



Linear Actuators for Off Highway Vehicles

www.thomsonlinear.com

THOMSON[®]
Linear Motion. Optimized.

Why Go Electric?

Replacing hydraulic and pneumatic cylinders with electrical linear actuators means a simpler and smaller installation, easier control, lower energy costs, higher accuracy, less maintenance, less noise and a cleaner, healthier environment.

Simpler, Smaller Installation

- Installs with just 2 pins, making installation quick.
- Smaller footprint created over traditional methods.

Easier Control

- Operate with very little force, reducing operator effort.
- By using a joystick, the operator can execute multiple motions simultaneously.
- Provide remote control - increase production.

Lower Energy Costs

- Electric actuation components cost less than comparable hydraulic and pneumatic systems.
- One electric linear actuator is faster and easier to install than the multiple hydraulic and pneumatic components required to achieve the same function, thereby reducing the time and cost of installation.
- There is no need to upsize the current system to account for any parasitic power draw. Actuators run off a battery.
- There is no need for a pump running continuously, and no amp draw to hold the load in position.

Higher Accuracy

- Holds power position when off so you don't have to keep a pump running.
- Will not drift when power is off.

Less Maintenance

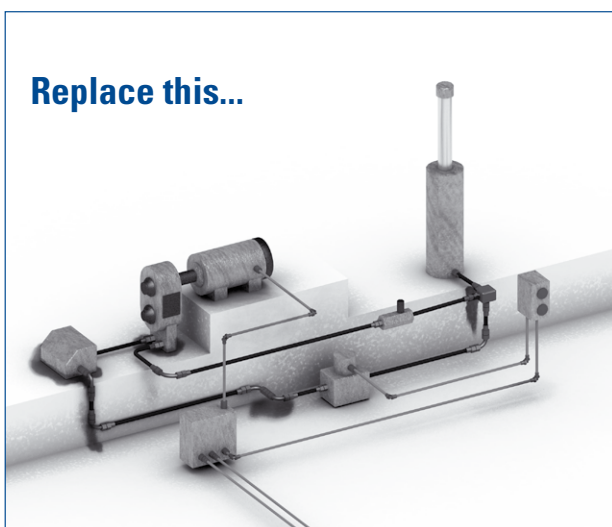
- No need for hydraulic pumps, valves and hoses means less parts to malfunction or wear out.
- Self-contained unit eliminates the need for easy access, so unit can be placed virtually anywhere in the application.
- No need to resize or change out hydraulic components, break into the system to add components.
- Programmable and end-of-stroke limit switches extend the life of the actuator eliminating the need for costly maintenance and replacement.
- Eliminate the cost and hassle associated with fluid maintenance.

Less Noise

- No pumps, air pressure or fluids needed means smooth, quiet operation.

Cleaner, Healthier Environment

- No fluids, chemicals, or solvents necessary for operation mean there is nothing to leak out or contaminate the environment.
- A compact design means less materials used in production.
- Regional manufacturing and distribution plants mean the product doesn't have to travel as far, reducing the carbon footprint.



Why Thomson Actuators?

Thomson is the original electrical linear actuator manufacturer. For over 40 years, our engineers have designed actuators to provide the unique features that off-highway applications require.

Changing technologies

Off-highway vehicle 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 equipped with electric actuators that are smaller, lighter and cleaner, easier to install and integrate with modern control systems. In fact, linear actuators 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.

Rugged and reliable

Thomson electric linear actuators 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 production.
- Remove operators from dangerous places - improve safety.

The largest linear actuator range in the market

Thomson has the largest range of standard and custom electrical linear actuators in the market. We are able to provide positioning solutions for a vast array of unique on/off-highway applications for dynamic loads up to 9000 N (2000 lbf). Our success is driven by:

- Understanding the critical needs of the on/off-highway industry.
- Decades of application and engineering expertise.
- Robust and reliable products.
- An extensive standard and custom product range.
- Custom designs for unique on/off-highway applications.

Customization

Thomson is the industry leader in custom actuator design. Our design flexibility and unique customization expertise give us an advantage to quickly provide cost-effective designs that meets the requirements.

Electrak 1

- Very compact and lightweight.
- Ideal for replacement of comparable size pneumatic and hydraulic cylinders.
- Integrated potentiometer or end of stroke limit switches.
- Corrosion resistant housing.



Electrak 050

- Small, quiet and lightweight.
- Very short retracted length.
- Low cost.
- Corrosion free plastic housing.
- End of stroke limit switches.

Electrak PPA-DC

- Strong and versatile heavy duty actuator.
- High duty cycle.
- Long stroke lengths.
- A variety of DC voltage models.
- Large range of options.



Electrak 10

- The original on/off-highway actuator.
- Robust, strong and reliable.
- Withstands very harsh environments.
- Stainless steel extension tube.
- Acme or ball screw models.
- A variety of DC voltage models.

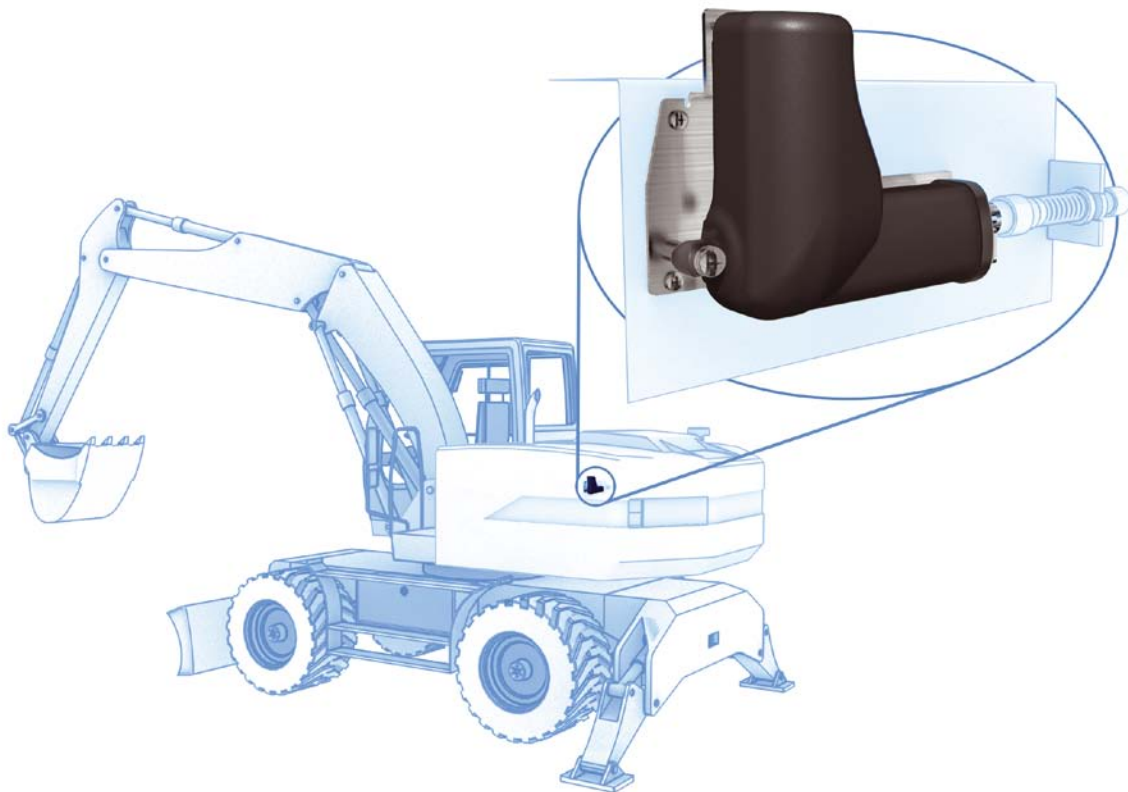
Electrak Pro

- 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.



Throttle Control - Automatic Control of Engine Speed

Throttle actuators allow automatic control of engine speed for reduced noise and emissions, and improved fuel economy.



Reduces design cost

- Flexible potentiometer models allow easy interface with multiple controls.
- Variety of speed options to match application requirements.
- Optional mounting brackets for reduced design time.
- Multiple feedback options.
- Compatible with multiple engine platforms as an add on.

Reduces installation cost

- Optional mounting brackets for easy installation.
- Variety of mounting accessories.
- No need to accommodate large bend radius of wire wound throttle cables.
- Allows for placement of actuator to accommodate easy installation - no direct access needed for maintenance.

Reduces operating cost

- Maintenance free - lubricated for life.
- Allows automatic return to low speed for economy and emission reduction.
- Allows for automatic rapid resumption of operating speed based on demand.

- Designed to withstand underhood temperatures, vibrations and moisture (IP66) and high cycle life for maintenance free operation.

Reduces working capital

- Reduce inventory cost of engines with and without factory controls to one design.

Increases safety

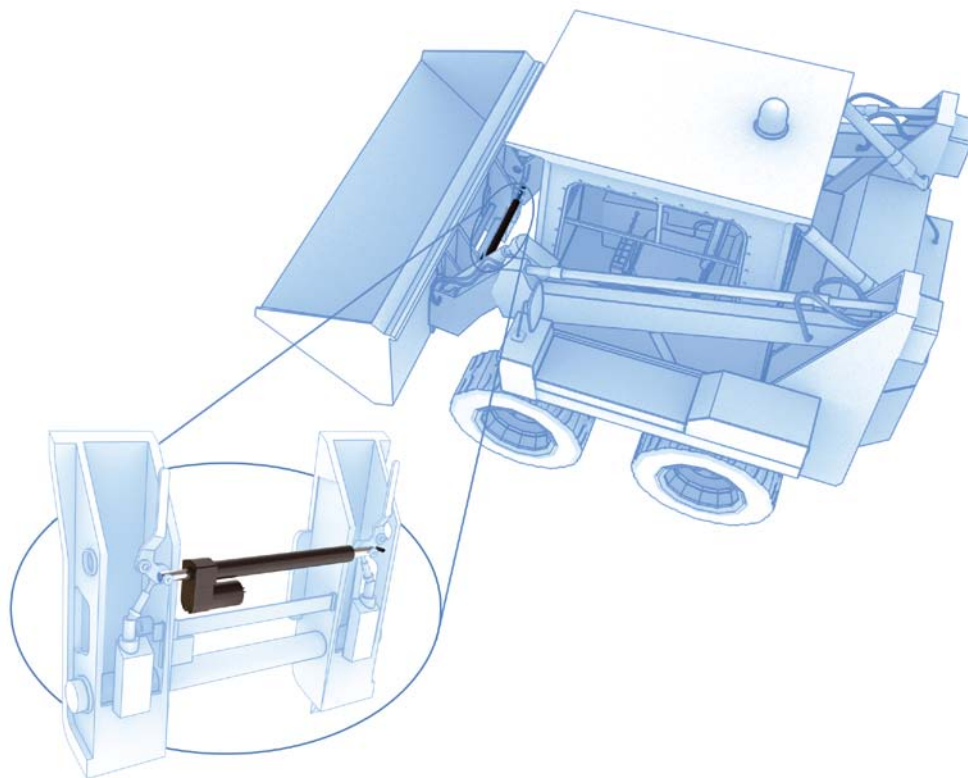
- Easy interface with seat interlock, other sensors for automatic shut off or speed reduction.
- Noise management through engine rpm control.
- Reduced operator fatigue with lower noise levels.
- Speed controls can be placed in ergonomic positions rather than positions required by wire wound throttle cables.

Increases productivity

- More operator up time with fewer refueling stops - lower fuel consumption.
- Automatic and immediate return to working speeds upon demand.
- Automatic speed adjustments reduces the workload on the operator.

Quick Attach - Remote Operation of Implement Safety Locks

Quick attach actuators allow the operator to change implements on the loader or skid steer without leaving the seat for improved productivity and safety.



Reduces design cost

- Easy interface with multiple electronic controls.
- Can be operated by a simple switch.
- No need to accommodate large bend radius of hoses.
- No need to design system of hoses, valves, controls, filters, switches, etc.

Reduces installation cost

- Easy interface with multiple electronic controls.
- Easy to retrofit into existing applications.
- No need to accommodate large bend radius of hoses.
- Fewer parts to install - 2 wires and a switch instead of valve, valve operator, hoses, filter, switches, etc.
- Reduce installation labor and materials by eliminating hoses, valves and cylinders.

Reduces operating cost

- Maintenance free - lubricated for life.
- Replace costly, complicated hydraulic systems and long runs of hydraulic hoses.
- No hoses to fatigue and rupture, no filters to change.
- No chance to introduce debris into the main hydraulic operating system.

- Holds position with power off - no parasitic drain on the hydraulic system.
- Connection with simple wiring is easier to protect from damage than hydraulic hoses.

Reduces working capital

- Fewer parts to inventory.
- Can easily be added to existing vehicle at the factory or dealer.

Increases safety

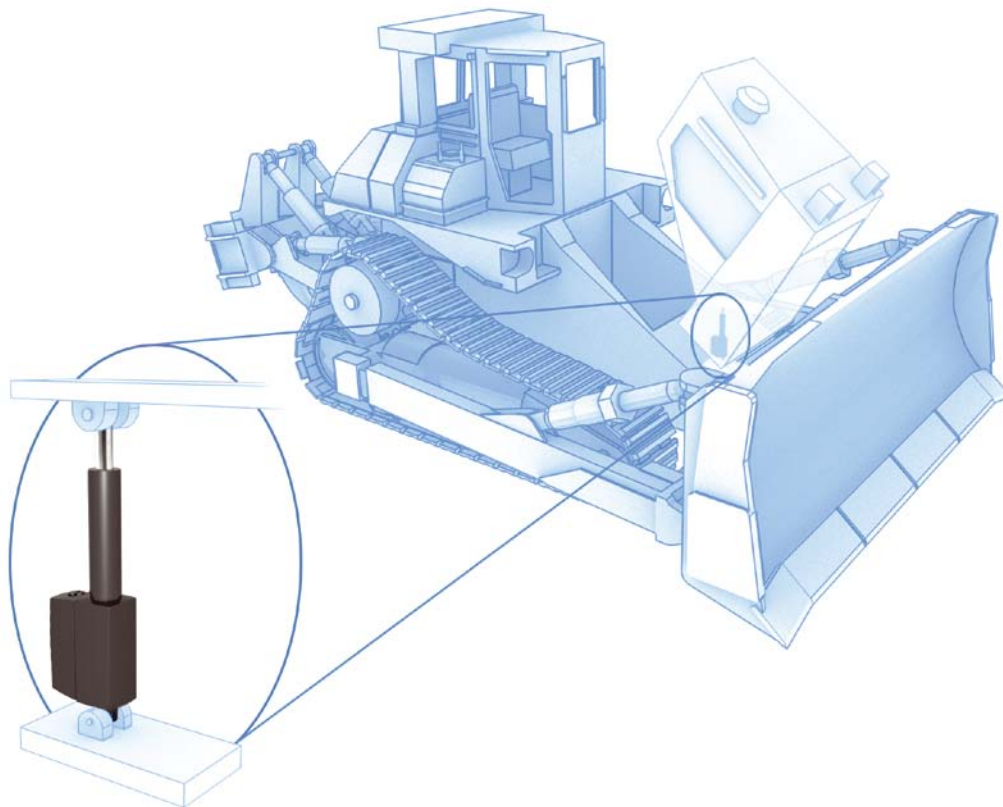
- Allows the operator to change implements without leaving his seat.
- Eliminates a pair of high pressure hoses from the operator cab.
- No extra operator required to change implements.
- Provide the potential for position interlock to ensure safe operation.

Increases productivity

- Faster change of implements.
- Single operator can change implements without leaving the seat.

Hood lift - Remote and Powered Lifting of Hood or Panels

Hood and access panel lift actuators provide easy and safe access to engines and other parts of the vehicle for maintenance and repair.



Reduces design cost

- Easy interface with multiple electronic controls and interlocks.
- Needs only a switch to operate.
- Built in clutch or limit switches for end of stroke protection
- Fewer components than hydraulic systems.
- Compatible with multiple chassis platforms as an add on.
- Wide temperature range for reliable operation in all conditions.

Reduces installation cost

- Easy interface with multiple electronic controls.
- Variety of mounting accessories.
- Built in clutch or limit switches for end of stroke protection.
- Fewer components than hydraulic systems.

Reduces operating cost

- Maintenance free - lubricated for life.
- High resistance to underhood temperatures, shock and vibration.

- Reliable operation - won't weaken with age or low temperatures.
- Provide controllable clamping force preventing overstressing hood materials.

Increases safety

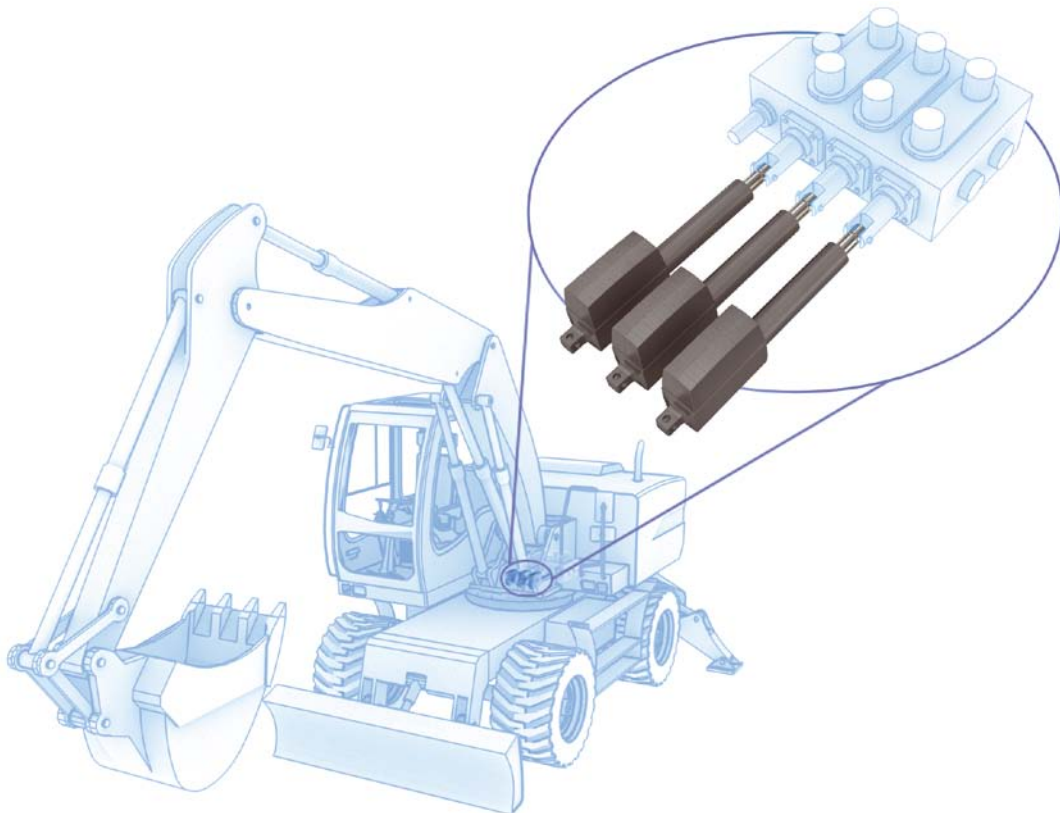
- Easy interface with interlock to prevent inadvertent operation.
- Holds position with power off - no drifting or backdriving in the wind.
- Reduced exposure of operator to awkward lifting positions with heavy loads.
- Manual over ride allows operation with dead or no battery.
- Will not leak hydraulic fluid reducing the environmental hazards and expense of clean up.

Increases productivity

- Allows one person to lift the hood or access panels.
- Includes a manual over ride function allowing engine access even with vehicle battery failure or removal.

Spool valve control - Remote Control of Spool Valves

Actuators replace mechanical linkage for spool valve control of boom and tilt cylinders for front end loaders enabling the use of joystick control.



Reduces design cost

- Easy interface with multiple electronic controls.
- Multiple speed and feedback options.
- Wires and switch can be placed anywhere, not limited by hose bend radius or located near operator.

Reduces installation cost

- Easy interface with multiple electronic controls.
- Variety of mounting accessories.
- No need to accommodate large hydraulic hoses.
- Actuators allow for more flexible positioning of spool valves in the machine for reduced installation cost and easier maintenance.

Reduces operating cost

- Maintenance free - lubricated for life.
- High resistance to temperatures, shock and vibration.
- Electronically controlled valves means less operator fatigue.

Increases safety

- Easy interface with seat interlock, other sensors for automatic shut off or speed reduction.

- Valves and hoses can be placed outside of the cab, eliminating a source of heat and high pressure hydraulics.
- Reduced operator fatigue with lower noise levels when valves and hoses are out of the cab.
- Programmable motions can reduce the chance of repetitive motion injuries.
- Removing multiple levers from the cab can increase operator comfort and visibility.
- Interlocks can prevent dangerous operations.

Increases productivity

- Less operator fatigue using electronics instead of mechanical linkages.
- Multiple operations can be combined on joystick controls allowing more simultaneous or coordinated moves.
- Lower operator training time by interlocking conflicting or dangerous moves.
- Joystick/actuator systems allow for user selected controls layouts - H or ISO patterns, right or left hand reversible.
- Increasing the speed of shaking the bucket for removal of debris.

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