

Turtle Product Catalogue

TURTLE®
Bayeux Tapestry
technology inside

Turtle Product Catalogue

For decades, TURTLE has helped museums worldwide transport valuable artworks safely and securely. At the heart of TURTLE is the T+, our proven corner-block system for safe, flexible and sustainable art transport.

Our vibration reduction management technology combines TURTLE, the T+ corner block and its integrated WRI (Wire Rope Isolator). This system was used in the specially engineered crate for the transportation of the Bayeux Tapestry. Testing of this specific construction demonstrated a 96% reduction in vibration, following 35 years of development.

This integrated technology is available to museums worldwide, offering advanced vibration reduction management for the safe transport of valuable cultural heritage.

TURTLE offers a range of proven and bespoke solutions tailored to the needs of each artwork and transport challenge.

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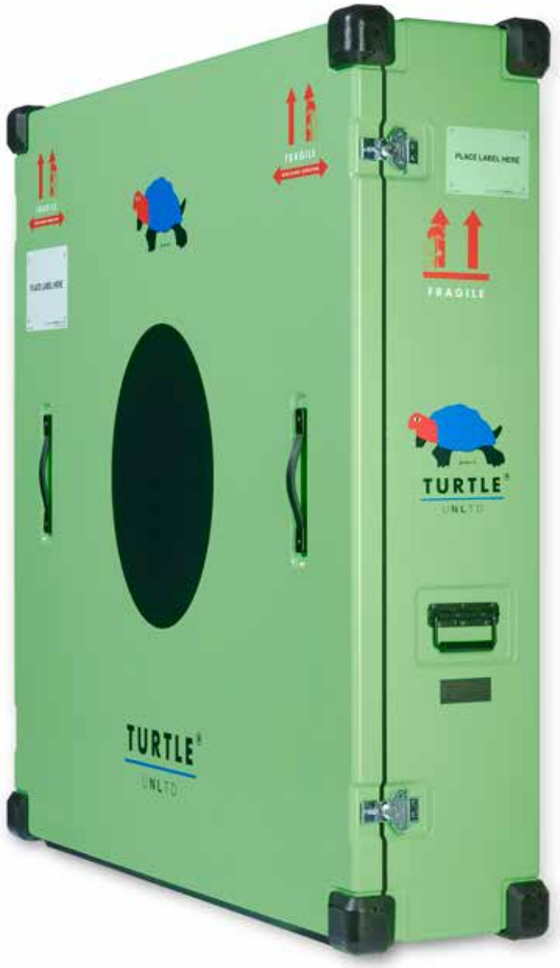
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Turtle uNLtd

Turtle is the safe, most innovative and sustainable museum crate in the world for the transportation of valuable artworks. The Turtle, a climate crate with unique properties, was originally developed in 1994 and is the result of extensive testing and development. Turtle meets all contemporary demands of art transportation and is user-friendly. It is also the most sustainable crate available on the market today. Turtles are available in range of sizes.



Unique outer aspects of the Turtle

- Made of composite material
- All separate parts can be replaced easily
- Durable and recyclable shoulder blocks
- Maximum height of 159 cm (62 in) for lower deck transportation
- No forklift holes, this leaves more space in the Turtle and reduces the risk of damage
- Can be packed in an upright position

Unique inner elements of the Turtle

- Standard 4 corner blocks included
- Velcro rear wall, flexible play area
- Multiple works can be placed in a Turtle

Climate management

- With a temperature difference outside the crate of 10°C, it takes more than 48 before the inside climate is leveled
- Humidity is regulated by the birchwood plate behind the Velcro

Vibration reduction

- The outer shell is made of a stiff composite material which reduces vibration
- The birchwood plate is held in place by the surrounding foam to pass on fewer vibrations
- The total weight of the Turtle is 115 kg/254 lbs
- Rubber shoulders are fixed on the outer shell
- The lid is closed with butterfly locks to avoid the use of screws and tools

Sustainability

- The current Turtle model has a lifespan of more than 25 years
- After 30 years Turtles are refurbished to remain in use, providing secure transit for at least another 20 years
- If a Turtle is rented out only five times in a year, it has already saved two trees



Turtle uNLtd Sizes

	Maximum artwork size (cm/inches)			
Type	**Height**	**Width**	**Depth adjustable corner block**	**Depth non-adjustable corner block**
Turtle uNLtd 125	87/34,3	88/34,7	11/4,3	17/6,5
Turtle uNLtd 160	118/46	119/46,4	11/4,3	17/6,5

	Outside size (cm/inches)			
Type	**Height**	**Width**	**Depth**	**Weight**
Turtle uNLtd 125	129/50,8	129/50,8	40/15,6	85 kg
Turtle uNLtd 160	159/62	159/62	40/15,6	115 kg



"...cutting-edge engineering..."

The New York Times



The Advanced Corner Block T+

The advanced Turtle corner block T+ is especially designed to transport a wide range of paintings with optimal vibration reduction and shock absorption in the Turtle uNLtd.

- Custom wire rope isolators (wri) are used for shock and vibration management; the exact position, number and thickness are key in the performance
- The 'cover plate' is used to fixate the painting towards the back plate of the Turtle
- The L-profiles are rigid aluminum, which provides a solid base for the wri
- The T+ is a right, left and side block
- The pads are made of durable rubber
- The blocks stay in place using high-quality Velcro
- The weight of the painting determines the number of T+ which are needed to achieve the most optimal result
- T+ is only used in the Turtle uNLtd because of the rigid composite outer shell





General Information

- Maximum dim. between blocks is 128 x 133 cm
- Minimum dim. between blocks is 29,5 x 29 cm
- Actual weight per block is 2,2kg
- Max. frame thickness is 11,5 cm

Vibration and shock performance

Please contact us for the full report of the most important test results.

- Turtle uNLtd including T+ reduces 100% more vibration than a double-walled museum quality wooden crate and 60% more than the current corner blocks
- Turtle uNLtd including T+ absorbs 90% of shocks

The table below shows the percentage vibration reductions attained with respect to the input.

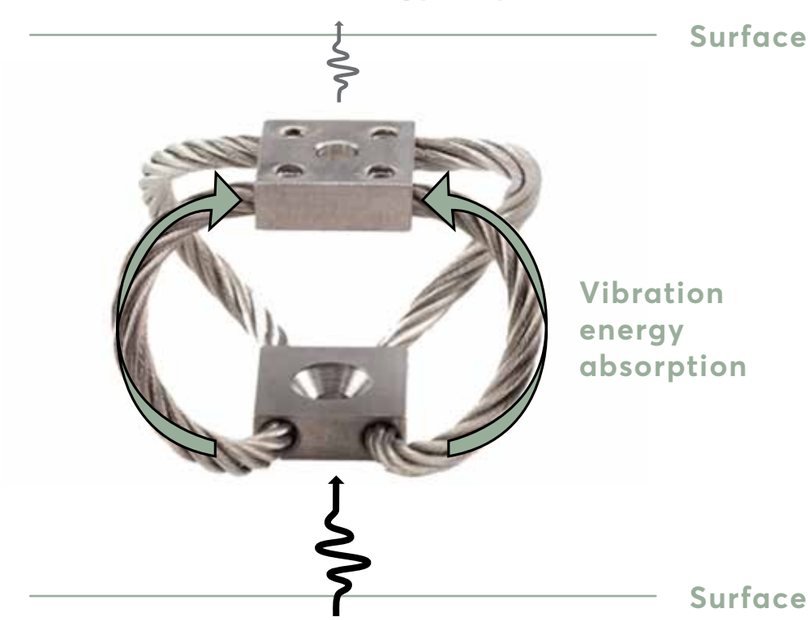
	Road transport	Air transport
Double-walled museum-quality crates	-11%	28%
Regular corner blocks in Turtle uNLtd	21%	35%
T+ corner blocks in Turtle uNLtd	45%	65%

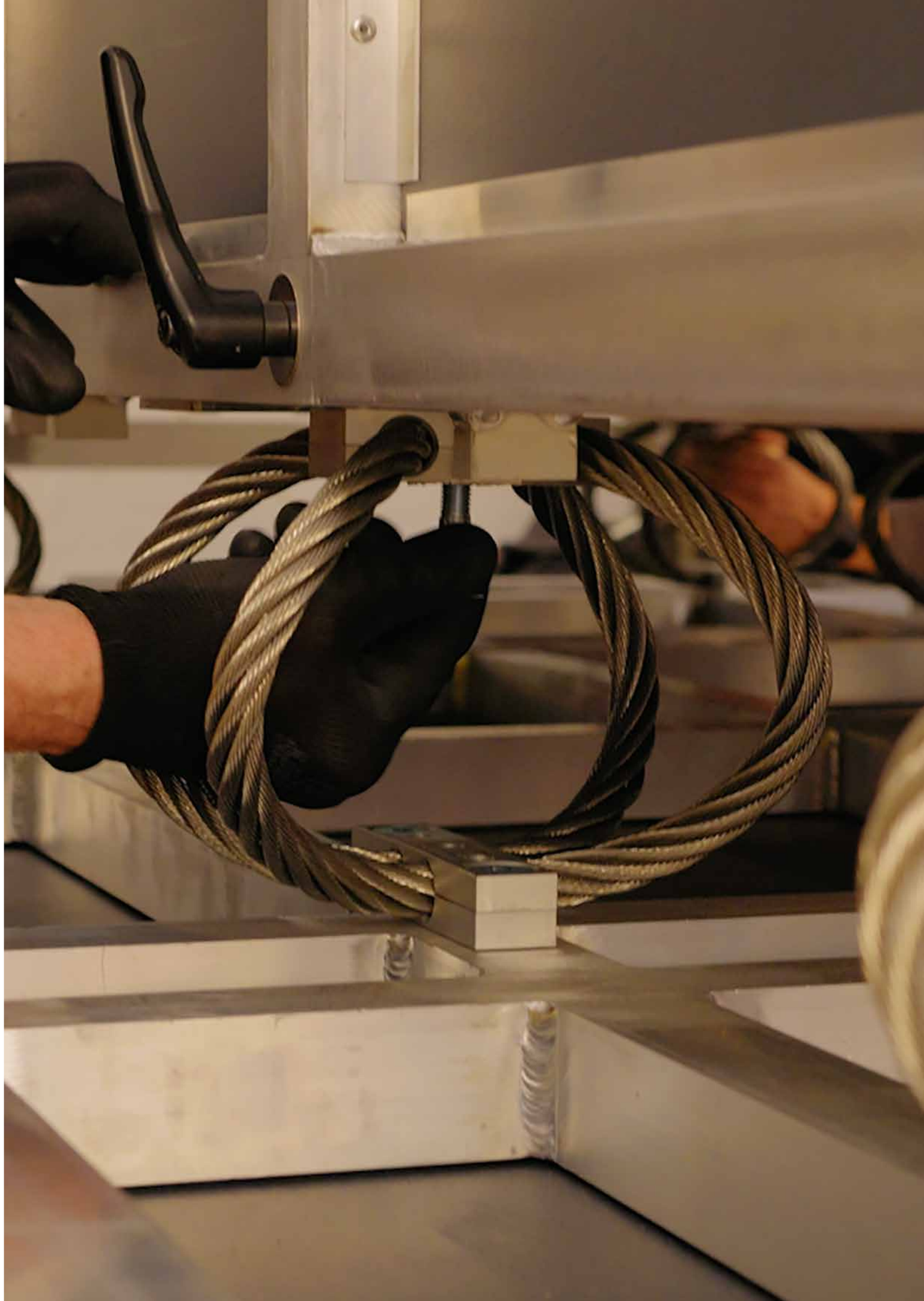
Table: Compared to a single walled wooden crate.



How wire rope isolators (wri) work

The wri need two rigid surfaces to which the fixation plates are attached. The vibration energy enters from the bottom surface and is led into the steel wires. The steel wire rope absorbs the vibrational energy and release the reduced vibration to the top surface.







Climate Cabinet

The Turtle Climate Cabinet is especially designed to transport multiple artworks and 3D objects in one box, with optimum vibration management and a climatized environment. It was developed for the safe transportation of prints, drawings and pastels that need to travel flat.

- The artworks stay in place using corner blocks and Velcro
- The drawers are easily adjustable to specific heights
- The insulation of the Turtle Climate Cabinet is comparable to the insulation in Turtle uNLtd
- The Turtle Climate Cabinet now comes in three sizes
- The Turtle Climate Cabinet is equipped with wire rope isolators between the lower and upper frame, to optimize vibration and shock reduction
- Because of its wheels, the Turtle Climate Cabinet is easy to move. During transportation, the Turtle Climate Cabinet is supported by adjustable feet, making it stable on every surface
- The Turtle Climate Cabinet is sustainable, since the cart can be re-used in various ways

Note: Research reports are available.





General Information

	Model 1	Model 2	Model 3
Dimension outside	89 cm L x 172 cm W x 169 cm H	116 cm L x 172 cm W x 169 cm H	135 cm L x 205 cm W x 169 cm H
Dim. inside (between tracks)	44 cm L x 114 cm W	71 cm L x 119 cm W	91 cm L x 154 cm W
Weight (empty)	410 kg	460 kg	555 kg
Weight (with trays)	525 kg	625 kg	805 kg
Number of trays	12		
Space between trays	4,7 cm		
Max. load of the tray	50 kg		
Corner blocks	Material: foam and Velcro. Dimensions: 2,5 cm L x 12 cm W x 3,8 cm H Fixation via Velcro, Pieces per tray: 12		
Material	Birch wood plywood, Aluminium edges, 2 Steel frames with handle bars Springs: Steel. Wheels: Polyurethane		
Springs	Wire rope isolators		
Wheels	Brakes and ball bearing. Colour: grey, 4 pieces per cabinet		

Vibration Performance

		Vibration Performance	Shock Performance
During handling	Vibration reduction at the rate of excitation	90 % avg.	92 % avg.
During truck transport	Background noise (Volvo VFH 420 Globetrotter Air Spring)	0.05 g avg.	0.04 g avg.
	Max. detected vibration amplitude	0.21 g avg.	0.7 g avg.
	Vibration reduction at the rate of excitation	74 % avg.	79 % avg.

Note: The listed reduction rates and amplitudes are measured at the most sensitive point of the crate. The mid points of the trays oscillate 50% less.


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