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Matador ‘Superhond’ transport cart

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1 Introduction

In the Netherlands a transport cart on wheels is called a ‘doggie’. ‘Superhond’ means a’ super doggie’. This report contains the assessment for a vhp occupational health and safety and ergonomics quality mark for the Matador Superhond (versions - M-Superhond CT (puncture-proof tyres, article number 12255) and M-Superhond-LB (pneumatic tyres, article number 14082).
When assessing the vhp occupational health and safety and ergonomics mark of quality, the functional and usage aspects of the product are assessed in terms of compliance with the guidelines for physical load from the Dutch Handbook of Physical Workload[1]. General regulations regarding physical load also apply, including lifting and carrying and pushing and pulling[2].

2 Product: Matador Superhond

The Matador Superhond is a cart that can carry 250 kg of weight and can also be used in uneven and rough terrain. Due to the special construction with six wheels, the cart can turn around its own axis and has a minimum turning radius. The Superhond is suitable for transporting of all kinds of materials. The Superhond is equipped with a tow bar that can be folded completely (secured) and is sunk into the top of the trolley. In this way, several Superhond carts can be stacked and transported.
The Superhond weighs less than 23 kg and has a size of 98 by 65 cm; therefore it fits easily through doorways. Optionally, it is possible to equip the Superhond with brackets to secure the Superhond load.

3 Features Matador Superhond

The Matador Superhond has the following ergonomic features:

- The Matador Superhond is equipped with 6 wheels; as a result, the Superhond does not sink easily into soft ground. The required force to pull the Superhond forward remains therefore low. However, the force required will differ per surface.
- The pull handle of the Super Dog can be positioned an ideal height between the hips and shoulders.
- The construction with the pull-rod makes it possible to 'dip' the Super Dog over curbs and thresholds up to 8 cm. This means that the Super Dog does not need to be lifted. It is also possible to get the Superhond into a van without having to lift it.
- The Super Dog is equipped with handles on the side so that it can easily be put away or lifted.
- The short turning circle of the Super Dog makes it easy to manoeuvre.

[1] Dutch Handbook of Physical Workload, editors K.J. Peereboom Eur.Erg. and N.C.H. de Langen, seventh revised edition, 2016. The standards of Mital et al (1997) are used for pushing and pulling.

[2] According to the Dutch Working Conditions Act, employers must ensure that physical load does not endanger the safety and health of their employees (Working Conditions Decree 5.2). Employers are obliged to include the risks of pushing and pulling in their risk inventory and evaluation and the Plan of Action. Employers must also provide proper information on how employees can push and pull objects in a safe and healthy manner, see: www.arboportaal.nl (in Dutch).

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The Matador Superhond makes it possible to move heavy loads easily, even in unpaved terrain, without exceeding health limits. This is because Superhond is equipped with 6 wheels, has a drawbar that is positioned at an ideal height and is easy to handle.

To prevent complaints, please pay attention to the following points when using Superhond:

When the Superhond is pulled, this should be done with two hands.
For occasional pulling (1x per day) the maximum pulling force should be 510 N, when pulling more often the maximum pulling force will be lower. Use the tables from the manual Physical load1. See appendix 1.

The pneumatic tyres of the Superhond should be inflated regularly (car tire type of valve). Especially when moving heavy loads, and especially after not being used for some time, inflate the tyres firmly to avoid unnecessary rolling resistance and thus unnecessary tractive force.

5 Appendix

Verplaatsingsafstand		Frequentie									
		10 / min		5 / min		1 / min		12 / uur		1 / 8 uur	
		AK	VK	AK	VK	AK	VK	AK	VK	AK	VK
		AK	VK	AK	VK	AK	VK	AK	VK	AK	VK
2.1 m	m	140-200	80-100	160-230	100-160	180-260	120-200	190-320	150-230	230-390	180-280
	v	130-190	50-90	160-220	80-130	170-240	100-160	190-290	110-190	220-320	140-250
7.6 m	m					160-240	100-160	170-250	120-190	210-310	150-230
	v					160-220	90-130	170-250	100-160	200-280	130-220
15.2 m	m					150-220	90-140	160-240	100-170	200-290	130-200
	v					130-190	60-100	150-210	80-140	170-240	110-180
30.5 m	m					120-170	70-90	150-220	90-150	190-270	130-200
	v					120-170	50-90	140-200	70-120	170-240	100-170
45.7 m	m					100-150	50-70	130-190	80-120	160-240	100-170
	v					100-150	40-70	140-200	60-90	160-240	90-150
61 m	m							110-160	60-100	140-200	90-140
	v							110-160	50-70	140-200	70-120

The table shows acceptable forces when applying pushing and pulling while working with carts like the Superhond.
Explanation:

- ‘Verplaatsingsafstand’ means: distance to be covered in meters.
- AK means: maximum allowed initial applied force related to a frequency per minute (min) or hour (uur)
- VK means : maximum allowed sustained force related to a frequency per minute (min) or hour (uur)
- Values are in Newton (10 newton is equivalent to 1 KGF (kilo gram force).

Source: Dutch Handbook of Physical Workload, editors K.J. Peereboom Eur.Erg. and N.C.H. de Langen, seventh revised edition, 2016. These standards for pushing and pulling are derived from publications of Mital et al (1997).