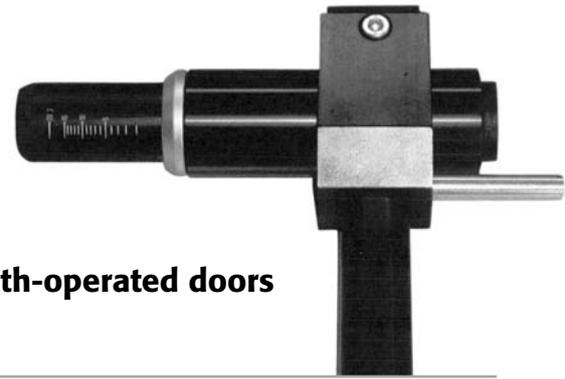


Swiss door force measuring tools

Measuring instrument for the determination of:

- closing force and the kinetic energy of automatically strength-operated doors
- mechanical firmness of different components



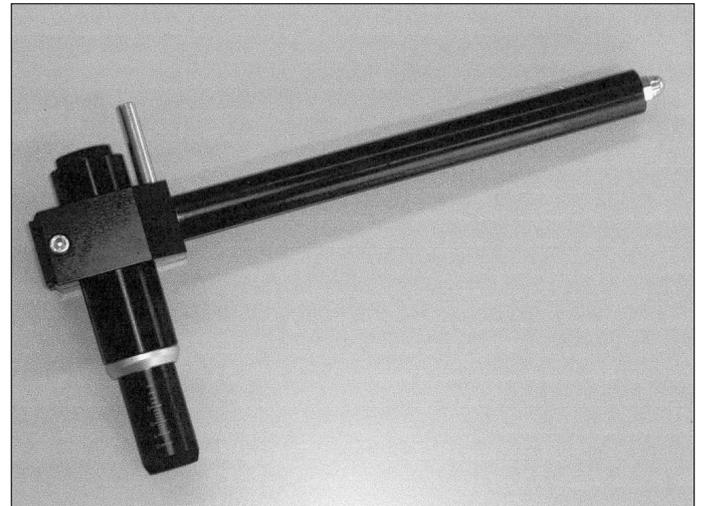
Of doors strength-operated automatically by the company Müller-Leuthold AG in cooperation with the SUVA (Swiss institute for accident insurance) developed measuring instrument for the determination of the closing force and the kinetic energy can be used in the further one for the measurement of the mechanical firmness by cabin and shaft doors as well as by cab walls and aprons. Likewise modifications were considered on the part of the TÜV.

It can be converted by simple handles in such a way that measurements within the ranges < 250 mm (175 mm) and > 250 mm (500 mm) can be made.

The measurement takes place purely mechanically, and the value can be read off over the dragging indicator. The measuring accuracy of ca. $\pm 7\%$ is sufficient for this area of application.

This measuring instrument convinces by its simplicity and robustness.

New: Scale for strength (N)
and scale for kinetic energy (J)



F max	1000 N
Wf of max	20 J
feather rate c	25 N/mm
dial graduations	50 N/1J
measuring accuracy	$\pm 7\%$
weight inclusive owner	770 g
impact surface	5 cm ²
measuring range	175/500 mm

Scope of supply: measuring instrument
carrying suit-case (b x h x l = 165 x 72 x 420 mm) hexagonal pin spanner
inspection certificate for measuring feather



In the following on the basis the EN 81-1/-2 the area of application of the measuring instrument is more near described. This documentation is not complete. It concerns thereby some examples. These applications are transferable in a general manner also to other standards.

Closing force

EN-81, 7.5.2.1.1.1

the strength those is necessary, in order to prevent a closing of the shaft doors, may not 150 N not exceed. This does not apply to the first third of the closing way.

EN-81, 8.7.2.1.1.1

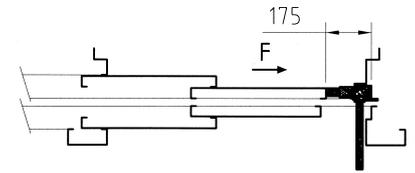
basically like with shaft doors

EN-81, 7.5.2.1.1.5

the strength, which is necessary, in order to prevent an opening from folding doors to, may not exceed 150 N. It is to be measured with folding up door in the position, in that the outside neighbouring edges of the folding wings or comparable one, e.g. door frame, a distance of 100 mm has.

EN-81, 8.7.2.1.1.4

basically like with shaft doors



Kinetic energy

EN-81, 7.5.2.1.1.2

the kinetic energy of the shaft doors and with their firmly connected mechanical parts may not exceed, computed or measured at the middle closing speed, 10 J. The middle closing speed of a pit sliding door is counted over entire motion travel, less a) doors opening centrally 25 mm at each end b) 50 mm at each end, with on one side opening doors

EN-81, 8.7.2.1.1.2

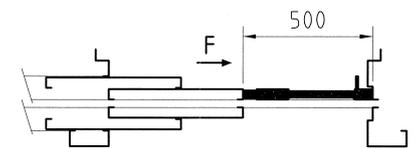
basically like with shaft doors

EN-81, 7.5.2.1.1.3

is made ineffective the protection device at expiration of a preset time, in order to prevent a too long blocking of the closing procedure, may not the kinetic energy defined in 7.5.2.1.1.2 when closing the shaft doors 4 J not exceed, after the protection device was made ineffective.

EN-81, 8.7.2.1.1.3

basically like with shaft doors



Mechanical firmness

EN-81, 7.2.3.1

shaft doors with their bolting devices must have in the locked position a mechanical firmness, thus one on or other side in arbitrary place perpendicularly to the door surface on a round or square surface of 5 cm² evenly distribute attacking strength of 300 N the shaft doors neither lasting deformed; still around more than 15 mm flexibly deforms; still, while and after the examination, in their safety function impairs.

EN-81, 8.6.7.1

basically like with shaft doors

EN-81, 8.3.2.1

Cabin walls must have a mechanical firmness that one, of the inside of the cabin outward in arbitrary place perpendicularly to the wall on a round or square surface of 5 cm² evenly distributes attacking strength of 300 N the wall a) neither lasting deformed b) still around more than 15 mm flexibly deforms.

EN-81, 7.2.3.2

with work a hand strength (without tool) of 150 N in opening direction at the most unfavourable point of the closing edge may with horizontally moved pit sliding doors and with folding doors the column defined in 7.1.1 be larger than 6 mm, without exceeding however a) 30 mm with on one side opening doors b) altogether 45 mm with centrally opening doors.

EN-81, 8.7.2.1.1.3

basically like with shaft doors

