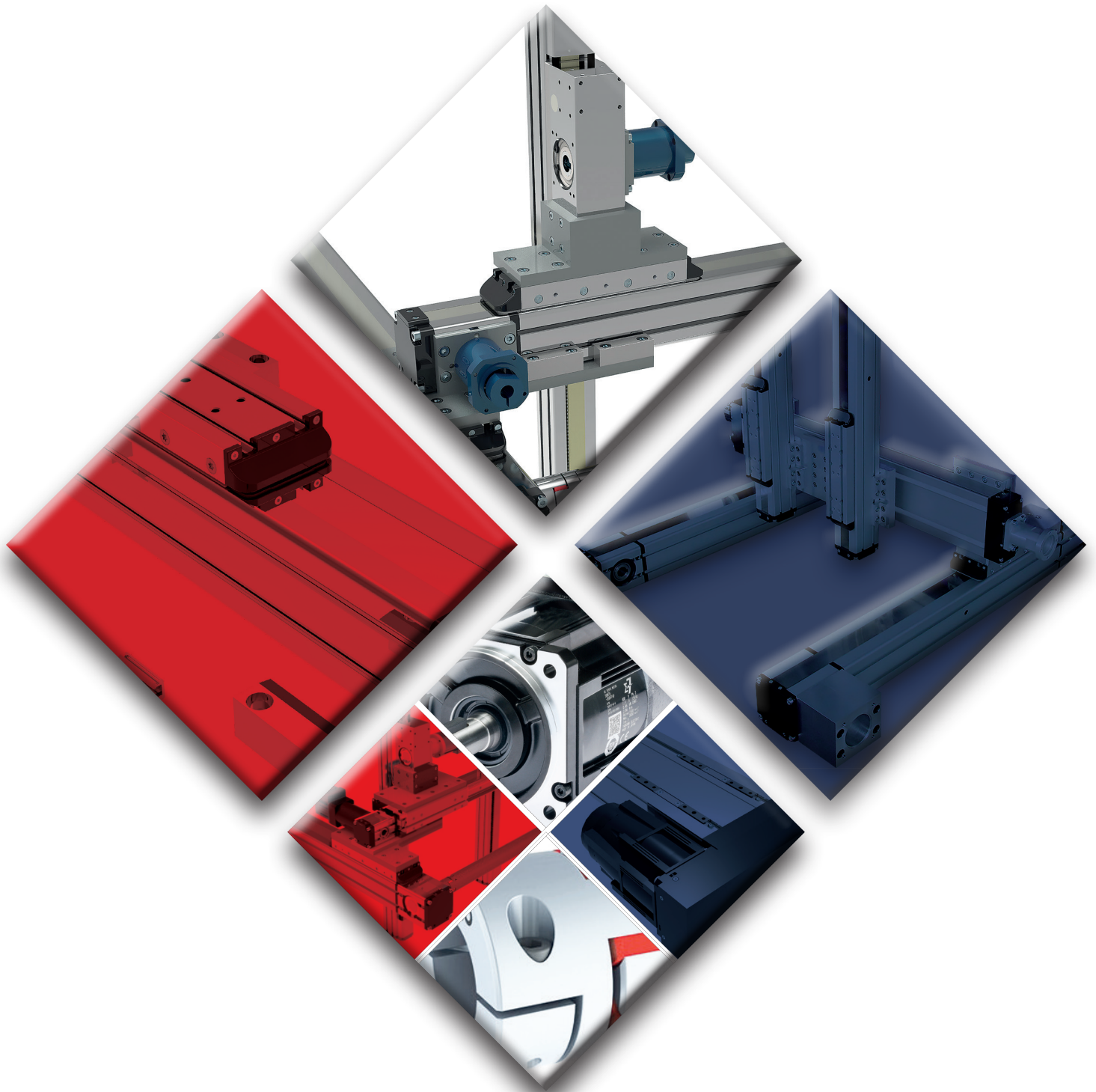


THE **DYNAMICS** OF **MOVEMENT**



LINEAR ACTUATOR PRODUCT CATALOGUE

MATARA UK LTD - LA0618-2ED

Welcome to **MATARA UK**

For more than 21 years Matara has delivered an outstanding range of pneumatic and linear automation products throughout all industrial sectors both in the UK and World-wide.

From **automotive** to **aerospace**, **food** to **pharmaceuticals** our reputation as the partner of choice for prompt service, rapid delivery and superb after sales support is widely recognised.

Our headquarters, **located in Gloucestershire** has an **extensive CNC machine shop**, clean room assembly area and an automated storage facility. Whether its an **electronic**, **pneumatic** or **linear product** we have technical experts on-site ready to deal with your enquiry.

As a privately owned business we are often able to operate on a more flexible basis than others within our sector enabling:

- Direct relationships with key personnel and management
- Short and effective lines of communication
- Consistent pricing policies



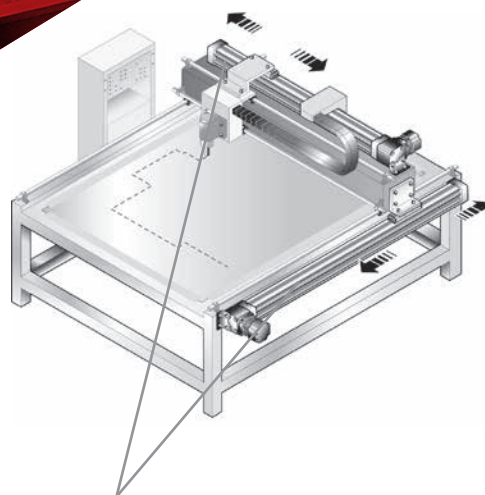
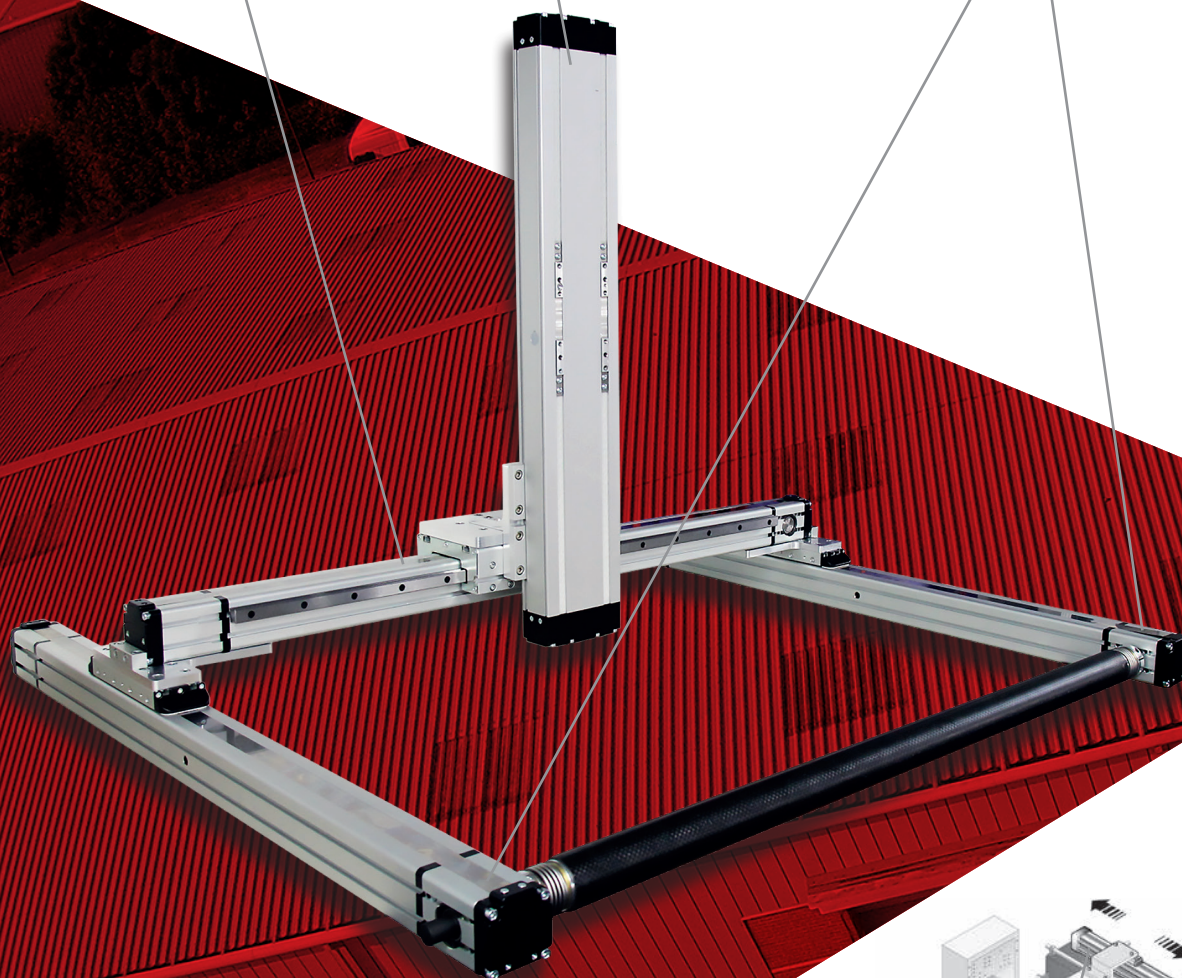
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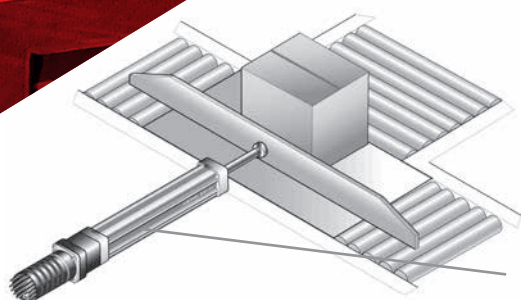
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MTB Series Belt Driven Actuator
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MTB Series Belt Driven Actuator
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MTZ-L Series Belt Driven Actuator
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MTB Series Belt Driven Actuator
(p.6)

Belt Driven Linear Actuator Range

THE DYNAMICS OF MOVEMENT



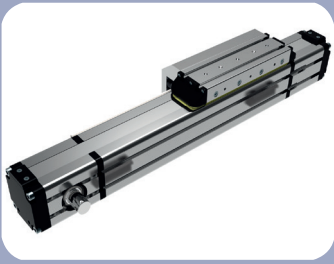
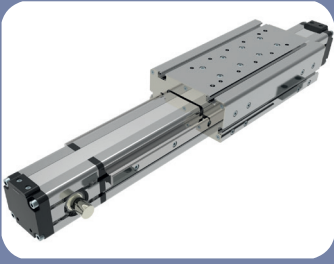
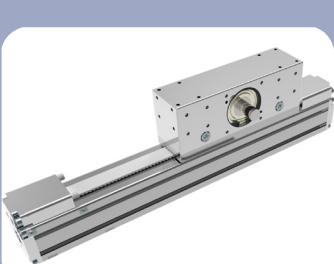
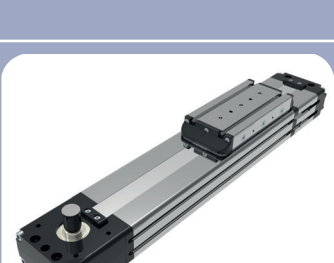
BESPOKE BELT DRIVEN ACTUATORS:

Linear actuators are the core component of many production machine and automation systems and as such reliability, accuracy and repeatability are often the pre-requisites of any unit. Matara design and build many of its Belt and Ballscrew units in house. Belt drives use proven AT Steel Core Belting with precision pinions as well as PMI Linear Rails & Carriages.

Having been machining Ballscrews for more than 15 years Matara have the know to ensure that their Ballscrew drives go together quickly and efficiently and provide high levels of accuracy with zero backlash. All of Matara's actuators are available as single off the shelf units or as completely assembled modules or gantry's. Units can be supplied without motors or control or as a complete package including couplings and flanges and sensors. With more than 22 years of trading experience, Matara have qualified engineers who are able to service or build actuators quickly, efficiently and at extremely competitive prices.

Manufactured In-House Your Order, Your Way

Belt Driven Actuators Content Guide

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MTB Series Internally Guided Belt Driven Actuator

The Matara MTB series actuator uses a toothed belt drive with an internal linear guide system, which combines high speed with both accuracy and repeatability. These units can be easily combined in various configurations using multi- axis brackets.

High accuracy anodised Aluminium 6063 is used to form the body, with T slots for fixing brackets and switches. This type of unit incorporates a pre-tensioned polyurethane belt with internal steel cords and a zero backlash pulley.

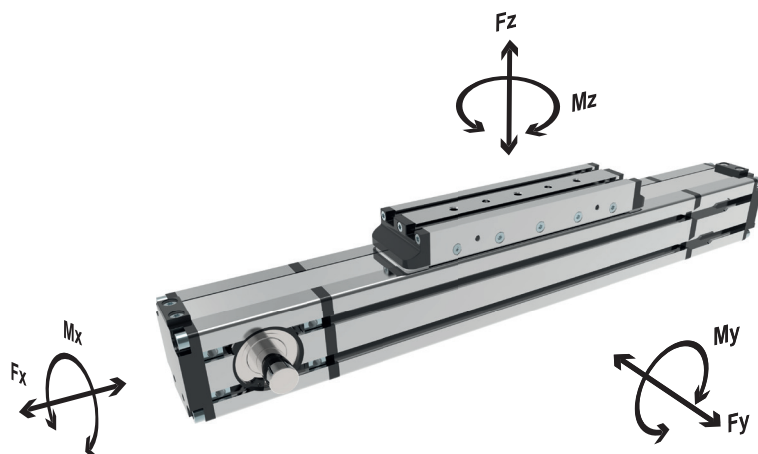
Technical Data							
Size			42x42	55x55	80x80	105x105	
Max. speed	m/s		3	3	3	3	
Max. stroke length	mm		6700	6700	6700	6700	
Min. stroke length	mm		100	100	100	100	
Pulley drive ratio	mm		90	120	160	210	
Number of teeth of pulley			18	24	32	21	
Tooth belt with Steel Reinforced Polyurethane ATL 5** profile clearance 0. Width =			mm	12	16	25	32
Max rpm	rpm		2000	1500	1150	850	
Base weight	Kg		1.6	3.3	6	12.5	
Add for 100 mm of stroke	Kg		0.25	0.58	0.9	1.5	
Max. load*	Fx	N	460	820	1650	2750	
	Fy	N	1560	1850	4500	7500	
	Fz	N	1560	1850	4500	7500	
Moments*	Mx	Nm	20	25	80	120	
	My	Nm	55	120	450	700	
	Mz	Nm	55	120	450	700	
Inertia moment Aluminium profile	Ix	cm ⁴	11.8	36	183	440	
Inertia moment Aluminium profile	Iy	cm ⁴	14.2	45	226	535	
Repeatability	mm		± 0.05	± 0.05	± 0.05	± 0.05	
Max. radial load on input shaft	N		220	300	300	400	
No load torque	Nm		>0.3	>0.4	>0.5	>0.8	

** MTB 80 uses an ATL 10 steel reinforced polyurethane belt, profile clearance 0.

* Max values for dynamic conditions. Please refer to the following formula when combined loads are applied.

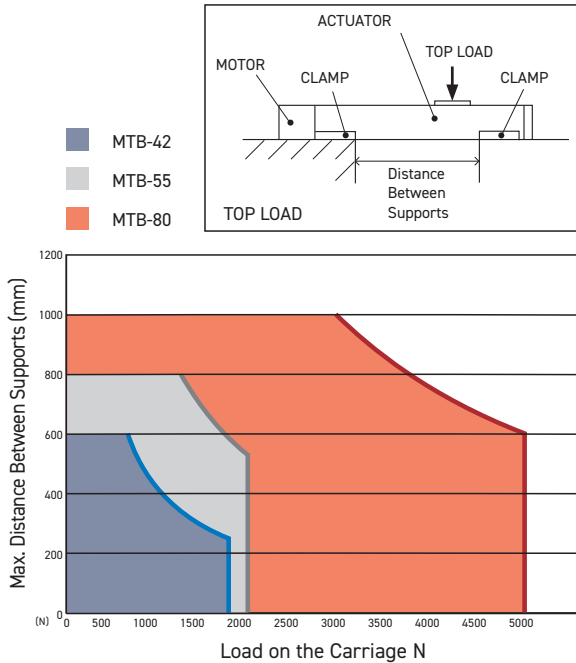
$$\frac{F_{yA}}{F_y} + \frac{F_{zA}}{F_z} + \frac{M_{xA}}{M_x} + \frac{M_{yA}}{M_y} + \frac{M_{zA}}{M_z} \leq 1$$

The A letters show the calculated value.

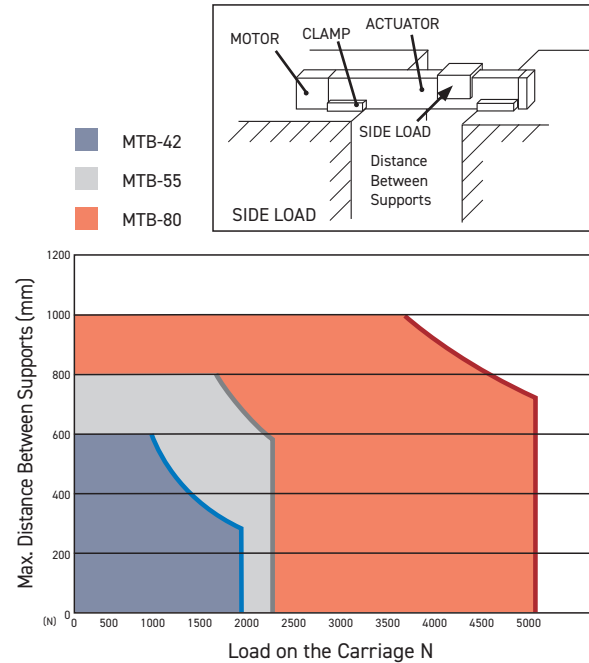


Deflection of Linear Unit

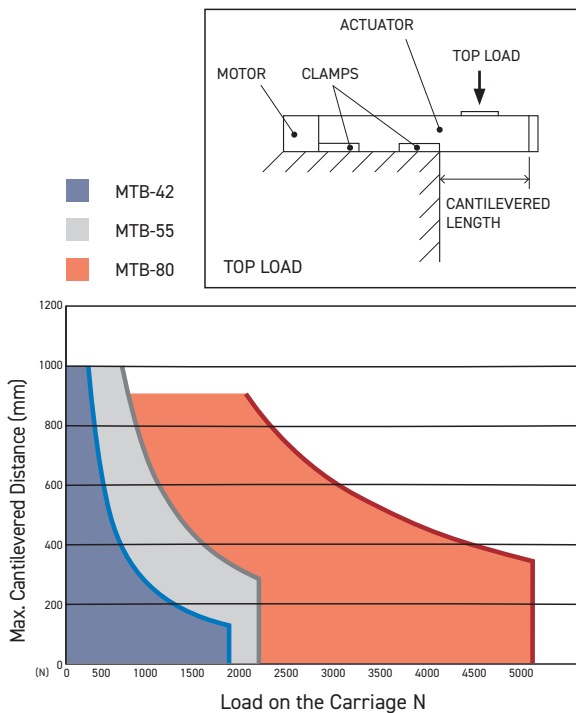
End supported top load



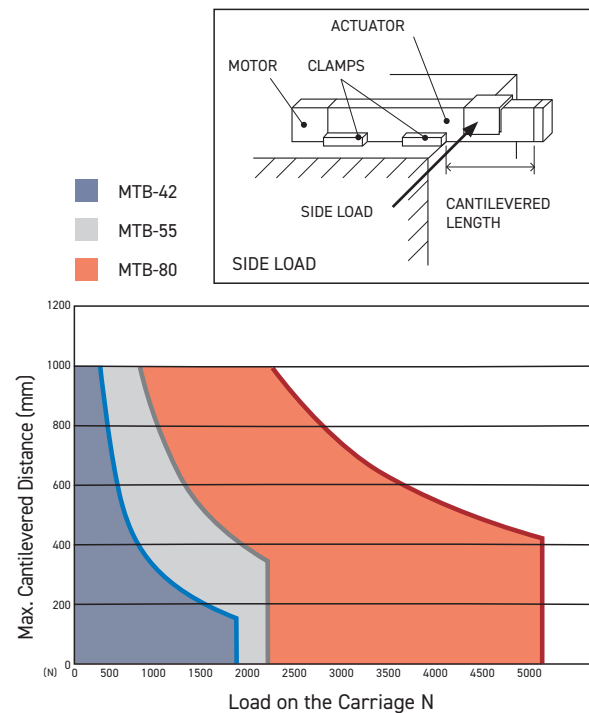
End supported side load



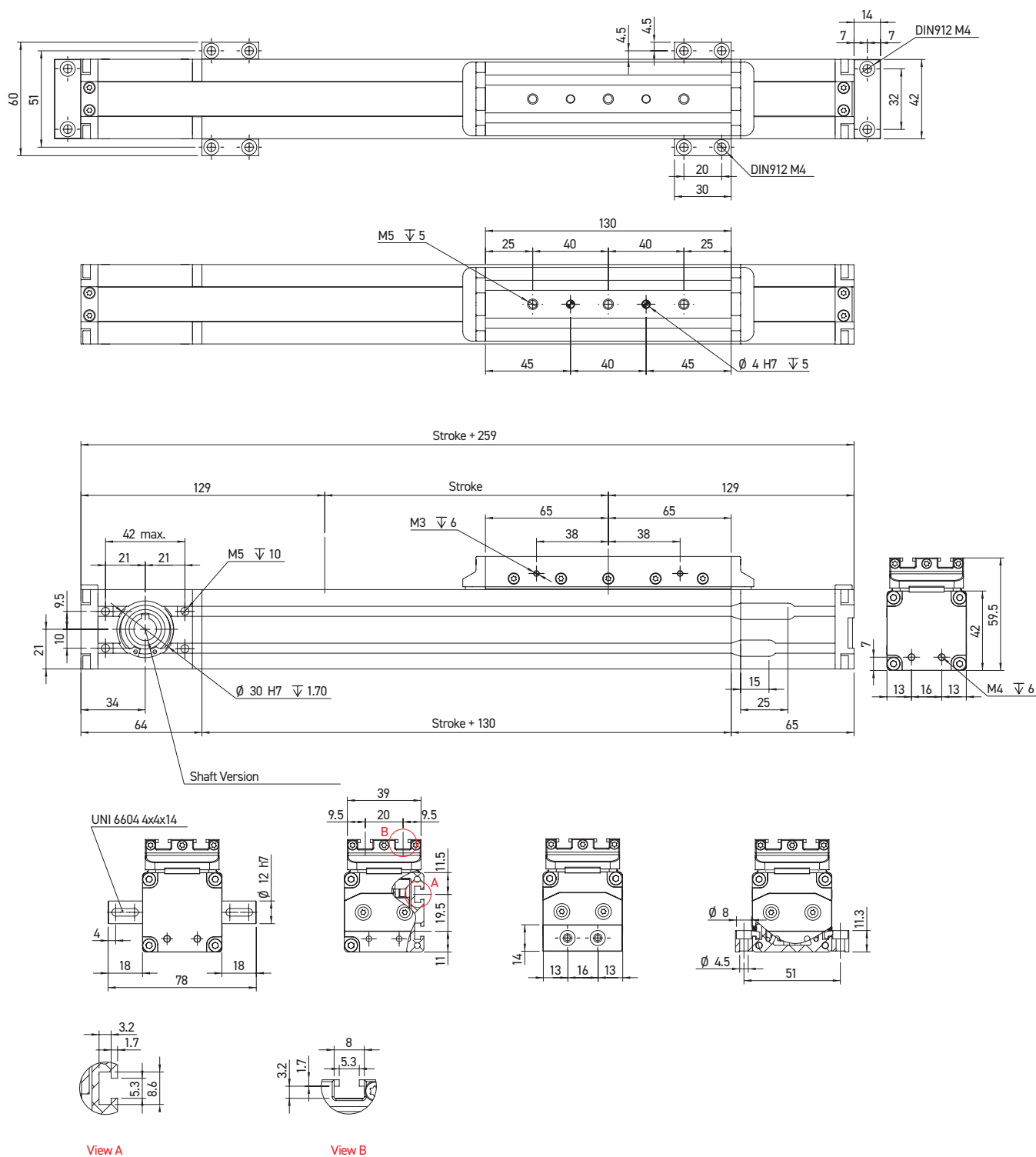
Cantilevered top load



Cantilevered side load



MTB42 Series Dimensions



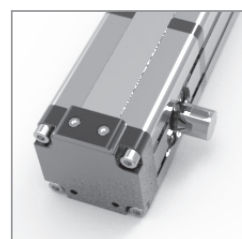
Female mount F2



Left mount M2L

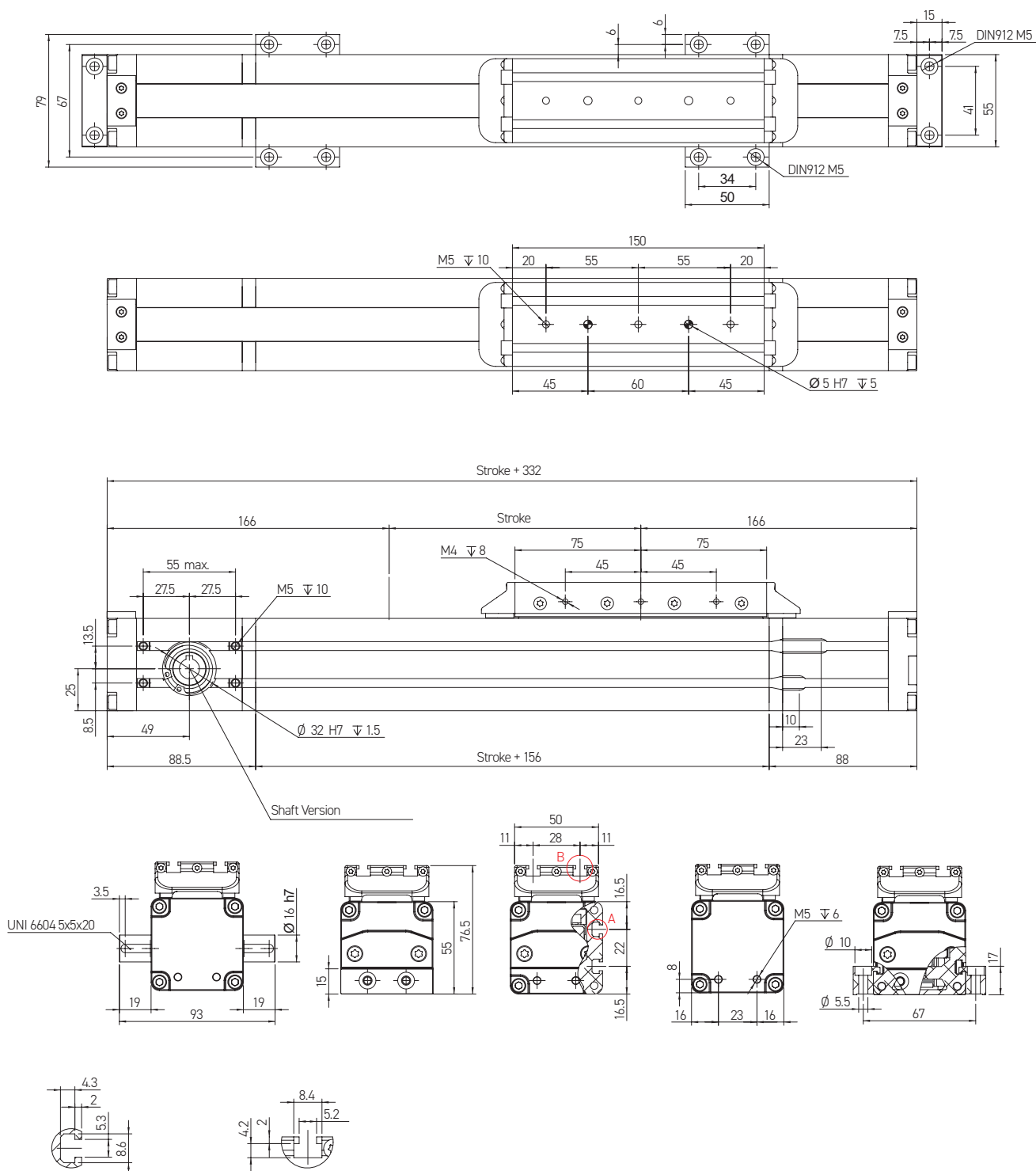


Dual mount D2



Right mount M2R

MTB55 Series Dimensions



View A

View B



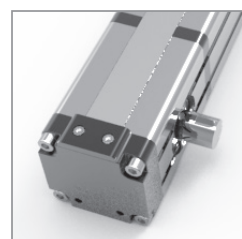
Female mount F4



Left mount M6L

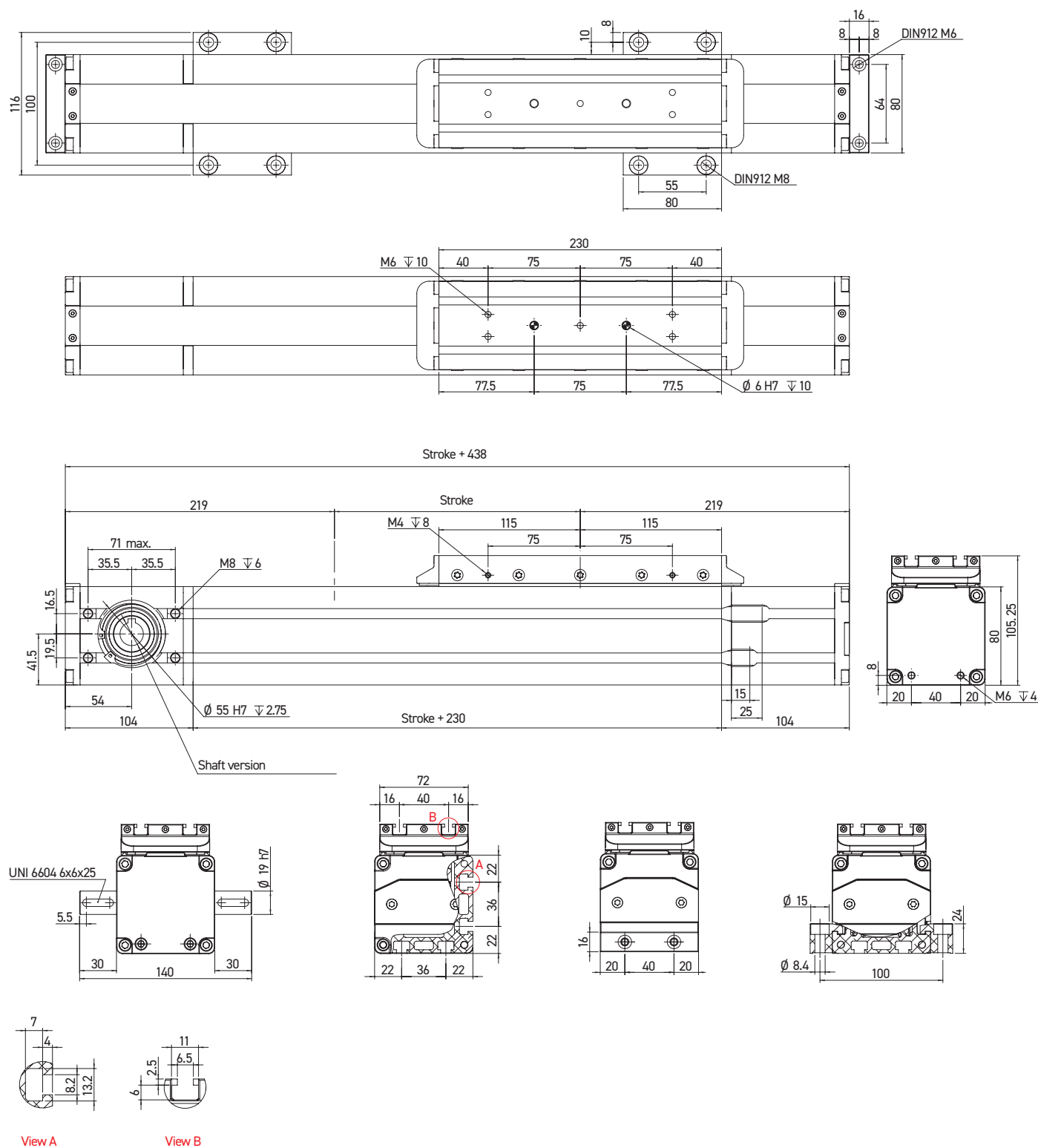


Dual mount D6



Right mount M6R

MTB80 Series Dimensions



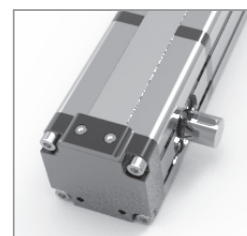
Female mount F9



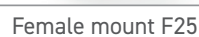
Left mount M9L



Dual mount D9



Right mount M9R

[illegible]

MTB Series Order Example

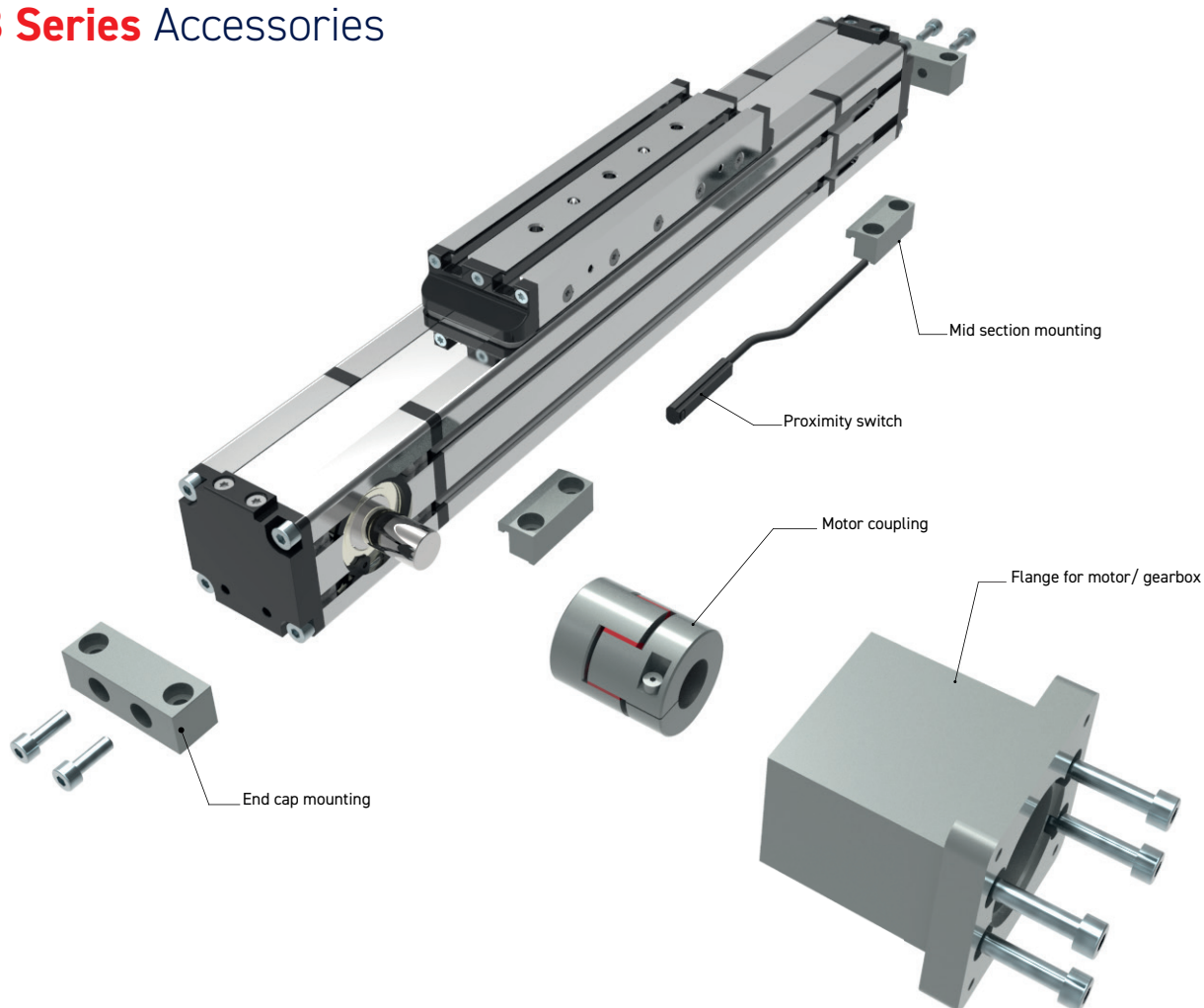
Code: **MTB** **55** - **2100** - **F4**
Options: 1 2 3 4

Options		Selection			
1	Series	MTB			
2	Size	42 (42x42)	55 (55x55)	80 (80x80)	105 (105x105)
3	Stroke	0-6700 mm			
4	Shaft Versions *	F0 F2 M2L M2R D2	F2 F4 M6L M6R D6	F6 F9 M9L M9R D9	F22 F25 M25L M25R D25

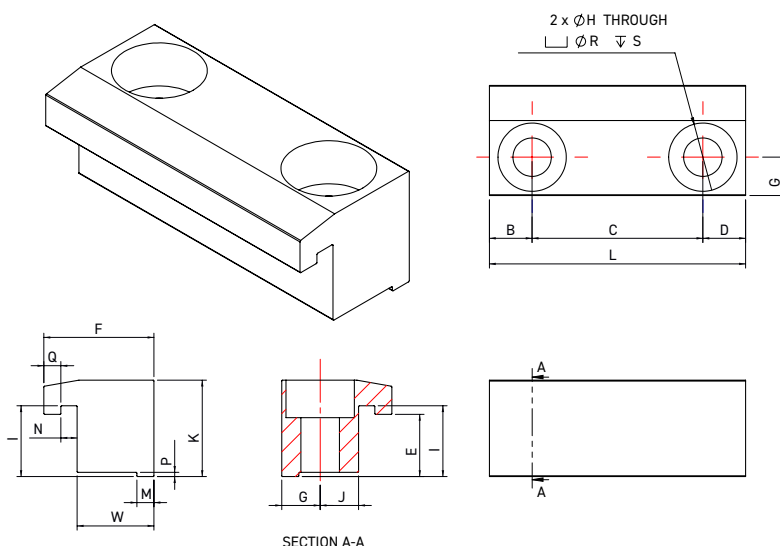
*Shaft Version Codes

F0	Female shaft Ø10 mm with keyshaft	M2L	Male shaft Ø12 mm mount left	D2	Double male shaft Ø12 mm
F2	Female shaft Ø12 mm with keyshaft	M6L	Male shaft Ø16 mm mount left	D6	Double male shaft Ø16 mm
F4	Female shaft Ø14 mm with keyshaft	M9L	Male shaft Ø19 mm mount left	D9	Double male shaft Ø19 mm
F6	Female shaft Ø16 mm with keyshaft	M25L	Male shaft Ø25 mm mount left	D25	Double male shaft Ø25 mm
F9	Female shaft Ø19 mm with keyshaft	M2R	Male shaft Ø12 mm mount right		
F22	Female shaft Ø22 mm with keyshaft	M6R	Male shaft Ø16 mm mount right		
F25	Female shaft Ø25 mm with keyshaft	M9R	Male shaft Ø19 mm mount right		

MTB Series Accessories

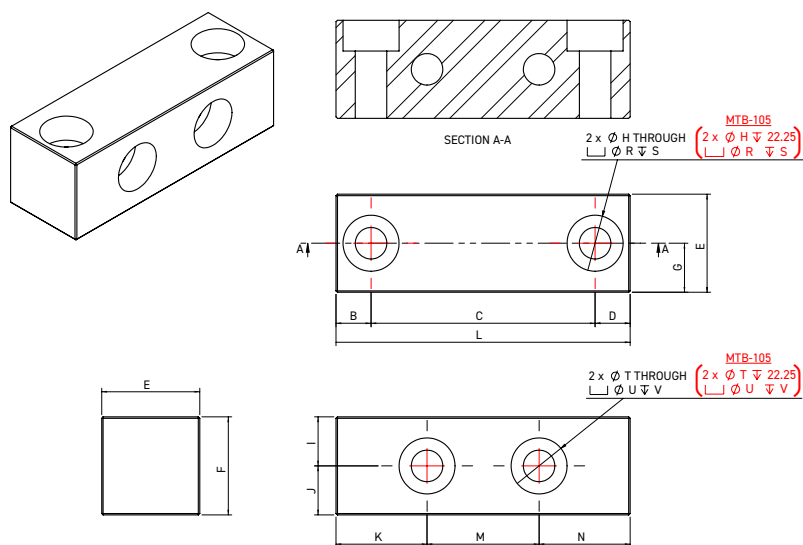


Mid Section Mounting



Linear Unit	Dimensions (mm)															ØH	ØR	∇ S	Code
	B	C	D	E	F	G	I	J	K	L	M	N	P	Q	W				
MTB 42	5	20	5	7.3	12.9	4.5	8.3	4.5	11.3	30	2	1.9	0.5	2	9	4.3	8	4.4	A0AA003L
MTB 55	8	34	8	12.9	16	6	13.9	6	17	50	2	2.5	0.5	1.5	12	5.5	10	5.4	A1AA003L
MTB 80	12.5	55	12.5	16	26.5	8	17.9	10	24	80	2	4.5	0.5	4	18	8.4	15	8.6	A2AA003L
MTB 105	12.5	55	12.5	22	33.5	10	23.9	14	29.7	80	-	5.2	0.5	4	24	8.4	15	8.6	A3AA003L

End Cap Mounting

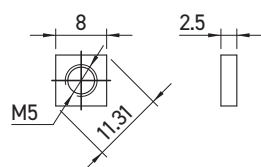


Linear Unit	Dimensions (mm)												ØH	ØR	▽S	ØT	ØU	▽V	Code
	B	C	D	E	F	G	I	J	K	L	M	N							
MTB 42	5	32	5	14	14	7	7	7	13	42	16	13	4.5	8	4.4	4.5	8	4.4	A0AA001L
MTB 55	7	41	7	15	15	7.5	7	8	16	55	23	16	5.5	10	5	5.5	10	5	A1AA001L
MTB 80	8	64	8	16	16	8	8	8	20	65	40	20	6.6	11	6	6.6	11	6	A2AA001L
MTB 105	8.5	88	8.5	21	21	10	10	11	22.5	105	60	22.5	9	15	8.6	9	15	8.6	A3AA001L

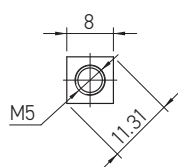
Slot Nuts

Square Nuts

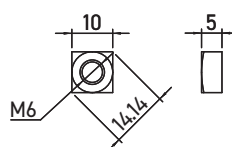
DQM05-01



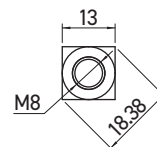
DQM05



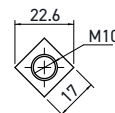
DQM06



DQM08

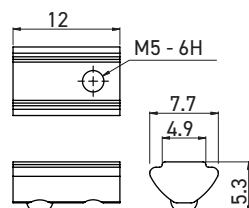


DQM10

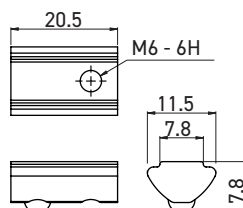


T Nuts

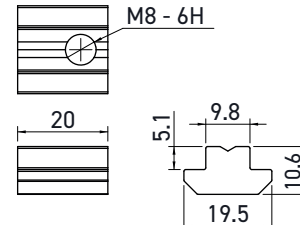
DTM05-M5



DTM06-M6

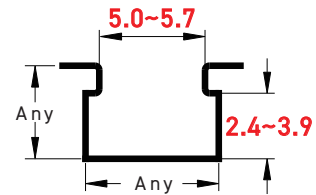
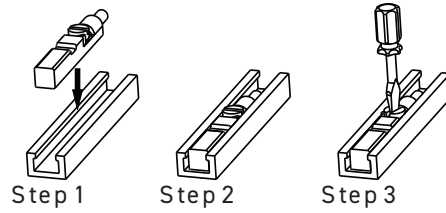


DTM10-M8



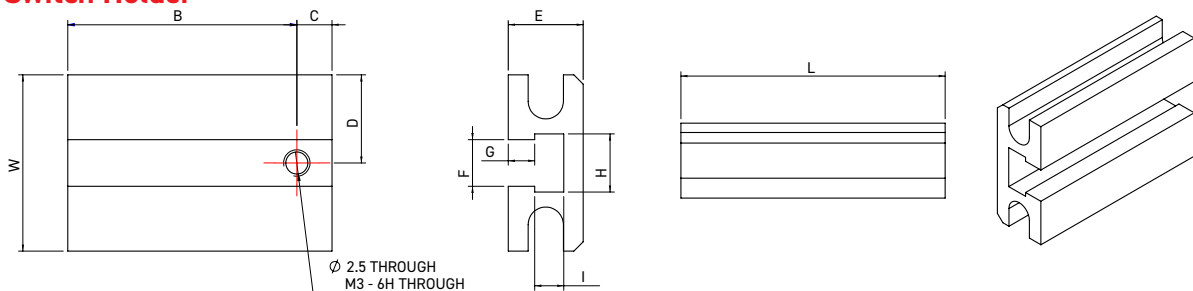
Code	Nut Type	MTB 42	MTB 55	MTB 80	MTB 105
DQM05-01	Square Nut - M5	X			
DQM05	Square Nut - M5		X		
DQM06	Square Nut - M6			X	
DQM08	Square Nut - M8			X	
DQM10	Square Nut - M10				X
DTM05-M5	Slot Nut T - M5		X		
DTM06-M6	Slot Nut T - M6			X	
DTM10-M8	Slot Nut T - M10				X

Magnetic Sensor



Characteristic	AL39-R	AL39-S
Switching Logic	SPST Normally Open	Solid State Output, Normally Open
Sensor Type	Reed Switch	NPN/PNP Automatic Detection
Operating Voltage	5~240V DC/AC	5~30V DC
Switching Current	100 mA Max.	100 mA Max.
Switching Rating	10 W Max.	3 W Max.
Current Consumption	—	7.5 mA Max. @ 24V
Voltage Drop	2.5V Max. @ 100mA DC	1 V Max. @ 200 mA DC
Leakage Current	—	0.01 mA Max.
Indicator	Red LED	Red LED
Cable	2.9 , 2C, Grey Oil Resistat PUR	2.9 , 3C, Black Oil Resistat PUR
Sensitivity	35 ~ 45 Gauss	40 ~ 800 Gauss
Switching Frequency	200 Hz	5000 Hz
Temperature range	-10 ~ 70°C	-10 ~ 70°C
Shock	30 G	50 G
Vibration	9 G	9 G
Enclosure Classification	IP 65 (EN60529)	IP 65 (EN60529)
Protection Circuit	—	Power Reverse Polarity; Surge Suppression
CE Certificate NO.	E8N 11 0 4 53334 005	—
3C Certificate NO.	No. : 2 004010305127433	—
CNEx Certificate NO.	CNEx16.2333X(ExnCICT6GC)	—
Connect Diagram		
	AL-39R AL-39R-QD8 AL-39R-QD12 AL-39R-EZ2M	M8, M12, EZ QUICK CONNECT OR (IEC61076-2-101) 2 wire QD wiring 3 wire QD wiring M83M M83M Brown(+) 1 4 (NC) 3 Blue(-) 4 Black(OUT) M124M M124M Blue(-) 3 2 (NC) 1 Brown(+) 4 Black(OUT) EZ2M EZ3M Blue(-) 2 4 1 Brown(+) 3 2 Black(OUT) 1 Brown(+)

Sensor Switch Holder



Linear Unit	Dimensions (mm)										Code
	B	C	D	E	F	G	H	I	L	W	
MTB 80	26	4	6.5	6.5	5.3	1.8	6.6	3.3	30	13	A9AA_AD80
MTB 105	26	4	10	8.5	5.3	3	6.6	3.3	30	20	A9AA_AD105

MTE Series Technical Data

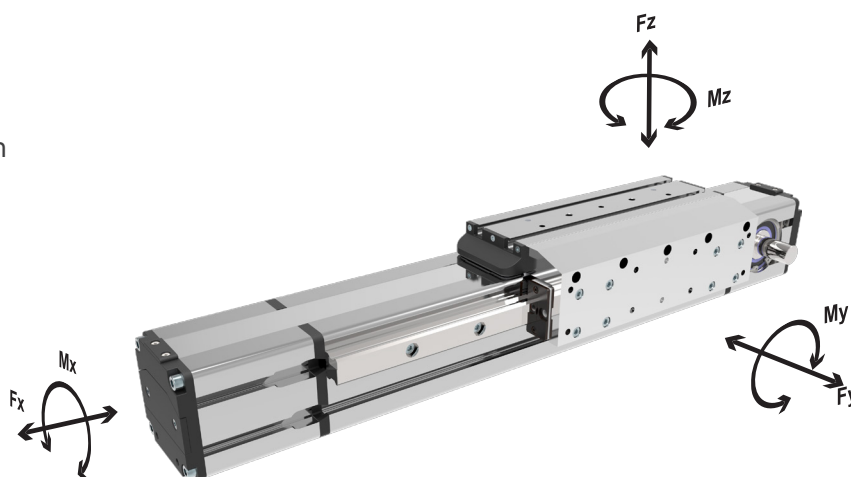
The Matara MTE series actuator has all of the benefits of the MTB series, with an additional externally fitted linear guide. This allows for higher static and dynamic loads in all directions.

Technical Data				
Size			55x55	80x80
Max. speed	m/s		3	3
Max. stroke length	mm		6700	6700
Min. stroke length	mm		100	100
Pulley drive ratio	mm		120	160
Number of teeth of pulley			24	32
Tooth belt with Steel Reinforced Polyurethane ATL 5 profile clearance 0. Width =		mm	16	25
Max rpm	rpm		1500	1000
Base weight	Kg		4.2	8.0
Add for 100 mm of stroke	Kg		0.37	1.1
Max. load*	Fx	N	820	1950
	Fy	N	9180	17170
	Fz	N	9180	17170
Moments*	Mx	Nm	335	527
	My	Nm	408	620
	Mz	Nm	408	620
Inertia moment Aluminum profile	Ix	cm ⁴	36	183
Inertia moment Aluminum profile	Iy	cm ⁴	45	226
Repeatability	mm		± 0.05	± 0.05
Max. radial load on input shaft	N		300	300
No load torque	Nm		>0.5	>0.7

* Max values for dynamic conditions.
Please refer to the following formula when
combined loads are applied.

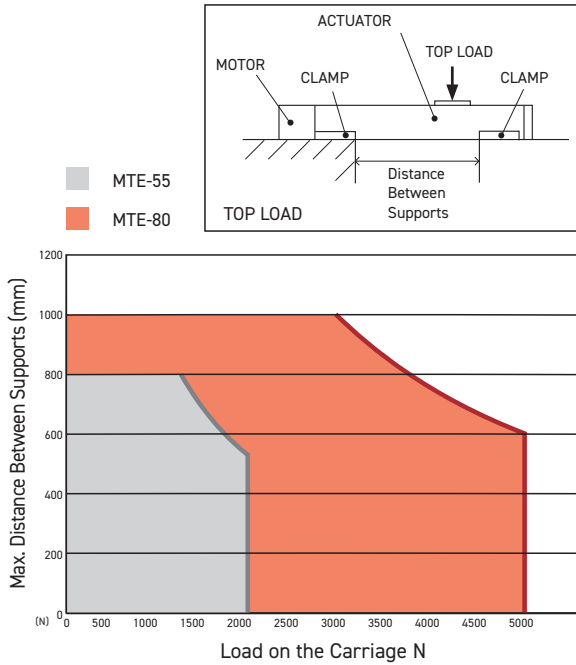
$$\frac{F_{yA}}{F_y} + \frac{F_{zA}}{F_z} + \frac{M_{xA}}{M_x} + \frac{M_{yA}}{M_y} + \frac{M_{zA}}{M_z} \leq 1$$

The A letters show the calculated value.

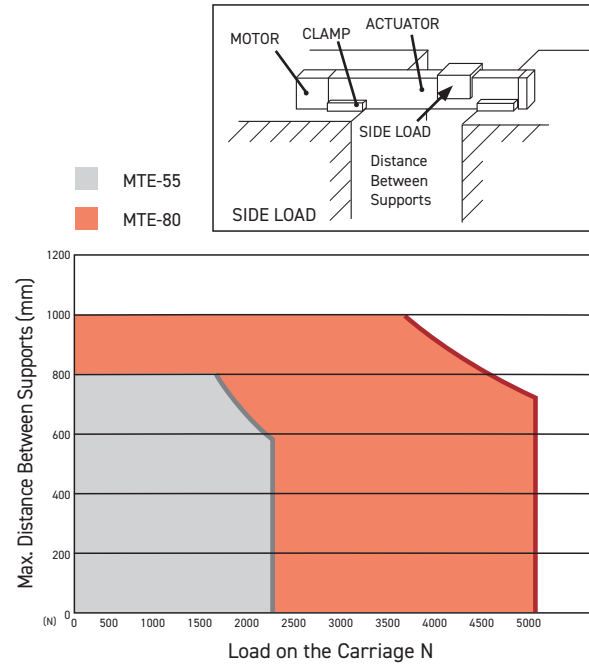


Deflection of Linear Unit

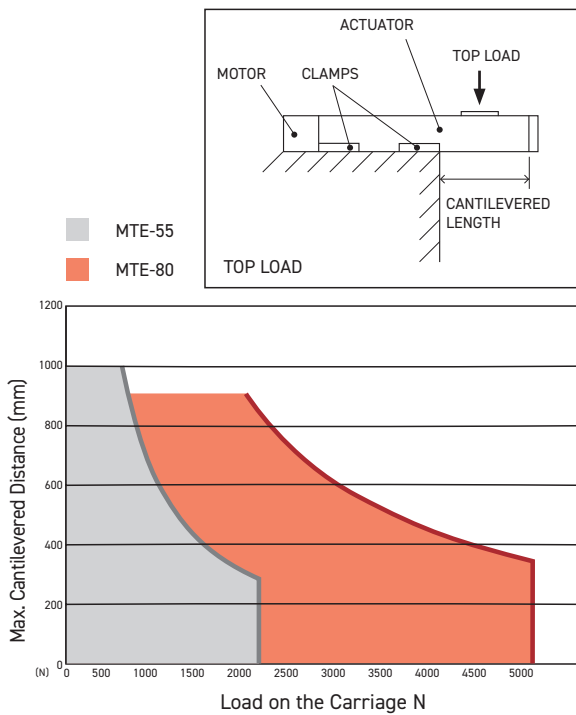
End supported top load



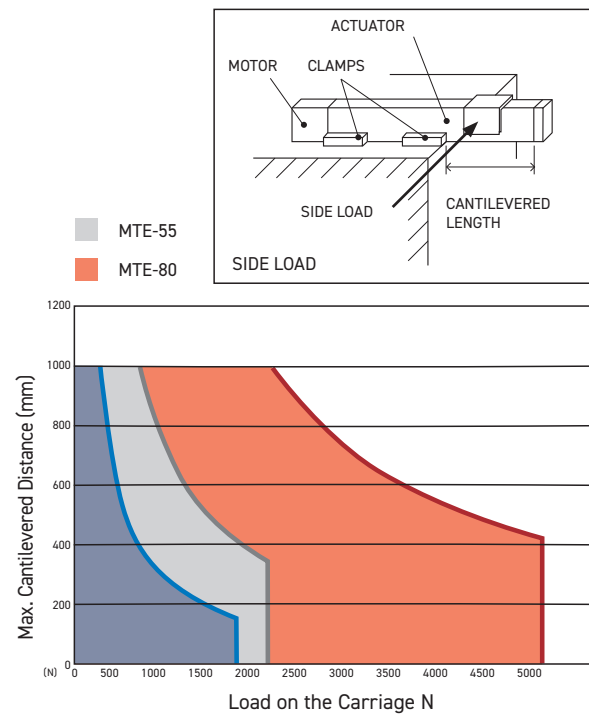
End supported side load



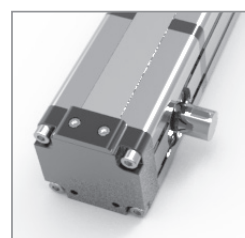
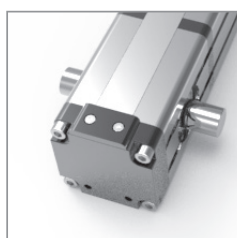
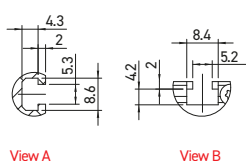
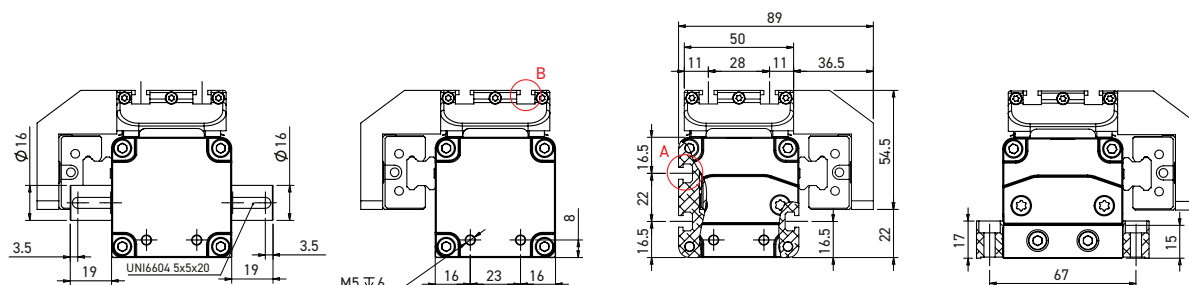
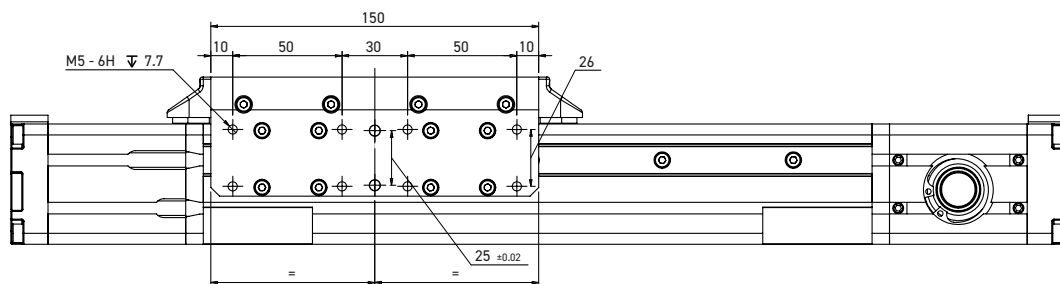
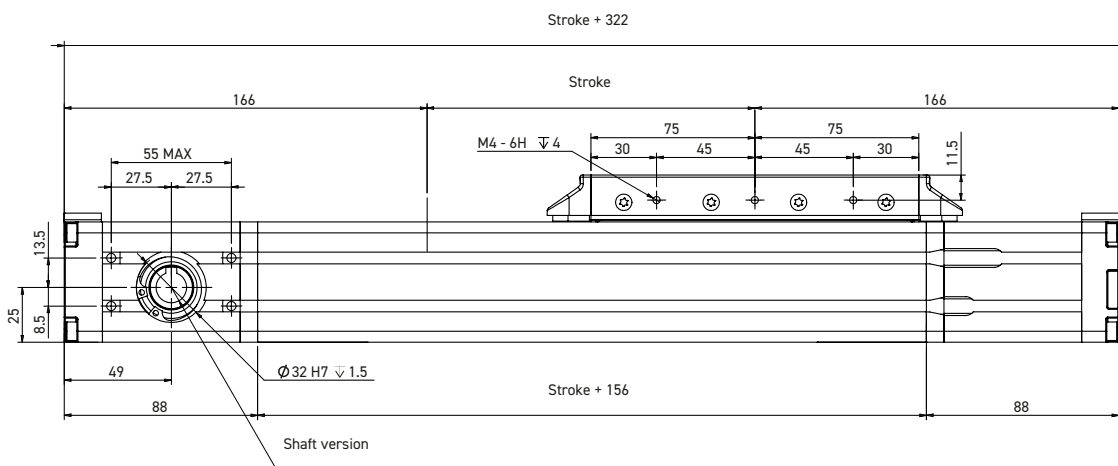
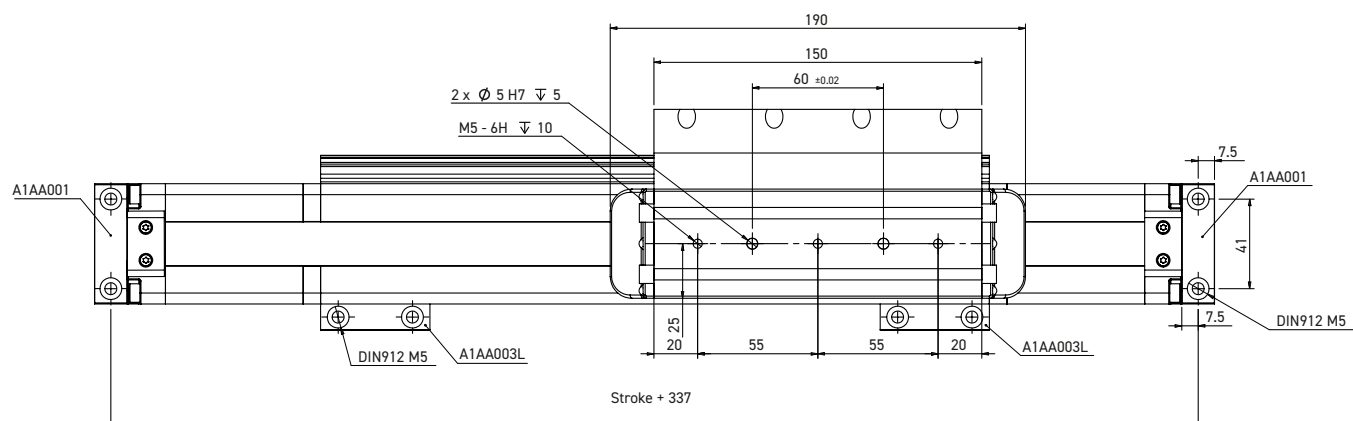
Cantilevered top load



Cantilevered side load



MTE55 Series Dimensions



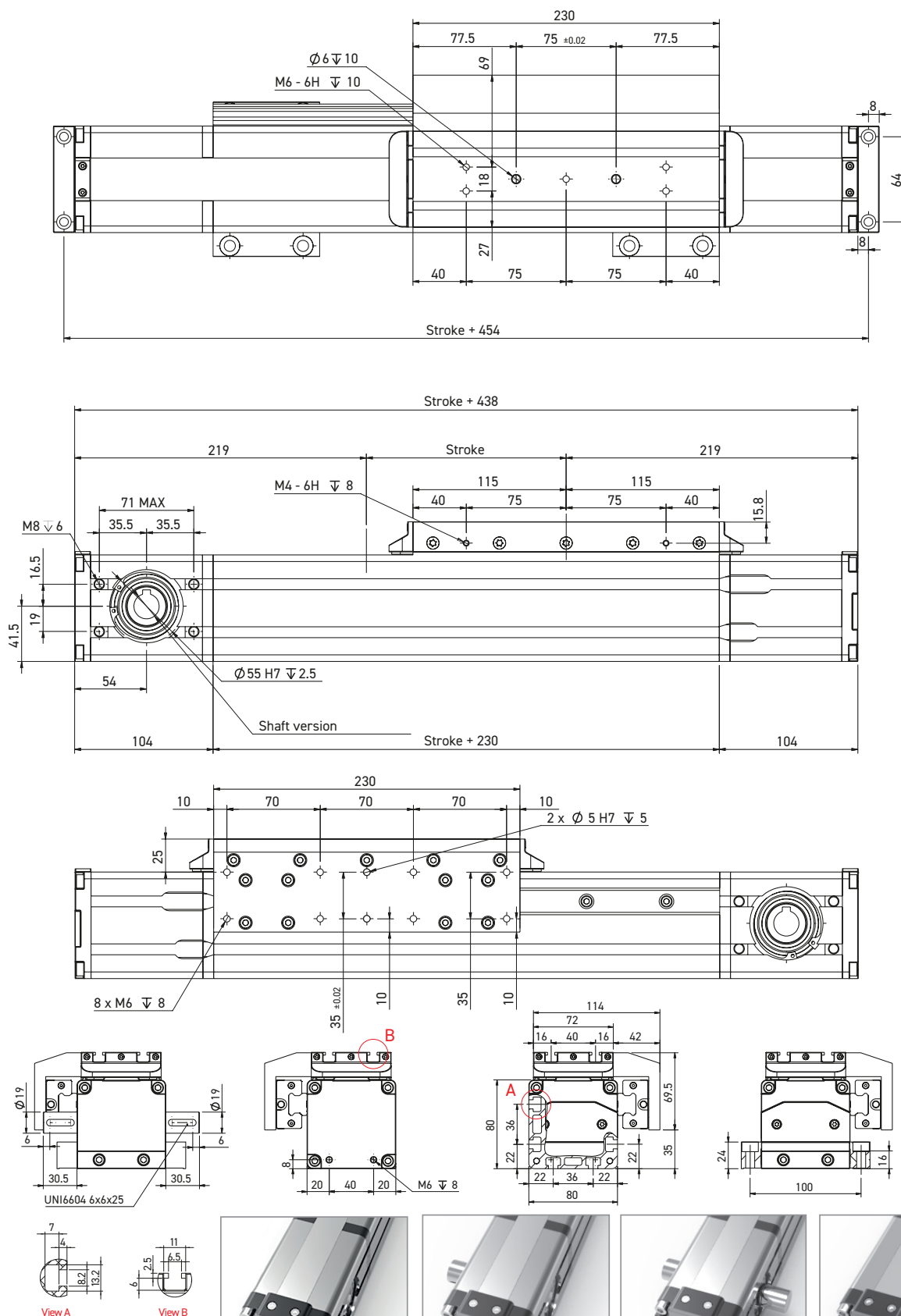
Female mount F4

Left mount M6L

Dual mount D6

Right mount M6R

MTE80 Series Dimensions



Female mount F9

Left mount M9L

Dual mount D9

Right mount M9R

MTE Series Order Example

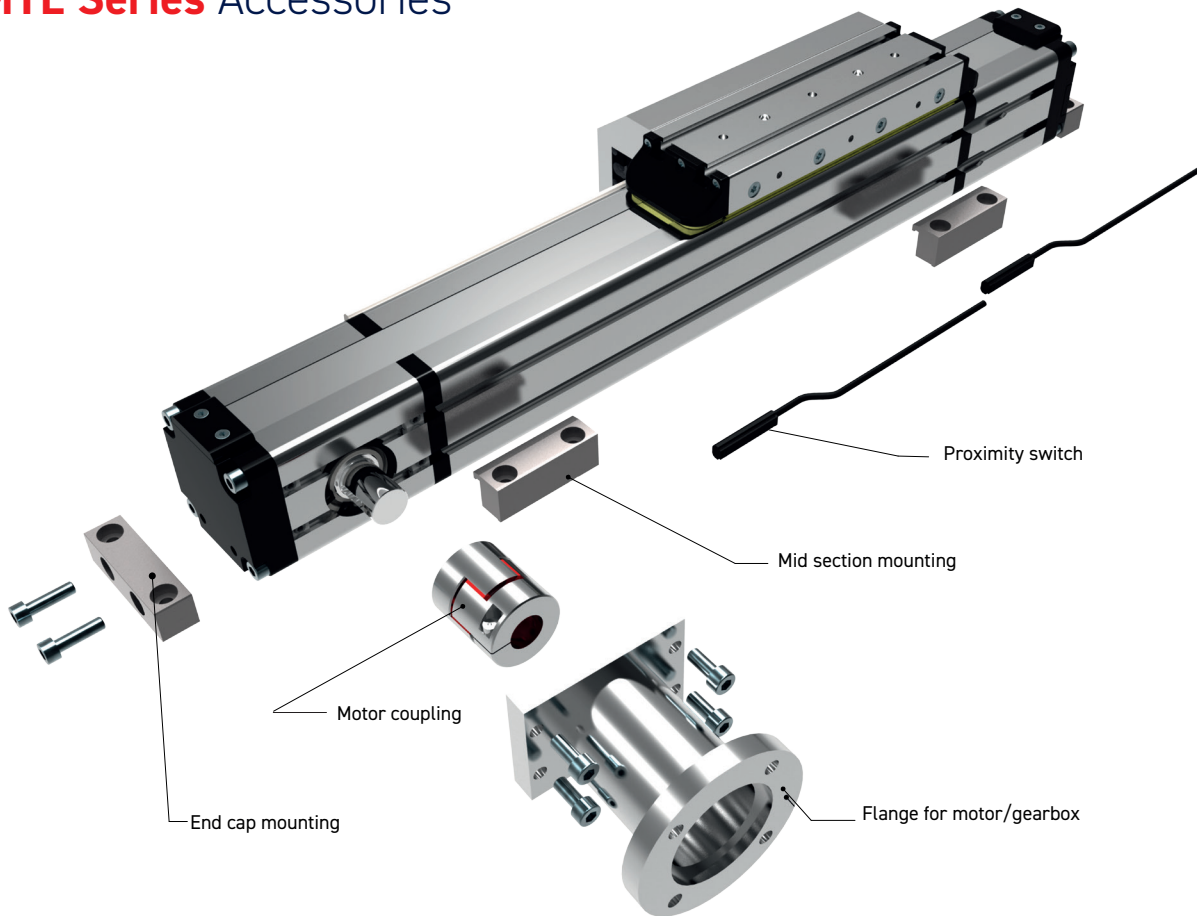
Code: **MTE** **80** - **2100** - **D9**
Options: 1 2 3 4

Options		Selection	
1	Series	MTE	
2	Size	55 (55x55)	80 (80x80)
3	Stroke	0-6700 mm	
4	Shaft Versions *	F2 F4 M6L M6R D6	F6 F9 M9L M9R D9

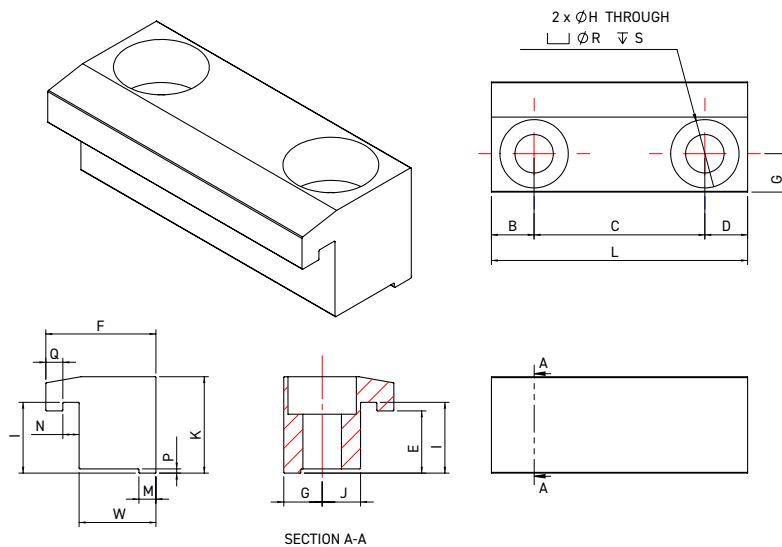
*Shaft Version Codes

F2	Female shaft Ø12 mm with keyshaft	M6L	Male shaft Ø16 mm mount left	D6	Double male shaft Ø16 mm
F4	Female shaft Ø14 mm with keyshaft	M9L	Male shaft Ø19 mm mount left	D9	Double male shaft Ø19 mm
F6	Female shaft Ø16 mm with keyshaft	M6R	Male shaft Ø16 mm mount right		
F9	Female shaft Ø19 mm with keyshaft	M9R	Male shaft Ø19 mm mount right		

MTE Series Accessories

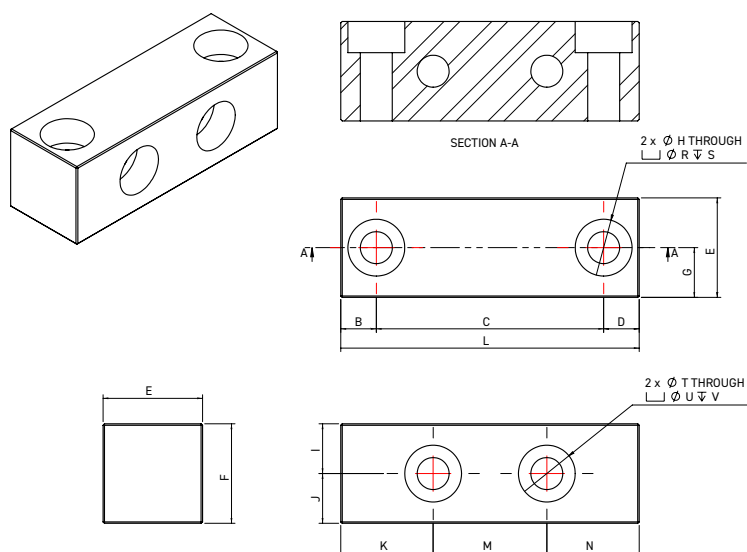


Mid Section Mounting



Linear Unit	Dimensions (mm)															ØH	ØR	▽ S	Code
	B	C	D	E	F	G	I	J	K	L	M	N	P	Q	W				
MTE 55	8	34	8	12.9	16	6	13.9	6	17	50	2	2.5	0.5	1.5	12	5.5	10	5.4	A1AA003L
MTE 80	12.5	55	12.5	16	26.5	8	17.9	10	24	80	2	4.5	0.5	4	18	8.4	15	8.6	A2AA003L

End Cap Mounting

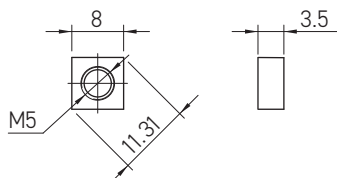


Linear Unit	Dimensions (mm)												ØH	ØR	S	T	U	V	Code
	B	C	D	E	F	G	I	J	K	L	M	N							
MTE 55	7	41	7	15	15	7.5	7	8	16	55	23	16	5.5	10	5	5.5	10	5	A1AA001L
MTE 80	8	64	8	16	16	8	8	8	20	65	40	20	6.6	11	6	6.6	11	6	A2AA001L

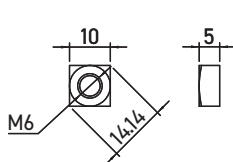
Slot Nuts

Square Nuts

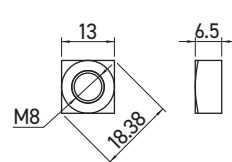
DQM05



DQM06

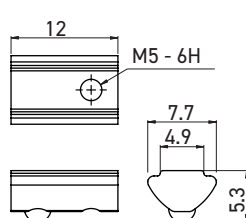


DQM08

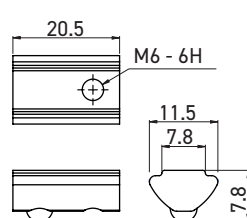


T Nuts

DTM05-M5

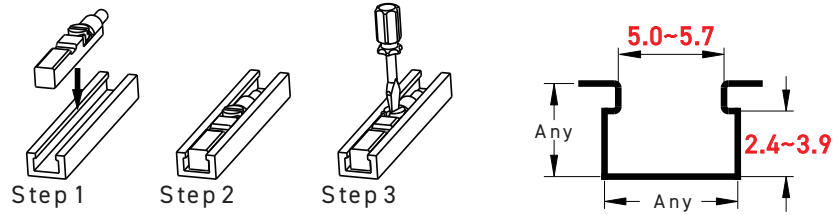


DTM06-M6



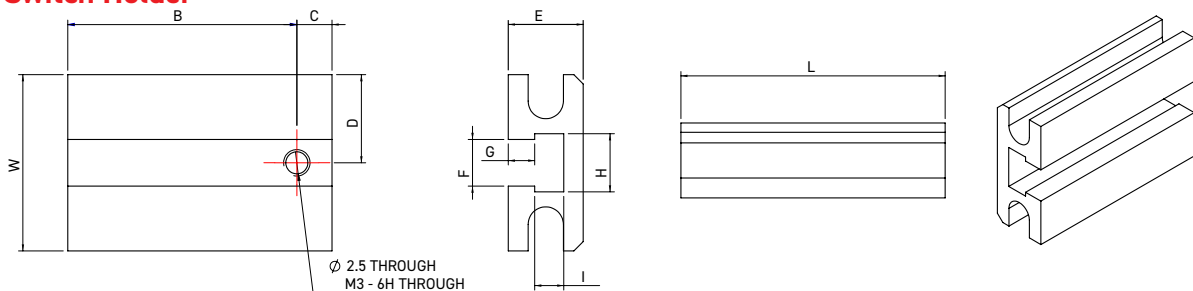
Code	Nut Type	MTE 55	MTE 80
DQM05	Square Nut - M5	X	
DQM06	Square Nut - M6		X
DQM08	Square Nut - M8		X
DTM05-M5	Slot Nut T - M5	X	
DTM06-M6	Slot Nut T - M6		X

Magnetic Sensor



Characteristic	AL39-R	AL39-S
Switching Logic	SPST Normally Open	Solid State Output, Normally Open
Sensor Type	Reed Switch	NPN/PNP Automatic Detection
Operating Voltage	5~240V DC/AC	5~30V DC
Switching Current	100 mA Max.	100 mA Max.
Switching Rating	10 W Max.	3 W Max.
Current Consumption	—	7.5 mA Max. @ 24V
Voltage Drop	2.5V Max. @ 100mA DC	1 V Max. @ 200 mA DC
Leakage Current	—	0.01 mA Max.
Indicator	Red LED	Red LED
Cable	2.9 , 2C, Grey Oil Resistat PUR	2.9 , 3C, Black Oil Resistat PUR
Sensitivity	35 ~ 45 Gauss	40 ~ 800 Gauss
Switching Frequency	200 Hz	5000 Hz
Temperature range	-10 ~ 70°C	-10 ~ 70°C
Shock	30 G	50 G
Vibration	9 G	9 G
Enclosure Classification	IP 65 (EN60529)	IP 65 (EN60529)
Protection Circuit	—	Power Reverse Polarity; Surge Suppression
CE Certificate NO.	E8N 11 0 4 53334 005	—
3C Certificate NO.	No. : 2 004010305127433	—
CNEx Certificate NO.	CNEx16.2333X(ExnCIIT6GC)	—
Connect Diagram		
	AL-39R AL-39R-QD8 AL-39R-QD12 AL-39R-EZ2M	M8, M12, EZ QUICK CONNECT OR (IEC61076-2-101) 2 wire QD wiring M83M M124M EZ2M 3 wire QD wiring M83M M124M EZ3M

Sensor Switch Holder



Linear Unit	Dimensions (mm)										Code
	B	C	D	E	F	G	H	I	L	W	
MTE 80	26	4	6.5	6.5	5.3	1.8	6.6	3.3	30	13	A9AA_AD80

MTS Series Internally And Externally Guided Belt Driven Actuator

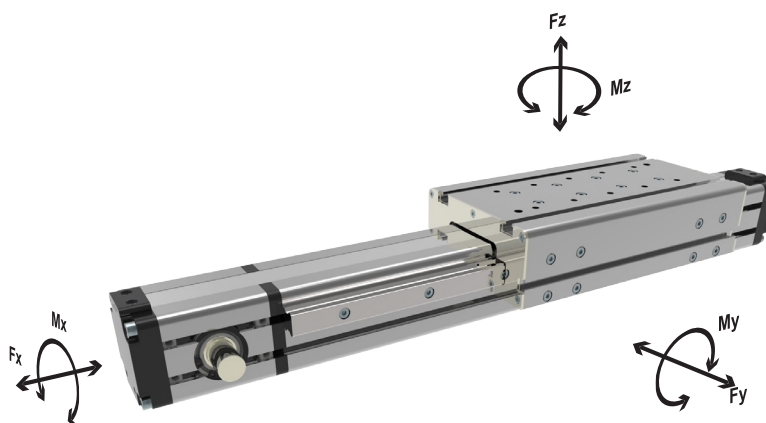
The MTS series actuator is Matarara's ultra high load belt drive. Whilst also using an internal rail system, this unit externally incorporates a rail and two carriages either side of the piston. If this actuator is required in a specialist environment, all of the rails and carriages can be supplied with corrosion resistant Armoloy coating. These units, with their high degree of rigidity and accuracy, are particularly useful in X Y Z axis systems.

Technical Data				
Size			55x55	80x80
Max. speed	m/s		3	3
Max. stroke length	mm		6700	6700
Min. stroke length	mm		100	100
Pulley drive ratio	mm		120	160
Number of teeth of pulley			24	32
Tooth belt with Steel Reinforced Polyurethane ATL 5 profile clearance 0, width 16 mm	mm		16	25
Max rpm	rpm		1500	1000
Base weight	Kg		4.8	8.8
Add for 100 mm of stroke	Kg		0.37	1.1
Max. load*	Fx	N	820	1950
	Fy	N	10800	20200
	Fz	N	10800	20200
Moments*	Mx	Nm	395	620
	My	Nm	480	730
	Mz	Nm	480	730
Inertia moment Aluminium profile	Ix	cm ⁴	36	183
Inertia moment Aluminium profile	Iy	cm ⁴	45	226
Repeatability	mm		± 0.05	± 0.05
Max. radial load on input shaft	N		300	300
No load torque	Nm		>0.5	>0.7

* Max values for dynamic conditions.
Please refer to the following formula when
combined loads are applied.

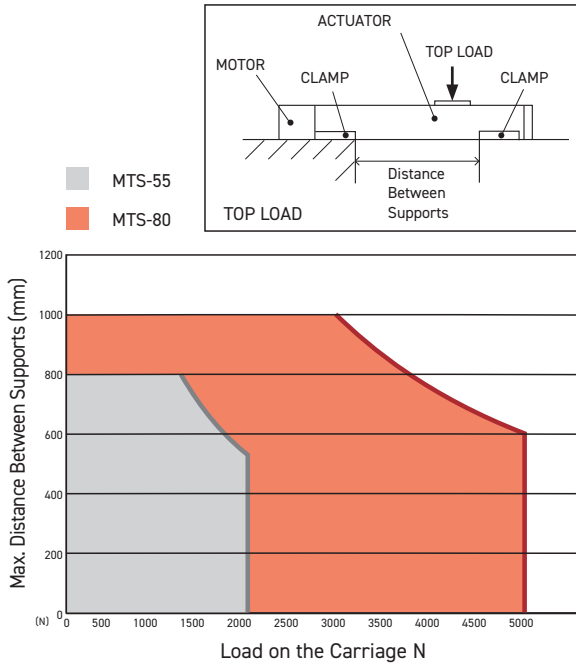
$$\frac{F_{yA}}{F_y} + \frac{F_{zA}}{F_z} + \frac{M_{xA}}{M_x} + \frac{M_{yA}}{M_y} + \frac{M_{zA}}{M_z} \leq 1$$

The A letters show the calculated value.

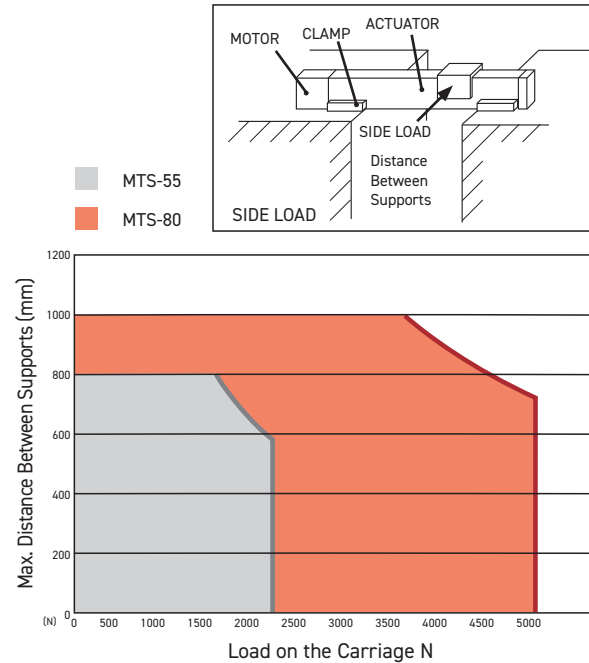


Deflection of Linear Unit

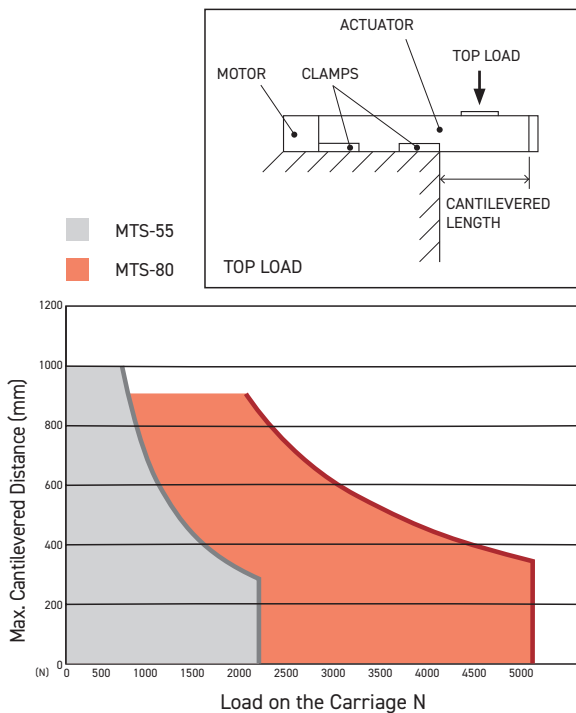
End supported top load



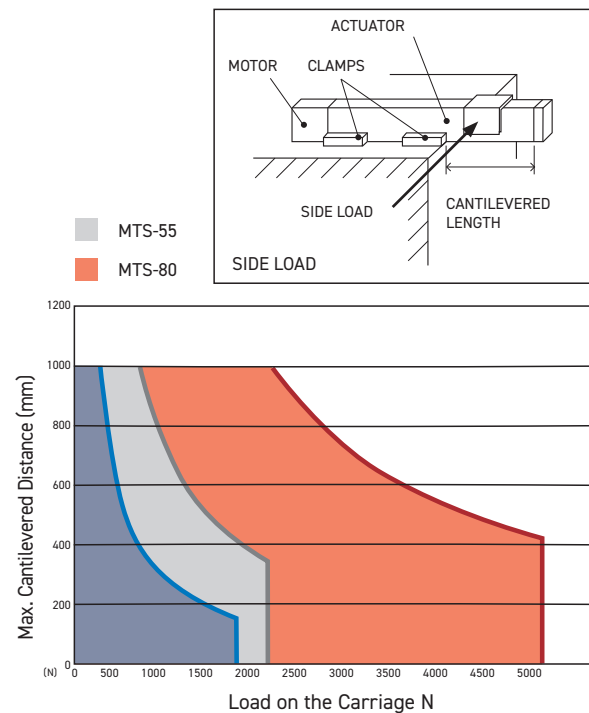
End supported side load



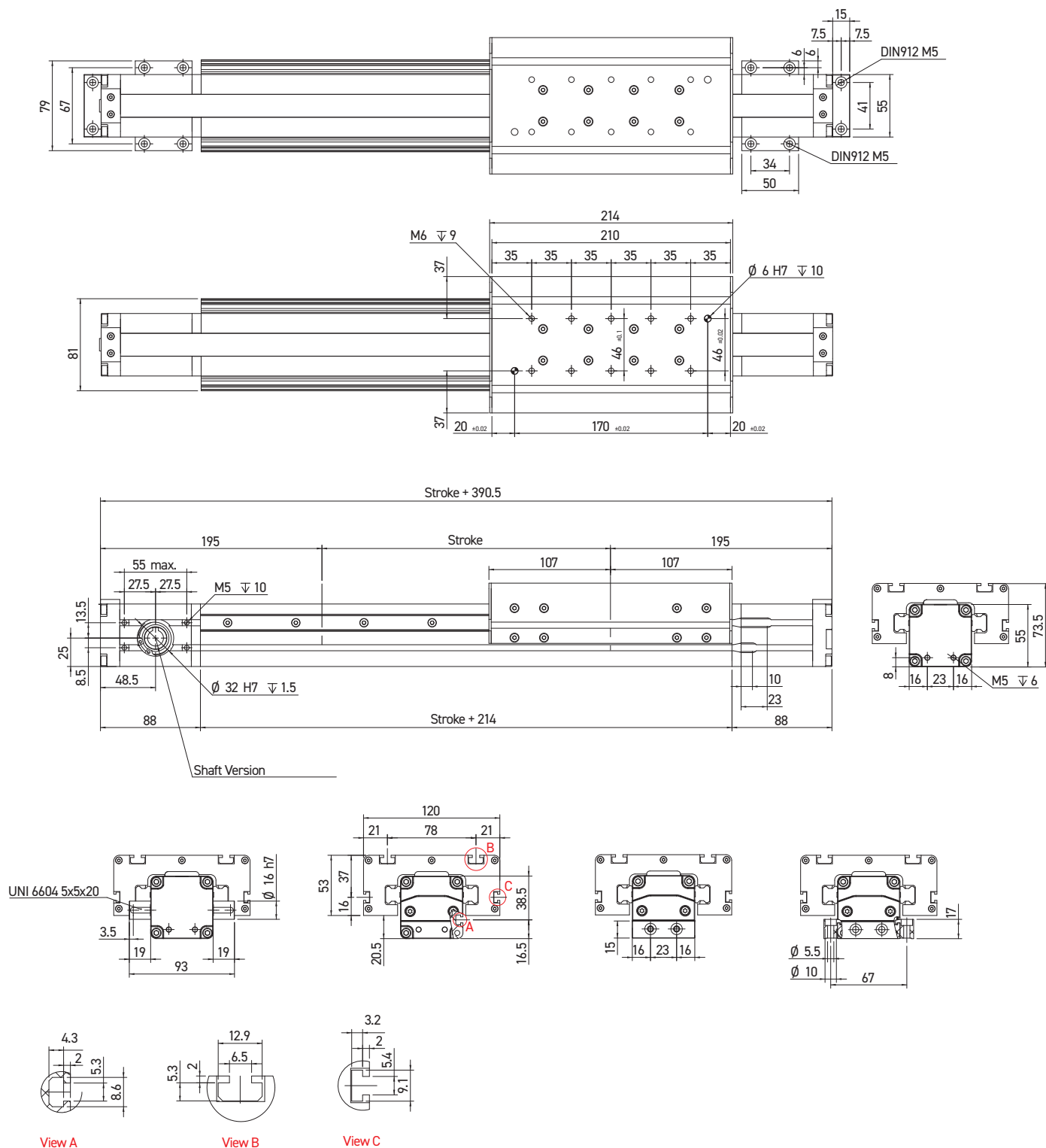
Cantilevered top load



Cantilevered side load



MTS55 Series Dimensions



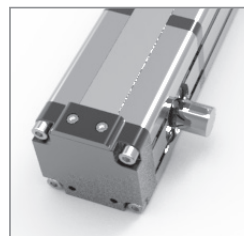
Female mount F4



Left mount M6L

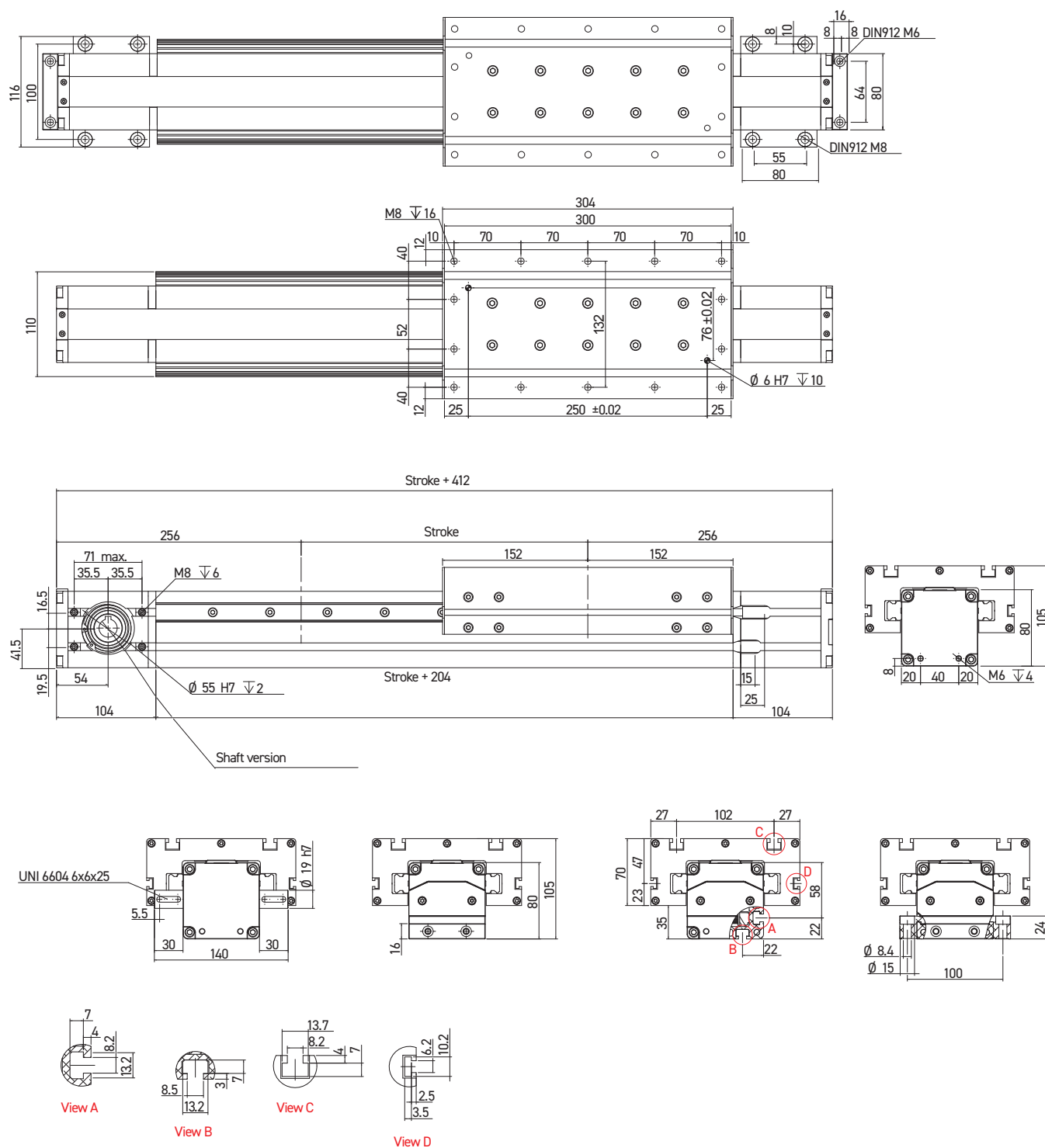


Dual mount D6



Right mount M6R

MTS80 Series Dimensions



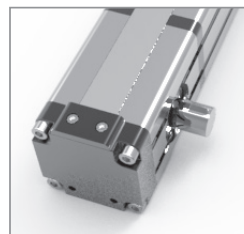
Female mount F9



Left mount M9L



Dual mount D9



Right mount M9R

MTS Series Order Example

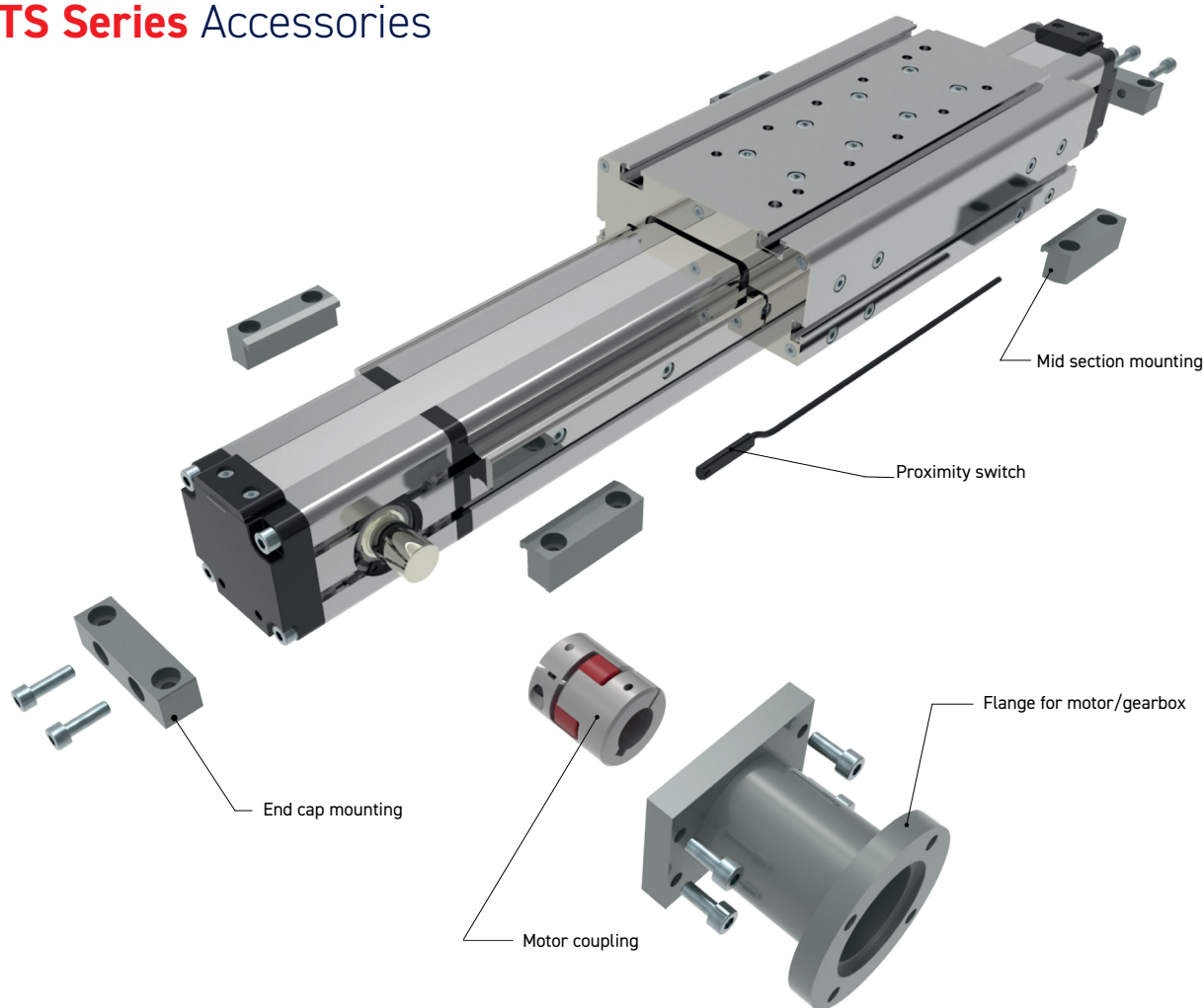
Code: **MTS** **55** - **2100** - **F2**
Options: 1 2 3 4

Options		Selection	
1	Series	MTS	
2	Size	55 (55x55)	80 (80x80)
3	Stroke	0-6700 mm	
4	Shaft Versions *	F2 F4 M6L M6R D6	F6 F9 M9L M9R D9

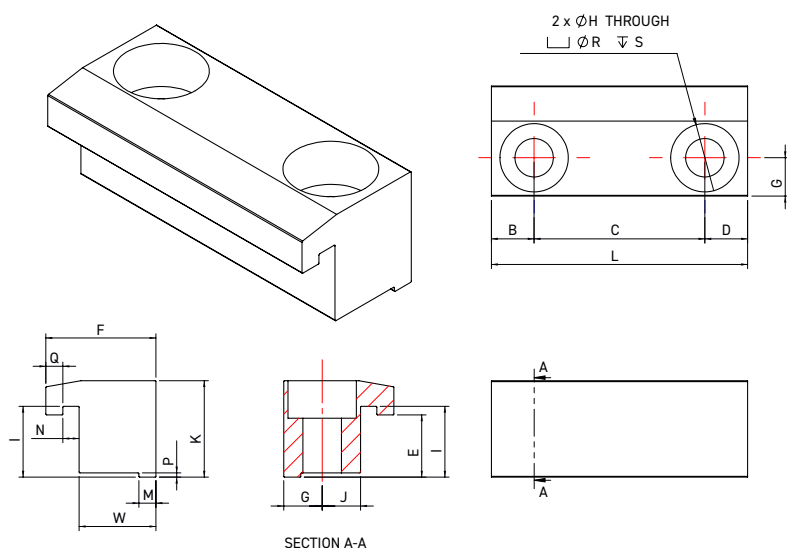
*Shaft Version Codes

F2	Female shaft Ø12 mm with keyshaft	M6L	Male shaft Ø16 mm mount left	D6	Double male shaft Ø16 mm
F4	Female shaft Ø14 mm with keyshaft	M9L	Male shaft Ø19 mm mount left	D9	Double male shaft Ø19 mm
F6	Female shaft Ø16 mm with keyshaft	M6R	Male shaft Ø16 mm mount right		
F9	Female shaft Ø19 mm with keyshaft	M9R	Male shaft Ø19 mm mount right		

MTS Series Accessories

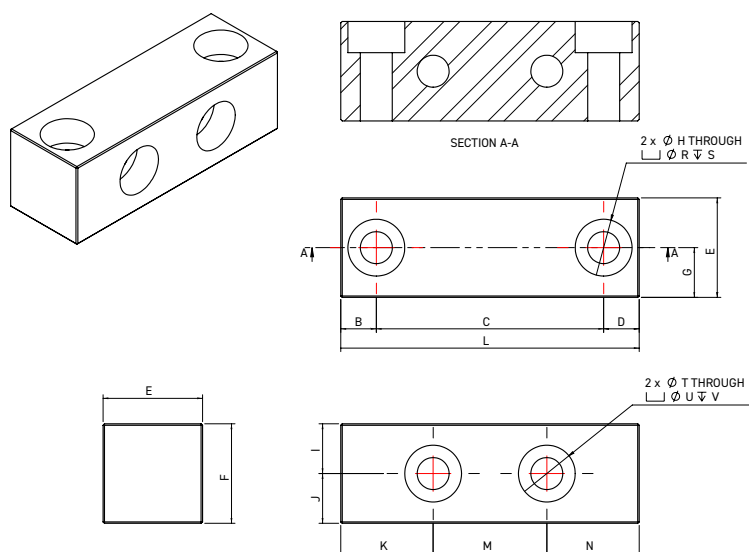


Mid Section Mounting



Linear Unit	Dimensions (mm)															ØH	ØR	▽ S	Code
	B	C	D	E	F	G	I	J	K	L	M	N	P	Q	W				
MTS 55	8	34	8	12.9	16	6	13.9	6	17	50	2	2.5	0.5	1.5	12	5.5	10	5.4	A1AA003L
MTS 80	12.5	55	12.5	16	26.5	8	17.9	10	24	80	2	4.5	0.5	4	18	8.4	15	8.6	A2AA003L

End Cap Mounting

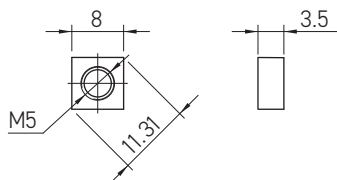


Linear Unit	Dimensions (mm)												ØH	ØR	▽S	ØT	ØU	▽V	Code
	B	C	D	E	F	G	I	J	K	L	M	N							
MTS 55	7	41	7	15	15	7.5	7	8	16	55	23	16	5.5	10	5	5.5	10	5	A1AA001L
MTS 80	8	64	8	16	16	8	8	8	20	65	40	20	6.6	11	6	6.6	11	6	A2AA001L

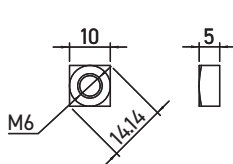
Slot Nuts

Square Nuts

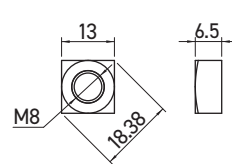
DQM05



DQM06

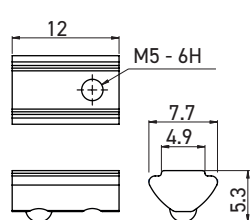


DQM08

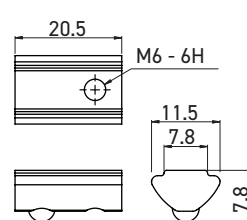


T Nuts

DTM05-M5

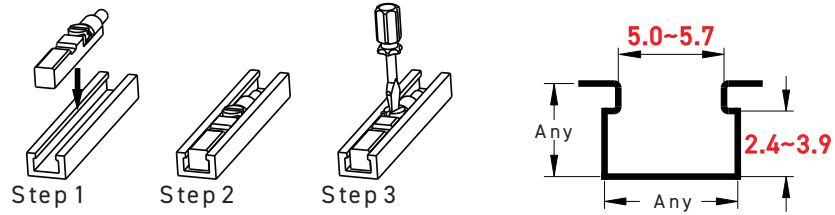


DTM06-M6



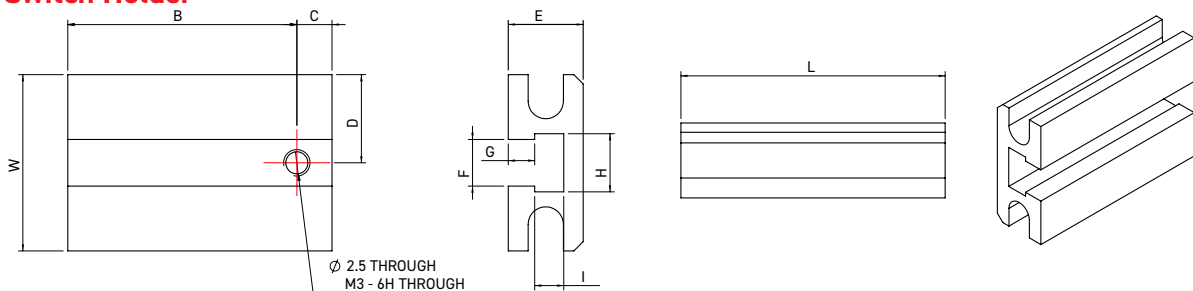
Code	Nut Type	MTS 55	MTS 80
DQM05	Square Nut - M5	X	
DQM06	Square Nut - M6		X
DQM08	Square Nut - M8		X
DTM05-M5	Slot Nut T - M5	X	
DTM06-M6	Slot Nut T - M6		X

Magnetic Sensor



Characteristic	AL39-R	AL39-S
Switching Logic	SPST Normally Open	Solid State Output, Normally Open
Sensor Type	Reed Switch	NPN/PNP Automatic Detection
Operating Voltage	5~240V DC/AC	5~30V DC
Switching Current	100 mA Max.	100 mA Max.
Switching Rating	10 W Max.	3 W Max.
Current Consumption	—	7.5 mA Max. @ 24V
Voltage Drop	2.5V Max. @ 100mA DC	1 V Max. @ 200 mA DC
Leakage Current	—	0.01 mA Max.
Indicator	Red LED	Red LED
Cable	2.9 , 2C, Grey Oil Resistat PUR	2.9 , 3C, Black Oil Resistat PUR
Sensitivity	35 ~ 45 Gauss	40 ~ 800 Gauss
Switching Frequency	200 Hz	5000 Hz
Temperature range	-10 ~ 70°C	-10 ~ 70°C
Shock	30 G	50 G
Vibration	9 G	9 G
Enclosure Classification	IP 65 (EN60529)	IP 65 (EN60529)
Protection Circuit	—	Power Reverse Polarity; Surge Suppression
CE Certificate NO.	E8N 11 0 4 53334 005	—
3C Certificate NO.	No. : 2 004010305127433	—
CNEx Certificate NO.	CNEx16.2333X(ExnCIIT6GC)	—
Connect Diagram		
	AL-39R AL-39R-QD8 AL-39R-QD12 AL-39R-EZ2M	M8, M12, EZ QUICK CONNECT OR (IEC61076-2-101) 2 wire QD wiring M83M Brown(+) 1 4(NC) 3 Blue(-) M124M Blue(-) 3 2(NC) 1 Brown(+) 4(NC) EZ2M Blue(-) 2 1 Brown(+) 3 3 wire QD wiring M83M Brown(+) 1 4 Black(OUT) 3 Blue(-) M124M Blue(-) 3 2 (NC) 1 Brown(+) 4 Black(OUT) EZ3M Blue(-) 3 2 Black(OUT) 1 Brown(+)

Sensor Switch Holder



Linear Unit	Dimensions (mm)										Code
	B	C	D	E	F	G	H	I	L	W	
MTS 80	26	4	6.5	6.5	5.3	1.8	6.6	3.3	30	13	A9AA_AD80

MTZ L Series Internally Guided Belt Driven Actuator

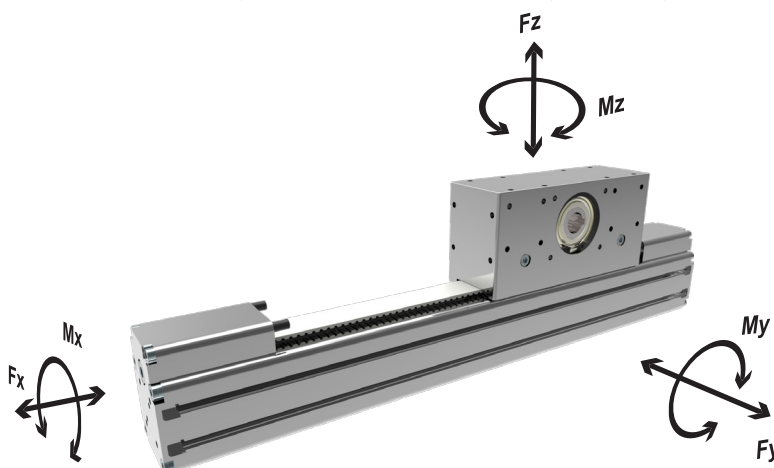
The Matara MTZ L series actuator is normally used as a Z axis unit, with the ability to connect the motor directly to the carriage assembly. This model can be combined with the MTB, MTE and MTS to make a simple and cost effective gantry unit.

Technical Data				
Size		42x42	55x55	80x80
Max. speed	m/s	1	1	1
Max. stroke length	mm	1000	1500	1500
Min. stroke length	mm	100	100	100
Pulley drive ratio	mm	130	130	192
Number of teeth of pulley		26	26	24
Tooth belt width with Steel Reinforced Polyurethane HTD 5 profile with 0 clearance. For size 80x80, a tooth belt with Steel Reinforced Polyurethane HTD8 profile clearance 0, width 30 mm, is used.		16	25	30
Max rpm	rpm	500	750	900
Base weight	Kg	1.1	3.7	12
Add for 100 mm of stroke	Kg	0.35	0.52	0.9
Max. load*	Fx	N	600	2500
	Fy	N	1200	4500
	Fz	N	1200	4500
Moments*	Mx	Nm	20	90
	My	Nm	55	390
	Mz	Nm	55	390
Inertia moment Aluminum profile	Ix	cm ⁴	11.8	183
Inertia moment Aluminum profile	Iy	cm ⁴	14.2	226
Repeatability	mm	± 0.01	± 0.1	± 0.1
Max. radial load on input shaft	N	200	230	300
No load torque	Nm	>0.3	>0.7	>0.6

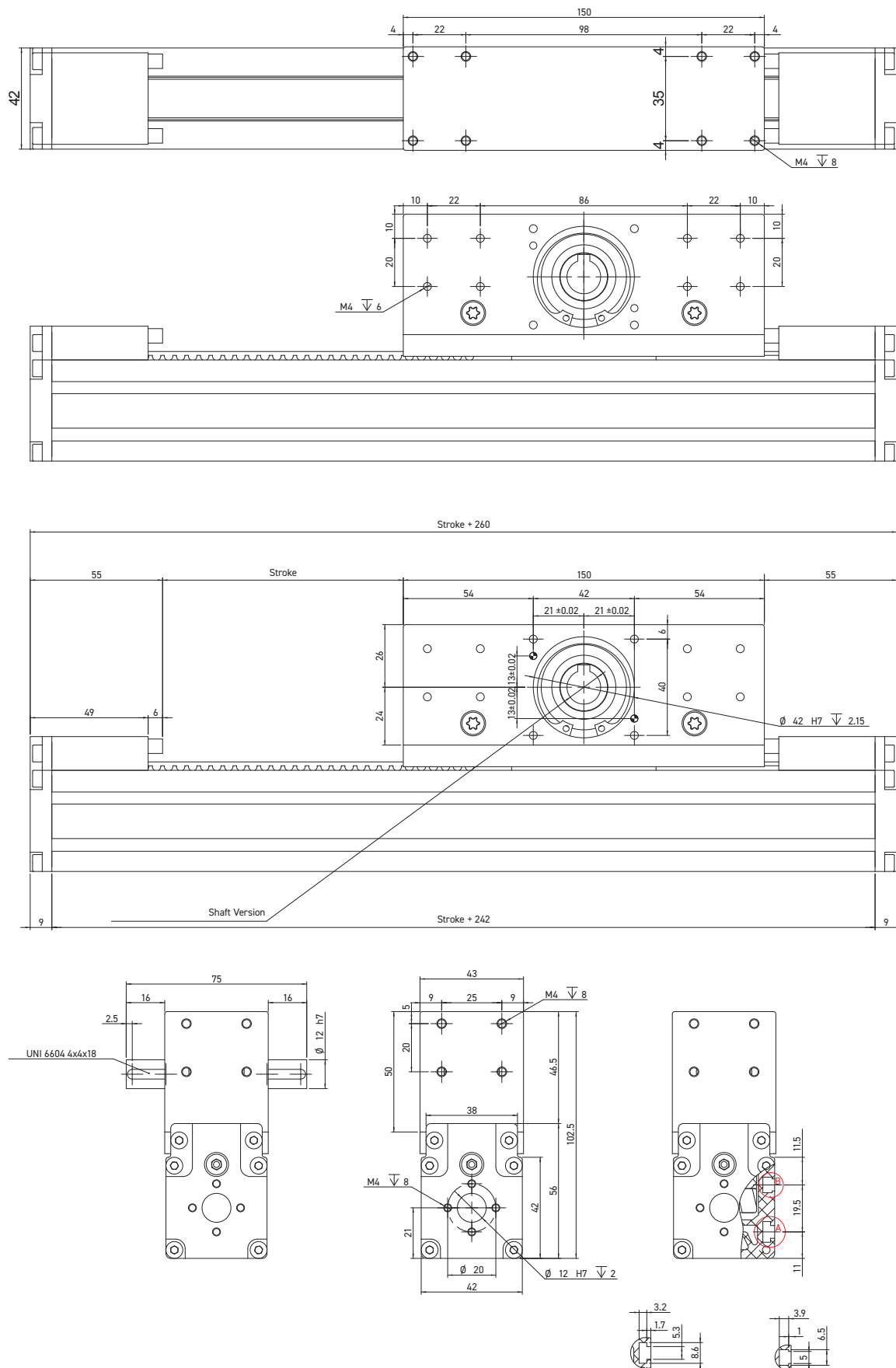
* Max values for dynamic conditions.
Please refer to the following formula when combined loads are applied.

$$\frac{F_{yA}}{F_y} + \frac{F_{zA}}{F_z} + \frac{M_{xA}}{M_x} + \frac{M_{yA}}{M_y} + \frac{M_{zA}}{M_z} \leq 1$$

The A letters show the calculated value.



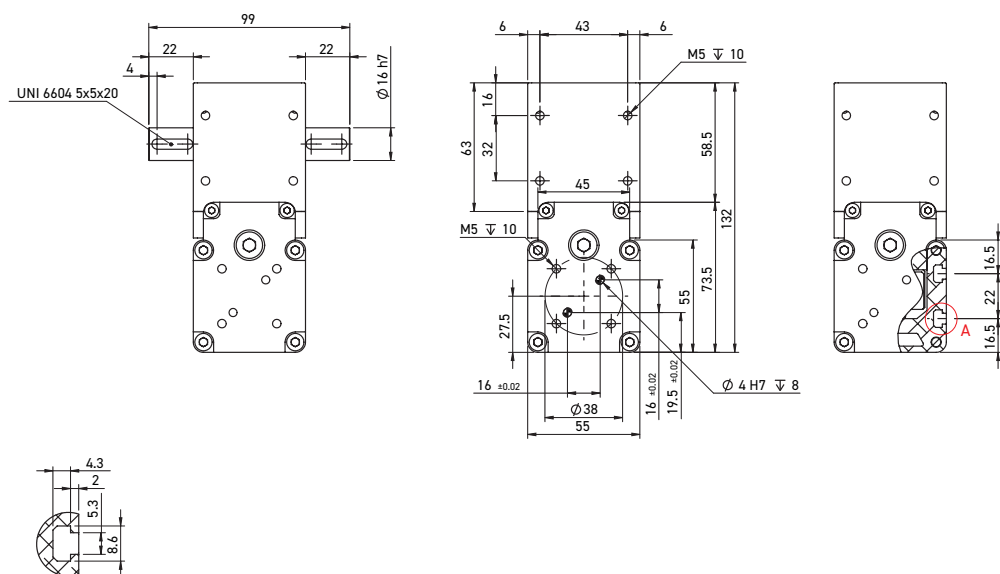
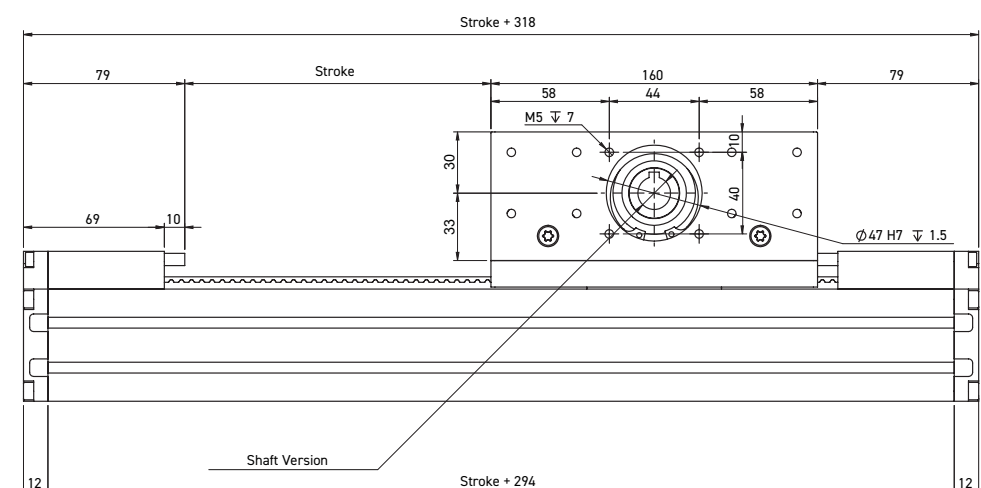
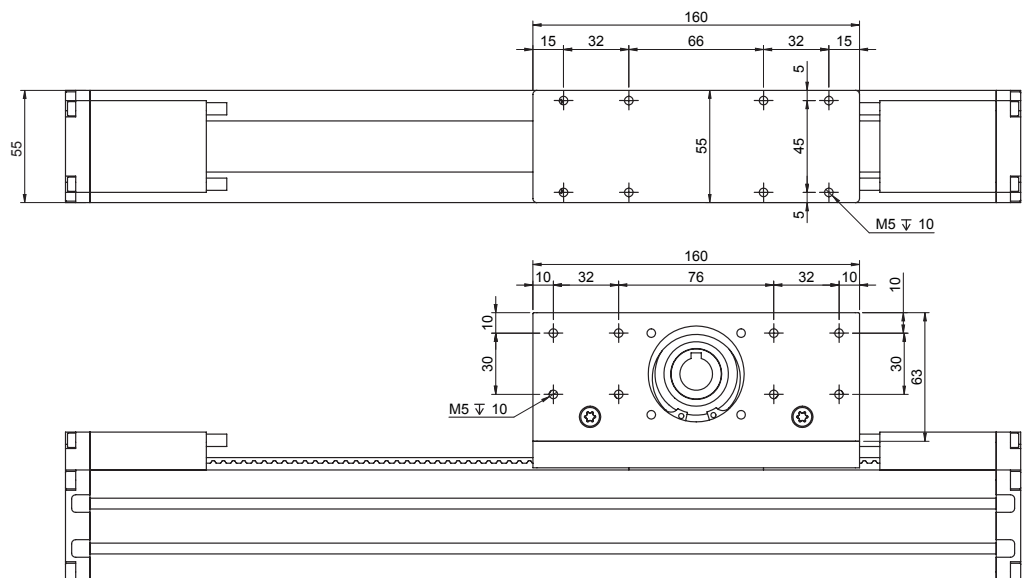
MTZ42L Series Dimensions



View A

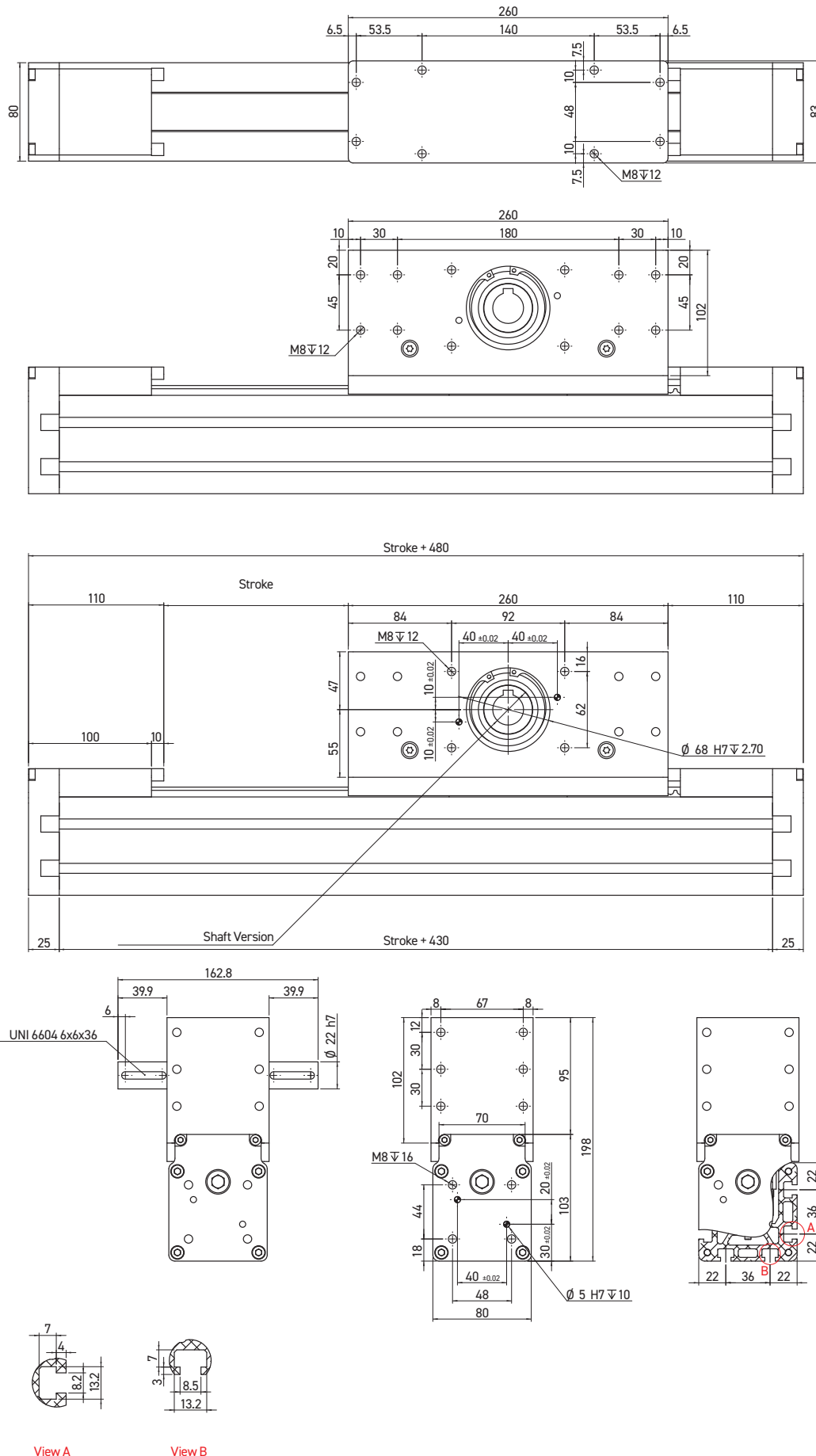
View B

MTZ55L Series Dimensions



View A

MTZ80L Series Dimensions



MTZ S Series Internally And Externally Guided Belt Driven Actuator

The Matara MTZ S series actuator, a derivative of the MTZ-L series, has two additional external rails fitted. The rails are fitted either side of the piston and can be supplied coated and with pre-load if required.

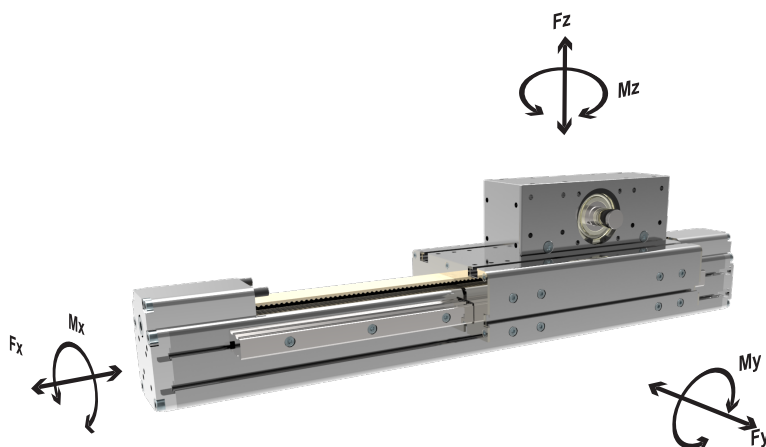
Technical Data				
Size			55x55	80x80
Max. speed	m/s		1	2
Max. stroke length	mm		1500	1500
Min. stroke length	mm		100	100
Pulley drive ratio	mm		130	192
Number of teeth of pulley			26	24
Size 55 x 55: Teeth belt with Steel Reinforced Polyurethane HTD5 profile clearance 0. Size 80 x 80: Teeth belt with Steel Reinforced Polyurethane HTD8 profile clearance 0. Width=		mm	25	30
Max rpm	rpm		500	900
Base weight	Kg		5.1	15
Add for 100 mm of stroke	Kg		0.6	1.55
Max. load*	Fx	N	1250	2500
	Fy	N	7800	15000
	Fz	N	7800	15000
Moments*	Mx	Nm	395	620
	My	Nm	480	980
	Mz	Nm	480	980
Inertia moment Aluminium profile	Ix	cm ⁴	36	183
Inertia moment Aluminium profile	Iy	cm ⁴	45	226
Repeatability	mm		± 0.1	± 0.1
Max. radial load on input shaft	N		300	300
No load torque	Nm		>0.7	>0.6

* Max values for dynamic conditions.

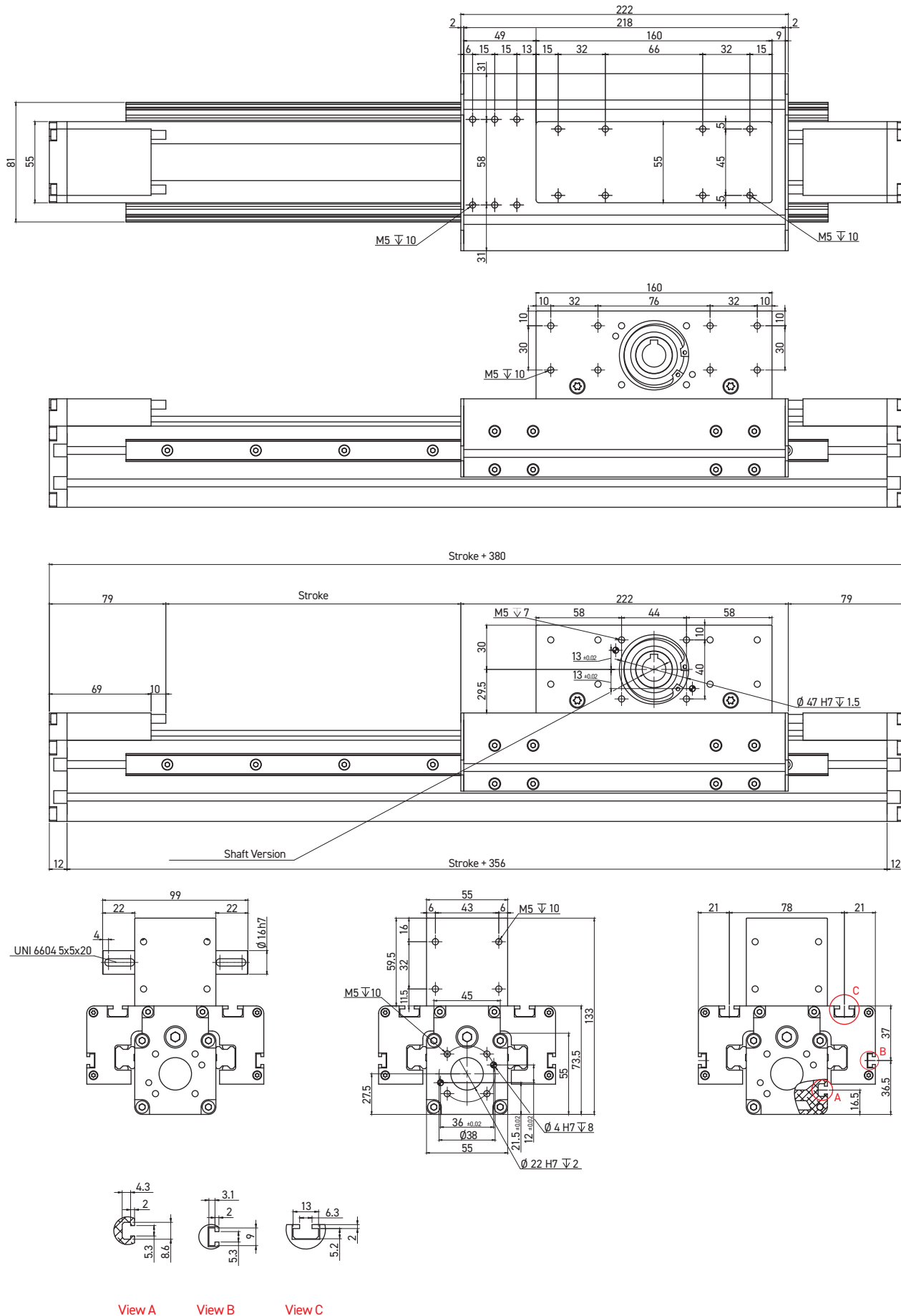
Please refer to the following formula when combined loads are applied.

$$\frac{F_{yA}}{F_y} + \frac{F_{zA}}{F_z} + \frac{M_{xA}}{M_x} + \frac{M_{yA}}{M_y} + \frac{M_{zA}}{M_z} \leq 1$$

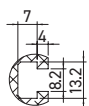
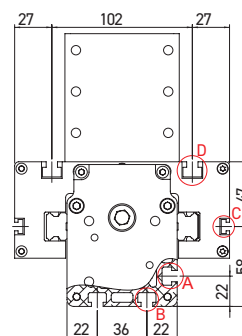
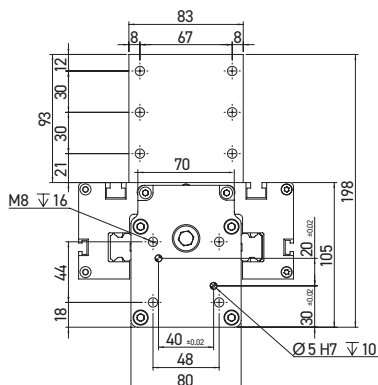
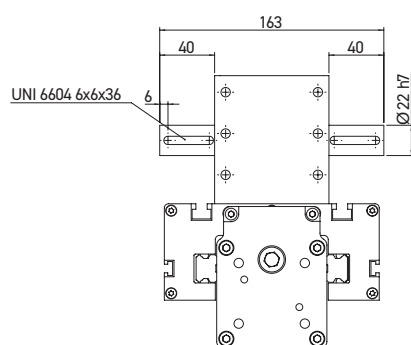
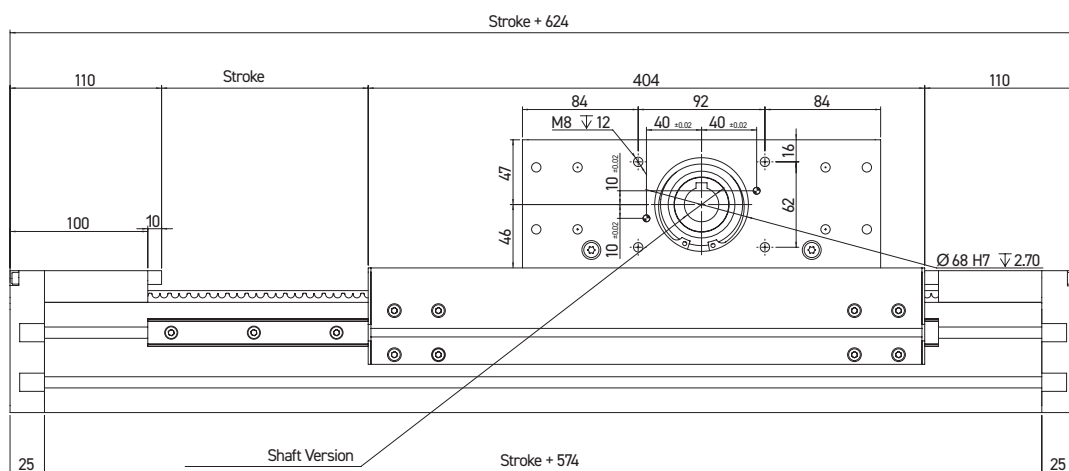
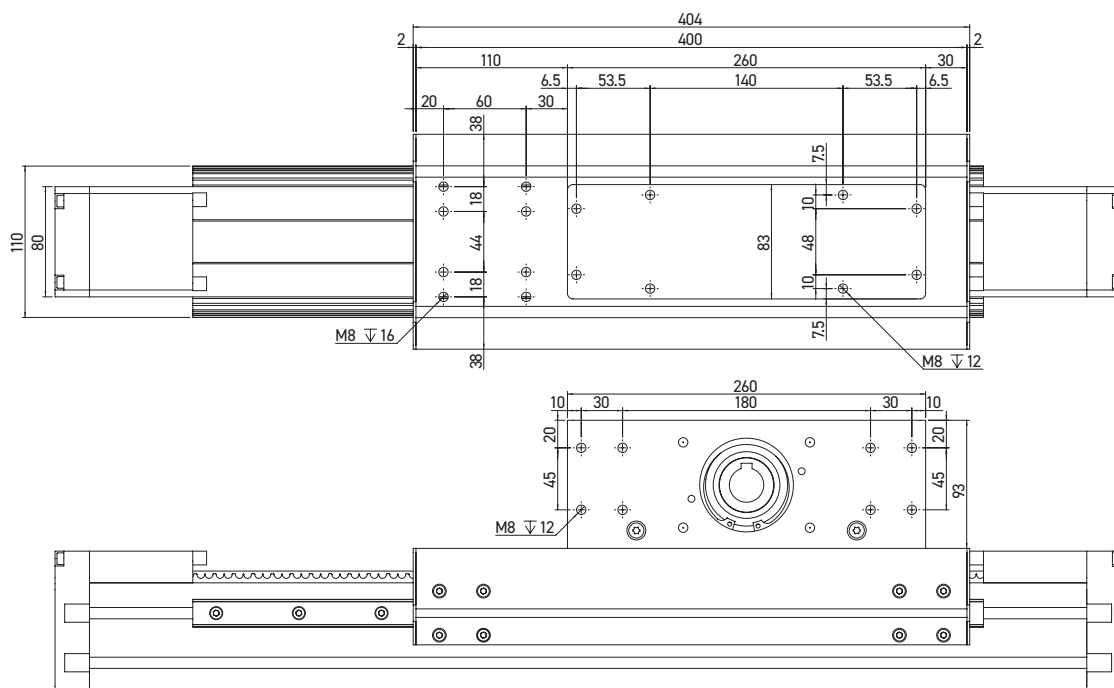
The A letters show the calculated value.



MTZ55S Series Dimensions



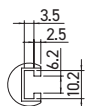
MTZ80S Series Dimensions



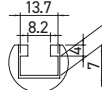
View A



View B



View C



View D

MTZ L&S Series Order Example

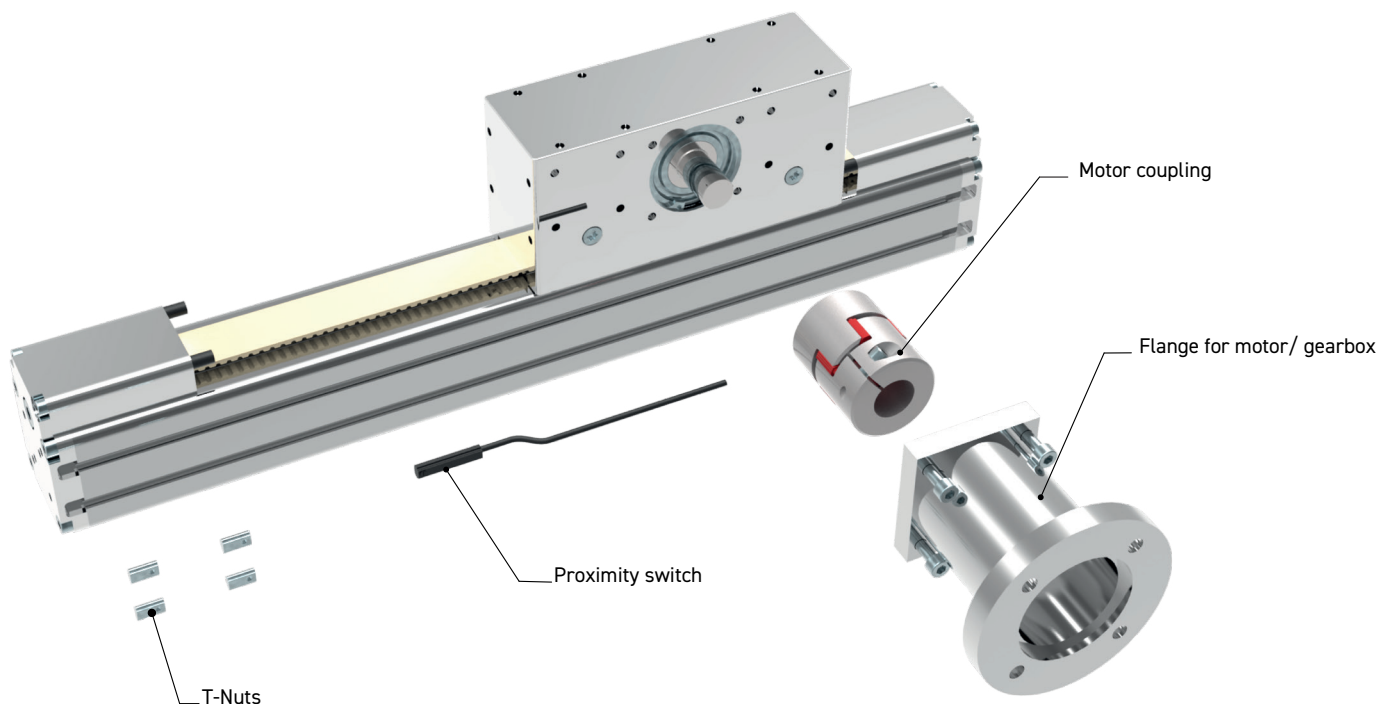
Code: **MTZ 55 L - 2100 - F08**
Options: 1 2 3 4 5

Options		Selection				
1	Series	MTZ				
2	Size	42 (42x42)	55 (55x55)		80 (80x80)	
3	Type	L	L	S	L	S
4	Stroke	0-1000 mm	0-1500 mm		0-1500 mm	
5	Shaft Versions *	F14 M14	F16 M16	F6 M6L M6R D6	F22 M22	F25 M25L M25R

*Shaft Version Codes

F6	Female shaft Ø16 mm with keyshaft	M14	Male shaft Ø14 mm	D6	Double male shaft Ø16 mm
F14	Female shaft Ø16 mm with keyshaft	M16	Male shaft Ø16 mm		
F16	Female shaft Ø16 mm with keyshaft	M22	Male shaft Ø22 mm		
F22	Female shaft Ø22 mm with keyshaft	M6L	Male shaft Ø16 mm mount left		
F25	Female shaft Ø16 mm with keyshaft	M25L	Male shaft Ø25 mm mount left		
		M6R	Male shaft Ø16 mm mount right		
		M25R	Male shaft Ø25 mm mount right		

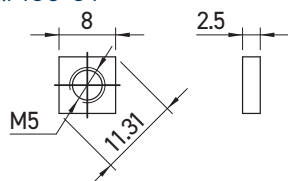
MTZ Series Accessories



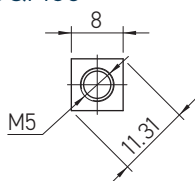
Slot Nuts

Square Nuts

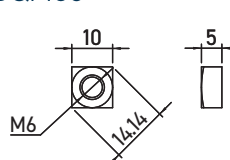
DQM05-01



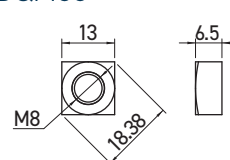
DQM05



DQM06

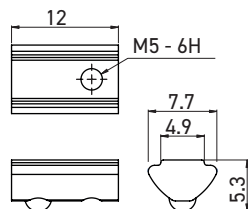


DQM08

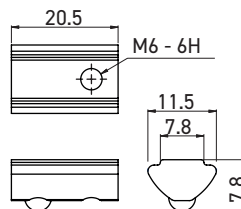


T Nuts

DTM05-M5

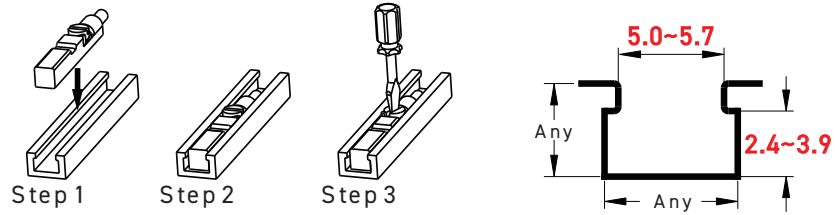


DTM06-M6



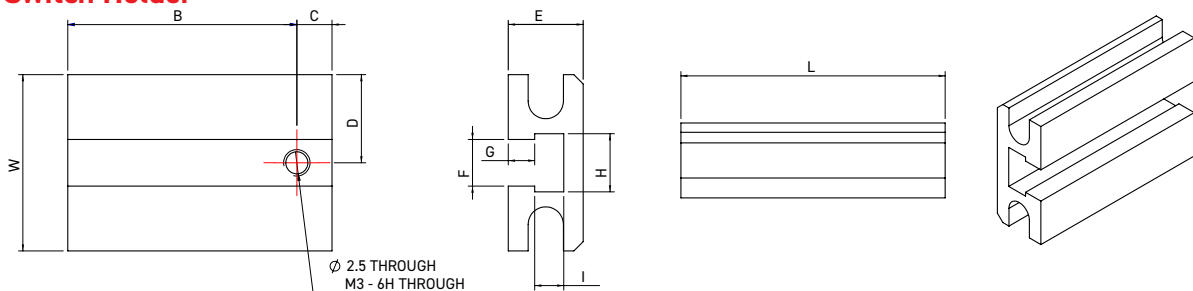
Code	Nut Type	MTZ L 42	MTZ L/S 55	MTZ L/S 80
DQM05-01	Square Nut - M5	X		
DQM05	Square Nut - M5		X	
DQM06	Square Nut - M6			X
DQM08	Square Nut - M8			X
DTM05-M5	Slot Nut T - M5		X	
DTM06-M6	Slot Nut T - M6			X

Magnetic Sensor



Characteristic	AL39-R	AL39-S
Switching Logic	SPST Normally Open	Solid State Output, Normally Open
Sensor Type	Reed Switch	NPN/PNP Automatic Detection
Operating Voltage	5~240V DC/AC	5~30V DC
Switching Current	100 mA Max.	100 mA Max.
Switching Rating	10 W Max.	3 W Max.
Current Consumption	—	7.5 mA Max. @ 24V
Voltage Drop	2.5V Max. @ 100mA DC	1 V Max. @ 200 mA DC
Leakage Current	—	0.01 mA Max.
Indicator	Red LED	Red LED
Cable	2.9 , 2C, Grey Oil Resistat PUR	2.9 , 3C, Black Oil Resistat PUR
Sensitivity	35 ~ 45 Gauss	40 ~ 800 Gauss
Switching Frequency	200 Hz	5000 Hz
Temperature range	-10 ~ 70°C	-10 ~ 70°C
Shock	30 G	50 G
Vibration	9 G	9 G
Enclosure Classification	IP 65 (EN60529)	IP 65 (EN60529)
Protection Circuit	—	Power Reverse Polarity; Surge Suppression
CE Certificate NO.	E8N 11 0 4 53334 005	—
3C Certificate NO.	No. : 2 004010305127433	—
CNEx Certificate NO.	CNEx16.2333X(ExnCIIT6GC)	—
Connect Diagram		
	AL-39R AL-39R-QD8 AL-39R-QD12 AL-39R-EZ2M	M8, M12, EZ QUICK CONNECT OR (IEC61076-2-101) 2 wire QD wiring M83M M124M EZ2M 3 wire QD wiring M83M M124M EZ3M

Sensor Switch Holder



Linear Unit	Dimensions (mm)										Code
	B	C	D	E	F	G	H	I	L	W	
MTZ 80	26	4	6.5	6.5	5.3	1.8	6.6	3.3	30	13	A9AA_AD80

MTF42 Series Technical Data

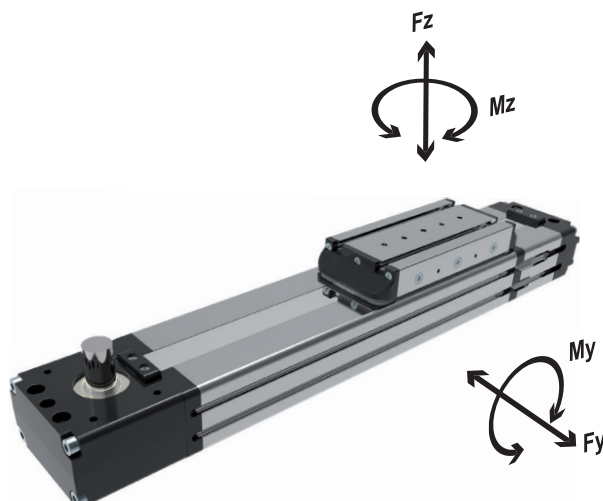
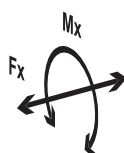
The Matara MTF Series actuator is the most compact of all the M series actuators and allows for simple integration into many machinery layouts. Available in lengths of up to 6 metres and above, these robustly built actuators offer high dynamic precision, without sacrificing payload or thrust capability. The units are also available with tandem carriages (D Type).

Technical Data				
Size				42x75
Max. speed	m/s		3	
Max. stroke length	mm		6000	
Min. stroke length	mm		100	
Pulley drive ratio	mm		130	
Number of teeth of pulley				26
Tooth belt with Steel Reinforced Polyurethane ATL 5 profile clearance 0. Width =	mm		12	
Max rpm	rpm		1400	
Version			H	L
Base weight	Kg		2.8	2.4
Add for 100 mm of stroke	Kg		0.32	0.32
Max. load*	Fx	N	615	
	Fy	N	1275	
	Fz	N	1275	
Moments*	Mx	Nm	18	9
	My	Nm	110	55
	Mz	Nm	110	55
Inertia moment Aluminium profile	Ix	cm4	28	
Inertia moment Aluminium profile	Iy	cm4	37	
Repeatability	mm		± 0.05	
Max. radial load on input shaft	N		250	
No load torque	Nm		>0.3	

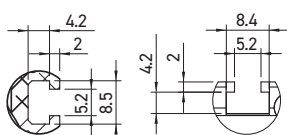
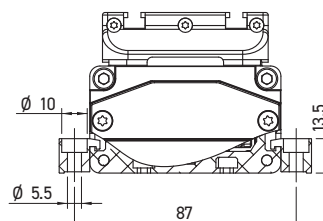
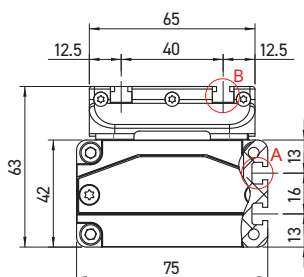
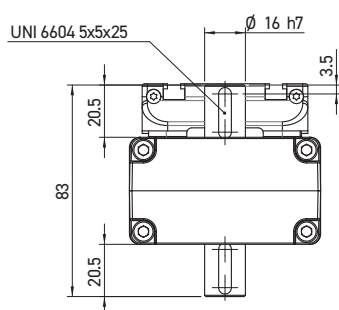
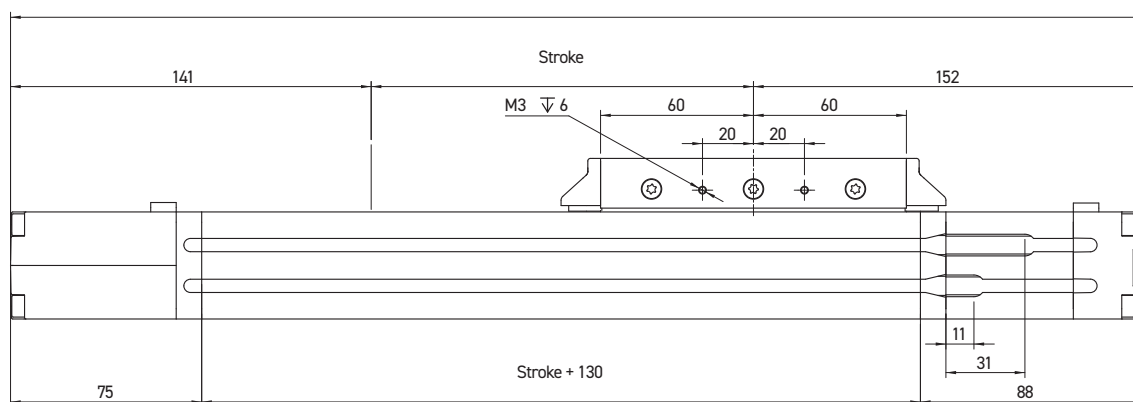
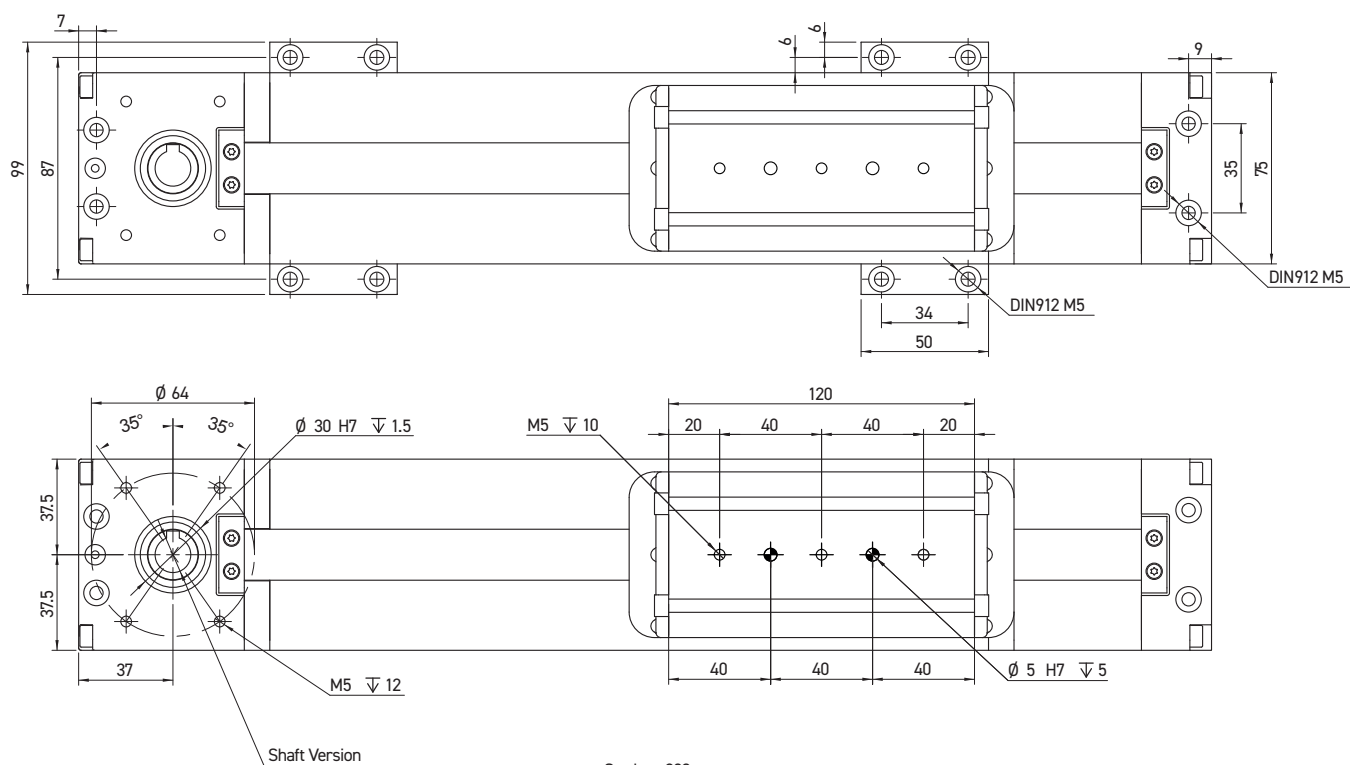
* Max values for dynamic conditions.
 Please refer to the following formula when combined loads are applied.

$$\frac{F_{yA}}{F_y} + \frac{F_{zA}}{F_z} + \frac{M_{xA}}{M_x} + \frac{M_{yA}}{M_y} + \frac{M_{zA}}{M_z} \leq 1$$

The A letters show the calculated value.



MTF42 Series Dimensions



View A

View B



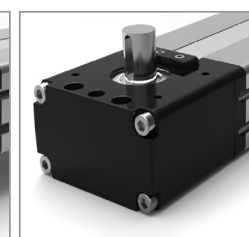
Female Shaft F2



Down mount M6L

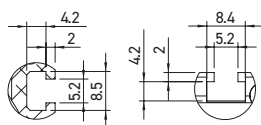
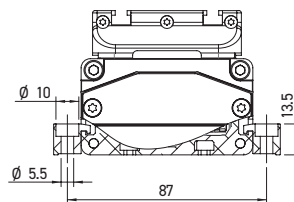
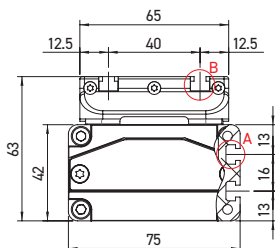
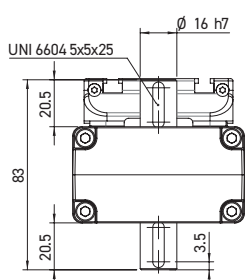
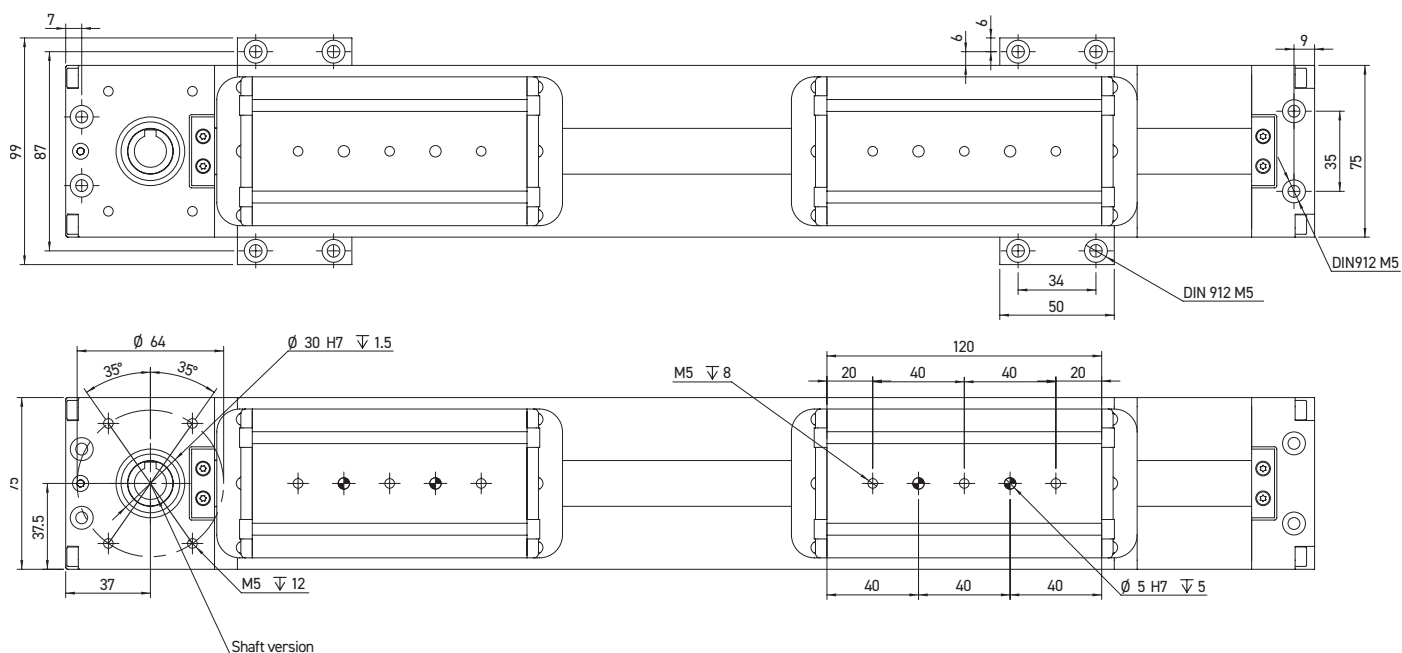


Dual mount D6



Up mount M6R

MTF42D Series Dimensions

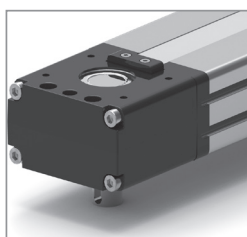


View A

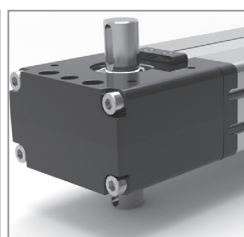
View B



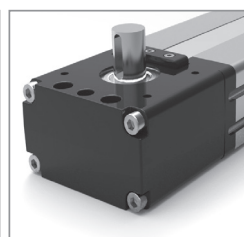
Female Shaft F2



Down mount M6L



Dual mount D6



Up mount M6R

MTF42 Series Order Example

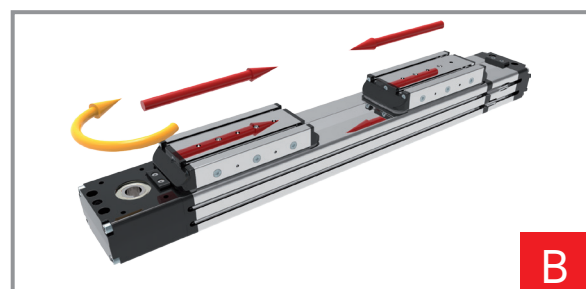
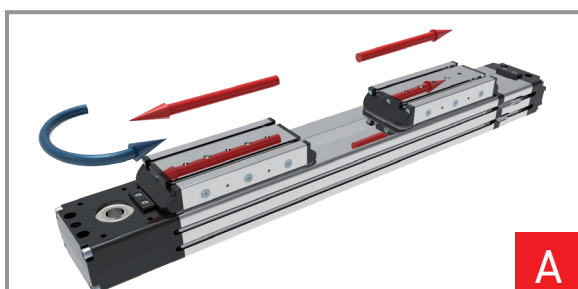
Code: **MTF** **42** **D** - **L** - **A** - **2100** - **F2**
Options: 1 2 3 4 5 6 7

Options		Selection	
1	Series	MTF	
2	Size	42	
3	Carriage Type	D : Double Carriage	_ : Single Carriage
4	Runner Block	L : Single Runner Block H : Double Runner Block	
5	Runner Block Direction of Movement	A, B	N/A
6	Stroke	0-6000 mm	
7	Shaft Versions	F2 F4 M6L M6R D6	

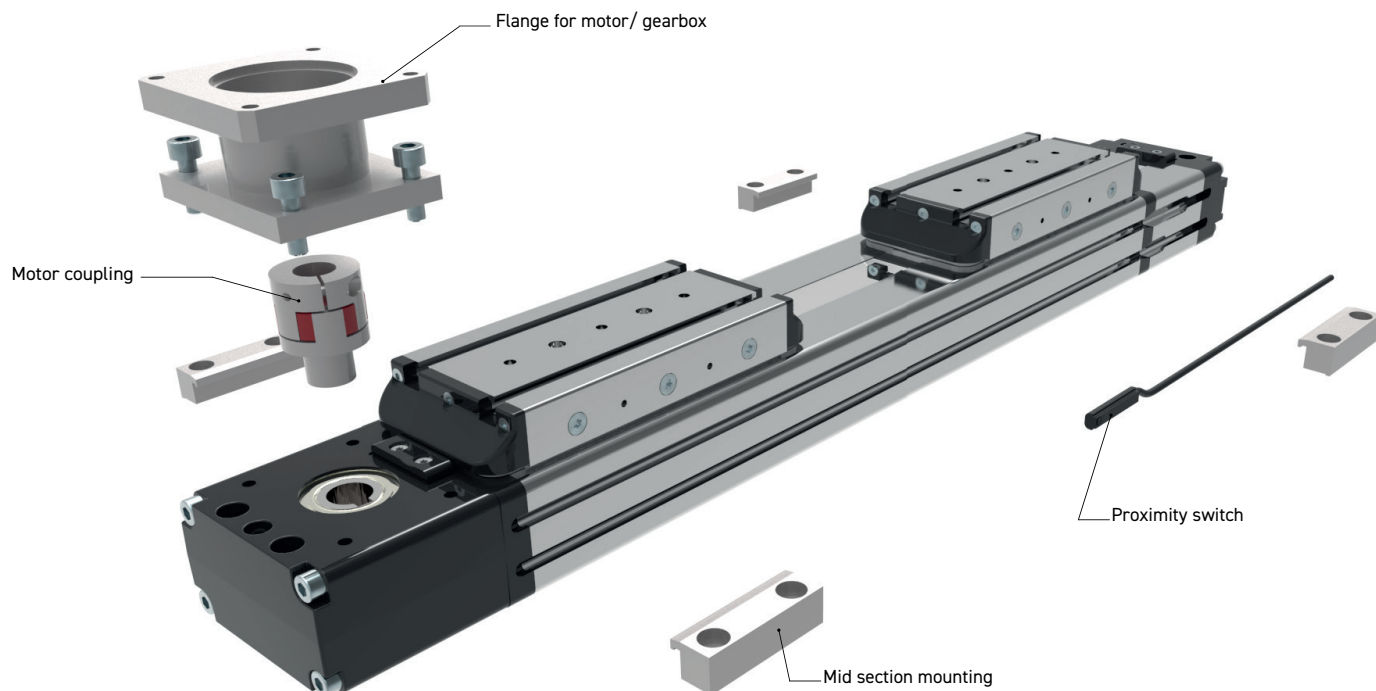
* Shaft Version Codes

F2	Female shaft Ø12 mm with keyshaft	M6L	Male shaft Ø16 mm downwards mount	D6	Double male shaft Ø16 mm
F4	Female shaft Ø14 mm with keyshaft	M6R	Male shaft Ø16 mm upwards mount		

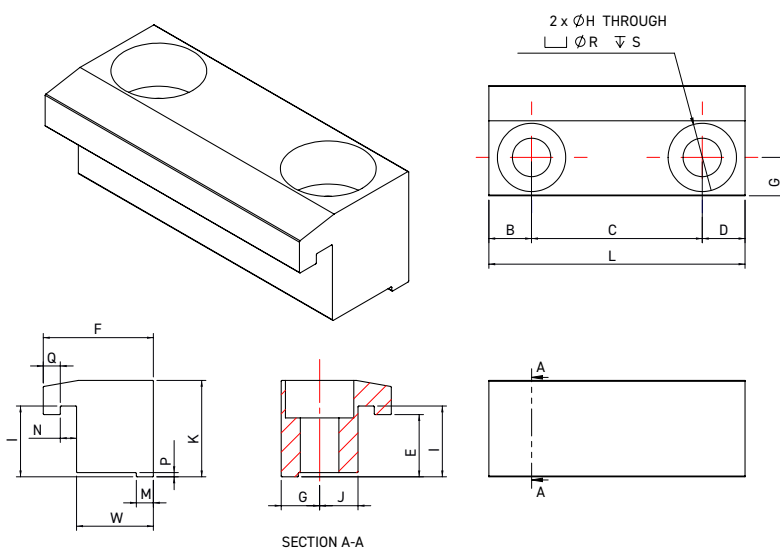
** Figure 1 For D Type Only



MTF42 Series Accessories



Mid Section Mounting

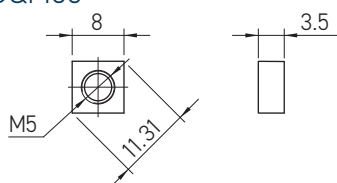


Linear Unit	Dimensions (mm)															$\varnothing H$	$\varnothing R$	∇S	Code
	B	C	D	E	F	G	I	J	K	L	M	N	P	Q	W				
MTF 42	8	34	8	9.5	16	6	10.5	6	13.6	50	2	2.5	0.5	1.5	12	5.5	10	5.4	C4AA003L

Slot Nuts

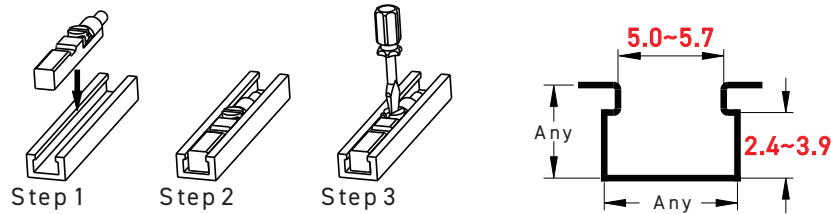
Square Nuts

DQM05



Code	Nut Type	MTF 42
DQM05	Square Nut - M5	X

Magnetic Field Sensor



Characteristic	AL39-R	AL39-S
Switching Logic	SPST Normally Open	Solid State Output, Normally Open
Sensor Type	Reed Switch	NPN/PNP Automatic Detection
Operating Voltage	5~240V DC/AC	5~30V DC
Switching Current	100 mA Max.	100 mA Max.
Switching Rating	10 W Max.	3 W Max.
Current Consumption	—	7.5 mA Max. @ 24V
Voltage Drop	2.5V Max. @ 100mA DC	1 V Max. @ 200 mA DC
Leakage Current	—	0.01 mA Max.
Indicator	Red LED	Red LED
Cable	2.9 , 2C, Grey Oil Resistat PUR	2.9 , 3C, Black Oil Resistat PUR
Sensitivity	35 ~ 45 Gauss	40 ~ 800 Gauss
Switching Frequency	200 Hz	5000 Hz
Temperature range	-10 ~ 70°C	-10 ~ 70°C
Shock	30 G	50 G
Vibration	9 G	9 G
Enclosure Classification	IP 65 (EN60529)	IP 65 (EN60529)
Protection Circuit	—	Power Reverse Polarity; Surge Suppression
CE Certificate NO.	E8N 11 0 4 53334 005	—
3C Certificate NO.	No. : 2 004010305127433	—
CNEx Certificate NO.	CNEx16.2333X(ExnCIICT6GC)	—
Connect Diagram		
	AL-39R AL-39R-QD8 AL-39R-QD12 AL-39R-EZ2M	M8, M12, EZ QUICK CONNECT OR (IEC61076-2-101) 2 wire QD wiring 3 wire QD wiring M83M M124M EZ2M M83M M124M EZ3M

CTJ Series Introduction & Technical Data

The Matara CTJ series actuator has two internal linear rail and carriage assemblies, combined with an extremely wide, AT steel reinforced belt. The body of this unit is extruded in AL6063 Alloy, containing Tslots for modular mounting and sensor switches. The CTJ model is offered with a wide variety of simple plate mounting options and motor mount flanges.

Technical Data										
Series			CTJ 90 S	CTJ 90 L	CTJ 110 S	CTJ 110 L	CTJ 145 S	CTJ 145 L	CTJ 200 S	CTJ 200 L
Carriage length	Lv	mm	102	156	170	215	180	240	265	405
Dynamic load capacity	C	N	4620	9240	19800	39600	34200	68400	49600	99200
Dynamic moment	Mx	Nm	125	250	610	1225	1500	3005	3235	6470
	My	Nm	17	290	118	1680	260	3420	450	8680
	Mz	Nm	34	290	235	1680	520	3420	900	8680
Max. permissible loads (Forces)	Fpy	N	2000	3990	6470	13080	8930	17870	10000	20000
	Fpz	N	4000	8270	8390	18820	15320	30640	24520	50900
Max. permissible loads (Moments)	Mpx	Nm	110	200	260	525	674	1200	1600	3250
	Mpy	Nm	17	290	90	880	260	1700	450	4550
	Mpz	Nm	34	125	90	550	180	893	308	1750
Moved Mass		kg	0.20	0.35	0.64	0.98	1.35	2.25	3.05	5.70
Max. repeatability		mm	± 0.08	±0.08	±0.08	±0.08	±0.08	±0.08	±0.08	±0.08
* Max. length	Lmax	mm	6000	6000	6000	6000	6000	6000	6000	6000
* Max. stroke		mm	5873	5819	5805	5760	5795	5735	5710	5570
** Min. stroke		mm	25	25	40	40	55	55	65	65

* For lengths/stroke over the stated value in the table above please contact us.
Values for max. stroke are not valid for double carriage (equation of defining the linear unit length for particular size of the linear unit needs to be used).

** For minimum stroke below the stated value in the table above please contact us.

Selection	Selection
Operating temperature	0°C ~ +60°C
Duty cycle	100%

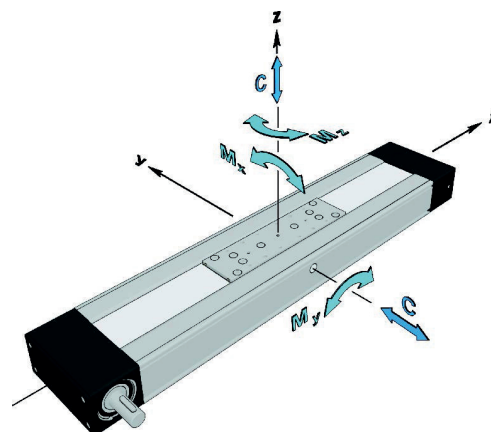
For operating temperatures out of the presented range, please contact us.

i Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor ($f_s \approx 5.0$)

Modulus of elasticity

$E = 70000 \text{ N/mm}^2$

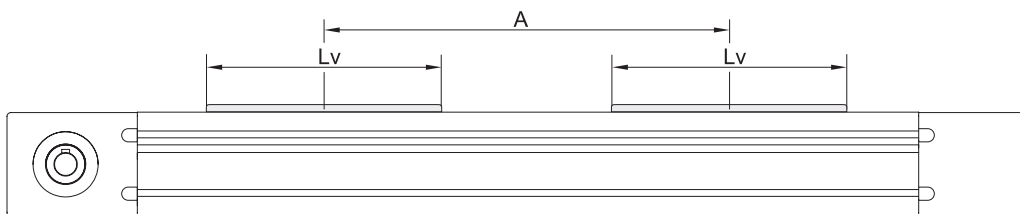


CTJ Series Technical Data For Double Carriage

Doubel Carriage Technical Data						
Series			CTJ 90	CTJ 110	CTJ 145	CTJ 200
Carriage version			S2	S2	S2	S2
Dynamic load capacity	C	N	9230	39600	68400	99200
	Mx	Nm	250	1220	3000	6470
Dynamic moment	My	Nm	4.6 * A (mm)	19.8 * A (mm)	34.2 * A (mm)	49.6 * A (mm)
	Mz	Nm	4.6 * A (mm)	19.8 * A (mm)	34.2 * A (mm)	49.6 * A (mm)
Max. permissible loads (Forces)	Fpy	N	4000	12940	17870	20000
	Fpz	N	8000	16770	30640	49040
Max. permissible loads (Moments)	Mpx	Nm	220	520	1350	3200
	Mpy	Nm	4.6 * A (mm)	8.4 * A (mm)	15.3 * A (mm)	24.5 * A (mm)
	Mpz	Nm	2.0 * A (mm)	6.5 * A (mm)	8.9 * A (mm)	10.0 * A (mm)

* A- Distance between carriages.

i For a higher number of carriages, please contact us



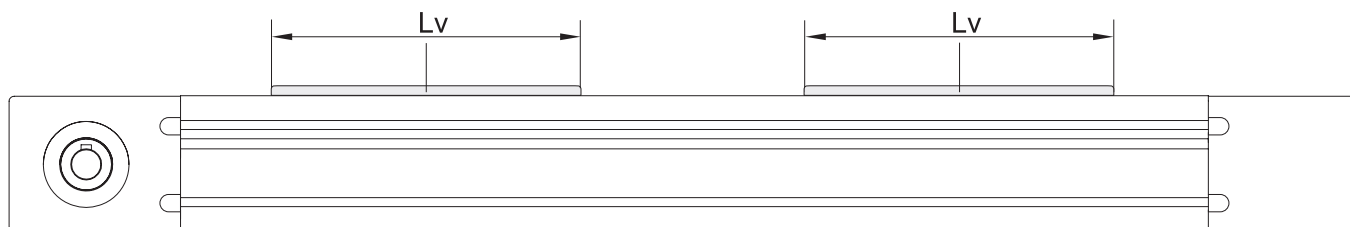
Drive & Belt Data

Drive & Belt Technical Data									
Series		CTJ 90 S	CTJ 90 L	CTJ 110 S	CTJ 110 L	CTJ 145 S	CTJ 145 L	CTJ 200 S	CTJ 200 L
**Max. travel speed	m/s	5		6		6		6	
Max. drive torque	Nm	7.5		15.7		33.6		102 with keyway	129 without keyway
*No load torque	Nm	0.4	0.42	0.98	1.0	1.48	1.5	3.5	4.5
Pulley drive ratio	mm/rev	90		120		165		250	
Pulley diameter	mm	28.65		38.20		52.52		79.58	
Belt type		AT 3		AT 5		AT 5		AT 10	
Belt width	mm	35		50		70		100	
Max. force transmitted by belt	N	520		820		1280		3250	
Specific spring constant	kN	402.5		960		1360		4350	
**Max. acceleration	m/s ²	70		70		70		70	

* The stated values are for strokes up to 500mm. The No Load Torque value increases with stroke elongation.

** For travel speed and acceleration over the stated value in the table above or diagrams, please contact us

Mass & Moment Of Inertia

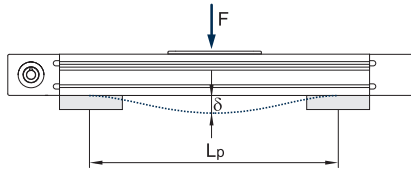


Series	Carriage length	Mass of linear unit*	Mass moment of inertia*	Planar moment of inertia*	
	L_v (mm)	(kg)	($10^{-5} \text{kg} \cdot \text{m}^2$)	I_y (cm^4)	I_z (cm^4)
CTJ 90 S	102	$1.7 + 0.0048 \cdot \text{Stroke (mm)}$	$7 + 0.0031 \cdot \text{Stroke (mm)}$	13.4	107.0
CTJ 90 L	156	$2.1 + 0.0048 \cdot \text{Stroke (mm)}$	$11 + 0.0031 \cdot \text{Stroke (mm)}$		
CTJ 110S	170	$3.6 + 0.0072 \cdot \text{Stroke (mm)}$	$36 + 0.0125 \cdot \text{Stroke (mm)}$	31.1	217.2
CTJ 110 L	215	$4.2 + 0.0072 \cdot \text{Stroke (mm)}$	$49 + 0.0125 \cdot \text{Stroke (mm)}$		
CTJ 145 S	180	$7.2 + 0.0127 \cdot \text{Stroke (mm)}$	$145 + 0.0330 \cdot \text{Stroke (mm)}$	78.9	707.6
CTJ 145 L	240	$8.8 + 0.0127 \cdot \text{Stroke (mm)}$	$208 + 0.0330 \cdot \text{Stroke (mm)}$		
CTJ 200 S	265	$20.2 + 0.0245 \cdot \text{Stroke (mm)}$	$778 + 0.1868 \cdot \text{Stroke (mm)}$	376.4	2744.6
CTJ 200 L	405	$26.2 + 0.0245 \cdot \text{Stroke (mm)}$	$1210 + 0.1868 \cdot \text{Stroke (mm)}$		

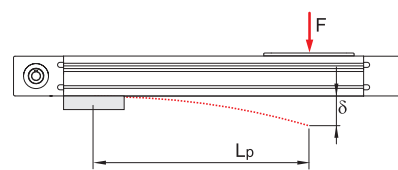
* Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of Linear Unit

Fixed- fixed mounting



Fixed- free mounting



δ Maximum deflection of the linear unit [mm]

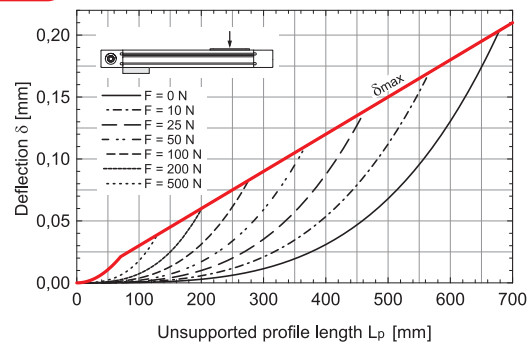
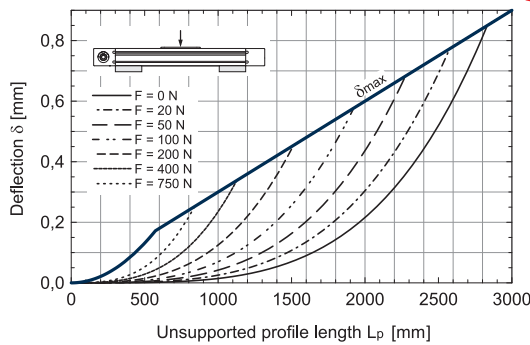
δ_{max} Maximum permissible deflection of the linear unit [mm] F Applied force [N]

L_p Unsupported profile length [mm]

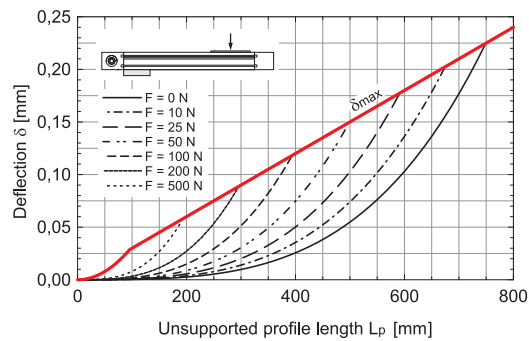
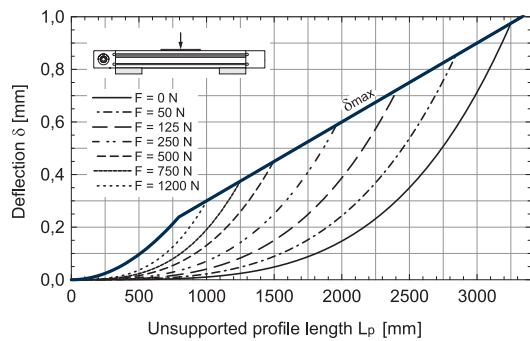
The maximum permissible deflection δ_{max} must not be exceeded.

In the case that maximum deflection δ exceeds the maximum permissible deflection δ_{max} , additional profile supports are needed.

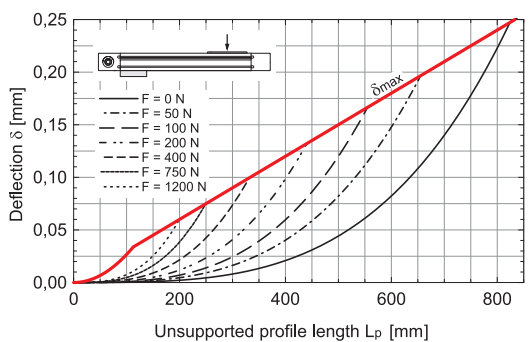
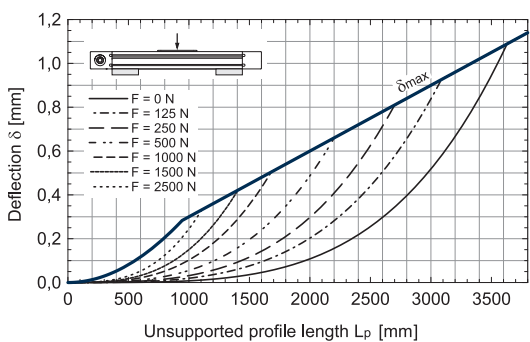
CTJ 90



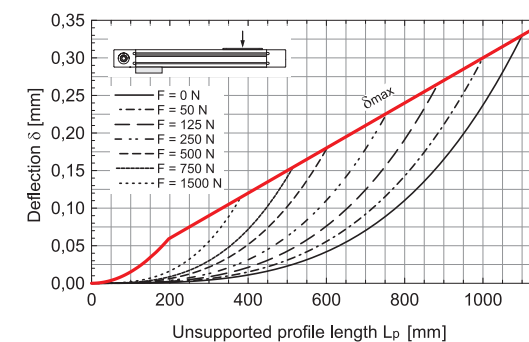
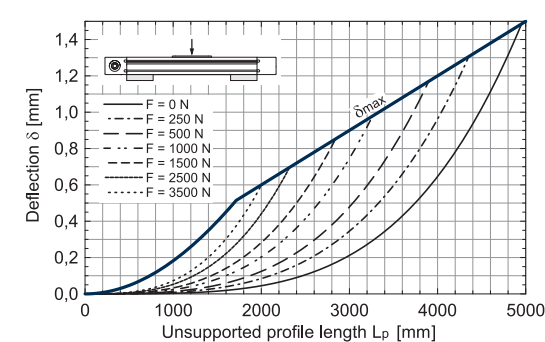
CTJ 110



CTJ 145

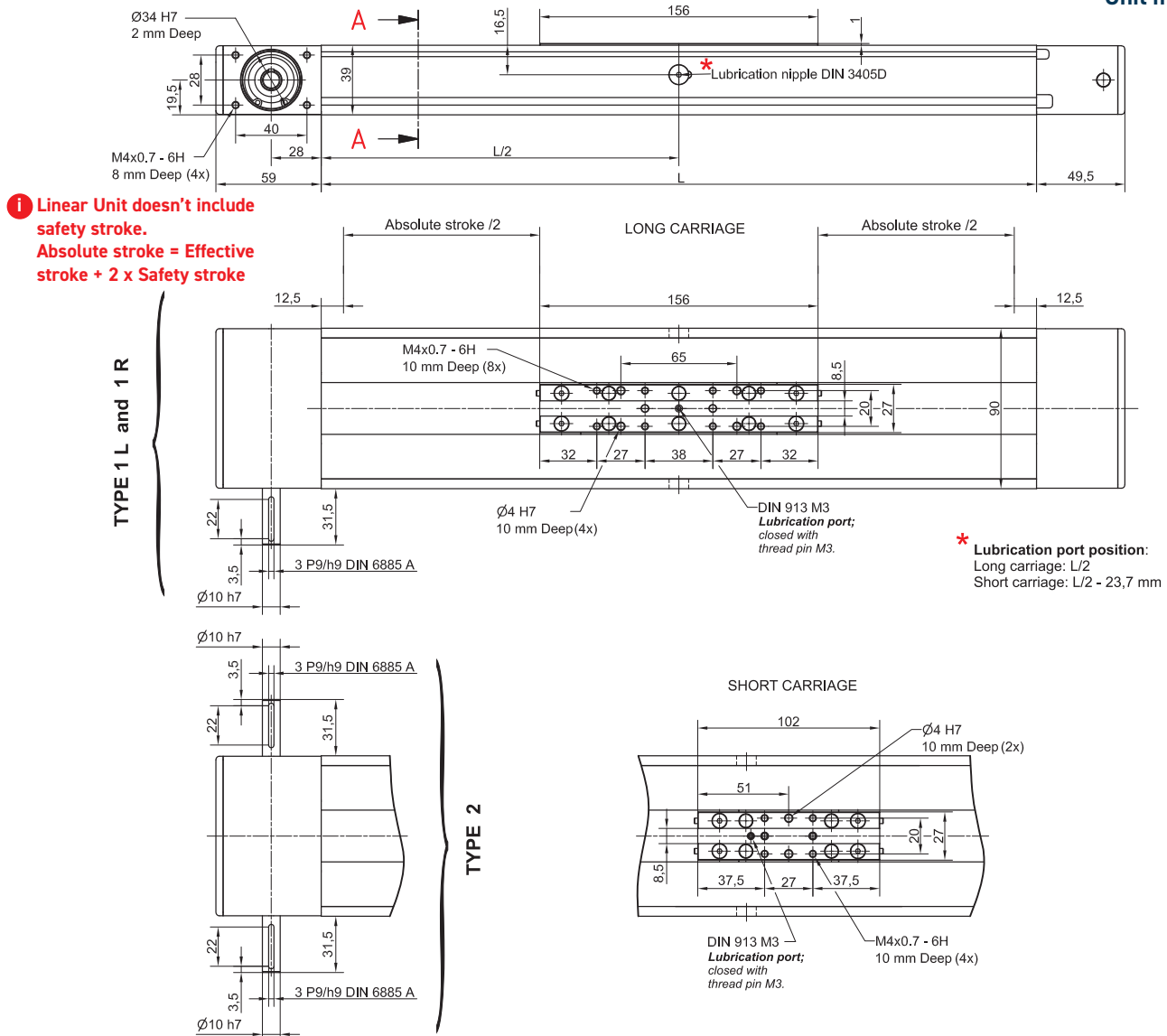


CTJ 200



CTJ 90 Series Dimensions

Unit mm

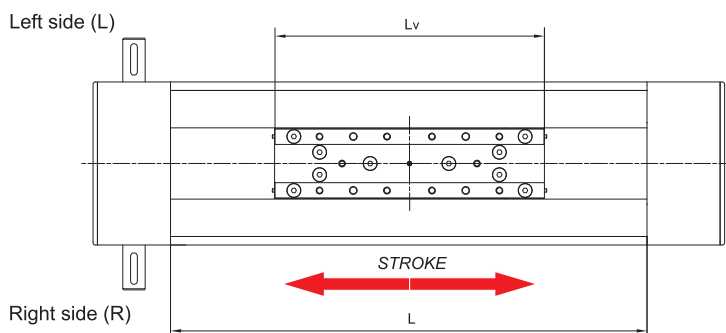


Calculating the linear unit length

Single Carriage

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 25 \text{ mm}$$

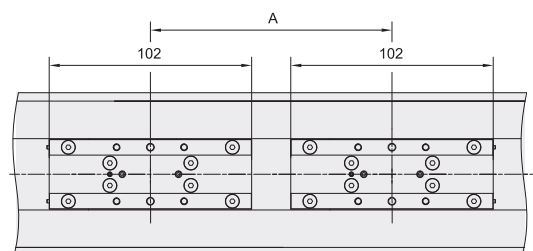
$$L_{\text{total}} = L + 108.5 \text{ mm}$$



Lv - long carriage = 156 mm
Lv - short carriage = 102 mm

Double Carriage

* Only with short carriage version



* For ordering code please contact us

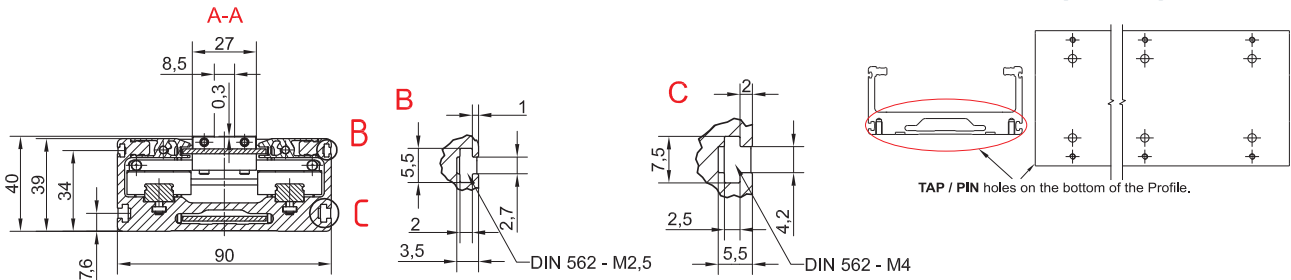
$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 127 \text{ mm}$$

$$L_{\text{total}} = L + 108.5 \text{ mm}$$

A > 102 mm

Unit mm

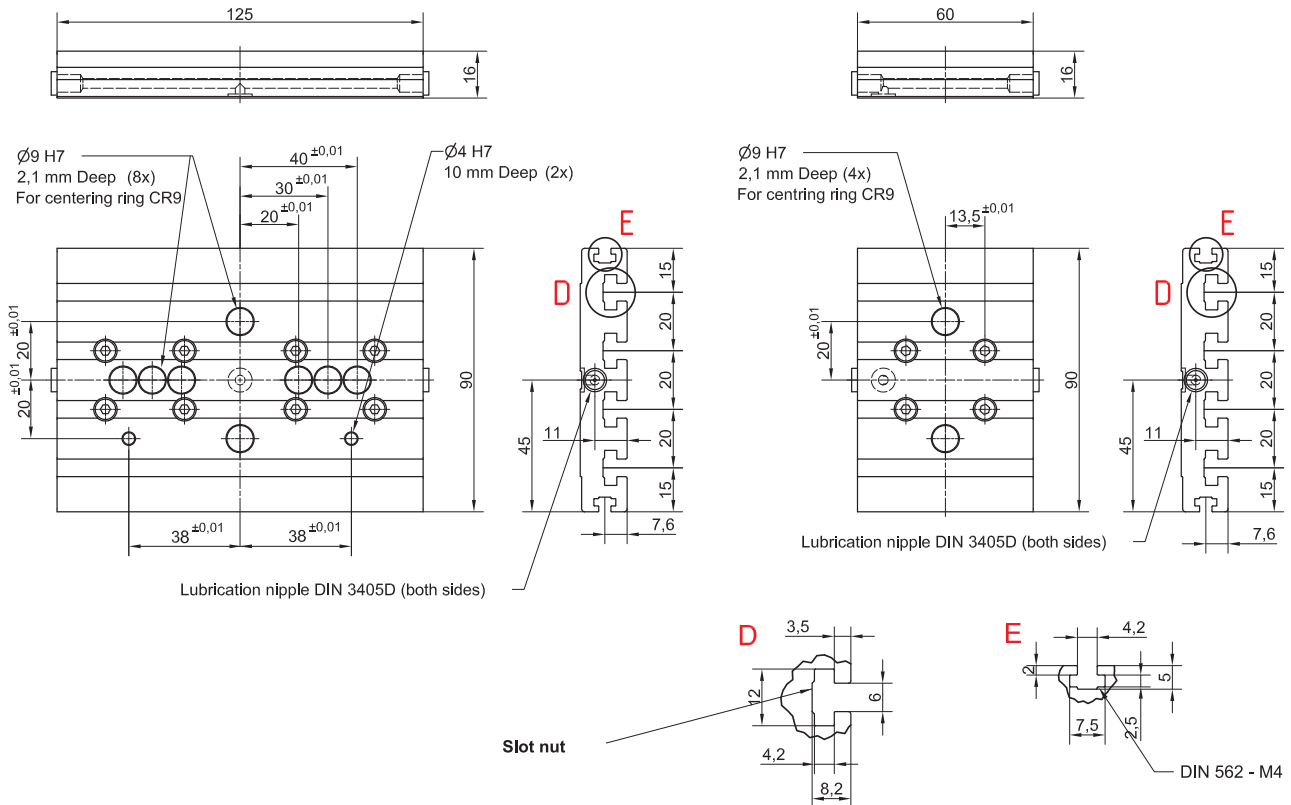
Tap/ Pin holes are
available upon request



Connection Plate

CTJ 90 L

CTJ 90 S



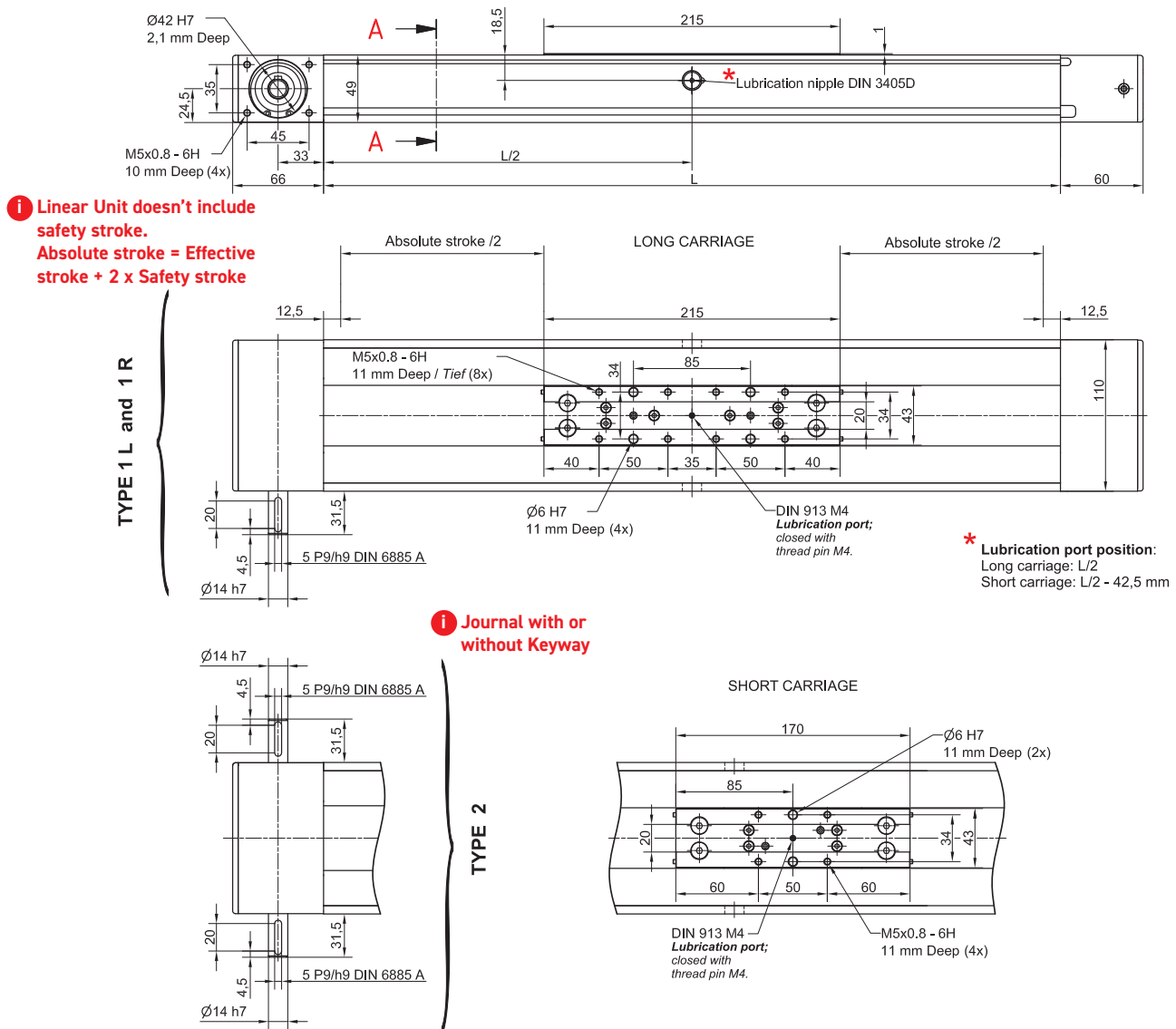
Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTJ 90 S	60	0.2	48853
CTJ 90 L	125	0.4	48855

* Mounting elements for mounting the connection plate on the Linear Unit are included.



CTJ 110 Series Dimensions

Unit mm

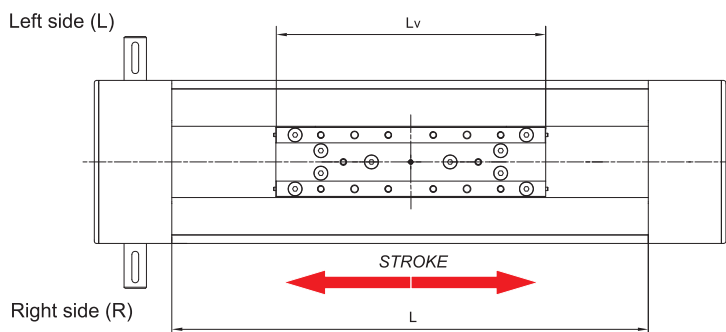


Calculating the linear unit length

Single Carriage

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 25 \text{ mm}$$

$$L_{\text{total}} = L + 126 \text{ mm}$$

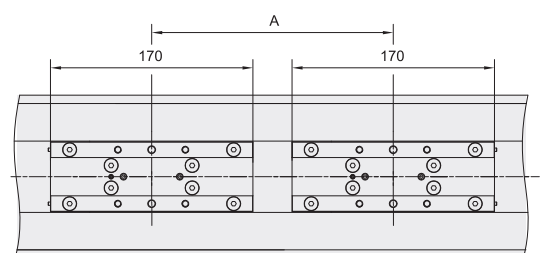


L_v - long carriage = 215 mm

L_v - short carriage = 170 mm

Double Carriage

* Only with short carriage version

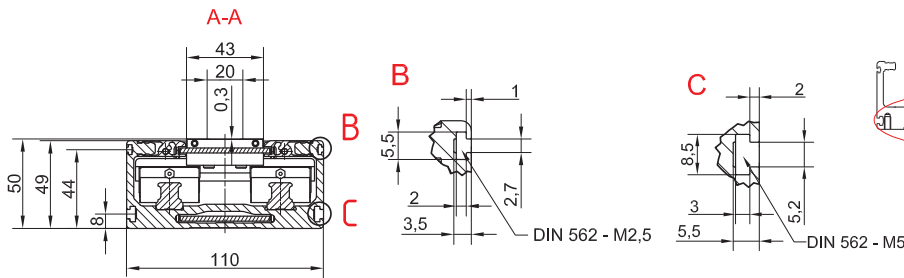


* For ordering code please contact us

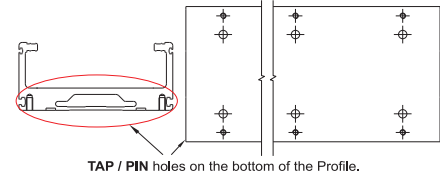
$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 195 \text{ mm}$$

$$L_{\text{total}} = L + 126 \text{ mm}$$

$A \geq 170 \text{ mm}$

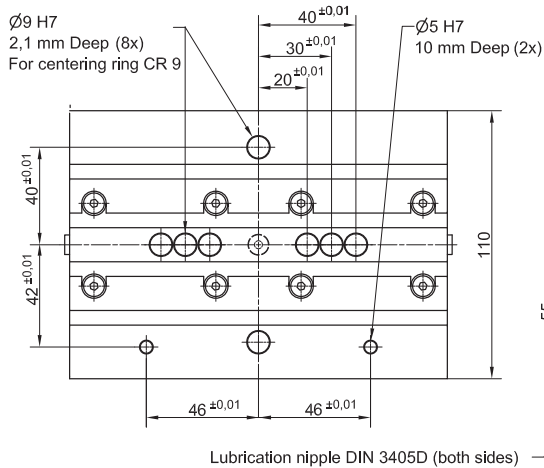
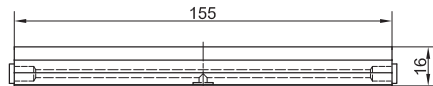


Tap/ Pin holes are
available upon request

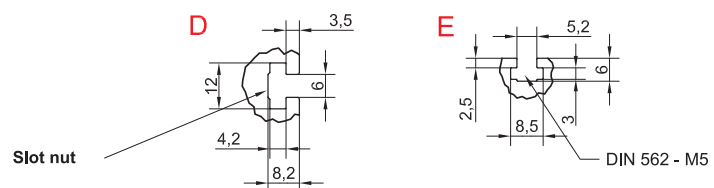
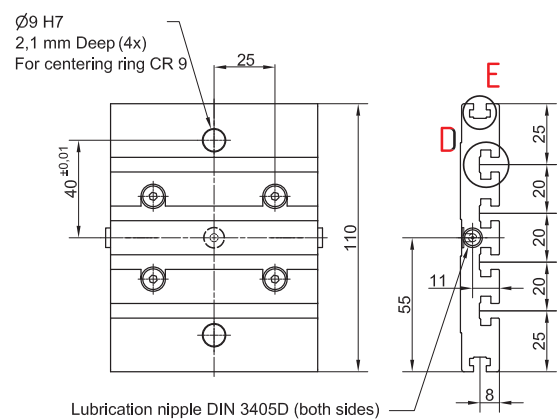
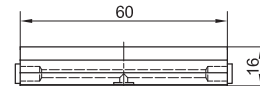


Connection Plate

CTJ 110 L



CTJ 110 S



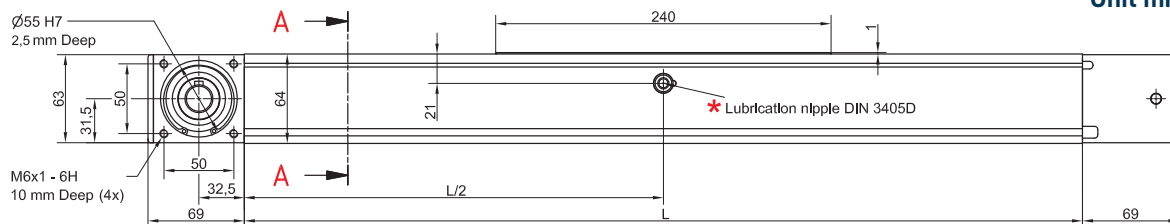
Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTJ 110 S	60	0.35	48525
CTJ 110 L	155	0.60	48480

* Mounting elements for mounting the connection plate on the Linear Unit are included.

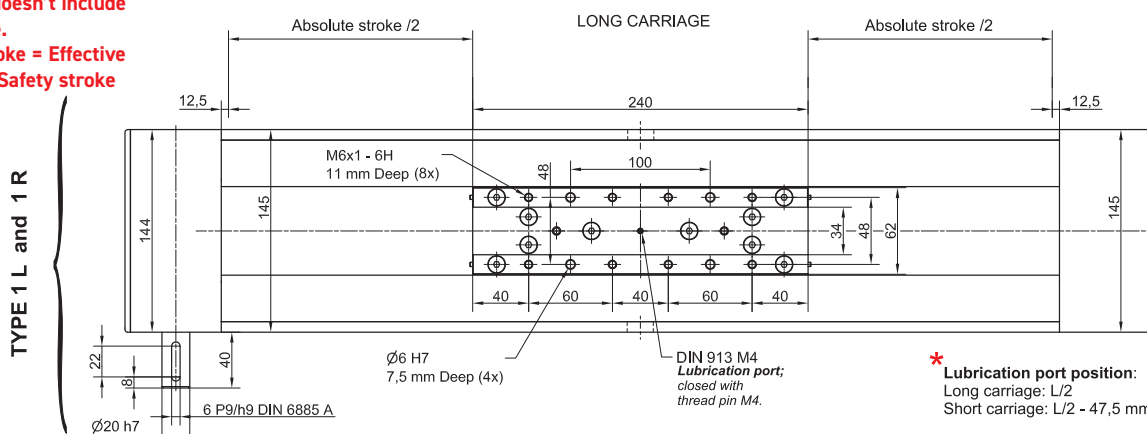


CTJ 145 Series Dimensions

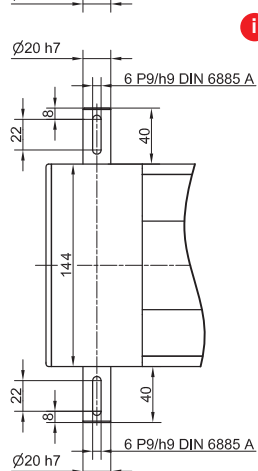
Unit mm



i Linear Unit doesn't include safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke

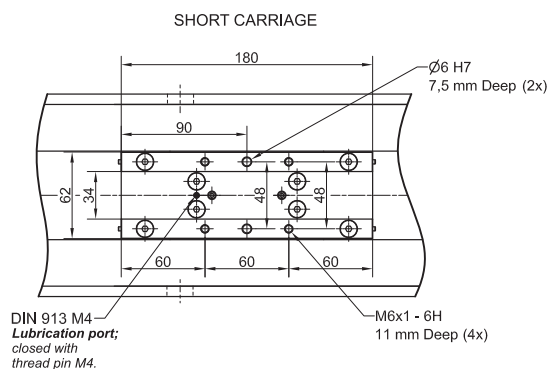


* Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 47,5 mm



i Journal with or without Keyway

TYPE 2



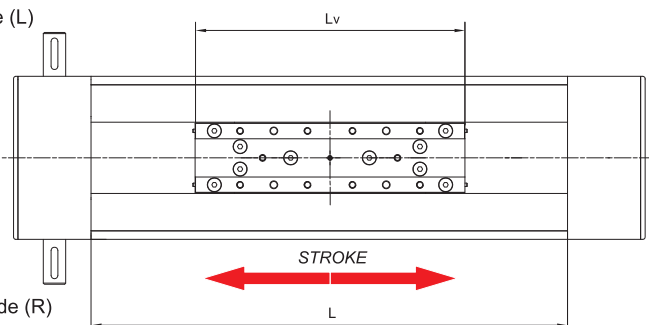
Calculating the linear unit length

Single Carriage

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 25 \text{ mm}$

$L_{\text{total}} = L + 138 \text{ mm}$

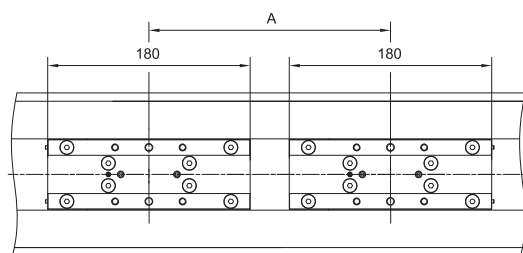
Left side (L)



$L_v - \text{long carriage} = 240 \text{ mm}$
 $L_v - \text{short carriage} = 180 \text{ mm}$

Double Carriage

* Only with short carriage version



* For ordering code please contact us

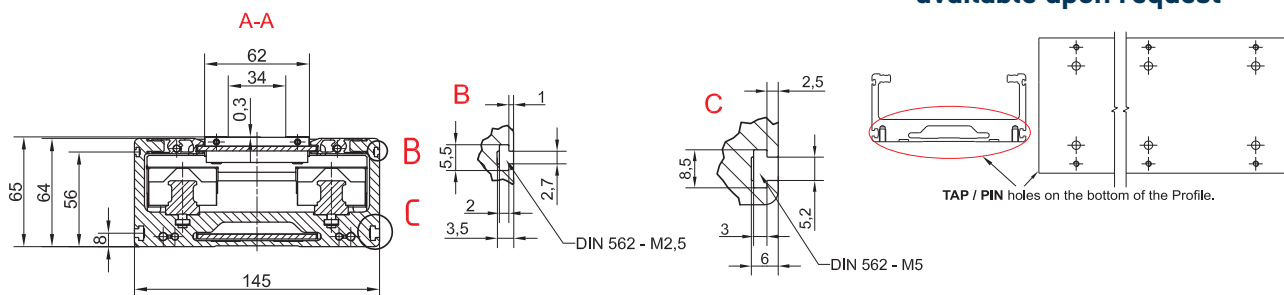
$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 205 \text{ mm}$

$L_{\text{total}} = L + 138 \text{ mm}$

$A \geq 180 \text{ mm}$

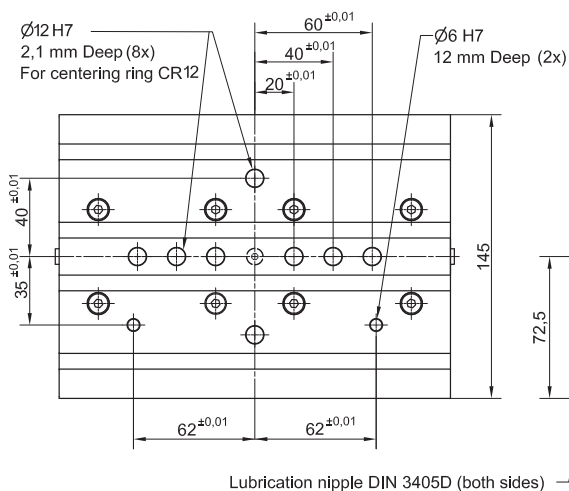
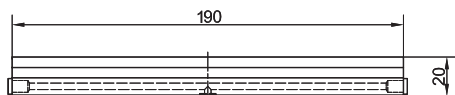
Unit mm

Tap/ Pin holes are
available upon request

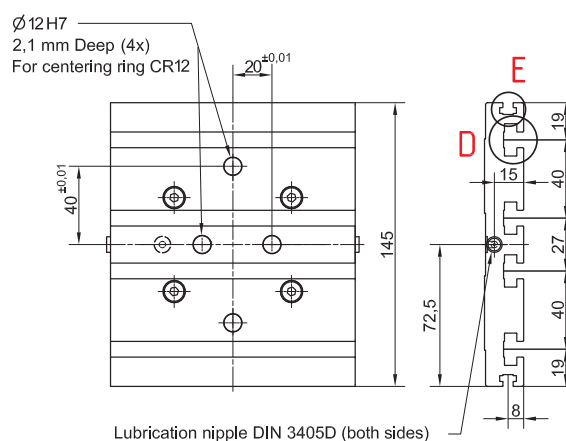
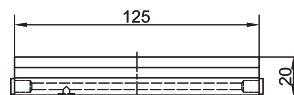


Connection Plate

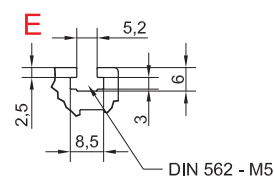
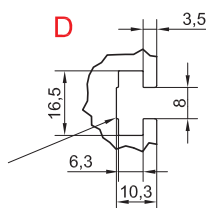
CTJ 145 L



CTJ 145 S



Slot nut

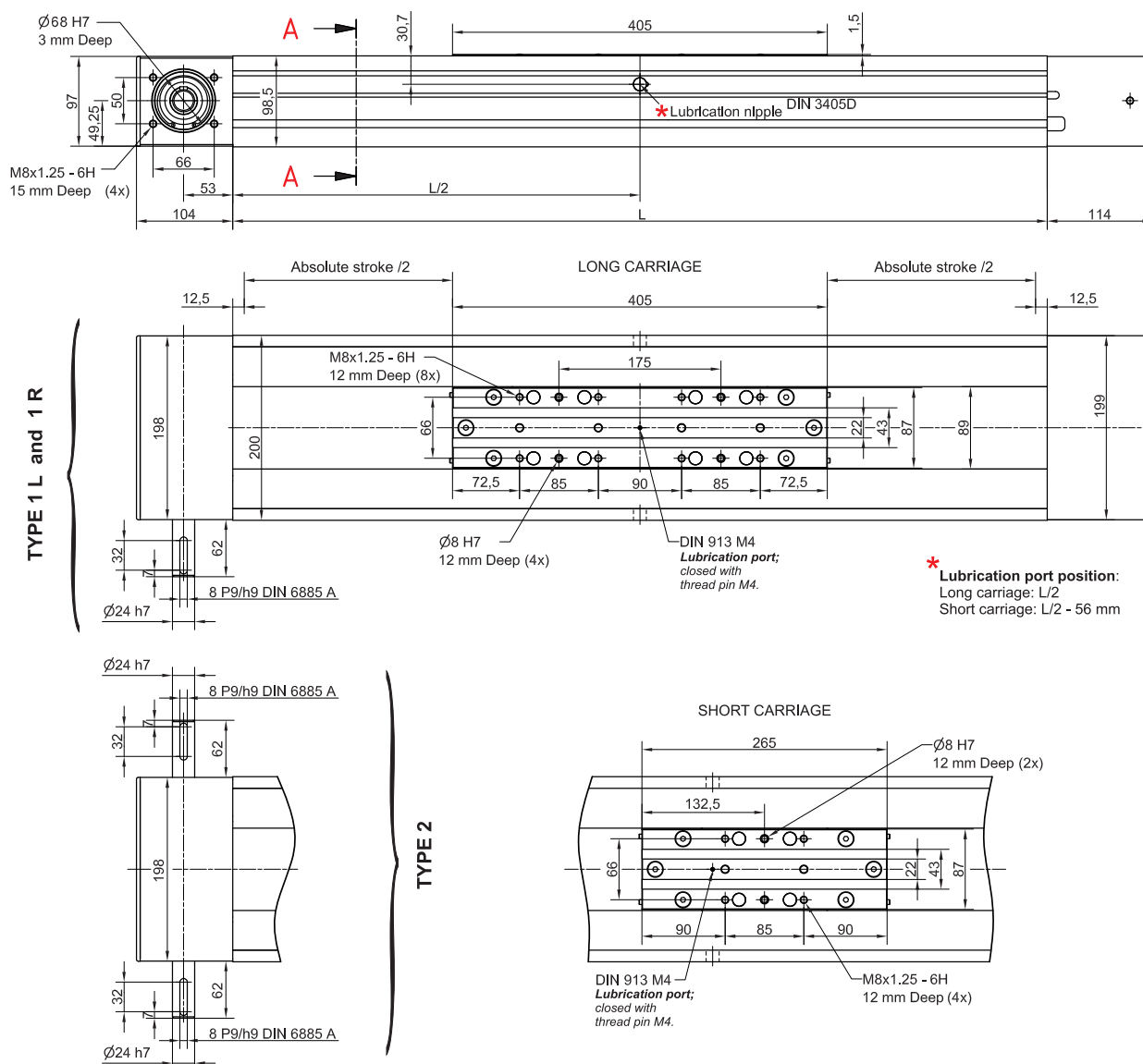


Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTJ 145 S	125	0.8	46776
CTJ 145 L	190	1.3	46775

* Mounting elements for mounting the connection plate on the Linear Unit are included.



CTJ 200 Series Dimensions

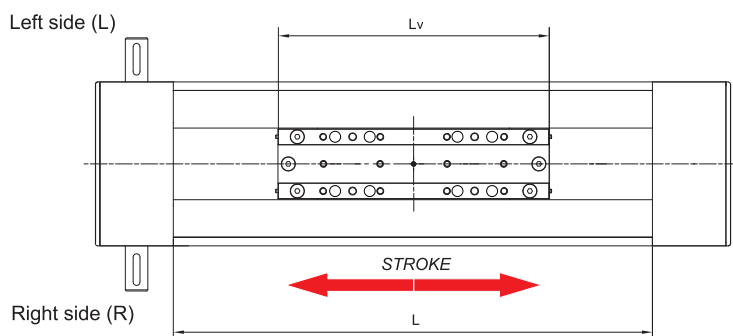


Calculating the linear unit length

Single Carriage

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 25 \text{ mm}$

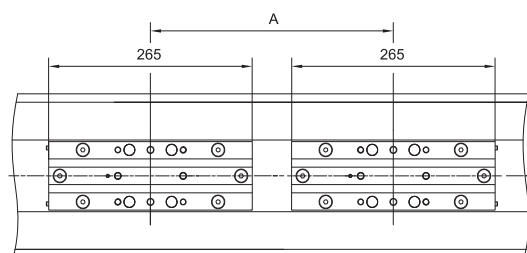
$L_{\text{total}} = L + 218 \text{ mm}$



L_v - long carriage = 405 mm
 L_v - short carriage = 265 mm

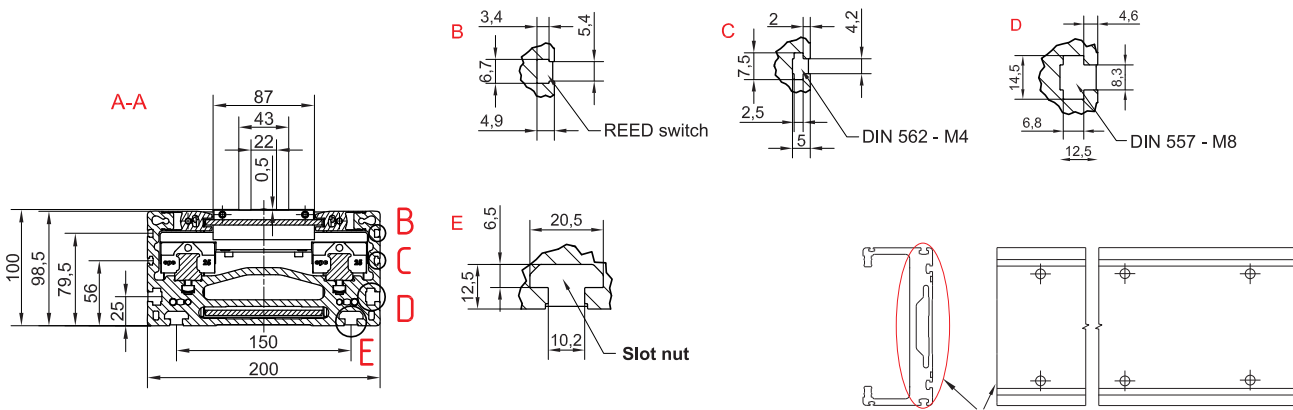
Double Carriage

* Only with short carriage version



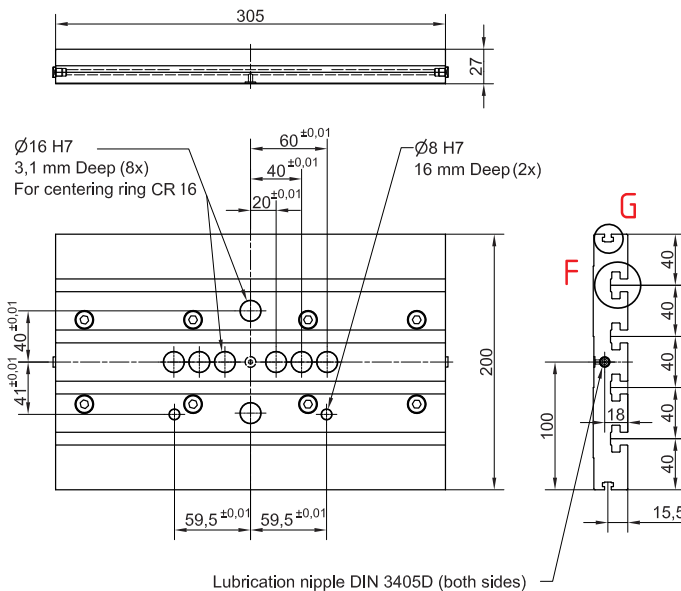
* For ordering code please contact us

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 290 \text{ mm}$
 $L_{\text{total}} = L + 218 \text{ mm}$
 $A \geq 265 \text{ mm}$

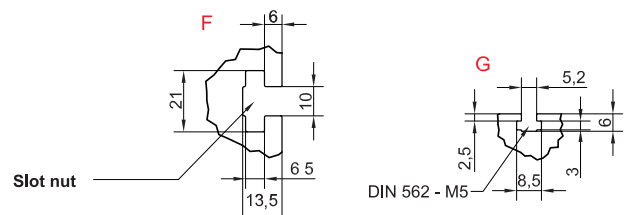
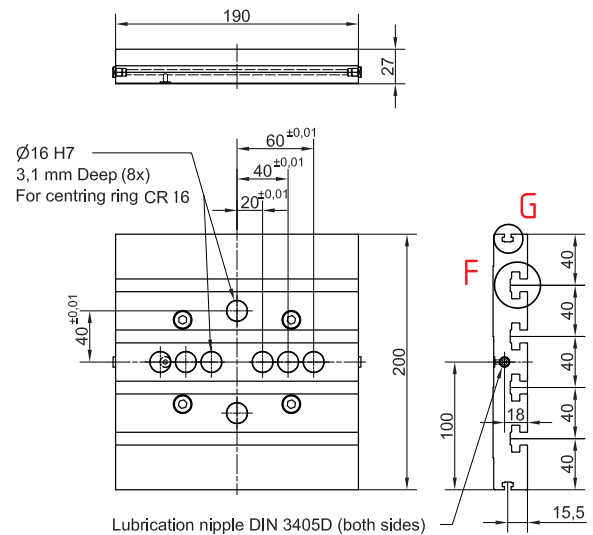


Connection Plate

CTJ 200 L



CTJ 200 S



Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTJ 200 S	190	2.3	52483
CTJ 200 L	305	3.7	52482

* Mounting elements for mounting the connection plate on the Linear Unit are included.



CTJ Series Order Example

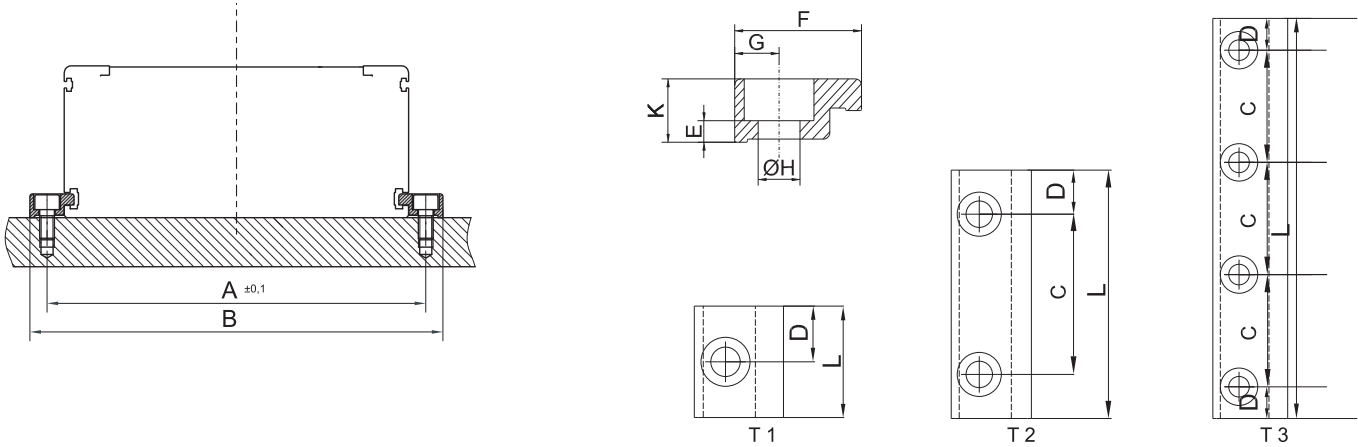
Code: **CTJ** **145** **1000** - **L** - **1** - **R** - **1**
Options: 1 2 3 4 5 6 7

Options		Selection			
1	Series	CTJ			
2	Size	90	110	145	200
3	Absolute Stroke	Absolute Stroke = Effective stroke + 2 x Safety Stroke			
4	Carriage Version	S : Short L : Long			
5	Type of Drive Pulley*	1 : Pulley with Journal 10 : Pulley with Journal (Without Keyway) 2 : Pulley with Journal on both sides 20 : Pulley with Journal on both sides (Without Keyway) 3 : Without Drive Unit			
6	Drive Journal Position	L : Journal on Left Side R : Journal on Right Side _ : Leave Blank for Drive Pulley Type 3			
7	Connection Plate	0: Without 1: With			

* For the CTJ 200 series with drive pulley option 2 or 20, the drive journal position left - L or right - R side must be also specified - motor/gearbox attachment side.

CTJ Accessories

Mid Section Mounting



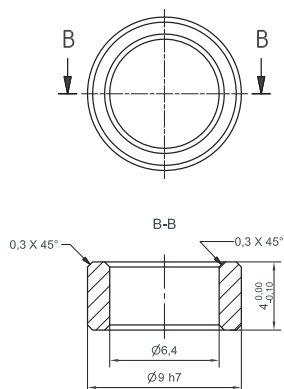
Linear Unit	Type	Dimensions (mm)										Screw	Countersink for	Weight (kg)	Code
		A	B	C	D	L	E	F	G	ØH	K				
CTJ 90	T1	102	112	—	12.5	25	4.5	15	5	4.5	9	M4	DIN 912	0.01	46994
CTJ 90	T2	102	112	40	11	62	4.5	15	5	4.5	9	M4	DIN 912	0.02	48636
CTJ 90	T3	102	112	20	8.5	77	4.5	15	5	4.5	9	M4	DIN 912	0.025	47163
CTJ 90	T3	102	112	25	6	87	4.5	15	5	4.5	9	M4	DIN 912	0.028	55261
CTJ 90	T3	102	112	30	8.5	107	4.5	15	5	4.5	9	M4	DIN 912	0.031	55638
CTJ 110	T1	126	140	—	12.5	25	3.4	20	7	6.6	10	M6	DIN 912	0.01	48642
CTJ 110	T2	126	140	40	11	62	3.4	20	7	6.6	10	M6	DIN 912	0.03	48643
CTJ 110	T3	126	140	20	8.5	77	4.5	20	7	5.5	10	M5	DIN 912	0.03	48640
CTJ 110	T3	126	140	30	8.5	107	4.5	20	7	5.5	10	M5	DIN 912	0.045	46995
CTJ 110	T3	126	140	40	11	142	3.4	20	7	6.6	10	M6	DIN 912	0.056	55260
CTJ 145	T1	161	175	—	12.5	25	3.4	20	7	6.6	10	M6	DIN 912	0.01	48642
CTJ 145	T2	161	175	40	11	62	3.4	20	7	6.6	10	M6	DIN 912	0.03	48643
CTJ 145	T3	161	175	20	8.5	77	4.5	20	7	5.5	10	M5	DIN 912	0.03	48640
CTJ 145	T3	161	175	30	8.5	107	4.5	20	7	5.5	10	M5	DIN 912	0.045	46995
CTJ 145	T3	161	175	40	11	142	3.4	20	7	6.6	10	M6	DIN 912	0.056	55260
CTJ 200	T2	222	240	40	19	78	14.8	29	9	8.5	27.5	M8	DIN 912	0.110	53049
CTJ 200	T2	222	240	50	19	88	14.8	29	9	8.5	27.5	M8	DIN 912	0.120	53050
CTJ 200	T2	222	240	70	19	108	16.3	29	9	8.5	27.5	M8	DIN 912	0.160	53051

Recommended number of mounting fixtures

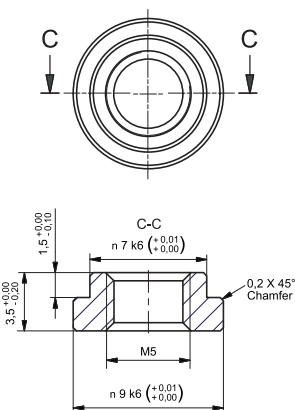
T1	6 pieces per metre, per side
T2	3 pieces per metre, per side
T3	3 pieces per metre, per side

Centring Rings

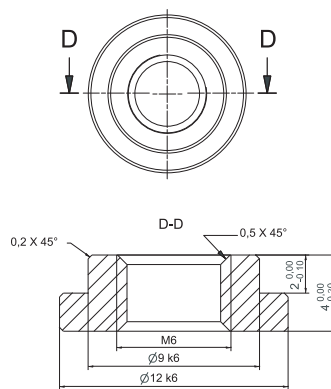
CR 9



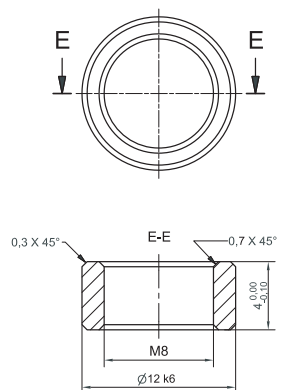
CR 7 / 9



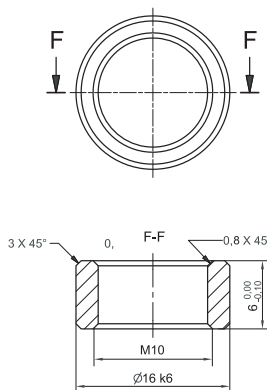
CR 9 / 12



CR 12



CR 16



Type	Compatible with	Code
CR 7/9	CTJ: 90, 110	75114
CR 9/12	CTJ: 90, 110, 145	48885
CR12	CTJ: 145	49049
CR16	CTJ: 200	53023

Slot Nuts



DIN 526



DIN 557



T Nut

Code	Nut Type	CTJ 90	CTJ 110	CTJ 145	CTJ 200
41609	DIN562 - M2.5	X	X	X	
40682	DIN562 - M4	X			X
40768	DIN562 - M5		X	X	
44451	DIN557 - M8				X
5551	Slot Nut T-10-M8				X
5552	Slot Nut T-10-M6				X
5553	Slot Nut T-10-M5				X
5570	Slot N. T-10-M8 L=90				X

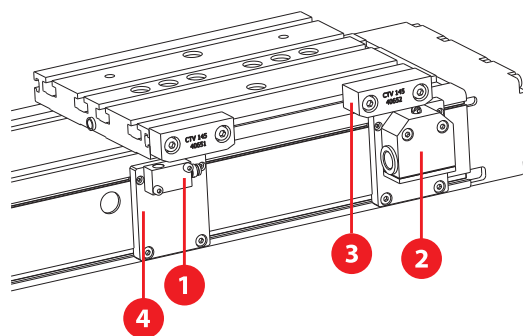
Connection Plate Nuts

Code	Nut Type	CTJ 200
5551	Slot Nut T-10-M8	X
5552	Slot Nut T-10-M6	X
5553	Slot Nut T-10-M5	X
5570	Slot Nut T-10-M8 L =90	X

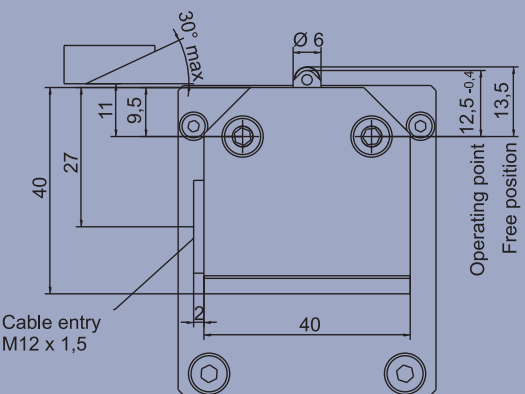
Code	Nut Type	CTJ 145
5704	Slot Nut 8LM4	X
5703	Slot Nut 8LM5	X
5702	Slot Nut 8LM6	X
5701	Slot Nut 8LM8	X

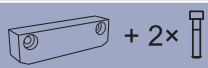
Code	Nut Type	CTJ 110	CTJ 90
48887	Slot Nut 6LM4	X	X
48888	Slot Nut 6LM5	X	X

1	Induction Switch
2	Mechanical Switch
3	Activation Block
4	Switch Holder



MS - Mechanical Switch

Technical Data	SMT-65TP-K NC	SMT-65TP-K NO
 Technical drawing of the mechanical switch. Dimensions include: 40 (width), 27 (height), 11 (height), 9.5 (height), 30° max (angle), 12.5-0.4 (height), 13.5 (height), 40 (width), 2 (height), 40 (width), 12.5-0.4 (height), 13.5 (height). Cable entry M12 x 1.5. Operating point Free position.	Protection class IEC 60529	IP67
	Ambient temperature	-5°C ~ +80°C
	Operating point accuracy	± 0.05 mm
	Approach speed max.	45 m/min
	Approach speed min.	0.01 m/min
	Switching contact	1 changeover
	Switching principle	Snap-action
	Rated voltage	250 V AC
	Switching current, min. at	10 mA
	Switching voltage	24 V DC
	Cable entry	M12 X 1.5

Ordering Codes	CTJ 90	CTJ 110	CTJ 145	CTJ 200
 + 2x 	49032	49031	40652	40652
	47921			
2x  +  + 2x  + 	49034	49033	47939	53055

IS - Inductive Switch

Technical Data		
	Sensor Type	PNP
	Switching function	NC / NO
	Rated voltage	10 - 30 V DC
	Switching Current	150mAmax.
	Ambient temperature	-25°C ...+70°C
	Switching Frequency	800 Hz max.
	Voltage Drop	3,5 V
	Protection class	IP 67
	Electrical connection	M8, 3-pin
	Extension cable	Energy chain compliant - bending radius 75 mm
	Cable material-length	PU
	Cable length	2m / 5m
	Cable length	M8, 3-pin Straight or Angled connector

Ordering Codes		CTJ 90	CTJ 110	CTJ 145	CTJ 200
	Activation block with fixing screws	49032	49031	40652	40652
	PNP NO Inductive switch Only	40671			
	PNP NO inc. switch with mounting elements	49039	49038	48058	53054
	PNP NC Inductive switch Only	43570			
	PNP NC inc. switch with mounting elements	49037	49036	47850	53052
	Extension cable length 2m Straight Connector	8146			
	Extension cable length 5m Straight Connector	8147			
	Extension cable length 2m Angled Connector	9017			
	Extension cable length 5m Angled Connector	9019			

Ballscrew Driven Linear Actuator Range

THE DYNAMICS OF MOVEMENT



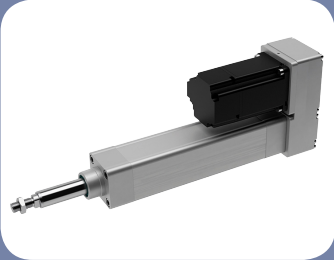
PRECISION BALLSCREW DRIVEN ACTUATORS:

Matara's ballscrew actuators closely resemble a rolling ball bearing system and thus is capable of carrying higher loads and achieving a higher thrust force. For this reason, our ballscrew driven actuators are ideal in applications where the positioning of large, heavy loads may be necessary to a high level of precision.

Matara's precision linear actuator range is a result of over 20 years of actuator development and represents the state of the art in linear actuator design. Designed for the most demanding applications they are ideal when the maximum available performance and longest life cycle are required. Many units are currently being manufactured in Tewkesbury and in the future Matara should be making the complete range.

Manufactured In-House Your Order, Your Way

Ballscrew Driven Actuators Content Guide

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MTV Series Technical Data

The Matara MTV series actuator is a linear unit incorporating a precision ballscrew, enabling high loads to be moved quickly and precisely. These models can be manufactured to give exacting lengths of travel and can be supplied with a full range of modular mounting brackets. Accessories such as flanges, motors, gearboxes and couplings can also be supplied.

Technical Data							
Series			MTV 65	MTV 65 2LR	MTV 80	MTV 80 2LR	MTV 110
Carriage length	Lv	mm	220	220	290	290	330
Dynamic load capacity	C	N	19800	19800	34200	34200	49600
Dynamic moment	Mx	Nm	158	158	370	370	630
	My	Nm	700	700	1470	1470	2650
	Mz	Nm	700	700	1470	1470	2650
Max. permissible loads (Forces)	Fpy	N	6540	6540	8930	8930	10000
	Fpz	N	10190	10190	15070	15070	20260
Max. permissible loads (Moments)	Mpx	Nm	94	94	150	150	295
	Mpy	Nm	350	350	500	500	670
	Mpz	Nm	233	233	384	384	535
* Max. length	Lmax	mm	2920	5789	5480	11055	5850
* Max. stroke		mm	2690	2667	5163	5224	5456

* For lengths/stroke over the stated value in the table above please contact us.

Values for max. stroke are not valid for double carriage (equation of defining the linear unit length for particular size of the linear unit needs to be used).

** For minimum stroke below the stated value in the table above please contact us.

Selection	Selection
Operating temperature	0°C ~ +60°C
Duty cycle	100%

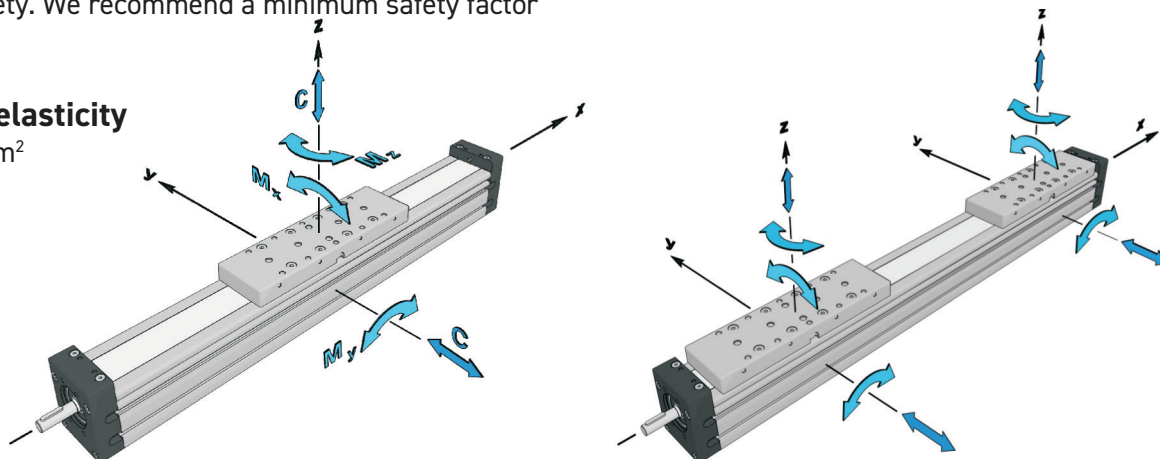
For operating temperatures out of the presented range, please contact us.

i Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor ($f_s = 5.0$)

Modulus of elasticity

$E = 70000 \text{ N/mm}^2$



Ballscrew Technical Data

Ballscrew Technical Data												
Series		MTV 65 MTV 65 2LR			MTV 80 MTV 80 2LR				MTV 110			
Ballscrew	d x l	16 x 5	16 x 10	16 x 16	20 x 5	20 x 10	20 x 20	20 x 50	32 x 5	32 x 10	32 x 20	32 x 32
³ Max. rotational Speed	rev/min	4200			3300				3000	2150	3000	
¹ Max. travel speed	m/s	0.35	0.70	1.12	0.28	0.55	1.10	2.50	0.18	0.50	1.00	1.60
Lead constant	mm/rev	5	10	16	5	10	20	50	5	10	20	32
² Max. repeatability precision	ISO7	mm	± 0.02			± 0.02				± 0.02		
	ISO 5	mm	± 0.01			± 0.01				± 0.01		
Dynamic load capacity BS	Ca (N)	13150	11550	8170	14800	15900	16250	13000	18850	33400	29700	35150
⁵ Max. axial load	Fx	8700	6730	4200	14800	13850	6930	2770	18850	29600	14800	9240
Max. drive torque	Ma (Nm)	5.5 with keyway 7.7 without keyway	5.5 with keyway 11.9 without keyway	11.9 with keyway 13.0 without keyway	11.9 with keyway 24.5 without keyway	16.7 with keyway 16.7 without keyway	27.3 with keyway 52.3 without keyway					
⁴ Min. stroke	(mm)	40			55				65			70
Max. acceleration	(m/s ²)	20			20				20			

1. Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit.
For travel speed and acceleration over the stated value in the table above or diagrams please contact us.
2. For the ball nut with the preload of 2%, please contact us.
3. With SA or 2LR version the max. rotation speed is limited to 3000 rev/min.
4. For minimum stroke below the stated value in the table above please contact us.
5. In the case of 2RL version the axial load is total axial load of both carriages.

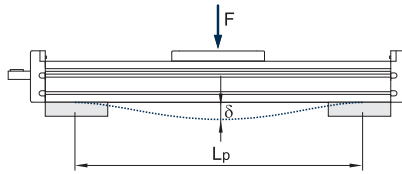
Mass & Moment Of Inertia

Series	Ballscrew	Number of SA	Mass of linear unit	Moved Mass	Mass moment of inertia	No load torque	Planar moment of inertia*	
	(d x l)	n _{SA}	(kg)	(d x l)	(10 ⁻⁵ kg *m ²)	(Nm)	I _y (cm ⁴)	I _z (cm ⁴)
MTV 65	16 x 5	0	4.0 + 0.0073 * Stroke (mm)	1.5	1.6 + 0.0052 * Stroke (mm)	0.11	71.3	89.4
		2	4.5 + 0.0073 * Stroke (mm)	1.58	1.9 + 0.0052 * Stroke (mm)	0.13		
		4	5.0 + 0.0073 * Stroke (mm)	1.66	2.2 + 0.0052 * Stroke (mm)	0.15		
	16 x 5 2LR version	0	7.2 + 0.0146 * Stroke (mm)	3	2.9 + 0.0104 * Stroke (mm)	0.22		
		2	8.2 + 0.0146 * Stroke (mm)	3.16	3.5 + 0.0104 * Stroke (mm)	0.26		
		4	9.2 + 0.0146 * Stroke (mm)	3.32	4.1 + 0.0104 * Stroke (mm)	0.29		
	16 x 10	0	4.0 + 0.0073 * Stroke (mm)	1.5	1.9 + 0.0052 * Stroke (mm)	0.12		
		2	4.5 + 0.0073 * Stroke (mm)	1.58	2.2 + 0.0052 * Stroke (mm)	0.16		
		4	5.0 + 0.0073 * Stroke (mm)	1.66	2.5 + 0.0052 * Stroke (mm)	0.19		
	16 x 10 2LR version	0	7.2 + 0.0146 * Stroke (mm)	3	3.5 + 0.0104 * Stroke (mm)	0.24		
		2	8.2 + 0.0146 * Stroke (mm)	3.16	4.1 + 0.0104 * Stroke (mm)	0.28		
		4	9.2 + 0.0146 * Stroke (mm)	3.32	4.8 + 0.0104 * Stroke (mm)	0.31		
	16 x 16	0	4.0 + 0.0073 * Stroke (mm)	1.5	2.5 + 0.0052 * Stroke (mm)	0.13		
		2	4.5 + 0.0073 * Stroke (mm)	1.58	2.8 + 0.0052 * Stroke (mm)	0.19		
		4	5.0 + 0.0073 * Stroke (mm)	1.66	3.2 + 0.0052 * Stroke (mm)	0.24		
MTV 80	20 x 5	0	8.2 + 0.0114 * Stroke (mm)	3	5.6 + 0.0127 * Stroke (mm)	0.16	144.1	192.3
		2	8.9 + 0.0114 * Stroke (mm)	3.07	6.2 + 0.0127 * Stroke (mm)	0.19		
		4/6/8/10	9.7 + 0.4 * (n _{SA} - 4) + 0.0114 * Stroke (mm)	3.21 + 0.035 * (n _{SA} - 4)	7.0 + 0.4 * (n _{SA} - 4) + 0.0127 * Stroke (mm)	0.24 + 0.015 * (n _{SA} - 4)		
	20 x 5 2LR Version	0	14.6 + 0.0228 * Stroke (mm)	6	9.5 + 0.0254 * Stroke (mm)	0.32		
		2	15.9 + 0.0228 * Stroke (mm)	6.14	10.7 + 0.0254 * Stroke (mm)	0.37		
		4/6/8/10	17.6 + 0.8 * (n _{SA} - 4) + 0.0228 * Stroke (mm)	6.42 + 0.07 * (n _{SA} - 4)	12.3 + 0.8 * (n _{SA} - 4) + 0.0254 * Stroke (mm)	0.48 + 0.03 * (n _{SA} - 4)		
	20 x 10	0	8.2 + 0.0114 * Stroke (mm)	3	6.2 + 0.0127 * Stroke (mm)	0.17		
		2	8.9 + 0.0114 * Stroke (mm)	3.07	6.8 + 0.0127 * Stroke (mm)	0.22		
		4/6/8/10	9.7 + 0.4 * (n _{SA} - 4) + 0.0114 * Stroke (mm)	3.21 + 0.035 * (n _{SA} - 4)	7.6 + 0.4 * (n _{SA} - 4) + 0.0127 * Stroke (mm)	0.33 + 0.025 * (n _{SA} - 4)		
	20 x 20	0	8.2 + 0.0114 * Stroke (mm)	3	8.5 + 0.0127 * Stroke (mm)	0.18		
		2	8.9 + 0.0114 * Stroke (mm)	3.07	9.1 + 0.0127 * Stroke (mm)	0.29		
		4/6/8/10	9.7 + 0.4 * (n _{SA} - 4) + 0.0114 * Stroke (mm)	3.21 + 0.035 * (n _{SA} - 4)	10.1 + 0.5 * (n _{SA} - 4) + 0.0127 * Stroke (mm)	0.50 + 0.055 * (n _{SA} - 4)		
	20 x 50	0	8.2 + 0.0114 * Stroke (mm)	3	24.4 + 0.0127 * Stroke (mm)	0.58		
		2	8.9 + 0.0114 * Stroke (mm)	3.07	25.5 + 0.0127 * Stroke (mm)	0.85		
		4/6/8/10	9.7 + 0.4 * (n _{SA} - 4) + 0.0114 * Stroke (mm)	3.21 + 0.035 * (n _{SA} - 4)	27.1 + 0.6 * (n _{SA} - 4) + 0.0127 * Stroke (mm)	1.38 + 0.0135 * (n _{SA} - 4)		
MTV 110	32 x 5	0	17.3 + 0.0216 * Stroke (mm)	4.9	34.6 + 0.0690 * Stroke (mm)	0.45	562.0	669.0
		2	17.7 + 0.0216 * Stroke (mm)	5.03	35.1 + 0.0690 * Stroke (mm)	0.52		
		4/6/8/10	19.3 + 0.8 * (n _{SA} - 4) + 0.0216 * Stroke (mm)	5.29 + 0.065 * (n _{SA} - 4)	39.4 + 2.2 * (n _{SA} - 4) + 0.0690 * Stroke (mm)	0.66 + 0.035 * (n _{SA} - 4)		
	32 x 10	0	17.3 + 0.0216 * Stroke (mm)	4.9	35.5 + 0.0690 * Stroke (mm)	0.5		
		2	17.7 + 0.0216 * Stroke (mm)	5.03	36.1 + 0.0690 * Stroke (mm)	0.64		
		4/6/8/10	19.3 + 0.8 * (n _{SA} - 4) + 0.0216 * Stroke (mm)	5.29 + 0.065 * (n _{SA} - 4)	40.4 + 2.2 * (n _{SA} - 4) + 0.0690 * Stroke (mm)	0.92 + 0.070 * (n _{SA} - 4)		
	32 x 20	0	17.3 + 0.0216 * Stroke (mm)	4.9	39.3 + 0.0690 * Stroke (mm)	0.55		
		2	17.7 + 0.0216 * Stroke (mm)	5.03	39.9 + 0.0690 * Stroke (mm)	0.83		
		4/6/8/10	19.3 + 0.8 * (n _{SA} - 4) + 0.0216 * Stroke (mm)	5.29 + 0.065 * (n _{SA} - 4)	44.4 + 2.2 * (n _{SA} - 4) + 0.0690 * Stroke (mm)	1.40 + 0.140 * (n _{SA} - 4)		
	32 x 32	0	17.3 + 0.0216 * Hub (mm)	4.9	47.0 + 0.0690 * Stroke (mm)	0.6		
		2	17.7 + 0.0216 * Hub (mm)	5.03	47.8 + 0.0690 * Stroke (mm)	1.05		
		4/6/8/10	19.3 + 0.8 * (n _{SA} - 4) + 0.0216 * Stroke (mm)	5.29 + 0.065 * (n _{SA} - 4)	52.8 + 2.3 * (n _{SA} - 4) + 0.0690 * Stroke (mm)	1.96 + 0.225 * (n _{SA} - 4)		

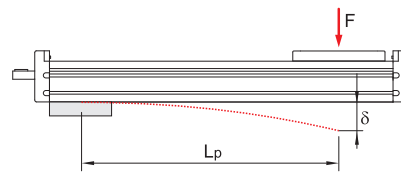
* The stated values are for strokes up to 500mm.
No Load Torque value increases with stroke elongation.

Deflection of Linear Unit

Fixed- Fixed mounting



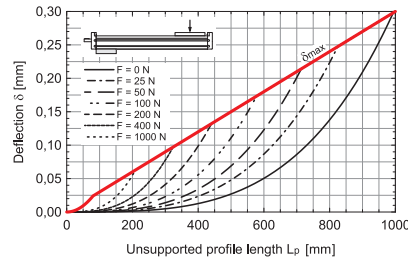
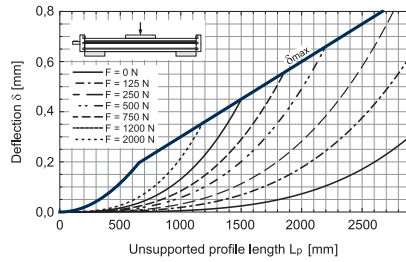
Fixed- Free mounting



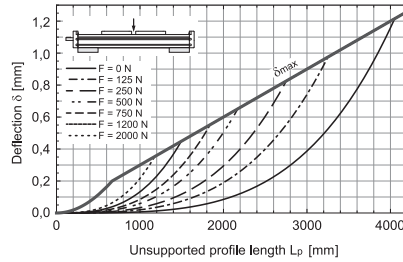
δ Maximum deflection of the linear unit [mm]
 δ_{max} Maximum permissible deflection of the linear unit [mm] F Applied force [N]
 L_p Unsupported profile length [mm]

The maximum permissible deflection δ_{max} must not be exceeded.
 In the case that maximum deflection δ exceeds the maximum permissible deflection δ_{max} , additional profile supports are needed.

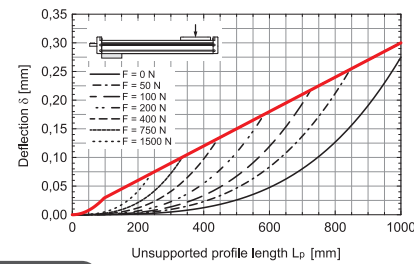
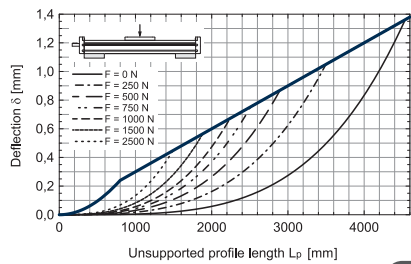
MTV 65



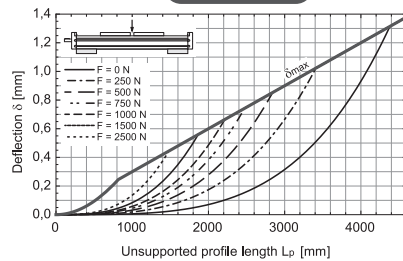
MTV 65 2LR



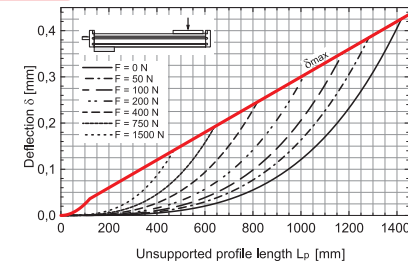
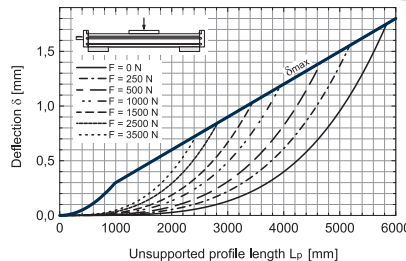
MTV 80



MTV 80 2LR



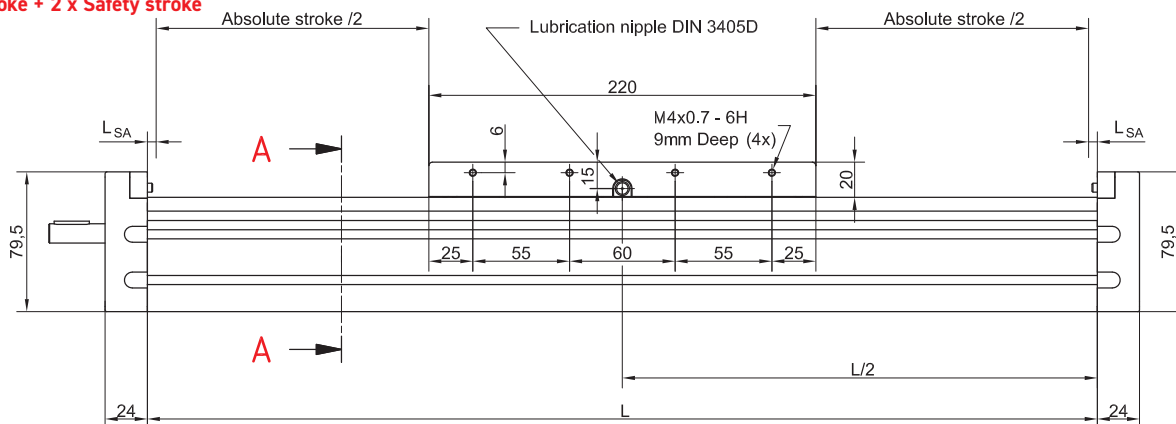
MTV 110



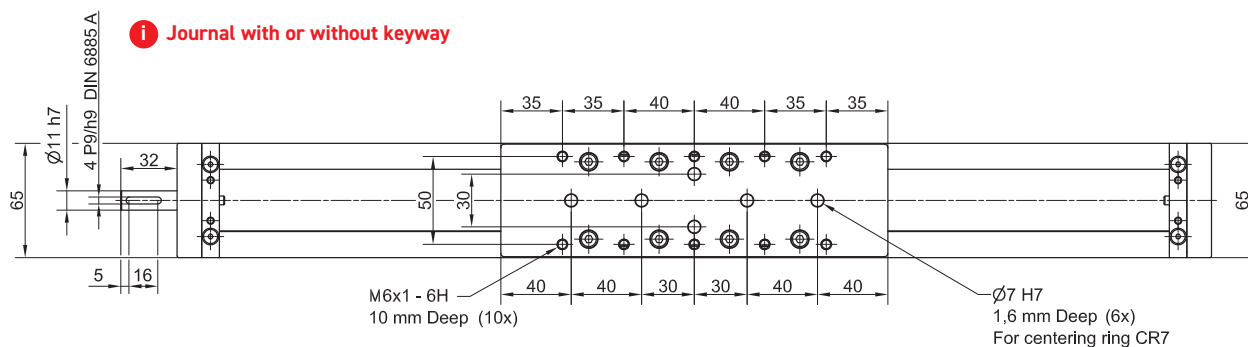
MTV65 Dimensions

Unit mm

i Linear Unit doesn't include safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke



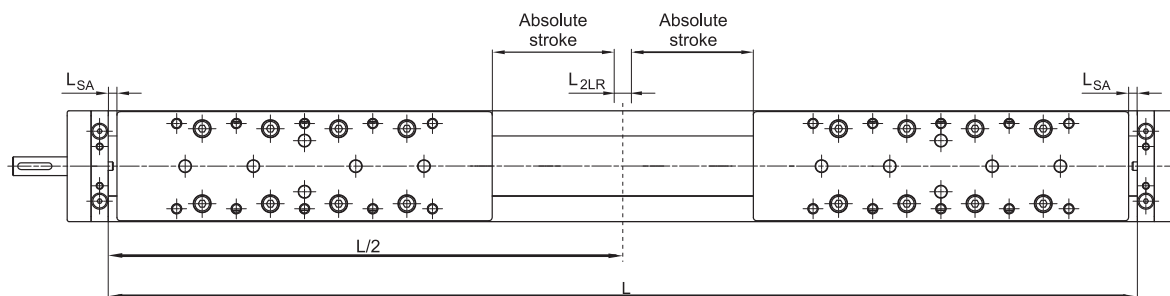
i Journal with or without keyway



n	L_{SA}
0	5.0
2SA	31.0
4SA	62.0

L_{SA} Additional length [mm]

2LR Version

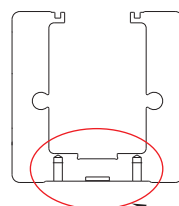
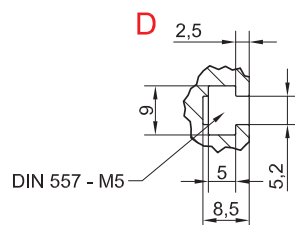
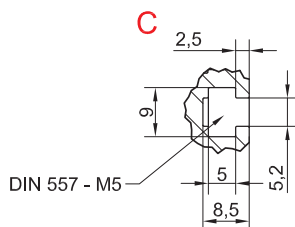
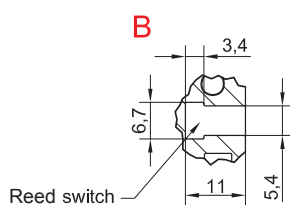
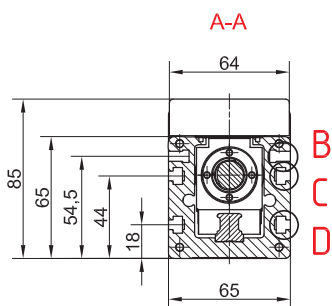
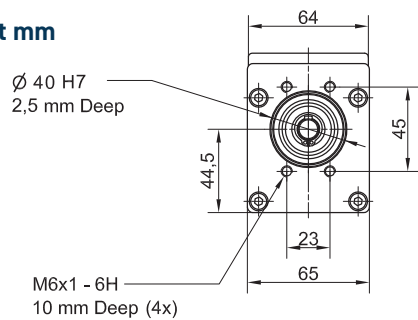


n	L _{SA}	L _{2LR}
0	5,0	5,0
2SA	31,0	67,0
4SA	62,0	129,0

L_{SA} Additional length [mm]

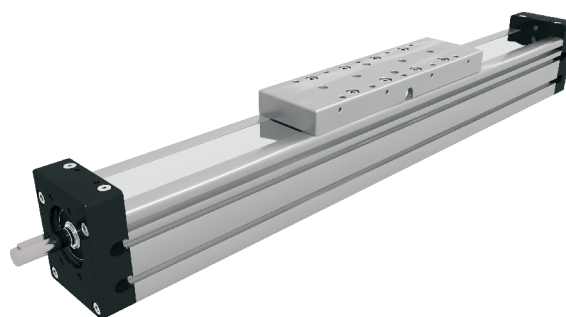
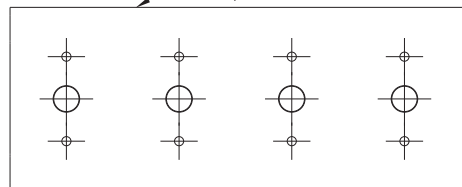
L_{21R} Min. distance between carriages [mm]

Unit mm



Tap/ Pin holes are available upon request

TAP / PIN holes on bottom of the profile



Calculating the linear unit length

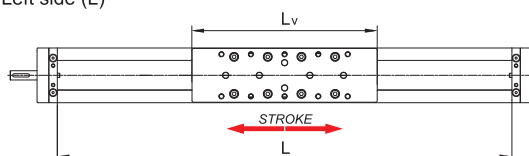
Standard Version

$$L = (\text{Effective stroke} + 2 \times \text{Safety stroke}) + L_v + 2 \times L_{sa}$$

$$L_{total} = L + 48 \text{ mm}$$

$$L_v = 220 \text{ mm}$$

Left side (L)



Right side (R)

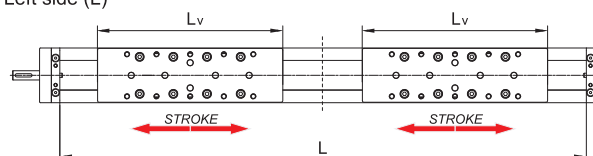
2LR Version

$$L = 2 \times (\text{Effective stroke} + 2 \times \text{Safety stroke}) + 2 \times L_v + 2 \times L_{sa} + L_{2LR}$$

$$L_{total} = L + 48 \text{ mm}$$

$$L_v = 220 \text{ mm}$$

Left side (L)



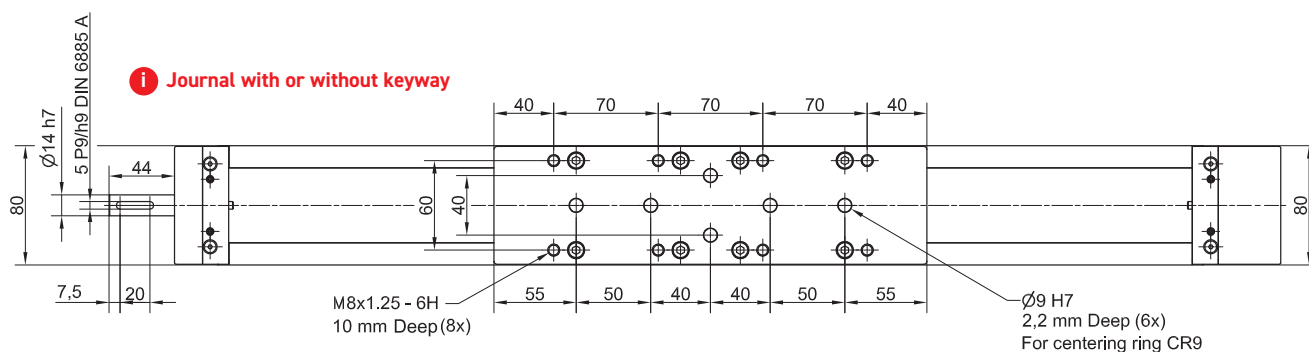
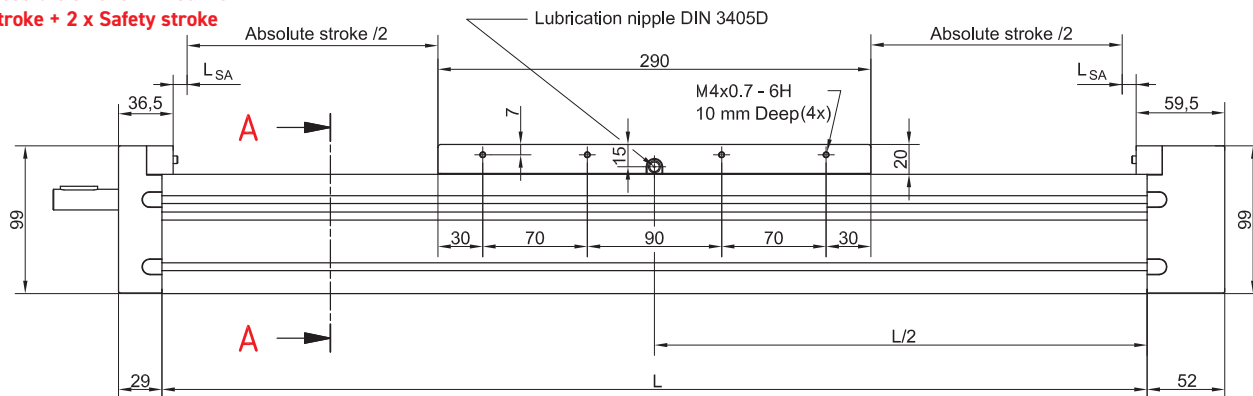
Right side (R)

MTV80 Dimensions

Unit mm

i Linear Unit doesn't include safety stroke.

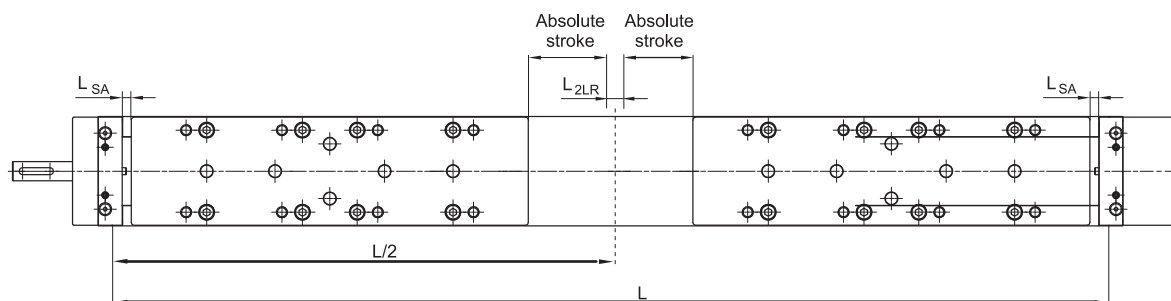
Absolute stroke = Effective stroke + 2 x Safety stroke



n_{SA}	L_{SA}
0	6.0
2SA	28.5
4SA	59.5
6SA	90.5
8SA	121.5
10SA	152.5

L_{SA} Additional length [mm]

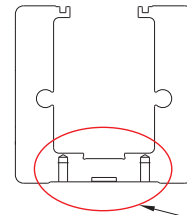
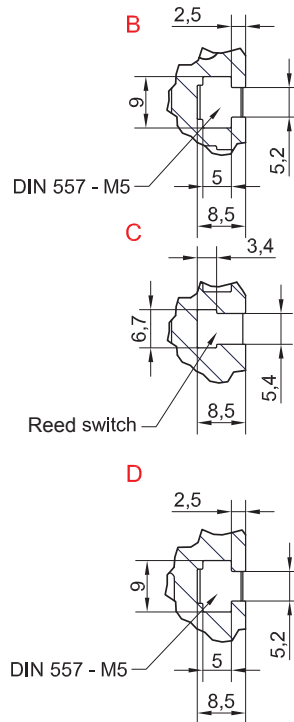
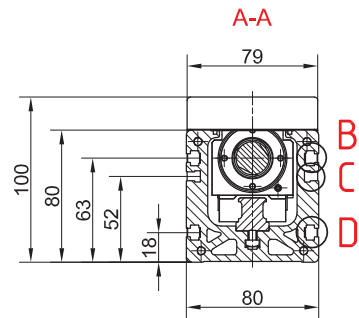
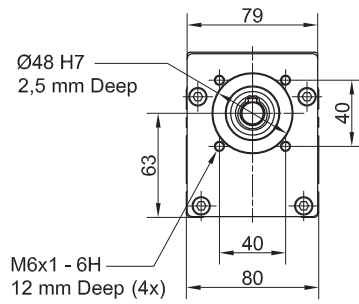
2LR Version



n_{SA}	L_{SA}	L_{2LR}
0	6.0	0.0
2SA	28.5	48.0
4SA	59.5	110.0
6SA	90.5	172.0
8SA	121.5	234.0
10SA	152.5	296.0

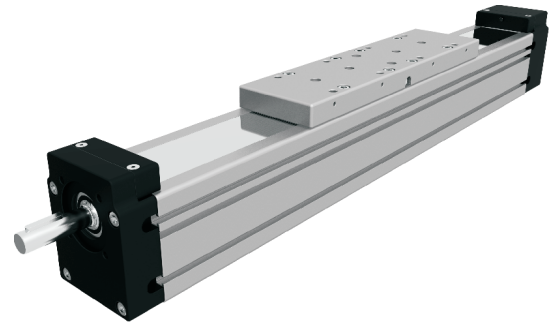
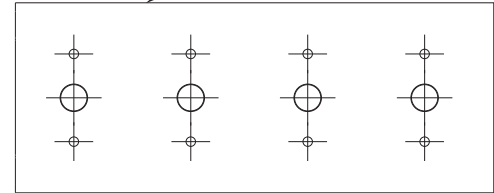
L_{SA} Additional length [mm]

Unit mm



Tap/ Pin holes are available upon request

TAP / PIN holes on bottom of the profile



Defining of the linear unit length

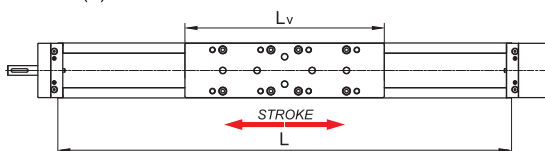
Standard Version

$$L = (\text{Effective stroke} + 2 \times \text{Safety stroke}) + L_v + 2 \times L_{sa} + 15\text{mm}$$

$$L_{\text{total}} = L + 81 \text{ mm}$$

$$L_v = 290 \text{ mm}$$

Left side (L)



Right side (R)

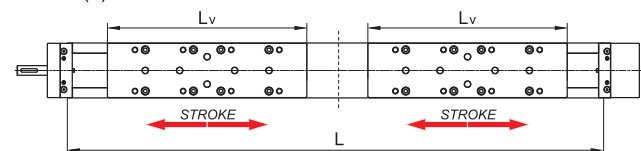
2LR Version

$$L = 2 \times (\text{Effective stroke} + 2 \times \text{Safety stroke}) + 2 \times L_v + 2 \times L_{sa} + L_{2LR} + 15\text{mm}$$

$$L_{\text{total}} = L + 81 \text{ mm}$$

$$L_v = 290 \text{ mm}$$

Left side (L)



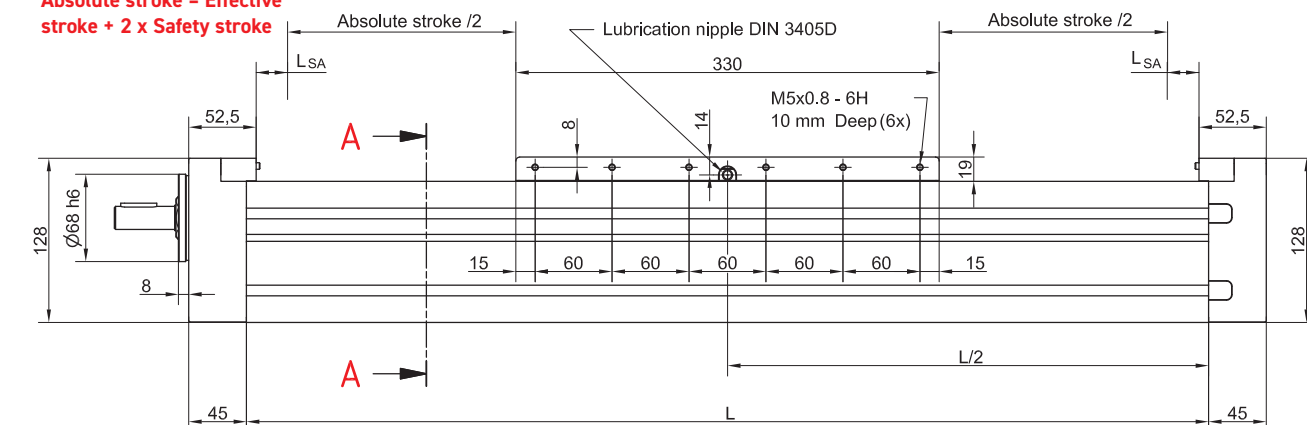
Right side (R)

MTV1 10 Dimensions

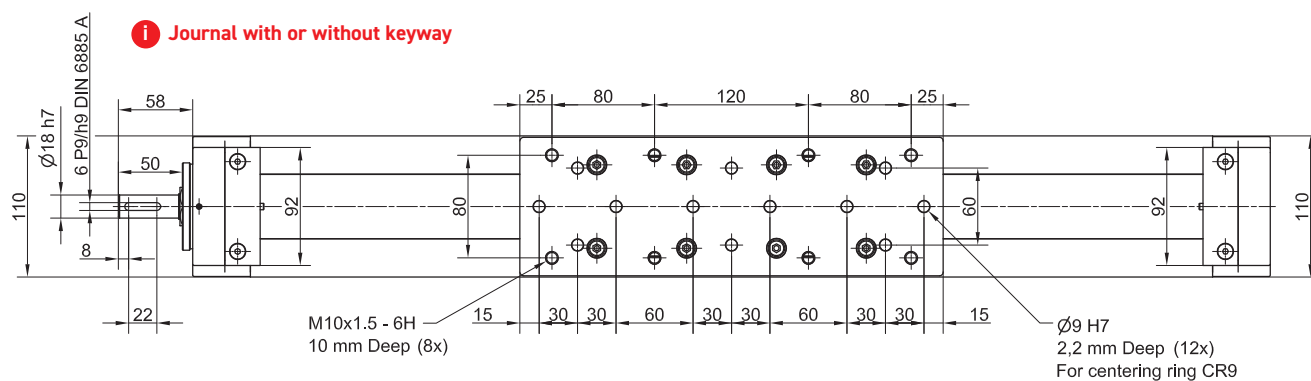
Unit mm

i Linear Unit doesn't include safety stroke.

Absolute stroke = Effective stroke + 2 x Safety stroke



i Journal with or without keyway



n_{SA}	L_{SA}
0	24.5
2SA	28.0
4SA	59.0
6SA	90.0
8SA	121.0
10SA	152.0

L_{SA} Additional length [mm]

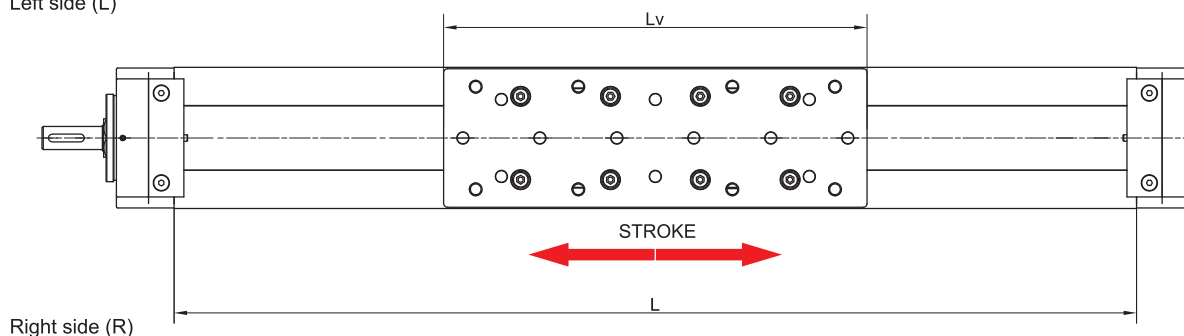
Defining of the linear unit length

$$L = (\text{Effective stroke} + 2 \times \text{Safety stroke}) + L_v + 2 \times L_{SA} + 15\text{mm}$$

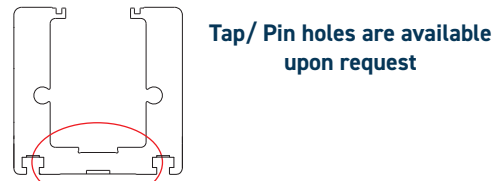
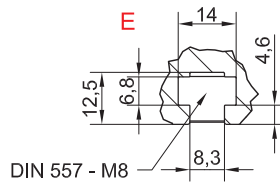
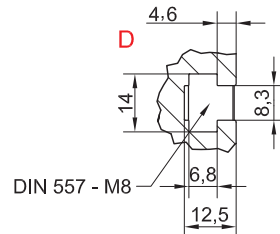
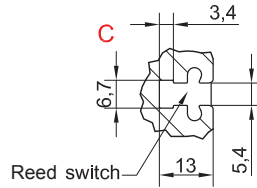
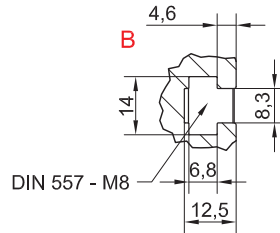
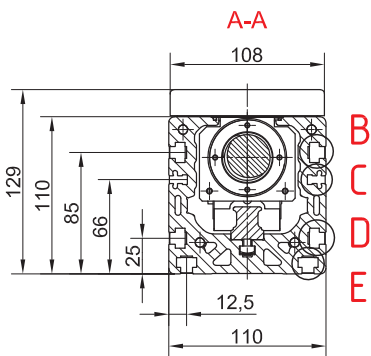
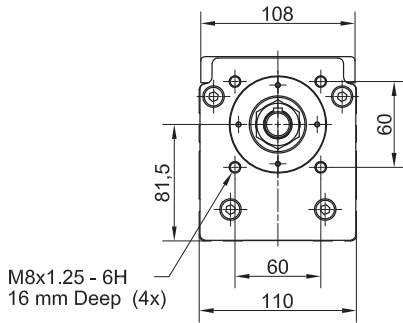
$$L_{\text{total}} = L + 90 \text{ mm}$$

$L_v = 330 \text{ mm}$

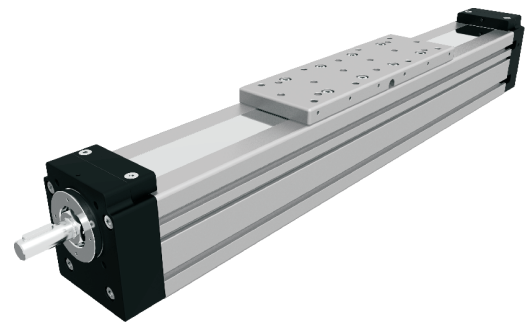
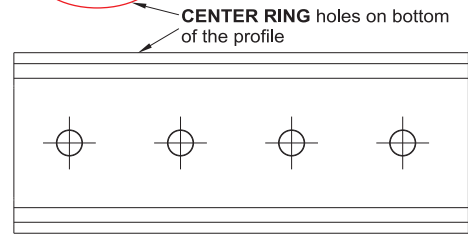
Left side (L)



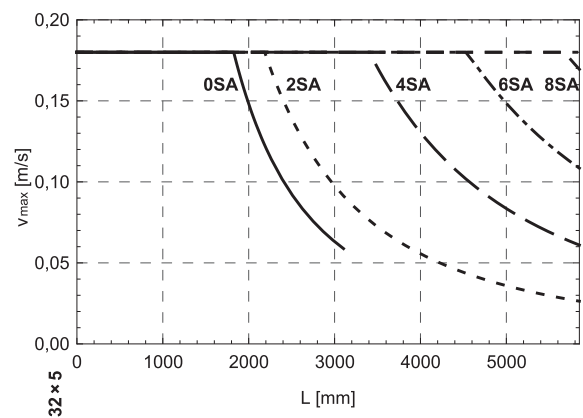
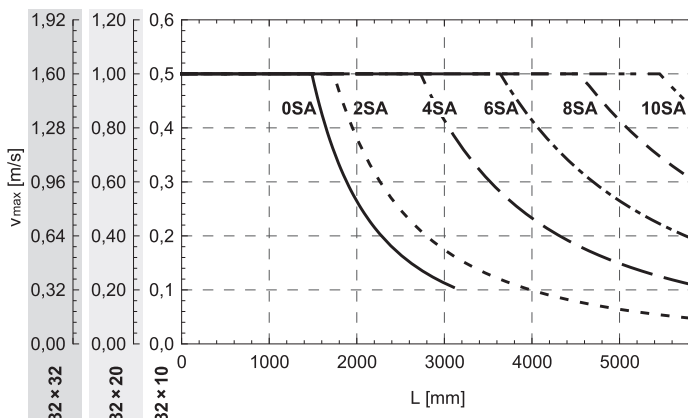
Unit mm



Tap/ Pin holes are available upon request



Maximum travel speed as a function of the profile length (Vmax - L curves)

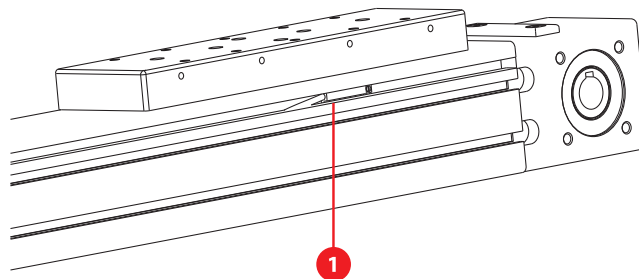


MTV Series Order Example

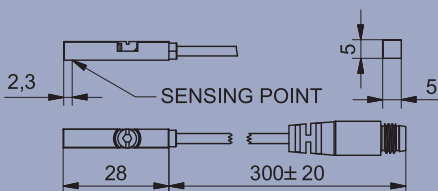
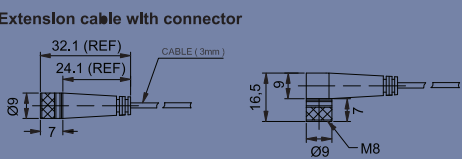
Code: **MTV 65 1610 - ISO7 - 1 - 1000 - 2SA - 2LR**
Options: 1 2 3 4 5 6 7 8

Options		Selection		
1	Series	MTV		
2	Size	65	80	110
3	Ballscrew	Ø16x5, Ø16x10, Ø16x16	Ø20x5, Ø20x10, Ø20x20 Ø20x50	Ø32x5, Ø32x10, Ø32x20, Ø32x32
4	Ballscrew Tolerance	ISO7 (Standard) ISO5		
5	Ballscrew Journal	0: Without Keyway 1: With Keyway		
6	Absolute Stroke	Absolute Stroke= Effective stroke + 2 x Safety Stroke (2LR Version: Absolute Stroke Of One Carriage)		
7	Number of Screw Supports n_{SA}	2, 4 _: Leave Blank For No Screw Supports	2, 4, 6, 8, 10 _: Leave Blank For "No SA" Option	
8	Version	2LR (Both Left and Right Ballscrews are used.) (Available for : MTV65 : 16 x 5, 16 x 10 / MTV80 : 20 x 5) _: Leave Blank For Standard Option.		N/A

Magnetic Field Sensors

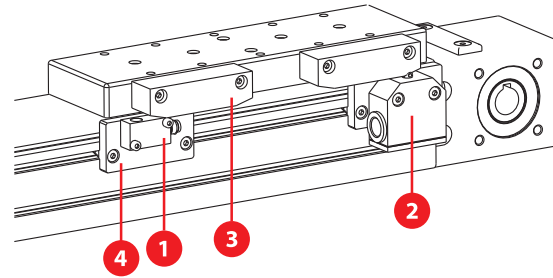


1 Magnetic Field Sensor

SMT-65TP-K NO/ NC	Code	Type	Compatability	
	74073	SMT-65TP-K NC	MTV 65/80/ 110	
	74074	SMT-65TP-K NO	MTV 65/80/ 110	
	8146	Extension Cable length 2m - Straight connector		
	8147	Extension Cable length 5m - Straight connector		
	9017	Extension Cable length 2m - Angled connector		
	9019	Extension Cable length 5m - Angled connector		

Technical Data	SMT-65TP-K NC	SMT-65TP-K NO
Sensor Type	GMR sensor	GMR sensor
Switching function	NC	NO
Output	PNP	PNP
Operating voltage	10 ~ 28 V DC	10 ~ 28 V DC
Switching Current	200 mA max.	200 mA max.
Power rating	5.5 W max.	5.5 W max.
Voltage Drop	1.5 V / 200 mA max.	1.5 V / 200 mA max.
Current Consumption	10 mA/ 24 V max.	10 mA/ 24 V max.
Switching Frequency	1000 Hz	1000 Hz
Ambient temperature	-10 ~ +70°C	-10 ~ +70°C
Shock Vibration	50 G / 9 G	50 G / 9 G
Protection class	IP 67	IP 67
LED indicator	Yellow	Yellow
Electrical connection	M8, 3-pin	M8, 3-pin
Cable material length	PU - 0.3 m	PU - 0.3 m
Extension cable	Energy chain compliant	Energy chain compliant

1	Induction Switch
2	Mechanical Switch
3	Activation Block
4	Switch Holder



MS - Mechanical Switch

Technical Data	SMT-65TP-K NC	SMT-65TP-K NO
	Protection class IEC 60529	IP67
	Ambient temperature	-5°C ~ +80°C
	Operating point accuracy	± 0.05 mm
	Approach speed max.	45 m/min
	Approach speed min.	0.01 m/min
	Switching contact	1 changeover
	Switching principle	Snap-action
	Rated voltage	250 V AC
	Switching current, min. at	10 mA
	Switching voltage	24 V DC
	Cable entry	M12 X 1.5

Ordering Codes	MTV 65	MTV 80	MTV 110
+ 2x	43247	43256	47827
		47921	
2x + 2x +	40687	40689	47826

IS - Inductive Switch

Technical Data		
	Sensor Type	PNP
	Switching function	NC / NO
	Rated voltage	10 - 30 V DC
	Switching Current	150mAmax.
	Ambient temperature	-25°C ...+70°C
	Switching Frequency	800 Hz max.
	Voltage Drop	3,5 V
	Protection class	IP 67
	Electrical connection	M8, 3-pin
	Extension cable	Energy chain compliant - bending radius 75 mm
	Cable material-length	PU
	Cable length	2m / 5m
	Cable length	M8, 3-pin Straight or Angled connector

Ordering Codes	MTV 65	MTV 80	MTV 110
+ 2x	43247	43256	47827
		40671	
2x + 2x +	48026	43233	48047
		43570	
2x + 2x +	40685	47848	47989

CTV Series Introduction & Technical Data

The Matara CTV series is available as a fully sealed or open actuator. The CTV incorporates a pair of precision linear guides, mounted either side of the ballscrew which runs through the centre of the assembly. Furthermore, a central lubrication port is incorporated to allow for quick and simple maintenance. These units are available with a range of mounting fixtures, flanges, couplings, motors and gearboxes.

Technical Data										
Series			CTV 90 S	CTV 90 L	CTV 110 S	CTV 110 L	CTV 145 S	CTV 145 L	CTV 200 S	CTV 200 L
Carriage length	Lv	mm	35	100	39	124	49	149	80	255
Dynamic load capacity	C	N	4620	9240	19800	39600	34200	68400	49600	99200
Dynamic moment	Mx	Nm	125	250	650	1305	1500	3005	3220	6445
	My	Nm	17	300	118	1680	260	3420	450	8680
	Mz	Nm	34	300	235	1680	520	3420	900	8680
Max. permissible loads (Forces)	Fpy	N	2000	3990	4670	13080	8930	17870	10000	20000
	Fpz	N	4540	9090	9390	18800	15320	30680	24610	51540
Max. permissible loads (Moments)	Mpx	Nm	125	250	310	620	674	1350	1600	3350
	Mpy	Nm	17	297	90	800	260	1700	450	4550
	Mpz	Nm	34	130	90	550	180	893	308	1750
Moved Mass		kg	0.3	0.5	0.63	1.36	1.19	2.61	3.11	6.21
* Max. length	Lmax	mm	750	750	1500	1500	1800	1800	2200	2200
* Max. stroke		mm	665	600	1410	1325	1690	1590	2000	1825

* For lengths/stroke over the stated value in the table above please contact us.

Values for max. stroke are not valid for double carriage (equation of defining the linear unit length for particular size of the linear unit needs to be used).

** For minimum stroke below the stated value in the table above please contact us.

Selection	Selection
Operating temperature	0°C ~ +60°C
Duty cycle	100%

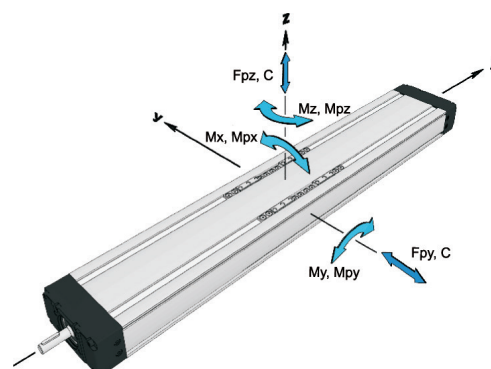
For operating temperatures out of the presented range, please contact us.

i Recommended values of loads

All the data of dynamic moments and load capacities stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety. We recommend a minimum safety factor ($f_s \approx 5.0$)

Modulus of elasticity

$$E = 70000 \text{ N/mm}^2$$

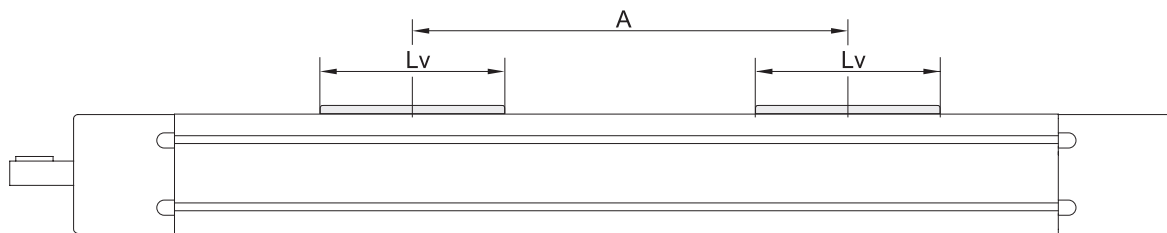


CTV Series Technical Data For Double Carriage

Double Carriage Technical Data						
Series			CTV 90	CTV 110	CTV 145	CTV 200
Carriage version			S2	S2	S2	S2
Dynamic load capacity		C N	9240	39600	68400	99200
Dynamic moment	Mx	Nm	250	1300	3000	6440
	My	Nm	4.6 * A (mm)	19.8 * A (mm)	34.2 * A (mm)	49.6 * A (mm)
	Mz	Nm	4.6 * A (mm)	19.8 * A (mm)	34.2 * A (mm)	49.6 * A (mm)
Max. permissible loads (Forces)	Fpy	N	3990	12940	17870	20000
	Fpz	N	9090	18790	30640	49230
Max. permissible loads (Moments)	Mpx	Nm	250	620	1350	3200
	Mpy	Nm	4.5 * A (mm)	9.4 * A (mm)	15.3 * A (mm)	24.6 * A (mm)
	Mpz	Nm	2.0 * A (mm)	6.5 * A (mm)	8.9 * A (mm)	10.0 * A (mm)

* A- Distance between carriages.

i For a higher number of carriages, please contact us



Ballscrew Technical Data

Ballscrew Technical Data																	
Series		CTV 90		CTV 110			CTV 145				CTV 200						
Ballscrew		d x l	12 x 5	12 x 10	16 x 5	16 x 10	16 x 16	20 x 5	20 x 10	20 x 20	20 x 50	32 x 5	32 x 10	32 x 20	32 x 32		
Max. rotational Speed		rev/min	5800		4200			3300			3000	2150	3000				
*Max. travel speed		m/s	0.49	0.97	0.35	0.70	1.12	0.28	0.55	1.10	2.50	0.18	0.50	1.00	1.60		
No Load Torque	Carriage: S	Nm	0.07	0.06	0.11	0.12	0.14	0.28	0.26	0.24	0.58	0.45	0.50	0.55	0.60		
	Carriage: L	Nm	0.09	0.08	0.13	0.16	0.18	0.3	0.28	0.28	0.6	0.55	0.60	0.65	0.70		
Lead constant		mm/rev	5	10	5	10	16	5	10	20	50	5	10	20	32		
Max. repeatability precision	ISO7	mm	± 0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02	±0.02		
	ISO 5	mm	± 0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01	±0.01		
Dynamic load capacity BS		Ca (N)	5000	3800	13150	11550	8170	14800	15900	16250	13000	18850	33400	29700	35150		
Max. axial load		Fx	5000	2540	8700	6730	4200	14800	13850	6930	2770	18850	29600	14800	9240		
Max. drive torque		Ma (Nm)	4.4 without keyway	4.5 without keyway	5.5 with keyway 7.7 without keyway	5.5 with keyway, 11.9 without keyway	11.9 with keyway, 13.0 without keyway	11.9 with keyway, 24.5 without keyway		16.7 with keyway, 16.7 without keyway		27.3 with keyway, 52.3 without keyway					
Min. stroke		(mm)	30		40			55				65			70		
Max. acceleration		(m/s²)	20		20			20				20					

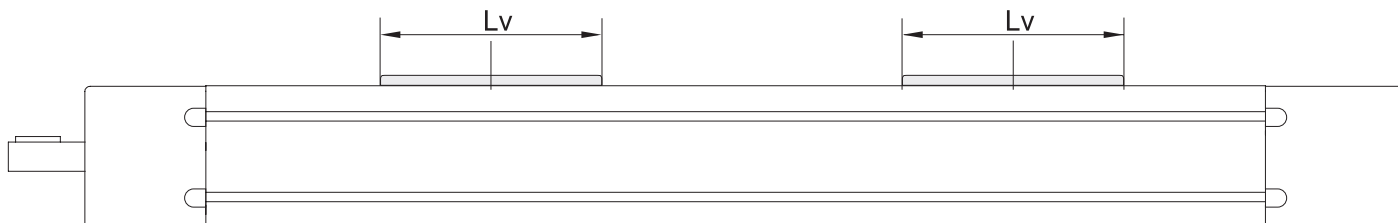
1 Max. travel speed depends of the length of the linear unit, see diagram for particular size of the linear unit.

2 The stated values are for strokes up to 500mm. No Load Torque value increases with stroke elongation.

3 For a ball nut with the pre load of 2%, please contact us.

4 For minimum strokes below the stated value in the table above, please contact us.

Mass & Moment Of Inertia

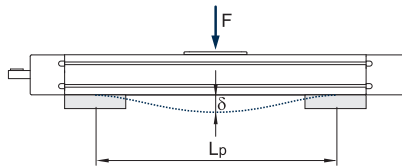


Series	Carriage length	Mass of linear unit*	ballscrew	Mass moment of inertia*	Planar moment of inertia*	
	Lv (mm)	(kg)	(d x l)	(10 ⁻⁵ kg *m ²)	ly (cm ⁴)	lz (cm ⁴)
CTV 90 S	35	1.6 + 0.006 * Stroke (mm)	12 x 5	0.32 + 0.002 * Stroke (mm)	13.6	102.6
			12 x 10	0.38 + 0.002 * Stroke (mm)		
CTV 90 L	100	2.2 + 0.006 * Stroke (mm)	12 x 5	0.43 + 0.002 * Stroke (mm)	13.6	102.6
			12 x 10	0.53 + 0.002 * Stroke (mm)		
CTV 110S	39	3.3 + 0.008 * Stroke (mm)	16 x 5	0.70 + 0.005 * Stroke (mm)	29.1	196.0
			16 x 10	0.82 + 0.005 * Stroke (mm)		
			16 x 16	1.07 + 0.005 * Stroke (mm)		
CTV 110 L	124	4.6 + 0.008 * Stroke (mm)	16 x 5	1.19 + 0.005 * Stroke (mm)	29.1	196.0
			16 x 10	1.45 + 0.005 * Stroke (mm)		
			16 x 16	1.99 + 0.005 * Stroke (mm)		
CTV 145 S	49	5.7 + 0.015 * Stroke (mm)	20 x 5	3.04 + 0.013 * Stroke (mm)	85.3	682.3
			20 x 10	3.27 + 0.013 * Stroke (mm)		
			20 x 20	4.17 + 0.013 * Stroke (mm)		
			20 x 50	10.50 + 0.013 * Stroke (mm)		
CTV 145 L	149	8.4 + 0.015 * Stroke (mm)	20 x 5	4.43 + 0.013 * Stroke (mm)	85.3	682.3
			20 x 10	4.92 + 0.013 * Stroke (mm)		
			20 x 20	6.91 + 0.013 * Stroke (mm)		
			20 x 50	20.79 + 0.013 * Stroke (mm)		
CTV 200 S	80	15.4 + 0.031 * Stroke (mm)	32 x 5	21.17 + 0.069 * Stroke (mm)	417.4	3007.3
			32 x 10	21.76 + 0.069 * Stroke (mm)		
			32 x 20	24.12 + 0.069 * Stroke (mm)		
			32 x 32	29.04 + 0.069 * Stroke (mm)		
CTV 200 L	255	23.8 + 0.031 * Stroke (mm)	32 x 5	33.41 + 0.069 * Stroke (mm)	427.4	3007.3
			32 x 10	34.59 + 0.069 * Stroke (mm)		
			32 x 20	39.31 + 0.069 * Stroke (mm)		
			32 x 32	49.12 + 0.069 * Stroke (mm)		

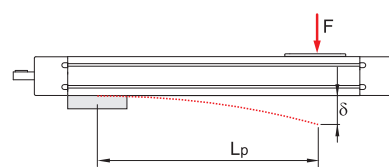
* Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of Linear Unit

Fixed- fixed mounting



Fixed- free mounting



δ Maximum deflection of the linear unit [mm]

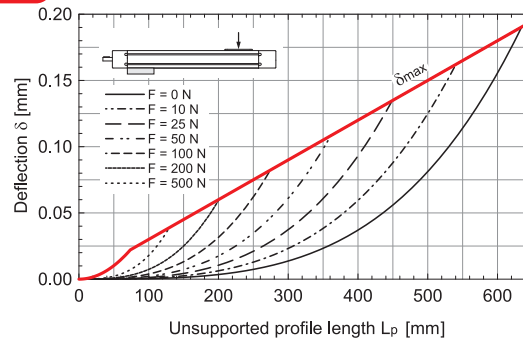
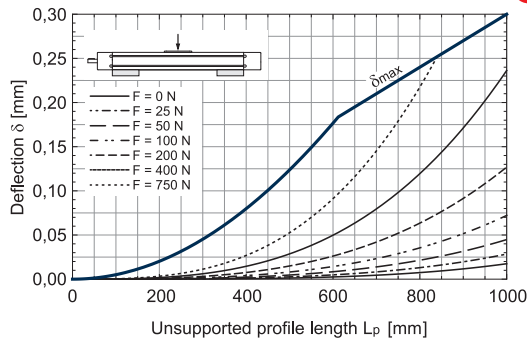
δ_{max} Maximum permissible deflection of the linear unit [mm] F Applied force [N]

L_p Unsupported profile length [mm]

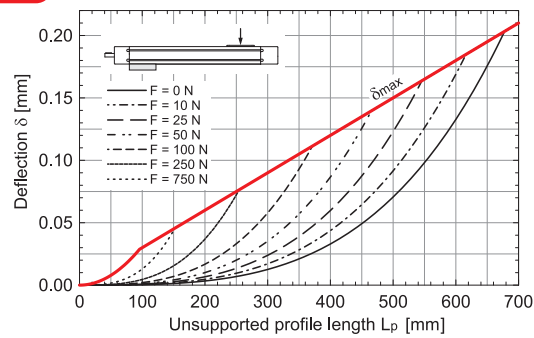
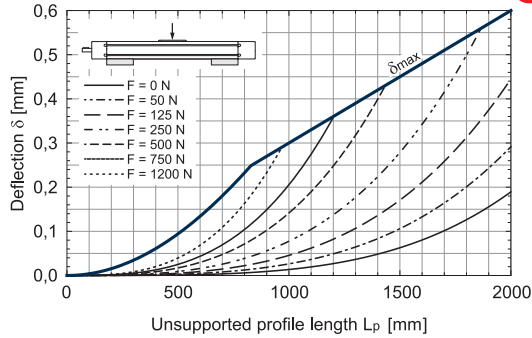
The maximum permissible deflection δ_{max} must not be exceeded.

In the case that maximum deflection δ exceeds the maximum permissible deflection δ_{max} , additional profile supports are needed.

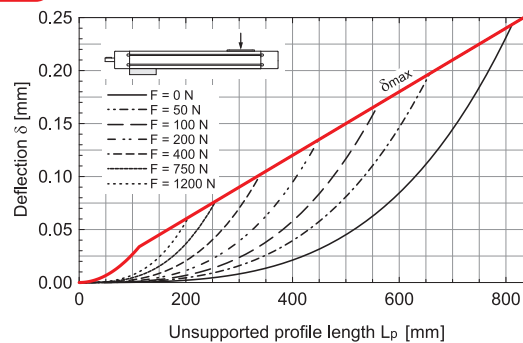
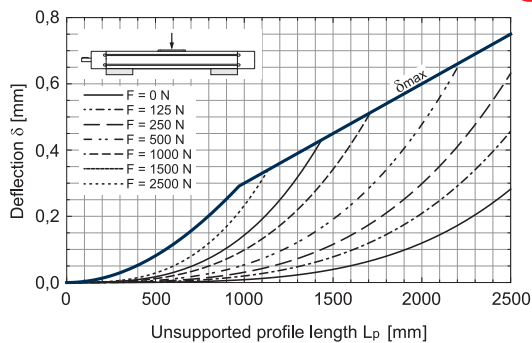
CTV 90



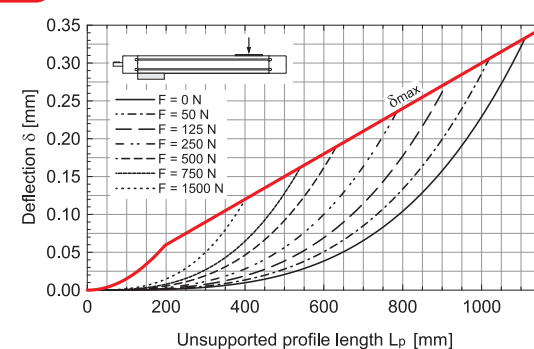
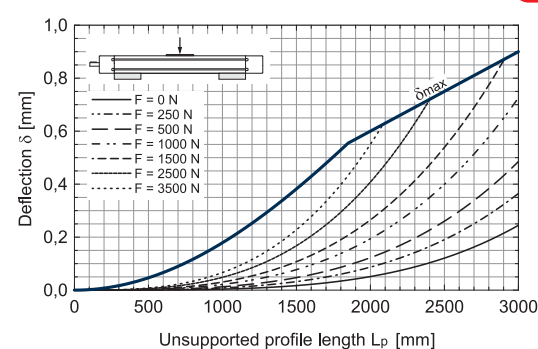
CTV 110



CTV 145

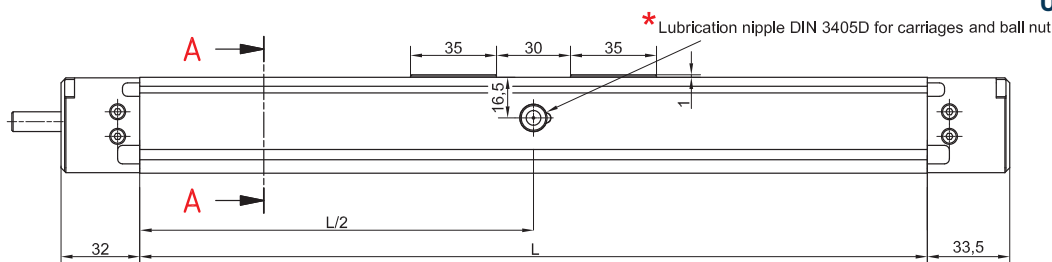


CTV 200



CTV 90 Series Dimensions

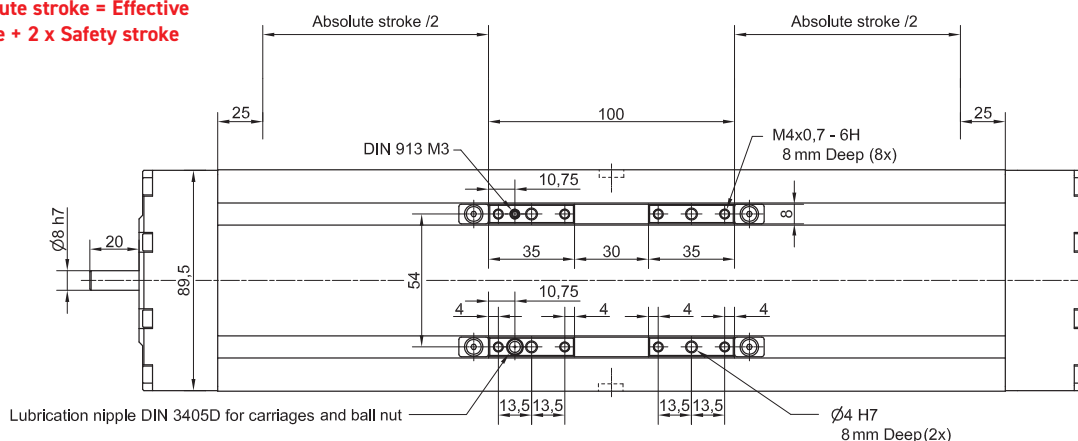
Unit mm



- i** Linear Unit doesn't include safety stroke.

Absolute stroke = Effective stroke + 2 x Safety stroke

LONG CARRIAGE

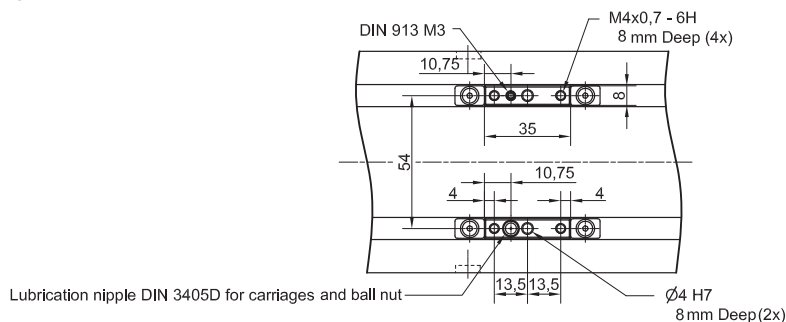


- * Lubrication port position:**

Long carriage: $L/2$

Short carriage: L/2 - 24.2 mm

SHORT CARRIAGE

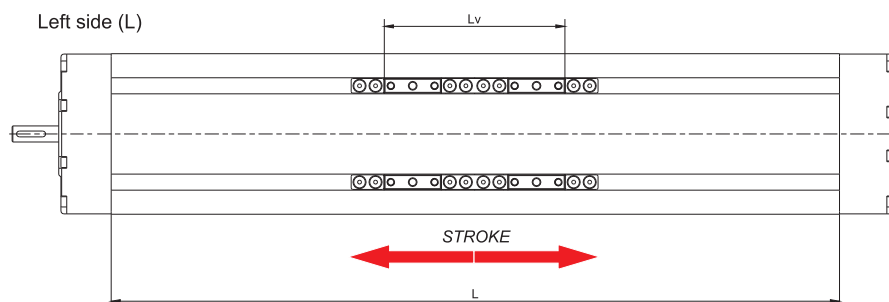


Defining of the linear unit length

Single Carriage

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 50 \text{ mm}$$
$$L_{\text{total}} = L + 65.5 \text{ mm}$$

Left side (L)



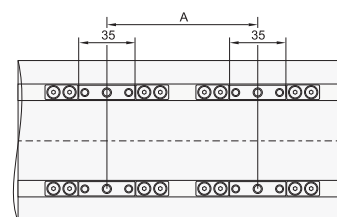
Right side (R)

Lv - long carriage = 100mm

Lv - short carriage = 35mm

Double Carriage

* Only with short carriage version

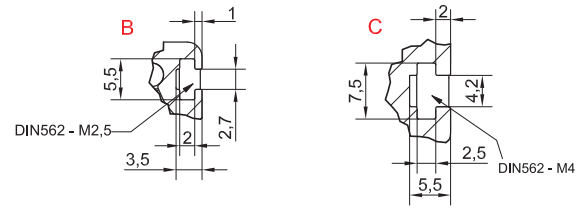
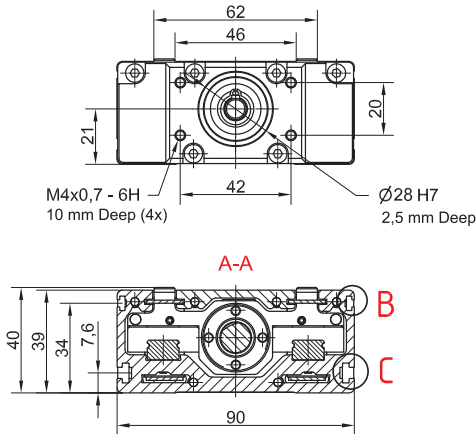


* For ordering code please contact us

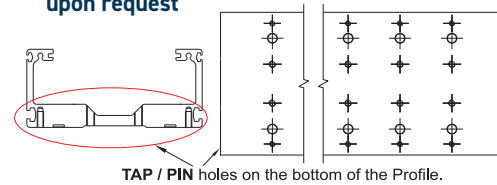
$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 85\text{mm}$$
$$L_{\text{total}} = L + 65.5 \text{ mm}$$

$A \geq 65\text{mm}$

Unit mm

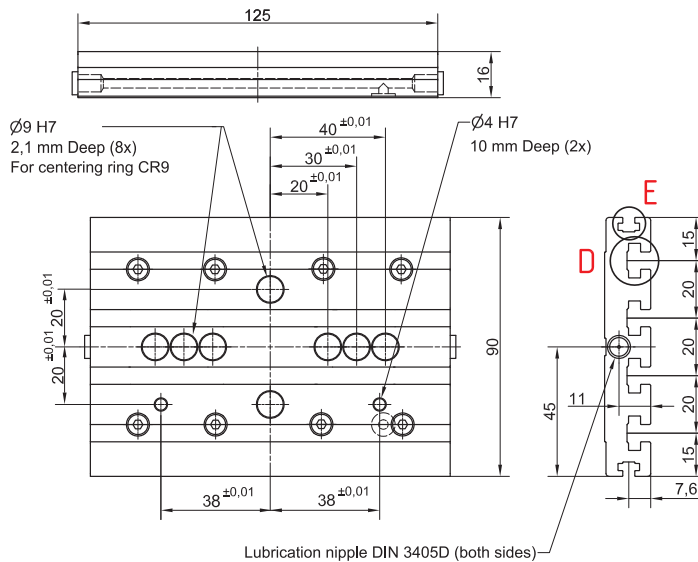


Tap/ Pin holes are available upon request

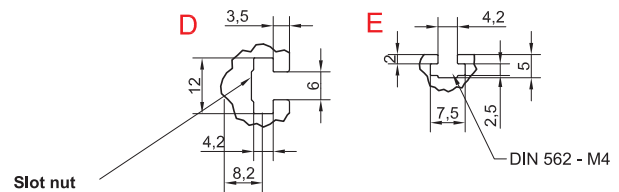
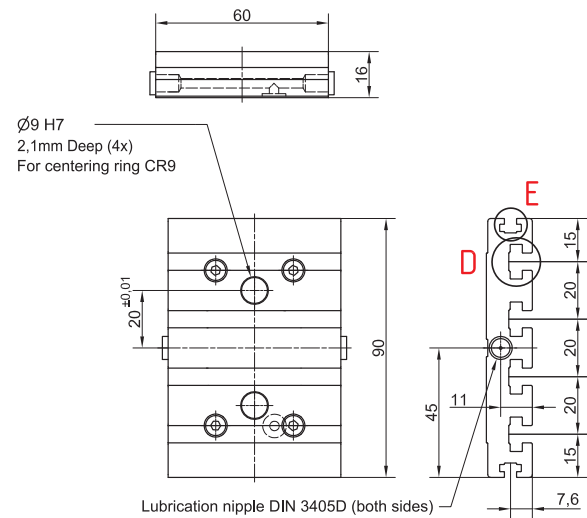


Connection Plate

CTV 90 L



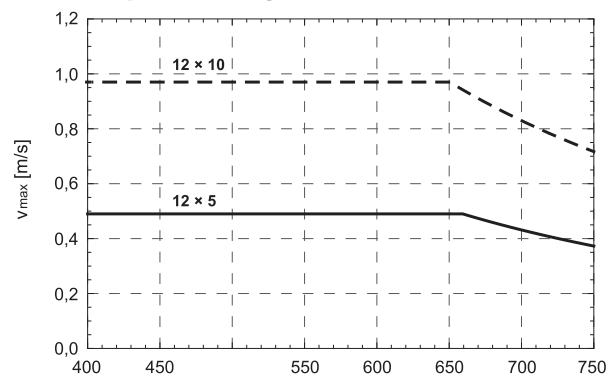
CTV 90 S



Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTV 90 S	60	0.21	46906
CTV 90 L	125	0.44	46907

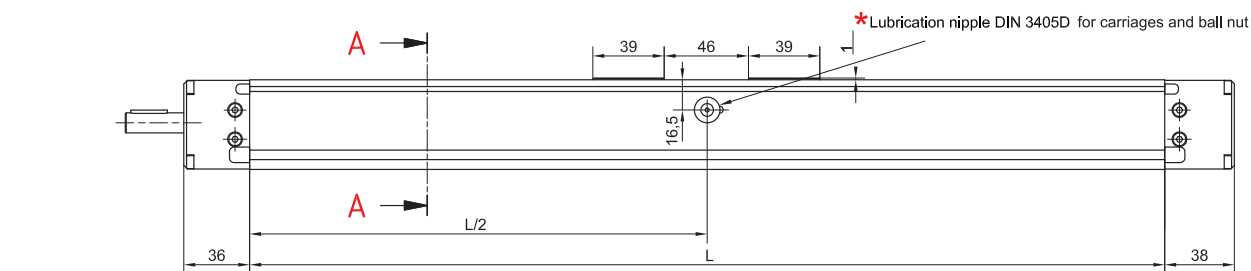
* Mounting elements for mounting the connection plate on the Linear Unit are included.

Maximum travel speed as a function of the profile length (Vmax - L curves)

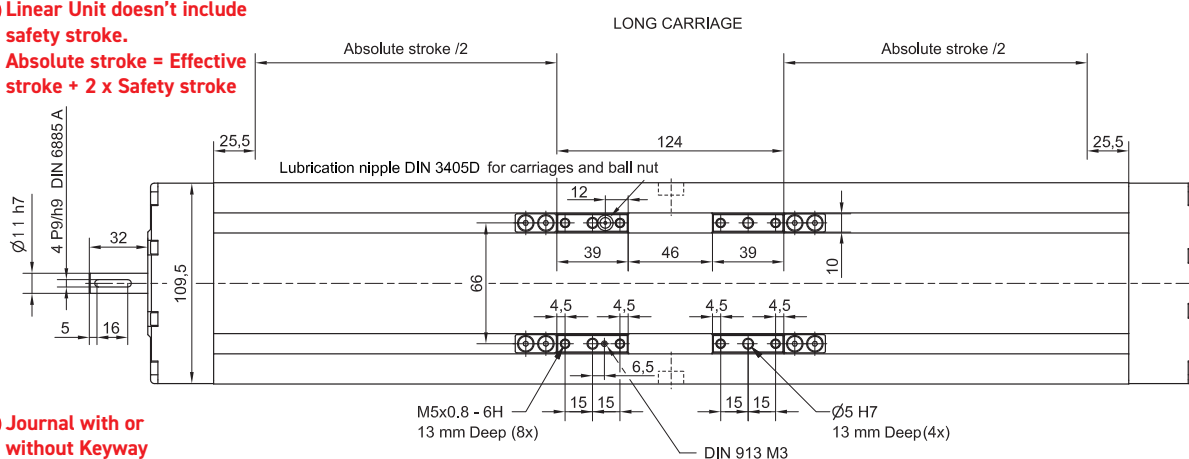


CTV 110 Series Dimensions

Unit mm

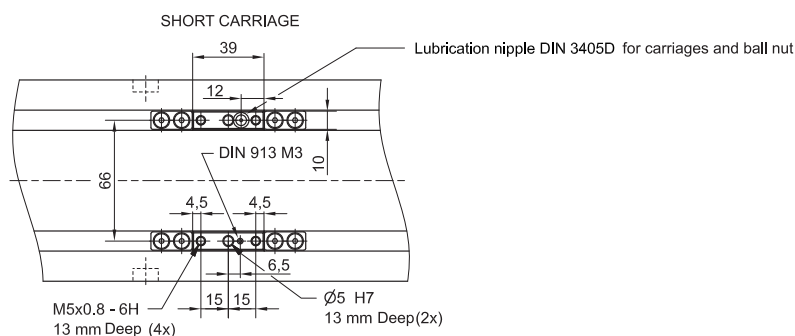


i Linear Unit doesn't include safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke



i Journal with or without Keyway

*** Lubrication port position:**
Long carriage: $L/2$
Short carriage: $L/2 - 39$ mm



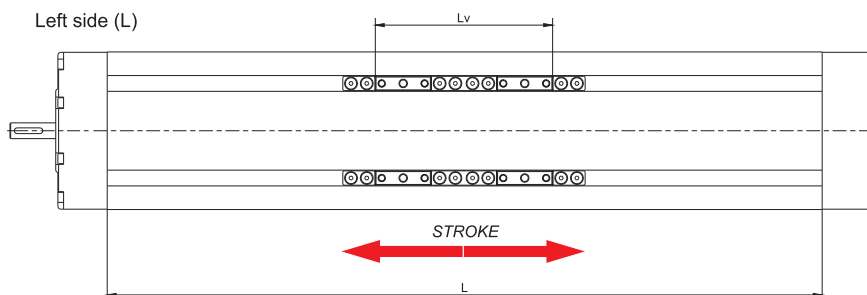
Defining of the linear unit length

Single Carriage

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 51 \text{ mm}$

$L_{\text{total}} = L + 74 \text{ mm}$

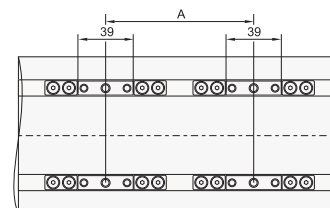
Left side (L)



L_v - long carriage = 124mm
 L_v - short carriage = 39mm

Double Carriage

* Only with short carriage version



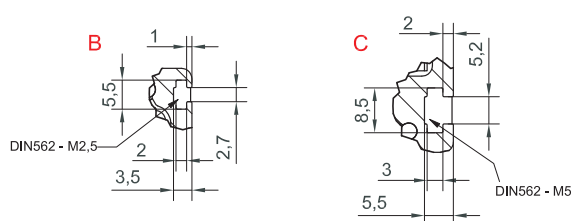
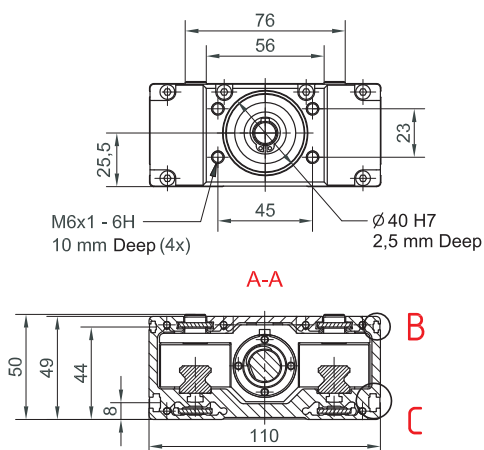
* For ordering code please contact us

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 90 \text{ mm}$

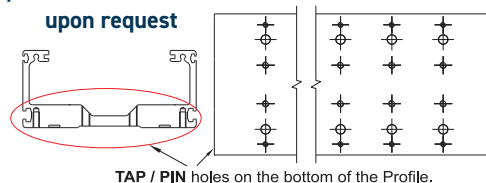
$L_{\text{total}} = L + 74 \text{ mm}$

$A \geq 85 \text{ mm}$

Unit mm



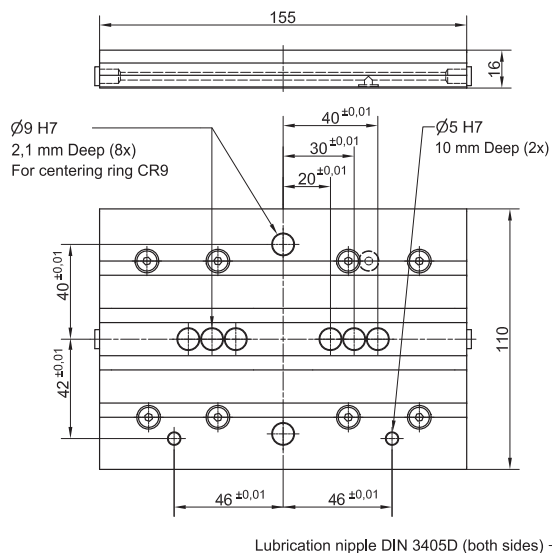
Tap/ Pin holes are available upon request



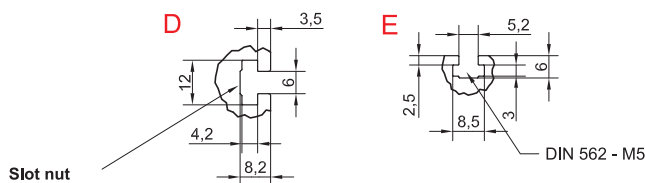
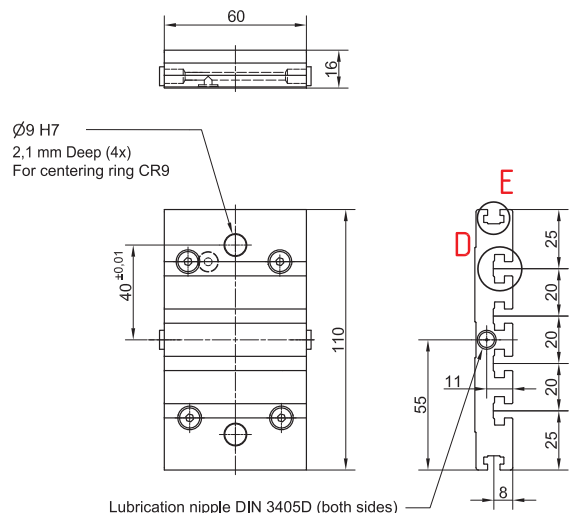
TAP / PIN holes on the bottom of the Profile.

Connection Plate

CTV 110 L



CTV 110 S

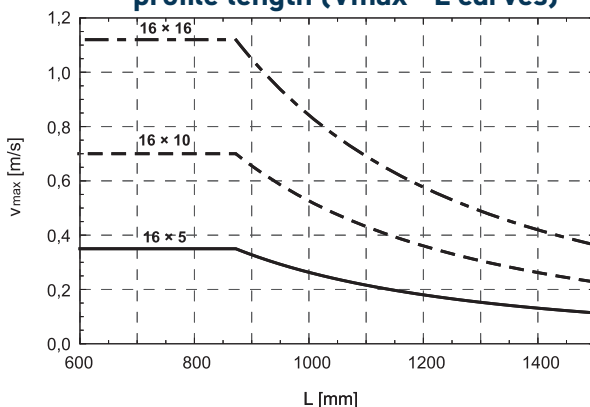


Slot nut

Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTV 110 S	60	0.37	48348
CTV 110 L	155	0.74	48349

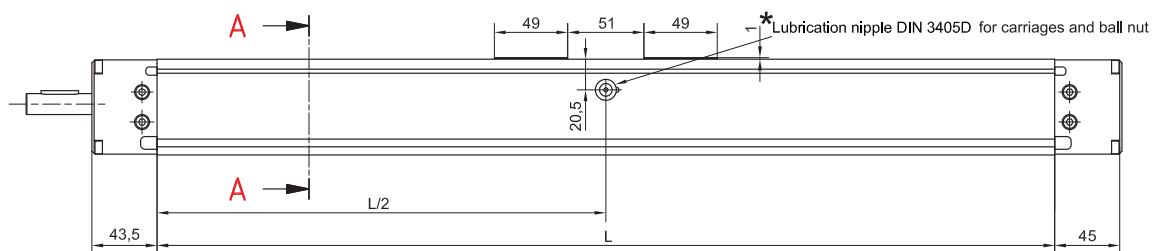
* Mounting elements for mounting the connection plate on the Linear Unit are included.

Maximum travel speed as a function of the profile length (Vmax - L curves)



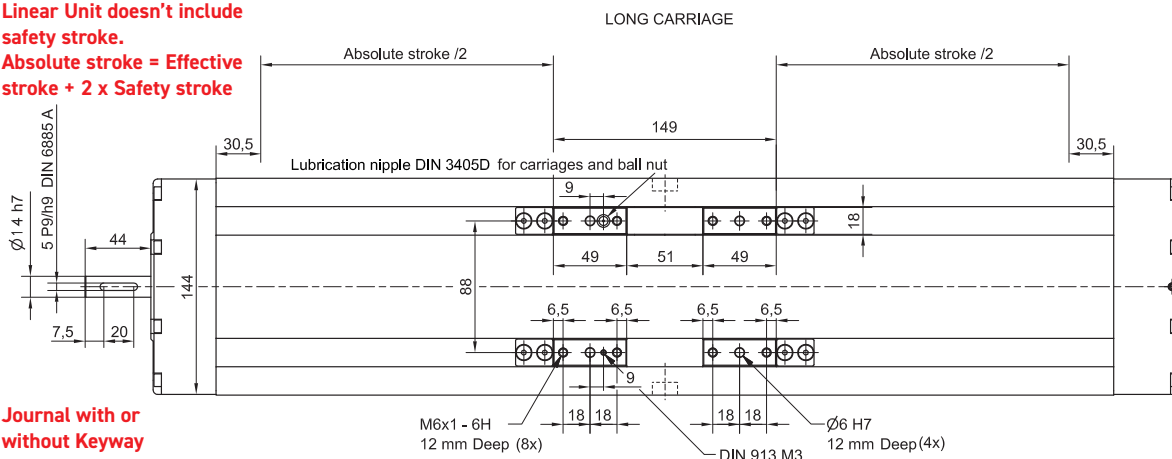
CTV 145 Series Dimensions

Unit mm



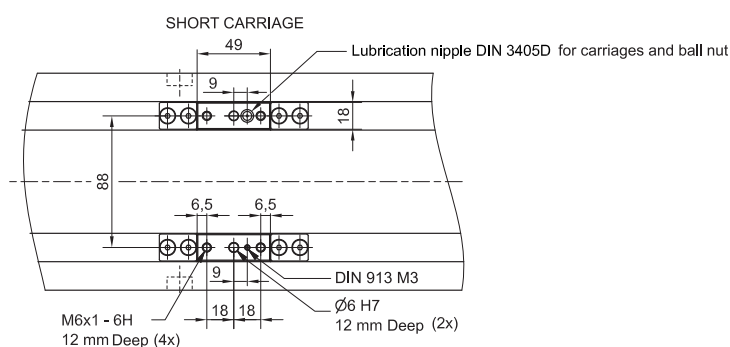
i Linear Unit doesn't include safety stroke.

Absolute stroke = Effective stroke + 2 x Safety stroke



i Journal with or without Keyway

*** Lubrication port position:**
Long carriage: L/2
Short carriage: L/2 - 46 mm



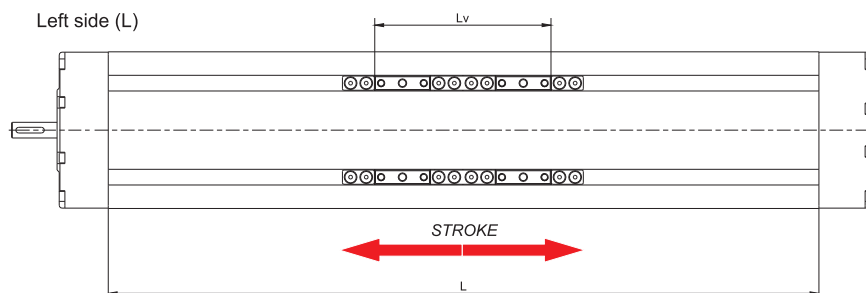
Defining of the linear unit length

Single Carriage

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 61 \text{ mm}$

$L_{\text{total}} = L + 88.5 \text{ mm}$

Left side (L)

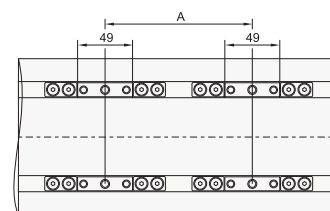


Right side (R)

L_v - long carriage = 149 mm
 L_v - short carriage = 49 mm

Double Carriage

* Only with short carriage version



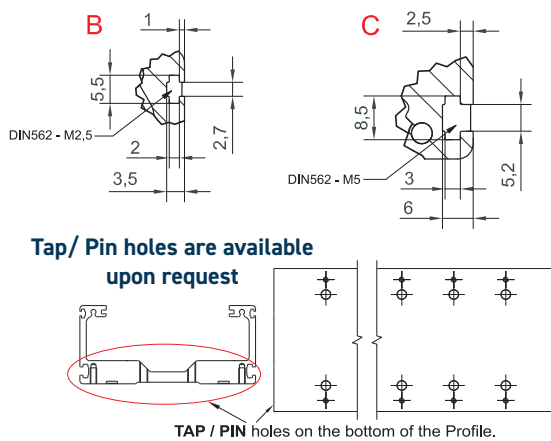
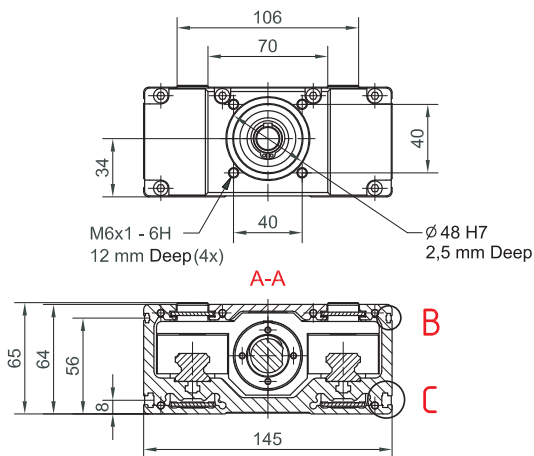
* For ordering code please contact us

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 110 \text{ mm}$

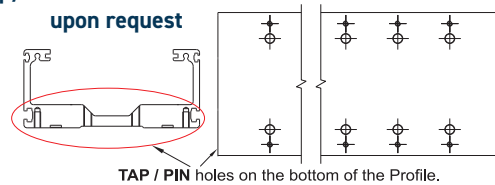
$L_{\text{total}} = L + 88.5 \text{ mm}$

$A \geq 100 \text{ mm}$

Unit mm



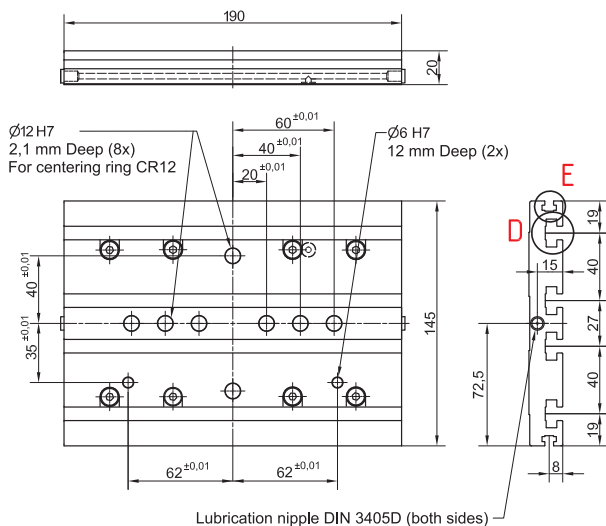
Tap/ Pin holes are available upon request



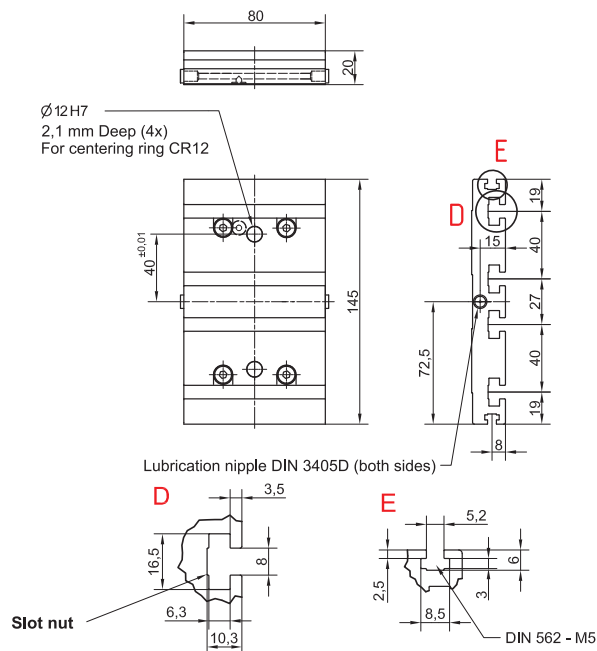
TAP / PIN holes on the bottom of the Profile.

Connection Plate

CTV 145 L

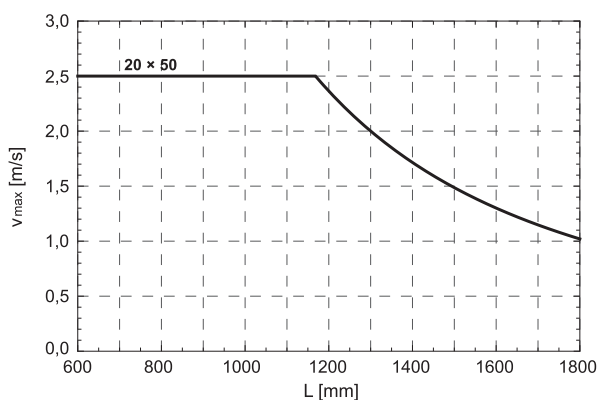


CTV 145 S

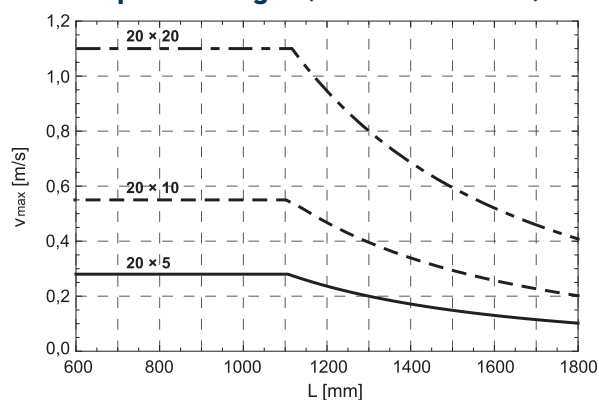


Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTV 145 S	80	0.78	48351
CTV 145 L	190	1.54	48350

* Mounting elements for mounting the connection plate on the Linear Unit are included.

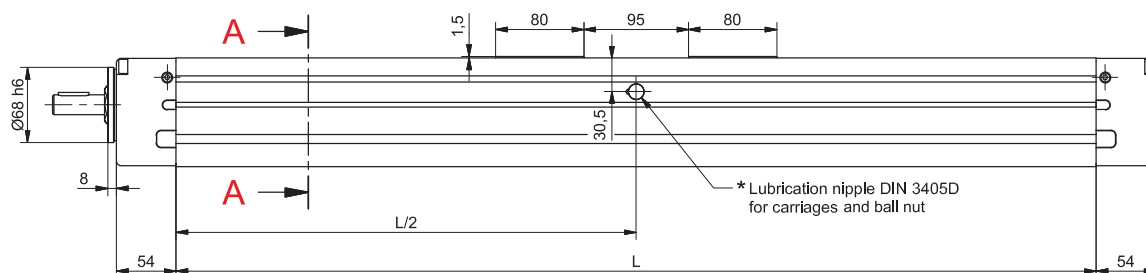


Maximum travel speed as a function of the profile length (V_{max} - L curves)



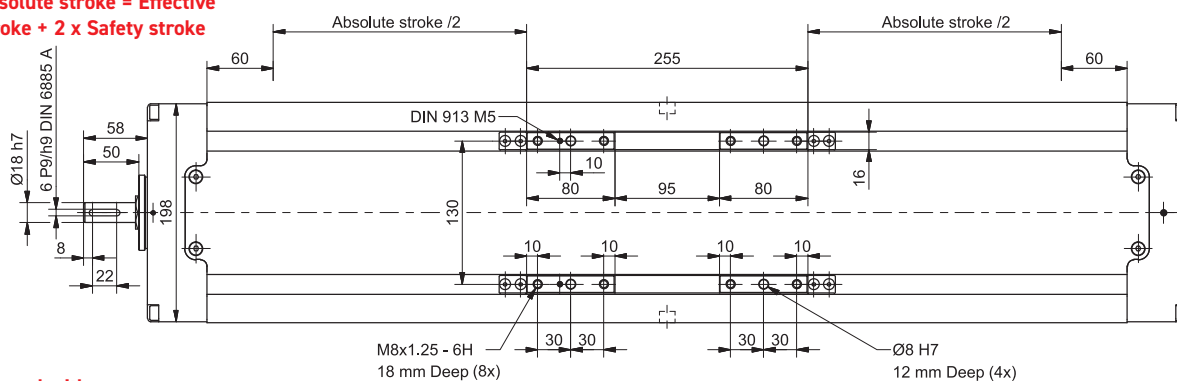
CTV 200 Series Dimensions

Unit mm



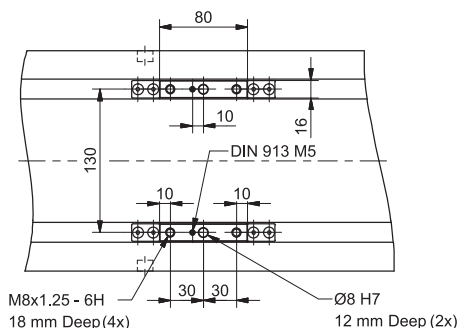
- i** Linear Unit doesn't include safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke

LONG CARRIAGE



- i** Journal with or without Keyway

SHORT CARRIAGE



- * Lubrication port position:
Long carriage: L/2
Short carriage: L/2 - 53 mm

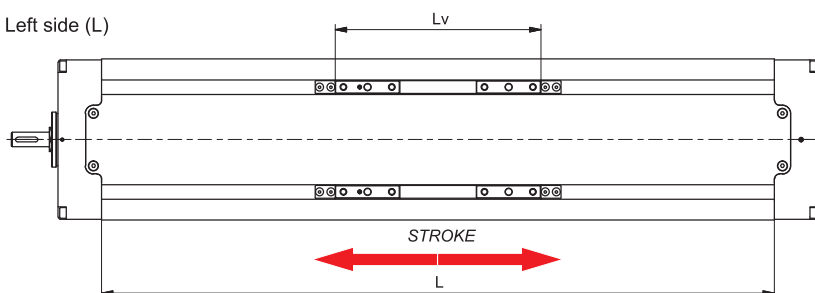
Defining of the linear unit length

Single Carriage

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + L_v + 120\text{mm}$$

$$L_{\text{total}} = L + 108 \text{ mm}$$

Left side (L)

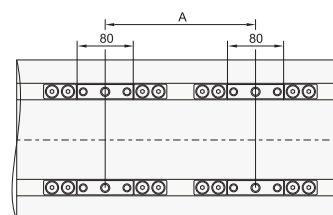


Right side (R)

Lv - long carriage = 255 mm
Lv - short carriage = 80 mm

Double Carriage

* Only with short carriage version



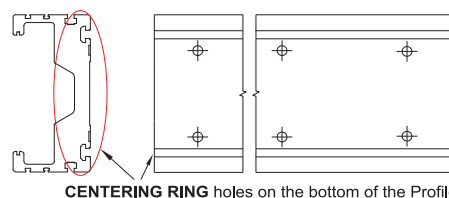
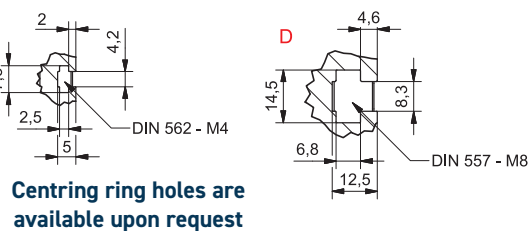
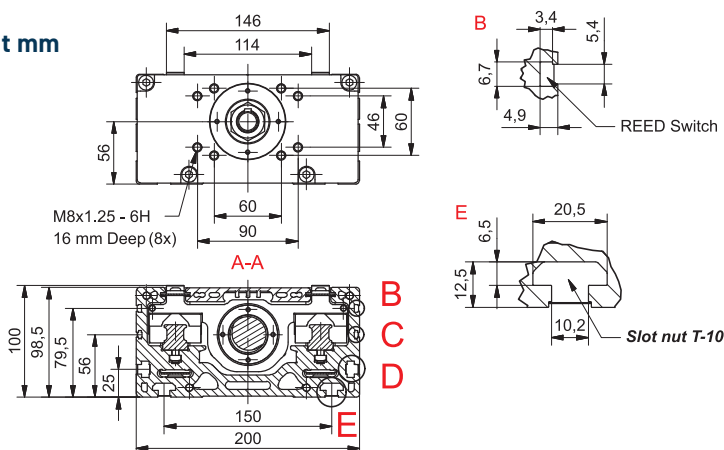
* For ordering code please contact us

$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 200 \text{ mm}$$

$$L_{\text{total}} = L + 108 \text{ mm}$$

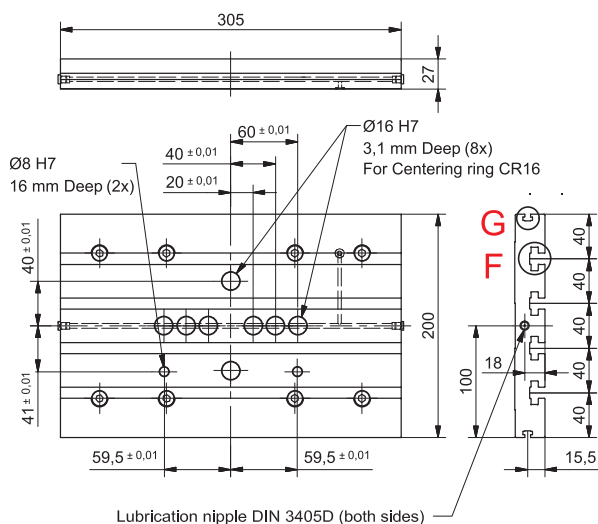
A ≥ 100mm
*A ≥ 195mm
* When using connection plates

Unit mm

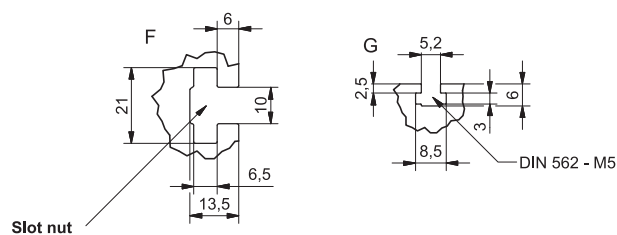
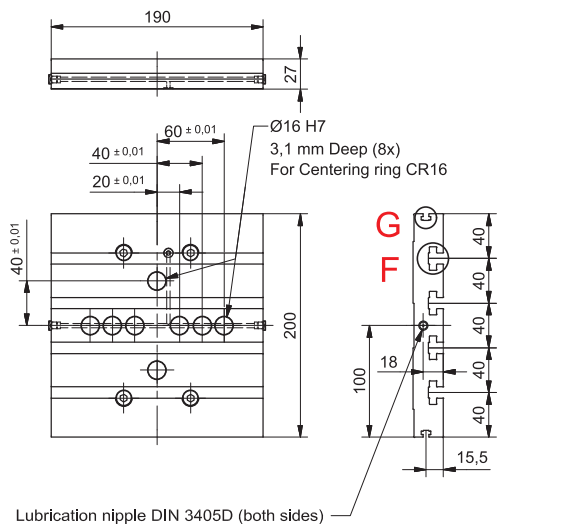


Connection Plate

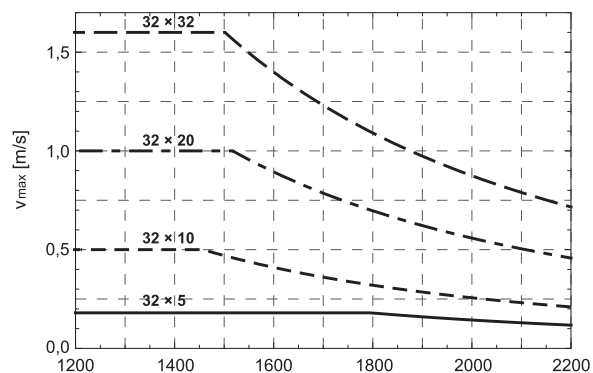
CTV 200 L



CTV 200 S



Maximum travel speed as a function of the profile length (Vmax - L curves)



Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTV 200 S	190	2.32	66669
CTV 200 L	305	3.75	66657

* Mounting elements for mounting the connection plate on the Linear Unit are included.

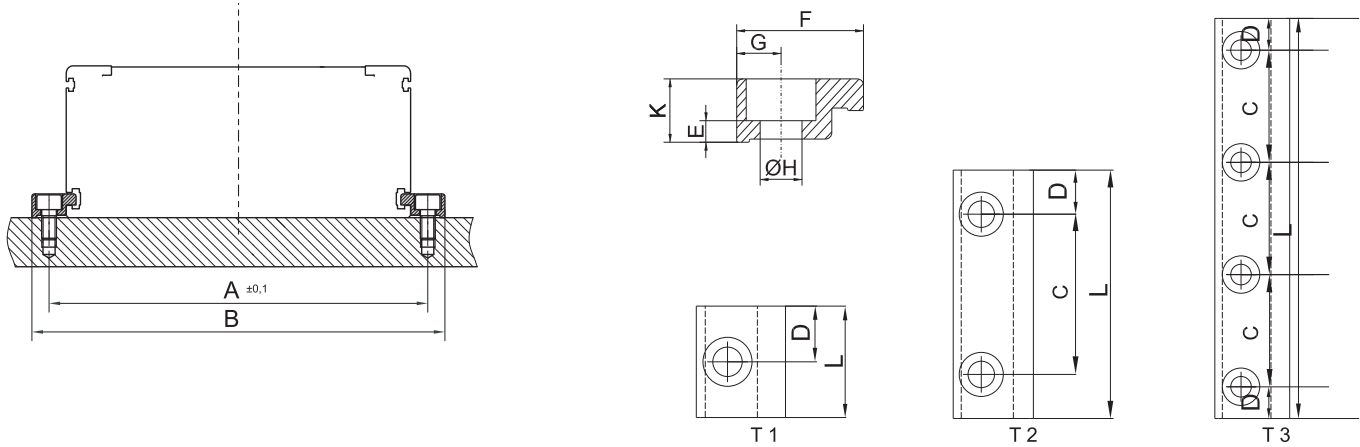
CTV Series Order Example

Code: **CTV** **110** **1610** - **ISO7** - **1** - **1000** - **L** - **1** - **1**
Options: 1 2 3 4 5 6 7 8 9

Options		Selection			
1	Series	CTV			
2	Size	90	110	145	200
3	Ballscrew	Ø12x5, Ø12x10	Ø16x5, Ø16x10, Ø16x16	Ø20x5, Ø20x10, Ø20x20 Ø20x50	Ø32x5, Ø32x10, Ø32x20, Ø32x32
4	Ballscrew Tolerance	ISO7 (Standard) ISO5			
5	Ballscrew Journal	0: Without Keyway	0: Without Keyway 1: With Keyway		
6	Absolute Stroke	Absolute Stroke= Effective stroke + 2 x Safety Stroke			
7	Carriage Version	S : Short L : Long			
8	Connection Plate	0: Without 1: With			
9	Protection Cover	0: No Cover 1 : With Antistatic PU Gap-Type Seal Strip (Standard) 2 : With Corrosion-Resistant Protection Strip			

CTV Accessories

Mid Section Mounting



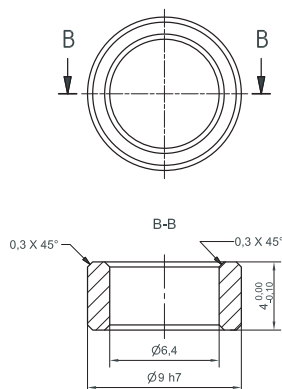
Linear Unit	Type	Dimensions (mm)										Screw	Countersink for	Weight (kg)	Code
		A	B	C	D	L	E	F	G	ØH	K				
CTV 90	T1	102	112	—	12.5	25	4.5	15	5	4.5	9	M4	DIN 912	0.01	46994
CTV 90	T2	102	112	40	11	62	4.5	15	5	4.5	9	M4	DIN 912	0.02	48636
CTV 90	T3	102	112	20	8.5	77	4.5	15	5	4.5	9	M4	DIN 912	0.025	47163
CTV 90	T3	102	112	25	6	87	4.5	15	5	4.5	9	M4	DIN 912	0.028	55261
CTV 90	T3	102	112	30	8.5	107	4.5	15	5	4.5	9	M4	DIN 912	0.031	55638
CTV 110	T1	126	140	—	12.5	25	3.4	20	7	6.6	10	M6	DIN 912	0.01	48642
CTV 110	T2	126	140	40	11	62	3.4	20	7	6.6	10	M6	DIN 912	0.03	48643
CTV 110	T3	126	140	20	8.5	77	4.5	20	7	5.5	10	M5	DIN 912	0.03	48640
CTV 110	T3	126	140	30	8.5	107	4.5	20	7	5.5	10	M5	DIN 912	0.045	46995
CTV 110	T3	126	140	40	11	142	3.4	20	7	6.6	10	M6	DIN 912	0.056	55260
CTV 145	T1	161	175	—	12.5	25	3.4	20	7	6.6	10	M6	DIN 912	0.01	48642
CTV 145	T2	161	175	40	11	62	3.4	20	7	6.6	10	M6	DIN 912	0.03	48643
CTV 145	T3	161	175	20	8.5	77	4.5	20	7	5.5	10	M5	DIN 912	0.03	48640
CTV 145	T3	161	175	30	8.5	107	4.5	20	7	5.5	10	M5	DIN 912	0.045	46995
CTV 145	T3	161	175	40	11	142	3.4	20	7	6.6	10	M6	DIN 912	0.056	55260
CTV 200	T2	222	240	40	19	78	14.8	29	9	8.5	27.5	M8	DIN 912	0.110	53049
CTV 200	T2	222	240	50	19	88	14.8	29	9	8.5	27.5	M8	DIN 912	0.120	53050
CTV 200	T2	222	240	70	19	108	16.3	29	9	8.5	27.5	M8	DIN 912	0.160	53051

Recommended number of mounting fixtures

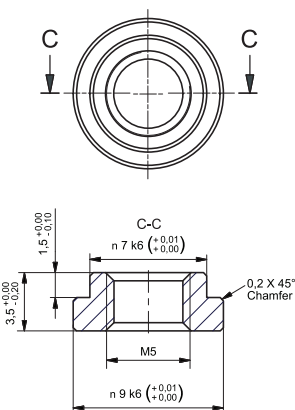
T1	6 pieces per metre, per side
T2	3 pieces per metre, per side
T3	3 pieces per metre, per side

Centring Rings

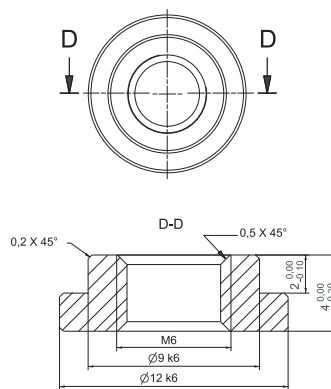
CR 9



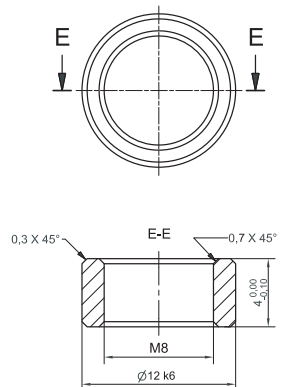
CR 7 / 9



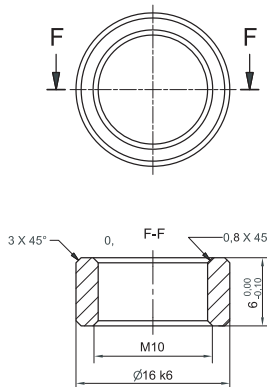
CR 9 / 12



CR 12



CR 16



Type	Compatible with	Code
CR 9	CTV/CTJ: 90, 110	75114
CR 7/9	CTV/CTJ: 90, 110	23331
CR 9/12	CTV/CTJ: 90, 110, 145	48885
CR12	CTV/CTJ: 145	49049
CR16	CTV/CTJ: 200	53023

Slot Nuts



DIN 526



DIN 557



T Nut

Code	Nut Type	CTV 90 CTJ 90	CTV 110 CTJ 110	CTV 145 CTJ 145	CTV 200 CTJ 200
41609	DIN562 - M2.5	X	X	X	
40682	DIN562 - M4	X			X
40768	DIN562 - M5		X	X	
44451	DIN557 - M8				X
5551	Slot Nut T-10-M8				X
5552	Slot Nut T-10-M6				X
5553	Slot Nut T-10-M5				X
5570	Slot N. T-10-M8 L=90				X

Connection Plate Nuts

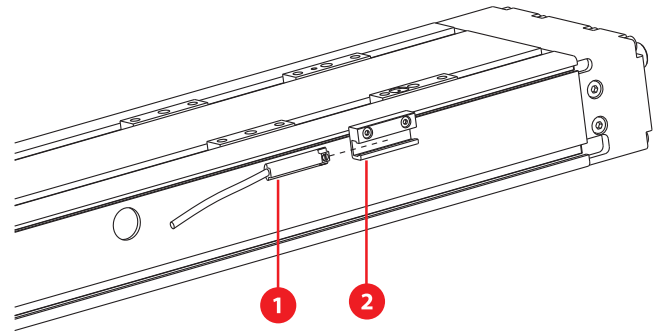
Code	Nut Type	CTV 200 CTJ 200
5551	Slot Nut T-10-M8	X
5552	Slot Nut T-10-M6	X
5553	Slot Nut T-10-M5	X
5570	Slot Nut T-10-M8 L=90	X

Code	Nut Type	CTV 145 CTJ 145
5704	Slot Nut 8LM4	X
5703	Slot Nut 8LM5	X
5702	Slot Nut 8LM6	X
5701	Slot Nut 8LM8	X

Code	Nut Type	CTV 110 CTJ 110	CTV 90 CTJ 90
48887	Slot Nut 6LM4	X	X
48888	Slot Nut 6LM5	X	X

Magnetic Field Sensors

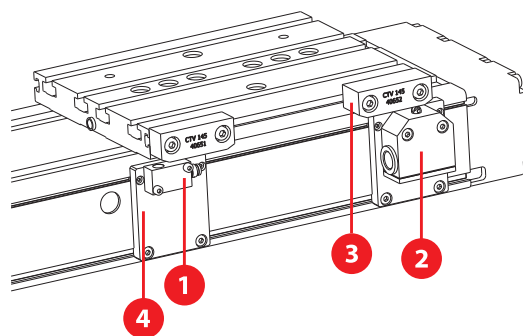
1	Magnetic Field Sensor
2	Sensor Holder



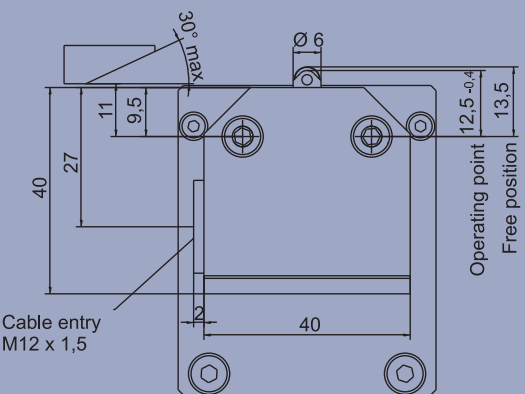
SMT-65TP-K NO/ NC	Code	Type	Compatability	
	43851	HOM Sensor holder	CTV90 , CTV110, CTV145	
	74073	SMT-6STP-K NC	CTV: 200	
	77075	SMT-6STP-K NC + HOM	CTV90, CTV110, CTV145,	
	74074	SMT-6STP-K NO	CTV: 200	
	77076	SMT-6STP-K NO + HOM	CTV90, CTV110, CTV145	
	8146	Extension Cable length 2m - Straight connector		
	8147	Extension Cable length 5m - Straight connector		
	9017	Extension Cable length 2m - Angled connector		
	9019	Extension Cable length 5m - Angled connector		

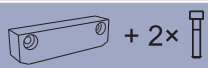
Technical Data	SMT-65TP-K NC	SMT-65TP-K NO
Sensor Type	GMR sensor	GMR sensor
Switching function	NC	NO
Output	PNP	PNP
Operating voltage	10 ~ 28 V DC	10 ~ 28 V DC
Switching Current	200 mA max.	200 mA max.
Power rating	5.5 W max.	5.5 W max.
Voltage Drop	1.5 V / 200mA max.	1.5 V / 200 mA max.
Current Consumption	10 mA/ 24 V max.	10 mA/ 24 V max.
Switching Frequency	1000 Hz	1000 Hz
Ambient temperature	-10 ~ +70°C	-10 ~ +70°C
Shock Vibration	50 G / 9 G	50 G / 9 G
Protection class	IP 67	IP 67
LED indicator	Yellow	Yellow
Electrical connection	M8. 3-pin	M8. 3-pin
Cable material length	PU - 0.3 m	PU - 0.3 m
Extension cable	Energy chain compliant	Energy chain compliant

1	Induction Switch
2	Mechanical Switch
3	Activation Block
4	Switch Holder

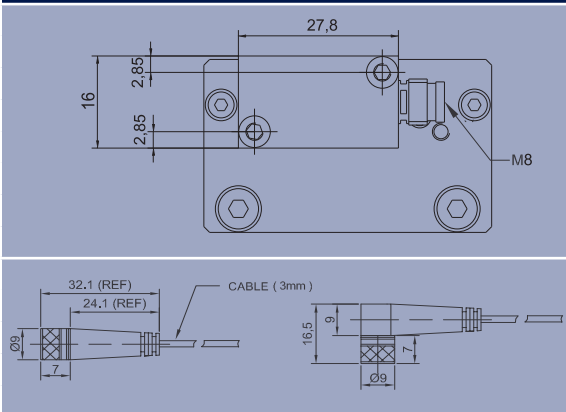


MS - Mechanical Switch

Technical Data	SMT-65TP-K NC	SMT-65TP-K NO
	Protection class IEC 60529	IP67
	Ambient temperature	-5°C ~ +80°C
	Operating point accuracy	± 0.05 mm
	Approach speed max.	45 m/min
	Approach speed min.	0.01 m/min
	Switching contact	1 changeover
	Switching principle	Snap-action
	Rated voltage	250 V AC
	Switching current, min. at	10 mA
	Switching voltage	24 V DC
	Cable entry	M12 X 1.5

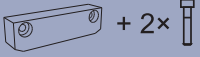
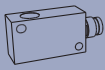
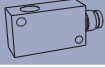
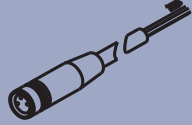
Ordering Codes	CTV 90	CTV 110	CTV 145	CTV 200
 + 2×	49032	49031	40652	40652
	47921			
2×  +  + 2×  + 	49034	49033	47939	53055

Technical Data



Sensor Type	PNP
Switching function	NC / NO
Rated voltage	10 - 30 V DC
Switching Current	150mAmax.
Ambient temperature	-25°C ...+70°C
Switching Frequency	800 Hz max.
Voltage Drop	3,5 V
Protection class	IP 67
Electrical connection	M8, 3-pin
Extension cable	Energy chain compliant - bending radius 75 mm
Cable material-length	PU
Cable length	2m / 5m
Cable length	M8, 3-pin Straight or Angled connector

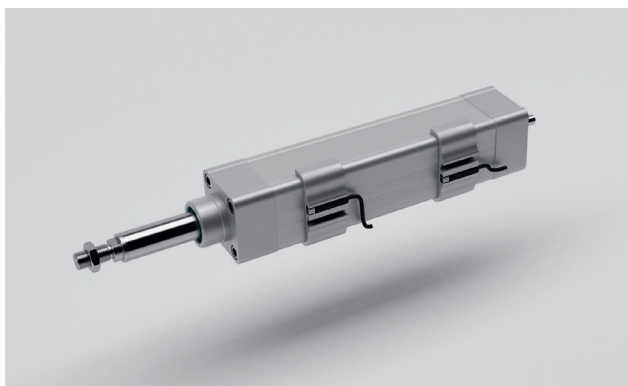
Ordering Codes

		CTV 90	CTV 110	CTV 145	CTV 200
 + 2x 	Activation block with fixing screws	49032	49031	40652	40652
	PNP NO Inductive switch Only	40671			
2x  +  + 2x  + 	PNP NO inc. switch with mounting elements	49039	49038	48058	53054
	PNP NC Inductive switch Only	43570			
2x  +  + 2x  + 	PNP NC inc. switch with mounting elements	49037	49036	47850	53052
	Extension cable length 2m Straight Connector	8146			
	Extension cable length 5m Straight Connector	8147			
	Extension cable length 2m Angled Connector	9017			
	Extension cable length 5m Angled Connector	9019			

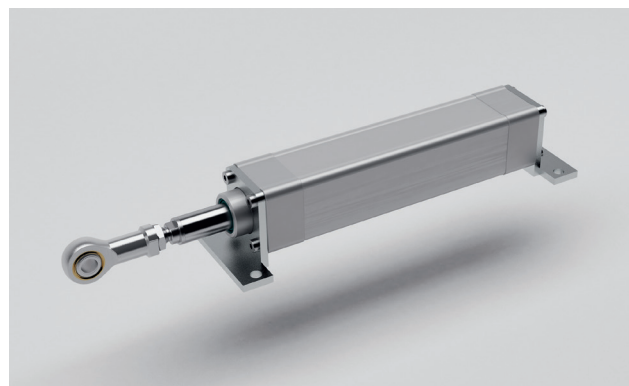
PNCE Series

ISO 15552 / VDMA 24562

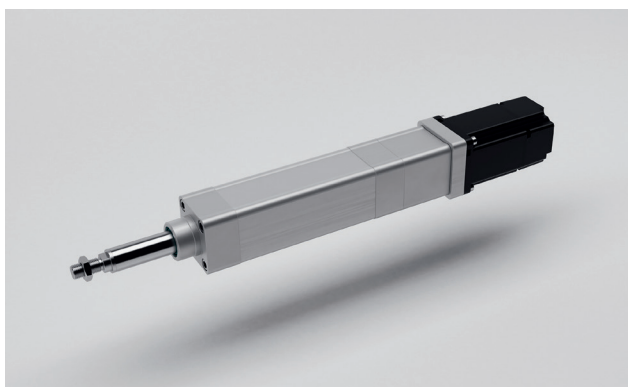
i The aluminium profiles are manufactured according to the medium EN 12020-2 standard



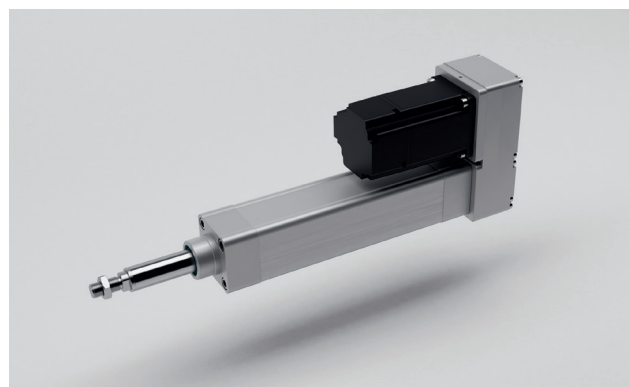
Sensor holder



ISO standard accessories



Motor adapter with coupling (IP65)



Motor side drive (IP65)

Order Example

PNCE - **40** - **BS** - **1610** - **200** - **S** - **F** - **E20**

Series: _____
PNCE

Size: _____
• 32
• 40
• 50
• 63

Screw type: _____
• BS: ball screw

Ball screw: _____
• PNCE 32: Ø12x5, Ø12x10
• PNCE 40: Ø16x5, Ø16x10, Ø16x16
• PNCE 50: Ø20x5, Ø20x10, Ø20x20, Ø20x50
• PNCE 63: Ø25x5, Ø25x10, Ø25x25

Absolute stroke [mm]: _____
Absolute stroke = Effective stroke + 2 × Safety stroke

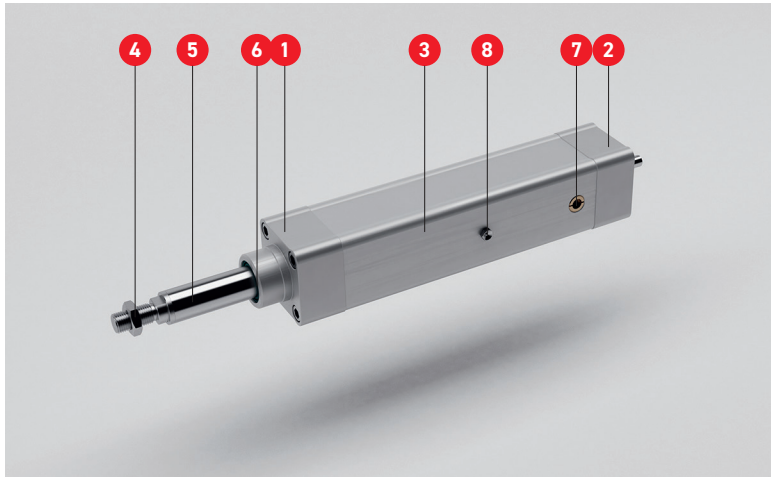
Versions: _____
• S: Standard version
• IP65: IP65 protection class
• IP65CR: IP65 protection class with high corrosion resistance
• FI: For applications in the food industry (check the material information)

Option 1: _____
• Leave blank: standard
• F: female thread on the piston rod

Option 2: _____
• Extended piston rod E [mm]

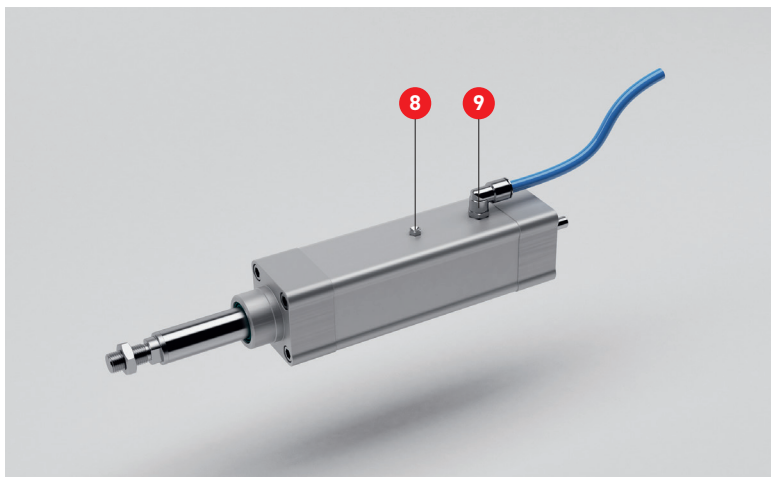
Structural Design

• Standard version (S)*



- 1 – Front cap
- 2 – Drive cap
- 3 – Smooth cylinder profile
- 4 – Hex nut
- 5 – Piston rod (stainless steel) with an anti-rotation device
- 6 – Piston rod seal
- 7 – Pressure compensation
- 8 – Lubrication nipple

* IP40 protection class



- 8 – Lubrication nipple
- 9 – Connection for pressure compensation

• IP65 protection class (IP65)



The appropriate sealing of the external parts ensures the electric cylinder the IP65 protection class. The IP65 protection class of the electric cylinder fulfils the specifications to IEC 60 529. The connection for pressure compensation in the cylinder profile ensures the exchange of air between the interior of the cylinder and the environment. This prevents the occurrence of excess pressure or negative pressure inside the electric cylinder. It also protects the interior of the cylinder from the external media like dust and water.

• IP65 protection class with high corrosion resistance (IP65CR)



It offers high corrosion resistance in harsh environments. The version IP65CR includes all the features of the electric cylinder version IP65. In addition to ensuring high corrosion resistance all the external parts are corrosion resistant (e.g. the connection for pressure compensation, lubrication nipple, and the connection elements are made of stainless steel). More information about materials is available upon request in the extended material information list.

• For applications in the food industry (FI)



The version FI includes all the features of the electric cylinder version IP65CR. It is upgraded by materials suitable for some applications in the food industry. The cylinder is greased with a lubricant class NSF H1. The design with the smooth surfaces of the aluminium profile enables its quick and effective cleaning. During the cleaning the sealing air can be applied to the connection for pressure compensation. The use for the food & beverage industry is limited by the materials of the electric cylinder. More information about materials is available upon request in the extended material information list.

PNCE Series Technical Data

General technical data for the PNCE series

PNCE	Ball screw	Dynamic * load capacity	Maximum axial load **	Maximum drive torque	Maximum travel speed ***	Max. rotational speed	No load torque	Minimum stroke	Maximum stroke	Axial backlash (BS)	Maximum acceleration
	d×l [mm]	C [N]	F _{max} [N]	M _p [Nm]	v _{max} [m/s]	n _{max} [min ⁻¹]	M ₀ [Nm]	s _{min} [mm]	s _{max} [mm]	[mm]	[m/s ²]
32	12×5	5000	2540	2.2	0.48	5800	0.10	30	800	< 0.02	20
	12×10	3800	1270		0.97		0.15	30			
40	16×5	13150	6020	5.3	0.35	4200	0.15	40	900	< 0.02	20
	16×10	11550	3010		0.70		0.20	35			
	16×16	8170	1880		1.12		0.25	35			
50	20×5	14800	14600	12.9	0.28	3300	0.30	50	1000	< 0.02	20
	20×10	15900	7830	13.9	0.55		0.35	55			
	20×20	16250	3900		1.10		0.40	50			
	20×50	13000	1560		2.5	3000	0.50	30			
63	25×5	16700	16500	14.6	0.23	2700	0.50	40	1200	< 0.02	20
	25×10	15800	15800	28.0	0.45		0.55	40			
	25×25	13400	7940	35.1	1.13		0.65	30			

* Dynamic load capacity of ball screw drive. This value is the basis for calculating the service life.

** When considering service life, see page 108. This value needs to be considered when using the piston rod or mounting attachments' accessories.

*** Maximum travel speed depends of the absolute stroke of the PNCE.

Operating conditions

Operating temperature	0°C ~ +60°C
Protection class	IP40, IP65
Duty cycle	100 %

i Recommended values of loads:

All the data of the dynamic load capacities (ball screw drive) stated in the upper table are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety and service life.

We recommend a minimum safety factor $f_s = 5.0$, where f_s is defined as $f_s = C / F_m$.

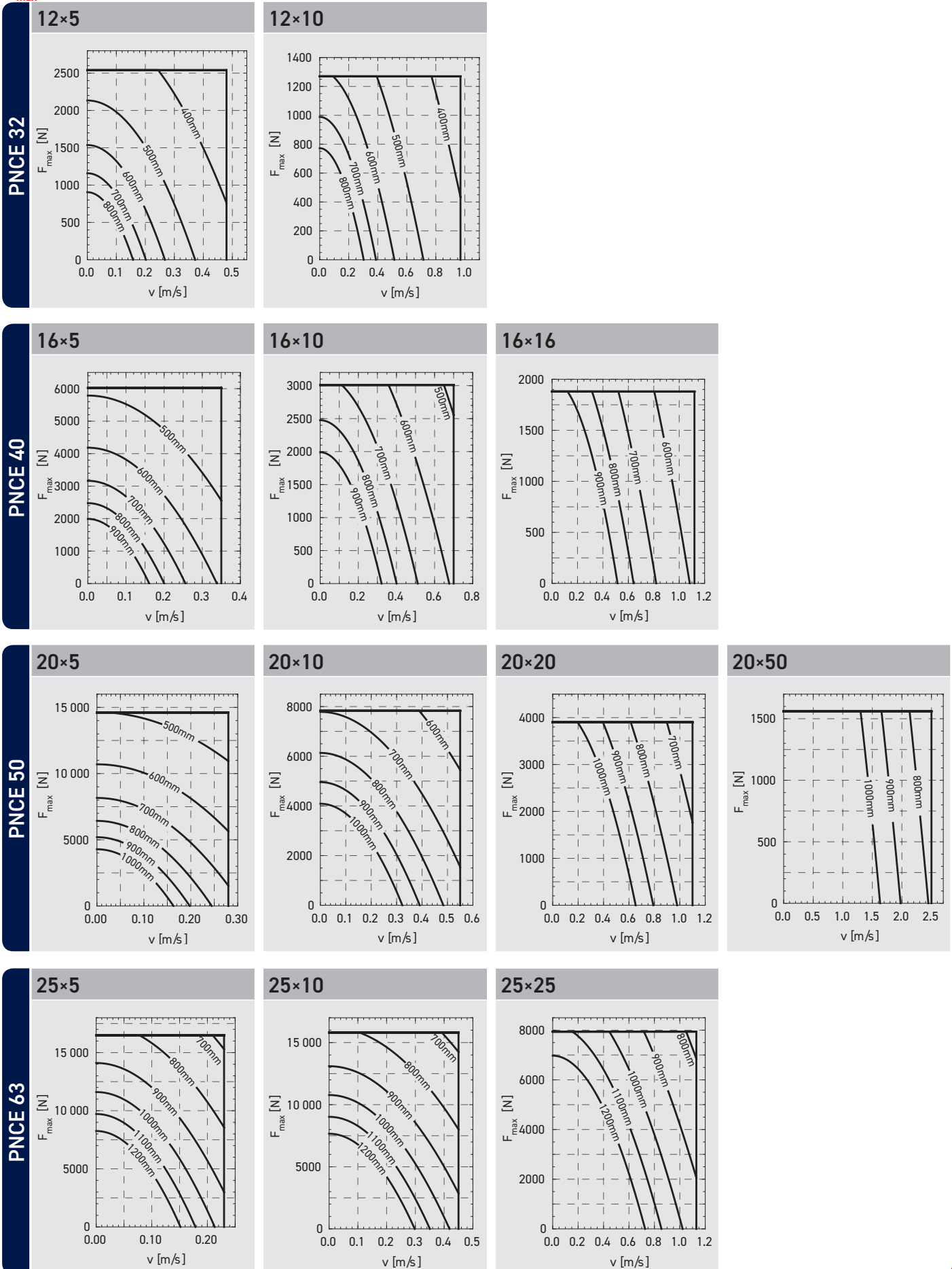
Mass and mass moment of inertia

PNCE	Ball screw	Moved mass **	Mass of the electric cylinder	Mass moment of inertia
	d×l [mm]	m _m [kg]	m _{PNCE} [kg]	J _{PNCE} [10 ⁻⁶ kg m ²]
32	12×5	0.32 + 0.0010 × (Absolute stroke + E)	1.10 + 0.0043 × Absolute stroke + 0.0010 × E	2.15 + 0.0128 × Absolute stroke + 0.0006 × E + 0.6333 × m _{load}
	12×10			2.75 + 0.0147 × Absolute stroke + 0.0025 × E + 2.5331 × m _{load}
40	16×5	0.44 + 0.0007 × (Absolute stroke + E)	1.45 + 0.0051 × Absolute stroke + 0.0007 × E	4.50 + 0.0395 × Absolute stroke + 0.0004 × E + 0.6333 × m _{load}
	16×10			5.35 + 0.0408 × Absolute stroke + 0.0018 × E + 2.5331 × m _{load}
	16×16			7.10 + 0.0436 × Absolute stroke + 0.0046 × E + 6.4846 × m _{load}
50	20×5	0.95 + 0.0012 × (Absolute stroke + E)	2.50 + 0.0073 × Absolute stroke + 0.0012 × E	17.75 + 0.0817 × Absolute stroke + 0.0007 × E + 0.6333 × m _{load}
	20×10			19.55 + 0.0839 × Absolute stroke + 0.0030 × E + 2.5331 × m _{load}
	20×20			26.75 + 0.0928 × Absolute stroke + 0.0118 × E + 10.1322 × m _{load}
	20×50			73.80 + 0.1549 × Absolute stroke + 0.0740 × E + 63.3258 × m _{load}
63	25×5	1.00 + 0.0011 × (Absolute stroke + E)	3.05 + 0.0097 × Absolute stroke + 0.0011 × E	32.55 + 0.2358 × Absolute stroke + 0.0007 × E + 0.6333 × m _{load}
	25×10			34.45 + 0.2378 × Absolute stroke + 0.0028 × E + 2.5331 × m _{load}
	25×25			47.30 + 0.2523 × Absolute stroke + 0.0172 × E + 15.8315 × m _{load}

** The moved mass is already considered in the equation for calculating the mass of the electric cylinder m_{PNCE} and the mass moment of inertia J_{PNCE}. The moved mass includes the mass of the piston rod with the internal anti-rotation device and ball nut.

m _{load}	Applied mass to be moved	[kg]
E	Extended piston rod	[mm]
Absolute stroke		[mm]

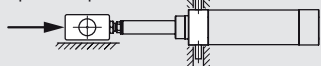
Maximum axial loading as a function of the travel speed for different values of absolute stroke (F_{max} - v curves)



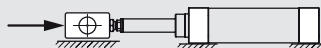
Maximum axial loading as a function of the absolute stroke (F_{max} - absolute stroke curves)

Schematically presented mounting cases

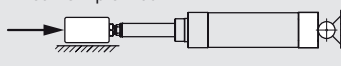
Simple - Simple mount



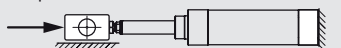
Simple - Fixed mount



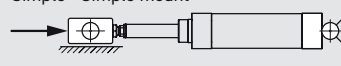
Fixed - Simple mount



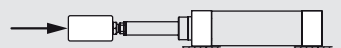
Simple - Fixed mount



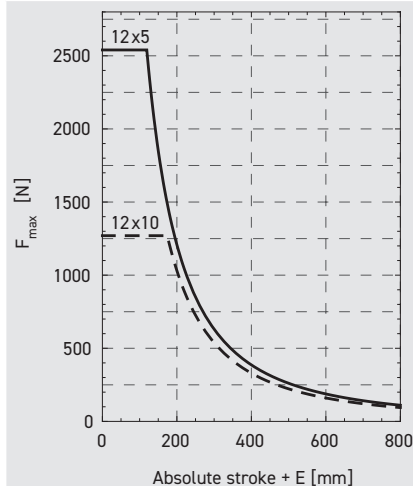
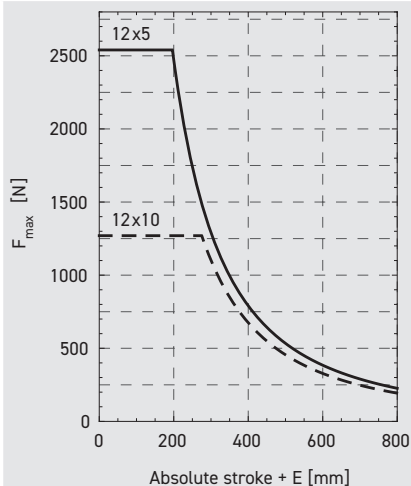
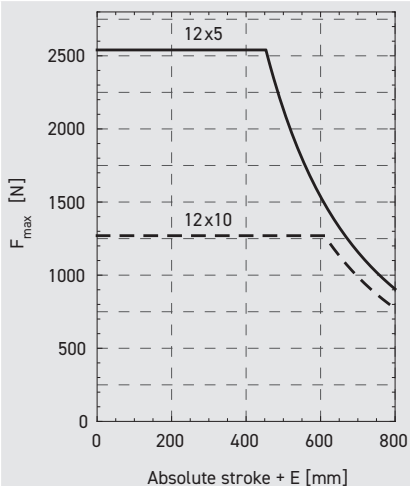
Simple - Simple mount



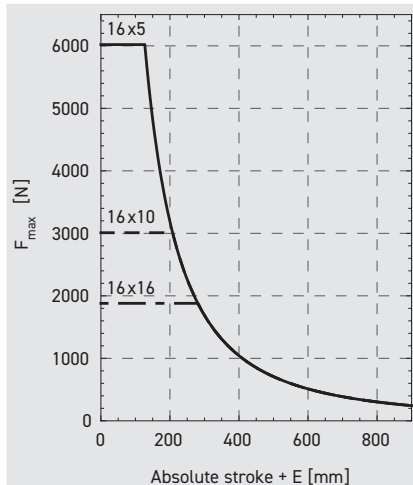
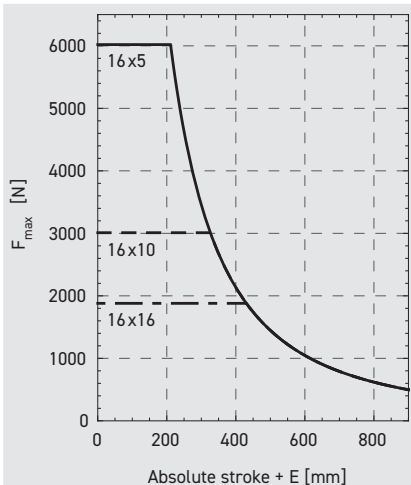
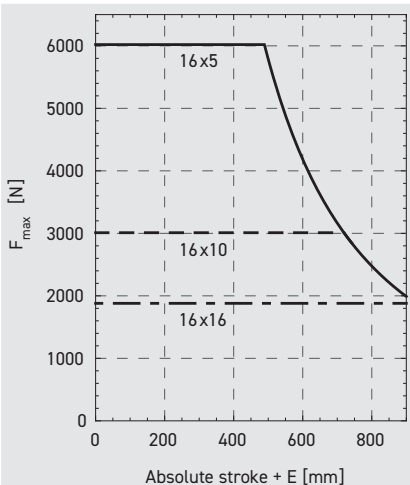
Free - Fixed mount



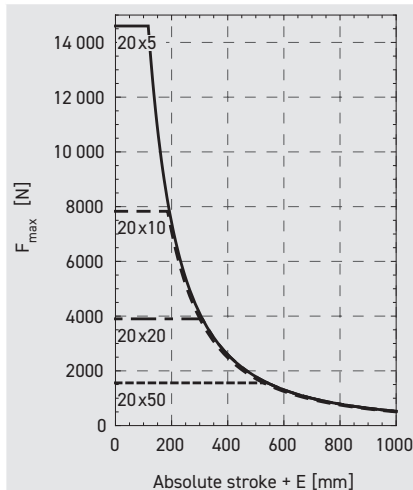
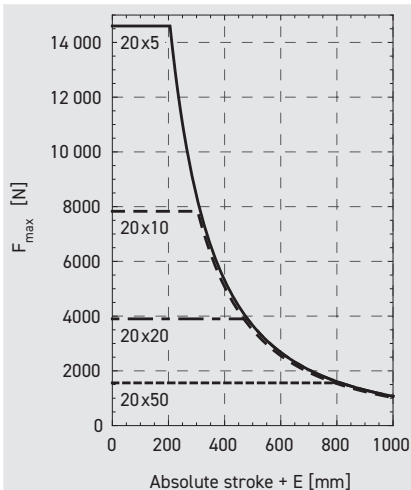
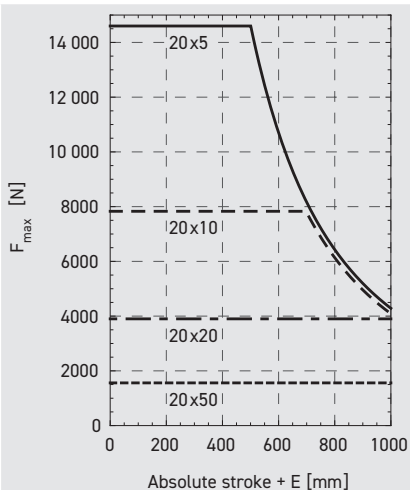
PNCE 32



PNCE 40

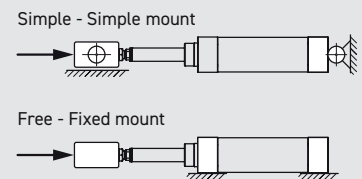
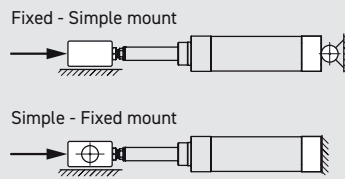
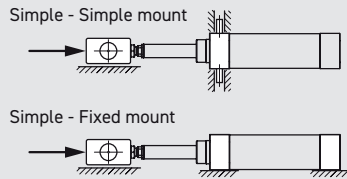


PNCE 50

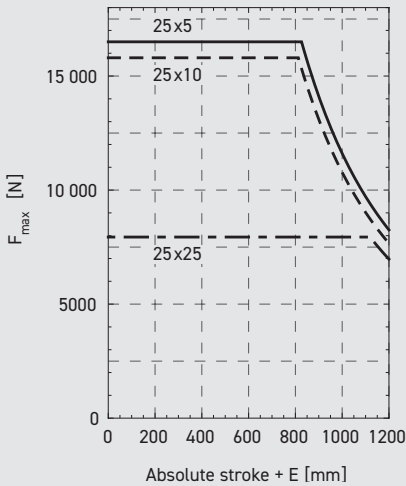


E Extended piston rod [mm]

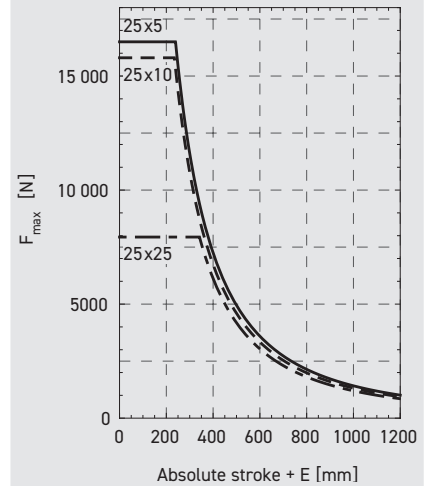
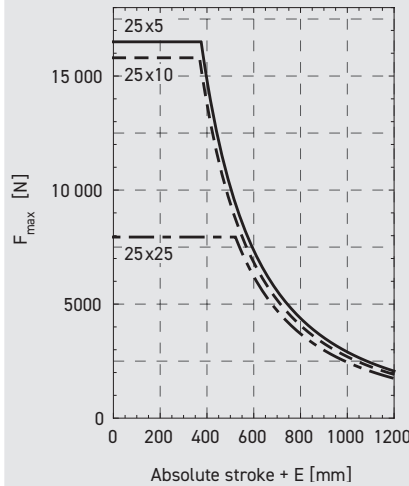
Schematically presented mounting cases



PNCE 63

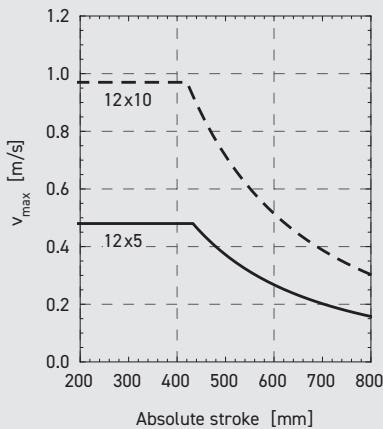


E Extended piston rod [mm]

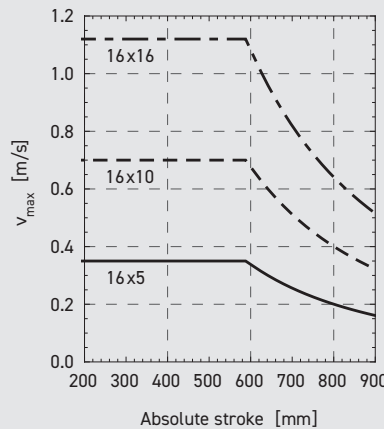


Maximum travel speed as a function of the absolute stroke (v_{max} - absolute stroke curves)

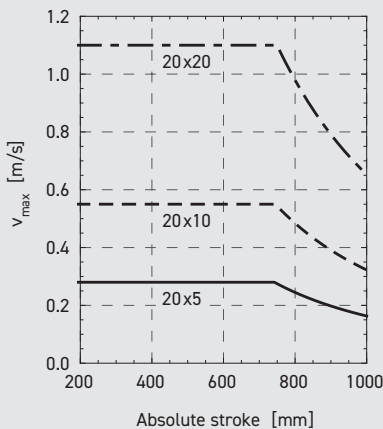
PNCE 32



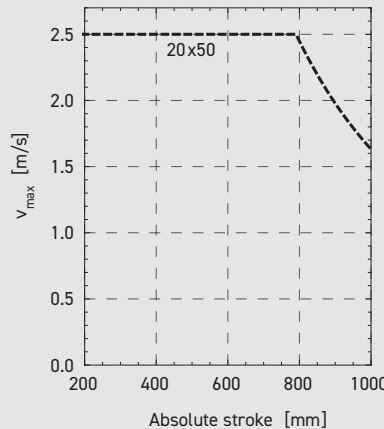
PNCE 40



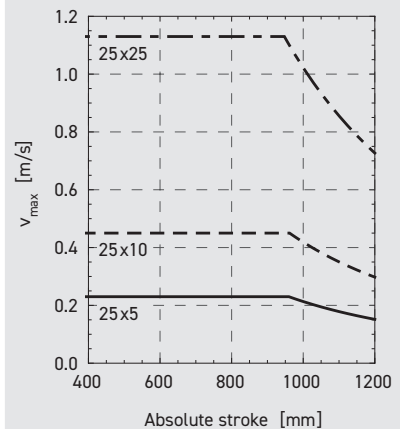
PNCE 50



PNCE 50

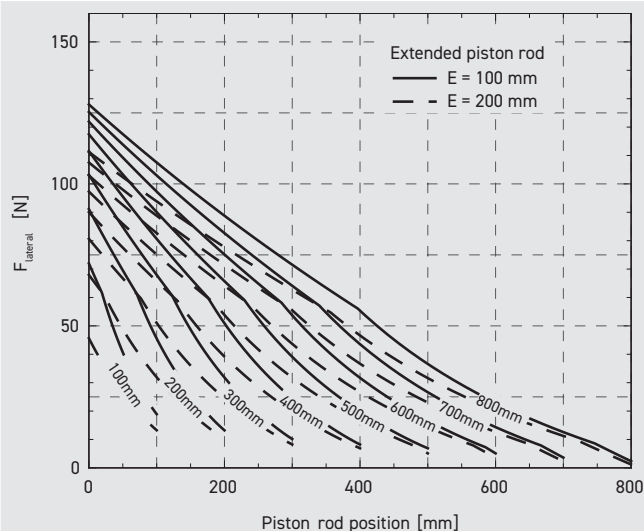
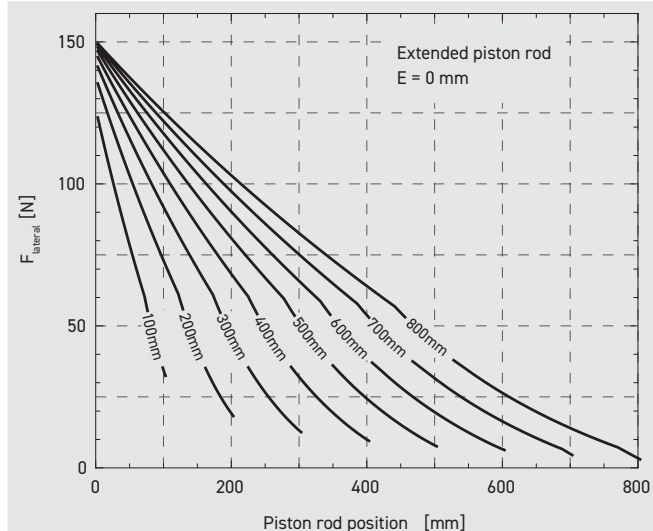


PNCE 63

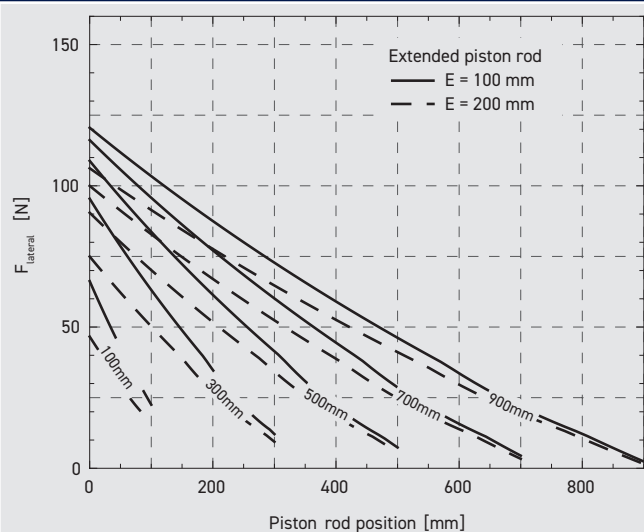
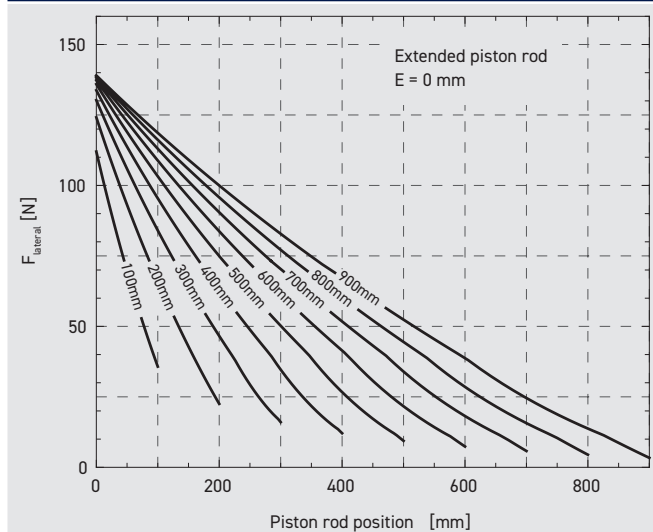


Maximum lateral loading as a function of the piston rod position for different values of the absolute stroke
(F_{lateral} - piston rod position curves)

PNCE 32

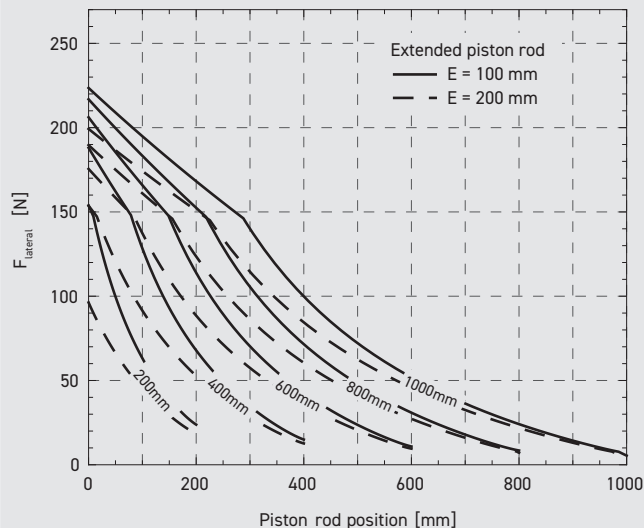
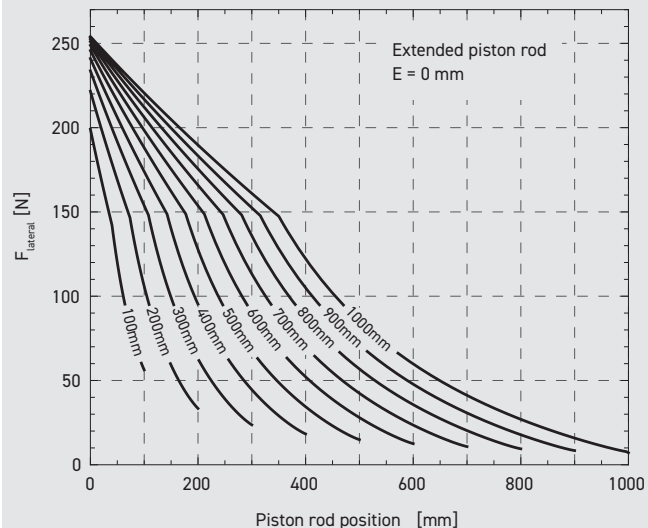


PNCE 40

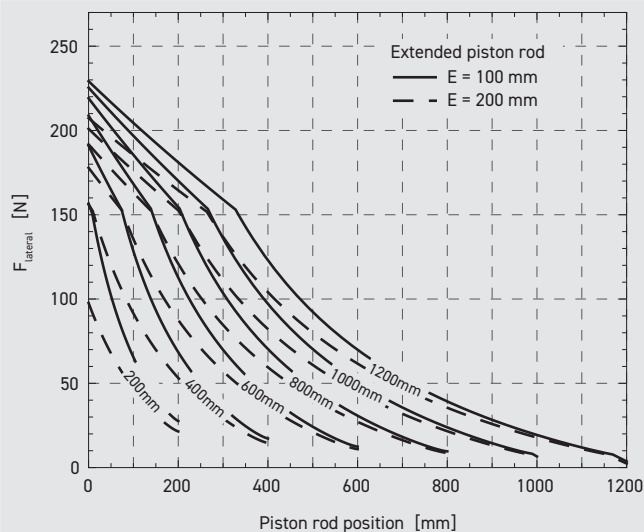
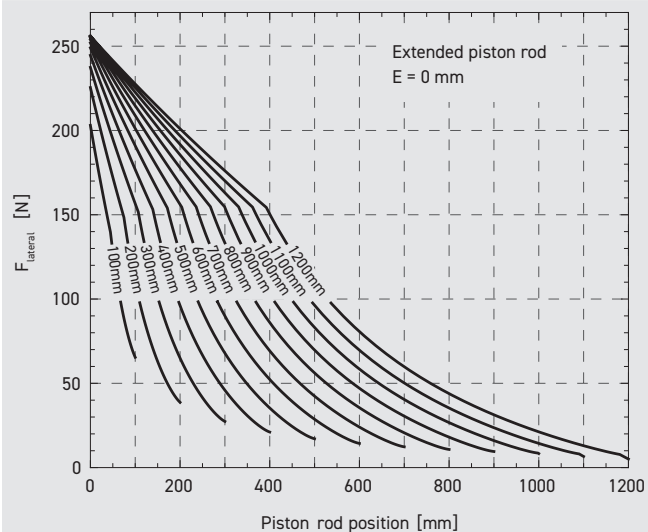


Values on the curves represent the absolute stroke

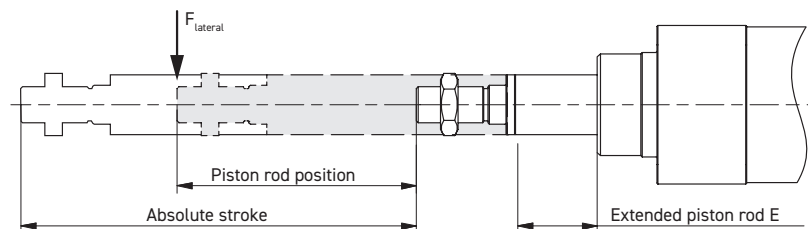
PNCE 50



PNCE 63

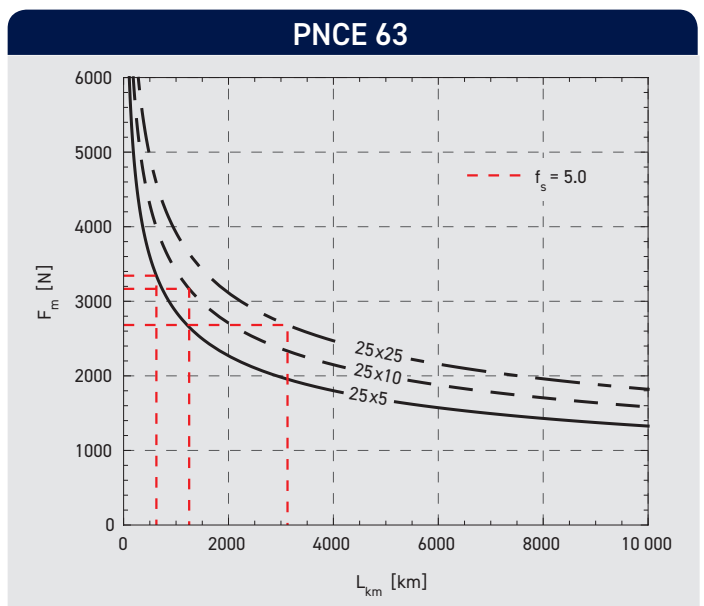
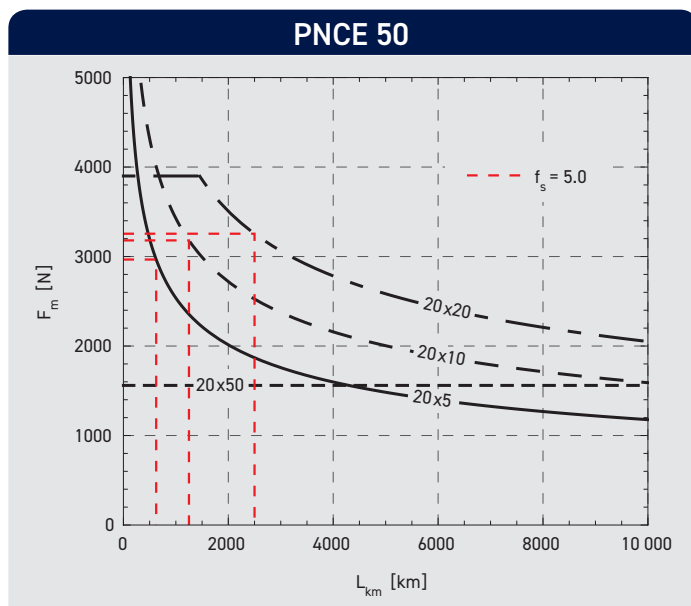
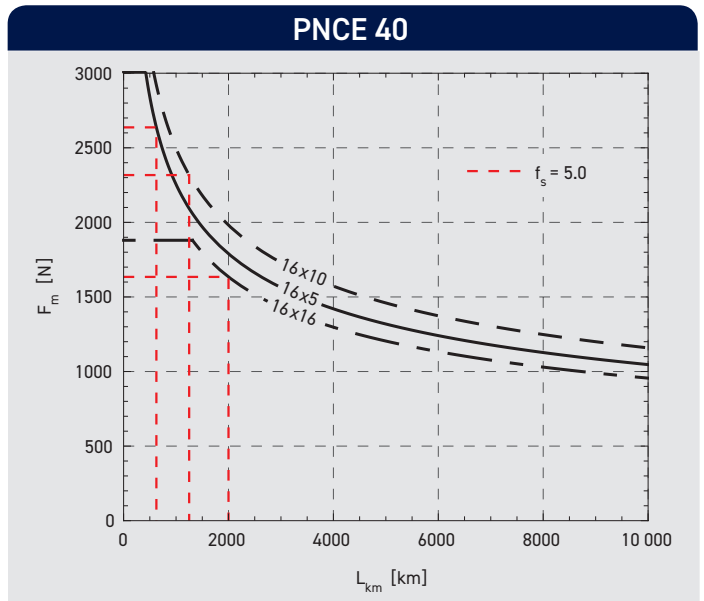
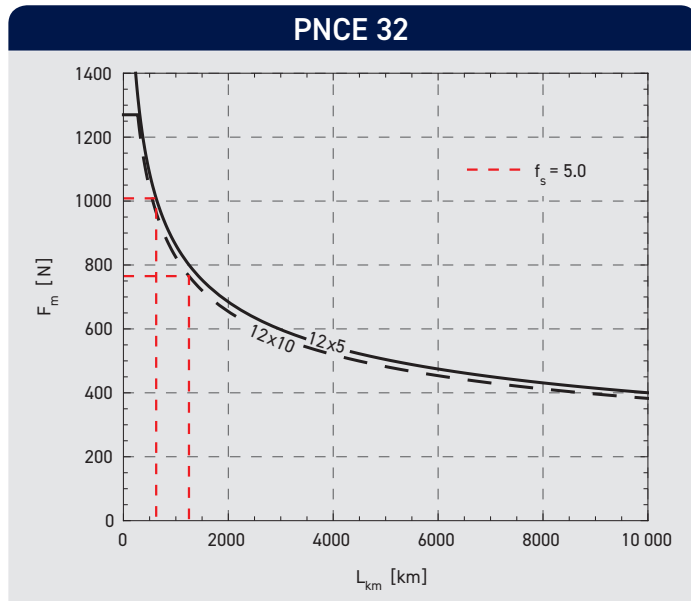


Values on the curves represent the absolute stroke



Diagrams taking into consideration
a travel speed of 0,5 m/s and an axial load of $F_{\max}/4$

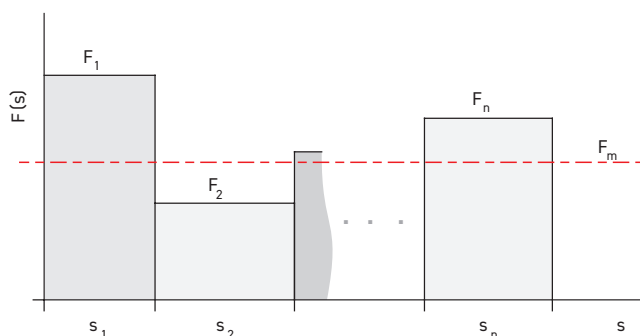
Service life - applied mean axial load F_m as a function of the service life L_{km}



Mean axial load F_m calculation

$$F_m = \sqrt[3]{\frac{|F_1|^3 \times s_1 + |F_2|^3 \times s_2 + \dots + |F_n|^3 \times s_n}{s_1 + s_2 + \dots + s_n}}$$

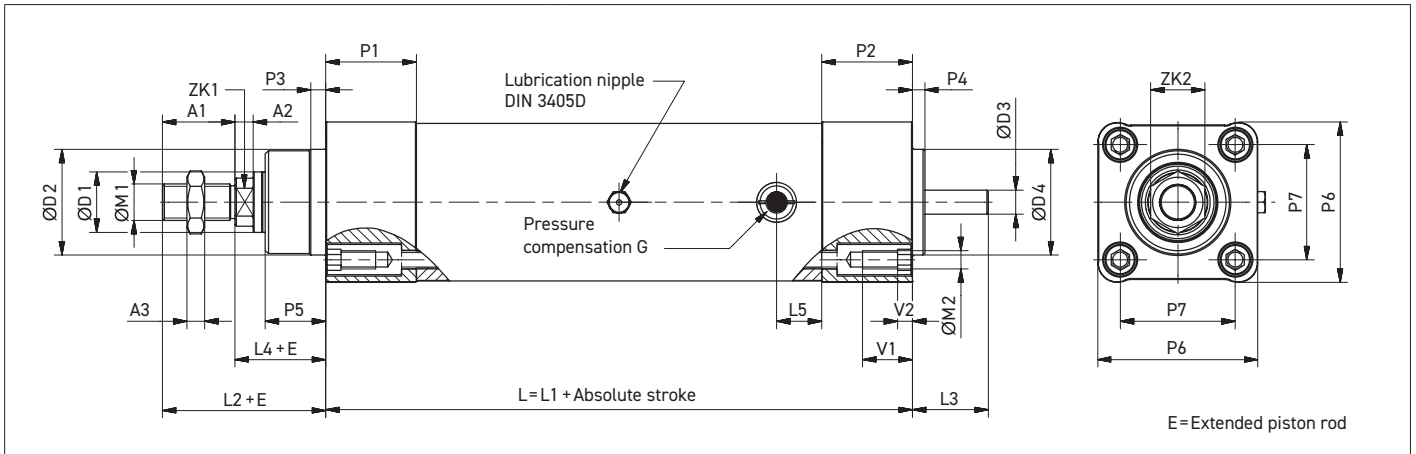
F_m	mean axial load
F_i	i-th axial load of a given loading regime $F(s)$. $i \in \{1, 2, \dots, n\}$
s_i	i-th travel path of a given loading regime $F(s)$. $i \in \{1, 2, \dots, n\}$



Diagrams presented above are showing the theoretically determined service life of the ball screw drive when the mean axial load F_m at room temperature is taken into consideration.

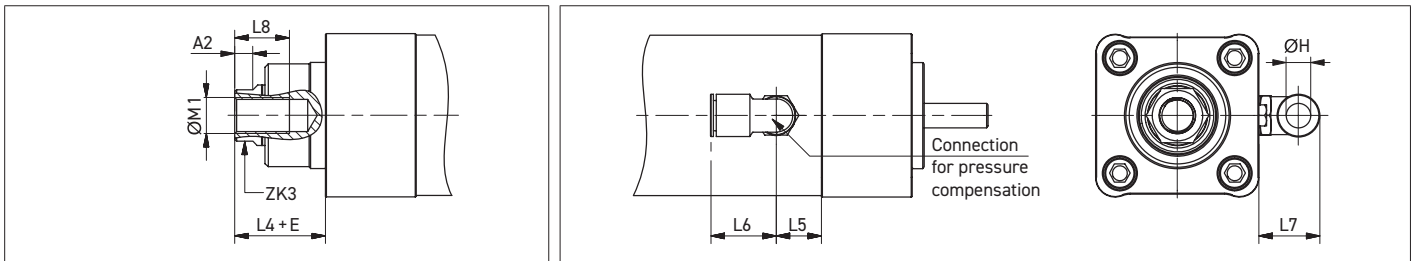
It should be noted that application conditions may have a significant effect on the service life.

Dimensions



Female thread

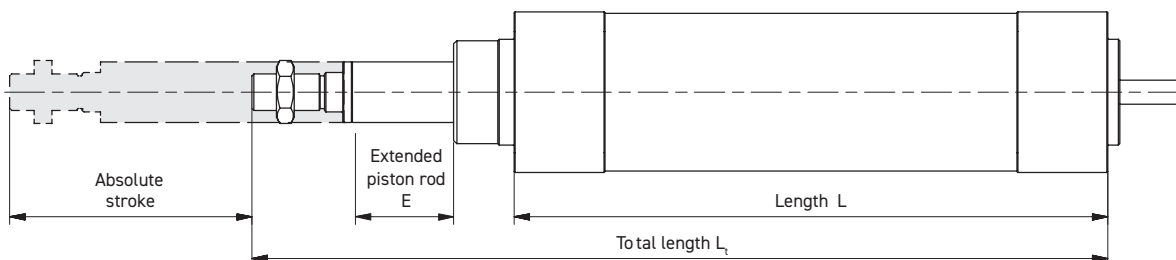
IP65. IP65CR. FI



PNCE	L1 (+0.2 / -1.4)	L2	L3	L4 (+1.9 / -0.8)	L5	L6	L7	L8	P1	P2	P3	P4 (±0.1)	P5 (±0.1)	P6	P7	G
Size	[mm]															
32	136	48	21	26	15	22.5	20.0	15	30	30	5	4	18	47	32.5	G 1/8
40	144	54	25	30	15	22.5	20.0	18	30	30	5	4	20	54	38	G 1/8
50	180	69	32	37	15	22.5	20.0	25	36	37	5	4	25	65	46.5	G 1/8
63	171	69	38	37	15	22.5	20.0	25	38	38	5	4	25	75	56.5	G 1/8

PNCE	$\varnothing D1$ (f8)	$\varnothing D2$ (d11)	$\varnothing D3$ (h7)	$\varnothing D4$ (g7)	$\varnothing M1$	$\varnothing M2$	$\varnothing H$	A1	A2	A3	ZK1	ZK2	ZK3	V1	V2
Size	[mm]														
32	18	30	6	30	M10×1.25	M6	8	22	5	5	10	17	16	16	4.5
40	20	35	8	35	M12×1.25	M6	8	24	6	6	13	19	17	16	4.5
50	25	40	11	40	M16×1.5	M8	8	32	8	8	17	24	22	18	4.5
63	30	45	15	45	M16×1.5	M8	8	32	8	8	17	24	27	18	4.5

Absolute stroke and length of the PNCE definition



Absolute stroke = Effective stroke + 2 × Safety stroke

$L = L1 + \text{Absolute stroke}$

$L_t = L + L2 + E$ $E_{\max} = 200 \text{ mm}$

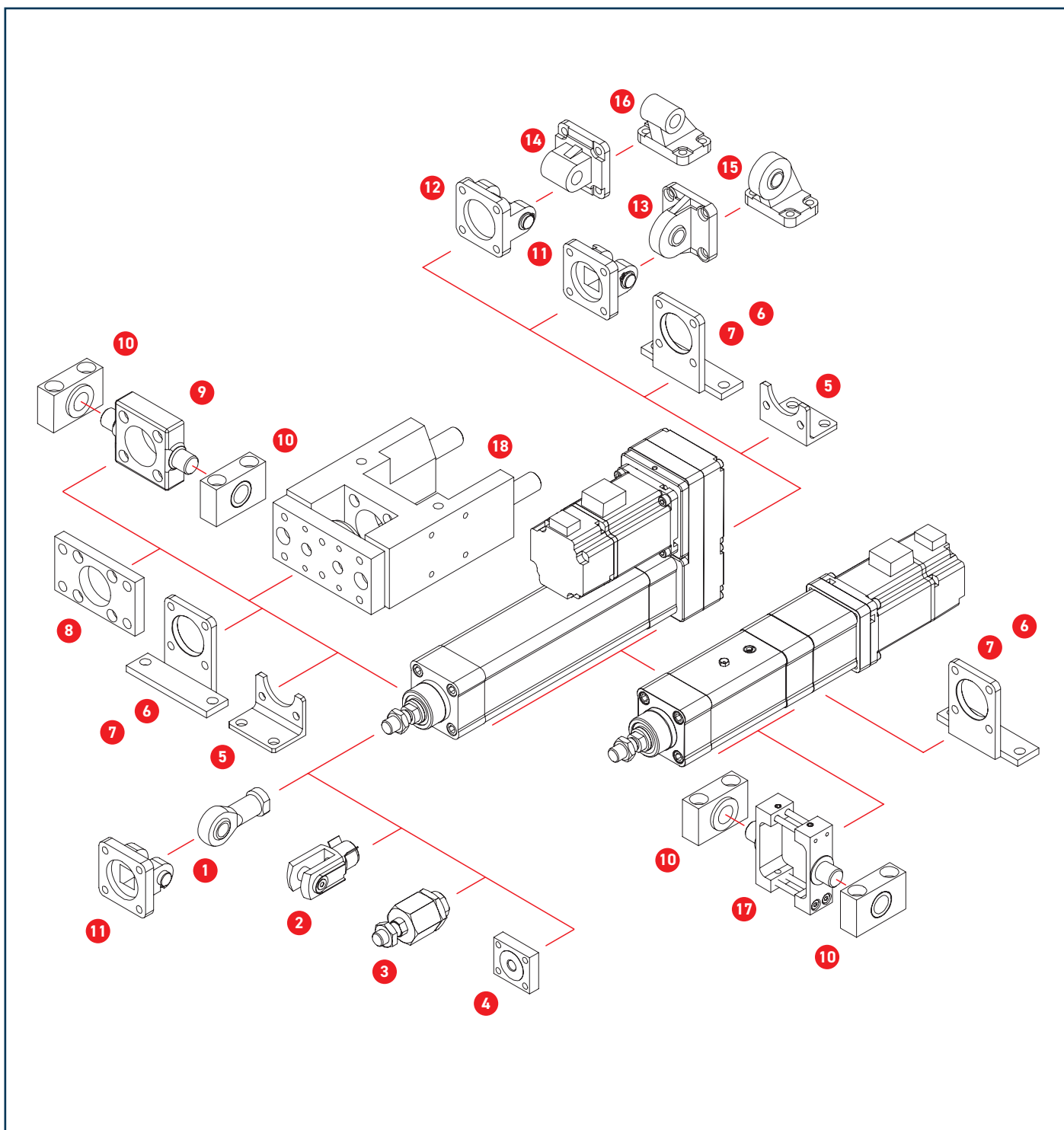
Female thread:

$L_t = L + L4 + E$ $E_{\max} = 200 \text{ mm}$

i The electric cylinder doesn't include any safety stroke.

E Extended piston rod [mm]

Accessories

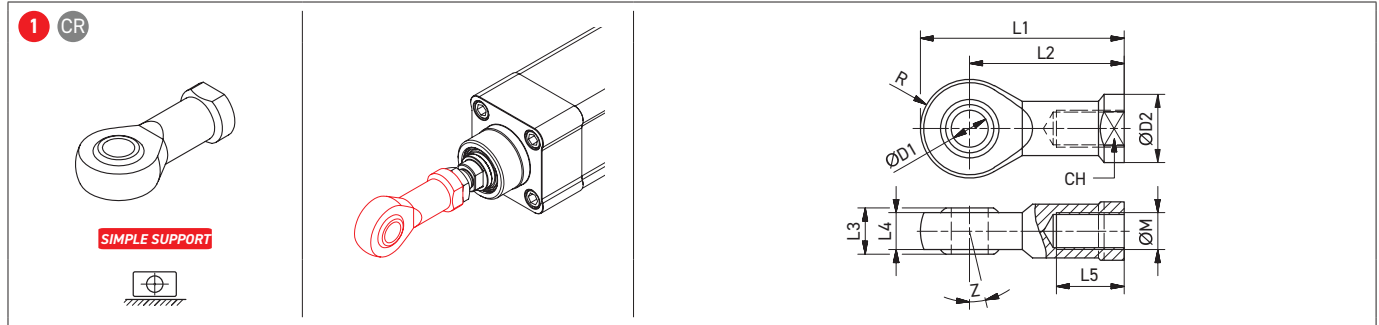


Page	111				112				113				114				115				116				117
Piston rod accessories	1	2	3	4																					
Mounting attachment accessories					5	6	7	8	9	10	11	12	13	14	15	16	17								
Guiding unit																									18

CR This sign applies to corrosion resistant products

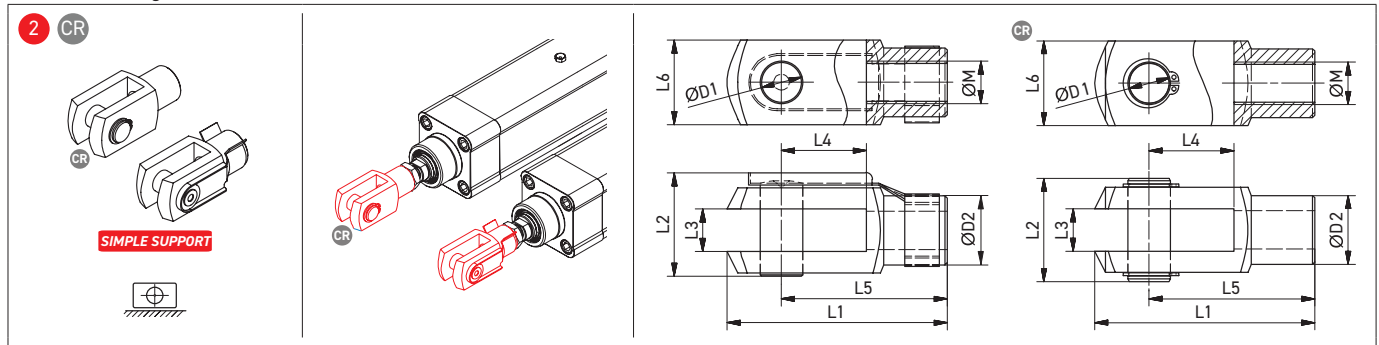
Piston Rod Accessories

SGS (Material: galvanized steel. CR - stainless steel AISI 304)



SGS			ØM	L1	L2	L3	L4	L5	ØD1 (H7)	ØD2	R	CH	Z	m	F _{max}	
Size	Code	Code CR	[mm]											[°]	[kg]	[N]
32	9206	69550	M10×1.25	57	43	14	10.5	20	10	19	14	17	13	0.08	F _{PNCE}	
40	9208	69551	M12×1.25	66	50	16	12	22	12	22	16	19	13	0.11	F _{PNCE}	
50	9210	50691	M16×1.5	85	64	21	15	28	16	27	21	22	15	0.22	F _{PNCE}	
63	9210	50691	M16×1.5	85	64	21	15	28	16	27	21	22	15	0.22	F _{PNCE}	

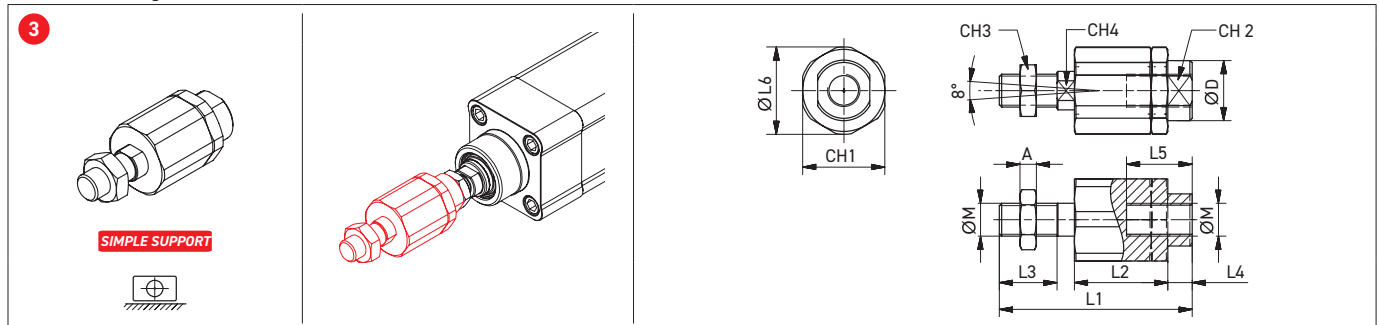
SG (Material: galvanized steel. CR - stainless steel AISI 304)



SG			ØM	L1 (±0.5)	L2	L3 (B13)	L4 (±0.5)	L5	L6	ØD1 (h11)	ØD2	m	F _{max}
Size	Code	Code CR	[mm]									[kg]	[N]
32	9186	69547	M10×1.25	52	26 [25]	10	20	40	20	10	18	0.09	F _{PNCE}
40	9189	69548	M12×1.25	62	32 [30]	12	24	48	24	12	20	0.15	F _{PNCE}
50	9191	69549	M16×1.5	83	40 [39]	16	32	64	32	16	26	0.33	F _{PNCE}
63	9191	69549	M16×1.5	83	40 [39]	16	32	64	32	16	26	0.33	F _{PNCE}

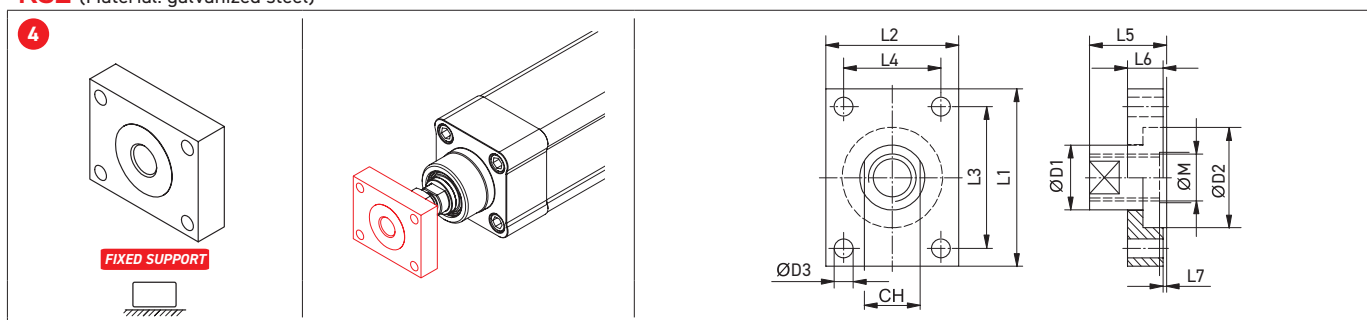
Bracketed values for type CR

FK (Material: galvanized steel)



F _{max}		ØM	L1	L2	L3	L4	L5	ØL6	A	ØD	CH1	CH2	CH3	CH4	m	F _{max}	
Size	Code	[mm]														[kg]	[N]
32	5466	M10×1.25	71	35	20	11	23	32	6	22	30	19	17	12	0.22	F _{PNCE}	
40	5468	M12×1.25	75	35	24	11	23	32	7	22	30	19	19	12	0.23	5000	
50	5470	M16×1.5	103	54	32	9	32	45	8	32	41	27	24	20	0.66	10000	
63	5470	M16×1.5	103	54	32	9	32	45	8	32	41	27	24	20	0.66	10000	

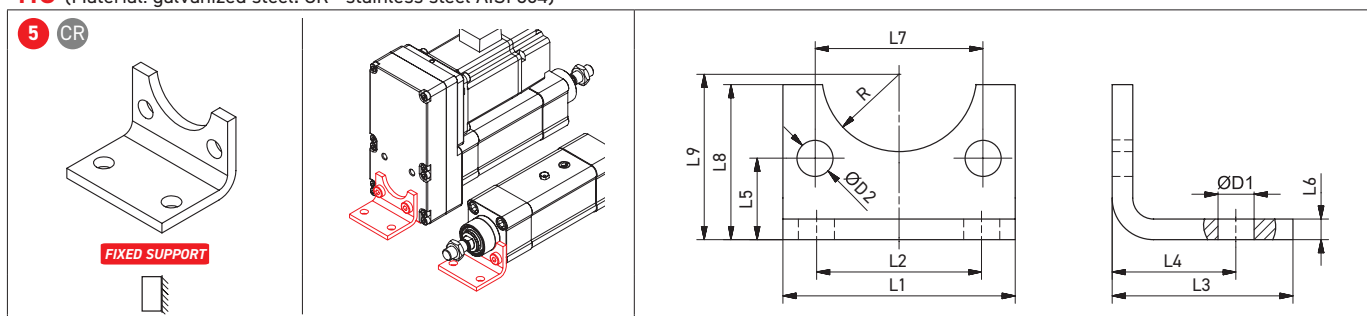
KSZ (Material: galvanized steel)



KSZ		ØM	L1	L2	L3	L4	L5	L6	L7	ØD1 (-0,2)	ØD2	ØD3 (H13)	CH	m	F _{max}
Size	Code	[mm]												[kg]	[N]
32	5229	M10×1.25	40	35	30	25	20	10	0.1	17	26	5.5	15	0.11	F _{PINCE}
40	5230	M12×1.25	50	40	40	30	22	12	0.1	17	26	5.5	15	0.18	F _{PINCE}
50	5231	M16×1.5	60	45	48	33	25	12	0.1	22	34	6.6	19	0.25	F _{PINCE}
63	5231	M16×1.5	60	45	48	33	25	12	0.1	22	34	6.6	19	0.25	F _{PINCE}

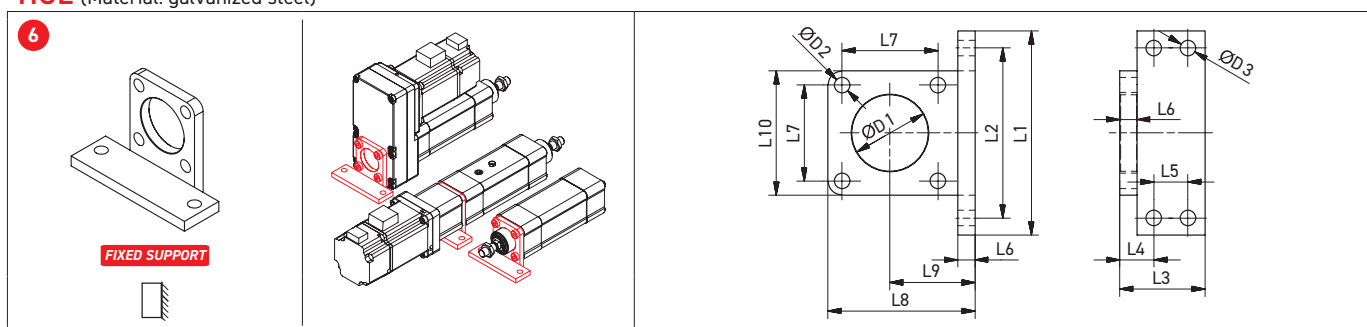
Mounting attachments' accessories

HG (Material: galvanized steel. CR - stainless steel AISI 304)



HG					L1	L2	L3	L4	L5	L6	L7	L8	L9	ØD1	ØD2	R	m	F _{max}
Size	Code ¹	Code CR ¹	Code MSD type T1 ²	Code MSD CR type T1 ²	[mm]												[kg]	[N]
32	69601	69605	69597	69609	45	32	35	24	15.75	4	32.5	30	32	7	7	15	0.09	F _{PNCE}
40	69602	69606	69598	69610	52	36	36	28	17	4	38	30	36	9	7	17.5	0.10	3500
50	69603	69607	69599	69611	65	45	47	32	21.75	5	46.5	36	45	9	9	20	0.20	5400
63	69604	69608	69600	69612	75	50	45	32	21.75	5	56.5	35	50	9	9	22.5	0.22	6200

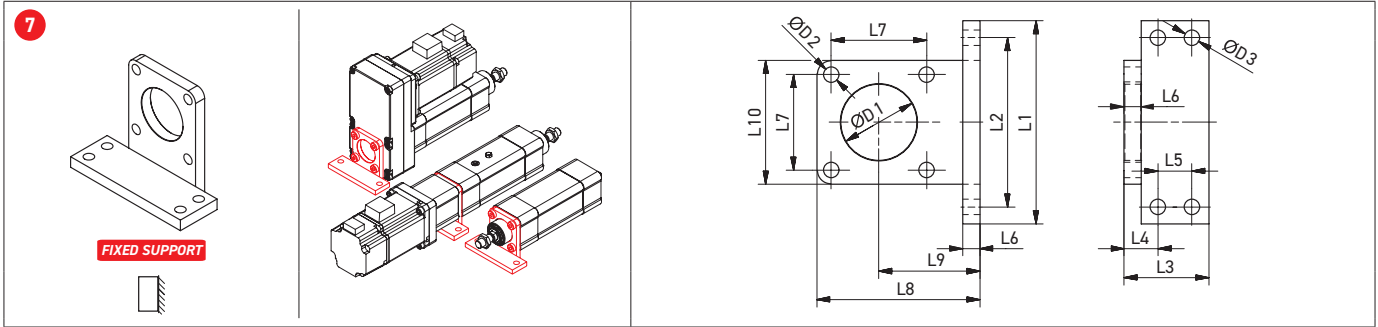
HGL (Material: galvanized steel)



HGL			L1	L2	L3	L4	L5	L6 (±0.5)	L7	L8	L9 (±0.1)	L10	ØD1 (H11)	ØD2 (H13)	ØD3 (H13)	m	F _{max}
Size	Code ¹⁻³	Code MSD type T1 ²	[mm]													[kg]	[N]
32	69162	69613	79	65	30	16	-	6	32.5	54.5	32	45	30	7	7	0.19	F _{PNCE}
40	69163	69614	90	75	30	16	-	6	38	62	36	52	35	7	9	0.23	5100
50	69164	69615	110	90	35	19	-	10	46.5	76.5	45	63	40	9	9	0.54	11100
63	69165	69616	120	100	50	20	20	10	56.5	86.5	50	73	45	9	9	0.79	11100

¹ Front cap mounting² Motor side drive type T1 mounting³ Motor adapter mounting

HGLL (Material: galvanized steel)



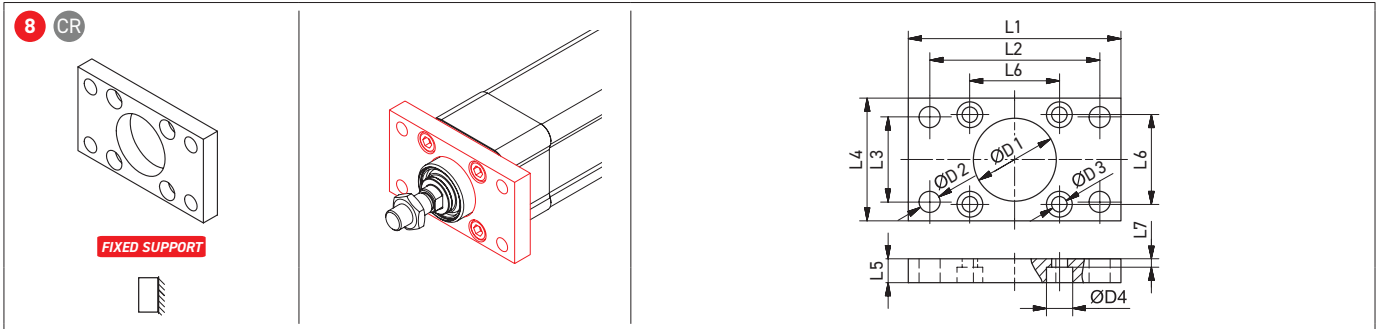
HGLL			L1	L2	L3	L4	L5	L6 (±0.5)	L7	L8	L9 (±0.1)	L10	ØD1 (H11)	ØD2 (H13)	ØD3 (H13)	m	F _{max}
Size	Code ^{1,3}	Code MSD type T2 ²	[mm]													[kg]	[N]
32	69429	69617	79	65	30	16	-	6	32.5	57.5	35	45	30	7	7	0.20	F _{PNCE}
40	69166	69618	90	75	30	16	-	6	38	71	45	52	35	7	9	0.25	2800
50	69167	69619	110	90	35	19	-	10	46.5	91.5	60	63	40	9	9	0.62	7100
63	69168	69620	120	100	50	20	20	10	56.5	96.5	60	73	45	9	9	0.85	10100

¹ Front cap mounting

² Motor side drive type T2 mounting

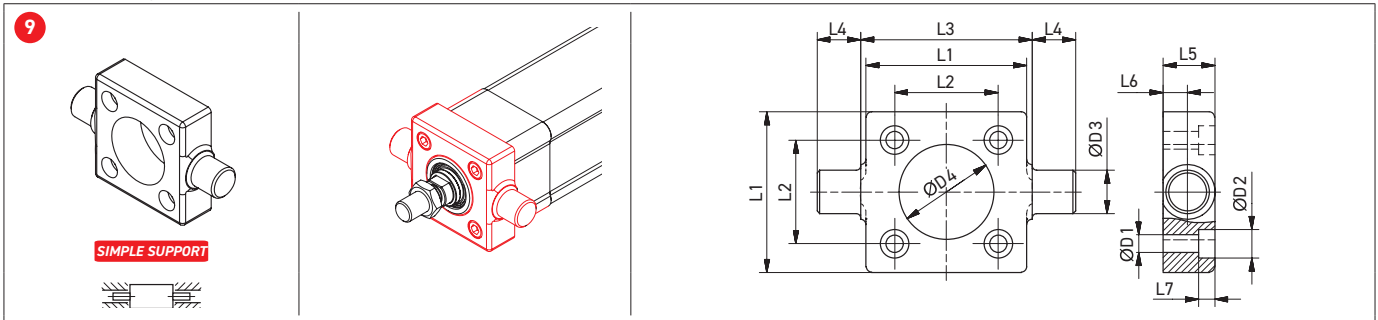
³ Motor adapter mounting

FG (Material: galvanized steel. CR - stainless steel AISI 304)



FG			L1	L2	L3	L4	L5	L6	L7	ØD1 (H11)	ØD2 (H13)	ØD3	ØD4	m	F _{max}
Size	Code	Code CR	[mm]											[kg]	[N]
32	5485	69495	80	64	32	45	10	32.5	5	30	7	6.5	10.5	0.22	F _{PNCE}
40	5487	69497	90	72	36	52	10	38	5	35	9	6.5	10.5	0.28	F _{PNCE}
50	5489	69498	110	90	45	65	12	46.5	6.5	40	9	8.5	13.5	0.53	F _{PNCE}
63	5491	69499	120	100	50	75	12	56.5	6.5	45	9	8.5	13.5	0.68	F _{PNCE}

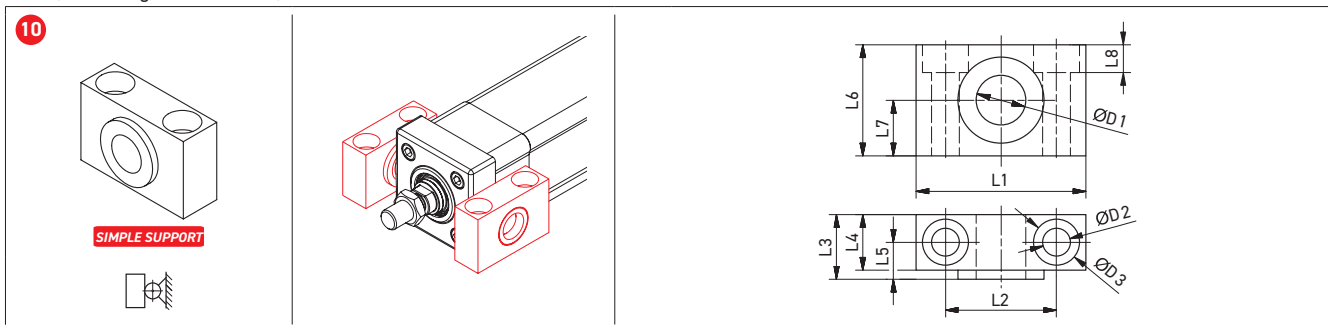
ZK (Material: galvanized steel)



ZK		L1	L2	L3 (h14)	L4 (h14)	L5	L6 (+0.2 / 0)	L7 (+0.5 / 0)	ØD1	ØD2	ØD3 (e9)	ØD4 (H11)	m	F _{max}
Size	Code	[mm]											[kg]	[N]
32	69075	46	32.5	50	12	14	6.5	6	6.6	11	12	30	0.17	F _{PNCE}
40	69083	59	38	63	16	19	9	6	6.6	11	16	35	0.43	F _{PNCE}
50	69084	69	46.5	75	16	19	9	8	9	15	16	40	0.58	F _{PNCE}
63	69085	84	56.5	90	20	24	11.5	8	9	15	20	45	1.12	F _{PNCE}

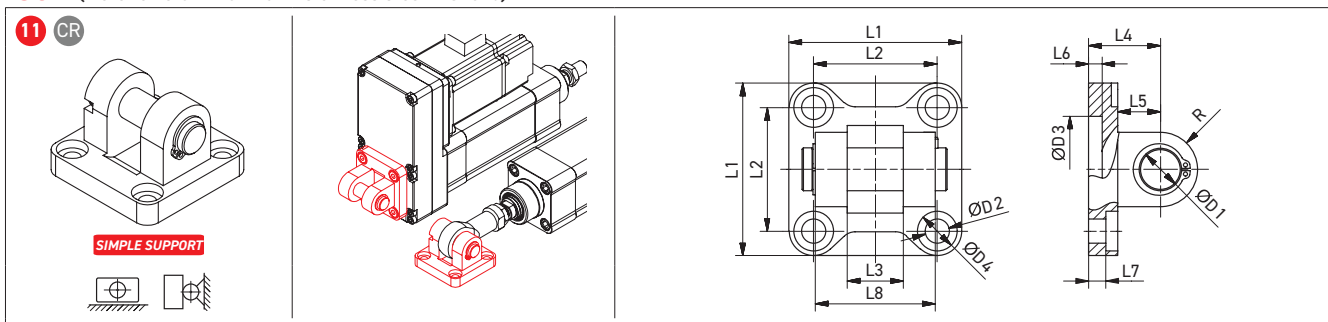
LZ (Material: galvanized steel)

i set contains 2 pcs

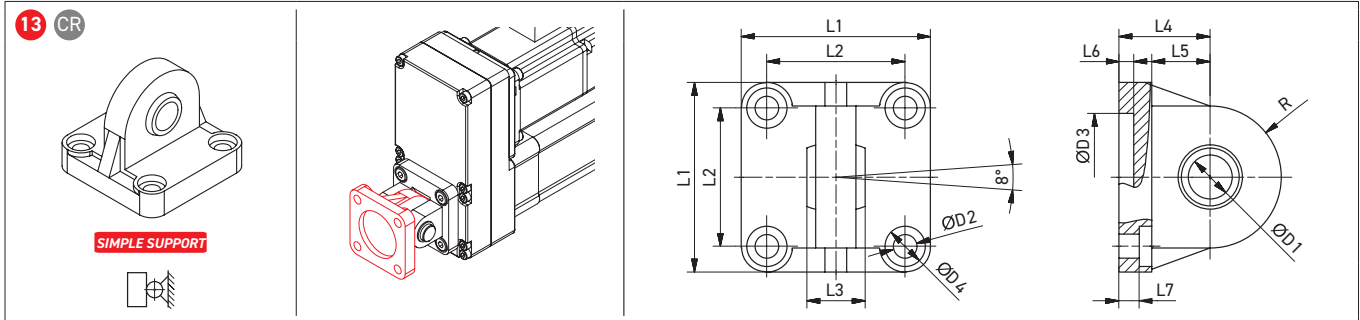


LZ		L1	L2 (±0.2)	L3	L4	L5	L6	L7 (±0.1)	L8 (±0.5)	ØD1 (F7)	ØD2 (H13)	ØD3 (H13)	m	F _{max}
Size	Code	[mm]											[kg]	[N]
32	8139	46	32	18	15	10.5	30	15	7	12	6.6	11	0.10	F _{PNCE}
40	8141	55	36	21	18	12	36	18	9	16	9	15	0.15	F _{PNCE}
50	8141	55	36	21	18	12	36	18	9	16	9	15	0.15	9200
63	8143	65	42	23	20	13	40	20	11	20	11	18	0.23	12800

SGN (Material: aluminium. CR - stainless steel AISI 316)



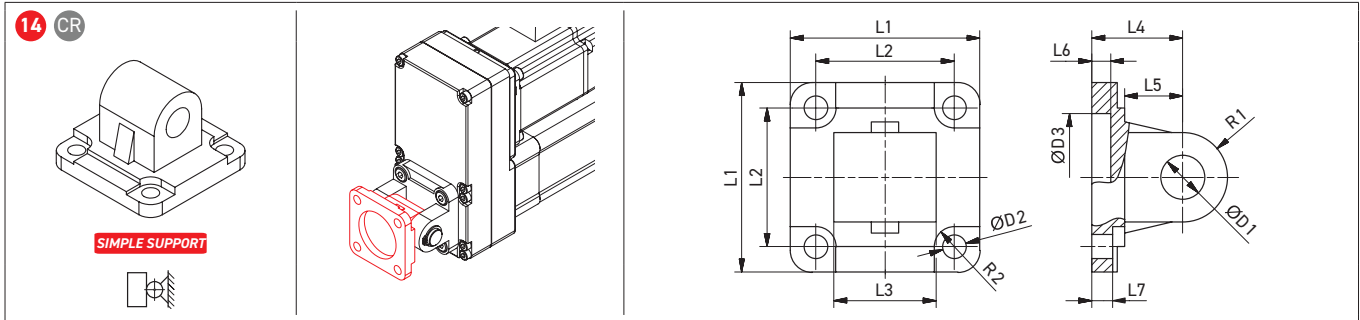
SSG (Material: aluminium. CR - stainless steel AISI 316)



SSG			L1	L2	L3	L4 (JS 15)	L5	L6	L7 (±0.5)	ØD1 (H7)	ØD2 (H13)	ØD3 (H11)	ØD4 (H13)	R	m	F _{max}
Size	Code	Code CR	[mm]												[kg]	[N]
32	9292	69542	45	32.5	14	22	12	5	5.5	10	6.6	30	11	16 [15]	0.09 [0.18]	F _{PNCE}
40	9294	69544	52 [55]	38	16	25	15	5	5.5	12	6.6	35	11	18	0.13 [0.29]	F _{PNCE}
50	9296	50709	65	46.5	21	27	15 [17]	5	6.5	16	9	40	15	21	0.24 [0.42]	14400
63	9298	69546	75	56.5	21	32	20	5	6.5	16	9	45	15	23	0.30 [0.66]	14400

Bracketed values for type CR

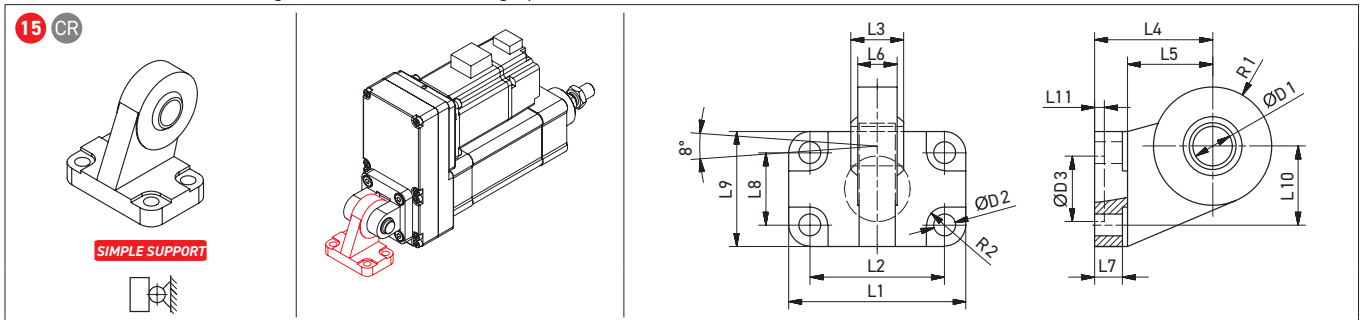
SGL (Material: aluminium. CR - stainless steel AISI 304)



SSG			L1	L2	L3	L4 (±0.2)	L5	L6	L7	ØD1 (H9)	ØD2 (H13)	ØD3 (H11)	R1	R2	m	F _{max}
Size	Code	Code CR	[mm]												[kg]	[N]
32	9176	69500	45	32.5	26	22	13	5	5.5	10	6.6	30	10	5.5	0.08 [0.21]	F _{PNCE}
40	9178	69501	52	38	28	25	16	5	5.5	12	6.6	35	12	5.5	0.11 [0.30]	F _{PNCE}
50	9180	69502	65	46.5	32	27	16	5	6.5	12	9	40	12	7.5	0.18 [0.43]	9200
63	9182	69503	75	56.5	40	32	21	5	6.5	16	9	45	16	7.5	0.27 [0.74]	14300

Bracketed values for type CR

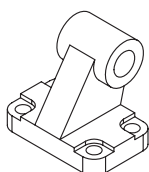
LSG (Material: size 32...50 - galvanized steel. size 63 - graphite cast iron. CR - stainless steel AISI 316)



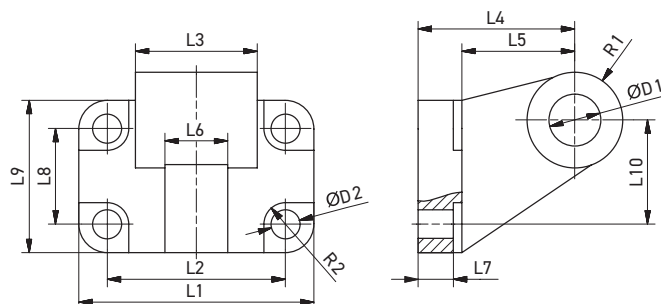
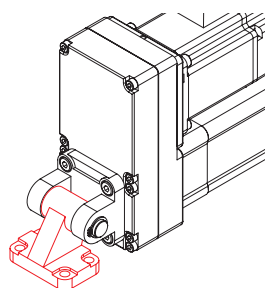
LSG			L1	L2	L3	L4 (JS 15)	L5	L6	L7	L8	L9	L10 (JS 15)	L11	ØD1 (H7)	ØD2 (H13)	ØD3 (H13)	R1	R2 (H13)	m	F _{max}	
Size	Code	Code CR	[mm]																	[kg]	[N]
32	8129	69071	51	38	14	32	22	10.5	8.5	18	31	21	3	10	6.6	20	15	5.5	0.18	F _{PNCE}	
40	8130	69072	54	41	16	36	26	12	8.5	22	35	24	3	12	6.6	20	18	5.5	0.27	F _{PNCE}	
50	8131	69073	65	50	21	45	33	15	10.5	30	45	33	3	16	9	20	20	7.5	0.46	F _{PNCE}	
63	8132	69069	67	52	21	50	38	15	10.5	35	50	37	3	16	9	20	23	7.5	0.55	F _{PNCE}	

LG (Material: aluminium. CR - stainless steel AISI 304)

16 CR



SIMPLE SUPPORT

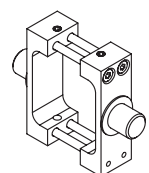


SGN			L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	ØD1 (H9)	ØD2 (H13)	R1	R2	m	F _{max}
Size	Code	Code CR	[mm]														[kg]	[N]
32	8119	69505	51	38	26	32	24	10	6.4	18	31	21	10	6.6	10	5.5	0.06 [0.16]	F _{PNCE}
40	8120	69506	54	41	28	36	26	15	8.4	22	35	24	12	6.6	11	5.5	0.14 [0.24]	F _{PNCE}
50	8121	69507	65	50	32	45	33	16	10.4	30	45	33	12	9	13	7.5	0.14 [0.42]	9200
63	8122	69508	67	52	40	50	36	16	12.4	35	50	37	16	9	15	7.5	0.20 [0.53]	15300

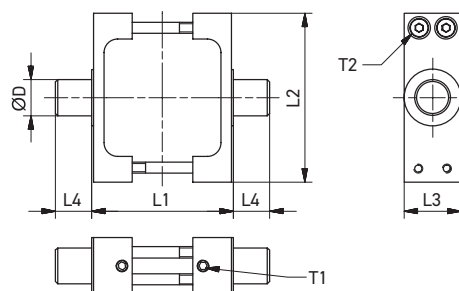
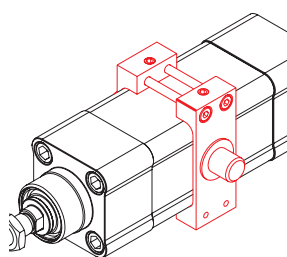
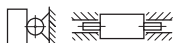
Bracketed values for type CR

ZKCE (Material: galvanized steel)

17



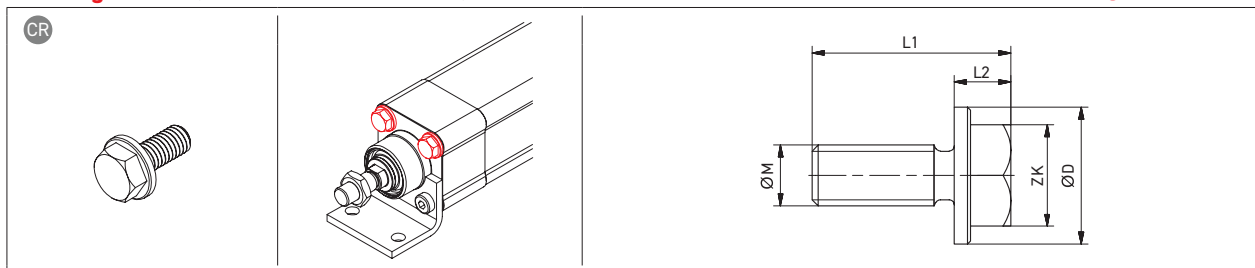
SIMPLE SUPPORT



ZKCE		L1	L2	L3	L4	ØD	T1	T2	m	F _{max}
Size	Code	[mm]					[Nm]		[kg]	[N]
32	69148	50	65	25	12	12	5	3	0.15	F _{PNCE}
40	69149	63	75	25	16	16	7	5	0.30	F _{PNCE}
50	69150	75	95	30	16	16	7	5	0.52	8500
63	69151	90	105	30	20	20	7	5	0.64	8500

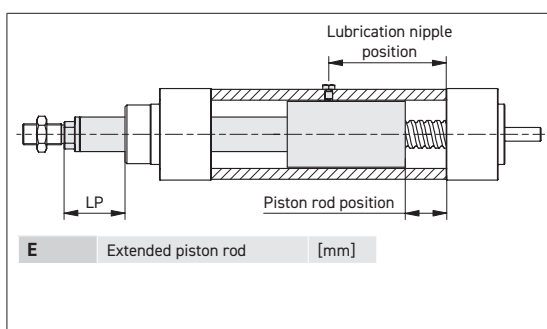
Blanking screws (Material: stainless steel AISI 304)

i set contains 4 pcs



Blanking screw		ØM	L1	L2	ØD	ZK
Tip / Type	Code	[mm]				
M6	69156	M6	19.5	5.5	12.8	10
M8	69157	M8	24	8	17	13

Lubrication Position

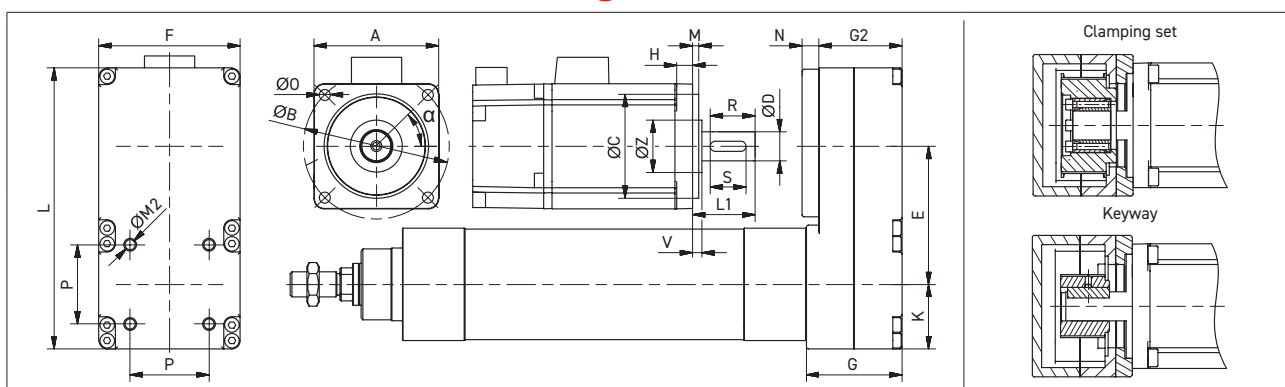


PNCE	Ball screw d x l [mm]	Lubrication nipple position [mm]	Piston rod position [mm]	LP [mm]
32	12x5, 12x0	Abs. stroke / 2 + 38.0	Abs. stroke / 2 - 9.0	Abs. stroke / 2 + E - 1.0
40	16x5, 16x10, 16x16	Abs. stroke / 2 + 42.0	Abs. stroke / 2 - 10.5	Abs. stroke / 2 + E - 0.5
50	20x5, 20x10, 20x20	Abs. stroke / 2 + 53.5	Abs. stroke / 2 - 22.0	Abs. stroke / 2 + E - 10.0
	20x50		Abs. stroke / 2 - 5.0	Abs. stroke / 2 + E + 7.0
63	25x5, 25x10	Abs. stroke / 2 + 47.5	Abs. stroke / 2 - 13.5	Abs. stroke / 2 + E - 1.5
	25x25		Abs. stroke / 2 - 4.0	Abs. stroke / 2 + E + 8.0

The lubrication nipple on the aluminum profile of the electric cylinder allows easy re-lubrication of the ball screw.

To achieve the lubrication position the piston rod must be moved from the end position into position (Piston rod position) shown in the table above. The same position is achieved when the distance LP is obtained.

Motor Side Drive With Timing Belt



Technical data

PNCE	Type	Gear ratio	Max. drive torque	Maximum radial load on shaft *	No load torque	Mass moment of inertia	Mass	Motor size limits [mm]							
								A	ØB	L1		ØC	ØD		
		i	M _{p, MSD} [Nm]	F _{r, MSD} [N]	M _{0, MSD} [Nm]	J _{MSD} [10 ⁻⁶ kg m ²]	m _{MSD} [kg]	max	max	min	max	max	max		
										Clamping set	Keyway		Clamping set	Keyway	
32	T1	1	1.4	40	0.10	65	0.85	81	80	**	25	38	50	16	-
		1.5	0.9	40	0.07	34	0.72	80						9	14
40	T1	1	3	80	0.10	82	0.92	74	80		25	42	50	16	-
		1.5	2	80	0.07	46	0.79	73						9	14
	T2	1	4	80	0.27	281	1.66	109	110		30	52	75	28	-
		1.5	2.6	80	0.18	195	1.39	107						16	24
50	T1	1	9	170	0.27	356	1.76	98	110		30	52	75	28	-
		1.5	6	170	0.18	240	1.48	96						16	24
	T2	1	9	205	0.30	1002	3.63	173	140		35	62	100	35	-
		2	4.5	205	0.15	574	3.06	184					95	15	22
63	T1	1	21	500	0.34	1115	3.72	163	140		35	62	100	35	-
		2	8.9	400	0.17	631	3.10	174					95	15	22

* This is the load which is linearly dependent on the maximum drive torque M_{p, MSD} and is generated by the correct pretension of the belt. This load needs to be reduced in accordance with the capabilities of the motor.

** Minimum dimension L1 depends on the size of particular clamping set. Values can be found on the upper table on page 22.

Dimensions

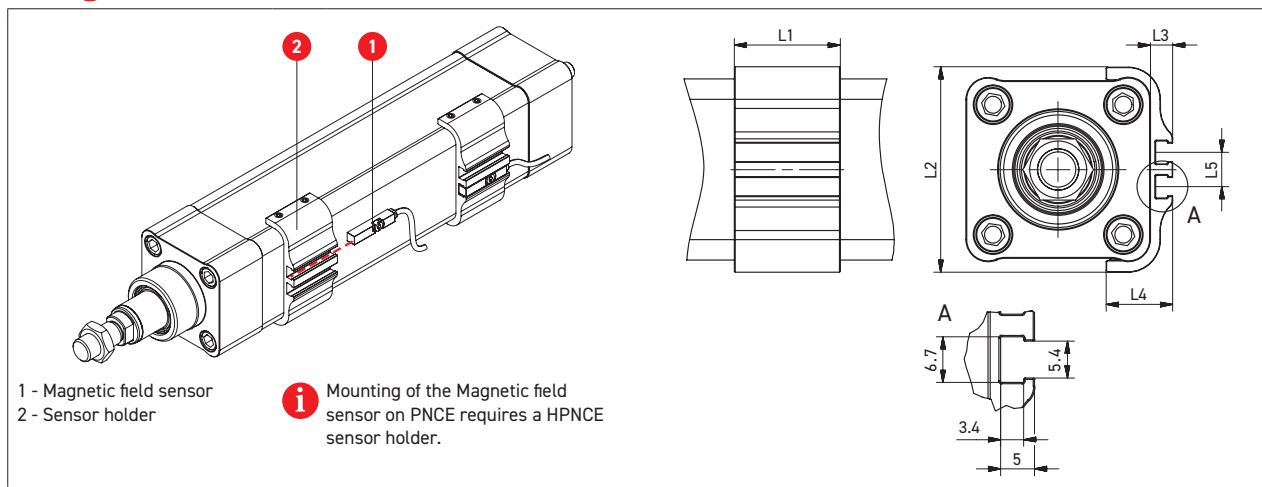
PNCE	Type	Gear ratio	E	F	G	G2	N ***	K	L	P	ØM2
		i	[mm]								
32	T1	1	65	68	42	36	8	31	135	32.5	M6×8.5
		1.5	64.5								
40	T1	1	65	68	46	40	8	31	135	38	M6×8.5
		1.5	64.5								
	T2	1	82.5	89	57	51	8	42	174	46.5	M6×9
		1.5	81.7								
50	T1	1	82.5	89	57	51	8	42	174	46.5	M8×9
		1.5	81.7								
	T2	1	120	116	66	60	10	49.5	239	56.5	M8×10
		2	125.8								
63	T1	1	120	116	66	60	10	49.5	239	56.5	M8×10
		2	125.8								

*** This is a standard value. It could differ depending on the motor dimensions M and L1.

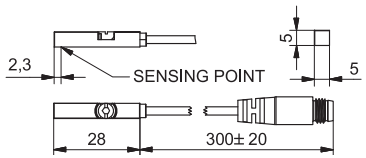
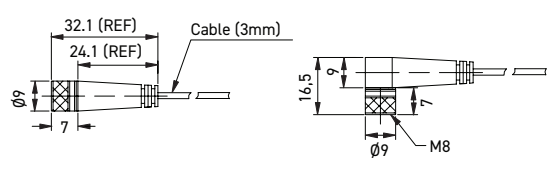
Minimum dimension L1 [mm] depends on the motor shafts diameter ØD

PNCE	Type	Gear ratio	ØD [mm]																									
		i	6	6.35	7	8	9	9.53	10	11	12	14	15	16	17	18	19	20	22	24	25	25.4	28	30	32	35		
32	T1	1	18	18	18	18	20	20	20	23	23	27	27	27	-	-	-	-	-	-	-	-	-	-	-	-		
		1.5	18	18	18	18	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
40	T1	1	18	18	18	18	20	20	20	23	23	27	27	27	-	-	-	-	-	-	-	-	-	-	-	-		
		1.5	18	18	18	18	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
40	T2	1	18	18	18	18	20	20	20	23	23	27	27	27	31	31	31	31	31	36	36	36	36	-	-	-		
		1.5	18	18	18	18	20	20	20	23	23	27	27	27	-	-	-	-	-	-	-	-	-	-	-	-		
50	T1	1	-	-	-	18	20	20	20	23	23	27	27	27	31	31	31	31	31	36	36	36	36	-	-	-		
		1.5	-	-	18	18	20	20	20	23	23	27	27	27	-	-	-	-	-	-	-	-	-	-	-	-		
50	T2	1	-	-	-	23	25	25	25	25	25	29	29	29	33	33	33	33	33	38	38	38	38	38	38	41		
		2	23	23	23	23	25	25	25	25	25	29	29	-	-	-	-	-	-	-	-	-	-	-	-			
63	T1	1	-	-	-	-	-	-	-	-	-	29	29	29	33	33	33	33	33	38	38	38	38	38	38	41		
		2	-	-	-	23	25	25	25	25	25	29	29	-	-	-	-	-	-	-	-	-	-	-	-			

Magnetic Field Sensors



PNCE	L1	L2	L3	L4	L5
	[mm]				
32	30	53	6.5	19.5	10
40	30	60	6.5	19.5	10
50	30	71	6.5	22.5	10
63	30	81	6.5	22.5	10

SMT-65TP-K NO / NC	Code	Type	Compatibility	
	68997	HPNCE sensor holder	PNCE 32	
	68998		PNCE 40	
	68999		PNCE 50	
	69000		PNCE 63	
	74073	SMT-65TP-K NC	PNCE series	     
	74074	SMT-65TP-K NO	PNCE series	
	8146	Extension cable length 2m - Straight connector		
	8147	Extension cable length 5m - Straight connector		
	9017	Extension cable length 2m - Angled connector		
	9019	Extension cable length 5m - Angled connector		

TECHNICAL DATA	SMT-65TP-K NC	SMT-65TP-K NO
Sensor Type	GMR sensor	GMR sensor
Switching function	NC	NO
Output	PNP	PNP
Operating voltage	10 ~ 28 V DC	10 ~ 28 V DC
Switching Current	200 mA max.	200 mA max.
Power rating	5.5 W max.	5.5 W max.
Voltage Drop	1.5 V / 200mA max.	1.5 V / 200mA max.
Current Consumption	10mA / 24 V max.	10mA / 24 V max.
Switching Frequency	1000 Hz	1000 Hz
Ambient temperature	-10 ~ +70°C	-10 ~ +70°C
Shock/Vibration	50 G / 9 G	50 G / 9 G
Protection class	IP67	IP67
LED indicator	Yellow	Yellow
Electrical connection	M8. 3-pin	M8. 3-pin
Cable material length	PU - 0.3m	PU - 0.3m
Extension cable	Energy chain compliant	Energy chain compliant

Load torque calculation and determination of maximum axial load on the PNCE cylinder

Load torque

The load torque is a function of an applied axial load on the PNCE and can be calculated as follows:

$$M_{load} = \frac{F_{axial} \times l}{2000 \times \pi \times \eta}$$

When the motor side drive (MSD) is taken into consideration:

$$M_{load} = \frac{F_{axial} \times l}{2000 \times \pi \times \eta \times i}$$

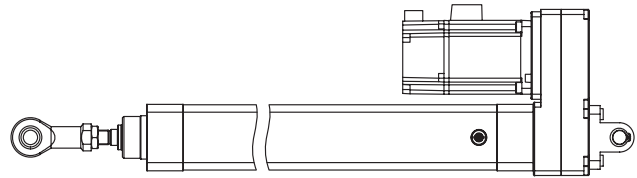
M_{load}	Load torque	[Nm]
F_{axial}	Applied axial load on the PNCE	[N]
l	Ball screw lead	[mm]
η	Mechanical efficiency ≈ 0.9	[-]
i	Gear ratio	[-]

i It should be noted that the load torque M_{load} must never exceed the maximum drive torque M_p .

Maximum axial load on the PNCE

Application conditions example:

- PNCE 40 with ball screw 16×5
- Absolute stroke = 500 mm
- Extended piston rod E = 0 mm
- Travel speed $v_{max} = 0.2$ m/s
- Using motor side drive type T1 with a gear ratio $i = 1.5$
- Mounting: simple – simple mount with SGS and SBG attachment



Using the diagram of the maximum axial loading as a function of the absolute stroke, the maximum axial load depending on the given mounting case can be obtained as $F_{max} = 700$ N.

Using the diagram of the maximum axial loading as a function of the travel speed, the maximum axial load depending on the ball screw lead and absolute stroke can be obtained as $F_{max} = 4700$ N.

For a selected motor side drive, the maximum drive torque $M_{p, MSD} = 2$ Nm can be found (technical data table). Using the equation for the load torque calculation when the motor side drive is taken into consideration, the maximum axial load $F_{max} = 3392$ N can be calculated.

For selected mounting attachments, the maximum axial load is limited to the maximum axial load of the PNCE. i.e. $F_{max} = 6020$ N.

Finally, for this application example, the maximum axial load on the PNCE can be determined, i.e. $F_{max} = 700$ N. This is the smallest value of all the values obtained in the previous steps.

Automation & Control Components Range

THE DYNAMICS OF MOVEMENT

COMPLETE AUTOMATION SOLUTIONS:

For any actuator to perform consistently at its optimum level it needs the correctly specified motor, gearbox coupling and control system.

Matara have worked extensively with Yaskawa for more than 10 years and are one of its preferred system integrators and together we are able to provide single components or complete packages.

Whether it's a Servo motor, inverter drive unit or coupling our engineers can offer technical support and product recommendations backed up by the world-wide organisation that is Yaskawa. If a gearbox is required we can specify this and through experience work closely with Wittenstein.

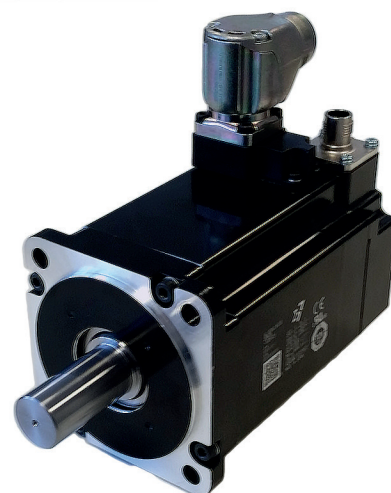
Specified By Our Expert Team Your Order, Your Way

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SGM7A Series 400V Servo Motor

The SGM7A Series of motor is a 400V 3-phase motor that is highly efficient and has an integrated 24-bit high-resolution encoder. This particular range is designed for low inertia, high speed applications, however, this range is extremely versatile and lends itself well to a wide variety of applications. Whether it's for high load/slow speed or low load/high speed, the SGM7A offers a wide operating window.



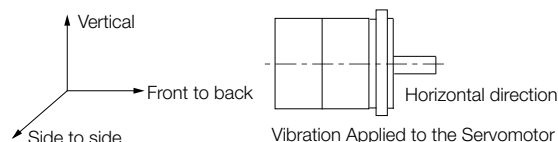
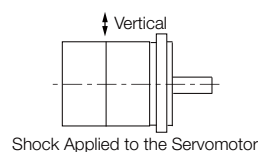
Specifications

Voltage		400V			
Model SGM7A-		10D	15D	20D	30D
Time Rating		Continuous			
Thermal Class		B	F		
Insulation Resistance		500 VDC, 10 MΩ min.			
Withstand Voltage		1,800 VAC for 1 minute			
Excitation		Permanent magnet			
Mounting		Flange-mounted			
Drive Method		Direct drive			
Rotation Direction		Counterclockwise (CCW) for forward reference when viewed from the load side			
Vibration Class*1		V15			
Environmental Conditions	Surrounding Air Temperature	0 °C to 40 °C (With derating, usage is possible between 40 °C and 60 °C)			
	Surrounding Air Humidity	20% to 80% relative humidity (with no condensation)			
	Installation Site	• Must be indoors and free of corrosive and explosive gases. • Must be well-ventilated and free of dust and moisture. • Must facilitate inspection and cleaning. • Must have an altitude of 1,000 m or less. (With derating, usage is possible between 1,000 m and 2,000 m.) • Must be free of strong magnetic fields.			
	Storage Environment	Store the Servomotor in the following environment if you store it with the power cable disconnected. Storage Temperature: -20 °C to 60 °C (with no freezing) Storage Humidity: 20% to 80% relative humidity (with no condensation)			
Shock Resistance*2	Impact Acceleration Rate at Flange	490 m/s ²			
	Number of Impacts	2 times			
Vibration Resistance*3	Vibration Acceleration Rate at Flange	49 m/s ² (Models 15A to 30D: 24.5 m/s ² front to back)			
Applicable SERVOPACKs	SGD7S-	5R4D		8R4D	120D
	SGD7W-	5R4D	5R4D	-	

*1 A Vibration class of V15 indicates a vibration amplitude of 15 μm maximum on the Servomotor without a load at the rated motor speed.

*2 The shock resistance for shock in the vertical direction when the Servomotor is mounted with the shaft in a horizontal position is given in the above table.

*3 The vertical, side-to-side, and front-to-back vibration resistance for vibration in three directions when the Servomotor is mounted with the shaft in a horizontal position is given in the above table. The strength of the vibration that the Servomotor can withstand depends on the application. Always check the vibration acceleration rate that is applied to the Servomotor with the actual equipment.



Servomotor Ratings

Voltage			400V			
Model SGM7A-			10D	15D	20D	30D
Rated Output ^{*1}	W		1,000	1,500	2,000	3000
Rated Torque ^{*1, *2}	Nm		3.18	4.90	6.36	9.80
Instantaneous Maximum Torque ^{*1}	Nm		11.1	14.7	19.1	29.4
Rated Current ^{*1}	Arms		3.2	4.7	6.1	8.9
Instantaneous Maximum Current ^{*1}	Arms		12	14	20	28
Rated Motor Speed ^{*1}	min ⁻¹		3000			
Maximum Motor Speed ^{*1}	min ⁻¹		6000			
Torque Constant	Nm/Arms		1.07	1.23	1.18	1.16
Motor Moment of Inertia	×10 ⁻⁴ kg m ²		0.971 (1.15)	2.00 (2.25)	2.47 (2.72)	7.00 (9.20)
Rated Power Rate ^{*1}	kW/s		104 (87.9)	120 (106)	164 (148)	137 (104)
Rated Angular Acceleration Rate ^{*1}	rad/s ²		32,700 (27,600)	24,500 (21,700)	25,700 (23,300)	14,000 (10,600)
Derating Rate for Servomotor with Dust Seal	%		95	100		
Heat Sink Size	mm		300 × 300 × 12			400 × 400 × 20
Protective Structure ^{*3}			Totally enclosed, self-cooled, IP67			
Holding Brake Specifications ^{*4}	Rated Voltage	V	24VDC ± 10%			
	Capacity	W	6.5	12	10	
	Holding Torque	Nm	2.39	3.18	7.84	10
	Coil Resistance	Ω (at 20°C)	88.6 ± 10%	48 ± 10%	59 ± 10%	
	Rated Current	A (at 20°C)	0.27	0.5	0.41	
	Time required to release Brake	ms	80	170	100	
	Time required to brake	ms	100	80		
Allowable Load Moment of Inertia (Motor Moment of Inertia Ratio)	Standard		20 times	10 times	5 times	
	With External Regenerative Resistor and Dynamic Brake Resistor Connected		30 times	20 times	15 times	
Allowable Shaft Load ^{*5}	LF	mm	35	45	63	
	Allowable Radial Load	N	392	686	980	
	Allowable Thrust Load	N	147	196	392	

Note: The values in parentheses are for Servomotors with Holding Brakes.

*1. For the SGM7A-10D, these values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. For the SGM7A-15D to SGM7A-30D, these values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C. These are typical values.

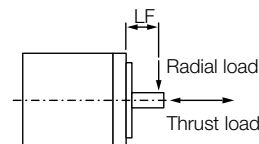
*2. The rated torques are the continuous allowable torque values at a surrounding air temperature of 40°C with an aluminium heat sink of the dimensions given in the table.

*3. This does not apply to the shaft opening. Protective structure specifications apply only when the special cable is used.

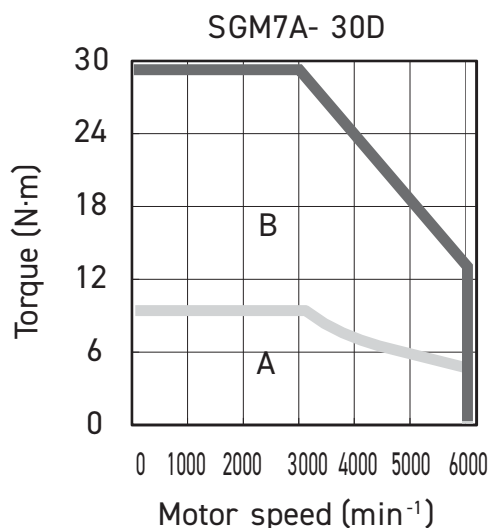
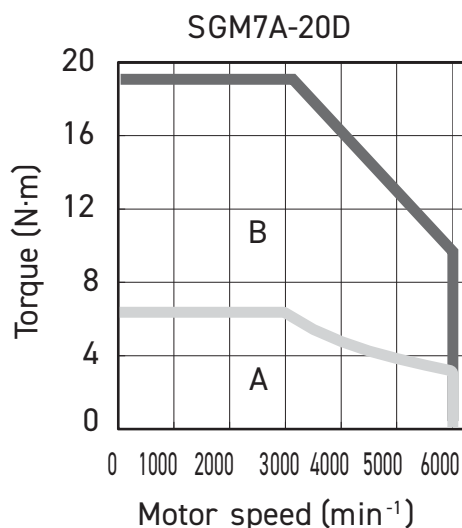
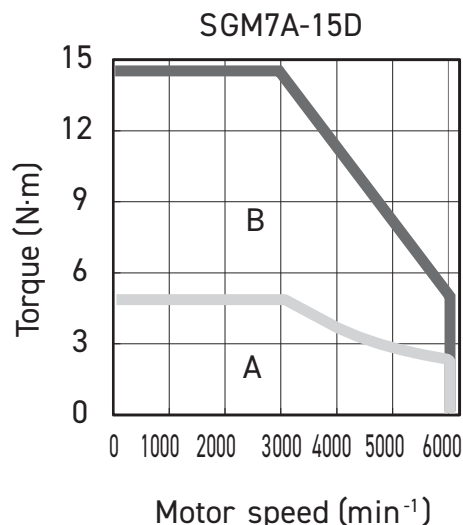
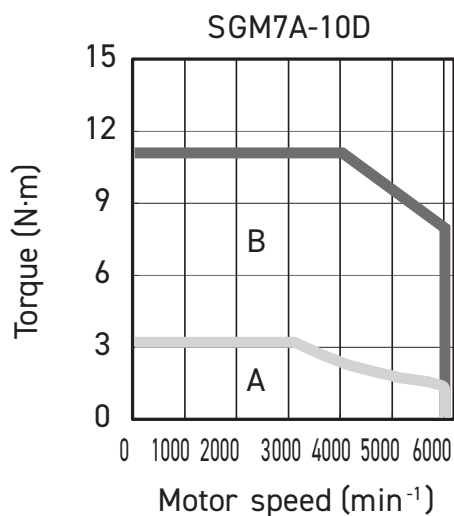
*4. Observe the following precautions if you use a Servomotor with a Holding Brake.

- The holding brake cannot be used to stop the Servomotor.
- The time required to release the brake and the time required to brake depend on which discharge circuit is used.
- Confirm that the operation delay time is appropriate for the actual equipment.
- The 24-VDC power supply is not provided by YASKAWA.

*5. The allowable shaft loads are illustrated in the following figure. Design the mechanical system so that the thrust and radial loads applied to the Servomotor shaft end during operation do not exceed the values given in the table.



Motor Speed-Torque Characteristics

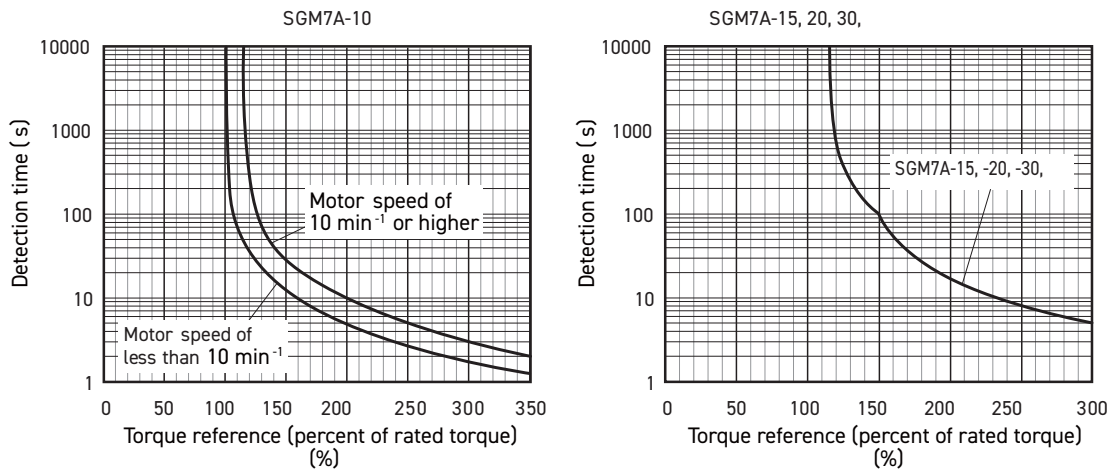


Note:

1. For the SGM7A-10D, these values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C.
For the SGM7A-15D to SGM7A-25D, these values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 20°C. These are typical values.
2. The characteristics in the intermittent duty zone depend on the power supply voltage. The intermittent duty zones in the graphs show the characteristics when a three-phase, 400-VAC power supply voltage is used.
3. If the effective torque is within the allowable range for the rated torque, the Servomotor can be used within the intermittent duty zone.
4. If you use a Servomotor Main Circuit Cable that exceeds 20 m, the intermittent duty zone in the torque-motor speed characteristics will become smaller because the voltage drop increases.

Servomotor Overload Protection Characteristics

The overload detection level is set for hot start conditions with a Servomotor surrounding air temperature of 40 °C.



Note:

The above overload protection characteristics do not mean that you can perform continuous duty operation with an output of 100% or higher. Use the Servomotor so that the effective torque remains within the continuous duty zone given in Motor Speed-Torque Characteristics.

Load Moment of Inertia

The load moment of inertia indicates the inertia of the load. The larger the load moment of inertia, the worse the response. If the moment of inertia is too large, operation will become unstable.

The allowable size of the load moment of inertia (J_L) for the Servomotor is restricted. Refer to Ratings of Rotary Servomotors SGM7J. This value is provided strictly as a guideline and results depend on Servomotor driving conditions.

An Overvoltage Alarm (A.400) is likely to occur during deceleration if the load moment of inertia exceeds the allowable load moment of inertia. SERVOPACKs with a built-in regenerative resistor may generate a Regenerative Overload Alarm (A.320).

Perform one of the following steps if this occurs.

- Reduce the torque limit.
- Reduce the deceleration rate.
- Reduce the maximum motor speed.
- Install an external regenerative resistor if the alarm cannot be cleared using the above steps.

Servomotor Heat Dissipation Conditions

The Servomotor ratings are the continuous allowable values at a surrounding air temperature of 40°C when a heat sink is installed on the Servomotor. If the Servomotor is mounted on a small device component, the Servomotor temperature may rise considerably because the surface for heat dissipation becomes smaller. Refer to the following graphs for the relation between the heat sink size as it will reduce the power rating (derating rate).

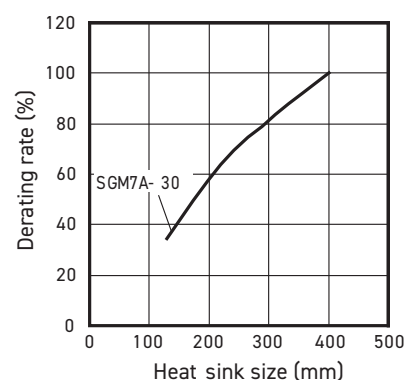
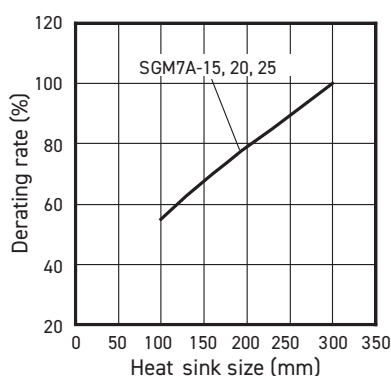
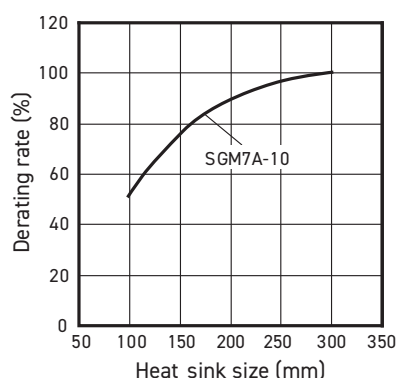
Also, change the overload warning and overload alarm detection timing in advance based on the overload detection level of the motor.

Note:

The derating rates are applicable only when the average motor speed is less than or equal to the rated motor speed. If the average motor speed exceeds the rated motor speed, consult with your Matara representative.

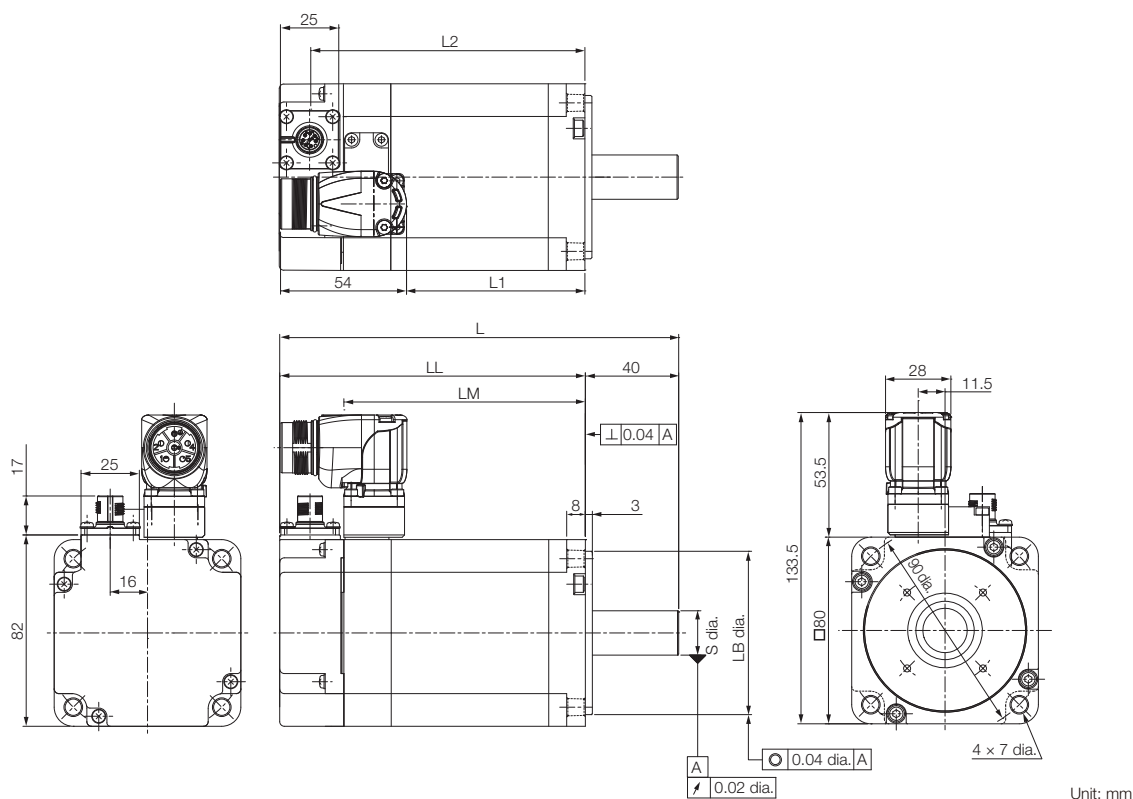
Important:

The actual temperature rise depends on how the heat sink (i.e., the Servomotor mounting section) is attached to the installation surface, what material is used for the Servomotor mounting section, and the motor speed. Always check the Servomotor temperature with the actual equipment.



See Servomotor Ratings for more information.

SGM7A-10 Dimensions



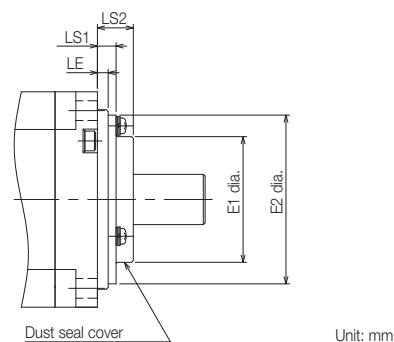
Model SGM7A-	L	LL	LM	LB	S	L1	L2	Approx. Mass (kg)
10D□ F2□	171 (218)	131 (178)	103.5	70 ⁰ -0.030	19 ⁰ -0.013	77	117.5 (164.5)	3.2 (3.8)

Note:
The values in parentheses are for Servomotors with Holding Brakes.

Options

- With Dust Seal

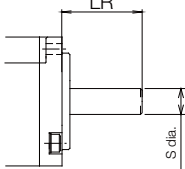
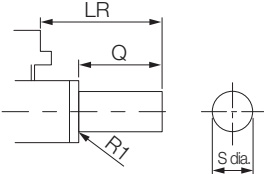
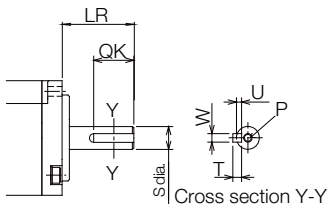
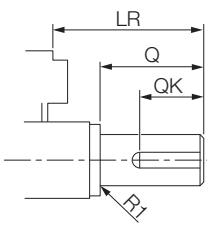
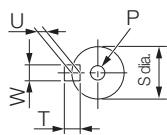
Model SGM7A-	Dimension with Dust Seal			
	E1	E2	LS1	LS2
10D	47	61	5.5	11



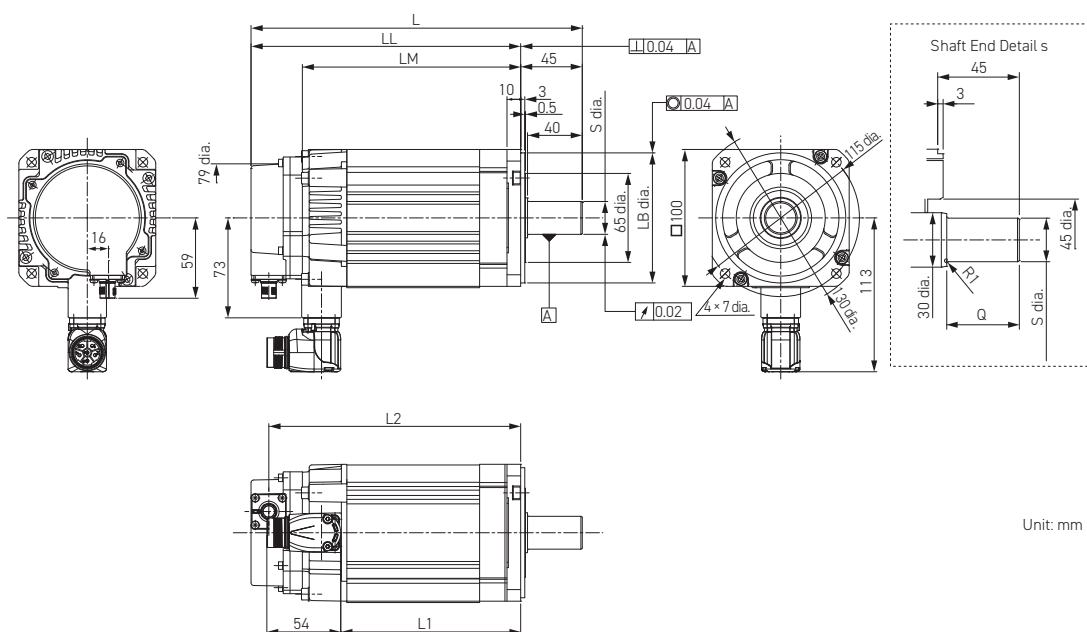
Shaft End Specifications for SGM7A-10 to 30

SGM7A-□□□□□□

Code	Specification
2	Straight without key
6	Straight with key and tap for one location (Key slot is JIS B1301-1996 fastening type.)

Shaft End Details		Servomotor Model SGM7A-			
		10	15	20	30
Code: 2 (Straight without Key)					
For SGM7-10  For SGM7-15-30 	LR	40	45		63
	Q	—	40		55
	S	0 19 -0.013	0 24 -0.013	0 28 -0.013	
Code: 6 (Straight with Key and Tap)					
For SGM7-10   	LR	40	45		
	Q	—	40		
	QK	22	32		
	S	0 19 -0.013	0 24 -0.013		
	W	6	8		
	T	6	7		
	U	3.5	4		
	P	M6 × 10L	M8 screw, depth: 16		

SGM7A-15, -20, and -30



Model SGM7A-	L	LL	LM	L1	L2	LB	Shaft End Dimensions		Approx. Mass (kg)
							S	Q	
15D□ F2□	204 (245)	159 (200)	121 (162)	90	145 (187)	95 ⁰ -0.035	24 ⁰ -0.013	40	4.7 (6.1)
20D□ F2□	220 (261)	175 (216)	137 (178)	106	161 (203)	95 ⁰ -0.035	24 ⁰ -0.013	40	5.5 (6.9)
30D□ F2□	259 (295)	196 (232)	158 (194)	131	183 (219)	110 ⁰ -0.035	28 ⁰ -0.013	55	10.6 (13.1)

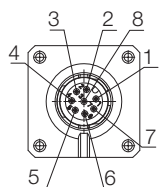
Note:

1. The values in parentheses are for Servomotors with Holding Brakes.
2. Servomotors with Dust Seals have the same dimensions.
3. Refer to Shaft End Specifications for SGM7A-15 to -70 for details. Refer to the section Connector Specifications.

Connector Specifications

SGM7A-10 to -30

- Encoder Connector Specifications

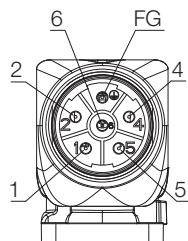


Receptacle
Size: M12
Part number: 1419959
Model: SACC-MSQ-M12MS-25-3,2 SCO
Manufacturer: Phoenix Contact

1	PG 5V
2	PG 0V
3	FG
4	BAT (+)
5	BAT (-)
6	Data (+)
7	Data (-)
8	Empty
Housing	Shield

SGM7A-10 to -30

- Servomotor Connector Specifications



Receptacle
Size: M23
Part number: 1617905
Model: ST-5EP1N8AAD00S
Manufacturer: Phoenix Contact

1	V
2	(Brake)
4	(Brake)
5	U
6	W
FG	FG
Housing	Shield

SGM7A Order Example

Code: **SGM7A** - **20** **D** - **F** - **F** - **6** - **1**

Options: 1 2 3 4 5 6 7

Options		Selection			
1	Series	SGM7A			
2	Rated Output	10: 1.0 kW	15: 1.5 kW	20: 2.0 kW	30: 3.0 kW
3	Power Supply Voltage	D: 400 VAC			
4	Serial Encoder	7: 24-bit Absolute F: 24-bit Incremental			
5	Design Revision Order	F: Standard Model			
6	Shaft End	2: Straight without Key 6: Straight with Key and Tap			
7	Options	1: Without Options C: With Holding Brake (24 VDC) F: With Dust Seal H: With Dust Seal and holding Brake (24 VDC)			

Note:
The **bolded** options are standard stock.

SGM7J Series 200V Servo Motor

The SGM7J Series are capable of operating at 200V 1-phase or 3-phase. They are a medium inertia, high speed motor designed to be lightweight and have a compact footprint. It has an integrated 24-bit encoder resolution maintaining industry leading positional accuracy with torque ratings up to 2.39N-m at 3000RPM.



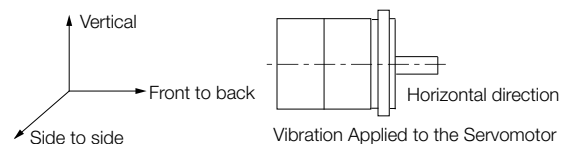
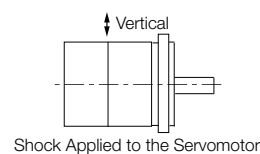
Specifications

Voltage		200V			
Model SGM7J-		02A	04A	06A	08A
Time Rating		Continuous			
Thermal Class		B			
Insulation Resistance		500 VDC, 10 MΩh min.			
Withstand Voltage		1,500 VAC for 1 minute			
Excitation		Permanent magnet			
Mounting		Flange-mounted			
Drive Method		Direct drive			
Rotation Direction		Counterclockwise (CCW) for forward reference when viewed from the load side			
Vibration Class*1		V15			
Environmental Conditions	Surrounding Air Temperature	0 °C to 40 °C (With derating, usage is possible between 40 °C and 60 °C)			
	Surrounding Air Humidity	20% to 80% relative humidity (with no condensation)			
	Installation Site	• Must be indoors and free of corrosive and explosive gases. • Must be well-ventilated and free of dust and moisture. • Must facilitate inspection and cleaning. • Must have an altitude of 1,000 m or less. (With derating, usage is possible between 1,000 m and 2,000 m.) • Must be free of strong magnetic fields.			
	Storage Environment	Store the Servomotor in the following environment if you store it with the power cable disconnected. Storage Temperature: -20 °C to 60 °C (with no freezing) Storage Humidity: 20% to 80% relative humidity (with no condensation)			
Shock Resistance*2	Impact Acceleration Rate at Flange	490 m/s ²			
	Number of Impacts	2 times			
Vibration Resistance*3	Vibration Acceleration Rate at Flange	49 m/s ²			
Applicable SERVOPACKS	SGD7S-	1R6A	2R8A	5R5A	
	SGD7W-	2R8A	2R8A, 5R5A, 7R6A	5R5A, 7R6A	

*1 A Vibration class of V15 indicates a vibration amplitude of 15 µm maximum on the Servomotor without a load at the rated motor speed.

*2 The shock resistance for shock in the vertical direction when the Servomotor is mounted with the shaft in a horizontal position is given in the above table.

*3 The vertical, side-to-side, and front-to-back vibration resistance for vibration in three directions when the Servomotor is mounted with the shaft in a horizontal position is given in the above table. The strength of the vibration that the Servomotor can withstand depends on the application. Always check the vibration acceleration rate that is applied to the Servomotor with the actual equipment.



Ratings

Voltage			200V			
Model SGM7J-			02A	04A	06A	08A
Rated Output *1		W	200	400	600	750
Rated Torque *1, *2		Nm	0.637	1.27	1.91	2.39
Instantaneous Maximum Torque *1		Nm	2.23	4.46	6.69	8.36
Rated Current *1		Arms	1.6	2.5	4.2	4.4
Instantaneous Maximum Current *1		Arms	5.8	9.3	15.3	16.9
Rated Motor Speed *1		min ⁻¹	3000			
Maximum Motor Speed		min ⁻¹	6000			
Torque Constant		Nm/Arms	0.444	0.544	0.493	0.584
Motor Moment of Inertia		×10 ⁻⁴ kg m ²	0.263 (0.333)	0.486 (0.556)	0.800 (0.870)	1.59 (1.77)
Rated Power Rate *1		kW/s	15.4 (12.1)	33.1 (29.0)	45.6 (41.9)	35.9 (32.2)
Rated Angular Acceleration Rate *1		rad/s	24200 (19100)	26100 (22800)	23800 (21900)	15000 (13500)
Derating Rate for Servomotor with Oil Seal		%	90	95		
Heat Sink Size (Aluminium)		mm	250 × 250 × 6			
Protective Structure *3			Totally enclosed, self-cooled, IP67			
Holding Brake Specifications *4	Rated Voltage	V		24 VDC ± 10% 0		
	Capacity	W	6		6.5	
	Holding Torque	Nm	0.637	1.27	1.91	2.39
	Coil Resistance	Ω (at 20 °C)	96±10%		88.6±10%	
	Rated Current	A (at 20 °C)	0.25		0.27	
	Time Required to Release Brake	ms	60		80	
	Time Required to Brake	ms	100			
Allowable Load Moment of Inertia (Motor Moment of Inertia Ratio)			15 times	10 times	20 times	12 times
	With External Regenerative Resistor and Dynamic Brake Resistor					
Allowable Shaft Load *5	LF	mm	25			35
	Allowable Radial Load	N	245			392
	Allowable Thrust Load	N	74			147

Notes: The values in parentheses are for Servomotors with Holding Brakes.

*1 These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. The values for other items are at 20°C. These are typical values.

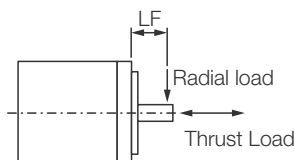
*2 The rated torques are the continuous allowable torque values at a surrounding air temperature of 40°C with an aluminium heat sink of the dimensions given in the table.

*3 This does not apply to the shaft opening. Protective structure specifications apply only when the special cable is used.

*4 Observe the following precautions if you use a Servomotor with a Holding Brake.

- The holding brake cannot be used to stop the Servomotor.
- The time required to release the brake and the time required to brake depend on which discharge circuit is used. Confirm that the operation delay time is appropriate for the actual equipment.
- The 24-VDC power supply is not provided by Matara.

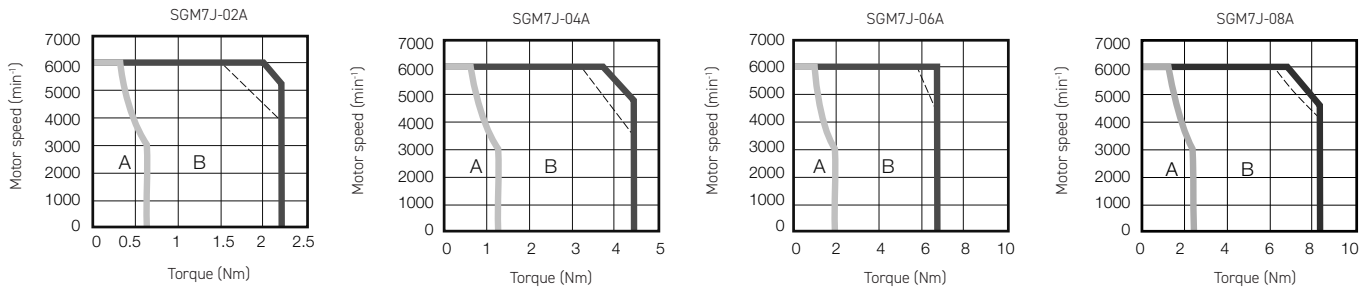
*5 The allowable shaft loads are illustrated in the following figure. Design the mechanical system so that the thrust and radial loads applied to the Servomotor shaft end during operation do not exceed the values given in the table.



Torque-Motor Speed Characteristics

A : Continuous duty zone
B : Intermittent duty zone

— (solid lines): With three-phase 200-V or single-phase 230-V input
- - - (dotted lines): With single-phase 200-V input



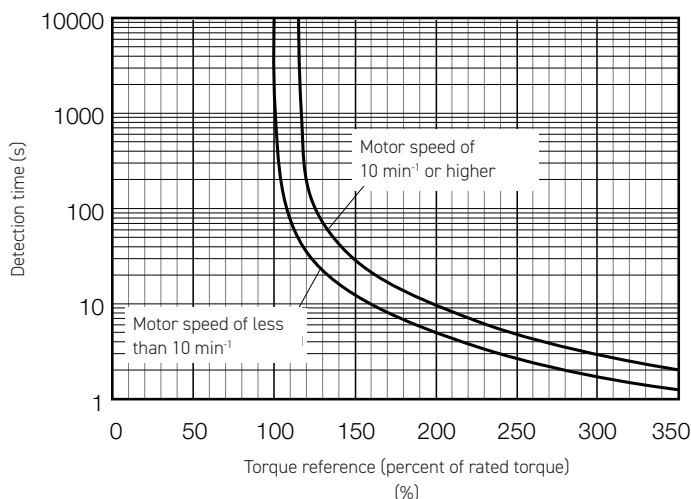
* The characteristics are the same for three-phase 200 V and single-phase 200 V.

Notes:

- 1 These values are for operation in combination with a SERVOPACK when the temperature of the armature winding is 100°C. These are typical values.
- 2 The characteristics in the intermittent duty zone depend on the power supply voltage.
- 3 If the effective torque is within the allowable range for the rated torque, the Servomotor can be used within the intermittent duty zone.
- 4 If you use a Servomotor Main Circuit Cable that exceeds 20 m, the intermittent duty zone in the torque-motor speed characteristics will become smaller because the voltage drop increases.

Servomotor Overload Protection Characteristics

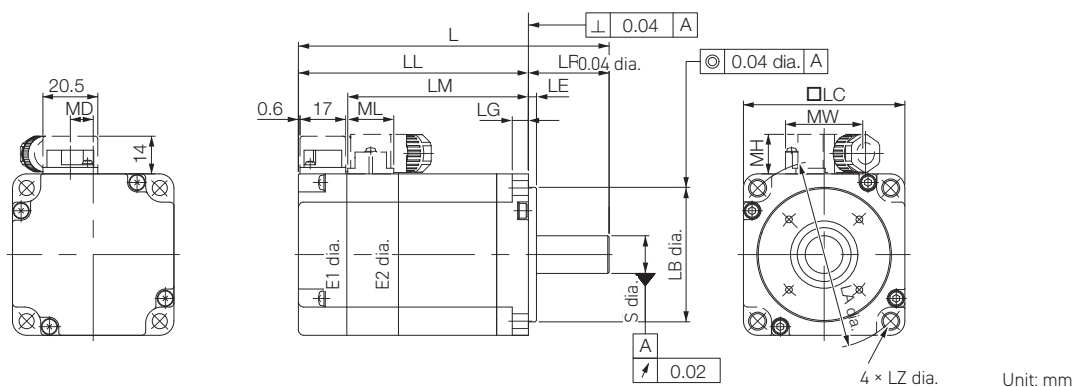
The overload detection level is set for hot start conditions with a Servomotor surrounding air temperature of 40 °C.



Note:

The above overload characteristics does not give permission to perform continuous duty operation with an output of 100% or higher. Use the Servomotor so that the effective torque remains within the continuous duty zone given in Torque-Motor Speed Characteristics on page 51.

SGM7J-02, -04, -06, and -08



Model	SGM7J-	L	LL	LM	Flange Dimensions						S	
					LR	LE	LG	LC	LA	LB		
02A	A2	99.5 (140)	69.5 (110)	51.2	30	3	6	60	70	50 ⁰ -0.025	5.5	14 ⁰ -0.011
04A	A2	115.5 (156)	85.5 (126)	67.2	30	3	6	60	70	50 ⁰ -0.025	5.5	14 ⁰ -0.011
06A	A2	137.5 (191.5)	107.5 (161.5)	89.2	30	3	6	60	70	50 ⁰ -0.025	5.5	14 ⁰ 0.011
08A	A2	137 (184)	97 (144)	78.5	40	3	8	80	90	70 ⁰ -0.025	7	19 ⁰ -0.013

Model SGM7J-	MD	MW	ML	ML	Approx. Mass (kg)
02A□A2□	8.5	28.7	14.7	17.1	0.8 (1.4)
04A□A2□	8.5	28.7	14.7	17.1	1.1 (1.7)
06A□A2□	8.5	28.7	14.7	17.1	1.6 (2.2)
08A□A2□	13.6	38	14.7	19.3	2.2 (2.8)

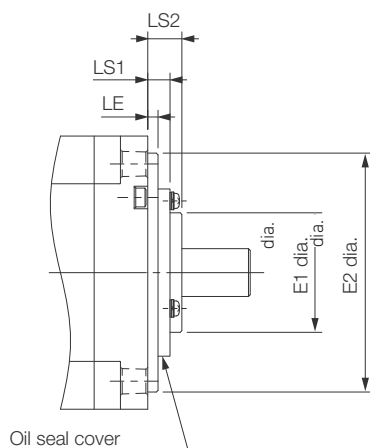
Notes:

1 The values in parentheses are for Servomotors with Holding Brakes.

2 Refer to the following section for detailed shaft end specifications.

Specifications of Options

Oil Seal



Model SGM7J-	Model SGM7J-			
	E1	E2	LS1	LS2
02A, 04A, 06A	35	47	5.2	10
08A	47	61	5.5	11

Shaft End Specifications

SGM7J-□□□□□□□□



Code	Specification
2	Straight without key
6	Straight with key and tap (Key slot is JIS B1301-1996 fastening type.)
B	With two flat seats

Code		Specification			
		02	04	06	08
Code: 2 (Straight without Key)					
Unit: mm	LR		30		40
	S		$14^{0}_{-0.011}$		$19^{0}_{-0.013}$
Code: 6 (Straight with Key and Tap)					
Unit: mm Cross section Y-Y	LR		30		40
	QK		14		22
	S		$14^{0}_{-0.011}$		$19^{0}_{-0.013}$
	W		5		6
	T		5		6
	U		3		3.5
	P		M5 × 8L		M6 × 10L
Code: B (with Two Flat Seats)					
Unit: mm Cross section Y-Y	LR		30		40
	QH		15		22
	S		$14^{0}_{-0.011}$		$19^{0}_{-0.013}$
	H1		13		18
	H2		13		18

SGM7J Order Example

Code: **SGM7J - 02 A - F - A - 6 - 1**

Options: 1 2 3 4 5 6 7

Options		Selection			
1	Series	SGM7A			
2	Rated Output	02: 200W	04: 400W	06: 600W	08: 800W
3	Power Supply Voltage	A: 200 VAC			
4	Serial Encoder	7: 24-bit Absolute F: 24-bit Incremental			
5	Design Revision Order	A: Initial Design			
6	Shaft End	2: Straight without Key 6: Straight with Key and Tap B: With two flat seats			
7	Options	1: Without Options C: With Holding Brake (24 VDC) E: With oil seal and holding brake (24 VDC) S: With oil seal			

Note:

The **bolded** options are standard stock.

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The name **WITTENSTEIN alpha** is synonymous with premium quality and optimal reliability, high precision and synchronization accuracy and maximum power density.

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- World-wide support

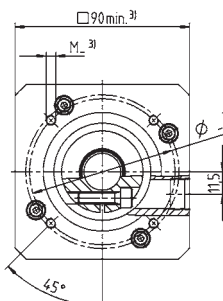
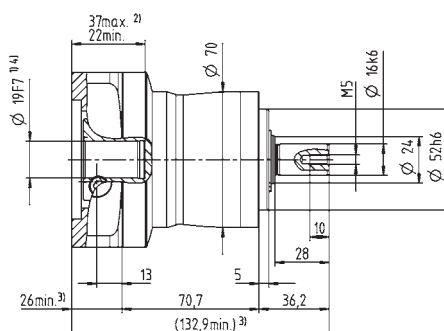
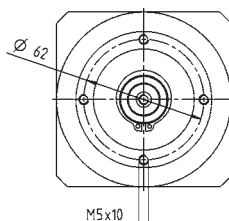
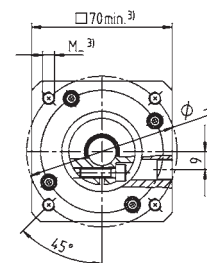
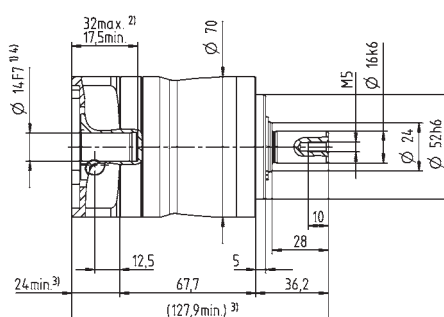
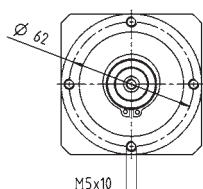


alpha Value Line		NP
Ratios		3-100
Torsional backlash (arcmin)		≤ 8
Smooth output shaft		•
Grooved output shaft		•
Input type		Motor attachment version
In continuous operation		•
In cyclic operation		•
HIGH TORQUE version		•
Foodgrade lubrication		•
With coupling at output		•
As linear system		•
With mounted pinion at output		•
With screwed on B5 flange		•
Max. torque T2	Nm	800
Max. input speed	rpm	10000
Efficiency	%	97%
Max. radial force F2R	N	8000

NP 015S Technical Data

Technical data					1-Stage	
Ratio ^{a)}			i		5	10
Maximum torque MF			T _{2α}	Nm	64	56
Emergency stop torque ^{b)}			T _{2Not}	Nm	80	
Nominal input speed ^{c)}			n _{1N}	min ⁻¹	3700	4300
Max. input speed			n _{1Max}	min ⁻¹	8000	
Max. torsional backlash			j _t	arcmin	Standard ≤ 8	
Max. axial force ^{d)}			F _{2AMax}	N	1550	
Max. radial force ^{d)}			F _{2RMax}	N	1700	
Weight incl. standard adapter plate ^{e)}			m	kg	1.9 - 2.3	
Operating noise ^{f)}			L _{PA}	dB(A)	≤ 59	
Max. permitted housing temperature				°C	+90	
Ambient temperature				°C	-15 to +40	
Lubrication					Lubricated for life	
Paint					Housing: pearl dark grey / Drive-Side: Innovation Blue	
Direction of rotation					Motor and gearbox same direction	
Type of protection					IP 64	
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	C	14	J1	kgcm ²	0.2	0.2
	E	19	J1	kgcm ²	0.5	0.4

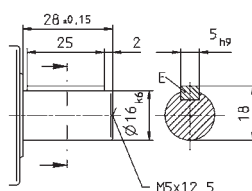
Motor Shaft Diameter



Alternatives: Output shaft variants

Output shaft with key

E = keys as DIN 6885, sheet 1, form A



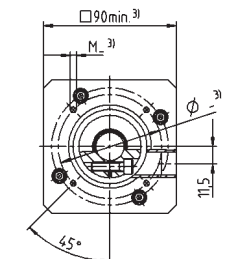
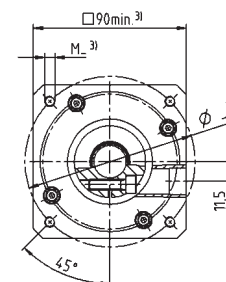
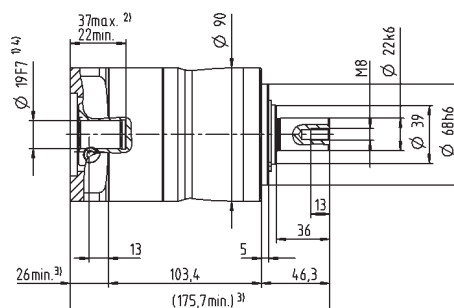
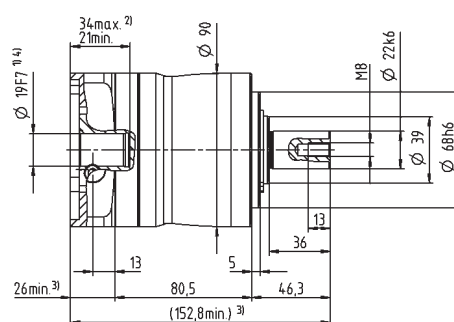
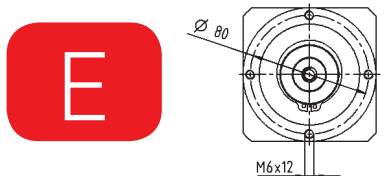
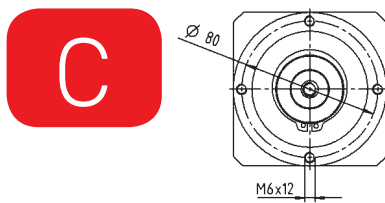
Non-tolerated dimensions ± 1 mm

1. Check motor shaft fit.
2. Min./max. permissible motor shaft length.
3. Longer motor shafts are adaptable; please contact us.
4. The dimensions depend on the motor.
5. Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

NP 025S Technical Data

Technical data					1-Stage	2-Stage
Ratio ^{a)}			i		10	15
Maximum torque MF			T _{2α}	Nm	144	128
Maximum torque HIGH TORQUE- MA			T _{2α}	Nm	-	185
Emergency stop torque ^{b)}			T _{2Not}	Nm	200	
Nominal input speed ^{c)}			n _{1N}	min ⁻¹	3900	3700
Max. input speed			n _{1Max}	min ⁻¹	7000	8000
Max. torsional backlash			j _t	arcmin	Standard ≤ 8	Standard ≤ 10
Max. axial force ^{d)}			F _{2AMax}	N	1900	
Max. radial force ^{d)}			F _{2RMax}	N	2800	
Weight incl. standard adapter plate ^{e)}			m	kg	3.8 - 4.7	4.1 - 4.5
Operating noise ^{f)}			L _{PA}	dB(A)	≤ 61	≤ 59
Max. permitted housing temperature				°C	+90	
Ambient temperature				°C	-15 to +40	
Lubrication					Lubricated for life	
Paint					Housing: pearl dark grey / Drive-Side: Innovation Blue	
Direction of rotation					Motor and gearbox same direction	
Type of protection					IP 64	
Moment of inertia (relates to the drive)	C	14	J1	kgcm²	0.25	0.30
Clamping hub diameter [mm]	E	19	J1	kgcm²	0.49	0.51

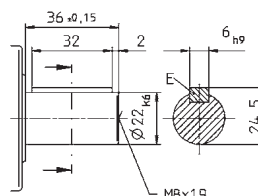
Motor Shaft Diameter



Alternatives: Output shaft variants

Output shaft with key

E = keys as DIN 6885, sheet 1, form A



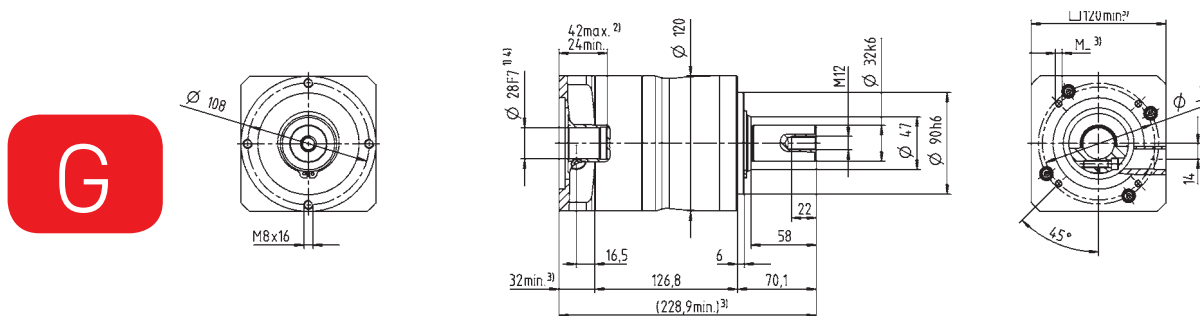
Non-tolerated dimensions ± 1 mm

1. Check motor shaft fit.
2. Min./max. permissible motor shaft length.
3. Longer motor shafts are adaptable; please contact us.
4. The dimensions depend on the motor.
5. Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

NP 035S Technical Data

Technical data					2-Stage		
Ratio			i		15	20	25
Maximum torque MF			T _{2α}	Nm	320	408	400
Maximum torque HIGH TORQUE- MA			T _{2α}	Nm	480	480	-
Emergency stop torque			T _{2Not}	Nm	500		
Nominal input speed			n _{1N}	min-1	3400	3400	3400
Max. input speed			n _{1Max}	min-1	7000		
Max. torsional backlash			j _t	arcmin	Standard ≤ 10		
Max. axial force			F _{2AMax}	N	4000		
Max. radial force			F _{2RMax}	N	900		
Weight incl. standard adapter plate ^{e)}			m	kg	5000		
Operating noise			L _{PA}	dB(A)	1130		
Max. permitted housing temperature				°C	9.8-11		
Ambient temperature				°C	22-24		
Lubrication					≤ 61		
Paint					Housing: pearl dark grey / Drive-Side: Innovation Blue		
Direction of rotation					Motor and gearbox same direction		
Type of protection					IP 64		
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	G	24	J1	kgcm ²	1.9	1.7	1.6

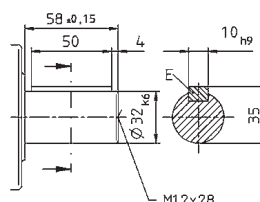
Motor Shaft Diameter



Alternatives: Output shaft variants

Output shaft with key

E = keys as DIN 6885, sheet 1, form A



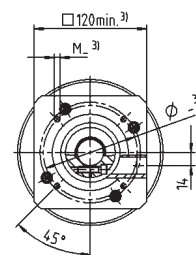
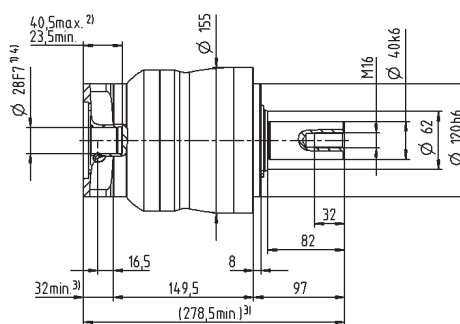
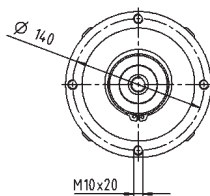
Non-tolerated dimensions ± 1 mm

1. Check motor shaft fit.
2. Min./max. permissible motor shaft length.
3. Longer motor shafts are adaptable; please contact us.
4. The dimensions depend on the motor.
5. Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

NP 045S Technical Data

Technical data					2-Stage
Ratio			i		25
Maximum torque MF			T _{2α}	Nm	700
Emergency stop torque			T _{2Not}	Nm	1000
Nominal input speed			n _{1N}	min-1	2600
Max. input speed			n _{1Max}	min-1	6000
Max. torsional backlash			j _t	arcmin	Standard ≤ 10
Max. axial force			F _{2AMax}	N	6000
Max. radial force			F _{2RMax}	N	8000
Weight incl. standard adapter plate			m	kg	20-22
Operating noise			L _{PA}	dB(A)	≤65
Max. permitted housing temperature				°C	+90
Ambient temperature				°C	-15 to +40
Lubrication					Lubricated for life
Paint					Housing: pearl dark grey / Drive-Side: Innovation Blue
Direction of rotation					Motor and gearbox same direction
Type of protection					IP 64
Moment of inertia (relates to the drive) Clamping hub diameter [mm]	H	28	J1	kgcm²	1.7

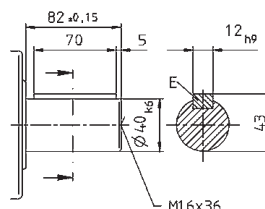
Motor Shaft Diameter



Alternatives: Output shaft variants

Output shaft with key

E = keys as DIN 6885, sheet 1, form A



Non-tolerated dimensions ± 1 mm

1. Check motor shaft fit.
2. Min./max. permissible motor shaft length.
3. Longer motor shafts are adaptable; please contact us.
4. The dimensions depend on the motor.
5. Smaller motor shaft diameters are compensated by a bushing with a minimum thickness of 1 mm.

Elastomer Compensation Couplings

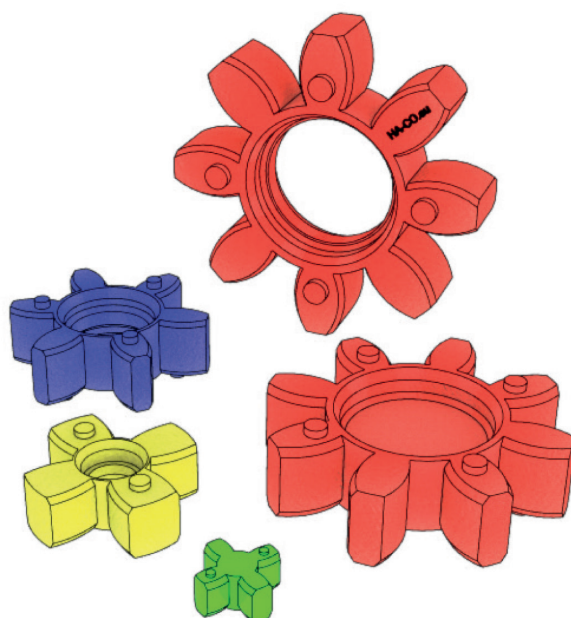
Elastomeric couplings are a form of flexible coupling that uses an insert, made of an elastomeric polymer, to help transmit torque. The design of elastomeric couplings mean that the elastic material is meant to wear out before any metal components. This not only saves time and money on maintenance, but also means that the couplings do not require any form of lubrication.

Elastomer spiders provide anti-backlash and absorb vibration.

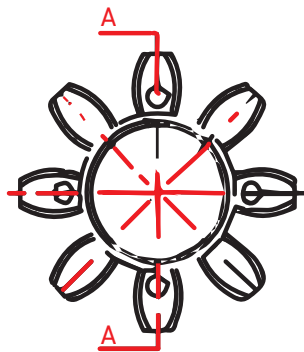
Spider Shore Hardness	Colour	Material	Allowable Temperature °C		Typical applications
			Continuous Temperature	Max. temp. short term	
98 Sh A	Red	polyurethane	-30 to +90	-40 to +120	Positioning drives; backlash-free when pre-compressed
80 Sh A	Blue	polyurethane	-50 to +80	-60 to +120	Drives in electronic measuring systems; backlash-free when pre-compressed
92 Sh A	Yellow	polyurethane	-40 to +90	-50 to +120	Main spindle drives; backlash-free when pre-compressed
64 Sh D-H	Green	hytrel	-50 to +120	-60 to +150	Machine tool spindles, control drives, lead units, planetary gearboxes; heavy loads, torsionally stiff, high ambient temperature, water proof
64 Sh D	Green	polyurethane	-20 to +110	-30 to +120	

Pre-Compression

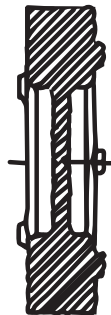
Jaw type couplings are general purpose and consist of an elastomeric element, commonly referred to as a spider, sandwiched between two metal hubs with interlocking teeth. The spider acts as a shock absorber for the coupling and helps to reduce vibrations and, in some applications, electrical isolation. Jaw couplings are fail-safe because, if the spider were to fail, the teeth of the two hubs would interlock and continue to transmit torque. This would decrease coupling performance but would prevent damage to the machine and give engineers time to shut the system down.



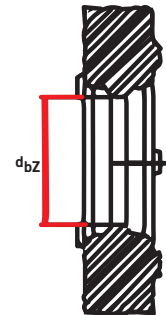
Elastometric Spider



Standard



Optional with bore hole

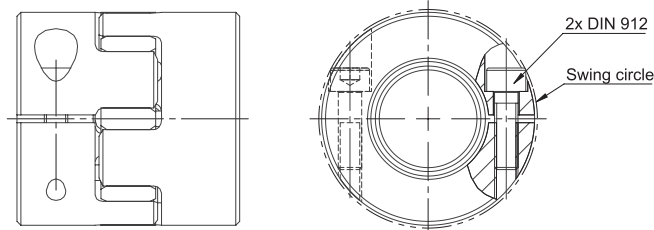


Size	Outer- ϕ	Sh	$n_{\max}$ SKK	$n_{\max}$ SKL	T_N	$T_{\max}$	T_{stat}	T_{dyn}	Cr	optional dbZ	ΔK_a	ΔK_r	ΔK_w
1	$\phi 10$	80 Sh A 92 Sh A 98 Sh A	–	–	0.3 0.5 0.9	0.6 1.0 1.7	3.2 5.2 8.3	10 16 25	82 154 296	–	+0.4/-0.2	0.12 0.06 0.04	1.1 1.0 0.9
2	$\phi 14$	64 Sh D-H 80 Sh A 92 Sh A 98 Sh A	27000	–	2.4 0.7 1.2 2.0	4.8 1.4 2.4 4.0	34 8.6 14.3 23	103 26 43 69	630 114 219 421	–	+0.6/-0.3	0.04 0.15 0.1 0.06	0.8 1.1 1.0 0.9
5	$\phi 20$	64 Sh D-H 80 Sh A 92 Sh A 98 Sh A	19000	–	6 1.8 3 5	12 3.6 6 10	74 17 31 51	224 52 95 155	769 125 262 518	6.5	+0.8/-0.4	0.05 0.19 0.13 0.08	0.8 1.1 1.0 0.9
9	$\phi 25$	64 Sh D-H 80 Sh A 92 Sh A 98 Sh A	15000 15000	–	12 3 5 9	24 6 10 18	328 84 160 241	982 252 482 718	1198 274 470 846	7.5	+0.9/-0.4	0.05 0.2 0.14 0.08	0.8 1.1 1.0 0.9
12	$\phi 30$	64 Sh D-H 80 Sh A 92 Sh A 98 Sh A	13000	13000	16 4 7.5 12.5	32 8 15 25	234 60 115 172	702 180 344 513	856 153 336 654	8.5	+1.0/-0.5	0.06 0.21 0.15 0.09	0.8 1.1 1.0 0.9
17	$\phi 40$	64 Sh D-H 80 Sh A 92 Sh A 98 Sh A	10000	10000	21 5 10 17	42 10 20 34	1240 340 570 860	3720 1030 1720 2580	2930 582 1120 2010	16	+1.2/-0.5	0.04 0.15 0.1 0.06	0.8 1.1 1.0 0.9
60	$\phi 55$	64 Sh D-H 92 Sh A 98 Sh A	7000	7000	75 35 60	150 70 120	2980 1430 2060	8934 4296 6189	3696 1480 2560	24	+1.4/-0.5	0.07 0.14 0.1	0.8 1.0 0.9
160	$\phi 65$	64 Sh D-H 92 Sh A 98 Sh A	6000	6000	200 95 160	400 190 320	4350 2290 3440	13050 6876 10314	4348 1780 3200	27	+1.5/-0.7	0.08 0.15 0.11	0.8 1.0 0.9
325	$\phi 80$	64 Sh D-H 92 Sh A 98 Sh A	5000	5000	405 190 325	810 380 650	10540 4580 7160	31620 13752 21486	6474 2350 4400	35	+1.8/-0.7	0.09 0.17 0.12	0.8 1.0 0.9
450	$\phi 95$	64 Sh D 92 Sh A 98 Sh A	4000	4000	560 265 450	1120 530 900	27580 6300 19200	71700 24300 48000	7270 2430 5930	42	+2.0/-1.0	0.1 0.19 0.14	0.8 1.0 0.9
525	$\phi 105$	64 Sh D 92 Sh A 98 Sh A	3600	3600	655 310 525	1310 620 1050	36200 7850 22370	90500 18055 55925	8274 2580 5930	46	+2.1/-1.0	0.11 0.23 0.16	0.8 1.0 0.9

SKK Series Elastomer Compensation Couplings

SKK Series Characteristics

- Clamping hub made of high strength aluminium
- Backlash-free torque transmission
- Easy assembly, connectable
- Electrically isolating
- Optimum damping behaviour by spider(s)
- 98° Shore A execution
- High level of thermal stability
- Very low mass moment of inertia
- Ideal for servomotors
- Compensation of radial, axial and angular misalignment
- Various kinds of elastomer hardness of spiders



SKK Series Short Compact Type With Clamping Hub

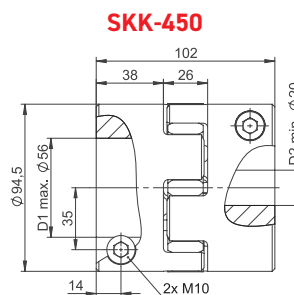
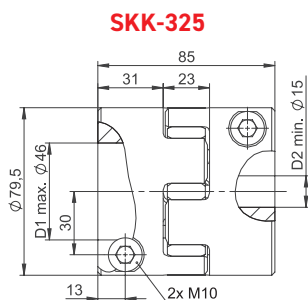
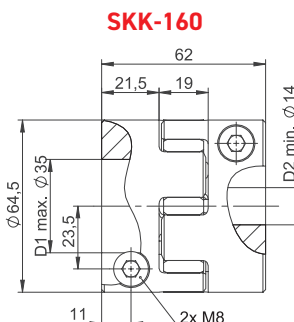
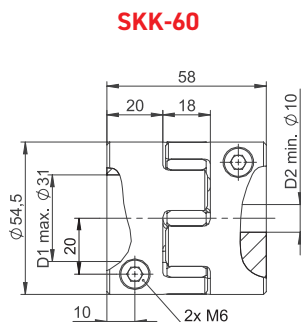
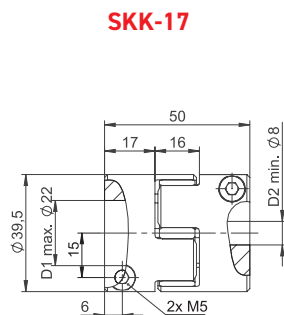
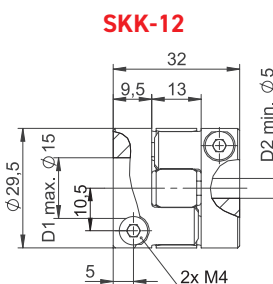
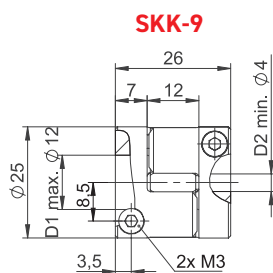
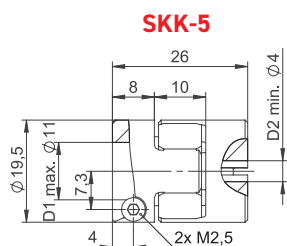


SKK Series Order Example

Code: **SKK - 160 - 20H7 - 22H7 - A - 98 Sh A - U - P**

Options: 1 2 3 4 5 6 7 8

Options	Coupling Specifications
1	Coupling Series
2	Size
3	Bore D1
4	Bore D2
5	Material: A= Aluminium (Standard) S= Steel E= Stainless Steel
6	Elastomer Spider Shore Hardness
7	U: Undrilled G: Drilled
8	Keyway: _ = No Keyway P= DIN 6885 Keyway

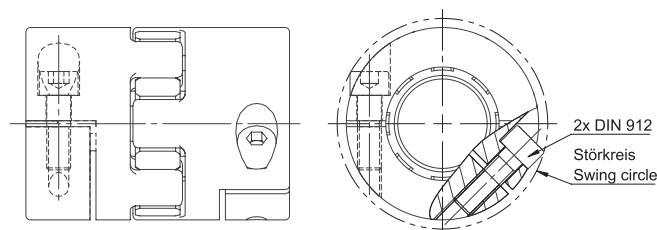


Model No.	Colour	Nominal Torque (Nm)	Max. Torque (Nm)	Static spring stiffness (Nm/rad)	Lateral spring stiffness (N/mm)	Max. lateral shaft misalignment (mm)	Max. angular shaft misalignment (Degree)	Max. axial shaft misalignment (mm)	max. speed (rpm)	Tightening torque of screws MA(Nm)	Swing circle (Ø mm)
SKK-5	Red	5	10	51	518	0.08	0.9	+0.8 / -0.4	19000	4.0	23.0
	Blue	1.8	3.6	17	125	0.19	1.1				
	Yellow	3	6	31	262	0.13	1.0				
	Green	6	12	74	796	0.05	0.8				
SKK-9	Red	9	18	241	846	0.08	0.9	+0.9 / -0.4	15000	1.5	26.0
	Blue	3	6	84	274	0.20	1.1				
	Yellow	5	10	160	470	0.14	1.0				
	Green	12	24	328	1198	0.05	0.8				
SKK-12	Red	12.5	25	172	654	0.09	0.9	+1.0 / -0.5	13000	5.0	33.0
	Blue	4	8	60	153	0.21	1.1				
	Yellow	7.5	15	115	336	0.15	1.0				
	Green	16	32	234	856	0.06	0.8				
SKK-17	Red	17	34	860	2010	0.06	0.9	+1.2 / -0.5	10000	11.0	43.0
	Blue	5	10	340	582	0.15	1.1				
	Yellow	10	20	570	1120	0.10	1.0				
	Green	21	42	1240	2930	0.04	0.8				
SKK-60	Red	60	120	2060	2560	0.10	0.9	+1.4 / -0.5	7000	18.0	56.0
	Yellow	35	70	1430	1480	0.14	1.0				
	Green	75	150	2980	3969	0.07	0.8				
SKK-160	Red	160	320	3440	3200	0.11	0.9	+1.5 / -0.7	6000	36.0	67.0
	Yellow	95	190	2290	1780	0.15	1.0				
	Green	200	400	4350	4348	0.08	0.8				
SKK-325	Red	325	650	7160	4400	0.12	0.9	+1.8 / -0.7	5000	84.0	88.0
	Yellow	190	380	4580	2350	0.17	1.0				
	Green	405	810	10540	6474	0.09	0.8				
SKK-450	Red	450	900	19200	5930	0.14	0.9	+2.0 / -1.0	4000	84.0	95.0
	Yellow	265	530	6300	2430	0.19	1.0				
	Green	560	1120	27580	7270	0.10	0.8				

SKL Series Elastomer Compensation Couplings

SKL Series Characteristics

- Clamping hub made of high strength aluminium
- Backlash-free torque transmission
- Easy assembly, connectable
- Electrically isolating
- Optimum damping behaviour by spider(s)
- 98° Shore A execution
- High level of thermal stability
- Very low mass moment of inertia
- Ideal for servomotors
- Compensation of radial, axial and angular misalignment
- Various kinds of elastomer hardness



SKL Series Long Type With Clamping Hub

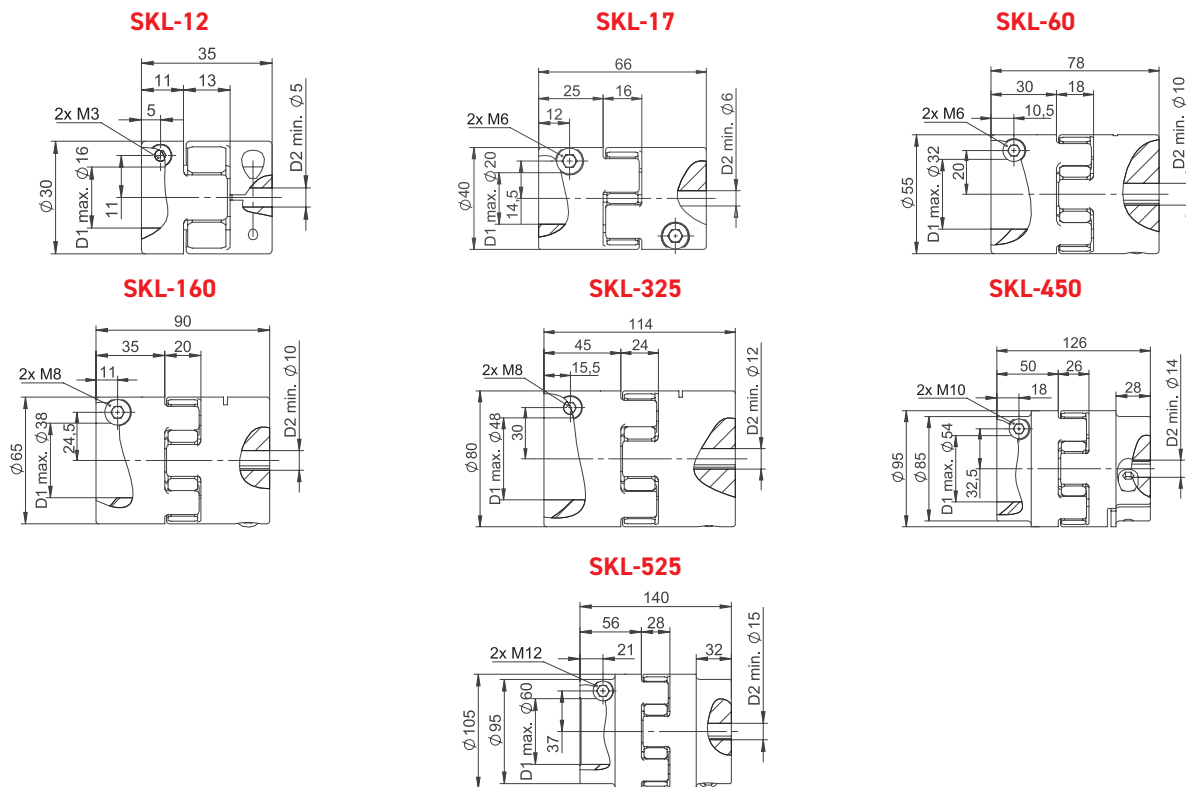


SKL Series Order Example

Code: **SKL** - **160** - **20H7** - **22H7** - **A** - **98 Sh A** - **U**

Options: 1 2 3 4 5 6 7

Options	Coupling Specifications
1	Coupling Series
2	Size
3	Bore D1
4	Bore D2
5	Material: A= Aluminium (Standard) S= Steel E= Stainless Steel
6	Elastomer Spider Shore Hardness
7	Star Drilling: U= Undrilled G= Drilled



Model No.	Colour	Nominal Torque (Nm)	Max. Torque (Nm)	Static spring stiffness (Nm/rad)	Lateral spring stiffness (N/mm)	Max. lateral shaft misalignment (mm)	Max. angular shaft misalignment (Degree)	Max. axial shaft misalignment (mm)	max. speed (rpm)	Tightening torque of screws MA(Nm)	Swing circle (ø mm)
SKL-12	Red	12	24	172	654	0.09	0.9	+1.0 / -0.5	13000	2.0	32.2
	Blue	4	8	60	153	0.21	1.1				
	Yellow	7.5	15	115	336	0.15	1.0				
	Green	18	36	234	856	0.06	0.8				
SKL-17	Red	17	34	860	2010	0.06	0.9	+1.2/-0.5	10000	11.0	46.0
	Blue	5	10	340	582	0.15	1.1				
	Yellow	10	20	570	1120	0.10	1.0				
	Green	21	42	1240	2930	0.04	0.8				
SKL-60	Red	60	120	2060	2560	0.10	0.9	+1.4/-0.5	7000	15.0	57.0
	Yellow	35	70	1430	1480	0.14	1.0				
	Green	75	150	2980	3696	0.07	0.8				
SKL-160	Red	160	320	3440	3200	0.11	0.9	+1.5/-0.7	6000	32.0	71.0
	Yellow	95	190	2290	1780	0.15	1.0				
	Green	200	400	4350	4348	0.08	0.8				
SKL-325	Red	325	650	7160	4400	0.12	0.9	+1.8/-0.7	5000	38.0	83.0
	Yellow	190	380	4580	2350	0.17	1.0				
	Green	405	810	10540	6474	0.09	0.8				
SKL-450	Red	450	900	19200	5930	0.14	0.9	+2.0/-1.0	4000	84.0	95.0
	Yellow	265	530	6300	2430	0.19	1.0				
	Green	560	1120	27580	7270	0.10	0.8				
SKL-525	Red	525	1050	22370	5930	0.16	0.9	+2.1/-1.0	3600	145.0	106.0
	Yellow	310	620	7850	2580	0.23	1.0				
	Green	655	1310	36200	8274	0.11	0.8				

SWA-EE Series Aluminium Line Shafts

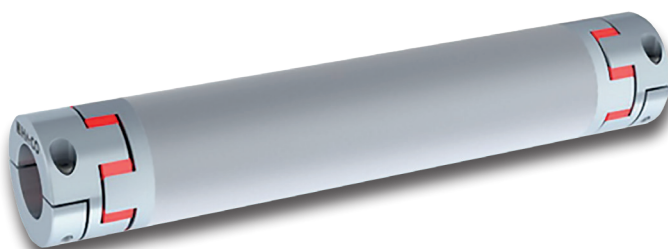
SWA-EE Series Characteristics

- Aluminium construction
- Very low mass inertia torque
- Backlash-free
- High torsional stiffness
- Equipped with two elastomer spiders
- Allows for large misalignment

Easy to mount
with divided
clamping hub



SWA-EE Series Aluminium Type With Double Ended Elastomer Connections

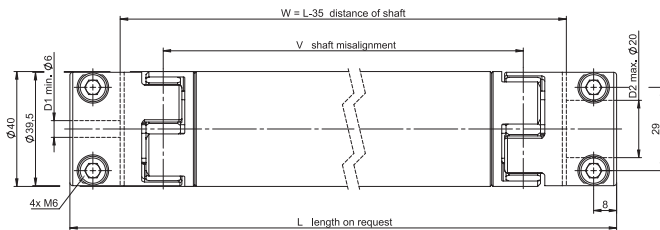


SWA-EE Series Order Example

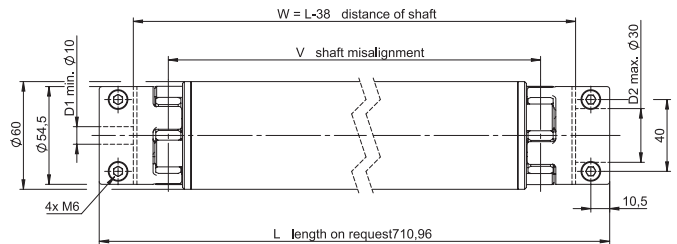
Code: **SWA-EE - 325 - 40H7 - 42H7 - 850mm**
Options: 1 2 3 4 5

Options	Coupling Specifications
1	Coupling Series
2	Size
3	Bore D1
4	Bore D2
5	Total Length (mm)

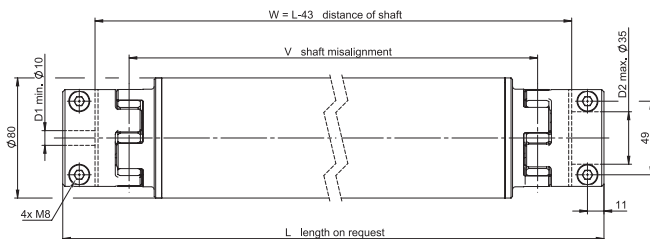
SWA-EE-17



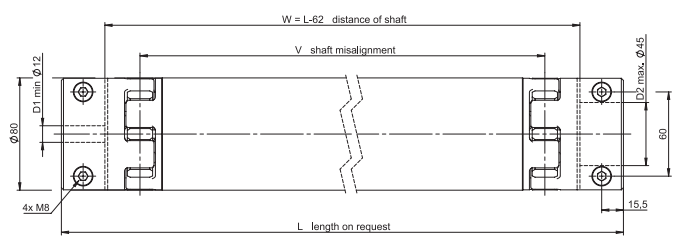
SWA-EE-60



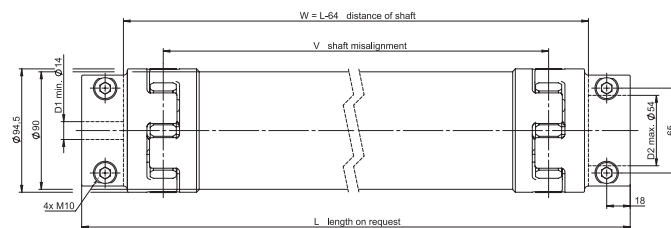
SWA-EE-160



SWA-EE-325



SWA-EE-450



Model No.	Nominal torque	Max. length	Max. axial shaft misalignment	Max. lateral shaft misalignment V	Mass (pipe/m) / Mass of the couplings	Torsional stiffness (pipe/m)	Torsional stiffness of the couplings	Lateral spring stiffness	Tightening torque of screws
	(Nm)	(mm)	(mm)	(mm)	(ca. kg)	(Nm/rad)	(Nm/rad)	(N/mm)	M _A (Nm)
SWA-EE-17	17	3000	1.8	L x tan 0.9	0.95 / 0.26	3360	1425	1005	17.5
SWA-EE-60	60	4000	2.1	L x tan 0.9	1.90 / 0.53	15500	3050	1280	17.5
SWA-EE-160	160	4000	2.2	L x tan 0.9	2.20 / 1.00	46600	10734	2200	42.0
SWA-EE-325	325	4000	2.7	L x tan 0.9	2.20 / 1.80	46600	24000	2785	42.0
SWA-EE-450	450	4000	3.0	L x tan 0.9	3.60 / 2.50	78600	27700	3360	85.0

SWE-EE Series Stainless Steel Line Shafts

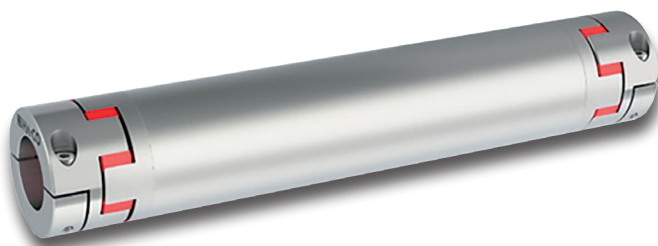
SWE-EE Series Characteristics

- Stainless Steel construction
- Very low mass inertia torque
- Backlash-free
- High torsional stiffness
- Equipped with two elastomer spiders
- Allows for large misalignment

Easy to mount
with divided
clamping hub



SWE-EE Series Stainless Steel Type With Double Ended Elastomer Connections

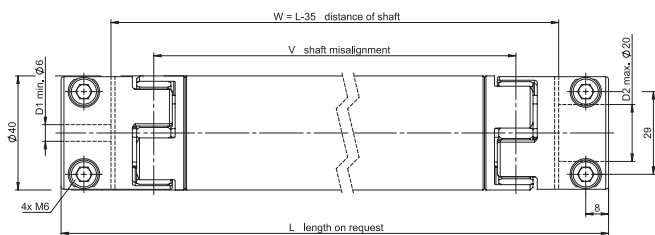


SWE-EE Series Order Example

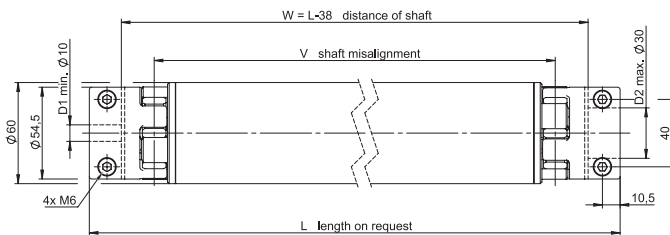
Code: **SWE-EE - 325 - 40H7 - 42H7 - 850mm**
Options: 1 2 3 4 5

Options	Coupling Specifications
1	Coupling Series
2	Size
3	Bore D1
4	Bore D2
5	Total Length (mm)

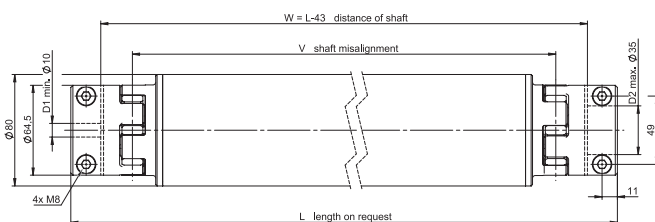
SWE-EE-17



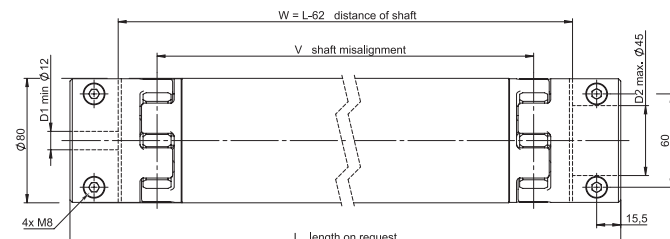
SWE-EE-60



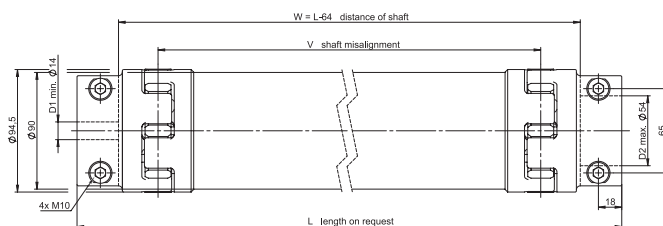
SWE-EE-160



SWE-EE-325



SWE-EE-450

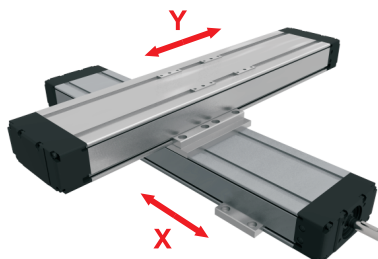


Model No.	Nominal torque	Max. length	Max. axial shaft misalignment	Max. lateral shaft misalignment V	Mass (pipe/m) / Mass of the couplings	Torsional stiffness (pipe/m)	Torsional stiffness of the couplings	Lateral spring stiffness	Tightening torque of screws
	(Nm)	(mm)	(mm)	(mm)	(ca. kg)	(Nm/rad)	(Nm/rad)	(N/mm)	M _A (Nm)
SWE-EE-17	17	3000	1.8	L x tan 0.9	2.30 / 0.74	8320	1425	1005	10.0
SWE-EE-60	60	4000	2.1	L x tan 0.9	4.20 / 1.52	35000	3050	1280	10.0
SWE-EE-160	160	4000	2.2	L x tan 0.9	5.70 / 2.90	86190	10724	2200	24.0
SWE-EE-325	325	4000	2.7	L x tan 0.9	5.70 / 5.20	86190	24000	2785	24.0
SWE-EE-450	450	4000	3.0	L x tan 0.9	8.50 / 7.20	160200	27700	3360	48.0

Automation Solutions

X-Y Connection Plates

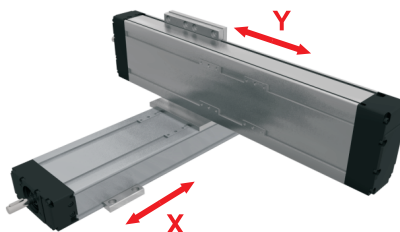
X-Axis CTV = 0° → Y Axis = 0°



*For actuators and connection methods not listed, please contact Matara.

X-Axis	Y-Axis						
	MTV 65	MTV 80	MTV 110	CTV, CTJ 90	CTV, CTJ 110	CTV, CTJ 145	CTV, CTJ 200
MTV 65	CP M65 0 M65 0	CP M65 0 M80 0		CP M65 0 C90 0	CP M65 0 C110 0		
MTV 80	CP M80 0 M65 0	CP M80 0 M80 0	CP M80 0 M110 0	CP M80 0 C90 0	CP M80 0 C110 0	CP M80 0 C145 0	
CTV, CTJ 90	CP C90 0 M65 0			CP C90 0 C90 0	CP C90 0 C110 0		
CTV, CTJ 110	CP C110 0 M65 0	CP C110 0 M80 0		CP C110 0 C90 0	CP C110 0 C110 0	CP C110 0 C145 0	
CTV, CTJ 145	CP C145 0 M65 0	CP C145 0 M80 0	CP C145 0 M110 0	CP C145 0 C90 0	CP C145 0 C110 0	CP C145 0 C145 0	
CTV, CTJ 200		CP C200 0 M80 0	CP C200 0 M110 0		CP C200 0 C110 0	CP C200 0 C145 0	CP C200 0 C200 0

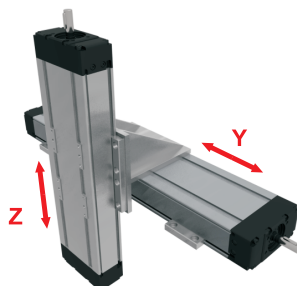
X-Axis CTV = 0° → Y Axis = 90°



X-Axis	Y-Axis						
	MTV 65	MTV 80	MTV 110	CTV, CTJ 90	CTV, CTJ 110	CTV, CTJ 145	CTV, CTJ 200
MTV 65	CP M65 0 M65 90	CP M65 0 M80 90		CP M65 0 C90 90	CP M65 0 C110 90		
MTV 80	CP M80 0 M65 90	CP M80 0 M80 90		CP M80 0 C90 90	CP M80 0 C110 90	CP M80 0 C145 90	
CTV, CTJ 90	CP C90 0 M65 90			CP C90 0 C90 90			
CTV, CTJ 110	CP C110 0 M65 90	CP C110 0 M80 90		CP C110 0 C90 90	CP C110 0 C110 90		
CTV, CTJ 145	CP C145 0 M65 90	CP C145 0 M80 90		CP C145 0 C90 90	CP C145 0 C110 90	CP C145 0 C145 90	
CTV, CTJ 200		CP C200 0 M80 90			CP C200 0 C110 90	CP C200 0 C145 90	CP C200 0 C200 90

Y-Z Connection Plates

Y-Axis CTV = 0° → Z Axis = 90°



Y-Axis	X-Axis					
	MTV65	MTV 80	MTV110	CTV90	CTV110	CTV145
MTV 65	CP M65 0 ZM65					
MTV 80	CP M80 0 ZM65	CP M80 0 ZM80				
MTV 110	CP M110 0 ZM65	CP M110 0 ZM80	CP M110 0 ZM110			
CTV, CTJ 90				CP C90 0 ZC90		
CTV, CTJ 110	CP C110 0 ZM65	CP C110 0 ZM80		CP C110 0 ZC90	CP C110 0 ZC110	
CTV, CTJ 145	CP C145 0 ZM65	CP C145 0 ZM80	CP C145 0 ZM110	CP C145 0 ZC90	CP C145 0 ZC110	CP C1450 ZC145
CTV, CTJ 200		CP C200 0 ZM80	CP C200 0 ZM110		CP C200 0 ZC110	CPC200 0 ZC145

Multi Axis System Examples



Belt Driven Actuators	MTB Series	MTE Series	MTS Series	MTZ Series	MTF Series	CTJ Series	Ballscrew Actuators	MTV Series	CTV Series	PNCE Series	Automation Components
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THE **DYNAMICS**

Linear Motion Catalogue

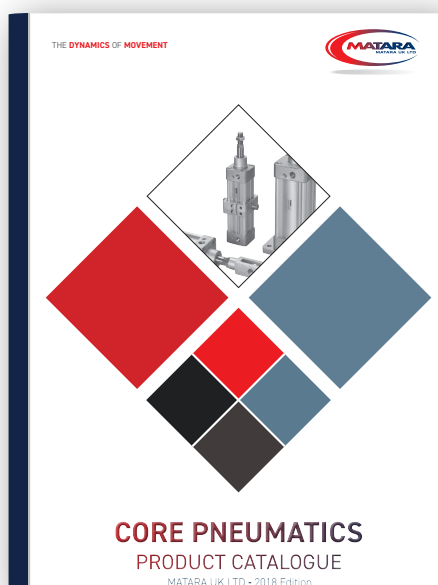


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