



Mechanical Motion Solutions for Military Land Vehicles

www.thomsonlinear.com

THOMSON[®]

Linear Motion. Optimized.

Proven performance in Aerospace and Defense

For over 70 years Thomson has provided simple, innovative, and dependable solutions for the Aerospace and Defense market. Thomson leverages over 30 years of commercial success in rugged Mobile Off-Highway markets including agriculture, construction, marine, and turf. We understand products that need to perform the first time and every time under the harshest conditions. Thomson provides rapid response to all customer needs with an extensive network of domestic manufacturing and distribution facilities.

Customization. Thomson is the industry leader in custom design. Many products are designed and built right here in the USA. Our engineering teams are accessible and able to work directly with customers to design the perfect solution. We have a full testing lab available to work directly with customer equipment to run vibration, shock, hot and cold cycling, load, life, and other environmental tests that provide critical data to optimize your solution. Flexible ISO 9001 certified manufacturing cells allow our facilities to provide quick turnaround on deliveries. This design flexibility and unique customization expertise give us an advantage to quickly provide our customers a cost-effective design that meets their exact requirements.

Rugged and reliable. Thomson's product portfolio has long been designed to withstand the rough, daily use of agricultural, construction, and marine applications and is ideally suited for applications in the defense industry. Thomson products are rugged and reliable, withstanding harsh environments to:

- Make manual jobs easier – reduce operator fatigue
- Automate tasks – improve efficiency and reduce costs
- Provide remote control – increase flexibility
- Remove operators from dangerous places – improve safety

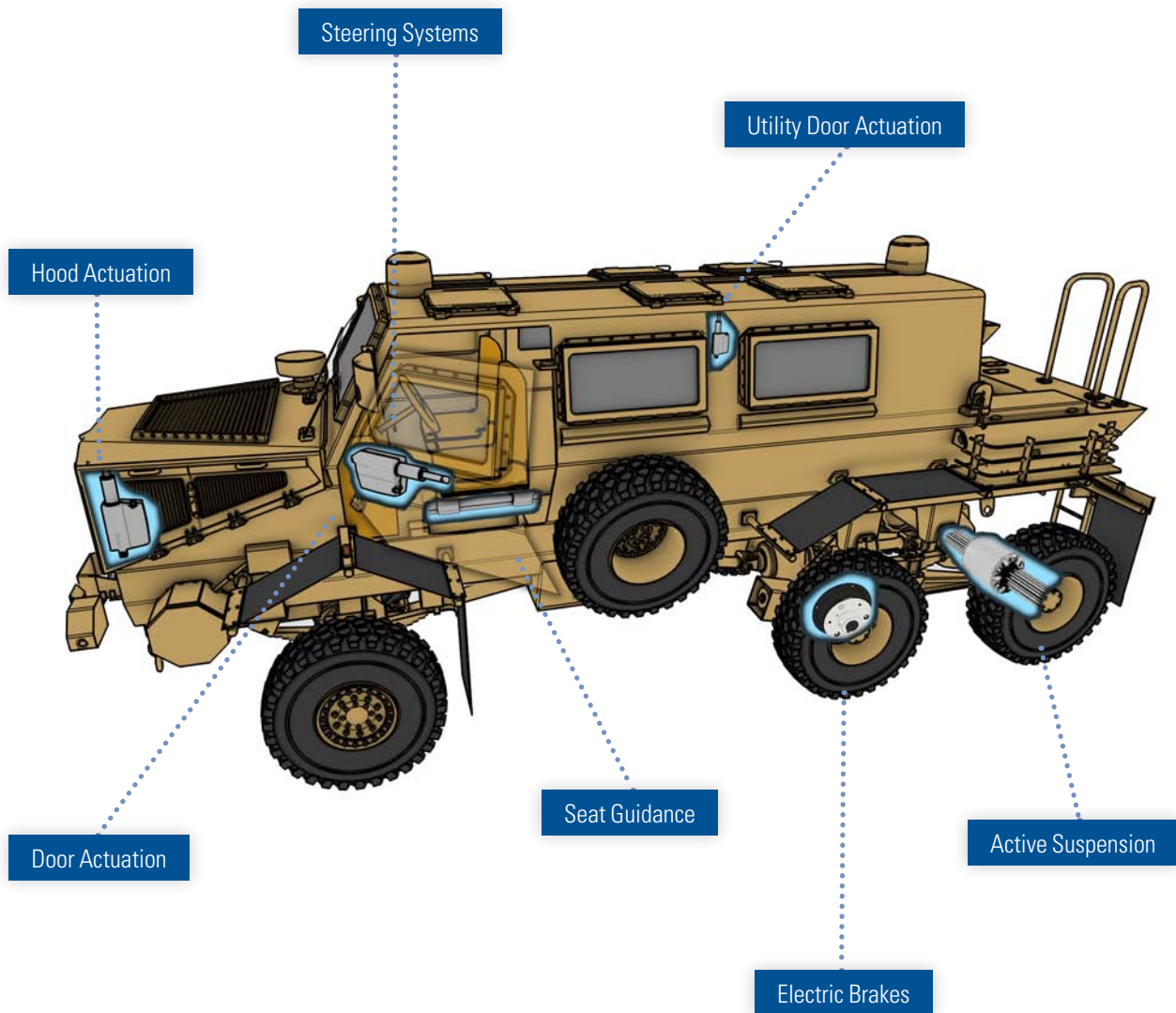
Changing technologies. Manufacturers are taking a long, hard look at the way they use motion control systems in their equipment. Once dominated by pneumatic and hydraulic systems, equipment is now increasingly designed to use electric linear actuators, precision linear actuators and screw jacks for automation in a large number of tasks. They are easier to control, integrate with modern computer based control systems. They are smaller, lighter, and cleaner than hydraulic systems – all attributes which increase safety and reliability. Electric linear actuators or screw jacks eliminate:

- The need for hydraulic pumps, valves and hoses
- The cost and bulk associated with hydraulic systems
- Environmentally hazardous oil and risk of leakage
- The high energy consumption of hydraulic systems
- Costly hydraulic reliability issues (contamination)
- The cost and hassle associated with fluid maintenance

Thomson Delivers for Military Land Vehicle Applications

Thomson solutions for military land vehicle applications extend to every facet of vehicle operation and also enhance weapons and gun systems associated with the vehicles. This graphic represents just some of the solutions currently being explored.

Thomson has many door actuation and seat guidance solutions in the field today. These advances in vehicle technology provide troops superior vehicle safety and security with ease of use unrivaled by other technologies.



Land Vehicle Solutions Specific for Actuators

As combat presents new challenges and requires greater capabilities and flexibility to meet ever changing threats, manufacturers realize that the military needs rapid, intelligent solutions to protect its most important asset - its people. Thomson has many years of experience providing creative, rugged solutions to the Mobile Off-Highway market. That experience enabled us to develop a toolkit of rapidly deployable solutions which can be quickly customized for the unique needs of the military market.

Thomson provides custom actuation solutions as a standard that provide long lasting service with zero maintenance. These solutions are easily incorporated into both new and existing vehicles and with minimal effort to suit your specific application needs.

The largest linear actuator range in the market

Thomson also has the largest, unmatched range of electrical linear actuators, precision linear actuators, and screw jacks in the market today. We are the market leader with millions of actuators in the field used in a vast array of unique applications with dynamic loads up to 9,000 N.

Our success is driven by:

- Decades of application and engineering expertise
- Robust and reliable products that withstand the harshest environments
- An extensive standard and modified product range
- Custom designs for unique applications

Solutions for Door and Hatch Actuation

Making jobs easier

- Shifting manual transmission
- Lifting equipment into a vehicle
- Opening and closing doors
- Automating a process

Providing remote control

- Throttle control from the rear of tanks
- Opening/closing the hood/engine covers
- Belt tensioning

Removing people from danger

- Sliding a cover over a tank turret

Replacing hydraulics or pneumatics

- Power steering
- Trailer lifts
- Cat 1 litter lift

Other Featured Solutions:

- Active Suspension Solution
- Electric Brakes
- Seat Guidance / Drivers Controls / Steering Systems
- Weapons systems
- Auto Hitch (trailer)
- Ambulance Litter Storage
- Cargo Handling
- Engine Throttle controls
- Utility Actuation (Antenna, Etc)
- Door/Hatch Actuation



Vehicle Applications / Component Capabilities

- Gun Turret - Position Feedback
- Gun Turret - Clutch / Brake
- Environmental Control System - Clutch
- Door / Hatch Actuation
- Driver Controls
- Weapon Charging
- Utility Actuation
- Driver/Passenger Seat Guidance Systems

HET



Bradley



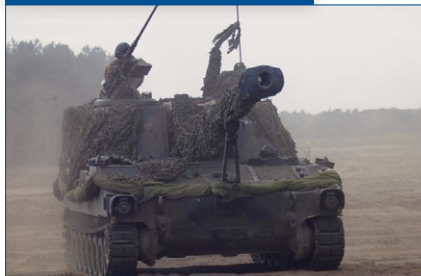
LAV



HMMWV



M109 Howitzer



MRAP



M1A1



Stryker



Product Overview

Thomson has proven solutions available today to bolt onto existing vehicles, as well as the ability to modify and customize quickly – available at one of the two domestic and two international manufacturing facilities. With over 70 years of Aerospace and Defense experience and over 30 years of Mobile Off-Highway experience, Thomson has the right people with the right mix of solutions for military land vehicles. Our products are built to withstand the toughest agriculture, marine, and construction applications in the harshest environments.

Linear Actuators



ELECTRAK 10

- Robust, strong and reliable
- Withstands very harsh environments
- Stainless steel extension tube
- Acme or ball screw models
- A variety of DC voltage models
- Clevis mounting



ELECTRAK PRO

- The next generation in actuator design
- Designed for the harshest applications
- Electronic load monitoring (ELM)
- Small size with minimal retracted length
- Acme or ball screw models
- IP66 protection as standard
- Manual override as standard
- Wide range of options
- Clevis mounting
- Optional programmable limit switches and feedback



E050

- Small, quiet and lightweight
- Short retracted length
- Durable, corrosion free plastic housing
- End of stroke limit switches with dynamic braking
- Maintenance-free
- Internally restrained extension tube
- Vibration resistant
- Internal load limiting clutch
- Optional mounting brackets
- Optional feedback



ELECTRAK PPA

- Strong and versatile heavy duty actuator
- A variety of AC and DC voltage models
- High duty cycle
- Long stroke lengths
- Large range of options
- Trunnion mounting
- Long stroke lengths with column loading

Additional Thomson Products



ROUNDRAIL LINEAR GUIDES

Driver and Passenger Guidance Systems

- North American production and assembly
- Quick turnaround, custom machining
- High quality, best materials
- Smooth, accurate motion
- Loads from 5 - 2000 lbs



BALL SCREWS

Transmission, Active Suspension

- Low backlash
- Low drag torque
- Long lasting
- Eliminates skidding
- North American production and assembly



CLUTCHES / BRAKES

Turret Controls

- AS9100 Approved Supplier
- Mil-I-45208 Approved Supplier
- Tooth, multiple disc, wrap spring, and friction
- Ideal for applications including high/low temp, shock, vibration, salt spray, dust, and vacuum
- North American production and assembly



GEARHEADS

Position Feedback

- High torque in small package
- Self contained for harsh environments
- Increased stiffness for heavy shock loads
- No maintenance required
- Easily customized



LINEAR SLIDES

Weapon Charging

- Low backlash
- Low drag torque
- Long lasting
- Eliminates skidding
- High repeatability

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