

## INTEGRATED SAFETY EN 81-20/50, EN 81-21

Limax3CP is a shaft positioning system with an accuracy of 1mm for speed up to 10 m/s and shafts of 260m.

The principle of magnetic measurement ensures a high robustness of the system and makes it insensitive to smoke, heat, humidity, and dust. Further the magnetic tape is robust enough to withstand the harsh conditions in lift shafts.

The integration with the Ethos through the serial CAN-bus and pre-wired looms makes the installation fast and easy.

To satisfy functional safety requirements, the LIMAX3CP absolute car position measurement sensors have full redundancy and thus can be used for safety-relevant applications up to SIL3.

Safety-relevant switching and control functions that depend on the position and the speed of the car can be implemented in the software:

- Overspeed monitoring and safety gear tripping
- Final limit switches top and bottom
- ETSL Device for reduced buffer stroke
- Lock bridging and unintended car movement detection
- Inspection limits
- Pre-triggering to EN81-21

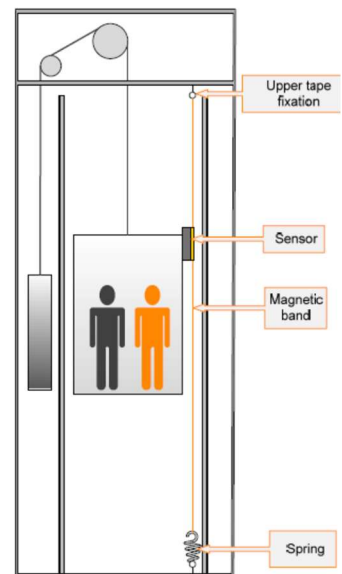
With the LIMAX3CP shaft information and safety system, several formerly mechanical components and subsystems in the shaft can be dispensed with:

- Final Limit switches and actuating ramp
- Inspection Limit switches
- Overspeed governor and rope
- Moveable stops for reduced headroom/pit depth.

This drastic reduction of components offers significant cost advantages. Time for installation and maintenance is reduced considerably. Maintenance and troubleshooting are also simplified.

The tape carries the unique positioning information as a magnetic code. It is installed free hanging in the lift shaft by use of a mounting kit. The LIMAX3CP is mounted to the lift car.

While the actual measurement is contactless the tape is guided along the LIMAX3CP by use of the polymer tape guide which is an integral component of the sensor head.



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The following safety features are available with the Limax3CP and are configured to suit customer requirements:

Feature	Normative Reference
Overspeed (Pre-tripping)	EN81-20 §5.6.2.2.1.6.a.)
Overspeed (Final tripping)	EN81-20 §5.6.2.2.1.1.a.)
Final limit switches	EN81-20 §5.12.2.3.1.b.)
Deceleration control for reduced stroke buffer	EN81-20 §5.12.1.3
Door bridging (Monitoring the levelling and re-levelling)	EN81-20 §5.12.1.4
Unintended car movement protection	EN81-20 §5.6.7.7
Inspection limit switches	EN81-21 §5.5.3.4, / §5.7.3.4 EN81-20 §5.12.1.5.2.1 g.)
Supervision of inspection direction	No normative reference
Overspeed inspection (Pre-tripping)	EN81-20 §5.12.1.5.2.1.e.)
Overspeed inspection (Final tripping)	No Normative reference
Pre-triggered stopping system	EN 81-21 §5.5.2.2 / §5.7.2.2
Working platform	EN81-20 §5.2.6.4.3.1.b.)



The Limax3CP is shipped from TVC **pre-configured** to suit customer requirements, it **cannot** be changed on site; it must be returned to TVC for re-configuration.