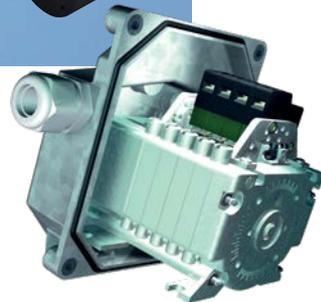
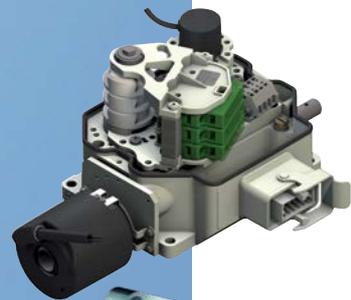




Controls and Sensors for Cranes and Compact Hoistings



Stromag

Founded in 1932, Stromag has grown to become a globally recognized leader in the development and manufacture of innovative power transmission components for industrial drivetrain applications. Stromag engineers utilize the latest design technologies and materials to provide creative, energy-efficient solutions that meet their customer's most challenging requirements.

Stromag's extensive product range includes flexible couplings, disc brakes, limit switches, an array of hydraulically, pneumatically, and electrically actuated brakes, and a complete line of electric, hydraulic and pneumatic clutches.

Stromag engineered solutions improve drivetrain performance in a variety of key markets including energy, off-highway, metals, marine, transportation, printing, textiles, and material handling on applications such as wind turbines, conveyor systems, rolling mills, agriculture and construction machinery, municipal vehicles, forklifts, cranes, presses, deck winches, diesel engines, gensets and stage machinery.



VISIT US ON THE WEB AT STROMAG.COM

Altra Industrial Motion

Altra is a leading global designer and manufacturer of quality power transmission and motion control products utilized on a wide variety of industrial drivetrain applications. Altra clutches and brakes, couplings, gearing and PT component product lines are marketed under the industries most well known manufacturing brands. Each brand is committed to the guiding principles of operational excellence, continuous improvement and customer satisfaction. Highly-engineered Altra solutions are sold in over 70 countries and utilized in a variety of major industrial markets, including food processing, material handling, packaging machinery, mining, energy, automotive, primary metals, turf and garden and many others.

Altra's leading brands include **Ameridrives**, **Bauer** Gear Motor, **Bibby** Turboflex, **Boston** Gear, **Delroyd** Worm Gear, **Formsprag** Clutch, **Guardian** Couplings, **Huco**, **Industrial** Clutch, **Inertia** Dynamics, **Kilian**, **Lamiflex** Couplings, **Marland** Clutch, **Matrix**, **Nuttall** Gear, **Stieber**, **Stromag**, **Svendborg** Brakes, **TB Wood's**, **Twiflex**, **Warner** Electric, **Warner** Linear and **Wichita** Clutch.

VISIT US ON THE WEB AT ALTRAMOTION.COM



SAFE, PRECISE AND RELIABLE

Geared cam and spindle limit switches from the market leader

precision manufactured, preconfigured, for fast installation

Stromag has been building geared cam and spindle limit switches for over fifty years. With a wide range of gear systems, switching contacts, and housings of metal or polycarbonate, we can offer solutions for every application.

All analogue and digital encoder systems can be integrated. Our geared cam limit switches reliably switch off sequences of movements, and position or restrict these with independently and precisely adjustable cam discs.

Whether simple chain hoists, compact hoistings, open winches, or complex STS, mobile, or any other type of mobile cranes, Stromag provides customer solutions configured optimally to any application. The modern designs present a wide range of standardised solutions for reliable cut-offs.



Securing loads, protecting buildings and machinery

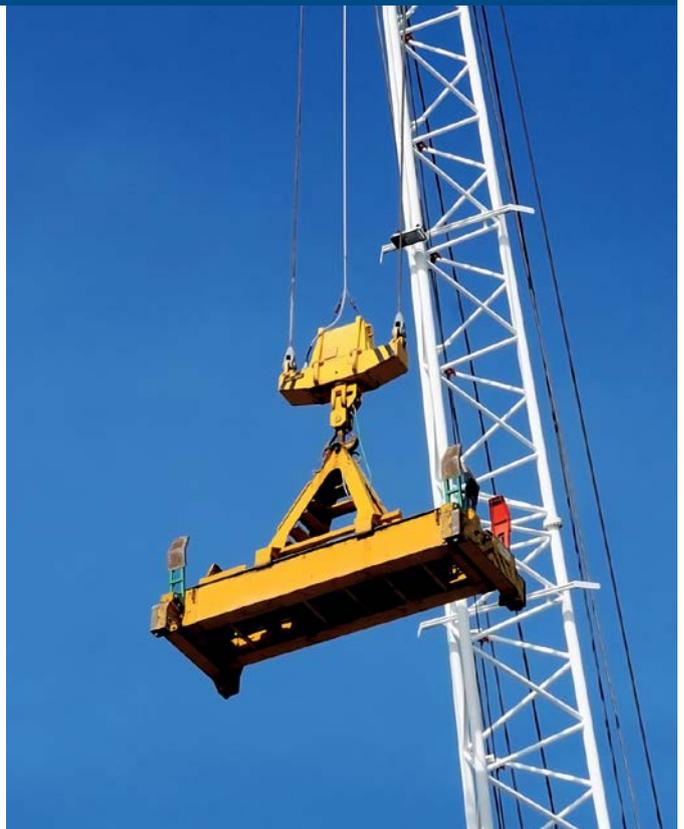
Controls and Sensors for cranes and compact hoistings

As a measure to protect equipment and machinery, compact hoistings must be limited at their top and bottom cutoff points. The geared cam limit switches from Stromag for this reliable cut-off are ideally attached directly to the drum.

When integrated with optional, intelligent encoder technologies, these geared cam limit switches can easily determine absolute positions to a high precision.

These values can be converted into reliable additional data like e.g. sense of rotation and overspeed. Data can be transferred to the manufacturer's controller via a customer bus interface.

The plant operator benefits from optimised cost control when these status parameters and appropriate preventive measures are integrated in the condition monitoring system.



THE IDEAL SOLUTION FOR COMPACT HOISTINGS

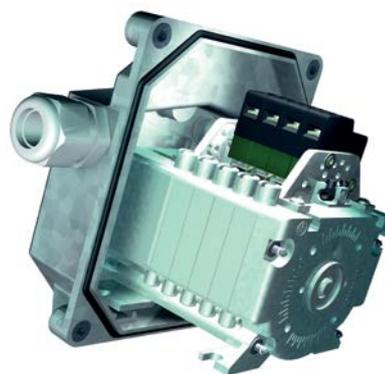
Planetary gears series 51

Function and application: Series 51 geared cam limit switches are universal, mechanical switchgears that can map a wide range of shaft rotations to the angular displacements of the installed cam discs. These cam discs actuate the mechanical switching contacts.

They are used everywhere angles or distances cannot be limited directly with switchgear, but only indirectly on the basis of the measured shaft angle. One classical example of this application involves limiting the hook lift of a crane hoist.

Benefits include

- Patented planetary gears
- Cam adjustments at fixed position in housing (simple and precise adjustment)
- Large cam disc diameter
- Modular design with many identical parts
- 4.1 – 16,000 usable revolutions
- More contacts possible on request
- Various housing designs
- Approved under DGUV V17 (formerly BGV C1) (stage engineering)
- Direct drive of multi-turn encoders



Worm gears Stromag Light Cam® and Light Cam® M

Function and application: Light Cam® Series geared cam limit switches are universal, mechanical switchgears that can map a wide range of input shaft rotations over the full angular displacement of the cam discs. These cam discs actuate the switching contacts.

The classical applications of these limit switches are e.g. crane hoist, traversing, and slewing drives; wind turbine generator systems; bucket conveyors; etc. In particular where EN 60947 T5-1/ IEC 947-5-1 prescribe forced opening switches eliminating potential harm to persons, there is no alternative that is more economical than geared cam limit switches.

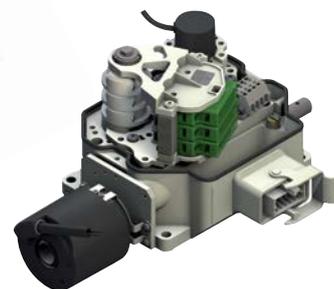
Benefits include

- Synthetic housing (PBT) or seawater-resistant aluminium housing IP66
- Gear teeth made of synthetic material (POM)
- 0.85 – 880 usable revolutions
- 4 or 8 contacts
- Suitable for the integration of encoders and potentiometers
- Encoder attachments possible



Die-cast aluminium housing

Synthetic housing (PBT)

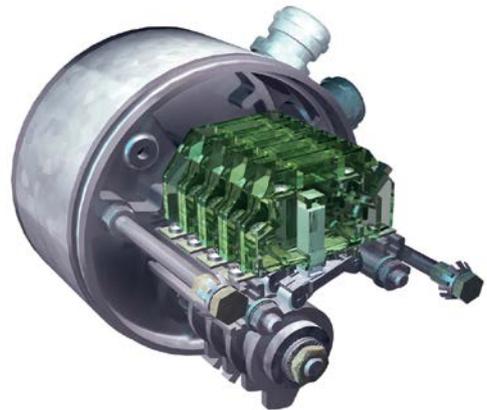


Spur gears Series 100

Function and application: Series 100 spur geared cam limit switches are robust limit switches in a metal housing for use under difficult, mechanical conditions. Owing to the pretensioned gears, potentiometers and single-turn encoders can be actuated free of backlash.

Benefits include

- Highly robust metal housing
- Steel sheet IP 65, grey cast iron IP 66
- Gears of synthetic material (POM) or metal
- 0.153 – 15,300 usable revolutions
- 2 to 14 contacts
- Potentiometer facility
- Also explosion protection ATEX 95 available (gas zone 1 and 2, dust zone 21 and 22)



Spur gears Series 110

Function and application: Series 110 geared cam limit switches with dry running moulded gears (acetyl copolymer). Microswitches as snap switches or push action contacts, break and make contacts with positive, also form-closed opening operation. Switching point intervals adjustable continuously or in 4° steps within the utilisable rotation range. Any installed position.

Benefits include

- Robust polycarbonate housing
- Gears of synthetic material (POM) or metal
- 0.153 – 420 usable revolutions
- 2 to 12 contacts
- Potentiometer facility



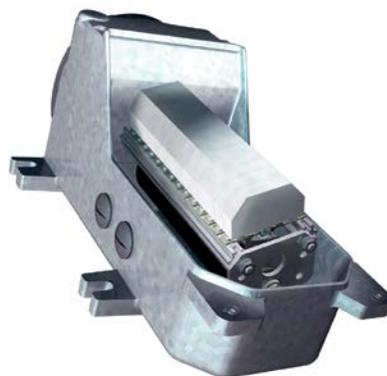
Spur gears Series 410

Function and application: Series 410 geared cam limit switches are used for the independent restriction of movements by all types of electrically operated compact hoistings.

This model presents an extremely robust design. Ideal for applications under difficult operating conditions, e.g. in seaports and steelworks. Owing to the generously sized housing, the geared cam limit switch can be fitted on its sides with large diameter entries for thick cables.

Benefits include

- Heavy aluminum housing IP 65
- Gears of metal
- 0.08 – 263 usable revolutions
- 5, 9, or 14 contacts
- Potentiometer facility

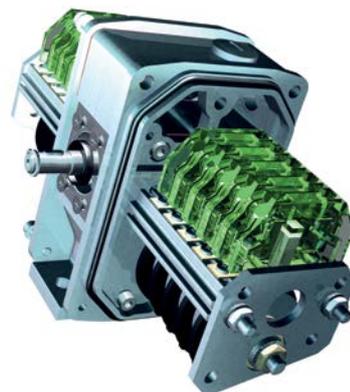


Worm gears Series HGE

Function and application: Series HGE geared cam limit switches are universal, mechanical switchgear for general industrial applications. They consist of a reduction gear set and one or two contact chambers taking the switching contacts and the assigned cam discs. The reduction gears reduce a high number of rotations transferred to the geared cam limit switch's input shaft to a max angle of 320° at the cam disc (on 40° cam discs). The adjustable cam discs then actuate the mechanical switching contacts. When fitted with mechanical forced opening switches complying with EN 60947-5-1, geared cam limit switches are the ideal choice in compact hoistings.

Benefits include

- Highly robust aluminium housing IP 65
- Gears of metal
- 8 to 715 usable revolutions
- 2 to 16 contacts
- Potentiometer facility
- Directly coupled encoders



Levers Series HHEV

Function and application: The HHEV Series lever limit switch is used everywhere movements can be cut off directly, e.g. traverses by gantry bridges or trolleys, bucket conveyors, and other compact hoistings. The switch is attached in such a manner that traverses cause the switch's lever to move on a switch actuator, displacing it from its centre position.

Benefits include

- Highly robust aluminium housing IP 65
- Usable 85° lever angle to each side
- 2 to 8 contacts

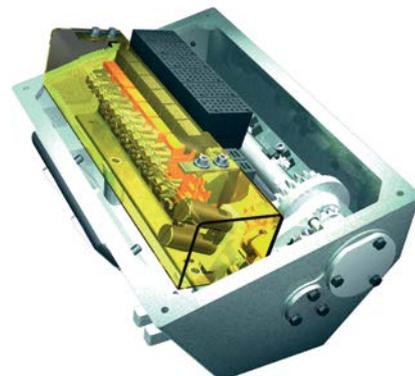


Spindle gears Series 62

Function and application: Series 62 spindle cam limit switches (SNE) are used for the independent restriction of all types of electrically actuated compact hoistings, e.g. travelling, gantry, luffing cranes; sluice gates; and general industrial applications, for the direct cut-off of main currents at the emergency end positions. This series presents an extremely robust housing in seawater-resistant sand cast aluminium, making it ideal for operations under difficult conditions e.g. in steel mills and seaports.

Benefits include

- Heavy aluminium / grey cast iron housing IP 65
- Usable revolutions
- Size 2: Up to 42
- Size 3 and 4: Up to 62
- Fixed and adjustable series contacts possible



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The Brands of Altra Industrial Motion

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