

## Max Jac® Electric Linear Actuators

Heavy Duty IP69K Actuator for the Toughest Conditions

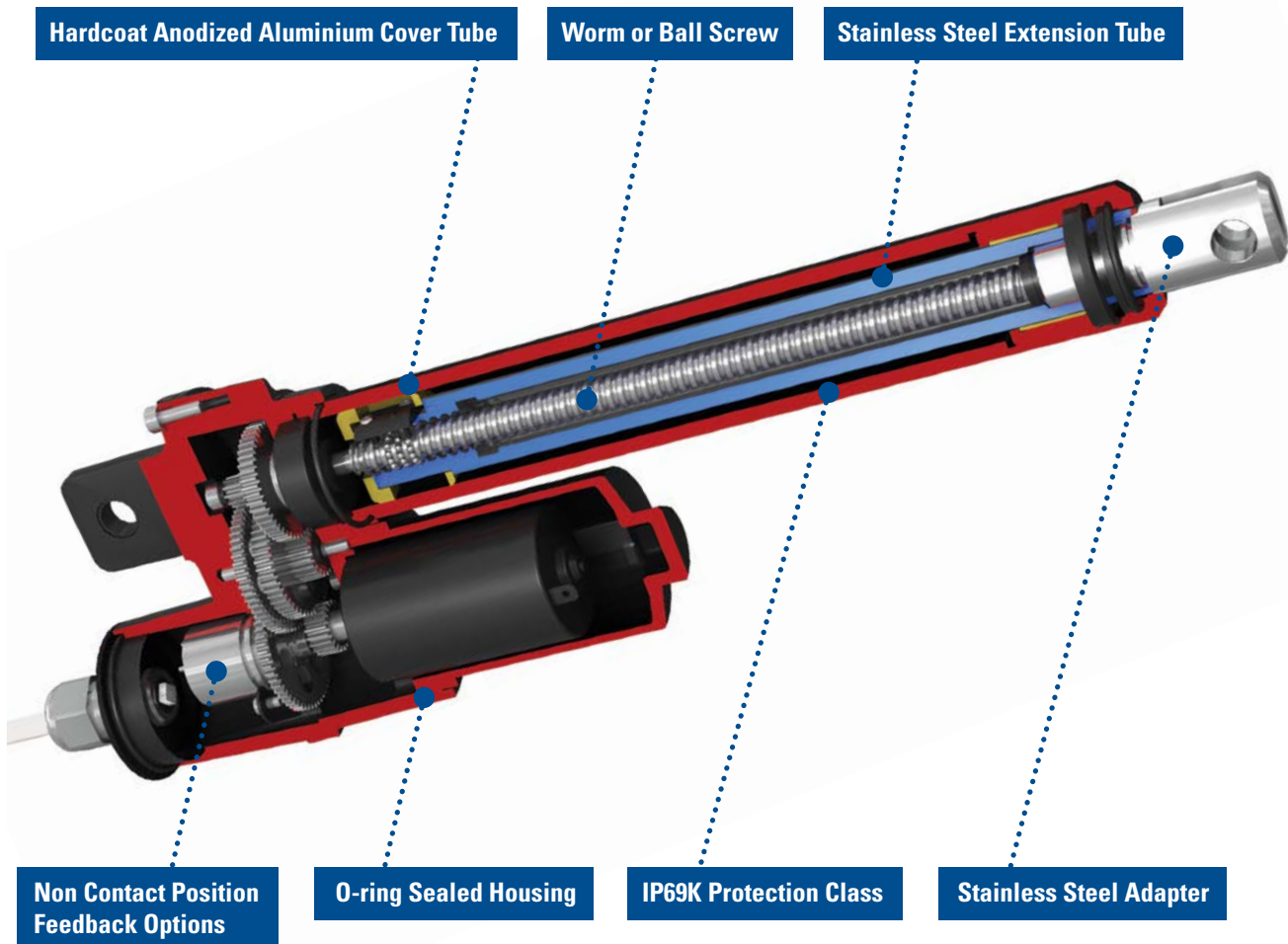
## Introduction

The new Thomson Max Jac<sup>®</sup> linear actuator is the result of decades of extensive success in making linear actuators for the mobile-off-highway market. The Max Jac is built to work virtually maintenance-free in environments where it encounters fertilizers, mud, sand, high pressure water jets, slush, salt water, snow, heat or heavy vibrations.

The Max Jac is not only tough but also a high performer that delivers high speed, efficiency, and accuracy in a compact envelope. Like all Thomson linear actuators, the Max Jac can easily be customized to match your application's requirements.

## Tough, Tougher, Max Jac® ...

State of the art technology and the best materials available make the Max Jac strong and reliable within a lightweight package. The Max Jac has undergone rigorous testing throughout the entire development process to ensure that it will deliver trouble free operation, long life, and outstanding performance in demanding environments.



### Max Jac Main Features

- Long life
- Reliability
- High speed
- High efficiency
- Small envelope
- Minimal backlash
- Vibration resistant
- Duty cycle up to 100%
- Short total length versus stroke
- High degree corrosion protection
- High accuracy position feedback options

## Features and Benefits

The Max Jac® can be used in many types of applications, but it excels when used under the harshest conditions. Every aspect of the actuator has been designed to ensure longevity, reliability, and performance.



### **Let the Max Jac Work in Dust, Dirt, and Mud...**

The Max Jac electric linear actuator is designed to endure the harshest environments. It is rated for IP66/IP69K and has been tested for 500 hours of salt spray. It withstands dirt, dust and water, and also aggressive substances such as fertilizers, acid, oil, grease, and cleaning agents.



### **... in Arctic to Desert Temperatures ...**

The operating temperature range of the Max Jac stretches from -40 to +85 °C which is the greatest range of any actuator on the market. It can operate in almost any place on the Earth whether it be in the arctic region or in a desert.



### **... and Just Wash it Off!**

Unlike most actuators the Max Jac can be washed directly with high pressure water jets and even be submerged for short periods when not operating. This eliminates the need for bellows or other protective devices. The Max Jac simplifies cleaning and installation, reduces the size of the installation, and lowers the total cost.

## Features, Benefits and Applications

### Best In Class

The Max Jac® is the best overall choice among actuators when designing for demanding applications. It offers the following advantages.

- Shortest overall length versus stroke
- Fastest among its peers
- Resistant against vibration and impacts
- Largest operating temperature range
- Possibility to work at 100% duty cycle
- Long and completely maintenance free life.

### Non Contact Position Feedback Options

The Max Jac can be equipped with two kinds of position feedback options that fit in to the standard housing without adding to the outer dimensions:

- analog position output signal
- digital encoder output.

Both use non contact position sensors which ensure that the life of the position feedback device is at least as long as the life of the actuator itself. It also means that the signal does not vary over time due to wear and the system therefore never requires any re-calibration.

### Worm or Ball Screw Models

Max Jac is available with either worm or ball screws, each with unique advantages. The worm screw version is self-locking and will not back drive on power-off. The ball screw version will go faster, take higher loads and operate at higher duty cycles.

### Suitable for Pneumatic Conversion

Compared to pneumatic cylinders, electric linear actuators:

- Easier to install
- Offer more control options
- Reduce energy costs.

The Max Jac has many properties that make it suitable for pneumatic conversion. It is:

- Fast
- Small

- Long life
- High duty cycle
- Able to withstand harsh environments.

Typical applications where the Max Jac can replace pneumatic cylinders are found in the food, packaging and handling industries and in all types of vehicles, construction and farming equipment.

### Applications

The Max Jac® is the ideal choice whenever the environment is tough and wherever long life and trouble free operation is essential. The Max Jac is specifically designed to be used in applications that need:

- High duty cycles
- Accuracy
- Ability to withstand water
- Ability to withstand aggressive chemicals.

The Max Jac can be used to control sand/salt/fertilizer spreaders, hatches, doors and throttles and is ideal in vehicles used for:

- Farming equipment
- Road maintenance
- Construction work
- Military

The Max Jac linear actuator is also an excellent choice for yacht, ship and oil platform applications due it's ability to withstand water, salt and chemicals as well as its great operating temperature range. Other suitable application areas includes:

- Food industry
- Trains and trams
- Mining equipment

# Specifications



## Standard Features and Benefits

- Designed for industrial applications
- Rugged aluminum 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

| Parameter  | Max Jac                              |
|--|--------------------------------------|
| Screw type   | worm or ball                         |
| Internally restrained                                  | no                                   |
| Manual override  | no                                   |
| Dynamic braking  | no                                   |
| Self locking<br>worm screw models<br>ball screw models | yes<br>no                            |
| End of stroke protection                               | no                                   |
| Mid stroke protection                                  | no                                   |
| Motor protection                                       | no                                   |
| Motor connection                                       | flying leads or cable with connector |
| Motor connector  | AMP Superseal Series 1,5             |
| Certificates   | CE                                   |
| Options  | Encoder position feedback            |

## Performance Specifications

| Parameter  | Max Jac  |
|--|--|
| Maximum load, dynamic / static [N]<br>MX • • W (worm screw)<br>MX • • B (ball screw)                     | 500 / 2000<br>800 / 100 - 350 <sup>(1)</sup>               |
| Speed, at no load / at maximum load [mm/s]<br>MX • • W (worm screw)<br>MX • • B (ball screw)             | 33 / 19<br>60 / 30   |
| Available input voltages [VDC]   | 12, 24   |
| Standard stroke lengths [mm]   | 50,100,150<br>200, 250 <sup>(2)</sup> , 300 <sup>(2)</sup> |
| Operating temperature limits [°C]  | -40 to +85   |
| Full load duty cycle @ 25 °C [%]   | 25   |
| End play, maximum [mm]   | 0,3  |
| Restraining torque [Nm]  | 2  |
| Lead cross section [mm <sup>2</sup> ]  | 1  |
| Standard cable lengths [mm]  | 300, 1600  |
| Protection class   | IP66/IP69K   |
| Salt spray resistance [h]  | 500  |
| Life [cycles]  | 500000 <sup>(3)</sup>                                      |
| Analog position feedback signal [VDC]  | 0,5 - 4,5  |
| Encoder position feedback option<br>Supply voltage [VDC]<br>Pulses per mm, worm / ball screw<br>Channels | 5<br>9,86 / 5,84<br>A, B                                   |

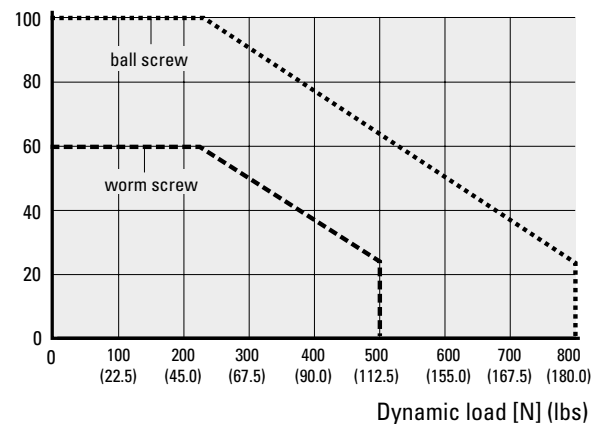
<sup>(1)</sup> The static force (i.e. the backdriving force) for a ball screw unit varies and is dependent on the number of cycles it has been running and at which loads.

<sup>(2)</sup> Strokes possible for ball screw models only.

<sup>(3)</sup> For ball screw actuator with 100 mm stroke, average load of 500 N and changing load direction.

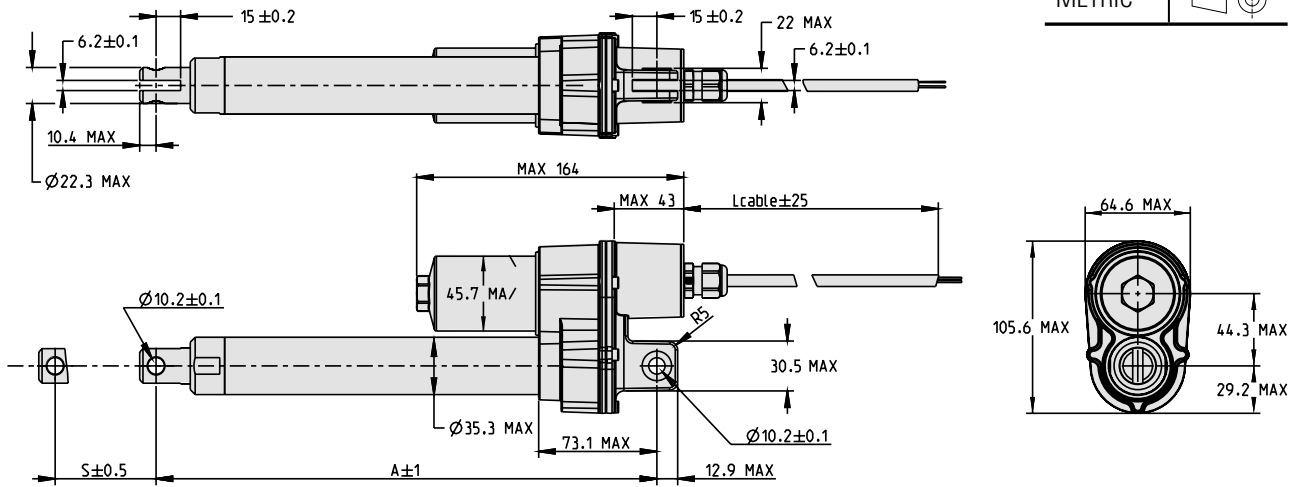
## Duty Cycle vs. Load

ED @ 25 °C [%]



# Dimensions, Performance and Ordering Key

|            |            |
|------------|------------|
| Dimensions | Projection |
| METRIC     |            |

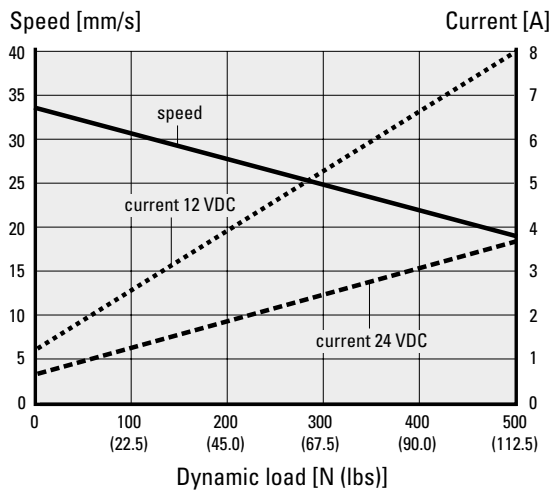


|                             |             |                  |                   |                   |                   |                    |                     |
|-----------------------------|-------------|------------------|-------------------|-------------------|-------------------|--------------------|---------------------|
| <b>Stroke (S)</b>           | [mm (inch)] | <b>50 (1.97)</b> | <b>100 (3.94)</b> | <b>150 (5.91)</b> | <b>200 (7.87)</b> | <b>250 (9.84)*</b> | <b>300 (11.81)*</b> |
| <b>Retracted length (A)</b> | [mm (inch)] | 206 (8.11)       | 256 (10.08)       | 306 (12.05)       | 356 (14.02)       | 406 (15.98)        | 456 (17.95)         |
| <b>Weight</b>               | [kg]        | 1,5              | 1,7               | 1,9               | 2,1               | 2,2                | 2,4                 |

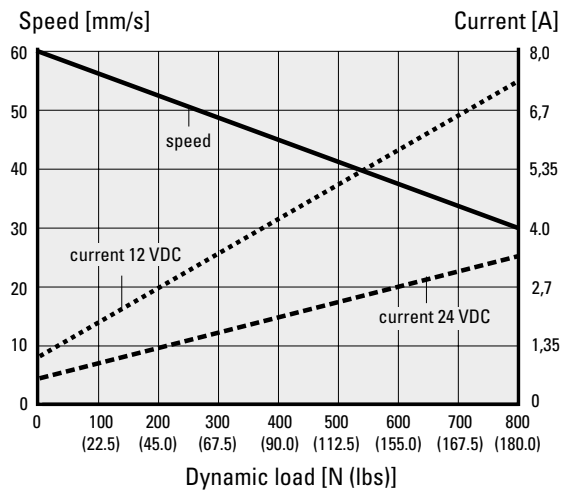
\* Strokes possible for ball screw models only.

## Performance Diagrams

Worm Screw Models (MX • • W)



Ball Screw Models (MX • • B)



## Ordering Key

|          |              |           |            |          |          |
|----------|--------------|-----------|------------|----------|----------|
| Position | 1            | 2         | 3          | 4        | 5        |
| Example  | <b>MX12-</b> | <b>B8</b> | <b>M15</b> | <b>P</b> | <b>1</b> |

|   |   |  |   |
|---|---|--|---|
| <p>1. Actuator type and supply voltage<br/>MX12- = Max Jac 12 VDC<br/>MX24- = Max Jac 24 VDC</p> <p>2. Max. dynamic load, screw type and max. speed<br/>B8 = 800 N, ball screw, 55 mm/s<br/>W1 = 500 N, worm screw, 35 mm/s</p> | <p>3. Stroke (S)<br/>M05 = 50 mm<br/>M10 = 100 mm<br/>M15 = 150 mm<br/>M20 = 200 mm<br/>M25 = 250 mm*<br/>M30 = 300 mm*</p> | <p>4. Position feedback option<br/>P = analog signal (standard)<br/>E = encoder signal</p> | <p>5. Cable and connectors<br/>0 = 300 mm long flying leads<br/>1 = 300 mm long cable and connector **<br/>2 = 1600 mm long cable and connector **<br/>** AMP Super seal series 1,5 connector</p> |
|---|---|--|---|

\* Strokes possible for ball screw models only.

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