Series 5E electromechanical axis

Sizes 50, 65, 80
Available versions: standard axis, support axis, reinforced axis

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.

- 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
- Sliders available: standard, long, double
- Supplied with protection plugs for end caps and slider's centering bushings
- Greasing nipples included

GENERAL DATA

Construction	electromechanical axis with toothed belt
Design	open profile with protection plate
Operation	multi-position 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 (available for versions A and D only)
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	2(500)

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 0050 ÷ 4000 mm for size 050 0050 ÷ 6000 mm for sizes 065 and 080
A	VERSIONS A = standard axis D = support axis H = reinforced axis (for sizes 65 and 80 only)
S	TYPE OF SLIDER S = standard L = long - only for standard axis (A version)
2(500)	NUMBER OF SLIDERS 1 = 1 slider 2(____) = 2 sliders at (____) mm step - only for standard axis (A) with support axis (D) and standard slider (S)

MECHANICAL CHARACTERISTICS

		Size 50	Size 50	Size 50	Size 65	Size 65	Size 65	Size 65	Size 80	Size 80	Size 80	Size 80
RECIRCULATING BALL GUIDE (CAGE TYPE)												
Version		A	A	D	A	A	D	H	A	A	D	H
Type of slider		S	L	S	S	L	S	S	S	L	S	S
Number of guides		1	1	1	1	1	1	2	1	1	1	2
Number of RDS blocks	pcs	2	3	2	2	3	2	4	2	3	2	4
Fy, eq [A]	N	3400	5100	3400	8300	12450	8300	16600	13000	19500	13000	26000
Fz, eq [A]	N	3400	5100	3400	8300	12450	8300	16600	13000	19500	13000	26000
Mx, eq [A]	Nm	19.4	29	19.4	47.7	71.6	47.7	234.7	106	160	106	454
My, eq [A]	Nm	91.7	183.5	91.7	283.2	564.7	282.3	564.7	626	1252	626	1252
Mz, eq [A]	Nm	91.7	183.5	91.7	283.2	564.7	282.3	564.7	626	1252	626	1252
Max linear speed of mechanics (V_{max})	m/s	5	2.5[B]	5	5	2.5[B]	5	2.5[B]	5	2.5[B]	5	2.5[B]
Max linear acceleration of mechanics (a_{max})	m/s²	50	20[B]	50	50	20[B]	50	2.5[B]	50	20[B]	50	20[B]
PROFILE												
Moment of surface inertia I_y	mm⁴	1.89 · 105	1.89 · 105	1.89 · 105	4.94 · 105	4.94 · 105	4.94 · 105	4.94 · 105	1.23 · 106	1.23 · 106	1.23 · 106	1.23 · 106
Moment of surface inertia I_z	mm⁴	2.48 · 105	2.48 · 105	2.48 · 105	6.97 · 105	6.97 · 105	6.97 · 105	6.97 · 105	1.68 · 106	1.68 · 106	1.68 · 106	1.68 · 106
TOOTHED BELT												
Type		20 AT 5 HP	20 AT 5 HP	-	32 AT 5 HP	32 AT 5 HP	-	32 AT 5 HP	32 AT 5 HP	32 AT 5 HP	-	32 AT 5 HP
Pitch	mm	5	5	-	5	5	-	5	10	10	-	10
Max transmittable load	N	See the diagram	See the diagram	-	See the diagram	See the diagram	-	See the diagram	See the diagram	See the diagram	-	See the diagram
PULLEY												
Effective diameter of the pulley	mm	31.83	31.83	-	47.75	47.75	-	47.75	63.66	63.66	-	63.66
Number of teeth	z	20	20	-	30	30	-	30	20	20	-	20
Linear movement per pulley round	mm/round	100	100	-	150	150	-	150	200	200	-	200

NOTES:
1. Check the nominal admissible torque of the used motion transmission devices.
2. Details about directions of loads and moments can be found in the "EQUIVALENT LOAD" section.

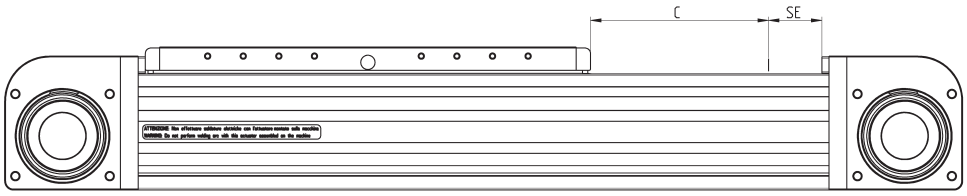
[A] Value refers to a covered distance of 2000 Km with fully supported system.
[B] The "suggested" speed is not the mechanical limit of the unit but represents the best compromise between high load applied and high dynamics. In case of particular requirements, please contact our technical assistance (service@camozzi.com).

SERIES 5E STROKE

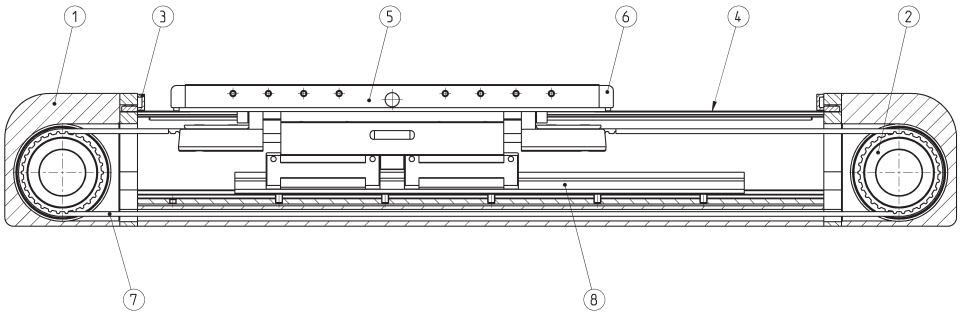
LEGEND:

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

HOW TO CALCULATE THE LIFE OF SERIES 5E AXIS

The correct dimensioning of the Series 5E axis, used individually or in a cartesian system with several axes, you need to consider some facts, both static and dynamic.

CALCULATION OF LIFE [km]

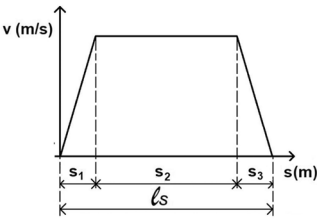
L_{eq} =Life of the axis [km]
f_l = load coefficient
f_w = safety coefficient according to the working conditions

The loads acting on the actuator (Fy, Fz, Mx, My and Mz) that appear in the fl calculation are the average ones on the cycle. These are calculated by averaging the loads of each single phase as indicated in the equation of P.

l_s = stroke s_1 = acc. phase; s_2= constant speed phase; s_3 = deceleration phase
P = Mx / My / Mz /Fy / Fz

$$f_l = \frac{|Fy|}{Fy,eq} + \frac{|Fz|}{Fz,eq} + \frac{|Mx|}{Mx,eq} + \frac{|My|}{My,eq} + \frac{|Mz|}{Mz,eq}$$

$$L_{eq} = \left(\frac{1}{f_l \cdot f_w}\right)^3 \cdot 2000$$



$$P = \sqrt[3]{\frac{1}{ls} \cdot \sum_{i=1}^{n} (P_i{}^3 \cdot s_i)}$$

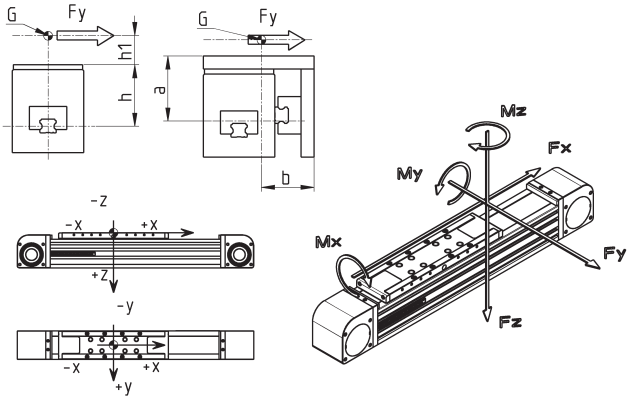
$$P = \sqrt[3]{\frac{1}{ls} \cdot (P_1{}^3 \cdot s_1 + P_2{}^3 \cdot s_2 + P_3{}^3 \cdot s_3)}$$

EQUIVALENT LOAD

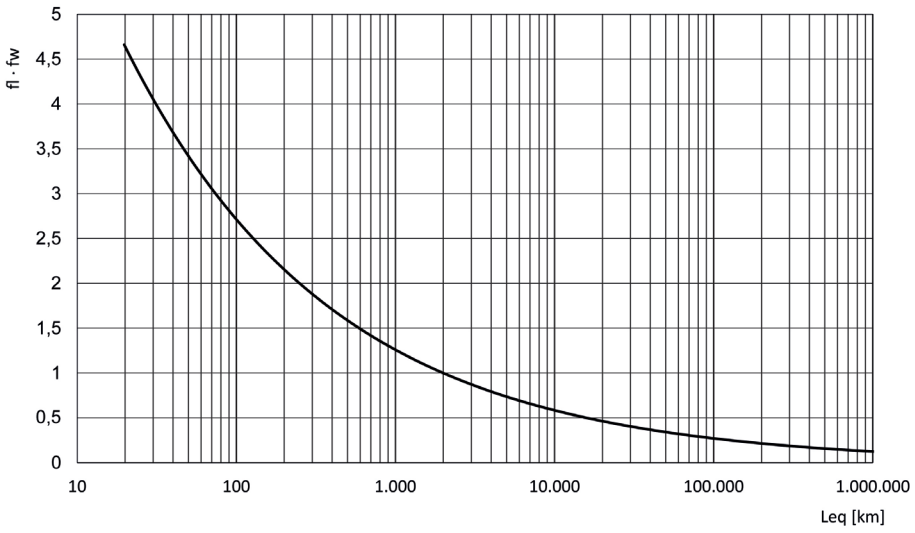
Fy = Force acting along the Y-axis [N]
Fz = Force acting along the Z-axis [N]
h = fixed distance for 5E axis [mm]
Mx = Moment along X-axis [Nm]
My = Moment along Y-axis [Nm]
Mz = Moment along Z-axis Z [Nm]

Here you can find the "h" values, valid for version A:
- h = 45.5 mm (5ES050)
- h = 56.0 mm (5ES065)
- h = 69.5 mm (5ES080)

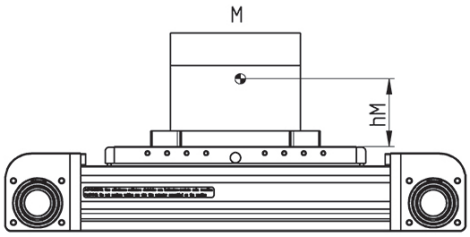
Here you can find the "A" and "B" values, valid for version H:
"A" = 56.0 mm "B" 32.9 mm (5ES050)
"A" = 57.0 mm "B" 45.0 mm (5ES065)
"A" = 71.6 mm "B" 51.6 mm (5ES080)

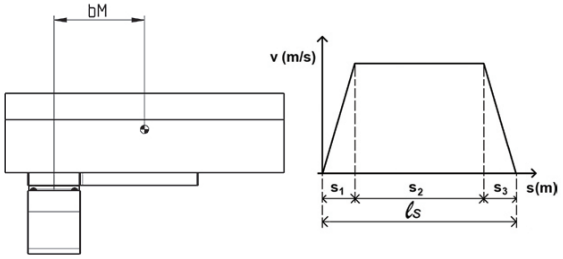


GRAPH OF THE SERVICE LIFE



HOW TO CALCULATE THE SERVICE LIFE OF 5ES050TBL0500AS1 - HORIZONTAL MOUNTING





Application data:
M = 15 kg
bM = 86 mm
hM = 50 mm

acc = dec = 6 m/s² v = 0.6 m/s
$s_1 = s_3 = 30$ mm
Ls = 500 mm
$f_w = 1$

CALCULATION OF APPLIED LOADS

$$F_y = 0$$

$$F_z = M \cdot g = 15 \cdot 9.81 = 147\ N$$

$$M_{x_{1;2;3}} = F_z \cdot b_M = 147 \cdot 0.086 = 12.7\ Nm$$

$$M_{y_{1;3}} = F_x \cdot (h_M + h) = M \cdot a \cdot (h_M + h) =$$
$$= 15 \cdot 6 \cdot (0.05 + 0.045) = 8.55\ Nm$$

$$M_{y_2} = F_x \cdot (h_M + h) = M \cdot a \cdot (h_M + h) =$$
$$= 15 \cdot 0 \cdot (0.05 + 0.045) = 0\ Nm$$

$$M_{z_{1;3}} = F_x \cdot b_M = M \cdot a \cdot b_M =$$
$$= 15 \cdot 6 \cdot 0.086 = 7.74\ Nm$$

$$M_{z_2} = F_x \cdot b_M = M \cdot a \cdot b_M =$$
$$= 15 \cdot 0 \cdot 0.086 = 0\ Nm$$

$$M_y = \sqrt[3]{\frac{1}{ls} \cdot (My_1{}^3 \cdot s1 + My_2{}^3 \cdot s2 + My_3{}^3 \cdot s3 + \cdots + My_n{}^3 \cdot sn)} =$$
$$= \sqrt[3]{\frac{1}{500} \cdot (8.55^{\,3} \cdot 30 + 0 \cdot 440 + 8.55^{\,3} \cdot 30)} = 4.22\ Nm$$

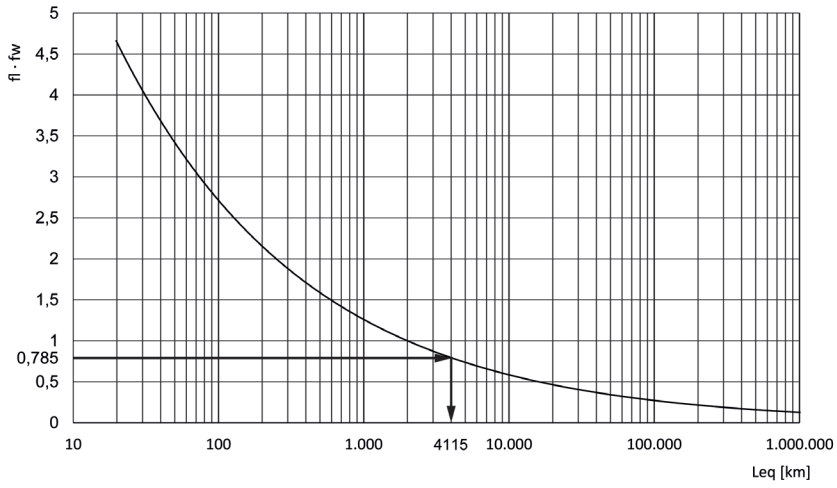
$$M_z = \sqrt[3]{\frac{1}{500} \cdot (7.74^{\,3} \cdot 30 + 0 \cdot 440 + 7.74^{\,3} \cdot 30)} = 3.82\ Nm$$

$$fl = \frac{|Fy|}{Fy,eq} + \frac{|Fz|}{Fz,eq} + \frac{|Mx|}{Mx,eq} + \frac{|My|}{My,eq} + \frac{|Mz|}{Mz,eq} =$$
$$= \frac{0}{3400} + \frac{147}{3400} + \frac{12.7}{19.4} + \frac{4.22}{91.7} + \frac{3.82}{91.7} = 0.785$$

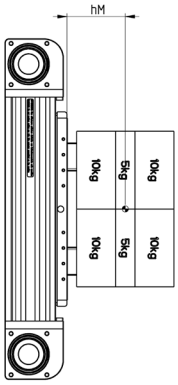
HOW TO CALCULATE THE SERVICE LIFE

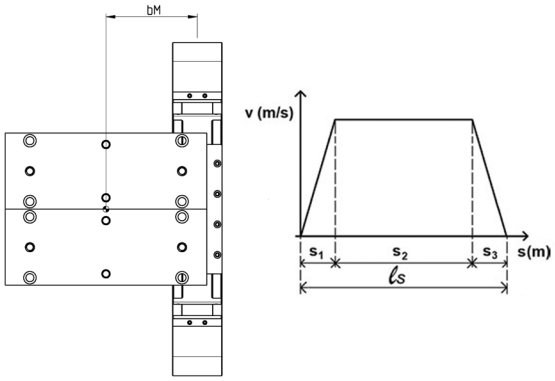
Once the fl value has been calculated, the service life value can be obtained from the graph or by using the formula:

$$Leq = \left(\frac{1}{fl \cdot fw}\right)^3 \times 2000 = \left(\frac{1}{0.785 \cdot 1}\right)^3 \times 2000 = 4115\ \text{km}$$



HOW TO CALCULATE THE SERVICE LIFE OF 5ES065TBL0750AS1 - VERTICAL MOUNTING





Application data:
M = 50 kg
bM = 120 mm
hM = 79.5 mm

acc = dec = 10 m/s² v = 0.8 m/s
$s_1 = s_3 = 32$ mm
ls = 750 mm
$f_w = 1.5$

CALCULATION OF APPLIED LOADS

$$F_y = 0\ N$$

$$F_z = 0\ N$$

$$M_{x_{1;2;3}} = 0\ Nm$$

$$M_{y_1} = F_x \cdot (h_M + h) = M \cdot (g + a) \cdot (h_M + h) =$$
$$= 50 \cdot (9.81 + 10) \cdot (0.056 + 0.0795) = 134.2\ Nm$$

$$M_{y_2} = F_x \cdot (h_M + h) = M \cdot (g + a) \cdot (h_M + h) =$$
$$= 50 \cdot (9.81 + 0) \cdot (0.056 + 0.0795) = 66.5\ Nm$$

$$M_{y_3} = F_x \cdot (h_M + h) = M \cdot (g + a) \cdot (h_M + h) =$$
$$= 50 \cdot (9.81 - 10) \cdot (0.056 + 0.0795) = 1.3\ Nm^*$$

$$M_{z_1} = F_x \cdot b_M = M \cdot (g + a) \cdot b_M =$$
$$= 50 \cdot (9.81 + 10) \cdot 0.12 = 118.9\ Nm$$

$$M_{z_2} = F_x \cdot b_M = M \cdot (g + a) \cdot b_M =$$
$$= 50 \cdot (9.81 + 0) \cdot 0.12 = 58.9\ Nm$$

$$M_{z_3} = F_x \cdot b_M = M \cdot (g + a) \cdot b_M =$$
$$= 50 \cdot (9.81 - 10) \cdot 0.12 = 1.14\ Nm^*$$

$$M_y = \sqrt[3]{\frac{1}{750} \cdot (134.2^{\,3} \cdot 32 + 66.5^{\,3} \cdot 686 + 1.3^{\,3} \cdot 32)} = 71.9\ Nm$$

$$M_z = \sqrt[3]{\frac{1}{750} \cdot (118.9^{\,3} \cdot 32 + 58.9^{\,3} \cdot 686 + 1.14^{\,3} \cdot 32)} = 63.7\ Nm$$

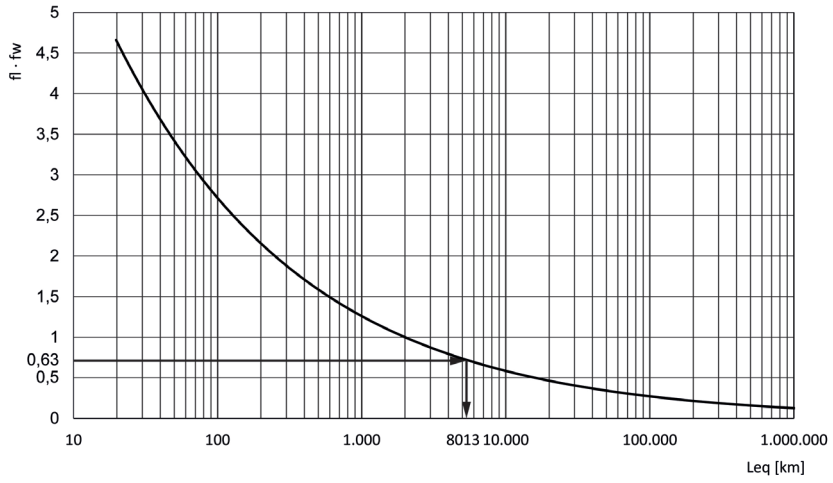
$$fl = \frac{|Fy|}{Fy,eq} + \frac{|Fz|}{Fz,eq} + \frac{|Mx|}{Mx,eq} + \frac{|My|}{My,eq} + \frac{|Mz|}{Mz,eq} =$$
$$= \frac{0}{8300} + \frac{0}{8300} + \frac{71.9}{324} + \frac{63.7}{324} + \frac{0}{55} = 0.42$$

*N.B: Positive sign because for each phase, the values are considered in absolute value.

HOW TO CALCULATE THE SERVICE LIFE

Once the fl value has been calculated, the service life value can be obtained from the graph or by using the formula:

$$Leq = \left(\frac{1}{fl \cdot fw}\right)^3 \times 2000 = \left(\frac{1}{0.42 \cdot 1.5}\right)^3 \times 2000 = 8013\ \text{km}$$



HOW TO CALCULATE THE DRIVING TORQUE [Nm]

F_A = Total force acting from outside [N]
F_E = Force to be applied externally [N]
g = Gravitational acceleration (9.81 m/s²)
m_E = Mass of the body to move [kg]
D_P = Pulley pitch diameter [mm]
C_{M1} = Driving torque due to external agents [Nm]

$$C_{TOT} = C_{M1} + C_{M2} + C_{M3}$$

$$F_A = F_E + m_E \cdot a$$

$$C_{M1} = \frac{F_A \cdot D_P}{2}$$

J_{TOT} = Moment of inertia of rotating components [kg·m²]
$\dot{\omega}$ = Angular acceleration [rad/s²]
a = Axis linear acceleration [m/s²]
C_{M2} = Driving torque due to rotating components [Nm]

$$\dot{\omega} = \frac{2 \cdot a}{D_P}$$

$$C_{M2} = J_{TOT} \cdot \dot{\omega}$$

F_{TT} = Force needed to move translating components [N]
F_{TF} = Force needed to move fixed-length translating components [N]
F_{TV} = Force needed to move variable-length translating components [N]
m_{C1} = Mass of fixed-length translating components [kg]
K_{TV} = Mass coefficient of variable-length translating components [kg/mm]
C_{M3} = Driving torque due to translating components [Nm]

K_{TI} = Mass coefficient of variable-length ..... components with the interaxis [kg/mm]
C = Stroke [mm]
I = Interaxis [mm]

$$F_{TT} = F_{TF} + F_{TV}$$

$$F_{TF} = m_{C1} \cdot a$$

$$F_{TV} = K_{TV} \cdot C \cdot a$$

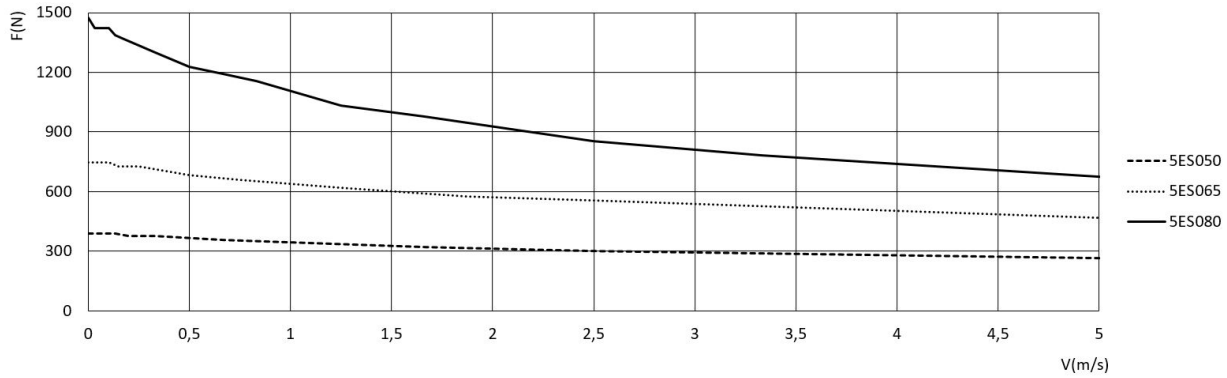
$$C_{M3} = \frac{F_{TT} \cdot D_P}{2}$$

Values of masses and fixed and rotating inertia moments of 5E components

Mod.	J_{TOT} [Kg·mm²]	m_{C1} [kg]	K_{TV} [Kg·m]	K_{TI} [Kg/m]
5E050...AS1	48.76	0.51	0.14	0.00
5E050...AL1	48.76	0.80	0.14	0.00
5E050...AS2	48.76	1.01	0.14	0.38
5E050...DS1	0.00	0.40	0.00	0.00
5E050...DS2	0.00	0.87	0.00	0.31
5E065...AS1	372.07	1.27	0.21	0.00
5E065...AL1	372.07	1.83	0.21	0.00
5E065...AS2	372.07	2.53	0.21	0.41
5E065...DS1	0.00	1.01	0.00	0.00
5E065...HS1	372.07	2.84	0.21	0.00
5E065...DS2	0.00	2.1	0.00	0.31
5E080...AS1	1130.28	2.69	0.34	0.00
5E080...AL1	1130.28	3.84	0.34	0.00
5E080...AS2	1130.28	5.38	0.34	0.48
5E080...DS1	0.00	2.15	0.00	0.00
5E080...HS1	1130.28	5.61	0.34	0.00
5E080...DS2	0.00	4.41	0.00	0.31

TRANSMISSIBLE FORCE

According to the size of the axis and the selected speed, the transmissible force of the toothed belt has the following limits.



HOW TO CALCULATE MAX DEFLECTION AND VERIFY 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:

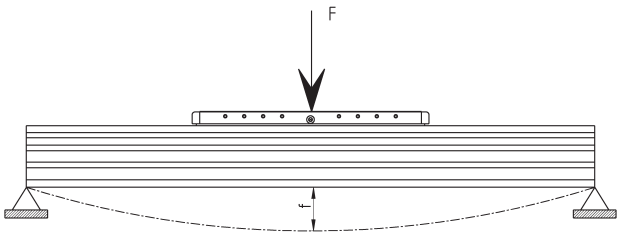
f_{max} = Maximum admissible deflection [mm]
c_{max} = Maximum stroke of axis 5E [mm]

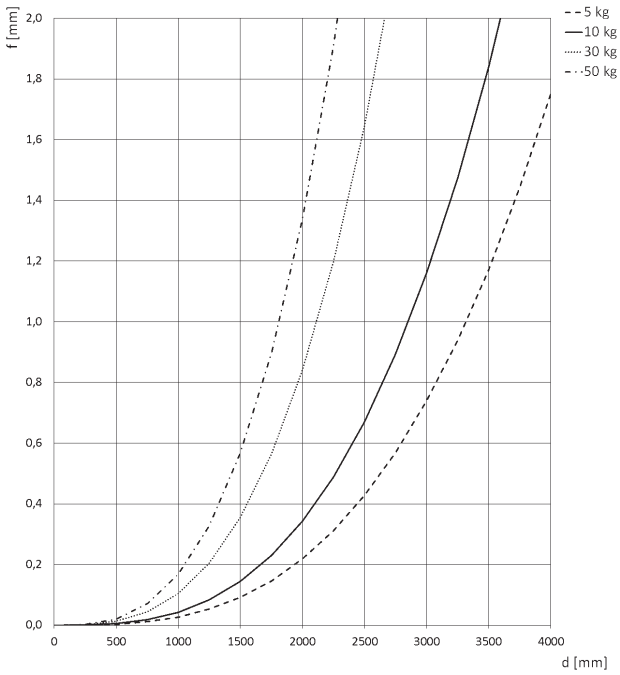
$$f_{max} = c_{max} \cdot 5 \cdot 10^{-4}$$

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

APPLICATION	ACCELERATION [m/s²]	SPEED [m/s]	f_w
light	< 10	< 1.5	1 ÷ 1.25
normal	10 ÷ 25	1.5 ÷ 2.5	1.25 ÷ 1.5
heavy	> 25	> 2.5	1.5 ÷ 3

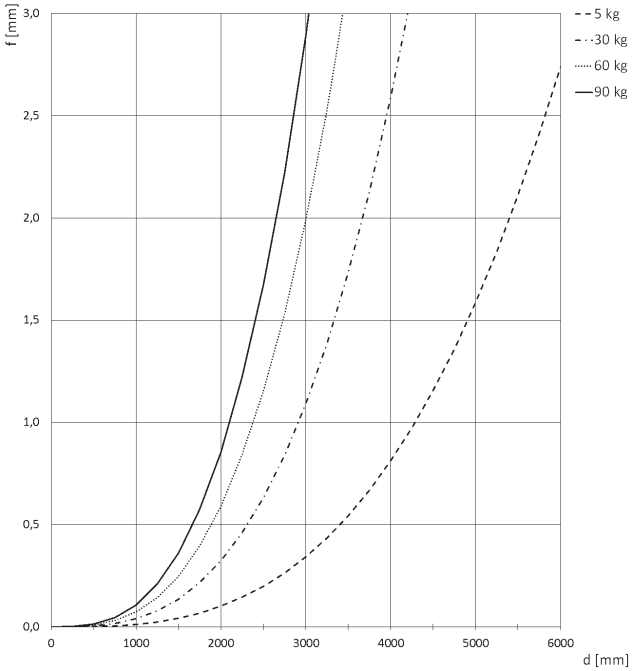
Deflection according to the distance of the supports - version A





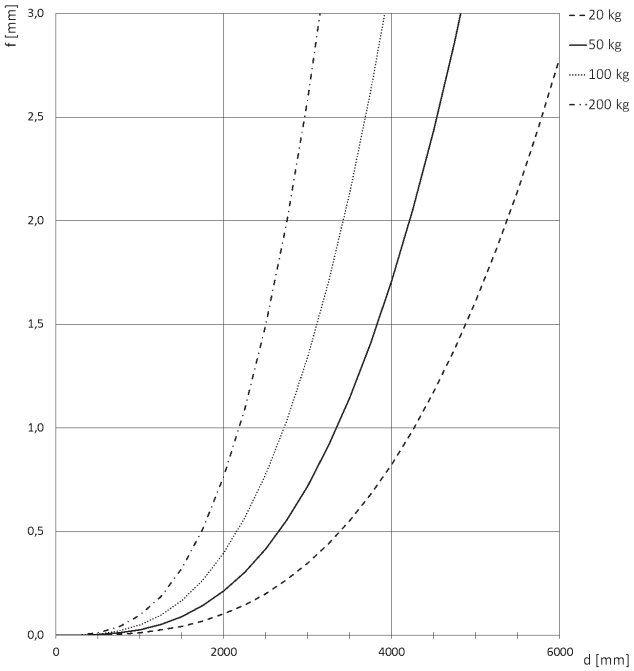
Size 050

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



Size 065

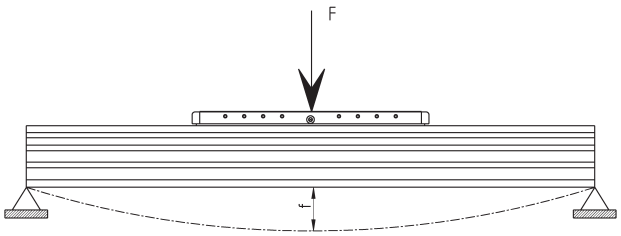
f = deflection generated between the supports [mm]
d = distance between the supports [mm]

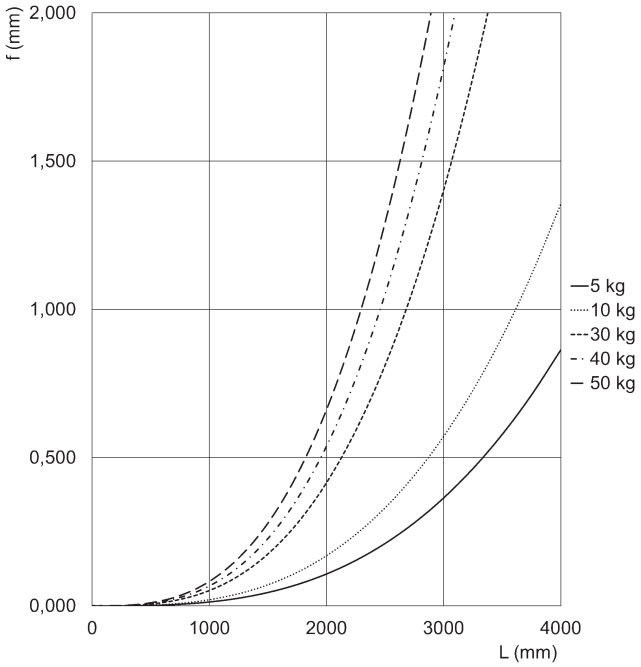


Size 080

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

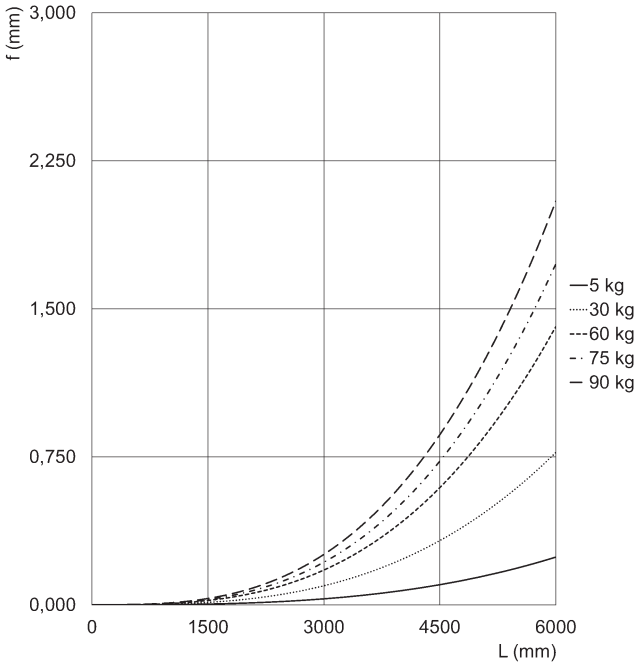
Deflection according to the distance of the supports - version H





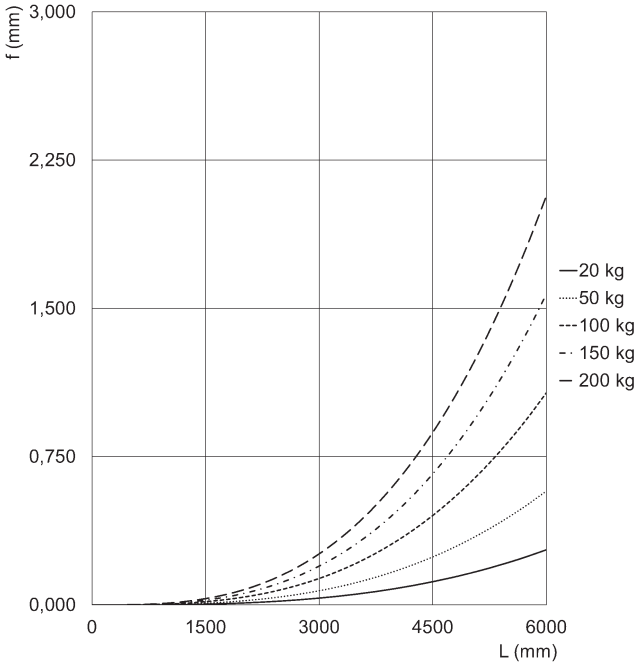
Size 050

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



Size 065

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



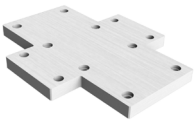
Size 080

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

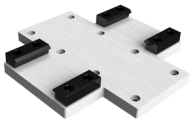
ACCESSORIES FOR SERIES 5E

Side clamping bracket Mod. BGS

Perforated side clamping bracket Mod. BGA

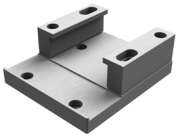


Interface plate - slider on slider



Interface plate - profile on slider

Interface plate - profile on slider - long arm

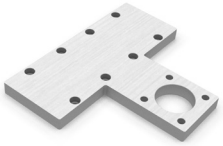


Interface plate - Series 6E cylinder on slider

Interface plate - profile side on slider, left pos.

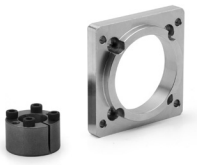
Interf. plate - profile side on slider, right pos.

Fixed interface plate



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

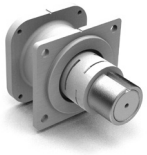
Kit to fix the inductive sensor



Kit to connect the gearbox GB Mod. FR

Kit to connect the gearbox, enhanced series

Kit to connect the gearbox, enhanced series (size 80)



Direct connection kit for Stepper motor

Parallel connection kit

Nuts for slots

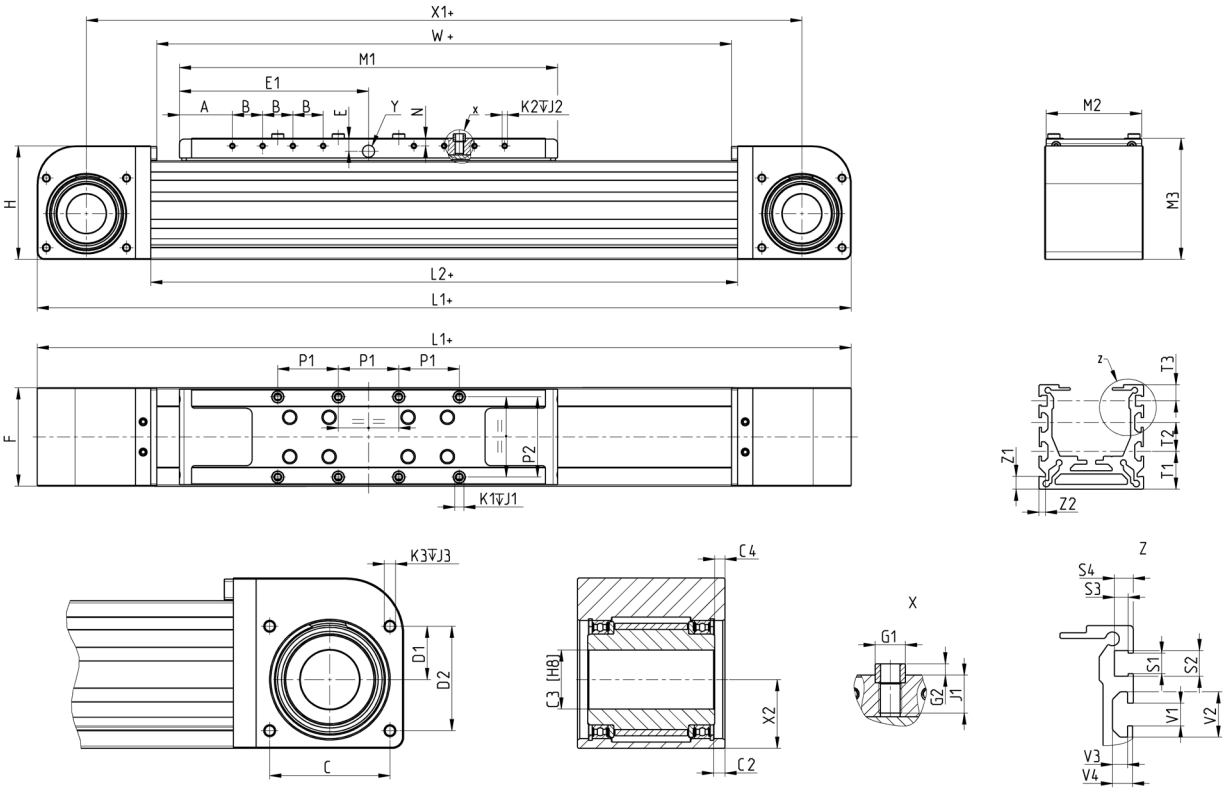
5E/5V connection flange

Centering ring Mod. TR-CG

All accessories are supplied separately from the axis.

Electromechanical axis Mod. 5E...AS1

+ = add the stroke



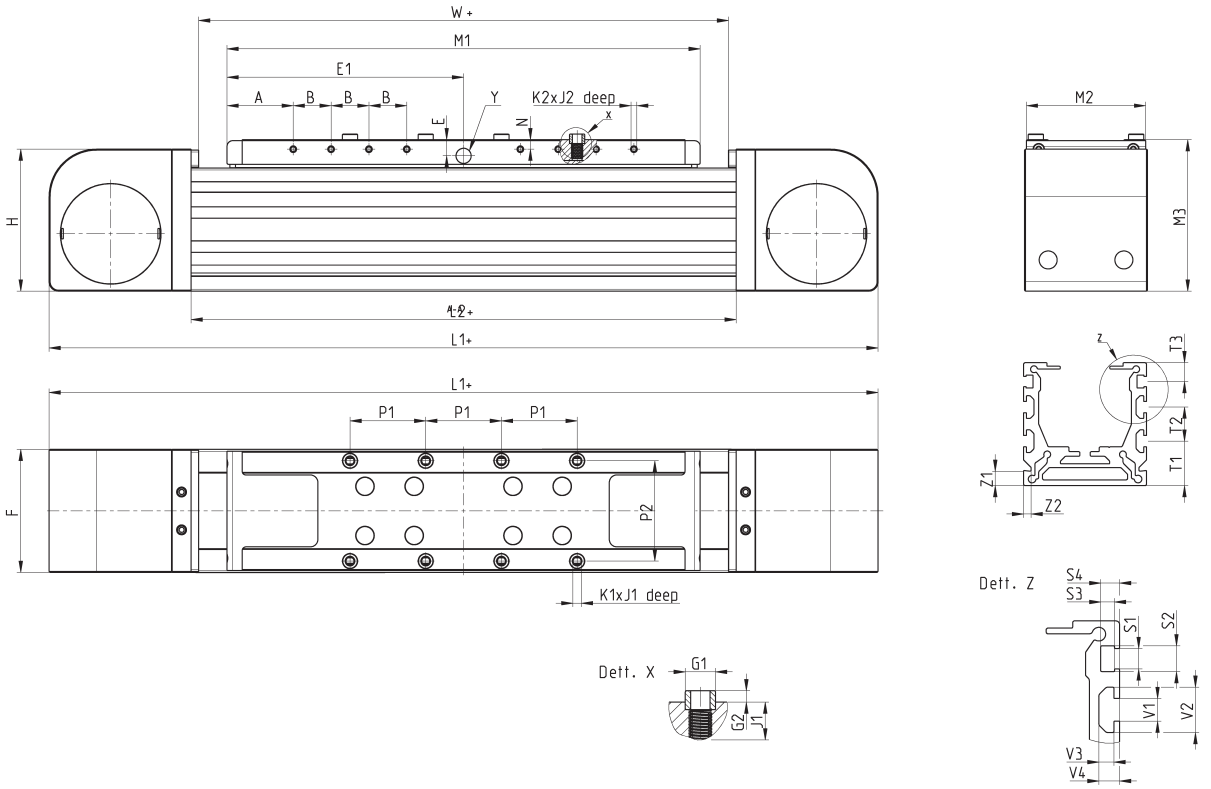
NOTE:
* We recommend a coupling with a shaft of tolerance h8.
■ Dimension T2 in size 50 is not indicated because there is only one slot.
■ Dimension Y indicates the hole for centralized lubrication by means of grease.

Taglia	A	B	C	ø C1	C2	ø C3 (h8)	C4	D1	D2	E	E1	F	ø G1 (h8)	G2	H	L1	L2	M1	M2	M3	N	P1	P2	K1	J1	K2	J2	K3	J3	T1	T2	T3	Y	X1	X2	W	Z1	Z2	S1	S2	S3	S4	V1	V2	V3	V4
50	32.5	15	37	37	4.5	20	2	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	■	304	21.8	230	8	4	5.4	6.8	3.65	5	6	12	4	5.5
65	35	20	53	52	2	26	4.5	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	■	373	30.5	280	8	4	5.4	6.8	3.65	5	6	12	4	5.5
80	35	30	68	68	6.5	38	6	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	■	468	40.5	360	8	4	5.4	6.8	3.65	5	8	16.5	6.8	9

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

Electromechanical axis Mod. 5E...DS1

+ = add the stroke

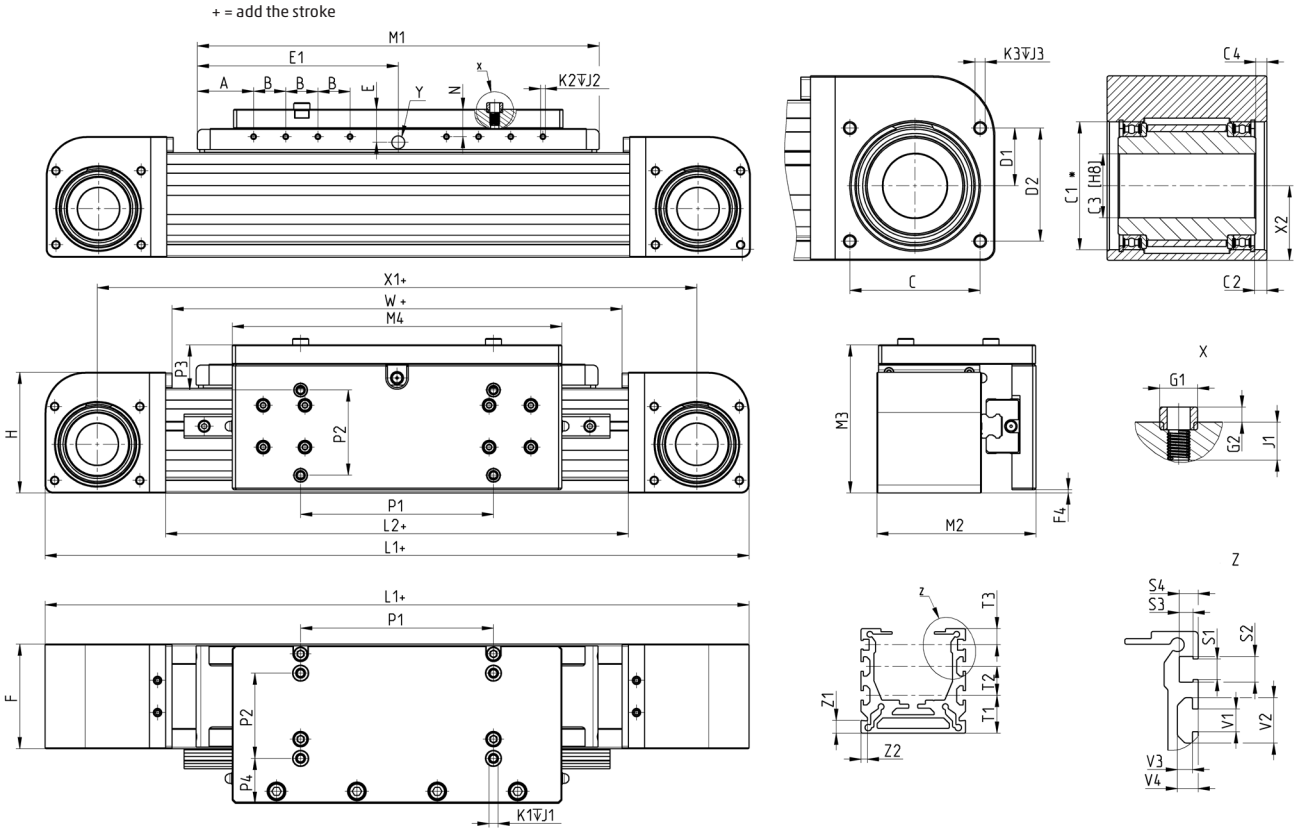


NOTE:
* We recommend a coupling with a shaft of tolerance h8.
■ Dimension T2 in size 50 is not indicated because there is only one slot.
• Dimension Y indicates the hole for centralized lubrication by means of grease.

Taglia	A	B	E	E1	F	⌀G1	G2	H	L1	L2	M1	M2	M3	N	P1	P2	K1	J1	K2	J2	T1	T2	T3	Y	W	Z1	Z2	S1	S2	S3	S4	V1	V2	V3	V4
50	32.5	15	8.5	100	50	6	2	60	354	238	200	200	48	5	30	40	M4	7	M3	5	20	■	10	■	230	8	4	5,4	6,8	3,65	5	6	12	4	5.5
65	35	20	8.5	125	65	8	3	75	438	288	250	250	63	5	40	53	M5	8	M3	6	23.5	18	10	■	280	8	4	5,4	6,8	3,65	5	6	12	4	5.5
80	35	30	11.5	165	80	10	3	95	548	368	330	330	78	8	55	64	M6	12	M4	8.5	25	25	10	■	360	8	4	5,4	6,8	3,65	5	8	16.5	6.8	9

Size	WEIGHT STROKE ZERO [kg]	STROKE WEIGHT PER METER [kg/m]
50	1.81	3.00
65	3.58	4.88
80	7.05	5.31

Electromechanical axis Mod. 5E...HS1

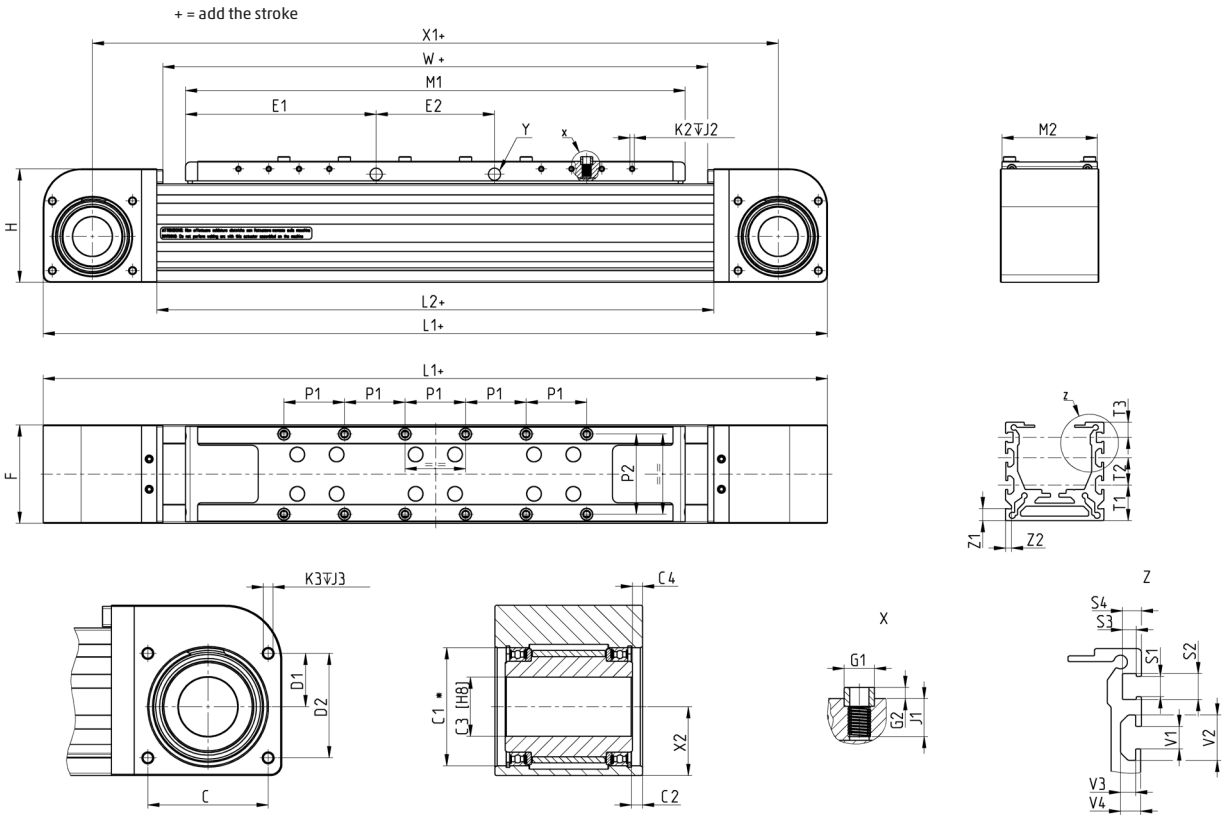


NOTE:
* We recommend a coupling with a shaft of tolerance h8.
● Dimension Y indicates the hole for centralized lubrication by means of grease.

Size	A	B	C	ø C1	C2	ø C3	C4	D1	D2	E	E1	F	ø F4	ø G1	G2	H	L1	L2	M1	M2	M3	N	P1	P2	P3	P4	K1	J1	K2	J2	K3	J3	T1	T2	T3	Y	X1	X2	W	Z1	Z2	S1	S2	S3	S4	V1	V2	V3	V4
65	35	20	53	52	5	26	4.5	23.5	46	20.5	125	65	2	8	3	75	438	288	250	99	92	17	120	53	28	28	M5	8	M3	6	M5	10	23.5	18	10	●	373	30.5	280	8	4	5.4	6.8	3.65	5	6	12	4	5.5
80	35	30	68	68	6.5	38	6	30.5	60.5	26.5	165	80	1	10	3	95	548	368	330	119	115	23	165	64	31	33.5	M5	12	M4	8.5	M5	10	25	25	10	●	468	40.5	360	8	4	5.4	6.8	3.65	5	8	16.5	6.8	9

Size	WEIGHT STROKE ZERO [kg]	STROKE WEIGHT PER METER [kg/m]
65	7.08	6.86
80	14.86	8.34

Electromechanical axis Mod. 5E...AL1

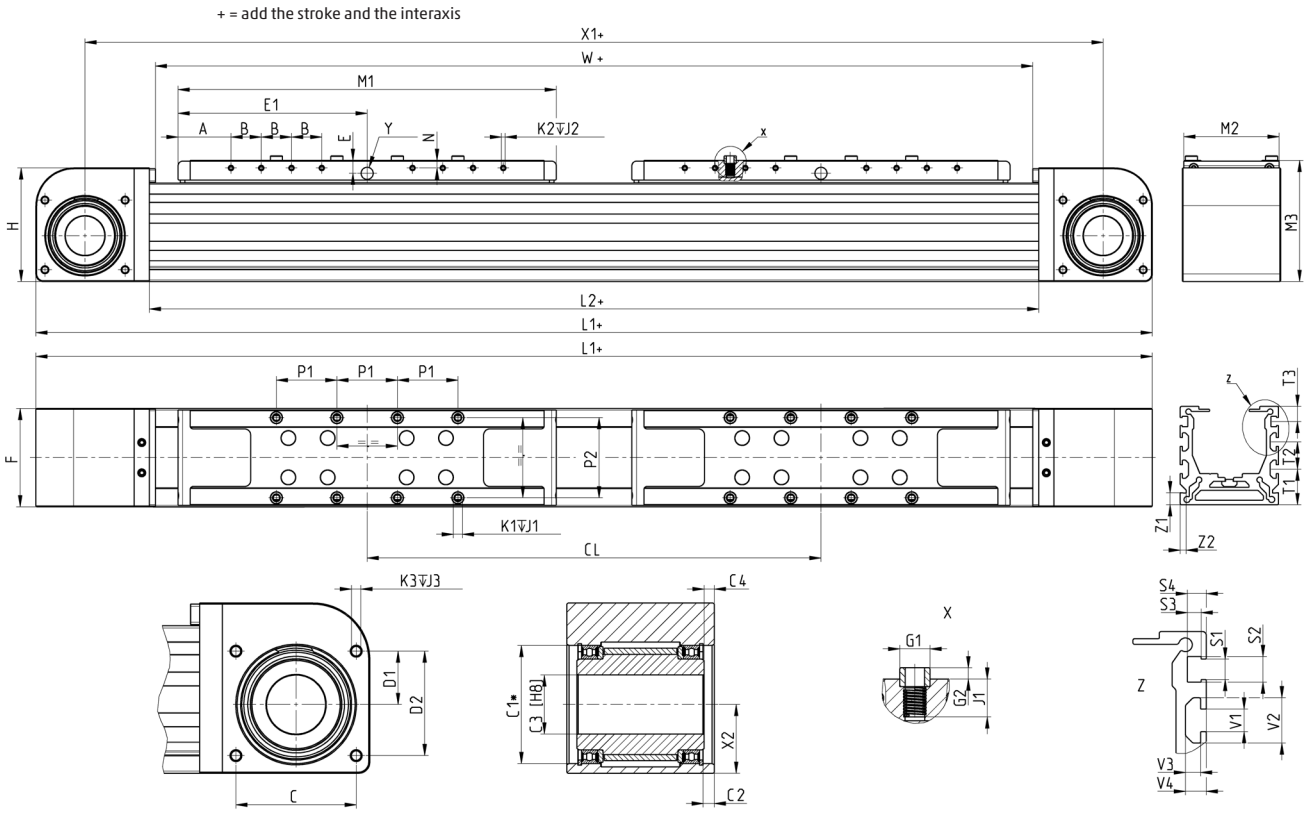


NOTE:
* We recommend a coupling with a shaft of tolerance h8.
■ Dimension T2 in size 50 is not indicated because there is only one slot.
■ Dimension Y indicates the hole for centralized lubrication by means of grease.

Size	A	B	C	ø C1	C2	ø C3 (h8)	C4	D1	D2	E	E1	E2	F	ø G1 (h8)	G2	H	L1	L2	M1	M2	M3	N	P1	P2	K1	J1	K2	J2	K3	J3	T1	T2	T3	Y	X1	X2	W	Z1	Z2	S1	S2	S3	S4	V1	V2	V3	V4
50	32.5	15	37	37	4.5	20	2	17	32	8.5	101.5	62	50	6	2	60	419	303	265	48	65	5	30	40	M4	7	M3	5	M4	8	20.0	■	10	■	369	21.8	295	8	4	5.4	6.8	3.65	5	6	12	4	5.5
65	35.0	20	53	52	5	26	4.5	23.5	46	8.5	126.0	78	65	8	3	75	518	368	330	63	80	5	40	53	M5	8	M3	6	M5	10	23.5	18	10	■	453	30.5	360	8	4	5.4	6.8	3.65	5	6	12	4	5.5
80	37.5	30	68	68	6.5	38	6	30.5	60.5	11.5	167.5	110	80	10	3	95	663	483	445	78	100	8	55	64	M6	12	M4	8.5	M5	10	25.0	25	10	■	583	40.5	475	8	4	5.4	6.8	3.65	5	6	16.5	6.8	9

Size	WEIGHT STROKE ZERO [kg]	STROKE WEIGHT PER METER [kg/m]
50	2.58	3.35
65	5.56	5.4
80	11.10	5.9

Electromechanical axis Mod. 5E...AS2



NOTE:
* We recommend a coupling with a shaft of tolerance h8.
■ 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.

Size	A	B	C	ø C1	C2	ø C3 (H8)	C4	D1	D2	E	E1	F	ø G1 (h8)	G2	H	L1	L2	M1	M2	M3	N	P1	P2	K1	J1	K2	J2	K3	J3	T1	T2	T3	Y	X1	X2	W	Z1	Z2	S1	S2	S3	S4	V1	V2	V3	V4
50	32.5	15	37	37	4.5	20	2	17	32	8.5	100	50	6	2	60	604	488	200	48	65	5	30	40	M4	7	M3	5	M4	8	20	■	10	■	304	21.8	230	8	4	5.4	6.8	3.65	5	6	12	4	5.5
65	35	20	53	52	5	26	4.5	23.5	46	8.5	125	65	8	3	75	738	588	250	63	80	5	40	53	M5	8	M3	6	M5	10	23.5	18	10	■	373	30.5	280	8	4	5.4	6.8	3.65	5	6	12	4	5.5
80	35	30	68	68	6.5	38	6	30.5	60.5	11.5	165	80	10	3	95	948	768	330	78	100	8	55	64	M6	12	M4	8.5	M5	10	25	25	10	■	468	40.5	360	8	4	5.4	6.8	3.65	5	8	17	6.8	9

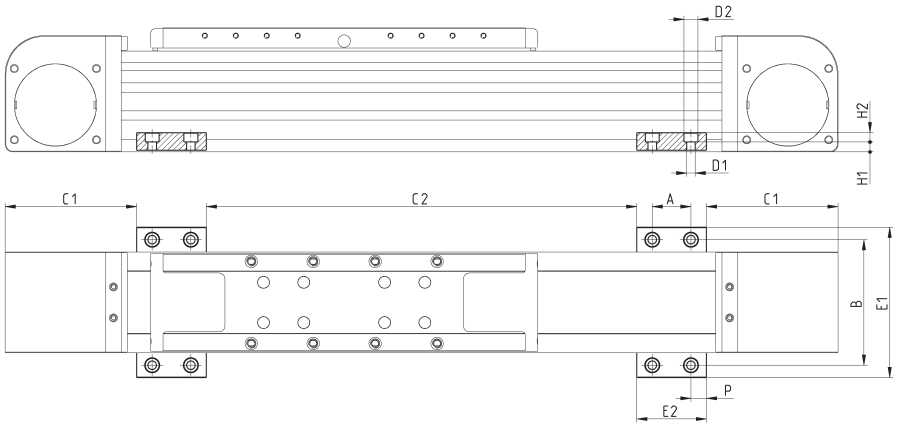
Size	CL min	CL max	Max applicable stroke	WEIGHT STROKE ZERO [kg]	WEIGHT PER METER [kg/m] (valid for stroke and interaxis increases)
50	250	2000	Smax = 4262 - CL	3.49	3.35
65	300	2000	Smax = 6212 - CL	7.35	5.4
80	400	2000	Smax = 6132 - CL	14.68	5.9

Side clamping bracket Mod. BGS

Material: Aluminium

Supplied with:
2x clamps

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



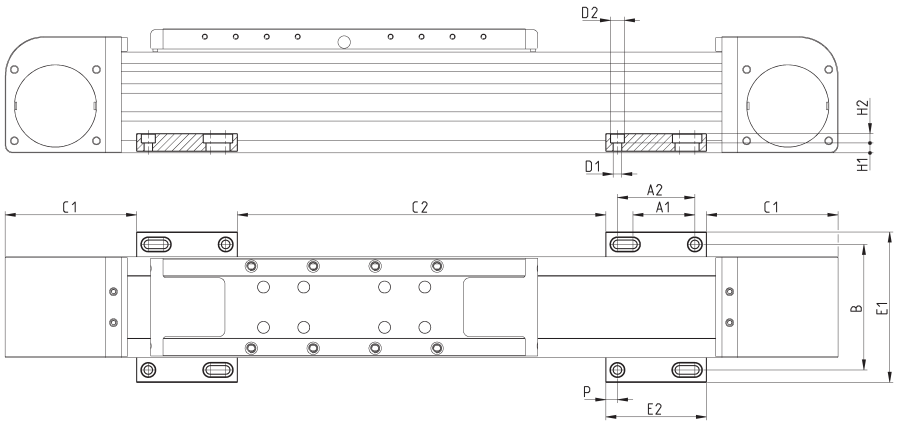
Mod.	Size	A	B	C1	C2	øD1	øD2	E1	E2	H1	H2	P	Weight (g)
BGS-5E-M5	50	25	66	68	*	5.5	9	82	45	6.4	6	10	45
BGS-5E-M5	65	25	81	85	*	5.5	9	97	45	6.4	6	10	45
BGS-5E-M5	80	25	96	100	*	5.5	9	112	45	6.4	6	10	45
BGS-5E-M6	50	25	66	68	*	6.5	10.5	82	45	5.4	7	10	40
BGS-5E-M6	65	25	81	85	*	6.5	10.5	97	45	5.4	7	10	40
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

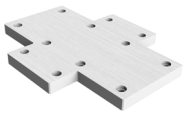
Supplied with:
2x clamps with perforation

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

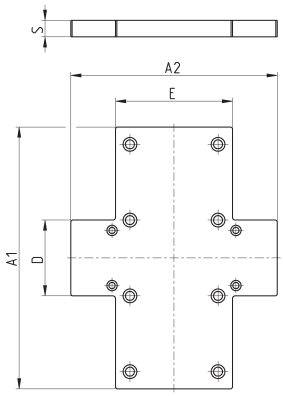


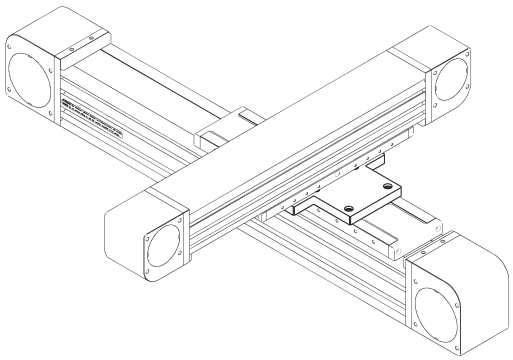
Mod.	Size	A1	A2	B	C1	C2	øD1	øD2	E1	E2	H1	H2	P	Weight (g)
BGA-5E-M5	50	40	50	66	68	*	5.5	9	82	65	6.4	6	7.5	60
BGA-5E-M5	65	40	50	81	85	*	5.5	9	97	65	6.4	6	7.5	60
BGA-5E-M5	80	40	50	96	100	*	5.5	9	112	65	6.4	6	7.5	60
BGA-5E-M6	50	40	50	66	68	*	6.5	10.5	82	65	5.4	7	7.5	55
BGA-5E-M6	65	40	50	81	85	*	6.5	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:
1x interface plate
8x screws + 8x lock washers to connect the plate on the slider of the main axis
4x screws + 4x lock washers to connect the plate on the slider of the secondary axis

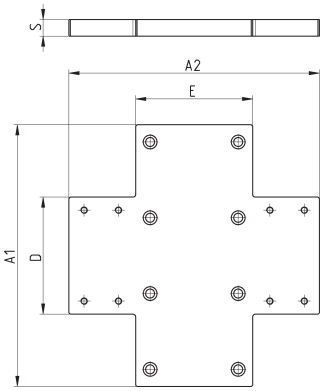


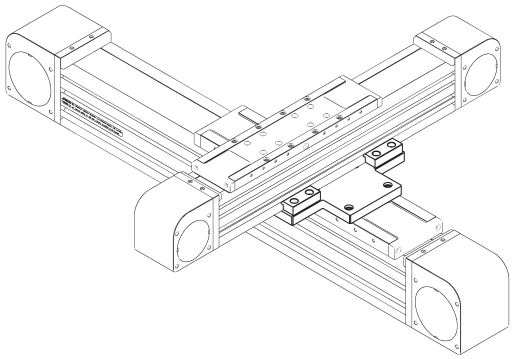


Mod.	Size	A1	A2	D	E	S	Weight (g)
XY-S65-S50	65	150	150	55	70	12	515
XY-S80-S50	80	190	150	55	85	12	690
XY-S80-S65	80	190	150	70	85	12	720

Interface plate - profile on slider

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

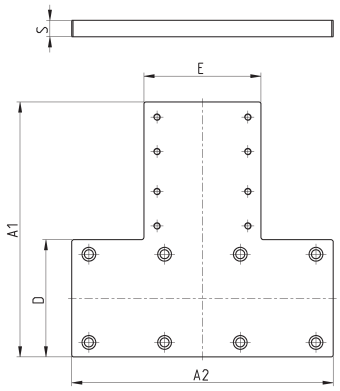


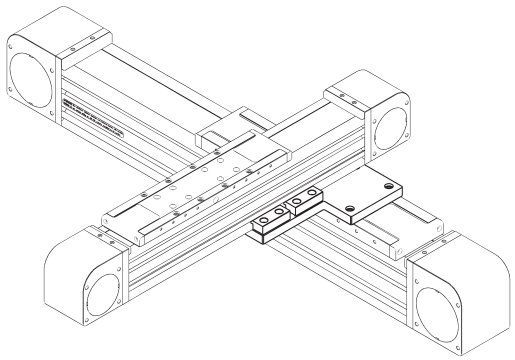


Mod.	Size	A1	A2	D	E	S	Weight (g)
XY-S65-P50	65	150	162	85	70	12	730
XY-S80-P50	80	190	182	85	85	12	945
XY-S80-P65	80	190	185	100	85	12	1000

Interface plate - profile on slider - long arm

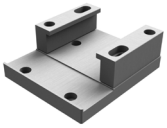
The kit includes:
1x interface plate
8x screws + 8x lock washers
to connect plate on the slider
of the main axis
4x clamps
8x screws + 8x lock washers
to connect plate on the slider
of the secondary axis by
means of clamps



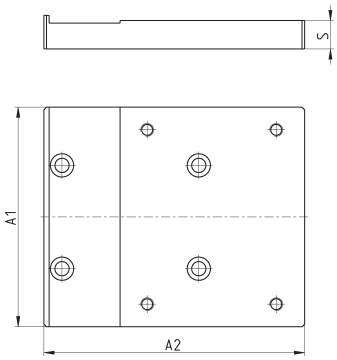


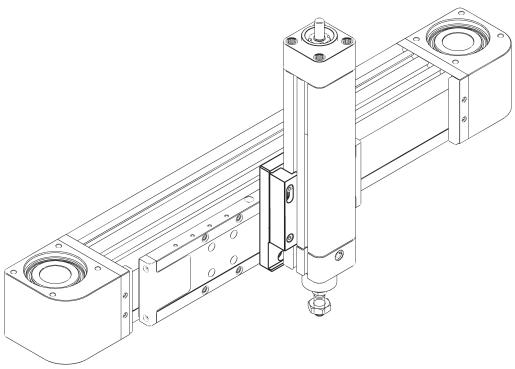
Mod.	Size	A1	A2	D	E	S	Weight (g)
XY-S50-P50-T	50	162	130	50	85	12	600
XY-S65-P50-T	65	170	150	65	85	12	750
XY-S65-P65-T	65	185	170	65	100	12	800
XY-S80-P50-T	80	185	190	85	85	12	960
XY-S80-P65-T	80	185	190	85	100	12	1010
XY-S80-P80-T	80	200	190	85	120	12	1100

Interface plate - Series 6E cylinder on slider



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

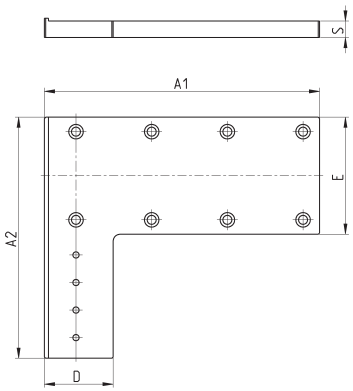


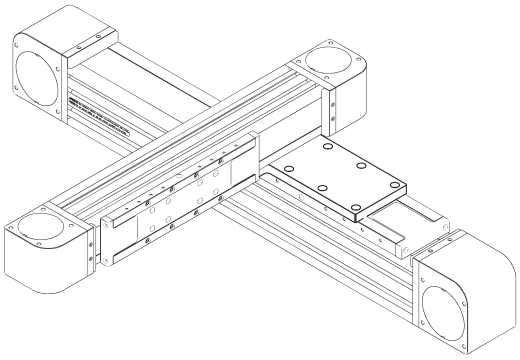


Mod.	Size	A1	A2	S	Weight (g)
XY S50-6E32	50	72	101	11	315
XY-S65-6E32	65	72	101	11	315
XY-S65-6E40	65	85	101	11	350
XY S65-6E50	65	95	110	12	510
XY-S80-6E32	80	75	101	12	385
XY-S80-6E40	80	85	101	12	410
XY-S80-6E50	80	95	110	12	510
XY S80-6E63	80	106	110	12	560

Interface plate - profile side on slider - left position

The kit includes:
1x interface plate
8x screws + 8x 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

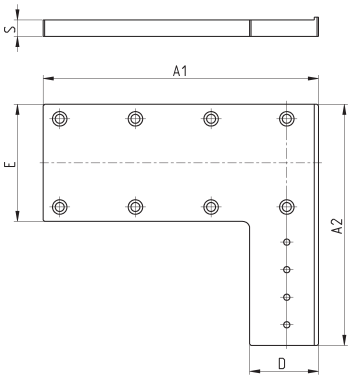


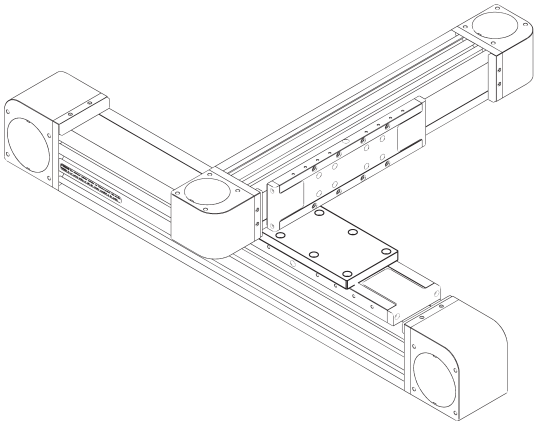


Mod.	Size	A1	A2	D	E	S	Nr of holes	Weight (g)
XY-S50-LL50	50	130	145	50	55	11	4	450
XY-S65-LL50	65	160	160	50	70	11	4	500
XY-S65-LL65	65	170	180	65	70	12	8	550
XY-S80-LL50	80	200	175	50	85	12	4	750
XY-S80-LL65	80	210	195	65	85	12	8	870
XY-S80-LL80	80	210	195	80	85	12	8	900

Interface plate - profile side on slider - right position

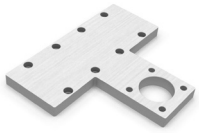
The kit includes:
1x interface plate
8x screws + 8x lock washers to connect the plate on the slider of the main axis,
screws and nuts for slot to connect the plate on the slider of the secondary axis



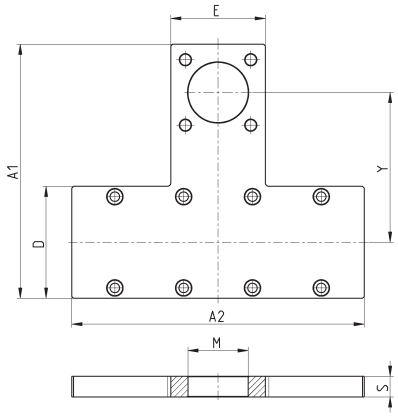


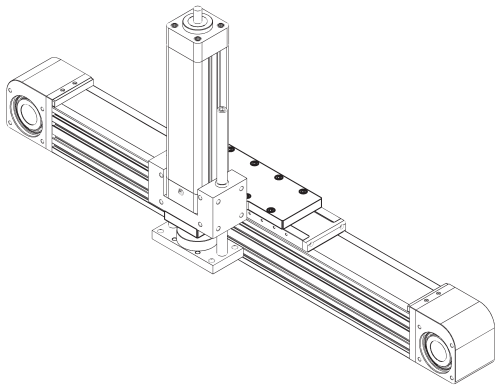
Mod.	Size	A1	A2	D	E	S	Nr of holes	Weight (g)
XY-S50-LR50	50	130	145	50	55	11	4	450
XY-S65-LR50	65	160	160	50	70	11	4	500
XY-S65-LR65	65	170	180	65	70	12	8	550
XY-S80-LR50	80	200	175	50	85	12	4	750
XY-S80-LR65	80	210	195	65	85	12	8	870
XY-S80-LR80	80	210	195	80	85	12	8	900

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



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

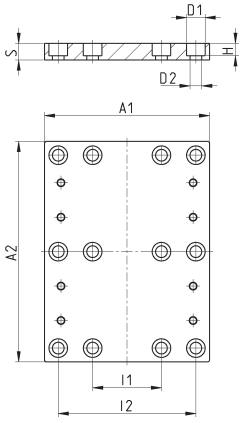


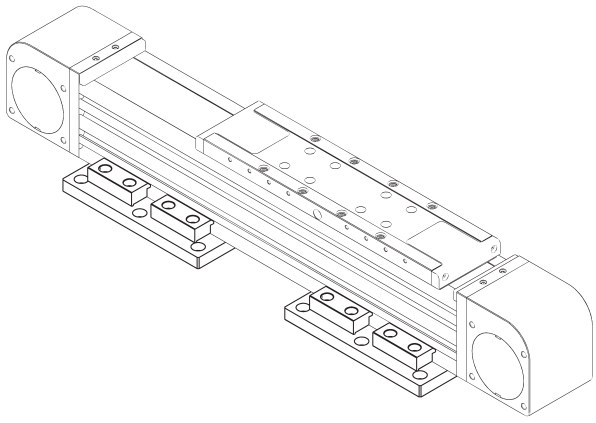


Mod.	Size	A1	A2	D	E	S	ø M(H10)	Y	Weight (g)
XY-S50-45N32	50	124	130	50	49	12	30	75	350
XY-S65-45N32	65	139	170	65	49	12	30	82.5	480
XY-S65-45N40	65	147.5	170	65	55	12	35	87	500
XY-S65-45N50	65	157	170	65	66.5	12	40	91.5	530
XY-S80-45N40	80	167.5	190	85	55	12	35	97	660
XY-S80-45N50	80	177	190	85	65	12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

Fixed interface plate

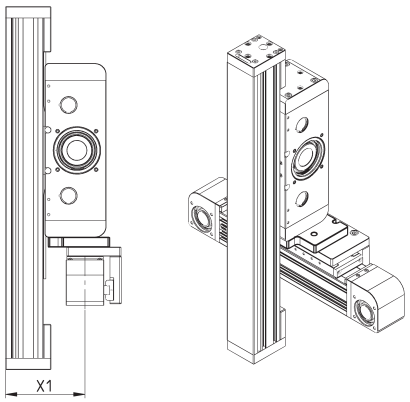
The kit includes:
1x interface plate
4x clamps
8x screws to connect the clamps on the plate

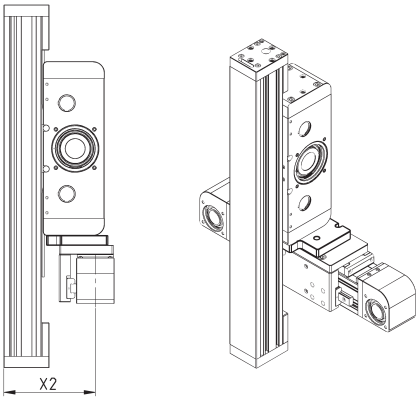


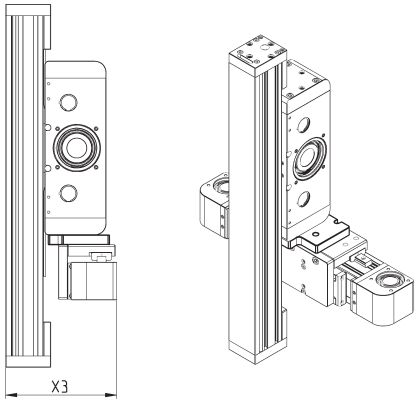


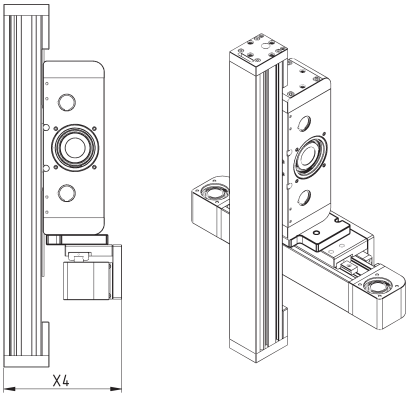
Mod.	Size	A1	A2	ø D1	ø D2	H	I1	I2	S	Weight (g)
X-P50	50	95	140	9	5.5	6	45	80	8	275
X-P65	65	120	140	10.5	6.5	7	50	100	10	430
X-P80	80	120	160	13.5	8.5	9	50	100	12	570

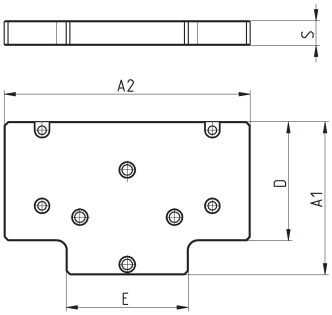
5E/5V connection flange

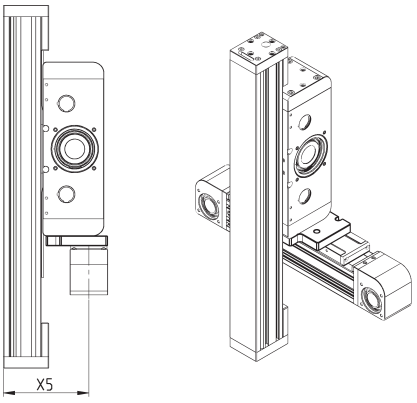








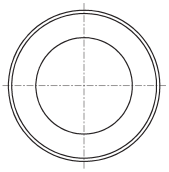


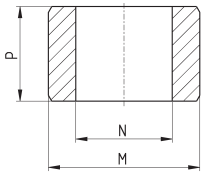


Mod.	Size	X1	X2	X3	X4	X5	A1	A2	E	D	S	Weight (g)
YZ-50-5V50	50	105	121	147	79	-	81	130	64.5	63	13	335
YZ-65-5V50	65	112.5	136.5	16	87	124.5	99.5	140	64.5	76.5	13	445
YZ-65-5V65	65	130	154	179.5	104.5	-	101.5	140	84.5	76.5	13	460
YZ-80-5V50	80	120.5	146.5	185.5	81.5	133.5	118	190	64.5	78	13	635
YZ-80-5V65	80	137.5	163.5	202.5	98.5	150.5	118	190	84.5	78	15	770
YZ-80-5V80	80	141	183.5	222.5	118.5	-	120	190	99.5	78	15	825

Centering ring Mod. TR-CG

Supplied with:
2x centering rings in steel

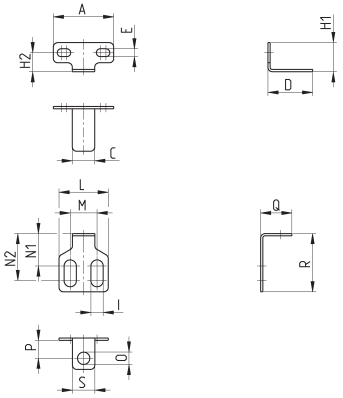


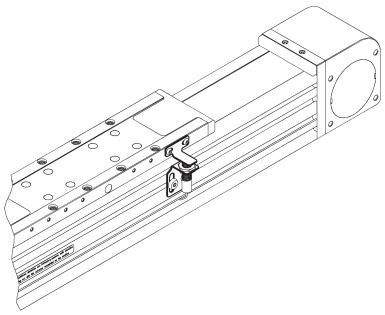


Mod.	M (h8)	N	P
TR-CG-04	Ø4	Ø2.6	2.5
TR-CG-05	Ø5	Ø3.1	3
TR-CG-06	Ø6	Ø4.1	4
TR-CG-08	Ø8	Ø5.1	5
TR-CG-10	Ø10	Ø6.1	6
TR-CG-12	Ø12	Ø8.1	6

Kit to fix the inductive sensor

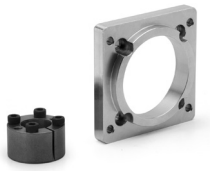
The kit includes:
1x sensor dog
2x screws to fix the sensor dog
1x sensor supporting plate
2x screws to connect the sensor supporting plate
2x nuts for the slot



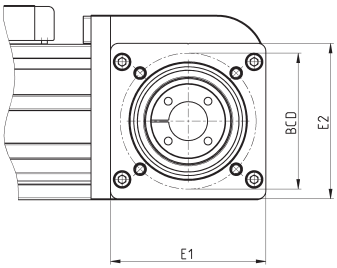


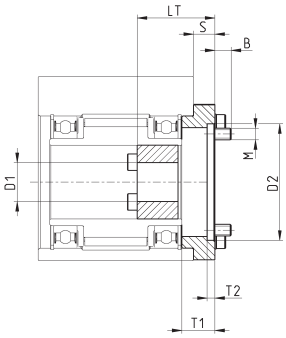
Mod.	Size	A	C	D	E	H1	H2	I	L	M	N1	N2	⌀O	P	Q	R	S	Weight (g)
SIS-M5-50/65	50-65	27	10	20	3.5	13	8.5	5.5	22	12	14.5	21	5.5	8	14	26	10	10
SIS-M8-65	65	27	10	20	3.5	13	8.5	5.5	25	15	10.5	24	8.5	10	18.5	30	15	10
SIS-M5-80	80	45	15	20	4.5	16	10.5	5.5	22	12	14.5	21	5.5	8	14	26	10	15
SIS-M8-80	80	45	15	20	4.5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

Kit to connect the Series FR gearbox



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



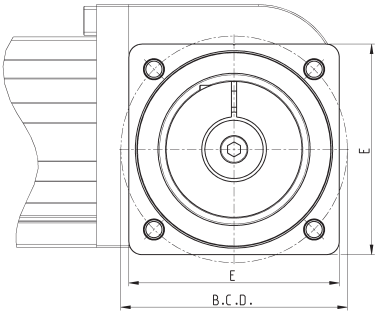


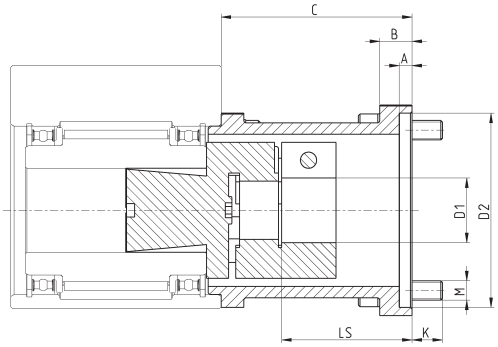
Mod.	Size	Gearbox	E1	E2	S	øD1	øD2(H7)	LT	BCD	T1	T2	M	B	(A)	J (Kgmm²)	Weight (g)
FR-5E-50	50	GB-040	48	43	6	10	26	26	34	10	10	4	5.5	14	1.50	85
FR-5E-65	65	GB-060	63	60	7	14	40	40	52	11	11	5	7.4	30	5.49	140
FR-5E-80	80	GB-080	80	80	11	20	60	60	70	17	4	6	8.4	125	31.20	325

(A) value refers to ideal mounting and operating conditions. For further details, please contact service@camozzi.com

Kit to connect the gearbox - enhanced series (sizes 50, 65)

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



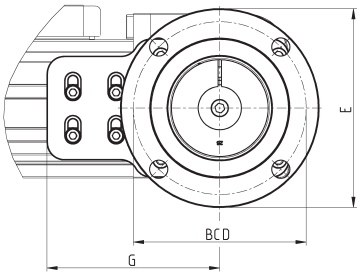


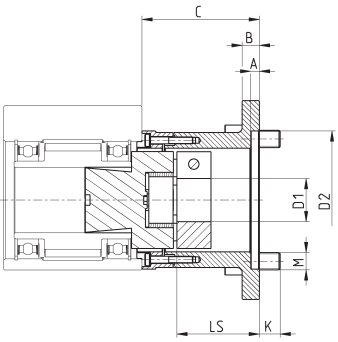
DIMENSIONS																
Mod.	Size	Gearbox	øD1	øD2(H7)	A	LS	øBCD	B	C	E	M	K	(A)	(B)	J (Kgmm²)	Weight (g)
FRH-5E-50	50	GB-060	14	40	4	35.3	52	8	51	50	5	7.4	12.5	25	13	170
FRH-5E-65	65	GB-080	20	60	4	40.3	70	10	59	65	6	9.4	17	34	50	530

(A) Continuously applicable torque, under ideal mounting and operating conditions. For further details, please contact service@camozzi.com
(B) Torque applicable for short intervals, under ideal mounting and operating conditions. For further details, please contact service@camozzi.com

Kit to connect the gearbox - enhanced series (size 80)

The kit includes:
2x connection flanges
4x screws + 4x lock washers
1x expansion coupling
4x screws + 4x lock washers to fix the axis
4x screws + 4x lock washers to fix the profile
4x nuts + 4x screws to fix the gearbox

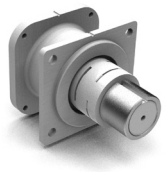




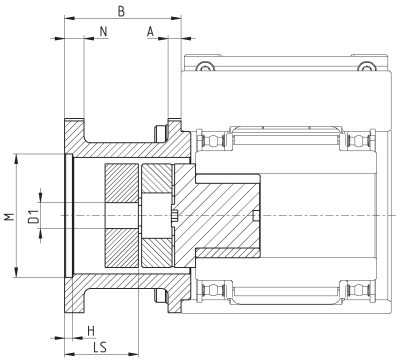
Mod.	Size	Gearbox	⌀D1(H7)	⌀D2	A	LS	⌀BCD	B	C	⌀E	K	G	(A)	(B)	J (Kgmm²)	Weight (g)
FRH-5E-80	80	GB-120	20	80	5	47.8	100	10	68	115	12	100	60	120	140	1000

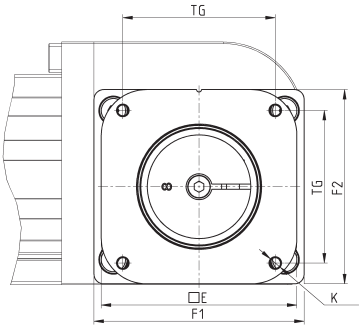
(A) Continuously applicable torque, under ideal mounting and operating conditions. For further details, please contact service@camozzi.com
(B) Torque applicable for short intervals, under ideal mounting and operating conditions. For further details, please contact service@camozzi.com

Direct connection kit for Stepper motor



The kit includes:
1x MTS-24 connection flange
4x screws + 4 lock washers
1x expansion coupling
1x bushing (not present in FS-5E-50-0024)



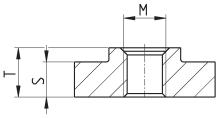


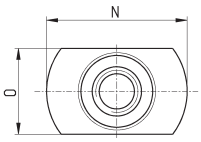
Mod.	Size	Motor	⌀D1	A	B	F1	F2	E	LS	TG	K	⌀M	H	N	(A)	(B)	J (Kgmm²)	Weight (g)
FS-5E-50-0024	50	MTS-24-...	8	4	37	47	45	60.5	21.3	47.1	M4	38.1	2.5	2.5	12.5	25	13	125
FS-5E-65-0024	65	MTS-24-...	8	4	36	65	60	60.5	22.8	47.1	M4	38.1	2.5	2.5	12.5	25	13	200

(A) Continuously applicable torque, under ideal mounting and operating conditions. For further details, please contact service@camozzi.com
(B) Torque applicable for short intervals, under ideal mounting and operating conditions. For further details, please contact service@camozzi.com

Slot nut for sensor

Material: steel



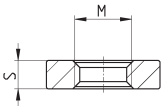


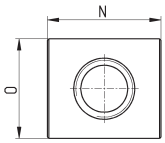
Supplied with:
2x nuts

Mod.	Size	M	N	O	S	T
PCV-5E-CS-M3	50 - 65 - 80	M3	10.3	6.1	2.5	3.5
PCV-5E-CS-M4	50 - 65 - 80	M4	10.3	6.1	2.5	3.5

Slot nut 6 - rectangular type

Material: steel



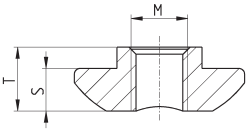


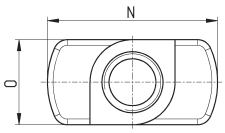
Supplied with:
2x nuts

Mod.		M	N	O	S
PCV-5E-C6-M4Q	50 - 65	M4	8	7	2

Slot nut 6 for front insertion

Material: steel



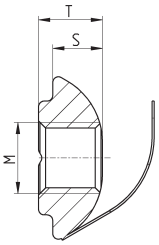


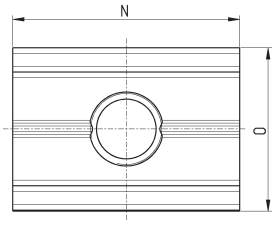
Supplied with:
2x nuts

Mod.	Size	M	N	O	S	T
PCV-5E-C6-M4R	50 - 65	M4	12	6	3	4.5

Slot nut 8 with flexible flap

Material: steel





Supplied with:
2x nuts

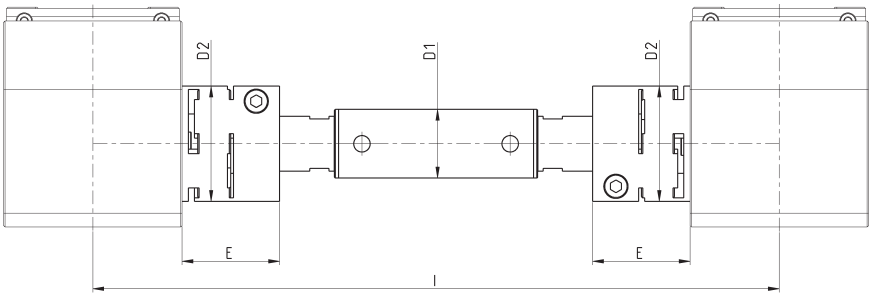
Mod.	Size	M	N	O	S	T
PCV-5E-C8-M5	80	M5	16	11.5	3.5	4.5
PCV-5E-C8-M6	80	M6	16	11.5	3.5	4.5

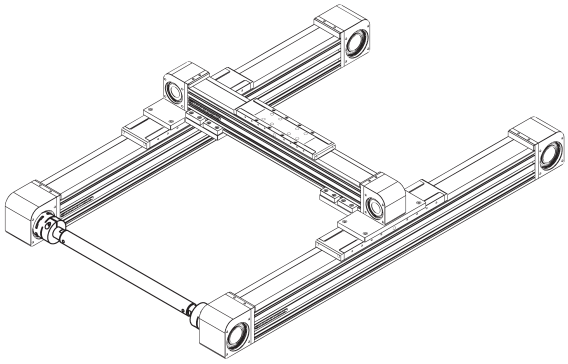
Parallel connection kit

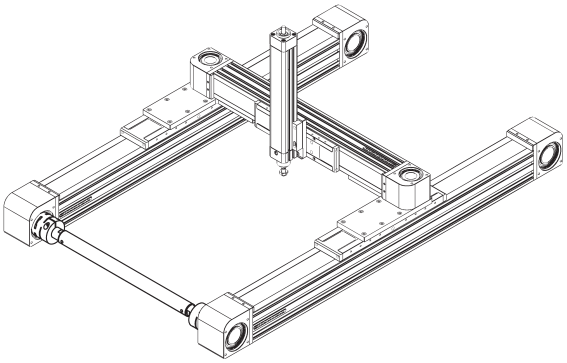
The kit includes:
1x parallel shaft
2x expansion couplings

EXAMPLE:

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

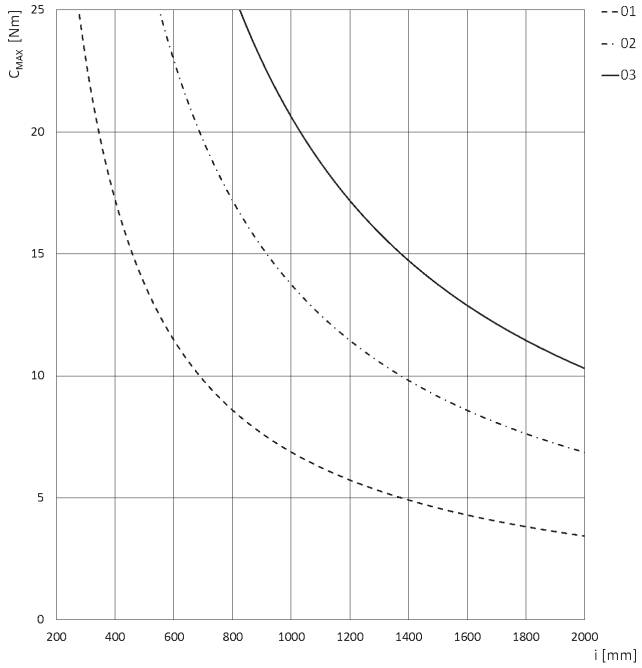






Mod.	Size	I min	I max	⌀D1	⌀D2	E	Transmission torque
PS-5E-50-0000	50	200	2000	22	32	26	see graph
PS-5E-65-0000	65	250	2000	25	42	35.5	see graph
PS-5E-80-0000	80	300	2000	30	56	40	see graph

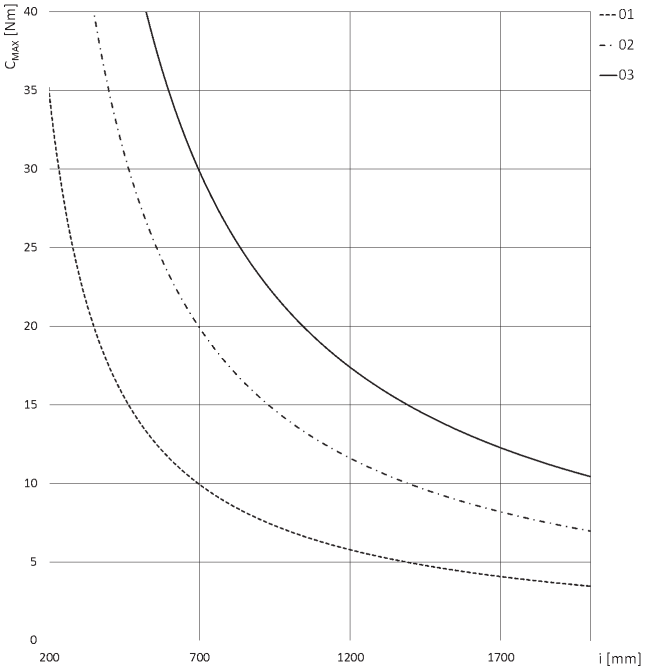
INTERAXIS ACCORDING TO THE MAXIMUM ADMISSIBLE TORQUE



Size 50x50

C_{max} = max applicable torque
i = interaxis between the two 5E axes

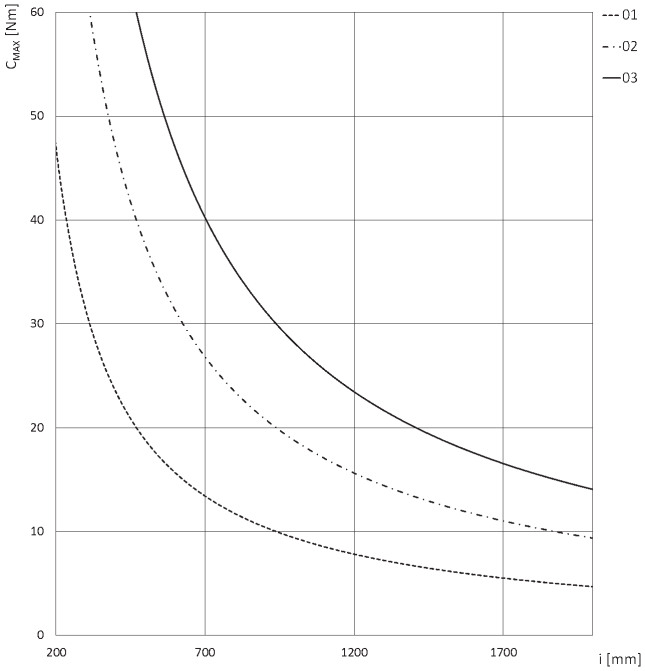
01 = lag error 0.1 mm
02 = lag error 0.2 mm
03 = lag error 0.3 mm



Size 65x65

C_{max} = 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

C_{max} = 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