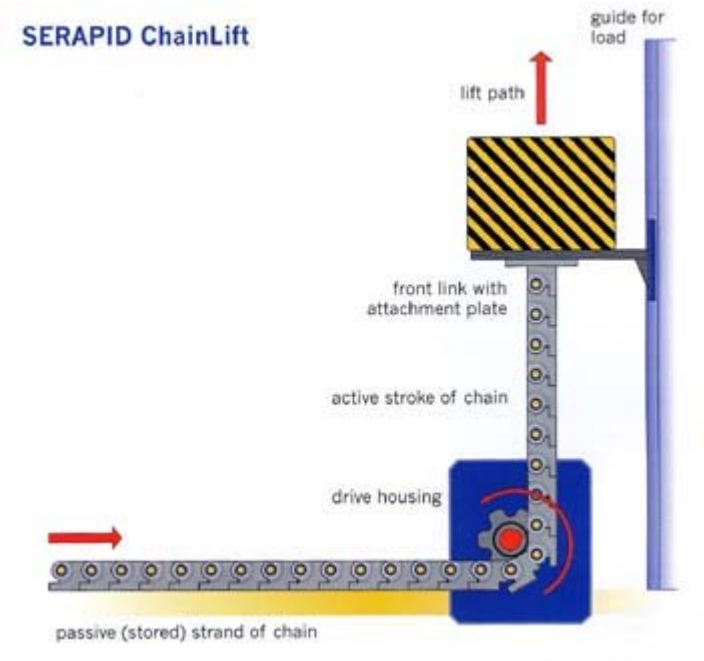
SERAPID Vertical Rigid Chain Systems



The SERAPID lifts are driven by means of pinions on a shaft. These are integrated in the lift drive housings. As the shaft rotates the pinions, their teeth engage with rollers on the links' cross-axes, moving the links upward or downward one by one. As each link enters its upright position on the sprocket wheel, it is locked with its preceding link and aligned on the vertical axis.

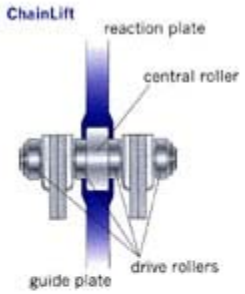
As the lift column moves out of the drive housing, it pushes the load upward along the lift path. In the other direction, when lowering the load, the pinions slow down or hold up the load against the force of gravity.

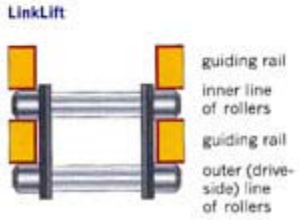
Unlike a normal chain, the lift chain does not cycle and does not need to be twice as long as the stroke. **Thus, the length required for the lift is always the length of the stroke plus only the few additional links that have to remain in the drive housing.**

Inside the drive chain

The chain's path through the housing is defined by guide and reaction elements which counter the thrust resistance and keep the lift strand on its track.

With the SERAPID chain lift, a central roller on each link's cross-axis is guided between two plates. The LinkLift has two lines of rollers on each side; these are guided by rails inside the housing.





ChainLift and LinkLift

SERAPID offers two types of vertical chains and thus two types of lift systems. One, the **ChainLift**, uses a chain that is basically the same as the chain used in horizontal applications. For vertical use, the chain has been modified mostly in the guide and reaction mechanics, with bigger and broader central rollers and thicker guide and reaction plates.

The second type of SERAPID lift system, the **LinkLift**, uses a newly developed concept of the rigid chain. It features links that are shaped like building blocks and stack up to a tower at the output side of the drive.

The new links consist of two facing steel plates which are inter-connected by two rows of cross-axes. These axes have rollers on their outer ends which are used for moving, driving and guiding the lift strand.

The axes in one of the rows connect the links permanently, but flexibly, so that they can still rotate. The axes in the other row only help to prop up the links against each other; they engage with notches in the side plates of neighbouring links. These connections are opened when the strand is redirected or coiled. Under the load, however, they are fixed and so lock the entire active lifting column. In addition, the cassette-like shape and the boxing of inner and outer links contribute to the column's stability. All factors together make for a closed formation with high rigidity and strength.

Elementary conditions

To ensure proper operation of the entire lift system, certain conditions have to be met.

1. **Guiding the load** over the entire lifting distance secures the locking of links.
2. **The load platform** has to be positioned at a right angle and fixed to the lift without any play. This is ensured with the lift's special front link and attachment plate.
3. **The drive housing** has to be fixed to the base firmly without any play and in parallel alignment with the attachment plate. The entire system has to be set up in perpendicular orientation, with the lifting column perfectly vertical and the inactive strand perfectly horizontal.