levelok®

Hold that cage

The **level**ok® system consists of a power pack and clamps which hold a cage or skip steady during the transfer of loads. The clamps release their grip at a controlled rate to allow the rope stretch to be taken up smoothly.

The **level**ok® system has been used in mines all over the globe since the 80's & safety records have been excellent. Ongoing improvements keep improving safety.

Advantages of using levelok® **cage and skips systems:**

- **No spillage** of material during skip loading;
- **Rope life** on skip systems may be **increased**;
- **Time saving**, as re-decking of the cage will not be necessary during loading of men and material;
- **Safe** transfer of men and material while loading or unloading the cage.
- **Emergency Fall Arresting (E-FAS)**, the system can be complemented with an E-FAS system.

How does the levelok® **cage system operate?**

- When the cage is in position, the station air supply quick coupler is connected to the cage **leve**lok® connection. In the case of an electric power unit, an electrical cable will be used.
- The power pack/unit boosts the hydraulic pressure up to the required pressure. The pump then stalls and the clamp force is maintained indefinitely.
- When transfer of load is completed, the station air supply or electrical connection is removed, thus starting the decompression cycle, taking approximately 10 seconds.
- As the oil pressure drops, the clamps release their grip at a controlled rate and the cage slides smoothly to its new position in the shaft.
- The clamp arms will then fully retract allowing the cage to be hoisted.

Interlocking of the levelok® **cage system**

The system is fully interlocked to ensure safety. All **level**ok® cage systems are supplied with an electrical solenoid valve on the power pack/unit which requires an electrical signal over and above all the other interlocking requirements in order to release the cage. A pressure switch will also be supplied on the power pack/unit to indicate to the user that full clamping pressure has been achieved which should be linked to an indication light to confirm it is safe to load or unload.

Levelok ® clamp

Levelok ® power pack

Strengthening of the guides

The clamping/crushing force on the shaft guide is about 4 times higher than the clamp capacity e.g. 18 tons for a 4.5 ton clamp. Strengthening of the top hat or channel guides is recommended for clamp capacity of 6.5T and higher. The guides need only be strengthened over the distance that the clamps normally operate.

Levellok® system masses

When the clamps and power pack are cage mounted, the cage should be verified to ensure that it can carry the additional mass. If the mass of the system must be kept to a minimum, aluminum clamps are available which are lighter than the mild steel units. We recommend that the clamps always be installed on top of the cage which then places the cage into tension when the clamps are applied. Placing the cage in tension results in less reinforcing required of the cage structure and the cage is then lighter, as opposed to putting the clamps on the bottom of the cage which places the cage in compression (when clamps are applied) and requires additional cage reinforcing.

Clamp	Mild steel	Aluminium
3.0 ton capacity clamp (6600lb)	135kg (297lb)	100kg (220lb)
4.5 ton capacity clamp (9900lb)	185kg (407lb)	130kg (286lb)
6.5 ton capacity clamp (14300lb)	280kg (616lb)	
9.0 ton capacity clamp (19800lb)	570kg (1254lb)	

*Approximate weights of the **leve**lok® system*

Emergency Fall Arrest (E-FAS)

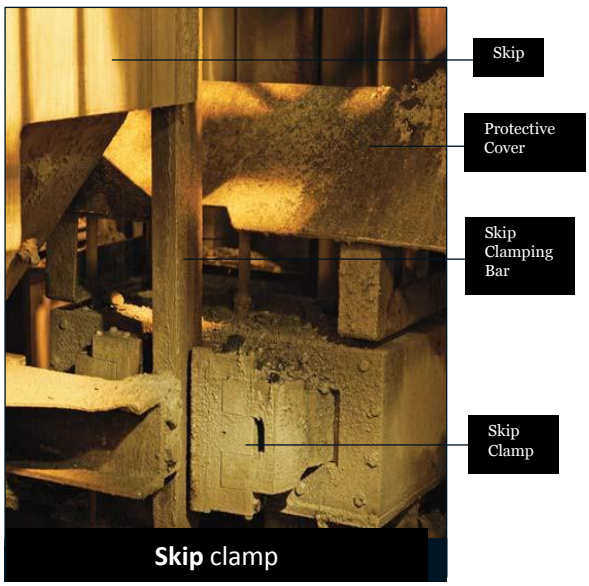
E-FAS under slack rope conditions can be added into a standard cage holding system by incorporating accumulators into the system. Those are charged to working pressure when the system is used for the first time. Should an emergency situation occur, oil would then be automatically released from the accumulator, activating the **leve**lok® clamps, which then grip onto the shaft guides in a controlled manner. The deceleration rate is adjusted according to the individual customer's requirements.

levelok® skip holding system

This system is designed to hold a skip in the shaft during loading. This eliminates spillage and the transfer of shock loads to the rope, thus increasing rope life.

The system is installed at the loading level. The skip is fitted with clamping bars, onto which the clamps grip, holding the skip in position during loading. The system is fully automated.

Pre-tensioning of the rope before the clamps release will ensure that there is minimal movement of the skip. An alternative would be to use the patented decompression system to allow the skip to slide in a controlled manner to its new position when the clamps release, again depending on the design requirements of the client. The 'slide through' option has a quicker loading time.



Skip clamp