



GATX Rail Europe

# Operating Instructions

**GATX Type**

**5250**

**5270**

**GATX Rail Germany GmbH**

Valentinskamp 70

20355 Hamburg

Germany

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Issue 1, V 2.1

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The technical information and notes contained in these operating in-  
structions correspond to the current status of the tank vehicle.

Date	Version	Remarks
2013-03-22	1.0	First edition
2014-10-24	2.0	Correction
2014-10-31	2.1	Correction

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## 1 Introduction

### 1.1 Owner and ECM: GATX Rail Europe

GATX Rail Europe (GRE) was founded in 2006 and encompasses GATX Rail Austria, GATX Rail Germany, GATX Rail France and GATX Rail Poland. We are part of the American GATX Corporation, one of the world's largest owners of private freight cars, which was founded in 1898. Since this time, GRE's core business has been the rental of tank wagons to industrial users, freight forwarders and railway undertaking.

GRE has a diversified and high-performance fleet of over 20,000 wagons, one of the largest fleets of privately owned wagons in Europe. This fleet is constantly modernised through new constructions and conversions. The wagons are co-ordinated to the needs and requirements of shippers, meet the standardisation regulations and comply with national and international legislation.

Our long-term success is the result of the committed and efficient deployment of our employees and material. GRE employees offer a wealth of experience and extensive specialist knowledge of the private freight wagon business. At the same time, they are highly motivated and are thus a crucial factor of our success. GRE's organisational structure guarantees fast and short decision paths plus flexible solutions.

The GATX fleet includes chemical tank cars with a capacity of 20 to 95 m<sup>3</sup> for transporting chemical products. They are equipped with various types of loading and unloading facilities. This diversified wagon group's tanks are manufactured from stainless steel, aluminium and carbon steel. The interior of the tanks can be optionally equipped with various types of coating.

The tanks meet all legal and standardisation requirements for transporting HAZMAT (hazardous materials) and running on all standard gauge European railway lines. The tanks are manufactured according to the most stringent standards of quality and safety.

GRE is certified according to ISO 9001 and ECM.

## 1.2 About these operating instructions

These instructions are aimed at fillers and unloaders, and describe how to operate the tanks safely and efficiently. Adherence to all safety instructions and handling instructions is the prerequisite of safe and proper work.

The instructions are part of the scope of delivery. The trained personnel must have carefully read through and understood these instructions prior to the start of all work.

The local accident prevention regulations and general safety regulations applicable to the area in which the wagon is operated must also be adhered to.



## 1.3 Representation methods

These operating instructions contain different representation methods, the meaning of which is explained in the following.

### 1.3.1 Visualisation of safety information

Safety information is identified through a symbol and a signal word. A distinction is made between four levels of danger.

All safety information is structured according to the same four-stage pattern.

#### **DANGER**

---

##### **Source of the danger**

Consequences of non-observance.

– Measures for averting the danger.

---

The safety information DANGER designates an immediate danger.

If it is not avoided, fatal or severe injuries will result.

#### **WARNING**

---

##### **Source of the danger**

Consequences of non-observance.

– Measures for averting the danger.

---

The safety information WARNING designates a possibly hazardous situation.

If it is not avoided, fatal or severe injuries may result.

#### **CAUTION**

---

##### **Source of the danger**

Consequences of non-observance.

– Measures for averting the danger.

---

The safety information CAUTION designates a possibly hazardous situation.

If it is not avoided, slight or minor injuries may result.

**NOTICE****Source of the danger**

Consequences of non-observance.

– Measures for averting the danger.

The safety information ATTENTION designates a possibly harmful situation.

If it is not avoided, material damage to the wagon, the product or the environment may occur.

**1.3.2 Visualisation of separate information**

In these operating instructions, separate information is identified with the following symbol.

** Information**

Usage tips and important additional information.

**1.3.3 Visualisation of action instructions and lists**

Action instructions require you to do something.

"**Prerequisites**" list conditions that have to be met before you start an action.

Action instructions in which the sequence has to be observed are numbered:

1. Action 1
2. Action 2
3. Action 3

Action instructions with an arbitrary sequence are identified with in-dents:

- Action
- Action
- Action

Lists are identified with bullet points:

- Part 1
- Part 2
- Part 3

## 1.4 Definitions

### 1.4.1 Abbreviations

#### **GCU**

The General Contract of Use for Freight Cars (GCU) is a multilateral railway law contract and regulates the use of freight cars on the member railway network. It came into force on July 1st 2006 as the successor of the RIV.

#### **ECM**

Entity in Charge of Maintenance as per the current EU directive.

#### **EN standards**

The European standards (EN) are technical regulations ratified by the EU.

#### **RID**

The "Regulations concerning the International railway transportation of Dangerous Goods" regulate the transportation of HAZMAT (hazardous materials) by rail.

The current version of the RID is available at: [www.otif.org/en/publications/rid-2013.html](http://www.otif.org/en/publications/rid-2013.html).

#### **WAG TSI**

The Technical Specifications for Interoperability (TSI) are technical specifications with legislative character defined by the European Commission for interoperable railway traffic throughout Europe.

#### **UN number**

The UN number is a ID number defined as per RID to clearly identify HAZMAT (hazardous materials).



## 2 Safety

### 2.1 Proper use

This tank wagon complies with the stipulations of the WAG TSI, valid UIC leaflets, the stipulations of the treaty on the exchange and use of freight cars in international traffic GCU plus the applicable EN standards.

The vehicle is unreservedly intended for operation on all standard gauge European railway lines.

This freight car is a GATX type 5250 or 5270 chemical tank car. The tank is approved for tank code L4BH. The transport of products as per tank code L4BH is only permissible in the event of compatibility with the materials of the tank and the fittings including the seals.

At most, the chemical tank car may be filled with the maximum permissible weights specified in the load table and to the maximum permissible filling degree arising from the RID.

Refer to the separately provided documents for the technical data and specific equipment of the wagons.

Proper use includes the observance of these and all other operating instructions provided as well as adherence to all specified inspection and maintenance intervals.

All other uses of the chemical tank car are improper.

### 2.2 Cleaning the wagon

Cleaning inside of the tank and the fittings must only be undertaken by an authorised cleaning company.

### 2.3 Obligations according to RID

All of the safety obligations listed under point 1.4 of the "Regulations concerning the International Carriage of Dangerous Goods by Rail" (RID) must be adhered to by the parties concerned.

#### **i**Information

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The filler and unloader must ensure the correct function of the locks and the leaktightness of all locking facilities before and after filling and discharging.

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## 2.4 Basic safety information

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**⚠ WARNING**

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**Risk of fire and explosion due to static charging**

The tank may become electrostatically charged during filling, discharging and cleaning; this may trigger explosions or fires.

- During filling, discharging and cleaning, establish a highly conductive connection between the tank's earthing plate and the station (potential equalisation).
- 

---

**⚠ WARNING**

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**Danger of fatality on climbing onto the tank**

Fatal or severe injuries due to hazardous vapours and the tank atmosphere (e.g. nitrogen or other suffocating gases/atmospheres) are possible on entering the tank.

- Adhere to the operating safety regulations.
  - Wear personal safety equipment corresponding to the product-specific safety regulations.
  - Before entering: test the atmosphere in the tank.
  - Only enter the tank if a second person remains in contact with you outside of the tank.
  - In the event of respiratory problems, exit the tank as quickly as possible.
- 

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**⚠ WARNING**

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**Risk of injury when filling or discharging pressurised tanks**

The escape of pressurised product can cause severe injuries.

- Operate the tank as per the local safety and operating instructions.
  - Connect the product hose before pressurising.
  - Always connect the hose connections carefully.
  - Secure the hose connections with the intended catches.
  - Do not release hose connections during filling or discharging.
-

## 2.5 Product-specific safety information

### **⚠ WARNING**

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#### **Risk of injury due to product**

Product can cause severe injuries on direct contact.

- Avoid direct contact with the product.
  - Wear personal safety equipment.
  - Observe the product-specific safety regulations.
  - Adhere to the operating safety regulations.
- 

### **NOTICE**

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#### **Material damage due to overflowing product**

Damage to the wagon and environmental pollution possible due to overflowing product.

- Pay attention to the tank filling degree when filling.
  - Properly remove any overflowed product on completion of filling or discharge.
-

## 2.6 Behaviour in an emergency

### Preventive measures

- Comply with these operating instructions and adhere to the applicable safety information.
- Observe all applicable product-specific safety regulations.
- Comply with the operating safety regulations.
- Wear personal safety equipment corresponding to the product-specific safety regulations.
- Keep first aid equipment (first aid box, blankets, etc.) and fire extinguishers plus further necessary equipment as per the product-specific safety regulations ready to hand.
- Familiarise yourself with the location and use of safety, accident reporting, first aid and rescue equipment.

### 2.6.1 Measures in the event of personal injury

#### In an emergency

Comply with all applicable local emergency regulations. Immediately implement all necessary steps/first aid measures as per the applicable regulations and laws, especially:

1. Cease filling, discharging or cleaning.
2. Rescue persons from the danger zone.
3. Implement first aid measures.
4. Alarm a physician and the fire brigade.
5. Keep access routes free for emergency vehicles.
6. Inform the person responsible at the operating location.

#### First aid measures

- On contact with product: see product-specific safety regulations. Implement all suitable measures based on the applicable regulations.
- In the event of product release and fire: see product-specific safety regulations. Implement all suitable measures based on the applicable regulations.



### 2.6.2 Measures in the event of product overflow

If the product overflows on filling or discharge, comply with all local, applicable emergency regulations. Immediately implement all necessary steps/first aid measures as per the applicable regulations and laws, especially:

1. Cease filling or discharging.
2. Inform the person responsible at the operating location.
3. Remove or neutralise overflowed product according to the product-specific safety regulations and valid law.
4. Discharge overfilled tanks to the permissible filling degree.

Irrespective of the measures described in Chapter 2.5, each operator bears full responsibility for his actions in each situation and for assessing the situation and implementing suitable measures as per the regulations and valid laws. He is therefore responsible for damage arising from failure to comply with these measures, regulations and laws.

## 2.7 Safety devices

The chemical tank car must only be used with complete and functional safety devices.

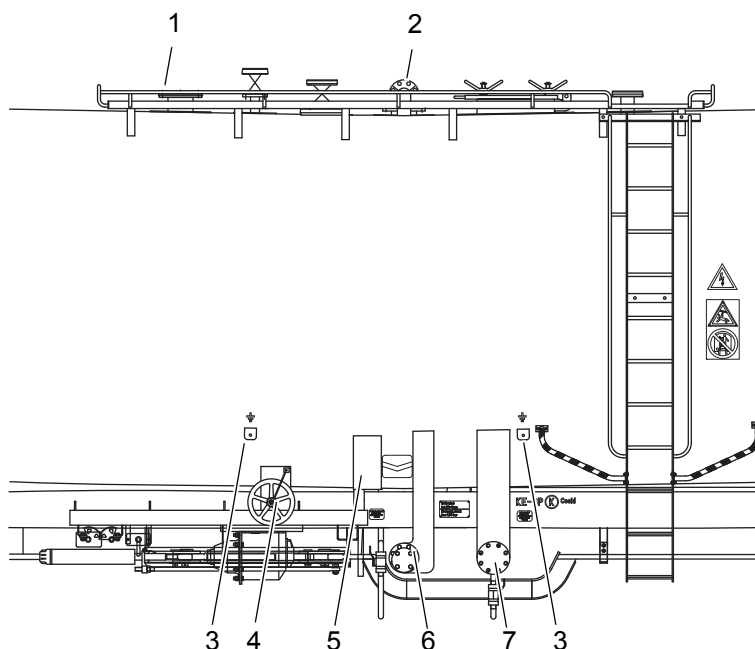


Figure 2.1: Safety devices on the chemical tank car

Position	Safety device	Safety function
1	Lashing point for PSA to prevent falling	A low railing running around the upper tank operating platform serves as a lashing point for personal safety equipment (PSA) to prevent falling.
2	Forced aeration valve	When the vapour recovery line is open and connected, the forced aeration valve prevents the formation of a vacuum in the tank.
3	Earthing plates	Earthing the tank prevents static charging during filling and discharging.
4	Hand wheel trap on the hydraulic pump hand wheel	When the hand wheel trap is closed, the hand wheel cannot be engaged. Activation of the hydraulic pump is not possible and the bottom valve cannot be opened.
5	Safety devices on the control box	The control box is equipped with two safety devices: <ul style="list-style-type: none"> <li>– When the hydraulic pump is activated, the lever of the ball valve shut-off valve is set to the horizontal position. It is automatically pushed into the vertical position on closing the flap. This closes the bottom valve.</li> <li>– The control box on the opposite side of the wagon cannot be opened when the bottom valve is open. To do this, the extended open/close indicator blocks and locks the control box flap using a safety catch.</li> </ul>
6	Vapour recovery line	Vapour recovery serves to compensate the pressure and reduce emissions. On use of inert gas, the atmosphere between the tanks is exchanged.
7	Spring cotter pin on the side valve hand wheel	Locking to prevent unintentional actuation of the side valve depending on the relevant design of the valve.

## 2.8 Warning and notice plates

### 2.8.1 Identification plate (tank plate)

The identification plate is located on the front side of the tank. Data important for operating the chemical tank car are embossed on the identification plate.

EN 12561-1

①	HERSTELLER	
②	ZULASSUNGSNUMMER	
③	HERSTELLUNGSNUMMER	
④	BAUJAHR	
⑤	PRÜFDRUCK	[MPa] 0,4
⑥	RAUMINHALT	[L]
⑦	BERECHNUNGSTEMPERATUR	[°C] -20/+165
⑧	WERKSTOFF	EN 10028-7
⑨	SCHUTZAUSKLEIDUNG	-
⑩	ZUL.BETRIEBSÜBERDRUCK	[MPa] 0,3
⑪	BERECHNUNGSÜBERDRUCK (FIKTIV)	[MPa] 1,0
⑫	ÄUSSERER BERECHNUNGSÜBERDRUCK	[MPa] 0,05
⑬	STEMPEL DES SACHVERSTÄNDIGEN	




1	2	3	4
5	6	7	8

Figure 2.1: Identification plate

1	Tank manufacturer
2	Type approval number, type approval
3	Production number of the tank
4	Year of construction
5	Test pressure [Mpa]
6	Capacity [L], volume of the tank in litres
7	Calculation temperature [°C], permissible temperature range
8	Material of the tank and applicable EN
9	Protective lining
10	Permissible operating pressure [Mpa]
11	Calculation pressure (fictitious) [Mpa]
12	Outer calculation pressure [Mpa]
13	Expert's stamp: Fields 1 - 8 for stamps with test date (month, year)

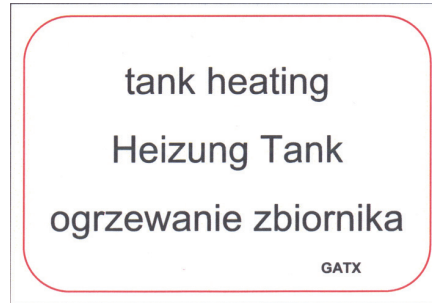
**2.8.2 Warning labels**

The warning labels are located next to the ladder on the tank.

	<p><b>Electrical voltage, lethal hazard</b></p> <p>Fatal or severe injury due to electric shock.</p> <ul style="list-style-type: none"> <li>– Do not touch live lines.</li> <li>– Maintain a sufficient safety distance.</li> </ul>
	<p><b>High voltage at catenary, lethal hazard</b></p> <p>Fatal or severe injury due to electric shock on direct contact or due to arcs.</p>
	<p><b>Climbing on the wagon is prohibited for unauthorised persons.</b></p>

### 2.8.3 Labels with inscriptions

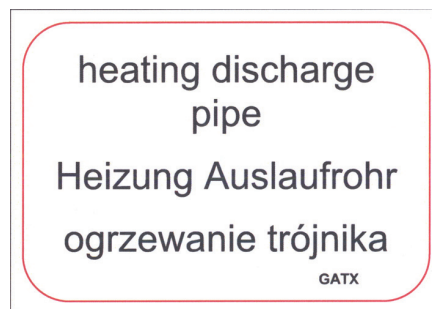
#### Tank heating connection



Label: tank heating connection

The label is located on the tank in the vicinity of the tank heating connection.

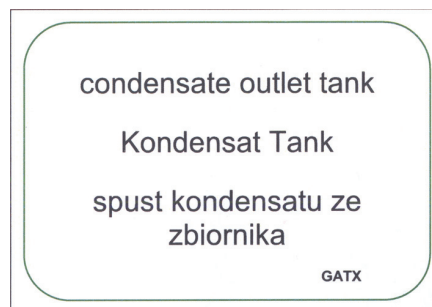
#### Product discharge pipe heating connection



Label: product discharge pipe heating connection

The label is located on the tank in the vicinity of the product discharge pipe heating connection.

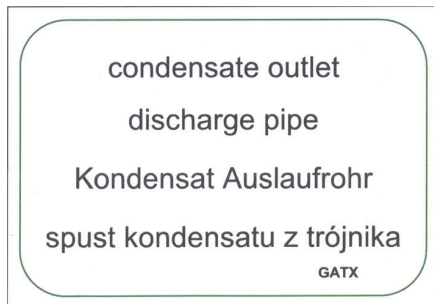
#### Tank heating steam trap



Label: tank heating steam trap

The label is located on the underframe in the vicinity of the tank heating steam trap.

**Product discharge pipe heating steam trap**



Label: product discharge pipe heating steam trap

The label is located on the underframe in the vicinity of the product discharge pipe heating steam trap.

**Open/close indicator in the control box**

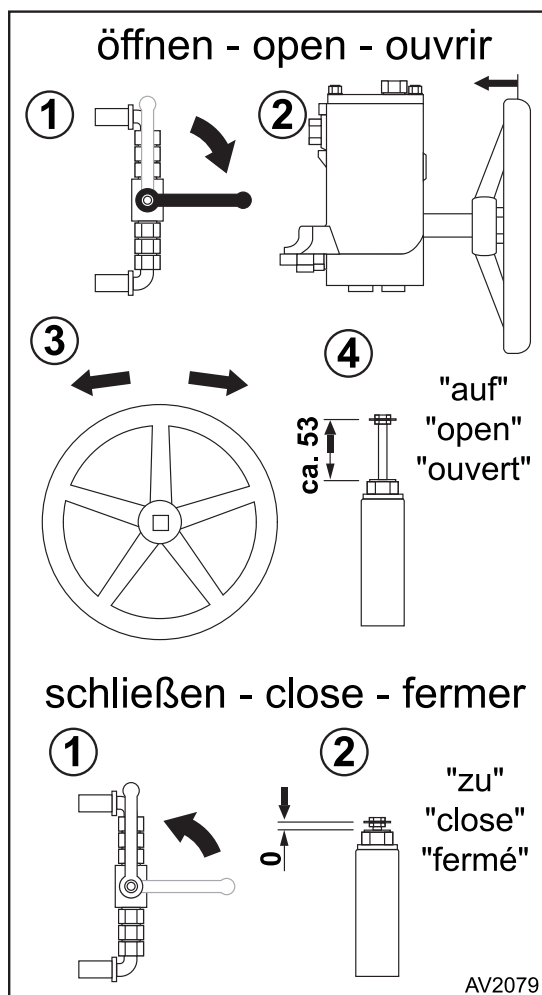


Figure 2.2: Controls in the control box, schematic

The label is located in the control box lid.

**2.8.4 Other labels**

**Earthing**

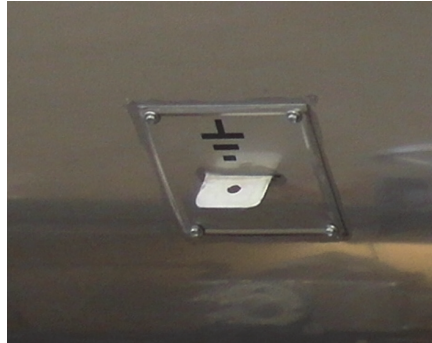


Figure 2.3: Label: earthing

The label is located on the earthing plates on the tank.

**Residual quantity drainage**



Figure 2.4: Label: residual quantity drainage

The label indicates that the residual quantity is discharged from the tank.

**Load table**

	A	B	C	D
S	40,5	48,5	58,5	66,5
120	00,0			

Figure 2.5: Address: load table for GATX type 5250

Depending on the line category and speed, freight cars may only travel with a specific maximum load weight. The maximum load weight is entered in the internationally valid load table.

The number at the point at which the line category (column) and speed (row) intersects specifies the payload in tonnes. The speed is specified as a symbol or as a number in km/h. "S" stands for 100 km/h.

**Tank code, tank test, tank pressure, heating pressure**

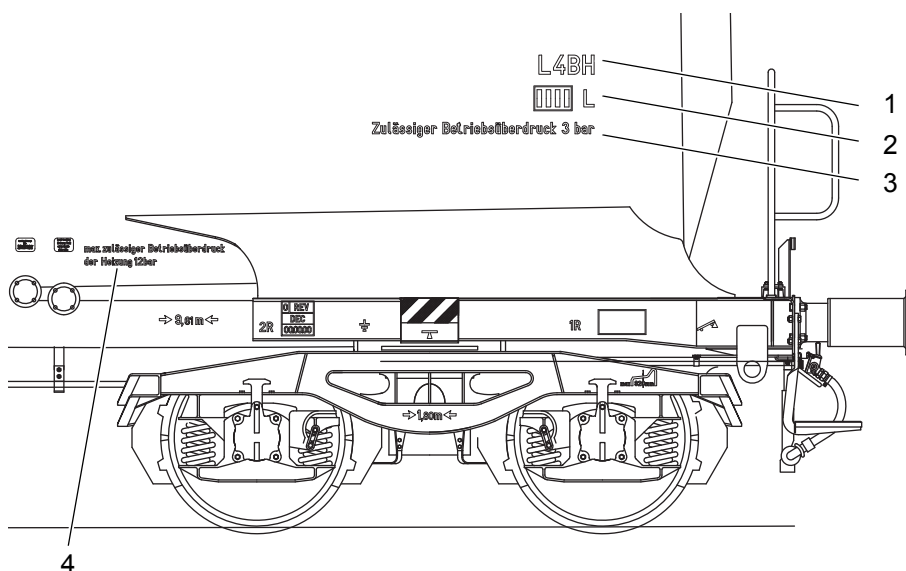


Figure 2.6: Labels: tank code, tank test, pressures for GATX type 5250

1	Tank code
2	Next tank test and type of test
3	Permissible operating pressure [bar]
4	Maximum permissible heating operating pressure [bar]

The chemical tank car tank is identified with the following tank coding as per RID: L4BH.

Tank code	Meaning
L	Tank type: tank for liquid substances
4	Minimum calculation pressure: 4 bar
B	Openings: tank with floor opening with 3 closures for filling and discharging
H	Tank sealed airtight



### 3 Design and function

#### 3.1 Design

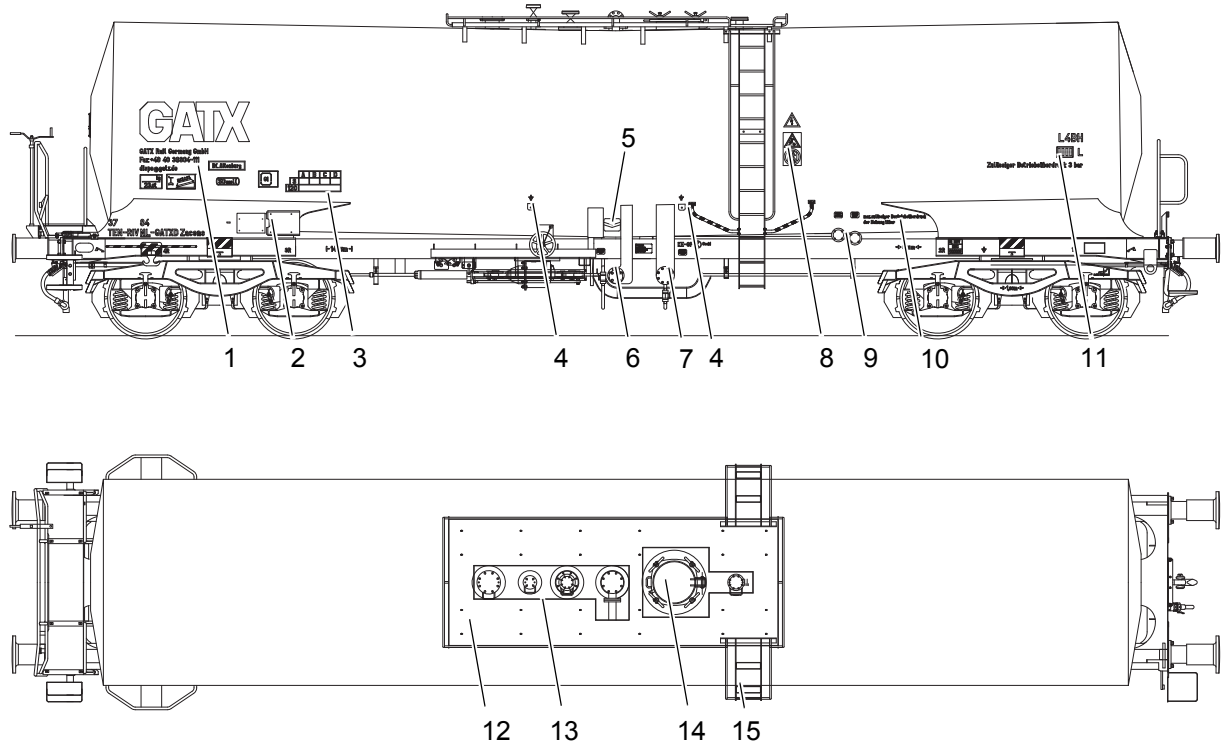


Figure 3.1: Chemical tank car: side view, top view

1	Labels for: <ul style="list-style-type: none"> <li>– Keeper address</li> <li>– Handbrake parameters</li> <li>– Tank capacity as per RID</li> <li>– Clearance gauge G1</li> <li>– Optional: home station</li> </ul>
2	Box for accompanying documents, mounting frame for UN number
3	Load table
4	Earthing plates
5	Label: residual quantity drainage
6	Vapour recovery line connection
7	Lower filling/discharge facility, product connection
8	Warning label
9	Tank heating and product discharge pipe heating connections
10	Tank label: heating operating pressure
11	Tank labels: tank code, tank test, operating pressure
12	Upper tank operating platform

13	Upper filling/discharge facilities
14	Dome cover
15	Ladder for climbing onto the tank operating platform

### 3.2 Assembly description

The following assemblies, connections and labels occur on both sides of the wagon:

- Vapour recovery line connection,
- Side valve (product connection),
- Control box for bottom valve,
- Heating steam traps,
- Product discharge pipe heating and tank heating connections,
- Ladders,
- Earthing plates,
- Tank labels,
- Labels.

#### 3.2.1 Tank

The tank wagon's tank can be filled and discharged from the top or bottom.

The tank material is stainless steel. The precise designation of the stainless steel type is listed on the identification plate (tank plate).

The tank is equipped with 6-line, external tank heating. It is insulated with mineral wool.

The tank sheathing cover plate is equipped with a corrosion-resistant zinc-aluminium coating (Galvalume®) or consists of stainless steel.

#### Thermometer

Optionally, the tank can be equipped with a thermometer. The thermometer is installed next to the ladder. Further positioning options are possible if required by the customer.

The thermometer is fitted into the tank sheathing and indicates the tank wall temperature.



Figure 3.2: Thermometer on the tank

**3.2.2 Upper filling and discharge facilities**

All upper filling and discharge facilities can be operated from the accessible tank operating platform. A ladder on each side of the wagon leads to the tank operating platform.

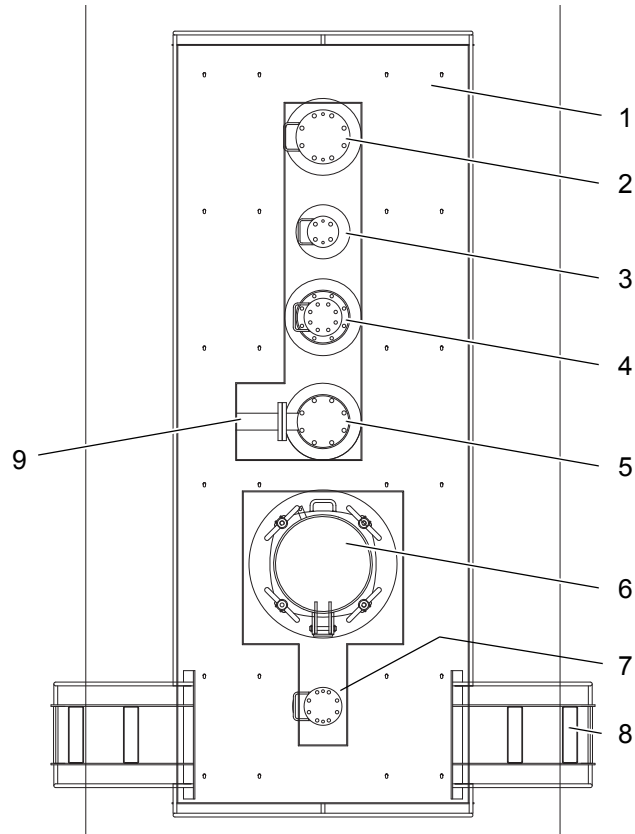


Figure 3.3: Upper filling and discharge facilities

1	Upper tank operating platform
2	Filling connection with blind flange
3	Pressure connection with ball valve and blind flange
4	Dip-pipe nozzle with ball valve and blind flange
5	Forced aeration valve
6	Dome cover with 4-toggle hinged dome cover lid
7	Special nozzle with blind flange
8	Ladder
9	Vapour recovery line, routed downwards within the insulation

**Connection standard sizes and identification on the tank:**

Connection	Size, DN	Equipment
Filling connection	150	With blind flange
Dip-pipe nozzle	150/80	With ball valve, moulded edge and blind flange, colour: red
Pressure connection	40/50	With ball valve, moulded edge and blind flange (DN 50), colour: blue
Dome cover	500	With hinged dome cover lid and four toggle screws
Special nozzle	80	Optional, with blind flange

**Pressure connection**

The pressure connection is used to connect an external pressure supply (max. 3 bar) for discharging the tank via the dip-pipe.

When filling the tank from the top, the pressure can be compensated using a line connected to the pressure connection.

**Filling connection**

The tank can be filled via the filling connection.

The filling connection is usually used at the same time as the pressure connection. Alternatively, aeration via other connections is possible.

**Dip-pipe nozzle**

At the dip-pipe nozzle, a dip-pipe leads vertically into the tank. It ends in a sump recess let into the bottom of the tank.

When discharging via the dip-pipe nozzle, pressure is supplied into the tank via the pressure connection. As a result, the product is pressed upwards through the dip-pipe.

When filling using the dip-pipe nozzle, pressure compensation takes place via the pressure connection. Alternatively, aeration via other connections is also possible.

**Forced aeration valve**

The forced aeration valve connects the tank to the vapour recovery line.

The forced aeration valve is opened and closed automatically via the common hydraulic circuit with the bottom valve.

The hydraulically actuated forced aeration valve is described in greater detail in Section "Vapour recovery line".

**Information**

The described function of the forced aeration valve is only ensured when the vapour recovery line is open or connected.

**Dome cover**

The dome cover is used as access and for maintenance and cleaning work.

The dome cover is sealed with a hinged dome cover lid and four toggle screws.

The tank can be filled via the dome cover.

**Special nozzle**

The special nozzle is used e.g. for sampling or to insert probes.

**3.2.3 Distances between the upper connections**

The following illustration shows the distances between the upper connections. The distances each refer to the centre of the connection.

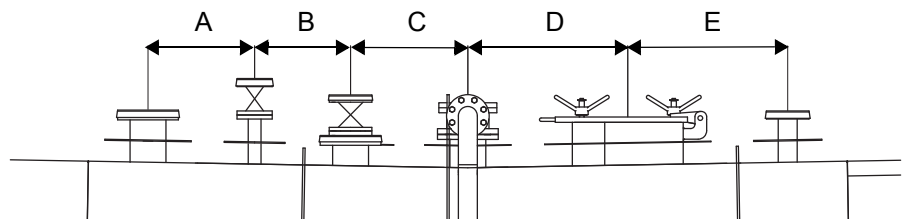


Figure 3.4: Distances between the upper connections

Connection	Designation	Distance in cm
Filling connection - pressure connection	A	500
Pressure connection - dip-pipe nozzle	B	450
Dip-pipe nozzle - forced aeration valve	C	550
Forced aeration valve - dome cover	D	750
Dome cover - special nozzle	E	750

### 3.2.4 Lower filling and discharge facilities

All lower filling and discharge facilities can be operated from the ground.

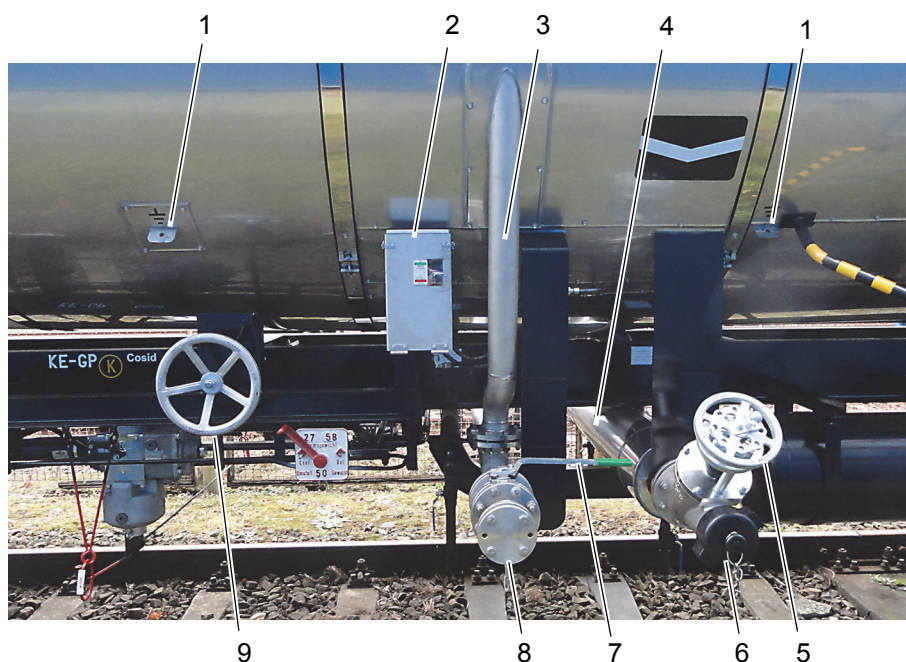


Figure 3.5: Lower filling and discharge facilities

1	Earthing plate
2	Control box, closed
3	Vapour recovery line
4	Product discharge pipe
5	Hand wheel for side valve
6	Side valve outlet connection with end cap
7	Hand lever on vapour recovery line ball valve
8	Vapour recovery line connection with blind flange
9	Hand wheel for hydraulic pump

#### Standard connection sizes:

Connections	Size, DN	Equipment
Vapour recovery line	80	
Vapour recovery line connection	80/50	With ball valve and blind flange
Product discharge pipe	100	With heating jacket
Side valve	100	With hand wheel
Outlet connection threaded connection	5 1/2" Withworth	With end cap
Bottom valve	125/100	

**Bottom valve**

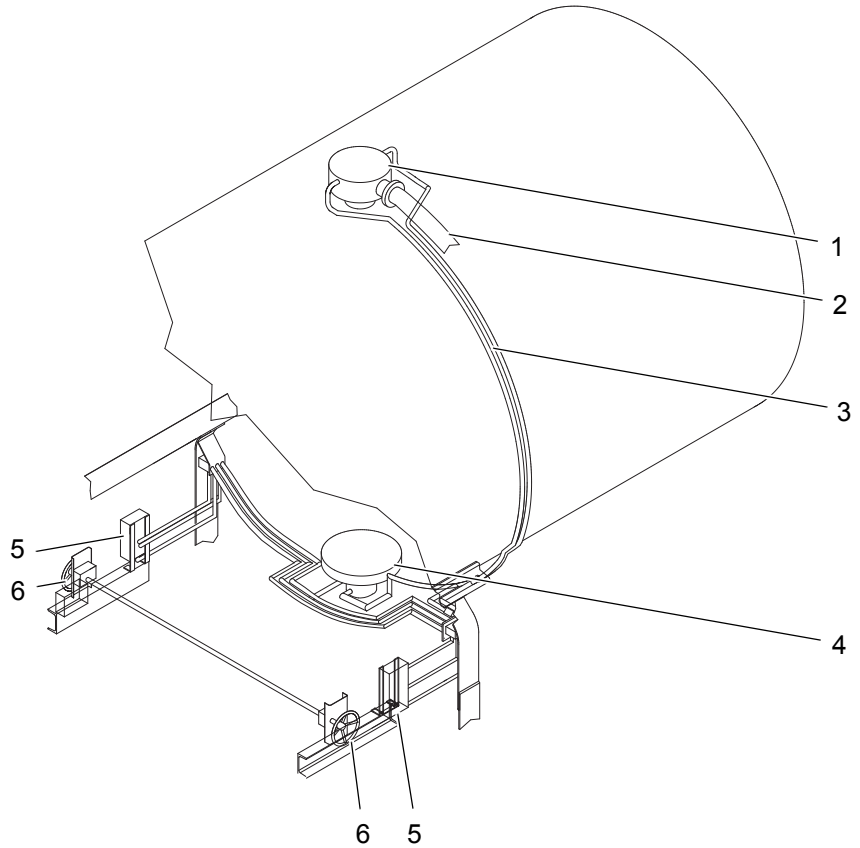


Figure 3.6: Bottom valve

1	Forced aeration valve
2	Vapour recovery line (routed downwards within the insulation)
3	Hydraulic line to the forced aeration valve (routed downwards within the insulation)
4	Bottom valve, hydraulic
5	Control box for bottom valve
6	Hand wheel for hydraulic pump

The tank is filled and discharged from below using a bottom valve located in the bottom of the tank.

The bottom valve is opened and closed hydraulically. The hydraulic pressure is built up using an eccentric pump. A hand wheel and a control box for actuating the hydraulic pump are located on both sides of the wagon. As regards operation, see Chapter 4 "Control".

## Control box

The control box contains a ball valve shut-off valve and an open/close indicator.

The open/close indicator shows how far the bottom valve is open.

The ball valve shut-off valve is actuated using a lever. Repositioning the lever to the horizontal position activates the hydraulic circuit.

For further details on operation, see Chapter 4.1 "Operation of the control box for bottom valve".

The control box on the opposite side of the wagon cannot be opened if the bottom valve has already been opened using the other control box. As regards the catches on the control box, see Chapter 2.7 "Safety devices".

## Side valve

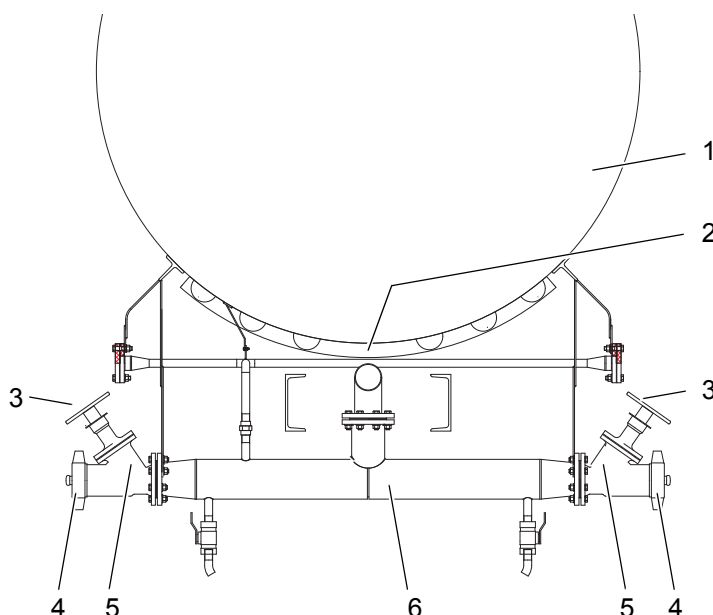


Figure 3.7: Side valve

1	Tank
2	Bottom valve
3	Hand wheel on the side valve
4	Side valve product connection with end cap
5	Side valve
6	Product discharge pipe

The bottom valve's product discharge pipe branches off to each side of the wagon via a T-pipe.

Filling and discharge are carried out via a side valve actuated using a hand wheel.



The product discharge pipe is equipped with a standardised threaded connection for connection to the station. When not in use, it is sealed with a screw cap.

Alternative versions of the side valves with deviating connections are possible.

**Vapour recovery line**

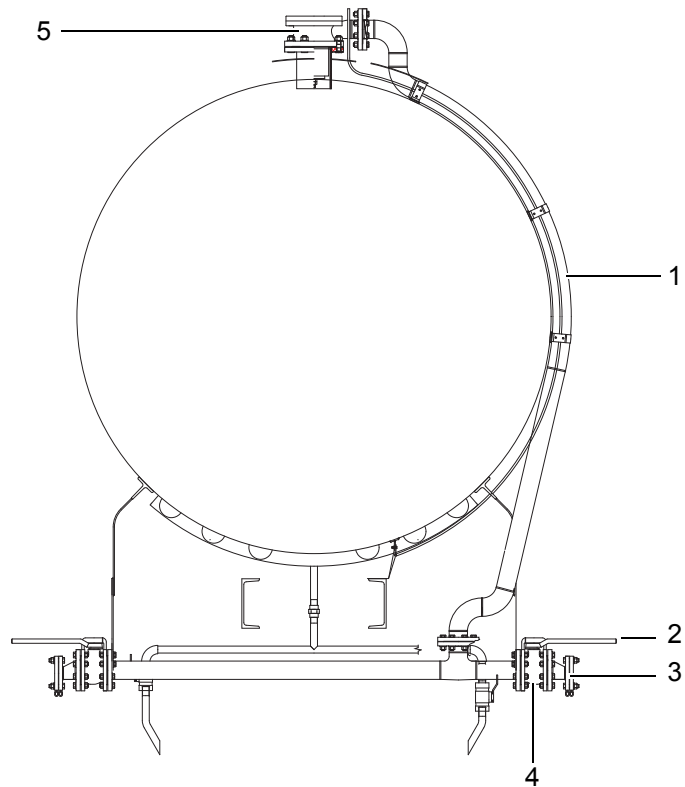


Figure 3.8: Vapour recovery line and connections

1	Vapour recovery line
2	Hand lever for ball valve
3	Vapour recovery line connection with blind flange
4	Ball valve
5	Forced aeration valve

When filling the tank from below, the displayed air-gas mixture is fed back into the station's tank through the vapour recovery line. When discharging, the air-gas mixture flows out of the station's tank and into the tank via the vapour recovery line. This measure ensures pressure compensation and reduces product emissions.

An inert gas atmosphere is also transferred in this closed-loop system.

The vapour recovery line runs primarily within the insulation along one side of the wagon. A vapour recovery connection with ball valve is located on each side of the wagon.

The vapour recovery line is released by opening the forced aeration valve.

**NOTICE**

The described function of the forced aeration valve is only ensured when the vapour recovery line is open or connected.  
Alternative connection options/valves are possible.

**Tank heating and product discharge pipe heating**

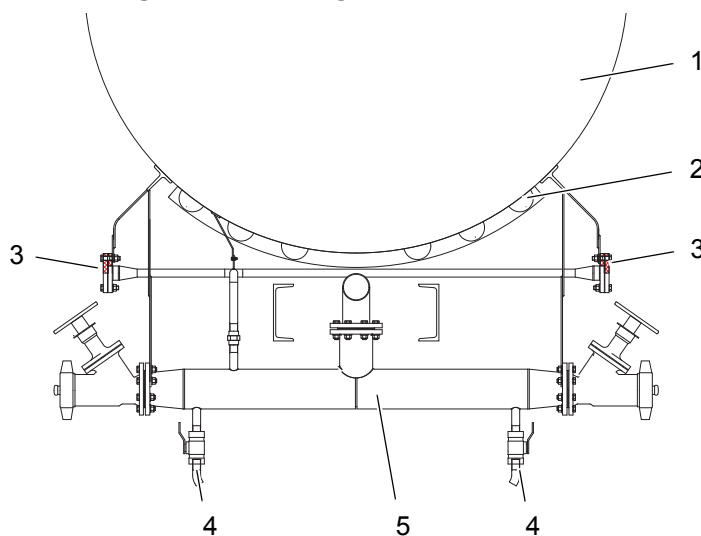


Figure 3.9: Tank heating and product discharge pipe heating

1	Tank
2	Tank heating tract (within the insulation)
3	Product discharge pipe heating connection for steam or hot water
4	Product discharge pipe heating steam trap
5	Product discharge pipe with heating

The connections for the tank heating and the product discharge pipe heating are located next to each other, see Figure 3.10: "Tank heating and product discharge pipe heating connections".

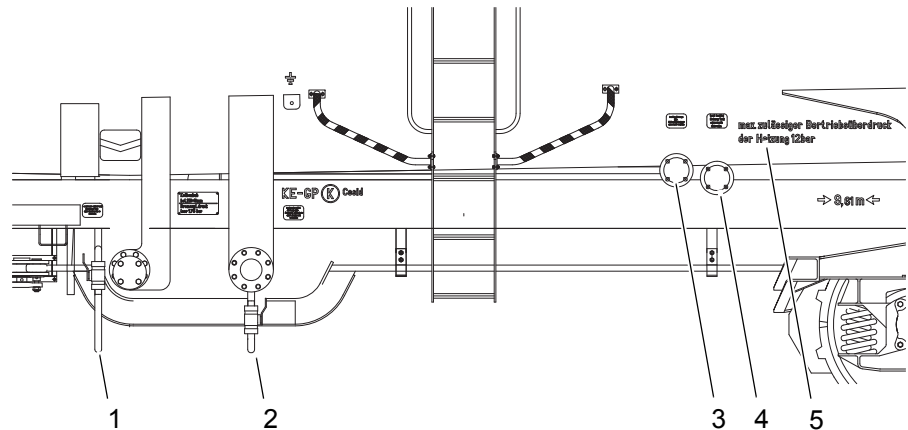


Figure 3.10: Tank heating and product discharge pipe heating connections

1	Tank heating steam trap
2	Heating steam trap
3	Product discharge pipe heating connection for steam or hot water
4	Tank heating connection for steam or hot water
5	Label: maximum permissible heating operating pressure [bar]

The tank is equipped with external, 6-line half-pipe heating as per DIN 26024. The product discharge pipe is additionally heated.

The tank heating can be operated using steam or hot water. The connections are each sealed with a shut-off valve (not shown here, see Figure 7.1: "Tank heating and product discharge pipe heating connections", page 58).

The steam or water throughput can be regulated with the shut-off valves at the steam traps. After the heating process, the shut-off valves must remain open to drain the residual water and moisture condensate.

**NOTICE**

**Damage due to atmospheric icing and corrosion**

Moisture condensate or residual water in the tank heating can cause frost and corrosion damage.

- After heating, leave the shut-off valves at the heating connection open on at least one side of the wagon.
- Always leave the steam trap shut-off valves open on at least one side of the wagon when the heating is not in operation.

As regards heating the tank and the product discharge pipe, see Chapter 7 "Heating".



## 4 Control

### 4.1 Operation of the control box for bottom valve

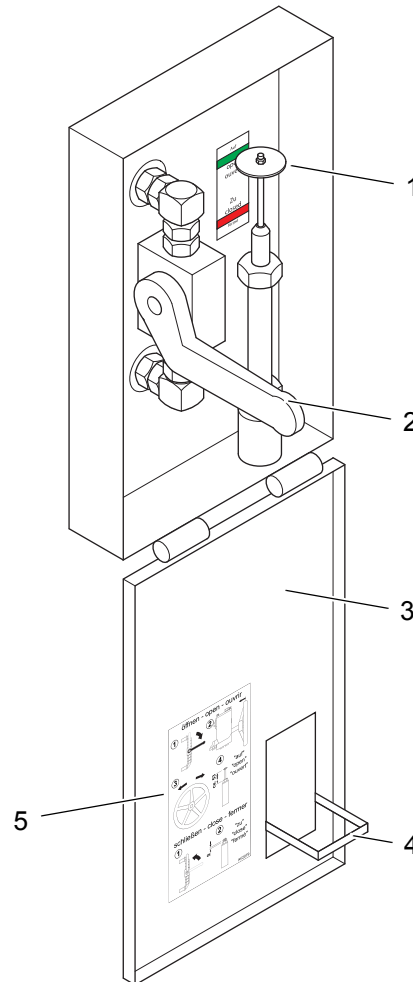


Figure 4.1: Control box, open

1	Open/close indicator for bottom valve, "open" position here, green area
2	Hand lever, horizontal position
3	Control box cover
4	Safety catch
5	Illustration with instructions (schematic)

A hydraulic line bypass with a ball valve shut-off valve and an open/close indicator runs through the control box.

The open/close indicator shows how far the bottom valve is open.

When fully open, the bottom valve open/close indicator shows "open" and is located in the green area.

When the bottom valve is closed, the bottom valve open/close indicator shows "closed" and is located in the red area.

The ball valve shut-off valve is actuated using a lever. Switching the lever over controls the hydraulic pump:

- Vertical position: hydraulic pump inactive.
- Horizontal position: hydraulic pump active.

When the hydraulic pump is activated, the bottom valve opens by turning the hydraulic pump's hand wheel.

When the hydraulic pump is deactivated, the hydraulic pressure is released and the bottom valve closes automatically.

The hand lever and open/close indicator positions are explained on an illustration in the control box lid, also see Chapter 2.8.3 "Labels with inscriptions".

## 4.2 Operation of the hydraulic pump for opening the bottom valve

The hand wheel for opening the bottom valve must be engaged in the hydraulic pump's transmission. Turning the hand wheel builds up pressure in the hydraulic pump and the bottom valve opens. The hand wheel can be turned in both directions to build up pressure.

When not in use, the hand wheel is disengaged and secured with a hand wheel trap.

## 5 Filling the tank

Before filling, proper use of the tank as per Chapter 2.1 must be ensured.

### 5.1 Safety information

---

#### **⚠ WARNING**

##### **Risk of fire and explosion due to static charging**

The tank may become electrostatically charged during filling, discharging and cleaning; this may trigger explosions or fires.

- During filling, discharging and cleaning, establish a highly conductive connection between the tank's earthing plate and the station (potential equalisation).
- 

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#### **⚠ WARNING**

##### **Risk of injury due to product**

Product can cause severe injuries on direct contact.

- Avoid direct contact with the product.
  - Wear personal safety equipment.
  - Observe the product-specific safety regulations.
  - Adhere to the operating safety regulations.
- 

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#### **⚠ WARNING**

##### **Risk of injury when filling or discharging pressurised tanks**

The escape of pressurised product can cause severe injuries.

- Operate the tank as per the local safety and operating instructions.
  - Connect the product hose before pressurising.
  - Always connect the hose connections carefully.
  - Secure the hose connections with the intended catches.
  - Do not release hose connections during filling or discharging.
- 

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#### **⚠ CAUTION**

##### **Risk of injury due to pressurised hoses**

Hose ends whipping around freely can cause injuries.

- Only pressurise pressure hoses once both ends have been connected.
-

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**NOTICE****Tank damage due to overpressure or vacuum**

Tank deformation possible.

- Adhere to the maximum operating pressures of the tank and the heating. The data can be found on the tank and in the tank wagon leaflet.
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**NOTICE****Material damage due to foreign bodies in the tank**

Damage to seals and valves possible due to foreign bodies in the tank.

- Make sure that no foreign bodies such as bolts or lead seals fall into the tank.
- 

---

**NOTICE****Material damage due to overflowing product**

Damage to the wagon and environmental pollution possible due to overflowing product.

- Pay attention to the tank filling degree when filling.
  - Properly remove any overflowed product on completion of filling or discharge.
-



## 5.2 Preparing for filling

At low outside temperatures, tank filling can be facilitated by heating the product with the tank heating and the product discharge pipe heating. The necessity of this depends on the type of product. As regards operating the heating, see Chapter 7.

## 5.3 Filling the tank from the top

### Prerequisites

- The tank and all fittings are in technically flawless condition.
- The filling facility and the tank are conductively connected via the earthing plate (potential equalisation).
- All valves are closed.

### 5.3.1 Filling the tank using the filling connection

#### Connecting and filling

1. Release the blind flange at the pressure connection.
2. Connect the pressure hose flange to the pressure connection.
3. Release the blind flange at the filling connection.
4. Connect the product hose flange to the filling connection.
5. Open the shut-off valve at the filling connection.
6. Open the shut-off valve at the pressure connection.
7. Fill the tank.

The air displaced during filling is conducted away via the pressure connection.

#### Disconnecting and locking

1. Close the shut-off valve at the filling connection.
2. Close the shut-off valve at the pressure connection.
3. Release the product hose.
4. Screw the blind flange with the seal onto the filling connection.
5. Release the pressure hose.
6. Screw the blind flange with the seal onto the pressure connection.

## 5.3.2 Filling the tank using the dip-pipe nozzle

### Connecting and filling

1. Release the blind flange from the pressure connection and remove.
2. Connect the pressure hose flange to the pressure connection.
3. Release the blind flange from the dip-pipe nozzle and remove.
4. Connect the product hose flange to the dip-pipe nozzle.
5. Open the shut-off valve at the dip-pipe nozzle.
6. Open the shut-off valve at the pressure connection.
7. Fill the tank.

The air displaced during filling is conducted away via the pressure connection.

### Disconnecting and locking

1. Close the shut-off valve at the dip-pipe nozzle.
2. Close the shut-off valve at the pressure connection.
3. Release the product hose.
4. Screw the blind flange with the seal onto the dip-pipe nozzle.
5. Release the pressure hose.
6. Screw the blind flange with the seal onto the pressure connection.

### 5.3.3 Filling the tank via the dome cover

#### Connecting and filling

1. Release the two toggle screws next to the hinges.  
Allow any overpressure to escape.
2. Release all toggle screws.
3. Open the dome cover lid.
4. Insert the filling facility.
5. Fill the tank.

#### Disconnecting and locking

#### NOTICE

#### Damage due to incorrect toggle screw tightening

Incorrectly tightening the toggle screws on the dome cover lid can lead to dome cover lid leakage and damage to the toggle screws.

– Always tighten the dome cover lid toggle screws crosswise.

1. Remove the filling facility.
2. Close the dome cover lid.
3. Tighten the toggle screws crosswise.

## 5.4 Filling the tank from below

#### Prerequisites

- The tank and all fittings are in technically flawless condition.
- The filling facility and the tank are conductively connected via the earthing plate (potential equalisation).
- All valves are closed.

## 5.4.1 Filling the tank using the side valve and bottom valve

### Connecting and filling

1. Unscrew the end cap from the side valve outlet connection.
2. Connect the product hose to the side valve.
3. Unscrew the blind flange from the vapour recovery connection.
4. Connect the station-side vapour recovery line flange connection to the chemical tank car's vapour recovery line.
5. Open the vapour recovery line ball valve with the hand lever.
6. Release the hand wheel lock on the side valve.
7. Open the side valve by turning the hand wheel on the side valve.

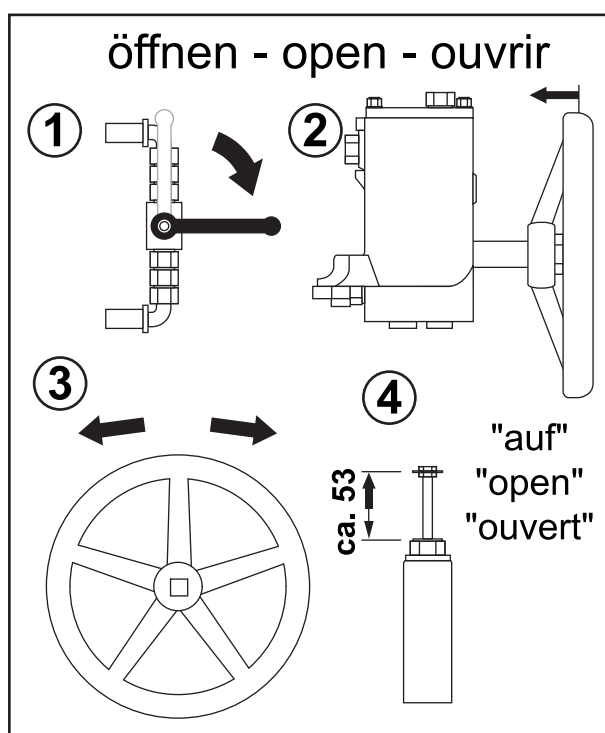


Figure 5.1: Instructions in the control box: opening the bottom valve

8. Open the control box.
9. Move the hand lever in the control box to the horizontal position (1).
10. Open the hand wheel trap on the hydraulic pump's hand wheel (parking position).
11. Engage the hand wheel in the transmission (2).
12. Open the bottom valve by turning the hand wheel (3).  
The degree to which the bottom valve is opened can be read off in the control box. The bottom valve is completely open when the open/close indicator points to "open" (4).
13. Fill the tank.

**Disconnecting and locking**

**⚠ WARNING**

**Risk of injury due to product**

Product can cause severe injuries on direct contact.

- Avoid direct contact with the product.
- Wear personal safety equipment.
- Observe the product-specific safety regulations.
- Adhere to the operating safety regulations.

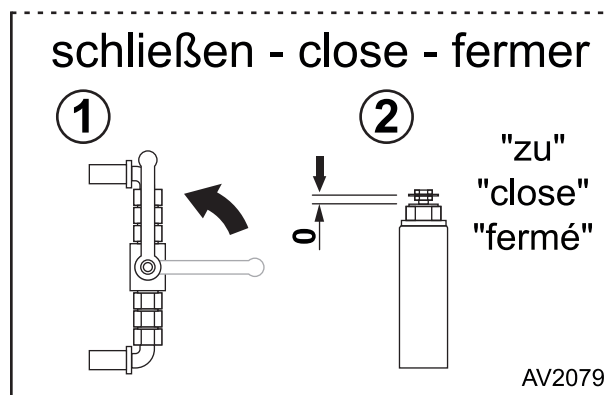


Figure 5.2: Instructions in the control box: closing the bottom valve

1. Move the hand lever in the control box to the vertical position (1).  
The bottom valve is closed when the open/close indicator points to "close" (2).
2. Close the side valve by turning the hand wheel on the side valve.
3. Insert the catch on the side valve.
4. Close the vapour recovery line ball valve with the hand lever.
5. Release the station-side vapour recovery line.
6. Screw the blind flange onto the vapour recovery connection.
7. Release the product hose.
8. Remove product residues from the outlet connection.
9. Screw the end cap onto the side valve outlet connection and tighten.
10. Close the control box.
11. Disengage the hydraulic pump hand wheel.
12. Close the hand wheel trap on the hydraulic pump hand wheel.

## 5.5 Concluding measures

### 5.5.1 Checking the condition of the wagon

After filling, check whether dangerous product residues are adhered to the outside of the wagon.

Remove product residues properly before dispatching the chemical tank car.

Make sure all valves and locking facilities are leaktight (RID 1.4)

### 5.5.2 Fitting a lead seal

Fit a lead seal on the filling and discharging facility at the seal eyelets or seal holes if necessary.

### 5.5.3 Checking before operation

Before operation, especially check the following:

- Is the maximum permissible tank filling degree adhered to? See RID, point 1.4.
- Are the tank, the filling and discharging facilities, the underframe, the ladders or the platform externally damaged?
- Are there defect notices from the railway company on the chemical tank car?
- Is there any product soiling?
- Are all valves and locks correctly locked and secured?
- Are all attaching parts (hand wheels) present and secured?
- Are all shut-off devices leaktight?
- Are all accompanying documents complete and correctly attached to the tank?
- Are all labels correctly attached to the tank and legible?

## 6 Discharging the tank

### 6.1 Safety information

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**⚠ WARNING**

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**Risk of fire and explosion due to static charging**

The tank may become electrostatically charged during filling, discharging and cleaning; this may trigger explosions or fires.

- During filling, discharging and cleaning, establish a highly conductive connection between the tank's earthing plate and the station (potential equalisation).
- 

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**⚠ WARNING**

---

**Risk of injury due to product**

Product can cause severe injuries on direct contact.

- Avoid direct contact with the product.
  - Wear personal safety equipment.
  - Observe the product-specific safety regulations.
  - Adhere to the operating safety regulations.
- 

---

**⚠ WARNING**

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**Risk of injury when filling or discharging pressurised tanks**

The escape of pressurised product can cause severe injuries.

- Operate the tank as per the local safety and operating instructions.
  - Connect the product hose before pressurising.
  - Always connect the hose connections carefully.
  - Secure the hose connections with the intended catches.
  - Do not release hose connections during filling or discharging.
- 

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**⚠ CAUTION**

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**Risk of injury due to compressed air hoses**

Hose ends whipping around freely can cause injuries.

- Only pressurise compressed air hoses once both ends have been connected.
-

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## NOTICE

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### **Tank damage due to overpressure or vacuum**

Tank deformation possible.

- Adhere to the maximum operating pressures of the tank and the heating. The data can be found on the tank and in the tank wagon leaflet.
- 

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## NOTICE

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### **Material damage due to foreign bodies in the tank**

Damage to seals and valves possible due to foreign bodies in the tank.

- Make sure that no foreign bodies such as bolts or lead seals fall into the tank.
- 

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## NOTICE

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### **Material damage due to overflowing product**

Damage to the wagon and environmental pollution possible due to overflowing product.

- Pay attention to the tank filling degree when filling.
  - Properly remove any overflowed product on completion of filling or discharge.
- 

## 6.2 Preparing for discharging

At low outside temperatures, tank discharging can be facilitated by heating the product with the tank heating and the product discharge pipe heating. The necessity of this depends on the type of product. As regards operating the heating, see Chapter 7 "Heating".



## 6.3 Discharging the tank from the top

### Prerequisites

- The tank and all fittings are in technically flawless condition.
- The filling facility and the tank are conductively connected via the earthing plate (potential equalisation).
- All valves are closed.

### 6.3.1 Dip-pipe nozzle: discharging the tank using the pump

#### Further prerequisite

- A pump is connected to the product hose.

#### Connecting and discharging

1. Release the blind flange from the pressure connection and remove.
2. Connect the pressure hose flange to the pressure connection.

#### Information

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In this discharge method, the connection serves to aerate the tank.

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3. Release the blind flange from the dip-pipe nozzle and remove.
4. Connect the product hose flange to the dip-pipe nozzle.
5. Open the shut-off valve at the pressure connection.
6. Open the shut-off valve at the dip-pipe nozzle.
7. Switch on the pump.  
The pump pumps the product upwards through the dip-pipe.
8. Discharge the tank.

#### Disconnecting and locking

1. Switch off the pump.
2. Close the shut-off valve at the dip-pipe nozzle.
3. Close the shut-off valve at the pressure connection.
4. Release the product hose.
5. Release the pressure hose.
6. Screw the blind flange onto the dip-pipe nozzle.
7. Screw the blind flange onto the pressure connection.

## 6.3.2 Dip-pipe nozzle: discharging the tank using overpressure

### Connecting and discharging

1. Release the blind flange from the pressure connection and remove.
2. Connect the pressure hose flange to the pressure connection.
3. Release the blind flange from the dip-pipe nozzle and remove.
4. Connect the product hose flange to the dip-pipe nozzle.
5. Open the shut-off valve at the dip-pipe nozzle.
6. Open the shut-off valve at the pressure connection.
7. Pressurise the tank with compressed air at a maximum of 3 bar.  
The compressed air presses the product upwards through the dip-pipe.
8. Discharge the tank.

### Disconnecting and locking

1. Shut off the pressure supply.
2. Close the shut-off valve at the pressure connection.
3. Close the shut-off valve at the dip-pipe nozzle.

#### **i**Information

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Prior to the next action steps, make sure that the tank is depressurised. Depressurise as specified in the operating regulations.

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4. Release the product hose.
5. Release the pressure hose.
6. Screw the blind flange onto the dip-pipe nozzle.
7. Screw the blind flange onto the pressure connection.

## 6.4 Discharging the tank from below

### Prerequisites

- The tank and all fittings are in technically flawless condition.
- The filling facility and the tank are conductively connected via the earthing plate (potential equalisation).
- All valves are closed.

### 6.4.1 Discharging the tank using the bottom valve and side valve

#### Connecting and discharging

1. Unscrew the end cap from the side valve outlet connection.
2. Connect the product hose to the side valve.
3. Unscrew the blind flange from the vapour recovery connection.
4. Connect the station-side vapour recovery line flange connection to the chemical tank car's vapour recovery line.
5. Open the vapour recovery line ball valve with the hand lever.
6. Remove the hand wheel lock from the side valve.
7. Open the side valve by turning the hand wheel on the side valve.

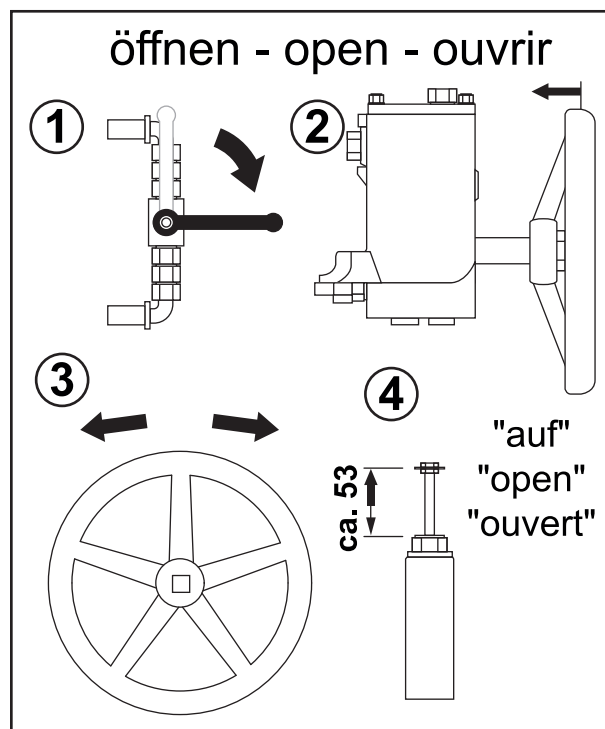


Figure 6.1: Instructions in the control box: opening the bottom valve

8. Open the control box.
9. Move the hand lever in the control box to the horizontal position (1).
10. Open the hand wheel trap on the hydraulic pump's hand wheel (parking position).

11. Engage the hand wheel in the transmission (2).
12. Open the bottom valve by turning the hand wheel (3).  
The degree to which the bottom valve is opened can be read off in the control box. The bottom valve is completely open when the open/close indicator points to "open" (4).
13. Discharge the tank.

## Disconnecting and locking

As soon as the tank is completely discharged, first close the bottom valve:

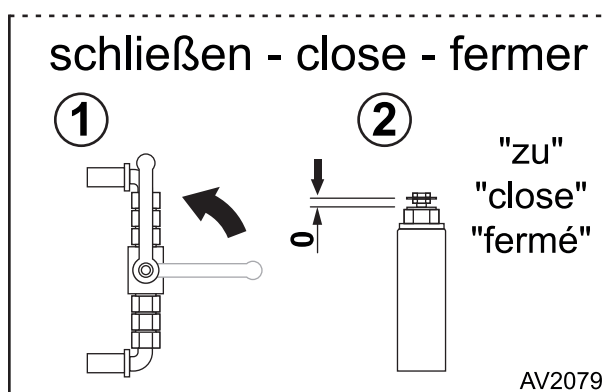


Figure 6.2: Instructions in the control box: closing the bottom valve

1. Move the hand lever in the control box to the vertical position (1).  
The bottom valve is closed when the open/close indicator points to "close" (2).
2. Close the side valve by turning the hand wheel on the side valve.
3. Insert the catch on the side valve.
4. Close the vapour recovery line ball valve with the hand lever.
5. Release the station-side vapour recovery line.
6. Screw the blind flange onto the vapour recovery connection.
7. Release the product hose.
8. Remove product residues from the outlet connection.
9. Screw the end cap onto the side valve outlet connection and tighten.
10. Close the control box.
11. Disengage the hydraulic pump hand wheel.
12. Close the hand wheel trap on the hydraulic pump hand wheel.

### 6.5 Discharging the tank using the emergency actuation bolt

If the bottom valve cannot be opened hydraulically, it can be forcibly opened mechanically using an emergency actuation bolt.

The emergency actuation bolt (size 3/4", length 80 mm) is located in a bracket on the hydraulic pump box.

**NOTICE**

**Material damage due to incorrect actuation**

The emergency actuation bolt must only be used to discharge the tank. Opening the bottom valve for filling in this manner is not permissible.

- After forcibly opening the bottom valve with the emergency actuation bolt, the wagon must be transferred to a specialist workshop.

**Connecting and discharging**

1. Unscrew the end cap from the side valve outlet connection.
2. Connect the product hose to the side valve.
3. Unscrew the blind flange from the vapour recovery connection.
4. Connect the station-side vapour recovery line flange connection to the chemical tank car's vapour recovery line.
5. Open the vapour recovery line ball valve with the hand lever.
6. Remove the hand wheel lock from the side valve.
7. Open the side valve by turning the hand wheel on the side valve.
8. Remove the lower part of the insulating cover cladding in the area of the bottom valve to obtain access to the valve.
9. Place a collection container for hydraulic oil beneath the bottom valve.

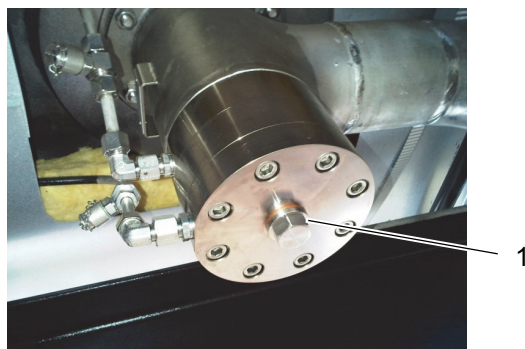


Figure 6.3: Bottom valve oil drain screw

1	Oil drain screw
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10. Unscrew the bottom valve oil drain screw from the housing.
11. Screw the emergency actuation bolt into the threaded opening of the oil drain screw to stop.  
The bottom valve is open.
12. Discharge the tank.

### **i**Information

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The open/close indicator in the control box only moves if the hydraulic oil circuit is intact. Correct indication is not possible if there is no hydraulic oil.

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### **Disconnecting and locking**

1. To close the bottom valve, unscrew the emergency actuation bolt.
2. Screw the oil drain screw back into the opening.
3. Close the side valve by turning the hand wheel on the side valve.
4. Insert the catch on the side valve.
5. Close the vapour recovery line ball valve with the hand lever.
6. Release the station-side vapour recovery line.
7. Screw the blind flange onto the vapour recovery connection.
8. Release the product hose.
9. Remove product residues from the outlet connection.
10. Screw the end cap onto the side valve outlet connection and tighten.
11. Transfer the wagon to a specialist workshop.

## 6.6 Concluding measures

### 6.6.1 Checking the condition of the wagon

After filling, check whether dangerous product residues are adhered to the outside of the wagon.

Remove product residues properly before dispatching the chemical tank car.

### 6.6.2 Checking before operation

Before operation, especially check the following:

- Is the maximum permissible tank filling degree adhered to? See RID, point 1.4.
- Are the tank, the filling and discharge facilities, the underframe, the ladders or the platform externally damaged?
- Are there defect notices from the railway company on the chemical tank car?
- Is there any product soiling?
- Are all valves and locks correctly locked and secured?
- Are all attaching parts (hand wheels) present and secured?
- Are all shut-off devices leaktight?
- Are all accompanying documents complete and correctly attached to the tank?
- Are all labels correctly attached to the tank and legible?





## 7 Heating

### 7.1 Safety information

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**⚠ CAUTION**

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**Danger of burning due to components conducting steam**

Components conducting steam may become hot during operation and cause burns.

- Wear safety gloves when touching components conducting steam.
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**⚠ CAUTION**

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**Danger of scalding due to hot steam**

Hot steam can cause scalding.

- Avoid contact with hot steam.
  - Wear safety gloves and safety goggles.
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**NOTICE**

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**Damage due to atmospheric icing and corrosion**

Moisture condensate and residual water in the tank heating can cause frost and corrosion damage.

- After heating, leave the shut-off valves at the heating connection open on at least one side of the wagon.
  - Always leave the steam trap shut-off valves open on at least one side of the wagon when the heating is not in operation.
-

## 7.2 Heating the tank and product discharge pipe

The shut-off valves for the tank heating and the product discharge pipe heating are identified through labels on the tank, see Chapter 2 "Safety".

### **i**Information

The tank heating can be operated using steam or hot water. Only steam is described in this chapter.

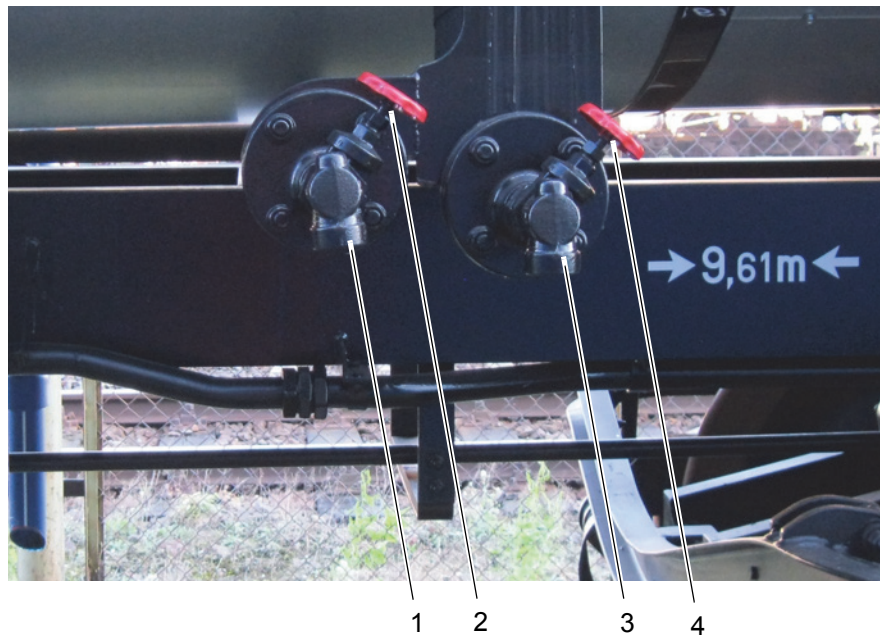


Figure 7.1: Tank heating and product discharge pipe heating connections

1	Product discharge pipe heating connection
2	Shut-off valve, product discharge pipe heating connection
3	Tank heating connection
4	Shut-off valve, tank heating connection

### Heating the tank

1. Close shut-off valves **(2)** and **(4)**.
2. Connect hose for steam supply to connection **(3)**.
3. Connect hose for steam supply to connection **(1)**.
4. Open shut-off valves **(2)** and **(4)**.
5. Start steam supply.

The steam throughput can be regulated with the shut-off valves at the steam traps.

**Ending heating**

As soon as the desired temperature is reached:

1. End the steam supply.
2. Close shut-off valves **(2)** and **(4)**.
3. Release hoses.

On completion of heating process:

4. Open all heating shut-off valves and allow water to drain off.
5. Leave the steam trap shut-off valves open under all circumstances.
6. The connections' shut-off valves can remain open.



## 8 Cleaning

The inside of the tank and the fittings must only be cleaned by an authorised cleaning company, see Chapter 2.2 "Cleaning the wagon".

### 8.1 Safety information

---

**⚠ WARNING**

---

**Risk of fire and explosion due to static charging**

The tank may become electrostatically charged during filling, discharging and cleaning; this may trigger explosions or fires.

- During filling, discharging and cleaning, establish a highly conductive connection between the tank's earthing plate and the station (potential equalisation).
- 

---

**⚠ WARNING**

---

**Risk of injury due to product**

Product can cause severe injuries on direct contact.

- Avoid direct contact with the product.
  - Wear personal safety equipment.
  - Observe the product-specific safety regulations.
  - Adhere to the operating safety regulations.
- 

---

**⚠ WARNING**

---

**Danger of fatality on climbing onto the tank**

Fatal or severe injuries due to hazardous vapours and the tank atmosphere (e.g. nitrogen or other suffocating gases/atmospheres) are possible on entering the tank.

- Adhere to the operating safety regulations.
  - Wear personal safety equipment corresponding to the product-specific safety regulations.
  - Before entering: test the atmosphere in the tank.
  - Only enter the tank if a second person remains in contact with you outside of the tank.
  - In the event of respiratory problems, exit the tank as quickly as possible.
-

**NOTICE****Material damage**

Incompatible cleaning agents can attack and destroy the tank, cover plate and seals.

- Use only cleaning agents that are compatible with the tank and seal materials.
- Contact GATX Rail Europe directly in the event of questions.

**NOTICE****Corrosion damage due to water**

Contact corrosion on fittings due to trapped moisture.

- All fittings must be free of cleaning agents.
- Only close cleaned cocks, flaps and valves once they are completely dry.

**NOTICE****Damage due to ingressing water**

- If external cleaning is necessary, water ingress into the insulation must be avoided.
- Do not use a high-pressure cleaning system in the vicinity of the insulating plates.

## 8.2 Transferring the wagon to an authorised cleaning company

**Prerequisites**

- The tank has been completely discharged.
- The fittings and connections contain no product residues.

## 8.3 Concluding measures

After cleaning, check the condition of the wagon, especially:

- Have all cleaning agent residues been removed?
- Have all previously removed parts been completely and correctly installed again?
- Are all seals undamaged?
- Are all seals positioned correctly?
- Have all released threaded connections been tightened correctly?

## 9 When not in use for long periods

### 9.1 Protective measures when not in use for long periods

#### NOTICE

---

##### **Damage due to atmospheric icing and corrosion**

Moisture condensate or residual water in the tank heating can cause frost and corrosion damage.

- After heating, leave the shut-off valves at the heating connection open on at least one side of the wagon.
  - Always leave the steam trap shut-off valves open on at least one side of the wagon when the heating is not in operation.
- 

If the chemical tank car is not used for a long time, we recommend the following protective measures to avoid material damage:

- Leave the heating system shut-off valves open,
- Leave the steam trap shut-off valves open,
- Clean and dry the tank, connections and lines if necessary,
- Clean the wagon from the outside,
- Lock the dome cover lid and fit a lead seal if necessary.

### 9.2 Measures prior to re-commissioning

Before re-commissioning, check the following components are in technically flawless condition:

- Check the leaktightness and function of all locking facilities,
- Check the tank, fittings and underframe for corrosion damage,
- Check the completeness and function of the equipment,
- Check adherence to legal test periods,
- Check adherence to the general commercial terms.

When not in use for long periods



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