OPERATING MANUAL

VV 2010 and VV 2510

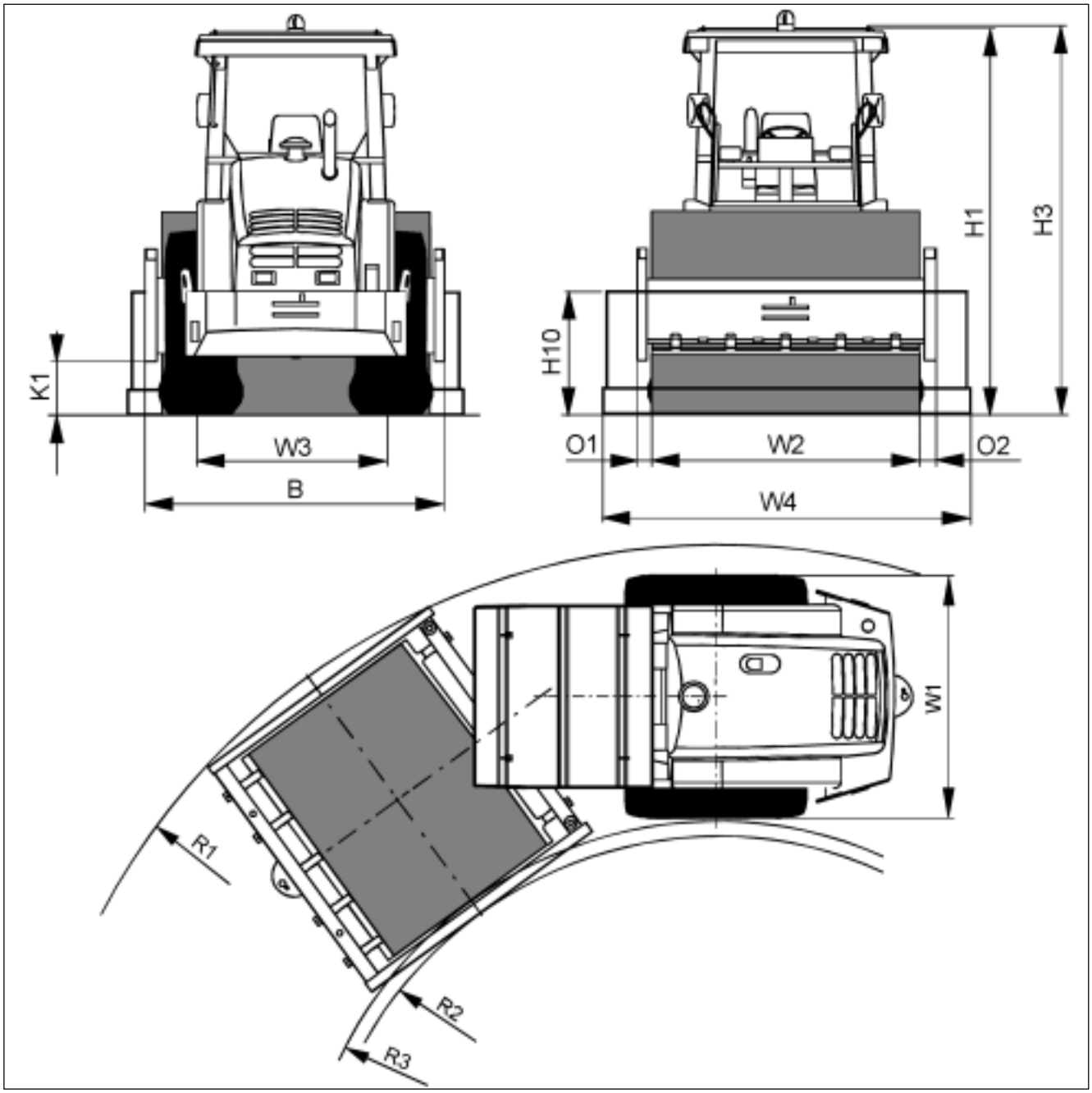
VIBRATORY ROLLERS - ENGINE CUMMINS TIER II

STAVOSTROJ a.s., Nové Město nad Metují

SPECIFICATION MANUAL

VV 2010
VV 2510

Dimension Chart of the Machine VV 2510 (with platform, protective frame and canopy)



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Dimensions in mm (in)	K1	L	L1	L2	O1	O2	R1	R2	R3	S	W1	W2	W3	W4
VV 2510 D VV 2510 DH	430	6560	1770	-	120	140	6315	3815	3950	50	2180	2240	1590	-
	(16,9)	(258,2)	(69,7)	(-)	(4,72)	(5,5)	(248,6)	(150,2)	(153,5)	(1,97)	(85,8)	(88,2)	(62,5)	(-)
VV 2510 PD VV 2510 PDH	430	6560	1770	-	120	140	6315	3815	3950	30	2180	2240	1590	-
	(16,9)	(258,2)	(69,7)	(-)	(4,72)	(5,5)	(248,6)	(150,2)	(153,5)	(1,18)	(85,8)	(88,2)	(62,5)	(-)
VV 2510 PDB VV 2510 PDBH	430	6560	1770	6990	120	140	6820	3815	3950	30	2180	2240	1590	3000
	(16,9)	(258,2)	(69,7)	(275,2)	(4,72)	(5,5)	(268,5)	(150,2)	(153,5)	(1,18)	(85,8)	(88,2)	(62,5)	(118,1)

1.3.9. Hydrostatic Drive of Travel

		VV 2010
Hydraulic pump of travel variable output with skew plate, electrohydraulically controlled		Sauer 90 R 100
Delivery per revolution	cm^3(cu in/rev)	100 (6,08)
Safety pressure	MPa (PSI)	42 (6090)
Kontroller		Sauer MCH
Drum drive gear-box		Trasmital 715C3B 108 H6
		Trasmital 715C3B 129 H6 (VV2010 DH;PDH;PDBH)
Filtration block		Hytos 729-0060
Filter element		Argo V3.0720-46
Drum drive hydromotor		Sauer 51 C 110
Wheel gears		Trasmital 709C3B63,1 H1
		Trasmital 709C3B75,5 H1 (VV 2010 DH;PDH;PDBH)
Hydraulic motors of wheel drives		Sauer 51C060
The distributor block		Hytos 880-0303

		VV 2510
Hydraulic pump of travel variable output with skew plate, electrohydraulically controlled		Sauer 90 R 100
Delivery per revolution	cm^3(cu in/rev)	100 (6,08)
Safety pressure	MPa (PSI)	42 (6090)
Kontroller		Sauer MCH
Drum drive gear-box		Trasmital 715C3B129 H6
		Lohmann GFT110T3 1288 (VV2510DH;PDH;PDBH)
Filtration block		Hytos 729-0060
Filter element		Argo V3.0720-46
Drum drive hydromotor		Sauer 51 C 110
Wheel gears		Trasmital 709C3B63,1 H1
		Trasmital 709C3B 75,5 H1 (VV2510DH;PDH;PDBH)
Hydraulic motors of wheel drives		Sauer 51C060
The distributor block		Hytos 880-0303

1.3.10. Hydrostatic Drive of Vibration

Hydraulic pump of vibration variable-output, with skew plate, electrohydraulically controlled		Sauer 90 R 100
Delivery per revolution	cm^3(cu in/rev)	100 (6,08)
Safety pressure	MPa (PSI)	35 (5075)
Hydromotor of vibration		Sauer 90 M 100

2.1.1. Safety Regulations and Instruction for Operation of the Machine

The safety regulations stated in the individual chapters of the documentation delivered with the machine are to be complemented with safety regulations valid for the respective country of use and on the respective jobsite with regards to organization of work, work processes and personnel.

2.1.1.1. Beginning of Compaction Works

- The contractor (the company which operates the machine) is obliged to issue regulations for operation and maintenance of the machine, which must contain also the requirements for safety of work.
- Before the work is started, it is necessary to check:
  - location of engineering networks
  - underground spaces (direction, depth)
  - suction and/or escape of dangerous agents
  - bearing power of soil, inclination of the work area

  These facts must be communicated to the machine's operator designated to carry out the work.
- It is necessary to issue a technological procedures for the actual work activity, which would set up:
  - measurements for operation under exceptional conditions (work in protective zones, at extreme slopes, etc.);
  - measurements for protection from the forces of nature;
  - requirements for operational safety;
  - technical and organizational measurements for securing safety of personnel, jobsite and the surrounding area.

  The technological procedures must be communicated to the machine's operator.

2.1.1.2. Operation in an imperiled area

Whatever damage to service networks must be reported immediately to the operating company, simultaneously, access by unauthorized persons to the imperiled area must be limited.

No worker must be left alone whenever there is no other worker in sight that could provide or call for help, unless another effective method of control and contact has been installed.

2.3.1. Short-term storage of 1 to 2 months

Wash and clean the machine thoroughly. Warm up the engine to operating temperature before starting conservation for storage. Place the machine on a firm and flat surface in a secure location where there is no danger of damaging the machine by forces of nature like floods, landslides, fire, etc.

then

- repair any defective lacquer
- grease all lubrication places, cables, lever elbows, etc.
- check that water tanks are drained
- check whether the refrigerant is frost resistant
- check the charge of batteries and recharge if necessary
- cover chrome plated surface of pistons with conservation grease
- we recommend to protect the machine against corrosion by spraying it with conservation means, mainly in spots endangered by corrosion.

A machine that has been treated in this manner doesn't require any special processing before next use.

2.3.2. Conservation and storage for more than 2 months

Same rules for short-term storage apply here as well, moreover,

- remove batteries, check condition and store in a dry, cool room – recharge battery regularly,
- support the drum frame so that the shock absorbing system is not loaded,
- protect rubber components with a layer of special conservation preparation
- inflate tires to prescribed pressure and protect them against direct sunshine
- cover chrome plated surface of pistons with conservation grease
- for conservation spray the machine with a special preparation particularly in places subject to possible corrosion
- cover exhaust and intake of the engine with double PE foil and sticky tape over it
- protect headlights, outside rearview mirrors and other electrical components outside by spraying over them special preparation and covering with PE foil,
- conserve the engine as instructed by manufacturer and leave a sign that the engine has been conserved.

! NOTE !

We recommend that you inspect the conservation condition. After 6 months inspect and renew if necessary.

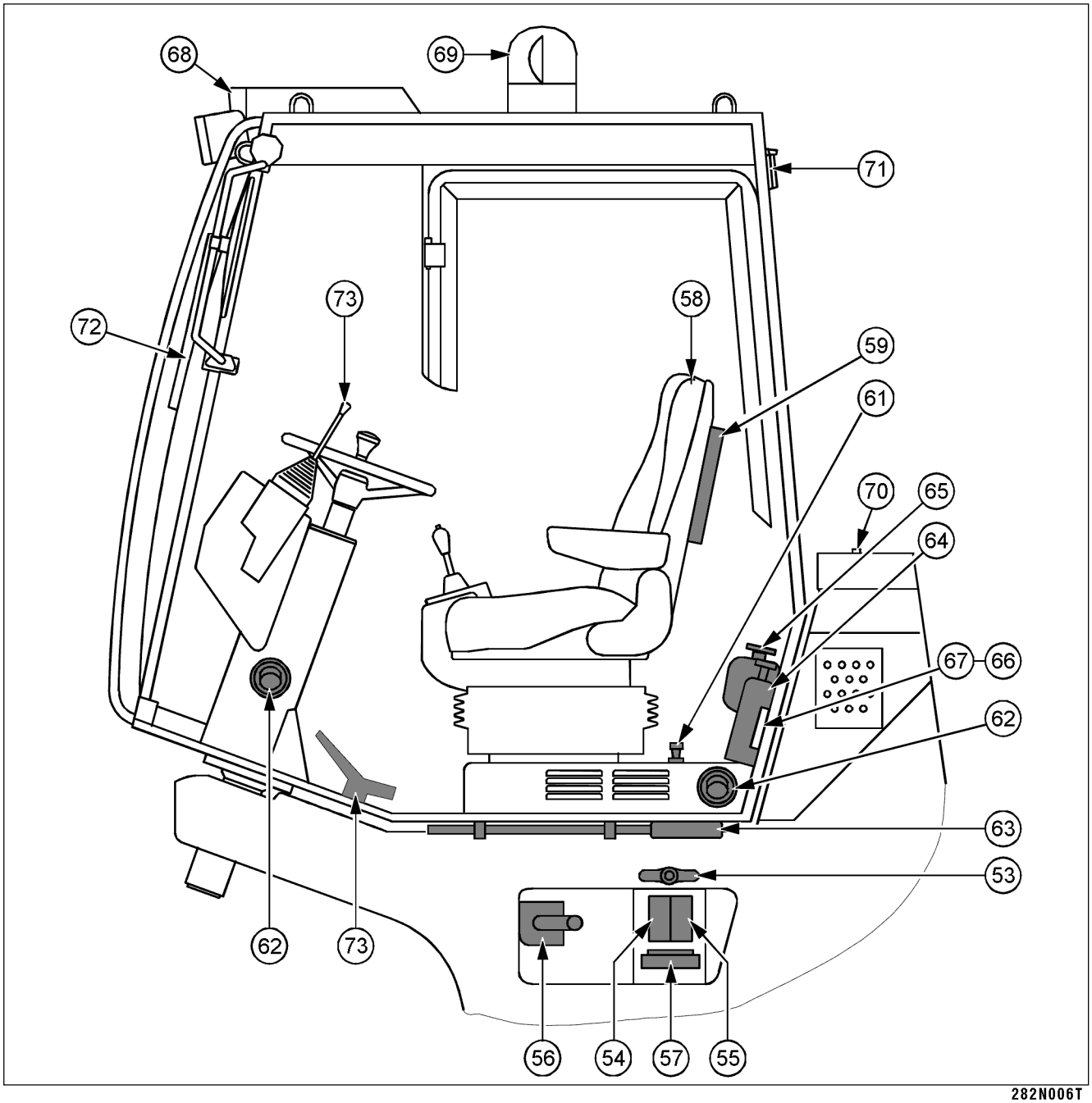
Do not start the engine while stored!

If the machine is stored outside, check whether the site is not in danger of being flooded in case of bad weather or endangered in any other way.

Before starting operations again, wash off conservation with high-pressured hot water with ordinary degreasing means added as directed, while observing environmental rules.

Remove conservation and wash the machine in places with catch basins available to collect rinse water and chemicals.

Cabin



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53 - Battery disconnector
54 - Cabin lifting and lowering switch
55 - Bonnet lifting and lowering switch
56 - Manual hydro-generator for lifting and lowering of driver's stand and bonnet
57 - (50A) fuse
58 - Driver's seat
59 - Box
61 - Heat control
62 - Heating vents
63 - Manual hydro-generator operating lever
64 - Fire extinguisher
65 - Washer tank
66 - Bottle holder
67 - Storage compartment
68 - Cabin ventilation filter
69 - Beacon
70 - Beacon connector
71 - Rear wiper
72 - Front wiper
73 - Blade control - hand pedal

Clogged air cleaner - signal lamp (25)

This lamp (on) indicates excessively clogged air filter.

! NOTE !

Clean or replace filters immediately!

ASC differential lock - signal lamp (26)

Flashing lamp indicates a defect on ASC differential lock.

Note
For function description ASC, see chapter 2.7.8.

Hydraulic oil level - signal lamp (27)

This lamp (on) indicates oil level in the tank under the lower limit. The machine and engine will automatically stop (environmental protection).

! NOTE !

It is possible to start engine only after repairing the defect and refilling oil in the hydraulic tank to proper level!

Vibration on - signal lamp (28)

This lamp (on) indicates vibration is on.

Clogging of the pressure filter of hydraulic oil - signal lamp (29)

At oil temperature of 50 - 60°C, this lamp (on) indicates clogging of the filter.

! NOTE !

Replace the filter immediately!

Indicators - signal lamp (30)
The lamp is flashing when direction indicators are on.

! NOTE !

Check function of indicators.

Box (59)
Fold out the back wall of the seat to use the box to store operation manual.


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Heating control (61)
Amount of liquid flowing to the heating radiator can be infinitely controlled from fully closed (valve closed) to fully open valve.


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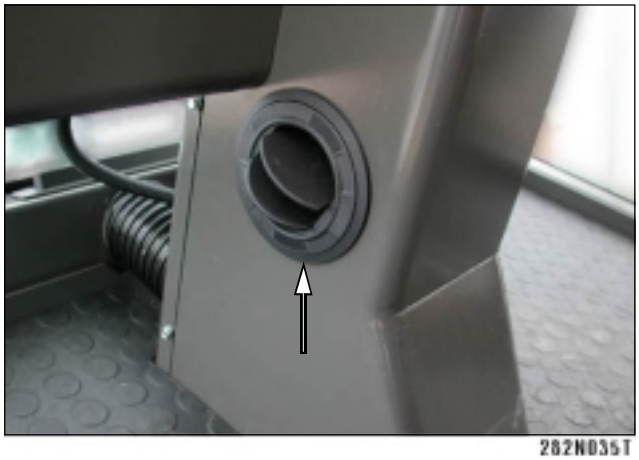
Adjust the heating valve before driving!

Heating vents (62)
Tilt the vents to adjust amount of fresh air, swivel to adjust direction.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Front and rear windshields are blown with hot air to avoid dewing.


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! NOTE !

Ensure proper ventilation while heating!

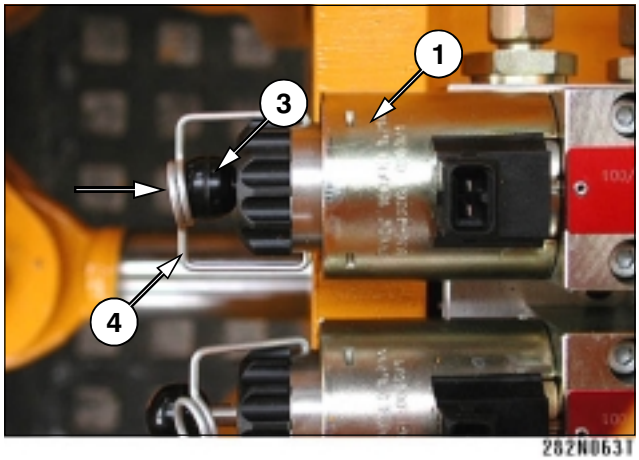
2.7.6. Dead parking of the machine

- Stop the machine - see chapter 2.7.4.
- Turn off the battery disconnector.
- Clean the machine from dirt (scraper and tyres).
- Check the whole machine and repair defects arisen during the operation.
- Check the tyre pressure.
- Secure wheels and drum with scotch blocks.
- Lock covers of instruments or the cabin and door under the driver's stand.

Stop the machine on even and firm surface.

Check the place of parking for risk of natural dangers (landslides, floods etc.)

- Unlock the safety pin of lifting before starting lowering.
- Push the sliding valve (3) on the other side of the switchboard (1), secure it with safety pin (4) and pump to lower the driver's stand.



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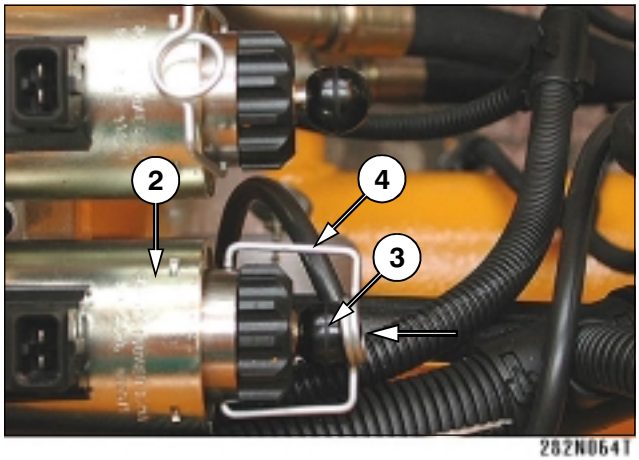
Screw the driver's stand in after lowering. If the driver's stand is not screwed in properly, the machine may overturn and cause lethal injuries.

Bonnet

- Push the sliding valve (3) on the switchboard (2) and secure it in the position with safety pin (4).



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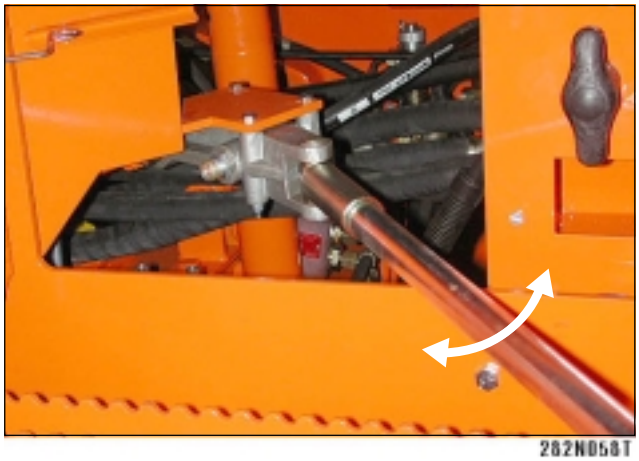
- Pump to lift the bonnet.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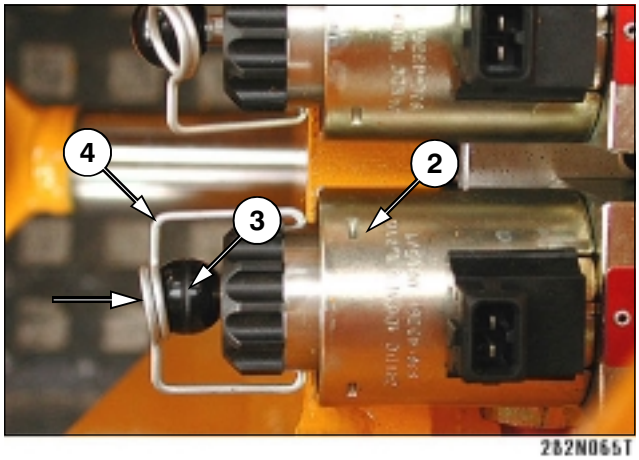
- Unlock the safety pin of lifting before starting lowering.
- Push the sliding valve (3) on the other side of the switchboard (2), secure it with safety pin (4) and pump to lower the bonnet.



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After releasing brakes and short-circuiting the travel hydraulic circuit, all brakes are out of operation!

Use unimpaired towing cables or towing bars of sufficient capacity - dimensioned to weight 1.5 times higher than weight of the towed machine. It is not permitted to use chains for towing.

No persons can be present on the machine with non-working engine.

It is necessary to keep the deviation from the straight towing angle as little as possible. Maximum deviation is 30 degrees.

The movement during towing must be smooth. Do not exceed towing speed of 2 kmph (1.2 mph). Do not tow the machine for distances longer than 300 m (0.19 miles).

The towing machine should be equal by size to the damaged machine. It must be sufficiently powerful (towing power), heavy and have sufficient brake effect.

When towing downhill using a cable, it is necessary to connect another towing machine to the rear part of the damaged machine. This will prevent uncontrolled movement of the damaged machine.

Do not start the engine during towing.

NOTE
These are general requirements for safe towing of the damaged machine under standard conditions. Any specific conditions that may occur during towing must be consulted with a machine distributor.

2.9.2. Driving with vibrations on compacted and hard material

When driving with vibration on more compacted subgrade material, so called vibro-strike may occur.
The same applies when driving with vibration on hard materials (such as stone aggregate). This situation results in increased transmission of vibrations to the machine frame and the driver's stand. It can be partially reduced by increasing travel speed or by changing vibration parameters (using smaller amplitude).

Note:
Emission data of vibration acceleration will be different during driving with vibration on subgrade material other than the one specified in "Specification manual" - Sanitary data.

! NOTE !

If working with the machine under conditions exposing the operator to increased vibrations cannot be avoided, the keeper of the machine must modify working procedures so that it is not harmful to the driver's health.

AIR CONDITIONER

VV 1100, VV 1500
VV 2010 and VV 2510
(Cummins tier 2)

4.2.1. Engine oil

Engine oil is specified by its performance and viscosity classifications.

Performance classification according to

API (AMERICAN PETROLEUM INSTITUTE)

CCMC (COMMITE of COMMON MARKET AUTOMOBILE CONSTRUCTORS).

ACEA (ASSOTIATION DES CONSTRUCTEURS EUROPÉENS DE AUTOMOBILE)

Viscosity classification

To determine SAE (Society of Automotive Engineers) viscosity class, the ambient temperature and type of operation in place of usage of the machine are decisive.

Permitted oil according to API: CH-4/SJ

All season - SAE 15W-40 (e.g. Valvoline, Premium Blue,).

NOTE

Exceeding of the lower temperature limit does not damage the engine, it may only cause starting problems.

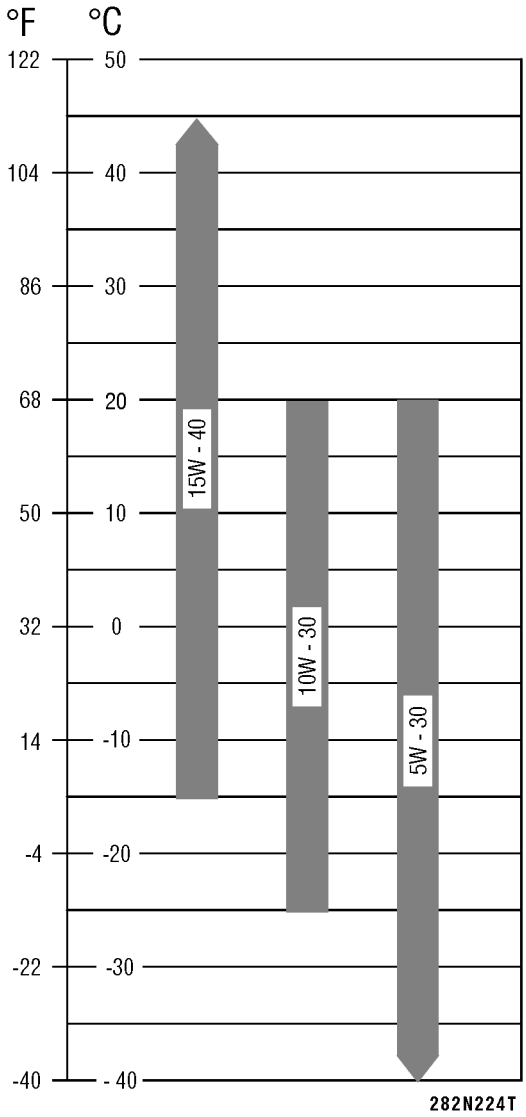
It is suitable to use general-purpose multi-grade oil in order that oil need not be exchanged because of ambient temperature changes.

For easier start at temperatures below 0 °C (32 °F), SAE 10W-30 oil is recommended by the engine manufacturer.

! WARNING !

Exceeding the upper temperature limit must not last for long, taking into consideration reduced lubricating properties of oil.

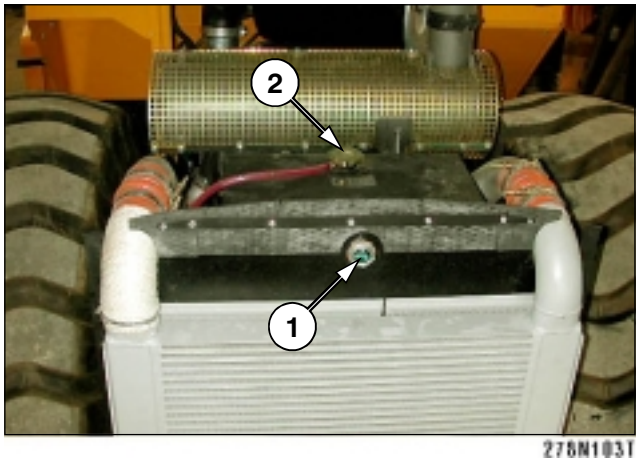
When using oil according to API CF-4/SG, the exchange interval should be cut to one half, i.e. 250 hours or 3 months.



Every 20 Hours or Daily

4.6.2. Checking cooling liquid of the engine

- Place the roller onto flat, firm surface and stop the engine.
- Let cooling liquid cool down to less than 50 °C (120 °F).
- Check visually the level (1).
- Refill coolant through the filler (2).



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Every 20 Hours or Daily

! NOTE !

The level must not fall below the level indicator eyesight.

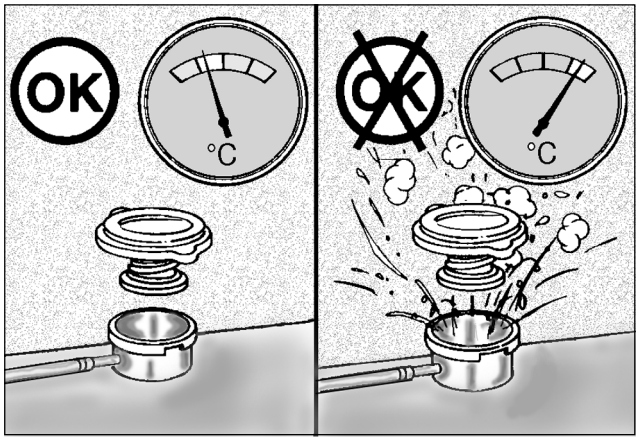
Refill only cooling liquids containing the frost-resistant agents on the identical basis, according to chapter 4.2.3.

Do not add additives eliminating untightness of the cooling system to the engine cooling liquid!

Do not refill cold cooling liquid into hot engine. Engine castings might get damaged.

In case of larger losses, find the location of cooling system leaks and repair the cause.

Dismantle the filling plug only when the temperature of engine cooling liquid falls to less than 50 °C (120 °F). If you open it at higher temperatures, you risk scalding by steam or by cooling liquid due to the inner overpressure.



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Every 250 Hours or Once in 3 Months

Always follow the instructions of the manufacturer, when working with the battery.

Use protective gloves and eye protection equipment when working with the battery.

Wear suitable dress to protect your skin against staining with electrolyte.

In case of an eye injured by electrolyte immediately wash the eye with flowing water for couple of minutes. Then seek medical advice.

In case of ingestion of electrolyte drink maximum possible amount of milk, water or mixture of magnesium oxide with water.

In case of staining your skin with electrolyte take off your clothes and shoes, wash injured spots with soap water or with solution of soda and water as soon as possible. Then seek medical advice.

Do not eat, drink and smoke during operation!

Wash your hands and face carefully with soap and water after finishing you work!

Do not test whether wires are alive by touching the frame of the machine.

Disconnect the battery to avoid short-circuit when repairing it or manipulating with wires and electric equipment in the circuit of electric system.

Disconnect the minus pole wire first when disconnecting the battery. Connect the plus pole wire first when connecting the battery.

In case of contact of both poles of the battery the short-circuit may cause explosion of the battery.

Every 250 Hours or Once in 3 Months

Do not turn batteries upside down to avoid draining of electrolyte from venting of the battery.

In case of spilling electrolyte wash such a place with water and neutralise with lime.

Dispose of old damaged batteries.

Every 500 Hours or Once in 6 Month

Beware of scalding when draining hot oil. Let oil cool down to less than 50 °C (122 °F).

Follow the fire safety measures!

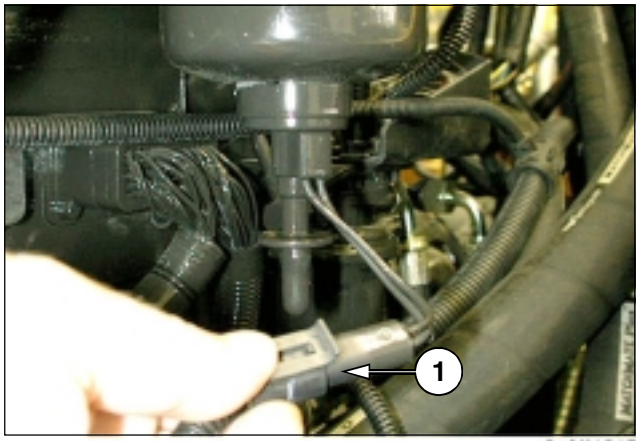
Collect drained oil; do not let it soak into the ground.

Used oil and filters are environmentally dangerous waste - have them liquidated.

Every 500 Hours or Once in 6 Month

4.6.20. Engine fuel filter exchange

- Stop the engine.
- Disconnect water separator sensor connector (1).



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- Clean the head of fuel filter dismantle the filter and after dismantle water separator sensor from the filter.

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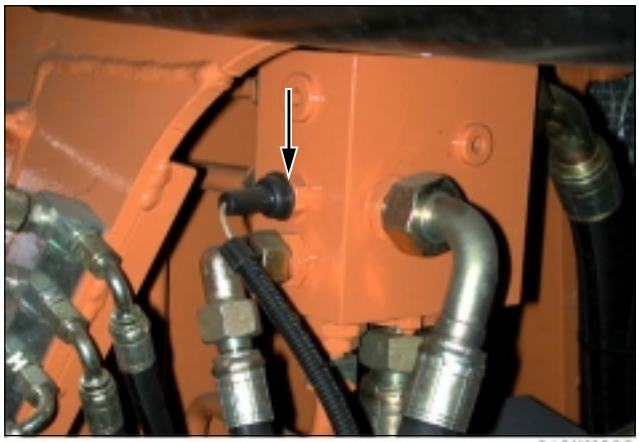
Every 2000 Hours or Every 2 Years

Checking the oil thermometer sensor

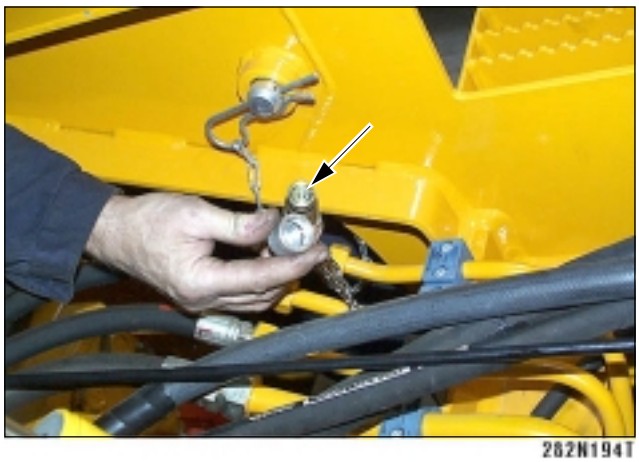
- Dismantle the sensor and clean the contact.



- Dip the sensor into warm oil of known temperature and read out the oil temperature on the thermometer. Replace the sensor if not working properly.

Filling the hydraulic circuit:

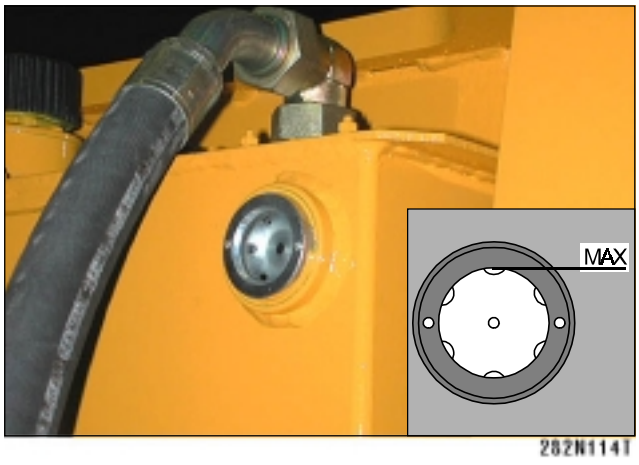
- Use a filling device with the following parameters:
  min. pressure 6 MPa (870 PSI)
  filtering property 3 to 10 μm
- Open the cover on the right side under the cabin and remove the cap of filling terminal.



Every 2000 Hours or Every 2 Years

- Mount the quick coupling of the filling device to the quick coupling.

- Fill the hydraulic circuit until clean oil starts to flow out of the hose. Collect it to a clean vessel.
- After flowing out of approximately 15 l (4 US gal), dismantle the terminal from the drain spout and mount it back to the tank side.
- Refill oil in the tank to maximum and disconnect the filling device.



Maintenance - As Needed

- After unscrewing nut (2), replace the safety element.

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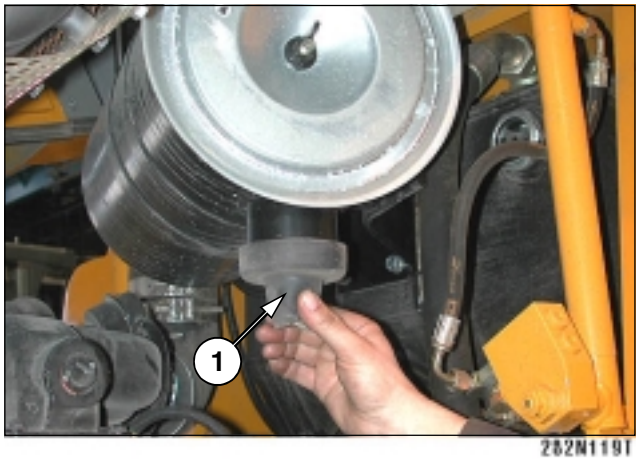
- Mount new or cleaned main element. Check whether it fits correctly and whether it is tight.
- Remove the dust valve (1), clean it and mount it back.



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Maintenance - As Needed

! NOTE !

Do not clean elements by beating-out.

Replace the safety element always when replacing the main element or if the signal lamp lights up after cleaning the main element.

Replace the sealing nut with a new one when replacing the element.

Use original elements only.

Do not use defective elements.

Do not take the elements out for inspection.

Never use petrol or other liquids for cleaning the cleaner elements.

When washing the machine, make sure water cannot pour into the air cleaner.

In case of absorbing water, dismantle both elements and dry them. Dry the cleaner body.

Replace defective vacuum valve immediately!

Do not operate the machine with damaged cleaner body or cover.