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Stadler Winterthur AG

Guideline

Loading and transport

Stadler Winterthur AG Sulzer-Allee 11 CH-8404 Winterthur Tel. +41 (0)52 224 61 00 Fax +41 (0)52 224 61 10 stadler.winterthur@stadlerrail.com

Index	Revision	Date	Created	Checked	Released
-	First edition	14.09.2010	K. Wisniewski	R. Mayer	R. Mayer
a	5.3,5.6,5.6.1 Non-woven fabric added / STAP	21.02.2013	Ronald Herzog	R. Mayer	R. Mayer
b	1. Changed to FCA Incoterms 2010 3. Change to directions map 4.1 Variobahn deleted, image of FLIRT X added 5.2 Caption added, "*Optimo"* replaced by "*Loading bay employee"* 5.3 Transport abroad added 5.5 *"Fixing strap on damper", "Securement with chain"* added 5.6. Image with foam added	24.04.2019	Stefan Moser	S. Singh	J. Eckhardt
c	4.1 Supplement lifting pints for frames 214, 215, 216 and 402 4.2 Supplement lifting equipment / lifting swivels for frames 214, 2015, 216, 402 8 Supplement data sheets: loading with lifting swivels	04.05.2021	Simon Franz	S. Singh	C. Filla
d	(*) New FO-number for this guideline changed to FO-4.4.3.1-02 3. Amendment for new pick-up location at Fabrikstrasse 2 in 8404 Winterthur	28.09.2022	Indra Testolin	S. Franz	S. Franz

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1 Introduction

In order to guarantee fault-free, safe and damage-free processes in loading and transport and ensure the contractually agreed quality for our customers, Stadler Winterthur AG requests this guideline be noted and complied with. The subject of this guideline is the handling of bogie frames, axles and fully assembled bogies.

The following regulations are an integral part of the contract concluded between Stadler Winterthur AG or one of the companies in the Stadler Rail Group and all companies assigned for loading and transportation at Stadler Winterthur AG. These regulations apply in addition to the FCA Incoterms 2010 terms and conditions of delivery of Stadler Winterthur AG. Prior to loading or transport, Stadler Winterthur AG must be notified of any deviations from these regulations or any special regulations agreed upon.

An inspection of the guideline specifications is to be carried out in the loading bay of Stadler Winterthur AG and in the goods receipt area of customers of Stadler Winterthur AG (shipping destinations). Any deviation shall be documented and addressed to responsible companies.

Costs due to transport damage that arise due to the non-adherence of this guideline shall be invoiced to the responsible transport company by the customer.

2 Scope of responsibility of the transport company

The briefing and training of employees with regards to the specifications in this guideline are in responsibility of the transportation company. In the appendix various data sheets, instructions and self-explanatory pictures can be found and should be used by the drivers involved.

Furthermore, the operational safety of the vehicles in use needs to be ensured. Vehicles should conform to road regulations and guarantee positioning and restraint of the Stadler Winterthur AG goods to be transported (e.g. in relation to the fastening of fixing straps on the vehicle).

The provision of fully functioning auxiliaries for the positioning and restraint of the goods for transport is also part of the duties of the transport company. This includes e.g. round slings, fixing straps, anti-slip mats, edge protection equipment and tarpaulins, which must conform to safety requirements.

Eye bolts to be screwed in flush as attachment points for fixing straps, e.g. in bogie frames or fully assembled bogies are also to be provided. At least four of each are necessary in the sizes M12, M16, M20 and M30, depending on the respective good.

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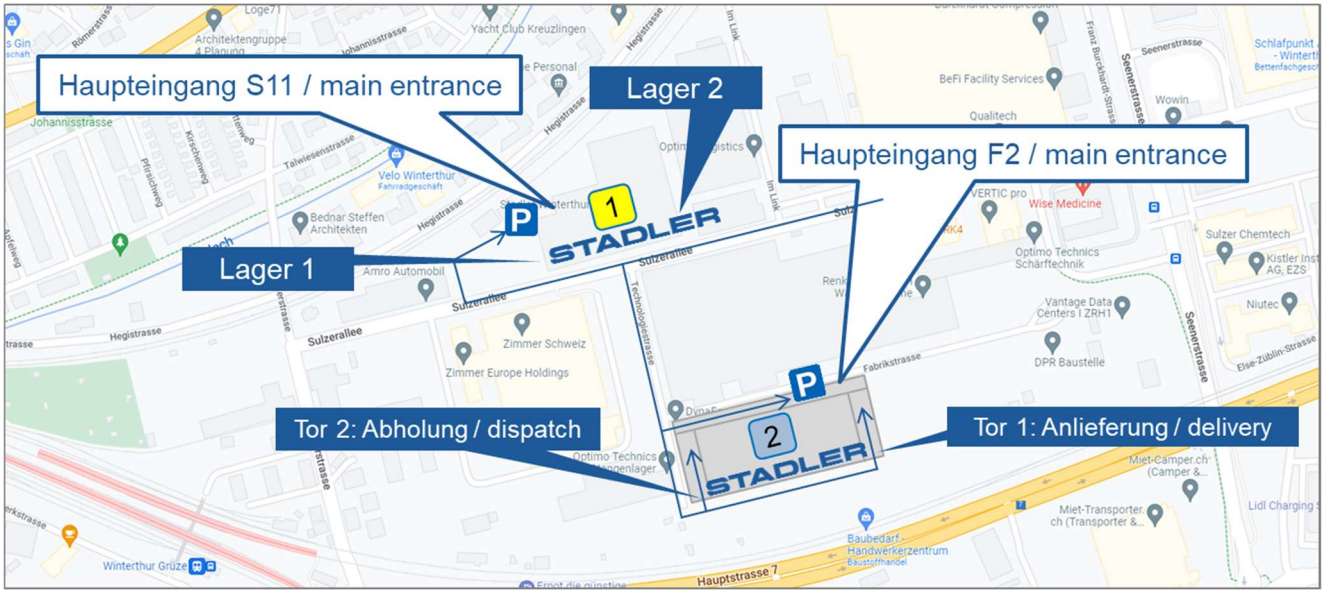
3 Delivery address and loading location at bogie competence center in Winterthur (CH)

Please consider that there are two dispatch locations (loading zones) at Stadler Winterthur AG. The addresses are as follows:

1) Stadler Winterthur AG
Sulzer-Allee 11
8404 Winterthur
Switzerland

2) Stadler Winterthur AG
Fabrikstrasse 2
8404 Winterthur
Switzerland

Location map Stadler Winterthur AG:



At the site on Sulzer-Allee 11 (location no. 1) there are two factory main gates. The loading zone is located next to gate 2 (marked as 'loading zone' on the map). Please note the local markings at the plant. The loading zone is approached via a one-way road named 'Im Link'. In general this location is been used for picking up wheels sets and boogie frames.

At the location at Fabrikstrasse 2 (location no. 2) there are also two factory gates. These are approached via the Technologiestrasse and can be driven on from the south side of the building. Complete bogies and shipping materials are generally made available for collection at the Fabrikstrasse 2 location and can be loaded in the loading area (gate 2).

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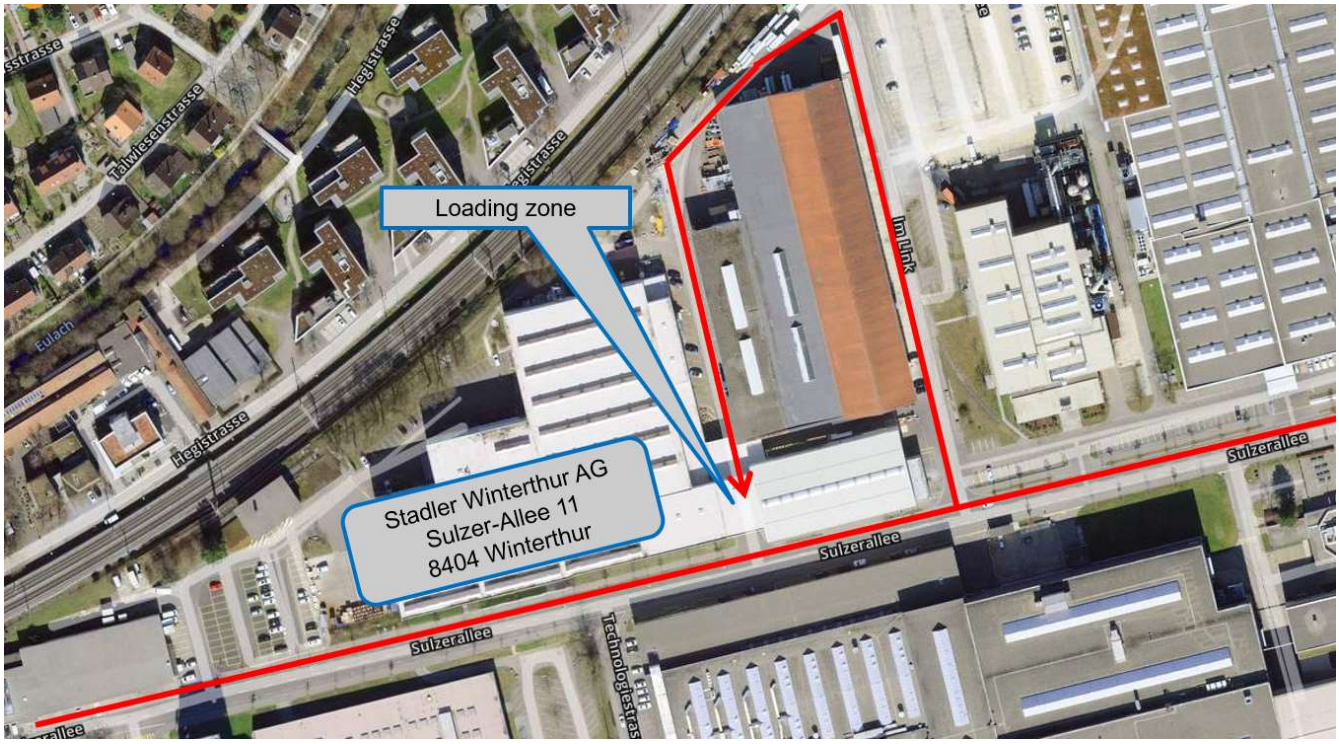
Location map Sulzer-Allee 11, 8404 Winterthur:



Location map Fabrikstrasse 2, 8404 Winterthur:

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4 Loading

4.1 Bearing points

Each bogie is designed with four bearing points for round slings, which are usually marked yellow. Rounds slings may only be fastened at these four points and nowhere else.

Examples: FLIRT France Trailer bogie (left), FLIRT NSB Jacobs bogie (centre), FLIRT X MB / TB (right)



Bogie frames also have bearing points in all four corners where eye bolts / lifting swivels can be screwed in and then round slings can be attached.

Examples: Lifting swivels for Flirt X MDG of RSBN; frame types 214, 215, 216 and 402


Bad example: Lifting a surface-treated bogie frame without using eye bolts.

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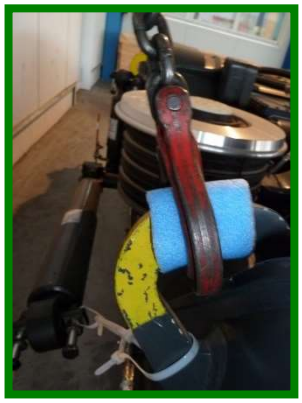
4.2 Lifting equipment - connection to freight

For loading freight on the transport vehicle, round slings have to be used. Those slings should be in faultless condition without malfunctions. Any cracks, tears, fraying etc. are not allowed under any circumstances. Likewise two round slings can't be knotted / connected.

Round slings are to be fastened by forming a loop at all four bearing points. Metallic hooks or chains must only be used if round slings cannot be used. This will be the case, for instance, with the bearing points of the Variobahn.

To avoid metal-on-metal contacts, hooks or chains may only be used in conjunction with a rubber or foam protection.

Good examples: Use of lifting equipment with round sling or protective underlay



Bad examples: Use of lifting equipment without a protective underlay

With frame types 214, 215, 216 and 402, the cast brackets at the ends of the solebar are designed with boreholes in all 4 quadrants of the frame. In this a bolt is fastened from the inside of the solebar, which has a thread on the opposite side. A lifting swivel M30 x38, e.g. from Theile GmbH, must be attached at this point to fasten the sling. It should be noted that the protective caps are screwed back into the hole as soon as the swivel anchorage is removed. This serves to protect the borehole from corrosion.

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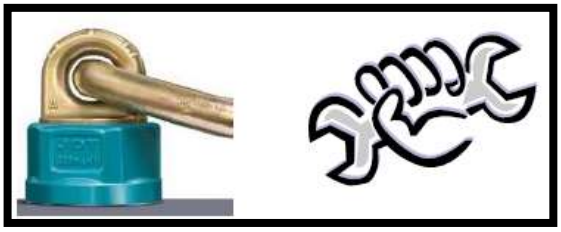

The lifting swivels have tob e fastend with hand-tight torque.

The trailer bogie of the GTW is a special case. At this bogie the round slings cannot be fastened at two of the four bearing points due to the pipes. To lift the bogie the shaft has to be used as the attachment point.

Good example: Round slings on the shaft of the trailer bogie of the GTW

The bearing points of the Variobahn are also an exception. Round slings do not fit through the retention points. The hooks of the strap suspension are likewise too large. If these are used, the paint around the bearing point will be scratched.

Bad examples: Hook of strap suspension on the bearing points of the Variobahn (left), hook of the sling chain on the bearing points of the Variobahn without protection (right)

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4.3 Lifting equipment

At the moment the heaviest bogie fully assembled is the KISS motor bogie (MDG) with a weight of approx. 13 t. For this and all other motor bogies types, the crane traverse is to be used for lifting the bogies onto the transport vehicle. The traverse is located in the loading bay of Stadler Winterthur AG and is designed to lift goods with maximum weight of 32 t (8 t per strand).

Example: crane traverse

For fully assembled trailer bogies, frames and wheel sets, the use of the strap suspension or the sling chain with four strands each is sufficient. With the strap suspension, 10 t (2.5 t per strand) can be lifted with the sling chain 5.6 t (1.4 t per strand). Both lifting equipment types can also be found in the loading bay of Stadler Winterthur AG at its site on Sulzer-Allee 11.

Example: Strap suspension without protection at the bearing point (left), sling chain (right)

Markings and labels can be found on the bogie identifying whether it is a trailer bogie (LDG, JDG) or a motor bogie (MDG). If labels and markings can't be located, one of the employees from the loading bay or one of the contacts from chapter 7 should be consulted.

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5 Fixing on the transport vehicle

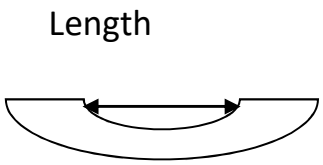
5.1 Loading area

Prior to loading, the loading area of the transport vehicle is to be cleaned. Dirt, mud, waste as well as ice and snow needs to be removed. Dirt, mud and waste are to be disposed of in the corresponding containers.

5.2 Assuring positioning

To ensure positioning for fully assembled bogies on the transport vehicle, wooden half shells are available in the loading bay of Stadler Winterthur AG at its site on Sulzer-Allee 11. These are available in suitable sizes for various bogie wheel sizes. Four uniform wooden shells are to be used on the loading floor of the transport vehicle. In doing so, make sure that the half shells are not set down on any rollers present on the loading floor of the transport vehicle.

Half-shell variant	**Length of rounding**
Half shell 1	55.5 cm
Half shell 2	43 cm
Half shell 3	54.5 cm
Half-shell 4 with wooden connection For FLIRT MB	53 cm



The loading assistants in the loading bay know which wooden half-shells are to be used for which bogie. Otherwise one of the points of contact in chapter 7 is to be consulted.

Bad example: Half shell broken during loading

Wheelsets with and without motor control gears are supplied by manufacturers on a wooden frame. The use of these is mandatory for all subsequent transport.

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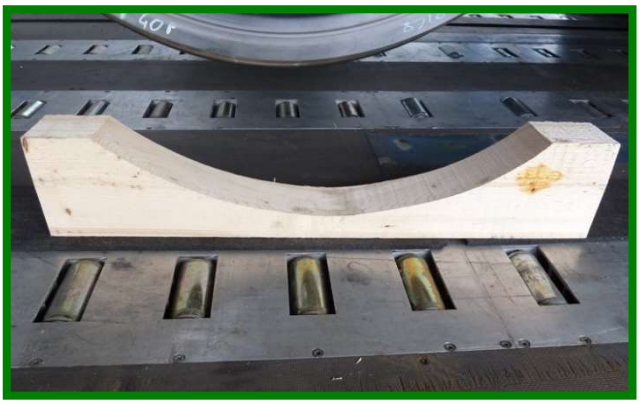
Good example: Wheelset with wooden frame from the manufacturer on the loading floor (untensioned across the running surface of the wheel)

Auxiliaries for the transport of goods like the wooden half-shells with fully assembled bogies or load carriers made of wood must be protected from slipping at the axles. Bogie frames must also be attached correctly to prevent positional displacement even when auxiliaries are not used, for instance. For this, a sufficient number of fully-functioning anti-slip mats (**IMPORTANT NOTE**: Not normal rubber mats) are to be used directly between the loading floor and the auxiliary or freight.

Good and bad example: Anti-slip mats

Good examples: Positioning of wooden half shells with anti-slip mat



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Fully assembled bogies with sanding systems (=sand injection nozzles) on the wheels constitute a special case. Special wooden half shells are to be used for these. The side which runs to a taper is then to be positioned pointing towards the sanding system.

Good example: Wooden half shells positioned on fully assembled bogies with sanding systems

Bad examples: Wooden half-shells positioned without anti-slip mats

5

If the loading floor of the transport vehicle cannot be sealed, the freight is to covered from all sides with a sufficiently large tarpaulin to protect the goods from the effects of the weather and high flying road grit in the winter months.

For transport abroad, the goods must be protected against the effects of the weather in all seasons.

It is imperative to ensure that securement of the cover is merely an additional securement to the main strap. The tarpaulin itself must be in a condition that ensures protection from the effects of the weather and road grit.

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Bad examples: defect covers resp. false installation

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5.4 Attachment of the fixing straps to the transport vehicle

The end hooks of the fixing straps must be fastened at the designated points of the transport vehicle. In the eyelets of the transport vehicle, the hooks must always point away from the freight. When attaching directly to the transport vehicle, ensure the end hooks are straight and not skewed

Good examples: End hooks of the fixing straps directly on the transport vehicle

Bad example: End hooks of fixing straps wrong way round — hook pointing to the freight — in the eyelet (left), end hook with rusted locking mechanism that can no longer be moved (right)

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5.5 Restraint using fixing straps

The bogies, frames and wheelsets are always to be tied down in order to increase the friction force via additional, downwardly acting force. The required tie-down force must be complied with as a function of the loading weight.[1]

Make sure that the straps do not become knotted when restrained but rest tidily on top. The restraint rollers must not lie fully on the freight but may only make contact with the loading floor of the transport vehicle to prevent damage to paintwork in particular. If this is not possible, edge protection is to be used with straight edges and, with rounded edges, an underlay of rubber or foam between the goods and the restraint roller.

All the required protective agents must be provided by the transport company commissioned in sufficient quantity and be fully functioning.

Example: Edge protection

Good examples: Fixing straps with rubber protection (left), with old fire hose as protection (right)

[1] For the tie-down force: E.g.ASTAG/Les Routiers Suisses/VBS/ACVS; Richtig laden, richtig sichern 2007, p. 39 f.

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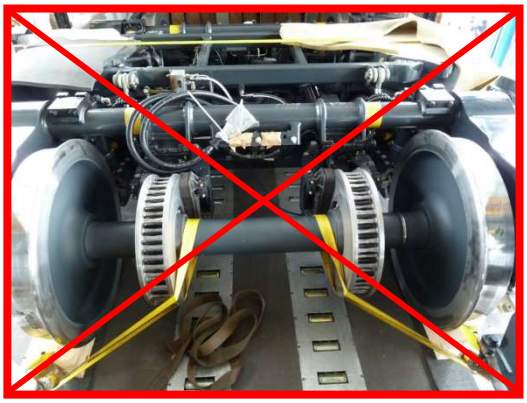
Good examples: Fixing straps with foam underlay (left), rubber protection between the wheels of two axles (right)

Bad examples: Hook of fixing strap without protective underlay at bearing point (left), fixing strap directly on the axle without protective underlay (left), fixing strap without edge protection (bottom), fixing strap on damper (bottom)



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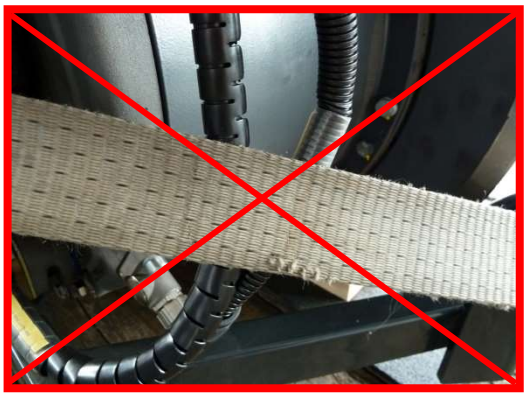
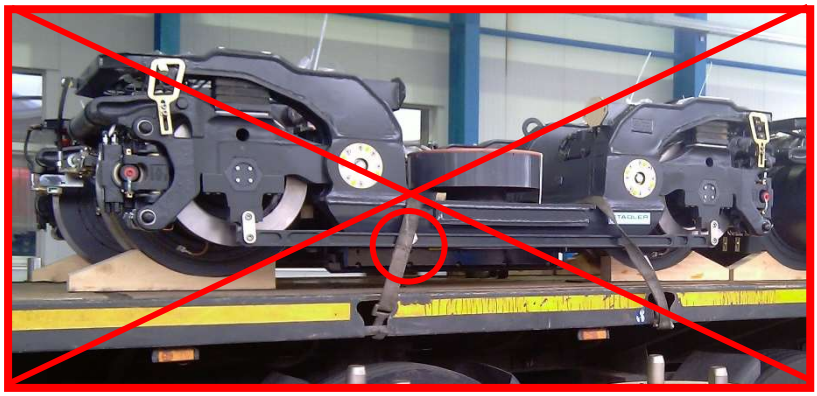
Bad examples: Fixing strap pressing on pipes (left), fixing strap pressing on flexible pipes (right, Variobahn), fixing strap pressing on rod (bottom, Variobahn)





The freight is to be secured with the fixing straps such that longitudinal and transverse motion is precluded while the vehicle is in motion. Crosswise attachment of fixing straps using protective underlays is suitable for this. Attention must be paid to freedom of movement of non-rigid parts.

For some fully assembled bogies and bogie frames, eye bolts can be used to obtain restraint points for crosswise attachment of fixing straps.

Some bogie types or their frames do not have any eyelets and so no attachment possibilities for eye bolts. To ensure crosswise attachment of fixing straps, in case of uncertainty as to how the freight is to be fixed down, one of the points of contact in chapter 7 should be consulted.

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Good examples: Attachment of eye bolts for crosswise fastening

Good example: Crosswise fastening of fully assembled bogies for protection against longitudinal and transverse forces

Good examples: Crosswise fastening of welded bogie frames for protection against longitudinal and transverse forces

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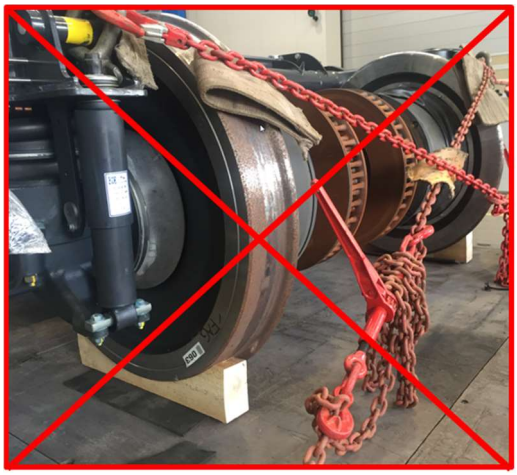
Bad examples: Transverse fastening of the fully assembled bogie only (left), likewise transverse fastening of surface-treated bogie frames only (right), attachment with chain (bottom)



Surface-treated bogie frames are fastened onto pallets with an underlay like cardboard or similar to protect the floor. The pallets are available in the loading bay of Stadler Winterthur AG at its site Sulzer-Allee 11.

Good example: Crosswise fastening of a surface-treated bogie frame on pallets using eye bolts

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Wheelsets for motor bogies are to be fastened with at least three fixing straps. These must run over the wheels and the gearbox. In case of wheelsets for trailer bogies, securing them twice via the wheels is sufficient. Straps must never only run over the wooden frames provided by the manufacturer. Due to a soft coating of the axles to prevent stone impact, securement via the axle is precluded too, as is lashing via the bearings. The bearings are likewise to be protected from impact during transport that is not between the two STAWI sites using suitable auxiliaries.

Good examples: Fastening via one of the wheels (left), overall fixing in case of one wheelset for a motor bogie (right)


Bad examples: Risk of breakage in case of fastening via the beams on the wheelset (left), no securement of wheelset in case of fastening via the beams under the wheelset (right)


Bad examples: Destruction of paint in case of fixing via the axle (left), damage to the bearings in case of fastening via axle (right)


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5.6 Use of tarpaulins

To protect against weather effects and road grit in winter, a tarpaulin is to be used on transport vehicles without a lockable loading floor. This must be fixed so that it cannot become loose and flap about while the vehicle is in motion. The fixing straps for the tarpaulin must always be attached additionally to the main fixing straps that secure the freight under the tarpaulin.

The tarpaulins must be attached so that the paintwork of the freight is not damaged during transport.

Good example: Sufficiently large foam mats

Bad example: Chafing mark point due to tarpaulin

5.7 Transport of running gears to Stadler Pankow GmbH

Since 18.02.2013 Stadler Pankow GmbH only provides closed vehicles.

If an open transport occurs in exceptional cases, non-woven fabric is to be attached between running gear and tarpaulin as a buffer:

Make: Painter's non-woven fabric (shielding non-woven fabric) MAV 180 g/m² 50 x 1 m

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6 Insurance

Transport companies that convey semi-finished or finished products of Stadler Winterthur AG must conclude an insurance policy with an insured sum of CHF 500 000 against possible damage to the goods transported. In addition liability insurance against third-party damages is mandatory. This applies also for any sub-suppliers that are commissioned by one of the transport companies.

7 Contact

For any questions on loading or transport, please consult the production or assembly supervisor.

For questions on shipping documents, customs invoices and deadlines, the head of logistics and the dispatch department is available. Contact e-mail: STAWI-Versand@stadlerrail.com

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8 Appendix: Data sheets for drivers

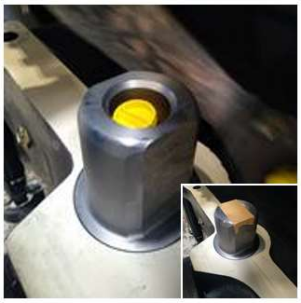
Tragpunkte zur Verladung auf das Transportfahrzeug

Tragpunkte sind bei end-montierten Drehgestellen gelb markiert.

Verladung immer mittels Rundschlin-gen. Ist dies nicht möglich, Kantenschutz einsetzen.

Procedure for bogie loading with lifting swivels M30 x 38

1. Remove protective cap (yellow)



2. Store protective caps in the vent of the cones and seal it with a tape

3. Install lifting swivels M30 x 38 (hand-tight torque)

4. Reinstall protective caps after removing of lifting swivels >> corrosion protection

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Verladung auf das Transportfahrzeug

Verbindung von Rundschlinge zu Traversenschäkel.

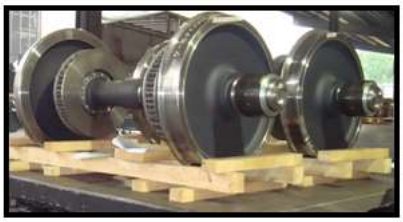
Die Traverse hebt mit vier Strängen maximal 32 t (8 t je Strang).

Mit dem Gurtgehänge können 10 t (2,5 t je Strang) gehoben werden.

Die Anschlagkette hebt 5,6 t (1,4 t je Strang).

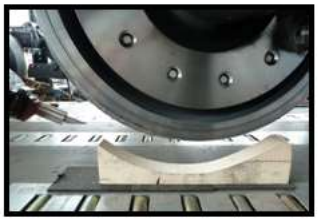
Loading bay employees at Stadler Winterthur AG can answer any questions on permissible weights of freight.

Positionssicherung auf dem Transportfahrzeug



Holzhalbschalen für endmontierte Drehgestelle. Paletten oder Holzblöcke für Rahmen. Holzgestelle für Radsätze.

+



<u>Immer</u> Antirutschmatten zur Positionssicherung verwenden.

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Mittel zur Niederzurrung auf dem Transportfahrzeug



Funktions-fähige Zurr-gurte mit Kantenschutz-mitteln (z. B. Gummis, Schaumstoff) sind zu verwenden.


Mögliche Scheuer-punkte sind ebenfalls zu schützen.

Niederzurrung auf dem Transportfahrzeug: fertige Drehgestelle


<u>Möglichst immer</u> bün-dige Anbring-ung von Ring-schrauben zur kreuzweisen Verzurrung mittels Zurrgurten.

+

<u>Immer</u> kreuzweise Verzurrung zur Sicherung gegen Längs- und Querkräfte.

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Niederzurrung auf dem Transportfahrzeug: Rahmen und Radsätze

Immer kreuzweise Verzurrung von Rahmen.

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Immer Verzurrung von Radsätzen über die Räder und die Getriebeeinheit.

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