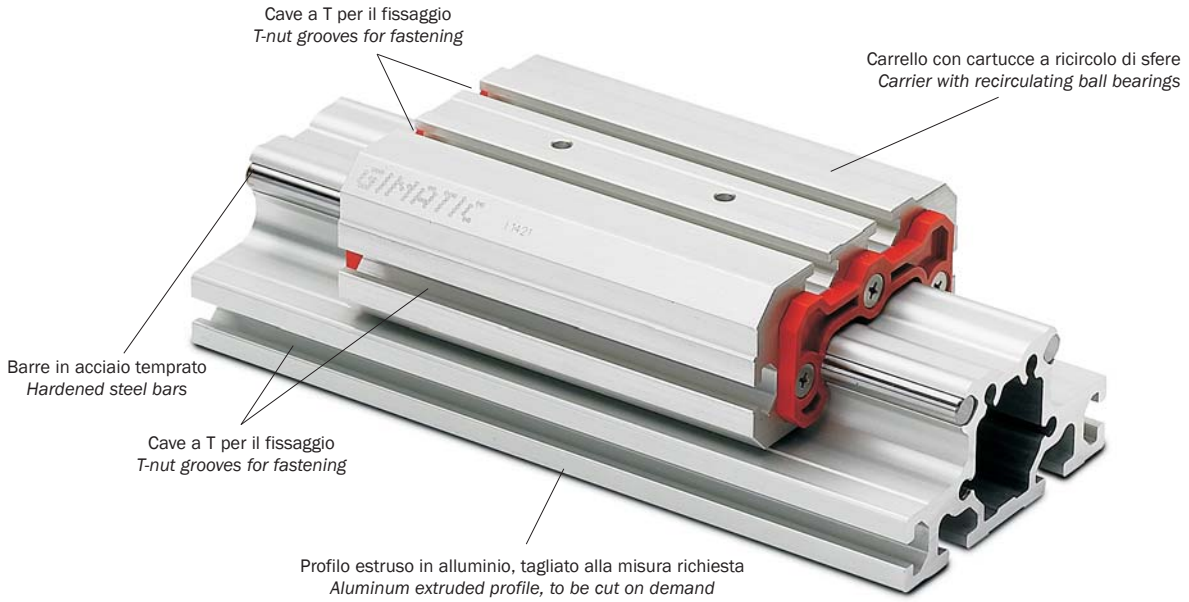
Guide lineari a ricircolo di sfere serie LL

- Sistema di guida a ricircolo di sfere brevettato.
- Semplici da usare ed economiche.
- Diverse possibilità di montaggio con dadi a T.
- Vari kit opzionali per il montaggio di accessori.
- Qualsiasi lunghezza fino a 3000 mm è possibile.
- E' possibile montare più di un carrello per ogni profilo.

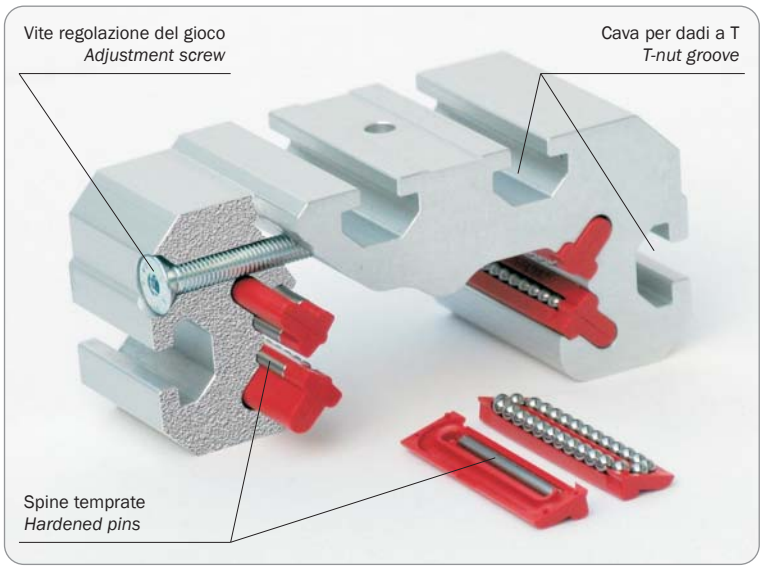
Linear guidance with recirculating ball-bearing series LL

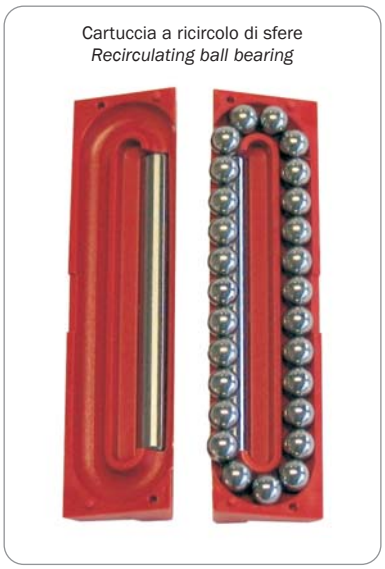
- *Patented bearing system.*
- *Easy fitting and inexpensive.*
- *Several mounting options with T-nuts.*
- *Optional kits for accessories.*
- *Available in any length up to 3000 mm.*
- *More than one carrier per rail is possible.*



Il carrello è ricavato da un estruso di alluminio nel quale sono previste le sedi per le cartucce a ricircolo di sfere e le cave a T per i vari fissaggi.
La particolare forma permette l'azzeramento del gioco e la registrazione del precarico tramite le quattro viti di regolazione.
L'assemblaggio completo del carrello, il montaggio sulle barre, la registrazione e la prima lubrificazione sono effettuati in fabbrica.
Sulla guida lineare possono essere montati due o più carrelli, a richiesta, per aumentare la capacità di carico, oppure per avere due o più slitte comandabili in modo indipendente.

The carrier is made from an aluminium extruded profile, in which the housings for the recirculating ball bearings and the T-nut grooves are located.
Thanks to the carrier special profile, with four adjustment screws, it is possible to set to zero the carrier backlash and to adjust the correct bearing preload.
The carrier assembling, mounting on the bars, preloading and the first lubrication are made in Gimatic.
Two or more carriers, on demand, can be mounted on the same rail, to increase the load capacity or to get two or more independent slides.





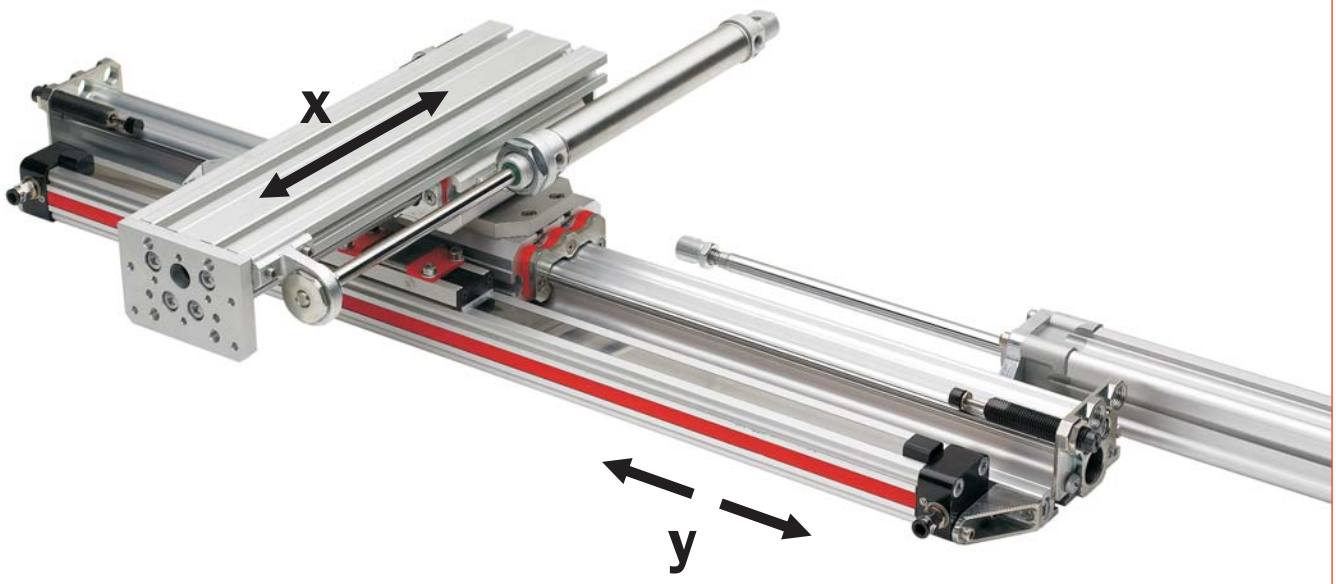
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Esempio di applicazione

Manipolatore Y-X con arresto intermedio su Y, azionato da cilindri pneumatici.

Application example

Y-X manipulator with intermediate stop along Y, powered by pneumatic cylinders.

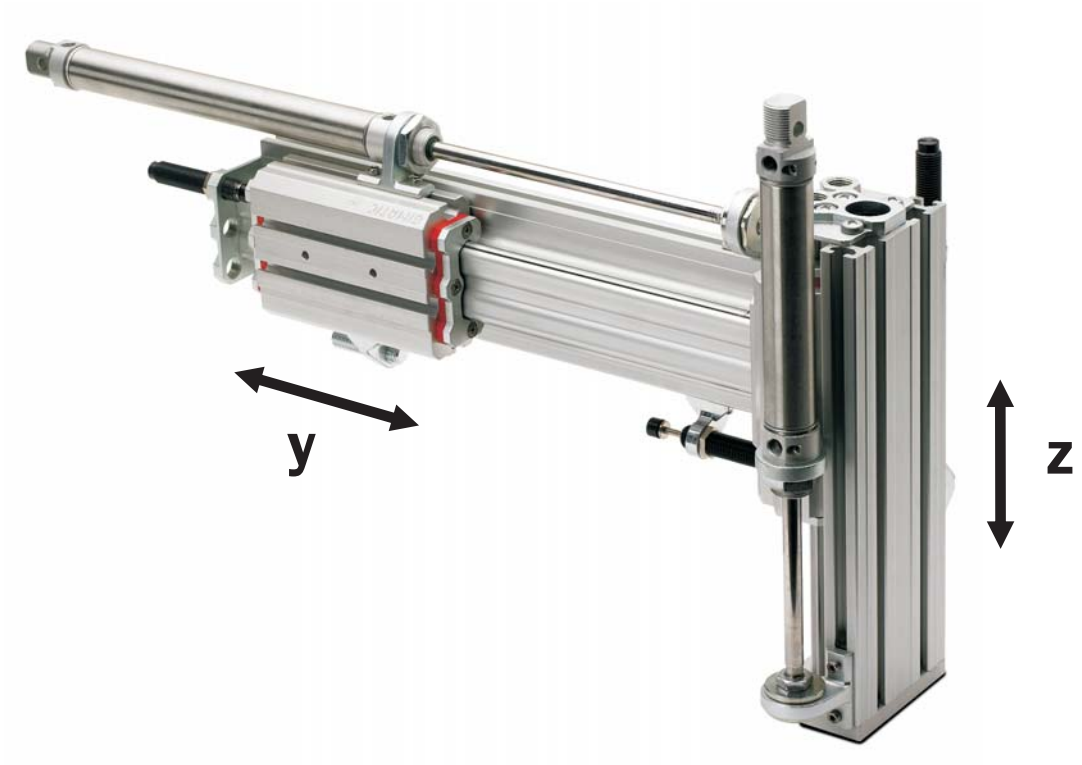


Esempio di applicazione

Manipolatore Y-Z tipo Pick & Place, azionato da cilindri pneumatici.

Application example

Y-Z Pick & Place manipulator, powered by pneumatic cylinders.

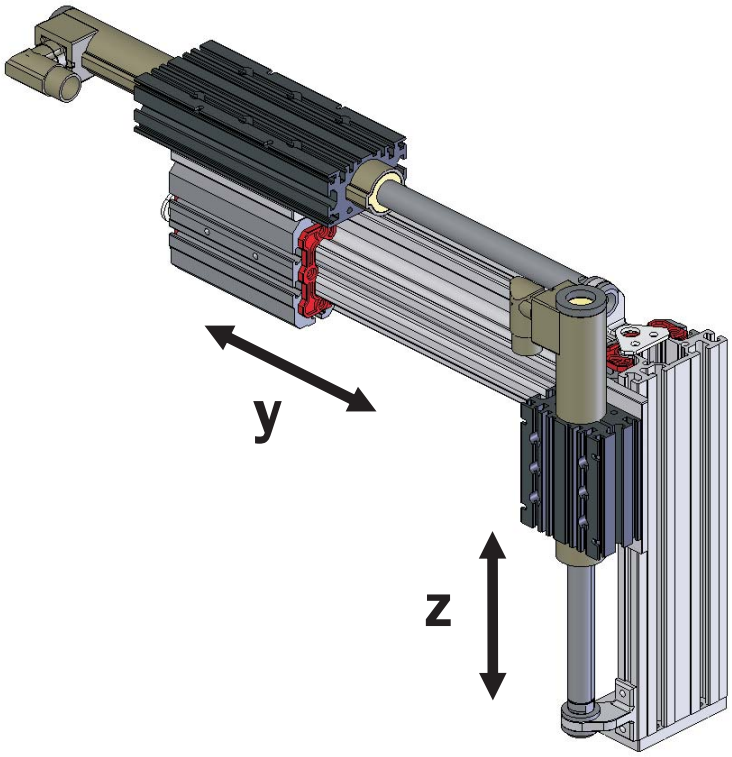


Esempio di applicazione

Manipolatore Y-Z tipo Pick & Place, azionato da motori lineari.

Application example

Y-Z Pick & Place manipulator, powered by linear motors.

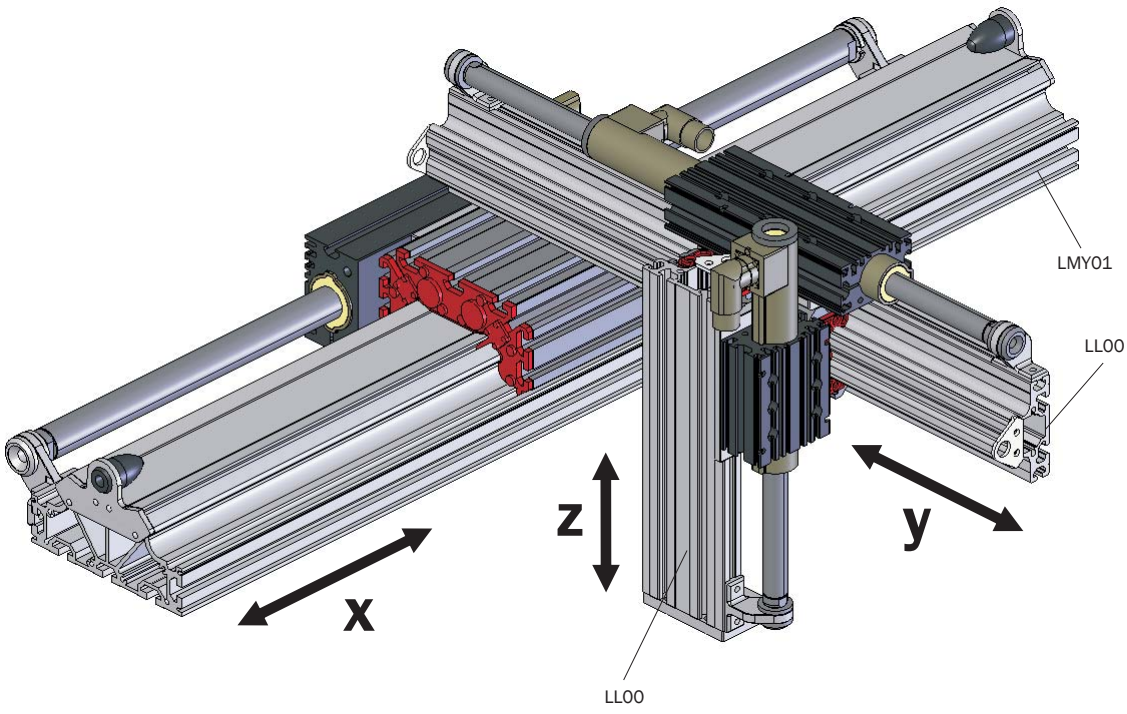


Esempio di applicazione

Manipolatore X-Y-Z, azionato da motori lineari.

Application example

X-Y-Z manipulator, powered by linear motors.



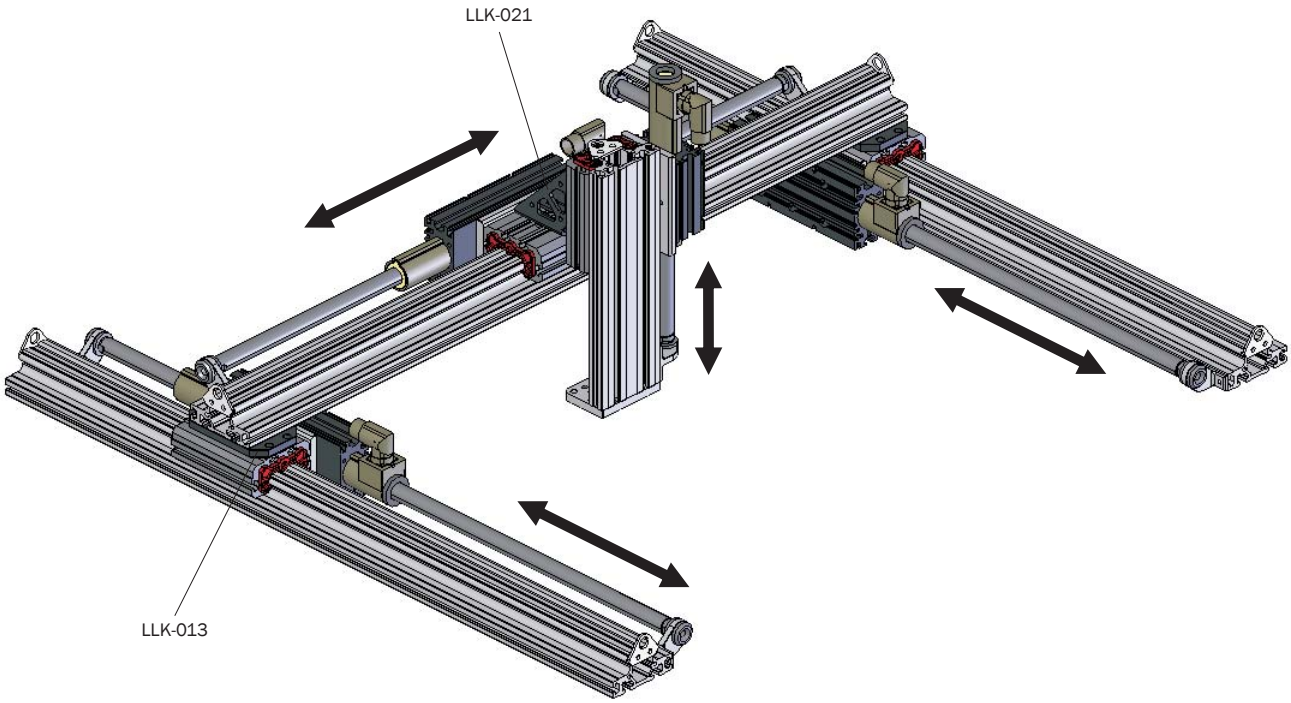
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Esempio di applicazione

Portale a 3 assi, costituito da 4 guide LL, azionate da motori lineari.

Application example

3-axis gantry, assembled with 4 LL guidances, powered by linear motors.

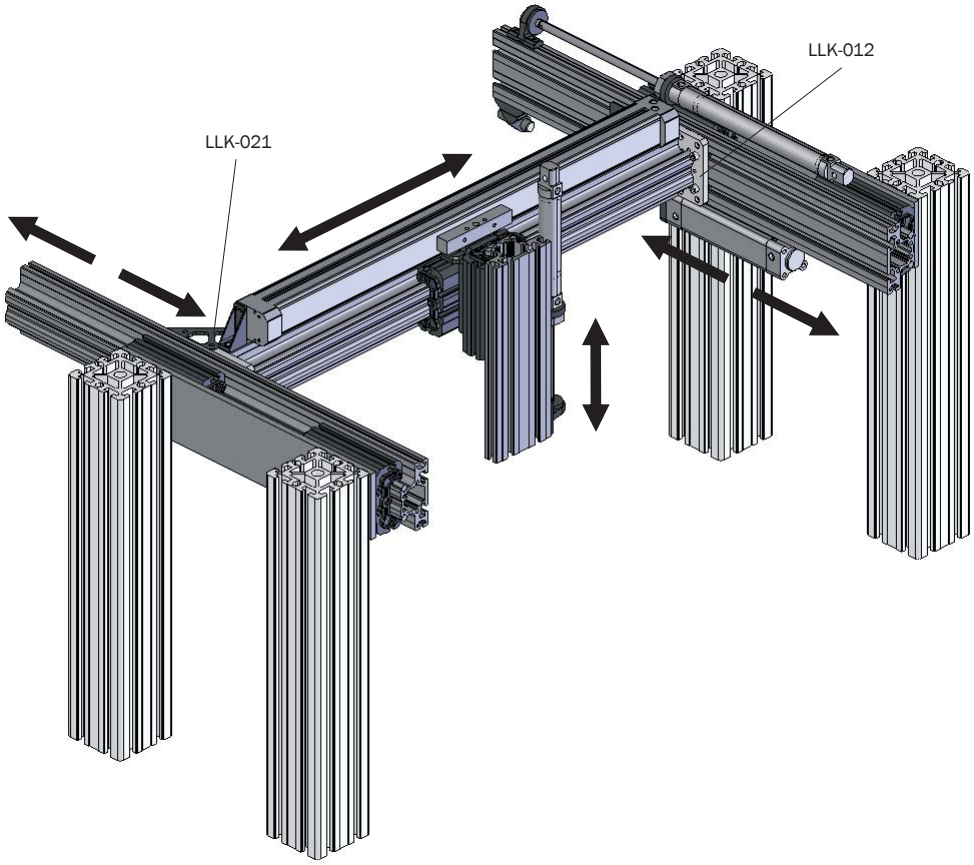


Esempio di applicazione

Portale a 3 assi, costituito da 4 guide LL, azionate da cilindri pneumatici.

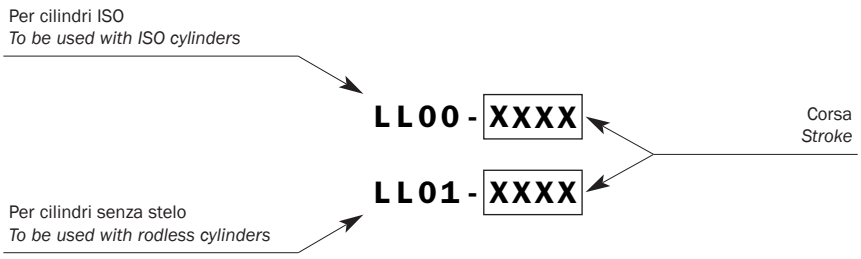
Application example

3-axis gantry, assembled with 4 LL guidances, powered by pneumatic cylinders.



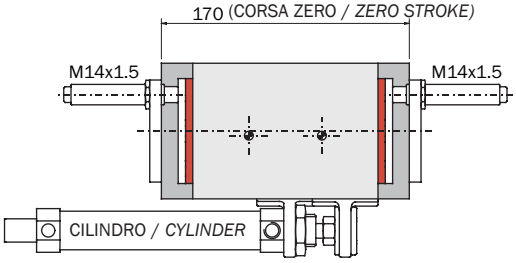
Codice di ordinazione

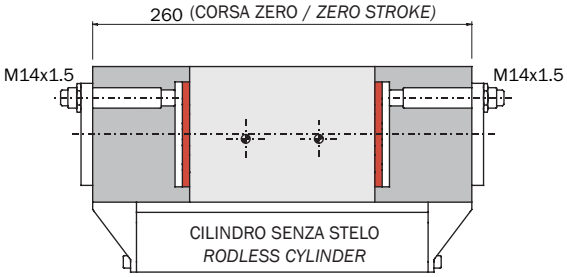
Ordering code



Il codice suddetto comprende il profilo in alluminio estruso assemblato con le barre in acciaio temprato ed un carrello completo, con le protezioni in plastica rossa, montato sulla guida lineare.
Due limitatori di corsa impediscono al carrello di uscire dalla guida.
La lunghezza totale della guida è la somma della corsa utile e dell'ingombro della corsa zero:
170mm per LL00;
260mm per LL01.

This code includes the extruded aluminum profile with the hardened steel bars and one complete carrier, with the red plastic covers, mounted on the guidance.
Two stroke limiters stop the carrier leaving the guidance.
The total length of the guidance is the sum of the carrier travel plus the zero stroke length:
170mm in LL00;
260mm in LL01.



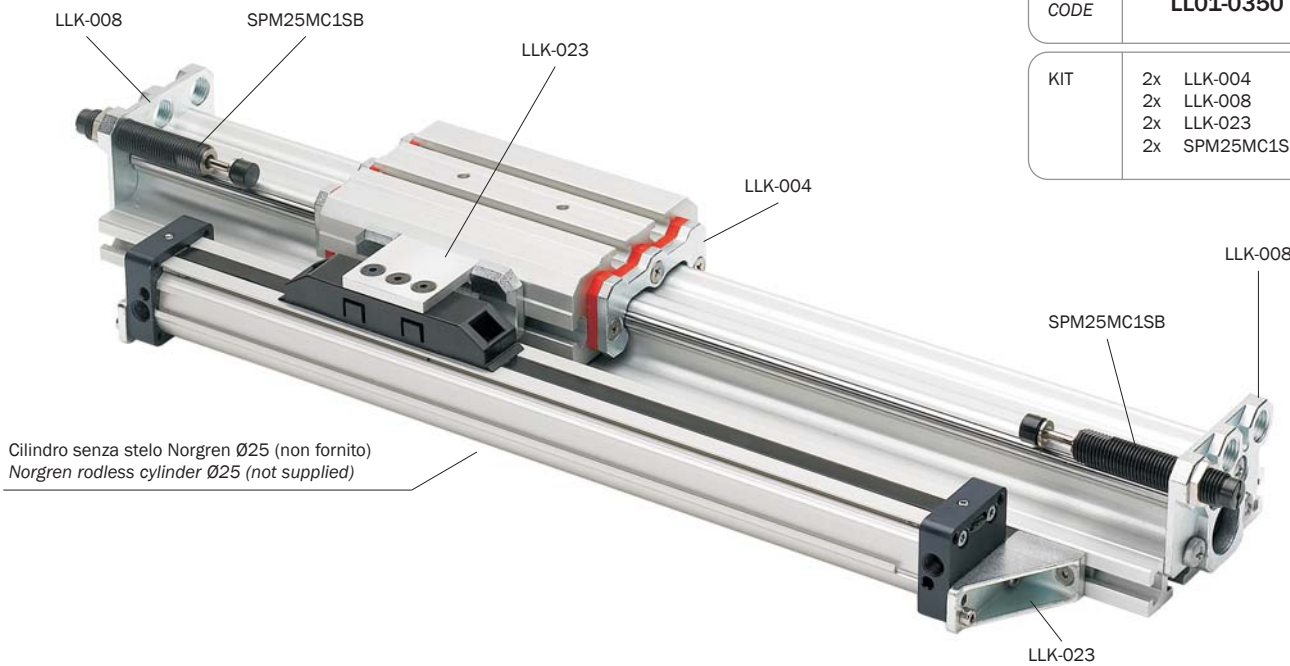


La lunghezza totale della guida deve essere inferiore a 3000mm.
Per lunghezze maggiori consultare la Gimatic.
Esistono varie interfacce e kit opzionali per il fissaggio dei cilindri, dei fine corsa, dei deceleratori e dei sensori.
Sono venduti in confezioni singole, non assemblati alla guida lineare.
I cilindri non sono forniti.

The total length of the guidance must be lower than 3000mm.
Contact Gimatic for longer ones.
There are also several optional interfaces and kits with the brackets to mount the cylinders, the end stroke stoppers, the shock-absorbers and the sensors.
They are sold in single packages, not assembled with the guidance.
The cylinders are not supplied.

Esempio / *Example*

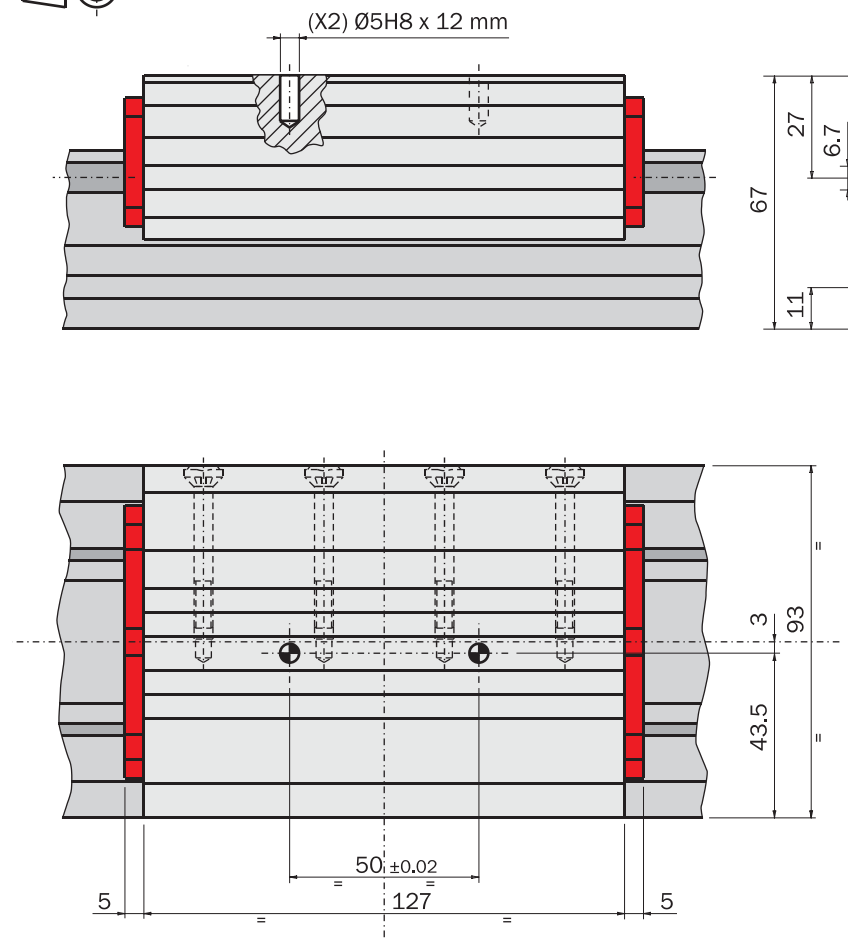
CODICE *CODE*	LL01-0350
KIT	2x LLK-004 2x LLK-008 2x LLK-023 2x SPM25MC1SB



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Dimensioni / *Dimensions (mm)*

FIRST ANGLE PROJECTION



Calcolo del peso

Ogni carrello completo pesa 0.82 kg .
La guida (profilo in alluminio più barre in acciaio) pesa 4.22 kg/m .

Weight calculation

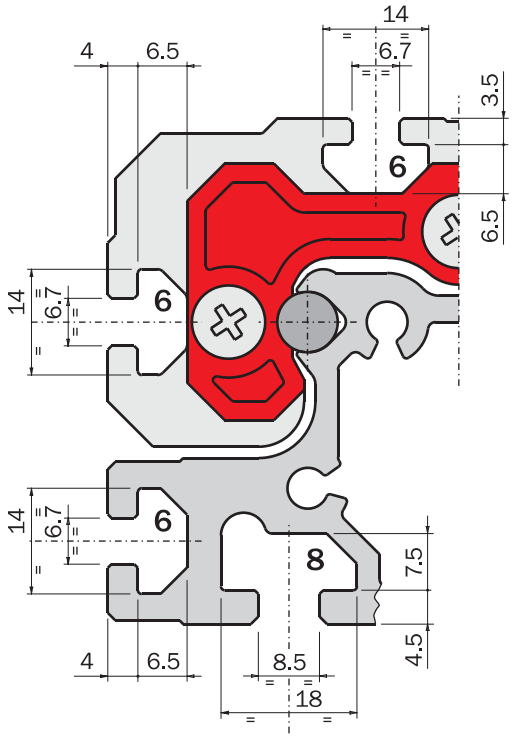
The weight of the carrier is 0.82 kg .
The weight of the guidance (alu profile plus steel bars) is 4.22 kg/m .

Cave per dadi a "T"

Sulla guida esistono due misure delle cave (6 ed 8).
Ci si possono montare quattro tipi di dadi a T.
Sono forniti in confezioni da 100 pezzi.

T-nut grooves

There are two groove sizes on the guidance (6 and 8).
And it is possible to use in them four T-nut types.
They are supplied in 100 piece packages.

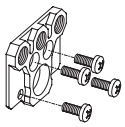


Cava *Slot*	*6*	*8*
Dado *Nut*	*LLK-009* (M4)	*LLK-010* (M6)
	LLK-014 (M5)	*LLK-011* (M6 Bosch)

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Kit opzionali / *Optional kits*

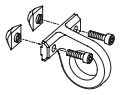
Testata per fissaggio deceleratori, sensori induttivi di finecorsa o grani di fermo
End plate for the fastening of shock-absorbers, end stroke grub screws and inductive sensors
- LLK-008



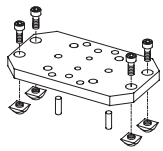
Staffa fissaggio deceleratori o grani di fermo
Bracket for the side fastening of shock-absorbers, or end stroke grub screws
- LLK-007
- LLK-020
- LLK-025
- LLK-026



Staffa per fissaggio cilindro ISO 6432 Ø20 / Ø25
Cylinder holder Ø20 / Ø25
- LLK-002



Interfaccia di montaggio per il carrello
Mounting interface plate for the carrier
- LLK-013



Grano di fermo
End stroke grub screw
- LLK-024

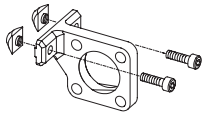


Cilindro ISO 6432 Ø20 / Ø25 (non fornito)
ISO 6432 cylinder Ø20 / Ø25 (not supplied)

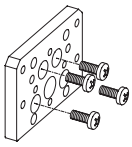
Terminale per cilindro Ø25 e Ø32
End block for cylinder rods Ø25 and Ø32
- LLK-016



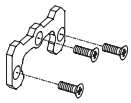
Anello per fissaggio cilindro ISO 6431 Ø32
Cylinder holder Ø32
- LLK-019



Testata di trascinamento
End interface plate
- LLK-012



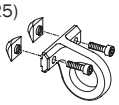
Protezione in acciaio per il carrello
Steel plate for the carrier
- LLK-004



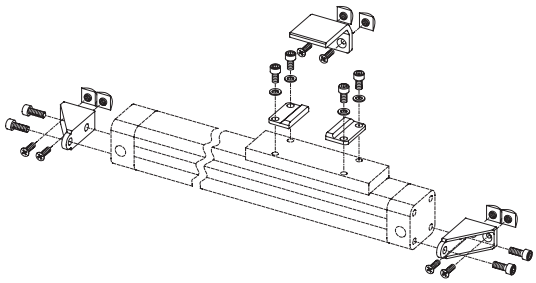
Cilindro ISO 6431 Ø32 (non fornito)
ISO 6431 cylinder Ø32 (not supplied)

Deceleratore idraulico
Shock-absorber
- SPM25MC1SB
- PM25MC-2SB-SP22039

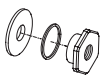
Anello per giunto cilindro ISO
Cylinder holder
- LLK-002 (Ø20 / Ø25)
- LLK-018 (Ø32)



Kit fissaggio cilindro senza stelo Ø25
Fastening for kit rodless cylinder Ø25
- LLK-005 (Origa)
- LLK-006 (Festo)
- LLK-022 (Ultraline)
- LLK-005 (Norgren)

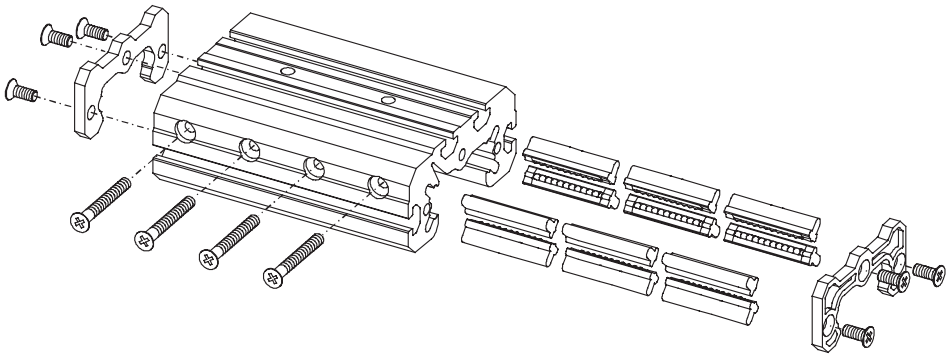


Giunto per cilindro ISO
Cylinder rod bolt
- LLK-003 (Ø25 / Ø32)
- LLK-017 (Ø20)

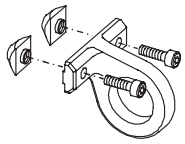




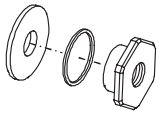
LLK-001 (832 g)
Carrello addizionale
Additional carrier



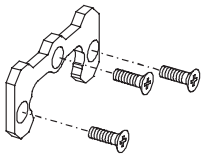
LLK-002 (93 g)
Anello per fissaggio cilindro Ø20 / Ø25
Cylinder holder Ø20 / Ø25

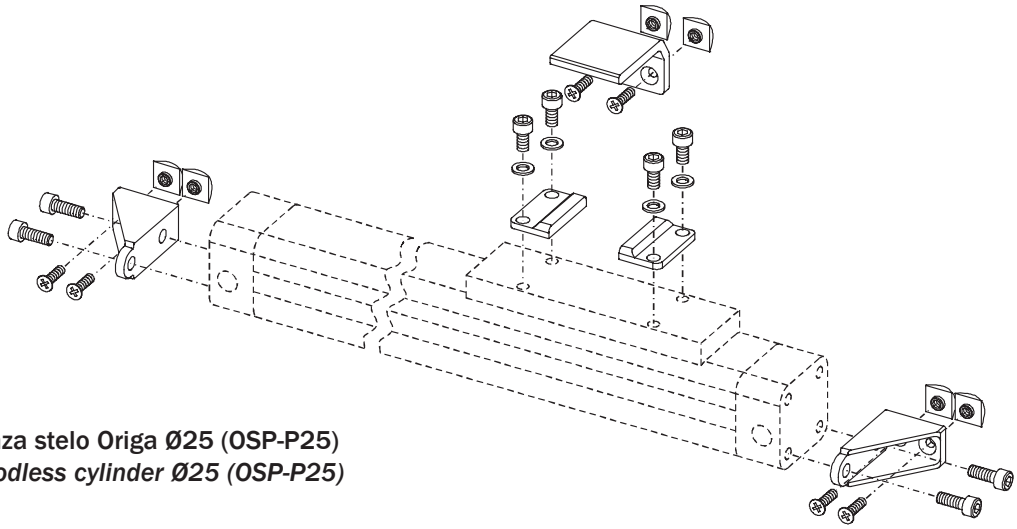


LLK-003 (57 g)
Giunto M10x1.25 per stelo cilindro Ø25 / Ø32
Rod bolt M10x1.25 for cylinder Ø25 / Ø32

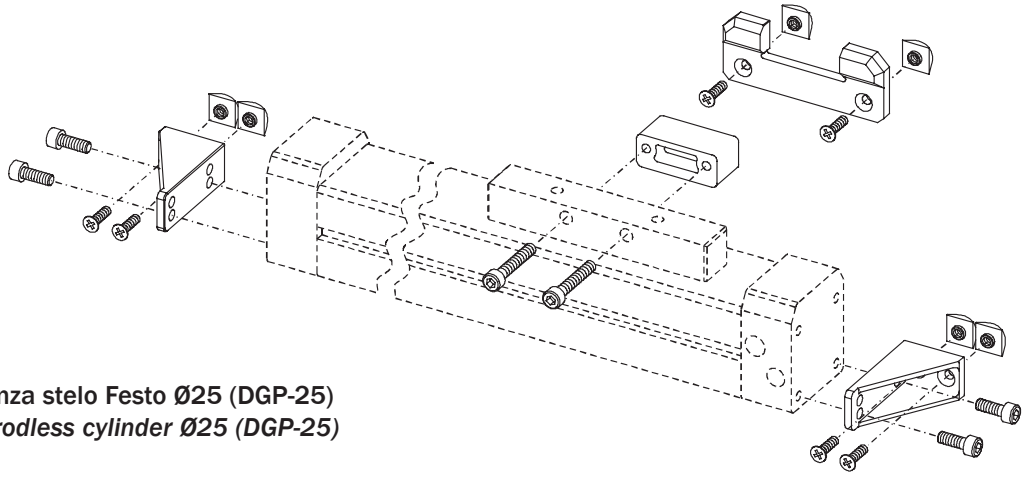


LLK-004 (59 g)
Protezione in acciaio per il carrello
Steel plate for the carrier



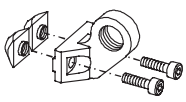


LLK-005 (268 g)
Kit fissaggio cilindro senza stelo Origa Ø25 (OSP-P25)
Fastening kit for Origa rodless cylinder Ø25 (OSP-P25)



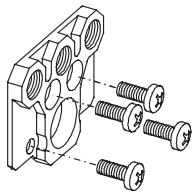
LLK-006 (314 g)
Kit fissaggio cilindro senza stelo Festo Ø25 (DGP-25)
Fastening kit for Festo rodless cylinder Ø25 (DGP-25)

LLK-007 (69 g)
Staffa filettata M14x1.5 per il fissaggio laterale di deceleratori o grani di fermo per cilindri Ø20 e Ø25
Threaded bracket (M14x1.5) for the side fastening of shock absorbers or end stroke grub screws for cylinders Ø20 and Ø25

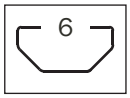


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LLK-008 (137 g)
Testata
End plate



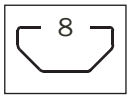
LLK-009 (528 g)
Dado a T M4 per cava
M4 T-nut for slot



(100 pezzi)
(100 pieces)



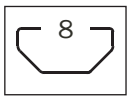
LLK-010 (937 g)
Dado a T M6 per cava
M6 T-nut for slot



(100 pezzi)
(100 pieces)



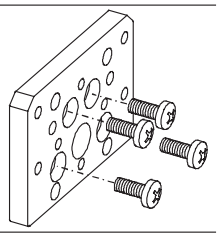
LLK-011 (758 g)
Dado a T M6 intercambiabile Bosch per cava
M6 T-nut Bosch interchangeable for slot



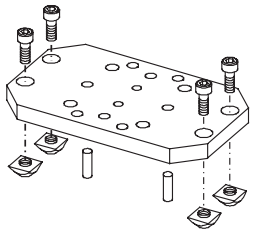
(100 pezzi)
(100 pieces)



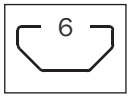
LLK-012 (137 g)
Testata di trascinamento
End interface plate



LLK-013 (262 g)
Interfaccia di montaggio per il carrello
Mounting interface plate for the carrier



LLK-014 (478 g)
Dado a T M5 per cava
M5 T-nut for slot



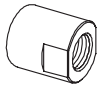
(100 pezzi)
(100 pieces)



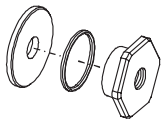
LLK-015 (16 g)
Riduzione porta-sensori M14x1.5 / M8x1 (1 pezzo)
Sensor holder adaptor M14x1.5 / M8x1 (1 piece)



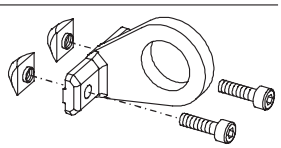
LLK-016 (24 g)
Terminale M10x1.25 per stelo cilindro Ø25 / Ø32 (1 pezzo)
End block M10x1.25 for the rod of a cylinder Ø25 / Ø32 (1 piece)



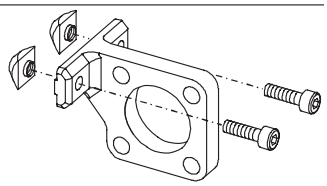
LLK-017 (57 g)
Giunto M8 per stelo cilindro Ø20
Rod bolt M8 for cylinder Ø20



LLK-018 (130 g)
Anello fissaggio giunto per cilindro Ø32
Rod bolt holder for cylinder Ø32

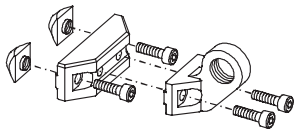


LLK-019 (172 g)
Anello per fissaggio cilindro Ø32
Cylinder holder Ø32

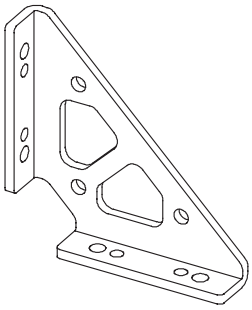


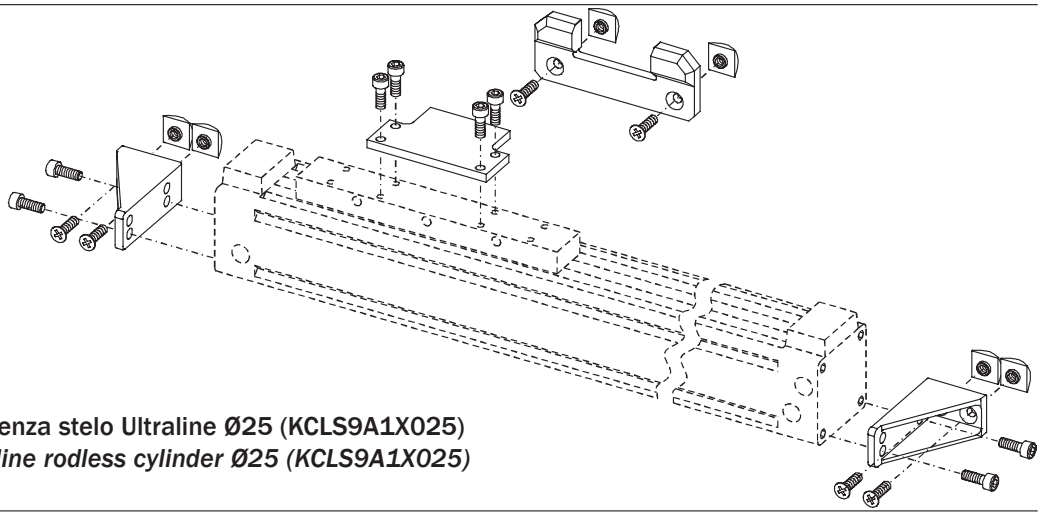
03/2007

LLK-020 (96 g)
Staffa filettata M14x1.5 per il fissaggio laterale di deceleratori o grani di fermo per cilindro Ø32
Threaded bracket (M14x1.5) for the side fastening of shock absorbers or end stroke grub screws for cylinder Ø32

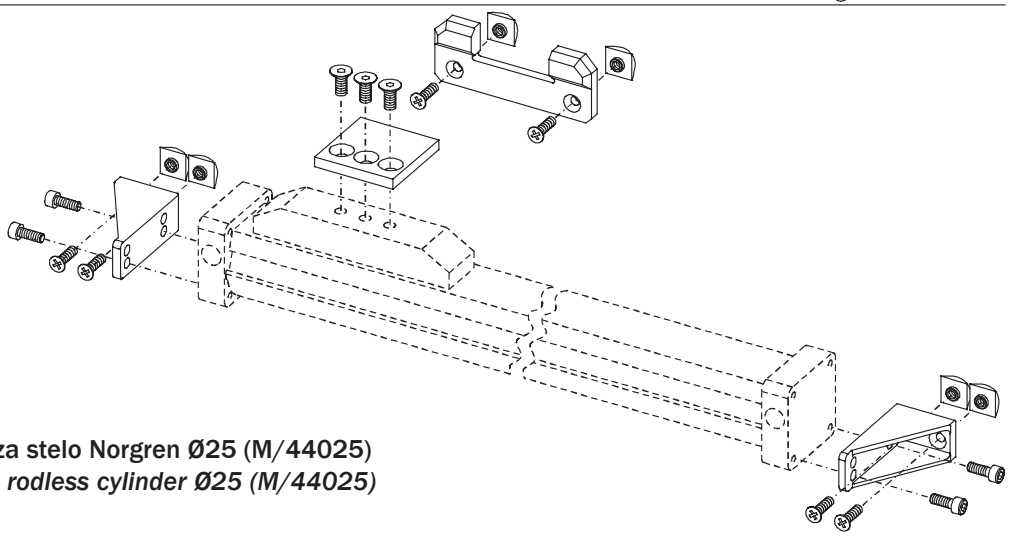


LLK-021 (170 g)
Squadra di fissaggio
90° mounting bracket



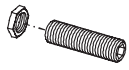


LLK-022 (320 g)
Kit fissaggio cilindro senza stelo Ultraline Ø25 (KCLS9A1X025)
Fastening kit for Ultraline rodless cylinder Ø25 (KCLS9A1X025)

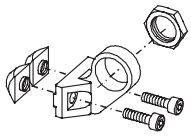


LLK-023 (315 g)
Kit fissaggio cilindro senza stelo Norgren Ø25 (M/44025)
Fastening kit for Norgren rodless cylinder Ø25 (M/44025)

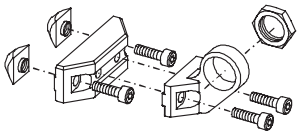
LLK-024 (55 g)
Grano di fermo
End stroke grub screw



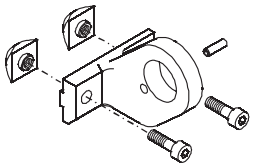
LLK-025 (72 g)
Staffa Ø15 per il fissaggio laterale di deceleratori o grani di fermo per cilindri Ø20 e Ø25
Bracket Ø15 for the side fastening of shock absorbers or end stroke grub screws for cylinders Ø20 and Ø25



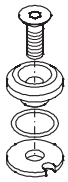
LLK-026 (100 g)
Staffa Ø15 per il fissaggio laterale di deceleratori o grani di fermo per cilindro Ø32
Bracket Ø15 for the side fastening of shock absorbers or end stroke grub screws for cylinder Ø32



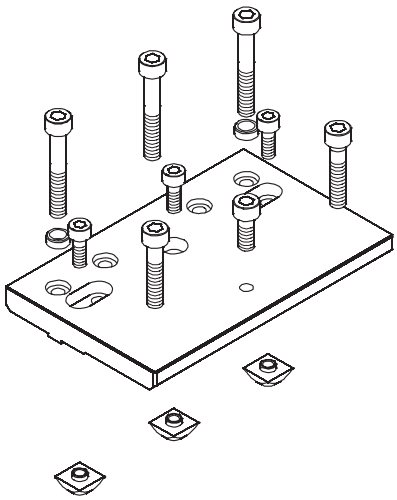
LLK-027 (100 g)
Anello per giunto slider LinMot PL01-20
Bracket for slider bolt for LinMot PL01-20



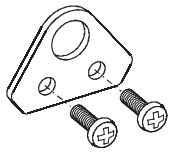
LLK-028 (60 g)
Giunto per slider LinMot PL01-20
Slider bolt for LinMot PL01-20



LLK-029 (280 g)
Piastra di interfaccia per flangia LinMot PF02-37
Interface plate for LinMot flange PF02-37

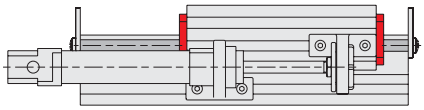


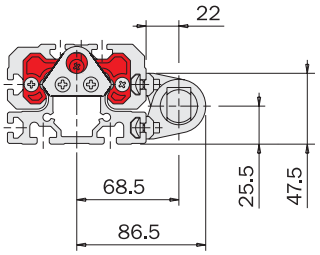
LLK-031 (30 g)
Fine corsa d'emergenza
Emergency stopper

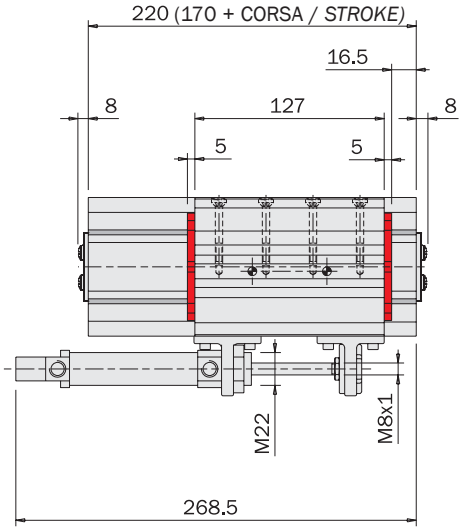


Esempio: Slitta di alesaggio 20mm (cilindro ISO 6432) e corsa 50mm

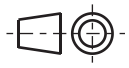
Example: Slide with 20mm piston bore (ISO 6432) and 50mm stroke

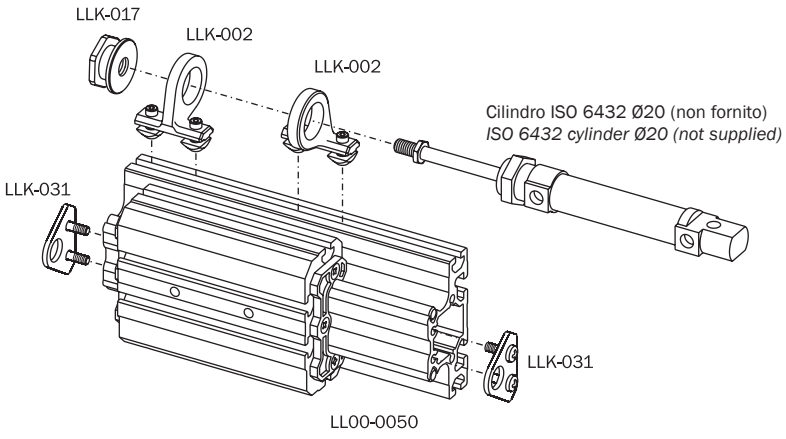




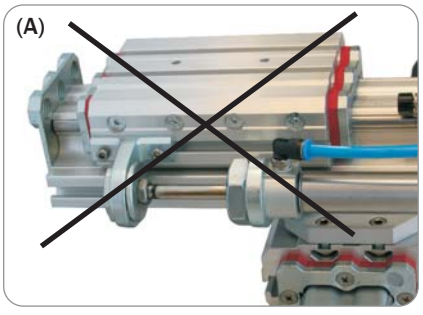


FIRST ANGLE PROJECTION





(A)

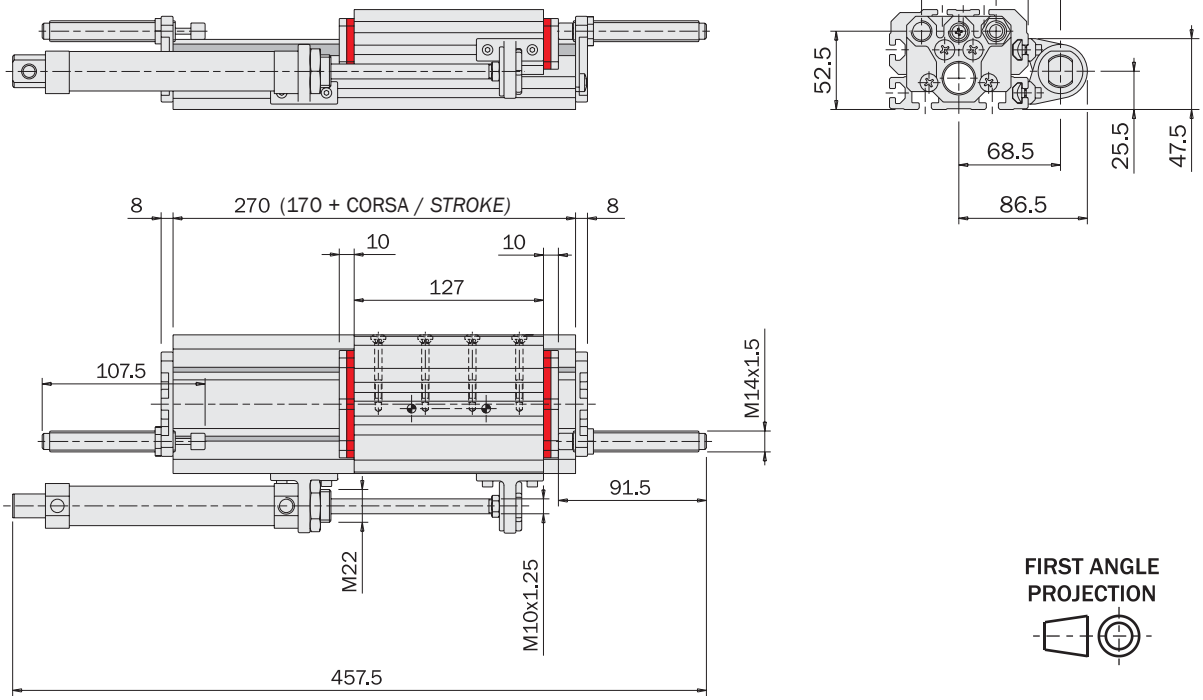


Avvertenza
Il lato del carrello con le viti di regolazione si flette, quando si fa le registrazione del precarico.
Quindi si deve evitare di collegare il cilindro, o altri componenti che necessitino di un posizionamento preciso, su quel lato.

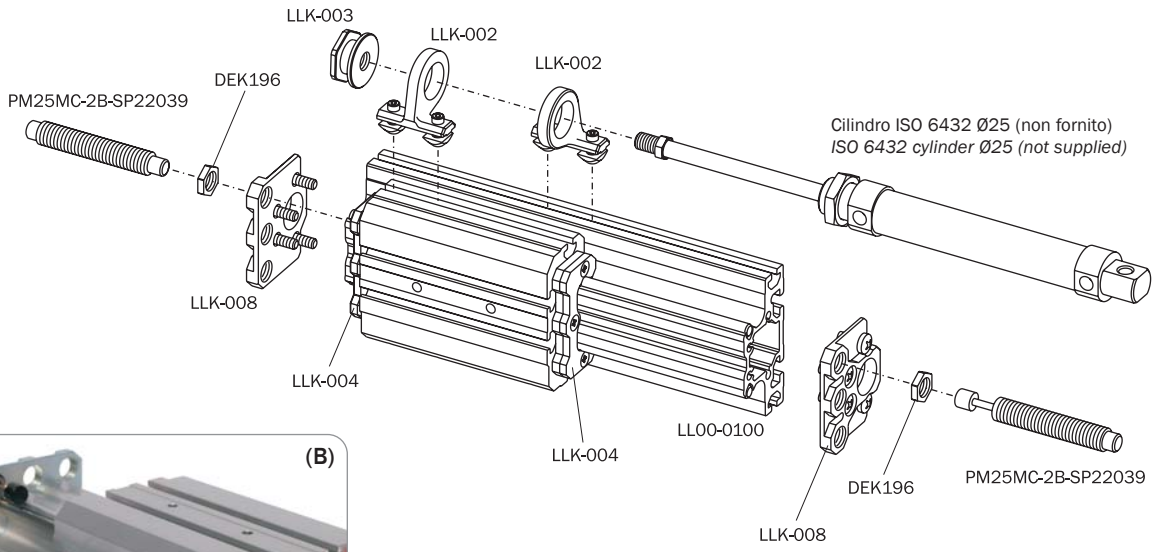
Caution
The side of the carrier with the adjustment screws bends, when the preload is set.
Thus, the cylinder, or other parts needing a precise positioning, should not be mounted on that side.

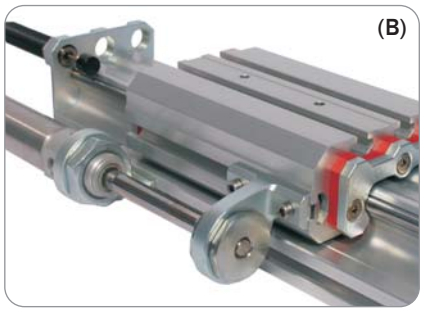
Esempio: Slitta di alesaggio 25mm (cilindro ISO 6432) e corsa 100mm, con deceleratori idraulici sulle testate

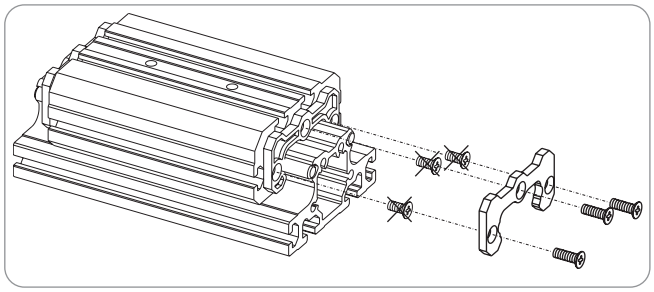
Example: Slide with 25mm piston bore (ISO 6432) and 100mm stroke, with hydraulic shock-absorbers on the end plates



FIRST ANGLE PROJECTION







(B)

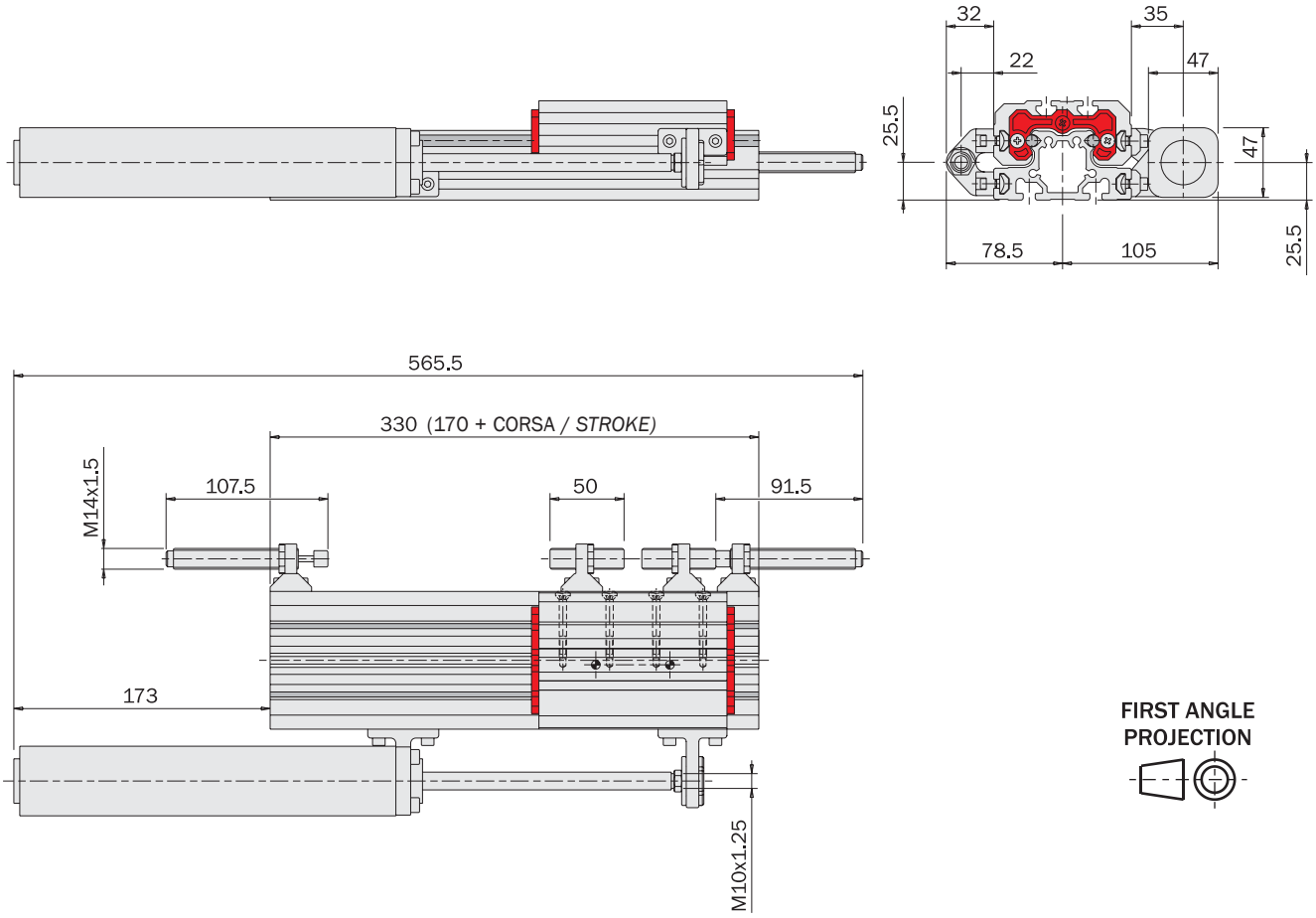
Avvertenza
La protezione di plastica rossa non deve essere rimossa, quando si applica la protezione in acciaio LLK-004, che fa da riscontro per il deceleratore.
Si devono rimuovere solo le sue tre viti corte, per poi fissare insieme entrambe le protezioni con le viti lunghe fornite nel kit LLK-004.

Caution
The red plastic cover must not be removed, when the steel plate LLK-004 (working against the shock-absorber) is used.
Remove only its three short screws and then fasten both the plastic and steel protections, with the longer screws, supplied in the kit LLK-004.

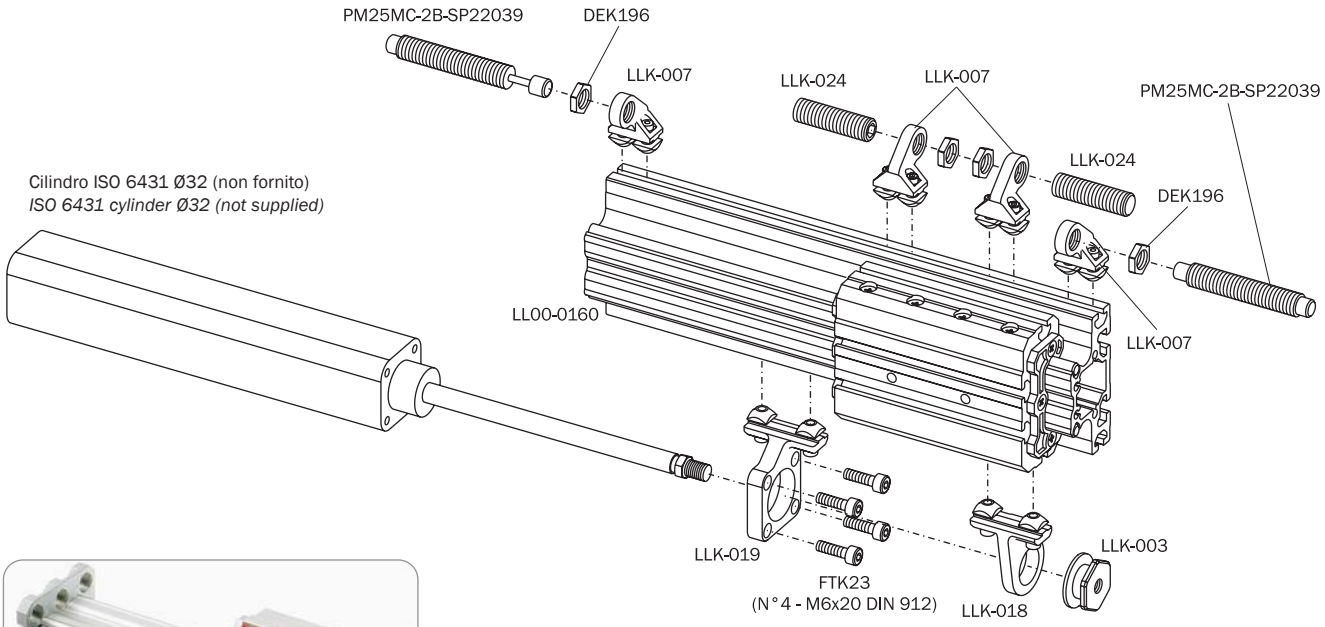
03/2007

Esempio: Slitta di alesaggio 32mm (cilindro ISO 6431) e corsa 160mm, con deceleratori idraulici sul fianco

Example: Slide with 32mm piston bore (ISO 6431) and 160mm stroke, with hydraulic shock-absorbers on one side



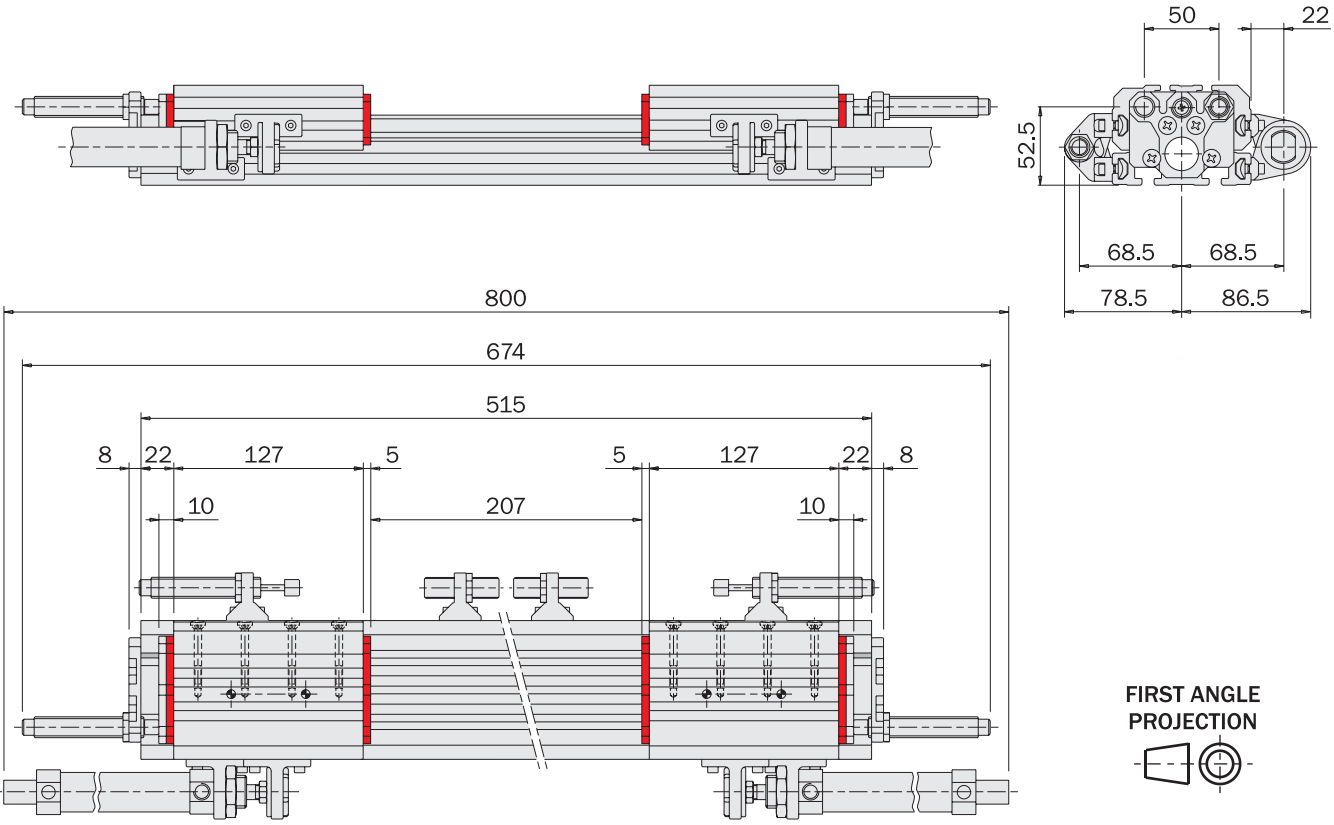
FIRST ANGLE PROJECTION

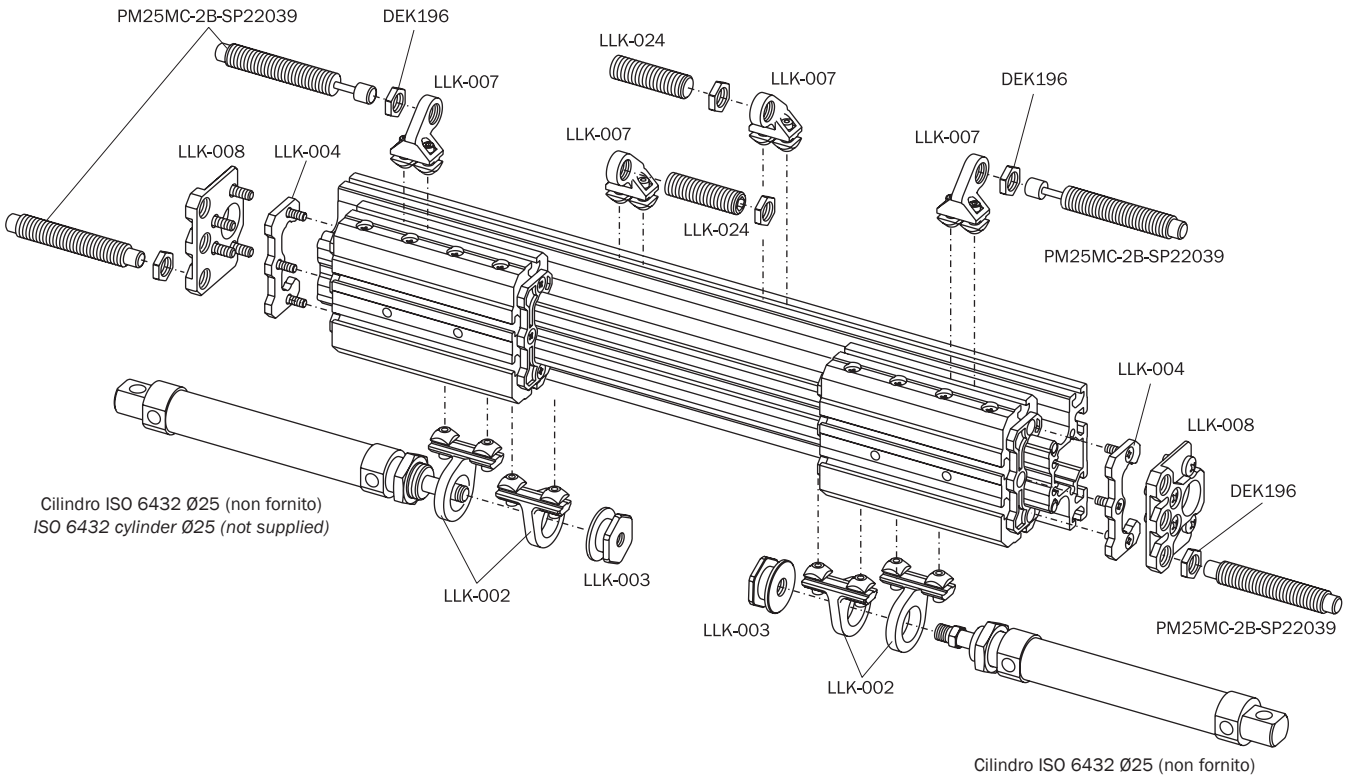




Esempio: Due slitte indipendenti sullo stesso asse di alesaggio 25 (cilindro ISO 6432) e corsa 2x100mm, con deceleratori idraulici

Example: Two independent slides on the same profile with 25mm piston bore (ISO 6432) and 2x100mm stroke, with hydraulic shock-absorbers

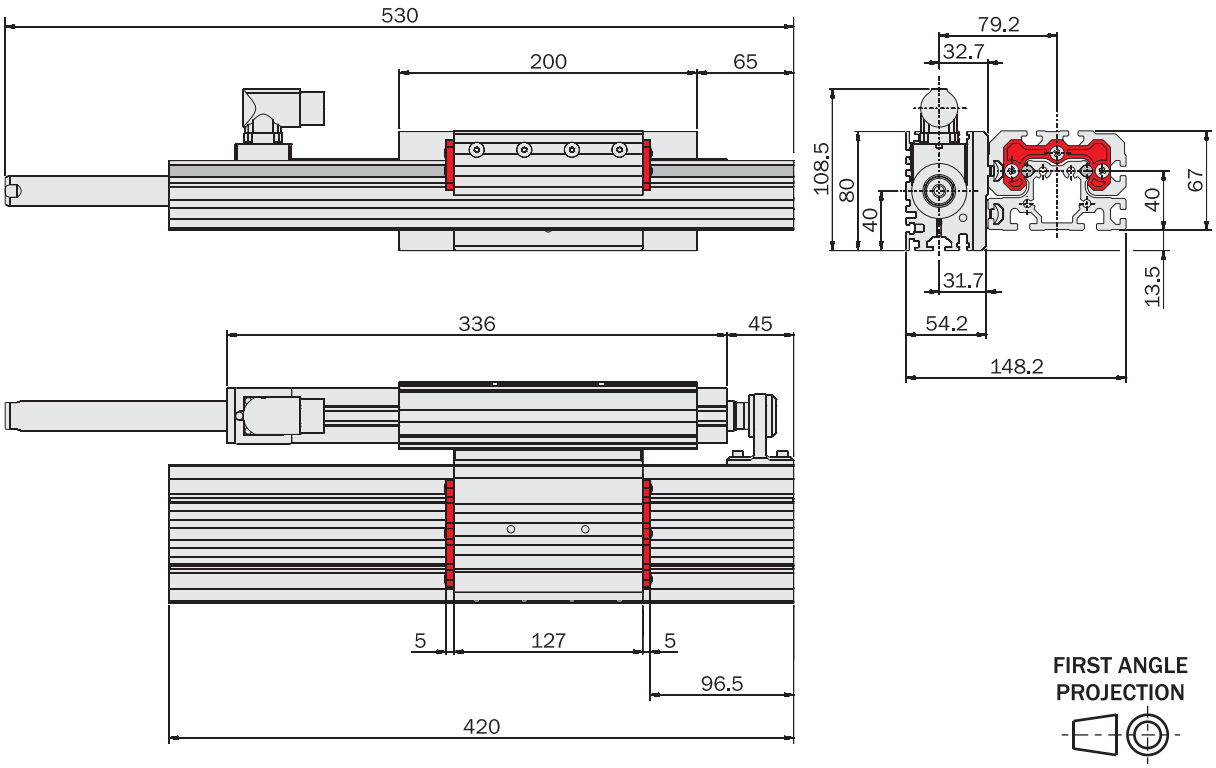


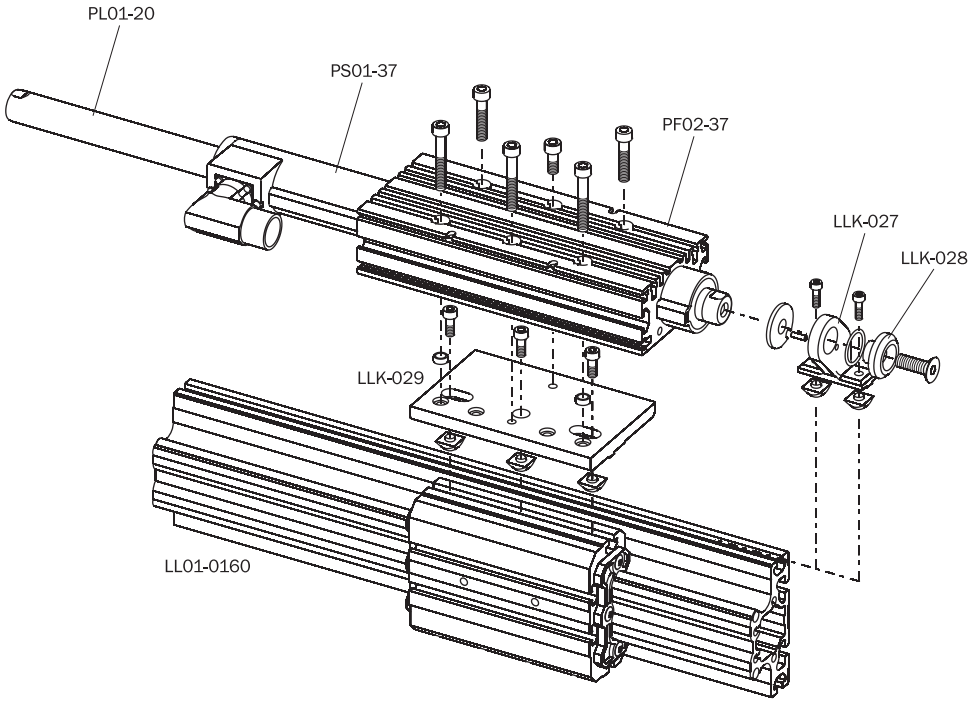


03/2007

Esempio: Slitta di corsa 160mm azionata da motore lineare LinMot.

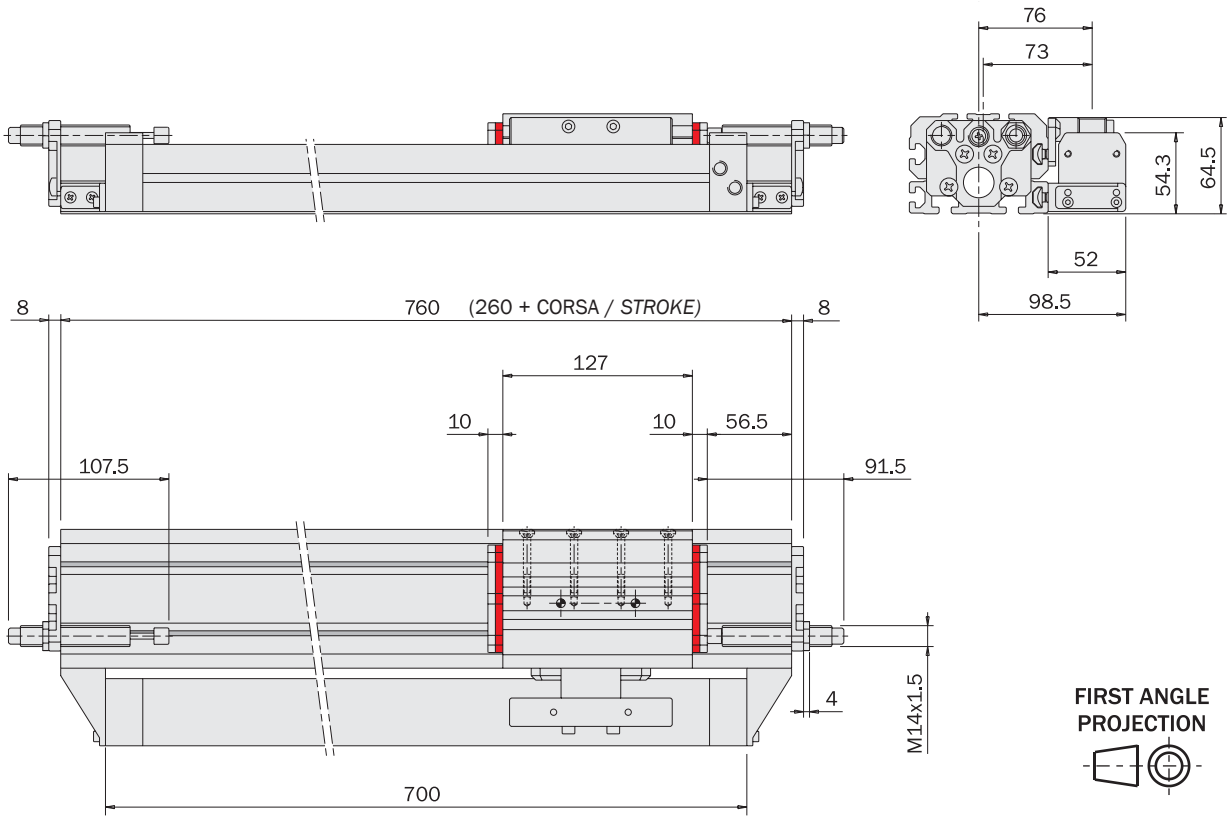
Example: Slide, 160mm stroke, powered by a LinMot linear motor.

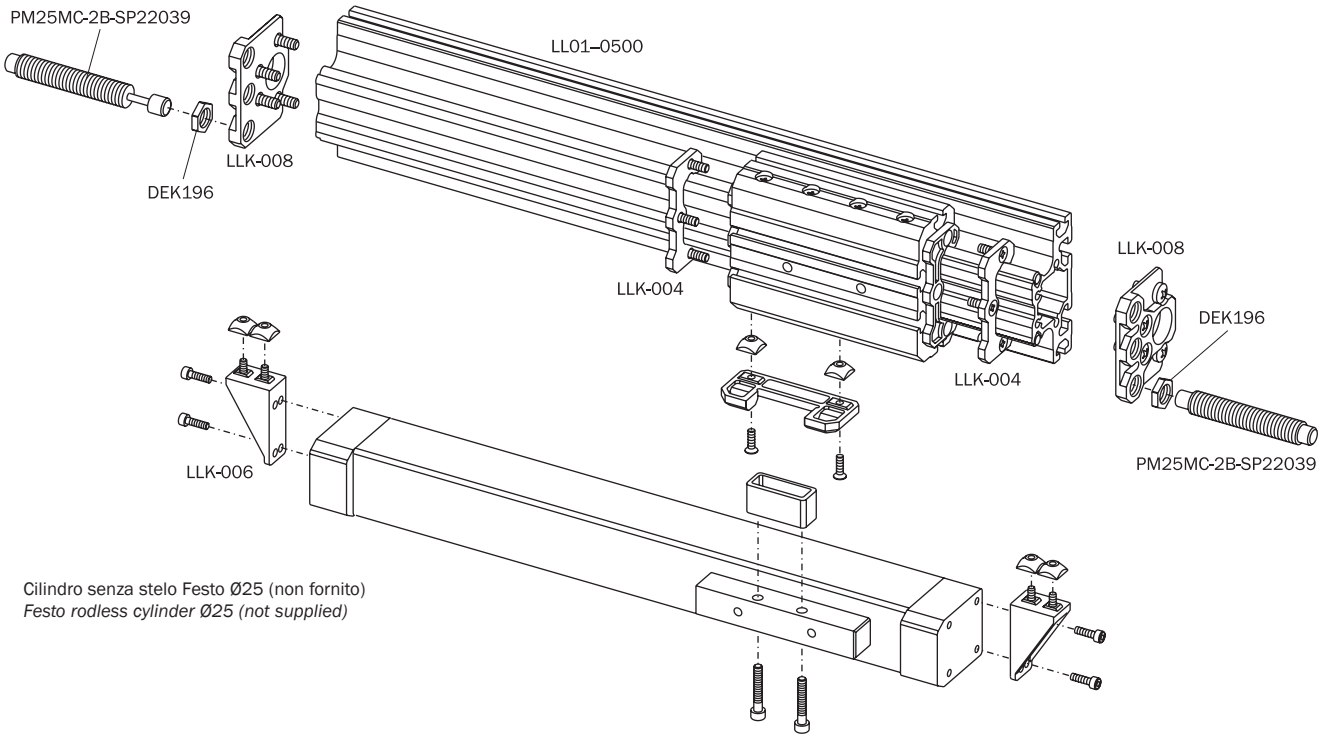




Esempio: Slitta di alesaggio 25mm e corsa 500mm con deceleratori idraulici movimentata da cilindro senza stelo Festo

Example: Slide with 25mm piston bore and 500mm stroke, with hydraulic shock-absorbers, powered by the Festo rodless cylinder

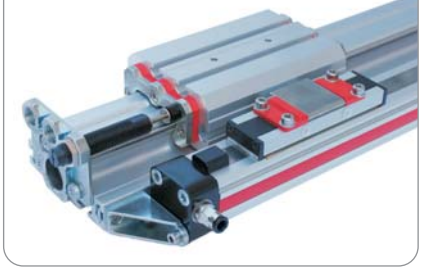


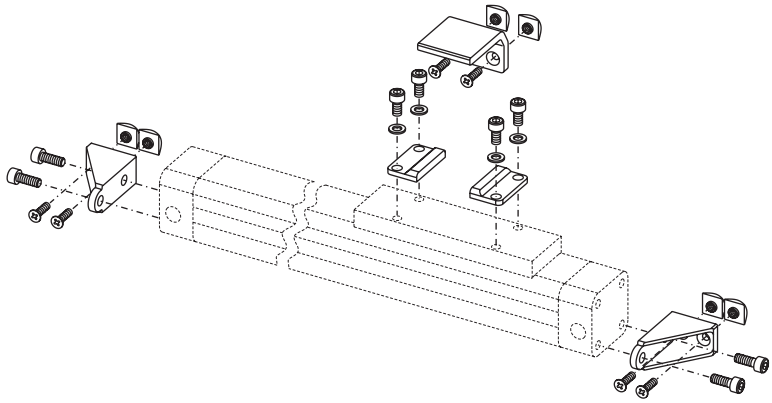


Kit di fissaggio per cilindro senza stelo

Kit for fastening rodless cylinder

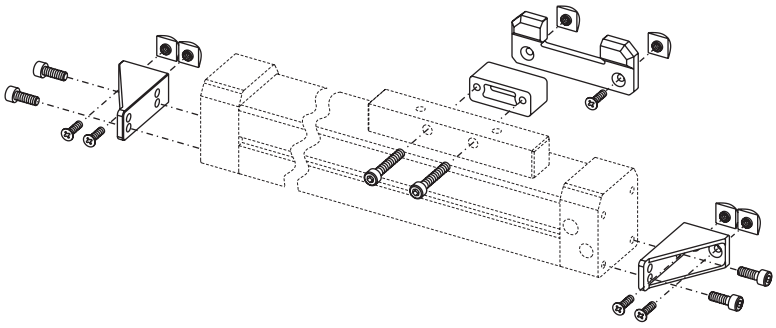
LLK-005 + Origa OSP-P25





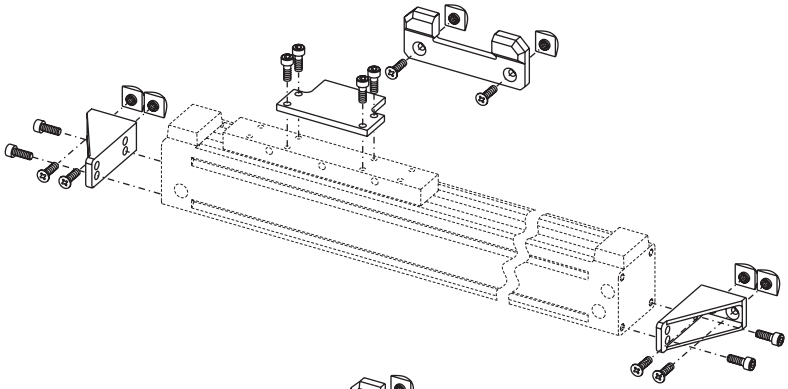
LLK-006 + Festo DGP-25





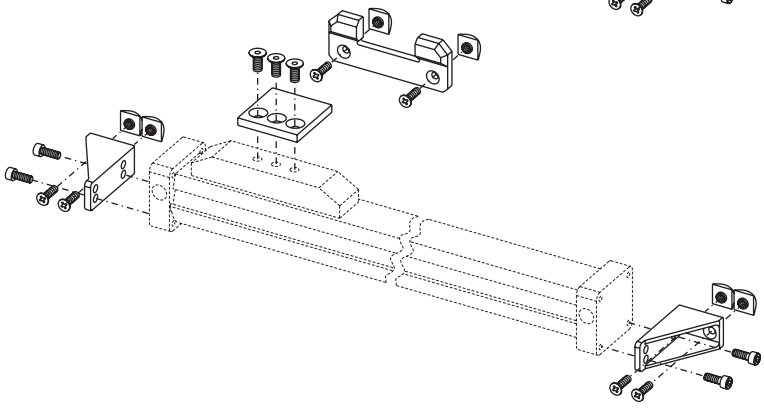
LLK-022 + Ultraline KCLS9A1X025



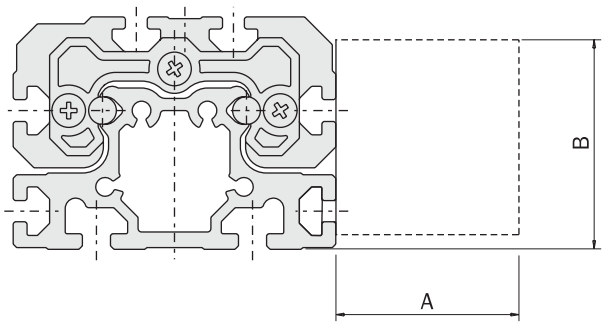


LLK-023: Norgren LINTRA M/44025



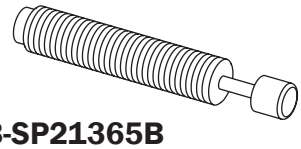


	A	B
Origa OSP-P25 + LLK-005	*48 mm*	*65 mm*
Festo DGP-25 + LLK-006	*52 mm*	*65 mm*
Ultraline KCLS9A1X025 + LLK-022	*52 mm*	*65 mm*
Norgren Lintra M/44025 + LLK-023	*52 mm*	*65 mm*



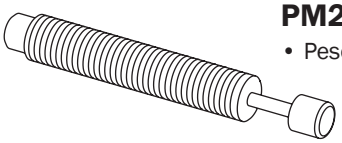
Deceleratori

Shock-absorbers



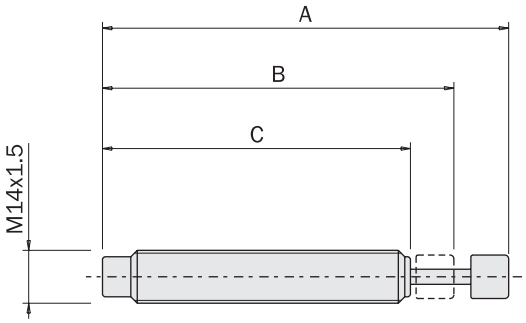
SPM25MC-1B-SP21365B

• Peso / *Weight:* 67 g

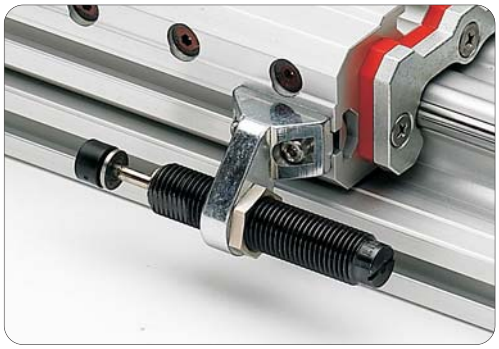


PM25MC-2B-SP22039

• Peso / *Weight:* 75 g



	A	B	C
SPM25MC-1B-SP21365B	*92.5 mm*	*79 mm*	*70 mm*
PM25MC-2B-SP22039	*107.5 mm*	*91.5 mm*	*81.5 mm*

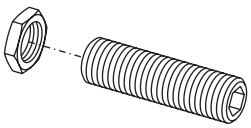


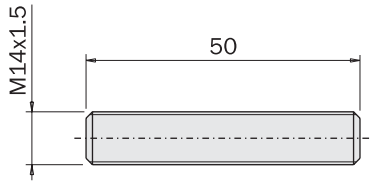
LLK-024
Fermo meccanico rigido M14x1.5x50

• Peso: 55 g

LLK-024
End stroke grub screw M14x1.5x50

• *Weight:* 55 g



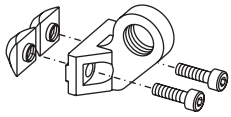




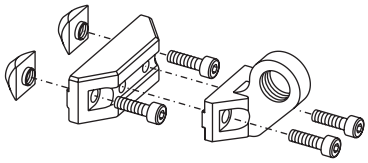
03/2007

Staffe di fissaggio per deceleratori o fermi meccanici

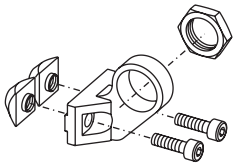
Brackets for shock-absorbers or end stroke grub screws



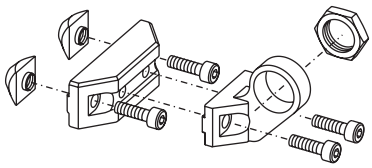
LLK-007
- Peso / Weight: 69 g



LLK-020
- Peso / Weight: 96 g

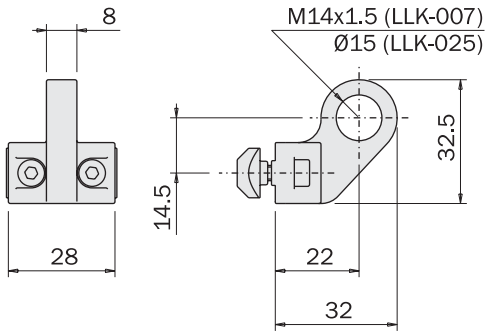


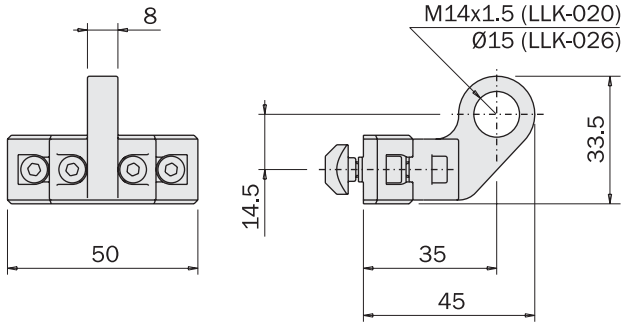
LLK-025
- Peso / Weight: 72 g



LLK-026
- Peso / Weight: 100 g

Dimensioni (mm) / *Dimensions (mm)*





Esempio di utilizzo / *Application example*

(C)

Avvertenza
Quando si utilizzano le staffe filettate (LLK-007 o LLK-020) sul lato del carrello con le viti di regolazione, è possibile che si verifichi il disallineamento mostrato in figura.
Le staffe senza filetto (LLK-025 o LLK-026) consentono il recupero del disallineamento.

Caution
When the threaded brackets (LLK-007 or LLK-020) are used on the side of the carrier with the adjustment screws, the misalignment showed in the photo is possible.
The brackets without thread (LLK-025 or LLK-026) avoid this problem.

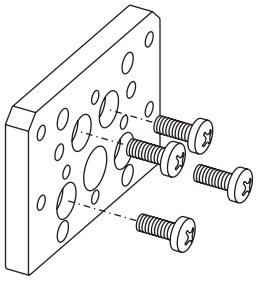


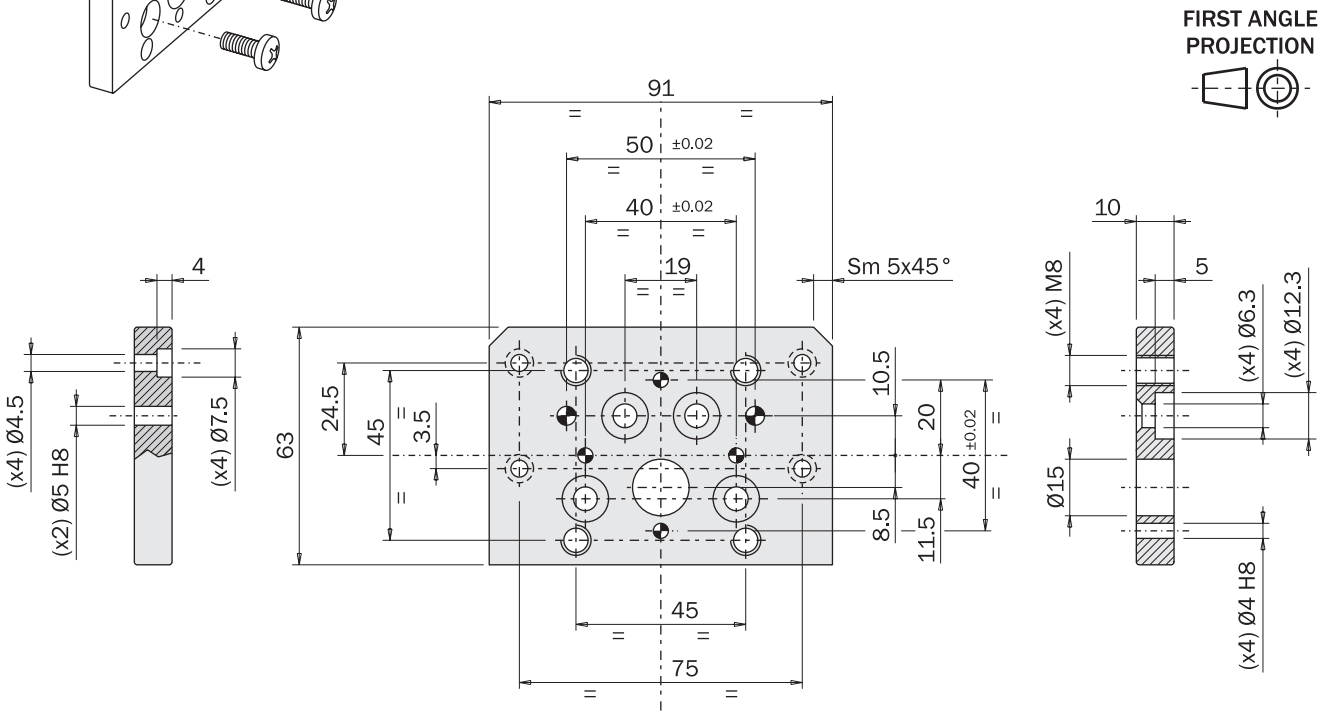
LLK-012
Testata di trascinamento

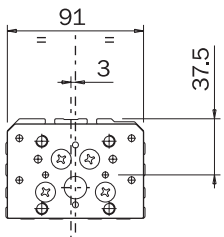
Va fissata all'estremità del profilo in alluminio, con le quattro viti autofilettanti fornite e serve per il montaggio diretto di un'altra guida LL, oppure di un attuatore rotante R32/3.
Può essere utile anche per fissare altri componenti.
Peso: 137 g

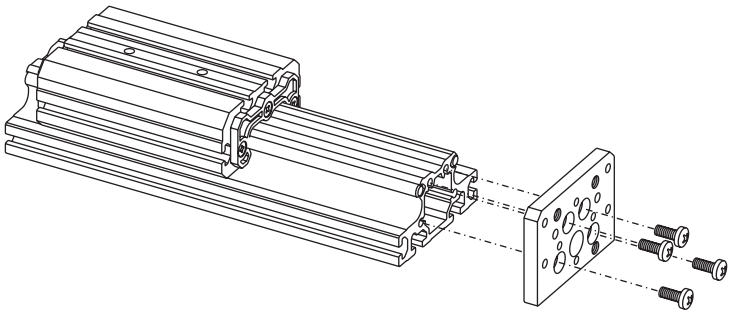
LLK-012
End interface plate

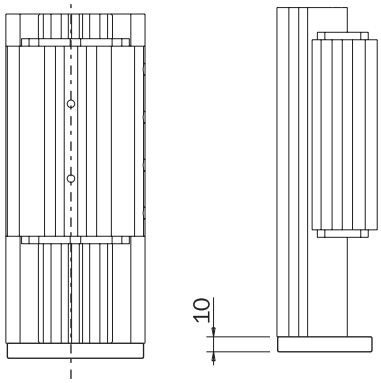
It must be fixed at the end side of the aluminium profile, by four screws (supplied) and it makes possible to mount directly a second LL guidance, or a R32/3 swiveling unit. It can be used also to mount other components.
Weight: 137 g









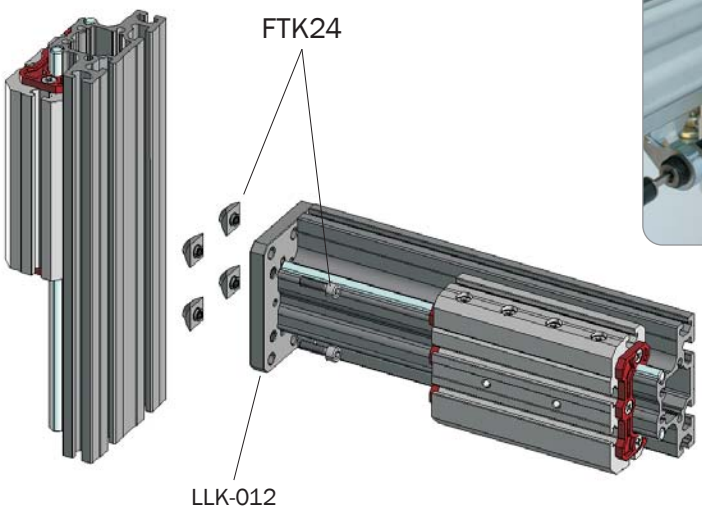




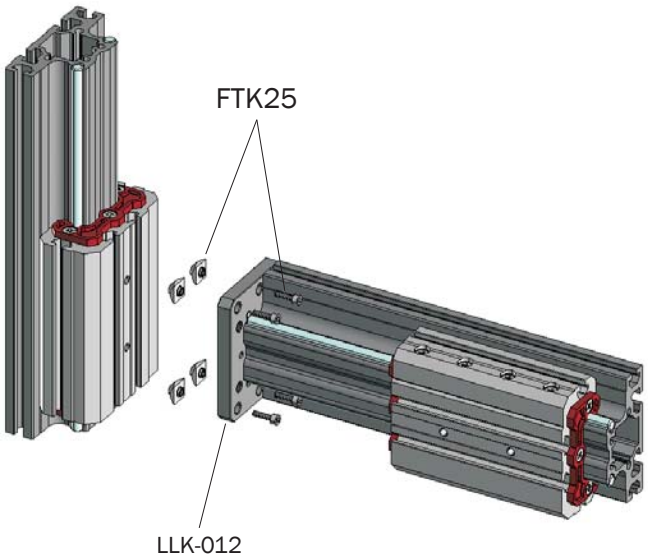
03/2007

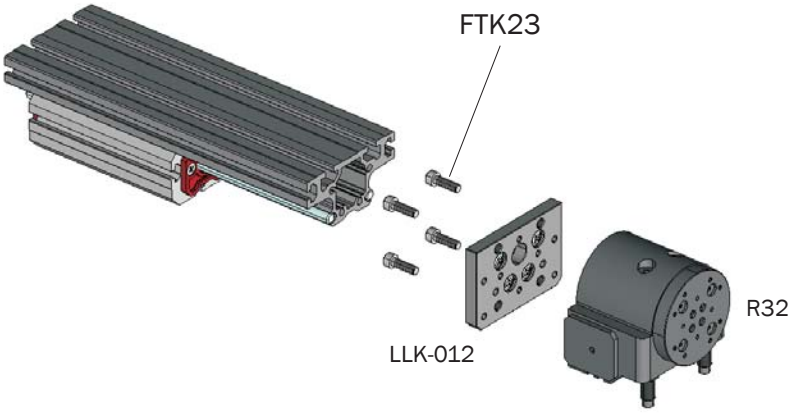





FTK24
LLK-012




FTK25
LLK-012

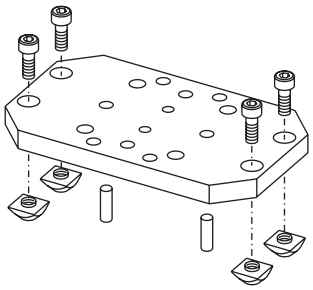

FTK23
R32
LLK-012

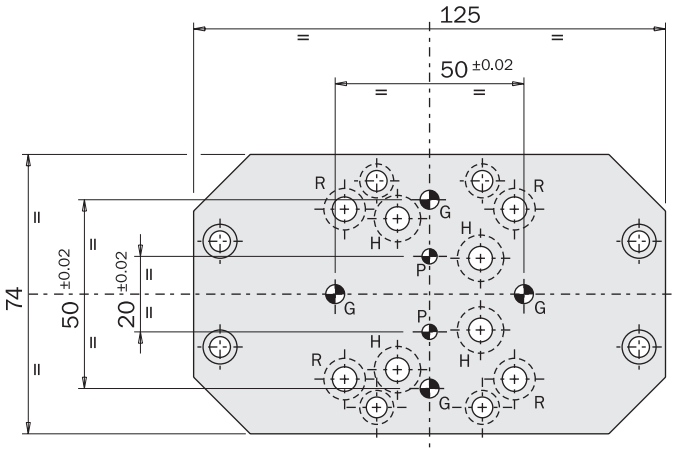
LLK-013
Interfaccia di montaggio

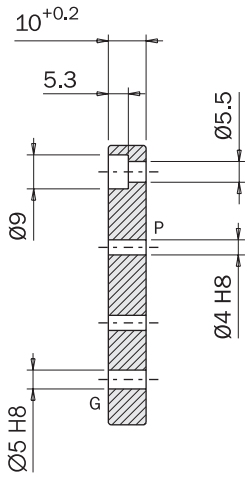
Va fissata all'estremità del profilo in alluminio, o al carrello, e serve per il montaggio diretto di un'altra guida LL, oppure di un attuatore rotante R32/3, o attuatore lineare M25.
Può essere utile anche per fissare altri componenti.
Peso: 262 g

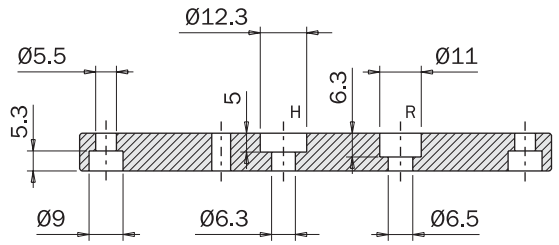
LLK-013
Mounting interface plate

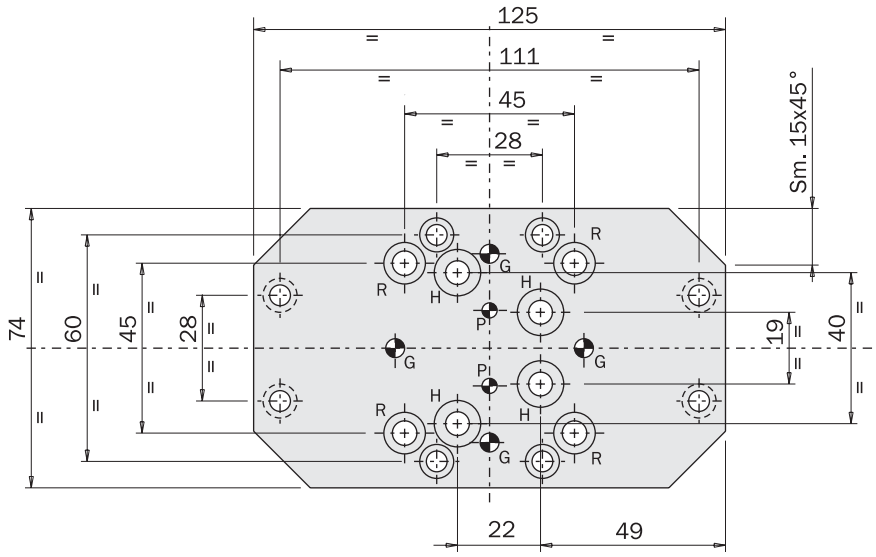
It must be fixed at the end side of the aluminium profile, or on the carrier
and it makes possible to mount directly a second LL guidance, or a R32/3 swiveling unit, or a linear actuator M25
It can be used also to mount other components.
Weight *: 262 g*



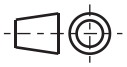




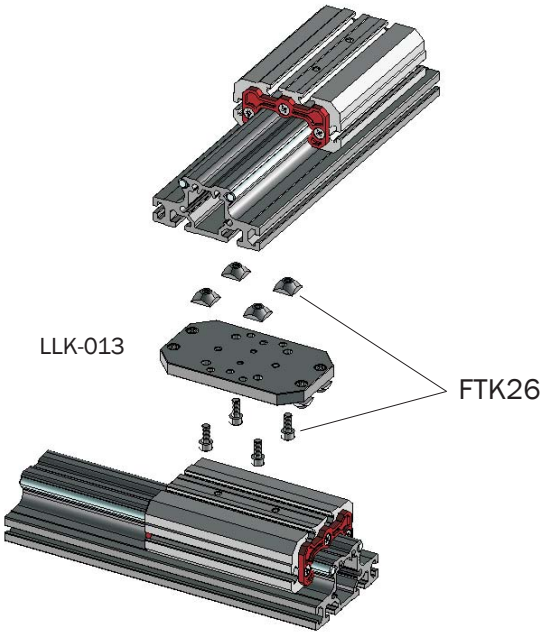




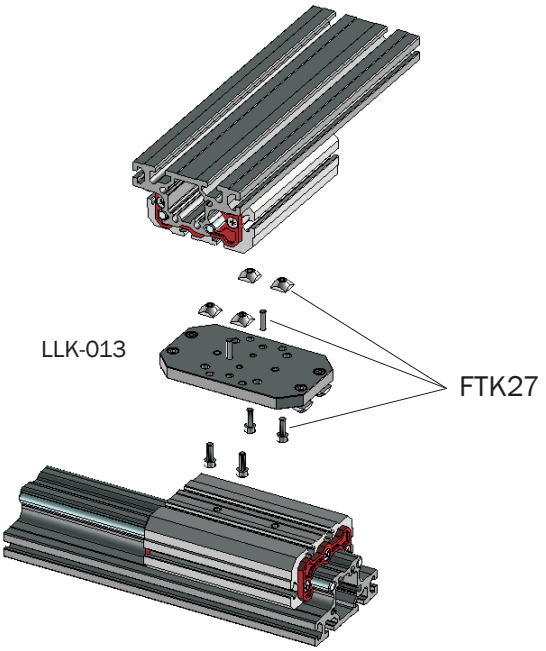
FIRST ANGLE PROJECTION

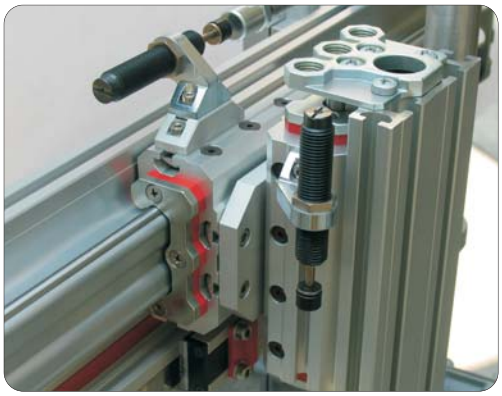


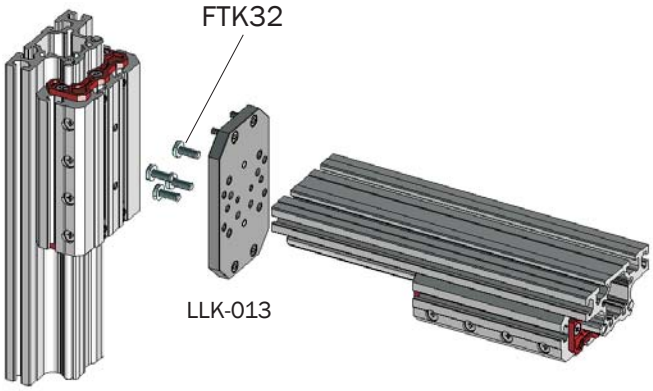
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LLK-013
FTK26

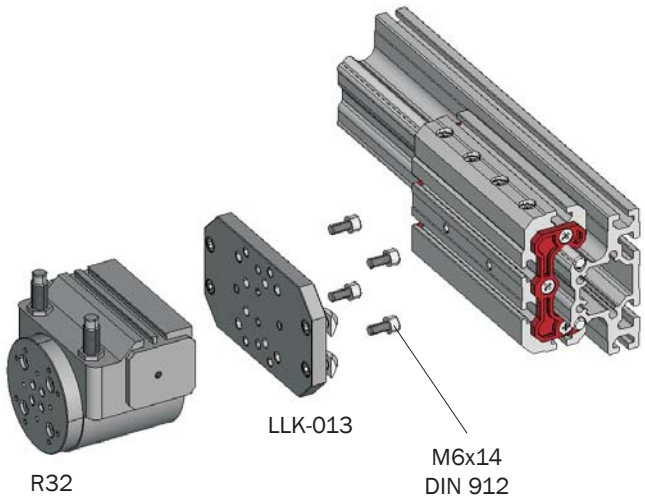


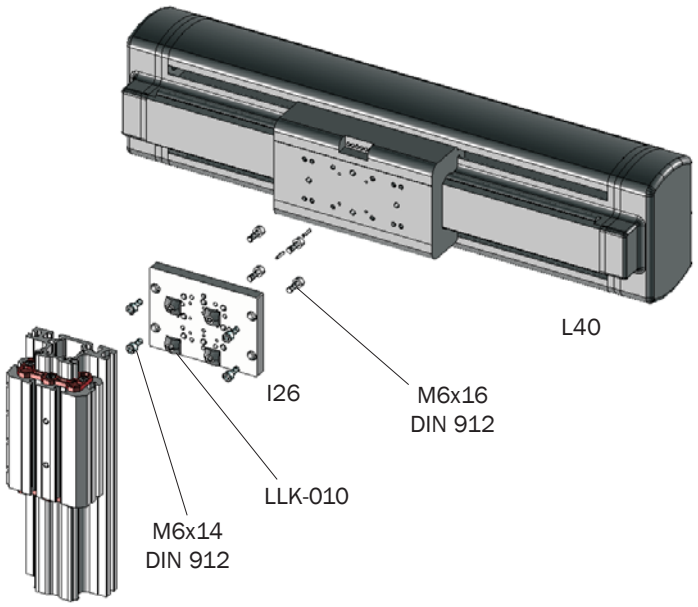

LLK-013
FTK27

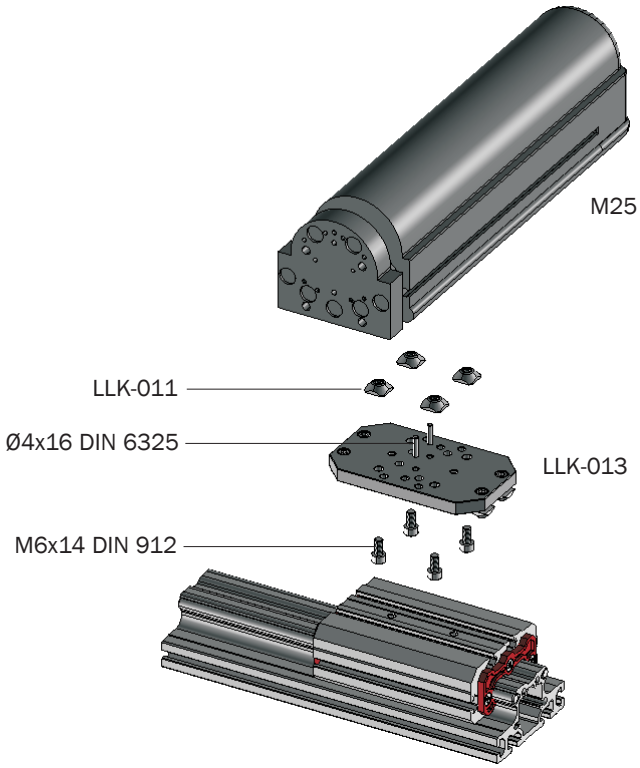



FTK32
LLK-013

Assemblaggio con altri componenti Gimatic — *Matching other Gimatic components*



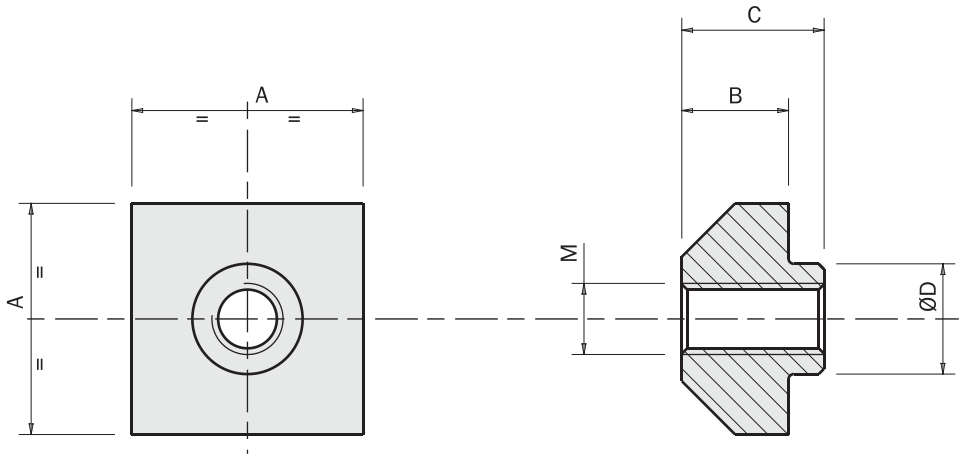




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Dadi di fissaggio

Nuts for fastening



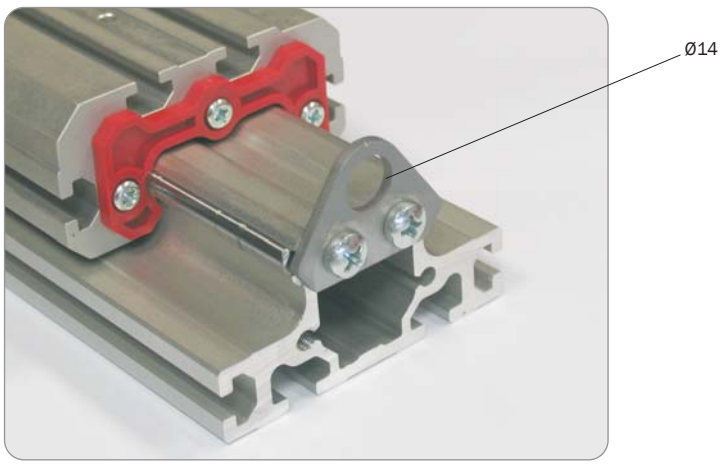
	codice / *code*	A	B	C	ØD	M	cava / *slot*	peso / *weight*
LLK-009	*LL25-09*	*13*	*6*	*8*	*Ø6.2*	*M4*	*6*	*5 g*
LLK-010	*LL25-10*	*16*	*7.3*	*9.8*	*Ø8*	*M6*	*8*	*9 g*
LLK-011	*VITE-243*	*16*	*6.3*	*8.3*	*Ø8*	*M6*	*8*	*7.5 g*
LLK-014	*LL25-23*	*13*	*6*	*8*	*Ø6.2*	*M5*	*6*	*5 g*

LLK-031
Fine corsa d'emergenza

La piastrina LLK-031 serve come fine corsa d'emergenza, per evitare la fuoriuscita del carrello.
La si può anche utilizzare per fissare un deceleratore, o un ammortizzatore di gomma.
Nelle unità dotate di serie della piastrina LLK-031, le barre in acciaio non sono cianfrinate nel profilo in alluminio.
Quindi, se la piastrina viene rimossa, si deve sempre montare una delle piastre (LLK-008 o LLK-012) che fanno da contenimento per le barre in acciaio.
Peso: 30 g

LLK-031
Emergency stop plate

The end plate LLK-031 is an emergency stopper, to avoid the carrier going out of the rail.
It can be used also to mount a shock-absorber, or a rubber damper. In the units assembled in factory with the end plate LLK-031, the steel bars are not caulked in the aluminium profile.
Therefore, if the end plate is removed, one of the plates LLK-008 or LLK-012 must be mounted, to hold the steel bars in their housing.
Weight: 30 g



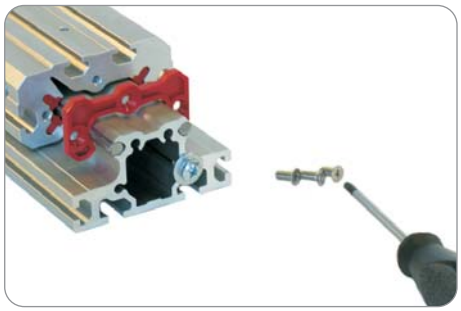
03/2007

Lubrificazione

Controllare periodicamente le colonne di guida e lubrificarle quando sono secche.
L'apposito grasso è disponibile in tubetti da 90 grammi.
Codice di ordinazione: GLP500-90.

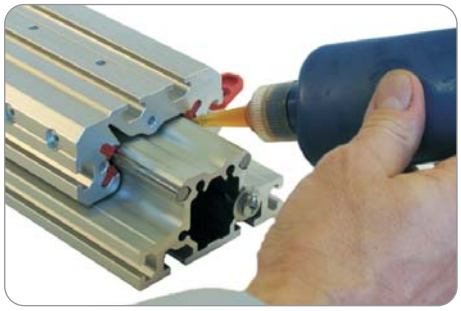
Lubrication

Periodically check the steel bars and lubricate when dry.
The suitable grease is available in 90 grams tubes.
Ordering code: GLP500-90.



Rimuovere la protezione rossa (tre viti)

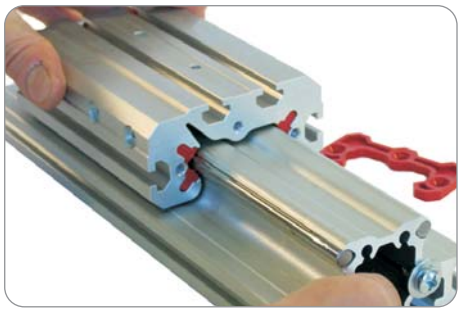
Remove the three screws and then the red plastic plate



Applicare il lubrificante sulle colonne di guida in acciaio

Lubricate the steel bars





Muovere il carrello per distribuire il lubrificante nelle cartucce

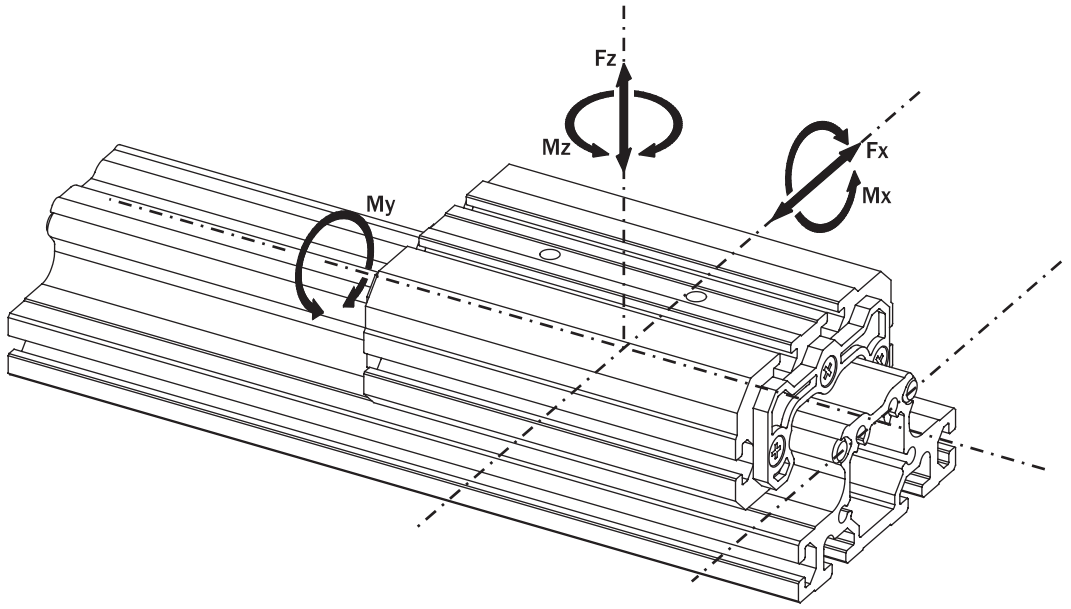
Move the carrier to distribute the lubricant in the ball bearings

Carichi di sicurezza

Carichi eccessivi possono danneggiare l'unità, causare difficoltà di funzionamento e compromettere la sicurezza dell'operatore.
Verificare che l'indice di carico LF sia inferiore all'unità.

Safety loads

Excessive loads can damage the unit, cause functioning troubles and endanger the safety of the operator.
The load factor LF must be lower than 1.



$$LF = \frac{Fx}{Fx\ max} + \frac{Fz}{Fz\ max} + \frac{Mx}{Mx\ max} + \frac{My}{My\ max} + \frac{Mz}{Mz\ max} \leq 1$$

	max
Fx	*2500 N*
Fz	*2500 N*
Mx	*56 Nm*
My	*50 Nm*
Mz	*56 Nm*

