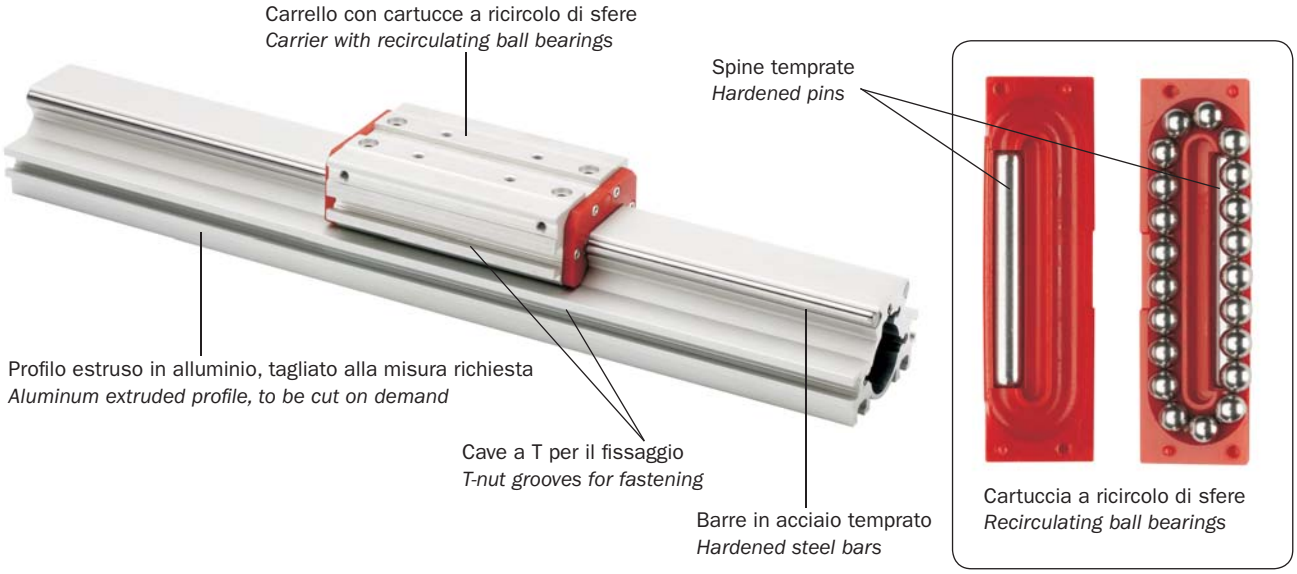
Guide lineari a ricircolo di sfere (serie LP)

- Sistema di guida a ricircolo di sfere brevettato.
- Diverse possibilità di montaggio con dadi a T.
- Vari kit opzionali per il montaggio di accessori.
- E' possibile montare più di un carrello per ogni profilo.

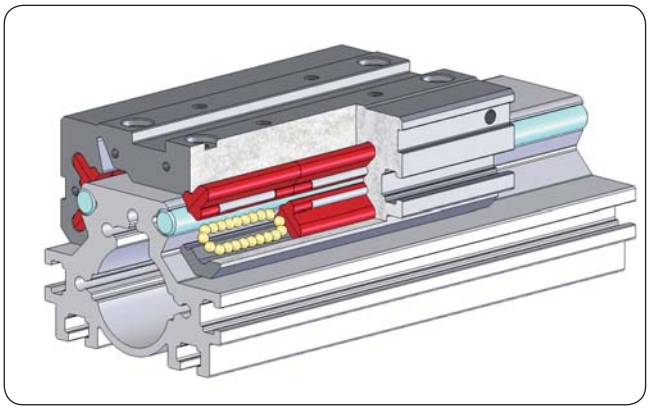
Linear guides with recirculating ball bearings (series LP)

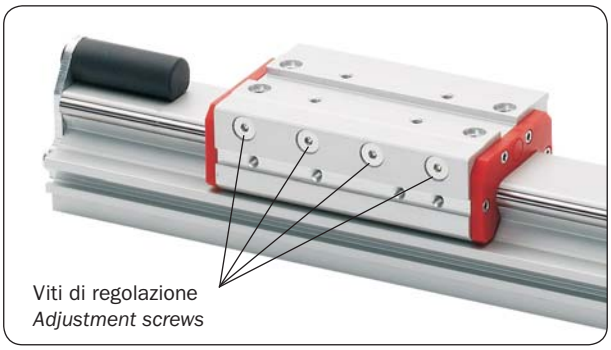
- *Patented bearing system.*
- *Several mounting options with T-nuts.*
- *Optional kits for accessories.*
- *More than one carrier can be fitted to each rail.*



Il carrello è ricavato da un estruso di alluminio nel quale sono previste le sedi per le cartucce a ricircolo di sfere.
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.

The carrier is made from an aluminium extruded profile, in which the housings for the recirculating ball bearings 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.





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.

Esempio di applicazione

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

Application example

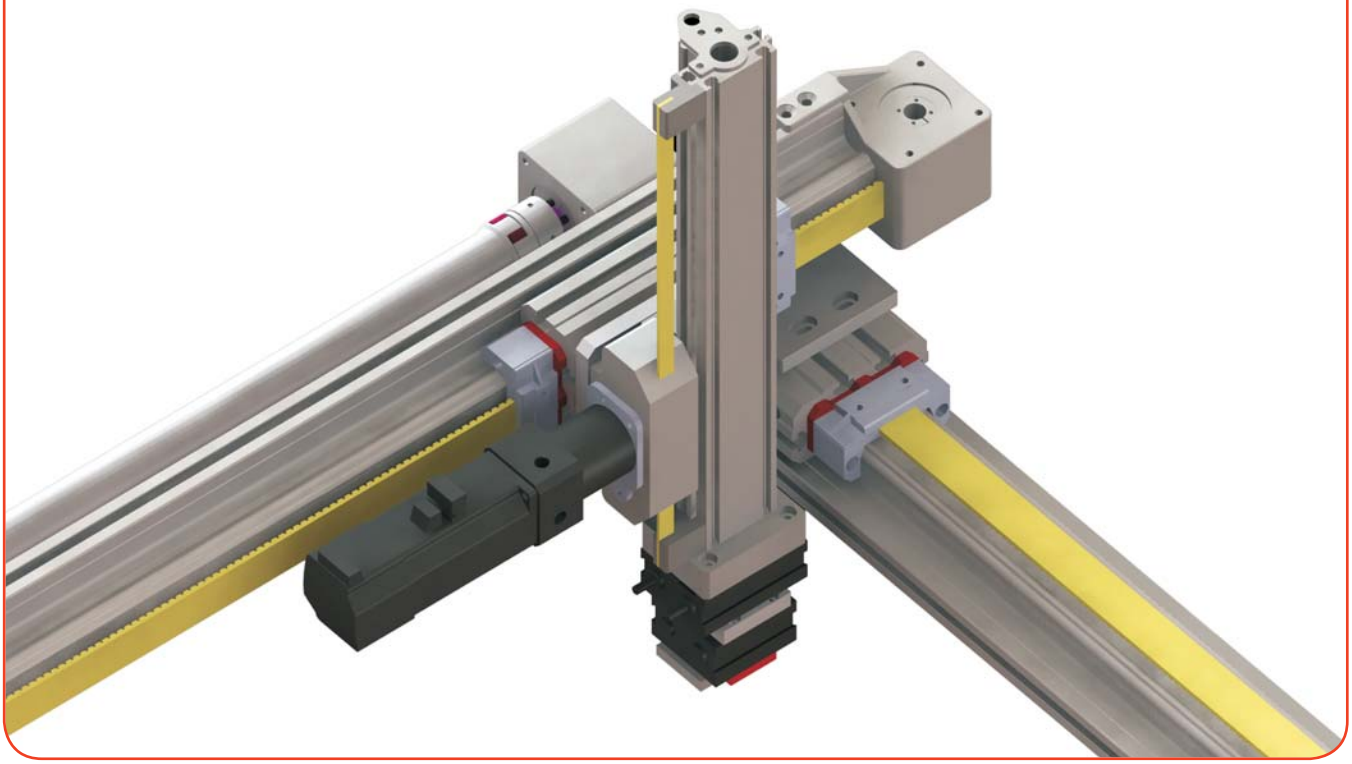
Y-Z Pick & Place manipulator, powered by linear motors.

Esempio di applicazione

Asse verticale in manipolatore a portale.

Application example

Vertical axis in gantry manipulator.

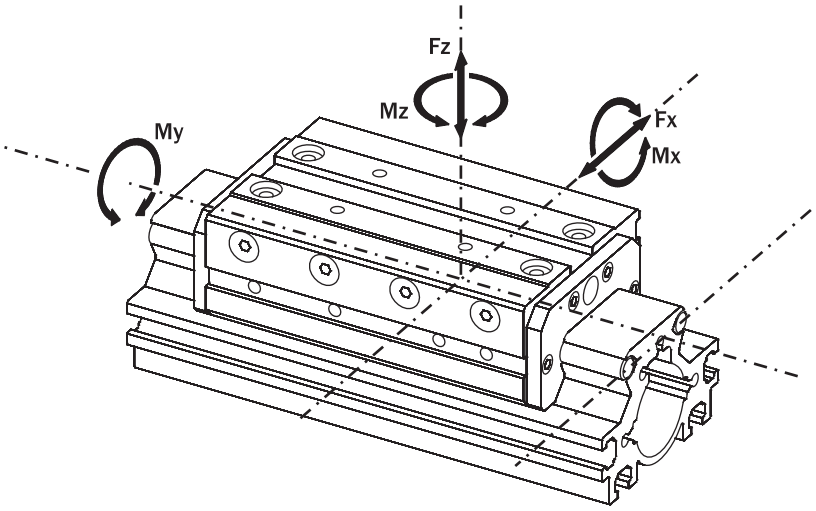


Carichi di sicurezza

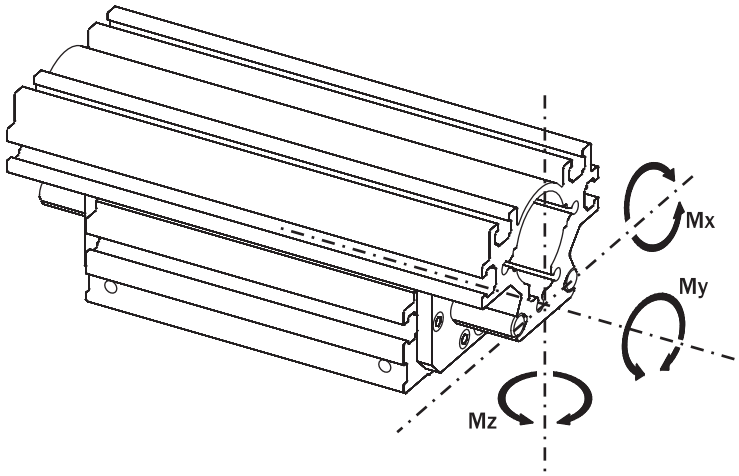
Carichi eccessivi possono danneggiare l'unità, causare difficoltà di funzionamento e compromettere la sicurezza dell'operatore.
Verificare che l'indice di carico LF sia inferiore all'unità.

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.



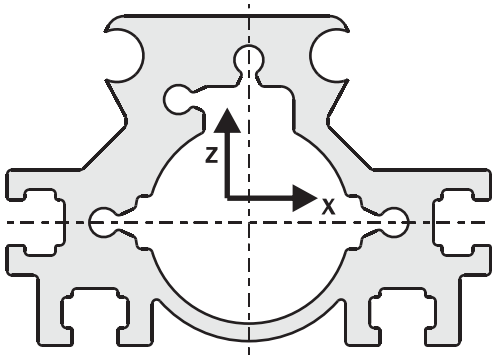
$$LF = \frac{Fx}{Fx\ max} + \frac{Fz}{Fz\ max} + \frac{Mx}{Mx\ max} + \frac{My}{My\ max} + \frac{Mz}{Mz\ max} \leqslant 1$$



	max
Fx	1200 N
Fz	1200 N
Mx	20 Nm
My	15 Nm
Mz	20 Nm

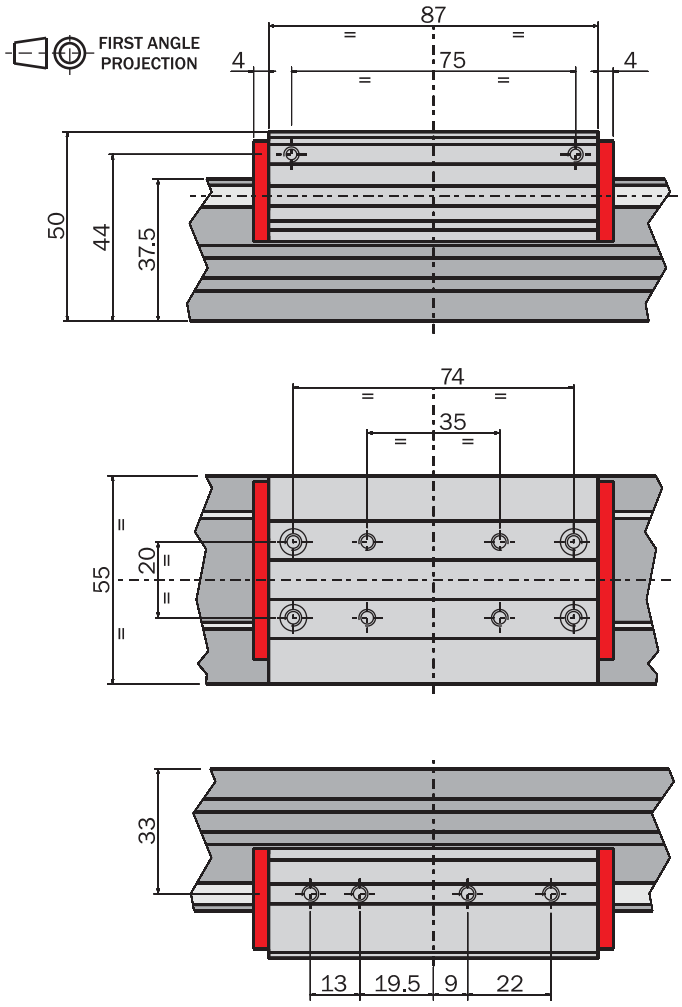
Momenti d'inerzia del profilo estruso in alluminio

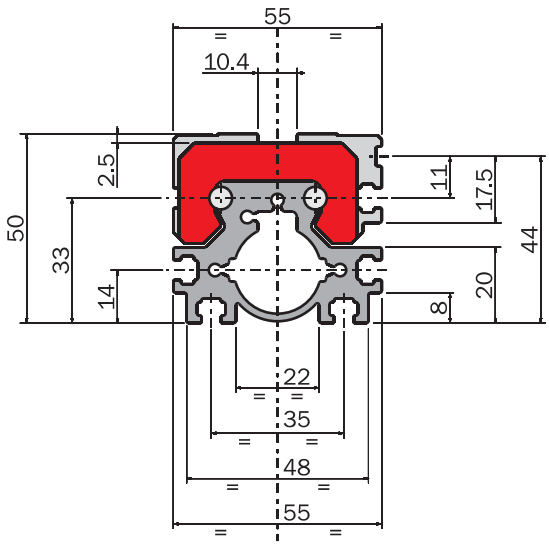
Area moment of inertia for the extruded aluminum profile



Ix= 88617 mm⁴
Iz= 163056 mm⁴

Dimensioni (mm) / *Dimensions (mm)*





Calcolo del peso

Ogni carrello completo pesa 0.22 kg .
La guida (profilo in alluminio più barre in acciaio) pesa 2.28 kg/m .

Weight calculation

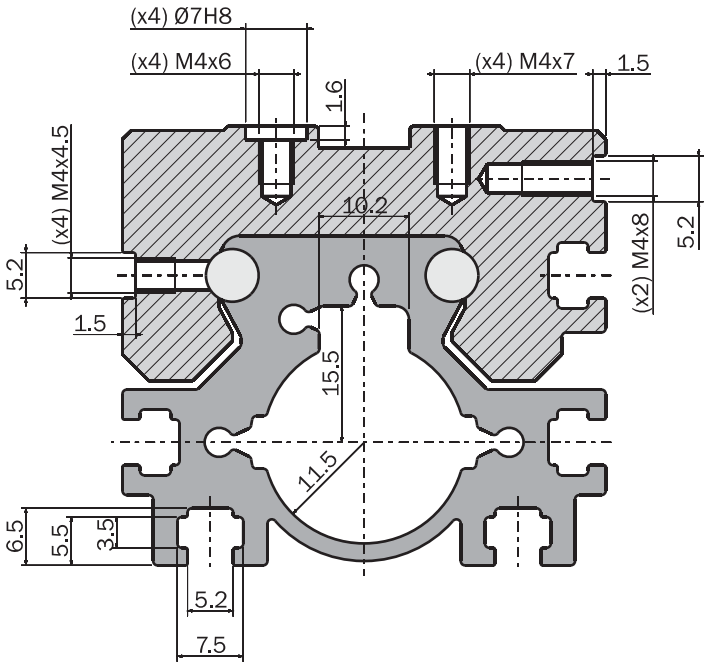
The weight of the carrier is 0.22 kg .
The weight of the guide (alu profile plus steel bars) is 2.28 kg/m .

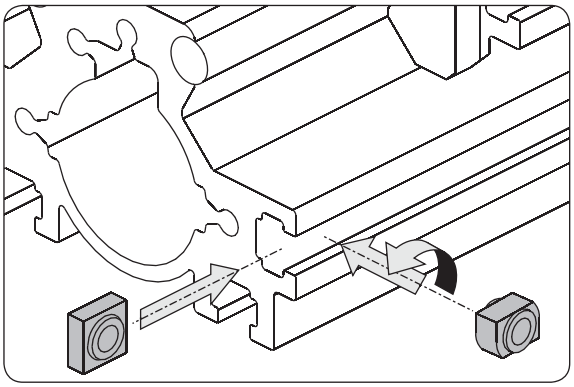
Cave per dadi a "T"

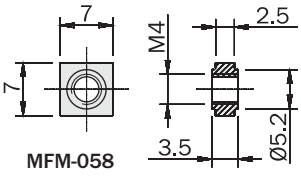
Tutte le cave hanno le stesse dimensioni.
Ci si possono montare due tipi di dadi a T.

T-nut grooves

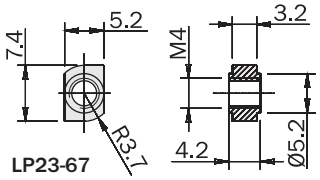
All grooves have the same size.
Two T-nut types can be used.







MFM-058



LP23-67

Codice di ordinazione / *Ordering code*

LP XX - XXXX

		Corsa / *Stroke [mm] (*)*	
Per cilindri ISO Ø12, Ø16 *For ISO cylinders Ø12, Ø16*	**00**	**0÷1500** (1)	
Per cilindro senza stelo Origa OSP-P16 *For Origa OSP-P16 rodless cylinder*	**01**	**0÷1500** (1)	
Per motori lineari LinMot P01-23 *For linear motor LinMot P01-23*	**02**	**0050** **0100**	
Per cilindro senza stelo Festo DGP-18 e per motori lineari LinMot *For Festo DGP-18 rodless cylinder*	**03**	**0÷1500** (1)	
Trasmissione a omega, completa di calettatore per alberi Ø10 *Omega transmission, with Ø10 shaft locking assembly*	**06**	**0÷1500** (1)	
Trasmissione a cinghia e pulegge, completa di calettatore per alberi Ø10 *Belt drive and pulleys, with Ø10 shaft locking assembly*	**07**	**0÷1500** (1)	
Con due carrelli autocentranti *With two self-centering carriers*	**08**	**96÷1500** (1)	
Con cilindro senza stelo Ø25 a trascinamento magnetico *With rodless cylinder Ø25 magnetically coupled*	**10**	**0300** **0500** **1000** **1500**	

(*) Per LP08 la corsa è il massimo interasse fra i due carrelli.

(1) E' possibile ordinare lunghezze di guida con step di 1mm.
(2) E' possibile ordinare lunghezze di guida con step di 100mm.

Consultare il fornitore per lunghezze fuori standard.

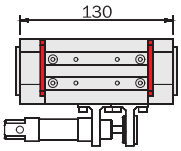
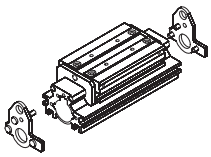
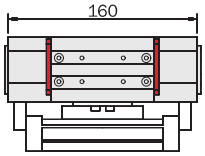
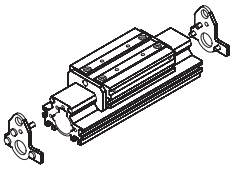
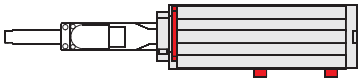
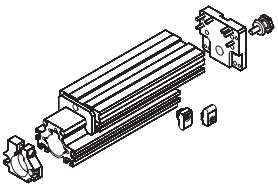
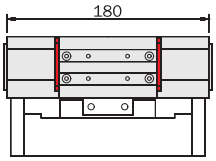
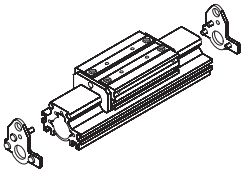
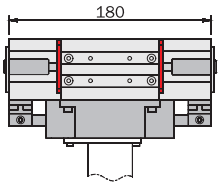
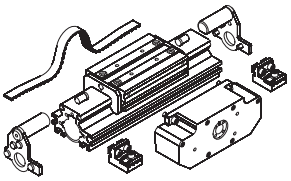
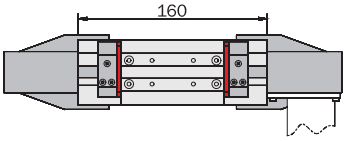
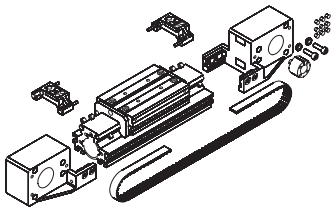
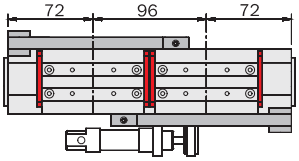
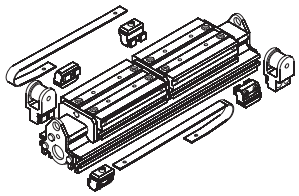
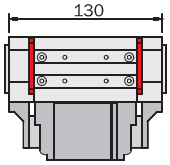
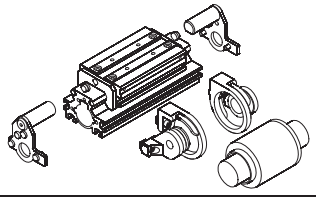
(*) For the LP08 the stroke is intended like the maximum interaxis between the two carriers.
(1) It is possible to order any guide length in 1mm steps.
(2) It is possible to order any guide length in 100mm steps.

Consult factory for special lengths.

Le parti fornite con ciascun codice di ordinazione sono qui evidenziate.

The parts supplied with the ordering codes are here highlighted.

Ingombro della corsa zero [mm] e peso [g/mm]
Zero-stroke length [mm] and weight [g/mm]

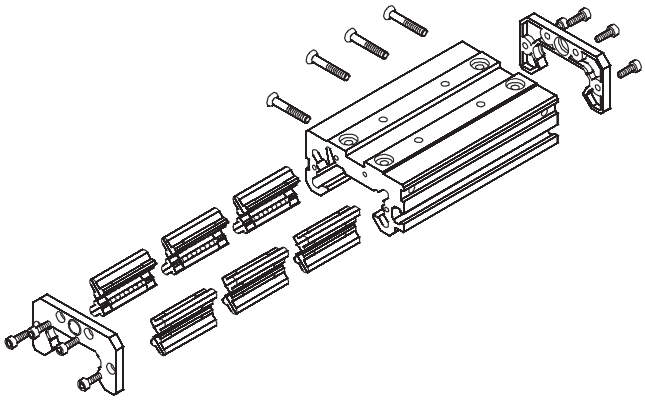
LP00		575g + 2.28 g/mm	
LP01		640g + 2.28 g/mm	
LP02-0050 **LP02-0100**		800g 1000g	
LP03		685g + 2.28 g/mm	
LP06		1300g + 2.3 g/mm	
LP07		1470g + 2.33 g/mm	
LP08		940g + 2.34 g/mm	
LP10-0300 **LP10-0500** **LP10-1000** **LP10-1500**		1970g 2500g 3860g 5200g	

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, i motori ed i riduttori non sono forniti.

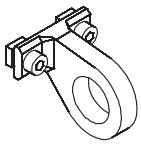
There are also several optional interfaces and kits with the brackets to mount the cylinders, the end stroke stoppers, the shock-absorbers and the sensors.
They are sold in single packages, not assembled with the guide.
The cylinders, the motors and gear reducers are not supplied.

Kit opzionali / *Optional kits*

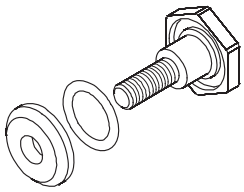
LPK-001 (220 g)
Carrello supplementare (montato da Gimatic su una guida LP)
Additional carrier (mounted on a LP guide by Gimatic)



LPK-002 (40 g)
Anello per fissaggio cilindro Ø12 / Ø16
Cylinder holder Ø12 / Ø16

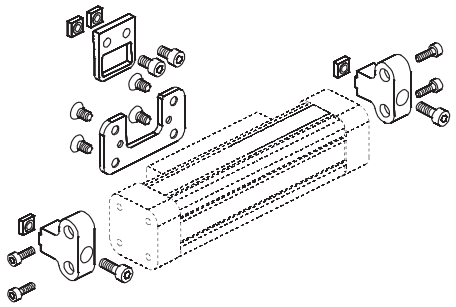


LPK-003 (15 g)
Giunto per stelo LinMot P01-23Sx80
Rod bolt for LinMot P01-23Sx80

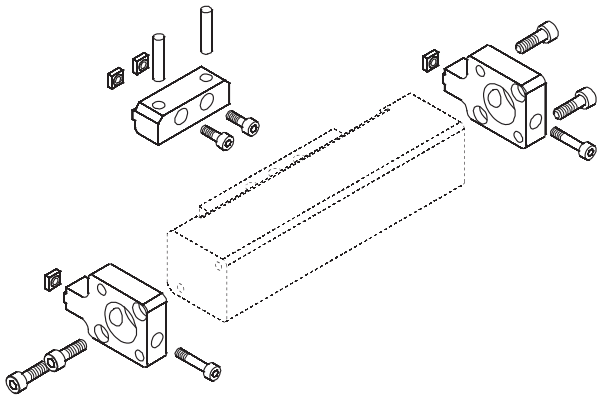


LPK-004 (2 g)
Riscontro corto per deceleratore (per LP00 e LP10)
Shock-absorber short stopper (for LP00 and LP10)

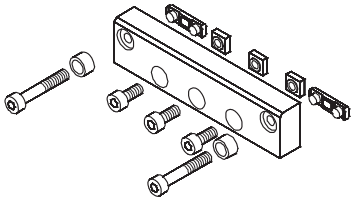
LPK-005 (65 g)
Kit fissaggio cilindro senza stelo Origa Ø16 (OSP-P16)
Fastening kit for Origa rodless cylinder Ø16 (OSP-P16)



LPK-006 (95 g)
Kit fissaggio cilindro senza stelo Festo Ø18 (DGP-18)
Fastening kit for Festo rodless cylinder Ø18 (DGP-18)

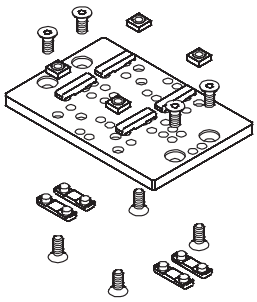


LPK-012 (60 g)
Kit fissaggio statore LinMot P01-23Sx80
Stator fastening kit for LinMot P01-23Sx80

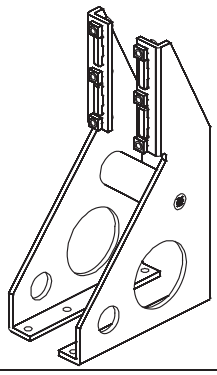


Kit opzionali / *Optional kits*

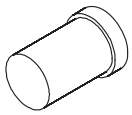
LPK-013 (75 g)
Interfaccia di montaggio per il carrello
Mounting interface plate for the carrier



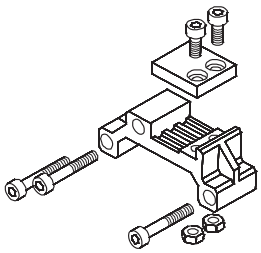
LPK-021 (530 g)
Kit per fissaggio verticale LP02
Vertical mounting kit for LP02



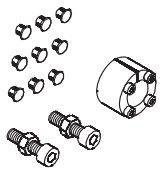
LPK-027 (4 g)
Riscontro lungo per deceleratore (per LP01 e LP03)
Shock-absorber long stopper (for LP01 and LP03)



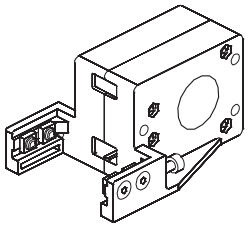
LPK-032 (40 g)
Blocca cinghia per trasmissione a cinghia
Belt clamp for belt drive



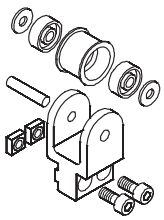
LPK-033 (25 g)
Calettatore, tensionatore e tappi per LP07
Locking assembly, belt tensioner and plugs for LP07



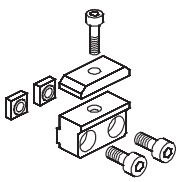
LPK-034 (370 g)
Puleggia per trasmissione a cinghia
Pulley for belt drive



LPK-035 (30 g)
Rinvio per autocentraggio pinza
Transmission wheel for self-centering gripper

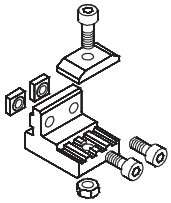


LPK-036 (15 g)
Blocca cinghia per autocentraggio pinza
Belt clamp for self-centering gripper

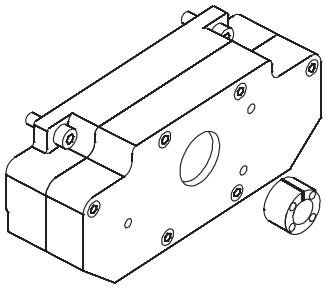


Kit opzionali / *Optional kits*

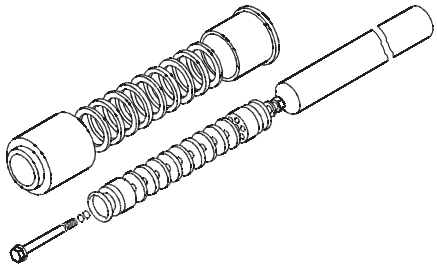
LPK-037 (35 g)
Staffa bloccaggio cinghia dentata sistema Omega
Clamping bracket for Omega system belt



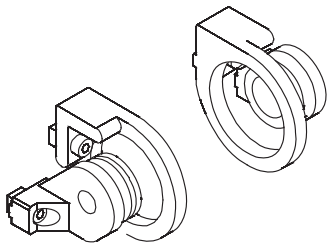
LPK-038 (530 g)
Gruppo pulegge per trasmissione a omega
Pulleys assembly for omega transmission



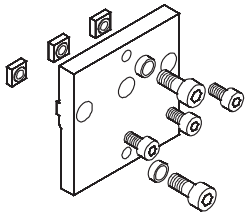
LPK-039 (300 g)
Pistone per cilindro senza stelo a trascinamento magnetico
Piston for magnetically coupled rodless cylinder



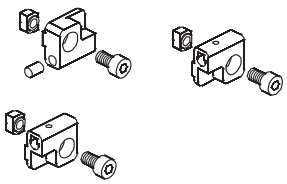
LPK-040 (210 g)
Kit di fissaggio per cilindro senza stelo a trascinamento magnetico LPK-039
Fastening kit for magnetically coupled rodless cylinder LPK-039



LPK-045 (50 g)
Piastra di interfaccia per flangia LinMot PF02-23
Interface plate for LinMot flange PF02-23

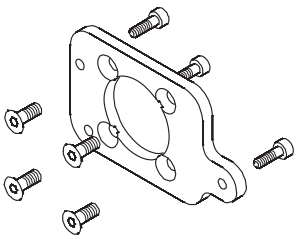


LPK-046 (10 g)
Staffe per sensori
Sensor brackets



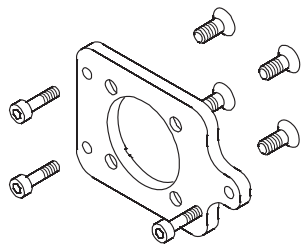
LP23-67 (70 g)
Dado ad innesto M4 per cava 5 (1 pezzo)
M4 rhombus T-nut for slot 5 (1 piece)

LPK-048 (60 g)
Interfaccia per riduttore epicicloidale per alberi Ø10 (LP06)
Adapter plate for planetary gear for shafts Ø10 (LP06)

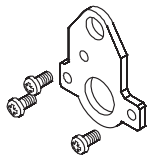


Kit opzionali / *Optional kits*

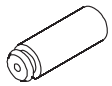
LPK-049 (50 g)
Interfaccia per riduttore epicicloidale per alberi Ø10 (LP07)
Adapter plate for planetary gear for shafts Ø10 (LP07)



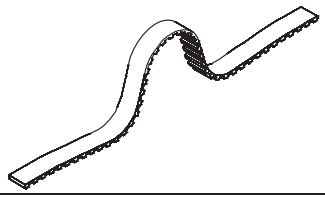
LPK-050 (25 g)
Testata
End plate



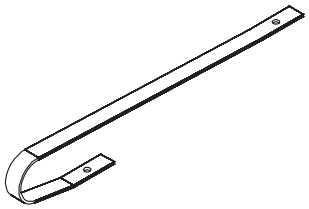
LPK-051 (6 g)
Ammortizzatore in gomma
Rubber stopper



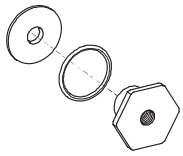
LP23-53 (21 g/m)
Cinghia dentata per LP06 e LP07
Timing belt for LP06 and LP07



LP23-54 (20 g/m)
Cinghia piana per LP08 e LL08
Flat belt for LP08 and LL08

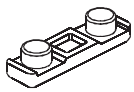


LZK-003 (23 g)
Giunto M6 per cilindri Ø12 e Ø16 ISO 6432
Cylinder rod bolt M6 for ISO 6432 cylinders Ø12 and Ø16

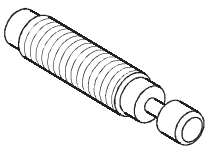


MFM-058 (170 g)
Dado (1 pezzo)
T-nut (1 piece)

MFP-K19 (40 g)
Linguette di centraggio piatte (100 pezzi)
Flat centering feather keys (100 pieces)

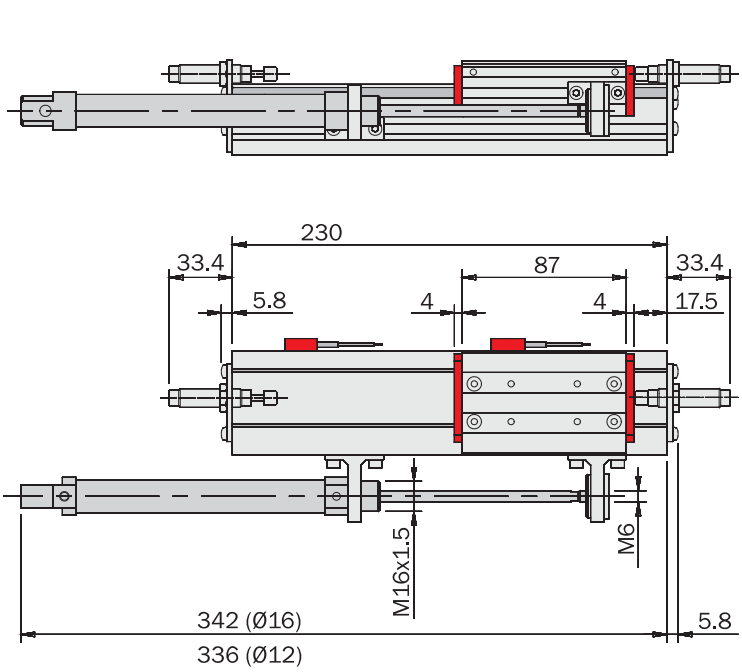


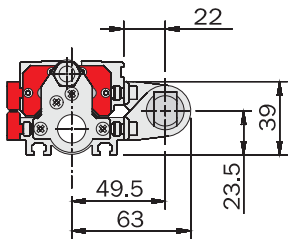
TK10-4MB (16 g)
Deceleratore idraulico (M10x1)
Shock-absorber (M10x1



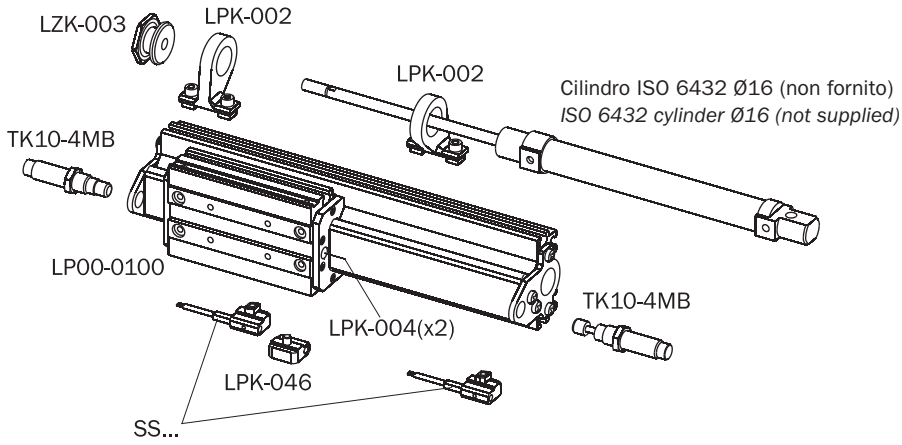
Esempio: Slitta di alesaggio 16mm (cilindro ISO 6432), corsa 100mm, con deceleratori idraulici e sensori

Example: Slide with 16mm piston bore (ISO 6432), 100mm stroke, with hydraulic shock-absorbers and sensors





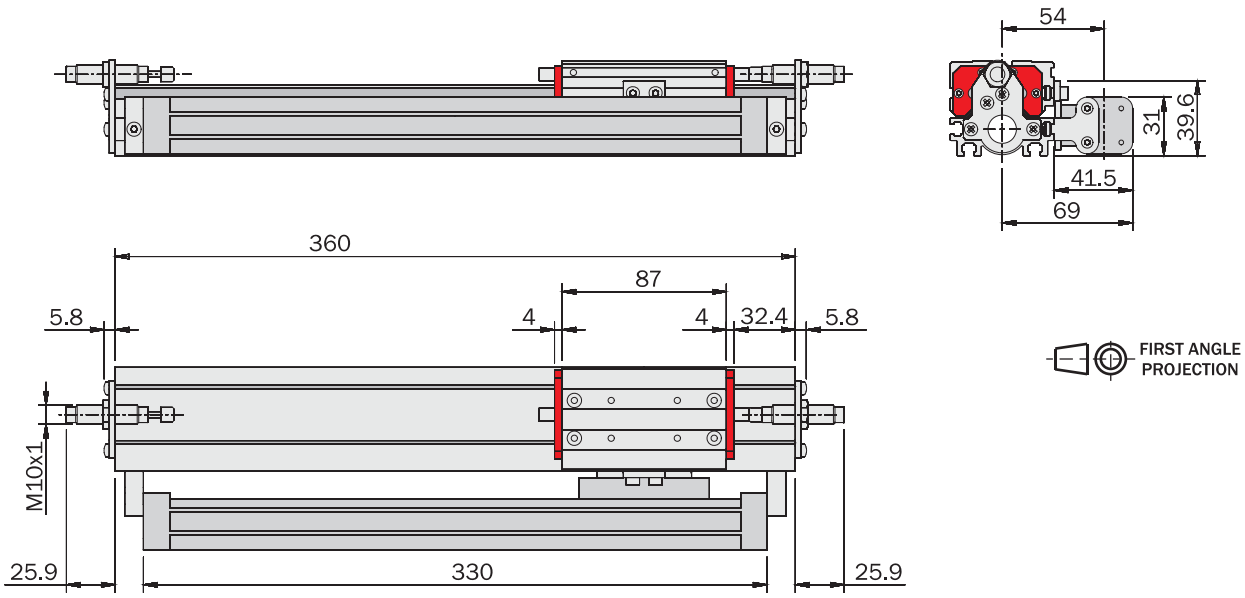
FIRST ANGLE PROJECTION

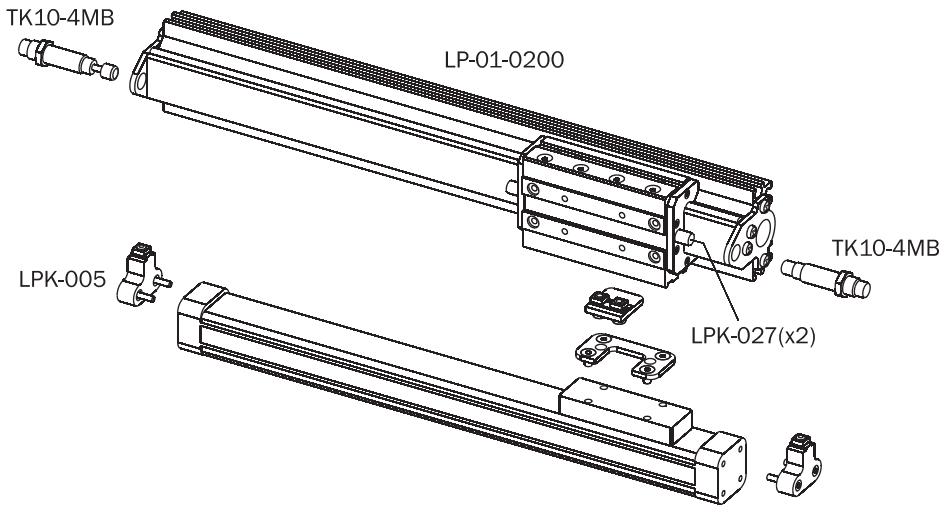


Montaggio LPK-004 e LPK-027 / *LPK-004 and LPK-027 mounting*

Esempio: Slitta di alesaggio 16mm, corsa 200mm, con deceleratori idraulici, movimentata da cilindro senza stelo Origa

Example: Slide with 16mm piston bore, 200mm stroke, with hydraulic shock-absorbers, powered by the Origa rodless cylinder

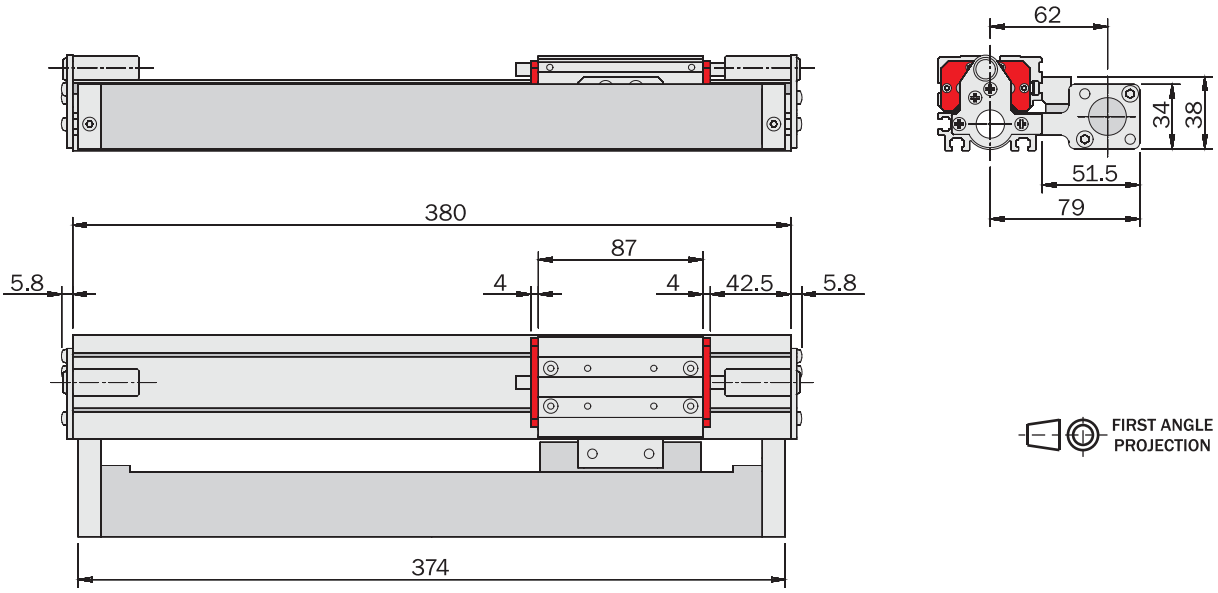


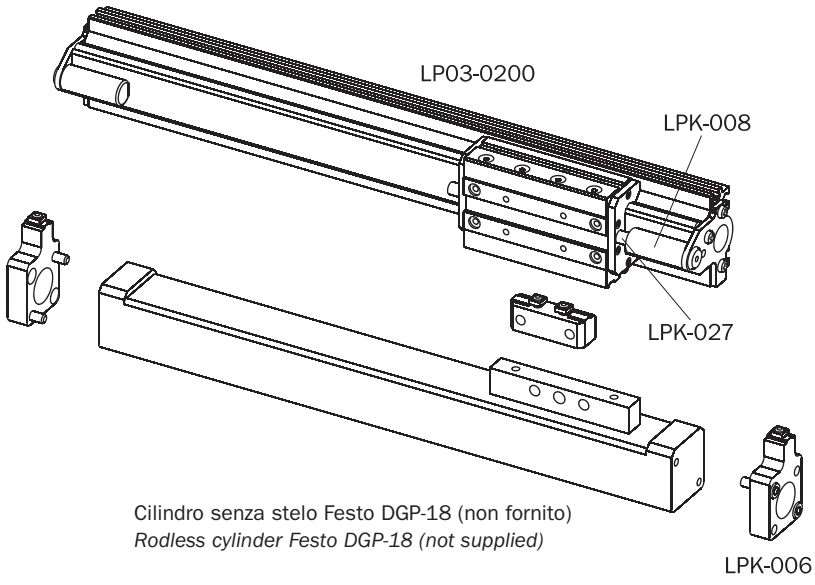


Cilindro senza stelo Origa OSP-P16 (non fornito)
Rodless cylinder Origa OSP-P16 (not supplied)

Esempio: Slitta di alesaggio 18mm, corsa 200mm, con fine-corsa d'emergenza in gomma, movimentata da cilindro senza stelo Festo

Example: Slide with 18mm piston bore, 200mm stroke, with rubber emergency stoppers, powered by the Festo rodless cylinder

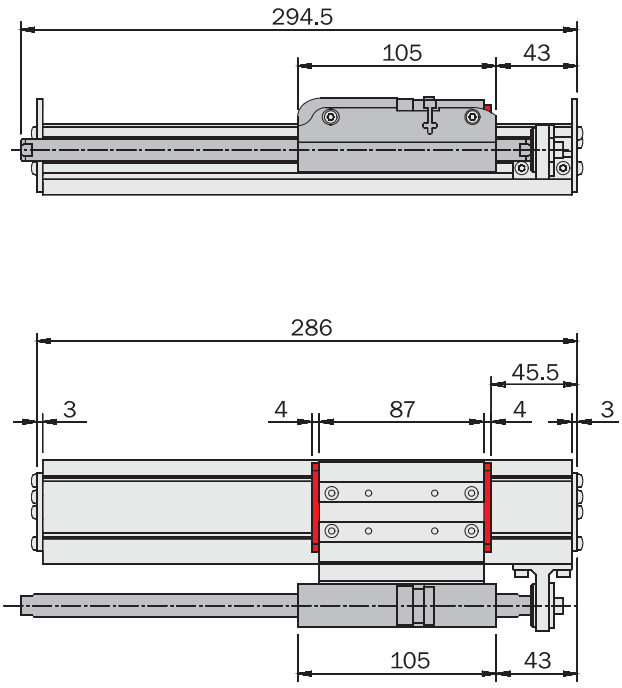


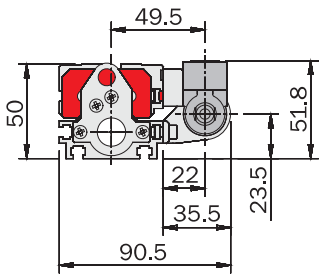


Cilindro senza stelo Festo DGP-18 (non fornito)
Rodless cylinder Festo DGP-18 (not supplied)

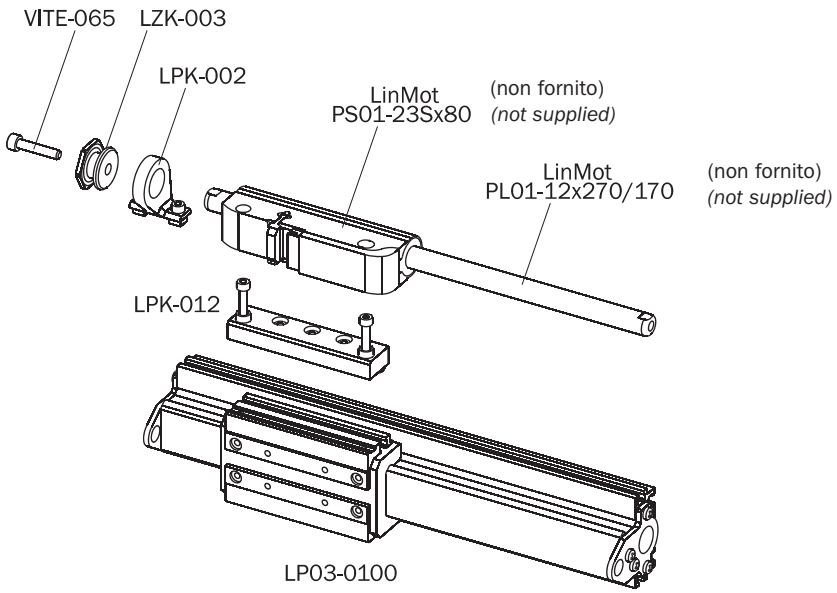
Esempio: Slitta di corsa 100mm, azionata da motore lineare LinMot compatto

Example: Slide, 100mm stroke, powered by a LinMot compact linear motor



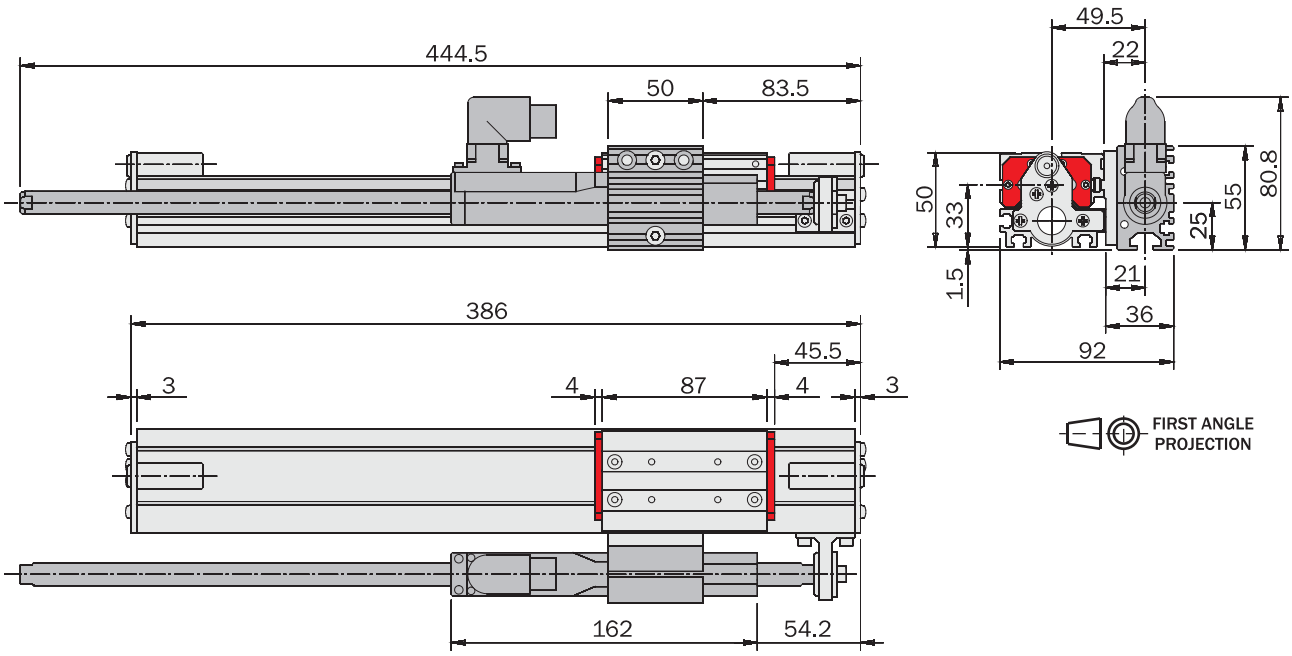


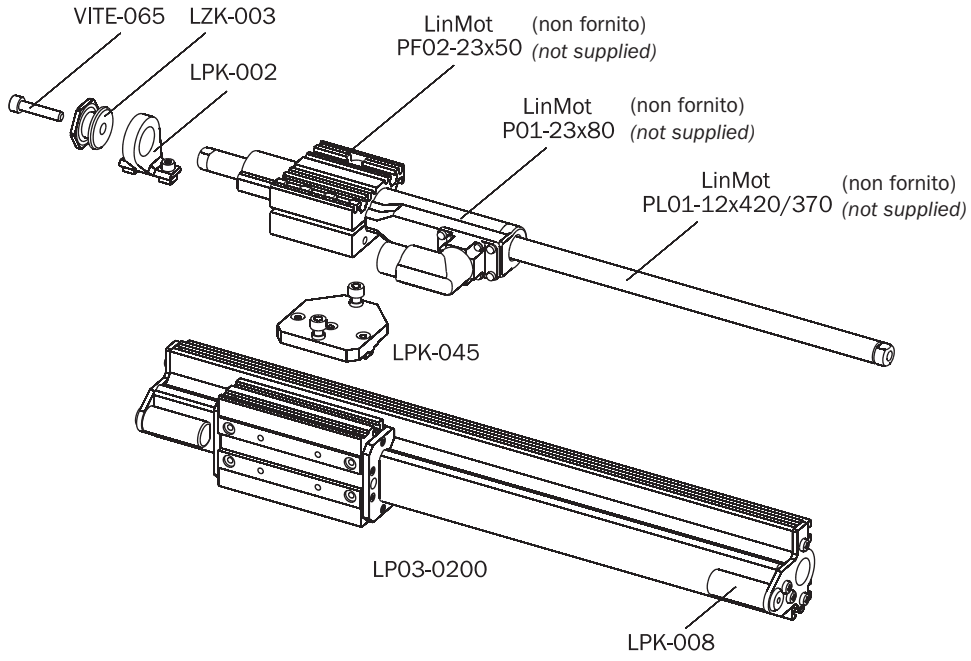
FIRST ANGLE PROJECTION



Esempio: Slitta di corsa 200mm, con fine-corsa d'emergenza in gomma, azionata da motore lineare LinMot

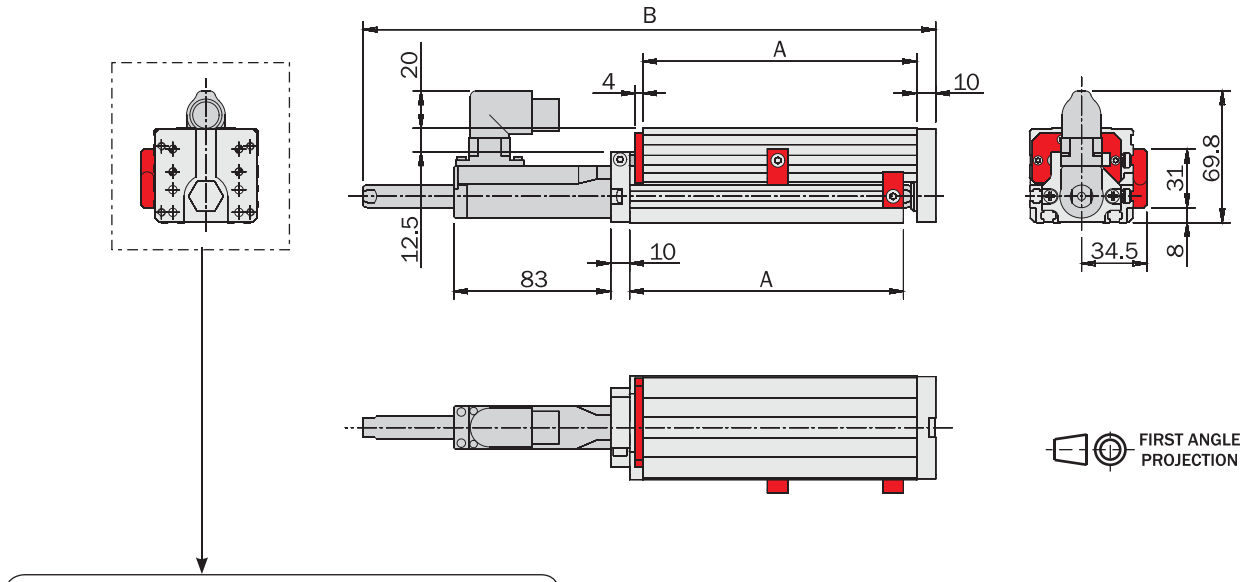
Example: Slide, 200mm stroke, with rubber emergency stoppers, powered by a LinMot linear motor

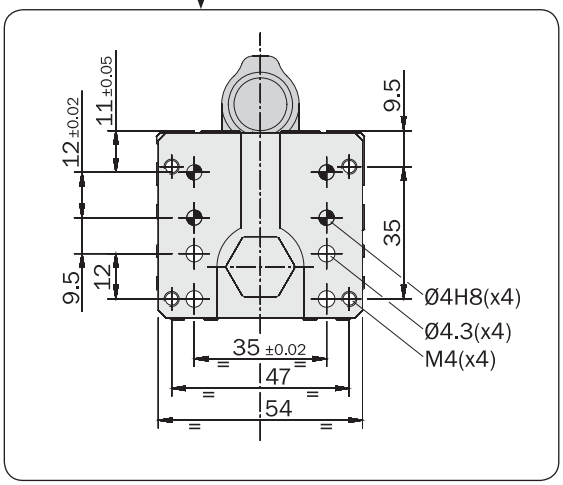




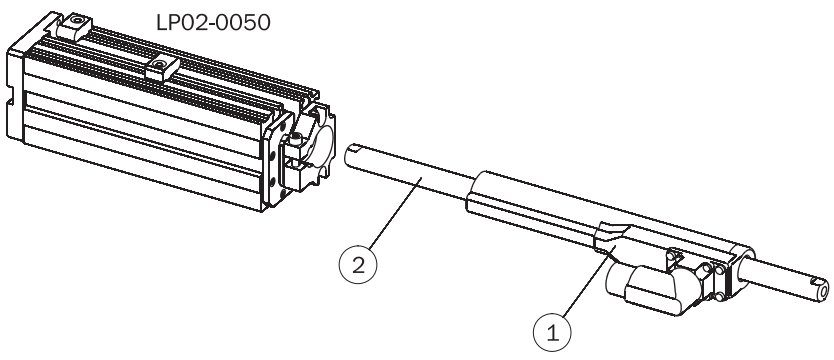
Esempio: Slitte LP02-0050 e LP02-0100 azionate da motore lineare LinMot in linea

Example: Slides LP02-0050 and LP02-0100, powered by an in-line LinMot linear motor



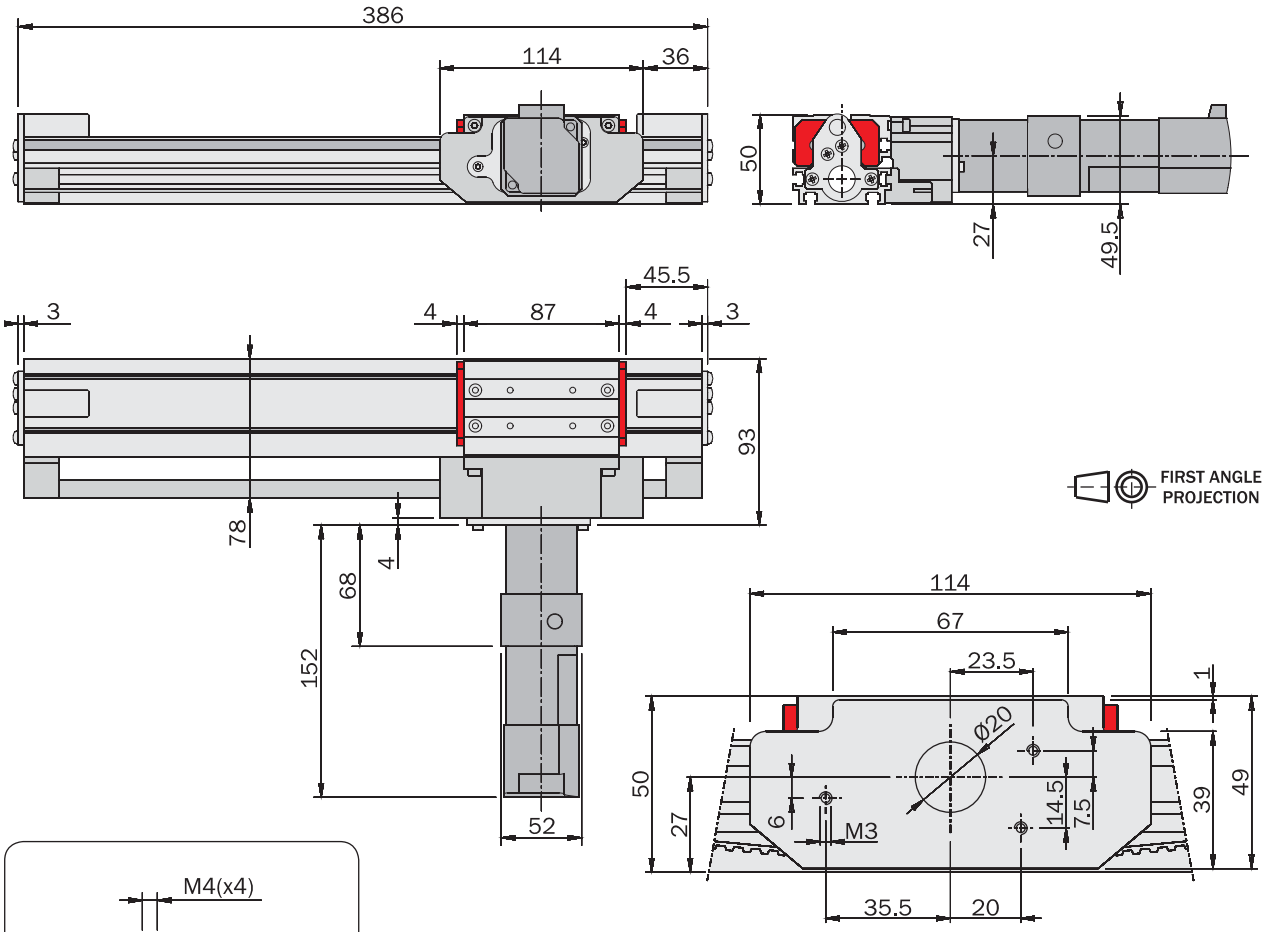


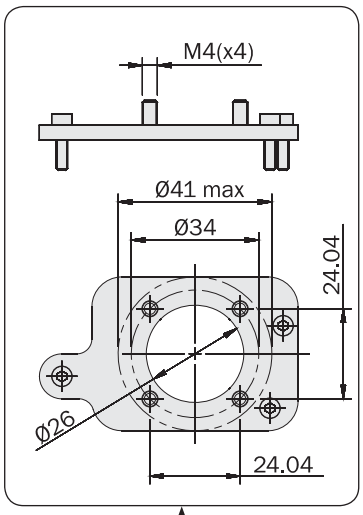
	LP02-0050	LP02-0100
A	145mm	195mm
B	303mm	363mm
1	LinMot P01-23x160/70x210 (non fornito / not supplied)	LinMot P01-23x160/130x270 (non fornito / not supplied)
2	LinMot PL02-12x290/240 (non fornito / not supplied)	LinMot PL02-12x350/300 (non fornito / not supplied)

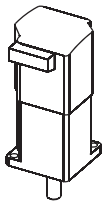


Esempio: Slitta con trasmissione ad omega (corsa 200mm) azionata da motoriduttore

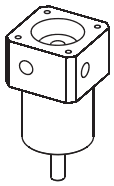
Example: Slide with omega transmission (200mm stroke) powered by servomotor and gear reducer



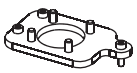




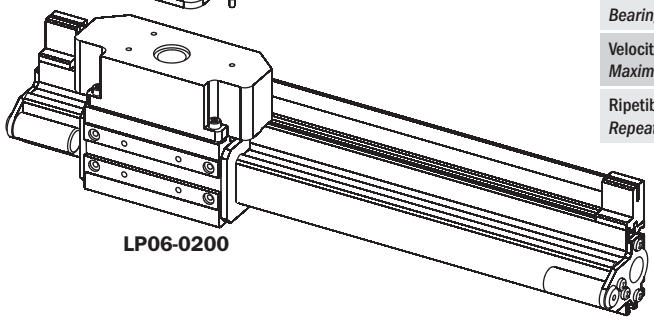
Motore Mitsubishi / Mitsubishi motor
HF-KE13W1-S100 (100W)
(non fornito) / (not supplied)



Riduttore Pini / Pini gear reducer
GL4038X253046
(non fornito) / (not supplied)



LPK-048

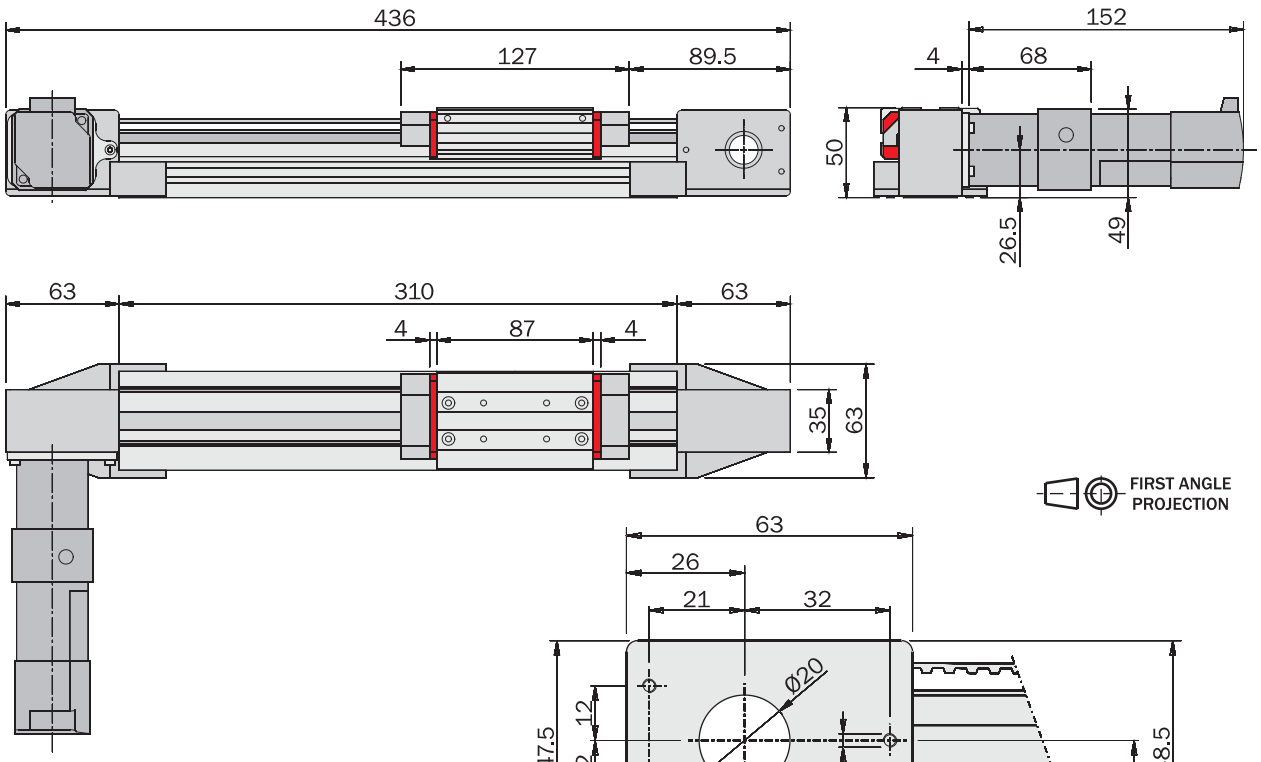


LP06-0200

Cinghia *Belt*	T5-10
Carico ammesso sulla cinghia *Allowable tensile load on the belt*	320N
Diametro calettatore *Lock unit diameter*	10mm
Corsa per ogni rotazione puleggia *Stroke per pulley revolution*	100mm
Inerzia pulegge *Pulleys inertia*	17kgmm^2
Massa del carrello *Carrier mass*	0.75kg
Attrito del carrello *Carrier friction*	12N
Carico dinamico dei cuscinetti (C) *Bearings dynamic load rate (C)*	4360N
Carico statico dei cuscinetti (Co) *Bearings static load rate (Co)*	2600N
Velocità massima *Maximum speed*	2m/s
Ripetibilità *Repeatability*	±0.1mm

Esempio: Slitta con trasmissione a cinghia (corsa 150mm) azionata da motoriduttore

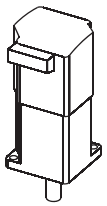
Example: Slide with belt drive (150mm stroke) powered by servomotor and gear reducer



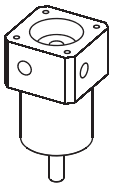
FIRST ANGLE PROJECTION

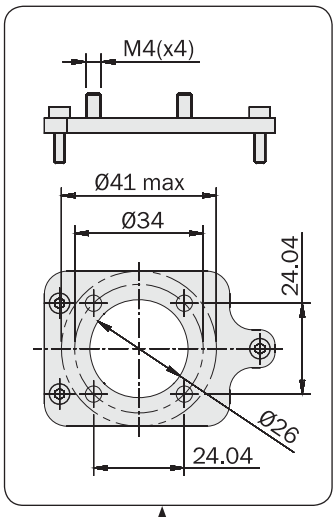
Cinghia *Belt*	T5-10
Carico ammesso sulla cinghia *Allowable tensile load on the belt*	320N
Diametro calettatore *Lock unit diameter*	10mm
Corsa per ogni rotazione puleggia *Stroke per pulley revolution*	100mm
Inerzia pulegge *Pulleys inertia*	18kgmm²
Massa del carrello *Carrier mass*	0.3kg
Attrito del carrello *Carrier friction*	11N
Carico dinamico dei cuscinetti (C) *Bearings dynamic load rate (C)*	4360N
Carico statico dei cuscinetti (Co) *Bearings static load rate (Co)*	2600N
Velocità massima *Maximum speed*	2m/s
Ripetibilità *Repeatability*	±0.1mm

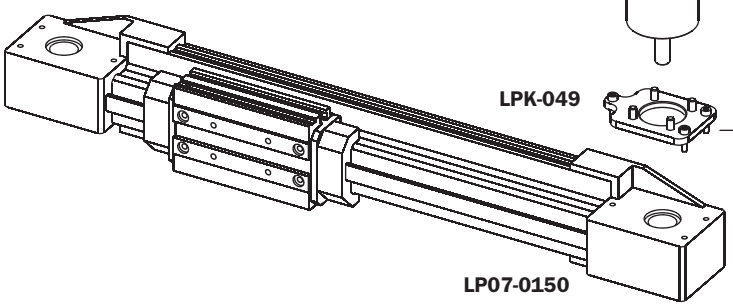
Motore Mitsubishi / Mitsubishi motor
HF-KE13W1-S100 (100W)
(non fornito) / (not supplied)



Riduttore Pini / Pini gear reducer
GL4038X253046
(non fornito) / (not supplied)

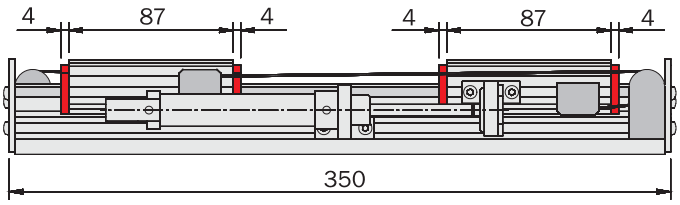


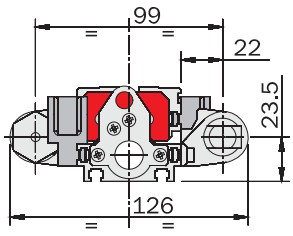


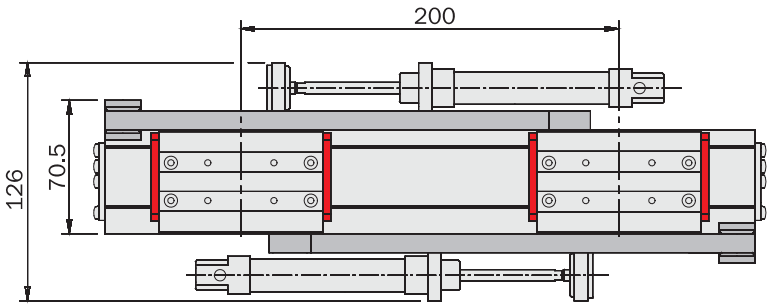


Esempio: Pinza autocentrante (interasse: 200mm) azionata da due cilindri ISO 6432 di alesaggio 16mm e corsa 50mm

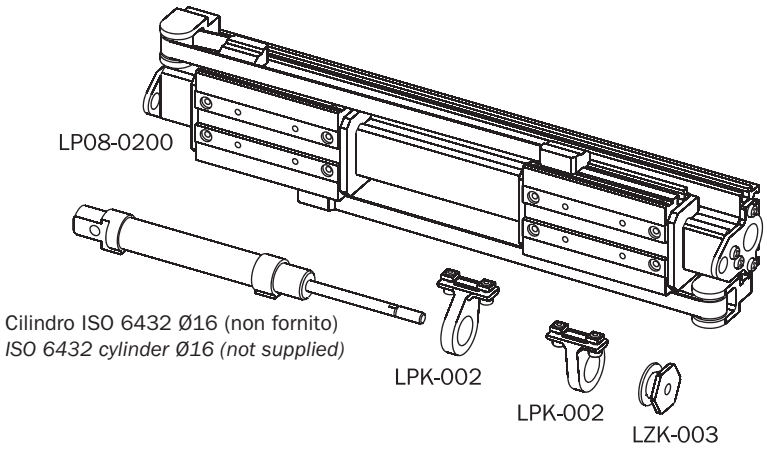
Example: Selfcentering gripper (interaxis: 200mm) powered by two 16mm ISO 6432 cylinders, stroke 50mm



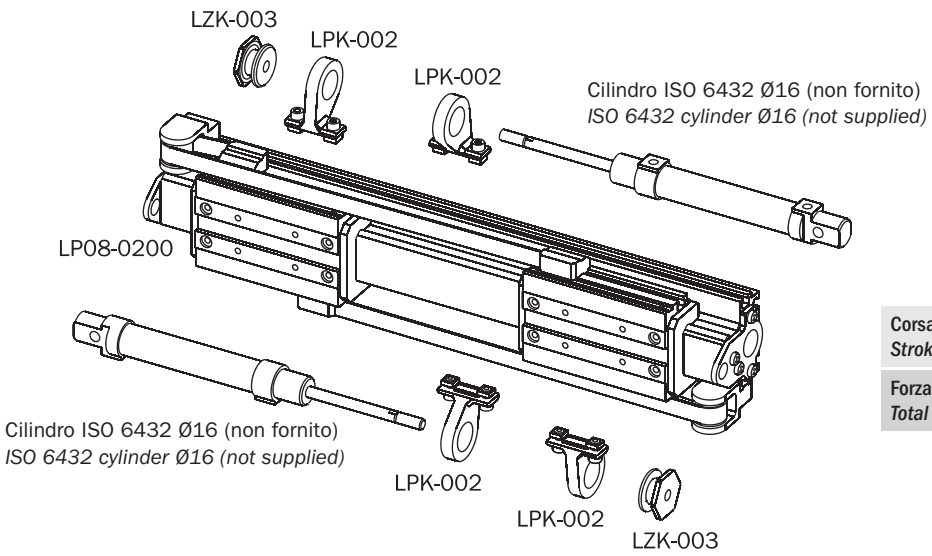




FIRST ANGLE PROJECTION



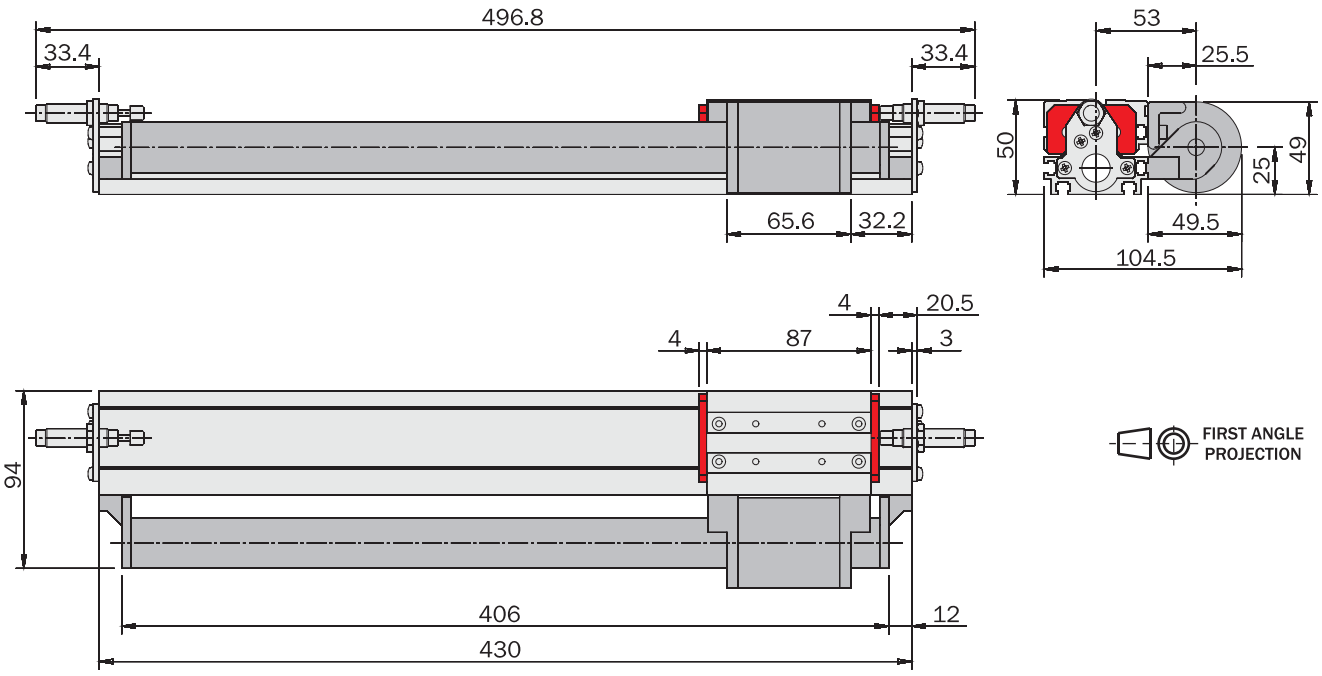
Corsa *Stroke*	2x50 mm
Forza totale a 6 bar *Total force at 6 bar*	100 N



Corsa *Stroke*	2x50 mm
Forza totale a 6 bar *Total force at 6 bar*	200 N

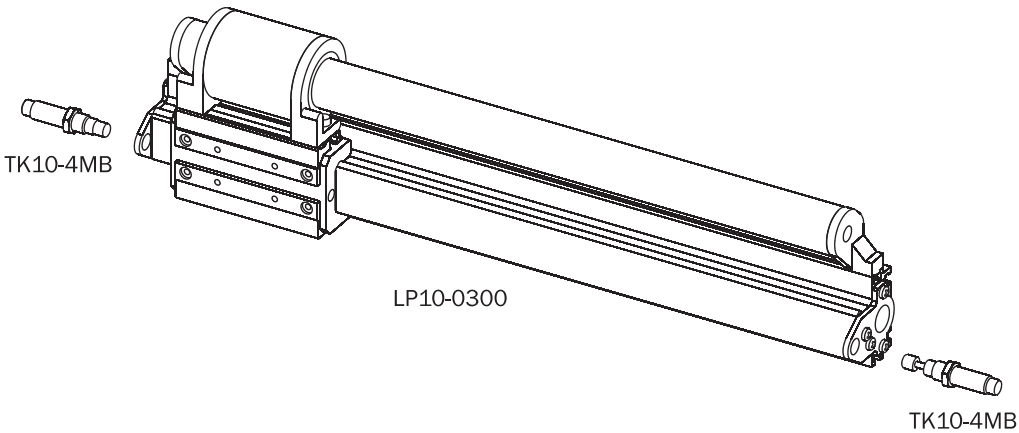
Esempio: Attuatore pneumatico (alesaggio 25mm, corsa 300mm) a trascinamento magnetico, con deceleratori idraulici

Example: Pneumatic actuator (piston bore: 25mm, stroke: 300mm) magnetically coupled, with hydraulic shock-absorbers



Avvertenza
La pressione massima di utilizzo è 5bar

Caution
Maximum working pressure is 5bar



LPK-013

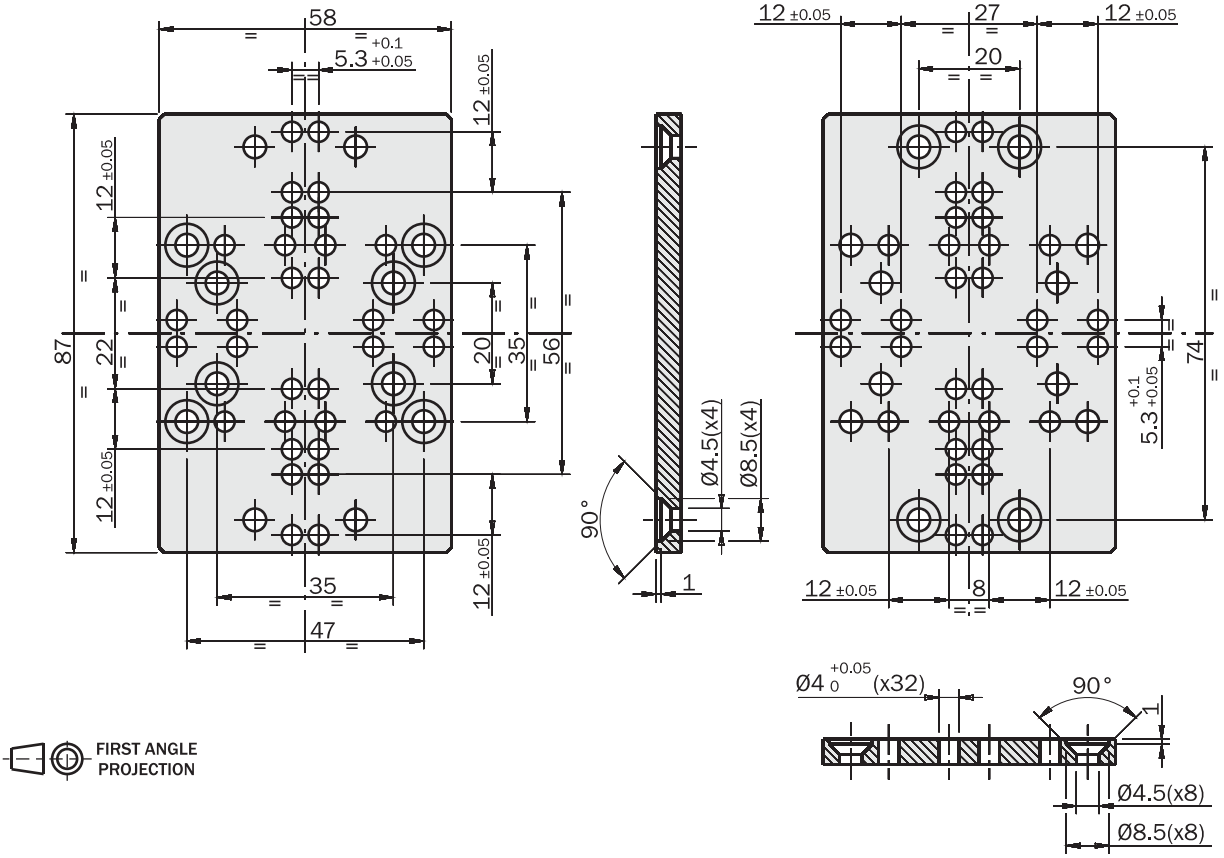
Interfaccia di montaggio

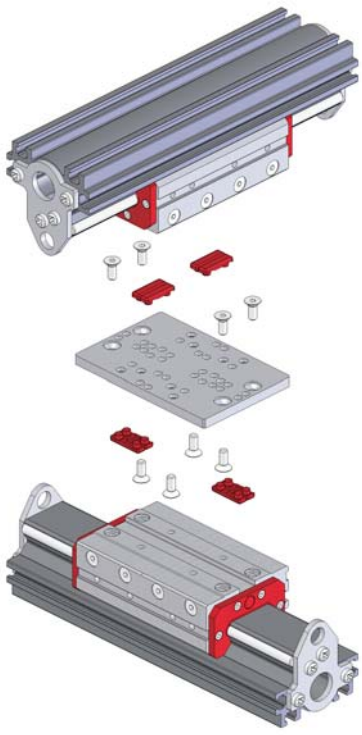
Va fissata al carrello e serve per il montaggio diretto di un'altra guida LP.
Peso: 75 g

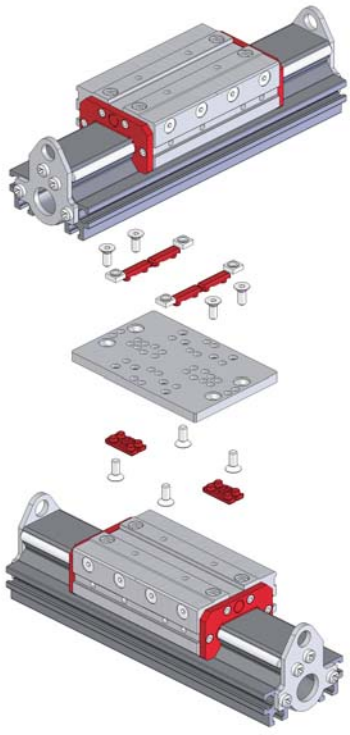
LPK-013

Mounting interface plate

It must be fixed to the carrier for direct mounting of an additional guide LP.
Weight : 75 g







Sensori

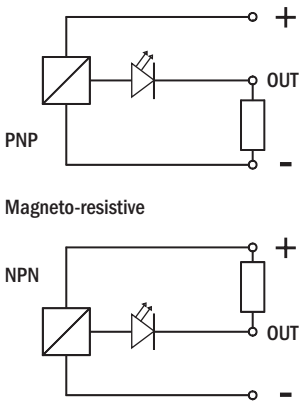
Il rilevamento della posizione di lavoro è affidato a uno o più sensori magnetici di prossimità (opzionali), che rilevano la posizione attraverso un magnete.
Quindi, per un corretto funzionamento, è da evitare l'impiego in presenza di forti campi magnetici od in prossimità di grosse masse di materiale ferromagnetico.

Sensors

The operating position is detected by magnetic proximity sensors (optional) through a magnet.
The use of magnetic proximity sensors is therefore to be avoided in the vicinity of large masses of ferromagnetic material or intense magnetic fields as this may cause detection problems.

I sensori utilizzabili sono:

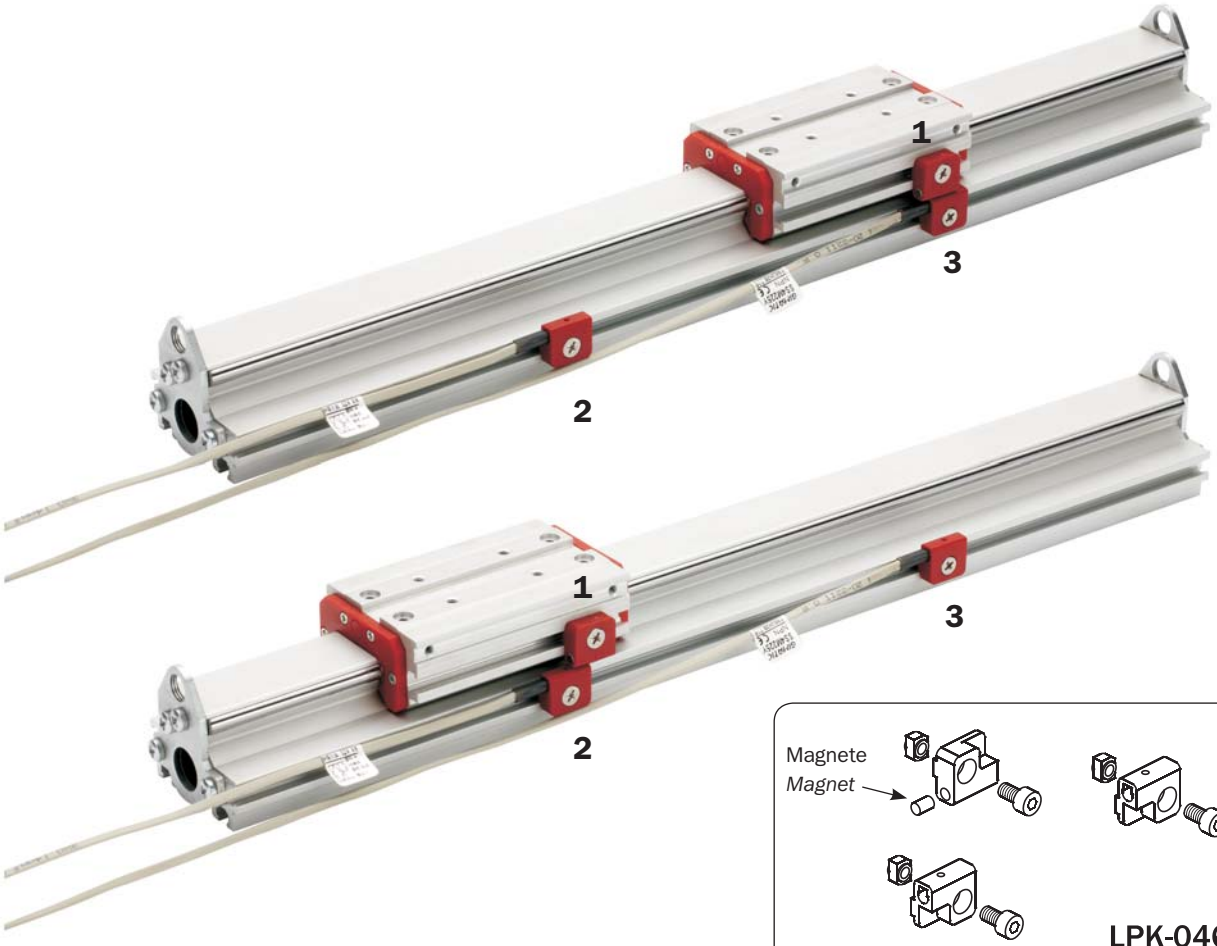
Use sensors:



			LP...
SS4N225-G	PNP	2.5m cable	☑
SS4M225-G	NPN	2.5m cable	☑
SS3N203-G	PNP	M8 connector	☑
SS3M203-G	NPN	M8 connector	☑

Per montare 2 sensori è necessario il kit LPK-046.

One kit LPK-046 is necessary to mount two sensors.



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 (quattro viti)

Remove the four screws and then the red plastic plate

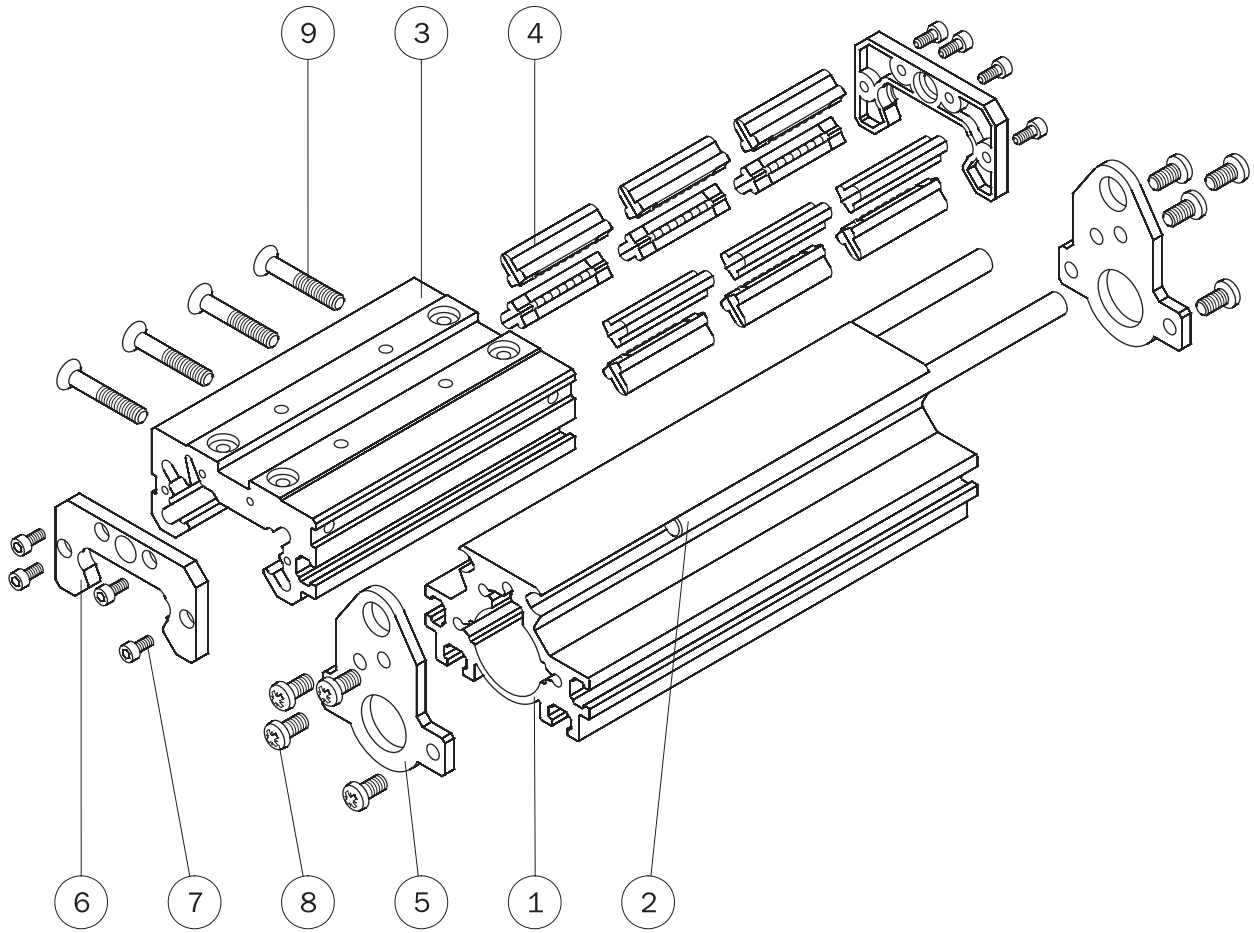
Applicare il lubrificante sulle colonne di guida in acciaio

Lubricate the steel bars

Muovere il carrello per distribuire il lubrificante nelle cartucce

Move the carrier to distribute the lubricant in the ball bearings

Elenco delle parti / *Part list*



		LP		
1	Profilo in alluminio	ESTR-LP23-02	*Alu profile*	*1*
2	Guida	BARRA-002 Ø6 mm	*Guideway*	*2*
3	Carrello	LP23-10	*Carrier*	*3*
4	Cartuccia ricircolo di sfere	C-2521	*Ball bushing*	*4*
5	Testata	LP23-12	*End plate*	*5*
6	Protezione carrello	LP23-05	*Protection*	*6*
7	Vite	M2.5x6 mm DIN912 Z/B	*Screw*	*7*
8	Vite	M4x8 mm DIN7500C Z/B	*Screw*	*8*
9	Vite	M4x25 mm UNI5933 Z/B	*Screw*	*9*