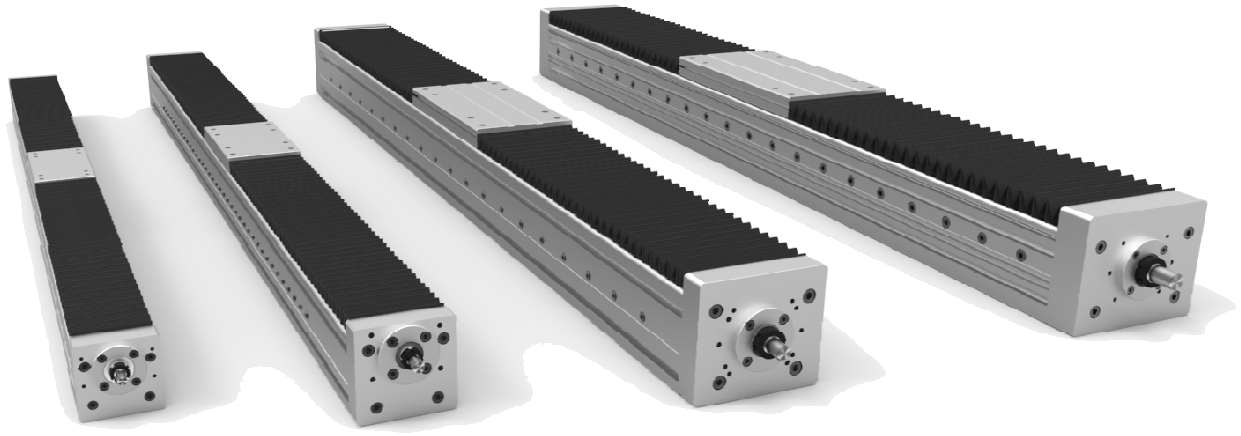
IMPEX TECNICHE LINEARI



BI-RAIL
LINEAR MODULES

USER AND MAINTENANCE MANUAL

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This user and maintenance manual has been compiled by the manufacturer Impex Tecniche Lineari srl. Before starting to use any product, read the following instructions carefully. Impex Tecniche Lineari accepts no responsibility for damage to persons or property resulting from non-compliance with safety regulations contained herein or improper use of the product.

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1. Product description

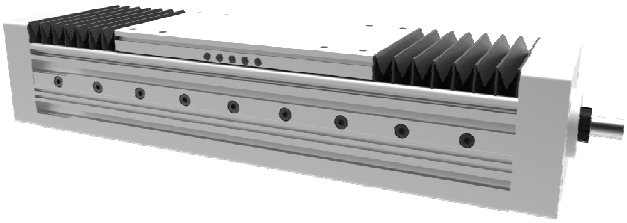
All MOVITEC branded linear products are designed to offer many customizable solutions and can be combined with each other to form multi-axis systems. Thanks to a choice of drives, guiding systems, protections and options, the adaptability of the products in either existing or in new machines is guaranteed. MOVITEC linear systems are manufactured from extruded aluminium or from high-quality aluminium. in steel.

2. Application areas

MOVITEC Bi-Rail Linear Modules are mainly used in the following areas: automotive, packaging, handling, marking systems, control and vision systems, assemblies, semiconductors, electronics, special machines, industrial automation, installation, etc.

3. Different sizes

MV Sises **70, 90, 130, 160 type:**



- **MVP** with screw drive and linear rail guides
- **MVL** with screw drive and long block linear rail guides
- **MVH** with screw drive and heavy duty linear rail guides
- **MVR** with screw drive and roller guides

4. Safety symbols

ATTENTION!

DANGER!

The following safety instructions must be followed strictly to avoid any damage to property or persons. The manufacturer is not liable for any damage caused by negligence.

5. Safety instructions

MOVITEC Bi-Rail Linear Modules are precision machine elements. They must be handled with utmost care. It is not allowed to put them into operation if they are not complied with the relevant European standards for machine safety, the relevant harmonized standards and all other relevant regulations.

6. Transport and storage

Bi-Rail Linear Modules or Linear Systems are packed individually with care. Carefully read all the symbols on the packaging. Move products with the utmost care and leave them in original packaging until installation. Do not shake, do not drop! Remove packaging only in installation area. Careful when handling, weights can vary widely.

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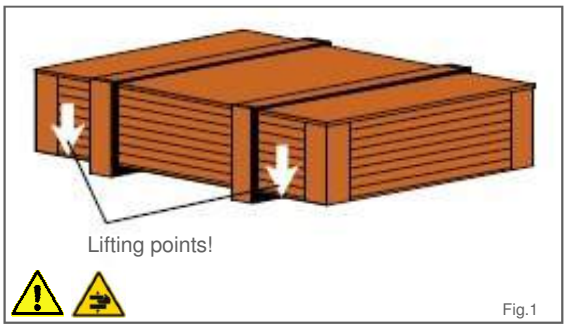


Fig.1

Raise the packaging only simultaneously on the two points

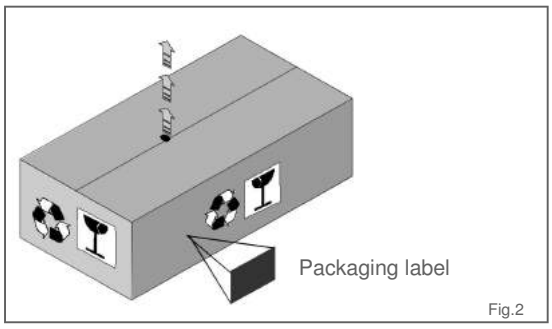
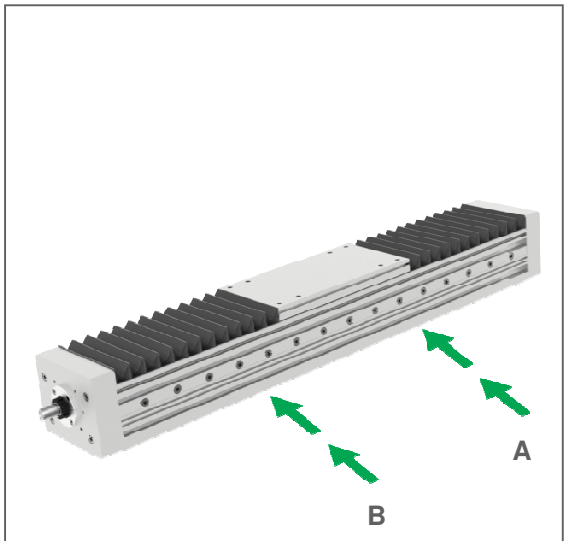


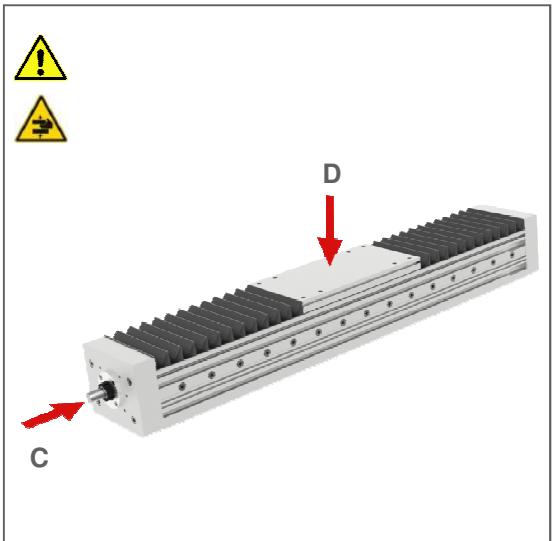
Fig.2

All information is provided on the packaging



Lift the product **only** from points A and B simultaneously!

Fig.3



Do not lift from point C and D!

Fig.4

7. Serial number Identification

Each MOVITEC Bi-Rail Linear Module is marked with a serial number. This number is always on the right side of the table, under the bellows and identifies all the assembly parts. To request spare parts, always attach the serial number.

2 0 1 6	0 4	1 6 0	0 1

To identify the serial number, raise the bellows from the front plate side and remove from the support.

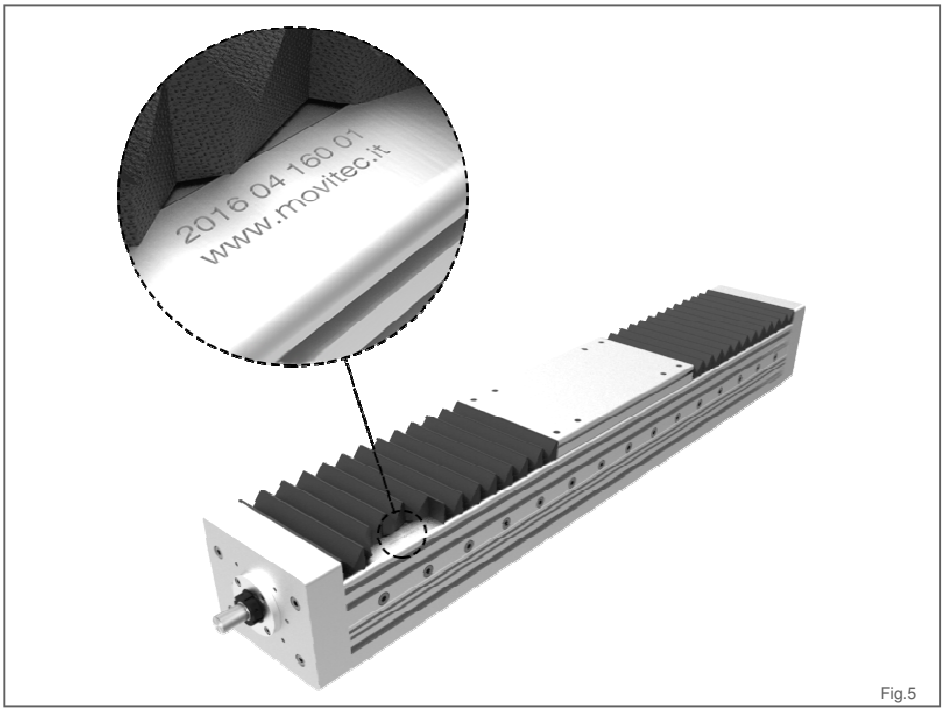


Fig.5

8. Main parts Bi-Rail Linear Modules

Main parts of Bi-Rail Linear Modules MOVITEC:

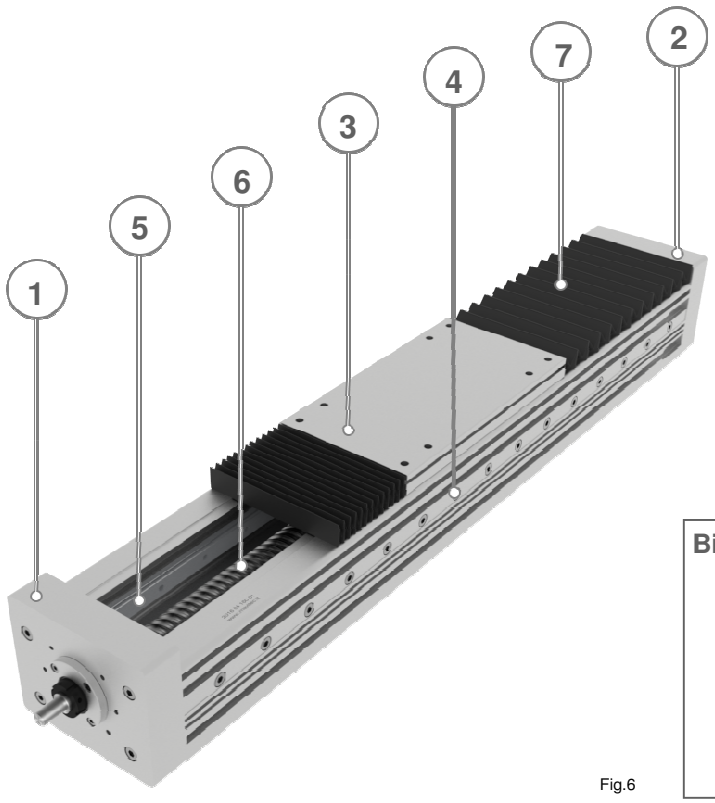


Fig.6

Bi-Rail main parts

1) Front plate
2) Rear plate
3) Carriage
4) Base profile
5) Linear guides
6) Screw drive
7) Bellows

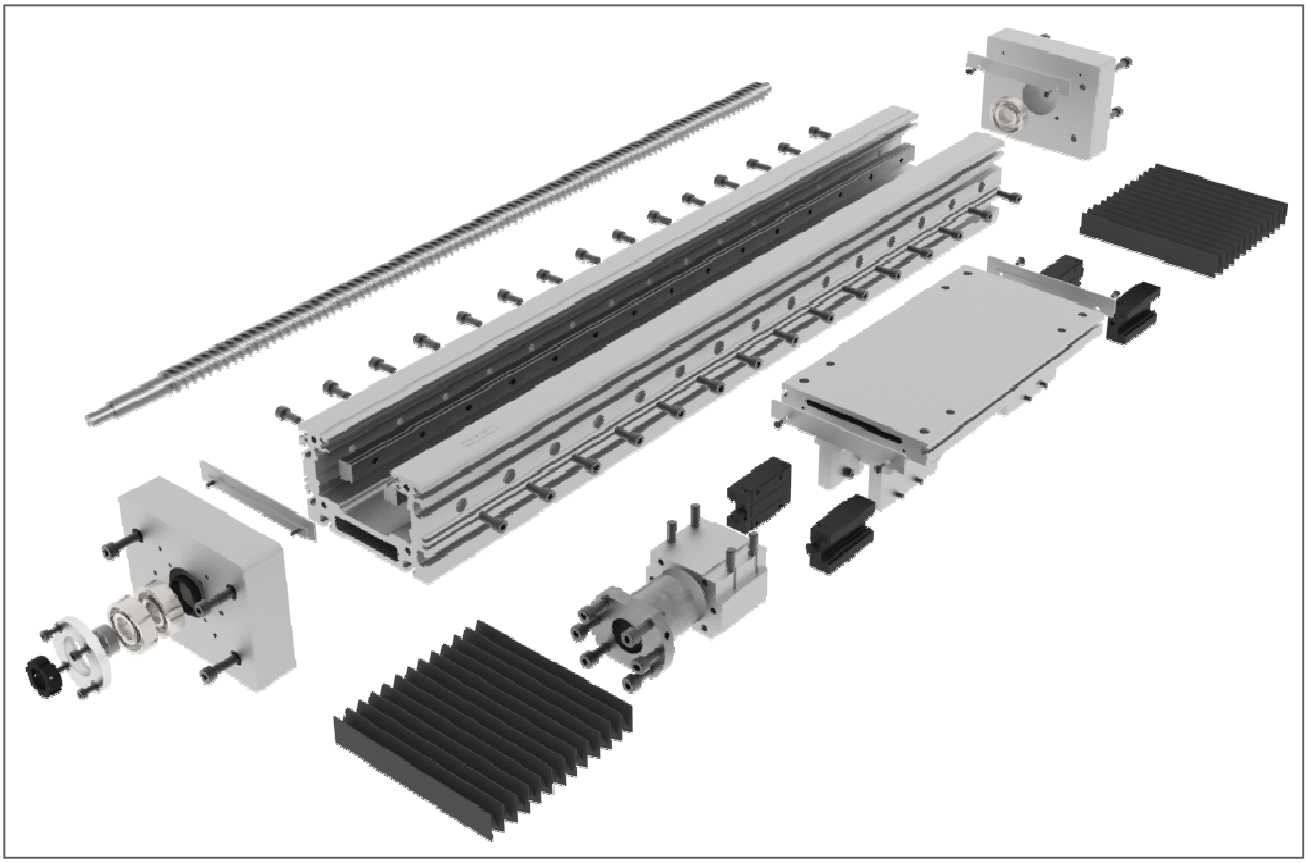


Fig.7

9. Maintenance

MOVITEC Bi-Rail Linear Modules are manufactured to require a minimum of maintenance. Maintenance should be performed only by qualified and specially trained staff .

Before performing maintenance, observe all necessary safety rules!

- Turn off the machine and disconnect the power plug
- For cleaning do not use any sharp or abrasive objects
- For greasing, use a minimal amount of fat. Do not dirt the mechanical elements

Standard maintenance is limited to a general cleaning and lubrication of nut and linear guides. Regularly inspect the Bi-Rail Linear Modules in order to keep them clean. For lubrication refer to table 3 on page 10.

10. Part assembly and disassembly

Bi-Rail Linear Module are supplied assembled and ready for installation. To carry out a proper maintenance itb may be necessary to remove some of the parts:

Carriage on base profile:

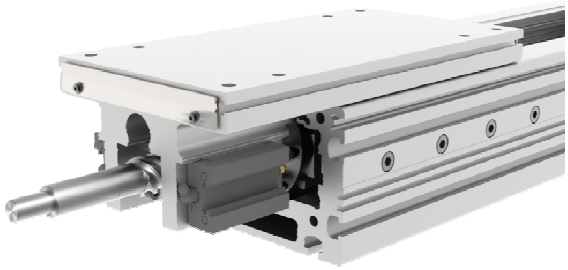


Fig.8

Screw drive, nut and linear slide blocks:

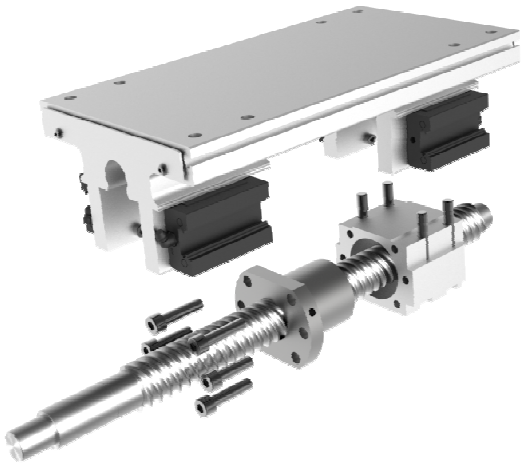
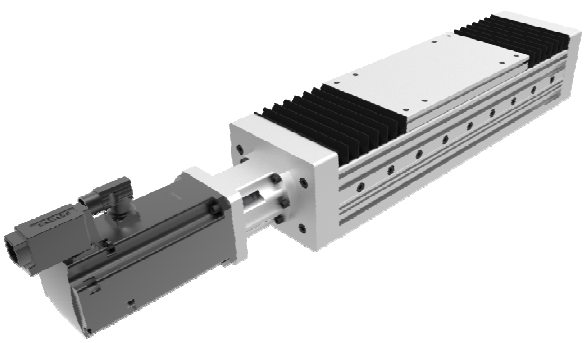


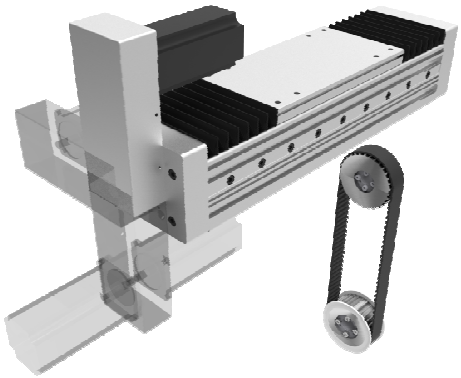
Fig.9

Attacco mMotor mounting:



Direct with coupling

Fig.10



Lateral motor mount with belt gear

Fig.11

11. Precision couplings

Direct motor mounting is provided with aluminium support and coupling. These last are dangerous rotating parts. The operator has to comply with all safety rules and not touch the coupling at any time while rotating. Secure the machine during assembly / disassembly work.

	Fixing screw ISO 4762/12.9 [B]	Tightening torque [Nm]
Clamp coupling	M2	0,35
	M2,5	0,75
	M3	1,35
	M3	2
	M4	4
	M5	8
	M6	10,5
	M6	15
	M8	25
Coupling with conical locking assembly	M3	1,34
	3 x M3	2
	M4	2,9
	6 x M4	3
	4 x M5	6
	M5	6
	8 x M6	7
	M6	10
	8 x M8	12
	8 x M10	35
Giunto con albero ad espansione	M3	2
	M4	4
	M5	8
	M6	15
	M8	35
	M10	70
	M12	120
	M16	290

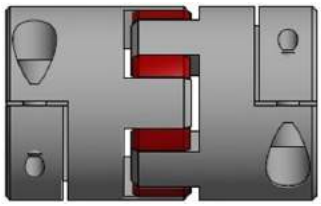
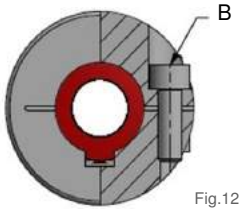



Fig.12

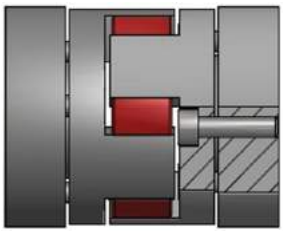
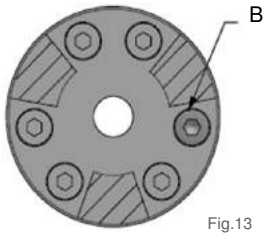



Fig.13

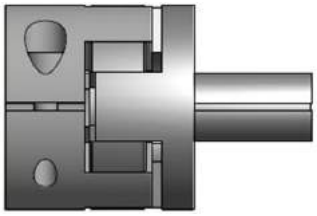
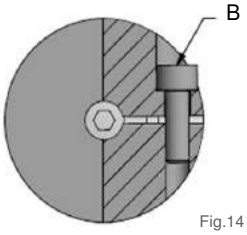



Fig.14

Tab.1

12. Locking assembly

Locking device for lateral motor mount with belt gear.

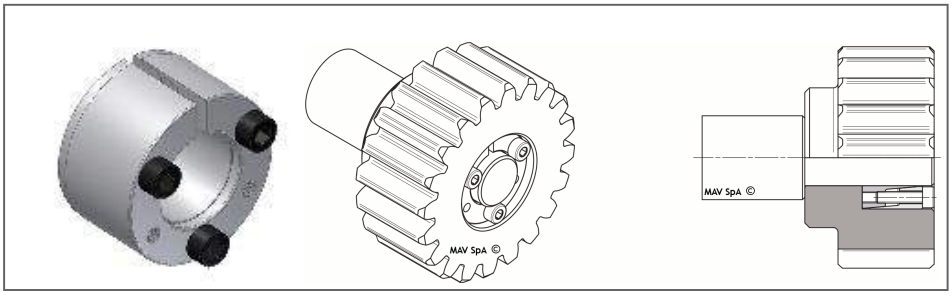


Fig.15

Fixing screw	Tightening torque [Nm]
M 2,5	1,2
M 3	2,2
M 4	5
M 5	10
M 6	17
M 8	41

Tab.2

13. Lubrication

MOVITEC Bi-Rail Linear Modules are supplied lubricated. Optionally, it is possible to have additional lubrication holes on some sizes. The holes for centralized lubrication system are standards made on the left side of the carriage. On request, they can be provided on the right side.

For Bi-Rail Linear Modules it is possible to add one lubrication hole for the screw (Case A, Figure 17), or 5 lubrication holes (Case B, Figure 18). it is possible to mount self-lubricating sliding blocks (Case C, Fig.19).

Lubrication	Use	Lubrication product	Maintenance cycle*
Screw	*High helix lead screws Speedy:* Lubricate nut with a brush. *Ballscrews:* Use a syringe with lubricant and inject on nut trough lubrication hole.	*High helix lead screws Speedy:* KLÜBER MICROLUBE GBUY131 *Ballscrews:* KLÜBER ISOFLEX NBU15	Dynamic cycle **< 10m/min** every 500/600 hours Dynamic cycle **> 10m/min** every 300 hours
Linear guides	Lubricate each sliding block trough lubrication hole (Fig.21)	KLÜBER ISOFLEX NBU15	

* Function of the kinematics

Tab.3

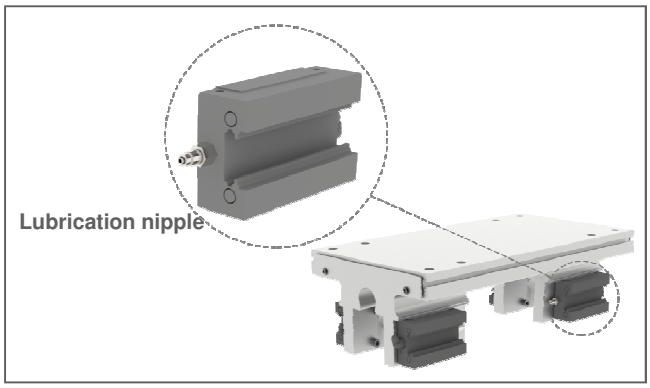
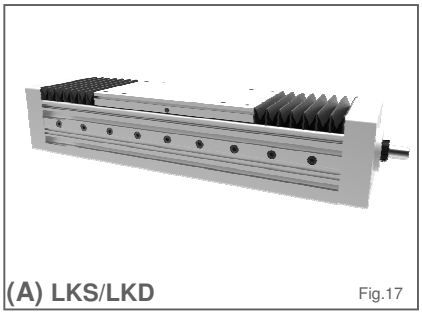


Fig.16

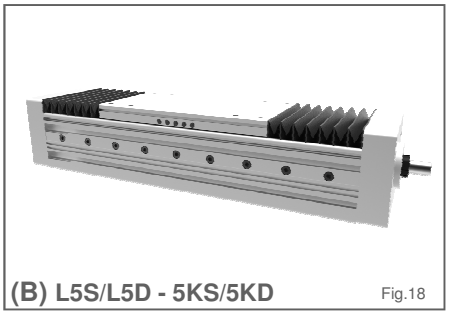
Sise	Lubrication holes		
MV	Ø	Quantity (A)	Quantity (B)
070	M6	1	5x
090	1/8"	1	5x
130	1/8"	1	5x
160	1/8"	1	5x

Tab.4



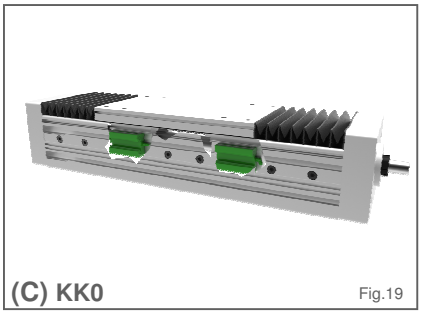
(A) LKS/LKD Fig.17

Linear Module with one lubrication hole



(B) L5S/L5D - 5KS/5KD Fig.18

Linear Module with five lubrication holes



(C) KK0 Fig.19

Linear Module without lubrication but self lubricating sliding blocks

14. Limit switches

The pin connector is supplied standard on the right side. It is possible to mount inductive limit switches.

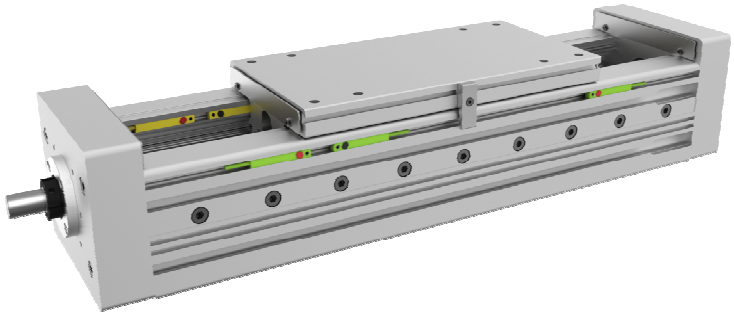


Fig.20

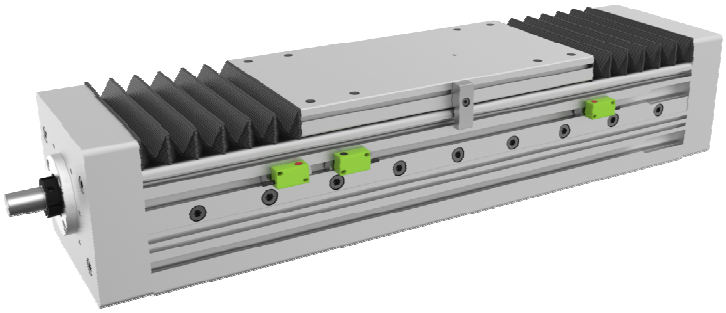


Fig.21

With pin connector		Without pin connector		Inductive limit switches
FA1	FA3	FA2	FA4	2x PNP-NC (emergency)
				1x PNP-NO (reference, motor side)
FB1	FB3	FB2	FB4	2x PNP-NC (emergency)
				1x PNP-NO (reference, opposite motor side)
FC1	FC3	FC2	FC4	2x PNP-NC (emergency)
FD1	FD3	FD2	FD4	1x PNP-NO (reference)

Wiring diagram:

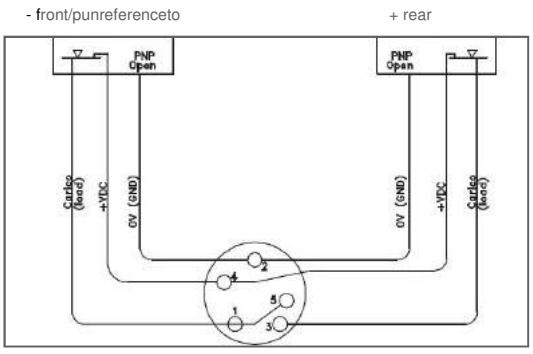


Fig.22

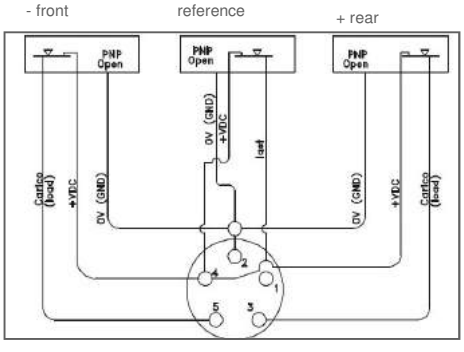
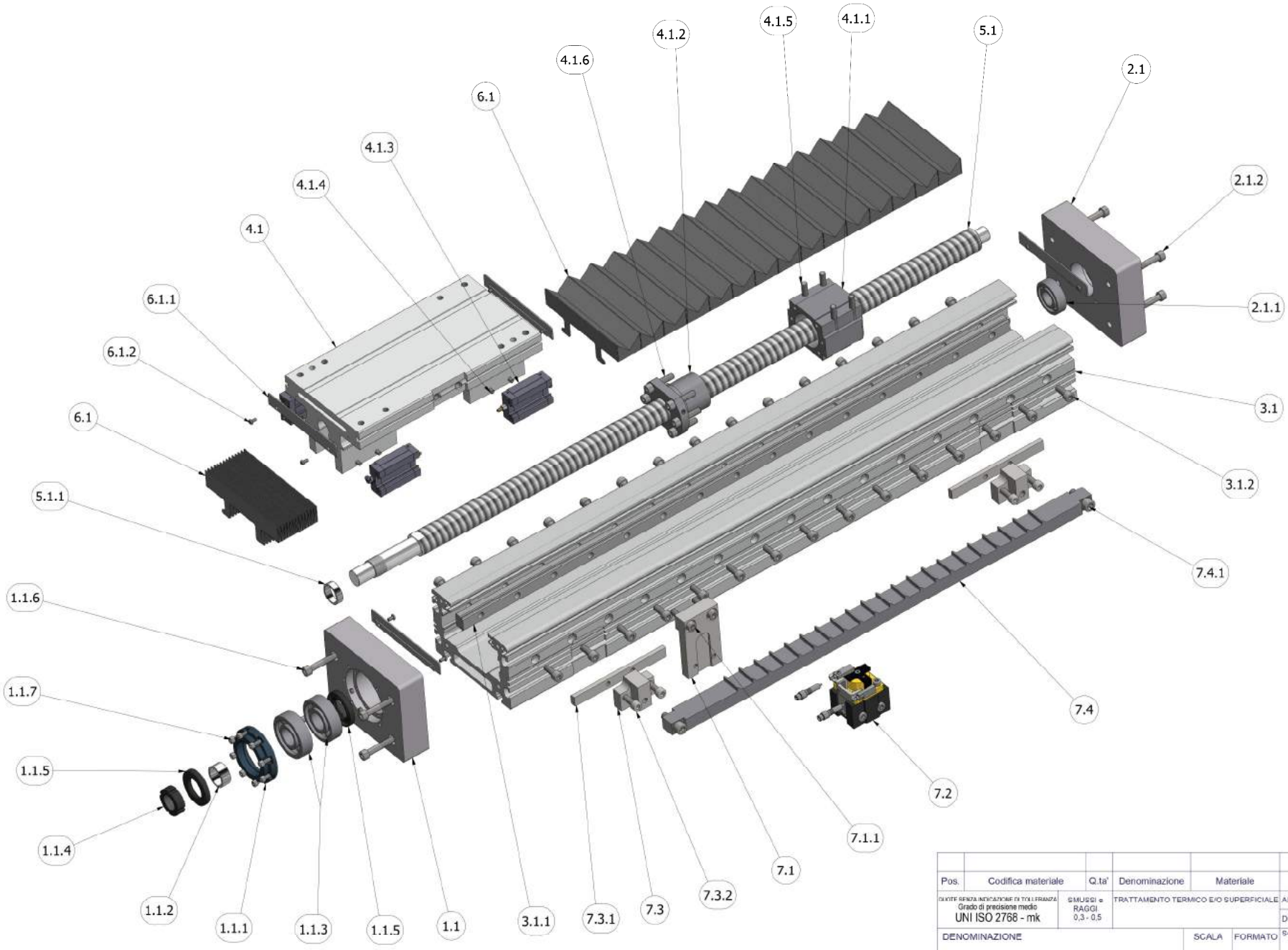


Fig.23



Pos.	Codifica materiale	Q.ta'	Denominazione	Materiale	Dimensioni	kg
QUOTE SENZA INDICAZIONE DI TOLLERANZA Grado di precisione medio UNI ISO 2768 - mk	SMUSSI e RAGGI 0,3 - 0,5		TRATTAMENTO TERMICO E/O SUPERFICIALE		APPROVATO	
					DISEGNATO	
DENOMINAZIONE				SCALA	FORMATO A2	SOSTITUISCE N°
						SOSTITUITO da N°
					FOGLIO 1 /1	Edizione

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P/N

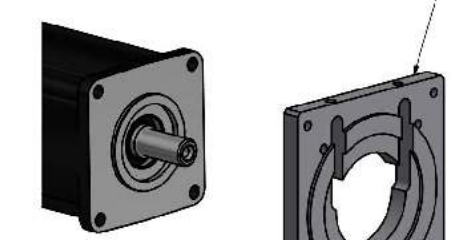
BI-RAIL LINEAR MODULE TYPE MV WITH LUBRICATION SYSTEM

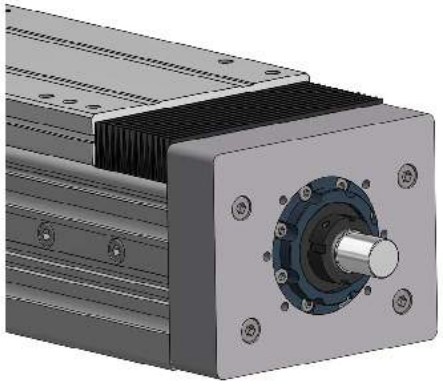
Part Nr.	Description	Quantity
1	**Front plate assembly for screw drive**	
1.1	Front plate	1
1.1.1	Retaining ring	1
1.1.2	Spacer ring	1
1.1.3	Ball bearing	2
1.1.4	Ground nut	1
1.1.5	Seal	2
1.1.6	Bolt ISO4762	3
1.1.7	Bolt ISO4762	8
2	**Rear plate assembly**	
2.1	Rear plate	1
2.1.1	Ball bearing	1
2.1.2	Bolt ISO4762	3
3	**Base plate assembly**	
3.1	Base plate	1
3.1.1	Linear guides	2
3.1.2	Bolt ISO4762	L1*
4	**Carriage assembly for screw drive**	
4.1	Carriage for screw drive	1
4.1.1	Nut support	1
4.1.2	Nut	1
4.1.3	Sliding block	4
4.1.4	Bolt ISO4762	16
4.1.5	Bolt ISO 4762	4
4.3	Lubrication system on carriage right side	1
5	**Screw drive assembly**	
5.1	Screw drive	1
5.1.1	Spacer ring	1
6	**Cover**	
6.1	Bellow	2
6.1.1	Bellow support	4
6.1.2	Bolt ISO7380	8
7	**Mechanical safety stop assembly**	
7.1	Safety stop support	1
7.1.1	Bolt ISO4762	2
7.2	Mechanical safety stop Rs/Ls	1
7.3	Support for shock absorber and rack on base plate	2
7.3.1	Support	2
7.3.2	Bolt ISO4762	4

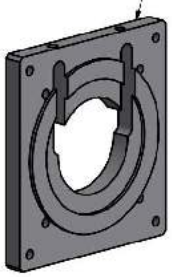
L1* = in base alla lunghezza basamento

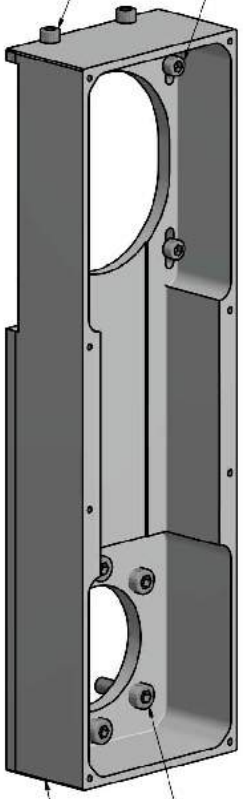
MODULO LINEARE BI-RAIL MV CON LUBRIFICAZIONE CENTRALIZZATA

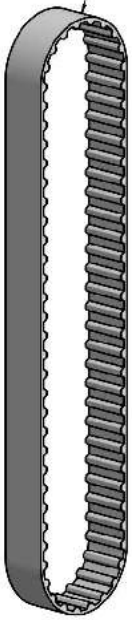
Part Nr.	Description	Quantity
7.4	25mm pitch rack	1
7.4.1	Bolt ISO4762	2

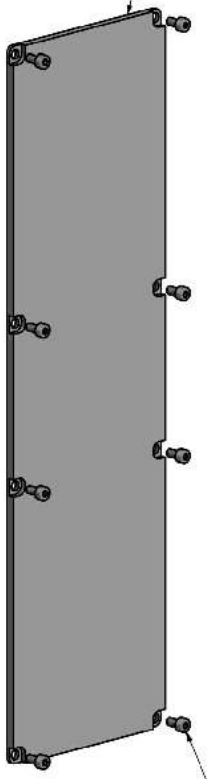












9.1 9.2 9.3 9.4 9.5 9.6 9.7 9.8 9.9 9.10 9.11 9.12

DENOMINAZIONE	SCALA	FORMATO	APPROVATO	
			DISEGNATO	
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LATERAL MOTOR MOUNT WITH BELT GEAR

Part Nr.	Description	Quantity
9	**Lateral motor mount with belt gear**	
9.1	Case	1
9.2	Cover	1
9.3	Motor adapter plate	1
9.4	Belt	1
9.5	Pulley 1	1
9.6	Pulley 2	1
9.7	Locking assembly 1	1
9.8	Locking assembly 2	1
9.9	Bolt ISO4762	6
9.10	Bolt ISO4762	4
9.11	Bolt ISO4762	2
9.12	Bolt ISO4762	8

10.1
10.4

10.3

10.2
10.5

DIRECT MOTOR MOUNT WITH COUPLING

Part Nr.	Description	Quantity
10	**Direct motor mount**	1
10.1	Aluminium support	1
10.2	Motor adapter plate	1
10.3	Coupling	1
10.4	Bolt ISO4762	6
10.5	Bolt ISO4762	4

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