Linear Actuators

Linear actuators for industrial, mobile, medical, office and domestic applications.

THOMSON®

Linear Motion. ***Optimized.***

www.thomsonlinear.com

THOMSON®

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Thomson – the Choice for Optimized Motion Solutions

Often the ideal design solution is not about finding the fastest, sturdiest, most accurate or even the least expensive option. Rather, the ideal solution is the optimal balance of performance, life and cost.

The Best Positioned Supplier of Mechanical Motion Technology

Thomson has several advantages that makes us the supplier of choice for motion control technology.

- Thomson own the broadest standard product offering of mechanical motion technologies in the industry.
- Modified versions of standard product or white sheet design solutions are routine for us.
- Choose Thomson and gain access to over 70 years of global application experience in industries including packaging, factory automation, material handling, medical, clean energy, printing, automotive, machine tool, aerospace and defense.
- As part of Danaher Corporation, we are financially strong and unique in our ability to bring together control, drive, motor, power transmission and precision linear motion technologies.

A Name You Can Trust

A wealth of product and application information as well as 3D models, software tools, our distributor locator and global contact information is available at www.thomsonlinear.com. For assistance in Europe, contact us at +44 1271 334 500 or e-mail us at sales.uk@thomsonlinear.com.

Talk to us early in the design process to see how Thomson can help identify the optimal balance of performance, life and cost for your next application. And, call us or any of our 2000+ distribution partners around the world for fast delivery of replacement parts.

The Danaher Business System

The Danaher Business System (DBS) was established to increase the value we bring to customers. It is a mature and successful set of tools we use daily to continually improve manufacturing operations and product development processes. DBS is based on the principles of Kaizen which continuously and aggressively eliminate waste in every aspect of our business. DBS focuses the entire organization on achieving breakthrough results that create competitive advantages in quality, delivery and performance – advantages that are passed on to you. Through these advantages Thomson is able to provide you faster times to market as well as unsurpassed product selection, service, reliability and productivity.

Local Support Around the Globe

Introduction

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Introduction

Company Introduction

The history of the Thomson Electrak® actuator goes back to the development of ball screw actuators 40 years ago in Marengo, IL, USA. The first generation of general purpose actuators were developed for control of accessory drives on garden tractors and farm equipment. Since that simple beginning, actuators are now used in all types of equipment to automate a process, remove people from dangerous situations, provide remote control or make difficult, tedious manual jobs easier.

The linear actuators in this catalog represent proven design concepts found in the entire Electrak series. From light load 050s to the high performance Electrak 10 series capable of handling loads up to 6800 N, Thomson offers features unavailable anywhere else.

The world's most versatile actuator selection
Thomson combined the clevis to clevis mount Electrak series, and the trunnion mount Electrak PPA units, to provide the most versatile selection of linear actuators available. Our actuator team has solved over 10000 tough application challenges with even tougher actuators. We built our reputation in the mobile off highway market in extremely demanding operating conditions. And if you can't find the actuator to meet your application, call us for a cost effective actuator built to your needs. Thomson builds more custom actuators than anyone.

You can count on Thomson
Thomson linear actuators – rugged, reliable remote linear motion control with the push of a button. You can count on Thomson for worldwide sales, service, application support and local availability. Please visit www.thomsonlinear.com for more information.

1967	1969	1974	1982	1984	1987	1988	1991
The first generation of actuators for use in garden tractors and farm equipment is released.	First line of ball screw driven actuators with right angle AC and DC motors is released.	First line of actuators with parallel motors and both acme and ball screw drive is released.	The "Tiger" line actuators are released for OEMs.	Electrak 1, 2, 5, 10 and 100 are released for distribution.	Electrak 205 and the first line of MCS controls are released.	Electrak 1SP with feedback potentiometer is released.	The first lifting columns, DMD and DMA, are released.







Introduction

Product Introduction

Thomson actuators are easy to mount and operate, require no maintenance, don't leak hydraulic fluid, are easy to incorporate into an automated process and once installed they will work reliably under the toughest conditions year after year.

Actuators offer advantages over mechanical and hydraulic systems in many applications. They are self-contained, rugged, and durable, making them ideal anywhere you want to lift, lower, push, pull, rotate or position a load.

Compact design
With their compact size, actuators can be located in confined areas. An actuator with a 100 mm stroke length can produce 6800 N of force from a 290 mm package. Electrak 1 and 050 series actuators fit small areas with package lengths as short as 115 mm.

Rugged and reliable
All Thomson actuators incorporate strong, high quality components to assure trouble-free service. Rugged spur, worm or helical gearing, aircraft quality lubricants and high performance motors provide the maximum life and value. The actuators are gasketed and sealed throughout for protection in wet, dirty and oily environments and are ideal for use on outdoor equipment. The rod style actuators have stainless steel or aluminum extension tubes to resist corrosion.

Maintenance-free
All adjustments and lubrication are made at the factory and no maintenance is required or recommended. Consistent, repeatable performance is provided for the entire lifetime of the actuator.

Bidirectional
Thomson actuators can push and pull loads ranging from one to 680 kg, and can extend up to 900 mm. With the Thomson series of actuator controls, you can create an actuator control system to meet your particular motion control requirements.

Safe operation
Motors used on Electrak actuators utilize thermal switches in their windings or Electronic Load Monitoring to shut the actuator off in case of overheating. A standard overload clutch or Electronic Load Monitoring will stop the motion if the load is too great or at the end of a stroke. All linear actuators will hold their loads with power removed.

Versatile
Stroke lengths of 25 to 1500 mms are available and speeds are as high as 110 mm per second. Actuators are easy to apply, quick to install and usually only requiring two wires for operation. A wide variety of options and controls makes it easy to find the perfect actuator for your application. And if you have special needs, cost effective custom solutions are our speciality.

1992	1994	1998	1999	2000	2006	2013	2014
A patent for a load lock device is granted.	Electrak 1LL is released.	Electrak 150 with two patents is released. AC control line is released.	Electrak 050 with patented design and the first rotary actuators are released.	The first LM80 rodless actuator is released.	The DCG control line is released.	Max Jac and Electrak Throttle are released.	The lifting columns range LC Series is released.








Introduction

The Benefits of Electrification

Electrification is converting manual, hydraulic and pneumatic operations to electromechanical motion. Substantially improved machine performance and cost advantages can be gained through electrification.

Reduce 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.
- Electric actuators feature quick and predictable system tuning when compared to the headaches of configuring hydraulic systems and their components which contend with power variation, temperature variation, and non-linear performance profiles.
- Compare zero maintenance electric actuators against the fluid replacement, leak repairs and other routine maintenance needed to support hydraulic systems.
- Eliminate the environmental problems and costs associated with hydraulic fluid leaks and fluid disposal.

Boost productivity and efficiency

- Improve control over critical machine operations with:
  - Multiple digital and analog feedback options
  - Fixed and programmable limit switches for "teach and repeat" positions
  - Low voltage switching options that can interface directly with programmable PC/PLC controllers
  - Pulse width modulation for variable speed control
- Superior accuracy and repeatability
- Link and automate simultaneous processes
- Reduce down time with:
  - Zero maintenance
  - Longer component life
  - Redundancy through manual override
- Improve safety and reduce costs by removing people from danger with convenient remote control

Great opportunities for electric conversion

Making jobs easier

- Raising and lowering a deck on a mower, paver or floor scrubber.
- Shifting manual transmission.
- Lifting wheelchairs into a vehicle.
- Opening and closing doors on buses or vans.

Automating a process

- Moving twine across a round bale of hay for consistent wrap.
- Varying the chute opening on a salt/sand spreader based on speed for consistent application.
- Lift and lower pantographs on electrical trains and trams.

Providing remote control

- Throttle control from the rear of garbage trucks.
- Positioning the discharge spout on a large chipper, snowblower or combine.
- Opening a chute on a salt/sand spreader.
- Positioning of solar energy panels and wind power plant turbines.
- Opening/closing the engine hatch on boats.
- Positioning boat, handicap vehicle seats.
- Belt tensioning.

Removing people from danger

- Sliding a cover over the stairs in a recreational vehicle.
- Throttle control for a tree stump grinder to keep the operator away from moving parts or flying debris.
- Medical waste/refuse compacting.

Replacing hydraulics or pneumatics

- Power steering.
- Dump beds on ATVs.
- Positioning mower decks on golf course equipment.

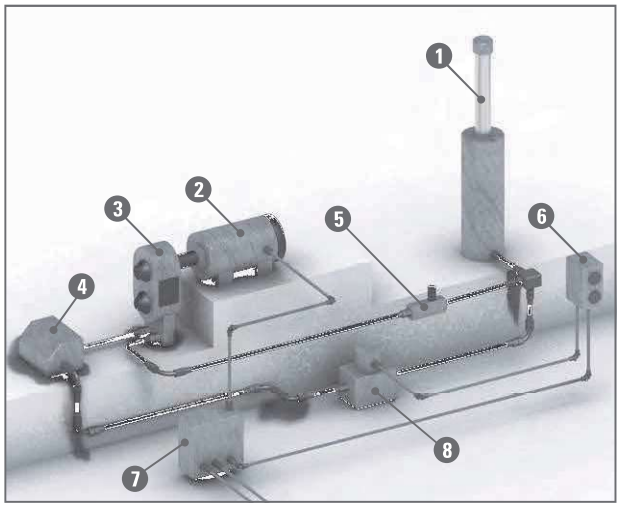




Introduction

The Benefits of Electrification

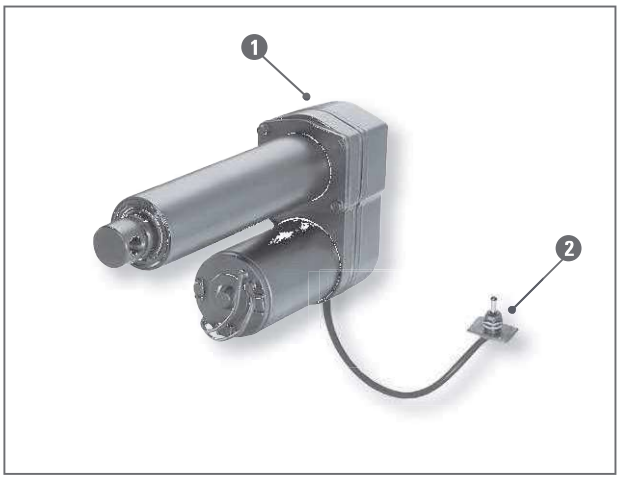
Replacing hydraulic or pneumatic cylinders with electrical linear actuators means a simpler and smaller installation, easier control, lower energy costs, higher accuracy, less maintenance, less noise and a cleaner, healthier environment.



You can design, purchase and install all these components or you can select and install an actuator and control.

Single acting, uni-directional hydraulic cylinder system
1. Hydraulic cylinder
2. Electric pump motor
3. Hydraulic pump
4. Hydraulic oil resevoir
5. Check valve
6. Operator push button box
7. Relay cabinet
8. Unloading valve

This single acting, uni-directional hydraulic cylinder system is one of the simplest hydraulic solutions. This system only allows consistent performance in one direction. In order to get consistent performance in both directions a bi-directional system would be required which is even more complex and costly.



Plug and play type of connections, simple installation and no need for any set up or adjustments ensures accurate, clean and trouble free operation within the hour.

Electric linear actuator system
1. Linear actuator
2. DPDT switch

This simple electrical actuator system will ensure consistent operation in both directions. It will also give you added features such as electronic load monitoring, end of stroke limit switches, mid stroke protection and manual override operation in case of power failure. Optional features such as analog or digital position feedback, adjustable end of stroke limit switches, end of stroke indication outputs and signal following capability are also available. Another advantage is that a system like this is easy to integrate with other control systems normally found in industrial systems or vehicles such as PLC's, micro-controllers, computers or simple relay based systems.

Introduction

Actuator Applications

Thomson Electrak actuators can be found in the most diverse applications, ranging from agricultural to industrial, ventilation and medical equipment. Anywhere you want to lift, lower, push, pull, rotate or position a load - only your imagination will set the limit.

Mobile-off-highway
Actuators are widely used in agricultural, construction, mining, forestry, road work and railway equipment for the control of seats, hoods, doors, covers, balers, pantographs, sprayer booms, throttles and much more.

Turf and garden
Actuators can be found on riding lawn mowers, golf carts, garden tractors, cleaning machines, sky lifts and other utility vehicles.

Industrial equipment
Actuators are used on conveyor belts, for adjustable work tables/platforms and in the opening and closing of hatches, doors and locks. They are also common in machines for dispensing, cutting, packaging, labeling, scanning or printing.

Health and fitness
Actuators are commonly used in patient lifts/beds, handicap adapted vehicles and wheel chairs to position patients or equipment. Other applications include hospital devices, examination chairs/tables and work out/gym apparatus.

Office, domestic and entertainment equipment
At home, in the office and in the entertainment business actuators are used in automatic doors, lifts, garage doors, gates, satellite dishes, beds, reclining chairs, adjustable office desks, arcade games, vending machines, theatre/TV/movie props and theme park attractions.

Marine
On boats, ships and oil rigs actuators are used in seats, hatches, fire doors, rescue equipment, valves and throttles.

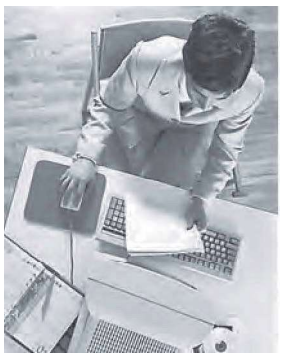
Ventilation and process control
Actuators are used for valve control in ventilation and process equipment.











Introduction

Selection Procedure

Thomson actuators have been divided into good, better and best groups to help you select the appropiate actuator for your application. By using the simple selection procedure described below and the Performance Overview on the next few pages, the process will be even easier.

Good
These actuators are the lowest cost solution, provide capable, reliable performance and have some flexibility of options and configurations. If you just need a basic actuator, this is the best choice.

Better
These actuators have more flexibility in options, configurations and modifications. They have passed the test of time in the toughest agriculture and construction applications. Choose from this group if you need a rugged, heavy duty actuator customized to your application.

Best
These robust and strong actuators are the market leaders with state of the art technology and flexibility. They are smaller, lighter and have a shorter retracted length than other actuators on the market. If you need electronic load monitoring, programmable limit switches, digital feedback or signal following, this is the group for you.

Selection procedure
Step 1 - Determine Voltage
DC actuators can be operated by battery, a rectifier or an actuator control with 230 Vac input. AC actuators are either 230 or 400 Vac.

Step 2 - Determine Load/Speed
Select the actuator which has the load and speed rating that suits your application.

Step 3 - Select Stroke Length
Choose the desired stroke length from either the Performance Overview pages or the individual product pages.

Step 4 - Verify Design Considerations
Do you need a very short retracted length, adjustable, fixed or programmable limit switches, electronic load monitoring, digital or analog feedback, low voltage power switching, manual override, signal following, clevis mounting, tube mounting or trunnion mounting? If you need an actuator to take side loads or cantilever loads, select from the LC-Series, DMD, DMA or LM80 actuators.

Step 5 - Select Control
The controls in the catalog are designed for use with Electrak actuators and range from a simple switch to a control with membrane switches and feedback display or with a hand pendant.

On-line selection software
On www.thomsonlinear.com you can select an actuator by using the actuator product advisor. This easy to use software lets you play with all the parameters and will give you all the relevant data and the correct ordering information for your choice.

Can't find what you are looking for?
If you are an OEM customer and can't find exactly what you need, contact customer service at +46 (0)44 24 67 90 for a custom solution.

Performance Overview

Standard Rod Actuator Range

	ROD ACTUATORS					
	E 1	E 1SP	E 050	E PPA-DC	E 10	E LA14
						
Product availability						
North America / Europe / Asia [1]	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•	/•/•
General performance						
Product group rating	good	good	better	good	better	best
Input voltage - Vdc / Vac [V]	12, 24, 36[2] /	12, 24, 36[2] /	12, 24, 36 /	12, 24, 36, 90[3] /	12, 24, 36 /	12, 24, 36 /
Maximum dynamic load [N]	340	340	500	6670	6800	6800
Maximum speed [mm/s]	75	75	48	33	60	60
Maximum stroke length [mm]	150	150	200	914	610	600
Restraining torque [Nm]	2,3	0	0	23	12	0
Protection class	IP65	IP65	IP56	IP52	IP65	IP65
Features						
Mounting configuration	clevis	clevis	clevis	trunnion	clevis	clevis/ trunnion
Screw type - acme / worm / ball	•/ /	•/ /	/•/	/ /•	•[2] / /•	•/ /•
Overload clutch			•	•	•	•
Motor overload protection	•	•	•	•	•	•
End of stroke limit switches	•		•			
Potentiometer feedback		•				
Dynamic braking			•[6]			
Optional features						
End of stroke limit switches				•	•[3]	
Potentiometer feedback			•	•	•	•
Encoder feedback				•		
External adjustable magnetic sensors						•
Manual override				•[3]	•	•
More information						
See page[1]	16	18	20	22	24	26
Actuator Controls						
Recommended control	AC-247 ELS	AC-247 ELS	DCG-150	AC-063	AC-063	AC-063

[1] Products not available in this region are not further described in this catalog. Contact customer support for more information.
[2] Not available in North America. [3] Not available in Europe. [4] For horizontal operation only.
[5] For vertical operation only. [6] At end of stroke only. [7] Trapezoidal screw.

Can't find what you are looking for?
Thomson is the industry leader in custom actuator design. If you do not find the right product for your application within our standard range, please contact customer service at Phone +46 (0)44 24 67 90 for a customized solution.

Performance Overview

Standard Rod Actuator Range

ROD ACTUATORS				
	E 5	**E LA24**	**E THROTTLE**	**MAX JAC**
				
Product availability				
North America / Europe / Asia [1]	•/•/•	/•/•	•/•/•	•/•/•
General performance				
Product group rating	better	best	best	best
Input voltage - Vdc / Vac [V]	/ 115[3], 230, 400[2]	/ 230, 400	12, 24	12, 24
Maximum dynamic load [N]	6800	6800	130	800
Maximum speed [mm/s]	60	60	96	60
Maximum stroke length [mm]	610	600	50.8	300
Restraining torque [Nm]	12	0	0	2
Protection class	IP45	IP45	IP67/IP69K	IP66/IP69K
Features				
Mounting configuration	clevis	clevis/trunnion	integrated	clevis
Screw type - acme / worm / ball	•[2] / / •	•/ / •	/ • /	/ • / •
Overload clutch	•	•	•	
Motor overload protection	•	•	•	
End of stroke limit switches				
Potentiometer feedback				•
Dynamic braking				
Optional features				
End of stroke limit switches	•[3]		•	
Potentiometer feedback	•	•	•	•
Encoder feedback				•
External adjustable magnetic sensors		•		
Manual override	•	•		
More information				
See page[1]	28	30	32	34
Actuator Controls				
Recommended control	DPDT Switch	DPDT Switch	DPDT, CanBus	upon request

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Performance Overview

Lifting Columns

	LIFTING COLUMNS				
	LC1600	LC2000	LC3000	DMD	DMA
					
Product availability					
North America / Europe / Asia [1]	•/•/•	•/•/•	•/•/•	•/•/•	•/•/•
General performance					
Product group rating	best	best	best	better	better
Input voltage - Vdc / Vac [V]	24	24	24	12, 24, 36 /	/ 115[3], 230, 400[2]
Maximum dynamic load [N]	1600	2000	3000	6800	6800
Maximum speed [mm/s]	11	19	8	60	60
Maximum stroke length [mm]	400	600	400	610	610
Restraining torque [Nm]	0	0	0	0	0
Protection class	IP44	IP44	IP44	IP65	IP45
Features					
Mounting configuration	base mount	base mount	base mount	base mount	base mount
Screw type - acme / worm / ball	•/ /	telescopic	/ /•	•/ /•	•/ /•
Overload clutch				•	•
Motor overload protection				•	•
End of stroke limit switches	•	•	•		
Potentiometer feedback					
Dynamic braking	•				
Optional features					
End of stroke limit switches					
Potentiometer feedback				•[2]	•[2]
Encoder feedback	•	•	•		
External adjustable magnetic sensors					
Manual override					
More information					
See page[1]	36	38	40	42	44
Actuator Controls					
Recommended control	DCG-154	DCG-180	DCG-180	AC-063	DPDT Switch

[1] Products not available in this region are not further described in this catalog. Contact customer support for more information.
[2] Not available in North America. [3] Not available in Europe. [4] For horizontal operation only.
[5] For vertical operation only. [6] At end of stroke only. [7] Trapezoidal screw.

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Performance Overview

Rodless Actuators

RODLESS ACTUATORS				
		LM80-H	LM80-V	LM80-I
				
Product availability				
North America / Europe / Asia [1]		• / • / •	• / • / •	• / • / •
General performance				
Product group rating		better	better	better
Input voltage - Vdc / Vac	[V]	12, 24 /	12, 24 /	12, 24 /
Maximum dynamic load	[N]	2000[4]	2000[5]	2000[5]
Maximum speed	[mm/s]	110	110	110
Maximum stroke length	[mm]	1500	1500	1500
Restraining torque	[Nm]	0	0	0
Protection class		IP44	IP44	IP44
Features				
Mounting configuration		T-slot	T-slot	T-slot
Screw type - acme / worm / ball		•[7] / / •	•[7] / / •	•[7] / / •
Overload clutch				
Motor overload protection				
End of stroke limit switches				
Potentiometer feedback				
Dynamic braking				
Optional features				
End of stroke limit switches				
Potentiometer feedback				
Encoder feedback				
External adjustable magnetic sensors				
Manual override		•	•	•
More information				
See page[1]		46	48	50
Actuator Controls				
Recommended control		DCG-170	DCG-160	DCG-160

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Performance Overview

Non-driven and Rotary Actuators

		E PPA-M	E FA14
			
Product availability			
North America / Europe / Asia [1]		• / • / •	/ • / •
General performance			
Product group rating		good	best
Max. input torque	[Nm]	9	1,8
Max. input speed	[rpm]	100	3000
Maximum dynamic load	[N]	6670	6800
Maximum speed	[mm/s]	8	37
Maximum stroke length	[mm]	914	600
Restraining torque	[Nm]	23	0
Standard features			
Mounting configuration		trunnion	clevis/trunnion
Screw type - acme / worm / ball		/ / •	• / / •
Overload clutch			•
Optional features			
Manual override			•
Protective bellows		•	
External adjustable magnetic sensors			•
More information			
See page[1]		52	54

[1] Products not available in this region are not further described in this catalog. Contact customer support for more information.

		ROTARY
		DGB
		
Product availability		
North America / Europe / Asia		• / / •
General performance		
Product group rating		better
Input voltage - Vdc / Vac	[V]	12, 24, 36 /
Maximum torque	[Nm]	20
Maximum speed	[rpm]	200
Maximum duty cycle	[%]	25
Protection class		IP56
Standard features		
Mounting configuration		clevis/tapped holes
Overload clutch		•
Motor overload protection		•
Optional features		
Dual ouput shafts		•
Manual override		•
More information		
See page[1]		–

[1] Products not available in this region are not further described in this catalog. Contact customer support for more information.

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Performance Overview

Legacy Actuators

	LEGACY ACTUATORS			
	E 1SL	**E 150**	**E100**	**E Pro**
				
Product availability				
North America / Europe / Asia	•/ /	•/•/•	•/ /	•/•/•
General performance				
Input voltage - Vdc / Vac [V]	12, 24 /	12, 24, 36 / 115[1]	24 /	12, 24 /
Maximum dynamic load [N]	340	2000	6800	4500
Maximum speed [mm/s]	76	71	48	51
Maximum stroke length [mm]	152	406	609	300
Restraining torque [Nm]	0	0	12	17 / 0[2]
Protection class	IP65	IP56	IP65	IP66 (67)
Standard features				
Mounting configuration	clevis	clevis	tube	clevis
Screw type - acme / worm / ball	•/ /	/•/	/ /•	•/ /•
Motor overload protection		•	•	•
Potentiometer feedback			•	•
Fixed end of stroke limit switches	•			
Adjustable end of stroke limit switches			•	•
Internally restrained	•	•		
Electronic load monitoring				•
Dynamic braking				•
Manual override				•
Optional features				
Adjustable end of stroke limit switches		•		
Potentiometer feedback		•		•
Encoder feedback				•
Programmable limit switches				•
End of stroke indication outputs				•
Low voltage power switching				•
Signal follower input				•

[1] Not available in Europe. [2] Without/with anti-rotation option.

About Legacy Actuators

The legacy products will not be further described in this catalog. We recommend you choose one of the products on the preceding pages, especially when designing new equipment. However, the legacy actuators can still be purchased and we fully support them. Please contact customer support if you need more information.

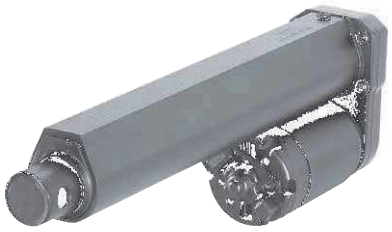
About Custom Actuators

The actuators you see on these pages are some of the building blocks we use to create cost effective custom actuators for OEMs. If you can't find the actuator that meets your needs, call customer service for a custom solution. Thomson is the industry leader in custom actuator design.

Electrak® 1

12, 24 and 36 Vdc - load up to 340 N

» Ordering Key - see page 74
» Glossary - see page 85
» Electric Wiring Diagram - see page 56



Standard Features and Benefits

- Very compact and lightweight
- Integrated end of stroke limit switches
- Corrosion resistant housing
- Self-locking acme screw drive system
- Maintenance free
- Ideal for replacement of comparable size pneumatic and hydraulic cylinders

General Specifications

Parameter	Electrak 1
Screw type	acme
Internally restrained	no
Manual override	no
Dynamic braking	no
Holding brake	no, self-locking
End of stroke protection	end of stroke limit switches
Mid stroke protection	no
Motor protection	auto reset thermal switch
Motor connection	flying leads and connector
Motor connector	Packard Electric Pack-Con male 8911773 with terminal 6294511. Mating connector: 8911772 with terminal 8911639 (p/n 9300-448-001)
Certificates	CE
Options	none

Performance Specifications

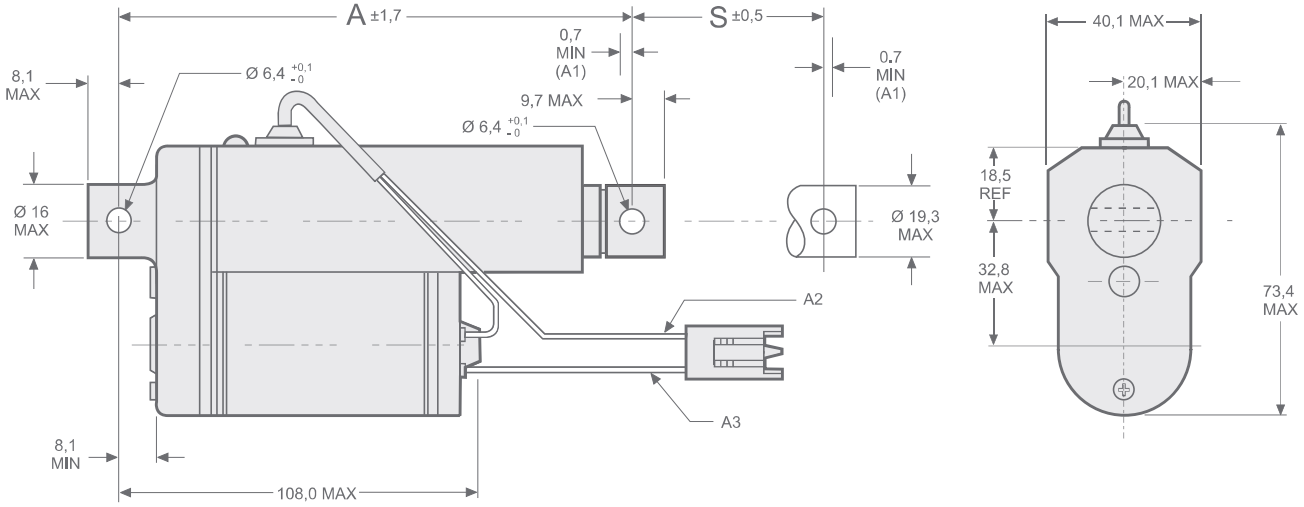
Parameter		Electrak 1
Maximum load, dynamic / static	[N]	
S • • -09A04		110 / 1300
S • • -09A08		225 / 1300
S • • -17A08		340 / 1300
S • • -17A16		340 / 1300
Speed, at no load / at maximum load	[mm/s]	
S • • -09A04		75 / 52
S • • -09A08		45 / 33
S • • -17A08		26 / 17
S • • -17A16		14 / 7
Available input voltages	[Vdc]	12, 24, 36
Standard stroke lengths	[inch]	1, 2, 3, 4, 5, 6
Operating temperature limits	[°C]	-25 – +65
Full load duty cycle @ 25 °C	[%]	25
End play, maximum	[mm]	0,9
Restraining torque	[Nm]	2,3
Lead cross section	[mm²]	1
Lead length	[mm]	110
Protection class		IP65

Compatible Controls

Control model	See page
DPDT switch	61
AC-247 ELS	64
DCG-150	66

Electrak® 1

12, 24 and 36 Vdc - load up to 340 N



S: stroke
A: retracted length
A1: installation must include at least this much coast beyond limit switch shut off

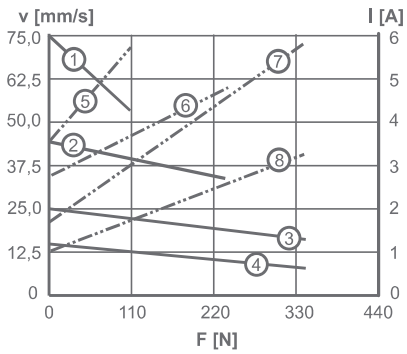
A2: red lead
A3: yellow lead

Ordering stroke	[inch]	1	2	3	4	5	6
Electrical stroke (S) *	[mm (inch)]	20,8 (0,82)	46,2 (1,82)	71,6 (2,82)	97,0 (3,82)	122,4 (4,82)	147,8 (5,82)
Retracted length (A)	[mm]	134,5	159,9	185,3	210,7	236,1	261,5
Weight	[kg]	0,52	0,54	0,60	0,63	0,66	0,68

* The electrical stroke is the stroke when the internal limit switches switch off the power to the motor. The installation then must allow the extension tube to coast at least 0,7 mm beyond that position before it becomes mechanically blocked to travel any further (distance A1). If there is no mechanical block the extension tube coasting distance will depend on the load, no load means the longest coasting distance while the distance becomes shorter as the load becomes higher. The exact coasting distance depends on the load, in which direction the load acts (push or pull), the mounting orientation of the actuator and any added friction to the system by guides or other installations and has to be determined on a case to case basis.

Performance Diagrams

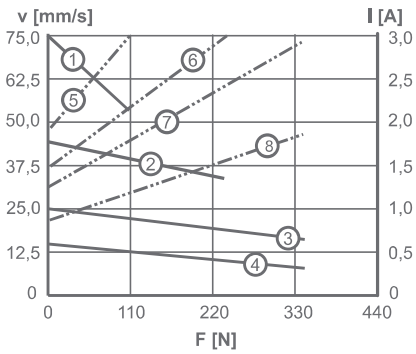
Speed and Current vs. Load 12 Vdc



V: speed I: current F: load

1: speed S12-09A04
2: speed S12-09A08
3: speed S12-17A08
4: speed S12-17A16
5: current S12-09A04
6: current S12-09A08
7: current S12-17A08
8: current S12-17A16

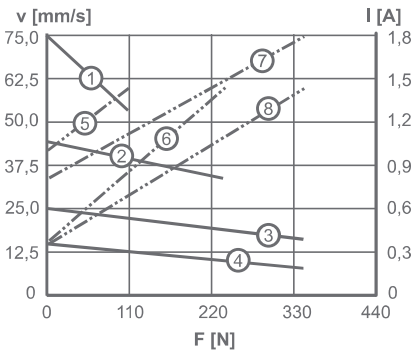
Speed and Current vs. Load 24 Vdc



V: speed I: current F: load

1: speed S24-09A04
2: speed S24-09A08
3: speed S24 -17A08
4: speed S24-17A16
5: current S24-09A04
6: current S24-09A08
7: current S24-17A08
8: current S24-17A16

Speed and Current vs. Load 36 Vdc



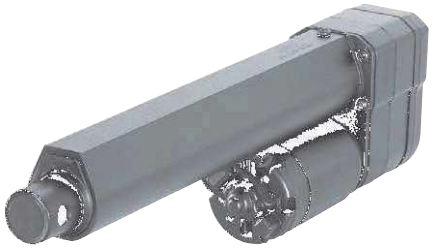
V: speed I: current F: load

1: speed S36-09A04
2: speed S36-09A08
3: speed S36-17A08
4: speed S36-17A16
5: current S36-09A04
6: current S36-09A08
7: current S36-17A08
8: current S36-17A16

Electrak® 1SP

12, 24 and 36 Vdc - load up to 340 N

» Ordering Key - see page 74
» Glossary - see page 85
» Electric Wiring Diagram - see page 56



Standard Features and Benefits

- Very compact and lightweight
- Potentiometer feedback
- Corrosion resistant housing
- Self-locking acme screw drive system
- Maintenance free
- Internally restrained extension tube
- Ideal for replacement of comparable size pneumatic and hydraulic cylinders

General Specifications

Parameter	Electrak 1SP
Screw type	acme
Internally restrained	yes
Manual override	no
Dynamic braking	no
Holding brake	no, self-locking
End of stroke protection	no
Mid stroke protection	no
Motor protection	auto reset thermal switch
Motor connection	flying leads and connector
Motor connector	Packard Electric Pack-Con male 8911773 with terminal 6294511. Mating connector: 8911772 with terminal 8911639 (p/n 9300-448-001)
Certificates	CE
Options	none

Performance Specifications

Parameter		Electrak 1SP
Maximum load, dynamic / static	[N]	
SP • • -09A04		110 / 1300
SP • • -09A08		225 / 1300
SP • • -17A08		340 / 1300
SP • • -17A16		340 / 1300
Speed, at no load / at maximum load	[mm/s]	
SP • • -09A04		75 / 52
SP • • -09A08		45 / 33
SP • • -17A08		26 / 17
SP • • -17A16		14 / 7
Available input voltages	[Vdc]	12, 24, 36
Standard stroke lengths	[inch]	2, 4, 6*
Operating temperature limits	[°C]	-25 – +65
Full load duty cycle @ 25 °C	[%]	25
End play, maximum	[mm]	0,9
Restraining torque	[Nm]	0
Lead cross section	[mm²]	1
Lead length	[mm]	110
Protection class		IP65
Potentiometer	[kOhm]	10**

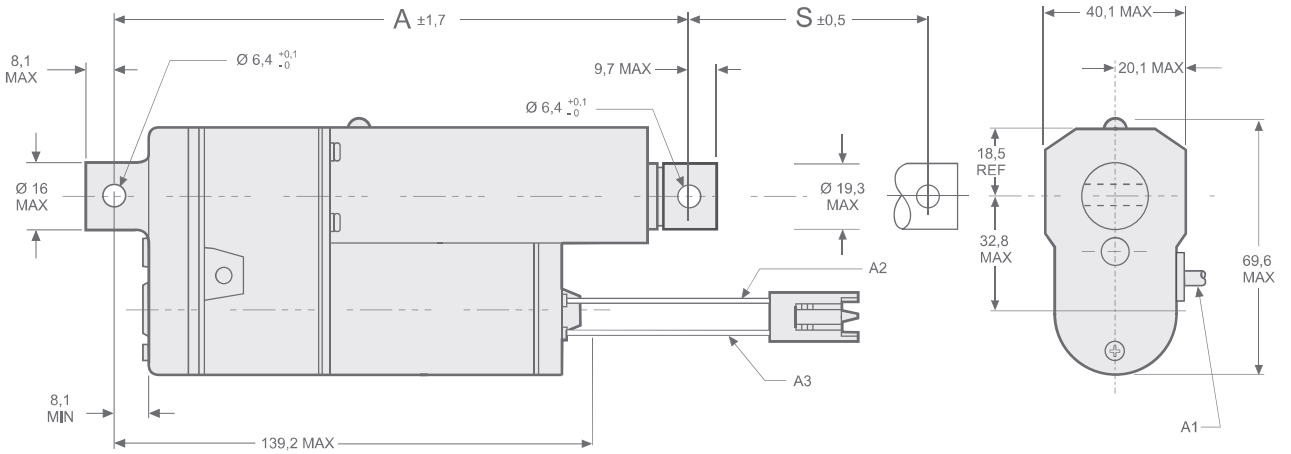
* Six inch stroke lenght not possible for SP • • -17A16.
** See table on page 19 for resistance change per mm.

Compatible Controls

Control model	See page
DPDT switch	61
AC-247 ELS	64
DCG-150	66

Electrak® 1SP

12, 24 and 36 Vdc - load up to 340 N



S: stroke
A: retracted length
A1: cable for potentiometer feedback, length = 635 mm

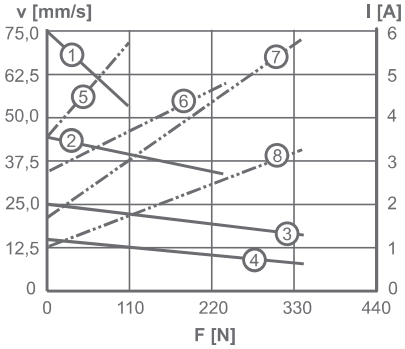
A2: black lead for 12 Vdc units, white lead for 24 Vdc units, blue lead for 36 Vdc
A3: yellow lead

Ordering stroke	[inch]	2	4	6*
Actual stroke (S)	[mm (inch)]	58,7 (2,31)	115,1 (4,53)	171,5 (6,75)
Retracted length (A)	[mm]	197,9	254,3	310,7
Weight	[kg]	0,8	0,85	0,9
Potentiometer resistance change	[ohm/mm]	94	47 (63)**	31

* Six inch stroke lenght not possible for SP • • -17A16. ** SP • • -17A16 with 4 inch stroke = 63 ohm/mm, all other stroke lengths has 47 ohm/mm.

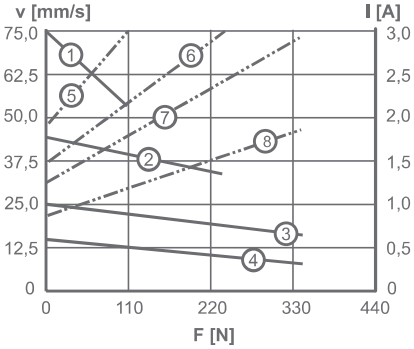
Performance Diagrams

Speed and Current vs. Load 12 Vdc



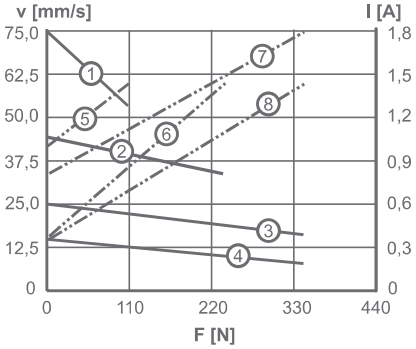
V: speed I: current F: load
1: speed SP12-09A04
2: speed SP12-09A08
3: speed SP12-17A08
4: speed SP12-17A16
5: current SP12-09A04
6: current SP12-09A08
7: current SP12-17A08
8: current SP12-17A16

Speed and Current vs. Load 24 Vdc



V: speed I: current F: load
1: speed SP24-09A04
2: speed SP24-09A08
3: speed SP24-17A08
4: speed SP24-17A16
5: current SP24-09A04
6: current SP24-09A08
7: current SP24-17A08
8: current SP24-17A16

Speed and Current vs. Load 36 Vdc



V: speed I: current F: load
1: speed SP36-09A04
2: speed SP36-09A08
3: speed SP36-17A08
4: speed SP36-17A16
5: current SP36-09A04
6: current SP36-09A08
7: current SP36-17A08
8: current SP36-17A16

Electrak® 050

12, 24 and 36 Vdc - load up to 510 N

» Ordering Key - see page 75
» Glossary - see page 85
» Electric Wiring Diagram - see page 56

Standard Features and Benefits

- Designed for office or medical applications
- Small, quiet and lightweight
- Very short retracted length
- Low cost
- Durable and corrosion free plastic housing
- Color molded into the plastic, no painting required
- End of stroke limit switches with dynamic braking
- Maintenance free
- Internally restrained extension tube
- Estimated life is minimum 40000 cycles
- Q-version for noise sensitive applications

General Specifications

Parameter	Electrak 050
Screw type	worm
Internally restrained	yes
Manual override	no
Dynamic braking	yes, at end of stroke
Holding brake	no, self-locking
End of stroke protection	internal limit switches
Mid stroke protection	overload clutch
Motor protection	auto reset thermal switch
Motor connection	flying leads
Motor connector	no
Certificates	CE
Options	• potentiometer 10 kOhm* • cross holes rotated 90° • white housing

* See performance specification table for resistance change per mm of travel.

Performance Specifications

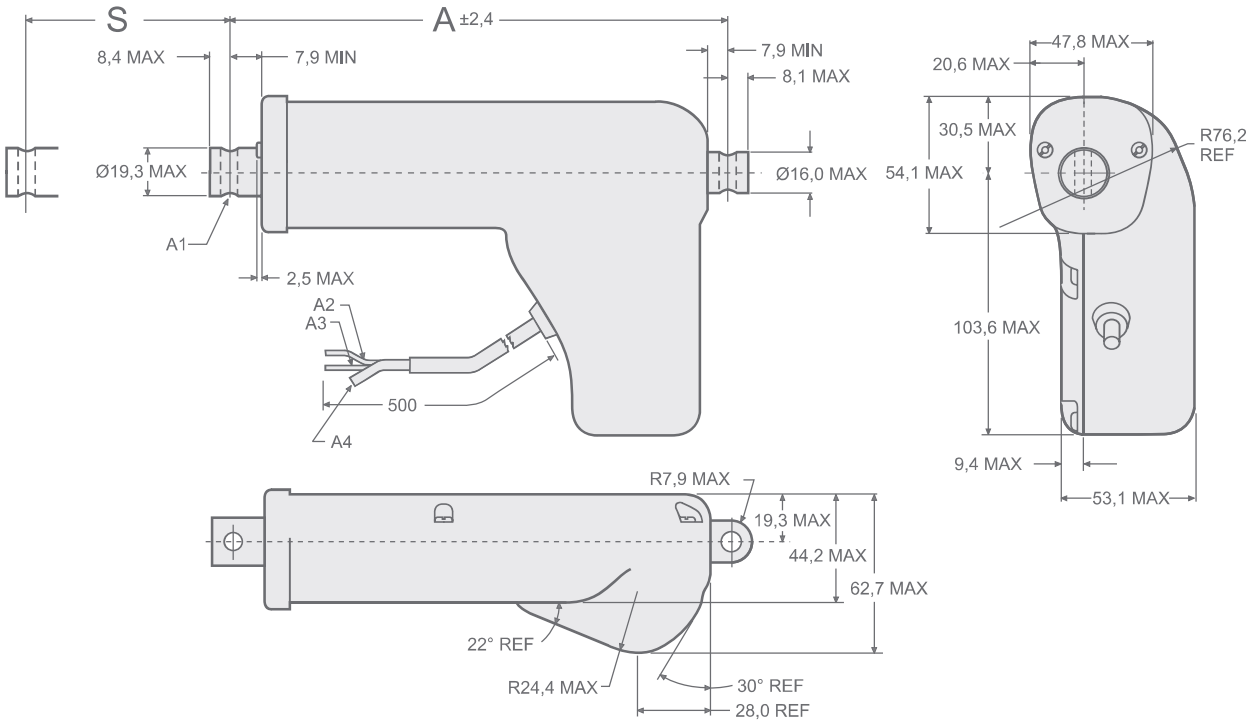
Parameter		Electrak 050
Maximum load, dynamic / static	[N]	
DE • • • 17W41		510 / 1020
DE • • • 17W42		275 / 550
DE • • • 17W44		140 / 280
Speed, at no load / at maximum load	[mm/s]	
DE • • - 17W41		12 / 9
DE • • - 17W42		24 / 18
DE • • - 17W44		48 / 37
DE • • Q17W41		9 / 7,5
DE • • Q17W42		18 / 14
DE • • Q17W44		38 / 30
Available input voltages	[Vdc]	
DE • • -		12, 24, 36
DE • • Q		24
Standard stroke lengths	[mm]	25, 50, 75, 100, 125, 150, 175, 200
Operating temperature limits	[°C]	-30 – +80
Full load duty cycle @ 20 °C	[%]	25
End play, maximum	[mm]	1,5
Restraining torque	[Nm]	0
Lead cross section	[mm²]	1
Lead length	[mm]	500
Protection class		
DE • • -		IP56
DE • • Q		IP51
Potentiometer resistance change	[ohm/mm]	
DE • • • 17W41		22,0
DE • • • 17W42		21,9
DE • • • 17W44		21,2

Compatible Controls

Control model	See page
DPDT switch	61
AC-247 ELS	64
DCG-150	66

Electrak® 050

12, 24 and 36 Vdc - load up to 510 N



S: stroke (tolerances: 17W41 = ± 3,23 mm, 17W42 = ± 4,25 mm, 17W44 = ± 5,26 mm)
A: retracted length
A1: Ø 6 mm +0,15/ -0 mounting cross holes (2 ×) in standard position

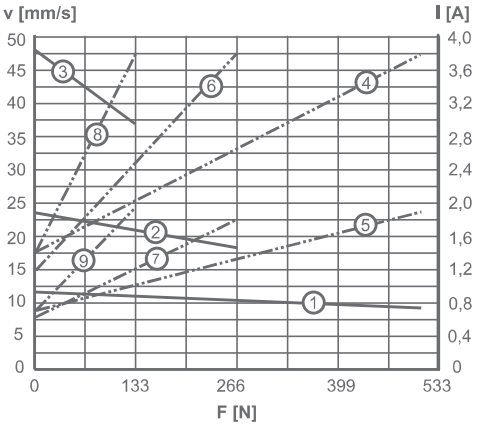
A2: red lead
A3: yellow lead
A4: vent tube Ø 3 mm

Stroke (S)	[mm]	25	50	75	100	125	150	175	200
Retracted length (A)	[mm]	114,2	139,2	164,2	189,2	214,2	239,2	264,2	289,2
Retracted length, with potentiometer (A)	[mm]	145,7	170,7	195,7	220,7	245,7	270,7	295,7	- *
Weight	[kg]	0,59	0,64	0,69	0,73	0,78	0,82	0,87	0,91
Weight with potentiometer	[kg]	0,69	0,74	0,79	0,83	0,88	0,92	0,97	- *

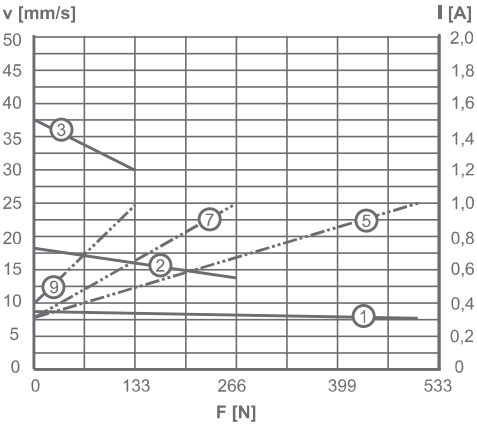
* 200 mm stroke not possible with potentiometer (PO, MP, PF options)

Performance Diagrams

050, standard version
Speed and Current vs. Load



050, Q-version
Speed and Current vs. Load



V: speed I: current F: load
1: speed DE • • • 17W41
2: speed DE • • • 17W42
3: speed DE • • • 17W44
4: current 12 Vdc, DE12 - 17W41
5: current 24 Vdc, DE24 • 17W41
6: current 12 Vdc, DE12 - 17W42
7: current 24 Vdc, DE24 • 17W42
8: current 12 Vdc, DE12 - 17W44
9: current 24 Vdc, DE24 • 17W44

Electrak® PPA-DC

12, 24 and 36 Vdc - load up to 6670 N

» Ordering Key - see page 75
» Glossary - see page 85
» Electric Wiring Diagram - see page 57

Standard Features and Benefits

- Strong and versatile heavy duty actuator
- High duty cycle
- Highly efficient ball screw drive system
- Overload clutch for mid and end of stroke protection
- Stroke lengths up to 36 inch (914 mm)
- Three different input voltages to choose from
- Motor with thermal switch
- Maintenance free
- Large range of options

General Specifications

Parameter	Electrak PPA-DC
Screw type	ball
Internally restrained	no
Manual override	no, optional
Dynamic braking	no
Holding brake	yes
End of stroke protection	overload clutch
Mid stroke protection	overload clutch
Motor protection	auto reset thermal switch
Motor connection	flying leads
Motor connector	no
Certificates	CE
Options	• end of stroke limit switches • potentiometer • encoder • protective bellows

Performance Specifications

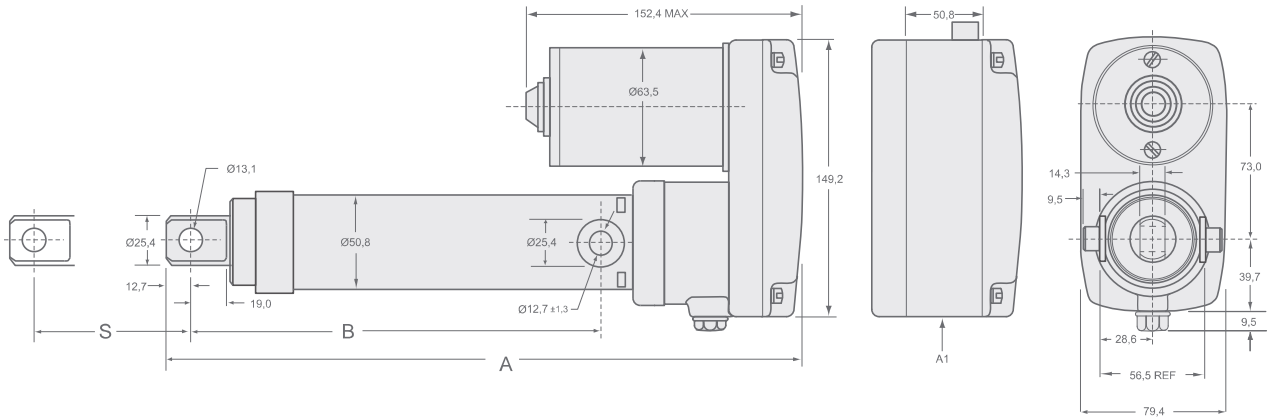
Parameter		PPA-DC
Maximum load, dynamic / static PPA • • -18B65 PPA • • -58B65	[N]	 3330 / 13350 6670 / 13350
Speed, at no load / at maximum load PPA12(24/36)-18B65 PPA12(24/36)-58B65	[mm/s]	 32 / 28 12 / 9
Available input voltages	[Vdc]	12, 24, 36
Standard stroke lengths	[inch]	4, 8, 12, 18, 24, 36
Operating temperature limits	[°C]	-25 – +65
Full load duty cycle @ 25 °C	[%]	30
End play, maximum	[mm]	1
Restraining torque PPA • • -18B65 PPA • • -58B65	[Nm]	 11 22
Lead cross section	[mm²]	2
Lead length	[mm]	420
Protection class		IP52

Compatible Controls

Control model	See page
DPDT switch	61
AC-063	62

Electrak® PPA-DC

12, 24 and 36 Vdc - load up to 6670 N



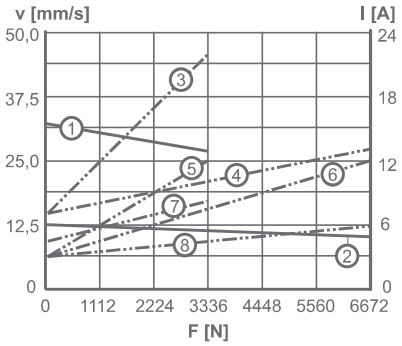
S: stroke
A: retracted length

B: retracted length to trunnions
A1: housing dimensions for limit switch, encoder or potentiometer options

Stroke (S)	[inch (mm)]	4 (101,6)	8 (203,2)	12 (304,8)	18 (457,2)	24 (609,6)	36 (914,4)
Retracted length (A) without options	[mm]	348,0	449,6	551,2	754,4	906,8	1211,6
Retracted length (A) with limit switch, encoder or potentiometer	[mm]	398,8	500,4	602,0	805,2	957,6	1262,4
Retracted length to trunnions (B)	[mm]	223,5	352,1	426,7	629,9	782,3	1087,1
Weight	[kg]	4,5	5,3	6,0	7,2	8,4	10,8
Add on weight for limit switch, encoder or potentiometer	[kg]	0,5	0,5	0,5	0,5	0,5	0,5

Performance Diagrams

Speed and Current vs. Load



V: speed I: current F: load

1: speed PPA • • -18B65
2: speed PPA • • -58B65
3: current 12 Vdc, PPA12-18B65
4: current 12 Vdc, PPA12-58B65
5: current 24 Vdc, PPA24-18B65
6: current 24 Vdc, PPA24-58B65
7: current 36 Vdc, PPA36-18B65
8: current 36 Vdc, PPA36-58B65

Electrak® 10

12, 24 and 36 Vdc - load up to 6800 N

» Ordering Key - see page 75
» Glossary - see page 85
» Electric Wiring Diagram - see page 57

Standard Features and Benefits

- Robust, strong and reliable
- Withstands very harsh environments
- Stainless steel extension tube
- Acme or ball screw models
- Overload clutch for mid and end of stroke protection
- Motor with thermal switch
- Maintenance free

General Specifications

Parameter	Electrak 10
Screw type	acme or ball
Internally restrained	no
Manual override	no, optional
Dynamic braking	no
Holding brake acme screw models ball screw models	 no, self-locking yes
End of stroke protection	overload clutch
Mid stroke protection	overload clutch
Motor protection	auto reset thermal switch
Motor connection	flying leads and connector
Motor connector	AMP connector with housing p/n 180908-5 with male terminals p/n 42098-2
Certificates	CE
Options	• potentiometer • manual override

Performance Specifications

Parameter		Electrak 10
Maximum load, dynamic / static	[N]	
D • • -05A5 (acme screw)		1100 / 11350
D • • -10A5 (acme screw)		2250 / 11350
D • • -20A5 (acme screw)		2250 / 11350
D • • -05B5 (ball screw)		2250 / 18000
D • • -10B5 (ball screw)		4500 / 18000
D • • -20B5 (ball screw)		4500 / 18000
D • • -21B5 (ball screw)		6800 / 18000
Speed, at no load / at maximum load	[mm/s]	
D • • -05A5 (acme screw)		54 / 32
D • • -10A5 (acme screw)		30 / 18
D • • -20A5 (acme screw)		15 / 12
D • • -05B5 (ball screw)		61 / 37
D • • -10B5 (ball screw)		30 / 19
D • • -20B5 (ball screw)		15 / 12
D • • -21B5 (ball screw)		15 / 11
Available input voltages	[Vdc]	12, 24, 36 *
Standard stroke lengths	[inch]	4, 6, 8, 10, 12, 14, 16, 18, 20, 24
Operating temperature limits	[°C]	-25 – +65
Full load duty cycle @ 25 °C	[%]	25
End play, maximum	[mm]	1,0
Restraining torque	[Nm]	11,3
Lead cross section	[mm²]	2
Lead length	[mm]	165
Protection class		IP65

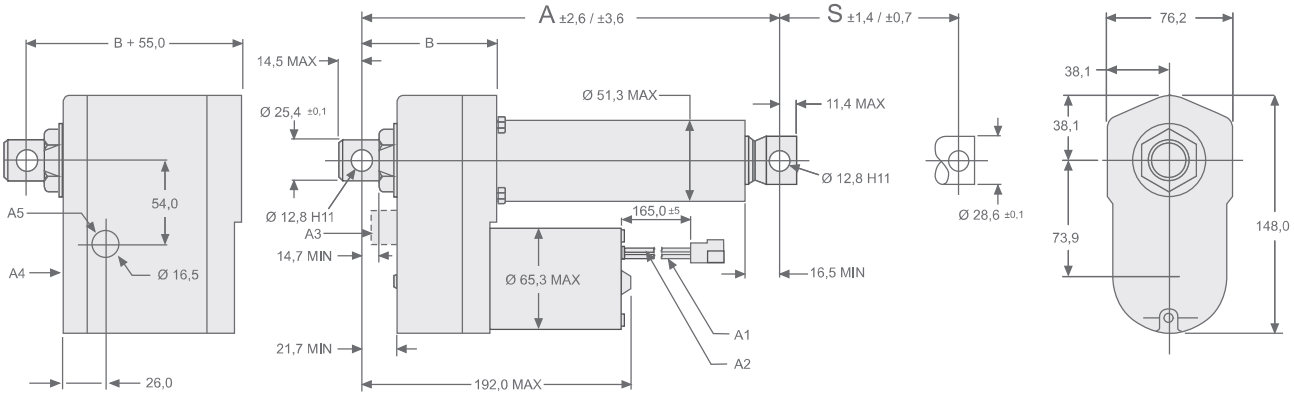
* Other input voltages available on request, contact customer support.

Compatible Controls

Control model	See page
DPDT switch	61
AC-063	62

Electrak® 10

12, 24 and 36 Vdc - load up to 6800 N



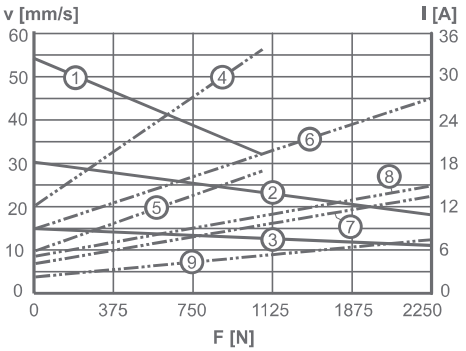
S: stroke, tolerance acme / ball screw
A: retracted length, tolerance acme / ball screw
A1: black lead
A2: red lead
A3: manual override input (optional)
A4: housing dimensions for potentiometer option
A5: potentiometer cable output, cable length = min. 500 mm
B: 86,1 mm

Stroke (S)	[inch (mm)]	4 (101,6)	6 (152,4)	8 (203,2)	10 (254,0)	12 (304,8)	14 (355,6)	16 (406,4)	18 (457,2)	20 (508,0)	24 (609,6)
Retracted length, acme screw models (A)	[mm]	262,3	313,1	363,9	414,7	465,5	567,1	617,9	668,7	719,5	821,1
Retracted length, ball screw models (A)	[mm]	302,3	353,1	403,9	454,7	505,5	607,1	657,9	708,7	759,5	861,1
Add on length for potentiometer*	[mm]	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0
Weight, acme screw models	[kg]	4,5	4,7	4,9	5,0	5,2	5,4	5,5	5,7	5,8	6,2
Weight, ball screw models	[kg]	5,1	5,3	5,5	5,6	5,8	5,9	6,1	6,3	6,4	6,8
Add on weight for potentiometer*	[kg]	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3
Potentiometer resistance change*	[ohm/mm]	39	39	39	39	20	20	20	20	20	10

* Potentiometer is optional

Performance Diagrams

Acme Screw Models
Speed and Current vs. Load

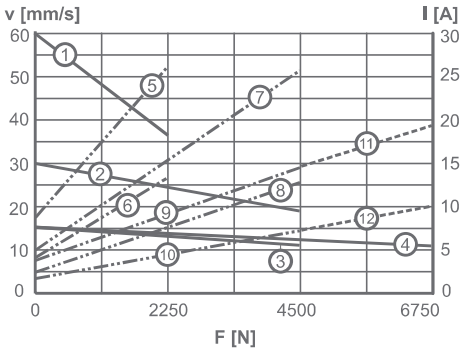


V: speed
I: current
F: load

1: speed D • • -05A5
2: speed D • • -10A5
3: speed D • • -20A5

4. current 12 Vdc, D12-05A5
5: current 24 Vdc, D24-05A5
6: current 12 Vdc, D12-10A5
7: current 24 Vdc, D24-10A5
8: current 12 Vdc, D12-20A5
9: current 24 Vdc, D24-20A5

Ball Screw Models
Speed and Current vs. Load



V: speed
I: current
F: load

1: speed D • • -05B5
2: speed D • • -10B5
3: speed D • • -20B5
4: speed D • • -21B5

5. current 12 Vdc, D12-05B5
6: current 24 Vdc, D24-05B5
7: current 12 Vdc, D12-10B5
8: current 24 Vdc, D24-10B5
9: current 12 Vdc, D12-20B5
10: current 24 Vdc, D24-20B5
11: current 12 Vdc, D12-21B5
12: current 24 Vdc, D24-21B5

Electrak® LA14

12, 24 and 36 Vdc - load up to 6800 N

» Ordering Key - see page 77
» Glossary - see page 85
» Electric Wiring Diagram - see page 56

Standard Features and Benefits

- Rugged and robust
- Withstands very harsh environments
- Stainless steel extension tube
- Corrosion free aluminium cover tube
- Acme or ball screw drive
- Trunnion mounting possible
- Overload clutch for mid and end of stroke protection
- T-slot grooves in the cover tube for magnetic sensors
- Motor with thermal switch
- Maintenance free

General Specifications

Parameter	Electrak LA14
Screw type	acme or ball
Internally restrained	yes
Manual override	no, optional
Dynamic braking	no
Holding brake acme screw models ball screw models	 no, self-locking yes
End of stroke protection	overload clutch
Mid stroke protection	overload clutch
Motor protection	auto reset thermal switch
Motor connection	flying leads and connector
Motor connector	AMP connector with housing p/n 180908-5 with male terminals p/n 42098-2
Certificates	CE
Options	• potentiometer • manual override

Performance Specifications

Parameter		Electrak LA14
Maximum load, dynamic / static	[N]	
DA • • -05A65M (acme screw)		1100 / 11350
DA • • -10A65M (acme screw)		2250 / 11350
DA • • -20A65M (acme screw)		2250 / 11350
DA • • -05B65M (ball screw)		2250 / 18000
DA • • -10B65M (ball screw)		4500 / 18000
DA • • -20B65M (ball screw)		4500 / 18000
DA • • -21B65M (ball screw)		6800 / 18000
Speed, at no load / at maximum load	[mm/s]	
DA • • -05A65M (acme screw)		54 / 32
DA • • -10A65M (acme screw)		30 / 18
DA • • -20A65M (acme screw)		15 / 12
DA • • -05B65M (ball screw)		61 / 37
DA • • -10B65M (ball screw)		30 / 19
DA • • -20B65M (ball screw)		15 / 12
DA • • -21B65M (ball screw)		15 / 11
Available input voltages	[Vdc]	12, 24, 36 *
Standard stroke lengths	[mm]	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600
Operating temperature limits	[°C]	-25 – +65
Full load duty cycle @ 25 °C	[%]	25
End play, maximum	[mm]	1,0
Restraining torque	[Nm]	0
Lead cross section	[mm²]	2
Lead length	[mm]	165
Protection class		IP65

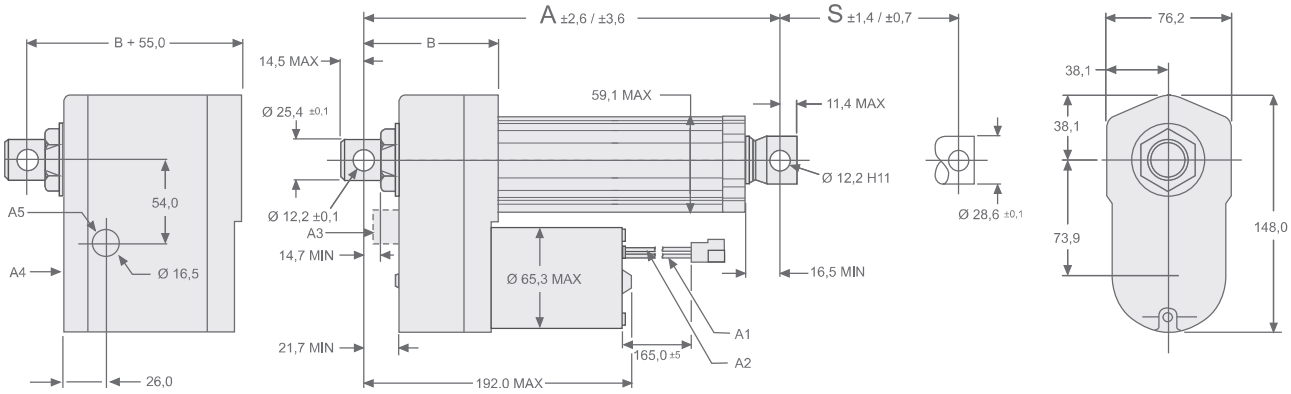
* Other input voltages available on request, contact customer support.

Compatible Controls

Control model	See page
DPDT switch	61
AC-063	62

Electrak® LA14

12, 24 and 36 Vdc - load up to 6800 N



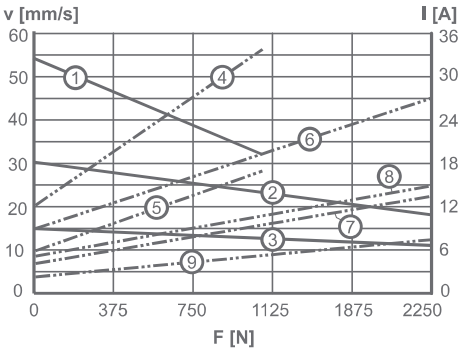
S: stroke, tolerance acme / ball screw
A: retracted length, tolerance acme / ball screw
A1: black lead
A2: red lead
A3: manual override input (optional)
A4: housing dimensions for potentiometer option
A5: potentiometer cable output, cable length = min. 500 mm
B: 86,1 mm

Stroke (S)	[mm]	50	100	150	200	250	300	350	400	450	500	550	600
Retracted length, acme screw models (A)	[mm]	216,7	266,7	316,7	366,7	416,7	466,7	566,7	616,7	666,7	716,7	766,7	816,7
Retracted length, ball screw models (A)	[mm]	269,6	319,6	369,6	419,6	469,6	519,6	619,6	669,6	719,6	769,6	819,6	869,6
Add on length for potentiometer*	[mm]	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0
Weight, acme screw models	[kg]	4,5	4,7	4,9	5,1	5,3	5,5	5,8	6,0	6,2	6,4	6,6	6,8
Weight, ball screw models	[kg]	5,3	5,5	5,7	5,9	6,1	6,3	6,6	6,8	7,0	7,2	7,4	7,6
Add on weight for potentiometer*	[kg]	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3
Potentiometer resistance change*	[ohm/mm]	39	39	39	39	39	20	20	20	20	20	10	10

* Potentiometer is optional

Performance Diagrams

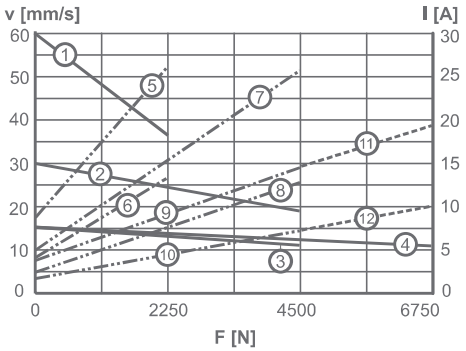
Acme Screw Models
Speed and Current vs. Load



V: speed
I: current
F: load

1: speed DA • • -05A65M
2: speed DA • • -10A65M
3: speed DA • • -20A65M
4. current 12 Vdc, DA12-05A65M
5: current 24 Vdc, DA24-05A65M
6: current 12 Vdc, DA12-10A65M
7: current 24 Vdc, DA24-10A65M
8: current 12 Vdc, DA12-20A65M
9: current 24 Vdc, DA24-20A65M

Ball Screw Models
Speed and Current vs. Load



V: speed
I: current
F: load

1: speed DA • • -05B65M
2: speed DA • • -10B65M
3: speed DA • • -20B65M
4: speed DA • • -21B65M
5. current 12 Vdc, DA12-05B65M
6: current 24 Vdc, DA24-05B65M
7: current 12 Vdc, DA12-10B65M
8: current 24 Vdc, DA24-10B65M
9: current 12 Vdc, DA12-20B65M
10: current 24 Vdc, DA24-20B65M
11: current 12 Vdc, DA12-21B65M
12: current 24 Vdc, DA24-21B65M

Electrak® 5

230 and 400 Vac - load up to 6800 N

» Ordering Key - see page 78
» Glossary - see page 85
» Electric Wiring Diagram - see page 58

Standard Features and Benefits

- Robust, strong and reliable
- Stainless steel extension tube
- Acme or ball screw models
- Overload clutch for mid and end of stroke protection
- Heavy duty motor with thermal switch
- Anti-coast brake for repeatable positioning on all ball screw models. Optional on acme screw models.
- Maintenance free

General Specifications

Parameter	Electrak 5
Screw type	acme or ball
Internally restrained	no
Manual override	no, optional
Dynamic braking	no
Holding brake acme screw models ball screw models	 no, self-locking yes
End of stroke protection	overload clutch
Mid stroke protection	overload clutch
Motor protection	auto reset thermal switch
Motor connection	cable
Motor connector	no
Certificates	UL, CSA, CE
Options	• potentiometer • manual override

Performance Specifications

Parameter		Electrak 5
Maximum load, dynamic / static	[N]	
A • • -05A5 (acme screw)*		1100 / 11350
A • • -10A5 (acme screw)		2250 / 11350
A • • -20A5 (acme screw)		2250 / 11350
A • • -05B5 (ball screw)		2250 / 18000
A • • -10B5 (ball screw)		4500 / 18000
A • • -20B5 (ball screw)		4500 / 18000
A • • -21B5 (ball screw)		6800 / 18000
Speed, at no load / at maximum load	[mm/s]	
A • • -05A5 (acme screw)*		48 / 38
A • • -10A5 (acme screw)		30 / 18
A • • -20A5 (acme screw)		15 / 12
A • • -05B5 (ball screw)		61 / 37
A • • -10B5 (ball screw)		30 / 19
A • • -20B5 (ball screw)		15 / 12
A • • -21B5 (ball screw)		15 / 11
Available input voltages Single phase Three phase	[Vac]	 230** 400
Input frequency 1 × 230 Vac model 3 × 400 Vac model	[Hz]	 50/60 50
Standard stroke lengths	[inch]	4, 6, 8, 10, 12, 14, 16, 18, 20, 24
Operating temperature limits	[°C]	-25 – +65
Full load duty cycle @ 25 °C	[%]	25
Maximum on time	[s]	45
End play, maximum	[mm]	1,0
Restraining torque	[Nm]	11,3
Lead cross section	[mm²]	1,5
Cable length	[mm]	600
Protection class		IP45

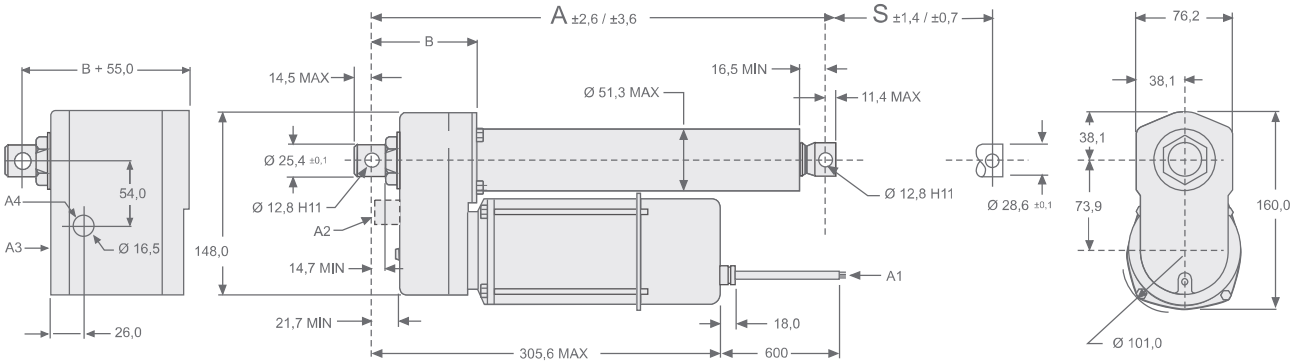
* Not possible with 400 Vac input voltage.
** 10 µF capacitor required to run the actuator, p/n 9200-448-003

Compatible Controls

Control model	See page
DPDT switch	61

Electrak® 5

230 and 400 Vac - load up to 6800 N



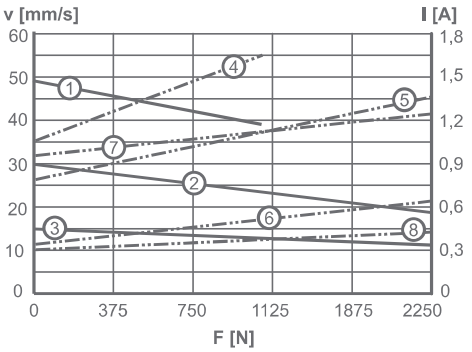
S: stroke, tolerance acme / ball screw
A: retracted length, tolerance acme / ball screw
A1: cable
A2: manual override input (optional)
A3: housing dimensions for potentiometer option
A4: potentiometer cable output, cable length = min. 500 mm
B: 86,1 mm

Stroke (S)	[inch (mm)]	4 (101,6)	6 (152,4)	8 (203,2)	10 (254,0)	12 (304,8)	14 (355,6)	16 (406,4)	18 (457,2)	20 (508,0)	24 (609,6)
Retracted length, acme screw models (A)	[mm]	262,3	313,1	363,9	414,7	465,5	567,1	617,9	668,7	719,5	821,1
Retracted length, ball screw models (A)	[mm]	302,3	353,1	403,9	454,7	505,5	607,1	657,9	708,7	759,5	861,1
Add on length for potentiometer*	[mm]	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0
Weight, acme screw models	[kg]	5,9	6,1	6,3	6,5	6,7	6,9	7,1	7,3	7,5	7,8
Weight, ball screw models	[kg]	6,5	6,7	6,9	7,1	7,3	7,5	7,7	7,9	8,1	8,4
Add on weight for potentiometer*	[kg]	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3
Potentiometer resistance change*	[ohm/mm]	39	39	39	39	20	20	20	20	20	10

* Potentiometer is optional (NPO, BPO option)

Performance Diagrams

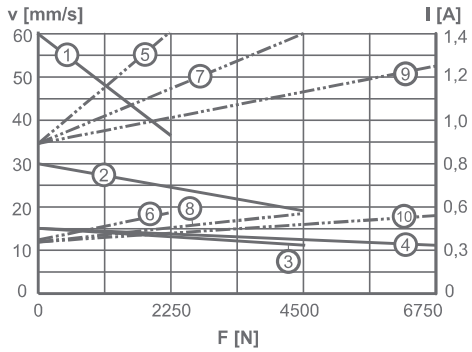
Acme Screw Models
Speed and Current vs. Load



V: speed
I: current
F: load

1: speed A22 -05A5
2: speed A•• -10A5
3: speed A•• -20A5
4. current 230 Vac, A22-05A5
5: current 230 Vac, A22-10A5
6: current 400 Vac, A42-10A5
7: current 230 Vac, A22-20A5
8: current 400 Vac, A42-20A5

Ball Screw Models
Speed and Current vs. Load



V: speed
I: current
F: load

1: speed A22-05B5, A42-05B5
2: speed A22-10B5, A42-10B5
3: speed A22-20B5, A42-20B5
4: speed A22-21B5, A42-21B5
5. current 230 Vac, A22-05B5
6: current 400 Vac, A42-05B5
7: current 230 Vac, A22-10B5, A22-20B5
8: current 400 Vac, A42-10B5, A42-20B5
9: current 230 Vac, A22-21B5
10: current 400 Vac, A42-21B5

Electrak® LA24

230 and 400 Vac - load up to 6800 N

» Ordering Key - see page 79
» Glossary - see page 85
» Electric Wiring Diagram - see page 58

Standard Features and Benefits

- Robust, strong and reliable
- Corrosion free aluminium cover tube
- Stainless steel extension tube
- Acme or ball screw models
- Rugged and robust
- Withstands very harsh environments
- Trunnion mounting possible
- Overload clutch for mid and end of stroke protection
- T-slot grooves in the cover tube for magnetic sensors
- Heavy duty motor with thermal switch
- Anti-coast brake for repeatable positioning on all ball screw models. Optional on acme screw models.
- Maintenance free

General Specifications

Parameter	Electrak LA24
Screw type	acme or ball
Internally restrained	yes
Manual override	no, optional
Dynamic braking	no
Holding brake acme screw models ball screw models	 no, self-locking yes
End of stroke protection	overload clutch
Mid stroke protection	overload clutch
Motor protection	auto reset thermal switch
Motor connection	cable
Motor connector	no
Certificates	UL, CSA, CE
Options	• potentiometer • manual override

Performance Specifications

Parameter		Electrak LA24
Maximum load, dynamic / static	[N]	
AA • • -05A65M (acme screw)*		1100 / 11350
AA • • -10A65M (acme screw)		2250 / 11350
AA • • -20A65M (acme screw)		2250 / 11350
AA • • -05B65M (ball screw)		2250 / 18000
AA • • -10B65M (ball screw)		4500 / 18000
AA • • -20B65M (ball screw)		4500 / 18000
AA • • -21B65M (ball screw)		6800 / 18000
Speed, at no load / at maximum load	[mm/s]	
AA • • -05A65M (acme screw)*		48 / 38
AA • • -10A65M (acme screw)		30 / 18
AA • • -20A65M (acme screw)		15 / 12
AA • • -05B65M (ball screw)		61 / 37
AA • • -10B65M (ball screw)		30 / 19
AA • • -20B65M (ball screw)		15 / 12
AA • • -21B65M (ball screw)		15 / 11
Available input voltages Single phase Three phase	[Vac]	 230** 400
Input frequency 1 × 230 Vac model 3 × 400 Vac model	[Hz]	 50/60 50
Standard stroke lengths	[inch]	50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600
Operating temperature limits	[°C]	-25 – +65
Full load duty cycle @ 25 °C	[%]	25
Maximum on time	[s]	45
End play, maximum	[mm]	1,0
Restraining torque	[Nm]	0
Lead cross section	[mm²]	1,5
Cable length	[mm]	600
Protection class		IP45

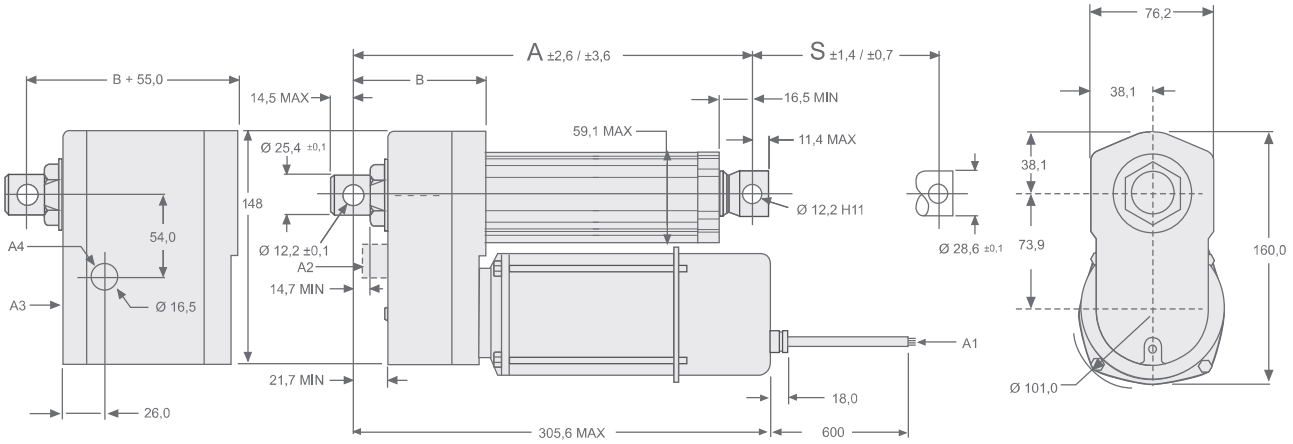
* Not possible with 400 Vac input voltage.
** 10 µF capacitor required to run the actuator, p/n 9200-448-003

Compatible Controls

Control model	See page
DPDT switch	61

Electrak® LA24

230 and 400 Vac - load up to 6800 N



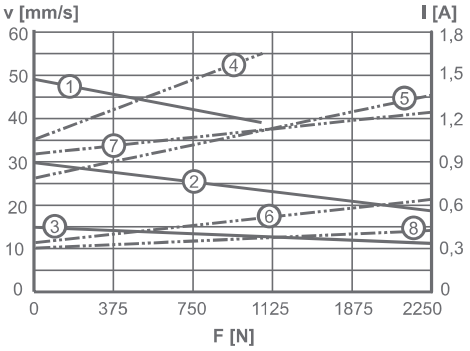
S: stroke, tolerance acme / ball screw
A: retracted length, tolerance acme / ball screw
A1: cable
A2: manual override input (optional)
A3: housing dimensions for potentiometer option
A4: potentiometer cable output, cable length = min. 500 mm
B: 86,1 mm

Stroke (S)	[mm]	50	100	150	200	250	300	350	400	450	500	550	600
Retracted length, acme screw models (A)	[mm]	216,7	266,7	316,7	366,7	416,7	466,7	566,7	616,7	666,7	716,7	766,7	816,7
Retracted length, ball screw models (A)	[mm]	269,6	319,6	369,6	419,6	469,6	519,6	619,6	669,6	719,6	769,6	819,6	869,6
Add on length for potentiometer*	[mm]	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0	55,0
Weight, acme screw models	[kg]	6,0	6,2	6,4	6,6	6,8	7,0	7,3	7,5	7,7	7,9	8,1	8,3
Weight, ball screw models	[kg]	6,8	7,0	7,2	7,4	7,6	7,8	8,1	8,3	8,5	8,7	8,9	9,1
Add on weight for potentiometer*	[kg]	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3	1,3
Potentiometer resistance change*	[ohm/mm]	39	39	39	39	39	20	20	20	20	20	10	10

* Potentiometer is optional (NPO, BPO option)

Performance Diagrams

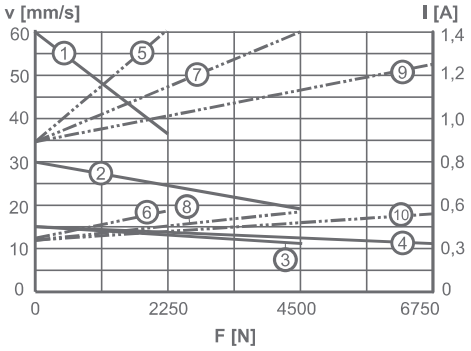
Acme Screw Models
Speed and Current vs. Load



V: speed
I: current
F: load

1: speed AA22 -05A65M
2: speed AA•• -10A65M
3: speed AA•• -20A65M
4. current 230 Vac, AA22-05A65M
5: current 230 Vac, AA22-10A65M
6: current 400 Vac, AA42-10A65M
7: current 230 Vac, AA22-20A65M
8: current 400 Vac, AA42-20A65M

Ball Screw Models
Speed and Current vs. Load



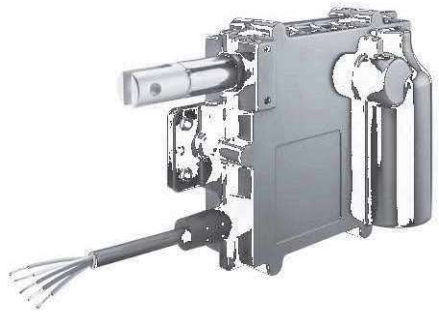
V: speed
I: current
F: load

1: speed AA22-05B65M, AA42-05B65M
2: speed AA22-10B65M, AA42-10B65M
3: speed AA22-20B65M, AA42-20B65M
4: speed AA22-21B65M, AA42-21B65M
5. current 230 Vac, AA22-05B65M
6: current 400 Vac, AA42-05B65M
7: current 230 Vac, AA22-10B65M, AA22-20B65M
8: current 400 Vac, AA42-10B65M, AA42-20B65M
9: current 230 Vac, AA22-21B65M
10: current 400 Vac, AA42-21B65M

Electrak® Throttle

12 and 24 Vdc - load up to 130 N

» Ordering Key - see page 80
» Glossary - see page 85
» Electric Wiring Diagram - see page 59



Standard Features and Benefits

- Designed for industrial applications
- Rugged aluminum housing with IP69K/IP67 sealing
- E-coated housing for corrosion resistance
- Minimal maintenance
- Integrated electronic options
- High end features at a low cost
- Integrated mounting holes

General Specifications

Parameter	Electrak Throttle
Screw type	worm
Internally restrained	yes
Manual override	no
Dynamic braking with option CN with option NP, FN, FP	 yes no
Holding brake	no (self locking)
End of stroke protection	yes
Mid stroke protection	yes
Motor protection with temperature rating S with temperature rating E	 auto reset thermal switch no
Motor connection	flying leads or Deutsch connector
Certificates	CE, RoHS
Options	• extended temperature range • adapter orientation • right angle cable exit • analog position feedback sensor • internal end of stroke limit switches • CanBus SAE J1939

Performance Specifications

Parameter		Electrak Throttle
Maximum load, dynamic / static ET••-084 (1) ET••-174	[N]	 45 / 90 130 / 260
Speed, no load / at max. load ET••-084 (1) ET••-174	[mm/s]	 96 / 83 48 / 37
Available input voltages	[VDC]	12, 24
Current draw, max. (2) 12 VDC models 24 VDC models	[A]	 4 2
Operating temperature, min	[°C]	- 40
Operating temperature, max ET••-•••-•S ET••-•••-•E	[°C]	 85 125
Full load duty cycle @ 25 °C (3)	[%]	50
End play, maximum	[mm]	1.5
Restraining torque	[Nm]	0
Motor cable lead cross section	[mm^2]	0.8
Motor cable length	[mm]	165
Protection class		IP69K, IP67
Operational life	[cycles]	500000
Retracted length	[mm]	184.7
Stroke length	[mm]	50.8
Weight	[kg]	1.11
Analog feedback sensor linearity	[± %]	1

(1) The ET• • -084 (high speed version) can only be ordered in combination with operating temperature rating E.
(2) Max. current draw ratings do not include motor inrush current. Typical inrush current values are 12 A at 12 VDC and 6 A at 24 VDC.
(3) For all models and load ranges.

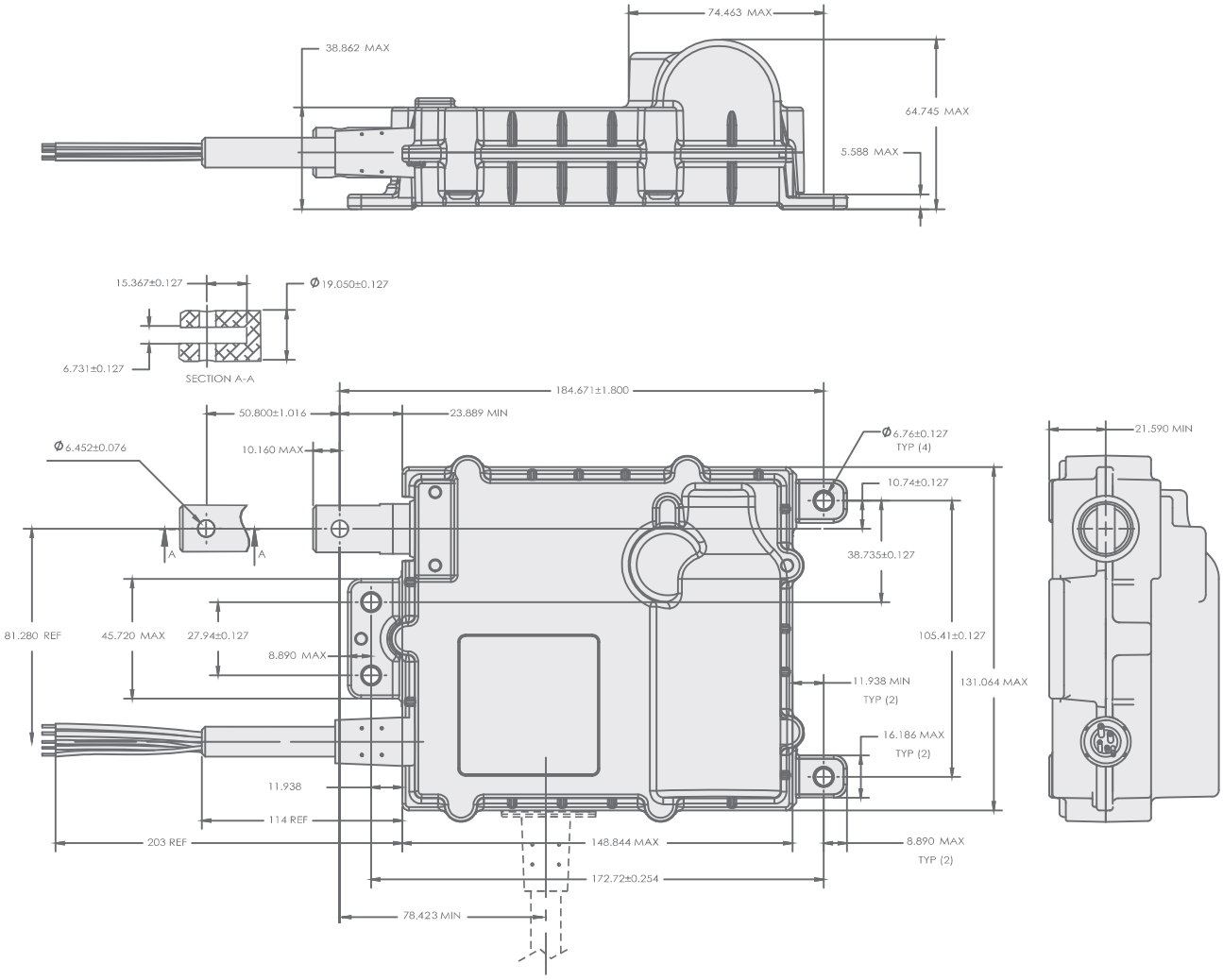
Compatible Controls

Control model	See page
DPDT switch (4)	61

(4) The DPDT switch cannot be used in combination with CanBus.

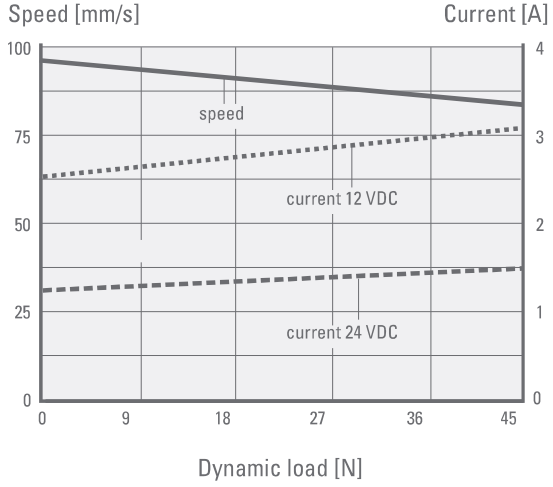
Electrak® Throttle

12 and 24 Vdc - load up to 130 N



Performance Diagrams

ET••-084



ET••-174