



Linear drives
Summary – Systems program



What counts is success – We can help you with it

Today clear competitive advantages and opportunities lie in the flexibility, speed, innovation and continuous improvement. We understand time, as one of the most significantly competitive factors. In clearly defined markets, we offer advanced solutions, which aim at the optimum customer value. With internationally recognized quality, – our entire company is certified according to ISO 9001 – high stock availability and maximum reliability, we want to be true partners for our customers. We know that a long lasting partnership especially measures in mutual trust, builds an understanding to each other and strengthens reliability. Therefore, everyday anew, over 50 Nozag employees exert themselves to justify the trust of our partners, whether customers or suppliers. The foundation for this, we lay with motivated, highly qualified experts, equipped with modern workplaces. Our state of the art modern manufacturing is complemented by an equally powerful logistics.

Standard Program Standard parts, further processing



Systems Program Screwjack systems, standard gearboxes



Toothed components, electromechanical and pneumatical drives





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Systems Program

- 1 Screw jacks
- 2 Bevel gearboxes
- 3 Connecting shafts
- 4 Linear drives
- 5 Gear/worm gear
- 6 Customer-specific construction group

Standard Program

- 7 Spur gears module 0.3 to 8
- 8 KBevel gears up to module 6
- 9 Worm and worm wheels
- 10 Standard racks
- 11 Trapezoid threaded screws/trapezoid threaded nuts
- 12 Chains and chain wheels
- 13 hardened and ground shafts made to customer design

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We reserve the right on printing and dimension errors, as well as technical changes and improvements.

With the new Nozag linear drives, we have brought our many years of experience in mechanical engineering and machine building to bear.

- > robust construction, high tensile and compressive loads possible
- > fast and simple linking
- > resistant to wind and weather
- > low-maintenance for 20 years and longer
- > setting accuracy up to 0.1 mm possible
- > mechanical self-locking
- > compact construction
- > high reliability

Thanks to their robust design, these drives can also be used for other industrial applications. The drive is matched to the customer requirements. Apart from the standard motors, individual motors can also be installed.

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Linear drive

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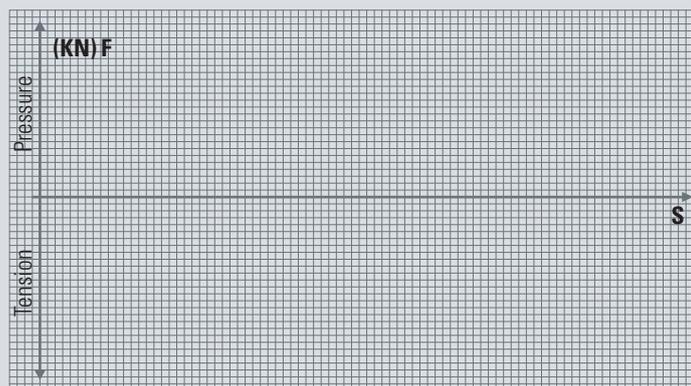
Configuration

- Screw jack SHC
 Nozdrive

Lifting force in kN

- _____ kN per gearbox _____ kN entire installation
 _____ kN under tensile load _____ kN under compressive load
 _____ kN static load _____ kN dynamic load

Force flow



(F (KN)=force, S (mm)=stroke)

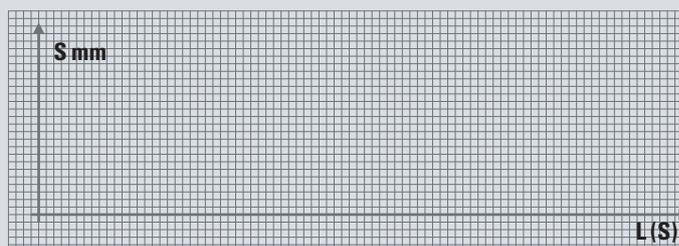
Installation position

- vertical horizontal

Lifting speed

- 1.5 m/min 0.375 m/min
 2-3 mm/s _____ mm/s

Working cycle



Conditions (operational demands)

- Steady (constant)
 Vibrations (alternating)
 Impact loading (swelling)

Operating voltage

- 24V DC
 230V AC / 50-60Hz / single-phase
 400V AC / 50-60Hz / three-phase

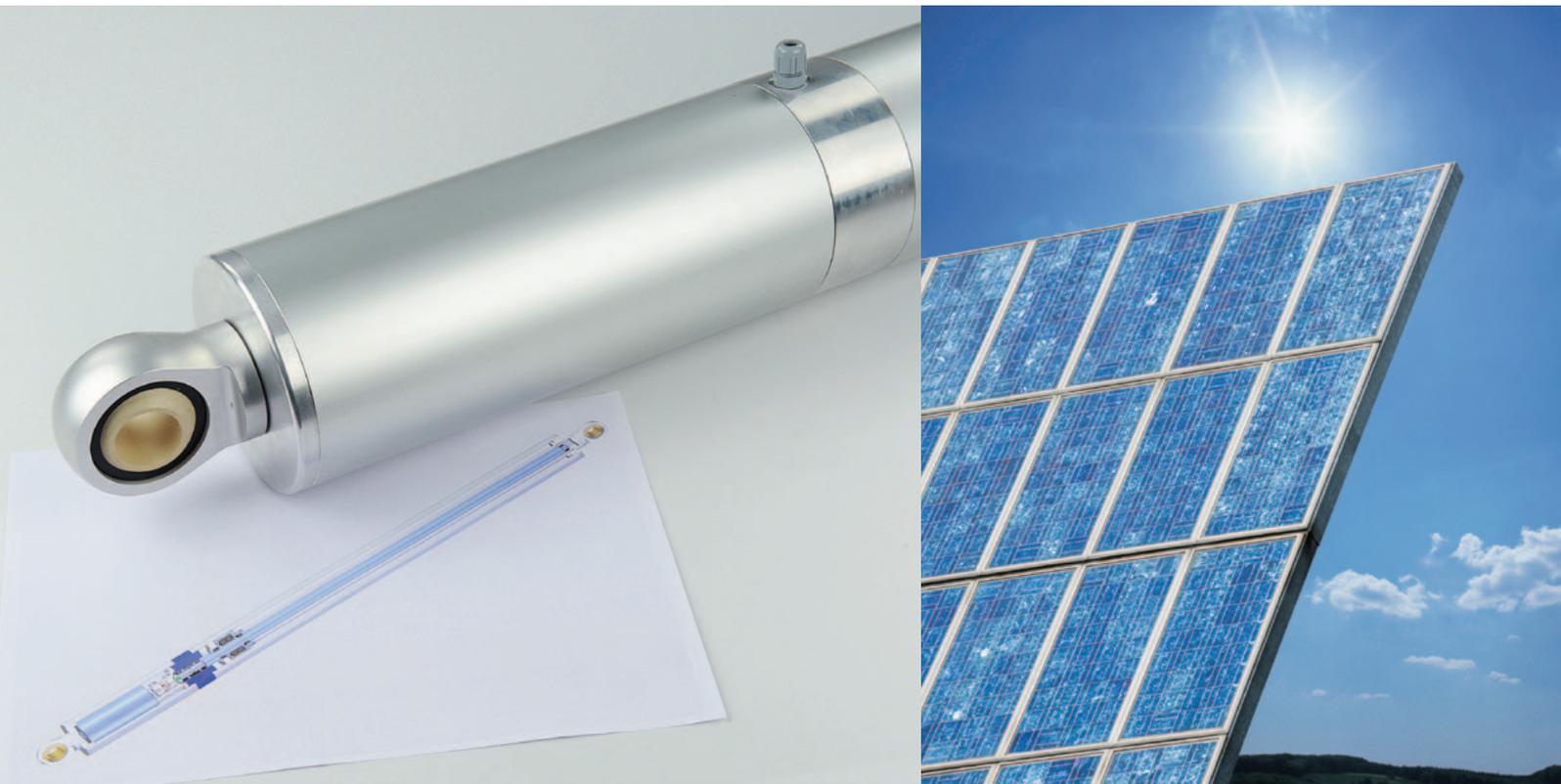
Connection type

- Connecting wires 5 m long, open end
 Connecting wires 5 m long, with plug at the end
 Connecting plug built in the actuator casing

Integrated end position switch

(Standard 2 pieces – retracted, extended)

- Microswitch (up to 10 A), preferred type
 Power circuit breaker with direct opening action (up to 16 A)
 Reed contacts, preferred type!
 Proximity switch
 No switch



New performance range for trapezoidal screw technique

With this development, based on a new functional principal of linear actuators, a new range of performance can be reached with screws and nuts.

Up to now, drives with trapezoidal screws were limited because of their poor efficiency. The resulting friction/heat allowed a duty cycle of max. 40% (i.e. per 10 minutes of duty, max. 4 minutes of operation) and this by an already reduced maximum load.

The rolling nut principal allows the turns of thread to roll onto and into each other and not slide over each other, resulting in the distinctive improvement in performance results. Another great benefit of this rolling motion is that the diameter differences between nut thread and spindle thread allows a large reduction ratio without the use of an additional gearbox. Securing the load is, as usual, by form closure of the turns of thread.

Initially, a size 25kN for installation in solar trackers has been developed, which can also be used for other applications. Sizes 2 and 10kN are currently in development.

Efficiency

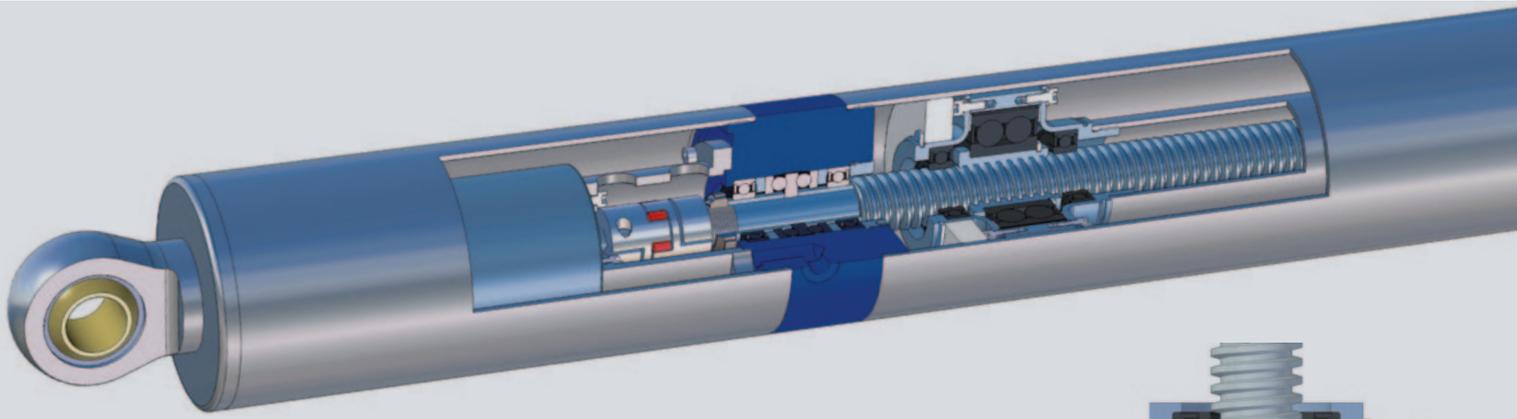
- > Duty cycles up to 80% possible (with trapezoidal screws)
- > Small axial clearance through pre-loaded nut
- > Small starting torque
- > High reduction ratio in a small space without additional gearbox
- > High operational life due to hardened steel nut
- > Motor is attached coaxially with cylinder/spindle, this allows a compact and closed build

High efficiency and yet self-locking

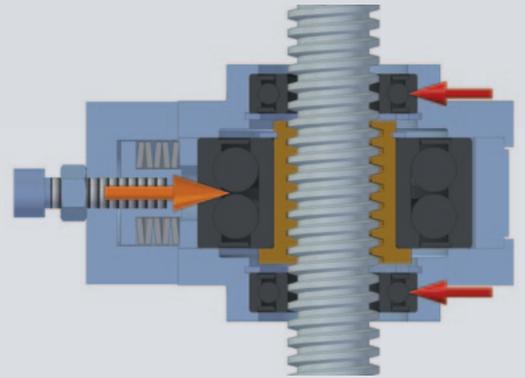
- > Thanks to a new principle, only roll friction and no slide friction between nut and spindle – efficiency > 70%
- > Virtually self-locking (depending on the application, no motor brake needed)

Lower costs

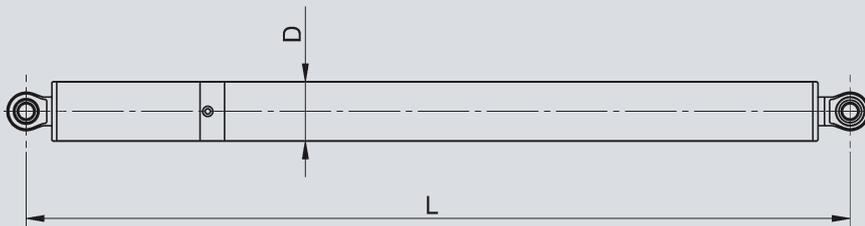
- > Trapezoidal screws are cheaper than ball screws
- > Trapezoidal nut made of steel (bronze is expensive)
- > Smaller motor, thanks to improved efficiency
- > No extra gearbox needed



Cross section shows the motor, coupling, spindle bearing, Nozdrive®



Cutaway view with functional principle of Nozdrive®



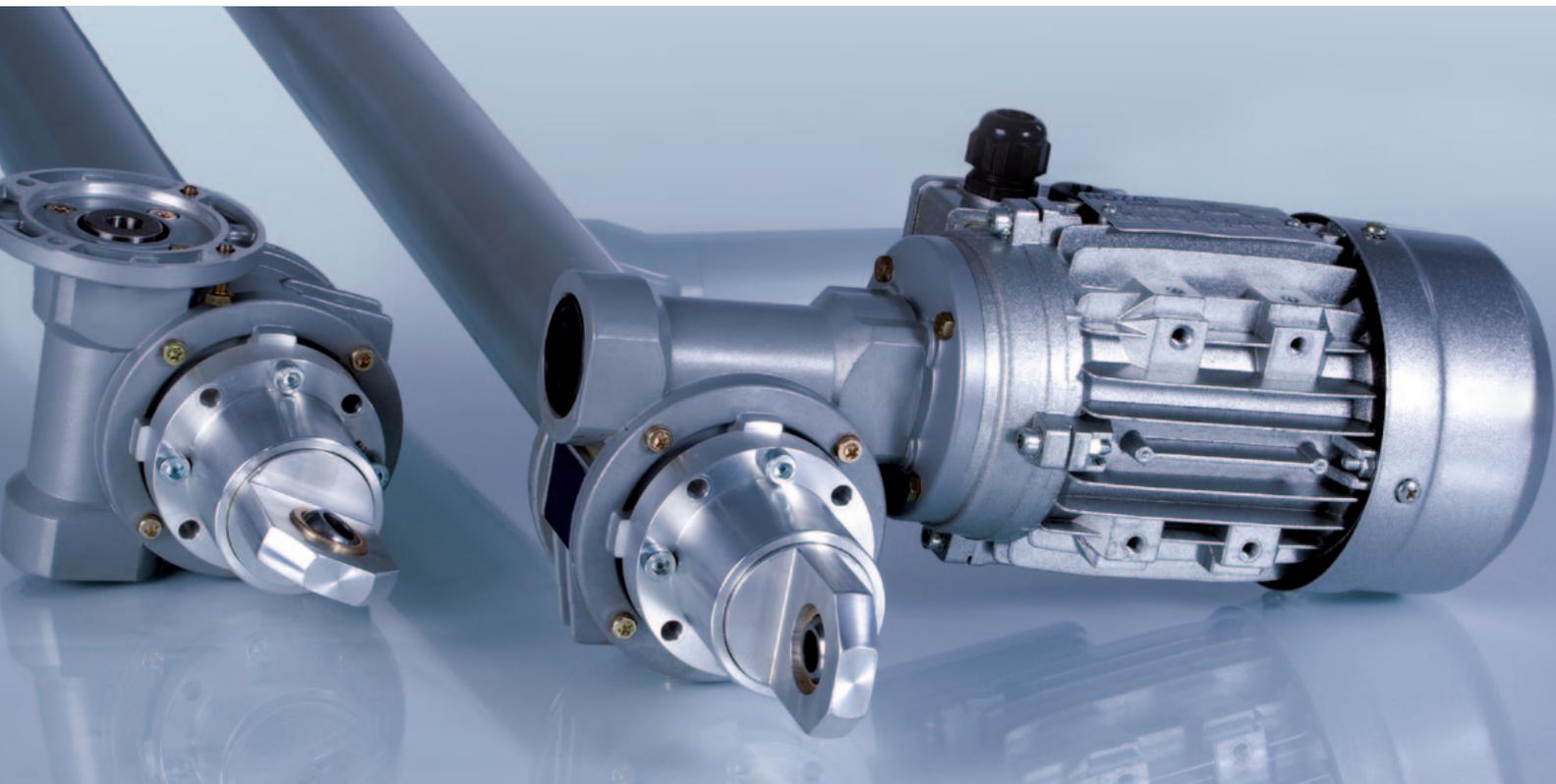
Performance data

	Static load	Dynamic	Linear speed	Spindle	Motor
Nozdrive®25	25kN	12kN	3mm/s	TR 30x6	0.18kW/1400 min ⁻¹

Other linear speeds on request
dimensions in mm

	D	L	Stroke
Nozdrive®25	116	1610	800

Other strokes on request



Simply low priced

These electromechanical linear actuators are designed for hard use in rough industrial environments; thanks to the encapsulated build, they are also all-weather suitable.

The initial three sizes available, 10, 25 and 50kN are primarily developed for installation in solar trackers. In the simple patent-pending design, you will find a very attractive alternative to conventional linear actuators. During development, a lot of attention was paid to an inexpensive solution, which nevertheless, ensures the tough requirements for outdoor use.

Upon request other speeds and ratios are available. The actuator is driven via AC or DC motors. If desired, servo or stepper motors can be attached.

Low cost

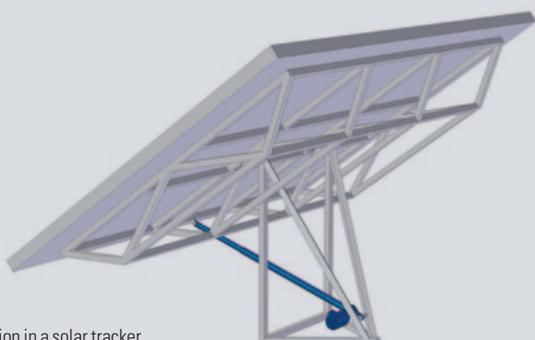
- > Reasonable price through mass production for solar trackers (also applicable for other applications)
- > Maintenance free
- > Simple, reliable construction
- > Self-locking by trapezoidal thread and worm gear

Robust

- > All-weather suitable (provide motor cover)
- > Encapsulated build

Flexible

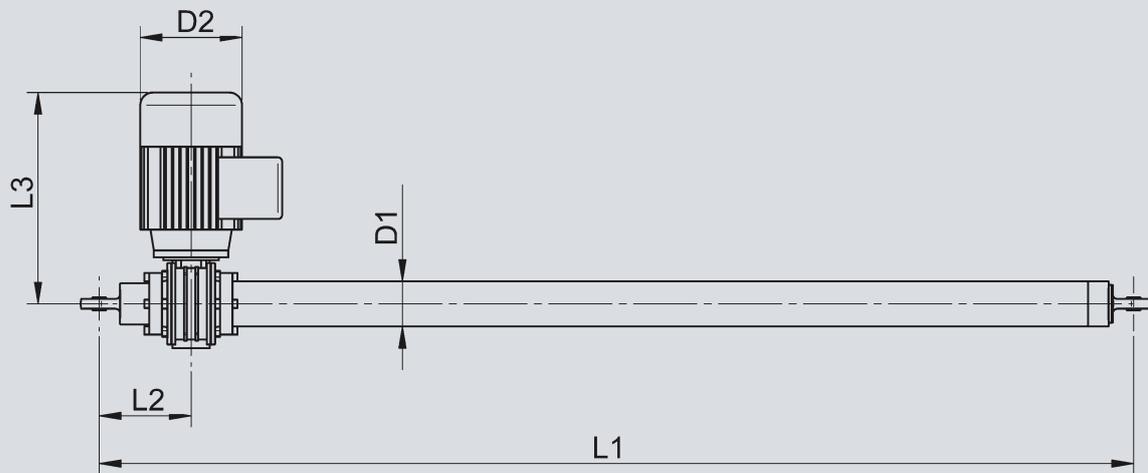
- > Different strokes and reduction ratios possible
- > Mounting of various motors possible



Application in a solar tracker



Special excitation with customer motor flange: to reduce the buckling risk, the fixing eyelets are positioned as close as possible. The spindle nut is preloaded and stays free of play over its defined life span.



Performance data

	Load static	Dynamic	Linear speed	Spindle	Motor
SHC10	10kN	5kN	3 mm/s	TR 20x4	0.12kW/1400 min ⁻¹
SHC25	25kN	12kN	3 mm/s	TR 30x6	0.25kW/1400 min ⁻¹
SHC50	50kN	25kN	3 mm/s	TR 40x7	0.55kW/1400 min ⁻¹

Other linear speeds on request

Dimensions in mm

	D1	D2	L1	L2	L3	Stroke
SHC10	45	123	1025	100.0	244	600
SHC25	55	123	1250	111.0	257	800
SHC50	68	138	1510	135.5	295	1000

Other strokes on request

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