# ELECTRIC CYLINDER SERIES ELEKTRO SSC



An electric cylinder with a connection interface in accordance with ISO 15552.

The ELEKTRO SSC series differs from the ISO 15552 ELEKTRO series in some design choices, including the absence of the front and rear heads. The cylinder is available with two defined strokes, 30 mm and 55 mm respectively.

The piston rod moves forwards by either the hardened and tempered steel screw and a ball recirculating screw nut or a stainless steel screw and technopolymer lead nut.

The cylinder is equipped with an anti-rotation system that can be easily removed as required.

A magnet is fitted to the piston rod to provide a limit switch signal and two separate lengthwise slots are provided on the cylinder body to accommodate the Square-type sensors.

An easily removable plate is attached to the cylinder body to facilitate re-lubrication of the screw.

The cylinder is available in either in-line or geared version.

The motor can be selected from among an optimized range, which includes both STEPPING and BRUSHLESS motors.

The most suitable drives for the motors are also provided.

Special flanges and couplings are provided on request when motors of a make or model other than those specified in the catalogue are used.

N.B: It is essential for the piston rod to be provided with an anti-rotation system. Therefore, if the piston rod is not secured firmly to a flange or a similar element that prevents rotation, the anti-rotation version of the cylinder must be chosen



geared version

in-line version



TECHNICAL DATA		Ø 32
Piston rod thread	mm	M10x1.25
Environmental temperature range for STEPPING motors	°C	from -10 to +50
BRUSHLESS motors	°C	from 0 to +40
Electrical protection rating with STEPPING motors		IP55 or IP65 (see key to codes on page A5.63)
BRUSHLESS motors		IP65 (see key to codes on page A5.63)
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)
Standard strokes (including 5 mm extra-stroke) for homing	mm	30
	mm	55
Positioning repeatability	mm	±0.02 with ball screw
		±0.15 with lead screw
Positioning accuracy	mm	±0.2 * with screw/ball screw nut
		±0.4 * with lead screw
Overall radial oscillation of the piston rod (without load) for 55 mm of stroke	mm	0.10
Versions		Ball screw;
		Lead screw
		With or without piston rod non-rotating
		In line or geared motor
Anti-rotation of the piston rod		YES (depending on the choice)
Uncontrolled impact at the end of stroke		NOT ALLOWED (for rear buffer ONLY)
Sensor magnet		YES
Maximum angle of twist of the piston rod for non-rotating version		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 ...

ACTUATORS

ELECTRIC CYLINDER SERIES ELEKTRO SSC

SSC
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ELEC

MECHANICAL FEATURES		Ball s	screw	Lead screw			
Screw pitch (p)	mm	4	10	5	12.7		
Screw diameter	mm	12	12	12	12.7		
Static axial load (F <sub>a</sub> )*	N	3000	3000	995	1155		
Dynamic axial load (F)	N	5200	3160	600	300		
		Calculate n	nean axial load and the calcu	ulate life (see graphs on page	A5.56-57)		
		N.B: 25% duty cycle, i.e. the cylinder must work					
				maximum 25% of time	to allow the screw/ball		
				screw nut to cool down.			
Maximum number of revs	1/min	3000	3000	600	940		
Maximum speed (V <sub>max</sub> ) "K" ratio of motor revs and piston rod speed	mm/s	200	500	50	200		
"K" ratio of motor revs and piston rod speed	n/V	15	6	12	4.7		

Example: V = 100 mm/s; pitch =  $10 \rightarrow K = 6$  n = V x K =  $100 \times 6 = 600$  rpm

\* N.B.: Static loads bearable without damage. Payloads are shown in the diagrams on page A5.57 onwards

WEIGHTS		Ball	screw	Lead screw		
Screw pitch (p)	mm	4	10	5	12.7	
Weight at stroke 0, in-line version	g	767	777	577	582	
Weight at stroke 0, geared version	g	1077	1087	927	932	
Additional weight each mm of stroke	g	7.6	7.6	7.6	7.6	
Moving mass at stroke 0 (non-rotating version) Mx	g	199	209	140	145	
Additional moving mass each mm of stroke	g	2.5	2.5	2.5	2.5	

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 motor.

MASS MOMENTS OF INERTIA		Ball	screw	Lead screw		
Screw pitch	mm	4	10	5	12.7	
Transmission ratio (τ)		1:1	1:1	1:1	1:1	
JO at stroke 0	kgmm <sup>2</sup>	7.821	7.934	5.708	6.123	
J1 each metre of stroke	kgmm²/m	12.76	13.76	11.6	14.7	
J2 each kg of load	kgmm²/kg	0.4053	2.5330	0.6333	4.0855	
J3 in-line transmission	kgmm <sup>2</sup>	2.879	2.879	2.879	2.879	
J3 geared transmission	kgmm <sup>2</sup>	3.237	3.237	3.237	3.237	

The total mass moment of inertia (Jtot) reduced for the motor is: Jtot = [J1 . stroke [m] + J2 . (load [kg] + Mx [kg]) + J0] .  $\tau$ 2 + J3 Mx is defined in the weights table.

### CALCULATION OF MEAN AXIAL LOAD F<sub>m</sub> AND VERIFICATION

Peak axial load in a work cycle must not exceed the static axial load F<sub>o</sub>. 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<sub>m</sub>

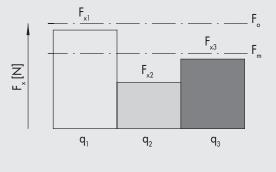
$$F_{m} = {}^{3} \sqrt{\sum F_{x}^{3} \times \frac{V_{x}}{V_{m}} \times \frac{q}{100}} =$$

$$F_{m} = {}^{3} \sqrt{F_{x1}^{3} \times \frac{V_{x1}}{V_{m}} \times \frac{q_{1}}{100} + F_{x2}^{3} \times \frac{V_{x2}}{V_{m}} + \frac{q_{2}}{100} + F_{x3}^{3} \times \frac{V_{x3}}{V_{m}} \times \frac{q_{3}}{100} + \dots}$$

- $\begin{array}{l} F_x &= Axial \mbox{ load at stage } x \\ F_m^{} &= Mean \mbox{ axial load during extension } \\ F_o^{} &= Static \mbox{ axial load } \end{array}$

- $q^{\circ}$  = Time segment V<sub>x</sub> = Speed in the phase x
- $V_{m}$  = Average speed

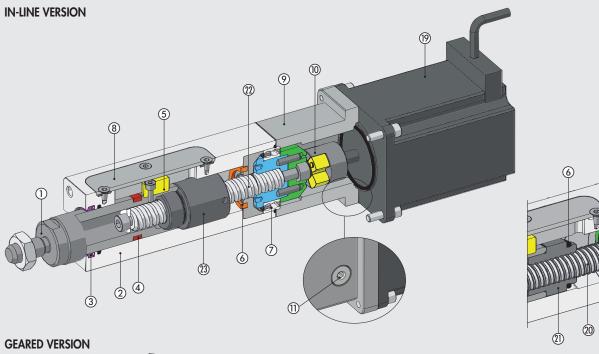
The mean axial load must not exceed the dynamic axial load:  $F_m \le F$ 

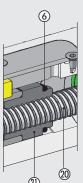


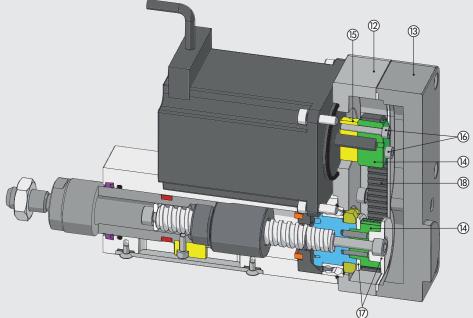
q [100%]



### **COMPONENTS**







- ① PISTON ROD: stainless steel (AISI 316)
- BODY: aluminium alloy with wear-resistant coating

- WIPER RING: polyurethane
   MAGNET: plastoferrite (optional)
   ANTI-ROTATION KEY: brass (optional)
- BUFFER: polyurethane
   BEARING: oblique with two ball rings
- PLATE: stainless steel (AISI 304)
- ③ ADAPTOR PLATE: anodized aluminium
- 1 ELASTIC COUPLING: aluminium / polyurethane
- PLUG: for access to the elastic coupling screw
   TRANSMISSION PLATE: anodized aluminium
- (13) COVER: anodized aluminium
- (4) COG PULLEY: anodized aluminium

- (5) ELASTIC COLLAR: anodized aluminium
- (6) ELASTIC COLLAR-LOCKING SCREWS: zinc-plated steel
- ⑦ BELT FLANGES: anodized aluminium
- 100 TOOTHED BELT: polyurethane with steel cables
- 19 MOTOR

### Version with lead screw:

- ② SCREW: stainless steel (AISI 304)
- 1 NUT: technopolymer

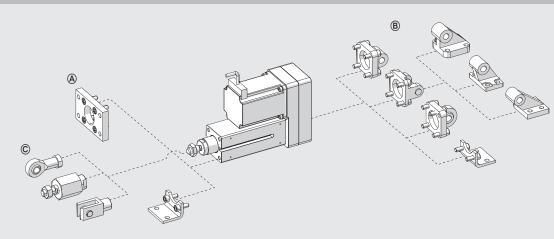
### Version with ball screw:

- 2 SCREW: hardened and rolled steel
- 1 NUT: ball recirculating

ELECTRIC CYLINDER SERIES ELEKTRO SSC

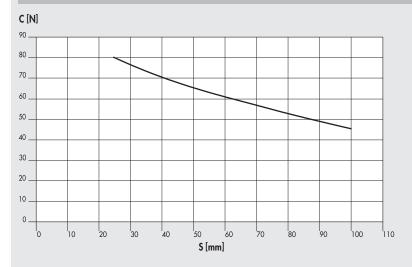
**FIXING OPTIONS** 

# ELECTRIC CYLINDER SERIES ELEKTRO SSC

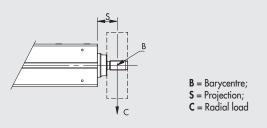


A Fitted directly to the front of the cylinder body, using 4 threaded holes according to ISO 15552
 B Fitted to the rear (geared version only), using 4 threaded holes according to ISO 15552
 C Piston rod accessories.

### 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.

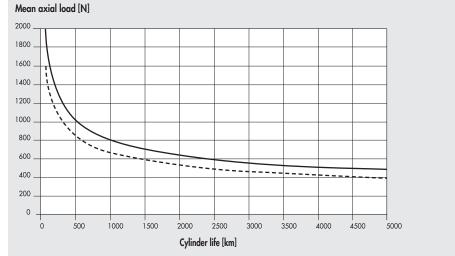


Screw pitch 4

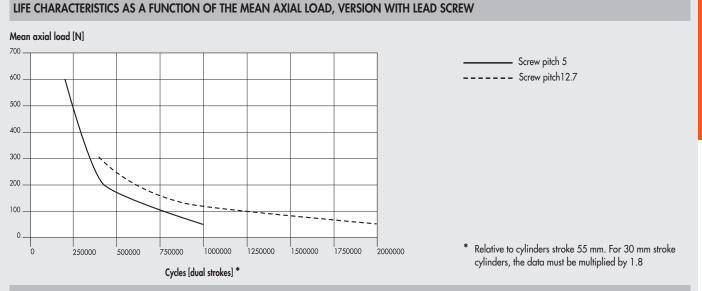
---- Screw pitch 10

### LIFE CHARACTERISTICS AS A FUNCTION OF THE MEAN AXIAL LOAD, VERSION WITH BALL SCREW

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



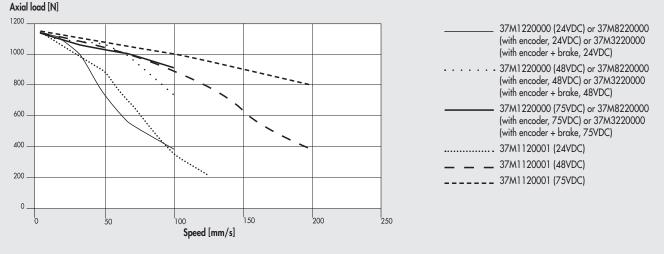




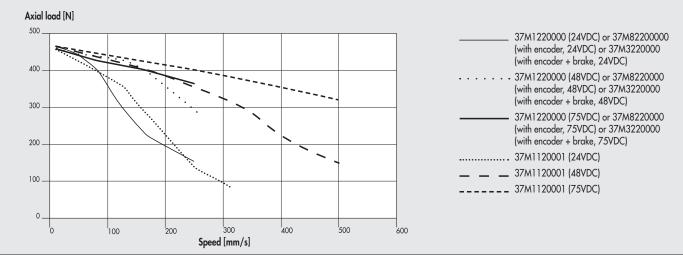
### AXIAL LOAD CURVES AS A FUNCTION OF SPEED (CYLINDER COMPLETE WITH MOTOR AND DRIVE)

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 ball screw, STEPPING motor, STEPPING motors with encoder, STEPPING motors with encoder + brake

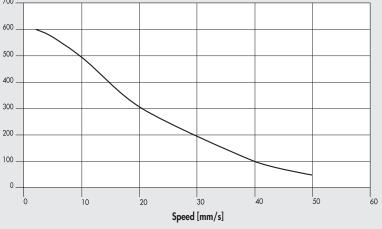


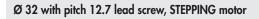


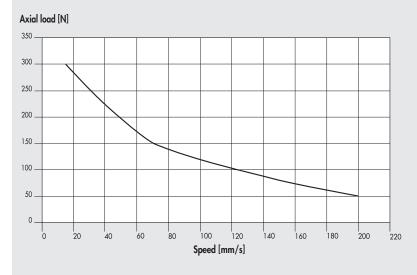


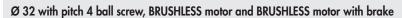
### Ø 32 with pitch 5 lead screw, STEPPING motor

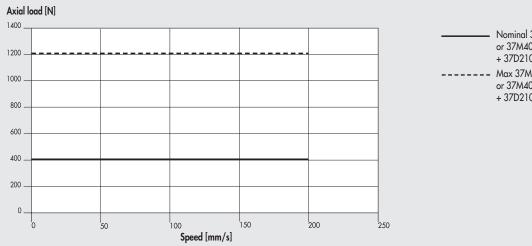
Axial load [N] 700 600 500





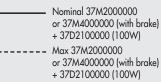








37M1120001 (24VDC) or 37M1220000 (24VDC) or 37M8220000 (with encoder, 24VDC) or 37M3220000 (with encoder + brake, 24VDC)



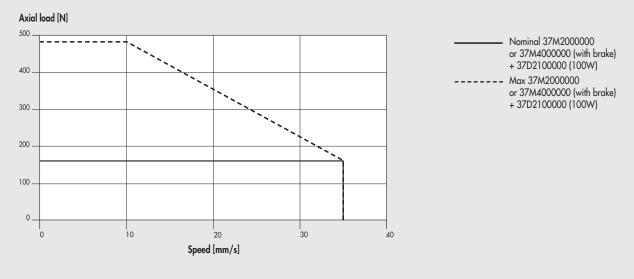


### Axial load [N] 500 400 300 200 100 0 0 300 400 500 100 200 600 Speed [mm/s]

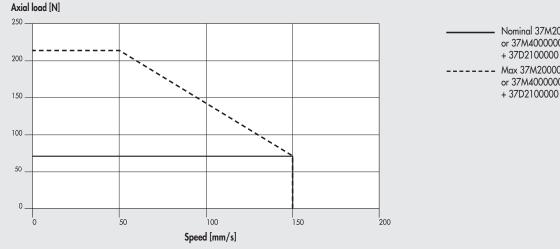
Ø 32 with pitch 10 ball screw, BRUSHLESS motor and BRUSHLESS motor with brake

Nominal 37M200000 or 37M4000000 (with brake) + 37D2100000 (100W) - Max 37M2000000 or 37M4000000 (with brake) + 37D2100000 (100W)

Ø 32 with pitch 5 lead screw, BRUSHLESS motor and BRUSHLESS motor with brake



Ø 32 with pitch 12.7 lead screw, BRUSHLESS motor and BRUSHLESS motor with brake

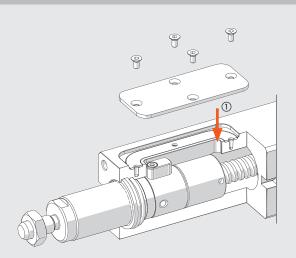




**ACTUATORS** 

ELECTRIC CYLINDER SERIES ELEKTRO SSC

### LUBRICATION DIAGRAMS



- Retract the piston rod towards the motor adapter plate until the piston
- Nove the pistor rod towards me motor dadpler plate onm me pistor rod/ball scroll system rests against the rear buffer.
  Move the pistor rod at low speed and/or controlled torque forwards by a value corresponding to the cylinder total stroke.
  Remove the plate by unscrewing the 4 screws.
  Lubricate the screw using a food-grade grease pump (code 9910514),
- according to the quantities shown in the table.
- Make the piston rod perform four complete strokes. The piston rod should end up in the initial (retracted) position. •

- Repeat the last two operations
  Refit the plate by tightening the 4 screws.
  The operation of re-greasing will have to be repeated every 200 km, approximately, at least once a year.

		Ø 32				
Screw pitch (p)	mm	4	10	5	12.7	
Relube grease quantity	g	0.3	0.5	0.3	0.5	
	cc	0.26	0.42	0.26	0.42	

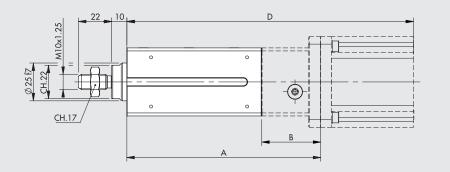
### NOTES

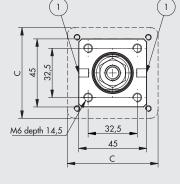


### **DIMENSIONS CYLINDER IN-LINE**

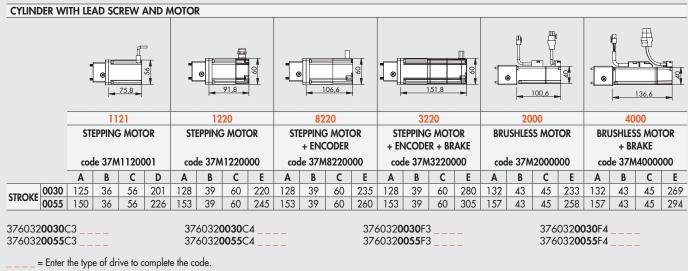
### WITHOUT MOTOR

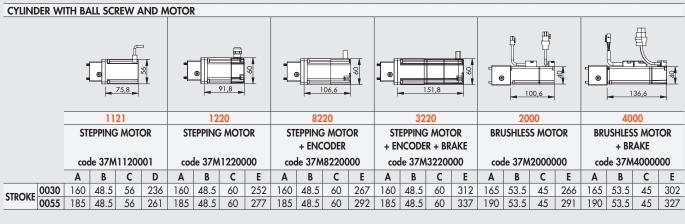
(1) =Slots for sensors





### WITH MOTOR



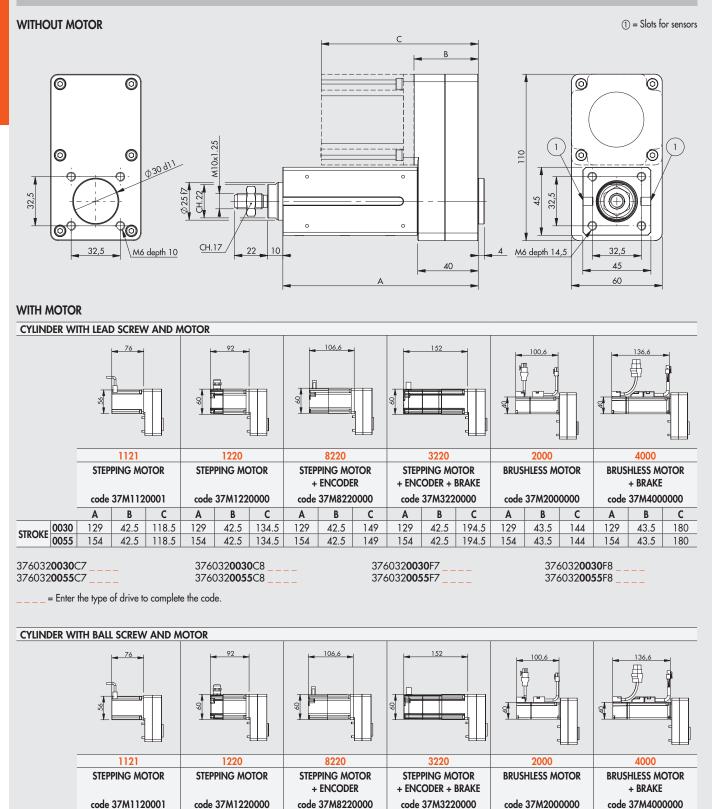


 376032**0030**14 \_\_\_\_ 376032**0055**14 \_\_\_\_  ACTUATORS

ACTUATORS

ELECTRIC CYLINDER SERIES ELEKTRO SSC

### DIMENSIONS CYLINDER GEARED



0030

0055

376032003017

376032005517

STROKE

В

42.5

42.5

A

152

177

С

118.5

118.5

В

42.5

42.5

376032003018

376032005518

С

134.5

134.5

А

152

177

A

152

177

В

42.5

42.5

С

149

149

Α

152

177

376032003047

376032005547

В

42.5

42.5

С

194.5

194.5

A

152

177

В

43.5

43.5

С

144

144

376032003048

376032005548

Α

152

177

В

43.5

43.5

С

180

180



### **MOTOR-DRIVE COUPLINGS**

MOTOR CODE	5	DRIVES CODES							
		Metal Work	37D1332000 *	37D1442000	37D1552000				
		Manufacturer	RTA NDC 96	RTA PLUS A4	RTA PLUS B7				
Metal Work	Manufacturer		(6A 24-75VDC)	(6A 24-75VDC)	(10A 28-62VAC)				
STEPPING									
37M1120001	Motor SANYO DENKI 103-H7126-6640 (5.6A 75V max)				√ ■				
37M1220000	Motor B&R 80MPF3.250S000-01 + kit IP65 (5A 80V max)		$\sqrt{\blacklozenge}$	$\sqrt{\blacksquare}$	$\sqrt{-1}$				
STEPPING + E	NCODER								
37M8220000	Motor B&R 80MPF3.500S114-01 (5A 80V max)		$\sqrt{igstar}$	√ ■	√ ■				
STEPPING WITH BRAKE + ENCODER									
37M3220000	Motor B&R 80MPF3.500D114-01 (5A 80V max)		√ ♦	√ ■	√ ■				

\* 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! AC drive to continuous voltage VDC = VAC · 2

MOTOR CODES		DRIVES CODES						
		Metal Work	37D2100000					
		Manufacturer	DELTA ASD-A2-0121-M					
Metal Work	Manufacturer		(100W)					
BRUSHLESS								
37M2000000	Motor DELTA ECMA-C20401RS (100W)							
BRUSHLESS WITH BRAKE								
37M4000000	Motor DELTA ECMA-C20401SS (100W)							
			· · · · · · · · · · · · · · · · · · ·					

### **KEY TO CODES**

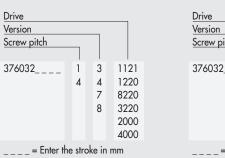
								DRIV	E	
CYL	37	6	032	0030	1	3	1	1	2	1
	TYPE	FAMILY	SIZE	STROKE	SCREW	VERSION	MOTOR	FLANGE	TORQUE	
	37 Electric actuators	6 Electric cylinder SSC	<b>032</b> Ø32	0030 30 mm 0055 55 mm	<ol> <li>With pitch 4 ball screw</li> <li>With pitch 10 ball screw</li> <li>With pitch 5 lead screw</li> <li>With pitch 12.7 lead screw</li> </ol>	IN-LINE • 3 Without non-rotating IP55/IP65 • 4 With antirotation, IP55/IP65 • 7 Without non-rotating IP55/IP65 • 8 With antirotation, IP55/IP65	<ol> <li>STEPPING</li> <li>BRUSHLESS</li> <li>STEPPING with BRAKE + encoder</li> <li>BRUSHLESS with BRAKE</li> <li>STEPPING + encoder</li> </ol>	0 40x40 1 NEMA 23 2 60x60	0 0-0.79 Nm 2 1.2-2.19 Nm	0 Base 1 Greater rpm

• Version available for all drives, except for motor code 37M112001, which is IP55 protected.

### POSSIBLE ORDERING CODES

### Ø 32 with ball screw

Ø 32 with multi-step screw



Version			
Screw pitch			
376032	С	3	1121
	F	4	1220
		7	8220
		8	3220
			2000
			4000

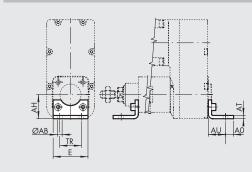




### ACCESSORIES FOR ELECTRIC CYLINDER SERIES ELEKTRO SSC

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

### FOOT MODEL A

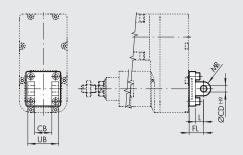


STEEL										
Code	Ø	Ø AB	AH	AO	AT	AU	TR	Ε	Weight [g]	Fmax [N]
W0950322001	32	7	32	11	4	24	32	45	76	1600

Note: Individually packed with 2 screws.

N.B.: Rear mounting requires 2 M6x14 UNI 5931screws.

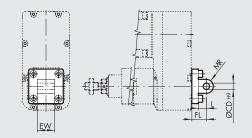
### FEMALE HINGE - MODEL B



ALUMINIUM										
Code	ø	UB	CB	FL	øCD	MR	L	Weight [g]	Fmax [N]	
W0950322003	32	45	26	22	10	10	12	116	800	
STEEL										
Code	ø	UB	CB	FL	øCD	MR	L	Weight [g]	Fmax [N]	
W095E322003	32	45	26	22	10	10	13	348	1600	

Note: Supplied with 4 screws, 4 washers, 2 snap rings and 1 pin. N.B.: Rear mounting requires 4 M6x16 UNI 5931 screws.

### MALE HINGE - MODEL BA

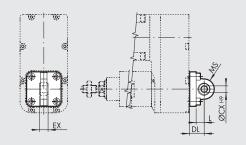


ALUMINIUM Code	ø	EW	FL	MR	øCD	L	Weight [g]	Fmax [N]	
W0950322004	32	26	22	11	10	12	94	800	
STEEL									
Code	Ø	EW	FL	MR	øCD	L	Weight [g]	Fmax [N]	
W095E322004	32	26	22	10	10	13	282	1600	

Note: Supplied with 4 screws.

N.B.: Rear mounting requires 4 M6x14 UNI 5931 screws.

### ARTICULATED MALE HINGE - MODEL BAS



ALUMINIUM Code	ø	DL	MS	L	øCX	EX	Weight [g]	Fmax [N]
W0950322006	32	22	16	12	10	14	106	800
STEEL								
Code	ø	DL	MS	L	øСХ	EX	Weight [g]	Fmax [N]
W095E322006	32	22	15	14	10	14	318	1600

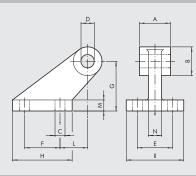
Note: Supplied with 4 screws, 4 washers.

N.B.: Rear mounting requires 4 M6x16 UNI 5931 screws.

**ACTUATORS** 

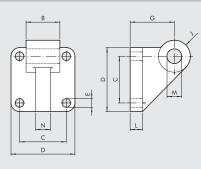


### **CETOP HINGE FOR MODEL B - MODEL GL**



ALUMINIUM															_
	ø	Α	В	с	D	E	F	G	н	I	L	м	Ν	Weight [g]	Fmax [N]
W0950322008															800
Note: Supplied w	uth 1 a	crow		acha	~										
Thole. Supplied w	/111 4 5	crews	, 4 w	usne	5.										

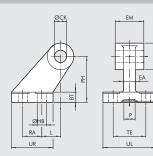
COUNTER-HINGE FOR MODEL B - MODEL GS



ALUMINIUM Code	ø	В	с	D	E	G	J	L	м	N	Weight [g]	Fmax [N]
W0950322108	32	26	32.5	45	7	32	11	10	10	10	106	800

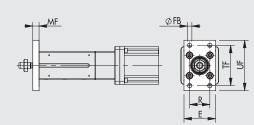
Note: Supplied with 4 screws, 4 washers.

### ISO 15552 COUNTER-HINGE FOR MODEL B - MODEL AB7



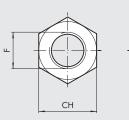
ALUMINIUM Code W0950322017	Ø 32	<b>EM</b> 26	-													Weight [g] 60	<b>Fmax [N]</b> 800
STEEL Code	ø	EM	-													Weight [g]	Fmax [N]
W095E322017	32	26	20	6.6	10	38	18	32	31	51	3	8	10	20	5	180	1600

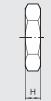
### FRONT FLANGE - MODEL C



Code	Ø	TF	UF	E	MF	R	øFB	Weight [g]	Fmax [N]
W0950322002	32	64	80	50	10	32	7	246	1600
Note: Supplied v	vith 4 so	crews.							

**ROD NUT - MODEL S** 

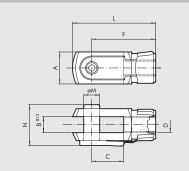




Code	Ø	F	Н	СН	Weight [g]
0950322010	32	M10x1.25	6	17	6

Note: Individually packed.

### FORK MODEL GK-M

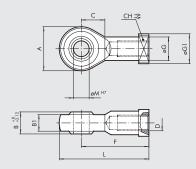


Code	Ø	øM	С	В	Α	L	F	D	Ν	Weight [g]
W0950322020	32	10	20	10	20	52	40	M10x1.25	26	92
Note: Individual	y packeo	ł.								

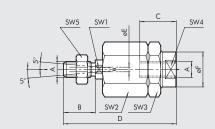
 Code
 Ø
 øM
 C
 B1
 B
 A
 L
 F
 D
 øG
 CH
 øG1
 Weight [g]

 W0950322025
 32
 10
 15
 10.5
 14
 28
 57
 43
 M10x1.25
 15
 17
 19
 78

### **ROD EYE - MODEL GA-M**



### SELF ALIGNING ROD COUPLER - MODEL GA-K



<b>C</b>	a			~				C) 4/1	0140	011/0	C14/4	C14/5	M + 1 - F 1
		Α											
		M10.1 25	20	20	71	22	Λ	12	30	30	19	17	216
W0950322030	32	MIUX1.25	20	20	/ 1	22	-			00	.,	.,	2.0
W0950322030	32	M10X1.23	20	20	71	~~~	-			00	.,	.,	2.0
W0950322030 Note: Individually			20	20	/1		-				17	.,	2.0

Note: Individually packed.

### GREASE



Code 9910514	Description Grease pipe ULTRAPLEX FG1 NSF CAT H1	Weight [g] 400

### **RETRACTABLE SENSOR**

### SENSOR, SQUARE TYPE Latest generation, secure fixing



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

ACTUATORS



### DRIVES



### Code 37D2100000 37D1332000 37D1442000 37D1552000

For technical data see from page **A5**.170 For motor-drive couplings see page **A5**.63

### **SPARE PARTS**

### **ELECTRIC MOTORS**



Code 37M1120001 37M1220000 37M200000 37M3220000 37M4000000 37M8220000

For technical data see from page A5.138 For motor-drive couplings see page A5.63

NOTES

# **STEPPING MOTORS**

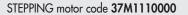
## **STEPPING MOTORS**

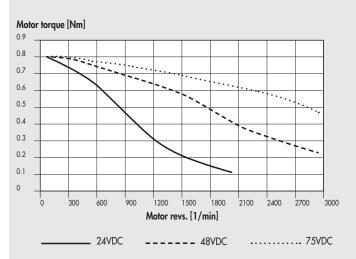
N.B.: With motor off, the drive current is automatically reduced by 50% to prevent overheating. Consequently, available torque with the motor stopped is also reduced by 50%.

ACTUATORS

**A5** 

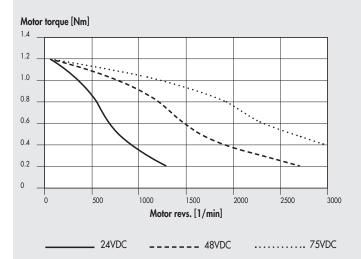
### TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS





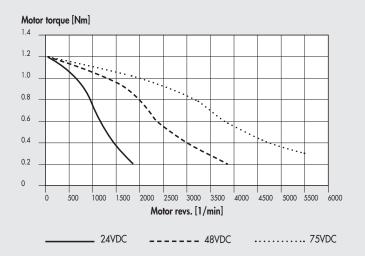
ECHNICAL DATA		MOTOR 37M1110000
Notor type		STEPPING
Nominal torque	Nm	0.8
Coupling flange		NEMA 23
base step angle		1.8°±0.09°
Bipolar current	A	4
Resistance	Ω	0.41
nductance	mH	1.6
Bipolar holding torque	Nm	1.1
Rotor inertia	kgmm <sup>2</sup>	21
heoretical acceleration	rad · s <sup>-2</sup>	50000
Back E.M.F.	V/krpm	20
Mass	kg	0.65
Degree of protection		IP40
ECHNICAL DATA		MOTOR 37M1120000
Notor type		STEPPING
Notor type Nominal torque	Nm	STEPPING 1.2
Notor type Iominal torque Toupling flange	Nm	Stepping 1.2 Nema 23
Aotor type Jominal torque Coupling flange ase step angle	Nm	STEPPING 1.2
Notor type	A	STEPPING <b>1.2</b> <b>NEMA 23</b> 1.8°±0.09° 4
Notor type Iominal torque ioupling flange ase step angle ipolar current		STEPPING <b>1.2</b> <b>NEMA 23</b> 1.8°±0.09°
Notor type Jominal torque coupling flange ase step angle ipolar current esistance rductance	Α Ω mH	STEPPING <b>1.2</b> <b>NEMA 23</b> 1.8°±0.09° 4
Notor type Jominal torque coupling flange ase step angle ipolar current esistance rductance ipolar holding torque	Α Ω mH Nm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48
Notor type Jominal torque coupling flange ase step angle ipolar current esistance rductance ipolar holding torque	A Ω mH Nm kgmm²	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2
Notor type Iominal torque ioupling flange ase step angle ipolar current esistance iductance ipolar holding torque otor inertia	Α Ω mH Nm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65
otor type ominal torque oupling flange ase step angle polar current esistance ductance polar holding torque otor inertia neoretical acceleration	A Ω mH Nm kgmm² rad·s²	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36
otor type ominal torque oupling flange ase step angle polar current esistance ductance polar holding torque otor inertia neoretical acceleration ack E.M.F.	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800
otor type ominal torque oupling flange use step angle polar current ductance polar holding torque otor inertia ueoretical acceleration ack E.M.F. ass	A Ω mH Nm kgmm² rad·s²	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31
Notor type lominal torque oupling flange ase step angle sipolar current esistance iductance iductance otor inertia neoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
otor type ominal torque oupling flange use step angle polar current ductance polar holding torque otor inertia neoretical acceleration ack E.M.F. ass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
otor type ominal torque oupling flange use step angle polar current ductance polar holding torque otor inertia neoretical acceleration ack E.M.F. ass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type lominal torque oupling flange ase step angle sipolar current esistance iductance iductance otor inertia neoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type lominal torque oupling flange ase step angle sipolar current esistance iductance iductance otor inertia neoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type lominal torque oupling flange ase step angle sipolar current esistance iductance iductance otor inertia neoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type Iominal torque ioupling flange ase step angle esistance iductance iductance otor inertia heoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type Iominal torque ioupling flange ase step angle	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type dominal torque icoupling flange ase step angle ipolar current esistance inductance ipolar holding torque otor inertia heoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type Iominal torque ioupling flange ase step angle esistance iductance iductance otor inertia heoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
otor type ominal torque oupling flange use step angle polar current ductance polar holding torque otor inertia neoretical acceleration ack E.M.F. ass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
otor type ominal torque oupling flange use step angle polar current ductance polar holding torque otor inertia eoretical acceleration tok E.M.F. ass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
Notor type dominal torque icoupling flange ase step angle ipolar current esistance inductance ipolar holding torque otor inertia heoretical acceleration ack E.M.F. Nass	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1
otor type ominal torque oupling flange ase step angle polar current esistance ductance polar holding torque otor inertia neoretical acceleration ack E.M.F.	A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	STEPPING 1.2 NEMA 23 1.8°±0.09° 4 0.48 2.2 1.65 36 45800 31 1

STEPPING motor code 37M1120000

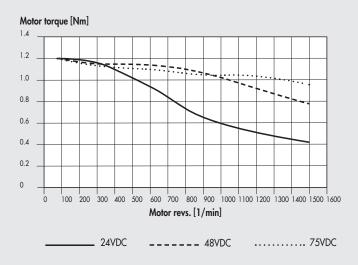




### STEPPING motor code 37M1120001

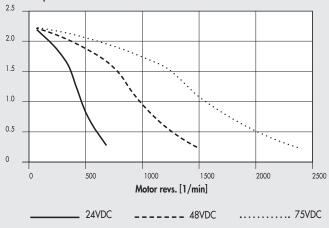


### STEPPING motor code 37M1220000



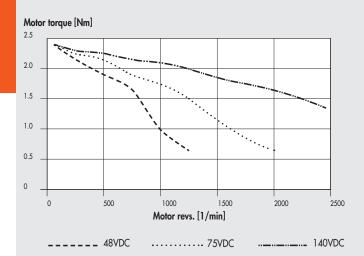
### STEPPING motor code 37M1230000



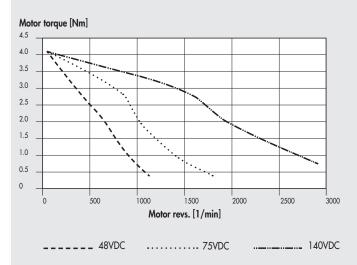


TECHNICAL DATA		MOTOR 37M1120001
Motor type		STEPPING
Nominal torque	Nm	1.2
Coupling flange	1 NIII	NEMA 23
		1.8°±0.09°
Base step angle		
Bipolar current	A	5.6
Resistance	Ω	0.3
Inductance	mH	0.85
Bipolar holding torque	Nm	1.65
Rotor inertia	kgmm <sup>2</sup>	36
Theoretical acceleration	rad · s <sup>-2</sup>	45800
Back E.M.F.	V/krpm	23
Mass	kg	1
Degree of protection		IP43
TECHNICAL DATA		MOTOR 37M1220000
Motor type		STEPPING
	Nm	1.2
Nominal torque		=
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	kgmm <sup>2</sup>	44
Mass	kg	1.28
Degree of protection	0	IP65
CABLE		
Power cable for stepping motors wi	th brake.	supplied
1 metre		
TECHNICAL DATA		
TECHNICAL DATA		MOTOR 37M1230000
Motor type		STEPPING
Nominal torque	Nm	2.2
Coupling flange (square)	Nm mm	60
Coupling flange (square) Base step angle		
Coupling flange (square)		60
Coupling flange (square) Base step angle	mm	<b>60</b> 1.8°±0.09°
Coupling flange (square) Base step angle Bipolar current	mm	<b>60</b> 1.8°±0.09° 4
Coupling flange (square) Base step angle Bipolar current Resistance Inductance	mm Α Ω	<b>60</b> 1.8°±0.09° 4 0.65
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque	mm Α Ω mH Nm	<b>60</b> 1.8°±0.09° 4 0.65 2.4
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia	mm Α Ω mH Nm kgmm <sup>2</sup>	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration	mm Α Ω mH Nm kgmm <sup>2</sup> rad · s <sup>2</sup>	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F.	mm A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	mm Α Ω mH Nm kgmm <sup>2</sup> rad · s <sup>2</sup>	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75 1.4
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F.	mm A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	mm A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75 1.4
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	mm A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75 1.4
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	mm A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75 1.4
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	mm A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75 1.4
Coupling flange (square) Base step angle Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	mm A Ω mH Nm kgmm <sup>2</sup> rad · s <sup>-2</sup> V/krpm	<b>60</b> 1.8°±0.09° 4 0.65 2.4 3 84 35700 75 1.4

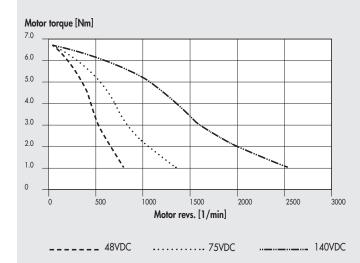
### STEPPING motor code 37M1430000



STEPPING motor	code <b>37M1440000</b>
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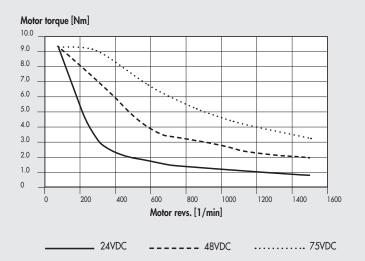
### STEPPING motor code 37M1450000



Aominal torque     Nm     2.4       Coupling flange     NEMA 34       iase step angle     1.8°±0.09°       iso set pangle     0.3       tesistance     Ω       0.3     0.3       iductance     mH       1.65     0.3       ipolar holding torque     Nm       0.3     3       iotor inertia     kgmm²       heoretical acceleration     rad · s²       20600     stas       kg     1.5       begree of protection     IP43       ECHNICAL DATA     MOTOR 37M1440000       Motor type     STEPPING       assistance     Ω       0.35     inductance       ipolar current     A       6     6       esistance     Ω       0.35     ductance       min     5.6       otor inertia     kgmm²       ipolar current     A       6     6       esistance     Ω       0.35     kg       ipolar holding torque     Nm       5.6     33       otor inertia     kgmm²       1.8*20.09°     STEPPING       Ass     kg       2.5     1.8*20.09°       ipolar current parallel	TECHNICAL DATA		MOTOR 37M1430000
Coupling flangeNEMA 34isse step angle $1.8^{\circ}\pm0.09^{\circ}$ ipolar currentAáductance $\Omega$ aductance $MH$ 1.65ipolar holding torqueNm3ipolar currentkorn inertiakgmm²heoretical accelerationrad 's²20600ick E.M.F.V/krpmS0Atasskglegree of protectionIP43ipolar holding torqueNm4.2MOTOR 37M1440000Motor typeIP43ioopling flange1.8°±0.09°ipolar currentA66esistance $\Omega$ 0.35iductanceinductancemH2.7ipolar currentA6esistance $\Omega$ 0.35iductancemductancemH2.7ipolar currentA6esistance $\Omega$ 0.35iductancemdasskg2.5IP43egree of protectionIP43estep angleI.8°±0.09°ipolar current parallelA6.7ipolar holding torqueNm6.7ipolar holding torqueNm6.70.46ipolar holding torqueNm6.70.46ipolar current parallelA66ipolar current parallelA66ipolar holding torqueNm9.20.46 <th>Motor type</th> <th></th> <th>STEPPING</th>	Motor type		STEPPING
isole step angle 1.8°±0.09° isole rourrent A 6 lesistance Ω 0 0.3 doctance mH 1.65 isolar holding torque Nm 3 totor ineria kgmm <sup>2</sup> 145 heoretical acceleration rad · s² 20600 ack E.M.F. V/kpm 50 Aass kg 1.5 Degree of protection IP43 ECHNICAL DATA MOTOR 37M1440000 STEPPING Job StepPing STEPPING acs step angle 1.8°±0.09° ipolar current A 6 sistance Ω 0.35 iductance mH 2.7 ipolar holding torque Nm 5.6 ator ineria kgmm <sup>2</sup> 290 horitical acceleration rad · s² 1.8°±0.09° STEPPING Job StepPing STEPPING ack E.M.F. V/kpm 93 tass kg 2.5 legree of protection IP43 ECHNICAL DATA MOTOR 37M1450000 STEPPING Action torpue Nm 5.6 ator ineria kgmm <sup>2</sup> 290 horitical acceleration rad · s² 1.8°±0.09° STEPPING Job StepPing	Nominal torque	Nm	2.4
isole step angle 1.8°±0.09° isole rourrent A 6 lesistance Ω 0 0.3 doctance mH 1.65 isolar holding torque Nm 3 totor ineria kgmm <sup>2</sup> 145 heoretical acceleration rad · s² 20600 ack E.M.F. V/kpm 50 Aass kg 1.5 Degree of protection IP43 ECHNICAL DATA MOTOR 37M1440000 STEPPING Job StepPing STEPPING acs step angle 1.8°±0.09° ipolar current A 6 sistance Ω 0.35 iductance mH 2.7 ipolar holding torque Nm 5.6 ator ineria kgmm <sup>2</sup> 290 horitical acceleration rad · s² 1.8°±0.09° STEPPING Job StepPing STEPPING ack E.M.F. V/kpm 93 tass kg 2.5 legree of protection IP43 ECHNICAL DATA MOTOR 37M1450000 STEPPING Action torpue Nm 5.6 ator ineria kgmm <sup>2</sup> 290 horitical acceleration rad · s² 1.8°±0.09° STEPPING Job StepPing			NEMA 34
ipolar currentA6desistance $\Omega$ 0.3nductancemH1.65ipolar holding torqueNm3totor inertiakgmm²145heoretical accelerationrcd · s²20600iack E.M.F.V/krpmSOAasskg1.5begree of protectionIP43court typeIP43borning flangeSTEPPINGiapolar holding torqueNmA6courtentA60.35iapolar holding torqueNm5.60.35idoutracemH2.7ipolar holding torqueipolar holding torqueNm6.6STEPPINGack E.M.F.V/krpm93Aasskg2.5ipolar holding torqueNm6.7IP43ipolar currentA6.6IP43ipolar holding torqueNm6.7STEPPINGipolar holding torqueNm6.7IP43ipolar holding torqueNm6.7IP43ipolar current parallelA66ipolar holding torqueNm6.70.46ipolar holding torqueNm6.70.46ipolar holding torqueNm6.70.46ipolar holding torqueNm6.70.46ipolar holding torqueNm6.70.45ipolar hol			1 8°+0 09°
esistance     Ω     0.3       riductance     mH     1.65       ipolar holding torque     Nm     3       totor ineria     kgmm²     145       heoretical acceleration     rad : s²     20600       acak E.M.F.     V/kpm     50       Aass     kg     1.5       legree of protection     IP43       CHNICAL DATA     MOTOR 37M1440000       Koninal torque     Nm     4.2       acousting flange     STEPPING       klorininal torque     Nm     4.2       ioupling flange     1.8*±0.09°     steppinG       ioupling flange     0.35     dota       iouctance     mH     2.7       ipolar current     A     6       esistance     Ω     0.35       iductance     mH     2.7       ipolar holding torque     Nm     5.6       otor inertia     kgmm²     290       heoretical acceleration     rad : s²     19300       ack E.M.F.     V/korm     93       kass     kg     2.5       legree of protection     IP43       elegree of protection     IP43       ipolar current parallel     A       acs Ete angle     1.8*±0.09°       isistance		۵	
Aductance     mH     1.65       iipolar holding torque     Nm     3       otor ineria     kgmm²     145       heoretical acceleration     rad's²     20600       ack E.M.F.     V/kpm     50       Aass     kg     1.5       begree of protection     IP43       ECHNICAL DATA     MOTOR 37M1440000       Motor type     STEPPING       Jorning flange     StepPING       ase step angle     1.8*20.09°       ipolar current     A       ésistance     Ω       otor inertia     kgmm²       loolar ing flange     StepPING       otor inertia     kgm²       beoretical acceleration     rad -s²       roductance     mH       Atas     kg       legree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Motor inertia     kgm²       heoretical acceleration     rad -s²       otor inertia     kgm²       kas     kg       legree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Motor 37M1450000     STEPPING       kas     kg       legree of protection     IP43       egree of protection     IP43	•		
ipolar holding torque Nm 3 totor ineria kgmm <sup>2</sup> 145 heoretical acceleration rod ·s <sup>2</sup> 20600 ack E.M.F. V/krpm 50 Mass kg 1.5 IP43 IP43 ECHNICAL DATA MOTOR 37M1440000 STEPPING Aotor type STEPPING torping flange Nm 4.2 Nm 4.2 Nm 4.2 Nm 4.2 Nm 4.2 Nm 4.2 Nm 4.2 Nm 4.2 Nm 5.6 of or ineria kgmm <sup>2</sup> 290 heoretical acceleration rod ·s <sup>2</sup> 19300 ack E.M.F. V/krpm 93 Acs kg 2.5 ECHNICAL DATA MOTOR 37M1450000 Motor type STEPPING Action inertia kgmm <sup>2</sup> 290 heoretical acceleration rod ·s <sup>2</sup> 19300 ack E.M.F. V/krpm 93 Acts kg 2.5 ECHNICAL DATA MOTOR 37M1450000 Motor type STEPPING Action inertia kgmm <sup>2</sup> 290 heoretical acceleration rod ·s <sup>2</sup> 19300 ack E.M.F. V/krpm 93 Acts kg 2.5 ECHNICAL DATA MOTOR 37M1450000 Motor type STEPPING Action inertia kgmm <sup>2</sup> 205 Action inertia kgmm <sup>2</sup> 45 Actor type STEPPING Action inertia kgmm <sup>2</sup> 45 Actor inertia kgm <sup>2</sup> 45 Actor inertia kgm <sup>2</sup> 45 Actor inertia kgm <sup>2</sup> 45 Actor inertia kgm <sup>2</sup> 45 Actor inertia kg			
Actor inertia     kgmm²     145       heoretical acceleration     rad · s²     20600       icack E.M.F.     V/krpm     50       Aass     kg     1.5       Degree of protection     IP43       ECHNICAL DATA     MOTOR 37M1440000       Notor type     STEPPING       Jominal torque     Nm     4.2       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current     A     6       action rardia     kgmm²     290       heoretical acceleration     rad · s²     19300       ack E.M.F.     V/krpm     93       Acass     kg     2.5       Pegree of protection     IP43			
heoretical acceleration     rod · s²     20600       icack E.M.F.     V/krpm     50       Aass     kg     1.5       Jegree of protection     IP43   ECHNICAL DATA MOTOR 37M1440000 STEPPING acse step angle Stance MH A2 coupling flange Stance MH A2 coupling flange Mitter A			
iack E.M.F.     V/krpm     50       Aass     kg     1.5       Degree of protection     IP43       ECHNICAL DATA     MOTOR 37/M1440000       Motor type     STEPPING       Joninal torque     Nm       Acss step angle     1.8°±0.09°       ipolar current     A       desistance     Ω       otor inertia     kgmm²       ipolar current     A       Ass     kg       2.5     19300       ack E.M.F.     V/krpm       Ass     kg       2.5     19300       ack E.M.F.     V/krpm       Ass     kg       Ass     kg       acs etep angle     IP43       ipolar holding torque     Nm       5.6     0       otor inertia     kgmm²       kegree of protection     rd       regree of protection     rd       Kotor type     STEPPING       Joninal torque     Nm       6.7     0.46       coupling flange     1.8°±0.09°       ipolar current parallel     A       6     4       esistance     Ω       0.46     34       odor inertia     kgmm²       ipolar holding torque     Nm <td>Rotor inertia</td> <td></td> <td>145</td>	Rotor inertia		145
Aass     kg     1.5       Jegree of protection     IP43       ECHNICAL DATA     MOTOR 37/M1440000       Aotor type     STEPPING       Journal orque     Nm       Loupling flange     Nm       ase step angle     1.8°±0.09°       ipolar current     A       dotor inertia     kgmm²       ipolar current     A       dotor inertia     kgmm²       ipolar colling torque     Nm       5.6     0       otor inertia     kgmm²       kgg     2.5       Pegree of protection     IP43	Theoretical acceleration	rad · s <sup>-2</sup>	20600
Aass     kg     1.5       Jegree of protection     IP43       ECHNICAL DATA     MOTOR 37/M1440000       Aotor type     STEPPING       Journal orque     Nm       Loupling flange     Nm       ase step angle     1.8°±0.09°       ipolar current     A       dotor inertia     kgmm²       ipolar current     A       dotor inertia     kgmm²       ipolar colling torque     Nm       5.6     0       otor inertia     kgmm²       kgg     2.5       Pegree of protection     IP43	Back E.M.F.	V/krpm	50
Degree of protection     IP43       ECHNICAL DATA     MOTOR 37M14400000       Motor type     STEPPING       Journal Data     Nm       Advicor type     Nm       Sase step angle     1.8°±0.09°       ipolar current     A       dotor inertia     kgmm²       otor inertia     kgmm²       ack E.M.F.     V/kpm       Aass     kg       legree of protection     rad - s²       IP43     STEPPING       A     6       cotor inertia     kgmm²       Aass     kg       Legree of protection     rad - s²       IP43     STEPPING       dotor inertia     kgmm²       ack E.M.F.     V/kpm       Aass     kg       color type     STEPPING       dotor type     STEPPING	Mass		1.5
ECHNICAL DATA     MOTOR 37/M1440000       Notor type     STEPPING       Joninal largue     Nm     4.2       Soupling flange     1.8°±0.09°       ace step angle     1.8°±0.09°       jolar current     A     6       esistance     Ω     0.35       rductance     mH     2.7       ipolar current     A     6       horotic inertia     kgmm²     290       heoretical acceleration     rod - s²     19300       ack E.M.F.     V/kpm     93       Aass     kg     2.5       legree of protection     IP43       ECHNICAL DATA     MOTOR 37/M1450000       Atobr type     STEPPING       Joupling flange     Nm       dotor inertia     kgmm²       kotor type     STEPPING       Joupling flange     Nm       dotor type     Nm       ipolar current parallel     A       esistance     Ω       Ω     0.46       esistance     Ω       Ω     0.46       Motor inertia     kgmm²       450     4       esistance     Ω       Ω     0.46       esistance     Ω       Ω     0.45       UL (CS	Degree of protection	3	IP/13
Actor type       STEPPING         Actor type       Nm         Actor type       Nm         Coupling flange       1.8°±0.09°         ase step angle       1.8°±0.09°         ipolar current       A         esistance       Ω         oductance       mH         2.7       ipolar holding torque         Nm       5.6         otor inertia       kgm²         heoretical acceleration       rad · s²         19300       ack E.M.F.         V/krpm       93         Ass       kg         Degree of protection       IP43         ECHNICAL DATA       MOTOR 37M1450000         Actor type       STEPPING         dominal torque       Nm         Coupling flange       Nm         ase step angle       1.8°±0.09°         ipolar current parallel       A         A       6         esistance       Ω         otor inertia       kgm²         ipolar holding torque       Nm         otor inertia       kgm²         ipolar holding torque       Nm         otor inertia       kgm²         ack E.M.F.       V/krpm <td></td> <td></td> <td>11-50</td>			11-50
Actor type       STEPPING         Actor type       Nm         Actor type       Nm         Coupling flange       1.8°±0.09°         ase step angle       1.8°±0.09°         ipolar current       A         esistance       Ω         oductance       mH         2.7       ipolar holding torque         Nm       5.6         otor inertia       kgm²         heoretical acceleration       rad · s²         19300       ack E.M.F.         V/krpm       93         Ass       kg         Degree of protection       IP43         ECHNICAL DATA       MOTOR 37M1450000         Actor type       STEPPING         dominal torque       Nm         Coupling flange       Nm         ase step angle       1.8°±0.09°         ipolar current parallel       A         A       6         esistance       Ω         otor inertia       kgm²         ipolar holding torque       Nm         otor inertia       kgm²         ipolar holding torque       Nm         otor inertia       kgm²         ack E.M.F.       V/krpm <td></td> <td></td> <td></td>			
Actor type       STEPPING         Actor type       Nm         Actor type       Nm         Coupling flange       1.8°±0.09°         ase step angle       1.8°±0.09°         ipolar current       A         esistance       Ω         oductance       mH         2.7       ipolar holding torque         Nm       5.6         otor inertia       kgm²         heoretical acceleration       rad · s²         19300       ack E.M.F.         V/krpm       93         Ass       kg         Degree of protection       IP43         ECHNICAL DATA       MOTOR 37M1450000         Actor type       STEPPING         dominal torque       Nm         Coupling flange       Nm         ase step angle       1.8°±0.09°         ipolar current parallel       A         A       6         esistance       Ω         otor inertia       kgm²         ipolar holding torque       Nm         otor inertia       kgm²         ipolar holding torque       Nm         otor inertia       kgm²         ack E.M.F.       V/krpm <td></td> <td></td> <td></td>			
Adminal torque     Nm     4.2       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current     A       esistance     Ω       oductance     mH       2.7     ipolar holding torque       Nm     5.6       otor inertia     kgmm²       heoretical acceleration     rad · s²       19300     ack E.M.F.       V/krpm     93       Ass     kg       Degree of protection     IP43         ECHNICAL DATA     MOTOR 37M1450000       Ator type     STEPPING       Ioninal torque     Nm       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       A     6       esistance     Ω       otor inertia     kgmm²       tipolar bolding torque     Nm       otor inertia     kgmm²       tipolar holding torque     Nm       otor inertia     kgmm²       450     theoretical acceleration       radictance     mH       ass     kg       tipolar holding torque     Nm       otor inertia     kgm²       tipolar holding torque     Nm       exo	rechnical data		MOTOR 37M1440000
Adminal torque     Nm     4.2       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current     A       esistance     Ω       oductance     mH       2.7     ipolar holding torque       Nm     5.6       otor inertia     kgmm²       heoretical acceleration     rad · s²       19300     ack E.M.F.       V/krpm     93       Ass     kg       Degree of protection     IP43         ECHNICAL DATA     MOTOR 37M1450000       Ator type     STEPPING       Ioninal torque     Nm       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       A     6       esistance     Ω       otor inertia     kgmm²       tipolar bolding torque     Nm       otor inertia     kgmm²       tipolar holding torque     Nm       otor inertia     kgmm²       450     theoretical acceleration       radictance     mH       ass     kg       tipolar holding torque     Nm       otor inertia     kgm²       tipolar holding torque     Nm       exo	Notor type		STEPPING
Image is a step angle     NEMA 34       ase step angle     1.8°±0.09°       ipolar current     A       esistance     Ω       nductance     mH       2.7     ipolar holding torque       heoretical acceleration     rad · s²       19300     ack E.M.F.       V/krpm     93       Aass     kg       2.5     0.35       Degree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Motor type     STEPPING       kominal torque     Nm       6.7     ipolar current parallel       ase step angle     1.8°±0.09°       ipolar current parallel     A       6     6       esistance     Ω       0.46     0.46       ipolar current parallel     A       6     0.46       ipolar current parallel     A       6     6       esistance     Ω       0.46     3.8       ipolar holding torque     Nm       9.2     0.46       set step angle     1.8°±0.09°       ipolar current parallel     A       6     6       esistance     Ω       0.46     4       totor inertia     kgmm²	/1	Nm	
ase step angle       1.8°±0.09°         ipolar current       A         esistance       Ω         nductance       mH         ipolar holding torque       Nm         otor inertia       kgmm²         heoretical acceleration       rad · s²         19300       ack E.M.F.         V/krpm       93         Aass       kg         Degree of protection       IP43         ECHNICAL DATA       MOTOR 37M1450000         Motor type       STEPPING         kominal torque       Nm         foother turnet parallel       A         desistance       Ω         nductance       mH         ipolar current parallel       A         desistance       Ω         otor inertia       kgmm²         450       Actor s²         heoretical acceleration       rad · s²         20500       ack E.M.F.         V/krpm       161         Aass       kg         450       A         foor inertia       kgm²         hass       kg         Aass       kg         Aass       kg         Aass       kg	•		
ipolar current       A       6         esistance       Ω       0.35         iductance       mH       2.7         ipolar holding torque       Nm       5.6         otor inertia       kgmm²       290         heoretical acceleration       rad · s²       19300         ack E.M.F.       V/krpm       93         Aass       kg       2.5         begree of protection       IP43         ECHNICAL DATA       MOTOR 37M1450000         Aotor type       STEPPING         Joinnal torque       Nm         Loupling flange       NEMA 34         ase step angle       1.8°±0.09°         ipolar current parallel       A         A       6         esistance       Ω         O       0.46         ductance       mH         ipolar holding torque       Nm         for inertia       kgmm²         A50       450         heoretical acceleration       rad · s²         20500       ack E.M.F.         Ass       kg         Ass       kg         Lertifications       UL, CSA, CE, RoHS         subtion voltage       250VAC (3			
esistance     Ω     0.35       nductance     mH     2.7       ipolar holding torque     Nm     5.6       otor inertia     kgmm²     290       heoretical acceleration     rad · s²     19300       ack E.M.F.     V/krpm     93       Aass     kg     2.5       begree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Atotor type     STEPPING       Jointal torque     Nm       Lowpling flange     1.8°±0.09°       ase step angle     1.8°±0.09°       ipolar current parallel     A       diductance     mH       ipolar current parallel     A       diductance     mH       ass     kgmm²       450     450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       450     4       UL, CSA, CE, RoHS     250VAC (350VDC)			
Inductance     mH     2.7       ipolar holding torque     Nm     5.6       otor inertia     kgmm²     290       heoretical acceleration     rad · s²     19300       ack E.M.F.     V/krpm     93       Aass     kg     2.5       Degree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Aotor type     STEPPING       kominal torque     Nm       coupling flange     1.8°±0.09°       ipolar current parallel     A       esistance     Ω       ipolar current parallel     A       ipolar current acceleration     rad · s²       ipolar current parallel     A       ipolar current acceleration     rad · s²       ipolar current barallel     A       ipolar holding torque     Nm       ipolar holding torque     Nm       ipolar holding torque     Nm       ipolar holding torque     Nm       ipolar holding torque <td>1</td> <td></td> <td></td>	1		
ipolar holding torque     Nm     5.6       otor inertia     kgmm²     290       heoretical acceleration     rad · s²     19300       ack E.M.F.     V/krpm     93       Aass     kg     2.5       begree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Aotor type     STEPPING       kominal torque     Nm       coupling flange     1.8°±0.09°       ipolar current parallel     A       esistance     Ω       iductance     mH       ipolar currentia     kgmm²       450     450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       450     4       bipolar current parallel     Kg       A     6       isolar holding torque     Nm       Ass     kg       theoretical acceleration     rad · s²       20500     ack E.M.F.     V/krpm       Ass     kg       4     450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     250VAC (350VDC) <td>Resistance</td> <td>Ω</td> <td></td>	Resistance	Ω	
otor inertia     kgmm²     290       heoretical acceleration     rad · s²     19300       ack E.M.F.     V/krpm     93       hass     kg     2.5       begree of protection     IP43         ECHNICAL DATA     MOTOR 37M1450000       Aotor type     STEPPING       Join al torque     Nm       Loopling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       diductance     mH       ass     kgmm²       tipolar current acceleration     rad · s²       ipolar current parallel     A       dotor inertia     kgmm²       tor inertia     kgmm²       tass     kg       tass     kg       tass     kg       tass     kg       tass     kg       tass     kg	nductance	mH	2.7
otor inertia     kgmm²     290       heoretical acceleration     rad · s²     19300       ack E.M.F.     V/krpm     93       hass     kg     2.5       begree of protection     IP43         ECHNICAL DATA     MOTOR 37M1450000       Aotor type     STEPPING       Join al torque     Nm       Loopling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       diductance     mH       ass     kgmm²       tipolar current acceleration     rad · s²       ipolar current parallel     A       dotor inertia     kgmm²       tor inertia     kgmm²       tass     kg       tass     kg       tass     kg       tass     kg       tass     kg       tass     kg	Bipolar holding torque	Nm	5.6
heoretical acceleration     rad · s²     19300       ack E.M.F.     V/krpm     93       Aass     kg     2.5       Degree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Aotor type     STEPPING       Jopania torque     Nm       Coupling flange     1.8°±0.09°       ase step angle     1.8°±0.09°       ipolar current parallel     A       Aotor type     0.46       iductance     mH       assistance     Ω       otor inertia     kgmm²       A50     450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     UL, CSA, CE, RoHS       subtori voltage     250VAC (350VDC)	Rotor inertia	kamm <sup>2</sup>	
ack E.M.F.     V/krpm     93       Aass     kg     2.5       Degree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Aotor type     STEPPING       Journal torque     Nm       Coupling flange     1.8°±0.09°       ase step angle     1.8°±0.09°       ipolar current parallel     A       Aductance     mH       assistance     Ω       otor inertia     kgmm²       ASO     9.2       otor inertia     kgmm²       ASS     kg       Ass     kg       Ass     kg       Ass     kg       Ass     kg       Ass     kg			
Aass     kg     2.5       Degree of protection     IP43       ECHNICAL DATA     MOTOR 37M1450000       Aotor type     STEPPING       Journal torque     Nm       Coupling flange     1.8°±0.09°       ase step angle     1.8°±0.09°       ipolar current parallel     A       dotor inertia     kgmm²       Ablotance     mH       ass     kgm²       450     450       heoretical acceleration     rad · s²²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     UL, CSA, CE, RoHS       subtation voltage     250VAC (350VDC)			
ECHNICAL DATA     MOTOR 37M1450000       Actor type     STEPPING       dominal torque     Nm       boold fange     1.8°±0.09°       ipolar current parallel     A       daductance     mH       aductance     mH       aductance     mH       aductance     MM       bootor inertia     kgmm²       ASS     kg       4     40       0     0.46       10     1.8°±0.09°       ipolar current parallel     A       6     6       esistance     0       0.446     6       450     1.8°±0.09°       ipolar holding torque     Nm       9.2     20500       ack E.M.F.     V/krpm       Mass     kg       4     4       0     0.46			
ECHNICAL DATA       MOTOR 37M1450000         Aotor type       STEPPING         dominal torque       Nm       6.7         coupling flange       1.8°±0.09°         ase step angle       1.8°±0.09°         ipolar current parallel       A         dotor inertia       kgmm²         acceleration       rad · s²         20500       ack E.M.F.         V/krpm       161         Ass       kg         4       UL, CSA, CE, RoHS         usulation voltage       250VAC (350VDC)	Mass	kg	
Actor type     STEPPING       Jointal torque     Nm     6.7       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       ase step angle     0.46       aductance     mH       age are holding torque     Nm       otor inertia     kgmm²       450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     UL, CSA, CE, RoHS       usulation voltage     250VAC (350VDC)	Degree of protection		IP43
Actor type     STEPPING       Jointal torque     Nm     6.7       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       ase step angle     0.46       aductance     mH       age are holding torque     Nm       otor inertia     kgmm²       450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     UL, CSA, CE, RoHS       usulation voltage     250VAC (350VDC)			
Actor type     STEPPING       Jointal torque     Nm     6.7       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       ase step angle     0.46       aductance     mH       age are holding torque     Nm       otor inertia     kgmm²       450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     UL, CSA, CE, RoHS       usulation voltage     250VAC (350VDC)			
Actor type     STEPPING       Jointal torque     Nm     6.7       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       ase step angle     0.46       aductance     mH       age are holding torque     Nm       otor inertia     kgmm²       450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     UL, CSA, CE, RoHS       usulation voltage     250VAC (350VDC)			
Actor type     STEPPING       Jointal torque     Nm     6.7       Coupling flange     NEMA 34       ase step angle     1.8°±0.09°       ipolar current parallel     A       ase step angle     0.46       aductance     mH       age are holding torque     Nm       otor inertia     kgmm²       450       heoretical acceleration     rad · s²       20500     ack E.M.F.       V/krpm     161       Ass     kg       4     UL, CSA, CE, RoHS       usulation voltage     250VAC (350VDC)	TECHNICAL DATA		MOTOR 37M1450000
Naminal torqueNm6.7Coupling flangeNEMA 34ase step angle1.8°±0.09°ipolar current parallelA60aductancemH3.8ipolar holding torqueNmotor inertiakgmm²450heoretical accelerationrad · s²20500ack E.M.F.V/krpm161Aasskg4Sublation voltage			
coupling flangeNEMA 34ase step angle1.8°±0.09°ipolar current parallelAesistanceΩaductancemH3.8ipolar holding torqueNmotor inertiakgmm²450heoretical accelerationrad s²²20500ack E.M.F.V/krpm161Asskg4UL, CSA, CE, RoHSsublation voltage250VAC (350VDC)		Nim	
ase step angle     1.8°±0.09°       ipolar current parallel     A       esistance     Ω       aductance     mH       ipolar holding torque     Nm       otor inertia     kgmm²       450       heoretical acceleration     rad · s²       20500       ack E.M.F.     V/krpm       Ass     kg       4       Lertifications     UL, CSA, CE, RoHS       subtrivio voltage     250VAC (350VDC)		INII	
ipolar current parallel A 6 esistance Ω 0.46 aductance mH 3.8 ipolar holding torque Nm 9.2 otor inertia kgmm² 450 heoretical acceleration rad · s² 20500 ack E.M.F. V/krpm 161 Aass kg 4 Certifications UL, CSA, CE, RoHS asulation voltage 250VAC (350VDC)			
esistance     Ω     0.46       aductance     mH     3.8       ipolar holding torque     Nm     9.2       otor inertia     kgmm²     450       heoretical acceleration     rad · s²²     20500       ack E.M.F.     V/krpm     161       Aass     kg     4       Lertifications     UL, CSA, CE, RoHS       sublation voltage     250VAC (350VDC)			
esistance     Ω     0.46       aductance     mH     3.8       ipolar holding torque     Nm     9.2       otor inertia     kgmm²     450       heoretical acceleration     rad · s²²     20500       ack E.M.F.     V/krpm     161       Aass     kg     4       Lertifications     UL, CSA, CE, RoHS       sublation voltage     250VAC (350VDC)	Bipolar current parallel	A	6
aductance     mH     3.8       ipolar holding torque     Nm     9.2       otor inertia     kgmm²     450       heoretical acceleration     rad · s²     20500       ack E.M.F.     V/krpm     161       Aass     kg     4       Certifications     UL, CSA, CE, RoHS       sublation voltage     250VAC (350VDC)	Resistance	Ω	0.46
ipolar holding torque     Nm     9.2       otor inertia     kgmm²     450       heoretical acceleration     rad · s²     20500       ack E.M.F.     V/krpm     161       Aass     kg     4       Certifications     UL, CSA, CE, RoHS       sublation voltage     250VAC (350VDC)	nductance	mH	
otor inertia kgmm² 450 heoretical acceleration rad s² 20500 ack E.M.F. V/krpm 161 Aass kg 4 certifications UL, CSA, CE, RoHS asulation voltage 250VAC (350VDC)			
heoretical acceleration rad · s <sup>-2</sup> 20500 ack E.M.F. V/krpm 161 Aass kg 4 Certifications UL, CSA, CE, RoHS asulation voltage 250VAC (350VDC)			
ack E.M.F.         V/krpm         161           Aass         kg         4           Certifications         UL, CSA, CE, RoHS         UL, CSA, CE, RoHS           Issulation voltage         250VAC (350VDC)         161			
Aass kg 4 Certifications UL, CSA, CE, RoHS Isulation voltage 250VAC (350VDC)			
Aass kg 4 Certifications UL, CSA, CE, RoHS Isulation voltage 250VAC (350VDC)	Back E.M.F.	V/krpm	161
Certifications     UL, CSA, CE, RoHS       usulation voltage     250VAC (350VDC)	Mass		4
nsulation voltage 250VAC (350VDC)	Certifications	U	UL, CSA, CE, RoHS
regree or projection IP43 * P			
			IF45 * F

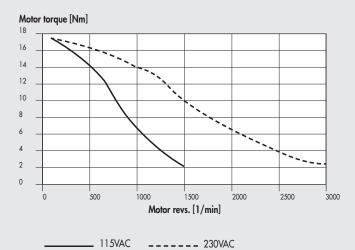


### STEPPING motor code 37M1470000



TECHNICAL DATA		MOTOR 37M1470000
Motor type		STEPPING
Nominal torque	Nm	9.3
	INM	9.3 NEMA 34
Coupling flange		1.8°
Base step angle		
Bipolar current	A	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	kgmm <sup>2</sup>	392
Mass	kg	4.2
Degree of protection		IP40
	I	
TECHNICAL DATA		MOTOR 37M1890000
Motor type		STEPPING
Nominal torque	Nm	17.5
Coupling flange		NEMA 42
Base step anale		
Base step angle Bipolar current	Δ	1.8°±0.09°
Bipolar current	A	1.8°±0.09° 6
Bipolar current Resistance	Ω	1.8°±0.09° 6 0.63
Bipolar current Resistance Inductance	Ω mH	1.8°±0.09° 6 0.63 8
Bipolar current Resistance Inductance Bipolar holding torque	Ω mH Nm	1.8°±0.09° 6 0.63 8 24.6
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia	Ω mH Nm kgmm <sup>2</sup>	1.8°±0.09° 6 0.63 8 24.6 2200
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration	Ω mH Nm kgmm² rad·s²	1.8°±0.09° 6 0.63 8 24.6 2200 11100
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F.	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm² rad·s²	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F.	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10
Bipolar current Resistance Inductance Bipolar holding torque Rotor inertia Theoretical acceleration Back E.M.F. Mass	Ω mH Nm kgmm <sup>2</sup> rad·s <sup>2</sup> V/krpm	1.8°±0.09° 6 0.63 8 24.6 2200 11100 410 10

STEPPING motor code 37M1890000



### NOTES

ACTUATORS

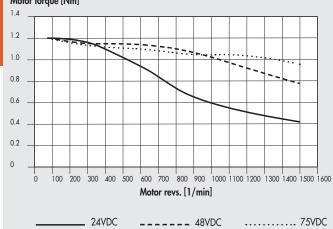
STEPPING MOTORS

# **STEPPING MOTORS WITH ENCODER**

### TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH ENCODER

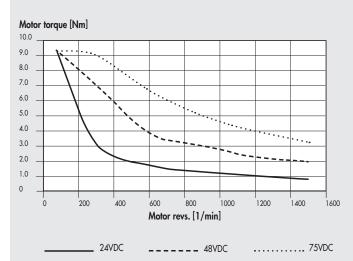
### STEPPING motor + ENCODER code 37M8220000





TECHNICAL DATA		MOTOR 37M8220000
Motor type		STEPPING + ENCODER
Nominal torque	Nm	1.2
Coupling flange (square)	mm	60
Base step angle		1.8°
Current	А	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm <sup>2</sup>	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,		37C1230000
3 metres		
Power cable for stepping motors with brake,		37C1330000
3 metres		
Encoder cable for stepping motors	with brake,	37C1250000
5 metres		
Power cable for stepping motors v	vith brake,	37C1350000
5 metres		

### 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	А	10
Resistance	Ω	0.24
Inductance	mH	1.6
Bipolar holding torque	Nm	13.6
Rotor inertia	kgmm <sup>2</sup>	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,		37C1230000
3 metres		
Power cable for stepping motors with brake,		37C1330000
3 metres		
Encoder cable for stepping motors with brake,		37C1250000
5 metres		
Power cable for stepping motors with brake,		37C1350000
5 metres		

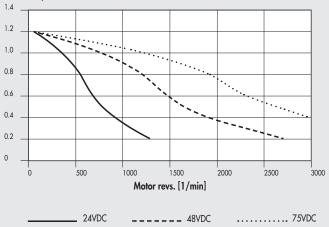


### **STEPPING MOTORS WITH BRAKE**

### TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC STEPPING MOTORS WITH BRAKE

### STEPPING motor with BRAKE code 37M5120000

### Motor torque [Nm]



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 <sup>2</sup>	36
Theoretical acceleration	rad · s <sup>-2</sup>	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

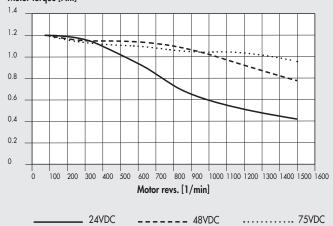
# **STEPPING MOTORS WITH BRAKE + ENCODER**

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

**TECHNICAL DATA** 

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





IECHINICAL DAIA		MOTOK 37M3220000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	1.2
Coupling flange (square)	mm	60
Base step angle		1.8°
Current	А	5
Resistance	Ω	0.38
Inductance	mH	1.4
Bipolar holding torque	Nm	1.7
Rotor inertia	kgmm <sup>2</sup>	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,		37C1230000
3 metres		
Power cable for stepping motors with brake,		37C1330000
3 metres		
Encoder cable for stepping motors with brake,		37C1250000
5 metres		
Power cable for stepping motors with brake,		37C1350000
5 metres		

MOTOR 37M3220000

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

Motor torque [Nm] 3.0 2.5 ٠. 2.0 1.5 •••• 1.0 0.5 0 1 0 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 0 Motor revs. [1/min]

\_\_\_\_ 24VDC

----- 48VDC

..... 75VDC

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	kgmm <sup>2</sup>	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,	37C1230000
3 metres		
Power cable for stepping motors wi	ith brake,	37C1330000
3 metres		
Encoder cable for stepping motors with brake, 5 metres		37C1250000
Power cable for stepping motors with brake,		37C1350000
5 metres		

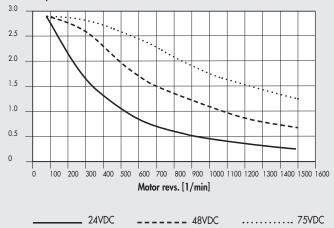
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ACTUATORS



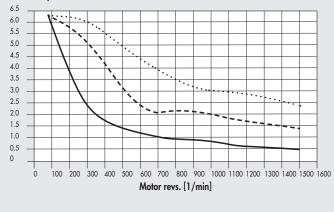
### STEPPING motor with BRAKE + ENCODER code 37M3430000

Motor torque [Nm]



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

Motor torque [Nm]



\_\_\_\_ 24VDC

---- 48VDC

..... 75VDC

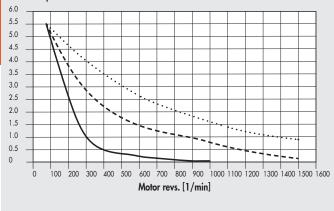
TECHNICAL DATA		MOTOR 37M3430000
Motor type		STEPPING with BRAKE + ENCODER
Nominal torque	Nm	2.9
Coupling flange		NEMA 34
Base step angle		1.8°
Bipolar current	А	6
Resistance	Ω	0.4
Inductance	mH	3.2
Bipolar holding torque	Nm	4
Rotor inertia	kgmm <sup>2</sup>	131
Mass	kg	2.5
Degree of protection	-	IP65
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,		37C1230000
3 metres		
Power cable for stepping motors with brake,		37C1330000
3 metres		
Encoder cable for stepping motors with brake,		37C1250000
5 metres		
Power cable for stepping motors wi	th brake,	37C1350000
5 metres		

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	kgmm <sup>2</sup>	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,		37C1230000
3 metres		
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 wi	th brake	37C1350000
5 metres	in bruke,	0/01000000
0 110103		

STEPPING MOTORS WITH BRAKE + ENCODER

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

Motor torque [Nm]

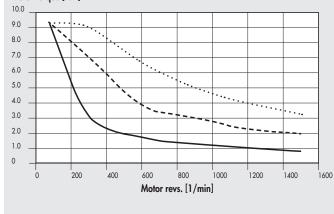


----- 48VDC

24VDC

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

Motor torque [Nm]



\_ 24VDC

----- 48VDC ...

..... 75VDC

..... 75VDC

Nominal torqueNm5.5Coupling flangeNEMA 34Base step angle1.8°Bipolar currentAA6ResistanceΩInductancemH4.3Bipolar holding torqueNmRotor inertiakgmm²AsskgRotor inertiakgmm²AsskgBoy of protectionIP65ENCODERIP65Number of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKEIP65Supply voltageVDCSupply voltageVDCDear consumptionWIs7Delay timemsDisconnection timemsAdoCABLESEncoder cable for stepping motors with brake,37C12300003 metresSmetresEncoder cable for stepping motors with brake,37C12500005 metresSmetres	TECHNICAL DATA		MOTOR 37M3460000
Coupling flangeNEMA 34Base step angle1.8°Bipolar currentA6ResistanceΩInductancemH4.3Bipolar holding torqueNmRotor inertiakgmm²Masskg3.7Degree of protectionIP65ENCODERIP65Number of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKEIP65Supply voltageVDCBraking torqueNm9Power consumptionW18Connecting timemsDisconnection timemsDisconnection timems40CABLESPower cable for stepping motors with brake,37C12300003 metres3 metresPower cable for stepping motors with brake,37C12500005 metres5 metres	Motor type		STEPPING with BRAKE + ENCODER
Base step angle1.8°Base step angle1.8°Bipolar currentAKesistanceΩInductancemH4.3Bipolar holding torqueNmRotor inertiakgmm²AsskgMasskgDegree of protectionIP65ENCODERIP65Number of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKEImage: State of the state o	Nominal torque	Nm	5.5
Bipolar currentA6ResistanceΩ0.6InductancemH4.3Bipolar holding torqueNm7.8Rotor inertiakgmm²261Masskg3.7Degree of protectionIP65ENCODERIP65Number of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKE1024Supply voltageVDCBraking torqueNmPower consumptionWNumber of stepping motors with brake, 3 metres37C1230000Super cable for stepping motors with brake, 3 metres37C1250000	Coupling flange		NEMA 34
ResistanceΩ0.6InductancemH4.3Bipolar holding torqueNm7.8Rotor inertiakgmm²261Masskg3.7Degree of protectionIP65ENCODERIP65Number of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKEIP65Supply voltageVDCBraking torqueNmPower consumptionWNume of nutputs3 A / B / RSupply voltageVDCBraking torqueNm99Power consumptionW182Disconnection timems27Disconnection time99Power cable for stepping motors with brake,37C12300003 metres3Power cable for stepping motors with brake,37C12300003 metres5Encoder cable for stepping motors with brake,37C1230000	Base step angle		1.8°
Inductance mH 4.3 Bipolar holding torque Nm 7.8 Rotor inertia kgmm <sup>2</sup> 261 Mass kg 3.7 Degree of protection IP65 <b>ENCODER</b> Number of outputs 3 A / B / R Resolution positions per rev 1024 Supply voltage VDC 18 - 30 <b>BRAKE</b> 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 <b>CABLES</b> Encoder cable for stepping motors with brake, 37C1230000 3 metres Power cable for stepping motors with brake, 37C1230000	Bipolar current	А	6
Bipolar holding torque     Nm     7.8       Rotor inertia     kgmm²     261       Mass     kg     3.7       Degree of protection     IP65       ENCODER     3 A / B / R       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         Power cable for stepping motors with brake,     37C1230000       3 metres         Power cable for stepping motors with brake,     37C1250000       3 metres         Encoder cable for stepping motors with brake,     37C1250000	Resistance	Ω	0.6
Rotor inertiakgmm²261Masskg3.7Degree of protectionIP65ENCODER3 A / B / RNumber of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKE1024Supply voltageVDCBraking torqueNmPower consumptionWNa7Delay timemsDisconnection timemsAddet SPower cable for stepping motors with brake, 3 metres37C1230000Super s3Encoder cable for stepping motors with brake, 5 metres37C1250000	Inductance	mH	4.3
Note of protectionIghtENCODERIP65ENCODER3 A / B / RNumber of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKE1024Supply voltageVDCBraking torqueNmPower consumptionW182Disconnecting timems2Disconnection timeBracker40CABLES10000Power cable for stepping motors with brake, 3 metres37C1230000S metres5Encoder cable for stepping motors with brake, 5 metres37C1250000	Bipolar holding torque	Nm	7.8
Initial Degree of protectionIP65ENCODERIP65Number of outputs3 A / B / RResolutionpositions per revSupply voltageVDCBRAKE1024Supply voltageVDCBraking torqueNmPower consumptionWOnnecting timemsDisconnection timemsAddeted40CABLESIncoder cable for stepping motors with brake, 3 metresPower cable for stepping motors with brake, 3 metres37C1230000SometresIncoder cable for stepping motors with brake, 5 metres	Rotor inertia	kgmm <sup>2</sup>	261
ENCODER       3 A / B / R         Number of outputs       3 A / B / R         Resolution       positions per rev       1024         Supply voltage       VDC       18 - 30         BRAKE	Mass	kg	3.7
Number of outputs3 A / B / RResolutionpositions per rev1024Supply voltageVDC18 - 30BRAKESupply voltageVDC24 + 6% / -10%Braking torqueNm9Power consumptionW18Connecting timems7Delay timems2Disconnection timems40CABLESEncoder cable for stepping motors with brake, 3 metres37C12300003 metresEncoder cable for stepping motors with brake, 5 metres37C1250000	Degree of protection		IP65
Resolutionpositions per rev1024Supply voltageVDC18 - 30BRAKESupply voltageVDCSupply voltageVDC24 +6% / -10%Braking torqueNm9Power consumptionW18Connecting timems7Delay timems2Disconnection timems40CABLESEncoder cable for stepping motors with brake, 3 metres37C12300003 metresEncoder cable for stepping motors with brake, 5 metres37C1250000	ENCODER		
Supply voltage     VDC     18 - 30       BRAKE     VDC     24 +6% / -10%       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,     37C1230000       3 metres     3     3       Power cable for stepping motors with brake,     37C1330000       3 metres     3       Encoder cable for stepping motors with brake,     37C1250000       5 metres     3	Number of outputs		3 A / B / R
BRAKE     VDC     24 +6% / -10%       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,     37C1230000       3 metres     3     3       Power cable for stepping motors with brake,     37C1330000       3 metres     3       Encoder cable for stepping motors with brake,     37C1250000       5 metres     37C1250000	Resolution	positions per rev	1024
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,     37C1230000       3 metres     3     3       Power cable for stepping motors with brake,     37C1330000       3 metres     3       Encoder cable for stepping motors with brake,     37C1250000       5 metres     3	Supply voltage	VDC	18 - 30
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,     37C1230000       3 metres     3       Power cable for stepping motors with brake,     37C1330000       3 metres     3       Encoder cable for stepping motors with brake,     37C1250000       5 metres     37C1250000	BRAKE		
Power consumption     W     18       Connecting time     ms     7       Delay time     ms     2       Disconnection time     ms     40       CABLES     ms     3       Encoder cable for stepping motors with brake,     37C1230000       3 metres     3       Power cable for stepping motors with brake,     37C1330000       3 metres     3       Encoder cable for stepping motors with brake,     37C1250000       5 metres     37C1250000	Supply voltage	VDC	24 +6% / -10%
Connecting timems7Delay timems2Disconnection timems40CABLESametres37C12300003 metresametres37C13300003 metresametres37C13300005 metresametres37C1250000	Braking torque	Nm	9
Delay time     ms     2       Disconnection time     ms     40       CABLES     Encoder cable for stepping motors with brake,     37C1230000       3 metres     3       Power cable for stepping motors with brake,     37C1330000       3 metres     3       Encoder cable for stepping motors with brake,     37C1330000       5 metres     37C1250000	Power consumption	W	18
Disconnection time ms 40 CABLES Encoder cable for stepping motors with brake, 37C1230000 3 metres Power cable for stepping motors with brake, 37C1330000 3 metres Encoder cable for stepping motors with brake, 37C1250000 5 metres	Connecting time	ms	7
CABLES Encoder cable for stepping motors with brake, 37C1230000 3 metres Power cable for stepping motors with brake, 37C1330000 3 metres Encoder cable for stepping motors with brake, 37C1250000 5 metres	Delay time	ms	2
Encoder cable for stepping motors with brake, 37C1230000 3 metres Power cable for stepping motors with brake, 37C1330000 3 metres Encoder cable for stepping motors with brake, 37C1250000 5 metres	Disconnection time	ms	40
3 metres     Power cable for stepping motors with brake,     37C1330000       3 metres     Encoder cable for stepping motors with brake,     37C1250000       5 metres     37C1250000     37C1250000	CABLES		
Power cable for stepping motors with brake, 37C1330000 3 metres Encoder cable for stepping motors with brake, 37C1250000 5 metres	Encoder cable for stepping motors	with brake,	37C1230000
3 metres Encoder cable for stepping motors with brake, 37C1250000 5 metres			
Encoder cable for stepping motors with brake, 37C1250000 5 metres	Power cable for stepping motors with brake,		37C1330000
5 metres	3 metres		
	Encoder cable for stepping motors	with brake,	37C1250000
Power cable for stepping motors with brake 37C1350000	5 metres		
	Power cable for stepping motors w	ith brake,	37C1350000
5 metres	5 metres		

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 <sup>2</sup>	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 3 metres	with brake,	37C1230000
Power cable for stepping motors with 3 metres	ith brake,	37C1330000
Encoder cable for stepping motors 5 metres	with brake,	37C1250000
Power cable for stepping motors with 5 metres	ith brake,	37C1350000

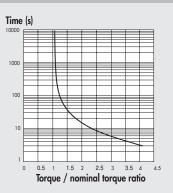
# **BRUSHLESS MOTORS**



### **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.

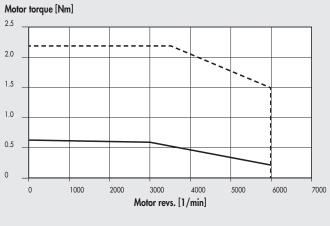


### TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS (SANYO DENKI)

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%

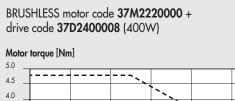
BRUSHLESS motor code **37M2200000** + drive code **37D2400008** (200W)

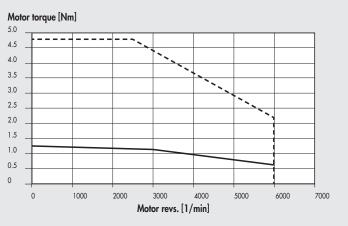


\_\_\_\_\_ Nominal torque

- - - - Maximum torque

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 <sup>2</sup>	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 me	etres	37C2130004
Brushless motor-drive-encoder, dynamic ca	ble, 3 metres	37C2230004
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 me	etres	37C2150004
Brushless motor-drive-encoder, dynamic ca		37C2250006
Brushless motor-drive, dynamic cable, 10 m	netres	37C2100004
Brushless motor-drive-encoder, dynamic ca		37C2200004





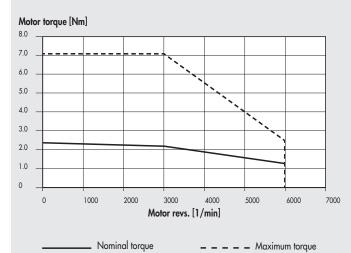
Nominal torque

\_ \_ \_ \_ Maximum torque

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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	kgmm <sup>2</sup>	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 m	etres	37C2130004
Brushless motor-drive-encoder, dynamic co	able, 3 metres	37C2230004
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 m	etres	37C2150004
Brushless motor-drive-encoder, dynamic co	able, 5 metres	37C2250006
Brushless motor-drive, dynamic cable, 10 r	metres	37C2100004
Brushless motor-drive-encoder, dynamic co	able, 10 metres	37C2200004

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

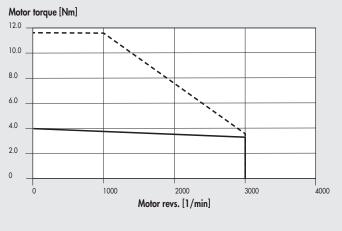


DATI TECNICI		MOTORE 37M2330000
Motor type		BRUSHLESS
Nominal torque	Nm	2.39
Coupling flange (square)	mm	80
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	2.55
Maximum torque	Nm	7.1
Rotor inertia	kgmm <sup>2</sup>	182
Mass	kg	2.6
Encoder	pulse/rev	131072 (17 bit)
Degree 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 met	res	37C2130004
Brushless motor-drive-encoder, dynamic cab	le, 3 metres	37C2230004
Brushless <b>motor-drive</b> , 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 met	res	37C2150004
Brushless motor-drive-encoder, dynamic cab	le, 5 metres	37C2250006
Brushless motor-drive, dynamic cable, 10 me	etres	37C2100004
Brushless motor-drive-encoder, dynamic cab	le, 10 metres	37C2200004

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



\_\_\_\_\_ Nominal torque

- - - - Maximum torque

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	Ńm	3.92
Maximum torque	Nm	11.6
Rotor inertia	kgmm <sup>2</sup>	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 m	etres	37C2130004
Brushless motor-drive-encoder, dynamic co	able, 3 metres	37C2230004
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 m	etres	37C2150004
Brushless motor-drive-encoder, dynamic co	able, 5 metres	37C2250006
Brushless motor-drive, dynamic cable, 10		37C2100004
Brushless motor-drive-encoder, dynamic co	able, 10 metres	37C2200004

ACTUATORS

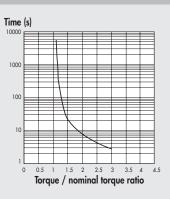
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### NOTES

**ACTUATORS** 

**BRUSHLESS MOTORS** 

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:

**TECHNICAL DATA** 

Motor type

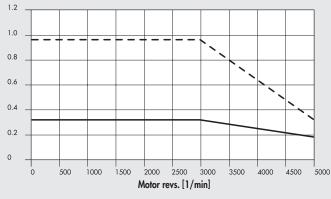
• NOMINAL TORQUE curve: the nominal torque delivered by the motor with a duty cycle of 100%

• MAXIMUM TORQUE curve: the torque delivered by the motor with a duty cycle of less than 100%

— — — — — Maximum torque

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

Motor torque [Nm]



Nominal torque Nm 0.32 40 Coupling flange (square) mm W 100 Nominal power 3000 Nominal speed rpm Maximum speed 5000 rpm Stall torque 0.32 Nm Maximum torque Nm 0.96 Rotor inertia 3.7 kgmm<sup>2</sup> Mass 0.5 kg 131072 (17 bit) Encoder imp./giro Degree of protection IP65 DRIVE 37D2100000 codice CABLES Brushless motor-drive, 3 metres 37C2130001 Brushless motor-drive-encoder, 3 metres 37C2230001 Brushless motor-drive, 5 metres 37C2150001 Brushless motor-drive-encoder, 5 metres 37C2250001

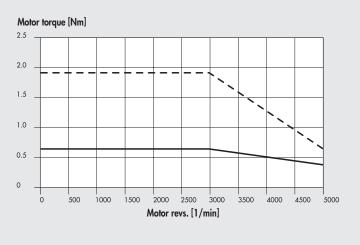
MOTOR 37M2000000

BRUSHLESS

\_\_\_\_\_ Nominal torque



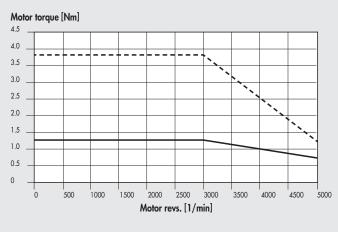
# BRUSHLESS motor code **37M2200001** + drive code **37D2200001** (200W)



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 <sup>2</sup>	17.7
Mass	kg	1.2
Encoder	pulse/rev	131072 (17 bit)
Degree of protection	-	IP65
DRIVE	code	37D2200001
CABLES		
Brushless motor-drive, 3 metres		37C2130001
Brushless motor-drive-encoder, 3 metres		37C2230001
Brushless motor-drive, 5 metres		37C2150001
Brushless motor-drive-encoder, 5 metres		37C2250001

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

Nominal torque



\_\_\_\_\_ Nominal torque

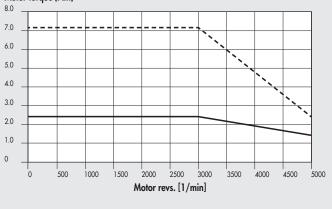
- - - - Maximum torque

- - - - Maximum torque

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 <sup>2</sup>	27.7
Mass	kg	1.6
Encoder	pulse/rev	131072 (17 bit)
Degree of protection		IP65
DRIVE	code	37D2300000
CABLES		
Brushless motor-drive, 3 metres		37C2130001
Brushless motor-drive-encoder, 3 metres		37C2230001
Brushless motor-drive, dynamic cable, 3 metres		37C2130002
Brushless motor-drive-encoder, dynamic cable, 3	metres	37C2230002
Brushless motor-drive, 5 metres		37C2150001
Brushless motor-drive-encoder, 5 metres		37C2250001
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 **37M2330001** + drive code **37D2400007** (750W)

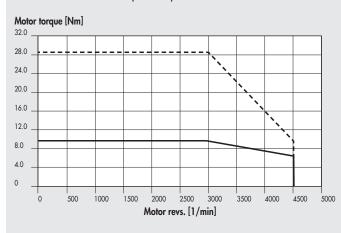




TECHNICAL DATA		MOTOR 37M2330001
Motor type		BRUSHLESS
Nominal torque	Nm	2.39
Coupling flange (square)	mm	80
Nominal power	W	750
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	2.39
Maximum torque	Nm	7.17
Rotor inertia	kgmm <sup>2</sup>	113
Mass	kg	3
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
DRIVE	code	37D2400007
CABLES		
Brushless motor-drive, 3 metres		37C2130001
Brushless motor-drive-encoder, 3 metres		37C2230001
Brushless motor-drive, dynamic cable, 3 metres		37C2130002
Brushless motor-drive-encoder, dynamic cable,	3 metres	37C2230002
Brushless motor-drive, 5 metresS		37C2150001
Brushless motor-drive-encoder, 5 metres		37C2250001
Brushless motor-drive, dynamic cable, 5 metres		37C2150002
Brushless motor-drive-encoder, dynamic cable,	5 metres	37C2250002
Brushless motor-drive connecting dynamic cable	e, 10 metres	37C2100003
Brushless motor-drive-encoder, dynamic cable,	10 metres	37C2200003

\_\_\_ Nominal torque

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



Nominal torque

\_ \_ \_ \_ Maximum torque

\_ \_ \_ \_ \_ Maximum torque

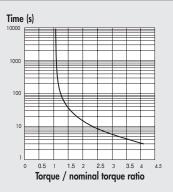
TECHNICAL DATA		MOTOR 37M2770000
Motor type		BRUSHLESS
Nominal torque	Nm	9.55
Coupling flange (square)	mm	130
Nominal power	W	3000
Nominal speed	rpm	3000
Maximum speed	rpm	4500
Stall torque	Nm	9.55
Maximum torque	Nm	28.65
Rotor inertia	kgmm <sup>2</sup>	1270
Mass	kg	7.8
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP65
DRIVE	code	37D2600001
CABLES		
Brushless motor-drive, 3 metres		37C3130001
Brushless motor-drive-encoder, 3 metres		37C3230001
Brushless motor-drive, 5 metres		37C3150001
Brushless motor-drive-encoder, 5 metres		37C3250001



### **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.

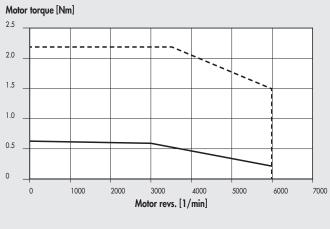


### TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS WITH BRAKE (SANYO DENKI)

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)



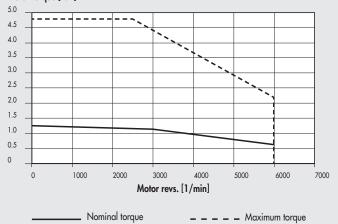
\_\_\_\_\_ Nominal torque

- - - - Maximum torque

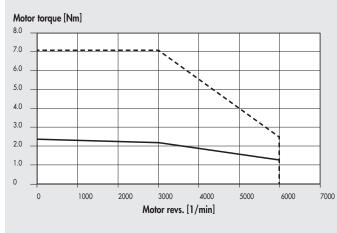
TECHNICAL DATA		MOTOR 37M4200000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	0.64
Coupling flange (square)	mm	60
Nominal power	W	200
Nominal speed	rpm	3000
Maximum speed	rpm	6000
Stall torque	Nm	0.686
Maximum torque	Nm	2.2
Rotor inertia	kgmm <sup>2</sup>	27.9
Mass	kg	1.23
Encoder	pulse/rev	131072 (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 met	res	37C2130004
Brushless motor-drive-encoder, dynamic cab	le, 3 metres	37C2230004
Brushless motor-brake, dynamic cable, 3 me	tres	37C2330000
Brushless <b>motor-drive</b> , 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless motor-drive, dynamic cable, 5 met	res	37C2150004
Brushless motor-drive-encoder, dynamic cab	le, 5 metres	37C2250006
Brushless motor-brake, dynamic cable, 5 me	tres	37C2350000
Brushless motor-drive, dynamic cable, 10 me	etres	37C2100004
Brushless motor-drive-encoder, dynamic cab		37C2200004
Brushless motor-brake, dynamic cable, 10 m		37C2310000
•		



Motor torque [Nm]



BRUSHLESS motor with BRAKE code 37M4330000 +
drive code <b>37D2400008</b> (750W)



\_\_\_\_ Nominal torque

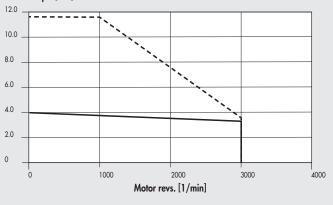
- - - - Maximum torque

TECHNICAL DATA		MOTOR 37M4220000
Motor type	N.I.	BRUSHLESS with BRAKE 1.27
Nominal torque	Nm	
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	kgmm <sup>2</sup>	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 me	etres	37C2130004
Brushless motor-drive-encoder, dynamic ca		37C2230004
Brushless motor-brake, dynamic cable, 3 m		37C2330000
, , , ,		
Brushless motor-drive, 5 metres		37C2150005
Brushless motor-drive-encoder, 5 metres		37C2250005
Brushless <b>motor-drive</b> , <b>dynamic</b> cable, 5 me	etres	37C2150004
Brushless motor-drive-encoder, dynamic ca		37C2250006
Brushless <b>motor-brake</b> , <b>dynamic</b> cable, 5 m		37C2350000
brosnioss motor brance, aynamic cable, e m		0/ 02000000
Brushless motor-drive dynamic cable 10 n	netres	37C2100004
Brushless motor-drive, dynamic cable, 10 n Brushless motor-drive-encoder, dynamic ca		37C2100004 37C2200004
Brushless motor-drive-encoder, dynamic ca	ble, 10 metres	37C2200004
	ble, 10 metres	
Brushless <b>motor-drive-encoder</b> , <b>dynamic</b> ca Brushless <b>motor-brake</b> , <b>dynamic</b> cable, 10	ble, 10 metres	37C2200004 37C2310000
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA	ble, 10 metres	37C2200004 37C2310000 MOTOR 37M4330000
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type	ble, 10 metres metres	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque	ble, 10 metres metres Nm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square)	ble, 10 metres metres Nm mm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power	ble, 10 metres metres Nm mm W	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed	ble, 10 metres metres Nm mm W rpm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed	ble, 10 metres metres Nm mm W rpm rpm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed	ble, 10 metres metres Nm mm W rpm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque	ble, 10 metres metres Nm mm W rpm rpm Nm Nm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque	ble, 10 metres metres Nm mm W rpm rpm Nm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia	ble, 10 metres metres Nm mm W rpm rpm Nm Nm Nm kgmm²	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit)
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit)
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage	ble, 10 metres metres Nm mm W rpm rpm Nm Nm Nm kgmm <sup>2</sup> kg pulse/rev	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg pulse/rev VDC	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10%
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRIVE	ble, 10 metres metres Nm mm W rpm rpm Nm Nm Nm kgmm² kg pulse/rev VDC Nm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRIVE CABLES	ble, 10 metres metres Nm mm W rpm rpm Nm Nm Nm kgmm² kg pulse/rev VDC Nm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min 37D2400008
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRIVE CABLES Brushless motor-drive, 3 metres	ble, 10 metres metres Nm mm W rpm rpm Nm Nm Nm kgmm² kg pulse/rev VDC Nm	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min 37D2400008
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Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRIVE CABLES Brushless motor-drive, 3 metres Brushless motor-drive, 3 metres Brushless motor-drive, dynamic cable, 3 me Brushless motor-drive.encoder, dynamic cable, 3 me	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg pulse/rev VDC Nm code etres ble, 3 metres	37C2200004 37C2310000 MOTOR 37M4330000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min 37D2400008 37C2130005 37C2230005 37C2230004 37C2230004
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRIVE CABLES Brushless motor-drive, 3 metres Brushless motor-drive, 3 metres Brushless motor-drive, dynamic cable, 3 met	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg pulse/rev VDC Nm code etres ble, 3 metres	37C2200004 37C2310000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min 37D2400008 37C2130005 37C2230005 37C2130004
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Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRVE CABLES Brushless motor-drive, 3 metres Brushless motor-drive, 4 mamic cable, 3 me Brushless motor-drive, 5 metres	ble, 10 metres metres Nm mm W rpm rpm Nm Nm kgmm <sup>2</sup> kg pulse/rev VDC Nm code etres ble, 3 metres	37C2200004 37C2310000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min 37D2400008 37C2130005 37C2230005 37C2230004 37C2230004 37C2230004
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Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 m TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRIVE CABLES Brushless motor-drive, 3 metres Brushless motor-drive, 3 metres Brushless motor-drive encoder, 3 metres Brushless motor-drive encoder, 3 metres Brushless motor-drive, 5 metres Brushless motor-drive, 6 metres Brushless motor-drive, 9 metres Brushless motor-drive, 6 metres Brushless motor-drive, 6 metres Brushless motor-drive, 9 metres Brushless motor-drive encoder, 9 metres Brushless motor-drive, 9 metres Brushless motor-drive encoder, 9 metres Bru	ble, 10 metres metres Nm Nm W V rpm rpm Nm kgmm² kg pulse/rev VDC Nm code etres ble, 3 metres tetres ble, 5 metres tetres tetres	37C2200004 37C2310000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min 37D2400008 37C2130005 37C2230004 37C2130004 37C2230004 37C2230004 37C2230004
Brushless motor-drive-encoder, dynamic ca Brushless motor-brake, dynamic cable, 10 models TECHNICAL DATA Motor type Nominal torque Coupling flange (square) Nominal power Nominal speed Maximum speed Stall torque Maximum torque Rotor inertia Mass Encoder Degree of protection BRAKE Supply voltage Braking torque static DRIVE CABLES Brushless motor-drive, 3 metres Brushless motor-drive-encoder, 3 metres Brushless motor-drive-encoder, 4 ynamic cable, 3 me Brushless motor-drive-encoder, 4 ynamic cable, 3 me Brushless motor-drive-encoder, 5 metres Brushless motor-drive-encoder, 4 ynamic cable, 5 me	ble, 10 metres metres Nm Nm W V rpm rpm Nm kgmm² kg pulse/rev VDC Nm code etres ble, 3 metres tetres ble, 5 metres tetres tetres	37C2200004 37C2310000 BRUSHLESS with BRAKE 2.39 80 750 3000 6000 2.55 8.5 207 2.19 131072 (17 bit) IP65 24 ±10% 2.55 min 37D2400008 37C2130005 37C2130004 37C2230004 37C2230004 37C2330000 37C2150005 37C2250005 37C2250005 37C2250005



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

Motor torque [Nm]



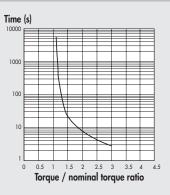
\_\_\_\_ Nominal torque \_ \_ \_ \_ Maximum torque

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 <sup>2</sup>	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 metre		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.

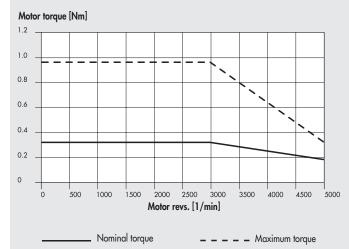


### TORQUE CURVES / TECHNICAL FEATURES OF ELECTRIC BRUSHLESS MOTORS WITH BRAKE (DELTA)

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%





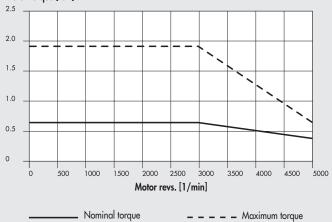
TECHNICAL DATA		MOTOR 37M4000000
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	0.32
Coupling flange (square)	mm	40
Nominal power	W	100
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	0.32
Maximum torque	Nm	0.96
Rotor inertia	kgmm <sup>2</sup>	4
Mass	kg	0.8
Encoder	imp./giro	131072 (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, 3 metres		37C2730000
Brushless motor-drive-encoder, 3 metres		37C2230001
Brushless motor-drive with brake, 5 metres		37C2750000
Brushless motor-drive-encoder, 5 metres		37C2250001

ACTUATORS



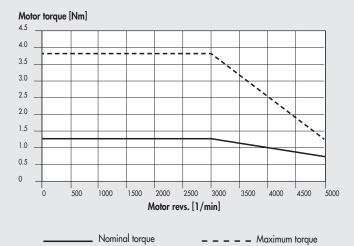
BRUSHLESS motor with BRAKE code **37M4200001** + drive code **37D2200001** (200W)

Motor torque [Nm]

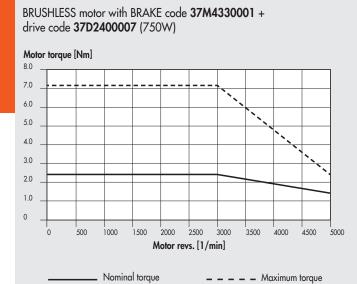


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BRUSHLESS motor with BRAKE code **37M4220001** + drive code **37D2300000** (400W)



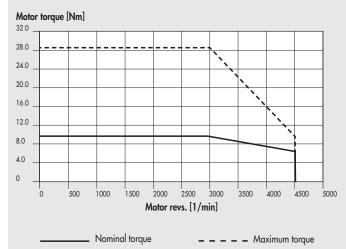
TECHNICAL DATA		MOTOR 37M4220001
Motor type		BRUSHLESS with BRAKE
Nominal torque	Nm	1.27
Coupling flange (square)	mm	60
Nominal power	W	400
Nominal speed	rpm	3000
Maximum speed	rpm	5000
Stall torque	Nm	1.27
Maximum torque	Nm	3.82
Rotor inertia	kgmm <sup>2</sup>	30
Mass	kg	2
Encoder	pulse/rev	131072 (17 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, 3 metres		37C2730000
Brushless motor-drive-encoder, 3 metres		37C2230001
Brushless motor-drive with brake dynamic cal	ole, 3 metres	37C2730001
Brushless motor-drive, dynamic cable, 3 metre	es	37C2130002
Brushless motor-drive with brake, 5 metres		37C2750000
Brushless motor-drive-encoder, 5 metres		37C2250001
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750001
Brushless motor-drive-encoder, dynamic cable	e, 5 metres	37C2250002
Brushless motor-drive with brake dynamic cal		37C2700001
Brushless motor-drive-encoder, dynamic cable	e, 10 metres	37C2200003



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	kgmm <sup>2</sup>	113
Mass	kg	3
Encoder	pulse/rev	1048576 (20 bit)
Degree of protection		IP40
BRAKE		
Supply voltage	VDC	24 ±10%
Braking torque static	Nm	1.3
Absorption	W	6.5
DRIVE	Scode	37D2400007
CABLES		
Brushless motor-drive with brake, 3 metres		37C2730000
Brushless motor-drive-encoder, 3 metres		37C2230001
Brushless motor-drive with brake dynamic cable, 3 metres		37C2730001
Brushless motor-drive, dynamic cable, 3 metre	s	37C2230002
Brushless motor-drive with brake, 5 metres		37C2750000
Brushless motor-drive-encoder, 5 metres		37C2250001
Brushless motor-drive with brake dynamic cable, 5 metres		37C2750001
Brushless motor-drive-encoder, dynamic cable	e, 5 metres	37C2250002
Brushless motor-drive with brake dynamic cable, 10 metres		37C2700001
Brushless motor-drive-encoder, dynamic cable	e, 10 metres	37C2200003

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	kgmm <sup>2</sup>	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-encoder, 3 metres		37C3230001
Brushless <b>motor-drive</b> with brake, 3 metres		37C3730000
Brushless motor-drive-encoder, 5 metres		37C3250001
Brushless <b>motor-drive</b> with brake, 5 metres		37C3750000

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



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# **DIMENSIONS OF ELECTRIC MOTORS**

ACTUATORS

DIMENSIONS OF ELECTRIC MOTORS



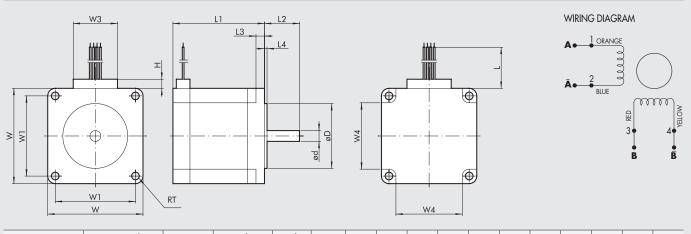
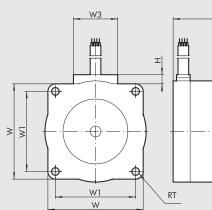
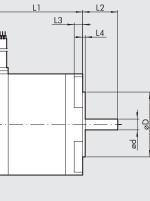
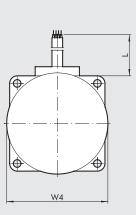


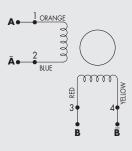
Image         Image         0/-0.013         ±0.025         min         ±0.8         ±0.25         ±0.25         ±0.50         ±0.5         ±0.13         max         ±0.5           STEPPING         37M110000         0.8         NEMA 23         6.35         38.1         7         305         53.8         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           0.10000         1.2         NEMA 23         6.35         38.1         7         305         75.8         20.6         5         1.5         4.5         56         47.14         26         39           0.100001         1.2         NEMA 23         6.35         38.1         7         305         75.8         20.6         5         1.5         4.5         56         47.14         26         39           0.1100001         1.2         NEMA 23         6.35         38.1         7         305         75.8         20.6         5         1.5	Motor type	Motor code	Motor torque	Coupling	ød	øD	Н	L	L1	L2	L3	L4	RT	W	W1	W3	W4
<b>37M1120000 1.2 NEMA 23</b> 6.35 38.1 7 305 75.8 20.6 5 1.5 4.5 56 47.14 26 39			[Nm]	flange	0/-0.013	±0.025		min	±0.8	±0.5	±0.25	±0.25	+0.5/0	±0.5	±0.13	max	±0.5
<b>37MT120000 1.2 NEIMA 23</b> 0.33 30.1 7 303 73.6 20.6 3 1.3 4.3 36 47.14 20 37	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		NEMA 23	6.35	38.1	7	305	75.8	20.6	5	1.5	4.5	56	47.14	26	39
<b>3/MIT20001 1.2 NEMA 23</b> 6.35 38.1 10 305 /5.8 20.6 5 1.5 4.5 56 47.14 39 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



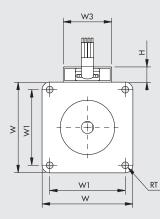


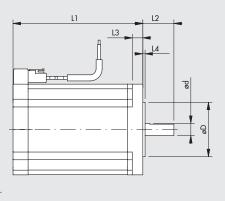


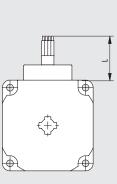


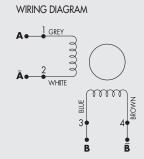


STEPPING         37M1430000         2.4         NEMA 34         9.525         73.02         10         305         62         30         4.8         1.5         5.4         82.5         69.6         37         8.	Motor type	Motor code	Motor torque	Coupling	ød	øD	Н	L	LI	L2	L3	L4	RT	W	W1	W3	W4
			[Nm]	flange	0/-0.018	±0.025		min		±0.5	±0.50	±0.25	+0.5/0	±0.5	±0.2		±0.5
<b>37M1440000 4.2 NEMA 34</b> 12 73.02 10 305 92.2 30 4.8 1.5 5.4 82.5 69.6 37 8	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
<b>37M1890000 17.5 NEMA 42</b> 16 55.52 10 305 221 35 8.6 1.5 6.9 106.4 88.9 37 10		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







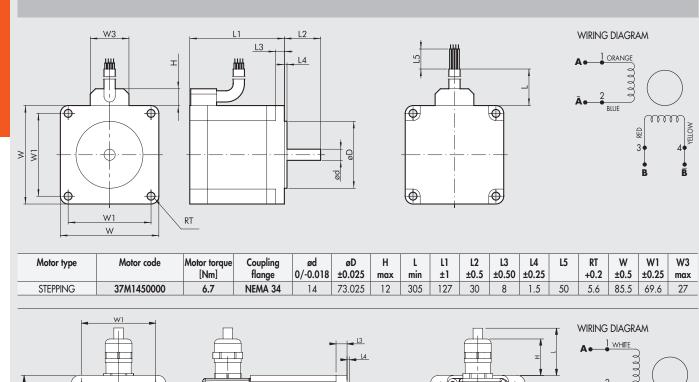


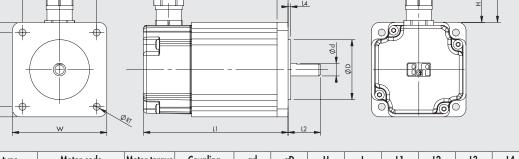
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.018	øD ±0.025	H max	L min	L1 ±1	L2 ±0.5	L3 ±0.50	L4 ±0.25	RT +0.2	W ±0.5	W1 ±0.25	W3 max
STEPPING	37M1230000	2.2	60	8	36	10	300	86	20.6	7	1.5	4.5	60	50	32

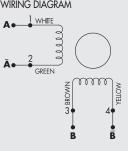
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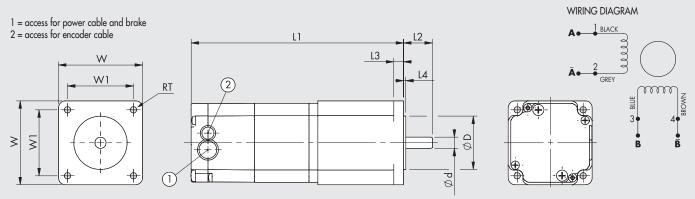
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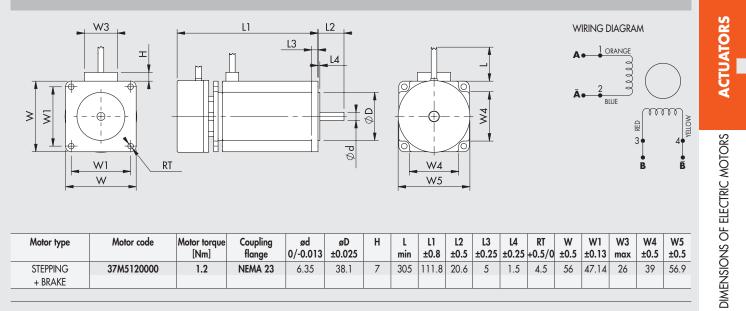


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	н	L min	L1 ±1	L2 ±0.5	L3 ±0.50	L4 ±0.25	RT +0.2	W ±0.5	W1 ±0.13
STEPPING	37M1220000	1.2	60	8	38.1	23	1023	91.8	20.6	7	1.6	4.5	60	47.14

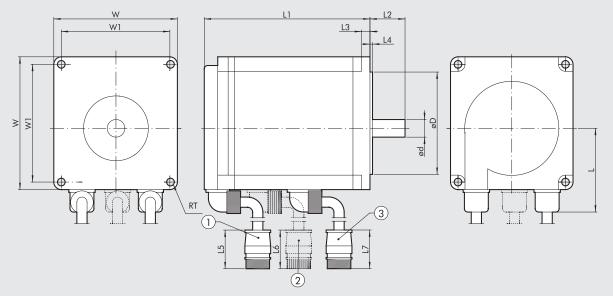


Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	u	L2 ±0.51	L3	L4	RT	W	W1 ±0.13
STEPPING	37M1470000	9.3	NEMA 34	12.7	73.025	130	31.75	9.91	2.03	5.6	86.6	69.6
	37M8220000	1.2	60	8	38.1	106.6	20.6	7	1.6	4.5	60	47.14
STEPPING	37M8470000	9.3	NEMA 34	12.7	73.025	165.4	31.75	9.91	2.03	5.6	86.6	69.6
+ ENCODER												
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



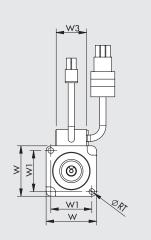


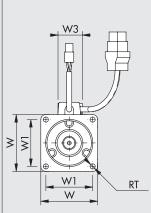
Motor type	Motor code	Motor torque [Nm]	Coupling flange	ød 0/-0.013	øD ±0.025	Η	L min	L1 ±0.8	L2 ±0.5	L3 ±0.25	L4 ±0.25	RT +0.5/0	W ±0.5	W1 ±0.13	W3 max	W4 ±0.5	W5 ±0.5
STEPPING + BRAKE	37M5120000	1.2	NEMA 23	6.35	38.1	7	305	111.8	20.6	5	1.5	4.5	56	47.14	26	39	56.9

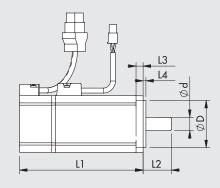


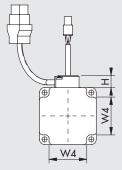
1 = encoder shielded cable, length 280 mm 2 = brake cable, length 280 mm 3 = motor cable, length 280 mm

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	37M2200000	0.64	60	14	50	44.6	69.5	30	6	3	55	-	58	5.5	60	49.5
(SANYO DENKI)	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	37M4200000	0.64	60	14	50	44.6	97.5	30	6	3	55	55	58	5.5	60	49.5
+ BRAKE	37M4220000	1.27	60	14	50	44.6	117.5	30	6	3	55	55	58	5.5	60	49.5
(SANYO DENKI)	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



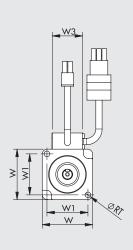


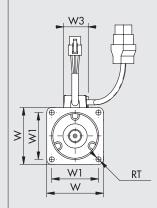


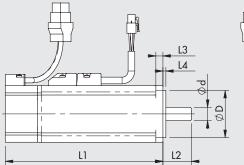


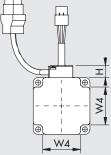
# View for motor 37M2000000

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	37M2000000	0.32	40	8	30	13	100.6	25	5	2.5	4.5	40	32.53	25	-
(DELTA)	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





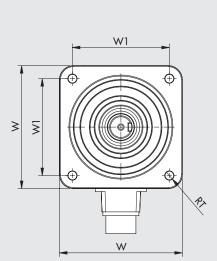


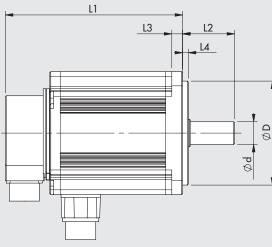


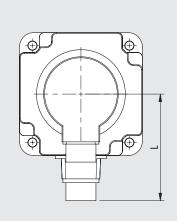
View for motor **37M4000000** 

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	37M4000000	0.32	40	8	30	13	136.6	25	5	2.5	4.5	40	32.53	25	-
+ BRAKE	37M4200001	0.64	60	14	50	13	141.6	30	7.5	3	5.5	60	49.5	25	40
(DELTA)	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	LI	L2	L3	L4	RT	W	W1
BRUSHLESS (DELTA)	37M2770000	9.55	130	24	110	113	187.5	55	11.5	6	9	130	102.53
BRUSHLESS + BRAKE (DELTA)	37M4770000	9.55	130	24	110	111	216	55	11.5	6	9	130	102.53

NOTES

# **PROGRAMMABLE UNIT** *C*.motion

PROGRAMMABLE UNIT - E.MOTION

**A5** 

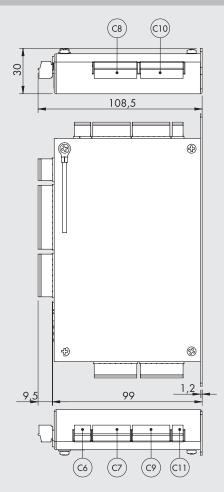
An independent system, ideal for stand-alone applications not requiring the use of any PLC. It can control electric cylinders simply and intuitively, or any other electric actuator, using either a STEPPING MOTOR or a BRUSHLESS motor of any size and capacity, connected to the relevant drive with a STEP/DIRECTION 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.

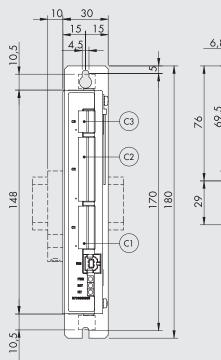


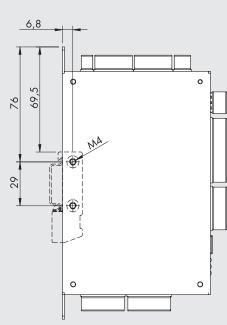
TECHNICAL DATA		
Code		37D000000
Stand-alone motion programming unit for motors-drives		Metal box
with a STEP/DIRECTION interface, type		
Dimensions	mm	148 x 99 x 30
Weight	g	460
Connectors		Screw type
Temperature range		0 to 50 °C – relative humidity 10-90%, non-condensing
Degree of protection		IP 20
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
5		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, u
		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.

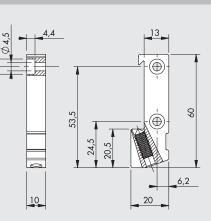
Connector	Description	Code Phoenix Contact
C11	2-pin plug with screw connection, MC 1.5/2-ST-3.5	1840366
C6	3-pin plug with screw connection, MC 1.5/3-ST-3.5	1840379
C3	4-pin plug with screw connection, MC 1.5/4-ST-3.5	1840382
C7, C9	7-pin plug with screw connection, MC 1.5/7-ST-3.5	1840418
C1, C8, C10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

8





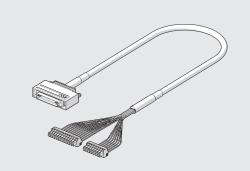
Code	Description	Weight [g]
095000M000	Bracket mountaing <i>e</i> .motion / <i>e</i> .drive on Omega bar	30
	(DIN EN 50022)	
Note: Individuo	Illy packed with 2 screws M4x10, 1 M6x16 grub screw	

ACTUATORS

CABLE USB ACTUATORS 2) S. PROGRAMMABLE UNIT - E.MOTION

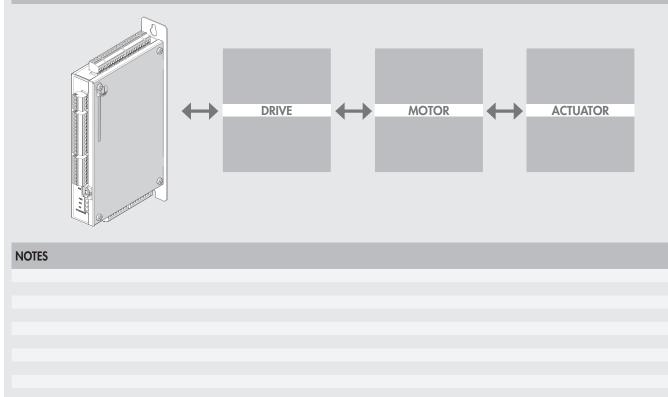
Code	Description	Weight [g]
37C0030000	Cable for USB 2.0 male A-B connector with ferrite core,	150
	for connecting the e.motion / e.drive board to a PC, 3 m	

# CABLE FOR BRUSHLESS DRIVERS



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

# CONNECTION SCHEME



# **PROGRAMMABLE STEPPING MOTOR DRIVE -** *C*.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	0	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

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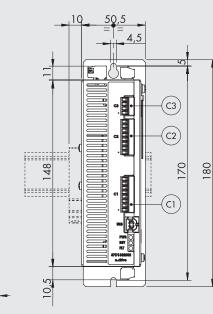
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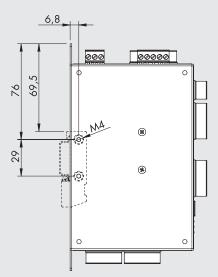
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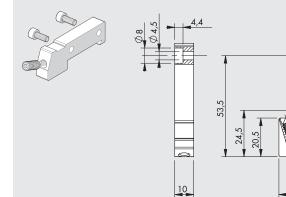


Below is a list of Phoenix Contact codes for the board connectors.

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)

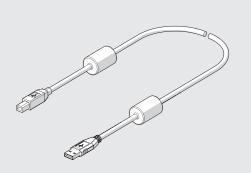


Code	Description	Weight [g]
095000M000	Bracket mountaing <i>e</i> .motion / <i>e</i> .drive on Omega bar	30
	(DIN EN 50022)	
Note: Individua	Ily packed with 2 screws M4x10, 1 M6x16 grub screw	

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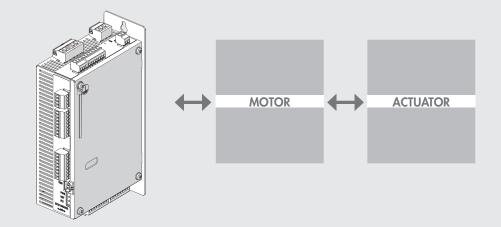


# CABLE USB



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

CONNECTION SCHEME



NOTES

ACTUATORS

PROGRAMMABLE STEPPING MOTOR DRIVE - E.DRIVE

# **DRIVES FOR STEPPING MOTORS**

# 4.4A - 48VDC DRIVE FOR STEPPING MOTORS

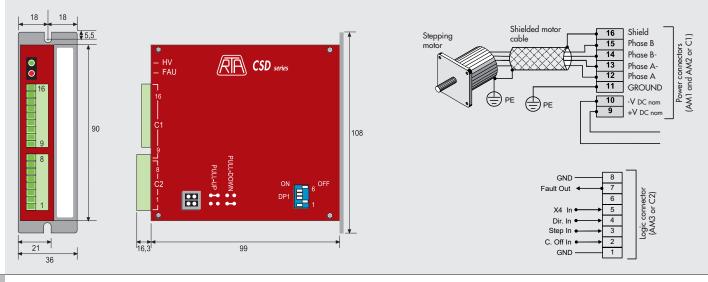
This is a ministep bipolar chopper drive made by RTA S.r.l. It comes with a STEP & DIRECTION interface for piloting low/medium-power two-stage STEPPING motors with four, six or eight terminals. It has a supply voltage range up to 48VDC, compact dimensions and considerable operating flexibility. It consists 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**

	37D1222000
	Metal box
mm	90 x 99 x 21
	Screw type
	NO
	Step and direction
VDC	24 - 48
A	2.6 - 4.4
	8
pulse/rev	400, 800, 1600, 3200
	YES (50%)
	Pull-up or Pull-down, settable
	Maximum and minimum voltage. Motor output short-circuiting. Thermal protection.
	Electronic damping circuit for maximum control of noise and vibration.
	VDC A

#### OVERALL DIMENSIONS AND WIRING DIAGRAM





# **6A - 75VDC DRIVE FOR STEPPING MOTORS**

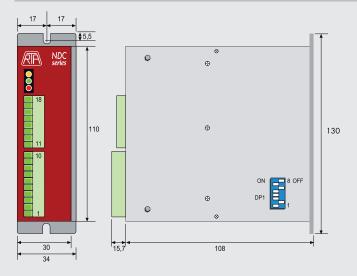
This is a ministep bipolar chopper drive made by RTA Srl. It comes with a STEP & DIRECTION interface for piloting medium-low power two-stage STEPPING motors with four, six or eight terminals.

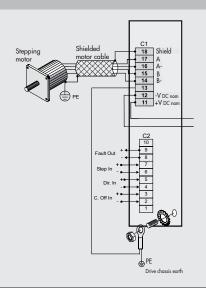
It has a supply voltage range up to 75VDC, compact dimensions and considerable operating flexibility. It consists of a board housed in a metal box and comes with separate logic and power pull-out screw connectors. It can control STEPPING motors with a nominal current up to 6A, the perfect choice for 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

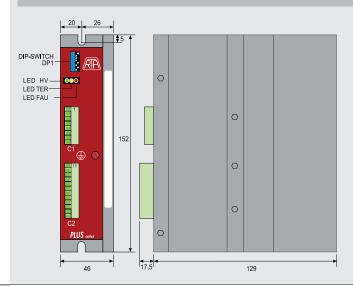
These are two ministep bipolar chopper drives made by RTA S.r.l. They come with a STEP & DIRECTION interface for piloting medium/ high-power two-stage STEPPING motors with four, six or eight terminals. They consist of a board housed in a metal box, which does not require external ventilation, and come with separate logic and power pull-out screw connectors.

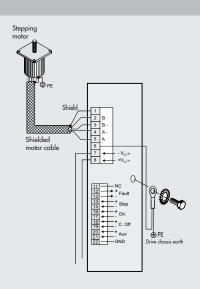
Drive code 37D1442000 is characterised by a voltage range up to 140VDC, compact dimensions and considerable operating flexibility. This drive can control STEPPING motors with a nominal current up to 6A, the perfect choice for medium-power applications requiring a DC supply. Drive code 37D1552000 is characterised 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		Meta	l box
Dimensions	mm	152 x 1	29 x 46
Connectors		Screw	/ type
Onboard power supply		N	
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	3
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-i:	
Protections		Maximum and minimum voltage. Motor c	
		Electronic damping circuit for maxim	num control of noise and vibration.

#### OVERALL DIMENSIONS AND WIRING DIAGRAM





ACTUATORS



# 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** 

Type of STEPPING motor drive

Operating voltage range Current range Motor output stage

Current values selected via a dip-switch Pulses per rev values selected by dip-switch

Automatic current reduction with motor off

Drive code

Dimensions Connectors Onboard power supply

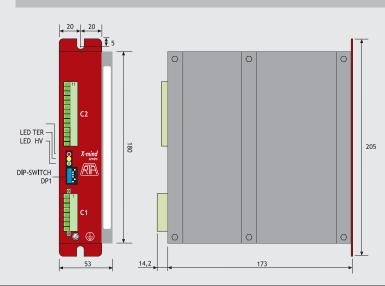
Control

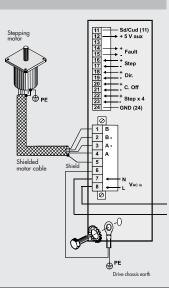
Type of inputs Protections Standards Other features



		ТЕРР
		44 - 110 - 230VAC DRIVE FOR STEPP
	37D1362001	Ľ
	Metal box	
mm	180 x 173 x 53	C C
	Screw type	1
	NO	ŝ
	Step and direction	ć
VAC	Single-phase 110 - 230	Ċ
А	3.4 - 6	=
	High-efficiency CHOPPER with IGBT final stage output	<
	8	~
pulse/rev	400, 500, 800, 1000, 1600, 2000, 3200, 4000	
	YES	
	Opto-isolated	
	Maximum and minimum voltage. Motor output short-circuiting. Thermal protection.	
	Electronic damping circuit for maximum control of noise and vibration.	
	UL and CSA	
	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.	

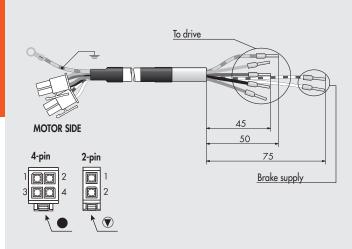
#### **OVERALL DIMENSIONS AND WIRING DIAGRAM**





# **CABLES FOR B&R MOTOR**

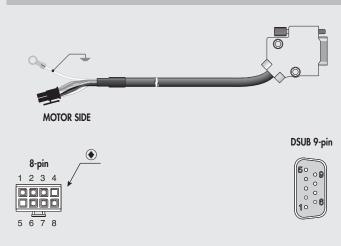
# POWER CABLE FOR MOTOR WITH BRAKE



	Pin	Function	Corresponding wire colour
4-pin	1	A\	Gray
connector	2	B/	Blue
	3	A	Black
	4	В	Brown
2-pin	1	24VDC brake	White + red ring
connector	2	GND	White

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

#### **ENCODER CABLE**



Optional - Can be used with stepping motor with encoder and brake.

# **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
U	44476-1111	Crimping contacts
•	39-01-2040	1 x 4 pin plug connector
	44476-1111	Crimping contacts
۲	43025-0800	1 x 8 pin plug connector
	43030-0002	Crimping contacts

# SPECIAL TOOLS FOR CRIMPING OR PULLING OUT CONTACTS

	Code Molex	Description
<u>.</u>	0638190000	For 8-pin connector
Crimping gripper	0638190900	For 4-pin and 2-pin connectors
<b>6</b>	0011030043	For 8-pin connector
Contact pull-out tool	0011030044	For 4-pin and 2-pin connectors

Code	
37C1230000	
37C1250000	

Code

Description

**Description** Encoder cable for stepping motors with brake, 3 metres Encoder cable for stepping motors with brake, 5 metres

8-pin connector		Function	DSUB 9-pin connector (6 pins used)	Corresponding wire colour
1	A	А	1	Green
2	В	В	3	Yellow
3	R	R	5	Gray
4	-	NC	-	-
5	-	NC	-	-
6	+ 24VDC	Encoder +24 V supply	8	Red
7	COM	Encoder 0 V supply	9	Black
8	Temp	Temperature	7	White

## NOTES

# **A5**.174



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.



# 

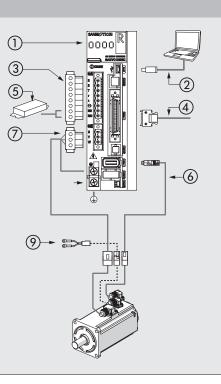
DRIVE TECHNICAL DATA	
Drive code	37D2400008
Nominal power	200 - 400 - 750 - 1000
ype of drive for BRUSHLESS motors	Metal box
Dimensions	mm 50 x 160 x 130
Power connectors and motor power	Plug-type 3M
Encoder connectors and signals	Plug-type 3M
Max output current	A 30
Motor output stage	IGBT, PWM control, 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:	2700120005
Brushless <b>motor-drive</b> connecting cable, 3 metres	37C2130005
Brushless motor-drive-encoder connecting cable, 3 metres	37C2230005
Brushless <b>motor-drive</b> connecting <b>dynamic</b> cable, 3 metres	37C2130004
Brushless <b>motor-drive-encoder</b> connecting <b>dynamic</b> cable, 3 metre	
Brushless <b>motor-brake</b> connecting <b>dynamic</b> cable, 3 metres	37C2330000
	27/21 50005
Brushless <b>motor-drive</b> connecting cable, 5 metres	37C2150005
Brushless <b>motor-drive-encoder</b> connecting cable, 5 metres	37C2250005
Brushless <b>motor-drive</b> connecting <b>dynamic</b> cable, 5 metres	37C2150004
Brushless <b>motor-drive-encoder</b> connecting <b>dynamic</b> cable, 5 metre	
Brushless <b>motor-brake</b> connecting <b>dynamic</b> cable, 5 metres	37C2350000
Brushless motor-drive connecting dynamic cable, 10 metres	37C2100004
Brushless motor-drive-encoder connecting dynamic cable, 10 met	
Brushless motor-brake connecting dynamic cable, 10 metres	37C2310000
,	



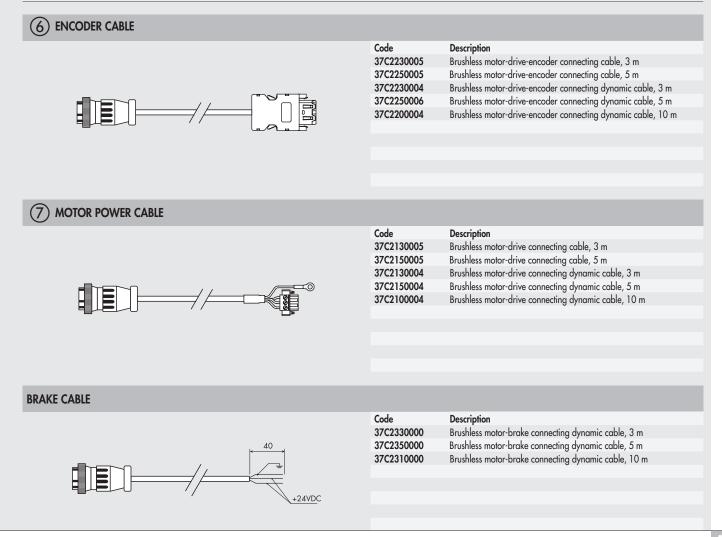
#### WIRING DIAGRAM FOR BRUSHLESS MOTOR DRIVES

- 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
- MOTOR BRAKE CONNECTOR (only for version with brake)

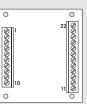
Log on to www.metalwork.it to view the instruction manual.



# ACCESSORIES



# LINE-DRIVER INTERFACE BOARD



#### Code 37D2000000

Code

37D2R00000

Description BRINT.A line driver interface board

Description

dissipated externally via a braking resistance.

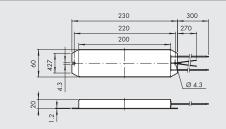
220W 50  $\Omega$  braking resistance

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

#### EXTERNAL BRAKING RESISTANCES



## 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.

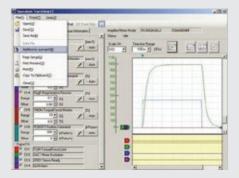
Single values acquired and displayed can be read using the cursor.



For drive code

37D2400008







# 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.



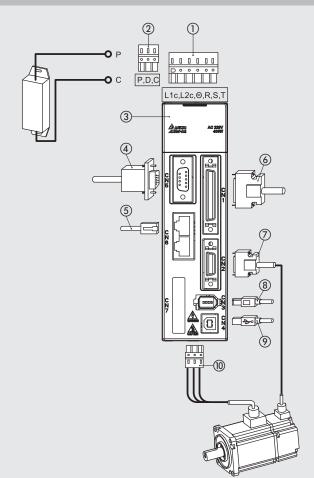
# DRIVE TECHNICAL DATA

DRIVE TECHNICAL DATA				
Drive code	37D2100000	37D2200001	37D2300000	37D2400007
Nominal power W	100	200	400	750
Type of drive for BRUSHLESS motors		Meta	box	
Dimensions mm		170 x 173 x 45		180 x 173 x 65
Power connectors and motor power		Spring	y type	
Encoder connectors and signals		Plug-ty	pe 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) 20	0VAC-230VAC (+10%, -15	%) 50/60 Hz (± 3 Hz)
Logic voltage		ngle-phase 200-230VAC (+1		
Control		With analogue signal (propo		
	Pulse-train	(clock + direction; forward +	backward pulse; 90° phase	e difference)
		fieldbus with "CANopen"	communication protocol	
		8 inputs and 5 output		
		se-train command, the contro		
	If the outp	outs are the open-collector type		)00 board,
		which is sold separat	ely (see accessories).	
Auto-tuning		Ye		
Communication interface	Serio	I USB port for settings and me		nputer
Protections		Integrated against overloo		
	incorpor	ated filters for suppressing the		equencies.
Standards		CE ar		
Other features		5-digit display and p	rogramming keypad.	
		l closed-loop system with posi		
		trol mode: position + speed; p		
	Autom	atic dynamic braking circuit ir	a alarm and power-off co	nditions.
		Connector for external bra	king resistance (optional).	
Suitable for motors code	2711200000	Configuration and cont	rol software (optional). 37M2220001	2740220001
Suitable for motors code	37M200000 37M400000	37M2200001 37M4200001	37M2220001 37M4220001	37M2330001 37M4330001
Connection only of	37 M400000	37/14200001	37 M422000 I	37 M433000 I
Connecting cable: Brushless <b>motor-drive</b> connecting cable, 3 metres		37C21	30001	
Brushless motor with brake-drive connecting cable, 3 metres		37C27		
Brushless motor-drive-encoder connecting cable, 3 metres		37C22		
Brushless motor-drive connecting dynamic cable, 3 metres		37C21		
Brushless motor-drive-encoder connecting dynamic cable, 3 metres		37C22		
Brushless motor with brake-drive connecting dynamic cable, 3 metres		37C27		
Brushless motor-drive connecting cable, 5 metres		37C21	50001	
Brushless motor with brake-drive connecting cable, 5 metres		37C27		
Brushless motor-drive-encoder connecting cable, 5 metres		37C22	50001	
Brushless motor-drive connecting dynamic cable, 5 metres		37C21	50002	
Brushless motor-drive-encoder connecting dynamic cable, 5 metres				
Brushless motor with brake-drive connecting dynamic cable, 5 metres		37C27	50001	
Brushless motor-drive connecting dynamic cable, 10 metres		37C21		
Brushless motor-drive-encoder connecting dynamic cable, 10 metres		37C22		
Brushless motor with brake-drive connecting dynamic cable, 10 metres		37C27	00001	

#### 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.
- CONNECTOR: for external braking resistance code 37D2R00000 (optional).
- 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.
- CANopen CONNECTOR (optional): this drive is designed for (5) communication with other devices via CANopen Fieldbus.
- 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).
- 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.



# ACCESSORIES

# **ENCODER CABLE**



#### Description

Code

Code

Code

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 100W-750W brushless motor-drive-encoder connecting dynamic cable, 10 metres 37C2200003

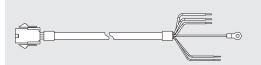
#### (10) MOTOR POWER CABLE



#### Description

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

#### **MOTOR POWER CABLE + BRAKE**



#### 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
	<b>,</b>



# **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 m	m 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 cable, 5 metres	37C3150001
Brushless motor with brake-drive connecting cable, 5 metres	37C3750000
Brushless motor-drive-encoder connecting cable, 5 metres	37C3250001
•	

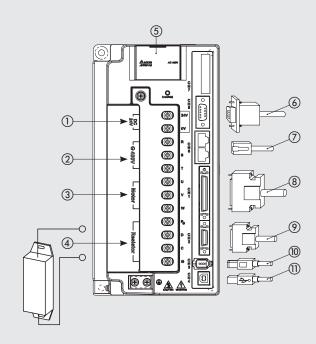
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# WIRING DIAGRAM FOR 3kW BRUSHLESS MOTOR DRIVES

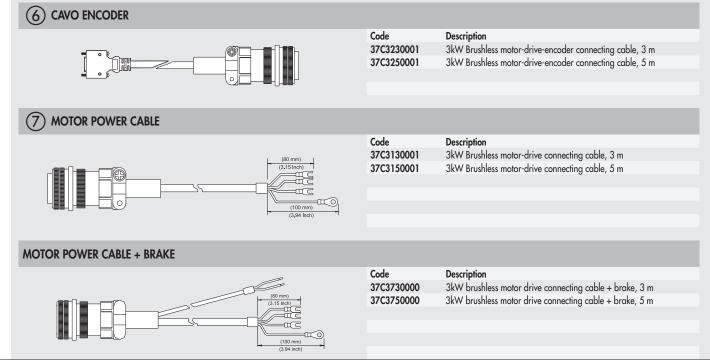
- 1) LOGIC POWER CONNECTOR: 24VDC.
- Included in the supply. Power section for logic electronics.
   POWER CONNECTOR: 400VAC, three-phase.
   Included in the supply. Power signal supply section.
   Integrated circuits protected against overload, input extra-voltages.
- ③ MOTOR POWER CONNECTOR
- CONNECTOR: 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.
- ③ 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.
- ③ 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.
- ③ CENCODER CONNECTOR: connection for 3kW BRUSHLESS motor encoder.
- 1 IEEE 1394 PC CONNECTOR: settings and possible connection to
- other devices via RS485 or RS232 (cable not included in the supply).
   USB PC CONNECTOR: settings and monitor through personal computer (not included in the supply).

Data acquisition is only possible via this connection.

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



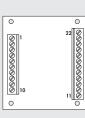
# ACCESSORIES





# **ACCESSORIES FOR DELTA DRIVES**

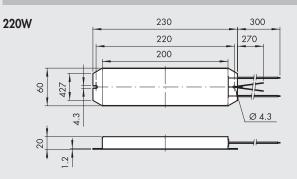
#### LINE-DRIVER INTERFACE BOARD



 Code
 Description

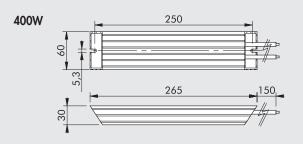
 37D2000000
 BRINT.A line driver interface board

## **EXTERNAL BRAKING RESISTANCES**

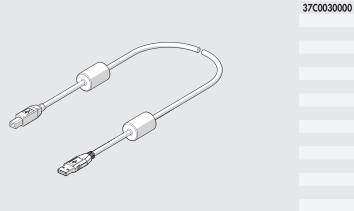


Code	Description	For drive code
37D2R00000	220W 50 Ω braking resistance	37D2100000 - 37D2200001
		37D2300000
37D2R00004	400W 40 Ω braking resistance	37D2600001

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	150
	core, for connecting the drive brushless to a PC, 3 m	

#### **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.

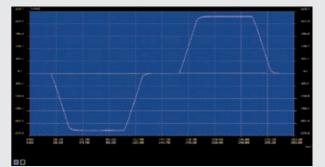


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## **GRAPHIC MONITOR**

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.



#### NOTES