

# INSTRUCTION MANUAL

## Compactor H 5i / H 7i

<b>H222</b> Series	<b>0001</b> valid from serial no.
<b>01.10.2014</b> Date of first issue	
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This instruction manual is valid for the following roller types:

**COMPACTOR**

H 5i

H 7i

H 5i P

H 7i P

H 7i VIO

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# 1 GENERAL



When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01

## 1.00 Introduction

### 1.00.01 Preface to the operating manual

This chapter contains important instructions for the operating personnel on how to operate the machine and to use this operating manual.

#### **This operating manual helps you:**

- to become familiar with the machine.
- to avoid malfunctions due to improper use.

#### **Adhering to this operating manual:**

- helps to avoid risks.
- increases the reliability when working on the construction site.
- increases the life span.
- reduces maintenance costs and downtimes.

It is absolutely necessary to adhere to this instruction manual, the instructions given in the safety instructions, supplementary information and all regulations and provisions applying at the building site (e.g. accident prevention regulations).

Maintenance and care of the diesel engine have to be performed according to these motor instructions. Any safety notes have to be followed.

609-08

### 1.00.02 Product information

You have received a quality product from HAMM. All the components of this machine have been carefully inspected and tested. As a result, they comply with the quality that you expect.

The reliability of the machine is preserved through correct use and careful maintenance. This includes the use of the specified operating supply items and the use of original HAMM spare parts.

Our representations will help you to keep your roller in perfect operating condition.

After the warranty period, our representatives will also assist you with advice and service. They will supply you with our original HAMM spare parts which do not only meet the technical requirements but also ensure exchangeability and quality.

The safety, operating and maintenance instructions given in this operating manual are intended for the operating personnel. Thus, keep this manual always at hand!

609-06

### 1.00.03 Guarantee

#### No guarantee claims with:

- operating errors.
- In the case the spare parts used are no original HAMM spare parts.
- in the case wrong operating supply items have been used.
- In the case any additional devices have been refitted and/or installed that have not been approved by HAMM.
- in the case of deficient maintenance.
- in the case of any processes that conflict with these operating manual.

609-07

### 1.00.04 Modifications / reservations

We are committed to provide you with correct and updated operating manual. However, we cannot guarantee the correctness of all data given. To be able to keep pace with changing trends, it may be necessary to amend or modify the product and/or its operating console without prior notice. We assume no liability for malfunctions, downtimes and resulting damage.

609-09

### 1.00.05 Packaging and storage

We have carefully packed our products to ensure proper protection in transit. Please check both packaging and the goods yourself for any damage upon reception of your goods. In the case of damage, the devices must not be put into operation. Damged cables and connections are a safety risk and must not be used.


In such a case, please contact your supplier.

If the devices are not put into operation upon unpacking, they must be protected against humidity and dirt.


609-10

### 1.00.06 Signs and symbols

The signs and symbols used in this instruction manual are to help you use this instruction manual and the device in a safe and fast manner.

**Note**  Informs about application hints and useful information. No dangerous or harmful situation.

**Enumeration**  Indicates a listing of issues or possibilities.

**Operating steps**  1. Are listed according to their succession each starting from 1 for each individual process.

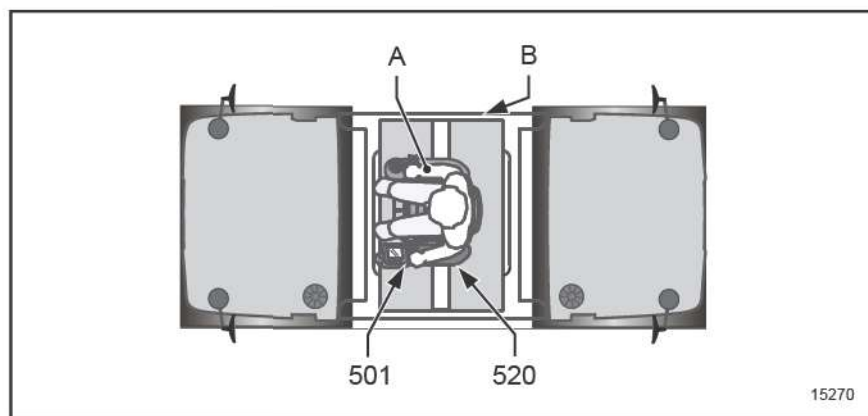
**Option**  Indicates special equipment which varies from the standard.

**Directions** Information on directions contained in these instructions such as left or right and/or front or rear always refer to the directions of the machine driving forwards.

**Cross-references** Cross-references help you to find quickly sections in this instruction manual which supply you with additional important information. The cross-reference shows you the page of the relevant section. The abbreviation sqq. means "and the following pages".  
Example: (see page 134 sqq.)

**Positioning of illustrations** The positions of illustrations are represented with letters and numbers. The items marked with letters in alphabetical order, are only explained in the associated text section, each of which starts anew for every single description. The items marked with numbers apply to operating elements, control units and switches. They are identical to the numbers in the section Overview of instruments and operating elements ([see page 50 sqq.](#)). These numbers in squared brackets are used as a reference in the description of the elements. Amongst others, this ensures that important and additional information can be found immediately and without any difficulty in the descriptions of the elements. The end of the positioning line is marked as dot or arrow. In the illustration the dot marks a visible element and an arrow an invisible element which is in arrow direction.

**Example**



**Legend**

**[A]** Driver

**[B]** Engine compartment

**Descriptive text**

The drive lever [501] determines the driving direction and speed.

Using the lever [520] you can adjust the pretension of the attenuation system to the driver's weight.

609-11



## 1.00.07 Signal words

A signal word identifies a source of dangers and residual risks.

609-12

### **▲ DANGER**

Identifies immediate danger. If this risk is not prevented, this causes death or severe personal injuries.

001-01

### **▲ WARNING**

Refers to situations that may be dangerous. If this situation is not avoided, fatality or very serious injuries may be caused.

002-01

### **▲ CAUTION**

Refers to situations that may be dangerous. If this situation is not avoided, minor or light injuries may be caused.

003-01

### **NOTICE**

Refers to a situation that may cause property damage.

004-01

## 1.01 Documentation

This operating manual is intended to make the operating personnel familiar with basic work steps / activities of and with the machine.

**The entire operating manual consists of:**

- Safety instructions
- Operating manual of the machine
- Operating manual of the diesel engine
- If necessary, additional information (e. g. QR code)

The entire operating manual must always be available at the machine and be accessible to the authorized operating personnel at all times. Prior to operating the machine, you must have carefully read und understood this operating manual. In case you do not understand this operating manual or individual parts, please ask us prior to starting these activities. The operating manual contains important information, which will ensure that the machine can be operated in a safe, proper and economic manner.

613-00

## **1.02 Use**

### **1.02.01 Intended use**

The machine represents state-of-the-art technology and complies with all valid safety regulations concerning its intended use at the time the machine was launched on the market.

When designing the machine it was not possible to avoid foreseeable misuse or residual risks without restricting the machine's intended functionality.

#### **The machine's intended use is:**

- pave roads and traffic areas.
- ramming and smoothing of loose earth, road bedding, pavement or similar ramable subgrade in layers.

The machine may only be deployed on surfaces that can support it. Subgrade **not** capable of bearing is e.g. high fillings, batters, roadside ditches.

The machine must **not** be used with explosive areas, on landfill sites and with mining.

The machine is only intended for commercial applications within fenced construction sites.

The machine must be operated by authorised operating personnel only if in proper technical condition and according to this operating manual.

All unintended uses and/or all machine-related activities not described in this operating manual are to be deemed as unauthorised misuse outside the legal limits of indemnity of the manufacturer.

611-01

## 1.02.02 Abnormal use

In the case of abnormal use and/or improper use of the machine, the manufacturer's guaranty period will expire and the operator will solely be responsible.

### **Abnormal use is:**

- Non-compliance with this operating manual.
- Operating errors by operating personnel not qualified or not instructed.
- Conveyance of passengers.
- Leaving the driver's position during operation.
- Starting, using the machine outside the driver's position.
- Errors due to "reflexive behaviour" and/or "choosing the easiest way".
- Operating the machine if it is not in a proper technical condition.
- Using the machine with improper ambient conditions (e.g. temperature, gradient, cross slope).
- Using the machine with the protective equipment removed.
- Spraying with high-pressure cleaners or fire extinguishing equipment.
- Towing trailing loads.
- Non-compliance with maintenance intervals.
- Omission of measurements and tests to detect damages early.
- Omission of replacing wear parts.
- In the case the spare parts used are no original HAMM spare parts.
- Omission of maintenance and repair works.
- Improper maintenance and repair works.
- Unauthorised modifications of the machine.

611-02

## 1.02.03 Residual risks

Residual risks have been analysed and evaluated prior to starting the construction and planning the machine. Existing residual risks are referred to in the documentation. However, HAMM cannot foresee all situations that may pose a risk in practice.

### **You can avoid existing residual risks if you comply with and implement the following instructions:**

- Special warnings at the machine.
- General safety instructions in this instruction manual and in the safety instructions.
- special warnings in this operating manual.
- Instructions contained in the safety instructions.
- Operating instructions of the operator.



**Danger of life / risk of personal injury when operating the machine due to:**

- Misuse.
- Improper operation.
- Transport.
- Missing protective equipment.
- Defective and/or damaged components.
- Operation / usage by personnel not trained and/or instructed.

**The machine may cause risk to the environment with:**

- Improper operation.
- Operating supply items (lubricants etc.).
- Noise emission.

**Property damage may occur at the machine e.g. with:**

- Improper operation.
- Non-compliance with operating and maintenance instructions.
- Improper operating supply items.

**Property damage may occur at additional assets within the machine's operating area e.g. with:**

- Improper operation.

**Reduction in performance and/or the machine's functionality may occur at the machine with:**

- Improper operation.
- Improper maintenance and/or repair works.
- Improper operating supply items.

611-03

## 1.02.04 Climatic conditions

**Low ambient temperature The diesel engine's starting behaviour and the machine's operation depend on:**

- The fuel used.
- The viscosity of the motor, gear and hydraulic oil.
- The battery's charge state.

**Please note:**

The acceleration and braking behaviour of the machine are influenced by viscous hydraulic oil. Prior to cold seasons (autumn, winter) please adjust all operating supply items (coolants, oils etc.) to low temperatures.

Please use fuels suitable in winter or additives improving the flow with temperatures below 0 °C (32 °F) ([see page 164](#) sqq.). Do not charge batteries with temperatures below 0 °C (32 °F).

**⚠ WARNING**

**Explosion!**

Risk of injury due to burns and moving parts.

- Do not use aerosol start-up aid (e.g. aether).
- Do not use any liquids as start-up aid (e.g. alcohol).

002-02

**Extensive ambient  
temperature, extensive  
height**

See operating manual of diesel engine.

611-04

## **1.03 Environmental protection**

Packing materials, cleaning agents and used or residual operating supply items are to be disposed according to relevant environmental provisions at the building site using the recycling systems provided.

614-00

## 1.04 Disposal

Conservation of nature is one of our major tasks. Properly disposed devices avoid negative impacts on human beings and the environment and allows re-using our precious resources.

**Operating supply items** Please dispose all operating supply items according to relevant specifications and local regulations of the relevant country.

**Materials (metal, plastics)** To be able to dispose materials professionally, these materials need to be correctly sorted. Cleanse materials of adhesive impurities.  
Please dispose all materials as demanded by local provisions of the relevant country.

**Electrical / electronical system / battery** Electrical / electronical components are not subject to Directive 2002/96/EC and relevant national regulations (in Germany e.g. ElektroG).

Dispose electrical / electronic components directly at a specialised recycling company.

615-00

## 1.05 EC conformity



For machines without EC Conformity, neither an EC Declaration of Conformity nor a CE type plate can be issued. This is the case if, for example, the machine does not have a drum drive, drum brake or roll-over protection.

000-45

The declaration of conformity is part of the documentation provided separately by HAMM and will be submitted to you together with the machine.



The pictogram represents the machine's conformity with relevant EU Directives. The CE mark of the machine is part of the type plate.



In case the machine has been modified in a way that has not been agreed by HAMM, the EC declaration of conformity expires.

616-00

## EC declaration of conformity

---

Manufacturer: HAMM AG - Hammstraße 1 - D-95643 Tirschenreuth

**CE**

**EC DECLARATION OF CONFORMITY**  
according to EC Machinery Directive 2006/42/EC, Annex II A

**We hereby declare that the**

Designation of the machinery:  
Type:  
Serial no.:

**complies with the following provisions:**

- EC Machinery directive 2006/42/EC
- EMC Directive 2004/108/EC
- EC Sound directive 2000/14/EC

with evaluation form: Annex VIII

Notified Body: Notified Body Number: 0515 <sup>1</sup>

measured  $L_{WA}$  [dB(A)]:  
guaranteed  $L_{WA}$  [dB(A)]:  
Power [ $kW/min^{-1}$ ]:

- Emissions standard EU/USA:  
- Exhaust gas after-treatment:

**Applied harmonised standards, in particular:**

- EN 500-1:2006+A1:2009: Mobile road construction machinery - Safety  
Part 1: Common requirements
- EN 500-4:2011: Mobile road construction machinery - Safety  
Part 4: Specific requirements for compaction machines
- EN 13309:2010: Construction machinery - Electromagnetic compatibility of machines  
with internal electrical power supply
- EN ISO 3744:2010: Allocation of the sound capacity level of sound sources

Authorised agent for the composition of the relevant technical documents:  
Mr. Patrick Fest, HAMM AG (CE representative)

Tirschenreuth, \_\_\_\_\_  
Date: \_\_\_\_\_

  
Dr. Axel Römer, General Manager Technics

<sup>1</sup> Notified Body, Kern-Nr. 0515 - DGUV Test, Prüf- und Zertifizierungsstelle, Fachbereich Bauwesen - Landsberger Straße 309 - D-80987 München (Germany)

616-03

## 1.06 Type plate



For machines without EC Conformity, neither an EC Declaration of Conformity nor a CE type plate can be issued. This is the case if, for example, the machine does not have a drum drive, drum brake or roll-over protection.

000-45

The entire marking represents an official document and must not be altered or effaced.



Please state the vehicle identification number (VIN) and the type of your machine for every spare part order.

602-01

**Machine type plate** The type plate is fixed to the machine frame ([see page 42](#)).





The VIN [E] indicates the type series and the serial number of the machine e.g. H1841234. The first four characters represent the type series (H184), the following characters the serial number of this type series (1234).

The maximum operating weight [J] is the static weight of the machine including:

- Working substances and lubricants
- 100 % fuel tank contents x 0.84 specific weight
- 100 % water & additive tank contents
- 75 kg for the driver
- the static weight of all options or attachments mountable at the same time and approved by HAMM AG (e.g., chip spreader).

No additional ballasting is allowed.

602-02

		
Homologation	[A]	
Bezeichnung Designation	[B]	
Typ Type	[C]	Baujahr Year of Manufacture [D]
Fz. Ident Nr. Serial No.	[E]	Leergewicht Basic Weight [G] kg
Motorleistung Engine Power	[F] kW/min <sup>-1</sup>	Betriebsgewicht Operating Weight [H] kg
Max. Betriebsgewicht Maximum Operating Weight	[J]	kg
Zul. Gesamtgewicht STVZO Admissible Total Weight STVZO	[K]	kg
Zul. Achslast vorn / hinten STVZO Admissible Axle Load front / rear STVZO	[L]	kg
Hersteller: HAMM AG – Hammstraße 1 – D-95643 Tirschenreuth – Germany Made in Germany		

17961

- |            |   |            |  |
|------------|---|------------|--|
| <b>[A]</b> | Homologation (for example the registration number for driving on public roads in Italy) | <b>[B]</b> | Designation  |
| <b>[C]</b> | Type  | <b>[D]</b> | Year of construction   |
| <b>[E]</b> | Vehicle identification number (VIN / PIN)   | <b>[F]</b> | Engine power / Nominal speed                                   |
| <b>[G]</b> | Basic weight  | <b>[H]</b> | Operating weight   |
| <b>[J]</b> | Maximum operating weight  | <b>[K]</b> | Gross vehicle weight rating STVZO (only valid on public roads) |
| <b>[L]</b> | Permissible axle load, front / rear STVZO (only valid on public roads)                  |            |  |







## Type plate roll-over protection ROPS

The roll-over protection, ROPS, approved by the manufacturer for this machine is marked by a type plate attached at the cabin / roll-over bar ([see page 43](#)).

602-03

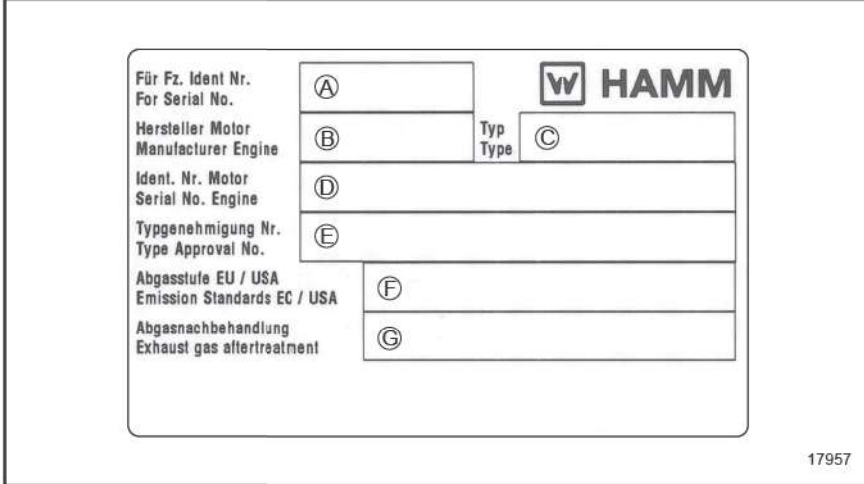
			
Gültig für Baureihe / Typ Valid for Series / Type		[A]	
ROPS Part 1	[B]	ROPS SN 1	[D]
ROPS Part 2	[C]	ROPS SN 2	[E]
FOPS Ident Nr. FOPS Part No.	[F]	Baujahr Year of Manufacture	[G]
Geprüft bis Max. Betriebsgewicht Tested to Maximum Operating Weight DIN EN ISO 3471:2010		[H]	kg
Hersteller: HAMM AG Hammstraße 1 – D – 95643 Tirschenreuth – Germany			

17956

<b>[A]</b>	Series / type (part of the VIN / PIN)	<b>[B]</b>	Cabin / ROPS identification number 1
<b>[C]</b>	Cabin / ROPS identification number 2	<b>[D]</b>	Cabin / ROPS Serial number (if available) 1
<b>[E]</b>	Cabin / ROPS serial number (if available) 2	<b>[F]</b>	FOPS identification number (if installed)
<b>[G]</b>	Year of construction	<b>[H]</b>	Tested up to the maximum operating weight

**Engine nameplate (HAMM)** The engine approved by the manufacturer for this machine is also indicated by a specially produced type plate. As a rule, this is located near the machine type plate.

602-04



The diagram shows a rectangular engine nameplate with the following fields and labels:

- Für Fz. Ident Nr. / For Serial No.:** Field **A**
- Hersteller Motor / Manufacturer Engine:** Field **B**
- Ident. Nr. Motor / Serial No. Engine:** Field **D**
- Typgenehmigung Nr. / Type Approval No.:** Field **E**
- Abgasstufe EU / USA / Emission Standards EC / USA:** Field **F**
- Abgasnachbehandlung / Exhaust gas aftertreatment:** Field **G**
- Typ / Type:** Field **C**
- HAMM logo** is located in the top right corner of the plate.

17957

**[A]** Vehicle identification number      **[B]** Engine Supplier

**[C]** Type      **[D]** Engine identification number

**[E]** Number of the type approval      **[F]** Emission level EU / USA

**[G]** Exhaust gas after-treatment

## 1.07 Noise and vibration requirements

The sound emission of the machine was measured according to the EC Sound Emission Directive in the version 2000/14/EC.

The sound and vibration indications on the driver's seat are in line with the requirements of the EC Machinery Directive in the version 2006/42/EC.

### **Sound power level    Sound indication of the machine**

The guaranteed sound power level is specified in the machine's Technical Details ([see page 166](#) sqq.).

### **Sound intensity level    Sound indication on operator panel**

The sound intensity level on the driver's seat is specified in the machine's Technical Details ([see page 166](#) sqq.) (measurement inaccuracy according to EN ISO 11201).



However, when working in the immediate vicinity of the machine, values may exceed 85 dB(A). In this case wear always your personal noise protection (ear protection).

### **Vibration indication on the operator panel**

#### **Whole body vibration**

The weighted rms values of the acceleration with whole body vibrations on the operator's seat have been accessed in accordance with EN1032 and do not exceed  $a_w = 0.5 \text{ m/s}^2$ .

#### **Hand arm vibrations**

The weighted rms values of the acceleration with hand arm vibrations have been accessed in accordance with EN 1032 and do not exceed  $a_{hw} = 2.5 \text{ m/s}^2$ .

602-06

## 1.08 Personnel

### 1.08.01 Qualification and duties

**Operating personnel** All activities at the machine must be carried out by authorised operating personnel only. In this operating manual the term operating personnel refers to all authorised persons that are responsible for operating, maintaining, installing, setting up, cleaning, repairing or transporting the machine.

**This comprises the following persons:**

- Machine operator
- Maintenance personnel

Persons are deemed as authorised that have been trained, qualified and instructed for carrying out relevant activities at the machine and that have proven their skills to the contractor. The operating personnel must be authorised by the contractor for those activities at the machine.

**In addition to the qualifications specified in the safety instructions, the operating personnel must:**

- Have read and understood the operating manual.
- Be trained and instructed according to the rules of action in the case of perturbation.

**Please adhere to the following instructions:**

- Please drive the machine only if you are entirely familiarised with the operating and control elements and the method of operation.
- Please use this machine only according to its intended purpose.
- In case you detect any defects, such as at the safety equipment, that may affect the safe operation of the machine, please immediately notify the supervising body.
- With defects that may endanger persons, please stop operating the machine immediately.
- Please ensure that the machine is compliant with all requirements concerning traffic law.

**Banksman Only persons are to marshal independently that:**

- Have been trained in marshalling others (the machine).
- Have successfully proven their participation in such a course.
- Have proven their skills to the contractor.
- Fulfil their tasks in a reliable manner.
- Have been appointed by the contractor / company as a banksman.

The meaning of signals must be unambiguous between driver and banksman.

To avoid ambiguities, clarify hand signal, such as specified by the German BG Directive "Safety and Health Protection Signals at Work", should be used.



**Please adhere to the following instructions:**

- Please make yourself familiar with the machine's and the loading vehicle's dimensions.
- Wear reflective clothing.
- For marshalling please use voice radio (e.g when loading with a crane) or via hand signals (e.g. when reversing the machine).

602-07

## 1.09 General safety instructions

**Safety instructions** The safety instructions are part of the operating manual. Please make yourself familiar with these safety instructions prior to working with the machine.

**Guidelines and Regulations** In addition to this operating manual, it is also necessary to adhere to all laws, standards, regulations and provisions applicable in the country of use and at the building site. The vandalism protection for the lighting is not permitted by the StVZO (Germany) and must be removed when travelling on public roads.

**Additional information** In case you should obtain additional technical and/or safety-relevant information for the machine, they also must be adhered to and need to be attached to the operating manual.

**Electrical system** During works at the electrical system, the machine must be de-energised at the battery isolating switch (if available) or by disconnecting the negative terminal (ground strap) at the battery.

**ROPS roll-over protection / FOPS Falling object protection** The machine frame in way of the ROPS or/and FOPS mounting may not be distorted, bent or torn (deformed). The reinforcement elements of the cabin / roll-over bar must not show rust, damage, fissures or open fractures. All screwed connections of the reinforcement elements must comply with the given specifications and must be screwed tightly to each other. Observe starting torque values! Bolts and nuts must not be damaged, bent or deformed. It is absolutely forbidden to modify or repair / level the reinforcement elements in any way ([see page 182](#) sqq.).

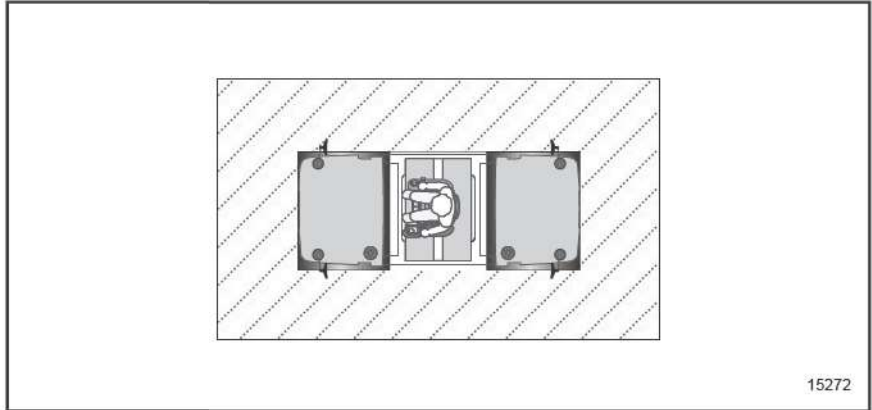
610-05

## 1.10 Danger zone



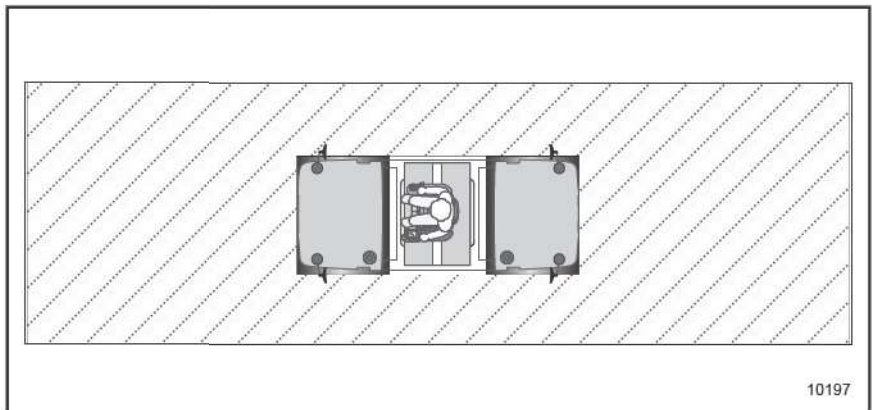
The machine's danger zone is divided into the areas inactive and moving.

### Zone "inactive"



With the machine put out of operation and with the diesel engine switched off, an area 1 metre around the machine is defined as danger zone. Only authorised operating personnel is allowed to enter the danger zone.

### Zone "moving"



**For a moving machine the danger zone is defined as follows:**

<b>13 metres</b>	In front of and in the rear of the machine
<b>3 metres</b>	To the left and right of the machine

During compaction and transport works no persons are allowed to be within the danger zone.

610-06

## 1.11 Loading and Transporting

**Guidelines and Regulations** When loading rollers onto lorries, trailers or semitrailers, it is obligatory to secure the load properly. The duty for tie-down on street vehicles arises from StVO § 22, StVO § 23, StVZO § 30, StVZO § 31, HGB § 412 as well as from VDI guideline 2700 or other local requirements. Sufficient knowledge about the loading of vehicles as well as about their behaviour under load are required for loading and transporting the machine. The machine may only be loaded by trained loading staff. The machine must be fixed or stowed in transport-safe way to the vehicle by an form-locked or friction-locked manner or by a combination of both. The machine must not change its position on the vehicle during normal traffic loads. Typical transport stresses also include emergency braking, evasive manoeuvres and unevenness of the road. If it is impossible to secure the machine properly onto the vehicle, or if the loading vehicle shows visible defects which do not ensure safe transport, loading must not be performed. This condition or requirement also applies to too little or damaged lashing tackle.

The transport company involved is always responsible for the safe transport of the machine and accessories.

716-11

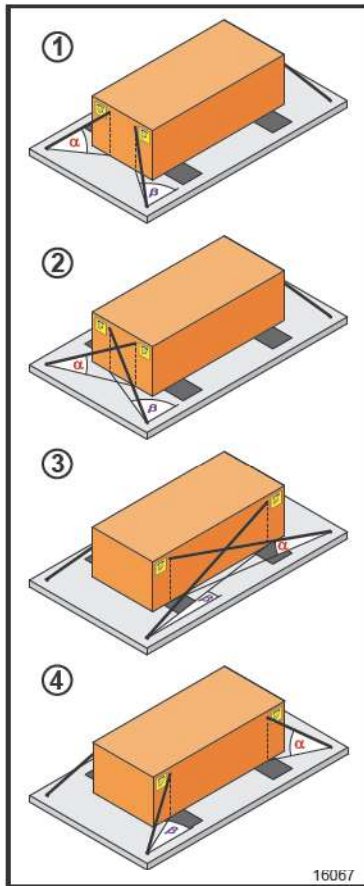
**Loading instructions** When loading please observe the following instructions:

- Adhere to section Transport as specified in the safety instructions.
- Observe weight and dimensions ([see page 166](#) sqq.).
- Observe the legally required maximum height.
- Only use approved gantries or planks that are provided with an antiskid coating. Never drive with metal on metal.
- Gantries, planks and loading areas must be swept clean and free of grease, dirt and ice etc. Clean roller drums and tyres prior to driving on the gantries. Please ensure a friction factor is  $\mu \geq 0.6$ , e.g. by use of anti-slide mats.
- Either remove every loose or movable part in or at the machine, or secure such parts separately.
- In case of rollers with articulated steering, the safety strut must always be activated for transport.
- Remove wedges and lashing devices completely before unloading. Unblock steering system by unblocking the safety strut.
- Drive the roller slowly and carefully from the loading area.

716-16



**Load securing    Special notes**

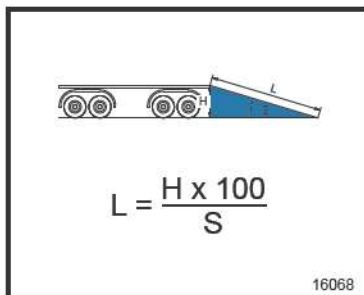


- Variant ① and variant ② may be combined. The lashing devices must not necessarily be arranged crosswise.
- Do not use any lashing device unless it is of sufficient dimension, bears the corresponding marking, and has been subjected to a valid inspection.
- Lash the machine with appropriate lashing devices onto the loading area, using only the marked lashing lugs.
- Observe the load for the lashing point(s) at the vehicle / load platform and at the load / roller. Do not overload the lashing points with a tensioning device (see the loading tables).
- To increase load safety, use additional precautions for securing the load including, e.g., wheel stop wedges, or a positive fit at the gooseneck.



Store the machine on the load platform, placing two continuous and clean strips of anti-slide mats (grammage approx. 10 kg/m<sup>2</sup>, loadable up to 630 t/m<sup>2</sup>, 10 mm thick, friction factor  $\mu \geq 0.6$ ) under every roller drum / tyre.

716-10

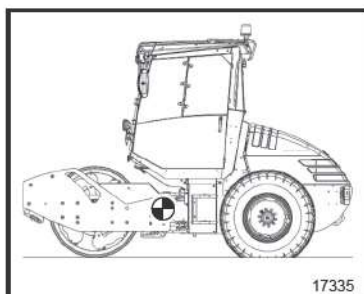


Maximum permissible ramp slope: see loading chart

[L] Ramp length (mm)

[H] Difference in height (mm)

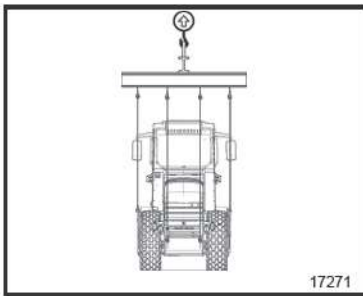
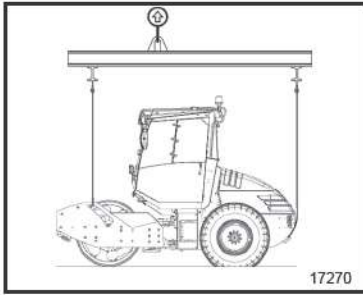
[S] Ramp slope (%)



Make certain to use a proper load distribution plan.

[⊙] Center of gravity

**Crane loading**    **Special notes**



- The crane vehicle must be positioned on flat ground providing the bearing capacity required while observing all relevant safety regulations.
- The crane's load table must correspond to the weight and to the centre of gravity of the machine to be lifted.
- Take suitable precautions to block access to the lifting area in order to prevent any person from moving or staying within the danger zone.
- Hoisting gears may only be attached to the appropriate lifting lugs provided for them.
- Observe the lifting capacity of the sling gear.
- Use lifting frames or spreader beams if necessary.

**Loading chart**

Diagram of the transport position

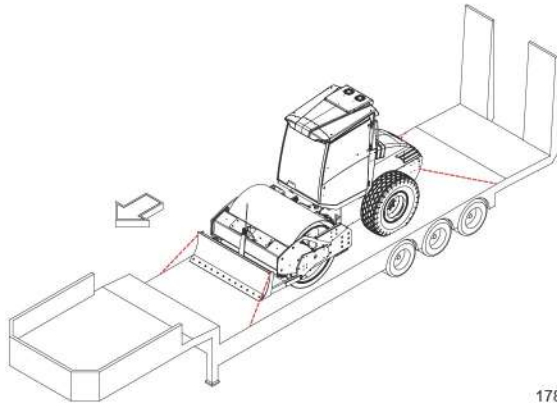
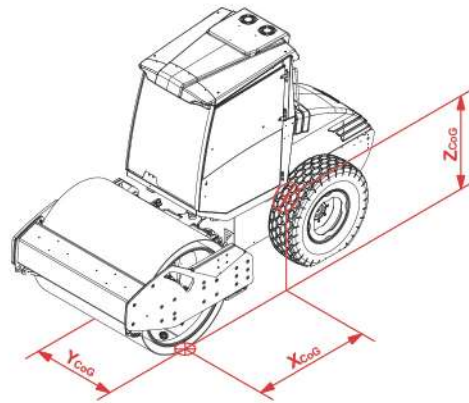
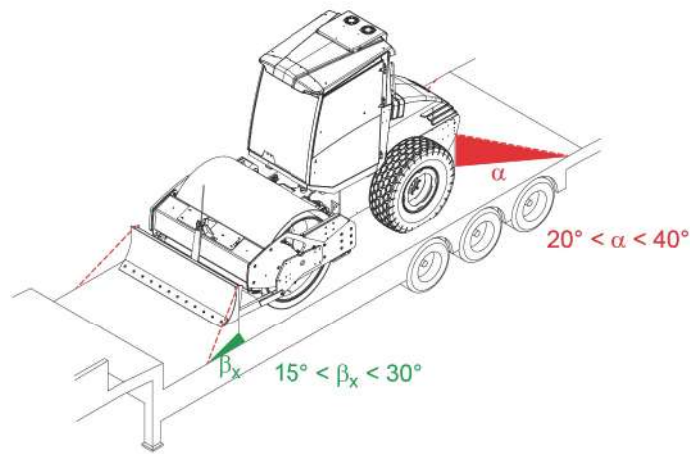


Diagram of the centre of gravity specifications:

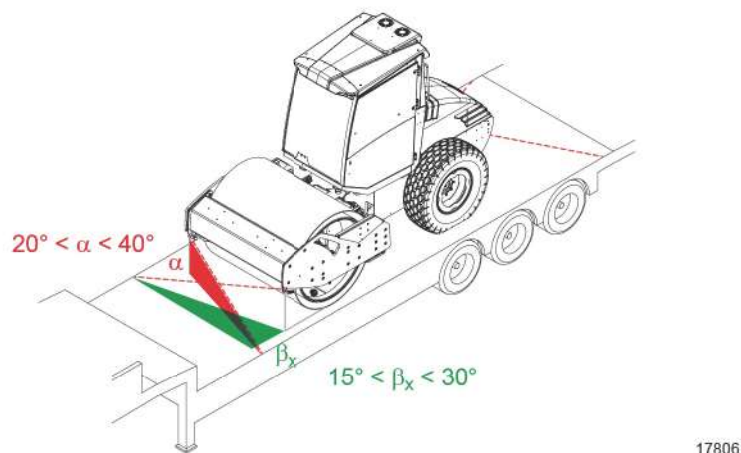


Lashing variant 1



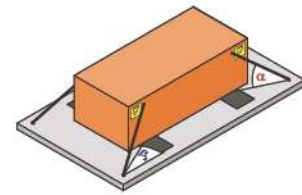
Weight class [t]	Lashing force LC ( $\mu=0.6$ ) [daN]
to 8.1	2000

Lashing variant 2

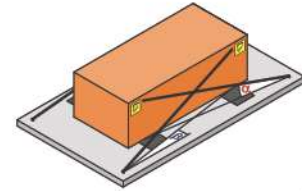


Weight class [t]	Lashing force LC ( $\mu=0.6$ ) [daN]
to 8.1	2000

Machine parameters	
Weight of machine [t]	5.0 t < m < 8.1 t
Area of center of gravity [mm]	X <sub>CoG</sub> = 703-947 Y <sub>CoG</sub> = 685-840 Z <sub>CoG</sub> = 580-660
Identification reference point:	Centre drum, front left
Interface parameters:	
Type of contact:	Anti-slip Material
Frictional force [ $\mu$ ]:	0.6
Heavy load capacity:	yes
Contact points:	under contact pair
Vertical lashing angle $\alpha$ :	$20^\circ < \alpha < 40^\circ$
Longitudinal, horizontal angle $\beta_x$ :	$15^\circ < \beta_x < 30^\circ$



17329



17340

Specification of attachment points on the load:			
Tensile capacity of lashing point [daN]:	2000		
Marking of lashing point:	Symbol ISO 6405-1		
Number of lashing points:	4		
Specification of lashing points on the means of transport:			
Tensile capacity of lashing point [daN]:	$\geq 2000$		
Number of lashing points:	4		
Load securing equipment:			
Wedge blocks:	no	Quantity: 0	Miscellaneous:
Other types of blocking:	Positive blocking longitudinally / transversely to the direction of travel		
Lashing equipment capacity [daN]:	2000	Quantity: 4	Miscellaneous:
Recommended type of lashing equipment:	Chain (6/8 2200 daN), Belt (2000 daN) as an alternative		
Connecting pieces to the lashing point:	Hook with safety latch		



## **Specific safety instructions**

- Drive the machine slowly onto the loading area in working speed, using the medium speed setting of the diesel engine (ECO or 2/3).
- Observe maximum permissible ramp slope (28.5 %, approx. 16°)
- Secure the clamping devices
- On rubber wheeled rollers with tyre filling system, the tyre filling system must be set to 0.6 MPa (6 bar, 87 psi).
- Check the inflation pressure at least every 24 hours and, if refill the air, if necessary.

## **Miscellaneous:**

- Slot in the seat console, close the cabin doors, lower the bulldozer blade

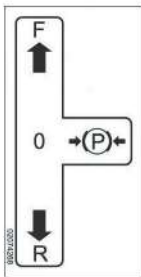
## 1.12 Stickers on the machine

You will find the precise arrangement of stickers in the spare parts catalogue.

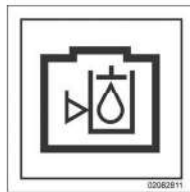
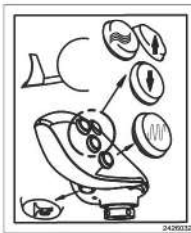
The safety manual contains the warning labels.

### 1.12.01 Information sign

In the following you will find a list of all information signs. Illustrations and values of the signs may vary depending on the machine type.



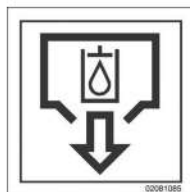
**Drive lever function**



**Hydraulic oil filling level**



**Hydraulic oil reservoir inlet**



**Hydraulic oil reservoir outlet**



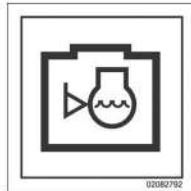
**Socket 12V**



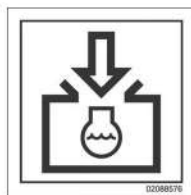
**Engine oil outlet**



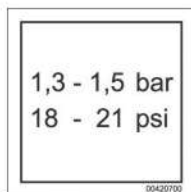
**Water sump fuel filter outlet**



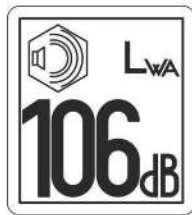
**Coolant filling level**



**Coolant inlet**



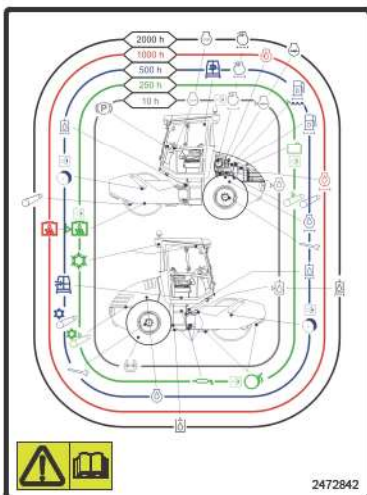
**Inflation pressure**  
Tyre without water filling



**Guaranteed sound power level**



**Expert inspection test badge**



**Maintenance overview**





## 2 DESCRIPTION



When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01

### 2.00 Technical characteristics of the machine

- Drive** Hydrostatic all-wheel drive
- infinitely variable
  - Single lever operation
- Vibration** Direct hydrostatic drive
- Steering** Hydrostatic servo-assisted steering via centre pivot assembly
- Large steering angle to both sides
  - Pendulum compensation upwards and downwards
- Service brake** During operation, the machine is braked with the hydrostatic drive.
- Wear-free brakes
- Parking brake** Spring-operated brake acting upon each hydromotor of the drive
- Manually and automatically
- EMERGENCY STOP brake** Machine is braked with spring-operated brakes and hydrostatic drive.
- Electrical system** Operating voltage 12 V

100-14

## 2.01 General view of machine



This operating manual applies to several types of this series. Therefore it is possible that these instructions include descriptions of operating elements not installed on your machine.

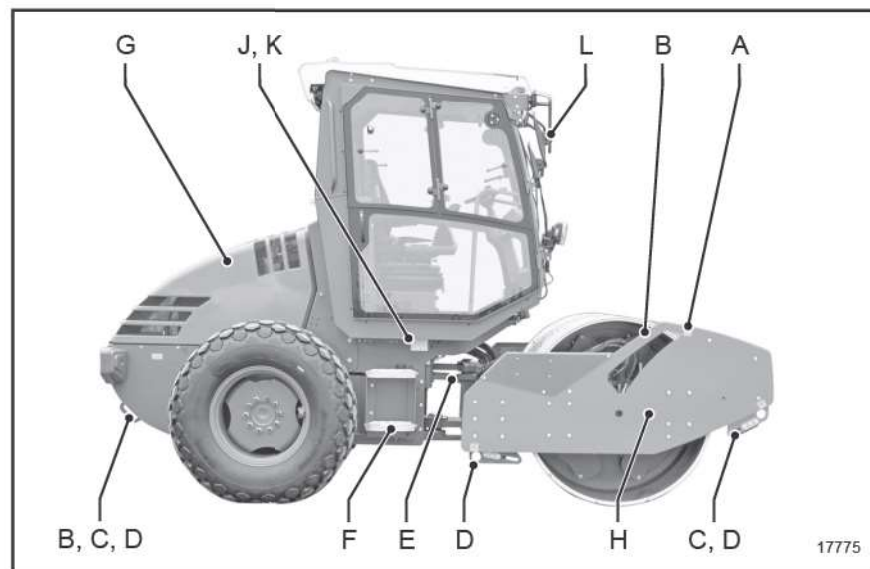
000-03



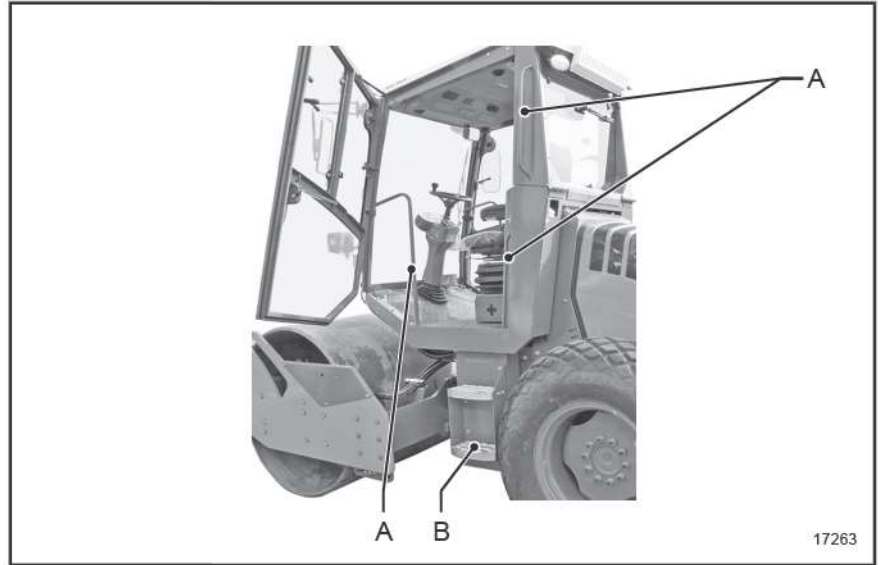
Please observe chapter 6, too. Here you find the description, operator control and maintenance of auxiliary equipment.

000-64

### 2.01.01 Chassis / safety devices

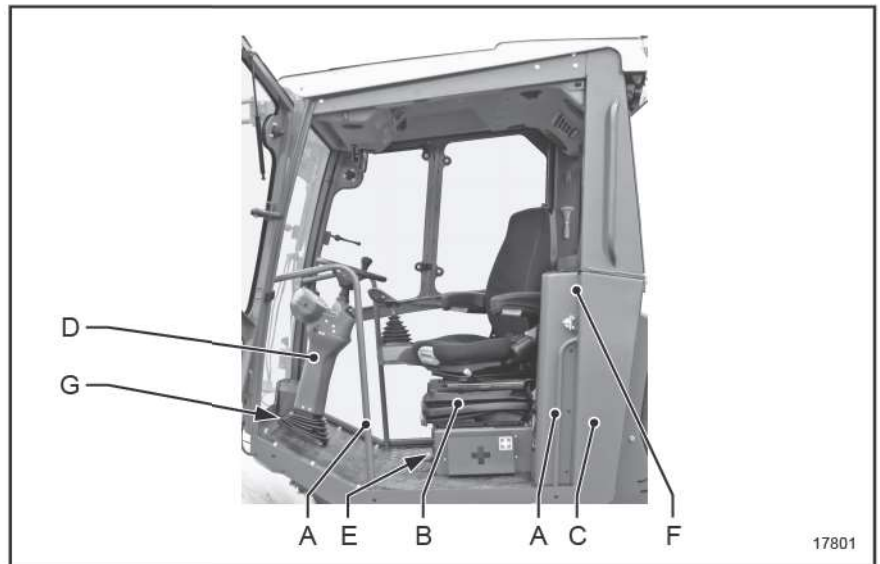


<b>[A]</b>	Stickers indicating dangers	<b>[B]</b>	Towing eyes for crane loading
<b>[C]</b>	Towing eye	<b>[D]</b>	Lashing point
<b>[E]</b>	Safety strut	<b>[F]</b>	Steps
<b>[G]</b>	Engine hood	<b>[H]</b>	Chassis
<b>[J]</b>	Vehicle identification number (VIN)	<b>[K]</b>	Machine type plate / engine nameplate (HAMM)
<b>[L]</b>	Operation mirror / rear-view mirror		



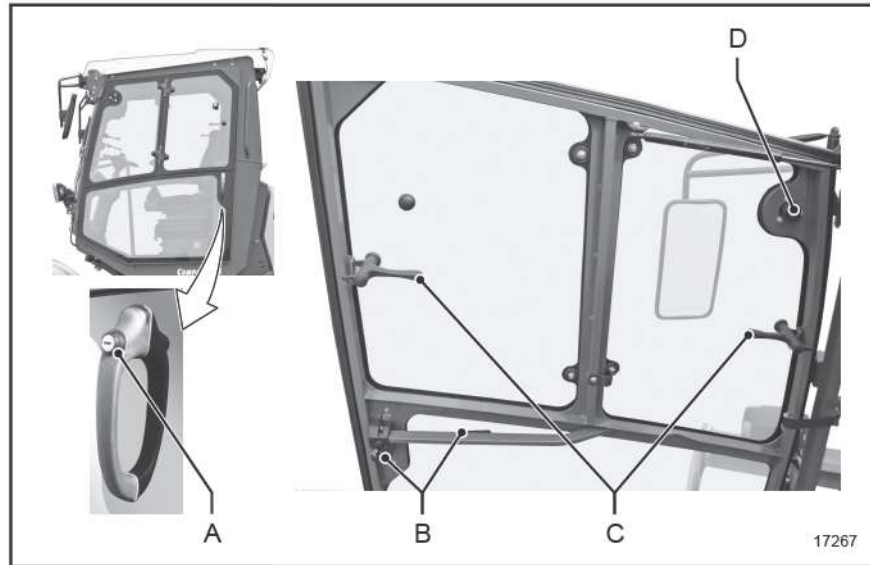
**[A]** Climbing handhold      **[B]** Steps

### 2.01.02 Control stand ROPS cabin



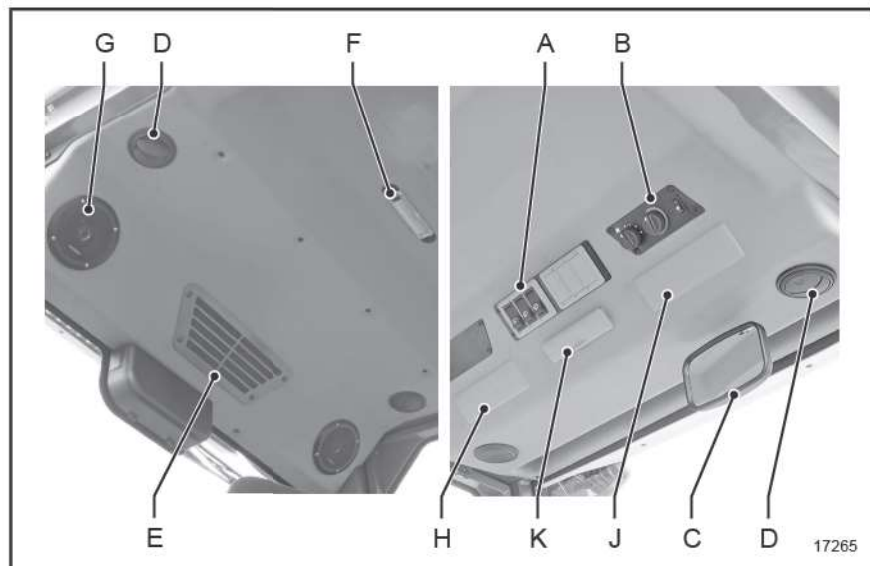
<b>[A]</b>	Handles	<b>[B]</b>	Operator's seat console
<b>[C]</b>	Operator's cab	<b>[D]</b>	Steering console
<b>[E]</b>	Stacker for instruction manual / first aid kit	<b>[F]</b>	ROPS cabin type plate
<b>[G]</b>	Position for *fire extinguisher		

**Cabin door**



- |            |                          |            |                           |
|------------|--------------------------|------------|---------------------------|
| <b>[A]</b> | Lock operation, outside  | <b>[B]</b> | Lock operation, inside    |
| <b>[C]</b> | Door glass locking lever | <b>[D]</b> | Door glass locking device |

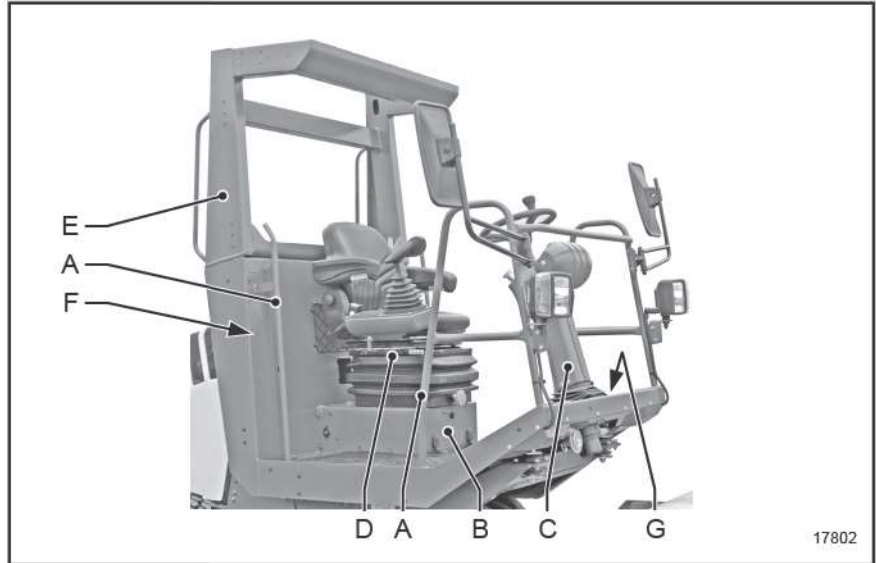
**Operator's cabin roof section**



- |             |                                      |             |                                      |
|-------------|--------------------------------------|-------------|--------------------------------------|
| <b>[A]</b>  | Windscreen wiper switch unit         | <b>[*B]</b> | Switch unit, air conditioning system |
| <b>[C]</b>  | Inside mirror                        | <b>[*D]</b> | Air conditioning ventilation nozzles |
| <b>[*E]</b> | Aspiration duct for air conditioning | <b>[F]</b>  | Cab lighting                         |
| <b>[*G]</b> | Loudspeaker                          | <b>[*H]</b> | Position for tachograph              |
| <b>[*J]</b> | Position for radio                   | <b>[*K]</b> | Fuses, operator's cabin              |

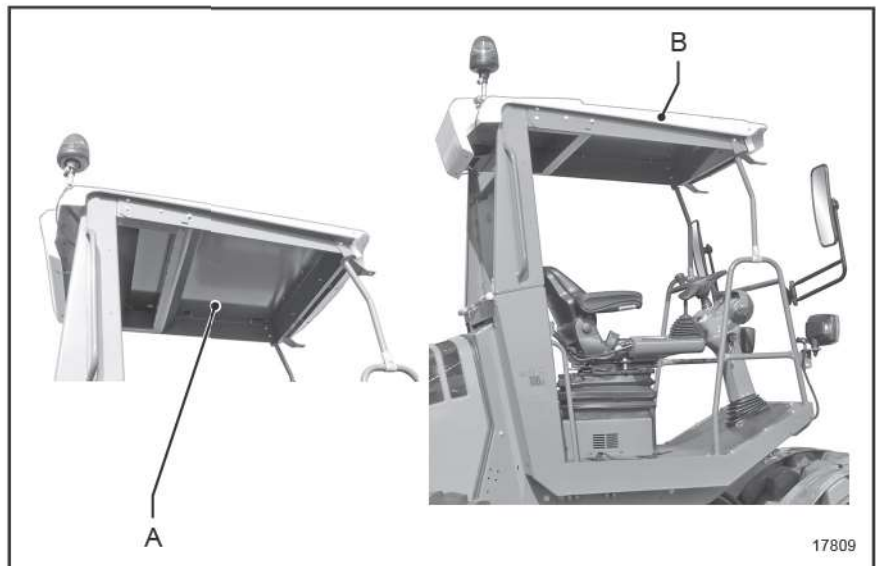


## ROPS roll-over bar



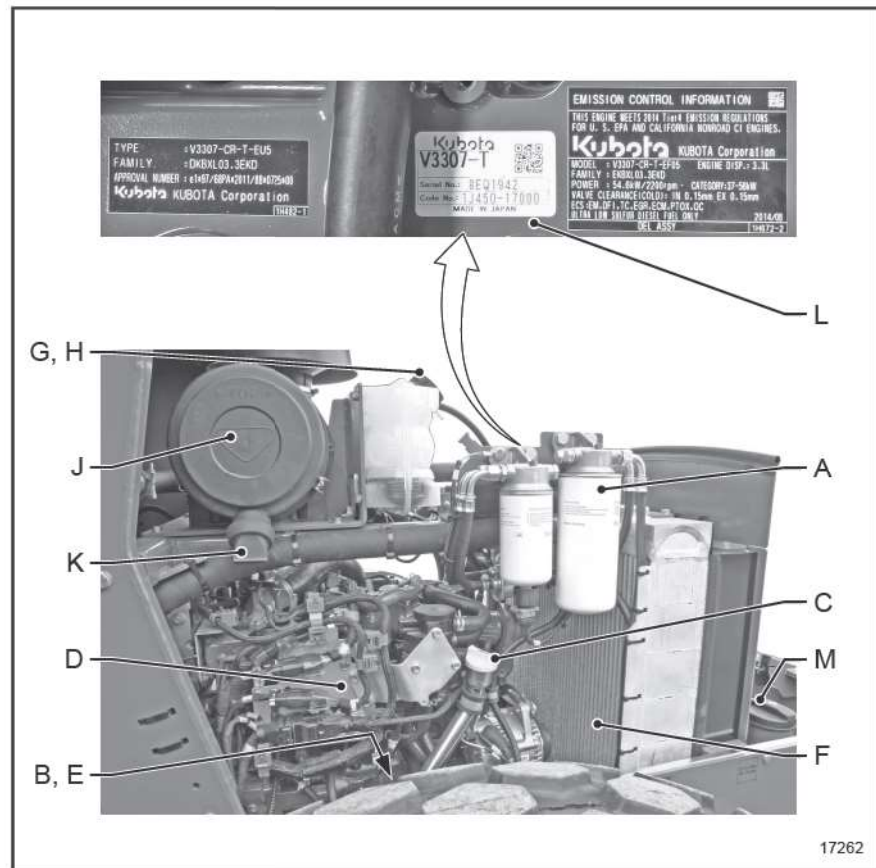
[A]	Handles	[B]	Stacker for instruction manual / first aid kit
[C]	Steering column	[D]	Operator's seat console
[E]	Roll-over bar	[F]	ROPS roll-over bar type plate
[G]	Position for *fire extinguisher		

## FOPS Falling object protection

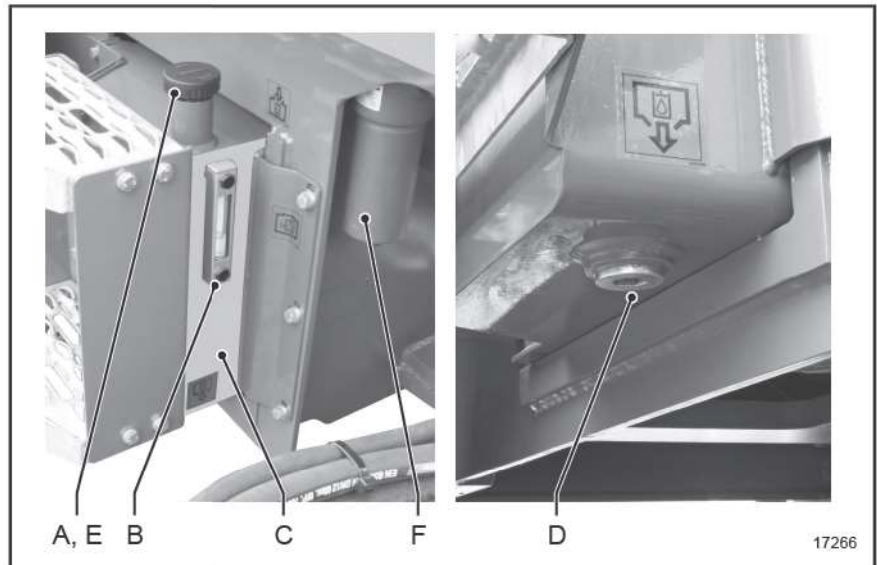


[*A]	FOPS, integrated	[*B]	Roof
------	------------------	------	------

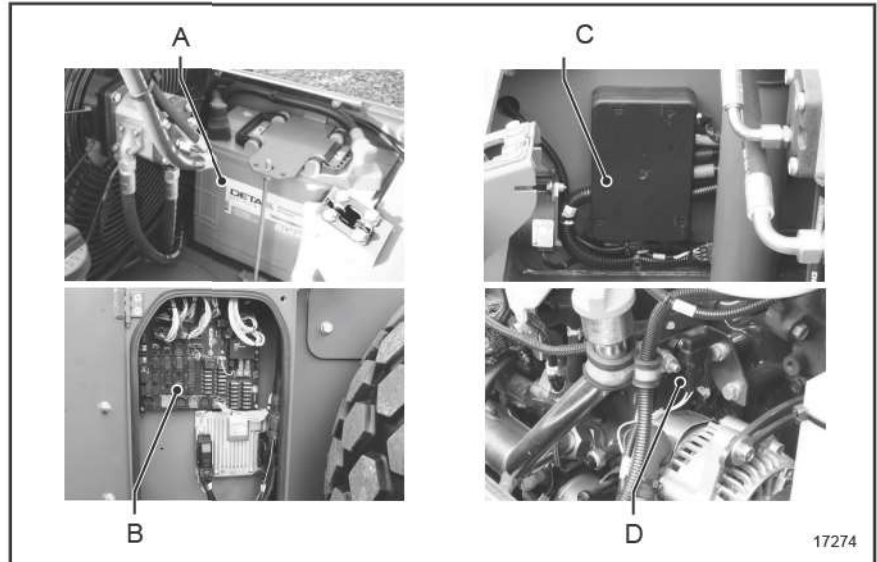
## 2.01.04 Drive unit / diesel engine



<b>[A]</b>	Fuel system	<b>[B]</b>	Oil gauge stick
<b>[C]</b>	Oil inlet	<b>[D]</b>	Diesel engine with drive units
<b>[E]</b>	Oil outlet	<b>[F]</b>	Cooling system
<b>[G]</b>	Coolant inlet	<b>[H]</b>	Coolant filling level
<b>[J]</b>	Air filter	<b>[K]</b>	Dust discharge valve
<b>[L]</b>	Diesel engine type plate	<b>[M]</b>	Fuel intake

**2.01.05 Hydraulic oil supply**


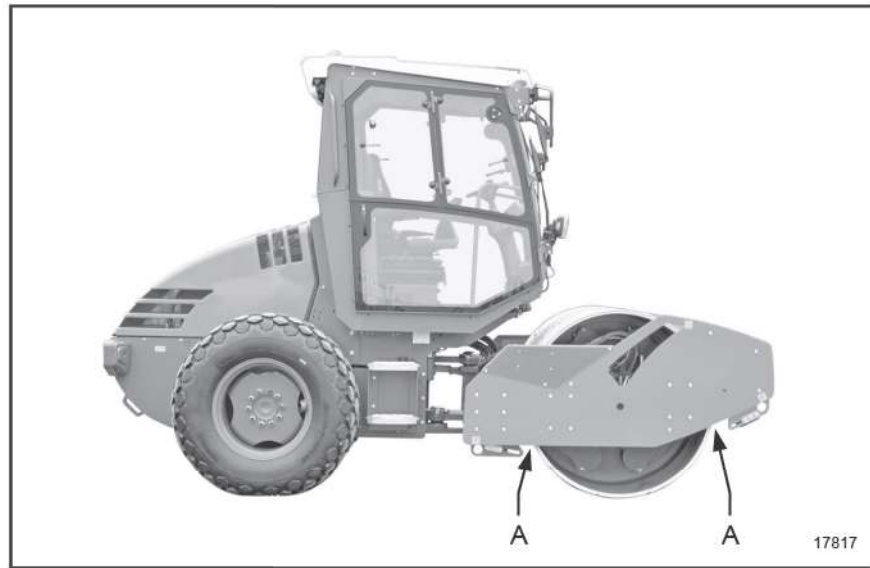
<b>[A]</b>	Oil inlet	<b>[B]</b>	Level indicator
<b>[C]</b>	Hydraulic oil reservoir	<b>[D]</b>	Oil outlet
<b>[E]</b>	Ventilation filter of hydraulic oil tank	<b>[F]</b>	Hydraulic oil filter

**2.01.06 Electrical equipment**


<b>[A]</b>	Battery	<b>[B]</b>	Fuses, electric box
<b>[C]</b>	Main fuses	<b>[D]</b>	Fuse, alternator D+

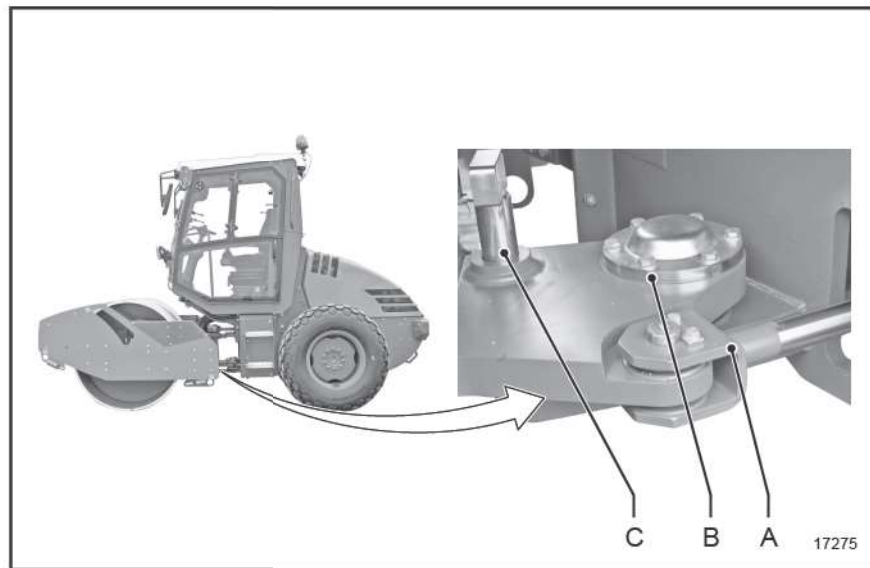
**2.01.08 Drive**

**Scraper**



**[A]** Scraper

**2.01.09 Steering system**



**[A]** Steering cylinder

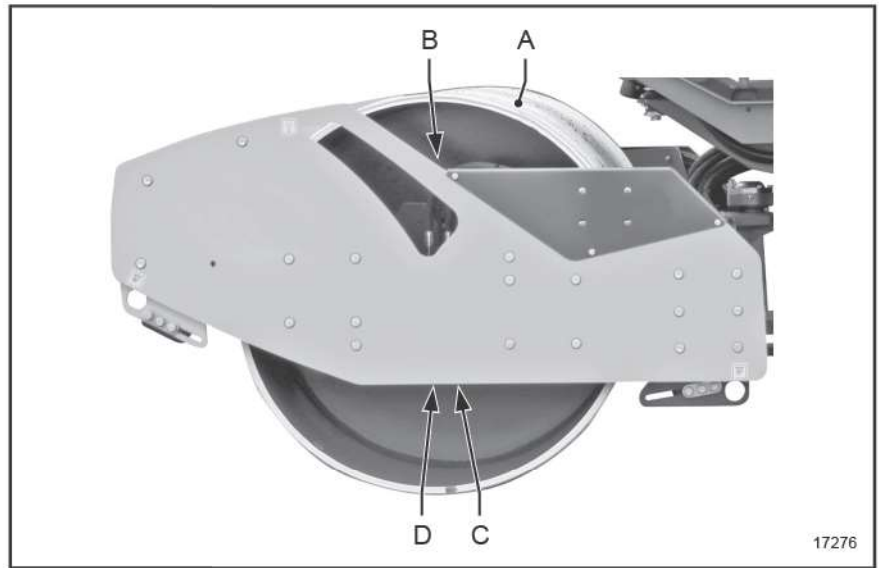
**[B]** Articulated pendulum joint

**[C]** Safety strut





## 2.01.26 Vibration



<b>[A]</b>	Drum with vibrator	<b>[B]</b>	Oil inlet for vibrator
<b>[C]</b>	Fill level indicator of vibrator	<b>[D]</b>	Oil outlet for vibrator

## 2.02 General view of instruments and operating elements



All instruments and operating elements are marked by numbers. You will find a description in chapter 3 under the corresponding element.

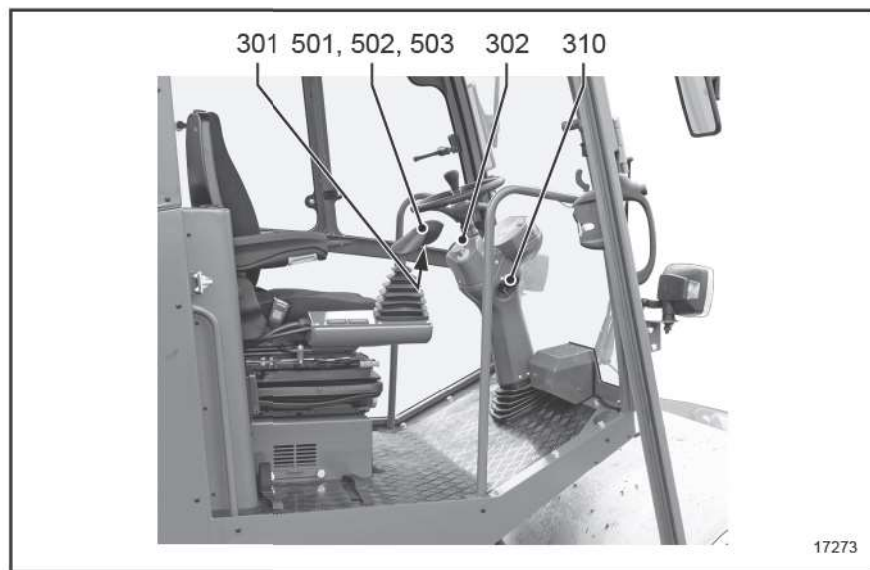
000-04



Please observe chapter 6, too. Here you find the description, operator control and maintenance of auxiliary equipment.

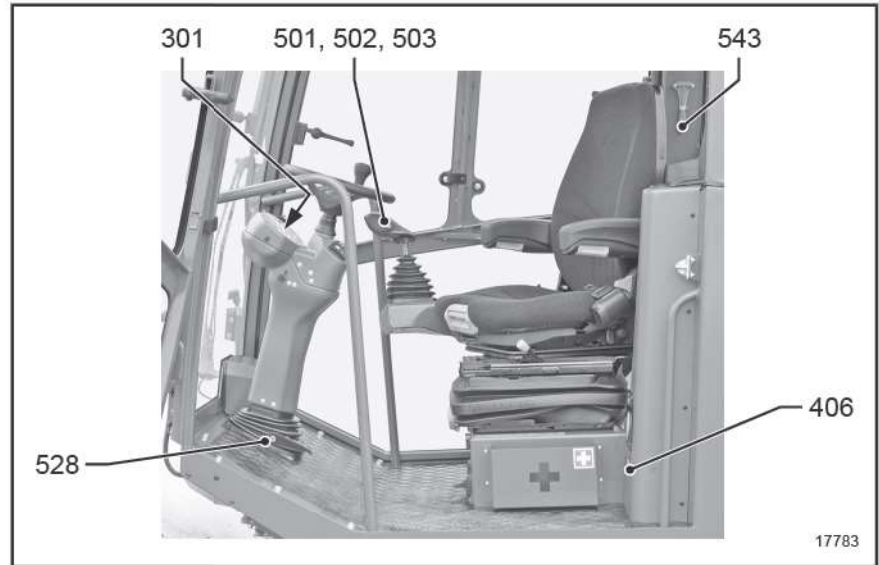
000-64

### 2.02.02 Control stand Operator's platform



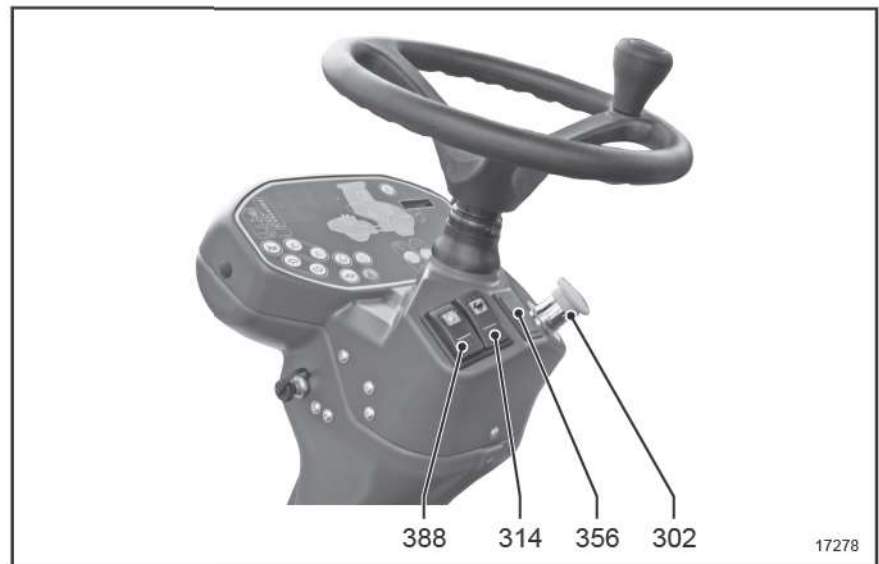
17273

<b>[301]</b>	Signal horn switch	<b>[302]</b>	EMERGENCY STOP switch
<b>[310]</b>	Electrical system / engine start switch	<b>[501]</b>	Drive lever
<b>[502]</b>	0 position lock / parking brake	<b>[503]</b>	Multifunction handle



<b>[301]</b>	Signal horn switch	<b>[406]</b>	Socket 12 V / cigarette lighter
<b>[501]</b>	Drive lever	<b>[502]</b>	0 position lock / parking brake
<b>[503]</b>	Multifunction handle	<b>[*528]</b>	Steering console adjustment
<b>[543]</b>	Emergency hammer		

### Instrument console

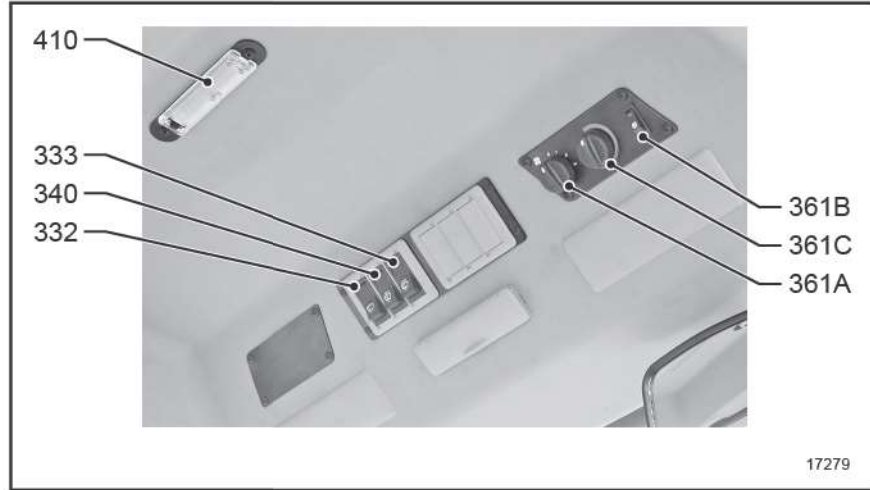


<b>[302]</b>	EMERGENCY STOP switch	<b>[314]</b>	Gear shifting switch
<b>[*356]</b>	Battery cut-off control unit switch (battery isolating switch)	<b>[388]</b>	Engine speed switch

**Description**

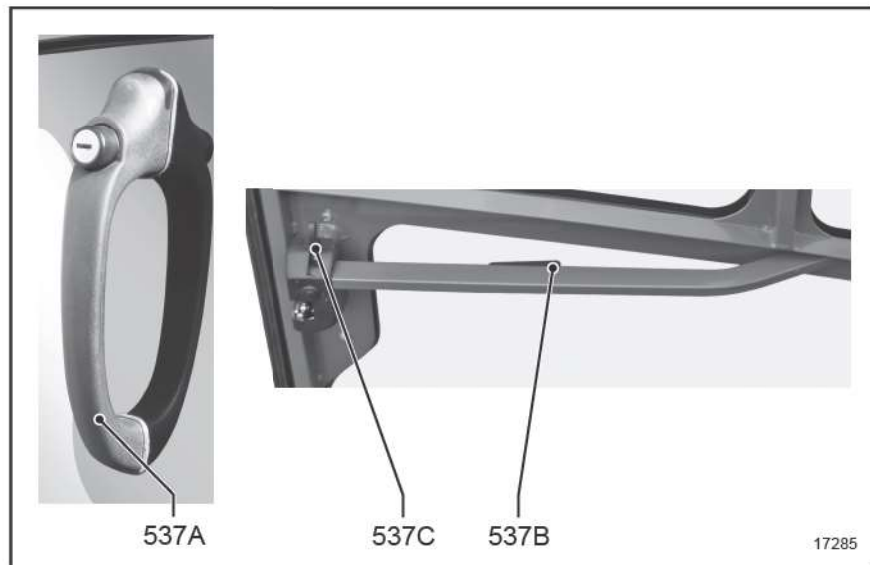
General view of instruments and operating elements

**Operator's cabin roof section**

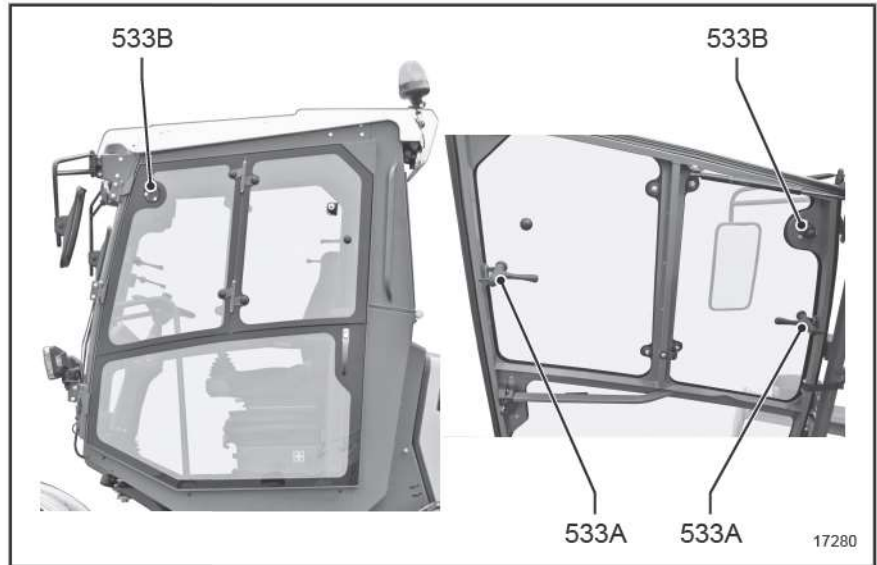


- |   |   |
|---|---|
| <b>[332]</b> Front windscreen wiper switch  | <b>[333]</b> Rear windshield wiper-<br>ing / washing switch |
| <b>[340]</b> Front windshield washer switch | <b>[*361]</b> Air conditioning system control unit          |
| <b>[410]</b> Cab lighting                   |   |

**Door lock**



- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| <b>[537A]</b> Lock operation, outside | <b>[537B]</b> Lock operation, inside |
| <b>[537C]</b> Lock operation, inside  |                                      |

**Door glass****[533A]** Locking lever**[533B]** Door glass locking device with stop knob**Driver's seat****[520]** Seat adjustment weight / height**[521]** Seat adjustment forward - backward**[522]** Seat backrest adjustment**[523]** Seat adjustment elbow-rest**[524]** Seat adjustment rotation**[\*525]** Seat adjustment left - right

**Description**

General view of instruments and operating elements

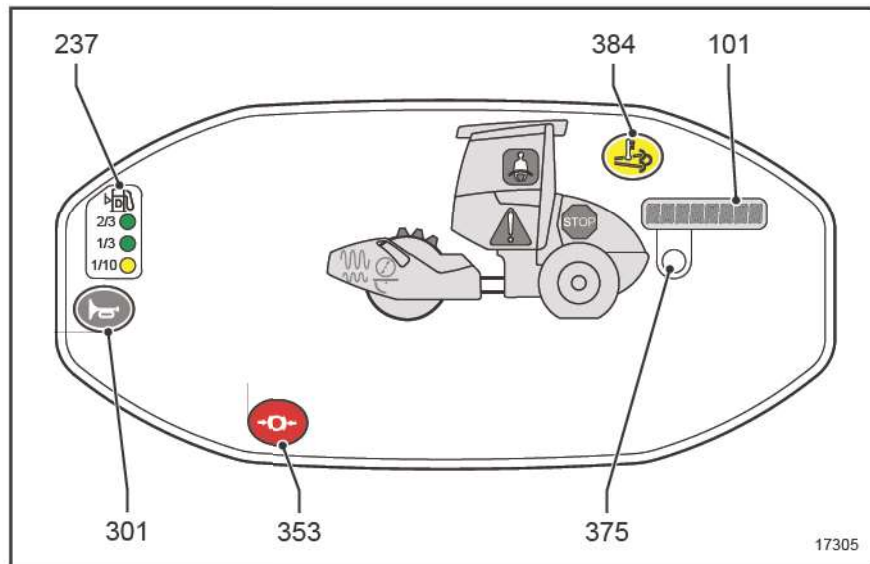
**Cabin heating**



**[330]** Cabin heating fan switch

**[347]** Cabin heating switch, temperature regulation

**Normal mode control unit**



**[101]** Display system info

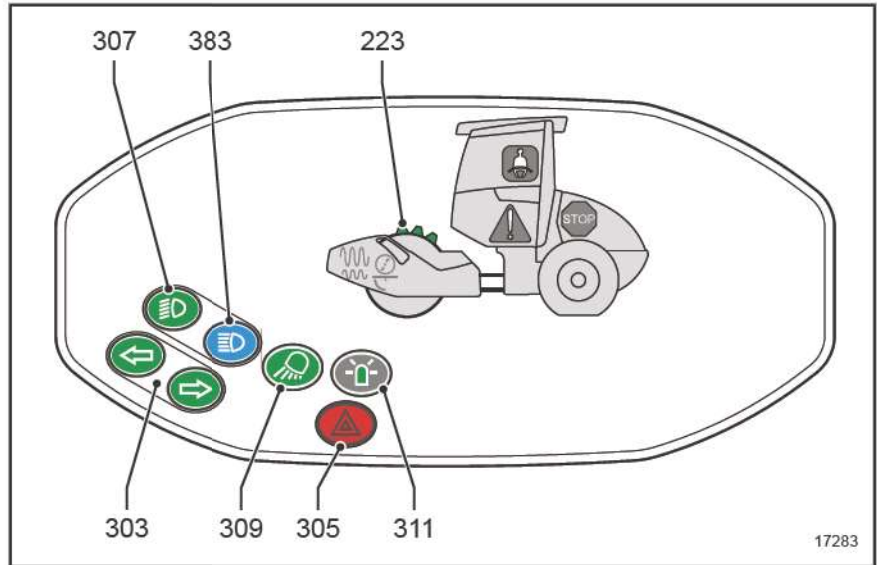
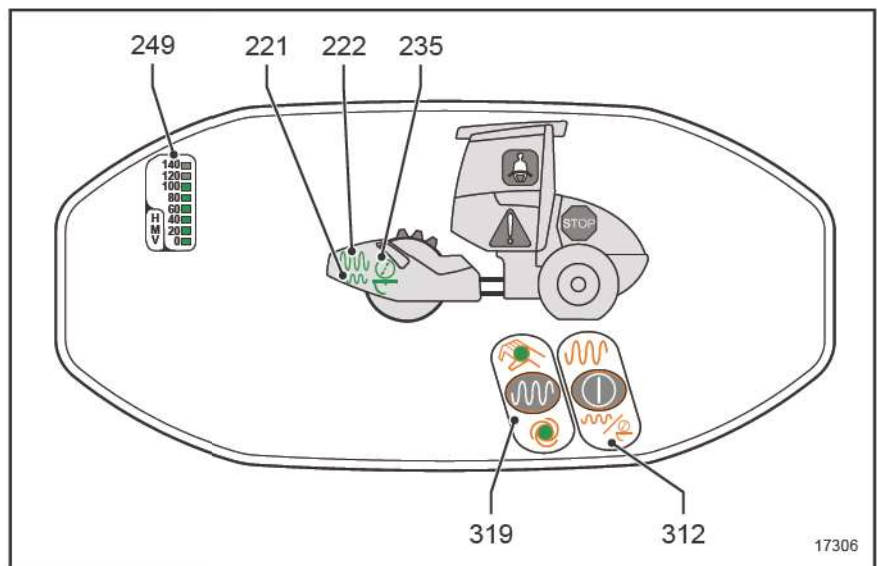
**[237]** Fuel level pilot light

**[301]** Signal horn switch

**[353]** Switch, parking brake monitoring

**[375]** Switch system info

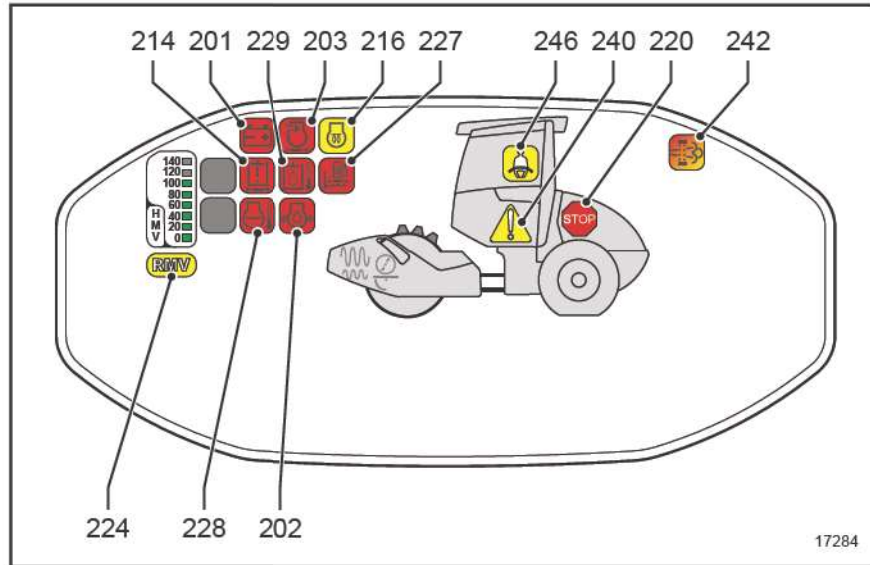
**[384]** DPF regeneration switch

**Driving control unit****[223]** without function**[\*303]** Flashing indicator switch**[\*305]** Warning flasher switch**[\*307]** Driving light switch**[\*309]** Working lights switch**[\*311]** Rotating light switch**[\*383]** High beam switch**Control unit vibration / oscillation****[221]** Small amplitude pilot light (only H 7i)**[222]** Large amplitude pilot light**[\*235]** Pilot light oscillation**[\*249]** Pilot light, compaction HMV**[312]** Vibration / oscillation switch**[\*319]** Switch, manual-automatic vibration mode

**Description**

General view of instruments and operating elements

**Warning lamps control unit**



<b>[201]</b> Charge current pilot light	<b>[202]</b> Oil pressure pilot light
<b>[203]</b> Air filter pilot light	<b>[214]</b> Pilot light, hydraulic oil filter
<b>[216]</b> Pilot light, cold start assistance	<b>[220]</b> STOP pilot light
<b>[*224]</b> Pilot light RMV (jump operation)	<b>[227]</b> Pilot light, water sump fuel prefilter
<b>[228]</b> Engine temperature pilot light	<b>[229]</b> Oil temperature pilot light, hydraulic system
<b>[240]</b> Warning, notice, malfunction pilot light	<b>[242]</b> DPF service pilot light
<b>[*246]</b> Pilot light, safety belt	



## 3 OPERATION

### 3.00 Instruments and operating elements



The instruments and operating elements are arranged in this section in ascending order according to their number. These numbers in squared brackets are used as a reference in the description of the elements.

000-05



Please observe chapter 6, too. Here you find the description, operator control and maintenance of auxiliary equipment.

000-64

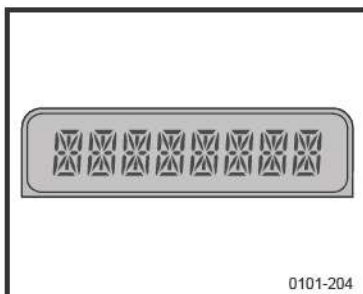
#### 3.00.01 Indicators, displays

##### Electrical equipment

When switching on the electrical system with the switch [310] all pilot lights and indicators are activated for ca 2 seconds . Check whether all elements are operable. You find further explanations in the section Operational monitoring ([see page 94](#) sqq.).

100-06

##### 101 System info



Via the indicator, the driver gets the information about machine condition, settings and system messages.

With the switch [375] you can select the corresponding display.

##### Operating hours

After the electrical system is switched on, the operating hours of the machine are shown in the display field. Maintenance work has to be carried out according to the accumulated operating hours.

##### Engine speed

Indicator of the engine speed (revolutions per minute).

##### Diagnostic Codes

A short acoustic signal sounds when a fault is detected. The display shows all the existing faults one above the other in the form of diagnostic codes (scrolled).

##### \*Driving speed

Indication of the driving speed in km/h or mph.

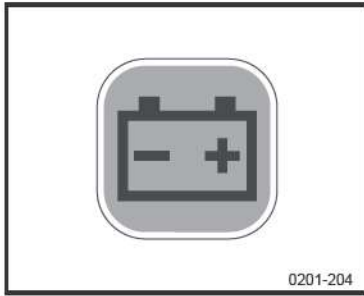
##### \*Vibration / oscillation frequency

Indication of the current frequency.

101-08

### 3.00.02 Pilot lights

#### 201 Charge current



Flashing during operation indicates missing charging current.

201-06

#### 202 Engine oil pressure



Flashing during operation indicates insufficient oil pressure.

202-07

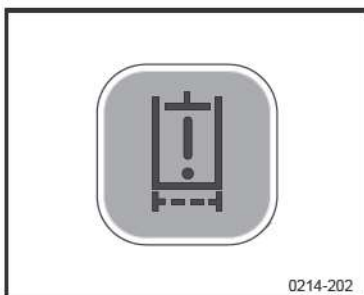
#### 203 Air filter



Flashing during operation indicates a clogged air filter cartridge.

203-04

#### 214 Hydraulic oil filter

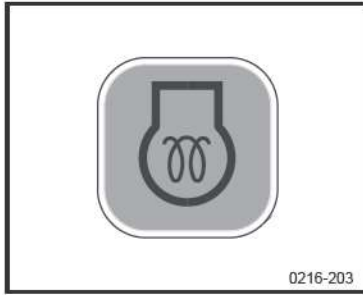


Flashing during operation indicates a clogged filter cartridge of the hydraulic oil filter.

214-01



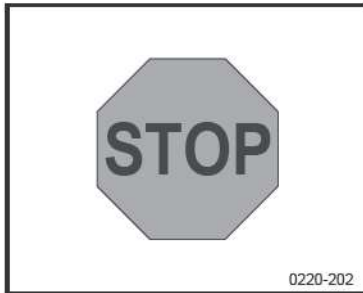
## 216 Cold start assistance



When the electric system is switched on (switch [310] in position I), this indicator lights up. After reaching start temperature, the indicator switches off; then start the diesel engine.

216-04

## 220 STOP



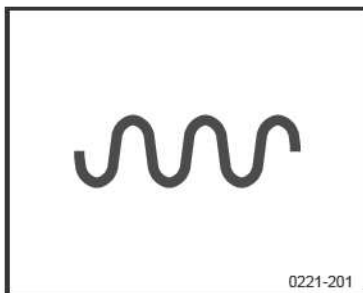
Flashing during operation indicates a serious malfunction of the machine. At the same time an acoustic signals sounds.

Further operation is inadmissible!

1. Park the machine out of the danger zone.
2. Shut down the diesel engine **immediately**
3. Rectify the cause immediately.

220-02

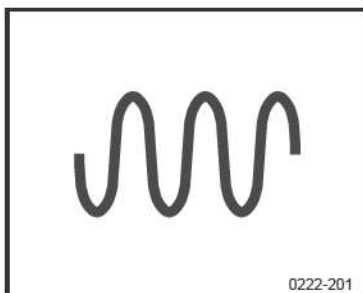
## 221 Small amplitude



The pilot light illuminates if working with roller drum vibration and pre-selected small amplitude.

221-03

## 222 Large amplitude



Pilot light illuminates if vibration with large amplitude is activated.

222-00

**\*224 RMV (jump operation)**



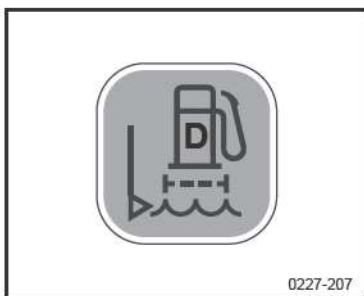
The vibrating drum must not be lifted from the ground (jump operation) during compaction in earth moving work. A slow flashing of the display indicates that the drum is immediately before jump operation. A fast flashing of the display indicates that the drum is in jump operation.



No even compaction measurement can be realised during jump operation. In this case, the values of the compaction display [249] are not reliable any longer.

224-01

**227 Water sump fuel prefilter**



Flashing during operation indicates an excessively high water sump in the fuel pre-filter.

227-03

**228 Engine temperature**



Flashing during operation indicates improper engine temperature.

228-03

**229 Oil temperature of hydraulic system**



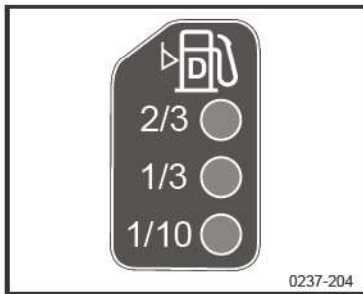
Flashing during operation indicates improper hydraulic oil temperature.

229-03

**\*235 Oscillation**

The pilot light illuminates when working with roller drum oscillation version.

235-01

**237 Fuel filling level**

The fuel tank filling level is displayed by an illuminated pilot light. According to the filling level, the luminous point moves between 2/3, 1/3 and 1/10. If the level drops below 1/10 the luminous point flashes. Refuelling is necessary!

237-01

**240 Warning, notice, malfunction**

If it lights up, this indicates a deviation from the normal operating state of individual components. Additionally an acoustic signals sounds.

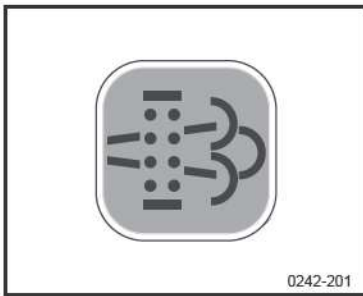
1. Park the machine out of the danger zone.
2. Find out the cause and have repaired.

The switch [375] enables the indication of the saved diagnostic codes on the screen [101].

Continued operation of the machine is only permitted if the displayed messages do not directly adversely affect the safety of persons or the machine (e.g. information about the fill levels of fuels and lubricants).

240-02

**242 DPF service**



If it lights up during operation, this indicates that the diesel particle filter (DPF) is heavily contaminated by soot and ash, and needs to be changed (the engine power and the speed has already been reduced).

Perform regeneration — **LIGHTS UP YELLOW**



A diesel particle filter contaminated by soot may be able to be cleaned by immediate regeneration (service personnel only). The pilot light goes out.

If after a standstill regeneration the pilot light lights up again within a short period of time, the diesel particle filter (DPF) is heavily contaminated by non-regenerable ash, and needs to be changed

Change required — **LIGHTS UP RED**

242-02

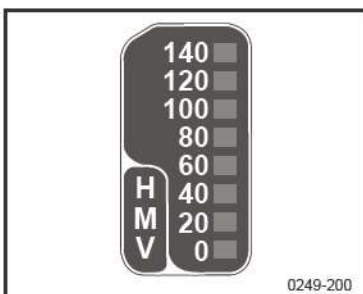
**\*246 Putting on safety belt**



Indicates a failure to fasten the seat belt when lit during travel. Additionally an acoustic signals sounds permanently.

246-00

**\*249 Compaction HMV**

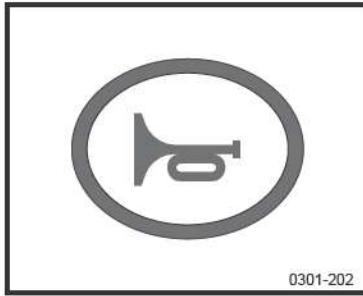


If the machine is not equipped with a computer unit for HMV, no display appears.

000-14

Pilot lights indicate the material compaction magnitude. The compaction value depends on the material to be compacted. In case of compaction work with the vibration turned on, increasing HMV values show an increasing material densification, or carrying capacity. If the value remains constantly at a precompact place, no further compaction is possible there. Use is only permissible with vibration in earthmoving applications

249-00

**3.00.03 Switch****301 Signal horn**

The signal horn sounds as long as this switch is pressed.

301-03

**301 Signal horn**

The signal horn sounds as long as this switch is pressed.

301-03

**302 EMERGENCY STOP****⚠ WARNING****Full braking!**

Danger of injuries due to strong braking force.

- Activate EMERGENCY STOP only in the event of danger.
- Do not use the EMERGENCY STOP as operation brake.

002-03

**Pressing the switch:**

- Stops the hydraulic drive,
- Switches off the diesel engine,
- Activates the hydraulic brakes

On — position **DOWN**

To disengage EMERGENCY STOP, turn push button clockwise.

Off — position **UP**



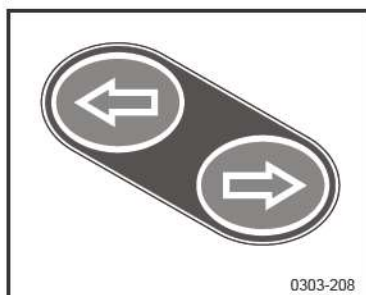
After actuating the EMERGENCY STOP switch, the machine must be brought into its start position.

**Start position:**

1. Switch off the electrical system [310].
2. Latch drive lever [501] in 0 position.
3. Release EMERGENCY STOP switch.
4. Start the diesel engine.

302-25

**\*303 Flashers**



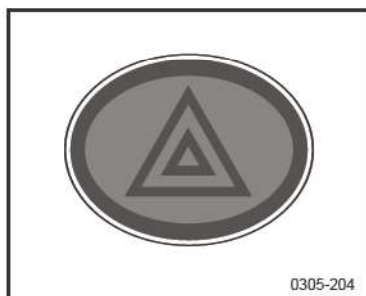
Pressing the switch turns the direction indicator on or off. The arrows indicate the actuation direction for the corresponding turning direction of the machine.

On — **PRESS**  
(push button flashes)

Off — **PRESS** again

303-13

**\*305 Warning flashers**



Pressing the switch turns the warning flasher system on or off.

On — **PRESS**  
(push button flashes)

Off — **PRESS** again

305-00

**\*307 Driving light**



If the electrical system is switched off (switch [310] in position 0) and you press this switch, only the parking lights are switched on or off. If the electrical system is switched on (switch [310] in position I) and you press this switch, the driving light is switched on or off.

On — **PRESS**  
(push button lights up)

Off — **PRESS** again

307-01

**\*309 Working spotlight**



Pressing the switch turns the working spotlights on or off.

On — **PRESS**  
(push button lights up)

Off — **PRESS** again

309-03



**310 Electrical system / engine start**


The switch (ignition key) supplies the electrical components with power, and starts and stops the diesel engine.

Position 0  
 Electrical system — **OFF**  
 Diesel engine — **STOP**  
 (key released)

Position I  
 Electrical system — **ON**

Position II — without function

Position III — **ENGINE START**

Key turns back to position I after starting.

310-08



When the engine is at a standstill and the electrical system is switched on for a longer period (position I), the battery discharges rapidly.

000-28

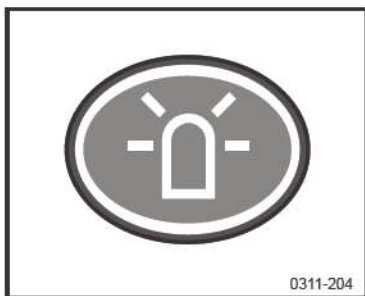


The machine may not be operated for safety reasons when an attempt is made to start the diesel engine while the emergency stop button is pressed.

To activate the machine:

1. Latch drive lever [501] in 0 position.
2. Release EMERGENCY STOP switch [302].

000-29

**\*311 Rotating light**


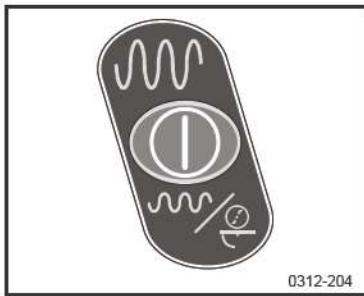
Pressing the switch turns the rotating light on or off.

On — **PRESS**  
 (push button lights up)

Off — **PRESS** again

311-08

### 312 Vibration / oscillation



Function only with  
Working gear [314] — position **II**  
Engine speed [388] — position **MAX** or **ECO**

000-67

Pressing the switch activates or deactivates the vibration / oscillation system. Each actuation of the switch switches one step ahead.

Large amplitude — **PRESS**  
(pilot light [222] lights up)

Deactivation — **PRESS** again  
(pilot light [222] goes out)

Amplitude small / Oscillation — **PRESS** again  
(In the vibration mode: pilot light [221] lights up)  
(In the oscillation mode: pilot light [235] lights up)

Deactivation — **PRESS** again  
(pilot light [221], [235] goes out)

When the vibration / oscillation system is activated, the vibrator / oscillator can be switched on or off at the multifunctional handle [503].

312-02

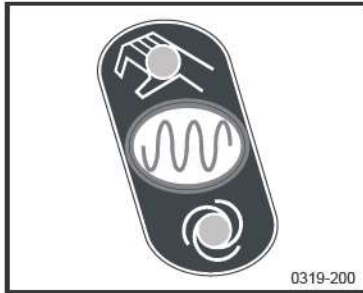
### 314 Gear shifting



Transport speed position **I**  
(push button lights up)

Working speed position **II**

314-03

**\*319 Vibration mode manual - automatic**


The operating mode for the vibration / oscillation is set with the switch. The vibrator / oscillator can be switched on or off manually or automatically.

Manual — **PRESS**  
 (upper pilot light illuminates)

The vibration can be switched on or off at any time with the switch on the multifunction handle [503].

Automatic — **PRESS** again  
 (lower control light lights up)

Switching on and off the vibration / oscillation is coupled to the road speed. Vibration is switched off when at low or high speed.



The automatic mode must be activated with the switch on the multifunctional handle [503] after initial switching on.

The vibration / oscillation can be switched on or off at any time with the switch on the multifunctional handle, even in automatic mode.

319-06

**330 Cabin heating blower**

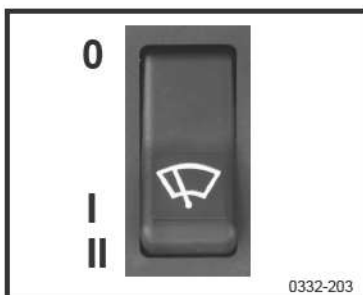

Use this switch to toggle the fan for the cabin ventilation either on or off.

Air flow Off — position **0**

Air flow level 1 — position **I**

Air flow level 2 — position **II**

330-04

**332 Front windscreen wiper**


Pressing the switch turns the windscreen wipers on and off.

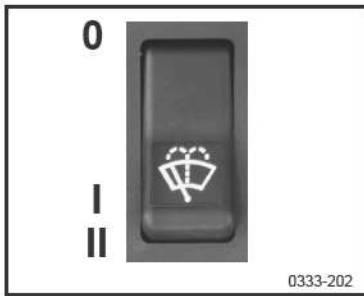
Wiping the screen Off — position **0**

Screen wiping, stage 1 — position **I**

Screen wiping, stage 2 — position **II**

332-02

**333 Rear wiping / washing the screen**



Pressing the switch switches the windscreen wipers on and off, and actuates the windscreen washing system.

Washing the screen — position **II PRESS** continuously

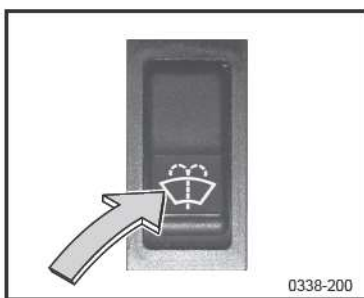
Wiping the screen On — position **I**

Wiping the screen Off — position **0**

Continuous pressing of the switch in position II will cause permanent moistening of the windscreen. As long as the switch is pressed, the pump runs in continuous operation.

332-05

**340 Front windshield washer**



By pressing the switch the pump of the washer system is switched on. Only as long as the switch is pressed a moistening of the windscreen takes place.

338-03

**347 Cabin heating temperature regulation**



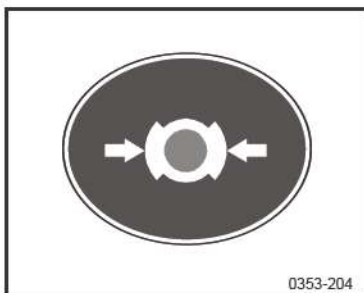
The heat exchanger for the cabin-heating is connected to the diesel engine cooling circuit. The heat exchanger temperature is continuously adjustable with the switch.

Minimum temperature — stop **RIGHT**

Maximum temperature — stop **LEFT**

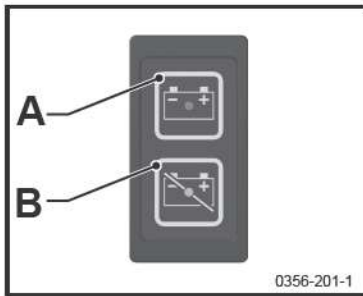
347-01

**353 Parking brake inspection**



The parking brake inspection is only possible when the push button lights. The parking brake is applied only as long as the switch is pressed.

353-01

**\*356 Battery cut-off control unit (battery isolating switch)**

**⚠ WARNING**
**Electrical voltage!**

Risk of injury due to electric shock.

- Do not start any a maintenance work unless the pilot lights at the battery isolating switch are off after pressing the switch of the battery switch-off.
- When the pilot light has gone out, also remove the ground strap from the battery.

002-67

The on-board power supply is provided by voltage from the battery. To switch off the battery power, switch [B] must be operated.

Activate the control unit:

Switch [A] — **PRESS**

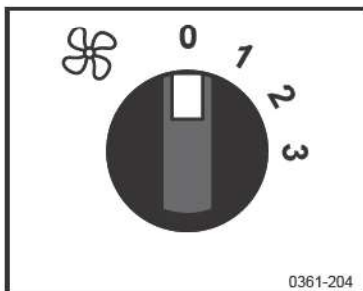
(pilot light lights or flashes in green)

Switch off the battery power:

Switch [B] — **PRESS**

(pilot light lights or flashes in red)

356-02

**\*361 Air conditioning system control unit**

**[A] Fan**

Use this switch [A] to toggle cooling and the fan for the air conditioning system either on or off. The air conditioning system works as a circulation air system when the cooling [B] is off.

Off — position **0**

Air flow level 1 — position **1**

Air flow level 2 — position **2**

Air flow level 3 — position **3**

361-01

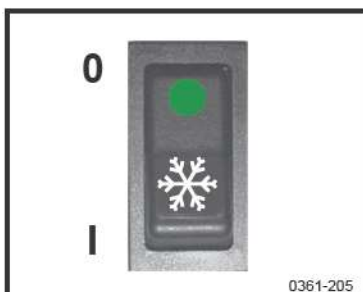
**[B] Cooling On-Off**

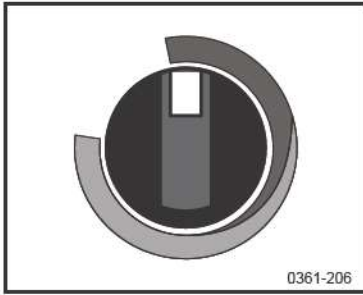
The switch [B] switches the cooling on or off when the engine and the fan [A] are running. The pilot light indicates that a refrigerating machine is running.

On — position **I**

Off — position **0**

361-06





**[C] Temperature regulation**

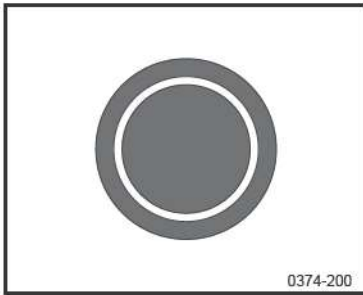
The inside temperature can be set freely with the switch [C]. The air flow is cooled down through the heat exchanger of the air conditioning system.

Cooling min. — stop **LEFT**

Cooling max. — stop **RIGHT**

361-07

**375 System info**



By pressing the switch, the display system info [101] changes. Each actuation of the switch switches one step ahead.

Operating hours — **PRESS**

Engine speed — **PRESS** again

Diagnostic Code — **PRESS** again

\*Driving speed — **PRESS** again

\*Vibration / oscillation frequency — **PRESS** again

375-04

**\*383 High beam**



Pressing the switch turns the high beam on or off.

On — **PRESS**

(push button lights up)

Off — **PRESS** again

383-01

**384 DPF regeneration**



Use this switch (button) to enable the regeneration of the diesel particulate filter (DPF) during the standstill.

The push button flashes when the standstill regeneration runs.

The light on the push button goes out when regeneration has been completed successfully. Flashing during operation indicates that the diesel particle filter (DPF) needs regenerating.

In emergencies or dangerous situations, an activated standstill regeneration can be interrupted actuating the drive button.

If the push button flashes after an interruption to indicate that the diesel particulate filter (DPF) needs to be regenerated.

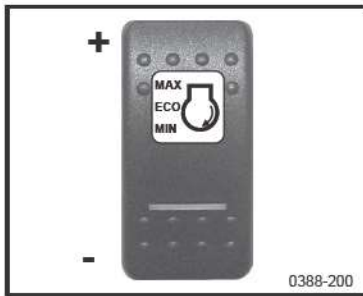
Activation — **PRESS**

(push button flashes)

384-03



## 388 Engine speed



Use this switch to adjust the engine speed to three stages.

Maximum speed — **MAX**

2/3 speed — **ECO**

Idle speed — **MIN**

Increasing the stage — **PRESS +**

Reduce the state — **PRESS -**

388-00

### 3.00.04 Sockets, lights

#### 406 Socket 12 V / cigarette lighter



##### \*Cigarette lighter

Press the cigarette lighter until it engages (spiral-wound filament is heated). After a short time the lighter springs out and can be removed from the socket.

##### Socket 12 V

Power can be taken off from the cigarette lighter socket using the special plug. The maximum load on the socket is 100 W (8 A).

406-01

#### 410 Cab lighting



This works even if the electrical system is switched off.

410-00

### 3.00.05 Operation levers, adjustment handles

#### 501 Drive lever



The drive lever determines the driving direction and speed.

Forwards travelling – push lever **FORWARD**

Reverse travelling – push lever **BACKWARD**

Braking – lever to **CENTRE**

Stop – lever in **CENTRE**

The driving speed is proportional to the magnitude of the lever displacement. It is also influenced by the engine speed.

If the machine is equipped with a \*back-up alarm, an acoustic signal sounds when travelling reverse.

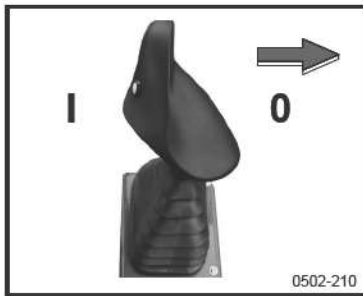
501-18



In case of danger the machine can also be brought to a standstill with the EMERGENCY STOP switch [302].

000-18



**502 0 position lock / parking brake**


When the driving lever is in the central position, a spring pulls it into the 0-position lock. Two functions are assigned to this position. To drive off, press the driving lever towards the driver's seat, and start the vehicle moving with the driving lever pressed.

**0-position lock**

The 0-position lock is a safety device. It avoids unintended movement of the machine.

Latched — drive lever position **0**  
 (drive lever [501] is latched in central position)

Unlatched — drive lever position **I**  
 (drive lever is free)



After unlatching the drive lever in position **I**, the engine speed increases.

000-68

**Parking brake**

If the drive lever is latched in the 0 position lock, the parking brake is applied. If the parking brake is applied, the push button [353] lights.

502-14

**503 Multifunction handle**

**Vibration**


Function only with  
 Working gear [314] — position **II**  
 Engine speed [388] — position **MAX** or **ECO**

000-67

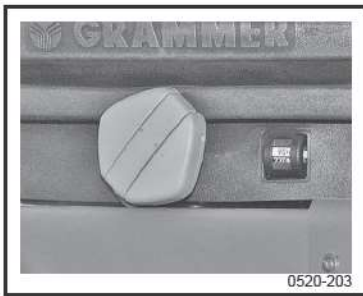
If the vibration system is activated, the vibrator can be switched on or off at switch [A] at any time.

Vibrator on — **PRESS**

Vibrator off — **PRESS** again

503-27

### 520 Seat adjustment weight / height



0520-203

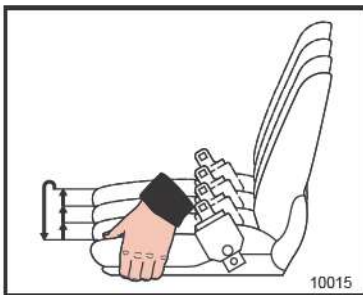
#### ⚠ WARNING

**Uncontrolled movements!**

Risk of injury due to uncontrolled movements when changing the seat pedestal position.

- Operate the machine only in an admissible seat position.
- Only drive the machine with latched seat pedestal.
- Do not adjust the seat pedestal during driving.
- Adjust the seat pedestal only on an even surface.

002-41



10015

In order to absorb impulsive machine movements using the installed attenuation system, this must be adjusted to the weight of the driver.

The pretension of the attenuation system can be adjusted continuously to the driver's weight by turning the lever to the left or right between 50 kg and 130 kg . The adjusted weight is displayed in the adjacent window.

The seat height can be adjusted to several levels. The seat latches to the next higher level by lifting it manually by approximately 30 mm.

For lowering, the seat must first be lifted to the stop. After that it can be lowered to the lowest level.

520-04

### 521 Seat adjustment forward - backward



0521-203

#### ⚠ WARNING

**Uncontrolled movements!**

Risk of injury due to uncontrolled movements when changing the seat pedestal position.

- Operate the machine only in an admissible seat position.
- Only drive the machine with latched seat pedestal.
- Do not adjust the seat pedestal during driving.
- Adjust the seat pedestal only on an even surface.

002-41

After lifting the lever, the upper part of the seat can be shifted in forward or backward direction in increments of 15 mm.

521-00

**522 Seat backrest adjustment****⚠ WARNING****Uncontrolled movements!**

Risk of injury due to uncontrolled movements when changing the seat pedestal position.

- Operate the machine only in an admissible seat position.
- Only drive the machine with latched seat pedestal.
- Do not adjust the seat pedestal during driving.
- Adjust the seat pedestal only on an even surface.

002-41

The inclination of the backrest can be adjusted in forward or backward direction by lifting the lever.

522-03

**523 Seat adjustment elbow-rest****⚠ WARNING****Uncontrolled movements!**

Risk of injury due to uncontrolled movements when changing the seat pedestal position.

- Operate the machine only in an admissible seat position.
- Only drive the machine with latched seat pedestal.
- Do not adjust the seat pedestal during driving.
- Adjust the seat pedestal only on an even surface.

002-41

The inclination of the elbow-rest can be adjusted in upward or downward direction by turning the handwheel [A].

The height of the elbow-rest can be adjusted after loosening the locking screw [B].

523-02

## 524 Seat adjustment rotation



### ▲WARNING

#### Uncontrolled movements!

Risk of injury by uncontrolled movements when changing the seat pedestal position.

- Operate the machine only in an admissible seat position.
- Only drive the machine with latched seat pedestal.
- Do not adjust the seat pedestal during driving.
- Adjust the seat pedestal only on an even surface.
- Use it for transporting only if the driver doors are closed and the seat is in central position of the cabin.

002-05

After lifting the lever, the seat can be turned to the left or to the right in increments of 10°. The seat can be rotated freely if the lever is pulled upward into the latching position. For locking, the lever must be pushed downwards over the latch.

524-04

## \*525 Seat adjustment left - right



### ▲WARNING

#### Uncontrolled movements!

Risk of injury due to uncontrolled movements when changing the seat pedestal position.

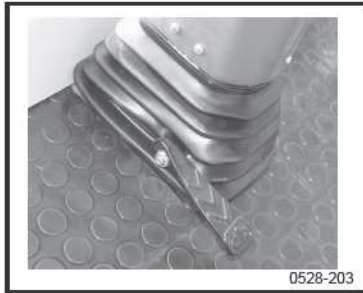
- Operate the machine only in an admissible seat position.
- Only drive the machine with latched seat pedestal.
- Do not adjust the seat pedestal during driving.
- Adjust the seat pedestal only on an even surface.

002-41

After lifting the lever, the entire seat console can be displaced to the left or to the right.

525-02

### \*528 Steering console adjustment



#### ⚠ WARNING

##### Uncontrolled movements!

Risk of injury due to uncontrolled movements when changing the steering console position.

- Only drive the machine with latched steering console.
- Do not adjust the steering console when the machine is driving.
- Adjust the steering console only on an even surface.

002-25

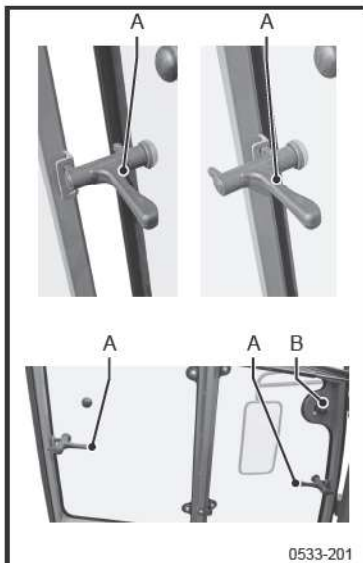
After releasing the lock with the foot lever, the complete steering panel can be rotated to the front or to the rear.

Locking device released — **PRESS** foot lever

Before driveway latch steering console in the desired position.

528-02

### 533 Door glass actuator



#### Move door glass out

1. Turn up the locking lever [A] until the outer turning bolt will unlock the door glass.
2. Press the locking lever [A] with the door glass towards the outside and lock the inner turning bolt

Locking is only possible in this position.

#### Open the door glass completely

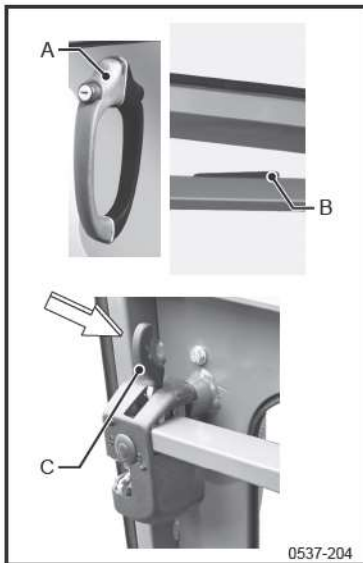
1. Turn up the locking lever [A] until the turning bolt will unlock the door glass.
2. Fold out the door glass until it locks in place at the locking device [B].

#### Close the door glass

1. Press the stop knob inside at the locking device [B].
2. Fold the door glass and pull it to the cabin door.
3. Use the locking lever [A] to put the turning bolt into the guide.
4. Turn down the locking lever [A] and lock the door glass.

533-01

### 537 Lock operation



The door of the driver's cab is locked by a latch lock. Elements [A], [B] or [C] only have to be actuated in order to open the door. The door is locked by pressing it into the lock.

#### Opening the door:

Lock operation from outside:

Push button [A] — **PRESS**

Lock operation from inside:

Handle [B] into the frame section — **PRESS** or

Lever [C] — **FLIP**

537-02

### 543 Emergency hammer



The glasses can be smashed using the emergency hammer to leave the operator platform in emergency situations.

543-00

## 3.01 Prior to machine start



Please observe chapter 6, too. Here you find the description, operator control and maintenance of auxiliary equipment.

000-64

### General

#### **▲WARNING**

##### **Operating errors!**

Risk of injury due to improper use.

Prior to every start-up:

- Check the machine for operational and traffic safety.
- Read and adhere to the instruction manual and the safety instructions.
- Ensure that there are no persons or objects in the danger zone of the machine.

002-07

### **What must be done prior to start of work?**

1. \*Battery isolating switch [356] (if available) — position **I**
2. Perform inspection and maintenance work ([see page 115](#) sqq.).
3. \*Check the flasher system [303] and the \*warning flasher system [305], as well as the signal horn [301], the \*back-up alarm [501], the \*driving light [307] and the \*rotating light [311] and the \*working spotlights [309].
4. Check the parking brake [353].
5. Adjust and lock the driver's seat.
6. Adjust the rear and operation mirrors so that you can watch the traffic in the rear.

701-32

### **Fuel**

1. Never drive the machine until the fuel tank is empty. Check the filling level of the fuel tank in time. Fill up the fuel tank already in the evening. This avoids the formation of condensed water in the fuel tank.
2. Fill up to the lower edge of the filler neck. Only use clean fuel!



Advice about fuel [see page 164](#) sqq. see also safety instructions.

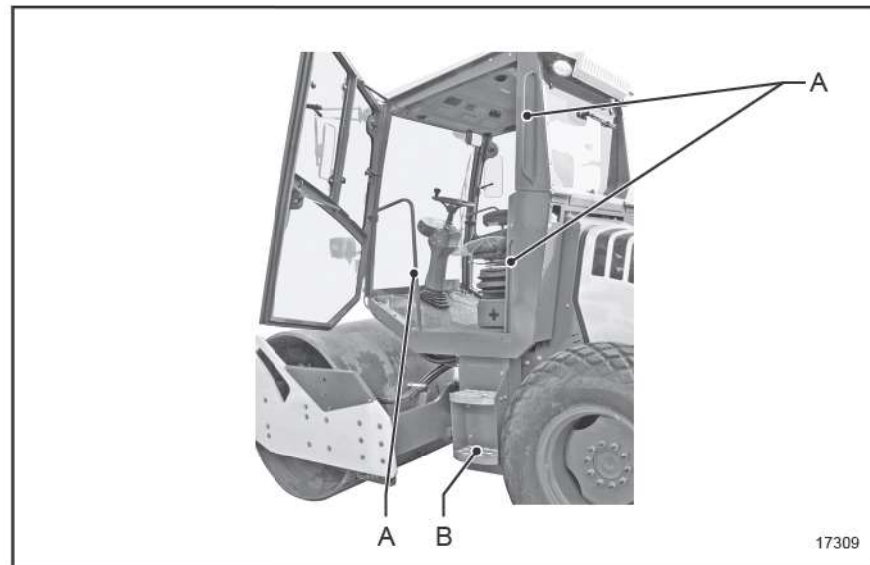
701-13

### **Air**

1. Check the air pressure in the tyres.

701-16

**Control stand Step to driver's cab**



The steps to the driver's cab are on the left-hand side of the machine. Only here are the handholds and steps ergonomically arranged according to international regulations. The steps on the right-hand side of the machine are only intended as an emergency exit, and may only be used in the event of an emergency or danger.

For machines equipped with operator's cab:

The glasses can be smashed using the emergency hammer [543] to leave the operator platform in emergency situations.

1. Use the handles [A] to climb up or down.
2. Climb up and down with the aid of the steps [B].

701-44

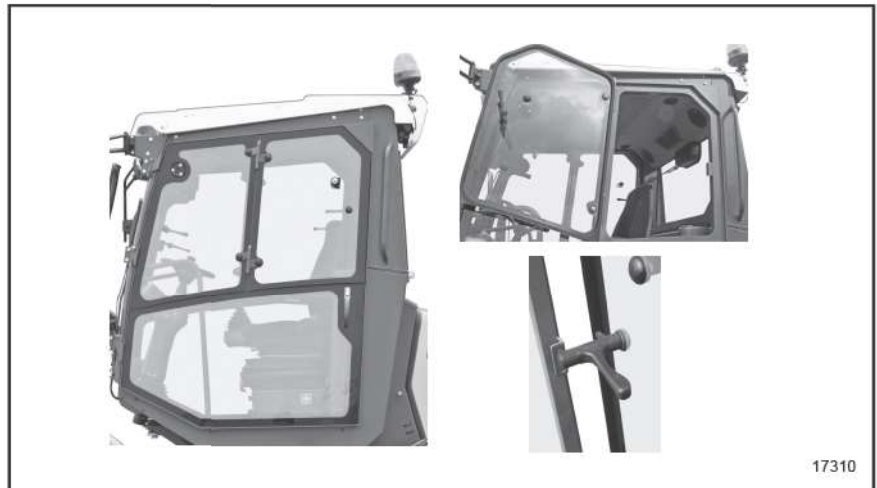


**Cabin door****⚠ WARNING****Cabin door projecting out!**

Danger of collision with items and vehicles driving past. Risk of injury due to shocks or crushing.

- Prior to opening the cabin door ensure that there are no persons or objects in the danger zone of the machine.
- Observe the traffic moving next to the machine.
- Do not leave the cabin door in its 90° position unless for getting on or off the machine.
- Do not move the machine neither for work nor for transportation unless the cabin door is closed.
- If the cabin door or the door glass are split, both half doors must be locked.

002-93



17310

Door glasses which can be opened must be locked in the cabin during driving.

701-45

### Seat belt



[A] Seat belt



The driver must wear a safety belt while driving machines with a ROPS cab or a ROPS roll-over bar.

000-37

If the machine is provided with a safety belt, this belt needs to be inspected for wear or damage before starting the engine. If damaged, replace the belt promptly. When closing the belt, make certain to apply it tightly across the hip (not across the belly). Do not twist the belt. Replace the safety belt every 3 years. Belts are strained by accidents and need to be replaced immediately when an accident has occurred.

701-25

### Seat adjustment

#### **⚠ WARNING**

##### **Uncontrolled movements!**

Risk of injury by uncontrolled movements when changing the seat pedestal position.

- Operate the machine only in an admissible seat position.
- Only drive the machine with latched seat pedestal.
- Do not adjust the seat pedestal during driving.
- Adjust the seat pedestal only on an even surface.
- Use it for transporting only if the driver doors are closed and the seat is in central position of the cabin.

002-05

## 3.02 Engine start

**General** The starting process may last 20 seconds as a maximum; otherwise, the starting motor will be overheated and destroyed. There must be pauses between the individual starting processes in order to allow the starting motor to cool down. If the diesel engine does not start after two starting attempts, find out and eliminate the cause. Observe the operating manual of the diesel engine. The diesel engine cannot be started by means of towing. Drive component damage would be the consequence.

When the battery is discharged, the diesel engine can be restarted by an external power source ([see page 105](#) sqq.).

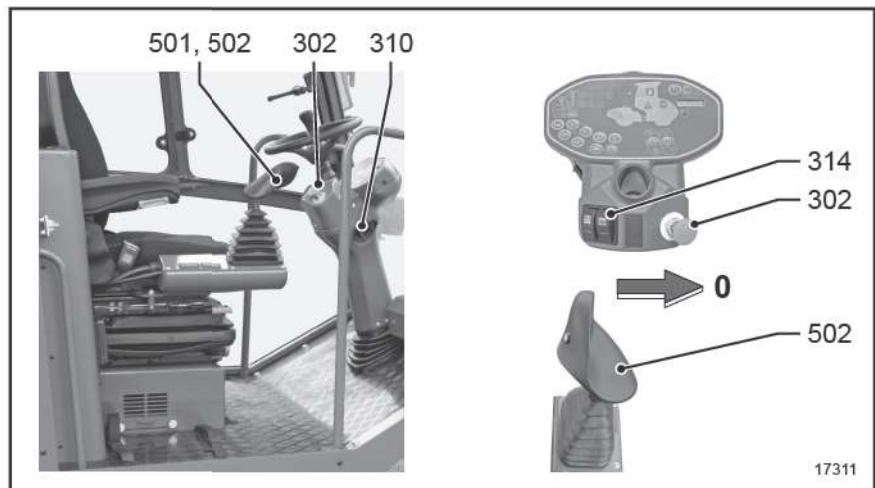
703-04



Do not operate the starter unless the diesel engine is stopped. Starter operation while the diesel engine is still running may destroy the starter.

000-46

### Basic position prior to starting



Set the operating elements to their initial position prior to the start of the engine.

1. Drive lever [501] — **CENTRE**
2. 0-position lock / parking brake [502] — position **0**
3. EMERGENCY STOP [302] — position **UP**
4. Working gear [314] — position **II**

702-20



Only when the 0-position lock is latched, is the starting motor connected to the switch [310] via the starter protection device. This is the only way to start the diesel engine.

000-49

- Engine start**
1. Key [310] — **0** → **I**  
(electrical system ON)  
If the key is turned to position I, all pilot lights light up shortly for function control purposes.
  2. Do not start the diesel engine until the pilot light [216] has gone out.  
Key [310] — **I** → **III**

704-27

**Before driveaway**

**▲WARNING**

**Long stopping distance!**

A delay in braking caused by a highly viscous hydraulic oil can lead to serious injuries or death.

- In case of low external temperatures, in particular when below freezing, wait a few minutes after starting the engine until driveaway.
- Warm up the machine during the warming phase with moderate speed and low load until the oil in the hydraulic system has heated to approx. +20 °C (68 °F) .

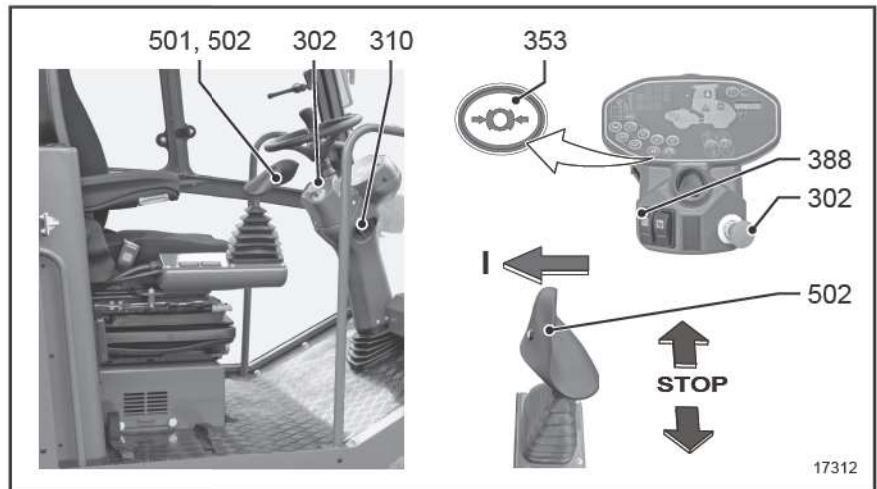
002-15

The acceleration and braking behaviour of the machine are influenced by viscous hydraulic oil. If the machine is frozen to the ground, take care that no clods of earth stick to the roller drum / tyre, since these could damage the scrapers. Therefore, park the machine on planks or dry gravel if frost is likely!

705-05

### 3.03 Driving

#### Driveaway



1. 0-position lock / parking brake [502] — position **I**  
 The push button [353] goes out.



After unlatching the drive lever in position **I**, the engine speed increases.

000-68

2. Prior to moving off actuate the signal horn [301] briefly.
3. Drive lever [501] — **FORWARD**  
 or — **BACKWARD**

If the machine is equipped with a \*back-up alarm, an acoustic signal sounds when travelling reverse.

706-17



#### **In case of danger only:**

In the case of danger, the machine can be brought to a standstill with the EMERGENCY STOP switch [302]. A further possibility to bring the machine to a standstill in the event of danger is to switch off the electrical system with the switch [310].

000-59

**Driving** Machine may only be operated from the operator platform.

#### Seat contact switch

##### **▲ WARNING**

##### **Extended braking distance!**

A delay in the effect of the automatic application of the brakes can lead to serious injuries or death.

- Do not use the function of the seat contact switch to stop the machine.
- Do not get up from the driver's seat while driving.
- Brake and stop the machine with the driving lever.

002-96

This machine is equipped with a seat contact switch. The machine is automatically braked if the operator leaves his seat while driving. There is an initial time delay, after which the brakes are applied abruptly. The function of the seat contact switch is not intended to be used as a control element to stop the machine.

If the machine is unintentionally stopped by function of the seat contact switch, the machine has to be brought into the basic position before driving can be resumed.

Start position:

1. Drive lever [501] – **CENTRE**
2. 0-position lock [502] – position **0**

707-01

#### Gearshift

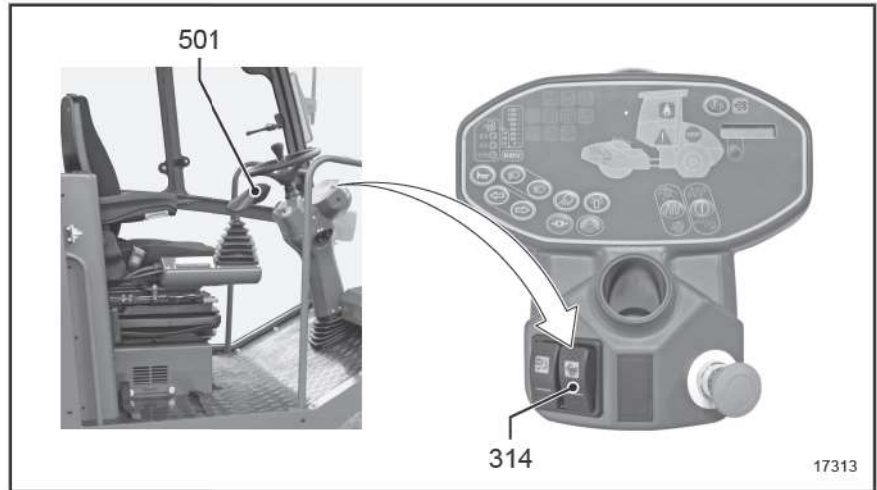
##### **▲ WARNING**

##### **Full braking!**

Danger of injuries due to strong braking force.

- Use transportation gear only to manoeuvre on paved roads.
- In case of visible obstacles reduce speed in good time.
- Longer uphill or downhill slopes must always be driven in working speed.
- Work may only be performed in the working gear.

002-16



Changeover is not enabled unless the drive lever is engaged in the 0 position. Toggling during driving is not possible.

The machine has a working gear and a transportation gear. These can be toggled with the switch [314]. The driving speed can be regulated variably with the driving lever [501].

708-02

## 3.04 Driving with vibration / oscillation

### 3.04.01 Vibration

#### General

#### ⚠ WARNING

##### Explosion!

Risk of injury due to burns and moving parts.

- Prior to switching on the vibration function, it must be ensured that there are no lines laid in the underground.

002-19

#### ⚠ WARNING

##### Reduced road adhesion!

Risk of falling or tipping due to reduced lateral stability when having switched in vibration.

- Do not switch in vibration function when driving across inclines or on hard underground.

002-20

#### NOTICE

##### Collapse or damage!

Risk of collapse or damage at buildings or on the pipe system in the ground.

- Do not switch on the vibration system near buildings!
- Prior to switching on the vibration function, ensure that there are no lines (e.g. gas, water, electricity, sewage lines) are laid in the underground.

004-26

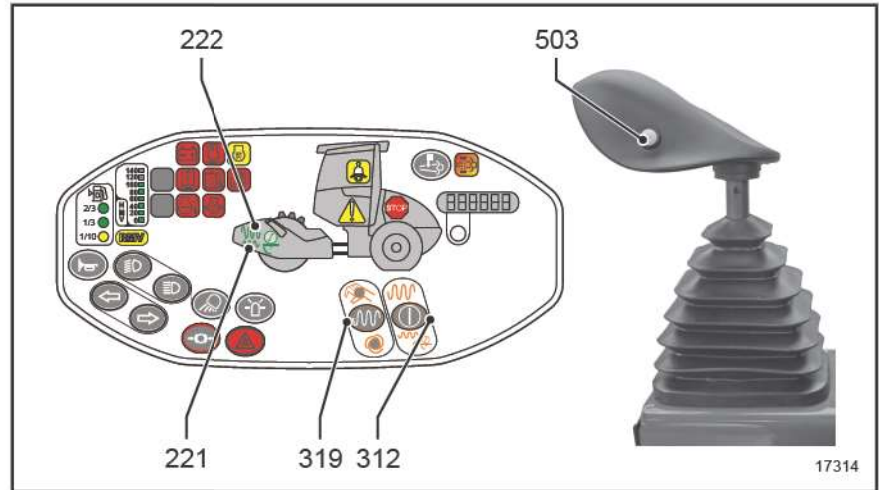
When the vibration system is switched on, the roller drum will vibrate according to the speed of the vibrator. This hammering will increase the compacting force of the machine several times over. Vibration may only be used at maximum diesel engine speed and can be operated in two amplitude ranges with the assigned frequency values. An elastic suspension of the roller drums prevents the transfer of vibration oscillations to the machine frame.

#### Vibrations

Vibration oscillations can spread in the ground over a wide area. They are generated in circles around the roller drum and affect also the deeper ground. This may cause damage to buildings or pipe systems under the machine.

712-36



**Vibration**


Function only with  
 Working gear [314] — position **II**  
 Engine speed [388] — position **MAX** or **ECO**

000-67

The switch [312] activates or deactivates the vibration. The pilot lights [221] or [222] indicate the selected amplitude. When the vibration system is activated, the vibrator can be switched on or off at the multifunction handle [503].

712-37

**Manual-automatic operating mode**

The operating mode for the vibration is set with the switch [319]. The vibrator can be switched on or off manually or automatically.

712-30

**3.04.02 Vibration / oscillation (VIO)**
**General**
**⚠ WARNING**
**Explosion!**

Risk of injury due to burns and moving parts.

- Prior to switching on the vibration function, it must be ensured that there are no lines laid in the underground.

002-19

**⚠ WARNING**
**Reduced road adhesion!**

Risk of falling or tipping due to reduced lateral stability when having switched in vibration.

- Do not switch in vibration function when driving across inclines or on hard underground.

002-20

**NOTICE****Collapse or damage!**

Risk of collapse or damage at buildings or on the pipe system in the ground.

- Do not switch on the vibration system near buildings!
- Prior to switching on the vibration function, ensure that there are no lines (e.g. gas, water, electricity, sewage lines) are laid in the underground.

004-26

When the vibration system is switched on, the roller drum will vibrate according to the speed of the vibrator. This hammering will increase the compacting force of the machine several times over.

In the oscillation mode the roller drum is shifted to tangential oscillations. The compression of the material to be compacted is conducted by flexing movements.

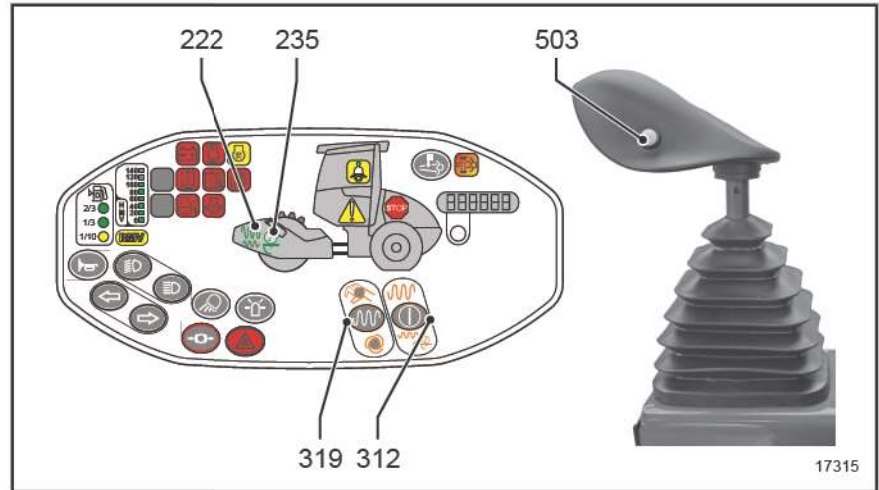
The vibration / oscillation may only be used at maximum speed of the diesel engine.

An elastic suspension of the roller drums prevents the transfer of vibration oscillations to the machine frame.

**Vibrations**

Vibration oscillations can spread in the ground over a wide area. They are generated in circles around the roller drum and effect also the deeper ground. This may cause a damage to buildings or pipe systems under the machine. Oscillation vibrations are developed predominantly on the surface of the ground and spread only in front of the roller drum and on its rear. Thus the damaging force is reduced considerably.

712-38

**Vibration / oscillation**


Function only with  
 Working gear [314] — position **II**  
 Engine speed [388] — position **MAX** or **ECO**

000-67

The switch [312] activates or deactivates the vibration / oscillation. The pilot lamp [222] lights up when vibration is activated, [235] when oscillation is activated.

When the vibration / oscillation system is activated, the vibrator / oscillator can be switched on or off at the multifunctional handle [503].

712-18

**Manual-automatic operating mode**

The operating mode for the vibration / oscillation is set with the switch [319]. The vibrator can be switched on or off manually or automatically.

712-26

### 3.05 Stopping, switching off engine, leaving machine

**⚠ WARNING**

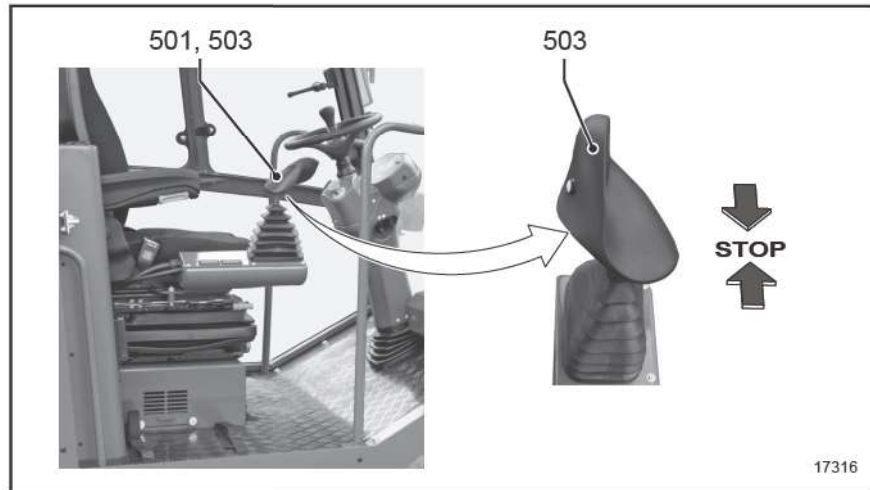
**Uncontrolled driving behaviour!**

Autonomous movement of the machine can lead to serious injuries or death.

- Switch off diesel engine even if you leave the operator platform only for short time.

002-22

**Stopping**

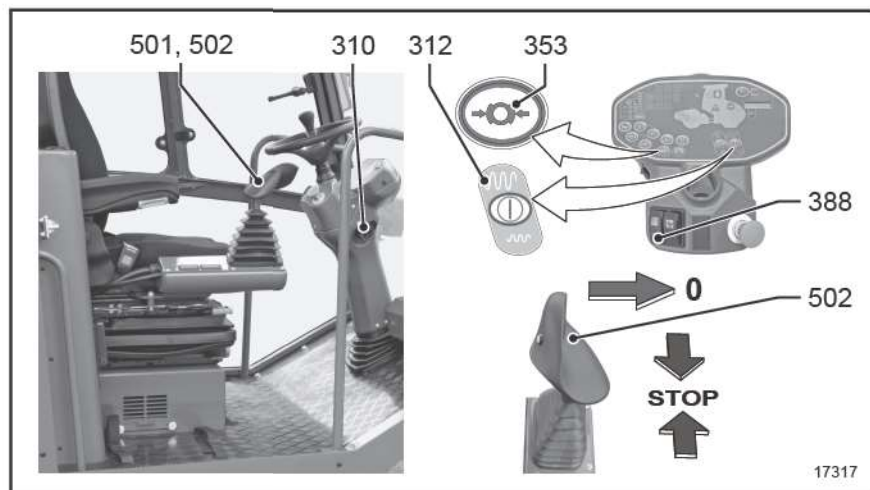


1. Vibration / oscillation [503] — **OFF**
2. Drive lever [501] — **CENTRE**

The hydrostatic transmission brakes the machine to a standstill.

713-18

**Before switching off the Diesel engine**



1. Vibration / oscillation [312] — **OFF**
2. 0-position lock / parking brake [502] — position **0**  
(push button [353] lights up)
3. Engine speed [388] — **MIN**
4. Fully lower attached accessory equipment.

713-17

**Shut down the diesel engine** Do not switch off engine directly after full load operation. Instead, let it run for 1-2 minutes with idling speed for temperature compensation purposes.

1. Key [310] – **I** → **0**

714-06



The battery discharges rapidly if the engine is at a standstill and the electrical system is switched on (switch [310] in position I).

000-02

**Leaving the machine** The driver may only leave the machine when orderly parked. Traffic regulations have to be observed as well.

**Before leaving the machine, the driver must ensure that**

- The driver's seat console is latched in the centre of the machine.
- The ignition key is disconnected.
- the machine is switched off at the battery isolating switch (if applicable).
- The cabin doors resp. the instrument panel covering, as well as all cladding covers are locked.
- suitable precautions (e.g., wheel chocks) are used to secure the machine against rolling away in addition when parking on an uphill or downhill gradient.

714-11

**\*Automatic engine stop** If the machine is fitted with an \*automatic engine stop, under certain conditions, the diesel engine is switched off automatically after a fixed set time.

Prerequisites:

1. Driving lever is locked in position 0.
2. Machine is at operating temperature.
3. Driver is not sitting in the driver's seat.

Only if these conditions are fulfilled, will the diesel engine diesel engine be switched off automatically after a fixed set time.

714-12

## 3.06 Operation monitoring

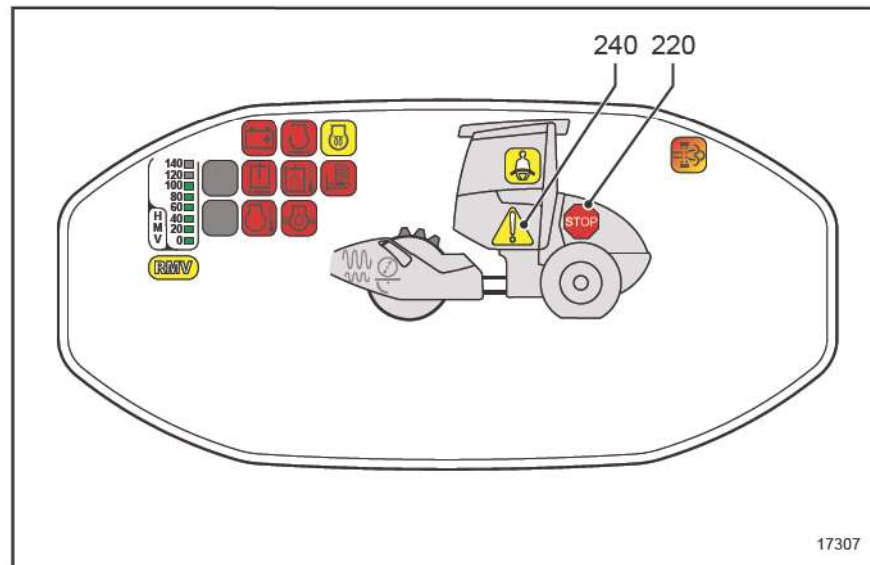
### 3.06.01 Filling levels

Pay attention to the filling level for operating supply items (fuel etc.).

1. Fill up tanks in time.
2. Never drive the machine until the fuel tank is empty.

711-30

### 3.06.02 Pilot lights



Observe the control and indication instruments on the dashboard from time to time. Pilot lights inform the driver about the operating stages of the individual machine components and indicate faults. The urgency of taking action is subdivided into three stages.

#### **Danger, important reminder**

The pilot light STOP [220] is active. In addition, you hear a permanent acoustic signal. Further operation of the machine is inadmissible. The cause of the fault is displayed by further active pilot lights.

1. Park the machine out of the danger zone and switch off the diesel engine.
2. Rectify the cause immediately.

#### **Warning, notice, malfunction**

The warning, notice, malfunction pilot light [240] is active. In addition, you hear a permanent acoustic signal. Other pilot lights can indicate the cause of a fault.

Further operation of the machine is admissible for a short period of time.

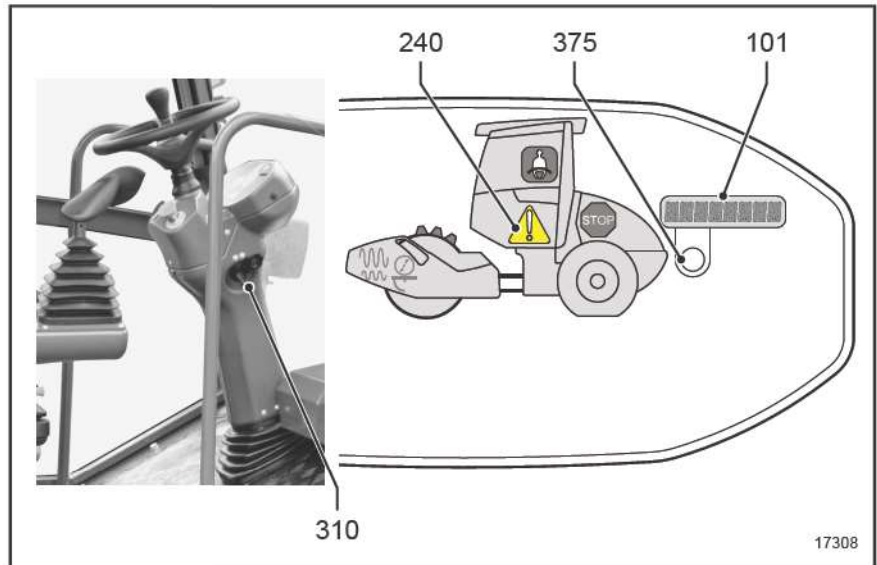
1. Rectify the cause of the fault without delay, at least at the end of the working shift.

#### **Switch-in check**

A pilot light indicates that a machine component e.g. the vibration is switched on. No action necessary.

711-28

### 3.06.03 Diagnostic Code



After the electrical system has been switched on (move switch [310] to position **I**), an internal component test is performed. A short acoustic signal sounds when a fault is detected; the pilot light [240] is active. The display [101] shows all existing faults one above the other in the form of diagnostic codes (scrolled). Other pilot lights can indicate the cause of a fault.

Faults occurring during operation are also indicated by an acoustic signal in the display [101] and the pilot light [240].lights up. The individual categories, such as operating hours, engine speed, diagnostic code etc., are selected with the switch [375].

**Diagnostic Code** A diagnostic code consists of two segments:

- Class of fault (letters)
- Code number (figures)

- Fault class** It is differentiated between:
- ERR\_xxx — Machine component malfunction e. g. display, travelling, vibration ect.
  - ENGINE-xx - Diesel engine malfunction.
- The complete diagnostic code is required in order to determine the type of fault.
- Example 1:  
The number indicates the type of fault in fault class ERR\_.  
(e. g. ERR\_304).  
The diagnostic code is: ERR\_304.
- Example 2:  
The number indicates diesel engine faults in fault class ENGINE\_.  
In order to determine the type of fault, the engine's own SPN code (e.g. S\_523914) and FMI code (e.g. F\_1) are also displayed after each individual fault message (e.g. ENGINE\_2).  
The diagnostic code for engine fault 2 is:  
ENGINE\_2 — S\_523914 — F\_1.  
When the acoustic signal shows a fault, please write down all messages pending, and contact your HAMM customer service agent. The diagnostic codes can only be interpreted by a HAMM service partner.

711-32

### 3.06.04 Exhaust gas treatment with diesel particulate filter (DPF)

#### **▲ WARNING**

##### **High exhaust gas temperature during diesel particulate filter regeneration.**

Risk of injury due to fire and explosion.

- When regenerating the diesel particulate filter, ensure that the hot gases emitted by the exhaust are not a source of danger (e.g. under dry trees).
- Regenerate only in a safe place.

002-60

- General** Harmful constituents of the exhaust gas, such as carbon monoxide, unburnt hydrocarbons, diesel particulate etc, are bound in catalytic converters or collected in filters, and not emitted into the environment. During operation, most of these residues are burnt at high temperature in the exhaust system. This results in self-regeneration of the elements.

767-00

- Diesel oxidation catalytic converter (DOC)** The diesel oxidation catalytic converter has a catalytic surface, which oxidises the carbon monoxide and unburnt hydrocarbons. Nitric oxide is also oxidised to nitrogen dioxide. In normal operation, these oxides are burnt at a high exhaust gas temperature.

767-05

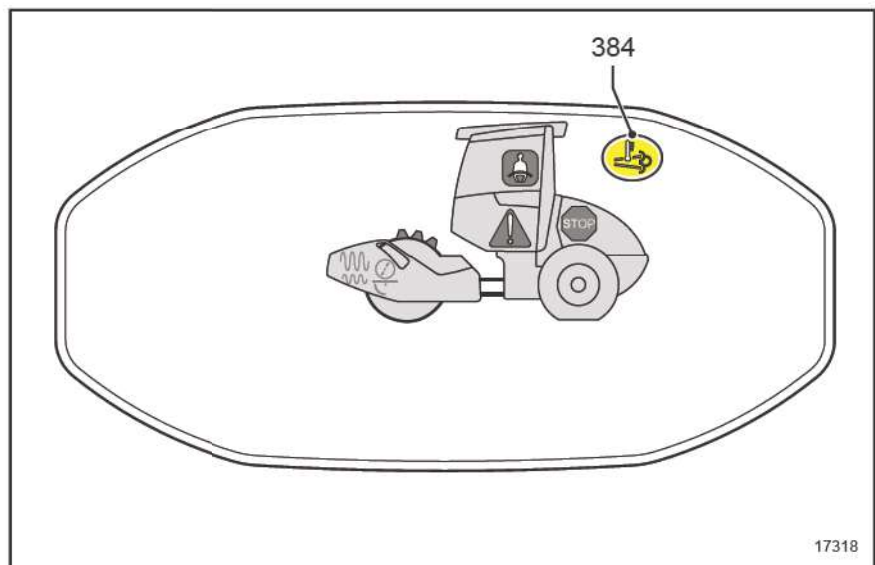


**Diesel particulate filter (DPF)** The sealed diesel particulate filter collects all the diesel particulates. At a sufficiently high exhaust gas temperature, they are burnt with the nitrogen dioxide. This enables the diesel particulate filter to be continuously regenerated during operation. Ash deposits, e.g. from lube oil residues or metal abrasion, cannot be removed from the diesel particulate filter by thermal regeneration. Therefore, the diesel particulate filter has to be changed at certain intervals of time.

767-01

**Regeneration** The diesel particulate filter cannot be regenerated until it has reached its operating temperature. In normal operation, regeneration takes place automatically once a certain level of particulate contamination has been reached. An indicator light shows that regeneration is necessary if the diesel particulate filter fails to reach its operating temperature (e.g., when the engine load used is extremely low, the operating time is short, etc.). Regeneration starts automatically after reaching the operating temperature when the engine speed is increased to the maximum speed.

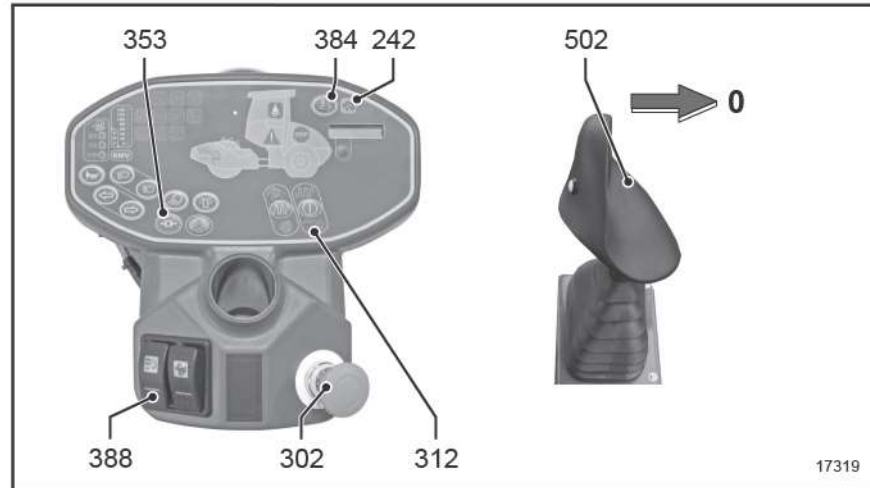
767-06

**Standstill regeneration**

Particulates accumulate in the diesel particulate filter if the operating conditions of the machine do not allow automatic regeneration of the diesel particulate filter (e.g. operating temperature not reached as a result of short periods of use, extremely lower ambient temperatures on site etc.) and clogs the diesel particulate filter with soot. The push button of switch [384] flashes, indicating that regeneration is required. In order to avoid having to change the diesel particulate filter prematurely, filter regeneration has to be initiated manually with the machine at a standstill.

767-07

### Activating / cancelling standstill regeneration



The hot gas escaping at the exhaust may create a safety hazard. Standstill regeneration is not permitted in environments containing inflammable objects, such as trees, or in enclosed spaces, such as tunnels. Drive the machine out of the danger area. In emergencies or dangerous situations, an activated standstill regeneration can be interrupted actuating the drive lever [501].

#### Requirement:

- Push button at switch [384] — **FLASHES**
- 0-position lock / parking brake [502] — position **LOCKED**
- EMERGENCY STOP [302] — position **UP**
- Vibration [312] — **OFF**
- Engine speed [388] — **MIN**

767-19

#### Activating standstill regeneration:

1. Switch [384] — **PRESS**  
(push button flashes)

The engine speed is increased strongly during standstill regeneration. No work functions may be activated during regeneration (duration approx. 30 minutes). The light on the push button goes out when regeneration has been completed successfully. Regeneration may only be cancelled in emergencies. Do not switch off the diesel engine until the light in the push button goes out.

767-16

#### Cancelling standstill regeneration:

1. Drive lever [501] — **FORWARD** or — **BACKWARD**

If the standstill regeneration has been cancelled, the push button [384] flashes to indicate that the diesel particulate filter (DPF) needs to be regenerated.

767-17

**Urgency of regeneration** If the state of the machine does not allow regeneration to take place, (e.g. extremely low engine load or operating temperature not reached), the diesel particulate filter continues to be contaminated with particulate, and is liable to clog. In order to avoid a premature change of the diesel particulate filter, 3 stages of urgency of regeneration are displayed.

Stage 1, regeneration required

Push button at switch [384] — **FLASHES**

No regeneration is possible when the diesel particulate filter is at a low operating temperature. Regeneration starts automatically after reaching the operating temperature by increasing the engine load (increasing the engine to the maximum speed, setting vibration to on, etc.) Standstill regeneration must be performed at a safe place if automatic regeneration cannot be carried out.

Stage 2, regenerate immediately (last opportunity for the driver to regenerate the filter)

Push button at switch [384] — **FLASHES**

Pilot light [240] — **FLASHES**

Power of the Diesel engine — **REDUCED**

Speed of the Diesel engine — **REDUCED**

The machine is disabled for normal operation in order to prevent damage to the Diesel engine and exhaust gas system. Standstill regeneration must be carried out at a safe place immediately.

1. Drive the machine out of the danger area.
2. Activating standstill regeneration.

Stage 3: Regeneration by service personnel

Push button at switch [384] — **LIGHTS**

Pilot light [240] — **LIGHTS**

Pilot light [242] — **LIGHTS UP YELLOW**

Power of the Diesel engine — **REDUCED**

Speed of the Diesel engine — **REDUCED**

The machine is disabled for normal operation in order to prevent damage to the Diesel engine and exhaust gas system. A last regeneration can only be performed by skilled personnel with the corresponding equipment.

1. Drive the machine out of the danger zone and shut it down.
2. Call the customer service.

767-20

**Replacing the diesel particulate filter**

The filter must be changed when the ash contamination of the diesel particulate filter reaches its maximum value. The pilot light [242] indicates the necessary replacement.

Pilot light [242] — **LIGHTS UP RED**



This work may only be carried out by trained personnel. Request assistance from customer services!

1. Drive the machine out of the danger zone and shut it down.
2. Call the customer service.

767-21

### 3.07 \*Battery cut-off (battery isolating switch)

#### ▲ WARNING

##### Electrical voltage!

Risk of injury due to electric shock.

- Do not start any a maintenance work unless the pilot lights at the battery isolating switch are off after pressing the switch of the battery switch-off.
- When the pilot light has gone out, also remove the ground strap from the battery.

002-67

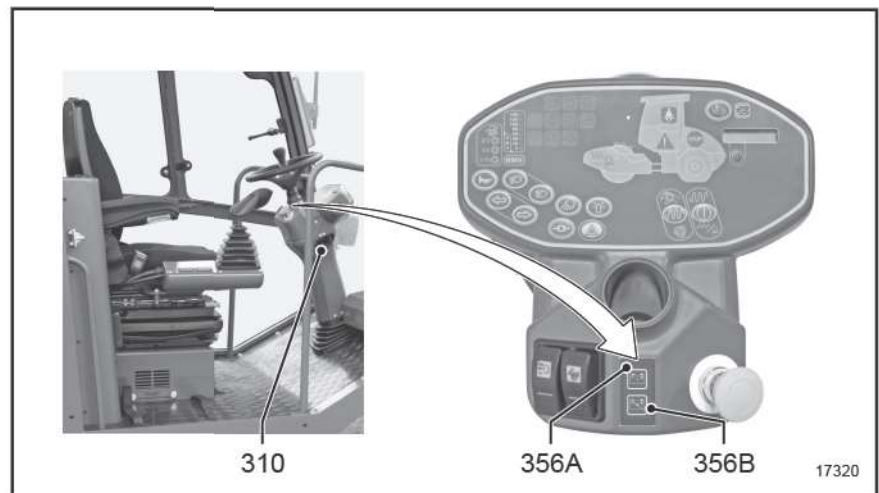
**General** By switching off the battery, the on-board power supply can be disconnected from the voltage source.

**Control unit** The control unit with the on and off switches ensures a controlled, time-delayed switching off of the battery power after approx. 2 minutes. This ensures that the required testing and storage routines may be performed in the control unit for the diesel engine. The pilot lights indicate the operating status of the control unit.

- On or flashing — active
- Off — stand-by-mode

714-05

#### 3.07.01 Operation



**General** Pressing the switch [356B] starts the battery switch-off. The switch-off can, however, only be effected after the electrical system has been switched off (switch [310] in position **0**).

- Activate control unit** When the electrical system is switched on (switch [310] in position **I**), the control unit is activated on the switch [356A].  
Switch [356A] — **PRESS**  
(pilot light lights in green).  
The control unit can also be activated on switch [356A] when the electrical system is off (switch [310] in position **0**). A flashing pilot light indicates that the control unit will switch to stand-by-mode in 24 hours.
- Switch-off by preselection** By using the switch [356B] when the electrical system is on (switch [310] in position **I**), battery switch-off is preselected.  
Switch [356B] — **PRESS**  
(pilot light lights in red)
- Switch-off is active** Only after the electrical system is switched off (switch [310] in position **0**) will the battery power be switched off on a time-delay of about 2 minutes.. During this time the red pilot light flashes and indicates the delay time.
- Switch-off without preselection** By pressing the switch [356B] when the electrical system is switched off (switch [310] in position **0**), the battery switch-off is activated instantly. A flashing pilot light indicates the delay time.  
Switch [356B] — **PRESS**  
(pilot light flashes in red)
- Battery switch-off** When the delay time has expired, the battery power is switched off. The control unit then switches instantly into stand-by-mode (pilot light red and green off).  
After the battery is switched off, the power supply from the battery remains disconnected even when the electrical system is switched on (switch [310] in position **I**) (no function check of the indicators on the instrument panel). The diesel engine cannot be started.
- Standby mode** If the machine is switched off (switch [310] in position **0**) without operating the switch [356B], battery switch-off is not effected (pilot light flashes green). The green flashing pilot light indicates that the control unit will switch to stand-by-mode in 24 hours (green pilot light off). Pressing the switch [356B] when in stand-by-mode activates the delayed battery switch-off (pilot light flashes in red). If the electrical system is switched on in stand-by-mode (switch [310] in position **I**) and if the battery was not switched off, the machine can be used normally. The control unit remains, however, in stand-by-mode (pilot light red and green off).



**Switch on battery power,  
start diesel engine**

To switch on the battery power, the control panel must be activated on the switch [356A]. When the switch [356A] is pressed, battery power is switched on without delay.

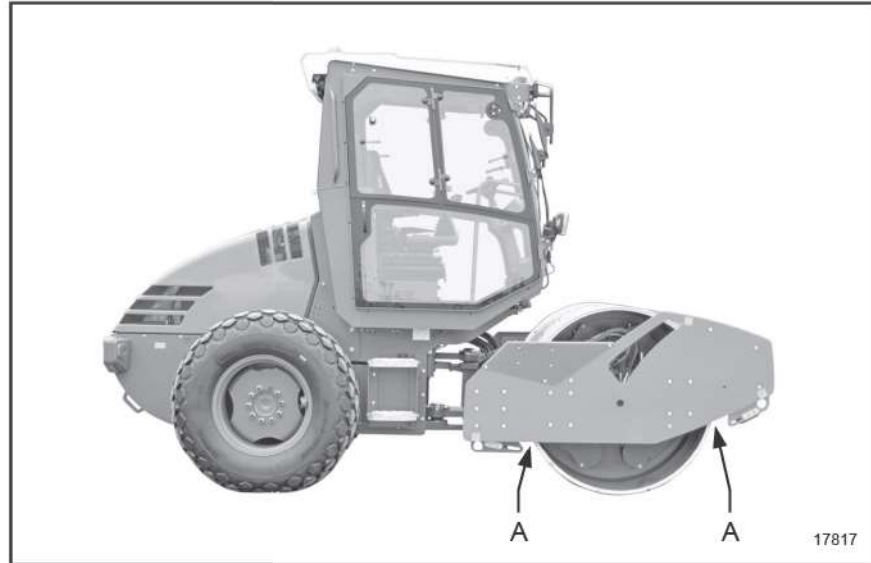
Switch [356A] — **PRESS**  
(pilot light flashes in green).

When the electrical system (switch [310] in position **I**) is switched on, all pilot lights are switched on briefly to check functionality. The pilot light on the switch [356A] lights up. The diesel engine can now also be started.

714-07

## 3.08 Scraper

### General

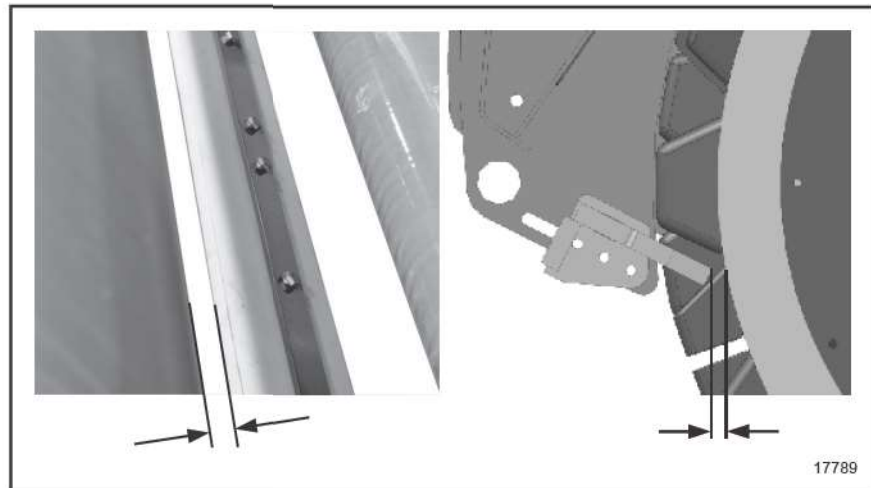


The scrapers [A] are designed to remove clogging dirt from the surface of the drum when working on soft, adhesive ground. With a padfoot drum, the dirt can only be removed from between the padfoot segments.

Rinse out dirt embedded between roller drum and the scraper with water jet. Remove strongly adhesive dirt with spatula or similar tool.

744-07

### Scraper



The scrapers are mounted on a rigid console. Because the drum is suspended elastically, the scraper must not touch the drum. Therefore a clearance must be maintained between the scraper and the drum.

Smooth drum clearance — **10 mm**

Padfoot drum clearance — **15 mm**

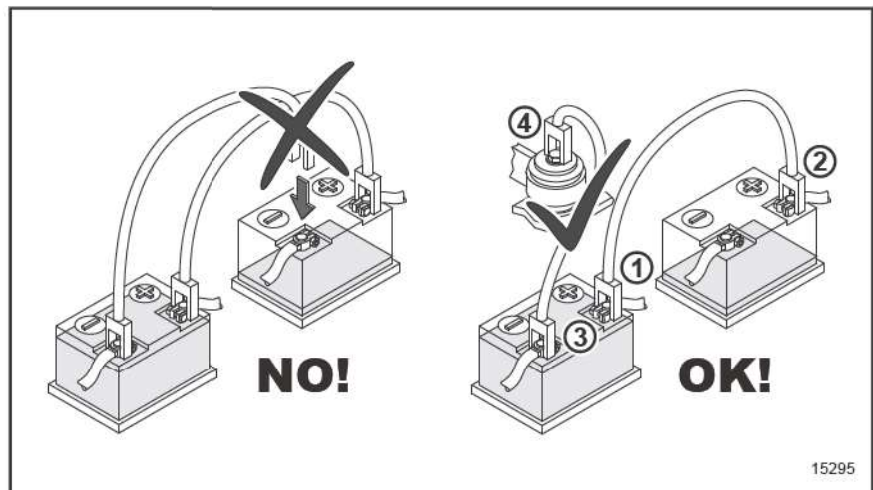
744-08



### 3.09 Starting with jump leads

- Preparation**
- Observe precaution measures for handling batteries (see Safety instructions).
  - Pay attention to the nominal voltage of the batteries.
  - A discharged battery can freeze already at 0 °C (32 °F). It is essential that you defrost a frozen battery in a warm room before connecting it with jump leads.
  - Use jump leads with an insulated terminal clamp and a cross section of at least 25 mm<sup>2</sup>.
  - The terminal clamps of one lead may not come in contact with those of the other.
  - Do not disconnect the battery from the vehicle's supply system.
  - Charging vehicle and discharged vehicle may not come in contact with each other.

#### Connecting leads



1. Connect one terminal clamp of one wire with the positive terminal of the charged battery (plus sign).
2. Connect the other terminal clamp of this lead to the positive terminal of the discharged battery (plus sign).
3. Connect one terminal clamp of the second wire with the negative terminal of the charged battery (minus sign).
4. Connect the other terminal clamp of the second lead with the discharged vehicle. e.g. at the engine block or at the fastening screw of the engine suspension. Do not connect the terminal clamp with the negative terminal of the discharged battery (risk of explosion) but as far away from the discharged battery as possible.
5. Lay leads such that they are not drawn into rotating parts and that they can be taken off even with a running diesel engine.

- Starting process**
1. Start the engine of the charging vehicle and let it run with medium engine speed.
  2. Start the diesel engine of the discharged vehicle after approx. 5 min.
  3. For approx. 3 min let both engines run with medium engine speed and the jump leads connected.

- Removing leads**
1. To prevent overloads in the electrical system, switch on an electrical component in the discharged vehicle (e.g. driving light) before removing the jump leads.
  2. Remove the jump leads in reverse order.

743-00

## 3.10 Towing

### General

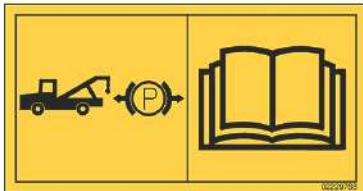
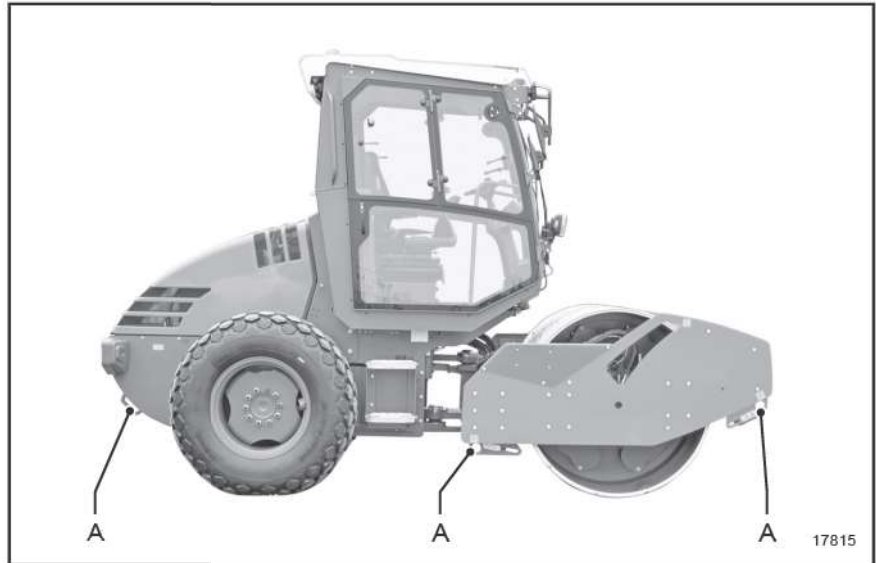
#### ⚠ WARNING

##### Brake out of order!

Unintentional rolling away of the machine can lead to serious injuries or death.

- Prior to releasing the brake, secure the machine against rolling away with wedges.

002-23



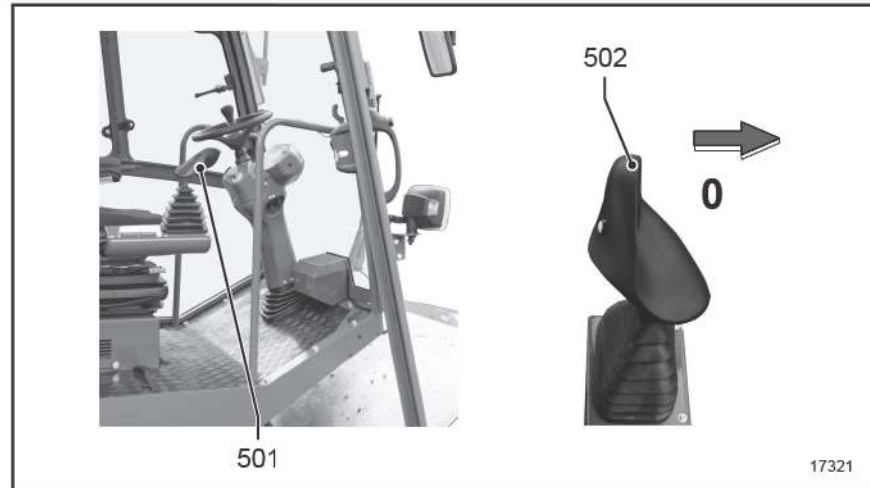
Towing of the machine assumes sufficient knowledge of the functioning of the hydrostatic drive and the operation of the spring-operated brake. The preparations for towing may only be carried out by experienced personnel who are aware of the dangers. The machine may only be fastened at the lifting points [A] and only be towed with a towing bar. Replace damaged pipes and hoses from which oil leaks before towing (environment protection).



In dangerous situations: You can also use a towing rope or towing chains when salvaging the machine on an uphill slope (brakes not released).

717-10

**Prior to towing**



1. Drive lever [501] — **CENTRE**
2. 0-position lock [502] — position **0**
3. Shut down diesel engine, if still functional..
4. Secure machine against rolling away with wedges or blocks.
5. Interrupt frictional connection of the hydrostatic drive (see text below).
6. Disable parking brakes (see text below).
7. Tow using towing bar only (brakes not functional).

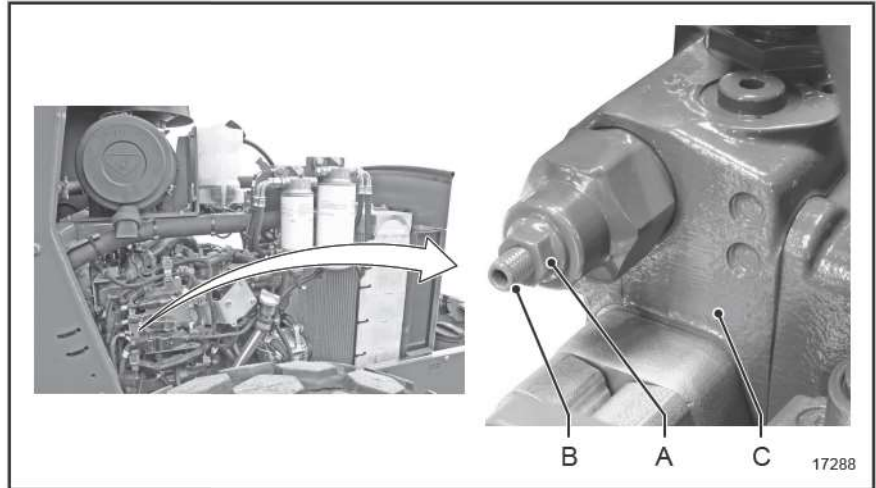
**Towing** Start, if possible, the engine (for steering hydraulics). The machine may only be towed with low speed 1 km/h (0.6 mph) . The maximum towing distance is 500 m.



If the diesel engine fails, the machine can only be steered in a restricted way and with a high amount of force at the steering wheel (emergency steering). Before moving, remove wedges or blocks.

- After towing**
1. Shut down the diesel engine.
  2. Secure machine against rolling away with wedges or blocks.
  3. Reestablish frictional connection of the hydrostatic drive (see text below)
  4. Actuate parking brakes (see text below).
  5. Remove towing bar.

717-07

**Separating the  
 hydrostatic drive power  
 train**


Only if the oil flow can circulate without pressure in the hydraulic system, can the machine be towed.

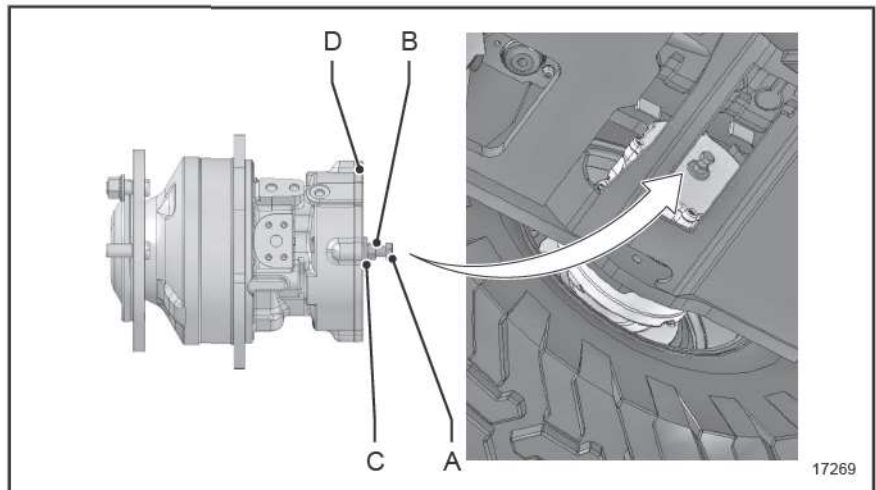
For this, perform the following at both high pressure valves:

1. Loosen lock nut [A] at the drive pump [C].
2. Screw in the locking screw [B] until the screw end flushes with the lock nut.

**Activating the hydrostatic  
 drive power train**

1. Screw out the locking screw [B] until the stop.
2. Tighten lock nut [A].

718-03

**Disengaging the parking  
 brake**


The pretension of spring-operated brake may only be reduced when towing with a defective diesel engine or hydraulic system. The following work must be carried out at all wheel motors.

1. Remove the screw plug [D] at the hydraulic motor.
2. Screw in the nut [B] up to the screw head.
3. Screw in the screw [A] together with washer [C] by hand onto the root of thread in the hydraulic motor [D].
4. Loosen the screw [A] by one half

5. Hold the screw [A] and tighten the nut [B] by hand until the washer [C] fits the the hydraulic motor [D].
6. Hold the screw [A] with the key. Use the key to tighten the nut [B] by 3/4 of a turn. The pretension of the spring-operated brakes will be reduced.

**Engaging the parking  
brake**

1. Hold the screw [A] with the key. Loosen the nut [B] by key and turn back to the screw head [A].
2. Screw out the screw [A] together with washer [C] from the hydraulic motor [D] by hand
3. Screw in the screw plug [D] in the hydraulic motor and tighten it.
4. Store the screw [A] and the washer [C] in the tool box.

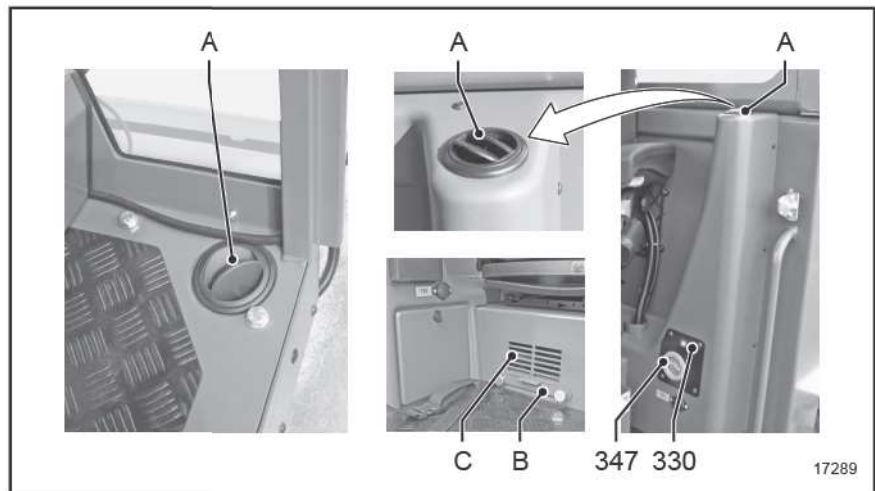
719-05

### 3.11 Heating / ventilation / cooling

**General** The comfort, well-being and good condition of the driver are largely dependent on a properly set heating and ventilation. This especially applies for the cold seasons. By opening the ventilation nozzles required, a temperature distribution is achieved with the pleasant effect of having warm feet but a cool head. A special heating and ventilation system in conjunction with an air conditioning ensures an optimal compartment climate. The cabin ventilation is achieved through mixer operation, i.e. the exhaust flow simultaneously sucks air out of the operator's cabin and draws in fresh outside air. Dirty filters must be replaced depending on the dust load.

720-18

#### Cabin ventilation



- |              |                                       |              |                               |
|--------------|---------------------------------------|--------------|-------------------------------|
| <b>[A]</b>   | Ventilation nozzle                    | <b>[B]</b>   | Aspiration duct for fresh air |
| <b>[C]</b>   | Aspiration duct for recirculating air | <b>[330]</b> | Cabin heating switch          |
| <b>[347]</b> | Cabin heating temperature regulation  |              |                               |

The air flow enters the cabin through the ventilation nozzles [A] that can be opened or closed by adjusting the discs. The direction is set by turning the disc ring. For drying or de-icing of the front or rear window the air flow must be directed to the windows.

760-01

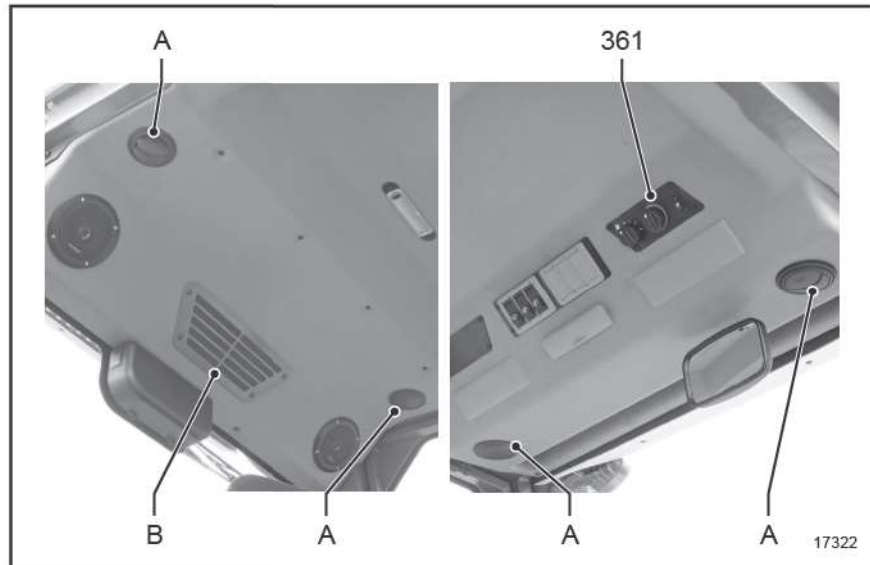
**Heating system** The heat exchanger for the heating is connected to the engine cooling circuit. After the ventilation fan [330] is switched on, the air flow which passed through the heat exchanger is guided into the cabin. The heating temperature [347] is infinitely variable.

761-01

**Ventilation** When the heating temperature [347] or the \*air conditioning system [361] is switched off, the system runs in ventilation operation. Several ventilation steps [330] ensure an optimal air circulation in the cabin.

762-00

**\*Cooling**



**[A]** Ventilation nozzle

**[B]** Aspiration duct for recirculating air

**[\*361]** Air conditioning system control unit

If the machine is equipped with a \*air conditioning, the air flow for cabin aerating can be cooled down at high outside temperatures. Doors and windows should be closed in order to obtain a fast cooling of the cabin if the air conditioning is turned on. This obtains a further cooling of already cooled inside air.

Switch [361] is used to switch the system on and off. Several ventilation steps ensure an optimal air circulation in the cabin. The air flow enters the cabin through the ventilation nozzles [A] that can be opened or closed by adjusting the discs.



Switch on air conditioning at least 1 per month (even in winter) for ca. 15 minutes.

763-01



## 3.12 Opening and closing engine hood

### General

#### ⚠ WARNING

##### Large swivel range of the engine hood!

Risk due to rotating parts.

- Ensure that there are no persons or objects in the danger zone of the machine.
- Only open the engine hood when the engine is at a standstill.
- Make sure that there is adequate space above.
- Carry out maintenance works only with the engine hood opened completely.
- Keep all parts of the body (e.g. hands) away from moving parts when closing it.

002-79

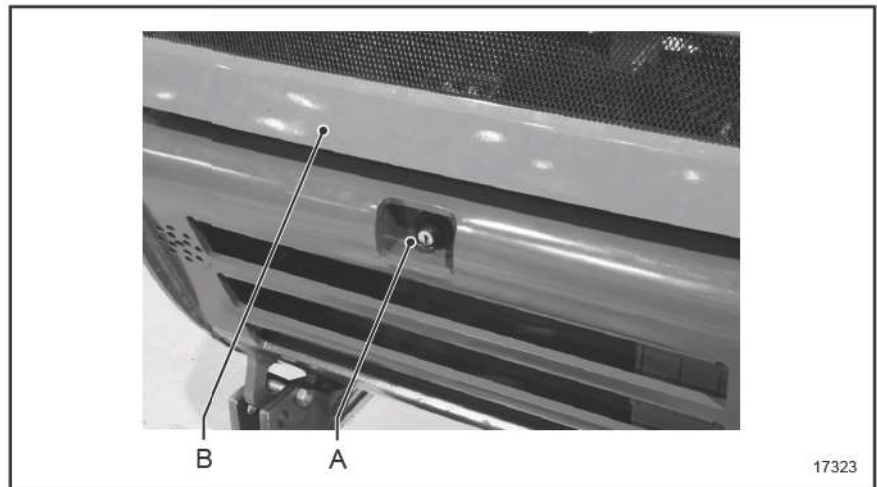
The motor hood may only be opened by one person. This person must be familiar with the work, and have been instructed about the dangers.

Prior to opening the engine hood:

1. Switch off diesel engine and remove ignition key.
2. Close the cabin doors.

723-05

### Opening the engine hood



1. Press button [A] to release the bonnet.
2. Open the engine hood [B] by hand.

### Closing the engine hood

Completely remove all loose tools from the engine compartment, replaced maintenance parts and other items not belonging to the machine.

1. Pull the engine hood [B] down and press the catch [A].

723-11

## 3.13 Driving on public roads

### 3.13.01 The following is applicable in Germany (StVZO - German Road Traffic Type Approval Law)

The government of Upper Palatinate grants an exception permit (see the details indicated on the original) for this machine pursuant to section 70, subsections 1 and 2 of the German Road Traffic Type Approval Law (StVZO).

- General instructions**
- This exemption permit may be revoked at any time and applies to the corresponding vehicle owner only.
  - A corresponding driving licence (class L as of 2010) is required for operating this vehicle on public roads..
  - The exemption may not be used unless an insurance cover is available.
  - Both the ORIGINAL exemption permit and the ORIGINAL proof of insurance must be carried when driving the machine.
  - To improve roadworthiness, the lamp guard and / or ramming guard installations need to be removed before driving on any public road.

749-02

### 3.13.02 Applicable in the User's Country

The laws, regulations, guidelines and standards applicable at the place of use must be observed (for example those concerning the lighting and warning systems).

749-03

## 4 MAINTENANCE



When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01



Please observe chapter 6, too. Here you find the description, operator control and maintenance of auxiliary equipment.

000-64

### 4.00 General maintenance instructions

This machine requires care and maintenance like any other technical device. The extent and the frequency of the maintenance work depends essentially of the operating and deployment conditions, which are very different in many cases. In case of more difficult operating conditions, the machine must have maintenance in shorter intervals as scheduled for normal operation.

The maintenance intervals are determined according to the running time of the operation hours counter; for this, additional maintenance work has to be performed during the running-in time according to the running-in regulations. The works necessary for care and the conservation of the operational safety of the machine are listed in the following sections.

The running-in regulations, the servicing intervals and the care measures for the diesel engine can be found in the operating manual of the engine manufacturer and must be observed.

800-06

#### 4.00.01 Operation monitoring

**Air filter** The operability of the air filter cartridge and the safety cartridge is monitored by an electric contamination indicator. Only if the pilot light [203] flashes, must the air filter cartridge or the safety filter cartridge be replaced.

810-16

**Pressure filter hydraulics** The pressure filters for the hydraulic system are monitored by an electrical contamination display. Only if the pilot light [214] flashes, must the filter insert of the hydraulic filters be replaced prematurely.



A prematurely contaminated filter can be a first hint for a damage in the hydraulic system.



819-05

**Preliminary fuel filter** According to the water content in the fuel, more or less water precipitates in the drain housing of the fuel pre-filter. If the pilot light [227] flashes, the water sump must be drained.

837-17

## 4.00.02 Maintenance overview



For engine maintenance see operating manual for diesel engine ( )!

### Lubricating oil change intervals

These intervals depend, e.g., on:

- Lubricating oil quality
- Fuel sulphur content
- The mode in which the diesel engine is used

Change lubricating oil after half the interval indicated, e.g., when at least one of the following conditions is true:

- Continuous ambient temperature below  $-10\text{ °C}$  ( $14\text{ °F}$ ) or lubricating oil temperature below  $60\text{ °C}$  ( $84\text{ °F}$ ).
- Operation using biodiesel fuel



Change the lubricating oil at least once per year if the lubricating oil change intervals are not reached before the year ends.

804-01

### Every 10 operating hours



Checking the function of the parking brake

[see page 127](#)



Inspecting the EMERGENCY STOP function when engine at standstill

[see page 128](#)



Checking hydraulic oil level

[see page 144](#)



Checking the air pressure in the tyres

[see page 151](#)



Checking engine oil level



Checking coolant level

[see page 142](#)



















Checking and cleaning air filter / dust valve

[see page 139 /](#)  
[see page 138](#)

**Every 250 operating hours**


- 
 Inspecting smooth drum scrapers [see page 149](#)  
 Inspecting scrapers of the padfoot drum [see page 150](#)
- 
 Checking vibrator oil filling level [see page 155](#)
- 
 Checking V-belt tension 
- 
 \*Checking V-belt tension of air conditioning [see page 130](#)
- 
 Lubricating pivoted bearing [see page 153](#)
- 
 Lubricate the steering cylinder bolts [see page 154](#)
- 
 Check the radiator [see page 141](#)
- 
 \*Checking air conditioning system [see page 130](#)

**Every 500 operating hours**


- 
 \*Replacing circulating air filter of the air conditioning system [see page 131](#)
- 
 Replacing fresh air filter of the operator's cabin [see page 131](#)
- 
 Replacing filter insert of pressure filter for hydraulic system [see page 147](#)
- 
 Replacing filter insert of pressure filter for steering system [see page 148](#)
- 
 Replacing V-belt 
- 
 \*Replacing V-belt of air conditioning system [see page 130](#)
- 
 Checking damping elements [see page 157](#)
- 
 Checking wheel nuts / wheel bolts for tightness [see page 150](#)
- 
 Changing engine oil 
- 
 Exchanging lubrication oil filter of diesel engine 
- 
 Replacing filter cartridge for the fuel filter [see page 136](#)
- 
 Clean the filter cartridge of the fuel prefilter [see page 137](#)
- 
 Replacing air filter cartridge [see page 139](#)

**Every 1000 operating hours**

1000 h



Changing vibrator oil

[see page 156](#)



Replacing filter insert of the oil separator



Replacing valve cover seal



**Every 2000 operating hours**

2000 h



Inspecting the EMERGENCY STOP function when driving

[see page 128](#)



Replacing hydraulic oil

[see page 145](#)



Changing coolant

[see page 143](#)



Changing safety cartridge

[see page 140](#)



Replacing ventilation filter of hydraulic oil tank

[see page 146](#)



Replacing the toothed belt

[see page 156](#)

### 4.00.03 Running-in regulations



For engine maintenance see operating manual for diesel engine (📖🔧)!

**After 50 operating hours Axle maintenance**

1. Checking wheel nuts / wheel bolts for tightness.

803-20

### 4.00.04 Required maintenance parts

**H 5i, all types (V3307-CR-T)**

**H2220001 →**

Quantity	Maintenance part			first time after 50	Servicing intervals in operating hours			
					every 250	every 500	every 1000	every 2000
10.5 l	Engine oil	<input type="checkbox"/>		50 D		D		
60.0 l	Hydraulic oil	<input type="checkbox"/>						D
11.0 l	Coolant	<input type="checkbox"/>						D
5.2 l	Vibrator oil	<input type="checkbox"/>			A		D	
1	V-belt	Generator	2428657		A	D		
1	*V-belt	Air conditioning system	1225812		A	D		
1	Air filter cartridge		2051604		A	D		
1	Safety cartridge		2051606					D
1	Filter cartridge	Lubricating oil	2373069	50 D		D		
1	Filter cartridge	Fuel	2275738			D		
1	Filter cartridge	fuel prefilter	2367788			D		
1	Filter insert	Oil separator	2428712				D	
1	Seal	Valve cover	2428661				D	
1	Filter insert	Hydraulic system	1296396			D		
1	Filter insert	Steering	1296396			D		
1	Ventilation filter	Oil tank	2247029					D
1	*Dryer	Air conditioning system	2429591					D
1	*Filter insert, air conditioning	Recirculating air	2429338			D		
1	Filter insert, operator's cabin	Fresh air	2429589			D		

Quantity	Maintenance part	first time after 50	Servicing intervals in operating hours			
			every 250	every 500	every 1000	every 2000
10	Damping elements for the drum suspension	1487116		A		
A = check, replace if necessary, D = replace						
1	All required maintenance parts for the corresponding maintenance intervals	2373069		2428761	2428764	2428766





All necessary maintenance parts for the corresponding maintenance interval are assembled in a service kit. You find the current order numbers for individual service kits in the WIRTGEN GROUP document Parts and more.

Maintenance parts marked as options (\*) are not included in the service kit.

899-00



**H 7i, all types (V3307-CR-T)**
**H2220001** →

Quantity	Maintenance part			first time after 50	Servicing intervals in operating hours			
					every 250	every 500	every 1000	every 2000
10.5 l	Engine oil			50 D		D		
60.0 l	Hydraulic oil							D
11.0 l	Coolant							D
10.0 l	Vibrator oil (at drum with only vibration)				A		D	
1	V-belt	Generator	2428657		A	D		
1	*V-belt	Air conditioning system	1225812		A	D		
1	Air filter cartridge		2051604		A	D		
1	Safety cartridge		2051606					D
1	Filter cartridge	Lubricating oil	2373069	50 D		D		
1	Filter cartridge	Fuel	2275738			D		
1	Filter cartridge	fuel prefilter	2367788			D		
1	Filter insert	Oil separator	2428712				D	
1	Seal	Valve cover	2428661				D	
1	Filter insert	Hydraulic system	1296396			D		
1	Filter insert	Steering	1296396			D		
1	Ventilation filter	Oil tank	2247029					D
1	*Dryer	Air conditioning system	2429591					D
1	*Filter insert, air conditioning	Recirculating air	2429338			D		
1	Filter insert, operator's cabin	Fresh air	2429589			D		
12	Damping elements for the drum suspension		1487116			A		
2	Toothed belt	VIO-drive	359645					D
A = check, replace if necessary, D = replace								
1	All required maintenance parts for the corresponding maintenance intervals		2373069			2428761	2428764	2428766

All necessary maintenance parts for the corresponding maintenance interval are assembled in a service kit. You find the current order numbers for individual service kits in the WIRTGEN GROUP document Parts and more.

Maintenance parts marked as options (\*) are not included in the service kit.

899-00

#### 4.00.05 Important information about maintenance works

**General** Specialist knowledge is necessary for the execution of some inspection and maintenance works; these cannot be given in the scope of these operating instructions. We recommend to have these works performed by trained specialised staff.

800-07

**Safety** The following safety instructions apply for all maintenance work.

##### ▲WARNING

###### Unintentional movement!

Unexpected movement during maintenance work can lead to serious injuries or death.

- Carry out maintenance work only when the engine is stopped.
- Put machine on a safe surface (even, capable of bearing, horizontal).
- Keep away from batters.
- Secure machine against rolling away.

002-37

##### ▲WARNING

###### Inadmissible engine start!

Risk of injury due to starting engine during maintenance works.

- Prior to maintenance works fasten a warning label on the operator platform.
- Remove the earthing strip from the battery strip before starting maintenance work.

002-68

##### ▲WARNING

###### Uncovered, rotating parts!

Risk of injury due to rotating parts.

- Only open the engine hood or engine room doors when the engine is at a standstill.

002-09

**⚠ WARNING****Hot surface, hot fluids!**

Risk of burns due to hot surfaces and fluids.

- Prior to maintenance works, allow machine to cool down to a temperature under 30 °C (86 °F) .
- Do not touch hot machine parts.
- Check filling levels only when machine is cooled down.

002-10

**⚠ WARNING****Explosion, acid!**

Risk of injury due to moving parts and caustic acids.

- Do not put any tools on the battery.

002-11

**⚠ WARNING****Fluids under pressure!**

Risk of injury due to fluids spurting out under pressure.

- Carry out maintenance works only with depressurized hydraulic systems.
- Park the machine on level ground and secure against rolling away.
- Put lifted machines on the ground.
- Wait at least 1 minute after you switched off the motor until the pressure is relieved.

002-12

**⚠ WARNING****Electrical voltage!**

Risk of injury due to electric shock.

- Prior to maintenance work, switch off the machine at the battery isolating switch (if applicable).
- Do not start any a maintenance work unless the pilot lights at the battery isolating switch are off.
- If no battery isolating switch exist, remove the ground strap from the battery.

002-69

**▲ WARNING**

**Work above floor level**

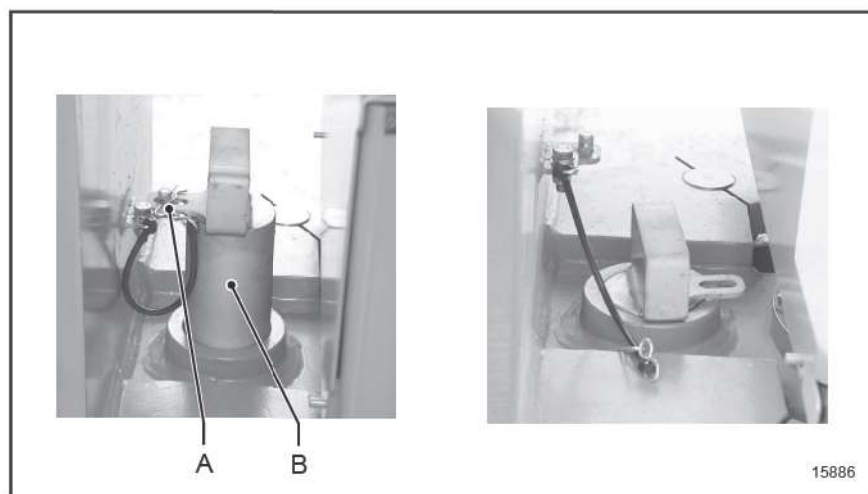
Risk of injury by falling.

- Do not perform any maintenance or repair work (e.g., to replace a defective incandescent lamp at the operator's cabin, or replace a wiper blade at the windscreen wiper, etc.) unless using a fall-safe ladder or a maintenance scaffold.
- Do not climb on any machine part to perform maintenance or repair work.

002-59

800-05

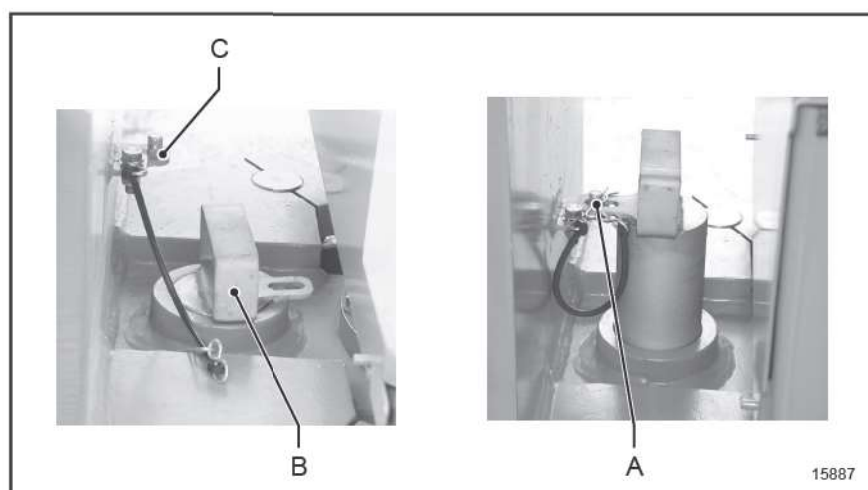
**4.00.06 Safety strut**  
Applying safety strut



1. Align articulated joint for travelling straight ahead (no steering angle).
2. Remove the bolt retainer [A].
3. Lift the locking pin [B], turn it through 180°, and lock the articulated joint.

800-13

**Releasing safety strut**



1. Lift the locking pin [B], turn it through 180°, and hook it into bracket [C].
2. Mount the bolt retainer [A].

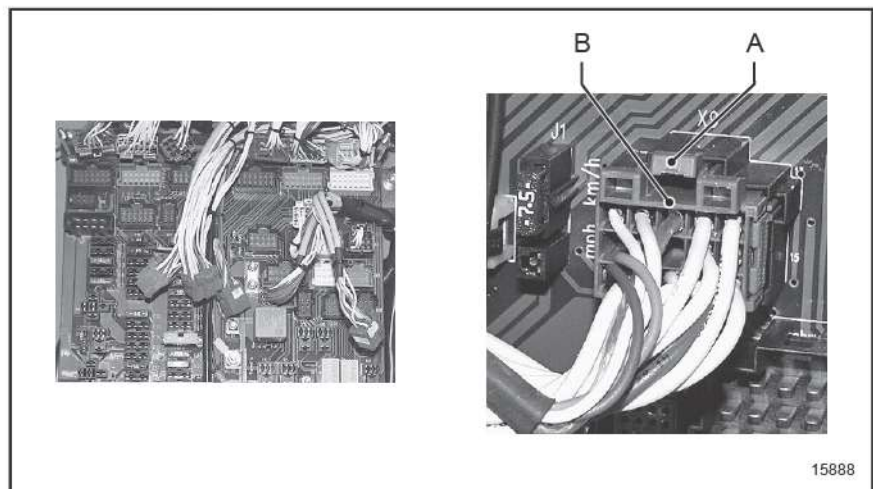
800-14

#### 4.00.07 Welding works on the machine

- Preparation**
- Observe the operating manual of the diesel engine.
  - In order to protect electronic components as e. g. central processing unit, monitor unit, sensors, relays etc., all connectors must be pulled out prior to welding work.
  - The negative terminal of the welding appliance must be applied in the vicinity of the weld directly on the component to be welded. Pay attention that it has good contact and remove insulating colour coats.
  - If possible, keep welding leads away from the leads of the machine (induction). If not possible, the welding leads must cross the machine leads.
  - Touch with live electrodes only the welds. Other components may be damaged if coming in contact with the electrodes. Prior to welding works remove components which may get damaged by heat or welding work.
  - Ensure that there are no inflammable or combustible materials / gases (e.g. fuel, oil, etc.) can get into the vicinity of the welds.

885-00

#### Fusible board



**Procedure** 1. Switch off diesel engine and remove ignition key.



Maintain an after-running time of 2 minutes.

000-39

2. Disconnect battery, first negative then positive terminal.
3. To disconnect fusible board:
  - Press catch A downwards.
  - Take all connectors [B] from the support by jiggling and pulling is carefully.
4. Connect negative terminal of the welding appliance in the vicinity of the weld.
5. Pay attention to the components in the vicinity of the weld.
6. Reconnect all connection plugs after welding.

885-05

## 4.01 Chassis / safety features

### 4.01.01 General

**Adhere to the following instructions:**

- Check operating and safety instructions on the machine. Replace damaged or non-legible signs.
- Ensure that hinges and links move easily and lubricate lightly.
- Check the warning devices (signal horn, reflectors, \*back-up alarm, blinkers and warning flashers).
- Check lighting.
- Check heavily loaded screw connections for being properly tightened e.g. pivoted links, roller drum suspensions, drum drives.

883-00

### 4.01.02 Checking the function of the parking brake

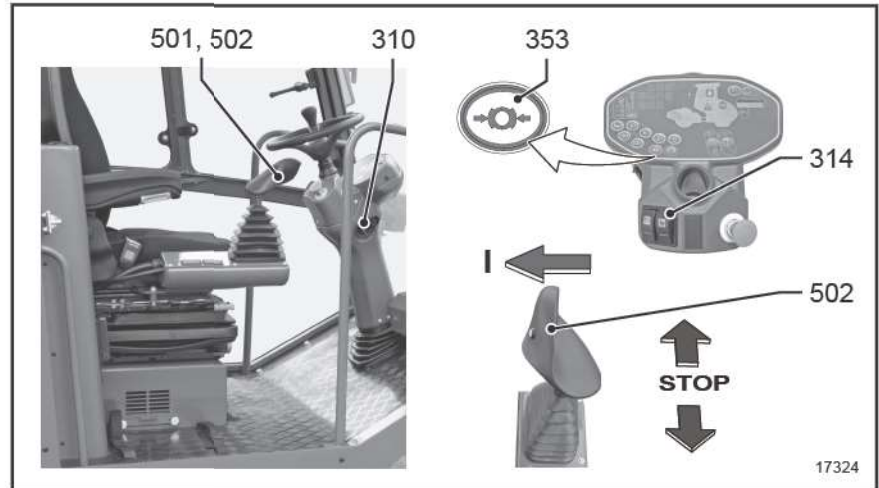
#### ⚠ WARNING

##### **Uncontrolled driving behaviour!**

Autonomous movement of the machine can lead to serious injuries or death.

- Ensure that there are no persons or objects in the danger zone of the machine.
- Do not check functioning in case there is not enough space.

002-26



Only inspect the parking brake when engine at standstill.

- Function test**
1. Start the diesel engine [310].
  2. Engage working gear [314].
  3. Keep the switch [353] pushed when the push button lights.
  4. Move the drive lever [501] from the 0-position lock [502] to the central position and push it shortly in forward direction.

If the switch [353] is pushed and the drive blocks, the parking brake works properly. If the brake discs of the brakes are worn in a way that driving is possible even if the switch is pushed, the parking brake must be inspected or replaced.



Operation of the machine is inadmissible! Request assistance from customer services!

5. Bring the drive lever [501] into central position again before releasing the switch [353].

813-02

### 4.01.03 Check function of emergency stop

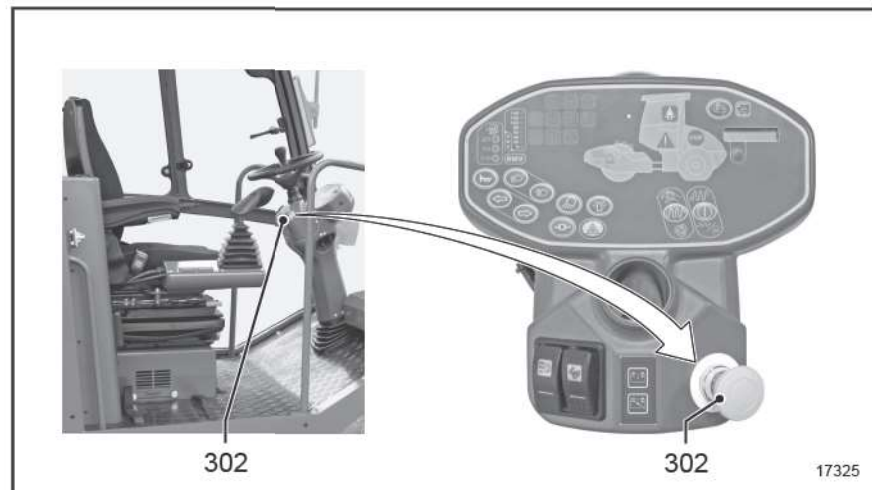
#### **▲ WARNING**

##### **Full braking!**

Danger of injuries due to strong braking force.

- Activate EMERGENCY STOP only in the event of danger.
- Do not use the EMERGENCY STOP as operation brake.

002-03



#### **Function test when engine at standstill (daily)**

Carry out functional tests with the diesel engine running and the work functions (e.g. vibration) switched on.

1. Press EMERGENCY STOP [302] when engine at standstill.

The machine:

- Switches off the working functions.
- Shuts down the diesel engine.

813-20





**Function test during driving operation (yearly)**

Carry out functional tests with the diesel engine running and the work functions (e.g. vibration) switched on.

1. Press EMERGENCY STOP [302] with low speed 0.5 km/h (0.3 mph).

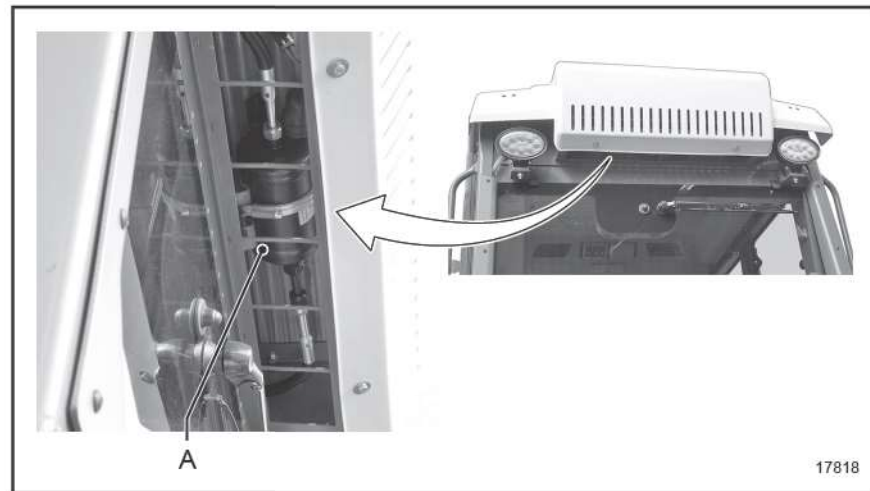
The machine:

- Stops immediately.
- Switches off the working functions.
- Shuts down the diesel engine.

813-15

## 4.02 Control stand

### 4.02.01 \*Air conditioning system



[A] Drain bottle

#### **⚠ WARNING**

##### **Fluids under pressure!**

Risk of injury due to fluids spurting out under pressure.

- Perform maintenance works only if the air conditioning is not under pressure and empty.
- Wear your safety equipment.

002-27

#### **⚠ WARNING**

##### **Refrigerating agent harmful to health!**

Risk of injury due to frostbite and harmful vapours.

- Do not touch air conditioning components.
- Do not open the pipe system of the air conditioning.

002-28

If the machine is equipped with a \*air conditioning, it must be maintained according to the manufacturer's instructions. Only trained, specialised staff with the corresponding workshop equipment is allowed to perform these works.

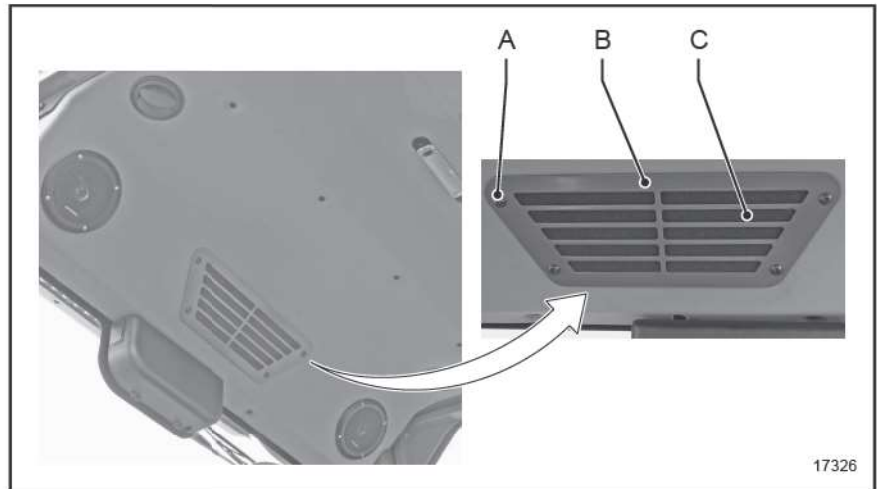
886-00



Switch on air conditioning at least 1 per month (even in winter) for about 15 minutes.

000-27

#### 4.02.02 \*Replacing circulating air filter of the air conditioning system

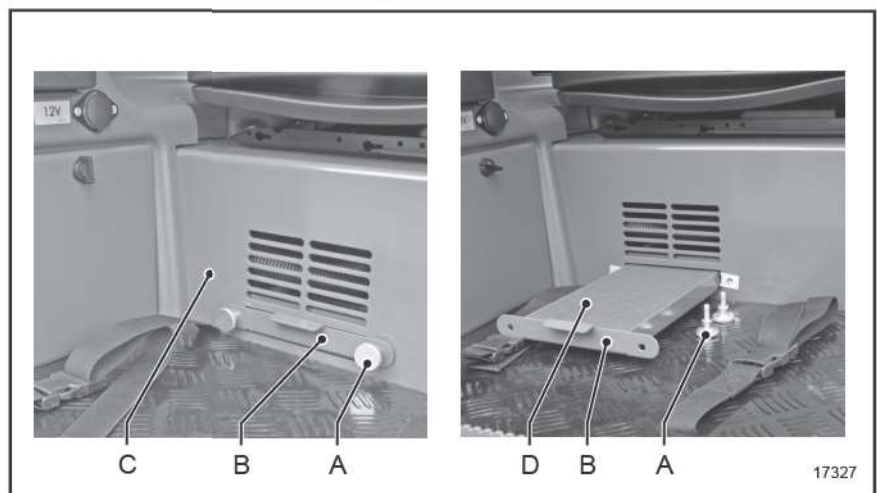


Replace the filter depending on the dusty conditions.

1. Switch off diesel engine and remove ignition key.
2. Loosen screws [A] and remove with the cover [B] and remove the filter element [C].
3. Replace the filter element [C] by a new one.
4. Mount cover [B] with the filter element [C] and tighten screws [A].

887-04

#### 4.02.03 Replacing fresh air filter of the operator's cabin

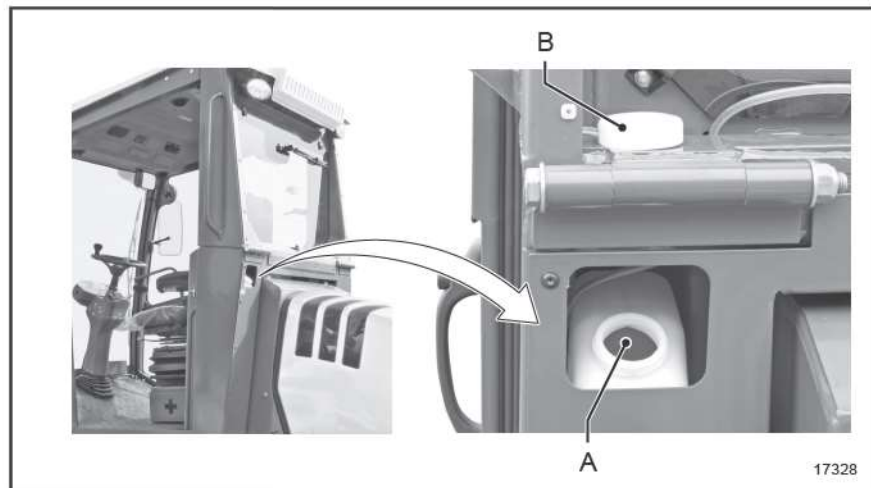


Replace the filter depending on the dusty conditions.

1. Switch off diesel engine and remove ignition key.
2. Loosen the screws [A].
3. Pull the filter unit [B] from the vented enclosure.
4. Replace the dust filter [D].
5. Slide the filter unit [B] into the vented enclosure [C].
6. Install and tighten the screws [A].

887-06

#### 4.02.04 Checking fill level of the windscreen washer



Fill up windscreen washer in good time.

Pure water can be used to wash the windscreen. Antifreeze must be added when outdoor temperatures are below freezing point. Make sure you use the mixing ratio specified by the manufacturer!

1. Open lid [B], and fill the tank [A] with the appropriate windscreen washing liquid.
2. Close the tank lid [B] again.

884-01

## 4.04 Drive unit - diesel engine

### 4.04.01 General

#### **▲WARNING**

##### **Fuel under high pressure!**

Risk of injury due to fluids spurting out under pressure. Fluids spurting out under pressure may get on your skin or eyes.

- Carry out maintenance works only with depressurized fuel systems.
- Wait 1 minute after you switched off the diesel engine and the pressure is relieved.
- Special knowledge is necessary for works on the high pressure lines of the injection system. Therefore only trained specialist personnel are to carry out these works.
- Wear your personal protective equipment (e.g. safety glasses, protective suit) during test run of the diesel engine.

002-47

#### **▲WARNING**

##### **Inflammable fuel!**

Risk of injury due to fire and explosion.

- Do not smoke. No open fire.
- Do not breathe in fuel vapours.
- Catch spilling fuel or water sump, do not allow to seep away into the ground!

002-29

#### **NOTICE**

##### **Inadmissible fuel or inadmissible lubricating oil for the diesel engine!**

Risk of damage to the diesel engine or to the system for exhaust treatment.

- Use only the fuel specified in the operating instructions.
- Use only the engine oil specified in the operating instructions.
- Observe the indicating labels affixed at the filler necks for fuel and engine oil.

004-12

### NOTICE

#### Damage to engine due to soiling!

Dirt in the fuel system damages the diesel engine.

Prior to work on the fuel system:

- Clean components and their vicinity thoroughly (e.g. with high pressure washer).
- Ensure no soiling or dust enters the fuel system (cover soiled areas with plastic film).
- Dry cleaned, wet areas with compressed air.

004-08



The fuel system must be deaerated after all works on the open fuel system or after the tank has run out of fuel. Performing a test run check fuel system for leaks.

000-08

Adhere to running-in regulations, servicing intervals and care measures for diesel engine as specified in the operating manual of the engine manufacturer.

800-08

#### Lubricating oil change intervals

These intervals depend, e.g., on:

- Lubricating oil quality
- Fuel sulphur content
- The mode in which the diesel engine is used

Change lubricating oil after half the interval indicated, e.g., when at least one of the following conditions is true:

- Continuous ambient temperature below  $-10\text{ }^{\circ}\text{C}$  ( $14\text{ }^{\circ}\text{F}$ ) or lubricating oil temperature below  $60\text{ }^{\circ}\text{C}$  ( $84\text{ }^{\circ}\text{F}$ ).
- Operation using biodiesel fuel



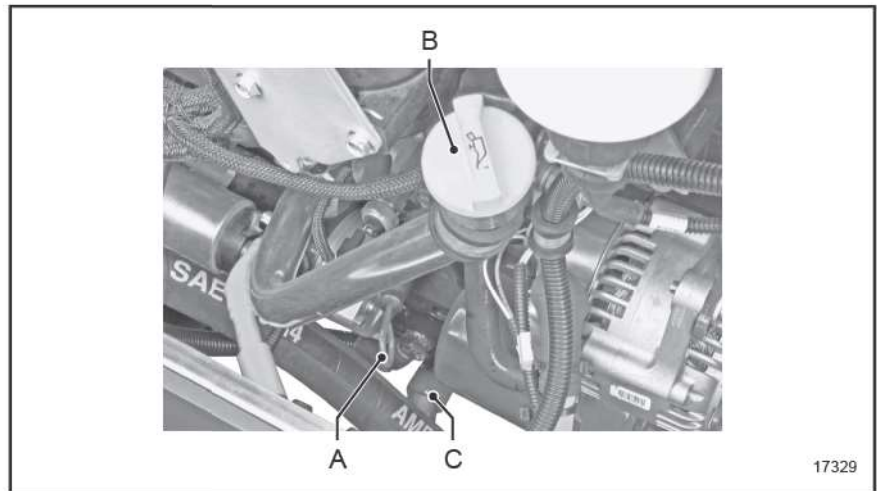
Change the lubricating oil at least once per year if the lubricating oil change intervals are not reached before the year ends.

804-01

**4.04.02 Maintenance points at the Diesel engine when changing oil**

For engine maintenance see operating manual for diesel engine!

000-35



[A] Oil gauge stick

[B] Oil filler

[C] Oil drain screw



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

872-01

### 4.04.03 Replacing filter cartridge for the fuel filter

#### ⚠ WARNING

##### Inflammable fuel!

Risk of injury due to fire and explosion.

- Do not smoke. No open fire.
- Do not breathe in fuel vapours.
- Catch spilling fuel or water sump, do not allow to seep away into the ground!

002-29



17723

#### Replacing filter cartridge

1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down to a temperature under 30 °C (86 °F).
3. Open the vent screw [B].
4. Unscrew the filter cartridge [A] and dispose of it properly.
5. Prior to assembly apply a thin coat of oil to the rubber seal and screw the new filter cartridge [A] to the filter head until the seal makes contact. Tighten the filter cartridge by hand further by half a turn.
6. Switch on the electrical system [310] until fuel runs out of the vent hole [B].
7. Screw in and tighten the vent screw [B].
8. Check for tightness after assembly.

837-15



#### 4.04.04 Changing filter cartridge for the fuel pre-filter

### ⚠ WARNING

#### Inflammable fuel!

Risk of injury due to fire and explosion.

- Do not smoke. No open fire.
- Do not breathe in fuel vapours.
- Catch spilling fuel or water sump, do not allow to seep away into the ground!

002-29



#### Replacing filter cartridge

1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down to a temperature under 30 °C (86 °F).
3. Close the fuel shutoff valve if existing (only if the fuel tank is installed in high position).
4. Open the vent screw [D] by one turn.
5. Unplug the plug-and-socket connection [B] to the sensor [A], and screw the sensor by 2 turns out the filter cartridge.
6. Drain fuel and waste water from the filter.
7. Unscrew filter cartridge [C].
8. Place the sensor [A] into the new filter cartridge.
9. Before installing the new filter cartridge, apply a thin coat of oil to the rubber seal, and screw the filter cartridge [C] to the filter head until the seal makes contact. Tighten the filter cartridge by hand further by half a turn.
10. Close the plug-and-socket connection [B].
11. Open the fuel shutoff valve if existing (only if the fuel tank is installed in high position).
12. Switch on the electrical system (switch [310] position **I** ).
13. Tighten the vent screw [F] when fuel runs out of the vent hole [D].
14. Open the vent screw [F] at the fuel filter cartridge [G] by one turn until fuel runs out of the vent hole [D] of the fuel filter cartridge.
15. Tighten the vent screw [F].

16. Start the diesel engine and run it for about 1 minute at idle speed.
17. Check for tightness after assembly.

The fuel pre-filter must be drained at the sensor [A] from time to time depending on the water content in the fuel. If the pilot light [227] flashes, the water sump must be drained immediately in order to avoid damage on the diesel engine.

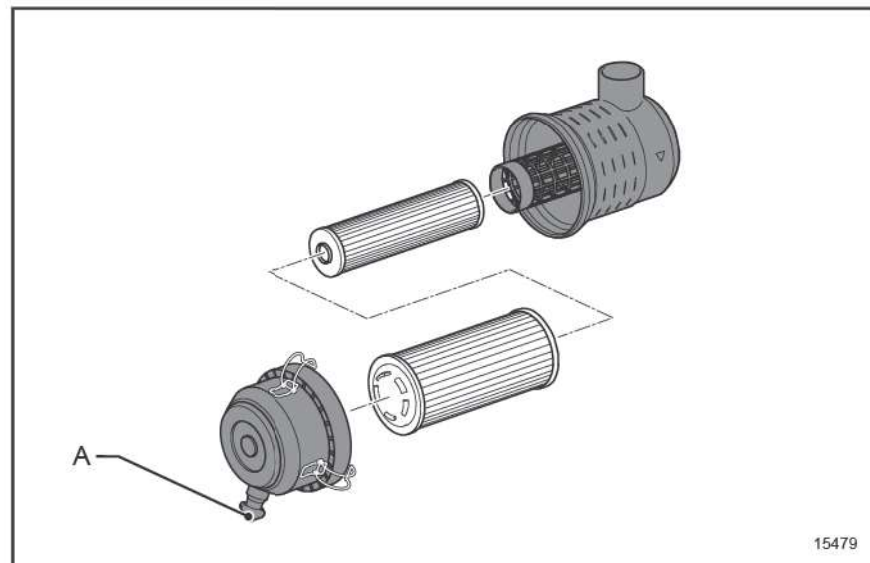
837-28

#### Draining water sump

1. Open the vent screw [D] by one turn.
2. Unplug the plug-and-socket connection [B] to the sensor [A], and screw the sensor by two turns out the filter cartridge.
3. Drain waste water from the filter.
4. Screw in and tighten the sensor [A] in the filter cartridge.
5. Plug the plug-and-socket connection [B] to the sensor.
6. Switch on the electrical system (switch [310] position **I** ).
7. Tighten the vent screw [D] when fuel runs out of the vent hole [D].

897-03

#### 4.04.05 Checking and cleaning dust discharge valve



Prior to start of work check whether the opening of the dust discharge valve [A] is clogged with moist dirt deposits.

1. Switch off diesel engine and remove ignition key.
2. Squeeze the dust discharge valve [A] and clean the discharge slot.

810-18

#### 4.04.06 Checking and replacing the air filter

##### ⚠ WARNING

###### Exposed, rotating parts!

Risk of injury due to rotating parts.

- Start the diesel engine only with closed engine hood resp. closed engine room doors.
- Ensure that there are no persons or objects in the danger zone of the machine.

002-30

##### NOTICE

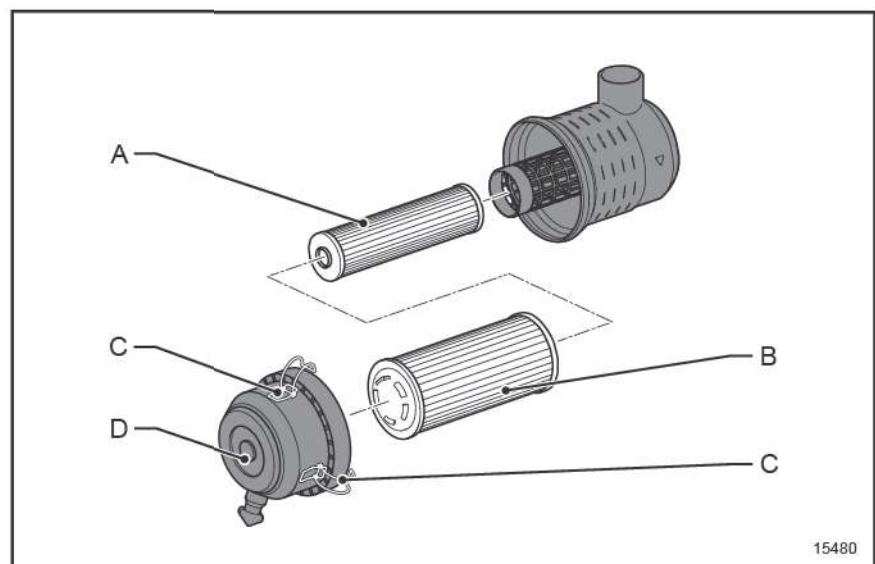
###### Air filter cartridge / safety cartridge damaged or missing!

Engine damaged by dirt in the intake air.

- Replace dirty air filter cartridge, do not clean it.
- Replace damaged air filter cartridge immediately.
- The safety filter cartridge may only be taken from the housing for replacement purposes. The safety cartridge must not be cleaned.
- Clean the interior parts of the casing only with a moist, fiber-free cloth, never with compressed air.
- Ensure that no dirt gets into the clean air side of the air filter.
- The diesel engine must not be operated without air filter cartridge and safety filter cartridge.

004-10

#### General



The operability control of the air filter cartridge and the safety cartridge must be performed with the diesel engine running.

1. Start diesel engine and shortly rev up to maximum speed.

If the pilot light [203] does not light up, both filter cartridges are still completely operable. If the pilot light flashes, the air filter cartridge [B] resp. the safety cartridge [A] must be replaced.

810-19

### Replacing the air filter cartridge

1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down under a temperature of 30 °C (86 °F).
3. Fold up clip [C].
4. Remove dust container [D].
5. Clean the inside of the dust collectors.
6. Replace the air filter cartridge [B].
7. Re-assemble in reverse order.

The operability check for the safety filter cartridge [A] is performed together with the replacement of the air filter cartridge [B]. To test that, start the diesel engine when the filter housing is open and the new air filter cartridge is inserted. Shortly rev up to maximum speed. If the pilot light [203] does not light up during this process, the safety filter cartridge is still completely operable. If the pilot light flashes, the safety filter cartridge must be replaced.

810-20

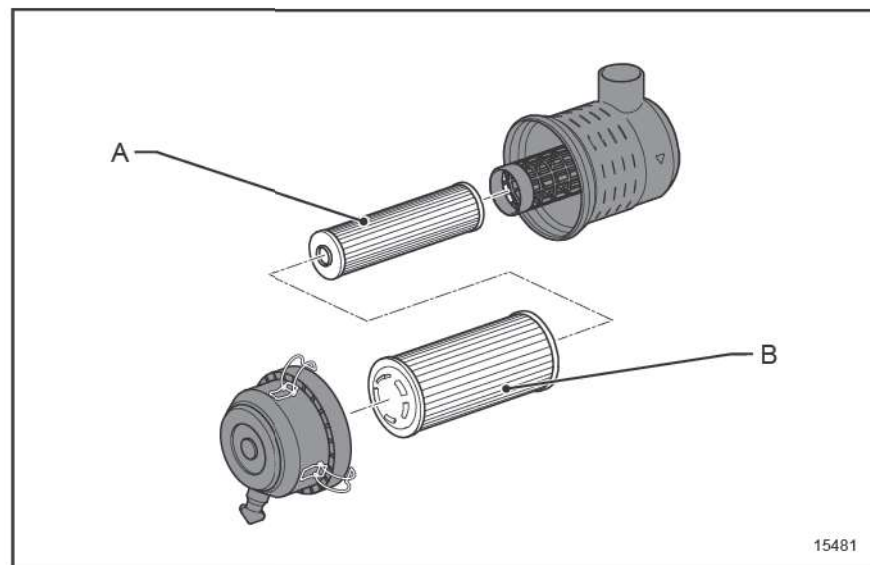
## 4.04.07 Changing safety cartridge

**Change the safety filter cartridge in the following intervals:**

- After having changed the air filter cartridge five times.
- After 2000 operating hours at the latest.
- If the pilot light [203] does not go out after having changed the air filter cartridge.
- If the air filter cartridge is defective.

861-05

### Changing safety cartridge



1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down under a temperature of 30 °C (86 °F).
3. Remove the air filter cartridge [B].
4. Pull out safety filter cartridge [A].
5. Insert a new safety filter cartridge.
6. Insert the air filter cartridge [B].



The safety filter cartridge may only be taken from the housing for replacement purposes. The safety cartridge must not be cleaned. The diesel engine must not be operated without air filter cartridge and safety filter cartridge.

861-06

#### 4.04.08 Checking radiator



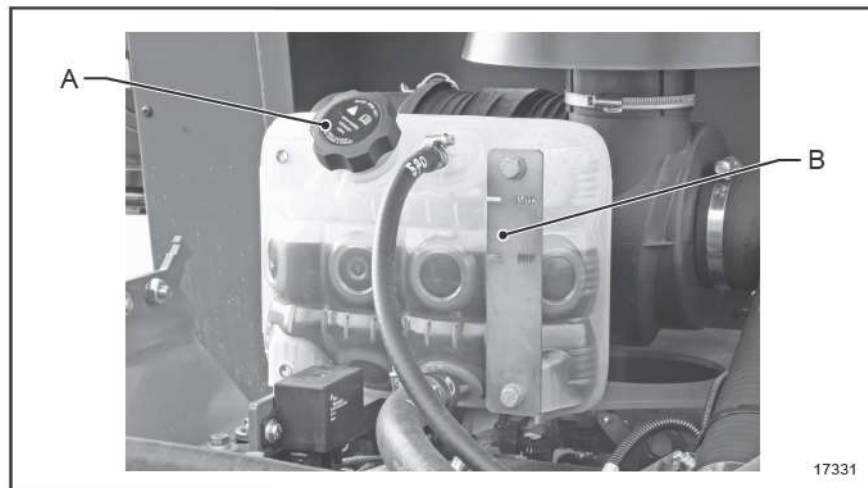
1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down under a temperature of 30 °C (86 °F).
3. Check the cooling fins of the radiators for contamination.

If the radiators are contaminated they must be cleaned thoroughly and immediately.

4. Clean the radiator carefully with a high-pressure cleaner.

824-03

#### 4.04.09 Checking coolant level



1. Switch off diesel engine and remove ignition key.
2. Only check the coolant level when the diesel engine is cold.
3. Correct coolant level: Min. mark [B] at the compensator tank. Do not exceed this level!
4. In case of a lack of coolant, only fill up coolant in the specified concentration through filling opening [A] at the compensator tank.
5. In case of bigger coolant losses, find out and eliminate the cause.



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

815-06

#### 4.04.10 Changing coolant

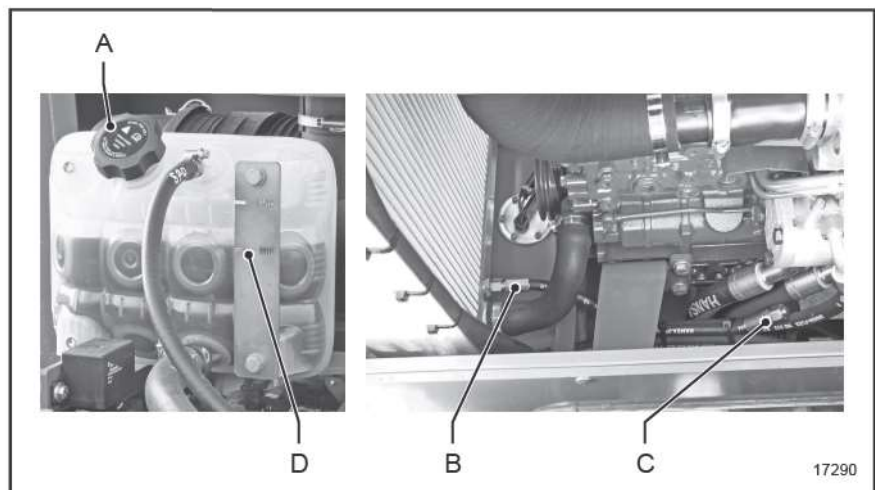
### ⚠ WARNING

#### Hot surface, hot fluids!

Risk of burns due to hot surfaces and fluids.

- Prior to maintenance works, allow machine to cool down to a temperature under 30 °C (86 °F) .
- Do not touch hot machine parts.
- Check filling levels only when machine is cooled down.
- Open the sealing cap of the compensator tank only when the diesel engine is cooled down!

002-31



1. Switch off diesel engine and remove ignition key.
2. Open the sealing cap [A] at the compensator tank.
3. Unscrew the plug [C] at the end of the drain hose [B] and discharge the coolant in a provided receptacle.
4. Screw in again the plug [C].
5. Set the temperature regulator for the cabin heating to maximum temperature.
6. Fill coolant up to the marking [D].
7. Close the filling opening with the sealing cap [A].
8. Start the diesel engine and bring it to operating temperature (thermostat opens).
9. Switch off diesel engine and remove ignition key.
10. Check coolant level when the diesel motor is cold, fill up as necessary.
11. Correct level of coolant: There is a mark [D] at the compensation tank.



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

866-02

## 4.05 Hydraulic oil supply

### 4.05.01 General

Check all lines, hoses and screwed connections regularly (at least 1x yearly) for leaks and visible damage.

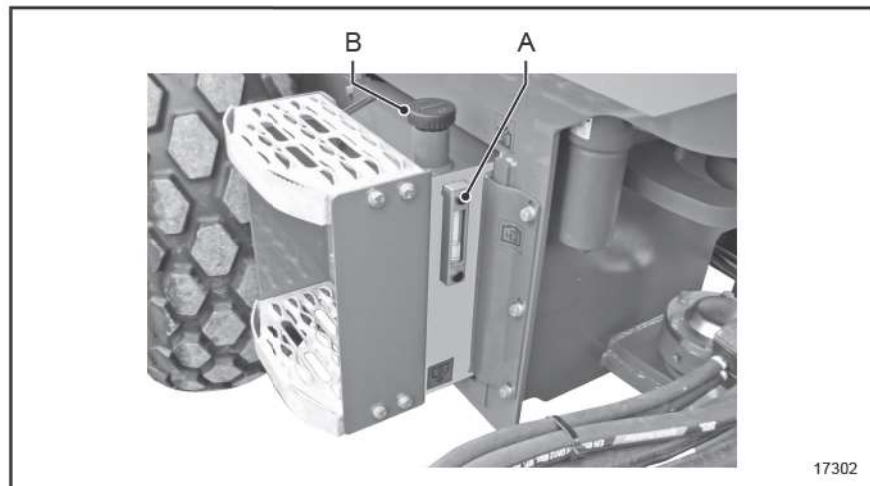
Damaged parts must be replaced immediately. Further operation is inadmissible. Oil spurting out can lead to injuries and fire.

Avoid subsequent damage! After a damage to the hydraulic system, with a foreign object having entered the oil circuit, the entire hydraulic system must be cleaned. This work may only be performed by trained specialised personnel! Call the customer service!

After that, replace all suction filters, return filters or pressure filters in the hydraulic system after 50 and after 125 operating hours.

888-00

### 4.05.02 Checking hydraulic oil level



1. Switch off diesel engine and remove ignition key.
2. Check only when the engine is cooled down to approx. 20 °C (68 °F).
3. Correct oil level: Centre of inspection glass [A].  
Do not exceed this level!
4. If the oil level is too low, fill in appropriate oil through filling opening [B].
5. In case of bigger oil losses, find out and eliminate the cause.

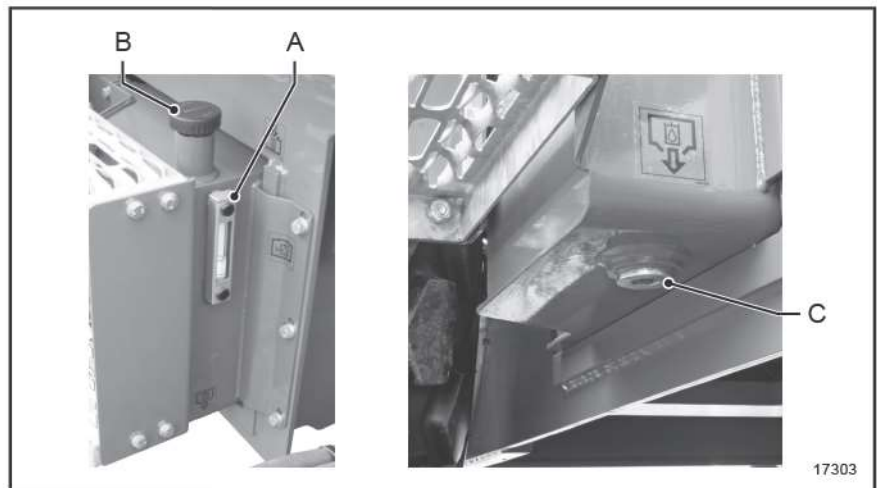


Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

811-03



### 4.05.03 Replacing hydraulic oil

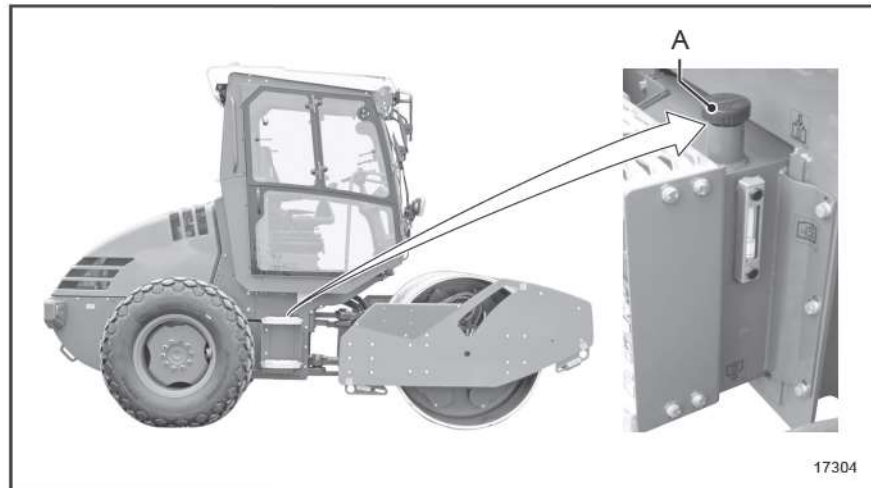


1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down under a temperature of 30 °C (86 °F).
3. Unscrew oil drain screw [C] down on the oil tank and discharge the used oil drain into a provided receptacle.
4. Screw in oil drain screw [C] and tighten.
5. Fill in specified oil through filling opening [B] to the centre of the inspection glass [A].
6. Start the diesel engine, actuate drive lever [501] with low engine speed until the drive activates, furthermore actuate the steering. Pipes and hoses are filled with oil and purged.
7. Check the oil level of the diesel engine with the engine at a standstill. If necessary fill up to the centre of the inspection glass [A].
8. Check the hydraulic system for leaks.

Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

860-14

#### 4.05.04 Replacing ventilation filter for hydraulic oil tank



1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down under a temperature of 30 °C (86 °F).
3. Unscrew ventilation filter [A] and replace by a new one.

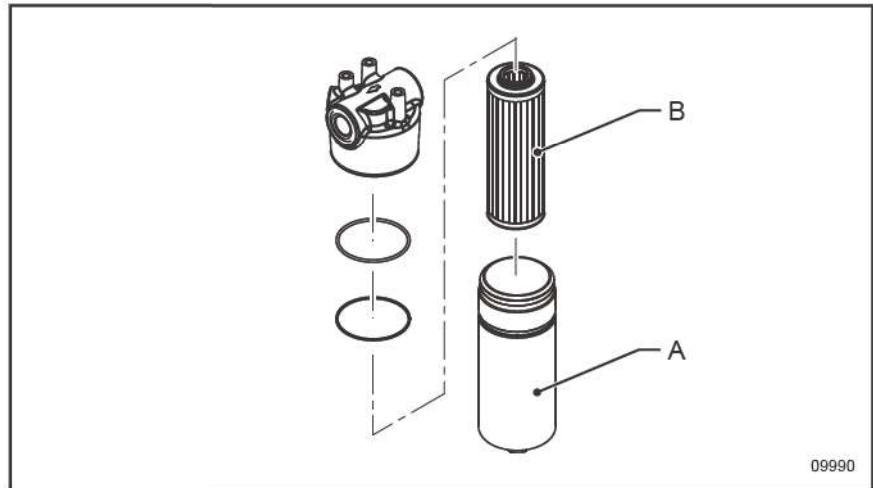
809-00

**4.05.05 Replacing filter insert of pressure filter for hydraulic system****▲WARNING****Hot surface, hot fluids!**

Risk of burns due to hot surfaces and fluids.

- Prior to maintenance works, allow machine to cool down to a temperature under 30 °C (86 °F) .
- Do not touch hot machine parts.

002-32



1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down below a temperature of 30 °C (86 °F).
3. Unscrew the cup-shaped housing [A].
4. Pull the filter insert [B] from the filter head and replace with a new one.
5. Clean the inside of the cup-shaped housing, screw it back to the filter head and tighten.

836-05

## 4.05.06 Replacing filter insert of pressure filter for steering system

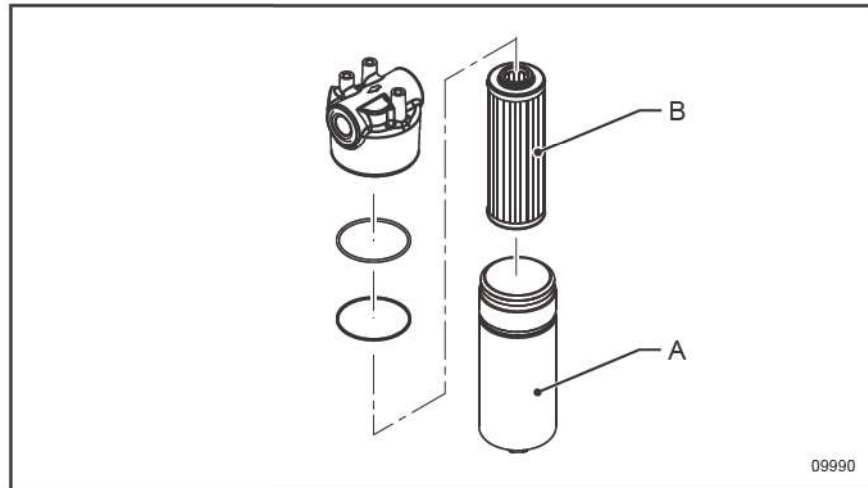
### ⚠ WARNING

#### Hot surface, hot fluids!

Risk of burns due to hot surfaces and fluids.

- Prior to maintenance works, allow machine to cool down to a temperature under 30 °C (86 °F) .
- Do not touch hot machine parts.

002-32



1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down below a temperature of 30 °C (86 °F).
3. Unscrew the cup-shaped housing [A].
4. Pull the filter insert [B] from the filter head and replace with a new one.
5. Clean the inside of the cup-shaped housing, screw it back to the filter head and tighten.

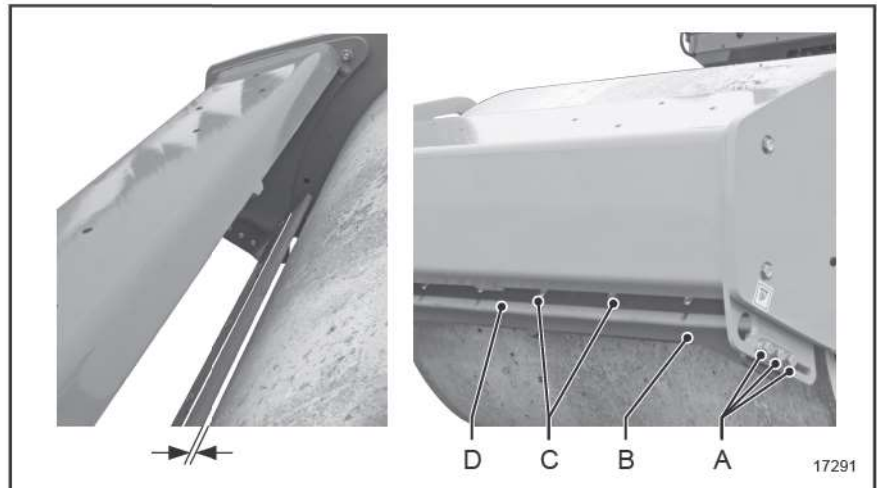
836-05

## 4.08 Drive

### 4.08.01 Inspecting smooth drum scrapers

**General** Only correctly adjusted scrapers ensure a clean roller drum surface. Check the condition of the scrapers. Replace worn scrapers in good time.

825-15



If the scrapers are worn to the extent that dirt adhering is no longer removed from the drum while the machine is working, the scraper must be readjusted to the correct clearance.

Smooth drum clearance — **10 mm**

- Basic setting of scraper**
1. Switch off diesel engine and remove ignition key.
  2. Loosen hexagonal screw [A].
  3. Push scraper console [B] to the clearance of the drum.
  4. Tighten hexagonal screw [A].

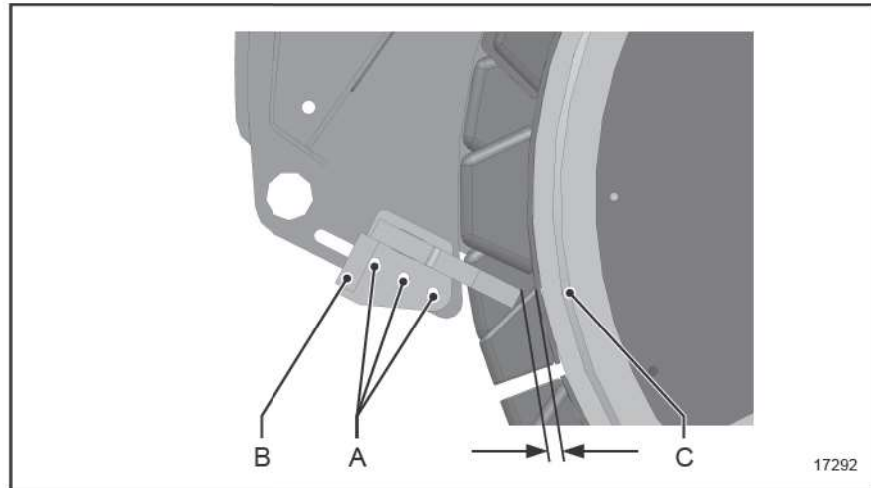
- Readjusting the scraper**
1. Switch off diesel engine and remove ignition key.
  2. Loosen clamp connection [C].
  3. Push scraper [D] to the clearance of the drum.
  4. Tighten clamp connection [C].

825-23

## 4.08.02 Inspecting scrapers of the padfoot drum

**General** Only correctly positioned scraper teeth can remove the dirt from between the padfoot segments optimally.

825-24



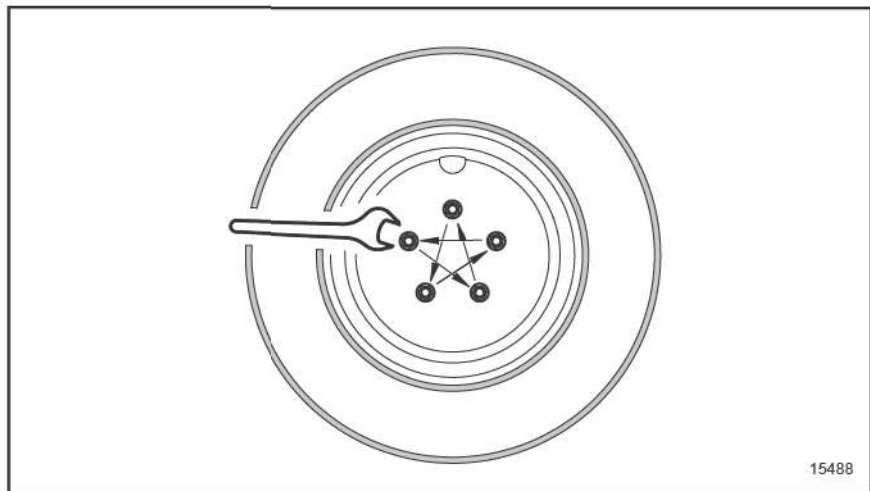
Padfoot drum clearance — **15 mm**

### Starting position of scraper bracket

1. Switch off diesel engine and remove ignition key.
2. Loosen hexagonal screw [A].
3. Adjust the width of the gap between drum [C] and scraper bracket [B].
4. Tighten hexagonal screw [A].

825-01

## 4.08.03 Checking the wheel nuts / wheel bolts for tightness



1. Switch off diesel engine and remove ignition key.
2. Tighten the wheel nuts / wheel bolts crosswise.  
For tightening torque see Technical data ([see page 166](#) sqq.).

879-00

#### 4.08.04 Checking the air pressure in the tyres

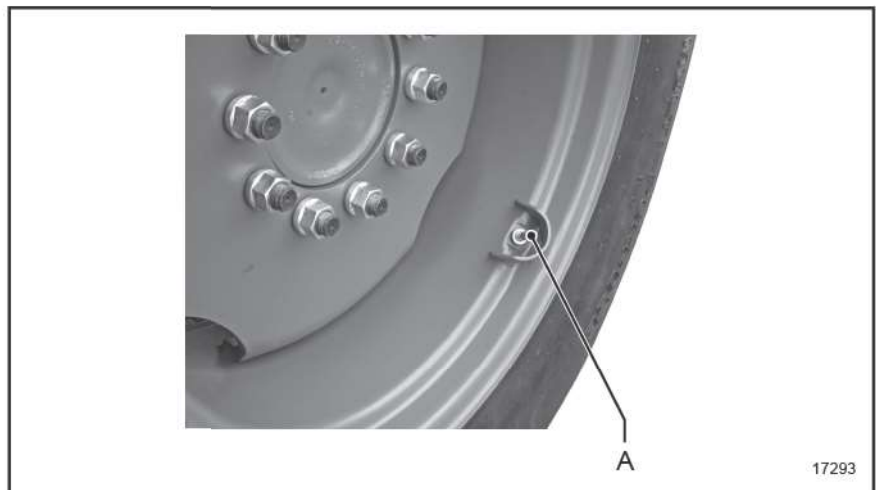
##### **▲ WARNING**

##### **Explosion, fluids under pressure!**

Risk of injury due to flying parts and fluids spurting out under pressure.

- Change damaged tyres.
- When filling, do not exceed the values of the specified air pressure.
- Use only suitable filling devices with a pressure indicator.
- Fill tyres with water filling only in UPSIDE valve position.
- When filling the tyres, be always next to the tyre, not in front of it.

002-43



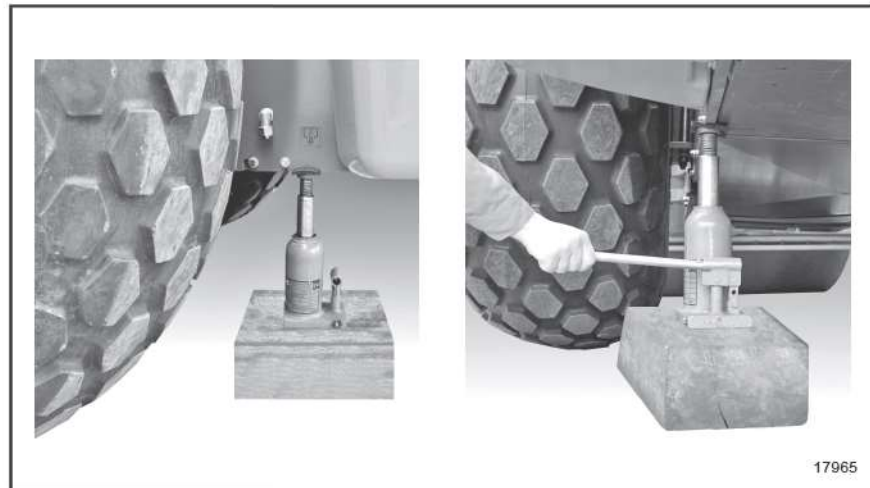
17293

Visually inspect the tyre pressure daily. In case of visible air deficiency fill the tyres with suitable filling devices to the specified air pressure.

1. Switch off diesel engine and remove ignition key.
2. Fasten filling hose to the valve [A] and fill the tyre till it reaches the specified air pressure (air pressure [see page 166 sqq.](#)).

898-00

## 4.08.05 Changing the tyres



- Preparation**
- Only persons familiar with changing tyres and aware of dangers are allowed to change the tyres.
  - Put machine on a safe surface (even, capable of bearing, horizontal).
  - Lift the machine only by the specified suspension points using suitable hoisting gear and take into account the weights ([see page 166](#) sqq.).
  - When jacking up the machine, use only stable liners capable of bearing (e.g. squared timber of sufficient size)
  - Observe the weight of the tyres ([see page 166](#) sqq.). Install if possible with two persons.
- Dismantling**
1. Switch off diesel engine and remove ignition key.
  2. Lift the machine until the tyres are clear from the ground.
  3. Put machine on the machine frame on liners capable of bearing (tyres may not be in contact with the ground).
  4. Unscrew wheel nuts.
  5. Remove the wheels from the wheel hub.
- Installation**
1. Put the wheels on the wheel hub (tyre bolts must align with the fixing holes).
  2. Screw the wheel nuts onto the tyre bolts and tighten by applying the specified tightening torque ([see page 166](#) sqq.).
  3. Lift the machine and remove the liners.

896-03



After every wheel change, check the firm seat of every wheel nut / wheel lug bolt after 50 operating hours.

000-26



## 4.09 Steering system

### 4.09.01 General

Any work in the danger zone of the articulated steering may only be performed with the engine at a standstill and with the electrical system switched off! Furthermore, the safety strut must be latched.

889-00

### 4.09.02 Lubricating pivoted bearing

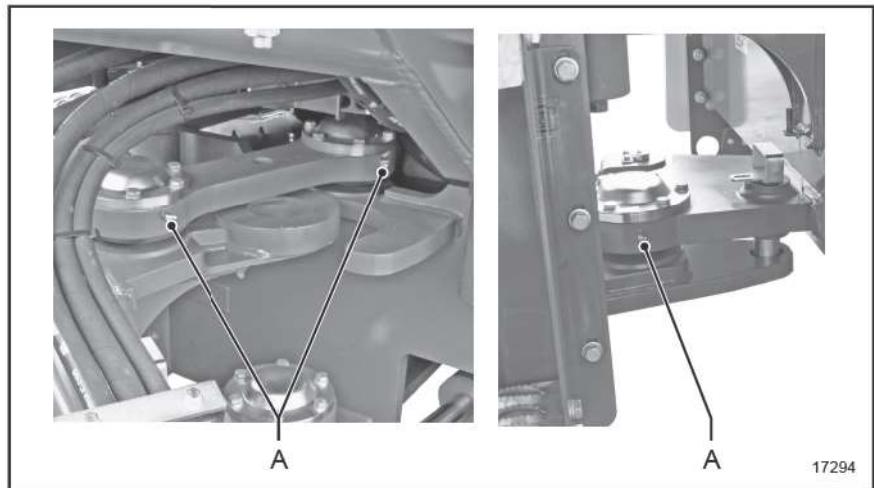
#### **▲WARNING**

##### **Uncontrolled movements!**

If the machine rolls away, this can lead to serious injuries or death.

- Secure machine against rolling away.
- Prior to maintenance works, apply the safety strut in the hazard area.

002-33



1. Switch off diesel engine and remove ignition key.
2. Lubricate lubrication nipple [A].



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

820-04

### 4.09.03 Lubricate the steering cylinder bolts

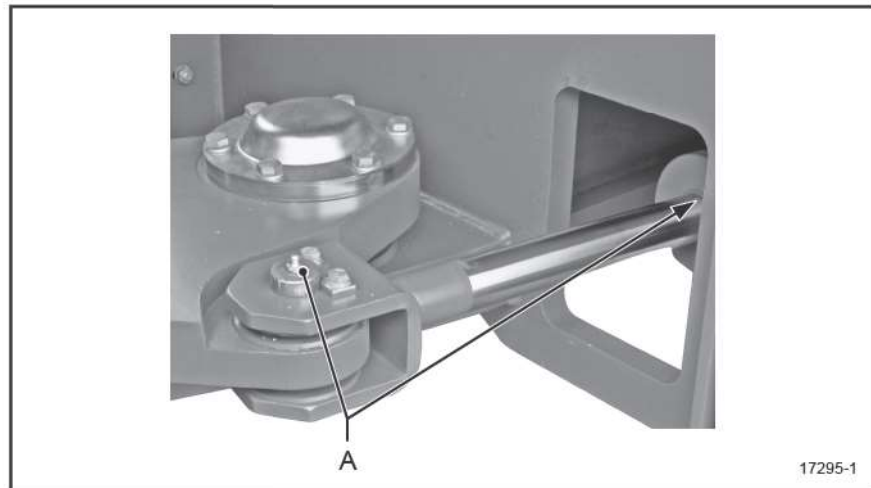
#### **▲WARNING**

##### **Uncontrolled movements!**

If the machine rolls away, this can lead to serious injuries or death.

- Secure machine against rolling away.
- Prior to maintenance works, apply the safety strut in the hazard area.

002-33



1. Switch off diesel engine and remove ignition key.
2. Lubricate lubrication nipple [A] (2 nipples).



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

821-04

## 4.26 Vibration

### 4.26.01 General

Prior to maintenance works clean roller drums thoroughly.

#### **▲WARNING**

##### **Hot surface, hot fluids!**

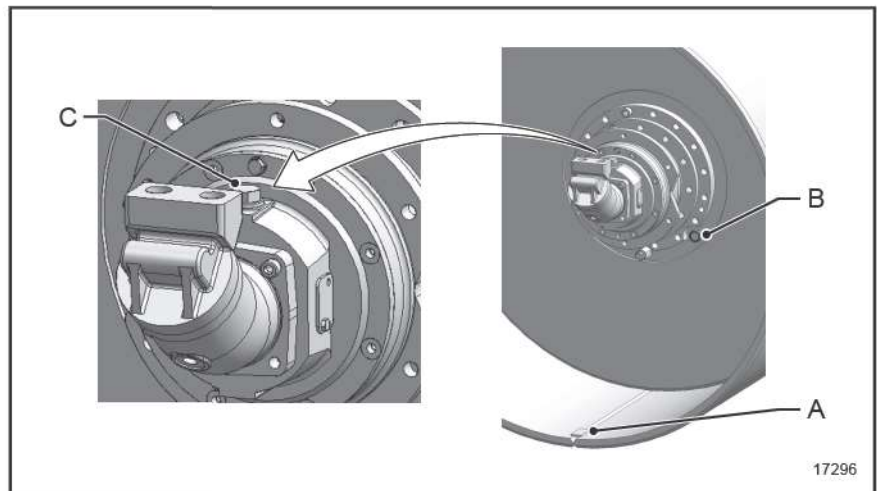
Risk of burns due to hot surfaces and fluids.

- Prior to maintenance works, allow machine to cool down to a temperature under 30 °C (86 °F) .
- Do not touch hot machine parts.
- Check filling levels only when machine is cooled down.

002-10

891-00

### 4.26.02 Checking vibrator oil filling level



Drive the machine slowly until the mark [A] is exactly perpendicular below the axle.

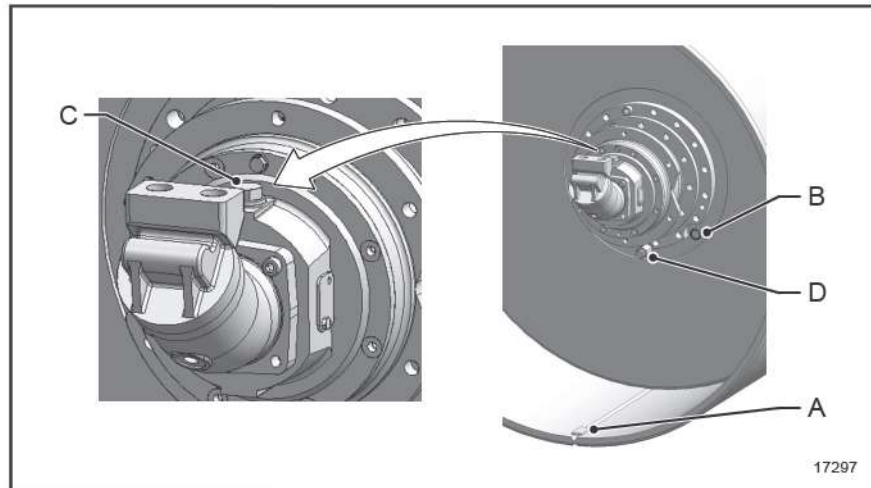
1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down under a temperature of 30 °C (86 °F).
3. Correct oil level: Centre of inspection glass [B].
4. If the oil level is insufficient, fill in oil through the filler bore [C].



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

814-06

### 4.26.03 Changing vibrator oil



Drive the machine slowly until the mark [A] is exactly perpendicular below the axle.

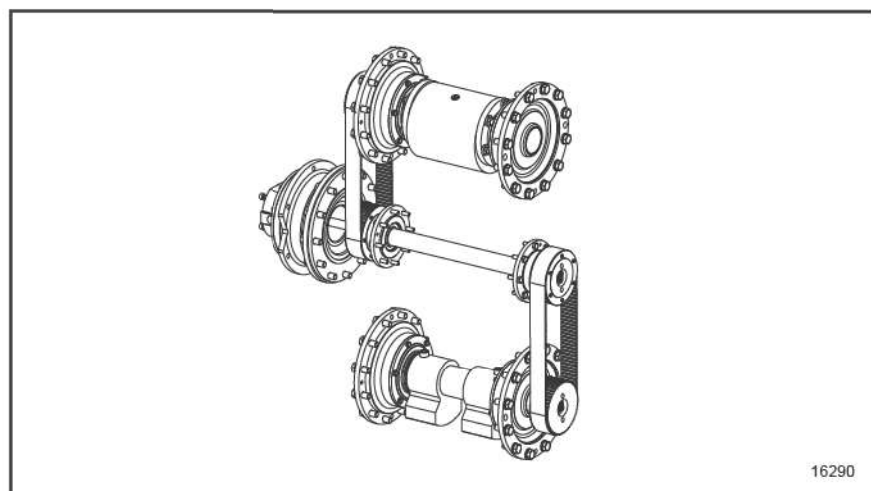
1. Switch off diesel engine and remove ignition key.
2. Allow machine to cool down under a temperature of 30 °C (86 °F).
3. Remove filling screw [C] for pressure equalization purposes.
4. Screw out oil drain screw [D] and let the used oil drain into a provided receptacle.
5. Screw in and tighten the oil drain screw [D] with gasket ring.
6. Fill in the specified oil type through the filler bore [C].  
Correct oil level: Centre of inspection glass [B].
7. Screw in and tighten the filling screw [C] with gasket ring.



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

838-07

### 4.26.04 Change tooth belt for VIO-drive



**Oscillation version**

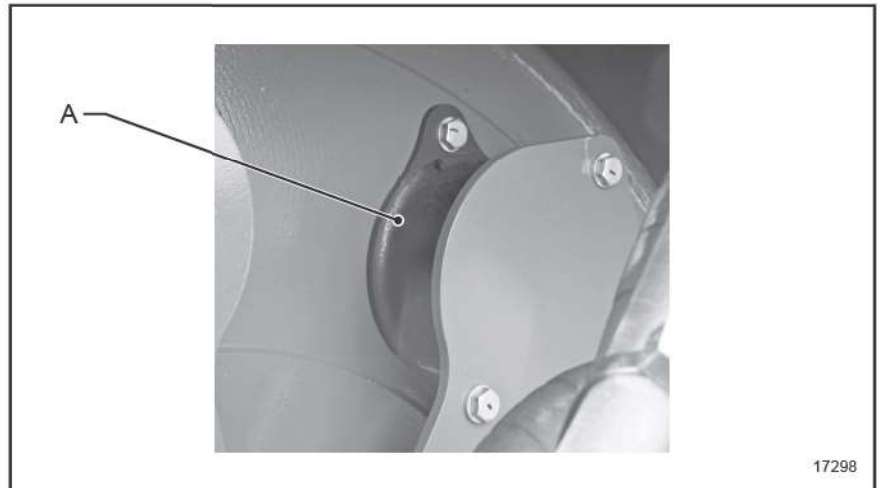
In order to avoid longer downtimes of the machine, we recommend to replace the toothed belts for the VIO drive after 2,000 operating hours.



This work may only be carried out by trained personnel.  
Call the customer service!

873-01

#### 4.26.05 Checking damping elements



1. Switch off diesel engine and remove ignition key.
2. Check the damping elements [A] of the roller drum suspension for cracks.

Replace damaged damping elements by new ones.

880-01

# 5 TABLES



When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01

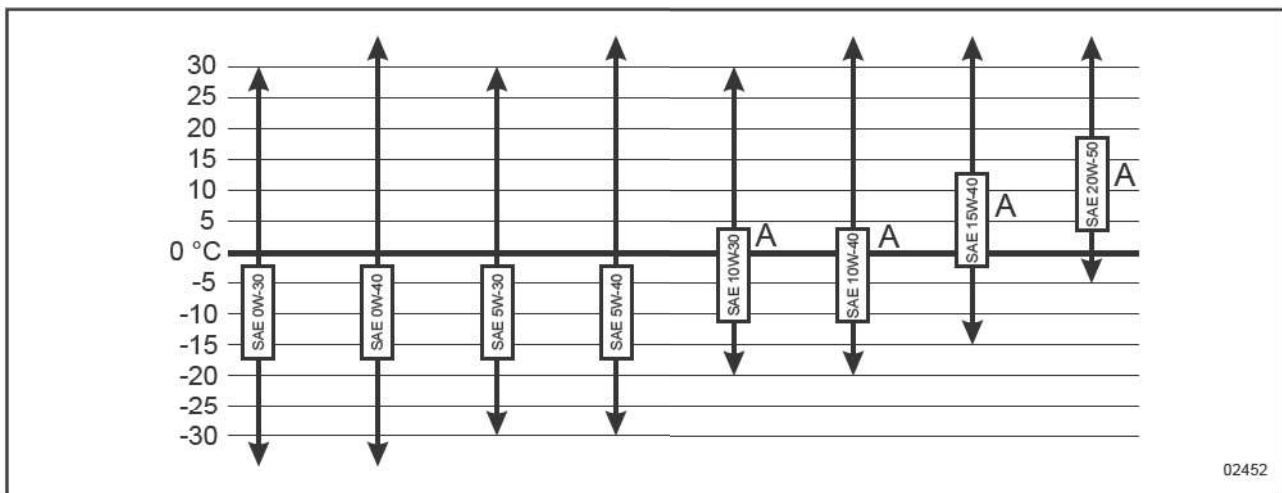
## 5.00 Technical data

### 5.00.01 Lubrication indications

#### Viscosity - temperature range

The viscosity of lubricant oil changes with the temperature. The ambient temperature at the place of utilisation determines the selection of the viscosity class (SAE class).

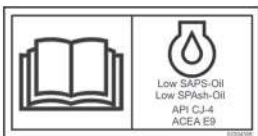
The following chart applies only for engine oil.



02452

[A] Pre-heating only

#### Engine oil grade



Do not operate the diesel engine unless using engine oil as specified in the table below.

**Lubricant details**

Lubricant	Quality	Viscosity	Identification
Engine oil The oil quality must correspond to the API / ACEA classification.	API: CJ-4/ SM or higher ACEA: E9 or higher	See chart	□
Hydraulic oil (mineral oil) The viscosity is determined in accordance with DIN standard 3448 (ISO-VG: viscosity grade).	HVLP	<b>Conditions</b> ISO VG 22 arctic ISO VG 32 winter ISO VG 46 summer ISO VG 68 tropical ISO VG 100 extreme heat	◻
Hydraulic oil (biological hydraulic oil) Synthetic, saturated ester (ISO-VG: viscosity grade).	HEES		
Special oil Only HAMM special oil is admissible.			◇
Gear oil with Limited Slip additions. The oil quality must correspond to the API classification.	API GL-5	SAE 85W-90	⬡
Coolant for diesel engine, liquid-cooled (free of nitrite, amine and phosphate). Mixture: 40 % coolant concentrate, 60 % water.			○
Lubricating grease Lithium saponified multi-purpose grease with high-pressure additives. Temperature application range from -25 °C (-13 °F) to +120 °C (248 °F).			△

For order numbers and packing size see WIRTGEN GROUP Document Parts and More and WIRTGEN GROUP lubricants ([see page 160](#) sqq.).

804-12

### 5.00.02 Use of biologic hydraulic oil

The hydraulic system of the machine is generally filled with mineral oil in factory. All maintenance intervals given in these maintenance instructions are related to mineral oil.

#### The use of biological hydraulic oil is admissible under the following circumstances:

- Only biological hydraulic oil based on special synthetic saturated complex esters may be used. For the products used and recommended by HAMM, please refer to the lubrication details ([see page 158](#) sqq.). Other oils used must correspond to the specifications of the oil above mentioned. The neutralisation value (oil acid) may not exceed 2.
- Hydraulic oil replacement (biological hydraulic oil replaces mineral oil; mineral oil replaces biological hydraulic oil) may only be performed in accordance with special instructions. You can request for these instructions at HAMM Customer service. All filters in the oil circuit are to be replaced 50 operating hours after oil replacement. After that, the filter change intervals given in this instructions apply again.
- Used biological oil must be disposed at a reliable place of disposal, just like mineral oil.

801-01

### 5.00.03 Wirtgen Group Lubricants



#### General

Intensive testing and development work with leading mineral oil companies has analysed the complex and high requirements of Wirtgen Group machines. The results have been translated into optimal specifications and used for the first filling in the factory. The results are impressive: a wide range of premium lubricants from one source augmented by highly functional accessories "Made in Germany" for filling and lubrication. The new Wirtgen Group lubricants are the "elixir of life" for your fleet.

#### Premium lubricants

Wirtgen Group lubricants combine the best basic oils and unique additives in tailor-made specifications. The advantages for you:

- A longer oil change interval according to the oil analysis by the Wirtgen Group
- Compatibility with the first filling
- Optimal protection against wear
- Perfect prevention of corrosion
- Retracing in the event of damage

Wirtgen Group lubricants not only increase the performance and service life of your machines but also permanently reduce your running costs. Why try to make savings in the wrong place?

#### Everything from one source

All Wirtgen Group machines – Wirtgen milling machines, Vögele pavers and HAMM rollers – can be filled and lubricated with the Wirtgen Group lubricant appropriate for the particular area of application.\* Together with the sophisticated container mix, this leads to clearly optimized ordering, storage and filling.

\*Exceptions are shown

#### Filling and lubricating accessories

We support you with highly functional accessories "Made in Germany" for filling and lubrication, such as canister pumps and grease guns.

804-03



**Wirtgen Group Engine Oil 10W30 "Low SAPS"**

Strong heavy-duty motor oil made from excellent basic oils and special additives. It increases the power output of your engine and gives the highest operational reliability.

Packing size: 5 l, 20 l, 208 l

Exhaust emission standard: EPA/CARB Tier 4i, EU-2004/26/EG stage III B

Classes: ACEA E9/E7, API CJ-4/SM

Manufacturer standards: Deutz DQC III-05, Daimler Chrysler MB 228.31, Caterpillar CAT ECF-3, Cummins CES 20081, Mack EO-O PP07, Volvo VDS-4

804-13

**Wirtgen Group Hydraulic Oil HVLP 46**

High quality, multirange hydraulic oil with a high viscosity index for the best protection against wear under the most difficult operating conditions. A new refined specification enables very long oil change intervals. Guaranteed optimal cold start performance.

Packing size: 20 l, 208 l

Classes: Dension HF-0, Vickers M-2950-S, DIN 51524 part 3, HVLP, ISO6743/4 type HV

804-05

**Wirtgen Group Gear Oil 85W90**

Latest generation mineral gear oil for multi-purpose use in gearboxes and axle drives. It provides impressive protection against wear and oxidation.

Packing size: 5 l, 20 l, 208 l

Classes: API GL-5

Manufacturer standards: Daimler Chrysler MB 235.0, ZF-TE-ML05A/07A/16C/17B/19B, MAN 342 type N



Do not use for Wirtgen milling drum gears, HAMM vibration bearings or drum drives, or Vögele pump distributor gears or drive units.

804-06

**Wirtgen Group Special Gear Oil**

Special fully synthetic heavy-duty gear oil for HAMM vibration bearings and drum drives, as well as Vögele pump distributor gears and drive units. Extremely pressure and temperature stable.

Packing size: 5 l, 20 l, 208 l



Do not mix with mineral gear oil. Do not use in Wirtgen milling drum gears.

804-07

### **Wirtgen Group Multipurpose Grease**

The finest multipurpose grease for a wide range of lubricating tasks, such as pivot pins and wheel bearings. State-of-the-art additive technology makes it especially suitable for use under shock and vibrating conditions.

Packing size: 400 g cartridge

804-08

### **Wirtgen Group Drum Bearing Grease**

Exclusive grease for lubricating HAMM drum bearings. Extremely temperature-resistant and pressure-stable.

Packing size: 1 kg

804-09

### **Wirtgen Group Drive Bearing Grease**

Special heavy-duty grease for use in HAMM drive bearings. Extremely pressure stable and water repellent.

Packing size: 1 kg

804-10

### **Wirtgen Group Asphalt Anti Stick**

Asphalt release agent for rubber tyre and combination rollers. Wirtgen Group Asphalt Anti Stick is supplied as a water-mixable concentrate. It is used in an emulsified form diluted in water in a ratio of approx. 1:10.

Processing: Mix Wirtgen Group Asphalt Anti Stick with water in the desired ratio while stirring. Ensure thorough mixing.

The most reliable results are obtained at a mixing ratio of 1:1 but this may vary depending on the mixing material to be processed.

Wirtgen Group Asphalt Anti Stick is quickly biodegradable and non-toxic.





Packing size: 5 l, 20 l



Use only clean water for mixing. Be sure to observe the proper sequence.

804-16

**Overview of Wirtgen Lubricants**

Designation	Identification	Packing size	Order No.
Wirtgen Group Engine Oil 10W30 "Low SAPS"		5 l	2210320
		20 l	2210322
		208 l	2210323
Wirtgen Group Hydraulic Oil HVL P 46		20 l	2065028
		208 l	2065029
Wirtgen Group Gear Oil 85W90		5 l	2065030
		20 l	2065031
		208 l	2065032
Wirtgen Group Special Gear Oil		5 l	1238051
		20 l	2065037
		208 l	2065038
Wirtgen Group Asphalt Anti Stick		5 l	2117378
		20 l	2117379
Wirtgen Group Multipurpose Grease		400 g	2065035
Wirtgen Group Drum Bearing Grease		1 kg	1205757
Wirtgen Group Drive Bearing Grease		1 kg	1227114
Radiator antifreeze agent		5 l	2120296
		20 l	2120298

804-15

#### 5.00.04 Coolant conditioning

For liquid-cooled diesel engines, special care must be taken for the conditioning and the inspection of the coolant; otherwise, corrosion, cavitation and freezing can cause damage on the diesel engine. The conditioning of the coolant is performed by adding a cooling system protection agent to the coolant.

The cooling system requires constant monitoring. Apart from the control of the coolant level, this also implies the verification of the concentration of the cooling system protection agent.

The concentration of the cooling system protection agent can be checked with commercially available test devices (e.g. gefo glycomat ®).

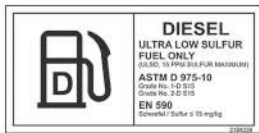
**The concentration of the cooling system protection agent in the coolant should not exceed or fall short of the following values:**

Cooling system protection agent	Water
max. 45 Vol. %	55 %
min. 35 Vol. %	65 %

The products used and recommended by HAMM are shown in the chapter lubricant details ([see page 158](#) sqq.) (without nitrite, amine and phosphate). The factory filled coolant blend consists of 40 parts cooling system protective liquid and 60 parts water. This ensures frost protection to - 25 °C (-13 °F). The cooling system protective agent can be purchased from HAMM customer service.

802-01

### 5.00.05 Fuel



Use only the diesel fuel commercially available which contains a sulphur content below 15 mg/kg (15 ppm). The engine oil replacement intervals specified here apply only for diesel fuel.

#### Approved diesel fuel specifications are:

- EN 590
- ASTM D 975-10 Grade-No. 1-D S15 and 2-D S15

In case other fuels are used that do not comply with the afore mentioned requirements, we do not accept any guarantee.

The certification measurements to measure the compliance with statutory emission limits are carried out using the test fuels specified by law. These fuels comply with the diesel fuels specified in this operating manual according to EN 590 and ASTM D 975. For all other fuels specified in this operating manual we cannot guarantee any emission value.

#### Winter operation with diesel fuel



No admixture of petroleum and no addition of flow additives is admissible.

With lower ambient temperatures paraffin precipitations may result in congestions of the fuel system and, thus, in malfunctions.

- Below an ambient temperature of 0 °C (32 °F) it is necessary to use winter diesel fuel (up to -20°C (-4 °F)) (gas stations provide them early enough prior to winter time).
- For arctic climate zones up to -44 °C (-47 °F) it is possible to use special diesel fuels.

715-03

### 5.00.06 Starting torques

The starting torques indicated within the tables apply to nuts in accordance with DIN 934 and screws with headrest according to DIN 931 (frictional coefficient  $\mu_{\text{total}} = 0.12$ ) unless otherwise specified.



Check screws and nuts regularly for tight seat, if necessary, retighten.

**Starting torques for regular type screw threads**

Threads	Starting torques MA (Nm)		
	8.8	10.9	12.9
M4	2,7	4,0	4,7
M5	5,5	8,1	9,5
M6	9,5	14	16,5
M8	23	34	40
M10	46	68	79
M12	79	117	135
M14	125	185	215
M16	195	280	330
M18	280	390	460
M20	390	560	650
M22	530	750	880
M24	670	960	1120
M27	1000	1400	1650
M30	1350	1900	2250

**Starting torques for fine threads**

Threads	Starting torques MA (Nm)		
	8.8	10.9	12.9
M8x1	24,5	36	43
M10x1.25	49	72	84
M12x1.25	87	125	150
M12x1.5	83	122	145
M14x1.5	135	200	235
M16x1.5	205	300	360
M18x1.5	310	440	520
M20x1.5	430	620	720
M22x1.5	580	820	960
M24x2	730	1040	1220
M27x2	1070	1500	1800
M30x2	1490	2120	2480

892-00

## 5.01 Technical data



The version valid at the time the technical data was prepared for this version of the manual was used (see impressum: change date). Other values may apply if modifications are made to the machine in the course of its further development.

000-30

**5.01.01 H 5i**

Designation	Value	Unit
<b>Dimensions and weights</b>		
Basic weight without cab	4580	kg
Operating weight with cabin	5035	kg
Axle load front / rear	2625 / 2410	kg
Working width	1370	mm
Turning radius inside / outside	3375 / 4745	mm
<b>Diesel engine</b>		
Manufacturer	Kubota	
Type	V3307-CR-T	
Number of cylinders	4	
Power (ISO 14396) / rated speed	54.6 / 2200	kW / rpm
Emission level EU / USA	III B / Tier 4	
<b>Drive</b>		
Working gear speed	0-6.0 / (0-3.7)	km/h / (mph)
Transport speed	0-12.5 / (0-7.7)	km/h / (mph)
Climbing ability, vibration on / off	55 / 60	%
Max. longitudinal gradient allowed	20	°
Max. transverse gradient allowed	20	°
<b>Tyres</b>		
Number of tyres	2	items
Tyre diameter, min. / max.	1040 / 1160	mm
Rolling circumference, min. / max.	3040 / 3420	mm
Tyre size	12.4-24-R1 8 PR	MPa / (bar) / [psi]
▪ Air pressure	0.15 / (1.5) / [21.75]	kg
▪ Total weight per tyre	85	
Tyre size	12.4-24-R3 8 PR	MPa / (bar) / [psi]
▪ Air pressure	0.22 / (2.2) / [32.0]	kg
▪ Total weight per tyre	85	
Tightening torque, wheel nut	450	

Designation	Value	Unit
<b>Vibration</b>		
Vibration	front	
Frequency / speed	30 / 1800	Hz / rpm
Maximum amplitude	1.55	mm
<b>Steering</b>		
Steering angle to both sides	31	°
Pendulum compensation upwards and downwards	10	°
<b>Filling quantities</b>		
Fuel	123.0	l
Engine oil (for oil change)	10.5	l
Coolant of diesel engine	11.0	l
Hydraulic oil	60.0	l
Vibrator	5.2	l
*Air conditioning (R134a)	0.85	kg
<b>Sound power level</b>		
Sound power LW(A), guaranteed	103	dB(A)
Sound power LW(A), representatively measured	101	dB(A)
<b>Sound intensity level</b>		
Sound pressure LP(A), measured near the cab	81	dB(A)
Sound pressure LP(A), measured near the ROPS	87	dB(A)
<b>Electrical system</b>		
Operating voltage	12	V



**5.01.02 H 5i P**

Designation	Value	Unit
<b>Dimensions and weights</b>		
Basic weight without cab	4700	kg
Operating weight with cabin	5155	kg
Axle load front / rear	2745 / 2410	kg
Working width	1370	mm
Padfoot, number	60	items
Padfoot, height	80	mm
Padfoot, end face	113	cm <sup>2</sup>
Turning radius inside / outside	3375 / 4745	mm
<b>Diesel engine</b>		
Manufacturer	Kubota	
Type	V3307-CR-T	
Number of cylinders	4	
Power (ISO 14396) / rated speed	54,6,0 / 2200	kW / rpm
Emission level EU / USA	III B / Tier 4	
<b>Drive</b>		
Working gear speed	0-6.0 / (0-3.7)	km/h / (mph)
Transport speed	0-12.5 / (0-7.7)	km/h / (mph)
Climbing ability, vibration on / off	55 / 60	%
Max. longitudinal gradient allowed	20	°
Max. transverse gradient allowed	20	°
<b>Tyres</b>		
Number of tyres	2	items
Tyre diameter, min. / max.	1040 / 1160	mm
Rolling circumference, min. / max.	3040 / 3420	mm
Tyre size	12.4-24-R1 8 PR	MPa / (bar) / [psi]
▪ Air pressure	0.15 / (1.5) / [21.75]	kg
▪ Total weight per tyre	85	
Tyre size	12.4-24-R3 8 PR	MPa / (bar) / [psi]
▪ Air pressure	0.22 / (2.2) / [32.0]	kg
▪ Total weight per tyre	85	
Tightening torque, wheel nut	450	Nm

Designation	Value	Unit
<b>Vibration</b>		
Vibration	front	
Frequency / speed	30 / 1800	Hz / rpm
Maximum amplitude	1.45	mm
<b>Steering</b>		
Steering angle to both sides	31	°
Pendulum compensation upwards and downwards	10	°
<b>Filling quantities</b>		
Fuel	123.0	l
Engine oil (for oil change)	10.5	l
Coolant of diesel engine	11.0	l
Hydraulic oil	60.0	l
Vibrator	5.2	l
*Air conditioning (R134a)	0.85	kg
<b>Sound power level</b>		
Sound power LW(A), guaranteed	103	dB(A)
Sound power LW(A), representatively measured	101	dB(A)
<b>Sound intensity level</b>		
Sound pressure LP(A), measured near the cab	81	dB(A)
Sound pressure LP(A), measured near the ROPS	87	dB(A)
<b>Electrical system</b>		
Operating voltage	12	V

**5.01.03 H 7i**

Designation	Value	Unit
<b>Dimensions and weights</b>		
Basic weight without cab	6085	kg
Operating weight with cabin	6540	kg
Axle load front / rear	3980 / 2560	kg
Working width	1680	mm
Turning radius inside / outside	3310 / 4990	mm
<b>Diesel engine</b>		
Manufacturer	Kubota	
Type	V3307-CR-T	
Number of cylinders	4	
Power (ISO 14396) / rated speed	54.6 / 2200	kW / rpm
Emission level EU / USA	III B / Tier 4	
<b>Drive</b>		
Working gear speed	0-6.0 / (0-3.7)	km/h / (mph)
Transport speed	0-12.5 / (0-7.7)	km/h / (mph)
Climbing ability, vibration on / off	55 / 60	%
Max. longitudinal gradient allowed	20	°
Max. transverse gradient allowed	20	°
<b>Tyres</b>		
Number of tyres	2	items
Tyre diameter, min. / max.	1250 / 1265	mm
Rolling circumference, min. / max.	3625 / 3750	mm
Tyre size	14.9-24-R1 8 PR	MPa / (bar) / [psi]
▪ Air pressure	0.13 / (1.3) / [18.8]	kg
▪ Total weight per tyre	115	
Tyre size	14.9-24-R3 8 TL	MPa / (bar) / [psi]
▪ Air pressure	0.13 / (1.3) / [18.8]	kg
▪ Total weight per tyre	103	
Tightening torque, wheel nut	450	

Designation	Value	Unit
<b>Vibration</b>		
Vibration	front	
Level 1: Frequency / speed	30 / 1800	Hz / rpm
Level 1: Maximum amplitude	1.71	mm
Level 2: Frequency / speed	42 / 2520	Hz / rpm
Level 2: Maximum amplitude	0.66	mm
<b>Steering</b>		
Steering angle to both sides	31	°
Pendulum compensation upwards and downwards	10	°
<b>Filling quantities</b>		
Fuel	123.0	l
Engine oil (for oil change)	10.5	l
Coolant of diesel engine	11.0	l
Hydraulic oil	60.0	l
Vibrator	10.0	l
*Air conditioning (R134a)	0.85	kg
<b>Sound power level</b>		
Sound power LW(A), guaranteed	103	dB(A)
Sound power LW(A), representatively measured	101	dB(A)
<b>Sound intensity level</b>		
Sound pressure LP(A), measured near the cab	81	dB(A)
Sound pressure LP(A), measured near the ROPS	87	dB(A)
<b>Electrical system</b>		
Operating voltage	12	V

**5.01.04 H 7i P**

Designation	Value	Unit
<b>Dimensions and weights</b>		
Basic weight without cab	5955	kg
Operating weight with cabin	6410	kg
Axle load front / rear	3850 / 2560	kg
Working width	1680	mm
Padfoot, number	84	items
Padfoot, height	80	mm
Padfoot, end face	113	cm <sup>2</sup>
Turning radius inside / outside	3310 / 4990	mm
<b>Diesel engine</b>		
Manufacturer	Kubota	
Type	V3307-CR-T	
Number of cylinders	4	
Power (ISO 14396) / rated speed	54,6,0 / 2200	kW / rpm
Emission level EU / USA	III B / Tier 4	
<b>Drive</b>		
Working gear speed	0-6.0 / (0-3.7)	km/h / (mph)
Transport speed	0-12.5 / (0-7.7)	km/h / (mph)
Climbing ability, vibration on / off	55 / 60	%
Max. longitudinal gradient allowed	20	°
Max. transverse gradient allowed	20	°
<b>Tyres</b>		
Number of tyres	2	items
Tyre diameter, min. / max.	1250 / 1265	mm
Rolling circumference, min. / max.	3625 / 3750	mm
Tyre size	14.9-24-R1 8 PR	MPa / (bar) / [psi]
▪ Air pressure	0.13 / (1.3) / [18.8]	kg
▪ Total weight per tyre	115	
Tyre size	14.9-24-R3 8 TL	MPa / (bar) / [psi]
▪ Air pressure	0.13 / (1.3) / [18.8]	kg
▪ Total weight per tyre	103	
Tightening torque, wheel nut	450	Nm

Designation	Value	Unit
<b>Vibration</b>		
Vibration	front	
Level 1: Frequency / speed	30 / 1800	Hz / rpm
Level 1: Maximum amplitude	1.79	mm
<b>Steering</b>		
Steering angle to both sides	31	°
Pendulum compensation upwards and downwards	10	°
<b>Filling quantities</b>		
Fuel	123.0	l
Engine oil (for oil change)	10.5	l
Coolant of diesel engine	11.0	l
Hydraulic oil	60.0	l
Vibrator	10.0	l
*Air conditioning (R134a)	0.85	kg
<b>Sound power level</b>		
Sound power LW(A), guaranteed	103	dB(A)
Sound power LW(A), representatively measured	101	dB(A)
<b>Sound intensity level</b>		
Sound pressure LP(A), measured near the cab	81	dB(A)
Sound pressure LP(A), measured near the ROPS	87	dB(A)
<b>Electrical system</b>		
Operating voltage	12	V

**5.01.05 H 7i VIO**

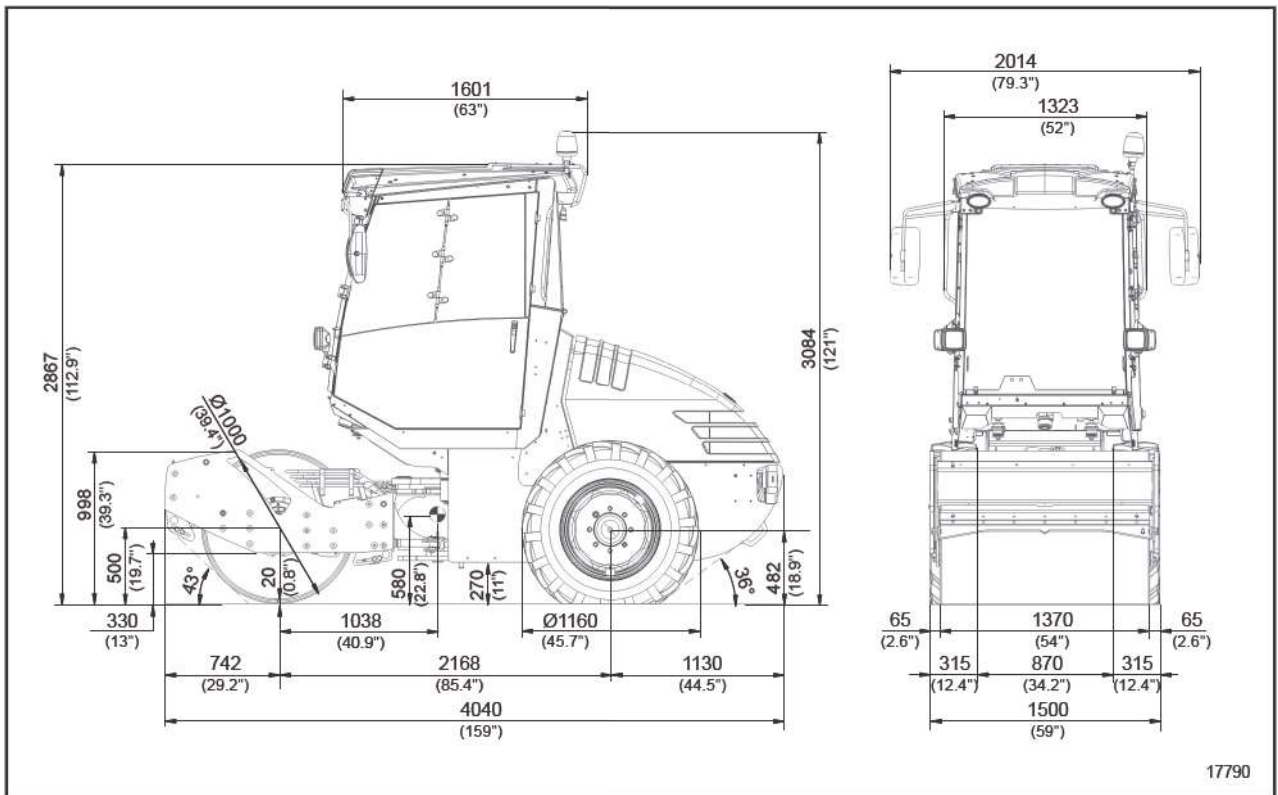
Designation	Value	Unit
<b>Dimensions and weights</b>		
Basic weight without cab	5870	kg
Operating weight with cabin	6325	kg
Axle load front / rear	3765 / 2560	kg
Working width	1680	mm
Turning radius inside / outside	3310 / 4990	mm
<b>Diesel engine</b>		
Manufacturer	Kubota	
Type	V3307-CR-T	
Number of cylinders	4	
Power (ISO 14396) / rated speed	54.6 / 2200	kW / rpm
Emission level EU / USA	III B / Tier 4	
<b>Drive</b>		
Working gear speed	0-6.0 / (0-3.7)	km/h / (mph)
Transport speed	0-12.5 / (0-7.7)	km/h / (mph)
Climbing ability, vibration on / off	55 / 60	%
Max. longitudinal gradient allowed	20	°
Max. transverse gradient allowed	20	°
<b>Tyres</b>		
Number of tyres	2	items
Tyre diameter, min. / max.	1250 / 1265	mm
Rolling circumference, min. / max.	3625 / 3750	mm
Tyre size	14.9-24-R1 8 PR	MPa / (bar) / [psi]
▪ Air pressure	0.13 / (1.3) / [18.8]	kg
▪ Total weight per tyre	115	
Tyre size	14.9-24-R3 8 TL	MPa / (bar) / [psi]
▪ Air pressure	0.13 / (1.3) / [18.8]	kg
▪ Total weight per tyre	103	
Tightening torque, wheel nut	450	

Designation	Value	Unit
<b>Vibration</b>		
Vibration	front	
Frequency / speed	36 / 2160	Hz / rpm
Maximum amplitude	1.38	mm
<b>Oscillation</b>		
Oscillation	front	
Level 2: Frequency / speed	36 / 2160	Hz / rpm
Max. tangential amplitude	1.37	mm
<b>Steering</b>		
Steering angle to both sides	31	°
Pendulum compensation upwards and downwards	10	°
<b>Filling quantities</b>		
Fuel	123.0	l
Engine oil (for oil change)	10.5	l
Coolant of diesel engine	11.0	l
Hydraulic oil	60.0	l
*Air conditioning (R134a)	0.85	kg
<b>Sound power level</b>		
Sound power LW(A), guaranteed	103	dB(A)
Sound power LW(A), representatively measured	101	dB(A)
<b>Sound intensity level</b>		
Sound pressure LP(A), measured near the cab	81	dB(A)
Sound pressure LP(A), measured near the ROPS	87	dB(A)
<b>Electrical system</b>		
Operating voltage	12	V

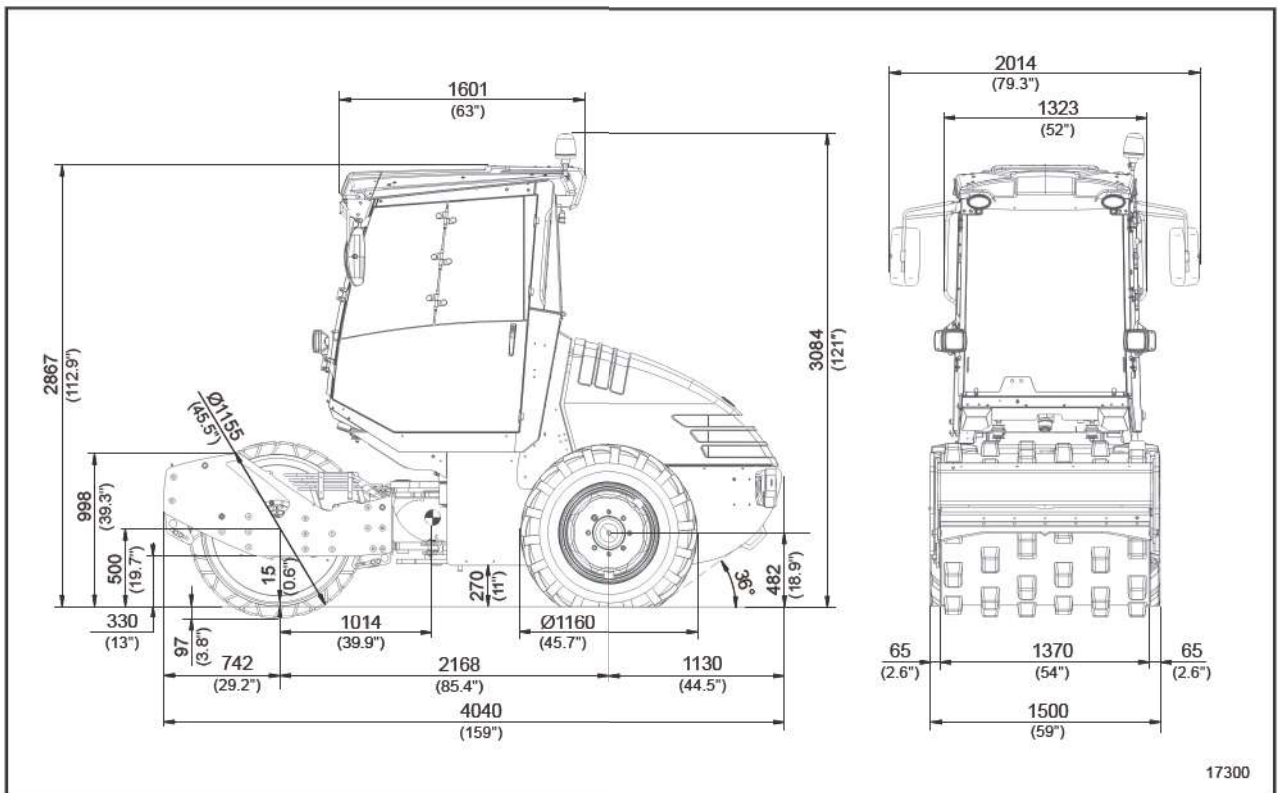


## 5.02 Dimension sheet

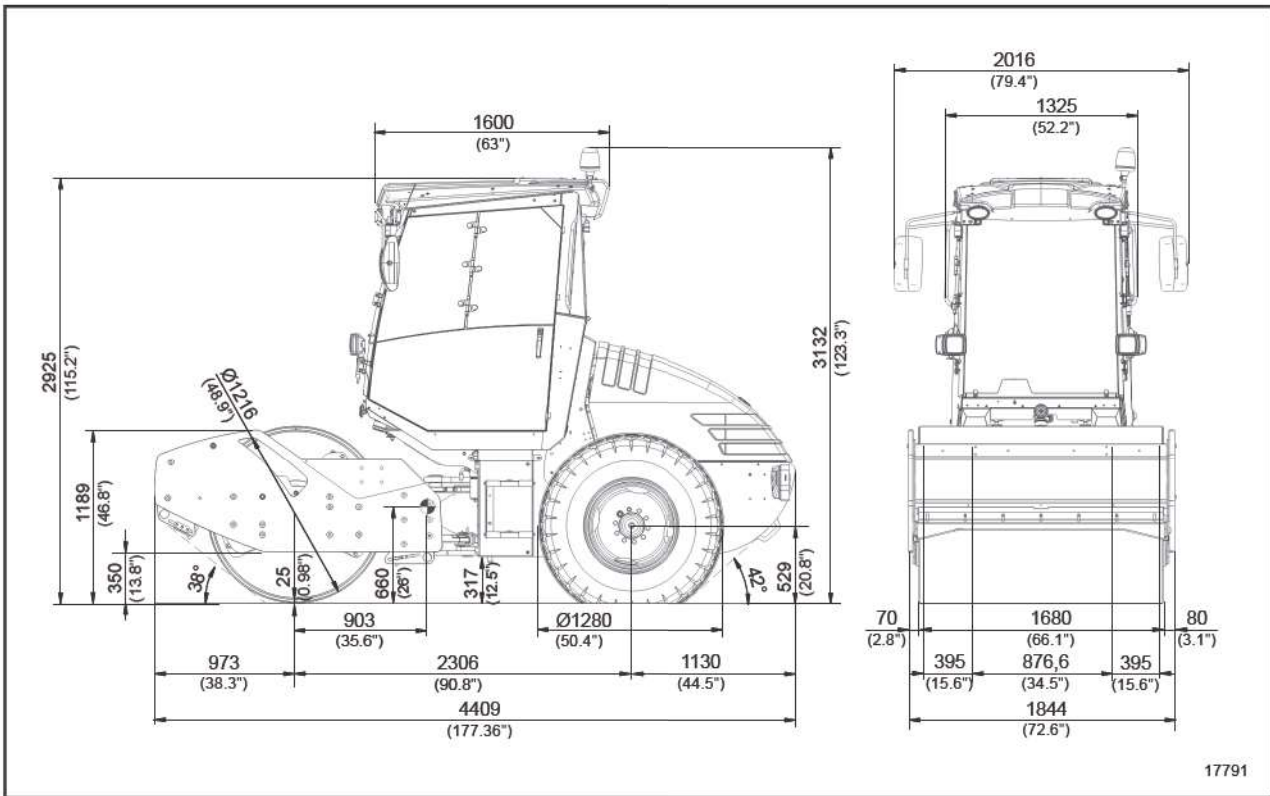
### 5.02.01 H 5i



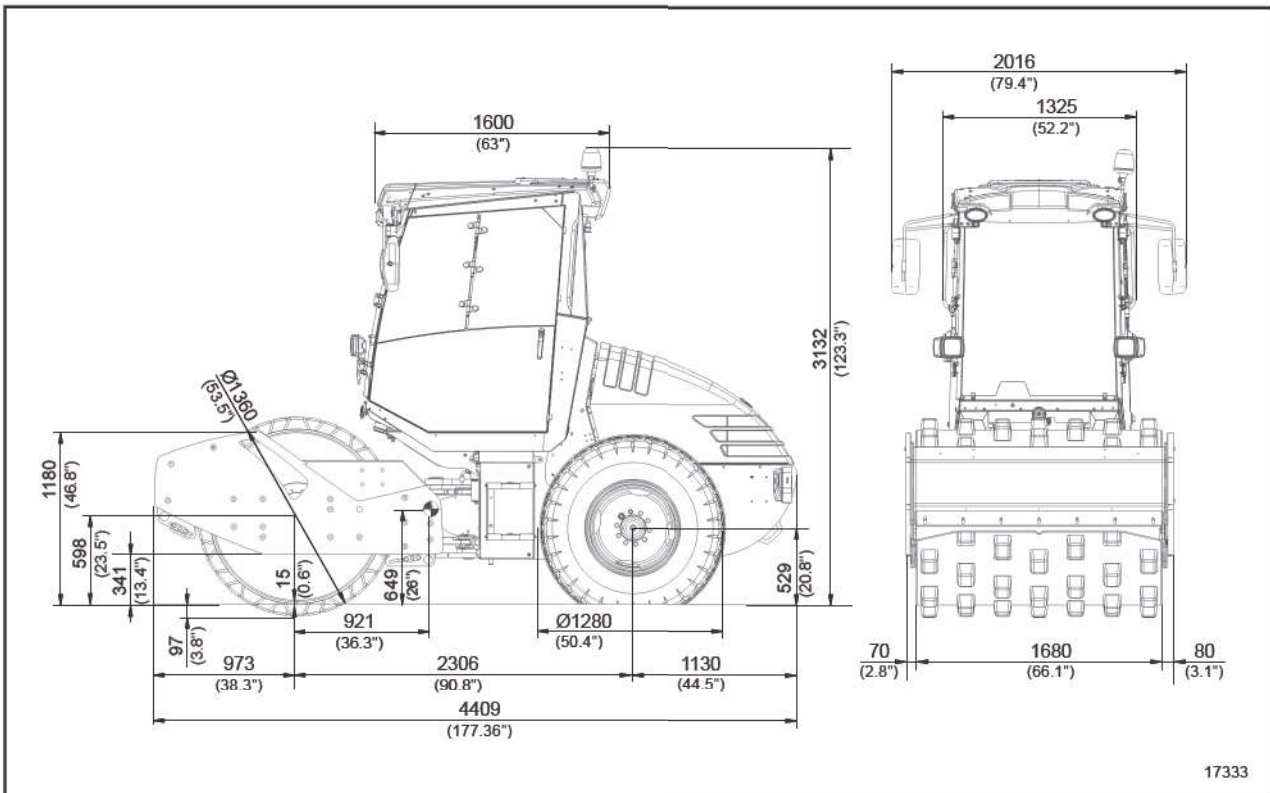
### 5.02.02 H 5i P



### 5.02.03 H 7i, H 7i VIO



### 5.02.04 H 7i P



## 5.03 Fuses

### ⚠ WARNING

#### Fire hazard if fuses are not inserted correctly!

- Insert only specified fuses (no fuses with a higher amperage!).
- Do not install a bypass to the fuses.

002-46

### 5.03.01 Main fuses

#### Fuses

Position	Fuse assignment	Fuse
F01.1	Alternator B+	100 A
F01.2	Cold starting device	100 A
F01.3	On-board electrical system (terminal 30)	100 A
F01.4	Solenoid switch for starter motor	30 A

400-49

### 5.03.02 Fuse, alternator D+

#### Fuse

Position	Fuse assignment	Fuse
F02	Alternator D+	5 A

401-03

### 5.03.03 \*Battery isolating switch

#### Fuse

Position	Fuse assignment	Fuse
F06	*Battery isolating switch	1 A

401-02

### 5.03.04 Fuses, electric box

#### Fuses

Position	Fuse assignment	Fuse
F1	Front working lights	15 A
F2	Rear working spotlights	15 A
F3	EGR valve Throttle valve	5 A
F4	Sensors at the diesel engine	5 A
F5	*Driving light, left	10 A

Position	Fuse assignment	Fuse
<b>F6</b>	*Driving light, right	10 A
<b>F7</b>	HCN, GPS (terminal 30)	5 A
<b>F8</b>	Cabin (terminal 30)	10 A
<b>F9</b>	Control device diesel engine (terminal 30)	20 A
<b>F10</b>	Ignition (start) switch (terminal 30) Instrument panel	15 A
<b>F11</b>	Unoccupied (terminal 30)	10 A
<b>F12</b>	not used (terminal 30)	10 A
<b>F13</b>	*Rotating light	10 A
<b>F14</b>	*High beam	15 A
<b>F15</b>	*Cabin heating	10 A
<b>F16</b>	*Backup alarm *Back-up light	10 A
<b>F17</b>	not used (terminal 15)	10 A
<b>F18</b>	*Push plate	10 A
<b>F19</b>	not used (terminal 15)	10 A
<b>F20</b>	not used (terminal 15, engine compartment)	10 A
<b>F21</b>	Display (terminal 15)	20 A
<b>F22</b>	Socket vehicle's main power supply (operator platform)	15 A
<b>F23</b>	Sensors	5 A
<b>F24</b>	Horn	10 A
<b>F25</b>	not used (terminal 15, operator's seat console)	10 A
<b>F26</b>	EMERGENCY STOP Control unit diesel engine	5 A
<b>F27</b>	*Compaction meter HCM	10 A
<b>F28</b>	Cabin (terminal 15)	60 A
<b>FC1</b>	Header for fuse test	



The green light-emitted diode (LED) lights up when the fuse is functional.



## 5.03.05 Fuses, operator's cabin

### Fuses

Position	Fuse assignment	Fuse
5F1	*Radio, *tachograph, *camera	10 A
5F2	*HCQ indicator, *WIFMS	10 A
5F3	not used	
5F4	Windshield wiper front / back Windscreen washer system	15 A
5F5	*AC thermostat	5 A
5F6	*Compressor, air conditioning system	5 A
5F7	*Air conditioning fan	15 A
5F8	*Air conditioning blower	20 A

403-07

## 6 ASSEMBLY INSTRUCTIONS AND AUXILIARY DEVICES



When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01



Please also consider the parts included in the scope of supply. They may be different from the parts list content indicated here due to further developments in the product.

000-23

### 6.00 ROPS cabin / roll-over bar

#### 6.00.01 Safety device ROPS cabin

**General** The ROPS cabin is a safety device in the case the machine tilts or rolls over. It avoids that the driver is crushed to death based on the high self-weight of the machine. In case the ROPS cabin was demounted (from the machine) due to transport or repair reasons, the ROPS cabin needs to be remounted according to instructions prior to operating the machine again.

#### Assembly instructions ROPS cabin

#### **▲ WARNING**

##### **High self-weight of machine!**

If the machine overturns backwards, forwards or sideways there is a danger of serious injuries or death.

- Operate machine only with the ROPS safety device installed according to instructions.
- With detectable defects of the ROPS safety device or of its fixation it is not allowed to operate the machine.

002-34

#### **Installation**

1. Use appropriate lifting devices and hoisting equipment. Observe weight (see type plate of ROPS safety device).
2. Lift ROPS cabin onto platform and align with fixing holes.
3. Screw ROPS cabin with operator platform. Observe specified starting torque (see picture).

- Visual test** The machine frame must not be warped, bent or cracked in the ROPS fixing area (deformation).
- The reinforcement elements of the ROPS cabin must not show rust, damage, fissures or open fractures.
- All screw connections of the reinforcement elements must comply with the given specifications and must be screwed tightly to each other (observe starting torque values).
- Bolts and nuts must not be damaged, bent or deformed.
- It is absolutely forbidden to modify or repair / level the reinforcement elements in any way.

619-00

## 6.00.02 Safety device ROPS roll-over bar

- General** The ROPS roll-over bar is a safety device in the case the machine tilts or rolls over. It avoids that the driver is crushed to death based on the high self-weight of the machine. In case the ROPS roll-over bar was dismantled (from the machine) due to transport or repair reasons, the ROPS roll-over bar needs to be remounted according to instructions prior to operating the machine again.

### Assembly instructions ROPS roll-over bar

#### **▲ WARNING**

##### **High self-weight of machine!**

If the machine overturns backwards, forwards or sideways there is a danger of serious injuries or death.

- Operate machine only with the ROPS safety device installed according to instructions.
- With detectable defects of the ROPS safety device or of its fixation it is not allowed to operate the machine.

002-34

#### **Installation**

1. Use appropriate lifting devices and hoisting equipment. Observe weight (see type plate of ROPS safety device).
2. Lift ROPS roll-over bar onto platform and align with fixing holes.
3. Screw ROPS roll-over bar with operator platform. Observe specified starting torque (see picture).

- Visual test** The machine frame must not be warped, bent or cracked in the ROPS fixing area (deformation).
- The reinforcement elements of the ROPS roll-over bar must not show rust, damage, fissures or open fractures.
- All screw connections of the reinforcement elements must comply with the given specifications and must be screwed tightly to each other (observe starting torque values).
- Bolts and nuts must not be damaged, bent or deformed.
- It is absolutely forbidden to modify or repair / level the reinforcement elements in any way.

620-00

## 6.01 \*Rotating light removable

**General** When switched on, the rotating light warns against possible hazards caused by the machine.

After parking the machine, the rotating light [A] can be removed from the contact tube [B] and be stowed inside the cab.

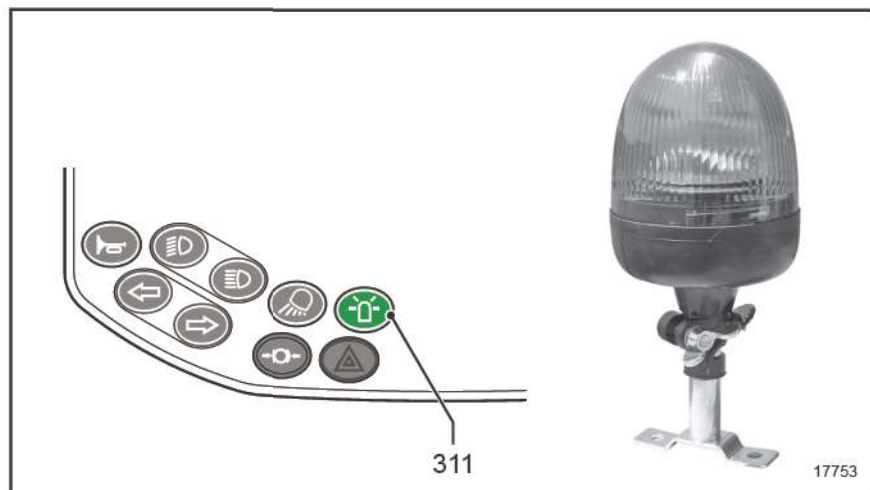
661-00

### 6.01.01 Overview



[A]	Rotating light mounted	[B]	Contact tube
[C]	Clamping screw	[D]	Plug contact

### 6.01.02 General view of instruments and operating elements



The form of the switch [311] and its location in the machine can vary according to the machine type. For the specific design and location, please refer to ident. number 311 in Chapters 2 and 3.

000-65



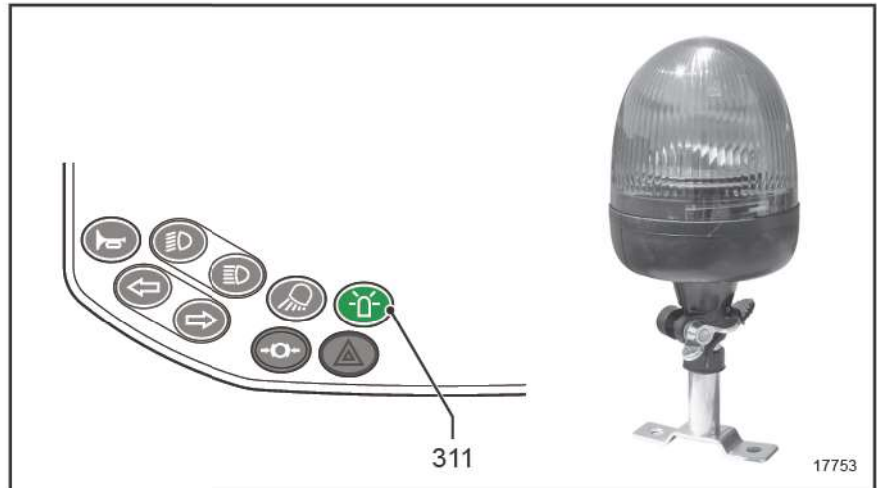
### 6.01.03 Operation

#### General

The rotating light must be placed on the outside of the machine and set to on at all times during operation.

778-00

#### Switching on and off rotating light



Pressing the switch turns the rotating light on or off.

On — **PRESS**

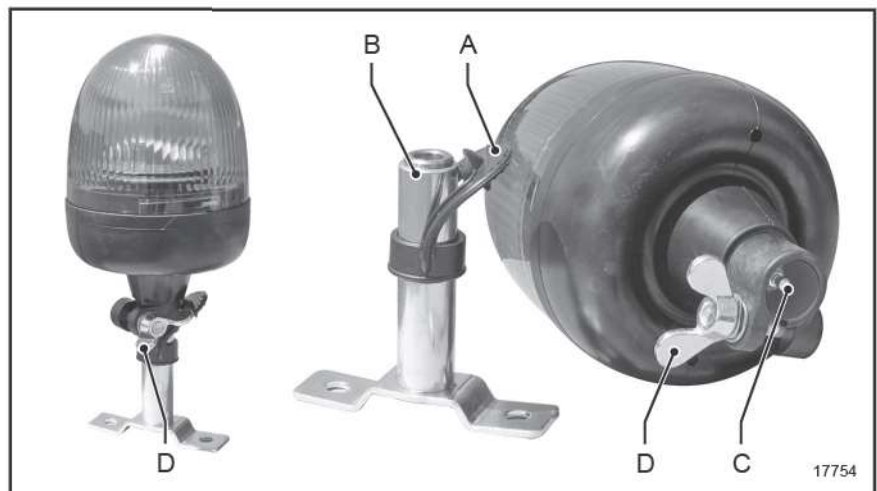
(push button lights up)

Off — **PRESS** again

311-08

### 6.01.04 Installation

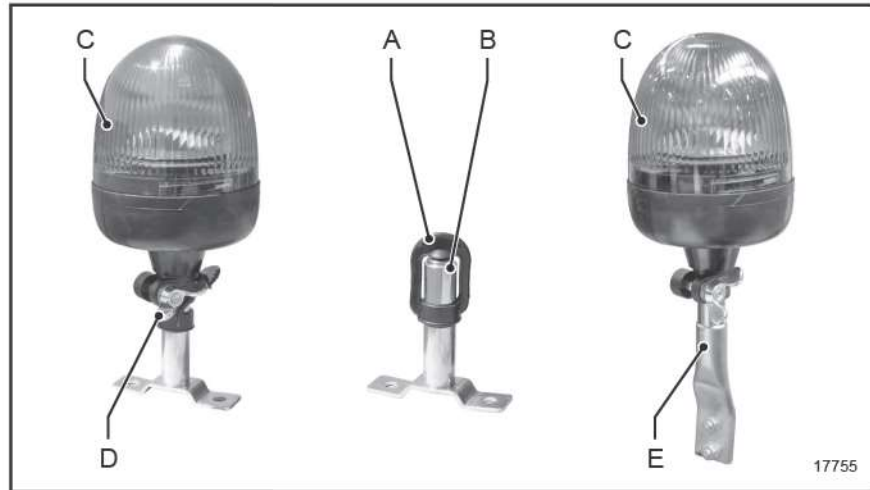
#### Mounting rotating light



1. Swivel the protective cap [A] to the side.
2. Put the locating hole [C] of the rotating light on the contact tube [B] and slide it up to the stop. This will establish the electrical connection.
3. Tighten the clamping screw [D].
4. Use the switch [311] to set the rotating light to on and check its function.

778-01

### Removing rotating light



1. Unscrew the clamping screw [D] and slide the rotating light [C] off the contact tube [B].
2. Close the contact tube [B] with the protective cap [A].
3. Stow the rotating light [C] on the holder [E] inside the cab.

778-02

## 6.01.05 Maintenance

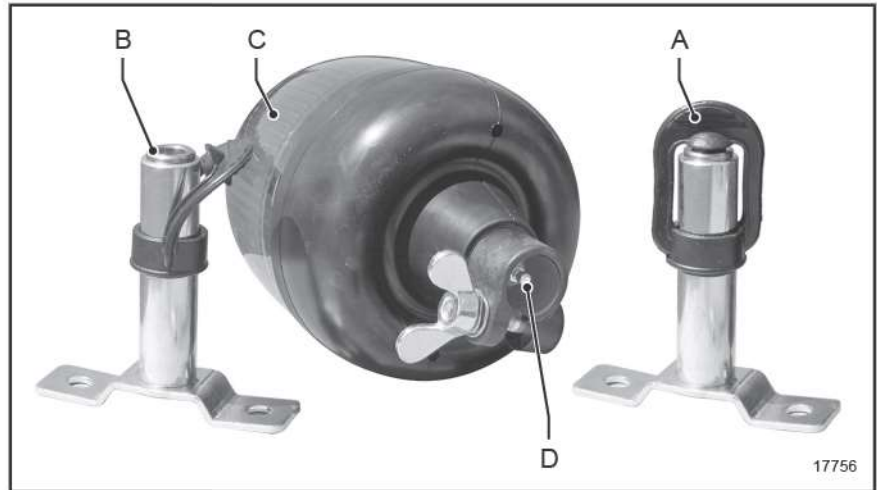


When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01

**General** The instructions itemized in the "Important information about maintenance work" chapter ([see page 122](#)) must always be followed during all maintenance work.

800-03

**Care**

Dirt can impair the function of the rotating light. Therefore keep the rotating light clean!

- To clean the rotating light [C], use only a sponge and soap water.
- Do not clean the rotating light with a water jet or high-pressure cleaner.
- Dust or sand can impair the function of the rotating light [C]. Avoid any dust or sand contamination of the contact tube [B]. Use the protective cap [A] to blank off the contact tube [B] after removing the rotating light.
- Ensure that the electrical contacts of the contact tube [B] and of the rotating light [D] are kept clean. Remove any dust or sand immediately. Spray contacts using a contact spray if necessary.

859-00

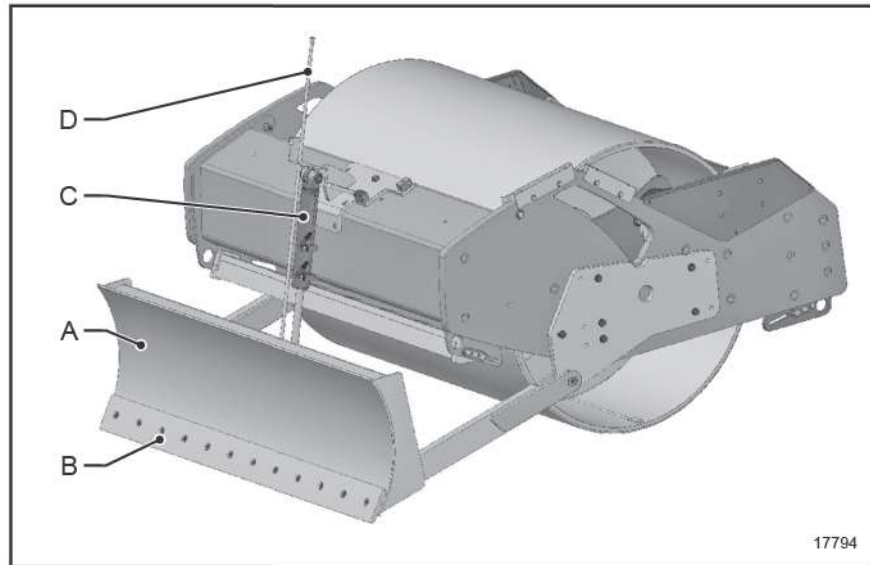
## 6.02 \*Push plate

**General** The push plate is not suitable for scraping deep, natural soil. The push plate can be used to distribute and remove low heaps of loose fill. The push plate is also used to fill trenches.

An exchangeable wearing edge prevents the body of the blade from wearing quickly.

635-01

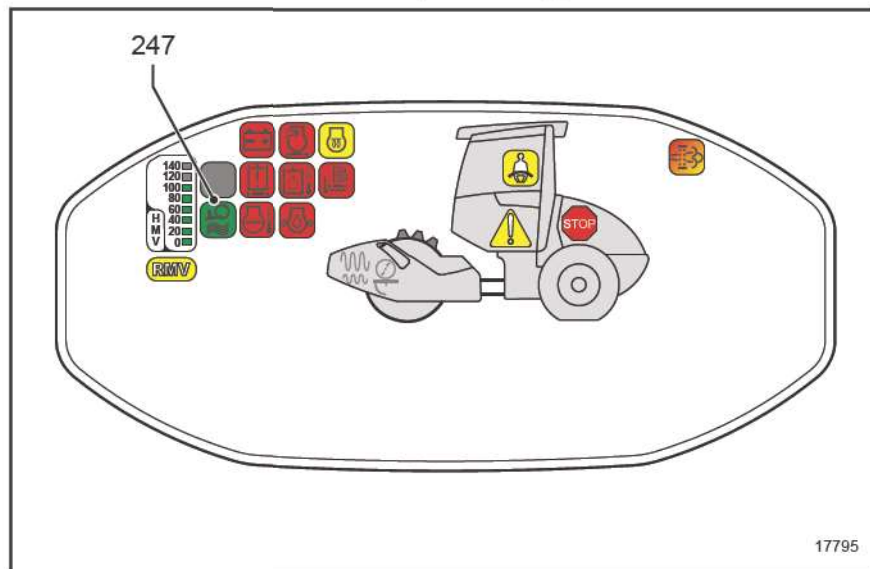
### 6.02.01 Overview Push plate



17794

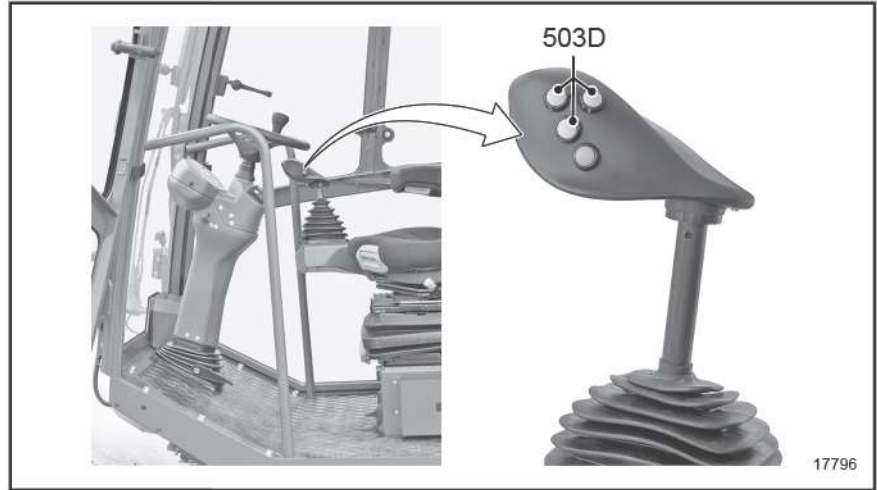
[A]	Push plate	[B]	Wearing edge
[C]	Hydraulic cylinder	[D]	Position indicator

### 6.02.02 General view of instruments and operating elements Pilot lights



17795

[247]	Floating position pilot light
-------	-------------------------------

**Operating elements**

**[503D]** Push plate switch

**6.02.03 Indication lights**
**247 Floating position**


The pilot lights lights up when the push plate is enabled (floating position).

247-00

**6.02.04 Operating levers, adjustment handles**
**[D] \*Push plate**


The push plate is lifted and lowered as long as one of the switches [I or II] is pressed. If the switch [0] is pressed for about 2 seconds, the lifting and lowering movement of the push plate is released (floating position). Then it can adapt to soil irregularities.

Pressing a switch [B] or [C] cancels the release of the push plate.

Lift push plate — **PRESS** position I

lower Push plate — **PRESS** position II

Push plate free — **PRESS** position 0 for about 2 seconds (pilot light [247] lights up)

503-26

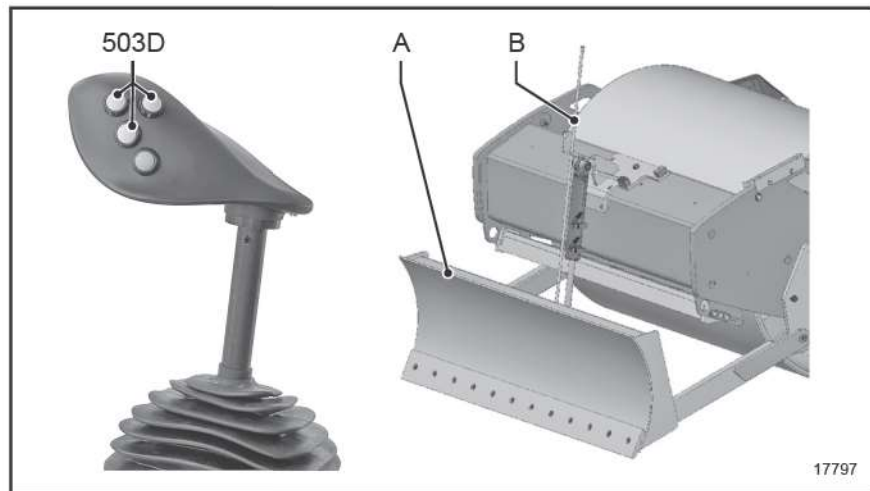
**6.02.05 Operation**
**General**

The push plate is not suitable for scraping deep, natural soil. The push plate can be used to distribute and remove low heaps of loose fill. The push plate is also used to fill trenches.

An exchangeable wearing edge prevents the body of the blade from wearing quickly.

635-01

### Raising and lowering the push plate



The push plate [A] is raised and lowered by actuating the switch [530D].

If the switch [0] is pressed for about 2 seconds while the push plate is raised, the push plate is lowered to the ground and remains enabled (pilot light [247] lights up). Then it can adapt to soil irregularities.

Pressing a switch [I or II] cancels the release of the push plate (pilot light [247] goes out). The depth of the push plate can be seen on the position indicator (B).

769-01

## 6.02.06 Maintenance



When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01

**General** The instructions itemized in the "Important information about maintenance work" chapter ([see page 122](#)) must always be followed during all maintenance work.

800-03

#### Adhere to the following instructions:

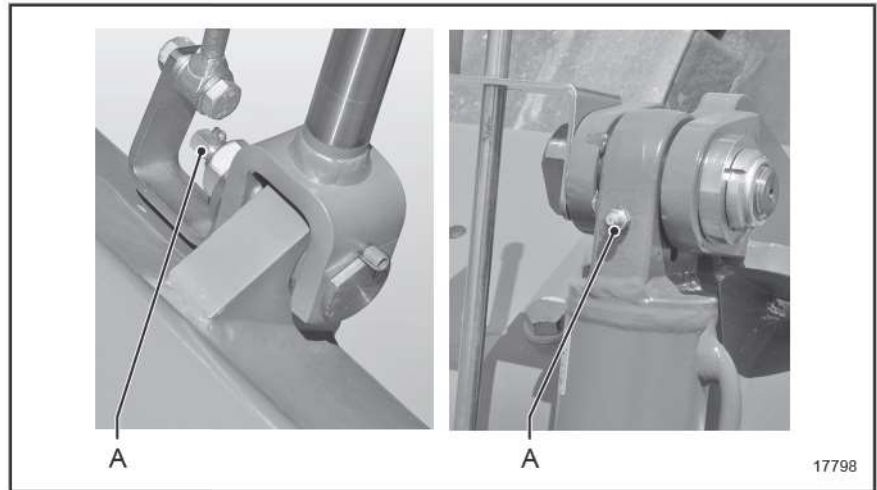
- Clean deposits of dirt off the push plate.
- Check that the screw connections on the bracket are tight.
- Replace the wearing edge in good time in order to prevent damage to the body of the blade.

805-00

### Maintenance overview Every 250 operating hours



- Lubricating cylinder bolts
- Lubricate the joint bearings
- Check the wearing edge

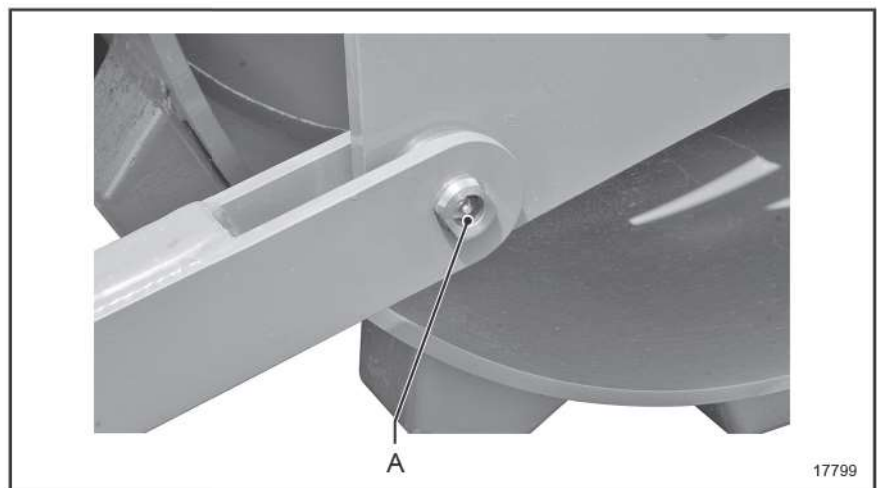
**Lubricating cylinder bolts**

1. Switch off diesel engine and remove ignition key.
2. Lubricate lubrication nipple [A] (2 nipples).



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

821-04

**Lubricate the joint bearings**

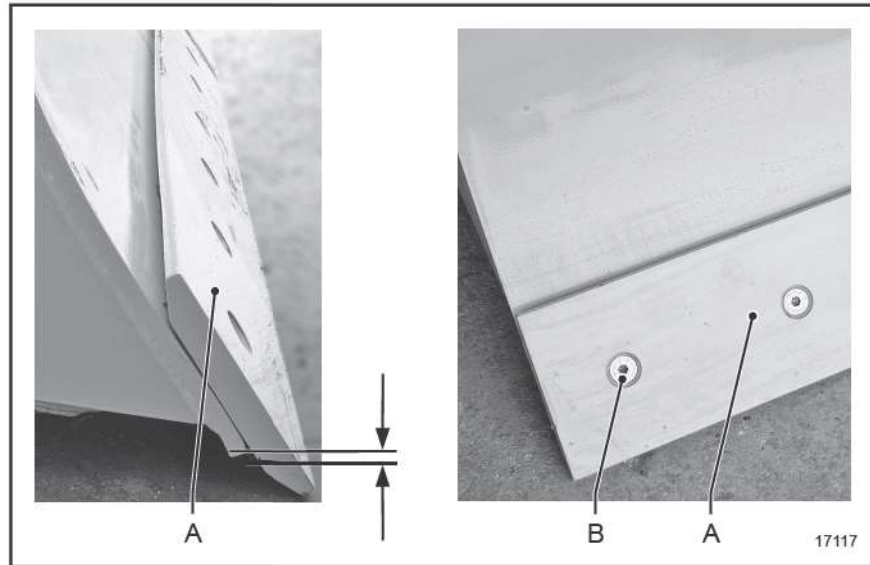
1. Switch off diesel engine and remove ignition key.
2. Lubricate lubrication nipple [A] (2 nipples).



Lubricant only admissible if containing this marking ([see page 158](#) sqq.).

821-04

**Check / change the wearing edge**



When the wearing edge [A] has worn down so that it projects only 3 mm, it must be turned or replaced.

1. Switch off diesel engine and remove ignition key.
2. Undo all screwed connections [B] and remove the screws.
3. Turn or replace the wearing edge [A].
4. Insert all screws, and tighten the screwed connections [B].

875-00

**6.02.07 Technical data**

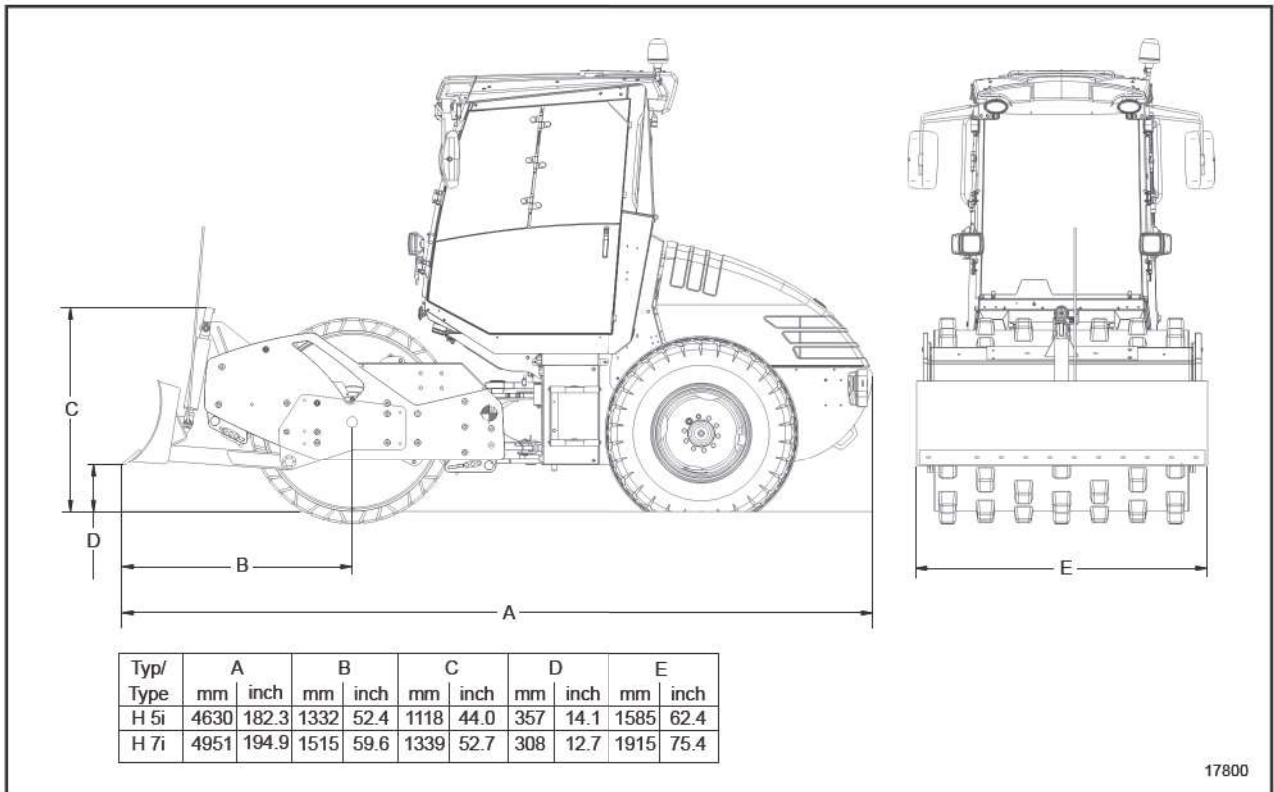
**H 5i**

Designation	Value	Unit
Push plate weight	350	kg
Working width	1585	mm

**H 7i**

Designation	Value	Unit
Push plate weight	450	kg
Working width	1915	mm



**6.02.08 Dimension sheet**


17800

## 6.03 \*Padfoot shells



Before starting any activity, please be sure to also observe the instructions provided in the assembly safety manual, in the general safety manual and in this instruction manual.

000-42



These instructions may be applicable to several types of a given series of machines or to machines which present different configurations. Accordingly, these instructions include descriptions of components or configurations not installed on your machine.

000-43

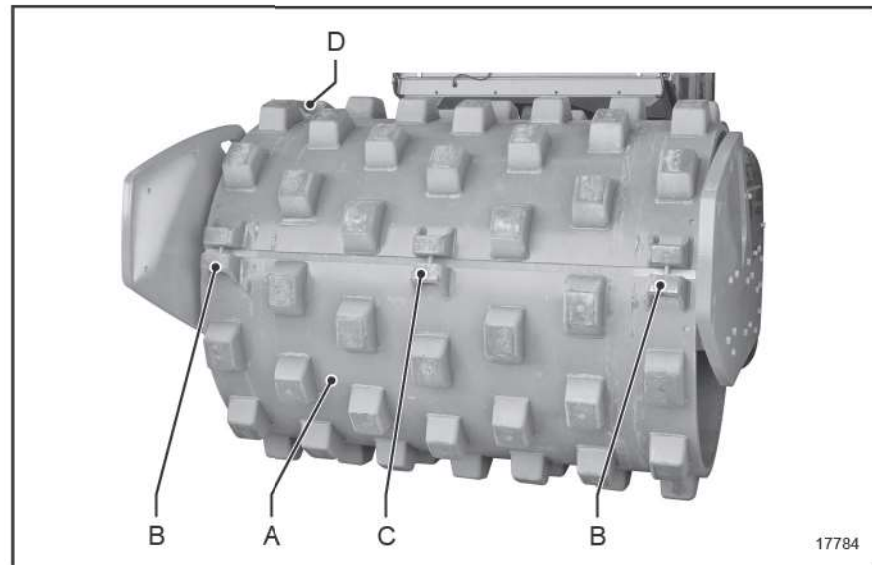
**General** This document includes mounting and removal instructions for various padfoot shell kits. The sequences of operations and the safety precautions provided herein will help you to quickly and safely refit a roller.

901-00

Special expertise is presumed for carrying out this assembly work , which cannot be given in these instructions. We recommend that this work is carried out by trained personnel.

800-18

### 6.03.01 Overview



17784

**View without front traverse**

<b>[A]</b>	Padfoot shells	<b>[B]</b>	Clamp connection, drum outside
<b>[C]</b>	Clamp connection, drum centre	<b>[D]</b>	Mounting bracket

### 6.03.02 Equipment needed

- Crane
- Hitching gears, e.g. hitching chains, round slings
- Lashing strap
- Electrical / pneumatic screwdriver
- Set of open end spanners
- Socket wrench set
- Torque wrench
- Assembly lever/ crowbar
- 2x squared timber 100x100x800
- 4x M16x150 mounting screws with nuts

901-04

**Cleaning** Before the padfoot shells are mounted, the surface of the smooth drum and the bearing surfaces of the padfoot shells must be thoroughly cleaned.

903-08

### 6.03.03 Safety Instructions

#### **⚠ WARNING**

##### **Lifting heavy components!**

Lifting or moving heavy components can lead to serious injuries or death.

- Perform installation / maintenance work on firm ground (flat, stable, horizontal).
- Carry out installation / maintenance work only when the engine is stopped.
- Switch off diesel engine even if you leave the operator platform only for short time and pull off the ignition key.
- Use appropriate lifting devices and hoisting equipment.
- Note the positions of the centres of gravity.
- Do not step underneath suspended loads.

002-97

#### **⚠ WARNING**

##### **Essential movement of the machine during assembly**

Driving the machine during assembly can lead to serious injuries or death.

- Ensure that there are no persons or objects in the danger zone of the machine.
- Ensure that there is adequate free space in front of, alongside and behind the machine.
- Drive the machine slowly and only in work gear.

002-98

**NOTICE**

**Any improper use of hoisting gear (crane) may lead to material damage.**

The roller may be damaged when removing or putting on padfoot shells.

- Proceed with caution and circumspection .
- Call in a second person to perform this work if possible.
- Use safety ropes if necessary.
- Remove any component part which might be damaged beforehand if necessary.

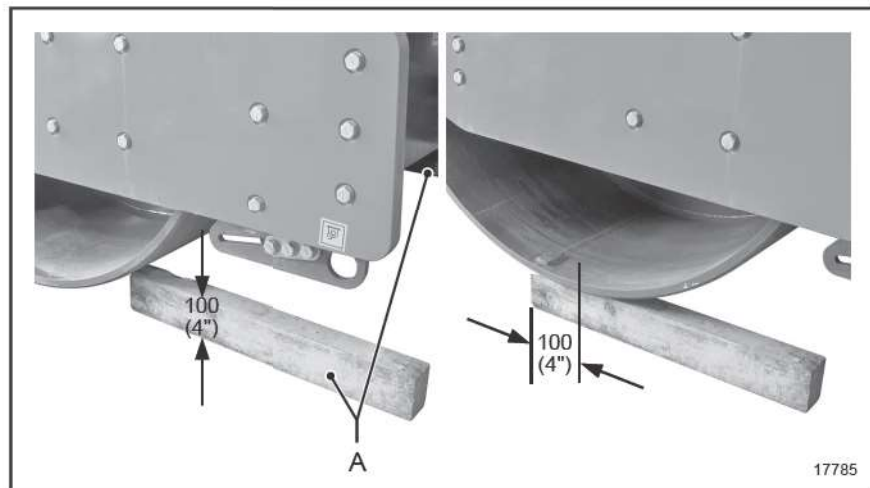
004-17

**Safe area** The machine has to be moved during the mounting of the padfoot shells, therefore keep a safe distance of 3 metres of clear space in front of and behind the machine.

905-00

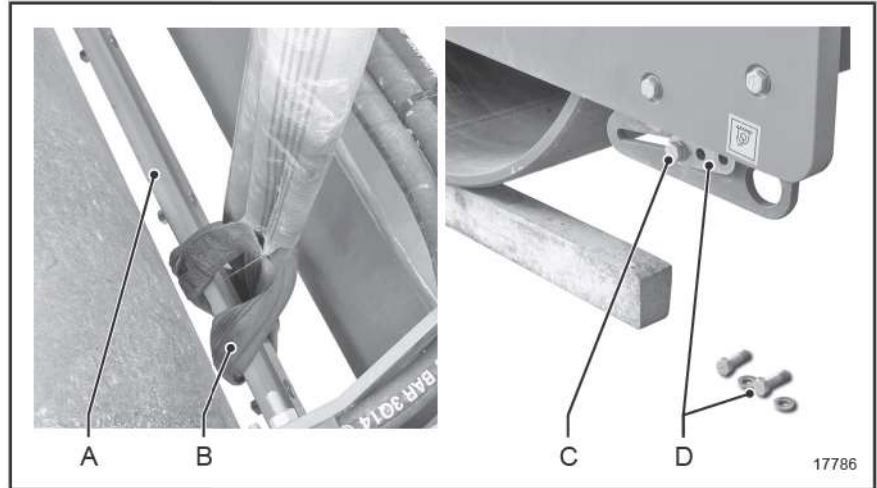
### 6.03.04 Installation

**Driving the machine onto wooden mounting blocks**



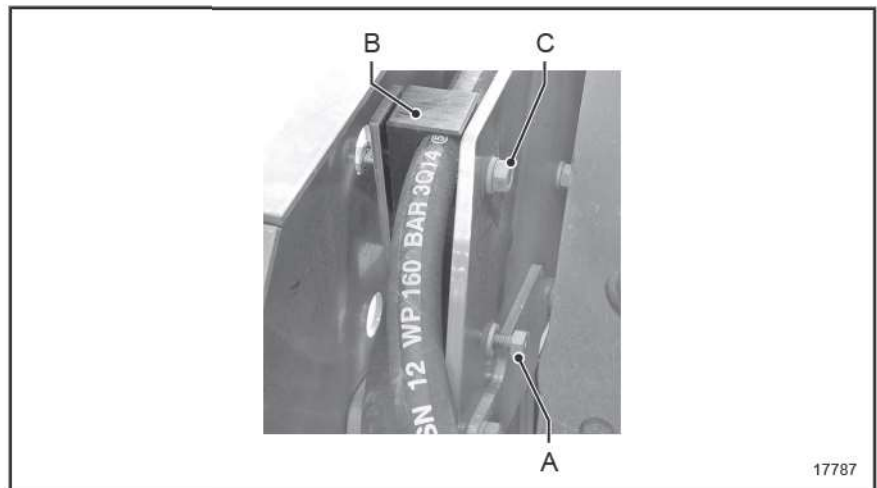
1. Place 2 square timbers [A] 100 mm x 100 mm x 800 mm (4" x 4" x 32") behind the drum, one near each end of the drum.
2. Slowly drive the machine in reverse in work gear onto the square timbers until the centre of the drum is about 100 mm (4") from the end of the square timbers (the ends of the square timbers may briefly rise as the machine mounts the ends).
3. Switch off diesel engine and remove ignition key.

902-08

**Removing the rear  
smooth drum scraper**


1. Hitch the outer side of the rear scraper bracket [A] to the crane with a round sling [B].
2. Lightly tension the round sling.
3. Undo the screwed connection [C], and remove the fastening elements [D].
4. Undo the screwed connection [C], and remove 2 screws from the other side.
5. Hold the scraper bracket [A] with one hand, and remove the last screw.
6. Lower the scraper bracket [A] to the ground.
7. Place all dismantled parts outside the working range of the machine.

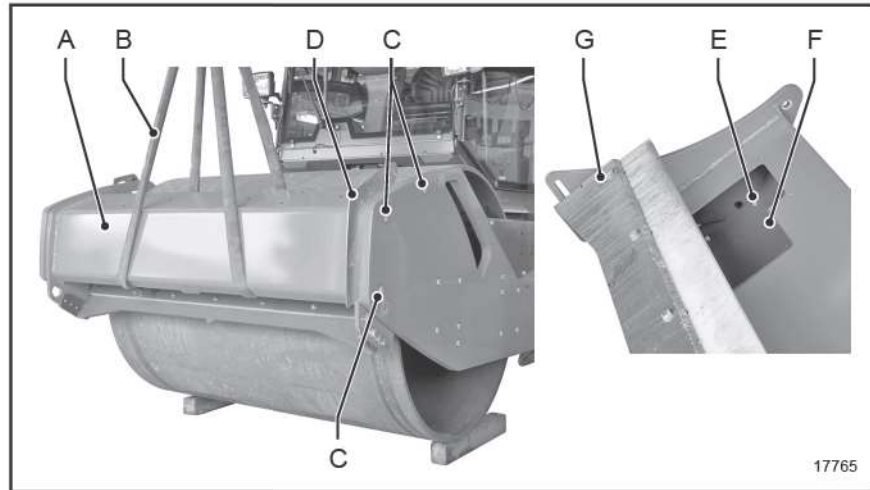
902-09

**Partly unscrewing the  
screws on the hose clamp  
mounting**


1. Loosen and unscrew the hexagonal nut [A] on the hose clamp [B] until its face is flush with the thread end of the screw.
2. Push the screw back until the hexagonal nut [C] lies against the plate.

902-10

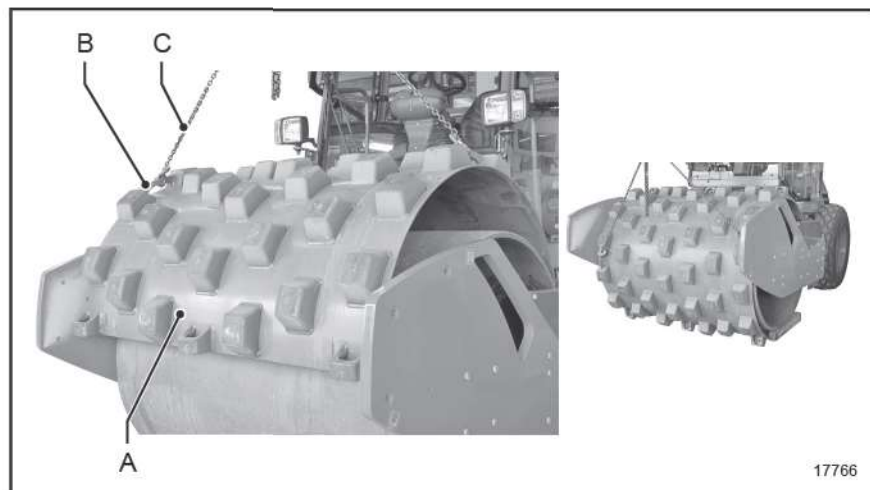
**Removing the front traverse**



1. Hitch the front traverse [A] to the crane with a round sling [B], and place it under slight tension. Note the position of the centre of gravity!
2. For a model with an assembly cutout on the back of the traverse: Loosen the screws [E] and remove together with the cover [F].
3. For variants equipped with spacers [D]: Undo 3 screw connections [C] on each side. First remove the spacer plates [D]. Then remove the screw connections [C].
4. Remove the front traverse [A]. Place the traverse down outside the working range of the machine so that scraper [G] can be dismantled.

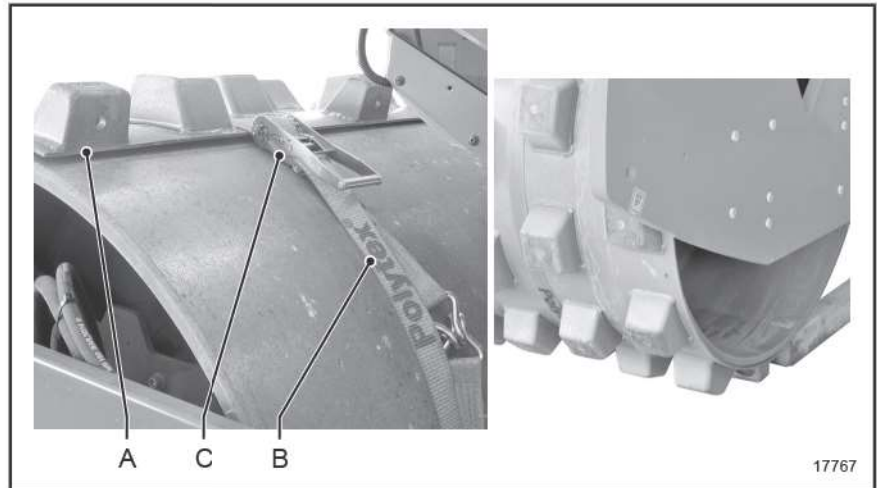
902-11

**Mounting the first padfoot shell**



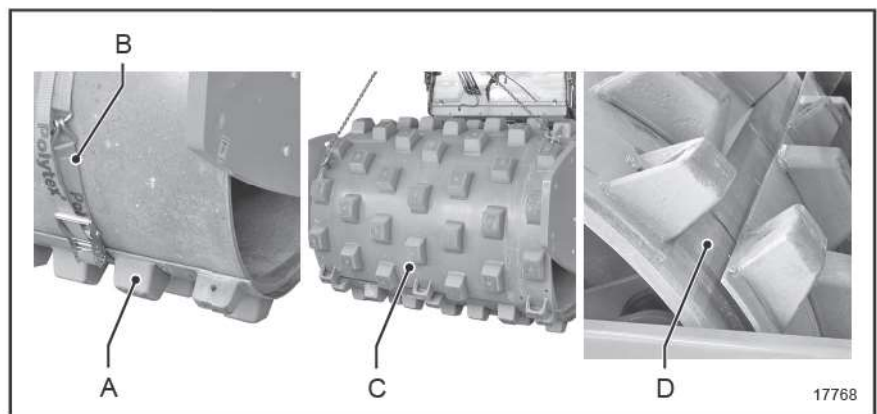
1. Hitch the mounting bracket [B] of one half shell [A] to the crane with chain [C], and allow the half shell to slide from the top of the drum down to the floor.
2. Use a crowbar to align both ends of the half shell [A] on the ground with the drum.

902-12

**Strapping on the first padfoot shell**


1. Apply securing strap [B] to prevent the half shell [A] from falling off the drum: Apply the securing strap [B] so that the strap buckle [C] lies behind the top edge of the half shell. Tighten the securing strap [B].

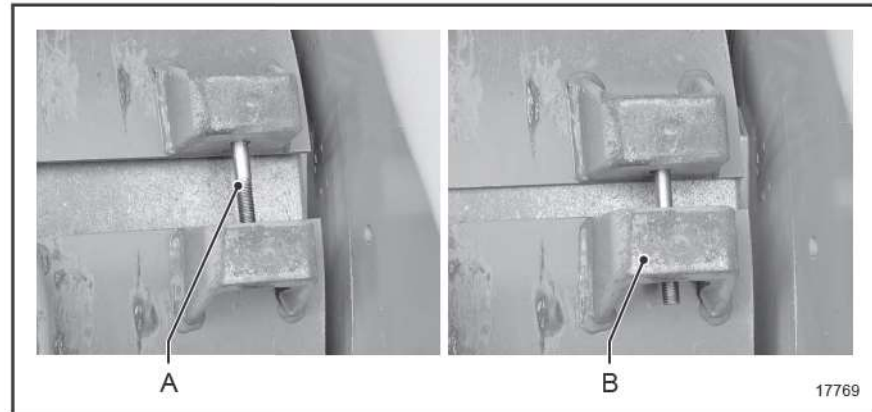
902-13

**Mounting the second padfoot shell**


1. Start the diesel engine, and drive the machine slowly forwards until the half shell [A] is lying in a horizontal position.
2. Switch off diesel engine and remove ignition key.
3. Remove the square timbers from the working range of the machine.
4. Undo and remove lashing strap [B].
5. Place the second half shell [C] on the drum. Ensure that the gap [D] between the half shells is the same on both sides.

902-14

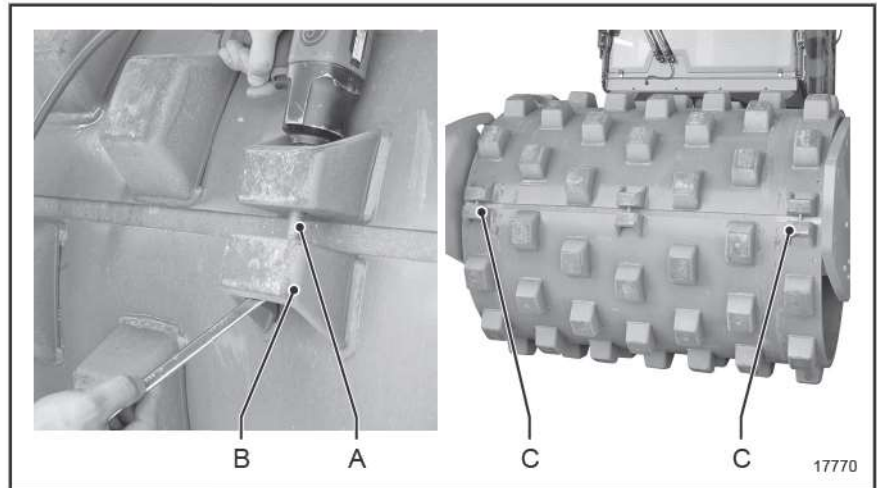
### Bolting the halves together



1. On the front side of the drum, insert the long fastening bolts [A] from above into the holes in the clamp brackets [B] at the ends of the drum, and screw on the mounting nut by hand.
2. On the rear side of the drum, insert the long fastening bolts [A] from below into the holes in the clamp brackets [B] at the ends of the drum, and screw on the mounting nut by hand.
3. Use a crowbar to align top half shell [A] flush with both ends of the drum. Lightly tighten the mounting nuts.
4. Start the diesel engine, and drive the machine slowly backwards until the top half shell lies horizontally under the drum.
5. Switch off diesel engine and remove ignition key.
6. Use a crowbar once more to align the top half shell flush with both ends of the drum.
7. Screw in the heads of the mounting bolts [A] to tighten the clamp connection [B] on the front side of the drum to reduce the gap to a width of approx. 30 mm. Hold the nuts motionless with a wrench.
8. Start the diesel engine, and drive the machine slowly forwards again until the top half shell lies horizontally under the drum once more.
9. Switch off diesel engine and remove ignition key.
10. If necessary, use a crowbar once more to align top half shell flush with both ends of the drum.
11. Screw in the heads of the mounting bolts [B] again to tighten the clamp connection [B] on the front side of the drum to reduce the gap to a width of approx. 30 mm. Hold the nuts motionless with a wrench.

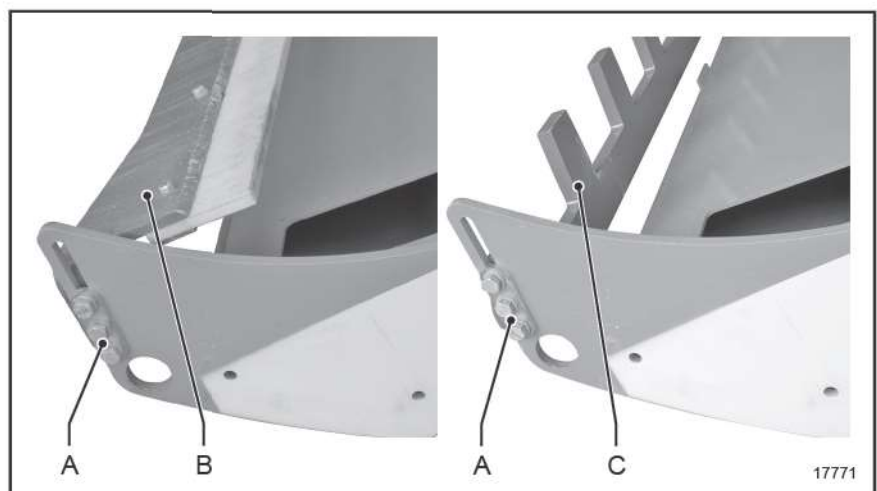
902-15



**Completing the clamp connection**


1. On the front side of the drum, insert a short fastening bolt [A] from above into the hole in the clamp brackets [B] in the centre of the drum. Put on the fastening nut, and lightly tighten by hand.
2. Screw in the head of the fastening bolt [A] to tighten the clamp connection [B] on the front side of the drum. Hold the nuts motionless with a wrench.
3. Replace the long fastening bolts in the clamp connections [C] by the short fastening bolts [A], and tighten them.
4. Start the diesel engine, and drive the machine slowly forwards again until the rear clamp connections [B] are on the front side of the drum.
5. Switch off diesel engine and remove ignition key.
6. Complete the clamp connections as described under points 1 to 3.

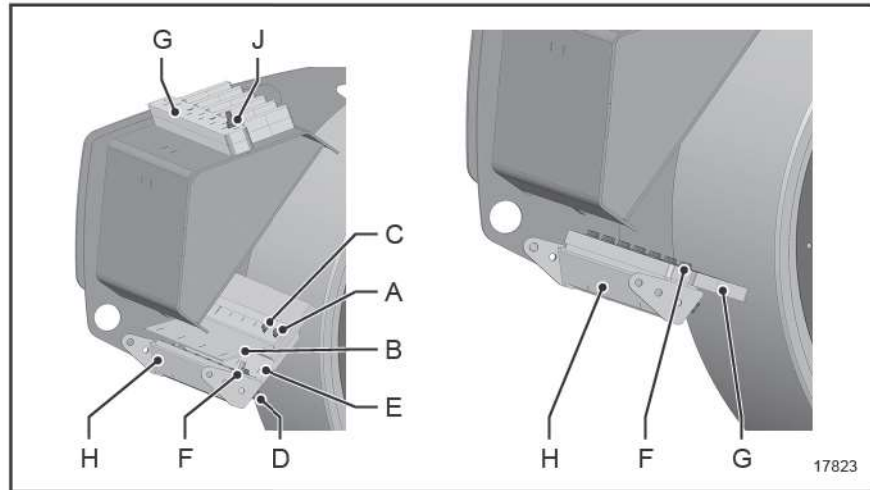
902-16

**Padfoot drum scrapers  
Variant 1**


1. Release the clamp connection [A], and replace the smooth drum scraper [B] by the padfoot drum scraper [C] in the front traverse (mind the spacer plates on the sides).
2. Tighten clamp connection [A] on both sides.
3. Install scrapers on the rear of the padfoot drum.

902-17

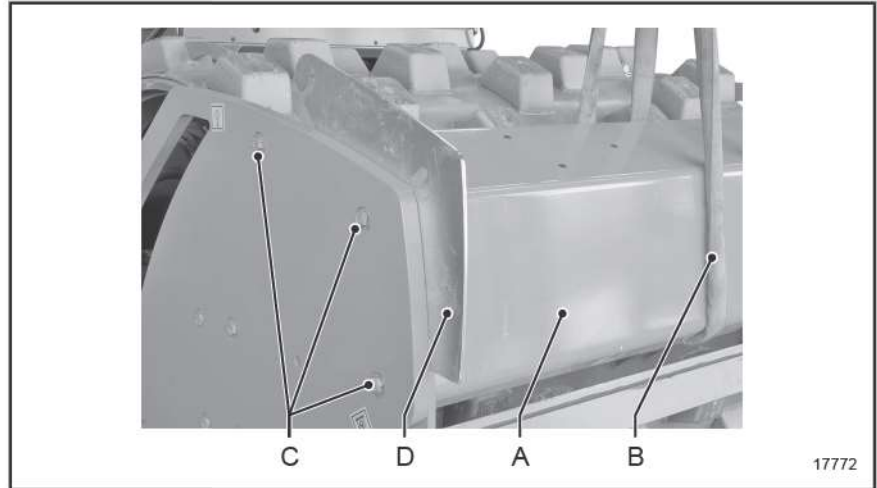
**Padfoot drum scrapers  
Variant 2**



1. Undo the fastening nut [J], then remove the padfoot drum scraper [G] from the front traverse.
2. Undo the screw connection [A] holding the guard plate [B] on the smooth drum scraper (do not undo the screw connection [C] on the cutout), and remove the guard plate [B].
3. Insert the screws into the mounting holes [A] again, and tighten.
4. Undo the fastening screws [D] holding the scraper holder [E], and remove them together with the scraper holder [E].
5. Relocate the thread protection screws [F] in the tapped holes [D], and tighten.
6. Place the padfoot drum scraper [G] on the scraper bracket [H], screw the fastening screws into the tapped holes [F], and tighten.

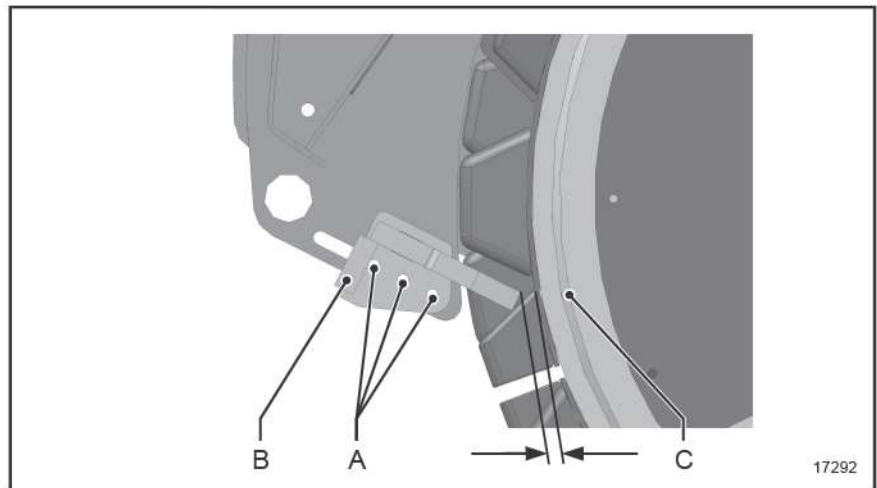
Perform this work on the front and rear scrapers.

902-25

**Mounting front crossbeam**

1. Hitch the front traverse [A] to the crane with a round sling [B]. Note the position of the centre of gravity!
2. Insert the fastening screws [C].
3. Mount the spacer plates [D].
4. Finish and tighten the screw connection [C].

902-18

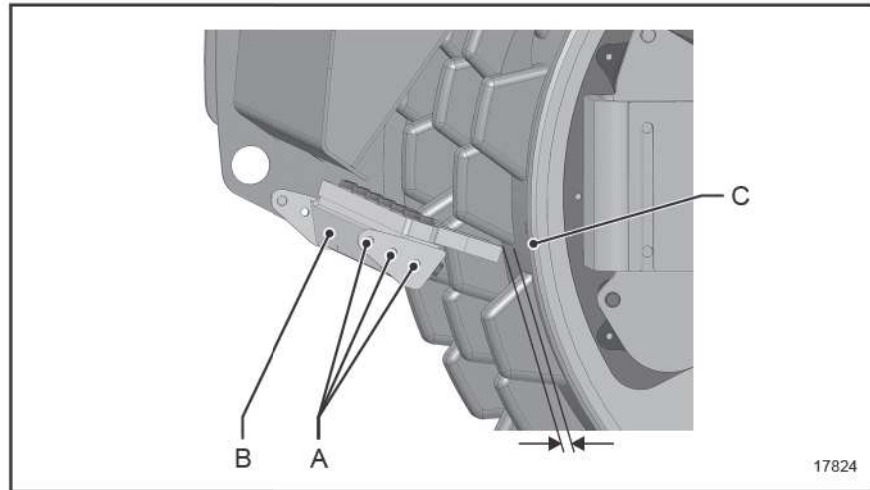
**Adjusting scrapers of the padfoot drum Variant 1****Padfoot drum clearance — 15 mm**

1. Loosen hexagonal screw [A].
2. Adjust the width of the gap between drum [C] and scraper bracket [B].
3. Tighten hexagonal screw [A].

Perform this work on the front and rear scrapers.

825-33

**Adjusting scrapers of the  
padfoot drum  
Variant 2**



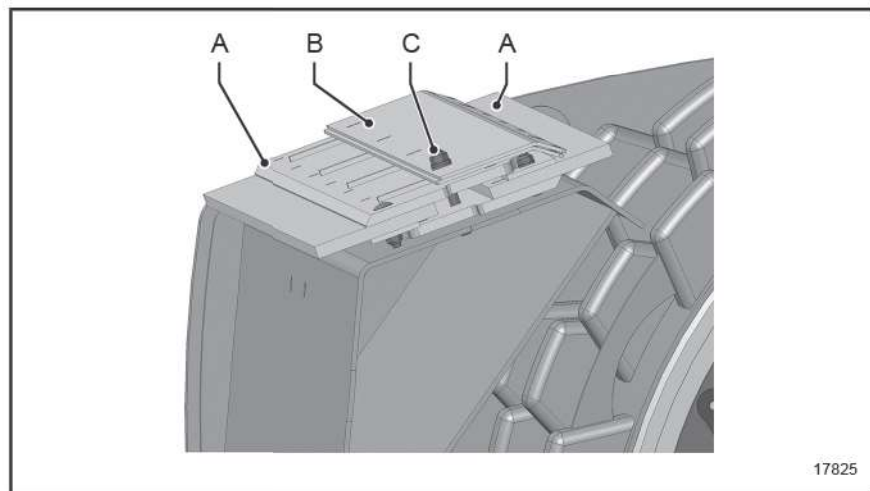
Padfoot drum clearance — **15 mm**

1. Loosen hexagonal screw [A].
2. Adjust the width of the gap between drum [C] and scraper bracket [B].
3. Tighten hexagonal screw [A].

Perform this work on the front and rear scrapers.

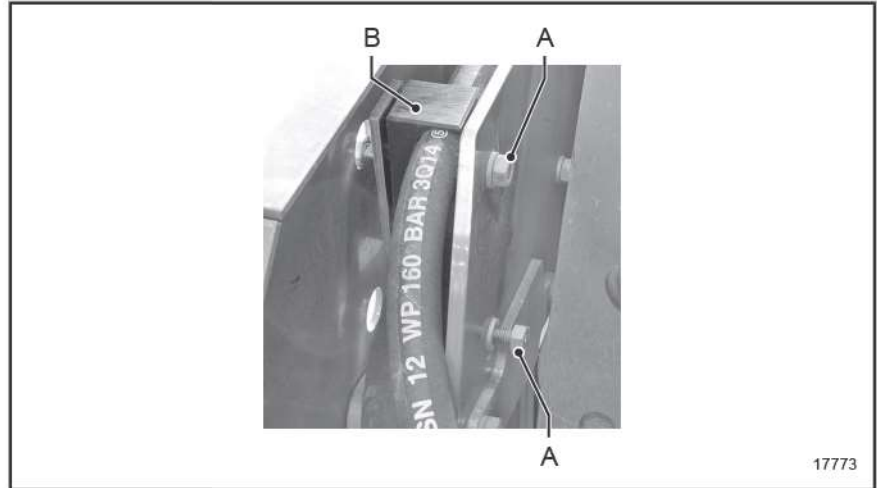
825-33

**Stowing away the smooth  
drum scraper  
Variant 2**



1. Place the two smooth drum scrapers [A] on the front traverse, facing in opposite directions.
2. Place the two guard plates [B] on the scrapers [A].
3. Screw the nut [C] onto the locking pin, and tighten.

902-26

**Tightening the bolts on the hose clamp mounting**


1. Tighten the hexagonal nut [A] on the hose clamp [B].  
Perform this work on the left and right-hand hose clamp mountings.

902-19

**Running in the padfoot shells**

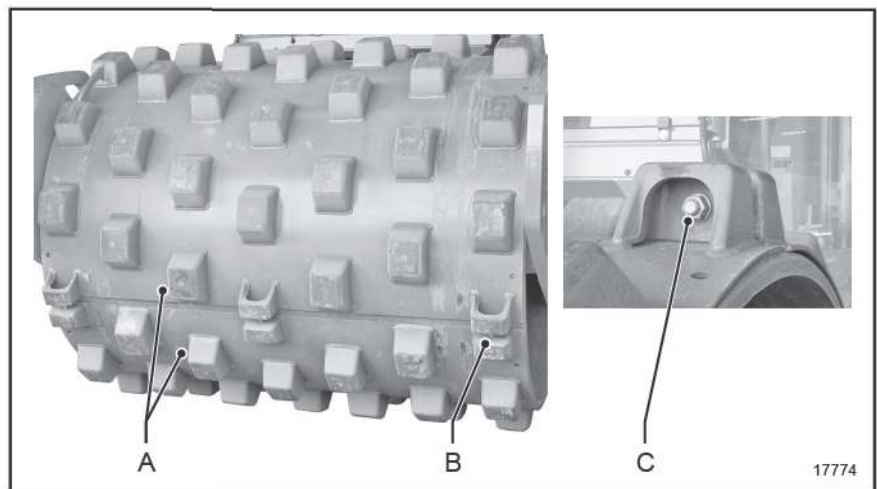
After the padfoot shells have been mounted, the machine must be driven backwards and forwards at a speed of 5 km/h (3 mph) along a distance of 20 metres (65 feet). Subsequently retighten all the fastening bolts in the clamp connections holding the padfoot shells. Check again after 10 operating hours, and retighten the bolts if necessary.

902-20

**6.03.05 Disassembly**


Read the Safety Section of this manual before starting the disassembly work.

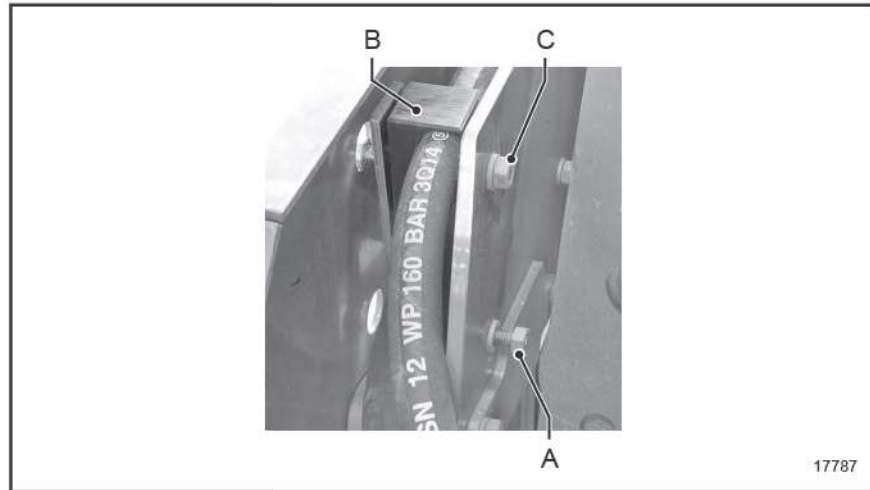
000-66

**Cleaning**


The padfoot shells [A], the clamp connections [B] and the fastening bolts [C] must be thoroughly cleaned before disassembly starts.

903-09

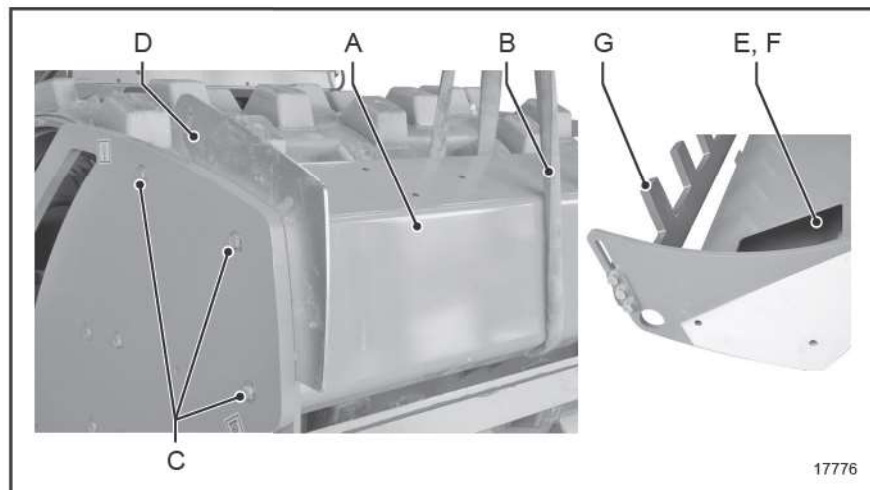
**Partly unscrewing the screws on the hose clamp mounting**



1. Loosen and unscrew the hexagonal nut [A] on the hose clamp [B] until its face is flush with the thread end of the screw.
2. Push the screw back until the hexagonal nut [C] lies against the plate.

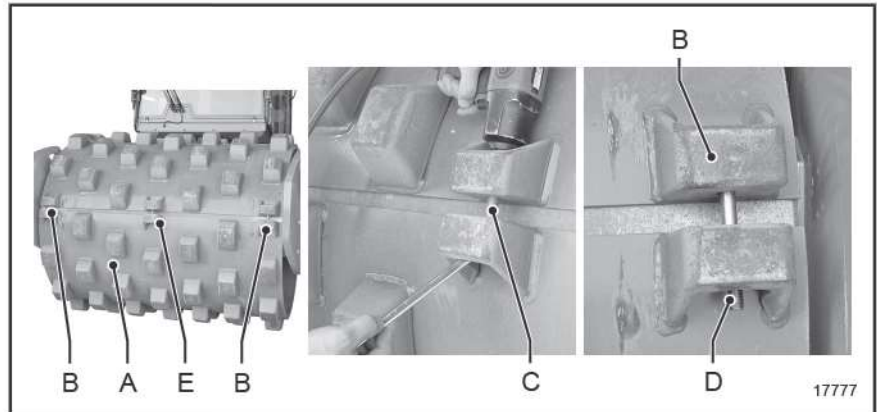
902-10

**Removing front traverse**



1. Hitch the front traverse [A] to the crane with a round sling [B], and place it under slight tension. Note the position of the centre of gravity!
2. For a model with an assembly cutout on the back of the traverse: Loosen the screws [E] and remove together with the cover [F].
3. For variants equipped with spacers [D]: Undo 3 screw connections [C] on each side. First remove the spacer plates [D]. Then remove the screw connections [C].
4. Remove the front traverse [A]. Place the traverse down outside the working range of the machine so that scraper [G] can be dismantled.

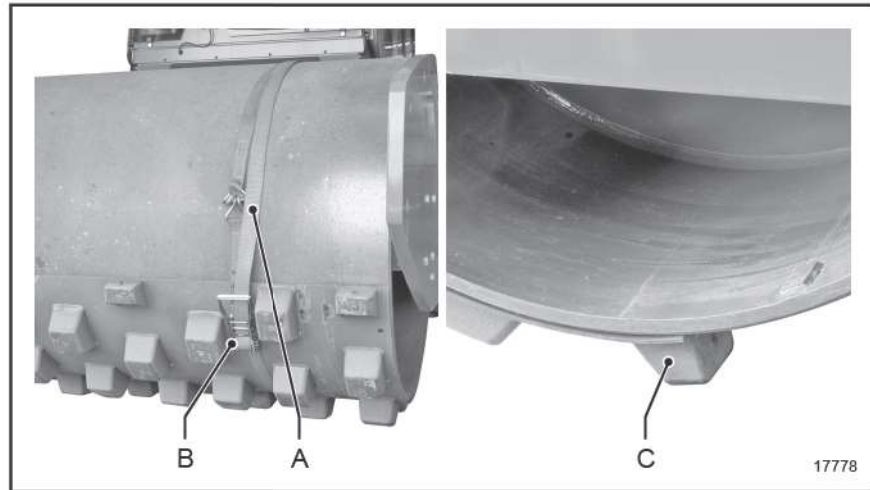
902-11

**Loosing clamp connection**


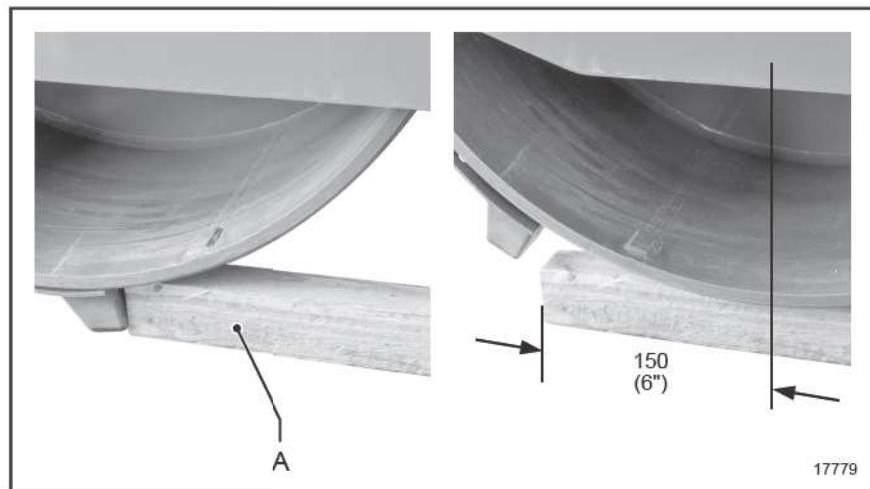
1. Start the diesel engine, and drive the machine slowly forwards until the half shell [A] is lying in a horizontal position.
2. Switch off diesel engine and remove ignition key.
3. On the front side of the drum, only unscrew the heads of the fastening bolts [C] in the clamp connections [C] at the ends of the drum. Hold the nuts motionless with a wrench.
4. Replace the short fastening bolts [C] by the long fastening bolts [D] with fastening nuts, and tighten by hand. (Insert the fastening bolts into the clamp connection [B] from below.)
5. Remove the fastening bolt [C] from the clamp connection [E] in the centre of the drum.
6. Unscrew the heads of the mounting bolts [D] until the nuts are flush with the ends of the bolts (half shells are loosened).
7. Start the diesel engine, and drive the machine slowly backwards until the other half shell [A] lies in a horizontal position underneath the drum.
8. Switch off diesel engine and remove ignition key.
9. On the front side of the drum, only unscrew the head of the fastening bolt [C] in the clamp connections [E] in the centre of the drum. Hold the nuts motionless with a wrench.
10. Replace the short fastening bolt [C] by the long fastening bolt [D] with mounting nut, and tighten by hand.
11. Remove the fastening bolts [C] from the clamp connection [B] at the end of the drum.
12. Now remove the fastening bolts [C] from the clamp connection [E] and the clamp connections [B] on the rear side of the drum.

902-21

### Removing padfoot shells

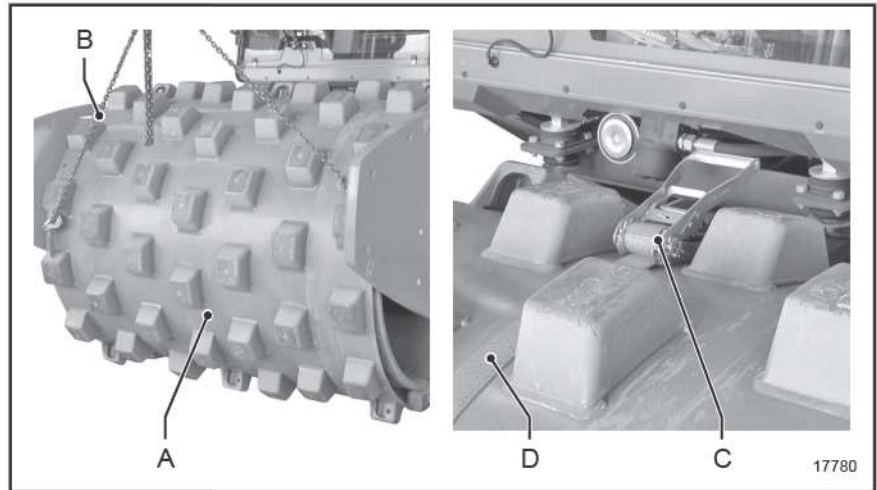


1. Hitch the top half shell to the crane with a chain, and carefully lift it off the drum.
2. Apply the securing strap [A] so that the strap buckle [B] lies in front of the end of the half shell.
3. Start the diesel engine, and drive the machine slowly backwards until the drum lies on the clamp connection [C].
4. Switch off diesel engine and remove ignition key.



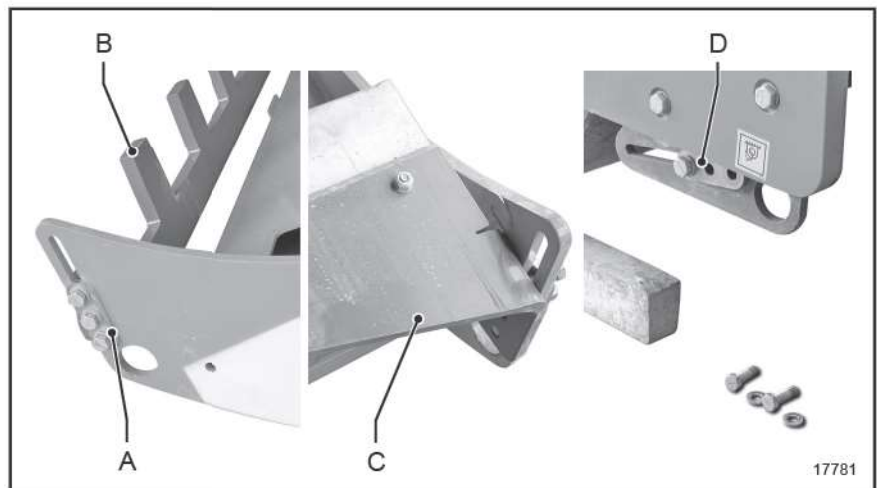
5. Slide 2 square timbers [A] up to the clamp connections.
6. Start the diesel engine, and drive the machine slowly backwards until the centre of the drum lies approximately 150 mm (6") from the ends of the square timbers [C].
7. Switch off diesel engine and remove ignition key.





8. Hitch the half shell [A] to the crane with a chain [B], and place it under slight tension.
9. Undo the strap buckle [C] and remove the securing strap [D].
10. Remove the half shell [A] from the drum.

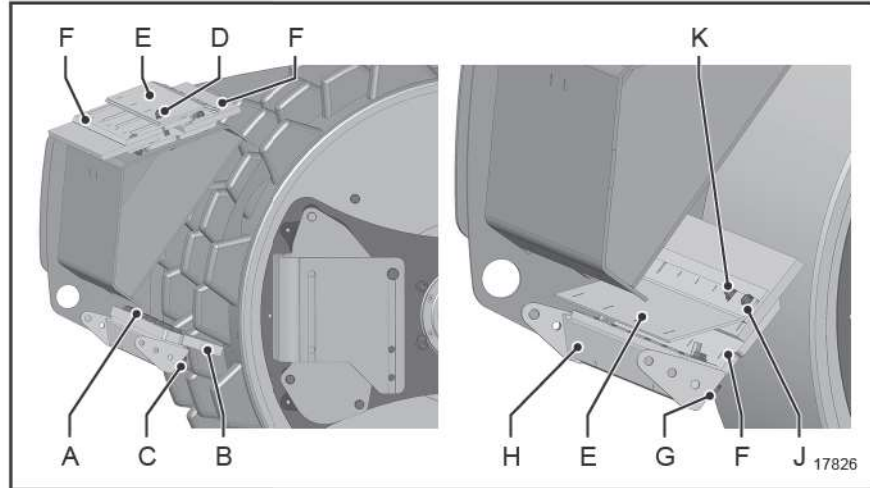
902-22

**Smooth drum scrapers  
Variant 1**


1. Release the clamp connection [A], and replace the padfoot drum scraper [B] by the smooth drum scraper [C] (mind the spacer plates on the sides).
2. Tighten clamp connection [A] on both sides.
3. Mount the rear smooth drum scraper [D].

902-23

**Smooth drum scrapers  
Variant 2**

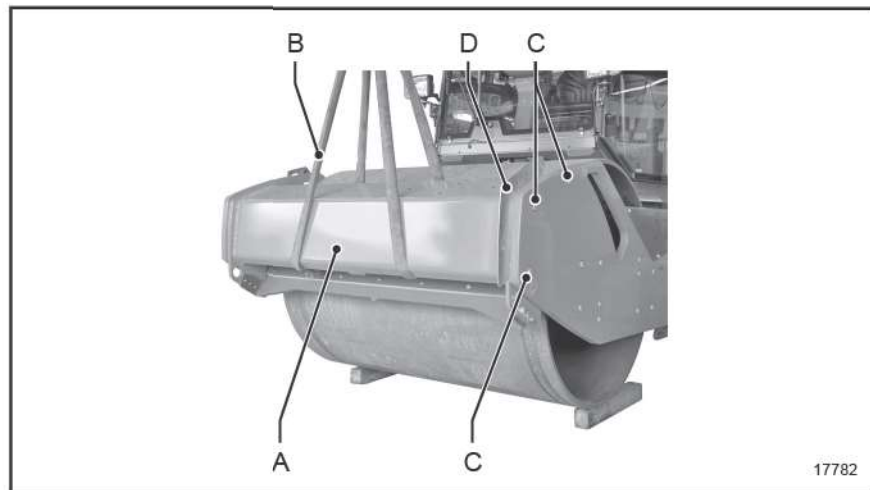


1. Undo the fastening screws [A], and remove them together with the padfoot drum scraper [B].
2. Relocate the thread protection screws [C] in the tapped holes [B], and tighten.
3. Remove the nut [D] and the scraper parts [E and F] for the smooth drum from the front traverse.
4. Screw the scraper holder [F] to the scraper bracket [H] with the fastening screws [G], and tighten.
5. Remove the fastening screws [J] from the scraper holder [E] (do not remove the screws [K]).
6. Mount the guard plate [E], and tighten the screw connection [J].

Perform this work on the front and rear scrapers.

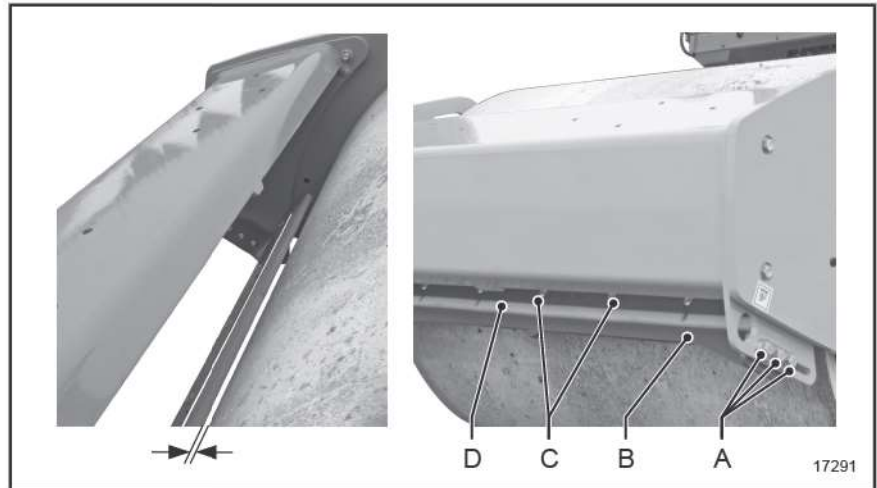
902-27

**Mounting front  
crossbeam**



1. Hitch the front traverse [A] to the crane with a round sling [B]. Note the position of the centre of gravity!
2. Insert the fastening screws [C].
3. Mount the spacer plates [D] (if present).
4. Finish and tighten the screw connection [C].

902-24

**Adjusting smooth drum  
scrapers  
Variant 1**


If the scrapers are worn to the extent that dirt adhering is no longer removed from the drum while the machine is working, the scraper must be readjusted to the correct clearance.

Smooth drum clearance — **10 mm**

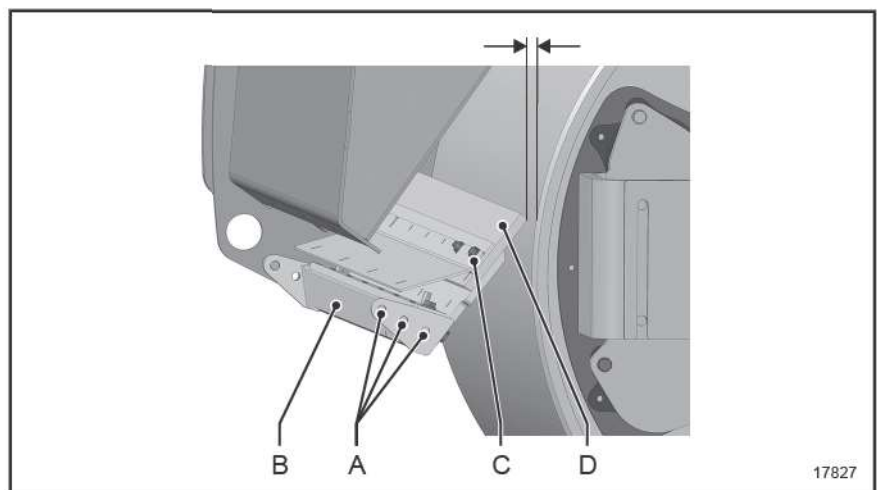
**Basic setting of scraper**

1. Switch off diesel engine and remove ignition key.
2. Loosen hexagonal screw [A].
3. Push scraper console [B] to the clearance of the drum.
4. Tighten hexagonal screw [A].

**Readjusting the scraper**

1. Switch off diesel engine and remove ignition key.
2. Loosen clamp connection [C].
3. Push scraper [D] to the clearance of the drum.
4. Tighten clamp connection [C].

825-23

**Adjusting smooth drum  
scrapers  
Variant 2**


If the scrapers are worn to the extent that dirt adhering is no longer removed from the drum while the machine is working, the scraper must be readjusted to the correct clearance.

Smooth drum clearance — **10 mm**

**Basic setting of scraper**

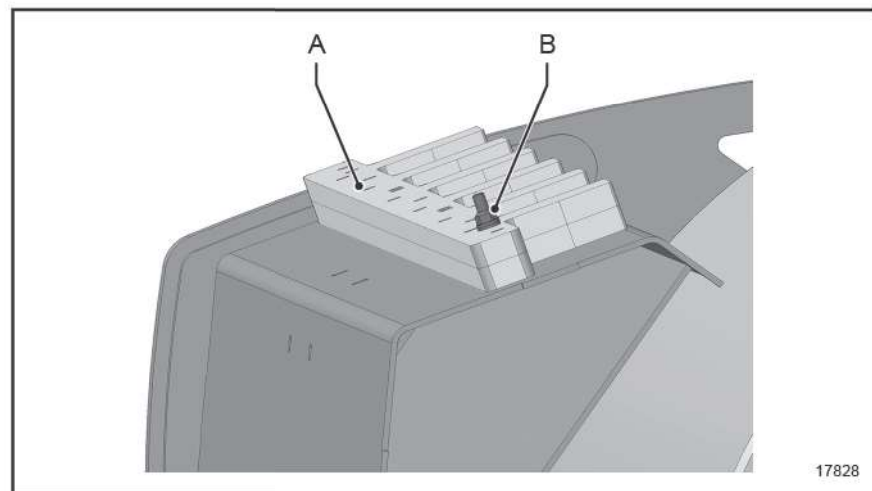
1. Switch off diesel engine and remove ignition key.
2. Loosen hexagonal screw [A].
3. Push scraper console [B] to the clearance of the drum.
4. Tighten hexagonal screw [A].

**Readjusting the scraper**

1. Switch off diesel engine and remove ignition key.
2. Loosen clamp connection [C].
3. Push scraper [D] to the clearance of the drum.
4. Tighten clamp connection [C].

825-23

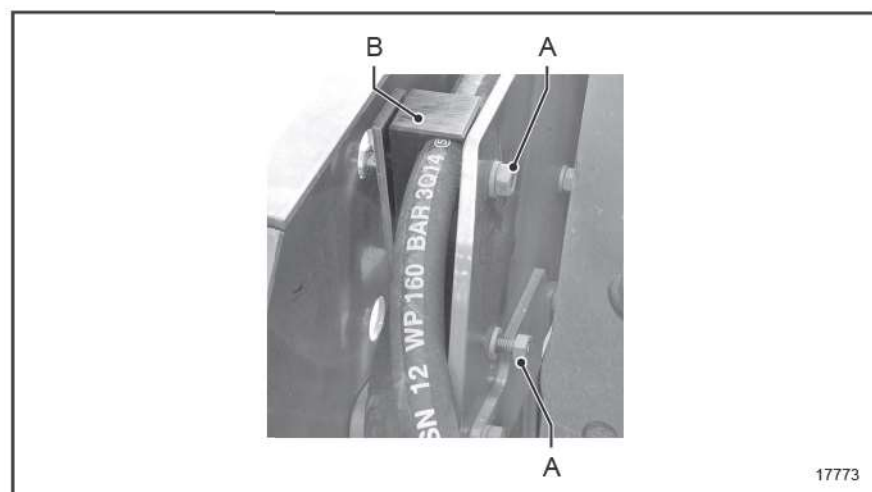
**Stowing away the  
padfoot drum scraper  
Variant 2**



1. Place the two padfoot drum scrapers [A] on the front traverse.
2. Screw the nut [B] on the locking pin, and tighten.

902-28

**Tightening the bolts on  
the hose clamp mounting**



1. Tighten the hexagonal nut [A] on the hose clamp [B].  
Perform this work on the left and right-hand hose clamp mountings.

902-19

### 6.03.06 Starting torques

The starting torques indicated within the tables apply to nuts in accordance with DIN 934 and screws with headrest according to DIN 931 (frictional coefficient  $\mu_{\text{total}} = 0.12$ ) unless otherwise specified.



Check screws and nuts regularly for tight seat, if necessary, retighten.

#### Starting torques for regular type screw threads

Threads	Starting torques MA (Nm)		
	8.8	10.9	12.9
M4	2,7	4,0	4,7
M5	5,5	8,1	9,5
M6	9,5	14	16,5
M8	23	34	40
M10	46	68	79
M12	79	117	135
M14	125	185	215
M16	195	280	330
M18	280	390	460
M20	390	560	650
M22	530	750	880
M24	670	960	1120
M27	1000	1400	1650
M30	1350	1900	2250

### Starting torques for fine threads

Threads	Starting torques MA (Nm)		
	8.8	10.9	12.9
M8x1	24,5	36	43
M10x1.25	49	72	84
M12x1.25	87	125	150
M12x1.5	83	122	145
M14x1.5	135	200	235
M16x1.5	205	300	360
M18x1.5	310	440	520
M20x1.5	430	620	720
M22x1.5	580	820	960
M24x2	730	1040	1220
M27x2	1070	1500	1800
M30x2	1490	2120	2480

892-00

### 6.03.07 Maintenance



When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01

**General** The instructions itemized in the "Important information about maintenance work" chapter ([see page 122](#)) must always be followed during all maintenance work.

800-03

#### Re-tightening padfoot shell screw connections

1. Re-tighten every screw connections of the padfoot shells using a torque spanner after 10 operating hours for the first time.
2. Re-tighten the screw connection of the padfoot shells using a torque spanner every 100 operating hours.

904-00

### 6.03.08 Technical data

#### H 5i

Designation	Value	Unit
Weight of shell half	240	kg
Weight of front crossbeam with scraper	140	kg
Weight of rear scraper	50	kg



### H 7i

Designation	Value	Unit
Weight of shell half	330	kg
Weight of front crossbeam with scraper	220	kg
Weight of rear scraper	70	kg

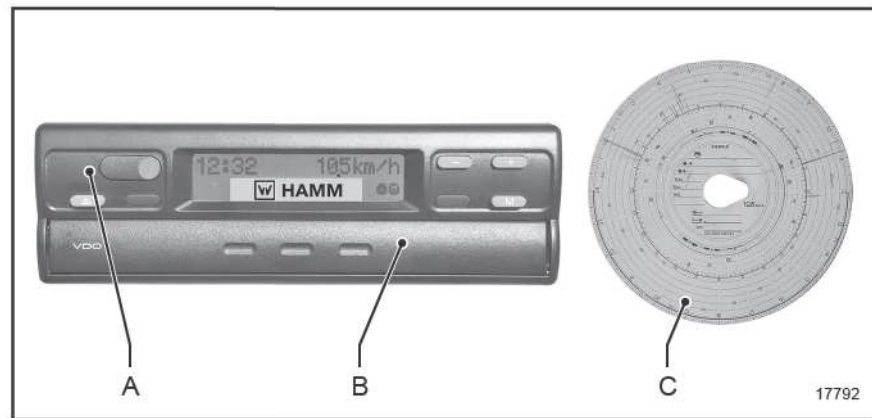
## 6.04 \*Tachograph

**General** After the electrical system has been switched on, the trip recorder [A] displays the various machine functions on the record sheet [C]. These include amongst others:

- Driving and stopping times
- Driving speed
- Vibration amplitude
- Vibrator speed

655-00

### 6.04.01 Overview



**[A]** Tachograph

**[B]** Drawer for record sheet

**[C]** Record sheet

### 6.04.02 Operation

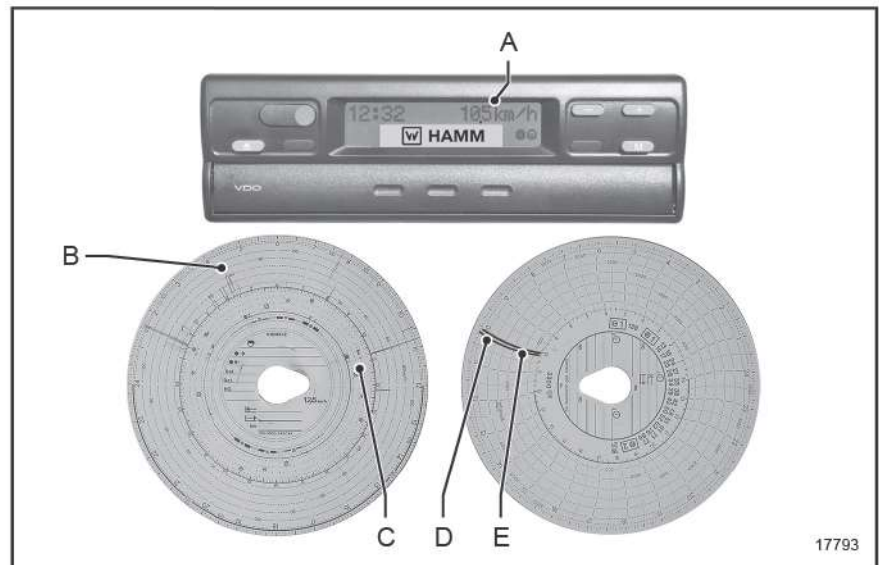
The operation of the trip recorder is described in the manufacturer's operating manual. This corresponds to the version current when the machine is delivered.

780-00



### 6.04.03 HAMM function

#### Indication



The trip recorder is specifically adapted for use in HAMM road rollers.

781-00

**Driving speed** During a trip, the speed [A] is shown with one digit after the decimal point in the display of the trip recorder. The point in the display window indicates the decimal point. The speed is also shown on the record sheet [B] with one digit after the decimal point. A peak in the curve at 105 km/h corresponds to a real driving speed of 10.5 km/h.

782-00

**Vibration amplitude** The area [C] under the driving speed [B] is used to record the amplitude of the vibrations. A thick bar indicate a large amplitude, a thin bar a small amplitude. On machines with double vibration, the recording of the front drum is given priority. If the machine works with mixed vibration amplitudes, that is one drum works with a large and the other with a small amplitude, only the large amplitude is shown on the record sheet.

783-00

**Vibrator speed** The frequency of rotation [D] for the vibrator is recorded on the back of the record sheet. The recording shows the revolutions per minute. The switching on of the electrical system (ignition on/off) is logged [E].

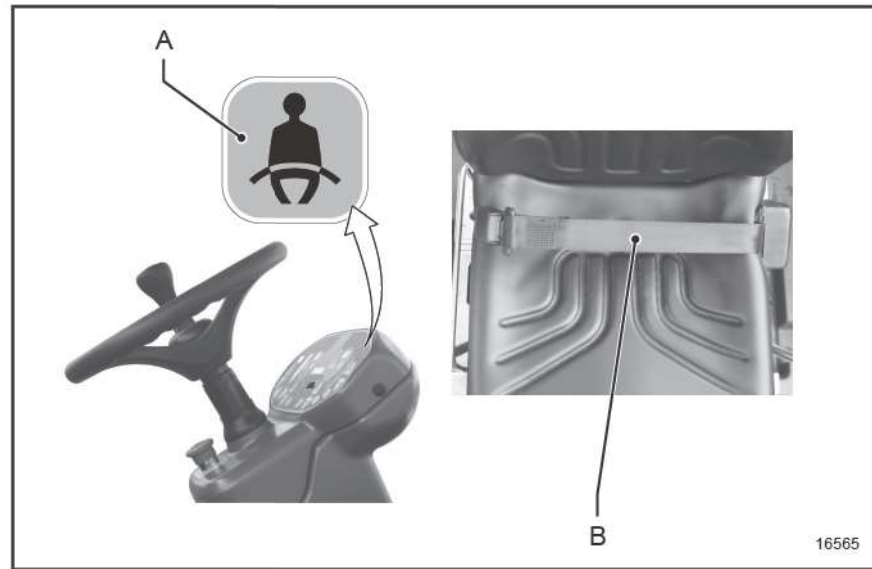
784-00

## 6.05 \*Seat belt with belt monitoring system

**General** A visual and audible signal will be activated at a travelling speed of more than 1 km/h (0.62 mph) unless the seat belt has been fastened.

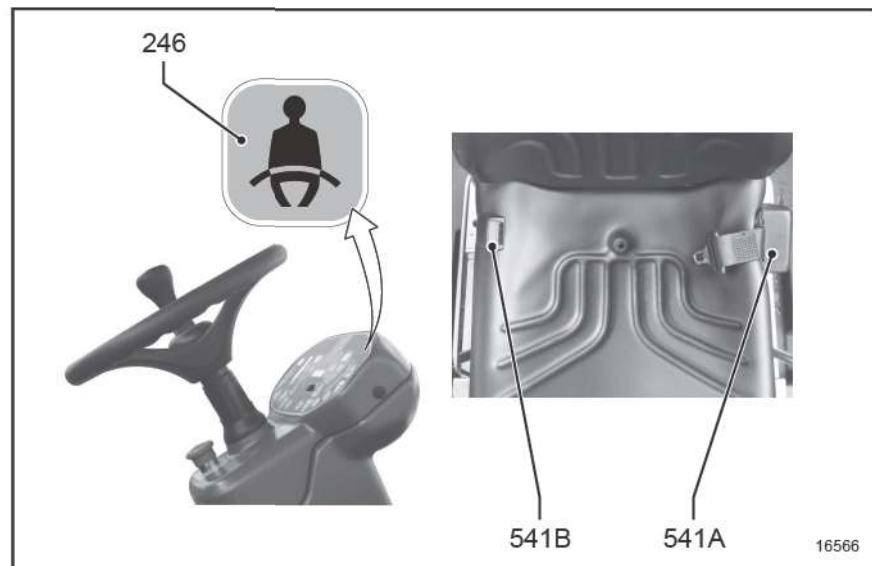
640-00

### 6.05.01 Overview



**[A]** Put on safety belt indicator light. **[B]** Seat belt

### 6.05.02 General view of instruments and operating elements



**[246]** Put on safety belt indicator light **[541A]** Belt take-up reel

**[541B]** Buckle

### 6.05.03 Indication lights

#### 246 Put on safety belt

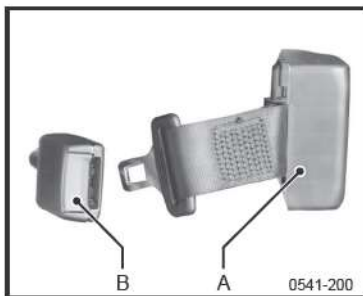


Indicates a failure to fasten the seat belt when lit during travel. Additionally an acoustic signals sounds permanently.

246-00

### 6.05.04 Operating levers, adjustment handles

#### 541 Seat belt



Put on safety belt:

1. Pull the seat belt out of the belt take-up reel [A].
2. Slide and snap the belt tab into the buckle [B].

Open the seat belt:

1. Press the red locking button [B].  
(The tab is released from the buckle).
2. Guide the seat belt back into the belt take-up reel.

541-00

### 6.05.05 Operation

#### General

When fastened, the seat belt secures the driver in the driver's seat during a rear-end collision and may thus avoid serious injuries. Inspect the seat belt for wear or damage before starting the engine. If damaged, replace the seat belt promptly.

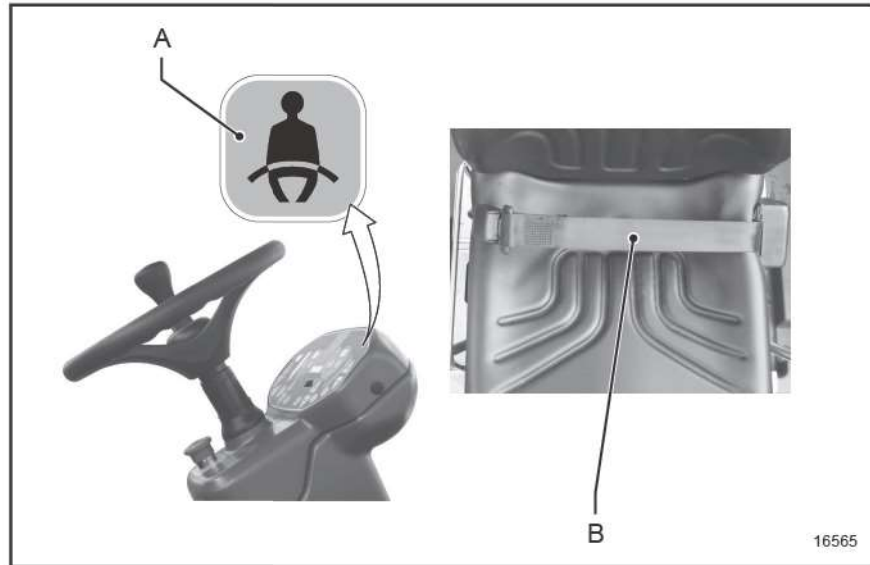
701-40



The driver must wear a safety belt while driving machines with a ROPS cab or a ROPS roll-over bar.

000-37

**Put on safety belt**



Fasten the seat belt [B] before driving away with the machine. When closing the safety belt, make certain to apply it tightly across the hip (not across the belly). Do not twist the belt. Indicator light [A] lights up to indicate a failure to fasten the seat belt during travel (at a speed of more than 1 km/h). Additionally an acoustic signals sounds permanently. Guide the seat belt back into belt take-up reel after use.

701-41

**6.05.06 Maintenance**

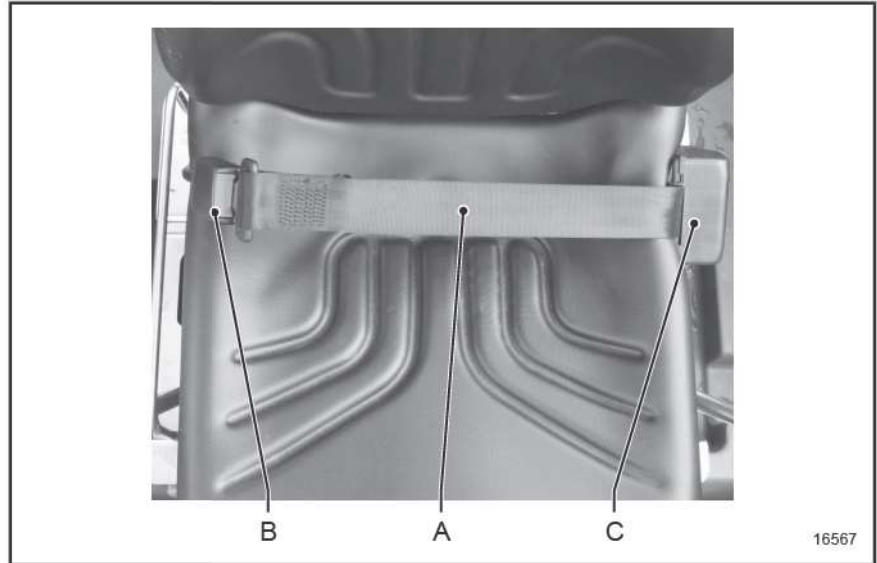


When working at the machine please always adhere to the instructions given in your Safety instructions!

000-01

**General** The instructions itemized in the "Important information about maintenance work" chapter ([see page 122](#)) must always be followed during all maintenance work.

800-03

**Care**

Dirt can impair the function of the safety belt. Therefore keep the safety belt clean!

- To clean the belt webbing [A], use only a sponge and soap water.
- Do not clean the safety belt with a water jet or high-pressure cleaner.
- Dust or sand may block the buckle [B] and the belt take-up reel [C]. Avoid any dust or sand contamination of buckle and belt take-up reel. Remove any dust or sand immediately.

856-00

**Replacement** The seat belt needs to be replaced for safety reasons every 3 years. Belts are strained by accidents and need to be replaced immediately when an accident has occurred.

857-00

## 6.06 Tilting the operator platform



Before starting any activity, please be sure to also observe the instructions provided in the assembly safety manual, in the general safety manual and in this instruction manual.

000-42

Special expertise is presumed for carrying out this assembly work , which cannot be given in these instructions. We recommend that this work is carried out by trained personnel.

800-18

### 6.06.01 Equipment needed

- Crane
- Hitching gears, e.g. hitching chains, round slings
- 2 hitching points M16 with a 35 mm length of thread engagement
- Set of open end spanners
- Socket wrench set
- Torque wrench

911-00

### 6.06.02 Safety Instructions

#### **▲ WARNING**

##### **Lifting heavy components!**

Lifting or moving heavy components can lead to serious injuries or death.

- Perform installation / maintenance work on firm ground (flat, stable, horizontal).
- Carry out installation / maintenance work only when the engine is stopped.
- Switch off diesel engine even if you leave the operator platform only for short time and pull off the ignition key.
- Use appropriate lifting devices and hoisting equipment.
- Note the positions of the centres of gravity.
- Do not step underneath suspended loads.

002-97

**⚠ WARNING**
**Operator platform slewing range!**

Risk due to rotating parts.

- Ensure that there are no persons or objects in the danger zone of the machine.
- Do not lift or lower the operator platform unless the engine is stopped.
- Check that sufficient room is available both above and on the sides.
- Before lifting or lowering the operator platform, ensure that no one is within its swivel range.
- Assembly work may only be done with the locking device securely bolted.
- Keep all parts of the body (e.g. hands) away from moving parts when lowering the operator platform.

002-99

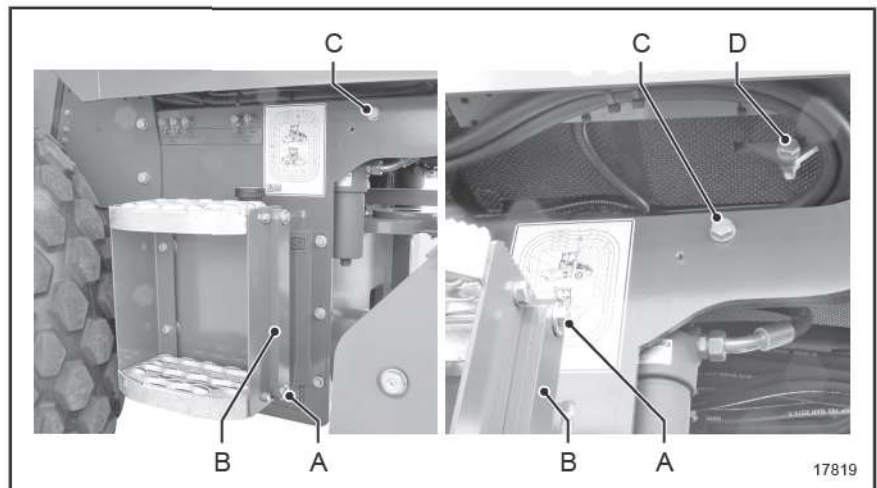
### 6.06.03 Tilting

**General** The operator platform may only be tilted or lowered by specially trained, skilled personnel. The personnel must be familiar with the work and have been instructed about the dangers.

- Switch off diesel engine and remove ignition key.
- Remove any loose items which may lie around in the operator platform (e.g., tools, bottles, bags, etc.).
- Close the cabin doors.

911-50

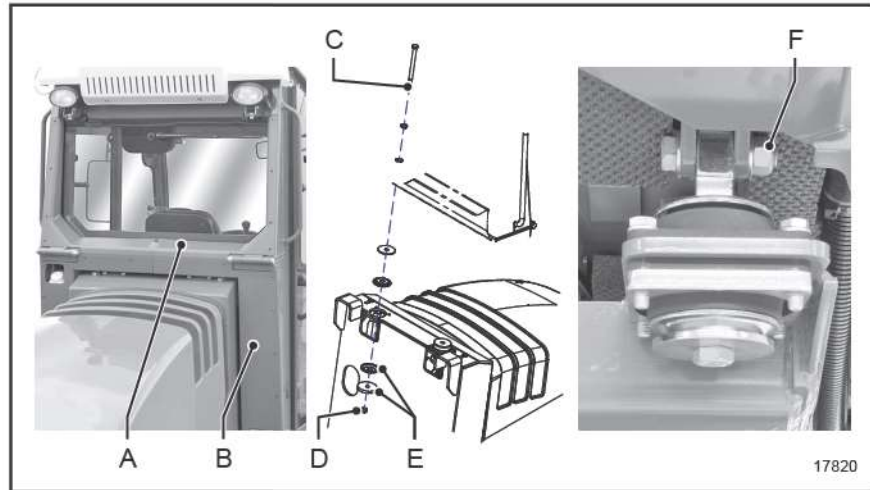
#### Removing supporting elements from the machine



1. Remove the bolts [A] and supports [B] from the machine.
2. Remove the fastening bolts [C] and [D] from the machine.

911-51

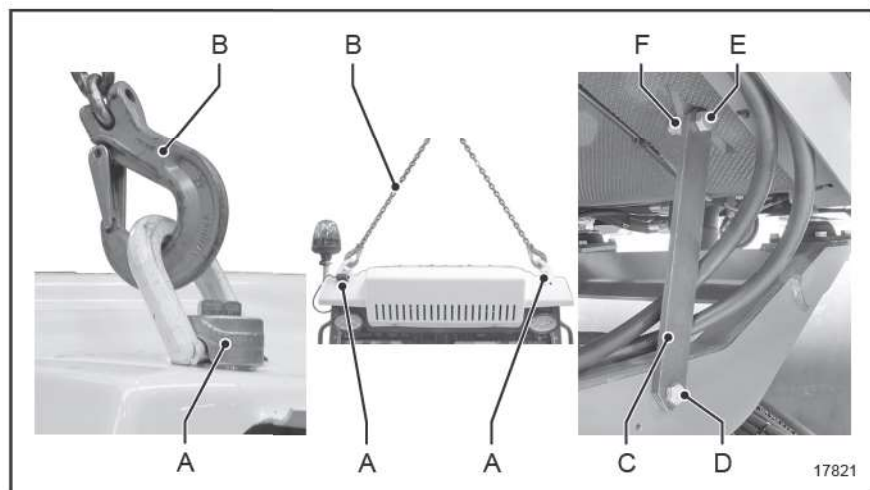
### Releasing operator platform mounting



1. Remove the cladding panels [A] and [B].
2. Undo the fastening bolts [C] and remove them together with the nuts [D], and washers [E].
3. Loosen the nut [F] on the front operator platform bearing by one turn (do not remove)

911-52

### Tilting operator platform



1. Screw two hitching points [A] into the mounting holes on the back of the cab, and tighten.
2. Hitch the cab to the crane with hitching gear [B] (chain or round sling).
3. Slowly raise the operator platform (note the washers on the rear screwed connection of the driver's cab).
4. Mount the supports [C] with the fastening bolts [D] on both sides of the machine frame. Do not tighten the bolts.
5. Swivel the support [C] upwards, and fixate to the operator platform with the fastening screw [E].
6. Tighten the nuts [F] of the bolted connections on both sides.
7. Tighten fastening screws [D] on both sides.
8. Slacken the hitching gear [B], and unhook it from the hitching point [A].

911-53

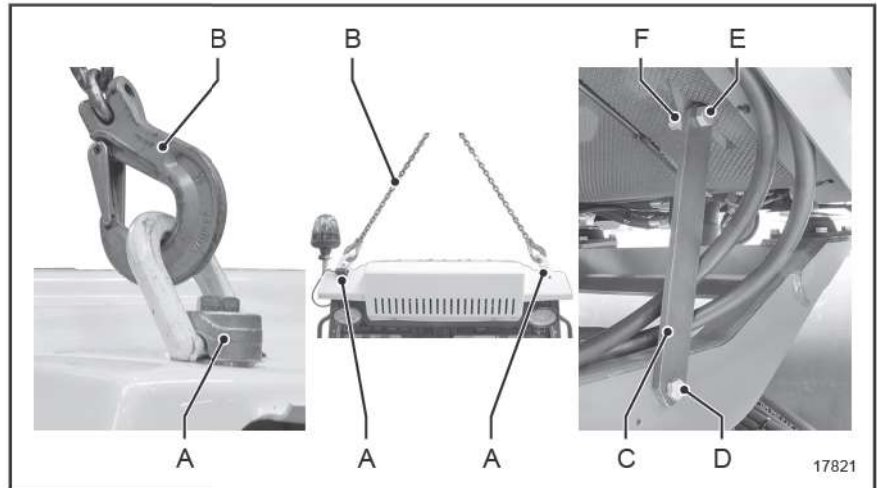


**6.06.04 Lowering**

Before lowering:

Completely remove tools, replaced parts and other items not belonging to the machine.

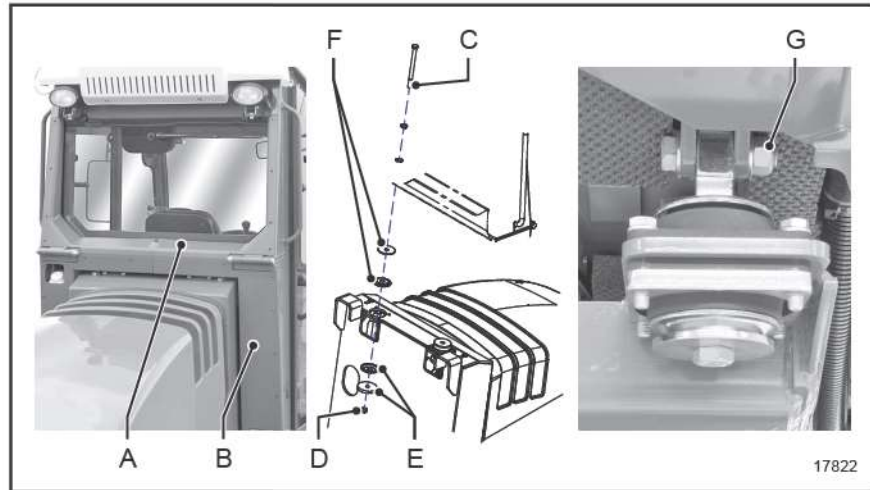
911-54

**Lowering operator platform**

1. Fasten the hitching gear (chain or round sling) [B] to the hitching point, and attach the sling or chain to the crane.
2. Lightly tension the hitching gear [B].
3. Undo the bolted connections [F] and remove the fastening elements.
4. Undo the fastening screws [C], and remove them together with the supports [C].
5. Slowly lower the operator platform but only so far that the washers can still be mounted on the rear screw connections of the driver's cab.

911-55

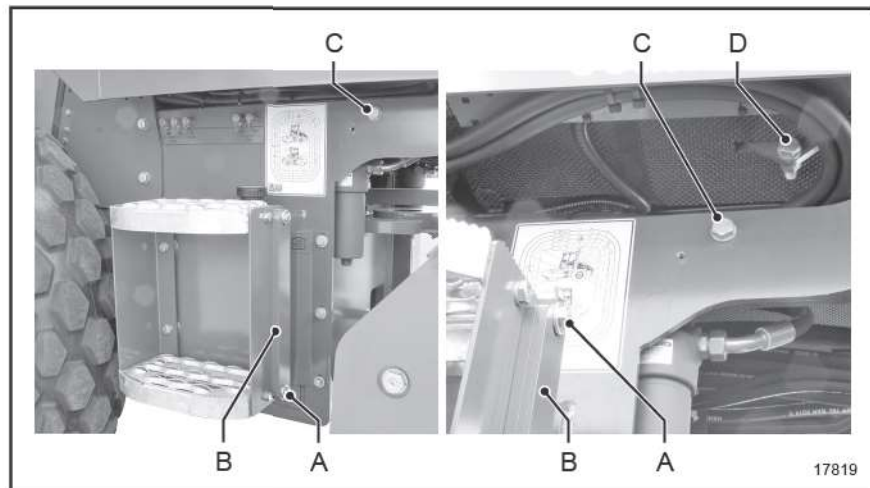
**Bolting on operator platform**



1. Insert washers [F] between the cab and the rubber bearing.
2. Insert the fastening bolt [C] with the washer through the hole from the operator platform, put on washers [F] and the rubber bearing.
3. Put washers [E] on the fastening bolt [C], and bolt together with nut [D].
4. Tighten bolted connections [C] and [D] with tightening torque  $MA = 110 \text{ Nm}$ .
5. Tighten screw connection [G] with tightening torque  $MA = 110 \text{ Nm}$  on the front operator platform bearing.
6. Mount the cladding panels [A] and [B].
7. Remove the hitching gear and the hitching point.

911-56

**Stowing away the support elements on the machine**



1. Mount and tighten the fastening elements of the bolted connection [D] in the lug.
2. Screw the fastening bolt [C] into the mounting hole, and tighten.
3. Stow away the supports [B] together with the screws [A] on the ladder.

911-57