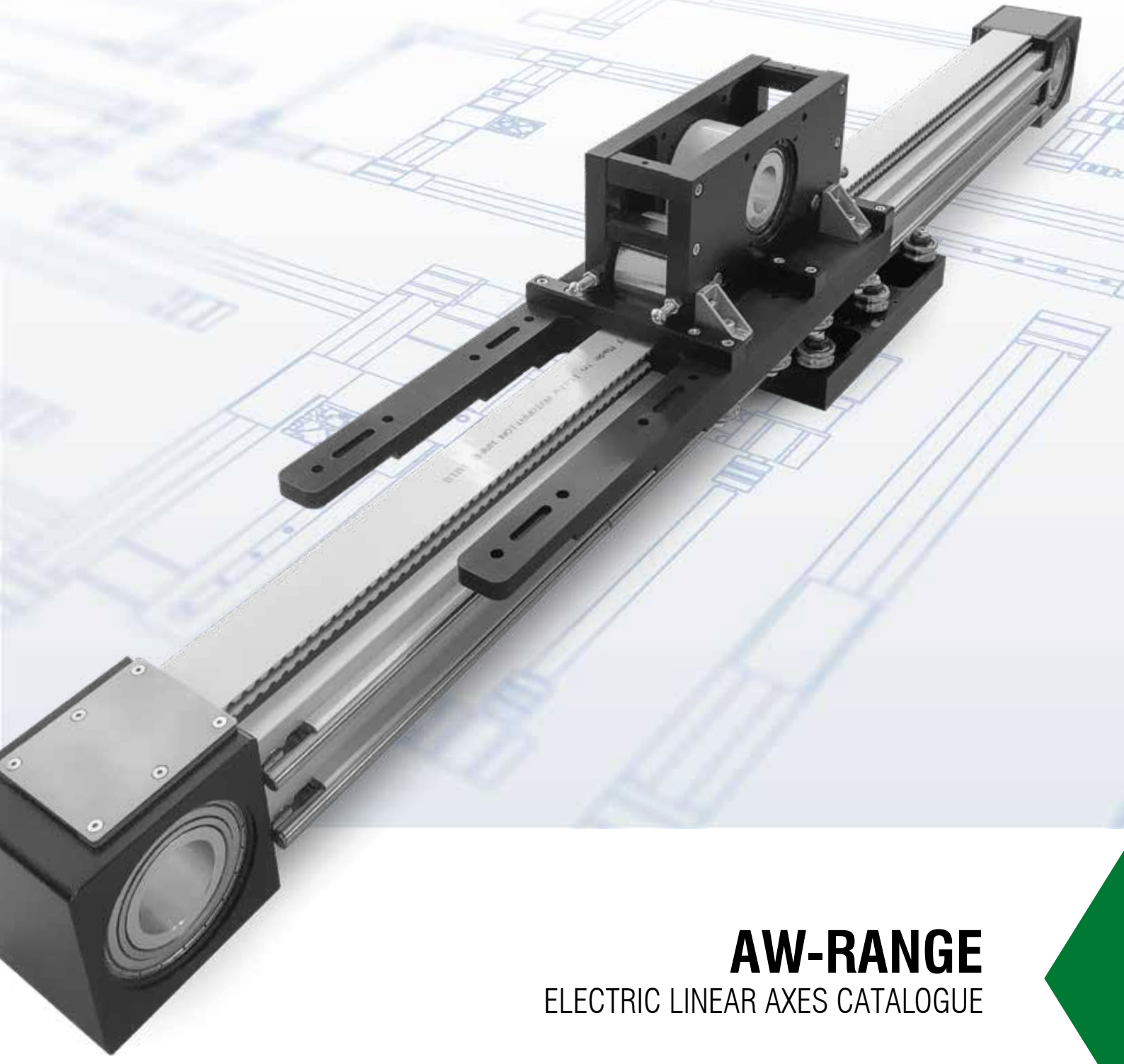
AutomationWare
PNEUMAX GROUP



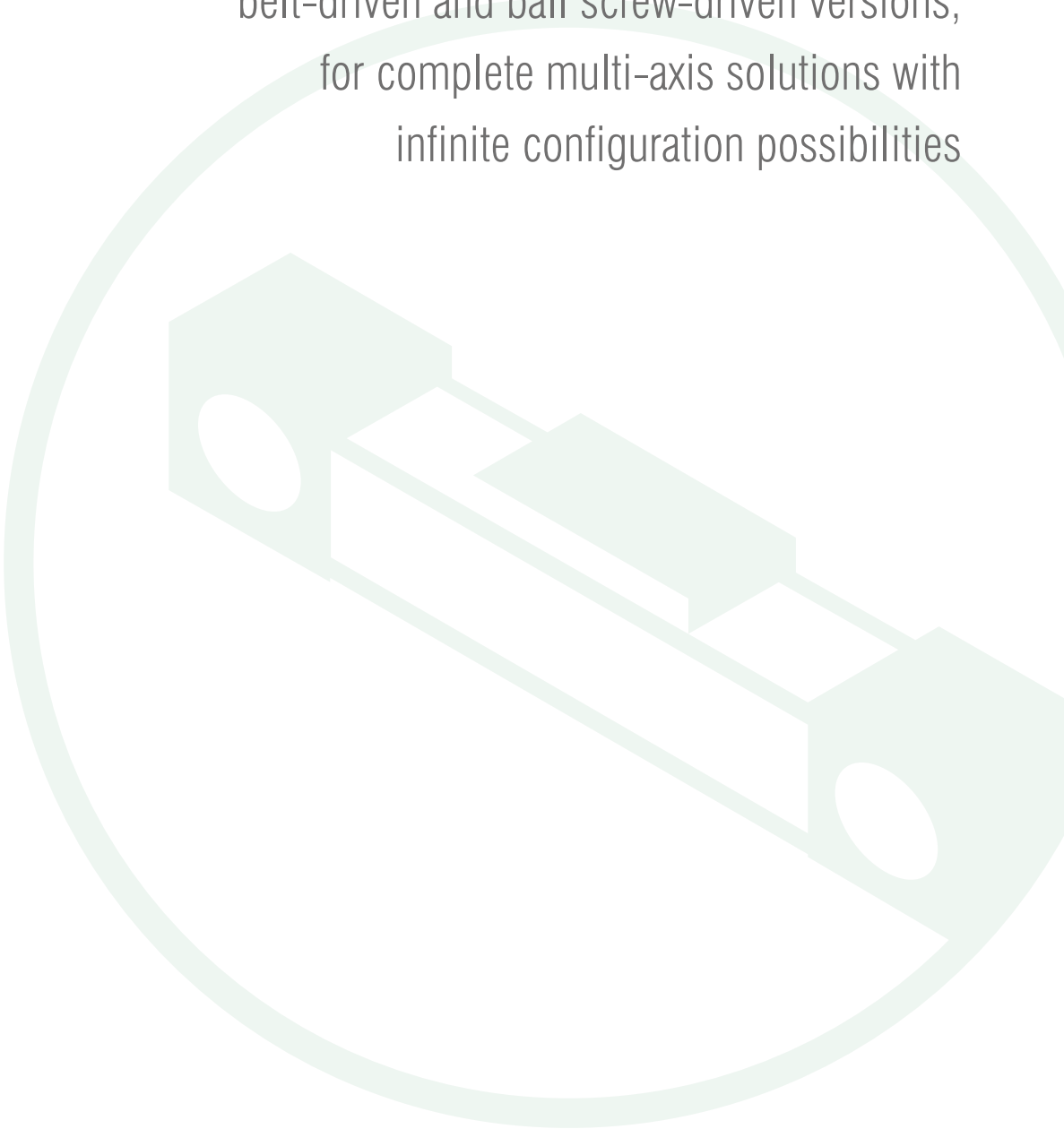
AW-RANGE

ELECTRIC LINEAR AXES CATALOGUE

AW-RANGE

Electric linear axes catalogue

Electric linear axes available in both belt-driven and ball screw-driven versions, for complete multi-axis solutions with infinite configuration possibilities



AutomationWare

One step ahead on the future

Pneumax Group

PNEUMAX GROUP

HEADQUARTERS
Lurano (BG)
Italy

Foundation
1976

10
Production facilities

26
Companies in the Group

+850
Collaborators around the world

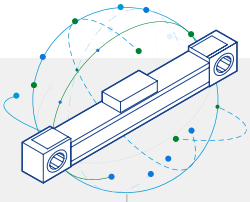
AutomationWare is now part of Pneumax Group, one of the leading international players in the automation sector.
The company based in Martellago (VE) was founded as a manufacturer of electric actuators, designed to guarantee energy savings, precision, reliability and safety in the work place.
The development of application skills and the experience gained in several industrial sectors has allowed us to develop over time a complete offer of real **Complex and customized mechatronic solutions.**

PNEUMAX GROUP

BUSINESS UNITS

- INDUSTRIAL AUTOMATION
- PROCESS AUTOMATION
- AUTOMOTIVE

Complete engineering: more than a mechanics supplier



- ELECTRIC LINEAR AXES SCREW- AND BELT-DRIVEN
- ELECTRIC CYLINDERS AND ROTARY ACTUATORS
- SERVO DRIVES
- SERVO MOTORS

INNOVATIVE TECHNOLOGIES, SMART PROCESSES AND APPLICATION SKILLS

Thanks to continuous investments in technologies, production processes and expertise, AutomationWare has developed **an offer that stands out in terms of quality, level of customisation, extent of range and degree of innovation**.

Innovative technologies
PRODUCTION

Our production is based on a mix of commercial components, managed through dynamic stocks, and an in-house workshop dedicated to manufacturing key parts for our products. **This production model allows us to be flexible, fast and to customise each solution, offering the added value that our customers are looking for and that distinguishes us in the market.**

We have a stock of aluminium profiles of our own design, which can be cut to customer specifications using a dedicated bar cutting machine.

Every single order is assembled by our production team, which follows every stage personally: **pre-assembly check, construction, function check and final packaging, guaranteeing maximum attention to detail.**

All other components - for axes and cylinders - are manufactured in-house from dedicated profiles or high quality raw materials according to application requirements. Each order is managed entirely by our production team, who personally oversees every phase: pre-assembly, construction, functional testing, and final packaging, ensuring the utmost attention to detail.
Before shipping, each product is photographed and registered to ensure its integrity and traceability.
On request, we can also assemble gearboxes and motors, thus completing the delivery with a finished product ready for use.

Smart Processes
TOTAL QUALITY MANAGEMENT

The total quality of products and processes is the basis of AutomationWare's production philosophy to ensure a perfect combination of excellent performance and maximum reliability solutions. The company also stands out for its commitment to sustainability by adopting eco-friendly production processes.
It is **ISO 9001**-certified and has obtained bronze level **ECOVADIS** validation, confirming its dedication to environmental and social responsibility.

Mechanical components from leading brands are used to make axes and cylinders in the AW range.
AW products can be customised with **automatic lubrication systems** and assembled in complete configurations, including motors, drives and **Pneumax** pneumatic components, to offer turnkey solutions. The aluminium is treated with **silver anodisation** with low environmental impact, combining robustness and sustainability.

Each axis is identified with a **laser marking containing the batch number and a QR code**, allowing rapid product traceability and immediate access to technical documentation and operating instructions.

Creating added value at all stages of the production process is our goal. In cooperation with our customers, we perform the **technical verification of every application** with a team of **mechatronic engineers** using **calculation tools developed in-house by AutomationWare**
This approach ensures **optimal product selection** in terms of **reliability, durability and cost**.
Based on the data obtained, our customer service will prepare a **clear and transparent** offer, complete with **3D models** and **technical sheet** of the product.

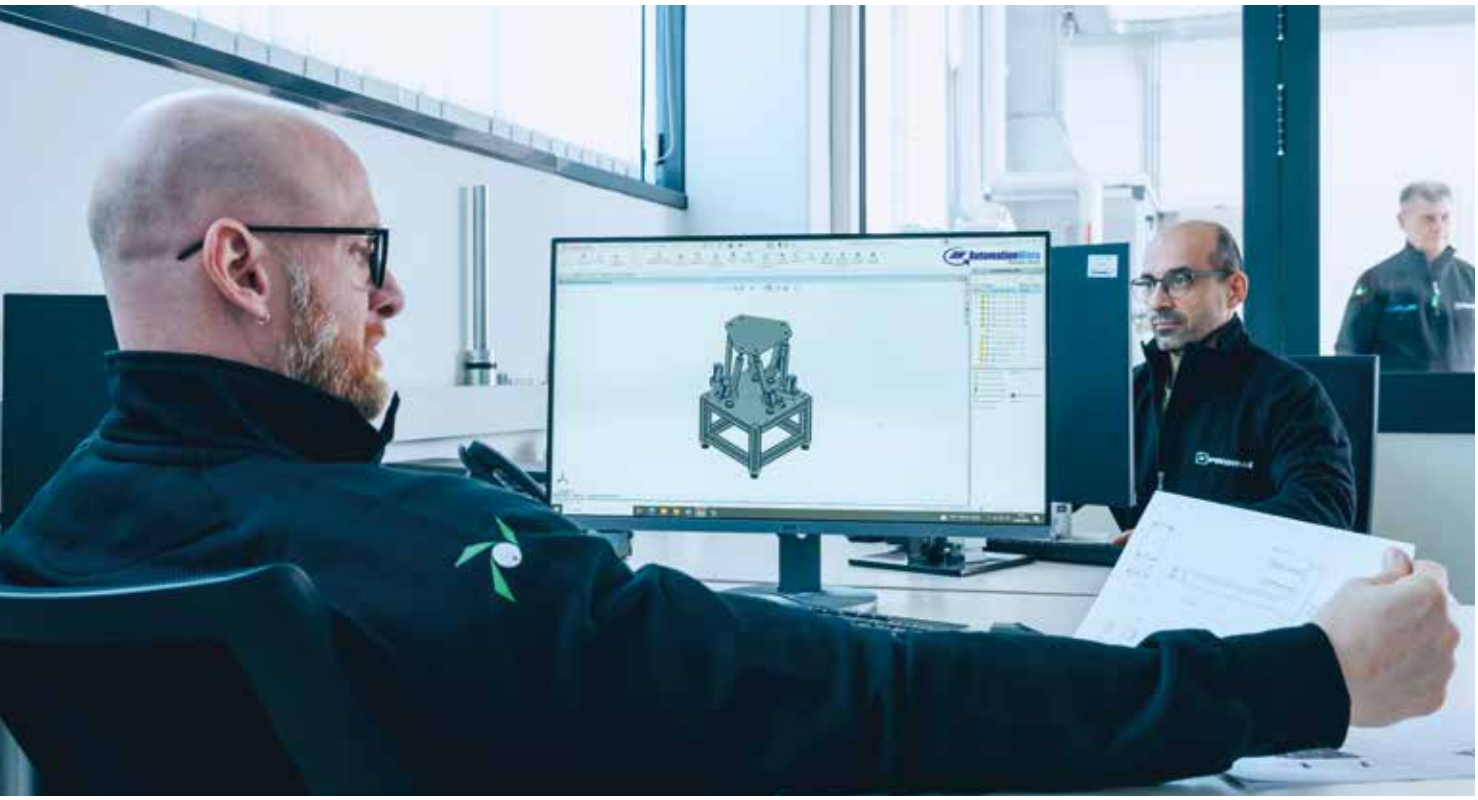
Once the order has been issued, **the technical department** transforms the proposal into **constructive 3D models**, shared with the customer for final validation.
Production is carried out by a **team of specialised fitters**, which guarantees maximum precision at every stage. Each product is **tracked individually**.
Our **quality control**, active throughout the production process, ensures the **conformity and excellence** of each individual item.

Value Creation
From Analysis to Testing

1	2	3	4	5	6
Technical Verification Application	Solution Definition	Offer Processing	Order Issuing and 3D	Production	Validation and Testing

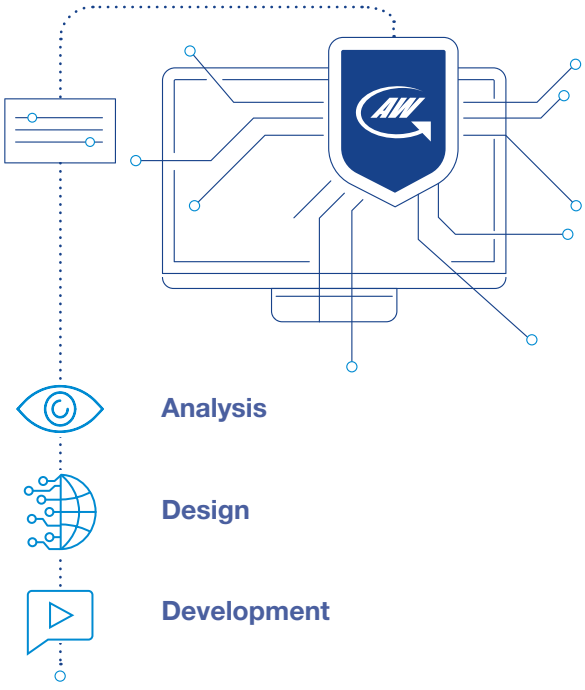
Application Skills

PEOPLE AND ORGANISATION



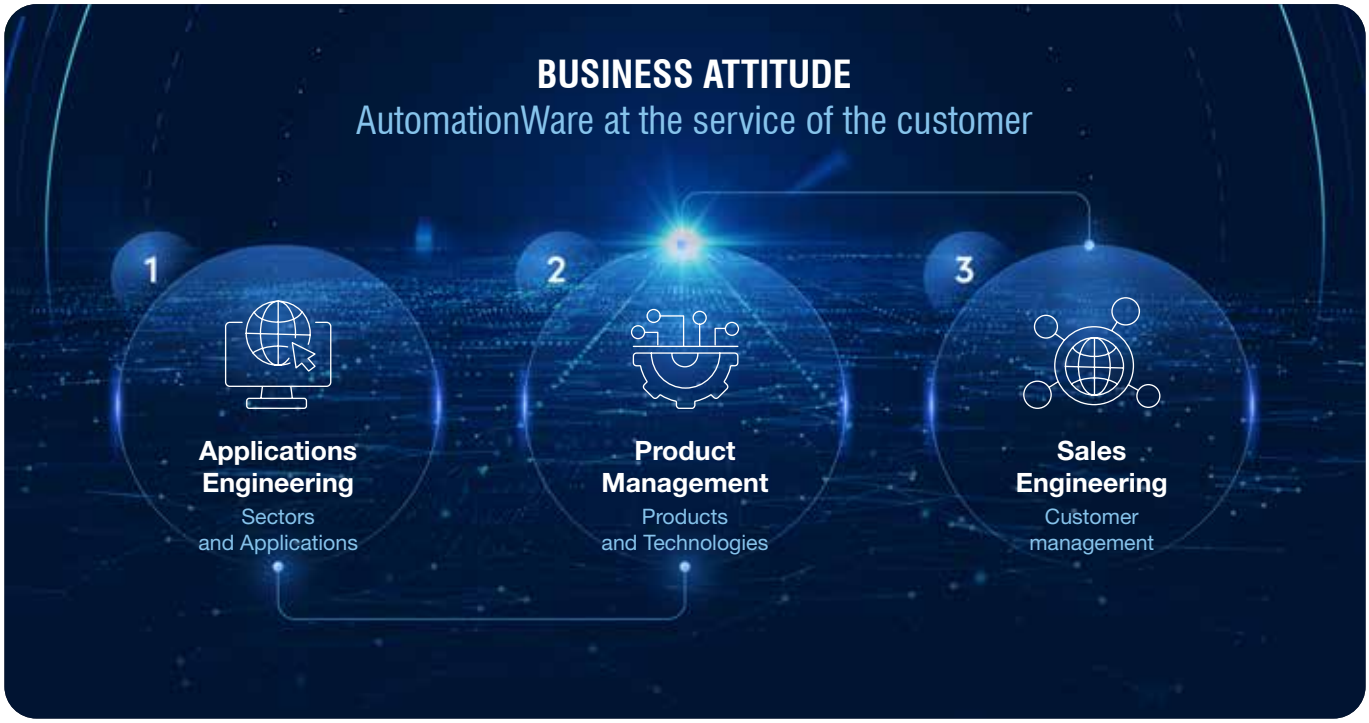
AutomationWare is distinguished by its team of young engineers with a passion for the product, supported by senior professionals with a solid background in industrial automation and mechatronics. This combination of **energy, curiosity and established expertise** creates an environment where technological innovation merges with design expertise, generating a **unique approach to our product development**.

Within the team, mechanical, mechatronic, electrical and electronic skills coexist, which are integrated every day to create **complete, state-of-the-art solutions**. This combination of subjects allows each project to be approached in a comprehensive and synergetic manner, reducing development time and **increasing the quality and reliability of results**.



The young, dynamic and collaborative environment is the natural basis for responding with **speed and precision to market and customer needs**.

Each new project is seen as an opportunity to **improve, experiment and innovate**, always keeping the end user's needs at the centre.
Every completed application is the result of this balance between creativity and technical expertise.
Starting from proven solutions, **our team adapts, optimises and re-engineers** them to meet new application challenges, ranging from single axes or cylinders to complete mechatronic systems that can be integrated in several industrial contexts, **from robotics to automated logistics**. This approach allows us to guarantee **reliable, customised and technologically advanced products**, which fully represent AutomationWare's philosophy: **continuous innovation, quality and customer focus**.



COMPLETE AND INTEGRATED SOLUTIONS
Beyond Linear Axes

AutomationWare is distinguished by its ability to address customer needs in a comprehensive manner, offering **integrated solutions that go beyond simply providing standard linear axes**.

Approach to the Complete Solution

Our philosophy is based on the total integration of automation devices into the application solution. This approach allows for optimised performance, improved energy efficiency and tailor-made integration.

Optimisation of Performance

Energy Efficiency

Customised Integration

Benefits for the Customer

- **Total customisation:** Solutions tailored to meet specific needs.
- **Strategic Collaboration:** Synergy with leading industry technology partners to ensure cutting-edge solutions.

Choosing an actuator:
a comprehensive and integrated approach

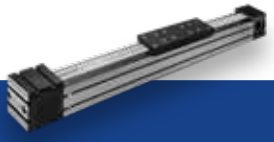
When selecting the actuator, AutomationWare takes a thorough and structured approach, including analysis of application specifications.

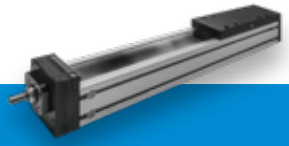
Customer-tailored solutions

To ensure maximum consistency with the performance requirements and budget of the application:

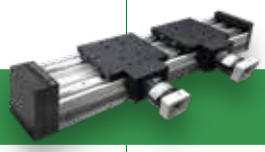
- **They assess performance requirements:** understanding of the requirements in terms of speed, accuracy and load of the application.
- **They integrate essential components:** optimal choice of motor, drive and, where necessary, gearbox.
- **They optimise the system:** they ensure that every component fits perfectly to maximise the efficiency and durability of the system.

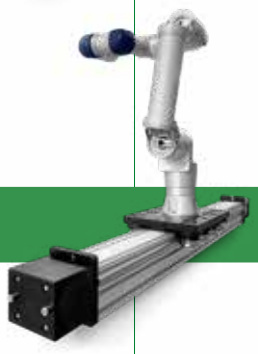
LINEAR AXES - Line-up

1 BELT-DRIVEN AXES

→ LINEAR GUIDE
→ Standard line → Parallel → Single-guide
→ Standard line → Orthogonal → Dual-guide
→ Standard line → Orthogonal → Cantilever
→ Protected line → Single-guide
→ Protected line → Dual-guide

2 SCREW-DRIVEN WITH BALL RECIRCULATION

→ LINEAR GUIDE
→ Protected line → Single-guide
→ Protected line → Dual-guide
→ Without protection → Dual-guide

3 SPECIAL AXES

RACK AND PINION


ROBOLINE ON WHEELS


TELESCOPIC

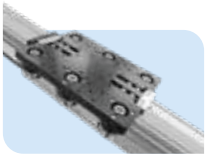

The hierarchy represented here describes precisely the classifications of axes available based on the type of movement system which can be summarized as **belt**, **ball screw and special axes**, such as rack and pinion, wheeled roboline and telescopic.

QUALITY AT THE CENTRE OF EVERY CHOICE

Belt versions
Automationware's range of belt-driven axes offers numerous configurations designed for high-speed applications and ensures high loads handling capability.

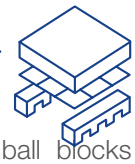
Screw versions
For screw axes, AutomationWare uses dedicated profiles to protect and integrate ball screws, combined with linear guides and blocks sized according to axis specifications. Protection techniques ensure reliable performance even in complex environments. Self-lubricating systems can be added to minimise maintenance over the life of the actuator and to guarantee protection during operation.

Special axes
Automationware produces special solutions such as telescopic axes for pick-and-place and palletising applications. The offer is completed with the supply of fully motorised systems, including power drivers on fieldbuses chosen by the customer and cabling systems with cable chains or pipes.



Profiles
Our axes are designed using over 20 proprietary 6000 series anodised aluminium profiles conforming to the UNI 3879 standard, developed to offer optimal structural stiffness with high loadability both in terms of bending and torsional stress. The compact design ensures an easy integration of motion technologies. Every profile is also equipped with slots for the insertion of accessories and the construction of Cartesian solutions.
Some profiles are specially designed to integrate protection systems, ensuring cleanliness and safety, ideal for delicate sectors such as pharmaceuticals and foodstuffs.
Each profile has been designed using a FEM (finite element analysis) approach, ensuring optimal performance even under complex dynamic conditions.

Components and materials



Linear guide
Linear guidance systems with recirculating ball blocks offer optimal speed, load and durability. They can include optional self-lubrication systems.

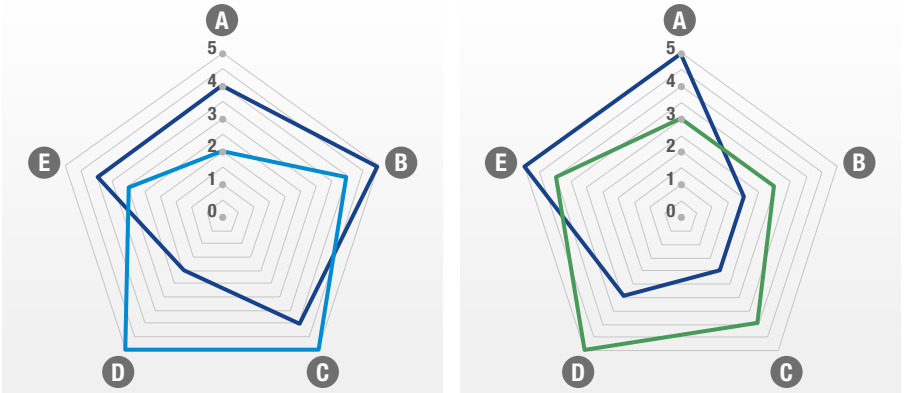
Toothed belts
The belts used are made of polyurethane reinforced with strands and a surface coating on the teeth to reduce friction and noise.

Ball screws
Automationware uses ball screws from leading brands, in the ISO 7 precision rolled version.

TO EACH APPLICATION, ITS OWN LINEAR TECHNOLOGY
Selection criteria

The radar graphs in the figure help the designer choose **the most suitable linear solution** with respect to the specific application.

The motion technologies used by AutomationWare are as follows:



▲ Max. value 5 - ▼ Min. value 1	Belt axes on linear guides	Axes with ball screw	Belt-axis on wheeled carriage	Axis with pinion and rack
A Speed	4	▼ 2	5	▼ 3
B Protection	▲ 5	4	2	3
C Repeatability	3	▲ 5	▼ 2	4
D Load capacity	▼ 2	5	3	▲ 5
E Economic impact	4	3	▲ 5	4

Axis speed and length
Speed is crucial in the choice of technology. Belt-driven solutions allow speeds of up to 5 m/s.

Applicable load
To handle high loads, Automationware offers the Pro and Plus series with dual-guide linear axes. For unbalanced loads, configurations with orthogonal guides are available to increase torsional stiffness. The Robo-Line series is ideal for load handling.

Protection
In industrial environments with residues or dust, the protection of linear axes is essential. The HP series offers advanced systems for belt and screw axes, with protective steel tape or the use of the belt as a dirt barrier. The Robo-Line serie guarantees opera in highly contaminated environments.

Precision
The belt-driven axes allow a positioning repeatability of 0.05mm, the ball screw and rack and pinion axes allow repeatability of 0.01mm.

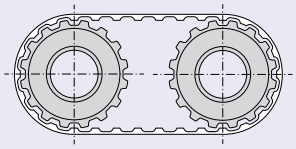
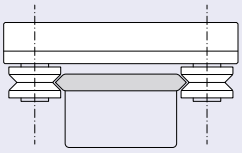
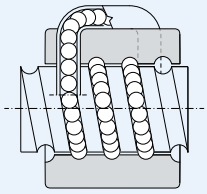
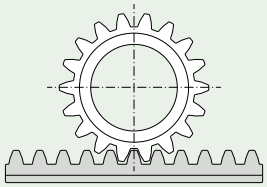
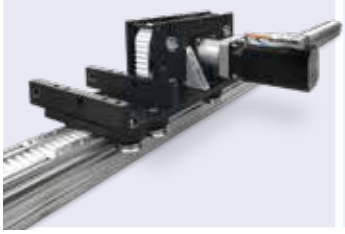
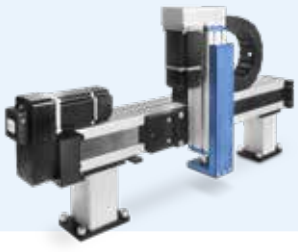
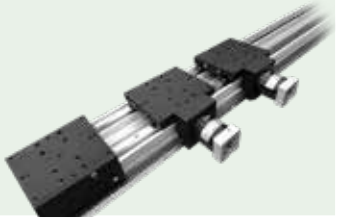
Economic impact
Cost-performance ratio is a key parameter in choosing the most suitable technology.

1 Belt-driven axes are an economical solution that simplifies modular design, reducing the time-to-market of the project.

2 Screw axes, with single or dual guide and high precision, entail a higher cost, but offer superior performance.

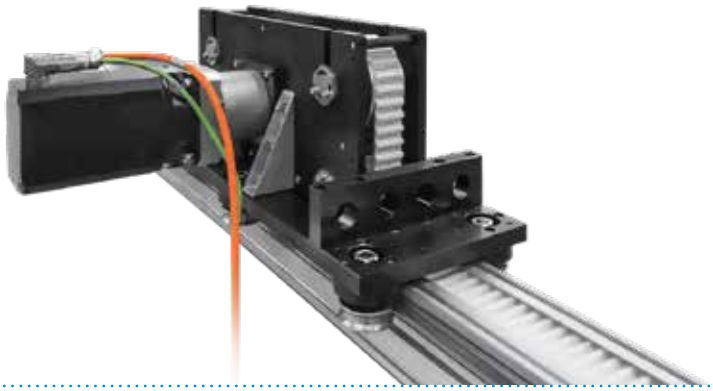
3 Linear systems are a cost-effective choice, especially for applications over long distances. Automationware not only produces standard linear axes, but develops customised solutions to meet the specific needs of each customer.

4 Rack-and-pinion axes involve a higher cost but ensure higher loadability, acceleration and precision.

Belt axes on linear guides	Belt-axis on wheeled carriage	Axes with ball screw	Axis with pinion and rack
			
SPEED	**SPEEDS AND LOADS**	**PRECISION**	**ROBUSTNESS**
Speed up to 5 m/s	Speed up to 5 m/s	Speed up to 1.5 m/s	Speed up to 5 m/s
Acceleration up to 50 m/s²	Acceleration up to 50 x m/s²	Acceleration up to 50 m/s²	Acceleration up to 50 m/s²
Standard stroke up to 5.5 m	Standard stroke up to 5.5 m	Standard stroke up to 1 m	Stroke without limits
Repeatability up to 0.05 mm	Repeatability up to 0.05 mm	Repeatability up to 0.01 mm	Repeatability up to 0.05 mm
Application sectors	Application sectors	Application sectors	Application sectors
			
Product family **MLB** **Motion Line Belt**	Product family **MLR** **Motion Line Roller** (special series on request)	Product family **MLS** **Motion Line Screw**	Product family **MLP** **Motion Line Rack&Pinion** (special series on request)
			

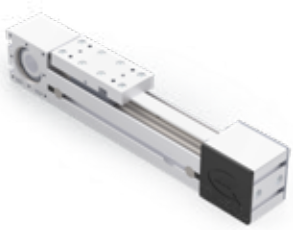
BELT AXES RANGE

AutomationWare offers a **wide range of belt-driven solutions** for linear handling, designed to meet complex industrial needs. Selection is divided into several series, each one optimised for specific applications.



STD Series

A E

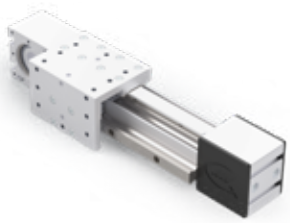


Single-guide axes with open profile, general and cost-effective solution for general automation applications. Polyurethane belt with steel coords.

- **Sizes available:** 45, 60, 80, 120

STO Series

A D E

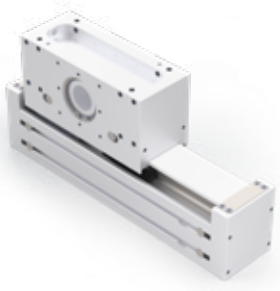


Axis with orthogonal guides, suitable to off-centered loads within a compact footprint, alternative to classic solutions with parallel guides.
Polyurethane belt with steel coords.

- **Sizes available:** 45, 60, 80, 120

CTL Series

A

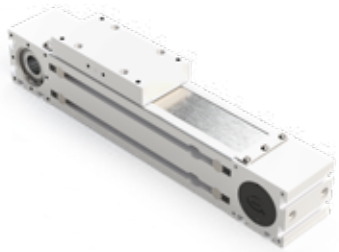


Single-axis guide designed for Z-axis applications, featuring a stationary carriage and a moving axis.
Polyurethane belt with steel coords.

- **Sizes available:** 45, 60, 80, 120

HPR Series

B

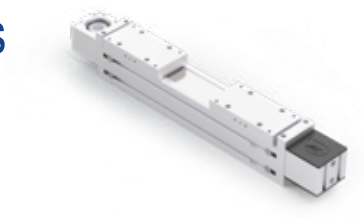


These axes are **characterised by linear guides with recirculating ball bearing blocks**, designed for applications requiring optimal protection of internal mechanical parts from dust or machining residues. The 'closed' aluminium profile protects the internal components.

- **Sizes available:** 45, 60, 80, 120

HPO Series

B D

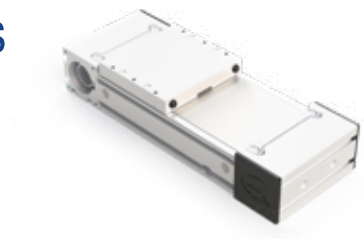


This series offers **two carriages with opposing movement**, ideal for high-speed alignment applications. The opposing carriages are driven by a single belt.

- **Sizes available:** 60, 80, 120

PRO Series

B D

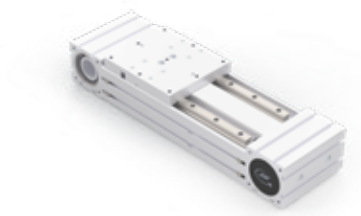


Based on the HPR Series, PRO incorporates a **dual guide for increased load capacity** in a reduced vertical footprint.

- **Sizes available:** 90, 120, 160

PLS Series

D



Designed for extreme loads, the PLS Series uses a high-stiffness open profile and a dual guide.

- **Sizes available:** 160

	▲ Max. value 5 - ▼ Min. value 1	Belt axes on linear guides	Axes with ball screw	Belt-axis on wheeled carriage	Axis with pinion and rack
A	Speed	4	▼ 2	5	▼ 3
B	Protection	▲ 5	4	2	3
C	Repeatability	3	▲ 5	▼ 2	4
D	Load capacity	▼ 2	5	3	▲ 5
E	Economic impact	4	3	▲ 5	4

BELT-DRIVEN AXES
Axis, gearbox and motor selection guide

1

Dynamic analysis

- Load
- Mass
- Motion profile

2

Product selection

- Stroke
- Load capacity
- Transmission force

3

Gearbox selection

- Torque
- Angular speed
- Inertia ratio

4

Motor and drive selection

- Torque
- Angular speed
- Power supply
- Communication protocol

5

Project validation

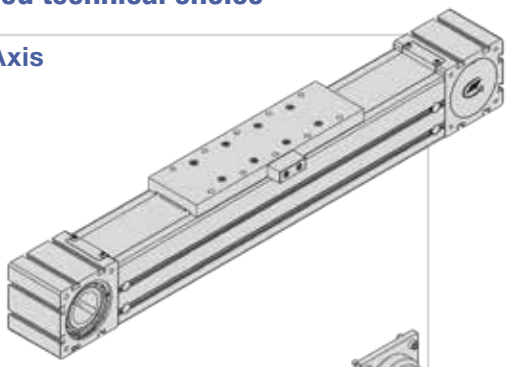
- Performance check
- Lifetime calculation

Application example

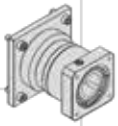
Parameter	Value
Actual stroke	800 mm
Required speed	1000 mm/s
Positioning repeatability	±0.1 mm
Load mass	15 kg
Cycle time	3.5 s
Required voltage	230V

Recommended technical choice

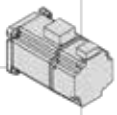
MLB Series Axis
Size 60



Gearbox
1:5 ratio to increase torque without exceeding the speed limit



Motor
Servomotor 400 W with integrated encoder



Communication protocol
EtherCAT

Sizing example with AW Sizer

Select actuator from menu	MLBNSTD060-AX11-XC22
Pulley unrolling (mm/rev)	110
Belt maximum pulling force (N)	1805
Overall Ca (kN)	14.2
Overall C0a (kN)	20.7
Overall Mx (Nm)	108
Overall My (Nm)	94.7
Overall Mz (Nm)	79.5
Carriage/guide q.ty	1
Guide q.ty	1
CDC along Y (mm)	0

Parameters

Enter process data	
Axial force Fx (N)	0.00
Lateral force Fy (N)	0.00
Orthogonal force Fz (N)	0.00
Load applying point - x (m)	0.00
Load applying point - y (m)	0.00
Load applying point - z (m)	0.20
Roll moment Mx (Nm)	0.00
Pitch moment My (Nm)	0.00
Yaw moment Mz (Nm)	0.00
Speed (m/s)	1.00
Acceleration (m/s^2)	2.50
Payload (kg)	15.00
Required duration (cycles)	4.00E+06 A
Load applying stroke (mm)	800.00
Total stroke (mm)	800.00
Service factor	1.20
Gearbox ratio	5.00 B
Mounting configuration	1.00

C

Evaluate motor sizing	
Pulley peak torque (Nm)	1.00
Motor peak torque (Nm)	0.23
Pulley speed (rpm)	545.45
Motor speed (rpm)	2727.27
Minimum rotor inertia (kgm^2)	4.60E-05

Evaluate actuator performance	
Requested guide life (km)	6.40E+03
Estimated guide life (km)	1.07E+04

D

Check validation values		Safety Factor
Admissible belt load (N)	1.39E+03	2.9E+01
Guiding system life (km)	1.07E+04	1.7E+00

Key point belt axis sizer - Legend

A - Peculiar calculation of the service life of the application, expressed in machine cycles
B - Possibility of evaluating a reduction ratio
C - Information on motor dynamics and motor-to-load inertia ratio
D - Intuitive analysis of the application reliability index

Single-guide linear unit

STD SERIES

Single-guide axes with open profile, general and cost-effective solution for general automation applications. Polyurethane belt with steel coords.

- **Sizes available: 45, 60, 80, 120**
- **Structurally rigid profile**
- **Easy maintenance**
- **Available in short and long carriage version**
- **Maximum stroke 5500 mm**

CODING

MLB	N	STD	045	-	A	X11	-	X	C22	-	XXXX

STROKE
[mm]

PRODUCT FAMILY
Linear belt-driven axes

DRIVE PULLEY HOLE
C22 = Hole for locking device self-centring D.22 mm (for sizes 45, 60)
C32 = Hole for locking device self-centring D.32 mm (for size 80)
C40 = Hole for locking device self-centring D.40 mm (for size 120)

PROTECTION
N = No protection

SERIES
STD = Standard series

MOTOR MOUNTING SIDE
X = Motor mounting side not specified

SIZE
045 = 45 mm
060 = 60 mm
080 = 80 mm
120 = 120 mm

GUIDE MATERIAL
A = Steel

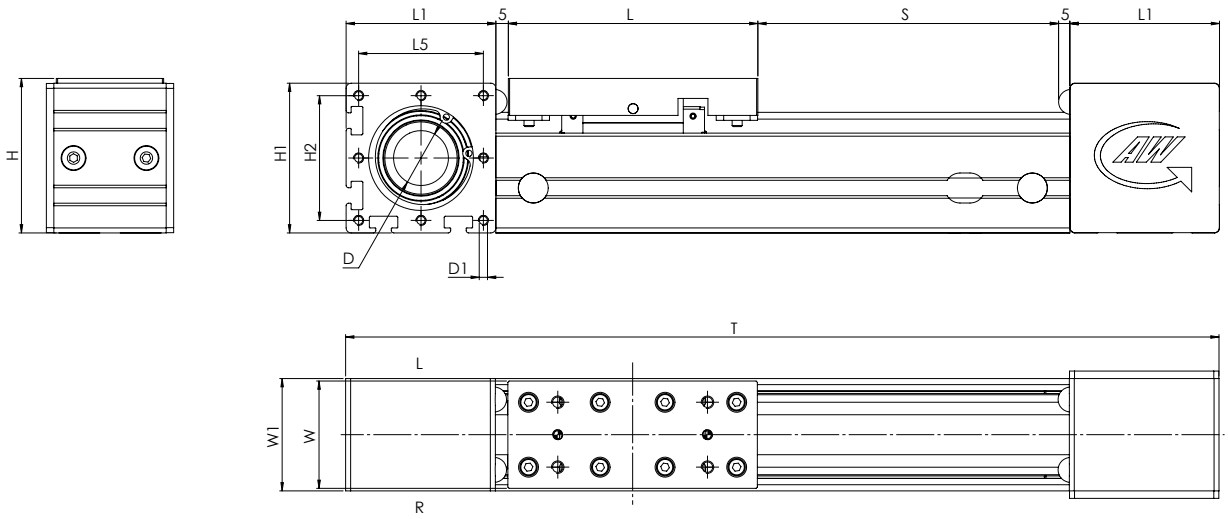
CARRIAGE OPTIONS
X11 = Short carriage
X12 = Long carriage

STD SERIES

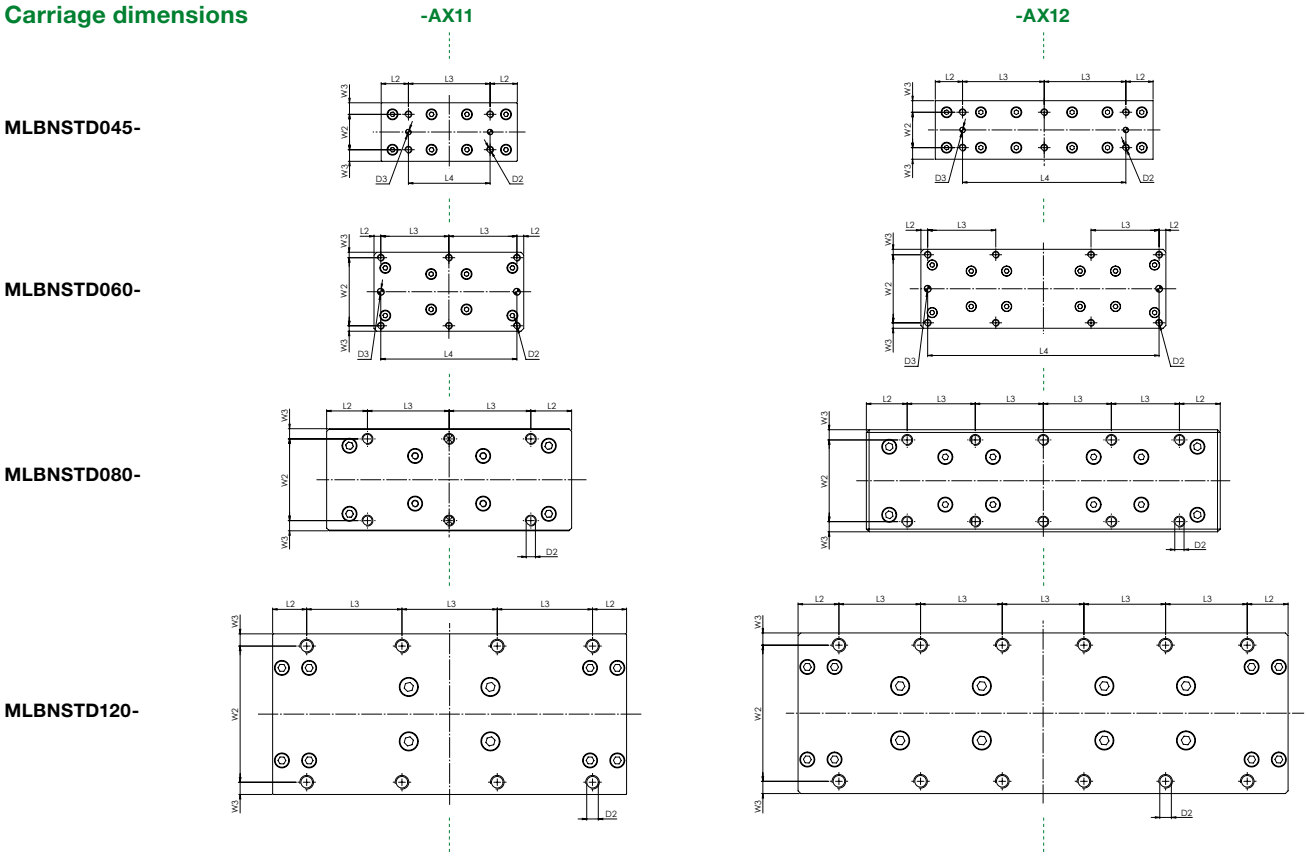
		MLBNSTD045-AX11	MLBNSTD045-AX12	MLBNSTD060-AX11	MLBNSTD060-AX12	MLBNSTD080-AX11	MLBNSTD080-AX12	MLBNSTD120-AX11	MLBNSTD120-AX12
GENERAL DATA									
Max. speed	[m/s]	5	5	5	5	5	5	5	5
Max. acceleration	[m/s²]	50	50	50	50	50	50	50	50
Repeatability	[mm]	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
Guide type	Type	ball recirculation							
Top & side guide size		15	15	15	15	25	25	30	30
Belt type	Type	16-AT5	16-AT5	25-AT5	25-AT5	32-AT10	32-AT10	50-AT10	50-AT10
Pulley primitive diameter	[mm]	35.03	35.03	38.21	38.21	50.95	50.95	63.9	63.9
Displacement per pulley revolution	[mm]	110	110	120	120	200	200	200	200
Number of blocks	n	1	2	1	2	1	2	1	2
DIMENSIONAL DATA									
L: Carriage length	[mm]	100	160	110	180	180	260	260	360
L1: Head length	[mm]	60	60	60	60	90	90	90	90
L2: Distance hole to carriage edge X	[mm]	20	20	5	5	30	30	25	30
L3: Carriage hole centre distance X	[mm]	60	60	50	50	60	50	70	60
L4: Carriage pin hole centre distance X+/-0.05	[mm]	60	120	100	170	-	-	-	-
W: Carriage width	[mm]	43	43	58	58	75	75	118	118
W1: Head width	[mm]	45	45	60	60	80	80	120	120
W2: Carriage hole centre distance Y	[mm]	26	26	50	50	60	60	100	100
W3: Distance hole to carriage edge Y	[mm]	8.5	8.5	4	4	7.5	7.5	9	9
H: Carriage height	[mm]	62	62	65	65	100	100	100	100
H1: Head height	[mm]	60	60	60	60	90	90	90	90
D: Pulley hole diameter	[mm]	Ø22 H7	Ø22 H7	Ø22 H7	Ø22 H7	Ø32 H7	Ø32 H7	Ø40 H7	Ø40 H7
D1: Fixing hole diameter on drive head	[mm]	M4x8	M4x8	M4x8	M4x8	M6x12	M6x12	M6x16	M6x16
D2: Carriage bore diameter	[mm]	M5x7	M5x7	M5x16.5	M5x16.5	M8x16	M8x16	M10x20	M10x20
D3: Carriage pin hole diameter	[mm]	Ø4 H7	Ø4 H7	Ø4 H7	Ø5 H7	-	-	-	-
L5: Head hole centre distance X	[mm]	50	50	50	50	70	70	70	70
H2: Head hole centre distance Y	[mm]	50	50	50	50	70	70	70	70
L6: Groove centre distance X	[mm]	-	-	30	30	40	40	80	80
L7: Groove-edge distance X-axis	[mm]	22.5	22.5	15	15	20	20	20	20
H3: Groove centre distance Y	[mm]	-	-	-	-	30	30	30	30
S: Max. stroke	[mm]	5500	5500	5500	5500	5500	5500	5500	5500
T: Total length	[mm]	L1+5+L+S+5+L1				L1+10+L+S+10+L1			
Protection Option		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MASS DATA									
Zero stroke base axis	[kg]	1.20	1.50	1.9	2.6	5.5	5.8	9.2	11.3
Mass for each 100 mm of stroke	[kg]	0.30	0.30	0.4	0.4	0.8	0.8	1.1	11.1
Carriage	[kg]	0.20	0.30	0.5	0.9	0.8	1.1	3.2	5.1
SECTION MOMENT OF INERTIA									
Section inertia extruded profile	Lyy [cm⁴]	7.1	7.1	17.3	17.3	74.4	74.4	120	120
Section inertia extruded profile	Lzz [cm⁴].	13.8	13.8	47.6	47.6	151.2	151.2	492	492
MAXIMUM RECOMMENDED LOADS (*)									
Fx	[N]	823	823	3077	3077	3969	3969	6608	6608
Fy	[N]	1535	2011	2185	3220	4673	6122	5670	7934
Fz	[N]	2944	4409	2297	3681	6653	9731	10000	18516
Mx	[Nm]	9	10	17	20	42	47	58	66
My	[Nm]	94	167	94	253	496	776	436	610
Mz	[Nm]	79	125	79	154	412	597	272	577

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.

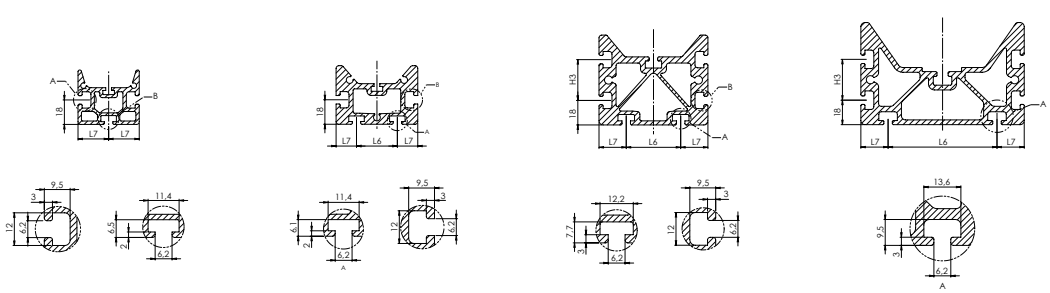
MLBNSTD / General Dimensions



Carriage dimensions

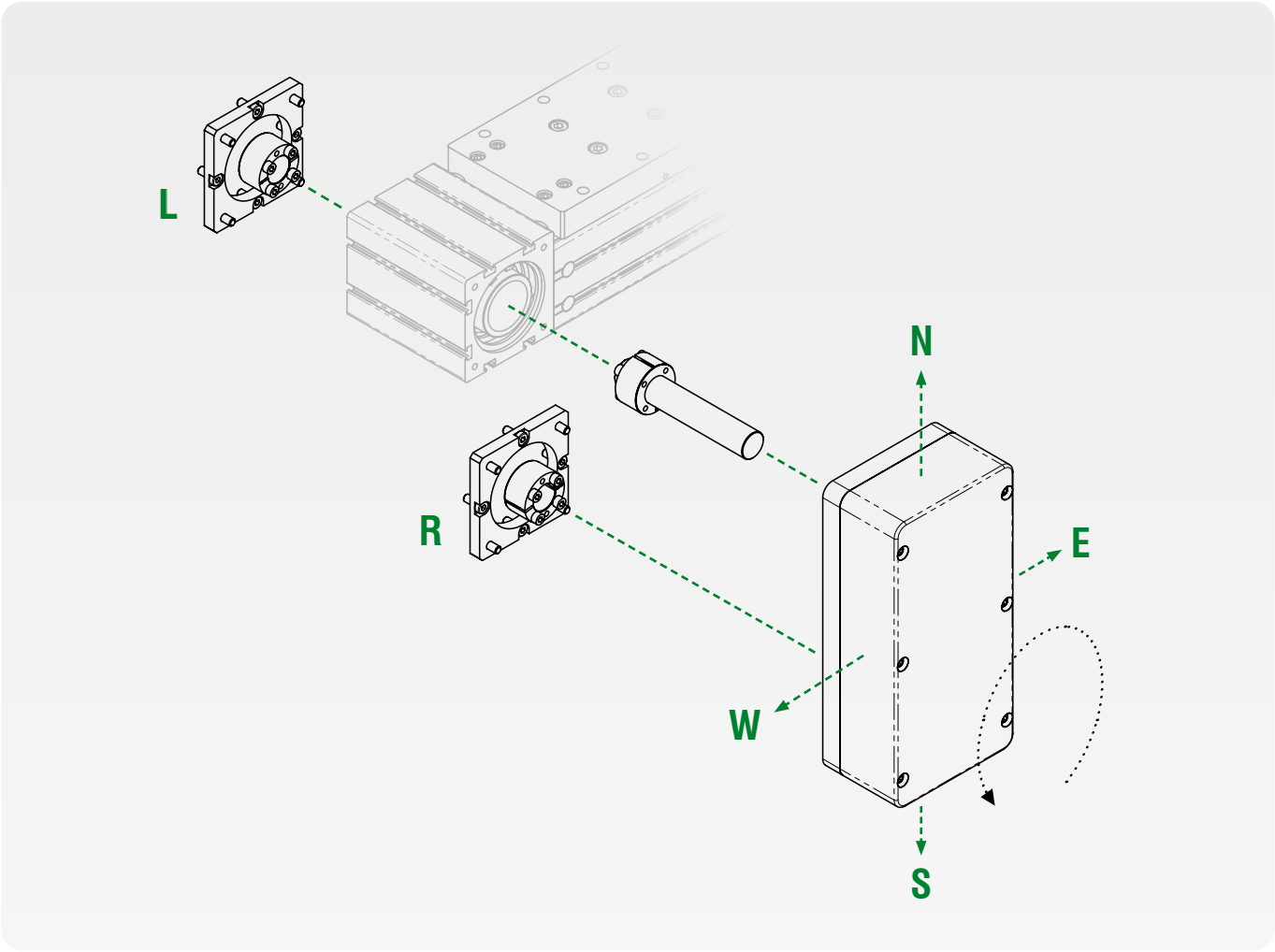


Section detail

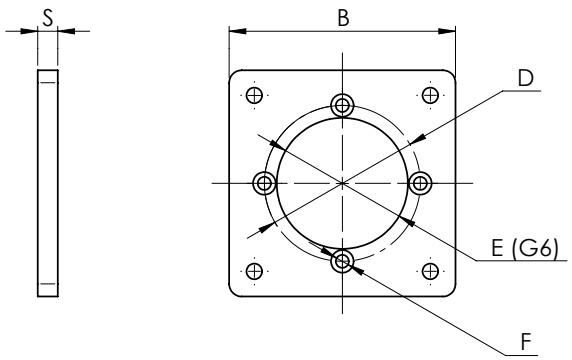


STD Series

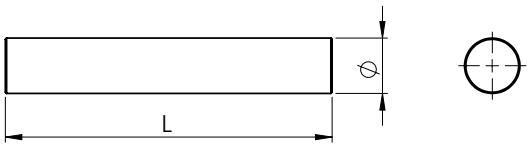
ACCESSORIES



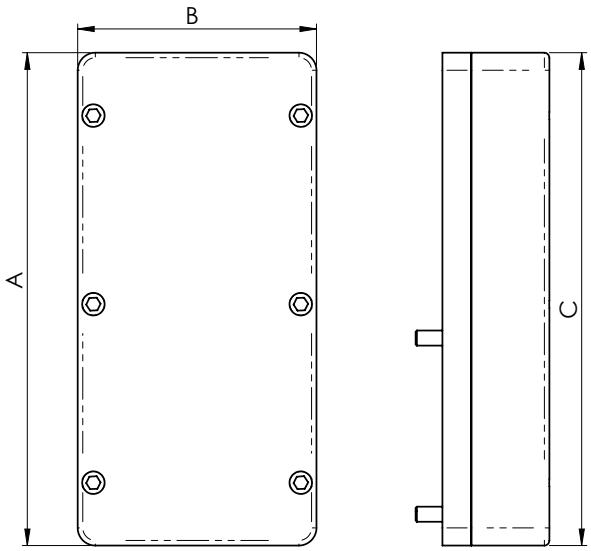
Interface flange kit



Male shaft kit



Parallel mounting kit



Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
STD	045	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
STD	060	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
STD	080	KFGSC-090-001-_X	90x6 52x5.2x62	D 16
STD	120	KFGSC-090-002-_X	90x9.8 68x6.2x80	D 22

CODING

KFGSC - 060 - 002 - _ X

L = Left
R = Right

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
STD	045	KPMSC-065-001-__	142 x 65 x 44
STD	060	KPMSC-065-001-__	142 x 65 x 44
STD	080	KPMSC-065-002-__	196 x 65 x 44
STD	120	KPMSC-120-001-__	250 x 120 x 75

CODING

KPMSC - 065 - 001 - _ _

L = Left
R = Right

N = North E = East
S = South W = West

Male shaft kit

Series	Size	Code Commercial	Ø x L	D hole locking device
STD	045	KSHSC-012-001-_X	12 x 50	D 12
STD	060	KSHSC-012-002-_X	12 x 60	D 12
STD	080	KSHSC-016-001-_X	16 x 70	D 16
STD	120	KSHSC-022-001-_X	22 x 130	D 22

CODING

KSHSC - 012 - 001 - _ X

L = Left
R = Right

Orthogonal dual-guide linear unit

STO SERIES

Axis with orthogonal guides, suitable to off-centered loads within a compact footprint, alternative to classic solutions with parallel guides.
Polyurethane belt with steel coords.

- **Sizes available: 45, 60, 80, 120**
- **90° guide assembly to eliminate roll clearance**
- **Available in carriage version short and long**
- **Maximum stroke 5500 mm**

CODING

MLB	N	STO	045	-	A	L22	-	X	C22	-	XXXX

STROKE
[mm]

PRODUCT FAMILY
Linear belt-driven axes

DRIVE PULLEY HOLE
C22 = Hole for locking device self-centring D.22 mm (for sizes 45, 60)
C32 = Hole for locking device self-centring D.32 mm (for size 80)
C40 = Hole for locking device self-centring D.40 mm (for size 120)

PROTECTION
N = No protection

SERIES
STO = Standard series with orthogonal guides

MOTOR MOUNTING SIDE
X = Motor mounting side not specified

SIZE
045 = 45 mm
060 = 60 mm
080 = 80 mm
120 = 120 mm

GUIDE MATERIAL
A = Steel

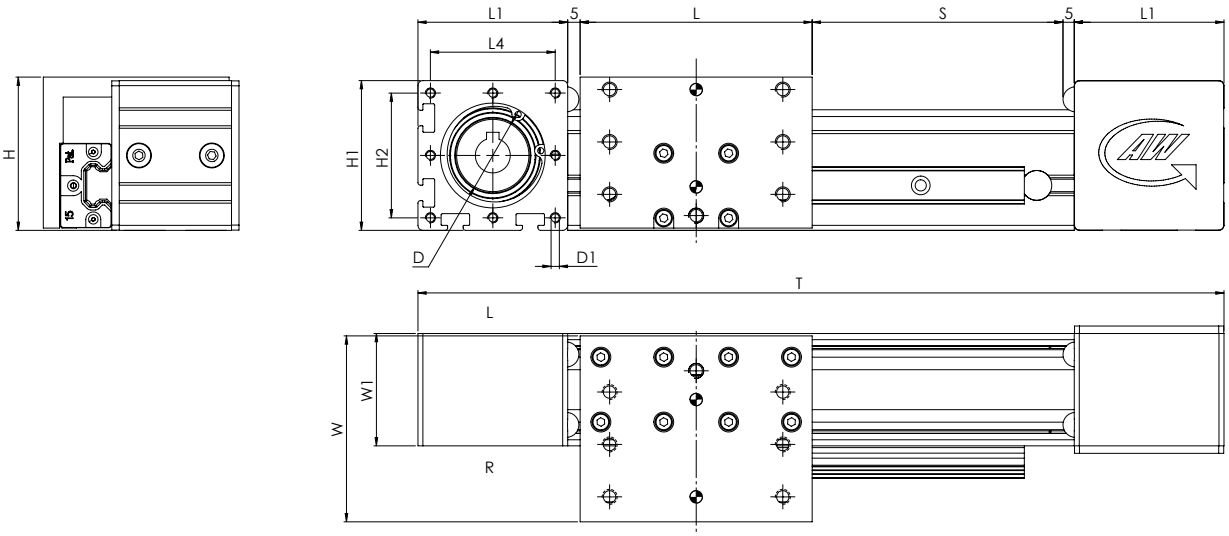
CARRIAGE OPTIONS
L22 = Short carriage with left side mounting
L24 = Long carriage with left side mounting
R22 = Short carriage with right side mounting
R24 = Long carriage with right side mounting

STO SERIES

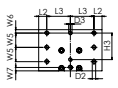
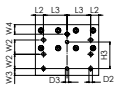
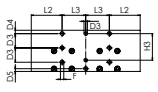
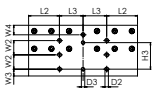
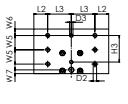
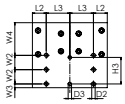
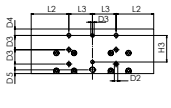
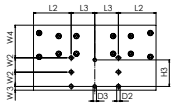
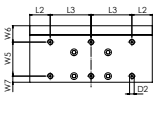
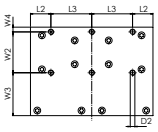
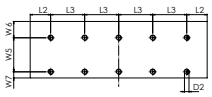
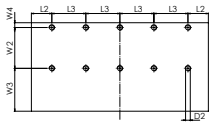
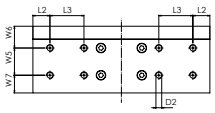
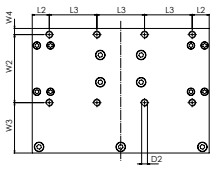
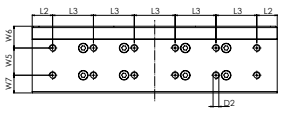
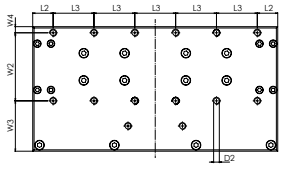
		MLBNSTO045-AL22/AR22	MLBNSTO045-AL24/AR24	MLBNSTO060-AL22/AR22	MLBNSTO060-AL24/AR24	MLBNSTO080-AL22/AR22	MLBNSTO080-AL24/AR24	MLBNSTO120-AL22/AR22	MLBNSTO120-AL24/AR24
GENERAL DATA									
Max. speed	[m/s]	5	5	5	5	5	5	5	5
Max. acceleration	[m/s²]	50	50	50	50	50	50	50	50
Repeatability	[mm]	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
Guide type	Type	ball recirculation							
Top & side guide size		15	15	15	15	25	25	30	30
Belt type	Type	16-AT5	16-AT5	25-AT5	25-AT5	32-AT10	32-AT10	50-AT10	50-AT10
Pulley primitive diameter	[mm]	35.03	35.03	38.21	38.21	50.95	50.95	63.9	63.9
Displacement per pulley revolution	[mm]	110	110	120	120	200	200	200	200
Number of blocks	n	2	4	2	4	2	4	2	4
DIMENSIONAL DATA									
L: Carriage length	[mm]	93	160	110	180	180	260	260	360
L1: Head length	[mm]	60	60	60	60	90	90	90	90
L2: Distance hole to carriage edge X	[mm]	12	45	20	55	30	30	25	30
L3: Carriage hole centre distance X	[mm]	35	35	35	35	60	50	70	60
W: Carriage width	[mm]	74.5	74.5	95.5	95.5	130	130	183	183
W1: Head width	[mm]	45	45	60	60	80	80	120	120
W2: Carriage hole centre distance Y PO	[mm]	21	21	21	21	60	60	100	100
W3: Hole-edge carriage angle distance PO	[mm]	10	10	5.5	5.5	63	63	74	74
W4: Hole-edge carriage distance PO	[mm]	14	14	48	48	7	7	9	9
W5: Carriage hole centre distance Y PV	[mm]	21	21	21	21	50	50	40	40
W6: Hole-edge carriage angle distance PV	[mm]	5	5	9.5	9.5	24	24	32	32
W7: Hole-edge carriage distance PV	[mm]	5	4	5.5	5.5	9	9	26	26
H: Carriage height	[mm]	61.5	61.5	66	66	104.5	104.5	100	100
H1: Head height	[mm]	60	60	60	60	90	90	90	90
H3: Carriage pin hole centre distance Y +/- 0.05	[mm]	39	39	39	39	-	-	-	-
D: Pulley hole diameter	[mm]	Ø22 H7	Ø22 H7	Ø22 H7	Ø22 H7	Ø32 H7	Ø32 H7	Ø40 H7	Ø40 H7
D1: Fixing hole diameter on drive head	[mm]	M4x8	M4x8	M4x8	M4x8	M6x12	M6x12	M6x12	M6x12
D2: Carriage bore diameter	[mm]	M6x12	M6x12	M6x12	M6x12	M8x16	M8x16	M10x20	M10x20
D3: Carriage pin hole diameter	[mm]	Ø5 H7	Ø5 H7	Ø5 H7	Ø5 H7	-	-	-	-
L4: Head hole centre distance X	[mm]	50	50	50	50	70	70	70	70
H2: Head hole centre distance Y	[mm]	50	50	50	50	70	70	70	70
L7: Groove centre distance X	[mm]	-	-	30	30	40	40	80	80
L8: Groove-edge distance X-axis	[mm]	22.5	22.5	15	15	20	20	20	20
H4: Groove centre distance Y	[mm]	-	-	-	-	30	30	30	30
S: Max. stroke	[mm]	5500	5500	5500	5500	5500	5500	5500	5500
T: Total length	[mm]	L1+5+L+S+5+L1				L1+10+L+S+10+L1			
Protection Option		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MASS DATA									
Base with zero stroke	[kg]	1.5	1.9	2.6	3.9	6.3	8.8	12.5	17.0
Mass for each 100 mm of stroke	[kg]	0.4	0.4	0.7	0.7	1.1	1.1	1.4	1.4
Complete carriage	[kg]	0.3	0.6	0.6	0.8	2.2	3.2	3.4	5.7
SECTION MOMENTS OF INERTIA									
Moment of inertia	Lyy [cm⁴]	7.1	7.1	17.3	17.3	74.4	74.4	120	120
Moment of inertia	Lzz [cm⁴].	13.8	13.8	47.6	47.6	151.2	151.2	492	492
MAXIMUM RECOMMENDED LOADS (*)									
Fx	[N]	823	823	3077	3077	3969	3969	6608	6608
Fy	[N]	1535	2011	2185	3220	4673	6122	5670	7934
Fz	[N]	2944	4409	2297	3681	6653	9731	10000	18516
Mx	[Nm]	18	20	34	40	84	94	116	132
My	[Nm]	97	167	134	253	496	776	436	610
Mz	[Nm]	73	125	92	154	412	597	272	577

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.

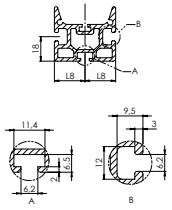
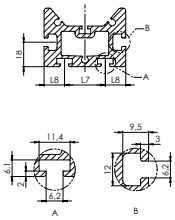
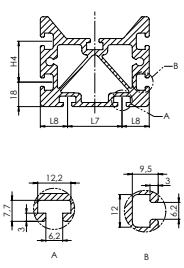
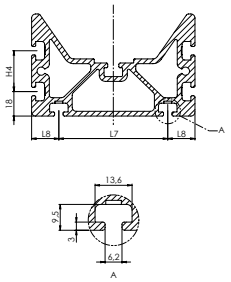
MLBNSTO / General dimensions



Carriage dimensions

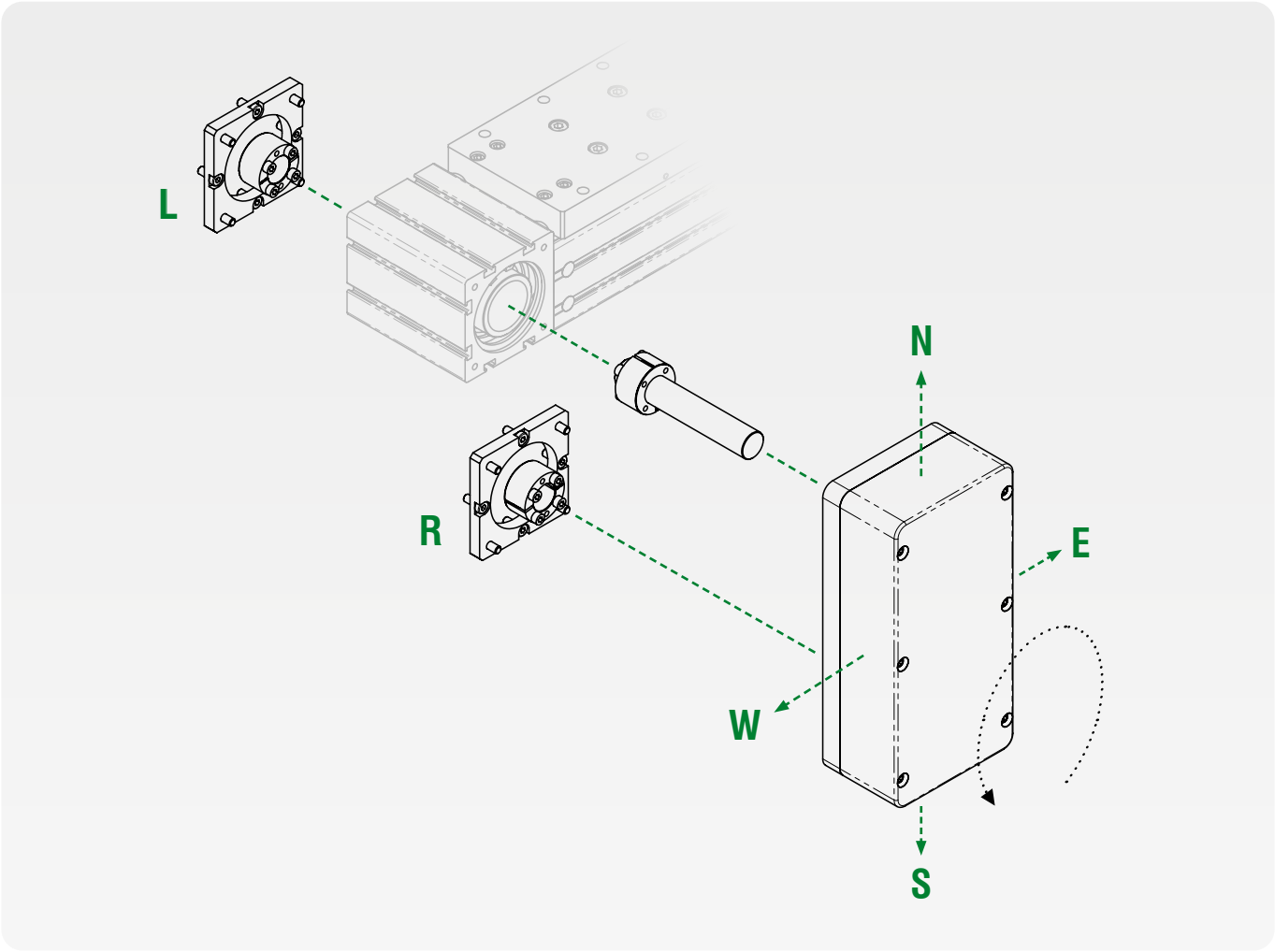
	-AL22		-AR24	
	PV	PO	PV	PO
MLBNSTO045-				
MLBNSTO060-				
MLBNSTO080-				
MLBNSTO120-				

Section detail

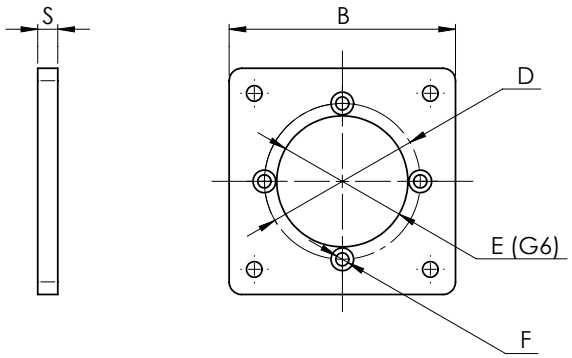
MLBNSTO045-	MLBNSTO060-	MLBNSTO080-	MLBNSTO120-
			

STO Series

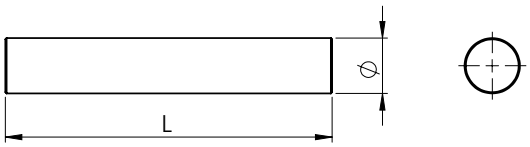
ACCESSORIES



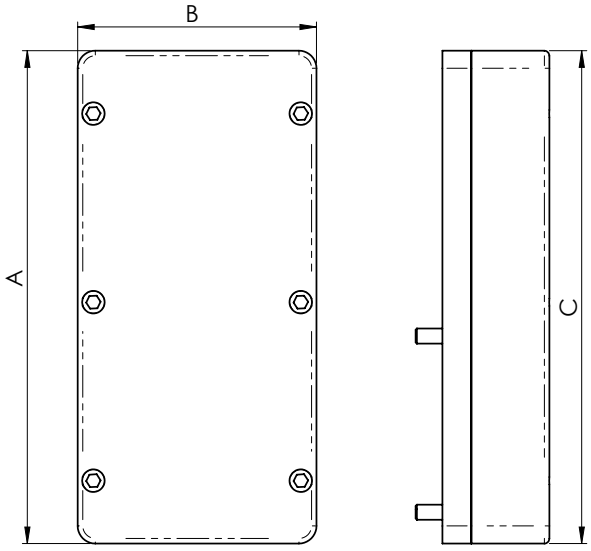
Interface flange kit



Male shaft kit



Parallel mounting kit



Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
STO	045	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
STO	060	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
STO	080	KFGSC-090-001-_X	90x6 52x5.2x62	D 16
STO	120	KFGSC-090-002-_X	90x9.8 68x6.2x80	D 22

CODING

KFGSC - 060 - 002 - _ X

L = Left
R = Right

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
STO	045	KPMSC-065-001-__	142 x 65 x 44
STO	060	KPMSC-065-001-__	142 x 65 x 44
STO	080	KPMSC-065-002-__	196 x 65 x 44
STO	120	KPMSC-120-001-__	250 x 120 x 75

CODING

KPMSC - 065 - 001 - _ _

L = Left
R = Right

N = North E = East
S = South W = West

Male shaft kit

Series	Size	Code Commercial	Ø x L	D hole locking device
STO	045	KSHSC-012-001-_X	12 x 50	D 12
STO	060	KSHSC-012-002-_X	12 x 60	D 12
STO	080	KSHSC-016-001-_X	16 x 70	D 16
STO	120	KSHSC-022-001-_X	22 x 130	D 22

CODING

KSHSC - 012 - 001 - _ X

L = Left
R = Right

Cantilever single-guide linear unit

CTL SERIES

Single-axis guide designed for Z-axis applications, featuring a stationary carriage and a moving axis. Polyurethane belt with steel coords.

- **Sizes available: 45, 60, 80, 120**
- **Reduction of moving masses**
- **Can be combined with STD and STO series**
- **Maximum stroke 2500 mm**

CODING

MLB	N	CTL	045	-	A	X12	-	X	C22	-	XXXX

PRODUCT FAMILY
Linear belt-driven axes

PROTECTION
N = No protection

SERIES
CTL = Cantilever series

SIZE
045 = 45 mm
060 = 60 mm
080 = 80 mm
120 = 120 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X12 = Long carriage

MOTOR MOUNTING SIDE
X = Motor mounting side not specified

DRIVE PULLEY HOLE
C22 = Hole for locking device self-centring D.22 mm (for sizes 45, 60)
C32 = Hole for locking device self-centring D.32 mm (for size 80)
C40 = Hole for locking device self-centring D.40 mm (for size 120)

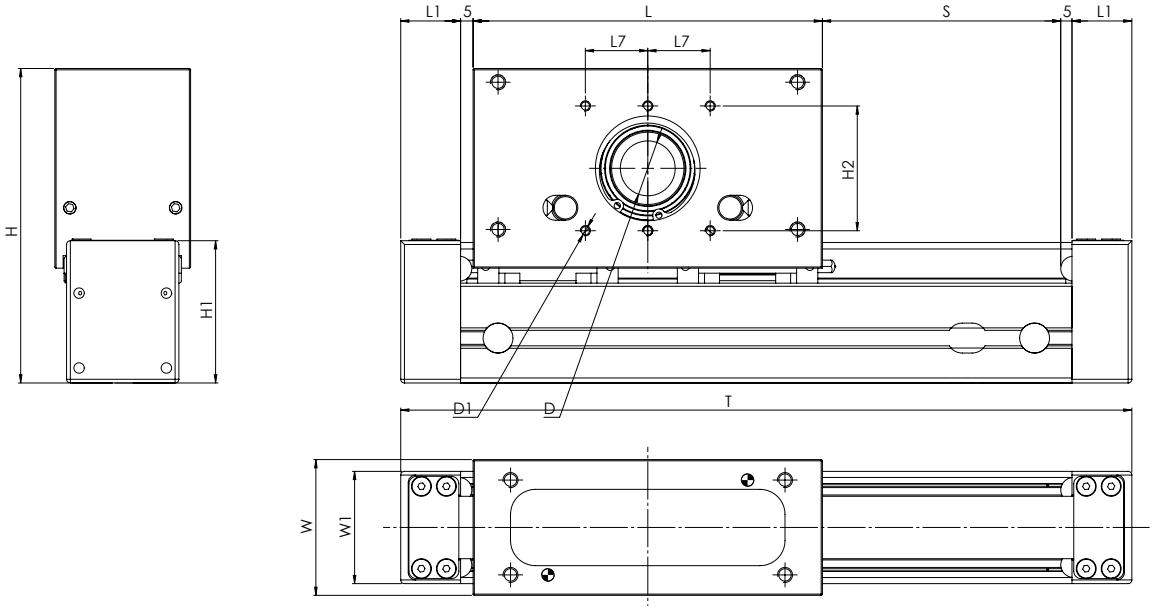
STROKE
[mm]

CTL SERIES

		MLBNCTL045-AX12	MLBNCTL060-AX12	MLBNCTL080-AX12	MLBNCTL120-AX12
GENERAL DATA					
Max. speed	[m/s]	5	5	5	5
Max. acceleration	[m/s²]	50	50	50	50
Repeatability	[mm]	± 0.05	± 0.05	± 0.05	± 0.05
Guide type	Type	ball recirculation			
Top & side guide size		15	15	25	30
Belt type	Type	25-AT5	25-AT5	50-AT5	50-AT10
Pulley primitive diameter	[mm]	35.03	38.21	50.95	63.9
Displacement per pulley revolution	[mm]	110	120	200	200
Number of blocks	n	2	2	2	2
DIMENSIONAL DATA					
L: Carriage length	[mm]	140	140	200	360
L1: Head length	[mm]	24	24	24	52
L2: Distance hole to carriage edge X PO	[mm]	15	15	23	40
L3: Carriage hole centre distance X PO	[mm]	110	110	154	60
L4: Distance between pin hole-carriage hole X PV +/- 0.05	[mm]	15	15	15	32
L5: Distance hole to carriage edge X PV	[mm]	10	10	10	30
L6: Carriage hole centre distance X PV	[mm]	120	120	21.5	80
W: Carriage width	[mm]	54	54	80	98
W1: Head width	[mm]	45	60	80	120
W2: Carriage hole centre distance Y PO	[mm]	38	38	60	76
W3: Hole-edge carriage distance PO	[mm]	8	8	10	11
W4: Carriage hole centre distance Y PV	[mm]	59	59	57	90
W5: Hole-edge carriage distance PV	[mm]	5.5	5.5	5.5	36
H: Carriage height	[mm]	126	129	178	234
H1: Head height	[mm]	57	60	90	95
D: Pulley hole diameter	[mm]	Ø22 H7	Ø22 H7	Ø32 H7	Ø40 H7
D1: Fixing hole diameter on drive head	[mm]	M4x8	M4x8	M5x10	M8x16
D2: Carriage bore diameter	[mm]	M6x12	M6x12	M8x16	M8x16
D3: Carriage pin hole diameter	[mm]	Ø5 H7	Ø5 H7	Ø5 H7	Ø8 H7
L7: Head hole centre distance X	[mm]	25	25	35	80
H2: Head hole centre distance Y	[mm]	50	50	35	80
L8: Groove centre distance X	[mm]	-	30	40	80
L9: Groove-edge distance X-axis	[mm]	22.5	15	20	20
H3: Groove centre distance Y	[mm]	-	-	30	30
S: Max. stroke	[mm]	1000	1500	2000	2500
T: Total length	[mm]	L1+5+L+S+5+L1		L1+10+L+S+10+L1	
Protection Option		N/A	N/A	N/A	N/A
MASS DATA					
Base with zero stroke	[kg]	1.8	2.5	6.0	12.6
Mass per 100 mm of stroke	[kg]	0.3	0.4	0.8	1.1
Complete carriage	[kg]	1.3	1.4	3.0	7.7
SECTION MOMENTS OF INERTIA					
Moment of inertia	Lyy [cm⁴]	7.1	17.3	74.4	120
Moment of inertia	Lzz [cm⁴].	13.8	47.6	151.2	492
MAXIMUM RECOMMENDED LOADS (*)					
Fx	[N]	1388	1388	1750	6608
Fy	[N]	2011	3220	6122	7934
Fz	[N]	4409	3681	9731	18516
Mx	[Nm]	10	20	47	66
My	[Nm]	167	253	776	610
Mz	[Nm]	125	154	597	577

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.

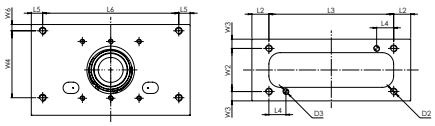
MLBNCTL / General dimensions



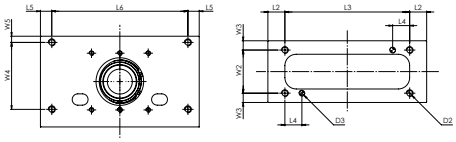
Carriage dimensions

-AX12

MLBNCTL045-



MLBNCTL060-



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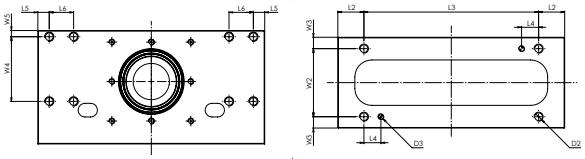

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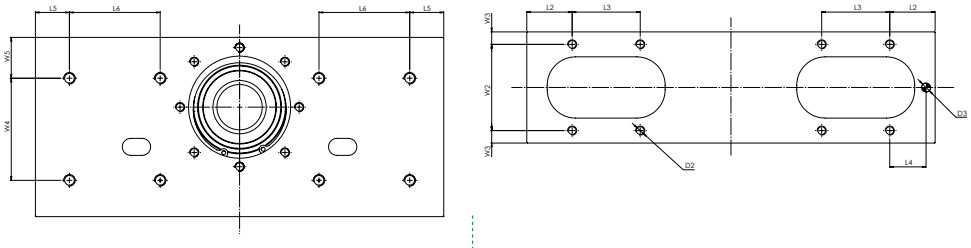
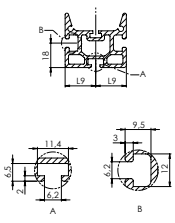


Section detail

MLBNCTL045-



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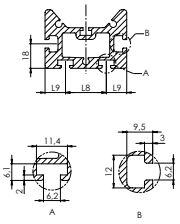

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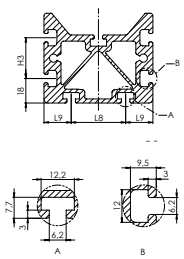

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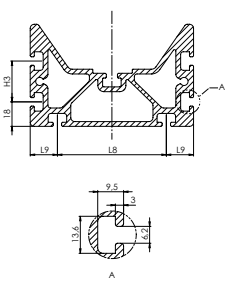
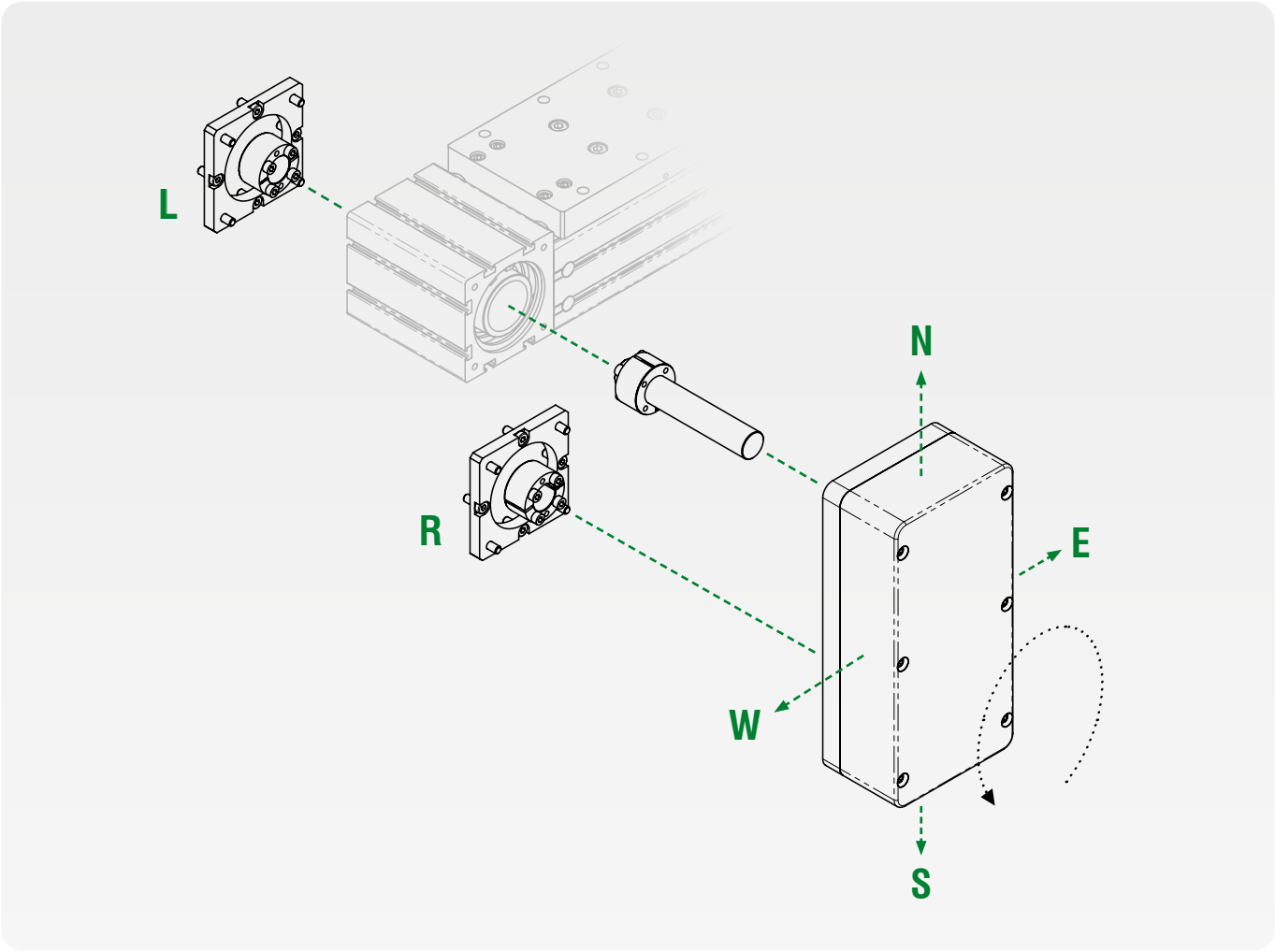
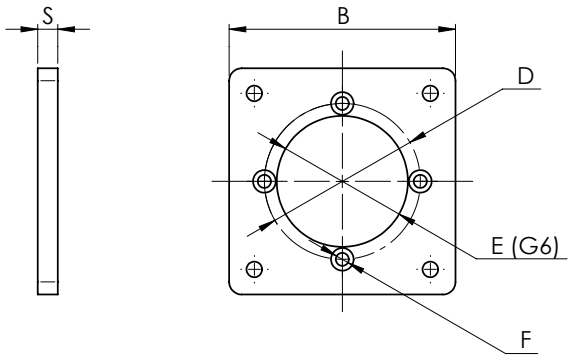


CTL Series

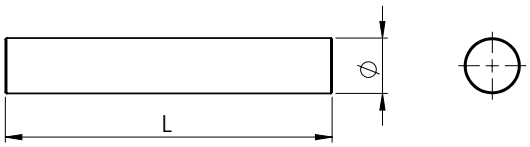
ACCESSORIES



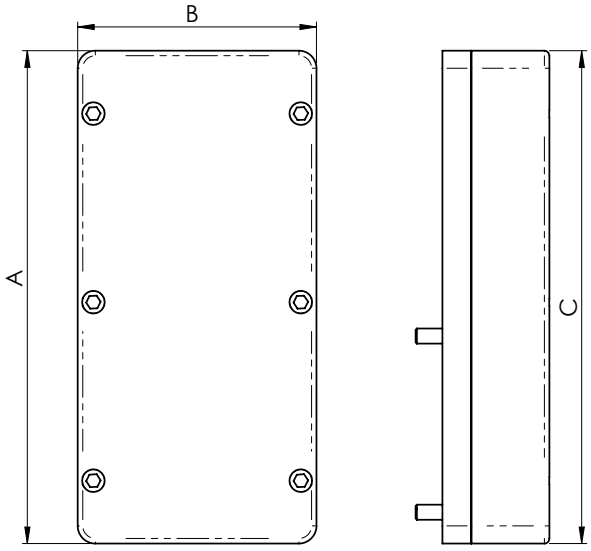
Interface flange kit



Male shaft kit



Parallel mounting kit



Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
CTL	045	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
CTL	060	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
CTL	080	KFGSC-090-004-_X	90x8 52x5.2x62	D 16
CTL	120	KFGSC-120-002-_X	120x10 68x6.2x80	D 22

CODING

KFGSC - 060 - 002 - _ X

L = Left

R = Right

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
CTL	045	-	-
CTL	060	-	-
CTL	080	-	-
CTL	120	-	-

Male shaft kit

Series	Size	Code Commercial	Ø x L	D hole locking device
CTL	045	KSHSC-012-001-_X	12 x 50	D 12
CTL	060	KSHSC-012-002-_X	12 x 60	D 12
CTL	080	KSHSC-016-001-_X	16 x 70	D 16
CTL	120	KSHSC-022-001-_X	22 x 130	D 22

CODING

KSHSC - 012 - 001 - _ X

L = Left

R = Right

High load capacity dual-guide linear unit

PLS SERIES

Designed for extreme loads, the PLS Series uses a high-stiffness open profile and a dual guide.

- **Sizes available: 160**
- **Structured profile for high load density**
- **Protection with bellows**
- **Maximum stroke 5500 mm**

CODING

MLB	N	PLS	160	-	A	X22	-	X	C40	-	XXXX

PRODUCT FAMILY
Linear belt-driven axes

PROTECTION
N = No protection
B = Protection with bellows

SERIES
PLS = High loadability series with double planar guide

SIZE
160 = 160 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X22 = Short carriage
X24 = Long carriage

MOTOR MOUNTING SIDE
X = Motor mounting side not specified

DRIVE PULLEY HOLE
C40 = Hole for locking device self-centring D 40 mm (for size 160)

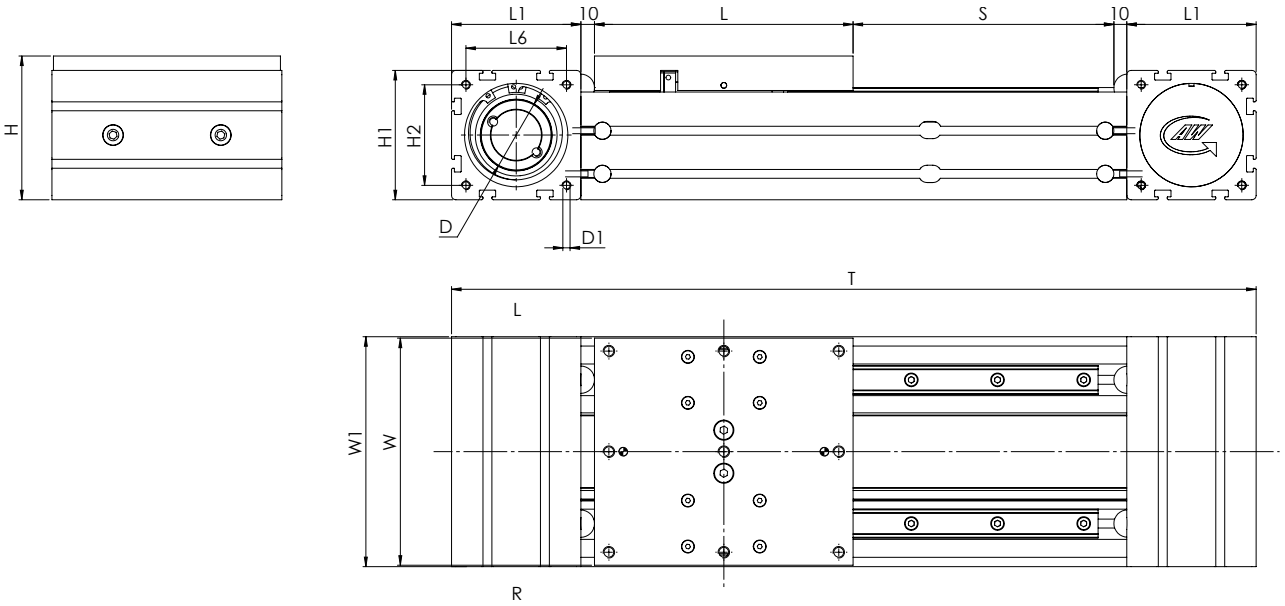
STROKE
[mm]

PLS SERIES

		MLBNPLS160-AX22	MLBNPLS160-AX24
TECHNICAL DATA			
Max. speed	[m/s]	5	5
Max. acceleration	[m/s²]	50	50
Repeatability	[mm]	± 0.05	± 0.05
Guide type	Type	ball recirculation	ball recirculation
Top & side guide size		20	20
Belt type	Type	50-AT10	50-AT10
Pulley primitive diameter	[mm]	63.9	63.9
Displacement per pulley revolution	[mm]	200	200
Number of blocks	n	2	4
DIMENSIONAL REFERENCE			
L: Carriage length	[mm]	180	260
L1: Head length	[mm]	90	90
L2: Distance hole to carriage edge X	[mm]	10	10
L3: Carriage hole centre distance X	[mm]	80	60
L4: Carriage pin holes centre distance X+/-0.05	[mm]	140	220
L5: Distance pin hole to carriage edge X	[mm]	20	20
W: Carriage width	[mm]	158	158
W1: Head width	[mm]	160	160
W2: Carriage hole centre distance Y	[mm]	70	70
W3: Distance hole to carriage edge Y	[mm]	9	9
H: Carriage height	[mm]	100	100
H1: Head height	[mm]	90	90
D: Pulley hole diameter	[mm]	Ø40 H7	Ø40 H7
D1: Fixing hole diameter on drive head	[mm]	M6x12	M6x12
D2: Carriage bore diameter	[mm]	M8x16	M8x16
D3: Carriage pin hole diameter	[mm]	Ø6 H7	Ø6 H7
L6: Head hole centre distance X	[mm]	70	70
H2: Head hole centre distance Y	[mm]	70	70
L7: Groove centre distance X	[mm]	40	40
L8: Groove-edge distance X-axis	[mm]	20	20
H3: Groove centre distance X	[mm]	30	30
S: Max. stroke	[mm]	5500	5500
T: Total length	[mm]	L1+10+L+S+10+L1	L1+10+L+S+10+L1
Protection Option		Bellows	Bellows
MASS DATA			
Base with zero stroke	[kg]	8.9	9.9
Mass per 100 mm of stroke	[kg]	1.1	1.1
Complete carriage	[kg]	1.6	2.1
SECTION MOMENTS OF INERTIA			
Moment of inertia	Lyy [cm⁴]	176	176
Moment of inertia	Lzz [cm⁴].	1096	1096
MAXIMUM RECOMMENDED LOADS (*)			
Fx	[N]	6608	6608
Fy	[N]	4055	5134
Fz	[N]	5545	9289
Mx	[Nm]	296	368
My	[Nm]	437	837
Mz	[Nm]	177	288

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.

MLBNPLS / General dimensions

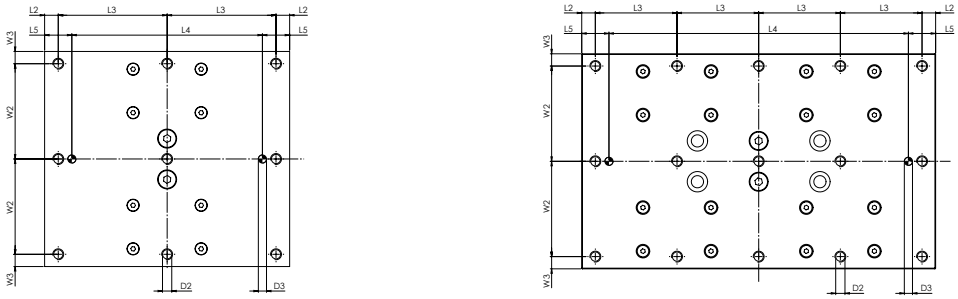


Carriage dimensions

-AX22

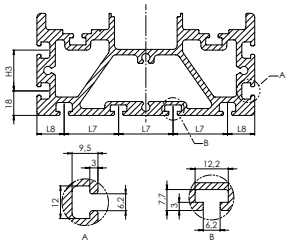
-AX24

MLBNPLS160-



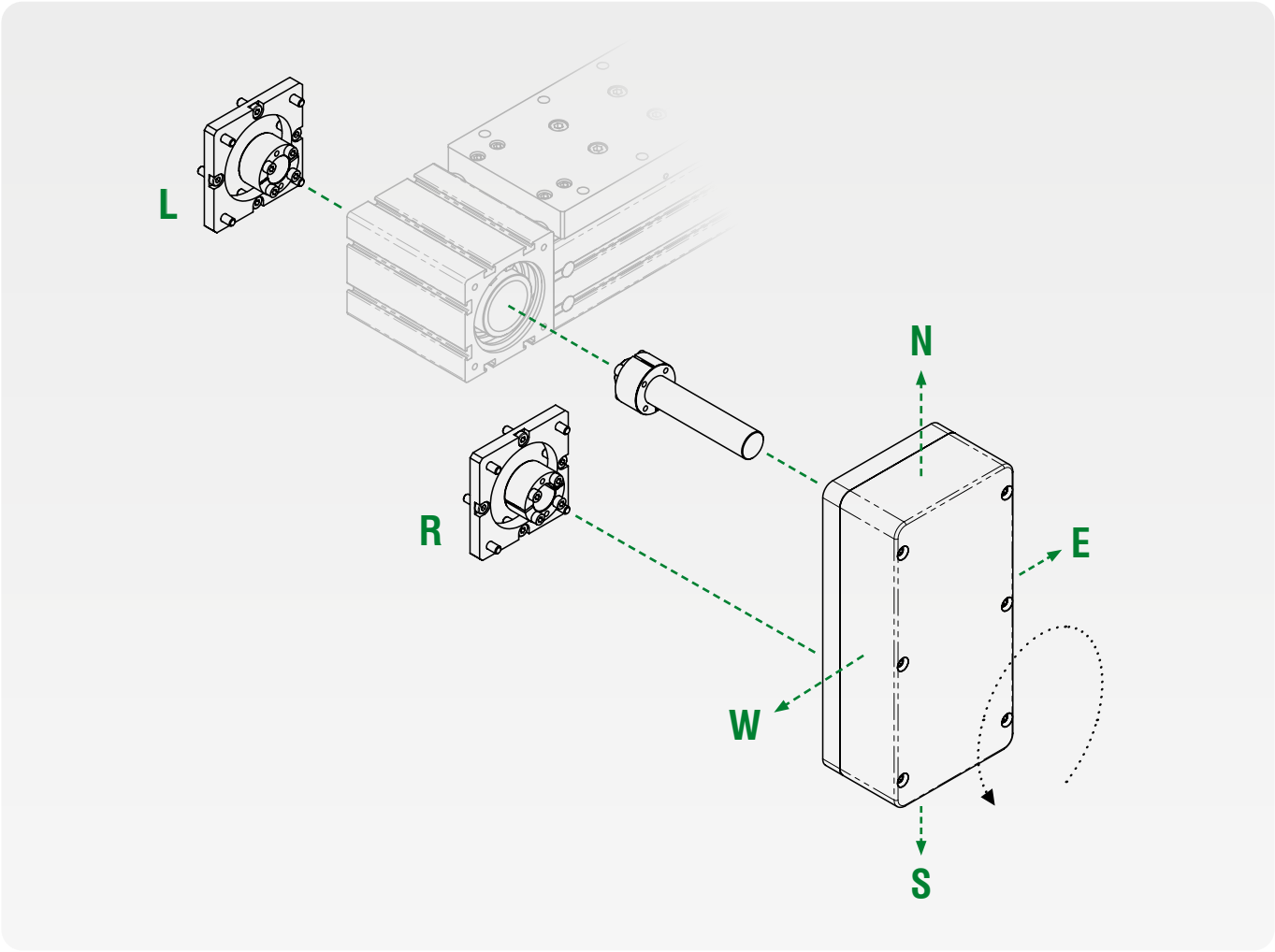
Section detail

MLBNPLS160-

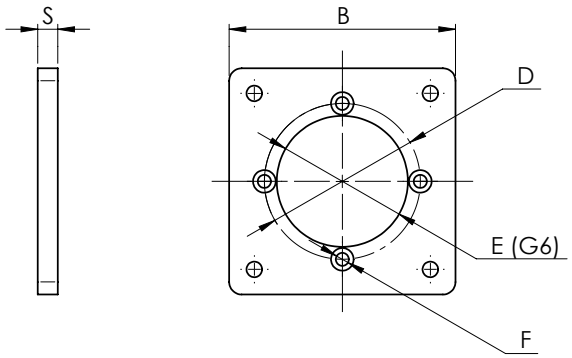


PLS Series

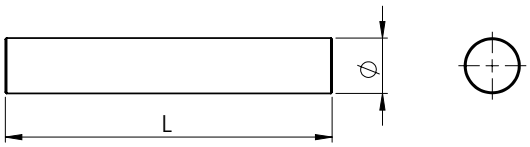
ACCESSORIES



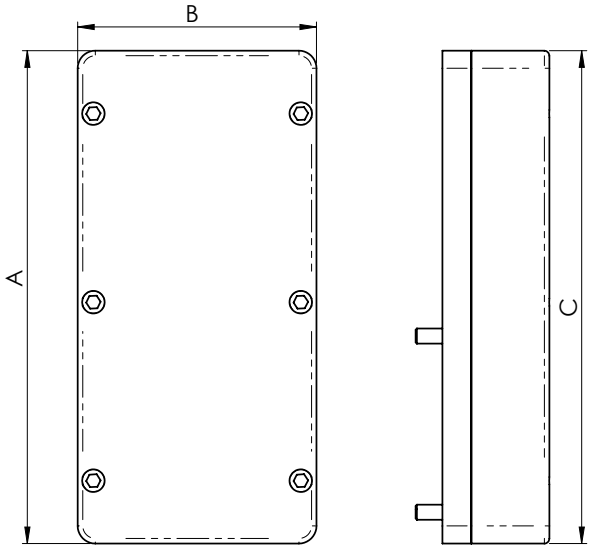
Interface flange kit



Male shaft kit



Parallel mounting kit



Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
PLS	160	KFGSC-090-003-_X	90x12 68x6.2x80	D 40

CODING

KFGSC - 060 - 002 - _ X

L = Left
R = Right

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
PLS	160	KPMSC-120-001-__	250 x 120 x 75

CODING

KPMSC - 065 - 001 - _ _

L = Left
R = Right

N = North **E** = East
S = South **W** = West

Male shaft kit

Series	Size	Code Commercial	Ø x L	D hole locking device
PLS	160	KSHSC-022-002-_X	22 x 170	D 40

CODING

KSHSC - 012 - 001 - _ X

L = Left
R = Right

High protection single-guide linear unit

HPR SERIES

These axes are **characterised by linear guides with recirculating ball bearings blocks**, designed for applications requiring optimal protection of internal mechanical parts from dust or machining residues. The 'closed' aluminium profile protects the internal components.

- **Sizes available: 45, 60, 80,120,**
- **Stainless steel protective sheet**
- **Maximum stroke 5500 mm**

CODING

MLB	T	HPR	045	-	A	X11	-	X	C22	-	XXXX

PRODUCT FAMILY
Linear belt-driven axes

PROTECTION
T = Stainless steel made protection sheet

SERIES
HPR = High protection series

SIZE
045 = 45 mm
060 = 60 mm
080 = 80 mm
120 = 120 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X11 = Short carriage
X12 = Long carriage

MOTOR MOUNTING SIDE
X = Motor mounting side not specified

DRIVE PULLEY HOLE
C22 = Hole for locking device self-centring D.22 mm (for sizes 45, 60)
C32 = Hole for locking device self-centring D.32 mm (for size 80)
C40 = Hole for locking device self-centring D.40 mm (for size 120)

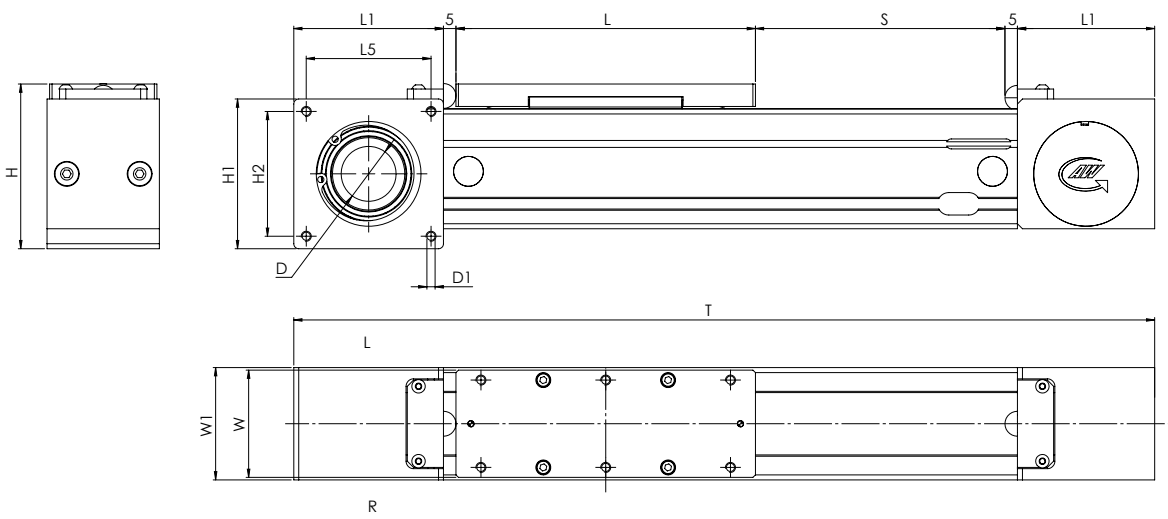
STROKE
[mm]

HPR SERIES

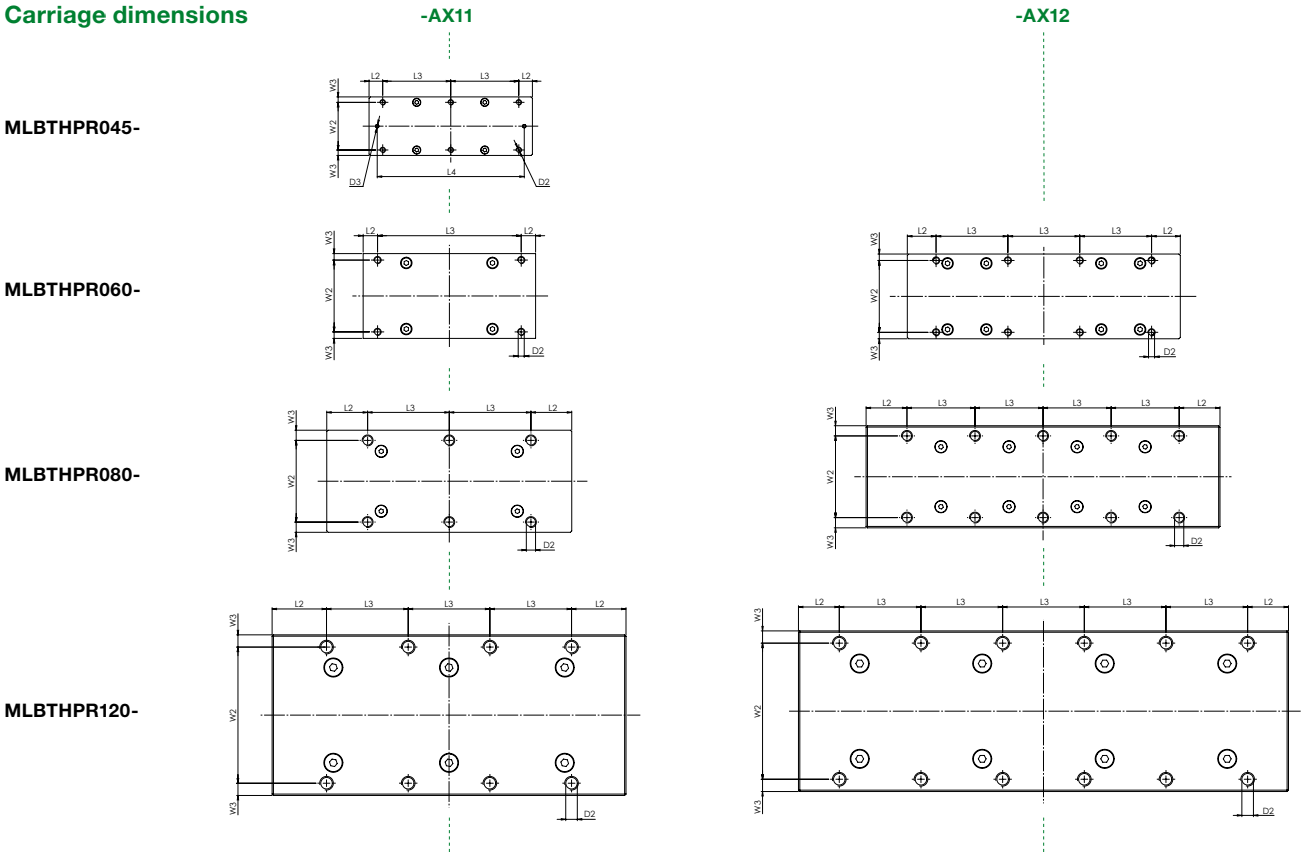
		MLBTHPR045-AX11	MLBTHPR060-AX11	MLBTHPR060-AX12	MLBTHPR080-AX11	MLBTHPR080-AX12	MLBTHPR120-AX11	MLBTHPR120-AX12
GENERAL DATA								
Max. speed	[m/s]	5	5	5	5	5	5	5
Max. acceleration	[m/s²]	50	50	50	50	50	50	50
Repeatability	[mm]	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
Guide type	Type	ball recirculation						
Top & side guide size		12	15	15	25	25	30	30
Belt type	Type	10-AT5	25-AT5	25-AT5	32-AT5	32-AT5	50-AT10	50-AT10
Pulley primitive diameter	[mm]	35.03	38.21	38.21	50.95	50.95	63.9	63.9
Displacement per pulley revolution	[mm]	110	120	120	200	200	200	200
Number of blocks	n	1	1	2	1	2	1	2
DIMENSIONAL DATA								
L: Carriage length	[mm]	120	120	190	180	260	260	360
L1: Head length	[mm]	60	60	60	90	90	90	90
L2: Distance hole to carriage edge X	[mm]	10	10	20	30	30	40	30
L3: Carriage hole centre distance X	[mm]	50	100	50	60	50	60	60
L4: Carriage pin holes centre distance X+/-0.05	[mm]	108	-	-	-	-	-	-
W: Carriage width	[mm]	43	59	59	75	75	118	118
W1: Head width	[mm]	45	60	60	80	80	120	120
W2: Carriage hole centre distance Y	[mm]	35	50	50	60	60	100	100
W3: Distance hole to carriage edge Y	[mm]	4	4.5	4.5	7.5	7.5	9	9
H: Carriage height	[mm]	66	80	80	100	100	115	115
H1: Head height	[mm]	60	60	60	90	90	90	90
D: Pulley hole diameter	[mm]	Ø22 H7	Ø22 H7	Ø22 H7	Ø32 H7	Ø32 H7	Ø40 H7	Ø40 H7
D1: Fixing hole diameter on drive head	[mm]	M4x12	M4x12	M4x12	M6x12	M6x12	M6x12	M6x12
D2: Carriage bore diameter	[mm]	M4x8	M5x10	M5x10	M8x16	M8x16	M10x20	M10x20
D3: Carriage pin hole diameter	[mm]	Ø2.5 H7	-	-	-	-	-	-
L5: Head hole centre distance X	[mm]	50	50	50	70	70	70	70
H2: Head hole centre distance Y	[mm]	50	50	50	70	70	70	70
L6: Groove centre distance X	[mm]	-	30	30	40	40	80	80
L7: Groove-edge distance X-axis	[mm]	-	15	15	20	20	20	20
H3: Groove centre distance Y	[mm]	-	30	30	30	30	30	30
S: Max. stroke	[mm]	5500	5500	5500	5500	5500	5500	5500
T: Total length	[mm]	L1+5+L+S+5+L1				L1+10+L+S+10+L1		
Protection Option		Stainless steel sheet						
MASS DATA								
Base with zero stroke	[kg]	1.5	2.5	2.5	5.8	5.8	10.9	12.6
Mass per 100 mm of stroke	[kg]	0.4	0.4	0.6	0.8	1.1	1.1	1.2
Complete carriage	[kg]	0.3	0.5	0.8	2.2	3.2	2.7	3.9
SECTION MOMENTS OF INERTIA								
Moment of inertia	Lyy [cm⁴]	7.1	17.3	17.3	74.4	74.4	120	120
Moment of inertia	Lzz [cm⁴].	13.8	47.6	47.6	151.2	151.2	492	492
MAXIMUM RECOMMENDED LOADS (*)								
Fx	[N]	515	1388	1388	3969	3969	6608	6608
Fy	[N]	2530	1035	1447	4204	6830	5187	9682
Fz	[N]	3105	1410	1996	5008	8360	7185	13890
Mx	[Nm]	14	15	15	34	34	85	85
My	[Nm]	59	77	143	371	694	544	1105
Mz	[Nm]	51	55	76	153	351	354	780

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.

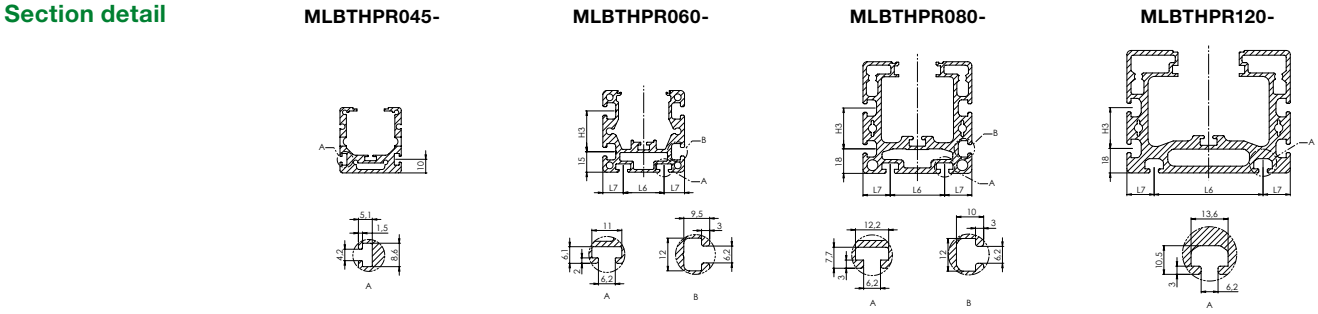
MLBTHPR / General dimensions



Carriage dimensions

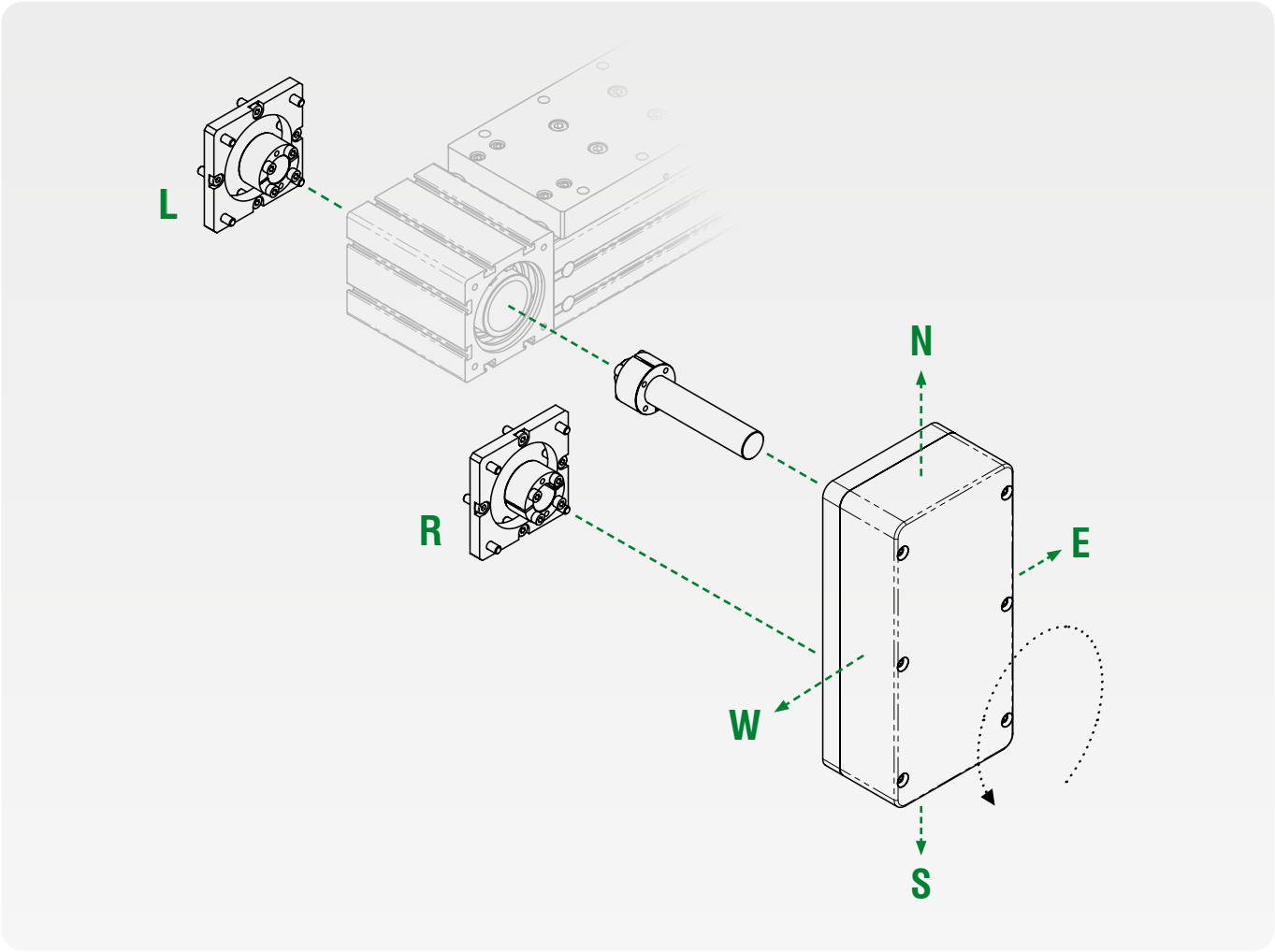


Section detail

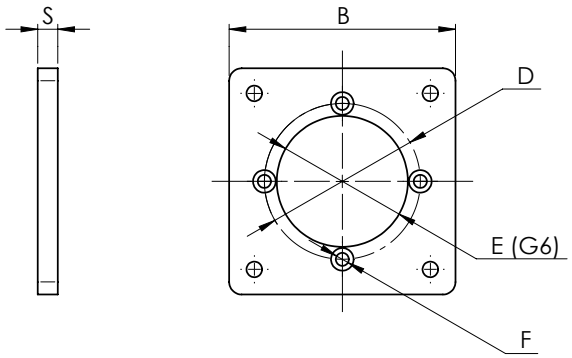


HPR Series

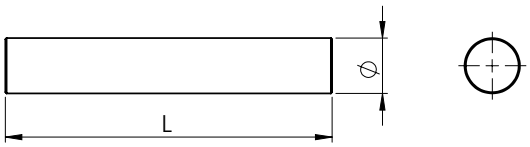
ACCESSORIES



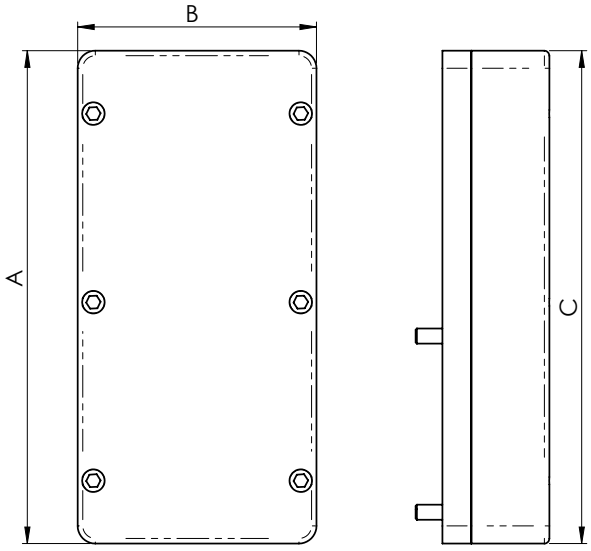
Interface flange kit



Male shaft kit



Parallel mounting kit



Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
HPR	045	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
HPR	060	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
HPR	080	KFGSC-090-001-_X	90x6 52x5.2x62	D 16
HPR	120	KFGSC-090-002-_X	90x9.8 68x6.2x80	D 22

CODING

KFGSC - 060 - 002 - _ X

L = Left
R = Right

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
HPR	045	KPMSC-065-001-__	142 x 65 x 44
HPR	060	KPMSC-065-001-__	142 x 65 x 44
HPR	080	KPMSC-065-002-__	196 x 65 x 44
HPR	120	KPMSC-120-001-__	250 x 120 x 75

CODING

KPMSC - 065 - 001 - _ _

L = Left
R = Right

N = North E = East
S = South W = West

Male shaft kit

Series	Size	Code Commercial	Ø x L	D hole locking device
HPR	045	KSHSC-012-001-_X	12 x 50	D 12
HPR	060	KSHSC-012-002-_X	12 x 60	D 12
HPR	080	KSHSC-016-001-_X	16 x 70	D 16
HPR	120	KSHSC-022-001-_X	22 x 130	D 22

CODING

KSHSC - 012 - 001 - _ X

L = Left
R = Right

High-protection single-guide linear unit with opposing carriages

HPO SERIES

This series offers **two carriages with opposing movement**, ideal for high-speed alignment applications. The opposing carriages are driven by a single belt.

- **Sizes available: 60, 80, 120**
- **Stainless steel protective sheet**
- **Space-saving motorisation**
- **Maximum stroke 5500 mm**

CODING

MLB	T	HPO	060	-	A	X12	-	X	C22	-	XXXX

PRODUCT FAMILY
Linear belt-driven axes

PROTECTION
T = Stainless steel made protection sheet

SERIES
HPO = High protection series with carriages with opposing motion

SIZE
060 = 60 mm
080 = 80 mm
120 = 120 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X12 = Short carriage

MOTOR MOUNTING SIDE
X = Motor mounting side not specified

DRIVE PULLEY HOLE
C22 = Hole for locking device self-centring D.22 mm (for sizes 60)
C32 = Hole for locking device self-centring D.32 mm (for size 80)
C40 = Hole for locking device self-centring D.40 mm (for size 120)

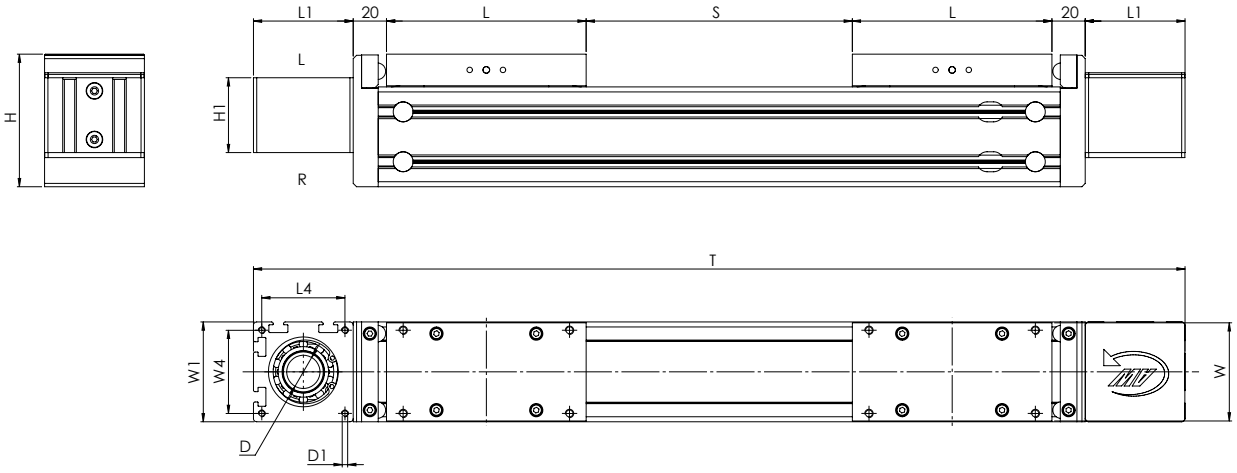
STROKE
[mm]

HPO SERIES

		MLBTHPO060-AX12	MLBTHPO080-AX12	MLBTHPO120-AX12
GENERAL DATA				
Max. speed	[m/s]	5	5	5
Max. acceleration	[m/s²]	50	50	50
Repeatability	[mm]	± 0.05	± 0.05	± 0.05
Guide type	Type	ball recirculation		
Top & side guide size		15	15	20
Belt type	Type	16-AT5	16-AT5	32-AT10
Pulley primitive diameter	[mm]	38.21	50.95	63.9
Displacement per pulley revolution	[mm]	120	200	200
Number of blocks	n	1 + 1	1 + 1	1 + 1
DIMENSIONAL DATA				
L: Carriage length	[mm]	2 x 120	2 x 120	2 x 165
L1: Head length	[mm]	60	60	90
L2: Distance hole to carriage edge X	[mm]	10	10	20
L3: Carriage hole centre distance X	[mm]	100	50	62.5
W: Carriage width	[mm]	59	75	118
W1: Head width	[mm]	60	60	80
W2: Carriage hole centre distance Y	[mm]	50	60	100
W3: Distance hole to carriage edge Y	[mm]	4.5	7.5	9
H: Carriage height	[mm]	80	100	115
H1: Head height	[mm]	45	60	90
D: Pulley hole diameter	[mm]	Ø22 H7	Ø32 H7	Ø40 H7
D1: Fixing hole diameter on drive head	[mm]	M4x8	M5x10	M6x12
D2: Carriage bore diameter	[mm]	M5x10	M8x16	M10x20
L4: Head hole centre distance X	[mm]	50	50	70
W4: Head hole centre distance Y	[mm]	50	50	70
L5: Groove centre distance X	[mm]	30	40	80
L6: Groove-edge distance X-axis	[mm]	15	20	20
H3: Groove centre distance Y	[mm]	30	30	30
S: Max. stroke	[mm]	5500	5500	5500
T: Total length	[mm]	L1+20+L+S+L+20+L1	L1+25+L+S+L+25+L1	L1+25+L+S+L+25+L1
Protection Option	[mm]	Stainless steel sheet		
MASS DATA				
Base with zero stroke	[kg]	3.9	5.8	7.1
Mass per 100 mm of stroke	[kg]	1.1	1.1	1.6
Complete carriage	[kg]	0.8	3.2	3.2
SECTION MOMENTS OF INERTIA				
Moment of inertia	Lyy [cm⁴]	17.3	75	120
Moment of inertia	Lzz [cm⁴].	46.7	151	429
MAXIMUM RECOMMENDED LOADS (*,)**				
Fx	[N]	823	823	3969
Fy	[N]	723.5	3415	4841
Fz	[N]	998	4180	6945
Mx	[Nm]	8	17	43
My	[Nm]	29	95	553
Mz	[Nm]	28	79	390

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.
(**) Forces and moments assessed on the individual carriage. In the case of non-symmetrical loads, please contact AutomationWare technical department

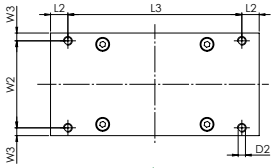
MLBTHPO / General dimensions



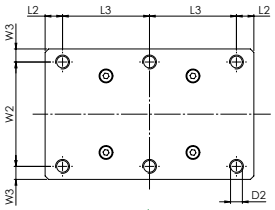
Carriage dimensions

-AX12

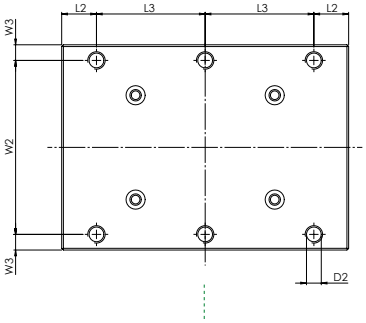
MLBTHPO060-



MLBTHPO080-

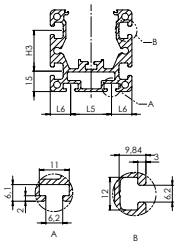


MLBTHPO120-

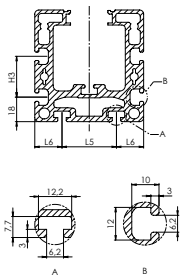


Section detail

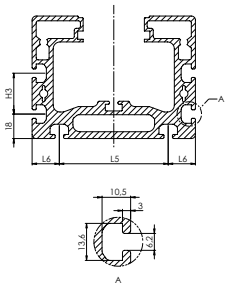
MLBTHPO060-



MLBTHPO080-

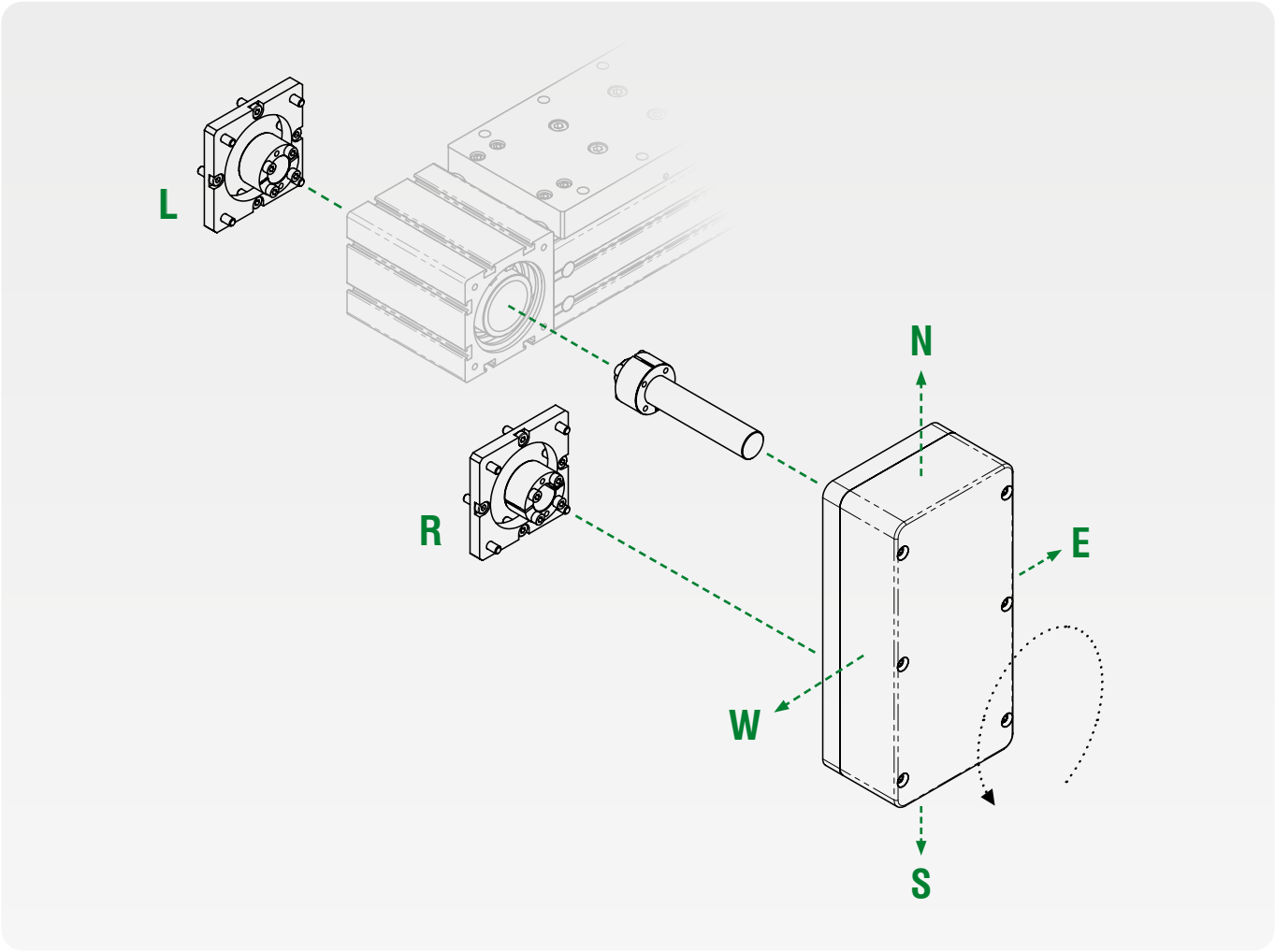


MLBTHPO120-

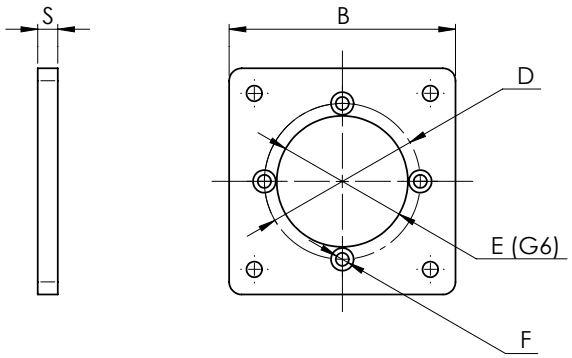


HPO Series

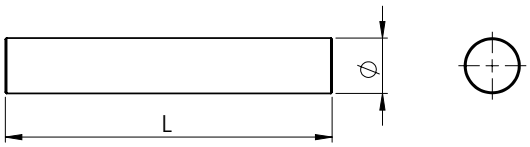
ACCESSORIES



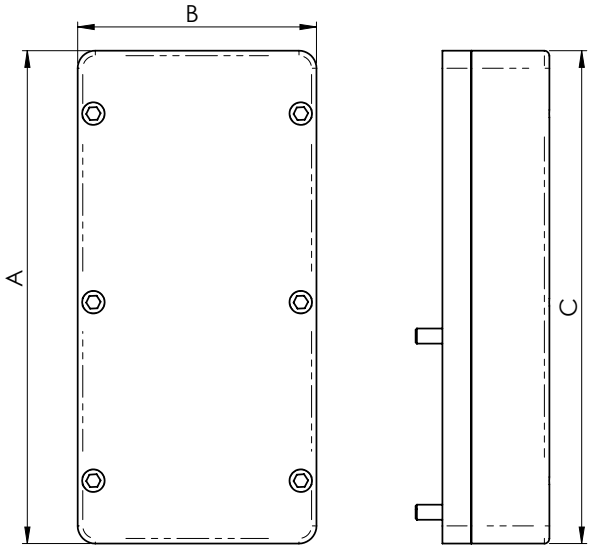
Interface flange kit



Male shaft kit



Parallel mounting kit



Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
HPO	060	KFGSC-060-004-_X	60x6 35x4.2x44	D 12
HPO	080	KFGSC-060-004-_X	90x6 52x5.2x62	D 12
HPO	120	KFGSC-090-002-_X	90x9.8 68x6.2x80	D 22

CODING

KFGSC - 060 - 002 - _ X

L = Left
R = Right

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
HPO	060	KPMSC-065-001-	142 x 65 x 44
HPO	080	KPMSC-065-002-	196 x 65 x 44
HPO	120	KPMSC-120-001-	250 x 120 x 75

CODING

KPMSC - 065 - 001 - _ _

L = Left
R = Right

N = North E = East
S = South W = West

Male shaft kit

Series	Size	Code Commercial	Ø x L	D hole locking device
HPO	060	KSHSC-012-002-_X	12 x 60	D 12
HPO	080	KSHSC-016-001-_X	16 x 70	D 16
HPO	120	KSHSC-022-001-_X	22 x 130	D 22

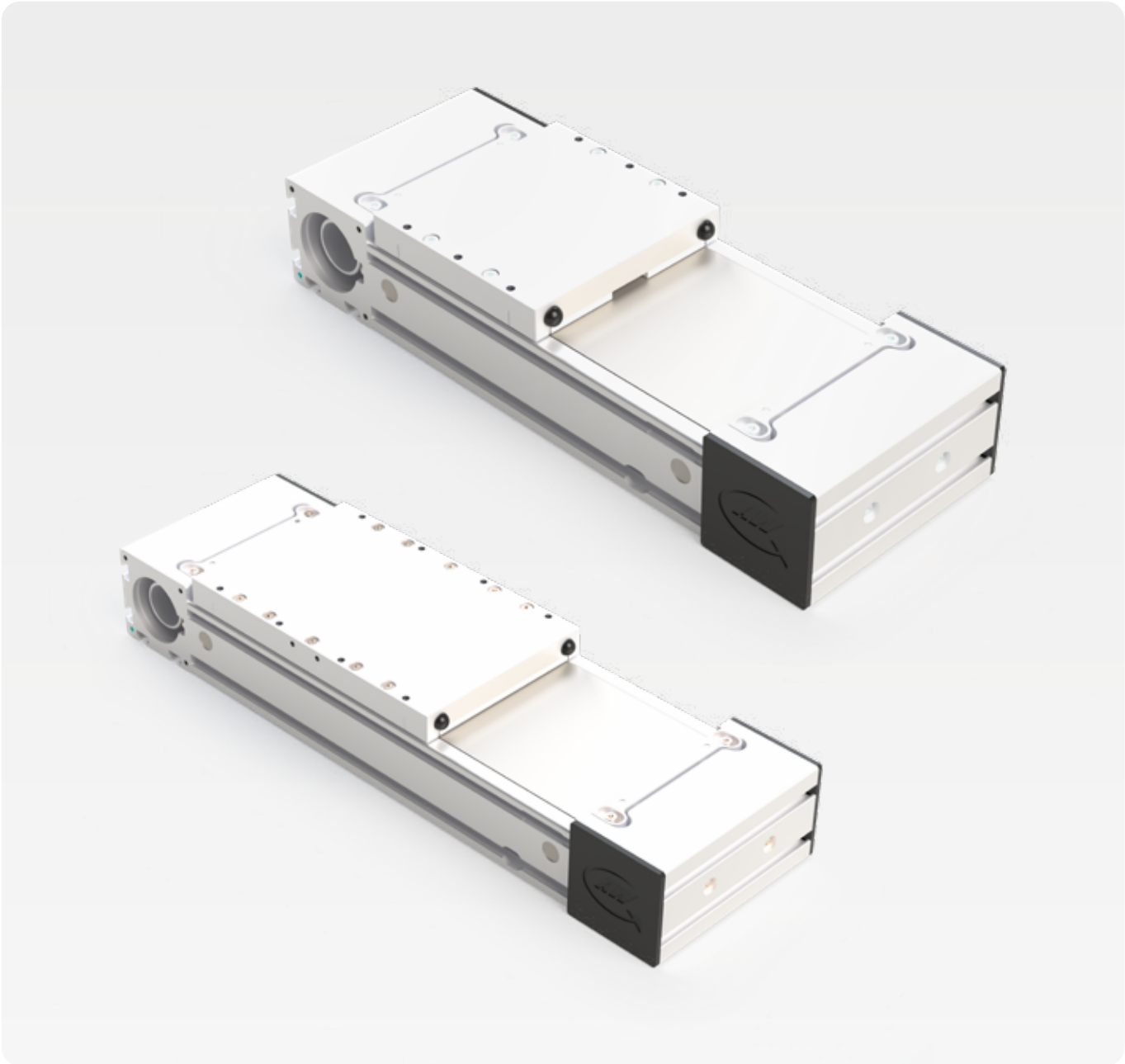
CODING

KSHSC - 012 - 001 - _ X

L = Left
R = Right

High-protection dual-guide linear unit

PRO SERIES



Based on the HPR Series, the PRO integrates a **dual guide for greater load capacity** in a compact vertical footprint.

- **Sizes available: 90, 120, 160**
- **Rectangular section for high load density**
- **Stainless steel protective sheet**
- **Maximum stroke 5500 mm**

CODING

MLB	T	PRO	090	-	A	X22	-	X	C22	-	XXXX

PRODUCT FAMILY
Linear belt-driven axes

PROTECTION
T = Stainless steel made protection sheet

SERIES
PRO = Protected Series with double planar guide

SIZE
090 = 90 mm
120 = 120 mm
160 = 160 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X22 = Short carriage
X24 = Long carriage

MOTOR MOUNTING SIDE
X = Motor mounting side not specified

DRIVE PULLEY HOLE
C22 = Hole for locking device self-centring D.22 mm (for sizes 60)
C40 = Hole for locking device self-centring D.40 mm (for size 120, 160)

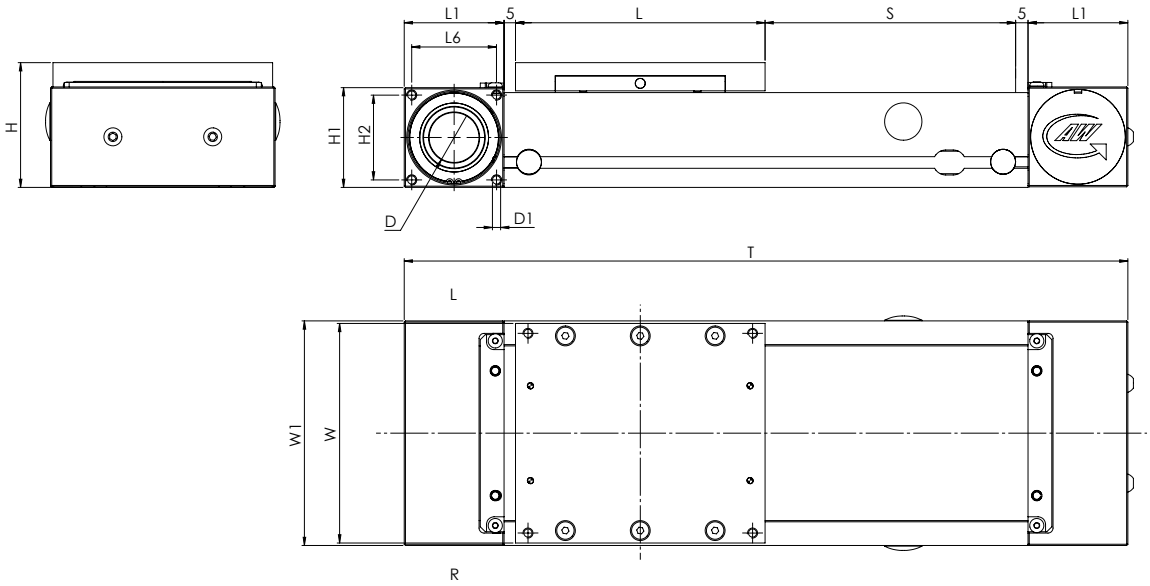
STROKE
[mm]

PRO SERIES

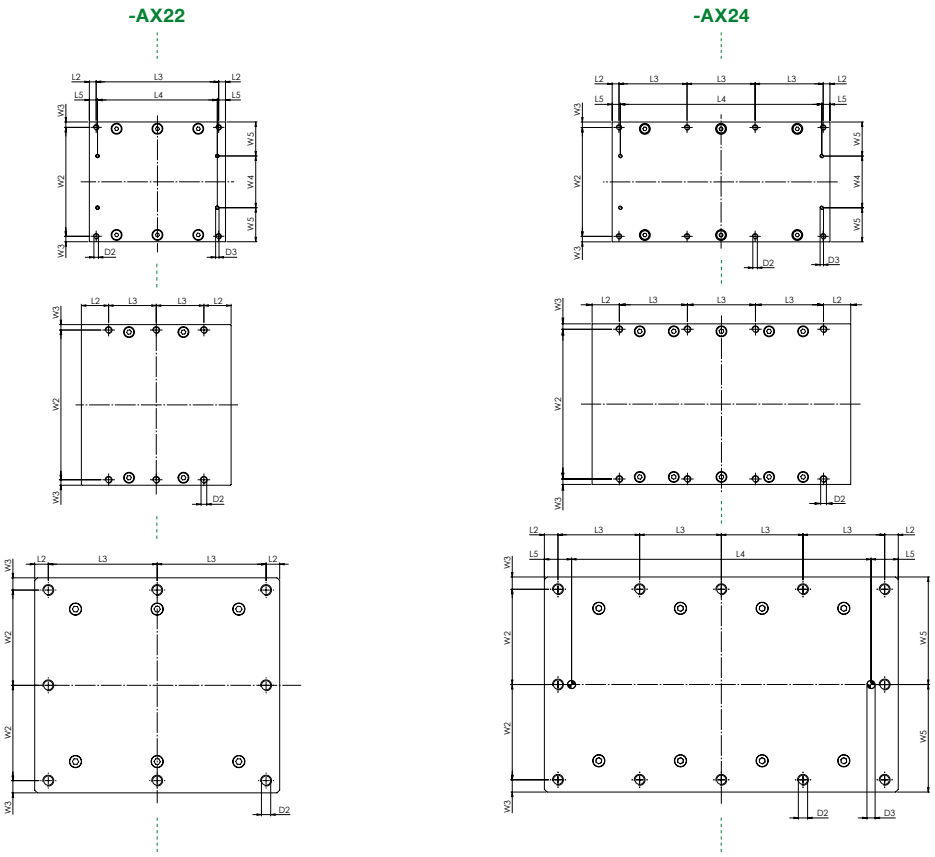
		MLBTPRO090-AX22	MLBTPRO090-AX24	MLBTPRO120-AX22	MLBTPRO120-AX24	MLBTPRO160-AX22	MLBTPRO160-AX24
GENERAL DATA							
Max. speed	[m/s]	5	5	5	5	5	5
Max. acceleration	[m/s²]	50	50	50	50	50	50
Repeatability	[mm]	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05	± 0.05
Guide type	Type	ball recirculation					
Top & side guide size		12	12	15	15	20	20
Belt type	Type	25-AT5	25-AT5	32-AT5	32-AT5	50-AT10	50-AT10
Pulley primitive diameter	[mm]	28.66	28.66	35.03	35.03	63.9	63.9
Displacement per pulley revolution	[mm]	90	90	120	120	200	200
Number of blocks	n	2	4	2	4	2	4
DIMENSIONAL DATA							
L: Carriage length	[mm]	100	160	110	190	180	260
L1: Head length	[mm]	40	40	60	60	90	90
L2: Distance hole to carriage edge X	[mm]	5	5	20	20	10	10
L3: Carriage hole centre distance X	[mm]	90	50	35	50	80	60
L4: Carriage pin holes centre distance X+/-0.05	[mm]	88	148	-	-	-	220
L5: Distance pin hole to carriage edge X	[mm]	6	6	-	-	-	20
W: Carriage width	[mm]	88	88	118	118	158	158
W1: Head width	[mm]	90	90	120	120	160	160
W2: Carriage hole centre distance Y	[mm]	80	80	110	110	70	70
W3: Distance hole to carriage edge Y	[mm]	4	4	4	4	9	9
W4: Carriage pin hole centre distance Y +/- 0.05	[mm]	38	38	-	-	-	-
W5: Distance pin hole to carriage edge Y	[mm]	25	25	-	-	-	79
H: Carriage height	[mm]	50	50	68	68	100	100
H1: Head height	[mm]	40	40	60	60	90	90
D: Pulley hole diameter	[mm]	Ø22 H7	Ø22 H7	Ø40 H7	Ø40 H7	Ø40 H7	Ø40 H7
D1: Fixing hole diameter on drive head	[mm]	M4x8	M4x8	M4x8	M4x8	M6x12	M6x12
D2: Carriage bore diameter	[mm]	M4x8	M4x8	M5x10	M5x10	M8x16	M8x16
D3: Carriage pin hole diameter	[mm]	Ø2.5 H7	Ø2.5 H7	-	-	-	Ø6 H7
L6: Head hole centre distance X	[mm]	34	34	50	50	70	70
H2: Head hole centre distance Y	[mm]	34	34	50	50	70	70
L7: Groove centre distance X	[mm]	60	60	80	80	40	40
L8: Groove-edge distance X-axis	[mm]	15	15	20	20	20	20
H3: Groove centre distance Y	[mm]	-	-	-	-	30	30
S: Max. stroke	[mm]	5500	5500	5500	5500	5500	5500
T: Total length	[mm]	L1+5+L+S+5+L1				L1+10+L+S+10+L1	
Protection Option		Stainless steel sheet					
MASS DATA							
Base with zero stroke	[kg]	1.10	1.60	3.40	4.1	5.5	5.9
Mass per 100 mm of stroke	[kg]	0.37	0.67	0.7	0.9	1.3	1.5
Complete carriage	[kg]	0.43	0.43	0.9	0.9	1.2	1.8
SECTION MOMENTS OF INERTIA							
Moment of inertia	Lyy [cm⁴]	9.6	9.6	27.2	27.2	176	176
Moment of inertia	Lzz [cm⁴].	9.1	9.1	291	291	1096	1096
MAXIMUM RECOMMENDED LOADS (*)							
Fx	[N]	1388	1388	1750	1750	6608	6608
Fy	[N]	3907	8044	6277	9986	5119	8169
Fz	[N]	6905	14076	12337	23333	9384	16636
Mx	[Nm]	26	33	99	129	206	257
My	[Nm]	57	214	154	635	475	923
Mz	[Nm]	57	165	129	385	288	559

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.

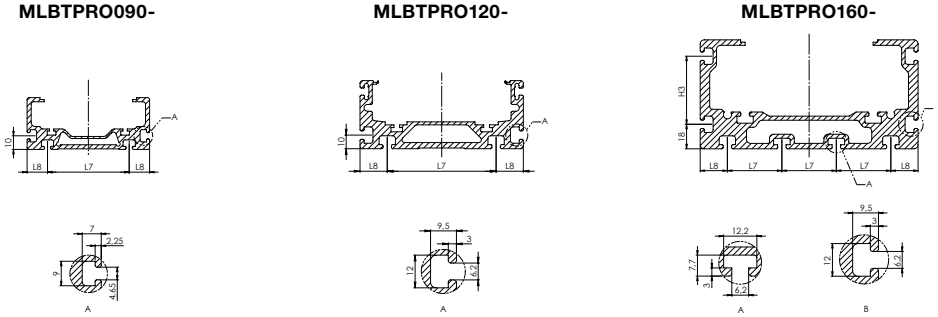
MLBTPRO / General dimensions



Carriage dimensions

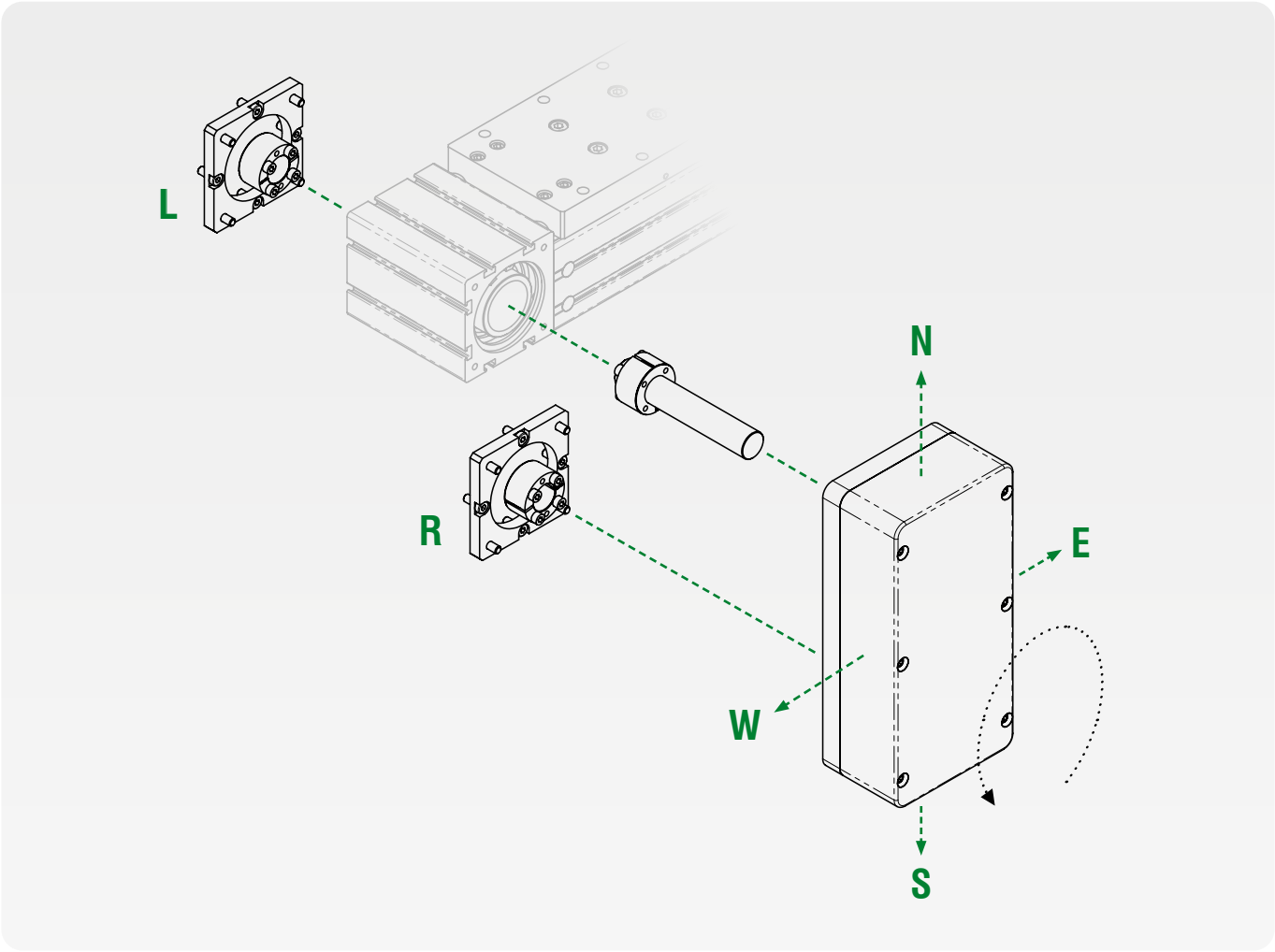


Section detail

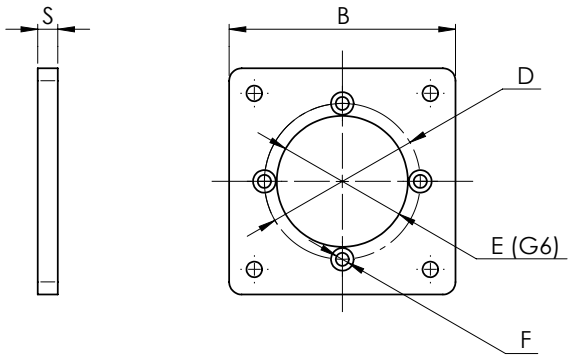


PRO Series

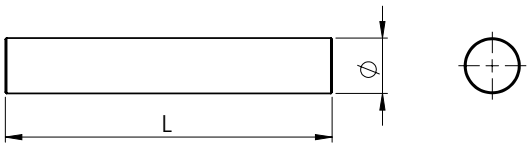
ACCESSORIES



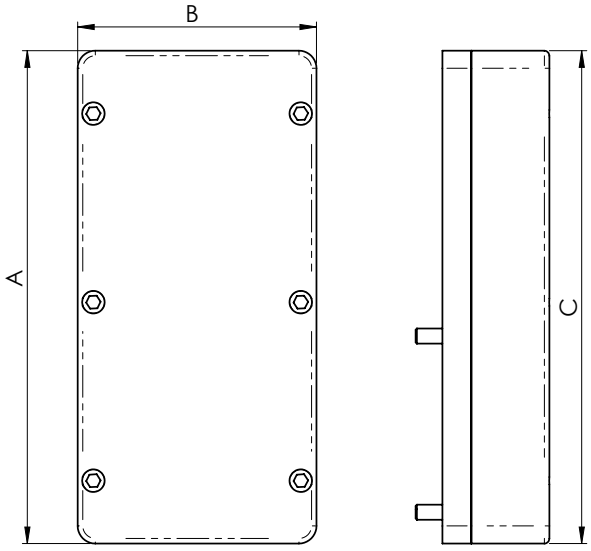
Interface flange kit



Male shaft kit



Parallel mounting kit



Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
PRO	090	KFGSC-060-003-_X	40x6 26x4.2x34	D 12
PRO	120	KFGSC-090-002-_X	90x9.8 68x6.2x80	D 22
PRO	160	KFGSC-090-003-_X	90x12 68x6.2x80	D 22

CODING

KFGSC - 060 - 002 - _ X

L = Left
R = Right

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
PRO	090	KPMSC-065-003-	142 x 65 x 44
PRO	120	KPMSC-120-001-	250 x 120 x 75
PRO	160	KPMSC-120-001-	250 x 120 x 75

CODING

KPMSC - 065 - 001 - _ _

L = Left
R = Right

N = North **E** = East
S = South **W** = West

Male shaft kit

Series	Size	Code Commercial	Ø x L	D hole locking device
PRO	090	KSHSC-012-002-_X	12 x 60	D 12
PRO	120	KSHSC-022-001-_X	22 x 130	D 22
PRO	160	KSHSC-022-002-_X	22 x 170	D 22

CODING

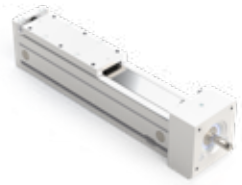
KSHSC - 012 - 001 - _ X

L = Left
R = Right

SCREW-DRIVEN AXES RANGE

These axes are characterised by linear guides with recirculating ball bearing blocks, designed for applications requiring optimal protection of internal mechanical parts from dust or processing residues. The 'closed' aluminium profile protects the internal components. The carriage is moved by a ball screw.

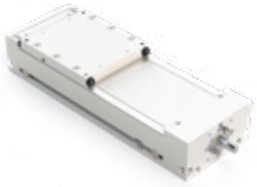
HPR Series



The HPR series is characterised by a single-guide which, coupled with a recirculating ball screw, allows maximum repeatability.

- **Sizes available:** 45, 60, 80, 120
- **Main features:** stainless steel protection.
- **Screw options:** Availability of several screw pitches.

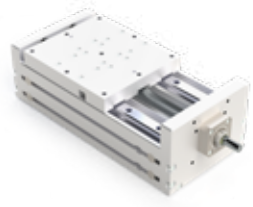
PRO Series



Based on the screw HPR Series, the PRO Series integrates a dual guide for greater load capacity in a compact vertical footprint.

- **Sizes available:** 90, 120, 160
- **Main features:** Rectangular section for high load density. Stainless steel protective sheet.
- **Screw options:** Availability of several screw pitches.

PLS Series



Designed for extreme loads, the screw PLS Series uses a high-stiffness open profile and a dual guide.

- **Sizes available:** 160
- **Main features:** Structured profile for high load density. B = Protection with bellows

SCREW AXES
Axis, gearbox and motor selection guide

1
Design data

- **Screw pitch (p)**: [mm] linear displacement per revolution.
- **Stroke (L)**: [mm]
- **Load**: [N]
- **Required linear speed (v)**: [mm/s]
- **Acceleration (a)**: [mm/s²]
- **Work frequency**: [cycles/hour]
- **Efficiency**

2
Motor torque and speed calculation

- **Required torque** (without gearbox)

$$T = \frac{F \cdot p}{2\pi \cdot \eta}$$

F: Force [N]
p: Screw pitch [m]
η: Efficiency

- **Motor speed**

$$n = \frac{v \cdot 60}{p}$$

v: Linear speed [m/s]

3
Evaluation of the introduction of a gearbox

- **It balances** torque, motor speed and performance characteristics required by the application
- **Resolution increase**
- **It protects the system** from quick reversal of torque or impacts

Application example

Parameter	Value
Load	200 N
Pitch	5 mm
Max. speed	0.25 m/s
Acceleration	1 m/s²

Required torque

$$T = \frac{200 \cdot 0.005}{2\pi \cdot 0.9} \approx 0.18 \text{ Nm}$$

Motor speed

$$n = \frac{0.25 \cdot 60}{0.005} = 3000 \text{ rpm}$$

Sizing example with AW Sizer

Select actuator from menu	MLSTHPR060-AX12-1605
Screw Ø (mm)	16
Screw lead (mm)	5
Ball Ø (mm)	3,175
Screw Ca (kN)	8.3
C0a screw (kN)	15.6
Ca bearing (kN)	7.2
C0a bearing (kN)	3.04
Bearing qty	2
CDC - x (mm)	110
CDC - y (mm)	0
Guide q.ty	1
Carriage/guide q.ty	2
Carriage Ca (kN)	8.1
Carriage C0a (kN)	11.3
Carriage width (mm)	32
Carriage length (mm)	61

Parameters

Enter process data	
Axial force Fx (N)	200.00
Lateral force Fy (N)	0.00
Orthogonal force Fz (N)	0.00
Force applying point - x (m)	0.00
Force applying point - y (m)	0.00
Force applying point - z (m)	0.00
Roll moment Mx (Nm)	0.00
Pitch moment My (Nm)	0.00
Yaw moment Mz (Nm)	0.00
Speed (m/s)	0.25
Acceleration (m/s^2)	1.00
Payload (kg)	10.00
Required duration (cycles)	1.00E+06
Load applying stroke (mm)	400.00
Total stroke (mm)	400.00
Service factor	1.20
Gearbox ratio	1.00
Axis configuration	3.00
Evaluate actuator performance	
Requested screw revs	8.00E+07
Requested screw life (km)	400.00
Estimated screw life (km)	5.14E+04
Estimated guide life (km)	3.59E+10
Evaluate motor sizing	
Screw peak torque (Nm)	0.30
Motor peak torque (Nm)	0.36
Screw speed (rpm)	3000.00
Motor speed (rpm)	3000.00
Minimum rotor inertia (kgm^2)	6.33E-07

Check validation values		Safety Factor
Screw life (revs)	1.03E+10	4.9E+01
Bearing life (revs)	3.82E+09	1.9E+01
Admissible buckling load (N)	5.30E+04	1.7E+02
Admissible screw speed (rpm)	1.21E+04	4.03E+00
Guiding system life (km)	3.59E+10	1.1E+03

High protection single-guide linear unit

HPR SERIES

The HPR series is characterised by a single-guide which, coupled with a recirculating ball screw, **allows maximum repeatability.**

- **Sizes available: 45, 60, 80,120,**
- **Stainless steel protective sheet**
- **Availability of different screw pitches**
- **Maximum stroke 1000 mm**

CODING

MLS	T	HPR	045	-	A	X11	-	10	03	-	XXXX

PRODUCT FAMILY
Ball screw
linear axes

PROTECTION
T = Stainless steel made protection sheet

SERIES
HPR = High protection series

SIZE
045 = 45 mm
060 = 60 mm
080 = 80 mm
120 = 120 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X11 = Short carriage
X12 = Long carriage

SCREW DIAMETER
10 mm - available in size 45
16 mm - available in size 60
20 mm - available in size 80
25 mm - available in size 120

SCREW PITCH
03 mm - available in size 45
05 mm - available in size 60, 80, 120
10 mm - available in size 45, 60, 80, 120
20 mm - available in size 80
25 mm - available in size 120

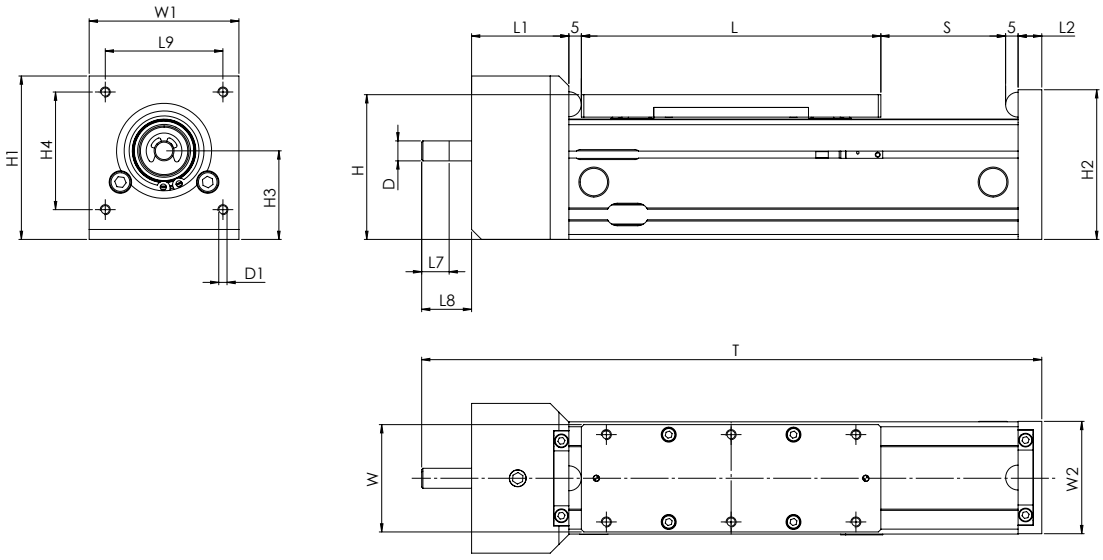
STROKE
[mm]

HPR SERIES

		MLSTHPR045-AX11	MLSTHPR060-AX12	MLSTHPR080-AX12	MLSTHPR120-AX12
GENERAL DATA					
Max. speed (**)	[m/s]	0.2-0.6	0.5-1-1.7	0.6-1.3-2.4	0.8-1.6-2.8
Max. acceleration	[m/s²]	50	50	50	50
Repeatability	[mm]	0.01	0.01	0.01	0.01
Guide type	Type	ball recirculation			
Guide size	mm	15	15	15	25
Screw diameter	mm	10	16	20	25
Screw pitch	[mm/rev]	3-10	5-10-16	5-10-20	5-10-25
Number of blocks	n	1	2	2	2
DIMENSIONAL DATA					
L: Carriage length	[mm]	120	190	260	360
L1: Motorised head length	[mm]	39	30	49.5	65
L2: Conducted head length	[mm]	9.5	15	20	65
L3: Distance hole to carriage edge X	[mm]	10	20	30	30
L4: Carriage hole centre distance X	[mm]	50	50	50	60
L5: Carriage pin holes centre distance X+/-0.05	[mm]	108	-	-	-
L6: Distance pin hole to carriage edge X	[mm]	6	-	-	-
W: Carriage width	[mm]	43	59	75	118
W1: Motorised head width	[mm]	60	60	80	120
W2: Conducted head width	[mm]	45	60	80	120
W3: Carriage hole centre distance Y	[mm]	35	50	60	100
W4: Distance hole to carriage edge Y	[mm]	4	4.5	7.5	9
W5: Distance pin hole to carriage edge Y	[mm]	21.5	-	-	-
H: Carriage height	[mm]	58	80	100	115
H1: Motorized head height	[mm]	65.5	79	112.6	124
H2: Conducted head height	[mm]	60	79	98.5	124
L7: Shank length	[mm]	11	17	38	25
L8: Footprint length	[mm]	20	36	47	38
D: Shank size	[mm]	8	10	12	14
H3: Screw centre height	[mm]	35,5	49	67.6	76.4
D1: Fixing hole diameter on drive head	[mm]	M4x8	M4x8	M6x12	M6x12
D2: Carriage bore diameter	[mm]	M4x8	M5x10	M8x16	M10x20
D3: Carriage pin hole diameter	[mm]	Ø2.5 H7	-	-	-
L9: Head hole centre distance X	[mm]	47.14	50	70	70
H4: Head hole centre distance Y	[mm]	47.14	50	70	70
L10: Groove centre distance X	[mm]	-	30	40	80
L11: Groove-edge distance X-axis	[mm]	-	15	20	20
H5: Groove centre distance Y	[mm]	-	30	30	30
S: Max. stroke	[mm]	400	800	1000	1000
T: Total length	[mm]	L8+L1+5+L+S+5+L2			
Protection Option		Stainless steel sheet			
MASS DATA					
Base with zero stroke	[kg]	1.5	2.7	6.0	17.3
Mass per 100 mm of stroke	[kg]	0.5	0.6	1.2	1.8
Complete carriage	[kg]	0.4	0.9	1.3	5.4
SECTION MOMENTS OF INERTIA					
Moment of inertia	Lyy [cm⁴]	7.1	17.3	74.4	120
Moment of inertia	Lzz [cm⁴].	13.8	47.6	151.2	492
MAXIMUM RECOMMENDED LOADS (*)					
Fx (***)	[N]	300/415	660-830-970	1010-1270-1600	1650-2245-3100
Fy	[N]	2530	2016	6830	9682
Fz	[N]	3105	2485	8360	13890
Mx	[Nm]	14	15	34	85
My	[Nm]	59	170	694	1105
Mz	[Nm]	51	133	351	780

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.
(**) Data refer to a stroke of 400 mm. Different strokes result in different speed limits, contact AutomationWare's technical department for a detailed study.
(***) Load value refers to a useful life of 2000 km.

MLSTHPR / General dimensions

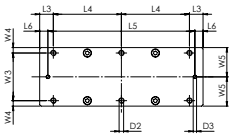


Carriage dimensions

-AX11

-AX12

MLSTHPR045-



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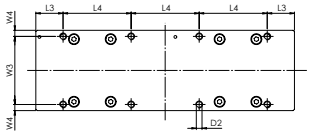

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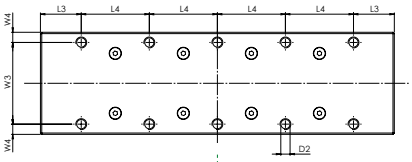
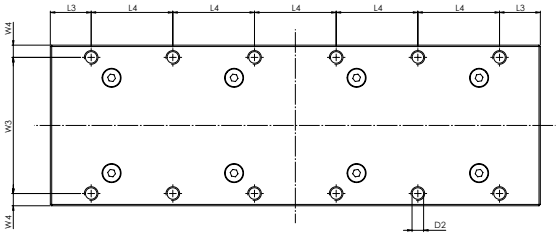
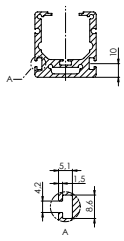


MLSTHPR120-

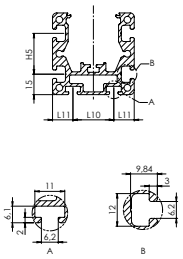


Section detail

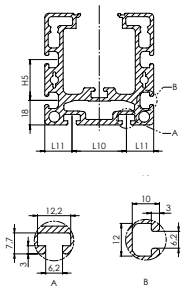
MLSTHPR045-



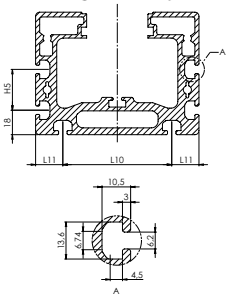
MLSTHPR060-



MLSTHPR080-

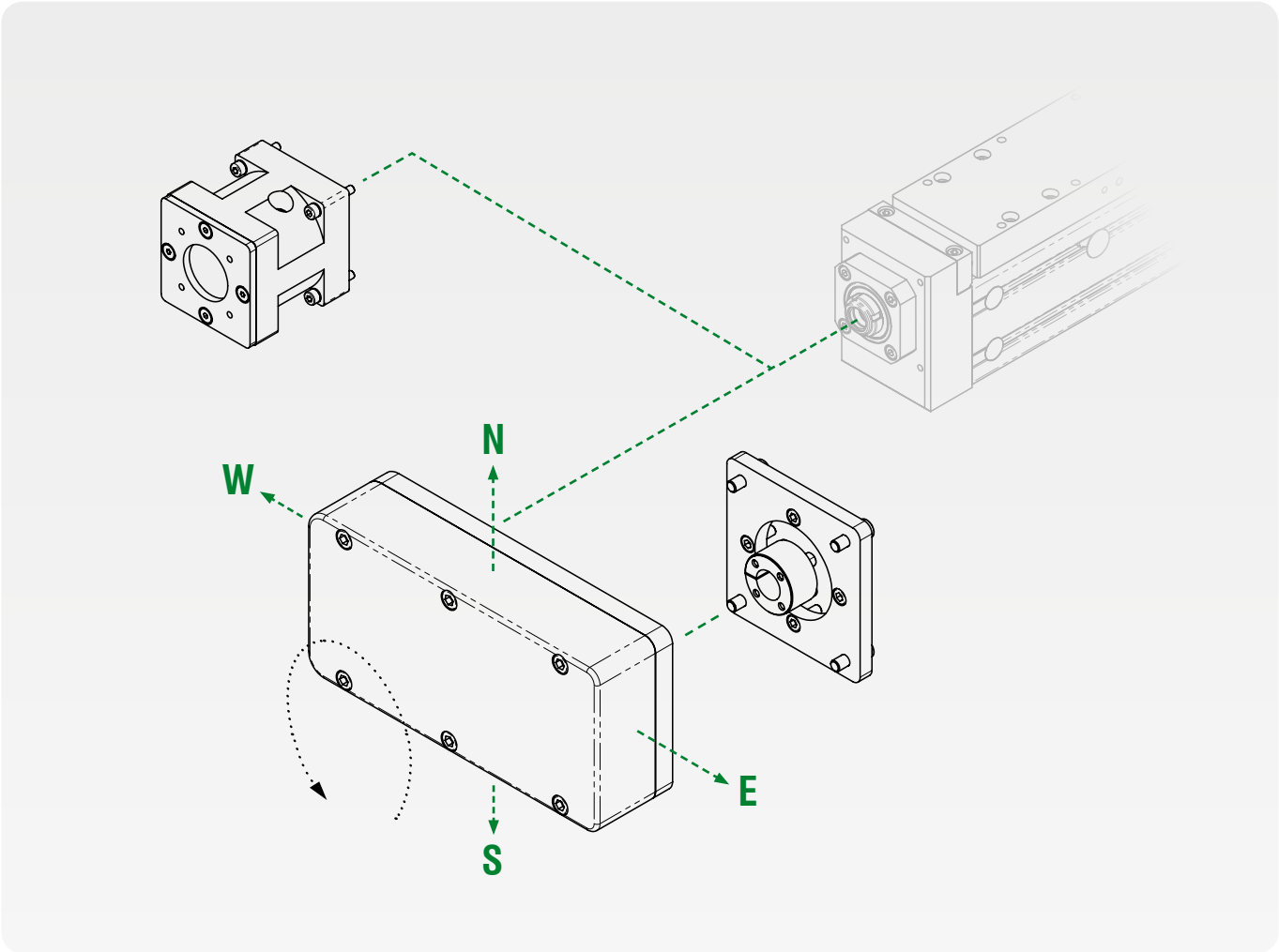


MLSTHPR120-

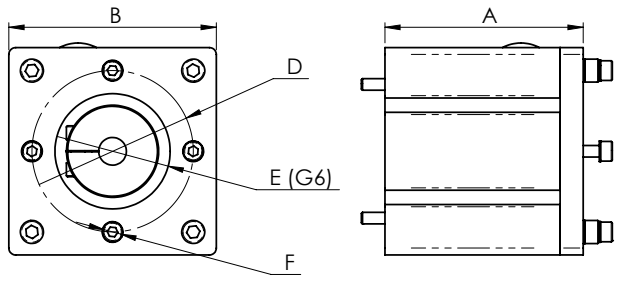


HPR Series

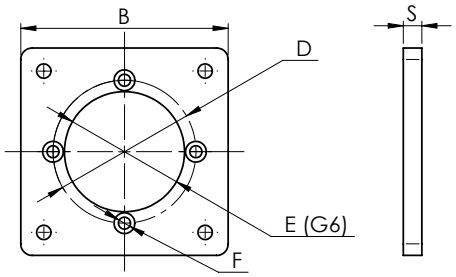
ACCESSORIES



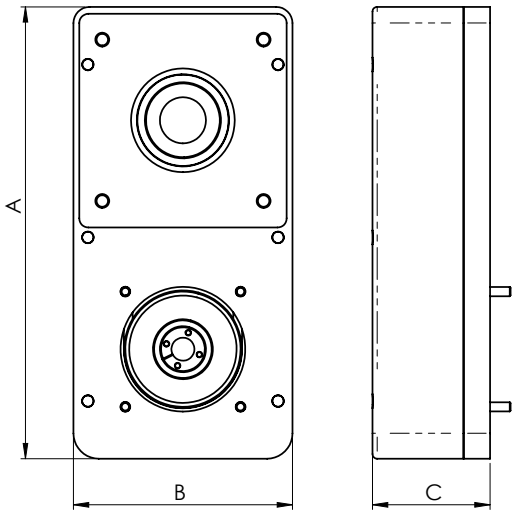
Inline motor mounting kit



Interface flange kit



Parallel mounting kit



Inline motor mounting kit

Series	Size	Code Commercial	BxA ExFxD	D hole joint
HPR	045	KIMEC-060-001-XX	60x67 30xM4x46	D 08
HPR	060	KIMEC-060-002-XX	60x67 30xM4x46	D 08
HPR	080	KIMEC-090-001-XX	90x86 50xM5x70	D 12
HPR	120	KIMEC-100-001-XX	100x100 70xM6x90	D 19

CODING

KIMEC	-	060	-	001	-	X	X

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
HPR	045	KPMSC-060-001-__	130x60x39
HPR	060	KPMSC-095-001- __	196x95x43
HPR	080	KPMSC-095-002-__	196x95x51
HPR	120	KPMSC-095-003-__	196x95x55

CODING

KPMSC	-	060	-	001	-	X	_

L = Left
R = Right

N = North **E** = East
S = South **W** = West

Interface flange kit

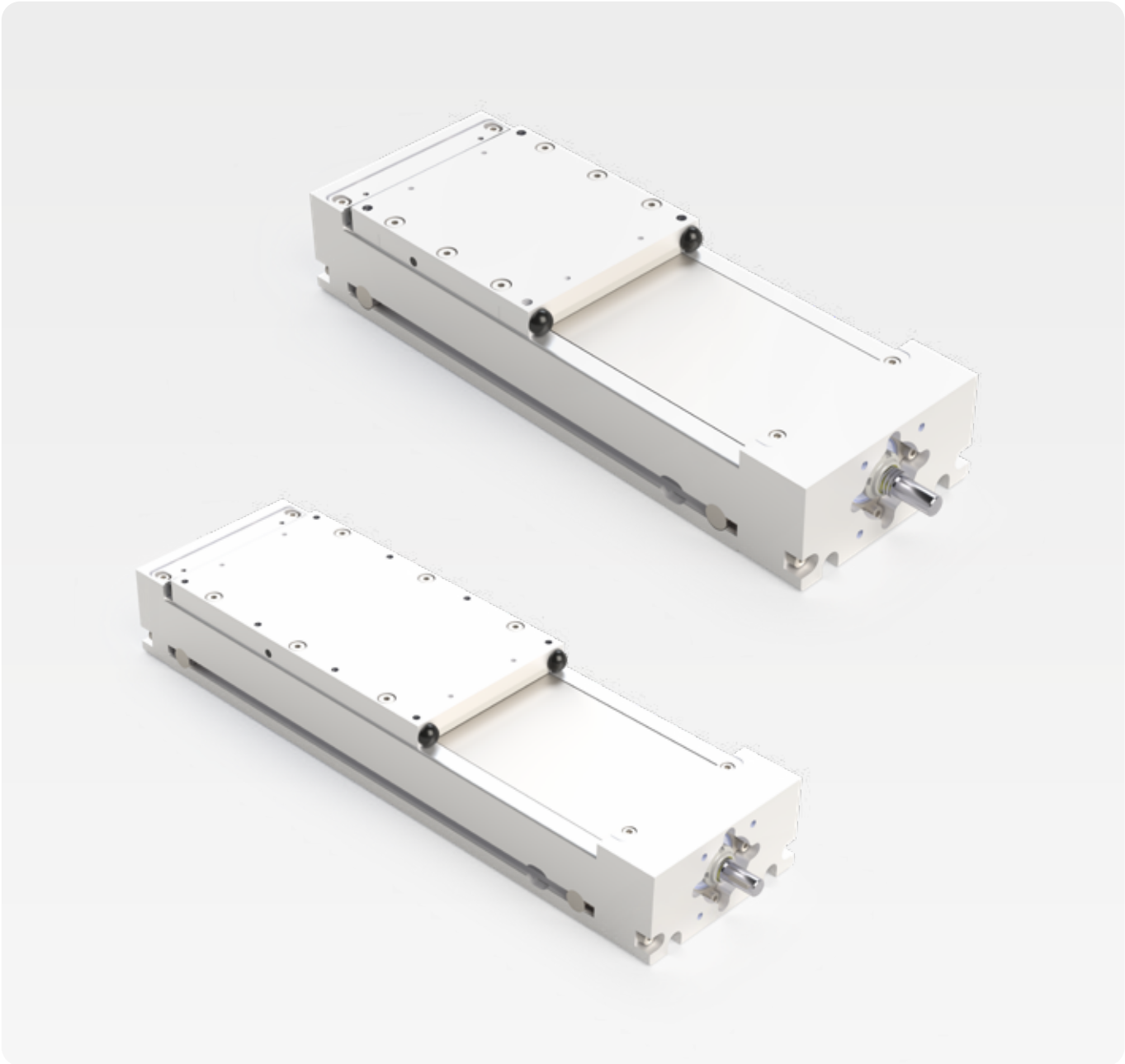
Series	Size	Code Commercial	BxS ExFxD	D hole locking device
HPR	045	KFGSC-060-002-_X	60x6 35x4.2x44	D 08
HPR	060	KFGSC-090-001-_X	90x6 52x5.2x62	D 08
HPR	080	KFGSC-060-002-_X	60x6 35x4.2x44	D 12
HPR	120	KFGSC-090-001-_X	90x6 52x5.2x62	D 19

CODING

KFGSC	-	060	-	002	-	X	X

High-protection dual-guide linear unit

PRO SERIES



Based on the screw HPR Series, the PRO Series **integrates a dual guide for greater load capacity** in a compact vertical footprint.

- **Sizes available: 90, 120, 160**
- **Rectangular section for high load density**
- **Stainless steel protective sheet**
- **Availability of different screw pitches**
- **Maximum stroke 1000 mm**

CODING

MLS	T	PRO	090	-	A	X22	-	12	05	-	XXXX

PRODUCT FAMILY
Ball screw
linear axes

PROTECTION
T = Stainless steel made protection sheet

SERIES
PRO = Protected Series with double planar guide

SIZE
090 = 90 mm
120 = 120 mm
160 = 160 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X22 = Short carriage
X24 = Long carriage

SCREW DIAMETER
12 mm - available in size 90
16 mm - available in size 120
20 mm - available in size 160

SCREW PITCH
05 mm - available in size 90, 120, 160
10 mm - available in size 90, 120, 160
20 mm - available in size 160

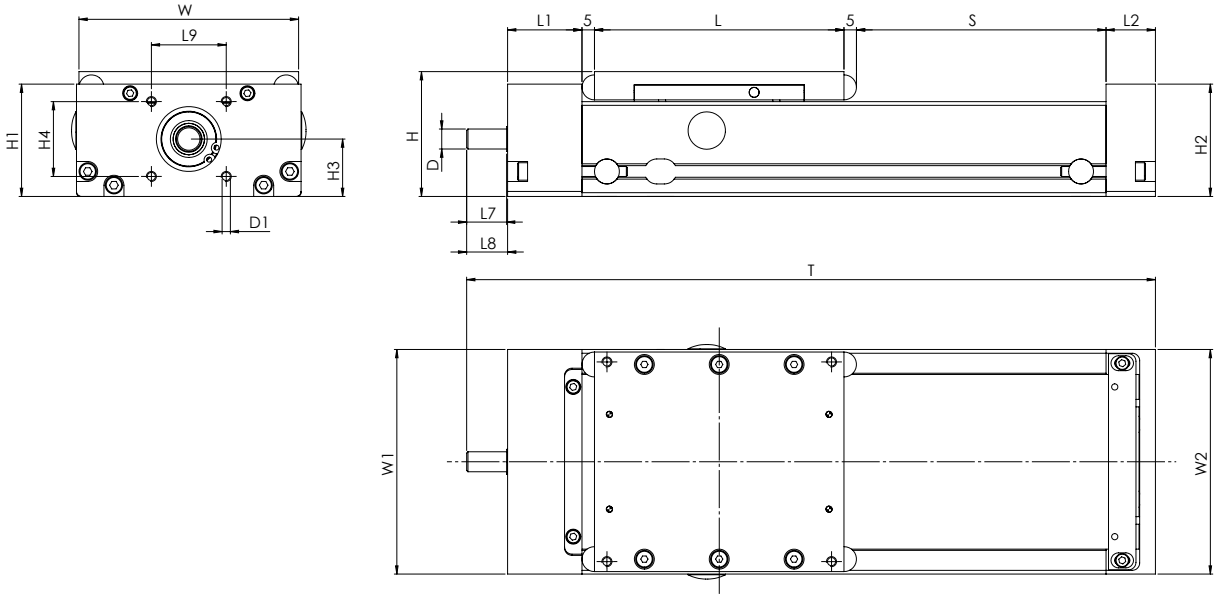
STROKE
[mm]

PRO SERIES

		MLSTPRO090-AX22	MLSTPRO090-AX24	MLSTPRO120-AX22	MLSTPRO120-AX24	MLSTPRO160-AX22	MLSTPRO160-AX24
GENERAL DATA							
Max. speed (**)	[m/s]	0.4-0.8	0.4-0.8	0.5-1	0.5-1	0.7-1.3-2.5	0.7-1.3-2.5
Max. acceleration	[m/s²]	50	50	50	50	50	50
Repeatability	[mm]	± 0.01	± 0.01	± 0.01	± 0.01	± 0.01	± 0.01
Guide type	Type	ball recirculation					
Guide size	mm	12	12	15	15	20	20
Screw diameter	mm	12	12	16	16	20	20
Screw pitch	[mm/rev]	05-10	05-10	05-10-16	05-10-16	05-10-20	05-10-20
Number of blocks	n	2	4	2	4	2	4
DIMENSIONAL DATA							
L: Carriage length	[mm]	100	160	110	190	180	260
L1: Motorised head length	[mm]	30	30	30	30	20	20
L2: Conducted head length	[mm]	20	20	15	15	20	20
L3: Distance hole to carriage edge X	[mm]	5	5	20	20	10	10
L4: Carriage hole centre distance X	[mm]	90	50	35	50	80	60
L5: Carriage pin holes centre distance X+/-0.05	[mm]	88	148	-	-	-	220
L6: Distance pin hole to carriage edge X	[mm]	6	6	-	-	-	20
W: Carriage width	[mm]	88	88	118	118	158	158
W1: Motorised head width	[mm]	90	90	120	120	160	160
W2: Conducted head width	[mm]	90	90	120	120	160	160
W3: Carriage hole centre distance Y	[mm]	80	80	110	110	70	70
W4: Distance hole to carriage edge Y	[mm]	4	4	4	4	9	9
W5: Carriage pin hole centre distance Y +/- 0.05	[mm]	38	38	-	-	-	-
W6: Distance pin hole to carriage edge Y	[mm]	25	25	-	-	-	79
H: Carriage height	[mm]	50	50	68	68	100	100
H1: Motorized head height	[mm]	45	45	66.5	66.5	95	95
H2: Conducted head height	[mm]	45	45	66.5	66.5	95	95
L7: Shank length	[mm]	16	16	16	16	25	25
L8: Footprint length	[mm]	16.4	16.4	37	37	54	54
D: Shank size	[mm]	8	8	10	10	12	12
H3: Screw centre height	[mm]	23	23	36.5	36.5	48.5	48.5
D1: Fixing hole diameter on drive head	[mm]	M4x8	M4x8	M4x8	M4x8	M6x12	M6x12
D2: Carriage bore diameter	[mm]	M4x8	M4x8	M5x10	M5x10	M8x16	M8x16
D3: Carriage pin hole diameter	[mm]	Ø2.5 H7	Ø2.5 H7	-	-	-	Ø6 H7
L9: Head hole centre distance X	[mm]	30	30	50	50	70	70
H4: Head hole centre distance Y	[mm]	30	30	50	50	70	70
L10: Groove centre distance X	[mm]	60	60	80	80	40	40
L11: Groove-edge distance X-axis	[mm]	15	15	20	20	20	20
H5: Groove centre distance Y	[mm]	-	-	-	-	50	50
S: Max. stroke	[mm]	400	400	800	800	1000	1000
T: Total length	[mm]	L8+L1+5+L+5+S+L2					
Protection Option		Stainless steel sheet					
MASS DATA							
Base with zero stroke	[kg]	1.6	2.2	3.3	4.5	8.3	11.1
Mass per 100 mm of stroke	[kg]	0.7	0.7	1.2	1.2	1.6	1.6
Complete carriage	[kg]	0.5	0.8	1.1	1.6	2.9	4.4
SECTION MOMENTS OF INERTIA							
Moment of inertia	Lyy [cm⁴]	9.6	9.6	27.2	27.2	176	176
Moment of inertia	Lzz [cm⁴].	9.1	9.1	291	291	1096	1096
MAXIMUM RECOMMENDED LOADS (*)							
Fx (***)	[N]	560-400	560-400	600-830	600-830	1010-1270-1600	1010-1270-1600
Fy	[N]	3064	7665	6277	9986	5199	8169
Fz	[N]	5779	11922	12337	23333	9384	16636
Mx	[Nm]	33	37	99	129	206	268
My	[Nm]	23	283	154	635	475	923
Mz	[Nm]	23	171	129	385	288	559

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.
(**) Data refer to a stroke of 400 mm. Different strokes result in different speed limits, contact AutomationWare's technical department for a detailed study.
(***) Load value refers to a useful life of 2000 km.

MLSTPRO / General dimensions

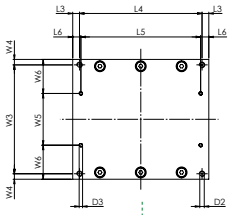


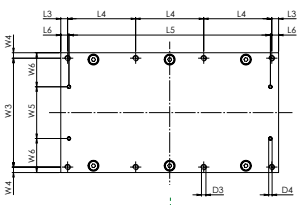
Carriage dimensions

-AX22

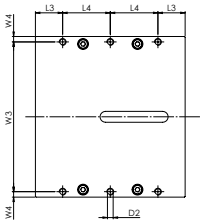
-AX24

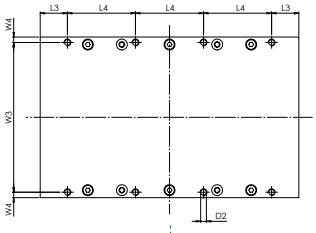
MLSTPRO090-



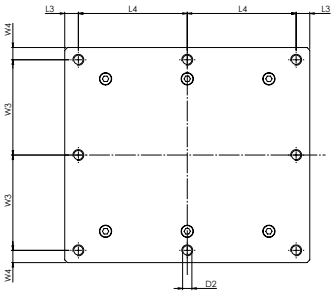


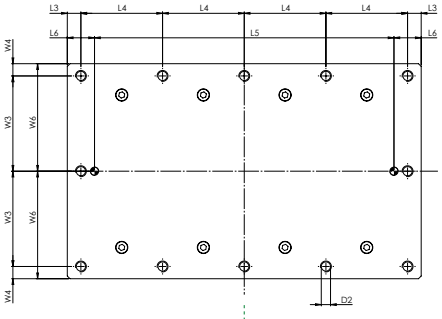
MLSTPRO120-





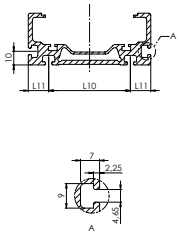
MLSTPRO160-



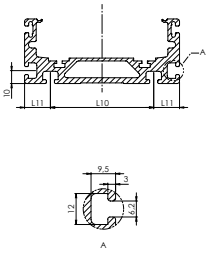


Section detail

MLSTPRO090-



MLSTPRO120-



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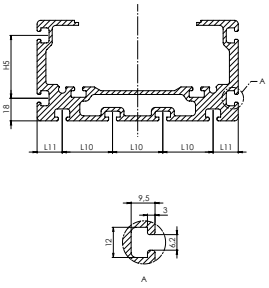
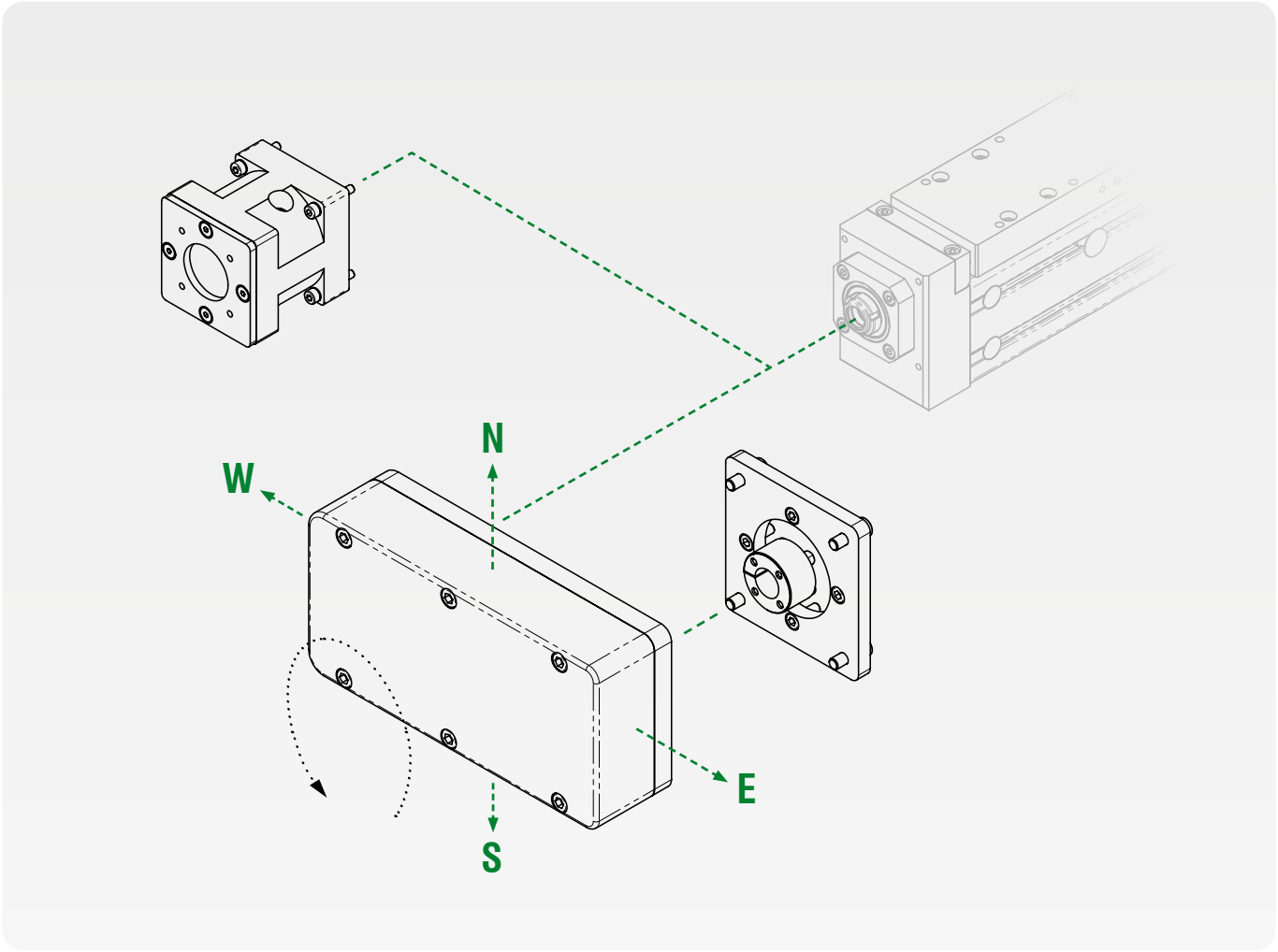
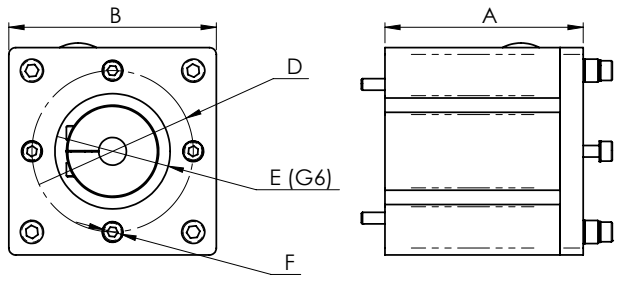


PRO Series

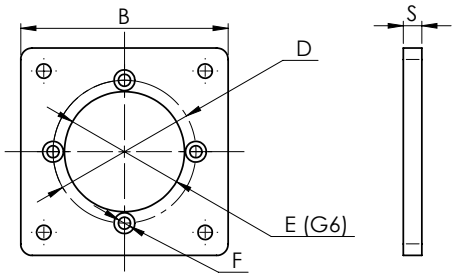
ACCESSORIES



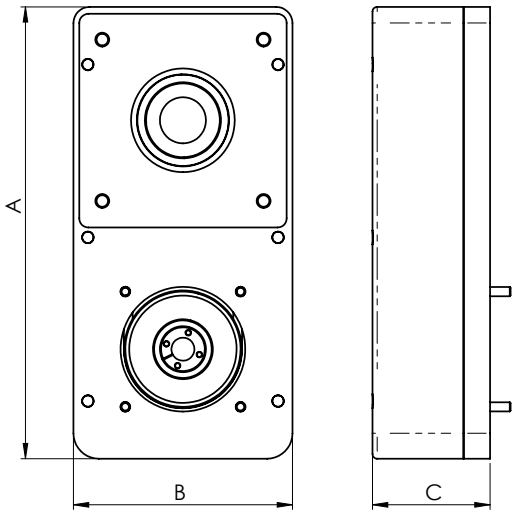
Inline motor mounting kit



Interface flange kit



Parallel mounting kit



Inline motor mounting kit

Series	Size	Code Commercial	BxA ExFxD	D hole joint
PRO	090	KIMEC-060-003-XX	60x67 30xM4x46	D 08
PRO	120	KIMEC-060-002-XX	60x67 30xM4x46	D 08
PRO	160	KIMEC-090-001-XX	90x86 50xM5x70	D 12

CODING

KIMEC	-	060	-	003	-	X	X

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
PRO	090	KPMSC-065-004-__	142x65x44
PRO	120	KPMSC-095-001-__	196x95x43
PRO	160	KPMSC-095-002-__	196x95x51

CODING

KPMSC	-	065	-	004	-	_	_

L = Left
R = Right

N = North **E** = East
S = South **W** = West

Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
PRO	090	KFGSC-060-002-_X	60x6 35x4.2x44	D 08
PRO	120	KFGSC-090-001-_X	90x6 52x5.2x62	D 08
PRO	160	KFGSC-060-002-_X	60x6 35x4.2x44	D 12

CODING

KFGSC	-	060	-	002	-	X	X

High load capacity dual-guide linear unit

PLS SERIES

Designed for extreme loads, the screw PLS Series uses a high-stiffness open profile and a dual guide.

- **Sizes available: 160**
- **Structured profile for high load density**
- **Protection with bellows**
- **Maximum stroke 1000 mm**

CODING

MLS	B	PLS	160	-	A	X22	-	20	05	-	XXXX

PRODUCT FAMILY
Ball screw
linear axes

PROTECTION
B = Protection with bellows
N = No protection

SERIES
PLS = High loadability series with double planar guide

SIZE
160 = 160 mm

GUIDE MATERIAL
A = Steel

CARRIAGE OPTIONS
X22 = Short carriage
X24 = Long carriage

SCREW DIAMETER
20 mm - available in size 160

SCREW PITCH
05 mm - available in size 160
10 mm - available in size 160
20 mm - available in size 160

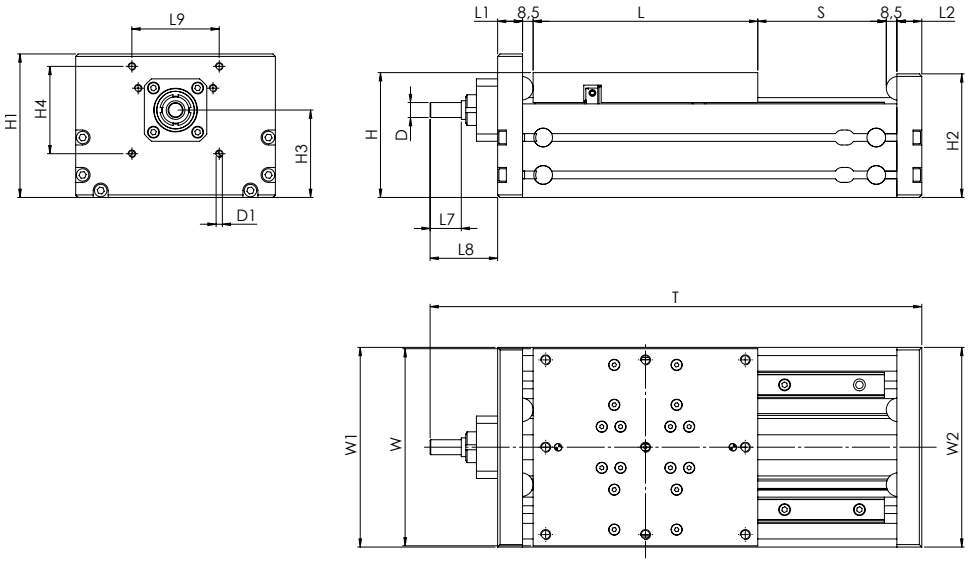
STROKE
[mm]

PLS SERIES

		MLSNPLS160-AX22	MLSNPLS160-AX24
GENERAL DATA			
Max. speed (**)	[m/s]	0.7-1.3-2.5	0.7-1.3-2.5
Max. acceleration	[m/s²]	50	50
Repeatability	[mm]	± 0.01	± 0.01
Guide type	Type	ball recirculation	
Guide size	mm	20	20
Screw diameter	mm	20	20
Screw pitch	[mm/rev]	05-10-20	05-10-20
Number of blocks	n	2	4
DIMENSIONAL DATA			
L: Carriage length	[mm]	180	260
L1: Motorised head length	[mm]	20	20
L2: Conducted head length	[mm]	20	20
L3: Distance hole to carriage edge X	[mm]	10	10
L4: Carriage hole centre distance X	[mm]	80	60
L5: Carriage pin holes centre distance X+/-0.05	[mm]	140	220
L6: Distance pin hole to carriage edge X	[mm]	20	20
W: Carriage width	[mm]	158	158
W1: Motorised head width	[mm]	160	160
W2: Conducted head width	[mm]	160	160
W3: Carriage hole centre distance Y	[mm]	70	70
W4: Distance hole to carriage edge Y	[mm]	9	9
W5: Distance pin hole to carriage edge Y	[mm]	79	79
H: Carriage height	[mm]	100	100
H1: Motorized head height	[mm]	115	115
H2: Conducted head height	[mm]	99	99
L7: Shank length	[mm]	25	25
L8: Footprint length	[mm]	54	54
D: Shank size	[mm]	12	12
H3: Screw centre height	[mm]	70	70
D1: Fixing hole diameter on drive head	[mm]	M6x12	M6x12
D2: Carriage bore diameter	[mm]	M8x16	M8x16
D3: Carriage pin hole diameter	[mm]	Ø6 H7	Ø6 H7
L9: Head hole centre distance X	[mm]	70	70
H4: Head hole centre distance Y	[mm]	70	70
L10: Groove centre distance X	[mm]	40	40
L11: Groove-edge distance X-axis	[mm]	20	20
H5: Groove centre distance Y	[mm]	30	30
S: Max. stroke	[mm]	1000	1000
T: Total length	[mm]	L8+L1+8.5+L+S+8.5+L2	
Protection Option		Bellows	
MASS DATA			
Base with zero stroke	[kg]	7.8	8.6
Mass per 100 mm of stroke	[kg]	1,7	1.5
Complete carriage	[kg]	2.1	2.5
SECTION MOMENTS OF INERTIA			
Moment of inertia	Lyy [cm⁴]	176	176
Moment of inertia	Lzz [cm⁴].	1096	1096
MAXIMUM RECOMMENDED LOADS (*)			
Fx (***)	[N]	1010-1270-1600	1010-1270-1600
Fy	[N]	4055	5134
Fz	[N]	5545	9289
Mx	[Nm]	296	368
My	[Nm]	437	837
Mz	[Nm]	177	288

(*) The maximum recommended loads are intended as the maximum value that can be applied individually and statically.
In the case of combined load configurations, please contact the AutomationWare technical department.
(**) Data refer to a stroke of 400 mm. Different strokes result in different speed limits, contact AutomationWare's technical department for a detailed study.
(***) Load value refers to a useful life of 2000 km.

MLSNPLS / General dimensions

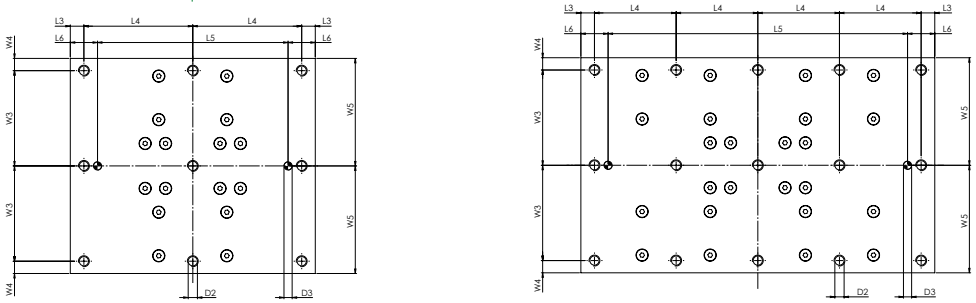


Carriage dimensions

-AX22

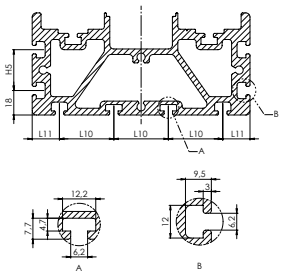
-AX24

MLSNPLS160-



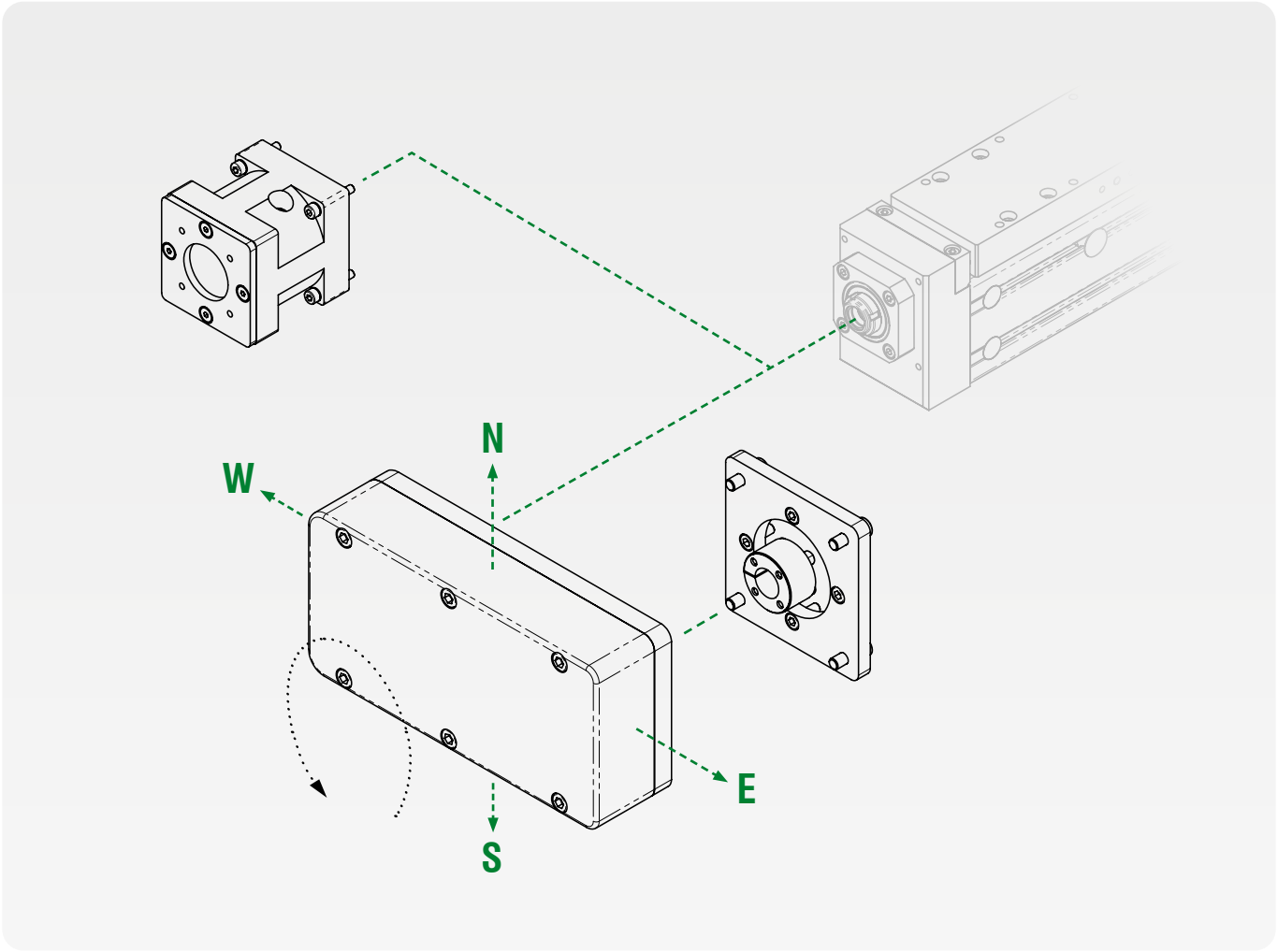
Section detail

MLSNPLS160-

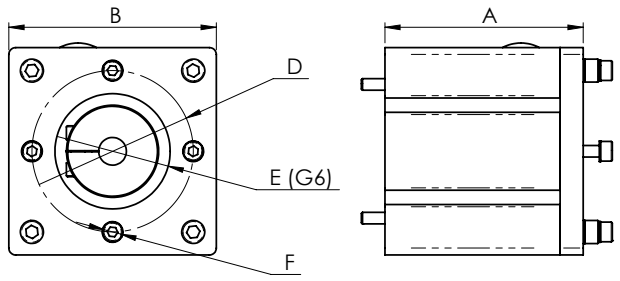


PLS Series

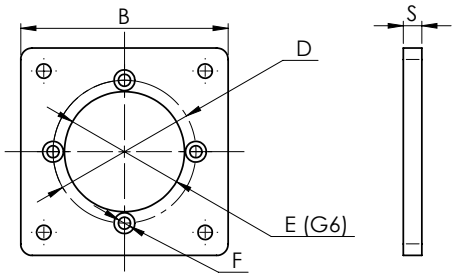
ACCESSORIES



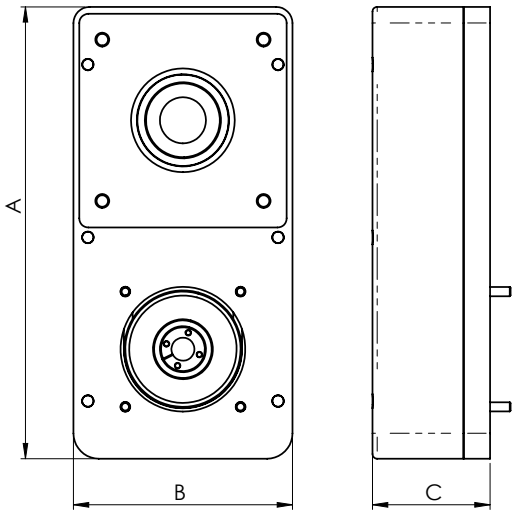
Inline motor mounting kit



Interface flange kit



Parallel mounting kit



Inline motor mounting kit

Series	Size	Code Commercial	BxA ExFxD	D hole joint
PLS	160	KIMEC-090-001-XX	90x86 50xM5x70	D 12

CODING

KIMEC - 090 - 001 - X X

Parallel mounting kit

Series	Size	Code Commercial	A x B x C
PLS	160	KPMSC-095-002-__	196x95x51

CODING

KPMSC - 095 - 002 - X _

N = North **E** = East
S = South **W** = West

Interface flange kit

Series	Size	Code Commercial	BxS ExFxD	D hole locking device
PLS	160	KFGSC-060-002-_X	60x6 35x4.2x44	D 12

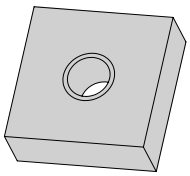
CODING

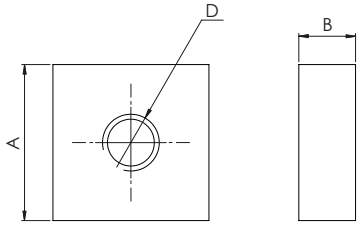
KFGSC - 060 - 002 - X X

Electric linear axes

GENERAL ACCESSORIES

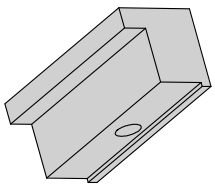
SQUARE NUTS

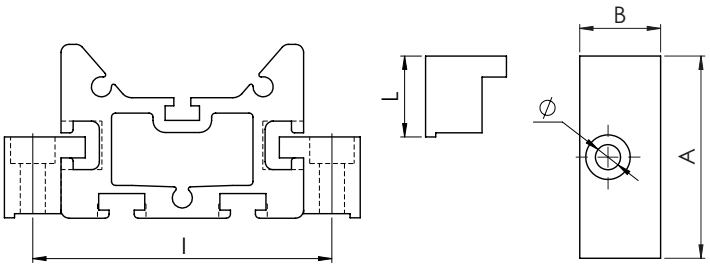




Cuts	A x B	D	Description	Part no. Commercial
MLB045 MLS045	11 x 4.5	M4	Square nut M4, pack of 25	KDAML-M4-001
			Square nut M4, pack of 100	KDAML-M4-002
MLB060 MLS060	11 x 4.5	M5	Square nut M5, pack of 25	KDAML-M5-001
			Square nut M5, pack of 100	KDAML-M5-002
	11 x 4	M6	Square nut M6, pack of 25	KDAML-M6-001
			Square nut M6, pack of 100	KDAML-M6-002
MLB080 MLS080	11 x 4.5	M5	Square nut M5, pack of 25	KDAML-M5-001
			Square nut M5, pack of 100	KDAML-M5-002
MLB120 MLS120	11 x 4	M6	Square nut M6, pack of 25	KDAML-M6-001
			Square nut M6, pack of 100	KDAML-M6-002
MLB160 MLS160	11 x 4	M6	Square nut M6, pack of 25	KDAML-M6-001
			Square nut M6, pack of 100	KDAML-M6-002
MLB090 MLS090	11 x 4.5	M4	Square nut M4, pack of 25	KDAML-M4-001
			Square nut M4, pack of 100	KDAML-M4-002

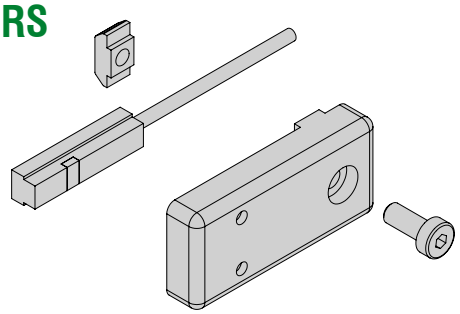
FASTENING BRACKETS

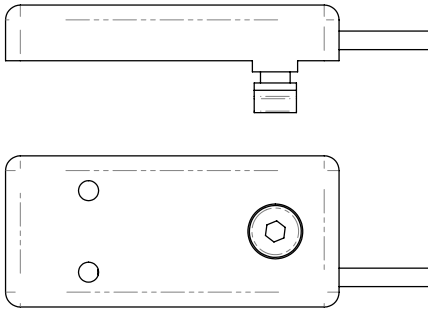




Type	Size	A	B	L	Ø	I	No. Holes	Part no. Commercial
STD	MLBNSTD045	40	12	11	4.2	50	1	KSLML-110-002
	MLBNSTD060	40	12	11	4.2	70	1	KSLML-110-002
	MLBNSTD080	100	30	20	10.2	100	2	KSLML-200-002
	MLBNSTD120	100	30	20	10.2	140	2	KSLML-200-002
STO	MLBNSTO045	40	12	11	4.2	50	1	KSLML-110-002
	MLBNSTO060	40	12	11	4.2	70	1	KSLML-110-002
	MLBNSTO080	100	30	20	10.2	100	2	KSLML-200-002
	MLBNSTO120	100	30	20	10.2	140	2	KSLML-200-002
CTL	MLBNCTL045	-	-	-	-	-	-	-
	MLBNCTL060	-	-	-	-	-	-	-
	MLBNCTL080	-	-	-	-	-	-	-
	MLBNCTL120	-	-	-	-	-	-	-
PLS	MLBNPLS160	100	30	20	6.2	180	2	KSLML-200-003
HPR	MLBLHPR045	40	12	11	4.2	54	1	KSLML-110-001
	MLBLHPR060	50	20	17	6.2	69	1	KSLML-170-001
	MLBLHPR080	100	30	20	10.2	100	2	KSLML-200-002
	MLBNHPR120	100	30	20	10.2	140	2	KSLML-200-002
HPO	MLBLHPO060	40	12	11	4.2	69	1	KSLML-110-002
	MLBLHPO080	100	30	20	10.2	100	2	KSLML-200-002
	MLBLHPO120	100	30	20	10.2	140	2	KSLML-200-002
PRO	MLBLPRO090	50	20	19	6.2	104	1	MSLML-190-001
	MLBLPRO120	50	20	12	M6	134	1	KSLML-120-001
	MLBLPRO160	100	30	20	6.2	180	2	KSLML-200-003

SENSORS





Type	Size	Description	Part no. Commercial
STD	MLBNSTD045	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBNSTD060	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBNSTD080	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBNSTD120	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
STO	MLBNSTO045	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBNSTO060	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBNSTO080	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBNSTO120	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
CTL	MLBNCTL045	Inductive sensor, PNP type, NO contact	KSEIB-PO2-001
	MLBNCTL060	Inductive sensor, PNP type, NO contact	KSEIB-PO2-001
	MLBNCTL080	Inductive sensor, PNP type, NO contact	KSEIB-PO2-001
	MLBNCTL120	Inductive sensor, PNP type, NO contact	KSEIB-PO2-001
HPR	MLBLHPR045	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-001
	MLBLHPR060	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-001
	MLBLHPR080	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-002
	MLBNHPR120	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-002
HPO	MLBLHPO060	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBLHPO080	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
	MLBLHPO120	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-005
PRO	MLBLPRO090	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-004
	MLBLPRO120	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-002
	MLBLPRO160	Hall effect sensor kit, PNP type, NO contact	KSEHB-PO2-003

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