

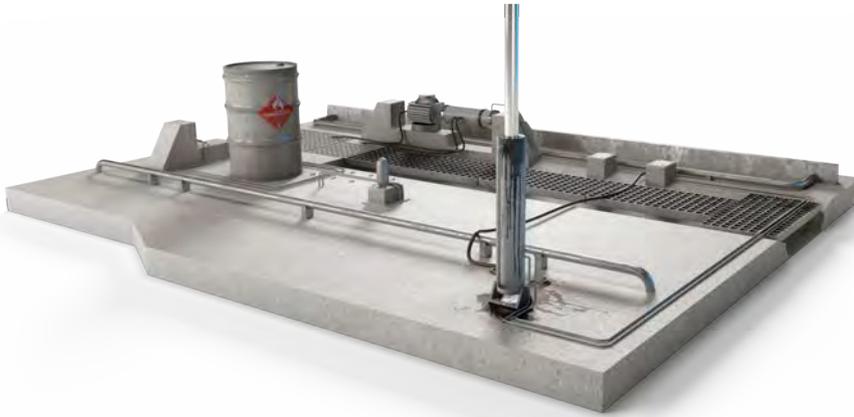
TECHLINE<sup>®</sup>  
IMPROVING FLEXIBILITY



Focus on  
mobile agriculture

[LINAK.COM/TECHLINE](http://LINAK.COM/TECHLINE)

**LINAK<sup>®</sup>**   
WE IMPROVE YOUR LIFE



### Hydraulic system

- Complex system of oil tanks, pumps, filters and hoses
- Per default no integrated positioning
- Requires routine maintenance
- High energy consumption
- Risk of fluid leaks

VS.



### Electric actuator system

- Simple system of actuator, control and power connection
- Integrated positioning
- Maintenance-free
- Low energy consumption
- No fluids

# Linear actuators - tough enough for mobile agriculture

The main concerns when considering an electric actuator solution for mobile agricultural machinery and equipment are durability and reliability.

These machines must work relentlessly in all kinds of weather and withstand dust, dirt and rough handling. Any failure could put both people and values at risk. Not to mention the often costly delays caused by failing equipment.

We give you two good reasons to why you can rest assured that your TECHLINE® actuator solution will do the job no matter what.

The first is our extensive testing programme. The second and equally important is the fact that all members of the TECHLINE team of engineers and consultants have vast product and application expertise.

We quite simply understand and respond to your needs. Our primary objective is to help improve your application to gain a competitive edge.

## Go electric and spot the difference

Electric linear actuators are the perfect solution when you need simple and clean movement with accurate and smooth motion control. You may choose actuator systems for adjustments, tilting, pushing, pulling and lifting with thrusts up to 10,000 N.

Actuators can be integrated into sophisticated control systems using databus communication. You get precise position feedback and accurate variable control over acceleration and velocity.

Compared to both hydraulic and pneumatic systems an actuator solution is a lot easier to install. It takes up less space and there are no hoses and pumps that require routine maintenance.

*“LINAK has supplied linear actuators to various agricultural equipment manufacturers around the world over the past 30 years. Based upon the vast actuator experience of LINAK, and with the input from several of our agricultural equipment customers, we have continued to develop more and more robust, innovative and intelligent actuators.”*

*- Torben Zerlang, Global Key Account Manager, Mobile AG & Construction*

A linear actuator has a long lifetime with little or no maintenance at all. This ensures a very low total operating cost compared to other systems.

Electric actuator systems are clean, non-toxic and energy efficient. They fulfill the ever increasing demands and legislation concerning environmentally sound equipment.

LINAK offers service  
worldwide

Please contact your local LINAK office with  
your enquiry



# What LINAK actuators do for the combine harvester

TECHLINE® actuators provide high flexibility and smooth motion control for the combine harvester. They ensure an interactive application where all elements come together in one unit for user-friendly adjustment as well as easy-to-change settings between crops. This is possible because LINAK® actuators easily interface with sophisticated control systems using databus communication. With their robustness and long lifetime TECHLINE actuators also provide high quality performance ideal for heavy-duty machinery.



## Header

Forward and backward movement of the header

## Concave

Concave adjustment depending on the crop

## Header

Speed regulation of the header

### Grain tank covers

Grain tank extension and / or opening and closing of the grain tank covers for inspection

### Thresher

Engagement and disengagement of the thresher unit

### Auger

Bending of the unloading auger in transport situations

### Spout

Adjustment of the auger spout to optimise the filling of the grain wagon

### Sieve

Grain sieve adjustment to keep the sieve in horizontal level when operating in hill areas

### Outlet

Wind compensation, changing directions of the outlet e.g. in heavy side wind situations

### Cutter

Engage and disengage the cutter unit

### Ladder

Access ladder extension or retraction, or have an angle on the ladder for easy access

### Sieve mesh

Adjustment of the size of the sieve mesh depending on the crop

### Blower

Airflow adjustment of blowers



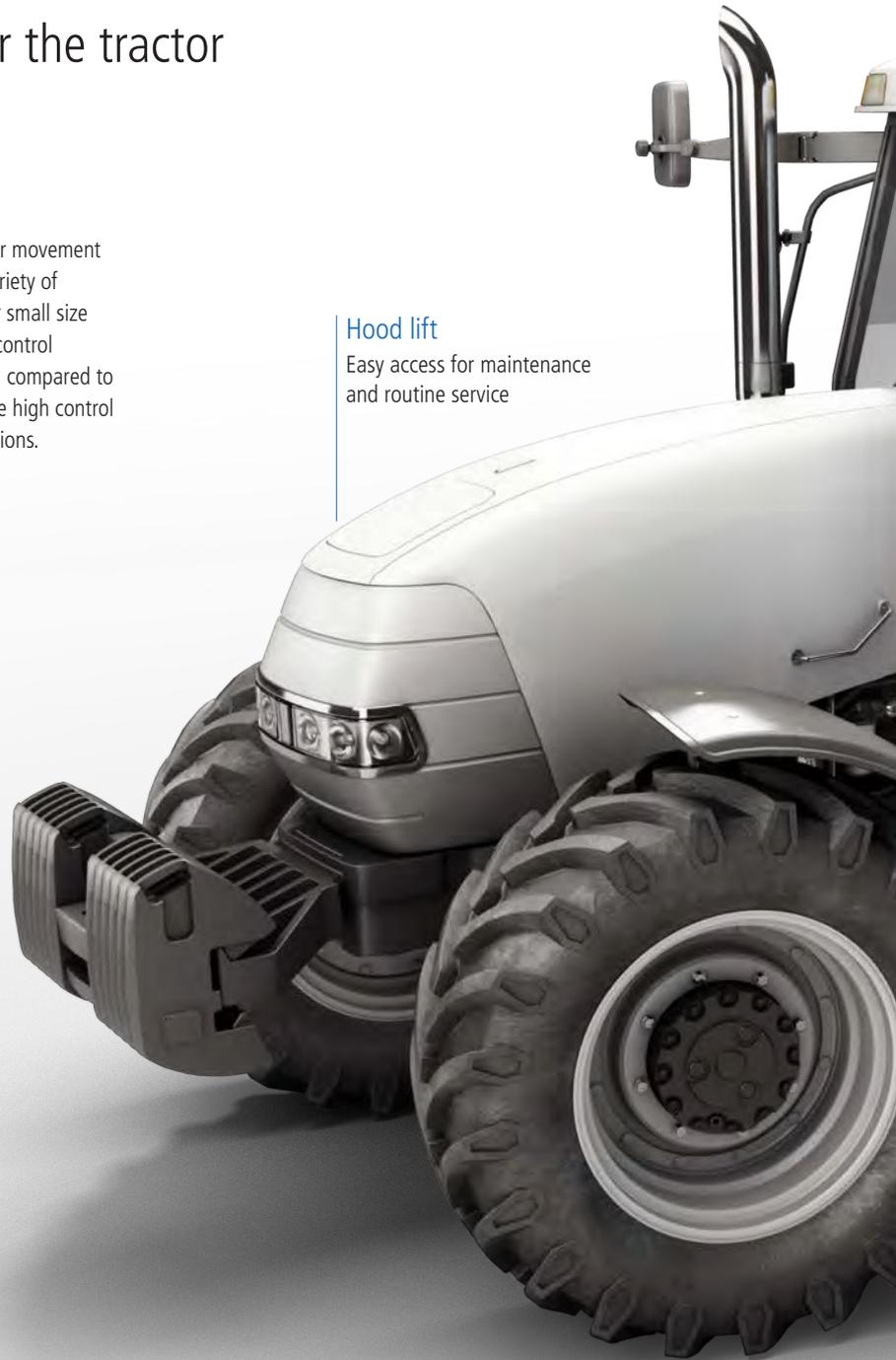
# What LINAK actuators do for the tractor

---

TECHLINE® actuator systems provide safe and easy electric linear movement for tractors as well as their attachable applications used for a variety of operations such as seeding, spraying, chopping, etc. Due to their small size and the fact that they are easily integrated with programmable control systems of the tractor, LINAK® actuators are also easier to install compared to more complex hydraulic systems. Moreover, the actuators provide high control and simple operation of the application even under harsh conditions.

## Hood lift

Easy access for maintenance and routine service



## Cabin comfort

Electric adjustment on e.g. gear shifting or on the PTO to improve the working environment



## Cabin comfort

Opening and closing of the windows

---

## Positioning

Positioning of the arm rest for comfort during operation

---

## Speed adjustment

Adjusting speed on the PTO

---

## Ladder

Ladder extension or retraction for easy access

## Parking break

Automation blocking of wheels to ensure the tractor does not move

# What LINAK actuators do for the spreader

---

Spreaders demand a high level of control and precision in order to function as effectively as possible and to meet with already determined and environmentally focused norms regarding how much fertiliser may be spread. To fulfil these requirements LINAK® actuators provide a very sophisticated positioning system which ensures that a precisely adjusted amount of fertiliser is spread to each specific field. TECHLINE® actuators are also resistant towards functional obstacles of the spreader such as corrosive liquids and everyday wear.

## Border spreading

Border spreading ensures optimal utilisation of the fertiliser and that it is not spread into streams and other sensitive areas

---





### Tank cover

Opening and closing of the tank cover on the spreader

### Start/stop feature

Automation of start and stop of the supply of fertiliser in the headland

---

### Dosing

Helps dosing a correct amount of fertiliser even when speed varies

---

### Adjusting

Adjusting the spreading pattern according to varying types of fertiliser

# What LINAK actuators do for the baler

---

For efficiency reasons, bales need to contain as much material as possible, while having the right proportions for easy transport. To obtain these features, the net tightening process in a baler is of the utmost importance. Depending on the net quality, different settings for net braking force is needed to ensure the highest density of the bales. LINAK® actuators provide a very precise positioning and feedback system resulting in high control of the net braking force. Furthermore, the actuators provide power efficient and easy to install movement solutions ideal for the various adjustment requirements in the baler.

## Net tightening

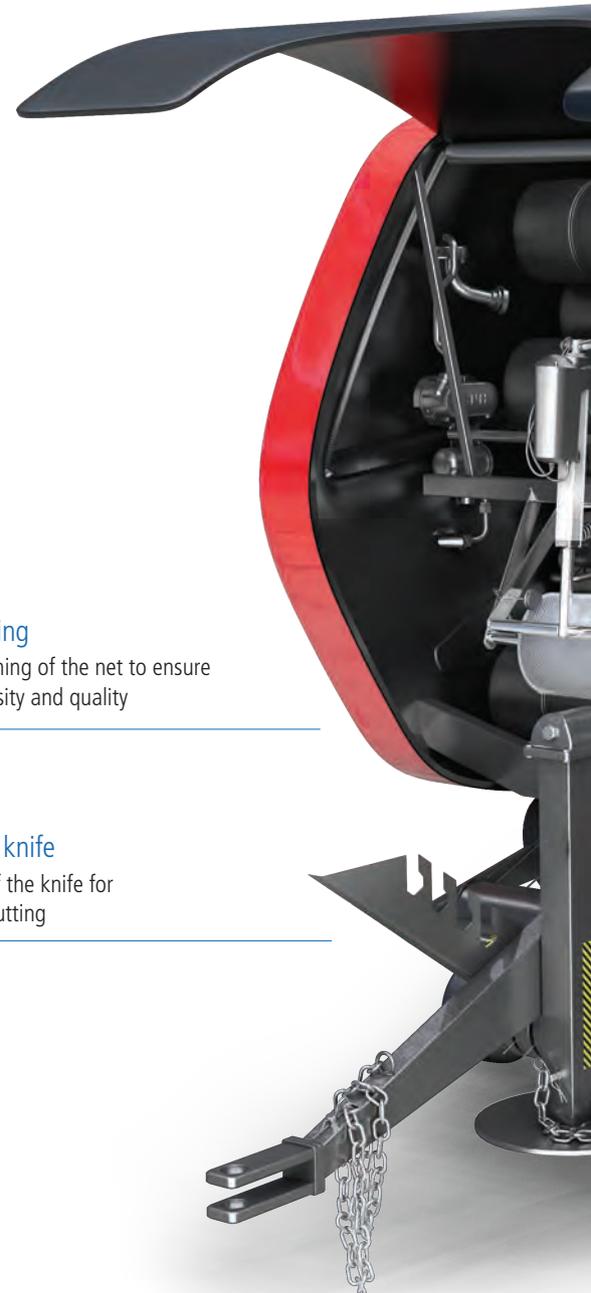
Precise tightening of the net to ensure high bale density and quality

---

## Net cutting knife

Fast control of the knife for efficient net cutting

---





### Pick-up

Raising and lowering the pick-up for

# What LINAK actuators do for the seed drill

To achieve faster and more effective seeding, interplay of several components in the seed drill is necessary. TECHLINE® actuators provide precise positioning which ensures that an accurate amount of grain is seeded throughout the field, thereby optimising the entire process of seeding. Furthermore, actuators make it possible to position the seeded grain precisely which will lead to high output and high quality grain. LINAK® actuators also communicate smoothly with databus control systems thereby making it easier to attach the seed drill to e.g. a tractor.



## Dosing

The dosing unit underneath the seed tank is adjusted at crop rotation/seed rotation



### Tank cover

Opening and closing of the tank cover  
on the seed drill

### Marker

Raising and lowering markers that  
reduce process waste

### Dosing

Helps dosing a correct amount of  
seed even when speed varies

# What LINAK actuators do for the straw blower

TECHLINE® actuator systems provide smooth electric linear movement for straw blowers. Everything becomes easy to control and is easily integrated into the straw blower due to the small size. LINAK actuators are generally easy to install compared to more complex hydraulic systems and the actuators provide reliable and simple operation even under harsh conditions.

Outlet direction  
Electric adjustment  
of the blower/ nozzle





### Knife adjustment

Electric adjustment of the cutting knives

### Hatches

Opening and closing hatches electrically

# What LINAK actuators do for the grape sprayer

---

TECHLINE® actuator systems provide precise and easy movement for all types of sprayers including grape sprayers. Fine adjustment is key in grape spraying equipment and this is where actuators can really make a difference and provide accurate spraying and easy control for the benefit of the farmer.

**Spray arm**  
Activating or deactivating  
the spray arm

---

**Parking break**  
Automated blocking of wheels to  
ensure the sprayer does not move





### Cabin comfort

Opening and closing of the windows  
and the roof top

### Spray accuracy

spray arm to be able to spray  
exactly where needed

### Ladder

Ladder extension or retraction  
for easy access

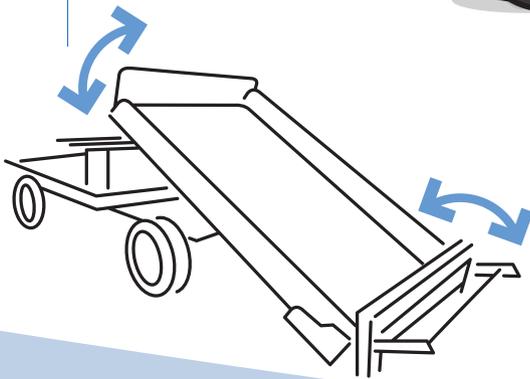
# What LINAK actuators do for the mobile agriculture

For agricultural applications it is often critical that products work under extreme conditions. LINAK® electric actuators are suitable for use in harsh conditions with dust, dirt and water. Even in these conditions electric actuators do not require regular maintenance. To develop a product that can handle tough conditions LINAK has extensive test facilities and rigid quality and design procedures.

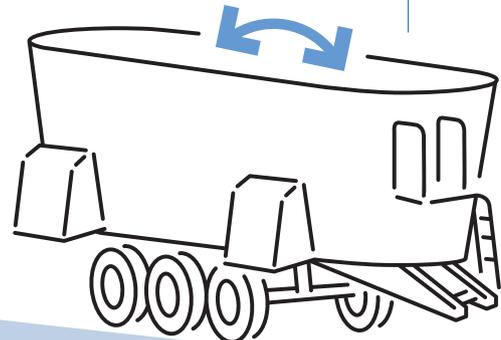
## Grape harvester

Reliable and accurate adjustment of multiple functions. Easy integration with the harvester's control system

## Lettuce harvester

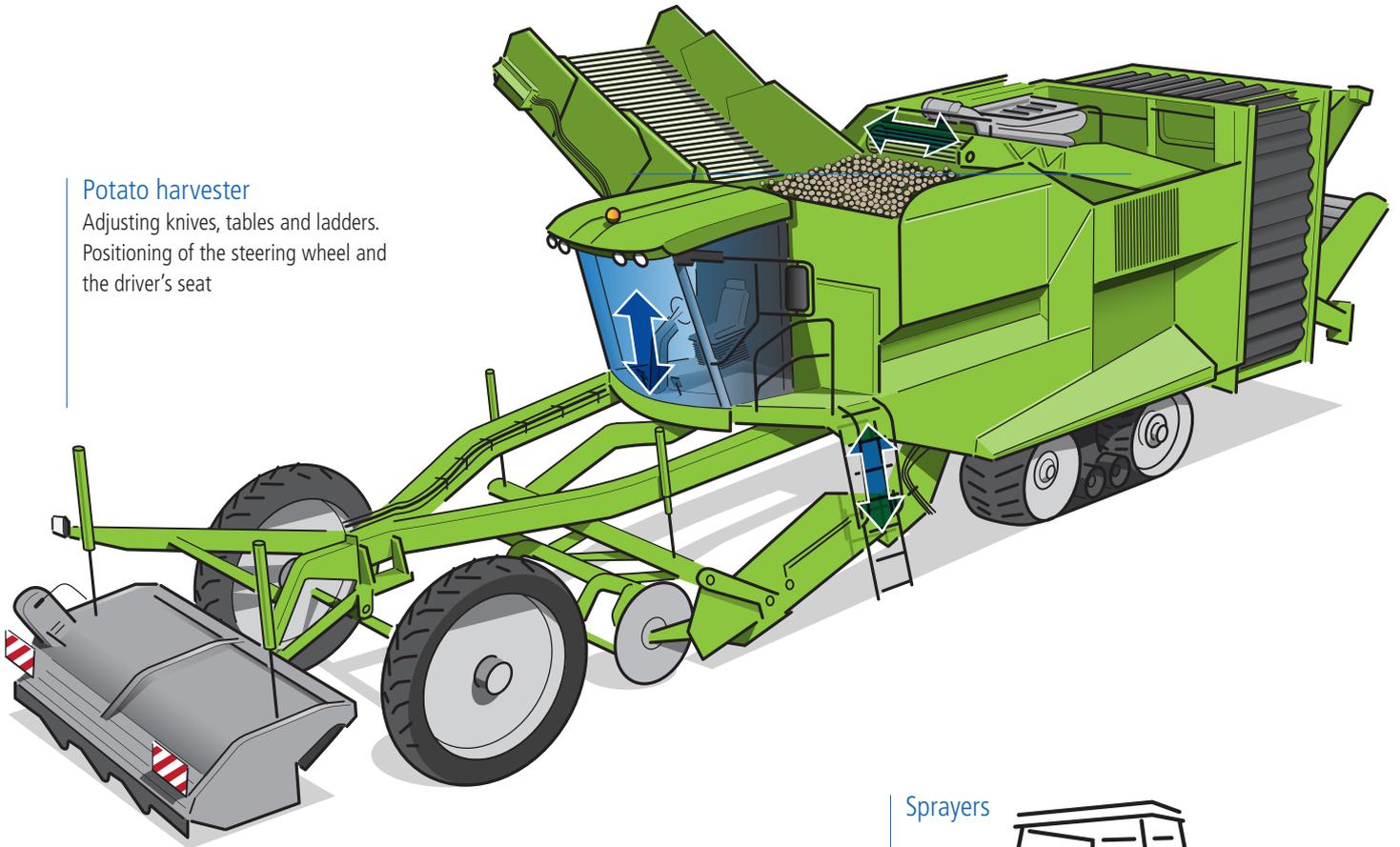


## Auger mixer

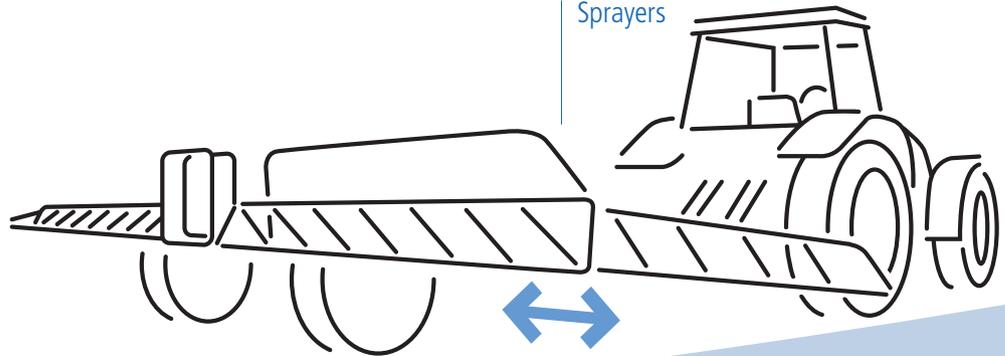


## Potato harvester

Adjusting knives, tables and ladders.  
Positioning of the steering wheel and  
the driver's seat



Sprayers



# Explore the rich technology behind actuators

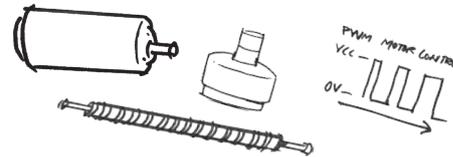
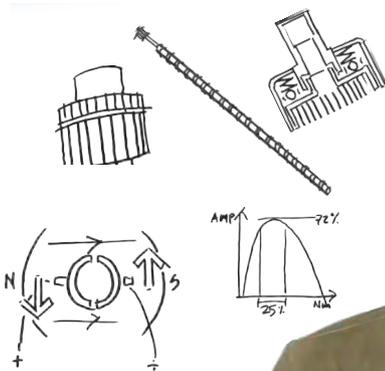


At the Actuator Academy™, you will find a library of videos and information about actuator components, actuator testing, and intelligent actuator control.

Find out what you should expect of a good industrial actuator, what affects its performance and efficiency, and how to best utilise your linear motion actuator.

We hope to inspire you and ultimately make you wiser on the moving electric revolution we are all part of.

**Happy exploring!**

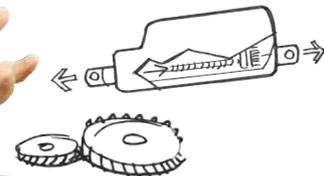


Check out the  
Actuator Academy

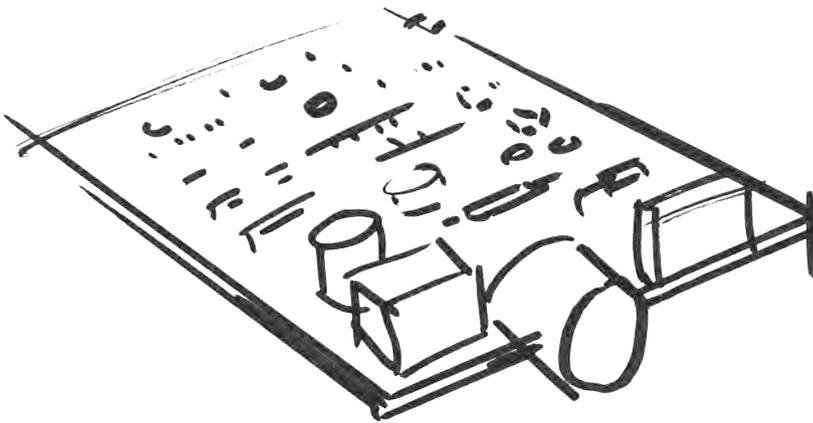
[LINAK.COM/  
ACTUATOR-ACADEMY](http://LINAK.COM/ACTUATOR-ACADEMY)



DC MOTOR CONTROL  
VCC —  
0V —



# Smart movement for mobile agriculture



A LINAK® IC actuator with built-in controller reduces the number of external components and the need for a third-party supplier for power electronics.

It also offers a comprehensive range of interfaces and gives you access to productivity enhancing data - all delivered by a single supplier you can trust.

By helping you move smarter at every stage of your application process, from development, installation and integration to tailored movement and improved productivity, our IC actuators add value across the board.

## IC INTEGRATED CONTROLLER™

Choosing an IC actuator for your application is a smart move in many ways:

- Reduced complexity for faster development and production
- Flexible integration with a variety of industrial interfaces
- Data monitoring that minimise downtime and boost productivity
- Benefit from one single supplier



For more information on IC, please visit [LINAK.COM](http://LINAK.COM) or scan the QR code.

# Actuators for mobile agriculture

---

LINAK® industrial actuators offer a versatile array of movement solutions for mobile agriculture.

With **thrusts up to 15,000 N, max speeds up to 160 mm/s, and strokes between 20 and 999 mm**, the actuators are highly adaptable for a wide variety of applications.

Industrial actuators with **heavy-duty aluminium housings** are very suitable for use in corrosive environments. Having been thoroughly salt spray and **chemical resistance tested** and approved for ratings up to **IP66 and IP69K static**, these actuators will work reliably for years, even when exposed to salt, water, wind, and sun.

**Operating temperatures between -40°C to +85°C** make them fit for work in numerous settings.

Actuator LA37



Actuator LA36



Actuator LA33



Actuator LA25



Actuator LA14



Actuator LA12\*



## SAE J1939 CAN bus

**CAN|J1939**

As an all-in-one package solution, LINAK® also offers actuators with integrated SAE J1939 CAN bus control. With this well-known bus standard you can use linear actuator movement in your CAN bus system without having to customise additional controls.

In addition to full position control, the CAN bus actuator is able to provide feedback information about the piston position, service data and full diagnostics. It also provides system identification data and actual current at runtime.

\* Not compatible with CAN bus



Resting on the pillars of the LINAK values

---



QUALITY

Built on state-of-the-art technologies and refined processes by competent people, you can expect the same quality worldwide.



INNOVATION

Innovation is in our core. We have the curiosity to think innovatively and the power to make it real on all levels.



RESPONSIBILITY

We are responsible in what we do – towards customers, employees and environment. Creating trust and taking care is in our DNA.



LOCAL  
& GLOBAL

From global presence to local understanding. We believe in world-wide support and being close to our customers.

# Testing programme

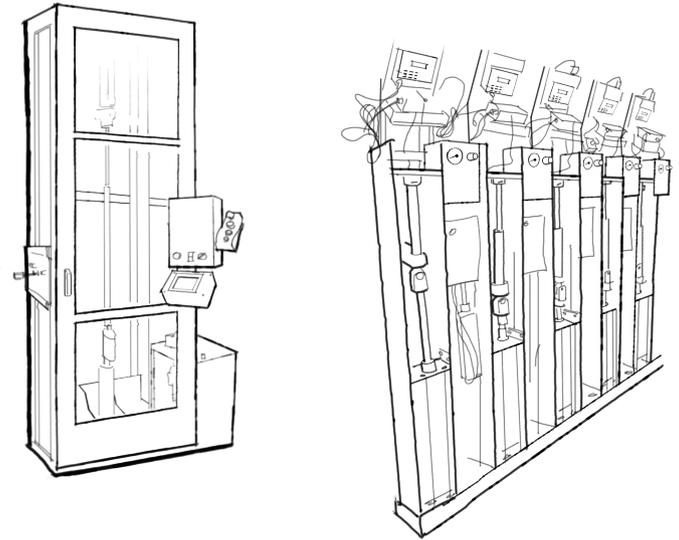
In each industrial application, the actuator is just one component of many, but at LINAK® we fully appreciate that it is of utmost importance to you and your customers. Not a single actuator leaves the factory until it has undergone a 100% function test.

Depending on the actuator type, various tests have been carried through. Please consult your local LINAK office or take a look at the actuator data sheet in question to get a thorough test overview.

This is your guarantee that a solution based on LINAK TECHLINE electric actuator systems is a solution that will work reliably for years and years.

“Our actuators must never malfunction. Therefore, it is important that all our products are tested inside and out, and to the extreme in a wide range of tests.”

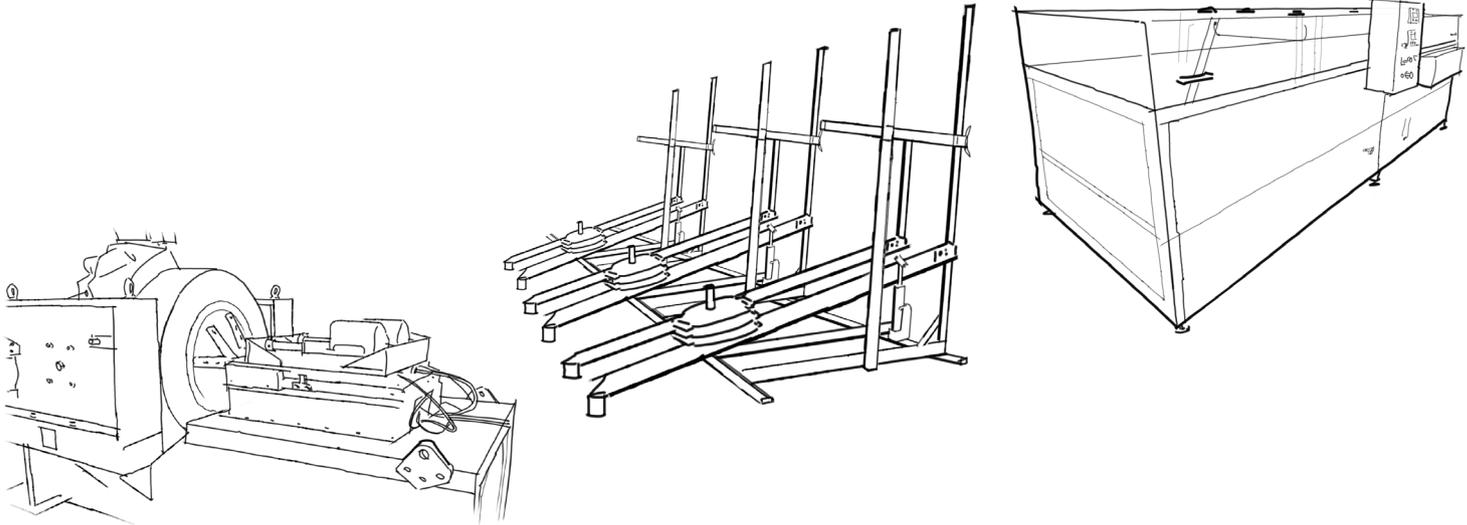
- Claus H. Sørensen, Director R&D



## Climatic tests:

In the climatic test the actuators are tested to operate in extreme temperatures as well as to endure rapid changes in temperature. In a dunk test, the actuators have to withstand repeating temperature fluctuations between +85°C to -40°C and still maintain full functionality and ingress protection.

<b>EN60529-IP6X</b>	- Dust
<b>EN60529-IPX6</b>	- Water
<b>ISO16750- IP69K</b>	- High pressure cleaning
<b>IEC60068-2-3</b>	- Moisture storage
<b>IEC60068-2-30</b>	- Operation in moisture
<b>ISO16750-4:2010</b>	- Dunk test
<b>EN60068-2-52</b>	- Salt spray
<b>BS7691 Section 6.11.2.4</b>	- Chemicals



### Electrical tests:

All electrical parts are tested i.e. power supply, power and signals cables, control signals etc. Electrical immunity is tested according to industrial standards i.e. for radio noise, electrical discharge and burst.\*

<b>EN/IEC 61000-6-4</b>	- Generic standard emission industry
<b>EN/IEC 60204</b>	- Electrical equipment of machinery
<b>EN 50121-3-2</b>	- Railway applications - Rolling stock apparatus
<b>94/25/EC</b>	- Recreational crafts directive
<b>EN/ISO 13766</b>	- Earth moving machinery
<b>EN/IEC 61000-6-2</b>	- Generic standard immunity industry
<b>2004/104/EC</b>	- Automotive Directive
<b>EN/ISO 14982</b>	- Agricultural and forestry machines
<b>EN/ISO 13309</b>	- Construction machinery

\* These tests do not apply to third party products!

### Mechanical tests:

**Vibration:** The actuator must withstand continuous vibration in three directions.

**Shock:** The shock test puts the actuator through 3 shocks of up to 50 G in each of six directions.

**Bump:** The actuator receives bumps of up to 30 G in each of six directions several hundred times.

**EN60068-2-64 (Fh)** - Random vibration

**EN60068-2-27 (Ea)** - Shock

**EN60068-2-29 (Eb)** - Bump

Find out more about how we test actuators to the extreme:

[linak.com/segments/techline/tech-trends/testing/](http://linak.com/segments/techline/tech-trends/testing/)





For further information, please visit our website:  
[LINAK.COM/BUSINESS-AREAS/MOBILE-AGRICULTURE/](https://www.linak.com/BUSINESS-AREAS/MOBILE-AGRICULTURE/)

LINAK® accepts no responsibility for possible errors or inaccuracies in catalogues, brochures, and other material. LINAK reserves the right to change its products without prior notice. LINAK cannot guarantee product availability and reserves the right to discontinue the sale of any product. User is responsible for determining the suitability of LINAK products for a specific application. All sales are subject to the 'Standard Terms of Sale and Delivery', available on LINAK websites.

LINAK and the LINAK logotype are registered trademarks of LINAK A/S. All rights reserved.



**QUALITY**

Built by market leading experts, using state-of-the-art technologies and perfected production methods, you can expect the same quality worldwide.



**INNOVATION**

Innovation is in our core. We take the lead and have the courage to make it real.



**RESPONSIBILITY**

We are responsible in what we do – towards customers, employees and environment. Creating trust and taking care is in our DNA.



**LOCAL  
& GLOBAL**

From global presence to local understanding. We believe in world-wide support and being close to our customers.