

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%

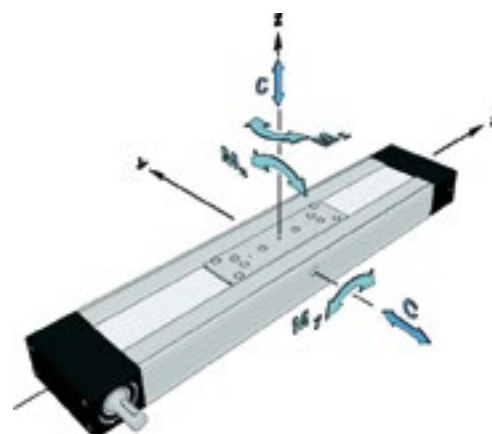
For operating temperatures out of the presented range, please contact us.

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

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

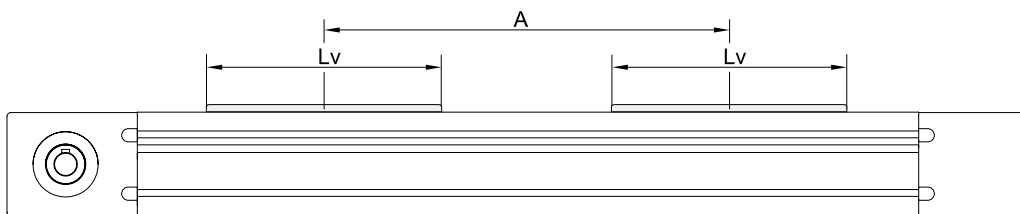


CTJ Series Technical Data For Double Carriage

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



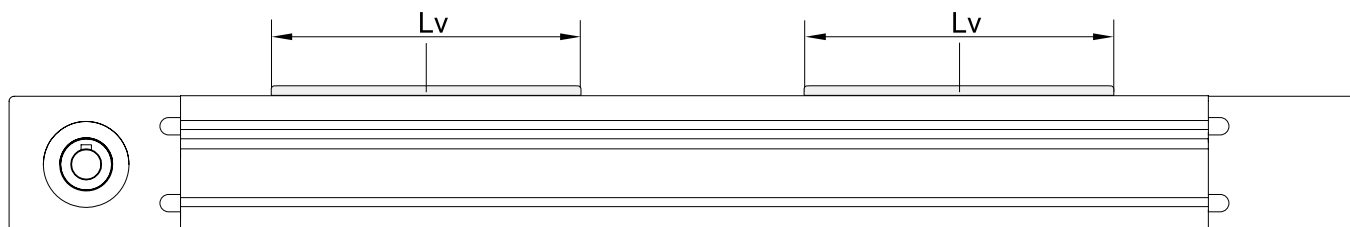
Drive & Belt Data

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

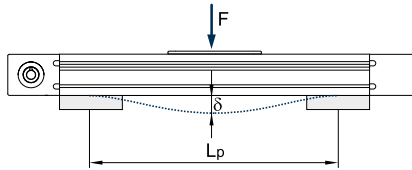


Series	Carriage length	Mass of linear unit*	Mass moment of inertia*	Planar moment of inertia*	
	L_v (mm)	(kg)	($10^{-5} \text{kg} \cdot \text{m}^2$)	I_y (cm^4)	I_z (cm^4)
CTJ 90 S	102	$1.7 + 0.0048 \cdot \text{Stroke (mm)}$	$7 + 0.0031 \cdot \text{Stroke (mm)}$	13.4	107.0
CTJ 90 L	156	$2.1 + 0.0048 \cdot \text{Stroke (mm)}$	$11 + 0.0031 \cdot \text{Stroke (mm)}$		
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	$26.2 + 0.0245 \cdot \text{Stroke (mm)}$	$1210 + 0.1868 \cdot \text{Stroke (mm)}$		

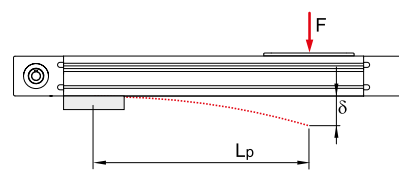
* Mass calculation doesn't include mass of motor, reduction gear, switches and clamps.

Deflection of Linear Unit

Fixed- fixed mounting



Fixed- free mounting



δ Maximum deflection of the linear unit [mm]

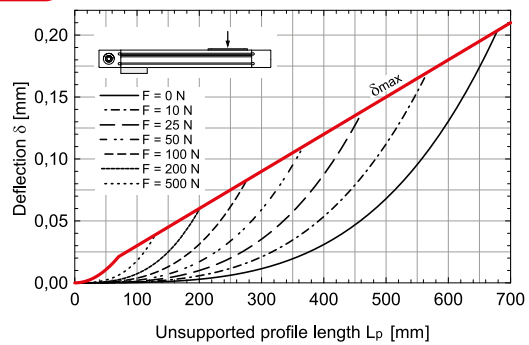
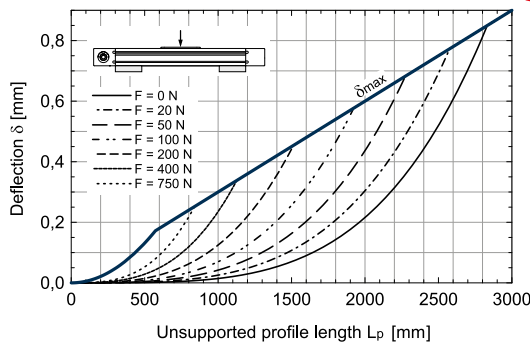
δ_{max} Maximum permissible deflection of the linear unit [mm] F Applied force [N]

L_p Unsupported profile length [mm]

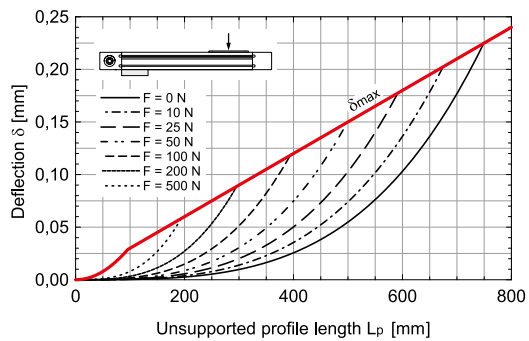
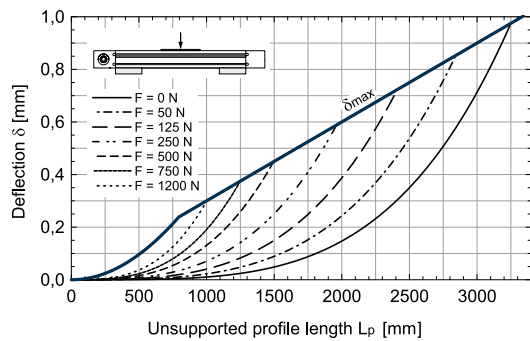
The maximum permissible deflection δ_{max} must not be exceeded.

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

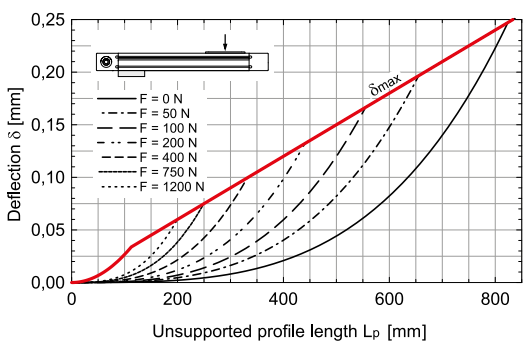
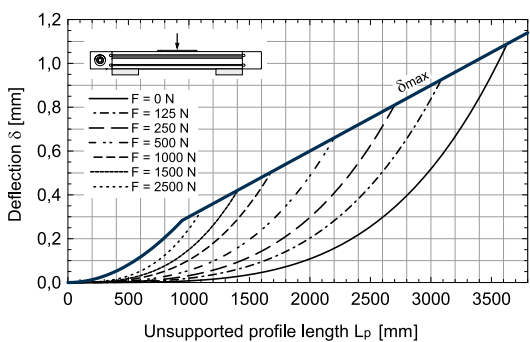
CTJ 90



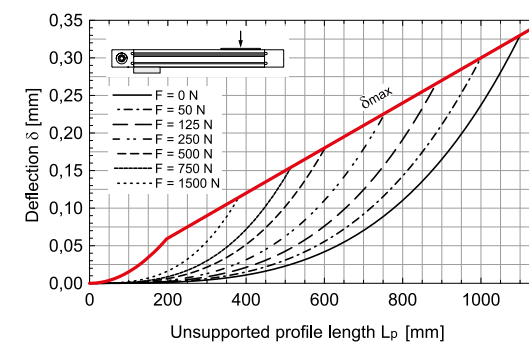
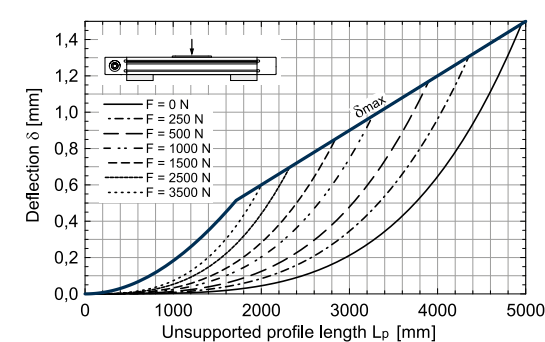
CTJ 110



CTJ 145

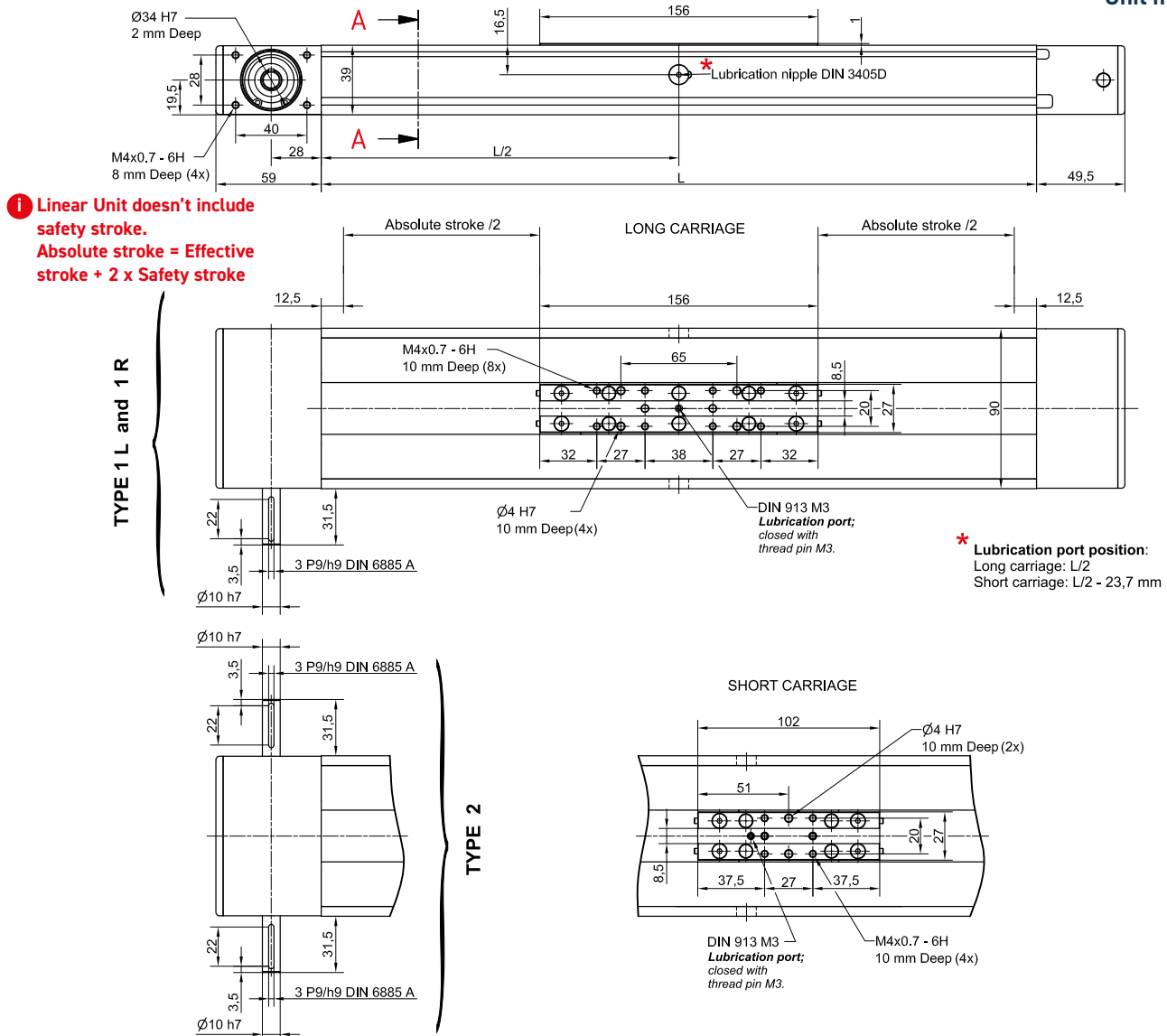


CTJ 200



CTJ 90 Series Dimensions

Unit mm

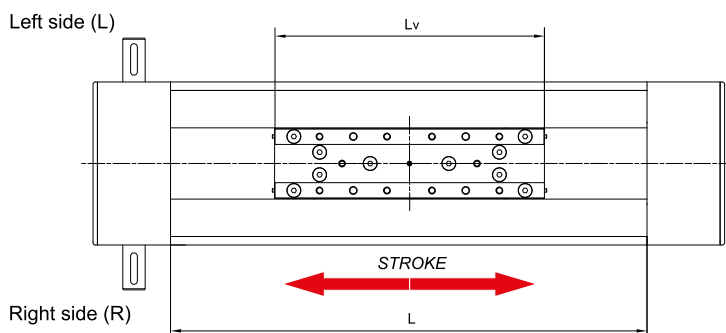


Calculating the linear unit length

Single Carriage

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

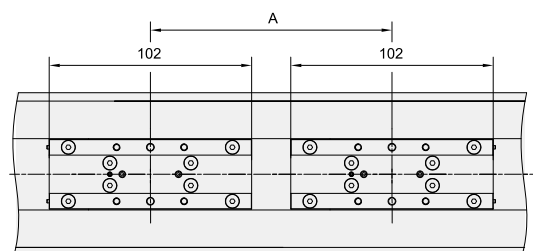
$$L_{\text{total}} = L + 108.5 \text{ mm}$$



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

Double Carriage

* Only with short carriage version



* For ordering code please contact us

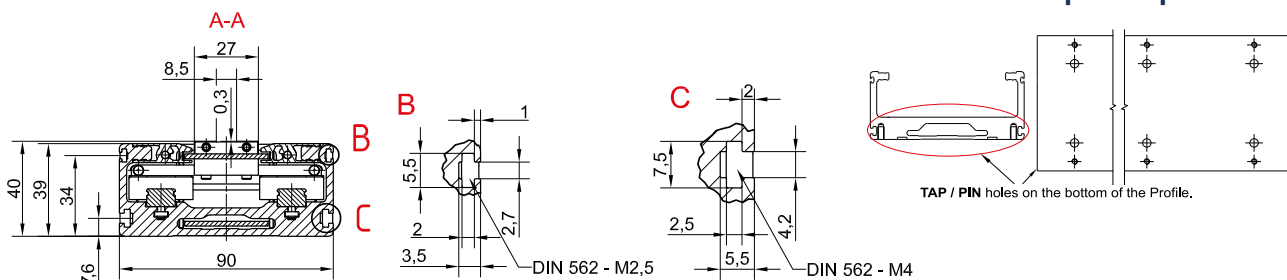
$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 127 \text{ mm}$$

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

A ≥ 102 mm

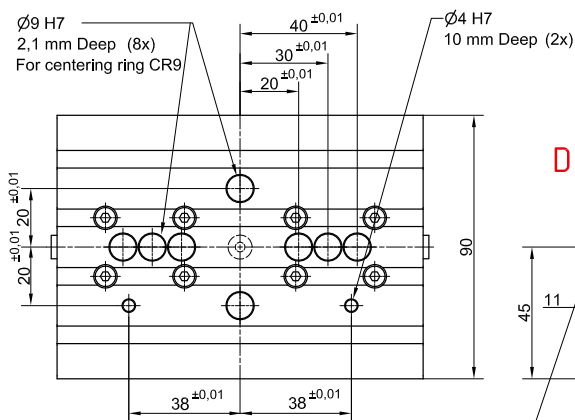
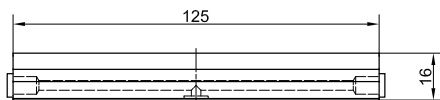
Unit mm

Tap/ Pin holes are
available upon request



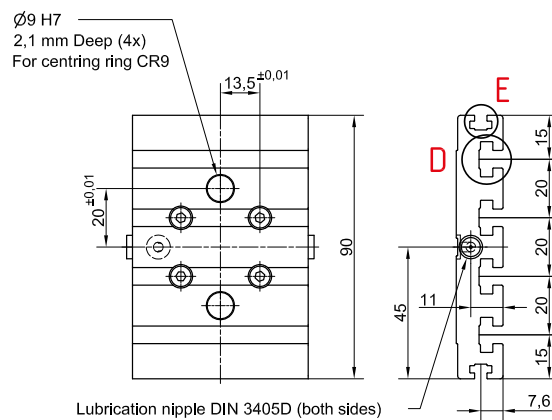
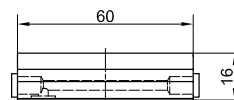
Connection Plate

CTJ 90 L

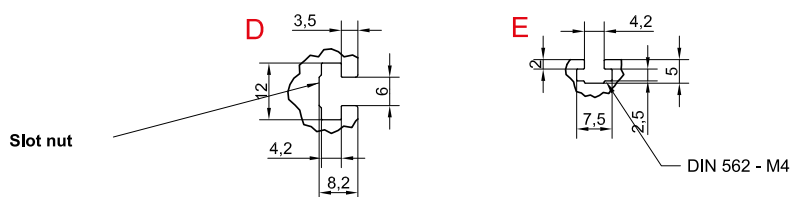


Lubrication nipple DIN 3405D (both sides)

CTJ 90 S



Lubrication nipple DIN 3405D (both sides)



Slot nut

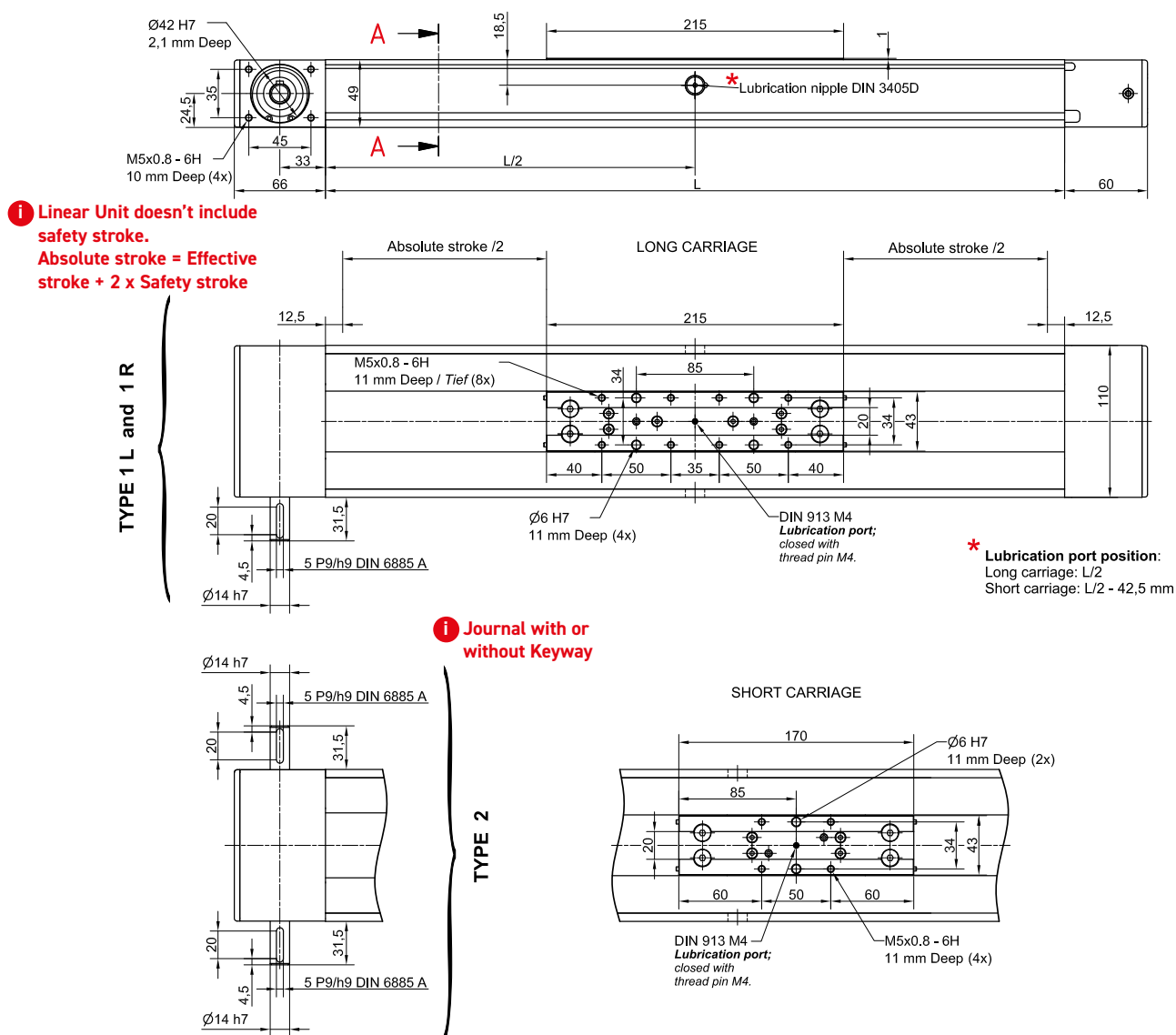
Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTJ 90 S	60	0.2	48853
CTJ 90 L	125	0.4	48855

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



CTJ 110 Series Dimensions

Unit mm



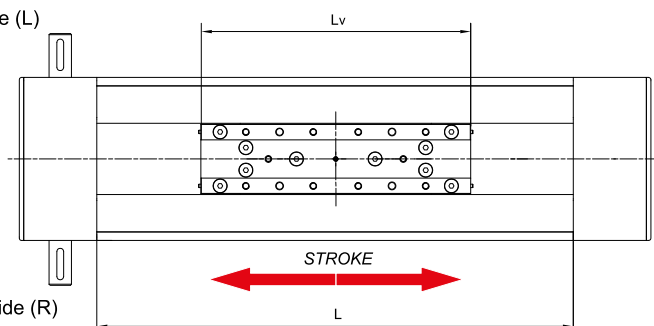
Calculating the linear unit length

Single Carriage

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

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

Left side (L)

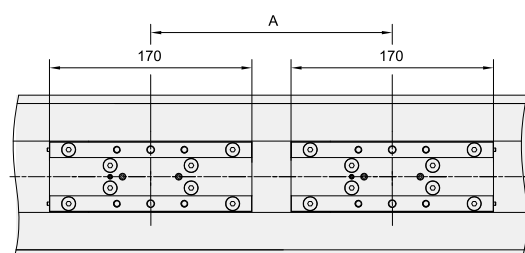


Lv - long carriage = 215mm

Lv - short carriage = 170mm

Double Carriage

* Only with short carriage version

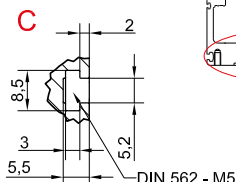
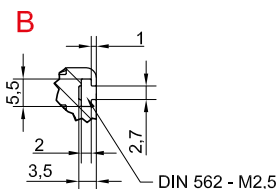
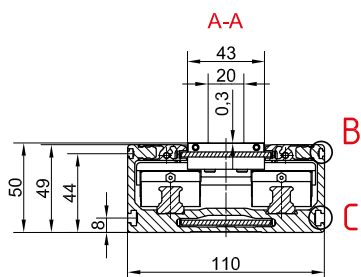


* For ordering code please contact us

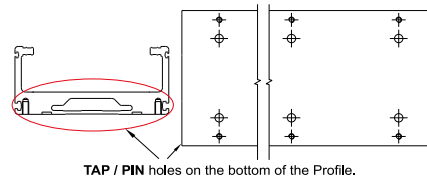
$$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 195\text{mm}$$

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

$A \geq 170\text{mm}$

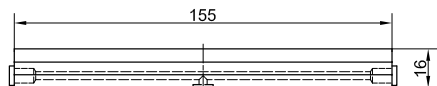


Tap/ Pin holes are available upon request

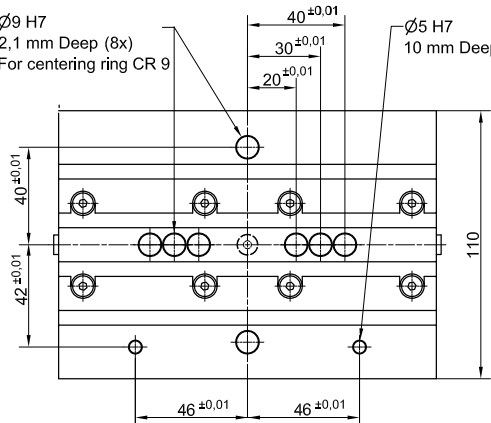


Connection Plate

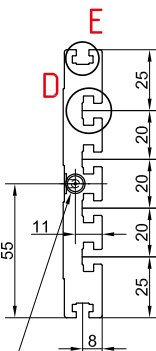
CTJ 110 L



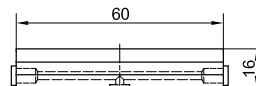
Ø9 H7
2,1 mm Deep (8x)
For centering ring CR 9



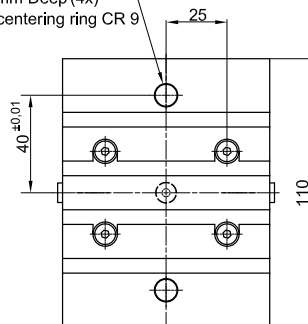
Lubrication nipple DIN 3405D (both sides)



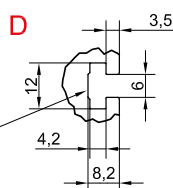
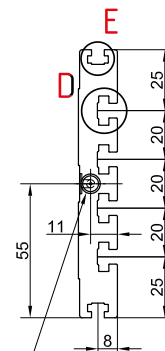
CTJ 110 S



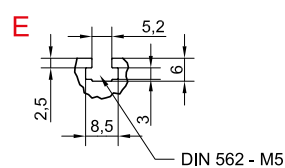
Ø9 H7
2,1 mm Deep (4x)
For centering ring CR 9



Lubrication nipple DIN 3405D (both sides)



Slot nut



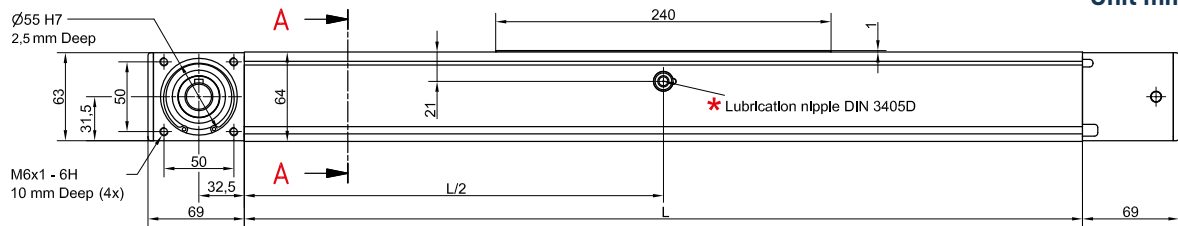
Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTJ 110 S	60	0.35	48525
CTJ 110 L	155	0.60	48480

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

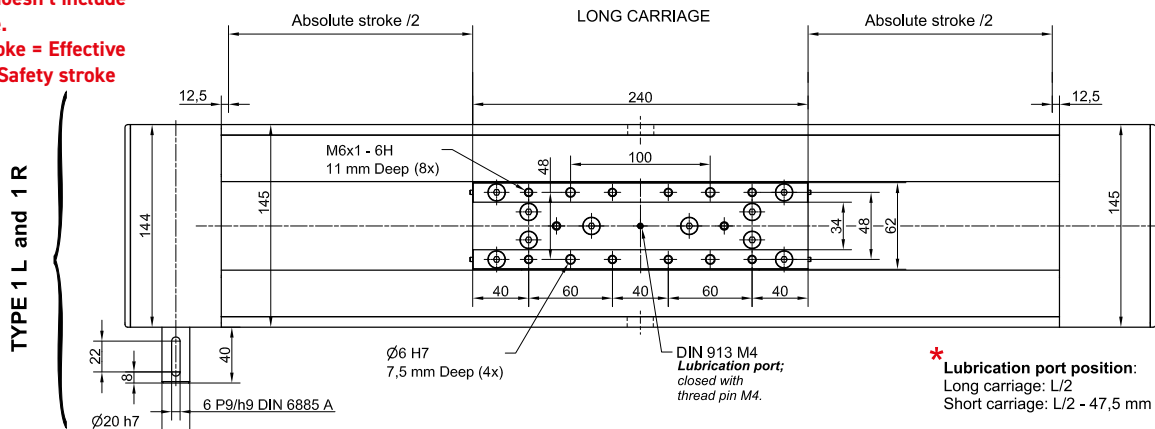


CTJ 145 Series Dimensions

Unit mm

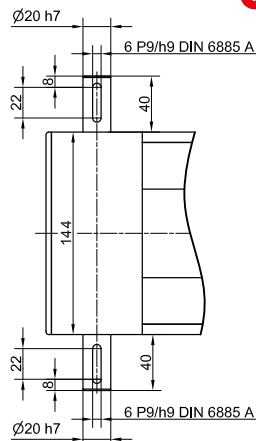


i Linear Unit doesn't include safety stroke.
Absolute stroke = Effective stroke + 2 x Safety stroke

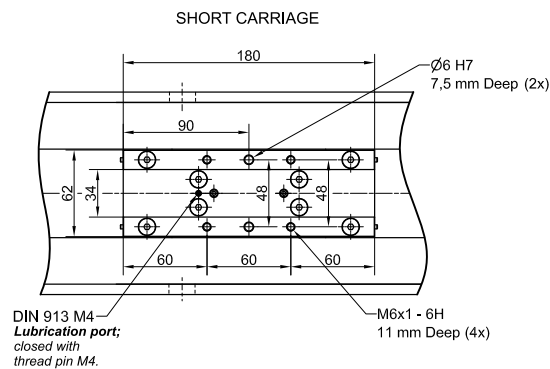


TYPE 1 L and 1 R

i Journal with or without Keyway



TYPE 2



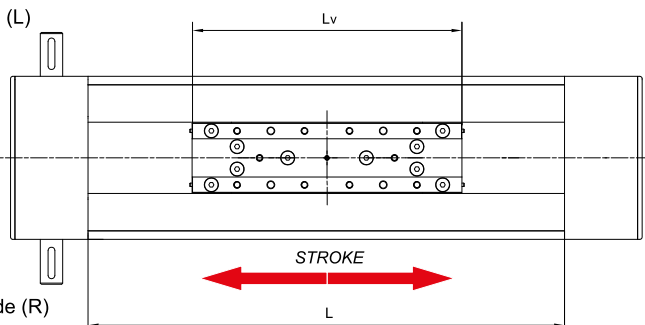
Calculating the linear unit length

Single Carriage

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

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

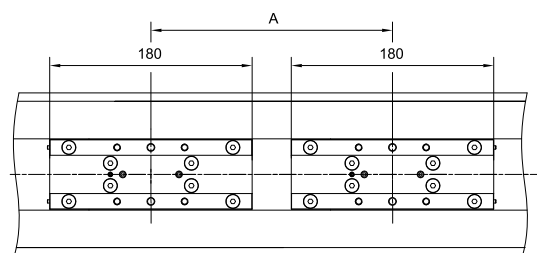
Left side (L)



L_v - long carriage = 240 mm
 L_v - short carriage = 180 mm

Double Carriage

* Only with short carriage version



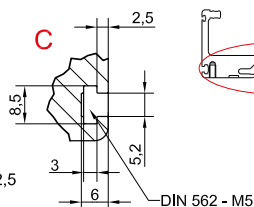
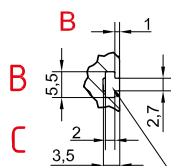
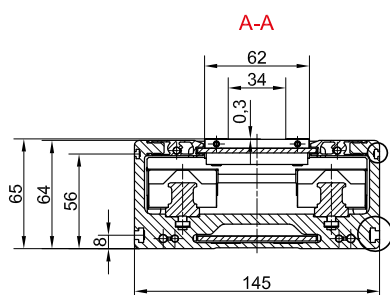
* For ordering code please contact us

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

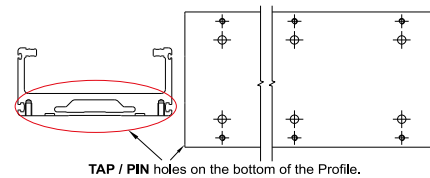
$L_{\text{total}} = L + 138 \text{ mm}$

$A \geq 180 \text{ mm}$

Unit mm



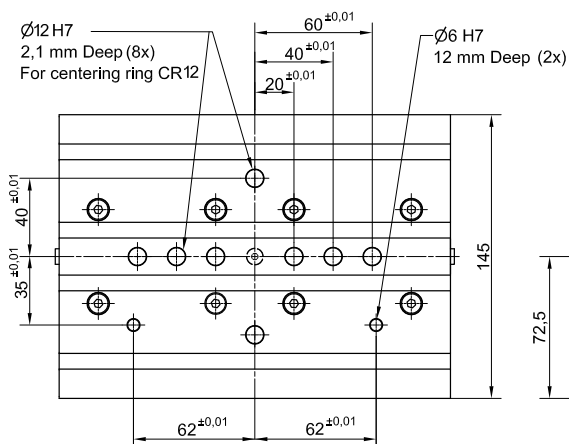
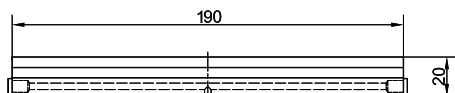
Tap/ Pin holes are available upon request



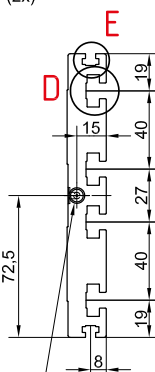
TAP / PIN holes on the bottom of the Profile.

Connection Plate

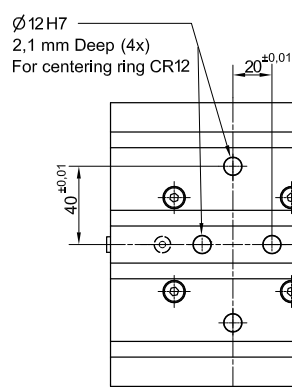
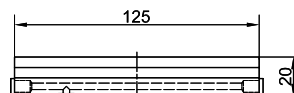
CTJ 145 L



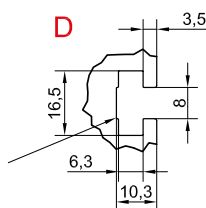
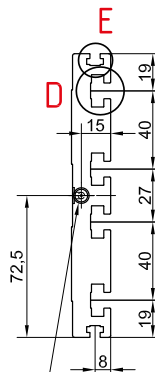
Lubrication nipple DIN 3405D (both sides)



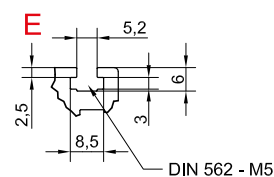
CTJ 145 S



Lubrication nipple DIN 3405D (both sides)



Slot nut

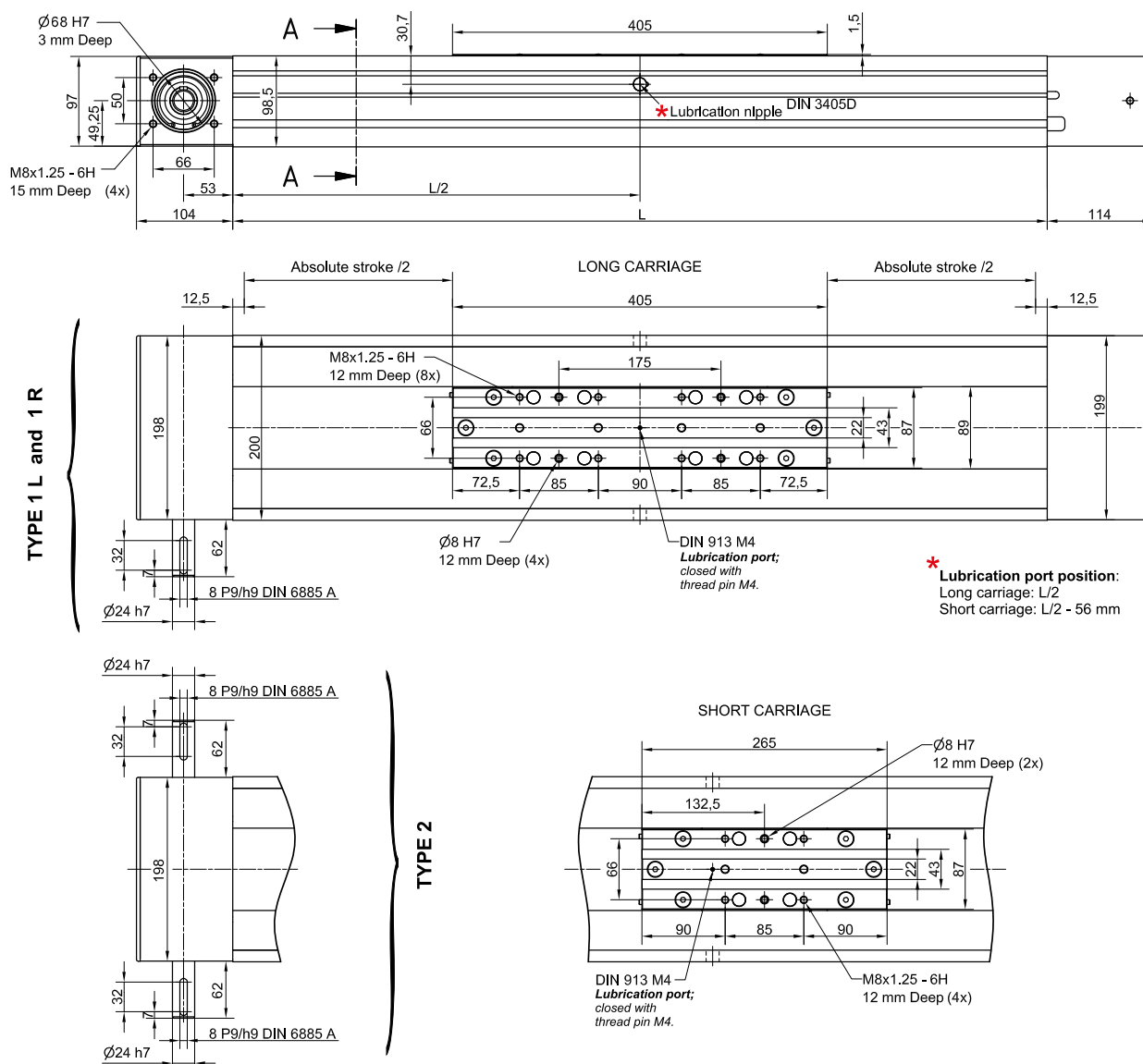


Linear Unit	Plate Length (mm)	Weight (kg)	Code
CTJ 145 S	125	0.8	46776
CTJ 145 L	190	1.3	46775

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



CTJ 200 Series Dimensions



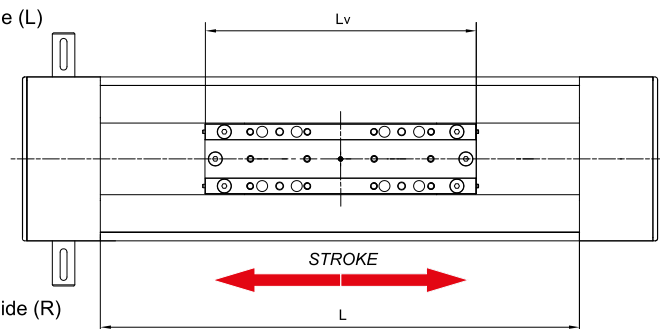
Calculating the linear unit length

Single Carriage

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

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

Left side (L)

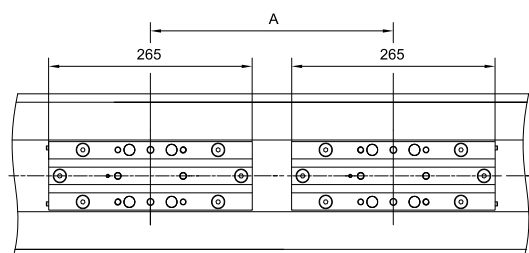


L_v - long carriage = 405 mm

L_v - short carriage = 265 mm

Double Carriage

* Only with short carriage version

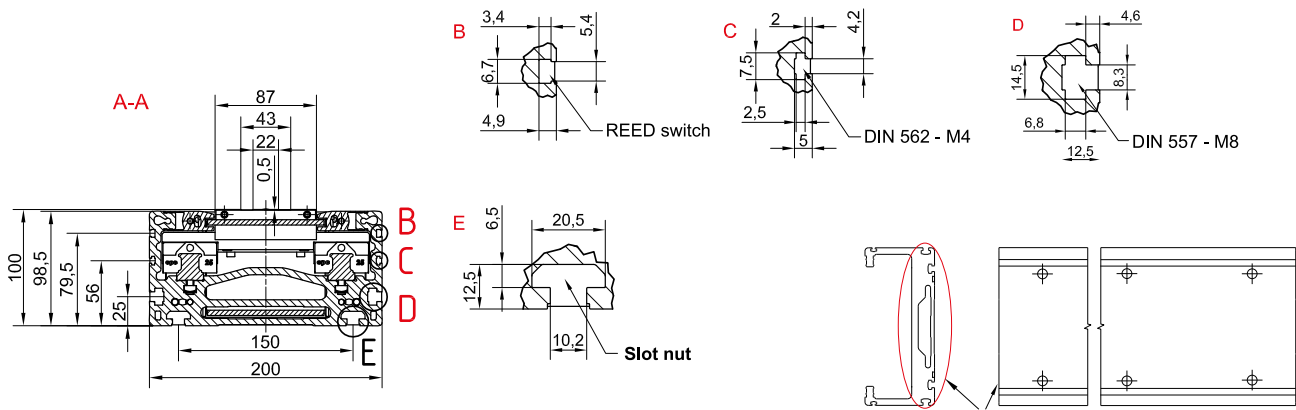


* For ordering code please contact us

$L = \text{Effective stroke} + 2 \times \text{Safety stroke} + A + 290\text{ mm}$

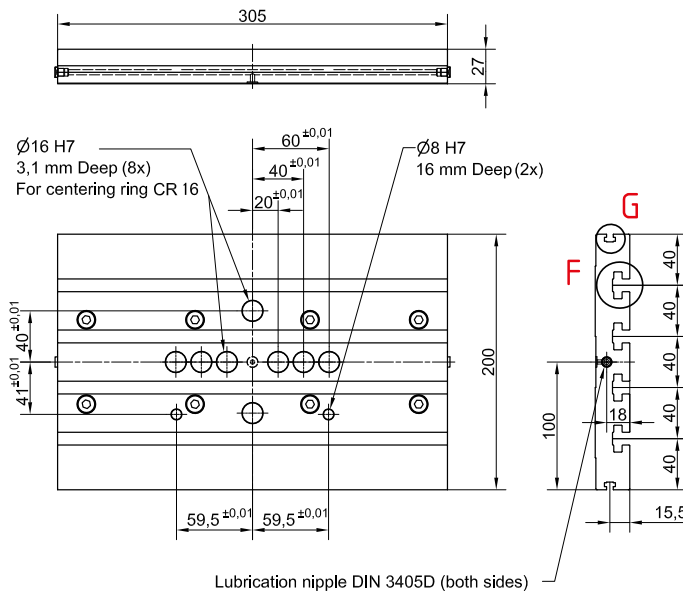
$L_{\text{total}} = L + 218\text{ mm}$

$A \geq 265\text{ mm}$

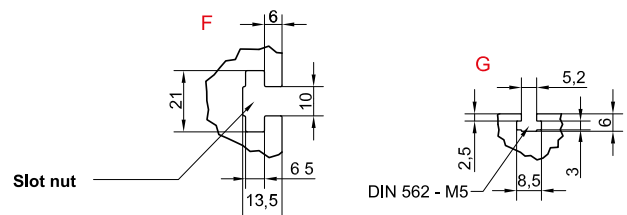
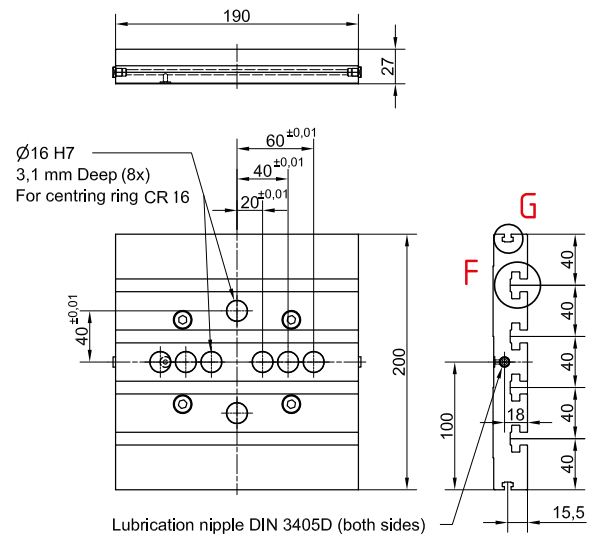


Connection Plate

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

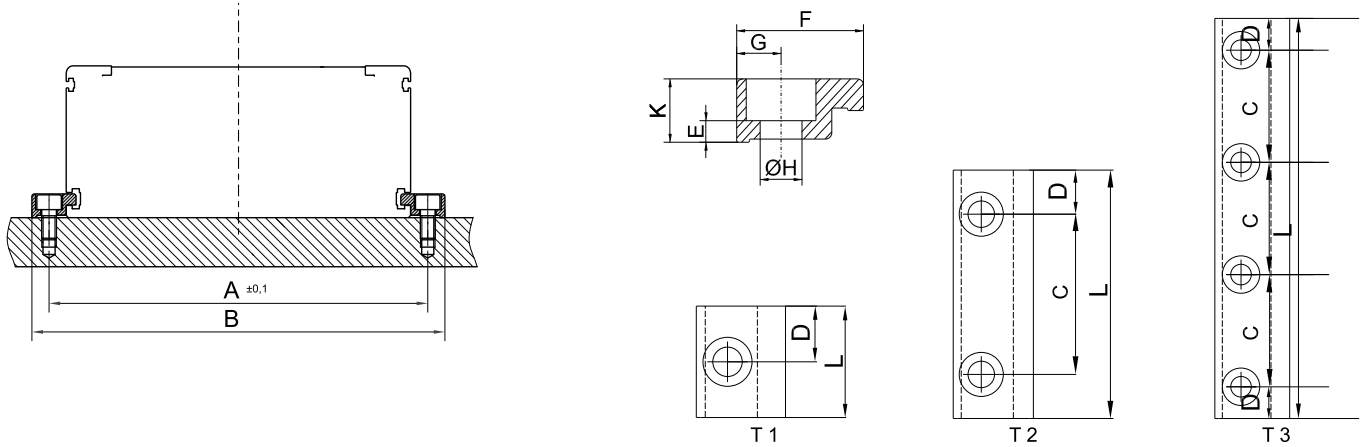
Code: **CTJ** **145** **1000** - **L** - **1** - **R** - **1**
Options: 1 2 3 4 5 6 7

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



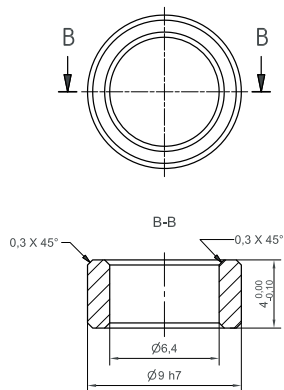
Linear Unit	Type	Dimensions (mm)										Screw	Countersink for	Weight (kg)	Code
		A	B	C	D	L	E	F	G	ØH	K				
CTJ 90	T1	102	112	—	12.5	25	4.5	15	5	4.5	9	M4	DIN 912	0.01	46994
CTJ 90	T2	102	112	40	11	62	4.5	15	5	4.5	9	M4	DIN 912	0.02	48636
CTJ 90	T3	102	112	20	8.5	77	4.5	15	5	4.5	9	M4	DIN 912	0.025	47163
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

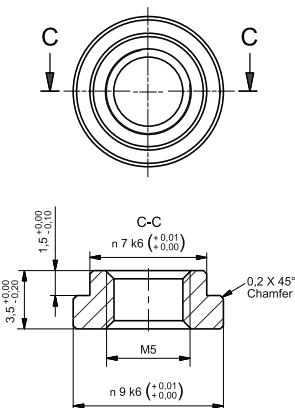
T1	6 pieces per metre, per side
T2	3 pieces per metre, per side
T3	3 pieces per metre, per side

Centring Rings

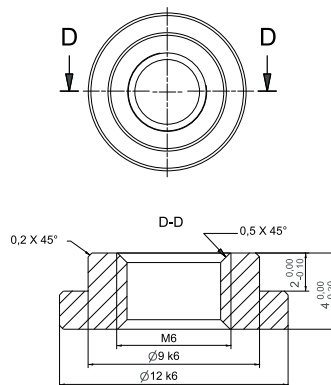
CR 9



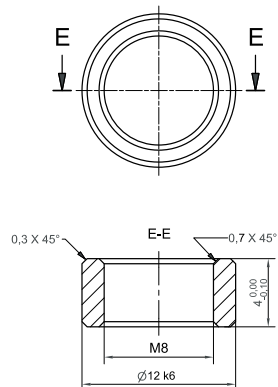
CR 7 / 9



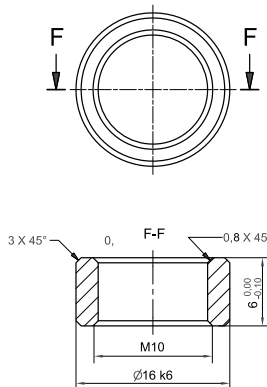
CR 9 / 12



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

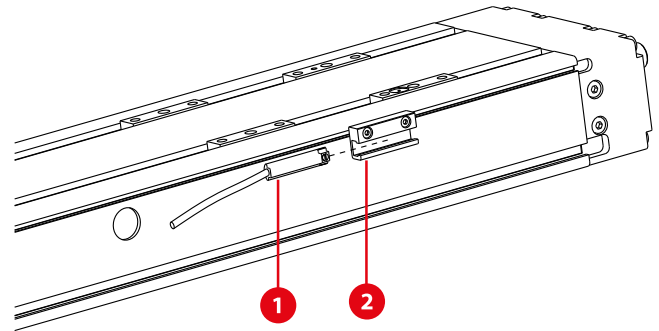
Code	Nut Type	CTJ 200
5551	Slot Nut T-10-M8	X
5552	Slot Nut T-10-M6	X
5553	Slot Nut T-10-M5	X
5570	Slot Nut T-10-M8 L =90	X

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

Magnetic Field Sensors

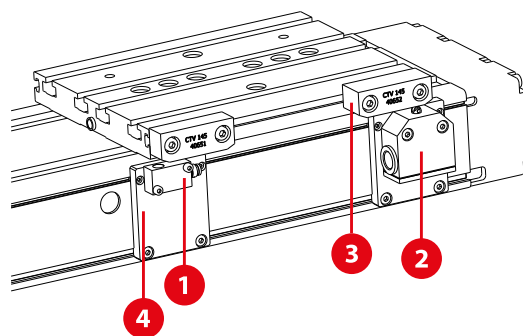
1	Magnetic Field Sensor
2	Sensor Holder



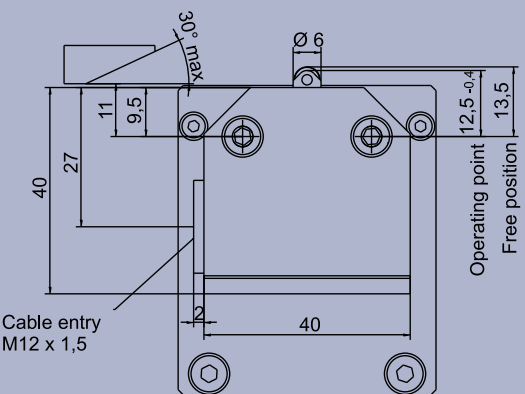
SMT-65TP-K NO/ NC	Code	Type	Compatability	
	43851	HOM Sensor holder	CTJ90 , CTJ110, CTJ145	
	74073	SMT-6STP-K NC	CTJ: 200	
	77075	SMT-6STP-K NC + HOM	CTJ90, CTJ110, CTJ145	
	74074	SMT-6STP-K NO	CTJ: 200	
	77076	SMT-6STP-K NO + HOM	CTJ90, CTJ110, CTJ145	
	8146	Extension Cable length 2m - Straight connector		
	8147	Extension Cable length 5m - Straight connector		
	9017	Extension Cable length 2m - Angled connector		
	9019	Extension Cable length 5m - Angled connector		

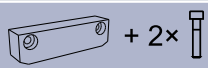
Technical Data	SMT-65TP-K NC	SMT-65TP-K NO
Sensor Type	GMR sensor	GMR sensor
Switching function	NC	NO
Output	PNP	PNP
Operating voltage	10 ~ 28 V DC	10 ~ 28 V DC
Switching Current	200 mA max.	200 mA max.
Power rating	5.5 W max.	5.5 W max.
Voltage Drop	1.5 V / 200mA max.	1.5 V / 200 mA max.
Current Consumption	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	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			