GLÖTZL Baumeßtechnik

FLAT JACK

Type: Flat Jack

Art. No.: 10. . .

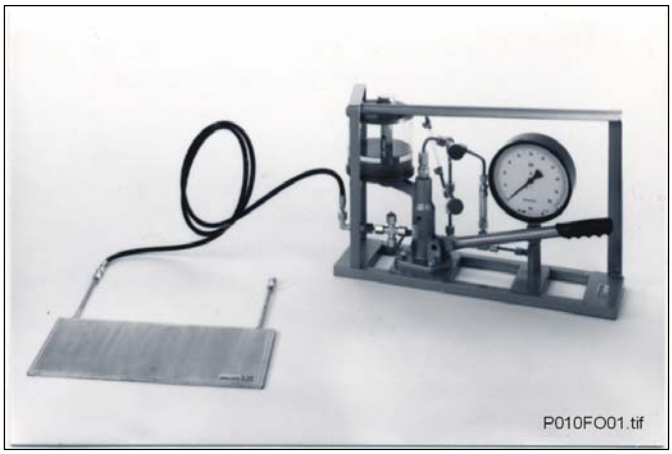
The flat jack is a hydraulic flat pressure pad which is used for measurement of stresses in situ, e.g. in tunnel vaults, walls, masonries and bridge piers.

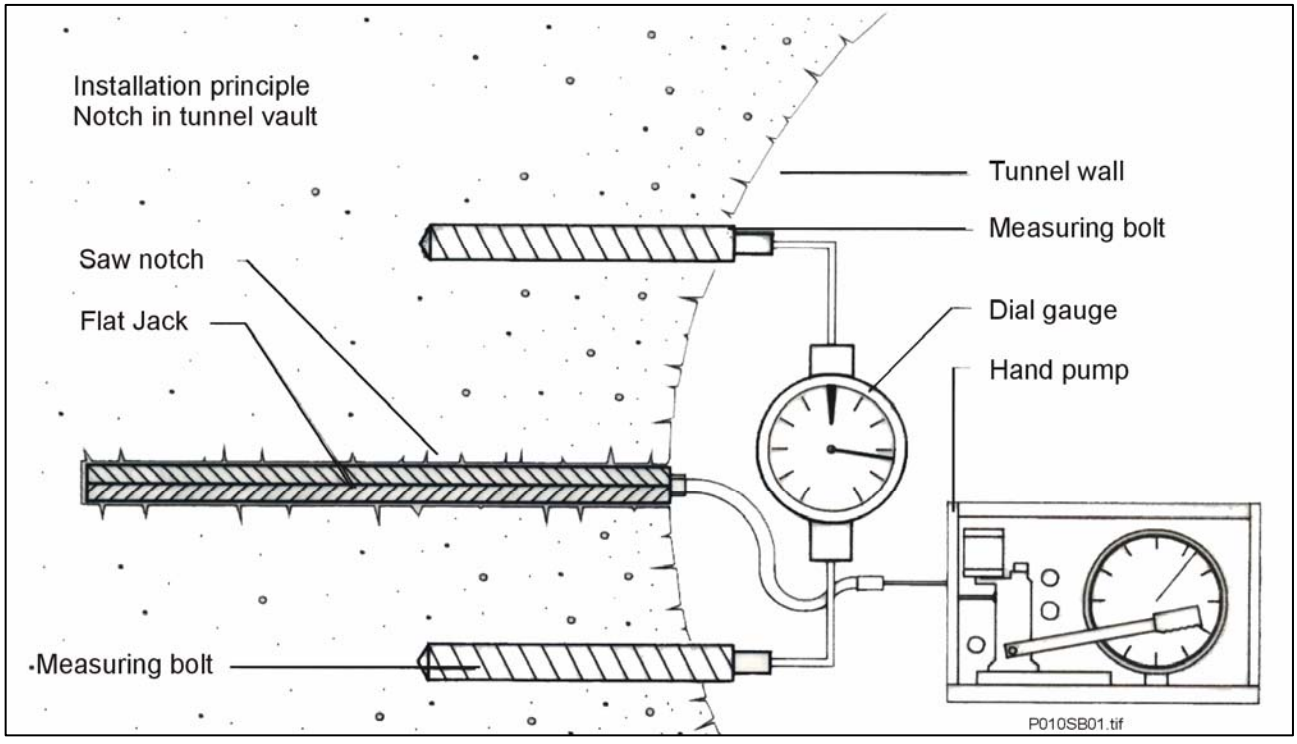
Measuring equipment:

The flat jack is manufactured according to the principle of the proved Glötzl pressure pad. Its small filling volume allows a reliable and exact contact pressure of the pressure cell with a low flow of hydraulic liquid.

By the typical, extremely flat construction of the Glötzl pressure pad a high quality of measuring results is secured, as an error with this measuring equipment is extremely small.

Furthermore, anchor points and at least two distance measuring units are used for measurement. A hand pump, e.g. the type M1 H16 should be available for the necessary measuring pressure.





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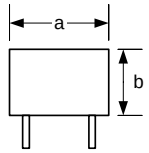
Measuring principle:

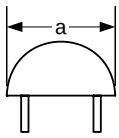
The measuring principle of compensation carried out with the flat jack has been used for the first time by Mayer (1951). Later on, it has been improved by Rocha (1966). The principle is to cancel the deformation caused by an artificial destress of the rock by a compensation pressure produced by the flat jack.

Normally, the pressure to be produced corresponds to the initially existing stress. No knowledge of the elastic constants of the rock around the measuring point is necessary. However, it is presupposed that the deformations are reversible in the range of discharge and recharge. A total elastic behaviour is not necessary.

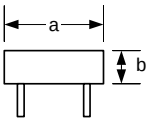
Flat Jack models:



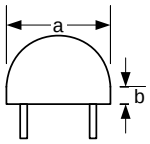
Art. No.:	Size (mm)	Range (bar)
10.01.01	400 x 200 x 6	300
10.01.02	400 x 200 x 4	100
10.01.03	400 x 200 x 3	20



Art. No.:	Size (mm)	Range (bar)
10.02.01	400x6	300
10.02.02	400x4	100
10.02.03	400x3	20

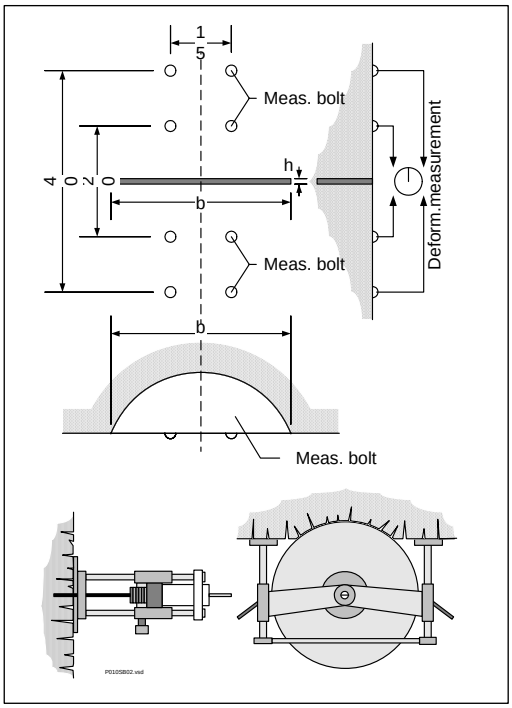


Art. No.:	Size (mm)	Range (bar)
10.01.11	400 x 50 x 6	300
10.01.12	400 x 50 x 4	100
10.01.13	400 x 50 x 3	20



Art. No.:	Size (mm)	Range (bar)
10.02.11	350 x 85 x 6	300
10.02.12	350 x 85 x 4	100
10.02.13	350 x 85 x 3	20

Installation and measurement:

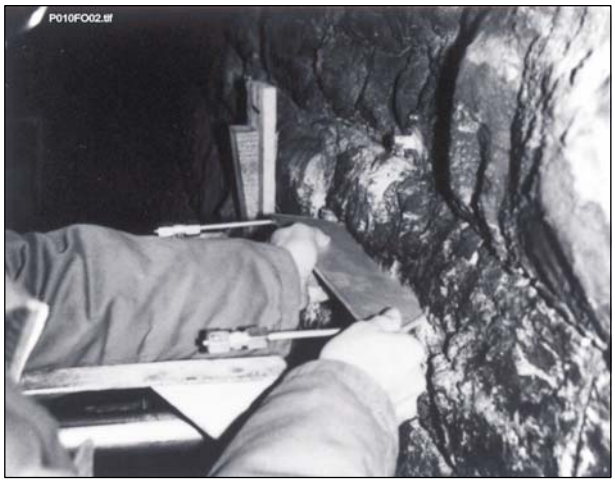


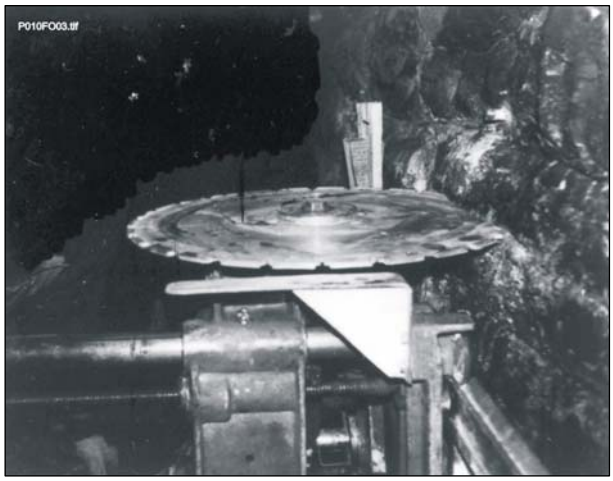
First, four measuring pins are placed at both sides of the planned saw notch by means of a template and then covered with cement. Empirically, the distance of these pins should be 15 cm in the horizontal and 20 cm in the vertical line.

Now the pins must be measured vertically to each other (zero measurement). This is normally done by two distance measuring units, as for example by electric displacement transducers, settlement stress cells or dial gauges. It is very important that this measurement is done before the next step (sawing of notch) as during sawing procedure a notch discharge occurs which results in a distance change between the measuring bolts. These distance differences are used for compensation of the notch discharge.

Now the notch is done by a diamond charged circular saw. The height of this notch should only be little more than that of the flat jack to avoid an unnecessary air kerf between flat jack and notch wall. Otherwise, this notch has to be cemented to reconstruct the contact of both mediums.
Now the flat jack is placed into the crescent-shaped opening and cemented, if necessary.

By producing the compensation pressure with the hydraulic pump, the distance between the anchor points – selected before sawing – can be made. The admitted pressure is then giving information about the existing stresses at the measuring point.





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