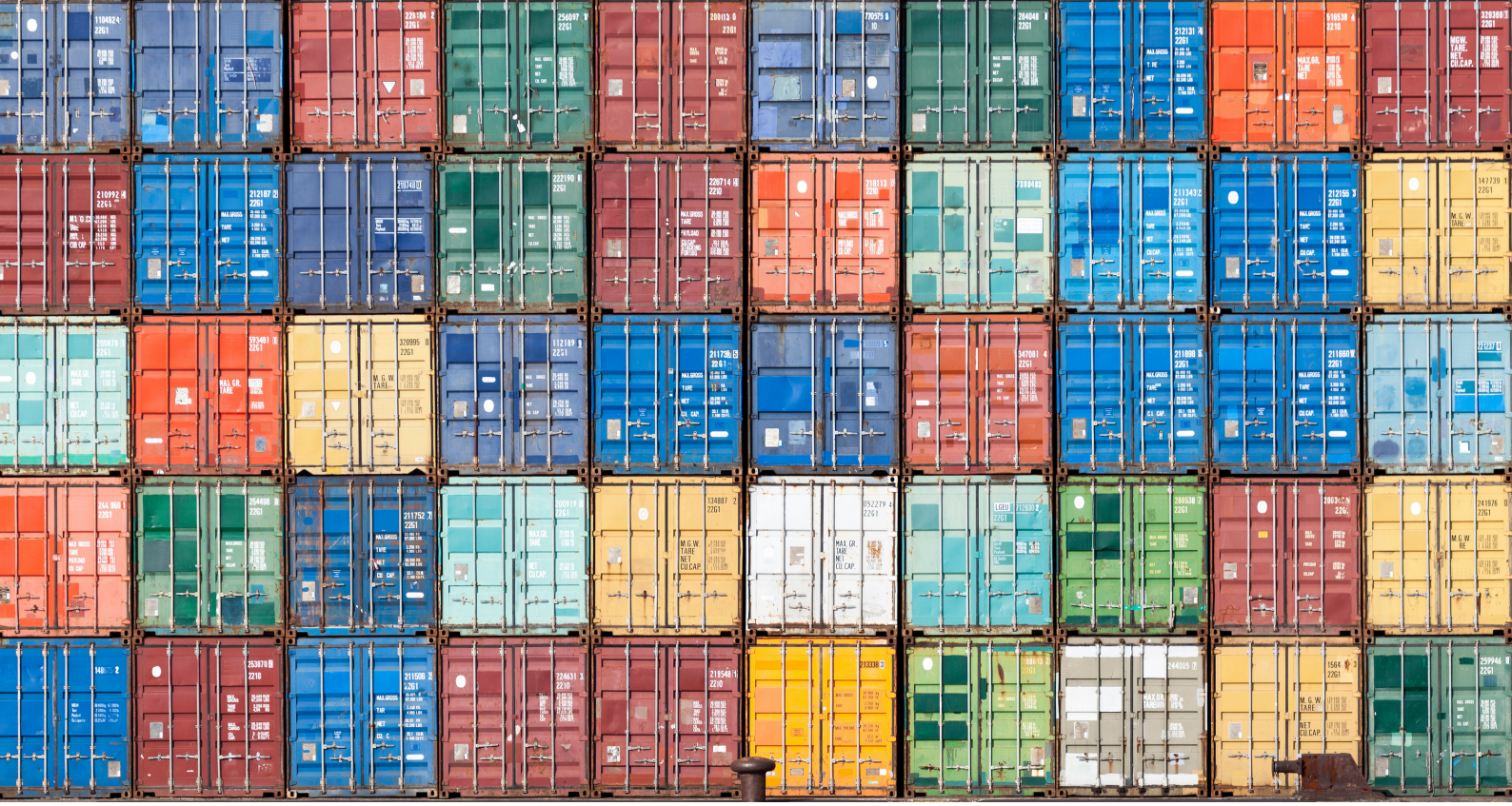
CEL-LOCK

FULLY AUTOMATIC CONTAINER SECURING SYSTEMS

CELTEC RAIL PTY LTD.

2021



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History of Twistlocks

Twist locks to lock down freight containers to ships, rail cars, road chassis and other carriers such as flat racks have been in use since the development of the ISO freight container.

The locking and securing of freight containers, equipped with International Standard Organization (ISO) bottom corner castings to load carriers such as a truck chassis or rail car, has been pursued for more than 30 years.

Over the years, different types of locking devices to secure freight containers have been developed. Depending on the circumstances of the security required, three main types of Twist locks have been used, manual, semi-automtic and fully automatic twistlocks.

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CELTEC RAIL PTY LTD

For the past two decades, we have been the market leader setting best practice standards, leading the design and development as well as supply of fully automatic twist lock systems in the container securing market.

The unique, high quality and innovative products and systems are marketed under the trademark brand of Cel-Lock. Our products are inspired by our customers, and reflect our passion for technology, function and reliability.

A key issue confronting the transport industry is to remain innovative and improve logistics performance and efficiency in the face of ever increasing consumer demand. Thus, our commitment to R&D and technology innovation is paramount to our product solutions.

The automation of container handling, and it's positive impact on productivity remains central to all Celtec products. Borne from this mission, are our fully automatic twistlock systems.

Requiring no pneumatic, hydraulic or electrical connections, these systems allow for automatic securing and retraction of containers of all lengths. Ultimately, removing all manual handling requirements and increasing safety, as well as productivity in order to maximise the overall efficiency of the industry as a whole.

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Manual Twistlocks

Positive manual locking devices provide locking of the container on the rail car unless unlocked. Such locks are commonly designed as a stem with a rectangular upward pointed head called a shaft.

After loading, the container is locked manually by turning the twist lock shaft - hence the name twist lock.

Operating manual twist locks on rail cars has been proven to be labor intensive, and thus, may have a negative impact on productivity and time effectiveness.

As a result, the market has seen a demand for less time consuming systems.

The diversity in container lengths directly increases the number of potential load configurations that securing systems must be capable of handling.

The locks must be retractable or removable, allowing the correct number of locks in the correct position, depending on the specific load configuration.

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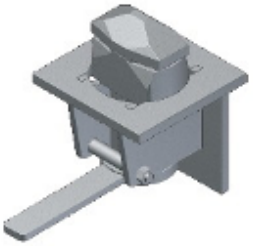
Manual
Sample Models





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Cel-Lock Fully Automatic Twist Locks

Fully automatic twist locks provide a positive locking device for vertical locking of containers onto the rail platform. This allows for the automatic unlocking where a predetermined lifting force is exceeded.

Our patented fully automatic twist lock systems include the following features:

The option to combine twist locks to create a system completely free from manual handling.

All late model Cel-Lock™ fully automatic twist locks are fitted with our tilt-release shaft as a standard feature. This is designed to reduce jamming when unloading an unevenly loaded or lifted container.

A safety indicator is fitted as standard feature on the Cel-Lock™ TFAD. This will clearly indicate whether the Cel-Lock™ is NOT in activated mode and cannot be used without adjustment.

Celtec's lates retractable system TFAR-3PL is fitted with a LED indicator light clearly displays the locking condition of the system, flashing when it is securely locked.

Celtec conducts motion simulations to determine the requirement for exit loads. The standard entry and exit loads are as per ROA, Australia.

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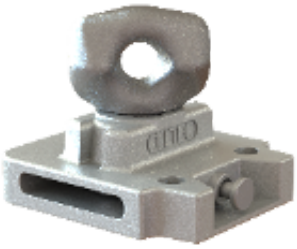
Fully Automatic
Sample Models



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Automatic Cel-Lock Systems

	Retractable System	Foldable System
Locking	Forced Automatic	Forced Automatic
Retraction	Automatic	Manual Folding
Productivity	Very high	High
Tilt Release	Standard feature - reduces jamming during unloading	Standard feature - reduces jamming during unloading
OH&S	Positive - no manual handling required	Positive
Configuration	TFAD, TFAE, TFAF in outer positions and TFAR in inner positions	Outer positions fixed, middle positions easily folded away
Theft Prevention	Does not secure container from theft. Twist lock is easily removed	Securely positioned, preventing theft

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Cel-lock Retractable System

Our patented retractable system includes the following benefits & features:

Increased productivity through automatic container securing using cassettes.

TFAR permits maximum flexibility in loading different length containers on the railcar by providing multiple seating options.

Tilt release features ensure secure and easy unloading in a variety of unloading conditions.

Increased safety due to the automatic locking of containers.

Mechanical operation ensures a fully automatic securing system that operates on a simple mechanical principle. Nothing to pull and no hydraulics.

Occupational, health & safety standards are met using the TFAR 3PL requiring no manual handling.

The combined designs will increase efficiency and safety during container handling and will reduce workplace injuries.

An LED indicator light clearly displays the locking condition of the system, flashing when it is securely locked

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Cel-lock Foldable System

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Comparing Manual & Fully Automatic Twist Locks

	Manual Twistlocks	Fully Automatic Twistlocks
Locking	Manual - in person	Automatic - no manual handling
OH&S	Operation required in person	Automatic - no manual handling
Productivity	Lower - each lock requires manual locking and unlocking walking along platform	High - no manual handling
Safety	Low. If a person does not lock the manual twist lock, the train will travel without secured containers.	High - twist locks remain locked
Wagon Design	Requires access to lock and unlock.	Not applicable due to manual handling is not required
Operations	Good. As long as the twist lock has been opened. If the twist lock has not been opened properly, it will cause bogie lift-off.	Good. The Cel-Lock™ has a Tilt-Release shaft function. The Tilt-Release function has been tested for loading and unloading with the maximum possible tilt.
Possibilities	Celtec can provide a Retractable Cassette System for automatic retraction when loading 40ft containers across 2 X 20ft positions.	Celtec can provide a Retractable Cassette System or TFAR that automatically retracts when loading 1 X 40ft container across 2 X 20ft positions
Convenience	Low. A manual twist locks does not offer convenience.	High

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Research & Development

The Cel-Lock™ twist locks and fittings have developed over the years to include our patented fully automatic twist locks, including the **TFA, TFA-EP, TFAD, TFAE, TFAF, TFAC and TFAR.**

The TFAR Twist lock System is the only truly fully automatic system available, requiring no manual handling.

Throughout 2014-15 we released a number of new developments, including the tilt release function aimed at ensuring easy and safe release of unevenly loaded containers fitted with our 3rd generation fully automatic twist locks.

The Cel-Lock™ twist lock system simplifies loading of cargo containers by automatically lowering containers with corner castings.

The TFAR twist locks permit maximum flexibility in loading different length containers on the railcar - providing multiple seating positions for the twist lock to be secured to the containers.

The twist locks will lock and securely hold the container in place under normal transportation conditions.

R&D is focused on providing customised solutions to maximise the efficiency, productivity and safety of our customers.

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INTELLECTUAL PROPERTY

Many of the design features and innovations are covered by Patents including the Tilt-Release function. The drawings are covered by Copyright laws and the brand name Cel-Lock is a trade mark.

TAILORED DESIGN

In the unlikely event that we do not have something suitable off the shelf, we have the ability to work with our customers to design a specific design suitable for your specific wagon. Please contact us for further discussions.

MOTION SIMULATION

We have carried out motion simulation to determine whether the Cel-Lock™ is suitable for high speed travel, in addition to, a study on container lifting forces on flat wagons. The study was done to understand the magnitude of lifting forces on twist locks. The study includes dynamic effects from motion of the wagon over uneven track and wind forces on single and double stack trains.

REPAIR & MAINTENANCE

We offer a comprehensive repair and maintenance service in Australia. This can be a low cost options compared with purchasing new Twist locks for replacement. Celtec will arrange pick up, inspection and repair; and will return products to a nominated address with diagnostics report if requested.

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