

## **OWNER'S MANUAL <sub>1.0</sub>**

# **ROLL TRAILER 100T 60FT**

**For transporting evenly distributed loads on the trailer**

**PROJECT NUMBER: 11.569.00-B**



## Revision History

REVISION	DATE	DESCRIPTION	PAGE	CHANGED BY

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## 1. Product information

<b>Manufacturer:</b> NT Industry Sp. z o.o. (subsidiary of Novatech Aps.) Fabryczna 1 43-180 Orzesze /Poland	<b>Vendor:</b> Novatech Aps. Skudehavnsvej 30 9000 Aalborg / Denmark Phone no: +45 98 16 50 09 Fax no: +45 98 16 80 97
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Type: **Transport equipment**  
Name: **Roll Trailer 100t 60ft**  
Project number: **11.569.00-B**  
Production year: **2021**

<b>Weights and loads</b>		
Capacity [kN]	1000	
Tare weight [kg]	12000	
Axle load [kN]	820	4 x 205
5 <sup>th</sup> wheel load (without gooseneck) [kN]	305	
<b>Dimensions</b>		
Total length [mm]	18500	
Total width [mm]	2790	
Total height [mm]	900	
Rear overhang [mm]	5000	
Length of the loading area (ft)	60	
<b>Running gear</b>		
Number of axle lines	2	
Number of wheels	8	
Tire size (solid rubber) (inch)	22x16x16	
<b>Loading platform</b>		
Steel deck	5mm checker plate	Max surface pressure 19,4kN/m <sup>2</sup>
<b>Speed and distance</b>		
Speed max. (km/h)	6	With load
	10	Without load
Distance with max. speed (m)	2000	Min. 3 hours break between driving cycles
<b>Accessories</b>		
D-rings	Equipped	50 pcs 50t BL
Lashing eye	Equipped	2 pcs on each longbeam
Forklift pockets	Equipped	2050 mm distance in between
<b>Finish</b>		
Shoot blasting	Sa 2½	EN ISO 8501
Top coat	C3	EN ISO 12944-6

Road requirements		
Max ramp angle (deg)	6	
Max allowable transverse slope (deg)	4	
Max tugmaster angle (deg)	±70	
Other requirements		
Ambient temperature (°C)	MIN. -20; MAKS +40	

## 2. Terms and units

Table 1. Unit conversion table


SI / METRIC SYSTEM	US UNITS
1 mm	0.03937 in
1 m	3.281 ft
1 km	0.6214 mi
1 km/h	0.6214 mph
1 kg	2.205 lb
1 t	2205 lbs
1 N	0.2248 lbf
1 Nm	0.7376 lbf*ft
1 bar	14.5 psi
1 liter	0.264 gal


Table 2. Definitions table


Cargo deck	The area within the CTU boundaries onto which packages may be placed and secured.
Cargo transport unit (CTU)	A freight container, swap body, vehicle, railway wagon or any other similar unit in particular when used in intermodal transport.
Clean CTU	A CTU free from: <ul style="list-style-type: none"> <li>Any previous cargo residues;</li> <li>Any securing materials used from previous consignments;</li> <li>Any marks, placards or signs associated with previous consignments;</li> <li>Any detritus (waste) that may have accumulated in the CTU;</li> <li>Visible pests and other living or dead organisms, including any part, gametes, seeds, eggs or propagules of such species that may survive and subsequently reproduce; soil; organic matter;</li> <li>All other items covered by contamination, infestation and invasive alien species that can be discovered upon visible inspection.</li> </ul>
COG	Center of gravity
Contamination	Visible forms of animals, insects or other invertebrates (alive or dead, in any lifecycle stage, including egg casings or rafts), or any organic material of animal origin (including blood, bones, hair, flesh, secretions, excretions); viable or non-viable plants or plant products (including fruit, seeds, leaves, twigs, roots, bark); or other organic material, including fungi; or soil, or water; where such products are not the manifested cargo within the CTU.
Overloaded	Load (kN) placed on the trailer is greater than the maximum capacity.
User	Whoever uses the Roll Trailer or has it operated by suitable trained personal is considered to be the user (employer/company)
Trained personnel	Trained personnel are persons who have been instructed and trained in the duties with which they are entrusted and risks which may arise from incorrect behaviour, have been advised on the necessary protective devices, precautions, applicable regulations, accident prevention regulations and prevailing conditions and have proven their ability.
Qualified person (specialist)	A qualified person is one with the necessary qualification, based on theoretical and practical knowledge of trailers, for the required activities as listed in the manual. Person with the authority to undertake certain maintenance work on our products include service engineers of manufacturer and trained fitters with the corresponding certification.

SWL	<b>Safe Working Load (SWL)</b> is the maximum safe force that a piece of lifting equipment, lifting device or accessory can exert to lift, suspend, or lower, a given mass without fear of breaking.
TARE	<b>Tare</b> is unladen weight of a device.

## Remarks

DANGER		
	<u>Highest danger level</u>	<u>Immediate danger of death or severe injury</u>
	<ul style="list-style-type: none"> <li>The action is forbidden</li> </ul>	


WARNING		
	<u>High danger level</u>	<u>Possible danger of death or severe injury</u>
	<ul style="list-style-type: none"> <li>Measures to be taken for preventing specific danger</li> </ul>	

CAUTION		
	<u>Hazardous situation</u>	<u>Danger of injury or property damage</u>
	<ul style="list-style-type: none"> <li>Measures to be taken for preventing specific danger</li> </ul>	

### 3. Safety

This section contains general safety instructions for supplied machine. This manual should be reviewed very carefully by all persons working on or with supplied machine.

#### Conditions

CAUTION	
	<u>Risk of injury</u>
	<ul style="list-style-type: none"> <li>• Read the instructions</li> </ul>

**REMEMBER: YOU are the best to prevent YOU from getting injured if you think about it before you come near the machine.**

**You should think about your own safety first. Various errors must be corrected as soon as possible.**

**Operators should think twice before they do anything with the machine not to get injured.**

**Machine should not be started until the operator is satisfied that there are no persons or unwanted things close by, in or on the machine and start-up can be done without risk to life and injury and damage to the machine.**

There are not always more persons in the immediate vicinity, so it requires that operators are extra careful in their use since help is not in the immediate vicinity.

#### **General safety instructions for maintenance personal.**

**Maintenance and service personnel must remember to disconnect the power supply** for machine, when maintenance, repair works, troubleshooting, cleaning etc are performed.







Put a sign on the machine indicating that "Do not start, work in progress" and "This energy source is locked." The service worker writes his name on the sign, so the third party can see who is working on the machine.

As long as the desired power is connected, it is incumbent for the service employees to make sure that others cannot get injured by / in / on machine.

After repairs, troubleshooting etc. is completed, the service employees ensure that all connections, guards etc. are properly installed, secured and connected before the machine is start up again.



## General safety information

CAUTION	
	<u>Risk of injury</u>
	<ul style="list-style-type: none"> <li>• Read the instructions</li> </ul>
CAUTION	
	<u>Danger when assembling of components and risk of cuts due to sharp edges.</u>
	<ul style="list-style-type: none"> <li>• Use safety gloves</li> </ul>
CAUTION	
	<u>Danger of flip over components due to insufficient stability or if it falls down during transportation</u>
	<ul style="list-style-type: none"> <li>• Never work under suspended components</li> <li>• Always use suitable, undamaged and tested cranes and load attachment gear for the respective load</li> <li>• Wear safety shoes.</li> <li>• Use safety helmet</li> </ul>
CAUTION	
	<u>Danger from sliding, rolling or falling components due to improper use of trailer</u>
	<ul style="list-style-type: none"> <li>• Ensure transport equipment has sufficient capacity</li> <li>• Wear safety shoes.</li> <li>• Use safety helmet</li> </ul>
CAUTION	
	<u>Danger of grease and oil. Risk of slipping!</u>
	<ul style="list-style-type: none"> <li>• Immediately remove grease and oil residues</li> <li>• It is recommended for operators to use non-slip footwear, safety vest and helmet when working near machine</li> </ul>
CAUTION	
	<u>Danger due to high working areas. Risk of falling down!</u>
	<ul style="list-style-type: none"> <li>• Work only in safe areas.</li> <li>• Use safety helmet</li> <li>• Use safety harnesses</li> <li>• Entrance on gooseneck is forbidden</li> </ul>

## CAUTION



**Movement/rotation of different components can result in the danger of injury.**

- Never reach between moving parts with your hands or other body parts
- Use safety gloves and helmet

## NOTICE



- Before starting, ensure that all devices are in place and functional.
- Take into account the capacity limits (especially lifting capacity).
- Use appropriate safety equipment when working under special temperature conditions.
- You should not use medicines that affect reaction and perception, when working with it.
- It is the user and NOT Novatech ApS, which is responsible for all personal and property damages, arising due to non-proper use.
- Safe operation is not guaranteed if the machine is not used according to specifications.

Use protective equipment appropriate for the work when you operate or maintain machine.

The following safety equipment must be available:



Safety Gloves



Shoes according to DIN EN ISO 2045, category S3 or in accordance with local regulations.



Safety helmet.



Safety glasses.



Hearing protection.



Safety Vest



Mask

Always obey the local laws and regulations regarding safety.

All safety equipment must be visually inspected prior to use by the user.

The user is responsible for:

- The use of the necessary personal safety equipment.
- Regular cleaning and care of equipment.




Timely replacement of damaged or defective equipment or components.

## **DANGER**




**It is forbidden to use trailer with construction defects or damages without service personnel permission, except emergency drive for repairs.**

## CAUTION

	<b><u>Noise Impacts during machine operation.</u></b>
	<ul style="list-style-type: none"> <li>• Wear ear protection</li> </ul>
	<b><u>Exhaust gases from TUGMASTER. Danger of suffocation!</u></b>
	<ul style="list-style-type: none"> <li>• See TUGMASTER manual for indoor use</li> </ul>
	<b><u>Danger at the start of the machine while people are in the danger zone.</u></b>
	<ul style="list-style-type: none"> <li>• Visual inspection before starting that no person is in the danger area</li> <li>• Use safety vest for better visual contact</li> </ul>

## NOTICE

	<ul style="list-style-type: none"> <li>• Operators should be trained in usage of machine.</li> <li>• Ensure that there are no unwanted components or the like on / in or around the machine before start-up.</li> <li>• Only use approved and tested lifting equipment and accessories which are CE marked.</li> <li>• The Tugmaster operator must have a valid certificate.</li> <li>• Avoid exceeding max gooseneck angle (<math>\pm 70^\circ</math>) to increase service life of tyres.</li> </ul>

## 4. General description

Roll Trailer is designed as steel structure with running gears (Fig. 1). It is designed to work with tugmaster for transporting general cargo.

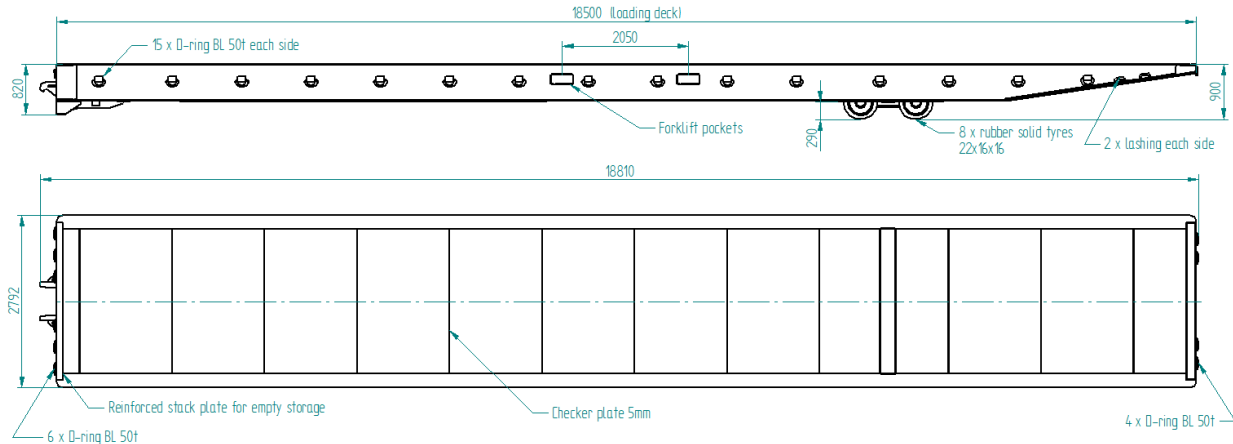


Fig. 1 Roll trailer ready to work

### Frame

The Roll Trailer is constructed as a skeletal frame steel S355J2 acc. To EN 10025 with following features:

- Longitudinal IPE main beams and between these cross members made of either IPE or U-profiles;
- Wheel beam made as box profile above running gear;
- Forklift pockets made of bended C-shape profile with reinforcement;
- Reinforced gooseneck tunnel;
- Rear crossbeam square profile;
- Special arrangement of crossbars above running gear.

### Platform

- Platform is constructed from checker plate resting on IPE cross members;
- Steel checker plate above wheels and support in front for empty stacking;

### Running Gear

- 2 rocker arms, box construction, type: straight;
- 4 axles, EN 10025 Steel S355 J2, dimension 140x140 mm;
- Axle bolt in steel C45;
- 8 steelband reinforced solid rubber tires 22x16x16;
- Bronze bushings for axle and rocker arm;
- Novatech standard bearings;
- Cover of bearing house made by pressed steel cover;

- Lubrication nipple placed in wheel and bolts for service;

#### **Additional**

- 40 pcs of D-rings 50t BL (6 at front end, 4 at rear end, 15 at each main beam);
- Lashing eyes (2 at the end of each main beam)
- All screws, nuts and washers are galvanized;
- Stacking support.

## 5. Operating rules

### General remarks

- The Roll trailer is intended for internal use only.
- The Roll trailer is not equipped in braking system. Required braking force should be generated by the tugmaster.

### Prohibited activities

- Do not step under the trailer when it is not empty.
- Do not drive with forklift on the deck.
- Do not pull/push the load on the deck.
- Do not smoke, eat or drink during packing, securing or unpacking.
- Do not concentrate heavy cargo on small areas of the floor.
- Do not load with eccentric load distribution.
- Do not use securing or protection equipment which is incompatible with the cargo.
- Do not secure the cargo with devices overstressing the structure of the trailer/cargo.
- Do not overstress securing devices.
- Do not over tighten securing devices so that the packaging or goods are damaged.
- Do not fasten web lashings by means of knots.

### Required activities

- Do use blocking or lashing or a combination of these methods to prevent the cargo from sliding and tipping in any direction.
- Do secure the cargo in a way that forces are distributed over an appropriate area of a unit.
- Do secure each single loaded item independently where necessary.
- Do use non-slip surface material to refrain packages from sliding where appropriate.
- Do use hooks or shackles to fasten lashings where applicable.
- Do check that the CTU and any cargo securing equipment are in good condition.
- Do select the securing methods best adapted to the characteristics of the cargo, the mode of transport and the properties of the CTU.
- Do load with the center of gravity correctly located in the CTU.

## 6. Working with the trailer

### 6.1. Before first use

Due to the fact that after production the roll trailer was stored and transported, which means that it was out of use for a long time. Before the first use, service activities should be performed, including:





- visual inspection whether the product has not been damaged during its transport;
- check that trailer is complete, there are no loose parts and all bolts are properly tightened (due to transport, the trailer may be delivered with disconnected elements that should be installed after delivery);
- lubrication of all greasing points (for complete description of lubrication, see section 7.2 "Greasing points").



### 6.2. Connecting the tugmaster

Lower/raise 5<sup>th</sup> wheel approximately to the coupling height of the trailer.

Drive tugmaster (equipped with gooseneck) into mid line of the trailer, adjust 5<sup>th</sup> wheel height, drive until gooseneck is locked in the tunnel of the trailer. Slowly lift the trailer to see if the connection is rigid.

Perform daily inspections (daily inspection is limited to a check for visual damage).

NOTICE	
	<ul style="list-style-type: none"> <li>• During coupling and uncoupling operation all personnel have to wear safety equipment.</li> </ul> <div>    </div>

DANGER	
	<ul style="list-style-type: none"> <li>• When coupling the Roll Trailer to the Tractor, ensure that no other persons are near. Roll Trailer do not have EMERGENCY STOP. HIGH DANGER of crushing.</li> </ul> <div>  </div>



### 6.3. Loading the trailer


Trailer is made for transport of general cargo evenly distributed over the length of the trailer. For special load cases please contact Novatech.


Other types of cargo has to be placed on the trailer and secured by suitable securing equipment like lashings so no danger can appear.

The COG of the load should be placed as close to the COG of the trailer as possibly.

#### Loading the trailer

- Before loading, make sure that Roll Trailer is parked horizontally
- The total load of the roll-trailer must not exceed its maximum load capacity;
- All cargo needs to be secured in the way that while driving no movement can occur.

CAUTION	
	<p><b><u>Trailer may not be used for anything other than specified purposes, unless Novatech ApS has given written permission.</u></b></p> <p><b><u>Consequences:</u></b></p> <ul style="list-style-type: none"> <li>• <b><u>Loss of warranty;</u></b></li> <li>• <b><u>Exclusions of liability claims.</u></b></li> </ul>

NOTICE	
	<ul style="list-style-type: none"> <li>• <b><u>The user and not Novatech ApS. is responsible for all personal injury and property damage that occurs due to non-proper use.</u></b></li> <li>• <b><u>Safe operation is not guaranteed if the machine is not used according to specifications.</u></b></li> </ul>

## Uniformly Distributed Load

- UDL as shown in the diagram below (Fig. 2) so that the centre of gravity of the load is in the appropriate areas of the diagram;
- Other loading methods may result in overloading and damaging the trailer;

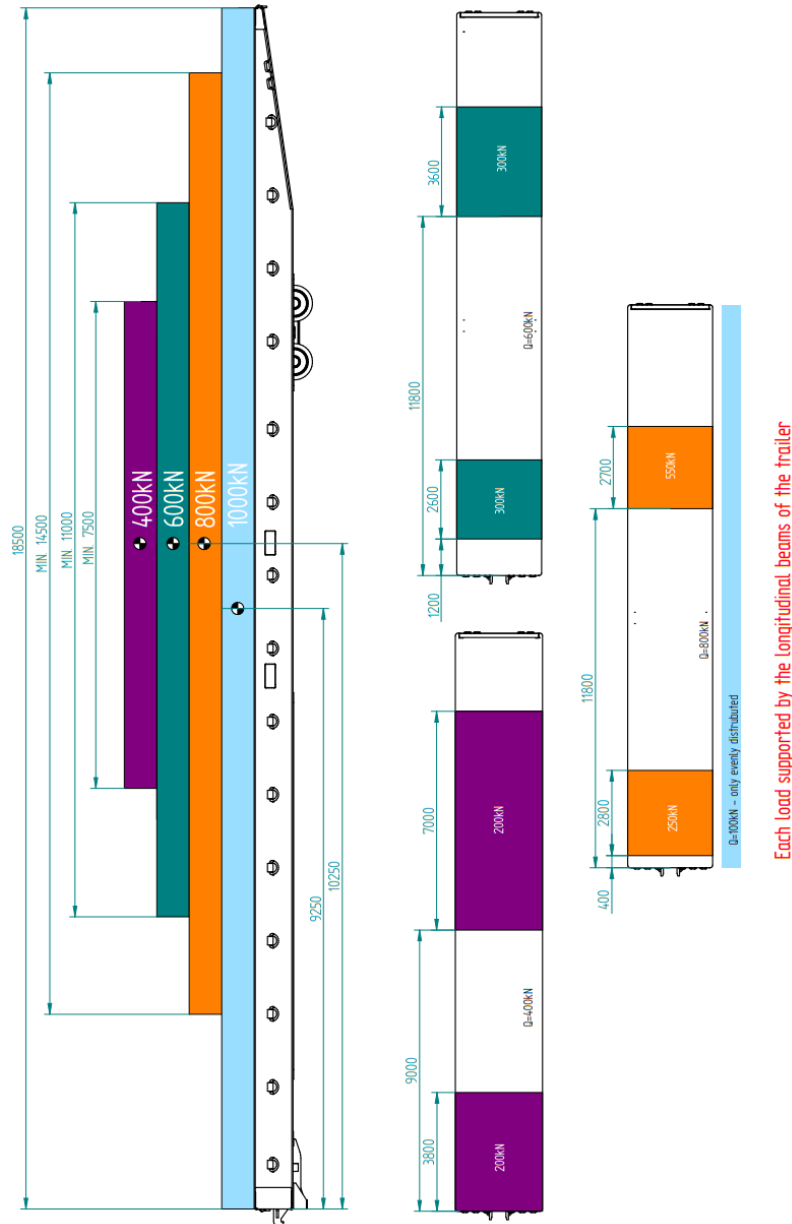


Fig. 2 Load diagram for evenly distributed load

## 6.4. Driving with the trailer

When transport driving, you can either pull or push the Roll Trailer along a pre-planned route. We recommend pulling the Roll Trailer. When backing up the Roll Trailer, you must have unimpeded rear visibility.

The driver must always carefully observe the driving route and drive at the speed required by the situation.

Drive with load only on previously checked driving route.

Never exceed the recommended driving speed. According to technical specification of solid rubber tyre 22x16x16 speed limit is **6km/h with load** and **10km/h with empty trailer**. Do not exceed **max distance limit 2000m** due to the risk of overheating tires and bearings and respect required standstill time at least **three hours between driving cycles**.

Keep COG of cargo as low as possible. Avoid exceeding max gooseneck angle ( $\pm 70^\circ$ ) to increase service life of tyres. When performing turns always observe outer turning circle of tugmaster and inner turning circle or trailers rear part.

Cross bumps and another uneven terrain drive very slowly.

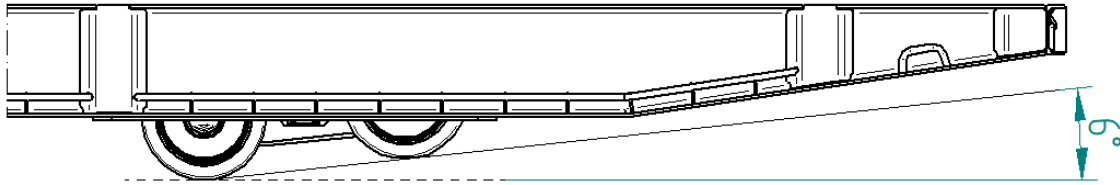
Sharp turns drive very slowly.

The issues listed below may have a detrimental effect on the manoeuvrability of the Roll Trailer and require that you lower your speed:

- load weight
- the location of the centre of gravity in the vertical direction
- the location of the centre of gravity in the horizontal direction
- aisle widths
- road inclinations
- speed bumps, railroads and other uneven spots
- underpasses
- lighting and visibility
- other traffic
- road condition
- slipperiness of road surface
- bends.

## 6.5. Driving on the ramp

Do not approach ramp sideways. Trailer is capable of going on ramps up to 6 deg.



*Fig. 3 Info graphic for ramp angle*

Keep in mind that height of the Roll Trailer body must be adjusted accordingly, using the terminal tractor's fifth wheel.

- when driving the rear end of the trailer onto the ramp, the tractor saddle should be lowered as much as possible to achieve about 30-50 mm distance between front foot and ground in order to obtain the maximum clearance at the rear;
- when the trailer suspension is on the upper edge of the ramp, raise the tractor's saddle as much as possible to obtain the maximum clearance between the ground and bottom surface of the longbeams.

## 6.6. Disconnecting the tugmaster

Adjust 5th wheel height, until gooseneck is unlocked from the tunnel of the trailer. Slowly lower the gooseneck to see if the connection has been released. Make sure that gooseneck is disconnected with trailer, then drive out the tugmaster straight forward. Perform daily inspections by checking for visual damage.

## 6.7. Trailer transport and stacking storage

### Securing against moving

The Roll Trailer must be on a level, hard surface when transport lockings are removed. Use wedges to prevent the Roll Trailer from moving.

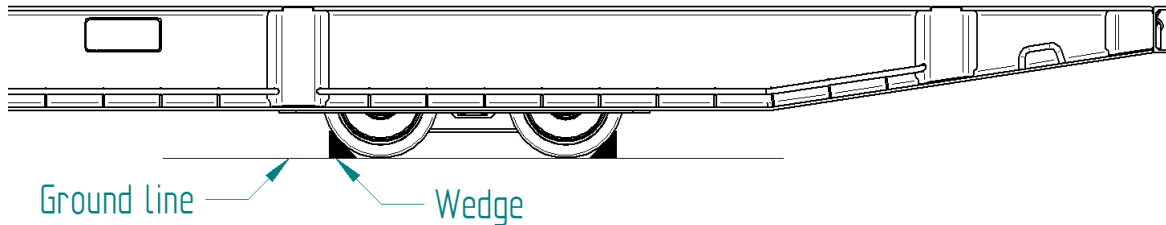


Fig. 4 Protection against moving

### Securing trailer with D-rings

The roll trailer is equipped with D-rings on its both side beams and both end beams. This element helps to secure trailer during its transport. Amount D-rings used depends from the load. Each D-ring has 50t braking load (BL) with  $\pm 45^\circ$  angle force as shown on picture below (Fig. 5). Keep in mind that exceeding  $\pm 45^\circ$  force angle affects on breaking load. Do not exceed the indicated load values and angles of force to avoid damage and accidents.

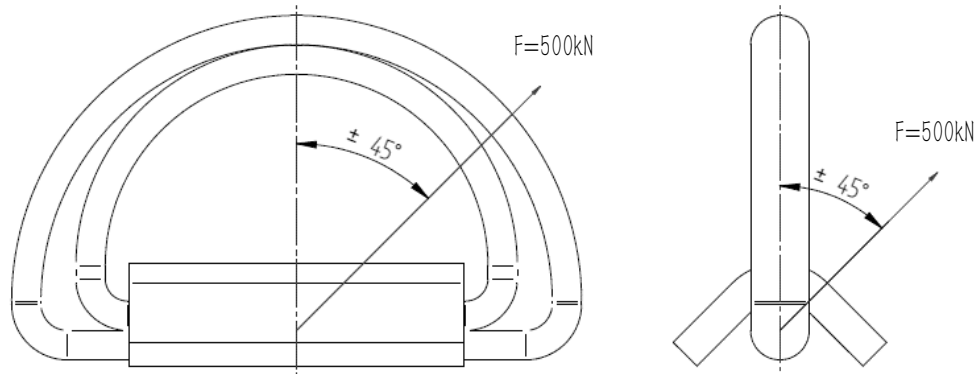


Fig. 5 D-ring operating range at 50t breaking load

## DANGER



- **Use of the D-rings in other purposes than its intended is forbidden!**
- **Do not use D-rings when there are cracks on its welds or parts.**

## Lifting by forklift pockets

The trailer has one pair of forklift pockets with openings size 360x150mm, 2580mm depth and 2050mm distance between centres of pockets. Take in account length, width and tare of trailer to make sure that forklift truck will be able to handle with it, and will provide proper stability during transport.

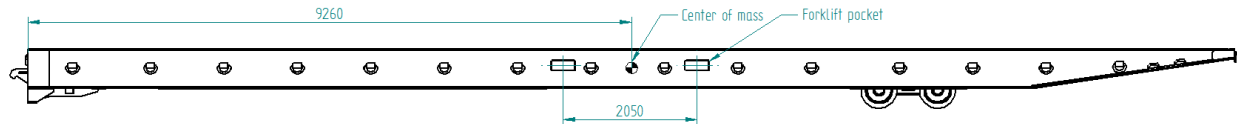


Fig. 6 Side view of roll trailer with forklift pockets positioning

## NOTICE



**During loading, unloading and transporting operations all personnel have to wear safety equipment:**



## DANGER



**Ensure that nobody is beneath or near Roll Trailer during lifting:**

## CAUTION



**Lifting by forklift pockets is allowed only for empty trailer:**

## Trailer stacking storage

The roll trailer is equipped with stacking plate at front and steel deck over running gear to allow stacking storage as shown on Fig. 7. Always make sure that stacking gear is not damaged and roll trailers are completely unloaded. To stack and unstack use only forklift truck that will be able to handle with it, and will provide proper stability during transport. Do not exceed 3 pieces of roll trailer in stack.

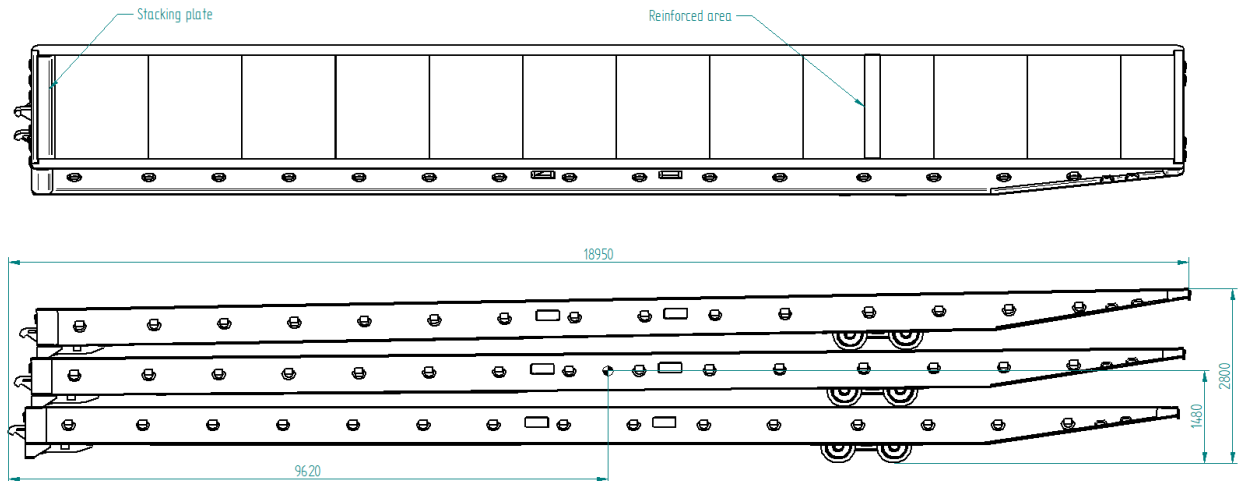


Fig. 7 Info graphic for stacking storage

## NOTICE



**During storing operations all personnel have to wear safety equipment:**



## DANGER




**Stacking is not allowed when:**

- **stacking plate or steel deck over running gear is damaged;**
- **roll trailers are not unloaded;**

**Using forklift truck to transport stacks is prohibited!**

## 7. Maintenance

WARNING		
	High danger level	<u>Possible danger of death or severe injury</u>
	<ul style="list-style-type: none"> <li>• All maintenance in only permitted to be done on an empty trailer;</li> <li>• If during operation occurs any failure - empty the trailer immediately;</li> </ul>	

### 7.1. Maintenance manual

The Roll Trailer must frequently be checked as follows:

#### Chassis:

Eventually cracks on welds or beams must be properly repaired.

#### Landing Gear:

Minor dents can be accepted, major must be repaired before use

#### Front and rear beam:

Only dents below 25mm on the upper flange downwards can be accepted. Upwards dents are not accepted.

#### Side Beams:

Bending downwards and sideways can be accepted. Dents below 25mm can be accepted.

#### Cross Members:

Dents below 25mm sideways in flange can be accepted. Dents below 10mm downwards can be accepted.

#### Forklift Pockets:

Only minor dents below 15mm can be accepted

#### Deck:

Steel Deck - broken deck should be repaired or replaced. Dents downwards over the wheel are acceptable.

#### Rocker Arm and Axles:

Any cracks on the axles should be repaired. Axle's pins and bushings should be replaced according to maintenance schedule. To be frequently checked for proper function. In case of malfunction, supplier is to be contacted for decision. Axle's bolts must be frequently



checked for damage and wear. Locking plate, cover plates should be checked for damage and correct torque on bolts.

#### Hub for wheel:

To be checked for dents. Dent up to 10mm inwards/outwards are accepted. Larger dents shall be repaired by straightening etc. or if necessary the hub to be changed.

#### Tires:

To be checked for damages. If damages exceed width of 50mm x length 100mm x depth 15mm on a tire, or if there are many small damages, the tire has to be changed.

#### Bearings:

Wheels should be spun to ensure there is no noise from the bearings. If noise occur this could indicate the bearing is damaged and this must be replaced.

## 7.2. Grease points

Following parts should be greased frequently (Fig. 8):

- a. Axle bolts
- b. Rocker arm bolts
- c. Wheel hubs

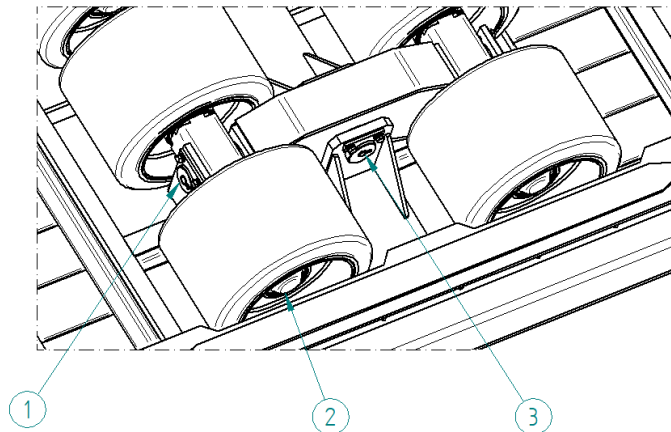


Fig. 8 Greasing points in Roll Trailer: 1) Rocker arm bolts; 2) Wheel hubs; 3) Axles bolts;

Table 3. Grease points

Grease Points	Item	Greasing interval
Grease nipples in wheels	8	6 months – top the grease off with standard pressure of grease pump (300-400 bar)
		36 months recommended – disassemble the hub, clean bearings, check the bearings technical condition (change if necessary), remove old grease from the hub, change the seal, apply new grease
Grease nipples in axle bolts	4	6 months – top the grease off with standard pressure of grease pump (300-400 bar)
Grease nipples in rocker arm bolts	2	6 months - top the grease off with standard pressure of grease pump (300-400 bar) until visible on both sides of the tube

### NOTICE



- In case of heavy duty use, please shorten the greasing intervals;
- Frequent lubrication extends the service life of bearings;

Lubricant: Standard multipurpose grease. Viscosity class NLGI 2 (e.g. Avia Lithoplex EP2).


### 7.3. Bolts

- Axle and rocker arm bolts must be frequently checked.
- Locking plate to be checked for damages.

Following bolts need frequently to be checked for right torque:

#### Suspension Bolts:

M16x35 quality 8.8 **Mounting torque (230Nm) 170,2lb/ft**

WARNING		
	<u>High danger level</u>	<u>Possible danger of damage or injury</u>
	<ul style="list-style-type: none"> <li>• When bolts has been dismantled - retighten bolts/nuts with a torque after a drive of 50 km and after 150 km;</li> </ul>	

Damaged or loose bolts or nuts must be replaced and proper tightened according to table 4.

Table 4. Bolt tightening torque

Bolt size	Tightening torque [Nm]
M6	10
M8	24
M10 class 10.9	67
M12	83
M16	200
M20	390

### 7.4. Old tire replacement

To remove tire from rim cut the tires rubber and steel cylinder. New tire is pressed on the rim with hydraulic press (force~60t). Before that rim surface must be cleaned from rust, cuts and particles left from old tires. Bends on rim cylinder are not accepted and must be replaced.

### 7.5. Bearings replacement

Wheels should be spun to ensure there is no noise from the bearings. If noise occurs this could indicate the bearing is damaged and must be replaced. Before installing new bearings make sure that bearing seat surfaces are in good condition. Also check seals in the hub. Lubricate hub bearing housing approximate 2/3 of volume.

## 7.6. Maintenance schedule

Table 5. Maintenance schedule

	Daily	Weekly	Monthly	Every 6 months	Yearly
Operators daily check	✓				
Extensive visual check for damage			✓		
Bolts in suspension check for correct tightening torque			✓		
Axles bushing replacement*				✓	
Axle bearing replacement*					✓
Tyre condition	✓				
Landing leg			✓		
*-depends on usage					

## 7.7. General safety

### Crushing hazard

During service operations, you must bear in mind that the Roll trailer may move unexpectedly. Do not go below the trailer if it is not correctly supported and all of its tires are not resting firmly on the ground.

### Waste handling

Dispose of hazardous waste such as waste oil, fluids and grease according to your company's regulations.

## 8. Spare parts

Spare parts according to table 6:

Table 6. Spare parts drawings list

Nr.	Description	Drawing/Item No	Rev.
1	General RT spare parts	11.569.00.SP	0
2	Wheel pair spare parts	11.569.03.00_WP_22x16x16.SP	0

## 9. Warranty regulations

### Conditions

Beginning with the delivery date, supplier grants the contracted warranty for the new machine, provided that it is used as intended and the maintenance and repair regulations are preserved.

User must notify supplier about the defect as soon as possible. To avoid other damages the machine should not be used, if not permitted by supplier.

The claim must include serial number, operating hours of machine and brief description of problem/defect.

Upon request the user must return defective parts to supplier, or the parts must be stored for supplier inspection, if not otherwise agreed.

Claims and complaints concerning the warranty cannot be taken into account if the inspections and maintenance work have not been performed on schedule. Regular maintenance of wear parts is not covered by warranty.

Maintenance and repair work must be documented by the operator.

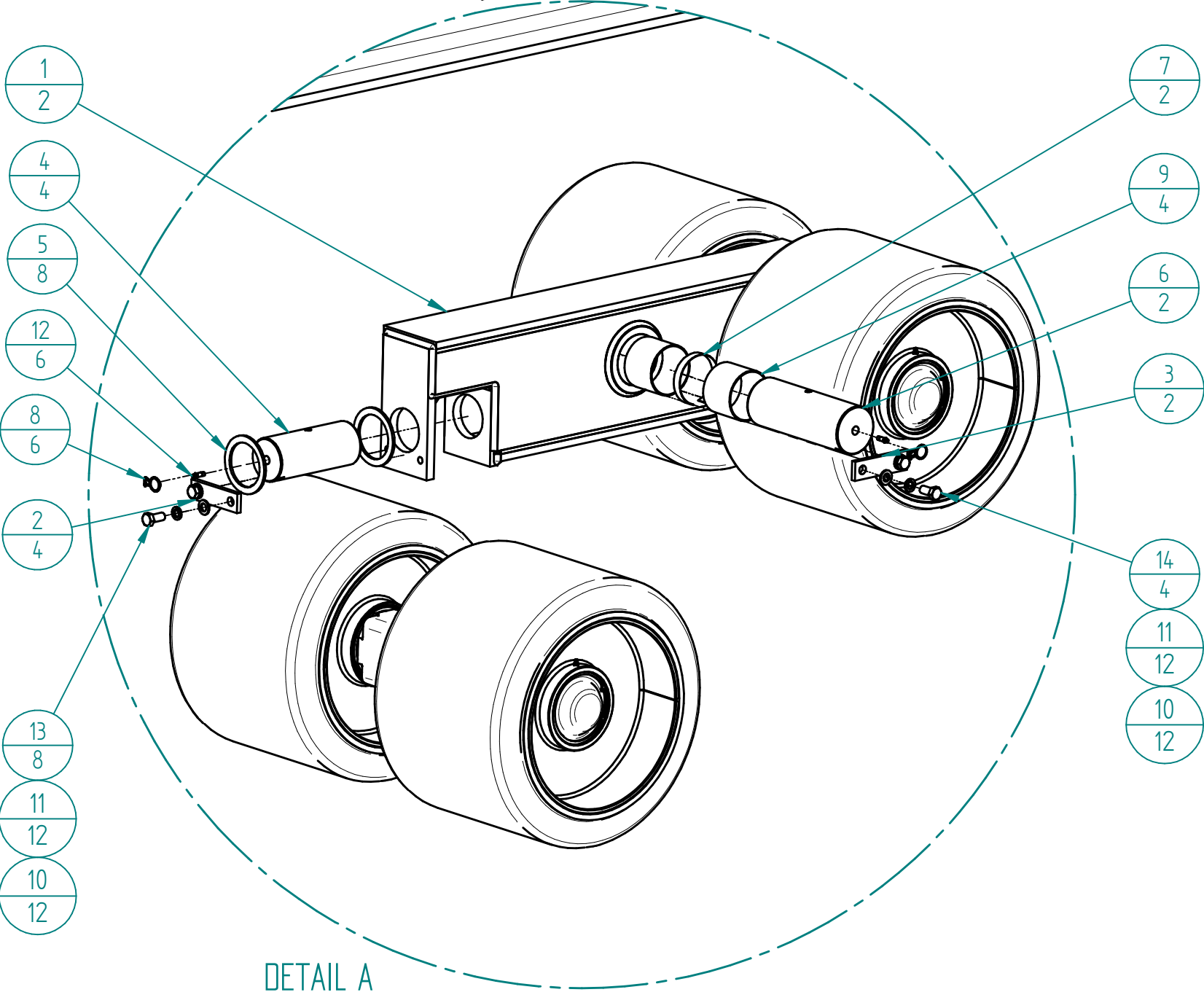
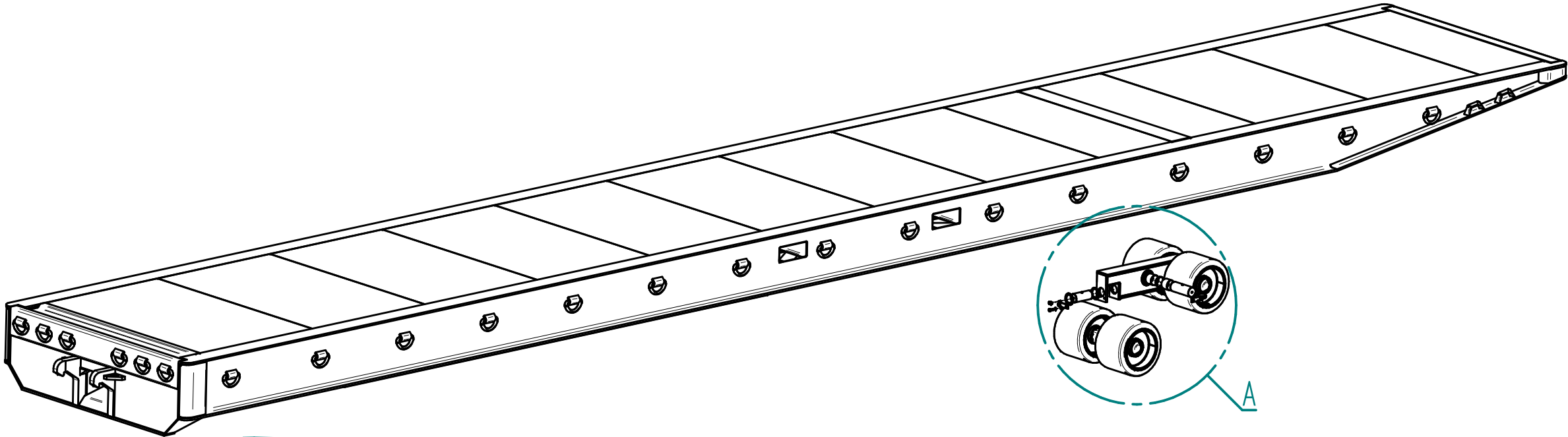
Supplier is not responsible for any production losses or other financial damages caused the defect to the buyer or other third parties.

### Limitations

The warranty becomes void:

- If the operational, maintenance and inspection regulations aren't being followed;
- If technical modifications are made to the machine without manufacturer permission;
- If the machine is overloaded or used improperly;
- If damages are caused by malfunctioning of Tugmaster;
- Lack of monitoring of machine parts that are subject to wear;
- If maintenance isn't being performed or is performed incorrectly.

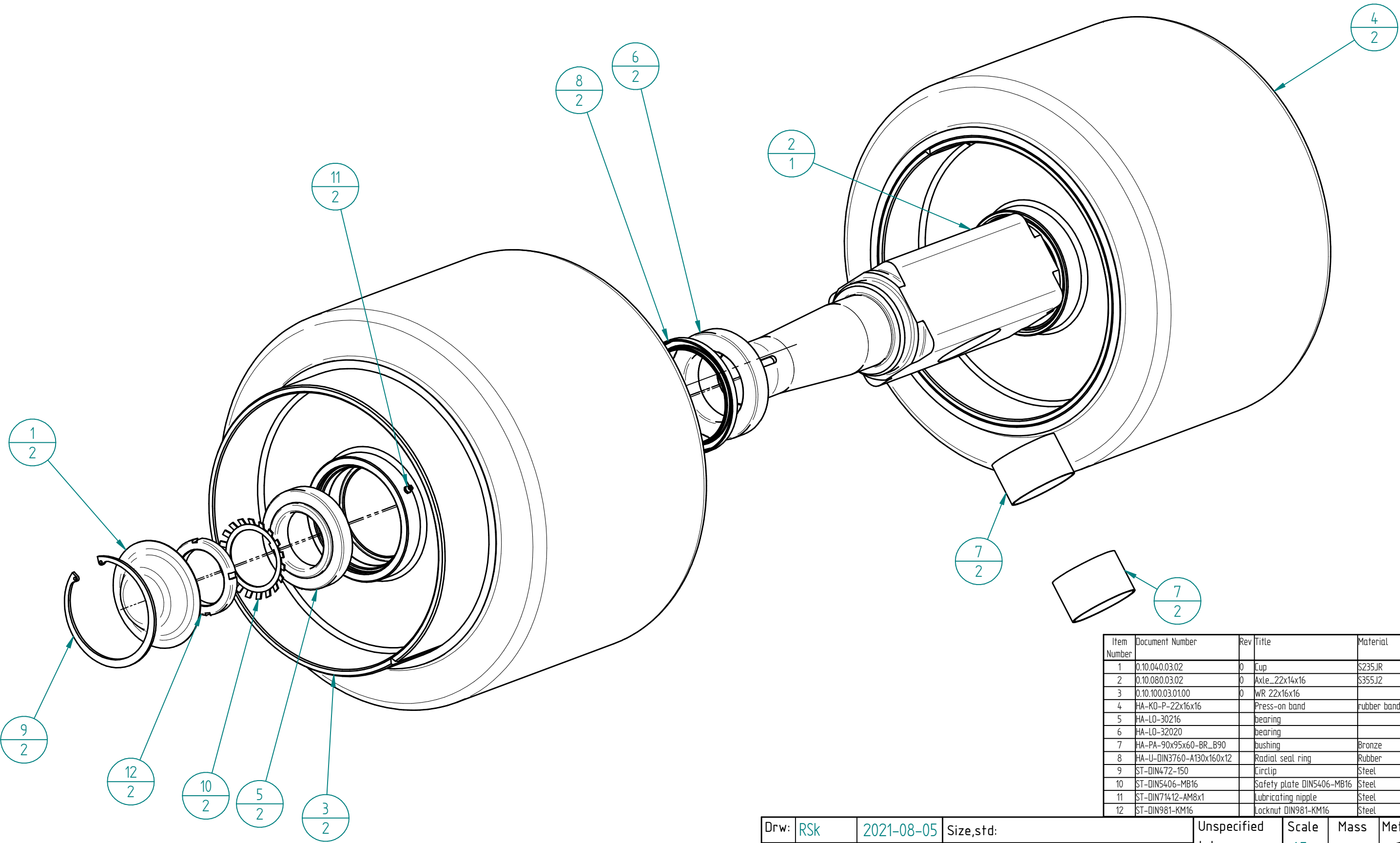
REVISION HISTORY				
REV	DESCRIPTION	Drawn by/date	Checked by/date	Approved by/date



No.	Document Number	Rev.	Title	Mass	Quantity
1	0.10.101.02.00	0	Rocker arm straight 22x16x16	102.21	2
2	10.080.08	0	Locking plate	0.40	4
3	10.080.08	0	Locking plate	0.40	2
4	10.100.02.11	0	Bolt for axle	10.59	4
5	10.100.07	0	Distance ring	0.18	8
6	11.569.10	0	Bolt for rock	16.78	2
7	11.569.11	0	Distance plate	0.04	2
8	HA-10095	0	plastic cover	0.00	6
9	HA-PA-100x105x80-BR_B90		bushing	0.57	4
10	ST-DIN125-A17		Washer	0.01	12
11	ST-DIN127-B16		Spring washer	0.01	12
12	ST-DIN71412-AM8x1-L30		Lubricating nipple	0.01	6
13	ST-DIN933-M16x35		hex screw	0.09	8
14	ST-DIN933-M16x35	0	hex screw	0.09	4

Drw:	Rsk	2021-10-27	Size, std:	Unspecified	Scale	Mass	Metric: mm
Chk:		2021-10-27	Material:	tolerances:	1:50	11734.44 kg	
App:		2021-10-27	Finish:	ISO 22768-mL	A3	Sheet: 1 of 1	
Project:			File: 11.569.00.SP	Description			
Replaces: _			Order No: _	RT 100+ 60ft			
This document is property of NOVATECH ApS. This document is not to be copied or to be made otherwise available to any unauthorized person without our specific permission.				NOVATECH ApS Skudehavnsvej 30 DK9000 Aalborg tel: +45 98165009	Drawing number	11.569.00.SP	Rev. 0

REVISION HISTORY			
REV	DESCRIPTION	Drawn by/date	checked by/date



Item Number	Document Number	Rev	Title	Material	Quantity
1	0.10.040.03.02	0	Cup	S235JR	2
2	0.10.080.03.02	0	Axle_22x14x16	S355J2	1
3	0.10.100.03.01.00	0	WR 22x16x16		2
4	HA-K0-P-22x16x16		Press-on band	rubber band	2
5	HA-L0-30216		bearing		2
6	HA-L0-32020		bearing		2
7	HA-PA-90x95x60-BR_B90		bushing	Bronze	2
8	HA-U-DIN3760-A130x160x12		Radial seal ring	Rubber	2
9	ST-DIN472-150		Circlip	Steel	2
10	ST-DIN5406-MB16		Safety plate DIN5406-MB16	Steel	2
11	ST-DIN71412-AM8x1		Lubricating nipple	Steel	2
12	ST-DIN981-KM16		Locknut DIN981-KM16	Steel	2

Drw:	RSK	2021-08-05	Size, std:	Unspecified tolerances: ISO 2768-mL EN ISO 13920-BF	Scale	Mass	Metric:mm	
Chk:		2021-08-05	Material:		1:5			
App:		2021-08-05	Finish:		A3	Sheet: 1 of 1		
Project:			File: 11.569.03.00_WP_22x16x16.SP	Description				
Replaces: _			Order No: _	Wheel pair 22x16x16				
<p>This document is property of NOVATECH ApS. This document is not to be copied or to be made otherwise available to any unauthorized person without our specific permission.</p>				NOVATECH ApS Skudehavnsvej 30 DK9000 Aalborg tel: +45 98165009		Drawing number		Rev. 0
						11.569.03.00.SP		



# Service book

---

Client: .....

Order No: .....

Product name: Roll Trailer

Type No: .....

Serial No: .....

Service book issued: .....

It is clients responsibility to follow service schedule and perform necessary regular maintenance works.  
Warranty void if not followed.

## *1. Regular maintenance*

Machine hours	Dedicated service according to service schedule	Performed on (date)	Performed by
50km			
150km			
30 days			
30 days			



Machine hours	Dedicated service according to service schedule	Performed on (date)	Performed by
30 days			
30 days			
30 days			
30 days HALF YEAR			
30 days			
30 days			
30 days			

Machine hours	Dedicated service according to service schedule	Performed on (date)	Performed by
30 days			
30 days			
30 days HALF YEAR			
30 days			
30 days			
30 days			
30 days			

Machine hours	Dedicated service according to service schedule	Performed on (date)	Performed by
30 days			
30 days HALF YEAR			
30 days			
30 days			
30 days			
30 days			
30 days			

Machine hours	Dedicated service according to service schedule	Performed on (date)	Performed by
30 days HALF YEAR			
30 days			
30 days			
30 days			
30 days			
30 days			
30 days HALF YEAR			

Machine hours	Dedicated service according to service schedule	Performed on (date)	Performed by
30 days			
30 days			
30 days			
30 days			
30 days			
30 days HALF YEAR			
30 days			

## *2. Additional repair/maintenance*

Date	Performed by	Work description	New parts used



Date	Performed by	Work description	New parts used



Date	Performed by	Work description	New parts used





# Trailer operation book

Client: .....

Order No: .....

Product name: Roll Trailer

Type No: .....

Serial No: .....

Date and time of starting work	Name and surname of the operator	Signature	Daily Maintenance. Ready to work YES/NO	Comments
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	



Date and time of starting work	Name and surname of the operator	Signature	Daily Maintenance. Ready to work	Comments
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	

Date and time of starting work	Name and surname of the operator	Signature	Daily Maintenance. Ready to work	Comments
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	



Date and time of starting work	Name and surname of the operator	Signature	Daily Maintenance. Ready to work	Comments
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	
			YES/NO	