



## Ergonomics approved quality label

Matador Door Jack



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# 1 Introduction

This report contains the assessment for a vhp ergonomics approved quality label for the Matador Door Jack. During the assessment of the vhp ergonomics quality label, the functional and user aspects of the product are assessed for compliance with the guidelines for physical load from the Dutch Physical Load Handbook . General regulations regarding physical load, including pushing and pulling, apply. The occupational health and safety ergonomics certification does not include a safety test.

## 2 Product: Matador Door Jack

The Matador Door Jack is specially constructed for transporting and hanging doors. By using the Matador Door Jack, a door does not have to be lifted manually. This makes the (re)placement of a door much less physically demanding. Using the Door Jack makes it possible to transport and place a door by one person where previously two persons were needed. The Door Jack is used in 2 ways:

1. As a transport trolley for moving a door in a horizontal position.
2. As a lever for vertical lifting and positioning (or lowering) of an upright standing door.

In transition from horizontal transport to a vertical position for placing the door the door must be manually tilted from landscape position to portrait position (or vice versa).

The way to operate the Door Jack is illustrated in this product video:

<https://www.youtube.com/watch?v=rqDNOxpXWfl>

## 3 Features Matador Door Jack

The following ergonomic features apply to the Matador Door Jack:

- A door of up to 150 KG can be loaded on the Matador Door Jack. The Door Jack (XL) itself has a weight of 7.7 kg. Dimensions of the Door Jack: 1315x313x244 mm. Tube diameter at the handle bar is 32 mm.
- In terms of force application, moving (applying force through pushing or pulling) a door using the Door Jack is comparable to moving a wheeled cage. Vhp has a database with hundreds of measurements concerning pushing and pulling with wheeled cages with comparable weights (plant chain/flower auctions, VNU, AHOLD, HEMA, TPG, BLOKKER). Per KG of weight to be moved, an average of 0.68 N<sup>1</sup> of force is considered necessary. If this is converted to a door of 150 KG this results in manual use of 102 N of force. Physical load of moving a door weighing 150 kg horizontally with the Matador Door Jack over a flat surface is thus 102 N. Mital & Ajoub assume a maximum push load of 300 N. The value is thus about 1/3 of what is allowed by relevant standards.
- For manual lifting a door the maximum load is 23 KG per person (NIOSH standard). Manual lifting however is not applied when using the Door Jack.

<sup>1</sup> N stands for Newton, 10 Newton is equal to 1 KG force.

- Physical load during tilting of a door should not be considered as lifting, but is considered pushing and/or pulling.

Advice:

If a door is installed by 1 person, this person should bend down or use his or her foot to be able to grab the handle of the Door Jack. This concerns the moment that the door has been removed from the Door Jack and needs to be picked up again in vertical position in order to be positioned in the door hinges. At the same time the person must stabilize the door. It is recommended to adjust the Door Jack in such a way that after removing the door from the Door Jack, the handle automatically adjusts to a vertical position, for example by using a spring.

## 4 Ergonomics approved quality label



The Matador Door Jack is approved and is provided with the vhp ergonomics approved quality label. Using the Door Jack, a door no longer needs to be lifted manually, which greatly reduces the physical workload during both transporting as well as positioning a door. Both the horizontal moving and tilting as well as the positioning of a door can be done by one person when using the Door Jack instead of the usual two persons.



## 5 Appendix

### Appropriate Standards

NEN-EN 1005-1:2001+A1:2008 en	Safety of machinery - Human physical performance - Part 1: Terms and definitions
NEN-EN 1005-2:2003+A1:2008 en	Safety of machinery - Human physical performance - Part 2: Manual handling of machinery and component parts of machinery
NEN-EN 1005-3:2002+A1:2008 en	Safety of machinery - Human physical performance - Part 3: Recommended force limits for machinery operation
NEN-EN 1005-4:2005+A1:2008 en	Safety of machinery - Human physical performance - Part 4: Evaluation of working postures and movements in relation to machinery
Mital , A. et al: 1997	A Guide to Manual Materials Handling, Taylor & Francis, London.