

IDENTIFICATION

About this documentation:

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Wagenbouw HAPERT

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About the trailer:

This user documentation is intended for all HAPERT trailers.
For further information, see the type plate on the trailer.

About the manufacturer:

The trailer was manufactured by:

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FOREWORD

This user documentation describes how to use a trailer delivered by HAPERT and how to perform periodic maintenance. It is applicable to all HAPERT trailers.

It does not include details of work carried out on the trailer by the personnel of HAPERT or an official HAPERT dealer.

This documentation should be considered an integral part of the trailer!
You should, therefore, store it in a safe place. It contains information that will be useful or necessary in the future, for example for repairs and maintenance. This documentation is included as part of the delivery of the trailer.

Besides the provisions stated in this documentation, statutory regulations for the use of trailers, for example, number plate registration, maximum driving speed, etc. must also be observed. The statutory regulations may differ per country and may change over time. Make sure you observe the latest regulations!

USING THIS DOCUMENTATION

This documentation describes various trailer models. The descriptions of parts only apply to the respective types or models on which they are actually fitted.

The instructions in this documentation are categorised according to the type of user. Chapter 2 contains details of the requirements that different users have to meet.

The following definitions are used in this documentation:

User: The collective name for anyone who works with or on the trailer.

Operator: The daily user of the trailer.
Chapter: Introduction, Safety and Operating Instructions.

Service personnel: People with the training, experience and tools required to carry out the described work.
Chapter: All

Safety officer: The person who is responsible for safety in the company that owns the trailer. If nobody is appointed as such, it will be the employer.
Chapter: Safety and Specifications

Work that is not included in this documentation must be carried out by the personnel of or in consultation with HAPERT or the official HAPERT dealer.

The figures included in the text of this documentation are purely illustrative. They are only intended to clarify the respective text sections, for example, to indicate the location and function of operating mechanisms or components. The actual design and dimensions may differ.

TEXT CONVENTIONS

Except for the text in the “Safety” chapter, text segments that are important for personal health and safety are printed in **bold**.

The following warnings may be placed on the trailer:



Attention!
This pictogram warns of possible damage to the load or the trailer.



Warning!
This pictogram is a warning for the risk of personal injury.

WARRANTY AND LIABILITY

WARRANTY

Unless agreed otherwise in writing, the manufacturer issues a warranty to the first user for a period of 24 months after delivery.

The warranty conditions given below are applicable.

Warranty conditions:

- The warranty exclusively applies to faults that occur under normal use of the trailer and that occur due to defective construction, or due to the use of poor materials or poor workmanship on the part of the manufacturer.
- Any defects or imperfections of the delivered goods must be reported to an official HAPERT dealer in writing as soon as possible, but no later than eight days after they have been discovered or could have been discovered.
- In order to enable the official HAPERT dealer and the manufacturer to respond adequately, the report must contain a description of the defect that is as detailed as possible.
- In the event that a defect is reported later, the owner/user will no longer be entitled to repair, replacement or compensation, unless a longer period ensues from the nature of the problem or the circumstances of the case.
- The warranty comprises of the replacement or repair of the faulty product or parts free of charge by the manufacturer or the official HAPERT dealer.
- The warranty conditions of the respective third parties shall apply to any built-in components supplied by them. The length of the warranty period may differ from the period specified above.

No claim can be made under the warranty if:

- The warranty certificate is not registered via WWW.HAPERT.COM/REGISTER.
- The fault is the result of normal wear, improper use, improper treatment, use of other consumer items than specified or improper or incorrect maintenance.
- The fault occurs after changes or repairs made by the buyer/user or by third parties on behalf of the buyer/user and if it concerns a fault to the trailer's support wheel.
- The owner/user fails to fulfil all of its obligations towards the manufacturer or the official HAPERT dealer arising from any agreement whatsoever.
- The condition of the trailer on handover cannot be proved (by means of a handover inspection by the dealer).
- It cannot be proved that the trailer has undergone the periodic services (after 6 months, after 1 year, etc.).

Liability:

The manufacturer **cannot be held liable** for unsafe situations, accidents or damage that are caused by ignoring warnings or regulations placed on the trailer or included in this documentation, such as:

- Incompetent or incorrect use, or poor maintenance.
- Using the trailer for purposes or under conditions other than those given in the documentation.
- Using components other than those prescribed in this documentation.
- Performing repairs without permission from the manufacturer.
- Making changes to the trailer, such as:
 - Changes to the control system.
 - Welding, mechanical treatment, etc.
 - Adding items to the trailer or its control system.
- If the buyer of the trailer has not fulfilled all his obligations (financial or otherwise) to the manufacturer.
- For consequential damage caused by defects or the malfunctioning of the trailer (for example damage to products (to be processed), interruption of work in progress, delays, etc.).

1. INTRODUCTION

1.1 PURPOSE AND FUNCTION OF THE TRAILER

The trailer is intended to be used to transport both bulk goods and individual items. The trailer consists of a chassis with a single axle, tandem axle or tridem axle on which a cargo bed is fitted. For types COBALT HB and the INDIGO HT and LT the cargo bed can be tipped backwards by means of a hydraulic pump and cylinder. For type COBALT HM and COBALT+, the cargo bed can be tipped to the left, right or backwards, as desired by the user, by means of a hydraulic pump and cylinder.

1.2 MODELS AND ACCESSORIES

The (technical) specifications of all the HAPERT models and types are available in the *Media* section of WWW.HAPERT.COM.

2. SAFETY

2.1 INTRODUCTION

The trailer has been designed in such a way so that it is safe to use and maintain. This applies to the uses, circumstances and guidelines described in this documentation. Everybody who works with or on the trailer **must**, therefore, read this documentation and follow the instructions it contains.

In the case of professional use, it is the employer's responsibility to ensure that the user is familiar with the instructions and that they are observed.

Additional safety measures may apply in the company or country in which the trailer is used. These measures mainly relate to the working conditions. This documentation does **not** describe how these measures must be complied with. It does, however, contain all the information you will need about the trailer. If you have any doubts, ask a relevant government official or your safety officer.

In this documentation, a distinction is made between **normal use** (see chapter 3: Operating Instructions) and **other work** (see chapter 4) carried out on the trailer. The reason for this is that service personnel have to meet different requirements than the operator, particularly with regard to safety.

Simple maintenance work described in the operating instructions can be carried out by the operators.

Work that is not described in the operating instructions may only be carried out by people who are qualified to do so. The accessories that are supplied with the trailer to restrict access to specific sections or functions (such as the key to the main switch) may not be stored on or near the trailer. These accessories may only be entrusted to people with the required qualifications.

2.2 SAFETY REGULATIONS

- Ensure unauthorised people, such as children, cannot operate the tipping system. The key must be removed from the main switch when the trailer is left unsupervised.
- People may only use the trailer if they have read and understood the operating instructions.
- The tipping system may only be operated when the trailer is stationary, the brake has been applied and the trailer is connected to a towing vehicle.
- Do not climb on the trailer when the tipping system is being used.
- Do not climb on the trailer if it is not connected to a vehicle.
- When tipping the load off the trailer, make sure nobody is in the area where the load is to be tipped.
- Safety devices may not be removed or put out of operation.
- Keep the workplace neat and tidy, and free of obstacles.
- Make sure the surroundings are adequately illuminated.
- Be aware of the risk of becoming trapped between the cargo bed and the frame or the front, side and rear flaps.
- A trailer must be on a stable surface (not to sink into gravel or sand) during tipping. Trailer may fall.
- Using the tipping system on an incline is dangerous. Trailer may fall.
- When using tipping system always use the mounted supports. (For instructions, see Section 3.2.2)
- Do not exceed the maximum permitted load (see name/type plate).
- Do not exceed the maximum permitted ball thrust (see name/type plate).
- Do not exceed the maximum load of the tie rings
- Only use the remote control after reading the operating instructions (see 3.1.2).

2.3 UNAUTHORISED USE

The trailer is especially **not suitable** for:

- Transporting people or animals.
- Using the tipping system to unload individual items.
- Lifting people or goods.

2.4 USERS

2.4.1 OPERATORS

The trailer may be used by any adult who is familiar with and observes the instructions in the “Safety” and “Operating Instructions” chapters. Special training is not required. However, a relevant driving licence is required to drive a vehicle while towing a trailer.

2.4.2 SERVICE PERSONNEL

Special knowledge/experience and/or training is required. For the driving section: knowledge and experience with regard to the maintenance of motorised vehicles. For the hydraulic section: knowledge and experience with regard to the maintenance of hydraulic systems.

2.5 WORK AREA

A work area of 100 cm around the trailer must be kept clear in order for the tipping system to be operated.

2.6 WARNINGS ON THE TRAILER

The warning signs placed on the trailer must be clearly legible. If necessary, replace them or have somebody else do this for you.

The text of the warning signs placed on the trailer are listed in the “Markings on the trailer” chapter. The respective hazards are described in further detail in the operating and maintenance instructions.

2.7 SUBSTANCES THAT ARE HAZARDOUS TO HUMANS AND THE ENVIRONMENT

2.7.1 GENERAL INFORMATION

The following substances that are used when working with the trailer require special attention:

- Hydraulic oil
- Battery acid

2.7.2 STORAGE

Always store hazardous substances in a location that is not accessible to unauthorised people. The storage of hazardous substances may be subjected to legal regulations. Contact the relevant authorities for the applicable regulations and the required permits.

2.7.3 PROTECTION OF THE ENVIRONMENT

Risks of environmental pollution are present in the form of:

- Hydraulic oil
- The battery (may contain lead)
- Battery acid
- Battery (the remote control)

Dispose of these substances in accordance with locally applicable regulations and environmental legislation.

2.7.4 DISPOSAL OF THE TRAILER

If the trailer is dismantled, the local waste disposal regulations applicable at the time of dismantlement must be observed. The battery unit fitted on the trailer and the oil must be treated as chemical waste and be processed accordingly. This also applies to the tyres.

The handbrake is spring-mounted. When disposing of the trailer, the energy stored in the spring must be released safely.

Apart from this, the trailer only consists of common materials. At the time of construction, these materials could be disposed of safely without the people carrying out dismantlement work being exposed to any special or undue risks.

See 2.7.3 "Protection of the environment".

3. OPERATING INSTRUCTIONS

Anyone who wishes to use the trailer must first be familiar with the information in the “Safety” chapter.

As specified in 2.4.1, this chapter is intended for operators.

Work that is not specified in this chapter may only be carried out by service personnel (see chapter 4).

3.1 CONSTRUCTION AND OPERATING DEVICES

The operating devices for the electrical tipping system are:

- A main switch.
- A hold-to-run button on the control panel for raising the cargo bed.
- A hold-to-run button on the control panel for lowering the cargo bed.
- A hold-to-run button on the remote control for raising the cargo bed (optional).
- A hold-to-run button on the remote control for lowering the cargo bed (optional).

The remote control for the tipping system includes:

- A valve: a two-position valve for raising and lowering
- A pump lever



Main switch

Pump lever
Hand pump

Electric operation switch

Hand pump valve

COBALT HM



Main switch
Emergency hand pump lever

Electric operation switch Emergency hand pump valve

COBALT +



Pump lever for hand pump

Electric operation

Main switch

hand pump valve

COBALT HB



Hand pump valve

Pump lever for hand pump

INDIGO HT



Hand pump valve

Pump lever for hand pump

INDIGO LT

3.1.1 REMOTE CONTROL SYSTEM/HAPERT REMOTE CONTROL (OPTIONAL)

The remote control system (see figure 3) is fitted during manufacture. The remote control system works with a hold-to-run system, meaning that raising or lowering stops as soon as the control button is released.

3.1.2 USING THE REMOTE CONTROL SYSTEM

Observe the safety regulations (see 2.2).

Use the main power switch's red key to turn on the system. By turning the key clockwise, the electrical system is switched on. (See figure 1) Before using the remote control (see figure 3), the on/off button on the control panel (see figure 2) needs to be pressed 2 times. Now the remote control is ready for use (operation with the control panel is no longer possible in this position).



Figure 1.

- To raise the cargo bed: keep the raise button on the remote control pressed until the desired height is reached.
- To lower the cargo bed: keep the lower button on the remote control pressed until the cargo bed is back in its rest position.
- Use the key of the main power switch to turn off the entire system by turning it anti-clockwise, then remove the key from the main power switch.

Control panel

Left LED is green or blue
GREEN > Manual operation
BLUE > Handheld remote control

Right LED is green, orange or red
GREEN > Battery voltage is good
ORANGE > Battery voltage is weak
RED > Battery in critical voltage (recharge)

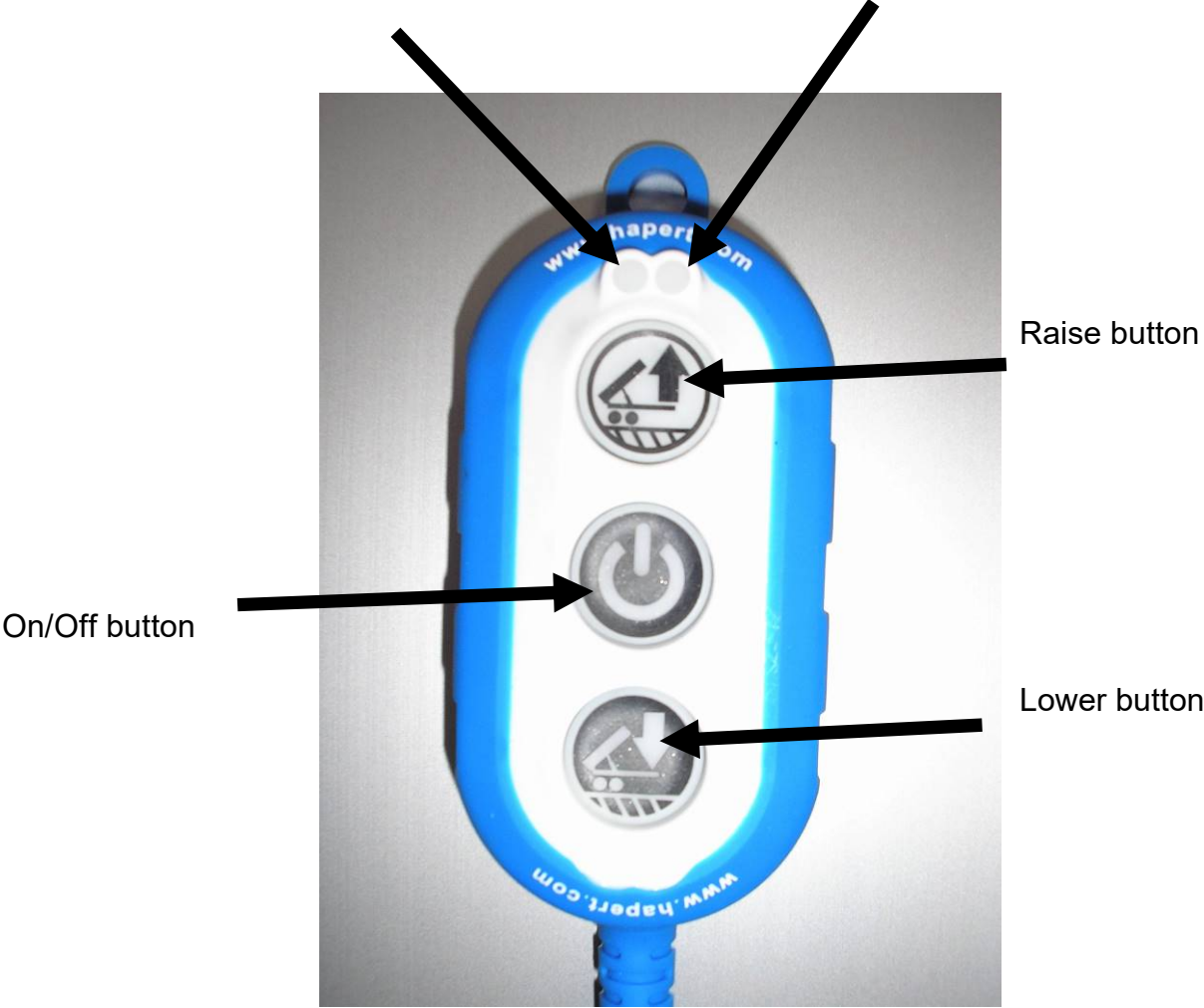


Figure 2.

Handheld remote control

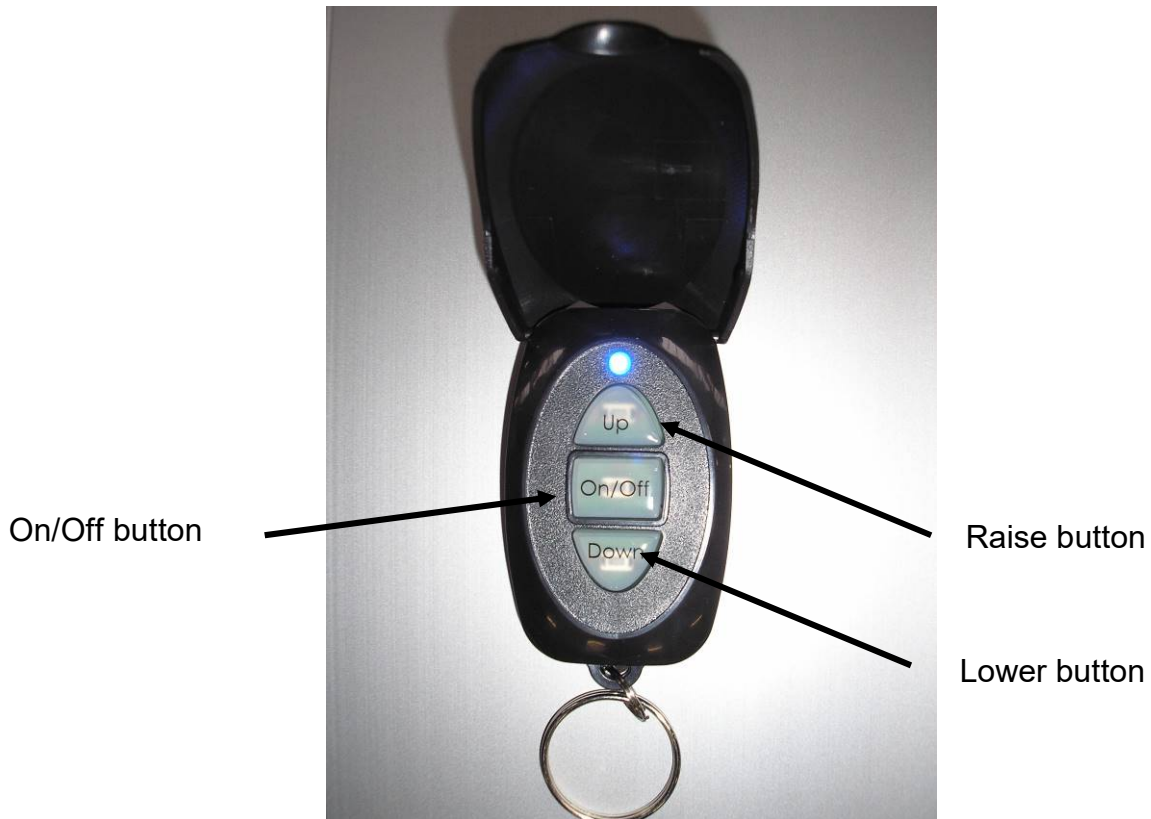


Figure 3.



Attention!

When the system is not in use, always turn off the main power switch and remove the key. Operation via both the control panel and the remote control is then no longer possible.



Warning!

Using the remote control as a two-channel on/off switch is not permitted.

3.1.3 CAR2TRAILER AUTOMATIC RECHARGING SYSTEM (OPTIONAL)

The purpose of the automatic recharging system is to supply the correct charging voltage to the electrically powered tipping system. The system is connected to the standard lighting cable using a two-pole adapter. The 13-pole connection with the towing vehicle ensures that the Car2Trailer booster/charger provides the battery system in the trailer with the correct charging voltage while driving. An acoustic signal is given if the voltage is too low when using the electric tipping system. See the *Media* section at WWW.HAPERT.COM for the installation manual circuit diagram.



Figure 4.



Attention!

The Car2Trailer recharging system may only be connected by competent service personnel who are familiar with the regulations for working with high-voltage batteries. Always read the installation manual. Incorrectly connecting the battery (e.g. reversing the plus and minus terminals) or using the wrong type of connectors can result in serious damage to the system, for which the manufacturer cannot be held liable. Make sure the cables are firmly attached. Always use fuses.

3.2 USING THE TRAILER

3.2.1 CONNECTING AND DISCONNECTING THE TRAILER

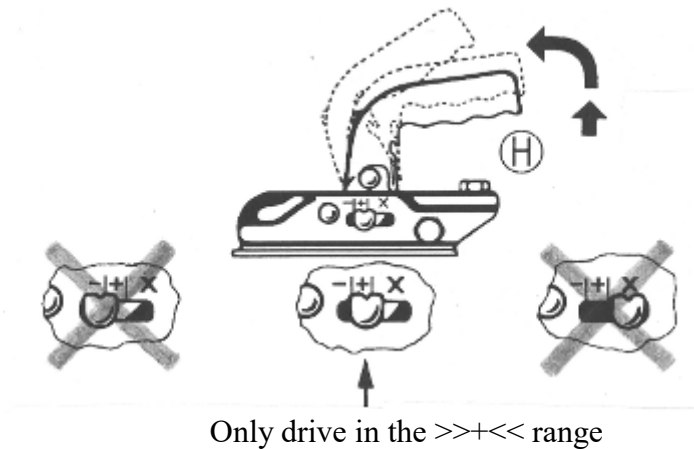


Figure 5.

- **Connecting:**

Open the coupling housing by pressing the locking button on the handle H and moving the handle upwards. Place the opened coupling on the ball of the towing vehicle's tow bar and release the handle. The handle should automatically slide back to the starting position. The coupling is automatically closed and locked in place. Make sure the coupling is in the right position >>+<< (see figure 5). The tow ball must not be visible when the trailer is connected. Fasten the safety cable (see figure 11) and insert the plug in the towing vehicle. Raise the support wheel and secure it in position parallel to the direction of travel (the support wheel must not impede the movement of the brake rod).

Always check whether the lights work before driving.

- **Disconnecting:**

Lower the support wheel. Disconnect the safety cable and the plug. Open the coupling housing by pressing the locking button on the handle H and moving the handle upwards. Lift the coupling off the towing vehicle's tow bar. Pay particular attention when disconnecting on an incline (once the towing vehicle is stationary, apply the handbrake or use the wheel blocker, if fitted)

3.2.2 LOADING THE TRAILER

Maximum load

The maximum load must not be exceeded. The maximum load is equal to the unladen weight of the trailer plus the load capacity.

Maximum load: Unladen weight + load capacity

Unladen weight: The weight of the trailer when ready to be used, i.e. with spare parts and tools that are normally included, but without a load.

Load capacity: The maximum permitted load weight.

Weight distribution:

To ensure the brakes work properly and to have good road handling, the centre of gravity must be as close as possible to the axle.

- Heavy objects must be placed as much as possible above the axle.
- Lighter objects should be distributed evenly across the cargo bed.
- The load should be divided over the right-hand and left-hand halves of the trailer as evenly as possible.
- Avoid point loads.
- The load must always be properly secured. Each country has its own regulations. Make sure the trailer meets the applicable requirements.
- When loading and unloading the trailer, it must always be connected to the towing vehicle.

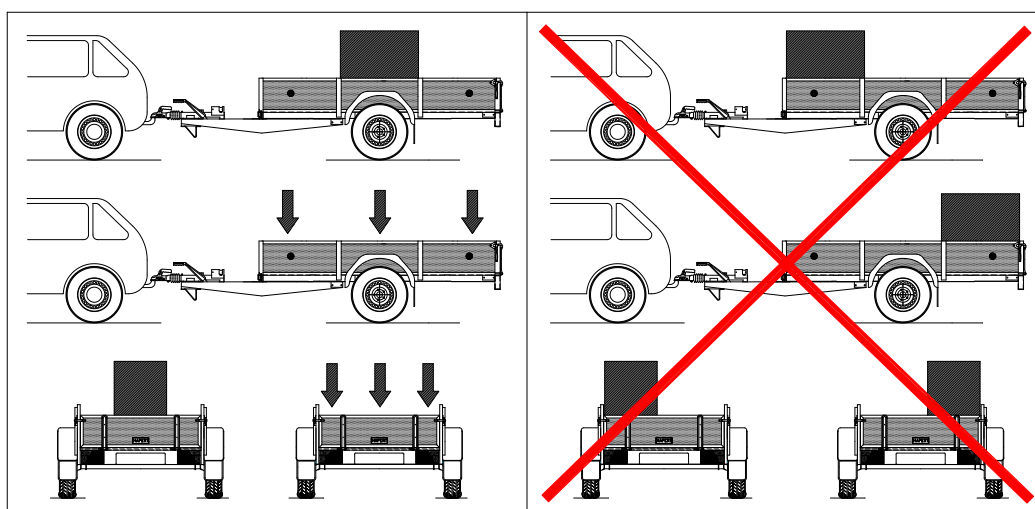


Figure 6

Maximum support wheel load:

The maximum static load for a sliding support wheel is 150 kg. The maximum static load for a foldable support wheel is 250 kg. The maximum load must not be exceeded.



Attention!

The trailer has been designed, constructed and tested for the loads shown in the accompanying documents and on the type plate/construction plate attached to the front of the trailer. Overloading the trailer can result in permanent damage, for which the manufacturer accepts no liability.

Tying down/securing the load:

The load must always be tied down and secured properly on the trailer using binders that are suitable for this specific purpose

The tie rings, which are fitted as standard and are TÜV-certified according to quality mark DIN EN 75410-1, must be used to secure a load.



Figure 7

For tying down the load, only use reliable ropes that are specifically designed for this purpose and that comply with standard EN 12195-2.

The maximum load that the tie rings fitted on the sides of the trailer (see figure 7) can take is 1,000 kg (daN)

Supports

Supports fitted under the chassis can be extended when loading the trailer.

How the supports work: After releasing the locking pin, the supports can be rotated 90°

Rotatable by 90° downwards and re-secured in position with the locking pin. Using the handle supplied with the trailer, the support should be lowered until it is approx. 5 cm above ground level when the trailer is empty (see figure 8).

The 5 cm gap is needed to compensate for the spring of the axles. If the supports are lowered completely, they will take the entire weight of the load and can become damaged. On soft ground, suitable plate material has to be laid under the supports.

Before driving off, the supports have to be secured in their top position and, if necessary, rotated 90° so that they lay parallel to the chassis (see figure 9).



Figure 8



Figure 9

Ball thrust:

The ball thrust is one of the most important criteria for the road handling of the trailer and, therefore, the entire vehicle combination.

The maximum permitted ball thrust (see the specifications of your tow bar or vehicle and the type plate on your trailer) may not be exceeded. The ball thrust can be increased or reduced by moving the load further forwards or backwards, respectively. The optimal ball thrust is close to the maximum ball thrust. A negative ball thrust (i.e. an upwards force applied to the tow bar) is strictly forbidden.

Carelessly loading the trailer may result in a risk of slipping or swerving. Adjust your speed to the condition of the road surface and the load. This is particularly important in corners.

Make sure the wheels do not wobble and the tyres are balanced.

Coupling height (with regard to the towing vehicle):

Another important element which influences the vehicle combination's road handling (particularly for tandem trailers) is the height of the coupling. The trailer's coupling height and that of the towing vehicle must not differ by too much. The vehicle combination's road handling is influenced by the difference in coupling height. A dangerous situation may arise if the towing vehicle's coupling height is considerably lower than that of the trailer, because this results in a negative ball thrust.

Relationship between load, tyre pressure, ball thrust and coupling height:

Poor road handling is unavoidable if a trailer creates a negative ball thrust because it is poorly loaded and if it is connected to a towing vehicle with a lower coupling height. If this is combined with a tyre pressure which is too low (see 5.1.1), then a dangerous situation may arise. For that reason, all the warnings given above must be observed.

3.2.3 BEFORE PULLING AWAY

- Raise the support wheel and secure it in position. The support wheel must always point in the direction of travel (the support wheel must not impede the movement of the brake rod).
- Check the coupling. The coupling housing must completely enclose the ball and must be secured. Make sure the coupling is in the right position >>+<< (see figure 5).
- Attach the safety cable to the towing vehicle (see figure 11).

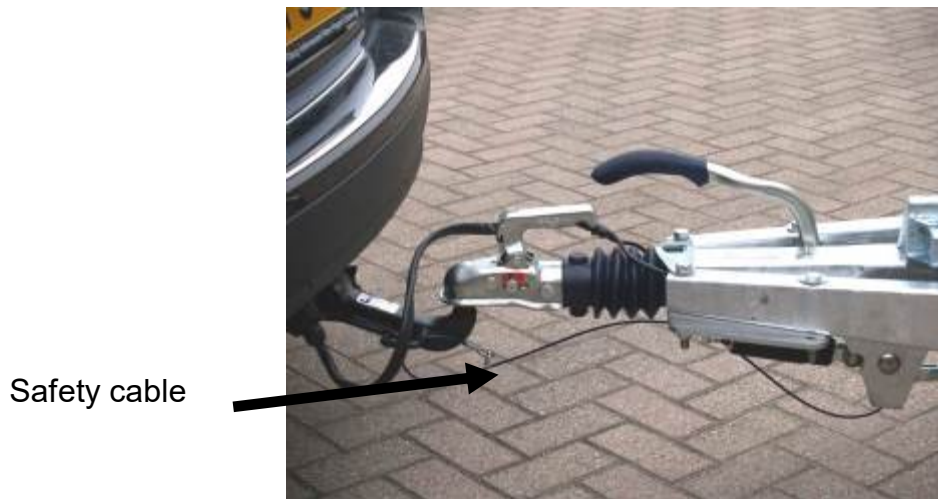


Figure 11

- Insert the lighting plug.
- Regularly check the tyre pressure (see table 5.1).
- Make sure the load is evenly distributed and properly secured.
- Check the lights: indicators, rear lights, brake lights (the load must never obscure the view of the lights).
- Before driving off, make sure any wheel blockers have been removed and that the handbrake on a braked trailer has been released.
- Check whether the cargo bed is secured to the chassis (only for type INDIGO HT and LT).
- Check whether all the locking pins are fitted and secured in place (only for type COBALT HM and COBALT+).
- Make sure the supports are secured in their top position and, if necessary, rotated 90° so that they lay parallel to the chassis (see figure 9).

The trailer has an auto-reversing mechanism. This means that if you reverse, the overrun brake does not have to be blocked.

3.2.4 TIPPING THE TRAILER

Find out whether the tipping trailer has a hand pump, an electric pump (possibly with a battery) or both.



Warning!

Only turn on the hydraulic system when you have made absolutely sure that nobody is in the danger zones around the trailer. Attention:

- Make sure nobody is in the location where the load is to be tipped.
- Make sure nobody is on the trailer.
- Pay attention to the risk of becoming trapped between the cargo bed and the chassis.



Warning!

Do not use the tipping system on a steep incline.

1. Only use the tipping system when the trailer is stationary and connected to the towing vehicle.
Make sure the trailer's handbrake has been applied.
2. Lower the support wheel.
3. Make sure the load is no longer secured.
4. To tip backwards:
 - Unlock the two locking pins on the two front corners of the trailer (only for type COBALT HM and COBALT+).
 - Unlock the rear flap.To tip to the left (only for type COBALT HM and COBALT+):
 - Fit the two locking pins to the two left-hand corners of the trailer.
 - Unlock the left-hand flap.To tip to the right (only for type COBALT HM and COBALT+):
 - Fit the two locking pins to the two right-hand corners of the trailer.
 - Unlock the right-hand flap.



Warning!

Before tipping, always check that:

- The load is no longer secured.

For type COBALT HM and COBALT+:

- The correct two locking pins are in place.

- The correct side flap or the rear flap is unlocked.

For types COBALT HB and INDIGO HT and INDIGO LT:

- The rear flap is unlocked.

5.0 Tipping using the hand pump:

To tip the cargo bed: place the hand pump's valve in the "raise" position and use the pump lever to pump until the desired height is reached.

To lower the cargo bed: place the hand pump's valve in the "lower" position until the cargo bed touches the chassis and then place the valve back in the "raise" position.

5.1 Electric tipping:

Use the key of the main power switch to turn on the system. (See figure 1) Turn the key clockwise to activate the electrical system. The on/off button on the control panel needs to be pressed 1 time to activate the control panel. To raise the cargo bed: keep the relevant button on the control panel (see figure 2) pressed until the desired height is reached.

To lower the cargo bed: keep the relevant button on the control panel pressed until the cargo bed has returned to its rest position.

Turn the system off using the key in the main switch - turn the key to the left and remove it!

See 3.1.1 and 3.1.2 for electric tipping using the remote control.

5.2 Electric tipping in combination with an emergency pump:

Electric operation: See "**Electric tipping**" for additional operating instructions.

Emergency pump operation: To tip the cargo bed: use the pump lever to pump until the desired height is reached.
To lower the cargo bed: rotate the button until the cargo bed rests on the chassis.
After the cargo bed has been lowered, place the rotary button back in the "raise" position.
(Rotate closed/see figure 12)

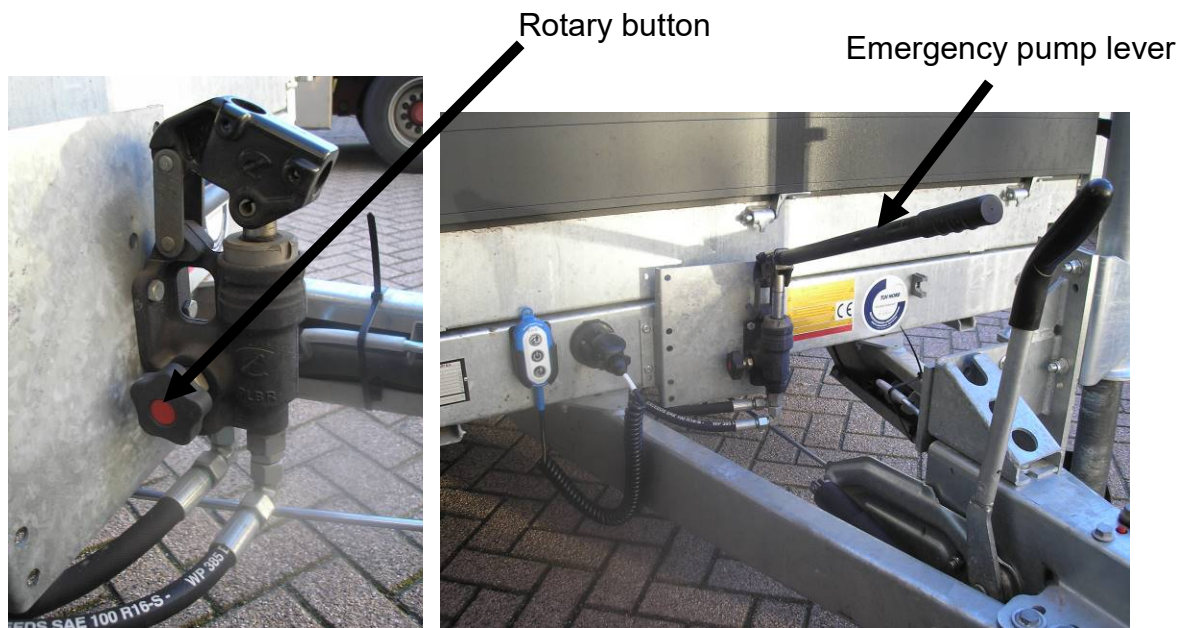


Figure 12

6. Lock the side flap or the rear flap.
Make sure the drive-on ramp is secured (only for type INDIGO HT and INDIGO LT).
7. Use the two locking pins to secure the cargo bed to the chassis (only for type COBALT HM and COBALT+) or lock the cargo bed to the chassis (only for type INDIGO HT and INDIGO LT).
8. Raise the support wheel.

3.3 MAINTENANCE



Warning!

When working under the cargo bed:
Always support the cargo bed!

Maintenance by the user/service personnel

- Wheel attachment:
After the first journey, check whether the wheel bolts are still sufficiently tightened. If necessary, retighten them. Use the tightening torques table in the Specifications chapter (5.1.1) to find the correct torque. Check the bolts every time a wheel has been loosened, for example, to change a tyre (tighten the wheel bolts crossways).
- Check the plug and the lights (dirt, corrosion and damage).
- Check the tyres (tyre pressure, wear and damage).
- Ball coupling:
Regularly clean and grease all sliding surfaces and bearing points.

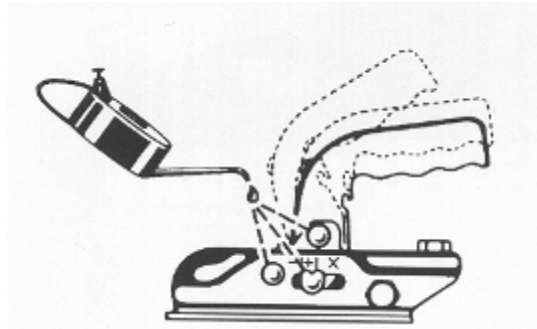


Figure 13

- Hydraulic pump oil level:

Check the hydraulic oil level and, if necessary, top it up.

For an electric pump: when the cylinders are in the highest position, the level must be up to 10 cm below the edge of the cover.

For a hand pump: when the cargo bed is down, the level must be up to 1 cm below the edge of the cover.

- Battery, charge it if necessary:

A disconnected battery should be stored in a dry, frost-free location in your warehouse (this is vital to reduce self-discharge to a minimum).

After a few months, the battery will have discharged itself and its condition should, therefore, be checked. At 12.2 V (this is 80% of its capacity), the battery needs to be recharged with a charger that has a capacity equal to at least 10% of the battery's capacity (e.g. a 90 Ah battery must be recharged with a charger of at least 8 A and no more than 10 A in order to obtain the best results).

This also applies to batteries that are installed in products in your showroom, so please check their condition regularly and, if needed, recharge to 12.7 V (100% battery charge).

If you neglect to do this, battery sulphation will irrevocably occur (lead sulphate that attaches itself to the plates) and recharging will no longer be possible.

Sulphated batteries are not covered by warranty.

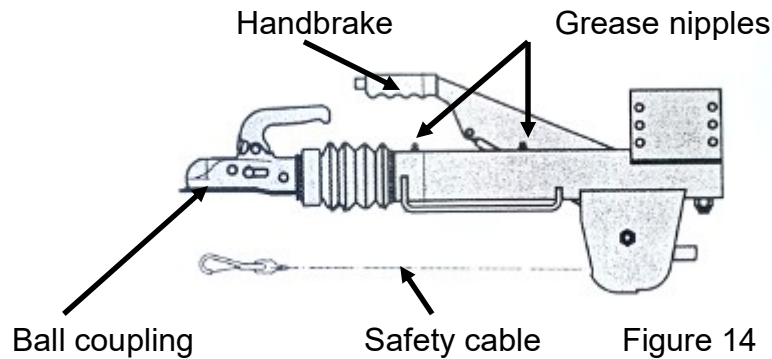


Attention!

You should **never** charge the battery with a quick charger.
Always use a trickle charger.

Depending on the type of trailer, it may have a plug socket for a battery charger.

- Lubricating the overrun system:
Lubricate the grease nipples with grease (see figure 14) and the sliding parts with oil.



3.4 CLEANING

The trailer may be hosed down with water. We recommend that you do so if the trailer has been in contact with salt (brine) or acids, as the zinc coating can be permanently damaged by such substances. For new vehicles of which the zinc coating has not yet fully hardened, white spots (white rust) or black spots may appear if the trailer is not cleaned frequently enough. However, the *protective effect* of the zinc coating is not reduced by the spots. To try to prevent these spots on hot-dip galvanised components, you can take measures to ensure there is sufficient air circulation during storage, so no water film develops between the metal surfaces.

Always make sure the electrical components do not come into contact with water or other liquids!

4. OTHER MAINTENANCE WORK

The work specified here may only be carried out by service personnel, as described in 2.4.2.

4.1 REPAIR AND MAINTENANCE

4.1.1 MAINTENANCE INSTRUCTIONS

The trailer must be inspected at least once a year by an official HAPERT dealer. The HAPERT dealer will check and repair the trailer in accordance with the “BOVAG-Aanhangwagenbedrijf” regulations (BOVAG Trailer Company).

If faults arise in the meantime, a dealer must be contacted as soon as possible.

4.1.2 REPAIRING/REPLACING PARTS

During the warranty period, repairs may only be carried out under the supervision of HAPERT or an official HAPERT dealer.

All replacement parts must always have the same specifications as the originals.

All parts can be ordered from an official HAPERT dealer.

The trailer is built from both standard parts (generally available on the market) and specific components (especially made for the trailer).

Standard parts:

Only use original parts.

If you have any doubts about the specifications, ask HAPERT or an official HAPERT dealer.

Specific parts:

Only use replacement parts provided by HAPERT or an official HAPERT dealer.



Warning!

Deviating from the instructions given above may result in damage to the trailer. HAPERT or an official HAPERT dealer cannot accept any liability in this respect.

5. SPECIFICATIONS

5.1 TRAILER AND WEIGHTS

See the Media section at WWW.HAPERT.COM for all the dimensions and weights.

5.1.1 WHEELS AND TYRES

Wheel bolt specifications:

Screw thread	Spanner size	Max. tightening moment
mm	mm	Nm
M 12 x 1,5	17 (19)	80 - 90
M 14 x 1,5	19	110 - 120

Optimal tyre pressure:

The optimal tyre pressure depends on the type of tyre. Any garage can give you this information. Only use Wagenbouw HAPERT tyres or inquire at Wagenbouw HAPERT or an official HAPERT dealer.

TYRE SIZE	TYRE PRESSURE		MAX. LOAD
	BAR	PSI	KG.
155/80R13	2,9	42	500
165R13C	4,5	65	710
185/70R13	3	44	650
175R14C	4,5	65	775
185R14C	4,5	65	900
155/70R12C	6,5	95	900
195/50R13C	6,5	95	900
195/55R10C	6,2	90	750
205/70/R15C	3,8	55	900
145/70R13	3	44	425
18.5x8.5-8	3,4	50	425
185/70R13C	6	85	950

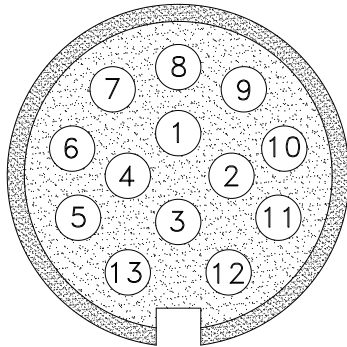
5.1.1.1 MOUNTING BRAKE SYSTEM, AXLES AND DRAWBAR

Screw thread	Spanner size	Max. tightening moment
mm	mm	Nm
M 12 Kl. 8.8	17 (19)	80 - 90
M 12 Kl. 10.9	17 (19)	110 - 120

5.1.2 ELECTRICAL SYSTEM

13-pole plug connection diagram:

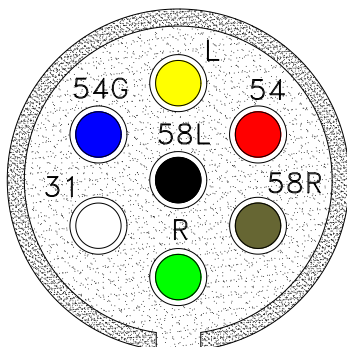
Figure 15



INDICATION	COLOUR	NAME
1	Yellow	Left indicator
2	Blue	Fog lamp
3	White	Earth (for poles 1-8)
4	Green	Right indicator
5	Brown	Right rear light
6	Red	Left and right brake lights
7	Black	Left rear light
8	Grey	Reversing light
9	Brown/blue	Continuous current
10	Brown/red	Battery charger (plus)
11	White/Red	Battery charger earth
12		Free
13	White/black	Earth (for poles 9-12)

7-pole plug connection diagram:

Figure 16



INDICATION	COLOUR	NAME
L	Yellow	Left indicator
54G	Blue	Fog lamp
31	White	Earth
R	Green	Right indicator
58R	Brown	Right rear light
54	Red	Left and right brake lights
58L	Black	Left rear light

5.2 TIPPING SYSTEM

5.2.1 TIPPING RANGE

Tipping range, tipping backwards	To the end of the cylinder
Tipping range, tipping sideways (only type COBALT HM and COBALT+)	Until the safety cable is tight or by means of a stop switch (electric operation)

5.2.2 HYDRAULIC PUMP

	Hand pump COBALT HB, HM, and COBALT+	Hand pump INDIGO HT and INDIGO LT (double-acting)	Electric pump COBALT HB, HM, COBALT+ and INDIGO HT
Nominal pressure	180 bar	250 bar	170 bar
Pressure relief valve setting	220 bar	300 bar	200 bar
Oil reservoir			
Volume	5 litres	1 litre	5 litres
Effective volume	4.5 litres	1 litre	4.5 litres
Hydraulic oil	Tellus 46, Shell HM46 or similar	Tellus 46, Shell HM46 or similar	Tellus 46, Shell HM46 or similar
Battery	N/A	N/A	
Type			12 V starter battery
Capacity			90 Ah
Electric motor capacity	N/A	N/A	2 kW
Maximum sound level	<70 dB(A)	<70 dB(A)	<70 dB(A)

5.3 PHYSICAL CONDITIONS OF USE

Ambient temperature:	
* Working	-5 to +40 degrees Celsius (with hydraulic system)
* During transport/storage	-25 to +40 degrees Celsius -25 to +55 degrees Celsius
Relative humidity (RH)	30% to 95%, non-condensing
Lighting	E4 / normal ambient lighting

The trailer is not suitable for use in an explosion-hazardous environment.

5.4 APPLICABLE DIRECTIVES AND STANDARDS

Trailers with a hydraulic tipping system have CE marking. This CE marking concerns the trailer's tipping system. The CE marking means that the tipping system meets the applicable European guidelines concerning health and safety. The "Declaration of Conformity" (see page 45) specifies the respective directives.

The applicable standards are also specified in the "Declaration of Conformity". The trailer also complies with the provisions of European Directive 2007/46/EC and the Netherlands Road Transport Directorate (Rijksdienst voor het Wegverkeer) has issued the required type approval.

6. MARKINGS ON THE TRAILER

6.1 TYPE/CONSTRUCTION PLATE

The trailer complies with the provisions of European Directive 2007/46/EC and the Netherlands Road Transport Directorate (Rijksdienst voor het Wegverkeer) has issued the required type approval, which means a type/construction plate has to be fitted on the trailer. The type/construction plate lists the following information (see figure 17):

DESCRIPTION	TRAILER DETAILS
Name of manufacturer	See trailer type plate
Approval no.	See trailer type plate
Identification no.	See trailer type plate
Max. total weight	See trailer type plate
Max. ball thrust	See trailer type plate
Max. axle load 1	See trailer type plate
Max. axle load 2	See trailer type plate
Max. axle load 3	See trailer type plate
Max. axle load 4	See trailer type plate
Type	See trailer type plate
Manufacturer	See trailer type plate

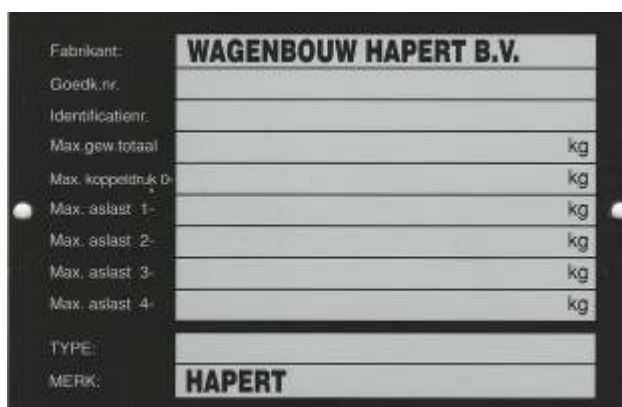


Figure 17

Location of the type/construction plate and chassis number: at the front on the right-hand side (see figure 18).

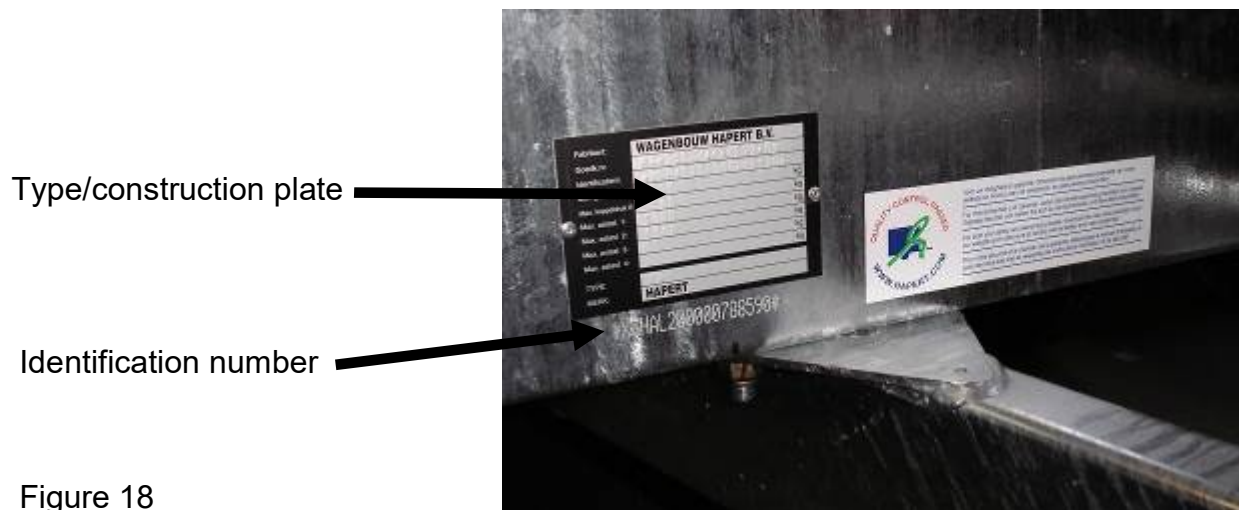


Figure 18

Location of the type plate of an ECE-approved tow pole: against the tow pole
 For trailers with a pipe tow shaft, it is located on the shaft.
 (See figure 19)

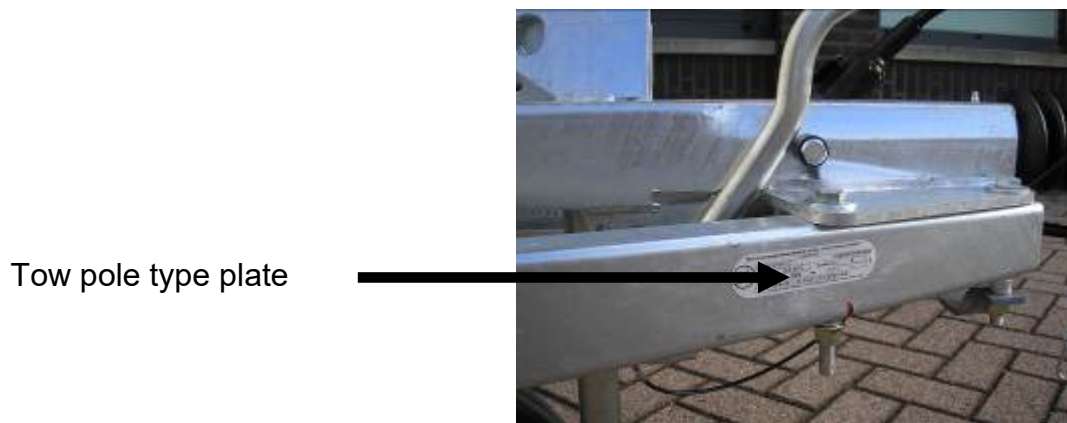


Figure 19

All warning stickers and type plates placed on the trailer must be legible at all times. Replace stickers and type plates that are damaged or no longer legible.

6.2 WARNINGS

The following warnings are placed on the front of a trailer with a hydraulic tipping system:



The following warning is placed on the rear of a trailer with lights that can be obscured:



6.3 VEHICLE DETAILS

Fill in the trailer details below:

<i>Type of trailer</i>	
<i>Trailer dimensions</i>	
<i>Chassis number</i>	
<i>Max. total weight</i>	
<i>HAPERT dealer stamp</i>	

7. SERVICES

This trailer is a road vehicle and has been constructed from parts that require continuous maintenance. For that reason, this trailer is always delivered with a handover inspection and a delivery confirmation, which must be completed by the dealer and the customer. The trailer must undergo its first service after no more than 6 months and then after every 12 months. Observing the service requirement (performing all the required services for the first 24 months) is compulsory for the warranty to remain valid. Also see “Warranty and liability” in this manual.

Service on delivery	Max. 6 months-after-delivery service
Date	Date
HAPERT dealer stamp	HAPERT dealer stamp
Signature	Signature

1st year service	2nd year service
Date	Date
HAPERT dealer stamp	HAPERT dealer stamp
Signature	Signature
At least 1 year after the delivery service	At least 1 year after the 2nd service

3rd year service	4th year service
Date	Date
HAPERT dealer stamp	HAPERT dealer stamp
Signature	Signature
At least 1 year after the 2nd service	At least 1 year after the 3rd service

5th year service	6th year service
Date	Date
HAPERT dealer stamp	HAPERT dealer stamp
Signature	Signature
At least 1 year after the 4th service	At least 1 year after the 5th service

7th year service	8th year service
Date	Date
HAPERT dealer stamp	HAPERT dealer stamp
Signature	Signature
At least 1 year after the 6th service	At least 1 year after the 7th service

9th year service	10th year service
Date	Date
HAPERT dealer stamp	HAPERT dealer stamp
Signature	Signature
At least 1 year after the 8th service	At least 1 year after the 9th service

11th year service	12th year service
Date	Date
HAPERT dealer stamp	HAPERT dealer stamp
Signature	Signature
At least 1 year after the 10th service	At least 1 year after the 11th service

EU DECLARATION OF CONFORMITY

We Wagenbouw HAPERT BV
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 5527 AL Hapert
 The Netherlands
 Tel: +31 (0) 497 38 68 68
 Fax: +31 (0) 497 38 68 82
 Internet: www.hapert.com
 E-mail: info@hapert.com

Hereby declare under sole responsibility:

- 1- We are the manufacturer of the following machine to which this declaration applies: **Trailer tipping system**

Brand: HAPERT
Types: COBALT HB
 COBALT+
 COBALT HM
 INDIGO LT
 INDIGO HT

Function: Tipping a cargo bed with a load.
Serial number: all serial numbers of these types.

- 2- The machine has been designed and built in accordance with the requirements of Machinery Directive 2006/42/EC.
- 3- The machine also complies, when the occasion arises, with the requirements of the following EU directives: EMC directive 2004/108/EC.
- 4- The machine has been designed and built in accordance with the requirements of the (European) standards or normative documents:
NEN EN 1037:1996+A1: 2008 Prevention of unexpected start-up
NEN EN 1853:1999+A1: 2009 Agricultural machinery. Trailers with tipping body. Safety.
NEN EN 4413:2010 Hydraulic fluid power - General rules and safety requirements for systems and their components
NEN-EN-ISO12100-1:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction.

Signed in Hapert

Date: September 2013

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Signed by: A.J.H. Saris
Position: Director

