



1.1 LINEARMECH LINEAR ACTUATORS

Linearmech electromechanical linear actuators are motorized mechanical cylinders able to transform a rotary movement of a motor into a linear motion.

Able to work under push or pull load. Due to the mechanical resistance of their components, many actuators can support push loads higher than pull loads.

Their main characteristics are the high performance reliability, with or without load, and the low noise level.

Their installation is simple and not expansive: it requires just a front and rear hinging as for standard hydraulic and pneumatic cylinders.

They can effectively replace pneumatic and hydraulic cylinders being able to perform:

- Reliability in push-pull motion
- Accuracy in stopping position
- Position holding under load (self-locking)
- Energy consumption during operation only
- Easy installation; only power and control electrical cables are required
- High safety in load lifting (static self-locking and safety nut available)
- Safe operation even in very high or very low temperature conditions without risk of freezing or fire; electromechanical cylinders do not use air or oil under pressure

The wide range of sizes, stroke lengths, motor types, linear speeds and available accessories makes it easy to use these products not only in new applications but also to replace hydraulic and pneumatic cylinders, improving the solution in terms of performances and economical advantages.

Linearmech S.r.l. Technical Dpt. is available to carry out calculations, technical checks and norm certifications issue according to customer requirements.

The technical catalogue in PDF format and 3D/2D models of standard products selected with a configurator can be downloaded on our website www.linearmech.it. For customized products and dimensioned drawings, please contact: info@linearmech.it.

Linearmech S.r.l. offers:

- Complete range of **standard electromechanical linear actuators** as per catalogue.

The mounting is carried out upon customer's purchase order. All components are available on stock. This ensure very short delivery time and immediate availability in case of machine stop.

- **Customized electromechanical linear and rotative actuators.**

The customization is carried out according to customer specific requirements. It can involve simple modifications of existing models up to the design and execution of completely tailor-made products, exclusively manufactured for a specific customer.

On request, products can be marked with customized label.

Linearmech electro-mechanical actuators are totally manufactured in Italy in the plant located in Anzola dell'Emilia (Bologna). All components used in the production are of Italian manufacture.

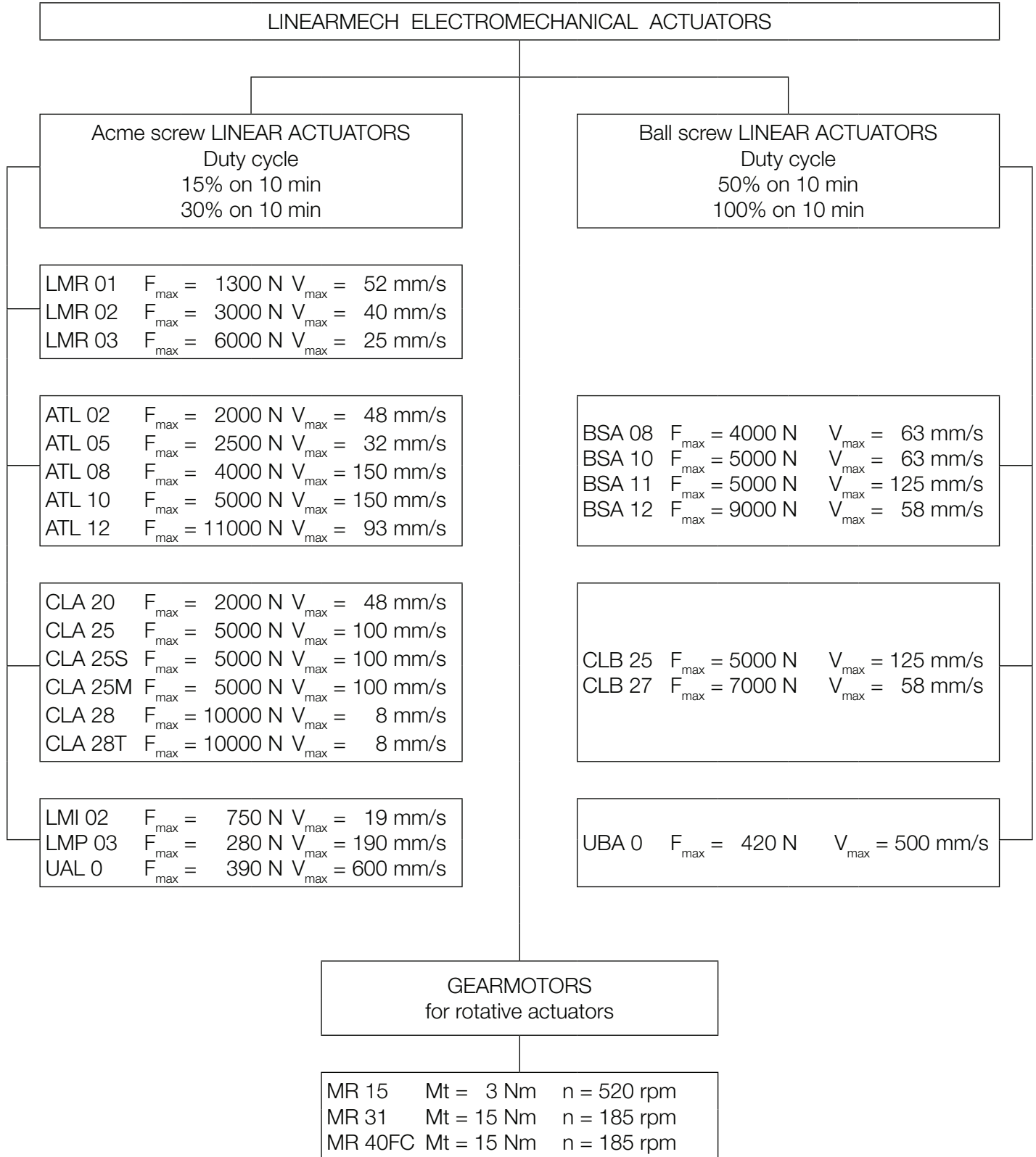
As a matter of fact, the entire product can be defined as "Made in Italy", assuring a constant total quality, checked by professional and skilled personnel.



1.2 LINEARMECH ACTUATORS RANGE

Linearmech linear actuators range consists of two main product groups determined by their different linear drives:

- Acme screw linear actuators;
- Ball screw linear actuators.





1.2 LINEARMECH ACTUATORS RANGE

LMR Series

Acme screw linear actuators, 3 sizes available. DC motor.
Built-in adjustable stroke end switches activated by self-keeping commutation devices.
Load capacity up to 6 000 N, linear speed up to 52 mm/s

ATL Series

Acme screw linear actuators, 5 sizes available. DC or AC 1-phase or 3-phase motors.
Adjustable stroke end magnetic reed switches and external adjustable stroke end electric switches.
Load capacity up to 11 000 N, linear speed up to 150 mm/s

CLA Series

Acme screw linear actuators, 6 sizes available. DC or AC 1-phase or 3-phase motors.
Adjustable electric cam-operated stroke end switches fitted in closed box.
Rotative potentiometer for positioning control.
Load capacity up to 10 000 N, linear speed up to 100 mm/s

LMI 02

Acme screw linear actuator with compact cylindrical shape, small overall dimensions. DC motor.
Max load 750 N, linear speed up to 20 mm/s

LMP 03

Acme screw linear actuator with motor mounted parallel to actuator axis. DC motor.
Max load 280 N, linear speed up to 190 mm/s

UAL 0

Acme screw linear actuator, timing belts and pulleys transmission, with parallel motor design. DC motor.
Adjustable stroke end magnetic reed switches.
Max load 390 N, linear speed up to 600 mm/s

BSA Series

Ball screw linear actuators, 4 sizes available. DC or AC 1-phase or 3-phase motors. Motor brake available.
Adjustable stroke end magnetic reed switches and external adjustable stroke end electric switches.
Load capacity up to 9 000 N, linear speed up to 125 mm/s

CLB Series

Ball screw linear actuators, 2 sizes available. DC or AC 1-phase or 3-phase motors. Motor brake available.
Adjustable electric cam-operated stroke end switches fitted in closed box.
Rotative potentiometer for positioning control.
Load capacity up to 7 000 N, linear speed up to 125 mm/s

UBA 0

Ball screw linear actuator, timing belts and pulleys transmission with motor mounted parallel to actuator axis.
DC motor. Adjustable stroke end magnetic reed switches.
Max. load 420 N, linear speed up to 500 mm/s

MR Series

Motorgears for rotative actuators. DC motor. Bi-directional, incremental encoder with 2 output channels
Adjustable electric cam-operated stroke end switches. Rotative potentiometer single turn 5 kOhm.



1.3 MANUFACTURING FEATURES

Linearmech linear actuators are totally manufactured in Italy and assembled in our plant located in Bologna. All materials used in the production are of Italian origin.

Methodical controls are carried out in-line during manufacturing process to monitor the production quality and functional checks are carried out on every finished assembled product to ensure the total quality and reliability of the final product.

Input drives

- Worm gear, geometric design for high performances and efficiency.
Worm shaft fitted or extracted directly on the electric motor shaft for a more compact and cost effective solution, allowing the integrated electric motor mounting on the actuator housing.
Helical wormwheel in bronze EN 1982 – CuSn12-C or in plastic material and high resistance Delrin® 500
- Timing pulleys UNI ISO 5294:1991 in aluminium for low inertia
Timing belts UNI ISO 5296-1:1991

Housing

- Casting in aluminium alloy EN 1706 AC-AISI9T6 machined with CNC machinery to ensure a high precision level.
- Die casting in aluminium EN 1706 AC-AISI11Cu2(Fe) machined in the bearing housing.

Trapezoidal acme screws Tr profile ISO 2901 ... ISO 2904

Material: steel C 43 (UNI 7847)

Rolled and subjected to straightening process to ensure the regular alignment in operation and avoiding undesirable noises and loss of efficiency.

Max pitch error ± 0.5 mm over 300 mm thread length

Bronze nuts Tr profile ISO 2901 ... ISO 2904

Material: Bronze EN 1982 – CuAl9 Tr 1-start
Bronze EN 1982 CuSn12 Tr 2 or 3 starts
Delrin® 500

Ball screws

Rolled and hardened, manufactured by Servomech SpA S.U.

Material: steel 42 CrMo 4 (UNI EN 10083)

Precision Class ISO IT 7

Max pitch error ± 0.5 mm over 300 mm thread length

Ball nuts

Manufactured by Servomech SpA S.U.

Material: steel 18 NiCrMo 5 (UNI EN 10084)

Hardened and ground

Microfinishing

Max axial backlash (0.07 \div 0.08)

Ball nut without play or pre-loaded on request

Push rods

- Material: Chrome plated steel ST 52 DIN 2391 - tolerance on outer diameter f7
- Anodized aluminium for small size actuators
- Push rods in stainless steel AISI 304 on request

Outer protective tubes

- Drawn profiles in aluminium EN AW 6060 T5
- Aluminium alloy tubes 6060 UNI 90005/1 anodizing 20 μ m
- Cold-drawn steel St 52.2 DIN 2391

Front and rear attachments

Wide range of options: clevis ends and ball joints

Both front and rear attachments are provided with self-lubricating bronze bushes to reduce frictions and sticking and to improve the efficiency (not available for small size actuators).

In order to select the most suitable linear actuator, it is first necessary to analyse the application to determine the required performances and the working conditions.

1. Basic performances required

- Stroke
- Push or pull load
- Linear speed

1.1 The load and the linear speed, if considered separately, determine the required type of linear actuator to be selected; if considered as contemporaneous performances they determine the required power and, therefore, the actuator's size.

1.2 The stroke length may influence the selection of the actuator's size only in case of very long stroke lengths and high push loads; in such a case, the buckling resistance of the screw should be checked. For more details and support, please contact our Technical Dpt.

2. Working and duty cycle

The single working cycle and the total actuator's duty cycle determine the choice of an actuator with acme screw or, alternatively, with ball screw.

The section "**Performances and Features**" states the duty cycle with max load admitted for each actuator.

The duty cycle, expressed in % over a 10 minutes period, is the percentage of time referred to 10 minutes, during which the actuator can operate under the maximum load conditions stated in this catalogue at (-10 ... +40) °C environment temperature.

Generally, the acme screw linear actuators can work with duty cycle of 15% or 30% over 10 minutes (depending on the electric motor type), while the ball screw linear actuators can work with duty cycle of 50% up to 100% (depending on the electric motor type).

For preliminary checks or any doubt concerning the selection, please contact our Technical Dpt.

3. Electric motor type

Depending on the series and the type, linear actuators are available with 12, 24 or 36 V DC motor or with AC 1-phase or 3-phase motor.

Some types of motors are available also with positioning or stopping brake.

The motors available for each actuator are stated in the specific section "**Performances and Features**" and in the table concerning the motors specifications at the end of this catalogue.



1.4 SELECTION CRITERIA

4. Accessories

Linearmech linear actuators are supplied with a wide range of accessories as indicated in the specific section “**Accessories**” for each actuator size:

- adjustable stroke end limit switches
- incremental bi-directional encoders with 2 output channels
- analogic rotative potentiometer
- brake motor
- overload electronic protection
- dynamic overload mechanical protection
- many type of front attachments
- rear fixing supports
- stainless steel push rod
- electronic dynamic braking device
- programmable drivers

5. Working environment conditions

The external environment conditions in which the actuator is working are particularly important and shall be considered and evaluated, since they may strongly influence the regular functioning and the lifetime of the linear actuator.

The standard equipment of the linear actuators as well as the stated protection level against water and dust, are sufficient to enable the regular functioning in the main industrial applications.

Nevertheless, we recommend to report particular working environment conditions such as:

- Outside use, without proper auxiliary protections;
- Environment temperature lower than -10 °C or higher than +40 °C;
- Dusty environment and with polluting substances;
- Environments which require strong washing with acid or basic solutions;
- Use with strong external induced vibrations.

Finally, we are convinced that there is always a solution to any problem; what is important is to highlight and to analyze the problem in advance.

Our Technical Dpt. is available to evaluate with you the best technical and economical solution.