**Lift with minimum lift shaft pit depth and with permanent protective space**

This invention relates to a lift which has either no shaft pit at all or, however, only a lift shaft pit with minimal pit depth. For constructional reasons in most conventional lift constructions the region above or the region below the lift cage has to be accessible and, in particular, regardless of where the lift cage happens to be located. If the region below the lift cage is to be accessible, there is the risk that a person, who is present there, is injured by downward travel of the lift cage unintentionally taking place. Safety precautions are therefore necessary to reliably prevent such an event. Accordingly, a temporary or permanent protective space has to be present of at least the size of a block F with the minimum dimensions of 0.5 metres x 0.6 metres x 0.8 metres on the upper cage side or 0.5 metres x 0.5 metres x 1.0 metre on the lower cage side so that even in the case of an upward or downward movement - which in fact is highly improbable - of the lift cage a service operative would be enclosed by the protective space and therefore protected from injuries. These protective measures as well as the constructions of most lifts prevent lift cages from being able to be moved down until quite close to the shaft floor or to be moved in upward direction until quite close below the shaft ceiling. In other words, the lift cage is always longer by a certain minimum dimension than the effective travel path of the lift cage and, more precisely, also longer than the effective maximum distance between lift cage roof in the uppermost position of the lift cage to below the floor of the lift cage in its lowermost position. This fact in many cases makes installation of a lift impossible, because it is not possible to realise the shaft pit to the necessary depth or the shaft head to prescribed shaft head height for constructional reasons.

As a central prescription it is necessary in new lift installations to avoid risk of crushing in the end settings of the lift cage, thus by free spaces or protective niches. Due to the wording of No. 2.2 in the Lifts Ordinance and EEC lift guidelines this means that for lawmakers optimum safety is achieved with a compulsory prescribed protective space. Thus, in Swiss Lift Ordinance 2.2 it states with respect to danger to persons outside the lift car, state of 1 July 2010: "Lifts are to be so designed and constructed that risks of crushing in the end settings of the lift car are excluded. This object is achieved if a free space or a protective niche is present either side of the end settings. If in exceptional cases, particularly in existing buildings, this solution cannot be realised, then other suitable means for avoidance of this risk can be provided, in which case the State Secretary for Economy is granted the possibility of prior consent.".

# ELEVATOR HAVING A MINIMAL ELEVATOR SHAFT WELL DEPTH AND A PERMANENT PROTECTIVE SPACE

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