FULLY AUTOMATIC TELESCOPIC

OVERHEIGHT FRAME

TOF

SHT

TOF – FULLY AUTOMATIC TELESCOPIC OVERHEIGHT FRAME

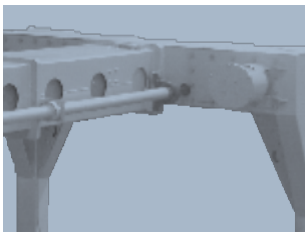
Function

- Pick-up by the master spreader (same pro- cedure 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 simultaneous- ly 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 mechani- cal and hydraulic components, connected by a telescope housing.
- 42CrMo4V twistlocks with 3.1b certificate.
- Optical indicators to show the twistlock position. Can be
- 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

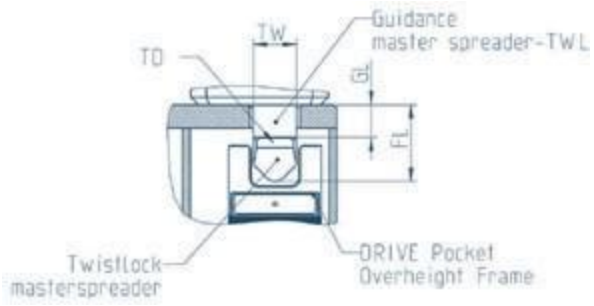
Requirements

The master spreader has to be able to telesco- pe 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.

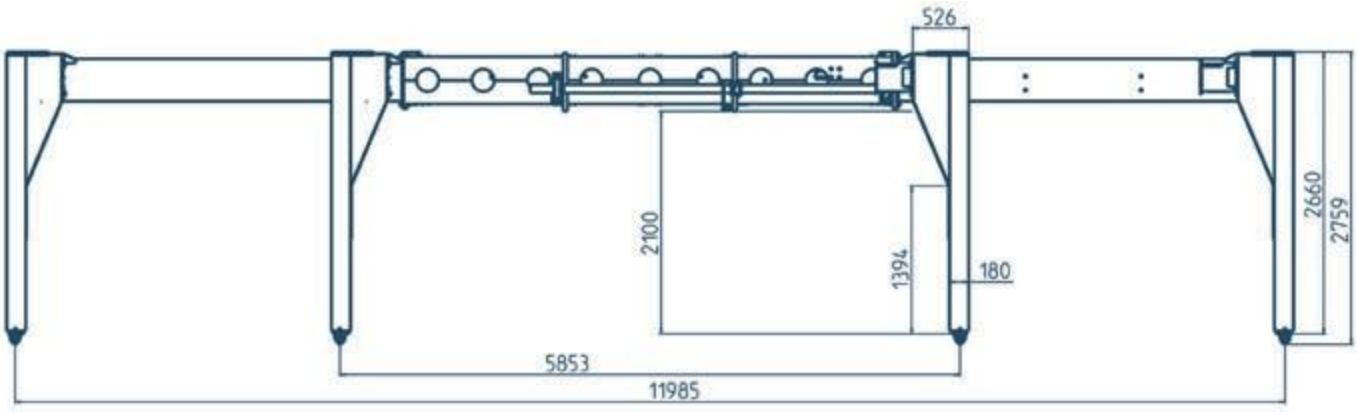
The master spreader's TWLs have to meet the following dimensions:

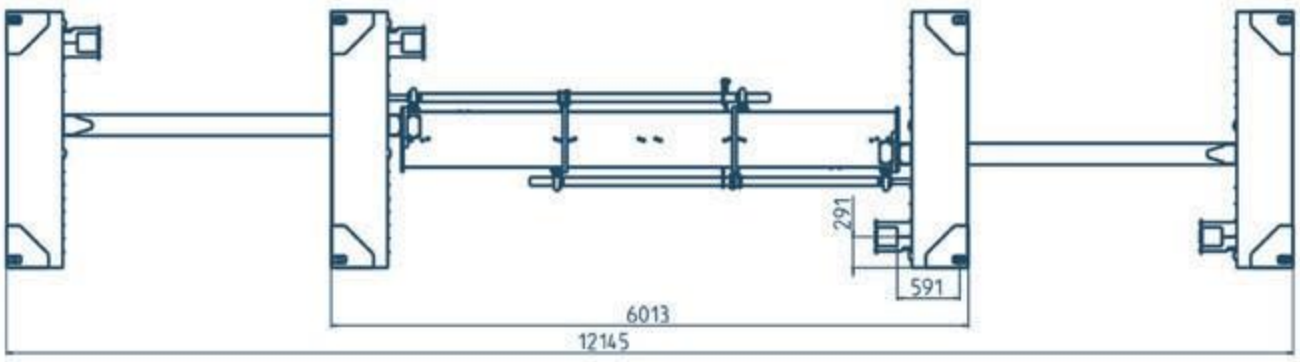
Width	TW	50 – 60 mm
Diameter TWL:	TD	100 – 110 mm
Length Guidance:	GL	104 mm
Full Length TWL:	FL	max.



S4

TOF-S4 Main Dimensions





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 50,000 kg	classification: H2B4 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 (2006/42/EY)

EN ISO 12100 - 1:2005 and EN ISO 12100 - 2:2005

UVV 18 load pick-up devices in hoisting

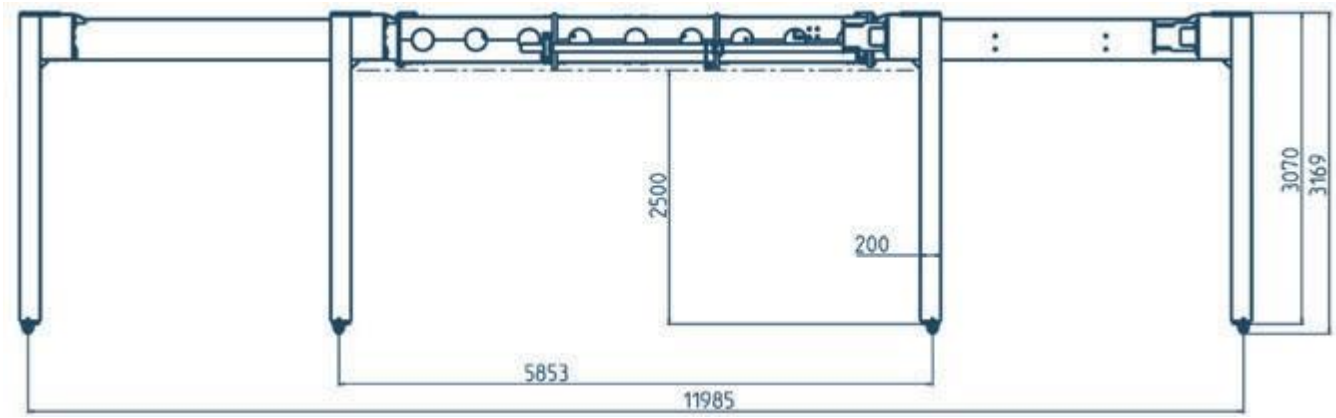
operations VBG 9a Steel construction DIN 15018

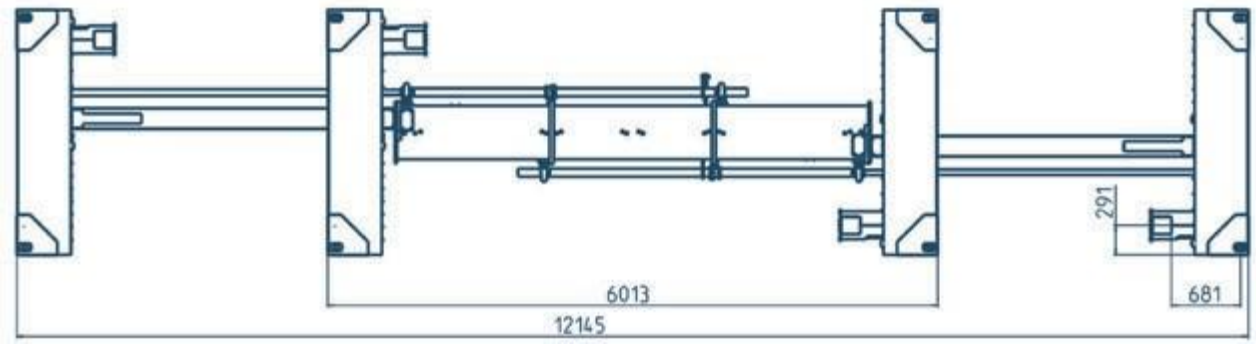
and 18800

Materials DIN 17100

S5

TOF-S5 Main Dimensions





TOF-S5 with extended overheight

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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 50,000 kg	classification: H2B4 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

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About us

In 2015 SHT, a german high quality sup- plier for special machinery equipment in the field of intralogistics, took over the product range of Sort + Store. For many years Sort
+ Store's spreader attachments and safety cages have been famous for their reliability and robustness that is both necessary to meet the daily requirements in the field of container handling.

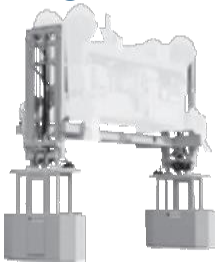
Advanced Container Handling

Throughout the world modern container termi- nals strive for quicker cargo handling and, simultaneously, enhanced occupational safety. The fully automatic overheight frames and telescopable lashing gondolas offered by SHT 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 marketori- ented 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 SHT products are sturdiness and dura- bility. 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 mechani- cal engineering "made in Germany".
Therefore, we are capable of delivering a consistently high quality level. Equipment still working flawlessly after ten years of service is no exception.
SHT 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/Sea- land, P&O Ports, PSA, Maher, Axis, Patrick Stevedores and, of course, the German groups EUROGATE and HHLA.
We are proud of the confidence our custo- mers show in us and feel obligated to create "protected connections" in the future as well.

TPC



Telescopic Personnel Cage

OHF

Overheight Frame

Technical specifications are subject to change without prior notice.

SHT hold worldwide patents on all products.

SHT Suhler Hebezeugtechnik GmbH
Wilhelm-C.-Spangenberg-Straße 18 D-
98529 Suhl
Germany

Phone: +49 (0) 3681 4949 -80
Fax: +49 (0) 3681 4549 -88
email: info@sht-lifting.com
web: www.sht-lifting.com