Vacuum Crawler

VC 70

Translation of the Original Operating Instructions
SDT-0000-MB-1546-02-en

1 General

1.1 Product identification

The VC 70 is identified by the following data:

- ❏ Name: VC 70
- ❏ Serial number: see type plate
- ❏ Generation: see type plate

1.2 Information about the operating instructions

1.2.1 Purpose of the operating instructions

The operating instructions – including the technical documentation – serve to inform the operator and operating personnel. They contain instructions and important notes that, when observed, support safe, proper and efficient operation.

1.2.2 Target group

The operating instructions are intended for the operator and the operating personnel. The operating personnel must be qualified and authorised for the activities they are to perform.
There are two groups of operating personnel:

- ❏ Users who extract soil with the machine or transport the machine.
- ❏ Maintenance and service personnel who perform repair and maintenance work.

For information on training and qualifications and requirements for the operator and operating personnel, see *Chapter Organisational and operator-relevant information Page 15*.

1.2.3 Editorial changes

The product information contained in the operating instructions is based on the status at the time of printing. The documents supplied with the product are not subject to change management. The manufacturer reserves the right to make changes to the documentation relating to the product.

1.3 Safety

For more information on safety instructions, product safety and personal safety, see *Chapter Safety information Page 13*.

Safety colour coding

Certain colours are used in the operating instructions for aspects of safety to indicate prohibitions, mandates, etc. The following table explains the colours used:

Table 1-1: Meaning of colours

Shape	Colour	Meaning	Example
	Red	Prohibition, fire prevention	Fire extinguisher, smoking prohibited
	Yellow	Danger, warning, caution	Information about dangers, hazards, etc.
	Green	Safety and information	First-aid equipment, escape route
	Blue	Mandate, reference	Specific procedure or use of protective equipment

1.4 Storage

The operating instructions must be accessible to the operator and operating personnel at all times. If the product is sold, the operating instructions must be passed on to the next owner.

1.5 Translation

The original operating instructions are the operating instructions in the German language. If other language versions of the operating instructions are available, the text of the original operating instructions remains binding. The other language versions are marked as translations of the original operating instructions.

1.6 Contact details of the manufacturer

MAX STREICHER GmbH & Co. Kommanditgesellschaft auf Aktien
Schwaigerbreite 17
94469 Deggendorf
Germany

Tel. +49(0)991 330-0 | Fax +49(0)991 330-180
info@streicher.de

1.7 Applicability of information

The information contained and the features described in this document (equipment and functions provided) apply only if the scope of delivery of the machine in question has the features described. The scope of delivery is specified in the contractual agreements. Reference to features in this document is not grounds for any claim to a change or addition to the scope of delivery. The contractually agreed scope of delivery is definitive and binding.

1.8 Proprietary notice

2 Product description

2.1 Product information

2.1.1 Use of the vacuum crawler

The vacuum crawler is to be used for the removal and vacuuming of mineral and organic solids in granular or liquid form.

2.1.2 Intended use

To guarantee operational safety and to ensure proper operation of the VC 70 the following must be observed:

- ❏ Operation is permitted only in technically perfect condition and with protective devices fitted.
- ❏ Any modifications or conversions to the machine require the approval of MAX STREICHER GmbH & Co. Kommanditgesellschaft auf Aktien.
- ❏ Use spare parts or accessories according to the spare parts list or with the approval of the manufacturer.
- ❏ Do not exceed the values specified in the Technical Data (see *Chapter Technical data Page 11*).
- ❏ Suction of bulk materials, see *Chapter Application limits Page 38*.
- ❏ Comply with the inspection and maintenance regulations.
- ❏ Observe the operating instructions.
- ❏ Use the machine only outdoors and above ground.
- ❏ As far as possible, the soil vacuumed up should not be cohesive.
- ❏ Stones that are vacuumed up must not exceed the size of railway ballast.

The VC 70 are designed for the specified use only. Any other use or use beyond that is considered to be improper use.

2.1.3 Precautions

Not intended for use:

- ❏ underground
- ❏ indoors
- ❏ in potentially explosive atmospheres (ignitable gas or dust mixtures)
- ❏ over 1000 metres above sea level

2.1.4 Service life

The VC 70 is designed for a service life of 10 years.

2.1.5 Ground

The ground on which the VC 70 is operated should meet the following requirements:

- ❏ Ground: Load-bearing capacity of the ground suitable for driving on with ordinary vehicles. Not intended for driving through water.

2.1.6 Operating locations

The operating locations VC 70 are explained in *Chapter Control and display elements Page 19* .

2.1.7 Ambient conditions

The VC 70 is designed for the following ambient conditions:

- ❏ 0°C to + 40°C
- ❏ max. 1,000 m above sea level
- ❏ Humidity: no restrictions

2.1.8 Danger areas

Fig. 2-1: Danger area in driving mode

Fig. 2-2: Danger area during emptying of the excavation material tank (tipping)

Fig. 2-3: Danger area during operation of the air lance/suction nozzle

2.1.9 Conformity

EG-Konformitätserklärung

gemäß der Maschinenrichtlinie 2006/42/EG

Hersteller:

MAX STREICHER GmbH & Co. KG aA
Schwaigerbreite 17
94469 Deggendorf

Hiermit erklären wir in alleiniger Verantwortung, dass die nachfolgend bezeichnete Maschine den Forderungen der Maschinenrichtlinie 2006/42/EG entspricht.

Weiterhin entspricht die Maschine der Outdoor-Richtlinie 2000/14/EG.

Beschreibung der Maschine: Saugraupe
Projektnummer:
Seriennummer(n):

Baujahr:

Durch nicht vom Hersteller oder Bevollmächtigten autorisierte Veränderungen an der oben beschriebenen Maschine wird diese Konformitätserklärung ungültig.

Für die Zusammenstellung der technischen Unterlagen ist verantwortlich:
Manuel Strumberger
Josef-Wallner-Straße 5a
94469 Deggendorf

Fundstelle der harmonisierten Normen:

- DIN EN ISO 12100:2011-03
- DIN EN 474-1:2020
- EN ISO 3744:1995
- EN 60204-1:2018
- DIN EN ISO 13849-1:2016-06

Deggendorf, den

Armin Kiendl
Geschäftsführer

2.1.10 Type plate

2.2 Technical data

2.2.1 Dimensions and weights

Table 2-1: Dimensions and weights

Description	Value Unit
Length	incl. suction hose 3300 mm
Width	1260 mm
Height	1950 mm
Empty weight	See type plate kg
Max. climbing ability	15°/27 %
Max. cross slope	15°/27 %

2.2.2 Conveying capacity and operating volumes

Table 2-2: Conveying capacity and operating volumes

Assignment	Description	Value Unit
Compressor	Max. working pressure	10 bar
	Max. conveying capacity	2.66 m³/h
Suction material container	Volume	350 litres
Fuel tank	Volume	60 litres

2.2.3 Power supply, interfaces and connections

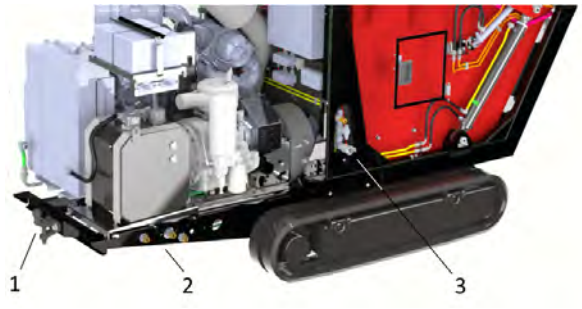


Fig. 2-4: Without enclosure

Fig. 2-5: With enclosure

Table 2-3: Interface - Supply

No.	Function	Specification
1	Trailer coupling	see *Chapter Hooking up/towing loads Page 33*
2	Oil/water drain	see *Chapter Draining operating liquids Page 56*
3	Air connections	Air lance connection
4	Water drain	Water separation of the excavation material tank
5	Tank nozzle	Interface for refuelling the vacuum crawler

2.2.4 Emissions

From the VC 70 sound emission produced.

- ❏ A-rated emission sound pressure level at the operator position 83 dB(A).
- ❏ The diesel engine complies with the legal requirements for use in the EU.

2.3 Direction and side conventions

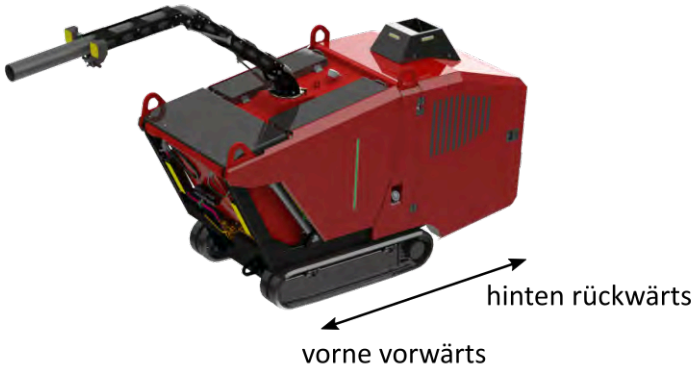


Fig. 2-6: Direction and side conventions

Right and left refer to the direction of forward travel.

3 Safety information

3.1 Presentation of safety instructions and information

3.1.1 Presentation of safety instructions

DANGER

Nature and source of the danger and possible consequence(s) of the danger.
➢ Measure(s) to be taken to avert the danger.

WARNING

Nature and source of the danger and possible consequence(s) of the danger.
➢ Measure(s) to be taken to avert the danger.

CAUTION

Nature and source of the danger and possible consequence(s) of the danger.
➢ Measure(s) to be taken to avert the danger.

NOTICE

Nature and source of the danger and possible consequence(s) of the danger.
➢ Measure(s) to be taken to avert the danger.

Table 3-1: Signal words of the warning instructions and their meaning

Signal word	Definition	Possible consequences of the danger
DANGER	Imminent danger.	Leads to serious physical injury or death.
WARNING	Potentially dangerous situation.	May cause serious physical injury or death.
CAUTION	Potentially dangerous situation.	May cause minor physical injury.
NOTE	Possible damage to the product or machine shut-down.	May cause damage to the product

3.1.2 Warning symbols

Warning, increased attention to sources of danger required

Warning of falling parts

Warning of crushing of body

Warning of crushing of hands

3.1.3 Presentation of information

INFORMATION

Instructions for use, accessories, tools etc.

➢ Details of the above information, if applicable.

The following symbols may appear:

Background information on an issue that is the subject of an action instruction.

Details of any tools or accessories required.

3.2 Product safety

The VC 70 corresponds to the state of the art and meets safety and health requirements. When used as intended (*Chapter Intended use Page 8*) and operated in perfect condition the VC 70 will not present any unknown hazards. However, the operating instructions and in particular the safety instructions must be observed at all times.

3.3 Organisational and operator-relevant information

3.3.1 Operator obligations

The operator of the VC 70 is responsible for the following measures:

- ❏ Compliance with occupational safety regulations for trench structures, wall stability, collapse protection, etc.
- ❏ Identifying hazards that may arise when using the machine at the site for, on or through underground supply infrastructure, roots of plants, etc.
- ❏ Appointing a person responsible for ensuring and monitoring the implementation of the aforementioned requirements.
- ❏ Personnel tasked with operating the machine must be instructed in its intended use. This instruction must be documented.
- ❏ Those tasked with loading and transporting the machine must have the appropriate traffic licences.
- ❏ Maintenance and servicing work must be assigned to qualified specialist personnel or carried out in a specialised workshop.

3.3.2 General requirements

To prevent hazards for individuals and damage to machines and the environment, the following general safety instructions must be observed by both the operator and the operating personnel:

- ❏ Read and understand the entire operating instructions
- ❏ Comply with the obligation to report and shut down the machine immediately in the event of malfunctions, irregularities or damage.
- ❏ Locate cause of leaks, unusual occurrences or noises and repair them.
- ❏ Never bridge, override or render safety equipment unusable.
- ❏ Carry out the prescribed maintenance work in compliance with the scheduled intervals.
- ❏ Persons under the influence of drugs, alcohol or medication must not operate the machine.
- ❏ Persons operating the machine must be at least 18 years of age.

3.3.3 Product

- ❏ Use of the VC 70 only for its intended purpose.
- ❏ The operator is responsible for compliance with the requirements of the German Industrial Safety Regulation (Betriebssicherheitsverordnung) and Workplace Ordinance (Arbeitsstättenverordnung). Outside Germany, the applicable national regulations for compliance with safety in the workplace must be observed.
- ❏ Within the company, it must be indicated that the operator (person who owns or leases the machine) is responsible for all aspects of the machine.
- ❏ Execution and documentation of periodic inspections.
- ❏ Ensuring the functional readiness of the VC 70.
- ❏ Proper disposal of all operating materials, operating liquids and defective parts.

3.3.4 Personnel and third parties

- ❏ Selection and deployment of employees who meet the requirements of the operating personnel (*Chapter Obligations of the operating personnel Page 17*).
- ❏ Regular professional instruction of the operating personnel.
- ❏ Ensuring the safety of third parties who are not among the operating personnel.

3.3.5 Safety, equipment and resources

- ❏ Provision of suitable lifting gear, ropes, chains, shackles, etc.
- ❏ Provision of padlocks, which are required to secure the machine against unintentional startup.
- ❏ Ensuring that during repair and maintenance work the VC 70 is secured against unintentional startup.
- ❏ Provision of suitable operating materials and consumables.
- ❏ Proper storage of operating materials and consumables.
- ❏ Publication and compliance with safety data sheets for the operating materials and consumables used.
- ❏ Protection of the control system against unauthorised external access (hacking attacks).
- ❏ Maintenance of the legibility of the safety, mandatory and prohibition signs.

3.3.6 Regular checks

- ❏ Safety regulations and instructions must be observed.
- ❏ Monitoring that the safety equipment is functioning properly.
- ❏ Safety and warning signs must always be present and legible at their intended location.

3.3.7 Technical documentation

- ❏ Provision of the complete technical documentation including operating instructions.
- ❏ Technical documentation including the operating instructions must be accessible at all times.

3.3.8 Obligations of the operating personnel

- ❏ Work in compliance with the recognised rules of occupational safety.
- ❏ Work on the machine only when fit for work, i.e. when not under the influence of alcohol, medication, mind-altering substances, extreme fatigue, etc.
- ❏ The VC 70 may only be used by trained operating personnel authorised by the operator.
- ❏ Personnel must have reached the minimum working age according to statutory national regulations.

3.4 Protective and monitoring equipment

The VC 70 have the following safety and monitoring devices and warning signals:

- ❏ Horn

3.5 Personal protective equipment

Wearing of head protection, safety footwear, protective clothing (flame-retardant) and face protection is required at all times; hearing protection must always be at hand. The operator specifies the use and availability of additional protective equipment on the basis of the risk assessment for the work to be completed.

Wear hearing protection

Wear head protection

Wear hand protection

Wear safety shoes

Wear protective clothing

Wear face shield

3.6 Environmental protection

National and local statutory regulations for protecting the environment must be observed. In-house regulations must take account of the manufacturer's instructions.

NOTICE

Environmentally harmful substances can escape, which can lead to environmental pollution.
The following environmental protection principles must be observed:

- ➢ Avoid waste
- ➢ Clear away waste
- ➢ Dispose of waste

The following instructions must be observed in relation to environmental protection.

- ❏ Ensure a drip pan and binding agent are at hand before commencing work on the hydraulics
- ❏ Arrange for proper removal of escaped pollutants to be carried out by qualified personnel only
- ❏ Dispose of parts and operating materials properly
- ❏ Inform the relevant authorities immediately if pollutants escape into the environment in an uncontrolled way

4 Control and display elements

4.1 Overview of control points

Fig. 4-1: Overview of control points

Table 4-1: Overview

No.	Operation	Description of function
A	Suspending suction hose	Head angle and AWD of the suction hose.
B	Fluid level indicator	*Chapter Fluid level Page 23*
C	Position of the suction arm	Release and locking of suction arm position.
D	Fault message display	*Chapter Warning lights Page 26*
E	Local control panel	*Chapter Local control panel Page 23*
F	Radio remote control	*Chapter Radio remote control Page 21*
G	Water drain - excavation material tank	Draining the excavation material tank
H	Compressed air ball valve	Activates the airflow for the compressed air lance.
I	Tank connection	Engine start / Emergency stop / Display of information and settings.
J	Main battery switch	*Chapter Main battery switch Page 25*

4.2 Radio remote control

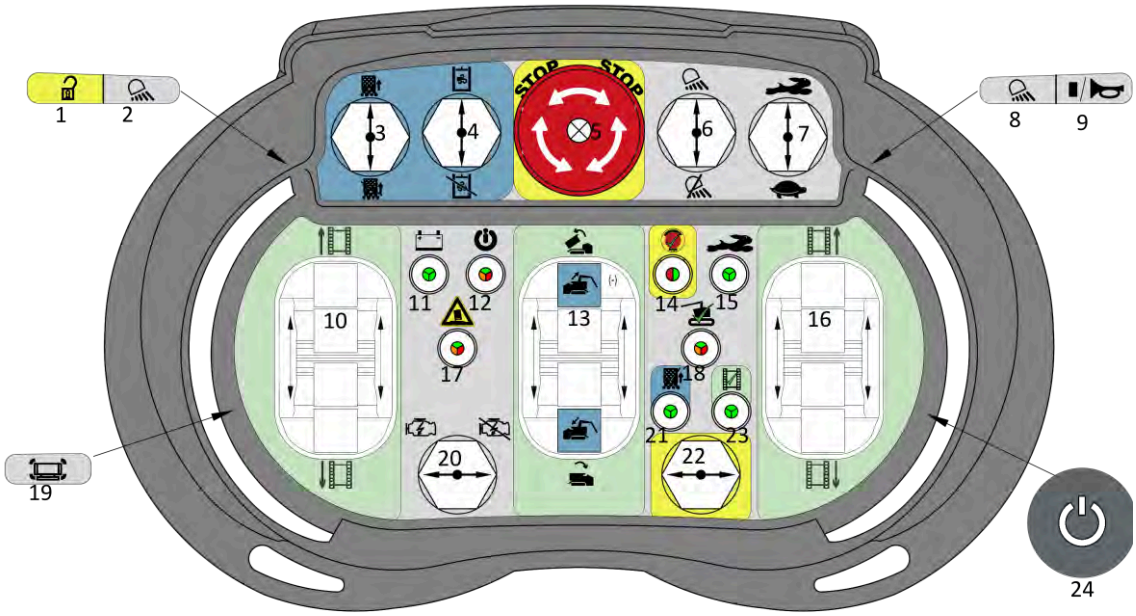


Fig. 4-2: Radio remote control

Table 4-2: Radio remote control

No.	ID	Assignment	Description of function	Element	Marking
1	RC01	Control	Disabling of the functions of the remote control	Key switch	
2	LT02	Lighting	Lighting left	Key switch	
3	WP01	Work process	Vacuum/turbine	Selector switch	
4	CA01	Compressed air circuit	Compressor	Selector switch	
5	SI01	Safety	Stops all functions. However, the diesel engine stays on.	Emergency stop switch	EMER-GENCY STOP
6	LT01	Lighting	Work lighting	Toggle switch	
7	FW02	Chassis	Driving mode/gear change slow/fast Suction mode: Suction power change	Selector switch	
8	LT03	Lighting	Lighting right	Key switch	
9	CL06	Control	Activates the signal horn	Pushbutton	
10	FW04	Chassis	Crawler chassis left (forward / reverse)	Joystick	
11	CL04	Control	Battery status / operating status	Indicator lamp	
12	RC03	Control	Radio remote control status	Indicator lamp	
13	WP05	Work process	Tilt / lower container	Joystick	

No.	ID	Assignment	Description of function	Element	Marking
			Raise / lower suction arm		
14	CL01	Control	Emergency stop status	Indicator lamp	
15	FW03	Chassis	Status display fast movement active	Indicator lamp	
16	FW05	Chassis	Crawler chassis right	Joystick	
17	CL02	Control	Tipping hazard status	Indicator lamp	
18	CL03	Control	Overall vacuum crawler status	Indicator lamp	
19	WP06	Work process	Shake container	Joystick	
20	DM01	Drive motor	Switching the drive motor on and off	Selector switch	
21	WP02	Work process	Vacuum/turbine active	Indicator lamp	
22	SI02	Safety	Safe deactivation hydraulics / enabling of suction/blowing. Switching between movement drive and movement of suction arm.	Selector switch	
23	FW01	Chassis	Chain chassis status active	Indicator lamp	
24	RC02	Control	Radio remote control On / Off / Reset	Pushbutton	

4.3 Fluid level

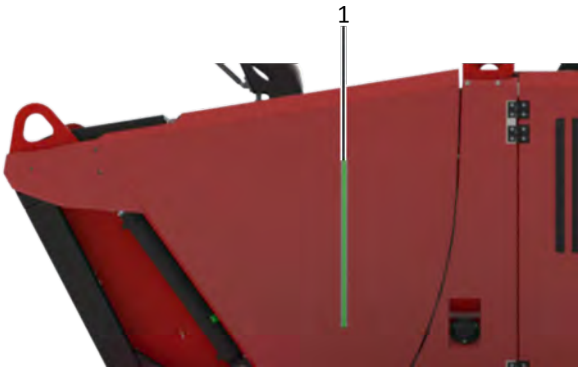


Fig. 4-3: Fluid level indicator

Table 4-3: Fluid level indicator

No.	ID	Assignment	Description of function	Element	Marking
1	WP04	Work process	Fluid level indicator / bulk material container (3-stage) up to 50% green; up to 90% orange; above 90% red	Indicator light:	---

4.4 Local control panel

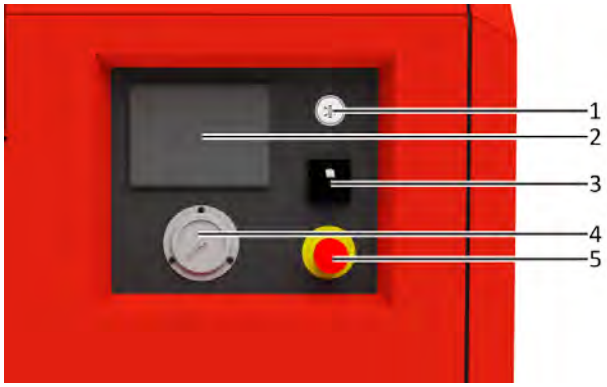


Fig. 4-4: Local control panel

Table 4-4: Radio remote control

No.	ID	Assignment	Description of function	Element	Marking
1	CL09	Control	Manual filter cleaning.	Pushbutton	
2	CL08	Control	Engine panel	Screen	
3	PW03	Energy supply	Ignition On/Off	Key switch	IGNITION
4	HY03	Hydraulics	System pressure	Manometer	HYDRAULIC SYSTEM PRESSURE
5	SI01	Safety	Stops all functions. However, the diesel engine stays on.	Emergency stop switch	EMERGENCY STOP

4.5 Air connections

Fig. 4-5: Air connections

Table 4-5: Radio remote control

No.	ID	Assignment	Description of function	Element
1	CA03	Compressed air circuit	Opens/closes supply to compressed air lance	Hand lever

4.6 Drain cock on the container

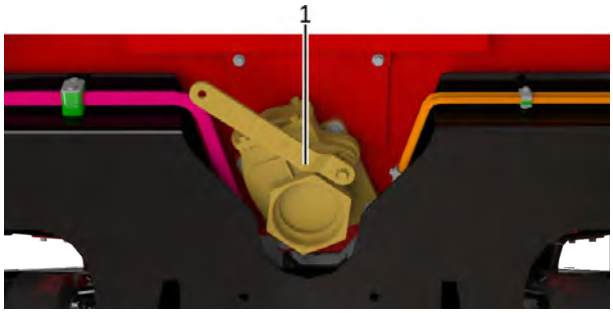


Fig. 4-6: Drain cock on the container

Table 4-6: Drain cock on the container

No.	ID	Assignment	Description of function	Element
1	DR01	Drainage	Water drainage suction material container.	Hand lever

4.7 Drain on the pressure vessel

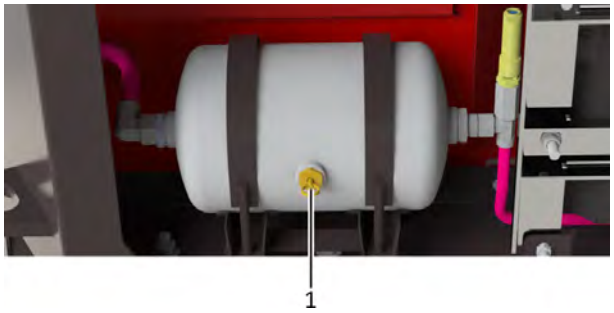


Fig. 4-7: Drain on the pressure vessel

Table 4-7: Drain on the pressure vessel

No.	ID	Assignment	Description of function	Element
1	DR02	Drainage	Drainage compressed air tank	Hand lever

4.8 Main battery switch

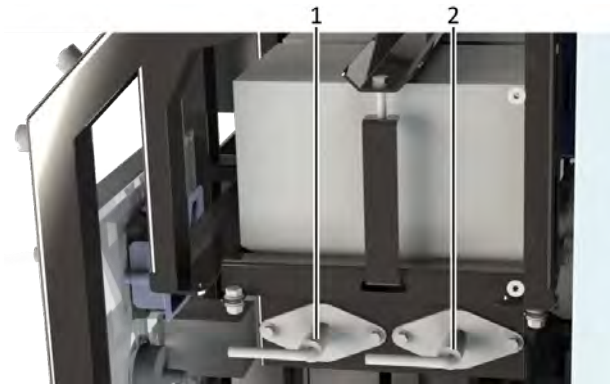


Fig. 4-8: Main battery switch

Table 4-8: Main battery switch

No.	ID	Assignment	Description of function	Element
1	PW01	Energy supply	Disconnects the negative pole from the battery.	Main switch
2	PW02	Energy supply	Disconnects the positive pole from the battery.	Main switch

4.9 Charger / battery / remote control

Fig. 4-9: Charger / battery / remote control

Table 4-9: Charger / battery / remote control

No.	ID	Assignment	Description of function	Element
1	RC04	Radio remote control	flashes during active charging operation lights up when fully charged	LED

4.10 Warning lights

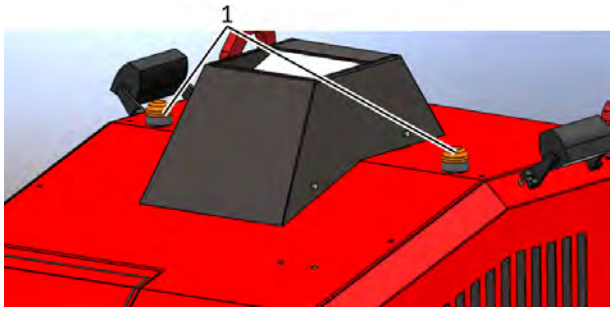


Fig. 4-10: Warning lights

Table 4-10: Warning lights

No.	ID	Assignment	Description of function	Element
1	CL07	Control	Flashes during operation of the engine.	Warning lights

4.11 Hydraulic components

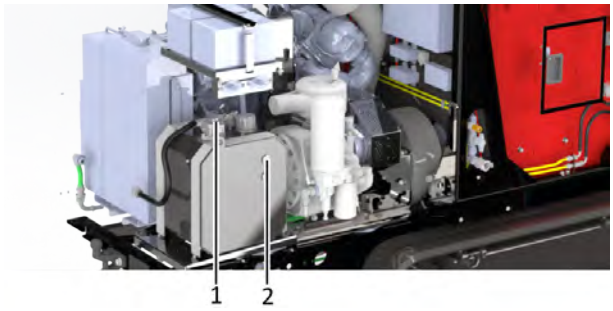


Fig. 4-11: Hydraulic components

Table 4-11: Hydraulic components

No.	ID	Assignment	Description of function	Element
1	HY02	Hydraulics	Soiling of return filter	Manometer
2	HY01	Hydraulics	Fluid level / oil tank	Inspection glass

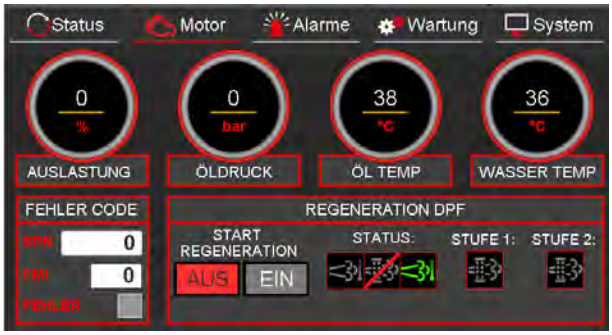
4.12 Engine panel - Visualisation

Homepage of the visualisation with display of the current operating data and the buttons for navigation to the pages:

- ❏ Status
- ❏ Engine
- ❏ System
- ❏ Alarms

Operation and status displays for the engine:

- ❏ Operating parameters
- ❏ Regeneration of catalytic converter
- ❏ Diagnostic messages from engine management

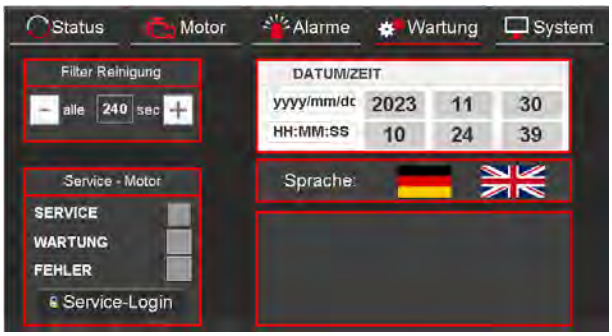


Error messages:

- ❏ Display of the current pending messages
- ❏ Archive of past messages.

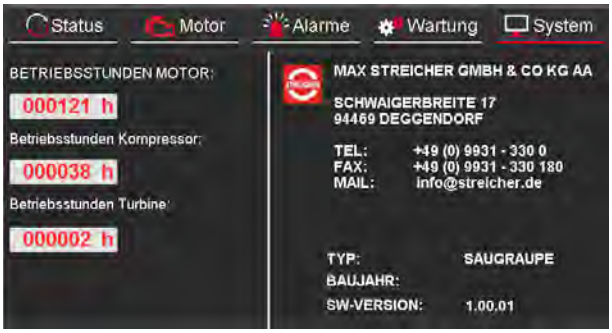
Settings

- ❏ Setting of date + time
- ❏ Language setting
- ❏ Time setting for filter cleaning
- ❏ Service login only on request



Machine-specific data:

- ❏ Serial number
- ❏ Operating hours
- ❏ Generation:
- ❏ Software version



5 Operation

5.1 Referencing of the controls

In the instructions for operation, the controls from the *Chapter Control and display elements Page 19* are used. The following table explains the context and appearance of the referenced controls.

Table 5-1: Controls referenced

Type	Example	Appearance	Meaning	Occurrence
Type of control	Main switch	Normal text	Specifies the type of control or display	Always
Reference	[TS05]	Numerical or alphanumerical in square brackets	Establishes the connection to the *Chapter Control and display elements Page 19* .	Always
Labelling	MAIN SWITCH	Only capital letters	Label text on control or display	Only if present
Switching option	*'Aus'*	Italic text in single quotation marks	Switch positions of a switch, each with the following effect	Only if present

INFORMATION

The data in the table is only an example and differs from the actual data.

5.2 General information

NOTICE

Unsuitable ambient conditions and environmental factors can cause damage to the chassis chains.

- ➢ Avoid prolonged exposure of the rubber chains to petrol, diesel, engine or hydraulic fluid.
- ➢ Do not expose to direct sunlight or weathering during extended periods of shutdown.
- ➢ After use in a salty environment, the rubber caterpillar tracks must be thoroughly washed with water.

5.3 Hitching

⚠ WARNING

Incorrect hitching of the machine can result in serious injury or death from falling objects.

- ➢ Use a hanger with a length of at least 3 m.
- ➢ Pay attention to the weight specifications on the type plate.

INFORMATION

Depending on the loading condition of the machine, the machine may hang off the horizontal.

Fig. 5-1: Hitching

5.4 Towing

Fig. 5-2: Towing points

Should the machine need to be towed, the following attachment points are provided for this purpose.

- ❏ The trailer coupling
- ❏ Welded lugs on the frame

INFORMATION

The engine of the vacuum crawler cannot be used for towing.

- ➢ The vacuum crawler can only be dragged over the ground with locked chains.

5.5 Transport

Fig. 5-3: Lashing points

To load the machine, proceed as follows:

1. Start the engine (see *Chapter Starting and stopping the engine Page 36*).
2. Empty the suction material container (see *Chapter Emptying the suction material container Page 46*).
3. Bring the suction arm into transport position and secure it (see *Chapter Page*).
4. Drive (see *Chapter Driving and steering Page 37*) the machine up the ramp onto the loading area.
5. Start the engine (see *Chapter Starting and stopping the engine Page 36*).
6. Secure the load at the lashing points .
7. Stow the radio remote control (see *Chapter Remote control charging Page 49*).

⚠ WARNING

Overloading the trailer can cause serious or fatal injury.

➢ Trailer payload: 2.7 t with empty suction material container.

➢ Trailer payload: 3.5 t with the suction material container not emptied.

⚠ WARNING

Overturning the machine can cause serious injury or death by crushing people.

➢ Keep to the maximum slope of 1 metre in height over a distance of 4 metres (15°).

➢ Only drive on level surfaces when the trough is not down.

5.6 Hooking up/towing loads

Fig. 5-4: Hooking up/towing loads

INFORMATION

The following operating loads apply to the trailer coupling:

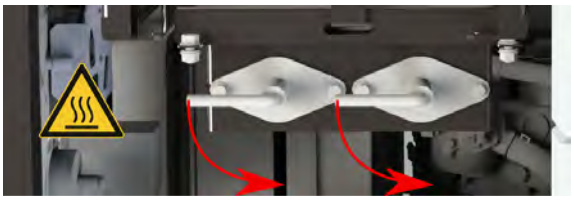
- ➢ Maximum weight tractive force: 1,500 kg
- ➢ Drawbar load: 150 kg

5.7 Engine start - Preparations

Before starting the machine, carry out the following preparations:

Turn the two main battery switches [PW01] + and [PW02] - downwards.

The levers can be found behind the engine cover on the side of the control panel.

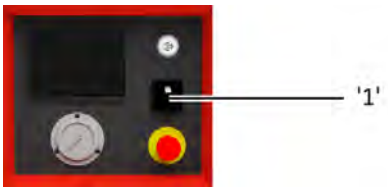


WARNING

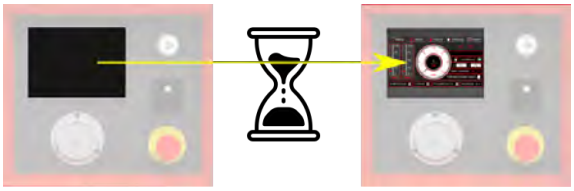
Touching hot surfaces can cause burn injuries.

➢ Wear gloves and do not touch parts of the engine

Move the selector switch [PW03] ZÜNDUNG into position *'1'*.



It can take a few minutes for the control system to start up.
Wait until the start screen is displayed.



INFORMATION

If the displays do not come on or the machine does not respond:

➢ Check the switch position of the main battery switches. [PW01] + and [PW02] - or

➢ Charge the battery (see *Chapter Charging battery Page 49*).

Check the fuel tank level on the engine panel [CL08]. To start using the Vacuum Crawler, the tank should be filled 50%. To fill the machine, see *Chapter Page* .

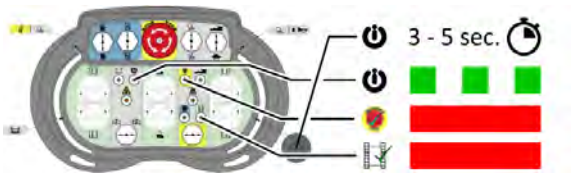
5.8 Enabling remote control

To enable the remote control, proceed as follows:

Release the emergency stop switch [SI01] NOT-AUS.

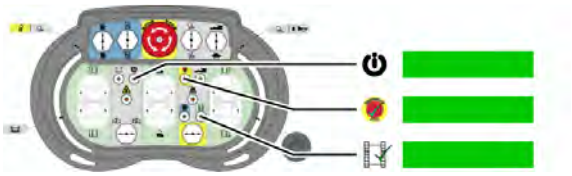
Press and hold the switch [RC02] ⏻ for at least 3 seconds until the following display appears:

- ❏ The LED [RC03] ⏻ flashes green.
- ❏ The LED [CL01] and [FW01] turn red.



Acknowledge the error messages by pressing the switch twice (double-click) [CL06] ▮/▶ until all error messages have been confirmed.

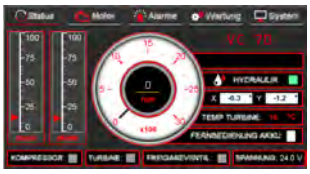
The remote control is ready for operation when the LEDs [RC03] ⏻, [CL01] and [FW01] turn green.



Check the charge level of the radio remote control on the engine panel [CL08]. To start using the Vacuum Crawler, the display should be green. To charge the radio remote control, see *Chapter Remote control charging Page 49*.

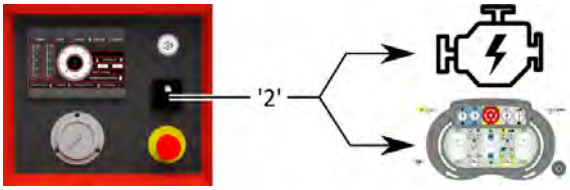
5.9 Starting and stopping the engine

Carry out the preparations for starting. *Chapter Engine start - Preparations Page 34* .

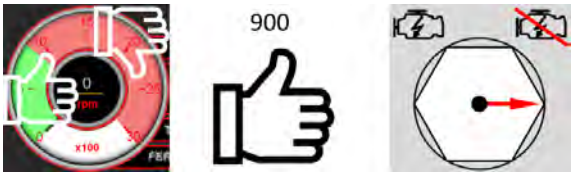


Enable the radio remote control *Chapter Engine start - Preparations Page 34* .

Turn the key switch [PW03] ZÜNDUNG into position *'2'*.
The engine starts.



The engine can now be stopped with the key switch [DM01] :
stops the engine.



NOTICE

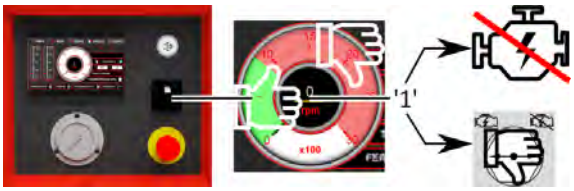
Switching off the engine when running under load can damage the machine.

➢ Switch off the engine only when idling.

The engine can then also be started again with the key switch [DM01] :
starts the engine.

Turning the selector switch [PW03] ZÜNDUNG into position *'1'*:

- ❏ stops the engine and
- ❏ prevents operation by remote control.



5.10 Driving and steering

⚠ WARNING

Moving the remote-controlled machine can cause serious injury or death by crushing people outside the field of vision.

➢ Only move the machine into your field of vision.

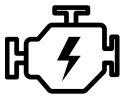
⚠ WARNING

Overturning the machine can cause serious injury or death by crushing people.

➢ Keep to the maximum slope of 1 metre in height over a distance of 4 metres (15°).

➢ Only drive on level surfaces when the trough is not down.

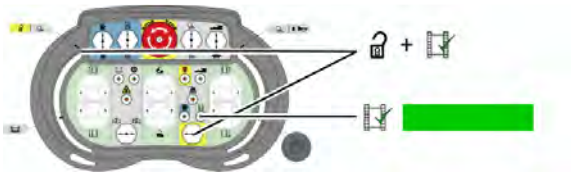
Start the engine (*Chapter Starting and stopping the engine Page 36*).



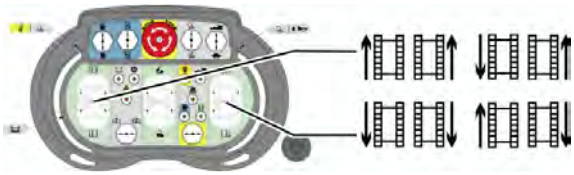
Enable the radio remote control *Chapter Engine start - Preparations Page 34* .

Enable drive:

- ❑ Press and hold the key switch [RC01] .
- ❑ Move the key switch [SI02] towards .
- ❑ The LED [FW01] comes on when the machine is ready.



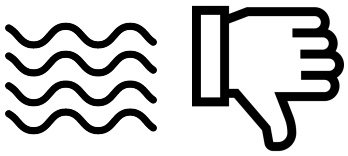
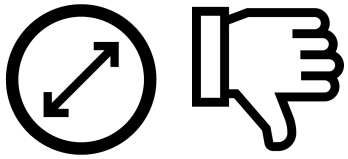
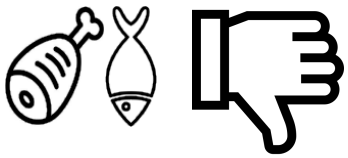
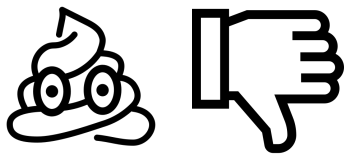
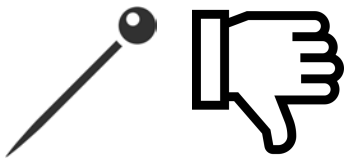
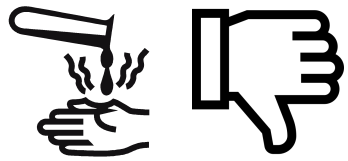
Move the chassis with the joystick [FW05] and [FW06] towards or .



5.11 Application limits

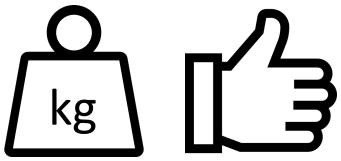
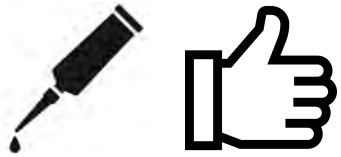
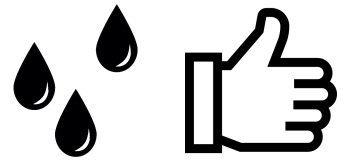
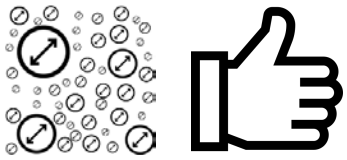
Forbidden suction material

Table 5-2: Forbidden suction material

Image	Description	Example
	Flammable gases, material components, granulates or dusts.	Sawdust, grain flour, sugar, coal, gas, propellants, etc.
	Water volume	Pumping out of flooded or partially filled pits, basements, containers, barrels, tubs, etc.
	Bulk materials with very low density below 200 kg/m^3.	Feathers, packaging materials, polystyrene, leaves, fabric, wool, sawdust, etc.
	Objects with a diameter or edge length greater than 100 mm.	Wood waste, paving stones, etc.
	Waste from food production from animal components.	Meat, poultry or fish waste
	Waste from animal husbandry or sewer cleaning.	Cow manure, slurry, dung, contents of septic tanks
	Objects with sharp edges or long thin objects with pointed ends.	Glass splinters and fragments of glass, nails, screws, needles, etc.
	Corrosive substances or substances to which corrosive substances stick or which develop corrosive properties together with water.	Acid and alkaline solutions, intensive cleaning agents, limescale remover.

Permitted suction material

Table 5-3: Permitted suction material

Image	Description	Example
	Materials with the usual density of soil and rock equate to approx. 1,600 kg/m³ to 2,600 kg/m³.	Gravel, sand, earth, screed, etc.
	Cohesive soil mixtures with organic content.	Marl, clay
	Damp and wet suction material and small amounts of water.	Sucking out of puddles or similarly small water accumulations of little depth and area.
	Granulates and soil with particles of different grain sizes.	Sand, gravel, track ballast with grading curve, wood chips.

5.12 Suction mode

5.12.1 Safety information

⚠ WARNING

Touching live cables can result in serious injury or death from electric shock.

➢ Stop work immediately when digging up damaged cables.

⚠ WARNING

Loud working noises from the machine can cause hearing damage.

➢ Wear hearing protection

⚠ WARNING

Stones thrown out by the air flow of the air lance can cause injuries.

➢ Wear gloves and protective clothing.

➢ Wear a face shield.

⚠ CAUTION

Being sucked in can cause minor injuries.

➢ Do not put any part of the body in the suction hose.

➢ Make sure that no one is in the immediate vicinity of the suction inlet.

⚠ CAUTION

Working on the suction hose is tiring.

➢ Schedule breaks or change personnel.

! NOTICE

Hot exhaust gases from the diesel engine cause damage to the suction hose.

➢ Do not put the suction hose over the exhaust.

! NOTICE

Sucking up large stones can cause damage to the machine

➢ Do not suck up stones that are larger than railway ballast.

NOTICE

Filters will be damaged if you empty large accumulations of water, i.e. if you pump it out or remove all the liquid.

➢ Only suck up small volumes of water.

➢ Never immerse the suction nozzle fully below the water surface.

➢ When water is sucked in, air must always be allowed to 'flow in'.

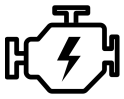
NOTICE

Moisture in the filters causes the filters to clog and suction power is reduced as a result.

➢ Dry the filters before vacuuming dusty materials (e.g. dry mineral granules) again.

5.12.2 Suction mode

Start the engine (*Chapter Starting and stopping the engine Page 36*).



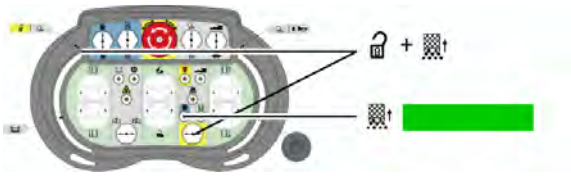
Enable the radio remote control *Chapter Engine start - Preparations Page 34* .

Enable suction mode:

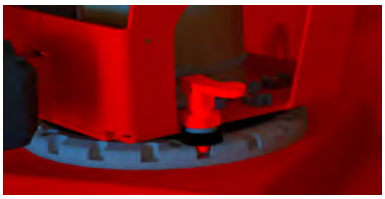
❑ Press and hold the key switch [RC01] .

❑ Move the key switch [SI02] towards .

❑ The LED [WP02] comes on when the suction arm is ready.



Unlock the suction arm's rotation axis.

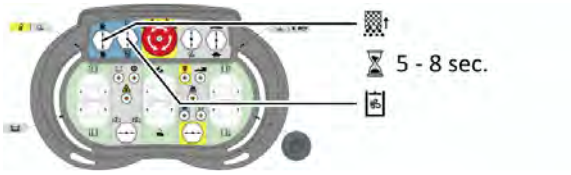


Switch on the compressor and the suction turbine:

❑ Selector switch [CA01] towards ,

❑ wait 5 to 8 seconds,

❑ Selector switch [WP01] towards .



NOTICE

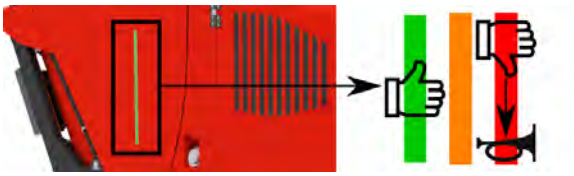
The engine will malfunction if you switch on the compressor and suction turbine at the same time.

➢ Switch the two units on one after the other, waiting 5 - 8 seconds in between.

Move the suction arm with the joystick [WP05] towards or .

The suction power can be changed [FW02] using the toggle switch.
increases suction power
reduces suction power

Check the fluid level of the suction material container occasionally and empty (*Chapter Emptying the suction material container Page 46*) it if it is full.



5.12.3 Disruptions to soil removal

Disruptions to soil removal can have the following causes:

- ❏ The suction material container is full. Empty the suction material container (see *Chapter Emptying the suction material container Page 46*).
- ❏ The exhaust air filters must be cleaned. Options for settings or manual triggering can be found in *Chapter Cleaning filter Page 45*.
- ❏ The suction line is blocked. Switch off the machine (see *Chapter Stopping suction mode Page 47*) and clean the suction hose.
- ❏ Suctioning external air. Check for leaks from the cover, the transition from the suction material container to the suction turbine and the filter covers.
- ❏ The machine switches off due to excessive exhaust air temperatures at the suction turbine (95°C). This occurs because the air flow stalls as a result of the suction nozzle being immersed too deeply in the conveyed material.

NOTICE

Immersing the suction nozzle in the conveyed material causes the air flow to stall and the suction turbine to overheat.

➢ Keep the opening of the suction nozzle above the suction material.

➢ Do not immerse the suction nozzle in the suction material

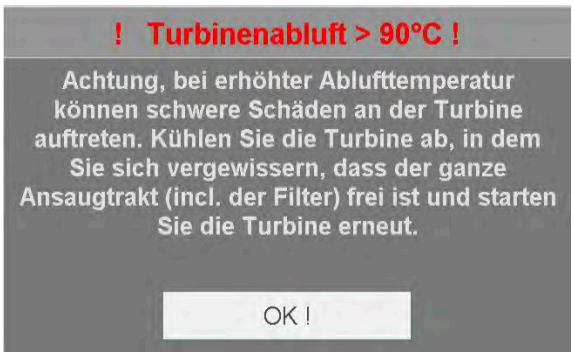


Fig. 5-5: Warning message - overheating of suction turbine

NOTICE

Blockages in the suction flow can damage the machine as a result of overheating of the suction turbine.

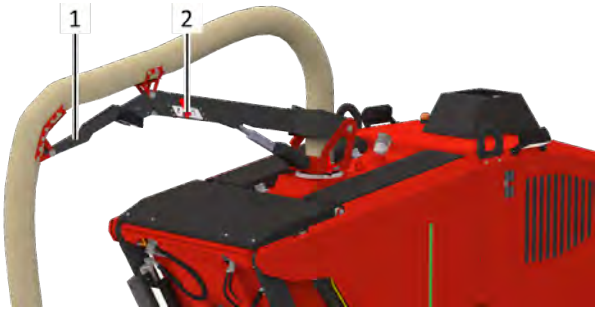
➢ Pause suction mode if the 90° warning message appears.

➢ Remove the blockage or fix the constriction in the suction hose.

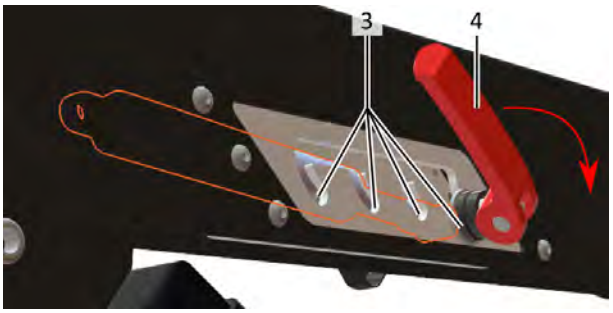
➢ Clean exhaust air filters.

5.13 Setting head angle of suction arm

Adjust the head angle of the suction arm **(1)** using the **(2)** clamp.



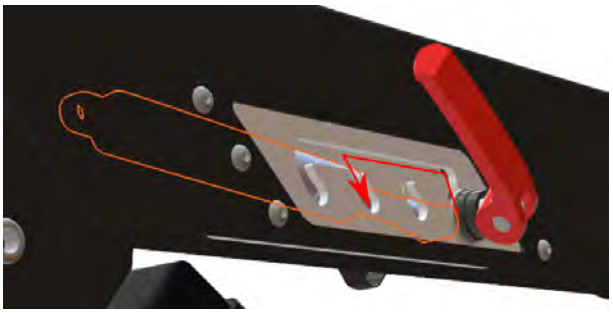
Open the lever **(4)** of the **(2)** clamp.



Position **(1)** suction arm:

- ❏ Manually **(1)** lift suction arm slightly
- ❏ Lift clamp **(2)** out of the latching cam **(4)** and hold it in place.
- ❏ Manually **(1)** move suction arm into desired position.

Lower suction arm slightly and **(2)** place clamp into appropriate latching **(3)** cam.



Open the lever **(4)** of the **(2)** clamp.

5.14 Cleaning filter

5.14.1 Information

NOTICE

When you clean the filter, the suction power and the air volume at the lance are impaired.

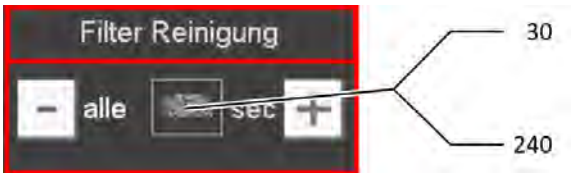
➢ Reduce cleaning activities to the required minimum.

5.14.2 Automatic cycle

Switch to the display screen on page SETTINGS.

Set the desired interval for automatic cleaning.

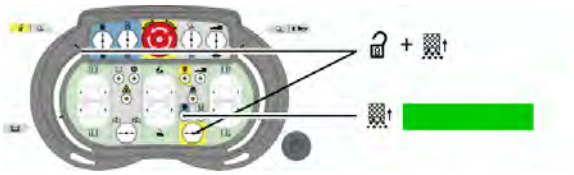
- ❏ Minimum: 30 seconds
- ❏ Maximum: 240 seconds



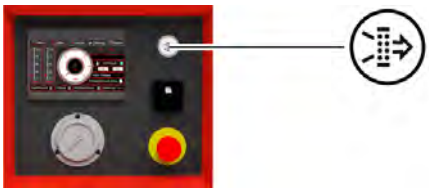
The filters are automatically cleaned if suction mode is active and the compressor is running (see *Chapter Suction mode Page 41*).
The compressor must be switched on [CA01] with the selector button ( ).

5.14.3 Manual triggering

Enable suction mode (see *Chapter Suction mode Page 41*).



Press the key switch [CL09] on the control panel.
The operation finishes automatically once it is complete.



5.15 Emptying the suction material container

⚠ WARNING

An excessive ramp slope can cause serious injury or machine damage due to overturning.

➢ Move the machine on a level surface (maximum 6° slope: corresponds to approx. 1 m height over 10 m distance).

⚠ WARNING

When emptying the suction container, injuries can be caused by falling parts.

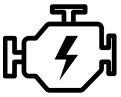
➢ Keep a sufficient distance away from the vacuum crawler.

⚠ WARNING

Getting caught between moving parts of the vacuum crawler can cause serious injuries.

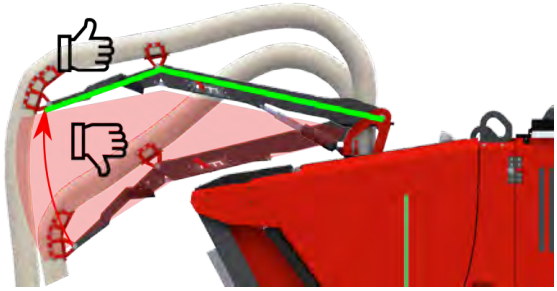
➢ Keep a sufficient distance away while the bulk material container is moving.

Start the engine (*Chapter Starting and stopping the engine Page 36*).

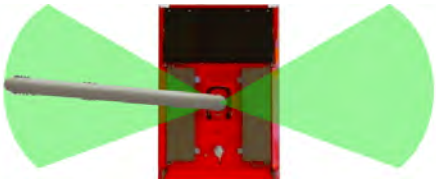


Enable the radio remote control *Chapter Engine start - Preparations Page 34* .

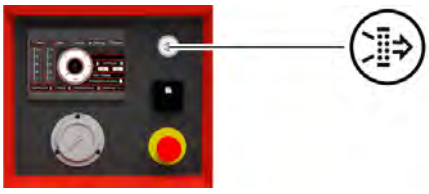
Enable suction mode (see *Chapter Suction mode Page 41*) and use the joystick to [WP05] raise the suction arm to the top position.



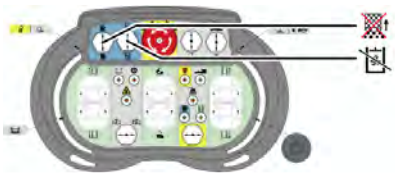
Turn the suction arm to the side and lock it there.



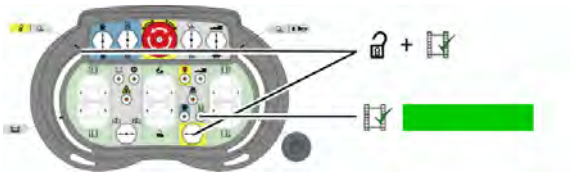
Clean filter manually (see *Chapter Manual triggering Page 45*).



Finish suction mode (see *Chapter Stopping suction mode Page 47*) until this is active.



Enable driving mode (see *Chapter Driving and steering Page 37*).



NOTICE

Having the suction arm in the wrong position when tipping the excavation material container can cause damage to the machine.

➢ Move the arm to the top position.

➢ Swing the arm to the side

Set the driving speed by moving the switch [FW02] towards the slow range.

Empty the container:

raises and opens the suction material container.

activates the vibrator.

closes and lowers the suction material container.

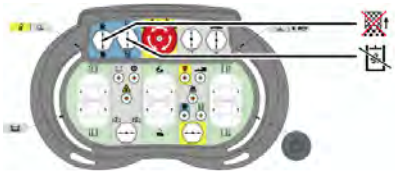
5.16 Stopping suction mode

To stop suction mode, proceed as follows:

Switch off the compressor and the suction turbine:

❑ Selector switch [CA01] towards .

❑ Selector switch [WP01] towards .



INFORMATION

When the machine is at a standstill for an extended period of time, the main battery [PW01] + and [PW02] - must be switched off to prevent the battery from discharging.

➢ See *Chapter Switching off and shutting down Page 48*.

➢ Switch off the main switches [PW01] + and [PW02] - at the earliest one minute after stopping the engine.

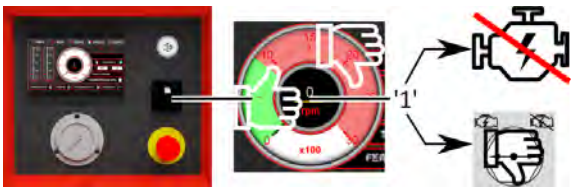
5.17 Switching off and shutting down

To switch off and shut down, proceed as follows:

Empty the suction material container
(see *Chapter Emptying the suction material container Page 46*).

Turning the selector switch [PW03] ZÜNDUNG into position *'1'*:

- ❏ stops the engine and
- ❏ prevents operation by remote control.

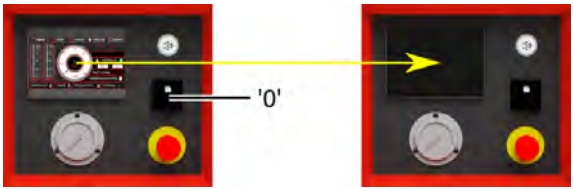


NOTICE

Switching off the engine when running under load can damage the machine.

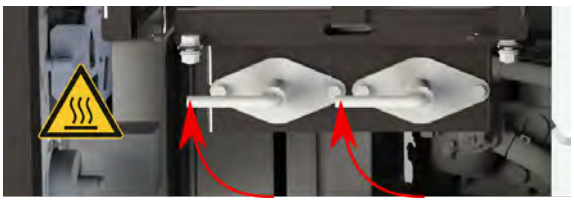
➢ Switch off the engine only when idling.

Move the selector switch [PW03] ZÜNDUNG into position *'0'*.



Turn the two main battery switches [PW01] + and [PW02] - to the horizontal position.

The levers can be found behind the engine cover on the side of the control panel.



WARNING

Touching hot surfaces can cause burn injuries.

➢ Wear gloves and do not touch parts of the engine

NOTICE

Switch off the main battery switches when the ignition is switched on [PW03] ZÜNDUNGor the following error message will appear less than a minute after switching off the ignition:

➢ SPN: 2634 FMI: 11 Early opening defect main relay.

➢ First turn the ignition key to position *'0'* .

➢ Wait at least a minute.

➢ Then use main battery switches

INFORMATION

You can acknowledge the error message by switching the ignition off and on again.

5.18 Remote control charging

To charge the remote control, proceed as follows:

- ❏ Remove the battery on the underside of the remote control.
- ❏ Open the remote control compartment on the back of the vacuum crawler and insert the empty battery into the charging tray provided.
- ❏ When the battery is fully charged, remove it from the charging tray and put it back into the battery compartment of the remote control.
- ❏ Finally, close all open compartments.

5.19 Charging battery

In general, you only need to charge the battery after a long period of inactivity. The electrical-system battery is constantly being charged during regular operation. To charge the battery, proceed as follows

1. Stopping the machine
   Stop and switch off engine, see *Chapter Switching off and shutting down Page 48*.
2. Disconnect the loads from the battery.
   Main battery switch [PW01] + and [PW02] - turn downwards.
3. Loosen the 2 screws of the battery box and slightly pull the battery box out.
4. Checking the condition of the battery
   Remove any dirt from the vent tubes.
5. Connect the red cable of the charger to the positive terminal of battery 1.
6. Connect the black cable of the charger to the negative terminal of battery 2.
7. Connect the charger to the mains supply.
8. Completing the charging process
   At the end of the charging process, first disconnect the charger from the mains supply before disconnecting the cables from the battery.
9. Push the battery box back and tighten the fastening screws.

⚠ WARNING

Ignition of oxyhydrogen can cause serious injury.

➢ Ensure there is good ventilation when charging in closed rooms.

NOTICE

If the charger is not connected properly, this can cause damage to the machine. The machine's battery system consists of 2 x 12 V batteries connected in series.

➢ Connect the red cable of the charger to the positive terminal of battery 1.

➢ Connect the black cable of the charger to the negative terminal of battery 2.

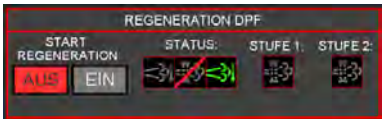
INFORMATION

The charger must be suitable for charging 24 V lead-acid batteries. Configure the charger according to the relevant device instructions.

5.20 Diesel regeneration

5.20.1 Carrying out DPF regeneration

After a long period of operation, the machine automatically sends a message to carry out DPF regeneration. This program can either be postponed with the [OFF] button or started with the [ON] button.



When DPF regeneration is started, a fire hazard warning appears. After you have read this carefully, confirm it with the [OK !] button

Regeneration stage 1 then starts:
Press the [OK !] button

Regeneration stage 2 then starts:
Press the [OK !] button

Requirement stage 2 only comes into play when stage 1 execution has been postponed too often.

NOTICE

Repeated postponement of DPF regeneration can cause engine damage.

➢ Only postpone DPF regeneration if absolutely necessary.

NOTICE

High temperatures may occur during the Regenerate Engine program.

➢ Do not operate the program under flammable structures/objects/plants.

5.20.2 DPF displays

	No regeneration requirement	SPN 3701 = 0 SPN 3703 = 0		Regeneration not active	SPN 3700 = 0
	Regeneration prohibited	SPN 3700 = 0 SPN 3703 = 1		Regeneration required stage 1 Dynamic Reg. Automatic standstill reg. possible	SPN 3701 = 1 SPN 3703 = 0
	Regeneration required stage 1 Regeneration prohibited	SPN 3701 = 1 SPN 3703 = 1		Regeneration required stage 2 Standstill reg. requested	SPN 3701 = 2 SPN 3703 = 0
	Regeneration required stage 2 Regeneration prohibited	SPN 3701 = 2 SPN 3703 = 1		Regeneration active dynamic or standstill regeneration	SPN 3700 = 1
	Regeneration active standstill regeneration exhaust gas temp. > 500°C	SPN 3700 = 1 SPN 3696 = 1 SPN 3698 > 1	Regeneration inhibit	Regeneration prohibition issue cancel	. SPN 3695 = 1 SPN 3695 = 0
Regeneration force	Start standstill regeneration	SPN 3696 = 1	Neutral gear (N) flashes	Driving application regeneration does not start because of neutral gear switch	SPN 3696 = 1 SPN 3708 = 1
Parking brake (P) flashes	Driving application regeneration does not start because of parking brake switch	SPN 3696 = 1 SPN 3710 = 1			

6 Maintenance and repair

6.1 Safety information

⚠ WARNING

Dismantling or disabling safety devices can cause serious injury.

➢ After carrying out maintenance work, refit the safety devices and check their function.

⚠ WARNING

Switching on the machine while maintenance work is in progress can cause serious or fatal injury.

➢ Switch off the machine safely and secure it against unauthorised restarting.

⚠ WARNING

Leakage of media under pressure can cause serious injury.

➢ Switch off the machine safely and secure it against unauthorised restarting.

➢ Release the pressure from pipes and containers before starting maintenance work.

⚠ WARNING

Live parts can cause serious injury or death from burns.

➢ Switch off the machine safely and secure it against unauthorised restarting.

⚠ WARNING

Hot surfaces and operating liquids can cause burns.

➢ Wear personal protective equipment.

➢ Let the machine cool down sufficiently before starting maintenance work.

! NOTICE

Incorrect results when checking the levels can cause damage to the machine.

➢ Place the machine on a level surface for the checks.

➢ Let the machine cool down sufficiently before carrying out the checks.

! NOTICE

Leakage of operating liquid can cause environmental damage.

➢ Avoid leakage of liquids.

➢ Collect spilled or leaked operating liquids and dispose of them properly.

! NOTICE

Objects left in the machine after cleaning or maintenance can cause damage to the machine.

➢ After cleaning or maintenance, remove all objects not belonging to the machine.

6.2 Operating materials

Table 6-1: Operating materials

Operating material | Use	Quantity	PSI number	Manufacturer	Type
Multi-purpose grease | Lubrication points		105002765	Shell	Naturelle Grease S5 V120P 2 (EP2)
Hydraulic oil | Hydraulic tank	approx. 60 l	105043114	MotorEx	ECOSYNT_HEES_46
Compressor oil | Compressor	9.5 l	105050234	Shell	Corena S3 R 46
Gear oil | Drive gearbox	2 x 5 l	105050261	Shell	Spirax MB 90 GL-5 API
Radiator anti-freeze | Cooling system	13.2 l	105050256	Hatz	COOLANT CONCENTRATE 5 L
Engine oil | Engine	approx. 8 l			15W40 20 L

6.3 General information

Carrying out maintenance requires information for some activities that goes beyond the instructions set out in this user information. That information can be found in the documentation of the component manufacturers.

Table 6-2: Additional information about the supplier documents

Part	Manufacturer	Type
Diesel engine	Hatz	4H50TICD

6.4 Draining operating liquids

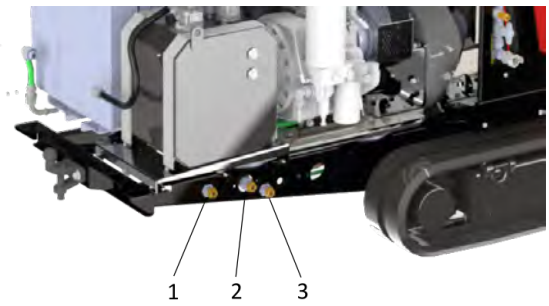


Fig. 6-1: BOE drain valves

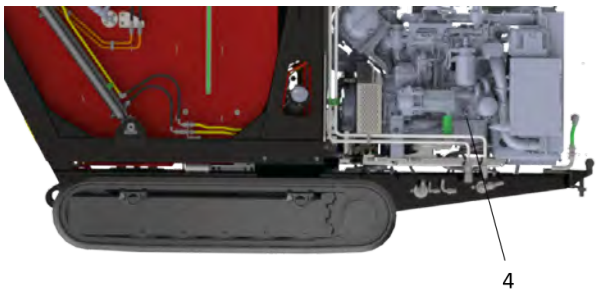


Fig. 6-2: BOE drain valve

An appropriate drain pipe is required to drain the BOE valves. To drain the operating liquids, the drain pipe must be screwed into the BOE valve.

Table 6-3: Overview

No.	Name	Description of function
1	BOE drain valve	To drain the cooling water
2	BOE drain valve	To drain the intercooler
3	BOE drain valve	To drain the compressor oil
4	BOE drain valve	To drain the engine oil

⚠ CAUTION

Hot operating liquid can cause burns

➢ Wear gloves

6.5 List of maintenance work with intervals

6.5.1 After the first 50 h

Table 6-4: After the first 50 h

Installation location	Consumer	On part	Measure
Chassis	Drive ring	Screw	Check
Chassis	Engine	Screw	Check

6.5.2 After the first 100 h

Table 6-5: After the first 100 h

Installation location	Consumer	On part	Measure
Chassis	Gearbox	Gear oil	Change

6.5.3 Daily

Table 6-6: Daily

Installation location	Consumer	On part	Measure
External installation	Manually	Suction hose	Check
Machine	Oil tank	Fluid level	Check
Engine compartment	Compressed air maintenance unit	Water separator	Empty

6.5.4 50 hours

Table 6-7: 50 hours

Installation location	Consumer	On part	Measure
Engine compartment	Compressor	Separator tank	Check

6.5.5 100 hours

Table 6-8: 100 hours

Excavation material tank	Filtration	Suction filter	Check
Chassis	Crawler	Tension	Check
Engine compartment	Filtration	Filter screen	Clean
Engine compartment	Installation	Hoses, screw connections	Check
Engine compartment	Compressor	Separator tank	Check
Engine compartment	Machine	General	Check

6.5.6 See manufacturer's specifications

Table 6-9: See manufacturer's specifications

Installation location	Consumer	On part	Measure
Engine compartment	Diesel engine	Assembly	See manufacturer’s specifications

6.5.7 As required

Table 6-10: As required

Installation location	Consumer	On part	Measure
Excavation material tank	Sealing	Seal frame	Change
Excavation material tank	Filtration	Suction filter	Change
External installation	Manually	Gas springs	Change
External installation	Manually	Suction hose	Change
Chassis	Crawler	Tension	Tension / loosen
Engine compartment	Filtration	Filter screen	Change

6.5.8 Weekly

Table 6-11: Weekly

Installation location	Consumer	On part	Measure
Excavation material tank	Sealing	Seal frame	Check
Excavation material tank	Tilt cylinders	Articulated eye	Lubricate
Chassis	Pressure vessel	Condensate drain	Empty
Engine compartment	Filtration	Filter screen	Check
Engine compartment	Belt drive	V-belt	Check

6.5.9 250 hours

Table 6-12: 250 hours

Installation location	Consumer	On part	Measure
External installation	Manually	Gas springs	Check
Chassis	Gearbox	Gear oil	Check
Engine compartment	Cooling	Cooler / compressor	Check

6.5.10 500 hours

Table 6-13: 500 hours

Installation location	Consumer	On part	Measure
Chassis	Drive ring	Screw	Check
Chassis	Engine	Screw	Check

6.5.11 1000 h

Table 6-14: 1000 h

Installation location	Consumer	On part	Measure
Chassis	Gearbox	Gear oil	Change

6.5.12 Yearly

Table 6-15: Yearly

Installation location	Consumer	On part	Measure
Engine compartment	Filtration	Return filter	Change
Machine	Oil tank	Hydraulic fluid	Change

6.5.13 1000 h to 3000 h; min. 12 months

Table 6-16: 1000 h to 3000 h; min. 12 months

Installation location	Consumer	On part	Measure
Engine compartment	Installation	Hoses, screw connections	Check
Engine compartment	Compressor	Intake air filter	Change
Engine compartment	Compressor	Compressor oil	Change
Engine compartment	Compressor	Air de-oiler	Change
Engine compartment	Compressor	Oil filter	Change
Engine compartment	Machine	General	Clean

6.5.14 5000 h

Table 6-17: 5000 h

Installation location	Consumer	On part	Measure
Engine compartment	Suction turbine	Assembly	Inspection by the manufacturer

6.6 Checking the tightness of hoses and screw connections

6.6.1 Checking the tightness of hoses and screw connections

Check for the following signs:

- ❏ Stains on the floor after the machine has been parked for some time.
- ❏ Drip marks inside the engine compartment.

6.6.2 Noticeable or unusual noises

Check for the following signs:

- ❏ Hissing due to escaping air in the compressed air circuit.
- ❏ Knocking or squeaking relating to the engine or drive frequency

INFORMATION

The noise of the machine’s working process is relatively loud.

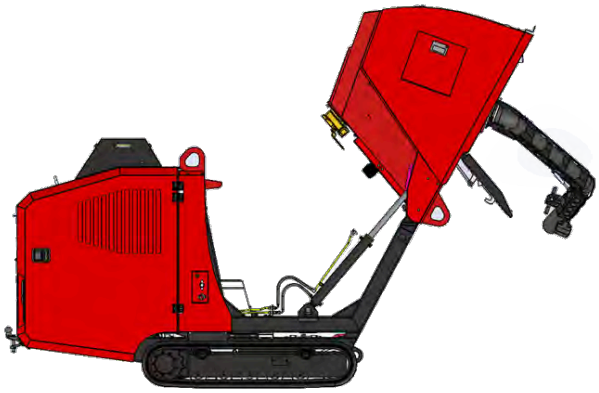
➢ Check the noise when the machine is idling.

6.7 Cleaning the machine

6.7.1 Cleaning the excavation material tank

The inside of the suction material container is only accessible when the excavation material container is raised.

- ❏ Follow the instructions in the *Chapter Emptying the suction material container Page 46* to lift the container and open the cover.
- ❏ You can rinse the inside of the container with a jet of water.



Next to the material opening are the openings for the air flow of the suction air.

NOTICE

Rinsing the suction filters with water can cause serious damage to the machine.

➢ Direct the water jet only into the middle of the three openings behind the cover.

6.7.2 Exterior cleaning

NOTICE

Cleaning the exterior surfaces with a water jet can cause water to enter the exterior controls and damage the machine.

➢ Only clean flat sheet metal surfaces with a water jet.

➢ Clean the area around the control panels and functional components with a damp cloth.

6.7.3 Cleaning the engine compartment

NOTICE

Cleaning the engine compartment with a water jet will damage the machine.

➢ Clean the interior of the machine by wiping it with paper towels or cleaning cloths by hand.

6.7.4 Cleaning the chassis

The chassis can be cleaned with a water jet.

6.8 Chassis

6.8.1 Safety information

⚠ WARNING

Inside the chassis there are components which are under internal pressure or spring tension. Abrupt release of stored energy can result in serious injury or death from ejected objects.

➢ Repairs to the chassis may only be carried out by instructed personnel of the manufacturer.

6.8.2 Checking gear oil level/topping up

To check the fluid level and refill, proceed as follows:

1. Move the machine until the three connections on the gearbox are exactly on top of one another.
2. Unscrew the centre screw plug LEVEL .

INFORMATION
The oil must be just below the opening.

3. If necessary, unscrew the upper screw plug and top up with oil through this opening.
4. Screw in both screw plugs tightly (seal with Teflon tape).

6.8.3 Changing the gear oil

1. Move the machine until the three connections on the gearbox are exactly on top of one another.
2. Place a collection container under the gearbox and unscrew the screw plug DRAIN .

INFORMATION
The collection container must be able to hold a volume of at least 5 litres.

3. Unscrew the screw plug at the top.
4. Screw the lower screw plug back in tightly.
5. For filling up the gearbox, see *Chapter Checking gear oil level/topping up Page 61*.

6.8.4 Checking the chain tension

The sag between the deflection rollers should be approx. 15 mm.

Fig. 6-3: Checking the chain tension

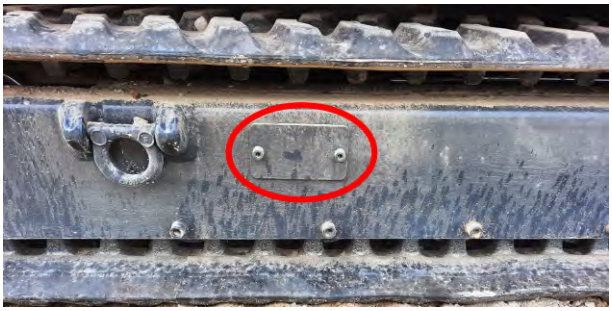
NOTICE

Incorrect chain tension can lead to malfunctions during travel or damage to the chassis parts.

➢ Adjust the chain tension according to the specifications.

6.8.5 Loosening the chain

To loosen the chain, proceed as follows:



1. Unscrew the cover.
2. Unscrew the filling valve until grease comes out (2 - 3 turns).
3. Allow grease to escape until the sag (see *Chapter Checking the chain tension Page 62*) complies with the specifications.
4. Tighten the filling valve.

INFORMATION

Tightening torque approx. 40 Nm - 50 Nm.

5. Clean the filling valve and the surrounding area and check that no grease escapes.
6. Screw the cover back on.

6.8.6 Tensioning the chain

To tension the chain, proceed as follows:

1. Unscrew the cover.
2. Using a grease gun and slide coupling, press grease into the filling valve until the sag of the crawler meets the specifications (see *Chapter Checking the chain tension Page 62*).
3. Clean the filling valve and check that no grease escapes.

INFORMATION

If grease leaks out, tighten the filling valve. Tightening torque approx. 40 Nm - 50 Nm.

4. Screw the cover back on.

NOTICE

Excessive tightening of the crawler chain can lead to premature wear on parts of the chassis.

6.8.7 Retightening the screws

Fastening screws of the drive rings

- ❏ M10x35 DIN 912 10.9
- ❏ 70 Nm

Fastening screws of the travel drives

- ❏ M10x25 DIN912 10.9
- ❏ 70 Nm

The screws are located behind the protective cover shown.

6.9 Maintenance work on the compressor

6.9.1 Compressor overview

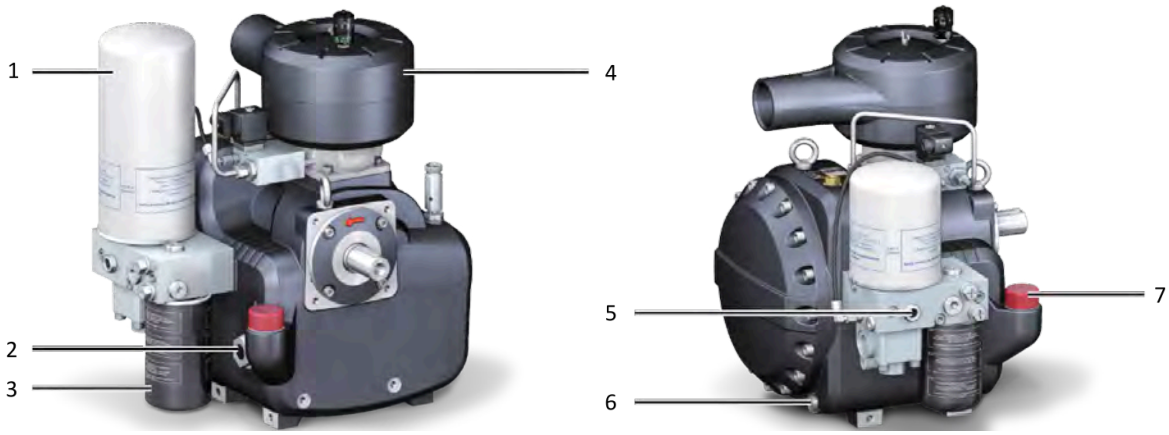


Fig. 6-4: Compressor overview

Table 6-18: Compressor overview

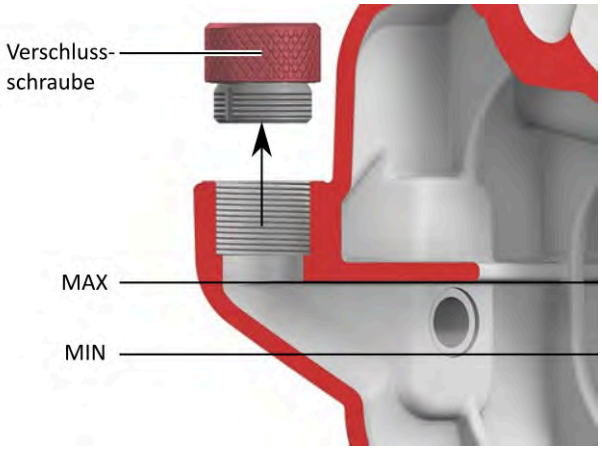
No.	Designation	No.	Designation
1	Air de-oiler	5	Oil return check
2	Oil inspection glass	6	Oil drain plug
3	Oil filter	7	Oil filler opening / screw plug
4	Intake filter		

6.9.2 Check fluid level (filler opening) - refill

INFORMATION

The screw cap of the oil filler neck is provided with a lateral safety hole from which oil or air escapes in the event of any residual pressure in the separator tank. In this case, wait a little.

1. Switch off the rig, secure it against unauthorised restarting and bring it into a horizontal position.
2. Wait for one minute.
3. Unscrew the filler plug by hand when the oil level is depressurised.
4. Check oil level.
5. If necessary, using oil of the same type and make (see *Chapter Operating materials Page 56*) fill up to MAX level.
6. Screw in the screw plug tightly by hand.
7. Switch on the rig.
8. Check that the screw plug is not leaking, change the O-ring if necessary.
9. Carefully remove any excess oil that has escaped.



6.9.3 Checking the fill level (inspection glass)

INFORMATION

The inspection glass is used to check the fluid level when the compressor is at a standstill.

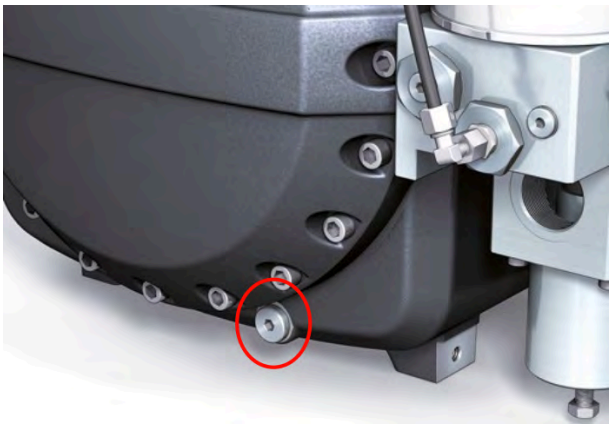
- ❏ When the compressor unit is at a standstill, oil must be visible in the inspection glass.
- ❏ If no fluid level can be seen, see *Chapter Check fluid level (filler opening) - refill Page 64*.

6.9.4 Changing the air de-oiler

1. Unscrew the air de-oiler with suitable tool, oil filter strap spanner.
2. Tighten the new air de-oiler (PSI no. 105054887) by hand. No tools required.
3. Switch on the compressor unit.
4. The air de-oiler must be checked for leaks while the rig is running.

6.9.5 Changing the compressor oil

1. Slowly unscrew the screw plug on the oil filler neck by hand.
2. Carefully unscrew the oil drain plug and collect the used oil in a suitable container.
3. Clean the oil drain plug and screw it back in.
4. If necessary, change the oil filter (see *Chapter Changing the oil filter Page 65*).
5. Fill up with oil, see *Chapter Check fluid level (filler opening) - refill Page 64*.



6.9.6 Changing the oil filter

1. Remove oil filter cartridge using a suitable tool such as an oil filter strap spanner.
2. Apply oil to the new oil filter cartridge, oil type as in the compressor (see *Chapter Operating materials Page 56*).
3. Before screwing on the new oil filter cartridge (PSI no. 1050533306), fill it up with oil of the same type as in the compressor while keeping it upright.
4. Screw on the new oil filter cartridge and tighten by hand. No tools required.
5. Switch on the rig.
6. The oil filter must then be checked for leaks while the rig is running.
7. Check oil level and top up if necessary, see *Chapter Check fluid level (filler opening) - refill Page 64*.

6.9.7 Changing the intake filter

1. Unscrew the wing nut and remove the filter housing.
2. Remove the old filter element.
3. Carefully remove dust from the filter housing.
4. Insert new filter element into the filter housing.
5. Ensure correct position when assembling.
6. Tighten the wing nut.
7. Switch on the rig, test run and function test.

NOTICE

Ingress of dirt and unsuitable filter elements can damage the machine.

➢ No dirt or dust particles must be allowed to enter the air inlet of the compressor module.

➢ Cleaning of the filter element is not permitted; the filter element must always be replaced when dirty.

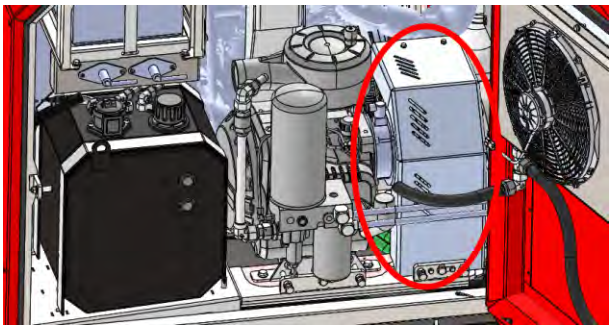
6.10 Checking the belt drive

To check, proceed as follows:

1. Switch off the machine and secure it against being switched on again.

   ⚠ WARNING
   Serious or fatal injury can occur if pulled in or due to rotating parts. Stop the machine before starting work.

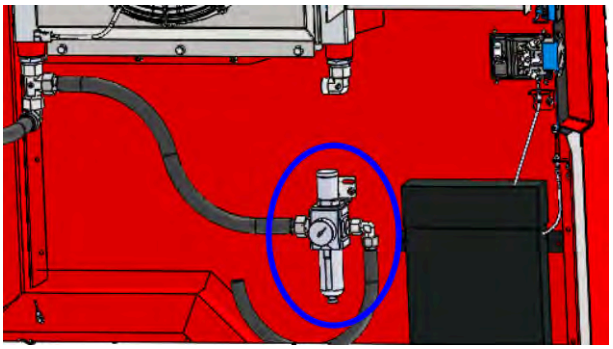
2. Remove the protective cover over the belt drive.
3. Carry out a visual check of the condition of the belt.
   - ❏ Centric running
   - ❏ Damage
   - ❏ Abraded material deposited on the belts or pulleys, or on the floor under the belt drive
4. Mount the protective cover completely.



6.11 Emptying the water separator

The water separator is located on the inside of the engine cover.

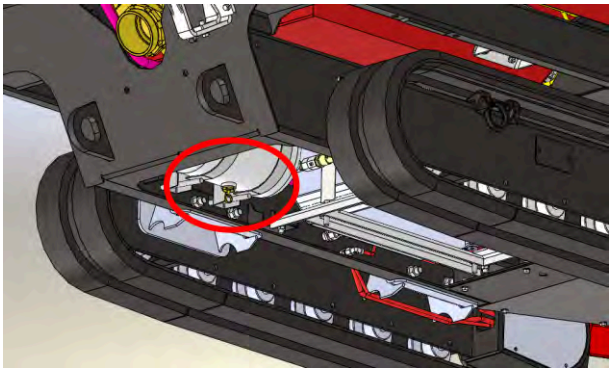
1. Open the engine cover.
2. Open the drain plug at the bottom of the collection container.
3. Close the drain plug after the liquid has drained out.



6.12 Draining condensate from the pressure vessel

The pressure vessel is located under the machine between the chassis.

1. Pull the ring on the drain valve.
2. Hold the ring pulled until no more water comes out, only air.
3. Let go of the ring.



6.13 Suction air

6.13.1 Checking/cleaning the filter screen

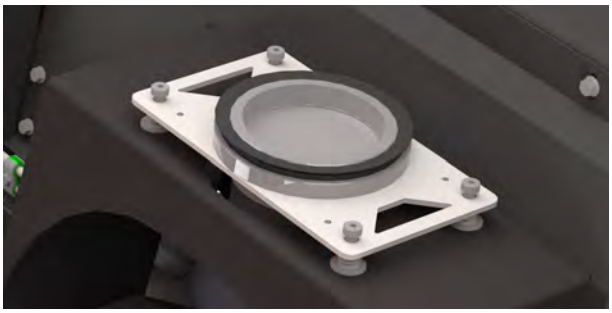
1. Move the suction material container up.
2. Check for impurities stuck on or in the screen grid.
3. Clean the screen grid and its surroundings thoroughly by vacuuming with an industrial vacuum cleaner.

NOTICE

Hard objects and impacts on the screen grid will damage it, which will result in damage to the suction turbine.

➢ When vacuuming the grid, fit a brush on the suction nozzle of the vacuum cleaner.

6.13.2 Changing the filter screen

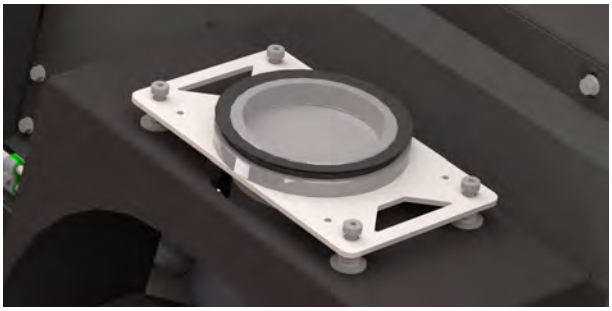


Vacuum Crawler 1 to 10

1. Clean the filter and surrounding area (see *Chapter Checking/cleaning the filter screen Page 68*)
2. Loosen the retaining flange.
3. Remove the grid and insert the new one.

   INFORMATION
   Art. no.: 106005820
4. Fix the grid with the retaining flange. Tighten all four screws.

6.13.3 Checking/changing the suction filter



To check/change the air filters, proceed as follows:

1. Open the cover 1 on the filter chamber.
2. Carry out a visual inspection for damage or resistant surface contamination on the filter elements 2 .
3. If an element has to be replaced, remove the retaining plate 3 .
4. Remove the filter element concerned.
5. Clean the upper area of the filter chamber thoroughly with an industrial vacuum cleaner.

   NOTICE
   Contamination in the intake area of the suction turbine will damage the suction turbine and cause the machine to fail. Clean thoroughly before installing the filter.
6. Insert the new filter element.

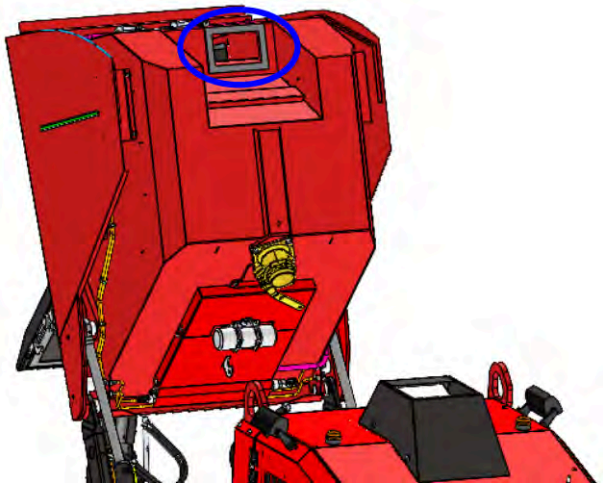
   INFORMATION
   Art. no.: 101012226
7. Replace the retaining plate 3 and fix it in place.
8. Close the cover 1.

6.13.4 Checking/changing the contact seal

To check/change the contact seal, proceed as follows:

1. Move the suction material container up; the seal is located in the marked position.
2. Carry out a visual inspection for damage.
3. If the seal is damaged or does not fit completely, remove the seal and clean the contact surface thoroughly.
4. Affix a new seal.

   INFORMATION
   Seal art. no.: 106006146; adhesive if required: Teroson SB2444
5. Move the container down.



6.14 Lubricating mechanical parts

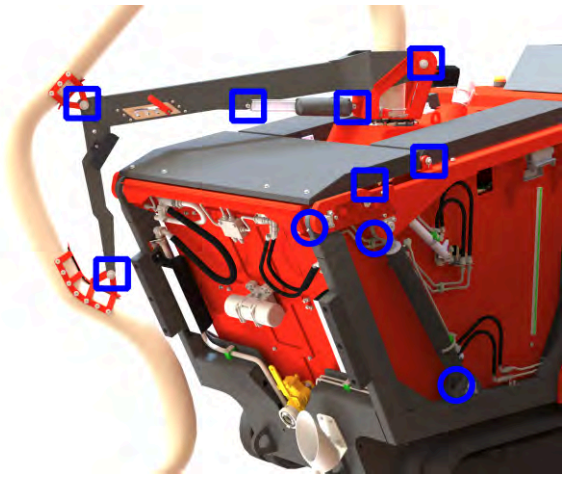
Carry out lubrication work as follows:

○ Grease nipple
□ Area without grease nipple

INFORMATION

Note the following:

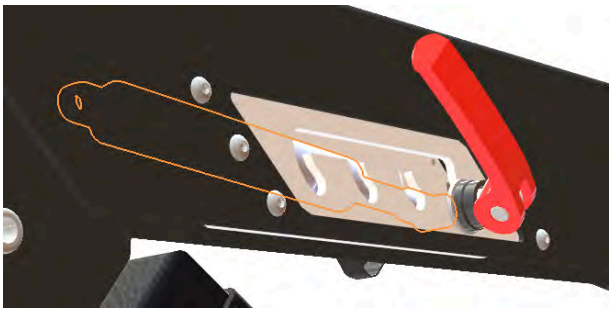
- ➢ The points shown are present symmetrically on the other side of the machine.
- ➢ Grease nipple, grease, see *Chapter Operating materials Page 56*.
- ➢ Lubrication areas: Universal oil spray



6.15 Gas springs

Maintenance includes the following:

- ❏ Clean the piston rod of the gas pressure cylinder with a dry cloth.
- ❏ Visual inspection of the piston seal for tightness.
- ❏ Replace the gas spring in case of leakage or malfunction.



⚠ WARNING

Stored energy can lead to serious injuries due to unexpected, rapid movements.

- ➢ Only remove the gas spring when it is in its maximum extended working position.
- ➢ When dismantling the gas spring, keep people away from the area along the movement axis.

Figures

Tables