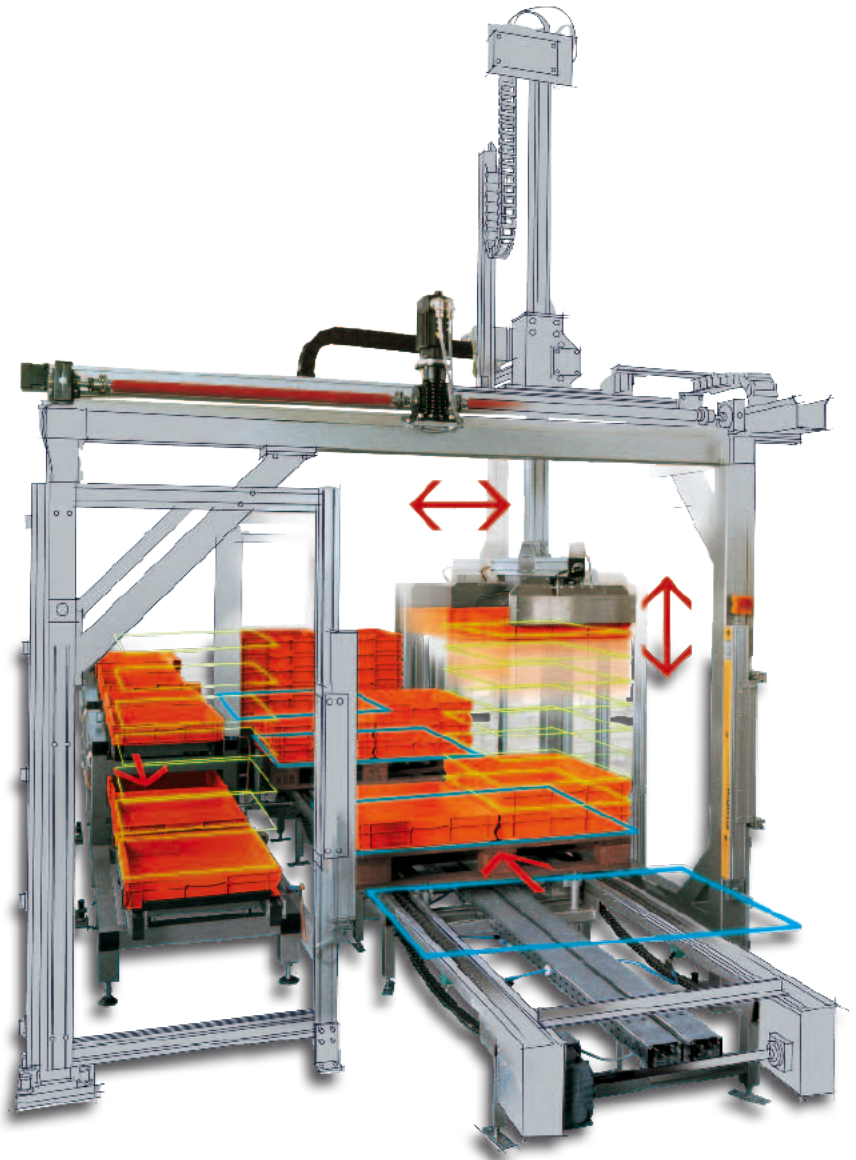
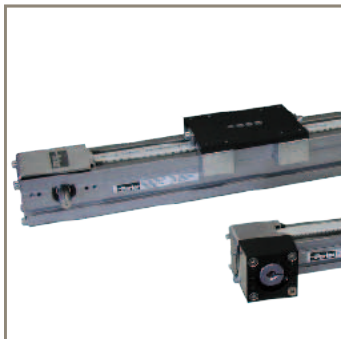


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electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Linear Actuators

Product Overview



ENGINEERING YOUR SUCCESS.



WARNING – USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

- This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.
- The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.
- To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

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Parker Hannifin

The global leader in motion and control technologies and systems

Global Partnerships Global Support

Parker is committed to helping make our customers more productive and more profitable through our global offering of motion and control products and systems. In an increasingly competitive global economy, we seek to develop customer relationships as technology partnerships. Working closely with our customers, we can ensure the best selection of technologies to suit the needs of our customers' applications.

Electromechanical Technologies for High Dynamic Performance and Precision Motion

Parker electromechanical technologies form an important part of Parker's global motion and control offering. Electromechanical systems combine high performance speed and position control with the flexibility to adapt the systems to the rapidly changing needs of the industries we serve.

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pneumatics
process control
sealing & shielding



Parker Hannifin Corporation

With annual sales exceeding \$13 billion in fiscal year 2013, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. The company employs approximately 58 000 people in 49 countries around the world.

Parker has increased its annual dividends paid to shareholders for 57 consecutive fiscal years, among the top five longest-running dividend-increase records in the S&P 500 index.

For more information, visit the company's website at www.parker.com, or its investor information website at www.phstock.com.

Issue: 08/2013

Parker Hannifin

The global leader in motion and control technologies

A world class player on a local stage

Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

Electromechanical Worldwide Manufacturing Locations

Europe

Littlehampton, United Kingdom
Dijon, France
Offenburg, Germany
Filderstadt, Germany
Milan, Italy

Asia

Wuxi, China
Chennai, India

North America

Rohnert Park, California
Irwin, Pennsylvania
Charlotte, North Carolina
New Ulm, Minnesota



Offenburg, Germany

Local Manufacturing and Support in Europe

Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

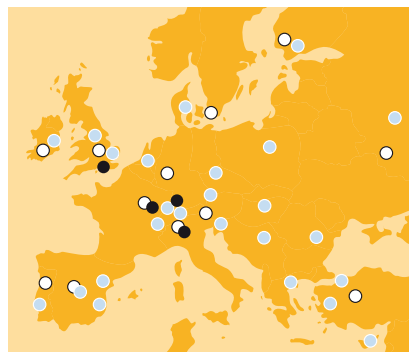
For contact information, please refer to the Sales Offices on the back cover of this document or visit www.parker.com



Milan, Italy



Littlehampton, UK



- Electromechanical Manufacturing
- Parker Sales Offices
- Distributors

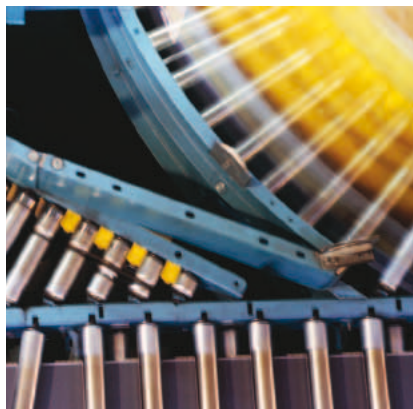


Dijon, France

Solutions to Improve Productivity, Increase Flexibility and Save Energy

Process Productivity and Reliability

Parker brings together the technology and experience required for continuous process applications across many industries. Electromechanical and drive products combine application specific functionality to ensure precise speed control and reliable performance. Parker combines more than 30 years of application experience with a global sales and support network that help you increase your machine availability.



	AC-Drives	DC-Drives	Direct-Drive Motors	Servo Drives and Motors
Converting machinery				
Folding, gluing, stitching and collating	✓	✓		✓
Coating, laminating and foil stamping	✓	✓	✓	✓
Slitting, cutting and rewinding	✓	✓	✓	✓
Plastics processing machinery				
Plastic extrusion	✓		✓	
Injection moulding	✓		✓	✓
Thermal forming	✓		✓	✓
Wire and cable				
Wire and cable manufacturing	✓	✓		✓
Winding/unwinding	✓	✓	✓	
Extrusion for wire and cable	✓	✓	✓	
Printing Machinery				
Web/sheetfed offset	✓		✓	✓
Flexo printing	✓		✓	✓
Gravure printing	✓		✓	✓
Shaftless printing	✓		✓	✓
Other industries				
Paper machinery	✓		✓	
Sugar processing	✓	✓		
Steel production	✓	✓	✓	
Construction materials	✓	✓		
Automotive test rigs	✓	✓	✓	

Energy Efficiency and Clean Power

Parker has developed the technology to maximize the efficient use of energy in industrial, mobile and infrastructure environments.

Hybrid Vehicle Technology

Now having adapted it's technology for use in hybrid and electric vehicles, Parker offers solutions for:

- Electro Hydraulic Actuation
- Hybrid and Electric Vehicle traction
- Vehicle auxiliary systems



Energy-savings for pumps, fans and compressors

Parker has the drive technology to help you make significant energy savings in the operation of pumps, fans and compressors in both industrial and infrastructure applications, including:

- Commercial refrigeration
- Water and wastewater treatment
- Building automation
- Industrial processes
- Hydraulic systems

Power Generation and Conversion

Using proven inverter technology, Parker has developed numerous solutions for the conversion of energy for commercial use from a variety of sources, including wind, wave and energy storage devices.



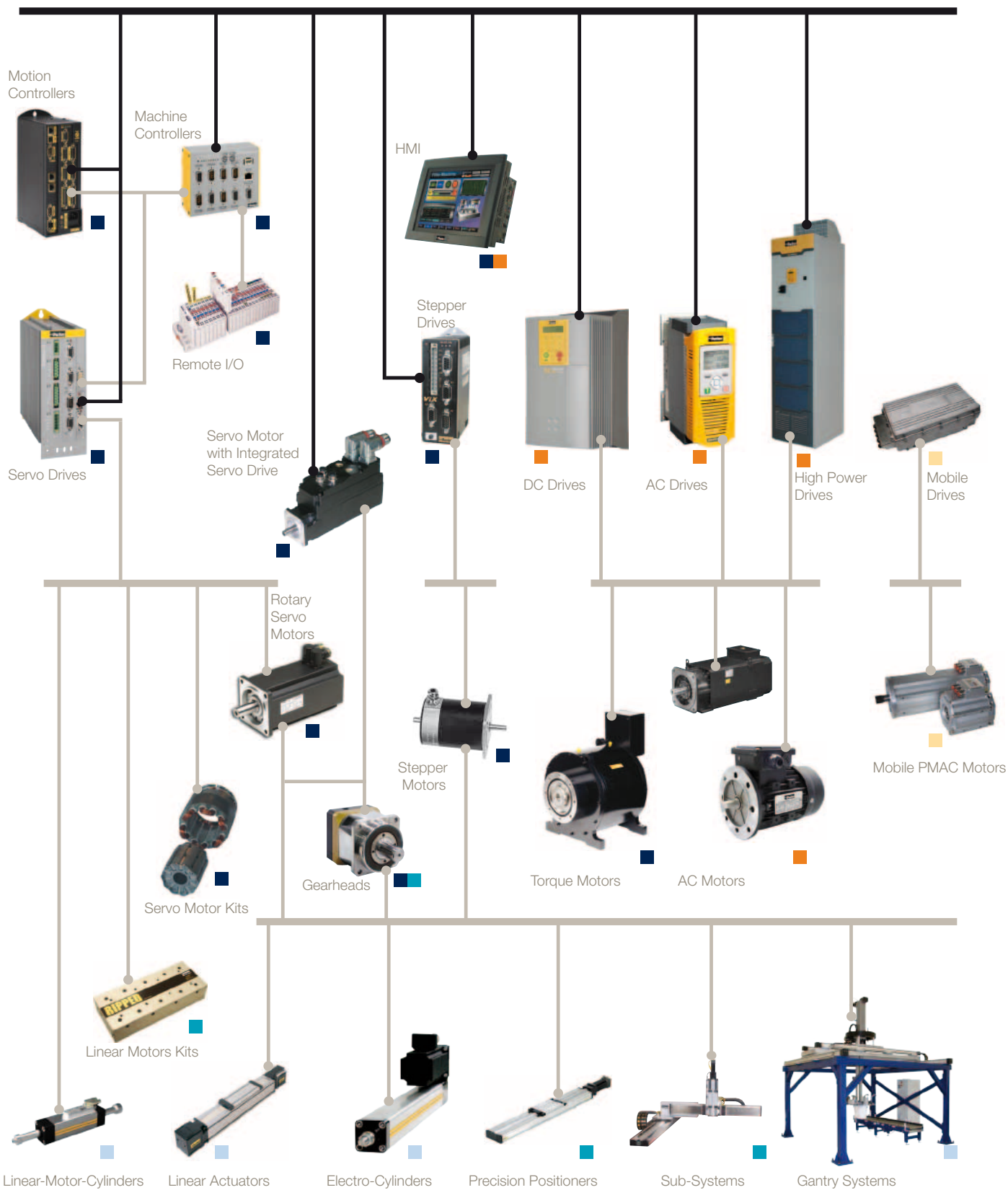
Motion Control Systems for Total Production Flexibility

Parker's electromechanical automation customers enjoy total production flexibility in their general and precision motion control applications. Complete packaged linear positioning systems, coupled to servo and stepper drives and controls, enable our customers to develop a complete motion solution with one partner. Parker provides the products for a wide range of motion needs- power, speed, travel, force-with easy to use controls designed to work on multiple control and communication platforms. Additionally, Parker's products can be easily customized to suit specific applications.



	Mechanical Actuators	Motors and Gearheads	Drives	Controls	HMI
Assembly machinery					
Pick and Place	✓	✓	✓	✓	✓
Lifting	✓	✓	✓	✓	
Transfer machinery	✓	✓	✓	✓	✓
Automotive industry					
Body shop	✓	✓	✓	✓	
Paintshop applications	✓	✓	✓	✓	✓
Transfer machinery	✓	✓	✓	✓	✓
Packaging machinery					
Primary, secondary, tertiary	✓	✓	✓	✓	✓
Handling machinery	✓	✓	✓	✓	✓
Food and Beverage processing machinery					
Processing machinery	✓	✓	✓	✓	
Packaging machinery	✓	✓	✓	✓	
Handling machinery	✓	✓	✓	✓	✓
Material handling systems					
Transfer systems	✓	✓	✓	✓	✓
Pick and place systems	✓	✓	✓	✓	✓
Material forming machinery					
Presses	✓	✓	✓		✓
Tube bending	✓	✓	✓	✓	✓
Die Casting	✓	✓	✓		✓
Injection Molding / Plastic Extrusion	✓	✓	✓		✓
Transfer Systems	✓	✓	✓	✓	✓
ePump (Variable Speed HPU)		✓	✓	✓	
Machine tools					
High Speed Servo Spindles		✓			
Loader/Unloader	✓	✓	✓	✓	
Palletizing/Transfer	✓	✓	✓	✓	✓
Rotary/Tilting Tables		✓			
Door Systems	✓	✓	✓	✓	
Semiconductor machinery					
Front end processes	✓	✓	✓	✓	✓
Inspection machinery	✓	✓	✓	✓	✓
Packaging machinery	✓	✓	✓	✓	✓
Lithography	✓	✓	✓	✓	
Medical equipment					
Device manufacturing	✓	✓	✓	✓	✓
Product packaging and dispensing	✓	✓	✓	✓	✓
Scanning equipment	✓	✓	✓		
Pumps and analyzers		✓	✓		
Entertainment					
Theatre and studio automation	✓	✓	✓	✓	
Simulation and amusement rides	✓	✓	✓		

Complete Range of Solutions



Literature



Motion Control Products

- Servo Drives
- Servo Motors
- Gearboxes
- Controller Products
- HMI

192-490123



AC & DC Drives and Motors

- Purpose Drives
- Compact Drives
- Modular Drives
- AC & DC Drives
- HMI
- Accessories
- AC Motors

192-490423



Mobile Drives and Motors

- High and low voltage drives,
- Permanent magnet motors and generators (PMAC)

192-300100



Linear Actuators

- Toothed Belt Driven Actuators
- Screw Driven Actuators
- Linear Motor Driven Actuators

192-490023



Precision Technology

- Screw Driven Tables
- Linear Motor Driven Tables
- Linear Motors
- Linear Positioners
- Miniature Stages

192-591011



Parker One Pneumatic

A complete range of pneumatic system components

- Actuator Products
- Control Devices
- Air Preparation & Airline Accessories

PDE2600PNUK

Value Added Services

In addition to providing products and systems, Parker also provides a number of value added services to our customers:

- **Programming and commissioning services**
- **Power quality and energy surveys**
- **24-hour support and service**
- **Product repairs**
- **Product training**

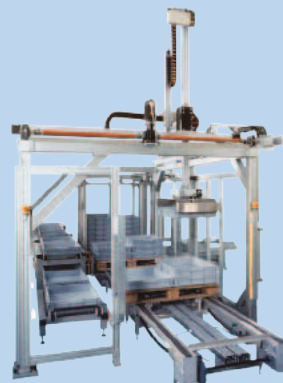
Mobile Drives & Motors

With global sales, engineering, and manufacturing, Parker can support your vehicle development goals by delivering high performance drivetrain and auxiliary products and solutions for maximum power density, highest efficiency and reliability in vehicle environments.

Customization

Many automation applications cannot be solved with off the shelf products. Parker's products are designed to be versatile as well as easy to configure for the most of industrial and process applications. Some customers require solutions that can't be found in a catalogue, and Parker has the resources and expertise available to provide solutions:

- **Custom motor designs**
- **Customized mechanical positioning systems**
- **Customized control functionality**
- **Customized communication solutions**



System Solutions

Parker offers system design and manufacturing in two main categories:

Drive Systems

Complete AC and DC drive systems across a wide power range, from less than 1 kW to more than 2 MW. Systems typically include electrical enclosure, ancillary electronic equipment and full documentation. Commissioning and support services are standard.

Mechanical Systems

Parker has more than 20 years of experience in providing a variety of multiple axis mechanical positioning systems, complete with motors, drives and controls. Typical applications include material transfer and pick and place gantry systems. Additionally, Parker designs and builds custom precision (micron and submicron level) positioning systems, integrating precision bearing, feedback and drive systems, including Parker's range of linear servo motors. Each system ships complete with motors, drives and controls, and can include the programming and commissioning.

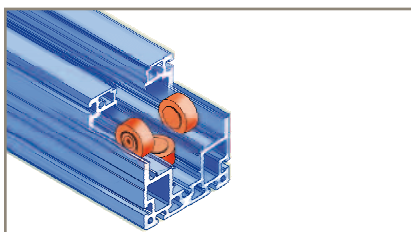
Parker Linear Actuators

Benefits of Parker Linear Actuators

A part of Parker's mechanical components comprises linear actuators, vertical actuators, telescopic actuators and screw actuators, which are all based on an aluminum profile. Depending on the load, different sizes with cross-sections between 40 mm and 180 mm are available. The carriages run either on sliding

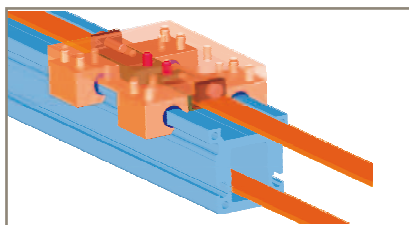
bearings, on plastic-sheathed rollers or steel rollers. As drive options, ballscrew drives, conventional toothed belt drives or a combination of toothed belt and rack-and-pinion-drive are available.

Profile



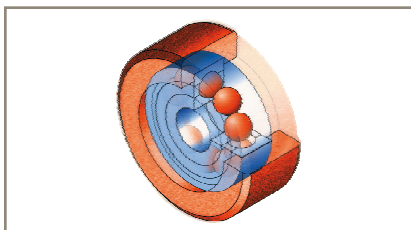
Anodized extruded aluminum profile, optimized for high rigidity and low mass.

Sliding bearing guidance system



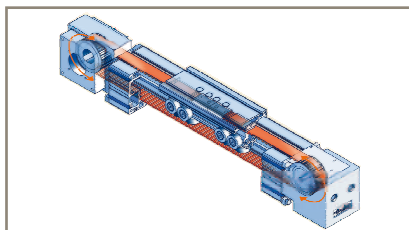
Clean operation without lubricants

Roller guiding system



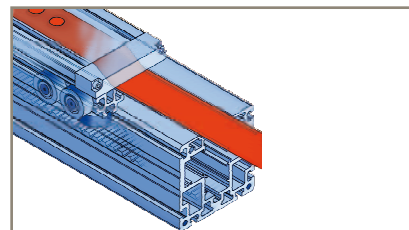
Plastic sheathed rollers; steel rollers for high payloads available as an option

Toothed belt drive



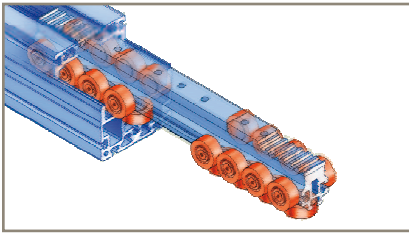
For high dynamics at small to medium stroke lengths

Protection against contamination



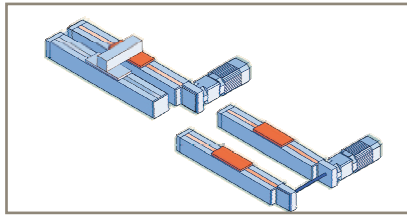
Optionally available stainless steel cover protects the actuator from contamination

Carriages for heavy loads



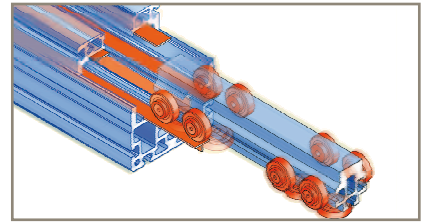
Extended carriage with double number of rollers

Drive options for heavy loads



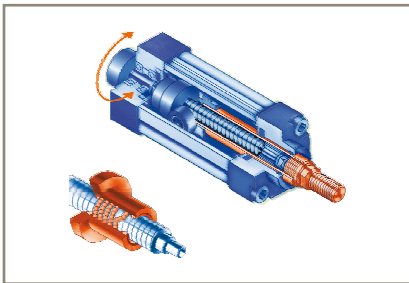
Double axis, following or synchronously driven

Carriage with steel rollers



Steel rollers run on hardened steel strips inserted into the profile and ensure a high load-bearing capacity and rigidity.

Drive for short and precise movements



Ballscrew in the ET/ETH electro cylinder

Accessories

A wide range of Parker accessories simplifies the integration

Motors and controllers

The correct gear-servomotor will, in combination with the optimal Parker servo amplifier, solve any positioning task.

All from one source

Our modular system allows a flexible, cost-efficient design of complex systems and plants. Please contact your local sales office for more information.

Toothed Belt Actuators

Parker's **LCB**, **HLE** and **HPLA** timing belt actuators can be easily combined with each other as well as with the rack-and-pinion or vertical actuators. A wide choice of accessories allows complete handling systems to be created with Parker components. Parker offers the ideal linear actuator for each application and task. All toothed belt actuators feature

high dynamics and are practically maintenance-free. Seven sizes from 40 mm up to 180 mm are available.

Areas of application

within the scope of progressive and cost-efficient machine and system design:

- Handling technology: e.g. palletizing, material feed and removal
- Textile machine construction: e.g. cross-, length cutting and stacking, quilting, seaming
- Process engineering: e.g. varnishing, coating, gluing
- Stock technology: e.g. commissioning, stock-keeping
- Construction technology: e.g. encasing, inserting steel reinforcements into concrete
- Clean room technology: e.g. wafer transport, wafer coating
- Machine tool manufacturing: e.g. charging of work pieces, changing tools

LCB

Carriage with sliding bearing which represents a very compact and favourably-priced alternative to common toothed-belt actuators with high requirements for robustness.



- Available in 2 sizes
- Cost-efficient positioning actuator
- External sliding guide and toothed belt drive
- Low maintenance and low noise
- Simple mounting
- Clean operation without lubricants
- High resistance to flexing
- Very high torsional rigidity
- Dirt tolerant
- Easy maintenance, robust

HLE

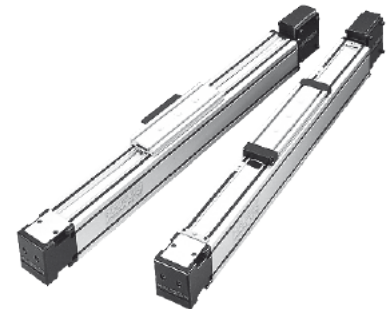
Carriage with plastic-sheathed rollers. Available as single or double actuator.



- Available in 2 sizes
- Long strokes up to 20 m
- High speeds up to 5 m/s
- Nominal drive torque up to 108 Nm
- High repeatability up to ± 0.05 mm
- High mechanical efficiency of 95 %
- Low abrasion (suitable for clean room up to class 10)

HPLA

Carriage available either with plastic-sheathed rollers or with steel rollers on steel bands (with lubrication system).



- 3 Frame sizes
- Strokes up to 20 m
- High speeds up to 5 m/s
- Nominal drive torque up to 244 Nm
- High payloads up to 1600 kg
- Nominal thrust force up to 5500 N
- Repeatability up to ± 0.05 mm
- High mechanic efficiency

Type	Stroke up to [m]	Speed up to [m/s]	Acceleration up to [m/s ²]	Thrust force up to [N]	Typical payload [kg]	Repeatability up to [mm]	Frame size
LCB	5.5	8	20	560	30	± 0.2	40, 60
HLE	20	5	10	1350	300	± 0.05	100, 150
HPLA	20	5	10	5460	500	± 0.05	80, 120, 180

Screw Actuator

ETH Electro Cylinder

The drive via rack-and-pinion ensures high rigidity and repeatability.



For precise motion, positioning, setting and actuating the electro cylinders offers:

- Stroke up to 2000 mm
- High traction/thrust force up to 56000 N
- Repeatability ± 0.03 mm
- Speeds up to 1.7 m/s
- Screw pitch from 5 to 32 mm/rev
- High mechanical efficiency up to 90 %
- 4 different sizes (ETH032, ETH050, ETH080, ETH100), additional sizes are being planned
- Toothed belt drive (for parallel motor mounting)

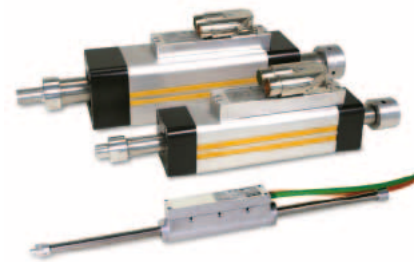
Type	Screw leads [mm]	Stroke up to [m]	Speed up to [m/s]	Acceleration up to [m/s ²]	Thrust force up to [kN]	Repeatability [mm]	Frame size ISO
ETH	5, 10, 16, 20, 32	2.0	1.7	15	3.6...56 (up to 114 in preparation)	± 0.03	32, 50, 80, 100

Linear Motors

ETT - Electric Tubular Motor

ETT is a direct thrust linear motor actuator, ideally suited for all kind of linear handling and pick & place applications. It is a cost-effective and energy-efficient alternative to pneumatic cylinders in applications that demand greater flexibility and control.

- Peak force 24 to 512 N
- Rated force 6 to 128 N
- Protection class IP67
- Repeatability up to ± 0.05 mm
- Speeds up to 4 m/s



Stroke up to [m]	Speed up to [m/s]	Acceleration up to [m/s ²]	Continuous/peak-thrust force [N]	Repeatability [mm]
7.20	4	200	128/512	± 0.05

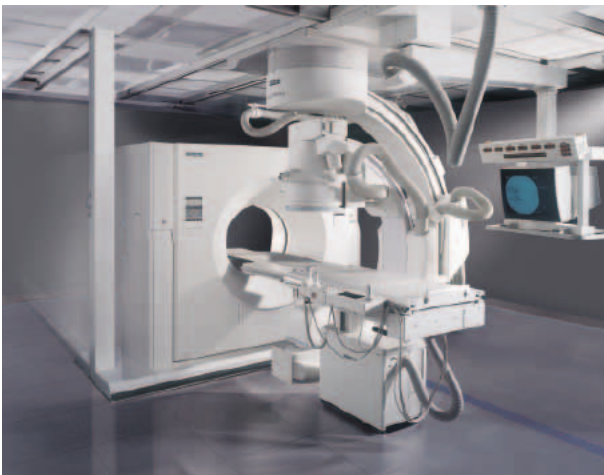
Toothed Belt Actuators

Parker's LCB, HLE and HPLA toothed belt actuators can be easily combined with each other as well as with the rack-and-pinion or vertical actuators. A wide choice of accessories allows complete handling systems to be created with Parker components. Parker offers the ideal linear actuator for each application and task. All toothed belt actuators feature high dynamics and are practically maintenance-free. Seven sizes from 40x40 mm up to 180x180 mm are available.

Areas of application

within the scope of progressive and cost-efficient machine and system design:

- Handling technology: e.g. palletizing, material feed and removal
- Textile machine construction: e.g. cross-/ length cutting and stacking, quilting, seaming
- Process engineering: e.g. varnishing, coating, gluing
- Stock technology: e.g. commissioning, stock-keeping
- Construction technology: e.g. encasing, inserting steel reinforcements into concrete
- Clean room technology: e.g. wafer transport, wafer coating
- Machine tool manufacturing: e.g. charging of work pieces, changing tools



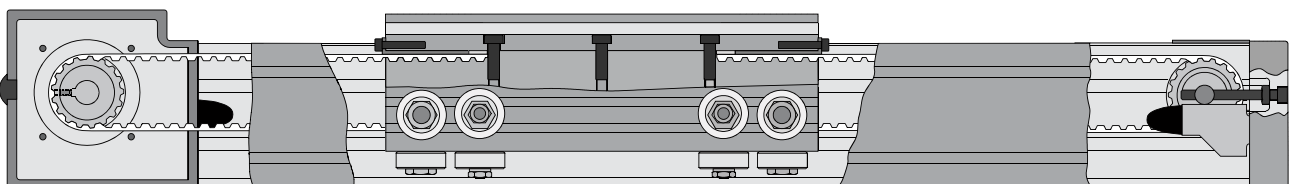
The principle of the toothed belt drive

A sophisticated technology

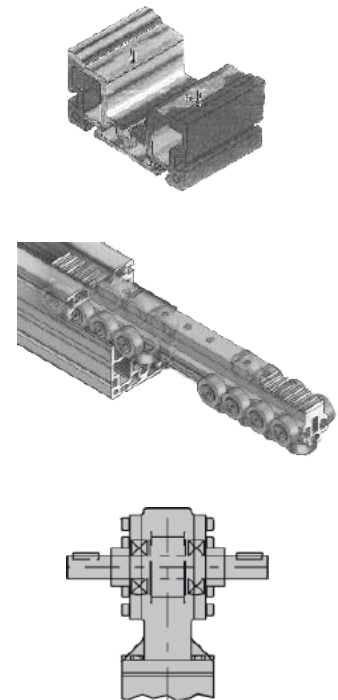
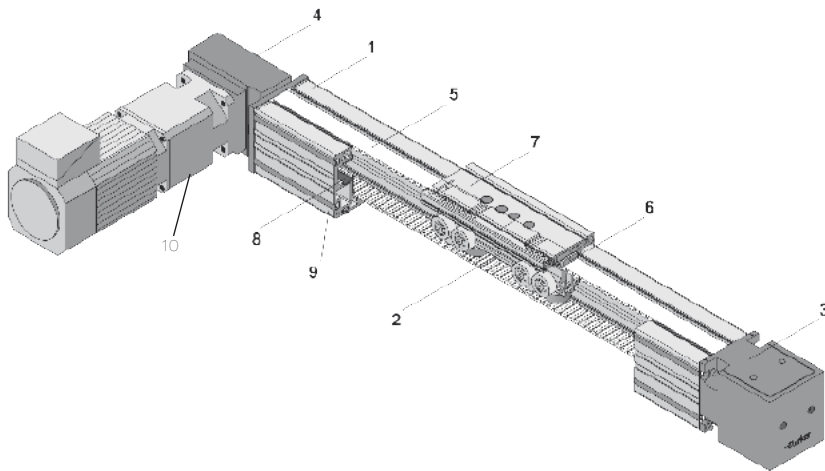
The toothed belt actuators consist of an extruded, self-supporting aluminum profile and a carriage, which is fitted backlash-free into the profile with the aid of rollers and is

moved via a toothed belt. The steel tension cords integrated into the belt provide the necessary stiffness and prevent the belt stretching. Special toothed pulleys

ensure backlash-free operation - and therefore excellent repeatability even with long strokes at high speeds.



Product design of the toothed belt drive



- The extruded aluminum profile **(1)** is optimized for highest stiffness (torsion and deflection) at the lowest possible mass.
- Mounting grooves on both sides and partly on the underside of the profile allows the mounting of additional mechanical components or the connection of several linear actuators with the aid of nuts. These grooves are also suitable as cable ducts if equipped with the optional cover profile **(9)**.
- For the HLE and HPLA, the carriage **(2)** is available in two sizes as a standard carriage with twelve rollers or as an extended carriage with twenty-four rollers. The cost-effective LCB actuator features a carriage without rollers, running on sliding bearings. Three lengths of sliding carriage are available. The distance between the sliding bearings increases with the carriage length.
- The HPLA carriage **(2)** is optionally available with steel rollers, which increases the load-bearing capacity or the payload considerably. For this option, steel strips **(8)** have to be inserted into the profile. The rolling-contact plastic or steel rollers with lifetime lubrication are aligned backlash-free in all directions via eccentric mountings.
- The tensioning station **(3)** is easily accessible and is therefore easy to maintain and mount. It is used to set the required pre-tension and the alignment of the timing belt (parallelism of the pulleys).
- The drive station **(4)** features several drive options. Everything is possible from the pulley directly on the gear shaft via a hollow shaft with bearing directly in the housing to the version with drive shaft on the left, on the right or on both sides.
- The practically backlash-free toothed belt **(5)** reinforced by steel tension cords guarantees high travel speeds and repeatabilities.
- The toothed belt fixing bracket and the wide area timing belt clamp **(6)** ensure a safe connection of toothed belt and carriage.
- The clamping system allows the toothed belt to be changed without removing the flange plate. This means that it is in most cases not necessary to remove the mounted components.
- The load attachment plate **(7)** of the HLE and HPLA actuators offers many component mounting possibilities due to the integrated longitudinal grooves on the surface. Simple and variable mounting of a tripping plate due to lateral longitudinal grooves on the load attachment plate. The unit height and the fixing points remain unchanged even if a steel strip cover is mounted subsequently.
- The optionally available Parker drive unit **(10)**, i.e. a servo motor with fitting planetary gearbox and servo drive, is the ideal solution for your dynamic and precise application.
- The linear actuator is also available in stainless steel as an option. The steel components are made of stainless material and the rollers and toothed pulleys are equipped with corrosion-free bearings. This makes the actuator ideal for use in clean-room or food processing industry applications.

LCB Compact Linear Actuator with Sliding Bearing

- Robust and compact linear actuator
- Cost-efficient positioning actuator
- External sliding guide and toothed belt drive
- Low maintenance and low noise
- Simple mounting
- Clean operation without lubricants
- High resistance to flexing
- Very high torsional rigidity
- Dirt tolerant
- Easy maintenance, robust



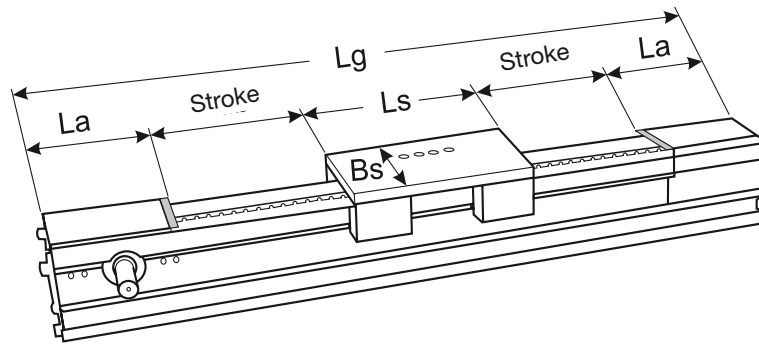
The linear actuators are available in two sizes: LCB040 and LCB060

The modular system allows the combination of actuators including other types of actuator to build complete handling systems.

Specifications

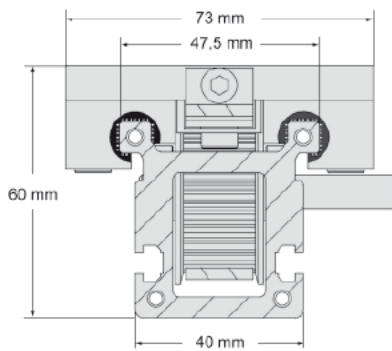
Frame sizes		LCB040	LCB060
Rating			
Maximum thrust force	[N]	160	560
Typical payload	[kg]	1...6	1...30
Max. static load bearing capacity	[N]	1250	3850
Max. Stroke	[mm]	2000	5500
Max. Speed	[m/s]	5	8
Repeatability	[mm]	±0.2	±0.2
Max. Acceleration	[m/s ²]	20	20
Travel distance per revolution	[mm/U]	125	170
Toothed belt width / pitch	[mm]	16/5	25/10
Maximum drive torque	[Nm]	3.2	15.2
Weight of base unit without stroke			
LCB with short sliding carriage	[kg]	1.47	4.33
LCB with medium sliding carriage	[kg]	1.66	4.71
LCB with long sliding carriage	[kg]	1.85	5.10
Weight of moved mass with short sliding carriage	[kg]	0.39	1.41
Weight of moved mass with medium sliding carriage	[kg]	0.46	1.53
Weight of moved mass with long sliding carriage	[kg]	0.53	1.66
Additional weight per meter of stroke	[kg/m]	2.45	5.21
Overall dimensions & physical data			
Length with short sliding carriage, zero stroke	[mm]	246	378
Length with medium sliding carriage, zero stroke	[mm]	296	428
Length with long sliding carriage, zero stroke	[mm]	346	478

Dimensions

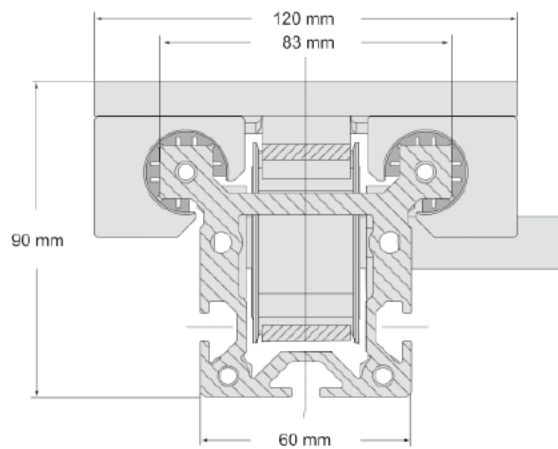


		LCB040	LCB060
Short sliding carriage Ls	[mm]	100	150
Medium sliding carriage Ls	[mm]	150	200
Long sliding carriage Ls	[mm]	200	250
Width of sliding carriage Bs	[mm]	73	120
Module stop La	[mm]	73	114
Total length Lg	[mm]	stroke + Ls + 2 La	stroke + Ls + 2 La
max. Stroke	[mm]	2000	5500

Section



LCB040



LCB060

Stroke lengths

possible stroke lengths [mm]															
Stroke	250	300	350	400	450	500	600	700	800	900	1000	1250	1500	1750	2000
LCB040	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
LCB060	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Stroke	2250	2500	2750	3000	3250	3500	3750	4000	4250	4500	4740	5000	5250	5500	
LCB060	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

When determining the stroke, a safety travel on both sides of the travel path should be considered.

For additional information please see our product catalog 192-510012 or our website www.parker.com/eme/lcb

HLE Linear Actuator with Plastic-Sheathed Rollers

For guiding, moving and positioning, even over long travels, we offer the HLE linear actuator:

- Long strokes up to 20 m
- High speeds up to 5 m/s
- Transmissible drive torque max. 108 Nm
- High load bearing capacity
- Repeatability up to ± 0.05 mm
- High mechanical efficiency of 95 %
- Low abrasion (suitable for clean room up to class 10)
- Low wear, low maintenance and low-noise operation
- High dynamics due to low-mass, backlash-free carriage



The linear actuators are available in two sizes (**HLE 100** and **HLE 150**). They are suitable for fast linear movements over long travel strokes. The actuators are available in many different configurations with various options and accessories.

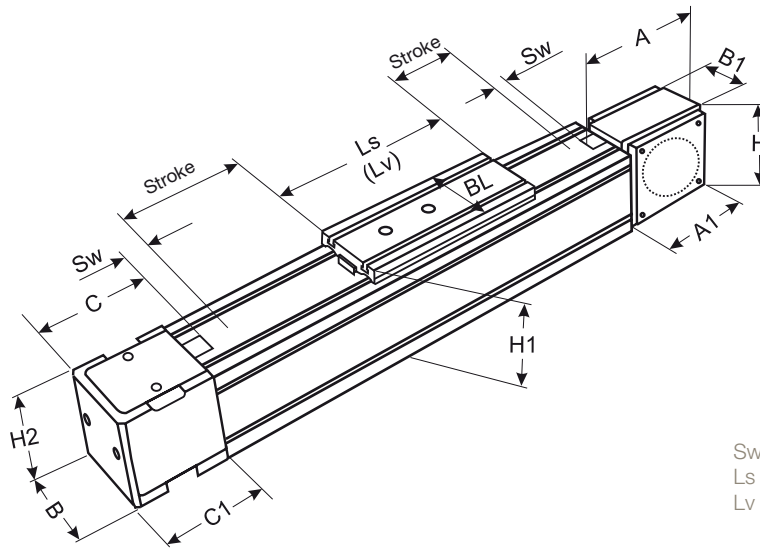
Specifications

Frame sizes		HLE 100		HLE 150	
		Standard	Steel strip cover	Standard	Steel strip cover
Weight of base unit without stroke					
HLE with standard carriage	[kg]	11.5	12.7	28.6	31.2
HLE with extended carriage	[kg]	14.6	15.8	35.9	38.5
Weight of standard carriage & load attachment plate	[kg]	2.5	2.8	6.7	7.3
Weight of extended carriage & load attachment plate	[kg]	4.1	4.4	10.9	11.5
Additional weight per meter of stroke	[kg/m]	9.9	10.0	21.0	21.1
Travel lengths and speeds					
Maximum travel speed	[m/s]	5.0		5.0	
Maximum Acceleration	[m/s ²]	10.0		10.0	
Maximum travel path, standard carriage with one profile	[mm]	6300	6210	9150	9060
Maximum travel path, extended carriage with one profile	[mm]	6150	6060	9000	8910
Overall dimensions and physical data of guiding profile					
Section	[mm]	100 x 100		150 x 150	
Forces and torques					
Nominal drive torque	[Nm]	15.7		51.6	
Nominal belt traction force (payload)	[N]	580		1350	
Repeatability up to 3 m ⁽¹⁾	[mm]	± 0.05		± 0.05	
Repeatability from 3 m ⁽¹⁾	[mm]	± 0.1		± 0.1	
Toothed pulley and toothed belt data					
Travel distance per revolution	[mm/U]	170		240	
Diameter of pulley	[mm]	54.113		76.394	
Toothed belt width / pitch	[mm]	25/10		32/10	
Weight of toothed belt	[kg/m]	0.166		0.213	

⁽¹⁾ at a constant ambient and operating temperature

Dimensions

HLE without steel strip cover

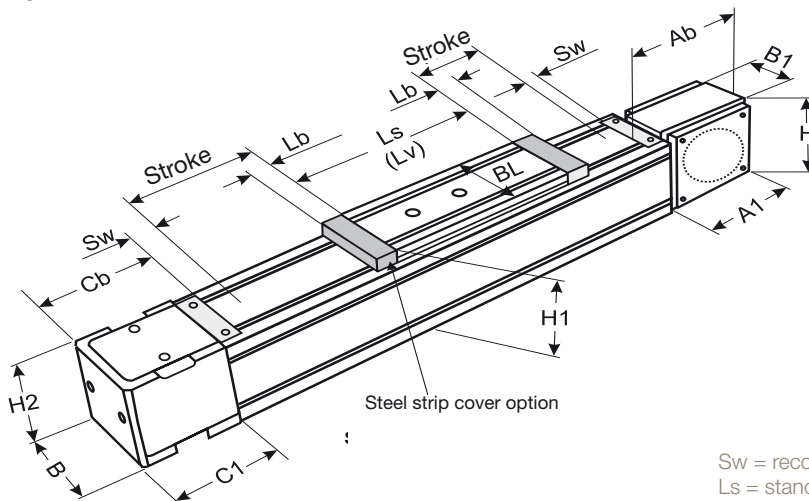


Sw = recommended safety travel
Ls = standard carriage
Lv = extended carriage

HLE with toothed belt without steel strip cover

	B	B1	BL	H	H1	H2	A1	A	C	C1	Ls	Lv	Sw
HLE 100	100	52	90	132	120	100	150	174	126	102	300	450	125
HLE 150	150	60	140	187	175	150	198	234	146	110	350	500	125

HLE with steel strip cover



Sw = recommended safety travel
Ls = standard carriage
Lv = extended carriage

HLE with toothed belt and steel strip cover

	B	B1	BL	H	H1	H2	A1	Ab	Cb	C1	Ls	Lv	Lb	Sw
HLE 100	100	52	90	132	120	100	150	219	171	102	300	450	35	125
HLE 150	150	60	140	187	175	150	198	279	191	110	350	500	35	125

For additional information please see our product catalog 192-510011 or our website www.parker-eme.com/hle

HPLA Linear Actuator optionally available with Steel Rollers

For guiding, moving and positioning, even over long travels, we offer the HPLA linear actuator:

- Travels up to 20 meters
- High speeds up to 5 m/s
- High payloads up to 1600 kg
- Nominal drive torque up to 244 Nm
- Nominal thrust force up to 5500 N
- Repeatability up to ± 0.05 mm
- High mechanic efficiency



The linear actuators are available in three sizes: HPLA80, HPLA120 and HPLA180

The modular system allows the combination of actuators including other types of actuator to build complete handling systems.

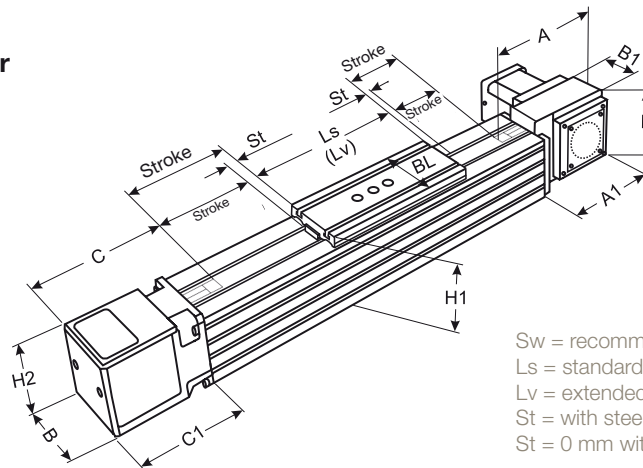
Specifications

Frame sizes		HPLA 080		HPLA 120		HPLA 180	
Roller guiding system		Plastic	Steel	Plastic	Steel	Plastic	Steel
Weight of base unit without stroke							
HPLA with standard carriage	[kg]	6.0	6.6	18.6	19.8	49.8	53.4
HPLA with steel strip cover	[kg]	6.8	7.5	20.2	21.6	57.2	61.6
HPLA with extended carriage	[kg]	7.8	8.6	23.5	25.2	67.4	72.6
HPLA with steel strip cover	[kg]	8.6	9.5	25.2	27.1	74.8	80.9
Weight of standard carriage & load attachment plate	[kg]	1.5	1.6	5.5	5.7	11.4	11.8
HPLA with steel strip cover	[kg]	1.7	1.8	5.8	6.0	12.3	12.6
Weight of extended carriage & load attachment plate	[kg]	2.4	2.6	8.5	8.9	20.3	21.0
HPLA with steel strip cover	[kg]	2.6	2.8	8.8	9.2	21.1	21.8
Additional weight per meter of stroke	[kg/m]	6.0	7.2	13.5	15.4	29.2	33.4
Weight with steel strip cover	[kg/m]	6.1	7.3	13.7	15.5	29.4	33.6
Travel lengths and speeds							
Max. travel speed	[m/s]	5.0					
Max. acceleration	[m/s ²]	10.0					
Max. travel path (standard carriage)	[mm]	5610	5590	9560	9530	9440	9400
ditto with steel strip cover	[mm]	5540	5520	9470	9440	9240	9200
Max. travel path (extended carriage)	[mm]	5460	5440	9360	9330	9140	9100
ditto with steel strip cover	[mm]	5390	5370	9270	9240	8940	8900
Overall dimensions and physical data of guiding profile							
Section	[mm]	80 x 80		120 x 120		180 x 180	
Forces and torques							
max. drive torque	[Nm]	32		96		365	
max. Thrust force	[N]	1114		2234		5457	
Repeatability up to 3 m ⁽¹⁾	[mm]	± 0.05		± 0.05		± 0.05	
Repeatability from 3 m ⁽¹⁾	[mm]	± 0.1		± 0.1		± 0.1	
Toothed pulley and toothed belt data							
Travel distance per revolution	[mm/U]	180		270		420	
Number of teeth of pulley		18		27		21	
Toothed belt width / pitch	[mm]	25/10		32/10		56/20	

⁽¹⁾ at a constant ambient and operating temperature

Dimensions

HPLA without steel strip cover

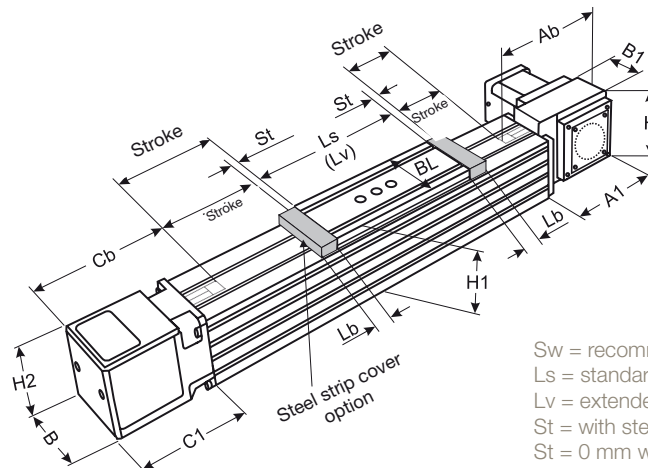


HPLA with toothed belt without steel strip cover

	B	B1	BL	H	H1	H2	A1	A	C	C1	Ls	Lv	St
HPLA 80	80	46	76	100	100	80	144	164	128	108	250	400	10
HPLA 120	120	60	110	135	143	120	185	205	160	140	300	500	13
HPLA 180	180	95	170	213	215	180	265	293	263	235	400	700	20

HPLA with steel strip cover

The optional steel strip cover is perfectly integrated into the linear actuator design and protects timing belt, rollers and the running surfaces of the profile reliably from contamination (protection class IP30).



HPLA with toothed belt and steel strip cover

	B	B1	BL	H	H1	H2	A1	Ab	Cb	C1	Ls	Lv	Lb	St
HPLA 80	80	46	76	100	100	80	144	199	163	108	250	400	40	10
HPLA 120	120	60	110	143	143	120	185	250	205	140	300	500	50	13
HPLA 180	180	95	170	215	215	180	265	393	363	235	400	700	100	20

Advantages of plastic roller guiding:

- clean operation, as the travel surface is free of lubricants
- low maintenance

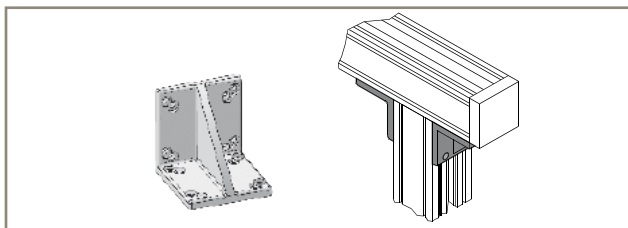
Advantages of steel roller guiding on an integrated steel strip:

- high load bearing capacity
- high stiffness

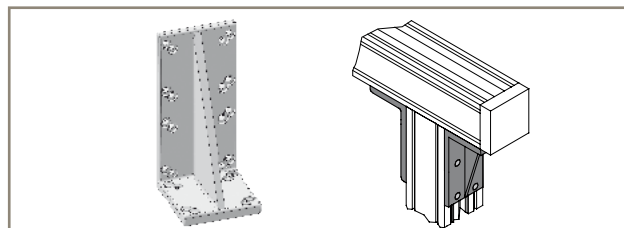
For additional information please see our product catalog 192-580011 or our website www.parker.com/eme/hpla

Accessories for Toothed Belt Actuators

Assembly angle plate isosceles



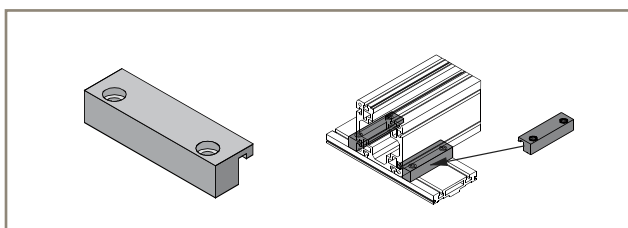
Assembly angle plate scalene



The assembly angle plates are used to connect linear actuators to the basic structure (as support, you may use a Parker profile), or with your construction elements.

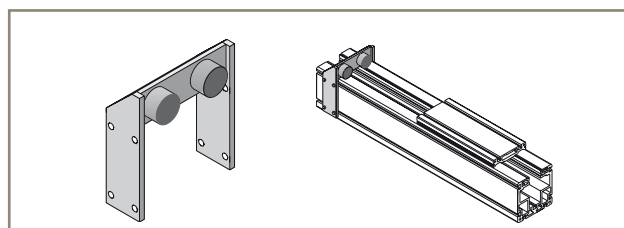
Toe Clamp

The toe clamps are used in conjunction with the standard load attachment plate to rapidly install and attach various combinations of linear actuators.



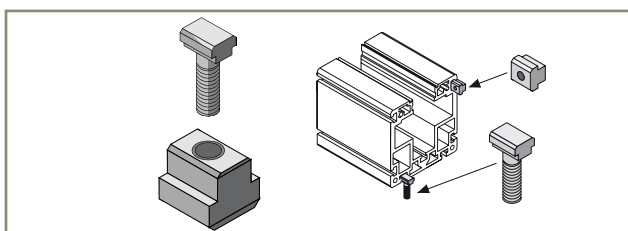
External stop buffer

The external stop buffer is mounted in the grooves of the profile and can be adjusted infinitely.



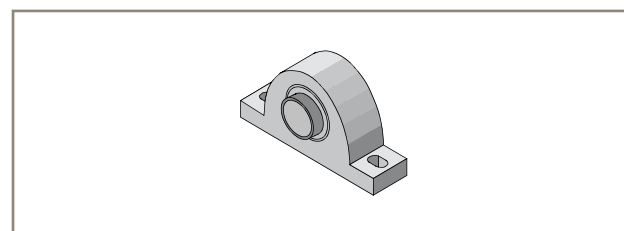
T-Nuts and bolts

The T nuts and bolts can be used to attach other components in the T-slots of the profile, or on the upper side of the load attachment plate.



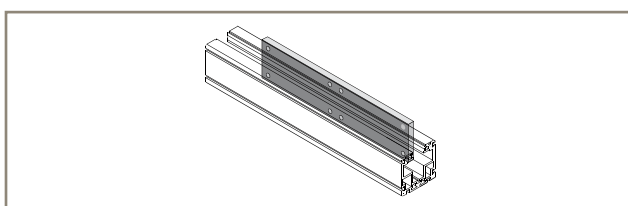
Intermediate shaft bearing for double actuators

The intermediate shaft bearing is used to support the connection shaft of a double actuator in the event of a long axis distance. The intermediate shaft bearing must be used if the critical rotational speed is exceeded with the double actuator connection shaft.



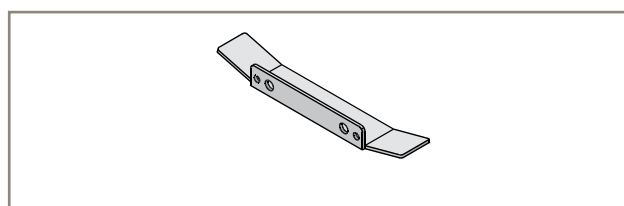
Longitudinal flanges

The working stroke can be more than doubled when using the flange plates. A longitudinal flange is required if the travel path exceeds the profile length.



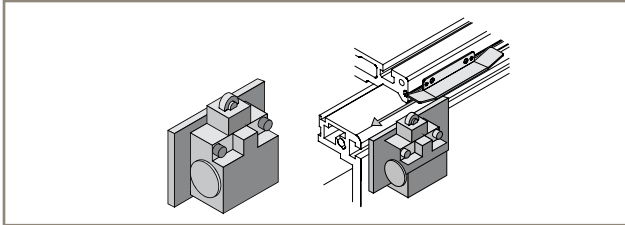
Tripping plate

The tripping plate is suitable for all standard load flange plates.



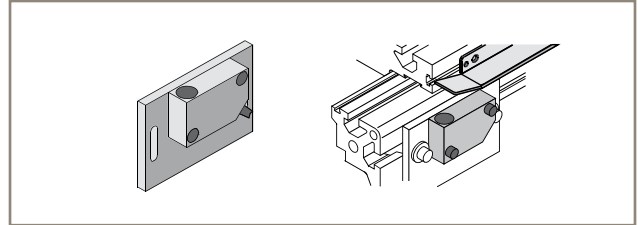
Mechanical limit switch

Switching button as per DIN EN50047. The contacts satisfy the safety requirements by forced opening.



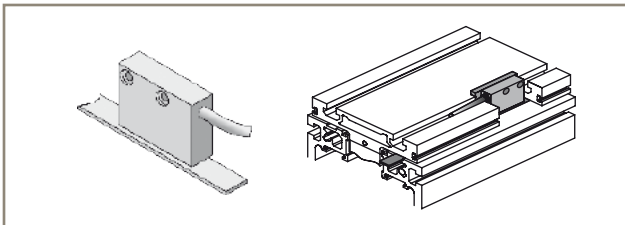
Electrical limit switches

The sensor is activated by a tripping plate on the side on the flange plate.



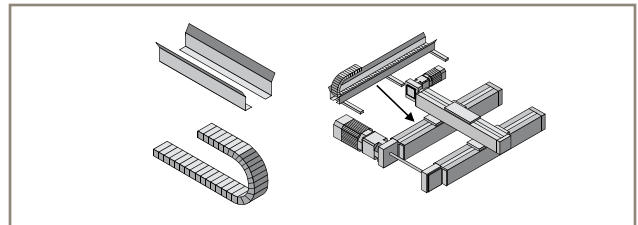
Linear Encoder

The use of a linear encoder increases the static position stiffness of the linear actuator as well as the control properties and positioning accuracy. An additional cable carrier is required due to the moving sensor.



Cable carrier

A cable carrier is needed when making power connections to moving elements. Use only electrical cables which are suitable for use in cable carriers.



Motor and amplifier

Servo amplifier

For additional information please see our product catalog 192-490123 or our website www.parker.com/eme

Motors and gears

For additional information on motors please see our website www.parker-eme.com/sm and for gears www.parker.com/eme/gear

Other accessories / software

DimAxes

Dimensioning tool for Parker linear actuators, for PC from Windows version 95
Download free of charge from:
<http://www.parker-eme.com/dimaxes>



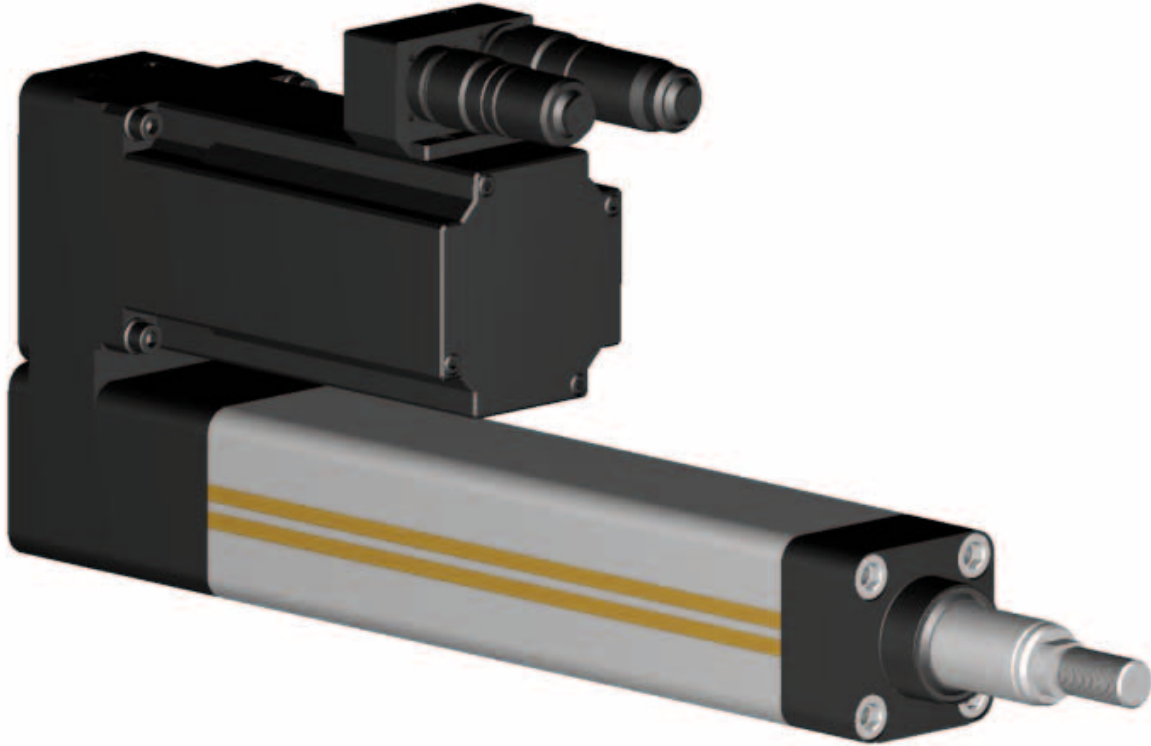
Belt tension measuring device RSM

For accurately setting the toothed belt tension.

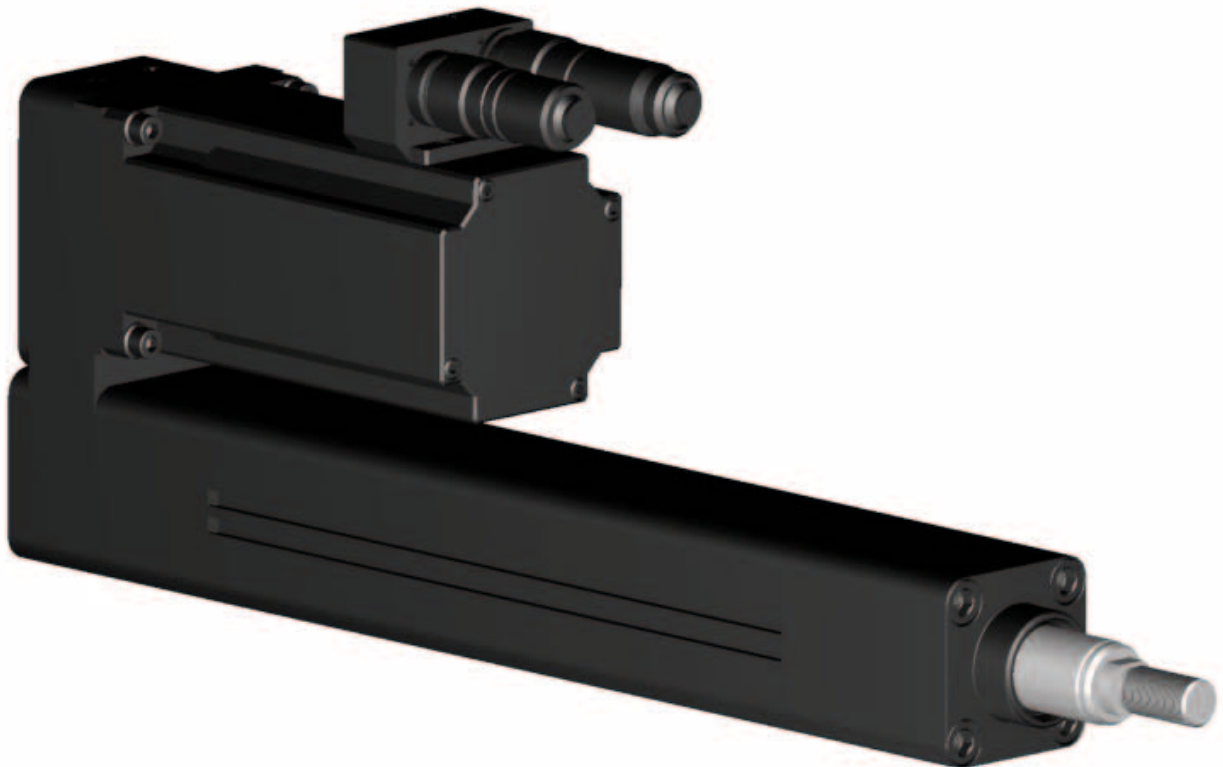


Screw Actuator

Parker High Force Electro Thrust Cylinder



ETH Standard



ETH IP65

ETH - High Force Electro Thrust Cylinder

Description

The ETH electro cylinder closes the gap between pneumatic and hydraulic actuators; it is suitable to replace those in many applications and simultaneously increase the reliability of the production process. Taking the costs for air and oil into consideration, you will find that in most cases an electromechanical system such as the ETH electro cylinder offers the more economical solution. Combined with a wide choice of accessories, it offers many possibilities in a wide variety of fields.

Typical areas of application



- **Material handling and feed systems**
 - wood and plastic working industry
 - vertical actuators for loading machine tools
 - in the textile industry for tensioning / gripping textile fabrics
 - in the automotive industry for transporting and feeding components
- **Testing equipment and laboratory applications**
- **Valve and flap actuation**
- **Pressing**
- **Packaging machinery**
- **Process automation in the food and beverage industry**

Features

- **Unrivalled power density - high forces and small frame sizes**
- **Cabling can be concealed in the profile**
- **Accessories with integrated force sensors help to allot and even to control forces precisely.**
- **Optimized for safe handling and simple cleaning**
- **High service life**
- **Reduced maintenance costs thanks to lubricating access in the cylinder flange**
- **Easy replacement due to pneumatic ISO flange norm (DIN ISO 15552:2005-12) conformity**
- **Integrated anti-rotation device**
- **Reduced noise emission**
- **All from one source**
We offer the complete drive train: Drive controllers, motors and gearboxes to match the Electro Cylinder



Technical Characteristics - Overview

Type	ETH Electro Cylinder
Frame sizes	ETH032 / ETH050 / ETH080 / ETH100
Screw pitch	5, 10, 16, 20, 32 mm
Stroke	up to 2000 mm
Traction/thrust force	up to 56000 N
Speed	up to 1.7 m/s
Acceleration	up to 15 m/s ²
Equivalent dynamic axial force at a lifetime of 2500 km	up to 24390 N
Efficiency	up to 90 %
Position repeatability	up to ± 0.03 mm
Protection classes	IP54 IP54 with stainless screws IP65
Drive	Inline: Axial drive or parallel drive with high performance toothed belt
Directives	2011/65/EC: Conform to RoHS  On request: 94/9/EC: ATEX  Equipment group II Category 2 Please contact Parker for details

We also offer customized solutions:

If your application requires a special version of the ETH cylinder, please contact your local Parker Sales Office.

- Oil splash lubrication
- Customized mountings and rod ends
- Mounting of customer motors
- Preparation of the cylinder for use under aggressive environmental conditions
- Overlong thrust rod
- Polished thrust rod
- Thrust rod hard-chrome plated
-

Technical Characteristics

Cylinder size type	Unit	ETH032			ETH050			ETH080		
		M05	M10	M16	M05	M10	M20	M05	M10	M32
Screw lead	[mm]	5	10	16	5	10	20	5	10	32
Screw diameter	[mm]	16			20			32		

Travels, speeds and accelerations

Available strokes *	[mm]	continuous from 50-1000 & standard strokes			continuous from 50-1200 & standard strokes			continuous from 50-1600 & standard strokes		
Max. permissible speed at stroke =										
50-400 mm	[mm/s]	333	667	1067	333	667	1333	267	533	1707
600 mm	[mm/s]	286	540	855	333	666	1318	267	533	1707
800 mm	[mm/s]	196	373	592	238	462	917	267	533	1707
1000 mm	[mm/s]	146	277	440	177	345	684	264	501	1561
1200 mm	[mm/s]	-	-	-	139	270	536	207	394	1233
1400 mm	[mm/s]	-	-	-	-	-	-	168	320	1006
1600 mm	[mm/s]	-	-	-	-	-	-	140	267	841
Max. Acceleration	[m/s ²]	4	8	12	4	8	15	4	8	15

Forces

Max. axial traction/thrust force motor inline	[N]		3700	2400		7000	4400		25100	10600		
Max. axial traction/thrust force depending on the motor speed n Motor parallel	n < 100 min ⁻¹	[N]	3600	3280	2050	9300	4920	2460	17800	11620	3630	
	100 < n < 300 min ⁻¹	[N]		2620	1640		7870	3930				1960
	n > 300 min ⁻¹	[N]		1820	1140		5480	2740				1370
Equivalent dynamic axial force at a lifetime of 2500 km	[N]	1130	1700	1610	2910	3250	2740	3140	7500	6050		

Max. transmissible torque / force constant

Max. transmissible torque inline motor	[Nm]	3.2	6.5	6.8	8.2	12.4	15.6	15.7	44.4	60.0
Max. transmissible torque depending on the motor speed n Motor parallel	n < 100 min ⁻¹	[Nm]	3.5	6.4		9.1	9.3		17.5	22.8
	100 < n < 300 min ⁻¹	[Nm]	3.5	5.2		7.7	7.7		17.5	22.8
	n > 300 min ⁻¹	[Nm]	3.5	3.6		5.4	5.4		17.5	21.1
Force constant motor inline	[N/Nm]	1131	565	353	1131	565	283	1131	565	177
Force constant motor parallel	[N/Nm]	1018	509	318	1018	509	254	1018	509	159

Mass

Mass of base unit with zero stroke (incl. Cylinder rod)	[kg]	1.2	1.2	1.3	2.2	2.3	2.5	6.9	7.6	8.7
Mass of additional stroke (incl. Cylinder rod)	[kg/m]	4.8			8.6			18.7		
Weight of cylinder rod with zero stroke	[kg]	0.06			0.15			0.59		
Weight of cylinder rod - additional length	[kg/m]	0.99			1.85			4.93		

Mass moments of inertia

Motor parallel without stroke	[kgmm ²]	8.3	8.8	14.1	30.3	30.6	38.0	215.2	213.6	301.9
Motor inline without stroke	[kgmm ²]	7.1	7.6	12.9	25.3	25.7	33.1	166.2	164.5	252.9
Parallel/inline motor per meter	[kgmm ² /m]	41.3	37.6	41.5	97.7	92.4	106.4	527.7	470.0	585.4

Accuracy: Bidirectional Repeatability (ISO230-2)

Motor inline	[mm]	±0.03								
Motor parallel	[mm]	±0.05								

Efficiency

Motor inline	the efficiency includes all friction torques	[%]	90								
Motor parallel		[%]	81								

Ambient conditions

Operating Temperature	[°C]	-10...+70								
Ambient temperature	[°C]	-10...+40								
Storage temperature	[°C]	-20...+40								
Humidity	[%]	0...95 % (non-condensing)								
Location height range	[m]	max. 3000								

* Intermediate stroke lengths may be interpolated.

Cylinder size type	Unit	ETH100		ETH125
		M10	M20	
Screw lead	[mm]	10	20	
Screw diameter	[mm]	50		

Travels, speeds and accelerations

Available strokes *	[mm]	continuous from 100-2000 & standard strokes		
Max. permissible speed at stroke =				
100-500 mm	[mm/s]	333	667	
600 mm	[mm/s]	333	622	
800 mm	[mm/s]	241	457	
1000 mm	[mm/s]	185	354	
1200 mm	[mm/s]	148	284	
1400 mm	[mm/s]	122	235	
1600 mm	[mm/s]	102	198	
1800 mm	[mm/s]	88	170	
2000 mm	[mm/s]	76	148	
Max. Acceleration	[m/s ²]	8	10	

Forces

Max. axial traction/thrust force motor inline	[N]		56000	max. 114000
Max. axial traction/thrust force depending on the motor speed n	n < 100 min ⁻¹	[N]	54800	50800
	100 < n < 300 min ⁻¹	[N]		43200
	n > 300 min ⁻¹	[N]		35600
Motor parallel				
Equivalent dynamic axial force at a lifetime of 2500 km	[N]	16570	24390	

Max. transmissible torque / force constant

Max. transmissible torque inline motor	[Nm]	100	200	
Max. transmissible torque depending on the motor speed n	n < 100 min ⁻¹	[Nm]	100	200
	100 < n < 300 min ⁻¹	[Nm]	100	170
	n > 300 min ⁻¹	[Nm]	100	140
Motor parallel				
Force constant motor inline	[N/Nm]	565	283	
Force constant motor parallel	[N/Nm]	509	254	

Mass

Mass of base unit with zero stroke (incl. Cylinder rod)	[kg]	21	23	
Mass of additional stroke (incl. Cylinder rod)	[kg/m]	39		
Weight of cylinder rod with zero stroke	[kg]	1.2		
Weight of cylinder rod - additional length	[kg/m]	7.8		

Mass moments of inertia

Motor parallel without stroke	[kgmm ²]	5860	6240	
Motor inline without stroke	[kgmm ²]	2240	2620	
Parallel/inline motor per meter	[kgmm ² /m]	4270	4710	

Accuracy: Bidirectional Repeatability (ISO230-2)

Motor inline	[mm]	±0.05	
Motor parallel	[mm]	±0.07	

Efficiency

Motor inline	the efficiency includes all friction torques	[%]	90
Motor parallel		[%]	81

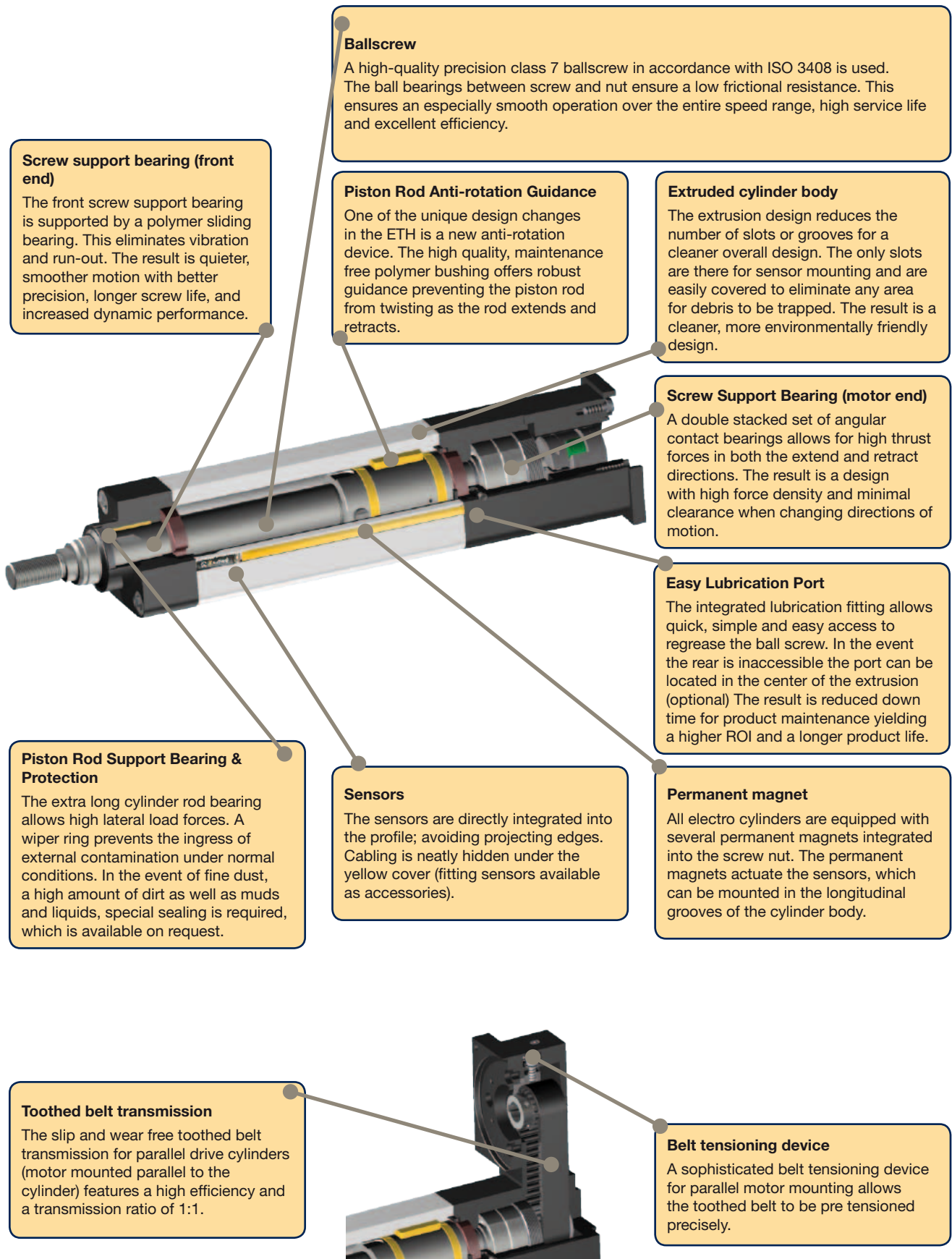
Ambient conditions

Operating Temperature	[°C]	-10...+70
Ambient temperature	[°C]	-10...+40
Storage temperature	[°C]	-20...+40
Humidity	[%]	0...95 % (non-condensing)
Location height range	[m]	max. 3000

* Intermediate stroke lengths may be interpolated.

Technical Data apply under normal conditions and only for the individual operating and load modes. In the case of compound loads, it is necessary to verify in accordance with normal physical laws and technical standards whether individual ratings should be reduced. In case of doubt please contact Parker.

Product Design



Ballscrew

A high-quality precision class 7 ballscrew in accordance with ISO 3408 is used. The ball bearings between screw and nut ensure a low frictional resistance. This ensures an especially smooth operation over the entire speed range, high service life and excellent efficiency.

Screw support bearing (front end)

The front screw support bearing is supported by a polymer sliding bearing. This eliminates vibration and run-out. The result is quieter, smoother motion with better precision, longer screw life, and increased dynamic performance.

Piston Rod Anti-rotation Guidance

One of the unique design changes in the ETH is a new anti-rotation device. The high quality, maintenance free polymer bushing offers robust guidance preventing the piston rod from twisting as the rod extends and retracts.

Extruded cylinder body

The extrusion design reduces the number of slots or grooves for a cleaner overall design. The only slots are there for sensor mounting and are easily covered to eliminate any area for debris to be trapped. The result is a cleaner, more environmentally friendly design.

Screw Support Bearing (motor end)

A double stacked set of angular contact bearings allows for high thrust forces in both the extend and retract directions. The result is a design with high force density and minimal clearance when changing directions of motion.

Easy Lubrication Port

The integrated lubrication fitting allows quick, simple and easy access to regrease the ball screw. In the event the rear is inaccessible the port can be located in the center of the extrusion (optional) The result is reduced down time for product maintenance yielding a higher ROI and a longer product life.

Piston Rod Support Bearing & Protection

The extra long cylinder rod bearing allows high lateral load forces. A wiper ring prevents the ingress of external contamination under normal conditions. In the event of fine dust, a high amount of dirt as well as muds and liquids, special sealing is required, which is available on request.

Sensors

The sensors are directly integrated into the profile; avoiding projecting edges. Cabling is neatly hidden under the yellow cover (fitting sensors available as accessories).

Permanent magnet

All electro cylinders are equipped with several permanent magnets integrated into the screw nut. The permanent magnets actuate the sensors, which can be mounted in the longitudinal grooves of the cylinder body.

Toothed belt transmission

The slip and wear free toothed belt transmission for parallel drive cylinders (motor mounted parallel to the cylinder) features a high efficiency and a transmission ratio of 1:1.

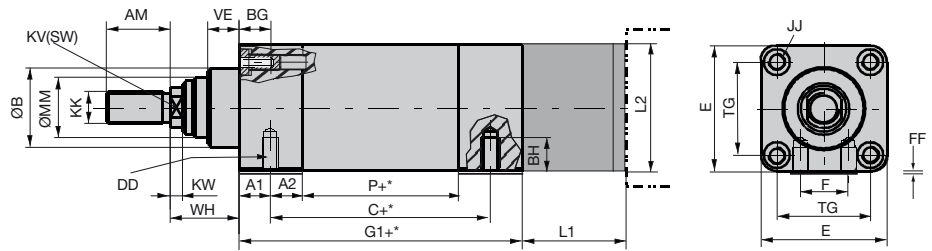
Belt tensioning device

A sophisticated belt tensioning device for parallel motor mounting allows the toothed belt to be pre tensioned precisely.

Dimensions

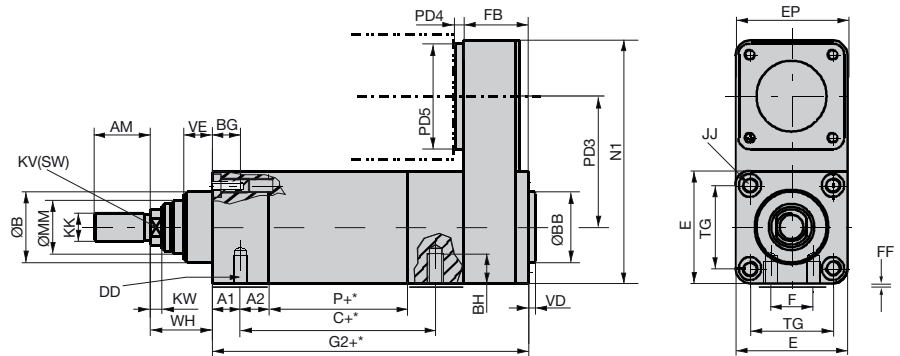
Electro Cylinder

prepared for inline motor mounting



Electro Cylinder

prepared for parallel motor mounting



+* = Measure + length of desired stroke.

Dimensions Standard (IP-Version)

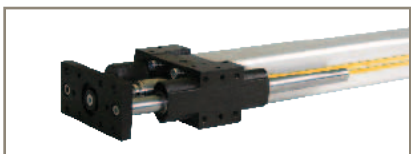
Cylinder size	Unit	ETH032			ETH050			ETH080			ETH100	
		M05	M10	M16	M05	M10	M20	M05	M10	M32	M10	M20
Screw lead		M05	M10	M16	M05	M10	M20	M05	M10	M32	M10	M20
C	[mm]	93.6 (93.6)	102.6 (102.6)	106.6 (106.6)	99.5 (100.5)	105.5 (106.5)	117.5 (118.5)	141.5 (142.5)	159.5 (160.5)	189.5 (190.5)	- *	
G1	[mm]	133 (180.5)	142 (189.5)	146 (193.5)	154 (198.5)	160 (204.5)	172 (216.5)	197 (259.5)	215 (277.5)	245 (307.5)	323 (349.5)	361 (387.5)
G2	[mm]	180.5 (228.5)	189.5 (237.5)	193.5 (241.5)	194 (239)	200 (245)	212 (257)	257 (320)	275 (338)	305 (368)	451 (478.0)	489 (516.0)
P	[mm]	66	75	79	67	73	85	89	107	137	162	200
A1	[mm]	14 (60)			15.5 (58.5)			21 (82)			- *	
A2	[mm]	17			18.5			32			- *	
AM	[mm]	22			32			40			70	
BG (=BN+BS)	[mm]	16			25			26			32	
BN Usable length of thread	[mm]	11			20			20			22	
BS Depth of width across flat (without thread)	[mm]	5			5			6			10	
BH	[mm]	9			12.7			18.5			- *	
DD mounting thread ⁽¹⁾	[mm]	M6x1.0			M8x1.25			M12x1.75			- *	
E	[mm]	46.5			63.5			95			120	
EP	[mm]	46.5			63.5			95			175	
F	[mm]	16			24			30			- *	
FF	[mm]	0.5			0.5			1.0			0	
JJ	[mm]	M6x1.0			M8x1.25			M10x1.5			M16x2	
KK	[mm]	M10x1.25			M16x1.5			M20x1.5			M42x2	
KV	[mm]	10			17			22			46	
ØMM h9	[mm]	22			28			45			70	
TG	[mm]	32.5			46.5			72			89	
KW	[mm]	5			6.5			10			10	
N1	[mm]	126			160			233.5			347	
FB	[mm]	47.5 (48)			40 (40.5)			60 (60.5)			128	
VD	[mm]	4			4			4			4	
ØBB	[mm]	30			40			45			90 d8	
VE	[mm]	12			16			20			20	
WH	[mm]	26			37			46			51	
ØB	[mm]	30 d11			40 d11			60 d11			90 d8	

⁽¹⁾ Thread "DD" is only mandatory for mounting method "F".

* ETH100 does not have a mounting thread on the underside.

Accessories for ETH Electro Cylinder

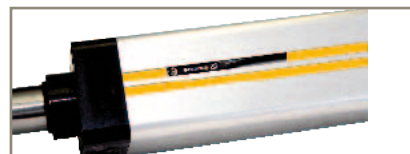
Piston Rod Guide Module



The rod guiding performs the following tasks:

- Anti-rotation device for higher torques
- Absorption of lateral forces
- Relieves the cylinder of lateral forces

Home / limit switches



Mounting Methods

Foot mounting



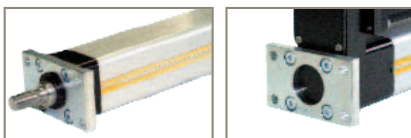
Mounting Flanges



Centre trunnion mounting



Installation flanges



Rear Clevis



Rear Eye Mounting



Rod End

with external thread



with internal thread



Clevis

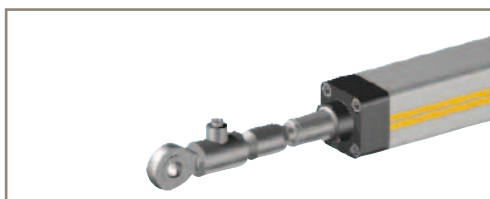


Spherical Rod eye

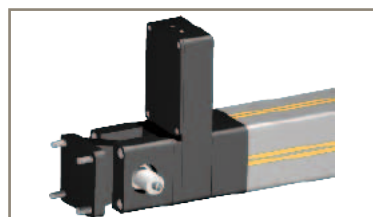


Force Sensor

Joint head with integrated force sensor



Rear clevis with force sensor



Motor and amplifier

Servo amplifier

For additional information please see our product catalog 192-490123 or our website www.parker.com/eme

Motors and gears

For additional information on motors please see our website www.parker.com/eme and for gears www.parker.com/eme/gear

For additional information please see our product catalog 192-550017 or our website www.parker.com/eme/eth

Linear Motors

ETT - Electric Tubular Motor

Description

ETT is a direct thrust linear motor actuator, ideally suited for all kind of linear handling and pick & place applications. It is a cost-effective and energy-efficient alternative to pneumatic cylinders in applications that demand greater flexibility and control.

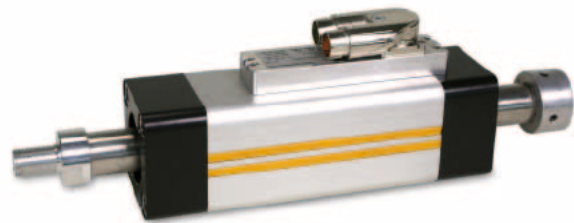
The ETT's linear motion is directly generated without the need for mechanical transmission elements like ball screws, toothed belts and gearboxes. The tubular motor has two main components; the rod (shaft) and the stator with the integrated feedback (body). The shaft is made of a stainless steel tube with built in neodymium magnets, that thanks to their high performance, are able to deliver significant thrust values up to 512 N. The main body comprises the stator winding, the feedback electronics and high performance bearings. A major benefit of the ETT design is that long and/or heavy duty cycles are possible without additional cooling. The IP67 protection class allows the ETT tubular motor to be used in harsh environmental conditions.

Features

- Ultra dynamic linear motion and position control capabilities
- Ideally suited for pneumatic substitution where greater position control capabilities are required
- Three lengths and three sizes conforming to pneumatic ISO flange norm (DIN ISO 15552:2005-12) for simplified mechanical integration
- Swiveling electrical connectors and extensive accessory options allow flexible mounting
- Reduced mechanical complexity delivers a high energy efficiency and reduces maintenance
- AISI304 stainless steel shaft permits use in "clean" environments
- High thermal efficiency improves reliability and increases mechanical life
- Wide choice of rod end mounting options, including swivel rod eye, increases flexibility

Application

- Food, Pharmaceutical & Beverage
- Packaging machinery
- Material Handling
- Factory automation



Technical Characteristics - Overview

Type of Motor	Linear tubular servo motor
Rod	AISI304 (stainless steel)
Rated force	6...128 N
Peak Force	24...512 N
Speed range	up to 4 m/s
Acceleration range	200 m/s ²
Mounting	Screw fixed
Shaft end	With screw fix external thread (standard) Other (option)
Cooling	Natural ventilation
Protection level (IEC60034-5)	IP67
Feedback Device	1 Vpp Sine/Cosine encoder
Thermal protection	KTY
Marking	CE
Power supply	230 VAC other voltage on request
Temperature class	Class F
Connections	Connectors for ETT032/050 Flying cables for ETT025
Accuracy	±0.05 mm

Technical characteristics

ETT025

ETT025		ETT025S1	ETT025S2	ETT025S3
	Unit			
Power supply 230 VAC				
Effective stroke	[mm]	30...360		
Rated force	[N]	6	9	12
Peak force for 10 s ¹⁾	[N]	24	36	48
Maximum speed ²⁾	[m/s]	4		
Peak acceleration ³⁾	[m/s ²]	200		
Actuator length	[mm]	162		
Slider length w/o stop	[mm]	215...545		
Slider weight	[kg]	0.224...0.618		
Slider diameter	[mm]	12		
Pole pitch	[mm]	60		
Force constant	[N/A]	8.57	12.86	17.14
Back EMF	[V/(m/s)]	n.a		
Phase resistance	[ohm]	16.5	24.5	32.5
Phase inductance	[mH]	7.3	11	14.6
Position repeatability	[mm]	±0.05		

¹⁾ Data valid at an ambient temperature of 40 °C

²⁾ Based on triangular move over maximum stroke with nominal payload

³⁾ Based on a 50 mm stroke, without payload

ETT032

ETT032		ETT032S1	ETT032S2	ETT032S3
	Unit			
Power supply 230 VAC				
Effective stroke	[mm]	30...660	30...630	30...600
Rated force	[N]	13	19	25
Peak force for 10 s ¹⁾	[N]	52	76	100
Maximum speed ²⁾	[m/s]	4		
Peak acceleration ³⁾	[m/s ²]	200		
Actuator length	[mm]	179	209	239
Slider length w/o stop	[mm]	221...851		
Slider weight	[kg]	0.389...1.63		
Slider diameter	[mm]	16		
Pole pitch	[mm]	60		
Force constant	[N/A]	19.12	30.65	40.32
Back EMF	[V/(m/s)]	7	10.6	14.4
Phase resistance	[ohm]	29	43	56
Phase inductance	[mH]	16	24	32
Position repeatability	[mm]	±0.05		

¹⁾ Data valid at an ambient temperature of 40 °C

²⁾ Based on triangular move over maximum stroke with nominal payload

³⁾ Based on a 50 mm stroke, without payload

ETT050

ETT050		ETT050S1	ETT050S2	ETT050S3
	Unit			
Power supply 230 VAC				
Effective stroke	[mm]	30...720	30...690	30...540
Rated force	[N]	32	48	128
Peak force for 10 s ¹⁾	[N]	128	192	512
Maximum speed ²⁾	[m/s]		4	
Peak acceleration ³⁾	[m/s ²]		200	
Actuator length	[mm]	206	236	386
Slider length w/o stop	[mm]		254...944	
Slider weight	[kg]		0.56...2.12	
Slider diameter	[mm]		25	
Pole pitch	[mm]		60	
Force constant	[N/A]	51.61	77.42	206.45
Back EMF	[V/(m/s)]	12.6	18.9	25.2
Phase resistance	[ohm]	44	66	44
Phase inductance	[mH]	28	42	38
Position repeatability	[mm]		±0.05	

¹⁾ Data valid at an ambient temperature of 40 °C

²⁾ Based on triangular move over maximum stroke with nominal payload

³⁾ Based on a 50 mm stroke, without payload

Standards and Conformance

Low Voltage Directive	<ul style="list-style-type: none"> • 2006/95/EC
EMC Directive	<ul style="list-style-type: none"> • 2004/108/EC
Generic standard - Emission standard for industrial environments	<ul style="list-style-type: none"> • CEI EN 61000-6-4:2007
Electromagnetic immunity for industrial environments	<ul style="list-style-type: none"> • CEI EN 61000-6-2:2006

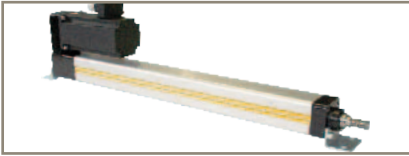
Marked



Accessories for ETT - Electric Tubular Motor

Mounting Methods

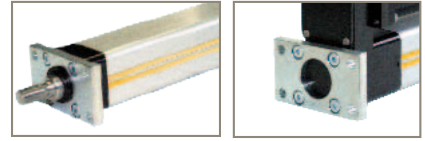
Foot mounting



Mounting Flanges



Installation flanges



Rod End

Plastic Rod Clevis



Plastic Spherical Rod Eye



Alignment Coupler



For additional information please see our product catalog 192-571001 or our website www.parker.com/eme/ett

Standard Gantries

Gantry kits - Pre-engineered components for your system

Parker's gantry kits offer a building set for basic handling systems. In order to ensure simple and secure system selection, we focused on a few individual types. You just need to select a suitable basic system with the desired options. The components are matched in our factory. This minimizes the overhead for project planning and calculation.

Short delivery times and attractive price due to standard components

The gantry kits consist of the proven Parker standard components. We put our decade long experience into every component. Standard gantry robots do not have to be assembled in our factory – this saves time and money. Therefore we can offer you an extremely short delivery time of four weeks and an attractive price.

It's your choice!

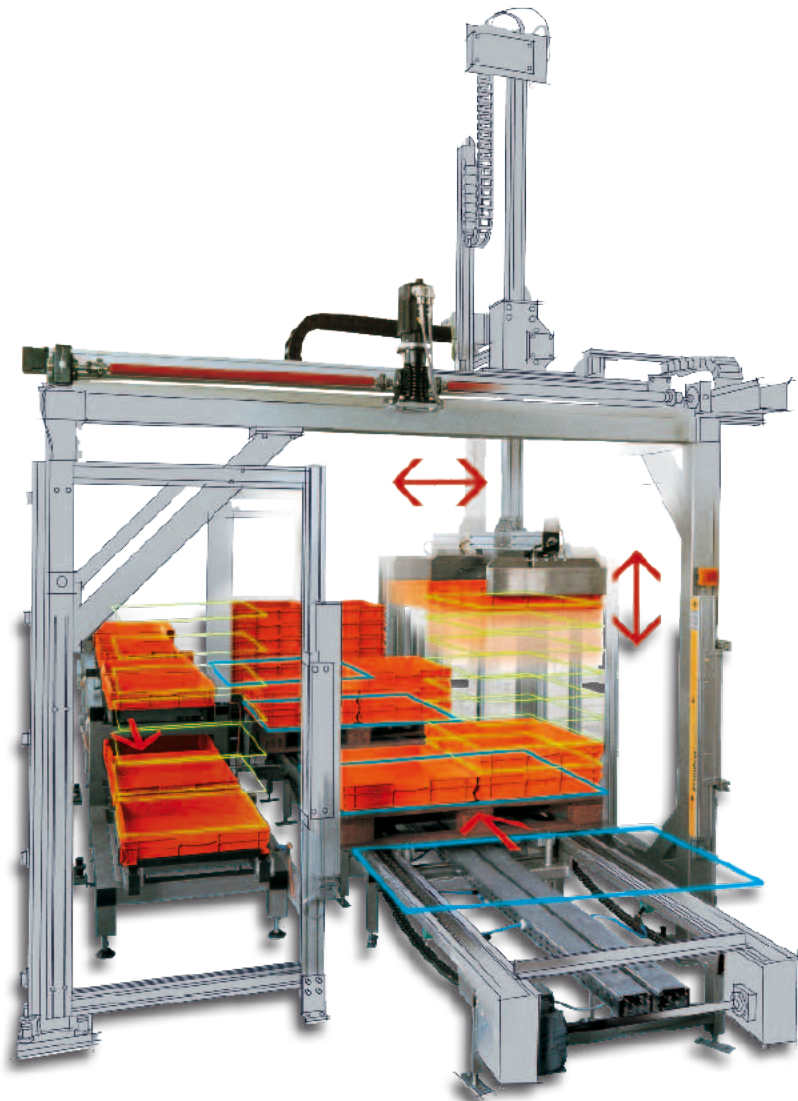
Standard gantry robots in different stages of extension:

Basic version

Line gantry with x and z axis or gantry with x, y and z axis (all axes with gear), either in standard version or with steel strip cover for the x and y axes (protection class IP30), available with or without cable carrier (for all axes).

Additional drive package

Complete package including motors, controllers, motor and feedback cables and parameter lists in addition to the basic version.



For additional information please see our product catalog 192-700011 or our website www.parker-eme.com/gantry

Precision Actuators / Tables

If highest precision, i.e. repeatabilities in the μm range, is required, Parker precision actuators and tables are being used.

The precision actuators and tables are driven by screw or linear motor. All mechanical components are optionally available for use in clean-room applications. The individual precision components can be combined with corresponding accessories to create a complete system.

Precision Actuator with Screw Drive

400XR Series

The XR precision actuators achieve their high precision with the aid of innovative ball bearing guides.



Type	Section (W x H) [mm]	Max. Stroke [mm]	Max. Speed [m/s]	Max. Load [kg]	Axial Force [N]	Repeatability [μm]
401XR	41 x 43	50...300	1.0	50	54...152	± 1.3
402XR	58 x 58	50...600	0.9	100	372	± 1.3
404XR	95 x 48	50...600	1.2	170	882	± 1.3
406XR	150 x 70	100...2000	1.2	630	882...1961	± 1.3
412XR	285 x 105	100...2000	1.34	1470	1961...4511	± 5.0

For additional information please see our website www.parker.com/eme/xr

Precision Actuator with Linear Motor

400LXR Series

The XR precision actuators are upgraded to LXR actuators by the aid of the „linear motor“ option in order to increase dynamics and positioning accuracy.



Type	Motor type	Section (W x H) [mm]	Max. Stroke [mm]	Max. Speed [m/s]	Continuous / peak-thrust force [N]	Max. Load [kg]	Repeatability [μm]
404LXR	8-pin	100 x 60	50...1000	3.0	50/180	45	± 1.0
406LXR	8-pin	150 x 70	50...1950	3.0	75/225	180	± 1.0
406LXR	12-pin	150 x 70	50...1850	3.0	110/330	180	± 1.0
412LXR	12-pin	285 x 105	150...3000	3.0	355/1000	950	± 1.0

For additional information please see our website www.parker.com/eme/lxr

Economy Actuator with Screw Drive

400XE Series

As not all actuators used in a system must be positioned with the utmost precision, we developed the cost-efficient XE actuator (E = Economy). The XE actuator is compatible with the XR or the LXR actuators.



Type	Section (W x H) [mm]	Max. Stroke [mm]	Max. Speed [m/s]	Max. Load [kg]	Axial Force [N]	Repeatability [μm]
402XE	57 x 36	70...220	0.45	90	127...166	±5
403XE	80 x 45	55...655	0.8	160	264...304	±5
404XE	95 x 48	25...700	1.5	122	588...686	< ±20

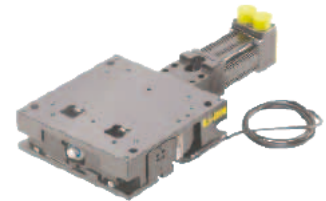
For additional information please see our website www.parker.com/eme/xe

Miniature Lifting Table with Screw

ZP200 Series

The ZP200 precision lifting table features a screw drive designed for loads up to 75 kg. Like all Parker precision products, the lifting table is delivered with a test certificate.

There are two variants:
ZP200P precision version
ZP200S standard version



Type	Section (W x H) [mm]	Max. Lifting height [mm]	Speed [m/s]	Max. Load [kg]	Repeatability [μm]
ZP200P	200 x 60.4	25	0.44	15	±3.0
ZP200S	200 x 60.4	25	0.44	75	±5.0

For additional information please see our website www.parker-eme.com/zp200

Precision Miniature Tables

MX Series

In the course of miniaturization in the fields of fiber optics, photonics, electronics and biomedicine, increasingly small and efficient

positioning systems are required. The MX miniature positioning table by Parker is the smallest system featuring a linear servo motor

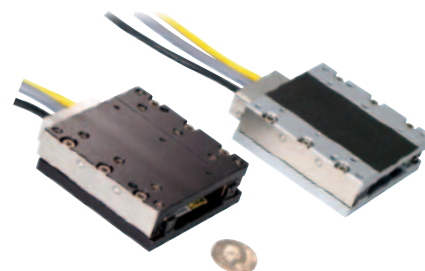
available on the market. This redefines the term „automation with high efficiency“ within the world of miniature positioning systems.

Miniature Table with Linear Motor

MX80L Series

Despite the small dimensions, the MX80L offers a maximum throughput and reliability. All important components are integrated into the table. The heart piece of the MX80L is an innovative, patent-pending linear servo motor. This direct drive has been optimized with respect to force, speed and acceleration.

A high-precision linear encoder available with resolutions of 10 nm to 5 µm, offers high repeatabilities. The MX80L is furnished ready for connection with 1 m high flex cable in two variants. MX80LP in precision version MX80LS in standard version



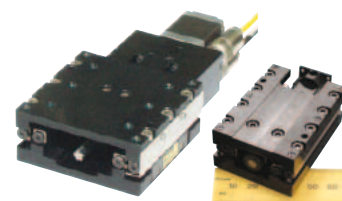
Type	Section (WxH) [mm]	Material	Max. Stroke [mm]	Max. Speed [m/s]	Continuous/peak-thrust force [N]	Max. Load [kg]	Repeatability [µm]
MX80LP	80 x 25	Steel	25...150	2.0	8/24	8	±0.4
MX80LS	80 x 25	Aluminum	25...150	2.0	8/24	8	±0.8

Miniature Table with Screw

MX80S, MX45S Series

The MX miniature positioner with screw drive is an intermediate stage within the product range between the highly dynamic linear motor MX80L and the manual model Mx80M. The MX..S is available in two variants either with a highly efficient

screw drive or with a precision-ground ballscrew drive. MX45SP, MX80SP as precision version, MX45SS, MX80SS as standard version.



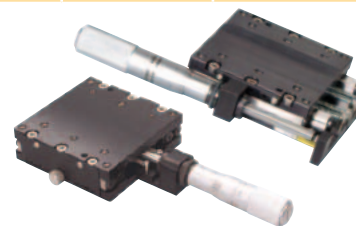
Type	Section (WxH) [mm]	Drive	Max. Stroke [mm]	Speed [m/s]	Max. Force [N]	Max. Load [kg]	Repeatability [µm]
MX80SP	80 x 35	Ballscrew	25...150	0.1	123	8	±1.5
MX80SS	80 x 35	Leadscrew	25...150	0.2	44	8	±5.0
MX45SP	45 x 25	Ballscrew	5...25	0.03	40	7	±1.0
MX45SS	45 x 25	Leadscrew	5...25	0.02	40	7	±2.0

Miniature Table with Micrometer Drive

MX80M Series

Precision micrometer for manually controlled point to point positioning along a linear path. Devices with free

motion are ideal for smooth, precise low-friction linear guides.



Type	Cross section (W x H) [mm]	Material	Max. Travel Stroke [mm]	Max. Load [kg]
MX80M	80 x 25	Aluminum	50	20

For additional information please see our website www.parker.com/eme/mx



Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



Aerospace

Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical

Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings



Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors



Pneumatics

Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors



Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves



Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

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