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Your ref.

Our ref: VD 745-06/JCB/pp

Ede, 13<sup>th</sup> November 2006

Subject: Risk assessment of 700 x 1400 mm roof hatch with scissor steps in a lowered ceiling construction

Dear Mr Hoogerdijk,

The definite assessment of the 700 x 1400 mm roof hatch with scissor steps in a lowered ceiling construction was held on 24<sup>th</sup> October. The report of this assessment is given below. The work was carried out on the Gorter Bouwprodukten test set-up in Anna Paulowna, the Netherlands.

### Law and legislation

The applicable law and legislation for these items are given in chapter 3 "Work Space Layout" and chapter 7 "Work Equipment" of the Occupational Health and Safety Act. However, this information gives insufficient, specific interpretation of the measures to be taken. Article 7.3 gives a short explanation of the method to be used for the risk assessment of the work equipment. EN 1050 "Safety of machinery - Principles for risk assessment" is used for machinery and work equipment.

The mechanical risks for roof hatches which were observed and assessed according to EN 1050 are:

- Falling from a height
- Becoming trapped/knocks
- Breaking/Collapsing
- Stumbling/Slipping
- Cutting/Stabbing

### Assessed construction

#### *Scissor steps*

The scissor steps with 9 steps are sold under the brand Gorter (see photograph 1). The scissor elements and the steps are all manufactured from cast aluminium. When in the unfolded position, the steps have an incline of 65°, a rise of 265 mm and a going of 115 mm. The dimensions of the steps are 350 x 140 mm and they have a cast, anti-slip surface. The steps are manufactured in accordance with the strength requirement of EN-ISO 14122-3, where a surface of 100 mm<sup>2</sup> of the less favourable step is placed under a static force of 1.5 kN.

Three consecutive transfer steps have been fitted to safely bridge the distance of the lowered ceiling (see photograph 1). These steps lay exactly in the walking line of the scissor steps. No hindrance is observed when climbing the scissor steps and the transfer steps. The final step from the transfer steps to the roof is 95 mm high. There is a free step of 700 x 200 mm on the roof surface within the raised edge around the roof hatch.

When the hatch is opened, the scissor steps are kept in their folded position by a double spring. In order to unfold the steps, they must be pulled out against the force of the spring using the bar provided. The balance between the position of the scissor steps and the force of the spring is such that the scissor steps do not make any sudden movement if the bar were to come loose for any reason whatsoever. When the steps are fully unfolded, it is possible to lock the scissor mechanism in the open position using a separate padlock (see photograph 2).

The scissor steps have a permanent guardrail. This can be fitted on either the left-hand side or the right-hand side. The guardrail consists of four parts that are slid into each other and which are made from tubes with a decreasing diameter. The thickness of the wall of each tubular guardrail is 1 mm.

#### *Roof hatch 700 x 1400 mm*

The roof hatch has a cover box with net dimensions of 700 x 1200 mm and a top hatch with dimensions of 700 x 1400 mm. The roof hatch opens to the left. The roof hatch can be locked with a cylinder lock and can be opened with a handle. An upwards force of approximately 80 N is required to open the hatch. When opened, the hatch cover is locked automatically with a catch. When closing the hatch, the catch can be easily released using the orange handle (see photograph 3). A yellow bar is fitted on the inside of the hatch cover for use as a support when climbing through the hatch (see photograph 3).

It is recommended to close the roof hatch after climbing onto the roof. The hatch opening is then closed according to the regulations to avoid falling through an opening. A yellow push button which unlocks the hatch has been fitted to open the hatch again.

#### **Observations**

##### *Falling from a height*

By taking the following measures, the danger of falling from a height has been removed:

- Permanent guardrail on the scissor steps.
- The yellow bar on the inside of the roof hatch which is used as a support when climbing onto the roof.
- The roof hatch can be locked so that the hatch opening is securely closed after climbing onto the roof.

##### *Becoming trapped/knocks*

By taking the following measures, the danger of becoming trapped or being knocked has been removed:

- The hatch opening is larger than 600 x 600 mm (derived from EN-ISO 14122-4 "Permanent Ladders").
- The hatch can be opened using a handle.
- The hatch opens and closes with gas springs.
- The hatch is automatically locked in the open position.
- The lock is easy to release using the orange handle.
- The hatch can be opened and closed with a force of 60 to 80 N.

##### *Breaking/Collapsing*

By taking the following measures, the danger of breaking/collapsing has been removed:

- The scissor steps meet the strength requirements of EN-ISO 14122-3.
- There are two extension springs and two pull springs for the hatch and the scissor steps.

##### *Stumbling/Slipping*

By taking the following measures, the danger of stumbling/slipping has been removed:

- The scissor steps have a fixed rise and going when in the extended position.
- The scissor steps have an anti-slip design.
- The transfer steps are in the walking line of the scissor steps.

##### *Cutting/Stabbing*

By taking the following measures, the danger of cutting/stabbing has been removed:

- Rounding off corners and protruding components.

**Conclusion**

The assessed risks have been sufficiently checked. As far as we could visually observe, this construction meets the requirements of the Occupational Health and Safety Act. To ensure correct installation, an instruction manual is provided.

Yours sincerely,  
Aboma+Keboma



J.C. Berkhout  
Safety Expert

Appendix: Photographs 1 to 4



700 x 1400 mm roof hatch with scissor steps  
in lowered ceiling construction

**Aboma**  
*plus* **Keboma**

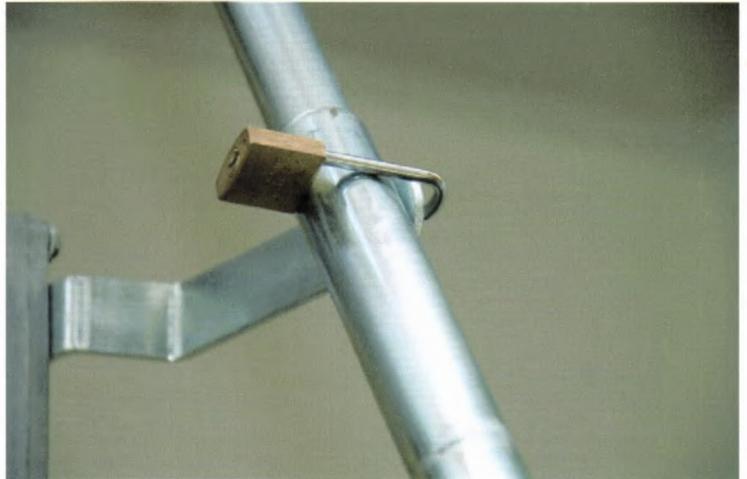
Gorter Bouwprodukten bv



Photograph 1

Photograph 2

Photograph 3



Photograph 4

