

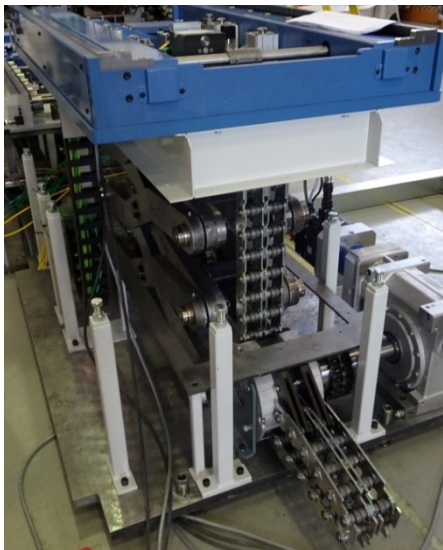
Linear chain plays decisive role in the "wedding" on the production line

When the body is assembled together with the engine in the production line manufacture of cars, the experts speak of a **"wedding"**. It is precisely at this point that the [linear chain from Grob Antriebstechnik](#) plays a very important role at a premium car manufacturer that produces in England.

The co-operation between our English representative for linear chains - [R A Rodriguez \(UK\) Ltd](#) - with a custom machine manufacturer gave rise to a solution that plays an important role in this "wedding" and is unique in the world.

It all revolves around two lifting tables, which can be raised and lowered. The lifting movement is realised with the linear chain type SK35 with a lifting force of 35 KN and a stroke of 2,000 mm.

The unprecedented solution in detail



One of the project managers from the custom machine manufacturer explains the function: *"The order of events on the production line is this: a conveyor belt delivers the internal combustion engine on a pallet to the first lifting table.*

The table is then lowered and the engine is pushed via a conveyor belt onto the second lifting table. The second lifting table is now raised. Two workers now take the engine using a guided system and place it in the correct assembly position in the car body.

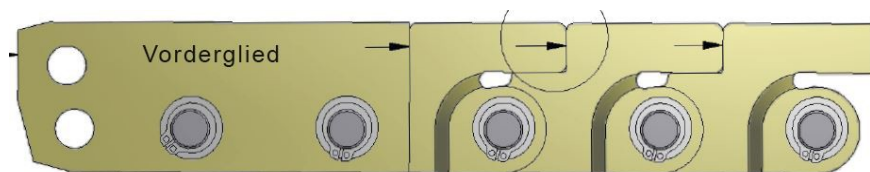
While that is taking place, the empty pallet is returned to the first lifting table via a second conveyor belt."

The project manager continues: *"If we compare the stroke of the linear chain with a conventional lifting element, we have to accommodate the stroke of the cylinder and the extended stroke there too. In comparison the linear chain is a much more compact solution because it can be rolled up."*

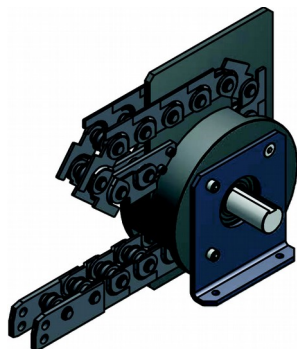
The chain that works like a bar – it pulls and "pushes"

What seems at first glance like a contradiction in the case of a chain is, on closer examination, an ingenious solution in linear drive technology. And it's predestined for this application. When the lifting table is raised, **the chain suddenly "becomes" a bar**, because the linear chain consists of specially shaped, high-precision, mechanical chain links. The chain links engage positively with one another and mutually support one other.

When the lifting table is raised, the linear chain "pushes" the load upwards. The shoulders of the individual chain links push against one another and form a rigid unit. The linear chain can thus lift or push loads.



When the lifting table is lowered, the following happens: The part of the linear chain that is not under load is "rolled up" like a rope into a magazine, thus saving a great deal of space.



The linear chain can thus **"pull and push"** – and it does so with only one drive and without wasting space. The **linear chain** is thus actually the first and only chain that can "push" as well as pull!

An ingenious solution in linear drive technology that is one thing above all else: space-saving!

"The part of the linear chain that is not under load can be rolled up like a rope and stored outside the work area. That saves an enormous amount of installation space.

That is the main advantage of the linear chain, in addition to which customers value the possibility of being able to implement practically "endless" strokes with the linear chain.

This allows us to realise solutions where conventional linear drives are impossible due to the cramped spatial conditions, or where hydraulic or pneumatic systems are not desired."



Eugen Reimche,
Managing Director, Grob
GmbH Antriebstechnik

The advantages of the linear chain at a glance

- ⇒ Loads can be positioned **directly, precisely and with high repeatability**.
- ⇒ The chain links can be **stored in the tightest of spaces**.
- ⇒ **Only very little space** is required to bridge long transport distances.
- ⇒ Often the only solution where other drive solutions such as linear drives, hydraulic/pneumatic cylinders, winches or gear racks are ruled out due to a lack of space.
- ⇒ Several chains can be coupled in parallel.
- ⇒ The linear chain can be **extended to any length**.
- ⇒ Can be installed horizontally, vertically or inclined.
- ⇒ Its **function** is purely **mechanical**.
- ⇒ Robust, compact design, also suitable for special environments such as **cleanrooms or high-temperature zones**.
- ⇒ High reliability, long service life, low maintenance requirement.
- ⇒ Standard stroke speed up to 250 mm/s; in special cases speeds of up to 1,000 mm/sec are even possible.
- ⇒ Temperatures up to 250 °C; continuous temperatures of up to 560 °C are possible with a special version.
- ⇒ With an energy efficiency of 80 – 90%, the linear chain is a sustainable investment, both ecologically and economically.
- ⇒ Maximum lifting load of 35,000 N per linear chain is possible.

Company information

Grob GmbH Antriebstechnik is an internationally leading company in linear drive technology. Its core competence is its high level of technical consulting expertise, which is groundbreaking in this industry.

The most important product is the linear drive in innumerable variants. Further products are electrical cylinders, transfer gearboxes, linear actuators, screw jacks and complete lifting systems. The company's most innovative product is the linear chain, which can both push and pull and needs very little space.

The company has published its own reference book, entitled "Grundlagen linearer Antriebstechnik" (Principles of Linear Drive Technology) through the Springer Verlag publishing house.