

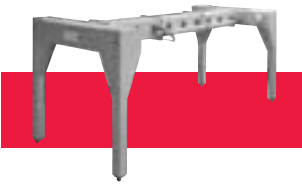
**FULLY AUTOMATIC TELESCOPIC
OVERHEIGHT FRAME**
TOF



SORT + STORE 

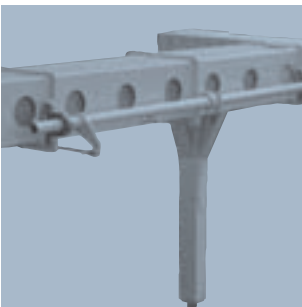


TOF - FULLY AUTOMATIC TELESCOPIC OVERHEIGHT FRAME



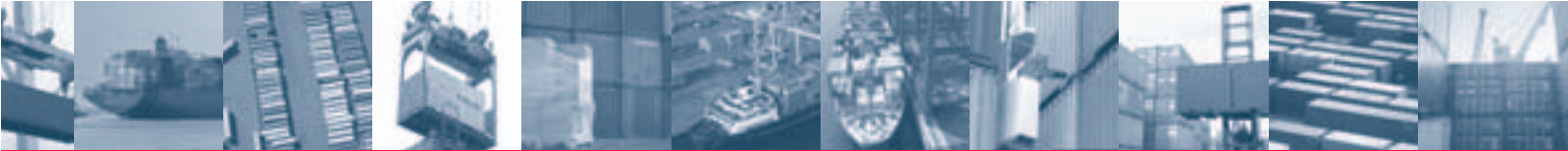
Function

- Pick-up by the master spreader (same procedure as for a [standard box](#)), telescoping to the desired position (20 or 40ft).
- Placement on the out-of-gauge cargo and simple locking by unlocking and relocking the spreader twistlocks.
- The twisting of the TOF's twistlocks is only possible if they are correctly aligned. All four safety pins have to be pushed in simultaneously.
- Clear optical indication of TOF twistlock position.
- Clear optical indication of OHF twistlock position. All four TWLs rotate simultaneously and lock at a exactly 90° position. The spreader twistlock activation angle is only 65°.
- After having put down the cargo, the driver decides whether the TOF remains on the container or if the handling device takes it away.



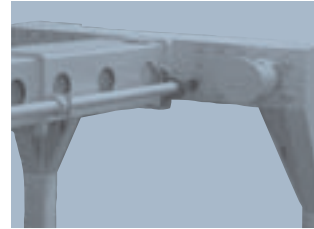
Product benefits

- No need for internal or external energy supply; the TOF system is supplied solely by the torque of the master spreader's twistlocks (min. 150Nm)
- No need for extensions or modifications on the spreader, very flexible application regardless of the spreader brand; no interference with warranty issues of third parties.
- No need for storage facility, the device can be kept anywhere and is always ready for use.
- Simple operation mode, the driver can concentrate fully on his or her job at hand.
- Significantly increased operational safety during cargo handling, due to automated process.
- Function is independent of the direction of rotation of the master spreader's TWLs.
- Sturdy and stable construction, designed for the rough operating conditions
- Consistent lightweight construction enables maximum payload capacity on the spreader.
- Manual emergency operation possible for all TOF TWL's together or each one separately.
- Low maintenance cost and high availability.
- Product advantages have been proven by many years of terminal servicing under different climate conditions.
- A world-wide network of sales partners guarantees reliable service and quick spare part deliveries.



Structure

- ST-52-3 steel construction
- Two closed-type construction portals at the narrow ends for the reception of mechanical and hydraulic components, connected by a telescope housing.
- 42CrMo4V twistlocks with 3.1b certificate.
- Optical indicators to show the twistlock position. Can be viewed from above and from the side.
- Hydraulic circuit serves solely for the safety check of the safety pins (correct alignment with container). Maximum working pressure of 30 bar, approximate filling quantity of oil is 3 liters.
- Steel construction sand-blasted.
- Coating with rust inhibiting primer – double top coating with a thickness of up to 200µm.



Hydraulics

The hydraulic system serves exclusively for the activating of the mechanical ratched gearbox, when all four posts are placed correctly on the container. The pump unit is driven by one of the master spreader twistlocks. (Operating pressure: max. 30 bar)

Telescope System

- From 20' to 40'
- Driven by the master spreader
- Guided by plastic sliding plates
- Telescope system is fitted with rollers for smooth movement.
- Telescope housing is reinforced at the 20' and 40' position

Requirements

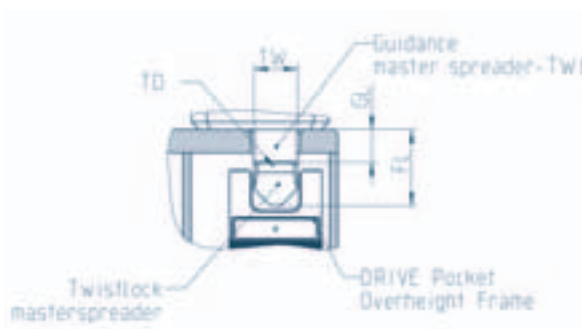
The master spreader has to be able to telescope while its twistlocks are in locked position.

The shifting power of the master spreader has to be at least 4500 N whilst the TOF is attached to the master spreader and hoisted.

Required torque of the master spreader has to be at least 150 Nm.

The master spreader's TWLs have to meet the following dimensions:

Width TWL:	TW	50 – 60 mm
Diameter TWL:	TD	100 – 110 mm
Length Guidance:	GL	40 – 50 mm
Full Length TWL:	FL	max. 104 mm

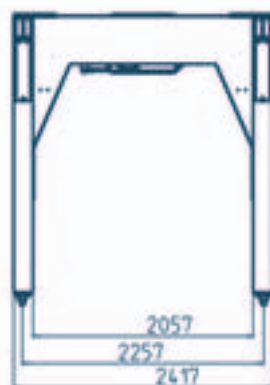
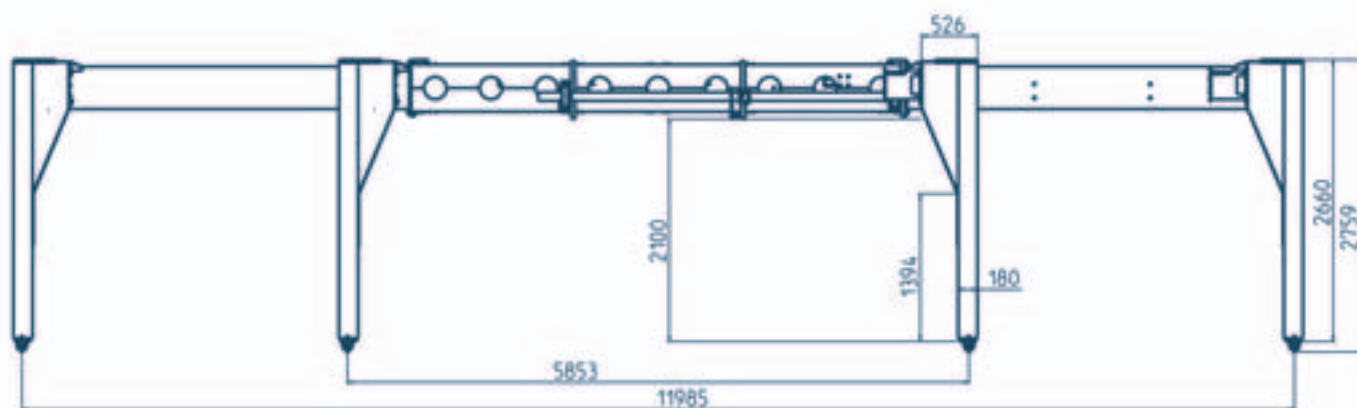




TOF S4 - FULLY AUTOMATIC TELESCOPIC OVERHEIGHT FRAME

S4

TOF-S4 Main Dimensions



TAILORMADE SOLUTIONS FOR ADVANCED CONTAINER HANDLING



TOF-S4 the new standard

S4

The TOF-S4 has been the new standard since mid 2005. The frame offers optimum reliability due to a strict reduction of hydraulic components. Like its predecessor models,

the TOF-S4 stands out by its compact storage dimensions in the 20' position and its immediate readiness for use once it has been interlocked with the master spreader.

Technical Data

Telescope length:	20 ft – 40 ft	
Lifting capacity: (tested to 25% overload)	40,000 kg	classification: H2B4
	50,000 kg	eccentric: 2/5 : 3/5 classification: H1B2 centric
Net weight:	3.6 t	
Temperature range:	- 20°C up to 55°C	
Brake deceleration operation:	0.8 m/s ²	
Max. brake deceleration:	4.9 m/s ²	(emergency stop straddle carrier)

Regulations

EC machinery guidelines (98/37/EC)

EN 292-1 and EN 292-2

UVV 18 load pick-up devices in hoisting operations VBG 9a

Steel construction DIN 15018 and 18800

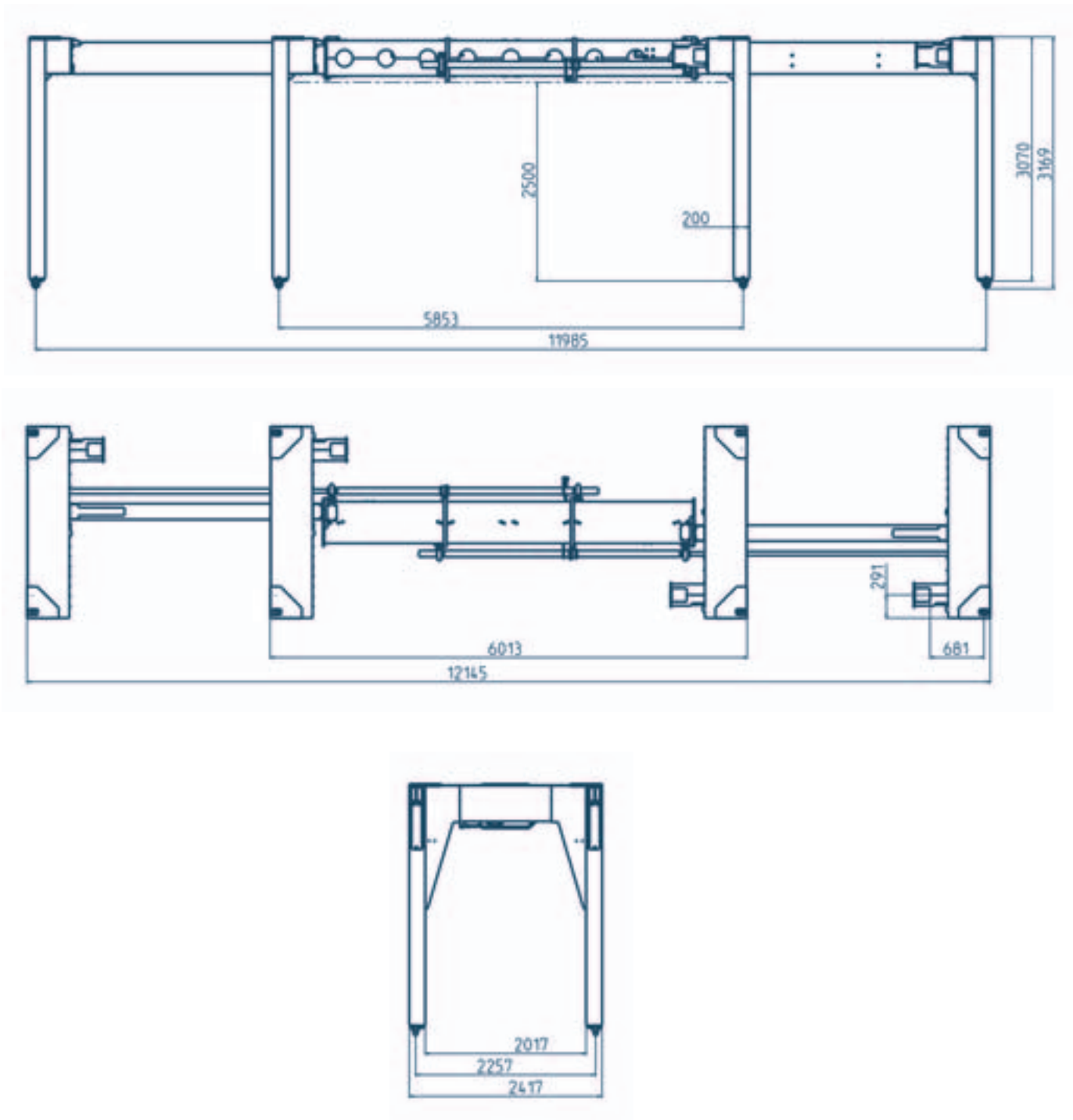
Materials DIN 17100



TOF S5 - FULLY AUTOMATIC TELESCOPIC OVERHEIGHT FRAME

S5

TOF-S5 Main Dimensions



TAILORMADE SOLUTIONS FOR ADVANCED CONTAINER HANDLING



WITH OVERHEIGHT 2,5M

TOF-S5 with extended overheight

S5

The TOF-S5 completes the product range for users having special requirements in terms of free overheight. TOF-S5 offers 2,500 mm along with an improved space profile.

Due to the shifting of the reinforcements out of the longitudinal part, even extremely long cargo does not create any difficulties when handled with the TOF-S5.

Technical Data

Telescope length:	20 ft – 40 ft	
Lifting capacity: (tested to 25% overload)	40,000 kg	classification: H2B4
	50,000 kg	eccentric: 2/5 : 3/5 classification: H1B2 centric
Net weight:	4 t	
Temperature range:	- 20°C up to 55°C	
Brake deceleration operation:	0.8 m/s ²	
Max. brake deceleration:	4.9 m/s ²	(emergency stop straddle carrier)

Regulations

EC machinery guidelines (98/37/EC)

EN 292-1 and EN 292-2

UVV 18 load pick-up devices in hoisting operations VBG 9a

Steel construction DIN 15018 and 18800

Materials DIN 17100

About us

For ten years SORT + STORE have been active in the field of container handling. Our engineers are experts who know exactly how container handling in the terminals works and what requirements have to be met there.

Advanced Container Handling

Throughout the world modern container terminals strive for quicker cargo handling and, simultaneously, enhanced occupational safety. The fully automatic overheight frames and telescopic lashing gondolas offered by SORT + STORE succeed in providing both. They help to automate handling processes carried out manually up to now and set standards in terms of ergonomics.

A close co-operation between development and user from the very beginning of the design of new handling equipment is our top priority and leads to the creation of market-oriented products. Furthermore, we are in steady contact with the harbors' operations and maintenance divisions. We take all kinds of input and integrate it into our product development in order to constantly optimize the features of our products.

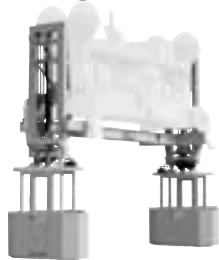
German engineering

In our eyes, the most important characteristics of SORT + STORE products are sturdiness and durability. The applications in container handling and the extreme productivity requirements container terminals have to meet demand equipment that is conceived especially for this working environment. That's why we have decided to offer mechanical engineering "made in Germany". Therefore, we are capable of delivering a consistently high quality level. Equipment still working flawlessly after ten years of service proves this decision right.

Protected connections

SORT + STORE equipment is compatible with almost 100% of the container handling devices used in large sea harbors world-wide – regardless of brands. Many of the renowned operators count on this flexibility: e.g. MAERSK/Sealand, P&O Ports, PSA, Maher, Axis, Patrick Stevedores and, of course, the German groups EUROGATE and HHLA. We are proud of the confidence our customers show in us and feel obligated to create "protected connections" in the future as well.

TPC



Telescopic
Personnel
Cage

OHF



Overheight
Frame

SORT + STORE



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Technical specifications
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