Linear Unit CTJ 90

The CTJ series includes linear units with a toothed belt drive and two parallel, integrated, zero-backlash rail guides. In the linear units CTJ is used a pre-tensioned steel reinforced AT polyurethane timing toothed belt. In conjunction with a zero-backlash drive pulley high moments with alternating loads with good positioning accuracy, low wear and low noise can be realized.

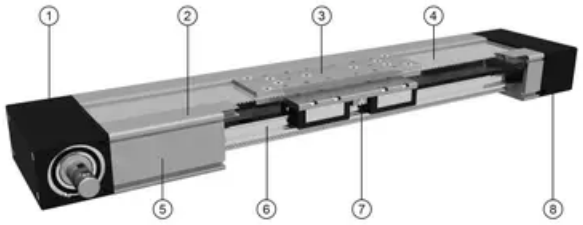


The in the profile slot driving timing belt, protects all the parts in the profile from dust and other contaminations. Re-lubrication can be done through maintenance holes on the side of the profile.

Dimensions in mm.

Modulus of Elasticity: E = 70000 N / mm2
Operating Temperature (°C): 0 ~ +60 For operating temperature out of the presented range, please contact Rollco.
Duty Cycle: 100%
Max. Acceleration (m/s²): 70
Max. Travel Speed (m/s): 5

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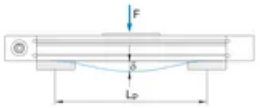


1. Drive block with pulley
2. Aluminum cover
3. Carriage, with built in magnets
4. AT polyurethane toothed belt with steel tension cords
5. Aluminium profile - hard anodized
6. Two integrated linear ball guideways
7. Central lubrication port, both sides
8. Tension end with integrated belt tensioning system

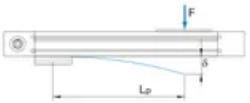
Deflection of the linear unit

CTJ

Fixed - fixed mounting



Fixed - free mounting

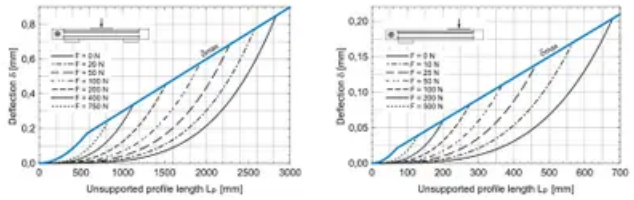


δ Maximum deflection of the linear unit [mm]
δmax Maximum permissible deflection of the linear unit [mm]
F Applied force [N]
Lp Unsupported profile length [mm]

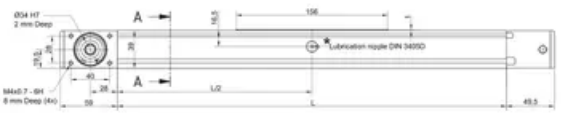
The maximum permissible deflection δmax must not be exceeded. In the case that maximum deflection δ exceeds the maximum permissible deflection δmax additional profile supports are needed.

Deflection of the linear unit

CTJ 90

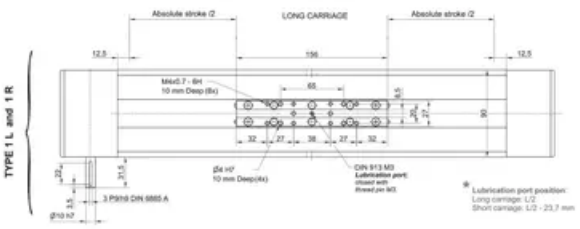


① *The linear units do not include any safetey stroke. Absolut stroke = Effective stroke + 2 x safety stroke.*



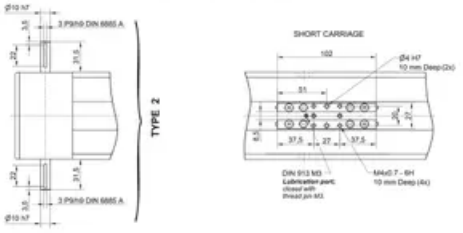
② *Journal with or without keyway.* ③ *All dimensions in mm. Drawings scales are not equal.*

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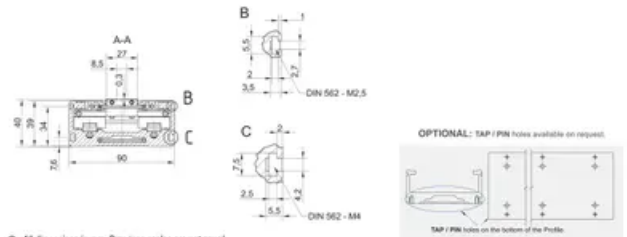


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Defining of the linear unit length

L = Effective stroke + 2 × Safety stroke + Lv + 25 mm
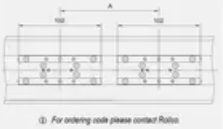
Ltotal= L + 108,5 mm



Lv - Long carriage = 156 mm
Lv - Short carriage = 102 mm

Double-Carriage

① *Only with short carriage version.*



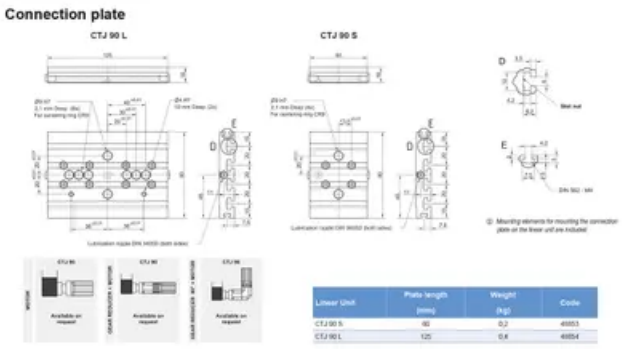
① *For ordering code please contact Rollco.*

L = Effective stroke + 2 × Safety stroke + A + 127 mm

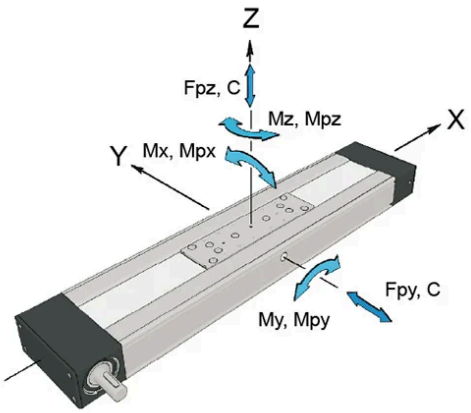
Ltotal = L + 108,5 mm

A ≥ 102 mm

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General data



For length/stroke over the stated value, please contact Rollco. 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, please contact Rollco.

Recommended values of loads
All the data of static and dynamic moments and load capacities stated are theoretical without considering any safety factor. The safety factor depends on the application and its requested safety.
We recommend a minimum safety factor (fs =5.0).

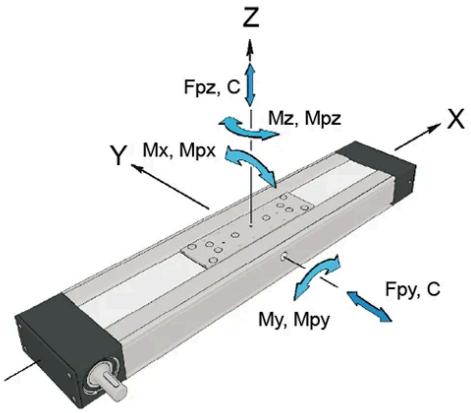
Designation	Carriage Length Lv (mm)	Dynamic Moment Mx (Nm)	Dynamic Moment My (Nm)	Dynamic Moment Mz (Nm)	Dynamic Load Capacity C (N)
CTJ 90 S	102	125	17	34	4620
CTJ 90 L	156	250	290	290	9240

Designation	Static Load Capacity C0 (N)	Max. Permissible Loads Forces Fpy (N)	Max. Permissible Loads Forces Fpz (N)	Max. Permissible Loads Moments Mpx (Nm)	Max. Permissible Loads Moments Mpy (Nm)	Max. Permissible Loads Moments Mpz (Nm)
CTJ 90 S	6930	2000	4000	110	17	34
CTJ 90 L	13860	3990	8270	200	290	125

Designation	Moved Mass (kg)	Max. Repeatability (mm)	Max. Length Lmax (mm)	Max. Stroke (mm)	Min. Stroke (mm)
CTJ 90 S	0.2	± 0.08	6000	5873	25
CTJ 90 L	0.35	± 0.08	6000	5819	25

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General data double carriage



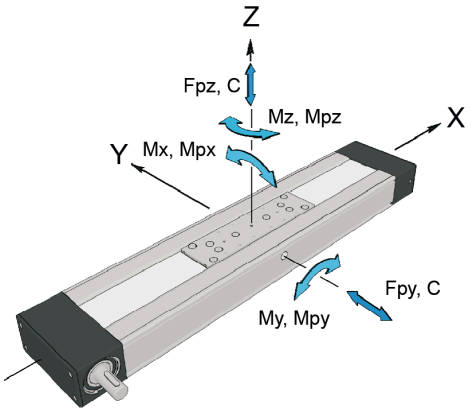
A - Distance between carriages.

Recommended values of loads
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We recommend a minimum safety factor (fs =5.0).

Designation	Carriage version	Dynamic Load Capacity C (N)	Static Load Capacity C0 (N)	Dynamic Moment Mx (Nm)	Dynamic Moment My (Nm)
CTJ 90 S	S2	9232	13860	250	4.6 × A (mm)
CTJ 90 L	S2	9232	13860	250	4.6 × A (mm)

Designation	Dynamic Moment Mz (Nm)	Max. Permissible Loads Forces Fpy (N)	Max. Permissible Loads Forces Fpz (N)	Max. Permissible Loads Moments Mpx (Nm)	Max. Permissible Loads Moments Mpy (Nm)	Max. Permissible Loads Moments Mpz (Nm)
CTJ 90 S	4.6 × A (mm)	4000	8000	220	4.0 × A (mm)	2.0 × A (mm)
CTJ 90 L	4.6 × A (mm)	4000	8000	220	4.0 × A (mm)	2.0 × A (mm)

Drive data



The stated values are for strokes up to 500 mm.
No load torque value increases with stroke elongation.

Max. acceleration (m/s2): 70

For acceleration over the stated value, please contact Rollco.

Mass calculation does not include mass of motor, reduction gear, switches and clamps.

Abs. stroke	Absolute stroke [mm]
A	Distance between carriages [mm]
nc	Number of carriages

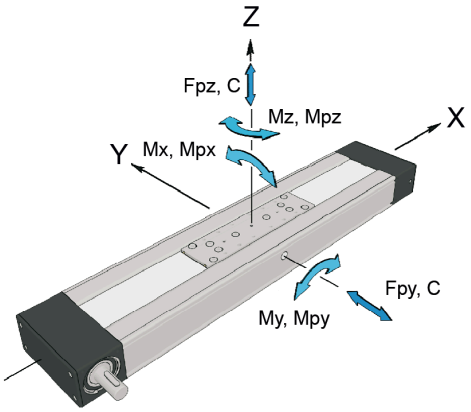
Designation	Max. Travel Speed (m/s)	No Load Torque (Nm)	Pulley Drive Ratio (mm/rev)	Pulley Diameter	Belt Type
CTJ 90 S	5	0.4 × nc	90	28.65	AT 3
CTJ 90 L	5	0.42 × nc	90	28.65	AT 3

Designation	Belt Width	Max. Force Transmitted by Belt (N)	Specific Spring Constant Cspec (N)	Max. Drive Torque (Nm)	Planar Moment of Inertia Iy (cm⁴)	Planar Moment of Inertia Iz (cm⁴)
CTJ 90 S	35	520	402500	7.5	13.4	107

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Designation	Belt Width	Max. Force Transmitted by Belt (N)	Specific Spring Constant Cspec (N)	Max. Drive Torque (Nm)	Planar Moment of Inertia Iy (cm⁴)	Planar Moment of Inertia Iz (cm⁴)
CTJ 90 L	35	520	402500	7.5	13.4	107

Mass and Mass moment



The stated values are for strokes up to 500 mm.
No load torque value increases with stroke elongation.

Max. acceleration (m/s2): 70

For acceleration over the stated value, please contact Rollco.

Mass calculation does not include mass of motor, reduction gear, switches and clamps.

Abs. stroke	Absolute stroke [mm]
A	Distance between carriages [mm]
nc	Number of carriages

Designation	Mass of Linear Unit (kg)	Mass Moment of Inertia (10^{-5} kg m²)	Planar Moment of Inertia Iy (cm⁴)	Planar Moment of Inertia Iz (cm⁴)	Moved Mass (kg)
CTJ 90 S	1.7 + 0.0048 × (Abs. Stroke + (nc - 1) × A) + 0.20 × (nc - 1)	7 + 0.0031 × (Abs. Stroke + (nc - 1) × A) + 4.1 × (nc - 1)	13.4	107	0.2
CTJ 90 L	2.1 + 0.0048 × (Abs. Stroke + (nc - 1) × A) + 0.35 × (nc - 1)	11 + 0.0031 × (Abs. Stroke + (nc - 1) × A) + 7.2 × (nc - 1)	13.4	107	0.35

Designation	No Load Torque (Nm)
CTJ 90 S	0.4 × nc
CTJ 90 L	0.42 × nc

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