



## Linear Actuators

Advanced Components for Industrial, Mobile and Structural Applications



## 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 more than 75 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 Regal Rexnord 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](http://www.thomsonlinear.com). For assistance, contact your local sales office (contact information listed on the back of catalog). 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.

### Local Support Around the Globe



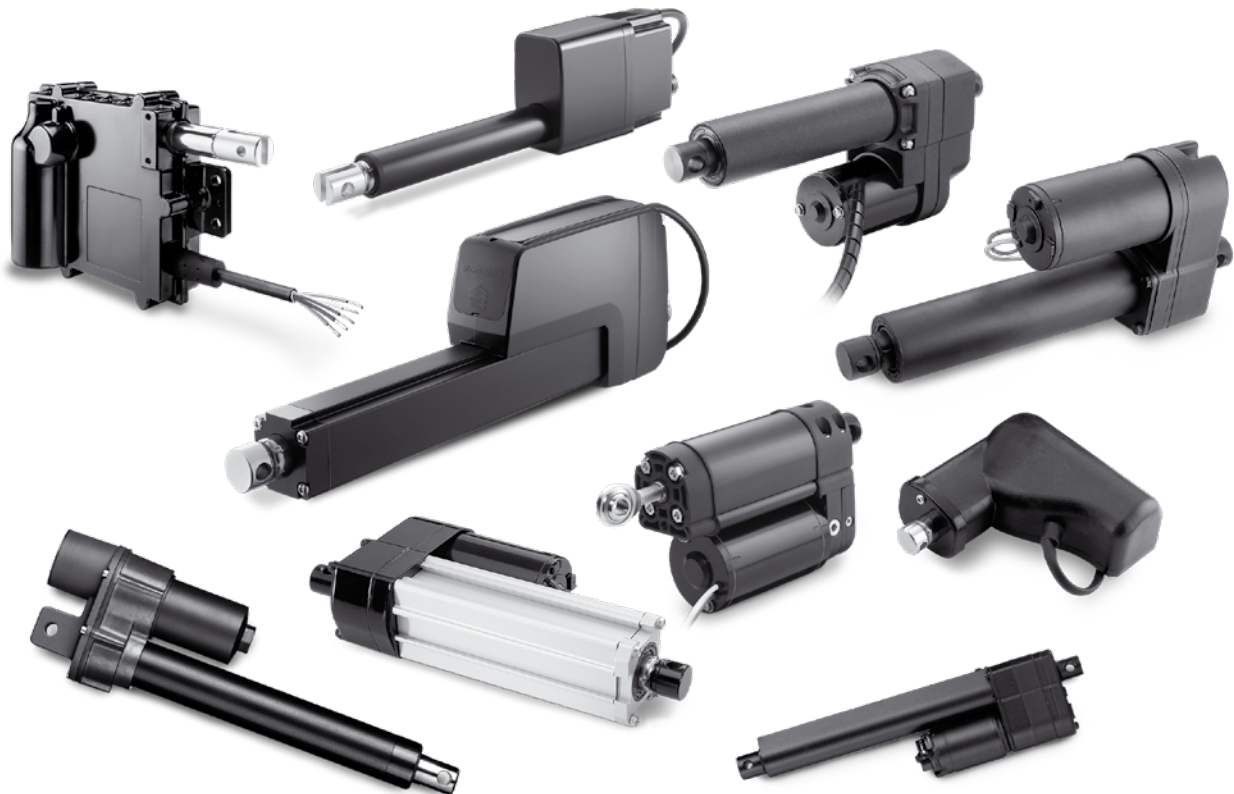
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## Leveraging Decades of Design and Application Expertise

The history of Thomson actuators goes back to the mid-1960s when American engineers used ball screws to build the first generation of electric linear actuators. These 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 processes, remove people from dangerous situations, provide remote control, and make difficult, tedious or manual jobs easier.



**1967**

The first electric linear actuators, designed for agricultural equipment, are released.



**1974**

**First line of actuators** with parallel motors are released.



**1982**

The **Electrak 10** actuator line is released.



**1984**

**Electrak 1** - the miniature actuator is released.



**1991**

The first series of **lifting columns** are released.



**1999**

**Electrak 050** is released.



Today, Thomson is the market leader for electric linear actuators used in the most demanding applications, including construction and agriculture vehicles. We routinely collaborate with OEMs globally to solve problems, boost efficiency and enhance the value passed on to their customers.

Call us today to discuss how our vast offering of standard or custom solutions can deliver the optimal balance of performance, life and installed cost for you and your applications.



Thomson actuators help people every day at home or work, during commuting, or when visiting the doctor, dentist or therapist.

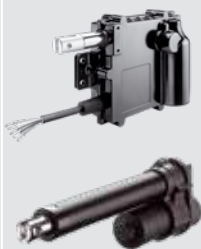
**2000**

The rodless **LM80 actuator** is released.



**2013**

**Electrak Throttle** and **Max Jac** are released.



**2016**

**Electrak HD** is released.



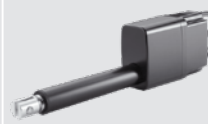
**2019**

**Electrak GX** is released.



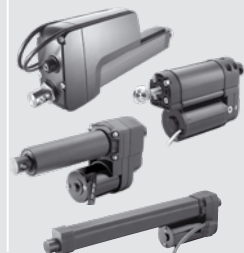
**2020**

**Electrak MD** is released.



**2021**

**Electrak LL** is released and **B-Track**, **M-Track** and **H-Track** are added to the actuator range.





## Why Choose Electric Linear Actuators?

Electric linear actuators are versatile, easy to use and affordable compared to most alternatives. As long as electric power is available, there is likely a suitable electric actuator for the job. The latest generation of actuators, which are smarter, stronger and sturdier, have also created new application possibilities. Where you once had to look for expensive, complex and often custom-built solutions, a standard electric actuator is often now the simple choice.

An electric actuator is often the easiest way to move from manual to powered motion since electricity is the easiest and most readily available power source. It doesn't matter if electricity is from the grid, a battery or any other source since there are actuators for both AC or DC in all the most common voltages. Plug in and run - it is often as simple as that.

### **Smaller, Stronger and More Robust**

Electric motors, drives and batteries have experienced huge technological leaps forward over the past few decades, and the trend of making electric actuators more powerful and efficient continues. At the same time, actuators have become better sealed and more robust, allowing them to be used in even the toughest environments.

### **Clean, Maintenance-Free Operation**

Electric actuators are inherently clean since there are no messy compressors, filters, oils or other mediums involved. Most of them are, in fact, clean enough to be used in areas sensitive to contamination out of the box. Thomson electric actuators are also completely maintenance free - there is no need to remember to check or replace anything. Electric actuators don't carry hidden ownership costs, sparing you of any unpleasant surprises throughout their lifetime.



Modern actuators can work in almost any environment

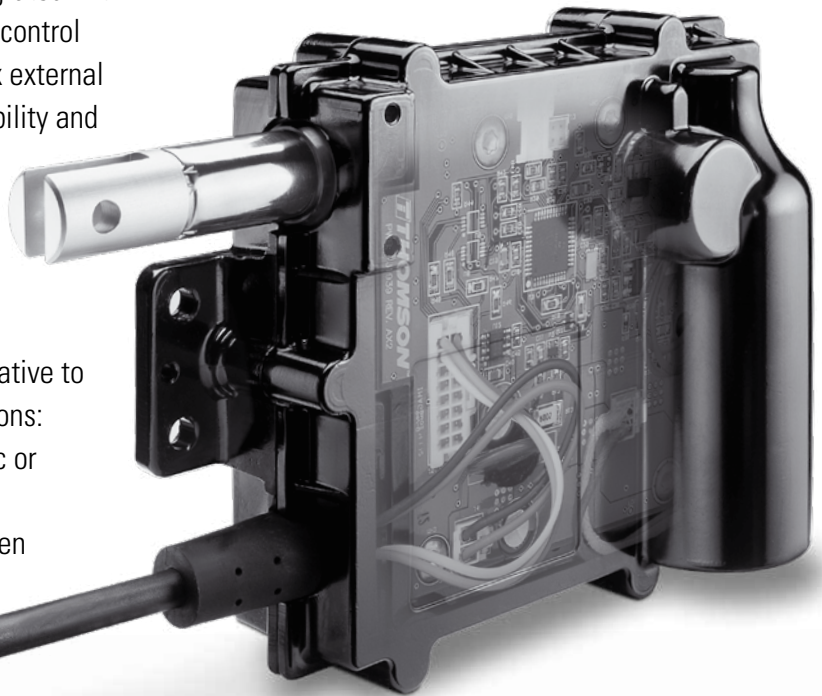
### Smart Actuation

At Thomson, the most advanced actuators today are known as “smart.” These models are integrated with onboard controls, which enable enhanced control functions that previously required complex external controls. They feature enhanced controllability and allow you to monitor performance and diagnostics to help increase efficiency and productivity.

### Affordable Actuation

Linear actuators are a cost-efficient alternative to other actuator technologies for many reasons:

- Electric power costs less than hydraulic or pneumatic power.  
Electric actuators only need energy when moving; at a standstill, they are self-locking and need no power to keep the position.
- Cables are less expensive than tubes and hoses.
- Cables are a lot quicker and easier to install and commission.
- An electric actuator system is lightweight and requires little space.
- Less or eliminated maintenance reduces total cost of ownership.



The “smart” Electrak Throttle and Electrak® HD actuators



## Why Convert to Electric Actuators?

There are many reasons to switch from a pneumatic or hydraulic actuator solution to an electric one. Better controllability, reduced complexity and a smaller footprint are often the main ones. Less energy consumption, cleaner operation and reduced maintenance are others but often you will also experience additional benefits such as better performance, reduced downtime, and faster assembly and commissioning.

### **Better Controllability**

An electric motor and a lead/ball screw are much easier to run than a pneumatic or hydraulic cylinder, since essentially all you need to do is plug it in. They are also easier to control precisely since they react faster, are more accurate and do not suffer from creep at standstill or power off. In addition, they are easier to equip with onboard feedback and controls, making them easy to connect to other controls.

### **Modular Control Concept**

State-of-the-art electric actuators, such as the Thomson Electrak® HD, have a modular control architecture and can be ordered with anything from a simple motor to full bus communication functionality that let you control and monitor every aspect of the actuator and its performance.

### **Reduced Costs and Improved Environment**

There are many reasons why electric actuators can help you both save money and improve the environment, including:

- Increased energy efficiency and environment-friendly features.
- No need for costly compressors and the supporting infrastructure.
- Cleaner and safer to use in places sensitive to contamination.
- No risk of leaks – small, undetected leakages add hidden costs, while larger leaks can be hazardous, messy and costly.
- No maintenance required, reliable and easy to replace if necessary.
- Quick and simple to install and commission.

# ELECTRIC LINEAR ACTUATORS

**IMPROVE**

**EFFICIENCY  
RELIABILITY  
PRODUCTIVITY  
PERFORMANCE  
CONTROLLABILITY**

**REDUCE**

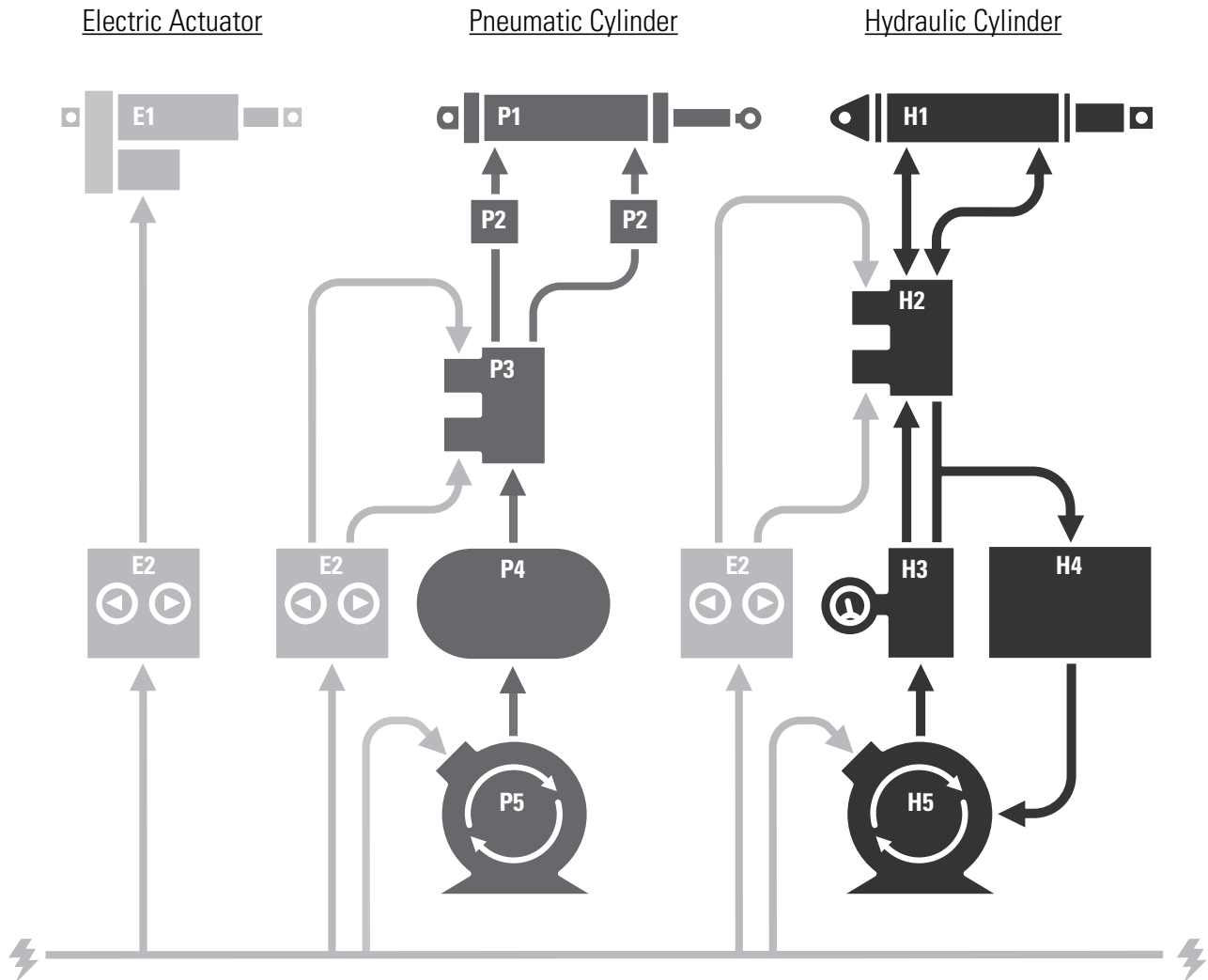
**COMPLEXITY  
ENGINEERING  
COMPONENTS  
OVERALL COSTS  
INSTALLATION TIME**



### Reduced Complexity and Smaller Footprint

The illustration below compares three common, simple ways to run an electric actuator, a pneumatic cylinder and a hydraulic cylinder back and forth.

It appears obvious that both the pneumatic and hydraulic cylinder require more complex, space-demanding solutions that add more weight to the complete system.



- E1. Electric linear actuator
- E2. Electric switches

- P1. Pneumatic cylinder
- P2. One-way flow control valves
- P3. Bidirectional valve
- P4. Compressed air tank
- P5. Pneumatic air compressor

- H1. Hydraulic cylinder
- H2. Bidirectional valve
- H3. Pressure relief valve
- H4. Hydraulic oil reservoir tank
- H5. Hydraulic oil compressor

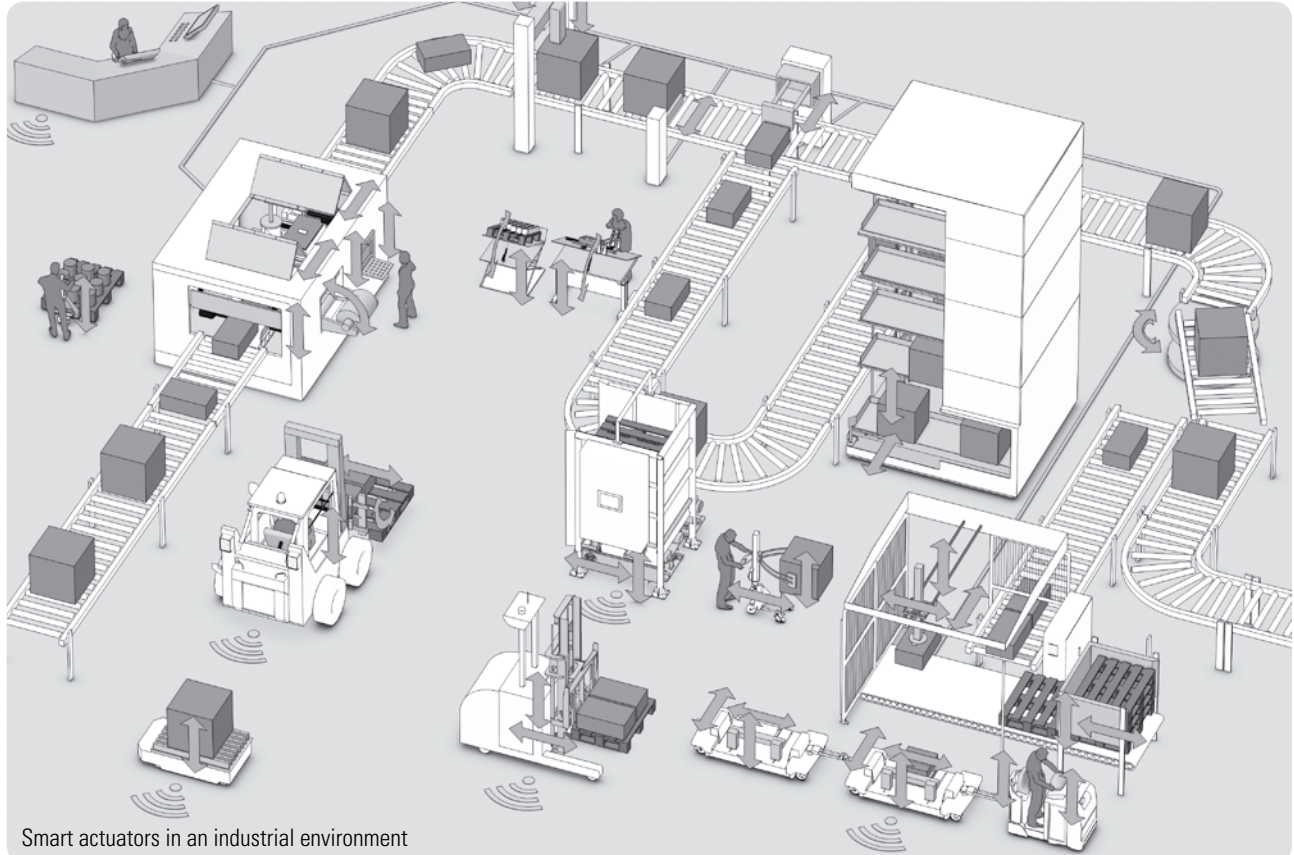


## Smart Actuators

As the industrial world becomes increasingly connected, the designer's need for intelligent components that can communicate with each other and operate without the need for manual interaction is growing. Thomson is meeting this demand and helping to usher in a new generation of "smart" actuators where a modular onboard control architecture and the possibility to use bus communication are key features.

### Smart Actuator Benefits

- Increased efficiency and productivity.
- Fewer components and less cabling.
- Minimized complexity and easier installation.
- Reduced hardware and software costs.
- Decreased machine development time.
- Reduced overall system weight.
- Improved machine functionality and performance.
- Bus communication between host control and actuators.
- Synchronized actuator motion without having to add any extra external controls.
- Better and more accurate controllability.
- Speed and force control.
- Enhanced diagnostic and monitoring capabilities.

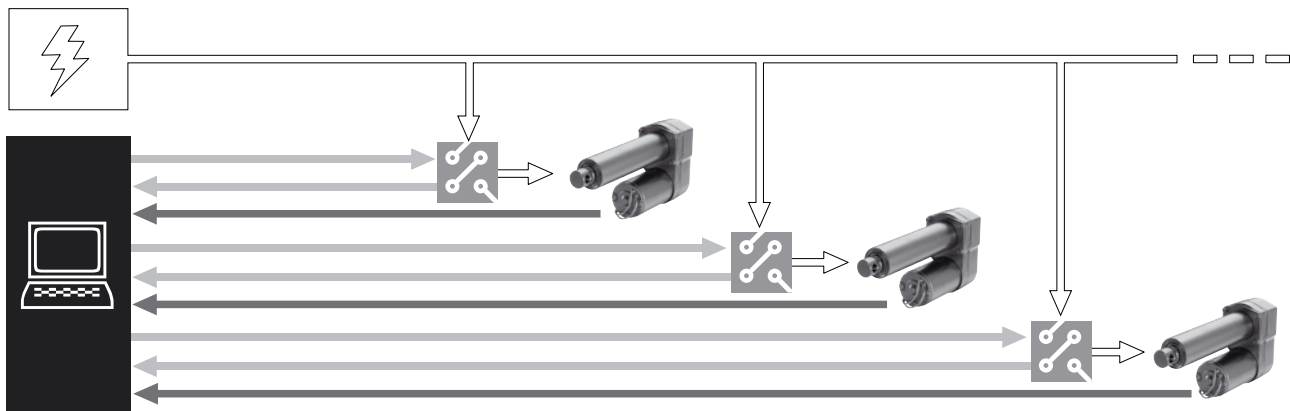


**Learn more about smart actuators at [www.thomsonlinear.com/smart](http://www.thomsonlinear.com/smart)**

### Traditional vs. Smart Systems

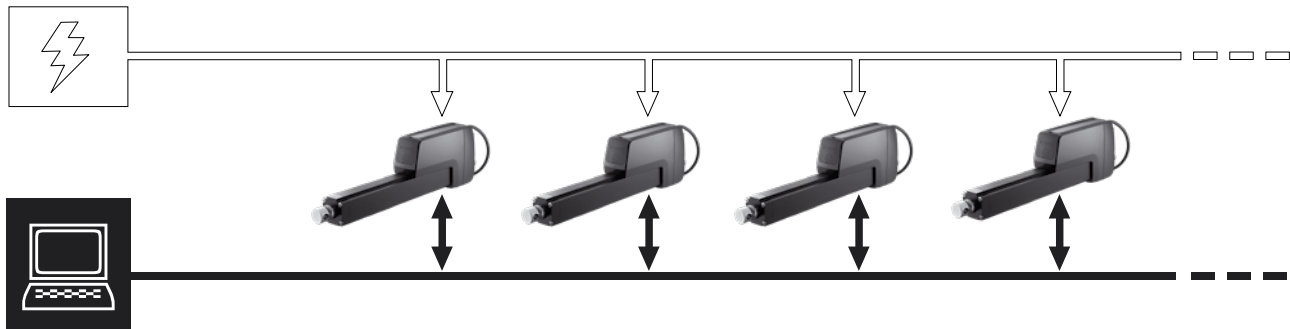
#### Traditional System

Each actuator is controlled by the host individually. By using control boxes, switches, sensors and position feedback devices, the host controls and keeps track of each actuator.



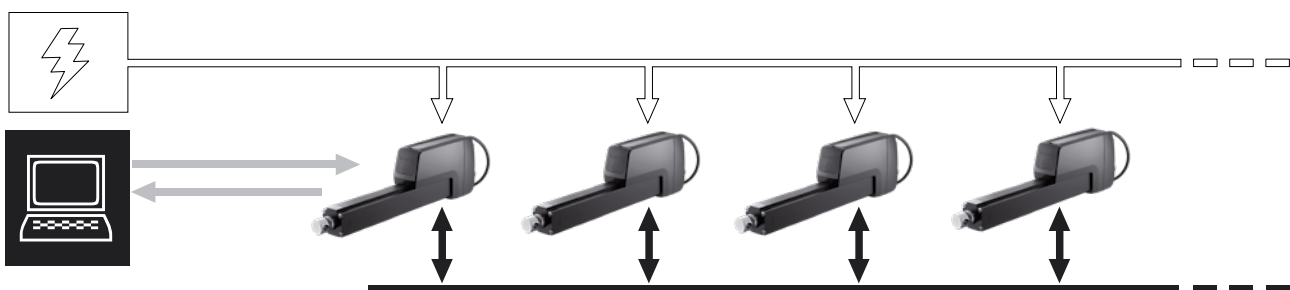
#### Bus Communication System





All actuators speak to the host control over the same bus, and each actuator does what it is commanded to and reports back when done or if something goes wrong.

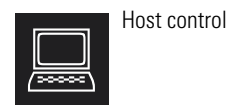
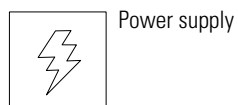


#### Synchronization System

The host control runs one actuator, which becomes the master. The other actuators follow the master as slaves without having to communicate with the host control.

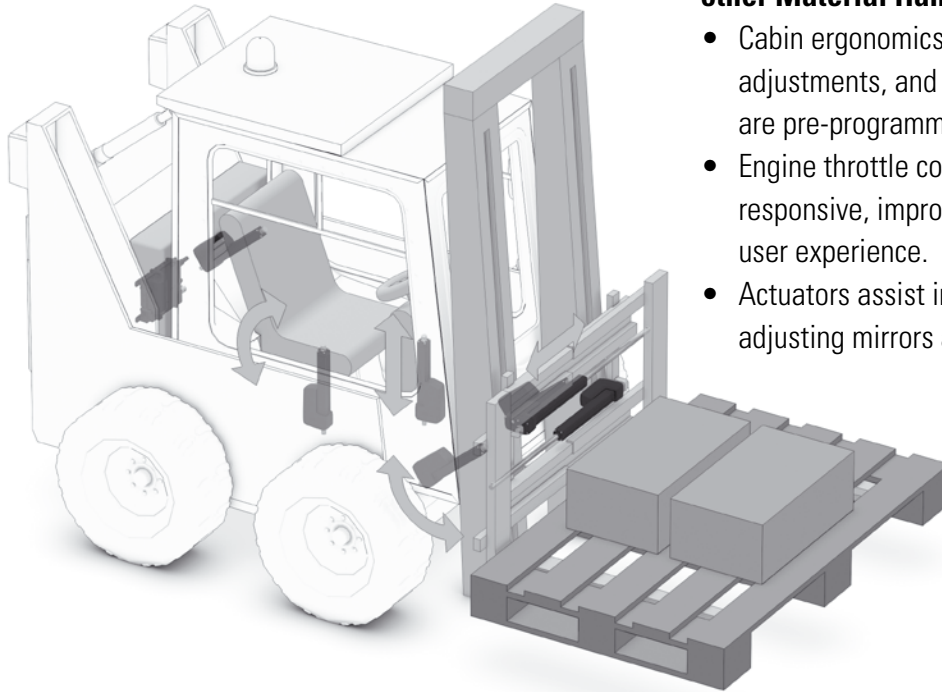


-  Power lines
-  Control signals
-  Position feedback signals
-  Bus communication





## Applications

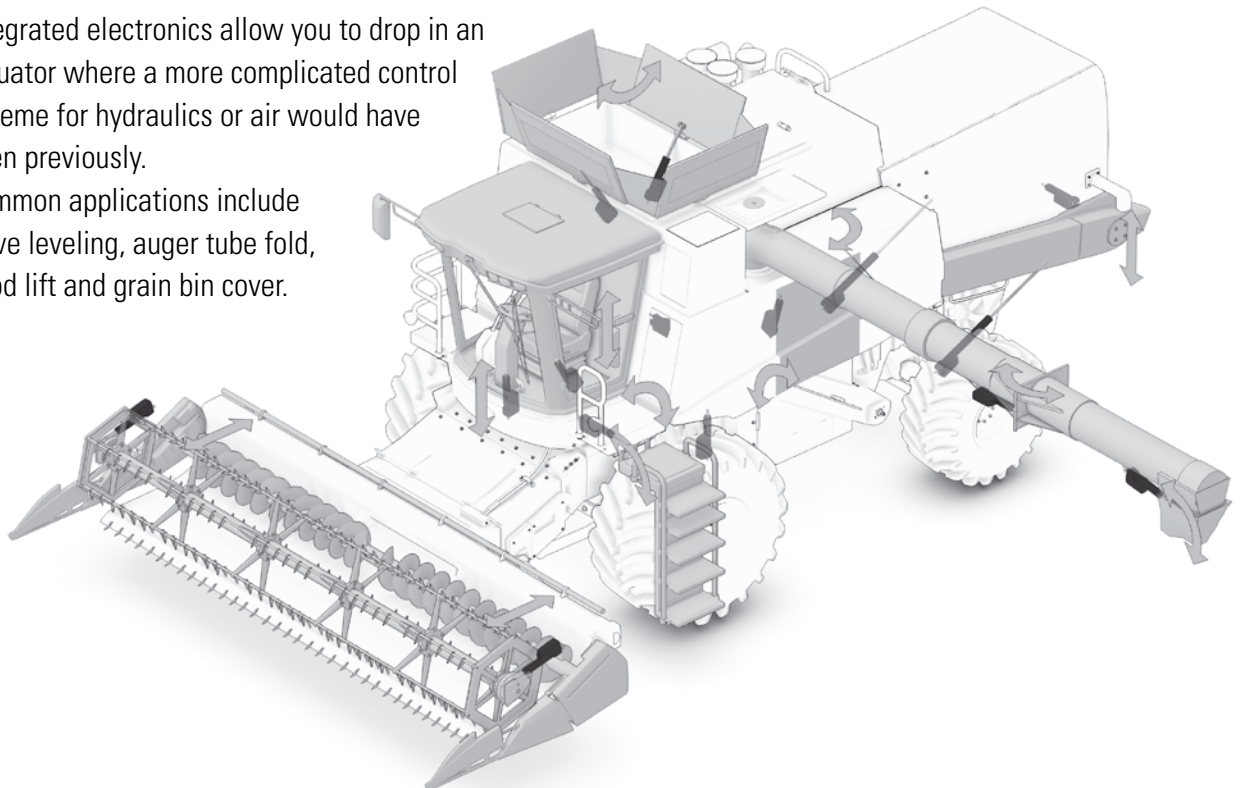


### **Lifting Devices, Fork Lifts, Driver Cabins and other Material Handling Vehicles**

- Cabin ergonomics are improved with seat adjustments, and individual, user-defined settings are pre-programmed for quick changes.
- Engine throttle control is more precise and responsive, improving fuel consumption and the user experience.
- Actuators assist in opening hoods and doors, and adjusting mirrors and ladders.

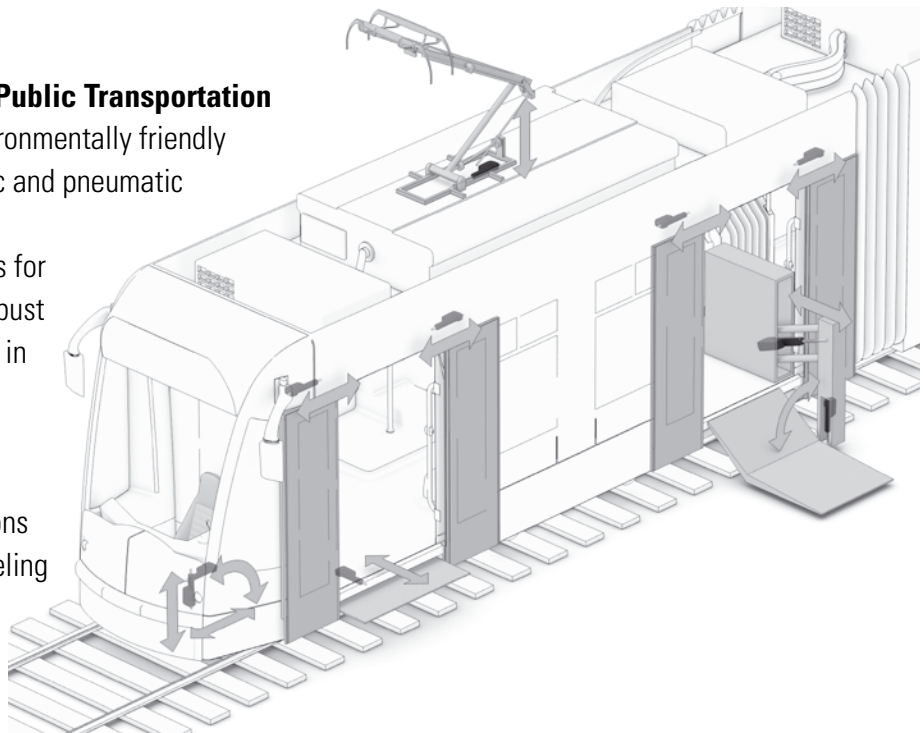
### **Combines and other Agricultural Vehicles**

- Electromechanical actuation is ideal for hard-to-reach places that may require complex control to function.
- Integrated electronics allow you to drop in an actuator where a more complicated control scheme for hydraulics or air would have been previously.
- Common applications include sieve leveling, auger tube fold, hood lift and grain bin cover.



### Trains, Trams, Buses and other Public Transportation

- Electric actuators are more environmentally friendly and cost effective than hydraulic and pneumatic systems.
- Trains and buses using actuators for pantographs benefit from the robust construction to achieve long life in harsh environments.
- Overload sense and confirmed position are vital to user safety.
- Other public transport applications include door actuation, step leveling and gap control.

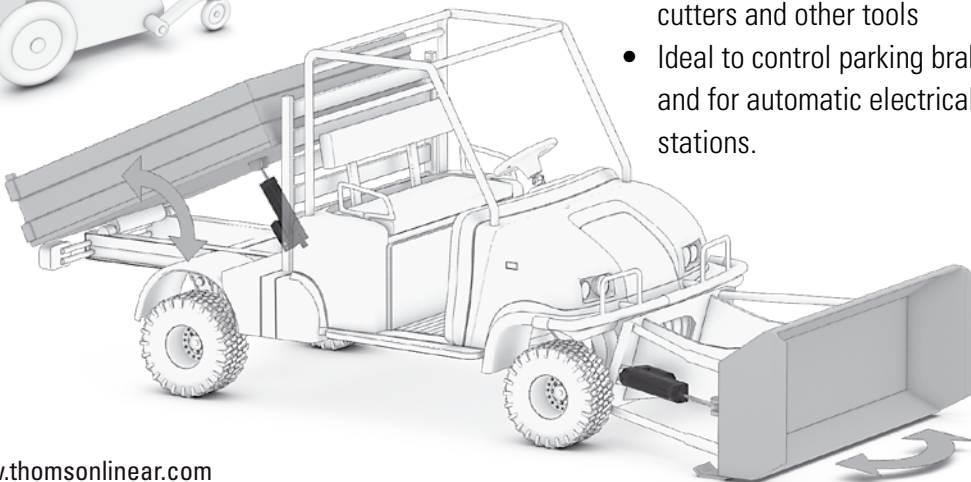


### Staircase Lifts, Patient Lifts and Wheel Chairs

- Used typically in homes, offices, mobile equipment or where electricity is the only available power source.
- Electric actuators are ideal for many lift functions depending on the style and configuration.
- Examples include seat leveling, tilting of the seat and foot rest, and extending and retracting the rail at the end of the staircase.

### Utility vehicles, lawn mowers and AGV's

- Assist you in numerous applications to reduce heavy lifting and improve safety and ergonomics
- Used to change or and position buckets, decks, cutters and other tools
- Ideal to control parking brakes, steering, throttles and for automatic electrical vehicle charging stations.





## Online Sizing and Selection Tools

Thomson LinearMotioneering® for Linear Actuators is a self-service, online sizing and selection tool that saves you time and cost and helps avoid misapplication. It allows you to quickly and accurately find your ideal solution by completing a self-guided, interactive series of questions that taps into the extensive application engineering knowledge base of Thomson experts.

LinearMotioneering is an easy-to-use, step-by-step tool that gathers all necessary information and then presents you with suitable solutions. Once the best candidate among the options is defined, LinearMotioneering will let you download all of the technical data and a 3D CAD model of the selected actuator, show you the cost and delivery time, and even let you purchase it from the Thomson online store.

### Your Own Project Library

All of your projects are stored in your own library so that you can return and continue working on them

or use an old project as the basis for a new one. Since projects are stored online, you can open them from any computer, mobile phone or tablet - from anywhere in the world

### Help with Custom Solutions

If LinearMotioneering can't find a suitable actuator for your project, you have the option to ask for a custom solution. The tool will ask for the necessary data so that our engineers can have a look and help you get what you need.

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Linear Motion. Optimized.™

Home learn more support my projects

Linear MOTIONEERING®  
**LINEAR ACTUATORS**

Size and Select Your System

START > SIZING & SELECTION > SOLUTIONS COMPARISON > OPTIONS & ACCESSORIES > BILL OF MATERIAL

Back Reset Save Project Continue

**Step 1 - Fundamentals**

**Dynamic Force** [?] Max. required push/pull force at motion [N]  
(Min: 0N , Max: 20000N)

**Static Force** [?] Max. required holding force at stand still [N]  
(Min: 0N , Max: 20000N)

**Max. Stroke Length** [?] Max. required stroke [mm]  
(Min: 0mm , Max: 1500mm)

**Actuator Supply Voltage** [?] [v]

**Environmental Conditions** (select best match) [?]  
 Standard Factory – IP55

**1 2 3**

**Solutions Based on Application Type** [?]  
Solutions by Family

Continue

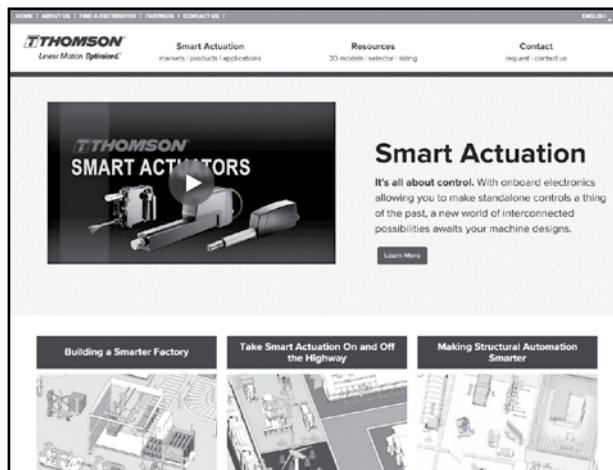
Request for Custom Quotation

**Do you want help to size and select the best match for your application?  
Please visit: [www.linearactuators.linearmotioneering.com](http://www.linearactuators.linearmotioneering.com)**

Thomson offers a wide variety of online resources to help you learn more about electric linear actuators. An experienced team of application engineers is also available to help you. To explore additional technical resources and options, contact Thomson customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs).

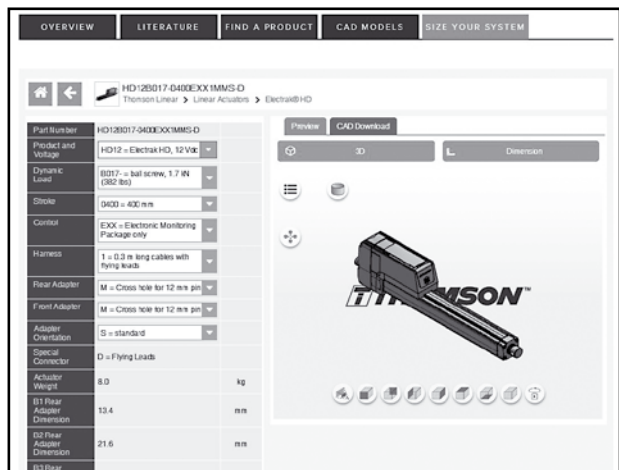
### Smart Actuators Product Website

Learn more about smart actuators and how they can help you build better machines at: [www.thomsonlinear.com/smart](http://www.thomsonlinear.com/smart)



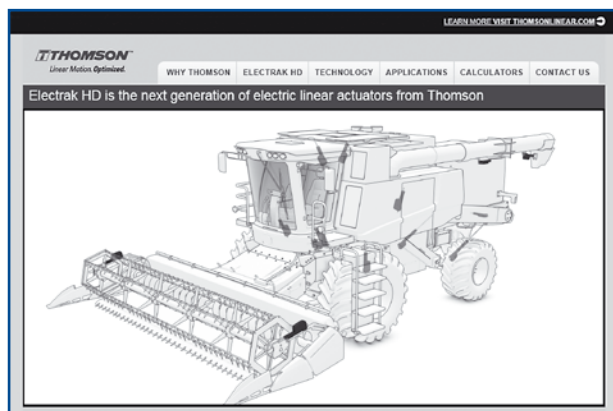
### Free CAD Models

Download free interactive 3D CAD models in the most common CAD formats at: [www.thomsonlinear.com/en/products/linear-actuators-drawings](http://www.thomsonlinear.com/en/products/linear-actuators-drawings)



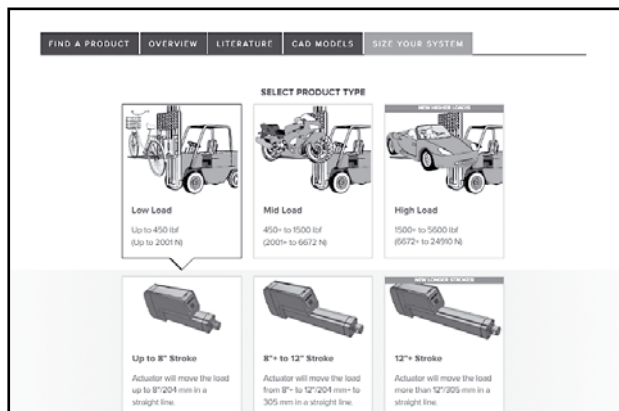
### Electrak® HD Product Website

Get additional information and learn more about Electrak HD at: [www.thomsonlinear.com/hd](http://www.thomsonlinear.com/hd)



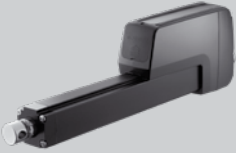
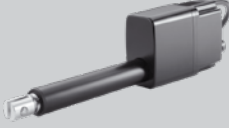
### Linear Actuator Selector Tool

The tool walks you through the selection process to your ideal actuator model. [www.thomsonlinear.com/en/products/linear-actuators](http://www.thomsonlinear.com/en/products/linear-actuators)









## Specifications


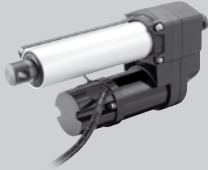
|                                              | <b>Electrak® HD</b>                                                               | <b>Electrak MD</b>                                                                  |                         |
|----------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------|
|                                              |  |  |                         |
| Screw type                                   | ball                                                                              | acme                                                                                |                         |
| Manual operation                             | yes                                                                               | yes                                                                                 |                         |
| Static load holding                          | yes                                                                               | yes (self-locking)                                                                  |                         |
| End-of-stroke protection                     | internal limit switches                                                           | internal limit switches                                                             |                         |
| Overload protection                          | yes                                                                               | yes (optional)                                                                      |                         |
| Available input voltages                     | [Vdc]<br>[Vac]                                                                    | 12, 24<br>-                                                                         | 12, 24<br>-             |
| Max. static load                             | [N (lbf)]                                                                         | 18000 (4000)                                                                        | 2000 (450)              |
| Max. dynamic load (Fx)                       | [N (lbf)]                                                                         | 16000 (3584)                                                                        | 2000 (450)              |
| Max. speed @ no load / max. load             | [mm/s (in/s)]                                                                     | 71 / 58 (2.80 / 2.28)                                                               | 52 / 43.8 (2.04 / 1.72) |
| Max. ordering stroke (S) length              | [mm] / [in]                                                                       | 1000 / -                                                                            | 300 / -                 |
| Restraining torque                           | [Nm (lbf-in)]                                                                     | 0                                                                                   | 0                       |
| Operating temperature limits                 | [°C (°F)]                                                                         | - 40 – 85 (- 40 – 185)                                                              | - 40 – 85 (- 40 – 185)  |
| Full load duty cycle @ 25 °C (77 °F)         | [%]                                                                               | 25                                                                                  | 25                      |
| Ingress protection rating - static / dynamic | IP67, IP69K / IP66                                                                | IP67, IP69K / IP66                                                                  |                         |
| Control options                              |                                                                                   |                                                                                     |                         |
| End-of-stroke output                         | yes                                                                               | yes                                                                                 |                         |
| Analog position feedback                     | yes                                                                               | yes                                                                                 |                         |
| Digital position feedback                    | yes                                                                               | no                                                                                  |                         |
| Low-level switching                          | yes                                                                               | yes                                                                                 |                         |
| Programmable extend and retract limits       | yes                                                                               | no                                                                                  |                         |
| Signal-follower                              | yes                                                                               | no                                                                                  |                         |
| Synchronization                              | yes                                                                               | no                                                                                  |                         |
| SAE J1939 CAN bus                            | yes                                                                               | yes                                                                                 |                         |
| CANopen® CAN bus                             | yes                                                                               | yes                                                                                 |                         |
| End-of-stroke limit switches                 | standard                                                                          | standard                                                                            |                         |
| Page                                         | 24                                                                                | 40                                                                                  |                         |

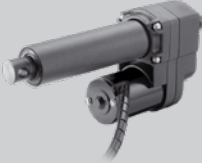
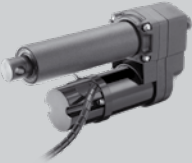





|  | <b>Electrak GX DC</b>                                                             | <b>Electrak GX AC</b>                                                             | <b>Electrak LA14</b>                                                               | <b>Electrak LA24</b>                                                                |
|--|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |
|  | acme or ball                                                                      | acme or ball                                                                      | acme or ball                                                                       | acme or ball                                                                        |
|  | optional                                                                          | optional                                                                          | optional                                                                           | optional                                                                            |
|  | yes                                                                               | yes                                                                               | yes                                                                                | yes                                                                                 |
|  | clutch                                                                            | clutch                                                                            | clutch                                                                             | clutch                                                                              |
|  | yes                                                                               | yes                                                                               | yes                                                                                | yes                                                                                 |
|  | 12, 24, 36, 48, 90<br>-                                                           | -<br>1 × 115, 1 × 230, 3 × 400                                                    | 12, 24, 36<br>-                                                                    | -<br>1 × 115, 1 × 230, 3 × 400                                                      |
|  | 18000 (4000)                                                                      | 18000 (4000)                                                                      | 18000 (4000)                                                                       | 18000 (4000)                                                                        |
|  | 9000 (2000)                                                                       | 9000 (2000)                                                                       | 6800 (1500)                                                                        | 4500 (1000)                                                                         |
|  | 61 / 37 (2.40 / 1.40)                                                             | 53 / 43 (2.10 / 1.70)                                                             | 61 / 37 (2.40 / 1.40)                                                              | 53 / 43 (2.10 / 1.70)                                                               |
|  | - / 24                                                                            | - / 24                                                                            | 600 / -                                                                            | 600 / -                                                                             |
|  | 11.3 (100)                                                                        | 11.3 (100)                                                                        | 0                                                                                  | 0                                                                                   |
|  | - 25 – 65 (- 15 – 150)                                                            | - 25 – 65 (- 15 – 150)                                                            | - 25 – 65 (- 15 – 150)                                                             | - 25 – 65 (- 15 – 150)                                                              |
|  | 25                                                                                | 25                                                                                | 25                                                                                 | 25                                                                                  |
|  | IP66, IP69K / -                                                                   | IP45 / -                                                                          | IP65 / -                                                                           | IP45 / -                                                                            |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | yes                                                                               | yes                                                                               | yes                                                                                | yes                                                                                 |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | 50                                                                                | 60                                                                                | 72                                                                                 | 80                                                                                  |



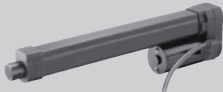

## Specifications


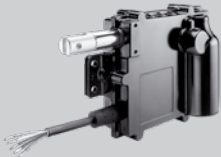
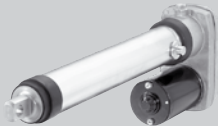
|                                              |                | <b>B-Track IC DC</b>                                                              | <b>B-Track IC AC</b>                                                                |
|----------------------------------------------|----------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                              |                |  |  |
| Screw type                                   |                | acme or ball                                                                      | acme or ball                                                                        |
| Manual operation                             |                | no                                                                                | no                                                                                  |
| Static load holding                          |                | yes                                                                               | yes                                                                                 |
| End-of-stroke protection                     |                | yes                                                                               | yes                                                                                 |
| Overload protection                          |                | yes                                                                               | yes                                                                                 |
| Available input voltages                     | [Vdc]<br>[Vac] | 12, 24<br>-                                                                       | -<br>1 × 115, 1 × 230                                                               |
| Max. static load                             | [N (lbf)]      | 13345 (3000)                                                                      | 13345 (3000)                                                                        |
| Max. dynamic load (Fx)                       | [N (lbf)]      | 12460 (2800)                                                                      | 12460 (2800)                                                                        |
| Max. speed @ no load / max. load             | [mm/s (in/s)]  | 73 / 43 (2.85 / 1.7)                                                              | 44 / 32 (1.75 / 1.28)                                                               |
| Max. ordering stroke (S) length              | [mm] / [in]    | - / 24                                                                            | - / 24                                                                              |
| Restraining torque                           | [Nm (lbf-in)]  | 11.3 (100)                                                                        | 11.3 (100)                                                                          |
| Operating temperature limits                 | [°C (F)]       | -29 – 65 (-20 – 150)                                                              | -29 – 65 (-20 – 150)                                                                |
| Full load duty cycle @ 25 °C (77 °F)         | [%]            | 25                                                                                | 25                                                                                  |
| Ingress protection rating - static / dynamic |                | IP66, IP69K / -                                                                   | IP66, IP69K / -                                                                     |
| Control options                              |                |                                                                                   |                                                                                     |
| End-of-stroke output                         |                | yes                                                                               | yes                                                                                 |
| Analog position feedback                     |                | yes                                                                               | yes                                                                                 |
| Digital position feedback                    |                | no                                                                                | no                                                                                  |
| Low-level switching                          |                | yes                                                                               | no                                                                                  |
| Programmable extend and retract limits       |                | no                                                                                | no                                                                                  |
| Signal-follower                              |                | no                                                                                | no                                                                                  |
| Synchronization                              |                | no                                                                                | no                                                                                  |
| SAE J1939 CAN bus                            |                | no                                                                                | no                                                                                  |
| CANopen CAN bus                              |                | no                                                                                | no                                                                                  |
| End-of-stroke limit switches                 |                | yes                                                                               | no                                                                                  |
| Page                                         |                | 90                                                                                | 98                                                                                  |

|  | <b>B-Track DC</b>                                                                 | <b>B-Track AC</b>                                                                 | <b>H-Track</b>                                                                    | <b>Electrak® 1 S</b>                                                               | <b>Electrak 1 SP</b>                                                                |
|--|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
|  | acme or ball                                                                      | acme or ball                                                                      | none (hydraulic piston)                                                           | acme                                                                               | acme                                                                                |
|  | no                                                                                | no                                                                                | yes                                                                               | no                                                                                 | no                                                                                  |
|  | yes                                                                               | yes                                                                               | yes                                                                               | yes                                                                                | yes                                                                                 |
|  | yes                                                                               | yes                                                                               | no                                                                                | internal limit switches                                                            | no                                                                                  |
|  | yes                                                                               | yes                                                                               | yes                                                                               | no                                                                                 | no                                                                                  |
|  | 12, 24, 36, 48, 90<br>-                                                           | -<br>1 × 115, 1 × 230                                                             | 12, 24, 48<br>-                                                                   | 12, 24<br>-                                                                        | 12, 24<br>-                                                                         |
|  | 13345 (3000)                                                                      | 13345 (3000)                                                                      | 22241 (5000)                                                                      | 1300 (300)                                                                         | 1300 (300)                                                                          |
|  | 12460 (2800)                                                                      | 12460 (2800)                                                                      | 21351 (4800)                                                                      | 340 (75)                                                                           | 340 (75)                                                                            |
|  | 73 / 43 (2.85 / 1.7)                                                              | 44 / 32 (1.75 / 1.28)                                                             | 111.2 / 111.2 (4.38 / 4.38)                                                       | 78 / 64 (3.1 / 2.5)                                                                | 78 / 64 (3.1 / 2.5)                                                                 |
|  | - / 24                                                                            | - / 24                                                                            | - / 16                                                                            | - / 8                                                                              | - / 8                                                                               |
|  | 11.3 (100)                                                                        | 11.3 (100)                                                                        | 0.1 (0.89)                                                                        | 2.3 (1.7)                                                                          | 0                                                                                   |
|  | - 29 – 65 (- 20 – 150)                                                            | - 29 – 65 (- 20 – 150)                                                            | - 26 – 65 (- 20 – 150)                                                            | - 25 – 65 (- 13 – 150)                                                             | - 25 – 65 (- 13 – 150)                                                              |
|  | 25                                                                                | 25                                                                                | 25                                                                                | 25                                                                                 | 25                                                                                  |
|  | IP66, IP69K / -                                                                   | IP66, IP69K / -                                                                   | IP69K, IP67 / IP65                                                                | IP66 / -                                                                           | IP66 / -                                                                            |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | standard                                                                            |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | no                                                                                 | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                | standard                                                                           | no                                                                                  |
|  | 104                                                                               | 110                                                                               | 116                                                                               | 128                                                                                | 134                                                                                 |






## Specifications



|                                              |                | <b>M-Track</b>                                                                    | <b>Electrak 050</b>                                                                 |  |
|----------------------------------------------|----------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                                              |                |  |  |  |
| Screw type                                   |                | acme                                                                              | worm                                                                                |  |
| Manual operation                             |                | no                                                                                | no                                                                                  |  |
| Static load holding                          |                | yes                                                                               | yes                                                                                 |  |
| End-of-stroke protection                     |                | internal limit switches                                                           | internal limit switches and clutch                                                  |  |
| Overload protection                          |                | no                                                                                | yes                                                                                 |  |
| Available input voltages                     | [Vdc]<br>[Vac] | 12, 24<br>-                                                                       | 12, 24, 36<br>-                                                                     |  |
| Max. static load                             | [N (lbf)]      | 1300 (300)                                                                        | 1020 (224)                                                                          |  |
| Max. dynamic load (Fx)                       | [N (lbf)]      | 735 (165)                                                                         | 510 (112)                                                                           |  |
| Max. speed @ no load / max. load             | [mm/s (in/s)]  | 44 / 40 (1.74 / 1.58)                                                             | 48 / 37 (1.9 / 1.5)                                                                 |  |
| Max. ordering stroke (S) length              | [mm] / [in]    | - / 12                                                                            | 200 / -                                                                             |  |
| Restraining torque                           | [Nm (lbf-in)]  | 0                                                                                 | 0                                                                                   |  |
| Operating temperature limits                 | [°C (F)]       | - 25 – 65 (- 13 – 150)                                                            | -30 – 80 (-22 – 176)                                                                |  |
| Full load duty cycle @ 25 °C (77 °F)         | [%]            | 25                                                                                | 25                                                                                  |  |
| Ingress protection rating - static / dynamic |                | IP69K / IP65                                                                      | IP56 / -                                                                            |  |
| Control options                              |                |                                                                                   |                                                                                     |  |
| End-of-stroke output                         |                | no                                                                                | no                                                                                  |  |
| Analog position feedback                     |                | yes                                                                               | yes                                                                                 |  |
| Digital position feedback                    |                | no                                                                                | no                                                                                  |  |
| Low-level switching                          |                | no                                                                                | no                                                                                  |  |
| Programmable extend and retract limits       |                | no                                                                                | no                                                                                  |  |
| Signal-follower                              |                | no                                                                                | no                                                                                  |  |
| Synchronization                              |                | no                                                                                | no                                                                                  |  |
| SAE J1939 CAN bus                            |                | no                                                                                | no                                                                                  |  |
| CANopen CAN bus                              |                | no                                                                                | no                                                                                  |  |
| End-of-stroke limit switches                 |                | standard                                                                          | yes                                                                                 |  |
| Page                                         |                | 140                                                                               | 146                                                                                 |  |

|  | <b>Max Jac</b>                                                                    | <b>Electrak Throttle</b>                                                          | <b>Electrak PPA</b>                                                                 |
|--|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
|  | worm or ball                                                                      | worm                                                                              | ball                                                                                |
|  | no                                                                                | no                                                                                | no                                                                                  |
|  | worm yes, ball no                                                                 | yes                                                                               | yes                                                                                 |
|  | no                                                                                | internal limit switches and clutch or current sensing                             | clutch                                                                              |
|  | no                                                                                | yes                                                                               | yes                                                                                 |
|  | 12, 24                                                                            | 12, 24                                                                            | 12, 24, 36                                                                          |
|  | -                                                                                 | -                                                                                 | -                                                                                   |
|  | 2000 (450)                                                                        | 260 (60)                                                                          | 13350 (3000)                                                                        |
|  | 800 (180)                                                                         | 130 (30)                                                                          | 6670 (1500)                                                                         |
|  | 60 / 30 (2.4 / 1.2)                                                               | 196 / 83 (3.7 / 3.3)                                                              | 32 / 28 (1.26 / 1.10)                                                               |
|  | 300 / -                                                                           | - / 2                                                                             | - / 36                                                                              |
|  | 2 (1.48)                                                                          | 0                                                                                 | 22 (200)                                                                            |
|  | -40 – 85 (-40 – 185)                                                              | -40 – 125 (-40 – 257)                                                             | -25 – 65 (-15 – 150)                                                                |
|  | 25                                                                                | 50                                                                                | 30                                                                                  |
|  | IP66, IP69K / -                                                                   | IP69K, IP67 / -                                                                   | IP54 / -                                                                            |
|  | no                                                                                | no                                                                                | no                                                                                  |
|  | yes                                                                               | yes                                                                               | yes                                                                                 |
|  | yes                                                                               | no                                                                                | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                  |
|  | no                                                                                | yes                                                                               | no                                                                                  |
|  | no                                                                                | no                                                                                | no                                                                                  |
|  | no                                                                                | yes                                                                               | yes                                                                                 |
|  | 152                                                                               | 158                                                                               | 166                                                                                 |



# Performance Overview

| Specifications                               |                                                                                   |                                                                                     |                                                                                     |                        |
|----------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------|
|                                              | DMHD                                                                              | DMD                                                                                 | DMA                                                                                 |                        |
|                                              |  |  |  |                        |
| Screw type                                   | ball                                                                              | acme or ball                                                                        | acme or ball                                                                        |                        |
| Manual operation                             | yes                                                                               | optional                                                                            | optional                                                                            |                        |
| Static load holding                          | yes                                                                               | yes                                                                                 | yes                                                                                 |                        |
| End-of-stroke protection                     | internal limit switches                                                           | clutch                                                                              | clutch                                                                              |                        |
| Overload protection                          | yes                                                                               | yes                                                                                 | yes                                                                                 |                        |
| Available input voltages                     | [Vdc]<br>[Vac]                                                                    | 12, 24, 48<br>-                                                                     | -<br>1 × 230, 3 × 400                                                               |                        |
| Max. static load                             | [N (lbf)]                                                                         | 18000 (4000)                                                                        | 18000 (4000)                                                                        | 18000 (4000)           |
| Max. dynamic load (Fx)                       | [N (lbf)]                                                                         | 16000 (2248)                                                                        | 6800 (1500)                                                                         | 6800 (1500)            |
| Speed @ no load / max. load                  | [mm/s (in/s)]                                                                     | 71 / 58 (2.80 / 2.28)                                                               | 61 / 37 (2.40 / 1.40)                                                               | 61 / 37 (2.40 / 1.40)  |
| Max. ordering stroke (S) length              | [mm] / [in]                                                                       | 600 / -                                                                             | 600 / -                                                                             | 600 / -                |
| Restraining torque                           | [Nm (lbf-in)]                                                                     | 0                                                                                   | 0                                                                                   | 0                      |
| Operating temperature limits                 | [°C (F)]                                                                          | - 40 – 85 (- 40 – 185)                                                              | - 25 – 85 (- 15 – 185)                                                              | - 25 – 85 (- 15 – 185) |
| Full load duty cycle @ 25 °C (77 °F)         | [%]                                                                               | 25                                                                                  | 25                                                                                  | 25                     |
| Ingress protection rating - static / dynamic |                                                                                   | IP65 / -                                                                            | IP65 / -                                                                            | IP65 / -               |
| Control options                              |                                                                                   |                                                                                     |                                                                                     |                        |
| End-of-stroke output                         | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| Analog position feedback                     | yes                                                                               | yes                                                                                 | yes                                                                                 |                        |
| Digital position feedback                    | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| Low-level switching                          | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| Programmable extend and retract limits       | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| Signal-follower                              | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| Synchronization                              | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| SAE J1939 CAN bus                            | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| CANopen CAN bus                              | yes                                                                               | no                                                                                  | no                                                                                  |                        |
| End-of-stroke limit switches                 | standard                                                                          | no                                                                                  | no                                                                                  |                        |
| Page                                         | 174                                                                               | 186                                                                                 | 192                                                                                 |                        |

|  | LM80H                                                                             | LM80V                                                                              |
|--|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |  |
|  | trapezoidal or ball                                                               | trapezoidal or ball                                                                |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | spring loaded soft stop                                                           | spring loaded soft stop                                                            |
|  | no                                                                                | no                                                                                 |
|  | 12, 24                                                                            | 12, 24                                                                             |
|  | -                                                                                 | -                                                                                  |
|  | 2000 (450)                                                                        | 2000 (450)                                                                         |
|  | 750 (169)                                                                         | 750 (169)                                                                          |
|  | 110 / 73 (4.3 / 2.9)                                                              | 110 / 83 (4.3 / 3.3)                                                               |
|  | 1500 / -                                                                          | 1500 / -                                                                           |
|  | 0                                                                                 | 0                                                                                  |
|  | 0–40 (32–104)                                                                     | 0–40 (32–104)                                                                      |
|  | 15                                                                                | 15                                                                                 |
|  | IP44 / -                                                                          | IP44 / -                                                                           |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | no                                                                                | no                                                                                 |
|  | 198                                                                               | 204                                                                                |



# Electrak® HD – Technical Features



## Standard Features

- Onboard electronics with many optional functions
- Static load up to 18 kN (4050 lbf)
- Dynamic load up to 16 kN (3584 lbf)
- Stroke up to 1000 mm
- Speed up to 71 mm/s (2.8 in/s)
- Protection class static IP67 / IP69K and dynamic IP66 and tested for 500 hour salt spray resistance

## General Specifications

|                                       |                                                                                                                                                                                                                            |
|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Screw type                            | ball                                                                                                                                                                                                                       |
| Nut type                              | load lock ball nut                                                                                                                                                                                                         |
| Manual override                       | yes                                                                                                                                                                                                                        |
| Anti-rotation                         | yes                                                                                                                                                                                                                        |
| Static load holding brake             | yes                                                                                                                                                                                                                        |
| Safety features                       | Electrak monitoring package:<br>current monitoring<br>voltage monitoring<br>temperature monitoring<br>load trip point calibration<br>internal end-of-stroke limit switches <sup>(1)</sup><br>end-of-stroke dynamic braking |
| Electrical connections <sup>(2)</sup> | cable(s) with flying leads                                                                                                                                                                                                 |
| Compliances                           | CE                                                                                                                                                                                                                         |

(1) Dynamic braking is included at the ends of stroke for all Electrak HD actuators. Dynamic braking offered throughout the entire stroke length only on low-level switching and SAE J1939 options.

(2) There are one or two cables depending on the control option used. The cable(s) enters the actuator via a connector. The replacement of an actuator can be completed by unplugging the old actuator and plugging in the new one.

## Optional Mechanical Features

Variety of front and rear adapters

Alternative adapter orientation

## Optional Electronic Control Features

CANopen CAN bus

SAE J1939 CAN bus

Synchronization option

Low-level switching

Programmable limit switches

Signal-follower

End-of-stroke indication output

Analog position output

Digital position output

## Control Option Combinations

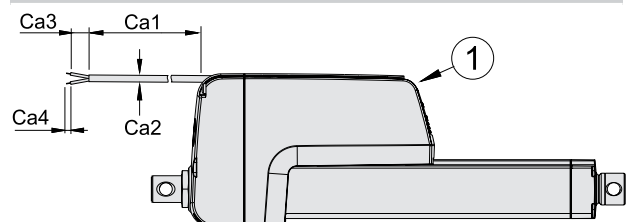
|     |                                                           |
|-----|-----------------------------------------------------------|
| EXX | Electrak Monitoring Package only                          |
| ELX | EXX + End-of-Stroke Indication Output                     |
| EXP | EXX + Analog Position Output                              |
| EXD | EXX + Digital Position Output                             |
| ELP | ELX + Analog Position Output                              |
| ELD | ELX + Digital Position Output                             |
| LXX | EXX + Low-Level Signal Motor Switching                    |
| LLX | EXX + LXX + End-of-Stroke Indication Output               |
| LXP | EXX + LXX + Analog Position Output                        |
| LPS | EXX + LXX + Programmable Limit Switches + Signal-Follower |
| CNO | SAE J1939 CAN Bus Control + Open-Loop Speed Control       |
| COO | CANopen CAN Bus Control + Open-Loop Speed Control         |
| SYN | Synchronization Option                                    |

## Accessories

Rod end front adapter

External slot-mounted limit switches

## Cable Definitions



The drawing shows the cables exiting the cable slots at the end of the actuator housing, which is the shipping position. The user can adjust the exit point to be anywhere between the connector (1) in the front of the housing and the end of the cable slots.



# Electrak HD – Technical Specifications

| Mechanical Specifications                      |               |                      |
|------------------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>                | [kN (lbf)]    | 18 (4050)            |
| Max. dynamic load (Fx)                         | [kN (lbf)]    |                      |
| HDxx-B017                                      |               | 1.7 (382)            |
| HDxx-B026                                      |               | 2.6 (585)            |
| HDxx-B045                                      |               | 4.5 (1012)           |
| HDxx-B068                                      |               | 6.8 (1529)           |
| HDxx-B100                                      |               | 10 (2248)            |
| HDxx-B160                                      |               | 16 (3584)            |
| Speed @ no load/max. load <sup>(2)</sup>       | [mm/s (in/s)] |                      |
| HDxx-B017                                      |               | 71/58 (2.8/2.28)     |
| HDxx-B026                                      |               | 40/32 (1.6/1.3)      |
| HDxx-B045                                      |               | 24/19 (0.94/0.75)    |
| HDxx-B068                                      |               | 18/14 (0.71/0.55)    |
| HDxx-B100                                      |               | 11/9 (0.43/0.35)     |
| HDxx-B160                                      |               | 7/5 (0.27/0.21)      |
| Min. ordering stroke (S) length <sup>(3)</sup> | [mm]          | 50                   |
| Max. ordering stroke (S) length <sup>(4)</sup> | [mm]          | 1000                 |
| Ordering stroke length increments              | [mm]          | 50                   |
| Operating temperature limits                   | [°C (F)]      | -40 – 85 (-40 – 185) |
| Full load duty cycle @ 25 °C (77 °F)           | [%]           | 25 <sup>(5)</sup>    |
| End play, maximum                              | [mm (in)]     | 1.2 (0.047)          |
| Restraining torque                             | [Nm (lbf-in)] | 0                    |
| Protection class - static                      |               | IP67, IP69K          |
| Protection class - dynamic                     |               | IP66                 |
| Salt spray resistance                          | [h]           | 500                  |

- (1) Max. static load at fully retracted stroke.  
 (2) For units with the synchronization option, the speed is 25% lower at any load.  
 (3) 50 mm stroke units will have the same retracted length as a 100 mm unit. Note! When using the handwind on a 50 mm stroke unit, running the handwind to extend past the internal 50 mm limit switch will cause damage to the actuator and the switch.  
 (4) 500 mm max. for 16 kN.  
 (5) For HDxx-B100 and HDxx-160, unidirectional load, the duty cycle is 15%.

| Electrical Specifications                   |                         |                             |
|---------------------------------------------|-------------------------|-----------------------------|
| Available input voltages <sup>(6)</sup>     | [Vdc]                   | 12, 24, 48                  |
| Input voltage tolerance                     | [Vdc]                   |                             |
| HD12 (12 Vdc input voltage)                 |                         | 9 - 16                      |
| HD24 (24 Vdc input voltage)                 |                         | 18 - 32                     |
| HD48 (48 Vdc input voltage)                 |                         | 36 - 64                     |
| Current draw @ no load/max. load            | [A]                     |                             |
| HD12-B017                                   |                         | 3/18                        |
| HD24-B017                                   |                         | 1.5/9                       |
| HD48-B017                                   |                         | 0.75/4.5                    |
| HD12-B026                                   |                         | 3/18                        |
| HD24-B026                                   |                         | 1.5/9                       |
| HD48-B026                                   |                         | 0.75/4.5                    |
| HD12-B045                                   |                         | 3/18                        |
| HD24-B045                                   |                         | 1.5/9                       |
| HD48-B045                                   |                         | 0.75/4.5                    |
| HD12-B068                                   |                         | 3/20                        |
| HD24-B068                                   |                         | 1.5/10                      |
| HD48-B068                                   |                         | 0.75/5                      |
| HD12-B100                                   |                         | 3/18                        |
| HD24-B100                                   |                         | 1.5/9                       |
| HD48-B100                                   |                         | 0.75/4.5                    |
| HD12-B160                                   |                         | 3/20                        |
| HD24-B160                                   |                         | 1.5/10                      |
| HD48-B160                                   |                         | 0.75/10                     |
| Motor leads cross section                   | [mm <sup>2</sup> (AWG)] | 2 (14)                      |
| Signal leads cross section                  | [mm <sup>2</sup> (AWG)] | 0.5 (20)                    |
| Standard cable lengths (Ca1) <sup>(7)</sup> | [m (in)]                | 0.3, 1.5, 5 (11.8, 59, 197) |
| Cable diameter (Ca2) <sup>(7)</sup>         | [mm (in)]               | 7.5 (.295)                  |
| Flying lead length (Ca3) <sup>(7)</sup>     | [mm (in)]               | 76 (3)                      |
| Stripped lead length (Ca4) <sup>(7)</sup>   | [mm (in)]               | 6 (0.25)                    |

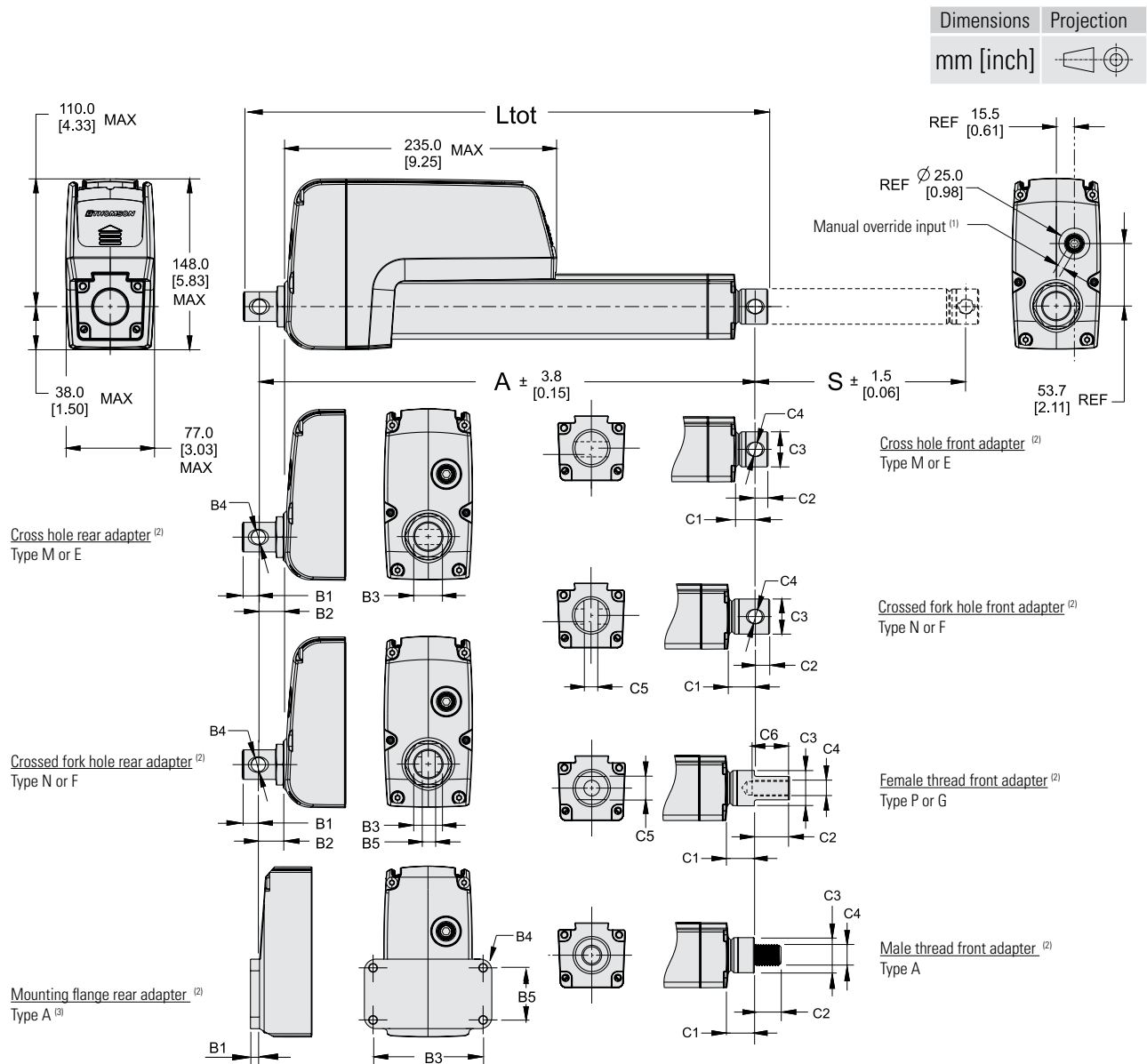
- (6) Do not use PWM voltage for speed control to avoid damaging the onboard electronics.  
 (7) See previous page for cable definitions.

| Actuator Weight [kg]                 |                          |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|--------------------------------------|--------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
| Maximum Dynamic Load (Fx) [kN (lbf)] | Ordering stroke (S) [mm] |     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|                                      | 50                       | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600  | 650  | 700  | 750  | 800  | 850  | 900  | 950  | 1000 |
| 1.7 (382)                            | 6.5                      | 6.5 | 6.7 | 7.0 | 7.2 | 7.5 | 7.7 | 8.0 | 8.2 | 8.5 | 8.7 | 9.0  | 9.2  | 9.5  | 9.7  | 10.0 | 10.2 | 10.5 | 10.7 | 11.0 |
| 2.6 (585)                            | 6.5                      | 6.5 | 6.7 | 7.0 | 7.2 | 7.5 | 7.7 | 8.0 | 8.2 | 8.5 | 8.7 | 9.0  | 9.2  | 9.5  | 9.7  | 10.0 | 10.2 | 10.5 | 11.9 | 12.2 |
| 4.5 (1012)                           | 6.5                      | 6.5 | 6.7 | 7.0 | 7.2 | 7.5 | 7.7 | 8.0 | 8.2 | 8.5 | 8.7 | 9.0  | 9.2  | 9.5  | 10.7 | 11.0 | 11.3 | 11.6 | 11.9 | 12.2 |
| 6.8 (1592)                           | 6.5                      | 6.5 | 6.7 | 7.0 | 7.2 | 7.5 | 7.7 | 8.0 | 8.2 | 8.5 | 9.5 | 9.0  | 10.1 | 10.4 | 10.7 | 11.0 | 11.3 | 11.6 | 11.9 | 12.2 |
| 10 (2248)                            | 6.7                      | 6.7 | 7.0 | 7.2 | 7.5 | 7.7 | 8.0 | 8.2 | 8.5 | 8.7 | 9.7 | 10.0 | 10.3 | 10.6 | 10.9 | 11.2 | 11.5 | 11.8 | 12.1 | 12.4 |
| 16 (3584)                            | 8.1                      | 8.1 | 8.3 | 8.5 | 8.7 | 8.9 | 9.1 | 9.3 | 9.5 | 9.7 | -   | -    | -    | -    | -    | -    | -    | -    | -    | -    |

Conversion Factors: Millimeter to inch: 1 mm = 0.03937 in, kilogram to pound: 1 kg = 2.204623 lbf



# Electrak® HD – Dimensions



## Rear and Front Adapter Dimensions [mm]

|    | Rear Adapter Types |      |      |      |                  |    | Front Adapter Types    |      |      |      |            |               |         |
|----|--------------------|------|------|------|------------------|----|------------------------|------|------|------|------------|---------------|---------|
|    | M                  | E    | N    | F    | A <sup>(3)</sup> |    | M                      | E    | N    | F    | P          | G             | A       |
| B1 | 13.4               | 13.4 | 13.4 | 13.4 | 7.8              | C1 | see table on next page |      |      |      |            |               | 16.5    |
| B2 | 21.6               | 21.6 | 21.6 | 21.6 | -                | C2 | 10.9                   | 10.9 | 12.9 | 12.9 | 30.0       | 30.0          | 20.0    |
| B3 | 25.4               | 25.4 | 25.4 | 25.4 | 95.0             | C3 | see table on next page |      |      |      |            |               |         |
| B4 | 12.2               | 12.8 | 12.2 | 12.8 | 6.6              | C4 | 12.2                   | 12.8 | 12.2 | 12.8 | M12 × 1.75 | 1/2-20 UNF-2B | M16 × 2 |
| B5 | -                  | -    | 8.2  | 8.2  | 45.0             | C5 | -                      | -    | 8.2  | 8.2  | 19.0       | 19.0          | -       |
|    |                    |      |      |      |                  | C6 | -                      | -    | -    | -    | 35.0       | 35.0          | -       |

(1) The input hole is covered with a plastic threaded plug. When removed, a 6 mm socket can be inserted and used as a crank.

(2) All adapters shown in the standard orientation.

(3) Rear mounting flange type A cannot be ordered with a higher maximum static load capacity than 10 kN or/and a maximum stroke of 300 mm.

Electrak<sup>®</sup> HD – Dimensions

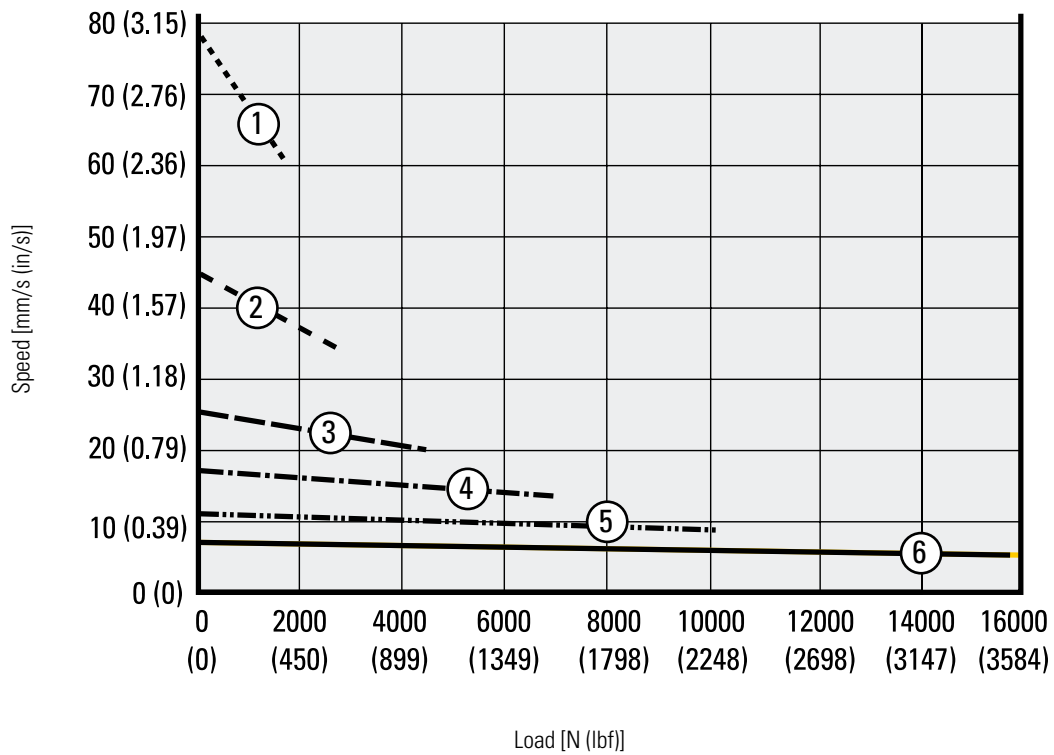
| Maximum Dynamic Load (Fx) - kN (lbf.) |      |           | Total Length (Ltot), Retracted Length (A) and Front Adapter Dimensions [mm] |      | Ordering Stroke (S) [mm]             |                     |           |           |            |
|---------------------------------------|------|-----------|-----------------------------------------------------------------------------|------|--------------------------------------|---------------------|-----------|-----------|------------|
|                                       |      |           |                                                                             |      | 50 – 500 <sup>(1)</sup>              | 550 – 600           | 650 – 700 | 750 – 900 | 950 – 1000 |
| 1.7<br>(382)                          | Ltot |           | A + B1 + C2                                                                 |      |                                      |                     |           |           |            |
|                                       | A    |           | S + 150.9 + B2 + C1                                                         |      |                                      |                     |           |           |            |
|                                       | C1   | Type M, E | 17.5                                                                        |      |                                      |                     |           |           |            |
|                                       |      | Type N, F | 26.5                                                                        |      |                                      |                     |           |           |            |
|                                       |      | Type P, G | 23.9                                                                        |      |                                      |                     |           |           |            |
| C3                                    |      | 30.2      |                                                                             |      |                                      |                     |           |           |            |
| 2.6<br>(585)                          | Ltot |           | A + B1 + C2                                                                 |      |                                      | A + B1 + C2         |           |           |            |
|                                       | A    |           | S + 150.9 + B2 + C1                                                         |      |                                      | S + 156.8 + B2 + C1 |           |           |            |
|                                       | C1   | Type M, E | 17.5                                                                        |      |                                      | 24.0                |           |           |            |
|                                       |      | Type N, F | 26.5                                                                        |      |                                      | 27.0                |           |           |            |
|                                       |      | Type P, G | 23.9                                                                        |      |                                      | 24.9                |           |           |            |
| C3                                    |      | 30.2      |                                                                             |      | 35.0                                 |                     |           |           |            |
| 4.5<br>(1012)                         | Ltot |           | A + B1 + C2                                                                 |      |                                      | A + B1 + C2         |           |           |            |
|                                       | A    |           | S + 150.9 + B2 + C1                                                         |      |                                      | S + 156.8 + B2 + C1 |           |           |            |
|                                       | C1   | Type M, E | 17.5                                                                        |      |                                      | 24.0                |           |           |            |
|                                       |      | Type N, F | 26.5                                                                        |      |                                      | 27.0                |           |           |            |
|                                       |      | Type P, G | 23.9                                                                        |      |                                      | 24.9                |           |           |            |
| C3                                    |      | 30.2      |                                                                             |      | 35.0                                 |                     |           |           |            |
| 6.8<br>(1529)                         | Ltot |           | A + B1 + C2                                                                 |      |                                      | A + B1 + C2         |           |           |            |
|                                       | A    |           | S + 150.9 + B2 + C1                                                         |      |                                      | S + 156.8 + B2 + C1 |           |           |            |
|                                       | C1   | Type M, E | 17.5                                                                        |      |                                      | 24.0                |           |           |            |
|                                       |      | Type N, F | 26.5                                                                        |      |                                      | 27.0                |           |           |            |
|                                       |      | Type P, G | 23.9                                                                        |      |                                      | 24.9                |           |           |            |
| C3                                    |      | 30.2      |                                                                             |      | 35.0                                 |                     |           |           |            |
| 10<br>(2248)                          | Ltot |           | A + B1 + C2                                                                 |      | A + B1 + C2                          |                     |           |           |            |
|                                       | A    |           | S + 180.9 + B2 + C1                                                         |      | S + 182 + B2 + C1                    |                     |           |           |            |
|                                       | C1   | Type M, E | 17.5                                                                        |      | 24.0                                 |                     |           |           |            |
|                                       |      | Type N, F | 26.5                                                                        |      | 27.0                                 |                     |           |           |            |
|                                       |      | Type P, G | 23.9                                                                        |      | 24.9                                 |                     |           |           |            |
| C3                                    |      | 30.2      |                                                                             | 35.0 |                                      |                     |           |           |            |
| 16<br>(3584)                          | Ltot |           | A + B1 + C2                                                                 |      | strokes not available for this model |                     |           |           |            |
|                                       | A    |           | S + 182 + B2 + C1                                                           |      |                                      |                     |           |           |            |
|                                       | C1   | Type M, E | 24.0                                                                        |      |                                      |                     |           |           |            |
|                                       |      | Type N, F | 27.0                                                                        |      |                                      |                     |           |           |            |
|                                       |      | Type P, G | 24.9                                                                        |      |                                      |                     |           |           |            |
| C3                                    |      | 35.0      |                                                                             |      |                                      |                     |           |           |            |

(1) For a unit with 50 mm stroke, A and Ltot dimension are the same as for a unit with 100 mm stroke.



# Electrak® HD – Performance Diagrams

Load vs. Speed <sup>(1)</sup>

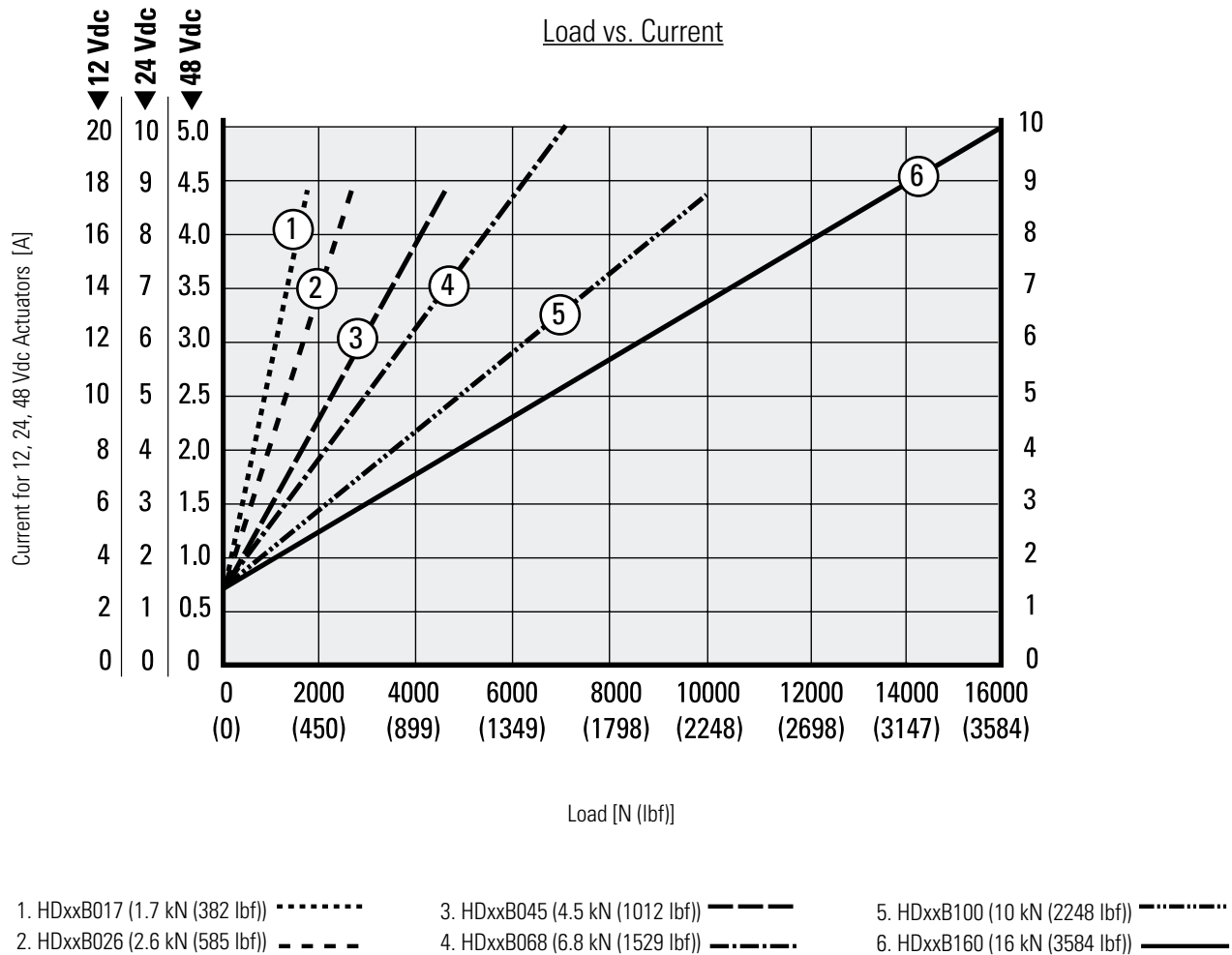


- |                                |       |                                 |       |                                |       |
|--------------------------------|-------|---------------------------------|-------|--------------------------------|-------|
| 1. HDxxB017 (1.7 kN (382 lbf)) | ..... | 3. HDxxB045 (4.5 kN (1012 lbf)) | ----- | 5. HDxxB100 (10 kN (2248 lbf)) | ..... |
| 2. HDxxB026 (2.6 kN (585 lbf)) | ----- | 4. HDxxB068 (6.8 kN (1529 lbf)) | ----- | 6. HDxxB160 (16 kN (3584 lbf)) | ----- |

<sup>1</sup> Curves valid for all units except those with the synchronization option, where the speed at any load is 25% lower than for those without.

**Note!** Curves were generated at an ambient temperature of 21°C (70°F). Different ambient temperature and individual actuator characteristics can produce slightly different values.

# Electrak<sup>®</sup> HD – Performance Diagrams



**Note!** Curves were generated at an ambient temperature of 21°C (70°F). Different ambient temperature and individual actuator characteristics can produce slightly different values.



# Electrak® HD – Ordering Key

## Ordering Key

| 1           | 2            | 3           | 4          | 5        | 6        | 7        | 8        | 9        |
|-------------|--------------|-------------|------------|----------|----------|----------|----------|----------|
| <b>HD12</b> | <b>B026-</b> | <b>0300</b> | <b>LXX</b> | <b>2</b> | <b>M</b> | <b>M</b> | <b>S</b> | <b>D</b> |

### 1. Model and input voltage

HD12 = Electrak HD, 12 Vdc  
 HD24 = Electrak HD, 24 Vdc  
 HD48 = Electrak HD, 48 Vdc

### 2. Screw type, dynamic load capacity

B017 = ball screw, 1.7 kN (382 lbf)  
 B026 = ball screw, 2.6 kN (585 lbf)  
 B045 = ball screw, 4.5 kN (1012 lbf)  
 B068 = ball screw, 6.8 kN (1529 lbf)  
 B100 = ball screw, 10 kN (2248 lbf)  
 B160 = ball screw, 16 kN (3584 lbf)

### 3. Ordering stroke length <sup>(1) (2)</sup>

0050 = 50 mm <sup>(3)</sup>  
 0100 = 100 mm  
 0150 = 150 mm  
 0200 = 200 mm  
 0250 = 250 mm  
 0300 = 300 mm  
 0350 = 350 mm  
 0400 = 400 mm  
 0450 = 450 mm  
 0500 = 500 mm  
 0550 = 550 mm  
 0600 = 600 mm  
 0650 = 650 mm  
 0700 = 700 mm  
 0750 = 750 mm  
 0800 = 800 mm  
 0850 = 850 mm  
 0900 = 900 mm  
 0950 = 950 mm  
 1000 = 1000 mm

### 4. Electrak Modular Control System options

Options available for HD12 and HD24 only  
 EXX = Electronic Monitoring Package only  
 ELX = EXX + end-of-stroke indication output  
 EXP = EXX + analog (potentiometer) position output  
 EXD = EXX + digital position output  
 ELP = ELX + analog (potentiometer) position output  
 ELD = ELX + digital position output  
 LPS = EXX + LXX + programmable limit switches + signal-follower

Options available for HD12, HD24 and HD48  
 LXX = EXX + low-level signal motor switching  
 LLX = EXX + LXX + end-of-stroke indication output  
 LXP = EXX + LXX + analog (potentiometer) position output  
 CNO = SAE J1939 CAN bus + open-loop speed control  
 COO = CANopen CAN bus + open-loop speed control  
 SYN = LXX + synchronization option

### 5. Cable length

1 = 0.3 m long cables  
 2 = 1.5 m long cables  
 3 = 5.0 m long cables

### 6. Rear adapter/mounting flange options

A = rear mounting flange <sup>(4) (5)</sup>  
 M = cross hole for 12 mm pin  
 E = cross hole for ½ inch pin  
 N = forked cross hole for 12 mm pin  
 F = forked cross hole for ½ inch pin

### 7. Front adapter options

A = metric M16 male thread  
 M = cross hole for 12 mm pin  
 E = cross hole for ½ inch pin  
 N = forked cross hole for 12 mm pin  
 F = forked cross hole for ½ inch pin  
 P = metric M12 female thread  
 G = inch 1/2-20 UNF-2B female thread

### 8. Adapter orientation

S = standard  
 M = 90 ° turned

### 9. Connection options

D = flying leads

(1) Other stroke lengths available upon request. Please contact customer support.

(2) 500 mm is the max. stroke length for 16 kN units.

(3) 50 mm stroke units will have the same retracted length as a 100 mm unit. Note! When using the handwind on a 50 mm stroke unit, running the handwind to extend past the internal 50 mm limit switch will cause damage to the actuator and the switch.

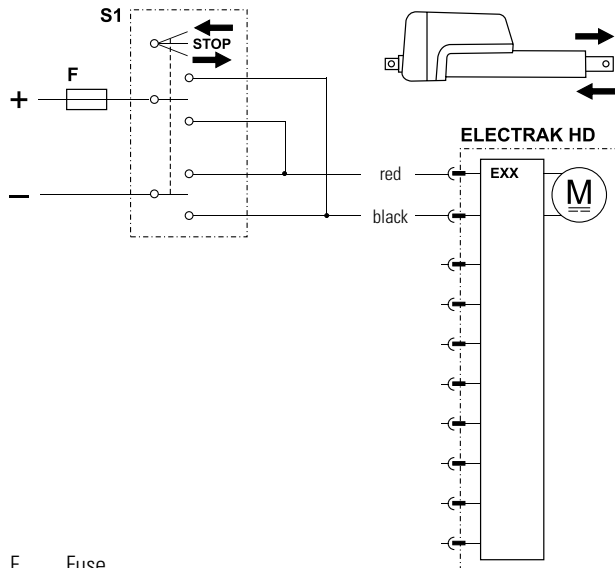
(4) Max. ordering stroke for the rear mounting flange type A is 300 mm.

(5) Max. dynamic load capacity for the rear mounting flange type A is 10 kN.

# Electrak® HD – Electrical Connections

## Option Type EXX

| Actuator supply voltage | [Vdc] |         |
|-------------------------|-------|---------|
| HD12                    |       | 9 - 16  |
| HD24                    |       | 18 - 32 |
| HD48                    |       | -       |

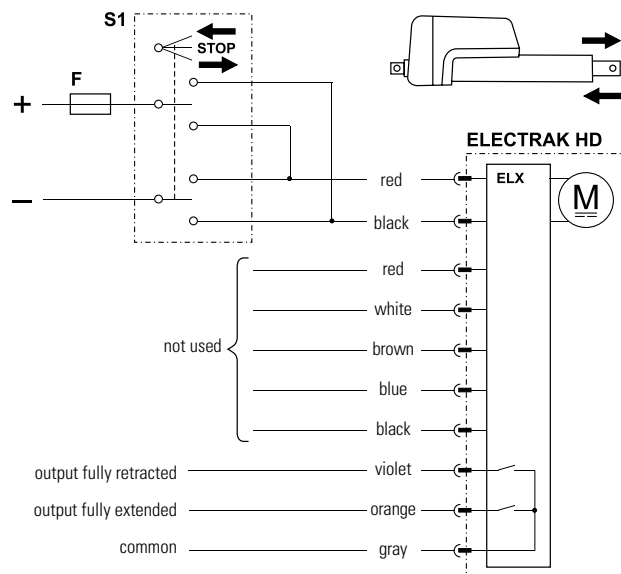


F Fuse  
S1 Double pole double throw switch

Control option EXX contains Electrak Monitoring Package features, guaranteeing safe operation of the actuator and equipment. With control option EXX, the polarity of the motor voltage is switched by a customer-supplied switch (switch, relay, etc.) to make the actuator extend or retract. The switch, power supply, wiring and all other components must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to three times the max. continuous current for the max. load being used for up to 150 milliseconds).

## Option Type ELX

| Actuator supply voltage | [Vdc]    |                |
|-------------------------|----------|----------------|
| HD12                    |          | 9 - 16         |
| HD24                    |          | 18 - 32        |
| HD48                    |          | -              |
| Output contact type     |          | potential free |
| Max. output voltage     | [Vdc/ac] | 30/120         |
| Max. output current     | [mA]     | 100            |



F Fuse  
S1 Double pole double throw switch

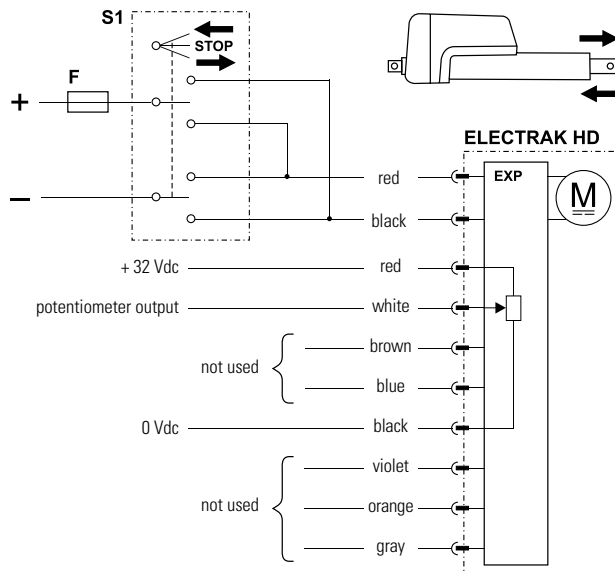
Control option ELX works as option EXX but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.



# Electrak® HD – Electrical Connections

## Option Type EXP

|                                  |          |            |
|----------------------------------|----------|------------|
| Actuator supply voltage          | [Vdc]    |            |
| HD12                             |          | 9 - 16     |
| HD24                             |          | 18 - 32    |
| HD48                             |          | -          |
| Potentiometer type               |          | wire-wound |
| Potentiometer max. input voltage | [Vdc]    | 32         |
| Potentiometer max. power         | [W]      | 1          |
| Potentiometer linearity          | [%]      | ± 0.25     |
| Potentiometer output resolution  | [ohm/mm] |            |
| 50 - 100 mm stroke               |          | 65.6       |
| 150 - 250 mm stroke              |          | 32.8       |
| 300 - 500 mm stroke              |          | 19.7       |
| 550 - 1000 mm stroke             |          | 9.8        |

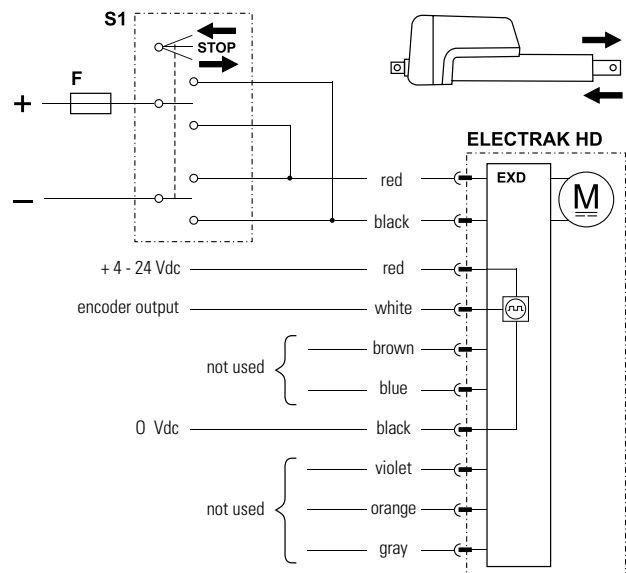


F Fuse  
S1 Double pole double throw switch

Control option EXP works as option EXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.

## Option Type EXD

|                                    |            |             |
|------------------------------------|------------|-------------|
| Actuator supply voltage            | [Vdc]      |             |
| HD12                               |            | 9 - 16      |
| HD24                               |            | 18 - 32     |
| HD48                               |            | -           |
| Encoder type                       |            | hall effect |
| Encoder input voltage              | [Vdc]      | 4 - 24      |
| Encoder output voltage levels      | [Vdc]      |             |
| low (logical zero), typical / max. |            | 0.1 / 0.25  |
| Encoder resolution                 | [mm/pulse] |             |
| HDxx-B017                          |            | 0.28        |
| HDxx-B026                          |            | 0.15        |
| HDxx-B045                          |            | 0.09        |
| HDxx-B068                          |            | 0.07        |
| HDxx-B100                          |            | 0.04        |
| HDxx-B160                          |            | 0.03        |



F Fuse  
S1 Double pole double throw switch

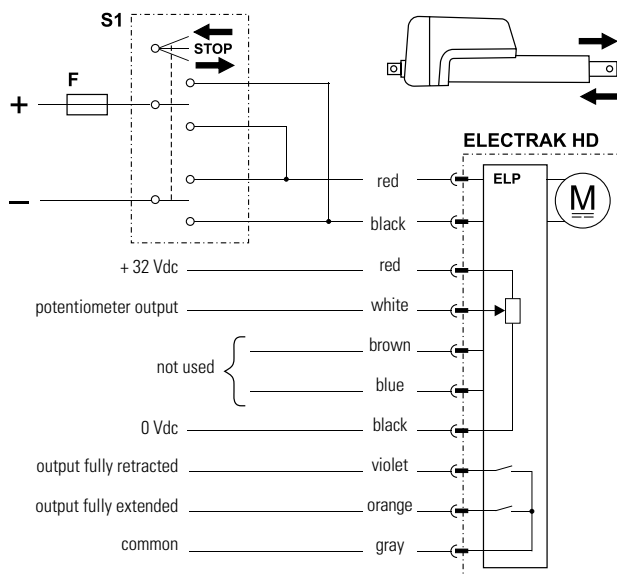
Control option EXD works as option EXX but also has a single-channel encoder output that will provide feedback on the extension tube position.



# Electrak® HD – Electrical Connections

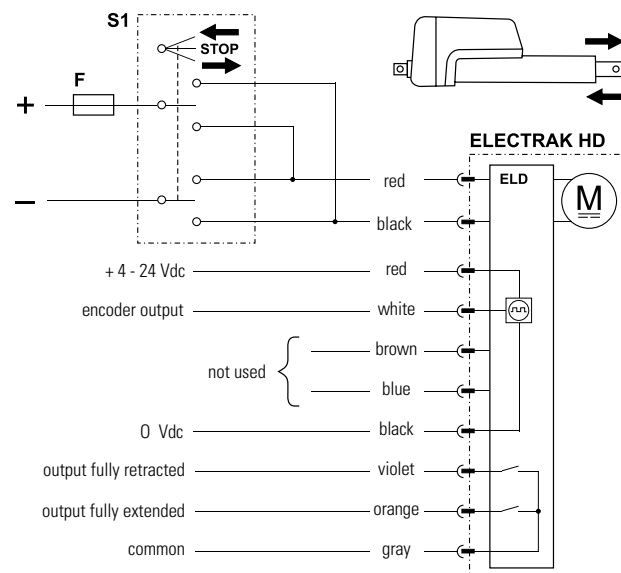
| Option Type ELP                  |          |                                                                                                                 |
|----------------------------------|----------|-----------------------------------------------------------------------------------------------------------------|
| Actuator supply voltage          | [Vdc]    | 9 - 16<br>HD12<br>HD24<br>HD48                                                                                  |
| Output contact type              |          | potential free                                                                                                  |
| Max. output voltage              | [Vdc/ac] | 30/120                                                                                                          |
| Max. output current              | [mA]     | 100                                                                                                             |
| Potentiometer type               |          | wire-wound                                                                                                      |
| Potentiometer max. input voltage | [Vdc]    | 32                                                                                                              |
| Potentiometer max. power         | [W]      | 1                                                                                                               |
| Potentiometer linearity          | [%]      | ± 0.25                                                                                                          |
| Potentiometer output resolution  | [ohm/mm] | 50 - 100 mm stroke: 65.6<br>150 - 250 mm stroke: 32.8<br>300 - 500 mm stroke: 19.7<br>550 - 1000 mm stroke: 9.8 |

| Option Type ELD               |            |                                                                                                                |
|-------------------------------|------------|----------------------------------------------------------------------------------------------------------------|
| Actuator supply voltage       | [Vdc]      | 9 - 16<br>HD12<br>HD24<br>HD48                                                                                 |
| Output contact type           |            | potential free                                                                                                 |
| Max. output voltage           | [Vdc/ac]   | 30/120                                                                                                         |
| Max. output current           | [mA]       | 100                                                                                                            |
| Encoder type                  |            | hall effect                                                                                                    |
| Encoder input voltage         | [Vdc]      | 4 - 24                                                                                                         |
| Encoder output voltage levels | [Vdc]      | low (logical zero), typical / max.                                                                             |
| Encoder resolution            | [mm/pulse] | 0.1 / 0.25                                                                                                     |
| Encoder resolution            | [mm/pulse] | HDxx-B017: 0.28<br>HDxx-B026: 0.15<br>HDxx-B045: 0.09<br>HDxx-B068: 0.07<br>HDxx-B100: 0.04<br>HDxx-B160: 0.03 |



F Fuse  
S1 Double pole double throw switch

Control option ELP works as option EXP but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.



F Fuse  
S1 Double pole double throw switch

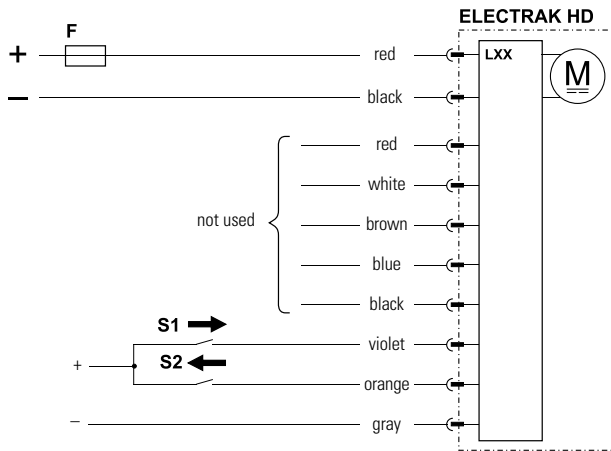
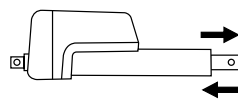
Control option ELD works as option EXD but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.



# Electrak® HD – Electrical Connections

## Option Type LXX

|                                |       |         |
|--------------------------------|-------|---------|
| Actuator supply voltage        | [Vdc] |         |
| HD12                           |       | 9 - 16  |
| HD24                           |       | 18 - 32 |
| HD48                           |       | 36 - 64 |
| Extend / retract input voltage | [Vdc] |         |
| HD12(24)                       |       | 9 - 32  |
| HD48                           |       | 12 - 64 |
| Extend / retract input current | [mA]  | 6 - 22  |

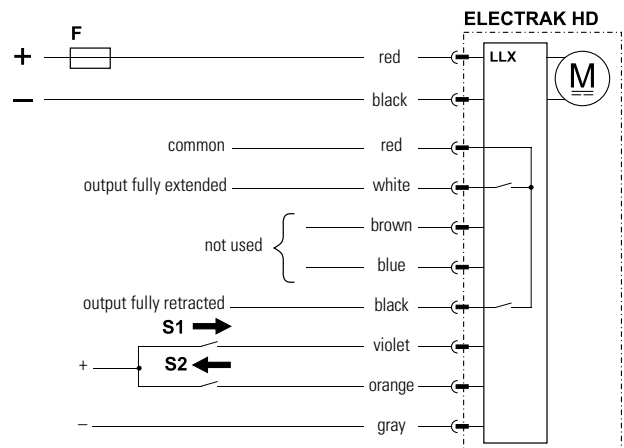
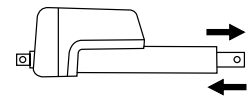


- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LXX has all the basic Electrak Monitoring Package features included in control option EXX, but the polarity of the motor voltage is switched by the onboard electronics instead. The customer-supplied switches used to command the actuator to extend or retract only need to handle low-level signals. However, the power supply and wiring that supply the actuator must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to one and a half times the max. continuous current for the max. load being used for up to 150 milliseconds).

## Option Type LLX

|                                |          |                |
|--------------------------------|----------|----------------|
| Actuator supply voltage        | [Vdc]    |                |
| HD12                           |          | 9 - 16         |
| HD24                           |          | 18 - 32        |
| HD48                           |          | 36 - 64        |
| Output contact type            |          | potential free |
| Max. output voltage            | [Vdc/ac] | 30/120         |
| Max. output current            | [mA]     | 100            |
| Extend / retract input voltage | [Vdc]    |                |
| HD12(24)                       |          | 9 - 32         |
| HD48                           |          | 12 - 64        |
| Extend / retract input current | [mA]     | 6 - 22         |



- F Fuse
- S1 Extend switch
- S2 Retract switch

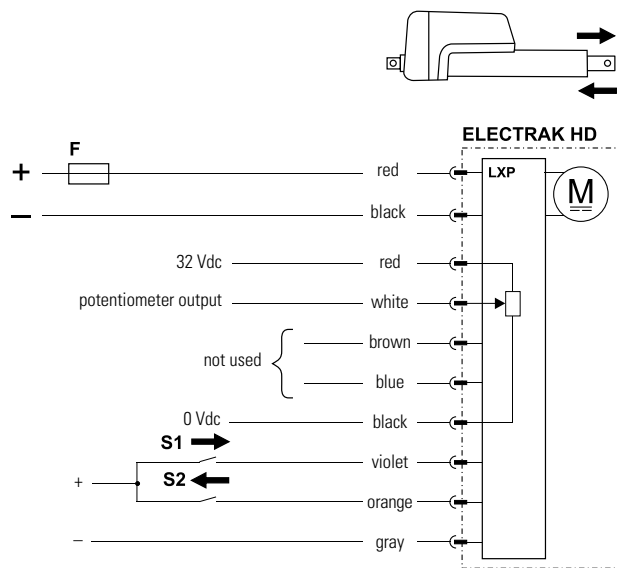
Control option LLX works as option LXX but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.

# Electrak<sup>®</sup> HD – Electrical Connections

| Option Type LXP                  |          |                                                                                                                 |
|----------------------------------|----------|-----------------------------------------------------------------------------------------------------------------|
| Actuator supply voltage          | [Vdc]    | 9 - 16<br>HD12<br>HD24<br>HD48                                                                                  |
| Potentiometer type               |          | wire-wound                                                                                                      |
| Potentiometer max. input voltage | [Vdc]    | 32                                                                                                              |
| Potentiometer max. power         | [W]      | 1                                                                                                               |
| Potentiometer linearity          | [%]      | ± 0.25                                                                                                          |
| Potentiometer output resolution  | [ohm/mm] | 50 - 100 mm stroke: 65.6<br>150 - 250 mm stroke: 32.8<br>300 - 500 mm stroke: 19.7<br>550 - 1000 mm stroke: 9.8 |
| Extend / retract input voltage   | [Vdc]    | 9 - 32<br>HD12(24)<br>HD48                                                                                      |
| Extend / retract input current   | [mA]     | 6 - 22                                                                                                          |

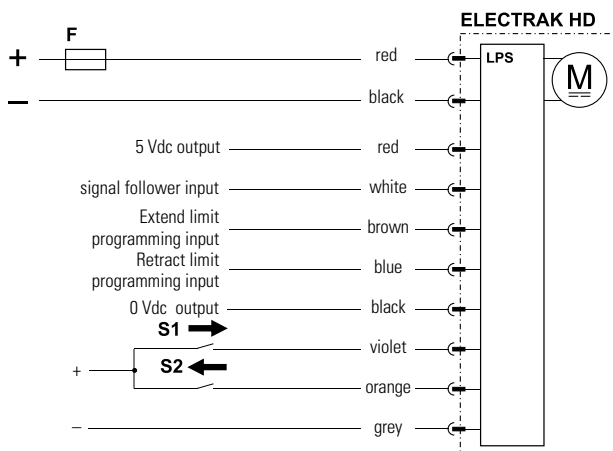
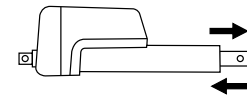
| Option Type LPS                |          |                                |
|--------------------------------|----------|--------------------------------|
| Actuator supply voltage        | [Vdc]    | 9 - 16<br>HD12<br>HD24<br>HD48 |
| Signal-follower input voltage  | [Vdc]    | 0.5 - 4.5                      |
| Signal-follower max. current   | [A]      | 0.8                            |
| Signal-follower movement       | [mm/Vdc] | stroke* [mm] / 4               |
| Signal-follower repeatability  | [± mm]   | 0.1                            |
| Programming inputs voltage     | [Vdc]    | 9 - 32<br>HD12(24)<br>HD48     |
| Extend / retract input voltage | [Vdc]    | 9 - 32<br>HD12(24)<br>HD48     |
| Extend / retract input current | [mA]     | 6 - 22                         |

\* ordering stroke of the actuator or the stroke between any set programmable extend or retract limits.



- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LXP works as option LXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.



- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LPS works as option LXX but also has programmable mid-stroke software extend and retract limits as well as a signal-follower input that allows the extension tube position to be controlled from a potentiometer or other voltage control. Both functions can be used at the same time.



# Electrak® HD – Electrical Connections

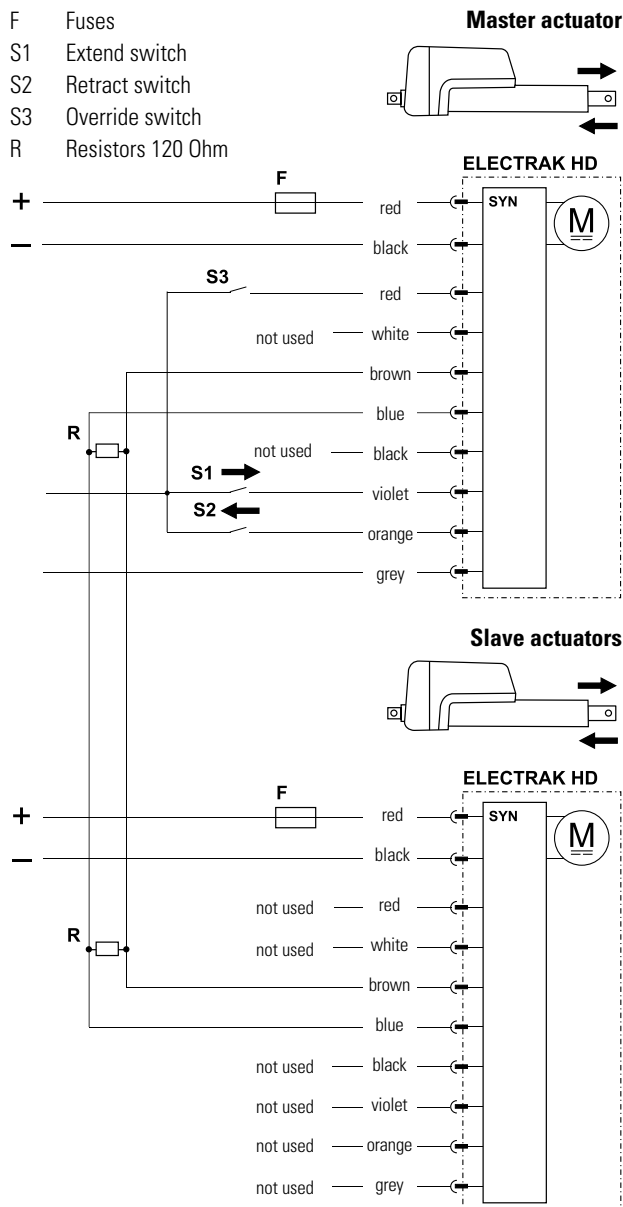
| Option Type SYN                  |       |         |
|----------------------------------|-------|---------|
| Actuator supply voltage          | [Vdc] |         |
| HD12                             |       | 9 - 16  |
| HD24                             |       | 18 - 32 |
| HD48                             |       | 36 - 64 |
| Extend / retract input voltage   | [Vdc] |         |
| HD12(24)                         |       | 9 - 32  |
| HD48                             |       | 12 - 64 |
| Extend / retract input current   | [mA]  | 6 - 22  |
| Number of synchronized actuators |       | 2+      |
| Max. actuator speed difference   | [%]   | 25      |

Control option SYN works as option LXX but also has a synchronization feature, allowing two or more actuators having the SYN option to run in integrated motion.

When using the low-level extend and retract inputs on the master actuator, the slave(s) will follow. If there is a need to run an actuator individually, it is possible to put it into an override state by closing a switch (S3) connected to the red lead as shown in the wiring diagram.

### Important design notes:

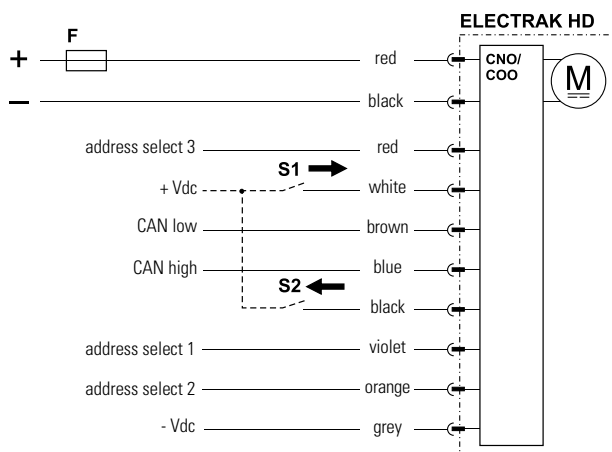
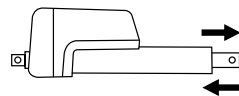
- Ensure that supply voltage to each actuator is within  $\pm 1.0$  V.
- Uneven loading between the actuators is not recommended, but the synchronization option can withstand its effects up to a 25% speed loss.
- For units with the synchronization option, the speed at a given load is 25% lower than for those without. This is true irrespective of the unit being in synchronization or override mode, or simply run individually.
- If one actuator encounters an overload condition, it will trip the overload protection and send a signal to each actuator on the network to stop. The units can be immediately reversed (unless they bind up the system), or they can continue in the same direction after a power reset.
- If power is lost at any time to any actuator, the actuators still powered will continue their last commanded move until told to stop, either by an individual current overload trip, or a stop signal sent from the master actuator.
- If communication is lost (i.e. brown/blue wires cut), the slaves will continue their last commanded move until they reach end of stroke or trip current overload. The master will continue its last commanded move unless commanded to stop with the switching leads, reaching end of stroke, or tripping current overload.
- After a large number of mid-stroke movements, the time difference between each unit receiving a signal to move (master vs. slave) will add to small variances in when the units start and stop. Since they are designed to run at the same speed, these small differences amount to a variance of position over time – even when load is applied. To address this concern, Thomson suggests running the units either to a fully extended or fully retracted position each cycle to re-align the units with each other to take out these added variances.
- In order to give the master and slave(s) enough time to communicate there must be at least 250 ms between each start and stop command.



# Electrak<sup>®</sup> HD – Electrical Connections

| Option Type CNO and COO                                                                                                                  |       |         |
|------------------------------------------------------------------------------------------------------------------------------------------|-------|---------|
| Actuator supply voltage                                                                                                                  | [Vdc] |         |
| HD12                                                                                                                                     |       | 9 - 16  |
| HD24                                                                                                                                     |       | 18 - 32 |
| HD48                                                                                                                                     |       | 36 - 64 |
| Command data includes:                                                                                                                   |       |         |
| <ul style="list-style-type: none"> <li>• position</li> <li>• speed</li> <li>• current</li> </ul>                                         |       |         |
| Feedback data includes:                                                                                                                  |       |         |
| <ul style="list-style-type: none"> <li>• position</li> <li>• speed</li> <li>• current</li> <li>• other diagnostic information</li> </ul> |       |         |
| Extend / retract input voltage                                                                                                           | [Vdc] |         |
| HD12(24)                                                                                                                                 |       | 9 - 32  |
| HD48                                                                                                                                     |       | 12 - 64 |
| Extend / retract input current                                                                                                           | [mA]  | 6 - 22  |

on a single bus. The actuator can be manually forced to extend or retract by using the inputs on white and black wires. When the manual control inputs are used, CAN bus control messages are ignored, but the unit will still provide CAN bus feedback messages. When the inputs are left floating, CAN bus functionality for control messages is restored.



- F Fuse
- S1 Manual extension switch (optional)
- S2 Manual retraction switch (optional)

Control option CNO has a SAE J1939 CAN bus control interface, COO has a CANopen control interface that control and monitor the actuator. Extend and retract commands are sent via CAN messages on the CAN low and CAN high pins. Address select 1, 2 and 3 pins can be used as a binary encoded decimal (BCD) adder to the default address. This can be used when multiple CAN bus actuators are located

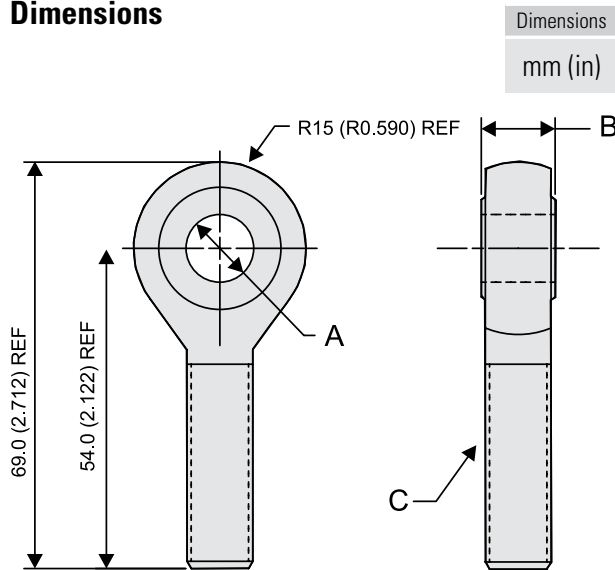


# Electrak<sup>®</sup> HD – Accessories

| Rod End Front Adapter |                      |            |
|-----------------------|----------------------|------------|
| Type                  | metric               | inch       |
| Material              | Cadmium-plated steel |            |
| Dimensions            |                      |            |
| A                     | 12.0 ± 0.1 mm        | 0.5 in     |
| B                     | 16.0 ± 0.1 mm        | 0.625 in   |
| C                     | M12                  | 1/2-20 UNF |
| p/n                   | 756-9021             | 756-9007   |

| Wire Harness Kits |                                                                             |
|-------------------|-----------------------------------------------------------------------------|
| Part Number       | Description                                                                 |
| 954-9364          | 0.3 m Power Only (EXX)                                                      |
| 954-9365          | 1.5 m Power Only (EXX)                                                      |
| 954-9366          | 5.0 m Power Only (EXX)                                                      |
| 954-9367          | 0.3 m Power and 8-Wire Signal (ELX, ELP, ELD, LXX, LLX, LXP, CNO, COO, SYN) |
| 954-9368          | 1.5 m Power and 8-Wire Signal (ELX, ELP, ELD, LXX, LLX, LXP, CNO, COO, SYN) |
| 954-9369          | 5.0 m Power and 8-Wire Signal (ELX, ELP, ELD, LXX, LLX, LXP, CNO, COO, SYN) |
| 954-9370          | 0.3 m Power and 3-Wire Signal (EXP, EXD)                                    |
| 954-9471          | 1.5 m Power and 3-Wire Signal (EXP, EXD)                                    |
| 954-9372          | 5.0 m Power and 3-Wire Signal (EXP, EXD)                                    |

## Dimensions



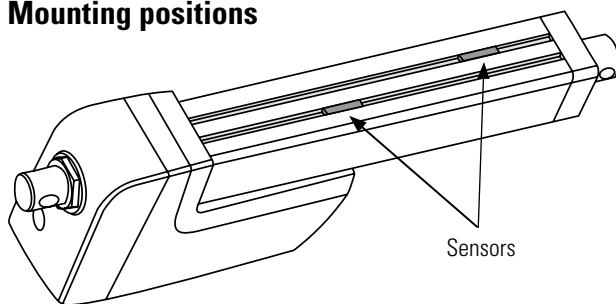
The rod end front adapter comes in one metric and one imperial version. The metric adapter can be mounted to the front of the extension tube if the actuator is equipped with the metric female thread front adapter option (type P), while the inch adapter requires the inch female thread option (type G).

# Electrak<sup>®</sup> HD – Accessories

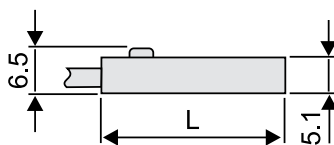
## Limit Switches for Cover Tube Mounting

|                                       |                             |                 |
|---------------------------------------|-----------------------------|-----------------|
| Sensor type                           | solid state                 | reed switch     |
| Contact type                          | normally open (N.O.)        |                 |
| Output type                           | PNP                         | contact         |
| Voltage [VDC/AC]                      | 10 - 30 / -                 | 5 -115 / 5 -115 |
| Max. current [mA]                     | 100                         |                 |
| Hysteresis [mm (in)]                  | 1.5 (0.06)                  | 1.0 (0.04)      |
| Operating temperature [°C]            | - 20 to + 70                | - 20 to + 70    |
| Lead cross section [mm <sup>2</sup> ] | 3 × 0.14                    | 2 × 0.14        |
| Length (L) [mm (in)]                  | 25.3 (1.0)                  | 30.5 (1.2)      |
| Protection class                      | IP69K                       | IP67            |
| LED indicator                         | yes                         |                 |
| Connection                            | 2 m cable with flying leads |                 |
| p/n                                   | 840-9131                    | 840-9132        |

### Mounting positions



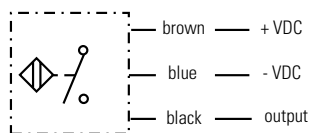
### Dimensions



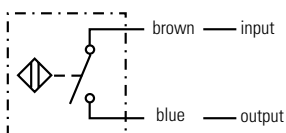
|            |
|------------|
| Dimensions |
| mm         |

### Connection

Solid state



Reed switch



The limit switches are mounted in the cover tube slots and will be switched by a magnet mounted inside of the actuator on the extension tube.



# Electrak<sup>®</sup> MD – Technical Features



## General Specifications

|                           |                            |
|---------------------------|----------------------------|
| Screw type                | acme                       |
| Nut type                  | lead                       |
| Manual override           | no                         |
| Anti-rotation             | yes                        |
| Static load holding brake | no (self-locking)          |
| Electrical connections    | cable with flying leads    |
| Compliance                | CE, RoHs, REACH, ISO 13766 |

## Standard Features

- Best-in-class power density
- Onboard electronics, including versions with SAE J1939 CAN bus or CANopen CAN bus
- Suitable for pneumatic and hydraulic-to-electric application conversions
- Designed and tested to meet the toughest environmental demands
- Reliable and maintenance free

## Optional Features

|                                   |                                  |
|-----------------------------------|----------------------------------|
| Mechanical options                | Multiple cable length options    |
|                                   | Alternative adapter orientation  |
| Control options<br>(see page 111) | End-of-stroke limit switches     |
|                                   | Analog position feedback         |
|                                   | Low-level signal motor switching |
|                                   | SAE J1939 CAN bus                |
|                                   | CANopen CAN bus                  |

## Control Option Safety Features

|                          | Control Option |     |     |     |     |     |     |     |
|--------------------------|----------------|-----|-----|-----|-----|-----|-----|-----|
|                          | XXX            | XXP | EXX | EXP | LXX | LXP | CNO | COO |
| Dynamic braking          | no             | no  | yes | yes | yes | yes | yes | yes |
| End-of-stroke protection | yes            | yes | yes | yes | yes | yes | yes | yes |
| Overload protection      | no             | no  | yes | yes | yes | yes | yes | yes |
| Temperature monitoring   | no             | no  | yes | yes | yes | yes | yes | yes |
| Temperature compensation | no             | no  | yes | yes | yes | yes | no  | no  |
| Voltage monitoring       | no             | no  | yes | yes | yes | yes | yes | yes |
| PWM voltage compatible   | yes            | yes | no  | no  | no  | no  | no  | no  |



# Electrak<sup>®</sup> MD – Technical Specifications

## Mechanical Specifications

|                                      |               |                      |
|--------------------------------------|---------------|----------------------|
| Max. static and dynamic load (Fx)    | [N (lbs)]     |                      |
| MDxxA025                             |               | 250 (56)             |
| MDxxA050                             |               | 500 (112)            |
| MDxxA100                             |               | 1000 (225)           |
| MDxxA200                             |               | 2000 (450)           |
| Speed @ no load/max. load            | [mm/s (in/s)] |                      |
| MDxxA025                             |               | 52/43.8 (2.04/1.72)  |
| MDxxA050                             |               | 28/18.5 (1.1/0.73)   |
| MDxxA100                             |               | 14.5/11 (0.57/0.43)  |
| MDxxA200                             |               | 7/5.4 (0.28/0.21)    |
| Min. ordering stroke (S) length      | [mm]          | 50                   |
| Max. ordering stroke (S) length      | [mm]          | 300                  |
| Ordering stroke length increments    | [mm]          | 50                   |
| Operating temperature limits         | [°C (F)]      | -40 – 85 (-40 – 185) |
| Full load duty cycle @ 25 °C (77 °F) | [%]           | 25                   |
| End play, maximum                    | [mm (in)]     | 1.2 (0.047)          |
| Restraining torque                   | [Nm (lbs)]    | 0                    |
| Protection class - static            |               | IP67/IP69K           |
| Protection class - dynamic           |               | IP66                 |
| Salt spray resistance                | [h]           | 500                  |

## Electrical Specifications

|                                  |                         |                                |
|----------------------------------|-------------------------|--------------------------------|
| Available input voltages         | [Vdc]                   | 12, 24                         |
| Input voltage tolerance          | [Vdc]                   |                                |
| MD12 (12 Vdc input voltage)      |                         | 9 - 16                         |
| MD24 (24 Vdc input voltage)      |                         | 18 - 32                        |
| Current draw @ no load/max. load | [A]                     |                                |
| MD12A025                         |                         | 1.2/5.2                        |
| MD24A025                         |                         | 0.6/2.6                        |
| MD12A050                         |                         | 1.4/6.2                        |
| MD24A050                         |                         | 0.7/3.1                        |
| MD12A100                         |                         | 1.2/5.2                        |
| MD24A100                         |                         | 0.6/2.6                        |
| MD12A200                         |                         | 1.4/6.2                        |
| MD24A200                         |                         | 0.7/3.1                        |
| Motor leads cross section        | [mm <sup>2</sup> (AWG)] | 0.75 (18)                      |
| Signal leads cross section       | [mm <sup>2</sup> (AWG)] | 0.35 (22)                      |
| Cable lengths, standard          | [mm (in)]               | 300 (11.81) or<br>1000 (39.37) |
| Cable diameter                   | [mm (in)]               | 7.5 (0.3)                      |

## Actuator Weight [kg (lb)]

| Ordering Stroke (S) [mm] |           |           |           |           |           |
|--------------------------|-----------|-----------|-----------|-----------|-----------|
| 50                       | 100       | 150       | 200       | 250       | 300       |
| 1.1 (2.4)                | 1.2 (2.6) | 1.3 (2.8) | 1.4 (3.1) | 1.5 (3.3) | 1.6 (3.5) |



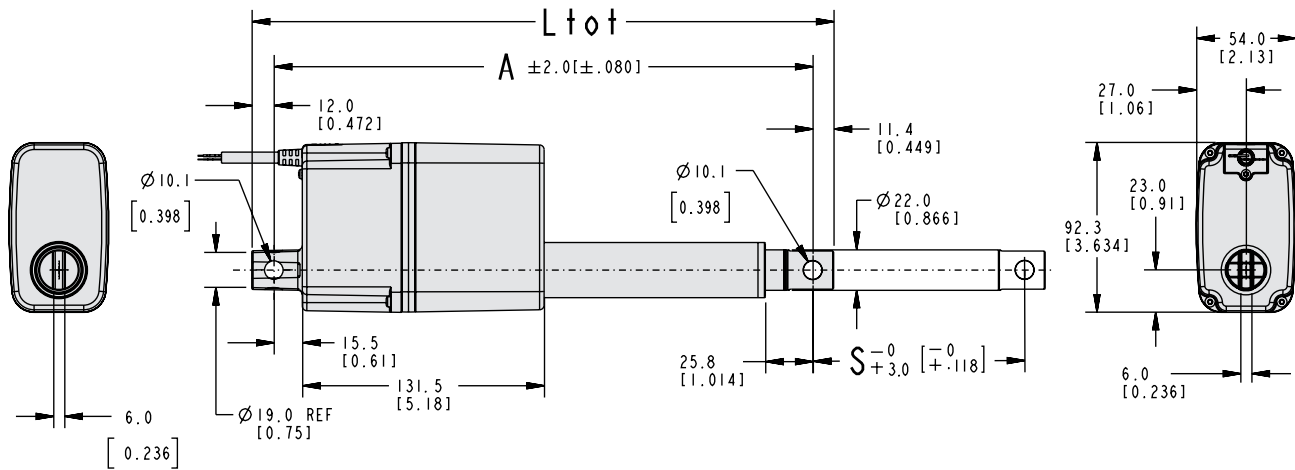
# Electrak<sup>®</sup> MD – Ordering Key

## Ordering Key

| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2            | 3           | 4          | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6        | 7        | 8        | 9        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|----------|
| <b>MD12</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>A025-</b> | <b>0300</b> | <b>XXX</b> | <b>2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>N</b> | <b>N</b> | <b>S</b> | <b>D</b> |
| <p><b>1. Model and input voltage</b><br/>MD12 = Electrak MD, 12 Vdc<br/>MD24 = Electrak MD, 24 Vdc</p> <p><b>2. Screw type, dynamic load capacity</b><br/>A025- = acme screw, 250 N (56 lbs)<br/>A050- = acme screw, 500 N (112 lbs)<br/>A100- = acme screw, 1000 N (225 lbs)<br/>A200- = acme screw, 2000 N (450 lbs)</p> <p><b>3. Ordering stroke length <sup>(1)</sup></b><br/>0050 = 50 mm<br/>0100 = 100 mm<br/>0150 = 150 mm<br/>0200 = 200 mm<br/>0250 = 250 mm<br/>0300 = 300 mm</p> <p><b>4. Electrak Modular Control System options</b><br/>XXX = internal end-of-stroke limit switches<br/>XXP = XXX + analog (potentiometer) position output<br/>EXX = Electronic Monitoring Package<br/>EXP = EXX + analog (potentiometer) position output<br/>LXX = EXX + low-level signal motor switching<br/>LLX = LXX + end-of-stroke indication outputs<br/>LXP = LXX + analog (potentiometer) position output<br/>LLP = LXP + end-of-stroke indication outputs<br/>CNO = EXX + SAE J1939 CAN bus + open-loop speed control<br/>COO = EXX + CANopen CAN bus + open-loop speed control</p> |              |             |            | <p><b>5. Harness option</b><br/>1 = 0.3 m long cable with flying leads<br/>2 = 1 m long cable with flying leads</p> <p><b>6. Rear adapter option</b><br/>N = forked cross hole for 10 mm pin</p> <p><b>7. Front adapter option</b><br/>N = forked cross hole for 10 mm pin</p> <p><b>8. Adapter orientation</b><br/>S = standard<br/>M = 90 ° turned</p> <p><b>9. Connector option</b><br/>D = flying leads</p> <p>(1) Other stroke lengths available upon request. Please contact customer support.</p> |          |          |          |          |

# Electrak<sup>®</sup> MD – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



Note: All adapters shown in the standard orientation.

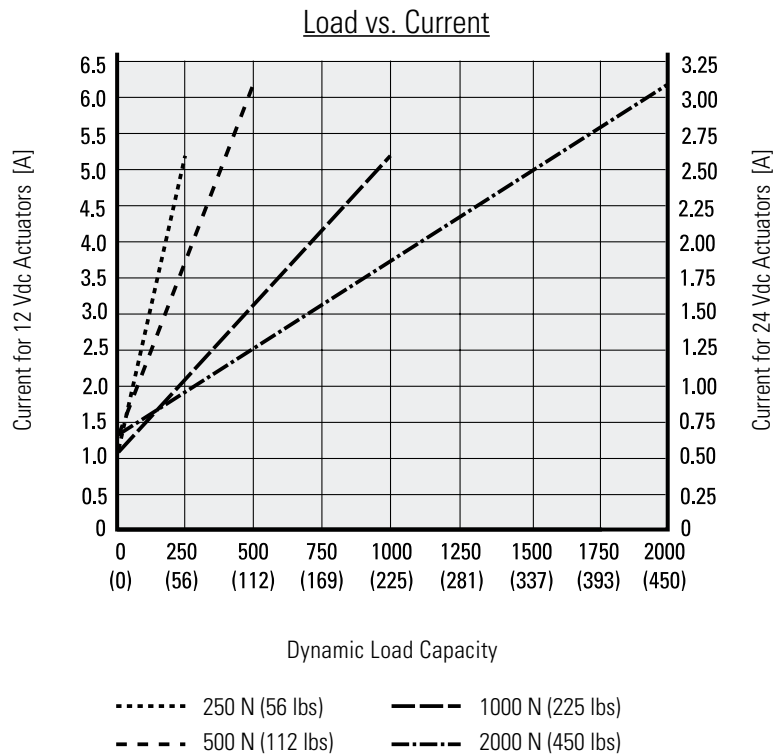
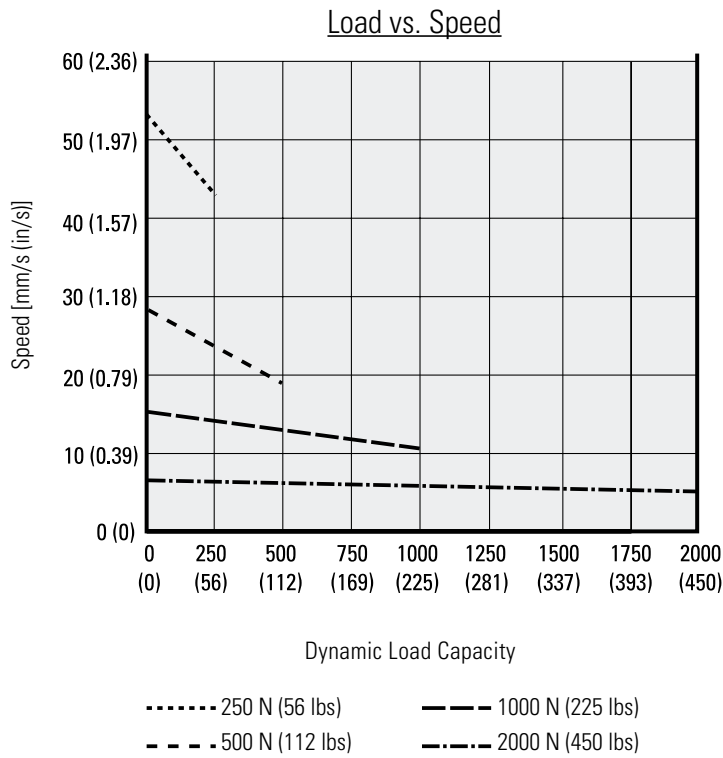
## Ordering Stroke (S), Total Length (Ltot) and Retracted Length (A) Relationships

|                               |      |                             |
|-------------------------------|------|-----------------------------|
| Standard Ordering Strokes (S) | [mm] | 50, 100, 150, 200, 250, 300 |
| Total Length (Ltot)           | [mm] | $L_{tot} = A + 23.4$        |
| Retracted Length (A)          | [mm] | $A = S + 133.2$             |

Current for 24 Vdc Actuators [A]



# Electrak<sup>®</sup> MD – Performance Diagrams

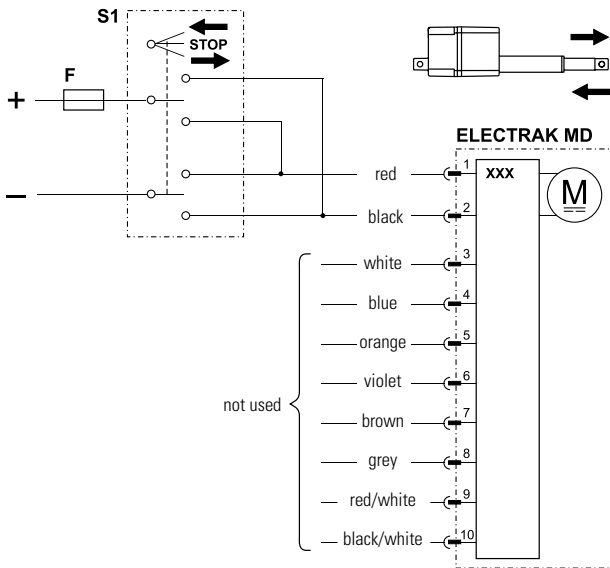


**Note!** Curves were generated at an ambient temperature of 21°C (70°F). Different ambient temperature and individual actuator characteristics can produce slightly different values.

# Electrak® MD – Control Options

## Control Option Type XXX

|                         |       |              |
|-------------------------|-------|--------------|
| Actuator supply voltage | [Vdc] |              |
| MD12                    |       | 9 - 16       |
| MD24                    |       | 18 - 32      |
| Actuator current draw   | [A]   | see page 110 |

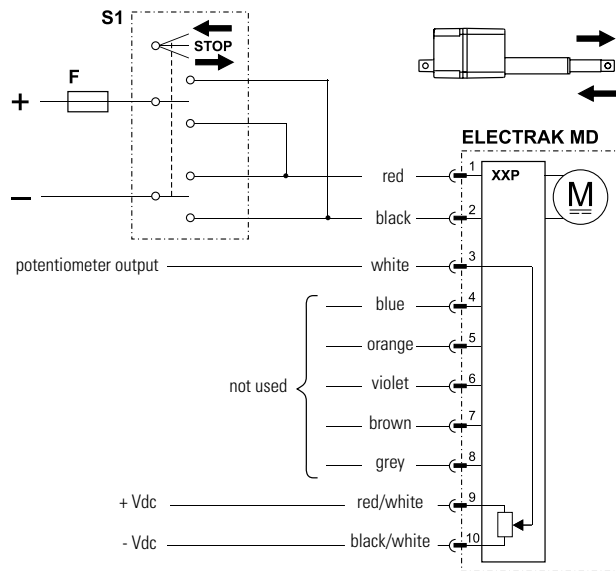


- F Fuse
- S1 Double pole double throw switch

With control option XXX, the polarity of the motor voltage is switched by a customer-supplied switch (switch, relay, etc.) to make the actuator extend or retract. The actuator will automatically stop when reaching the ends of stroke due to the built-in end-of-stroke limit switches. The switch, power supply, wiring and all other components must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to three times the max. continuous current for the max. load being used for up to 150 milliseconds).

## Control Option Type XXP

|                                  |          |              |
|----------------------------------|----------|--------------|
| Actuator supply voltage          | [Vdc]    |              |
| MD12                             |          | 9 - 16       |
| MD24                             |          | 18 - 32      |
| Actuator current draw            | [A]      | see page 110 |
| Potentiometer type               |          | wire-wound   |
| Potentiometer max. input voltage | [Vdc]    | 32           |
| Potentiometer max. power         | [W]      | 1            |
| Potentiometer linearity          | [%]      | ± 0.25       |
| Potentiometer output resolution  | [ohm/mm] |              |
| MDxxA025, all strokes            |          | 16.67        |
| MDxxA100, all strokes            |          | 16.67        |
| MDxxA050, 50 - 250 mm stroke     |          | 33.33        |
| MDxxA200, 50 - 250 mm stroke     |          | 33.33        |
| MDxxA050, 300 mm stroke          |          | 16.67        |
| MDxxA200, 300 mm stroke          |          | 16.67        |



- F Fuse
- S1 Double pole double throw switch

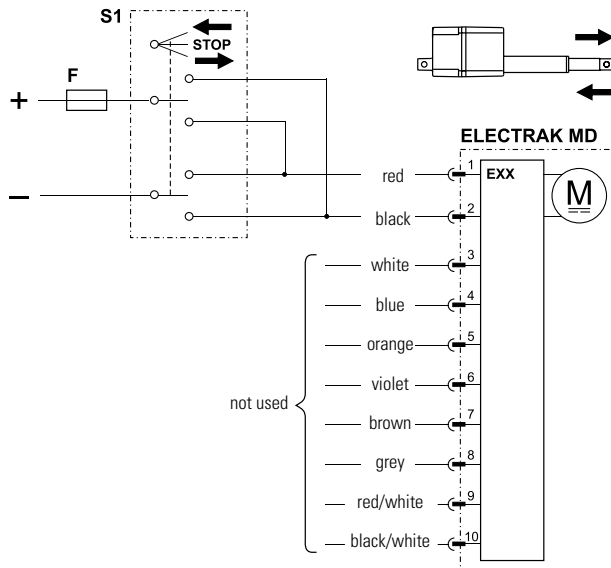
Control option XXP works as option XXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.



# Electrak<sup>®</sup> MD – Control Options

## Control Option Type EXX

|                         |       |              |
|-------------------------|-------|--------------|
| Actuator supply voltage | [Vdc] |              |
| MD12                    |       | 9 - 16       |
| MD24                    |       | 18 - 32      |
| Actuator current draw   | [A]   | see page 110 |

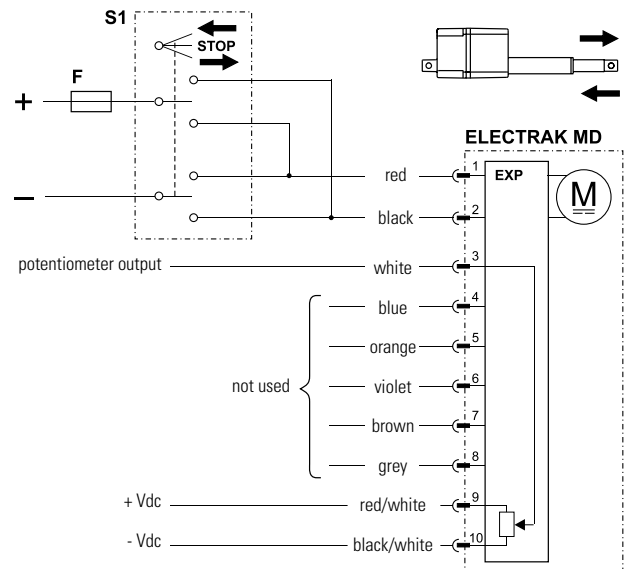


- F Fuse
- S1 Double pole double throw switch

Control option EXX contains all of the basic Electronic Monitoring Package features described on page six, guaranteeing safe operation of the actuator and equipment. With control option EXX, the polarity of the motor voltage is switched by a customer-supplied switch (switch, relay, etc.) to make the actuator extend or retract. The switch, power supply, wiring and all other components must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to three times the max. continuous current for the max. load being used for up to 150 milliseconds).

## Control Option Type EXP

|                                  |          |              |
|----------------------------------|----------|--------------|
| Actuator supply voltage          | [Vdc]    |              |
| MD12                             |          | 9 - 16       |
| MD24                             |          | 18 - 32      |
| Actuator current draw            | [A]      | see page 110 |
| Potentiometer type               |          | wire-wound   |
| Potentiometer max. input voltage | [Vdc]    | 32           |
| Potentiometer max. power         | [W]      | 1            |
| Potentiometer linearity          | [%]      | ± 0.25       |
| Potentiometer output resolution  | [ohm/mm] |              |
| MDxxA025, all strokes            |          | 16.67        |
| MDxxA100, all strokes            |          | 16.67        |
| MDxxA050, 50 - 250 mm stroke     |          | 33.33        |
| MDxxA200, 50 - 250 mm stroke     |          | 33.33        |
| MDxxA050, 300 mm stroke          |          | 16.67        |
| MDxxA200, 300 mm stroke          |          | 16.67        |



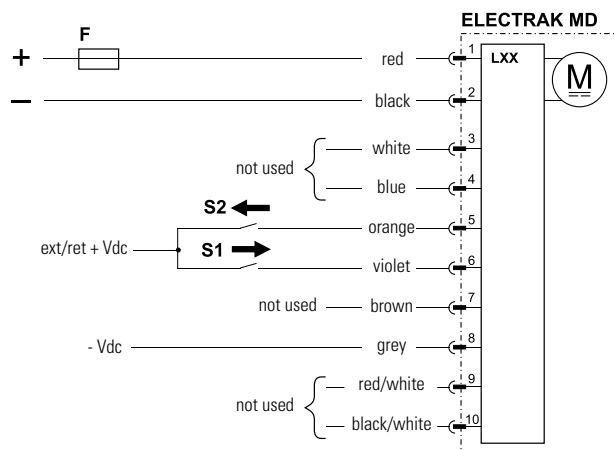
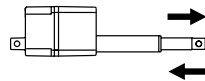
- F Fuse
- S1 Double pole double throw switch

Control option EXP works as option EXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.

# Electrak<sup>®</sup> MD – Control Options

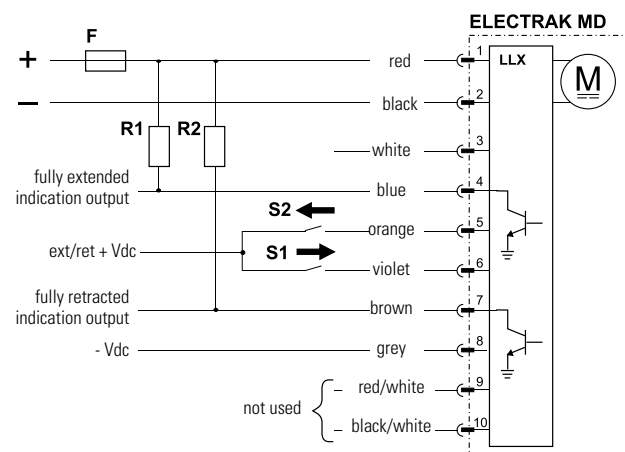
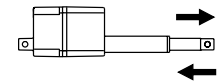
| Control Option Type LXX        |       |              |
|--------------------------------|-------|--------------|
| Actuator supply voltage        | [Vdc] |              |
| MD12                           |       | 9 - 16       |
| MD24                           |       | 18 - 32      |
| Actuator current draw          | [A]   | see page 110 |
| Extend / retract input voltage | [Vdc] | 9 - 32       |
| Extend / retract input current | [mA]  | 6 - 22       |

| Control Option Type LLX            |       |              |
|------------------------------------|-------|--------------|
| Actuator supply voltage            | [Vdc] |              |
| MD12                               |       | 9 - 16       |
| MD24                               |       | 18 - 32      |
| Actuator current draw              | [A]   | see page 110 |
| Extend / retract input voltage     | [Vdc] | 9 - 32       |
| Extend / retract input current     | [mA]  | 6 - 22       |
| End-of-stroke outputs max. voltage | [Vdc] | 32           |
| End-of-stroke outputs max. current | [mA]  | 25           |



- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LXX has all the basic Electronic Monitoring Package features included in control option EXX, but the polarity of the motor voltage is switched by the onboard electronics instead. The customer-supplied switches used to command the actuator to extend or retract only need to handle low-level signals. However, the power supply and wiring that supply the actuator must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to one and a half times the max. continuous current for the max. load being used for up to 150 milliseconds).



- F Fuse
- S1 Extend switch
- S2 Retract switch
- R1 Pull-up resistor
- R2 Pull-up resistor

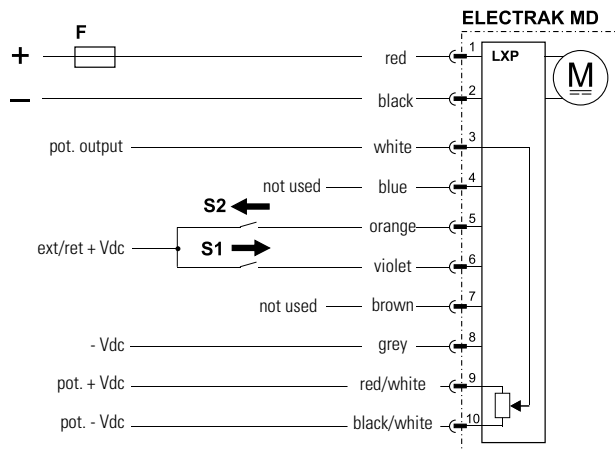
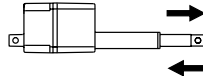
Control option LLX works as option LXX but also has two end-of-stroke indication outputs that will signal when the actuator is fully extended or fully retracted. Since these outputs are current sinking open collector outputs, they will each require an external pull-up resistor to operate effectively.



# Electrak<sup>®</sup> MD – Control Options

## Control Option Type LXP

|                                  |          |                   |
|----------------------------------|----------|-------------------|
| Actuator supply voltage          | [Vdc]    | 9 - 16<br>18 - 32 |
| Actuator current draw            | [A]      | see page 110      |
| Potentiometer type               |          | wire-wound        |
| Potentiometer max. input voltage | [Vdc]    | 32                |
| Potentiometer max. power         | [W]      | 1                 |
| Potentiometer linearity          | [%]      | ± 0.25            |
| Potentiometer output resolution  | [ohm/mm] |                   |
| MDxxA025, all strokes            |          | 16.67             |
| MDxxA100, all strokes            |          | 16.67             |
| MDxxA050, 50 - 250 mm stroke     |          | 33.33             |
| MDxxA200, 50 - 250 mm stroke     |          | 33.33             |
| MDxxA050, 300 mm stroke          |          | 16.67             |
| MDxxA200, 300 mm stroke          |          | 16.67             |
| Extend / retract input voltage   | [Vdc]    | 9 - 32            |
| Extend / retract input current   | [mA]     | 6 - 22            |

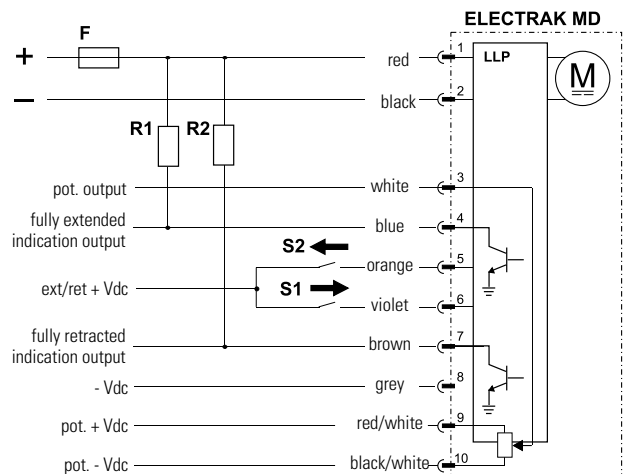
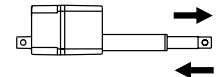


- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LXP works as option LXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.

## Control Option Type LLP

|                                    |          |                   |
|------------------------------------|----------|-------------------|
| Actuator supply voltage            | [Vdc]    | 9 - 16<br>18 - 32 |
| Actuator current draw              | [A]      | see page 110      |
| Potentiometer type                 |          | wire-wound        |
| Potentiometer max. input voltage   | [Vdc]    | 32                |
| Potentiometer max. power           | [W]      | 1                 |
| Potentiometer linearity            | [%]      | ± 0.25            |
| Potentiometer output resolution    | [ohm/mm] |                   |
| MDxxA025, all strokes              |          | 16.67             |
| MDxxA100, all strokes              |          | 16.67             |
| MDxxA050, 50 - 250 mm stroke       |          | 33.33             |
| MDxxA200, 50 - 250 mm stroke       |          | 33.33             |
| MDxxA050, 300 mm stroke            |          | 16.67             |
| MDxxA200, 300 mm stroke            |          | 16.67             |
| Extend / retract input voltage     | [Vdc]    | 9 - 32            |
| Extend / retract input current     | [mA]     | 6 - 22            |
| End-of-stroke outputs max. voltage | [Vdc]    | 32                |
| End-of-stroke outputs max. current | [mA]     | 25                |



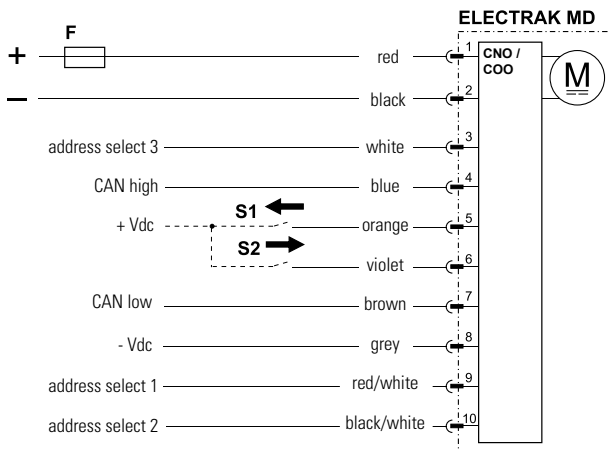
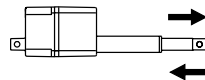
- F Fuse
- S1 Extend switch
- S2 Retract switch
- R1 Pull-up resistor
- R2 Pull-up resistor

Control option LLP works as option LLX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.



# Electrak<sup>®</sup> MD – Control Options

| Control Option Type CNO and COO                                                                                                          |       |              |
|------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------|
| Actuator supply voltage                                                                                                                  | [Vdc] |              |
| MD12                                                                                                                                     |       | 9 - 16       |
| MD24                                                                                                                                     |       | 18 - 32      |
| Actuator current draw                                                                                                                    | [A]   | see page 110 |
| Command data includes:                                                                                                                   |       |              |
| <ul style="list-style-type: none"> <li>• position</li> <li>• speed</li> <li>• current</li> </ul>                                         |       |              |
| Feedback data includes:                                                                                                                  |       |              |
| <ul style="list-style-type: none"> <li>• position</li> <li>• speed</li> <li>• current</li> <li>• other diagnostic information</li> </ul> |       |              |
| Manual extension/retraction input voltage                                                                                                | [Vdc] | 9 - 32       |
| Manual extension/retraction input current                                                                                                | [mA]  | 6 - 22       |



- F Fuse
- S1 Manual extension switch (optional)
- S2 Manual retraction switch (optional)

Control option CNO has a J1939 CAN bus control interface, COO has a CANopen control interface that control and monitor the actuator. Extend and retract commands are sent via CAN messages on the CAN low and CAN high pins. Address select 1, 2 and 3 pins can be used as a binary encoded decimal (BCD) adder to the default address. This can be used when multiple CAN actuators are on a single bus. The actuator can be manually forced to extend or retract by using pin 6 (violet wire) and 5 (orange wire).



# Electrak® GX DC – Technical Features



## Standard Features

- Robust and reliable
- 12, 24, 36, 48 or 90 Vdc as standard input voltages
- Acme and ball screw models
- Static load up to 18 kN (4000 lbf)
- Dynamic load up to 9 kN (2000 lbf)
- Stroke up to 24 in (609 mm)
- Speed up to 61 mm/s (2.4 in/s)
- Protection class static IP66
- Overload clutch for mid and end of stroke protection
- Motor with thermal switch
- Maintenance free

## General Specifications

|                                                                                |                                                                           |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Screw type                                                                     | acme or ball                                                              |
| Nut type<br>Dxxx-xxA (acme screw)<br>Dxxx-xxB (ball screw)                     | self locking lead nut<br>load lock ball nut                               |
| Manual override                                                                | no (optional)                                                             |
| Anti-rotation                                                                  | no                                                                        |
| Static load holding brake<br>acme screw models<br>ball screw models            | no (self locking)<br>yes                                                  |
| Safety features                                                                | overload clutch<br>motor auto reset thermal switch                        |
| Electrical connections<br>no potentiometer option<br>with potentiometer option | flying leads with or without connector<br>cable with or without connector |
| Compliances<br>standard<br>optional                                            | –<br>CE <sup>(1) (2)</sup>                                                |

(1) Actuators used in the EU must be in compliance with CE

(2) The 90 Vdc model cannot be delivered in compliance with CE.

## Optional Mechanical Features

Variety of front and rear adapters

Manual override

## Optional Electrical Features

Potentiometer feedback

## Accessories

Mechanical

Mounting pins

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# Electrak® GX DC – Technical Specifications

| Mechanical Specifications                            |               |                       |
|------------------------------------------------------|---------------|-----------------------|
| Max. static load <sup>(1)</sup>                      | [N (lbf)]     |                       |
| Dxx-xxA (acme screw)                                 |               | 11350 (2500)          |
| Dxx-xxB (ball screw)                                 |               | 18000 (4000)          |
| Max. dynamic load (Fx)                               | [N (lbf)]     |                       |
| Dxxx-05A5                                            |               | 1100 (250)            |
| Dxxx-10A5                                            |               | 2250 (500)            |
| Dxxx-20A5                                            |               | 2250 (500)            |
| Dxxx-05B5                                            |               | 2250 (500)            |
| Dxxx-10B5                                            |               | 4500 (1000)           |
| Dxxx-20B5                                            |               | 4500 (1000)           |
| Dxxx-21B5                                            |               | 6800 (1500)           |
| Dxxx-2KB5                                            |               | 9000 (2000)           |
| Speed @ no load/max. load                            | [mm/s (in/s)] |                       |
| Dxxx-05A5                                            |               | 54/32 (2.10/1.20)     |
| Dxxx-10A5                                            |               | 30/18 (1.20/0.70)     |
| Dxxx-20A5                                            |               | 15/12 (0.67/0.45)     |
| Dxxx-05B5                                            |               | 61/37 (2.40/1.40)     |
| Dxxx-10B5                                            |               | 30/19 (1.30/0.80)     |
| Dxxx-20B5                                            |               | 15/12 0.60/0.45)      |
| Dxxx-21B5                                            |               | 15/11 (0.60/0.43)     |
| Dxxx-2KB5                                            |               | 15/9 (0.60/0.40)      |
| Min. ordering stroke (S) length                      | [in]          | 2                     |
| Max. ordering stroke (S) length <sup>(2)(3)(4)</sup> | [in]          | 24                    |
| Ordering stroke length increments                    | [in]          | 2                     |
| Operating temperature limits                         | [°C (F)]      | -25 – 65 (- 15 – 150) |
| Full load duty cycle @ 25 °C (77 °F)                 | [%]           | 25                    |
| End play, maximum                                    | [mm (in)]     | 1.0 (0.04)            |
| Restraining torque                                   | [Nm (lbf-in)] | 11.3 (100)            |
| Protection class - static, standard (optional)       |               | IP66 (IP66 & IP69K)   |
| Salt spray resistance                                | [h]           | 96                    |

(1) Max. static load at fully retracted stroke

(2) Max. ordering stroke length for Dxx-2KB5 is 12 inches

(3) Max. ordering stroke length for Dxx-21B5 is 20 inches

(4) For other strokes, contact customer support

| Electrical Specifications                           |                         |                    |
|-----------------------------------------------------|-------------------------|--------------------|
| Available input voltages <sup>(1)(2)</sup>          | [Vdc]                   | 12, 24, 36, 48, 90 |
| Input voltage tolerance                             | [%]                     | ± 10               |
| Current draw @ no load/max. load                    | [A]                     |                    |
| D12x-05A5                                           |                         | 12.0/33.0          |
| D12x-10A5                                           |                         | 8.0/27.0           |
| D12x-20A5                                           |                         | 3.0/15.0           |
| D12x-05B5                                           |                         | 8.0/28.0           |
| D12x-10B5                                           |                         | 5.0/27.0           |
| D12x-20B5                                           |                         | 3.0/13.0           |
| D12x-21B5                                           |                         | 3.0/20.0           |
| D12x-2KB5                                           |                         | 4.0/25.0           |
| D24x-05A5                                           |                         | 6.0/16.5           |
| D24x-10A5                                           |                         | 4.0/13.5           |
| D24x-20A5                                           |                         | 1.5/7.5            |
| D24x-05B5                                           |                         | 4.0/14.0           |
| D24x-10B5                                           |                         | 2.5/13.5           |
| D24x-20B5                                           |                         | 1.5/7.5            |
| D24x-21B5                                           |                         | 1.5/10.0           |
| D24x-2KB5                                           |                         | 2.0/12.5           |
| D36x-05A5                                           |                         | 4.0/11.0           |
| D36x-10A5                                           |                         | 2.67/9.0           |
| D36x-20A5                                           |                         | 1.0/5.1            |
| D36x-05B5                                           |                         | 2.67/9.3           |
| D36x-10B5                                           |                         | 1.67/9.0           |
| D36x-20B5                                           |                         | 1.0/5.1            |
| D36x-21B5                                           |                         | 1.0/6.7            |
| D36x-2KB5                                           |                         | 1.34/8.4           |
| D48x-05A5                                           |                         | 3.0/8.3            |
| D48x-10A5                                           |                         | 2.0/6.8            |
| D48x-20A5                                           |                         | 0.8/3.8            |
| D48x-05B5                                           |                         | 2.0/7.0            |
| D48x-10B5                                           |                         | 1.3/6.8            |
| D48x-20B5                                           |                         | 0.8/3.8            |
| D48x-21B5                                           |                         | 0.8/5.0            |
| D48x-2KB5                                           |                         | 1.0/6.3            |
| D90x-05A5                                           |                         | 1.5/4.1            |
| D90x-10A5                                           |                         | 1.0/3.4            |
| D90x-20A5                                           |                         | 0.4/1.9            |
| D90x-05B5                                           |                         | 1.0/3.5            |
| D90x-10B5                                           |                         | 0.6/3.4            |
| D90x-20B5                                           |                         | 0.4/1.9            |
| D90x-21B5                                           |                         | 0.4/2.5            |
| D90x-2KB5                                           |                         | 0.5/3.2            |
| Flying leads length                                 | [mm (in)]               | 165 (7.5)          |
| Flying leads diameter                               | [mm (in)]               | 3 (0.12)           |
| Flying leads cross section                          | [mm <sup>2</sup> (AWG)] | 2 (14)             |
| Cable length with option pot.                       | [mm (in)]               | 600 (24)           |
| Cable diameter with option pot.                     | [mm (in)]               | 9 (0.35)           |
| Cable leads cross section with option potentiometer | [mm <sup>2</sup> (AWG)] |                    |
| motor leads                                         |                         | 2.5 (14)           |
| potentiometer leads                                 |                         | 1.5 (16)           |

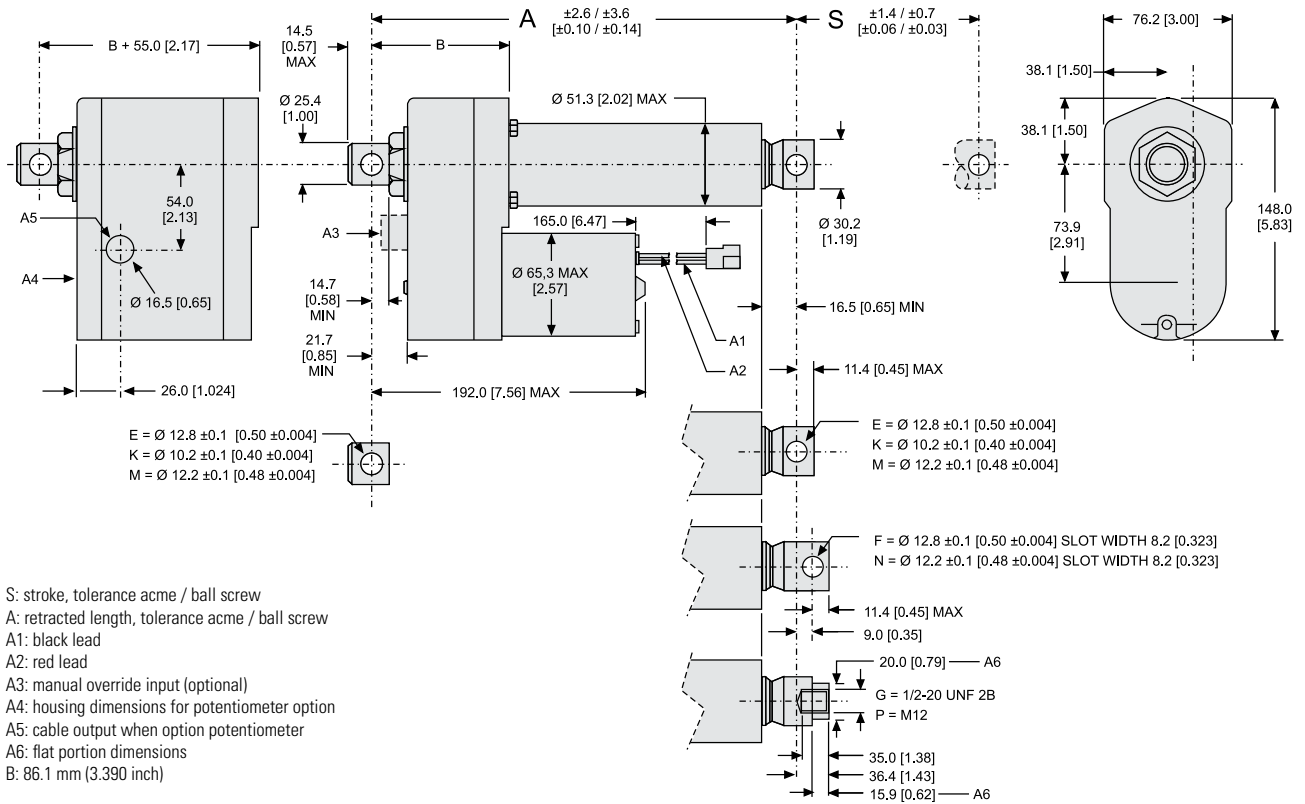
(1) For other input voltages - contact customer support.

(2) 90 Vdc model not CE compliant.



# Electrak® GX DC – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



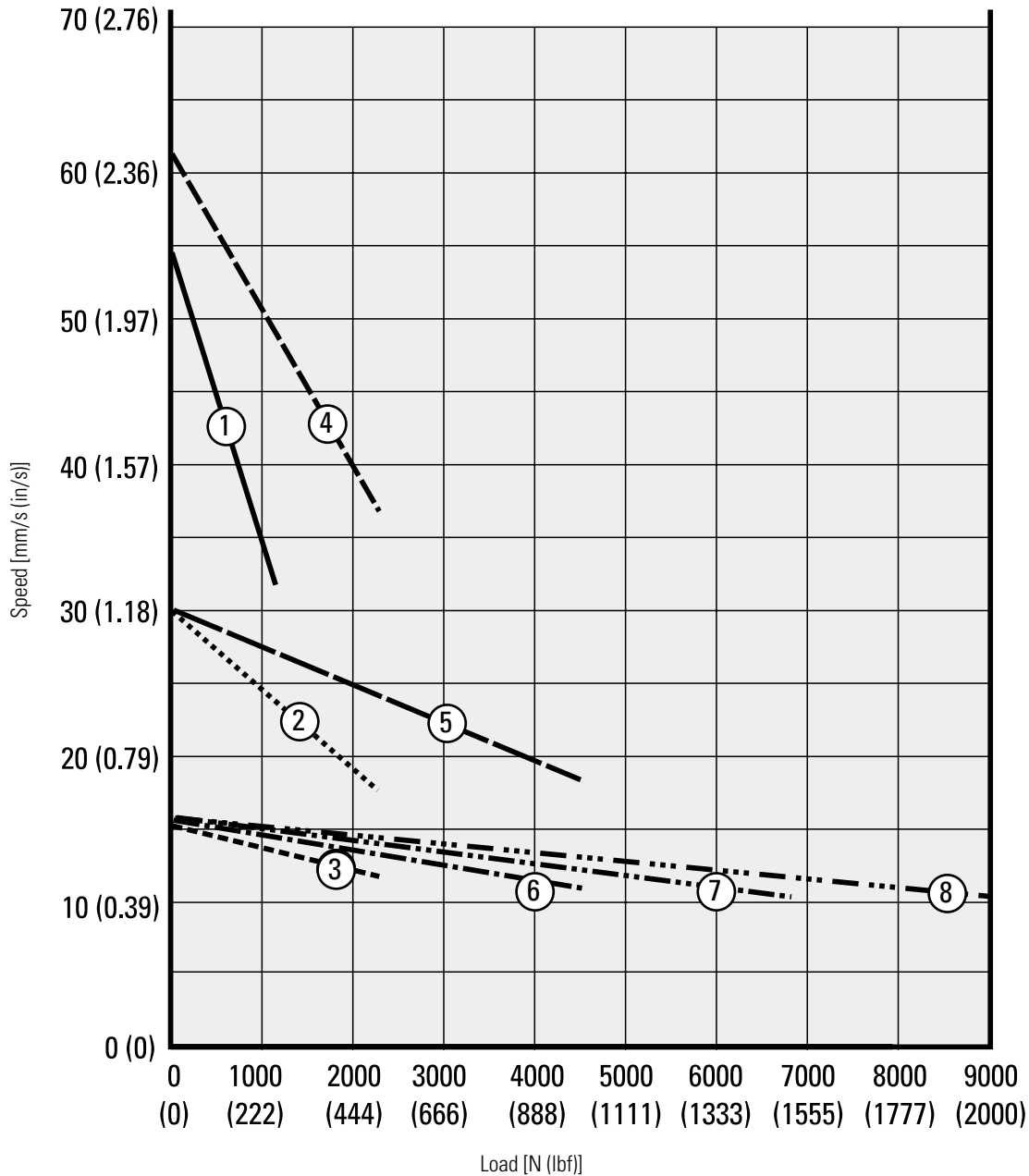
- S: stroke, tolerance acme / ball screw
- A: retracted length, tolerance acme / ball screw
- A1: black lead
- A2: red lead
- A3: manual override input (optional)
- A4: housing dimensions for potentiometer option
- A5: cable output when option potentiometer
- A6: flat portion dimensions
- B: 86.1 mm (3.390 inch)

## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                     | [in]  | 2     | 4     | 6     | 8     | 10    | 12    | 14    | 16    | 18    | 20    | 22    | 24    |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length, acme screw models (A) | [mm]  | 211.3 | 262.1 | 312.9 | 363.7 | 414.5 | 465.3 | 583.7 | 634.5 | 685.3 | 736.1 | 786.9 | 837.7 |
|                                         | [in]  | 8.32  | 10.32 | 12.32 | 14.32 | 16.32 | 18.32 | 22.98 | 24.98 | 26.98 | 28.98 | 30.98 | 32.98 |
| Retracted length, ball screw models (A) | [mm]  | 251.5 | 302.3 | 353.1 | 403.9 | 454.7 | 505.5 | 623.6 | 674.4 | 725.2 | 776.0 | 826.8 | 877.6 |
|                                         | [in]  | 9.90  | 11.90 | 13.90 | 15.90 | 17.90 | 19.90 | 24.55 | 26.55 | 28.55 | 30.55 | 32.55 | 34.55 |
| Add on length for option potentiometer  | [mm]  | 55.0  |       |       |       |       |       |       |       |       |       |       |       |
|                                         | [in]  | 2.17  |       |       |       |       |       |       |       |       |       |       |       |
| Weight, acme screw models               | [kg]  | 4.4   | 4.6   | 4.8   | 5.0   | 5.1   | 5.3   | 5.5   | 5.6   | 5.8   | 5.9   | 6.1   | 6.2   |
|                                         | [lbf] | 9.7   | 10.1  | 10.6  | 11.0  | 11.2  | 11.7  | 12.1  | 12.3  | 12.8  | 13.0  | 13.4  | 13.6  |
| Weight, ball screw models               | [kg]  | 5.0   | 5.2   | 5.4   | 5.6   | 5.8   | 6.0   | 6.1   | 6.2   | 6.4   | 6.5   | 6.7   | 6.9   |
|                                         | [lbf] | 11.0  | 11.4  | 11.9  | 12.3  | 12.8  | 13.2  | 13.4  | 13.6  | 14.1  | 14.3  | 14.7  | 15.2  |
| Add on weight for option potentiometer  | [kg]  | 1.30  |       |       |       |       |       |       |       |       |       |       |       |
|                                         | [lbf] | 2.86  |       |       |       |       |       |       |       |       |       |       |       |

# Electrak® GX DC – Performance Diagrams

Load vs. Speed

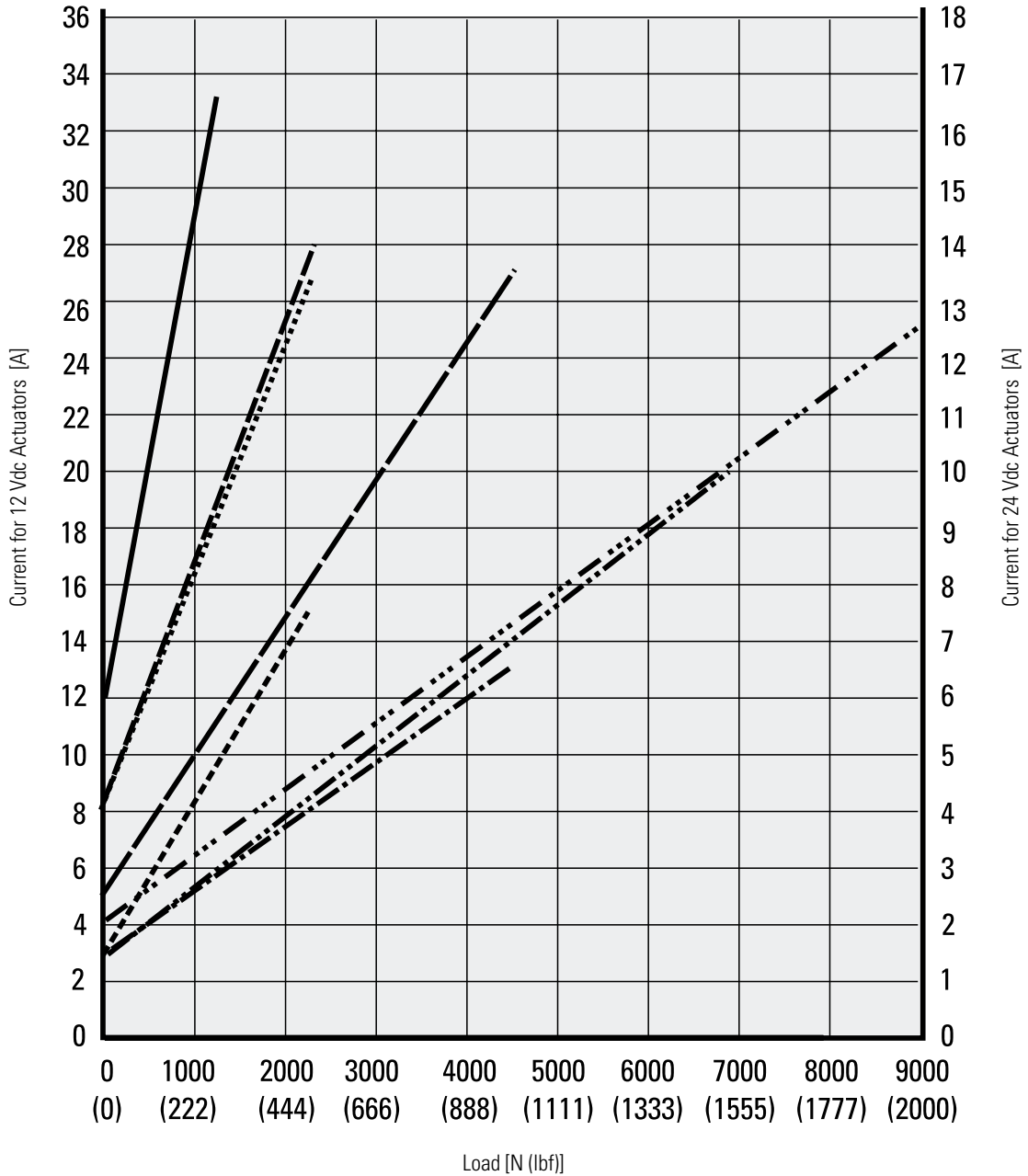


- |                                 |           |                                  |                     |
|---------------------------------|-----------|----------------------------------|---------------------|
| 1. Dxxx-05A5 (1100 N (250 lbf)) | —————     | 5. Dxxx-10B5 (4500 N (1000 lbf)) | —————               |
| 2. Dxxx-10A5 (2250 N (500 lbf)) | .....     | 6. Dxxx-20B5 (4500 N (1000 lbf)) | - . - . - . - .     |
| 3. Dxxx-20A5 (2250 N (500 lbf)) | - - - - - | 7. Dxxx-21B5 (6800 N (1500 lbf)) | - . - . - . - .     |
| 4. Dxxx-05B5 (2250 N (500 lbf)) | - - - - - | 8. Dxxx-2KB5 (9000 N (2000 lbf)) | - . . . - . . . - . |



# Electrak® GX DC – Performance Diagrams

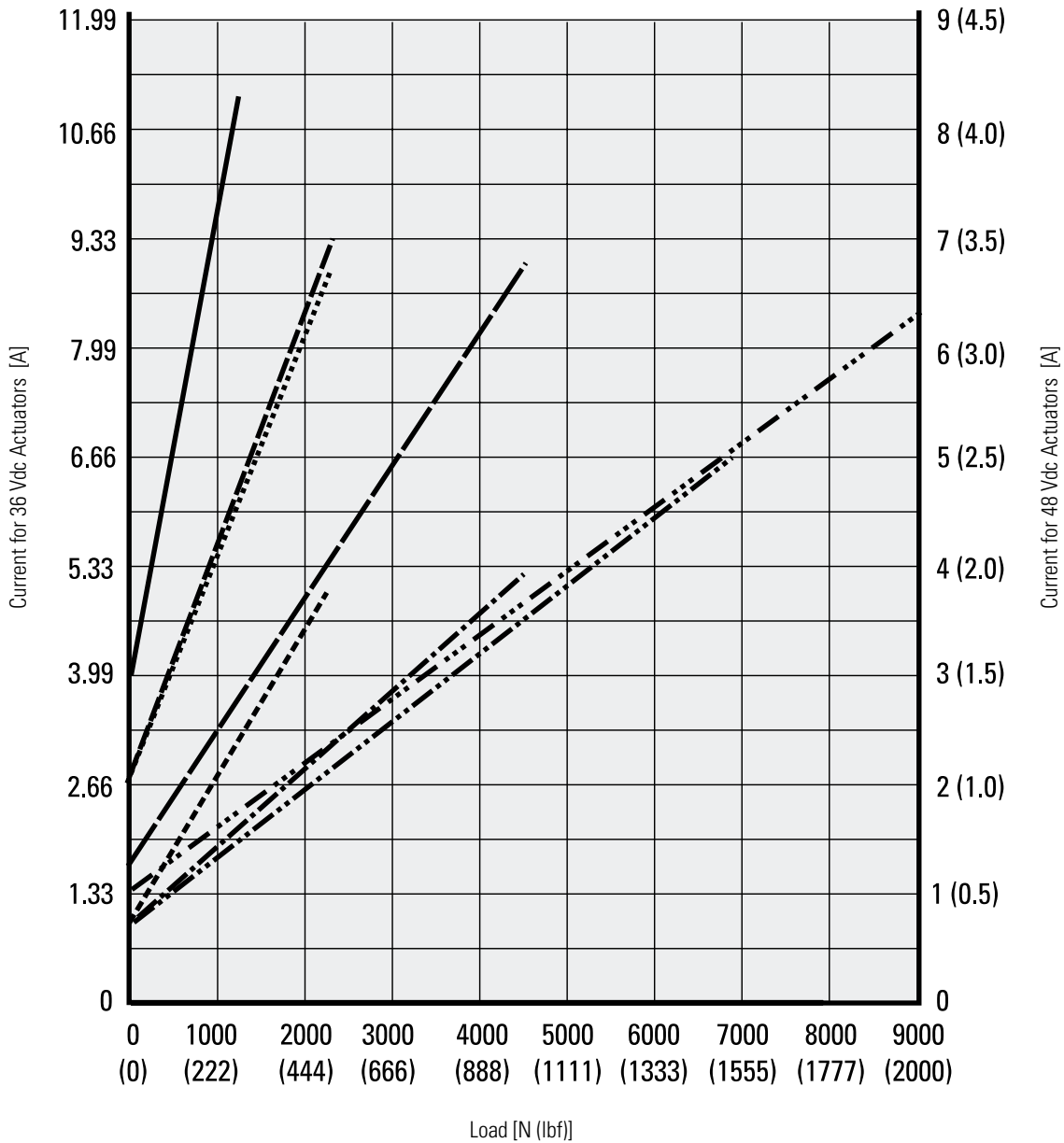
Load vs. Current for 12 and 24 Vdc actuators



- |                              |       |                               |             |
|------------------------------|-------|-------------------------------|-------------|
| Dxxx-05A5 (1100 N (250 lbf)) | ————— | Dxxx-10B5 (4500 N (1000 lbf)) | —————       |
| Dxxx-10A5 (2250 N (500 lbf)) | ..... | Dxxx-20B5 (4500 N (1000 lbf)) | — · — · — · |
| Dxxx-20A5 (2250 N (500 lbf)) | ----- | Dxxx-21B5 (6800 N (1500 lbf)) | — · — · — · |
| Dxxx-05B5 (2250 N (500 lbf)) | ----- | Dxxx-2KB5 (9000 N (2000 lbf)) | — · — · — · |

# Electrak® GX DC – Performance Diagrams

Load vs. Current for 36 and 48 Vdc actuators



- |                              |             |                               |                     |
|------------------------------|-------------|-------------------------------|---------------------|
| Dxxx-05A5 (1100 N (250 lbf)) | —————       | Dxxx-10B5 (4500 N (1000 lbf)) | —————               |
| Dxxx-10A5 (2250 N (500 lbf)) | .....       | Dxxx-20B5 (4500 N (1000 lbf)) | - . - . - .         |
| Dxxx-20A5 (2250 N (500 lbf)) | - - - - -   | Dxxx-21B5 (6800 N (1500 lbf)) | - . . . - . . .     |
| Dxxx-05B5 (2250 N (500 lbf)) | - . - . - . | Dxxx-2KB5 (9000 N (2000 lbf)) | - . . . . - . . . . |



# Electrak® GX DC – Ordering Key

## Ordering Key

|             |              |           |           |          |          |           |          |          |
|-------------|--------------|-----------|-----------|----------|----------|-----------|----------|----------|
| 1           | 2            | 3         | 4         | 5        | 6        | 7         | 8        | 9        |
| <b>D12C</b> | <b>05A5-</b> | <b>02</b> | <b>M0</b> | <b>N</b> | <b>N</b> | <b>-D</b> | <b>E</b> | <b>E</b> |

### 1. Model, input voltage and CE compliance

D12C = Electrak GX, 12 Vdc, CE compliant  
 D24C = Electrak GX, 24 Vdc, CE compliant  
 D36C = Electrak GX, 36 Vdc, CE compliant  
 D48C = Electrak GX, 48 Vdc, CE compliant  
 D12N = Electrak GX, 12 Vdc, not CE compliant  
 D24N = Electrak GX, 24 Vdc, not CE compliant  
 D36N = Electrak GX, 36 Vdc, not CE compliant  
 D48N = Electrak GX, 48 Vdc, not CE compliant  
 D90N = Electrak GX, 90 Vdc, not CE compliant

### 2. Dynamic load capacity, screw type and maximum speed

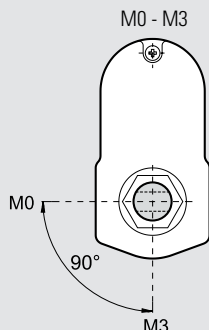
05A5 - = 1100 N, acme, 54 mm/s  
 10A5 - = 2250 N, acme, 30 mm/s  
 20A5 - = 2250 N, acme, 15 mm/s  
 05B5 - = 2250 N, ball, 61 mm/s  
 10B5 - = 4500 N, ball, 30 mm/s  
 20B5 - = 4500 N, ball, 15 mm/s  
 21B5 - = 6800 N, ball, 15 mm/s <sup>(1)</sup>  
 2KB5 - = 9000 N, ball, 9 mm/s <sup>(2)</sup>

### 3. Ordering stroke length

02 = 2 inch (50.8 mm)  
 04 = 4 inch (101.6 mm)  
 06 = 6 inch (152.4 mm)  
 08 = 8 inch (203.2 mm)  
 10 = 10 inch (254.0 mm)  
 12 = 12 inch (304.8 mm)  
 14 = 14 inch (355.6 mm)  
 16 = 16 inch (406.4 mm)  
 18 = 18 inch (457.2 mm)  
 20 = 20 inch (508.0 mm)  
 22 = 22 inch (558.8 mm)  
 24 = 24 inch (609.6 mm)

### 4. Rear adapter hole orientation

M0 = adapter at 0° (standard)  
 M3 = adapter at 90° <sup>(3)</sup>



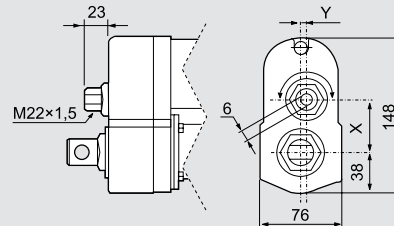
### 5. Ingress protection rating

N = IP66  
 K = IP66 and IP69K

### 6. Options

N = no option  
 P = potentiometer feedback  
 H = manual override

Dimensions for manual override option



| Model                | X    | Y   |
|----------------------|------|-----|
| Dxxx05A(B)5-         | 49.6 | 0.0 |
| Dxxx10A(B)5-         | 43.3 | 5.2 |
| Dxxx20(21, 2K)A(B)5- | 38.9 | 0.0 |

### 7. Connector option

-A = AMP terminal 42098-2, house 180908-5  
 -B = Packard Electric 56 Series  
 -D = no connector (flying leads)

### 8. Front adapter option

E = cross hole for 0.5 inch pin  
 F = forked cross hole for 0.5 inch pin  
 G = 1/2-20 UNF 2B female thread  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin  
 N = forked cross hole for 12 mm pin  
 P = M12 female thread

### 9. Rear adapter option

E = cross hole for 0.5 inch pin  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin

(1) 21B5 not possible with strokes above 20 inch

(2) 2KB5 not possible for strokes above 12 inch

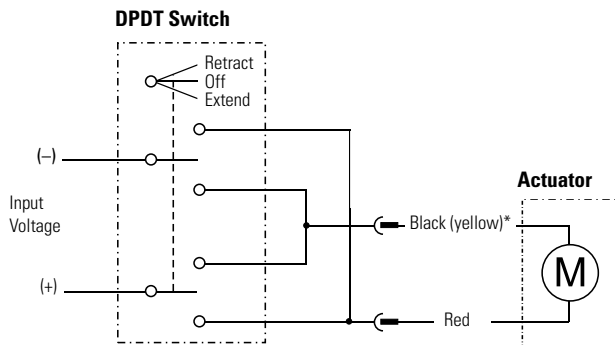
(3) Not possible with option manual override



# Electrak<sup>®</sup> GX DC – Electrical Connections

## Without Option

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| D12x                    |       | 12 |
| D24x                    |       | 24 |
| D36x                    |       | 36 |
| D48x                    |       | 48 |
| D90N                    |       | 90 |



\* Lead can be black or yellow

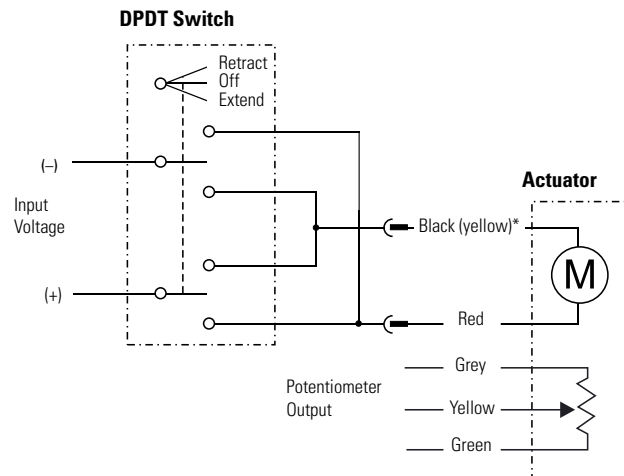
Connect the red lead to positive and black (yellow)\* to negative to extend the actuator. Change polarity to retract the actuator.

## Option Potentiometer

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| D12x                    |       | 12 |
| D24x                    |       | 24 |
| D36x                    |       | 36 |
| D48x                    |       | 48 |
| D90N                    |       | 90 |

|                                  |          |           |
|----------------------------------|----------|-----------|
| Potentiometer type               |          | wirewound |
| Potentiometer max. input voltage | [Vdc]    | 32        |
| Potentiometer max. power         | [W]      | 2         |
| Potentiometer linearity          | [%]      | ± 0.25    |
| Potentiometer output resolution  | [ohm/mm] |           |
| 2 - 10 inch stroke               |          | 39        |
| 11 - 20 inch stroke              |          | 20        |
| 21 - 24 inch stroke              |          | 10        |



\* Lead can be black or yellow

Connect the red lead to positive and black (yellow)\* to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output cable has 0 ohm between grey and yellow leads when the actuator is fully extended.

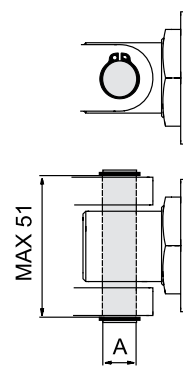


## Electrak® GX DC – Accessories

### Mounting Pin Kits

| Designation          | A [mm(in)] | Part Number |
|----------------------|------------|-------------|
| Mounting pins (pair) | 12.7 (0.5) | D603 028    |

The mounting pins are used in the rear and front adapter holes of the actuator. The pins have a groove in each end so that it can be secured with snap rings.



Dimensions

mm

### Mating Connectors

| Designation                            | Part Number  |
|----------------------------------------|--------------|
| North American mating connector kit    | 9100-448-001 |
| Rest of the world mating connector kit | LA100B9P1    |

The mating connector kit consist of the necessary connector parts required to be able to connect to the connector on the actuator wires.

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# Electrak® GX AC – Technical Features



## Standard Features

- Robust and reliable
- 1 × 115, 1 × 230 or 3 × 400 Vac as standard input voltages
- Acme and ball screw models
- Static load up to 18 kN (4000 lbf)
- Dynamic load up to 9 kN (2000 lbf)
- Stroke up to 24 in (609 mm)
- Speed up to 61 mm/s (2.4 in/s)
- Protection class static IP45
- Overload clutch for mid and end of stroke protection
- Anti coast brake
- Motor with thermal switch
- Maintenance free

## General Specifications

|                                                                                |                                                        |
|--------------------------------------------------------------------------------|--------------------------------------------------------|
| Screw type                                                                     | acme or ball                                           |
| Nut type<br>Axxx-xxA (acme screw)<br>Axxx-xxB (ball screw)                     | self locking lead nut<br>load lock ball nut            |
| Manual override                                                                | no (optional)                                          |
| Anti-rotation                                                                  | no                                                     |
| Static load holding brake<br>acme screw models<br>ball screw models            | no (self locking)<br>yes                               |
| Safety features                                                                | overload clutch<br>motor auto reset thermal switch     |
| Anti coast brake                                                               | yes                                                    |
| Electrical connections<br>no potentiometer option<br>with potentiometer option | cable with flying leads<br>2 x cable with flying leads |
| Compliances                                                                    | CE                                                     |
| Certificates                                                                   | UL, CSA                                                |

## Optional Mechanical Features

Variety of front and rear adapters

Manual override

## Optional Electrical Features

Potentiometer feedback

# Electrak<sup>®</sup> GX AC – Technical Specifications

| Mechanical Specifications                              |               |                      |
|--------------------------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>                        | [N (lbf)]     |                      |
| Axx-xxA (acme screw)                                   |               | 11350 (2500)         |
| Axx-xxB (ball screw)                                   |               | 18000 (4000)         |
| Max. dynamic load (Fx)                                 | [N (lbf)]     |                      |
| A12(22)C-05A5 <sup>(2)</sup>                           |               | 1100 (250)           |
| A12(22)C-10A5                                          |               | 2250 (500)           |
| A42C-10A5                                              |               | 1100 (250)           |
| A12(22)C-20A5                                          |               | 2250 (500)           |
| A42C-20A5                                              |               | 1100 (250)           |
| A12(22)C-05B5                                          |               | 2250 (500)           |
| A42C-05B5                                              |               | 1100 (250)           |
| A12(22)C-10B5                                          |               | 4500 (1000)          |
| A42C-10B5                                              |               | 2250 (500)           |
| A12(22)C-20B5                                          |               | 4500 (1000)          |
| A42C-20B5                                              |               | 2250 (500)           |
| A12(22)C-21B5 <sup>(2)</sup>                           |               | 6800 (1500)          |
| A12(22)C-2KB5 <sup>(2)</sup>                           |               | 9000 (2000)          |
| Speed @ no load/max. load                              | [mm/s (in/s)] |                      |
| AxxC-05A5 <sup>(2)</sup>                               |               | 54/32 (2.10/1.20)    |
| AxxC-10A5                                              |               | 30/18 (1.20/0.71)    |
| AxxC-20A5                                              |               | 15/12 (0.67/0.47)    |
| AxxC-05B5                                              |               | 61/37 (2.40/1.40)    |
| AxxC-10B5                                              |               | 30/18 (1.20/0.71)    |
| AxxC-20B5                                              |               | 15/12 (0.60/0.47)    |
| AxxC-21B5 <sup>(2)</sup>                               |               | 15/11 (0.60/0.43)    |
| AxxC-2KB5 <sup>(2)</sup>                               |               | 15/9 (0.60/0.35)     |
| Min. ordering stroke (S) length                        | [in]          | 6                    |
| Max. ordering stroke (S) length <sup>(3) (4) (5)</sup> | [in]          | 24                   |
| Ordering stroke length increments                      | [in]          | 2                    |
| Operating temperature limits                           | [°C (F)]      | -25 – 65 (-15 – 150) |
| Max. on time                                           | [s]           | 45                   |
| Full load duty cycle @ 25 °C (77 °F)                   | [%]           | 25                   |
| End play, maximum                                      | [mm (in)]     | 1.0 (0.04)           |
| Restraining torque                                     | [Nm (lbf-in)] | 11.3 (100)           |
| Protection class - static                              |               | IP45                 |
| Salt spray resistance                                  | [h]           | 96                   |

- (1) Max. static load at fully retracted stroke  
 (2) Not possible with supply voltage 3 × 400 Vac  
 (3) 2KB5 not possible for strokes above 12 inch  
 (4) 21B5 not possible for strokes above 20 inch  
 (5) For other strokes, contact customer support

| Electrical Specifications                     |                         |                                                             |
|-----------------------------------------------|-------------------------|-------------------------------------------------------------|
| Available input voltages <sup>(1)</sup>       | [Vac]                   | 1 × 115 <sup>(2)</sup><br>1 × 230 <sup>(2)</sup><br>3 × 400 |
| Input voltage tolerance                       | [%]                     | ± 10                                                        |
| Current draw @ no load/max. load              | [A]                     |                                                             |
| A12C-05A5                                     |                         | 1.2/2.8                                                     |
| A12C-10A5                                     |                         | 1.2/2.8                                                     |
| A12C-20A5                                     |                         | 0.8/2.2                                                     |
| A12C-05B5                                     |                         | 1.0/2.8                                                     |
| A12C-10B5                                     |                         | 1.0/2.8                                                     |
| A12C-20B5                                     |                         | 1.0/2.4                                                     |
| A12C-21B5                                     |                         | 0.8/2.8                                                     |
| A12C-2KB5                                     |                         | 0.8/3.7                                                     |
| A22C-05A5                                     |                         | 0.6/1.6                                                     |
| A22C-10A5                                     |                         | 0.6/1.6                                                     |
| A22C-20A5                                     |                         | 0.4/1.5                                                     |
| A22C-05B5                                     |                         | 0.5/1.3                                                     |
| A22C-10B5                                     |                         | 0.5/1.3                                                     |
| A22C-20B5                                     |                         | 0.5/1.4                                                     |
| A22C-21B5                                     |                         | 0.4/1.6                                                     |
| A22C-2KB5                                     |                         | 0.4/1.8                                                     |
| A42C-05A5                                     |                         | not possible                                                |
| A42C-10A5                                     |                         | 0.35/0.7                                                    |
| A42C-20A5                                     |                         | 0.30/0.7                                                    |
| A42C-05B5                                     |                         | 0.45/0.7                                                    |
| A42C-10B5                                     |                         | 0.45/0.7                                                    |
| A42C-20B5                                     |                         | 0.45/0.7                                                    |
| A42C-21B5                                     |                         | not possible                                                |
| A42C-2KB5                                     |                         | not possible                                                |
| Motor cable length                            | [mm (in)]               | 600 (24)                                                    |
| Motor cable diameter                          | [mm (in)]               | 10 (0.4)                                                    |
| Motor cable leads cross section               | [mm <sup>2</sup> (AWG)] | 1.5 (16)                                                    |
| Potentiometer cable length <sup>(3)</sup>     | [mm (in)]               | 500 (20)                                                    |
| Potentiometer cable diameter <sup>(3)</sup>   | [mm (in)]               | 9 (0.35)                                                    |
| Pot. cable leads cross section <sup>(3)</sup> | [mm <sup>2</sup> (AWG)] | 1.5 (16)                                                    |

(1) For other input voltages - contact customer support.

(2) Capacitor required to run the actuator.

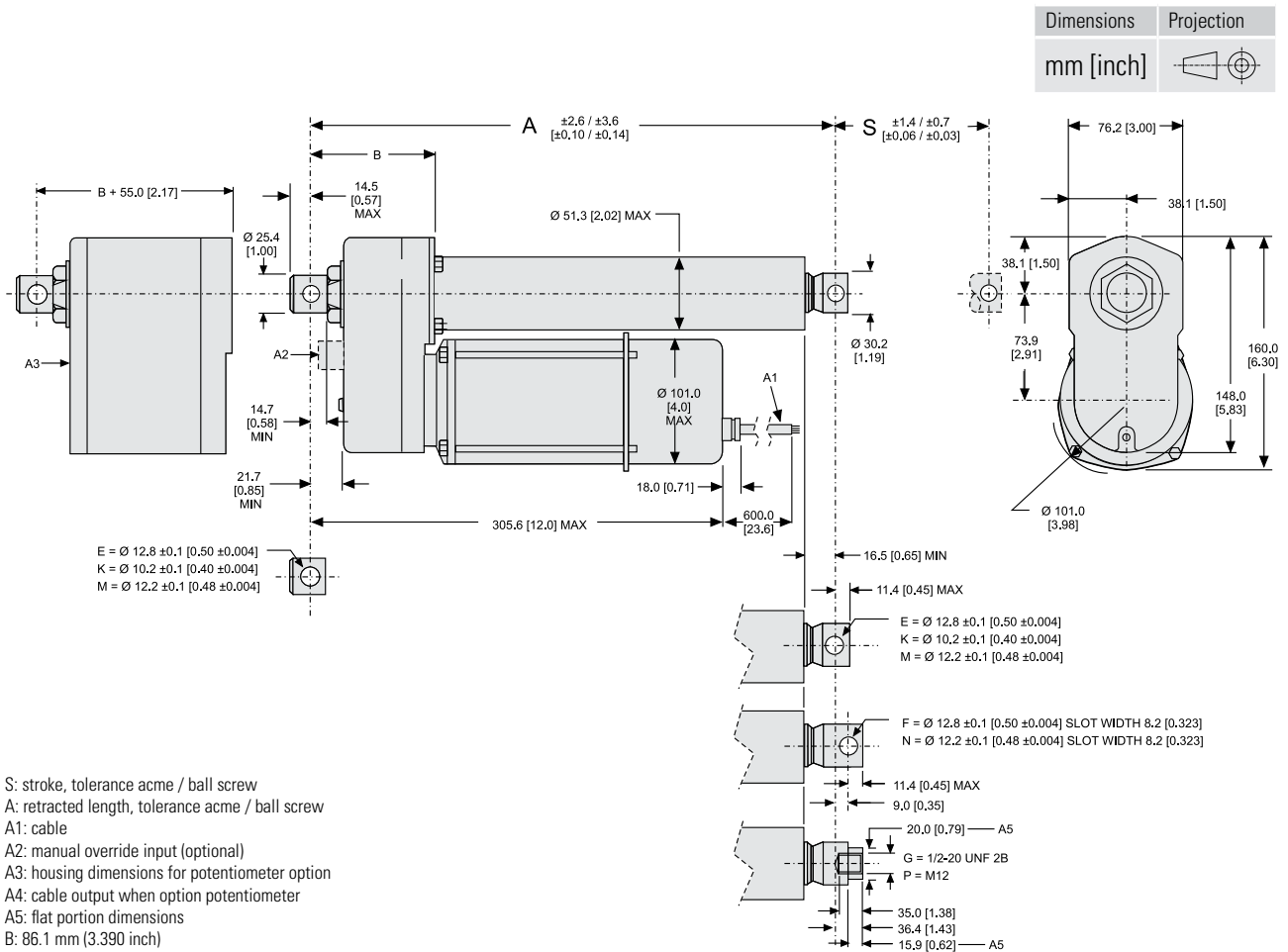
1 × 115 Vac = 35 µF, p/n 9200-448-002

1 × 230 Vac = 10 µF, p/n 9200-448-003

(3) Potentiometer is optional



# Electrak® GX AC – Dimensions



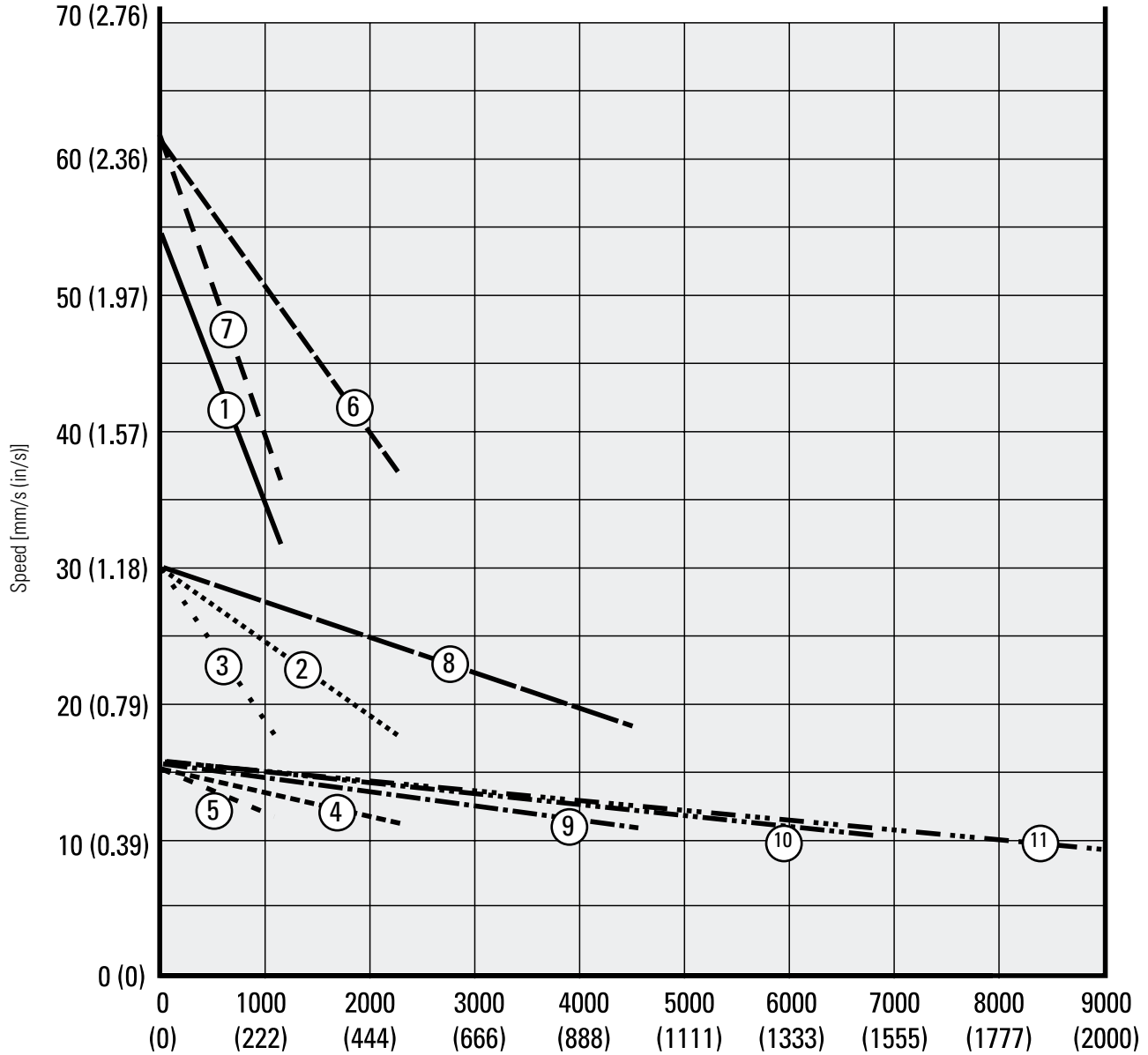
S: stroke, tolerance acme / ball screw  
 A: retracted length, tolerance acme / ball screw  
 A1: cable  
 A2: manual override input (optional)  
 A3: housing dimensions for potentiometer option  
 A4: cable output when option potentiometer  
 A5: flat portion dimensions  
 B: 86.1 mm (3.390 inch)

## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                     | [in]  | 6     | 8     | 10    | 12    | 14    | 16    | 18    | 20    | 22    | 24    |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length, acme screw models (A) | [mm]  | 312.9 | 363.7 | 414.5 | 465.3 | 583.7 | 634.5 | 685.3 | 736.1 | 786.9 | 837.7 |
|                                         | [in]  | 12.32 | 14.32 | 16.32 | 18.32 | 22.98 | 24.98 | 26.98 | 28.98 | 30.98 | 32.98 |
| Retracted length, ball screw models (A) | [mm]  | 353.1 | 403.9 | 454.7 | 505.5 | 623.6 | 674.4 | 725.2 | 776.0 | 826.8 | 877.6 |
|                                         | [in]  | 13.90 | 15.90 | 17.90 | 19.90 | 24.55 | 26.55 | 28.55 | 30.55 | 32.55 | 34.55 |
| Add on length for option potentiometer  | [mm]  | 55.0  |       |       |       |       |       |       |       |       |       |
|                                         | [in]  | 2.17  |       |       |       |       |       |       |       |       |       |
| Weight, acme screw models               | [kg]  | 6.2   | 6.4   | 6.6   | 6.8   | 7.0   | 7.2   | 7.4   | 7.6   | 7.8   | 7.9   |
|                                         | [lbf] | 13.6  | 14.1  | 14.5  | 15.0  | 15.4  | 15.8  | 16.3  | 16.7  | 17.1  | 17.4  |
| Weight, ball screw models               | [kg]  | 6.8   | 7.0   | 7.2   | 7.4   | 7.6   | 7.8   | 8.0   | 8.2   | 8.4   | 8.5   |
|                                         | [lbf] | 15.0  | 15.4  | 15.8  | 16.3  | 16.7  | 17.1  | 17.6  | 18.0  | 18.5  | 18.8  |
| Add on weight for option potentiometer  | [kg]  | 1.30  |       |       |       |       |       |       |       |       |       |
|                                         | [lbf] | 2.86  |       |       |       |       |       |       |       |       |       |

# Electrak® GX AC – Performance Diagrams

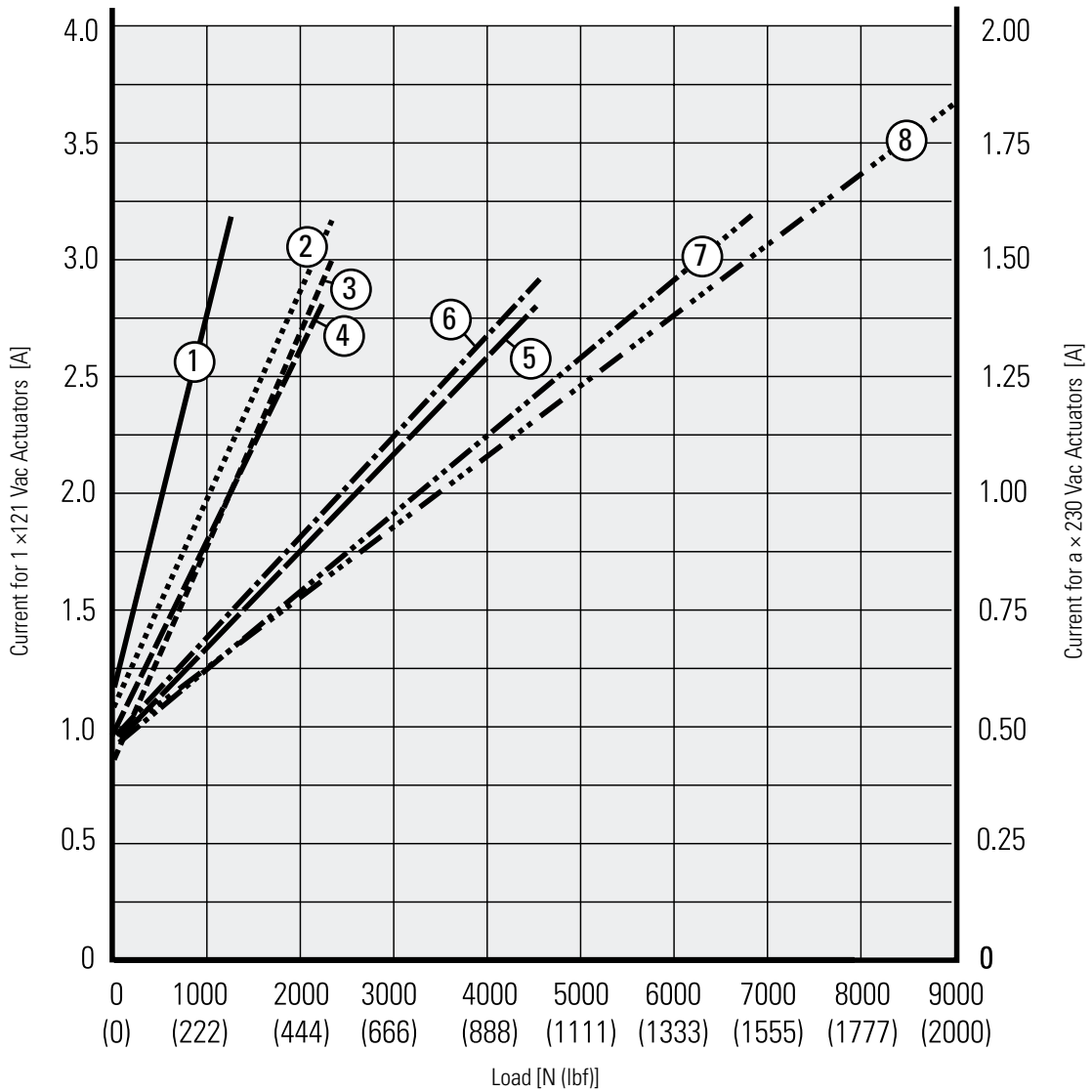
Load vs. Speed





# Electrak® GX AC – Performance Diagrams

Load vs. Current for 1 × 115 and 1 × 230 Vac actuators

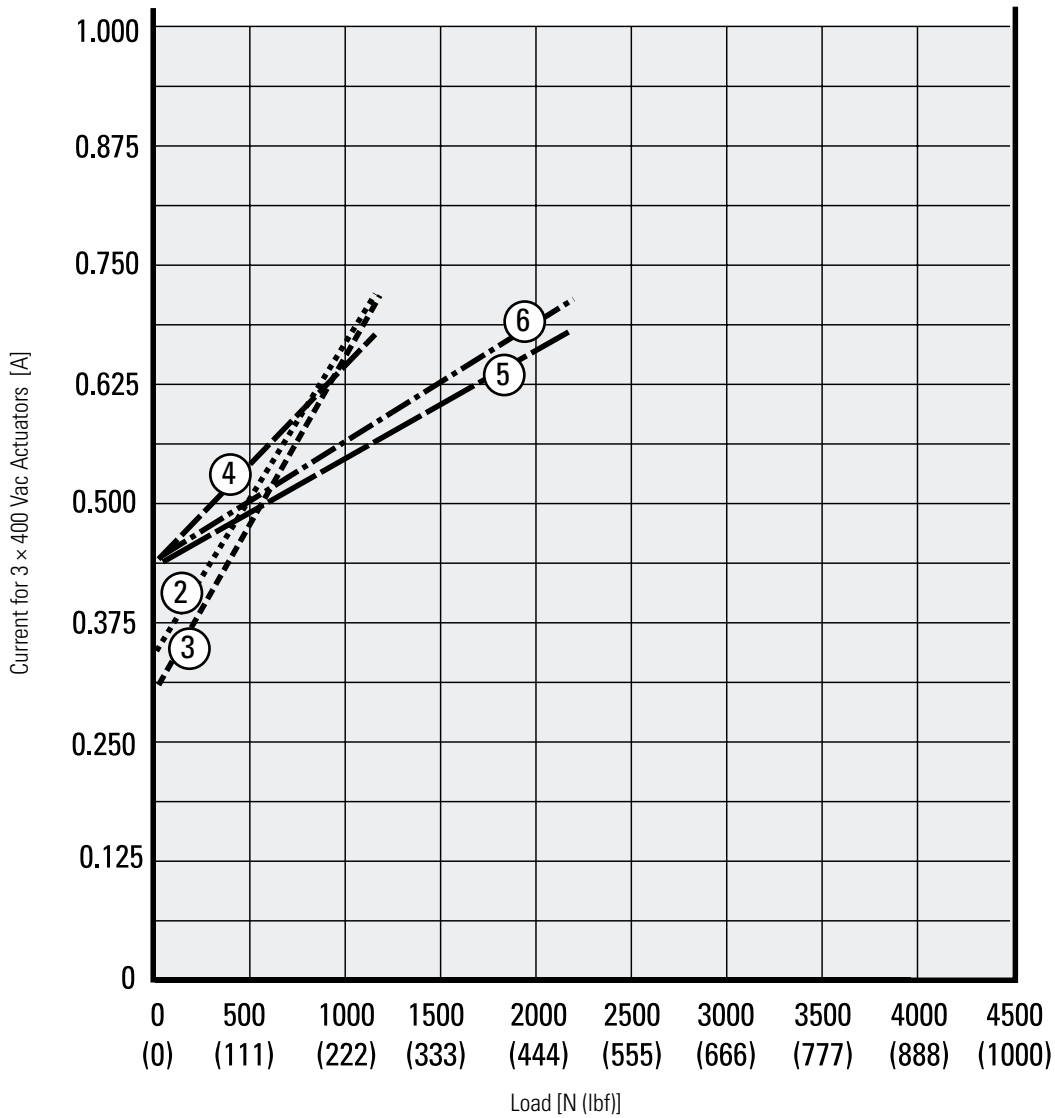


- |                                     |             |                                      |             |
|-------------------------------------|-------------|--------------------------------------|-------------|
| 1. A12(22)x-05A5 (1100 N (250 lbf)) | —————       | 5. A12(22)x-10B5 (4500 N (1000 lbf)) | —————       |
| 2. A12(22)x-10A5 (2250 N (500 lbf)) | .....       | 6. A12(22)x-20B5 (4500 N (1000 lbf)) | — · — · — · |
| 3. A12(22)x-20A5 (2250 N (500 lbf)) | - - - - -   | 7. A12(22)x21B5 (6800 N (1500 lbf))  | — · — · — · |
| 4. A12(22)x-05B5 (2250 N (500 lbf)) | - · - · - · | 8. A12(22)x-2KB5 (9000 N (2000 lbf)) | - · - · - · |



# Electrak<sup>®</sup> GX AC – Performance Diagrams

Load vs. Current for 3 × 400 Vac actuators





# Electrak® GX AC – Ordering Key

## Ordering Key

|                  |           |           |          |          |           |          |          |
|------------------|-----------|-----------|----------|----------|-----------|----------|----------|
| 1                | 2         | 3         | 4        | 5        | 6         | 7        | 8        |
| <b>A12C05A5-</b> | <b>06</b> | <b>M0</b> | <b>B</b> | <b>N</b> | <b>-D</b> | <b>E</b> | <b>E</b> |

### 1. Model, input voltage, dynamic load capacity, screw type, maximum speed

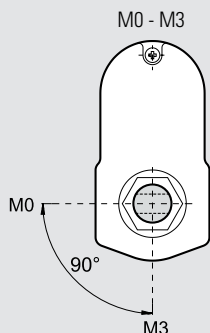
A12C05A5 = Electrak GX, 1 × 115 Vac, 1100 N, acme, 54 mm/s  
 A12C10A5 = Electrak GX, 1 × 115 Vac, 2250 N, acme, 30 mm/s  
 A12C20A5 = Electrak GX, 1 × 115 Vac, 2250 N, acme, 15 mm/s  
 A12C05B5 = Electrak GX, 1 × 115 Vac, 2250 N, ball, 61 mm/s  
 A12C10B5 = Electrak GX, 1 × 115 Vac, 4500 N, ball, 30 mm/s  
 A12C20B5 = Electrak GX, 1 × 115 Vac, 4500 N, ball, 15 mm/s  
 A12C21B5 = Electrak GX, 1 × 115 Vac, 6800 N, ball, 15 mm/s <sup>(1)</sup>  
 A12C2KB5 = Electrak GX, 1 × 115 Vac, 9000 N, ball, 10 mm/s <sup>(2)</sup>  
 A22C05A5 = Electrak GX, 1 × 230 Vac, 1100 N, acme, 54 mm/s  
 A22C10A5 = Electrak GX, 1 × 230 Vac, 2250 N, acme, 30 mm/s  
 A22C20A5 = Electrak GX, 1 × 230 Vac, 2250 N, acme, 15 mm/s  
 A22C05B5 = Electrak GX, 1 × 230 Vac, 2250 N, ball, 61 mm/s  
 A22C10B5 = Electrak GX, 1 × 230 Vac, 4500 N, ball, 30 mm/s  
 A22C20B5 = Electrak GX, 1 × 230 Vac, 4500 N, ball, 15 mm/s  
 A22C21B5 = Electrak GX, 1 × 230 Vac, 6800 N, ball, 15 mm/s <sup>(1)</sup>  
 A22C2KB5 = Electrak GX, 1 × 230 Vac, 9000 N, ball, 10 mm/s <sup>(2)</sup>  
 A42C10A5 = Electrak GX, 3 × 400 Vac, 1100 N, acme, 30 mm/s  
 A42C20A5 = Electrak GX, 3 × 400 Vac, 1100 N, acme, 15 mm/s  
 A42C05B5 = Electrak GX, 3 × 400 Vac, 1100 N, ball, 61 mm/s  
 A42C10B5 = Electrak GX, 3 × 400 Vac, 2250 N, ball, 30 mm/s  
 A42C20B5 = Electrak GX, 3 × 400 Vac, 2250 N, ball, 15 mm/s

### 2. Ordering stroke length

06 = 6 inch (152.4 mm)  
 08 = 8 inch (203.2 mm)  
 10 = 10 inch (254.0 mm)  
 12 = 12 inch (304.8 mm)  
 14 = 14 inch (355.6 mm)  
 16 = 16 inch (406.4 mm)  
 18 = 18 inch (457.2 mm)  
 20 = 20 inch (508.0 mm)  
 22 = 22 inch (558.8 mm)  
 24 = 24 inch (609.6 mm)

### 3. Rear adapter hole orientation

M0 = adapter at 0° (standard)  
 M3 = adapter at 90° <sup>(3)</sup>



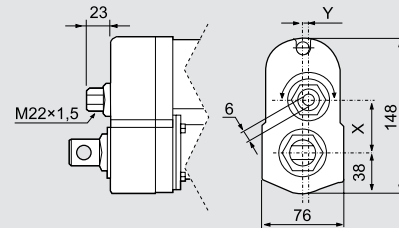
### 4. Ingress protection rating

B = IP45

### 5. Options

N = no option  
 P = potentiometer feedback  
 H = manual override

Dimensions for manual override option



| Model                | X    | Y   |
|----------------------|------|-----|
| Axxx05A(B)5-         | 49.6 | 0.0 |
| Axxx10A(B)5-         | 43.3 | 5.2 |
| Axxx20(21, 2K)A(B)5- | 38.9 | 0.0 |

### 6. Connector option

-D = no connector (flying leads)

### 7. Front adapter option

E = cross hole for 0.5 inch pin  
 F = forked cross hole for 0.5 inch pin  
 G = 1/2-20 UNF 2B female thread  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin  
 N = forked cross hole for 12 mm pin  
 P = M12 female thread

### 8. Rear adapter option

E = cross hole for 0.5 inch pin  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin

(1) 21B5 not possible with strokes above 20 inch

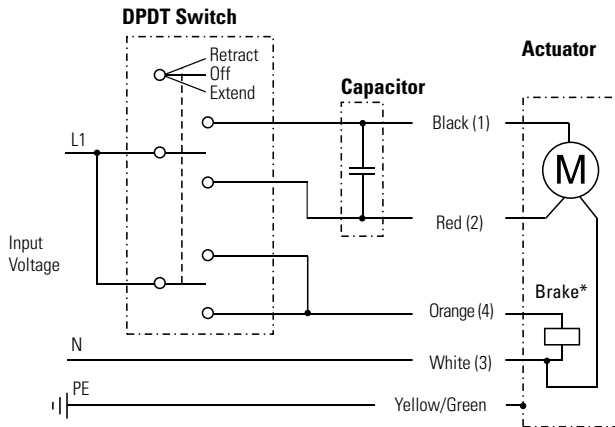
(2) 2KB5 not possible for strokes above 12 inch

(3) Not possible with option manual override

# Electrak® GX AC – Electrical Connections

## Input Voltage 115 or 230 Vac

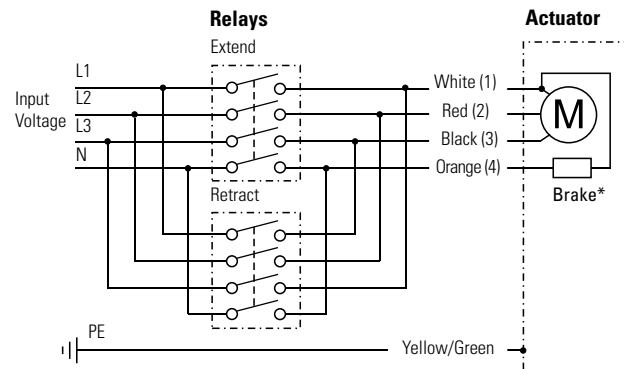
| Actuator supply voltage | [Vac] |         |
|-------------------------|-------|---------|
| A12                     |       | 1 × 115 |
| A22                     |       | 1 × 230 |



Leads can be either color or number marked. To be able to run the actuator, a capacitor must be connected between black (1) and red (2) leads. A 115 Vac actuator requires a 35  $\mu$ F capacitor, while a 230 Vac actuator requires a 10  $\mu$ F capacitor. See page 54 for ordering of capacitors. Connect black (1) lead to L1 and white (3) lead to N (neutral) to retract the actuator. Change L1 from lead black (1) to lead red (2) to extend the actuator. The anti-coast brake\* must also be released during motion, which is done by connecting orange (4) lead to L1.

## Input Voltage 400 Vac

| Actuator supply voltage | [Vac] |         |
|-------------------------|-------|---------|
| A42                     |       | 3 × 400 |

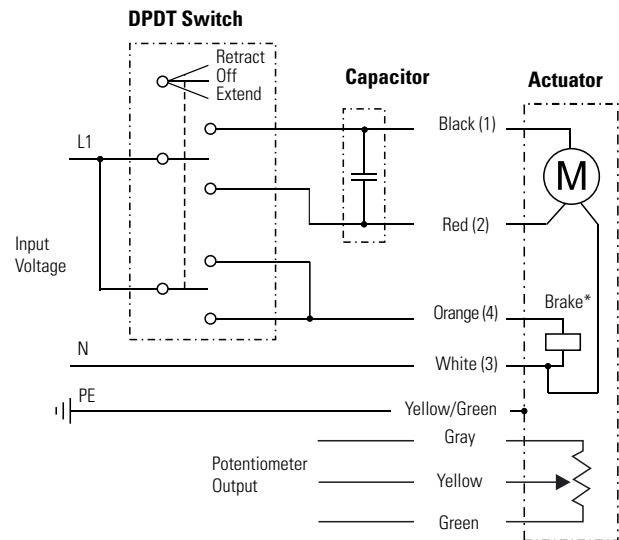


Leads can be either color or number marked. Connect white (1) lead to L1, red (2) lead to L2 and black (3) lead to L3 to extend the actuator. Change the places of white (2) lead and black (3) to retract the actuator. The anti-coast brake\* must also be released during motion, which is done by connecting orange (4) lead to neutral (N).



# Electrak® GX AC – Electrical Connections

| Input Voltage 115 or 230 Vac + Option Potentiometer |  |            |
|-----------------------------------------------------|--|------------|
| Actuator supply voltage [Vac]                       |  |            |
| A12                                                 |  | 1 × 115    |
| A22                                                 |  | 1 × 230    |
| Potentiometer type                                  |  | wire-wound |
| Potentiometer max. input voltage [Vdc]              |  | 32         |
| Potentiometer max. power [W]                        |  | 2          |
| Potentiometer linearity [%]                         |  | ± 0.25     |
| Potentiometer output resolution [ohm/mm]            |  |            |
| 2 - 10 inch stroke                                  |  | 39         |
| 11 - 20 inch stroke                                 |  | 20         |
| 21 - 24 inch stroke                                 |  | 10         |

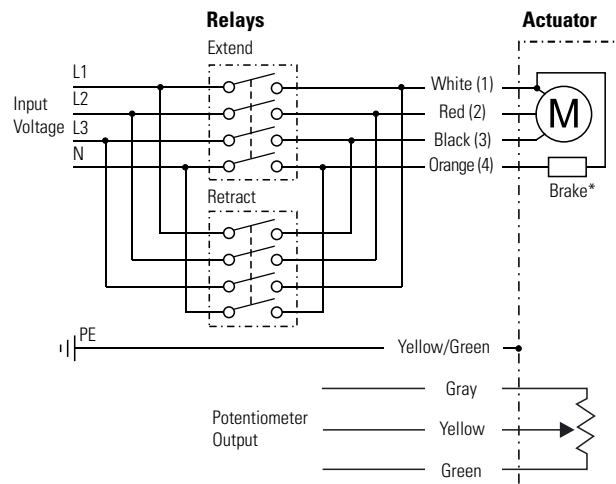


Leads can be either color or number marked. To be able to run the actuator, a capacitor must be connected between black (1) and red (2) leads. A 115 Vac actuator requires a 35  $\mu$ F capacitor, while a 230 Vac actuator requires a 10  $\mu$ F capacitor. See page 54 for ordering of capacitors. Connect black (1) lead to L1 and white (3) lead to N (neutral) to retract the actuator. Change L1 from lead black (1) to lead red (2) to extend the actuator. The anti-coast brake\* must also be released during motion, which is done by connecting orange (4) lead to neutral (N). The potentiometer output cable has 0 ohm between gray and yellow leads when the actuator is fully extended.

# Electrak<sup>®</sup> GX AC – Electrical Connections

| Input Voltage 400 Vac + Option Potentiometer |          |            |
|----------------------------------------------|----------|------------|
| Actuator supply voltage<br>A42               | [Vac]    | 3 × 400    |
| Potentiometer type                           |          | wire-wound |
| Potentiometer max. input voltage             | [Vdc]    | 32         |
| Potentiometer max. power                     | [W]      | 2          |
| Potentiometer linearity                      | [%]      | ± 0.25     |
| Potentiometer output resolution              | [ohm/mm] |            |
| 2 - 10 inch stroke                           |          | 39         |
| 11 - 20 inch stroke                          |          | 20         |
| 21 - 24 inch stroke                          |          | 10         |

Leads can be either color or number marked. Connect white (1) lead to L1, red (2) lead to L2 and black (3) lead to L3 to extend the actuator. Change the places of white (2) lead and black (3) to retract the actuator. The anti-coast brake\* must also be released during motion, which is done by connecting orange (4) lead to neutral (N). The potentiometer output cable has 0 ohm between gray and yellow leads when the actuator is fully extended.



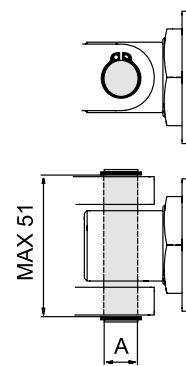


## Electrak® GX AC – Accessories

### Mounting Pin Kits

| Designation          | A [mm(in)] | Part Number |
|----------------------|------------|-------------|
| Mounting pins (pair) | 12.7 (0.5) | D603 028    |

The mounting pins are used in the rear and front adapter holes of the actuator. The pins have a groove in each end so that it can be secured with snap rings.



Dimensions

mm

### Capacitor Kits

| Designation   | Actuator Supply Voltage | Part Number  |
|---------------|-------------------------|--------------|
| Capacitor kit | 115 Vac                 | 9200-448-002 |
| Capacitor kit | 230 Vac                 | 9200-448-003 |

All 230 and 115 Vac actuators require a capacitor to be wired between the windings to run. The capacitor is bought separately and mounted externally by the customer.

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# Electrak® LA14 – Technical Features



## Standard Features

- Robust and reliable
- 12, 24 or 36 Vdc as standard input voltages
- Acme and ball screw models
- Static load up to 18 kN (4000 lbf)
- Dynamic load up to 6.8 kN (1500 lbf)
- Stroke up to 24 in
- Speed up to 61 mm/s (2.4 in/s)
- Protection class static IP65
- Overload clutch for mid and end of stroke protection
- Motor with thermal switch
- Corrosion free aluminium cover tube
- Anti-rotation mechanism
- T-slots in the cover tube for magnetic sensors
- Trunnion mounting possible
- Maintenance free

## General Specifications

|                                                                                |                                                                           |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Screw type                                                                     | acme or ball                                                              |
| Nut type<br>Dxx-xxA (acme screw)<br>Dxx-xxB (ball screw)                       | self-locking lead nut<br>load lock ball nut                               |
| Manual override                                                                | no (optional)                                                             |
| Anti-rotation                                                                  | yes                                                                       |
| Static load holding brake<br>acme screw models<br>ball screw models            | no (self-locking)<br>yes                                                  |
| Safety features                                                                | overload clutch<br>motor auto reset thermal switch                        |
| Electrical connections<br>no potentiometer option<br>with potentiometer option | flying leads with or without connector<br>cable with or without connector |
| Compliances                                                                    | CE                                                                        |

## Optional Mechanical Features

Variety of front and rear adapters

Variety of rear adapter orientations

Manual override

## Optional Electrical Features

Potentiometer feedback

## Accessories

External slot-mounted limit switches

Mounting pin kits

Mounting pin bracket kits

Trunnions mounting kits

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)



# Electrak<sup>®</sup> LA14 – Technical Specifications

| Mechanical Specifications                      |               |                      |
|------------------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>                | [N (lbf)]     |                      |
| DAxx-xxA (acme screw)                          |               | 11350 (2500)         |
| DAxx-xxB (ball screw)                          |               | 18000 (4000)         |
| Max. dynamic load (Fx)                         | [N (lbf)]     |                      |
| DAxx-05A65M                                    |               | 1100 (250)           |
| DAxx-10A65M                                    |               | 2250 (500)           |
| DAxx-20A65M                                    |               | 2250 (500)           |
| DAxx-05B65M                                    |               | 2250 (500)           |
| DAxx-10B65M                                    |               | 4500 (1000)          |
| DAxx-20B65M                                    |               | 4500 (1000)          |
| DAxx-21B65M                                    |               | 6800 (1500)          |
| Speed @ no load/max. load                      | [mm/s (in/s)] |                      |
| DAxx-05A65M                                    |               | 54/32 (2.10/1.20)    |
| DAxx-10A65M                                    |               | 30/18 (1.20/0.70)    |
| DAxx-20A65M                                    |               | 15/12 (0.67/0.45)    |
| DAxx-05B65M                                    |               | 61/37 (2.40/1.40)    |
| DAxx-10B65M                                    |               | 30/19 (1.30/0.80)    |
| DAxx-20B65M                                    |               | 15/12 0.60/0.45)     |
| DAxx-21B65M                                    |               | 15/11 (0.60/0.43)    |
| Min. ordering stroke (S) length                | [mm]          | 50                   |
| Max. ordering stroke (S) length <sup>(2)</sup> | [mm]          | 600                  |
| Ordering stroke length increments              | [mm]          | 50                   |
| Operating temperature limits                   | [°C (F)]      | -25 – 85 (-15 – 185) |
| Full load duty cycle @ 25 °C (77 °F)           | [%]           | 25                   |
| End play, maximum                              | [mm (in)]     | 1.0 (0.04)           |
| Restraining torque                             | [Nm (lbf-in)] | 0                    |
| Protection class - static                      |               | IP65                 |
| Salt spray resistance                          | [h]           | 96                   |

(1) Max. static load at fully retracted stroke

| Electrical Specifications                           |                         |            |
|-----------------------------------------------------|-------------------------|------------|
| Available input voltages <sup>(1)</sup>             | [Vdc]                   | 12, 24, 36 |
| Input voltage tolerance                             | [%]                     | ± 10       |
| Current draw @ no load/max. load <sup>(2)</sup>     | [A]                     |            |
| DA12-05A65M                                         |                         | 12.0/34.0  |
| DA12-10A65M                                         |                         | 9.0/27.0   |
| DA12-20A65M                                         |                         | 8.0/15.0   |
| DA12-05B65M                                         |                         | 8.0/26.0   |
| DA12-10B65M                                         |                         | 5.0/26.0   |
| DA12-20B65M                                         |                         | 4.0/14.0   |
| DA12-21B65M                                         |                         | 4.0/19.0   |
| DA24-05A65M                                         |                         | 6.0/17.0   |
| DA24-10A65M                                         |                         | 4.5/13.5   |
| DA24-20A65M                                         |                         | 4.0/7.5    |
| DA24-05B65M                                         |                         | 4.0/13.0   |
| DA24-10B65M                                         |                         | 2.5/13.0   |
| DA24-20B65M                                         |                         | 2.0/7.0    |
| DA24-21B65M                                         |                         | 2.0/9.5    |
| Flying leads length                                 | [mm (in)]               | 165 (7.5)  |
| Flying leads diameter                               | [mm (in)]               | 3 (0.12)   |
| Flying leads cross section                          | [mm <sup>2</sup> (AWG)] | 2 (14)     |
| Cable length with option pot.                       | [mm (in)]               | 600 (24)   |
| Cable diameter with option pot.                     | [mm (in)]               | 9 (0.35)   |
| Cable leads cross section with option potentiometer | [mm <sup>2</sup> (AWG)] |            |
| motor leads                                         |                         | 2.5 (14)   |
| potentiometer leads                                 |                         | 1.5 (16)   |

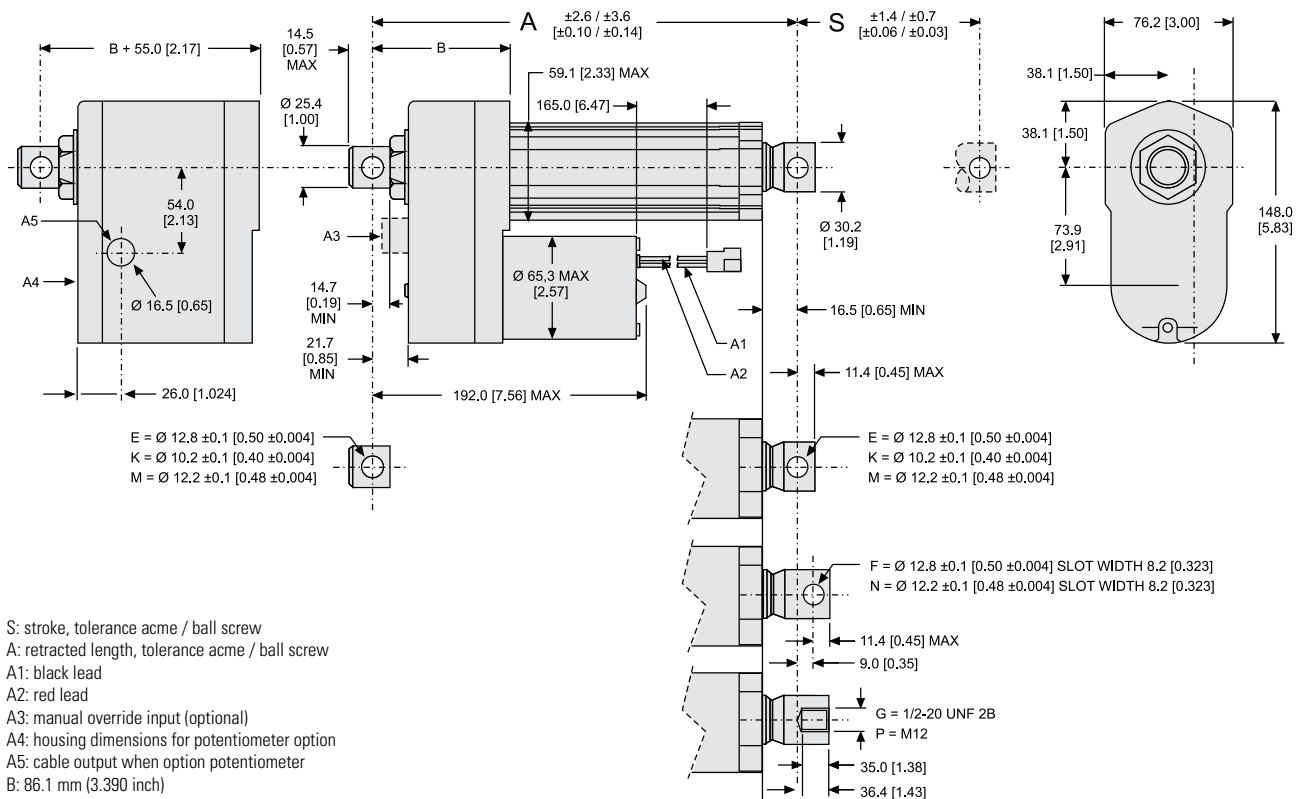
(1) For other input voltages - contact customer support

(2) For current draw for 36 Vdc input voltage models - contact customer support



# Electrak® LA14 – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |

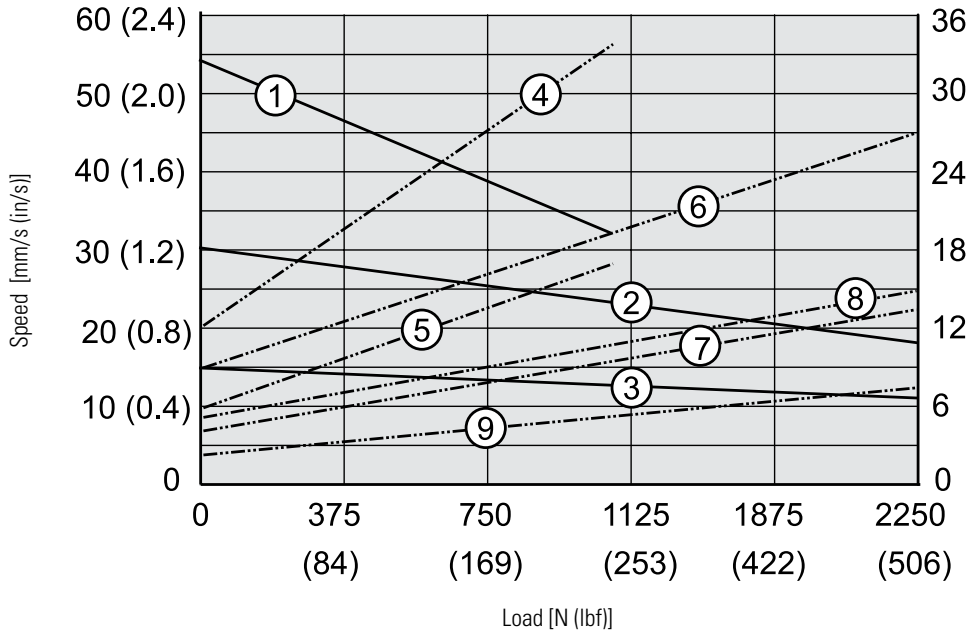


## Stroke, Retracted Length and Weight Relationships

|                                         |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Ordering stroke (S)                     | [mm]  | 50    | 100   | 150   | 200   | 250   | 300   | 350   | 400   | 450   | 500   | 550   | 600   |
| Retracted length, acme screw models (A) | [mm]  | 219.9 | 269.9 | 319.9 | 369.9 | 419.9 | 469.9 | 586.6 | 636.6 | 686.6 | 736.6 | 786.6 | 836.6 |
|                                         | [in]  | 8.86  | 10.62 | 12.59 | 14.56 | 16.53 | 18.50 | 23.09 | 25.06 | 27.03 | 29.00 | 30.97 | 32.94 |
| Retracted length, ball screw models (A) | [mm]  | 269.6 | 319.6 | 369.6 | 419.6 | 469.6 | 519.6 | 623.4 | 673.4 | 723.5 | 773.4 | 823.4 | 873.4 |
|                                         | [in]  | 10.61 | 12.58 | 14.55 | 16.52 | 18.49 | 20.46 | 24.54 | 26.51 | 28.48 | 30.45 | 32.42 | 34.39 |
| Add on length for option potentiometer  | [mm]  | 55.0  |       |       |       |       |       |       |       |       |       |       |       |
|                                         | [in]  | 2.17  |       |       |       |       |       |       |       |       |       |       |       |
| 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   |
|                                         | [lbf] | 9.9   | 10.3  | 10.8  | 11.2  | 11.7  | 12.1  | 12.8  | 13.2  | 13.6  | 14.1  | 14.5  | 15.0  |
| 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   |
|                                         | [lbf] | 11.7  | 12.1  | 12.5  | 13.0  | 13.4  | 13.9  | 14.5  | 15.0  | 15.4  | 15.8  | 16.3  | 16.7  |
| Add on weight for option potentiometer  | [kg]  | 1.30  |       |       |       |       |       |       |       |       |       |       |       |
|                                         | [lbf] | 3.31  |       |       |       |       |       |       |       |       |       |       |       |

# Electrak® LA14 – Performance Diagrams

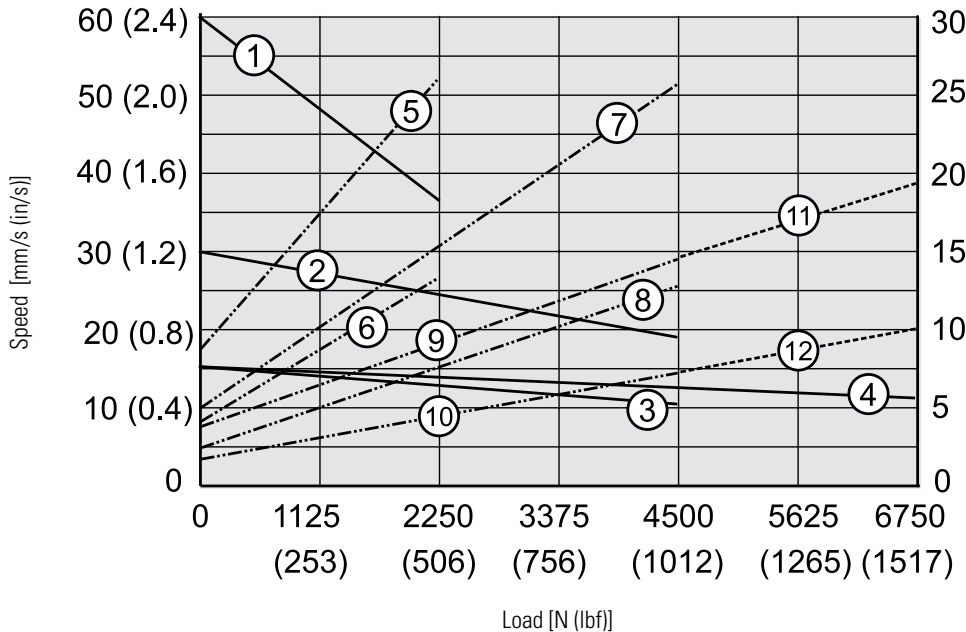
Acme Screw Models  
Speed and Current vs. Load



Speed  
1: DAxx-05A65M  
2: DAxx-10A65M  
3: DAxx-20A65M

Current  
4: DA12-05A65M  
5: DA24-05A65M  
6: DA12-10A65M  
7: DA24-10A65M  
8: DA12-20A65M  
9: DA24-20A65M

Ball Screw Models  
Speed and Current vs. Load



Speed  
1: DAxx-05B65M  
2: DAxx-10B65M  
3: DAxx-20B65M  
4: DAxx-21B65M

Current  
5: DA12-05B65M  
6: DA24-05B65M  
7: DA12-10B65M  
8: DA24-10B65M  
9: DA12-20B65M  
10: DA24-20B65M  
11: DA12-21B65M  
12: DA24-21B65M

Note: for current draw data for 36 Vdc input voltage models - contact customer support.



# Electrak® LA14 – Ordering Key

## Ordering Key

|              |               |           |           |          |           |          |          |
|--------------|---------------|-----------|-----------|----------|-----------|----------|----------|
| 1            | 2             | 3         | 4         | 5        | 6         | 7        | 8        |
| <b>DA12-</b> | <b>05A65M</b> | <b>10</b> | <b>MO</b> | <b>N</b> | <b>-A</b> | <b>F</b> | <b>M</b> |

### 1. Model and input voltage

DA12- = Electrak LA14, 12 Vdc  
 DA24- = Electrak LA14, 24 Vdc  
 DA36- = Electrak LA14, 36 Vdc

### 2. Dynamic load capacity, screw type, maximum speed

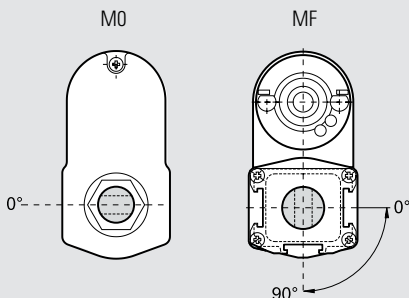
05A65M = 1100 N, acme, 54 mm/s  
 10A65M = 2250 N, acme, 30 mm/s  
 20A65M = 2250 N, acme, 15 mm/s  
 05B65M = 2250 N, ball, 61 mm/s  
 10B65M = 4500 N, ball, 30 mm/s  
 20B65M = 4500 N, ball, 15 mm/s  
 21B65M = 6800 N, ball, 15 mm/s

### 3. Ordering stroke length

05 = 50 mm (1.97 in)  
 10 = 100 mm (3.94 in)  
 15 = 150 mm (5.90 in)  
 20 = 200 mm (7.87 in)  
 25 = 250 mm (9.84 in)  
 30 = 300 mm (11.81 in)  
 35 = 350 mm (13.78 in)  
 40 = 400 mm (15.75 in)  
 45 = 450 mm (17.72 in)  
 50 = 500 mm (19.69 in)  
 55 = 550 mm (21.65 in)  
 60 = 600 mm (23.62 in)

### 4. Rear / front adapter hole position <sup>(1)</sup>

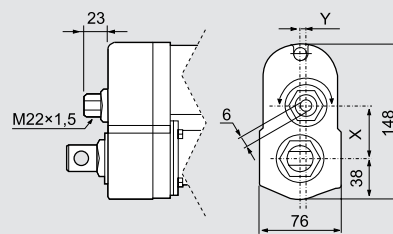
MO = both adapters at 0° (standard position)  
 MF = both adapters at 90°



### 5. Options

N = no option  
 NPO = potentiometer feedback  
 NHW = manual override <sup>(1)</sup>

Dimensions for manual override option



| Model             | X    | Y   |
|-------------------|------|-----|
| DAxx05A(B)65-     | 49.6 | 0.0 |
| DAxx10A(B)65-     | 43.3 | 5.2 |
| DAxx20(21)A(B)65- | 38.9 | 0.0 |

### 6. Connector option

-A = AMP terminal 42098-2, house 180908-5  
 -B = Packard Electric 56 Series  
 -D = no connector (flying leads)

### 7. Front adapter option

E = cross hole for 0.5 inch pin  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin

### 8. Rear adapter option

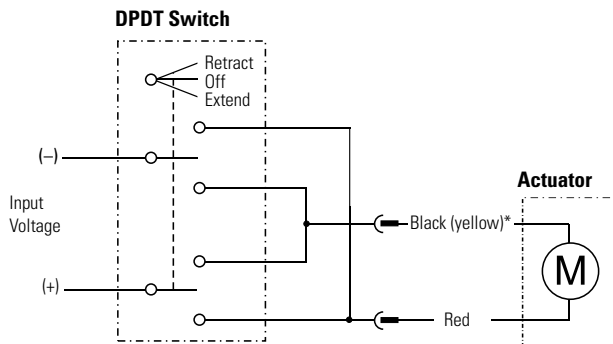
E = cross hole for 0.5 inch pin  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin

(1) Only adapter position MO possible with option manual override.

# Electrak<sup>®</sup> LA14 – Electrical Connections

## Without Option

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| DA12                    |       | 12 |
| DA24                    |       | 24 |
| DA36                    |       | 36 |

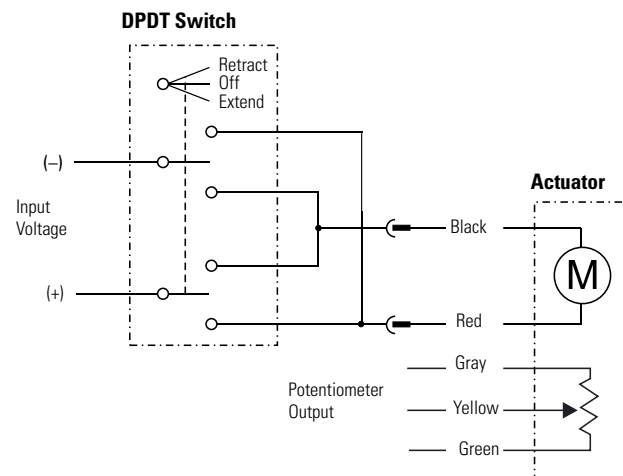


\* Lead can be black or yellow

Connect the red lead to positive and black (yellow)\* to negative to extend the actuator. Change polarity to retract the actuator.

## Option Potentiometer

| Actuator supply voltage          | [Vdc]    |            |
|----------------------------------|----------|------------|
| DA12                             |          | 12         |
| DA24                             |          | 24         |
| DA36                             |          | 36         |
| Potentiometer type               |          | wire-wound |
| Potentiometer max. input voltage | [Vdc]    | 32         |
| Potentiometer max. power         | [W]      | 2          |
| Potentiometer linearity          | [%]      | ± 0.25     |
| Potentiometer output resolution  | [ohm/mm] |            |
| 50 - 255 mm stroke               |          | 39         |
| 256 - 510 mm stroke              |          | 20         |
| 511 - 600 mm stroke              |          | 10         |



Connect the red lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output cable has 0 ohm between gray and yellow leads when the actuator is fully extended.

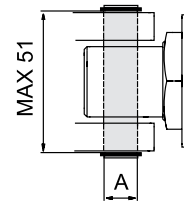


# Electrak® LA14 – Accessories

## Mounting Pin Kits

| Designation          | A [mm (in)] | Part Number |
|----------------------|-------------|-------------|
| Mounting pins (pair) | 12 (0.47)   | D603 023    |

The mounting pins are used in the rear and front adapter holes of the actuator. The pins have a groove in each end so that it can be secured with snap rings.



| Dimensions |
|------------|
| mm         |

## Mating Connectors

| Designation                                                                      | Part Number  |
|----------------------------------------------------------------------------------|--------------|
| North American mating connector kit (connector option -B in the ordering key)    | 9100-448-001 |
| Rest of the world mating connector kit (connector option -A in the ordering key) | LA100B9P1    |

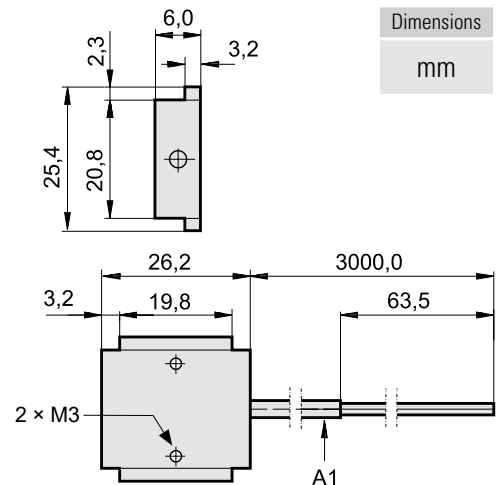
The mating connector kit consist of the necessary connector parts required to be able to connect to the connector on the actuator wires.

## Magnetic Sensor

| Designation     | Contact Type    | Part Number |
|-----------------|-----------------|-------------|
| Magnetic sensor | normally open   | D535 070    |
| Magnetic sensor | normally closed | D535 071    |
| Magnetic sensor | changing        | D535 073    |

## Specifications

| Parameter                             | D535 070<br>D535 071 | D535 073 |
|---------------------------------------|----------------------|----------|
| Maximum power [W]                     | 10                   | 10       |
| Maximum voltage [Vdc]                 | 100                  | 100      |
| Maximum current [A]                   | 0,5                  | 0,5      |
| Maximum contact resistance [ohm]      | 20                   | 20       |
| Lead cross section [mm <sup>2</sup> ] | 2 × 0,14             | 3 × 0,14 |
| Cable length [mm]                     | 3000                 | 3000     |
| Protection class                      | IP67                 | IP67     |



| Dimensions |
|------------|
| mm         |

A1: cable

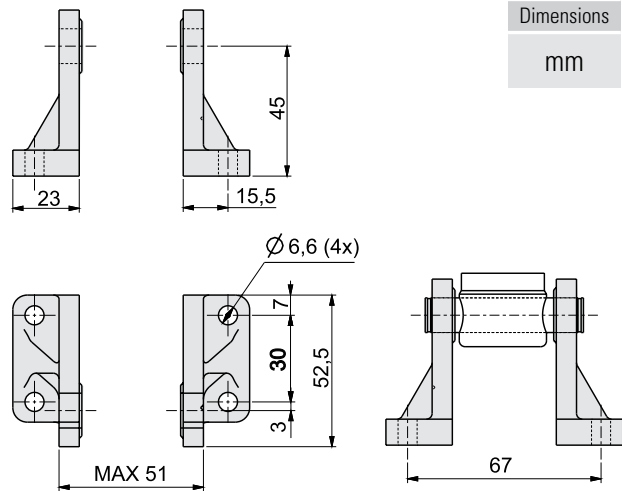
The magnetic sensor fits in to the T-slot running along three sides of the cover tube. The cable is moulded into the sensor.

# Electrak® LA14 – Accessories

## Mounting Pin Bracket Kits

| Designation                  | Part Number |
|------------------------------|-------------|
| Mounting pin brackets (pair) | D603 029    |

The mounting pin brackets are used to attach the front and rear adapter via a pair of mounting pins to the objects to which it is mounted. Note! one pair of brackets is needed per adapter as there must be a bracket on each side of the adapter.



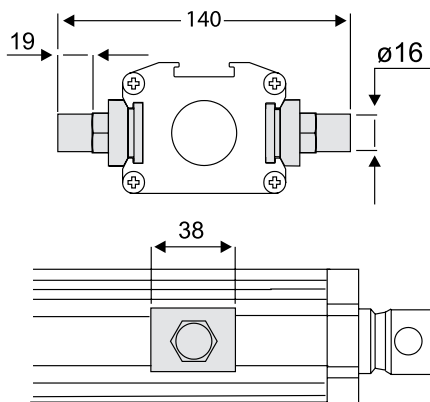
Dimensions  
mm

## Trunnion Mounting Kits

| Designation              | Part Number |
|--------------------------|-------------|
| Trunnions (pair)         | D603 022    |
| Trunnion brackets (pair) | D603 030    |

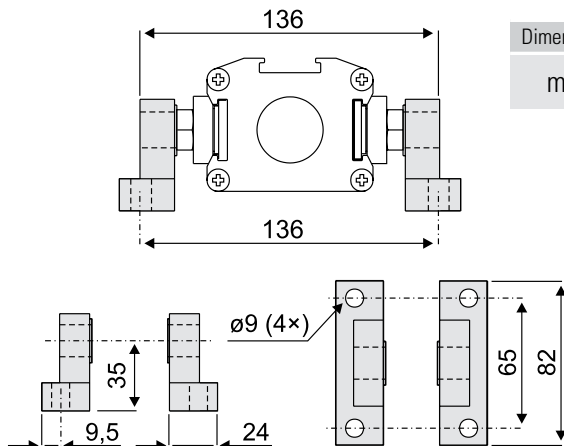
The trunnions can be mounted to the T-slot running along the right and left side of the cover tube.

### Trunnions



Dimensions  
mm

### Trunnion Brackets



Dimensions  
mm



# Electrak® LA24 – Technical Features



## Standard Features

- Robust and reliable
- 1 × 230 or 3 × 400 Vac as standard input voltages
- Acme and ball screw models
- Static load up to 18 kN (4000 lbf)
- Dynamic load up to 4.5 kN (1000 lbf)
- Stroke up to 24 in
- Speed up to 61 mm/s (2.4 in/s)
- Protection class static IP45
- Overload clutch for mid and end of stroke protection
- Motor with thermal switch
- Corrosion free aluminium cover tube
- Anti-rotation mechanism
- T-slots in the cover tube for magnetic sensors
- Maintenance free

## General Specifications

|                                                                                |                                                        |
|--------------------------------------------------------------------------------|--------------------------------------------------------|
| Screw type                                                                     | acme or ball                                           |
| Nut type<br>Dxx-xxA (acme screw)<br>Dxx-xxB (ball screw)                       | self-locking lead nut<br>load lock ball nut            |
| Manual override                                                                | no (optional)                                          |
| Anti-rotation                                                                  | yes                                                    |
| Static load holding brake<br>acme screw models<br>ball screw models            | no (self-locking)<br>yes                               |
| Safety features                                                                | overload clutch<br>motor auto reset thermal switch     |
| Electrical connections<br>no potentiometer option<br>with potentiometer option | cable with flying leads<br>2 x cable with flying leads |
| Compliances                                                                    | CE                                                     |
| Certificates                                                                   | UL, CSA                                                |

(1) Mating connector: 2973781 with terminal 2962573 (p/n 9100-448-001)

## Optional Mechanical Features

- Variety of front and rear adapters
- Variety of rear adapter orientations
- Manual override

## Optional Electrical Features

- Potentiometer feedback
- Anti-coast brake

## Accessories

- External slot-mounted limit switches
- Mounting pin kits
- Mounting pin bracket kits
- Trunnions mounting kits
- Capacitors

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)



# Electrak<sup>®</sup> LA24 – Technical Specifications

| Mechanical Specifications                                                                                                                                                                                                          |               |                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Max. static load <sup>(1)</sup><br>Axx-xxA (acme screw)<br>Axx-xxB (ball screw)                                                                                                                                                    | [N (lbf)]     | 11350 (2500)<br>18000 (4000)                                                                                                                             |
| Max. dynamic load (Fx)<br>AA12(22)-05A65M <sup>(2)</sup><br>AA12(22)-10A65M<br>AA42-10A65M<br>AA12(22)-20A65M<br>AA42-20A65M<br>AA12(22)-05B65M<br>AA42-05B65M<br>AA12(22)-10B65M<br>AA42-10B65M<br>AA12(22)-20B65M<br>AA42-20B65M | [N (lbf)]     | 1100 (250)<br>2250 (500)<br>1100 (250)<br>2250 (500)<br>1100 (250)<br>2250 (500)<br>1100 (250)<br>4500 (1000)<br>2250 (500)<br>4500 (1000)<br>2250 (500) |
| Speed @ no load/max. load<br>AAxx-05A65M <sup>(2)</sup><br>AAxx-10A65M<br>AAxx-20A65M<br>AAxx-05B65M<br>AAxx-10B65M<br>AAxx-20B65M                                                                                                 | [mm/s (in/s)] | 54/32 (2.10/1.20)<br>30/18 (1.20/0.70)<br>15/12 (0.67/0.45)<br>61/37 (2.40/1.40)<br>30/18 (1.30/0.71)<br>15/12 0.60/0.47)                                |
| Min. ordering stroke (S) length                                                                                                                                                                                                    | [mm]          | 50                                                                                                                                                       |
| Max. ordering stroke (S) length                                                                                                                                                                                                    | [mm]          | 600                                                                                                                                                      |
| Ordering stroke length increments                                                                                                                                                                                                  | [mm]          | 50                                                                                                                                                       |
| Operating temperature limits                                                                                                                                                                                                       | [°C (F)]      | -25 – 65 (-15– 150)                                                                                                                                      |
| Max. on time                                                                                                                                                                                                                       | [s]           | 45                                                                                                                                                       |
| Full load duty cycle @ 25 °C (77 °F)                                                                                                                                                                                               | [%]           | 25                                                                                                                                                       |
| End play, maximum                                                                                                                                                                                                                  | [mm (in)]     | 1.0 (0.04)                                                                                                                                               |
| Restraining torque                                                                                                                                                                                                                 | [Nm (lbf-in)] | 0                                                                                                                                                        |
| Protection class - static                                                                                                                                                                                                          |               | IP45                                                                                                                                                     |
| Salt spray resistance                                                                                                                                                                                                              | [h]           | 96                                                                                                                                                       |

(1) Max. static load at fully retracted stroke

(2) Not possible with supply voltage 3 × 400 Vac

| Electrical Specifications                                                                                                                                                                             |                         |                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Available input voltages <sup>(1)</sup>                                                                                                                                                               | [Vac]                   | 1 × 230 <sup>(2)</sup><br>3 × 400                                                                                                           |
| Input voltage tolerance                                                                                                                                                                               | [%]                     | ± 10                                                                                                                                        |
| Current draw @ no load/max. load<br>AA22-05A65M<br>AA22-10A65M<br>AA22-20A65M<br>AA22-05B65M<br>AA22-10B65M<br>AA22-20B65M<br>AA42-10A65M<br>AA42-20A65M<br>AA42-05B65M<br>AA42-10B65M<br>AA42-20B65M | [A]                     | 1.05/1.60<br>0.80/1.60<br>0.95/1.50<br>0.90/1.40<br>0.90/1.40<br>0.90/1.40<br>0.40/0.70<br>0.30/0.45<br>0.38/0.50<br>0.38/0.50<br>0.38/0.50 |
| Motor cable length                                                                                                                                                                                    | [mm (in)]               | 600 (24)                                                                                                                                    |
| Motor cable diameter                                                                                                                                                                                  | [mm (in)]               | 10 (0.4)                                                                                                                                    |
| Motor cable leads cross section                                                                                                                                                                       | [mm <sup>2</sup> (AWG)] | 1.5 (16)                                                                                                                                    |
| Potentiometer cable length <sup>(3)</sup>                                                                                                                                                             | [mm (in)]               | 500 (20)                                                                                                                                    |
| Potentiometer cable diameter <sup>(3)</sup>                                                                                                                                                           | [mm (in)]               | 9 (0.35)                                                                                                                                    |
| Pot. cable leads cross section <sup>(3)</sup>                                                                                                                                                         | [mm <sup>2</sup> (AWG)] | 1.5 (16)                                                                                                                                    |

(1) For other input voltages - contact customer

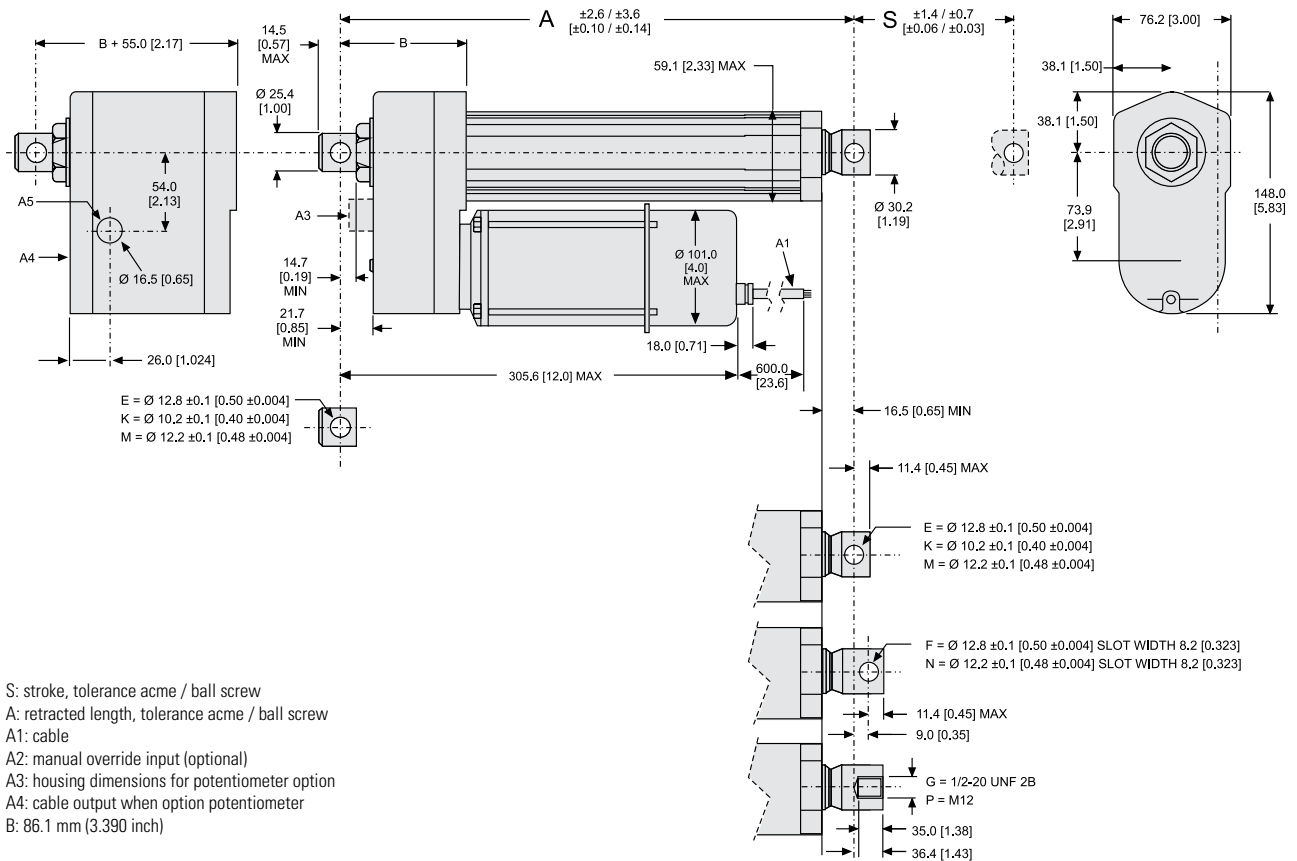
(2) Capacitor required to run the actuator. 10 µF, p/n 9200-448-003

(3) Potentiometer is optional



# Electrak® LA24 – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



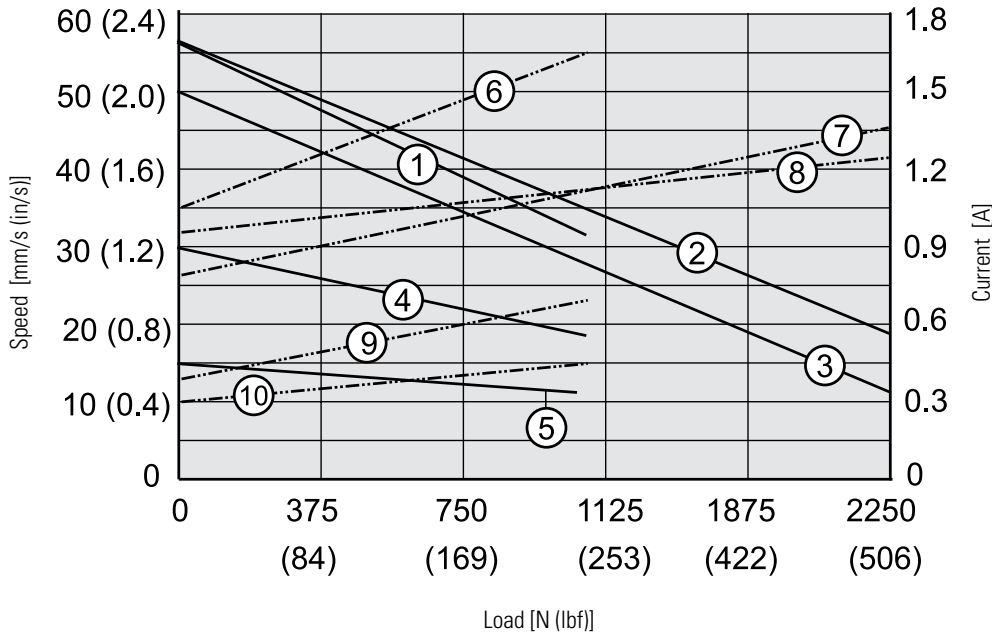
- S: stroke, tolerance acme / ball screw
- A: retracted length, tolerance acme / ball screw
- A1: cable
- A2: manual override input (optional)
- A3: housing dimensions for potentiometer option
- A4: cable output when option potentiometer
- B: 86.1 mm (3.390 inch)

## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                     | [mm]  | 50    | 100   | 150   | 200   | 250   | 300   | 350   | 400   | 450   | 500   | 550   | 600   |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length, acme screw models (A) | [mm]  | 219.9 | 269.9 | 319.9 | 369.9 | 419.9 | 469.9 | 586.6 | 636.6 | 686.6 | 736.6 | 786.6 | 836.6 |
|                                         | [in]  | 8.86  | 10.62 | 12.59 | 14.56 | 16.53 | 18.50 | 23.09 | 25.06 | 27.03 | 29.00 | 30.97 | 32.94 |
| Retracted length, ball screw models (A) | [mm]  | 269.6 | 319.6 | 369.6 | 419.6 | 469.6 | 519.6 | 623.4 | 673.4 | 723.5 | 773.4 | 823.4 | 873.4 |
|                                         | [in]  | 10.61 | 12.58 | 14.55 | 16.52 | 18.49 | 20.46 | 24.54 | 26.51 | 28.48 | 30.45 | 32.42 | 34.39 |
| Add on length for option potentiometer  | [mm]  | 55.0  |       |       |       |       |       |       |       |       |       |       |       |
|                                         | [in]  | 2.17  |       |       |       |       |       |       |       |       |       |       |       |
| 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   |
|                                         | [lbf] | 13.2  | 13.6  | 14.1  | 14.5  | 15.0  | 15.4  | 16.1  | 16.5  | 16.9  | 17.4  | 17.8  | 18.3  |
| 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   |
|                                         | [lbf] | 15.0  | 15.4  | 15.8  | 16.3  | 16.7  | 17.2  | 17.8  | 18.3  | 18.7  | 19.1  | 19.6  | 20.0  |
| Add on weight for option potentiometer  | [kg]  | 1.30  |       |       |       |       |       |       |       |       |       |       |       |
|                                         | [lbf] | 3.31  |       |       |       |       |       |       |       |       |       |       |       |

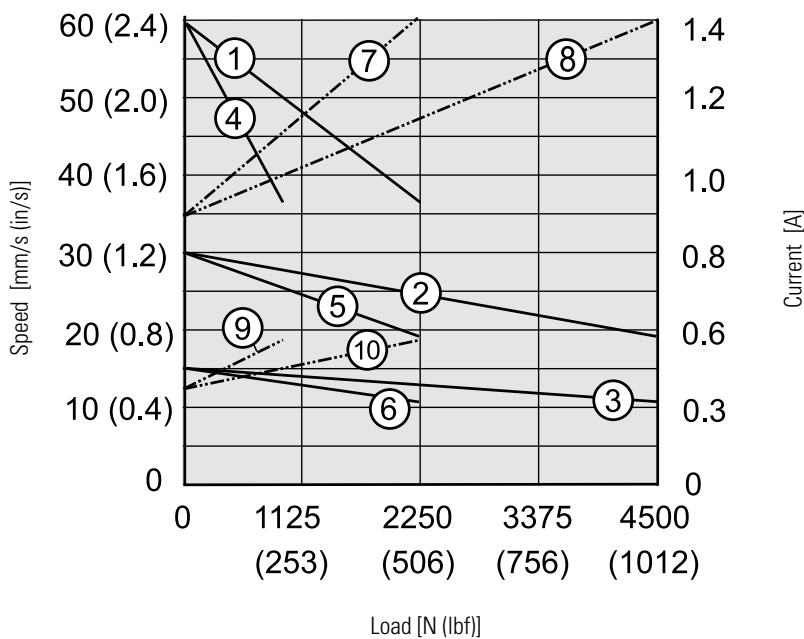
# Electrak® LA24 – Performance Diagrams

Acme Screw Models  
Speed and Current vs. Load



- Speed
- 1: AA22-05A65M
  - 2: AA22-10A65M
  - 3: AA22-20A65M
  - 4: AA42-10A65M
  - 5: AA42-20A65M
- Current
- 6: AA22-05A65M
  - 7: AA22-10A65M
  - 8: AA42-20A65M
  - 9: AA42-10A65M
  - 10: AA42-20A65M

Ball Screw Models  
Speed and Current vs. Load



- Speed
- 1: AA22-05B65M
  - 2: AA22-10B65M
  - 3: AA22-20B65M
  - 4: AA42-05B65M
  - 5: AA42-10B65M
  - 6: AA42-20B65M
- Current
- 7: AA22-05B65M
  - 8: AA22-10B65M  
AA22-20B65M
  - 9: AA42-05B65M
  - 10: AA42-10B65M  
AA42-20B65M



# Electrak® LA24 – Ordering Key

## Ordering Key

|                    |           |           |          |           |          |          |
|--------------------|-----------|-----------|----------|-----------|----------|----------|
| 1                  | 2         | 3         | 4        | 5         | 6        | 7        |
| <b>AA22-05A65M</b> | <b>10</b> | <b>M0</b> | <b>N</b> | <b>-D</b> | <b>F</b> | <b>M</b> |

### 1. Model, input voltage, dynamic load capacity, screw type, maximum speed

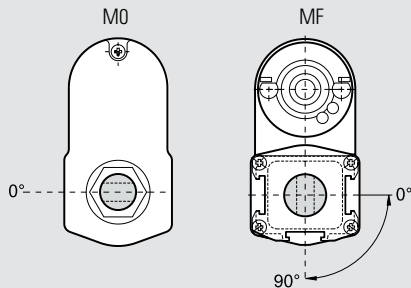
AA22-05A65M = Electrak LA24, 1 × 230 Vac, 1100 N, acme, 54 mm/s  
 AA22-10A65M = Electrak LA24, 1 × 230 Vac, 2250 N, acme, 30 mm/s  
 AA22-20A65M = Electrak LA24, 1 × 230 Vac, 2250 N, acme, 15 mm/s  
 AA22-05B65M = Electrak LA24, 1 × 230 Vac, 2250 N, ball, 61 mm/s  
 AA22-10B65M = Electrak LA24, 1 × 230 Vac, 4500 N, ball, 30 mm/s  
 AA22-20B65M = Electrak LA24, 1 × 230 Vac, 4500 N, ball, 15 mm/s  
 AA42-10A65M = Electrak LA24, 3 × 400 Vac, 1100 N, acme, 30 mm/s  
 AA42-20A65M = Electrak LA24, 3 × 400 Vac, 1100 N, acme, 15 mm/s  
 AA42-05B65M = Electrak LA24, 3 × 400 Vac, 1100 N, ball, 61 mm/s  
 AA42-10B65M = Electrak LA24, 3 × 400 Vac, 2250 N, ball, 30 mm/s  
 AA42-20B65M = Electrak LA24, 3 × 400 Vac, 2250 N, ball, 15 mm/s

### 2. Ordering stroke length

05 = 50 mm  
 10 = 100 mm  
 15 = 150 mm  
 20 = 200 mm  
 25 = 250 mm  
 30 = 300 mm  
 35 = 350 mm  
 40 = 400 mm  
 45 = 450 mm  
 50 = 500 mm  
 55 = 550 mm  
 60 = 600 mm

### 3. Rear / front adapter hole position <sup>(1)</sup>

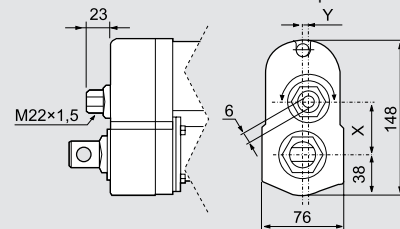
M0 = both adapters at 0° (standard position)  
 MF = both adapters at 90°



### 4. Options

N = no option  
 B = anti-coast brake <sup>(2)</sup>  
 NPO = potentiometer  
 NHW = manual override <sup>(1)</sup>  
 BPO = anti-coast brake and potentiometer <sup>(2)</sup>  
 BHW = anti-coast brake and manual override <sup>(2)</sup>

Dimensions for manual override option



| Model             | X    | Y   |
|-------------------|------|-----|
| DAxx05A(B)65-     | 49.6 | 0.0 |
| DAxx10A(B)65-     | 43.3 | 5.2 |
| DAxx20(21)A(B)65- | 38.9 | 0.0 |

### 5. Connector option

-D = no connector (flying leads)

### 6. Front adapter option

E = cross hole for 0.5 inch pin  
 F = forked cross hole for 0.5 inch pin  
 G = 1/2-20 UNF 2B female thread  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin  
 N = forked cross hole for 12 mm pin  
 P = M12 female thread

### 7. Rear adapter option

E = cross hole for 0.5 inch pin  
 K = cross hole for 10 mm pin  
 M = cross hole for 12 mm pin

(1) Only adapter position M0 possible with option manual override.

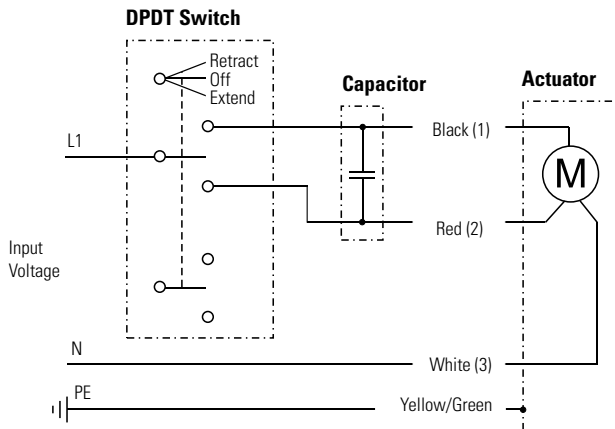
(2) Ball screw versions must always be ordered with anti-coast brake while acme versions can be ordered with or without.

# Electrak<sup>®</sup> LA24 – Electrical Connections

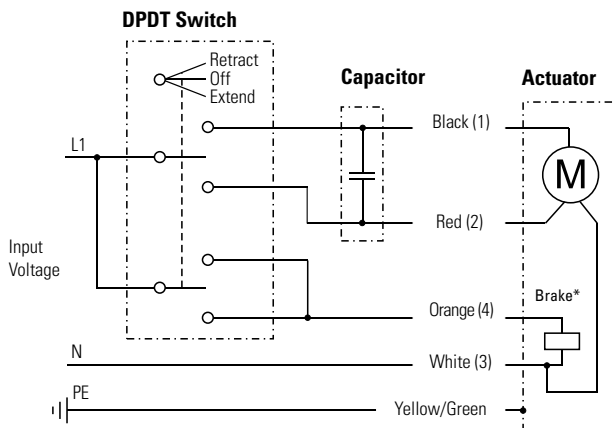
## Input Voltage 230 Vac

|                                  |       |         |
|----------------------------------|-------|---------|
| Actuator supply voltage<br>AA22- | [Vac] | 1 × 230 |
|----------------------------------|-------|---------|

### No anti-coast brake



### With anti-coast brake

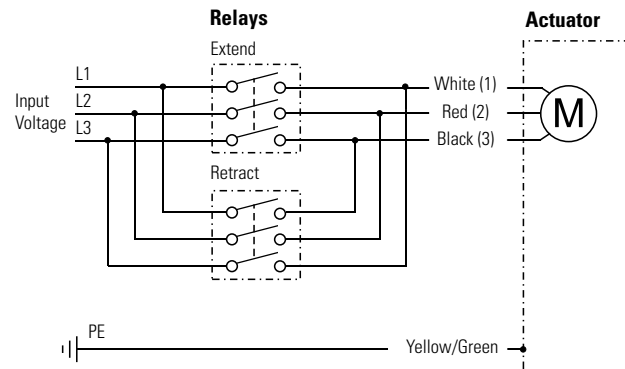


Leads can be either color or number marked. To be able to run the actuator, a 10  $\mu$ F capacitor must be connected between black (1) and red (2) leads. See page 72 for ordering of capacitors. Connect black (1) lead to L1 and white (3) lead to N (neutral) to retract the actuator. Change L1 from lead black (1) to lead red (2) to extend the actuator. If the actuator has an anti-coast brake\*, it must be released during motion, which is done by connecting orange (4) lead to L1.

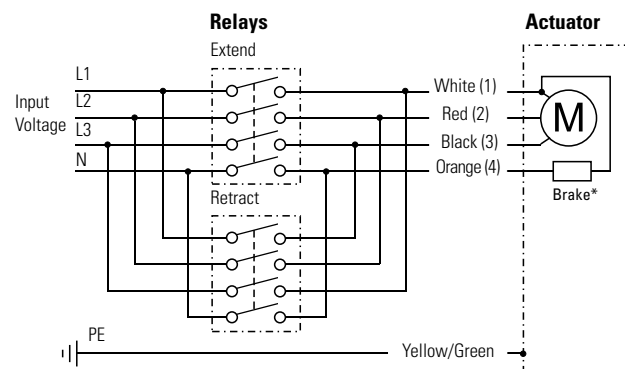
## Input Voltage 400 Vac

|                                  |       |         |
|----------------------------------|-------|---------|
| Actuator supply voltage<br>AA42- | [Vac] | 3 × 400 |
|----------------------------------|-------|---------|

### No anti-coast brake



### With anti-coast brake



Leads can be either color or number marked. Connect white (1) lead to L1, red (2) lead to L2 and black (3) lead to L3 to extend the actuator. Change the places of white (2) lead and black (3) to retract the actuator. If the actuator has an anti-coast brake\*, it must be released during motion, which is done by connecting orange (4) lead to N (neutral).

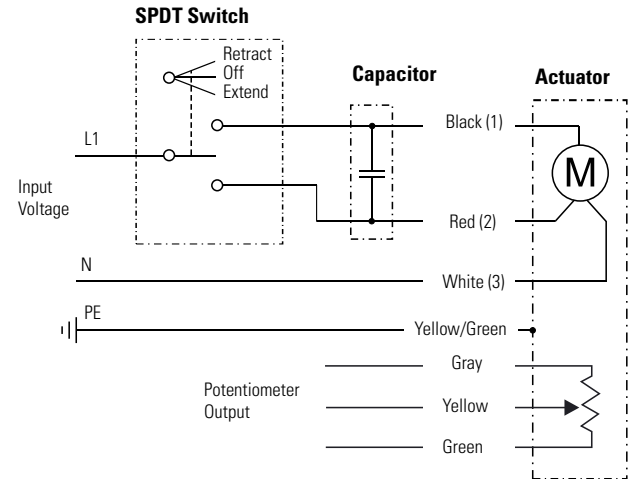


# Electrak® LA24 – Electrical Connections

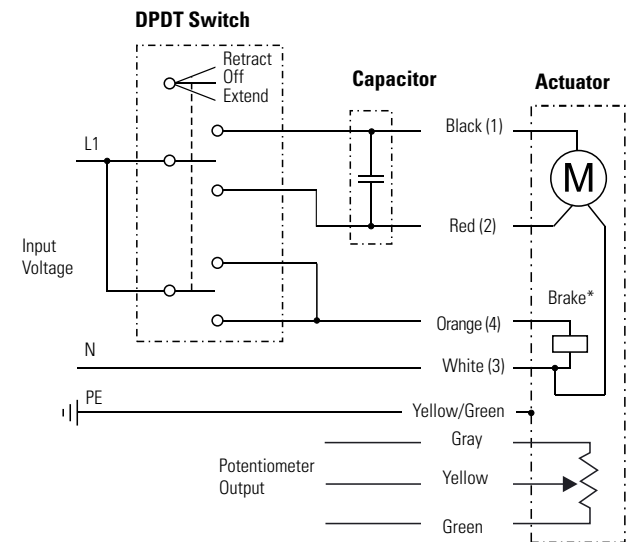
| Input Voltage 230 Vac + Option Potentiometer |          |            |
|----------------------------------------------|----------|------------|
| Actuator supply voltage<br>AA22-             | [Vac]    | 1 × 230    |
| Potentiometer type                           |          | wire-wound |
| Potentiometer max. input voltage             | [Vdc]    | 32         |
| Potentiometer max. power                     | [W]      | 2          |
| Potentiometer linearity                      | [%]      | ± 0.25     |
| Potentiometer output resolution              | [ohm/mm] |            |
| 50 - 255 mm stroke                           |          | 39         |
| 256 - 510 mm stroke                          |          | 20         |
| 511 - 600 mm stroke                          |          | 10         |

Leads can be either color or number marked. To be able to run the actuator, a 10 µF capacitor must be connected between black (1) and red (2) leads. See page 72 for ordering of capacitors. Connect black (1) lead to L1 and white (3) lead to N (neutral) to retract the actuator. Change L1 from lead black (1) to lead red (2) to extend the actuator. If the actuator has an anti-coast brake\*, it must be released during motion, which is done by connecting orange (4) lead to L1. The potentiometer output cable has 0 ohm between gray and yellow leads when the actuator is fully extended.

## No anti-coast brake



## With anti-coast brake

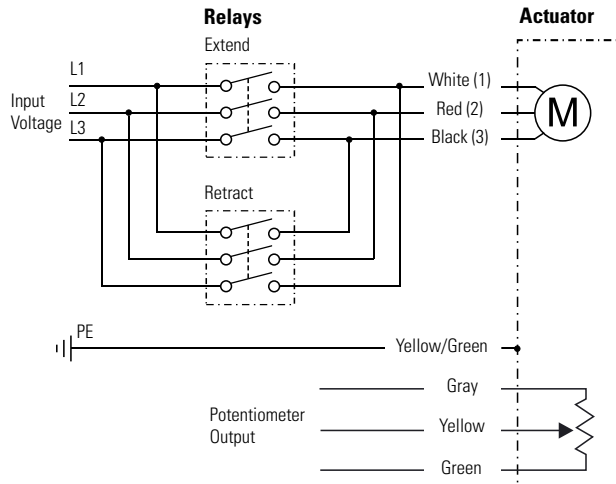


# Electrak<sup>®</sup> LA24 – Electrical Connections

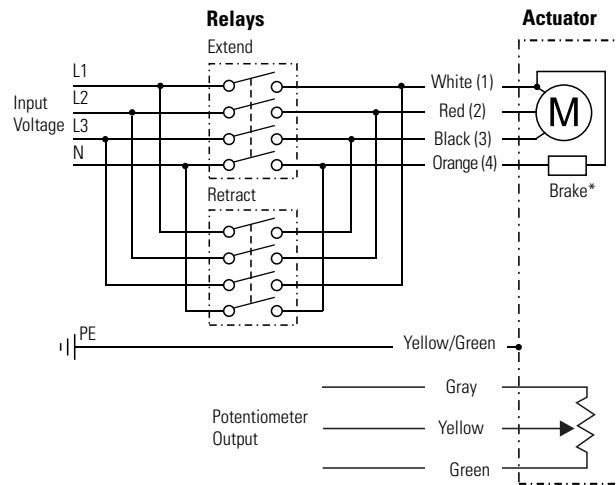
| Input Voltage 400 Vac + Option Potentiometer |          |            |
|----------------------------------------------|----------|------------|
| Actuator supply voltage<br>AA42-             | [Vac]    | 3 × 400    |
| Potentiometer type                           |          | wire-wound |
| Potentiometer max. input voltage             | [Vdc]    | 32         |
| Potentiometer max. power                     | [W]      | 2          |
| Potentiometer linearity                      | [%]      | ± 0.25     |
| Potentiometer output resolution              | [ohm/mm] |            |
| 50 - 255 mm stroke                           |          | 39         |
| 256 - 510 mm stroke                          |          | 20         |
| 511 - 600 mm stroke                          |          | 10         |

Leads can be either color or number marked. Connect white (1) lead to L1, red (2) lead to L2 and black (3) lead to L3 to extend the actuator. Change the places of white (2) lead and black (3) to retract the actuator. If the actuator have an anti-coast brake\*, it must be released during motion, which is done by connecting orange (4) lead to N (neutral). The potentiometer output cable has 0 ohm between gray and yellow leads when the actuator is fully extended.

### No anti-coast brake



### With anti-coast brake





# Electrak® LA24 – Accessories

## Capacitor Kits

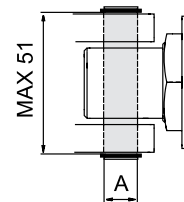
| Designation   | Actuator Supply Voltage | Part Number  |
|---------------|-------------------------|--------------|
| Capacitor kit | 230 Vac                 | 9200-448-003 |

All 230 Vac actuators require a capacitor to be wired between the windings to run. The capacitor is bought separately and mounted externally by the customer.

## Mounting Pin Kits

| Designation          | A [mm (in)] | Part Number |
|----------------------|-------------|-------------|
| Mounting pins (pair) | 12 (0.47)   | D603 023    |

The mounting pins are used in the rear and front adapter holes of the actuator. The pins have a groove in each end so that it can be secured with snap rings.



Dimensions  
mm

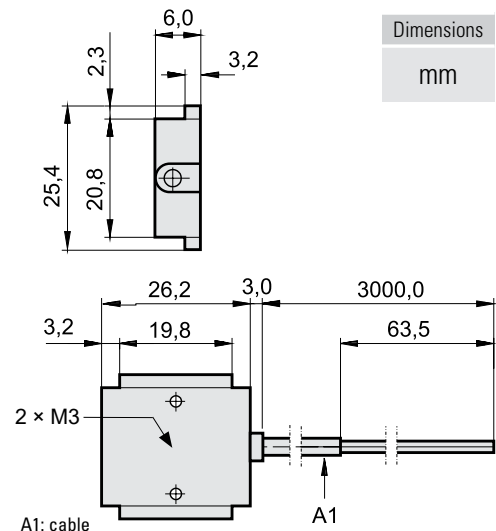
## Magnetic Sensor

| Designation     | Contact Type    | Part Number |
|-----------------|-----------------|-------------|
| Magnetic sensor | normally open   | D535 070    |
| Magnetic sensor | normally closed | D535 071    |
| Magnetic sensor | changing        | D535 073    |

## Specifications

| Parameter                             | D535 070<br>D535 071 |          | D535 073 |
|---------------------------------------|----------------------|----------|----------|
|                                       | Maximum power [W]    | 10       | 10       |
| Maximum voltage [Vdc]                 | 100                  | 100      |          |
| Maximum current [A]                   | 0,5                  | 0,5      |          |
| Maximum contact resistance [ohm]      | 20                   | 20       |          |
| Lead cross section [mm <sup>2</sup> ] | 2 × 0,14             | 3 × 0,14 |          |
| Cable length [mm]                     | 3000                 | 3000     |          |
| Protection class                      | IP67                 | IP67     |          |

The magnetic sensor fits in to the T-slot running along three sides of the cover tube. The cable is moulded into the sensor.



Dimensions  
mm

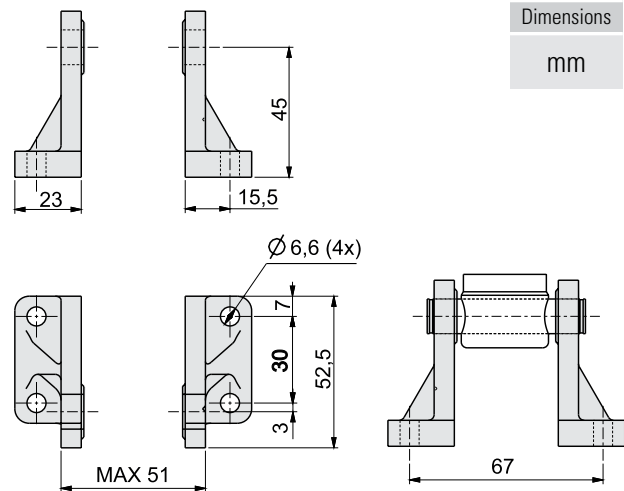


# Electrak<sup>®</sup> LA24 – Accessories

## Mounting Pin Bracket Kits

| Designation                  | Part Number |
|------------------------------|-------------|
| Mounting pin brackets (pair) | D603 029    |

The mounting pin brackets are used to attach the front and rear adapter via a pair of mounting pins to the objects to which it is mounted. Note! one pair of brackets is needed per adapter as there must be a bracket on each side of the adapter.

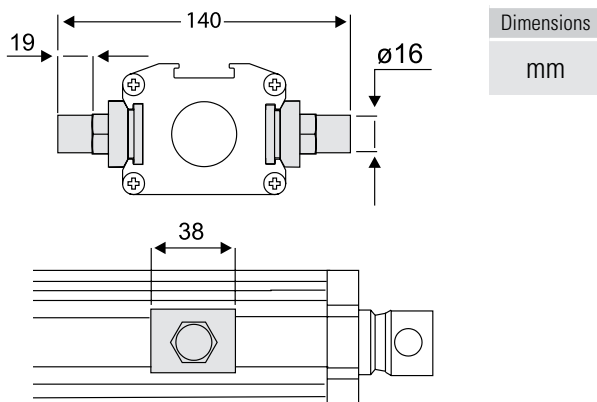


## Trunnion Mounting Kits

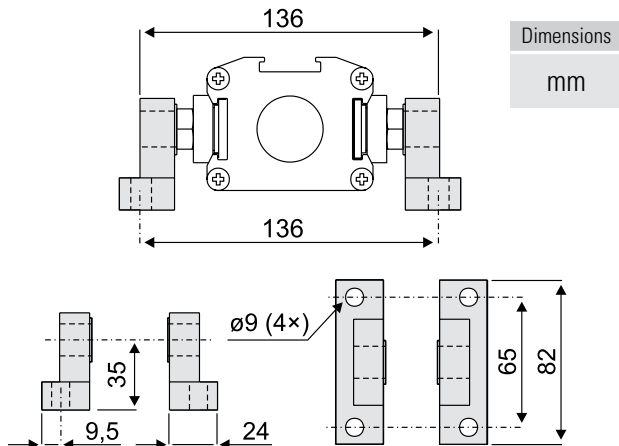
| Designation              | Part Number |
|--------------------------|-------------|
| Trunnions (pair)         | D603 022    |
| Trunnion brackets (pair) | D603 030    |

The trunnions can be mounted to the T-slot running along the right and left side of the cover tube.

### Trunnions



### Trunnion Brackets





## B-Track IC DC – Technical Features



### Standard Features

- Robust and reliable
- 12 and 24 Vdc as standard input voltages
- Acme and ball screw models
- Strokes up to 24 inch
- Load up to 12460 N (2800 lbf)
- IP66/IP69K protection
- Integrated controls for position feedback, end-of-stroke limit switches and end-of-stroke indication outputs
- Externally adjustable limit switches optional

### General Specifications

|                                                                     |                                                                 |
|---------------------------------------------------------------------|-----------------------------------------------------------------|
| Screw type                                                          | acme or ball                                                    |
| Nut type<br>K2 (acme screw)<br>K2X (ball screw)                     | self locking lead nut<br>load lock ball nut                     |
| Manual override                                                     | no                                                              |
| Anti-rotation                                                       | no                                                              |
| Static load holding brake<br>acme screw models<br>ball screw models | no (self locking)<br>yes                                        |
| Safety features                                                     | overload clutch<br>motor auto reset thermal switch              |
| Anti coast brake<br>K2 (acme screw)<br>K2X (ball screw)             | no<br>no                                                        |
| Electrical connections<br>power<br>control options                  | flying leads with Packard connector<br>control option dependent |
| Compliances                                                         | CE                                                              |

### Optional Electrical Features

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| Integrated end-of-stroke limit switches                                                            |
| Integrated end-of-stroke limit switches + end-of-stroke indication outputs                         |
| Externally adjustable end-of-stroke limit switches                                                 |
| Externally adjustable end-of-stroke limit switches + end-of-stroke indication outputs              |
| Analog potentiometer position feedback output                                                      |
| Analog potentiometer position feedback output + externally adjustable end-of-stroke limit switches |

### Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# B-Track IC DC – Technical Specifications

| Mechanical Specifications                            |               |                        |
|------------------------------------------------------|---------------|------------------------|
| Max. static load <sup>(1)</sup>                      | [N (lbf)]     | 13345 (3000)           |
| Max. dynamic load (Fx)                               | [N (lbf)]     |                        |
| K2xxxxG05-                                           |               | 1335 (300)             |
| K2xxxxG10-                                           |               | 2225 (500)             |
| K2xxxxG20-                                           |               | 3338 (700)             |
| K2xxxxG30-                                           |               | 4896 (1100)            |
| K2XxxxxG05-                                          |               | 2670 (600)             |
| K2XxxxxG10-                                          |               | 5340 (1200)            |
| K2XxxxxG20-                                          |               | 9790 (2200)            |
| K2XxxxxG30-                                          |               | 12460 (2800)           |
| Speed @ no load/max. load                            | [mm/s (in/s)] |                        |
| K2xxxxG05-                                           |               | 73 (2.85) / 43 (1.7)   |
| K2xxxxG10-                                           |               | 37 (1.45) / 15 (0.60)  |
| K2xxxxG20-                                           |               | 18 (0.70) / 8 (0.31)   |
| K2xxxxG30-                                           |               | 12 (0.48) / 7 (0.27)   |
| K2XxxxxG05-                                          |               | 67 (2.65) / 28 (1.10)  |
| K2XxxxxG10-                                          |               | 37 (1.45) / 17 (0.65)  |
| K2XxxxxG20-                                          |               | 19 (0.75) / 6.5 (0.25) |
| K2XxxxxG30-                                          |               | 11 (0.45) / 9.5 (0.38) |
| Min. ordering stroke (S) length                      | [in]          | 4                      |
| Max. ordering stroke (S) length <sup>(2)(3)(4)</sup> | [in]          | 24                     |
| Operating temperature limits                         | [°C (F)]      | -29 – 65 (-20 – 150)   |
| Full load duty cycle @ 25 °C (77 °F)                 | [%]           | 25                     |
| End play, maximum                                    | [mm (in)]     | 1.0 (0.04)             |
| Restraining torque                                   | [Nm (lbf-in)] | 11.3 (100)             |
| Protection class - static                            |               | IP66/IP69K             |
| Salt spray resistance                                | [h]           | 250                    |

(1) Max. static load at fully retracted stroke

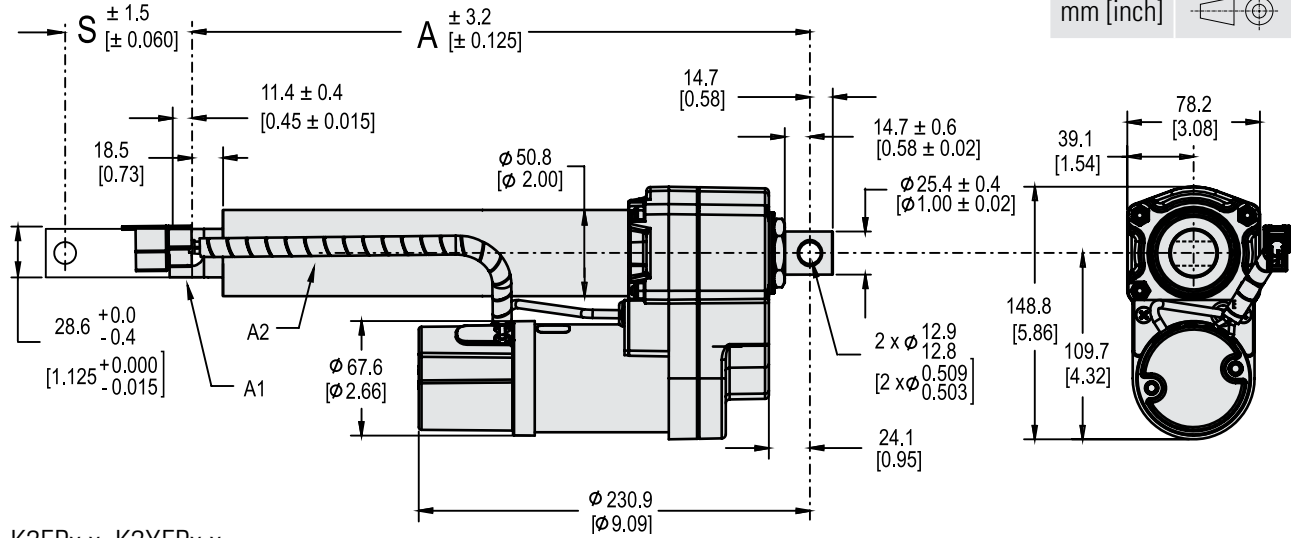
| Electrical Specifications                  |                         |             |
|--------------------------------------------|-------------------------|-------------|
| Available input voltages <sup>(1)(2)</sup> | [Vdc]                   | 12, 24      |
| Input voltage tolerance                    | [%]                     | ± 10        |
| Current draw @ no load/max. load           | [A]                     |             |
| K2xxxxG05-12V                              |                         | 3.8 / 25    |
| K2xxxxG05-24V                              |                         | 2.0 / 12    |
| K2xxxxG10-12V                              |                         | 3.8 / 25    |
| K2xxxxG10-24V                              |                         | 0.75 / 12   |
| K2xxxxG20-12V                              |                         | 2.0 / 25    |
| K2xxxxG20-24V                              |                         | 0.75 / 12   |
| K2xxxxG30-12V                              |                         | 2.0 / 21    |
| K2xxxxG30-24V                              |                         | 0.75 / 11   |
| K2XxxxxG05-12V                             |                         | 2.0 / 25    |
| K2XxxxxG05-24V                             |                         | 0.75 / 12   |
| K2XxxxxG10-12V                             |                         | 2.0 / 25    |
| K2XxxxxG10-24V                             |                         | 0.75 / 12.5 |
| K2XxxxxG20-12V                             |                         | 2.0 / 23    |
| K2XxxxxG20-24V                             |                         | 0.75 / 11   |
| K2XxxxxG30-12V                             |                         | 2.0 / 25    |
| K2XxxxxG30-24V                             |                         | 0.75 / 12.5 |
| Flying leads length                        | [mm (in)]               | 254 (10)    |
| Flying leads spiral wrap diameter          | [mm (in)]               | 11.5 (0.45) |
| Flying leads cross section                 | [mm <sup>2</sup> (AWG)] | 2 (14)      |



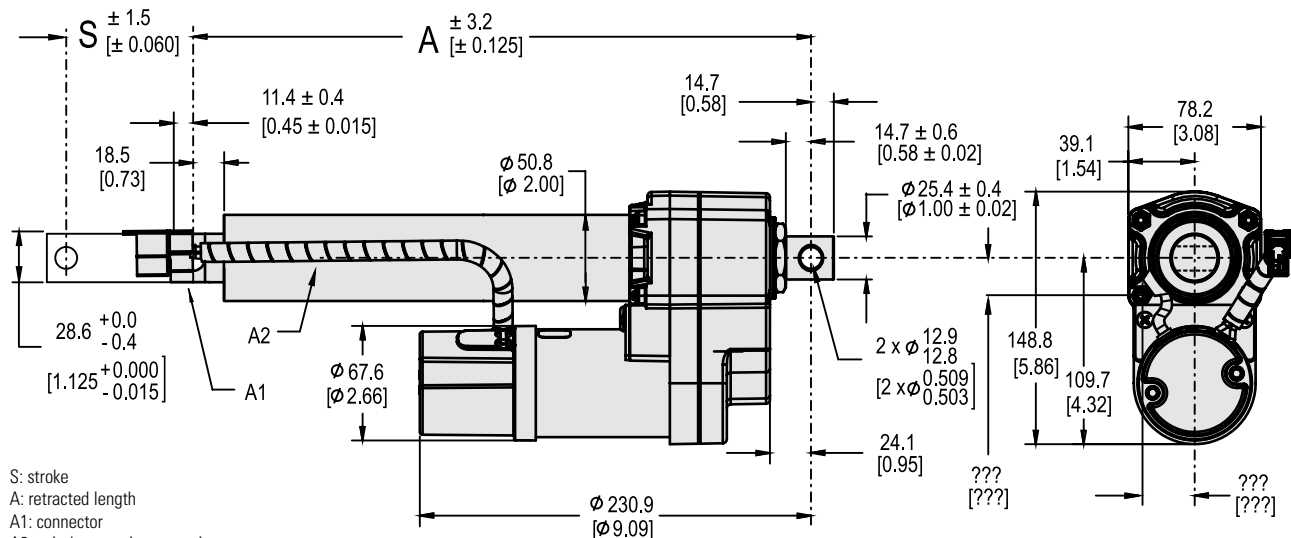
# B-Track IC DC – Dimensions

K2Px.x, K2XPx.x

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



K2EPx.x, K2XEPx.x



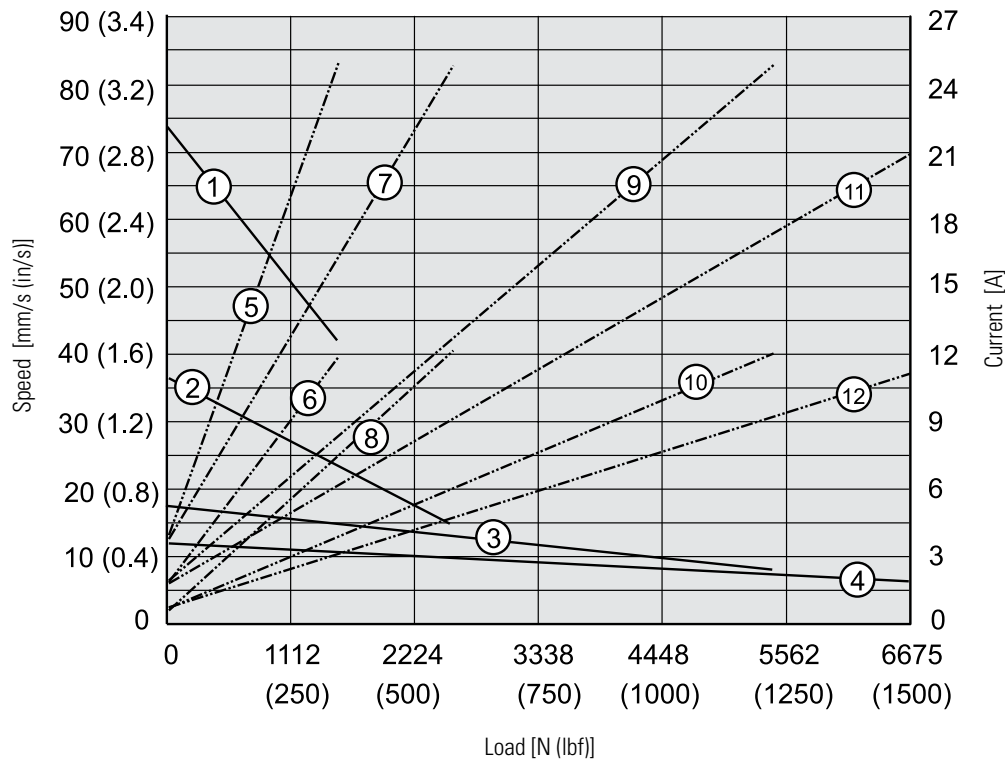
S: stroke  
 A: retracted length  
 A1: connector  
 A2: spiral wrap wire protection

## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                                                        | [in]  | 4     | 6     | 8     | 12    | 18    | 24    |
|----------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length acme screw models (A)                                     | [mm]  | 262.1 | 312.9 | 363.7 | 465.3 | 617.7 | 846.3 |
|                                                                            | [in]  | 10.32 | 12.32 | 14.32 | 18.32 | 24.32 | 33.32 |
| Weight acme screw models                                                   | [kg]  | 4.2   | 4.5   | 4.7   | 5.3   | 6.1   | 7.3   |
|                                                                            | [lbs] | 9.3   | 9.9   | 10.4  | 11.6  | 13.4  | 16.0  |
| Retracted length ball screw models and acme screw models with long nut (A) | [mm]  | 302.0 | 352.8 | 403.6 | 505.2 | 657.6 | 886.2 |
|                                                                            | [in]  | 11.89 | 13.89 | 15.89 | 19.89 | 25.89 | 34.89 |
| Weight ball screw models                                                   | [kg]  | 4.4   | 4.7   | 4.9   | 5.5   | 6.3   | 7.5   |
|                                                                            | [lbs] | 9.8   | 10.4  | 10.9  | 12.1  | 13.9  | 16.5  |

# B-Track IC DC – Performance Diagrams

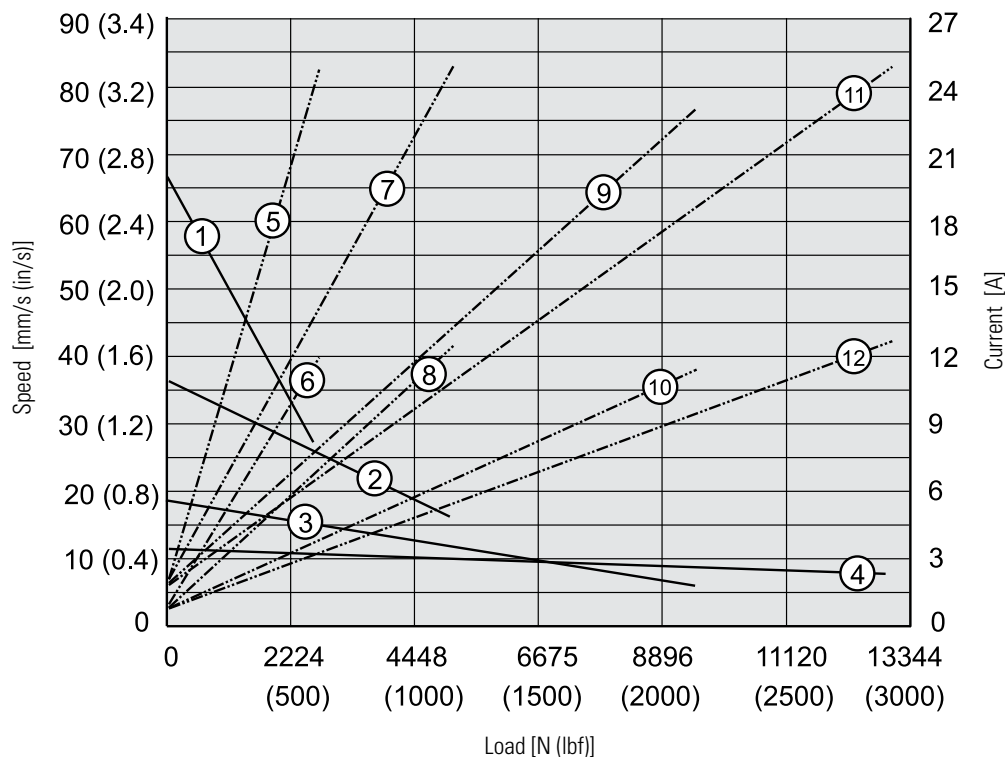
Acme Screw Models  
Speed and Current vs. Load



- Speed  
 1: K2xxxxxG05-  
 2: K2xxxxxG10-  
 3: K2xxxxxG20-  
 4: K2xxxxxG30-

- Current  
 5: K2xxxxxG05-12V  
 6: K2xxxxxG05-24V  
 7: K2xxxxxG10-12V  
 8: K2xxxxxG10-24V  
 9: K2xxxxxG20-12V  
 10: K2xxxxxG20-24V  
 11: K2xxxxxG30-12V  
 12: K2xxxxxG30-24V

Ball Screw Models  
Speed and Current vs. Load



- Speed  
 1: K2XxxxxxG05-  
 2: K2XxxxxxG10-  
 3: K2XxxxxxG20-  
 4: K2XxxxxxG30-

- Current  
 5: K2XxxxxxG05-12V  
 6: K2XxxxxxG05-24V  
 7: K2XxxxxxG10-12V  
 8: K2XxxxxxG10-24V  
 9: K2XxxxxxG20-12V  
 10: K2XxxxxxG20-24V  
 11: K2XxxxxxG30-12V  
 12: K2XxxxxxG30-24V



# B-Track IC DC – Ordering Key

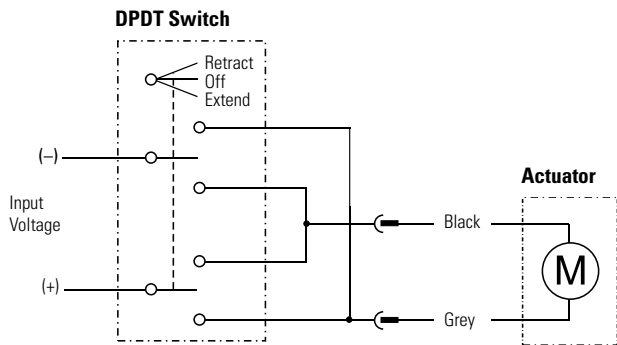
## Ordering Key

| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2           | 3           | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5         | 6 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|
| <b>K2P1.0</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>G05-</b> | <b>12V-</b> | <b>BR-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>04</b> |   |
| <p><b>1. Model, version, control and screw type</b><br/>           K2P1.0 = B-Track, IC, end of stroke limit switches, acme<br/>           K2P1.2 = B-Track, IC, end of stroke limit switches + end of stroke indication output, acme<br/>           K2EP1.0 = B-Track, IC, external, adjustable end of stroke limit switches, acme<br/>           K2EP1.2 = B-Track, IC, external, adjustable end of stroke limit switches + end of stroke indication output, acme<br/>           K2EP0.4 = B-Track, IC analog potentiometer position feedback output, acme <sup>(1)</sup><br/>           K2EP1.4 = B-Track, IC, analog potentiometer position feedback output + external, adjustable end of stroke limit switches, acme <sup>(1)</sup><br/>           K2XP1.0 = B-Track, IC, end of stroke limit switches, ball<br/>           K2XP1.2 = B-Track, IC, end of stroke limit switches + end of stroke indication output, ball<br/>           K2XEP1.0 = B-Track, IC, external, adjustable end of stroke limit switches, ball<br/>           K2XEP1.2 = B-Track, IC, external, adjustable end of stroke limit switches + end of stroke indication output, ball<br/>           K2XEP0.4 = B-Track, IC, analog potentiometer position feedback output, ball<br/>           K2XEP1.4 = B-Track, IC, analog potentiometer position feedback output + external, adjustable end of stroke limit switches, ball</p> <p><b>2. Dynamic load capacity (acme screw / ball screw models)</b><br/>           G05- = 1335 N (300 lbf) / 2670 N (600 lbf)<br/>           G10- = 2670 N (600 lbf) / 5340 N (1200 lbf)<br/>           G20- = 5340 N (1200 lbf) / 9790 N (2200 lbf)<br/>           G30- = 6675 N (1500 lbf) / 12460 N (2800 lbf)</p> |             |             | <p><b>3. Supply voltage</b><br/>           12V = 12 Vdc<br/>           24V = 24 Vdc</p> <p><b>4. Nut type</b><br/>           BR- = Acme screw nut (for K2 models only)<br/>           BRL- = Long acme screw nut (for K2 models) only <sup>(2)</sup><br/>           - = Ball screw nut (for all K2X models)</p> <p><b>5. Ordering stroke length <sup>(3)</sup></b><br/>           04- = 4 inch<br/>           06- = 6 inch<br/>           08- = 8 inch<br/>           12- = 12 inch<br/>           18- = 18 inch<br/>           24- = 24 inch</p> <p><b>6. Rear adapter orientation</b><br/>           blank = standard<br/>           R30 = 30 ° turned<br/>           R60 = 60 ° turned<br/>           R90 = 90 ° turned<br/>           R120 = 120 ° turned<br/>           R150 = 150 ° turned</p> <p><small>(1) Only possible with nut type BRL.<br/>           (2) An acme screw unit with long nut has the same retracted length (distance A) as a unit of the same stroke with a ball screw<br/>           (3) Other stroke lengths possible on request, please contact customer support.</small></p> |           |   |

# B-Track IC DC – Electrical Connections

## K2xP1.0xxx-12(24)V

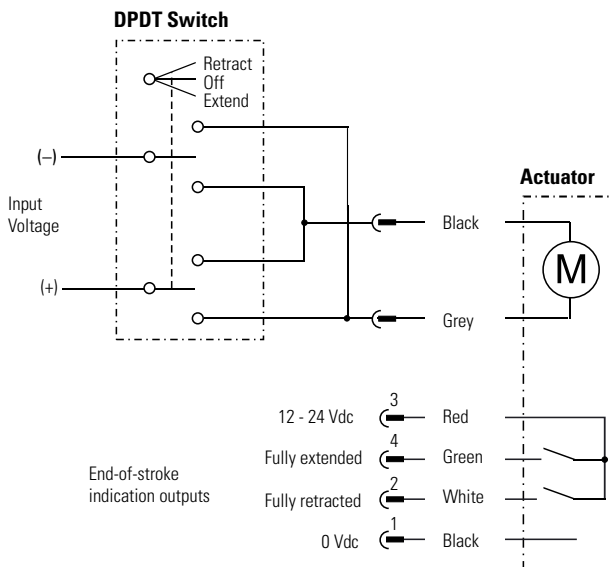
|                         |       |    |
|-------------------------|-------|----|
| Actuator supply voltage | [Vdc] |    |
| K2xxxxxxxx12V           |       | 12 |
| K2xxxxxxxx24V           |       | 24 |



Connect the grey lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The actuator has internal end-of-stroke limit switches which when affected will stop further motion in respectively direction.

## K2xP1.2xxx-12(24)V

|                                                  |       |                            |
|--------------------------------------------------|-------|----------------------------|
| Actuator supply voltage                          | [Vdc] |                            |
| K2xxxxxxxx12V                                    |       | 12                         |
| K2xxxxxxxx24V                                    |       | 24                         |
| End-of-stroke indication outputs supply voltage  | [Vdc] | 12 - 24                    |
| End-of-stroke indication outputs output voltage  | [Vdc] | same as the supply voltage |
| End-of-stroke indication outputs maximum current | [A]   | 0.5                        |

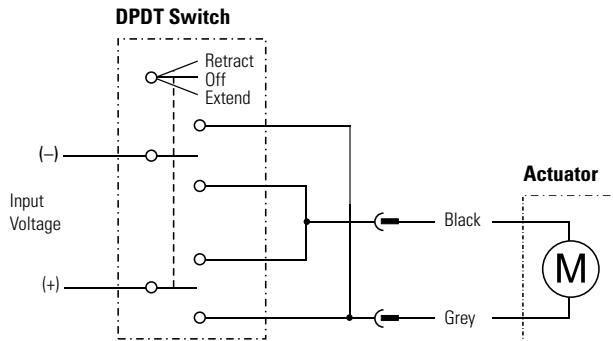


Connect the grey lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The actuator has internal end-of-stroke limit switches which when affected will stop further motion in respectively direction and at the same time the corresponding end-of-stroke indication output will close.



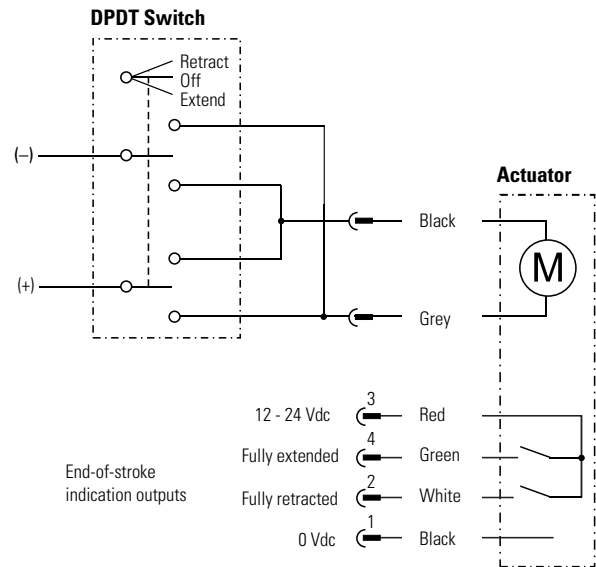
# B-Track IC DC – Electrical Connections

| K2xEP1.0xxx-12(24)V     |       |    |
|-------------------------|-------|----|
| Actuator supply voltage | [Vdc] |    |
| K2xxxxxxxxxx12V         |       | 12 |
| K2xxxxxxxxxx24V         |       | 24 |



Connect the grey lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The actuator has external adjustable end-of-stroke limit switches which when affected will stop further motion in respectively direction. The switch positions are factory set to fully extended and retracted.

| K2xEP1.2xxx-12(24)V                              |       |                            |
|--------------------------------------------------|-------|----------------------------|
| Actuator supply voltage                          | [Vdc] |                            |
| K2xxxxxxxxxx12V                                  |       | 12                         |
| K2xxxxxxxxxx24V                                  |       | 24                         |
| End-of-stroke indication outputs supply voltage  | [Vdc] | 12 - 24                    |
| End-of-stroke indication outputs output voltage  | [Vdc] | same as the supply voltage |
| End-of-stroke indication outputs maximum current | [A]   | 0.5                        |



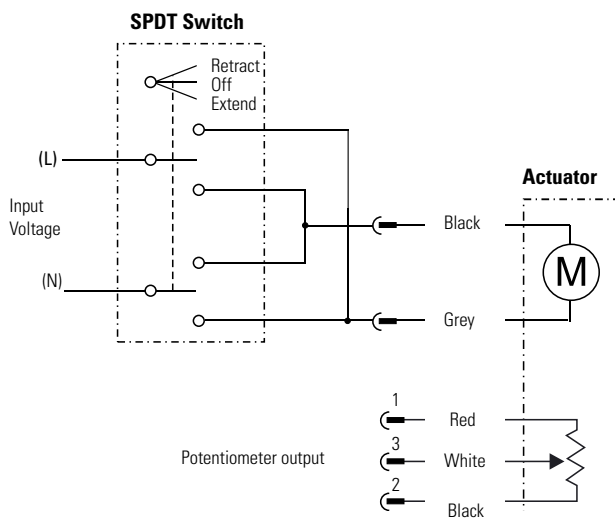
Connect the grey lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The actuator has external adjustable end-of-stroke limit switches which when affected will stop further motion in respectively direction and at the same time the corresponding end-of-stroke indication output will close.



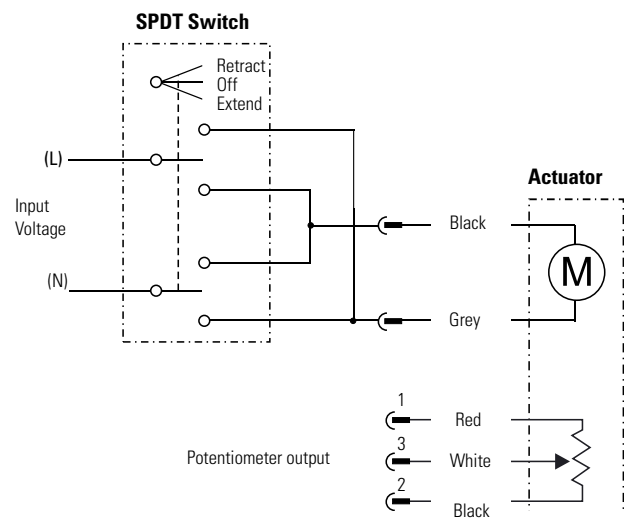
# B-Track IC DC – Electrical Connections

| K2xEP0.4xxx-12(24)V            |        |          |
|--------------------------------|--------|----------|
| Actuator supply voltage        | [Vdc]  |          |
| K2xxxxxxxxx12V                 |        | 12       |
| K2xxxxxxxxx24V                 |        | 24       |
| Potentiometer type             |        | membrane |
| Potentiometer voltage, maximum | [Vdc]  | 27       |
| Potentiometer resistance       | [kOhm] | 12       |
| Potentiometer tolerance        | [± %]  | 20       |
| Potentiometer linearity        | [%]    | 5        |

| K2xEP1.4xxx-12(24)V            |        |          |
|--------------------------------|--------|----------|
| Actuator supply voltage        | [Vdc]  |          |
| K2xxxxxxxxx12V                 |        | 12       |
| K2xxxxxxxxx24V                 |        | 24       |
| Potentiometer type             |        | membrane |
| Potentiometer voltage, maximum | [Vdc]  | 27       |
| Potentiometer resistance       | [kOhm] | 12       |
| Potentiometer tolerance        | [± %]  | 20       |
| Potentiometer linearity        | [%]    | 5        |



Connect the grey lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output connector will between pins 2 and 3 have 0.5 kOhm when fully retracted and increase proportionally to 11.5 kOhm when fully extended.



Connect the grey lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The actuator has external adjustable end-of-stroke limit switches which when affected will stop further motion in respectively direction. The switch positions are factory set to fully extended and retracted. The potentiometer output connector will between pins 2 and 3 have 0.5 kOhm when fully retracted and increase proportionally to 11.5 kOhm when fully extended. If the external end-of-stroke sensors are moved in order to limit the stroke the output signal from the potentiometer will be reduced accordingly meaning if the maximum extended move is reduced by 50%, then the resistance at that point will be 50% of 11.5 kOhm.



## B-Track IC AC – Technical Features



### Standard Features

- Robust and reliable
- 1 × 115 and 1 × 230 Vac as standard input voltages
- Acme and ball screw models
- Strokes up to 24 inch
- Load up to 12460 N (2800 lbf)
- IP66/IP69K protection
- Integrated controls for position feedback, end-of-stroke limit switches and end-of-stroke indication outputs
- Externally adjustable limit switches optional

### General Specifications

|                                                                     |                                                     |
|---------------------------------------------------------------------|-----------------------------------------------------|
| Screw type                                                          | acme or ball                                        |
| Nut type<br>K2 (acme screw)<br>K2X (ball screw)                     | self locking lead nut<br>load lock ball nut         |
| Manual override                                                     | no                                                  |
| Anti-rotation                                                       | no                                                  |
| Static load holding brake<br>acme screw models<br>ball screw models | no (self locking)<br>yes                            |
| Safety features                                                     | overload clutch<br>motor auto reset thermal switch  |
| Anti coast brake<br>K2 (acme screw)<br>K2X (ball screw)             | no<br>no                                            |
| Electrical connections<br>power<br>control options                  | cable with flying leads<br>control option dependent |
| Compliances                                                         | CE                                                  |

### Optional Electrical Features

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| Integrated end-of-stroke limit switches                                                            |
| Integrated end-of-stroke limit switches + end-of-stroke indication outputs                         |
| Externally adjustable end-of-stroke limit switches                                                 |
| Externally adjustable end-of-stroke limit switches + end-of-stroke indication outputs              |
| Analog potentiometer position feedback output                                                      |
| Analog potentiometer position feedback output + externally adjustable end-of-stroke limit switches |

### Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# B-Track IC AC – Technical Specifications

| Mechanical Specifications                            |               |                         |
|------------------------------------------------------|---------------|-------------------------|
| Max. static load <sup>(1)</sup>                      | [N (lbf)]     | 13345 (3000)            |
| Max. dynamic load (Fx)                               | [N (lbf)]     |                         |
| K2xxxxG10-                                           |               | 2225 (500)              |
| K2xxxxG20-                                           |               | 3338 (700)              |
| K2xxxxG30-                                           |               | 4896 (1100)             |
| K2XxxxxG05-                                          |               | 2225 (500)              |
| K2XxxxxG10-                                          |               | 5340 (1200)             |
| K2XxxxxG20-                                          |               | 9790 (2200)             |
| K2XxxxxG30-                                          |               | 12460 (2800)            |
| Speed @ no load/max. load                            | [mm/s (in/s)] |                         |
| K2xxxxG10-                                           |               | 26.5 (1.07) / 23 (0.9)  |
| K2xxxxG20-                                           |               | 14.5 (0.58) / 13 (0.52) |
| K2xxxxG30-                                           |               | 10 (0.39) / 9 (0.35)    |
| K2XxxxxG05-                                          |               | 44 (1.75) / 32 (1.28)   |
| K2XxxxxG10-                                          |               | 26.5 (1.07) / 24 (0.94) |
| K2XxxxxG20-                                          |               | 14 (0.55) / 12.5 (0.5)  |
| K2XxxxxG30-                                          |               | 9.5 (0.38) / 8 (0.32)   |
| Min. ordering stroke (S) length                      | [in]          | 4                       |
| Max. ordering stroke (S) length <sup>(2)(3)(4)</sup> | [in]          | 24                      |
| Operating temperature limits                         | [°C (F)]      | -29 – 65 (-20 – 150)    |
| Full load duty cycle @ 25 °C (77 °F)                 | [%]           | 25                      |
| End play, maximum                                    | [mm (in)]     | 1.0 (0.04)              |
| Restraining torque                                   | [Nm (lbf-in)] | 11.3 (100)              |
| Protection class - static                            |               | IP66/IP69K              |
| Salt spray resistance                                | [h]           | 250                     |

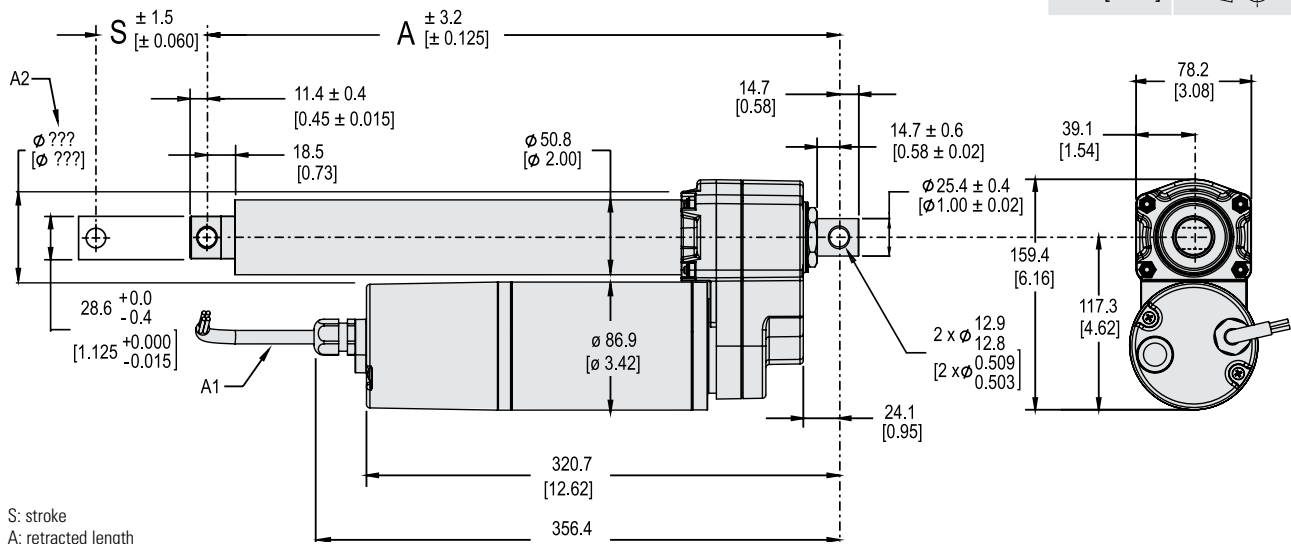
(1) Max. static load at fully retracted stroke

| Electrical Specifications        |                         |                  |
|----------------------------------|-------------------------|------------------|
| Available input voltages         | [Vac]                   | 1 × 115, 1 × 230 |
| Input voltage tolerance          | [%]                     | ± 10             |
| Current draw @ no load/max. load | [A]                     |                  |
| K2xxxxG10-115V                   |                         | 2.3 / 3.1        |
| K2xxxxG10-230V                   |                         | 1.2 / 1.8        |
| K2xxxxG20-115V                   |                         | 2.3 / 2.6        |
| K2xxxxG20-230V                   |                         | 1.1 / 1.3        |
| K2xxxxG30-115V                   |                         | 2.3 / 2.5        |
| K2xxxxG30-230V                   |                         | 1.1 / 1.3        |
| K2XxxxxG05-115V                  |                         | 2.3 / 3.3        |
| K2XxxxxG05-230V                  |                         | 1.2 / 1.6        |
| K2XxxxxG10-115V                  |                         | 2.4 / 3.3        |
| K2XxxxxG10-230V                  |                         | 3.2 / 4.3        |
| K2XxxxxG20-115V                  |                         | 2.3 / 2.7        |
| K2XxxxxG20-230V                  |                         | 1.1 / 1.3        |
| K2XxxxxG30-115V                  |                         | 2.4 / 2.6        |
| K2XxxxxG30-230V                  |                         | 2.8 / 3.7        |
| Cable length                     | [mm (in)]               | 597 (23.5)       |
| Cable diameter                   | [mm (in)]               | 10 (0.4)         |
| Cable leads cross section        | [mm <sup>2</sup> (AWG)] | 0.75 (18)        |



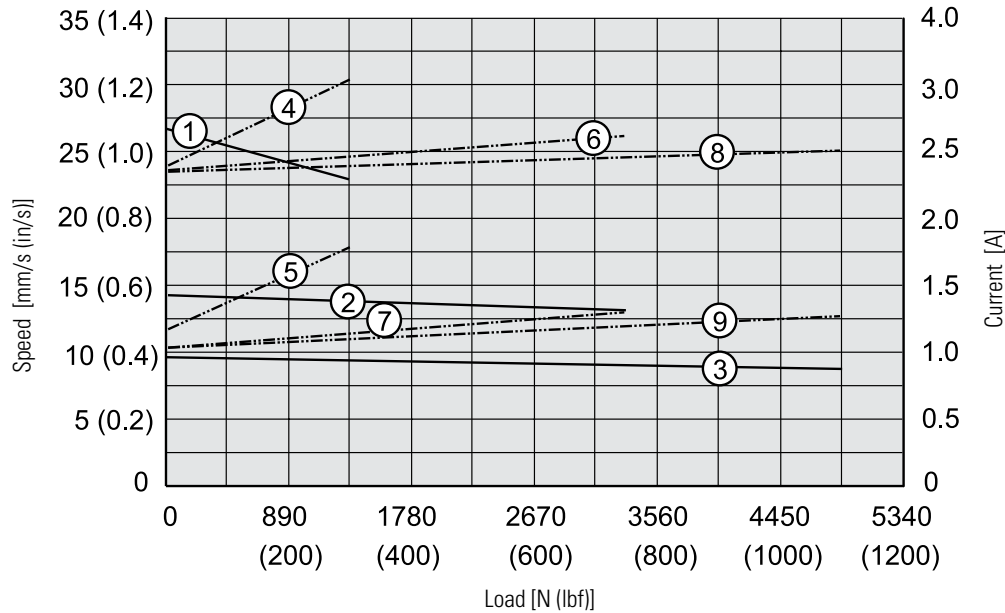
# B-Track IC AC – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



# B-Track IC AC – Performance Diagrams

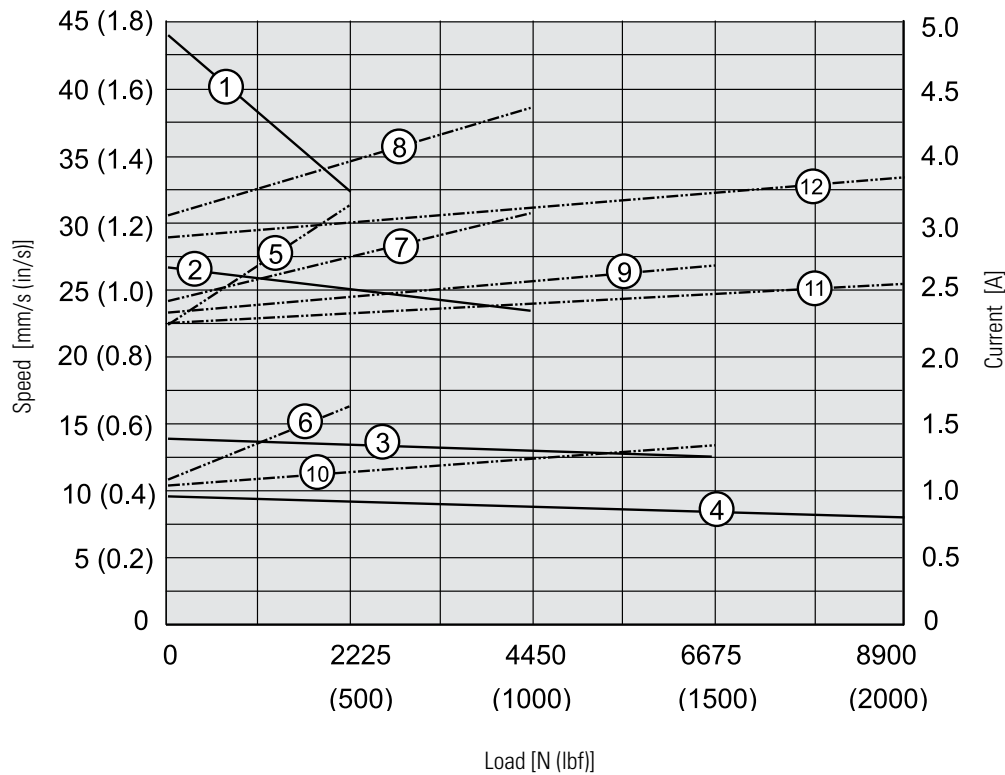
Acme Screw Models  
Speed and Current vs. Load\*



Speed  
1: K2xxxxG10-  
2: K2xxxxG20-  
3: K2xxxxG30-

Current  
4: K2xxxxG10-115V  
5: K2xxxxG20-115V  
6: K2xxxxG30-115V  
7: K2xxxxG10-230V  
8: K2xxxxG20-230V  
9: K2xxxxG30-230V

Ball Screw Models  
Speed and Current vs. Load\*



Speed  
1: K2XxxxxG05-  
2: K2XxxxxG10-  
3: K2XxxxxG20-  
4: K2XxxxxG30-

Current  
5: K2XxxxxG05-115V  
6: K2XxxxxG10-115V  
7: K2XxxxxG20-115V  
8: K2XxxxxG30-115V  
9: K2XxxxxG05-230V  
10: K2XxxxxG10-230V  
11: K2XxxxxG20-230V  
12: K2XxxxxG30-230V



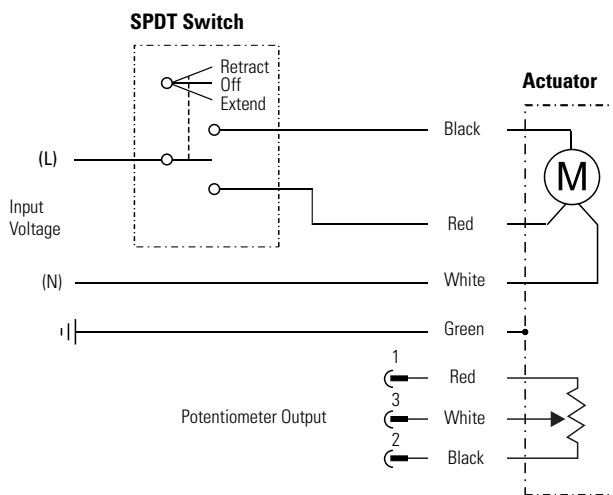
# B-Track IC AC – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|---|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2           | 3            | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5         | 6 |
| <b>K2EP0.4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>G10-</b> | <b>115V-</b> | <b>BR-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>04</b> |   |
| <p><b>1. Model, version, control and screw type</b><br/>           K2EP0.4 = B-Track, IC, analog potentiometer position feedback output, acme <sup>(1)</sup><br/>           K2EP1.4 = B-Track, IC, analog potentiometer position feedback output + external, adjustable end of stroke limit switches, acme <sup>(1)</sup><br/>           K2XEP0.4 = B-Track, IC, analog potentiometer position feedback output, ball<br/>           K2XEP1.4 = B-Track, IC, analog potentiometer position feedback output + external, adjustable end of stroke limit switches, ball</p> <p><b>2. Dynamic load capacity (acme screw / ball screw models)</b><br/>           G05- = -not available / 2225 N (500 lbf)<br/>           G10- = 2225 N (500 lbf) / 4450 N (1000 lbf)<br/>           G20- = 3338 N (750 lbf) / 6675 N (1500 lbf)<br/>           G30- = 4895 N (1100 lbf) / 8900 N (2000 lbf)</p> <p><b>3. Supply voltage</b><br/>           115V = 1 × 115 Vac<br/>           230V = 1 × 230 Vac</p> |             |              | <p><b>4. Nut type</b><br/>           BR- = Acme screw nut (for K2 models only)<br/>           BRL- = Long acme screw nut (for K2 models) only <sup>(2)</sup><br/>           - = Ball screw nut (for all K2X models)</p> <p><b>5. Ordering stroke length <sup>(3)</sup></b><br/>           04 = 4 inch<br/>           06 = 6 inch<br/>           08 = 8 inch<br/>           12 = 12 inch<br/>           18 = 18 inch<br/>           24 = 24 inch</p> <p><b>6. Rear adapter orientation</b><br/>           blank = standard<br/>           R30 = 30 ° turned<br/>           R60 = 60 ° turned<br/>           R90 = 90 ° turned<br/>           R120 = 120 ° turned<br/>           R150 = 150 ° turned</p> <p><small>(1) Only possible with nut type BRL.<br/>           (2) An acme screw unit with long nut has the same retracted length (distance A) as a unit of the same stroke with a ball screw.<br/>           (3) Other stroke lengths possible on request, please contact customer support.</small></p> |           |   |

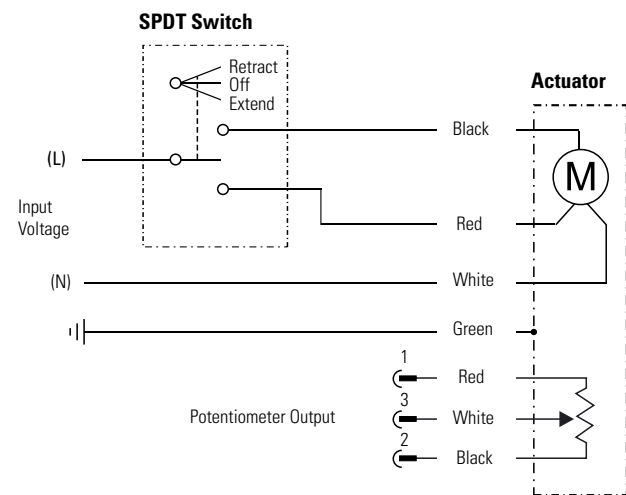
# B-Track IC AC – Electrical Connections

| K2xEP0.4xxx-115(230)V          |        |          |
|--------------------------------|--------|----------|
| Actuator supply voltage        | [Vac]  |          |
| K2xxxxxxxx115V                 |        | 1 × 115  |
| K2xxxxxxxx230V                 |        | 1 × 230  |
| Potentiometer type             |        | membrane |
| Potentiometer voltage, maximum | [Vdc]  | 27       |
| Potentiometer resistance       | [kOhm] | 12       |
| Potentiometer tolerance        | [± %]  | 20       |
| Potentiometer linearity        | [%]    | 5        |

| K2xEP1.4xxx-115(230)V          |        |          |
|--------------------------------|--------|----------|
| Actuator supply voltage        | [Vac]  |          |
| K2xxxxxxxx115V                 |        | 1 × 115  |
| K2xxxxxxxx230V                 |        | 1 × 230  |
| Potentiometer type             |        | membrane |
| Potentiometer voltage, maximum | [Vdc]  | 27       |
| Potentiometer resistance       | [kOhm] | 12       |
| Potentiometer tolerance        | [± %]  | 20       |
| Potentiometer linearity        | [%]    | 5        |



Connect white lead to neutral (N). To extend the actuator connect L to the red lead. To retract the actuator, change L to the black lead. The potentiometer output connector will between pins 2 and 3 have 0.5 kOhm when fully retracted and increase proportionally to 11.5 kOhm when fully extended.



Connect white lead to neutral (N). To extend the actuator connect L to the red lead. To retract the actuator, change L to the black lead. The actuator has external adjustable end-of-stroke limit switches which when affected will stop further motion in respectively direction. The switch positions are factory set to fully extended and retracted. The potentiometer output connector will between pins 2 and 3 have 0.5 kOhm when fully retracted and increase proportionally to 11.5 kOhm when fully extended. If the external end-of-stroke sensors are moved in order to limit the stroke the output signal from the potentiometer will be reduced accordingly meaning if the maximum extended move is reduced by 50%, then the resistance at that point will be 50% of 11.5 kOhm.



# B-Track DC – Technical Features



## Standard Features

- Robust and reliable
- 12, 24, 36, 48 and 90 Vdc as standard input voltages
- Acme and ball screw models
- Strokes up to 24 inches
- Load up to 12460 N (2800 lbf)
- IP66/IP69K protection

## General Specifications

|                                                                     |                                                    |
|---------------------------------------------------------------------|----------------------------------------------------|
| Screw type                                                          | acme or ball                                       |
| Nut type<br>K2 (acme screw)<br>K2X (ball screw)                     | self-locking lead nut<br>load lock ball nut        |
| Manual override                                                     | no                                                 |
| Anti-rotation                                                       | no                                                 |
| Static load holding brake<br>acme screw models<br>ball screw models | no (self-locking)<br>yes                           |
| Safety features                                                     | overload clutch<br>motor auto reset thermal switch |
| Anti coast brake<br>K2 (acme screw)<br>K2X (ball screw)             | no<br>no                                           |
| Electrical connection                                               | flying leads with Packard 56 connector             |
| Compliances                                                         | CE                                                 |

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)



# B-Track DC – Technical Specifications

| Mechanical Specifications                            |               |                        |
|------------------------------------------------------|---------------|------------------------|
| Max. static load <sup>(1)</sup>                      | [N (lbf)]     | 13345 (3000)           |
| Max. dynamic load (Fx)                               | [N (lbf)]     |                        |
| K2G05-                                               |               | 1335 (300)             |
| K2G10-                                               |               | 2225 (500)             |
| K2G20-                                               |               | 3338 (700)             |
| K2G30-                                               |               | 4896 (1100)            |
| K2XG05-                                              |               | 2670 (600)             |
| K2XG10-                                              |               | 5340 (1200)            |
| K2XG20-                                              |               | 9790 (2200)            |
| K2XG30-                                              |               | 12460 (2800)           |
| Speed @ no load/max. load                            | [mm/s (in/s)] |                        |
| K2G05-                                               |               | 73 (2.85) / 43 (1.7)   |
| K2G10-                                               |               | 37 (1.45) / 15 (0.60)  |
| K2G20-                                               |               | 18 (0.70) / 8 (0.31)   |
| K2G30-                                               |               | 12 (0.48) / 7 (0.27)   |
| K2XG05-                                              |               | 67 (2.65) / 28 (1.10)  |
| K2XG10-                                              |               | 37 (1.45) / 17 (0.65)  |
| K2XG20-                                              |               | 19 (0.75) / 6.5 (0.25) |
| K2XG30-                                              |               | 11 (0.45) / 9.5 (0.38) |
| Min. ordering stroke (S) length                      | [in]          | 4                      |
| Max. ordering stroke (S) length <sup>(2)(3)(4)</sup> | [in]          | 24                     |
| Operating temperature limits                         | [°C (F)]      | -29 – 65 (-20 – 150)   |
| Full load duty cycle @ 25 °C (77 °F)                 | [%]           | 25                     |
| End play, maximum                                    | [mm (in)]     | 1.0 (0.04)             |
| Restraining torque                                   | [Nm (lbf-in)] | 11.3 (100)             |
| Protection class - static                            |               | IP66/IP69K             |
| Salt spray resistance                                | [h]           | 250                    |

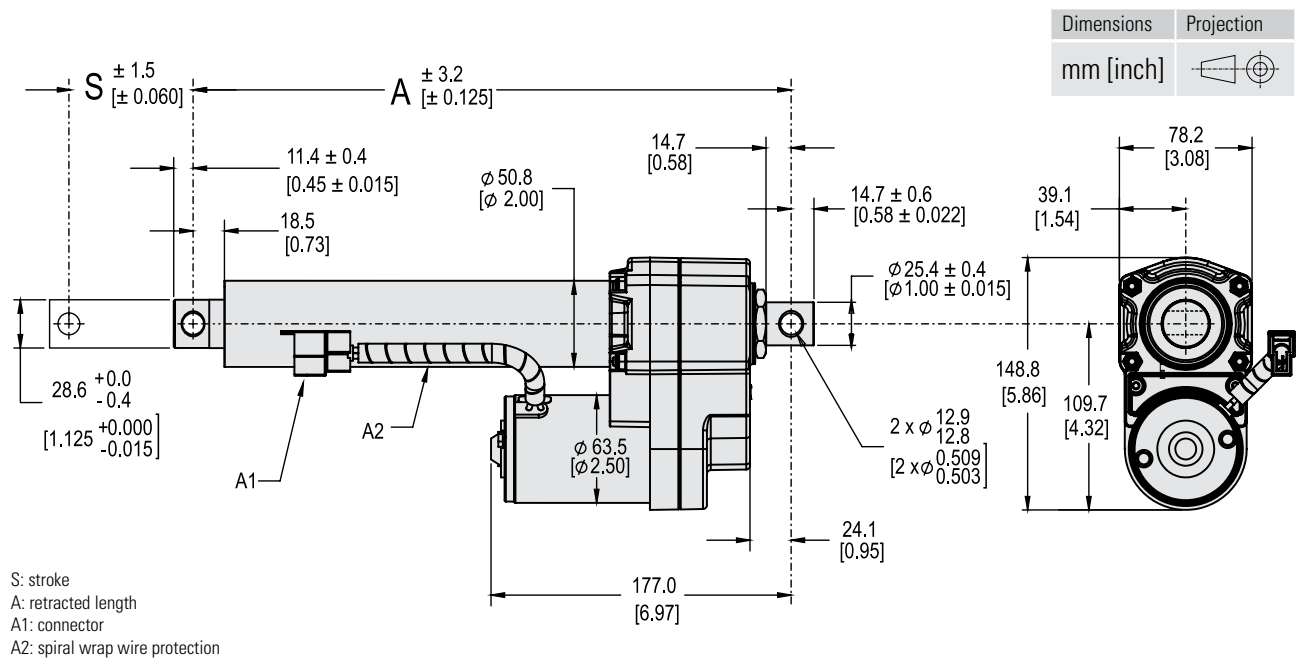
(1) Max. static load at fully retracted stroke

(2) Contact customer support for data on 36, 48 or 90 Vdc models

| Electrical Specifications               |                         |                    |
|-----------------------------------------|-------------------------|--------------------|
| Available input voltages <sup>(2)</sup> | [Vdc]                   | 12, 24, 36, 48, 90 |
| Input voltage tolerance                 | [%]                     | ± 10               |
| Current draw @ no load/max. load        | [A]                     |                    |
| K2G05-12V                               |                         | 3.8 / 25           |
| K2G05-24V                               |                         | 2.0 / 12           |
| K2G10-12V                               |                         | 3.8 / 25           |
| K2G10-24V                               |                         | 0.75 / 12          |
| K2G20-12V                               |                         | 2.0 / 25           |
| K2G20-24V                               |                         | 0.75 / 12          |
| K2G30-12V                               |                         | 2.0 / 21           |
| K2G30-24V                               |                         | 0.75 / 11          |
| K2XG05-12V                              |                         | 2.0 / 25           |
| K2XG05-24V                              |                         | 0.75 / 12          |
| K2XG10-12V                              |                         | 2.0 / 25           |
| K2XG10-24V                              |                         | 0.75 / 12.5        |
| K2XG20-12V                              |                         | 2.0 / 23           |
| K2XG20-24V                              |                         | 0.75 / 11          |
| K2XG30-12V                              |                         | 2.0 / 25           |
| K2XG30-24V                              |                         | 0.75 / 12.5        |
| Flying leads length                     | [mm (in)]               | 254 (10)           |
| Flying leads spiral wrap diameter       | [mm (in)]               | 11.5 (0.45)        |
| Flying leads cross section              | [mm <sup>2</sup> (AWG)] | 2 (14)             |



# B-Track DC – Dimensions

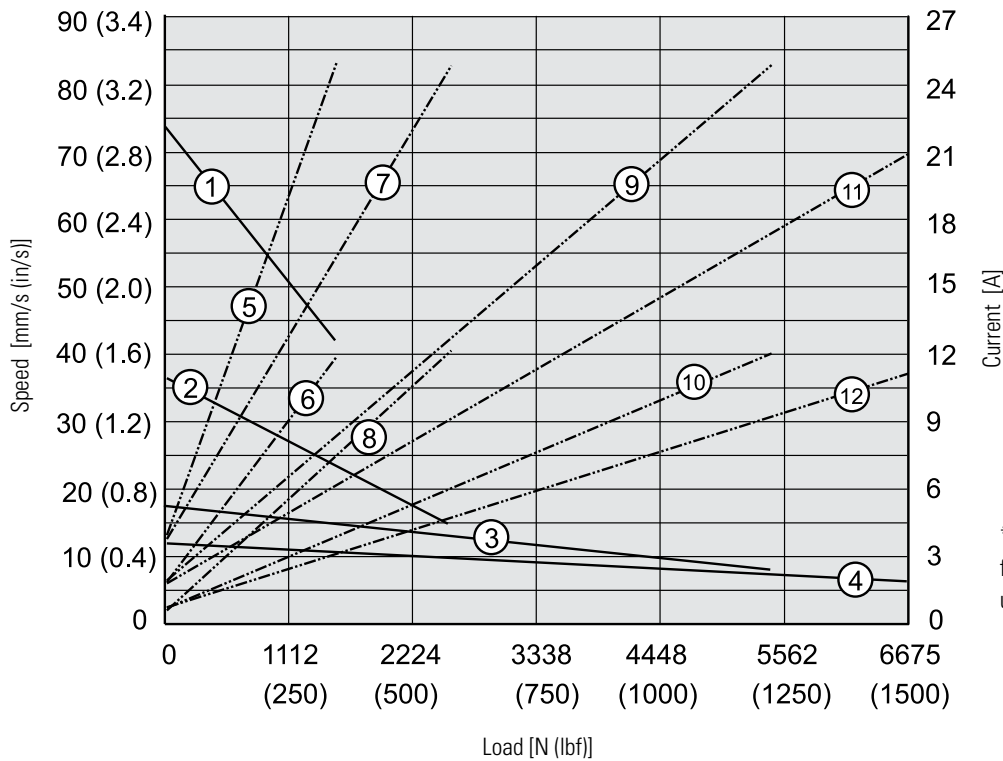


**Stroke, Retracted Length and Weight Relationships**

| Ordering stroke (S)                                                        | [in]  | 4     | 6     | 8     | 12    | 18    | 24    |
|----------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length acme screw models (A)                                     | [mm]  | 262.1 | 312.9 | 363.7 | 465.3 | 617.7 | 846.3 |
|                                                                            | [in]  | 10.32 | 12.32 | 14.32 | 18.32 | 24.32 | 33.32 |
| Weight acme screw models                                                   | [kg]  | 4.3   | 4.7   | 5.0   | 5.7   | 6.7   | 8.3   |
|                                                                            | [lbs] | 9.5   | 10.3  | 11.0  | 12.6  | 14.9  | 18.3  |
| Retracted length ball screw models and acme screw models with long nut (A) | [mm]  | 302.0 | 352.8 | 403.6 | 505.2 | 657.6 | 886.2 |
|                                                                            | [in]  | 11.89 | 13.89 | 15.89 | 19.89 | 25.89 | 34.89 |
| Weight ball screw models                                                   | [kg]  | 4.5   | 4.9   | 5.2   | 5.9   | 7.0   | 8.5   |
|                                                                            | [lbs] | 10.0  | 10.8  | 11.5  | 13.1  | 15.4  | 18.8  |

# B-Track DC – Performance Diagrams

Acme Screw Models  
Speed and Current vs. Load\*

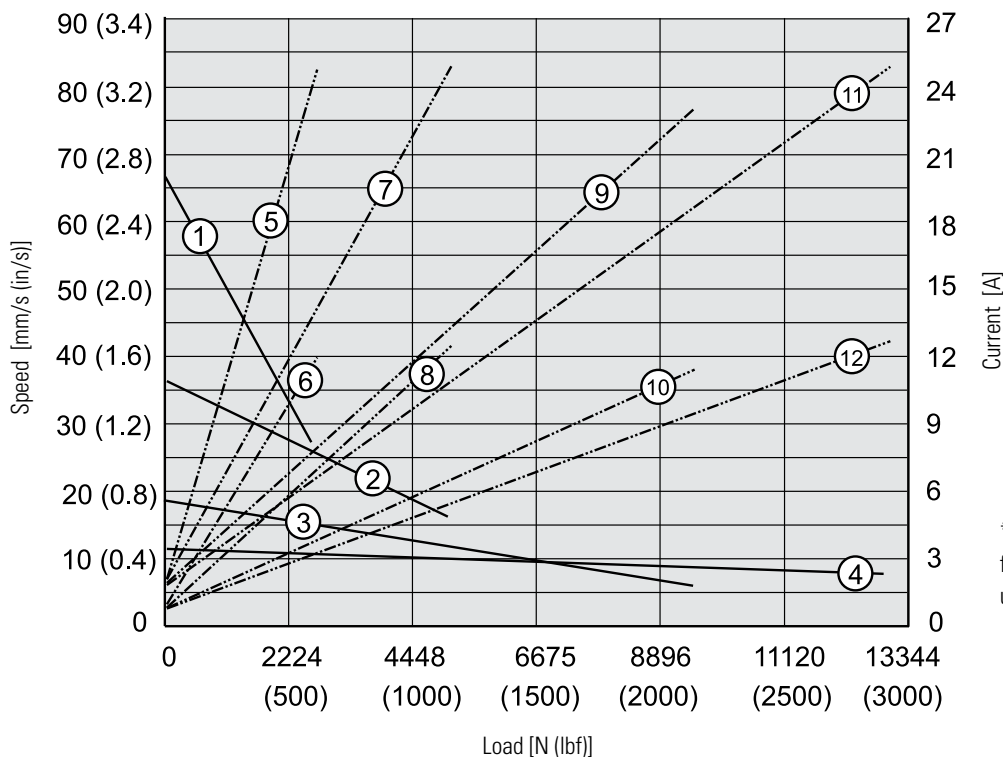


Speed  
1: K2G05-  
2: K2G10-  
3: K2G20-  
4: K2G30-

Current  
5: K2G05-12V  
6: K2G05-24V  
7: K2G10-12V  
8: K2G10-24V  
9: K2G20-12V  
10: K2G20-24V  
11: K2G30-12V  
12: K2G30-24V

\* Contact customer support for data on 36, 48 and 90 Vdc units.

Ball Screw Models  
Speed and Current vs. Load\*



Speed  
1: K2XG05-  
2: K2XG10-  
3: K2XG20-  
4: K2XG30-

Current  
5: K2XG05-12V  
6: K2XG05-24V  
7: K2XG10-12V  
8: K2XG10-24V  
9: K2XG20-12V  
10: K2XG20-24V  
11: K2XG30-12V  
12: K2XG30-24V

\* Contact customer support for data on 36, 48 and 90 Vdc units.



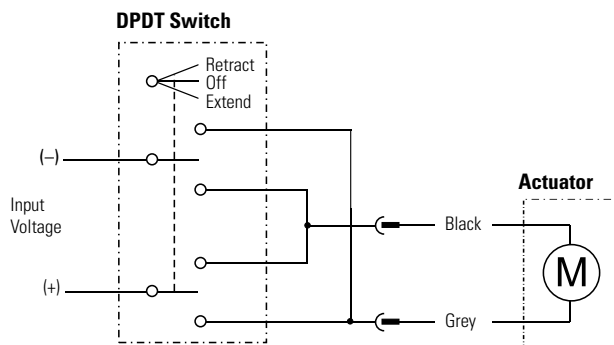
# B-Track DC – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |      |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2    | 3   | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5   | 6 |
| K2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | G05- | 12V | BR-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -04 |   |
| <p><b>1. Model, version and screw type</b><br/>           K2 = B-Track, acme<br/>           K2 = B-Track, acme<br/>           K2 = B-Track, acme<br/>           K2 = B-Track, acme<br/>           K2X = B-Track, ball<br/>           K2X = B-Track, ball<br/>           K2X = B-Track, ball<br/>           K2X = B-Track, ball</p> <p><b>2. Dynamic load capacity (acme screw / ball screw models)</b><br/>           G05- = 1335 N (300 lbf) / 2670 N (600 lbf)<br/>           G10- = 2670 N (600 lbf) / 5340 N (1200 lbf)<br/>           G20- = 5340 N (1200 lbf) / 9790 N (2200 lbf)<br/>           G30- = 6675 N (1500 lbf) / 12460 N (2800 lbf)</p> <p><b>3. Supply voltage</b><br/>           12V = 12 Vdc<br/>           24V = 24 Vdc<br/>           36V = 36 Vdc<br/>           48V = 48 Vdc<br/>           90V = 90 Vdc</p> |      |     | <p><b>4. Nut type</b><br/>           BR- = Acme screw nut (for K2 models)<br/>           BRL- = Long acme screw nut (for K2 models) <sup>(1)</sup><br/>           - = Ball screw nut (for all K2X models)</p> <p><b>5. Ordering stroke length <sup>(2)</sup></b><br/>           04 = 4 inch<br/>           06 = 6 inch<br/>           08 = 8 inch<br/>           12 = 12 inch<br/>           18 = 18 inch<br/>           24 = 24 inch</p> <p><b>6. Rear adapter orientation</b><br/>           blank = standard<br/>           R30 = 30 ° turned<br/>           R60 = 60 ° turned<br/>           R90 = 90 ° turned<br/>           R120 = 120 ° turned<br/>           R150 = 150 ° turned</p> <p><small>(1) An acme screw unit with long nut has the same retracted length (distance A) as a unit of the same stroke with a ball screw.<br/>           (2) Other stroke lengths possible on request, please contact customer support.</small></p> |     |   |

## B-Track DC – Electrical Connections

### Standard

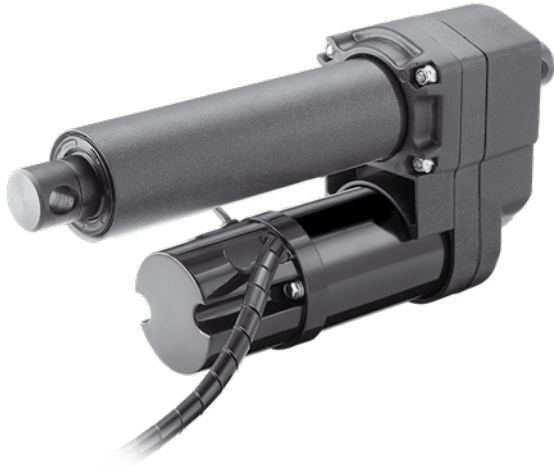
| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| K2xxxx12V               |       | 12 |
| K2xxxx24V               |       | 24 |
| K2xxxx36V               |       | 36 |
| K2xxxx48V               |       | 48 |
| K2xxxx90V               |       | 90 |



Connect the grey lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator.



# B-Track AC – Technical Features



## Standard Features

- Robust and reliable
- 1 × 115 and 1 × 230 Vac as standard input voltages
- Acme and ball screw models
- Strokes up to 24 inches
- Load up to 12460 N (2800 lbf)
- IP66/IP69K protection

## General Specifications

|                                                                     |                                                    |
|---------------------------------------------------------------------|----------------------------------------------------|
| Screw type                                                          | acme or ball                                       |
| Nut type<br>K2 (acme screw)<br>K2X (ball screw)                     | self-locking lead nut<br>load lock ball nut        |
| Manual override                                                     | no                                                 |
| Anti-rotation                                                       | no                                                 |
| Static load holding brake<br>acme screw models<br>ball screw models | no (self-locking)<br>yes                           |
| Safety features                                                     | overload clutch<br>motor auto reset thermal switch |
| Anti coast brake<br>K2 (acme screw)<br>K2X (ball screw)             | no<br>no                                           |
| Electrical connections                                              | cable with flying leads                            |
| Compliances                                                         | CE                                                 |

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# B-Track AC – Technical Specifications

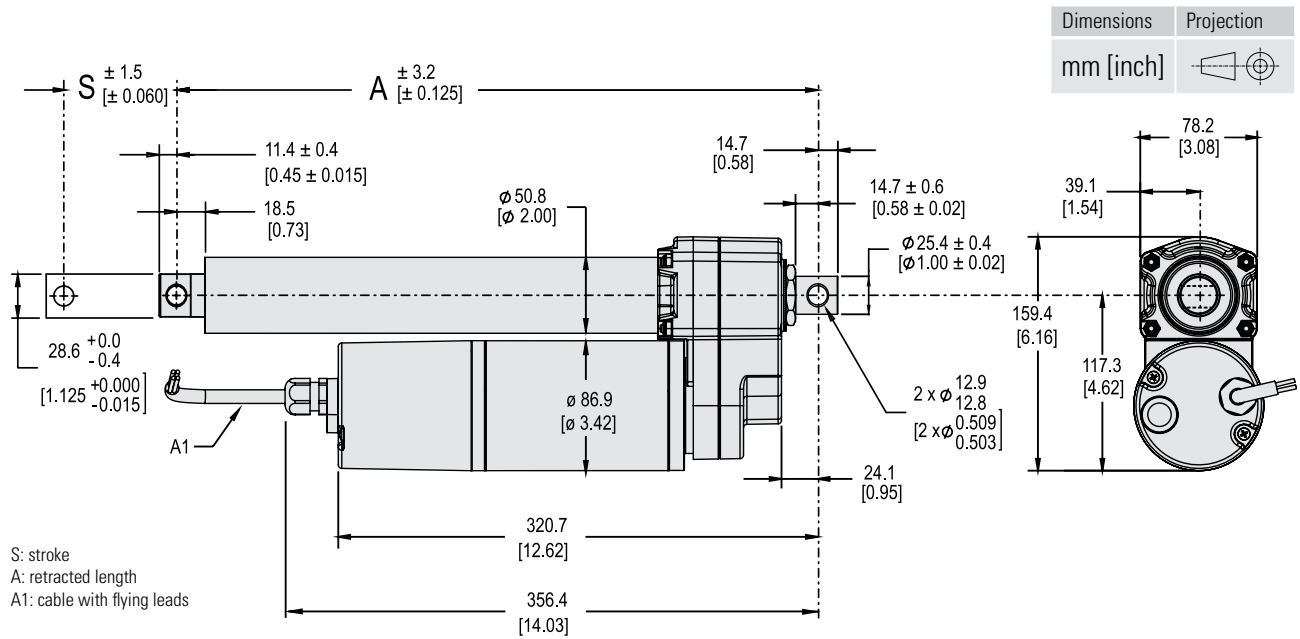
| Mechanical Specifications                            |               |                         |
|------------------------------------------------------|---------------|-------------------------|
| Max. static load <sup>(1)</sup>                      | [N (lbf)]     | 13345 (3000)            |
| Max. dynamic load (Fx)                               | [N (lbf)]     |                         |
| K2G10-                                               |               | 2225 (500)              |
| K2G20-                                               |               | 3338 (700)              |
| K2G30-                                               |               | 4896 (1100)             |
| K2XG05-                                              |               | 2225 (500)              |
| K2XG10-                                              |               | 5340 (1200)             |
| K2XG20-                                              |               | 9790 (2200)             |
| K2XG30-                                              |               | 12460 (2800)            |
| Speed @ no load/max. load                            | [mm/s (in/s)] |                         |
| K2G10-                                               |               | 26.5 (1.07) / 23 (0.9)  |
| K2G20-                                               |               | 14.5 (0.58) / 13 (0.52) |
| K2G30-                                               |               | 10 (0.39) / 9 (0.35)    |
| K2XG05-                                              |               | 44 (1.75) / 32 (1.28)   |
| K2XG10-                                              |               | 26.5 (1.07) / 24 (0.94) |
| K2XG20-                                              |               | 14 (0.55) / 12.5 (0.5)  |
| K2XG30-                                              |               | 9.5 (0.38) / 8 (0.32)   |
| Min. ordering stroke (S) length                      | [in]          | 4                       |
| Max. ordering stroke (S) length <sup>(2)(3)(4)</sup> | [in]          | 24                      |
| Operating temperature limits                         | [°C (F)]      | -29 – 65 (-20 – 150)    |
| Full load duty cycle @ 25 °C (77 °F)                 | [%]           | 25                      |
| End play, maximum                                    | [mm (in)]     | 1.0 (0.04)              |
| Restraining torque                                   | [Nm (lbf-in)] | 11.3 (100)              |
| Protection class - static                            |               | IP66/IP69K              |
| Salt spray resistance                                | [h]           | 250                     |

(1) Max. static load at fully retracted stroke

| Electrical Specifications        |                         |                  |
|----------------------------------|-------------------------|------------------|
| Available input voltages         | [Vac]                   | 1 × 115, 1 × 230 |
| Input voltage tolerance          | [%]                     | ± 10             |
| Current draw @ no load/max. load | [A]                     |                  |
| K2G10-115V                       |                         | 2.3 / 3.1        |
| K2G10-230V                       |                         | 1.2 / 1.8        |
| K2G20-115V                       |                         | 2.3 / 2.6        |
| K2G20-230V                       |                         | 1.1 / 1.3        |
| K2G30-115V                       |                         | 2.3 / 2.5        |
| K2G30-230V                       |                         | 1.1 / 1.3        |
| K2XG05-115V                      |                         | 2.3 / 3.3        |
| K2XG05-230V                      |                         | 1.2 / 1.6        |
| K2XG10-115V                      |                         | 2.4 / 3.3        |
| K2XG10-230V                      |                         | 3.2 / 4.3        |
| K2XG20-115V                      |                         | 2.3 / 2.7        |
| K2XG20-230V                      |                         | 1.1 / 1.3        |
| K2XG30-115V                      |                         | 2.4 / 2.6        |
| K2XG30-230V                      |                         | 2.8 / 3.7        |
| Cable length                     | [mm (in)]               | 597 (23.5)       |
| Cable diameter                   | [mm (in)]               | 10 (0.4)         |
| Cable leads cross section        | [mm <sup>2</sup> (AWG)] | 0.75 (18)        |



# B-Track AC – Dimensions



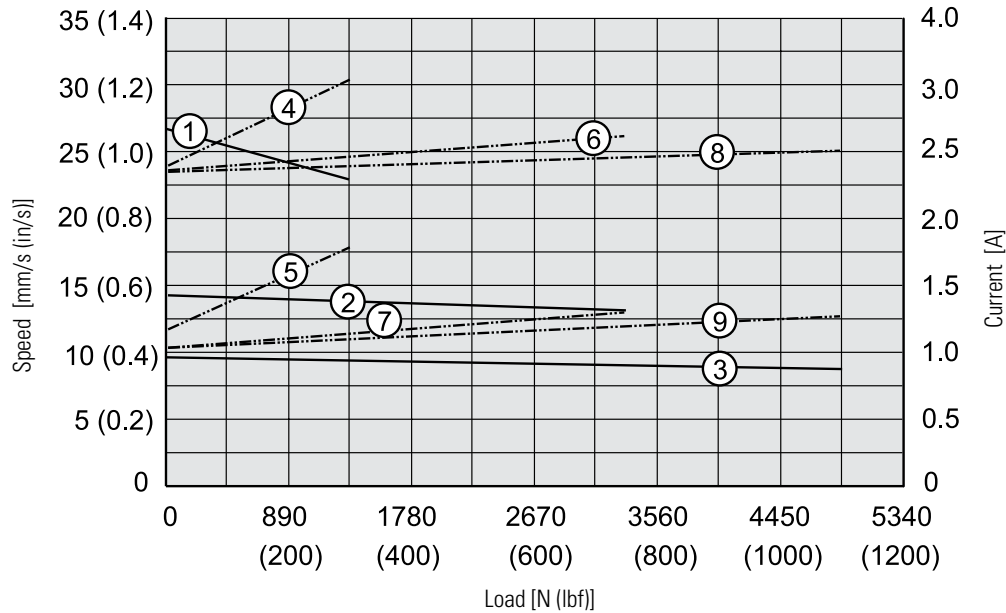
Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                    | [in]  | 4     | 6     | 8     | 12    | 18    | 24    |
|----------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length acme screw models (A) | [mm]  | 262.1 | 312.9 | 363.7 | 465.3 | 617.7 | 846.3 |
|                                        | [in]  | 10.32 | 12.32 | 14.32 | 18.32 | 24.32 | 33.32 |
| Weight acme screw models               | [kg]  | 7.3   | 7.7   | 8.0   | 8.7   | 9.7   | 11.3  |
|                                        | [lbs] | 16.1  | 16.9  | 17.7  | 19.2  | 21.5  | 24.9  |
| Retracted length ball screw models (A) | [mm]  | 302.0 | 352.8 | 403.6 | 505.2 | 657.6 | 886.2 |
|                                        | [in]  | 11.89 | 13.89 | 15.89 | 19.89 | 25.89 | 34.89 |
| Weight ball screw models               | [kg]  | 7.6   | 7.9   | 8.3   | 9.0   | 10.0  | 11.6  |
|                                        | [lbs] | 16.7  | 17.5  | 18.3  | 19.8  | 22.1  | 25.5  |



# B-Track AC – Performance Diagrams

Acme Screw Models  
Speed and Current vs. Load\*



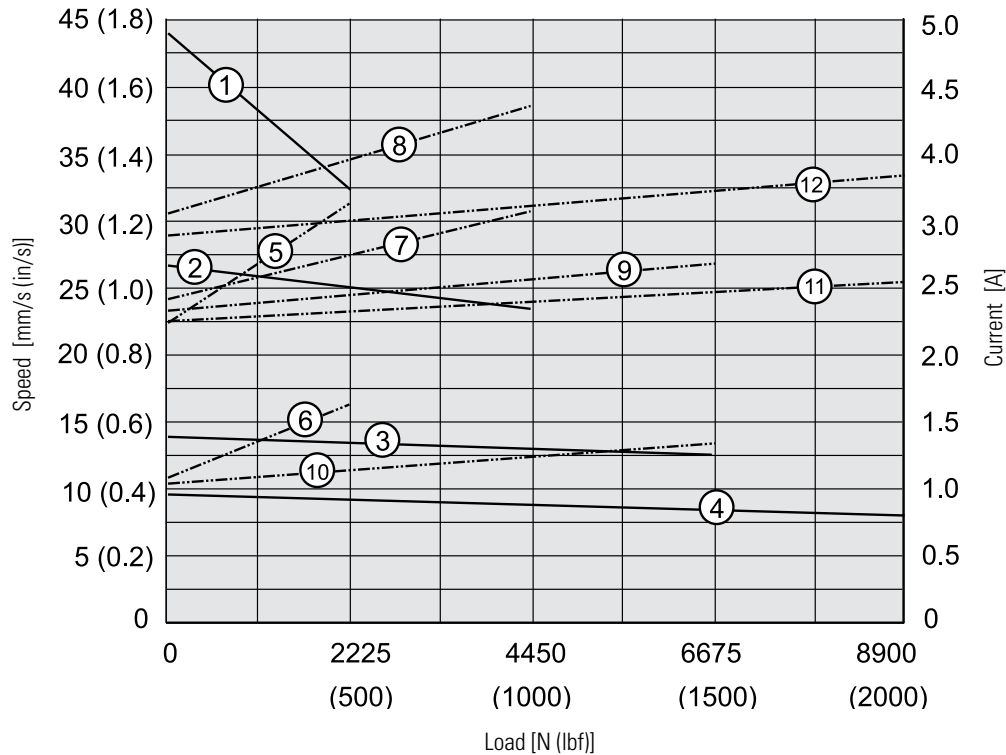
Speed

- 1: K2G10-
- 2: K2G20-
- 3: K2G30-

Current

- 4: K2G10-115V
- 5: K2G10-230V
- 6: K2G20-115V
- 7: K2G20-230V
- 8: K2G30-115V
- 9: K2G30-230V

Ball Screw Models  
Speed and Current vs. Load\*



Speed

- 1: K2XG05-
- 2: K2XG10-
- 3: K2XG20-
- 4: K2XG30-

Current

- 5: K2XG05-115V
- 6: K2XG05-230V
- 7: K2XG10-115V
- 8: K2XG10-230V
- 9: K2XG20-115V
- 10: K2XG20-230V
- 11: K2XG30-115V
- 12: K2XG30-230V

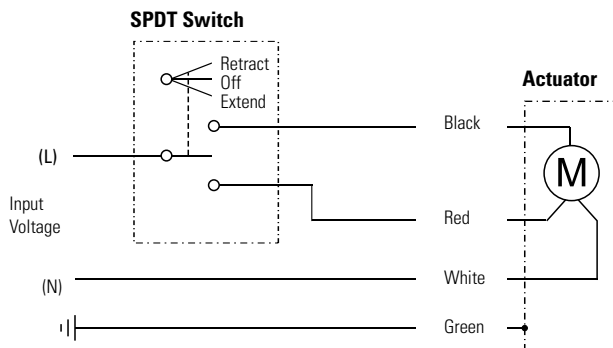


# B-Track AC – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2    | 3    | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5  | 6 |
| K2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | G10- | 115V | BR-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 04 |   |
| <p><b>1. Model, version and screw type</b><br/>           K2 = B-Track, acme<br/>           K2 = B-Track, acme<br/>           K2 = B-Track, acme<br/>           K2X = B-Track, ball<br/>           K2X = B-Track, ball<br/>           K2X = B-Track, ball</p> <p><b>2. Dynamic load capacity (acme screw / ball screw models)</b><br/>           G05- = -not available / 2225 N (500 lbf)<br/>           G10- = 2225 N (500 lbf) / 4450 N (1000 lbf)<br/>           G20- = 3338 N (750 lbf) / 6675 N (1500 lbf)<br/>           G30- = 4895 N (1100 lbf) / 8900 N (2000 lbf)</p> <p><b>3. Supply voltage</b><br/>           115V = 1 × 115 Vac<br/>           230V = 1 × 230 Vac</p> <p><b>4. Nut type</b><br/>           BR- = Acme screw nut (for all K2 models)<br/>           - = Ball screw nut (for all K2X models)</p> |      |      | <p><b>5. Ordering stroke length <sup>(2)</sup></b><br/>           04 = 4 inch<br/>           06 = 6 inch<br/>           08 = 8 inch<br/>           12 = 12 inch<br/>           18 = 18 inch<br/>           24 = 24 inch</p> <p><b>6. Rear adapter orientation</b><br/>           blank = standard<br/>           R30 = 30 ° turned<br/>           R60 = 60 ° turned<br/>           R90 = 90 ° turned<br/>           R120 = 120 ° turned<br/>           R150 = 150 ° turned</p> <p>(1) An acme screw unit with long nut has the same retracted length (distance A) as a unit of the same stroke with a ball screw.<br/>           (2) Other stroke lengths possible on request, please contact customer support.</p> |    |   |

# B-Track AC – Electrical Connections

| Standard                |       |         |
|-------------------------|-------|---------|
| Actuator supply voltage | [Vac] |         |
| K2xxxxx115V             |       | 1 × 115 |
| K2xxxxx230V             |       | 1 × 230 |



Connect white lead to neutral (N). To extend the actuator connect L to the red lead. To retract the actuator connect L to the black lead.



# H-Track – Technical Features



## Standard Features

- Electro-hydraulic actuator combining the best from the hydraulic and electric worlds.
- Integrated electrically powered power pack consisting of a hydraulic pump, valves and a fluid reservoir.
- Robust hydraulic cylinder with a solid extension tube allowing for increased resistance to buckling.
- High power density.
- Very compact and short pin-to-pin versus stroke length relationship.
- Immune to vibrational drifting and hydraulically self-locks.
- High shock load and vibration resistance.
- Fluid reservoir is vented and isolated from the atmosphere with a flexible lid, allowing actuator and pump operation in any orientation without entraining or cavitation.
- Standard strokes up to 16 in (406 mm).
- Designed for harsh outdoor conditions.
- Reliable and maintenance free.

## General Specifications

|                           |                                                                           |
|---------------------------|---------------------------------------------------------------------------|
| Cylinder type             | hydraulic                                                                 |
| Pump type                 | internal electric gear pump                                               |
| Manual override           | yes (can be used one time only)                                           |
| Anti-rotation             | no                                                                        |
| Motor protection          | built-in auto reset thermal switch                                        |
| Static load holding brake | no (self-locking)                                                         |
| Pressure relief valve     | yes (for both directions)                                                 |
| Electrical connections    | 240 W motor<br>560 W motor                                                |
|                           | flying leads + Packard 56 male connector<br>flying leads + ring terminals |
| Compliance                | CE, RoHs, REACH, Prop65                                                   |

## Optional Mechanical Features

|                    |                                      |
|--------------------|--------------------------------------|
| Mechanical options | Alternative front adapter ends       |
|                    | Alternative rear adapter orientation |

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# H-Track – Technical Specifications

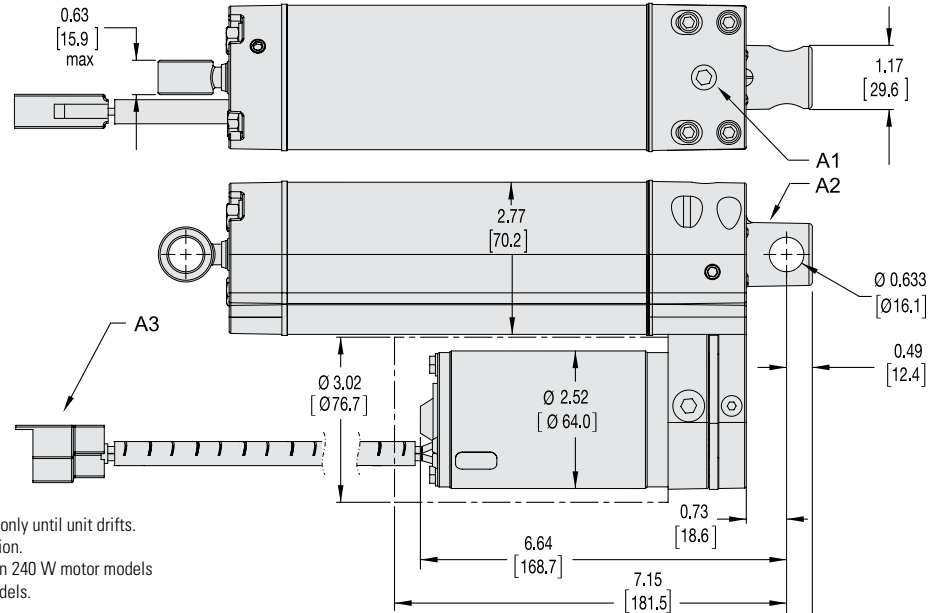
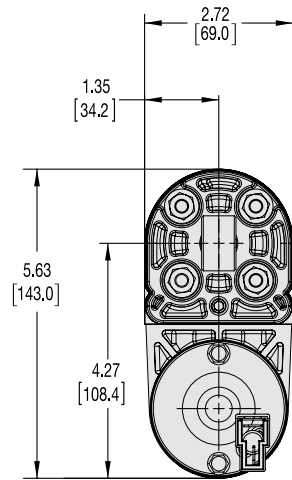
| Mechanical Specifications            |               |                      |
|--------------------------------------|---------------|----------------------|
| Max. static compression load (Fx)    | lbf (N)       | 5000 (22241)         |
| Max. dynamic load (Fx)               | lbf (N)       | see matrix page 125  |
| Speed retract @ no load/max. load    | [in/s (mm/s)] | see matrix page 125  |
| Speed extend @ no load/max. load     | [in/s (mm/s)] | see matrix page 125  |
| Min. ordering stroke (S) length      | [in]          | 2                    |
| Max. ordering stroke (S) length      | [in]          | 16                   |
| Ordering stroke length increments    | [in]          | 2                    |
| Operating temperature limits         | [F (°C)]      | -20 – 150 (-26 – 65) |
| Full load duty cycle @ 25 °C (77 °F) | [%]           | 25                   |
| End play, maximum                    | [in (mm)]     | 0.015 (0.4)          |
| Restraining torque                   | [lbf-in (Nm)] | 0.89 (0.1)           |
| Protection class - static            |               | IP67/IP69K           |
| Protection class - dynamic           |               | IP65                 |
| Salt spray resistance                | [h]           | 200                  |
| Weight                               | [lb (kg)]     | see table page 119   |

| Electrical Specifications          |                          |                     |
|------------------------------------|--------------------------|---------------------|
| Available input voltages           | [Vdc]                    | 12, 24, 48          |
| Input voltage tolerance            | [Vdc]                    |                     |
| 12 Vdc models                      |                          | 9 - 16              |
| 24 Vdc models                      |                          | 18 - 32             |
| 48 Vdc models                      |                          | 36 - 64             |
| Current draw @ no load/max. load   | [A]                      | see matrix page 125 |
| Motor leads cross section          | [AWG (mm <sup>2</sup> )] |                     |
| 240 W motor models                 |                          | 14 (2)              |
| 560 W motor models                 |                          | 12 (3)              |
| Motor ring terminals cross section | [AWG (mm <sup>2</sup> )] |                     |
| 240 W motor models                 |                          | -                   |
| 560 W motor models                 |                          | 10                  |
| Motor lead length, standard        | [in (mm)]                | 10 (254)            |



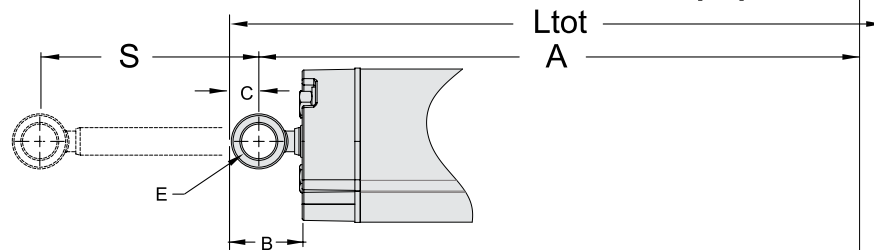
# H-Track – Dimensions

| Dimensions | Projection |
|------------|------------|
| inch [mm]  |            |

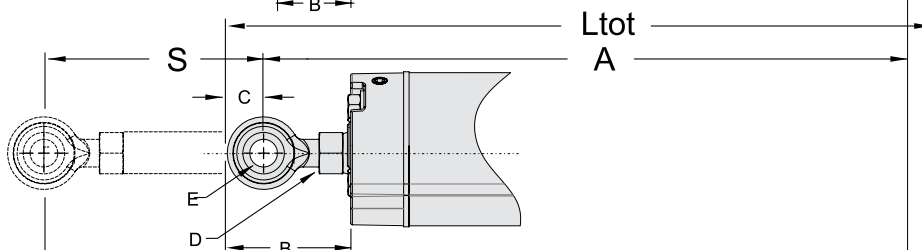


A1: Manual release. Do not remove. Rotate CCW only until unit drifts.  
 A2: Rear adapter hole shown in standard orientation.  
 A3: Flying leads and male Packard 56 connector on 240 W motor models and ¼ inch ring terminals on 560 W motor models.

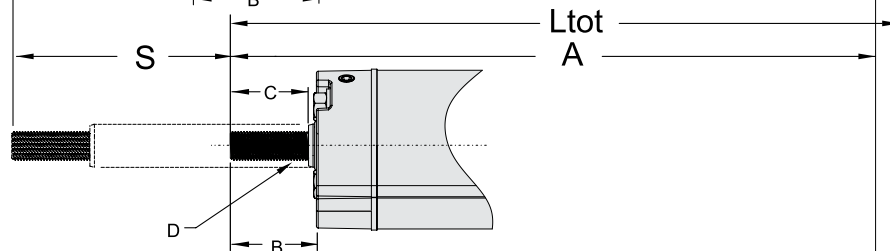
Type A front adapter



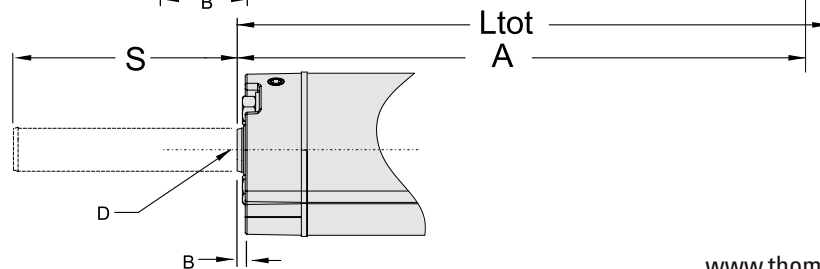
Type B front adapters



Type C front adapters



Type D front adapters



## H-Track – Dimensions

| Dimensions                         |                            |                          |                      |                        |
|------------------------------------|----------------------------|--------------------------|----------------------|------------------------|
| Front Adapter                      | Type A                     | Type B                   | Type C               | Type D                 |
| Standard Ordering Strokes (S) [in] | 2, 4, 6, 8, 10, 12, 14, 16 |                          |                      |                        |
| Total Length (Ltot) [in]           | $L_{tot} = A + C + 0.49$   | $L_{tot} = A + C + 0.49$ | $L_{tot} = A + 0.49$ | $L_{tot} = A + 0.49$   |
| Retracted Length (A) [in]          |                            |                          |                      |                        |
| Bore Size H1                       | $A = S + 4.8$              | $A = S + 5.5$            | $A = S + 5.1$        | $A = S + 4.2$          |
| Bore Size H2                       | $A = S + 4.8$              | $A = S + 5.4$            | $A = S + 5.2$        | $A = S + 4.2$          |
| Bore Size H3                       | $A = S + 4.8$              | $A = S + 5.7$            | $A = S + 5.5$        | $A = S + 4.2$          |
| Dimension B [in]                   |                            |                          |                      |                        |
| Bore Size H1                       | 1.31                       | 1.58                     | 1.13                 | 0.14                   |
| Bore Size H2                       | 1.31                       | 1.66                     | 1.31                 | 0.14                   |
| Bore Size H3                       | 1.31                       | 1.89                     | 1.50                 | 0.14                   |
| Dimension C [in]                   |                            |                          |                      |                        |
| Bore Size H1                       | 0.52                       | 0.50                     | 0.99                 | -                      |
| Bore Size H2                       | 0.52                       | 0.56                     | 1.17                 | -                      |
| Bore Size H3                       | 0.52                       | 0.66                     | 1.36                 | -                      |
| Dimension D [in]                   |                            |                          |                      |                        |
| Bore Size H1                       | -                          | 3/8-24 THREADS           | 3/8-24 THREADS       | 3/8-24 THREADS x 0.88  |
| Bore Size H2                       | -                          | 7/16-20 THREADS          | 7/16-20 THREADS      | 7/16-20 THREADS x 0.88 |
| Bore Size H3                       | -                          | 1/2-20 THREADS           | 1/2-20 THREADS       | 1/2-20 THREADS x 0.88  |
| Dimension E [in]                   |                            |                          |                      |                        |
| Bore Size H1                       | Ø 0.631                    | Ø 0.38THRU               | -                    | -                      |
| Bore Size H2                       | Ø 0.631                    | Ø 0.44 THRU              | -                    | -                      |
| Bore Size H3                       | Ø 0.631                    | Ø 0.50 THRU              | -                    | -                      |

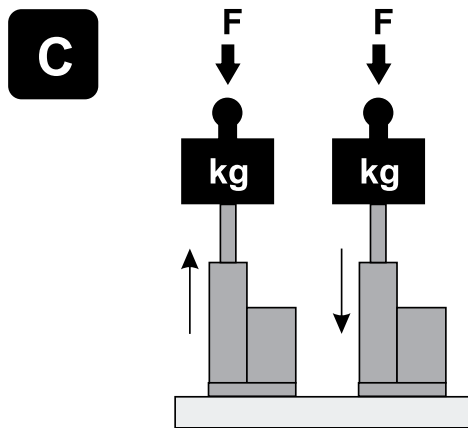
## H-Track – Weight

| Actuator Weight [lb (kg)] |                          |           |            |            |            |            |            |            |
|---------------------------|--------------------------|-----------|------------|------------|------------|------------|------------|------------|
| Actuator Type             | Ordering Stroke (S) [in] |           |            |            |            |            |            |            |
|                           | 2                        | 4         | 6          | 8          | 10         | 12         | 14         | 16         |
| H1x-xx-1                  | 6.4 (2.9)                | 7.2 (3.3) | 8.0 (3.6)  | 8.8 (4.0)  | 9.6 (4.4)  | 10.4 (4.7) | 11.2 (5.1) | 12.0 (5.4) |
| H2x-xx-1                  | 6.9 (3.1)                | 7.8 (3.5) | 8.7 (3.9)  | 9.6 (4.4)  | 10.5 (4.8) | 11.4 (5.2) | 12.3 (5.6) | 13.2 (6.0) |
| H3x-xx-1                  | 7.1 (3.2)                | 8.2 (3.7) | 9.3 (4.2)  | 10.4 (4.7) | 11.5 (5.2) | 12.6 (5.7) | 13.7 (6.2) | 14.8 (6.7) |
| H1x-xx-2                  | 8.0 (3.6)                | 8.8 (4.0) | 9.6 (4.4)  | 10.4 (4.7) | 11.2 (5.1) | 12.0 (5.4) | 12.8 (5.8) | 13.6 (6.2) |
| H2x-xx-2                  | 8.5 (3.9)                | 9.4 (4.3) | 10.3 (4.7) | 11.2 (5.1) | 12.1 (5.5) | 13.0 (5.9) | 13.9 (6.3) | 14.8 (6.7) |
| H3x-xx-2                  | 8.7 (3.9)                | 9.8 (4.4) | 10.9 (4.9) | 12.0 (5.4) | 13.1 (5.9) | 14.2 (6.4) | 15.3 (6.9) | 16.4 (7.4) |



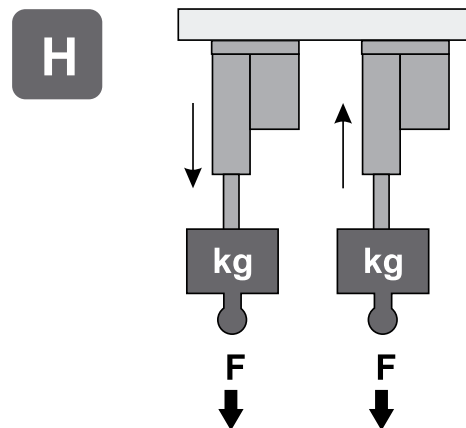
## Determining Load Configuration

There are three main types of load and gravity configurations, which will determine the performance of the actuator. Please refer to the configurations below and choose the one that best corresponds to your application. Contact Thomson customer support if you are unable to determine a valid configuration for your application.



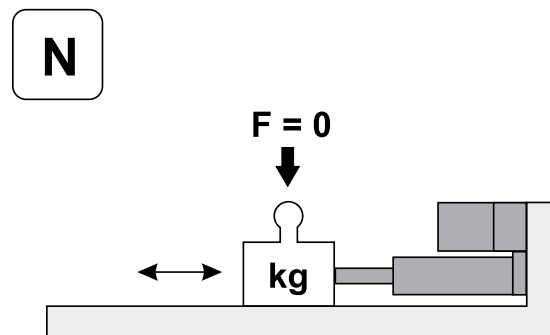
### Configuration C

The gravity resists the load being moved when the actuator extends and helps it when retracting.



### Configuration H

The gravity helps the load being moved when the actuator extends and resists it when retracting.



### Configuration N

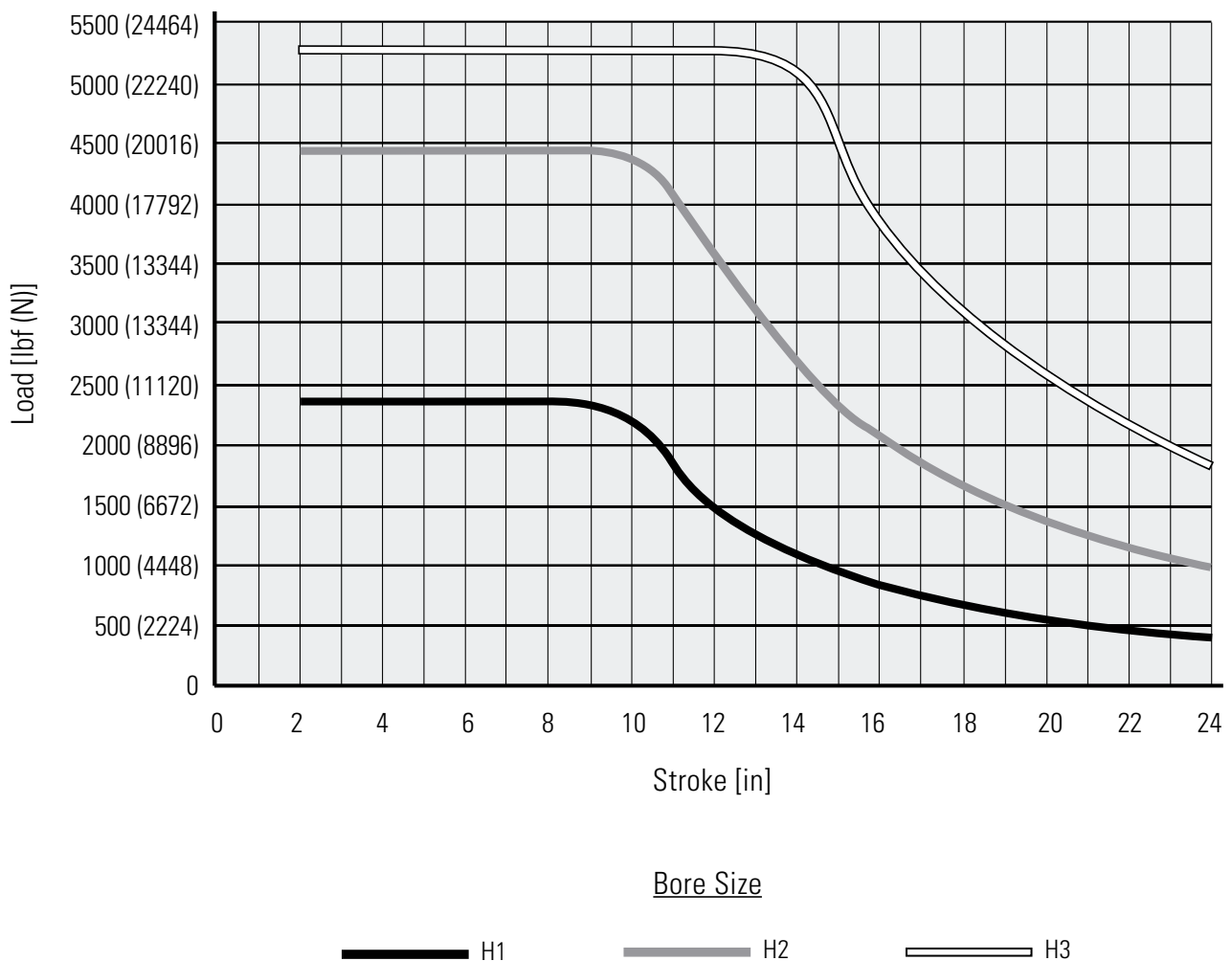
The gravity does not affect the load in any direction.



## Sizing of Bore and Extension Tube

The maximum load in each direction and the required stroke length determine the minimum bore and extension tube size needed for the actuator. Refer to the diagram below to determine which bore size your application requires. If no solution exists, the stroke and/or load must be reduced. Contact Thomson customer support if you are unable to determine a valid combination for your application.

Stroke vs. Load and Bore Size



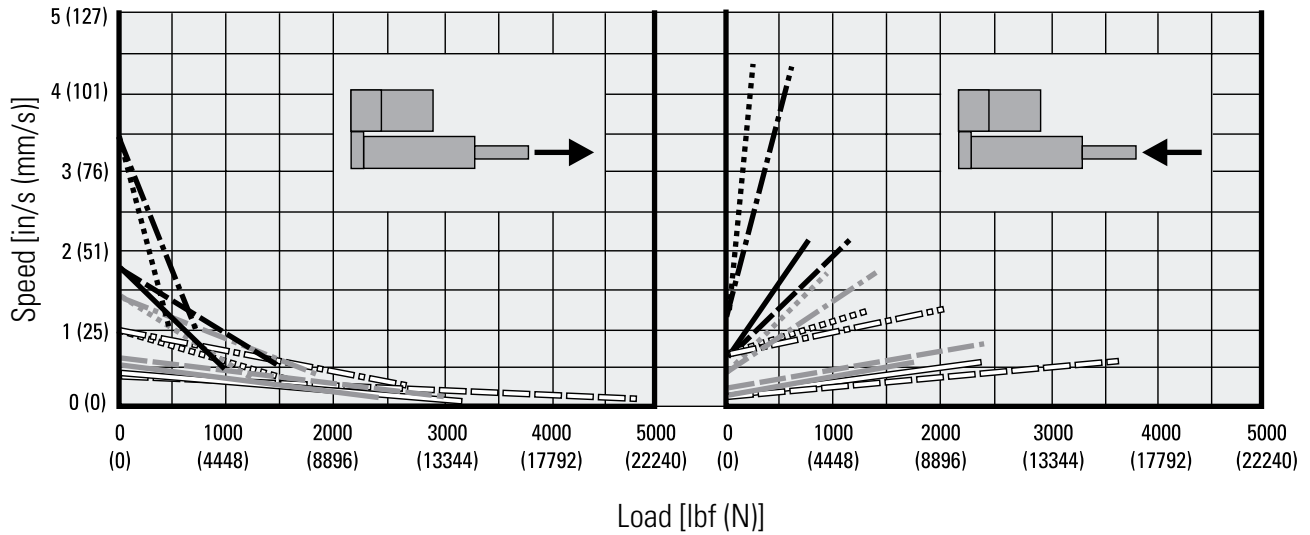


# Sizing of Motor, Pump and Power Supply



Load vs. Speed @ Extension

Load vs. Speed @ Retraction



Bore Size H1

Bore Size H2

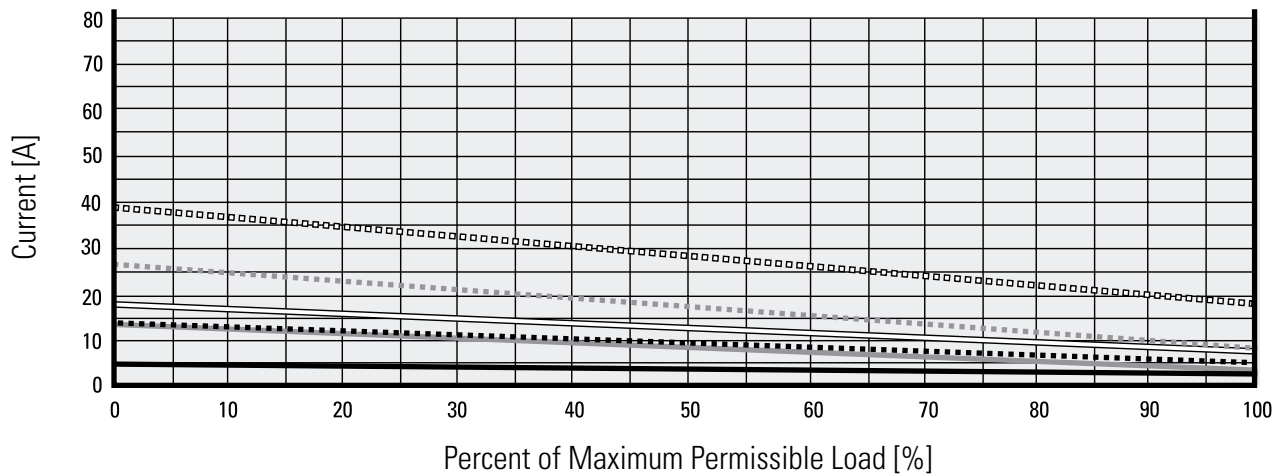
Bore Size H3

- H1C-xx-1B11
- ..... H1C-xx-1B41
- - - H1C-xx-2B11
- · - · - H1C-xx-2B41

- H2C-xx-1A12
- ..... H2C-xx-1B32
- - - H2C-xx-2A22
- · - · - H2C-xx-2B32

- H3C-xx-1A13
- ..... H3C-xx-1B23
- - - H3C-xx-2A13
- · - · - H3C-xx-2B23

Load vs. Current



12 Vdc Actuators

24 Vdc Actuators

48 Vdc Actuators

- HxC-12-1xxx
- ..... HxC-12-2xxx

- HxC-24-1xxx
- ..... HxC-24-2xxx

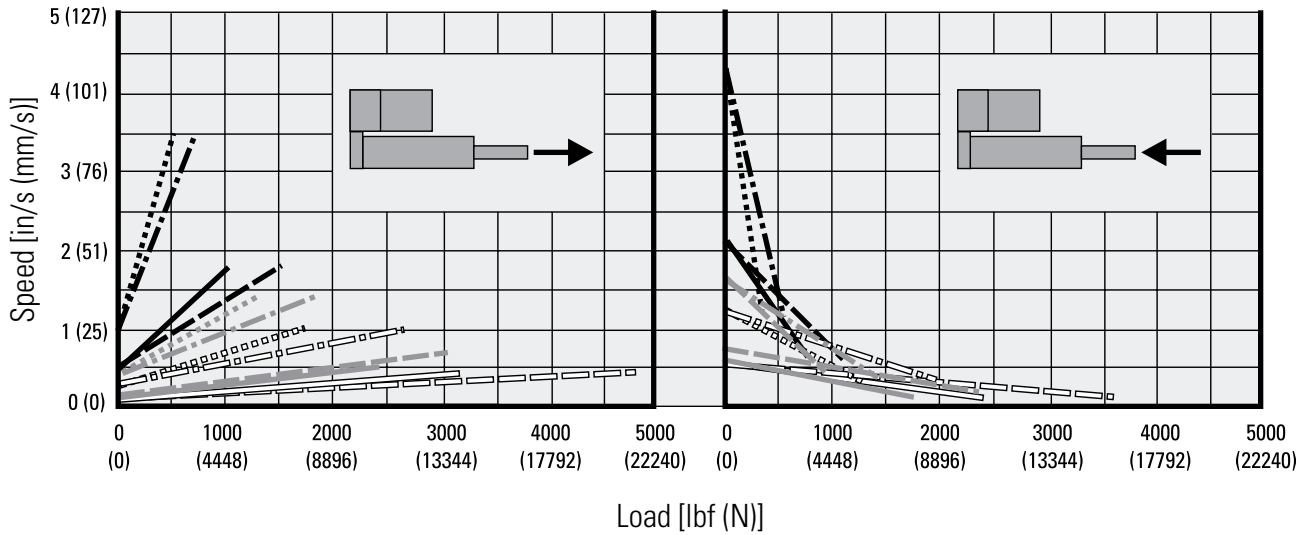
- HxC-48-1xxx
- ..... HxC-48-2xxx

# Sizing of Motor, Pump and Power Supply



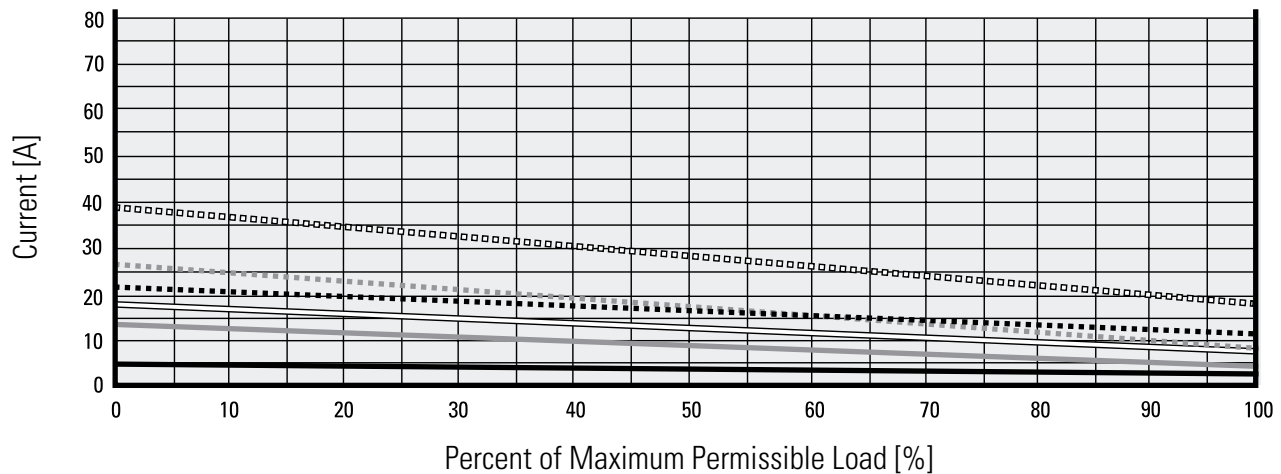
Load vs. Speed @ Extension

Load vs. Speed @ Retraction



- | <u>Bore Size H1</u> |             | <u>Bore Size H2</u> |             | <u>Bore Size H3</u> |             |
|---------------------|-------------|---------------------|-------------|---------------------|-------------|
| —————               | H1H-xx-1B11 | —————               | H2H-xx-1A12 | —————               | H3H-xx-1A13 |
| .....               | H1H-xx-1B41 | .....               | H2H-xx-1B32 | .....               | H3H-xx-1B23 |
| -----               | H1H-xx-2B11 | -----               | H2H-xx-2A22 | -----               | H3H-xx-2A13 |
| - · - · -           | H1H-xx-2B41 | - · - · -           | H2H-xx-2B32 | - · - · -           | H3H-xx-2B23 |

Load vs. Current



- | <u>12 Vdc Actuators</u> |             | <u>24 Vdc Actuators</u> |             | <u>48 Vdc Actuators</u> |             |
|-------------------------|-------------|-------------------------|-------------|-------------------------|-------------|
| —————                   | HxH-12-1xxx | —————                   | HxH-24-1xxx | —————                   | HxH-48-1xxx |
| .....                   | HxH-12-2xxx | .....                   | HxH-24-2xxx | .....                   | HxH-48-2xxx |

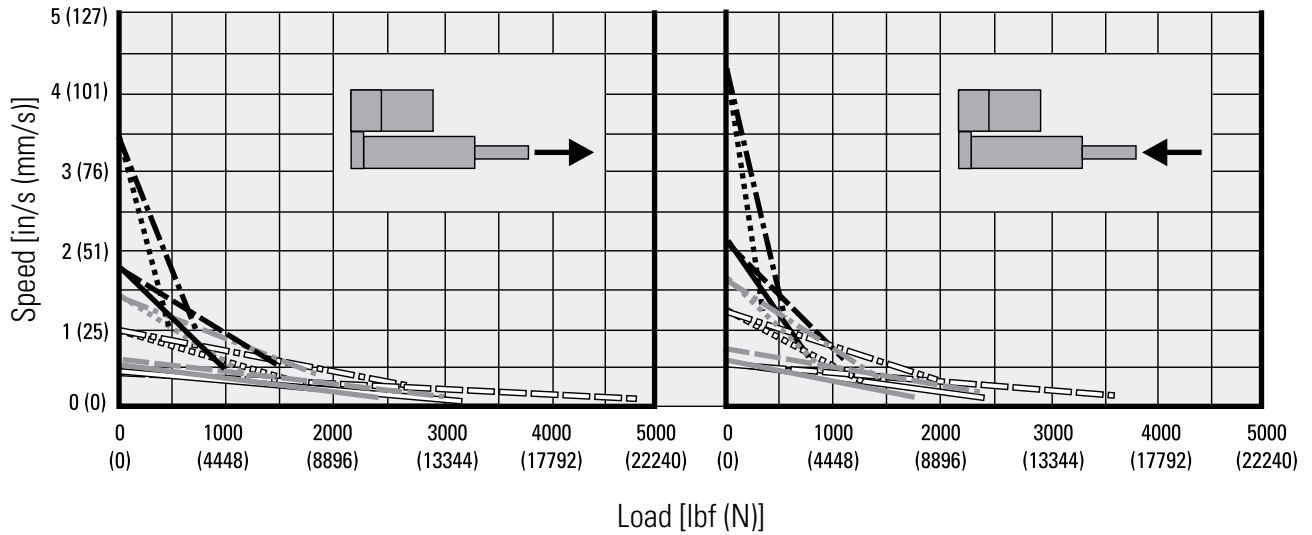


# Sizing of Motor, Pump and Power Supply



Load vs. Speed @ Extension

Load vs. Speed @ Retraction



Bore Size H1

Bore Size H2

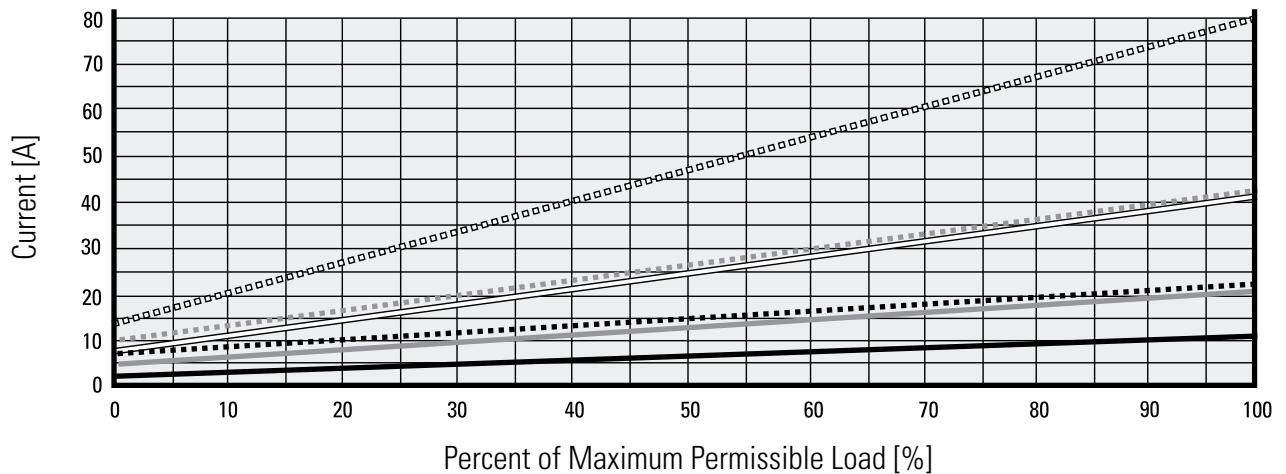
Bore Size H3

- H1N-xx-1B11
- ..... H1N-xx-1B41
- - - H1N-xx-2B11
- · - · H1N-xx-2B41

- H2N-xx-1A12
- ..... H2N-xx-1B32
- - - H2N-xx-2A22
- · - · H2N-xx-2B32

- H3N-xx-1A13
- ..... H3N-xx-1B23
- - - H3N-xx-2A13
- · - · H3N-xx-2B23

Load vs. Current



12 Vdc Actuators

24 Vdc Actuators

48 Vdc Actuators

- HxN-12-1xxx
- ..... HxN-12-2xxx

- HxN-24-1xxx
- ..... HxN-24-2xxx

- HxN-48-1xxx
- ..... HxN-48-2xxx

# H-Track – Performance Diagrams

Performance Matrix\*

| Load Configuration<br>(see page 18) | Model       | Max. Dynamic Load [lbf (N)] |              | Current Draw [A] |        |        |           |        |        | Extend Speed [in/s (mm/s)] |             | Retract Speed [in/s (mm/s)] |              |
|-------------------------------------|-------------|-----------------------------|--------------|------------------|--------|--------|-----------|--------|--------|----------------------------|-------------|-----------------------------|--------------|
|                                     |             | Extending                   | Retracting   | @ Max. Load      |        |        | @ No Load |        |        | @ Max. Load                | @ No Load   | @ Max. Load                 | @ No Load    |
|                                     |             |                             |              | 12 Vdc           | 24 Vdc | 48 Vdc | 12 Vdc    | 24 Vdc | 48 Vdc |                            |             |                             |              |
| <b>C</b>                            | H1C-xx-1B11 | 1000 (4448)                 | 750 (3336)   | 8                | 4      | 3      | 18        | 13     | 5      | 0.50 (12.7)                | 1.75 (44.5) | 2.19 (55.6)                 | 0.63 (16.0)  |
|                                     | H1C-xx-1B41 | 500 (2224)                  | 375 (1668)   | 8                | 4      | 3      | 18        | 13     | 5      | 1.00 (25.4)                | 3.50 (88.9) | 4.38 (111.3)                | 1.25 (31.8)  |
|                                     | H1C-xx-2B11 | 1500 (6672)                 | 1125 (5004)  | 18               | 9      | 5      | 38        | 26     | 13     | 0.50 (12.7)                | 1.75 (44.5) | 2.19 (55.6)                 | 0.63 (16.0)  |
|                                     | H1C-xx-2B41 | 750 (3336)                  | 563 (2504)   | 18               | 9      | 5      | 38        | 26     | 13     | 1.00 (25.4)                | 3.50 (88.9) | 4.38 (111.3)                | 1.25 (31.8)  |
|                                     | H2C-xx-1A12 | 2400 (10676)                | 1750 (7784)  | 8                | 4      | 3      | 18        | 13     | 5      | 0.15 (3.8)                 | 0.50 (12.7) | 0.60 (15.2)                 | 0.18 (4.6)   |
|                                     | H2C-xx-1B32 | 1250 (5560)                 | 992 (4413)   | 8                | 4      | 3      | 18        | 13     | 5      | 0.40 (10.2)                | 1.40 (35.6) | 1.69 (42.9)                 | 0.48 (12.2)  |
|                                     | H2C-xx-2A22 | 3000 (13345)                | 2380 (10587) | 18               | 9      | 5      | 38        | 26     | 13     | 0.19 (4.8)                 | 0.65 (16.5) | 0.78 (19.8)                 | 0.23 (5.8)   |
|                                     | H2C-xx-2B32 | 1875 (8340)                 | 1488 (6619)  | 18               | 9      | 5      | 38        | 26     | 13     | 0.40 (10.2)                | 1.40 (35.6) | 1.69 (42.9)                 | 0.48 (12.2)  |
|                                     | H3C-xx-1A13 | 3200 (14234)                | 2400 (10676) | 8                | 4      | 3      | 18        | 13     | 5      | 0.13 (3.3)                 | 0.45 (11.4) | 0.56 (14.2)                 | 0.16 (4.1)   |
|                                     | H3C-xx-1B23 | 1750 (7784)                 | 1313 (5841)  | 8                | 4      | 3      | 18        | 13     | 5      | 0.29 (7.4)                 | 1.00 (25.4) | 1.25 (31.8)                 | 0.36 (9.1)   |
| <b>H</b>                            | H3C-xx-2A13 | 4800 (21351)                | 3600 (16014) | 18               | 9      | 5      | 38        | 26     | 13     | 0.13 (3.3)                 | 0.45 (11.4) | 0.56 (14.2)                 | 0.16 (4.1)   |
|                                     | H3C-xx-2B23 | 2625 (11677)                | 1969 (8759)  | 18               | 9      | 5      | 38        | 26     | 13     | 0.29 (7.4)                 | 1.00 (25.4) | 1.25 (31.8)                 | 0.36 (9.1)   |
|                                     | H1H-xx-1B11 | 1000 (4448)                 | 750 (3336)   | 8                | 4      | 3      | 18        | 13     | 5      | 1.75 (44.4)                | 0.50 (12.7) | 0.63 (16.0)                 | 2.19 (55.6)  |
|                                     | H1H-xx-1B41 | 500 (2224)                  | 375 (1668)   | 8                | 4      | 3      | 18        | 13     | 5      | 3.50 (88.9)                | 1.00 (25.4) | 1.25 (31.8)                 | 4.38 (111.3) |
|                                     | H1H-xx-2B11 | 1500 (6672)                 | 1125 (5004)  | 18               | 9      | 13     | 38        | 26     | 22     | 1.75 (44.4)                | 0.50 (12.7) | 0.63 (16.0)                 | 2.19 (55.6)  |
|                                     | H1H-xx-2B41 | 750 (3336)                  | 563 (2504)   | 18               | 9      | 13     | 38        | 26     | 22     | 3.50 (88.9)                | 1.00 (25.4) | 1.25 (31.8)                 | 4.38 (111.3) |
|                                     | H2H-xx-1A12 | 2400 (10676)                | 1750 (7784)  | 8                | 4      | 3      | 18        | 13     | 5      | 0.50 (12.7)                | 0.15 (3.8)  | 0.18 (4.6)                  | 0.60 (15.2)  |
|                                     | H2H-xx-1B32 | 1250 (5560)                 | 992 (4413)   | 8                | 4      | 3      | 18        | 13     | 5      | 1.40 (35.6)                | 0.40 (10.2) | 0.48 (12.2)                 | 1.69 (42.9)  |
|                                     | H2H-xx-2A22 | 3000 (13345)                | 2380 (10587) | 18               | 9      | 13     | 38        | 26     | 22     | 0.65 (16.5)                | 0.19 (4.8)  | 0.23 (5.8)                  | 0.78 (19.8)  |
|                                     | H2H-xx-2B32 | 1875 (8340)                 | 1488 (6619)  | 18               | 9      | 13     | 38        | 26     | 22     | 1.40 (35.6)                | 0.40 (10.2) | 0.48 (12.2)                 | 1.69 (42.9)  |
| <b>N</b>                            | H3H-xx-1A13 | 3200 (14234)                | 2400 (10676) | 8                | 4      | 3      | 18        | 13     | 5      | 0.45 (11.4)                | 0.13 (3.3)  | 0.16 (4.1)                  | 0.56 (14.2)  |
|                                     | H3H-xx-1B23 | 1750 (7784)                 | 1313 (5841)  | 8                | 4      | 3      | 18        | 13     | 5      | 1.00 (25.4)                | 0.29 (7.4)  | 0.36 (9.1)                  | 1.25 (31.8)  |
|                                     | H3H-xx-2A13 | 4800 (21351)                | 3600 (16014) | 18               | 9      | 13     | 38        | 26     | 22     | 0.45 (11.4)                | 0.13 (3.3)  | 0.16 (4.1)                  | 0.56 (14.2)  |
|                                     | H3H-xx-2B23 | 2625 (11677)                | 1969 (8759)  | 18               | 9      | 13     | 38        | 26     | 22     | 1.00 (25.4)                | 0.29 (7.4)  | 0.36 (9.1)                  | 1.25 (31.8)  |
|                                     | H1N-xx-1B11 | 1000 (4448)                 | 750 (3336)   | 42               | 21     | 10.5   | 8         | 5      | 2.5    | 0.50 (12.7)                | 1.75 (44.4) | 0.63 (16.0)                 | 2.19 (55.6)  |
|                                     | H1N-xx-1B41 | 500 (2224)                  | 375 (1668)   | 42               | 21     | 10.5   | 8         | 5      | 2.5    | 1.00 (25.4)                | 3.50 (88.9) | 1.25 (31.8)                 | 4.38 (111.3) |
|                                     | H1N-xx-2B11 | 1500 (6672)                 | 1125 (5004)  | 80               | 43     | 22     | 14        | 10     | 7      | 0.50 (12.7)                | 1.75 (44.4) | 0.63 (16.0)                 | 2.19 (55.6)  |
|                                     | H1N-xx-2B41 | 750 (3336)                  | 563 (2504)   | 80               | 43     | 22     | 14        | 10     | 7      | 1.00 (25.4)                | 3.50 (88.9) | 1.25 (31.8)                 | 4.38 (111.3) |
|                                     | H2N-xx-1A12 | 2400 (10676)                | 1750 (7784)  | 42               | 21     | 10.5   | 8         | 5      | 2.5    | 0.15 (3.8)                 | 0.50 (12.7) | 0.18 (4.6)                  | 0.60 (15.2)  |
|                                     | H2N-xx-1B32 | 1250 (5560)                 | 992 (4413)   | 42               | 21     | 10.5   | 8         | 5      | 2.5    | 0.40 (10.2)                | 1.40 (35.6) | 0.48 (12.2)                 | 1.69 (42.9)  |
| <b>N</b>                            | H2N-xx-2A22 | 3000 (13345)                | 2380 (10587) | 80               | 43     | 22     | 14        | 10     | 7      | 0.19 (4.8)                 | 0.65 (16.5) | 0.23 (5.8)                  | 0.78 (19.8)  |
|                                     | H2N-xx-2B32 | 1875 (8340)                 | 1488 (6619)  | 80               | 43     | 22     | 14        | 10     | 7      | 0.40 (10.2)                | 1.40 (35.6) | 0.48 (12.2)                 | 1.69 (42.9)  |
|                                     | H3N-xx-1A13 | 3200 (14234)                | 2400 (10676) | 42               | 21     | 10.5   | 8         | 5      | 2.5    | 0.13 (3.3)                 | 0.45 (11.4) | 0.16 (4.1)                  | 0.56 (14.2)  |
|                                     | H3N-xx-1B23 | 1750 (7784)                 | 1313 (5841)  | 42               | 21     | 10.5   | 8         | 5      | 2.5    | 0.29 (7.4)                 | 1.00 (25.4) | 0.36 (9.1)                  | 1.25 (31.8)  |
|                                     | H3N-xx-2A13 | 4800 (21351)                | 3600 (16014) | 80               | 43     | 22     | 14        | 10     | 7      | 0.13 (3.3)                 | 0.45 (11.4) | 0.16 (4.1)                  | 0.56 (14.2)  |
|                                     | H3N-xx-2B23 | 2625 (11677)                | 1969 (8759)  | 80               | 43     | 22     | 14        | 10     | 7      | 0.29 (7.4)                 | 1.00 (25.4) | 0.36 (9.1)                  | 1.25 (31.8)  |

\* The table above is valid for the temperature span of 40 – 120°F (4 – 50°C). H-Track can operate in the larger range of -20 – 150°F (-26 – 65°C), but at temperatures below 40°F (4°C), force and current begin to increase, while speed decreases. At temperatures above 120°F (50°C), speed will decrease slightly. The exact amount of performance change is difficult to calculate. Also, when it comes to the lower temperature span, the performance will move towards what is stated above as the temperature rises in the actuator due to the heat generated by its work. Please consult Thomson customer service for more information.



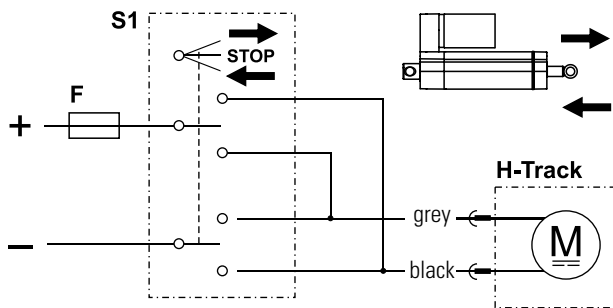
# H-Track – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |     |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |    |    |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|---|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2  | 3   | 4 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 6  | 7  | 8  | 9 |
| H1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | C- | 12- | 1 | A2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2- | A- | 06 |   |
| <p><b>1. Bore size <sup>(1)</sup></b><br/>           H1 = 1.000 in<br/>           H2 = 1.375 in<br/>           H3 = 1.500 in</p> <p><b>2. Load configuration</b><br/>           C- = gravity push on the load/extension tube<br/>           H- = gravity pull on the load/extension tube<br/>           N- = gravity does not affect the load/extension tube</p> <p><b>3. Input voltage</b><br/>           12- = 12 Vdc<br/>           24- = 24 Vdc<br/>           48- = 48 Vdc</p> <p><b>4. Motor power <sup>(1)</sup></b><br/>           1 = 240 W<br/>           2 = 560 W</p> <p><b>5. Pump size <sup>(1)</sup></b><br/>           A1 = gear tooth 16, thickness 0.125 in<br/>           A2 = gear tooth 16, thickness 0.156 in<br/>           A3 = gear tooth 16, thickness 0.188 in<br/>           A4 = gear tooth 16, thickness 0.250 in<br/>           B1 = gear tooth 12, thickness 0.125 in<br/>           B2 = gear tooth 12, thickness 0.156 in<br/>           B3 = gear tooth 12, thickness 0.188 in<br/>           B4 = gear tooth 12, thickness 0.250 in</p> |    |     |   | <p><b>6. Extension tube diameter <sup>(2)</sup></b><br/>           1- = 0.500 in (always with bore size H1)<br/>           2- = 0.625 in (always with bore size H2)<br/>           3- = 0.750 in (always with bore size H3)</p> <p><b>7. Extension tube front adapter</b><br/>           A = Standard<br/>           B = Spherical <sup>(1)</sup><br/>           C = Male Thread <sup>(1)</sup><br/>           D = Female Thread <sup>(1)</sup></p> <p><b>8. Stroke length <sup>(3)</sup></b><br/>           02 = 2 in (50 mm) <sup>(1)</sup><br/>           04 = 4 in (100 mm)<br/>           06 = 6 in (150 mm)<br/>           08 = 8 in (200 mm)<br/>           10 = 10 in (254 mm) <sup>(1)</sup><br/>           12 = 12 in (300 mm)<br/>           14 = 14 in (356 mm)<br/>           16 = 16 in (406 mm) <sup>(1)</sup></p> <p><b>9. Rear adapter orientation</b><br/>           blank = standard<br/>           R90 = 90° position</p> <p><small>(1) See the Performance Matrix for the possible combinations of bore size, motor power and pump size and their performance.<br/>           (2) Other rod/bore combinations available. Contact factory for options.<br/>           (3) Other stroke lengths available upon request. Please contact customer support.</small></p> |    |    |    |   |

# H-Track – Electrical Connections

## Electrical Data

|                                  |       |                     |
|----------------------------------|-------|---------------------|
| Actuator supply voltage          | [Vdc] |                     |
| Hxx-12                           |       | 9 - 16              |
| Hxx-24                           |       | 18 - 32             |
| Hxx-48                           |       | 36 - 64             |
| Current draw @ no load/max. load | [A]   | see matrix page 125 |



- F Fuse
- S1 Double pole double throw switch

To extend the actuator, apply +Vdc to black and -Vdc to grey. To retract, apply -Vdc to black and +Vdc to grey. Avoid running the actuator in to the ends.



## Electrak® 1 S – Technical Features



### Standard Features

- 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

|                           |                                                                 |
|---------------------------|-----------------------------------------------------------------|
| Screw type                | acme                                                            |
| Nut type                  | acme                                                            |
| Manual override           | no                                                              |
| Anti-rotation             | no                                                              |
| Static load holding brake | no (self-locking)                                               |
| Safety features           | end of stroke limit switches<br>motor auto reset thermal switch |
| Electrical connections    | flying leads with connector                                     |
| Compliances               | CE                                                              |

### Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)



# Electrak<sup>®</sup> 1 S – Technical Specifications

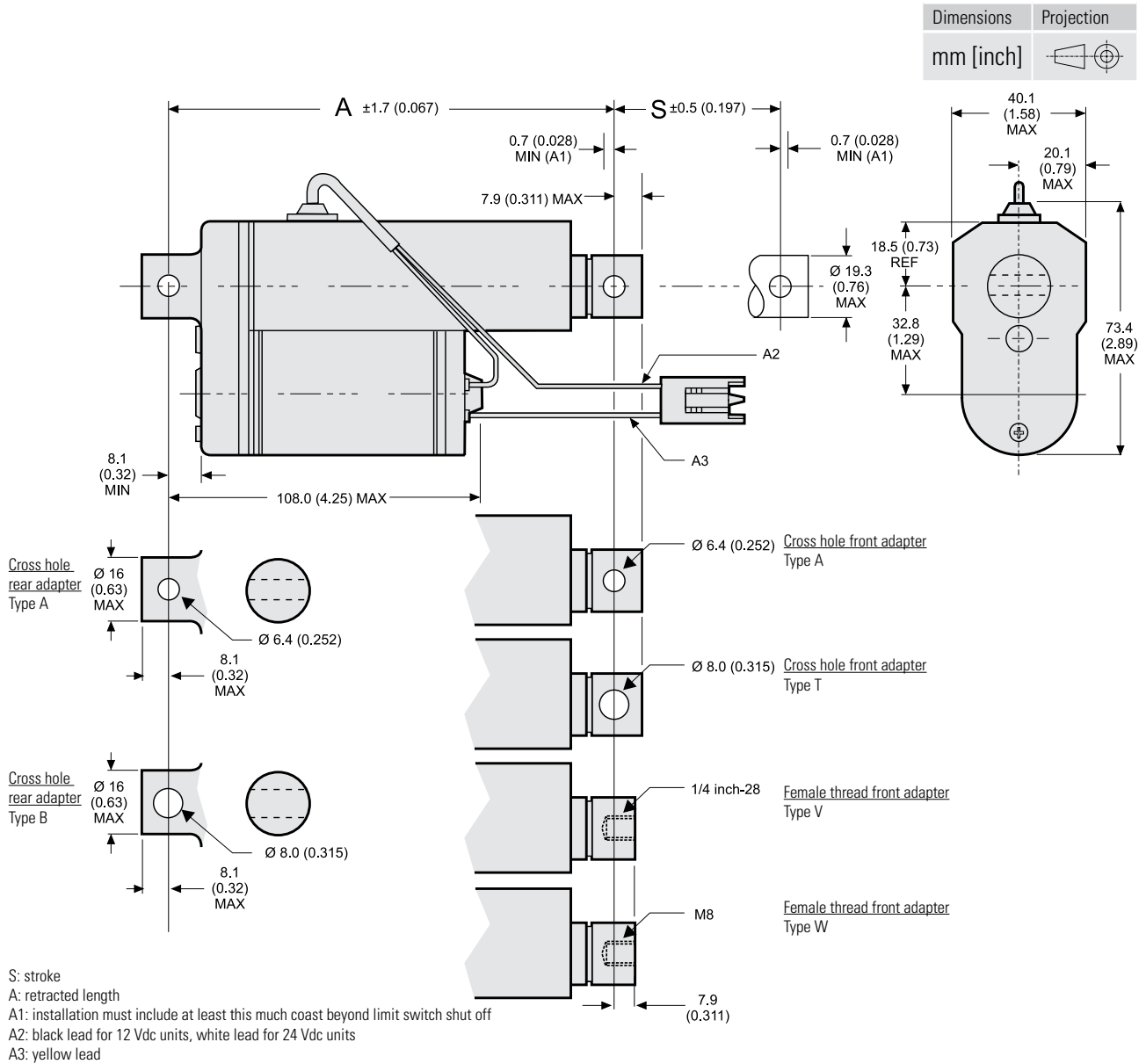
| Mechanical Specifications            |               |                      |
|--------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>      | [N (lbf)]     | 1300 (300)           |
| Max. dynamic load (Fx)               | [N (lbf)]     |                      |
| Sxx -09A04                           |               | 110 (25)             |
| Sxx -09A08                           |               | 225 (50)             |
| Sxx -17A08                           |               | 340 (75)             |
| Sxx -17A16                           |               | 340 (75)             |
| Speed @ no load/max. load            | [mm/s (in/s)] |                      |
| Sxx -09A04                           |               | 78/64 (3.1/2.5)      |
| Sxx -09A08                           |               | 39/29 1.5/1.1)       |
| Sxx -17A08                           |               | 21/16 (0.8/0.6)      |
| Sxx -17A16                           |               | 10/8 (0.4/0.3)       |
| Min. ordering stroke (S) length      | [in]          | 1                    |
| Max. ordering stroke (S) length      | [in]          | 8                    |
| Ordering stroke length increments    | [in]          | 1                    |
| Operating temperature limits         | [°C (F)]      | -25 – 65 (-13 – 150) |
| Full load duty cycle @ 25 °C (77 °F) | [%]           | 25                   |
| End play, maximum                    | [mm (in)]     | 0.9 (0.04)           |
| Restraining torque                   | [Nm (lbf-in)] | 2.3 (1.7)            |
| Protection class - static            |               | IP66                 |
| Salt spray resistance                | [h]           | 96                   |

(1) Max. static load at fully retracted stroke

| Electrical Specifications               |                         |         |
|-----------------------------------------|-------------------------|---------|
| Available input voltages <sup>(1)</sup> | [Vdc]                   | 12, 24  |
| Input voltage tolerance                 | [%]                     | ± 10    |
| Current draw @ no load/max. load        | [A]                     |         |
| S12 -09A04                              |                         | 0.8/3.8 |
| S12 -09A08                              |                         | 0.8/4.4 |
| S12 -17A08                              |                         | 0.8/4.1 |
| S12 -17A16                              |                         | 0.8/3.8 |
| S24 -09A04                              |                         | 0.4/1.6 |
| S24 -09A08                              |                         | 0.4/2.0 |
| S24 -17A08                              |                         | 0.4/1.9 |
| S24 -17A16                              |                         | 0.4/1.6 |
| Motor leads length                      | [mm (in)]               | 100 (4) |
| Motor leads cross section               | [mm <sup>2</sup> (AWG)] | 1 (18)  |



# Electrak<sup>®</sup> 1 S – Dimensions

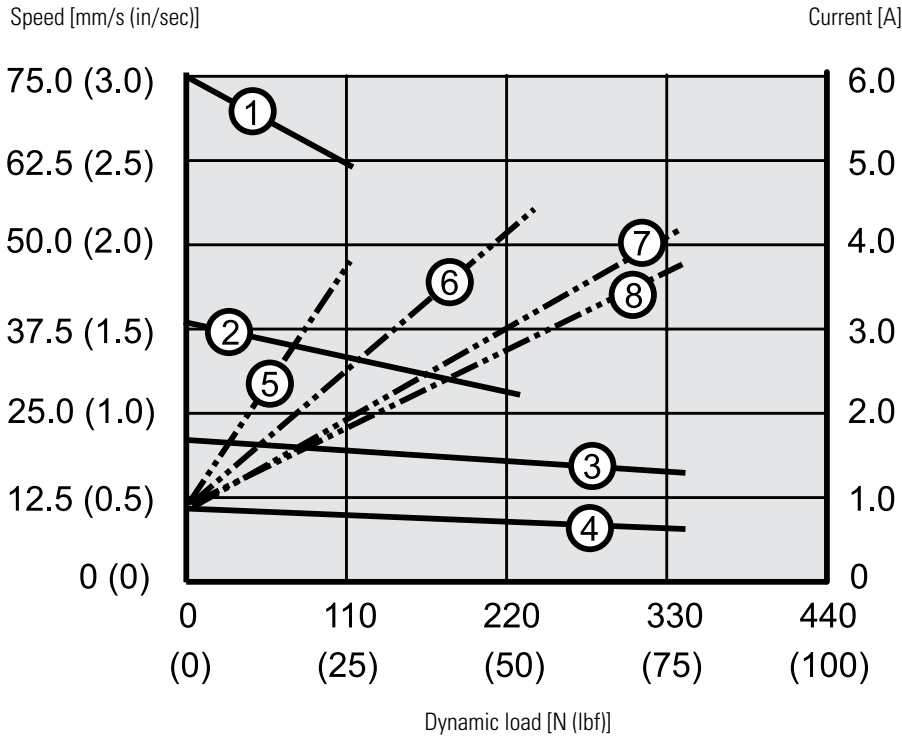


| Stroke, Retracted Length and Weight Relationships |       |      |      |      |      |      |      |      |
|---------------------------------------------------|-------|------|------|------|------|------|------|------|
| Ordering stroke (S)                               | [in]  | 1    | 2    | 3    | 4    | 5    | 6    | 8    |
| Electrical stroke*                                | [mm]  | 21   | 46   | 72   | 97   | 122  | 148  | 199  |
|                                                   | [in]  | 0.82 | 1.82 | 2.82 | 3.82 | 4.82 | 5.82 | 7.82 |
| Retracted length (A)                              | [mm]  | 135  | 160  | 185  | 211  | 236  | 262  | 312  |
|                                                   | [in]  | 5.3  | 6.3  | 7.3  | 8.3  | 9.3  | 10.3 | 12.3 |
| Weight                                            | [kg]  | 0.52 | 0.54 | 0.60 | 0.64 | 0.66 | 0.68 | 0.74 |
|                                                   | [lbf] | 1.15 | 1.20 | 1.35 | 1.40 | 1.45 | 1.50 | 1.60 |

\* The electrical stroke occurs 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 (0.028 in) 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-by-case basis.

# Electrak<sup>®</sup> 1 S – Performance Diagrams

Speed and Current vs. Load 12 Vdc Models



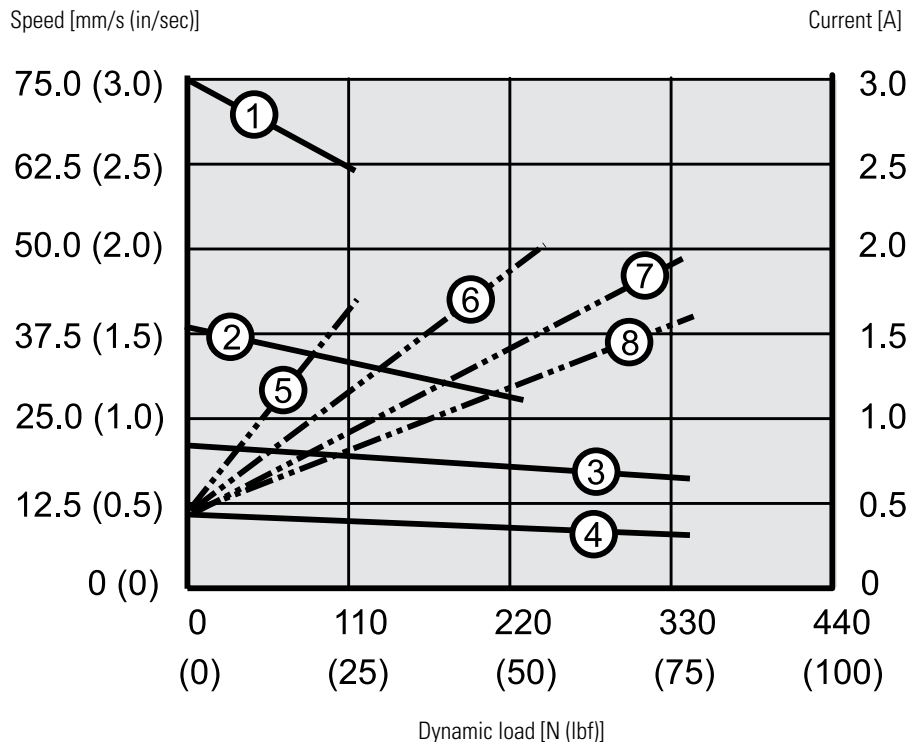
Speed

- 1: S12-09A04 (110 N (25 lbf))
- 2: S12-09A08 (225 N (50 lbf))
- 3: S12-17A08 (340 N (75 lbf))
- 4: S12-17A16 (340 N (75 lbf))

Current

- 5: S12-09A04 (110 N (25 lbf))
- 6: S12-09A08 (225 N (50 lbf))
- 7: S12-17A08 (340 N (75 lbf))
- 8: S12-17A16 (340 N (75 lbf))

Speed and Current vs. Load 24 Vdc Models



Speed

- 1: S24-09A04 (110 N (25 lbf))
- 2: S24-09A08 (225 N (50 lbf))
- 3: S24-17A08 (340 N (75 lbf))
- 4: S24-17A16 (340 N (75 lbf))

Current

- 5: S24-09A04 (110 N (25 lbf))
- 6: S24-09A08 (225 N (50 lbf))
- 7: S24-17A08 (340 N (75 lbf))
- 8: S24-17A16 (340 N (75 lbf))



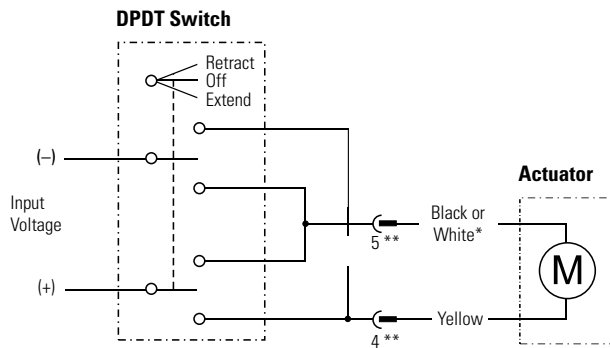
# Electrak® 1 S – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |          |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2        | 3             | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5         | 6        | 7        |
| <b>S12</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>C</b> | <b>09A04-</b> | <b>04</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>-C</b> | <b>A</b> | <b>A</b> |
| <p><b>1. Model and input voltage</b><br/>           S12 = Electrak 1, 12 Vdc<br/>           S24 = Electrak 1, 24 Vdc</p> <p><b>2. CE compliance</b><br/>           N = no<br/>           C = yes</p> <p><b>3. Dynamic load capacity, screw type and maximum speed</b><br/>           09A04- = 110 N (25 lbf), acme, 75 mm/s (3 in/s)<br/>           09A08- = 225 N (50 lbf), acme, 45 mm/s (1,8 in/s)<br/>           17A08- = 340 N (75 lbf), acme, 26 mm/s (1 in/s)<br/>           17A16- = 340 N (75 lbf), acme, 16 mm/s (0,6 in/s) <sup>(1)</sup></p> <p><b>4. Ordering stroke length</b><br/>           01 = 0.82 inch (21 mm)<br/>           02 = 1.82 inch (46 mm)<br/>           03 = 2.82 inch (72 mm)<br/>           04 = 3.82 inch (97 mm)<br/>           05 = 4.82 inch (122 mm)<br/>           06 = 5.82 inch (148 mm)<br/>           08 = 7.82 inch (199 mm)</p> |          |               | <p><b>5. Connector option</b><br/>           -C = Packard Electric Pac-Con<br/>           -I = AMP Superseal 2 pin</p> <p><b>6. Front adapter option</b><br/>           A = Cross hole 0.25 inch<br/>           T = Cross hole 8 mm<br/>           V = Female thread 1/4 inch-28<br/>           W = Female thread M8</p> <p><b>7. Rear adapter option</b><br/>           A = Cross hole 0.25 inch<br/>           B = Cross hole 8 mm</p> <p>(1) Not possible in combination with 8 inch stroke.</p> |           |          |          |

# Electrak<sup>®</sup> 1 S – Electrical Connections

## Standard

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| S12                     |       | 12 |
| S24                     |       | 24 |



\* Black for 12 Vdc supply voltage

White for 24 Vdc supply voltage

\*\* If equipped with AMP Superseal connector

Connect the yellow lead (pin 4 if connector) to positive and black or white (pin 5 if connector) to negative to extend the actuator. Change polarity to retract the actuator. The actuator should be protected from overload conditions by a customer-provided fuse in the circuit (6 A for 12 Vdc and 3 A for 24 Vdc).



## Electrak<sup>®</sup> 1 SP – Technical Features



### Standard Features

- Compact and lightweight
- Integrated 10 kOhm 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

|                           |                                                                                        |
|---------------------------|----------------------------------------------------------------------------------------|
| Screw type                | acme                                                                                   |
| Nut type                  | acme                                                                                   |
| Manual override           | no                                                                                     |
| Anti-rotation             | no                                                                                     |
| Static load holding brake | no (self-locking)                                                                      |
| Safety features           | motor auto reset thermal switch                                                        |
| Electrical connections    | flying leads with connector to the motor, cable with flying leads to the potentiometer |
| Compliances               | CE                                                                                     |

### Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# Electrak<sup>®</sup> 1 SP– Technical Specifications

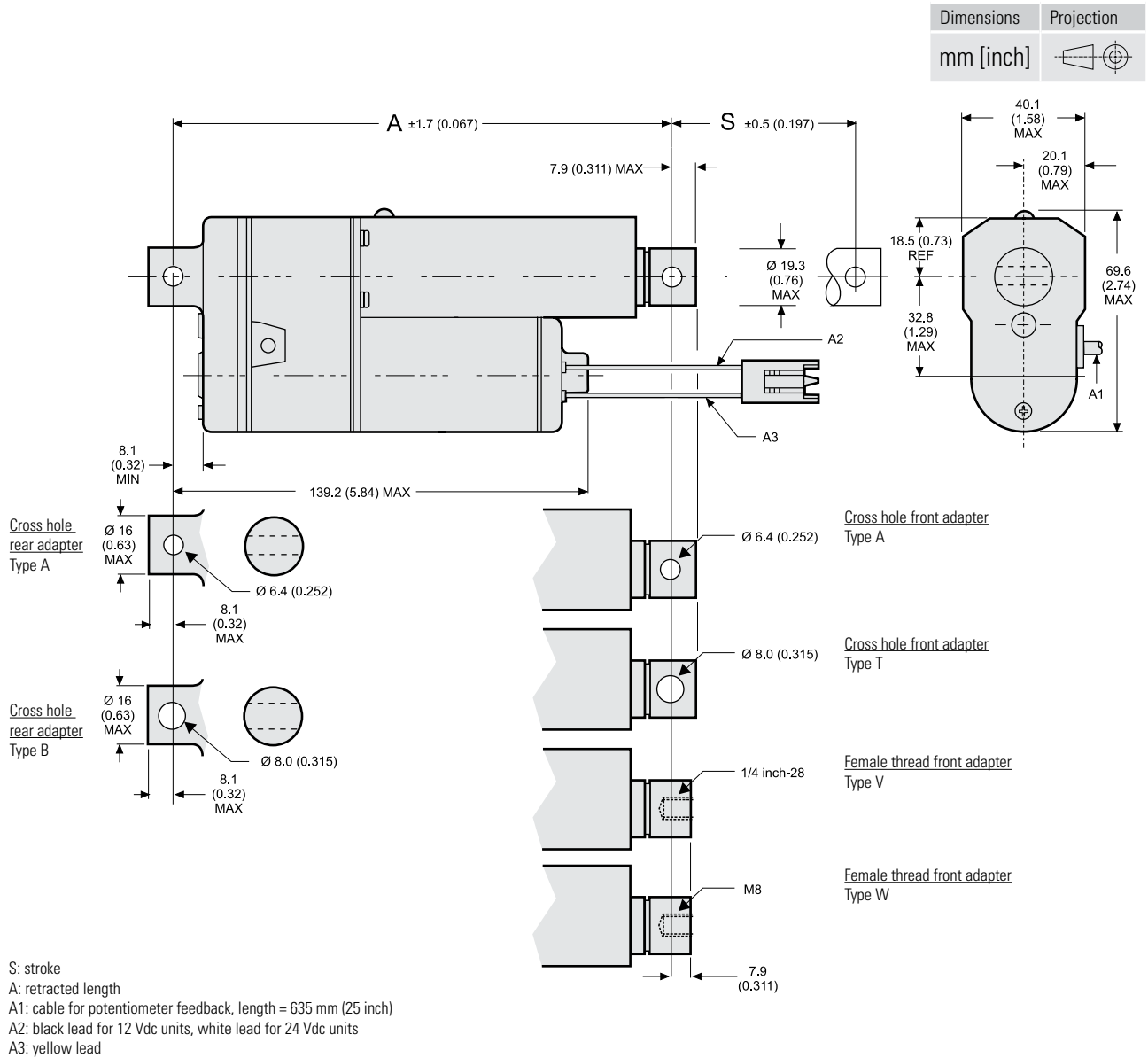
| Mechanical Specifications            |               |                      |
|--------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>      | [N (lbf)]     | 1300 (300)           |
| Max. dynamic load (Fx)               | [N (lbf)]     |                      |
| SPxx -09A04                          |               | 110 (25)             |
| SPxx -09A08                          |               | 225 (50)             |
| SPxx -17A08                          |               | 340 (75)             |
| SPxx -17A16                          |               | 340 (75)             |
| Speed @ no load/max. load            | [mm/s (in/s)] |                      |
| SPxx -09A04                          |               | 78/64 (3.1/2.5)      |
| SPxx -09A08                          |               | 39/29 1.5/1.1)       |
| SPxx -17A08                          |               | 21/16 (0.8/0.6)      |
| SPxx -17A16                          |               | 10/8 (0.4/0.3)       |
| Min. ordering stroke (S) length      | [in]          | 1                    |
| Max. ordering stroke (S) length      | [in]          | 8                    |
| Ordering stroke length increments    | [in]          | 1                    |
| Operating temperature limits         | [°C (F)]      | -25 – 65 (-13 – 150) |
| Full load duty cycle @ 25 °C (77 °F) | [%]           | 25                   |
| End play, maximum                    | [mm (in)]     | 0.9 (0.04)           |
| Restraining torque                   | [Nm (lbf-in)] | 2.3 (1.7)            |
| Protection class - static            |               | IP66                 |
| Salt spray resistance                | [h]           | 96                   |

(1) Max. static load at fully retracted stroke

| Electrical Specifications               |                         |          |
|-----------------------------------------|-------------------------|----------|
| Available input voltages <sup>(1)</sup> | [Vdc]                   | 12, 24   |
| Input voltage tolerance                 | [%]                     | ± 10     |
| Current draw @ no load/max. load        | [A]                     |          |
| SP12 -09A04                             |                         | 0.8/3.8  |
| SP12 -09A08                             |                         | 0.8/4.4  |
| SP12 -17A08                             |                         | 0.8/4.1  |
| SP12 -17A16                             |                         | 0.8/3.8  |
| SP24 -09A04                             |                         | 0.4/1.6  |
| SP24 -09A08                             |                         | 0.4/2.0  |
| SP24 -17A08                             |                         | 0.4/1.9  |
| SP24 -17A16                             |                         | 0.4/1.6  |
| Motor leads length                      | [mm (in)]               | 100 (4)  |
| Motor leads cross section               | [mm <sup>2</sup> (AWG)] | 1 (18)   |
| Potentiometer cable length              | [mm (in)]               | 635 (25) |
| Potentiometer cable diameter            | [mm (in)]               | 5 (0.2)  |
| Pot. cable leads cross section          | [mm <sup>2</sup> (AWG)] | 0.5 (20) |



# Electrak® 1 SP – Dimensions



## Stroke, Retracted Length and Weight Relationships

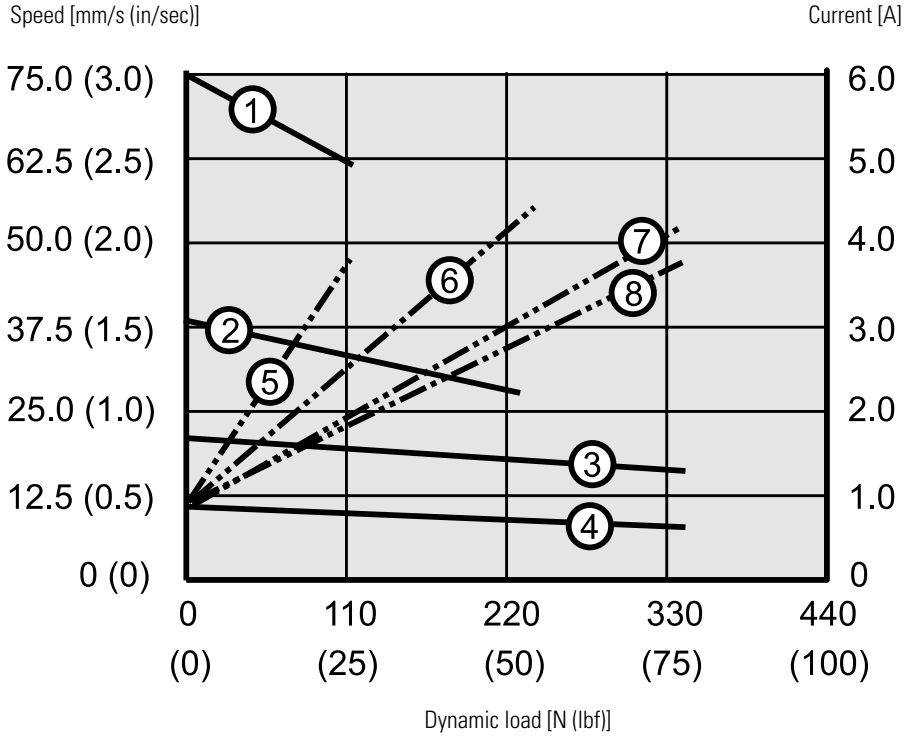
| Ordering stroke        | [in]  | 1    | 2    | 3    | 4     | 5     | 6*    | 8     |
|------------------------|-------|------|------|------|-------|-------|-------|-------|
| Actual max. stroke (S) | [mm]  | 30.4 | 58.7 | 86.8 | 115.1 | 143.2 | 171.5 | 227.9 |
|                        | [in]  | 1.2  | 2.3  | 3.5  | 4.6   | 5.8   | 6.9   | 9.2   |
| Retracted length (A)   | [mm]  | 170  | 198  | 226  | 254   | 282   | 310   | 366   |
|                        | [in]  | 6.7  | 7.8  | 8.9  | 10.0  | 11.1  | 12.2  | 14.4  |
| Weight                 | [kg]  | 0.50 | 0.55 | 0.60 | 0.65  | 0.70  | 0.75  | 0.85  |
|                        | [lbf] | 1.1  | 1.2  | 1.3  | 1.4   | 1.5   | 1.6   | 1.8   |

\* Six + inch length not possible for SPxx-17A16



# Electrak<sup>®</sup> 1 SP – Performance Diagrams

Speed and Current vs. Load 12 Vdc Models



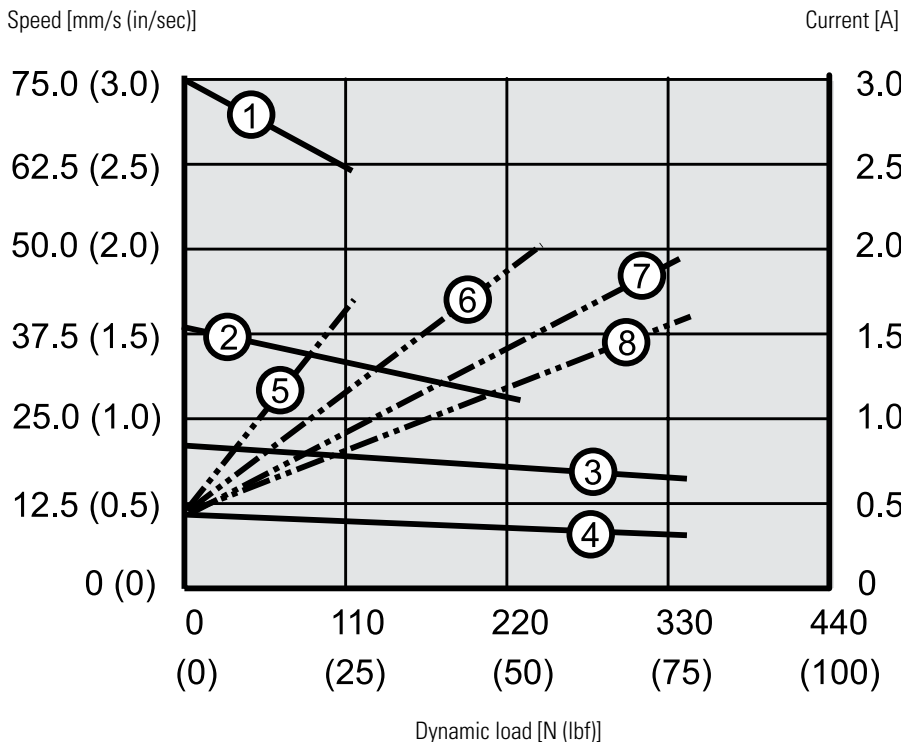
Speed

- 1: SP12-09A04 (110 N (25 lbf))
- 2: SP12-09A08 (225 N (50 lbf))
- 3: SP12-17A08 (340 N (75 lbf))
- 4: SP12-17A16 (340 N (75 lbf))

Current

- 5: SP12-09A04 (110 N (25 lbf))
- 6: SP12-09A08 (225 N (50 lbf))
- 7: SP12-17A08 (340 N (75 lbf))
- 8: SP12-17A16 (340 N (75 lbf))

Speed and Current vs. Load 24 Vdc Models



Speed

- 1: SP24-09A04 (110 N (25 lbf))
- 2: SP24-09A08 (225 N (50 lbf))
- 3: SP24-17A08 (340 N (75 lbf))
- 4: SP24-17A16 (340 N (75 lbf))

Current

- 5: SP24-09A04 (110 N (25 lbf))
- 6: SP24-09A08 (225 N (50 lbf))
- 7: SP24-17A08 (340 N (75 lbf))
- 8: SP24-17A16 (340 N (75 lbf))

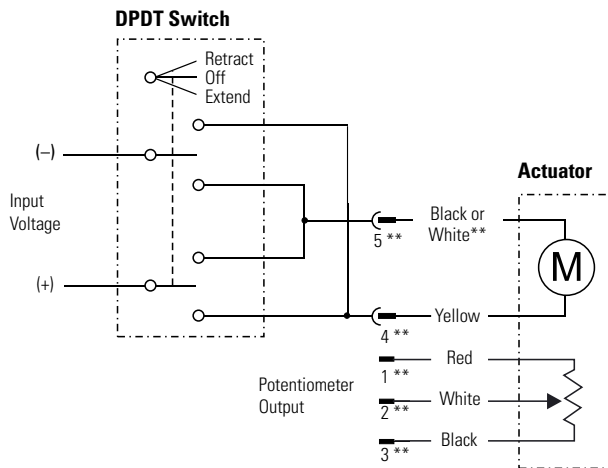


# Electrak® 1 SP – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |          |          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2        | 3             | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5         | 6        | 7        |
| <b>SP12</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>C</b> | <b>09A04-</b> | <b>04</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>-C</b> | <b>A</b> | <b>A</b> |
| <p><b>1. Model and input voltage</b><br/>           SP12 = Electrak 1, potentiometer feedback, 12 Vdc<br/>           SP24 = Electrak 1, potentiometer feedback, 24 Vdc</p> <p><b>2. CE compliance</b><br/>           N = no<br/>           C = yes</p> <p><b>3. Dynamic load capacity, screw type and maximum speed</b><br/>           09A04- = 110 N (25 lbf), acme, 75 mm/s (3 in/s)<br/>           09A08- = 225 N (50 lbf), acme, 45 mm/s (1,8 in/s)<br/>           17A08- = 340 N (75 lbf), acme, 26 mm/s (1 in/s)<br/>           17A16- = 340 N (75 lbf), acme, 16 mm/s (0,6 in/s) <sup>(1)</sup></p> <p><b>4. Ordering stroke length</b><br/>           01 = 1.2 inch (30.4 mm)<br/>           02 = 2.3 inch (58.7 mm)<br/>           03 = 3.5 inch (86.8 mm)<br/>           04 = 4.6 inch (115.1 mm)<br/>           05 = 5.8 inch (143.2 mm)<br/>           06 = 6.9 inch (171.5 mm)<br/>           08 = 9.2 inch (227.9 mm)</p> |          |               | <p><b>5. Connector option</b><br/>           -C = Packard Electric Pac-Con<br/>           -J = AMP Superseal 5 pin</p> <p><b>6. Front adapter option</b><br/>           A = Cross hole 0.25 inch<br/>           T = Cross hole 8 mm<br/>           V = Female thread 1/4 inch-28<br/>           W = Female thread M8</p> <p><b>7. Rear adapter option</b><br/>           A = Cross hole 0.25 inch<br/>           B = Cross hole 8 mm</p> <p>(1) Not possible in combination with 6 or 8 inch stroke.</p> |           |          |          |

# Electrak<sup>®</sup> 1 SP – Electrical Connections

| Standard                         |          |            |
|----------------------------------|----------|------------|
| Actuator supply voltage          | [Vdc]    |            |
| SP12                             |          | 12         |
| SP24                             |          | 24         |
| Potentiometer type               |          | wire-wound |
| Potentiometer resistance         | [kOhm]   | 10         |
| Potentiometer max. input voltage | [Vdc]    | 32         |
| Potentiometer max. power         | [W]      | 1.5        |
| Resistance tolerance             | [%]      | 5          |
| Potentiometer linearity          | [%]      | ± 0.25     |
| Potentiometer output resolution  | [ohm/mm] |            |
| SPxxxxxxx01(02)                  |          | 94.5       |
| SPxxxxA04(08)03(04)              |          | 47.2       |
| SPxxxxA1603(04, 05)              |          | 63.0       |
| SPxxxxA04(08)05(06, 08)          |          | 31.5       |



\*\* Black for 12 Vdc supply voltage  
 White for 24 Vdc supply voltage  
 \*\* If equipped with AMP Superseal connector

Connect the yellow lead (pin 4 if connector) to positive and black or white (pin 5 if connector) to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output has 0 ohm between white (pin 2 if connector) and red (pin 1 if connector) when the actuator is fully retracted. The actuator should be protected from overload conditions by a customer-provided fuse in the circuit (6 A for 12 Vdc and 3 A for 24 Vdc).



# M-Track – Technical Features



## Standard Features

- Compact and lightweight
- Corrosion resistant housing
- Self-locking acme screw drive system
- Integrated standard end-of-stroke limit switches
- Optional analog potentiometer feedback
- Stroke up to 12 inches
- Maintenance free
- Internally restrained extension tube
- Typical applications are ventilation and valve adjustment, vise or clamp operation or light weight positioning of lifts and tilts.

## General Specifications

|                           |                                                                                                       |
|---------------------------|-------------------------------------------------------------------------------------------------------|
| Screw type                | acme                                                                                                  |
| Nut type                  | acme                                                                                                  |
| Manual override           | no                                                                                                    |
| Anti-rotation             | yes                                                                                                   |
| Static load holding brake | no (self-locking)                                                                                     |
| Safety features           | motor auto reset thermal switch<br>internal end-of-stroke limit switches                              |
| Electrical connections    | cable with connector for units without option potentiometer, cable with flying leads if potentiometer |
| Compliances               | CE                                                                                                    |

## Accessories

Protective boot (contact customer support for more information)

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# M-Track – Technical Specifications

| Mechanical Specifications            |               |                      |
|--------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>      | [N (lbf)]     | 1300 (300)           |
| Max. dynamic load (Fx)               | [N (lbf)]     |                      |
| M1-D0xx-0025                         |               | 111 (25)             |
| M1-D0xx-0050                         |               | 222 (50)             |
| M1-D0xx-0100                         |               | 445 (100)            |
| M1-D0xx-0165                         |               | 734 (165)            |
| Speed @ no load/max. load            | [mm/s (in/s)] |                      |
| M1-D0xx-0025                         |               | 45 (1.75)            |
| M1-D0xx-0050                         |               | 20 (0.80)            |
| M1-D0xx-0100                         |               | 11 (0.45)            |
| M1-D0xx-0165                         |               | 6 (0.25)             |
| Min. ordering stroke (S) length      | [in]          | 1                    |
| Max. ordering stroke (S) length      | [in]          | 12                   |
| Ordering stroke length increments    | [in]          | 2                    |
| Operating temperature limits         | [°C (F)]      | -25 – 65 (-13 – 150) |
| Full load duty cycle @ 25 °C (77 °F) | [%]           | 25                   |
| End play, maximum                    | [mm (in)]     | 0.9 (0.04)           |
| Restraining torque                   | [Nm (lbf-in)] | 0                    |
| Protection class - static / dynamic  |               | IP69K / IP65         |
| Salt spray resistance                | [h]           | 96                   |

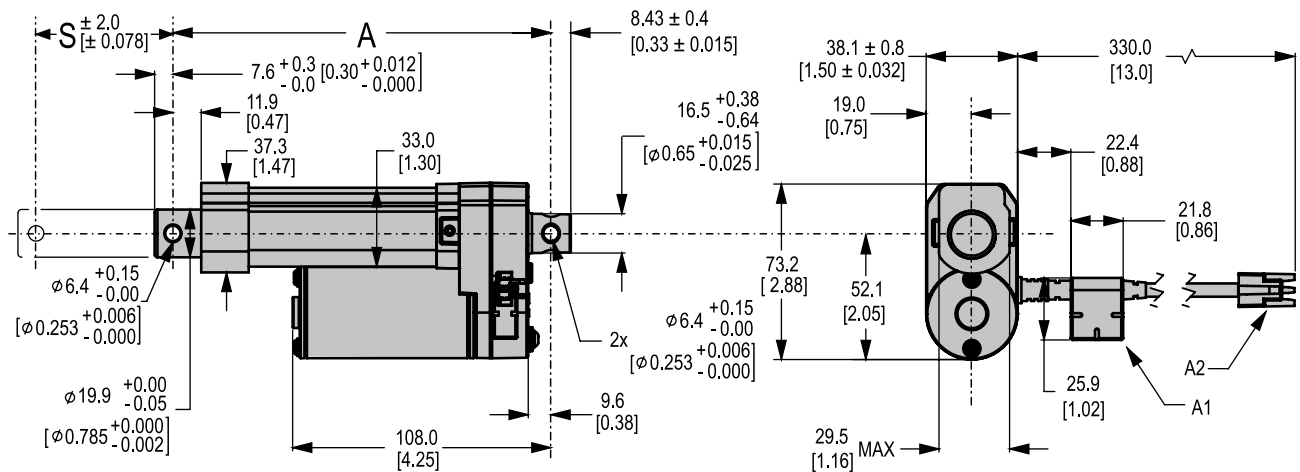
(1) Max. static load at fully retracted stroke

| Electrical Specifications               |                         |            |
|-----------------------------------------|-------------------------|------------|
| Available input voltages <sup>(1)</sup> | [Vdc]                   | 12, 24     |
| Input voltage tolerance                 | [%]                     | ± 10       |
| Current draw @ no load/max. load        | [A]                     |            |
| M1-D012-0025                            |                         | 0.9/2.0    |
| M1-D012-0050                            |                         | 0.6/2.5    |
| M1-D012-0100                            |                         | 0.9/4.4    |
| M1-D012-0165                            |                         | 0.7/3.4    |
| M1-D024-0025                            |                         | 0.5/1.0    |
| M1-D024-0050                            |                         | 0.3/1.3    |
| M1-D024-0100                            |                         | 0.5/2.2    |
| M1-D024-0165                            |                         | 0.4/1.1    |
| Cable connector                         | [mm (in)]               |            |
| Without potentiometer option            |                         | Packard    |
| With potentiometer option               |                         | -          |
| Cable length                            | [mm (in)]               |            |
| Without potentiometer option            |                         | 330 (13)   |
| With potentiometer option               |                         | 304 (12)   |
| Cable leads cross section               | [mm <sup>2</sup> (AWG)] |            |
| Power supply leads                      |                         | 0.75 (18)  |
| Potentiometer leads                     |                         | 0.26 (26)  |
| Cable diameter                          | [mm (in)]               | 7.8 (0.31) |



# M-Track – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



S: stroke  
 A: retracted length  
 A1: EMC filter  
 A2: 330 mm long cable with connector if no potentiometer, 304 mm long cable with no connector if potentiometer.

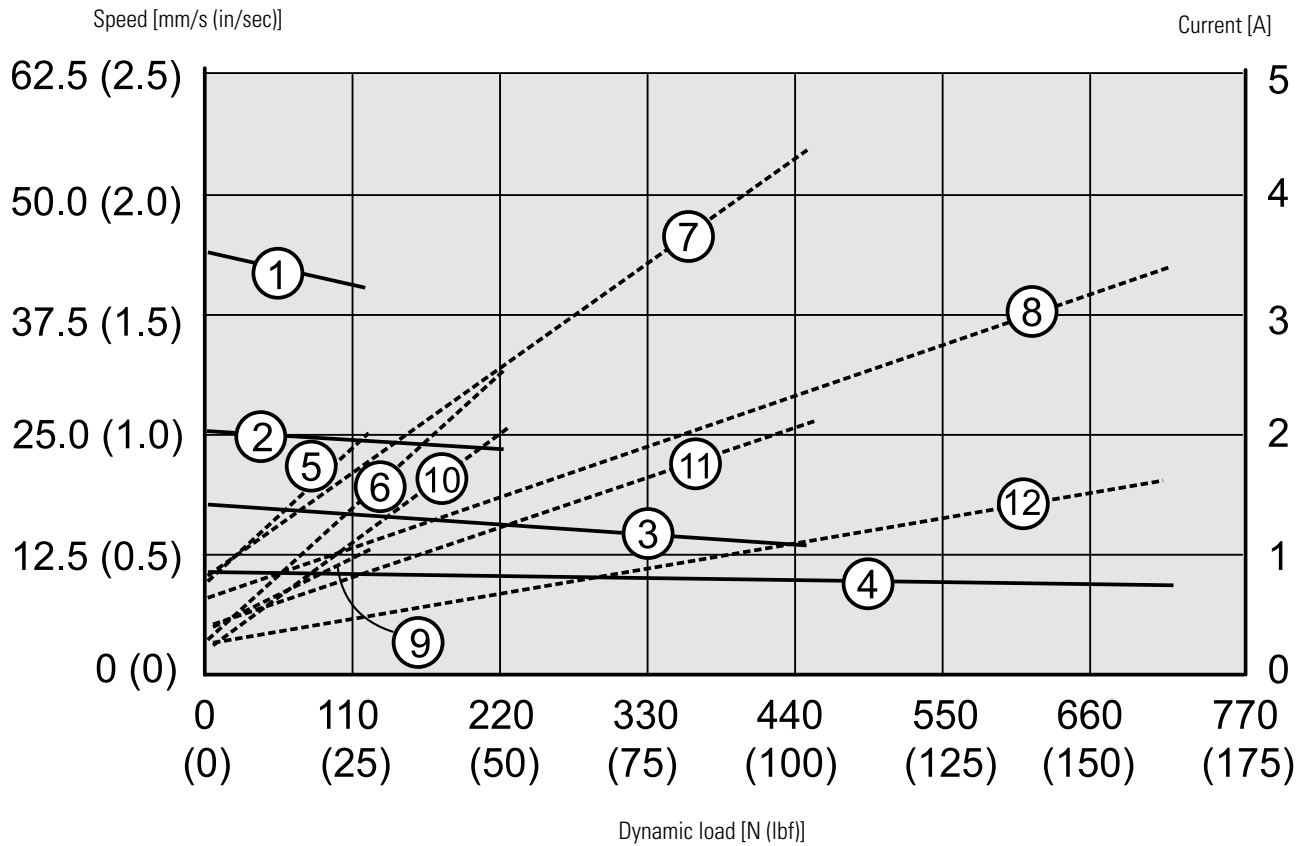
## Stroke, Retracted and Cover Tube Length and Weight Relationships

| Ordering stroke (S)                        | [in] | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    |
|--------------------------------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length (A) without potentiometer | [mm] | 132.6 | 158.0 | 183.4 | 209.0 | 234.4 | 260.1 | 285.5 | 310.9 | 336.6 | 362.0 | 387.4 | 413.0 |
|                                            | [in] | 5.22  | 6.22  | 7.22  | 8.23  | 9.23  | 10.24 | 11.24 | 12.24 | 13.25 | 14.25 | 15.25 | 16.26 |
| Retracted length (A) with potentiometer*   | [mm] | -     | 191.8 | 217.7 | 243.1 | 268.5 | 293.9 | 319.5 | 344.9 | 370.3 | 395.7 | 421.1 | 446.5 |
|                                            | [in] | -     | 7.55  | 8.57  | 9.57  | 10.57 | 11.57 | 12.58 | 13.58 | 14.58 | 15.58 | 16.58 | 17.58 |
| Weight without potentiometer               | [kg] | 0.50  | 0.58  | 0.66  | 0.75  | 0.83  | 0.91  | 0.99  | 1.07  | 1.15  | 1.24  | 1.32  | 1.40  |
|                                            | [lb] | 1.105 | 1.285 | 1.465 | 1.645 | 1.825 | 2.005 | 2.185 | 2.365 | 2.545 | 2.725 | 2.905 | 3.085 |
| Weight with potentiometer                  | [kg] | -     | 0.66  | 0.75  | 0.83  | 0.91  | 0.99  | 1.07  | 1.15  | 1.24  | 1.32  | 1.40  | 1.48  |
|                                            | [lb] | -     | 1.465 | 1.645 | 1.825 | 2.005 | 2.185 | 2.365 | 2.545 | 2.725 | 2.905 | 3.085 | 3.265 |

\* The extra retracted length added to a potentiometer model is only added to the cover tube length and not to the front or rear housings.

# M-Track – Performance Diagrams

Speed and Current vs. Load



Speed

- 1: M1-D012(24)-0025 (111 N (25 lbf))
- 2: M1-D012(24)-0050 (222 N (50 lbf))
- 3: M1-D012(24)-0100 (445 N (100 lbf))
- 4: M1-D012(24)-0165 (734 N (165 lbf))

Current

- 5: M1-D012-0025 (111 N (25 lbf))
- 6: M1-D012-0050 (222 N (50 lbf))
- 7: M1-D012-0100 (445 N (100 lbf))
- 8: M1-D012-0165 (734 N (165 lbf))
- 9: M1-D024-0025 (111 N (25 lbf))
- 10: M1-D024-0050 (222 N (50 lbf))
- 11: M1-D024-0100 (445 N (100 lbf))
- 12: M1-D024-0165 (734 N (165 lbf))

Dynamic load [N (lbf)]



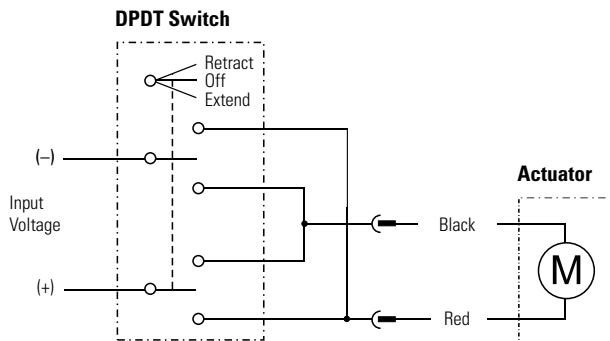
## M-Track – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                       |              |                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1                                                                                                                                                                                                                                                                                                  | 2            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4         |
| <b>M1-D012-</b>                                                                                                                                                                                                                                                                                    | <b>0025-</b> | <b>01-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>LN</b> |
| <p><b>1. Model and input voltage</b><br/>M1-D012- = M-Track, 12 Vdc<br/>M1-D024- = M-Track, 24 Vdc</p> <p><b>2. Dynamic load capacity and screw type</b><br/>0025- = 111 N (25 lbf), acme<br/>0050- = 222 N (50 lbf), acme<br/>0100- = 445 N (100 lbf), acme<br/>0165- = 734 N (165 lbf), acme</p> |              | <p><b>3. Ordering stroke length</b><br/>01- = 1 inch (25.4 mm)<br/>02- = 2 inch (50.8 mm)<br/>04- = 4 inch (101.6 mm)<br/>06- = 6 inch (152.4 mm)<br/>08- = 8 inch (203.2 mm)<br/>10- = 10 inch (254.0 mm)<br/>12- = 12 inch (304.8 mm)</p> <p><b>4. Control option</b><br/>LN = End-of-stroke limit switches<br/>LP = End-of-stroke limit switches and potentiometer feedback <sup>(1)</sup></p> <p>(1) Not possible with 1 inch stroke</p> |           |



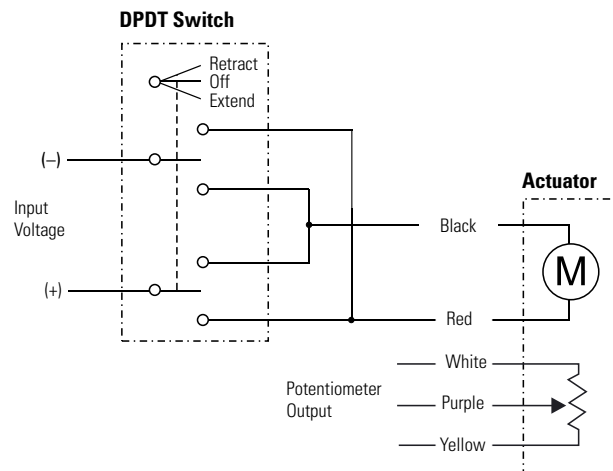
# M-Track – Electrical Connections

| Standard                |       |    |
|-------------------------|-------|----|
| Actuator supply voltage | [Vdc] |    |
| M1-D012                 |       | 12 |
| M1-D024                 |       | 24 |



Connect the red lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator.

| With Potentiometer               |          |                 |
|----------------------------------|----------|-----------------|
| Actuator supply voltage          | [Vdc]    |                 |
| M1-D012                          |          | 12              |
| M1-D024                          |          | 24              |
| Potentiometer type               |          | linear membrane |
| Potentiometer resistance         | [kohm]   | 12              |
| Potentiometer max. input voltage | [Vdc]    | 27              |
| Resistance tolerance             | [%]      | ± 20            |
| Potentiometer linearity          | [%]      | 5               |
| Potentiometer output resolution  | [ohm/mm] |                 |
| M1-D0xx-xxxxA-01                 |          | not possible    |
| M1-D0xx-xxxxA-02                 |          | 472             |
| M1-D0xx-xxxxA-04                 |          | 236             |
| M1-D0xx-xxxxA-06                 |          | 118             |
| M1-D0xx-xxxxA-08                 |          | 79              |
| M1-D0xx-xxxxA-10                 |          | 47              |
| M1-D0xx-xxxxA-12                 |          | 39              |



Connect the red lead to positive and black to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output has 0 ohm between white and purple leads when the actuator is fully retracted and 12 kohm when fully extended.



## Electrak® 050 – Technical Features



### Standard Features

- Designed for office or medical applications
- Small, quiet and lightweight
- Short retracted length
- Low cost
- Durable and corrosion free plastic housing
- Color molded into the plastic, no painting required
- Maintenance free
- Internally restrained extension tube
- Estimated life is minimum 40000 cycles

### General Specifications

|                           |                                                                         |
|---------------------------|-------------------------------------------------------------------------|
| Screw type                | worm                                                                    |
| Nut type                  | lead                                                                    |
| Manual override           | no                                                                      |
| Anti-rotation             | yes                                                                     |
| Static load holding brake | no (self-locking)                                                       |
| Safety features           | internal limit switches<br>overload clutch<br>auto reset thermal switch |
| Electrical connections    | cable with flying leads or connector                                    |
| Compliances               | CE                                                                      |

### Optional Mechanical Features

Cross hole orientation

### Optional Electrical Features

End of stroke limit switches with dynamic braking

Potentiometer feedback

# Electrak<sup>®</sup> 050 – Technical Specifications

| Mechanical Specifications            |               |                                                        |
|--------------------------------------|---------------|--------------------------------------------------------|
| Max. static load <sup>(1)</sup>      | [N (lbf)]     |                                                        |
| DExx17W41                            |               | 1020 (224)                                             |
| DExx17W42                            |               | 550 (120)                                              |
| DExx17W44                            |               | 280 (60)                                               |
| Max. dynamic load (Fx)               | [N (lbf)]     |                                                        |
| DExx17W41                            |               | 510 (112)                                              |
| DExx17W42                            |               | 275 (60)                                               |
| DExx17W44                            |               | 140 (30)                                               |
| Speed @ no load/max. load            | [mm/s (in/s)] | 12/9 (0.5 /0.35)<br>24/18 (0.9/0.7)<br>48/37 (1.9/1.5) |
| Min. ordering stroke (S) length      | [mm]          | 25                                                     |
| Max. ordering stroke (S) length      | [mm]          | 200                                                    |
| Ordering stroke length increments    | [in]          | 25                                                     |
| Operating temperature limits         | [°C (F)]      | -30 – 80 (-22 – 176)                                   |
| Full load duty cycle @ 20 °C (70 °F) | [%]           | 25                                                     |
| End play, maximum                    | [mm (in)]     | 1.5 (0.06)                                             |
| Restraining torque                   | [Nm (lbf-in)] | 0                                                      |
| Protection class - static            |               | IP56                                                   |
| Salt spray resistance                | [h]           | 96                                                     |

| Electrical Specifications                       |                         |            |
|-------------------------------------------------|-------------------------|------------|
| Available input voltages                        | [Vdc]                   | 12, 24, 36 |
| Input voltage tolerance                         | [%]                     | ± 10       |
| Current draw @ no load/max. load <sup>(1)</sup> | [A]                     |            |
| DE12-17W41                                      |                         | 1.4/3.8    |
| DE12-17W42                                      |                         | 0.7/1.9    |
| DE12-17W44                                      |                         | 1.2/3.8    |
| DE24-17W41                                      |                         | 0.6/1.8    |
| DE24-17W42                                      |                         | 1.4/3.8    |
| DE24-17W44                                      |                         | 0.7/1.9    |
| Cable lengths, standard <sup>(2)</sup>          | [mm (in)]               | 150 (6.0)  |
| Cable diameter                                  | [mm (in)]               | 13 (0.5)   |
| Cable leads cross section                       | [mm <sup>2</sup> (AWG)] | 1 (18)     |

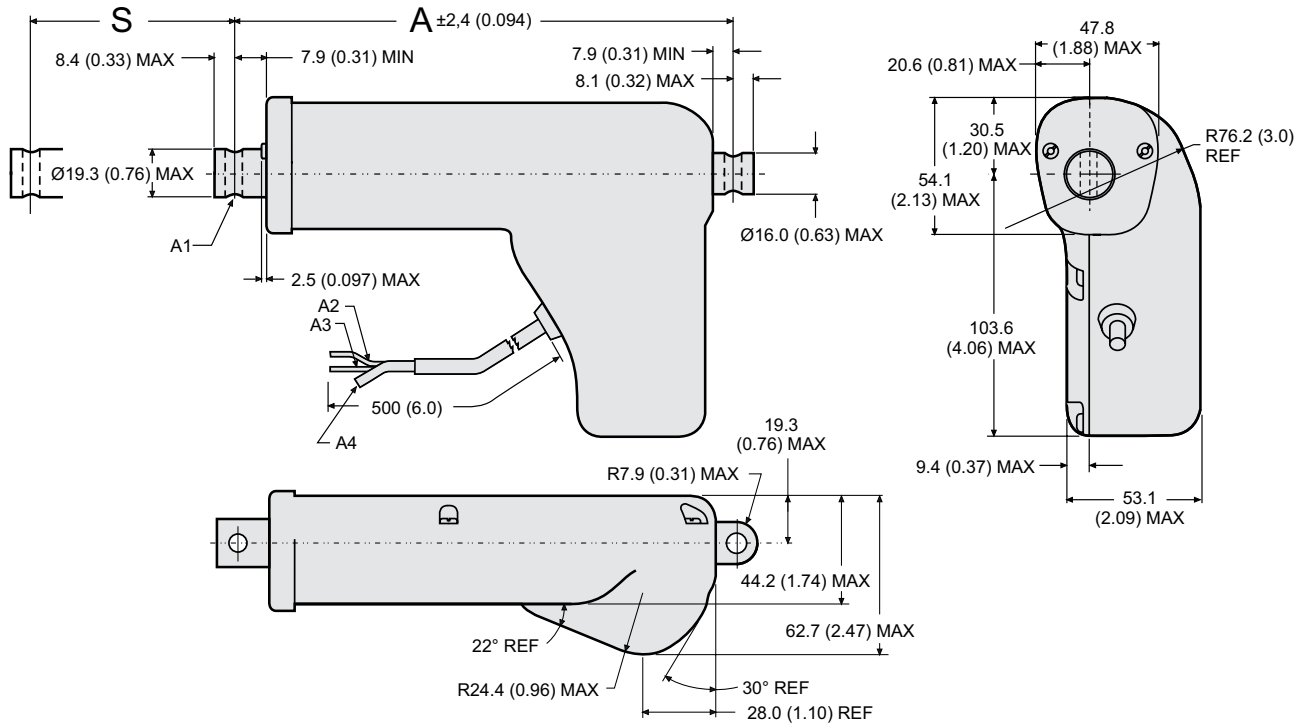
(1) For current draw for 36 Vdc input voltage models - contact customer support.

(2) The same cable is used both for the input voltage and the feedback signals.



# Electrak® 050 – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



Note: see 3D models for all available adapter options

S: stroke (tolerances: 17W41 = ± 3.23 mm (0.127 in), 17W42 = ± 4.25 mm (0.167 in), 17W44 = ± 5.26 mm (0.207 in))

A: retracted length

A1: Shown are Ø 6 mm +0.15/-0 (0.236 in +0.006/-0) mounting cross holes (2 x) in standard position.

A2: red lead

A3: yellow lead

A4: vent tube Ø 3 mm (0.188 in)

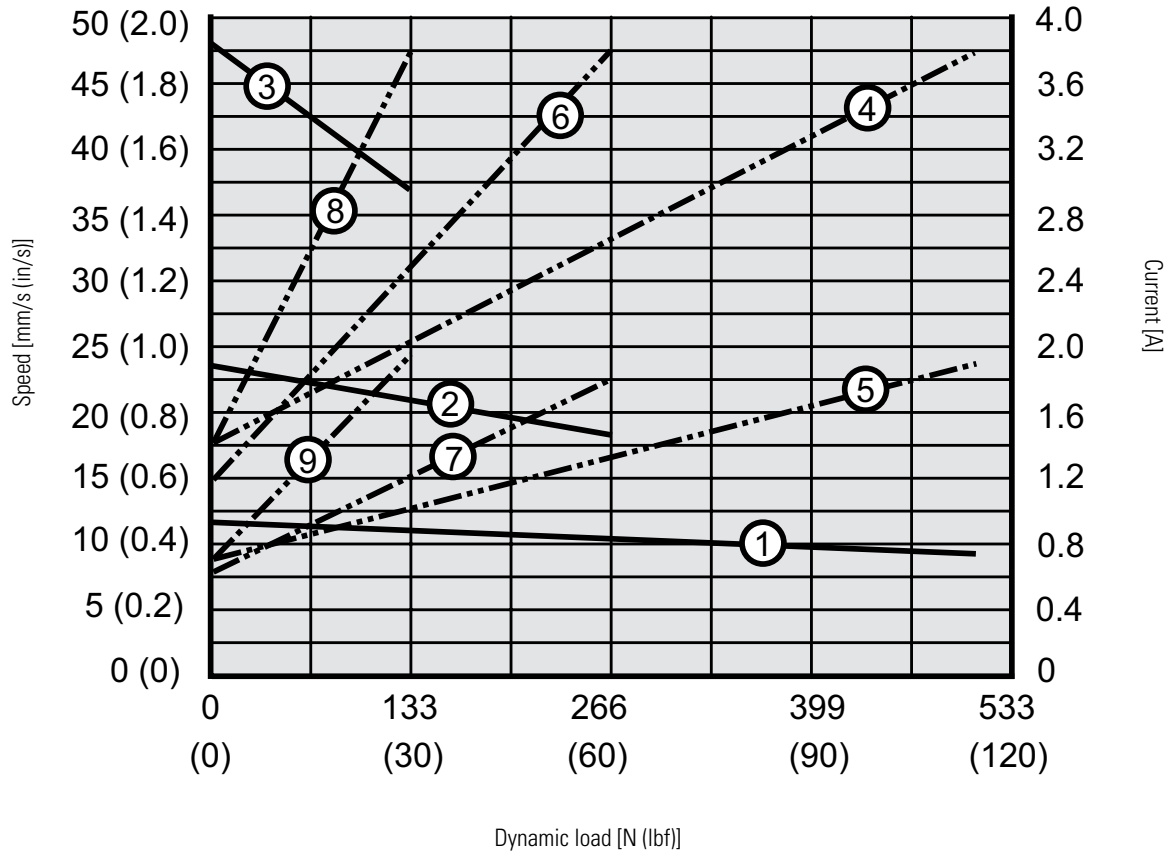
## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                                      | [in]  | 1     | 2     | 3     | 4     | 5     | 6     | 7      | 8      |
|----------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|
| Retracted length (A)                                     | [mm]  | 114.2 | 139.2 | 164.2 | 189.2 | 214.2 | 239.2 | 264.2  | 289.2  |
|                                                          | [in]  | 4.496 | 5.480 | 6.465 | 7.449 | 8.433 | 9.417 | 10.402 | 11.386 |
| Add on length for option<br>0.25 inch fork front adapter | [mm]  | 16.3  |       |       |       |       |       |        |        |
|                                                          | [in]  | 0.64  |       |       |       |       |       |        |        |
| Add on length for<br>option potentiometer                | [mm]  | 31.5  |       |       |       |       |       |        |        |
|                                                          | [in]  | 1.24  |       |       |       |       |       |        |        |
| Weight                                                   | [kg]  | 0.59  | 0.64  | 0.69  | 0.73  | 0.78  | 0.82  | 0.87   | 0.91   |
|                                                          | [lbf] | 1.30  | 1.41  | 1.52  | 1.61  | 1.72  | 1.81  | 1.92   | 2.01   |
| Add on weight for<br>option potentiometer                | [kg]  | 0.10  |       |       |       |       |       |        |        |
|                                                          | [lbf] | 0.22  |       |       |       |       |       |        |        |

\* 8 inch stroke not possible with potentiometer (PO, MP, PF options)

# Electrak® 050 – Performance Diagrams

Speed and Current vs. Load



Speed

- 1: DExx-17W41 (510 N (112 lbf))
- 2: DExx-17W42 (275 N (60 lbf))
- 3: DExx-17W44 (140 N (30 lbf))

Current

- 4: DE12-17W41 (12 Vdc, 510 N (112 lbf))
- 5: DE24-17W41 (24 Vdc, 510 N (112 lbf))
- 6: DE12-17W42 (12 Vdc, 275 N (60 lbf))
- 7: DE24-17W42 (24 Vdc, 275 N (60 lbf))
- 8: DE12-17W44 (12 Vdc, 140 N (30 lbf))
- 9: DE24-17W44 (24 Vdc, 140 N (30 lbf))



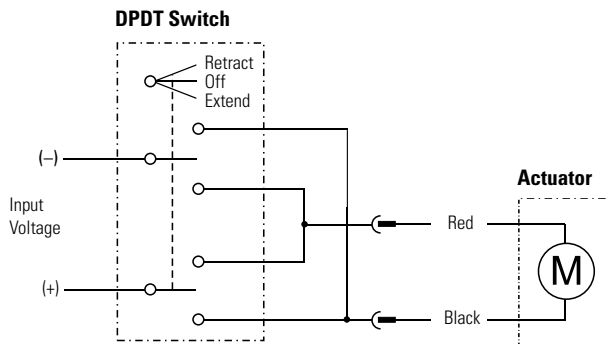
# Electrak® 050 – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                         |    |    |    |    |   |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|---|---|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2                                                                                                                                                                                                                                                                                                                                                                                       | 3  | 4  | 5  | 6  | 7 | 8 |
| DE12-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 17W41-                                                                                                                                                                                                                                                                                                                                                                                  | 02 | NN | HH | N- | C | A |
| <p><b>1. Model and input voltage</b><br/>DE12- = Electrak 050, 12 Vdc<br/>DE24- = Electrak 050, 24 Vdc<br/>DE36- = Electrak 050, 36 Vdc</p> <p><b>2. Dynamic load capacity</b><br/>17W41 - = 510 N (112 lbf)<br/>17W42 - = 275 N (60 lbf)<br/>17W44 - = 140 N (30 lbf)</p> <p><b>3. Ordering stroke length</b><br/>01 = 1 inch (25.4 mm)<br/>02 = 2 inch (50.8 mm)<br/>03 = 3 inch (76.2 mm)<br/>04 = 4 inch (101.6 mm)<br/>05 = 5 inch (127.0 mm)<br/>06 = 6 inch (152.4 mm)<br/>07 = 7 inch (177.8 mm)<br/>08 = 8 inch (203.2 mm)</p> <p><b>4. Options</b><br/>NN = no option<br/>FN = end-off-stroke limits switches<br/>NP = potentiometer<br/>FP = end-off-stroke limits switches + potentiometer</p> | <p><b>5. Cross-hole orientation</b><br/>HH = standard cross-hole orientation in both ends<br/>MH = cross-hole rotated 90° in both ends</p> <p><b>6. Color of housing</b><br/>N- = black</p> <p><b>7. Type of connector</b><br/>C = Packard Electric Pack-Con<br/>D = no connector (flying leads)</p> <p><b>8. Front adapter</b><br/>A = cross-hole 0.25 inch<br/>B = fork 0.25 inch</p> |    |    |    |    |   |   |

# Electrak<sup>®</sup> 050 – Electrical Connections

## Without Option

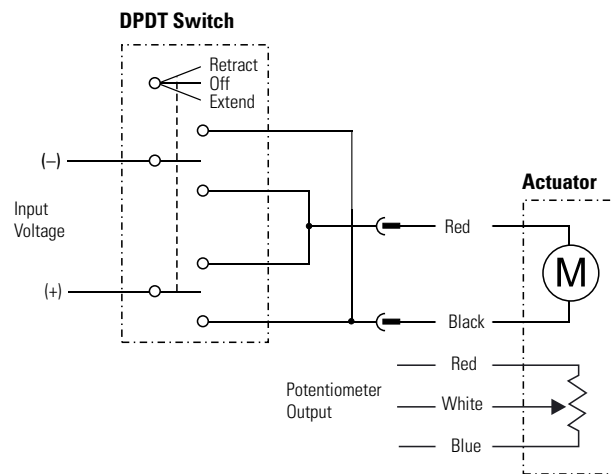
| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| DE12                    |       | 12 |
| DE24                    |       | 24 |
| DE36                    |       | 36 |



Connect the black lead to positive and red to negative to extend the actuator. Change polarity to retract the actuator.

## Option Potentiometer

| Actuator supply voltage          | [Vdc]    |            |
|----------------------------------|----------|------------|
| DE12                             |          | 12         |
| DE24                             |          | 24         |
| DE36                             |          | 36         |
| Potentiometer type               |          | wire-wound |
| Potentiometer max. input voltage | [Vdc]    | 32         |
| Potentiometer max. power         | [W]      | 2          |
| Potentiometer linearity          | [%]      | ± 0.25     |
| Potentiometer output resolution  | [ohm/mm] |            |
| DExx-17W41                       |          | 22.0       |
| DExx-17W42                       |          | 21.9       |
| DExx-17W44                       |          | 21.2       |



Connect the black lead to positive and red to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output has 0 ohm between white and blue when the actuator is fully retracted.



# Max Jac<sup>®</sup> – Technical Features



## Standard Features

- Designed for industrial applications
- Rugged aluminium housing with IP69K
- High efficiency
- Long life
- Hard coat anodizing for high corrosion resistance
- Virtually maintenance free
- Worm or ball screw models
- Non-contact analog position feedback signal

## General Specifications

|                                                                     |                                                    |
|---------------------------------------------------------------------|----------------------------------------------------|
| Screw type                                                          | worm or ball                                       |
| Nut type                                                            | lead or ball                                       |
| Manual override                                                     | no                                                 |
| Anti-rotation                                                       | no                                                 |
| Static load holding brake<br>worm screw models<br>ball screw models | no (self-locking)<br>no                            |
| Safety features                                                     | none                                               |
| Electrical connections                                              | flying leads or cable with AMP Superseal connector |
| Compliances                                                         | CE                                                 |

## Optional Electrical Features

Digital feedback

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)



# Max Jac® – Technical Specifications

| Mechanical Specifications                                                                  |               |                                             |
|--------------------------------------------------------------------------------------------|---------------|---------------------------------------------|
| Max. static load <sup>(1)</sup><br>MXxxW (worm screw)<br>MXxxB (ball screw) <sup>(2)</sup> | [N (lbf)]     | 2000 (450)<br>100 - 350 (22 - 79)           |
| Max. dynamic load (Fx)<br>MXxxW (worm screw)<br>MXxxB (ball screw)                         | [N (lbf)]     | 500 (112)<br>800 (180)                      |
| Speed @ no load/max. load<br>MXxxW (worm screw)<br>MXxxB (ball screw)                      | [mm/s (in/s)] | 33 / 19 (1.3 / 0.75)<br>60 / 30 (2.4 / 1.2) |
| Min. ordering stroke (S) length                                                            | [mm]          | 50                                          |
| Max. ordering stroke (S) length<br>MXxxW (worm screw)<br>MXxxB (ball screw)                | [mm]          | 200<br>300                                  |
| Ordering stroke length increments                                                          | [mm]          | 50                                          |
| Operating temperature limits                                                               | [°C (F)]      | -40 – 85 (-40 – 185)                        |
| Duty cycle, maximum <sup>(3)</sup><br>MXxxW (worm screw)<br>MXxxB (ball screw)             | [%]           | load dependent<br>load dependent            |
| End play, maximum                                                                          | [mm (in)]     | 0.3 (0.012)                                 |
| Restraining torque                                                                         | [Nm (lbf-in)] | 2 (1.48)                                    |
| Protection class - static                                                                  |               | IP66/IP69K                                  |
| Salt spray resistance                                                                      | [h]           | 500                                         |

(1) Max. static load at fully retracted stroke

(2) The static force (i.e. the back-driving force) for a ball screw unit varies and is dependent on the number of cycles it has been running and at which loads.

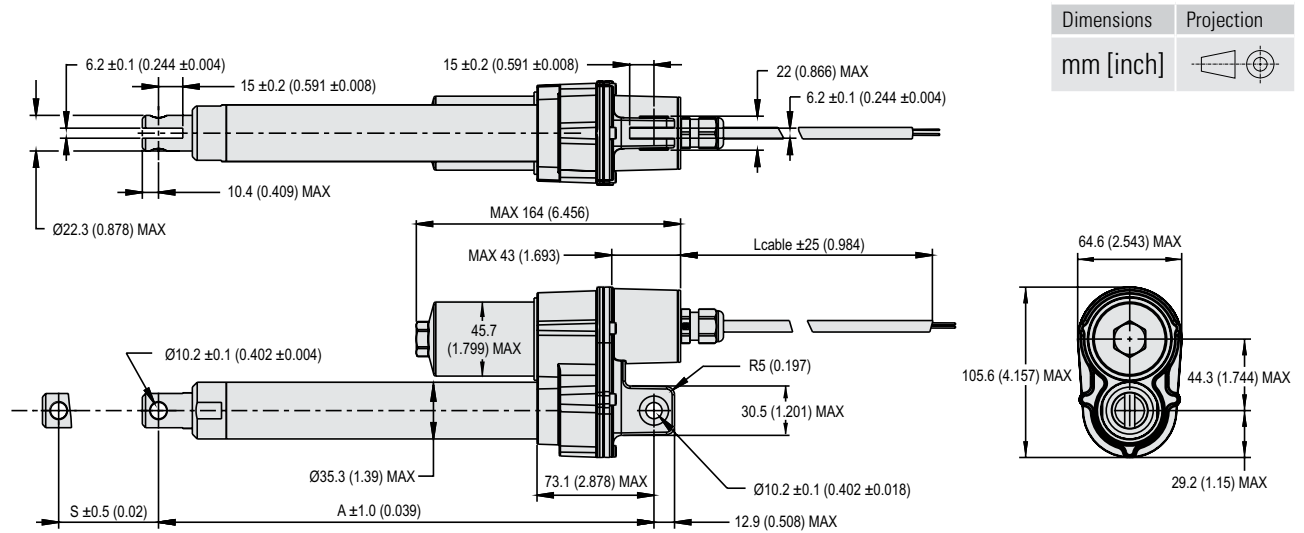
(3) See "Duty cycle vs. load" chart in the Glossary section.

| Electrical Specifications                                                                                                                                                        |                         |                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|------------------------------------------|
| Available input voltages                                                                                                                                                         | [Vdc]                   | 12, 24                                   |
| Input voltage tolerance                                                                                                                                                          | [%]                     | +15 / -10                                |
| Current draw @ no load/max. load<br>MX12W (12 Vdc input, worm screw)<br>MX24W (24 Vdc input, worm screw)<br>MX12B (12 Vdc input, ball screw)<br>MX24B (24 Vdc input, ball screw) | [A]                     | 1.2/8.0<br>0.8/3.8<br>1.1/7.4<br>0.7/3.5 |
| Inrush/stall current @ max. load<br>MX12W (12 Vdc input, worm screw)<br>MX24W (24 Vdc input, worm screw)<br>MX12B (12 Vdc input, ball screw)<br>MX24B (24 Vdc input, ball screw) | [A]                     | 18.0<br>9.0<br>18.0<br>9.0               |
| Cable lengths, standard <sup>(1)</sup>                                                                                                                                           | [mm (in)]               | 300 (12), 1600 (63)                      |
| Cable diameter <sup>(1)</sup>                                                                                                                                                    | [mm (in)]               | 6.2 (0.244)                              |
| Cable leads cross section <sup>(1)</sup>                                                                                                                                         | [mm <sup>2</sup> (AWG)] | 1 (18)                                   |

(1) The same cable is used both for the input voltage and the feedback signals.



# Max Jac<sup>®</sup> – Dimensions



## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)  | [mm]  | 50   | 100   | 150   | 200   | 250*  | 300*  |
|----------------------|-------|------|-------|-------|-------|-------|-------|
| Retracted length (A) | [mm]  | 206  | 256   | 306   | 356   | 406   | 456   |
|                      | [in]  | 8.11 | 10.08 | 12.05 | 14.02 | 15.98 | 17.95 |
| Weight               | [kg]  | 1.5  | 1.7   | 1.9   | 2.1   | 2.2   | 2.4   |
|                      | [lbf] | 3.3  | 3.8   | 4.2   | 4.6   | 4.8   | 5.3   |

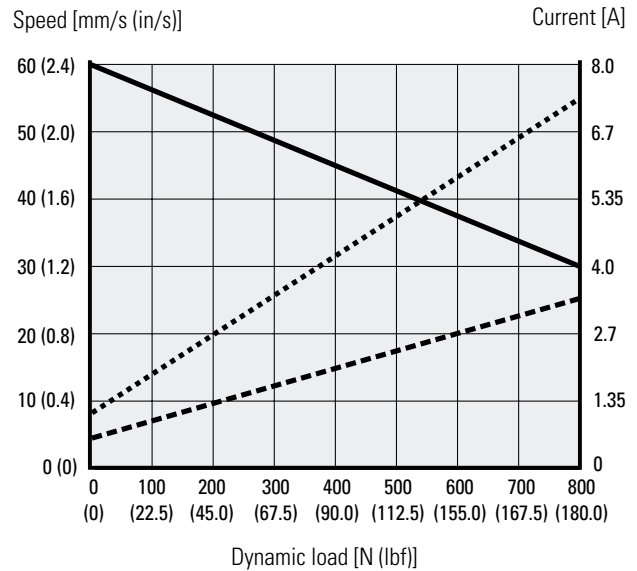
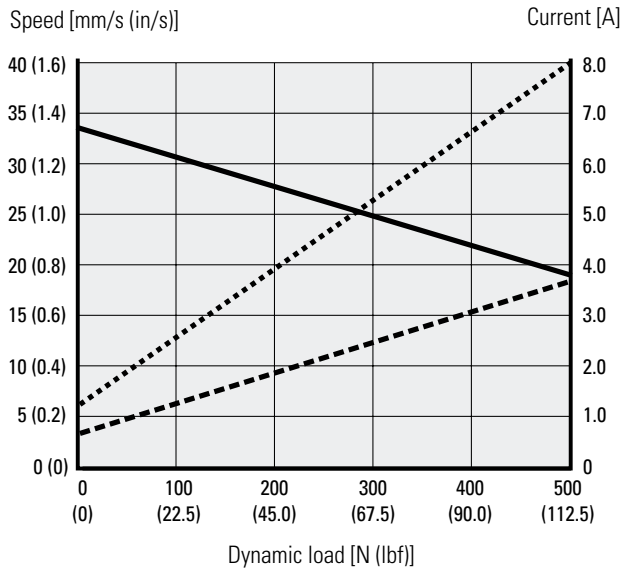
\* Stroke not possible for MSxxW1 (worm screw) models.

# Max Jac® – Performance Diagrams

## Speed and Current vs. Load

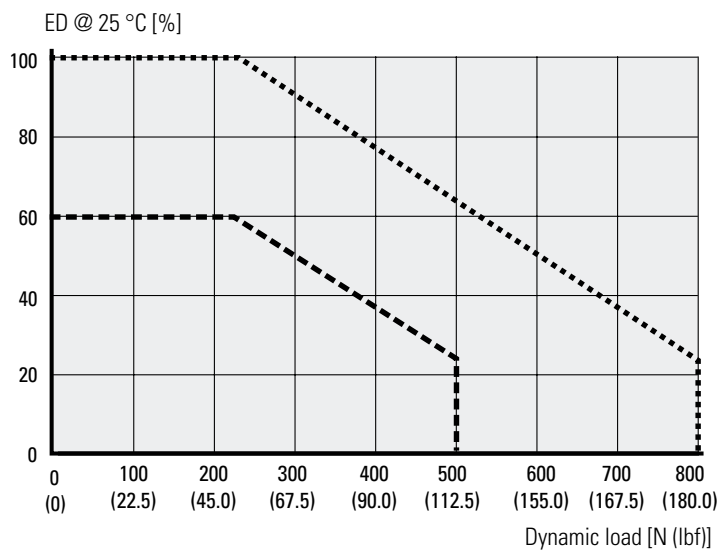
Worm Screw Models (MXxxW)

Ball Screw Models (MXxxB)



Speed ——— Current @ 12 Vdc ..... Current @ 24 Vdc - - - -

## Duty Cycle vs. Load



Worm Screw Models (MXxxW) - - - - - Ball Screw Models (MXxxB) .....



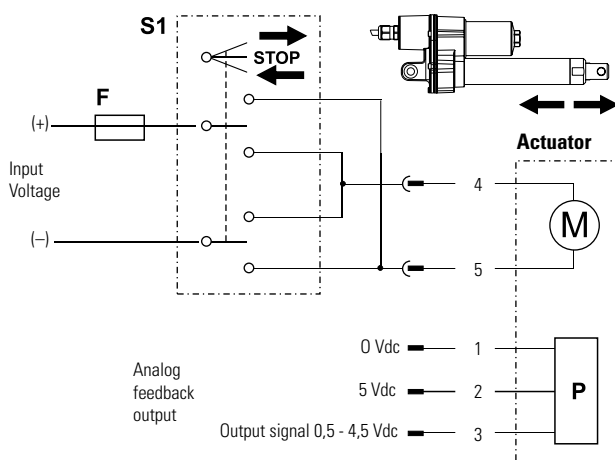
## Max Jac<sup>®</sup> – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |            |                                                                                                                                                                                                                                                                                                                                                                     |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2         | 3          | 4                                                                                                                                                                                                                                                                                                                                                                   | 5        |
| <b>MX12-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>W1</b> | <b>M05</b> | <b>P</b>                                                                                                                                                                                                                                                                                                                                                            | <b>0</b> |
| <p><b>1. Model and input voltage</b><br/>MX12- = Max Jac, 12 Vdc<br/>MX24- = Max Jac, 24 Vdc</p> <p><b>2. Dynamic load capacity, screw type and maximum speed</b><br/>W1 = 500 N (112 lbf), worm screw, 35 mm/s (1.38 in/s)<br/>B8 = 800 N (180 lbf), ball screw, 55 mm/s (2.17 in/s)</p> <p><b>3. Ordering stroke length</b><br/>M05 = 50 mm (1.969 in)<br/>M10 = 100 mm (3.937 in)<br/>M15 = 150 mm (5.906 in)<br/>M20 = 200 mm (7.874 in)<br/>M25 = 250 mm (9.843 in)<sup>(1)</sup><br/>M30 = 300 mm (11.811 in)<sup>(1)</sup></p> |           |            | <p><b>4. Options</b><br/>P = analog feedback (standard)<br/>E = digital encoder feedback</p> <p><b>5. Connector option</b><br/>0 = 300 mm (12 in) long flying leads<br/>1 = 300 mm (12 in) long cable and AMP Superseal connector<br/>2 = 1600 mm (63 in) long cable and AMP Superseal connector</p> <p>(1) Stroke not possible for MSxxW1 (worm screw) models.</p> |          |

# Max Jac® – Electrical Connections

## Option Analog Feedback

|                                  |       |             |
|----------------------------------|-------|-------------|
| Actuator supply voltage          | [Vdc] |             |
| MX12                             |       | 12          |
| MX24                             |       | 24          |
| Analog feedback type             |       | non-contact |
| Analog feedback input voltage    | [Vdc] | 5           |
| Analog feedback output voltage   | [Vdc] | 0.5 - 4.5   |
| Analog feedback output linearity | [%]   | ± 1         |



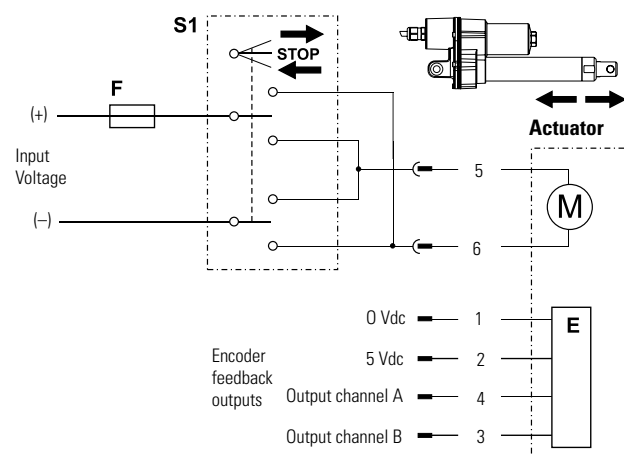
- M Actuator motor
- S1 Double pole double throw (DPDT) switch
- F Fuse
- P Analog feedback device

Connect lead 5 to positive and 4 to negative to extend the actuator. Change polarity to retract the actuator. The analog feedback device is supplied between leads 1 and 2, and the output signal is generated on lead 3.

Keep in mind that the actuator voltage must be switched off when reaching the ends of stroke or due to a mid-stroke overload to avoid causing damage to the actuator.

## Option Encoder Feedback

|                            |            |             |
|----------------------------|------------|-------------|
| Actuator supply voltage    | [Vdc]      |             |
| MX12                       |            | 12          |
| MX24                       |            | 24          |
| Encoder type               |            | incremental |
| Number of encoder channels |            | 2           |
| Encoder input voltage      | [Vdc]      | 5           |
| Encoder output resolution  | [pulse/mm] |             |
| MX12W                      |            | 9.86        |
| MX12B                      |            | 5.84        |



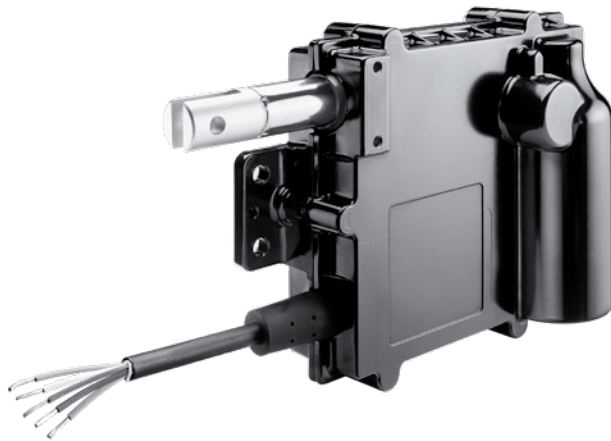
- M Actuator motor
- S1 Double pole double throw (DPDT) switch
- F Fuse
- E Encoder feedback device

Connect lead 6 to positive and 5 to negative to extend the actuator. Change polarity to retract the actuator. The encoder feedback device is supplied between leads 1 and 2, and the output signal train from channel A is generated on lead 4 and channel B on lead 3.

Keep in mind that the actuator voltage must be switched off when reaching the ends of stroke or due to a mid-stroke overload to avoid causing damage to the actuator.



# Electrak® Throttle – Technical Features



## Standard Features

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

## General Specifications

|                           |                                                                                                                       |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Screw type                | worm                                                                                                                  |
| Nut type                  | worm                                                                                                                  |
| Manual override           | no                                                                                                                    |
| Anti-rotation             | yes                                                                                                                   |
| Static load holding brake | no (self-locking)                                                                                                     |
| Safety features           | end-of-stroke overload protection<br>mid stroke overload protection<br>motor auto reset thermal switch <sup>(1)</sup> |
| Electrical connections    | cable with flying leads or<br>Deutsch connector                                                                       |
| Compliances               | CE                                                                                                                    |

(1) no thermal switch on units with temperature rating E.

## Optional Mechanical Features

- Adapter orientation
- Right angle cable exit
- Extended operating temperature range

## Optional Electrical Features

- Analog position feedback
- Internal end-of-stroke limit switches
- SAE J1939 CAN bus

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# Electrak<sup>®</sup> Throttle – Technical Specifications

| Mechanical Specifications                                              |               |                                               |
|------------------------------------------------------------------------|---------------|-----------------------------------------------|
| Max. static load <sup>(1)</sup><br>ETxx-084 <sup>(2)</sup><br>ETxx-174 | [N (lbf)]     | 90 (20)<br>260 (60)                           |
| Max. dynamic load (Fx)<br>ETxx-084 <sup>(2)</sup><br>ETxx-174          | [N (lbf)]     | 45 (10)<br>130 (30)                           |
| Speed @ no load/max. load<br>ETxx-084 <sup>(2)</sup><br>ETxx-174       | [mm/s (in/s)] | 96/83 (3.7/3.3)<br>48/37(1.9/1.45)            |
| Ordering stroke (S) length                                             | [mm(in)]      | 50.8 (2)                                      |
| Retracted length                                                       | [mm(in)]      | 184.7 (7.27)                                  |
| Operational life                                                       | [cycles]      | 500 000                                       |
| Operating temperature limits<br>ETxx-xxx-xS<br>ETxx-xxx-xE             | [°C (F)]      | -40 – 85 (-40 – 185)<br>-40 – 125 (-40 – 257) |
| Full load duty cycle @ 25 °C (77 °F)                                   | [%]           | 50                                            |
| End play, maximum                                                      | [mm (in)]     | 1.5 (0.06)                                    |
| Restraining torque                                                     | [Nm (lbf-in)] | 0                                             |
| Protection class - static                                              |               | IP69K, IP65                                   |
| Weight                                                                 | [kg (lbf)]    | 1.11 (2.5)                                    |
| Salt spray resistance                                                  | [h]           | 500                                           |

(1) Max. static load at fully retracted stroke.

(2) The ETxx-084 (high speed version) can only be ordered in combination with operating temperature rating E.

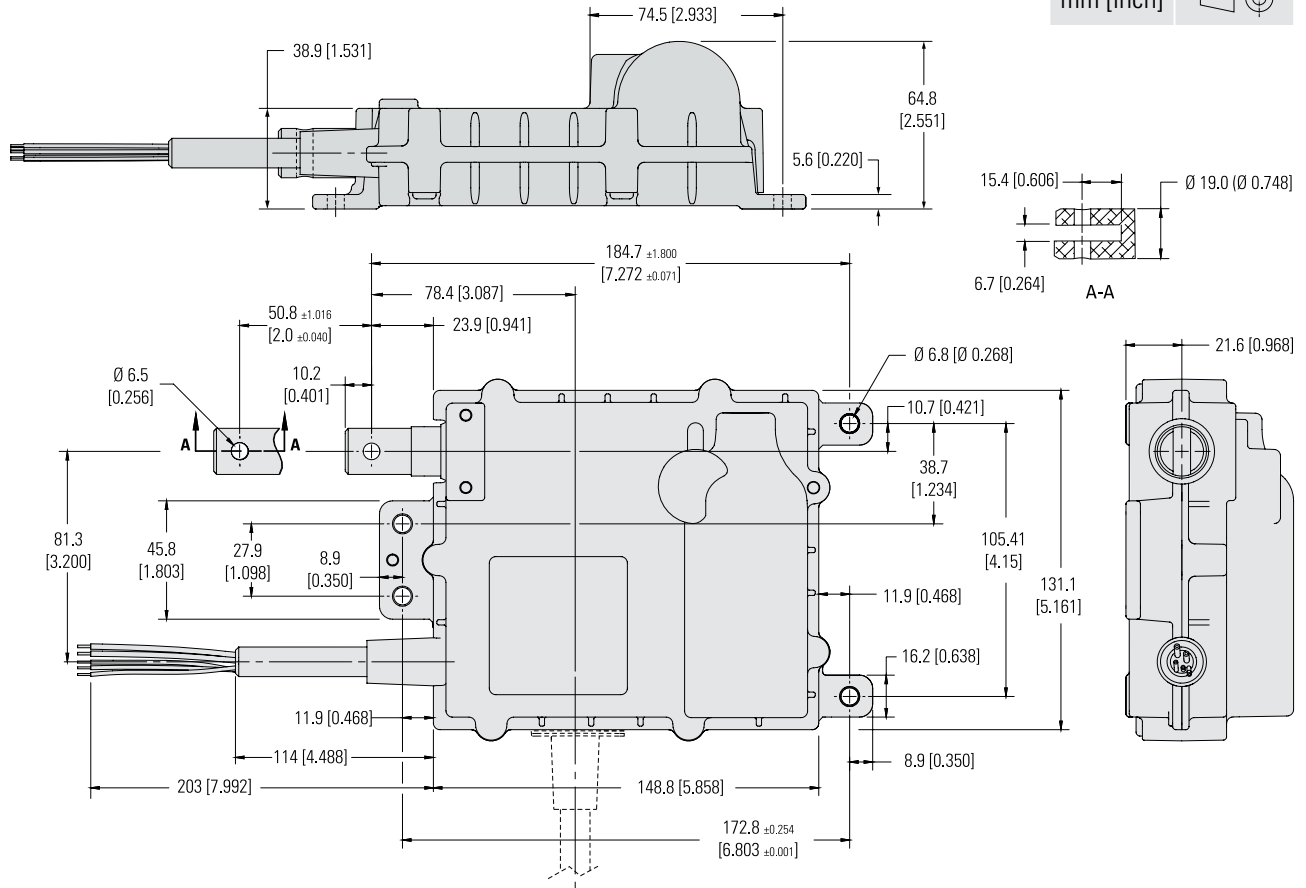
| Electrical Specifications                                                                                     |                         |                 |
|---------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|
| Available input voltages                                                                                      | [Vdc]                   | 12, 24          |
| Input voltage tolerance                                                                                       | [%]                     | ± 10            |
| Current draw @ no load/max. load <sup>(1)</sup><br>ET12 (12 Vdc input voltage)<br>ET24 (24 Vdc input voltage) | [A]                     | 1.5/4<br>0.75/2 |
| Motor cable length                                                                                            | [m (in)]                | 165 (6.5)       |
| Motor cable diameter                                                                                          | [mm (in)]               | 11.5 (0.45)     |
| Motor cable leads cross section                                                                               | [mm <sup>2</sup> (AWG)] | 1 (18)          |

(1) 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.



# Electrak® Throttle – Dimensions

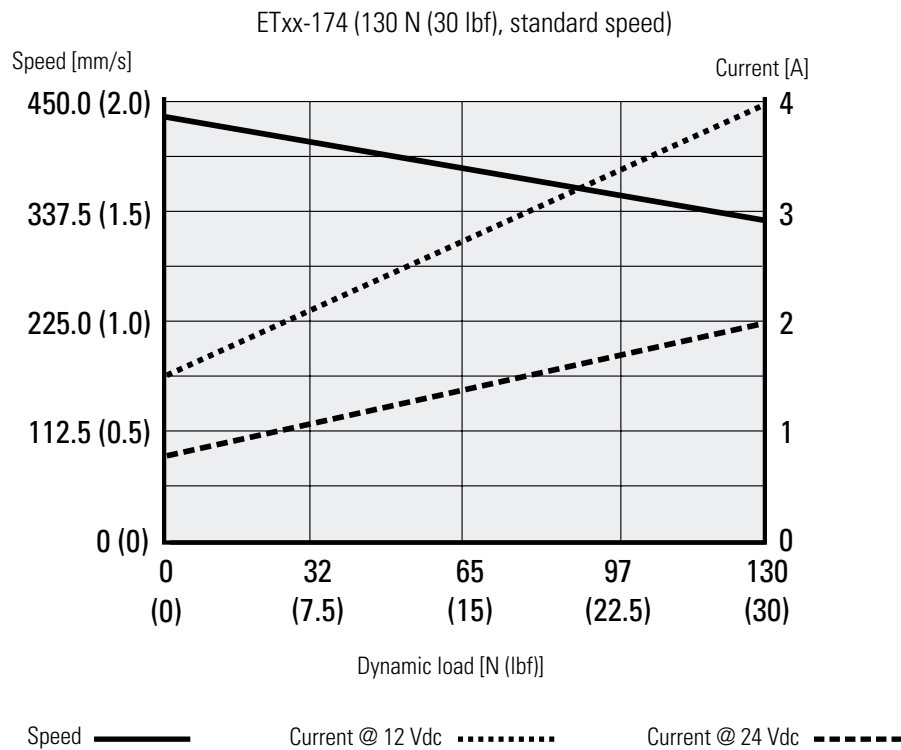
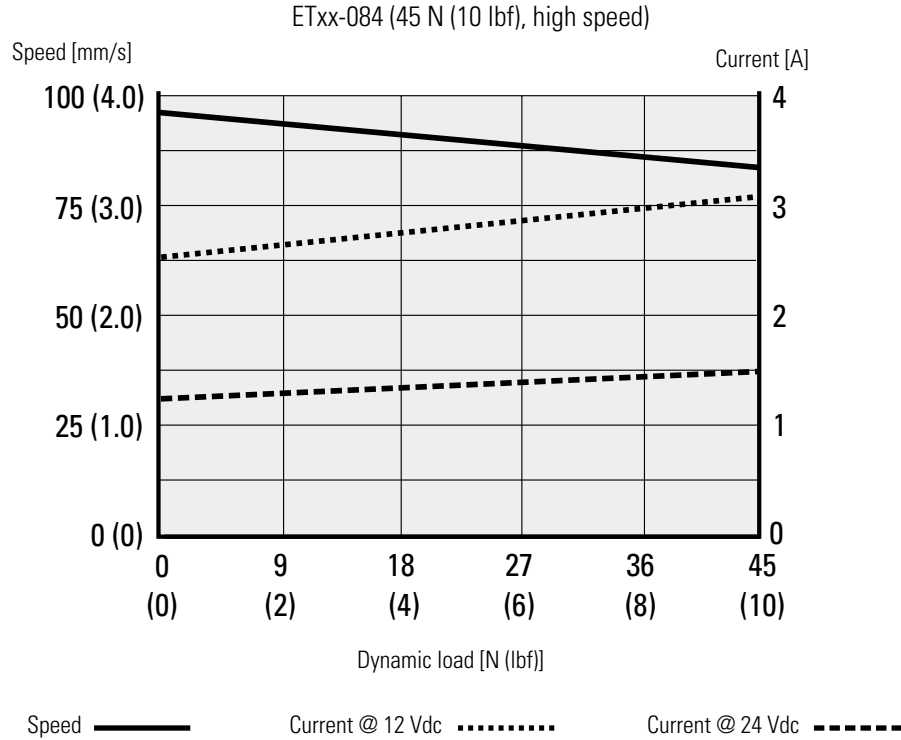
| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |





# Electrak<sup>®</sup> Throttle – Performance Diagrams

Speed and Current vs. Load





# Electrak® Throttle – Ordering Key

## Ordering Key

| 1            | 2           | 3        | 4        | 5         | 6        | 7        |
|--------------|-------------|----------|----------|-----------|----------|----------|
| <b>ET12-</b> | <b>174-</b> | <b>S</b> | <b>S</b> | <b>NP</b> | <b>1</b> | <b>S</b> |

### 1. Model and input voltage

ET12 - = Electrak® Throttle, 12 Vdc  
 ET24 - = Electrak® Throttle, 24 Vdc

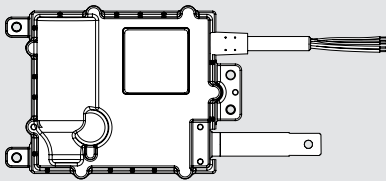
### 2. Max. dynamic load and speed version

084 - = 45 N (10 lbf), high speed <sup>(1)</sup>  
 174 - = 130 N (30 lbf), standard speed

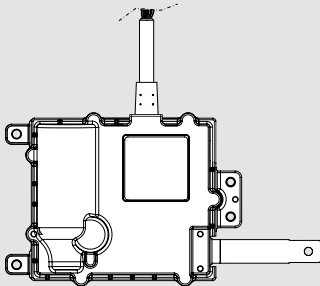
### 3. Harness orientation

S = parallel to adapter  
 R = rotated 90° in housing

S



R



### 4. Temperature rating

S = standard: -40 (-40) to +85 (+185) °C (F)  
 E = high temperature: -40 (-40) to +125 (+257) °C (F)

### 5. Control option

NP = analog position feedback sensor  
 FN = end-of-stroke limit switches  
 FP = analog position feedback and end-of-stroke limit switches  
 CN = SAE J1939 CAN bus

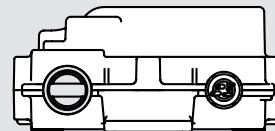
### 6. Connector option

1 = flying leads  
 2 = Deutsch DTM04-6P connector

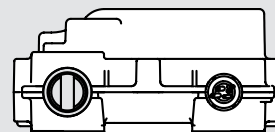
### 7. Adapter option

S = standard adapter orientation  
 M = adapter rotated 90°

S



M

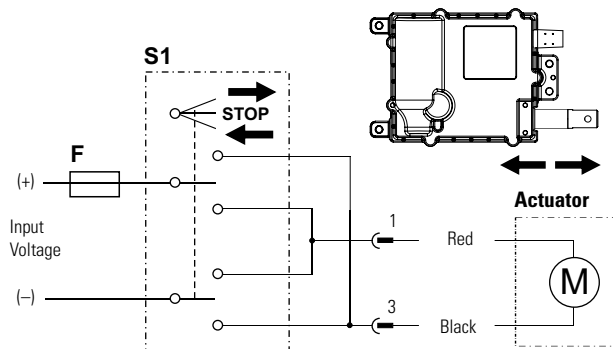


(1) Can only be ordered with high temperature rating (code E in position 4). Note that there is no thermal switch to protect the motor on the high temperature rated models.

# Electrak<sup>®</sup> Throttle – Electrical Connections

## Option End-of-Stroke Limit Switches

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| ET12                    |       | 12 |
| ET24                    |       | 24 |

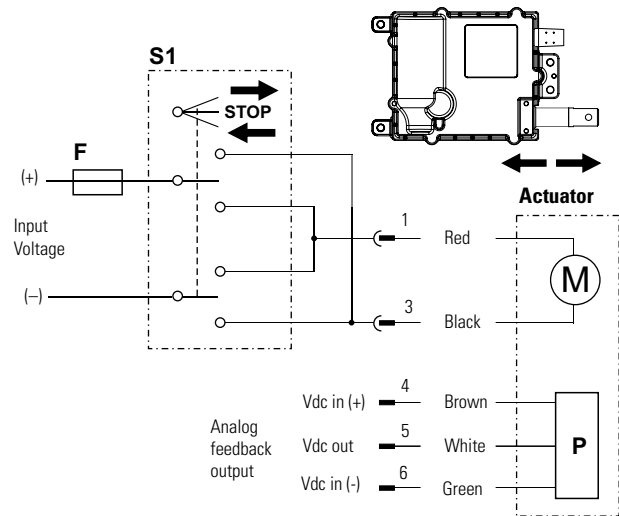


- M Actuator motor
- S1 Double pole double throw (DPDT) switch
- F Fuse

Connect black lead (connector pin 3) to positive and red lead (pin 1) to negative to extend the actuator. Change polarity to retract the actuator. When reaching the ends of stroke, the internal limit switches automatically will stop motion. A clutch is included as a safety feature to stop the motion in case of mid stroke overload.

## Option Analog Feedback

| Actuator supply voltage              | [Vdc]     |                  |
|--------------------------------------|-----------|------------------|
| ET12                                 |           | 12               |
| ET24                                 |           | 24               |
| Analog feedback type                 |           | non-contact      |
| Analog feedback input voltage, max.  | [Vdc in]  | 32               |
| Analog feedback output voltage       | [Vdc out] |                  |
| fully retracted                      |           | < 5 % of VDC in  |
| fully extended                       |           | > 75 % of VDC in |
| Analog feedback output current, max. | [mA]      | 1                |
| Analog feedback output linearity     | [%]       | ± 1              |



- M Actuator motor
- S1 Double pole double throw (DPDT) switch
- F Fuse
- P Analog feedback device

Connect black lead (connector pin 3) to positive and red lead (pin 1) to negative to extend the actuator. Change polarity to retract the actuator. If the actuator should reach the mechanical end of stroke, the built in clutch will stop the motion. The clutch, however, is a safety feature and should not be used as end of stroke control during normal operation.

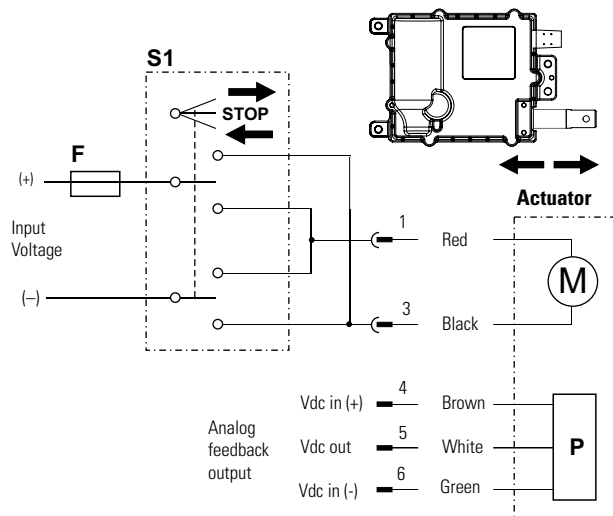
The analog feedback device is supplied between brown lead (connector pin 4) and green lead (pin 6), while the output signal is on white lead (pin 5).



# Electrak® Throttle – Electrical Connections

## Option Analog Feedback + End-of-Stroke Limit Switches

|                                      |           |                  |
|--------------------------------------|-----------|------------------|
| Actuator supply voltage              | [Vdc]     |                  |
| ET12                                 |           | 9 - 16           |
| ET24                                 |           | 18 - 32          |
| Analog feedback type                 |           | non contact      |
| Analog feedback input voltage, max.  | [Vdc in]  | 32               |
| Analog feedback output voltage       | [Vdc out] |                  |
| fully retracted                      |           | < 5 % of VDC in  |
| fully extended                       |           | > 75 % of VDC in |
| Analog feedback output current, max. | [mA]      | 1                |
| Analog feedback output linearity     | [%]       | ± 1              |



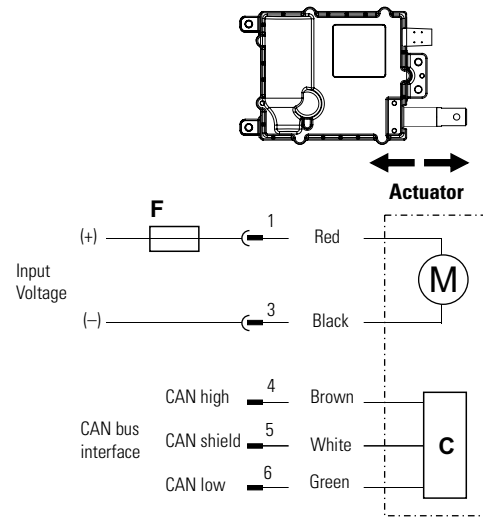
- M Actuator motor
- S1 Double pole double throw (DPDT) switch
- F Fuse
- P Analog feedback device

Connect black lead (connector pin 3) to positive and red lead (pin 1) to negative to extend the actuator. Change polarity to retract the actuator. When reaching the ends of stroke, the internal limit switches automatically will stop motion. A clutch is included as a safety feature to stop the motion in case of mid stroke overload.

The analog feedback device is supplied between brown lead (connector pin 4) and green lead (pin 6), while the output signal is on white lead (pin 5).

## Option SAE J1939 CAN bus

|                            |       |                 |
|----------------------------|-------|-----------------|
| Actuator supply voltage    | [Vdc] |                 |
| ET12                       |       | 12              |
| ET24                       |       | 24              |
| CAN bus signal information |       | see user manual |



- M Actuator motor
- S1 Double pole double throw (DPDT) switch
- F Fuse
- C CAN bus device

Connect red lead to (connector pin 1) to positive and black (pin 3) to negative to power up the actuator. A clutch is included as a safety feature to stop the motion in case of mechanical overload.

The actuator is controlled via the CAN bus interface on brown lead (connector pin 4), white lead (pin 5) and green lead (pin 6).

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# Electrak® PPA – Technical Features



## Standard Features

- Strong and versatile heavy-duty actuator
- High duty cycle
- 12, 24, 36 or 90 Vdc as standard input voltages
- Highly efficient ball screw drive system
- Static load up to 13350 N (3000 lbf)
- Dynamic load up to 6670 N (1500 lbf)
- Stroke up to 36 inches
- Overload clutch for mid and end of stroke protection
- Motor with thermal switch
- Maintenance free

## General Specifications

|                           |                                                    |
|---------------------------|----------------------------------------------------|
| Screw type                | ball                                               |
| Nut type                  | ball nut                                           |
| Manual override           | no                                                 |
| Anti-rotation             | no                                                 |
| Static load holding brake | yes                                                |
| Safety features           | overload clutch<br>motor auto reset thermal switch |
| Electrical connections    | flying leads                                       |
| Compliances<br>standard   | –                                                  |
| optional                  | CE <sup>(1, 2)</sup>                               |

(1) Actuators used in the EU must be in compliance with CE  
(2) 90 Vdc model not CE compliant

## Optional Mechanical Features

Protective bellows

## Optional Electrical Features

Potentiometer feedback

Encoder feedback

End of stroke limit switches

## Accessories

Rear clevis mounting kit

Tube mounting kits

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# Electrak<sup>®</sup> PPA – Technical Specifications

| Mechanical Specifications                      |               |                      |
|------------------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>                | [N (lbf)]     | 13350 (3000)         |
| Max. dynamic load (Fx)                         | [N (lbf)]     |                      |
| PPAxx-18B65                                    |               | 3330 (750)           |
| PPAxx-58B65                                    |               | 6670 (1500)          |
| Speed @ no load/max. load                      | [mm/s (in/s)] |                      |
| PPAxx-18B65                                    |               | 32/28 (1.26/1.10)    |
| PPAxx-58B65                                    |               | 12/9 (0.49/0.37)     |
| Min. ordering stroke (S) length                | [in]          | 4                    |
| Max. ordering stroke (S) length <sup>(2)</sup> | [in]          | 36                   |
| Standard stroke lengths                        | [in]          | 4, 8, 12, 18, 24, 36 |
| Operating temperature limits                   | [°C (F)]      | -25 – 65 (-15 – 150) |
| Full load duty cycle @ 25 °C (77 °F)           | [%]           | 30                   |
| End play, maximum                              | [mm (in)]     | 1.0 (0.04)           |
| Restraining torque                             | [Nm (lbf-in)] |                      |
| PPAxx-18B65                                    |               | 11 (100)             |
| PPAxx-58B65                                    |               | 22 (200)             |
| Protection class - static                      |               | IP54                 |

(1) Max. static load at fully retracted stroke

| Electrical Specifications                       |                         |                |
|-------------------------------------------------|-------------------------|----------------|
| Available input voltages <sup>(1)</sup>         | [Vdc]                   | 12, 24, 36, 90 |
| Input voltage tolerance                         | [%]                     | ± 10           |
| Current draw @ no load/max. load <sup>(2)</sup> | [A]                     |                |
| PPA12-18B65                                     |                         | 7.5/22.0       |
| PPA12-58B65                                     |                         | 7.5/13.5       |
| PPA24-18B65                                     |                         | 3.0/12.0       |
| PPA24-58B65                                     |                         | 3.0/12.0       |
| PPA36-18B65                                     |                         | 4.5/8.0        |
| PPA36-58B65                                     |                         | 3.0/6.0        |
| Motor leads length                              | [mm (in)]               | 420 (16.5)     |
| Motor leads cross section                       | [mm <sup>2</sup> (AWG)] | 2 (14)         |
| Connection of electrical options <sup>(3)</sup> |                         | terminals      |

(1) For other input voltages - contact customer support

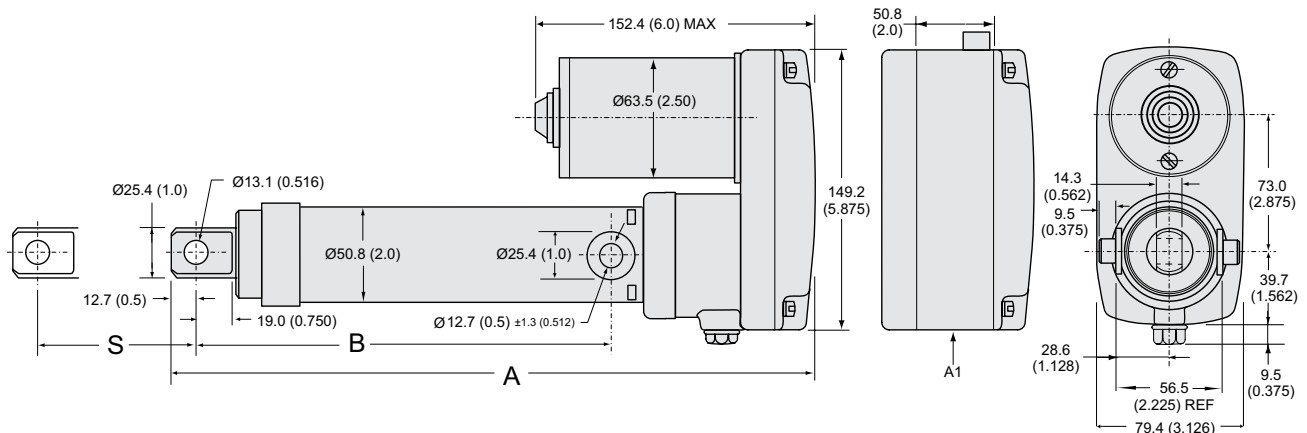
(2) For current draw for 90 Vdc input voltage models - contact customer support

(3) Potentiometer or end of stroke limit switches



# Electrak® PPA – Dimensions

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



S: stroke  
A: retracted length

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

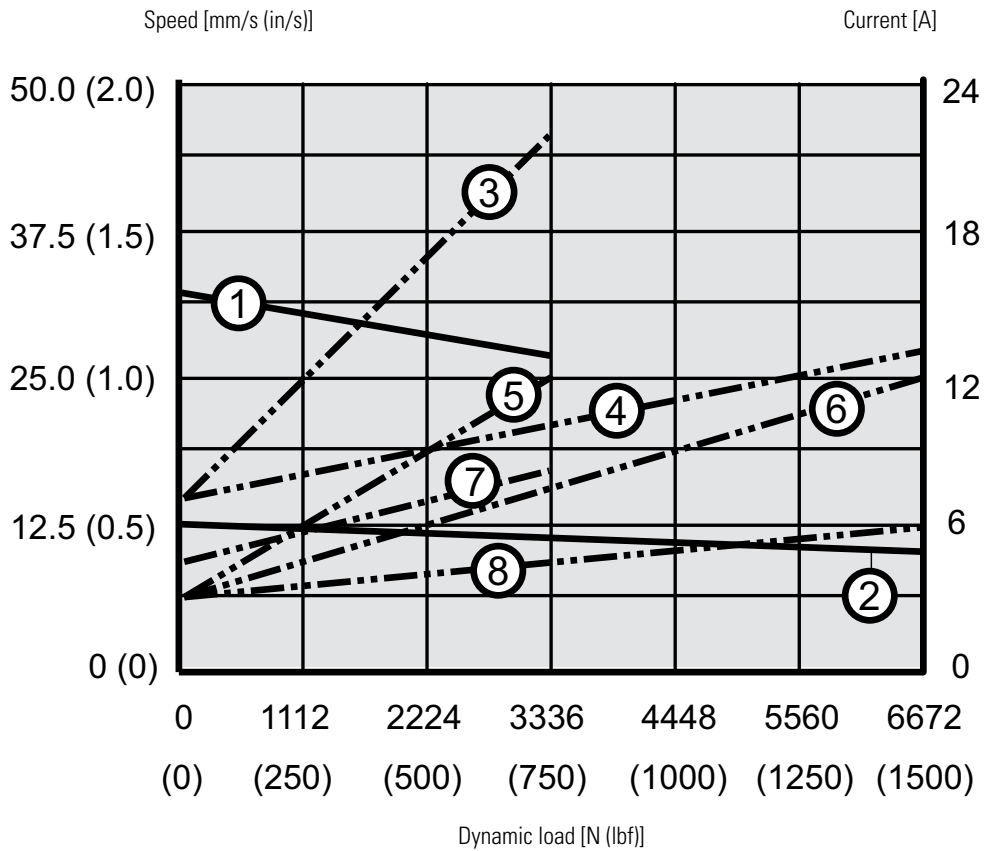
## Stroke, Retracted Length and Weight Relationships

|                                                                         |           |           |           |            |            |            |            |
|-------------------------------------------------------------------------|-----------|-----------|-----------|------------|------------|------------|------------|
| Ordering stroke (S)                                                     | [in (mm)] | 4 (101.5) | 8 (203.2) | 12 (304.8) | 18 (457.2) | 24 (609.6) | 36 (914.4) |
| Retracted length without option (A)                                     | [mm]      | 348.0     | 449.6     | 551.2      | 754.4      | 906.8      | 1211.6     |
|                                                                         | [in]      | 13.7      | 17.7      | 21.7       | 29.7       | 35.7       | 47.7       |
| Retracted length with potentiometer, encoder or limit switch option (A) | [mm]      | 398.8     | 500.4     | 602.0      | 805.2      | 957.6      | 1262.4     |
|                                                                         | [in]      | 15.7      | 19.7      | 23.7       | 31.7       | 37.7       | 49.7       |
| Retracted length to trunnions (B)                                       | [mm]      | 223.5     | 352.1     | 426.7      | 629.9      | 782.3      | 1087.1     |
|                                                                         | [in]      | 8.8       | 12.8      | 16.8       | 24.8       | 30.8       | 42.8       |
| Weight                                                                  | [kg]      | 4.5       | 5.3       | 6.0        | 7.2        | 8.4        | 10.8       |
|                                                                         | [lbf]     | 10.0      | 11.6      | 13.3       | 15.9       | 18.5       | 23.8       |
| Add on weight for potentiometer, encoder or limit switch options        | [kg]      | 0.5       |           |            |            |            |            |
|                                                                         | [lbf]     | 1.1       |           |            |            |            |            |



# Electrak<sup>®</sup> PPA – Performance Diagrams

Speed and Current vs. Load



Speed

- 1: PPAxx-18B65 (3330 N (750 lbf))
- 2: PPAxx-58B65 (6670 N (1500 lbf))

Current

- 3: PPA12-18B65 (12 Vdc, 3330 N (750 lbf))
- 4: PPA12-58B65 (12 Vdc, 6670 N (1500 lbf))
- 5: PPA24-18B65 (24 Vdc, 3330 N (750 lbf))
- 6: PPA24-58B65 (24 Vdc, 6670 N (1500 lbf))
- 7: PPA36-18B65 (36 Vdc, 3330 N (750 lbf))
- 8: PPA36-58B65 (36 Vdc, 6670 N (1500 lbf))



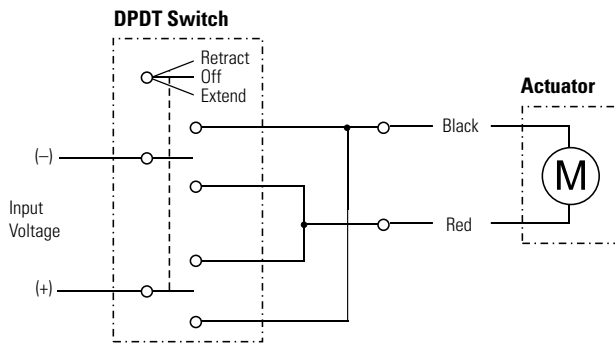
# Electrak® PPA – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |               |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                               |           |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2             | 3         | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5         | 6        |
| <b>PPA12-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>58B65-</b> | <b>08</b> | <b>N</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>LS</b> | <b>X</b> |
| <p><b>1. Model and input voltage</b><br/>           PPA12 - = Electrak PPA DC, 12 Vdc<br/>           PPA24 - = Electrak PPA DC, 24 Vdc<br/>           PPA36 - = Electrak PPA DC, 36 Vdc<br/>           PPA90 - = Electrak PPA DC, 90 Vdc <sup>(1)</sup></p> <p><b>2. Dynamic load capacity</b><br/>           18B65 - = 3330 N (750 lbf)<br/>           58B65 - = 6670 N (1500 lbf)</p> <p><b>3. Ordering stroke length</b><br/>           04 = 4 inch (101.6 mm)<br/>           08 = 8 inch (203.2 mm)<br/>           12 = 12 inch (304.8 mm)<br/>           18 = 18 inch (457.2 mm)<br/>           24 = 24 inch (609.6 mm)<br/>           36 = 36 inch (914.4 mm)</p> |               |           | <p><b>4. Brake option</b><br/>           N = no brake option</p> <p><b>5. Feedback option</b><br/>           XX = no feedback option<br/>           LS = end of stroke limit switches<br/>           PO = potentiometer <sup>(2)</sup></p> <p><b>6. Bellows option</b><br/>           X = no bellows<br/>           C = bellows</p> <p><small>(1) Not CE compliant.<br/>           (2) Potentiometer + end of stroke limit switches not possible.</small></p> |           |          |

# Electrak® PPA – Electrical Connections

## Without Option

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| PPA12                   |       | 12 |
| PPA24                   |       | 24 |
| PPA36                   |       | 36 |
| PPA90                   |       | 90 |



Connect the black lead to positive and red to negative to extend the actuator. Change polarity to retract the actuator.

## With Option Potentiometer

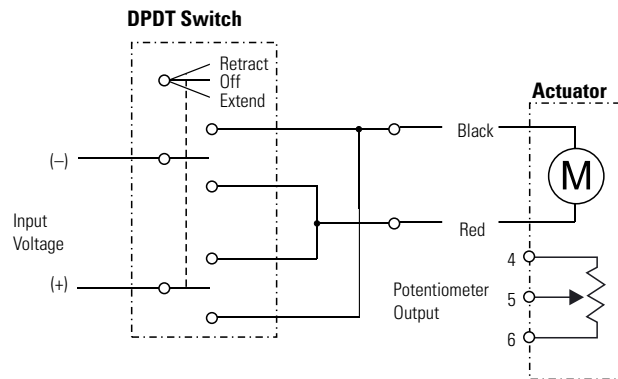
| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| PPA12                   |       | 12 |
| PPA24                   |       | 24 |
| PPA36                   |       | 36 |
| PPA90                   |       | 90 |

| Potentiometer type         |       | wire-wound |
|----------------------------|-------|------------|
| Potentiometer max. voltage | [Vdc] | 32         |
| Potentiometer max. power   | [W]   | 2          |
| Potentiometer linearity    | [%]   | ± 5        |

| Potentiometer output resolution | [ohm/mm] |    |
|---------------------------------|----------|----|
| 4 inch stroke                   |          | 98 |
| 8 inch stroke                   |          | 49 |
| 12 inch stroke                  |          | 33 |
| 18 inch stroke                  |          | 22 |
| 24 inch stroke                  |          | 16 |
| 36 inch stroke                  |          | 11 |



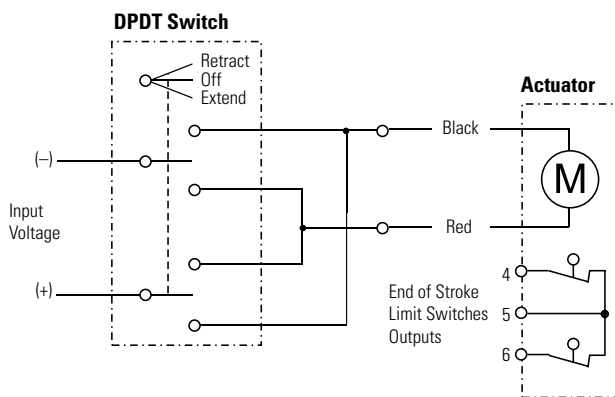
Connect the black lead to positive and red to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output has 0 ohm between terminal 4 and 5 when the actuator is fully retracted.

## With Option End of Stroke Limit Switches

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| PPA12                   |       | 12 |
| PPA24                   |       | 24 |
| PPA36                   |       | 36 |
| PPA90                   |       | 90 |

| Limit switches max. voltage | [V] | 250  |
|-----------------------------|-----|------|
| Limit switches max. current | [A] | 15.1 |



Connect the black lead to positive and red to negative to extend the actuator. Change polarity to retract the actuator. Limit switch outputs are on terminals 4 and 6, and they have a common voltage input on terminal 5.



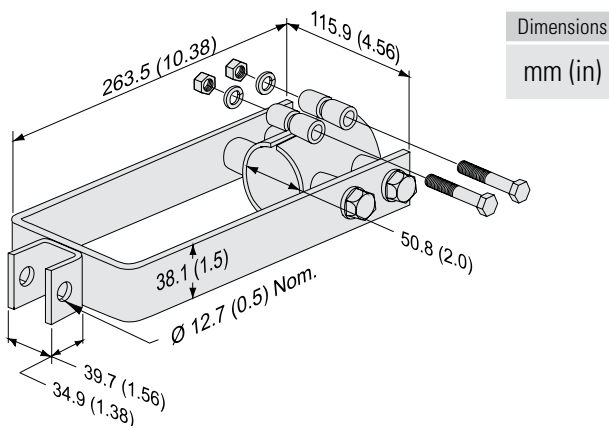
# Electrak® PPA – Accessories

## PPA Rear Clevis Mounting Kits

| Designation                         | Compatible Actuators | Part Number |
|-------------------------------------|----------------------|-------------|
| PPA rear clevis mounting kit type 1 | Electrak PPA         | 7827320     |
| PPA rear clevis mounting kit type 2 | Electrak PPA         | 7824295     |

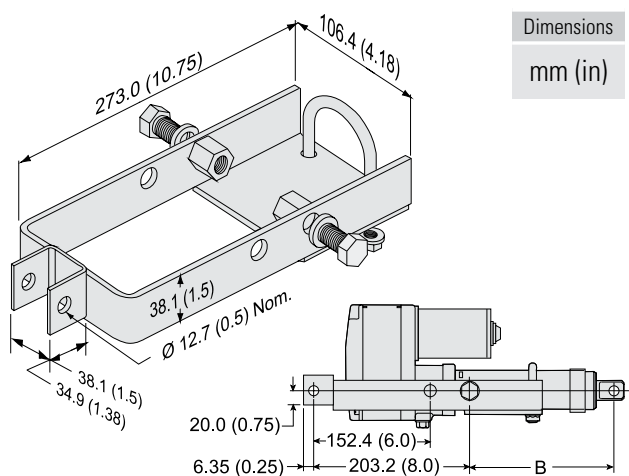
The rear clevis mounting kits are attached to the tube of an Electrak PPA actuator, allowing it to be mounted clevis to clevis style.

### PPA Rear Clevis Mounting Kit - Type 1



Dimensions  
mm (in)

### PPA Rear Clevis Mounting Kit - Type 2



Dimensions  
mm (in)

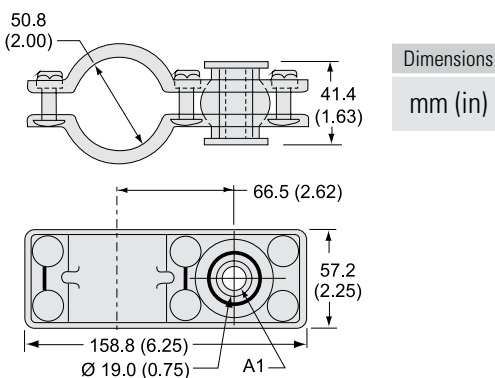
B: retracted length to trunnion, also see product pages.

## PPA Tube Mounting Kits

| Designation                                 | Compatible Actuators | Part Number |
|---------------------------------------------|----------------------|-------------|
| Electrak PPA tube mount - light duty 3330 N | Electrak PPA         | 7822520     |
| Electrak PPA tube mount - heavy-duty 6670 N | Electrak PPA         | 7821783     |

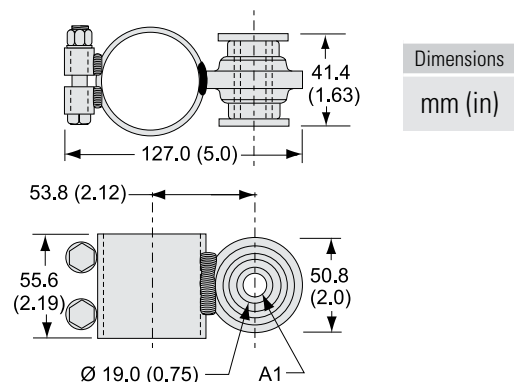
The tube mounting kits work as a clamp that is mounted at any desired position along the actuator tube. Trunnion pins for the tube mount clamp are supplied and mounted by the customer.

### Electrak PPA Tube Mount - Light Duty 3330 N (750 lbf)



Dimensions  
mm (in)

### Electrak PPA Tube Mount - Heavy-duty 6670 N (1500 lbf)



Dimensions  
mm (in)

A1: hole diameter 12.7 mm (0.5 in) with bushing.

A1: hole diameter 12.7 mm (0.5 in) with bushing.

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# DMHD – Technical Features



## Standard Features

- Self-supporting column in extruded anodized aluminium with high load torque capability
- Onboard electronics with many optional functions
- 12 or 24 Vdc as standard input voltages
- Static load up to 18 kN (4050 lbf)
- Dynamic load up to 16 kN (3584 lbf)
- Stroke up to 600 mm
- Speed up to 71 mm/s (2.8 in/s)
- Protection class static IP65
- Rugged, robust and strong
- T-slot grooves along the entire profile
- Maintenance free

## General Specifications

|                           |                                                                                                                                                                                                                            |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Screw type                | ball                                                                                                                                                                                                                       |
| Nut type                  | load lock ball nut                                                                                                                                                                                                         |
| Manual override           | no                                                                                                                                                                                                                         |
| Anti-rotation             | yes                                                                                                                                                                                                                        |
| Static load holding brake | yes                                                                                                                                                                                                                        |
| Safety features           | Electrak monitoring package:<br>current monitoring<br>voltage monitoring<br>temperature monitoring<br>load trip point calibration<br>internal end-of-stroke limit switches <sup>(1)</sup><br>end-of-stroke dynamic braking |
| Electrical connections    | cable with flying leads                                                                                                                                                                                                    |
| Compliances               | CE                                                                                                                                                                                                                         |

(1) Dynamic braking is included at the ends of stroke for all DMHD actuators. Dynamic braking offered throughout the entire stroke length only on low-level switching and J1939 options.

## Optional Electronic Control Features

|                                 |
|---------------------------------|
| CANopen CAN bus                 |
| SAE J1939 CAN bus               |
| Synchronization option          |
| Low-level switching             |
| Programmable limit switches     |
| Signal-follower                 |
| End-of-stroke indication output |
| Analog position output          |
| Digital position output         |

## Control Option Combinations

Same as for Electrak HD - see table on page 20

## Accessories

T-slot bolts

## Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# DMHD – Technical Specifications

| Mechanical Specifications                      |               |                      |
|------------------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>                | [kN (lbf)]    | 18 (4050)            |
| Max. dynamic load (Fx)                         | [kN (lbf)]    |                      |
| DMHDxxB017                                     |               | 1.7 (382)            |
| DMHDxxB026                                     |               | 2.6 (585)            |
| DMHDxxB045                                     |               | 4.5 (1012)           |
| DMHDxxB068                                     |               | 6.8 (1529)           |
| DMHDxxB100                                     |               | 10 (2248)            |
| DMHDxxB160                                     |               | 16 (3584)            |
| Max. load torque, dyn. and static              | [Nm (lbf-in)] | 710 (6284)           |
| Speed @ no load/max. load <sup>(2)</sup>       | [mm/s (in/s)] |                      |
| DMHDxxB017                                     |               | 71/58 (2.8/2.28)     |
| DMHDxxB026                                     |               | 40/32 (1.6/1.3)      |
| DMHDxxB045                                     |               | 24/19 (0.94/0.75)    |
| DMHDxxB068                                     |               | 18/14 (0.71/0.55)    |
| DMHDxxB100                                     |               | 11/9 (0.43/0.35)     |
| DMHDxxB160                                     |               | 7/5 (0.27/0.21)      |
| Min. ordering stroke (S) length                | [mm]          | 100                  |
| Max. ordering stroke (S) length <sup>(3)</sup> | [mm]          | 600                  |
| Ordering stroke length increments              | [mm]          | 50                   |
| Operating temperature limits                   | [°C (F)]      | -40 – 85 (-40 – 185) |
| Full load duty cycle @ 25 °C (77 °F)           | [%]           | 25 <sup>(4)</sup>    |
| End play, maximum                              | [mm (in)]     | 1.2 (0.047)          |
| Protection class - static                      |               | IP65                 |

<sup>1</sup> Max. static load at fully retracted stroke.

<sup>2</sup> For units with the synchronization option, the speed is 25% lower at any load.

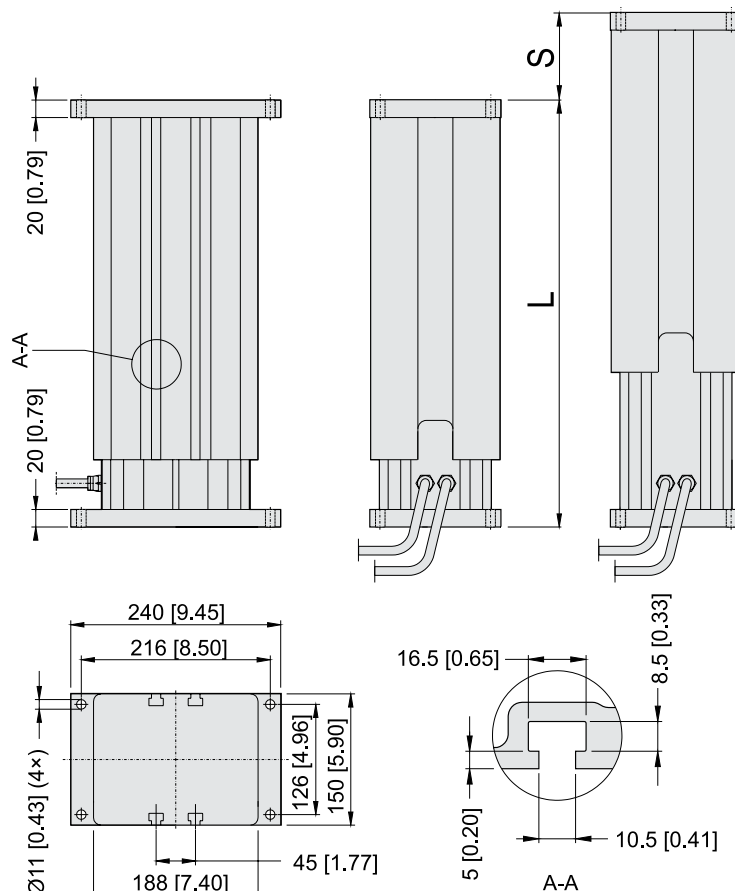
<sup>3</sup> 500 mm max. for 16 kN

<sup>4</sup> For DMHDxx-B100 and DMHDxx-160, unidirectional load, the duty cycle is 15%.

| Electrical Specifications        |                         |                     |
|----------------------------------|-------------------------|---------------------|
| Available input voltages         | [Vdc]                   | 12, 24              |
| Input voltage tolerance          | [Vdc]                   |                     |
| DMHD12 (12 Vdc input voltage)    |                         | 9 - 16              |
| DMHD24 (24 Vdc input voltage)    |                         | 18 - 32             |
| Current draw @ no load/max. load | [A]                     |                     |
| DMHD12B017                       |                         | 3/18                |
| DMHD24B017                       |                         | 1.5/9               |
| DMHD12B026                       |                         | 3/18                |
| DMHD24B026                       |                         | 1.5/9               |
| DMHD12B045                       |                         | 3/18                |
| DMHD24B045                       |                         | 1.5/9               |
| DMHD12B068                       |                         | 3/20                |
| DMHD24B068                       |                         | 1.5/10              |
| DMHD12B100                       |                         | 3/18                |
| DMHD24B100                       |                         | 1.5/9               |
| DMHD12B160                       |                         | 3/20                |
| DMHD24B160                       |                         | 1.5/10              |
| Motor leads cross section        | [mm <sup>2</sup> (AWG)] | 2 (14)              |
| Signal leads cross section       | [mm <sup>2</sup> (AWG)] | 0.5 (20)            |
| Standard cable lengths           | [m (in)]                | 1.5, 5<br>(59, 197) |
| Cable diameter                   | [mm (in)]               | 7.5 (.295)          |
| Flying lead length               | [mm (in)]               | 76 (3)              |
| Stripped lead length             | [mm (in)]               | 6 (0.25)            |



# DMHD – Dimensions



| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |

Note. All models have two cables except models with control option EXX which has one placed in the center of the profile.

## Stroke, Retracted Length and Weight Relationships

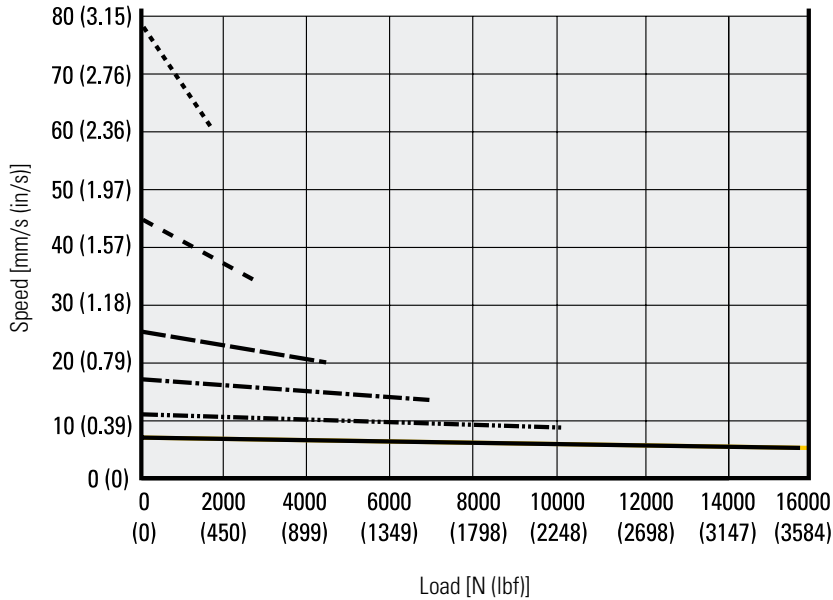
| Ordering stroke (S)                              | [mm]  | 100  | 150  | 200  | 250  | 300  | 350  | 400  | 450  | 500  | 550  | 600  |
|--------------------------------------------------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Retracted length (A) for DMHDxxB017(026,045,068) | [mm]  | 357  | 407  | 457  | 507  | 557  | 657  | 707  | 757  | 807  | 857  | 907  |
|                                                  | [in]  | 14.1 | 16.0 | 18.0 | 20.0 | 21.9 | 25.9 | 27.8 | 29.8 | 31.8 | 33.7 | 35.7 |
| Weight for DMHDxxB017(026,045,068)               | [kg]  | 21.8 | 23.3 | 24.9 | 26.4 | 28.0 | 30.8 | 32.3 | 33.8 | 35.5 | 37.0 | 38.5 |
|                                                  | [lbf] | 48.0 | 51.3 | 54.8 | 58.1 | 61.6 | 67.8 | 71.1 | 74.4 | 78.1 | 81.4 | 84.7 |
| Retracted length (A) for DMHDxxB100              | [mm]  | 407  | 457  | 507  | 557  | 607  | 657  | 707  | 757  | 807  | 857  | 907  |
|                                                  | [in]  | 16.0 | 18.0 | 20.0 | 21.9 | 23.9 | 23.9 | 27.8 | 29.8 | 31.8 | 33.7 | 35.7 |
| Weight for DMHDxxB100                            | [kg]  | 22.0 | 23.6 | 25.1 | 26.7 | 28.2 | 31.1 | 32.5 | 34.7 | 36.4 | 38.0 | 39.5 |
|                                                  | [lbf] | 48.4 | 51.9 | 55.2 | 58.7 | 62.0 | 68.4 | 71.5 | 76.3 | 80.1 | 83.6 | 86.9 |
| Retracted length (A) for DMHDxxB160 *            | [mm]  | 407  | 457  | 507  | 557  | 607  | 657  | 707  | 757  | 807  | -    | -    |
|                                                  | [in]  | 16.0 | 18.0 | 20.0 | 21.9 | 23.9 | 23.9 | 27.8 | 29.8 | 31.8 | -    | -    |
| Weight for DMHDxxB160 *                          | [kg]  | 22.3 | 23.9 | 25.4 | 27.0 | 28.5 | 31.4 | 32.5 | 34.7 | 36.4 | -    | -    |
|                                                  | [lbf] | 49.1 | 52.6 | 55.9 | 59.4 | 62.7 | 69.1 | 71.5 | 76.3 | 80.1 | -    | -    |

\* Max. stroke for DMHDxxB160 (16 kN (3584 lbf)) is 500 mm.

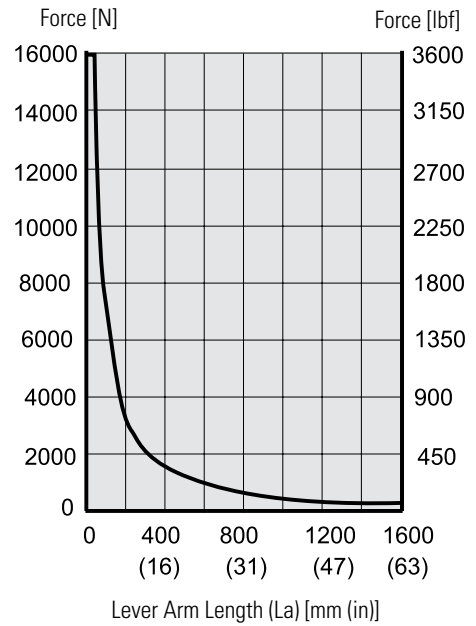


# DMHD – Performance Diagrams

Load vs. Speed<sup>(1)</sup>

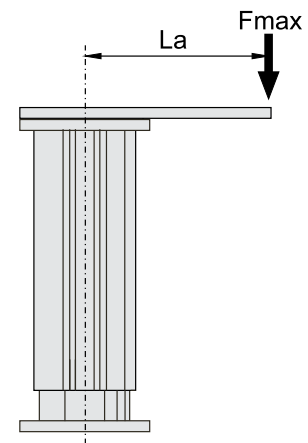
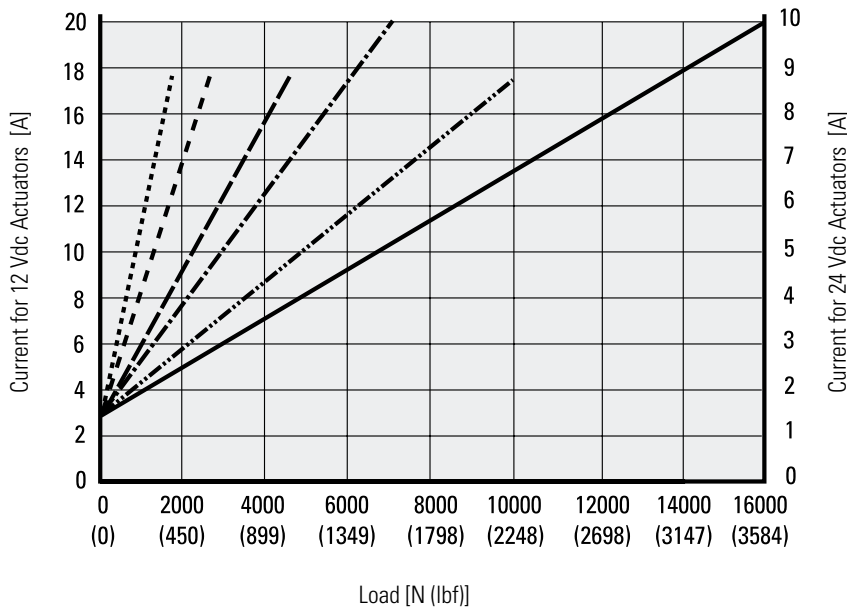


Off Center Load Capacity



<sup>1</sup> Curves valid for all units except those with the synchronization option, where the speed at any load is 25% lower than for those without.

Load vs. Current



- |                               |         |                                |           |                               |       |
|-------------------------------|---------|--------------------------------|-----------|-------------------------------|-------|
| DMHDxxB017 (1.7 kN (382 lbf)) | .....   | DMHDxxB045 (4.5 kN (1012 lbf)) | -----     | DMHDxxB100 (10 kN (2248 lbf)) | ..... |
| DMHDxxB026 (2.6 kN (585 lbf)) | - - - - | DMHDxxB068 (6.8 kN (1529 lbf)) | - . - . - | DMHDxxB160 (16 kN (3584 lbf)) | ————— |

**Note!** Curves were generated at an ambient temperature of 21°C (70°F). Different ambient temperature and individual actuator characteristics can produce slightly different values.



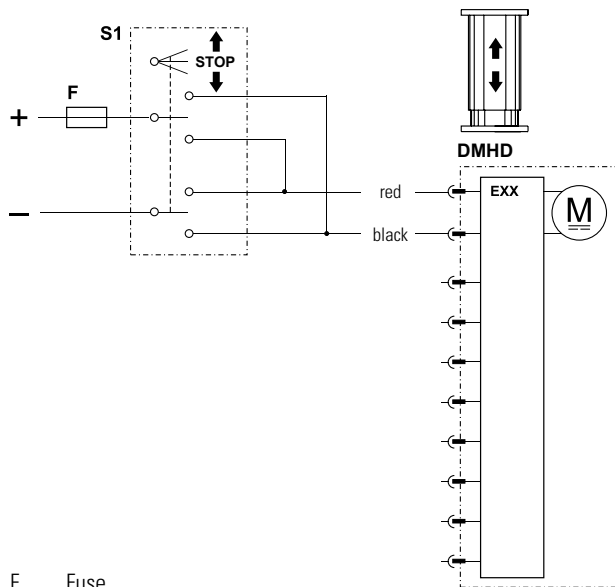
# DMHD – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2     | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 4   | 5 |
| DMHD12-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | B026- | 0300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | LXX | 5 |
| <p><b>1. Model and input voltage</b><br/>DMHD12- = lifting column type DMHD, 12 Vdc<br/>DMHD24- = lifting column type DMHD, 24 Vdc</p> <p><b>2. Screw type, dynamic load capacity</b><br/>B017- = ball screw, 1.7 kN (382 lbf)<br/>B026- = ball screw, 2.6 kN (585 lbf)<br/>B045- = ball screw, 4.5 kN (1012 lbf)<br/>B068- = ball screw, 6.8 kN (1529 lbf)<br/>B100- = ball screw, 10 kN (2248 lbf)<br/>B160- = ball screw, 16 kN (3584 lbf)</p> <p><b>3. Ordering stroke length <sup>(1)</sup> <sup>(2)</sup></b><br/>0100 = 100 mm<br/>0150 = 150 mm<br/>0200 = 200 mm<br/>0250 = 250 mm<br/>0300 = 300 mm<br/>0350 = 350 mm<br/>0400 = 400 mm<br/>0450 = 450 mm<br/>0500 = 500 mm<br/>0550 = 550 mm<br/>0600 = 600 mm</p> |       | <p><b>4. Electrak Modular Control System options</b><br/>EXX = Electronic Monitoring Package only<br/>ELX = EXX + end-of-stroke indication output<br/>EXP = EXX + analog (potentiometer) position output<br/>EXD = EXX + digital position output<br/>ELP = ELX + analog (potentiometer) position output<br/>ELD = ELX + digital position output<br/>LXX = EXX + low-level signal motor switching<br/>LLX = EXX + LXX + end-of-stroke indication output<br/>LXP = EXX + LXX + analog (potentiometer) position output<br/>LPS = EXX + LXX + programmable limit switches + signal-follower<br/>CNO = SAE J1939 CAN bus + open-loop speed control<br/>COO = CANopen CAN bus + open-loop speed control<br/>SYN = LXX + Synchronization option</p> <p><b>5. Cable length and connection type</b><br/>1 = 1.5 m long cable with flying leads<br/>2 = 5.0 m long cable with flying leads</p> <p>(1) Other stroke lengths available upon request. Contact customer support<br/>(2) Max. stroke for DMHDxxB160 (16 kN (3584 lbf)) is 500 mm.</p> |     |   |

# DMHD – Electrical Connections

## Option Type EXX

|                         |       |    |
|-------------------------|-------|----|
| Actuator supply voltage | [Vdc] |    |
| DMHD12                  |       | 12 |
| DMHD24                  |       | 24 |

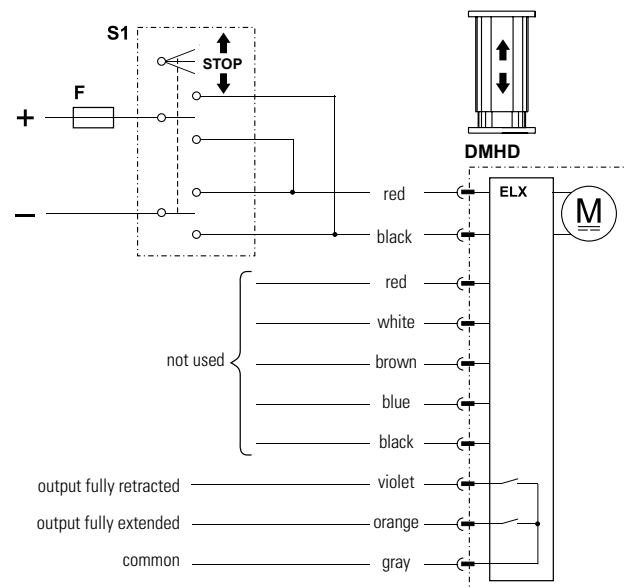


F Fuse  
S1 Double pole double throw switch

Control option EXX contains Electrak Monitoring Package features, guaranteeing safe operation of the actuator and equipment. With control option EXX, the polarity of the motor voltage is switched by a customer-supplied switch (switch, relay, etc.) to make the actuator extend or retract. The switch, power supply, wiring and all other components must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to three times the max. continuous current for the max. load being used for up to 150 milliseconds).

## Option Type ELX

|                                  |       |                |
|----------------------------------|-------|----------------|
| Actuator supply voltage          | [Vdc] |                |
| DMHD12                           |       | 12             |
| DMHD24                           |       | 24             |
| Output contact type              |       | potential free |
| Limit switch max. switch voltage | [Vdc] | 140            |
| Limit switch max. switch current | [mA]  | 350            |
| Limit switch max. switch power   | [W]   | 5              |



F Fuse  
S1 Double pole double throw switch

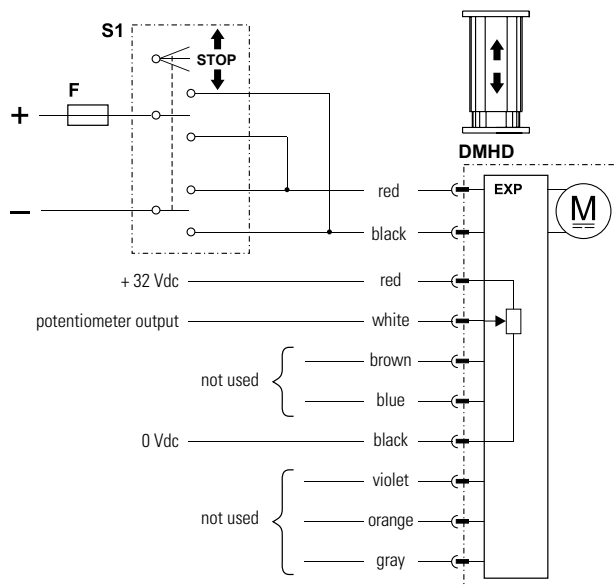
Control option ELX works as option EXX but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.



# DMHD – Electrical Connections

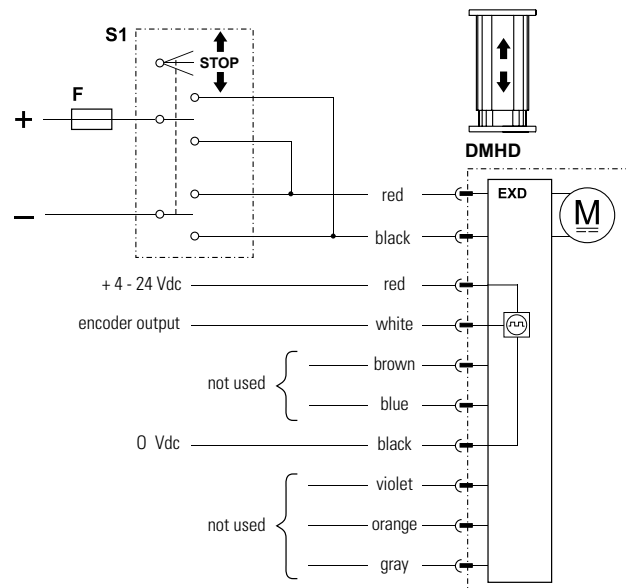
| Option Type EXP                  |          |            |
|----------------------------------|----------|------------|
| Actuator supply voltage          | [Vdc]    |            |
| DMHD12                           |          | 9 - 16     |
| DMHD24                           |          | 18 - 32    |
| Potentiometer type               |          | wire-wound |
| Potentiometer max. input voltage | [Vdc]    | 32         |
| Potentiometer max. power         | [W]      | 1          |
| Potentiometer linearity          | [%]      | ± 0.25     |
| Potentiometer output resolution  | [ohm/mm] |            |
| 50 - 100 mm stroke               |          | 65.6       |
| 150 - 250 mm stroke              |          | 32.8       |
| 300 - 500 mm stroke              |          | 19.7       |
| 550 - 600 mm stroke              |          | 9.8        |

| Option Type EXD                    |            |             |
|------------------------------------|------------|-------------|
| Actuator supply voltage            | [Vdc]      |             |
| DMHD12                             |            | 9 - 16      |
| DMHD24                             |            | 18 - 32     |
| Encoder type                       |            | hall effect |
| Encoder input voltage              | [Vdc]      | 4 - 24      |
| Encoder output voltage levels      | [Vdc]      |             |
| low (logical zero), typical / max. |            | 0.1 / 0.25  |
| Encoder resolution                 | [mm/pulse] |             |
| DMHDxx-B017                        |            | 0.28        |
| DMHDxx-B026                        |            | 0.15        |
| DMHDxx-B045                        |            | 0.09        |
| DMHDxx-B068                        |            | 0.07        |
| DMHDxx-B100                        |            | 0.04        |
| DMHDxx-B160                        |            | 0.03        |



F Fuse  
S1 Double pole double throw switch

Control option EXP works as option EXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.



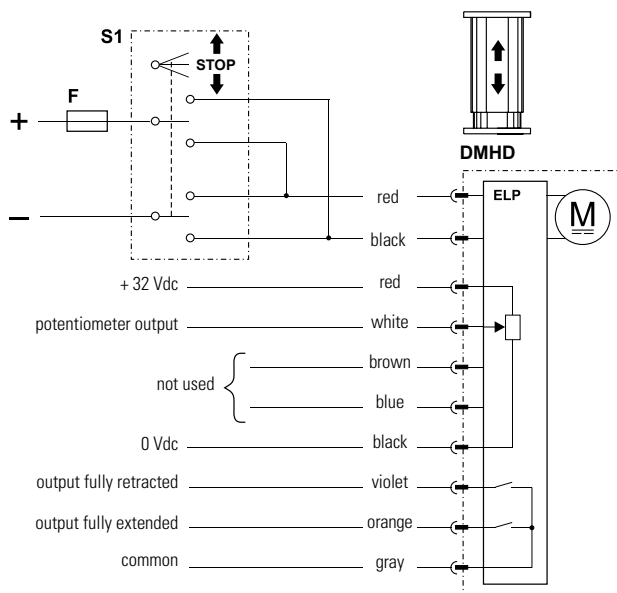
F Fuse  
S1 Double pole double throw switch

Control option EXD works as option EXX but also has a single-channel encoder output that will provide feedback on the extension tube position.

# DMHD – Electrical Connections

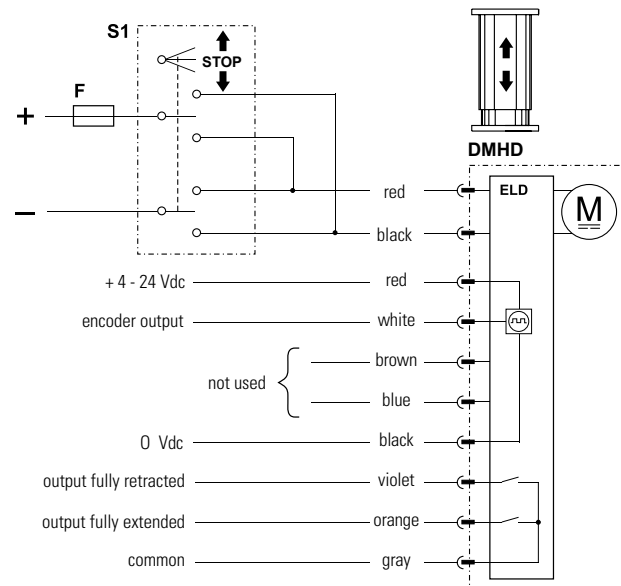
| Option Type ELP                              |          |                   |
|----------------------------------------------|----------|-------------------|
| Actuator supply voltage<br>DM HD12<br>DMHD24 | [Vdc]    | 9 - 16<br>18 - 32 |
| Output contact type                          |          | potential free    |
| Max. output voltage                          | [Vdc]    | 140               |
| Max. output current                          | [mA]     | 350               |
| Max. output power                            | [W]      | 5                 |
| Potentiometer type                           |          | wire-wound        |
| Potentiometer max. input voltage             | [Vdc]    | 32                |
| Potentiometer max. power                     | [W]      | 1                 |
| Potentiometer linearity                      | [%]      | ± 0.25            |
| Potentiometer output resolution              | [ohm/mm] |                   |
| 50 - 100 mm stroke                           |          | 65.6              |
| 150 - 250 mm stroke                          |          | 32.8              |
| 300 - 500 mm stroke                          |          | 19.7              |
| 550 - 600 mm stroke                          |          | 9.8               |

| Option Type ELD                                                     |            |                   |
|---------------------------------------------------------------------|------------|-------------------|
| Actuator supply voltage<br>DMHD12<br>DMHD24                         | [Vdc]      | 9 - 16<br>18 - 32 |
| Output contact type                                                 |            | potential free    |
| Max. output voltage                                                 | [Vdc]      | 140               |
| Max. output current                                                 | [mA]       | 350               |
| Max. output power                                                   | [W]        | 5                 |
| Encoder type                                                        |            | hall effect       |
| Encoder input voltage                                               | [Vdc]      | 4 - 24            |
| Encoder output voltage levels<br>low (logical zero), typical / max. | [Vdc]      | 0.1 / 0.25        |
| Encoder resolution                                                  | [mm/pulse] |                   |
| DMHDxx-B017                                                         |            | 0.28              |
| DMHDxx-B026                                                         |            | 0.15              |
| DMHDxx-B045                                                         |            | 0.09              |
| DMHDxx-B068                                                         |            | 0.07              |
| DMHDxx-B100                                                         |            | 0.04              |
| DMHDxx-B160                                                         |            | 0.03              |



F Fuse  
S1 Double pole double throw switch

Control option ELP works as option EXP but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.



F Fuse  
S1 Double pole double throw switch

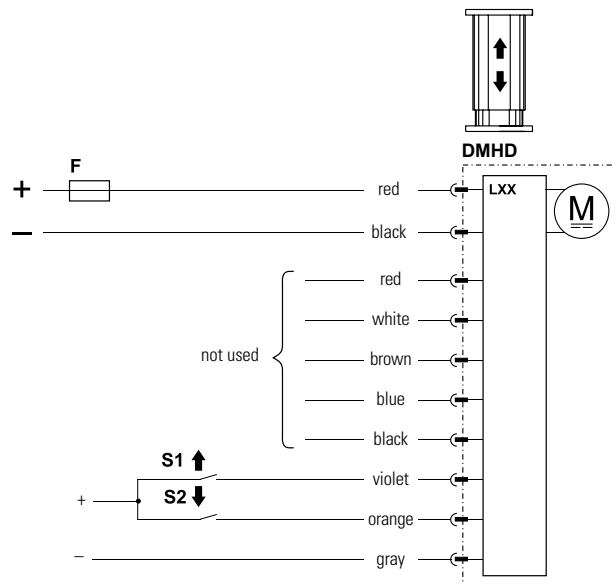
Control option ELD works as option EXD but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.



# DMHD – Electrical Connections

## Option Type LXX

|                                             |       |                   |
|---------------------------------------------|-------|-------------------|
| Actuator supply voltage<br>DMHD12<br>DMHD24 | [Vdc] | 9 - 16<br>18 - 32 |
| Extend / retract input voltage              | [Vdc] | 9 - 32            |
| Extend / retract input current              | [mA]  | 6 - 22            |

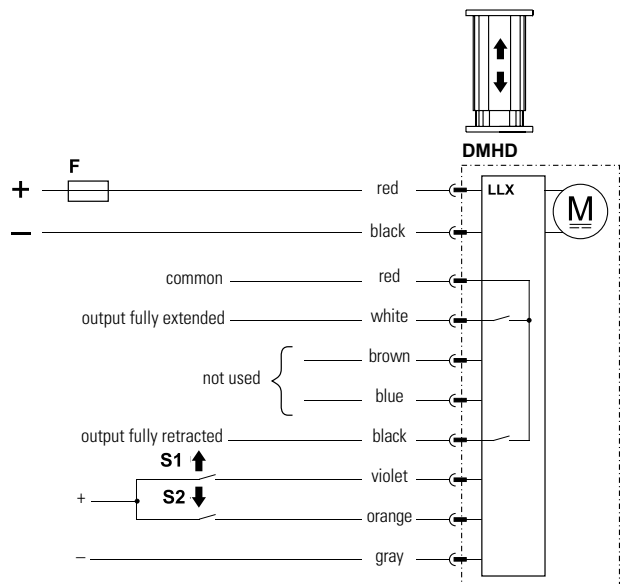


- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LXX has all the basic Electrak Monitoring Package features included in control option EXX, but the polarity of the motor voltage is switched by the onboard electronics instead. The customer-supplied switches used to command the actuator to extend or retract only need to handle low-level signals. However, the power supply and wiring that supply the actuator must be able to handle the motor current for the actuator model and load being used, as well as the inrush current (up to one and a half times the max. continuous current for the max. load being used for up to 150 milliseconds).

## Option Type LLX

|                                             |       |                   |
|---------------------------------------------|-------|-------------------|
| Actuator supply voltage<br>DMHD12<br>DMHD24 | [Vdc] | 9 - 16<br>18 - 32 |
| Output contact type                         |       | potential free    |
| Max. switched output voltage                | [Vdc] | 140               |
| Max. output current                         | [mA]  | 350               |
| Max. output power                           | [W]   | 5                 |
| Extend / retract input voltage              | [Vdc] | 9 - 32            |
| Extend / retract input current              | [mA]  | 6 - 22            |



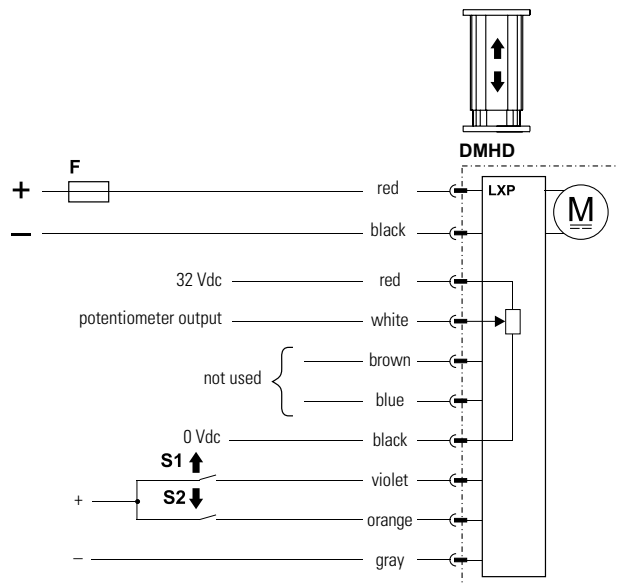
- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LLX works as option LXX but also has two outputs that indicate when the extension tube is in its fully extended or retracted position.

# DMHD – Electrical Connections

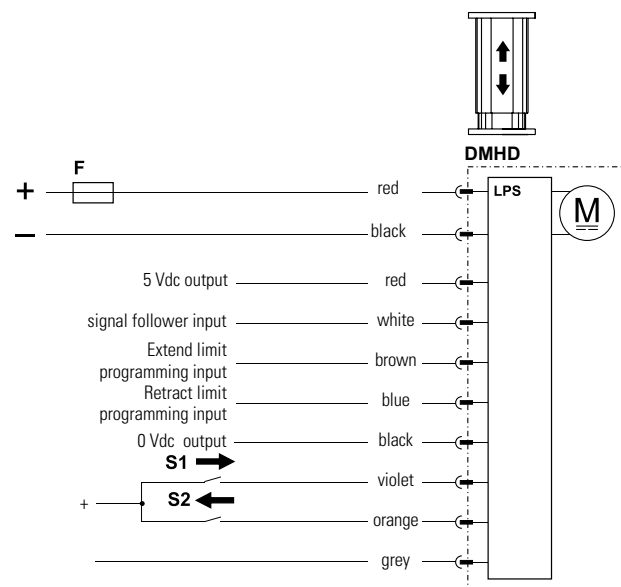
| Option Type LXP                  |          |                             |
|----------------------------------|----------|-----------------------------|
| Actuator supply voltage          | [Vdc]    | 9 - 16<br>18 - 32           |
| Potentiometer type               |          | wire-wound                  |
| Potentiometer max. input voltage | [Vdc]    | 32                          |
| Potentiometer max. power         | [W]      | 1                           |
| Potentiometer linearity          | [%]      | ± 0.25                      |
| Potentiometer output resolution  | [ohm/mm] | 65.6<br>32.8<br>19.7<br>9.8 |
| 50 - 100 mm stroke               |          |                             |
| 150 - 250 mm stroke              |          |                             |
| 300 - 500 mm stroke              |          |                             |
| 550 - 600 mm stroke              |          |                             |
| Extend / retract input voltage   | [Vdc]    | 9 - 32                      |
| Extend / retract input current   | [mA]     | 6 - 22                      |

| Option Type LPS                  |          |                   |
|----------------------------------|----------|-------------------|
| Actuator supply voltage          | [Vdc]    | 9 - 16<br>18 - 32 |
| Signal-follower input voltage    | [Vdc]    | 0.5 - 4.5         |
| Signal-follower max. current     | [A]      |                   |
| Signal-follower input resolution | [Vdc]    |                   |
| Signal-follower movement         | [mm/Vdc] |                   |
| Signal-follower repeatability    | [± mm]   |                   |
| Extend / retract input voltage   | [Vdc]    | 9 - 32            |
| Extend / retract input current   | [mA]     | 6 - 22            |



- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LXP works as option LXX but also has an analog (potentiometer) output that will provide feedback on the extension tube position.



- F Fuse
- S1 Extend switch
- S2 Retract switch

Control option LPS works as option LXX but also has programmable mid stroke software extend and retract limits as well as a signal-follower input that allow the extension tube position to be controlled from a potentiometer or another voltage control.



# DMHD – Electrical Connections

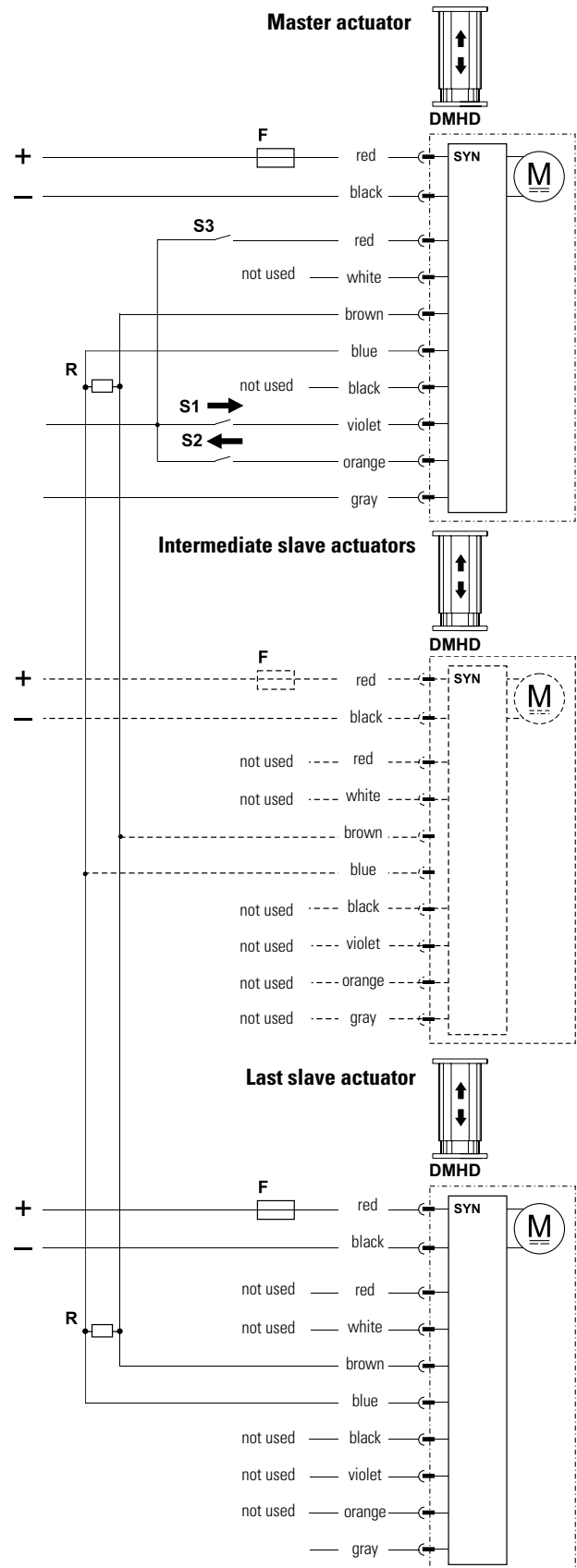
| Option Type SYN                  |       |         |
|----------------------------------|-------|---------|
| Actuator supply voltage          | [Vdc] |         |
| DMHD12                           |       | 9 - 16  |
| DMHD24                           |       | 18 - 32 |
| Extend / retract input voltage   | [Vdc] | 9 - 32  |
| Extend / retract input current   | [mA]  | 6 - 22  |
| Number of synchronized actuators |       | 2 +     |
| Max. actuator speed difference   | [%]   | 25      |

Control option SYN works as option LXX but also has a synchronization feature, allowing two or more actuators having the SYN option to run in integrated motion.

When using the low-level extend and retract inputs on the master actuator, the slave(s) will follow. If there is a need to run an actuator individually, it is possible to put it into an override state by closing a switch (S3) connected to the red lead as shown in the wiring diagram.

### Important design notes:

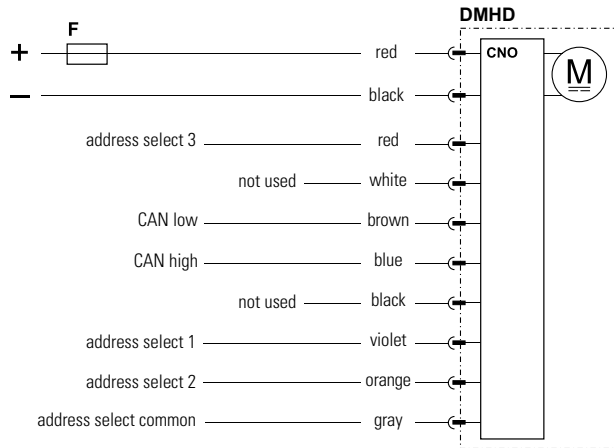
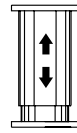
- Ensure that supply voltage to each actuator is within  $\pm 1.0$  V.
- Uneven loading between the actuators is not recommended, but the synchronization option can withstand its effects up to a 25% speed loss.
- For units with the synchronization option, the speed at a given load is 25% lower than for those without. This is true irrespective of the unit being in synchronization or override mode, or simply run individually.
- If one actuator encounters an overload condition, it will trip the overload protection and send a signal to each actuator on the network to stop. The units can be immediately reversed (unless they bind up the system), or they can continue in the same direction after a power reset.
- If power is lost at any time to any actuator, the actuators still powered will continue their last commanded move until told to stop, either by an individual current overload trip, or a stop signal sent from the master actuator.
- If communication is lost (i.e. brown/blue wires cut), the slaves will continue their last commanded move until they reach end of stroke or trip current overload. The master will continue its last commanded move unless commanded to stop with the switching leads, reaching end of stroke, or tripping current overload.
- After a large number of mid-stroke movements, the time difference between each unit receiving a signal to move (master vs. slave) will add to small variances in when the units start and stop. Since they are designed to run at the same speed, these small differences amount to a variance of position over time – even when load is applied. To address this concern, Thomson suggests running the units either to a fully extended or fully retracted position each cycle to re-align the units with each other to take out these added variances.
- In order to give the master and slave(s) enough time to communicate there must be at least 250 ms between each start and stop command.





## DMHD – Electrical Connections

| Option Type CNO and COO                                                                                                                  |         |
|------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Actuator supply voltage [Vdc]                                                                                                            |         |
| DM HD12                                                                                                                                  | 9 - 16  |
| DMHD24                                                                                                                                   | 18 - 32 |
| Command data includes:                                                                                                                   |         |
| <ul style="list-style-type: none"> <li>• position</li> <li>• speed</li> <li>• current</li> </ul>                                         |         |
| Feedback data includes:                                                                                                                  |         |
| <ul style="list-style-type: none"> <li>• position</li> <li>• speed</li> <li>• current</li> <li>• other diagnostic information</li> </ul> |         |



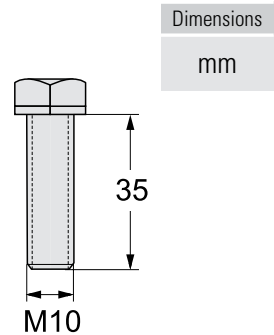
F Fuse

Control option CNO has an SAE J1939 CAN bus control interface/COO has a CANopen control interface that controls and monitors the actuator. Extend and retract commands are sent via CAN messages on the CAN low and CAN high pins. Address select 1, 2 and 3 pins can be used as a BCD encoded adder to the default address. This can be used when multiple actuators are located on a single bus.

## DMHD – Accessories

| T-slot Bolt     |             |
|-----------------|-------------|
| Designation     | Part Number |
| M10 T-slot bolt | D800041     |

The T-slot bolt fits in to the T-slot running along the outer profile of the lifting column. The T-slot bolts can be used to mount the unit instead of using the upper mounting plate, or/and for attaching other components to the profile.



not used



## DMD – Technical Features



### Standard Features

- Self supporting column in extruded anodized aluminum with high load torque capability
- 12 or 24 Vdc as standard input voltages
- Static load up to 18 kN (4000 lbf)
- Dynamic load up to 6.8 kN (1500 lbf)
- Stroke up to 24 inch
- Speed up to 71 mm/s (2.8 in/s)
- Protection class static IP65
- Rugged, robust and strong
- T-slot grooves along the entire profile
- Maintenance free

### General Specifications

|                                                            |                                              |
|------------------------------------------------------------|----------------------------------------------|
| Screw type                                                 | acme or ball                                 |
| Nut type<br>DMDxxxxA (acme screw)<br>DMDxxxxB (ball screw) | self locking lead nut<br>load lock ball nut  |
| Manual override                                            | no                                           |
| Anti-rotation                                              | yes                                          |
| Static load holding brake<br>acme screw<br>ball screw      | no (self-locking)<br>yes                     |
| Safety features                                            | overload clutch<br>auto reset thermal switch |
| Electrical connections                                     | cable with flying leads                      |
| Compliances                                                | CE                                           |

### Optional Electrical Features

Potentiometer feedback

### Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)

# DMD – Technical Specifications

| Mechanical Specifications                                                                                            |               |                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Max. static load <sup>(1)</sup><br>DMDxxxA (acme screw)<br>DMDxxxB (ball screw)                                      | [N (lbf)]     | 11350 (2500)<br>18000 (4000)                                                                                                                    |
| Max. dynamic load (Fx)<br>DMDxx05A5<br>DMDxx10A5<br>DMDxx20A5<br>DMDxx05B5<br>DMDxx10B5<br>DMDxx20B5<br>DMDxx21B5    | [N (lbf)]     | 1100 (250)<br>2250 (500)<br>2250 (500)<br>2250 (500)<br>4500 (1000)<br>4500 (1000)<br>6800 (1500)                                               |
| Max. load torque, dyn. and static<br>DMDxx-xxA (acme screw)<br>DMDxx-xxB (ball screw)                                | [Nm (lbf-in)] | 565 (5000)<br>710 (6284)                                                                                                                        |
| Speed @ no load/max. load<br>DMDxx05A5<br>DMDxx10A5<br>DMDxx20A5<br>DMDxx05B5<br>DMDxx10B5<br>DMDxx20B5<br>DMDxx21B5 | [mm/s (in/s)] | 54/32 (2.10/1.20)<br>30/18 (1.20/0.70)<br>15/12 (0.67/0.45)<br>61/37 (2.40/1.40)<br>30/19 (1.30/0.80)<br>15/12 (0.60/0.45)<br>15/11 (0.60/0.43) |
| Min. ordering stroke (S) length                                                                                      | [in]          | 4                                                                                                                                               |
| Max. ordering stroke (S) length <sup>(2)</sup>                                                                       | [in]          | 24                                                                                                                                              |
| Ordering stroke length increments                                                                                    | [in]          | 2                                                                                                                                               |
| Operating temperature limits                                                                                         | [°C (F)]      | -25 – 65 (-15 – 150)                                                                                                                            |
| Full load duty cycle @ 25 °C (77 °F)                                                                                 | [%]           | 25                                                                                                                                              |
| End play, maximum                                                                                                    | [mm (in)]     | 1.0 (0.04)                                                                                                                                      |
| Protection class - static                                                                                            |               | IP65                                                                                                                                            |

(1) Max. static load at fully retracted stroke

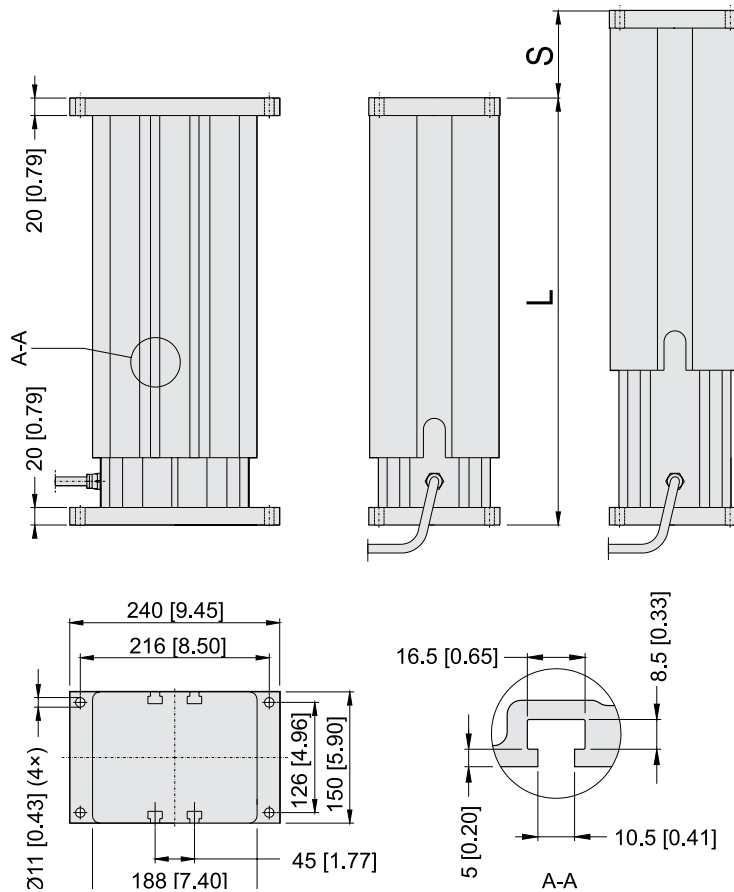
| Electrical Specifications                                                                                                                                                                                                             |                         |                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Available input voltages <sup>(1)</sup>                                                                                                                                                                                               | [Vdc]                   | 12, 24                                                                                                                                                              |
| Input voltage tolerance                                                                                                                                                                                                               | [%]                     | ± 10                                                                                                                                                                |
| Current draw @ no load/max. load <sup>(2)</sup><br>DMD1205A5<br>DMD1210A5<br>DMD1220A5<br>DMD1205B5<br>DMD1210B5<br>DMD1220B5<br>DMD1221B5<br>DMD2405A5<br>DMD2410A5<br>DMD2420A5<br>DMD2405B5<br>DMD2410B5<br>DMD2420B5<br>DMD2421B5 | [A]                     | 12.0/34.0<br>7.0/27.0<br>5.0/15.0<br>7.0/27.0<br>5.0/25.0<br>4.0/13.0<br>4.0/20.0<br>6.0/17.0<br>4.0/13.0<br>2.0/7.5<br>4.0/14.0<br>2.0/12.5<br>2.0/7.5<br>2.0/10.0 |
| Cable length                                                                                                                                                                                                                          | [mm (in)]               | 2000 (79)                                                                                                                                                           |
| Cable diameter                                                                                                                                                                                                                        | [mm (in)]               | 9 (0.35)                                                                                                                                                            |
| Cable leads cross section<br>motor leads<br>potentiometer leads                                                                                                                                                                       | [mm <sup>2</sup> (AWG)] | 2.5 (10)<br>1 (17)                                                                                                                                                  |

(1) For other input voltages - contact customer support.

(2) For current draw for 36 Vdc input voltage models - contact customer support.



# DMD – Dimensions



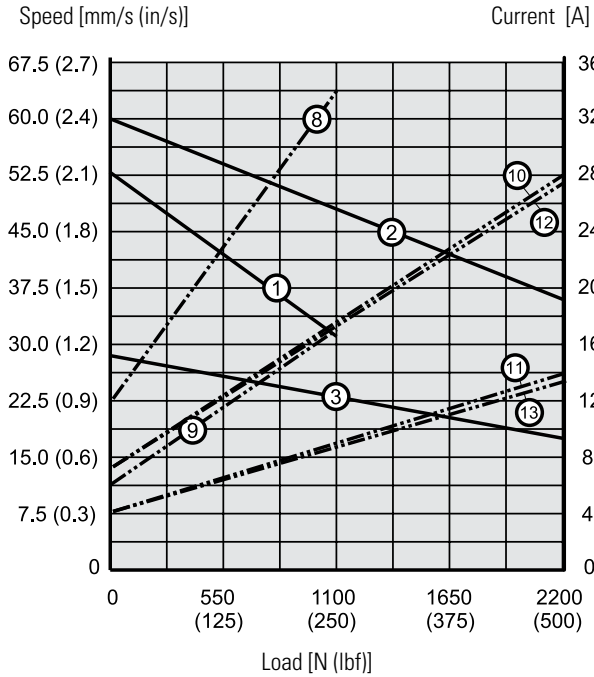
| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |

## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                     | [in]  | 4     | 6     | 8     | 10    | 12    | 14    | 16    | 18    | 20    | 24    |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length, acme screw models (A) | [mm]  | 329.6 | 380.4 | 431.2 | 482.0 | 532.8 | 633.6 | 684.4 | 735.2 | 786.0 | 887.6 |
|                                         | [in]  | 13.0  | 15.0  | 17.0  | 19.0  | 21.0  | 24.9  | 26.9  | 28.9  | 30.9  | 34.9  |
| Retracted length, ball screw models (A) | [mm]  | 369.6 | 420.4 | 471.2 | 522.0 | 572.8 | 673.6 | 724.4 | 775.2 | 826.2 | 927.6 |
|                                         | [in]  | 14.6  | 16.6  | 18.6  | 20.6  | 22.6  | 26.5  | 28.5  | 30.5  | 32.5  | 36.5  |
| Add on length for option potentiometer  | [mm]  | 55.0  |       |       |       |       |       |       |       |       |       |
|                                         | [in]  | 2.17  |       |       |       |       |       |       |       |       |       |
| Weight, acme screw models               | [kg]  | 18.7  | 20.2  | 21.6  | 23.1  | 24.6  | 27.3  | 28.7  | 30.2  | 31.7  | 34.6  |
|                                         | [lbf] | 41.2  | 44.5  | 47.6  | 50.9  | 54.2  | 60.2  | 63.3  | 66.6  | 69.9  | 76.3  |
| Weight, ball screw models               | [kg]  | 20.4  | 21.9  | 23.4  | 24.8  | 26.3  | 29.0  | 30.4  | 31.9  | 33.4  | 36.3  |
|                                         | [lbf] | 45.0  | 48.3  | 51.6  | 54.7  | 58.0  | 63.9  | 67.0  | 70.3  | 73.6  | 80.0  |
| Add on weight for option potentiometer  | [kg]  | 1.3   |       |       |       |       |       |       |       |       |       |
|                                         | [lbf] | 2.9   |       |       |       |       |       |       |       |       |       |

# DMD – Performance Diagrams

Speed and Current vs. Load - Diagram 1



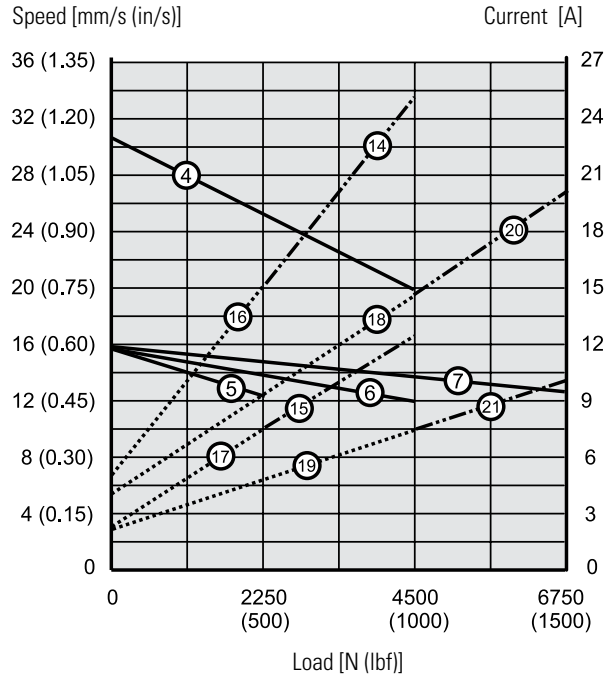
Speed Curves Diagram 1

- 1: DMDxx05A5
- 2: DMDxx05B5
- 3: DMDxx10A5

Current Curves Diagram 1

- 8: DMD1205A5
- 9: DMD2405A5
- 10: DMD1205B5
- 11: DMD2405B5
- 12: DMD1210A5
- 13: DMD2410A5

Speed and Current vs. Load - Diagram 2



Speed Curves Diagram 2

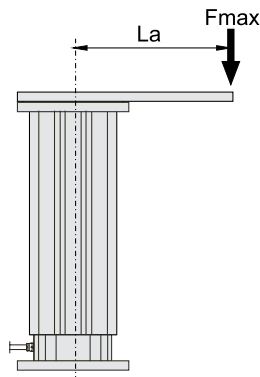
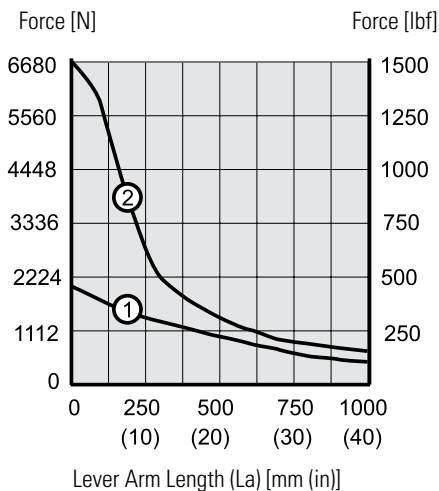
- 4: DMDxx10B5
- 5: DMDxx20A5
- 6: DMDxx20B5
- 7: DMDxx21B5

Current Curves Diagram 2

- 14: DMD1210B5
- 15: DMD2410B5
- 16: DMD1220A5
- 17: DMD2420A5
- 18: DMD1220B5
- 19: DMD2420B5
- 20: DMD1221B5
- 21: DMD2421B5

Contact customer service for data on 36 Vdc models.

Off Center Load Capacity



- 1: Acme screw models
- 2: Ball screw models



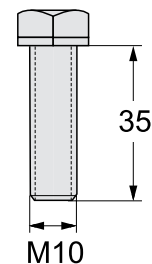
## DMD – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2     | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4  |
| DMD12-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 05A5- | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | PO |
| <p><b>1. Model and input voltage</b><br/>           DMD12- = lifting column type DMD, 12 Vdc<br/>           DMD24- = lifting column type DMD, 24 Vdc</p> <p><b>2. Screw type, dynamic load capacity</b><br/>           05A5 - = 1100 N, acme, 54 mm/s<br/>           10A5 - = 2250 N, acme, 30 mm/s<br/>           20A5 - = 2250 N, acme, 15 mm/s<br/>           05B5 - = 2250 N, ball, 61 mm/s<br/>           10B5 - = 4500 N, ball, 30 mm/s<br/>           20B5 - = 4500 N, ball, 15 mm/s<br/>           21B5 - = 6800 N, ball, 15 mm/s</p> |       | <p><b>3. Ordering stroke length <sup>(1)</sup></b><br/>           04 = 4 inch (101.6 mm)<br/>           06 = 6 inch (152.4 mm)<br/>           08 = 8 inch (203.2 mm)<br/>           10 = 10 inch (254.0 mm)<br/>           12 = 12 inch (304.8 mm)<br/>           14 = 14 inch (355.6 mm)<br/>           16 = 16 inch (406.4 mm)<br/>           18 = 18 inch (457.2 mm)<br/>           20 = 20 inch (508.0 mm)<br/>           24 = 24 inch (609.6 mm)</p> <p><b>4. Options <sup>(2)</sup></b><br/>           PO = potentiometer</p> <p>(1) Other stroke lengths available upon request. Contact customer support.<br/>           (2) Leave position blank for no option.</p> |    |

## DMD – Accessories

| T-slot Bolt     |             |
|-----------------|-------------|
| Designation     | Part Number |
| M10 T-slot bolt | D800041     |

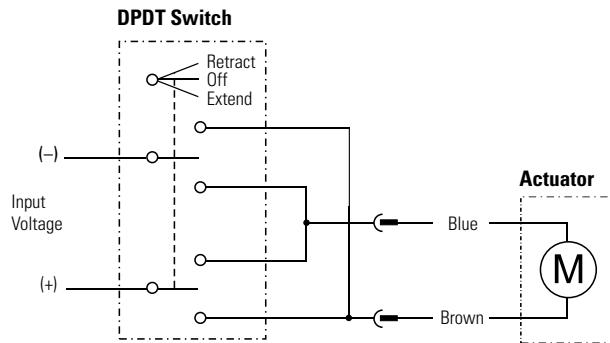
The T-slot bolt fits in to the T-slot running along the outer profile of the lifting column. The T-slot bolts can be used to mount the unit instead of using the upper mounting plate, or/and for attaching other components to the profile.



|            |
|------------|
| Dimensions |
| mm         |

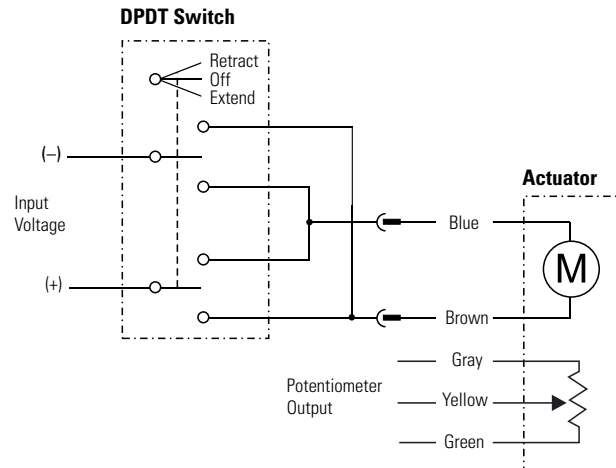
# DMD – Electrical Connections

| Without Option          |       |    |
|-------------------------|-------|----|
| Actuator supply voltage | [Vdc] |    |
| DMD12                   |       | 12 |
| DMD24                   |       | 24 |



Connect the brown lead to positive and blue to negative to extend the actuator. Change polarity to retract the actuator.

| Option Potentiometer             |          |            |
|----------------------------------|----------|------------|
| Actuator supply voltage          | [Vdc]    |            |
| DMD12                            |          | 12         |
| DMD24                            |          | 24         |
| Potentiometer type               |          | wire-wound |
| Potentiometer max. input voltage | [Vdc]    | 32         |
| Potentiometer max. power         | [W]      | 2          |
| Potentiometer linearity          | [%]      | ± 0.25     |
| Potentiometer output resolution  | [ohm/mm] |            |
| 2 - 10 inch stroke               |          | 39         |
| 11 - 20 inch stroke              |          | 20         |
| 21 - 24 inch stroke              |          | 10         |



Connect the brown lead to positive and blue to negative to extend the actuator. Change polarity to retract the actuator. The potentiometer output has 0 ohm between gray and yellow when the actuator is fully extended.



## DMA – Technical Features



### Standard Features

- Self-supporting column in extruded anodized aluminium with high load torque capability
- 1 × 230 Vac standard input voltage
- Static load up to 18 kN (4000 lbf)
- Dynamic load up to 9 kN (2000 lbf)
- Stroke up to 24 inch
- Speed up to 71 mm/s (2.8 in/s)
- Protection class static IP45
- Rugged, robust and strong
- T-slot grooves along the entire profile
- Maintenance free

### General Specifications

|                                                              |                                              |
|--------------------------------------------------------------|----------------------------------------------|
| Screw type                                                   | acme or ball                                 |
| Nut type<br>DMDxx-xxA (acme screw)<br>DMDxx-xxB (ball screw) | self-locking lead nut<br>load lock ball nut  |
| Manual override                                              | no                                           |
| Anti-rotation                                                | yes                                          |
| Static load holding brake<br>acme screw<br>ball screw        | no (self-locking)<br>yes                     |
| Safety features                                              | overload clutch<br>auto reset thermal switch |
| Electrical connections                                       | cable with flying leads                      |
| Compliances                                                  | CE                                           |

### Accessories

T-slot bolts

### Compatible Controls

Contact customer support at [www.thomsonlinear.com/cs](http://www.thomsonlinear.com/cs)



# DMA – Technical Specifications

| Mechanical Specifications                      |               |                      |
|------------------------------------------------|---------------|----------------------|
| Max. static load <sup>(1)</sup>                | [N (lbf)]     |                      |
| DMA22xxA (acme screw)                          |               | 11350 (2500)         |
| DMA22xxB (ball screw)                          |               | 18000 (4000)         |
| Max. dynamic load (Fx)                         | [N (lbf)]     |                      |
| DMA2205A5                                      |               | 1100 (250)           |
| DMA2210A5                                      |               | 2250 (500)           |
| DMA2220A5                                      |               | 2250 (500)           |
| DMA2205B5                                      |               | 2250 (500)           |
| DMA2210B5                                      |               | 4500 (1000)          |
| DMA2220B5                                      |               | 4500 (1000)          |
| DMA2221B5                                      |               | 6800 (1500)          |
| Max. load torque, dyn. and static              | [Nm (lbf-in)] |                      |
| DMAxxxxA (acme screw)                          |               | 565 (5000)           |
| DMAxxxxB (ball screw)                          |               | 710 (6284)           |
| Speed @ no load/max. load                      | [mm/s (in/s)] |                      |
| DMA2205A5                                      |               | 54/32 (2.10/1.20)    |
| DMA2210A5                                      |               | 30/18 (1.20/0.70)    |
| DMA2220A5                                      |               | 15/12 (0.67/0.45)    |
| DMA2205B5                                      |               | 61/37 (2.40/1.40)    |
| DMA2210B5                                      |               | 30/19 (1.30/0.80)    |
| DMA2220B5                                      |               | 15/12 (0.60/0.45)    |
| DMA2221B5                                      |               | 15/11 (0.60/0.43)    |
| Min. ordering stroke (S) length                | [in]          | 4                    |
| Max. ordering stroke (S) length                | [in]          | 24                   |
| Ordering stroke length increments              | [in]          | 2                    |
| Operating temperature limits                   | [°C (F)]      | -25 – 65 (-15 – 150) |
| Max. on time                                   | [s]           | 45                   |
| Full load duty cycle @ 25 °C (77 °F)           | [%]           | 25                   |
| End play, maximum                              | [mm (in)]     | 1.0 (0.04)           |
| Protection class - static, standard (optional) |               | IP45                 |

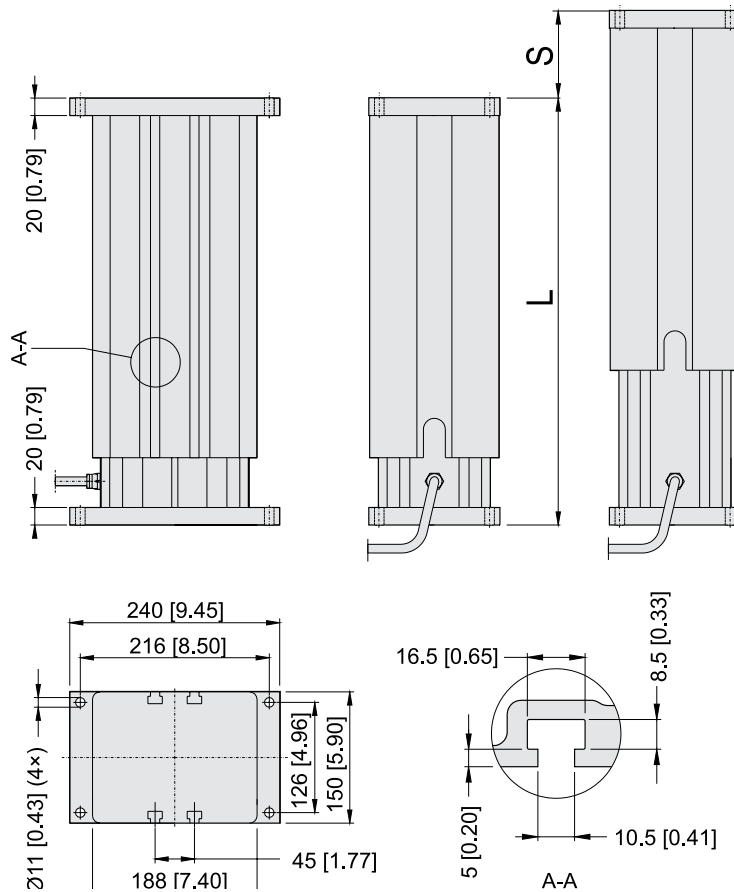
(1) Max. static load at fully retracted stroke

| Electrical Specifications        |                         |                        |
|----------------------------------|-------------------------|------------------------|
| Available input voltages         | [Vac]                   | 1 × 230 <sup>(1)</sup> |
| Input voltage tolerance          | [%]                     | ± 10                   |
| Current draw @ no load/max. load | [A]                     |                        |
| DMA2205A5                        |                         | 1.10/1.55              |
| DMA2210A5                        |                         | 0.85/1.30              |
| DMA2220A5                        |                         | 0.95/1.25              |
| DMA2205B5                        |                         | 0.85/1.30              |
| DMA2210B5                        |                         | 0.85/1.30              |
| DMA2220B5                        |                         | 0.85/1.30              |
| DMA2221B5                        |                         | 0.85/1.25              |
| Cable length                     | [mm (in)]               | 0.6 (24)               |
| Cable diameter                   | [mm (in)]               | 9 (0.35)               |
| Cable leads cross section        | [mm <sup>2</sup> (AWG)] | 2.5 (14)               |

(1) Capacitor 10 µF ( p/n 9200-448-003) required to run the actuator.



# DMA – Dimensions



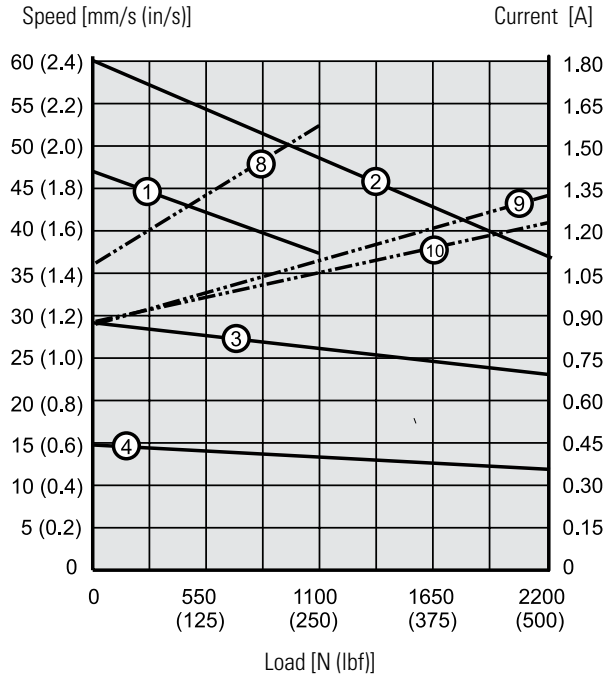
| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |

## Stroke, Retracted Length and Weight Relationships

| Ordering stroke (S)                     | [in]  | 4     | 6     | 8     | 10    | 12    | 14    | 16    | 18    | 20    | 24    |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Retracted length, acme screw models (A) | [mm]  | 329.6 | 380.4 | 431.2 | 482.0 | 532.8 | 633.6 | 684.4 | 735.2 | 786.0 | 887.6 |
|                                         | [in]  | 13.0  | 15.0  | 17.0  | 19.0  | 21.0  | 24.9  | 26.9  | 28.9  | 30.9  | 34.9  |
| Retracted length, ball screw models (A) | [mm]  | 369.6 | 420.4 | 471.2 | 522.0 | 572.8 | 673.6 | 724.4 | 775.2 | 826.2 | 927.6 |
|                                         | [in]  | 14.6  | 16.6  | 18.6  | 20.6  | 22.6  | 26.5  | 28.5  | 30.5  | 32.5  | 36.5  |
| Weight, acme screw models               | [kg]  | 20.9  | 22.4  | 23.8  | 25.3  | 26.8  | 29.5  | 30.9  | 32.4  | 33.9  | 36.8  |
|                                         | [lbf] | 46.1  | 49.4  | 52.5  | 55.8  | 59.1  | 65.0  | 68.1  | 71.4  | 74.7  | 81.1  |
| Weight, ball screw models               | [kg]  | 22.6  | 24.1  | 25.6  | 27.0  | 28.5  | 31.2  | 32.6  | 34.1  | 35.6  | 38.6  |
|                                         | [lbf] | 49.8  | 53.1  | 56.4  | 59.5  | 62.8  | 68.8  | 71.9  | 75.2  | 78.5  | 85.1  |

# DMA – Performance Diagrams

Speed and Current vs. Load - Diagram 1



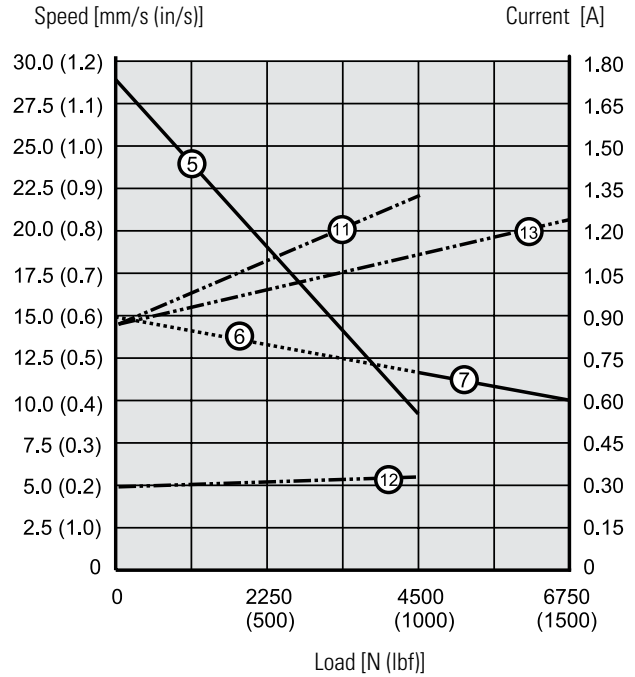
Speed Curves Diagram 1

- 1: DMA2205A5
- 2: DMA2205B5
- 3: DMA2210A5
- 4: DMA2220A5

Current Curves Diagram 1

- 8: DMA2205A5
- 9: DMA2205B5(10A5)
- 10: DMA2220A5

Speed and Current vs. Load - Diagram 2



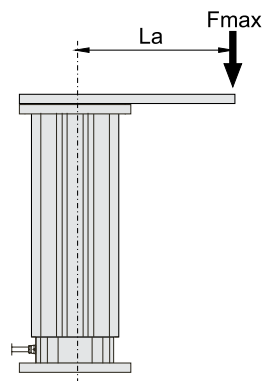
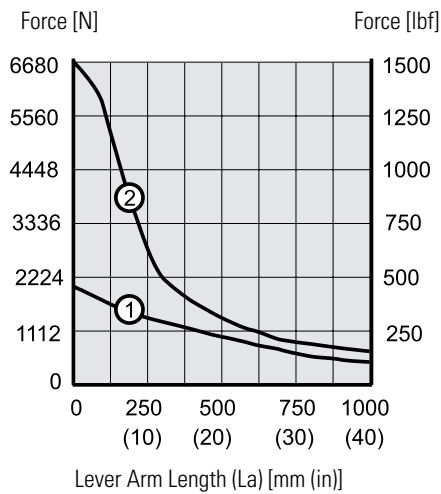
Speed Curves Diagram 2

- 5: DMA2210B5
- 6: DMA2220B5
- 7: DMA2221B5

Current Curves Diagram 2

- 11: DMA2210B5(20B5)
- 12: DMA2220B5
- 13: DMA2221B5

Off Center Load Capacity



- 1: Acme screw models
- 2: Ball screw models



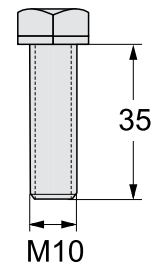
## DMA – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                              |              |                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                                                                                                                                                                                                                                                                         | 2            | 3                                                                                                                                                                                                                                                                                                                          |
| <b>DMA22</b>                                                                                                                                                                                                                                                                              | <b>05A5-</b> | <b>10</b>                                                                                                                                                                                                                                                                                                                  |
| <b>1. Model and input voltage</b><br>DMA22 = lifting column type DMA, 1 × 230 Vac                                                                                                                                                                                                         |              | <b>3. Ordering stroke length <sup>(1)</sup></b><br>04 = 4 inch (101.6 mm)<br>06 = 6 inch (152.4 mm)<br>08 = 8 inch (203.2 mm)<br>10 = 10 inch (254.0 mm)<br>12 = 12 inch (304.8 mm)<br>14 = 14 inch (355.6 mm)<br>16 = 16 inch (406.4 mm)<br>18 = 18 inch (457.2 mm)<br>20 = 20 inch (508.0 mm)<br>24 = 24 inch (609.6 mm) |
| <b>2. Screw type, dynamic load capacity</b><br>05A5 - = 1100 N, acme, 54 mm/s<br>10A5 - = 2250 N, acme, 30 mm/s<br>20A5 - = 2250 N, acme, 15 mm/s<br>05B5 - = 2250 N, ball, 61 mm/s<br>10B5 - = 4500 N, ball, 30 mm/s<br>20B5 - = 4500 N, ball, 15 mm/s<br>21B5 - = 6800 N, ball, 15 mm/s |              | (1) Other stroke lengths available upon request. Please contact customer support.<br>(2) Leave position blank for no option.                                                                                                                                                                                               |

## DMA – Accessories

| T-slot Bolt     |             |
|-----------------|-------------|
| Designation     | Part Number |
| M10 T-slot bolt | D800041     |

The T-slot bolt fits in to the T-slot running along the outer profile of the lifting column. The T-slot bolts can be used to mount the unit instead of using the upper mounting plate, or/and for attaching other components to the profile.



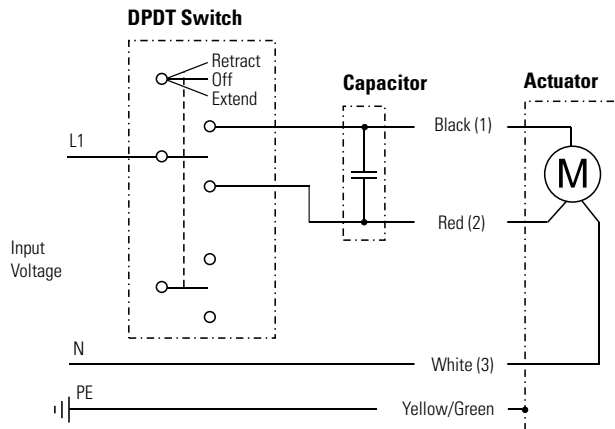
|            |
|------------|
| Dimensions |
| mm         |

# DMA – Electrical Connections

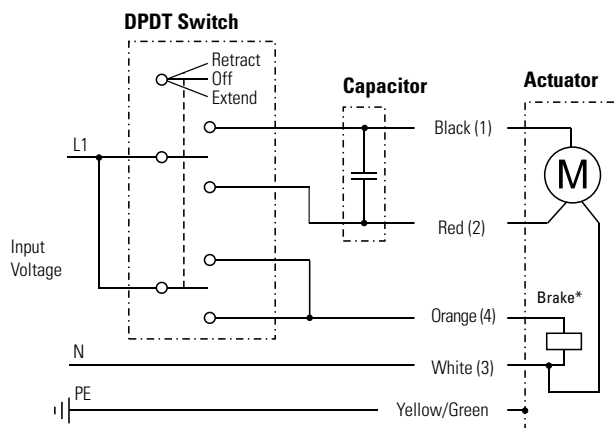
Input Voltage 230 Vac

|                                  |       |         |
|----------------------------------|-------|---------|
| Actuator supply voltage<br>DMA22 | [Vac] | 1 × 230 |
|----------------------------------|-------|---------|

### Acme screw models (no anti-coast brake)



### Ball screw models (with anti-coast brake)



Leads can be either color or number marked. To be able to run the actuator, a 10  $\mu\text{F}$  capacitor must be connected between black (1) and red (2) leads. See page 54 for ordering of capacitors. Connect black (1) lead to L1 and white (3) lead to N (neutral) to retract the actuator. Change L1 from lead black (1) to lead red (2) to extend the actuator. Ball screw models have an anti-coast brake\*, that must be released during motion, which is done by connecting orange (4) lead to L1. Acme models do not have any anti-coast brake.



# LM80-H – Technical Features



## Standard Features

- Rodless actuator for horizontal operation
- For use in domestic, office or medical applications
- Rigid, self-supporting extruded aluminium profile
- Durable and corrosion free
- Lightweight with quiet operation
- Safety nut on ball screw versions
- Easy and fast T-slot mounting
- Maintenance free

## General Specifications

|                                                                           |                                                       |
|---------------------------------------------------------------------------|-------------------------------------------------------|
| Screw type                                                                | trapezoidal or ball                                   |
| Nut type<br>trapezoidal screw<br>ball screw                               | polymer lead nut<br>load lock ball nut                |
| Manual override                                                           | no                                                    |
| Anti-rotation                                                             | yes                                                   |
| Static load holding brake                                                 | no                                                    |
| Safety features                                                           | spring loaded soft stop                               |
| Electrical connections<br>with motor enclosure<br>without motor enclosure | cable with connector<br>cable clips directly on motor |
| Compliances                                                               | CE                                                    |

## Optional Mechanical Features

|                                                                  |
|------------------------------------------------------------------|
| No motor enclosure                                               |
| Manual override                                                  |
| Alternative motor positions                                      |
| Special stroke or stroke over 1500 mm (contact customer support) |

## Optional Electrical Features

|                                             |
|---------------------------------------------|
| Encoder feedback (contact customer support) |
|---------------------------------------------|

## Accessories

|                     |
|---------------------|
| T-slot mounting kit |
|---------------------|

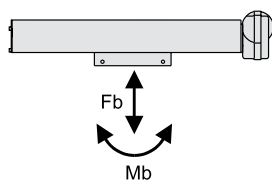
## Compatible Controls

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| Contact customer support at <a href="http://www.thomsonlinear.com/cs">www.thomsonlinear.com/cs</a> |
|----------------------------------------------------------------------------------------------------|

# LM80-H – Technical Specifications

| Mechanical Specifications                        |               |                   |
|--------------------------------------------------|---------------|-------------------|
| Max. load (Fb) <sup>(1)</sup>                    | [N (lbf)]     | 2000 (450)        |
| Max. load torque (Mb) <sup>(1)</sup>             | [N (lbf)]     |                   |
| DTxx-T68M xxxxx H                                |               | 250 (56)          |
| DTxx -B61M xxxxx H                               |               | 400 (90)          |
| DTxx -B62M xxxxx H                               |               | 180 (40)          |
| DTxx -B65M xxxxx H                               |               | 750 (169)         |
| Speed @ no load/max. load                        | [mm/s (in/s)] |                   |
| DTxx-T68M xxxxx H                                |               | 44/37 (1.7/1.5)   |
| DTxx -B61M xxxxx H                               |               | 55/50 (2.2/2.0)   |
| DT12 -B62M xxxxx H                               |               | 110/73 (4.3/2.9)  |
| DT24 -B62M xxxxx H                               |               | 11/87 (0.4/3.4)   |
| DTxx -B65M xxxxx H                               |               | 28/28 (1.1/1.1)   |
| Min. ordering stroke (S) length <sup>(2)</sup>   | [mm]          | 500               |
| Max. ordering stroke (S) length <sup>(2)</sup>   | [mm]          | 1500              |
| Ordering stroke length increments <sup>(2)</sup> | [mm]          | 100               |
| Operating temperature limits                     | [°C (F)]      | 0 – 40 (32 – 104) |
| Full load duty cycle @ 20 °C (68 °F)             | [%]           | 15                |
| End play, maximum                                | [mm (in)]     | 1.0 (0.04)        |
| Protection class - static                        |               |                   |
| with motor enclosure                             |               | IP44              |
| without motor enclosure                          |               | IP33              |

(1) See below for definition of forces.



(2) For other stroke lengths, contact customer support.

| Electrical Specifications        |                         |            |
|----------------------------------|-------------------------|------------|
| Available input voltages         | [Vdc]                   |            |
| DT12                             |                         | 12         |
| DT24                             |                         | 24         |
| Input voltage tolerance          | [%]                     | ± 10       |
| Current draw @ no load/max. load | [A]                     |            |
| DT12-T68MxxxxxH                  |                         | 5.5/6.0    |
| DT24-T(B)68(1)MxxxxxH            |                         | 3.0/5.0    |
| DT12-B61MxxxxxH                  |                         | 6.0/8.0    |
| DT12-B62MxxxxxH                  |                         | 6.0/15.0   |
| DT24-B62MxxxxxH                  |                         | 3.0/7.0    |
| DT12-B65MxxxxxH                  |                         | 5.8/5.8    |
| DT24-B65MxxxxxH                  |                         | 2.8/2.8    |
| Motor cable length               | [m (in)]                |            |
| with motor enclosure             |                         | 2000 (79)  |
| without motor enclosure          |                         | -          |
| Motor cable diameter             | [mm (in)]               |            |
| with motor enclosure             |                         | 5.7 (0.22) |
| without motor enclosure          |                         | -          |
| Motor cable leads cross section  | [mm <sup>2</sup> (AWG)] |            |
| with motor enclosure             |                         | 1.5 (16)   |
| without motor enclosure          |                         | -          |

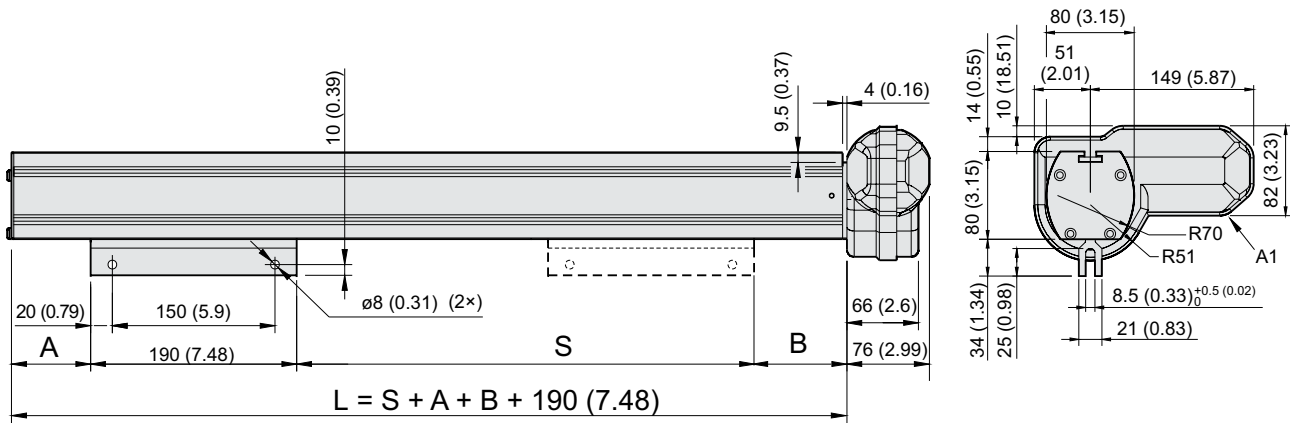


# LM80-H – Dimensions



Note: this unit may only be mounted horizontally

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



S: stroke

L: length of profile

A1: motor shown in position A (standard position)

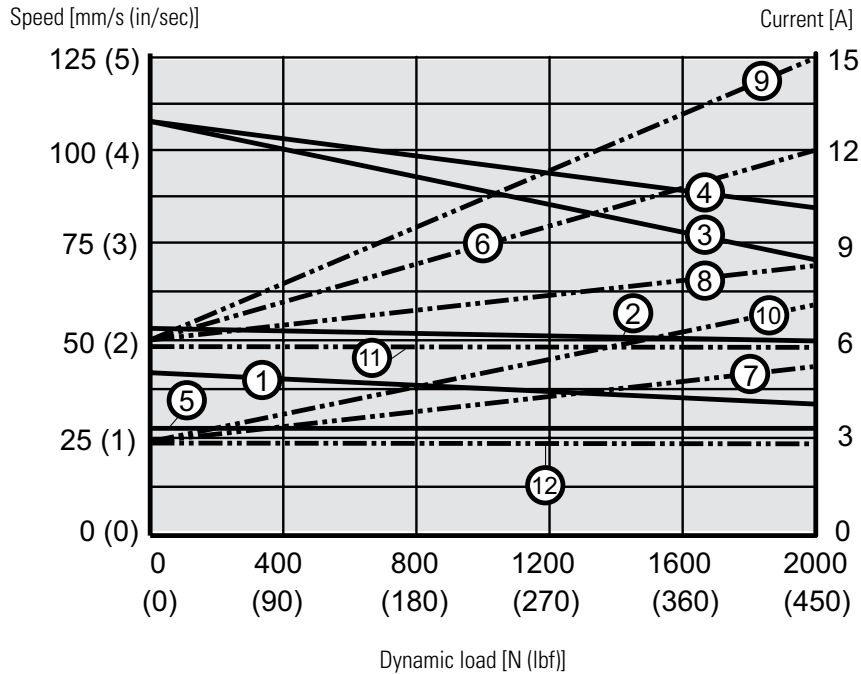
## Stroke, Profile Length and Weight Relationships

| Ordering stroke (S)                       | [mm]  | 500          | 600  | 700  | 800  | 900  | 1000 | 1100 | 1200  | 1300 | 1400 | 1500 |
|-------------------------------------------|-------|--------------|------|------|------|------|------|------|-------|------|------|------|
| Dimension (A) / (B)<br>DTxx -T68M xxxxx H | [mm]  | 54.0 / 77.0  |      |      |      |      |      |      |       |      |      |      |
|                                           | [in]  | 2.1 / 3.0    |      |      |      |      |      |      |       |      |      |      |
| Dimension (A) / (B)<br>DTxx -B61M xxxxx H | [mm]  | 102.0 / 77.0 |      |      |      |      |      |      |       |      |      |      |
|                                           | [in]  | 4.0 / 3.0    |      |      |      |      |      |      |       |      |      |      |
| Dimension (A) / (B)<br>DTxx -B62M xxxxx H | [mm]  | 102.0 / 77.0 |      |      |      |      |      |      |       |      |      |      |
|                                           | [in]  | 4.0 / 3.0    |      |      |      |      |      |      |       |      |      |      |
| Dimension (A) / (B)<br>DTxx -B65M xxxxx H | [mm]  | 79.0 / 77.0  |      |      |      |      |      |      |       |      |      |      |
|                                           | [in]  | 1.9 / 3.0    |      |      |      |      |      |      |       |      |      |      |
| Weight<br>DTxx -T68M xxxxx H              | [kg]  | 11.2         | 13.1 | 14.8 | 16.6 | 18.1 | 20.2 | 22.0 | 23.8  | 25.5 | 27.4 | 29.1 |
|                                           | [lbf] | 24.6         | 28.8 | 32.6 | 36.5 | 39.8 | 44.4 | 48.4 | 52.36 | 56.1 | 60.3 | 64.0 |
| Weight<br>DTxx -B61M xxxxx H              | [kg]  | 12.1         | 13.9 | 15.7 | 17.5 | 19.3 | 21.0 | 22.9 | 24.6  | 26.3 | 28.2 | 30.0 |
|                                           | [lbf] | 30.3         | 30.6 | 34.5 | 38.5 | 42.7 | 46.2 | 50.4 | 54.1  | 57.9 | 62.0 | 66.0 |
| Weight<br>DTxx -B62M xxxxx H              | [kg]  | 12.1         | 13.9 | 15.7 | 17.5 | 19.3 | 21.0 | 22.9 | 24.6  | 26.3 | 28.2 | 30.0 |
|                                           | [lbf] | 30.3         | 30.6 | 34.5 | 38.5 | 42.7 | 46.2 | 50.4 | 54.1  | 57.9 | 62.0 | 66.0 |
| Weight<br>DTxx -B65M xxxxx H              | [kg]  | 11.7         | 13.5 | 15.3 | 17.1 | 18.9 | 20.6 | 22.4 | 24.2  | 26.0 | 27.8 | 29.6 |
|                                           | [lbf] | 25.7         | 29.7 | 33.7 | 37.6 | 41.6 | 45.3 | 49.3 | 53.2  | 57.2 | 61.2 | 65.1 |



# LM80-H – Performance Diagrams

Speed and Current vs. Load



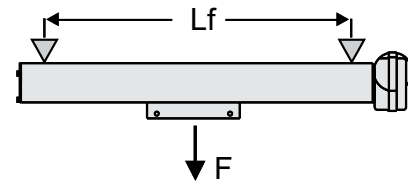
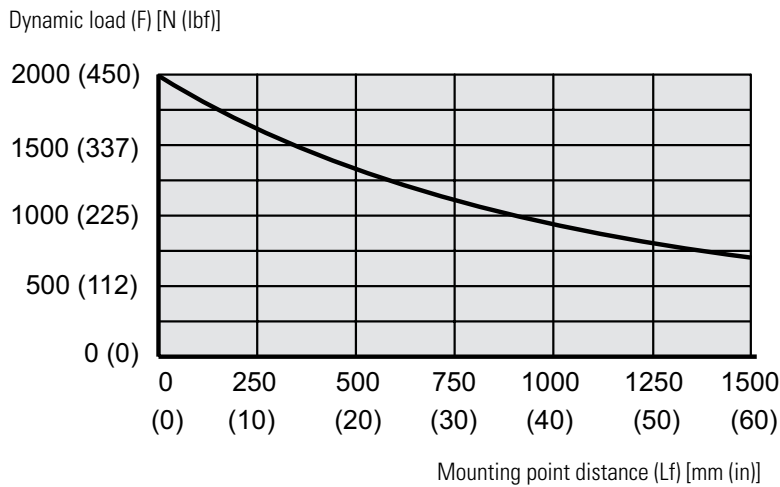
Speed

- 1: DTxx-T68MxxxxxH
- 2: DTxx-B61MxxxxxH
- 3: DT12-B62MxxxxxH
- 4: DT24-B62MxxxxxH
- 5: DTxx-B65MxxxxxH

Current

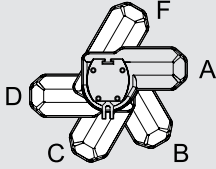
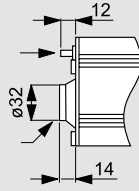
- 6: DT12-T68MxxxxxH
- 7: DT24-T(B)68(1)MxxxxxH
- 8: DT12-B61MxxxxxH
- 9: DT12-B62MxxxxxH
- 10: DT24-B62MxxxxxH
- 11: DT12-B65MxxxxxH
- 12: DT24-B65MxxxxxH

Maximum Permissible Deflection of Profile





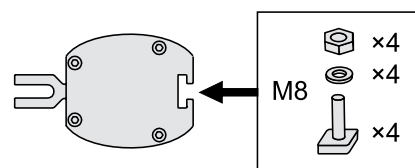
# LM80-H – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |          |          |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2            | 3          | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5        | 6        | 7        |
| <b>DT12-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>B62M-</b> | <b>100</b> | <b>A</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>C</b> | <b>H</b> | <b>X</b> |
| <p><b>1. Model and input voltage</b><br/>           DT12 - = LM80, 12 Vdc<br/>           DT24 - = LM80, 24 Vdc</p> <p><b>2. Load torque capacity and screw type</b><br/>           T68M - = 250 N (56 lbf), trapezoidal screw<br/>           B61M - = 400 N (90 lbf), ball screw<br/>           B62M - = 180 N (40 lbf), ball screw<br/>           B65M - = 750 N (169 lbf), ball screw</p> <p><b>3. Ordering stroke length</b><br/>           050 = 500 mm<br/>           060 = 600 mm<br/>           070 = 700 mm<br/>           080 = 800 mm<br/>           090 = 900 mm<br/>           100 = 1000 mm<br/>           110 = 1100 mm<br/>           120 = 1200 mm<br/>           130 = 1300 mm<br/>           140 = 1400 mm<br/>           150 = 1500 mm</p> |              |            | <p><b>4. Motor orientation</b><br/>           A = 0° (standard)<br/>           B = 60°<br/>           C = 120°<br/>           D = 180°<br/>           F = 300°</p>  <p><b>5. Motor enclosure</b><br/>           C = with enclosure (IP44)<br/>           U = no enclosure (IP33)</p> <p><b>6. Mounting orientation</b><br/>           H = horizontal</p> <p><b>7. Options</b><br/>           X = no option<br/>           H = manual override <sup>(1)</sup></p> <p>(1) Manual override dimensions</p>  <p>Hexagon socket with plastic cover (4 mm Allen key included)</p> |          |          |          |

# LM80-H – Accessories

| T-slot Mounting Kit    |             |
|------------------------|-------------|
| Designation            | Part Number |
| M8 T-slot mounting kit | D680507     |

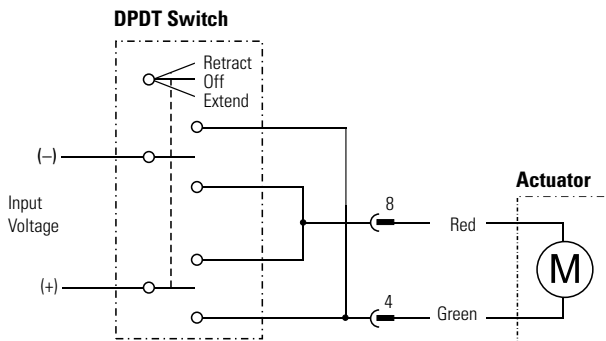
The T-slot mounting kit consists of four T-slot bolts, washers and nuts that fit in to the T-slot running along the profile. The T-slot mounting kit can be used to mount the unit or/and for attaching other components to the profile.



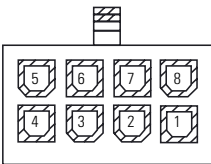
# LM80-H – Electrical Connections

## Without Option (standard)

| Actuator supply voltage | [Vdc] |    |
|-------------------------|-------|----|
| DT12                    |       | 12 |
| DT24                    |       | 24 |



### Connector pin configuration (front view)



Connect the green lead (connector pin 4) to positive and red (pin 8) to negative to extend the actuator. Change polarity to retract the actuator.



# LM80-V – Technical Features



## Standard Features

- Rodless actuator for vertical operation with motor down
- For use in domestic, office or medical applications
- Rigid, self-supporting extruded aluminium profile
- Durable and corrosion free
- Holding brake prevents downward motion at power off
- Lightweight with quiet operation
- Safety nut on ball screw versions
- Easy and fast T-slot mounting
- Optional spline safety function
- Maintenance free

## General Specifications

|                                                                           |                                                       |
|---------------------------------------------------------------------------|-------------------------------------------------------|
| Screw type                                                                | trapezoidal or ball                                   |
| Nut type<br>trapezoidal screw<br>ball screw                               | polymer lead nut<br>load lock ball nut                |
| Manual override                                                           | no                                                    |
| Anti-rotation                                                             | yes                                                   |
| Static load holding brake                                                 | yes                                                   |
| Safety features                                                           | spring loaded soft stop                               |
| Electrical connections<br>with motor enclosure<br>without motor enclosure | cable with connector<br>cable clips directly on motor |
| Compliances                                                               | CE                                                    |

## Optional Mechanical Features

|                                                                  |
|------------------------------------------------------------------|
| No motor enclosure                                               |
| Manual override                                                  |
| Alternative motor positions                                      |
| Spline safety function                                           |
| Special stroke or stroke over 1500 mm (contact customer support) |

## Optional Electrical Features

|                                             |
|---------------------------------------------|
| Encoder feedback (contact customer support) |
|---------------------------------------------|

## Accessories

|                     |
|---------------------|
| T-slot mounting kit |
|---------------------|

## Compatible Controls

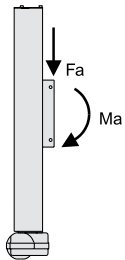
|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
| Contact customer support at <a href="http://www.thomsonlinear.com/cs">www.thomsonlinear.com/cs</a> |
|----------------------------------------------------------------------------------------------------|

# LM80-V – Technical Specifications

| Mechanical Specifications                        |               |                   |
|--------------------------------------------------|---------------|-------------------|
| Max. load (Fa) <sup>(1)</sup>                    | [N (lbf)]     |                   |
| DTxx-T68MxxxxV(F)                                |               | 650 (146)         |
| DTxx-B61MxxxxV(F)                                |               | 1000 (225)        |
| DTxx-B62MxxxxV(F)                                |               | 450 (101)         |
| DTxx-B65MxxxxV(F)                                |               | 2000 (450)        |
| Max. load torque (Ma) <sup>(1)</sup>             | [Nm (lbf-in)] |                   |
| DTxx-T68MxxxxV(F)                                |               | 250 (2213)        |
| DTxx-B61MxxxxV(F)                                |               | 400 (3540)        |
| DTxx-B62MxxxxV(F)                                |               | 180 (1593)        |
| DTxx-B65MxxxxV(F)                                |               | 750 (6638)        |
| Speed @ no load/max. load                        | [mm/s (in/s)] |                   |
| DT12-T68MxxxxV(F)                                |               | 44/29 (1.7/1.1)   |
| DT24-T68MxxxxV(F)                                |               | 44/35 (1.7/1.4)   |
| DT12-B61MxxxxV(F)                                |               | 55/37 (2.2/1.5)   |
| DT24-B61MxxxxV(F)                                |               | 55/43 (2.2/1.7)   |
| DT12-B62MxxxxV(F)                                |               | 110/67 (4.3/2.6)  |
| DT24-B62MxxxxV(F)                                |               | 110/83 (4.3/3.3)  |
| DT12-B65MxxxxV(F)                                |               | 28/19 (1.1/0.7)   |
| DT24-B65MxxxxV(F)                                |               | 28/22 (1.1/0.9)   |
| Min. ordering stroke (S) length <sup>(2)</sup>   | [mm]          | 500               |
| Max. ordering stroke (S) length <sup>(2)</sup>   | [mm]          | 1500              |
| Ordering stroke length increments <sup>(2)</sup> | [mm]          | 100               |
| Operating temperature limits                     | [°C (F)]      | 0 – 40 (32 – 104) |
| Full load duty cycle @ 20 °C (68 °F)             | [%]           | 15                |
| Maximum on time                                  | [s]           | 120               |
| Protection class - static                        |               |                   |
| with motor enclosure                             |               | IP44              |
| without motor enclosure                          |               | IP33              |

| Electrical Specifications        |                         |            |
|----------------------------------|-------------------------|------------|
| Available input voltages         | [Vdc]                   |            |
| DT12                             |                         | 12         |
| DT24                             |                         | 24         |
| Input voltage tolerance          | [%]                     | ± 10       |
| Current draw @ no load/max. load | [A]                     |            |
| DT12-T68MxxxxV(F)                |                         | 6.3/17.0   |
| DT24-T68MxxxxV(F)                |                         | 3.0/6.0    |
| DT12-B61MxxxxV(F)                |                         | 6.3/17.0   |
| DT24-B61MxxxxV(F)                |                         | 3.0/6.0    |
| DT12-B62MxxxxV(F)                |                         | 6.3/17.0   |
| DT24-B62MxxxxV(F)                |                         | 3.0/6.0    |
| DT12-B65MxxxxV(F)                |                         | 6.3/17.0   |
| DT24-B65MxxxxV(F)                |                         | 3.0/6.0    |
| Motor cable length               | [m (in)]                |            |
| with motor enclosure             |                         | 2000 (79)  |
| without motor enclosure          |                         | -          |
| Motor cable diameter             | [mm (in)]               |            |
| with motor enclosure             |                         | 5.7 (0.22) |
| without motor enclosure          |                         | -          |
| Motor cable leads cross section  | [mm <sup>2</sup> (AWG)] |            |
| with motor enclosure             |                         | 1.5 (16)   |
| without motor enclosure          |                         | -          |

(1) See below for definition of forces.



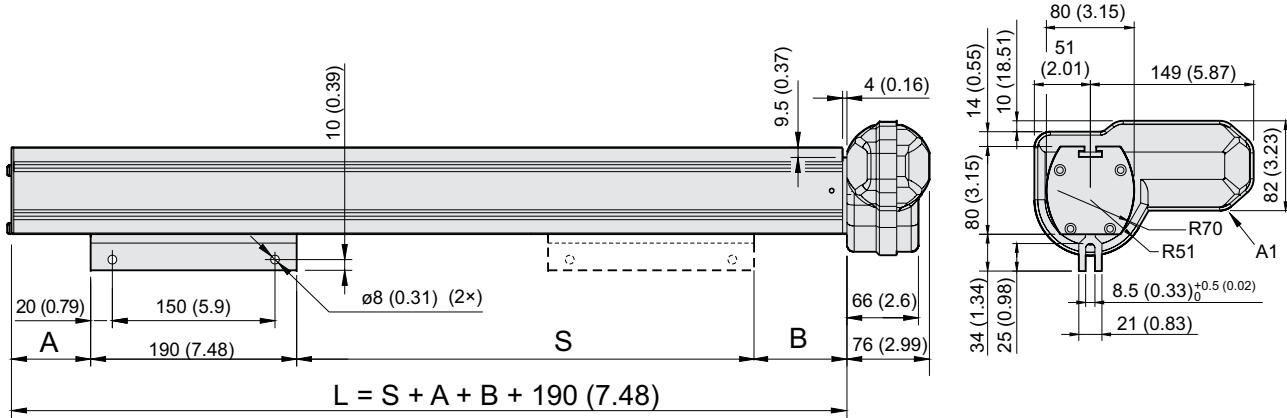
(2) For other stroke lengths, contact customer support.



# LM80-V – Dimensions

**!** Note: this unit may only be mounted vertically with the motor down even if drawing shows it horizontally

| Dimensions | Projection |
|------------|------------|
| mm [inch]  |            |



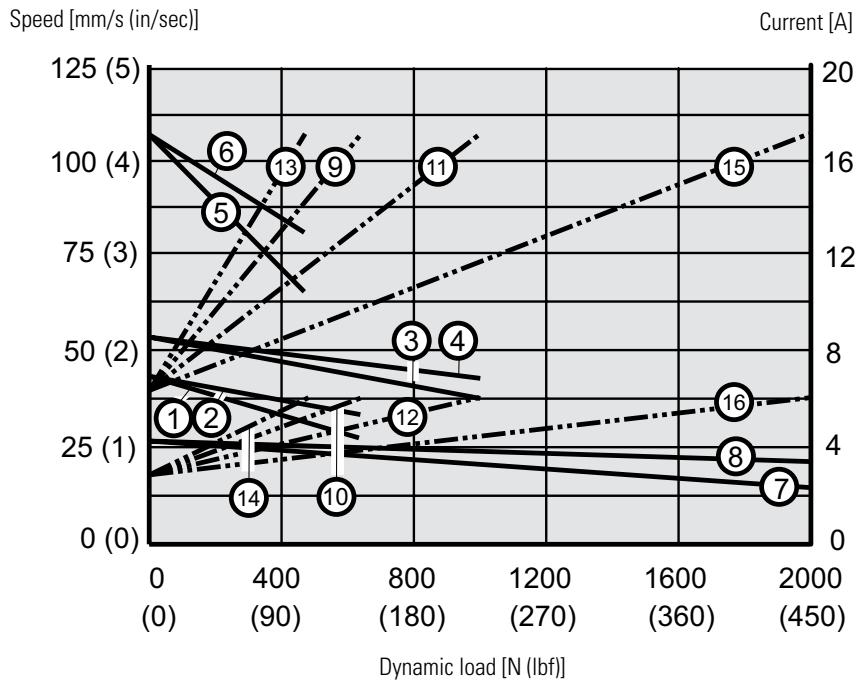
S: stroke  
L: length of profile  
A1: motor shown in position A (standard position)

## Stroke, Profile Length and Weight Relationships

| Ordering stroke (S)                          | [mm]  | 500                         | 600    | 700    | 800    | 900    | 1000   | 1100   | 1200   | 1300   | 1400   | 1500   |
|----------------------------------------------|-------|-----------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Dimension (A) / (B)<br>DTxx -T68M xxxxx V(F) | [mm]  | 50.0 / 71.0 (50.0 / 90.0)   |        |        |        |        |        |        |        |        |        |        |
|                                              | [in]  | 2.0 / 2.8 ( 2.0 / 3.5)      |        |        |        |        |        |        |        |        |        |        |
| DTxx -B61M xxxxx V(F)<br>Dimension (A) / (B) | [mm]  | 53.0 / 120.0 (53.0 / 144.0) |        |        |        |        |        |        |        |        |        |        |
|                                              | [in]  | 2.1 / 4.7 (2.1 / 5.7)       |        |        |        |        |        |        |        |        |        |        |
| DTxx -B62M xxxxx V(F)<br>Dimension (A) / (B) | [mm]  | 53.0 / 120.0 (53.0 / 144.0) |        |        |        |        |        |        |        |        |        |        |
|                                              | [in]  | 2.1 / 4.7 (2.1 / 5.7)       |        |        |        |        |        |        |        |        |        |        |
| DTxx -B65M xxxxx V(F)<br>Dimension (A) / (B) | [mm]  | 53.0 / 97.0 (53.0 / 126.0)  |        |        |        |        |        |        |        |        |        |        |
|                                              | [in]  | 2.1 / 3.8 (2.1 / 5.0)       |        |        |        |        |        |        |        |        |        |        |
| Weight<br>DTxx -T68M xxxxx V(F)              | [kg]  | 11.1                        | 12.9   | 14.7   | 16.5   | 18.2   | 20.0   | 21.8   | 23.6   | 25.4   | 27.2   | 28.9   |
|                                              | [lbf] | (11.6)                      | (13.4) | (15.2) | (17.0) | (18.7) | (20.5) | (22.3) | (24.1) | (25.9) | (27.7) | (29.4) |
| Weight<br>DTxx -B61M xxxxx V(F)              | [kg]  | 11.6                        | 13.4   | 15.2   | 17.0   | 18.7   | 20.5   | 22.3   | 24.1   | 25.9   | 27.7   | 29.5   |
|                                              | [lbf] | (12.1)                      | (13.9) | (15.7) | (17.5) | (19.2) | (21.0) | (22.8) | (24.6) | (26.4) | (28.2) | (30.0) |
| Weight<br>DTxx -B62M xxxxx V(F)              | [kg]  | 11.6                        | 13.4   | 15.2   | 17.0   | 18.7   | 20.5   | 22.3   | 24.1   | 25.9   | 27.7   | 29.5   |
|                                              | [lbf] | (12.1)                      | (13.9) | (15.7) | (17.5) | (19.2) | (21.0) | (22.8) | (24.6) | (26.4) | (28.2) | (30.0) |
| Weight<br>DTxx -B65M xxxxx V(F)              | [kg]  | 12.0                        | 13.8   | 15.6   | 17.6   | 19.3   | 21.1   | 22.9   | 24.7   | 26.5   | 28.2   | 30.1   |
|                                              | [lbf] | (12.5)                      | (14.3) | (16.1) | (18.1) | (19.8) | (21.6) | (23.4) | (25.2) | (27.0) | (28.7) | (30.6) |

# LM80-V – Performance Diagrams

Speed and Current vs. Load



Speed

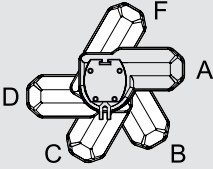
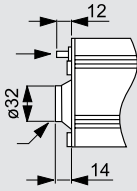
- 1: DT12-T68MxxxxxV(F)
- 2: DT24-T68MxxxxxV(F)
- 3: DT12-B61MxxxxxV(F)
- 4: DT24-B61MxxxxxV(F)
- 5: DT12-B62MxxxxxV(F)
- 6: DT14-B62MxxxxxV(F)
- 7: DT12-B65MxxxxxV(F)
- 8: DT24-B65MxxxxxV(F)
- ..

Current

- 9: DT12-T68MxxxxxV(F)
- 10: DT24-T68MxxxxxV(F)
- 11: DT12-B61MxxxxxV(F)
- 12: DT24-B61MxxxxxV(F)
- 13: DT12-B62MxxxxxV(F)
- 14: DT24-B62MxxxxxV(F)
- 15: DT12-B65MxxxxxV(F)
- 16: DT24-B65MxxxxxV(F)



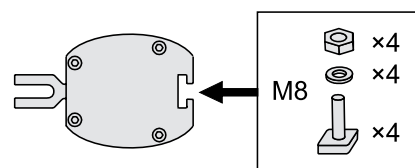
# LM80-V – Ordering Key

| Ordering Key                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |          |          |          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2            | 3          | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5        | 6        | 7        |
| <b>DT12-</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>B62M-</b> | <b>100</b> | <b>A</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>C</b> | <b>V</b> | <b>X</b> |
| <p><b>1. Model and input voltage</b><br/>           DT12 - = LM80, 12 Vdc<br/>           DT24 - = LM80, 24 Vdc</p> <p><b>2. Load torque capacity and screw type</b><br/>           T68M - = 250 N (56 lbf), trapezoidal screw<br/>           B61M - = 400 N (90 lbf), ball screw<br/>           B62M - = 180 N (40 lbf), ball screw<br/>           B65M - = 750 N (169 lbf), ball screw</p> <p><b>3. Ordering stroke length</b><br/>           050 = 500 mm<br/>           060 = 600 mm<br/>           070 = 700 mm<br/>           080 = 800 mm<br/>           090 = 900 mm<br/>           100 = 1000 mm<br/>           110 = 1100 mm<br/>           120 = 1200 mm<br/>           130 = 1300 mm<br/>           140 = 1400 mm<br/>           150 = 1500 mm</p> |              |            | <p><b>4. Motor orientation</b><br/>           A = 0° (standard)<br/>           B = 60°<br/>           C = 120°<br/>           D = 180°<br/>           F = 300°</p>  <p><b>5. Motor enclosure</b><br/>           C = with enclosure (IP44)<br/>           U = no enclosure (IP33)</p> <p><b>6. Mounting orientation and spline safety feature</b><br/>           V = vertical with motor down, without spline safety feature<br/>           F = vertical with motor down, with spline safety feature</p> <p><b>7. Options</b><br/>           X = no option<br/>           H = manual override <sup>(1)</sup></p> <p>(1) Manual override dimensions</p>  <p>Hexagon socket with plastic cover (4 mm Allen key included)</p> |          |          |          |

# LM80-V – Accessories

| T-slot Mounting Kit    |             |
|------------------------|-------------|
| Designation            | Part Number |
| M8 T-slot mounting kit | D680507     |

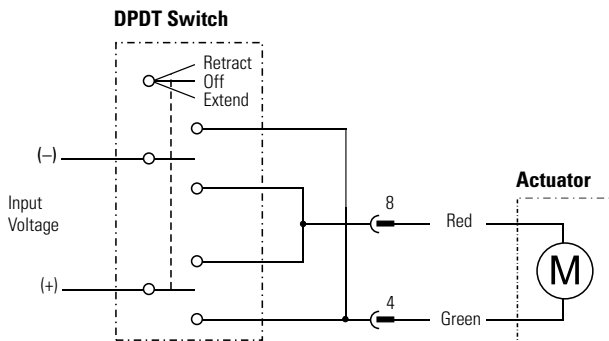
The T-slot mounting kit consists of four T-slot bolts, washers and nuts that fit in to the T-slot running along the profile. The T-slot mounting kit can be used to mount the unit or/and for attaching other components to the profile.



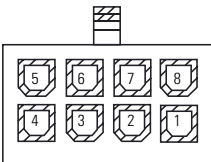


# LM80-V – Electrical Connections

| Without Option (standard) |       |    |
|---------------------------|-------|----|
| Actuator supply voltage   | [Vdc] |    |
| DT12                      |       | 12 |
| DT24                      |       | 24 |



## Connector pin configuration (front view)



Connect the green lead (connector pin 4) to positive and red (pin 8) to negative to extend the actuator. Change polarity to retract the actuator.



# Glossary

## Acme Screw

Acme screws are self-locking and will not back-drive. They also withstand vibration and shock better than ball or worm screws and are used for applications with these characteristics. Also see "lead screw".

## Actuator Housing

The actuator housing provides environmental protection for the internal components and may also be a structural member of the actuator.

## Adapters

The front and rear adapters are the connection points for mounting most Thomson actuators. The front adapter is usually a cross hole but optionally may be a tapped hole, threaded rod, or universal rod end. The rear adapter may be cast into the actuator housing or held in place with a nut.

## Adjustable End of Stroke Limit Switches

The adjustable end of stroke limit switches may be moved to positions inside the full stroke of the actuator and will shut off the actuator when it reaches the limit switch. Also see "end of stroke limit switches".

## Anti-coast Brake/Electrical Brake

Depending on the load, AC ball screw actuators may coast to a stop when power is removed. This overrun is eliminated by an anti-coast brake or an electrical brake. The anti-coast brake (pawl type) will allow up to one revolution of the motor after power is removed. They are used on the Electrak GX AC. An electrical brake (electrically released) operates much faster after power is removed and allow less coast than the pawl type. Also see "brake".

## Anti-rotation Mechanism

A feature available on some actuators that resolves the restraining torque within the actuator. The extension tube will not rotate on actuators with this feature when driven without having the ends fixed.

## Auto Reset Thermal Switch

An auto reset thermal will switch off the motor if it becomes too warm which means that the motor has exceeded its maximum allowed duty cycle. When the motor has cooled off, the switch will close again automatically, and the motor will start to run if power is still being applied to it. Also see "duty cycle".

## Ball Screw

Ball screws are highly efficient and are used for high loads and speeds. Also see "lead screw".

## Brake

Actuators using an acme or worm screw are inherently self-locking, while ball screw driven actuators are not. To prevent ball screw actuators from backdriving, they incorporate an anti backdriving brake (holding brake). Ball screw actuators with an AC motor can also be equipped with an anti-coast brake. Also see "Anti-coast brake/electrical brake" and "holding brake".

## Capacitor

AC actuators use permanent split capacitor motors and require the use of a start/run capacitor in the control circuit to operate. The controls for AC actuators have the capacitor included in the control. For customer supplied controls, a separate capacitor is required, and the part number is included on the actuator product page.

## CE Compliance and Certification

All actuators sold in the EU are CE compliant, while some actuators sold outside of the EU may not be. If you order your actuator outside of the EU and need a CE compliance, contact the factory to verify availability and be sure to include the request on your order. Most AC actuators are UL listed as standard. UL has no standard for DC actuators under 48 Vdc.

## Compression Loads

See "Tension and Compression Loads".

## Controls

Controls can be external to the actuator and provide the actuator with the correct voltage, have either membrane or pendant operators, and some have position indicators.

## Cover Tube

The cover tube provides protection for the lead screw and provides protection and support for the extension tube. For the Electrak® PPA, the cover tube also provides the rear mounting connection.

## Customization

Even the most versatile actuator may not always suit all applications. But whatever your need is, our engineers are ready to help you to customize the actuators according to your requirements. We build more exclusive actuators than anyone else and have decades of experience in producing actuators to meet special needs.

# Glossary

## Duty Cycle

$$\text{Duty cycle} = \frac{\text{on time}}{(\text{on time} + \text{off time})}$$

Example: 15 seconds on, 45 seconds off

$$\frac{15 \text{ s}}{(15 \text{ s} + 45 \text{ s})} = 25\% \text{ duty cycle}$$

The duty cycle is a function of the maximum rated load and the ambient temperature. Ambient temperatures above the stated will affect the duty cycle negatively, while lower temperatures and/or lower load will affect it positively. Also see "on-time".

## Dynamic Load

The dynamic load rating is how much load the actuator will move when power is applied. Also see "load rating".

## Dynamic Braking

Dynamic braking is a feature which short circuits the motor windings at power off, resulting in a shorter coasting distance before the actuator comes to a complete stop. Dynamic braking can be accomplished on other DC actuators by wiring the control to short the motor leads when power is removed.

## Electronic Limit Switches (ELS)

Electronic Limit Switches is a current sensing function used in some actuator control models. The ELS senses the current and if it exceeds a preset level, the control cuts the power to the motor. This function can be used to detect and stop at the ends of the actuator stroke or to stop the actuator if it runs into an obstacle.

## Electronic Load Monitoring (ELM)

A built-in microprocessor inside the actuators continuously monitors the performance of the actuator. The microprocessor will stop the movement at the end of stroke, in case of mid stroke stall, at overload conditions or if the duty cycle is too high. It also eliminates the need of a clutch and provides dynamic braking.

## Encoder Feedback

Encoders provide a digital output signal that can be used to determine the position of the extension tube. An encoder equipped actuator must return to a "home" position if power is removed and restored in order to reset its starting point. Also see "potentiometer feedback".

## End of Stroke Limit Switches

End of stroke limit switches are incorporated in some actuator models, either as standard or as an option, that will shut off power when the end of stroke is achieved. Also see "fixed end of stroke limit switches" and "adjustable end of stroke limit switches".

## End Play (Backlash)

The stack up of tolerances within the lead screw assembly and gearing allowing some linear movement of the extension tube without rotating the motor. Typical end play or backlash varies by model. The range is 0.3 to 2.0 mm (0.012 - 0.08 inch).

## Extension Tube

The extension tube slides in and out of the actuator and is connected via the front adapter to the load being moved or positioned.

## Fixed End of Stroke Limit Switches

The fixed end of stroke limit switches allow the full stroke of the actuator to be used and will shut off power when the end of stroke is achieved. Also see "end of stroke limit switches".

## Holding Brake

All acme, worm or trapezoidal screw driven actuators are inherently self-locking, while ball screw driven ones incorporate an anti back-driving brake (holding brake) that engages when the actuator has come to a complete stop. Also see "brake".

## Input Voltage

The nominal voltage required to operate the actuator. All actuators will accept at least a  $\pm 10\%$  variation of the nominal voltage, but a change in the voltage will result in a change of the speed of DC actuators. Controls are available that accept 115 or 230 Vac input and provide 24 Vdc output to operate 24 Vdc actuators.

## Inrush Current

Inrush current is a short current peak that appears at the start of an actuator as the motor tries to get the load moving. Typically, the inrush current will last between 75 to 150 milliseconds and can be up to three times higher (on a low-level switched actuator 1.5 times higher) than the current for the actuator and load. Batteries have no problem delivering the inrush current, but if using an AC power supply, it is important to size it to handle the inrush current.

## Installation Instructions

Each actuator has an installation manual to answer typical questions about mounting and wiring the actuators.

## IP Rating

See "protection class".

## Lead Screw

Actuators use four different types of lead screws depending on the configuration and load requirements of the actuator. Ball screws are highly efficient and used for high loads and speeds. Acme, worm and trapezoidal screws are self-locking and will not backdrive. Acme and trapezoidal screws withstand vibration and shock better than the other and are used for applications with these characteristics.



# Glossary

## Lifetime Expectancy

Life is very complex to calculate and depends on many parameters. Some of the more important parameters includes load, stroke length, operation temperature and how often the overload clutch is operated. Contact customer service for more information.

## Lifting Columns

Lifting columns provide a stable base for adjusting the height of tables or platforms. The column provides both the lifting force and the ability to resolve high moment forces from off axis loads.

## Linear Actuators

Actuators providing a linear thrust via an extension tube to lift, lower, push, pull or position a load.

## Load Rating

The load rating is the minimum amount of force the actuator will provide during its lifetime. The load rating of all rod style actuators is the same for both compression and tension loads. Also see "dynamic load", "static load" and "tension and compression load".

## Low Level Switching

Low level switching allows you to control the direction of the actuator motion by using low level inputs on the actuator instead of having to switch the much higher motor current.

## Manual Override (Hand Wind)

Allows manual operation of the actuator in both directions in case of a power failure. The actuator accepts a standard hexagon key to rotate the motor in either direction. Optional on some models.

## Maximum On Time

The maximum amount of time an actuator may operate without stopping to "cool off". For high load and long stroke actuators, this may be one extend and retract cycle. The actuator should not exceed 25% duty cycle at full rated load. If no maximum on time is stated, the maximum on time is equal to one full cycle at the maximum dynamic load for the actuator in question.

## Mounting

Electrak® actuators are quickly and easily mounted by slipping pins through the holes on each end of the unit and into brackets on the machine frame and the load. PPA actuators are mounted by the rear trunnions on the cover tube and the clevis on the extension tube. Solid pins provide maximum holding strength, and a retaining or cotter pin on each end will prevent the pin from falling out of its mounting bracket. Roll or spring type mounting pins should be avoided. The mounting pins must be parallel to each other as shown (Fig. a). Pins which are not parallel may cause the actuator to bind. The load should act along the axis of the actuator since off center loads may cause binding (Fig. b).

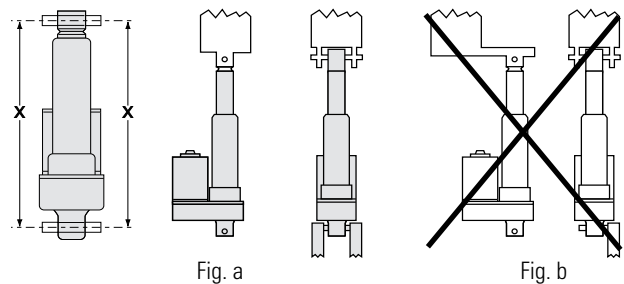


Fig. a

Fig. b

## Non-driven Actuators

Actuators supplied without a motor and driven manually or by a customer supplied motor.

## On-time

The on-time is the time that the motor runs for between two stops. The maximum on-time is the maximum time the motor is allowed to run for between two stops. Sometimes the maximum on-time is the limiting factor rather than the duty cycle rating. Also see "duty cycle".

## Operating and Storage Temperature

The operating temperature is the range in which the actuator may be safely operated. For the high end of the range, the duty cycle will be lower than 25%. All actuators can be stored or transported at the same temperature as the operating temperature. Contact customer support if the operating temperature will be exceeded during storage or transportation.

## Overload Clutch

Electrak 050, GX and PPA Series linear actuators are protected by a load limiting mechanical clutch which prevents the motor from stalling at either end of the actuator stroke. It will also slip when the factory-set load limit is exceeded. The clutch is a ball detent design, assuring a consistent slip point and long life.

## Potentiometer Feedback

Potentiometers provide an analog output signal that can be used to determine the position of the extension tube. A potentiometer will "remember" its position if power is removed and restored. Also see "encoder feedback"

## Protection Class

The protection class refers to the environmental rating of the enclosure, International Protection Marking (IP) ratings are commonly referenced standards that classify electrical equipment using standard tests to determine resistance to ingress of solid objects and liquids. The first digit applies to airborne contaminants and the second digit (and sometimes a third letter) to water/moisture.

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- IP33: protected against the penetration of solid objects with a diameter greater than 12 mm and against direct sprays of water up to 60 degrees from vertical.
- IP44: protected against the penetration of solid objects with a diameter greater than 1 mm and against water sprayed from any direction.
- IP45: protected against the penetration of solid objects with a diameter greater than 1 mm and low pressure water jets from any direction.
- IP51: protected from dust and vertical dripping water/condensation.
- IP52: protected from dust and dripping water/condensation falling at an angle up to 15 degrees from vertical.
- IP56: protected from dust and high pressure water jets from any direction.
- IP65: dust tight and protected against low pressure water jets from any direction.
- IP66: dust tight and protected against high pressure water jets from any direction.
- IP67: dust tight and protected against the effect of immersion in water between 150 mm (5.9 inch) and 1 meter (39.4 inch).
- IP69K: dust tight and protected against the effect of high pressure washing with hot water from any direction.

## Pulse Width Modulation (PWM)

Pulse width modulation control works by switching the power supplied to the motor on and off rapidly. The DC voltage is converted to a square-wave signal, alternating between fully on and zero, giving the motor a series of power “kicks”. If the switching frequency is high enough, the motor runs at a steady speed due to its fly-wheel momentum. By adjusting the duty cycle of the signal (modulating the width of the pulse, hence the ‘PWM’), the time fraction it is “on”, the average power can be varied, and hence the motor speed. Note: Actuators with built-in electronics and CE filters will be affected negatively by the PWM modulation and should not be used together. Contact customer support for more information.

## REACH

REACH is a European Union regulation concerning the Registration, Evaluation, Authorization and restriction of Chemicals. It makes manufacturers and importers who place chemicals on the market responsible for understanding and managing the risks associated with their use.

## Restraining Torque

The torque which is developed between the clevis on the extension tube and rear mount (clevis or trunnion) when the unit extends or retracts and ratchets the clutch (Fig. c). This means that if the ends are not fixed by a method that can handle the restraining torque, the extension tube will rotate instead of moving. However, units with anti-

rotation mechanism are internally restrained and can therefore be run in and out without having to be fixed in the ends. Also see “anti-rotation mechanism”.

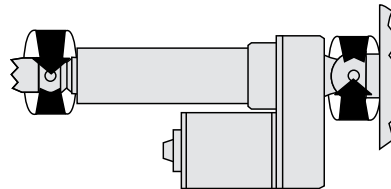


Fig. c

## Rodless Actuators

Rodless actuators provide support for the load as well as thrust. The load is supported and moved by a carriage on the actuator rather than pushed or pulled by an extension rod. Rodless actuators are ideal for applications requiring long strokes (up to 1500 mm), high speeds (up to 110 mm/s), movement of the load within the shortest envelope possible or the load supported by the actuator.

## RoHS Compliance

All actuators, controls and accessories sold in the EU are RoHS compliant unless otherwise stated, while products sold outside of the EU may not be. If you order an actuator outside of the EU and need it to be RoHS compliant, contact the factory to verify availability and be sure to include the request on your order.

## Rotary Actuators

Actuators providing a rotary output to position a load, turn a winch, or rotate a gear or sprocket.

## Service and Maintenance

Actuators are generally maintenance free. Electrak GX have repair kits available from your local distributor or OEM.

## Side Loading

Side loading occurs when the extension tube/moving member is subjected to loads from the side. Most actuators cannot handle any side loads, and a proper design of the application should eliminate any side loads or keep it within the permissible limits.

## Sizing and Selection

The Thomson web site ([www.thomsonlinear.com](http://www.thomsonlinear.com)) includes an online tool that can be used to walk through the decision process for picking the best actuator and get the ordering data for your choice.

## Speed

DC actuators have a direct load/speed relationship. As the load increases, the speed decreases. There are curves on each product page to show the speed from no load to full rated load. AC actuators have little speed fluctuations based on load but there are load/speed



# Glossary

curves on all the AC actuator product pages.

## Spline Safety Function

An optional safety function on the rodless actuator (LM80) that will stop downward motion in case the carriage (the moving member) collides with an obstacle. The motor will keep running but the carriage will stand still and not pull down on the obstacle. When reversing the motor rotation, the carriage will automatically start to move upwards again.

## Static Load

The static load rating is how much load the actuator will hold with power off. The static load rating is normally twice the dynamic load rating. Also see "load rating". If nothing else is stated, the static load rating is for the actuator extension tube being fully retracted. The static load rating will decrease as the tube extends.

## Synchronous Operation

Normally motor speed cannot be controlled with enough precision to ensure that the actuators will remain synchronized, and a binding effect could take place. However, there are some solutions. Non-driven actuators may be mechanically linked and thereby synchronized. Actuators equipped with an encoder can be synchronized using controls designed for synchronous operation as long as there is no onboard electronics preventing PWM operation. Electrak HD models with SYN option have a built in control which enables synchronized operation between two or more Electrak HD SYN units of the same type.

## Tension and Compression Load

A tension load tries to stretch the actuator, and a compression load tries to compress the actuator (Fig. d). Most actuators can manage the same tension and compression load. Also see "load rating". With bi-directional loads, the end play of the actuator extension tube may need to be taken into consideration when using the actuator for positioning tasks.

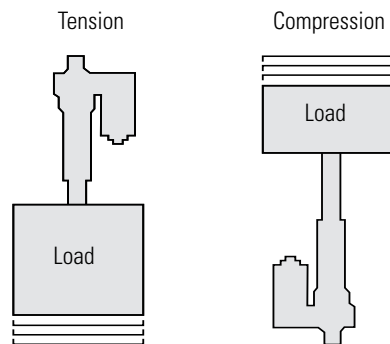


Fig. d

## Trapezoidal Screw

Screw type with similar characteristics as an acme screw. This type of screw is used in LM80. Also see "acme screw" and "lead screw".

## Vent Tube

Electrak® 050 actuators have a breather tube in the wiring harness to allow the actuator to operate without creating a vacuum and drawing water through the seals on the cover tube.

## Voltage Drop

Long leads/cables between the power source and the actuator will result in a voltage drop for DC units. This voltage drop can cause malfunction and are avoided by sizing the leads in accordance with the following lead cross section selection table. The table is based on an ambient temperature of 30 °C (86 °F) or less. A higher ambient temperature may result in the need for a greater lead cross section.

| Lead Cross Section Selection Table [mm <sup>2</sup> (AWG)] |                  |                              |          |          |
|------------------------------------------------------------|------------------|------------------------------|----------|----------|
| Current draw [A]                                           | Cable length [m] | Actuator input voltage [Vdc] |          |          |
|                                                            |                  | 12                           | 24       | 36       |
| 0 - 10                                                     | 0 - 3            | 2.5 (14)                     | 1.5 (16) | 1.5 (16) |
|                                                            | 3 - 6            | 2.5 (14)                     | 1.5 (16) | 1.5 (16) |
|                                                            | 6 - 10           | 1.5 (16)                     | 2.5 (14) | 1.5 (16) |
| 10 - 15                                                    | 0 - 3            | 2.5 (14)                     | 2.5 (14) | 1.5 (16) |
|                                                            | 3 - 6            | 2.5 (14)                     | 2.5 (14) | 1.5 (16) |
|                                                            | 6 - 10           | 2.5 (14)                     | -        | -        |
| 15 - 20                                                    | 0 - 3            | 2.5 (14)                     | -        | -        |
|                                                            | 3 - 6            | 6 (12)                       | -        | -        |
|                                                            | 6 - 10           | 2.5 (14)                     | -        | -        |
| 20 - 28                                                    | 0 - 3            | 6 (12)                       | -        | -        |
|                                                            | 3 - 6            | 10 (8)                       | -        | -        |
|                                                            | 6 - 10           | 6 (12)                       | -        | -        |
| 28 - 35                                                    | 0 - 3            | 6 (12)                       | -        | -        |
|                                                            | 3 - 6            | 10 (8)                       | -        | -        |
|                                                            | 6 - 10           | 10                           | -        | -        |

## Worm Screw

Worm screws are self-locking and will not back-drive. This type of screw is used in Electrak 050, Throttle and Max Jac. Also see "lead screw".

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