4540000/37M4640000 (with brake) + 37D2400008/37D2400006 (1000W) geared version (1:1.25)
- Maximum 37M2640000 or 37M4640000 (with brake) + 37D2400006 (1000W) in-line version
- Maximum 37M2540000 or 37M4540000 (with brake) + 37D2400008 (1000W) in-line version
- Maximum 37M2640000 or 37M4640000 (with brake) + 37D2400006 (1000W) geared version (1:1.25)
- Maximum 37M2540000 or 37M4540000 (with brake) + 37D2400008 (1000W) geared version (1:1.25)

Ø 80 with pitch 10 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (3000W)



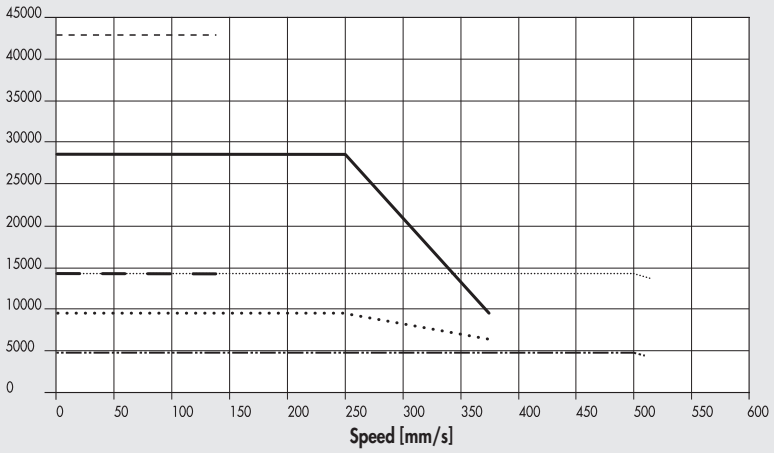
- Maximum 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) in-line version (1:1)
- Nominal 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) in-line version (1:1)
- Maximum 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) geared version (1:1.5)
- Nominal 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) geared version (1:1.5)

Ø 80 with pitch 32 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (3000W)



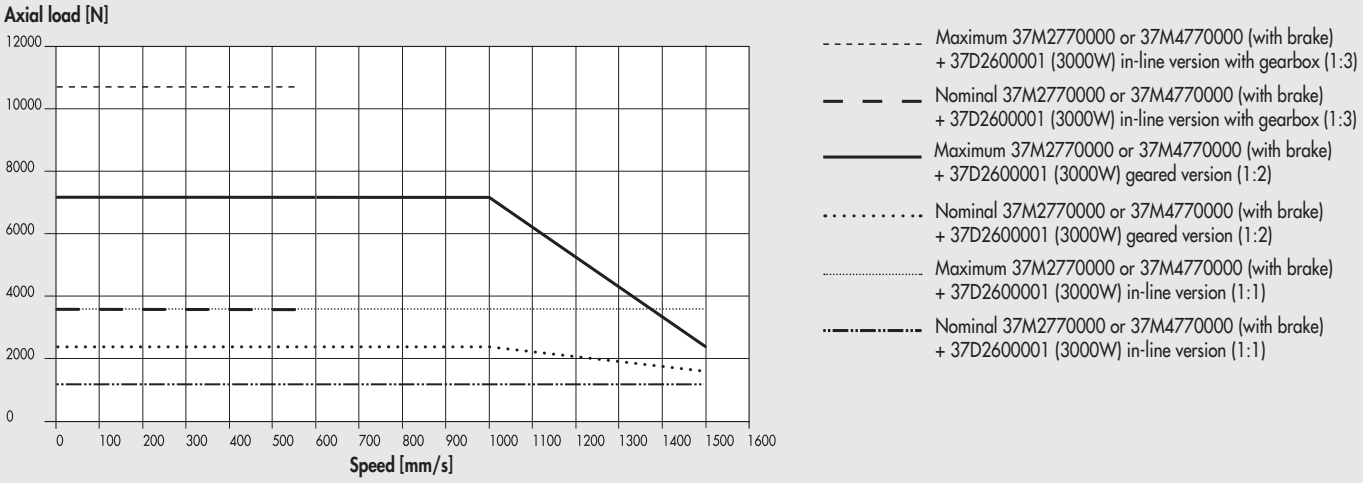
- Maximum 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) in-line version (1:1)
- Nominal 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) in-line version (1:1)
- Maximum 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) geared version (1:1.5)
- Nominal 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) geared version (1:1.5)

Ø 100 with pitch 10 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (3000W)



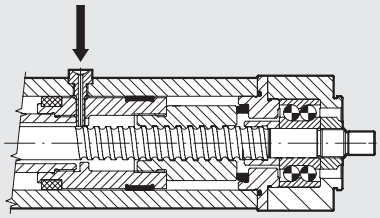
- Maximum 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) versione in linea con riduttore (1:3)
- Nominal 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) in-line version con riduttore (1:3)
- Maximum 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) geared version (1:2)
- Nominal 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) geared version (1:2)
- Maximum 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) in-line version (1:1)
- Nominal 37M2770000 or 37M4770000 (with brake) + 37D2600001 (3000W) in-line version (1:1)

Ø 100 with pitch 40 screw, BRUSHLESS motors and BRUSHLESS motors with BRAKE (3000W)



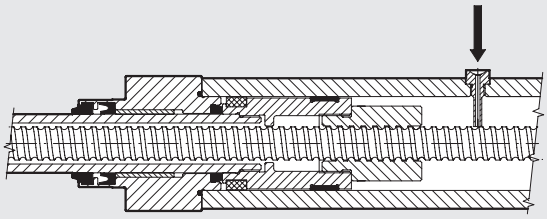
LUBRICATION DIAGRAMS

LUBRICATION OF VERSION WITH NON-ROTATING PISTON ROD



- Retract the piston rod towards the rear head. The piston rod/piston/ball screw system must rest against the buffer of the rear head.
- Unscrew the cap on the lubricator port (see note 1 in the drawing on **next page**).
- Screw the lubricating pin (see accessory on page **A5**.37) into the thread. Make sure you enter the corresponding hole in the piston below.
- Pump grease (code 9910506) using the suitable lubricator according to the quantity in table.
- Unscrew the lubricating pin and make the piston rod perform four complete strokes. The piston rod should end up in the initial (retracted) position.
- Repeat the last two operations.
- The operation of re-greasing will have to be repeated at least once a year.

LUBRICATION OF VERSION WITHOUT NON-ROTATING PISTON ROD



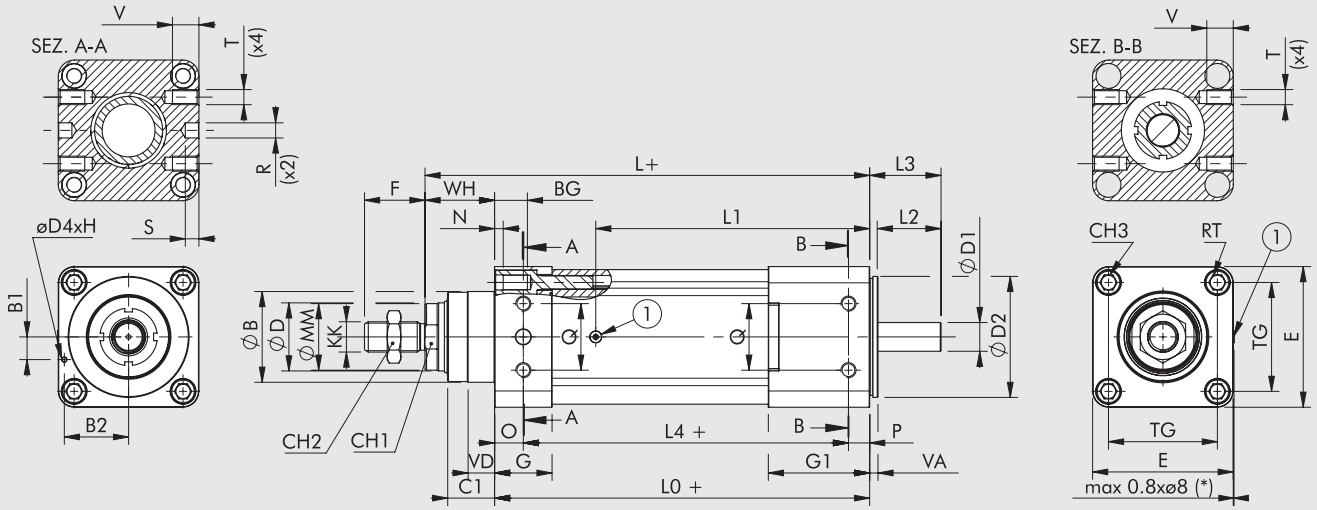
- Extend the piston rod completely. The piston rod/piston/ball screw system must rest against the buffer of the front head.
- Unscrew the cap on the lubricator port (see note 1 in the drawing on **next page**).
- Screw the lubricating pin (see accessory on page **A5**.37) into the thread. Make sure you enter the corresponding hole in the piston below.
- Pump grease (code 9910506) using the suitable lubricator according to the quantity in table.
- Unscrew the lubricating pin and make the piston rod perform four complete strokes. The piston rod should end up in the initial (extended) position.
- Repeat the last two operations.
- The operation of re-greasing will have to be repeated at least once a year.

		Ø 32		Ø 50			Ø 63			Ø 63 HD		Ø 80			Ø 100	
Screw pitch (p)	mm	4	12	5	10	16	5	10	20	5	10	5	10	32	10	40
Relube grease quantity	g	0.3	0.6	0.9	1.5	2.1	1.5	1.8	3	1.5	1.8	2.1	3.3	4.8	7.2	12.9
	cc	0.26	0.52	0.77	1.30	1.81	1.30	1.55	2.60	1.30	1.55	1.81	2.84	4.13	6.20	11.10

N.B.: These are indicative values that can change as a function of the stroke

DIMENSIONS

CYLINDER DIMENSIONS (WITHOUT MOTOR)



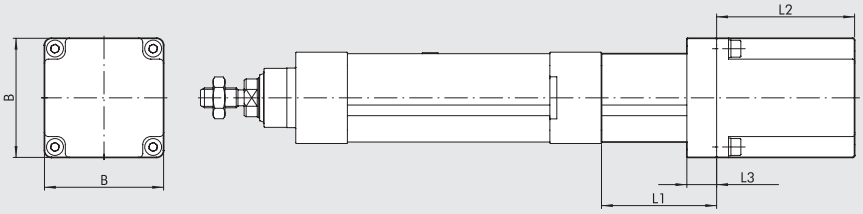
① = lubricator port
(*) = only for Ø 63 - Ø 80 - Ø 100
+ = add the stroke

Ø	ØB (d11)	B1	B2	BG	C1	CH1	CH2	CH3	ØD (f7)	ØD1 (h7)	ØD2	ØD4 (h7)	E	F	G	G1	H	KK	L	L0
32	30	7	19.5	14.5	16	17	17	6	20	6.35	32	3	46	22	26	26	9	M10x1.25	160	134
50	40	7	28	17.5	25	21	24	8	25	10	50	3	64.5	32	30	30	9	M16x1.5	194	157
63	45	9	34.5	17.5	25	26	24	8	30	12	63	3	75.5	32	32	32	9	M16x1.5	210	173
63 HD	45	9	34.5	17.5	25	26	24	8	30	12	63	3	75.5	32	32	46	9	M16x1.5	230	193
80	60	15	42.5	21	31	41	30	10	45	19	80	3	93	40	38	67	9	M20x1.5	294	248
100	90	25	21	21	34	65	30	10	70	24	100	5	110	40	38	77	9	M20x1.5	321.5	270.5

Ø	L1	L2	L3	L4	ØMM	N	O	P	Q	R (h7)	S	T	V	RT	TG	VA	VD	WH
32	86.3	23	27	-	19	4.5	-	-	-	-	-	-	-	M6	32.5	3	4.5	26
50	100.8	24	28.4	-	24	5.5	-	-	-	-	-	-	-	M8	46.5	5.5	5.5	37
63	112.3	34	39.5	-	29	5.5	-	-	-	-	-	-	-	M8	56.5	5.5	6.5	37
63 HD	132.3	34	39.5	-	29.5	5.5	-	-	-	-	-	-	-	M8	56.5	5.5	6.5	37
80	181.1	41.7	47.2	215	42	5	19	14	44	10	9	M10	17.5	M10	72	5.5	17.5	46
100	200.6	46.9	54.9	232.5	69	5	19	19	58	12	9	M12	20	M10	89	8	20	51

NOTES

DIMENSIONS OF CYLINDERS WITH IN-LINE MOTOR



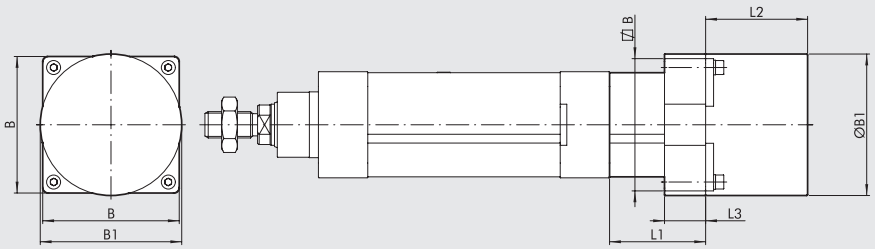
For any missing dimensions, please refer to page **A5**.25

VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	B	L1	L2	L3
32	BRUSHLESS	371032_ _ _ _ _2200	37M2200000	0.64	60	60	62	69.5	15
		371032_ _ _ _ _2220	37M2220000	1.27	60	60	62	95.5	15
		371032_ _ _ _ _220E	37M2200001	0.64	60	60	69.5	105.5	13.5
		371032_ _ _ _ _222E	37M2220001	1.27	60	60	69.5	130.7	13.5
	STEPPING	371032_ _ _ _ _1110	37M1110000	0.8	NEMA 23	56	45	53.8	12
		371032_ _ _ _ _1120	37M1120000	1.2	NEMA 23	56	45	75.8	12
		371032_ _ _ _ _1121	37M1120001	1.2	NEMA 23	56	45	75.8	12
50	BRUSHLESS	371050_ _ _ _ _2330	37M2330000	2.39	80	80	77.4	107.3	35
63	STEPPING	371063_ _ _ _ _1450	37M1450000	6.7	NEMA 34	85.5	63.5	127	16
63 HD	STEPPING	371H63_ _ _ _ _1450	37M1450000	6.7	NEMA 34	85.5	63.5	127	16
		371H63_ _ _ _ _1470	37M1470000	9.3	NEMA 34	86.6	63.5	130	16
80	BRUSHLESS	371080_ _ _ _ _2770	37M2770000	9.5	130	130	120	187.5	26
100	BRUSHLESS	371100_ _ _ _ _2770	37M2770000	9.5	130	130	126	187.5	40

VERSION WITH MOTOR AND BRAKE

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	B	L1	L2	L3
32	BRUSHLESS	371032_ _ _ _ _4200	37M4200000	0.64	60	60	62	97.5	15
		371032_ _ _ _ _4220	37M4220000	1.27	60	60	62	123.5	15
		371032_ _ _ _ _420E	37M4200001	0.64	60	60	69.5	141.6	13.5
		371032_ _ _ _ _422E	37M4220001	1.27	60	60	69.5	166.8	13.5
	STEPPING	371032_ _ _ _ _3220	37M3220000	1.2	60	60	45	151.8	7
		371032_ _ _ _ _3230	37M3230000	2.5	60	60	45	184.5	7
		371032_ _ _ _ _5120	37M5120000	1.2	NEMA 23	56	45	112	12
50	BRUSHLESS	371050_ _ _ _ _4330	37M4330000	2.39	80	80	77.4	143	35
	STEPPING	371050_ _ _ _ _3430	37M3430000	2.9	NEMA 34	86.6	63.4	156.5	9.9
		371050_ _ _ _ _3460	37M3460000	5.5	NEMA 34	86.6	63.4	188.5	9.9
63	STEPPING	371063_ _ _ _ _3460	37M3460000	5.5	NEMA 34	86.6	63.5	188.5	9.9
		371063_ _ _ _ _3450	37M3450000	6.3	NEMA 34	86.6	63.5	188.5	9.9
63 HD	STEPPING	371H63_ _ _ _ _3450	37M3450000	6.3	NEMA 34	86.6	63.5	188.5	16
		371H63_ _ _ _ _3460	37M3460000	5.5	NEMA 34	86.6	63.5	188.5	16
		371H63_ _ _ _ _3470	37M3470000	9.3	NEMA 34	86.6	63.5	220.5	16
80	BRUSHLESS	371080_ _ _ _ _4770	37M4770000	9.5	130	130	120	216	26
100	BRUSHLESS	371100_ _ _ _ _4770	37M4770000	9.5	130	130	126	216	40



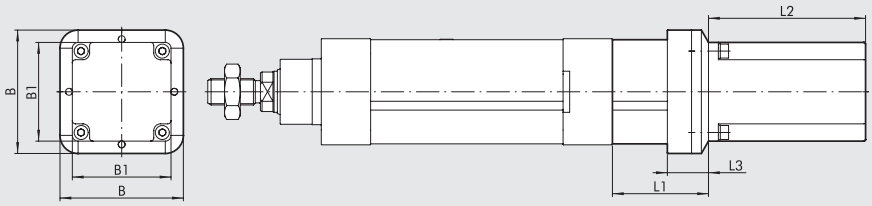
For any missing dimensions, please refer to page **A5**.25

VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	B	Ø B1	L1	L2	L3
50	STEPPING	371050_ _ _ _ _1430	37M1430000	2.4	NEMA 34	83	86	61.4	62	25
		371050_ _ _ _ _1440	37M1440000	4.2	NEMA 34	83	86	61.4	92.2	25
80	STEPPING	371080_ _ _ _ _1890	37M1890000	17.5	NEMA 42	106.4	106.4	102	221	35
100	STEPPING	371100_ _ _ _ _1890	37M1890000	17.5	NEMA 42	110	106.4	109	221	35

METAL WORK PNEUMATIC

DIMENSIONS OF CYLINDERS WITH IN-LINE MOTOR



For any missing dimensions, please refer to page **A5**.25

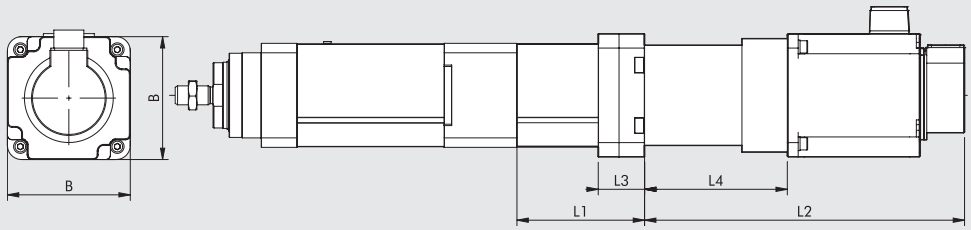
VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	B	B1	L1	L2	L3
50	BRUSHLESS	371050_ _ _ _ _2220	37M2220000	1.27	60	74.5	60	61.4	95.5	25
		371050_ _ _ _ _222E	37M2220001	1.27	60	74.5	60	70.5	130.7	25
		371050_ _ _ _ _233E	37M2330001	2.39	80	92	80	78.1	138.3	29
63	BRUSHLESS	371063_ _ _ _ _2330	37M2330000	2.39	80	94	80	78.5	107.3	25
		371063_ _ _ _ _233E	37M2330001	2.39	80	94	80	89.2	138.3	25
63 HD	BRUSHLESS	371H63_ _ _ _ _2330	37M2330000	2.39	80	94	80	78.5	107.3	25
		371H63_ _ _ _ _2540	37M2540000	3.18	86	94	84.4	78.5	137.1	25
		371H63_ _ _ _ _233E	37M2330001	2.39	80	94	80	89.2	138.3	25
		371H63_ _ _ _ _264E	37M2640000	3.18	100	100	100	99.2	153.3	35
80	BRUSHLESS	371080_ _ _ _ _2540	37M2540000	3.18	86	93	84.4	102	137.1	35
		371080_ _ _ _ _264E	37M2640000	3.18	100	100	100	111	153.3	44

VERSION WITH MOTOR AND BRAKE

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	B	B1	L1	L2	L3
50	BRUSHLESS	371050_ _ _ _ _4220	37M4220000	1.27	60	74.5	60	61.4	123.5	25
		371050_ _ _ _ _422E	37M4220001	1.27	60	74.5	60	70.5	166.8	25
		371050_ _ _ _ _433E	37M4330001	2.39	80	92	80	78.1	178	29
63	BRUSHLESS	371063_ _ _ _ _4330	37M4330000	2.39	80	94	80	78.5	143	25
		371063_ _ _ _ _433E	37M4330001	2.39	80	94	80	89.2	178	25
63 HD	BRUSHLESS	371H63_ _ _ _ _4330	37M4330000	2.39	80	94	80	78.5	143	25
		371H63_ _ _ _ _4540	37M4540000	3.18	86	94	84.4	78.5	163	25
		371H63_ _ _ _ _433E	37M4330001	2.39	80	94	80	89.2	178	25
		371H63_ _ _ _ _464E	37M4640000	3.18	100	100	100	99.2	192.5	35
80	BRUSHLESS	371080_ _ _ _ _4540	37M4540000	3.18	86	93	84.4	102	163	35
		371080_ _ _ _ _464E	37M4640000	3.18	100	100	100	111	192.5	44

DIMENSIONS OF CYLINDERS WITH IN-LINE MOTOR AND GEARBOX



For any missing dimensions, please refer to page **A5**.25

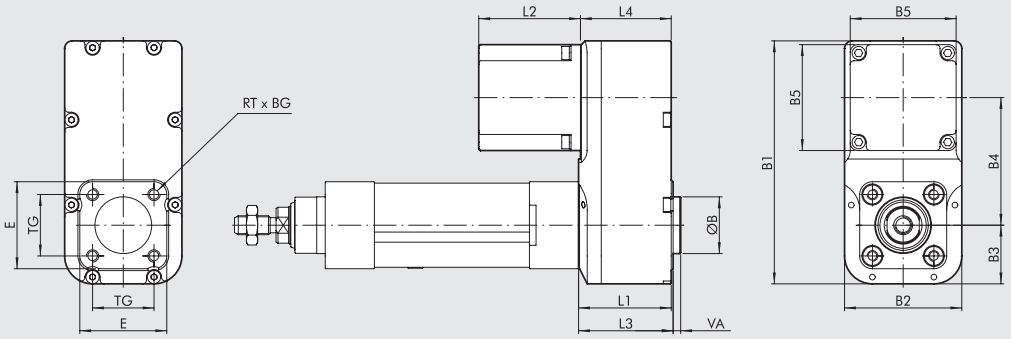
VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Code for gear mounted on the cylinder	Motor torque [Nm]	Coupling flange	B	L1	L2	L3	L4
100	BRUSHLESS	371100_ _ _ _ _6770	37M2770000	37R0364000	9.5	130	130	135	338.5	49	151

VERSION WITH MOTOR AND BRAKE

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Code for gear mounted on the cylinder	Motor torque [Nm]	Coupling flange	B	L1	L2	L3	L4
100	BRUSHLESS	371100_ _ _ _ _7770	37M4770000	37R0364000	9.5	130	130	135	367	49	151

DIMENSIONS OF CYLINDERS WITH GEARED MOTOR



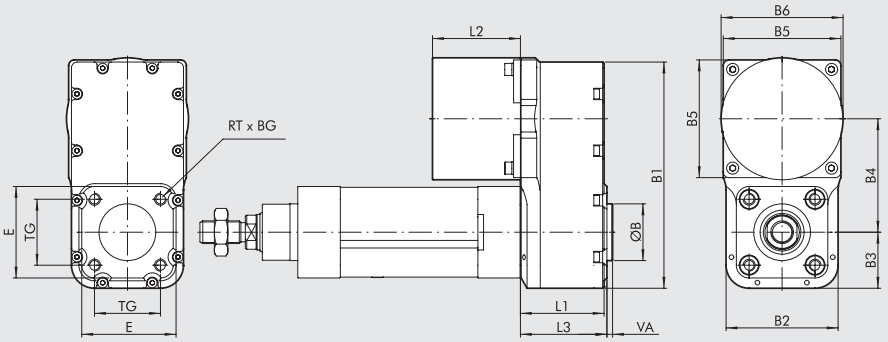
For any missing dimensions, please refer to page **A5**.25

VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	E	L1	L2	L3	L4	TG	RT	VA
32	STEPPING	371032_ _ _ _ _ _1110	37M1110000	0.8	NEMA 23	30	128.5	62	31	67.5	56	15	46	49	53.8	50	48	32.5	M6	4
		371032_ _ _ _ _ _1120	37M1120000	1.2	NEMA 23	30	128.5	62	31	67.5	56	15	46	49	75.8	50	48	32.5	M6	4
		371032_ _ _ _ _ _1121	37M1120001	1.2	NEMA 23	30	128.5	62	31	67.5	56	15	46	49	75.8	50	48	32.5	M6	4
63	STEPPING	371063_ _ _ _ _ _1450	37M1450000	6.7	NEMA 34	45	179.5	92	46	87.5	84.5	17	75.5	70	127	72	68	56.5	M8	4
63 HD	STEPPING	371H63_ _ _ _ _ _1450	37M1450000	6.7	NEMA 34	45	179.5	92	46	87.5	85.5	17	75.5	70	127	72	68	56.5	M8	4
80	BRUSHLESS	371080_ _ _ _ _ _2540	37M2540000	3.18	86	45	204.5	115	57	97.5	86	21	-	80.5	137.1	-	-	72	M10	4

VERSION WITH MOTOR AND BRAKE

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	E	L1	L2	L3	L4	TG	RT	VA
32	STEPPING	371032_ _ _ _ _ _3220	37M3220000	1.2	60	30	128.5	62	31	67.5	60	15	46	49	151.8	50	48	32.5	M6	4
		371032_ _ _ _ _ _3230	37M3230000	2.5	60	30	128.5	62	31	67.5	60	15	46	49	184.5	50	48	32.5	M6	4
		371032_ _ _ _ _ _5120	37M5120000	1.2	NEMA 23	30	128.5	62	31	67.5	56	15	46	49	112	50	48	32.5	M6	4
80	BRUSHLESS	371080_ _ _ _ _ _4540	37M4540000	3.18	86	45	204.5	115	57	97.5	86	21	-	80.5	163	-	-	72	M10	4



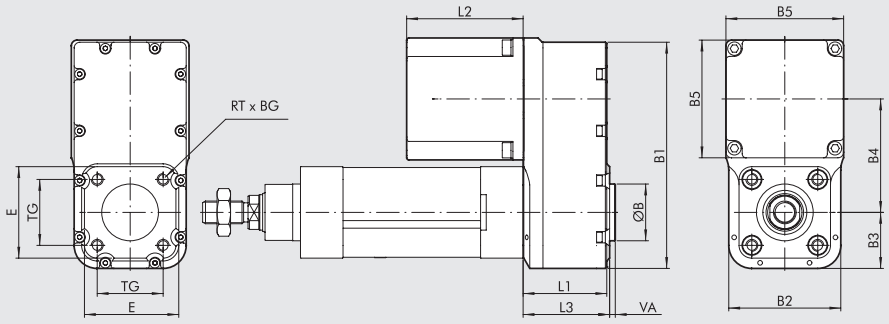
For any missing dimensions, please refer to page **A5**.25

VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	ØB6	BG	E	L1	L2	L3	TG	RT	VA
50	STEPPING	371050_ _ _ _ _ _1430	37M1430000	2.4	NEMA 34	40	159.5	79	39.5	80	80	86	17	64.5	59	62	61	46.5	M8	4
		371050_ _ _ _ _ _1440	37M1440000	4.2	NEMA 34	40	159.5	79	39.5	80	83	86	17	64.5	59	92.2	61	46.5	M8	4

METAL WORK PNEUMATIC

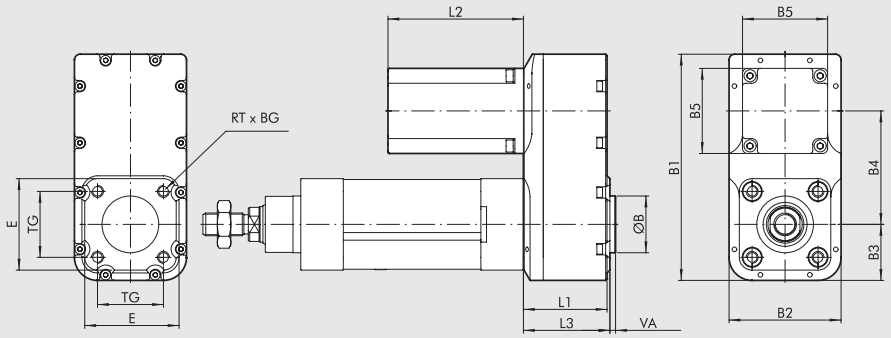
DIMENSIONS OF CYLINDERS WITH GEARED MOTOR



For any missing dimensions, please refer to page **A5**.25

VERSIONE CON MOTORE E FRENO

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	E	L1	L2	L3	TG	RT	VA
50	STEPPING	371050_ _ _ _ _3430	37M3430000	2.9	NEMA 34	40	159.5	79	39.5	80	86.6	17	64.5	59	156.5	61	46.5	M8	4
		371050_ _ _ _ _3460	37M3460000	5.5	NEMA 34	40	159.5	79	39.5	80	86.6	17	64.5	59	188.5	61	46.5	M8	4



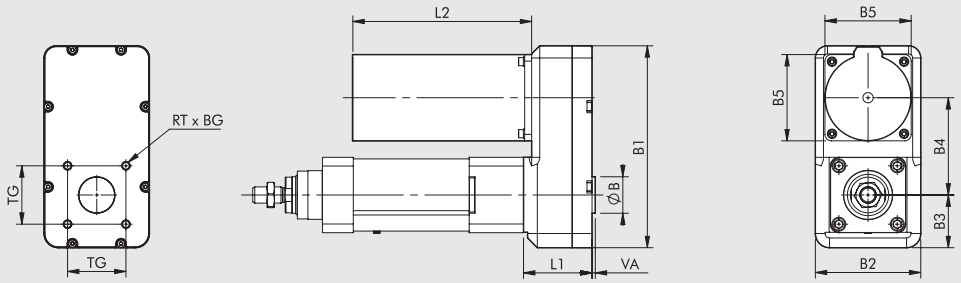
For any missing dimensions, please refer to page **A5**.25

VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	E	L1	L2	L3	TG	RT	VA
50	BRUSHLESS	371050_ _ _ _ _2220	37M2220000	1.27	60	40	159.5	79	39.5	80	60	17	64.5	59	95.5	61	46.5	M8	4
		371050_ _ _ _ _222E	37M2220001	1.27	60	40	159.5	79	39.5	80	60	17	64.5	59	130.7	61	46.5	M8	4
		371050_ _ _ _ _233E	37M2330001	2.39	80	40	159.5	80	39.5	75	80	17	64.5	59	138.3	61	46.5	M8	4
63	BRUSHLESS	371063_ _ _ _ _2330	37M2330000	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	107.3	72	56.5	M8	4
		371063_ _ _ _ _233E	37M2330001	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	138.3	72	56.5	M8	4
63 HD	BRUSHLESS	371H63_ _ _ _ _2330	37M2330000	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	107.3	72	56.5	M8	4
		371H63_ _ _ _ _2540	37M2540000	3.18	86	45	179.5	92	46	87.5	86	17	75.5	70	137.1	72	56.5	M8	4
		371H63_ _ _ _ _233E	37M2330001	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	138.3	72	56.5	M8	4
		371H63_ _ _ _ _264E	37M2640000	3.18	100	45	191.4	100	46	95	100	17	75.5	74.8	153.3	76.8	56.5	M8	4
	STEPPING	371H63_ _ _ _ _1470	37M1470000	9.3	NEMA 34	45	179.5	92	46	87.5	86.6	17	75.5	70	130	72	56.5	M8	4
80	BRUSHLESS	371080_ _ _ _ _264E	37M2640000	3.18	100	45	224.8	130	59	109.8	100	17	-	76.5	153.3	-	72	M10	4

VERSIONE CON MOTORE E FRENO

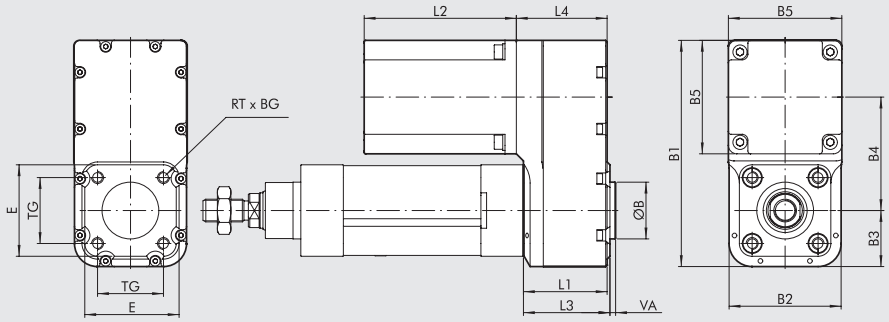
Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	E	L1	L2	L3	TG	RT	VA
50	BRUSHLESS	371050_ _ _ _ _4220	37M4220000	1.27	60	40	159.5	79	39.5	80	60	17	64.5	59	123.5	61	46.5	M8	4
		371050_ _ _ _ _422E	37M4220001	1.27	60	40	159.5	79	39.5	80	60	17	64.5	59	166.8	61	46.5	M8	4
		371050_ _ _ _ _433E	37M4330001	2.39	80	40	159.5	80	39.5	75	80	17	64.5	59	178	61	46.5	M8	4
63	BRUSHLESS	371063_ _ _ _ _4330	37M4330000	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	143	72	56.5	M8	4
		371063_ _ _ _ _433E	37M4330001	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	178	72	56.5	M8	4
	STEPPING	371063_ _ _ _ _3460	37M3460000	5.5	NEMA 34	45	179.5	92	46	87.5	86.6	17	75.5	70	188.5	72	56.5	M8	4
		371063_ _ _ _ _3450	37M3450000	6.3	NEMA 34	45	179.5	92	46	87.5	86.6	17	75.5	70	188.5	72	56.5	M8	4
63 HD	BRUSHLESS	371H63_ _ _ _ _4330	37M4330000	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	143	72	56.5	M8	4
		371H63_ _ _ _ _4540	37M4540000	3.18	86	45	179.5	92	46	87.5	86	17	75.5	70	163	72	56.5	M8	4
		371H63_ _ _ _ _433E	37M4330001	2.39	80	45	179.5	92	46	87.5	80	17	75.5	70	178	72	56.5	M8	4
		371H63_ _ _ _ _464E	37M4640000	3.18	100	45	191.4	100	46	95	100	17	75.5	74.8	192.5	76.8	56.5	M8	4
	STEPPING	371H63_ _ _ _ _3470	37M3470000	9.3	NEMA 34	45	179.5	92	46	87.5	86.6	17	75.5	70	220.5	72	56.5	M8	4
		371H63_ _ _ _ _3450	37M3450000	6.3	NEMA 34	45	179.5	92	46	87.5	86.6	17	75.5	70	188.5	72	56.5	M8	4
		371H63_ _ _ _ _3460	37M3460000	5.5	NEMA 34	45	179.5	92	46	87.5	86.6	17	75.5	70	188.5	72	56.5	M8	4
80	BRUSHLESS	371080_ _ _ _ _464E	37M4640000	3.18	100	45	224.8	130	59	109.8	100	17	-	76.5	192.5	-	72	M10	4



For any missing dimensions, please refer to page **A5**.25

VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	L1	L2	TG	RT	VA
80	STEPPING	**371080_ _ _ _ _ _1890**	**37M1890000**	**17.5**	**NEMA 42**	45	249	130	65	120	106.4	21	84.5	221	72	M10	4
100	STEPPING	**371100_ _ _ _ _ _1890**	**37M1890000**	**17.5**	**NEMA 42**	55	285	150	75	120	106.4	21	91.5	221	89	M10	4



For any missing dimensions, please refer to page **A5**.25

VERSION WITH MOTOR

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	E	L1	L2	L3	L4	TG	RT	VA
32	BRUSHLESS	**371032_ _ _ _ _ _2200**	**37M2200000**	**0.64**	**60**	30	128.5	62	31	67.5	60	15	46	49	69.5	50	51	32.5	M6	4
		371032_ _ _ _ _ _2220	**37M2220000**	**1.27**	**60**	30	128.5	62	31	67.5	60	15	46	49	95.5	50	51	32.5	M6	4
		371032_ _ _ _ _ _220E	**37M2200001**	**0.64**	**60**	30	128.5	62	31	67.5	60	15	46	49	105.5	50	51	32.5	M6	4
		371032_ _ _ _ _ _222E	**37M2220001**	**1.27**	**60**	30	128.5	62	31	67.5	60	15	46	49	130.7	50	51	32.5	M6	4
50	BRUSHLESS	**371050_ _ _ _ _ _2330**	**37M2330000**	**2.39**	**80**	40	159.5	79	39.5	80	80	17	64.5	59	107.3	61	64	46.5	M8	4
80	BRUSHLESS	**371080_ _ _ _ _ _2770**	**37M2770000**	**9.5**	**130**	45	249	130	65	119	130	21	-	84.5	187.5	-	-	72	M10	4
100	BRUSHLESS	**371100_ _ _ _ _ _2770**	**37M2770000**	**9.5**	**130**	55	285	150	75	145	130	21	-	91.5	187.5	-	-	89	M10	4

VERSION WITH MOTOR AND BRAKE

Size	Motor type	Code for cylinder complete with motor	Code for motor mounted on the cylinder	Motor torque [Nm]	Coupling flange	ØB (d11)	B1	B2	B3	B4	B5	BG	E	L1	L2	L3	L4	TG	RT	VA
32	BRUSHLESS	**371032_ _ _ _ _ _4200**	**37M4200000**	**0.64**	**60**	30	128.5	62	31	67.5	60	15	46	49	67.5	50	51	32.5	M6	4
		371032_ _ _ _ _ _4220	**37M4220000**	**1.27**	**60**	30	128.5	62	31	67.5	60	15	46	49	123.5	50	51	32.5	M6	4
		371032_ _ _ _ _ _420E	**37M4200001**	**0.64**	**60**	30	128.5	62	31	67.5	60	15	46	49	141.6	50	51	32.5	M6	4
		371032_ _ _ _ _ _422E	**37M4220001**	**1.27**	**60**	30	128.5	62	31	67.5	60	15	46	49	166.8	50	51	32.5	M6	4
50	BRUSHLESS	**371050_ _ _ _ _ _4330**	**37M4330000**	**2.39**	**80**	40	159.5	79	39.5	80	80	17	64.5	59	143	61	64	46.5	M8	4
80	BRUSHLESS	**371080_ _ _ _ _ _4770**	**37M4770000**	**9.5**	**130**	45	249	130	65	119	130	21	-	84.5	216	-	-	72	M10	4
100	BRUSHLESS	**371100_ _ _ _ _ _4770**	**37M4770000**	**9.5**	**130**	55	285	150	75	145	130	21	-	91.5	216	-	-	89	M10	4

METAL WORK PNEUMATIC

MOTOR-DRIVE COUPLINGS

MOTOR CODES			DRIVES CODES				
		Metal Work	37D1222000 *	37D1332000 *	37D1442000	37D1552000	37D1362001
		Manufacturer	RTA CSD 94	RTA NDC 96	RTA PLUS A4	RTA PLUS B7	X-MIND B6
Metal Work	Manufacturer		(4.4A 24-48VDC)	(6A 2-75VDC)	(6A 77-140VDC)	(10A 28-62VAC) ●	(6A 110-230VAC) ●
STEPPING MOTORS							
37M1110000	SANYO DENKI 103-H7123-1749 (4A 75V max)		Ø32	Ø32 ◆	-	Ø32 ■	-
37M1120000	SANYO DENKI 103-H7126-1740 (4A 75V max)		Ø32	Ø32 ◆	-	Ø32 ■	-
37M1120001	SANYO DENKI 103-H7126-6640 (5.6A 75V max)		-	Ø32	-	Ø32 ■	-
37M1430000	SANYO DENKI 103-H8221-6241 (6A 140V max)		-	Ø50	Ø 50	Ø50 ◆	Ø50 ▲
37M1440000	SANYO DENKI 103-H8222-6340 (6A 140V max)		-	Ø50	Ø 50	Ø50 ◆	Ø50 ▲
37M1450000	SANYO DENKI SM-2863-5255 (6A 140V max)		-	Ø63 - Ø63 HD	Ø63 - Ø63 HD	Ø63 - Ø63 HD ◆	Ø63 - Ø63 HD ▲
37M1470000	B&R 80MPH6.101S000-01 (10A 80V max)		-	-	-	Ø63 HD	-
37M1890000	SANYO DENKI 103-H89223-6341 (6A 230V max)		-	-	-	-	Ø80 - Ø100
STEPPING MOTORS WITH BRAKE							
37M5120000	SANYO DENKI 103-H7126-1710B (4A 75V max)		Ø32	Ø32 ◆	-	Ø32 ■	-
STEPPING MOTORS WITH BRAKE + ENCODER							
37M3220000	B&R 80MPF3.500D114-01 (5A 80V max)		-	Ø32 ◆	Ø32 ■	Ø32 ■	
37M3230000	B&R 80MPF5.500D114-01 (5A 80V max)		-	Ø32 ◆	Ø32 ■	Ø32 ■	
37M3430000	B&R 80MPH1.600D114-01 (6A 80V max)		-	Ø50	Ø50 ▲	Ø50 ◆	
37M3460000	B&R 80MPH3.600D114-01 (6A 80V max)		-	Ø50 - Ø63 - Ø63 HD	Ø50 - Ø63 - Ø63 HD ▲	Ø50 - Ø63 - Ø63 HD ◆	
37M3450000	B&R 80MPH4.101D114-01 (10A 80V max)		-	-	-	Ø63 - Ø63 HD	
37M3470000	B&R 80MPH6.101D114-01 (10A 80V max)		-	-	-	Ø63 HD	

✱ In all applications requiring motor powered up to 6A / 55VDC, the programmable drive **e**.drive, code 37D1332002, can be used.
◆ **Important!** Limit current
■ **Important!** Limit current and voltage
▲ **Important!** Limit voltage
● **Important!** AC drive to continuous voltage VDC = VAC · $\sqrt{2}$

MOTOR CODES			DRIVES CODES					
		Metal Work	37D2400008	37D2200001	37D2300000	37D2400007	37D2400006	37D2600001
		Manufacturer	SANYO DENKI RS3A03	DELTA ASD-A2-0221-M	DELTA ASD-A2-0421-M	DELTA ASD-A2-0721-M	DELTA ASD-A2-1021-M	DELTA ASD-A2-3043-M
Metal Work	Manufacturer		(30A 200-1000 W)	(200W)	(400W)	(750W)	(1000W)	(3000W)
BRUSHLESS MOTORS								
37M2200000	SANYO DENKI R2AA06020FXH11M (200W)		Ø32	-	-	-	-	-
37M2220000	SANYO DENKI R2AA06040FXH11M (400W)		Ø32 - Ø50	-	-	-	-	-
37M2330000	SANYO DENKI R2AA08075FXH11M (750W)		Ø50 - Ø63 - Ø63 HD	-	-	-	-	-
37M2540000	SANYO DENKI R2AAB8100HXH29M (1000W)		Ø63 HD - Ø80	-	-	-	-	-
37M2200001	DELTA ECMA-C20602RS (200W)		-	Ø32	-	-	-	-
37M2220001	DELTA ECMA-C20604RS (400W)		-	-	Ø32 - Ø50	-	-	-
37M2330001	DELTA ECMA-C20807RS (750W)		-	-	-	Ø50 - Ø63 - Ø63HD	-	-
37M2640000	DELTA ECMA-C21010R9 (1000W)		-	-	-	-	Ø63HD Ø80	-
37M2770000	DELTA ECMA-J11330R4 (3000W)		-					Ø80 - Ø100
BRUSHLESS MOTORS WITH BRAKE								
37M4200000	SANYO DENKI R2AA06020FCH11M (200W)		Ø32					-
37M4220000	SANYO DENKI R2AA06040FCH11M (400W)		Ø32 - Ø50					-
37M4330000	SANYO DENKI R2AA08075FCH11M (750W)		Ø50 - Ø63 - Ø63 HD					-
37M4540000	SANYO DENKI R2AAB8100HCH29M (1000W)		Ø63 HD - Ø80					-
37M4200001	DELTA ECMA-C20602SS (200W)		-	Ø32	-	-	-	-
37M4220001	DELTA ECMA-C20604SS (400W)		-	-	Ø32 - Ø50	-	-	-
37M4330001	DELTA ECMA-C20807SS (750W)		-	-	-	Ø50 - Ø63 - Ø63HD	-	-
37M4640000	DELTA ECMA-C21010S9 (1000W)		-	-	-	-	Ø63HD Ø80	-
37M4770000	DELTA ECMA-J11330S4 (3000W)		-					Ø80 - Ø100

KEY TO CODES FOR ELECTRIC CYLINDER SERIE ELEKTRO ISO 15552

KEY TO CODES CYLINDER WITHOUT MOTOR

CYL	37 TYPE	1	032 SIZE	0100 STROKE	1 SCREW PITCH	5 VERSION
	37 Electric actuators	**1** ISO 15552 electric cylinder	**032** 32 **050** 50 **063** 63 ◆ **H63** 63 Heavy Duty ◀ **080** 80 ◀ **100** 100		**1** Pitch 4 **2** Pitch 5 **4** Pitch 10 **5** Pitch 12 **6** Pitch 16 **7** Pitch 20 **8** Pitch 32 **9** Pitch 40	**5** Without non-rotating IP40 **6** With non-rotating IP40 **7** Without non-rotating IP55/IP65 **8** With non-rotating IP55/IP65

N.B.: For the possible ordering codes, please refer to the next page.
◆ Only for Ø63 with screw pitch 5 or pitch 10
◀ Only for versions 7 and 8

N.B.: An piston rod anti-rotation system must be used. If the piston rod is not fixed firmly to an element, a flange or to any other device preventing it from rotating, a cylinder in the anti-rotation version must be used.

KEY TO CODES CYLINDER WITH MOTOR

							DRIVE			
CYL	37 TYPE	1	032 SIZE	0100 STROKE	1 SCREW PITCH	1 VERSION	1 MOTOR ✱	2 FLANGE	2 TORQUE	0
	37 Electric actuators	**1** ISO 15552 electric cylinder	**032** 32 **050** 50 **063** 63 ◆ **H63** 63 Heavy Duty ◀ **080** 80 ◀ **100** 100		**1** Pitch 4 **2** Pitch 5 **4** Pitch 10 **5** Pitch 12 **6** Pitch 16 **7** Pitch 20 **8** Pitch 32 **9** Pitch 40	**IN-LINE** ● **1** Without non-rotating IP40/IP20 ● **2** With non-rotating IP40/IP20 ■ **3** Without non-rotating IP55/IP65 ■ **4** With non-rotating IP55/IP65 **GEARED** ● **5** Without non-rotating IP40/IP20 ● **6** With non-rotating IP40/IP20 ■ **7** Without non-rotating IP55/IP65 ■ **8** With non-rotating IP55/IP65	**1** STEPPING **2** BRUSHLESS **3** STEPPING with BRAKE + Encoder **4** BRUSHLESS with BRAKE **5** STEPPING with BRAKE without Encoder **6** BRUSHLESS with gearbox **7** BRUSHLESS with BRAKE + gearbox	**1** NEMA 23 **2** 60 **3** 80 **4** NEMA 34 **5** 86 **6** 100 **7** 130 **8** NEMA 42	**0** 0 - 0.79 Nm **1** 0.8 - 1.19 Nm **2** 1.2 - 2.19 Nm **3** 2.2 - 3 Nm **4** 3.01 - 5 Nm **5** 6.21 - 7 Nm **6** 5.01 - 6.2 Nm **7** 7.01 - 10 Nm **9** 15.01 - 25 Nm	**0** Base **1** Greater rpm ✚ **E** Type "E"

N.B.: The Orderable configurations are shown on the next page.
◆ Only for Ø63 with screw pitch 5 or pitch 10
◀ Only for versions 3, 4, 7 and 8
● Version IP40 available for all STEPPING and BRUSHLESS motors, for only the sizes 32, 50 and 63, with the exception of motor code 37M5120000 which it is IP20;
■ Version IP55 available for STEPPING motors, for only the sizes 50, 63, 80 and 100 all the motors, with the exception of motor code 37M1470000; for Ø 32 only for motor code 37M1120001; version IP65 available for BRUSHLESS motors, BRUSHLESS with BRAKE and STEPPING with BRAKE + ENCODER motors (all sizes).
✚ Identifies configuration with Delta BRUSHLESS motors.
✱ On request available versions with gearbox with reduction ratios other than those eventually foreseen as standard.

N.B.: An piston rod anti-rotation system must be used. If the piston rod is not fixed firmly to an element, a flange or to any other device preventing it from rotating, a cylinder in the anti-rotation version must be used.

METAL WORK PNEUMATIC

POSSIBLE ORDERING CODES

Ø 32

Drive	Version	Screw pitch
371032_ _ _ _	1	1	1110
		2	1120
		5	1121
		6	5120
			2200
			220E
			2220
			222E
			3220
			3230
			4200
			420E
			4220
			422E
	5	3	1121
		4	2200
		7	220E
		8	2220
			222E
			3220
			3230
			4200
			420E
			4220
			422E

_ _ _ _ = Enter the stroke in mm

Ø 50

Drive	Version	Screw pitch
371050_ _ _ _	2	1	1430
	4	2	1440
	6	3	2220
		4	222E
		5	2330
		6	233E
		7	3430
		8	3460
			4220
			422E
			4330
			433E

_ _ _ _ = Enter the stroke in mm

Ø 63

Drive	Version	Screw pitch
371063_ _ _ _	2	1	1450
	4	2	2330
	7	3	233E
		4	3450
		5	3460
		6	4330
		7	433E
		8	

_ _ _ _ = Enter the stroke in mm

Ø 63 HD

Drive	Version	Screw pitch
371H63_ _ _ _	2	1	1450
	4	2	1470
		5	2330
		6	233E
			2540
			264E
			3450
			3460
			3470
			4330
			433E
			4540
			464E
	4	3	1450
		4	2330
		7	233E
		8	2540
			264E
			3450
			3460
			3470
			4330
			433E
			4540
			464E

_ _ _ _ = Enter the stroke in mm

Ø 80

Drive	Version	Screw pitch		Transmission ratio *
371080_ _ _ _	2	3	1890	1
		4	2540	1
			264E	1
			4540	1
			464E	1
		7	1890	1
		8	2540	4/5
			264E	4/5
			4540	4/5
			464E	4/5
	4	3	1890	1
	8	4	2540	1
			264E	1
			2770	1
			4540	1
			464E	1
			4770	1
		7	1890	1
		8	2540	4/5
			264E	4/5
			2770	2/3
			4540	4/5
			464E	4/5
			4770	2/3

_ _ _ _ = Enter the stroke in mm

Ø 100

Drive	Version	Screw pitch		Transmission ratio *
371100_ _ _ _	4	3	1890	1
	9	4	2770	1
			4770	1
			6770	1/3
			7770	1/3
		7	1890	1
		8	2770	1/2
			4770	1/2

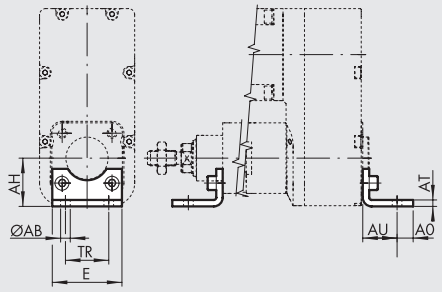
_ _ _ _ = Enter the stroke in mm

* For sizes Ø80 and Ø100 the standard transmission ratio depends on screw pitch, version and motorization. For the other sizes the standard transmission ratio is 1.

ACCESSORIES FOR ELECTRIC CYLINDER SERIES ELEKTRO ISO 15552

N.B.: Where specified, limit the maximum axial loads (Fmax) according to the electric cylinders

FOOT - MODEL A

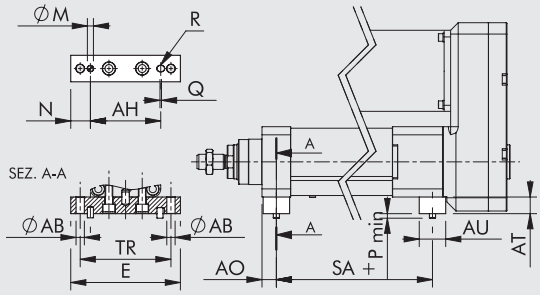


STEEL

Code	Ø	Ø AB	AH	AO	AT	AU	TR	E	Weight [g]	Fmax [N]
W0950322001	32	7	32	11	4	24	32	45	76	1600
W0950502001	50	9	45	15	5	32	45	65	162	4000
W0950632001	63	9	50	15	5	32	50	75	266	6000
W0950632001	63 HD	9	50	15	5	32	50	75	266	6000
W095E802001	80	12	68.5*	20	6	41	63	95	414	10000
W095EA12001	100	14	79*	25	6	41	75	115	518	16000

* Dimensions not to ISO 15552
Note: Individually packed with 2 screws

FOOT ON CYLINDER HEADS

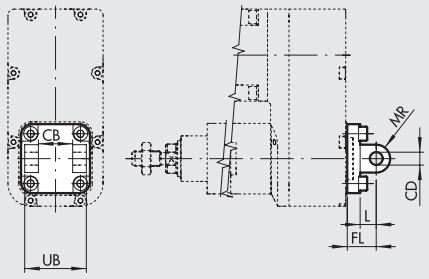


STEEL

Code	Ø	Ø AB	AH	AO	AT	AU	TR	E	ØM H7	N	P	Q	R H7	SA	Weight [g]	Fmax [N]
0950807042	80	11	93	19	22	35	120	145	8	26	6	2	8	215	770	10000
0951007042	100	13	111	19	24	35	140	165	8	27	6	2	8	232.5	945	16000

Note: Individually packed with 2 screws, 3 pins

FEMALE HINGE - MODEL B



ALUMINIUM

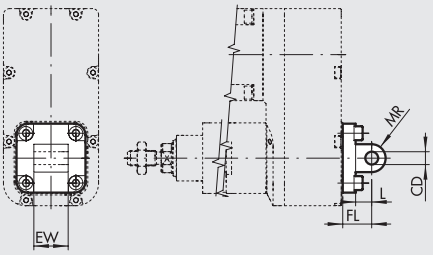
Code	Ø	UB	CB H14	FL	CD H9	MR	L	Weight [g]	Fmax [N]
W0950322003	32	45	26	22	10	10	12	116	800
W0950502003	50	60	32	27	12	12	15	252	2000
W0950632003	63	70	40	32	16	16	20	394	3000
W0950632003	63 HD	70	40	32	16	16	20	394	3000

STEEL

Code	Ø	UB	CB H14	FL	CD H9	MR	L	Weight [g]	Fmax [N]
W095E322003	32	45	26	22	10	10	13	348	1600
W095E502003	50	60	32	27	12	12	16	756	4000
W095E632003	63	70	40	32	16	15	22	1182	6000
W095E632003	63 HD	70	40	32	16	15	22	1182	6000
W095E802003	80	90	50	36	16	16	22	2010	10000
W095EA12003	100	110	60	41	20	20	27	3255	16000

Note: Supplied with 4 screws, 4 washers, 2 snap-rings, 1 pin

MALE HINGE - MODEL BA



ALUMINIUM

Code	Ø	EW	FL	MR	CD H9	L	Weight [g]	Fmax [N]
W0950322004	32	26	22	10	10	13	94	800
W0950502004	50	32	27	12	12	16	220	2000
W0950632004	63	40	32	16	16	22	316	3000
W0950632004	63 HD	40	32	16	16	22	316	3000

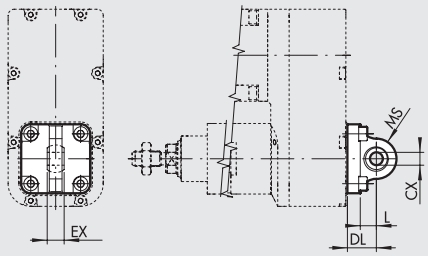
STEEL

Code	Ø	EW	FL	MR	CD H9	L	Weight [g]	Fmax [N]
W095E322004	32	26	22	10	10	13	282	1600
W095E502004	50	32	27	12	12	16	660	4000
W095E632004	63	40	32	16	15	22	948	6000
W095E632004	63 HD	40	32	16	15	22	948	6000
W095E802004	80	50	36	16	16	22	1734	10000
W095EA12004	100	60	41	20	20	27	2550	16000

Note: Supplied with 4 screws.

METAL WORK PNEUMATIC

ARTICULATED MALE HINGE - MODEL BAS



ALUMINIUM

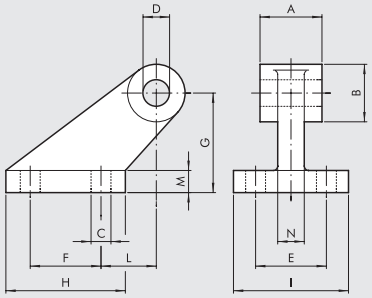
Code	Ø	DL	MS	L	CX H9	EX	Weight [g]	Fmax [N]
W0950322006	32	22	16	12	10	14	106	800
W0950502006	50	27	21	15	12	16	236	2000
W0950632006	63	32	23	20	16	21	336	3000
W0950632006	63 HD	32	23	20	16	21	336	3000

STEEL

Code	Ø	DL	MS	L	CX H9	EX	Weight [g]	Fmax [N]
W095E322006	32	22	15	14	10	14	318	1600
W095E502006	50	27	20	17	16	21	708	4000
W095E632006	63	32	23	22	16	21	1008	6000
W095E632006	63 HD	32	23	22	16	21	1008	6000
W095E802006	80	36	27	23	20	25	1716	10000
W095EA12006	100	41	30	28	20	25	2520	16000

Note: Supplied with 4 screws, 4 washers

CETOP HINGE FOR MODEL B - MODEL GL

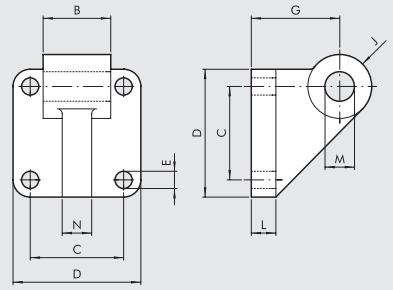


ALUMINIUM

Code	Ø	A	B	C	D	E	F	G	H	I	L	M	N	Weight [g]	Fmax [N]
W0950322008	32	26	19	7	10	25	20	32	37	41	18	8	10	96	800
W0950502008	50	32	26	9	12	32	32	45	54	52	25	10	12	212	2000
W0950632008	63	40	33	11	16	40	50	63	75	63	32	12	15	440	3000
W0950632008	63 HD	40	33	11	16	40	50	63	75	63	32	12	15	440	3000

Note: Supplied with 4 screws, 4 washers

COUNTER-HINGE FOR MODEL B - MODEL GS

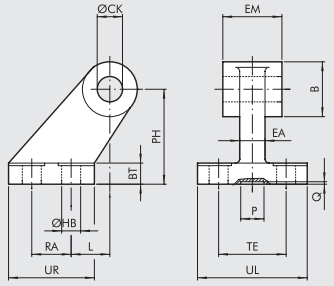


ALUMINIUM

Code	Ø	B	C	D	E	G	J	L	M	N	Weight [g]	Fmax [N]
W0950322108	32	26	32.5	45	7	32	11	10	10	10	106	800
W0950502108	50	32	46.5	65	9	45	13	12	12	12	252	2000
W0950632108	63	40	56.5	75	9	50	17	12	16	15	350	3000
W0950632108	63 HD	40	56.5	75	9	50	17	12	16	15	350	3000

Note: Supplied with 4 screws, 4 washers

ISO 15552 COUNTER-HINGE FOR MODEL B - MODEL AB7



ALUMINIUM

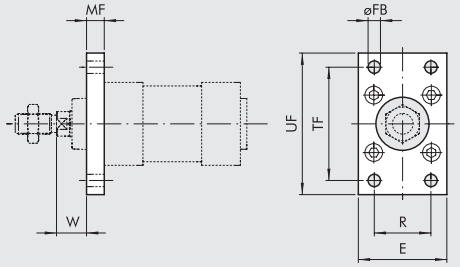
Code	Ø	EM	B	ØHB	ØCK	TE	RA	PH	UR	UL	L	BT	EA	P	Q	Weight [g]	Fmax [N]
W0950322017	32	26	20	6.6	10	38	18	32	31	51	3	8	10	21	3	60	800
W0950502017	50	32	26	9	12	50	30	45	45	65	3	12	16	21	3	162	2000
W0950632017	63	40	30	9	16	52	35	50	50	67	2	14*16	21	3		191	3000
W0950632017	63 HD	40	30	9	16	52	35	50	50	67	2	14*16	21	3		191	3000

STEEL

Code	Ø	EM	B	ØHB	ØCK	TE	RA	PH	UR	UL	L	BT	EA	P	Q	Weight [g]	Fmax [N]
W095E322017	32	26	20	6.6	10	38	18	32	31	51	3	8	10	20	5	180	1600
W095E502017	50	32	26	9	12	50	30	45	45	65	3	12	16	30	5	486	4000
W095E632017	63	40	30	9	16	52	35	50	50	67	2	12	16	35	5	573	6000
W095E632017	63 HD	40	30	9	16	52	35	50	50	67	2	12	16	35	5	573	6000
W095E802017	80	50	30	11	16	66	40	63	60	86	7	14	20	45	5	996	10000
W095EA12017	100	60	38	11	20	76	50	71	70	96	5	15	20	55	5	1566	16000

* Dimensions not to ISO 15552

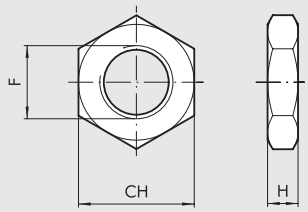
FRONT FLANGE - MODEL C



Code	Ø	TF	UF	E	MF	R	øFB	W	Weight [g]	Fmax [N]
W0950322002	32	64	80	50	10	32	7	16	246	1600
W0950502002	50	90	110	65	12	45	9	25	522	5000
W0950632002	63	100	120	75	12	50	9	25	670	7000
W0950632002	63 HD	100	120	75	12	50	9	25	670	7000

Note: Supplied with 4 screws

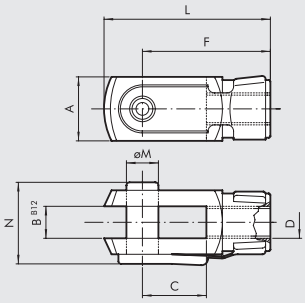
ROD NUT - MODEL S



Code	Ø	F	H	CH	Weight [g]
0950322010	32	M10x1.25	6	17	6
0950502010	50	M16x1.5	8	24	20
0950502010	63	M16x1.5	8	24	20
0950502010	63 HD	M16x1.5	8	24	20
0950802010	80	M20x1.5	9	30	32
0950802010	100	M20x1.5	9	30	32

Note: Individually packed

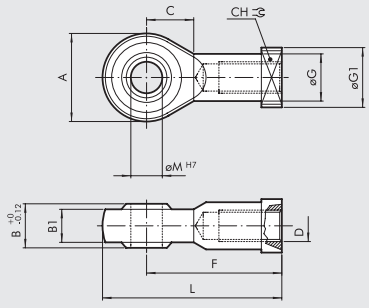
FORK MODEL GK-M



Code	Ø	øM	C	B	A	L	F	D	N	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
W0950502020	50	16	32	16	32	83	64	M16x1.5	40	340
W0950502020	63	16	32	16	32	83	64	M16x1.5	40	340
W0950502020	63 HD	16	32	16	32	83	64	M16x1.5	40	340
W0950802020	80	20	40	20	40	105	80	M20x1.5	40	690
W0950802020	100	20	40	20	40	105	80	M20x1.5	48	690

Note: Individually packed

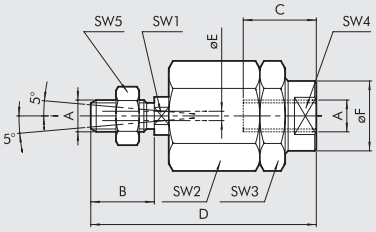
ROD EYE - MODEL GA-M



Code	Ø	øM	C	B1	B	A	L	F	D	øG	CH	øG1	Weight [g]
W0950322025	32	10	15	10.5	14	28	57	43	M10x1.25	15	17	19	78
W0950502025	50	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950502025	63	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950502025	63 HD	16	22	15	21	42	85	64	M16x1.5	22	22	22	226
W0950802025	80	20	26	18	25	50	102	77	M20x1.5	27.5	30	27	404
W0950802025	100	20	26	18	25	50	102	77	M20x1.5	27.5	30	27	404

Note: Individually packed

SELF ALIGNING ROD COUPLER - MODEL GA-K



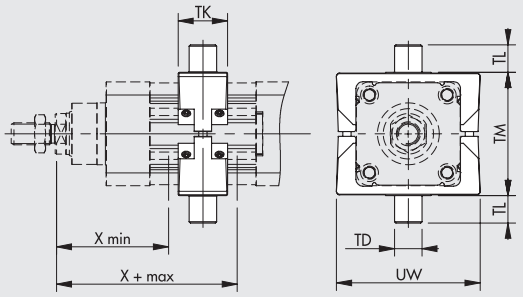
Code	Ø	A	B	C	D	øF	øE	SW1	SW2	SW3	SW4	SW5	Weight [g]
W0950322030	32	M10x1.25	20	20	71	22	4	12	30	30	19	17	216
W0950502030	50	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950502030	63	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950502030	63 HD	M16x1.5	32	32	103	32	4	20	41	41	30	24	620
W0950802030	80	M20x1.5	40	40	119	32	4	20	41	41	30	30	680
W0950802030	100	M20x1.5	40	40	119	32	4	20	41	41	30	30	680

Note: Individually packed

METAL WORK PNEUMATIC

INTERMEDIATE HINGE - MODEL EN

+ = ADD THE STROKE

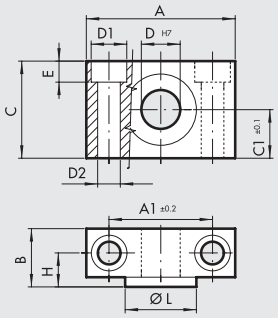


STEEL

Code	Ø	X (min)	X (max) IN LINE	X (max) GEARED	TM	TL	TD e9	TK	UW	Weight [g]	Fmax [N]	T [Nm] ◆
0950322107	**32**	63	123	*	50	12	12	22	65	170	500	2
0950502107	**50**	83	148	*	75	16	16	28	95	595	1200	6
0950632107	**63**	88	163	*	90	20	20	36	105	960	2000	10
0950632107	**63 HD**	88	163	*	90	20	20	36	105	960	2000	10

* Depending on motor length
◆ Reccommended tightening torque of grub screws
Note: Supplied with 8 grub screws, 2 pins

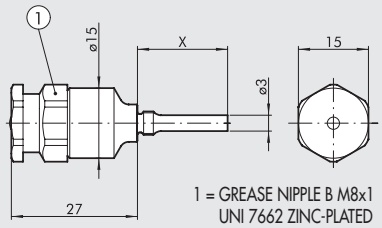
COUNTER-HINGE FOR MODEL EN - MODEL EL



Code	Ø	A	A_1	B	C	C_1	D_1	D_2	D	E	H	øL	Weight [g]
W0950322009	**32**	46	32	18	30	15	11	7	12	6.5	10.5	22	162
W0950402009	**50**	55	36	21	36	18	15	9	16	8.5	12	28	278
W0950632009	**63**	65	42	23	40	20	18	11	20	10.5	13	35	414
W0950632009	**63 HD**	65	42	23	40	20	18	11	20	10.5	13	35	414

Note: 2-pieces pack with 4 screws

GREASING NEEDLE

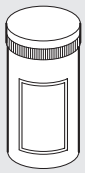


1 = GREASE NIPPLE B M8x1
UNI 7662 ZINC-PLATED

Code	Ø	Pitch	X
0950327108	**32**	-	12
0950507108	**50**	-	19.3
0950637108	**63**	-	23.6
0950637108	**80**	-	23.6
0950637108	**100**	10	23.6
0951007108	**100**	40	28.6

Note: Individually packed

GREASE

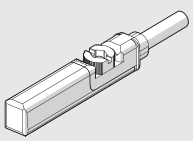


Code	Description	Weight [g]
9910506	Grease pipe RHEOLUBE 363 AX1	400

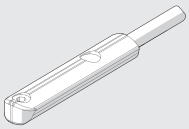
RETRACTABLE SENSOR

For codes and technical data, see **chapter A6**.

SENSOR, SQUARE TYPE
Latest generation,
secure fixing

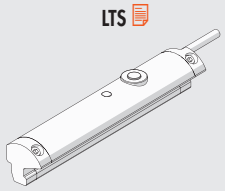


SENSOR, OVAL TYPE
Traditional

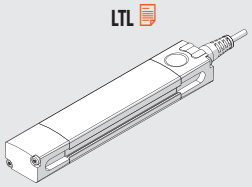


POSITION SENSORS

LTS

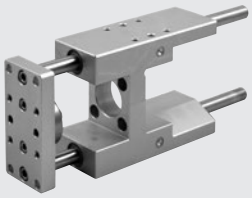


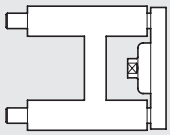
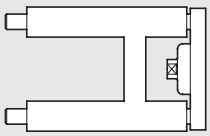
LTL



For technical data and usage strokes see chapter A6.

GUIDE UNIT



Version	Code	Bore	Type
Sliding on bronze bushings (GDH)			
	**W0700322...**	32*	UNIT MW DH 032...
	W0700502...	50	UNIT MW DH 050...
	W0700632...	63	UNIT MW DH 063...
	W0700E802...	80	UNIT MW DH 080...
	W070EA12...	100	UNIT MW DH 100...
	* Also available in V-Lock version (see **chapter A3**).		
	Note: The guide units must only be used with anti-rotation cylinders.		
	To complete the type and code, add the 3-digit stroke (e.g. 50=050)		
	For technical data and dimensions, see **chapter A1**.		
Sliding on ball bearing (GDM)			
	**W0700323...**	32*	UNIT MW DM 032...
	W0700503...	50	UNIT MW DM 050...
	W0700633...	63	UNIT MW DM 063...
	W0700E803...	80	UNIT MW DM 080...
	W070EA13...	100	UNIT MW DM 100...
	* Also available in V-Lock version (see **chapter A3**).		
	Note: The guide units must only be used with anti-rotation cylinders.		
	To complete the type and code, add the 3-digit stroke (e.g. 50=050)		
	For technical data and dimensions, see **chapter A1**.		

DRIVES

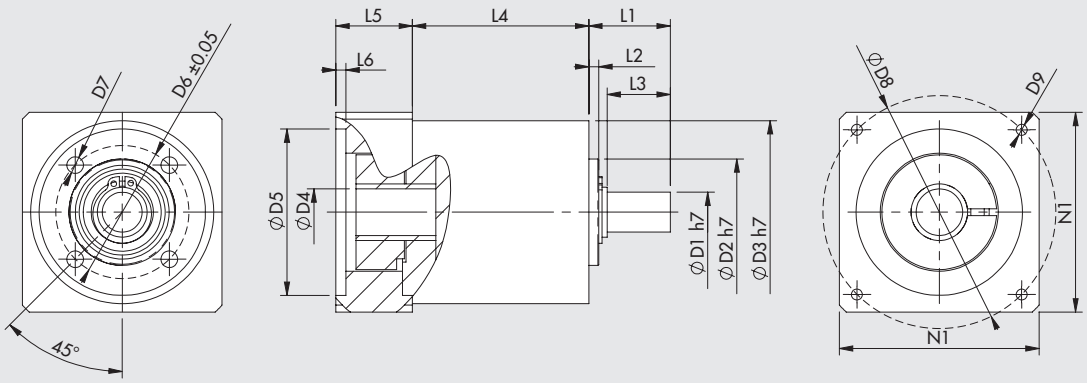
For motor-drive couplings see table on page **A5**.31

NOTES

METAL WORK PNEUMATIC

SPARE PARTS

ELEKTRO ISO 15552 Ø 100 GEARBOX



Code	Description	Application	C_{OUT} nominal [Nm]	N_{IN} nominal [1/min]	J reduced to motor shaft [kgmm²]	Mass [kg]	D1	D2	D3	D4	D5	D6	D7	D8	D9	L1	L2	L3	L4	L5	L6	N1
37R0364000	Gearbox MP105 1:3	Elektro ISO 15552 Ø 100	100	2500	222	6.5	25	70	106	24	110	85	M8	145	M8x20	57.5	5	50.5	107.5	48	6.5	120

C_{OUT} = rated output torque N_{IN} = nominal input speed J = mass moment of inertia of the gearhead

ELECTRIC MOTORS

For motor-drive couplings see table on page **A5**.31

NOTES

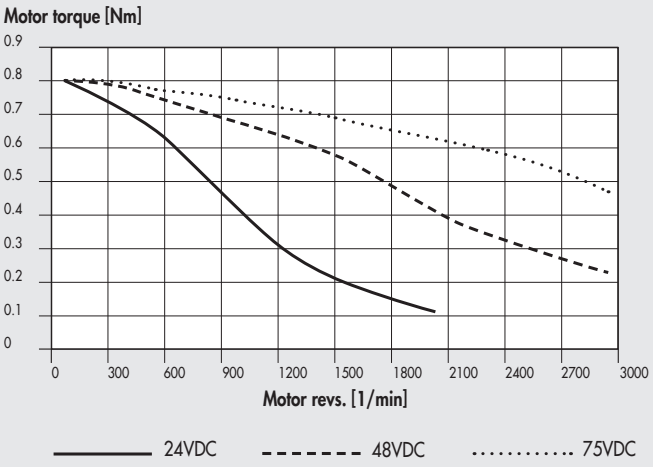
STEPPING MOTORS

STEPPING MOTORS

N.B.: With motor off, the drive current is automatically reduced by 50% to prevent overheating. Consequently, available torque with the motor stopped is also reduced by 50%.

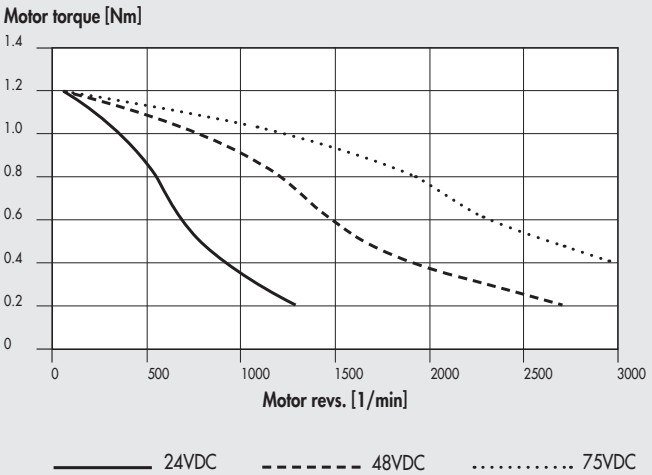
TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS

STEPPING motor code **37M1110000**



TECHNICAL DATA		MOTOR 37M1110000
Motor type		STEPPING
Nominal torque	Nm	**0.8**
Coupling flange		**NEMA 23**
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.41
Inductance	mH	1.6
Bipolar holding torque	Nm	1.1
Rotor inertia	$kgmm^2$	21
Theoretical acceleration	$rad \cdot s^{-2}$	50000
Back E.M.F.	V/krpm	20
Mass	kg	0.65
Degree of protection		IP40

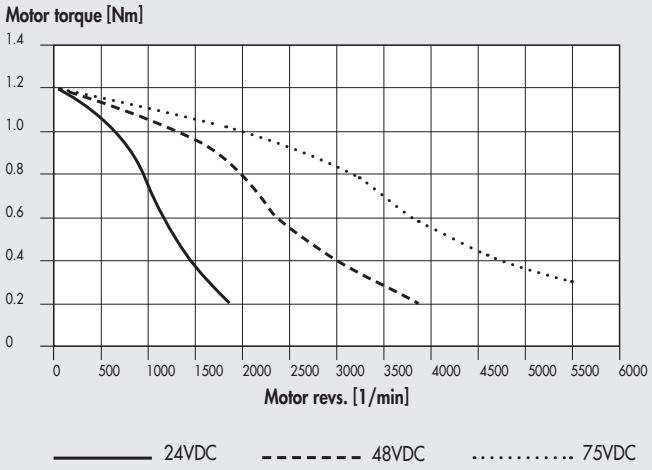
STEPPING motor code **37M1120000**



TECHNICAL DATA		MOTOR 37M1120000
Motor type		STEPPING
Nominal torque	Nm	**1.2**
Coupling flange		**NEMA 23**
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.48
Inductance	mH	2.2
Bipolar holding torque	Nm	1.65
Rotor inertia	$kgmm^2$	36
Theoretical acceleration	$rad \cdot s^{-2}$	45800
Back E.M.F.	V/krpm	31
Mass	kg	1
Degree of protection		IP40

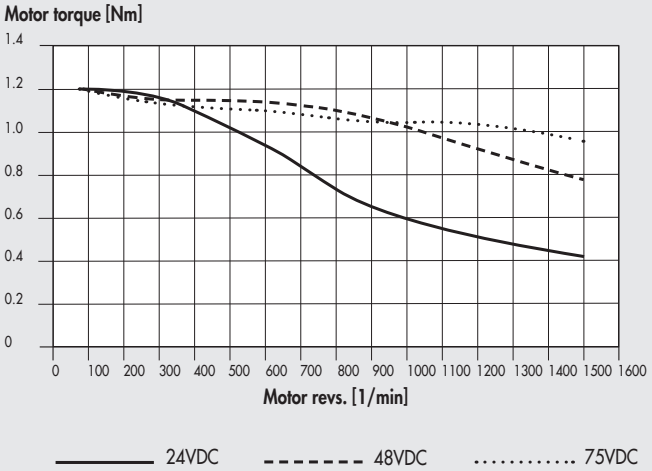
METAL WORK PNEUMATIC

STEPPING motor code **37M1120001**



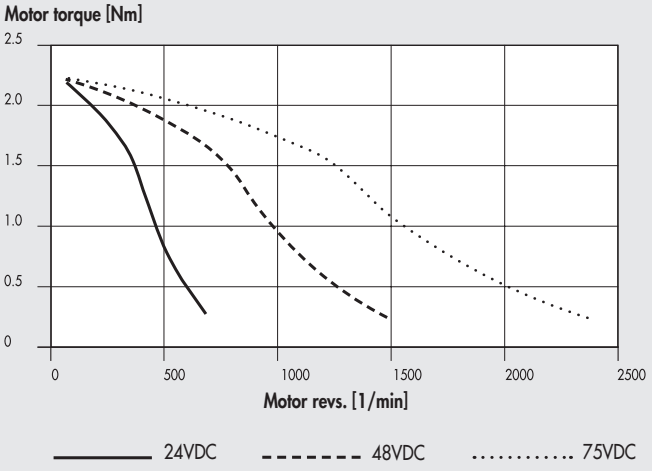
TECHNICAL DATA		MOTOR 37M1120001
Motor type		STEPPING
Nominal torque	Nm	**1.2**
Coupling flange		**NEMA 23**
Base step angle		1.8°±0.09°
Bipolar current	A	5.6
Resistance	Ω	0.3
Inductance	mH	0.85
Bipolar holding torque	Nm	1.65
Rotor inertia	kgmm²	36
Theoretical acceleration	rad · s⁻²	45800
Back E.M.F.	V/krpm	23
Mass	kg	1
Degree of protection		IP43

STEPPING motor code **37M1220000**



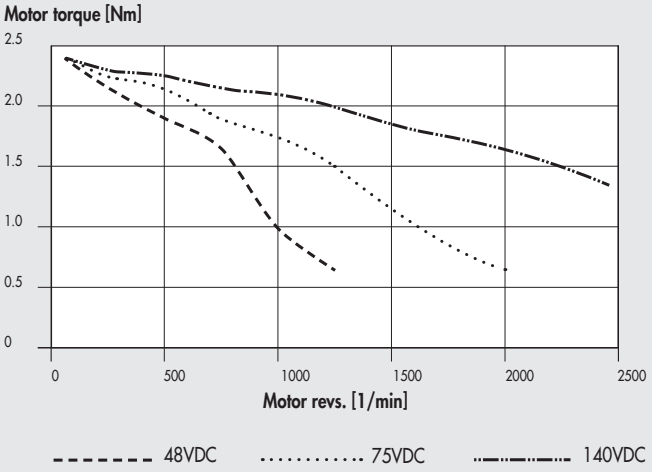
TECHNICAL DATA		MOTOR 37M1220000
Motor type		STEPPING
Nominal torque	Nm	**1.2**
Coupling flange (square)	mm	**60**
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm²	44
Mass	kg	1.28
Degree of protection		IP65
CABLE		
Power cable for stepping motors with brake, 1 metre		supplied

STEPPING motor code **37M1230000**



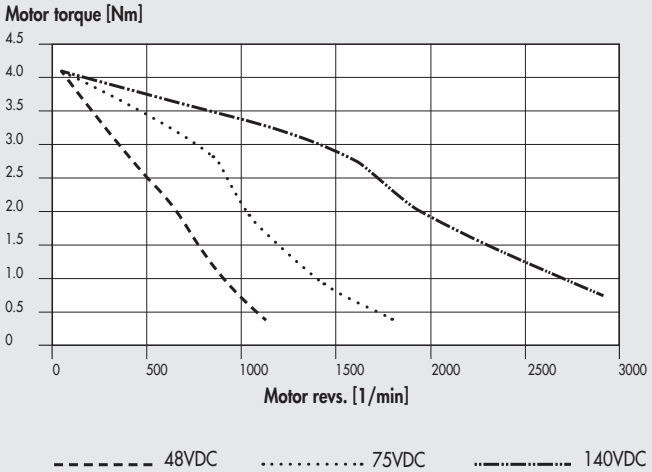
TECHNICAL DATA		MOTOR 37M1230000
Motor type		STEPPING
Nominal torque	Nm	**2.2**
Coupling flange (square)	mm	**60**
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.65
Inductance	mH	2.4
Bipolar holding torque	Nm	3
Rotor inertia	kgmm²	84
Theoretical acceleration	rad · s⁻²	35700
Back E.M.F.	V/krpm	75
Mass	kg	1.4
Degree of protection		IP40

STEPPING motor code **37M1430000**



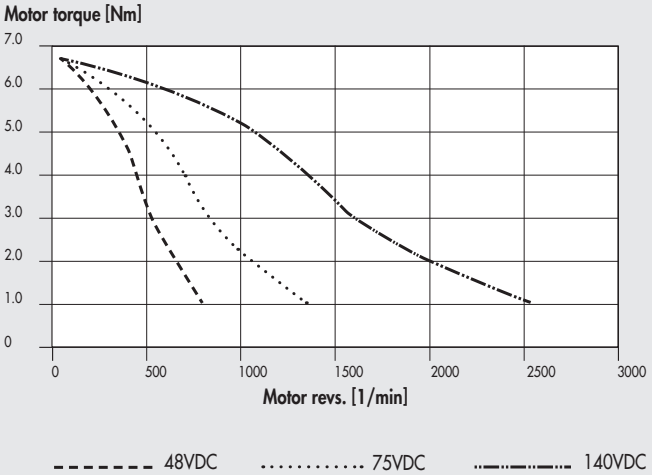
TECHNICAL DATA		MOTOR 37M1430000
Motor type		STEPPING
Nominal torque	Nm	**2.4**
Coupling flange		**NEMA 34**
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.3
Inductance	mH	1.65
Bipolar holding torque	Nm	3
Rotor inertia	kgmm²	145
Theoretical acceleration	rad · s⁻²	20600
Back E.M.F.	V/krpm	50
Mass	kg	1.5
Degree of protection		IP43

STEPPING motor code **37M1440000**



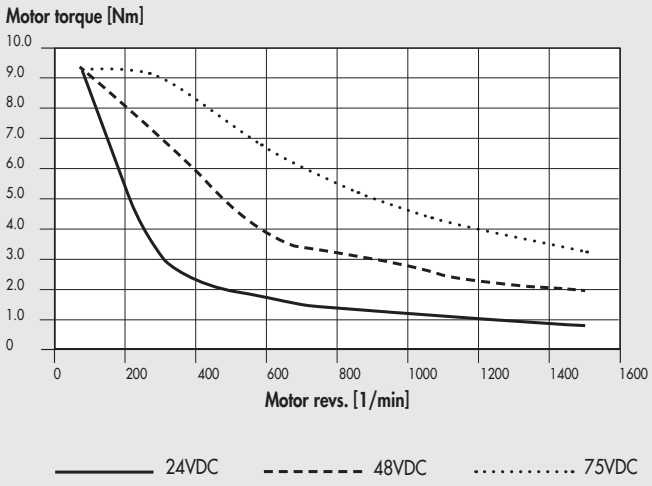
TECHNICAL DATA		MOTOR 37M1440000
Motor type		STEPPING
Nominal torque	Nm	**4.2**
Coupling flange		**NEMA 34**
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.35
Inductance	mH	2.7
Bipolar holding torque	Nm	5.6
Rotor inertia	kgmm²	290
Theoretical acceleration	rad · s⁻²	19300
Back E.M.F.	V/krpm	93
Mass	kg	2.5
Degree of protection		IP43

STEPPING motor code **37M1450000**



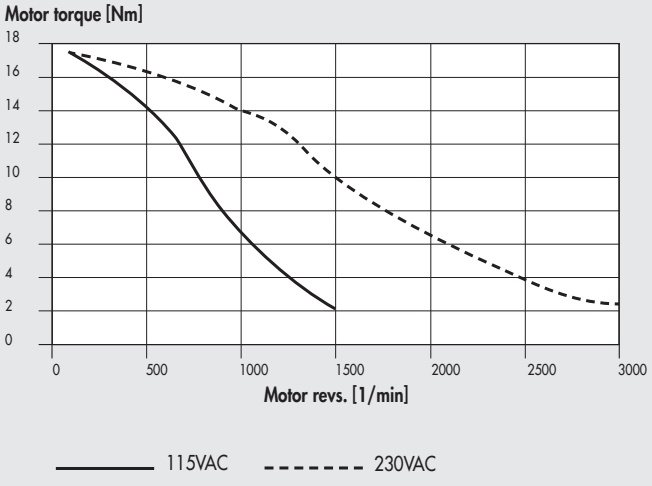
TECHNICAL DATA		MOTOR 37M1450000
Motor type		STEPPING
Nominal torque	Nm	**6.7**
Coupling flange		**NEMA 34**
Base step angle		1.8°±0.09°
Bipolar current parallel	A	6
Resistance	Ω	0.46
Inductance	mH	3.8
Bipolar holding torque	Nm	9.2
Rotor inertia	kgmm²	450
Theoretical acceleration	rad · s⁻²	20500
Back E.M.F.	V/krpm	161
Mass	kg	4
Certifications		UL, CSA, CE, RoHS
Insulation voltage		250VAC (350VDC)
Degree of protection		IP43 - F

STEPPING motor code **37M1470000**



TECHNICAL DATA		MOTOR 37M1470000
Motor type		STEPPING
Nominal torque	Nm	**9.3**
Coupling flange		**NEMA 34**
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	kgmm²	392
Mass	kg	4.2
Degree of protection		IP40

STEPPING motor code **37M1890000**



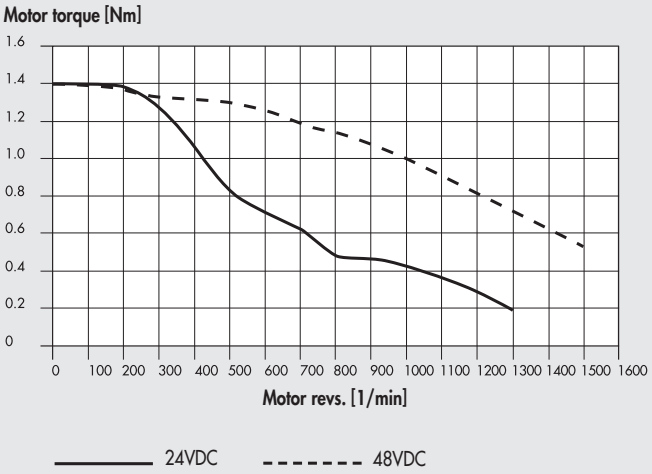
TECHNICAL DATA		MOTOR 37M1890000
Motor type		STEPPING
Nominal torque	Nm	**17.5**
Coupling flange		**NEMA 42**
Base step angle		1.8°±0.09°
Bipolar current	A	6
Resistance	Ω	0.63
Inductance	mH	8
Bipolar holding torque	Nm	24.6
Rotor inertia	kgmm²	2200
Theoretical acceleration	rad · s⁻²	11100
Back E.M.F.	V/krpm	410
Mass	kg	10
Degree of protection		IP43

NOTES

STEPPING MOTORS WITH ENCODER

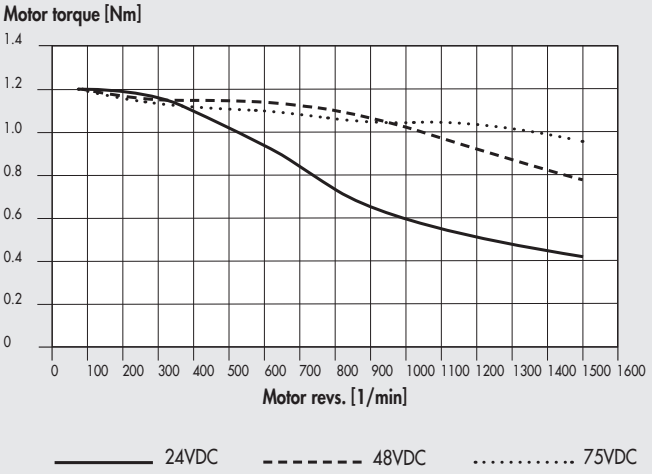
TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH ENCODER

STEPPING motor + ENCODER code **37M1820000**



TECHNICAL DATA		MOTOR 37M1820000
Motor type		STEPPING + ENCODER
Nominal torque	Nm	**1.4**
Coupling flange (square)	mm	**NEMA 23**
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.42
Inductance	mH	1.7
Bipolar holding torque	Nm	2
Rotor inertia	kgmm²	43
Mass	kg	1.4
Degree of protection		IP40
ENCODER		
Number of outputs		2 A / B (differential)
Resolution	positions per rev	1000
Supply voltage	VDC	5±10%
CABLES		
Encoder cable for stepping motors with brake, 5 metres		**37C1250001**
Power cable for stepping motors with brake, 5 metres		**37C1150000**
Encoder cable for stepping motors with brake, 10 metres		**37C1200003**
Power cable for stepping motors with brake, 10 metres		**37C1100000**

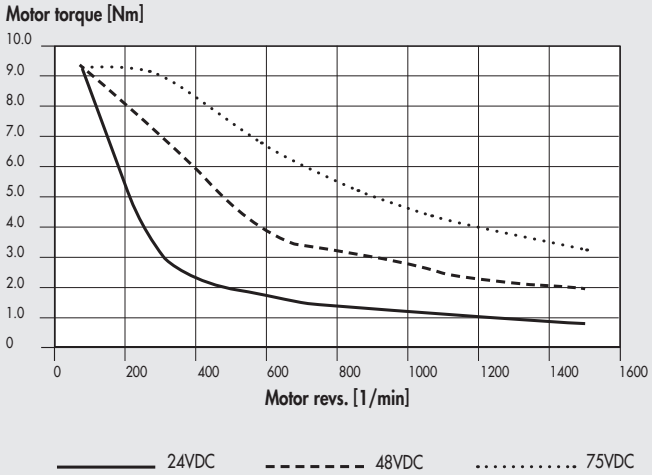
STEPPING motor + ENCODER code **37M8220000**



TECHNICAL DATA		MOTOR 37M8220000
Motor type		STEPPING + ENCODER
Nominal torque	Nm	**1.2**
Coupling flange (square)	mm	**60**
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm²	44
Mass	kg	1.28
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

METAL WORK PNEUMATIC

STEPPING motor with ENCODER code **37M8470000**



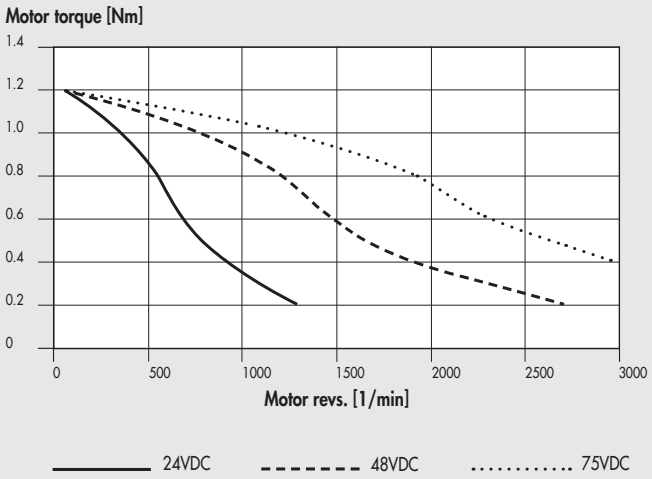
TECHNICAL DATA		MOTOR 37M8470000
Motor type		STEPPING with ENCODER
Nominal torque	Nm	**9.3**
Coupling flange		**NEMA 34**
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	kgmm²	392
Mass	kg	4.3
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

NOTES

STEPPING MOTORS WITH BRAKE

TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH BRAKE

STEPPING motor with BRAKE code **37M5120000**



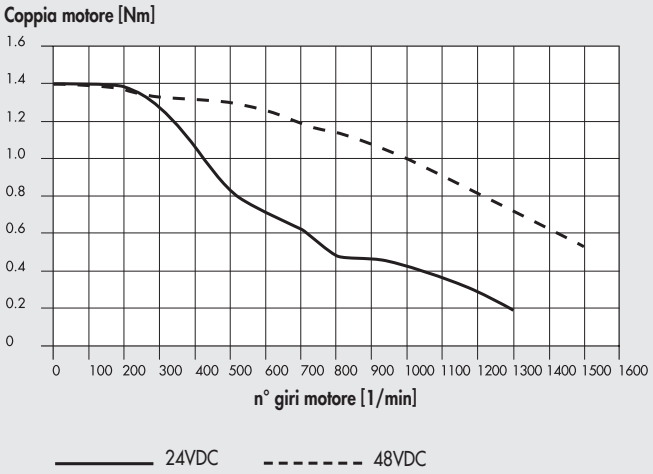
TECHNICAL DATA		MOTOR 37M5120000
Motor type		STEPPING with BRAKE
Nominal torque	Nm	**1.2**
Coupling flange		**NEMA 23**
Base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.48
Inductance	mH	2.2
Bipolar holding torque	Nm	1.65
Rotor inertia	$kgmm^2$	36
Theoretical acceleration	$rad \cdot s^{-2}$	45800
Back E.M.F.	V/krpm	31
Mass	kg	1.5
Degree of protection		IP20
BRAKE		
Braking torque	Nm	3.3
Duty Cycle		50% max
Supply voltage	VDC	24
Power consumption	W	18
Connecting time	ms	300

NOTES

STEPPING MOTORS WITH BRAKE + ENCODER

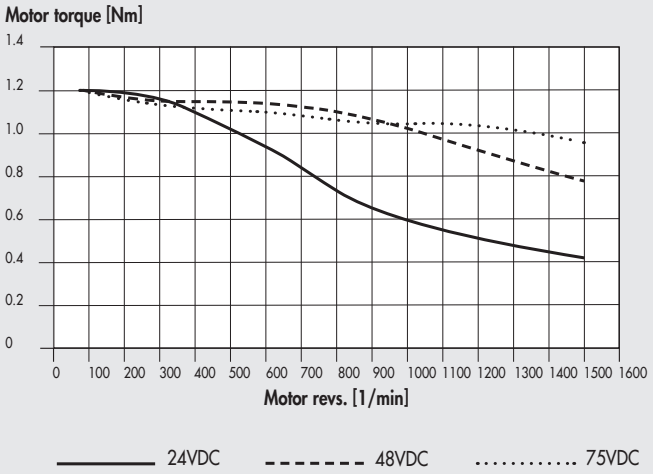
TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH BRAKE + ENCODER

STEPPING motor with BRAKE + ENCODER code **37M1320000**



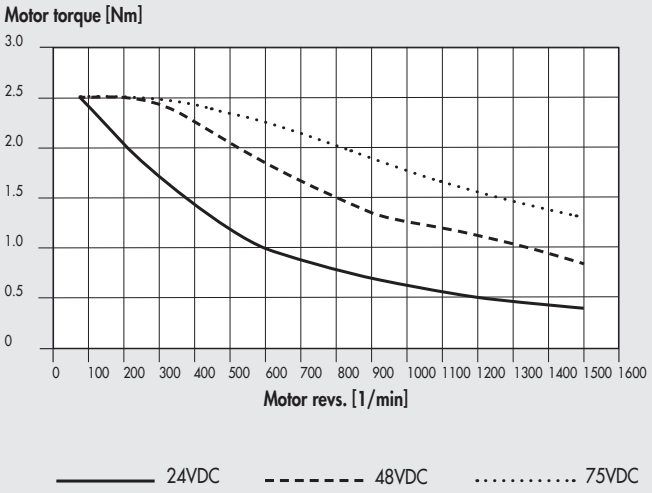
TECHNICAL DATA		MOTOR 37M1320000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	**1.4**
Coupling flange (square)	mm	**NEMA 23**
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.4
Inductance	mH	1.8
Bipolar holding torque	Nm	2
Rotor inertia	kgmm²	48
Mass	kg	1.8
Degree of protection		IP40
ENCODER		
Number of outputs		2 A / B (differential)
Resolution	positions per rev	1000
Supply voltage	VDC	5±10%
BRAKE		
Supply voltage	VDC	24±10%
Braking torque	Nm	2
Power consumption	W	11
CABLES		
Encoder cable for stepping motors with brake, 5 metres		**37C1250001**
Power cable for stepping motors with brake, 5 metres		**37C1150000**
Encoder cable for stepping motors with brake, 10 metres		**37C1200003**
Power cable for stepping motors with brake, 10 metres		**37C1100000**

STEPPING motor with BRAKE + ENCODER code **37M3220000**



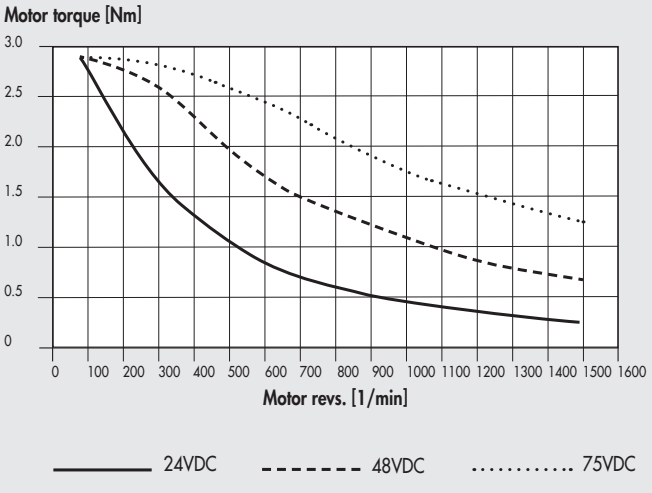
TECHNICAL DATA		MOTOR 37M3220000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	**1.2**
Coupling flange (square)	mm	**60**
Base step angle		1.8°
Current	A	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm²	44
Mass	kg	1.28
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	2
Power consumption	W	11
Connecting time	ms	6
Delay time	ms	2
Disconnection time	ms	25
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

STEPPING motor with BRAKE + ENCODER code **37M3230000**



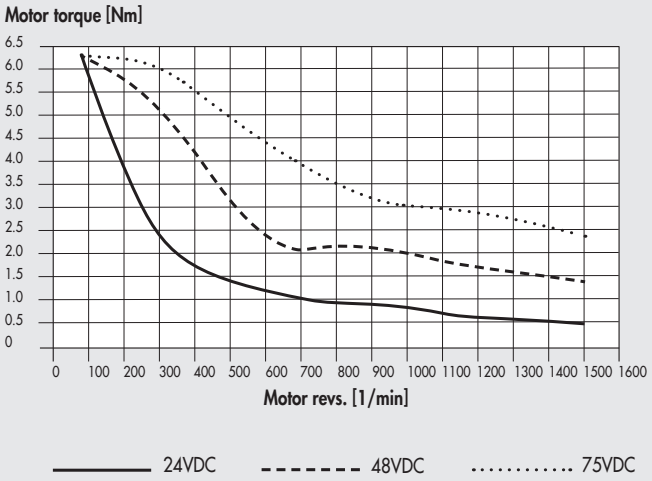
TECHNICAL DATA		MOTOR 37M3230000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	**2.5**
Coupling flange (square)	mm	**60**
Base step angle		1.8°
Bipolar current	A	5
Resistance	Ω	0.6
Inductance	mH	2.8
Bipolar holding torque	Nm	3.5
Rotor inertia	kgmm²	92
Mass	kg	1.8
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	2
Power consumption	W	11
Connecting time	ms	6
Delay time	ms	2
Disconnection time	ms	25
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

STEPPING motor with BRAKE + ENCODER code **37M3430000**



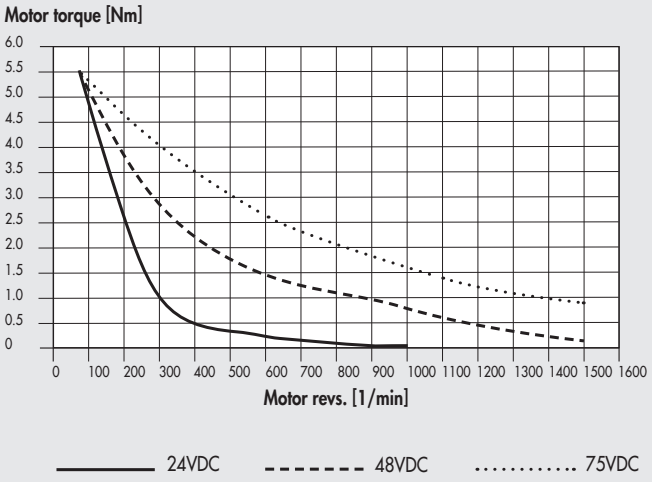
TECHNICAL DATA		MOTOR 37M3430000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	**2.9**
Coupling flange		**NEMA 34**
Base step angle		1.8°
Bipolar current	A	6
Resistance	Ω	0.4
Inductance	mH	3.2
Bipolar holding torque	Nm	4
Rotor inertia	kgmm²	131
Mass	kg	2.5
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

STEPPING motor with BRAKE + ENCODER code **37M3450000**



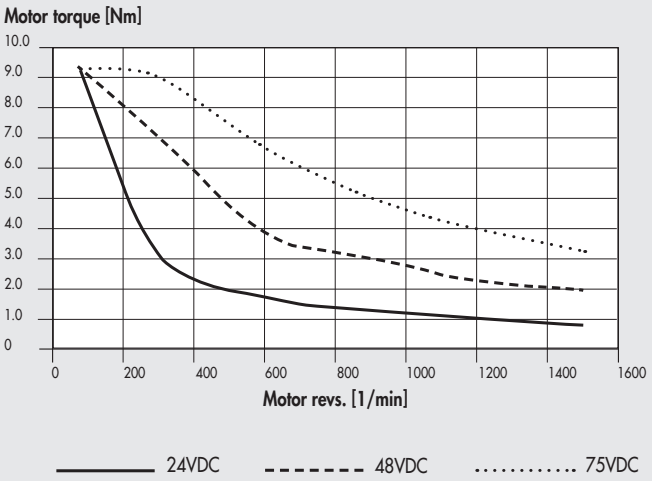
TECHNICAL DATA		MOTOR 37M3450000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	**6.3**
Coupling flange		**NEMA 34**
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.2
Inductance	mH	1.4
Bipolar holding torque	Nm	9.5
Rotor inertia	kgmm²	261
Mass	kg	3.7
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

STEPPING motor with BRAKE + ENCODER code **37M3460000**



TECHNICAL DATA		MOTOR 37M3460000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	**5.5**
Coupling flange		**NEMA 34**
Base step angle		1.8°
Bipolar current	A	6
Resistance	Ω	0.6
Inductance	mH	4.3
Bipolar holding torque	Nm	7.8
Rotor inertia	kgmm²	261
Mass	kg	3.7
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

STEPPING motor with BRAKE + ENCODER code **37M3470000**



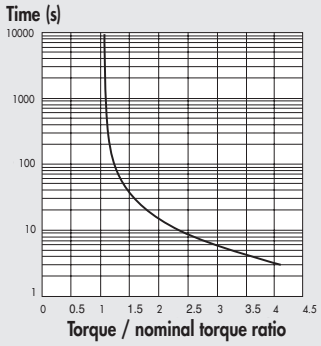
TECHNICAL DATA		MOTOR 37M3470000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	**9.3**
Coupling flange		**NEMA 34**
Base step angle		1.8°
Bipolar current	A	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	$kgmm^2$	392
Mass	kg	4.9
Degree of protection		IP65
ENCODER		
Number of outputs		3 A / B / R
Resolution	positions per rev	1024
Supply voltage	VDC	18 - 30
BRAKE		
Supply voltage	VDC	24 +6% / -10%
Braking torque	Nm	9
Power consumption	W	18
Connecting time	ms	7
Delay time	ms	2
Disconnection time	ms	40
CABLES		
Encoder cable for stepping motors with brake, 3 metres		**37C1230000**
Power cable for stepping motors with brake, 3 metres		**37C1330000**
Encoder cable for stepping motors with brake, 5 metres		**37C1250000**
Power cable for stepping motors with brake, 5 metres		**37C1350000**

NOTES

BRUSHLESS MOTORS

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.

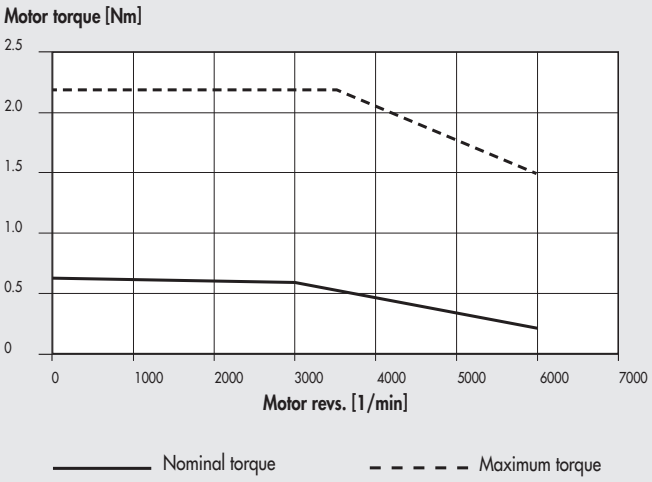


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

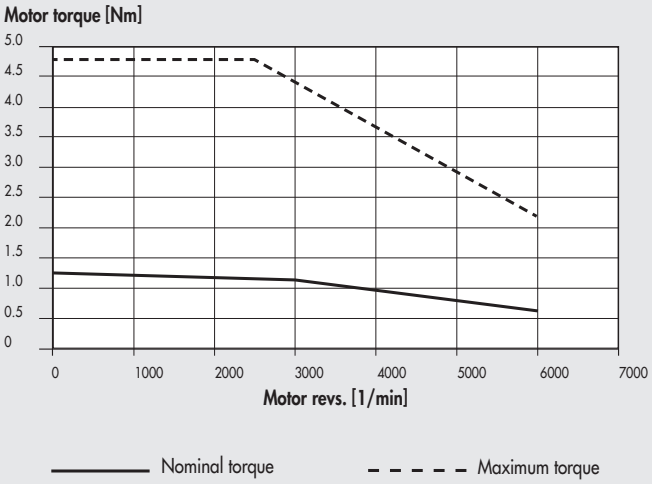
- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor code **37M2200000** +
drive code **37D2400008** (200W)



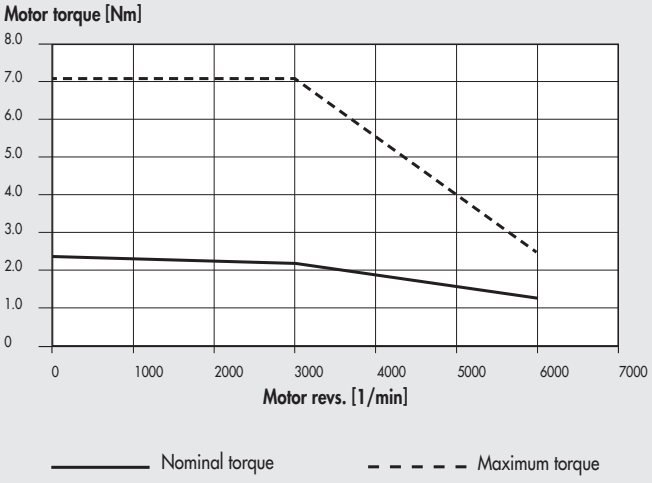
TECHNICAL DATA		MOTOR 37M2200000
Motor type		BRUSHLESS
Nominal torque	Nm	**0.64**
Coupling flange (square)	mm	**60**
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	0.686
Maximum torque	Nm	2.2
Rotor inertia	$kgmm^2$	21.9
Mass	kg	0.84
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**

BRUSHLESS motor code **37M2220000** +
drive code **37D2400008** (400W)



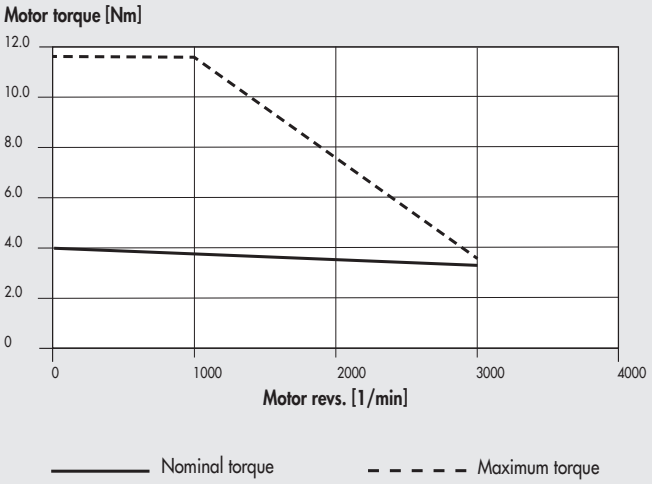
TECHNICAL DATA		MOTOR 37M2220000
Motor type		BRUSHLESS
Nominal torque	Nm	**1.27**
Coupling flange (square)	mm	**60**
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.37
Maximum torque	Nm	4.8
Rotor inertia	kgmm²	41.2
Mass	kg	1.3
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**

BRUSHLESS motor code **37M2330000** +
drive code **37D2400008** (750W)



DATI TECNICI		MOTORE 37M2330000
Motor type		BRUSHLESS
Nominal torque	Nm	**2.39**
Coupling flange (square)	mm	**80**
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	2.55
Maximum torque	Nm	7.1
Rotor inertia	kgmm²	182
Mass	kg	2.6
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**

BRUSHLESS motor code **37M2540000** +
drive code **37D2400008** (1000W)

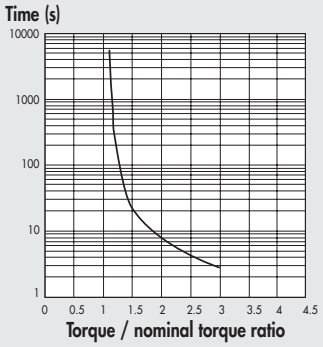


TECHNICAL DATA		MOTOR 37M2540000
Motor type		BRUSHLESS
Nominal torque	Nm	**3.18**
Coupling flange (square)	mm	**86**
Nominal power	W	1000
Nominal speed	rpm	3000
Maximum speed	rpm	3000
Stall torque	Nm	3.92
Maximum torque	Nm	11.6
Rotor inertia	$kgmm^2$	238.3
Mass	kg	3.5
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**

NOTES

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (DELTA)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.

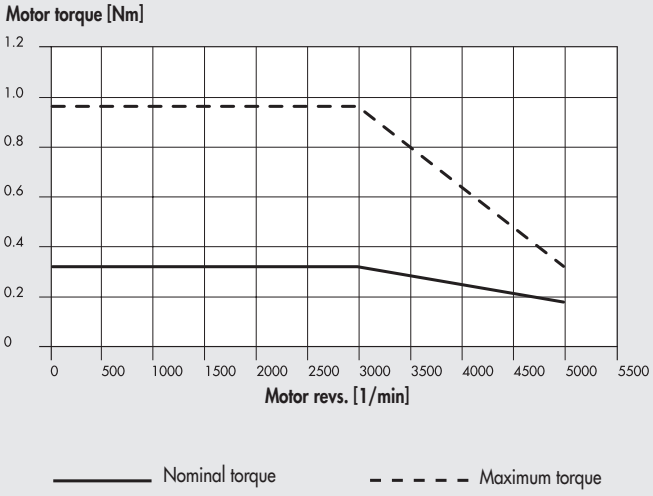


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS (DELTA)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

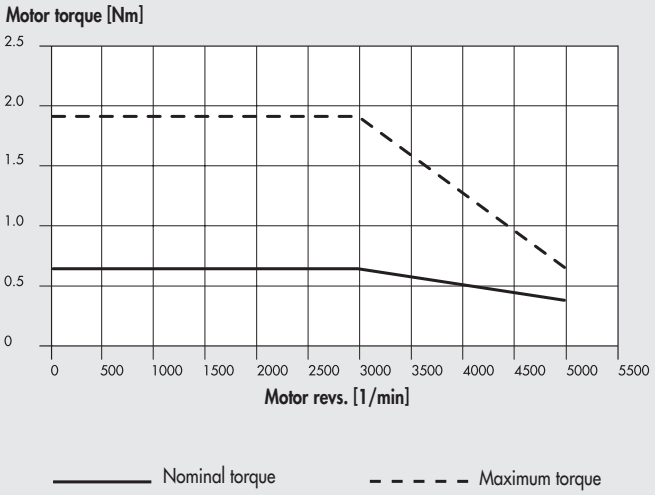
BRUSHLESS motor code **37M2000000** +
drive code **37D2100000** (100W)



TECHNICAL DATA		MOTOR 37M2000000
Motor type		BRUSHLESS
Nominal torque	Nm	**0.32**
Coupling flange (square)	mm	**40**
Nominal power	W	100
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	0.32
Maximum torque	Nm	0.96
Rotor inertia	$kgmm^2$	3.7
Mass	kg	0.5
Encoder	imp./giro	131072 (17 bit)
Degree of protection		IP65
DRIVE	codice	**37D2100000**
CABLES		
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130002**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150002**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100003**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

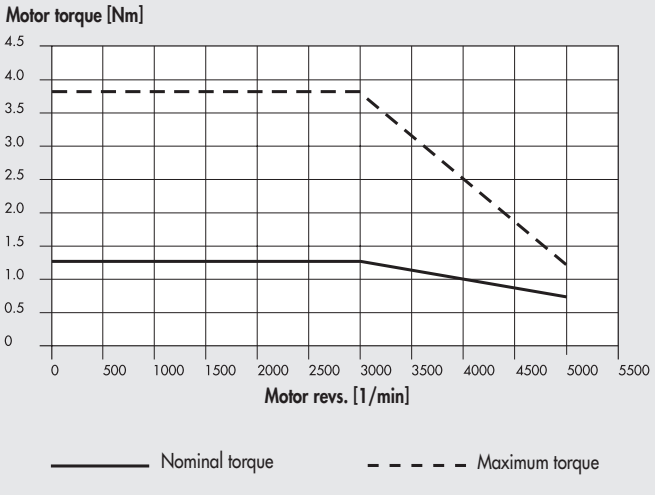
METAL WORK PNEUMATIC

BRUSHLESS motor code **37M2200001** +
drive code **37D2200001** (200W)



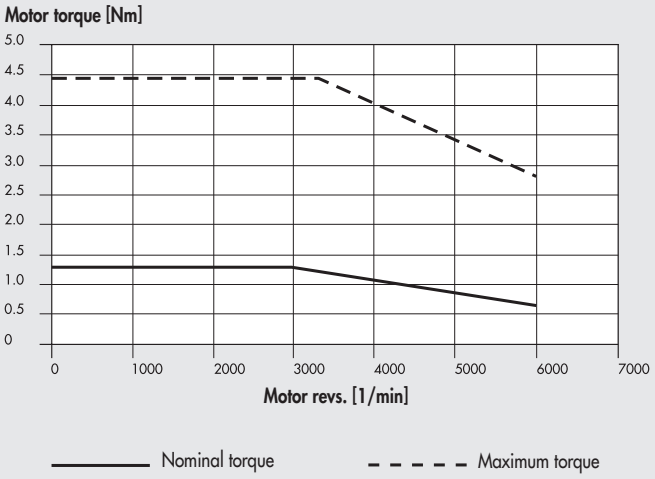
TECHNICAL DATA		MOTOR 37M2200001
Motor type		BRUSHLESS
Nominal torque	Nm	**0.64**
Coupling flange (square)	mm	**60**
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	0.64
Maximum torque	Nm	1.92
Rotor inertia	kgmm^2	17.7
Mass	kg	1.2
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	**37D2200001**
CABLES		
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130002**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150002**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100003**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

BRUSHLESS motor code **37M2220001** +
drive code **37D2300000** (400W)



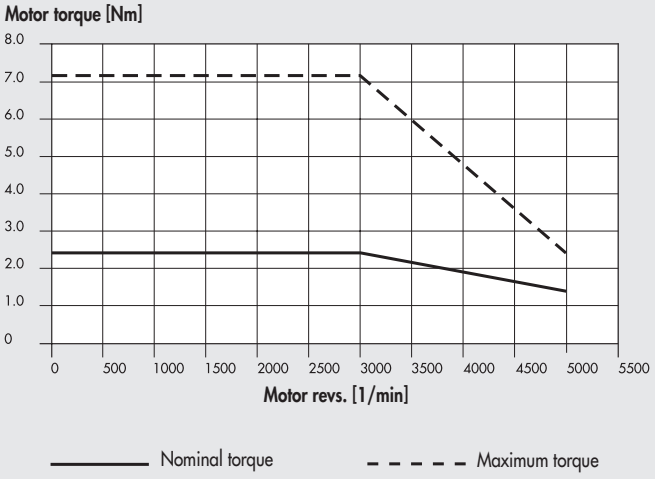
TECHNICAL DATA		MOTOR 37M2220001
Motor type		BRUSHLESS
Nominal torque	Nm	**1.27**
Coupling flange (square)	mm	**60**
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	1.27
Maximum torque	Nm	3.82
Rotor inertia	kgmm^2	27.7
Mass	kg	1.6
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	**37D2300000**
CABLES		
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130002**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150002**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100003**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

BRUSHLESS motor code **37M2220002** +
drive code **37D2300002** (400W)



TECHNICAL DATA		MOTOR 37M2220002
Motor type		BRUSHLESS B3
Nominal torque	Nm	**1.27**
Coupling flange (square)	mm	**60**
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.3
Maximum torque	Nm	4.45
Rotor inertia	kgmm²	25.4
Mass	kg	1.2
Encoder	pulse/rev	16777216 (24 bit)
Degree of protection		IP67
DRIVE	code	**37D2300002**
CABLES		
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130002**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230006**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150002**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250007**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100003**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200006**

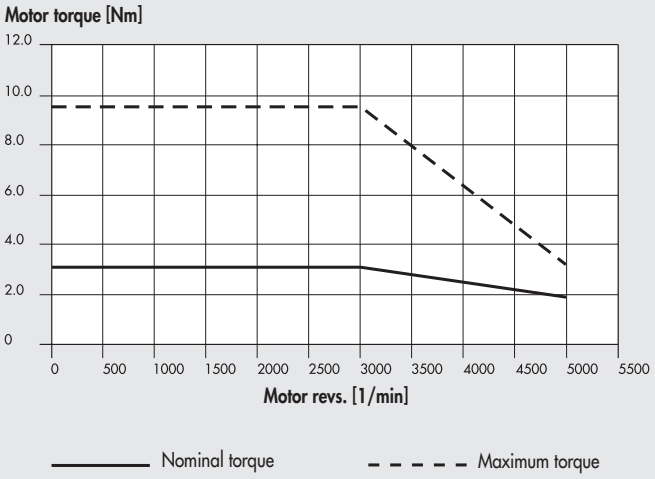
BRUSHLESS motor code **37M2330001** +
drive code **37D2400007** (750W)



TECHNICAL DATA		MOTOR 37M2330001
Motor type		BRUSHLESS
Nominal torque	Nm	**2.39**
Coupling flange (square)	mm	**80**
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	2.39
Maximum torque	Nm	7.17
Rotor inertia	kgmm²	113
Mass	kg	3
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
DRIVE	code	**37D2400007**
CABLES		
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130002**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150002**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100003**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

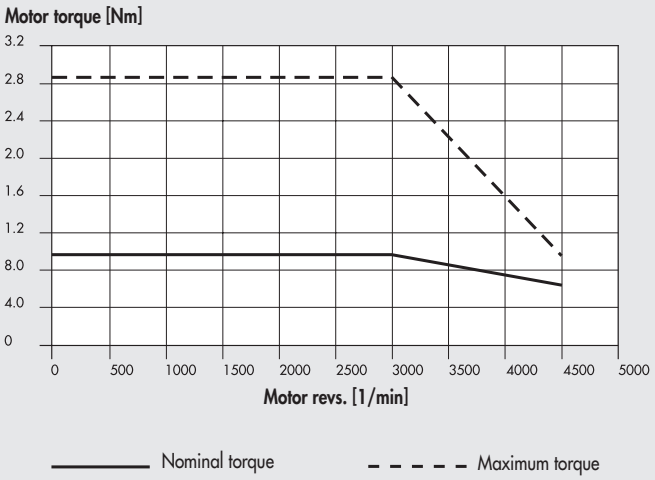
METAL WORK PNEUMATIC

BRUSHLESS motor code **37M2640000** +
drive code **37D2400006** (1000W)



TECHNICAL DATA		MOTOR 37M2640000
Motor type		BRUSHLESS
Nominal torque	Nm	**3.18**
Coupling flange (square)	mm	**100**
Nominal power	W	1000
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	3.18
Maximum torque	Nm	9.54
Rotor inertia	kgmm²	265
Mass	kg	4.3
Encoder	pulse/rev	131072 (17bit)
Degree of protection		IP65
DRIVE	code	**37D2400006**
CABLES		
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130006**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230007**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150006**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250008**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100006**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200007**

BRUSHLESS motor code **37M2770000** +
drive code **37D2600001** (3000W)



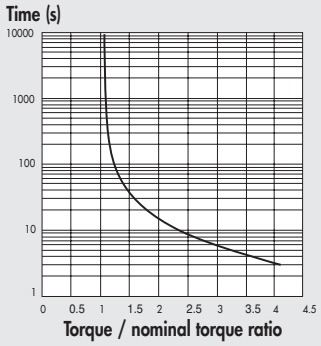
TECHNICAL DATA		MOTOR 37M2770000
Motor type		BRUSHLESS
Nominal torque	Nm	**9.55**
Coupling flange (square)	mm	**130**
Nominal power	W	3000
Nominal speed	rpm	3000
Maximum speed	rpm	4500
Stall torque	Nm	9.55
Maximum torque	Nm	28.65
Rotor inertia	kgmm²	1270
Mass	kg	7.8
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
DRIVE	code	**37D2600001**
CABLES		
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130006**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230007**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150006**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250008**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100006**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200007**

NOTES

BRUSHLESS MOTORS WITH BRAKE

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.

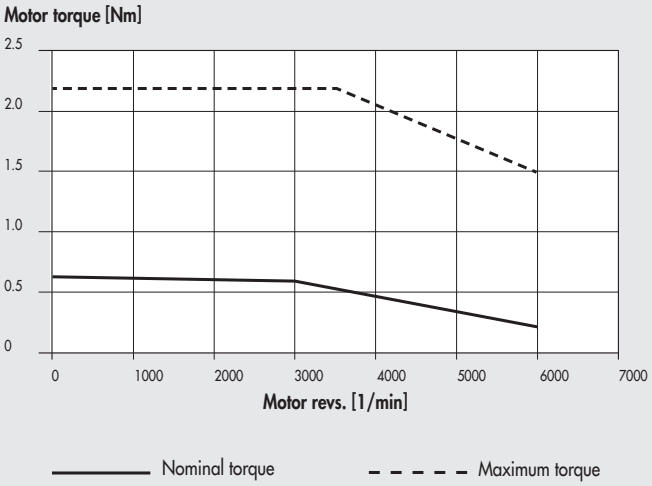


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS WITH BRAKE (SANYO DENKI)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

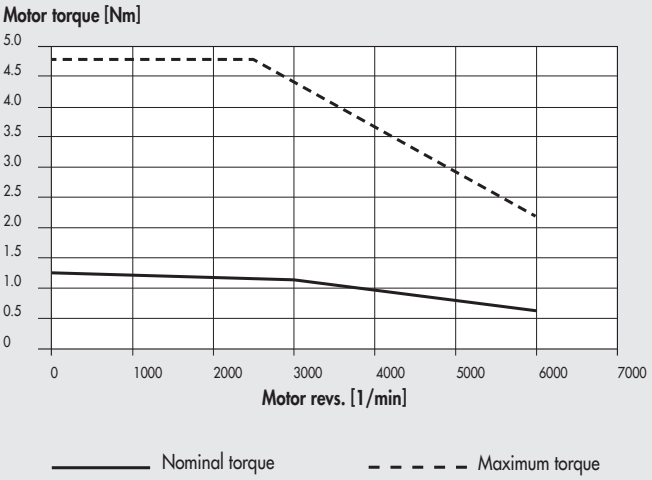
- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor with BRAKE code **37M4200000** + drive code **37D2400008** (200W)



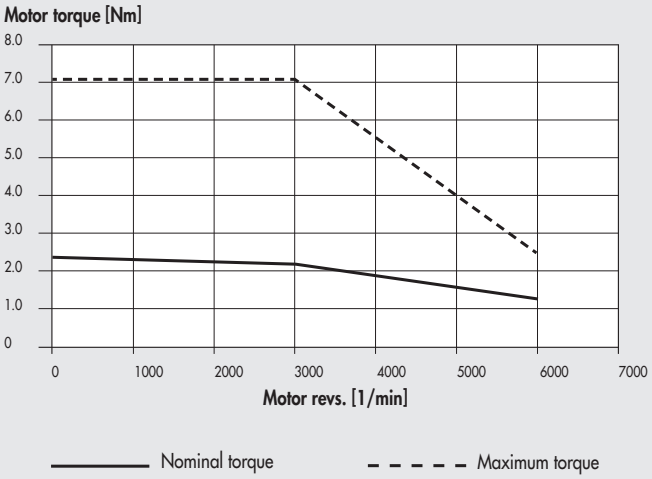
TECHNICAL DATA		MOTOR 37M4200000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**0.64**
Coupling flange (square)	mm	**60**
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	0.686
Maximum torque	Nm	2.2
Rotor inertia	$kgmm^2$	27.9
Mass	kg	1.23
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.37 min
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-brake**, **dynamic** cable, 3 metres		**37C2330000**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-brake**, **dynamic** cable, 5 metres		**37C2350000**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**
Brushless **motor-brake**, **dynamic** cable, 10 metres		**37C2310000**

BRUSHLESS motor with BRAKE code **37M4220000** + drive code **37D2400008** (400W)



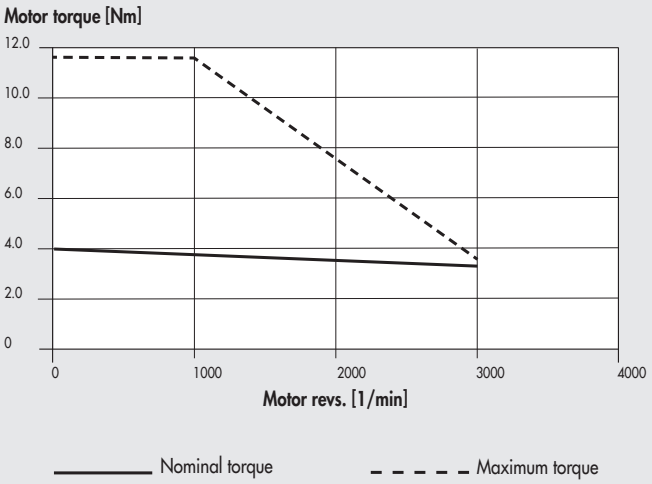
TECHNICAL DATA		MOTOR 37M4220000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**1.27**
Coupling flange (square)	mm	**60**
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.37
Maximum torque	Nm	4.8
Rotor inertia	kgmm²	47.2
Mass	kg	1.69
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.37 min
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-brake**, **dynamic** cable, 3 metres		**37C2330000**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-brake**, **dynamic** cable, 5 metres		**37C2350000**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**
Brushless **motor-brake**, **dynamic** cable, 10 metres		**37C2310000**

BRUSHLESS motor with BRAKE code **37M4330000** + drive code **37D2400008** (750W)



TECHNICAL DATA		MOTOR 37M4330000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**2.39**
Coupling flange (square)	mm	**80**
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	2.55
Maximum torque	Nm	7.1
Rotor inertia	kgmm²	207
Mass	kg	2.19
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	2.55 min
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-brake**, **dynamic** cable, 3 metres		**37C2330000**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-brake**, **dynamic** cable, 5 metres		**37C2350000**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**
Brushless **motor-brake**, **dynamic** cable, 10 metres		**37C2310000**

BRUSHLESS motor with BRAKE code **37M4540000** + drive code **37D2400008** (1000W)

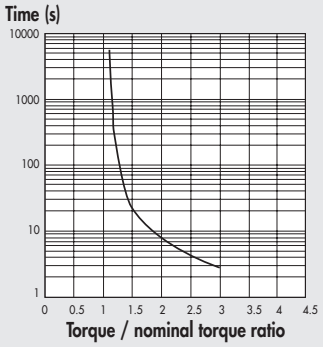


TECHNICAL DATA		MOTOR 37M4540000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**3.18**
Coupling flange (square)	mm	**86**
Nominal power	W	1000
Nominal speed	rpm	3000
Maximum speed	rpm	3000
Stall torque	Nm	3.92
Maximum torque	Nm	11.6
Rotor inertia	$kgmm^2$	272.6
Mass	kg	4.34
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	3.92 min
DRIVE	code	**37D2400008**
CABLES		
Brushless **motor-drive**, 3 metres		**37C2130005**
Brushless **motor-drive-encoder**, 3 metres		**37C2230005**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-brake**, **dynamic** cable, 3 metres		**37C2330000**
Brushless **motor-drive**, 5 metres		**37C2150005**
Brushless **motor-drive-encoder**, 5 metres		**37C2250005**
Brushless **motor-drive**, **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-brake**, **dynamic** cable, 5 metres		**37C2350000**
Brushless **motor-drive**, **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200004**
Brushless **motor-brake**, **dynamic** cable, 10 metres		**37C2310000**

NOTES

OVERLOAD CURVES FOR ELECTRIC BRUSHLESS MOTORS (DELTA)

The torque used can exceed the nominal torque within the time limits shown in the diagram. Never exceed the maximum torque.

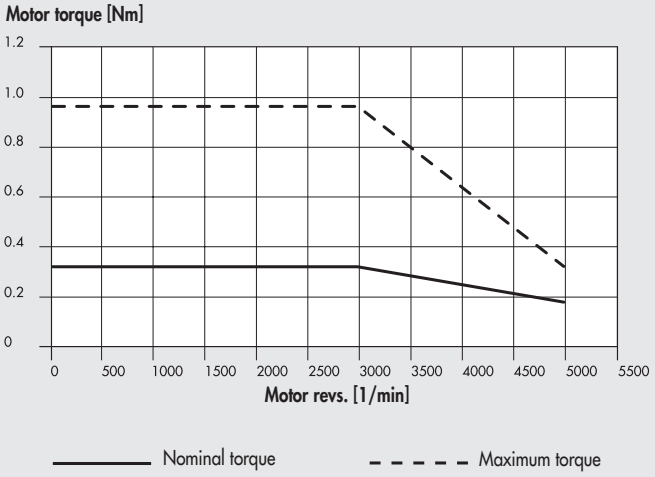


TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS WITH BRAKE (DELTA)

The following diagrams show the torque delivered by the motor with changing speed (rpm). Each diagram shows two separate curves:

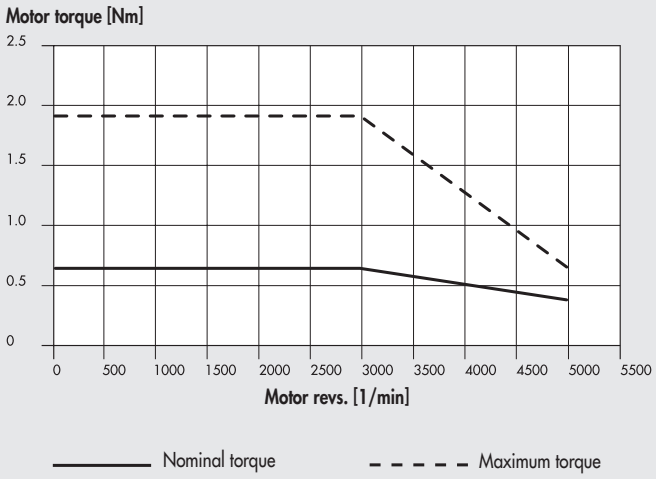
- **NOMINAL TORQUE** curve: the nominal torque delivered by the motor with a duty cycle of 100%
- **MAXIMUM TORQUE** curve: the torque delivered by the motor with a duty cycle of less than 100%

BRUSHLESS motor with BRAKE code **37M4000000** + drive code **37D2100000** (100W)



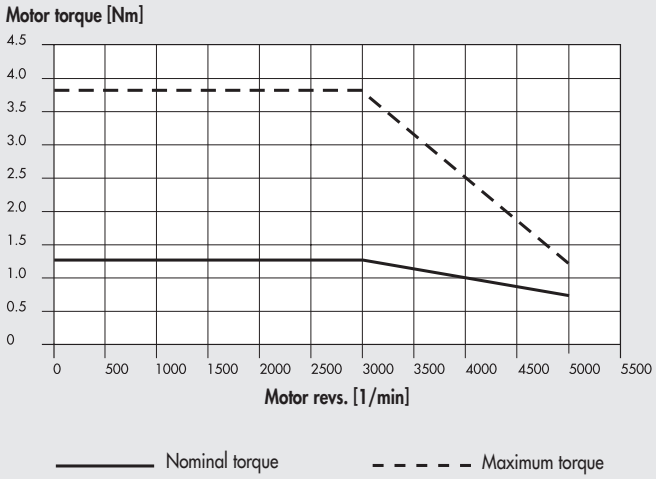
TECHNICAL DATA		MOTOR 37M4000000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**0.32**
Coupling flange (square)	mm	**40**
Nominal power	W	100
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	0.32
Maximum torque	Nm	0.96
Rotor inertia	kgmm^2	4
Mass	kg	0.8
Encoder	imp./giro	131072 (17 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	0.3
Absorption	W	7.2
DRIVE	code	**37D2100000**
CABLES		
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2730001**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2750001**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2700001**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

BRUSHLESS motor with BRAKE code **37M4200001** + drive code **37D2200001** (200W)



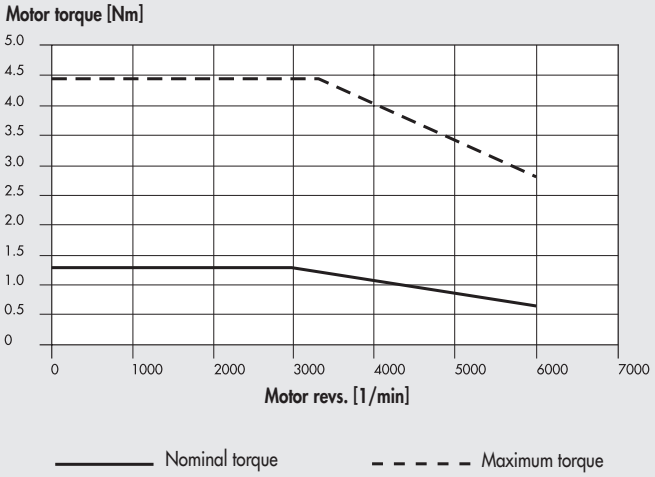
TECHNICAL DATA		MOTOR 37M4200001
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**0.64**
Coupling flange (square)	mm	**60**
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	0.64
Maximum torque	Nm	1.92
Rotor inertia	kgmm²	19.2
Mass	kg	1.5
Encoder	imp./giro	131072 (17 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.3
Absorption	W	6.5
DRIVE	code	**37D2200001**
CABLES		
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2730001**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2750001**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2700001**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

BRUSHLESS motor with BRAKE code **37M4220001** + drive code **37D2300000** (400W)



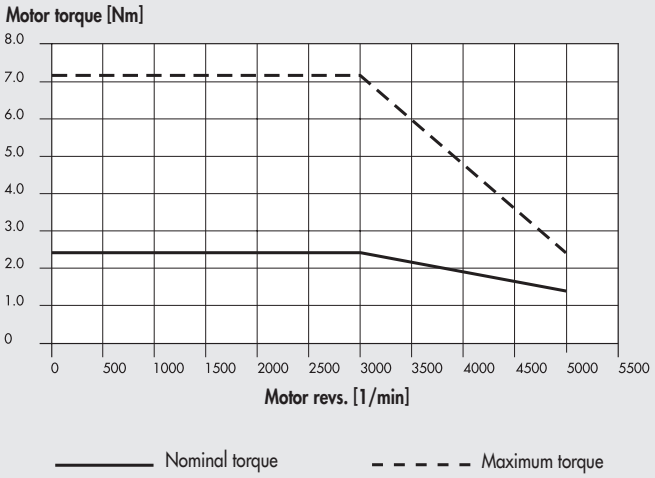
TECHNICAL DATA		MOTOR 37M4220001
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**1.27**
Coupling flange (square)	mm	**60**
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	1.27
Maximum torque	Nm	3.82
Rotor inertia	kgmm²	30
Mass	kg	2
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.3
Absorption	W	6.5
DRIVE	code	**37D2300000**
CABLES		
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2730001**
Brushless **motor-drive**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2750001**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2700001**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

BRUSHLESS motor with BRAKE code **37M4220002** + drive code **37D2300002** (400W)



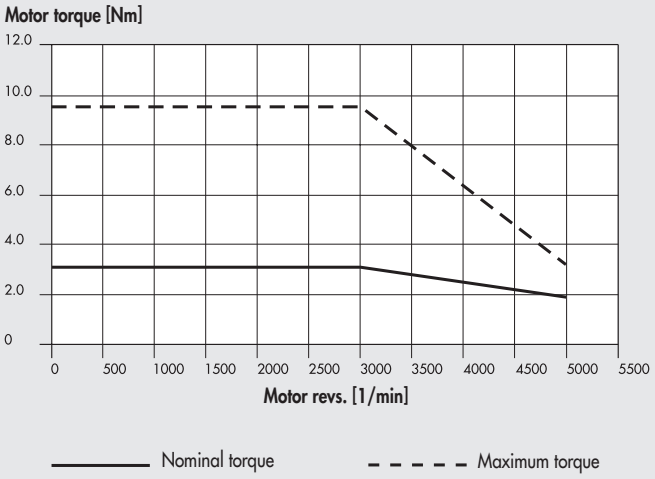
TECHNICAL DATA		MOTOR 37M4220002
Motor type		BRUSHLESS with BRAKE B3
Nominal torque	Nm	**1.27**
Coupling flange (square)	mm	**60**
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	1.3
Maximum torque	Nm	4.45
Rotor inertia	kgmm²	26.4
Mass	kg	1.6
Encoder	pulse/rev	16777216 (24 bit)
Degree of protection		IP67
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.3
Absorption	W	7.6
DRIVE	code	**37D2300002**
CABLES		
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2730001**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230006**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2750001**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250007**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2700001**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200006**

BRUSHLESS motor with BRAKE code **37M4330001** + drive code **37D2400007** (750W)



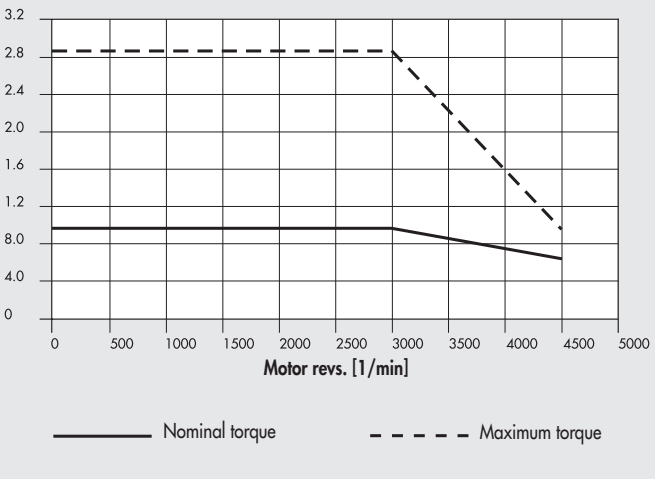
TECHNICAL DATA		MOTOR 37M4330001
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**2.39**
Coupling flange (square)	mm	**80**
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	2.39
Maximum torque	Nm	7.17
Rotor inertia	kgmm²	113
Mass	kg	3
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	2.5
Absorption	W	6.5
DRIVE	code	**37D2400007**
CABLES		
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2730001**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2750001**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2700001**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200003**

BRUSHLESS motor with BRAKE code **37M4640000** + drive code **37D2400006** (1000W)



TECHNICAL DATA		MOTOR 37M4640000
Motor type		BRUSHLESS
Nominal torque	Nm	**3.18**
Coupling flange (square)	mm	**100**
Nominal power	W	1000
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	3.18
Maximum torque	Nm	9.54
Rotor inertia	kgmm²	333
Mass	kg	4.7
Encoder	pulse/rev	131072 (17bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	10
Absorption	W	19
DRIVE	code	**37D2400006**
CABLES		
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2730002**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230007**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2750003**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250008**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2700002**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200007**

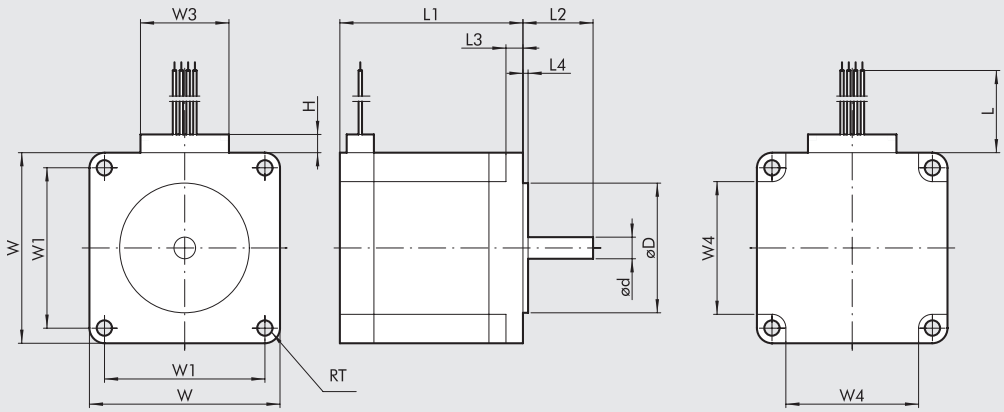
BRUSHLESS motor with BRAKE code **37M4770000** + drive code **37D2600001** (3000W)



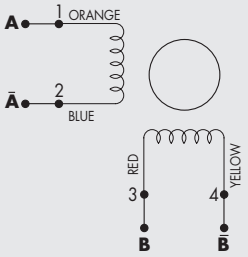
TECHNICAL DATA		MOTOR 37M4770000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	**9.55**
Coupling flange (square)	mm	**130**
Nominal power	W	3000
Nominal speed	rpm	3000
Maximum speed	rpm	4500
Stall torque	Nm	9.55
Maximum torque	Nm	28.65
Rotor inertia	kgmm²	1400
Mass	kg	9.2
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	10
Absorption	W	19
DRIVE	code	**37D2600001**
CABLES		
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2730002**
Brushless **motor-drive-encoder**, **dynamic** cable, 3 metres		**37C2230007**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2750003**
Brushless **motor-drive-encoder**, **dynamic** cable, 5 metres		**37C2250008**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2700002**
Brushless **motor-drive-encoder**, **dynamic** cable, 10 metres		**37C2200007**

NOTES

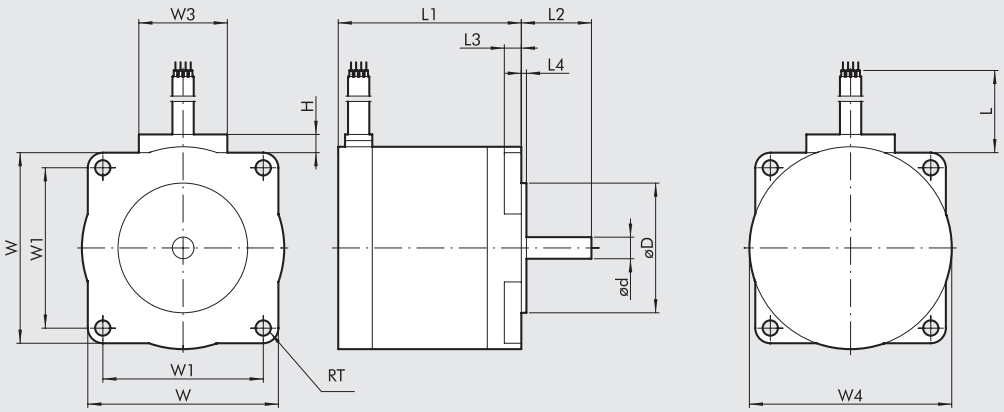
DIMENSIONS OF ELECTRIC MOTORS



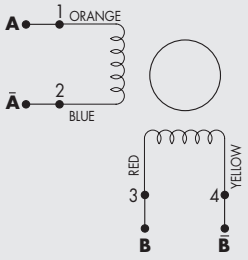
WIRING DIAGRAM



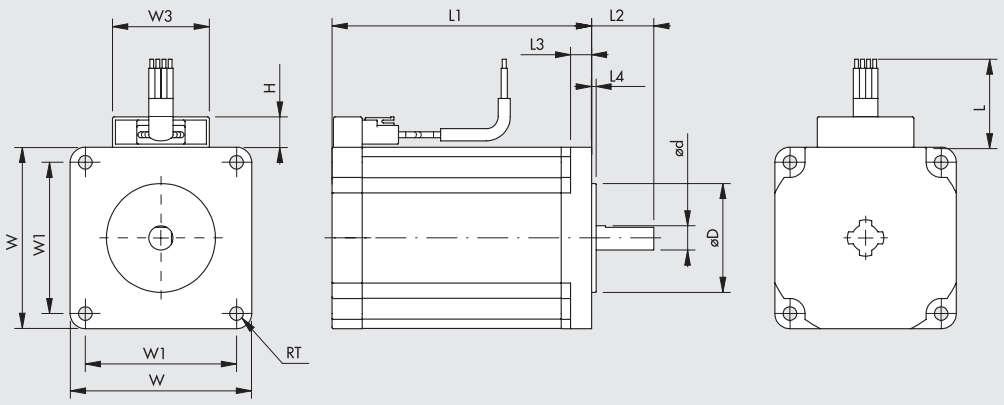
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	H	L min	L1 ±0.8	L2 ±0.5	L3 ±0.25	L4 ±0.25	RT +0.5/0	W ±0.5	W1 ±0.13	W3 max	W4 ±0.5
STEPPING	37M1110000	0.8	NEMA 23	6.35	38.1	7	305	53.8	20.6	5	1.5	4.5	56	47.14	26	39
	37M1120000	1.2	NEMA 23	6.35	38.1	7	305	75.8	20.6	5	1.5	4.5	56	47.14	26	39
	37M1120001	1.2	NEMA 23	6.35	38.1	10	305	75.8	20.6	5	1.5	4.5	56	47.14	39	39



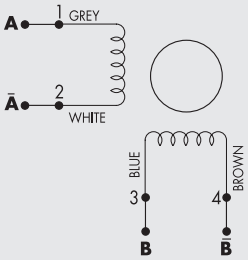
WIRING DIAGRAM



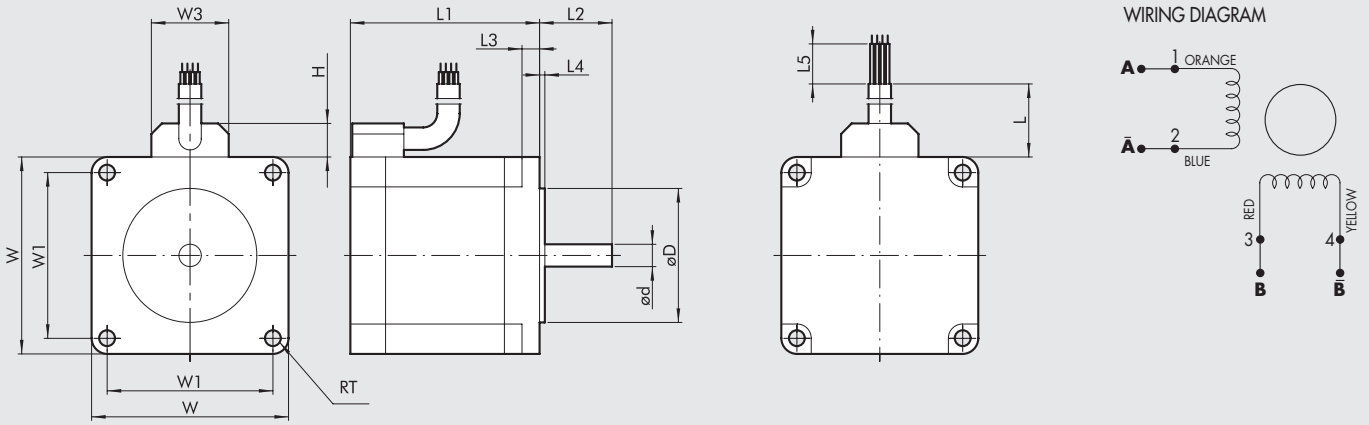
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.018	øD ±0.025	H	L min	L1	L2 ±0.5	L3 ±0.50	L4 ±0.25	RT +0.5/0	W ±0.5	W1 ±0.2	W3	W4 ±0.5
STEPPING	37M1430000	2.4	NEMA 34	9.525	73.02	10	305	62	30	4.8	1.5	5.4	82.5	69.6	37	85.8
	37M1440000	4.2	NEMA 34	12	73.02	10	305	92.2	30	4.8	1.5	5.4	82.5	69.6	37	85.8
	37M1890000	17.5	NEMA 42	16	55.52	10	305	221	35	8.6	1.5	6.9	106.4	88.9	37	106.4



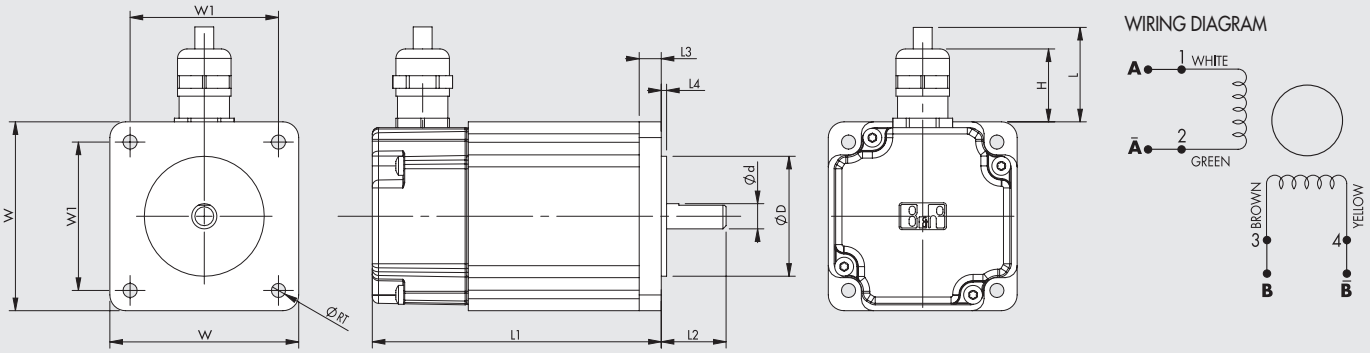
WIRING DIAGRAM



Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.018	øD ±0.025	H max	L min	L1 ±1	L2 ±0.5	L3 ±0.50	L4 ±0.25	RT +0.2	W ±0.5	W1 ±0.25	W3 max
STEPPING	37M1230000	2.2	60	8	36	10	300	86	20.6	7	1.5	4.5	60	50	32

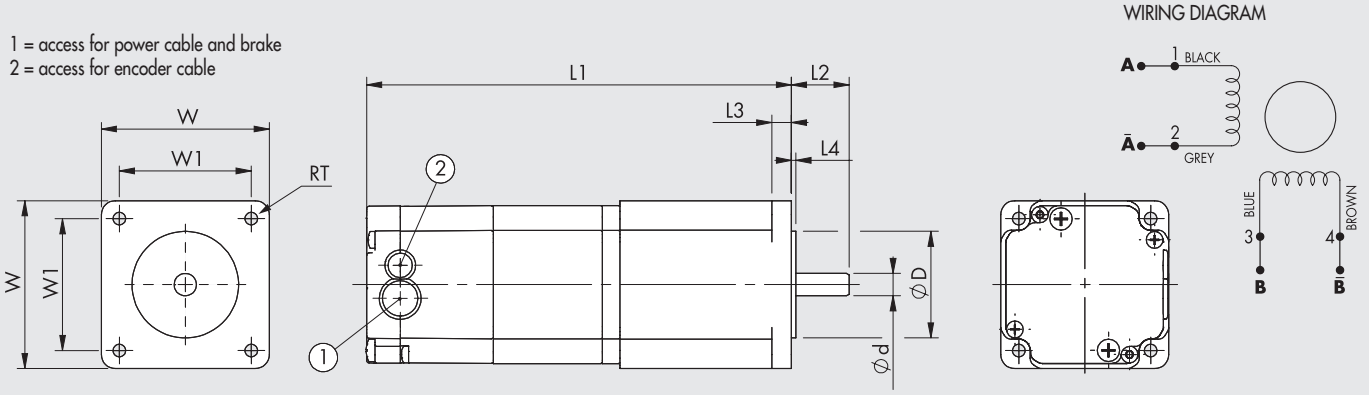


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.018	øD ±0.025	H max	L min	L1 ±1	L2 ±0.5	L3 ±0.50	L4 ±0.25	L5	RT +0.2	W ±0.5	W1 ±0.25	W3 max
STEPPING	**37M1450000**	**6.7**	**NEMA 34**	14	73.025	12	305	127	30	8	1.5	50	5.6	85.5	69.6	27



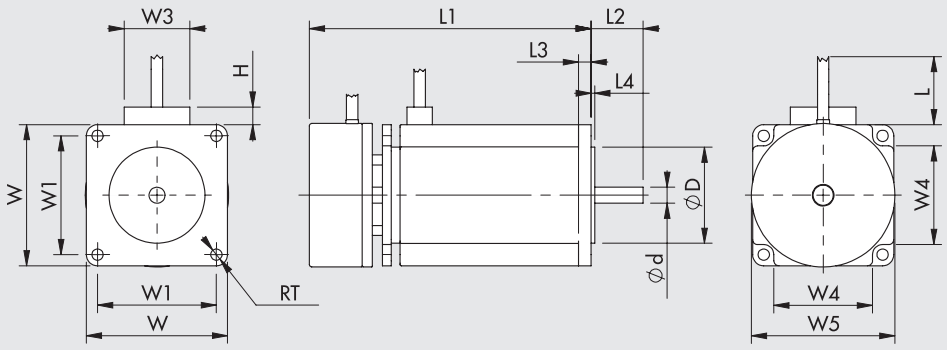
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	H	L min	L1 ±1	L2 ±0.5	L3 ±0.50	L4 ±0.25	RT +0.2	W ±0.5	W1 ±0.13
STEPPING	**37M1220000**	**1.2**	**60**	8	38.1	23	1023	91.8	20.6	7	1.6	4.5	60	47.14

1 = access for power cable and brake
2 = access for encoder cable

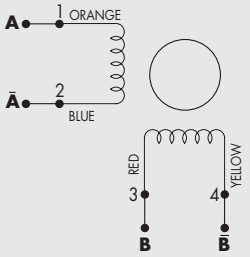


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	L1	L2 ±0.51	L3	L4	RT	W	W1 ±0.13
STEPPING	**37M1470000**	**9.3**	**NEMA 34**	12.7	73.025	130	31.75	9.91	2.03	5.6	86.6	69.6
STEPPING	**37M8220000**	**1.2**	**60**	8	38.1	106.6	20.6	7	1.6	4.5	60	47.14
+ ENCODER	**37M8470000**	**9.3**	**NEMA 34**	12.7	73.025	165.4	31.75	9.91	2.03	5.6	86.6	69.6
STEPPING	**37M3220000**	**1.2**	**60**	8	38.1	151.8	20.6	7	1.6	4.5	60	47.14
+ BRAKE	**37M3230000**	**2.5**	**60**	8	38.1	184.5	20.6	7	1.6	4.5	60	47.14
+ ENCODER	**37M3430000**	**2.9**	**NEMA 34**	12.7	73.02	156.5	31.75	9.9	2	5.6	86.6	69.6
	37M3460000	**5.5**	**NEMA 34**	12.7	73.02	188.5	31.75	9.9	2	5.6	86.6	69.6
	37M3450000	**6.3**	**NEMA 34**	12.7	73.02	188.5	31.75	9.9	2	5.6	86.6	69.6
	37M3470000	**9.3**	**NEMA 34**	12.7	73.02	220.5	31.75	9.9	2	5.6	86.6	69.6

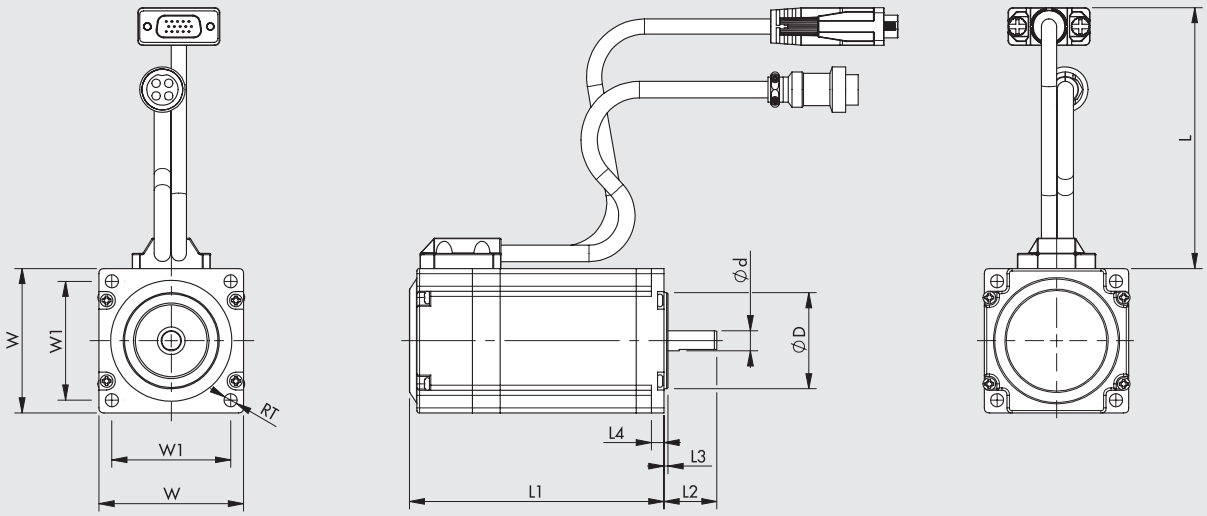
METAL WORK PNEUMATIC



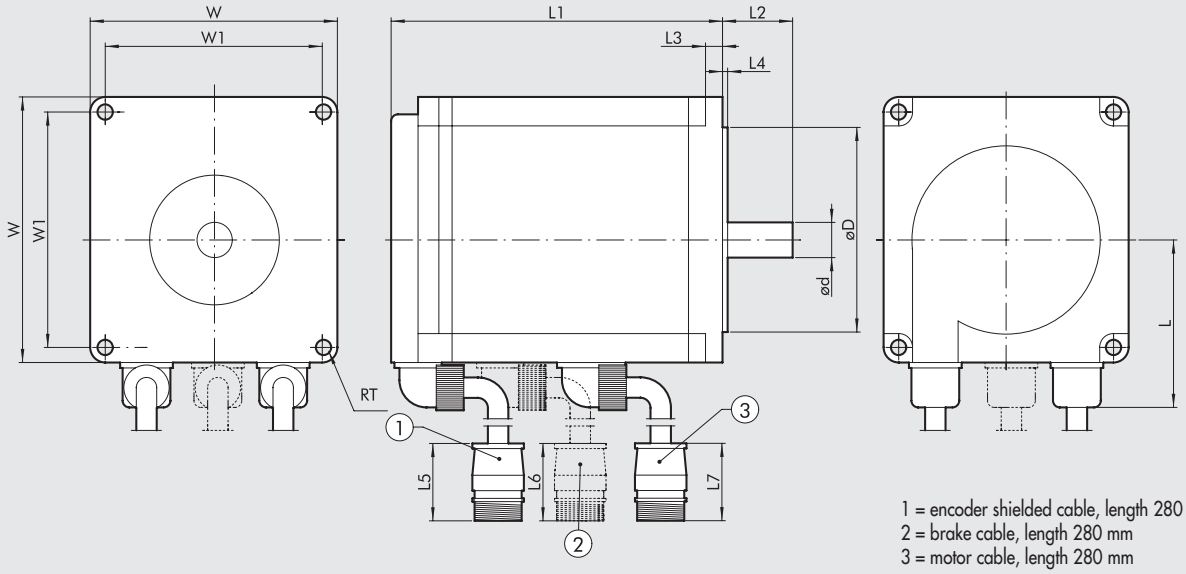
WIRING DIAGRAM



Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	H	L min	L1 ±0.8	L2 ±0.5	L3 ±0.25	L4 ±0.25	RT +0.5/0	W ±0.5	W1 ±0.13	W3 max	W4 ±0.5	W5 ±0.5
STEPPING + BRAKE	**37M5120000**	**1.2**	**NEMA 23**	6.35	38.1	7	305	111.8	20.6	5	1.5	4.5	56	47.14	26	39	56.9

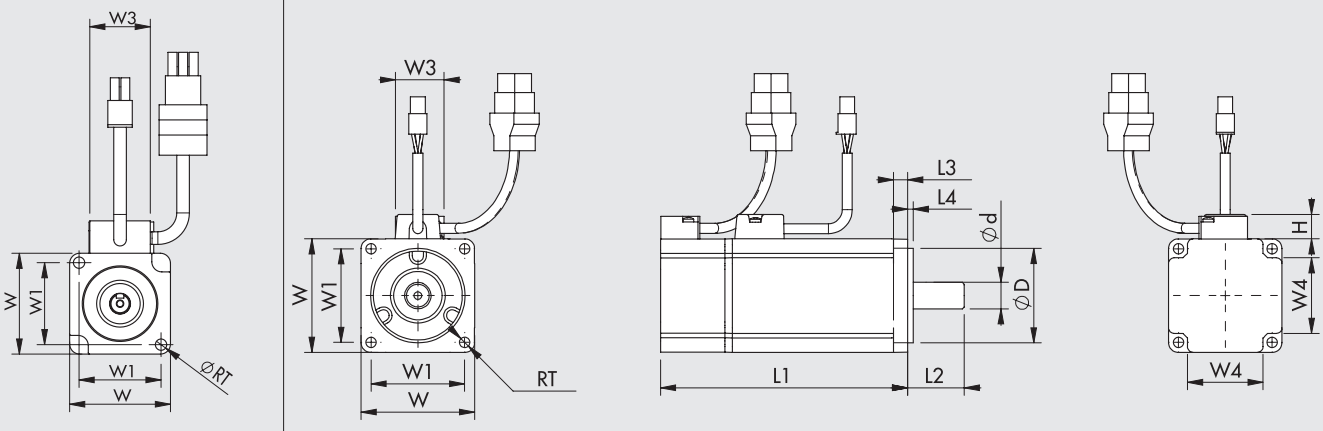


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD 0/-0.05	L	L1	L2	L3	L4	RT	W	W1 ±0.25
STEPPING + ENCODER	**37M1820000**	**1.4**	**NEMA 23**	8	38.1	300	101	21	1.6	5	5.15	56.4	47.14
STEPPING + BRAKE + ENCODER	**37M1320000**	**1.4**	**NEMA 23**	8	38.1	270	137.5	21	1.6	5	5.15	57.15	47.14



1 = encoder shielded cable, length 280 mm
2 = brake cable, length 280 mm
3 = motor cable, length 280 mm

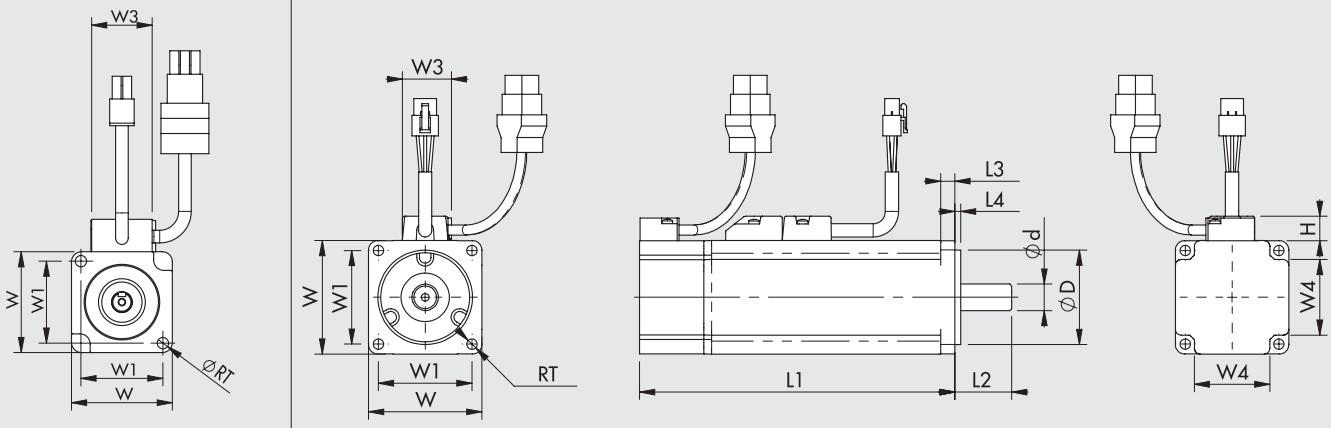
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.011	øD h7	L	L1 ±1	L2 ±1	L3	L4	L5	L6	L7	RT	W	W1
BRUSHLESS (SANYO DENKI)	**37M2200000**	**0.64**	**60**	14	50	44.6	69.5	30	6	3	55	-	58	5.5	60	49.5
	37M2220000	**1.27**	**60**	14	50	44.6	95.5	30	6	3	55	-	58	5.5	60	49.5
	37M2330000	**2.39**	**80**	16	70	54.4	107.3	40	8	3	55	-	58	6.6	80	63.6
	37M2540000	**3.18**	**86**	16	80	59.55	137.1	35	8	3	55	-	58	6.6	86	70.7
BRUSHLESS + BRAKE (SANYO DENKI)	**37M4200000**	**0.64**	**60**	14	50	44.6	97.5	30	6	3	55	55	58	5.5	60	49.5
	37M4220000	**1.27**	**60**	14	50	44.6	117.5	30	6	3	55	55	58	5.5	60	49.5
	37M4330000	**2.39**	**80**	16	70	54.4	143	40	8	3	55	55	58	6.6	80	63.4
	37M4540000	**3.18**	**86**	16	80	59.55	162.95	35	8	3	55	55	58	6.6	86	70.7



View for motor **37M2000000**

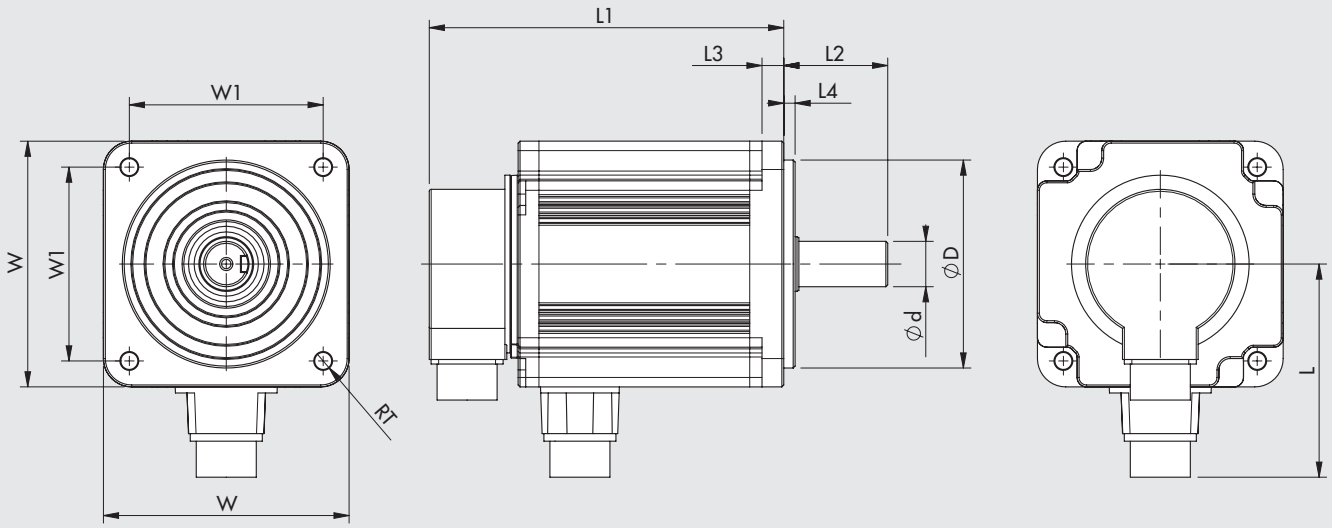
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.011	øD 0/-0.025	H max	L1 ±0.3	L2 ±0.2	L3 ±0.2	L4 ±0.2	RT ±0.2	W ±0.25	W1 ±0.2	W3 max	W4 ±0.2
BRUSHLESS (DELTA)	**37M2000000**	**0.32**	**40**	8	30	13	100.6	25	5	2.5	4.5	40	32.53	25	-
	37M2200001	**0.64**	**60**	14	50	13	105.5	30	7.5	3	5.5	60	49.5	25	40
	37M2220001	**1.27**	**60**	14	50	13	130.7	30	7.5	3	5.5	60	49.5	30	40
	37M2330001	**2.39**	**80**	19	70	13	138.3	35	8	3	6.6	80	63.64	30	52

METAL WORK PNEUMATIC

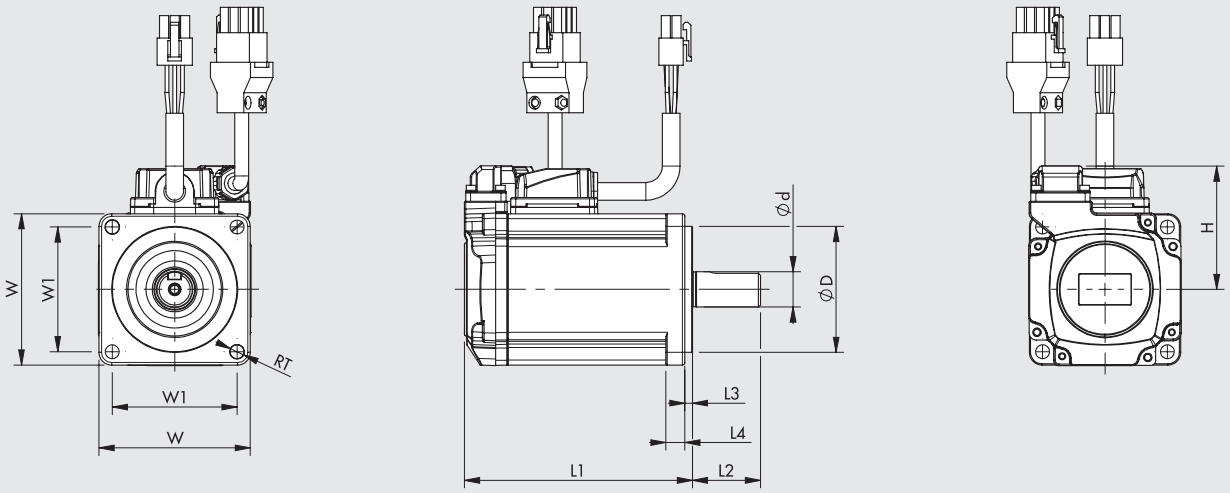


View for motor **37M4000000**

Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.011	øD 0/-0.025	H max	L1 ±0.3	L2 ±0.2	L3 ±0.2	L4 ±0.2	RT ±0.2	W ±0.25	W1 ±0.2	W3 max	W4 ±0.2
BRUSHLESS + BRAKE (DELTA)	**37M4000000**	**0.32**	**40**	8	30	13	136.6	25	5	2.5	4.5	40	32.53	25	-
	37M4200001	**0.64**	**60**	14	50	13	141.6	30	7.5	3	5.5	60	49.5	25	40
	37M4220001	**1.27**	**60**	14	50	13	166.8	30	7.5	3	5.5	60	49.5	30	40
	37M4330001	**2.39**	**80**	19	70	13	178	35	8	3	6.6	80	63.64	30	52



Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD 0/-0.035	L	L1	L2	L3	L4	RT	W	W1
BRUSHLESS (DELTA)	**37M2640000**	**3.18**	**100**	19	95	97.75	153.25	45	12	5	9	100	81.32
	37M2770000	**9.55**	**130**	24	110	113	187.5	55	11.5	6	9	130	102.53
BRUSHLESS + BRAKE (DELTA)	**37M4640000**	**3.18**	**100**	19	95	98.05	192.5	45	12	5	9	100	81.32
	37M4770000	**9.55**	**130**	24	110	111	216	55	11.5	6	9	130	102.53



Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.011	øD 0/-0.025	H	L1	L2	L3	L4	RT	W	W1
BRUSHLESS (DELTA B3)	**37M2220002**	**1.27**	**60**	14	50	48.5	91	30	3	7.5	5.5	60	49.5
BRUSHLESS + BRAKE (DELTA B3)	**37M4220002**	**1.27**	**60**	14	50	48.5	127.9	30	3	7.5	5.5	60	49.5

NOTES

METAL WORK PNEUMATIC

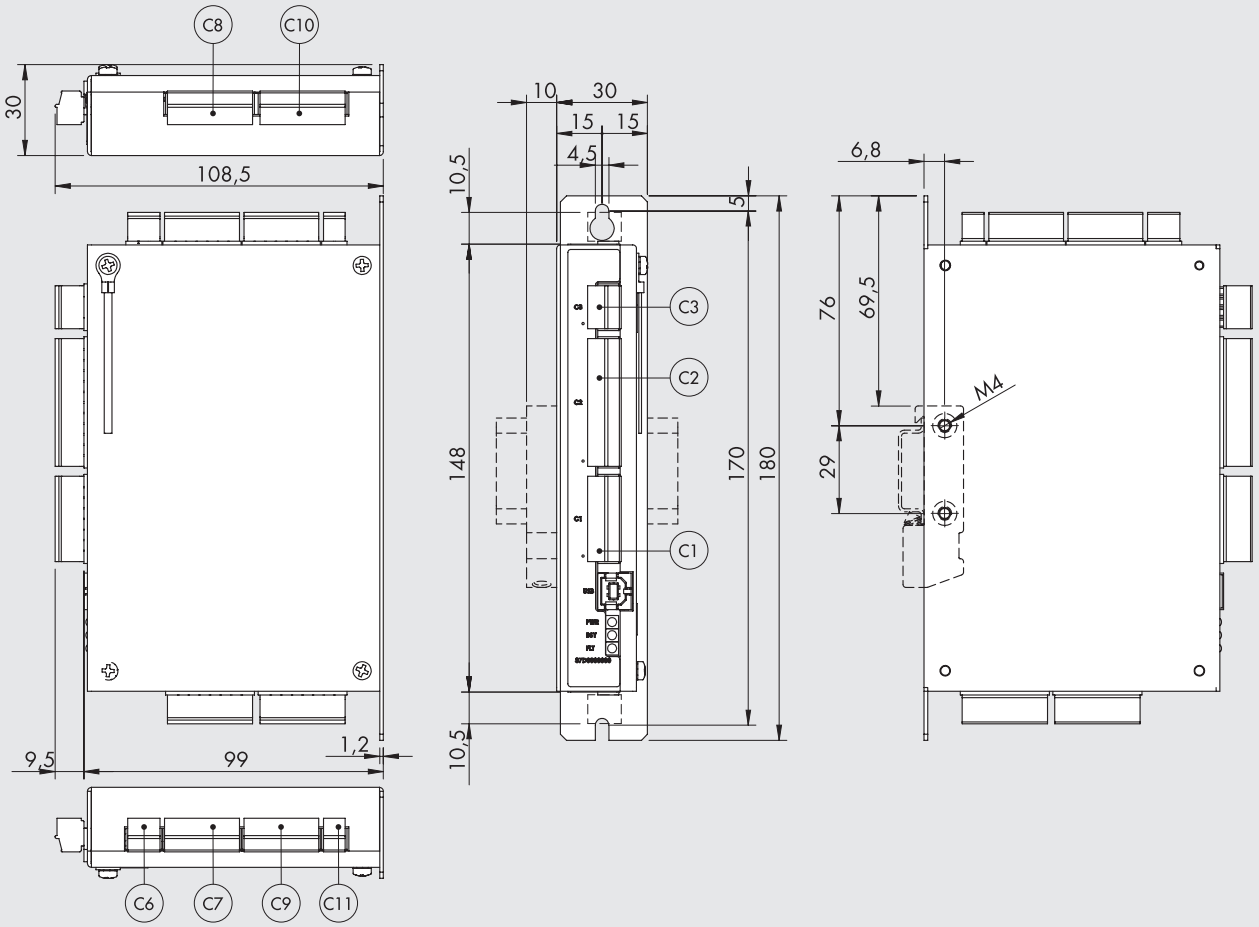
NOTES

PROGRAMMABLE UNIT
e.motion

An independent system, ideal for stand-alone applications not requiring the use of any PLC. It can control electric cylinders simply and intuitively, or any other electric actuator, using either a STEPPING MOTOR or a BRUSHLESS motor of any size and capacity, connected to the relevant drive with a STEP/DIRECTION interface. It is connected to PC via USB port, and the user has access to a motion-control configuration, programming and debug environment irrespective of the type of motor/drive/actuator chosen, which uses a user-friendly language (MW POS) and a set of simple instructions and functions to create work cycles, including complex ones as it can handle both digital and analogue inputs and outputs.
It consists of an electronic board housed in a metal box, which is designed for fixing to a wall or on a DIN bar with a fitting, and is equipped with removable screw connectors for wiring purposes.

TECHNICAL DATA		
Code		**37D0000000**
Stand-alone motion programming unit for motors-drives with a STEP/DIRECTION interface, type		Metal box
Dimensions	mm	148 x 99 x 30
Weight	g	460
Connectors		Screw type
Temperature range		0 to 50 °C – relative humidity 10-90%, non-condensing
Degree of protection		IP 20
Voltage		24VDC ±10%
Communication interface		Serial USB port for connection to PC
Configuration/programming/debug and diagnosis software		MW POS in Windows® environment
Dedicated signals		Encoder input (A + B + Z), Line Driver type
		STEP/DIRECTION outputs, with frequency up to 100 kHz, Line Driver type
Digital inputs		16, optoisolati, configurabili PNP o NPN, liberamente programmabili
Analogue inputs		2, from 0 to 10V, freely programmable
Digital outputs		15, Line Driver type, PNP, freely programmable
Analogue outputs		1, from 0 to 10V, freely programmable
Controls available		- Search for home position on the end stop, up against the stop, on the end stop and the encoder mark, up against the stop and the encoder zero mark; - Positioning in relative or absolute mode; - Force control; - Closed-loop motion control and step-loss control in the case of STEPPING motors with encoder; - Integrated brake control in the case of motors with a brake; - Possible control of multiple separate drivers in parallel for concurrent applications; - Complementary and logical instructions for complex work cycles, such as: timings; repetitions; analogue and digital I/O control; variables control; tests

DIMENSIONS

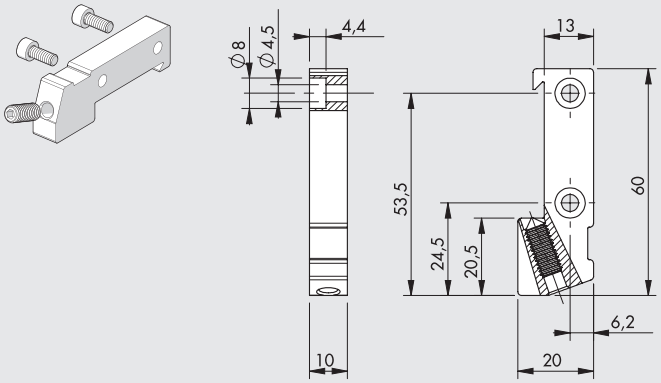


Below is a list of Phoenix Contact codes for the board connectors.

Connector	Description	Code Phoenix Contact
C11	2-pin plug with screw connection, MC 1.5/2-ST-3.5	1840366
C6	3-pin plug with screw connection, MC 1.5/3-ST-3.5	1840379
C3	4-pin plug with screw connection, MC 1.5/4-ST-3.5	1840382
C7, C9	7-pin plug with screw connection, MC 1.5/7-ST-3.5	1840418
C1, C8, C10	8-pin plug with screw connection, MC 1.5/8-ST-3.5	1840421
C2	12-pin plug with screw connection, MC 1.5/12-ST-3.5	1840463

ACCESSORIES

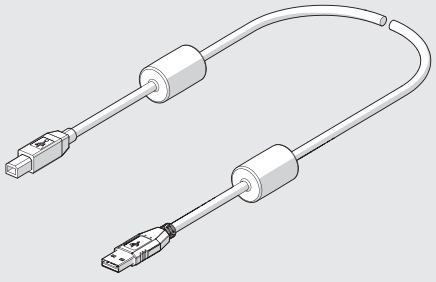
BRACKET MOUNTAING ON OMEGA BAR (DIN EN 50022)



Code	Description	Weight [g]
095000M000	Bracket mountaing **e**.motion / **e**.drive on Omega bar (DIN EN 50022)	30

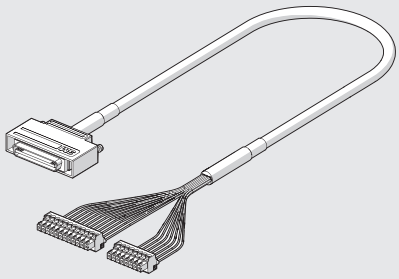
Note: Individually packed with 2 screws M4x10, 1 M6x16 grub screw

CABLE USB



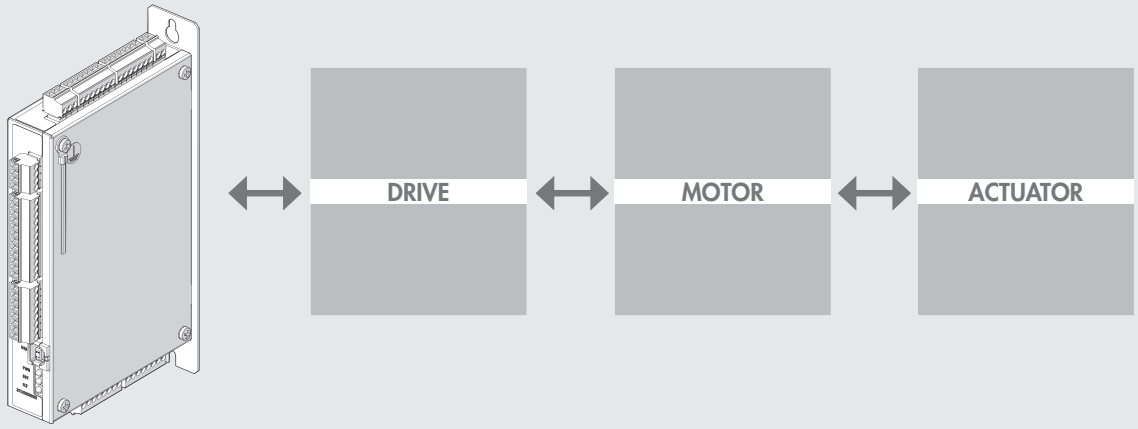
Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core, for connecting the ***e***.motion / ***e***.drive board to a PC, 3 m	150

CABLE FOR BRUSHLESS DRIVERS



Code	Description	Weight [g]
37C2510000	Cable for connecting the ***e***.motion board to Sanyo Denki RS_A0_ driver, 1 m	130
37C2510001	Cable for connecting the ***e***.motion board to Delta ASDA A2 driver, 1 m	130

CONNECTION SCHEME



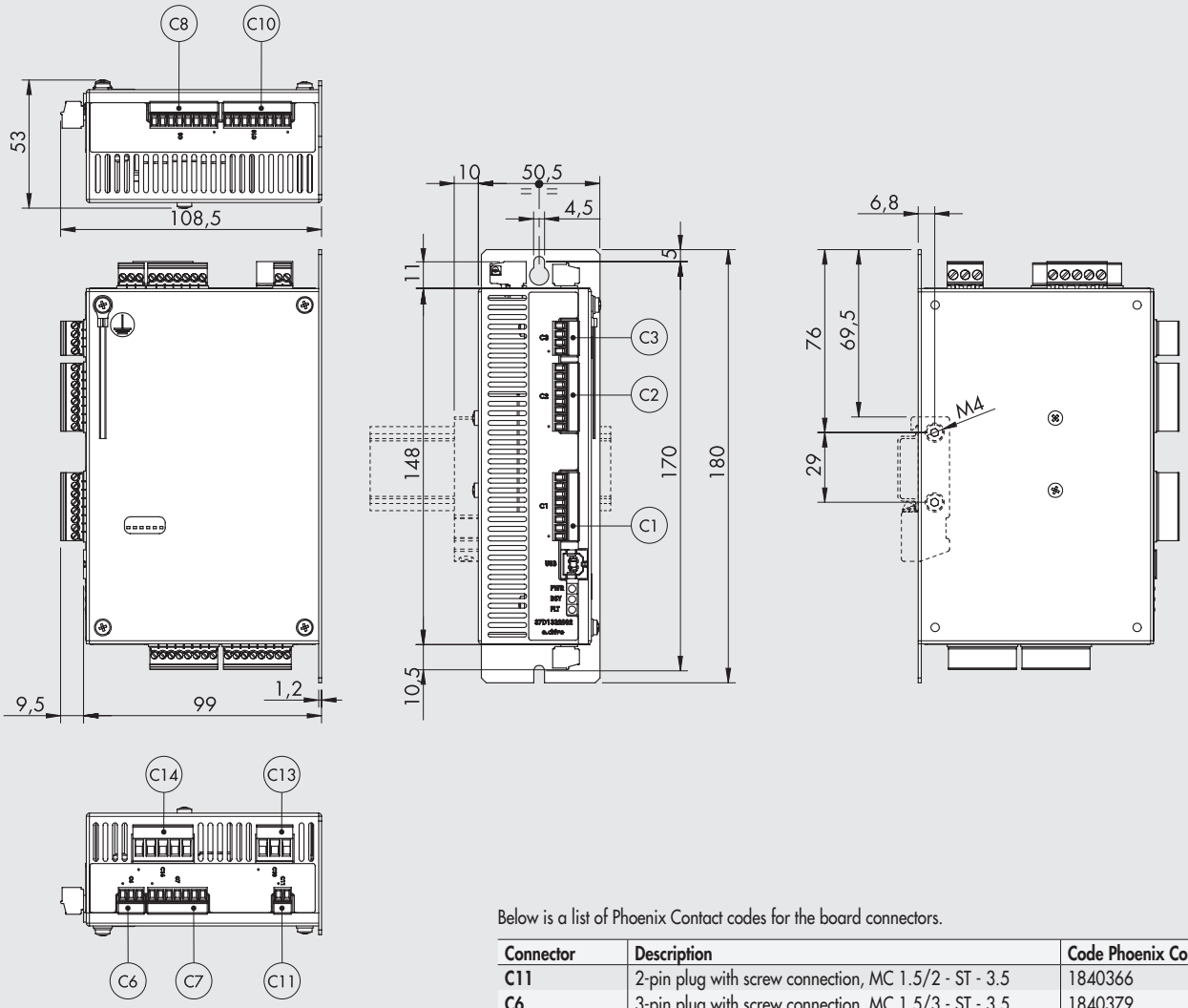
NOTES

PROGRAMMABLE STEPPING MOTOR DRIVE - *e*.drive

It can be used to control, easily and intuitively, electric cylinders that use a STEPPING motor with a rated current of up to 6A, two phases, with four, six or eight output wires. It connects up to a PC via a USB port and the user is provided with motion control configuration, programming and debugging environment, which allows you to create complex work cycles as it can handle both digital and analogue inputs and outputs, thanks to a user-friendly language (MW DRIVE) and a series of simple instructions and functions.
It consists of two electronic boards housed in a metal box that has been designed to be fixed onto a wall or to a DIN rail, using an accessory, and is equipped with removable screw connectors for wiring.
The electronic boards can control both the logic "motion control" stage and the power supply stage.
This independent system is ideal for use in stand-alone applications not requiring the use of any PLC.
The power stage consists of a ministep bipolar chopper drive. It is characterised by a supply voltage of up to 55VDC for the power supply side and 24VDC for the logic side, compact dimensions and great flexibility of use.

TECHNICAL DATA		
Code		**37D1332002**
Motion control logic power supply	VDC	24
Drive power supply	VDC	24 to 55
Motor phase peak current	A	1 to 6
Temperature range	°C	-20 to 40
Relative humidity (without condensation)	%	5 to 85
Bipolar motor inductance (1.8° angle)	mH	1 to 12
Dimensions	mm	148 x 99 x 50.5
Weight	g	790
Degree of protection		IP20
Communication interface		Serial USB port for connection to PC
Configuration/programming/debug and diagnosis software		MW DRIVE in Windows® environment
Dedicated signals		Encoder input (A + B + Z), 5V line driver or 24V Push-Pull/Open collector
Digital inputs		14
Digital outputs		7
Analogue inputs		2, from 0 to 10V, freely programmable
Analogue outputs		1, from 0 to 10V
Controls available		- Can be used with motors with a 1.8° base angle, 200 pulses/rev.; - Step Mode settable in various ways: Full Step, Half Step, 1/4, 1/8, 1/16 of step; - Integrated linear position transducer by connecting directly to the analogue output; - Automatic 60% reduction of the current supplied with motor stopped; - Possible dynamic regulation of the current supplied via cycle software instructions, for energy-saving purposes; - Home position search on limit switch, mechanical stop, encoder limit switch and zero mark, encoder mechanical stop and zero mark; - Positioning in relative or absolute mode; - Closed-loop motion control and step-loss control in the case of STEPPING motors with an encoder; - Integrated, automatic brake control via dedicated digital output in the case of motors with a brake; - Complementary and logical instructions for complex work cycles, such as: timings; variables control; test; analogue and digital I/O control

DIMENSIONS

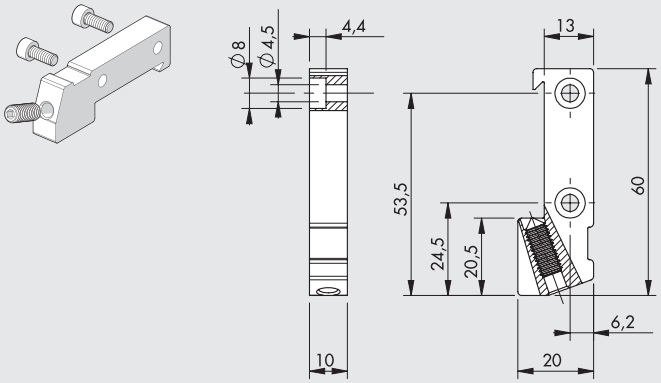


Below is a list of Phoenix Contact codes for the board connectors.

Connector	Description	Code Phoenix Contact
C11	2-pin plug with screw connection, MC 1.5/2 - ST - 3.5	1840366
C6	3-pin plug with screw connection, MC 1.5/3 - ST - 3.5	1840379
C3	4-pin plug with screw connection, MC 1.5/4 - ST - 3.5	1840382
C7	7-pin plug with screw connection, MC 1.5/7 - ST - 3.5	1840418
C1, C2, C8, C10	8-pin plug with screw connection, MC 1.5/8 - ST - 3.5	1840421
C13	3-pin plug with screw connection, MSTB 2.5/3 - ST - 5	1754465
C14	5-pin plug with screw connection, MSTB 2.5/5 - ST - 5	1754504

ACCESSORIES

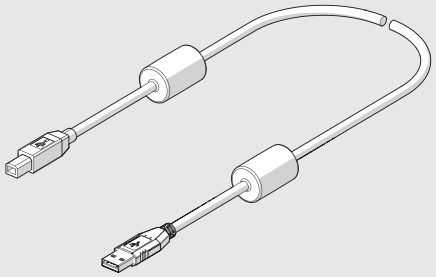
BRACKET MOUNTAING ON OMEGA BAR (DIN EN 50022)



Code	Description	Weight [g]
095000M000	Bracket mountaing ***e***.motion / ***e***.drive on Omega bar (DIN EN 50022)	30

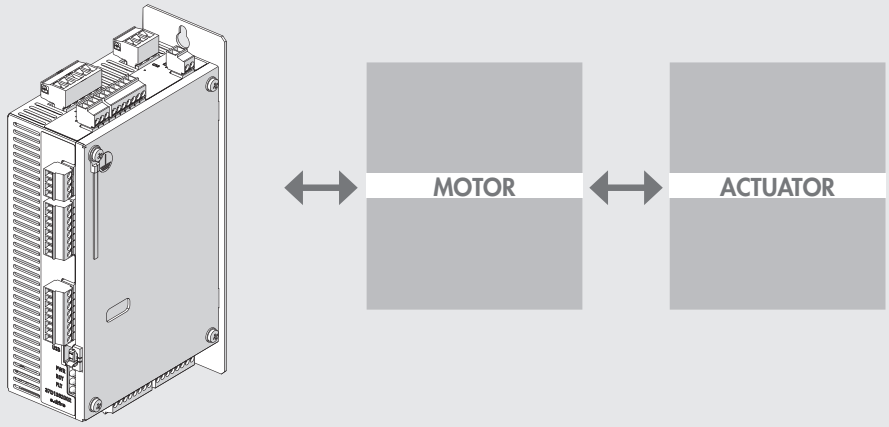
Note: Individually packed with 2 screws M4x10, 1 M6x16 grub screw

CABLE USB



Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core, for connecting the **e**.motion / **e**.drive board to a PC, 3 m	150

CONNECTION SCHEME



NOTES

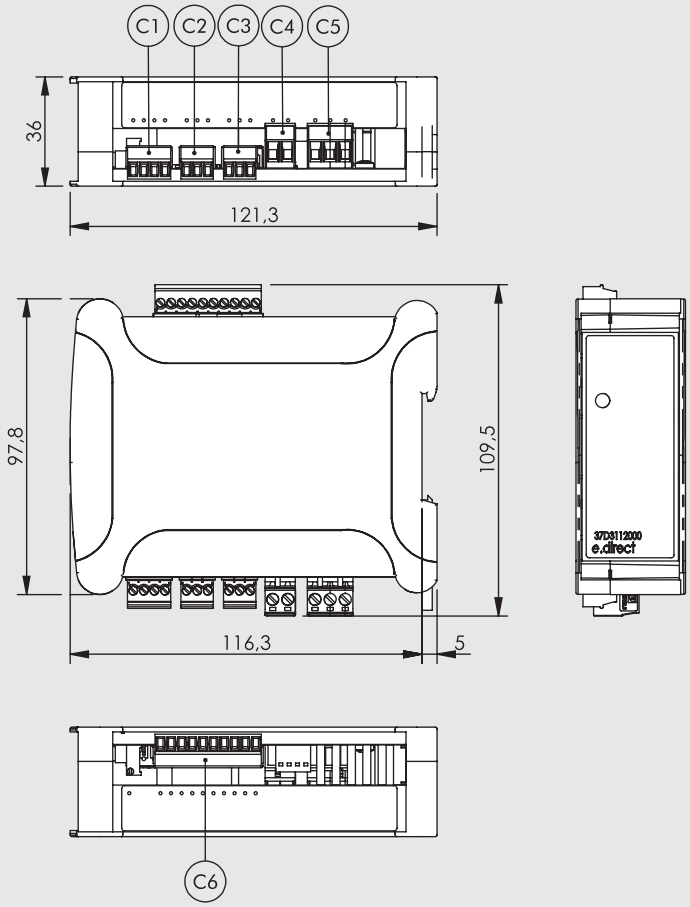
e.direct DRIVE
FOR DIRECT CURRENT MOTORS

With the e.direct drive for direct current motors, a 24VDC motor can be easily controlled and run. The electronic board is enclosed in a plastic housing designed for DIN rail mounting.
When activating the "CW" and "CCW" inputs, the motor starts running alternately clockwise and anticlockwise.
Two digital sensor inputs are provided to stop motor rotation upon activation.
The two stop signals are made available as outputs for possible connection to PLCs.
When activated, two digital sensor inputs are provided to stop motor rotation. The two stop signals are made available as outputs for possible connection to a PLC.
During acceleration and braking, the drive prevents mechanical stress on the motor and excessive energy regeneration.
Braking takes place dynamically, stopping the rotation immediately to avoid unwanted extra travel.
The rotation speed can be varied locally via the multi-turn trimmer installed on the board, or remotely, even continuously, via the analog input.
The board is equipped with 2 Hall sensor encoder inputs, NPN type and 5VDC power supply, which are fed back on two 24VDC encoder outputs, which adapt the signals coming from the Hall sensors to PLC inputs type OPEN DRAIN - PNP 24VDC.
The maximum current to be supplied to the motor can range between 1A, 2A, 3.5A and 5A via two DIP switch selectors.
When the board is not powered and the motor is stopped, the motor phases are short-circuited to increase braking torque.

TECHNICAL DATA		
Code		**37D3112000**
Motor and auxiliary power supply	VDC	24 ±15%
Maximum power voltage	VDC	30
Wattage	W	150
Current	A	1, 2, 3.5, 5 (Dip-switch selectable)
Temperature range	°C	-20 to 40
Relative humidity (without condensation)	%	5 to 85
Dimensions	mm	110 x 121 x 36
Weight	g	160
Degree of protection		IP20
Digital inputs		- no. 2, type PNP 24VDC motor rotation control (CW/CCW); - no. 2, type OPEN DRAIN - PNP 24VDC limit switch (LS); - no. 2, type NPN 5VDC for encoder (Hall sensors).
Digital outputs		- no. 2, type 24VDC OPEN DRAIN - PNP suitable for PNP 24VDC PLC for limit switch (LS); - no. 2, 24VDC: adapting signals from Hall sensors to PLC inputs type OPEN DRAIN - PNP 24VDC.
Analogue inputs		- no. 1, 0-10VDC speed adjustment from PLC or potentiometer (31400 Ω input impedance); - Internal trimmer for manual speed adjustment (0-100%).
Protections		- Motor output overcurrent protection; - Phase-to-phase short-circuit protection on motor; - Microprocessor over-temperature protection (150°C).
Signals		- Overvoltage (Vsupply>30VDC) - Under-voltage (Vsupply<18VDC); - With fault diagnostic output (OPEN DRAIN - PNP); - Active output corresponds to one of the FAULT statuses.

N.B.: A delayed, external fuse of a value appropriate to the set current must be provided in the system.
An appropriate external mains filter must be placed on the power supply to avoid disturbances generated by the drive.

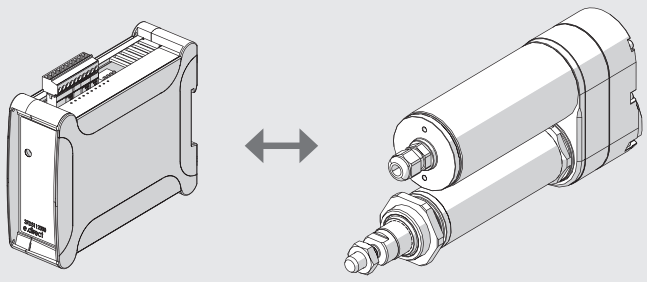
DIMENSIONS



Below is a list of Phoenix Contact codes for the board connectors.

Connector	Description	Code Phoenix Contact	Code Phoenix Contact BASIC LINE
C1	4-pin plug with screw connection, MC 1.5/4 - ST - 3.5	1840382	5441223
C2, C3	3-pin plug with screw connection, MC 1.5/3 - ST - 3.5	1840379	5441210
C4	2-pin plug with screw connection, MC 2.5/2 - ST - 5	1754449	5441171
C5	3-pin plug with screw connection, MC 2.5/3 - ST - 5	1754465	5448242
C6	10-pin plug with screw connection, MC 1.5/10 - ST - 3.5	1840447	5447560

EXAMPLE OF CONNCETION



DRIVES FOR STEPPING MOTORS

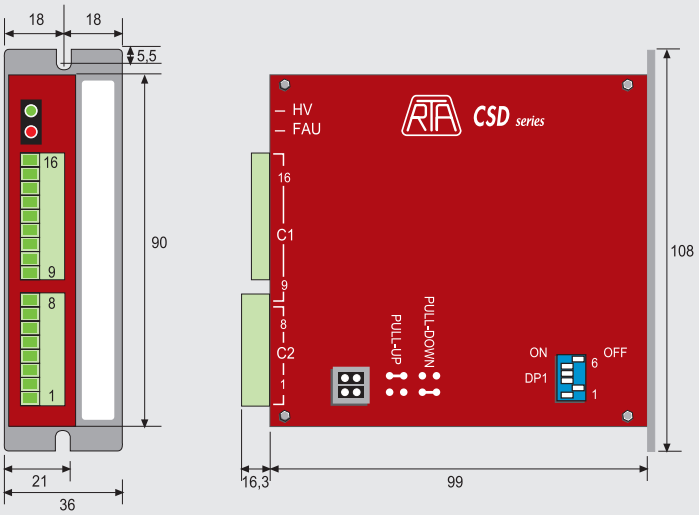
4.4A - 48VDC DRIVE FOR STEPPING MOTORS

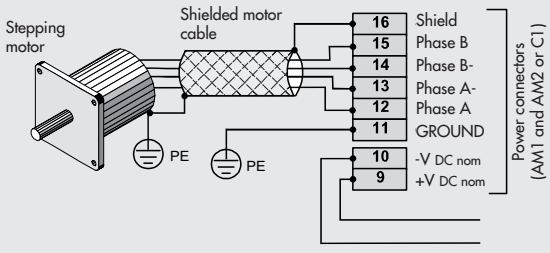
This is a ministep bipolar chopper drive made by RTA S.r.l. It comes with a STEP & DIRECTION interface for piloting low/medium-power two-stage STEPPING motors with four, six or eight terminals.
It has a supply voltage range up to 48VDC, compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box, which does not require external ventilation, and comes with separate logic and power pull-out screw connectors. It can control STEPPING motors with a nominal current up to 4.4A, the perfect choice for low/medium-power applications using small motors.

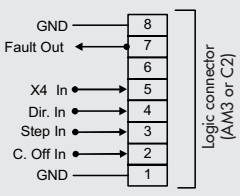
DRIVE TECHNICAL DATA

Drive code		**37D1222000**
Type of STEPPING motor drive		Metal box
Dimensions	mm	90 x 99 x 21
Connectors		Screw type
Onboard power supply		NO
Control		Step and direction
Operating voltage range	VDC	24 - 48
Current range	A	2.6 - 4.4
Current values selected via a dip-switch		8
Pulses per rev values selected by dip-switch	pulse/rev	400, 800, 1600, 3200
Automatic current reduction with motor off		YES (50%)
Type of inputs		Pull-up or Pull-down, settable
Protections		Maximum and minimum voltage. Motor output short-circuiting. Thermal protection. Electronic damping circuit for maximum control of noise and vibration.

OVERALL DIMENSIONS AND WIRING DIAGRAM







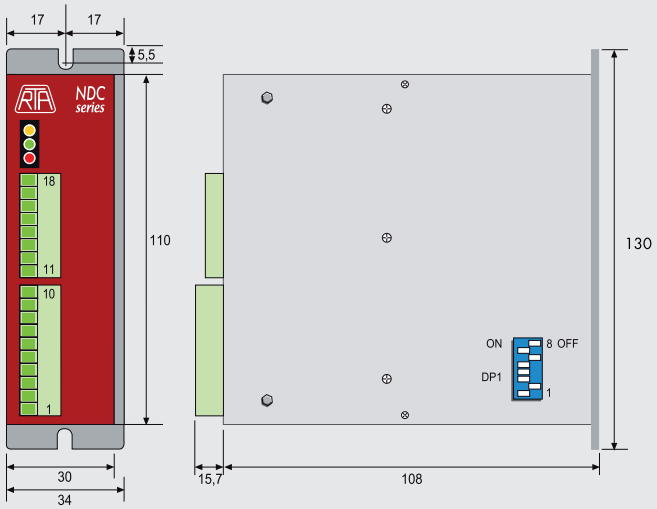
6A - 75VDC DRIVE FOR STEPPING MOTORS

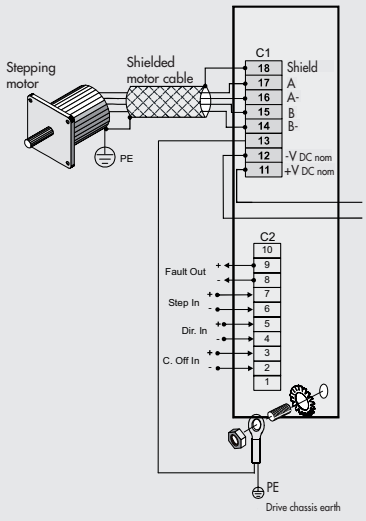
This is a ministep bipolar chopper drive made by RTA Srl. It comes with a STEP & DIRECTION interface for piloting medium-low power two-stage STEPPING motors with four, six or eight terminals.
It has a supply voltage range up to 75VDC, compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box and comes with separate logic and power pull-out screw connectors. It can control STEPPING motors with a nominal current up to 6A, the perfect choice for medium power applications using small and medium-size motors.

DRIVE TECHNICAL DATA

Drive code		**37D1332000**
Type of STEPPING motor drive		Metal box
Dimensions	mm	110 x 108 x 34
Connectors		Screw type
Onboard power supply		NO
Control		Step and direction
Operating voltage range	VDC	24 - 75
Current range	A	1.9 - 6
Current values selected via a dip-switch		8
Pulses per rev values selected by dip-switch	pulse/rev	400, 500, 800, 1000, 1600, 2000, 3200, 4000
Automatic current reduction with motor off		YES (50%)
Type of inputs		Opto-isolated
Protections		Maximum and minimum voltage. Motor output short-circuiting. Thermal protection. Electronic damping circuit for maximum control of noise and vibration.

OVERALL DIMENSIONS AND WIRING DIAGRAM





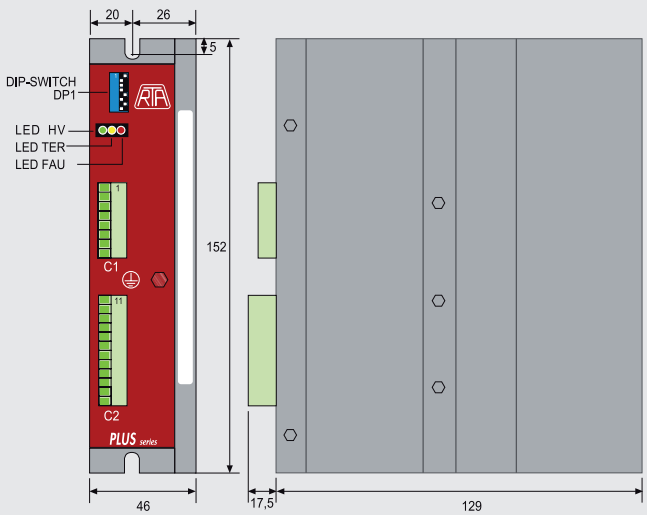
6A - 140VDC, 10A - 62VAC DRIVE FOR STEPPING MOTORS

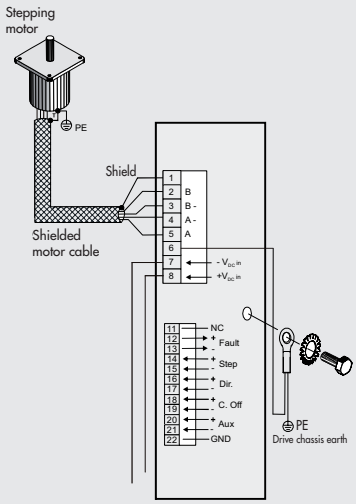
These are two ministep bipolar chopper drives made by RTA S.r.l.
They come with a STEP & DIRECTION interface for piloting medium/high-power two-stage STEPPING motors with four, six or eight terminals.
They consist of a board housed in a metal box, which does not require external ventilation, and come with separate logic and power pull-out screw connectors.
Drive code 37D1442000 is characterised by a voltage range up to 140VDC, compact dimensions and considerable operating flexibility.
This drive can control STEPPING motors with a nominal current up to 6A, the perfect choice for medium-power applications requiring a DC supply.
Drive code 37D1552000 is characterised by a voltage range up to 62VAC, compact dimensions and considerable operating flexibility.
This drive can control STEPPING motors with a nominal current up to 10A, the perfect choice for medium-power applications requiring an AC supply.

DRIVE TECHNICAL DATA

Drive code		**37D1442000**	**37D1552000**
Type of STEPPING motor drive		Metal box	
Dimensions	mm	152 x 129 x 46	
Connectors		Screw type	
Onboard power supply		NO	
Control		Step and direction	
Operating voltage range		77 - 140 VDC	28 - 62 VAC
Current range	A	1.9 - 6	3 - 10
Current values selected via a dip-switch		8	
Pulses per rev values selected by dip-switch	pulse/rev	400, 500, 800, 1000, 1600, 2000, 3200, 4000	
Automatic current reduction with motor off		YES (50%)	YES (50%)
Type of inputs		Opto-isolated	
Protections		Maximum and minimum voltage. Motor output short-circuiting. Thermal protection. Electronic damping circuit for maximum control of noise and vibration.	

OVERALL DIMENSIONS AND WIRING DIAGRAM





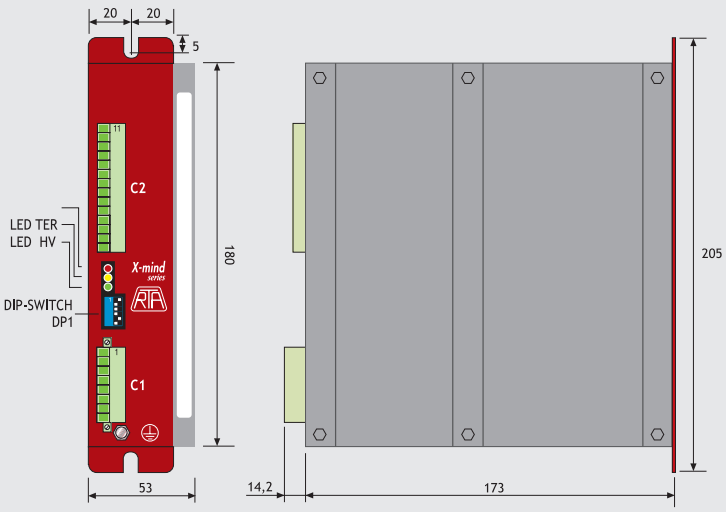
6A - 110 - 230VAC DRIVE FOR STEPPING MOTORS

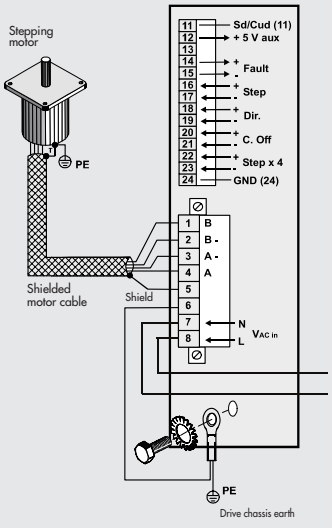
This is a ministep bipolar chopper drive made by RTA Srl. It comes with a STEP & DIRECTION interface for piloting medium-low power two-stage STEPPING motors with four, six or eight terminals.
It has a supply voltage range up to 230VAC, compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box and comes with separate logic and power pull-out screw connectors. It can control STEPPING motors with a nominal current up to 6A, the perfect choice for medium-high power applications using medium and big-size motors.

DRIVE TECHNICAL DATA

Drive code		**37D1362001**
Type of STEPPING motor drive		Metal box
Dimensions	mm	180 x 173 x 53
Connectors		Screw type
Onboard power supply		NO
Control		Step and direction
Operating voltage range	VAC	Single-phase 110 - 230
Current range	A	3.4 - 6
Motor output stage		High-efficiency CHOPPER with IGBT final stage output
Current values selected via a dip-switch		8
Pulses per rev values selected by dip-switch	pulse/rev	400, 500, 800, 1000, 1600, 2000, 3200, 4000
Automatic current reduction with motor off		YES
Type of inputs		Opto-isolated
Protections		Maximum and minimum voltage. Motor output short-circuiting. Thermal protection.
		Electronic damping circuit for maximum control of noise and vibration.
Standards		UL and CSA
Other features		Possibility to switch off motor current via an external logic control device.
		Electronic sound-damping circuit for enhanced reduced noise and mechanical vibration at low and medium speed.
		Storage and reporting of the intervention of protection circuits.
		It must be coupled with STEPPING motors designed for high-voltage rating and flanges not below 86 mm.
		No need for forced ventilation.

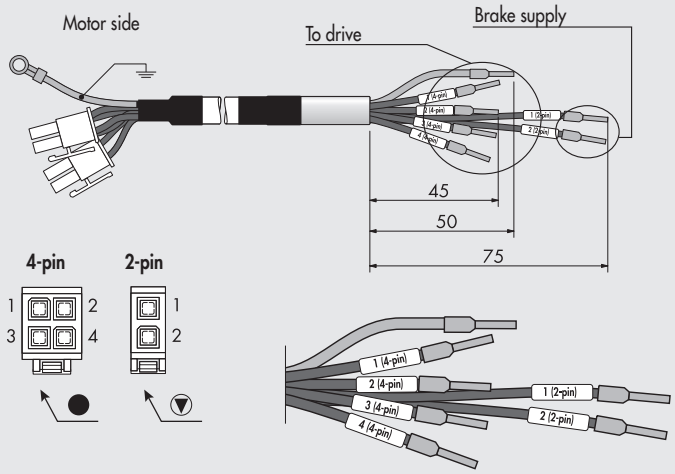
OVERALL DIMENSIONS AND WIRING DIAGRAM





CABLES FOR B&R STEPPING MOTORS

POWER CABLE FOR MOTOR WITH BRAKE

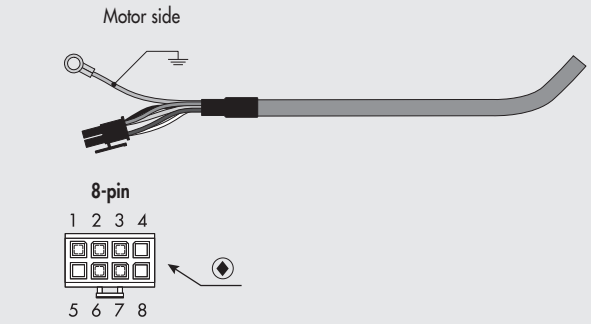


Code	Description
37C1330000	Power cable for stepping motor with brake, 3 metres
37C1350000	Power cable for stepping motor with brake, 5 metres

For use with STEPPING motors with brake and STEPPING motor code 37M1470000.

	Pin	Function	Corresponding wire colour
4-pin connector	1	A\	Black (1 4-pin)
	2	B\	Black (2 4-pin)
	3	A	Black (3 4-pin)
	4	B	Black (4 4-pin)
2-pin connector	1	24VDC brake	Black (1 2-pin)
	2	GND	Black (2 2-pin)

ENCODER CABLE



Code	Description
37C1230000	Encoder cable for stepping motors with brake, 3 metres
37C1250000	Encoder cable for stepping motors with brake, 5 metres

Optional – Can be used with STEPPING motor with encoder and brake.

Pin	Function		Corresponding wire colour
1	A	A	Green
2	B	B	Yellow
3	R	R	Gray
4	-	NC	-
5	-	NC	-
6	+ 24VDC	Encoder +24 V supply	Red
7	COM	Encoder 0 V supply	Blue
8	-	NC	-

REFERENCES FOR THE CONNECTORS

Below you find the codes of Molex to allow the customer to manufacture cables.

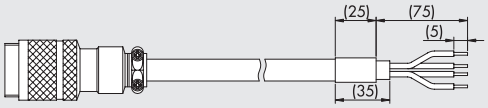
	Code Molex	Description
▼	**39-01-2020**	1 x 2 pin plug connector
	44476-1111	Crimping contacts
●	**39-01-2040**	1 x 4 pin plug connector
	44476-1111	Crimping contacts
◆	**43025-0800**	1 x 8 pin plug connector
	43030-0002	Crimping contacts

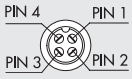
Special tools for crimping or pulling out contacts		
	Code Molex	**Description**
Crimping gripper	**0638190000**	For 8-pin connector
	0638190900	For 4-pin and 2-pin connectors
Contact pull-out tool	**0011030043**	For 8-pin connector
	0011030044	For 4-pin and 2-pin connectors

NOTES

CABLES FOR STEPPING MOTORS STEPPERONLINE

POWER CABLE FOR MOTOR WITH BRAKE

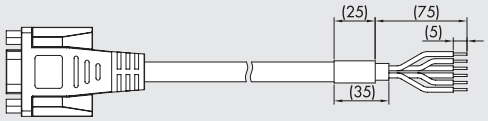


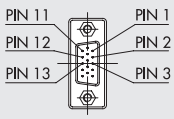


Code	Description
37C1150000	Power cable for stepping motor with brake, 5 metres
37C1100000	Power cable for stepping motor with brake, 10 metres

Pin	Function		Corresponding wire colour
1	A+	Motor phase A+	Black 1
2	A -	Motor phase A-	Black 2
3	B+	Motor phase B+	Black 3
4	B -	Motor phase B-	Black 4

ENCODER CABLE





Code	Description
37C1250001	Encoder cable for stepping motors with brake, 5 metres
37C1200003	Encoder cable for stepping motors with brake, 10 metres

Optional – Can be used with STEPPING motor with encoder and brake.

Pin	Function		Corresponding wire colour
1	A+	Phase A+	Green
2	+24VDC	Encoder +24 V supply	Brown
3	COM	Encoder 0 V supply	White
4	-	NC	-
5	-	NC	-
6	-	NC	-
7	-	NC	-
8	-	NC	-
9	-	NC	-
10	-	NC	-
11	B+	Phase B+	Gray
12	B-	Phase B-	Pink
13	A-	Phase A-	Yellow
14	-	NC	-
15	-	NC	-

NOTES

DRIVES FOR BRUSHLESS MOTORS

DRIVE FOR 200W, 400W, 750W, 1000W SANYO DENKI BRUSHLESS MOTORS

This drive made by SANYO DENKI is suitable for piloting BRUSHLESS motors.
It features compact dimensions and considerable operating flexibility.
It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic.
It can control BRUSHLESS motors with a nominal current up to 30A.
All the system parameters can be configured and controlled using SANMOTION software.

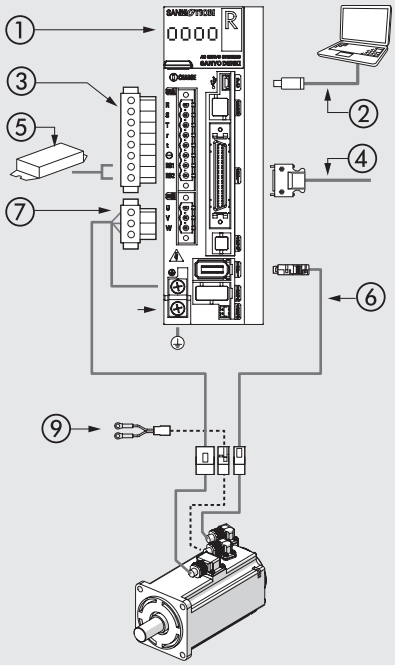
DRIVE TECHNICAL DATA		
Drive code		**37D2400008**
Nominal power		200 - 400 - 750 - 1000
Type of drive for BRUSHLESS motors		Metal box
Dimensions	mm	50 x 160 x 130
Power connectors and motor power		Plug-type 3M
Encoder connectors and signals		Plug-type 3M
Max output current	A	30
Motor output stage		IGBT, PWM control, sinusoidal current
Power voltage		Single-phase or three-phase (user configurable) 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Logic voltage		Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control		With analogue signal (proportional to speed and torque).
		Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)
		8 inputs and 8 outputs, user configurable.
		In the event of pulse-train command, the control system outputs should be the Line Driver type.
		If the outputs are the open-collector type, you can use a 37D2000000 board,
		which is sold separately (see accessories).
Auto-tuning		YES
Communication interface		Mini USB for settings and monitoring via a personal computer.
Protections		Integrated against overloads, input extra-voltages,
		incorporated filters for suppressing the system's own resonance frequencies
Standards		CE, UL and CSA.
Other features		5-digit display and programming keypad.
		Integrated closed-loop system with position, speed and torque control modes.
		Instant changeover option: position + speed; position + torque; speed + torque.
		Automatic dynamic braking circuit in a alarm and power-off conditions.
		Connector for external braking resistance (optional).
		Configuration and control software.
Connecting cable:		
Brushless **motor-drive** connecting cable, 3 metres		**37C2130005**
Brushless **motor-drive-encoder** connecting cable, 3 metres		**37C2230005**
Brushless **motor-drive** connecting **dynamic** cable, 3 metres		**37C2130004**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 3 metres		**37C2230004**
Brushless **motor-brake** connecting **dynamic** cable, 3 metres		**37C2330000**
Brushless **motor-drive** connecting cable, 5 metres		**37C2150005**
Brushless **motor-drive-encoder** connecting cable, 5 metres		**37C2250005**
Brushless **motor-drive** connecting **dynamic** cable, 5 metres		**37C2150004**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 5 metres		**37C2250006**
Brushless **motor-brake** connecting **dynamic** cable, 5 metres		**37C2350000**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100004**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 10 metres		**37C2200004**
Brushless **motor-brake** connecting **dynamic** cable, 10 metres		**37C2310000**

METAL WORK PNEUMATIC

WIRING DIAGRAM FOR BRUSHLESS MOTOR DRIVES

① 5-DIGIT DISPLAY and PROGRAMMING KEYPAD:
to display and modify parameters and monitor system operation in real time.
② PC CONNECTOR: settings and monitoring by PC via mini USB
③ POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). **Included in the supply**.
Separate supply section for logic/signal and power electronics. Integrated circuits protecting against overloads and input extra-voltages.
④ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 8 outputs, user configurable. **Included in the supply**.
⑤ CONNECTOR: for external braking resistance (optional)
⑥ ENCODER CONNECTOR
⑦ MOTOR POWER CONNECTOR
⑧ EARTH CONNECTION
⑨ MOTOR BRAKE CONNECTOR (only for version with brake)

Log on to www.metalwork.it to view the instruction manual.



ACCESSORIES

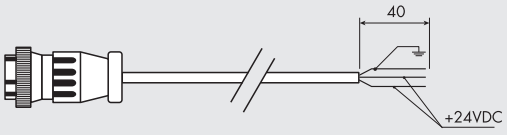
⑥ ENCODER CABLE

Code	Description
37C2230005	Brushless motor-drive-encoder connecting cable, 3 m
37C2250005	Brushless motor-drive-encoder connecting cable, 5 m
37C2230004	Brushless motor-drive-encoder connecting dynamic cable, 3 m
37C2250006	Brushless motor-drive-encoder connecting dynamic cable, 5 m
37C2200004	Brushless motor-drive-encoder connecting dynamic cable, 10 m

⑦ MOTOR POWER CABLE

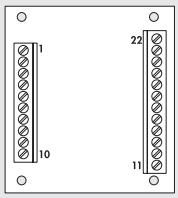
Code	Description
37C2130005	Brushless motor-drive connecting cable, 3 m
37C2150005	Brushless motor-drive connecting cable, 5 m
37C2130004	Brushless motor-drive connecting dynamic cable, 3 m
37C2150004	Brushless motor-drive connecting dynamic cable, 5 m
37C2100004	Brushless motor-drive connecting dynamic cable, 10 m

BRAKE CABLE



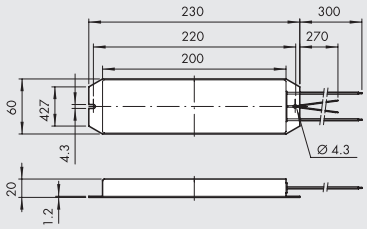
Code	Description
37C2330000	Brushless motor-brake connecting dynamic cable, 3 m
37C2350000	Brushless motor-brake connecting dynamic cable, 5 m
37C2310000	Brushless motor-brake connecting dynamic cable, 10 m

LINE-DRIVER INTERFACE BOARD



Code	Description
37D2000000	BRINT.A line driver interface board

EXTERNAL BRAKING RESISTANCES



Code	Description	For drive code
37D2R00000	220W 50 Ω braking resistance	37D2400008

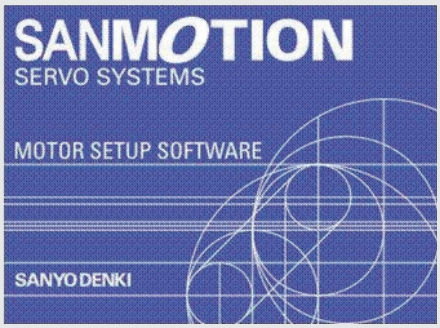
Under certain operating conditions, such as sudden deceleration with high inertial load, it may be necessary to dissipate externally the reverse energy generated by the motor. The drive indicates this requirement via a specific alarm. Excess energy is dissipated externally via a braking resistance.

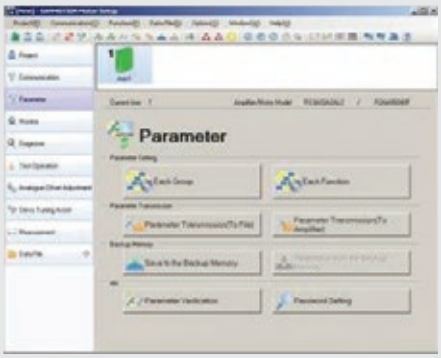
CONFIGURATION SOFTWARE

SANMOTION configuration software is used for parameter setting and complete control of all functions of the system.
The software includes a detailed description of each parameter.
In addition to parameter setting SANMOTION software can accurately analyze operation of the system via the following functions.

- Monitor: real-time display of all details about the system.
- Diagnosis: shows the state of servo amplifier, the type of alarms and the possible causes.
- Test operation: performs the velocity system test with JOG Operation, the positioning test with Positioning Operation, the detection of the origin signal and Serial Encoder Clear.
- Servo Tuning: performs auto-tuning notch filter and auto-tuning vibration suppression frequency.
- Operation Trace: this function shows operational state and parameters as speed and torque, in waveform display on an integrated oscilloscope.
- System Analysis: used to study the system's frequency response to identify and correct any mechanical resonance phenomena.

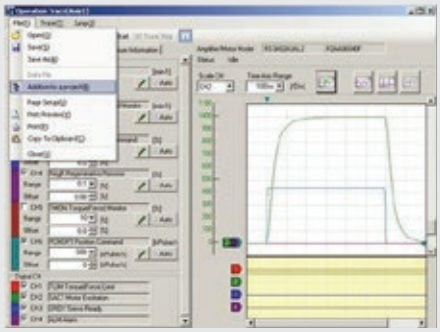
The software can freely be downloaded from Sanyo Denki website at the following link:
https://www.sanyodenki.com/products/sanmotion-softwareindex.html
file SANMOTION MOTOR Setup Software.





GRAPHIC MONITOR

Thanks to the integrated oscilloscope function, some important system parameters, such as speed and torque, can be displayed and saved on the PC monitor.
Data can be downloaded and saved in compatible Excel format.
The time setting range is 10 ms to 2 s.
Single values acquired and displayed can be read using the cursor.



DRIVE FOR 100W, 200W, 400W, 750W DELTA BRUSHLESS MOTORS

The DELTA ASD-A2-0121-M drive can only be used with a DELTA 100W motor, the DELTA ASDA-A2-0221-M drive can only be used with a DELTA 200W motor, the DELTA ASDA-A2-0421-M drive can only be used with the DELTA 400W motor, and the DELTA ASD-A2-0721-M drive can only be used with a DELTA 750W motor.
The drives are characterized by overall contained dimensions and great versatility of use. They consist of a circuit board situated in a metal box, complete with extractible power screw connectors and logics connectors.

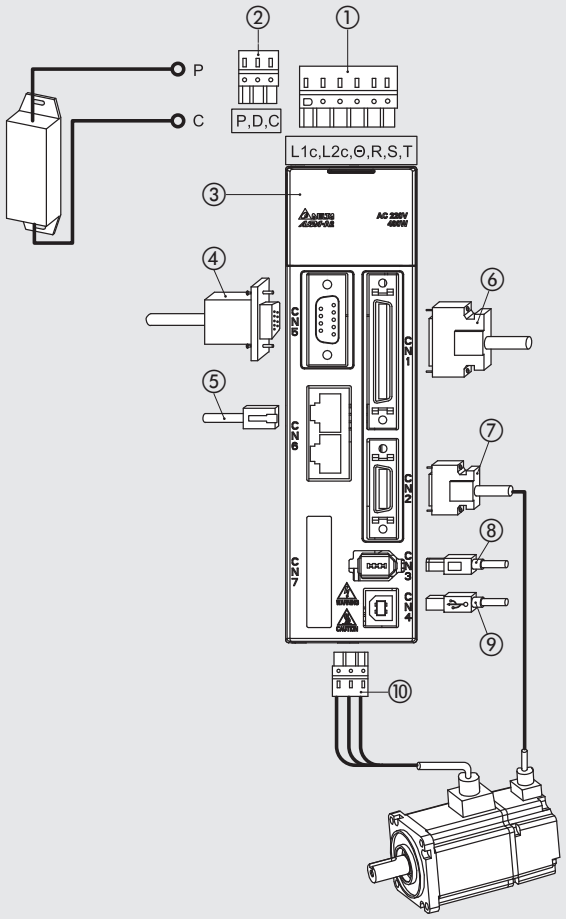
DRIVE TECHNICAL DATA

Drive code		**37D2100000**	**37D2200001**	**37D2300000**	**37D2400007**
Nominal power	W	100	200	400	750
Type of drive for BRUSHLESS motors		Metal box			
Dimensions	mm	170 x 173 x 45			180 x 173 x 65
Power connectors and motor power		Spring type			
Encoder connectors and signals		Plug-type 3M			
Max output current	A	2.7	4.65	7.80	15.30
Motor output stage		IGBT, PWM control, sinusoidal current			
Power voltage		Single-phase or three-phase (user configurable) 200VAC-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)			
Logic voltage		Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)			
Control		With analogue signal (proportional to speed and torque).			
		Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)			
		fieldbus with "CANopen" communication protocol			
		8 inputs and 5 outputs, user configurable.			
		In the event of pulse-train command, the control system outputs should be the Line Driver type.			
		If the outputs are the open-collector type, you can use a 37D2000000 board,			
		which is sold separately (see accessories).			
Auto-tuning		Yes			
Communication interface		Serial USB port for settings and monitoring via a personal computer			
Protections		Integrated against overloads, input extra-voltages,			
		incorporated filters for suppressing the system's own resonance frequencies.			
Standards		CE and UL			
Other features		5-digit display and programming keypad.			
		Integrated closed-loop system with position, speed and torque control modes.			
		Control mode: position + speed; position + torque; speed + torque.			
		Automatic dynamic braking circuit in a alarm and power-off conditions.			
		Connector for external braking resistance (optional).			
		Configuration and control software (optional).			
Suitable for motors code		**37M200000**	**37M2200001**	**37M2220001**	**37M2330001**
		37M400000	**37M4200001**	**37M4220001**	**37M4330001**
Connecting cable:					
Brushless **motor-drive** connecting cable, 3 metres		**37C2130001**			
Brushless **motor** with **brake-drive** connecting cable, 3 metres		**37C2730000**			
Brushless **motor-drive-encoder** connecting cable, 3 metres		**37C2230001**			
Brushless **motor-drive** connecting **dynamic** cable, 3 metres		**37C2130002**			
Brushless **motor-drive-encoder** connecting **dynamic** cable, 3 metres		**37C2230002**			
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 3 metres		**37C2730001**			
Brushless **motor-drive** connecting cable, 5 metres		**37C2150001**			
Brushless **motor** with **brake-drive** connecting cable, 5 metres		**37C2750000**			
Brushless **motor-drive-encoder** connecting cable, 5 metres		**37C2250001**			
Brushless **motor-drive** connecting **dynamic** cable, 5 metres		**37C2150002**			
Brushless **motor-drive-encoder** connecting **dynamic** cable, 5 metres		**37C2250002**			
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 5 metres		**37C2750001**			
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100003**			
Brushless **motor-drive-encoder** connecting **dynamic** cable, 10 metres		**37C2200003**			
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 10 metres		**37C2700001**			

WIRING DIAGRAM FOR 100W - 200W - 400W - 750W BRUSHLESS MOTOR DRIVES

① POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). **Included in the supply**.
Separate supply section for logic/signal and power electronics.
Integrated circuits protecting against overloads and input extra-voltages.
② CONNECTOR: for external braking resistance code 37D2R00000 (optional).
③ 5-DIGIT DISPLAY and PROGRAMMING KEYPAD: to display and modify parameters and monitor system operation in real time.
④ EXTERNAL ENCODER CONNECTOR (optional): possibility of connecting an external encoder to create a feedback of the linear axis position. Can support encoders A, B, Z, supplied at 5VDC.
⑤ CANopen CONNECTOR (optional): this drive is designed for communication with other devices via CANopen Fieldbus.
⑥ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 5 outputs, user configurable.
⑦ ENCODER CONNECTOR: connection for 100W - 200W - 400W - 750W BRUSHLESS motor encoder.
⑧ IEEE 1394 PC CONNECTOR: settings and possible connection to other devices via RS485 or RS232 (cable not included in the supply).
⑨ USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).
Data acquisition is only possible via this connection.
⑩ MOTOR POWER CONNECTOR

Log on to www.metalwork.it to view the instruction manual.



NOTES

DRIVE FOR 1kW DELTA BRUSHLESS MOTORS

It is a DELTA ASDA-A2-1021-M drive to be used only with a DELTA 1kW motor.
It features compact dimensions and considerable operating flexibility.
It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic.

DRIVE TECHNICAL DATA		
Drive code		**37D2400006**
Nominal power		1kW
Type of drive for BRUSHLESS motors		Metal box
Dimensions	mm	180 x 173 x 65
Power connectors and motor power		Screw type
Encoder connectors and signals		Plug-type 3M
Max output current	A	21.90
Motor output stage		IGBT, PWM control, sinusoidal current
Power voltage		Single-phase or three-phase (user configurable) 200VAC-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Logic voltage		Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control		With analogue signal (proportional to speed and torque).
		Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)
		fieldbus with "CANopen" communication protocol
		8 inputs and 5 outputs, user configurable.
		In the event of pulse-train command, the control system outputs should be the Line Driver type.
		If the outputs are the open-collector type, you can use a 37D2000000 board,
		which is sold separately (see accessories).
Auto-tuning		Yes
Communication interface		Serial USB port for settings and monitoring via a personal computer
Protections		Integrated against overloads, input extra-voltages,
		incorporated filters for suppressing the system's own resonance frequencies.
Standards		CE and UL
Other features		5-digit display and programming keypad.
		Integrated closed-loop system with position, speed and torque control modes.
		Control mode: position + speed; position + torque; speed + torque.
		Automatic dynamic braking circuit in a alarm and power-off conditions.
		Connector for external braking resistance (optional).
		Configuration and control software (optional).
Suitable for motors code		**37M2640000 - 37M4640000**
Connecting cable:		
Brushless **motor-drive** connecting cable, 3 metres		**37C3130001**
Brushless **motor** with **brake-drive** connecting cable, 3 metres		**37C3730000**
Brushless **motor-drive-encoder** connecting cable, 3 metres		**37C3230001**
Brushless **motor-drive** connecting **dynamic** cable, 3 metres		**37C2130006**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 3 metres		**37C2230007**
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 3 metres		**37C2730002**
Brushless **motor-drive** connecting cable, 5 metres		**37C3150001**
Brushless **motor** with **brake-drive** connecting cable, 5 metres		**37C3750000**
Brushless **motor-drive-encoder** connecting cable, 5 metres		**37C3250001**
Brushless **motor-drive** connecting **dynamic** cable, 5 metres		**37C2150006**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 5 metres		**37C2250008**
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 5 metres		**37C2750003**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100006**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 10 metres		**37C2200007**
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 10 metres		**37C2700002**

WIRING DIAGRAM FOR 1kW BRUSHLESS MOTOR DRIVES

① POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). **Included in the supply**.
Separate supply section for logic/signal and power electronics.
Integrated circuits protecting against overloads and input extra-voltages.
② CONNECTOR: for external braking resistance code 37D2R00000 (optional).
③ 5-DIGIT DISPLAY and PROGRAMMING KEYPAD: to display and modify parameters and monitor system operation in real time.
④ EXTERNAL ENCODER CONNECTOR (optional): possibility of connecting an external encoder to create a feedback of the linear axis position. Can support encoders A, B, Z, supplied at 5VDC.
⑤ CANopen CONNECTOR (optional): this drive is designed for communication with other devices via CANopen Fieldbus.
⑥ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 5 outputs, user configurable.
⑦ ENCODER CONNECTOR: connection for 100W - 200W - 400W - 750W BRUSHLESS motor encoder.
⑧ IEEE 1394 PC CONNECTOR: settings and possible connection to other devices via RS485 or RS232 (cable not included in the supply).
⑨ USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).
Data acquisition is only possible via this connection.
⑩ MOTOR POWER CONNECTOR

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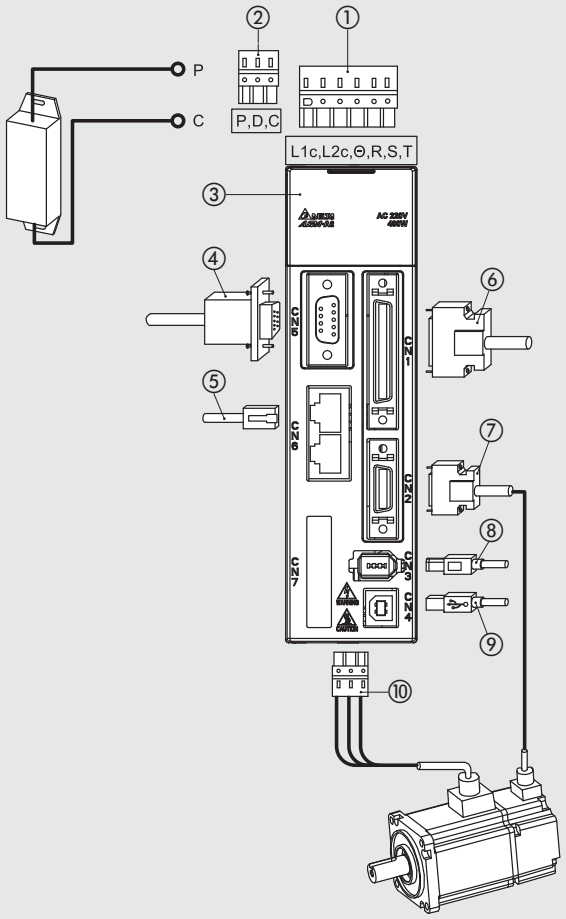

NOTES

DRIVE FOR 3kW DELTA BRUSHLESS MOTORS

It is a DELTA ASDA-A2-3043-M drive to be used only with a DELTA 3kW motor.
It features compact dimensions and considerable operating flexibility.
It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic.

DRIVE TECHNICAL DATA		
Drive code		**37D2600001**
Nominal power		3kW
Type of drive for BRUSHLESS motors		Metal box
Dimensions	mm	245 x 205.4 x 123
Power connectors and motor power		Screw type
Encoder connectors and signals		Plug-type 3M
Max output current	A	33.32
Motor output stage		IGBT, PWM control, sinusoidal current
Power voltage		Three-phase from 380VAC to 480VAC ±10% 50/60 Hz (± 3 Hz)
Logic voltage		24VDC ±10%
Control		With analogue signal (proportional to speed and torque).
		Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)
		fieldbus with "CANopen" communication protocol
		8 inputs and 5 outputs, user configurable.
		In the event of pulse-train command, the control system outputs should be the Line Driver type.
		If the outputs are the open-collector type, you can use a 37D2000000 board,
		which is sold separately (see accessories).
Auto-tuning		Yes
Communication interface		Serial USB port for settings and monitoring via a personal computer
Protections		Integrated against overloads, input extra-voltages,
		incorporated filters for suppressing the system's own resonance frequencies.
Standards		CE and UL
Other features		5-digit display and programming keypad.
		Integrated closed-loop system with position, speed and torque control modes.
		Control mode: position + speed; position + torque; speed + torque.
		Automatic dynamic braking circuit in a alarm and power-off conditions.
		Connector for external braking resistance (optional).
		Configuration and control software (optional).
Suitable for motors code		**37M2770000 - 37M4770000**
Connecting cable:		
Brushless **motor-drive** connecting cable, 3 metres		**37C3130001**
Brushless **motor** with **brake-drive** connecting cable, 3 metres		**37C3730000**
Brushless **motor-drive-encoder** connecting cable, 3 metres		**37C3230001**
Brushless **motor-drive** connecting **dynamic** cable, 3 metres		**37C2130006**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 3 metres		**37C2230007**
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 3 metres		**37C2730002**
Brushless **motor-drive** connecting cable, 5 metres		**37C3150001**
Brushless **motor** with **brake-drive** connecting cable, 5 metres		**37C3750000**
Brushless **motor-drive-encoder** connecting cable, 5 metres		**37C3250001**
Brushless **motor-drive** connecting **dynamic** cable, 5 metres		**37C2150006**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 5 metres		**37C2250008**
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 5 metres		**37C2750003**
Brushless **motor-drive** connecting **dynamic** cable, 10 metres		**37C2100006**
Brushless **motor-drive-encoder** connecting **dynamic** cable, 10 metres		**37C2200007**
Brushless **motor** with **brake-drive** connecting **dynamic** cable, 10 metres		**37C2700002**

WIRING DIAGRAM FOR 3kW BRUSHLESS MOTOR DRIVES

① LOGIC POWER CONNECTOR: 24VDC.
Included in the supply. Power section for logic electronics.
② POWER CONNECTOR: 400VAC, three-phase.
Included in the supply. Power signal supply section.
Integrated circuits protected against overload, input extra-voltages.
③ MOTOR POWER CONNECTOR
④ CONNECTOR: for external braking resistance code 37D2R00004 (optional).
⑤ 5-DIGIT DISPLAY and PROGRAMMING KEYPAD: to display and modify parameters and monitor system operation in real time.
⑥ EXTERNAL ENCODER CONNECTOR (optional): possibility of connecting an external encoder to create a feedback of the linear axis position. Can support encoders A, B, Z, supplied at 5VDC.
⑦ CANopen CONNECTOR (optional): this drive is designed for communication with other devices via CANopen Fieldbus.
⑧ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 8 inputs and 5 outputs, user configurable. **Included in the supply**.
⑨ ENCODER CONNECTOR: connection for 3kW BRUSHLESS motor encoder.
⑩ IEEE 1394 PC CONNECTOR: settings and possible connection to other devices via RS485 or RS232 (cable not included in the supply).
⑪ USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).
Data acquisition is only possible via this connection.

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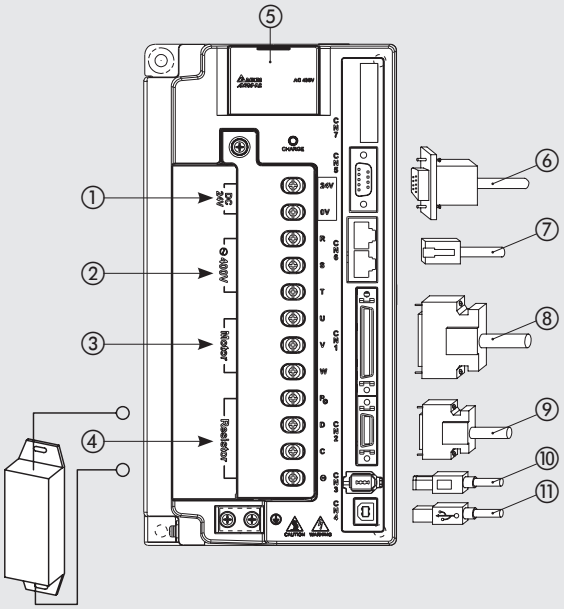


NOTES

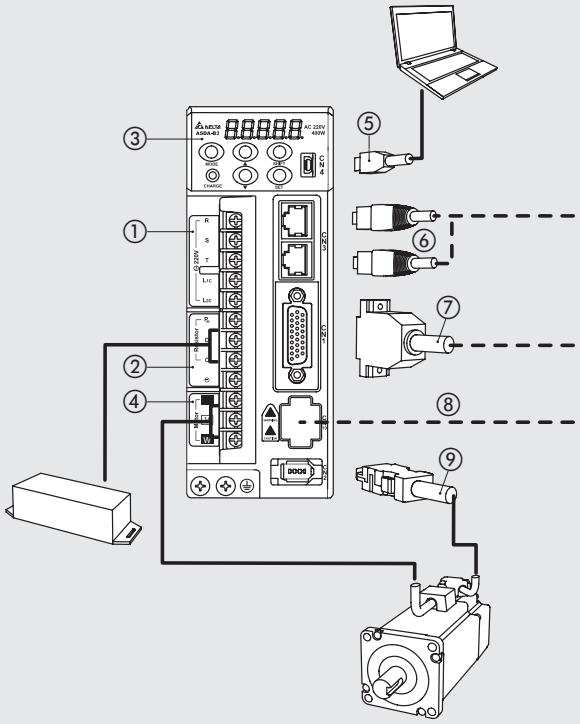
DRIVE FOR B3 400W DELTA BRUSHLESS MOTORS

It is a DELTA ASD-B3A-0421-M drive to be used only with a DELTA B3 400W motor.
It features compact dimensions and considerable operating flexibility.
It consists of a board housed in a metal box. It comes with pull-out screw connectors for power and plug connectors for logic.

DRIVE TECHNICAL DATA		
Drive code		**37D2300002**
Nominal power	W	400
Type of drive for BRUSHLESS motors		Metal box
Dimensions	mm	60 x 162 x 156
Power connectors and motor power		Spring type
Encoder connectors and signals		Plug-type, D-Sub high density 26 poles
Max output current	A	10.6
Motor output stage		IGBT, PWM control, sinusoidal current
Power voltage		Single-phase or three-phase (user configurable) 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Logic voltage		Single-phase 200-230VAC (+10%, -15%) 50/60 Hz (± 3 Hz)
Control		With analogue signal (proportional to speed and torque).
		Pulse-train (clock + direction; forward + backward pulse; 90° phase difference)
		fieldbus with "CANopen" communication protocol
		4 inputs and 2 outputs, user configurable.
		In the event of pulse-train command, the control system outputs should be the Line Driver type.
		If the outputs are the open-collector type, you can use a 37D2000000 board,
		which is sold separately (see accessories).
Auto-tuning		Yes
Communication interface		Serial USB port for settings and monitoring via a personal computer
Protections		Integrated against overloads, input extra-voltages, STO (Safe Torque Off)
		incorporated filters for suppressing the system's own resonance frequencies.
Standards		CE and UL
Other features		5-digit display and programming keypad.
		Integrated closed-loop system with position, speed and torque control modes.
		Control mode: position + speed; position + torque; speed + torque.
		Automatic dynamic braking circuit in a alarm and power-off conditions.
		Connector for external braking resistance (optional).
		Configuration and control software (optional).
Suitable for motors code		**37M2220002 - 37M4220002**
Connecting cable:		
Brushless **motor-drive, dynamic** cable, 3 metres		**37C2130002**
Brushless **motor-drive** with brake **dynamic** cable, 3 metres		**37C2230002**
Brushless **motor-drive-encoder, dynamic** cable, 3 metres		**37C2230006**
Brushless **motor-drive, dynamic** cable, 5 metres		**37C2150002**
Brushless **motor-drive** with brake **dynamic** cable, 5 metres		**37C2250002**
Brushless **motor-drive-encoder, dynamic** cable, 5 metres		**37C2250007**
Brushless **motor-drive, dynamic** cable, 10 metres		**37C2100003**
Brushless **motor-drive** with brake **dynamic** cable, 10 metres		**37C2200003**
Brushless **motor-drive-encoder, dynamic** cable, 10 metres		**37C2200006**

WIRING DIAGRAM FOR BRUSHLESS MOTOR DRIVES

① POWER CONNECTOR: 230VAC, single-phase and three-phase (user configurable). Separate supply section for logic/signal and power electronics. Integrated circuits protecting against overloads and input extra-voltages.
② Braking resistor connection (optional).
③ 5-DIGIT DISPLAY and PROGRAMMING KEYPAD: to display and modify parameters and monitor system operation in real time.
④ BRUSHLESS motor power cable connection
⑤ Mini USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).
⑥ CANopen CONNECTOR (optional): this drive is designed for communication with other devices via CANopen Fieldbus.
⑦ SIGNAL CONNECTOR: pulse-train command (clock + direction; forward + backward pulse; 90° phase difference) or with analogue signal (proportional to speed or torque) 4 inputs and 2 outputs, user configurable.
⑧ STO CONNECTOR: connector for functionality management safety Safe Torque Off
⑨ ENCODER CONNECTOR: connection for BRUSHLESS motor encoder.

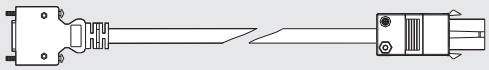


Log on to www.metalwork.it to view the instruction manual.

NOTES

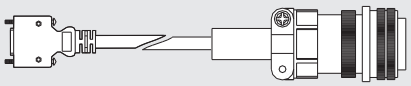
CABLES FOR DELTA BRUSHLESS MOTORS

ENCODER CABLE 100W - 750W



Code	Description
37C2230001	100W-750W brushless motor-drive-encoder connecting cable, 3 metres
37C2250001	100W-750W brushless motor-drive-encoder connecting cable, 5 metres
37C2230002	100W-750W brushless motor-drive-encoder connecting dynamic cable, 3 metres
37C2250002	100W-750W brushless motor-drive-encoder connecting dynamic cable, 5 metres
37C2200003	100W-750W brushless motor-drive-encoder connecting dynamic cable, 10 metres

ENCODER CABLE 1kW - 3kW



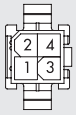
Code	Description
37C3230001	1kW - 3kW brushless motor-drive-encoder connecting cable, 3 m
37C3250001	1kW - 3kW brushless motor-drive-encoder connecting cable, 5 m
37C2230007	1kW - 3kW brushless motor-drive-encoder connecting dynamic cable, 3 metres
37C2250008	1kW - 3kW brushless motor-drive-encoder connecting dynamic cable, 5 metres
37C2200007	1kW - 3kW brushless motor-drive-encoder connecting dynamic cable, 10 metres

ENCODER CABLE B3 400W

Code	Description
37C2230006	B3 400W brushless motor-drive-encoder connecting dynamic cable, 3 metres
37C2250007	B3 400W brushless motor-drive-encoder connecting dynamic cable, 5 metres
37C2200006	B3 400W brushless motor-drive-encoder connecting dynamic cable, 10 metres

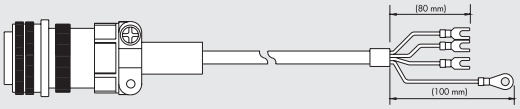
MOTOR POWER CABLE 100W - 750W

Code	Description
37C2130001	100W-750W brushless motor-drive connecting cable, 3 metres
37C2150001	100W-750W brushless motor-drive connecting cable, 5 metres
37C2130002	100W-750W brushless motor-drive connecting dynamic cable, 3 metres
37C2150002	100W-750W brushless motor-drive connecting dynamic cable, 5 metres
37C2100003	100W-750W brushless motor-drive connecting dynamic cable, 10 metres



Pin	Function	Corresponding wire colour
1	Motor phase U	Black 1
2	Motor phase V	Black 2
3	Motor phase W	Black 3
4	GND	Yellow / Green

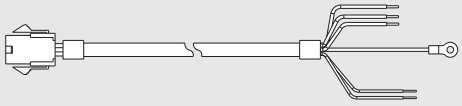
MOTOR POWER CABLE 1kW - 3kW



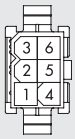
Code	Description
37C3130001	1kW - 3kW brushless motor-drive connecting cable, 3 m
37C3150001	1kW - 3kW brushless motor-drive connecting cable, 5 m
37C2130006	1kW - 3kW brushless motor-drive connecting dynamic cable, 3 metres
37C2150006	1kW - 3kW brushless motor-drive connecting dynamic cable, 5 metres
37C2100006	1kW - 3kW brushless motor-drive connecting dynamic cable, 10 metres

Pin	Function	Corresponding wire colour
A	-	-
B	Motor phase W	Black 4
C	-	-
D	-	-
E	GND	Yellow / Green
F	Motor phase U	Black 1
G	-	-
H	-	-
I	Motor phase V	Black 2

MOTOR POWER CABLE + BRAKE 100W - 750W

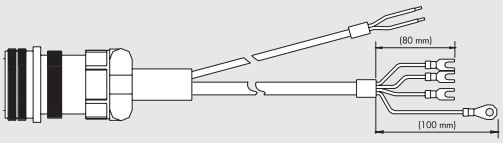


Code	Description
37C2730000	100W-750W brushless motor-drive connecting cable + brake, 3 metres
37C2750000	100W-750W brushless motor-drive connecting cable + brake, 5 metres
37C2730001	100W-750W brushless motor-drive connecting dynamic cable + brake, 3 metres
37C2750001	100W-750W brushless motor-drive connecting dynamic cable + brake, 5 metres
37C2700001	100W-750W brushless motor-drive connecting dynamic cable + brake, 10 metres

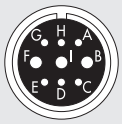


Pin	Function	Corresponding wire colour
1	Motor phase U	Black 1
2	Motor phase V	Black 2
3	24VDC brake	Black 3
4	Motor phase W	Black 4
5	GND	Yellow / Green
6	GND brake	Black 6

MOTOR POWER CABLE + BRAKE 1kW - 3kW



Code	Description
37C3730000	1kW - 3kW brushless motor drive connecting cable + brake, 3 m
37C3750000	1kW - 3kW brushless motor drive connecting cable + brake, 5 m
37C2730002	1kW - 3kW brushless motor-drive connecting dynamic cable + brake, 3 metres
37C2750003	1kW - 3kW brushless motor-drive connecting dynamic cable + brake, 5 metres
37C2700002	1kW - 3kW brushless motor-drive connecting dynamic cable + brake, 10 metres

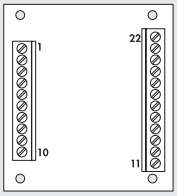


Pin	Function	Corresponding wire colour
A	-	-
B	Motor phase W	Black 4
C	-	-
D	-	-
E	GND	Yellow / Green
F	Motor phase U	Black 1
G	24VDC brake	Black 3
H	GND brake	Black 6
I	Motor phase V	Black 2

NOTES

ACCESSORIES FOR DELTA DRIVES

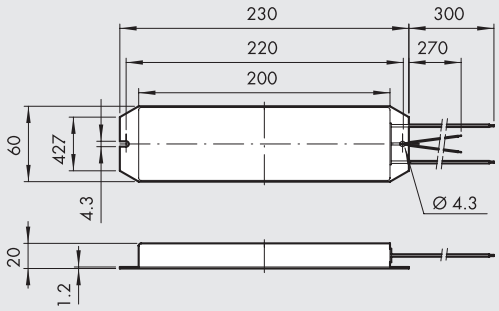
LINE-DRIVER INTERFACE BOARD



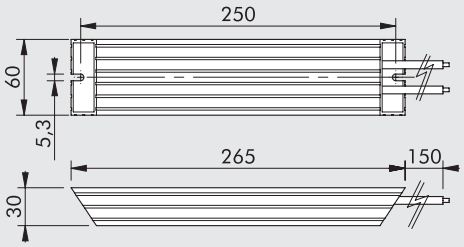
Code	Description
37D2000000	BRINT.A line driver interface board

EXTERNAL BRAKING RESISTANCES

220W



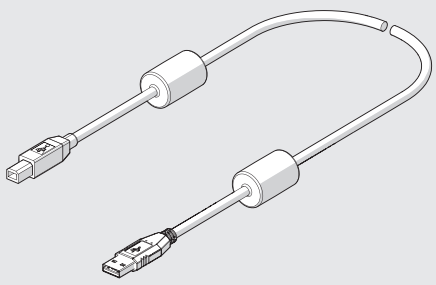
400W



Code	Description	For drive code
37D2R00000	220W 50 Ω braking resistance	37D2100000 - 37D2200001 37D2300000
37D2R00004	400W 40 Ω braking resistance	37D2300002 - 37D2400006 37D2400007 - 37D2600001

Under certain operating conditions, such as sudden deceleration with high inertial load, it may be necessary to dissipate externally the reverse energy generated by the motor. The drive indicates this requirement via a specific alarm. Excess energy is dissipated externally via a braking resistance.

CABLE USB



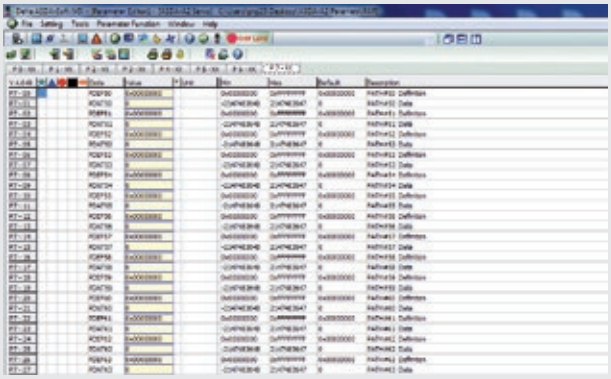
Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core, for connecting the drive brushless to a PC, 3 m	150

CONFIGURATION SOFTWARE ASDASoft

ASDASoft communication software is used for parameter setting and complete control of all functions of the system.
The configuration software can be downloaded free from the website http://www.deltaww.com
Access to parameter setting is done through the setup menus.
The software includes a detailed description of each parameter.
In addition to parameter setting ASDASoft software can accurately analyse operation of the system via the following functions.

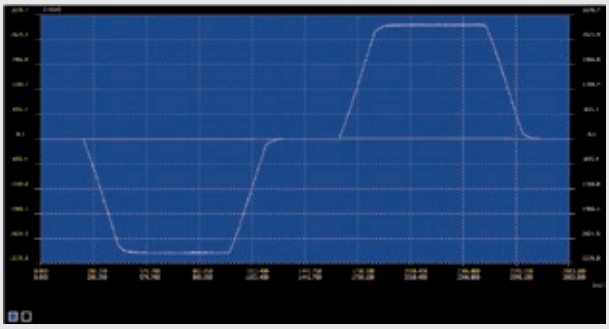
- Status Monitor: real-time display of all details about the system.
- Data Scope: a complete oscilloscope with 4 channels that can be selected as desired among analogue and digital signals.
- System Analisis: used to study the system's frequency response to identify and correct any mechancal resonance phenomena.

JOG speed modes are also available (Digital IO/Jog Control) and Gain Auto-Tuning.



GRAPHIC MONITOR

Thanks to the integrated oscilloscope function, some important system parameters, such as speed and torque, can be displayed and saved on the PC monitor.
Data can be downloaded and saved in compatible Excel format.
Displayed can be read using the cursor.



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