Components for electrical actuation

C_Electrics

Electric actuation
for industrial automation

CAMOZZI

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Components for electrical actuation

C_Electrics

The new Camozzi division completes the offering of solutions for industrial automation

At Camozzi we are well aware that every application in the industrial automation sector has different and very specific requirements. In order to be able to satisfy all clients, we have expanded our technological offerings by creating C_Electrics, the new division that is dedicated to the development of electric actuation, proposing solutions that include electromechanical cylinders and axes with auxiliary motors and accessory components, combined in configurable systems.
The objective of Camozzi is to supply products and software tools that support the user through their decision-making and afterwards, through installation and maintenance.
For this purpose, we developed QSet, an extremely intuitive and efficient configuration software, that is able to create a program for the positioning and control of cylinders and axes based on the requirements of the application in terms of load, speed, and accelerations requested.

C_Electrics

Movement

Polpenazze production facility - Italy

Camozzi: innovation, expertise and passion

Camozzi was founded in 1964, and since then we have specialized in pneumatic automation.
Our product range has been constantly evolving and we now design and manufacture a comprehensive range of highly advanced components and systems.
Our objective is to satisfy our customers' needs through the provision of innovative and high quality solutions, which are produced using optimized production processes and supported by excellent pre- and post-sales support services.
The passion and enterprising nature of the company's founders, the Camozzi brothers, has always guided the business, leading to sustained growth and a global presence. One of our guiding philosophies is to be close to our customers throughout the world as we believe this is fundamental in the building of successful partnerships. It is through these close customer partnerships that we provide quality components which are in accordance with local regulations and standards.
Every product and solution offered is fully supported through our global infrastructure, which ensures we are proactive in providing solutions and quick to meet the needs of every customer.

FOCUS ON MAXIMIZING CUSTOMER BENEFITS

CONSTANT COMMITMENT TO IMPROVING PERFORMANCE

PRODUCTION PLANTS IN ITALY, USA, RUSSIA, UKRAINE, CHINA AND INDIA

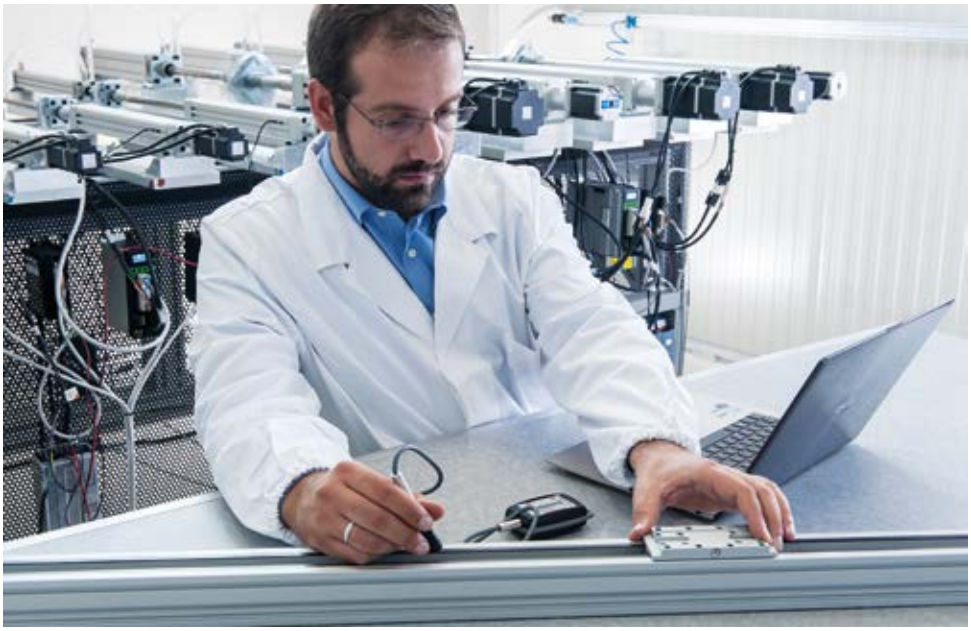
BRANCHES, DISTRIBUTORS AND SUPPORT CENTRES IN MORE THAN 75 COUNTRIES

Our unique goal: total quality

Camozzi Research Centre. Present and future Quality

The quality of our processes and activities is guaranteed by the Camozzi Quality Department that operates in the context of Total Quality Management; in addition all our production plants are organized according to the principles of Lean Production to assure maximum efficiency.

Constant Research and Development of products and technologies are at the foundation of our strategy and this target is pursued thanks to the continuous cooperation between the technical departments and the Camozzi Research Centre, an internal department completely dedicated to achieving the most innovative mechatronic technologies.



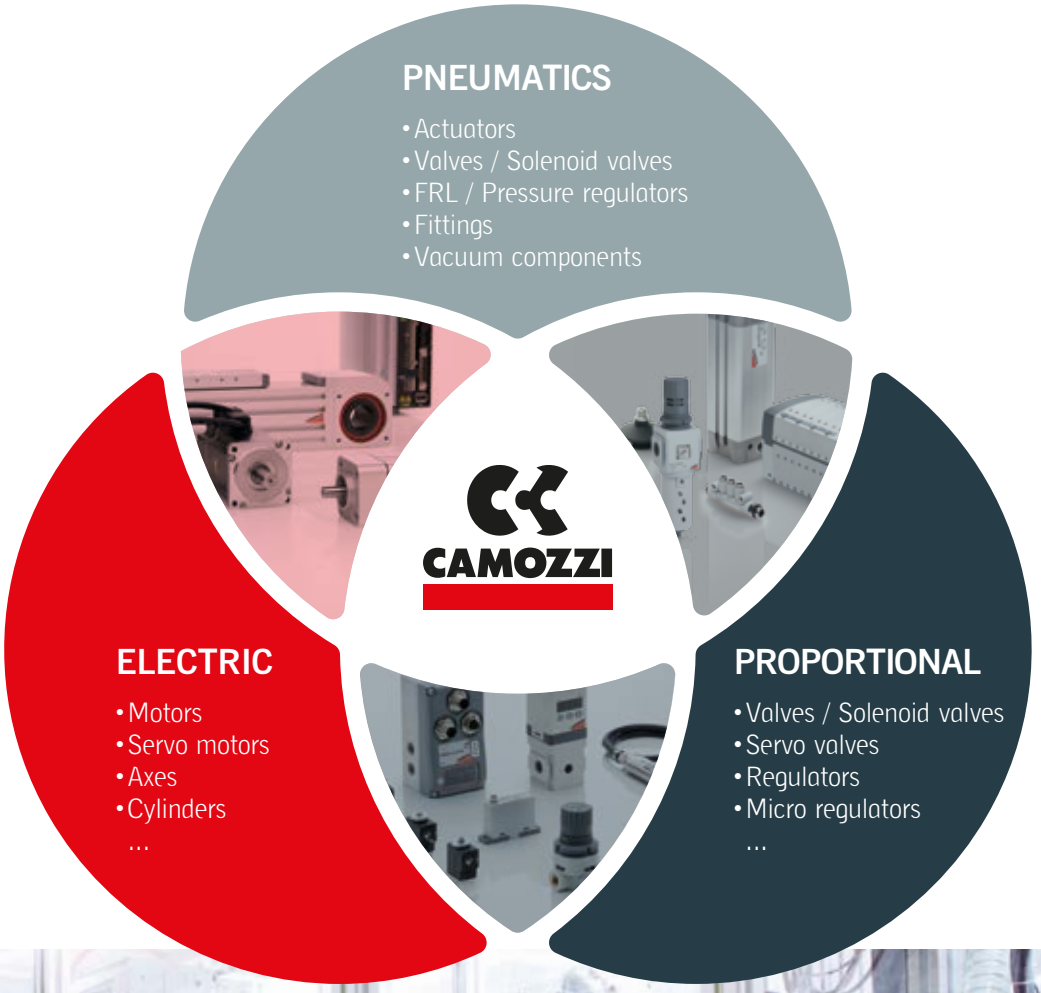
Clean room and in-house testing area equipped to simulate the most diverse working conditions

Technologies to serve our customers

Integration

At Camozzi we believe that there is no actuation technology that is absolutely better than another technology. Our conviction is that every application has different requirements that can be satisfied in the best way possible thanks to the use of a specific technology: pneumatics, proportional or electric. It's precisely the ability to offer all technologies and to combine them in case of need, optimizing single movements and the performance requested in the context of an industrial application, that represents the competitive advantage that Camozzi is able to offer its customers.

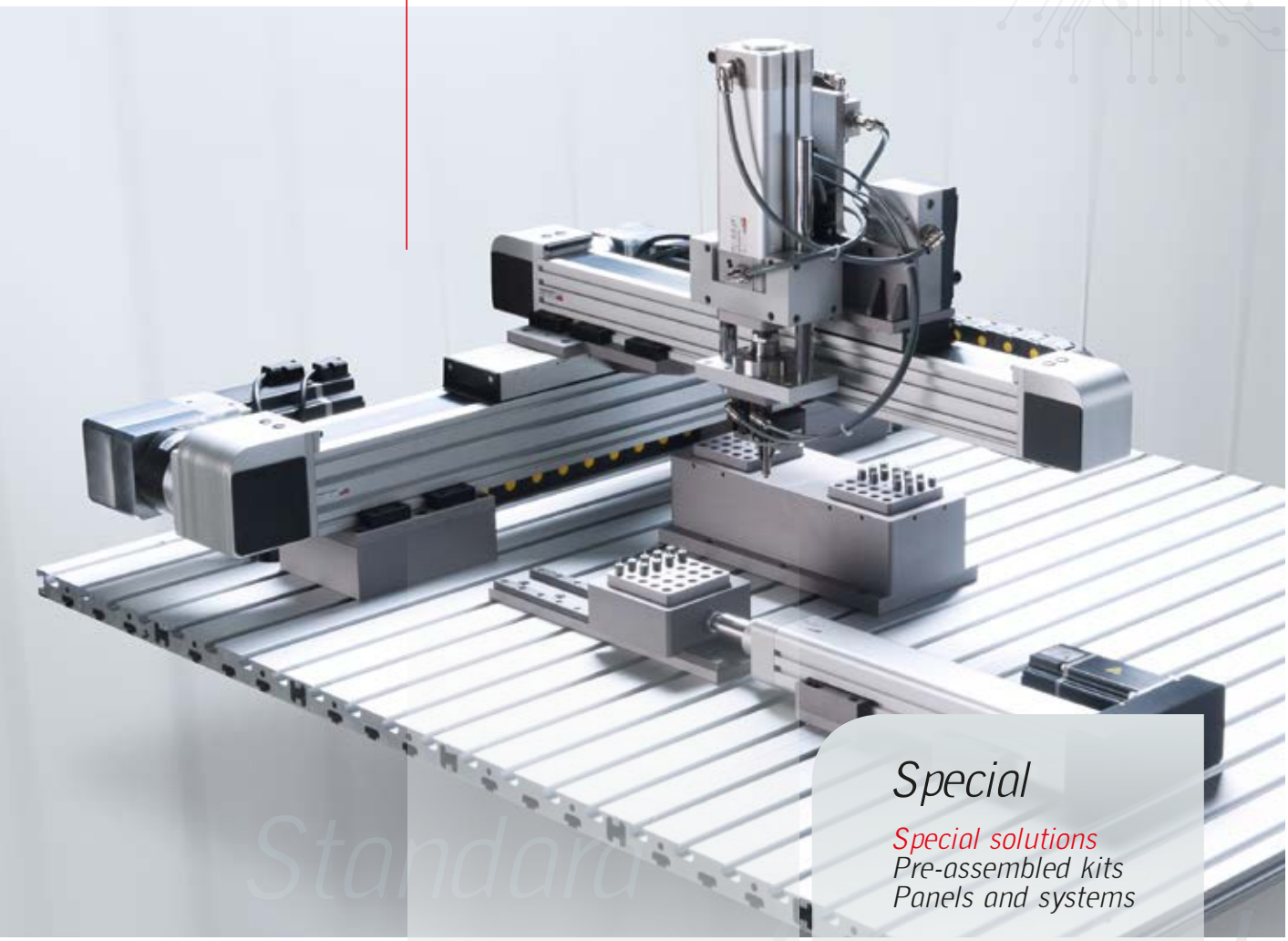
To control speed, acceleration, the position in relation to the load to move and the distances to cover, the requested precision, optimizing costs and providing a solution that is easy to install and to manage, are all the result of the combination of technologies and skills that Camozzi offers its partners with one aim only: providing the solution with the highest added value.



Camozzi. All you need for Automation

The ideal solution for any application

To us, complete service means offering not only standard products, but also special customized solutions, pre-assembled kits, and plug & play panels and systems, each designed and built according to the exact.

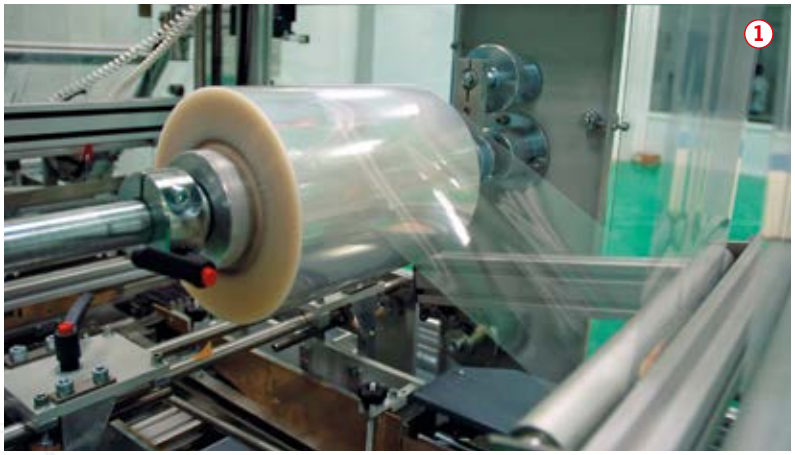


Special

Special solutions
Pre-assembled kits
Panels and systems

Standard

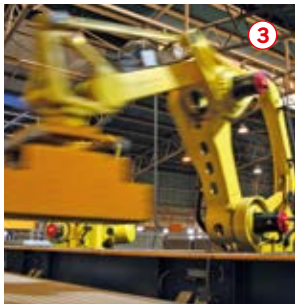
A wide range of standard components designed to be integrated in special applications

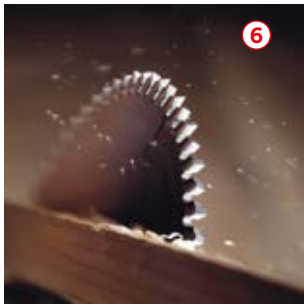


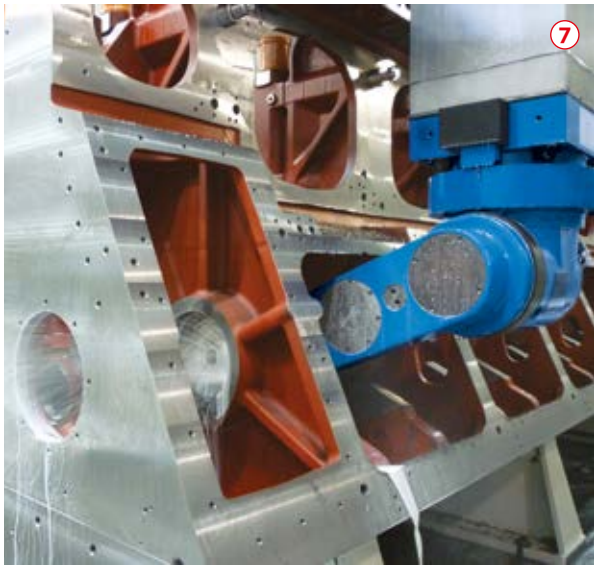
C_Electrics

1. *Packaging*
2. *Assembly & Robotics*
3. *Material handling*
4. *Food & Beverage*
5. *Life Science (Biotechnologies)*
6. *Wood*
7. *Machine tools*
8. *Transport*

Our Business Development Managers, who are in charge of single industrial sectors can support you in studying the requirements of the various applications, and can identify the best solution in terms of technologies and products.







Components for electrical actuation

C_Electrics

ELECTROMECHANICAL AXES

Linear units
with recirculating
ball bearing guides
and belt drive.

ELECTROMECHANICAL CYLINDERS

Recirculating ball screw
actuators.

DRIVERS

For Stepper
and Brushless motors.

C_Electrics

Linear Motion Systems

MOTORS

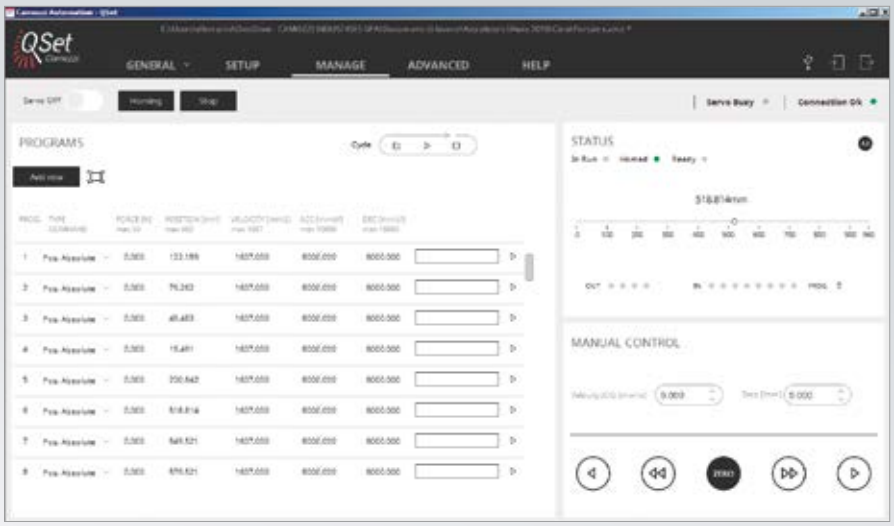
Compact and reliable.
Available in the Stepper
and Brushless versions.

QSet Camozzi

CONFIGURATION SOFTWARE

Camozzi has developed a software
so that every user, with no specific
skill in electronics, can create
a program to position or control
an axis or an electric cylinder.

We build any configuration according to specific requirements



Once configured, it is possible to program up to 64 command lines, each of them defining an absolute, relative, or force position.
All the other functions can be reached easily and promptly.

1

MOVEMENT

Series 6E electromechanical cylinders ISO 15552

Sizes 32, 40, 50 and 63

The Series 6E cylinders are mechanical linear actuators with rod, in which the rotary movement, generated by a motor, is converted into a linear movement by means of a recirculating ball screw. Available in 4 sizes, 32, 40, 50 and 63, the Series 6E has dimensions based on the ISO 15552 standard and it is therefore possible to use the mounting accessories of the pneumatic cylinders.

The cylinders are equipped with a magnet that makes it possible to use external magnetic proximity switches (Series CST and CSH), allowing operations like homing or extra-stroke readings to be performed. The Series 6E is equipped with specific interface kits, which make it possible to connect the motor, both in line and parallel. High precision and easy mounting make the Series 6E the ideal solution for different applications, especially for multi-position systems.

- Compatible with the ISO 15552 standard
- Multi-position system with transmission of the movement by means of a recirculating ball screw
- Possibility to connect the motor in line or parallel
- Large range of motor interfaces
- Permanent pre-lubrication (maintenance free)
- High positioning repeatability
- Reduced axial backlash
- Possibility to use magnetic sensors
- No stick-slip effects
- Integrated anti-rotation system of the rod
- IP 40
- Wide range of fixing accessories

GENERAL DATA

Construction **Design** **Operation**	electromechanical cylinder with recirculating ball screw profile with thread rolling screws based on the ISO 15552 standard multi-position actuator with high precision linear movement
Sizes **Strokes (min - max)**	32, 40, 50, 63 100 ÷ 1200 mm
Anti-rotation function	with anti-friction pads in technopolymer
Mounting	front / rear flange, with feet, with rear / swivel trunnion
Mounting motor	in line and parallel
Operating temperature **Storage temperature**	0°C ÷ 50°C -20°C ÷ 80°C
Protection class	IP 40
Lubrication	Not necessary. A pre-lubrication is performed on the cylinder.
Max. Reversing backlash **Repeatability** **Duty cycle** **Max rotation play**	0.02 mm ± 0.02 100% ± 0.4°
Use with external sensors	slots on three sides for sensors model CSH and CST

STANDARD STROKES

STANDARD STROKES

Size	100	200	300	400	500	600	700	800	900	1000	1100	1200
32	✖	✖	✖	✖	✖							
40	✖	✖	✖	✖	✖	✖	✖					
50	✖	✖	✖	✖	✖	✖		✖		✖		
63	✖	✖	✖	✖	✖			✖		✖		✖

CODING EXAMPLE

6E	032	BS	0200	P05	A	

6E	SERIES
032	SIZE: 032 = 32 040 = 40 050 = 50 063 = 63
BS	DESIGN: BS = recirculating ball screw
0200	STROKE: 100 ÷ 1200 mm
P05	SCREW PITCH: P05 = 5 mm P10 = 10 mm P16 = 16 mm (for size 40 only) P20 = 20 mm (for size 50 only) P25 = 25 mm (for size 63 only)
A	CONSTRUCTION: A = standard with rod nut
	VERSION: = standard (_ _ _) = extended piston rod _ _ _ mm

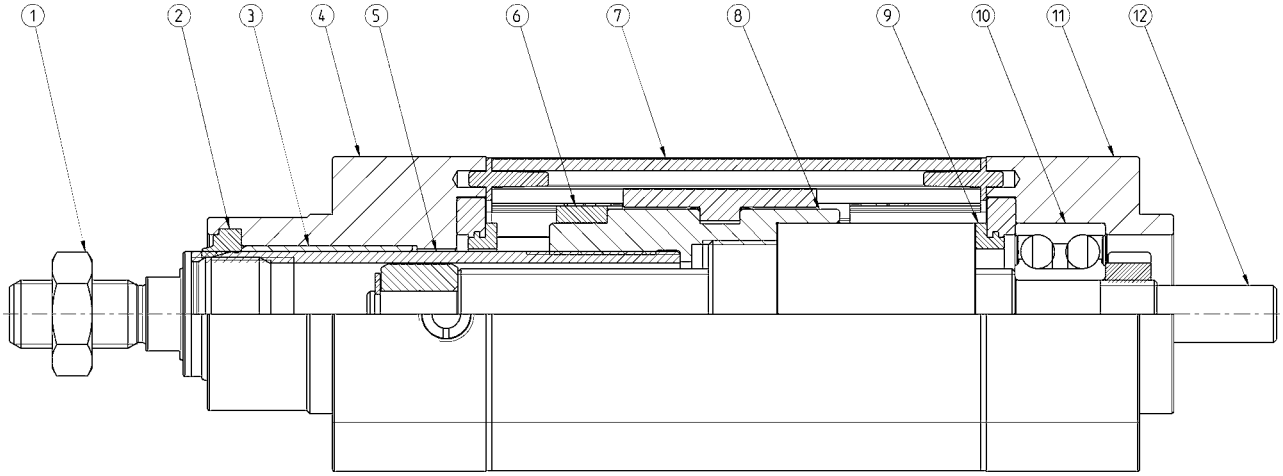
MECHANICAL CHARACTERISTICS

MECHANICAL CHARACTERISTICS

Size		32	32	40	40	40	50	50	50	63	63	63
BS screw diameter	[mm]	12	12	16	16	16	20	20	20	25	25	25
BS screw pitch (p)	[mm]	5	10	5	10	16	5	10	20	5	10	25
Dynamic load coefficient (C)	[N]	6600	4400	12000	8500	9150	14900	11300	7800	17700	20500	11300
Max applicable torque	[Nm]	2.50	2.80	5.50	6.50	8.20	9.10	10.90	13.60	16.60	19.90	24.90
Max linear speed *	[m/s]	0.56	1.12	0.42	0.84	1.33	0.33	0.67	1.33	0.27	0.53	1.33
Max rotational speed	[rpm]	6670	6670	5000	5000	5000	4000	4000	4000	3200	3200	3200
Max acceleration	[m/s²]	25	25	25	25	25	25	25	25	25	25	25

* it varies according to the stroke (see the graphs representing the maximum speed of the cylinder)

SERIES 6E MATERIALS



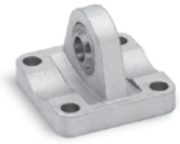
LIST OF COMPONENTS	
PARTS	MATERIALS
1. Rod nut	Zinc-plated steel
2. Rod seal	PU
3. Bushing	Technopolymer
4. Front endcap	Anodized aluminium
5. Rod	Stainless steel
6. Magnet	Plastoferrite
7. Extrusion profile	Anodized aluminium
8. Guiding element BS screw	Aluminium
9. End stroke seals	NBR
10. Bearing	Steel
11. Rear endcap	Anodized aluminium
12. BS ball screw	Steel

ACCESSORIES FOR SERIES 6E CYLINDERS

Piston rod socket joint
Mod. GY

Piston rod lock nut
Mod. U

Clevis pin Mod. S



Rear trunnion ball-joint
Mod. R

Coupling piece
Mod. GKF

Swivel ball joint Mod. GA

90° male trunnion
Mod. ZC

Swivel Combination
Mod. C+L+S

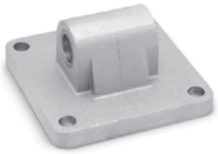
Front flange
Mod. D-E

Self aligning rod
Mod. GK

Foot mount Mod. B-6E

Rear female trunnion
Mod. C and C-H

Rod fork end Mod. G



Rear trunnion male
Mod. L

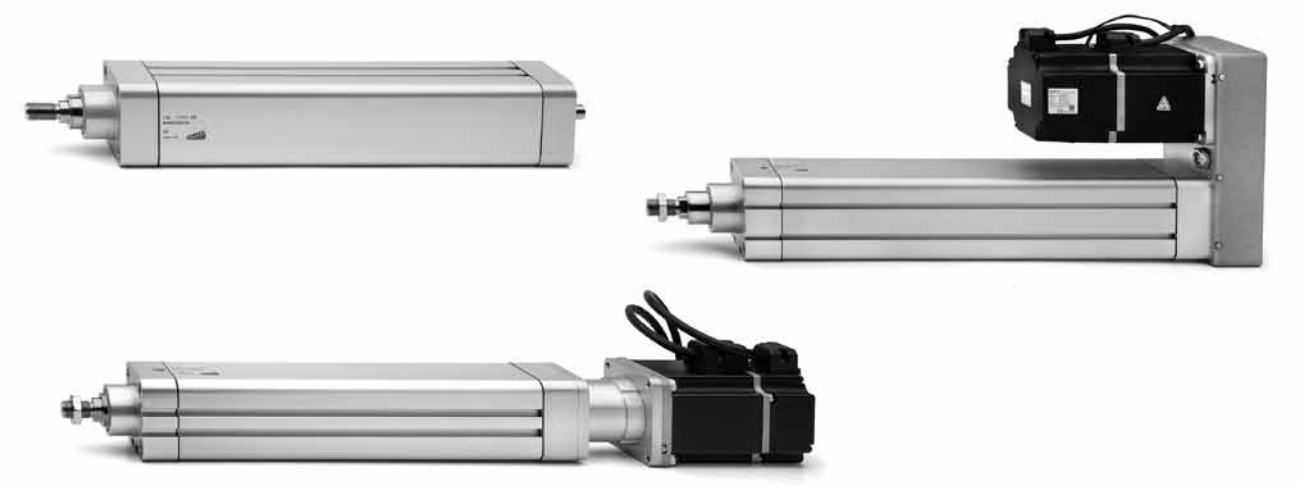
Side clamping bracket
Mod. BG

Housing for axial connection Mod. CM

Flange for axial connection Mod. FM

Kit for axial connection
Mod. AM

Kit for parallel connection
Mod. PM



All accessories are supplied separately, except for piston rod lock nut Mod. U

HOW TO CALCULATE THE LIFE OF THE CYLINDER

To perform a correct dimensioning of the Series 6E cylinder, you need to consider some facts.

Among these, the most important are:
- Dynamics of the system
- Operation and pause cyclicity
- Work environment
- General performance requirements: repeatability, accuracy, precision, etc.

CALCULATE THE LIFE IN ROTATIONS
where:

$$L_r = \left(\frac{C}{F_m \cdot f_w}\right)^3 \cdot 10^6$$

L_r = Life of the cylinder in number of rotations of the BS ball screw
C = Dynamic load coefficient of the cylinder [N]
F_m = Average axial force applied [N]
f_w = Safety coefficient according to the working conditions

CALCULATION OF LIFE IN km
where:

$$L_{km} = \frac{L_r \cdot p}{10^6}$$

L_{km} = Life of the cyllinder in km [km]
p = pitch of the BS ball screw [mm]

CALCULATION OF THE LIFE IN HOURS
where:

$$L_h = \frac{L_r}{n_m \cdot 60}$$

L_h = Life of the cylinder in hours
n_m = average number of revolutions of the RDS ball screw [rpm]

APPLICATION	ACCELERATION [m/s²]	SPEED [m/s]	DUTY CYCLE	f_w COEFFICIENT
light	< 5.0	< 0.5	< 35%	1.0 ÷ 1.25
normal	5.0 ÷ 15.0	0.5 ÷ 1.0	35% ÷ 65%	1.25 ÷ 1.5
heavy	> 15.0	> 1.0	> 65%	1.5 ÷ 3.0

ANALYSIS OF THE DUTY CYCLE AND OF SYSTEM PAUSES

The analysis of the duty cycle and of the pauses of the system is essential to calculate the average Fm axial loads and the number of average revolutions nm that act on the cylinder.
Normally, the duty cycle is composed by phases and for each single phase, we can have an acceleration, constant speed or deceleration.

CALCULATION OF THE AVERAGE AXIAL FORCE

$$F_m = \sqrt[3]{\frac{(F_{a1}{}^3 \cdot n_{a1} \cdot t_{a1}) + (F_{vc1}{}^3 \cdot n_{vc1} \cdot t_{vc1}) + (F_{d1}{}^3 \cdot n_{d1} \cdot t_{d1}) + \ \dots + \ (F_{an}{}^3 \cdot n_{an} \cdot t_{an}) + (F_{vcn}{}^3 \cdot n_{vcn} \cdot t_{vcn}) + (F_{dn}{}^3 \cdot n_{dn} \cdot t_{dn})}{(n_{a1} \cdot t_{a1}) + (n_{vc1} \cdot t_{vc1}) + (n_{d1} \cdot t_{d1}) + \ \dots + \ (n_{an} \cdot t_{an}) + (n_{vcn} \cdot t_{vcn}) + (n_{dn} \cdot t_{dn})}}$$

CALCULATION OF THE AVERAGE NUMBER OF REVOLUTIONS

$$n_m = \left\{\frac{(n_{a1} \cdot t_{a1}) + (n_{vc1} \cdot t_{vc1}) + (n_{d1} \cdot t_{d1}) + \ \dots + \ (n_{an} \cdot t_{an}) + (n_{vcn} \cdot t_{vcn}) + (n_{dn} \cdot t_{dn})}{t_{a1} + t_{vc1} + t_{d1} + \ \dots + \ t_{an} + t_{vcn} + t_{dn}}\right\}$$

The table shown below reports the values of acceleration, speed and deceleration for each phase.

		F [N]	n [rpm]	time %
PHASE 1	**Acceleration** **Constant speed** **Deceleration**	**Fa1** **Fvc1** **Fd1**	**na1** **nvc1** **nd1**	**ta1** **tvc1** **td1**
PHASE 2	**Acceleration** **Constant speed** **Deceleration**	**Fa2** **Fvc2** **Fd2**	**na2** **nvc2** **nd2**	**ta2** **tvc2** **td2**
PHASE "n -1"	**Acceleration** **Constant speed** **Deceleration**	**Fan-1** **Fvcn-1** **Fdn-1**	**nan-1** **nvcn-1** **ndn-1**	**tan-1** **tvcn-1** **tdn-1**
PHASE "n"	**Acceleration** **Constant speed** **Deceleration**	**Fan** **Fvcn** **Fdn**	**nan-1** **nvcn-1** **ndn-1**	**tan-1** **tvcn-1** **tdn-1**
	TOTAL			**100%**

APPLICATION EXAMPLE

Phase 1

$F_{a1} = 142\ N;$ $F_{vc1} = 98\ N;$ $F_{d1} = 54\ N;$
$n_{a1} = 630\ rpm;$ $n_{vc1} = 1260\ rpm;$ $n_{d1} = 630\ rpm;$
$t_{a1} = 0{,}7\ \%;$ $t_{vc1} = 12{,}9\ \%;$ $t_{d1} = 0{,}7\ \%;$

Phase 2

$F_{a2} = 616\ N;$ $F_{vc2} = 589\ N;$ $F_{d2} = 562\ N;$
$n_{a2} = 450\ rpm;$ $n_{vc2} = 900\ rpm;$ $n_{d2} = 450\ rpm;$
$t_{a2} = 4{,}8\ \%;$ $t_{vc2} = 33{,}3\ \%;$ $t_{d2} = 4{,}8\ \%;$

Phase 3

$F_{a3} = 997\ N;$ $F_{vc3} = 981\ N;$ $F_{d3} = 965\ N;$
$n_{a3} = 240\ rpm;$ $n_{vc3} = 480\ rpm;$ $n_{d3} = 240\ rpm;$
$t_{a3} = 7{,}1\ \%;$ $t_{vc3} = 28{,}6\ \%;$ $t_{d3} = 7{,}1\ \%;$

in this way it is possible to determine:

$$K_1 = (F_{a1}^3 \cdot n_{a1} \cdot t_{a1}) + (F_{vc1}^3 \cdot n_{vc1} \cdot t_{vc1}) + (F_{d1}^3 \cdot n_{d1} \cdot t_{d1}) \qquad n_1 = (n_{a1} \cdot t_{a1}) + (n_{vc1} \cdot t_{vc1}) + (n_{d1} \cdot t_{d1}) \qquad T_1 = t_{a1} + t_{vc1} + t_{d1}$$
$$K_2 = (F_{a2}^3 \cdot n_{a2} \cdot t_{a2}) + (F_{vc2}^3 \cdot n_{vc2} \cdot t_{vc2}) + (F_{d2}^3 \cdot n_{d2} \cdot t_{d2}) \qquad n_2 = (n_{a2} \cdot t_{a2}) + (n_{vc2} \cdot t_{vc2}) + (n_{d3} \cdot t_{d3}) \qquad T_2 = t_{a2} + t_{vc2} + t_{d2}$$
$$K_3 = (F_{a3}^3 \cdot n_{a3} \cdot t_{a3}) + (F_{vc3}^3 \cdot n_{vc3} \cdot t_{vc3}) + (F_{d3}^3 \cdot n_{d3} \cdot t_{d3}) \qquad n_3 = (n_{a3} \cdot t_{a3}) + (n_{vc3} \cdot t_{vc3}) + (n_{d3} \cdot t_{d3}) \qquad T_3 = t_{a3} + t_{vc3} + t_{d3}$$

Concluding, we know that:

$$F_m = \sqrt[3]{\frac{(K_1 + K_2 + K_3)}{(n_1 + n_2 + n_3)}} = 596{,}64\ N$$

$$n_m = \frac{n_1 + n_2 + n_3}{T_1 + T_2 + T_3} = 685{,}7\ rpm$$

		F [N]	n [rpm]	time %
PHASE 1	**Acceleration** **Constant speed** **Deceleration**			
PHASE 2	**Acceleration** **Constant speed** **Deceleration**			
PHASE 3	**Acceleration** **Constant speed** **Deceleration**			
	TOTAL			

MECHANICAL DIMENSIONING

CALCULATION OF THE DRIVING TORQUE AT CONSTANT SPEED [Nm]

$$C_{m1} = \frac{F_a \cdot p}{2\pi \cdot \eta \cdot 1000}$$

TOTAL FORCE ACTING ON THE SYSTEM [N]

$$F_a = F + \mu \cdot m \cdot g$$

where:
F = Force to be applied in axial direction [N]
m = Mass of the body to move [kg]
g = Gravitational acceleration (9.81 m/s²)
p = Pitch of the ball screw [mm]
η = Output of the Series 6E cylinders = 0.9
μ = Friction coefficient of the support guide

CALCULATION OF THE DRIVING TORQUE AT CONSTANT ACCELERATION [Nm]

$$Cm_2 = Cm_1 + J_{tot} \cdot \frac{\dot{\omega}}{\eta}$$

ANGULAR ACCELERATION [rad/s²]

$$\dot{\omega} = \frac{a \cdot 2\pi \cdot 1000}{p}$$

where:
a = Linear acceleration of the ball screw [m/s²]
p = Pitch of the screw [mm]

MOMENT OF TOTAL INERTIA OF THE CYLINDER [kg·m²]

$$J_{tot} = J_{frb} + J_{vrb}$$

MOMENT OF TOTAL INERTIA OF THE 6E COMPONENTS AT FIXED LENGTH [kg·m²]

$$J_{frb} = (J_{c1} \cdot 10^{-6}) + m_{c1} \cdot \left(\frac{p}{2\pi \cdot 1000}\right)^2$$

where:
J_{c1} = Moment of inertia of 6E rotating components [kg·m²]
m_{c1} = Mass of the 6E components to move [kg]

MOMENT OF TOTAL INERTIA OF THE 6E COMPONENTS AT VARIABLE LENGTH [kg·m²]

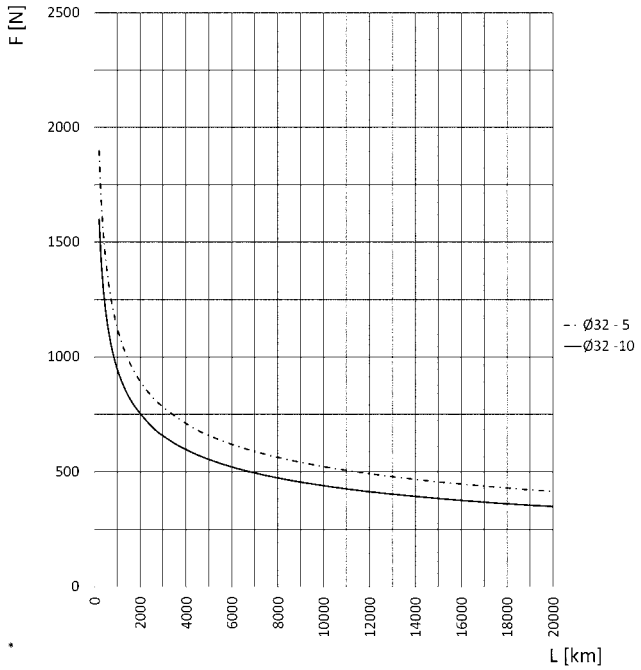
$$J_{vrb} = \left[(J_{c2} \cdot 10^{-6}) + m_{c2} \cdot \left(\frac{p}{2\pi \cdot 1000}\right)^2\right] \cdot \frac{c}{1000}$$

where:
J_{c2} = Moment of inertia of the 6E rotating components [kg·m²]
m_{c2} = Mass of the 6E components to move [kg]
c = rod stroke [mm]

Values of masses and fixed and rotating inertia moments of 6E components

Size	Pitch	m_{c1}	m_{c2}	J_{c1}	J_{c2}
32	5	0.151 Kg	0.0008 Kg	12.38 kg mm²	1.59 kg mm²
	10	0.151 Kg	0.0008 Kg	12.38 kg mm²	1.59 kg mm²
40	5	0.428 Kg	0.0010 Kg	35.55 kg mm²	5.02 kg mm²
	10	0.428 Kg	0.0010 Kg	35.55 kg mm²	5.02 kg mm²
	16	0.428 Kg	0.0010 Kg	35.55 kg mm²	5.02 kg mm²
50	5	0.399 Kg	0.0011 Kg	54.96 kg mm²	12.33 kg mm²
	10	0.399 Kg	0.0011 Kg	85.94 kg mm²	12.33 kg mm²
	20	0.399 Kg	0.0011 Kg	83.25 kg mm²	12.33 kg mm²
63	5	0.576 Kg	0.0014 Kg	207.53 kg mm²	30.07 kg mm²
	10	0.576 Kg	0.0014 Kg	230.82 kg mm²	30.07 kg mm²
	25	0.576 Kg	0.0014 Kg	219.55 kg mm²	30.07 kg mm²

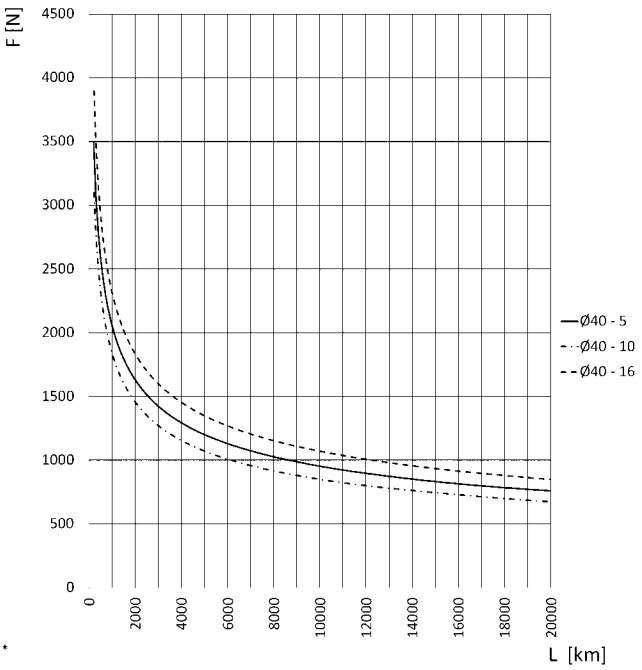
Life of the cylinder according to the average axial force applied



Size 32

F = Axial Force [N]
L = life [km]

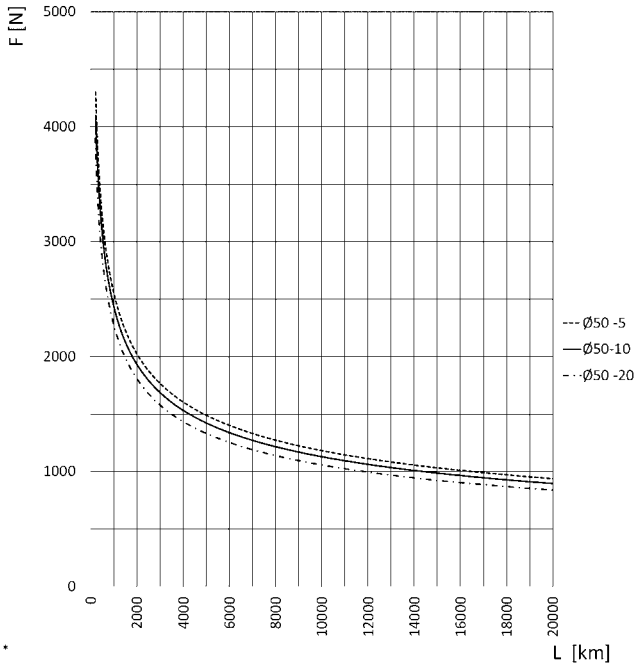
* Curves calculated with fw = 1 (see page 1/11.05.05)



Size 40

F = Axial Force [N]
L = life [km]

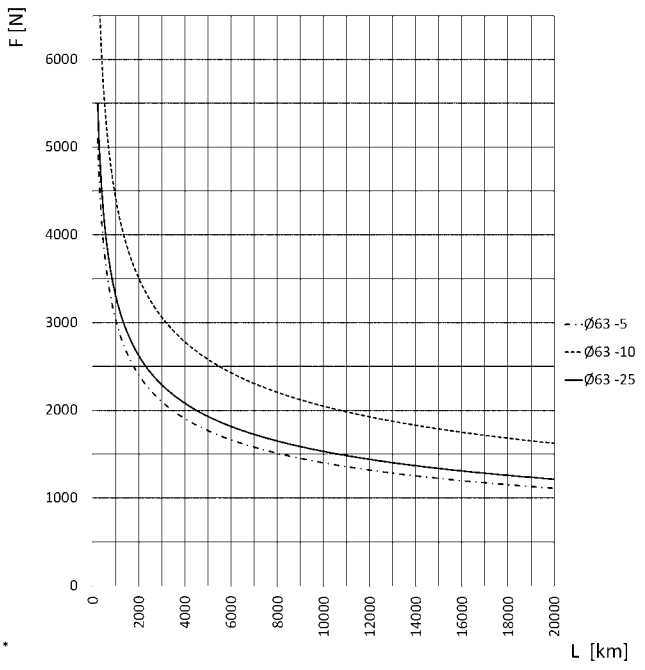
* Curves calculated with fw = 1 (see page 1/11.05.05)



Size 50

F = Axial Force [N]
L = life [km]

* Curves calculated with fw = 1 (see page 1/11.05.05)

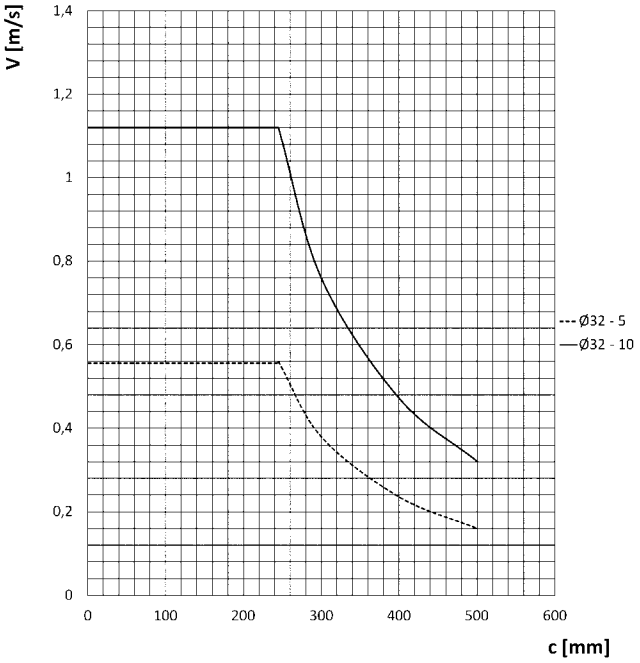


Size 63

F = Axial Force [N]
L = life [km]

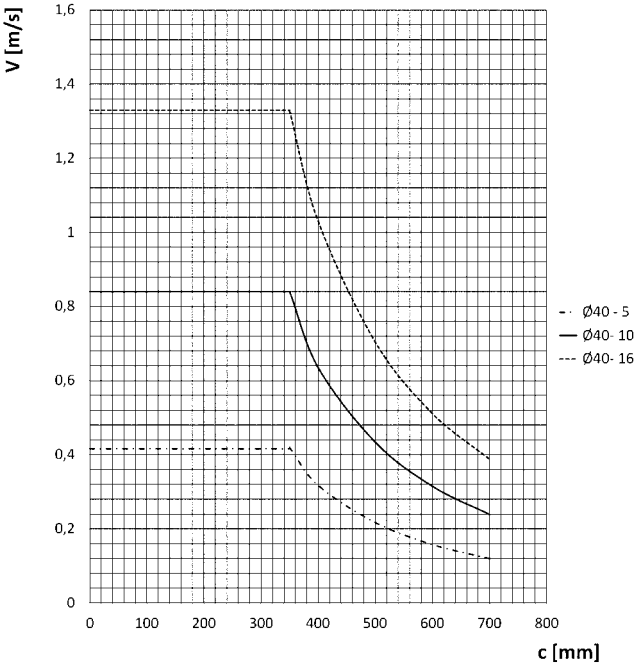
* Curves calculated with fw = 1 (see page 1/11.05.05)

Maximum speed of the cylinder according to its stroke



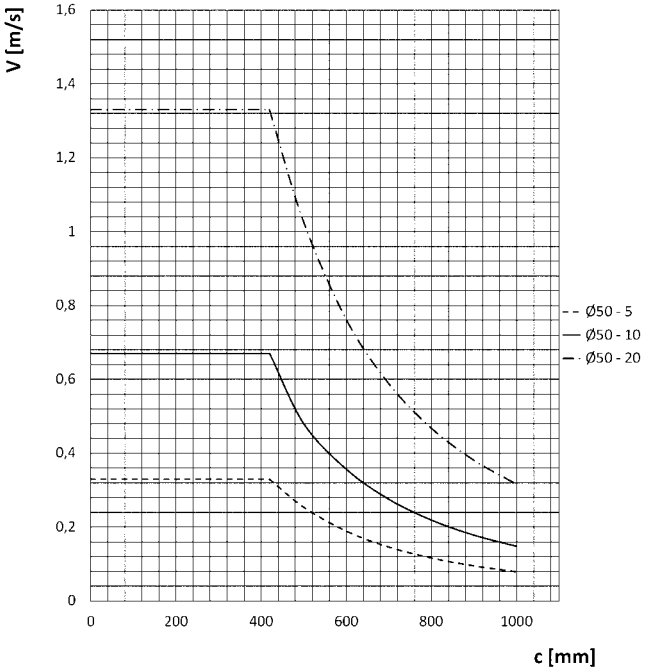
Size 32

V = speed [m/s]
c = stroke [mm]



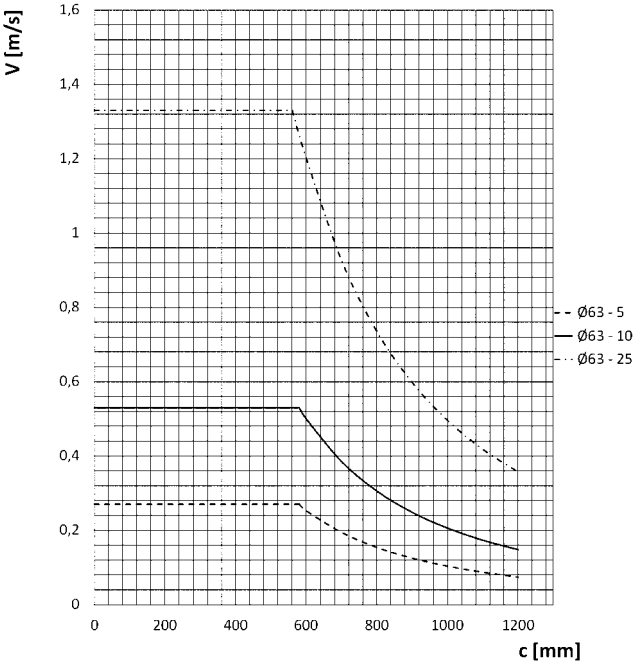
Size 40

V = speed [m/s]
c = stroke [mm]



Size 50

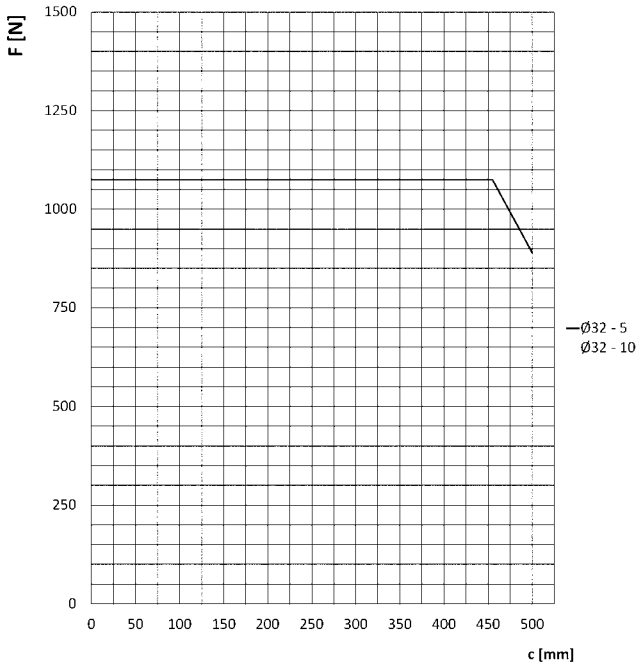
V = speed [m/s]
c = stroke [mm]



Size 63

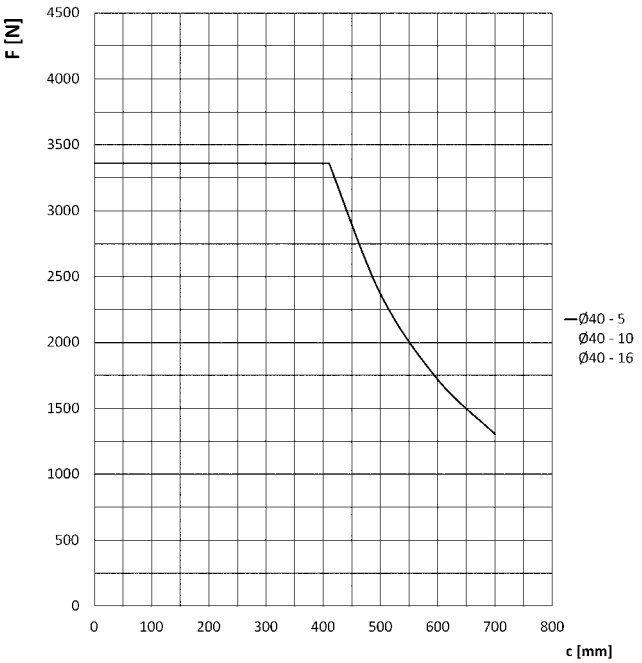
V = speed [m/s]
c = stroke [mm]

Maximum force of the cylinder according to its stroke



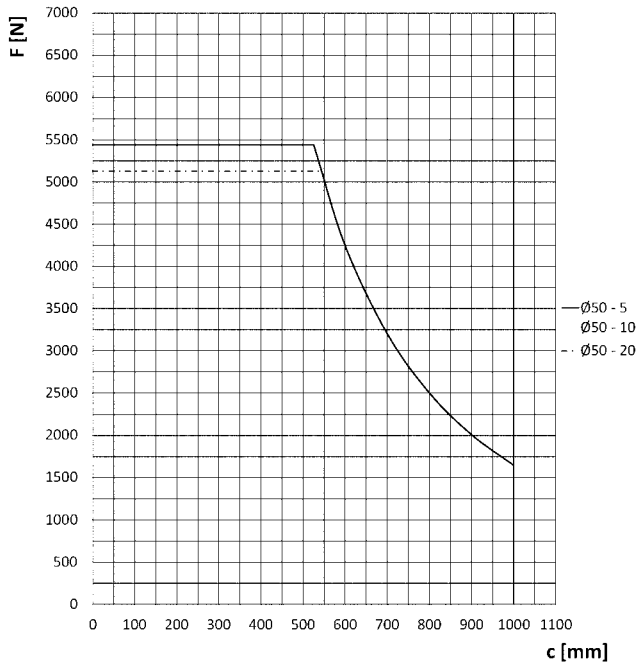
Size 32

F = static axial Force [N]
c = stroke [mm]



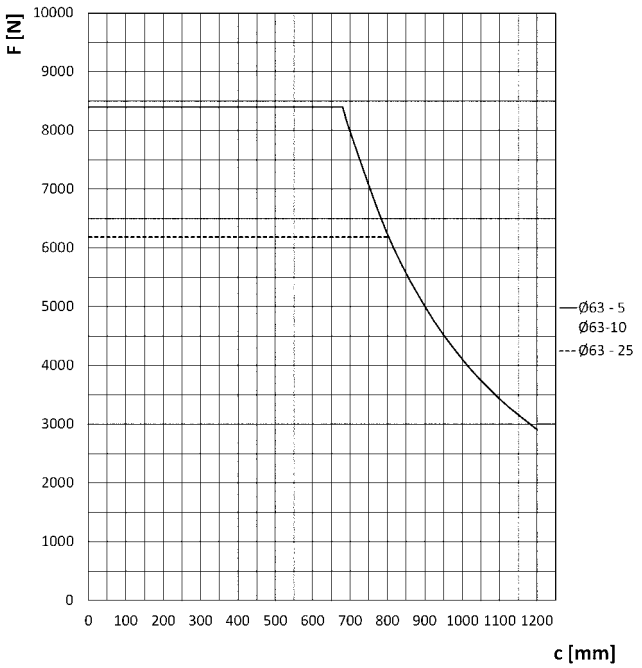
Size 40

F = static axial Force [N]
c = stroke [mm]



Size 50

F = static axial Force [N]
c = stroke [mm]

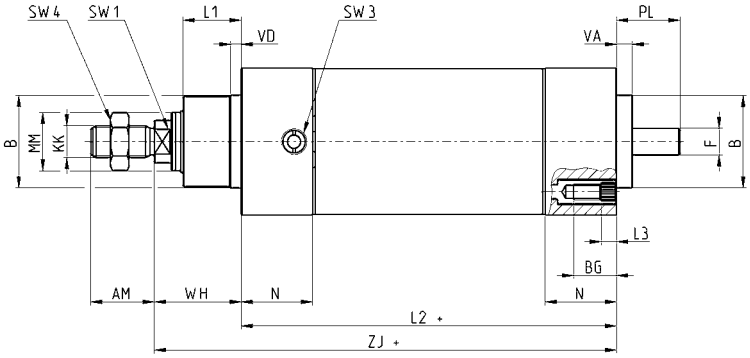


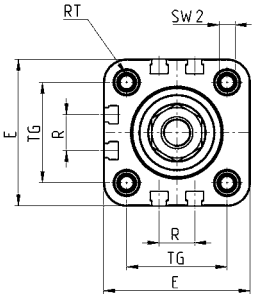
Size 63

F = static axial Force [N]
c = stroke [mm]

Series 6E cylinders

+ = add the stroke



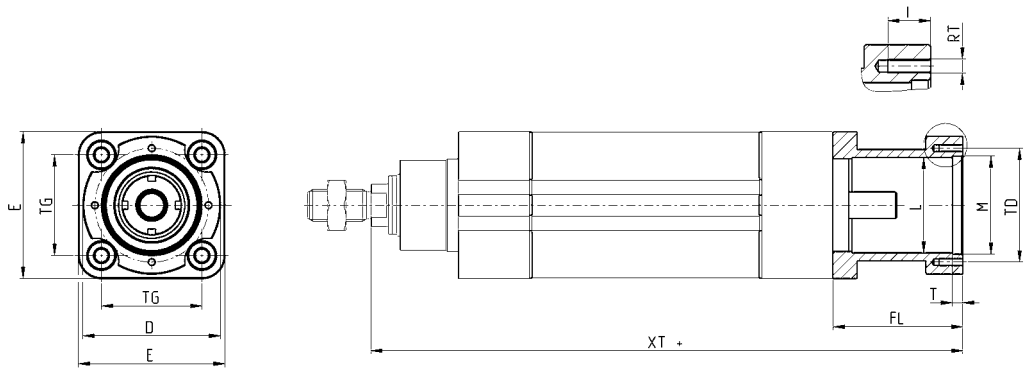


Size	AM	B	BG	E	F	KK	L1	L2+	L3	MM	N	R	RT	PL	SW1	SW2	SW3	SW4	TG	VA	VD	WH	ZJ+	weight stroke zero [g]	weight stroke [g/100mm]
32	22	30	16	46.5	8	M10x1.25	20	125	5.5	18	26	13	M6	21	10	6	G1/8	17	32.5	6	4	30	155	1175	377
40	24	35	16	55.4	10	M12x1.25	22	142	5.5	22	27	13.5	M6	24	13	6	G1/8	19	38	6	4	33	175	1395	530
50	32	40	16	64.9	12	M16x1.5	26	173	5.5	25	36	16	M8	30	17	8	G1/8	24	46.5	7	4	38	211	2280	603
63	32	45	16	75	15	M16x1.5	29	201	5.5	30	36	28	M8	38	17	8	G1/8	24	56.5	7	4	42	242.5	3500	977

Housing for axial connection Mod. CM

Material: anodized aluminium

Supplied with:
1x housing
4x screws

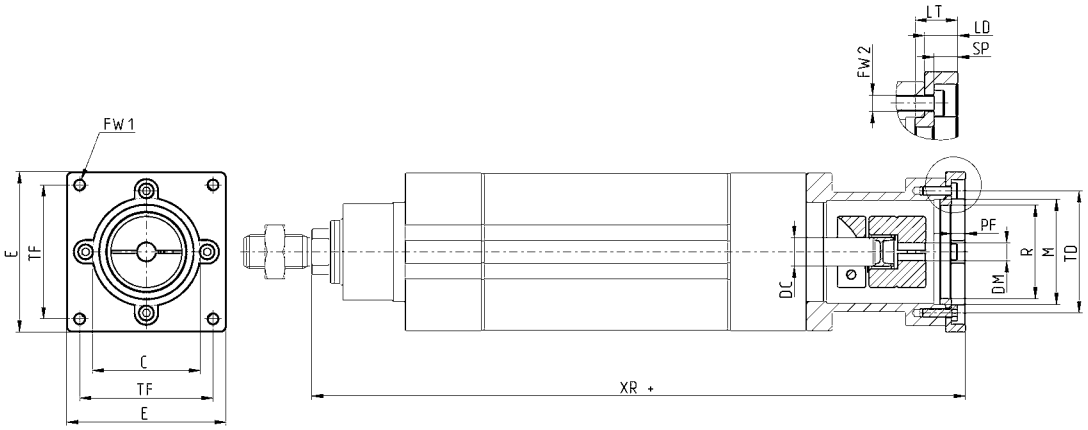


Mod.	Size	XT	E	⌀D	TG	FL	⌀L	⌀M [H7]	T	TD	RT	I	Weight (g)
CM-6E-32	32	201	46.5	42	32.5	46	29	32	4	37	M3	9	100
CM-6E-40	40	224	55.4	52	38	49	36	37	4	43	M3	9	150
CM-6E-50	50	267	64.9	58	46.5	56	39	42	4	49	M4	9	225
CM-6E-63	63	306.5	75	60.5	56.5	64	48	47	4	54	M4	9	280

Flange for axial connection Mod. FM

Material: anodized aluminium

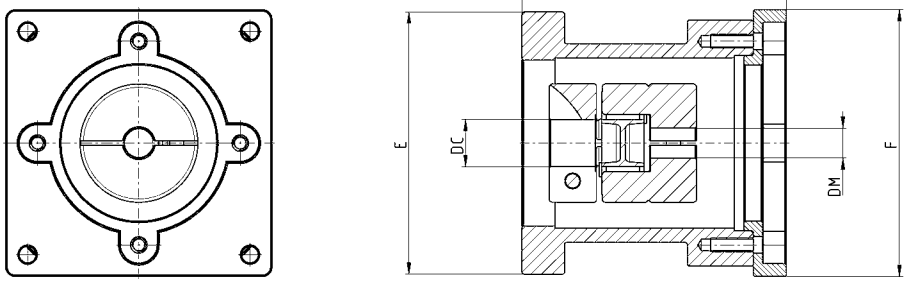
Supplied with:
1x flange
1x flexible coupling
4x screws



Mod.	Size	Housing	Motor	XR	øC [h7]	PF	LT	LD	øM [H7]	E	øR	TF	FW1	øTD	SP	øFW2	øDC	øDM	Weight (g)
FM-6E-32-0100	32	CM-6E-32	Brushless 100W	210	30	6	11	9	32	42	29	31.8	M3	37	6	3.5	8	8	65
FM-6E-32-0023	32	CM-6E-32	Stepper NEMA23	208	38.1	5	9	7	32	56.4	29	47.1	M4	37	5	3.5	8	6.35	140
FM-6E-40-0400	40	CM-6E-40	Brushless 400W	242	50	3.5	20	18	37	60	33	49.5	M5	43	3.5	3.5	10	14	140
FM-6E-40-0023	40	CM-6E-40	Stepper NEMA23	231	38.1	5	9	7	37	56.4	33	47.1	M4	43	5	3.5	10	6.35	215
FM-6E-50-0400	50	CM-6E-50	Brushless 400W	284	50	6	19	17	42	60	37	49.5	M5	49	14	4.5	12	14	210
FM-6E-50-0024	50	CM-6E-50	Stepper NEMA24	274	38.1	3	9	7	42	58	37	47.1	M4	49	4	4.5	12	8	190
FM-6E-63-0750	63	CM-6E-63	Brushless 750W	332.5	70	6	28	26	47	80	43	63.6	M6	54	24	4.5	15	19	565
FM-6E-63-0024	63	CM-6E-63	Stepper NEMA24	313.5	38.1	5	9	7	47	60.5	43	47.1	M4	54	5	4.5	15	8	200

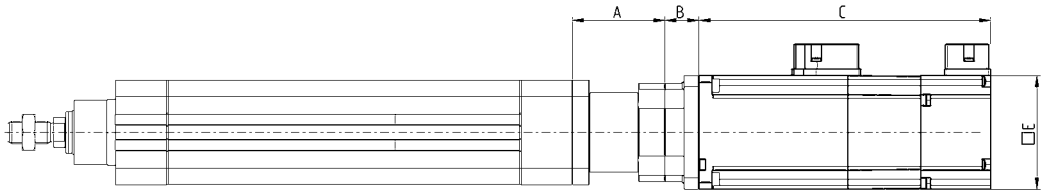
Kit for axial connection Mod. AM

Supplied with:
1x housing
1x flange
1x flexible coupling
4x screws to connect on the cylinder's side
4x screws to connect on the motor's side



Mod.	Size	Motor	øDC	øDM	E	F	XW	Weight (g)	η
AM-6E-32-0100	32	Brushless 100W	8	8	46.5	42	55	165	0.78
AM-6E-32-0023	32	Stepper Nema 23	8	6.35	46.5	56.4	53	240	0.78
AM-6E-40-0400	40	Brushless 400W	10	14	55.4	60	67	290	0.78
AM-6E-40-0023	40	Stepper Nema 23	10	6.35	55.4	56.4	56	365	0.78
AM-6E-50-0400	50	Brushless 400W	12	14	64.9	60	73	435	0.78
AM-6E-50-0024	50	Stepper Nema 24	12	6.35	64.9	58	63	415	0.78
AM-6E-63-0750	63	Brushless 750W	15	19	75	80	90	845	0.78
AM-6E-63-0024	63	Stepper Nema 24	15	6.35	75	60.5	71	480	0.78

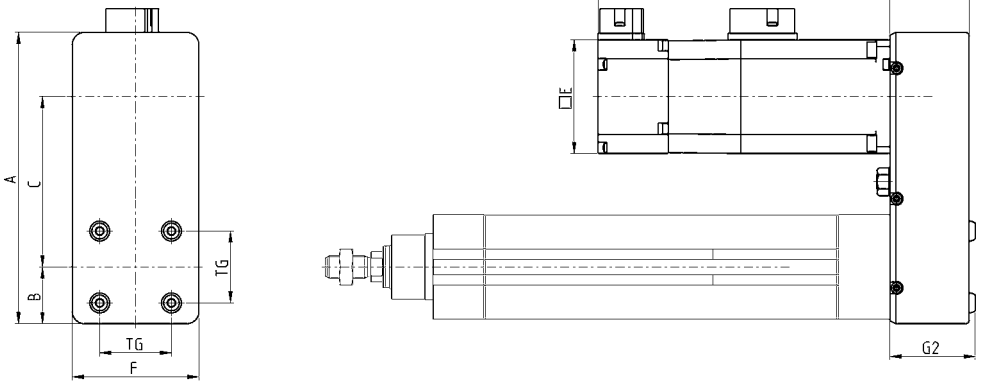
Series 6E cylinders - in line motor configuration



Size	Motor	A	B	C (with brake)	C (without brake)	E
32	Stepper NEMA 23	46	7	-	41	56.4
32	Brushless 100 W	46	9	139	110.5	42
40	Stepper NEMA 23	49	7	-	41	56.4
40	Brushless 400 W	49	18	154.5	121.5	60
50	Stepper NEMA 24	56	7	-	85	60.5
50	Brushless 400 W	56	17	154.5	121.5	60
63	Stepper NEMA 24	64	7	-	85	60.5
63	Brushless 750 W	64	26	176	140	80

Kit for parallel connection Mod. PM

The kit includes: flange to connect the motor to the cylinder, cover, 2 pulleys, 2 locking sets, toothed belt, belt traction unit, 4 fixing screws, 4 screws for cylinder's side, 4 screws rear cover, 6 cover fixing screws.



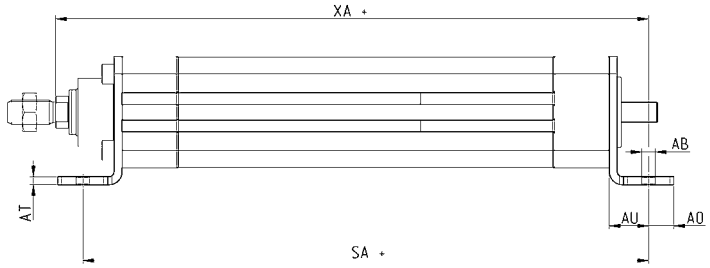
Mod.	Size	Motor	E	D (with brake)	D (without brake)	A	F	G1	G2	B	C	TG	Weight (g)	η
PM-6E-32-0100	32	Brushless 100W	42	139	110.5	122	50	35	39.2	26.5	65	32.5	400	0.62
PM-6E-40-0400	40	Brushless 400W	60	154.5	121.5	154	67	46	49.2	30	90	38	900	0.62
PM-6E-50-0400	50	Brushless 400W	60	154.5	121.5	174	77	48	52.4	34.5	105.5	46.5	1250	0.62
PM-6E-63-0750	63	Brushless 750W	80	176	140	192	87	50	54.4	41	107	56.5	1500	0.62

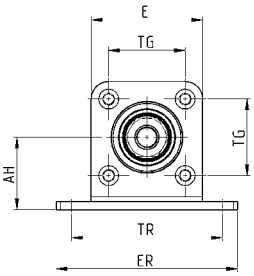
Foot bracket Mod. B-6E

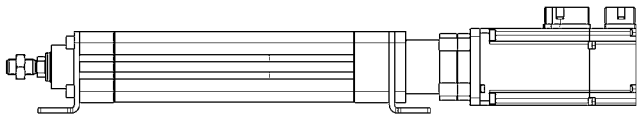
Material: zinc-plated steel

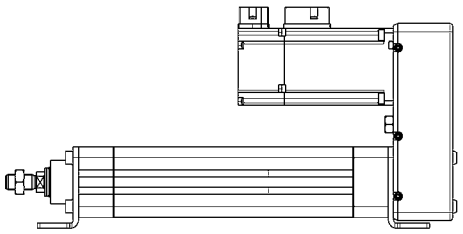
Supplied with:

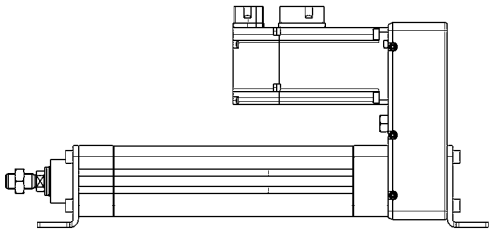
2x feet
8x screws







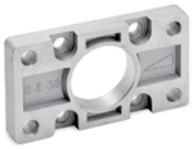


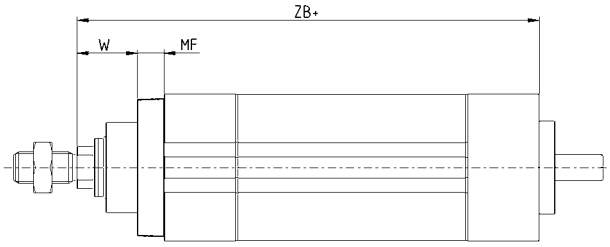


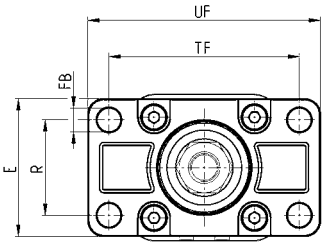
Mod.	Size	SA	XA	AH	TG	TR	AT	AU	AO	⌀AB	ER	E	Weight (g)
B-6E-32	32	164	174.5	32	32.5	65	4	19.5	12.5	6.6	79	46.5	275
B-6E-40	40	181	194.5	36	38	75	4	19.5	12.5	6.6	90	55.4	340
B-6E-50	50	223	236	45	46.5	90	5	25	15	9	110	64.9	635
B-6E-63	63	251	267.5	50	56.5	100	5	25	15	9	120	75	755

Front flange Mod. D-E

Material: Aluminium







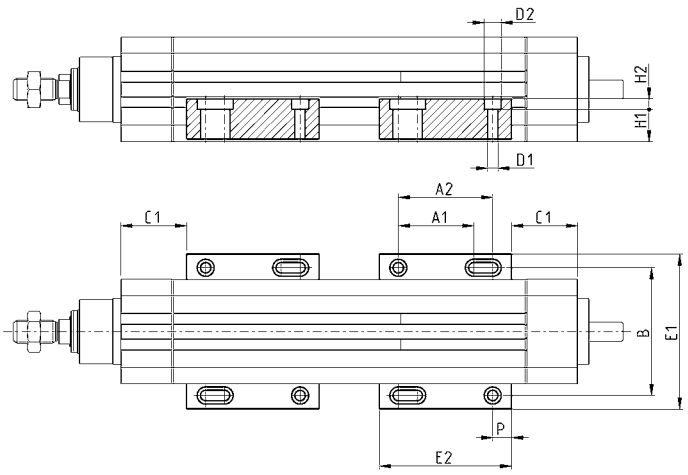
Supplied with:
1x flange
4x screws

+ = add the stroke

Mod.	Size	W	MF	ZB+	TF	R	UF	E	FB	torque force
D-E-41-32	32	20	10	155	64	32	86	45	7	6 Nm
D-E-41-40	40	23	10	175	72	36	88	52	9	6 Nm
D-E-41-50	50	26.5	12	211	90	43	110	63	9	13 Nm
D-E-41-63	63	30	12	242.5	100	50	116	73	9	13 Nm

Side clamping bracket Mod. BG

Material: Aluminium



Supplied with:
2x clamps

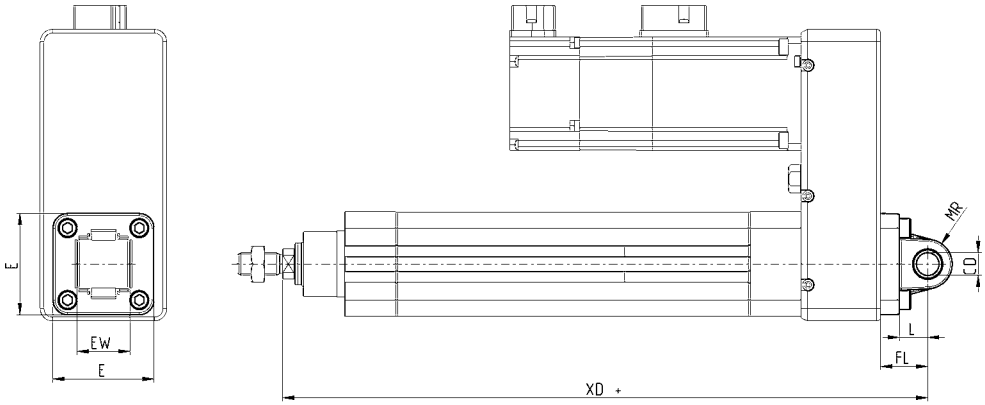
Mod.	Size	C1	E1	E2	P	A1	A2	B	Screw	⌀D1	⌀D2	H1	H2	Weight (g)
BG-6E-32	32	35	71	70	10	40	50	58.5	M4x...	4.5	7.5	13.5	4.5	80
BG-6E-40	40	35	82	70	10	40	50	67.5	M5x...	5.5	9	16.9	5.5	105
BG-6E-50	50	35	93	70	10	40	50	76.5	M6x...	6.5	10.5	19.4	6.5	125
BG-6E-63	63	35	103.5	70	10	40	50	87	M6x...	6.5	10.5	18.9	6.5	125

Rear male trunnion Mod. L

Material: Aluminium

Supplied with:
1x male trunnion
4x screws

+ = add the stroke



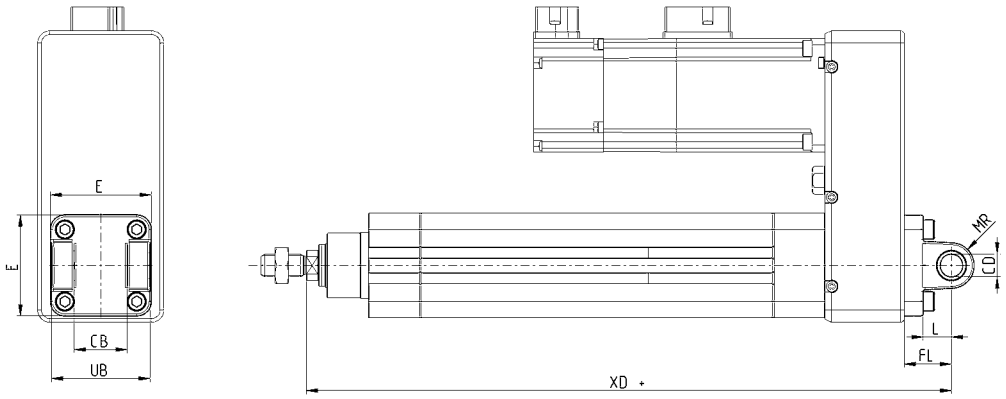
Mod.	Size	⌀CD	L	FL	XD+	MR	E	EW	torque force
L-41-32	32	10	12	22	212	10	45	26	6 Nm
L-41-40	40	12	15	25	246	13	53.5	28	6 Nm
L-41-50	50	12	15	27	286	13	62.5	32	13 Nm
L-41-63	63	16	20	32	324.5	17	73	40	13 Nm

Rear female trunnion Mod. C and C-H

Material: Aluminium

Supplied with:
1x female trunnion
4x screws

+ = add the stroke

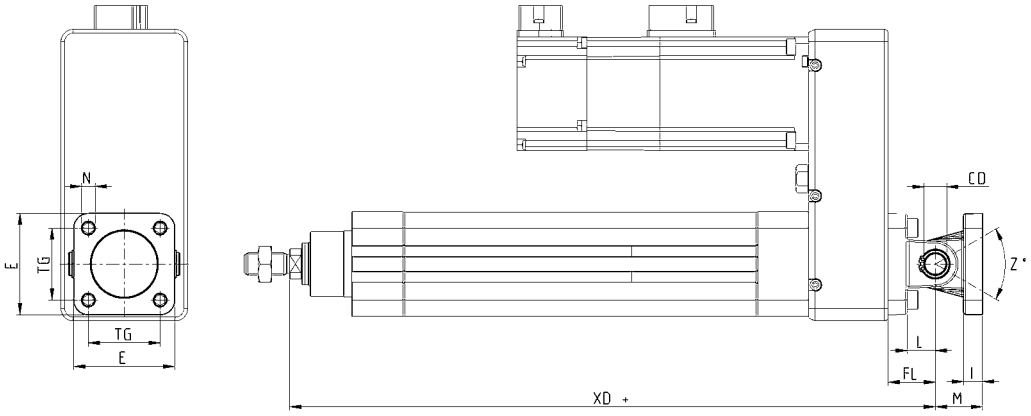


Mod.	Size	⌀CD	L	FL	XD+	MR	E	CB	UB	torque force
C-41-32	32	10	12	22	212	10	45	26	45	6 Nm
C-41-40	40	12	15	25	246	12	53.5	28	52	6 Nm
C-41-50	50	12	15	27	286	13	62.5	32	60	13 Nm
C-H-41-63	63	16	20	32	324.5	17	73	40	70	13 Nm

Accessory combination Mod. C+L+S

Material: aluminium

+ = add the stroke



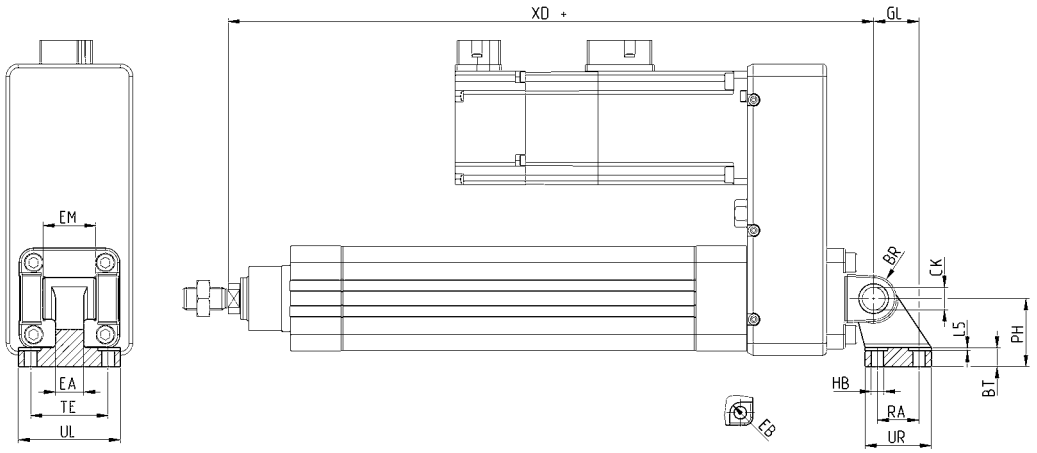
Mod.	Size	E	TG	⌀N	XD+	⌀CD	L	FL	I	M	Z° (max)	torque force
C+L+S	32	45	32.5	6.5	142	10	12	22	10	22	30	6 Nm
C+L+S	40	53.5	38	6.5	160	12	15	25	10	25	40	6 Nm
C+L+S	50	62.5	46.5	9	170	12	15	27	12	27	25	13 Nm
C+L+S	63	73	56.5	9	190	16	20	32	12	32	36	13 Nm

90° male trunnion Mod. ZC

CETOP RP 107P
Material: Aluminium

Supplied with:
1x male support

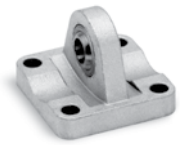
+ = add the stroke



Mod.	Size	⌀EB	⌀CK	⌀HB	XD+	TE	UL	EA	GL	L5	RA	EM	UR	PH	BT	BR
ZC-32	32	11	10	6.6	212	38	51	10	21	1.6	18	26	31	32	8	10
ZC-40	40	11	12	6.6	246	41	54	15	24	1.6	22	28	35	36	10	11
ZC-50	50	15	12	9	286	50	65	16	33	1.6	30	32	45	45	12	13
ZC-63	63	15	16	9	324.5	52	67	16	37	1.6	35	40	50	50	14	15

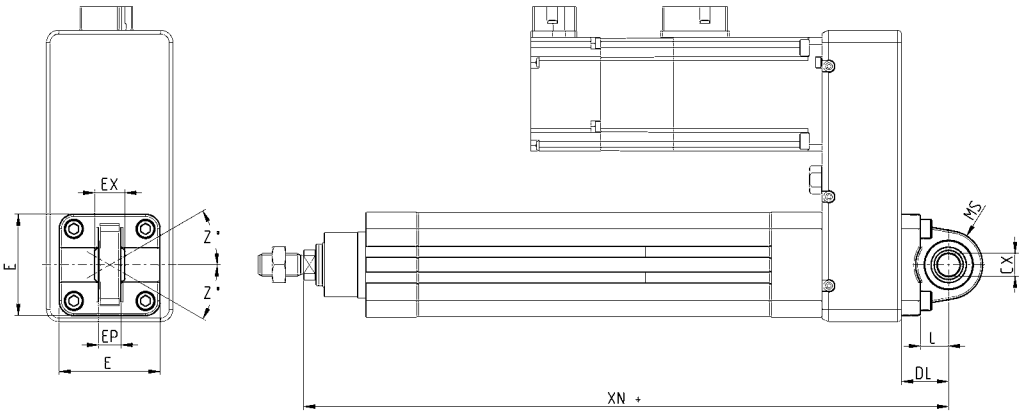
Trunnion ball-joint Mod. R

This trunnion doesn't comply with the ISO 15552 standard
Material: Aluminium



Supplied with:
1x trunnion ball joint
4x screws

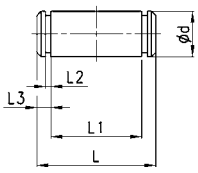
+ = add the stroke



Mod.	Size	⌀CX	L	DL	XN+	MS	E	EX	RP	Z	torque force
R-41-32	32	10	12	22	212	18	45	14	10.5	4°	6 Nm
R-41-40	40	12	15	25	246	18	53.5	16	12	4°	6 Nm
R-41-50	50	12	15	27	286	21	62.5	16	12	4°	13 Nm
R-41-63	63	16	20	32	324.5	23	73	21	15	4°	13 Nm

Clevis pin Mod. S

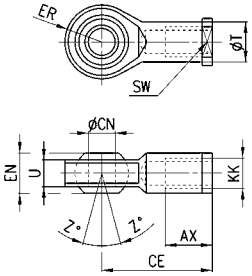
Supplied with:
1x clevis pin in
stainless steel 303
2x Seeger in steel



Mod.	Size	d	L	L1	L2	L3
S-32	32	10	52	46	1.1	3
S-40	40	12	59	53	1.1	3
S-50	50	12	67	61	1.1	3
S-63	63	16	77	71	1.1	3

Swivel ball joint Mod. GA

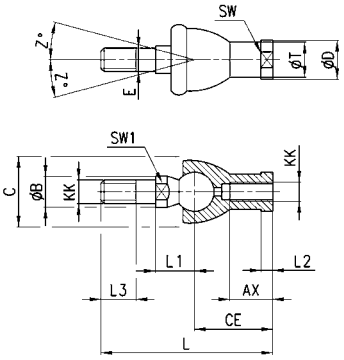
ISO 8139.
Material: zinc-plated steel.



Mod.	⌀CN	U	EN	ER	AX	CE	KK	T	Z	SW
GA-32	10	10,5	14	14	20	43	M10X1,25	15	6,5	17
GA-40	12	12	16	16	22	50	M12X1,25	17,5	6,5	19
GA-50-63	16	15	21	21	28	64	M16X1,5	22	7,5	22
GA-80-100	20	18	25	25	33	77	M20x1,5	27,5	7	30
GA-41-125	30	25	37	37	51	110	M27x2	40	7,5	41

Piston rod socket joint Mod. GY

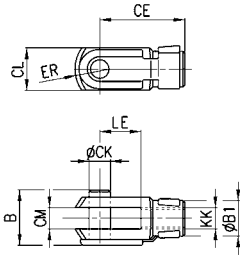
Material: zama and zinc-plated steel.



Mod.	Size	KK	AX	CE	E	L	L1	L2	L3	SW	SW1	⌀B	⌀C	⌀D	⌀T	Z
GY-32	32	M10X1.25	18	35	10	74	19.5	6.5	15	17	11	14	28	19	15	15
GY-40	40	M12X1.25	20	40	12	84	21	6.5	17	19	17	19	32	22	17.5	15
GY-50-63	50-63	M16X1.5	27	50	16	112	27.5	8	23	22	19	22	40	27	22	11

Rod fork end Mod. G

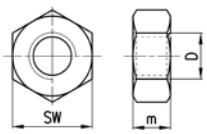
ISO 8140
Material: zinc-plated steel



Mod.	⌀CK	LE	CM	CL	ER	CE	KK	B	B1
G-25-32	10	20	10	20	12	40	M10 X 1.25	26	18
G-40	12	24	12	24	14	48	M12 X 1.25	32	20
G-50-63	16	32	16	32	19	64	M16 X 1.5	40	26

Piston rod lock nut Mod. U

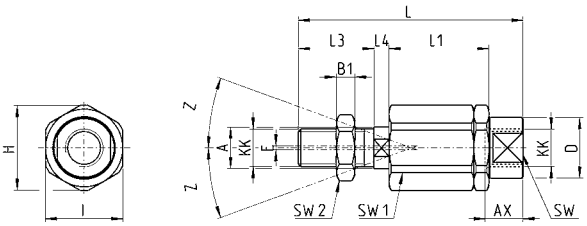
ISO 4035
Material: zinc-plated steel.



Mod.	D	m	SW
U-25-32	M10X1,25	6	17
U-40	M12X1,25	7	19
U-50-63	M16X1,5	8	24

Self aligning rod Mod. GK

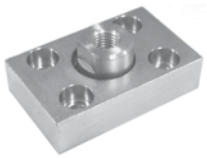
Material: zinc-plated steel.

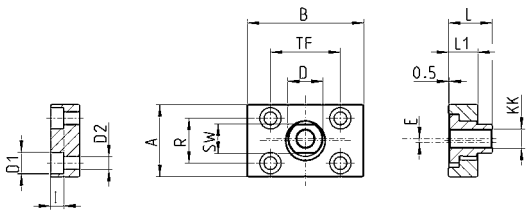


Mod.	Size	KK	L	L1	L3	L4	⌀A	⌀D	H	I	SW	SW1	SW2	B1	AX	Z	E
GK-25-32	32	M10x1.25	71.5	35	20	7.5	14	22	32	30	19	12	17	5	22	4	2
GK-40	40	M12x1.25	75.5	35	24	7.5	14	22	32	30	19	12	19	6	22	4	2
GK-50-63	50-63	M16x1.5	104	53	32	10	22	32	45	41	27	20	24	8	30	3	2

Coupling piece Mod. GKF

Material: zinc-plated steel.

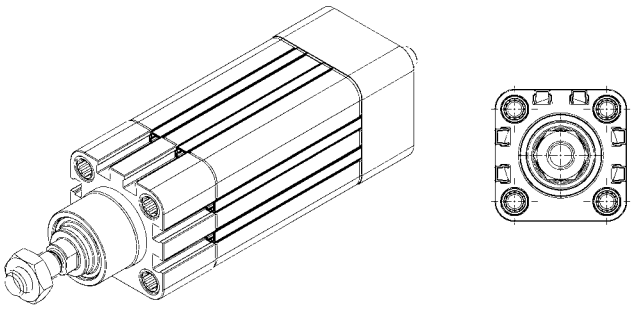




Mod.	Size	KK	A	B	R	TF	L	L1	I	⌀D	⌀D1	⌀D2	SW	E
GKF-25-32	32	M10x1.25	37	60	23	36	22.5	15	6.8	18	11	6.6	15	2
GKF-40	40	M12x1.25	56	60	38	42	22.5	15	9	20	15	9	15	2.5
GKF-50-63	50-63	M16x1.5	80	80	58	58	26.5	15	10.5	25	18	11	22	2.5

Slot cover profile Mod. S-CST-500

Supplied with 500 mm tube



Mod.
S-CST-500

Series 5E electromechanical axis

Sizes 50, 65, 80

- Multiposition system with transmission of the movement with toothed belt
- Suitable for high dynamics
- Possibility to connect the motor on 4 sides
- Large range of motor interfaces
- Possibility to use magnetic proximity switches and/ or inductive sensors
- IP 40
- Max stroke 6 meters
- Plates to realize multi-axis systems
- Presence of internal channels for re-lubrication
- Large range of axis mounting accessories

Series 5E axes are mechanical linear actuators in which the rotary movement generated by a motor is converted into a linear movement by means of a toothed belt.
The Series 5E, available in 3 sizes, 50, 65 and 80, is realized by means of a special self-supporting square profile, in which the components have been completely integrated, assuring compactness and light weight.
The presence of a recirculating ball guide grants high stiffness and resistance to external loads.

To protect the internal elements from potential contaminants from the external environment, the profile has been closed with a stainless steel plate. The axis is equipped with a magnet that makes it possible to use external proximity switches (Series CSH), allowing operations like homing or extra-stroke readings to be performed. Moreover, these actuators also have accessories in order to be used with inductive sensors. The Series 5E is equipped with specific interface kits making it possibleto connect the motor on 4 sides. The use with high dynamics and the possibility to realize multi-axis systems, make the Series 5E particularly suitable for the packaging and assembly sectors.

GENERAL DATA

Construction	electromechanical axis with toothed belt
Design	open profile with protection plate
Operation	multi-position linear actuator
Sizes	50, 65, 80
Strokes	50 ÷ 4000 mm for size 50; 50 ÷ 6000 mm for sizes 65 and 80
Type of guide	internal, with recirculating balls (cage type)
Fixing	by means of slots on the profile and special clamps
Mounting motor	on all 4 sides
Operating temperature	-10°C ÷ +50°C
Storage temperature	-20°C ÷ +80°C
Protection class	IP 40
Lubrication	centralized lubrification by means of internal channels
Repeatability	± 0.05 mm
Duty cycle	100%
Use with external sensors	Series CSH magnetic switches in special slots or inductives by means of supports

CODING EXAMPLE

5E	S	050	TBL	0200	A	S	1

5E	SERIES
S	PROFILE: S = square section
050	FRAME SIZE: 050 = 50x50 mm 065 = 65x65 mm 080 = 80x80 mm
TBL	TRANSMISSION: TBL = toothed belt
0200	STROKE [C]: 0050 ÷ 4000 mm for size 050 0050 ÷ 6000 mm for sizes 065 and 080
A	VERSION: A = standard
S	TYPE OF SLIDER: S = standard
1	NUMBER OF SLIDERS: 1 = 1 slider

MECHANICAL CHARACTERISTICS

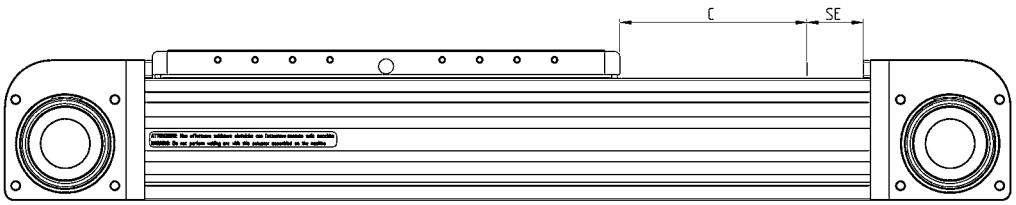
	Measuring unit	Size 50	Size 65	Size 80	
RECIRCULATING BALL GUIDE (CAGE TYPE)					
Number of RDS blocks	pcs	2	2	2	
Dynamic load of RDS blocks (C)	N	11640	28400	44600	
Max admissible load (C_{max} z) (C_{max} y)	N	3100*	8300*	13100*	
Max admissible moment (M_{max} x)	Nm	22.44	96.00	216.60	
Max admissible moment (M_{max} y) (M_{max} z)	Nm	45.30	269.40	525.00	
Max linear speed of mechanics (V_{max})	m/s	5	5	5	
Max linear acceleration of mechanics (a_{max})	m/s²	50	50	50	
					(*) Value refers to a covered distance of 2000 Km with fully supported system
TOOTHED BELT					
Type		20 AT 5 HP	32 AT 5 HP	32 AT 10 HP	
Pitch	mm	5	5	10	
Max tensile strength	N	1795	2890	6570	
Safe tensile strength	N	1110	1786	4061	
Max load at break	N	7180	11570	26295	
Max transmittable load (C_{max} x)	N	480**	1150**	1400**	
					(**) Value refers to 1500 rpm
PULLEY					
Primitive pulley diameter	mm	31.83	47.75	63.66	
Number of teeth	z	20	30	20	
Linear movement per pulley round	mm/round	100	150	200	
					N.B. Check the nominal admissible torque of the used motion transmission devices.
PROFILE					
Moment of surface inertia I_y	mm^4	$1.89 \cdot 10^5$	$4.94 \cdot 10^5$	$1.23 \cdot 10^6$	
Moment of surface inertia I_z	mm^4	$2.48 \cdot 10^5$	$6.97 \cdot 10^5$	$1.68 \cdot 10^6$	
Weight stroke zero	kg	2.15	4.60	8.90	
Weight per stroke meter	kg/m	3.35	5.40	5.90	
Mass in movement	kg	0.45	1.10	2.30	
Mass in movement per stroke meter	kg/m	0.13	0.21	0.41	

SERIES 5E STROKE

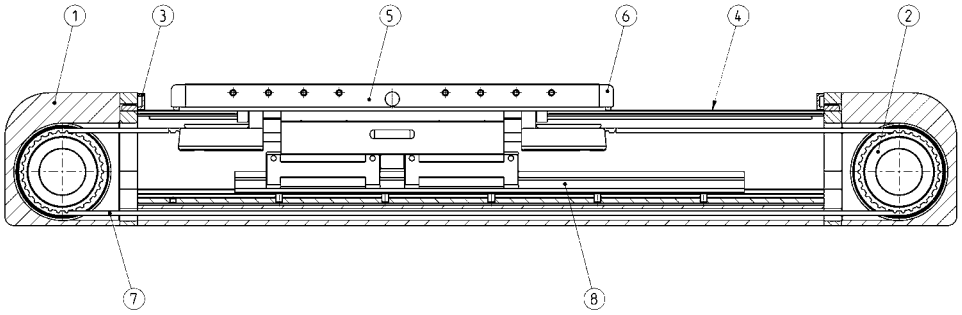
LEGEND:

C = Stroke
SE = Standard extra-stroke [5ES050.. = 30mm]
[5ES065.. = 30mm]
[5ES080.. = 30mm]

NOTES:
- Should an additional extra-stroke be required, it must be foreseen by the client.
- The slider should never work in stop on the header.



SERIES 5E MATERIALS



COMPONENTS	MATERIALS
1. End cap	Aluminium
2. Pulley	Steel
3. End cap bumper	Technopolymer
4. Protection plate	Steel
5. Slider	Aluminium
6. Bumper	Technopolymer
7. Toothed belt	PU + Steel
8. Recirculating ball guide	Steel

How to calculate the life of the axis 5E

The correct dimensioning of the axis 5E, used individually or in a cartesian system with several axes, you need to consider some facts, both static and dynamic. Among these, the most important are described on the following pages.

CALCULATION OF LIFE [km]

$$L_{eq} = \left(\frac{C_{ma}}{C_{eq} \cdot f_w}\right)^3 \cdot 2000$$

L_{eq} = Life of the axis 5E [km]
C_{ma} = Maximum admissible load [N]
C_{eq} = Equivalent load [N]
f_w = safety coefficient according to the working conditions

CALCULATION OF EQUIVALENT LOAD

When compression/traction and side loads as well as bending or torque moments act on the system, you need to calculate the equivalent load acting on the system.

$$C_{eq} = |F_y| + |F_Z| + C_{ma} \cdot \left|\frac{M_x}{M_{x,ma}}\right| + C_{ma} \cdot \left|\frac{M_y}{M_{y,ma}}\right| + C_{ma} \cdot \left|\frac{M_z}{M_{z,ma}}\right|$$

C_{eq} = Equivalent load [N]
F_y = Force acting along the Y-axis [N]
F_z = Force acting along the Z-axis [N]
C_{ma} = Max admissible load [N]
M_x = Moment along X-axis [Nm]
M_y = Moment along Y-axis [Nm]
M_z = Moment along Z-axis [Nm]
$M_{(x,ma)}$ = Max admissible moment along X-axis [Nm]
$M_{(y,ma)}$ = Max admissible moment along Y-axis [Nm]
$M_{(z,ma)}$ = Max admissible moment along Z-axis [Nm]

How to calculate the max deflection and verification of distance between supports

The electromechanical axis 5E is a self-supporting system and can also be used between 2 or more supports without the need of a continuous contact surface.
The maximum value of the deflection generated by the deformation of the system must never exceed the following calculation:

$$f_{max} = c_{max} \cdot 5 \cdot 10^{-4}$$

f_{max} = Maximum admissible deflection [mm]
c_{max} = Maximum stroke of axis 5E [mm]

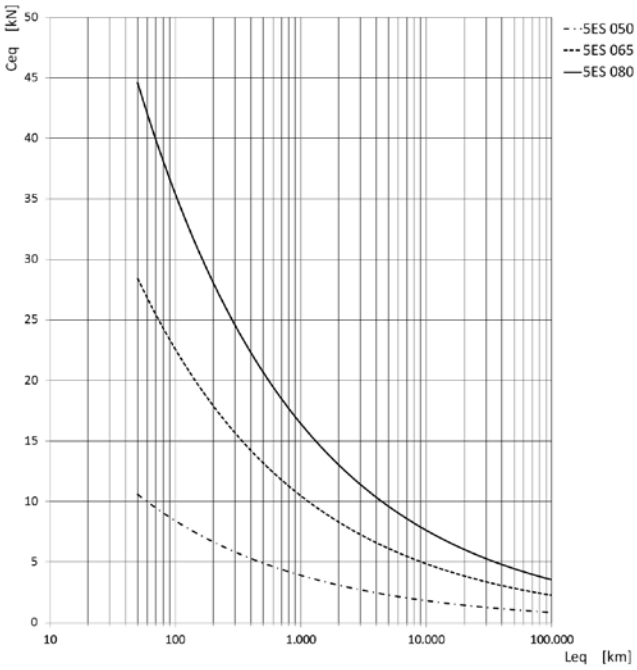
NOTE: for a quicker choice, please see the graphs on the following pages.

APPLICATION	ACCELERATION [m/s²]	SPEED [m/s]	DUTY CYCLE	f_w COEFFICIENT
light	< 10	< 1.5	< 35%	1 ÷ 1.25
normal	10 ÷ 25	1.5 ÷ 2.5	35% ÷ 65%	1.25 ÷ 1.5
heavy	> 25	> 2.5	> 65%	1.5 ÷ 3

LIFE OF THE SERIES 5E AXIS ACCORDING TO THE EQUIVALENT LOAD

* Curves calculated with fw = 1 (see page 1/11.15.04)

Ceq = Equivalent load applied on the axis 5E [kN]
Leq = Life of the axis 5E [km]



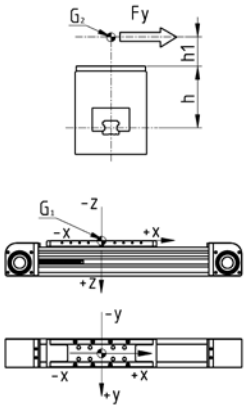
EQUIVALENT LOAD

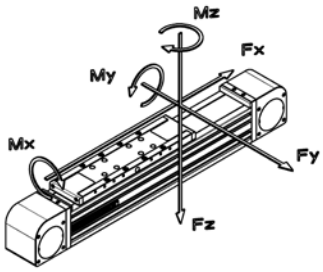
To determine the moment acting on the axis x,Mx, in an accurate way, refer to the following formula:

Mx = Fy · (h+h1)

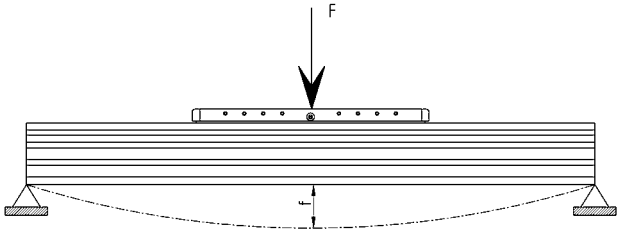
where:
Mx = Moment along X-axis [Nm]
Fy = Force acting along the Y-axis [N]
h = fixed distance for axis 5E [mm]
h1 = application arm [mm]
G1 = origin of the system of 5E axis coordinates
G2 = barycentre of application of acting forces

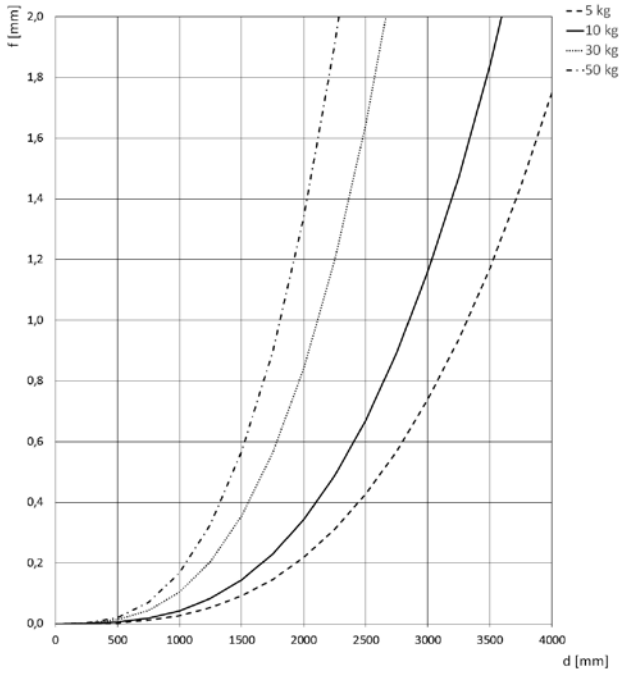
NOTE: here below, the “h” values are reported for the three sizes.
- h = 45.5 mm (5E050)
- h = 56 mm (5E065)
- h = 69.5 mm (5E080)





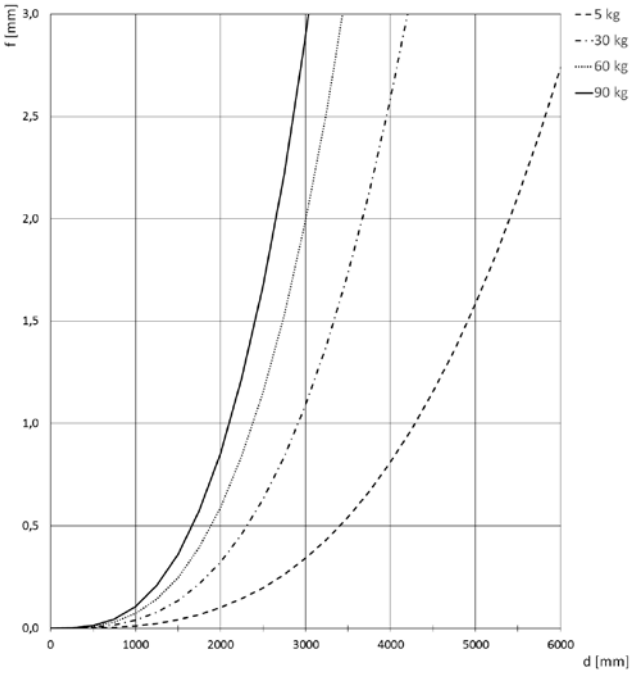
DEFLECTION ACCORDING TO THE DISTANCE OF THE SUPPORTS





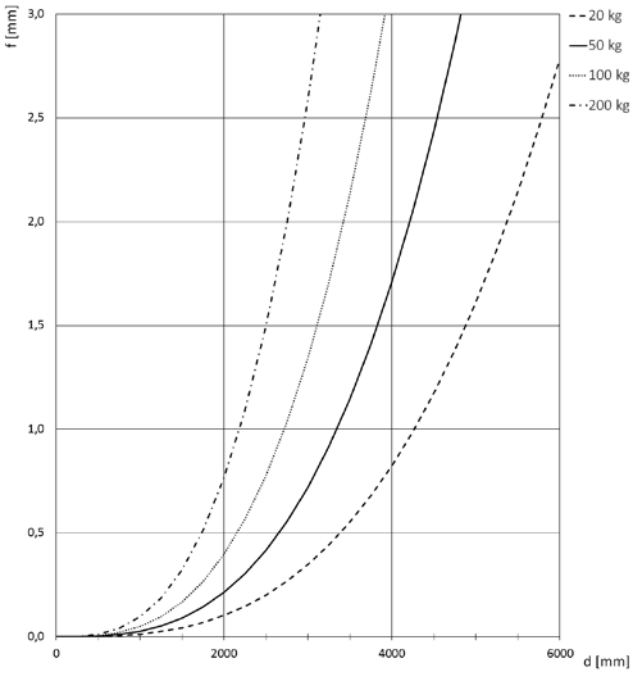
Size 50 x 50

f = deflection generated between the supports [mm]
d = distance between the supports [mm]



Size 65 x 65

f = deflection generated between the supports [mm]
d = distance between the supports [mm]



Size 80 x 80

f = deflection generated between the supports [mm]
d = distance between the supports [mm]

ACCESSORIES FOR SERIES 5E

Side clamping bracket
Mod. BGS

Perforated side clamping bracket Mod. BGA

Interface plate - slider on slider

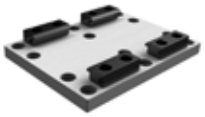
Interface plate - profile on slider

Interface plate - profile on slider - long arm

Interface plate - Series 6E cylinder on slider

Interface plate - profile side on slider, left pos.

Interf. plate - profile side on slider, right pos.



Fixed interface plate

Interface plate - Guide S. 45 / Cyl. S. 6E

Kit to fix the inductive sensor

Kit to connect the gearbox

Kit to connect the gearbox, enhanced series

Direct connection kit for Stepper motor

Slot nut
for sensor CSH

Slot nut 6 - rectangular type

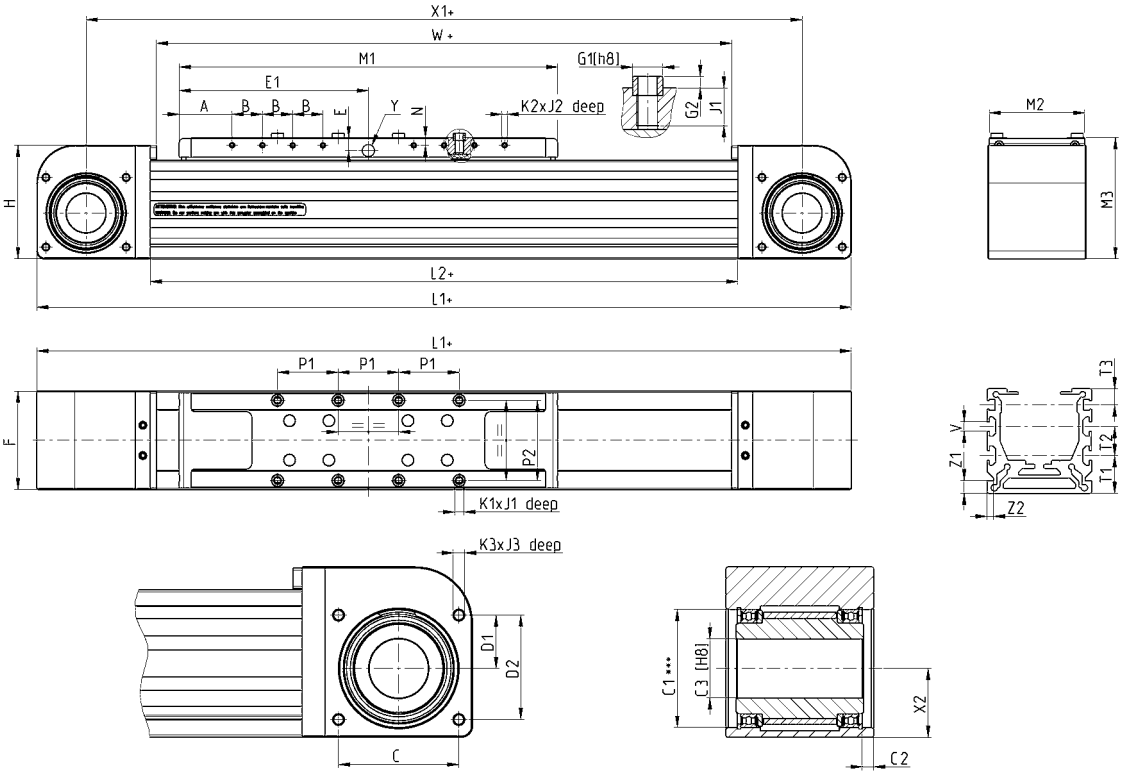
Slot nut 6
for front insertion

Slot nut 8
with flexible flap

Parallel connection kit

All accessories are supplied separately from the axis.
Together with the axis, a kit is supplied containing:
4 covers to close the holes on the endcap,
8 centering bushings for the slider and a nipple for greasing.

Series 5E electromechanical axis



NOTE REFERRING TO THE TABLE:
* dimension T2 in size 50 is not indicated because there is only one slot.
** dimension Y indicates the hole for centralized lubrication by means of grease.
*** We recommend a coupling with a shaft of tolerance h8.

Size	A	B	C	⌀C1	C2	⌀C3	D1	D2	E	E1	F	⌀G1	G2	H	L1	L2	M1	M2	M3	N	P1	P2	K1	J1	K2	J2	K3	J3	T1	T2	T3	V	Y	X1	X2	W	Z1	Z2
50	32.5	15	37	37	4.5	20	17	32	8.5	100	50	6	2	60	354	238	200	48	65	5	30	40	M4	7	M3	5	M4	8	20	*	10	6	**	304	21.8	230	8	4
65	35	20	53	52	5	26	23.5	46	8.5	125	65	8	3	75	438	288	250	63	80	5	40	53	M5	8	M3	6	M5	10	23.5	18	10	6	**	373	30.5	280	8	4
80	35	30	68	68	6.5	38	30.5	60.5	11.5	165	80	10	3	95	548	368	330	78	100	8	55	64	M6	12	M4	8.5	M5	10	25	25	10	8	**	468	40.5	360	8	4

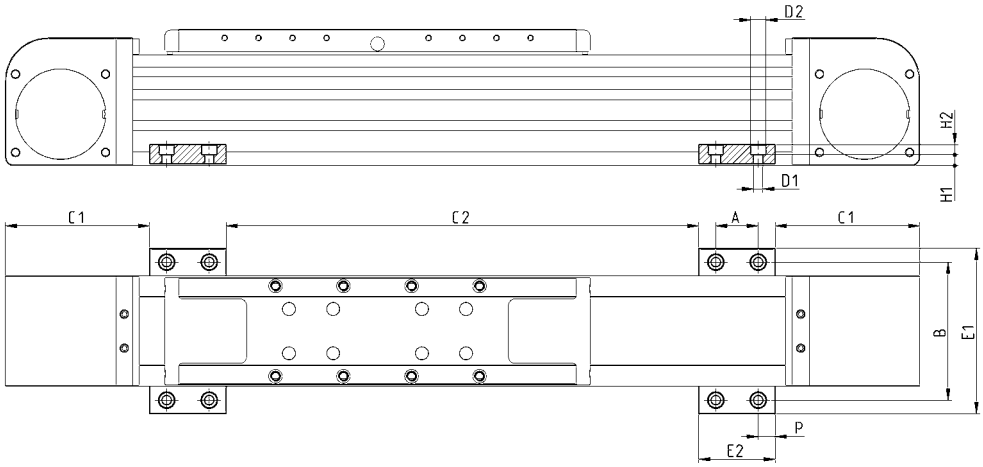
Size	WEIGHT STROKE ZERO [kg]	STROKE WEIGHT PER METER [kg/m]
50	2.15	3.35
65	4.6	5.4
80	8.9	5.9

Side clamping bracket Mod. BGS

Material: Aluminium

Supplied with:
2x clamps

* according to the span (max admissible deflection) recommended value 500 mm



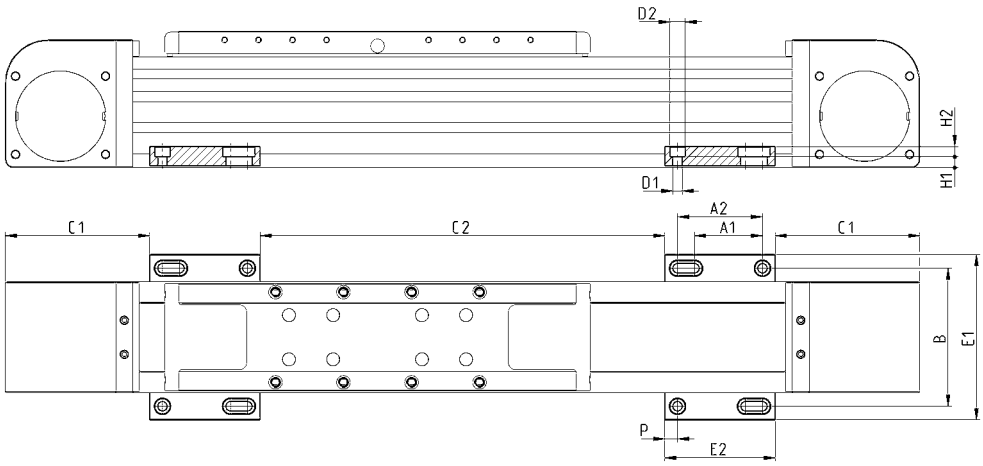
Mod.	Size	A	B	C1	C2	⌀D1	⌀D2	E1	E2	H1	H2	P	Weight (g)
BGS-5E-M5	50	25	66	68	*	5.5	9	82	45	6.4	6	10	45
BGS-5E-M5	65	25	81	85	*	5.5	9	97	45	6.4	6	10	45
BGS-5E-M5	80	25	96	100	*	5.5	9	112	45	6.4	6	10	45
BGS-5E-M6	50	25	66	68	*	6.5	10.5	82	45	5.4	7	10	40
BGS-5E-M6	65	25	81	85	*	6.5	10.5	97	45	5.4	7	10	40
BGS-5E-M6	80	25	96	100	*	6.5	10.5	112	45	5.4	7	10	40

Perforated side clamping bracket Mod. BGA

Material: Aluminium

Supplied with:
2x clamps with perforation

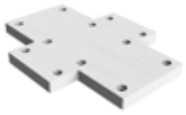
* according to the span (max admissible deflection) recommended value 500 mm

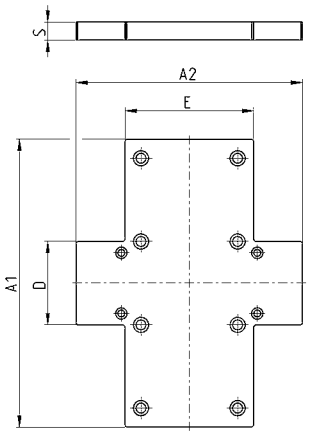


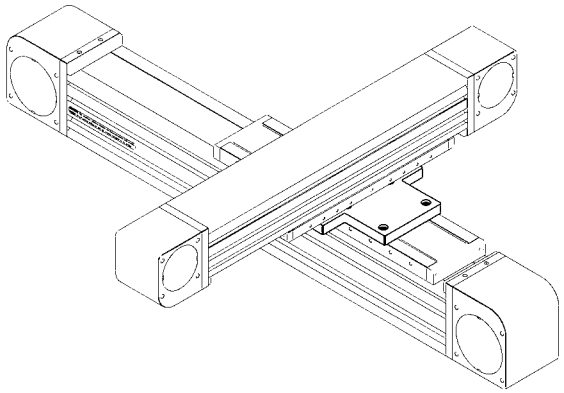
Mod.	Size	A1	A2	B	C1	C2	⌀D1	⌀D2	E1	E2	H1	H2	P	Weight (g)
BGA-5E-M5	50	40	50	66	68	*	5.5	9	82	65	6.4	6	7.5	60
BGA-5E-M5	65	40	50	81	85	*	5.5	9	97	65	6.4	6	7.5	60
BGA-5E-M5	80	40	50	96	100	*	5.5	9	112	65	6.4	6	7.5	60
BGA-5E-M6	50	40	50	66	68	*	6.5	10.5	82	65	5.4	7	7.5	55
BGA-5E-M6	65	40	50	81	85	*	6.5	10.5	97	65	5.4	7	7.5	55
BGA-5E-M6	80	40	50	96	100	*	6.5	10.5	112	65	5.4	7	7.5	55

Interface plate - slider on slider

The kit includes: 1 interface plate, 8 screws + 8 lock washers to connect the plate on the slider of the main axis, 4 screws + 4 lock washers to connect the plate on the slider of the secondary axis.



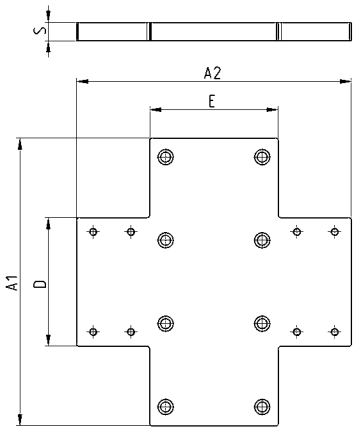


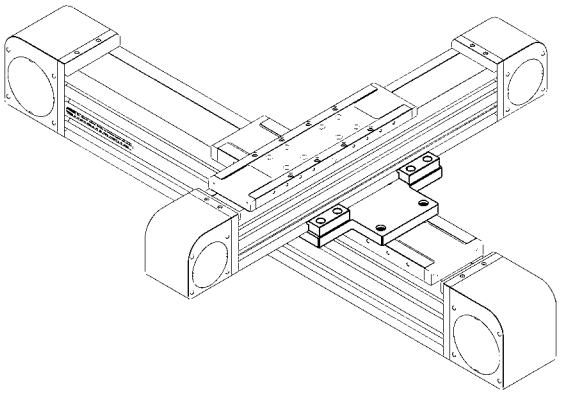


Mod.	Size	A1	A2	D	E	S	Weight (g)
XY-S65-S50	65	150	150	55	70	12	515
XY-S80-S50	80	190	150	55	85	12	690
XY-S80-S65	80	190	150	70	85	12	720

Interface plate - profile on slider

The kit includes: 1 interface plate, 8 screws + 8 lock washers to connect the plate on the slider of the main axis, 4 clamps, 8 screws + 8 lock washers to connect the secondary axis on the plate by means of clamps.

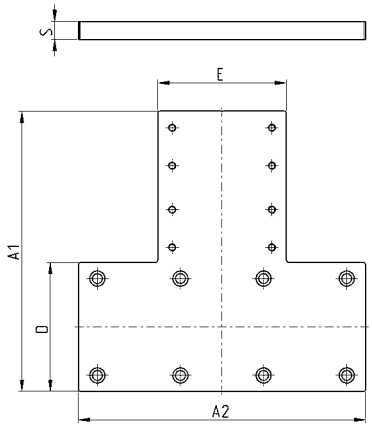


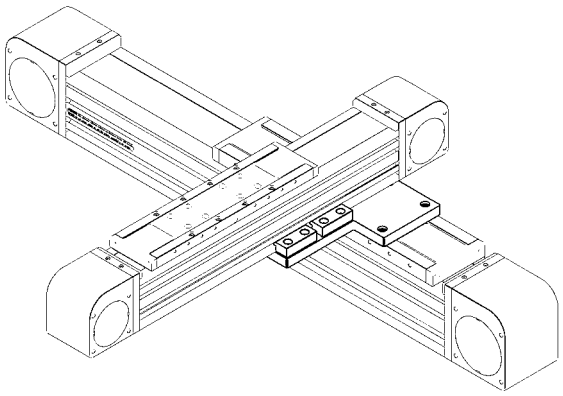


Mod.	Size	A1	A2	D	E	S	Weight (g)
XY-S65-P50	65	150	162	85	70	12	730
XY-S80-P50	80	190	182	85	85	12	945
XY-S80-P65	80	190	185	100	85	12	1000

Interface plate - profile on slider - long arm

The kit includes: 1 interface plate, 8 screws + 8 lock washers to connect plate on the slider of the main axis, 4 clamps, 8 screws + 8 lock washers to connect plate on the slider of the secondary axis by means of clamps.

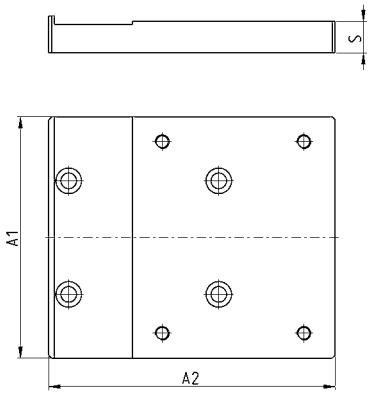


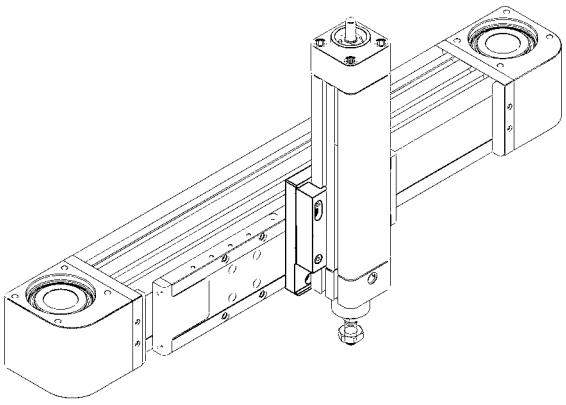


Mod.	Size	A1	A2	D	E	S	Weight (g)
XY-S50-P50-T	50	162	130	50	85	12	600
XY-S65-P50-T	65	170	150	65	85	12	750
XY-S65-P65-T	65	185	170	65	100	12	800
XY-S80-P50-T	80	185	190	85	85	12	960
XY-S80-P65-T	80	185	190	85	100	12	1010
XY-S80-P80-T	80	200	190	85	120	12	1100

Interface plate - Series 6E cylinder on slider

The kit includes: 1 interface plate, 4 screws + 4 lock washers to connect the plate on the slider of the axis, 2 clamps, 4 screws + 4 lock washers to fix the Series 6E cylinder by means of clamps.

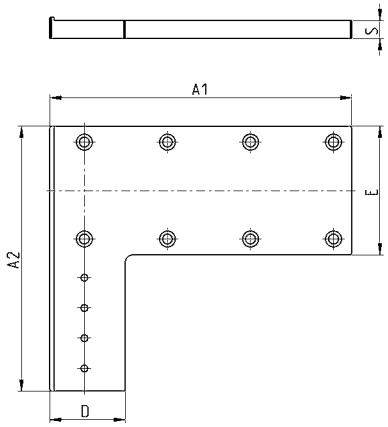


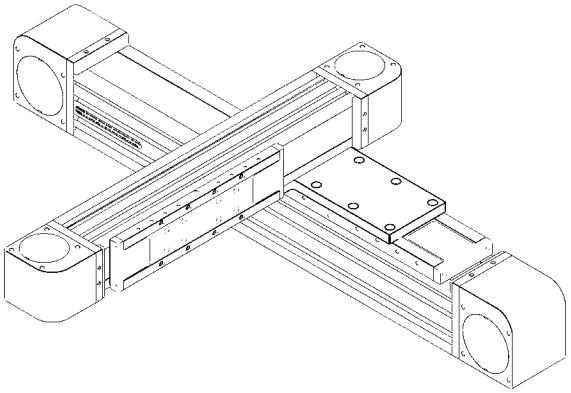


Mod.	Size	A1	A2	S	Weight (g)
XY S50-6E32	50	72	101	11	315
XY-S65-6E32	65	72	101	11	315
XY-S65-6E40	65	85	101	11	350
XY S65-6E50	65	95	110	12	510
XY-S80-6E32	80	75	101	12	385
XY-S80-6E40	80	85	101	12	410
XY-S80-6E50	80	95	110	12	510
XY S80-6E63	80	106	110	12	560

Interface plate - profile side on slider - left position

The kit includes: 1 interface plate, 8 screws + 8 lock washers to connect the plate on the slider of the main axis, screws and nuts for slot to connect the plate on the slider of the secondary axis.

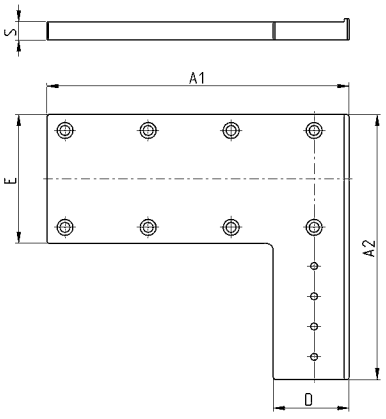


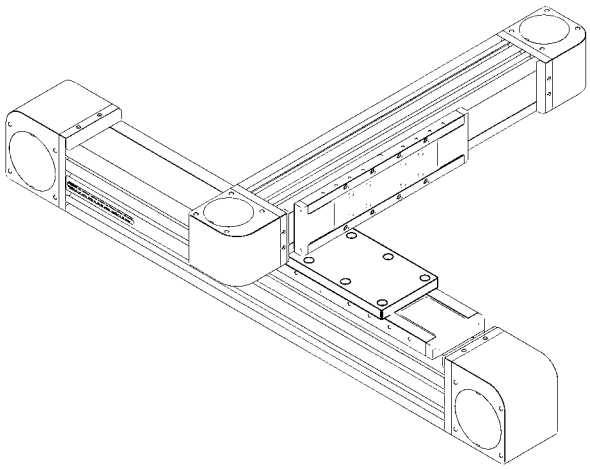


Mod.	Size	A1	A2	D	E	S	Nr of holes	Weight (g)
XY-S50-LL50	50	130	145	50	55	11	4	450
XY-S65-LL50	65	160	160	50	70	11	4	500
XY-S65-LL65	65	170	180	65	70	12	8	550
XY-S80-LL50	80	200	175	50	85	12	4	750
XY-S80-LL65	80	210	195	65	85	12	8	870
XY-S80-LL80	80	210	195	80	85	12	8	900

Interface plate - profile side on slider - right position

The kit includes: 1 interface plate, 8 screws + 8 lock washers to connect the plate on the slider of the main axis, screws and nuts for slot to connect the plate on the slider of the secondary axis.

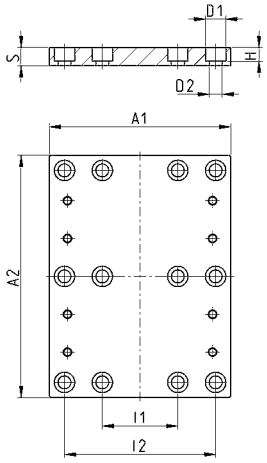


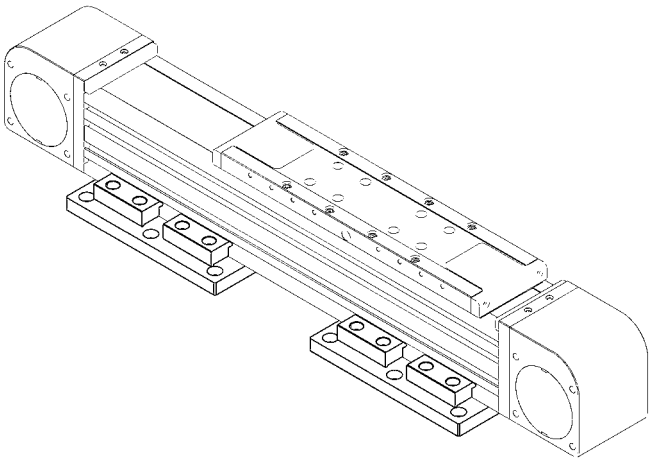


Mod.	Size	A1	A2	D	E	S	Nr of holes	Weight (g)
XY-S50-LR50	50	130	145	50	55	11	4	450
XY-S65-LR50	65	160	160	50	70	11	4	500
XY-S65-LR65	65	170	180	65	70	12	8	550
XY-S80-LR50	80	200	175	50	85	12	4	750
XY-S80-LR65	80	210	195	65	85	12	8	870
XY-S80-LR80	80	210	195	80	85	12	8	900

Fixed interface plate

The kit includes: 1 interface plate, 4 clamps, 8 screws to connect the clamps on the plate.

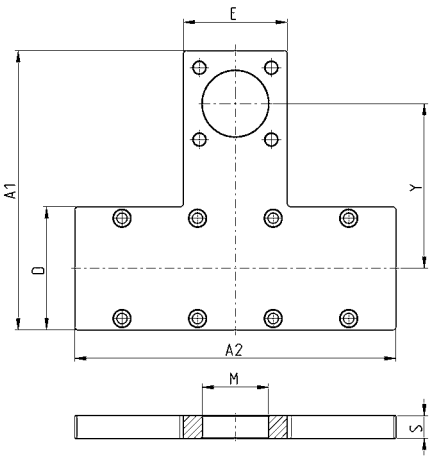


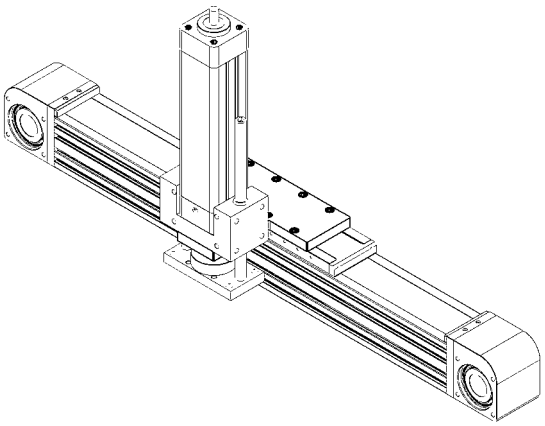


Mod.	Size	A1	A2	⌀D1	⌀D2	H	I1	I2	S	Weight (g)
X-P50	50	95	140	9	5.5	6	45	80	8	275
X-P65	65	120	140	10.5	6.5	7	50	100	10	430
X-P80	80	120	160	13.5	8.5	9	50	100	12	570

Interface plate - Anti-rotation guides S. 45 / Cylinders S. 6E on slider

The kit includes: 1 interface plate, 8 screws + 8 lock washers to connect the plate on the slider, 4 screws to connect the cylinder.

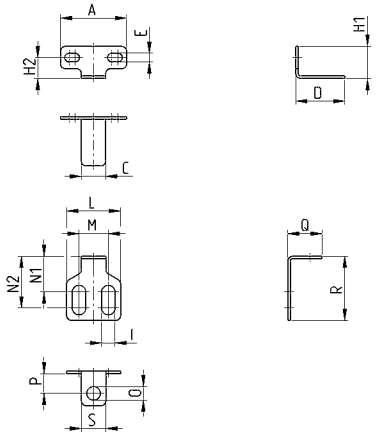


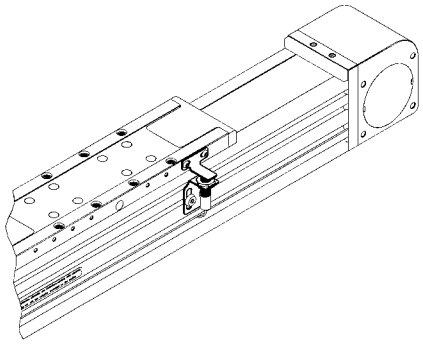


Mod.	Size	A1	A2	D	E	S	⌀M [H10]	Y	Weight (g)
XY-S50-45N32	50	124	130	50	49	12	30	75	350
XY-S65-45N32	65	139	170	65	49	12	30	82.5	480
XY-S65-45N40	65	147.5	170	65	55	12	35	87	500
XY-S65-45N50	65	157	170	65	66.5	12	40	91.5	530
XY-S80-45N40	80	167.5	190	85	55	12	35	97	660
XY-S80-45N50	80	177	190	85	65	12	40	101.5	690
XY-S80-45N63	80	190.5	190	85	75	12	45	110	740

Kit to fix the inductive sensor

The kit includes: 1 sensor dog, 2 screws to fix the sensor dog, 1 sensor supporting plate, 2 screws to connect the sensor supporting plate, 2 nuts for the slot.

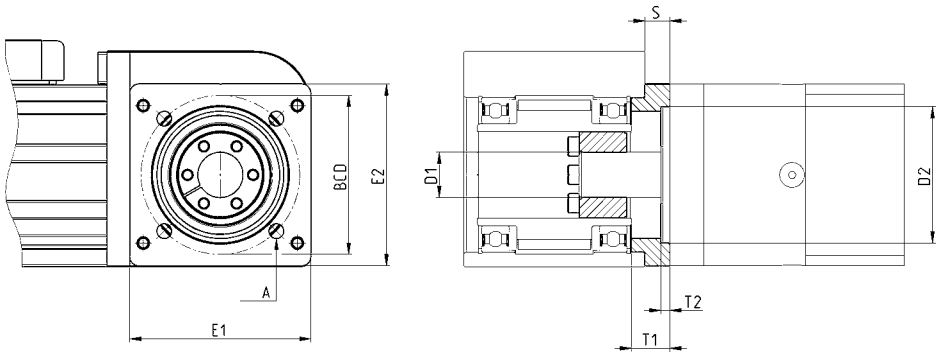




Mod.	Size	A	C	D	E	H1	H2	I	L	M	N1	N2	⌀O	P	Q	R	S	Weight (g)
SIS-M5-50/65	50-65	27	10	20	3.5	13	8.5	5.5	22	12	14.5	21	5.5	8	14	26	10	10
SIS-M8-65	65	27	10	20	3.5	13	8.5	5.5	25	15	10.5	24	8.5	10	18.5	30	15	10
SIS-M5-80	80	45	15	20	4.5	16	10.5	5.5	22	12	14.5	21	5.5	8	14	26	10	15
SIS-M8-80	80	45	15	20	4.5	16	10.5	5.5	25	15	10.5	24	8.5	10	18.5	30	15	15

Kit to connect the gearbox

The kit includes: 1 connection flange, 4 screws + 4 lock washers to connect the flange, 1 locking set, 4 screws + 4 lock washers to connect the gearbox.

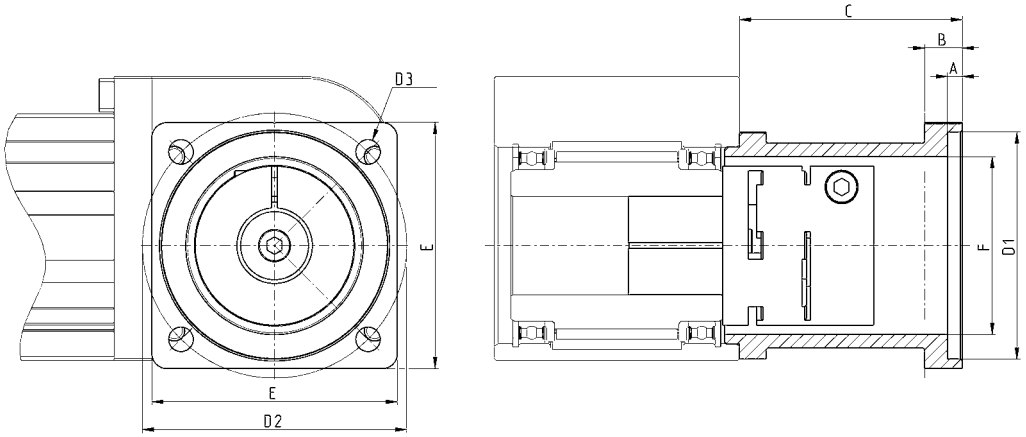


DIMENSIONS

Mod.	Size	E1	E2	S	BCD	⌀A	⌀D1	⌀D2 [H7]	T1	T2	Weight (g)
FR-5E-50	50	48	43	6	34	4.5	10	Ø26	10	10	85
FR-5E-65	65	63	60	7	52	5.5	14	Ø40	11	11	140
FR-5E-80	80	80	80	11	70	6.5	20	Ø56	17	4	325

Kit to connect the gearbox - enhanced series

The kit includes: 1 connection flange, 4 screws + 4 lock washers to connect the flange, 1 expansion coupling, 4 screws + 4 lock washers to connect the gearbox.

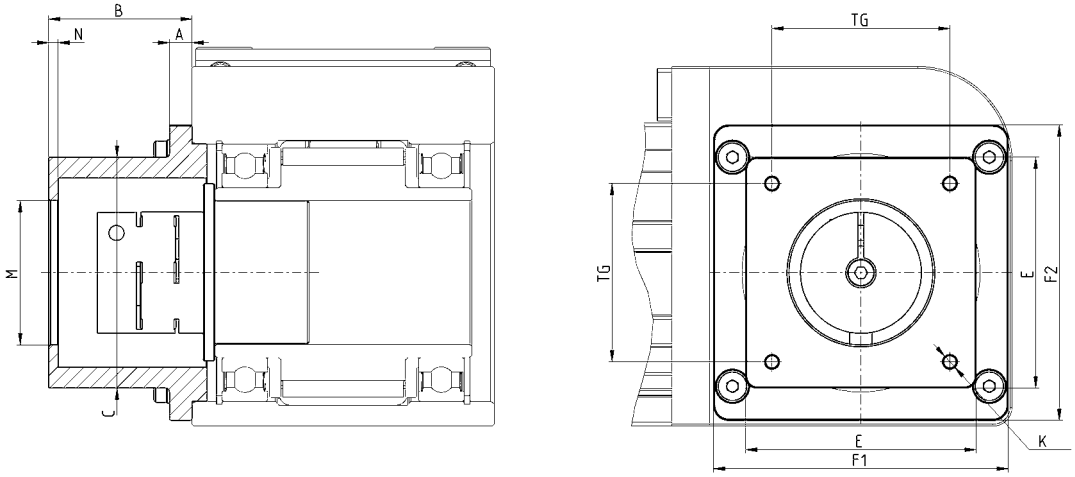


DIMENSIONS

Mod.	Size	⌀D1 [H7]	A	⌀D2	⌀D3	B	C	E	F	Weight (g)
FRH-5E-50	50	40	4	52	5.5	8	55	50	34	170
FRH-5E-65	65	60	4	70	6.5	10	63	65	47	530

Direct connection kit for Stepper motor

The kit includes: 1 NEMA 24 connection flange, 4 screws + 4 lock washers,
1 coupling Mod. COS, 1 bushing (not present in FS-5E-50-0024).

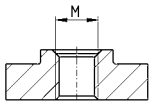


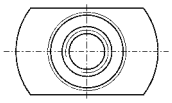
Mod.	Size	Motor	A	B	⌀C	F1	F2	E	TG	K	⌀M	N	Weight (g)
FS-5E-50-0024	50	NEMA 24	6	37	41	47	45	60.5	47.1	M4	38.1	2.5	125
FS-5E-65-0024	65	NEMA 24	4	36	45	65	60	60.5	47.1	M4	38.1	2.5	200

Slot nut for sensor CSH

Material: steel

Supplied with:
2x nuts



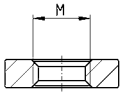


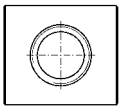
Mod.	Size	M
PCV-5E-CS-M3	50 - 65 - 80	M3
PCV-5E-CS-M4	50 - 65 - 80	M4

Slot nut 6 - rectangular type

Material: steel

Supplied with:
2x nuts



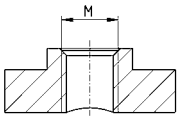


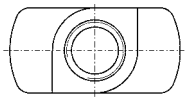
Mod.	Size	M
PCV-5E-C6-M4Q	50 - 65	M4

Slot nut 6 for front insertion

Material: steel

Supplied with:
2x nuts



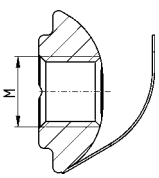


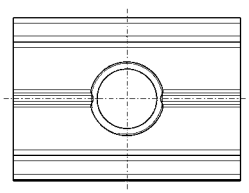
Mod.	Size	M
PCV-5E-C6-M4R	50 - 65	M4

Slot nut 8 with flexible flap

Material: steel

Supplied with:
2x nuts





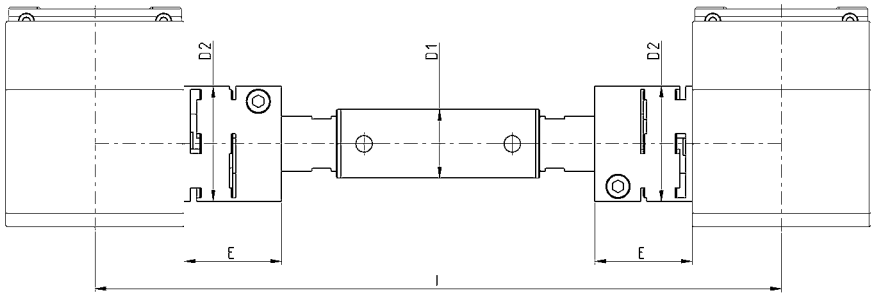
Mod.	Size	M
PCV-5E-C8-M5	80	M5
PCV-5E-C8-M6	80	M6

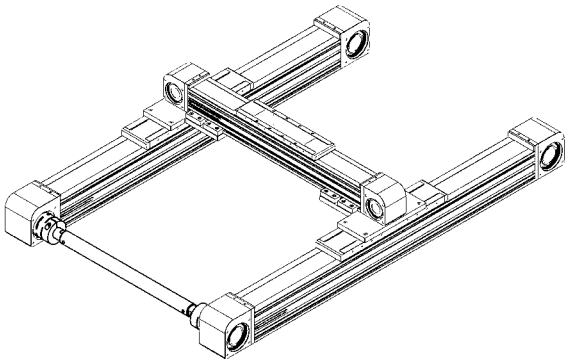
Parallel connection kit

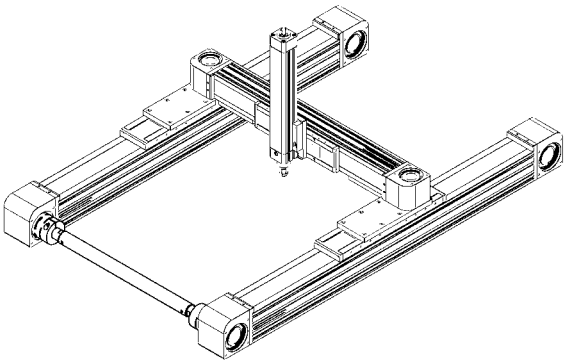
The kit includes:
1x parallel shaft
2x expansion couplings

EXAMPLE:

PS-5E-65-1400 corresponds to a parallel connection for axes positioned at interaxis I = 1400mm

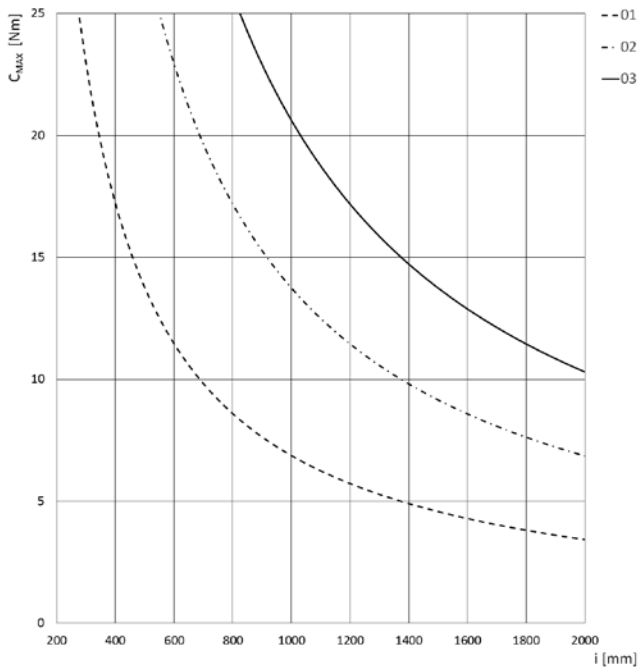






Mod.	Size	I min	I max	⌀D1	⌀D2	E	Transmission torque
PS-5E-50-0000	50	200	2000	22	32	26	see graph
PS-5E-65-0000	65	250	2000	25	42	35.5	see graph
PS-5E-80-0000	80	300	2000	30	56	40	see graph

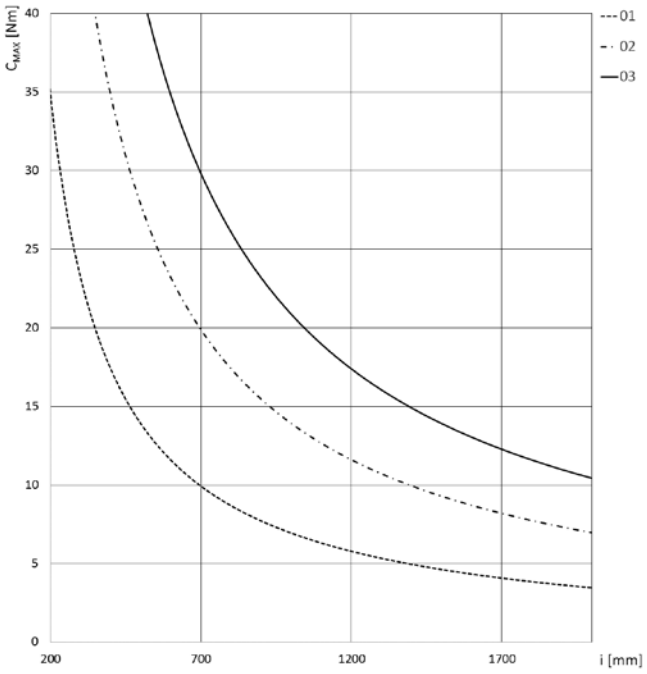
INTERAXIS ACCORDING TO THE MAXIMUM ADMISSIBLE TORQUE



Size 50x50

Cmax = max applicable torque
i = interaxis between the two 5E axes

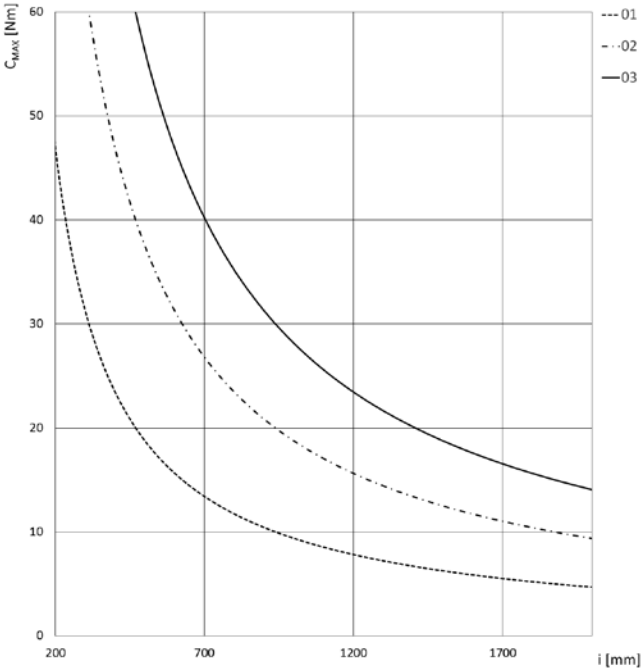
01 = lag error 0.1 mm
02 = lag error 0.2 mm
03 = lag error 0.3 mm



Size 65x65

Cmax = max applicable torque
i = interaxis between the two 5E axes

01 = lag error 0.1 mm
02 = lag error 0.2 mm
03 = lag error 0.3 mm



Size 80x80

Cmax = max applicable torque
i = interaxis between the two 5E axes

01 = lag error 0.1 mm
02 = lag error 0.2 mm
03 = lag error 0.3 mm

Series DRWB drivers for the control of electric actuation

Driver for Brushless motors, sizes in power classes 100, 400 and 750 W

- Completely digital drivers
- PLC function programmable with the Camozzi QSet configuration software
- Control of speed, position and torque (torque only for Series DRWB)
- 64 positions programmable through the QSet
- Self-compensation of errors

The new Camozzi driver Series DRWB have been designed to control the movement of the Camozzi electromechanical actuators (Series 5E and Series 6E).

The servo drivers DRWB, compact and especially optimized for the brushless Camozzi motors, are completely digital and available in the power classes 100 W, 400 W and 750 W. Equipped with vector mode and the function of Autotuning and containment of vibrations, they are made in such a way to easily perform replacements and to have a two-line alphanumeric display with 4 control keys on the servo driver. A digital pulse interface allows control of the direction, position, speed and torque. It is possible to control the driver with analogic signals.

GENERAL CHARACTERISTICS

Mod. DRWB-W01-2-D-E-A, DRWB-W04-2-D-E-A, DRWB-W07-2-D-E-A	
Power	100 W (Mod. DRWB-W01-2-D-E-A) 400 W (Mod. DRWB-W04-2-D-E-A) 750 W (Mod. DRWB-W07-2-D-E-A)
Electrical supply	200 ÷ 240 V AC (± 10%) single or three phase 50 ÷ 60 Hz (± 5%)
Number of phases	1
Maximum current	1.5 A (Mod. DRWB-W01-2-D-E-A) 4.1 A (Mod. DRWB-W04-2-D-E-A) 7.5 A (Mod. DRWB-W07-2-D-E-A)
Logic supply	200 ÷ 240 V AC (± 10 %) 50 ÷ 60 Hz (± 5 %) single phase
Maximum logic current	0.5 A max.
OUTPUT CURRENT	
Continuous current (effective)	0.9 A (Mod. DRWB-W01-2-D-E-A) 2.5 A (Mod. DRWB-W04-2-D-E-A) 5.1 A (Mod. DRWB-W07-2-D-E-A)
Peak current (effective)	2.7 A (Mod. DRWB-W01-2-D-E-A) 7.5 A (Mod. DRWB-W04-2-D-E-A) 15.3 A (Mod. DRWB-W07-2-D-E-A)
Maximum duration of peak current	1 second
Type of control	IGBT PWM vector control
Controller sampling rate	Current, speed and position: 15 kHz
Motor types supported	AC servo motors
Status of LED	Red: Error Green: Ready
OPERATING MODES	
Encoder interface	Operating voltage + 5 VDC ± 5 % @400 mA
Communication interface	USB 2.0
Parameterisable I/O interface	Digital Inputs [I1..I9], (single-end, optocoupler) Digital Outputs [O1..O4], (optocoupler) BRAKE Output [CN2_BRK], max. 1 A DC
Feedback	External transducer Activation threshold + HV> 370 V DC Activation threshold + HV< 360 V DC Tolerance ± 5 %
Monitoring functions	Short circuit, overvoltage (> 390 V DC ± 5 %), undervoltage (< 60 V DC); position error, encoder error, motor phase monitoring, overtemperature D2 (IGBT > 90 °C ± 1°C), motor overtemperature
Autotuning	with automatic mass inertia calculation
VSF (vibration suppression)	01 Hz ÷ 200 Hz
Other functions	Friction compensation, gear play compensation
Ambient conditions	Operating temperature 0°C ÷ 40°C (above 55 °C only with air conditioning) Storage temperature -20°C ÷ 65°C UAir humidity 20% ÷ 85% (non-condensing) Operating altitude < 1000 m above sea level Vibration 5.88 m/s (10 Hz ÷ 60 Hz) Protection class IP20

1
MOVEMENT

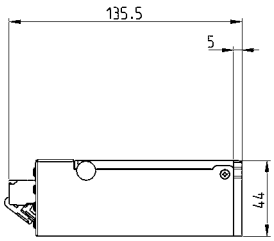
CODING EXAMPLE

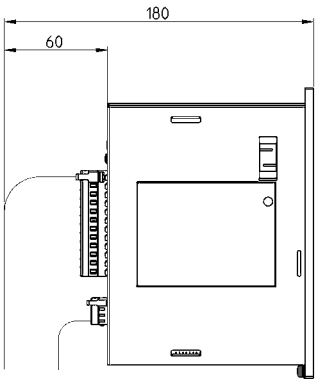
DRWB	-	W01	-	2	-	D	-	E	-	A

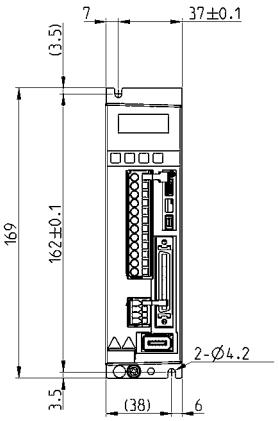
DRWB	SERIES
W01	SIZE W: W01 = 100 W W04 = 400 W W07 = 750 W
2	SUPPLY: 2 = 220 V AC
D	COMMUNICATION: D = Digital I/O and Analog
E	FEEDBACK: E = incremental encoder 13 bit
A	VERSIONS: A = Standard

Driver Mod. DRWB-W01-2-D-E-A

Driving for the Camozzi Brushless motors



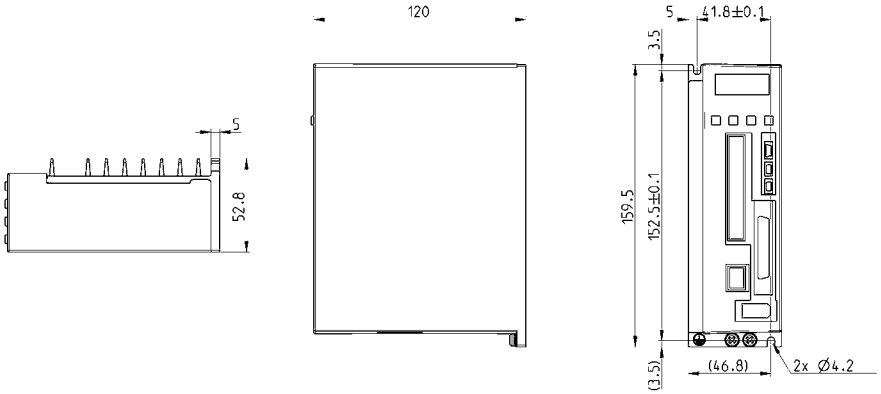




Mod.	Power	Supply	Encoder
DRWB-W01-2-D-E-A	100 W	230 V AC	13 bit

Driver Mod. DRWB-W04-2-D-E-A

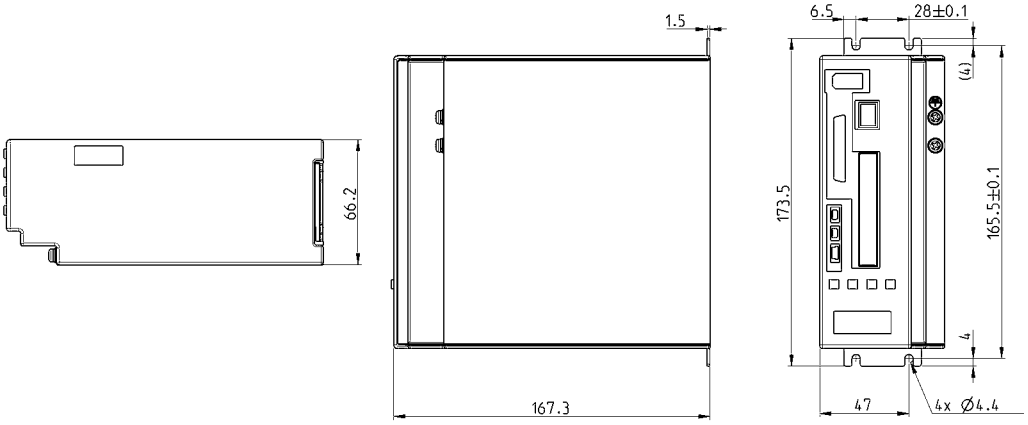
Driving for the Camozzi Brushless motors



Mod.	Power	Supply	Encoder
DRWB-W04-2-D-E-A	400 W	230 V AC	13 bit

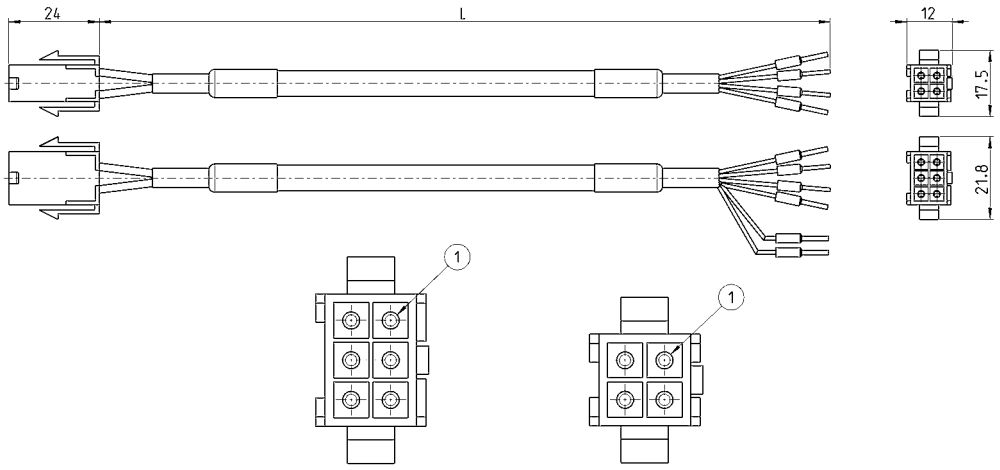
Driver Mod. DRWB-W07-2-D-E-A

Driving for the Camozzi Brushless motors



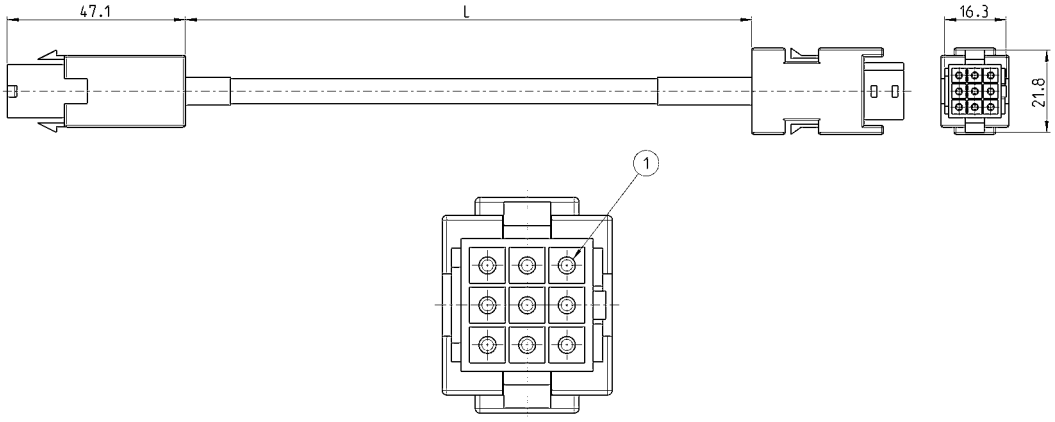
Mod.	Power	Supply	Encoder
DRWB-W07-2-D-E-A	750 W	230 V AC	13 bit

Cables for and Brushless (MTB) motors



Mod.	Brake	Pins	L = cable (m)
EC-200421-B300	-	4	3
EC-200421-B500	-	4	5
EC-200421-BA00	-	4	10
EC-210621-B300	✖	6	3
EC-210621-B500	✖	6	5
EC-210621-BA00	✖	6	10

Encoder cables for Brushless (MTB) motors



Mod.	Pins	L = cable (m)
EC-220923-B300	9	3
EC-220923-B500	9	5
EC-220923-BA00	9	10

Series DRWS drivers for the control of electric actuation

Driver for Stepper motors, one size/version

- Completely digital drivers
- PLC function programmable with the Camozzi QSet configuration software
- Control of speed, position and torque (torque only for Series DRWB)
- 32 positions programmable through the QSet
- Self-compensation of errors

The new Camozzi drivers Series DRWS have been designed to control the movement of the Camozzi electromechanical actuators (Series 5E and Series 6E).

The DRWS drivers, compact and optimized in one size, have been especially studied for all Camozzi stepper motors. They are capable of controlling stepper motors with 2 phases and micro stepping feed. They are able to calculate the normal resonance frequency of the motors and optimize their driving. Moreover, they can reduce natural friction to a minimum during very slow rollings of the stepper motor, giving a continuous and very fluid (smooth effect) movement at any speed thanks to the Microstepping technique, thus achieving a 1/128 STEP resolution.

Another function that has been integrated into the driver reduces vibrations to a minimum during rotation inversion or during sudden changes in speed. At initial ignition/ switching on, the DRWS drivers are able to calculate the inductance, the electrical resistance of the motor connected and the inertia of the motor, and saves these parameters inside in order to better manage the driving of the motors.

GENERAL CHARACTERISTICS

Mod. DRWS-A05-8-D-0-A	
Current	0.1 - 5 A
Working voltage	24 - 48 V DC
Amplifier type	Dual H-Bridge, 4 Quadrants
Current control	4 state PWM at 20 KHz
Protection	Overvoltage, undervoltage, overtemperature, internal motor shorts (phase-to-phase, phase-to-ground)
Idle current	Automatic idle current reduction to reduce heat after motor stops moving, software selectable current and idle delay
Microstep emulation	Performs high resolution stepping by synthesizing fine microsteps from coarse steps. Reduces jerk and extraneous system resonances.
Anti-resonance	Raises the system damping ratio to eliminate midrange instability and allow stable operation throughout the speed range and improves settling time.
Torque ripple smoothing	Allows for fine adjustment of phase current waveform harmonic content to reduce low-speed torque ripple in the range of 0.25 to 1.5 rps
Non-volatile storage	Configurations are saved in FLASH memory on-board the DSP
Humidity	90% non-condensing
Ambient temperature	0 - 40°C
Mass	Approx. 0.2 Kg
I/O specifications	- 8 Inputs: optically isolated, 24 V DC - Outputs: optically isolated, 24 V DC max, 10 mA max - 1 Output brake: optically isolated - Analog Input: 0-5 V DC, 12 bit resolution (4096 points)

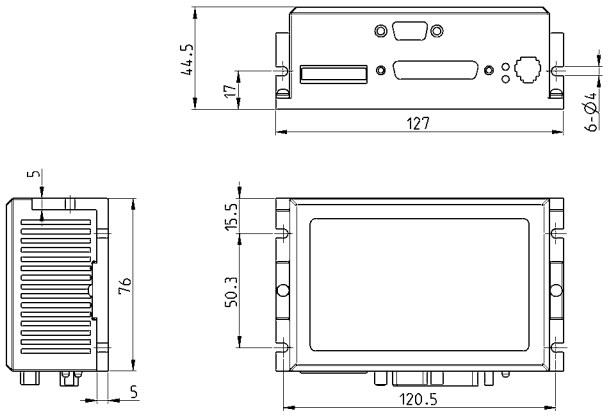
CODING EXAMPLE

DRWS	-	A05	-	8	-	D	-	0	-	A

DRWS	SERIES
A05	MAX SIZE A: A05 = 5 A
8	SUPPLY: 8 = 24V - 48V DC
D	COMMUNICATION: D = Digital I/O and Analog
0	FEEDBACK: 0 = no Feedback
A	VERSIONS: A = Standard

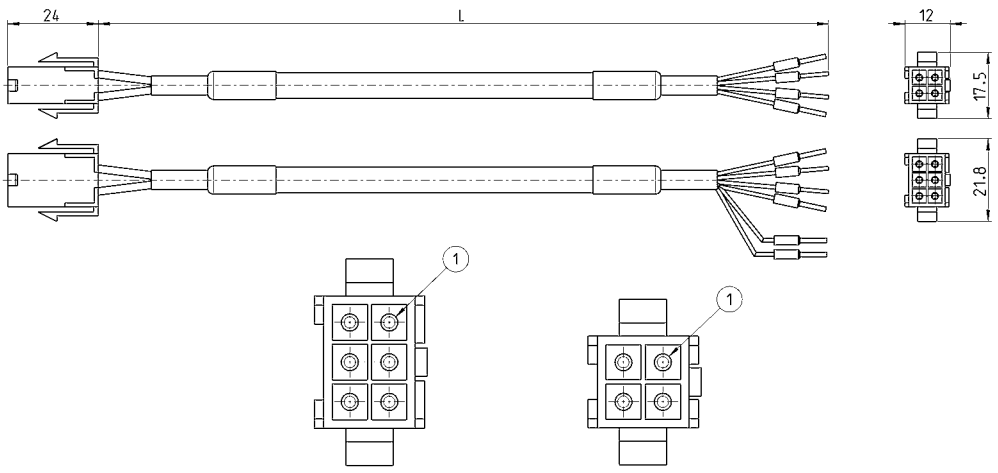
Driver Mod. DRWS-A05-8-D-0-A

Driving for the Camozzi Stepper motors



Mod.	Max current	Supply
DRWS-A05-8-D-0-A	5 A	80 V DC

Cables for Stepper (MTS) motors



Mod.	Brake	Pins	L = cable (m)
EC-200422-B100	-	4	1
EC-200422-B300	-	4	3
EC-200422-B500	-	4	5
EC-210622-BA00	✖	4	10
EC-210622-B300	✖	6	3
EC-210622-B500	✖	6	5
EC-200421-BA00	-	6	10

Series MTB
motors for electric actuation

Brushless motors in power classes 100, 400 and 750 W

- Low inertia motors
- Available with or without brake
- With incremental 13 bit encoder
- Different sizes or power classes available

The new Camozzi motors Series MTB have been designed to be connected in an easy and practical way to the new product range within electrical actuation, being able to drive both electromechanical cylinders and axes.
The new Series MTB of synchronous AC Brushless motors is available with a power of 100, 400 and 750 W.

The standard motors are equipped with a 13 bit encoder with 10,000 increments per cycle and are offered with or without a motor brake. Due to the high dynamics of these motors, it is possible to guarantee a constant torque at any speed.
Due to the low mass inertia, they are particularly suitable for high work dynamics, like sudden changes in direction or high moving frequencies.

GENERAL DATA

Power	100 W (Mod. MTB-010-...) - 400 W (Mod. MTB-040-...) - 750 W (Mod. MTB-075-...)
Power	permanently excited synchronous servo motor
Magnet	Neodymium, iron and boron (NdFeB)
Housing	Aluminium
Colour	black
Protection class: motor **on the shaft** **connector**	IP65 IP40 IP20
Insulation class	class A
Shaft end	no machining
Nominal torque	0.32 Nm (100 W) - 1.27 Nm (400 W) - 2.4 Nm (750 W)
Peak torque	3 × nominal torque
Braking torque (only for motors with brake)	0.32 Nm (100 W) - 1.27 Nm (400 W) - 2.4 Nm (750 W)
Service life	> 20.000 h (at nominal load)
Motor connection **Encoder connection**	cable (300 mm) available out of the motor cable (300 mm) available out of the encoder
Cooling	with an integrated radiator
Thermal monitoring	not available
Encoder	incremental 13-bit TTL encoder, 10 000 pulses/revolution
Ambient temperature **Ambient temperature**	0°C ÷ 40°C –15°C ÷ 70°C
Air humidity	up to 80 % of relative air humidity
Air humidity	at below 1.000 m above sea level

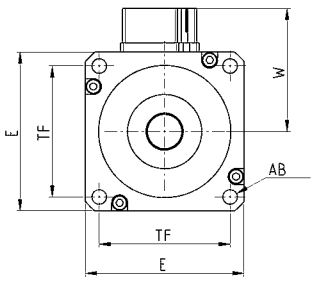
CODING EXAMPLE

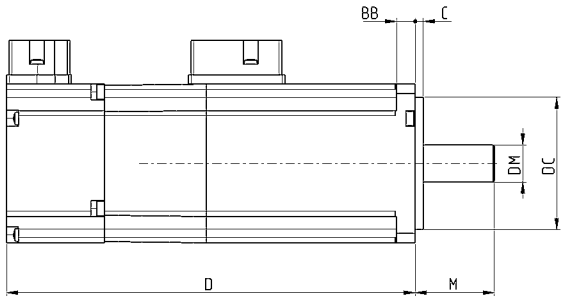
MTB	-	010	-	2	-	0	-	E

MTB	SERIES
010	POWER: 010 = 100 W 040 = 400 W 075 = 750 W
2	SUPPLY: 2 = 220 V DC
0	BRAKE: 0 = without brake F = with brake
E	ENCODER: E = standard 13 bit

Series MTB Brushless motors - dimensions

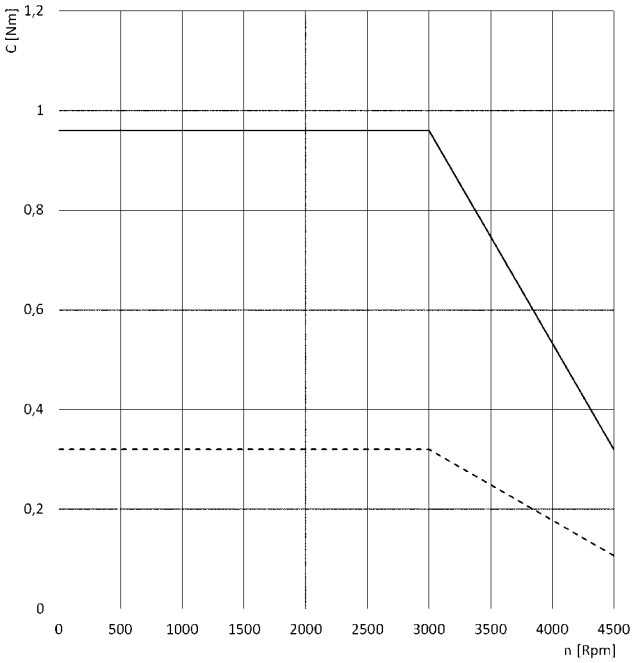
Supplied with:
1 motor
4 screws





Mod.	Power	D	E	W	⌀DM [h6]	M	⌀DC	C	TF	⌀AB	BB	Weight (Kg)
MTB-010-2-0-E	100 W	110.5	42	32	8	25	30 f7	2.5	31.8	3.4	12	0.63
MTB-010-2-F-E	100 W	139	42	32	8	25	30 f7	2.5	31.8	3.4	12	0.76
MTB-040-2-0-E	400 W	121.5	60	46.5	14	30	50 h7	3	49.5	5.5	7.5	1.31
MTB-040-2-F-E	400 W	159	60	46.5	14	30	50 h7	3	49.5	5.5	7.5	1.86
MTB-075-2-0-E	750 W	140	80	56.5	19	40	70 f6	3	63.6	6.6	9	2.66
MTB-075-2-F-E	750 W	176	80	56.5	19	40	70 f6	3	63.6	6.6	9	3.32

Torque - speed of Series MTB motors

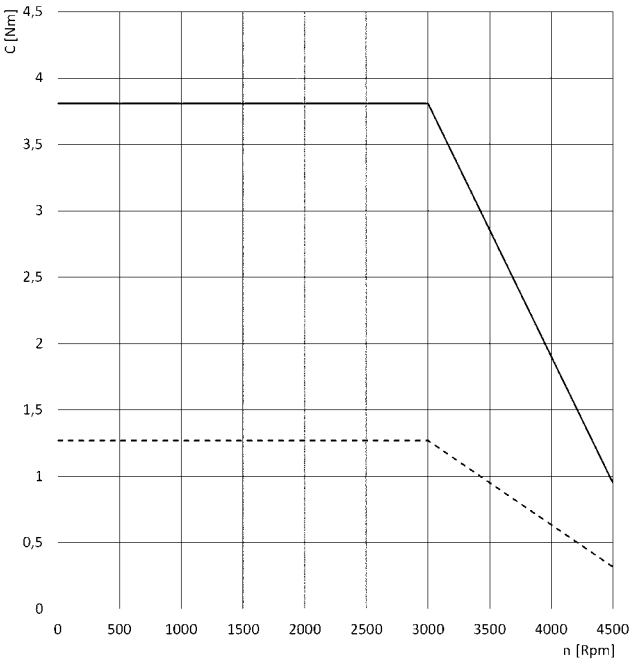


MTB-010..

C = torque
n = number of revolutions per minute

The continuous line represents the peak torque of the motor.

The dashed line represents the nominal torque of the motor.

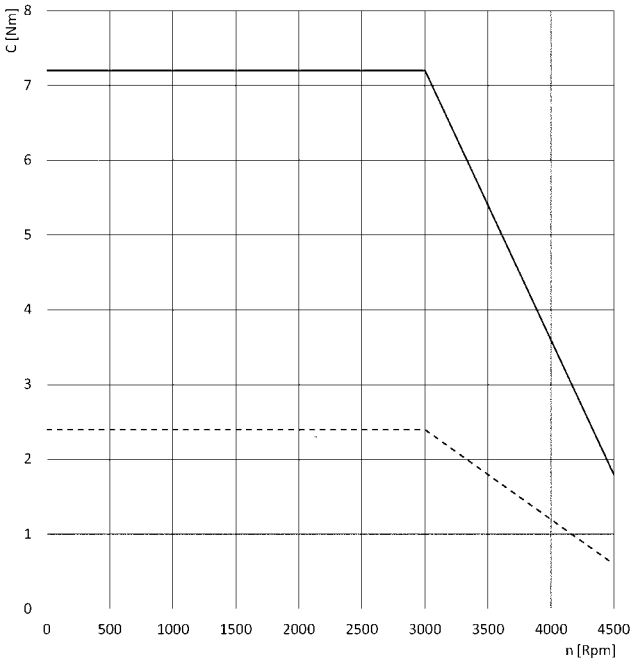


MTB-040..

C = torque
n = number of revolutions per minute

The continuous line represents the peak torque of the motor.

The dashed line represents the nominal torque of the motor.



MTB-060..

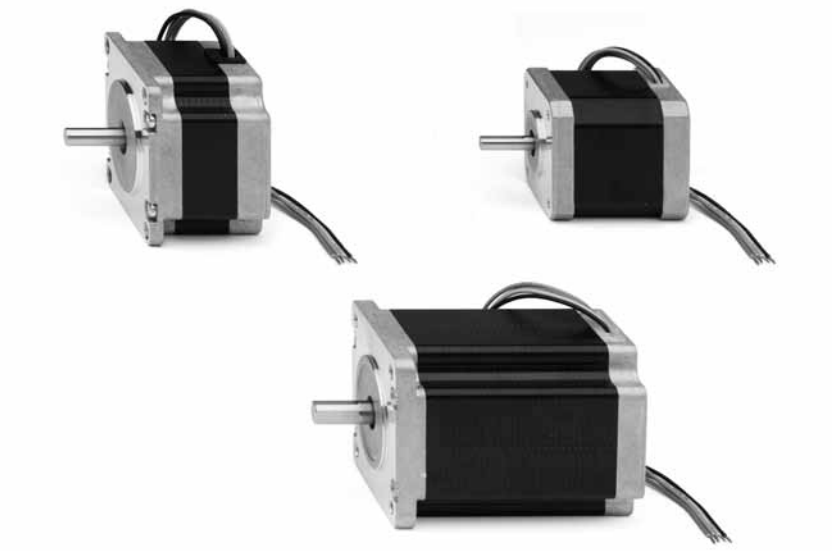
C = torque
n = number of revolutions per minute

The continuous line represents the peak torque of the motor.

The dashed line represents the nominal torque of the motor.

Series MTS
motors for electric actuation

Stepper motors with Nema 23 or 24 fixing flange



- Low inertia motors
- Different sizes or power classes available

The new Camozzi motors Series MTS have been designed to be connected in an easy and practical way to the new product range within electrical actuation, being able to drive both electromechanical cylinders and axes.

The new Series MTS electrical Stepper motors are available in the sizes Nema 23 and Nema 24.
Each motor version comes with its own driving version that is interfaceable with the QSet configuration software, especially developed by Camozzi in order to simplify the setting up of the electric actuator.

GENERAL DATA

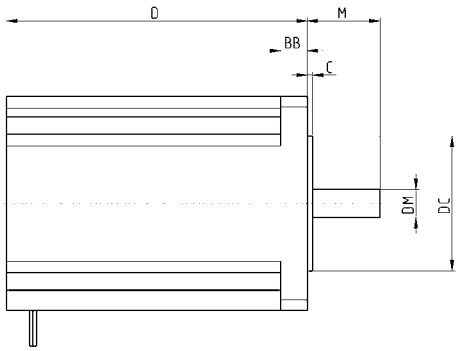
	Mod. MTS-23-18-060-0-0-S-C	Mod. MTS-24-18-250-0-0-S-C
Shaft	single	single
Leads	4	4
Length	41 mm	85 mm
Holding torque	0.6 Nm	2.5 Nm
Current per phase	4.5 A/Phase	4.5 A/Phase
Resistance	0.48 Ω/Phase	0.65 Ω/Phase
Motor inertia	135 g·cm²	900 g·cm²
Dielectric strength	500 V AC/min	500 V AC/min

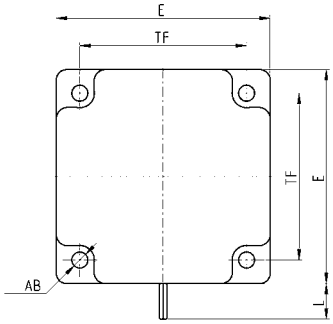
SERIES MTS CODING EXAMPLE

MTS	-	23	-	18	-	060	-	0	-	0	-	S	-	C

MTS	SERIES
23	MOTOR SIZE FLANGE CONNECTION: 23 = Nema 23 24 = Nema 24
18	RESOLUTION IN DEGREES PER REVOLUTION: 18 = 1.8° per step
060	TORQUE: 060 = 0.6 Nm with Nema 23 only 250 = 2.5 Nm with Nema 24 only
0	ELECTRICAL CONNECTION: 0 = connector
0	BRAKE: 0 = without brake
S	ENCODER VARIANTS: S = single shaft without encoder
C	MECHANICAL SHAFT VARIANTS: C = cylindrical shaft

Series MTS Stepper motors - dimensions



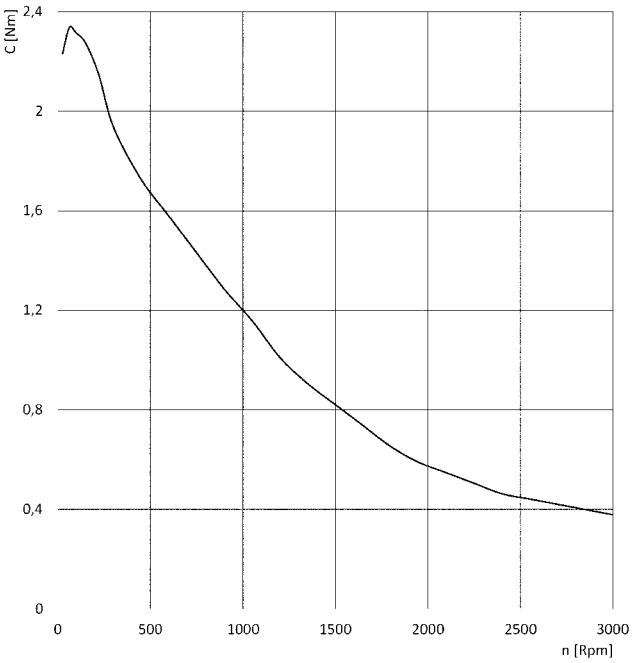


Mod.	Nema	D	E	L	DM [h7]	M	DC [js10]	C	TF	⌀AB	BB	Weight (Kg)
MTS-23-18-060-0-0-S-C	23	41	56.4	300 ± 10	6.35	20.6	38.1	1.6	47.14	5.1	4.8	0.42
MTS-24-18-250-0-0-S-C	24	85	60.5	300 ± 10	8	20.6	38.1	1.5	47.14	4.5	7.5	1.41

Torque - speed of Series MTS motors

MTS-23-18-060-0-0-S-C

C = torque
n = revolutions per minute



MTS-24-18-250-0-0-S-C

C = torque
n = revolutions per minute

1 MOVEMENT

Series GB planetary gearboxes

Available sizes: 40, 60 and 80

- Reduced play
- Prepared to be connected with Series MTB and Series MTS motors
- High performance
- 4 Reduction ratios available (i=3,5,7,10)
- Silent operation
- Any mounting position
- Lifetime lubrication
- Available in in-line and orthogonal configurations

The Series GB planetary gearboxes, by means of a planetary gear system, enable the reduction of the angular speed and the increase of transmittable torque. These gearboxes can be used with the Series 5E electromechanical axes.

Available in 3 sizes with 4 different reduction ratios, the Series GB planetary gearboxes can be supplied in two different configurations, in-line or orthogonal.
All gearboxes are equipped with interface flanges for the connection to the Camozzi Series MTB and Series MTS motors.

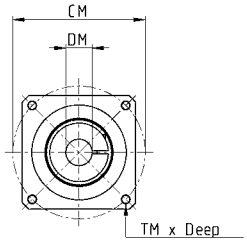
CODING EXAMPLE

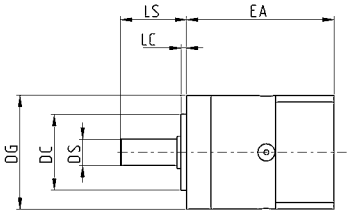
GB	-	040	-	03	-	D	-	0100

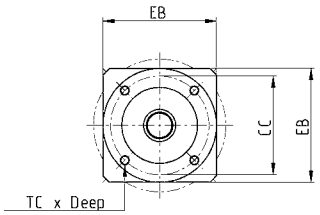
GB	GEARBOX
040	SIZE: 040 = Ø40 060 = Ø60 080 = Ø80
03	REDUCTION RATIO: 03 i = 3 05 i = 5 07 i = 7 10 i = 10
D	TYPE: D = straight A = angular
0100	PREPARATION OF THE MOTOR: 0100 = Brushless 100W (size 040 only) 0400 = Brushless 400W (size 060 only) 0750 = Brushless 750W (size 080 only) 0024 = Nema 24

1
MOVEMENT

IN-LINE PLANETARY GEARBOX

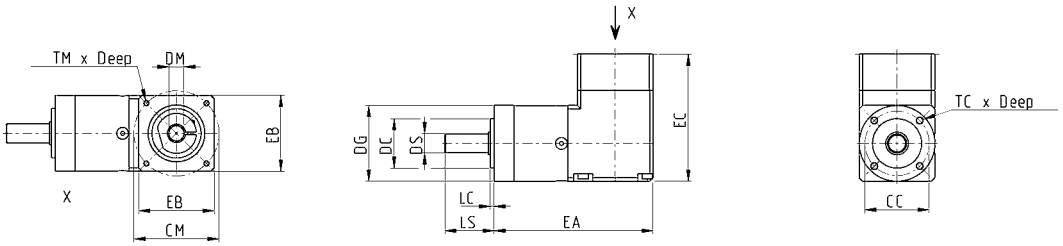






Mod.	BACKLASH	⌀DS [h7]	LS	⌀DC [h7]	LC	⌀CC	TC x Deep	EA	EB	⌀DG	⌀DM	⌀CM	TM x Deep	Weight (Kg)
GB-040-03-D-0100	<15'	10	26	26	2	34	M4 x 6	67.5	40	40	8	45	M3 x 8	0.35
GB-040-05-D-0100	<15'	10	26	26	2	34	M4 x 6	67.5	40	40	8	45	M3 x 8	0.35
GB-040-07-D-0100	<15'	10	26	26	2	34	M4 x 6	67.5	40	40	8	45	M3 x 8	0.35
GB-040-10-D-0100	<15'	10	26	26	2	34	M4 x 6	67.5	40	40	8	45	M3 x 8	0.35
GB-040-03-D-0024	<15'	10	26	26	2	34	M4 x 6	63.5	60	40	8	66.7	M4 x 10	0.35
GB-040-05-D-0024	<15'	10	26	26	2	34	M4 x 6	63.5	60	40	8	66.7	M4 x 10	0.35
GB-040-07-D-0024	<15'	10	26	26	2	34	M4 x 6	63.5	60	40	8	66.7	M4 x 10	0.5
GB-040-10-D-0024	<15'	10	26	26	2	34	M4 x 6	63.5	60	40	8	66.7	M4 x 10	0.5
GB-060-03-D-0400	<10'	14	35	40	3	52	M5 x 8	78	60	60	14	70	M5 x 12	0.9
GB-060-05-D-0400	<10'	14	35	40	3	52	M5 x 8	78	60	60	14	70	M5 x 12	0.9
GB-060-07-D-0400	<10'	14	35	40	3	52	M5 x 8	78	60	60	14	70	M5 x 12	0.9
GB-060-10-D-0400	<10'	14	35	40	3	52	M5 x 8	78	60	60	14	70	M5 x 12	0.9
GB-060-03-D-0024	<10'	14	35	40	3	52	M5 x 8	71	60	60	8	66.7	M4 x 10	0.9
GB-060-05-D-0024	<10'	14	35	40	3	52	M5 x 8	71	60	60	8	66.7	M4 x 10	0.9
GB-060-07-D-0024	<10'	14	35	40	3	52	M5 x 8	71	60	60	8	66.7	M4 x 10	0.9
GB-060-10-D-0024	<10'	14	35	40	3	52	M5 x 8	71	60	60	8	66.7	M4 x 10	0.9
GB-080-03-D-0750	<7'	20	40	60	3	70	M6 x 10	103.5	80	80	19	90	M6 x 15	2.1
GB-080-05-D-0750	<7'	20	40	60	3	70	M6 x 10	103.5	80	80	19	90	M6 x 15	2.1
GB-080-07-D-0750	<7'	20	40	60	3	70	M6 x 10	103.5	80	80	19	90	M6 x 15	2.1
GB-080-10-D-0750	<7'	20	40	60	3	70	M6 x 10	103.5	80	80	19	90	M6 x 15	2.1
GB-080-03-D-0024	<7'	20	40	60	3	70	M6 x 10	93.5	80	80	8	66.7	M4 x 10	2.1
GB-080-05-D-0024	<7'	20	40	60	3	70	M6 x 10	93.5	80	80	8	66.7	M4 x 10	2.1
GB-080-07-D-0024	<7'	20	40	60	3	70	M6 x 10	93.5	80	80	8	66.7	M4 x 10	2.1
GB-080-10-D-0024	<7'	20	40	60	3	70	M6 x 10	93.5	80	80	8	66.7	M4 x 10	2.1

ORTHOGONAL PLANETARY GEARBOX



Mod.	BACKLASH	⌀DS [h7]	LS	⌀DC [h7]	LC	⌀CC	TC x Deep	EA	EB	EC	⌀DG	⌀DM	⌀CM	TM x Deep	Weight (Kg)
GB-040-03-A-0100	<21'	10	26	26	2	34	M4 x 6	84	40	67	40	8	45	M3 x 7	0.51
GB-040-05-A-0100	<21'	10	26	26	2	34	M4 x 6	84	40	67	40	8	45	M3 x 7	0.51
GB-040-07-A-0100	<21'	10	26	26	2	34	M4 x 6	84	40	67	40	8	45	M3 x 7	0.51
GB-040-10-A-0100	<21'	10	26	26	2	34	M4 x 6	84	40	67	40	8	45	M3 x 7	0.51
GB-040-03-A-0024	<21'	10	26	26	2	34	M4 x 6	84	60	63	40	8	66.7	M4 x 7	0.51
GB-040-05-A-0024	<21'	10	26	26	2	34	M4 x 6	84	60	63	40	8	66.7	M4 x 7	0.51
GB-040-07-A-0024	<21'	10	26	26	2	34	M4 x 6	84	60	63	40	8	66.7	M4 x 7	0.51
GB-040-10-A-0024	<21'	10	26	26	2	34	M4 x 6	84	60	63	40	8	66.7	M4 x 7	0.51
GB-060-03-A-0400	<16'	14	35	40	3	52	M5 x 8	112	60	92.5	60	14	70	M5 x 12	1.7
GB-060-05-A-0400	<16'	14	35	40	3	52	M5 x 8	112	60	92.5	60	14	70	M5 x 12	1.7
GB-060-07-A-0400	<16'	14	35	40	3	52	M5 x 8	112	60	92.5	60	14	70	M5 x 12	1.7
GB-060-10-A-0400	<16'	14	35	40	3	52	M5 x 8	112	60	92.5	60	14	70	M5 x 12	1.7
GB-060-03-A-0024	<16'	14	35	40	3	52	M5 x 8	71	60	85.5	60	8	66.7	M4 x 10	1.7
GB-060-05-A-0024	<16'	14	35	40	3	52	M5 x 8	71	60	85.5	60	8	66.7	M4 x 10	1.7
GB-060-07-A-0024	<16'	14	35	40	3	52	M5 x 8	71	60	85.5	60	8	66.7	M4 x 10	1.7
GB-060-10-A-0024	<16'	14	35	40	3	52	M5 x 8	71	60	85.5	60	8	66.7	M4 x 10	1.7
GB-080-03-A-0750	<13'	20	40	60	3	70	M6 x 10	144	80	119.5	80	19	90	M6 x 15	4.4
GB-080-05-A-0750	<13'	20	40	60	3	70	M6 x 10	144	80	119.5	80	19	90	M6 x 15	4.4
GB-080-07-A-0750	<13'	20	40	60	3	70	M6 x 10	144	80	119.5	80	19	90	M6 x 15	4.4
GB-080-10-A-0750	<13'	20	40	60	3	70	M6 x 10	144	80	119.5	80	19	90	M6 x 15	4.4
GB-080-03-A-0024	<13'	20	40	60	3	70	M6 x 10	144	80	109.5	80	8	66.7	M4 x 10	4.4
GB-080-05-A-0024	<13'	20	40	60	3	70	M6 x 10	144	80	109.5	80	8	66.7	M4 x 10	4.4
GB-080-07-A-0024	<13'	20	40	60	3	70	M6 x 10	144	80	109.5	80	8	66.7	M4 x 10	4.4
GB-080-10-A-0024	<13'	20	40	60	3	70	M6 x 10	144	80	109.5	80	8	66.7	M4 x 10	4.4

1

MOVEMENT

Series CO
motion transmission devices

New

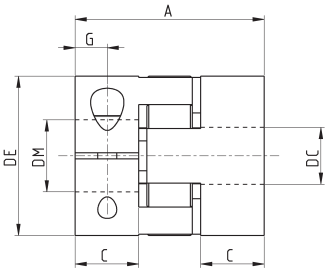
Mod. COE: elastomer coupling with clamps
Mod. COS: elastomer coupling with expansion shaft
Mod. COT: self-centering locking-set

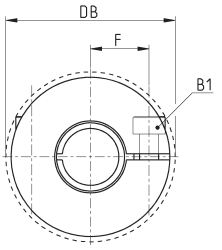
The motion transmission devices are necessary for a proper connection of electromechanical axes and cylinders with motors or gearboxes.

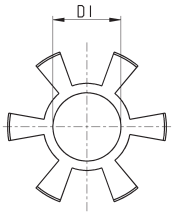
Mod. COE couplings are composed of two hubs with a high concentricity clamp and an elastomeric element.
Mod. COS couplings are composed of one hub with a high concentricity clamp, a hub with expansion shaft and an elastomeric element.
The torque transmission is performed without angular play or vibrations.
Both couplings are without angular play thanks to the pretensioning of the elastomer between the two semi-couplings.

Mod. COT locking-sets are composed by an internal and an external conical ring connected with eachother by means of several screws. Through the tightening of the screws, an axial force is generated that enables the torque transmission from the shaft to the hub.

Elastomer coupling with clamps Mod. COE

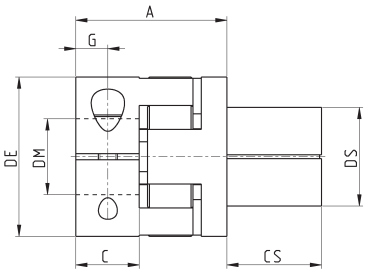


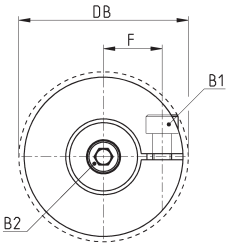


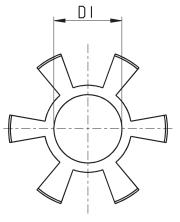


Mod.	⌀DC [H7]	⌀DM [H7]	⌀DE	⌀DB	⌀DI	A	C	F	G	B1 [ISO4762]	Torque force (Nm)		Weight (g)
COE-05-0800-0635-A	8	6.35	25	25	10.2	26	8	8	4	M3 (CH2.5)	2	9	20
COE-05-0800-0800-A	8	8	25	25	10.2	26	8	8	4	M3 (CH2.5)	2	9	20
COE-10-1000-0635-A	10	6.35	32	32	14.2	32	10.3	10.5	5	M4 (CH2.5)	4	12.5	50
COE-10-1200-0800-A	12	8	32	32	14.2	32	10.3	10.5	4	M4 (CH2.5)	4	12.5	50
COE-10-1000-1400-A	10	14	32	32	14.2	32	10.3	10.5	5	M4 (CH3)	4	12.5	20
COE-10-1200-1400-A	12	14	32	32	14.2	32	10.3	10.5	5	M4 (CH3)	4	12.5	50
COE-10-1500-0800-A	15	8	32	32	14.2	32	10.3	10.5	5	M4 (CH3)	4	12.5	50
COE-20-1500-1900-A	15	19	42	44.5	19.2	50	17	15.5	8.5	M5 (CH4)	8	17	120

Elastomer coupling with expansion shaft Mod. COS

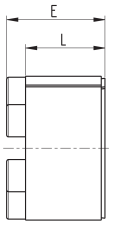


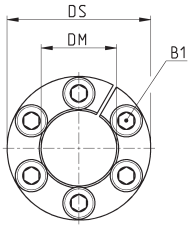




Mod.	⌀DS [h7]	⌀DM [H7]	⌀DE	⌀DB	⌀DI	A	C	CS	F	G	B1 [ISO4762]	Torque force (Nm)	B2 [ISO4762]	Torque force (Nm)		Weight (g)
COS-10-2000-1400-A	20	14	32	32	14.2	28	10.3	20	10.5	5	M4 (CH3)	4	M5 (CH4)	9	12.5	50
COS-10-2000-0800-A	20	8	32	32	14.2	28	10.3	20	10.5	5	M4 (CH3)	4	M5 (CH4)	9	12.5	50
COS-20-2600-2000-A	26	20	42	44.5	19.2	40	17	25	15.5	8.5	M5 (CH4)	8	M6 (CH5)	12	17	120
COS-60-3800-2500-A	38	25	56	57	26.2	46	20	27	21	10	M6 (CH5)	15	M8 (CH6)	32	60	300

Self-centering locking-set Mod. COT





Mod.	⌀DS	⌀DM	L	E	B1 [ISO4762]	Torque force (Nm)	Nominal torque (Nm)	Weight (g)
COT-2000-1000	20	10	13	15.5	M2.5 (CH2.5)	1.2	19	25
COT-2600-1400	26	14	17	20	M3 (CH2.5)	2.1	40	50
COT-3800-2000	38	20	21	26	M5 (CH4)	4.9	165	140

The Camozzi worldwide network

To respond and act quickly

To understand markets and the small but important differences between them, a company cannot only rely on the essential digital tools we all use every day, but it needs to be locally present, face to face, able to look into people's eyes and speak their language. This is why Camozzi now has an international network, based in Italy, but present on every continent.

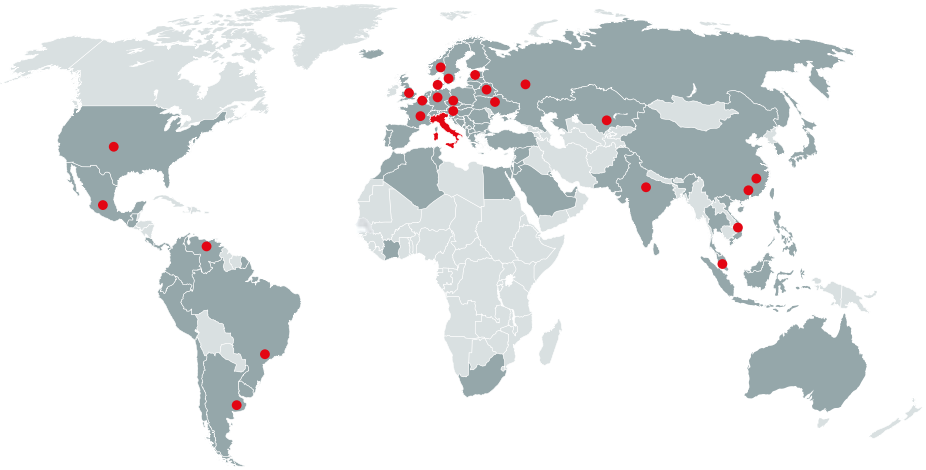
PRESENCE ON EVERY CONTINENT

23 SUBSIDIARIES

55 EXCLUSIVE DISTRIBUTORS

6 PRODUCTION FACILITIES

OVER 1200 EMPLOYEES



ITALY HEADQUARTERS
CAMOZZI SPA

SUBSIDIARIES AND
PRODUCTION FACILITIES

COUNTRY
WITH EXCLUSIVE DISTRIBUTORS