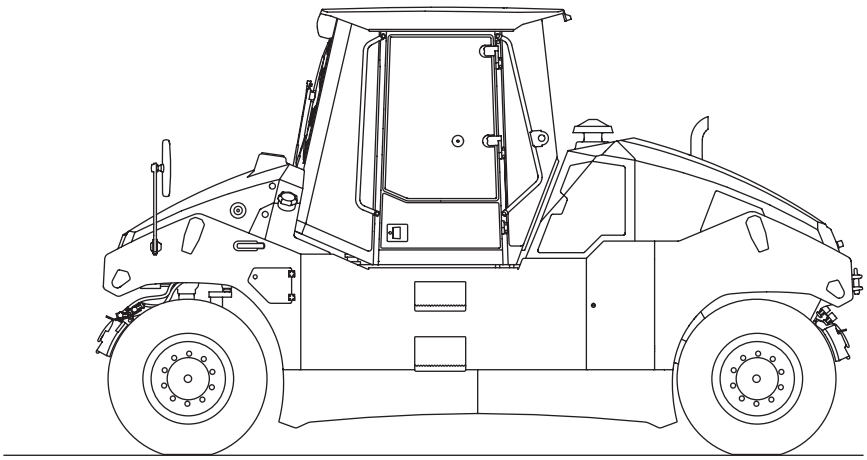
ART 280

PNEU TYRED ROLLER
DEUTZ TCD3.6 L4
EU Stage IV / U.S. EPA Tier 4f



OPERATING MANUAL

EDITION 01/2021 EN
Product Identification Number 3004994 -

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	ART 280	
	EU Stage IV / U.S. EPA Tier 4f	
Fluid capacities		
Fuel	l (gal US)	250 (66)
Capacity of ballast tanks	l (gal US)	1500 (396.3)
Water for tyre watering	l (gal US)	400 (105.7)
Water for tyre sprinkling from ballast tanks	l (gal US)	650 (171.7)
Engine (oil filling)	l (gal US)	8.5 (2.2)
Cooling system	l (gal US)	27 (7.1)
DEF (AdBlue) Tank	l (gal US)	22 (5.8)
Rear axle reducer oil	l (gal US)	2x6.5 (2x1.72)
Oil in front axle disengaging	l (gal US)	6 (1.6)
Hydraulic system oil	l (gal US)	70 (18.5)
Spraying emulsion	l (gal US)	64 (16.9)
Washer tank	l (gal US)	3 (0.8)
Wiring		
Voltage	V	24
Battery capacity	Ah	2x55
Noise and vibration emissions		
Measured sound power level A, L_{pA} at the operator's position (cab) *	dB	77
Uncertainty K_{pA} *	dB	2
Measured sound power level A, L_{WA}	dB	102
Guaranteed sound power level A, L_{WA} **	dB	104
Declared highest weighted effective value of vibration acceleration transmitted to the whole body (cab) ***	m/s^2 (ft/s^2)	<0.5 (<1.6)
Declared total value of vibration acceleration transmitted to hands (cab) ***	m/s^2 (ft/s^2)	<2.5 (<8.2)

* measured according the EN 500-4

** measured according the DIRECTIVE 2000/14/EC

*** measured according the EN 1032+A1 on the gravel base under the vibration travel)

2.1.4 Forbidden activities – safety and guarantee

The following is forbidden:

- Filling the hydraulic circuit during the guarantee period in a different way than using the hydraulic unit.
- Using the machine in case of an evident defect of the machine.
- Using the machine when any operating fluid level is low.
- Wilful repair of the engine – Except common changes of operating fluids and filters, only the Deutz service department can intervene in the engine, in particular in peripheral components of the engine – alternator, starter, thermostat, electrical installation of the engine.
- Using the emergency brake for turning off the engine during normal operation of the machine.
- Operate the machine in potentially explosive atmospheres (ATEX) and underground areas.
- To use the Machine following ingestion of alcoholic beverages or narcotic substances.
- To use the Machine that would mean a threat to its technical condition, safety (life, health) of persons, sites, facilities and things, or eventually of road traffic and its continuity.
- To put into operation and use the Machine if other people are staying within its hazardous reach - except for training a driver by lector.
- Putting the machine into operation and using the machine when a safety device (emergency brake, horn, etc.) has been removed or damaged.
- To travel and compact in such banks where Machine stability would be impaired (overturn). The mentioned static stability of the Machine lowers by dynamic effects of travel.
- To travel and compact in such gradients of slopes where hazard of ground torn off along with the Machine would occur, or loss of adhesion followed by uncontrolled skid.
- To control the Machine in some other way different from that stated in the Operation Manual.
- To travel and compact according to the soil bearing capacity at such distance from the edge of a slope, excavated trenches so to avoid any hazard of material fall (slide) or shoulder torn off along with the Machine.
- To travel and compact at such distance from the walls, cuts, slopes so to avoid any hazard of their sliding and covering the Machine.
- To displace and transport people on the Machine.
- To operate the Machine within the hazardous range of which there are other machines or transport vehicles except for those that operate in mutual coordination with the Machine.
- To operate the Machine in places invisible from driver's post and where hazard to the persons or property might occur unless work safety is secured another way, i.e. implicitly through signalling by a person duly instructed – refer to the Section named Hand Signals.
- To operate the Machine within protective zone of electric line system and substations, and of gas.
- To drive over electric cables unless these are properly protected against any mechanical damage.
- To operate the Machine under reduced visibility and at night unless Machine's working area and the site have sufficient lighting.
- To change driver's position at the control stand from the left to the right and vice versa while driving.
- Leave Machine driver's position with the Machine running.
- To leave unsecured Machine - move away from the Machine without preventing it from being misused.
- To disable safety system, protective system and locking system or change their parameters.
- To use the Machine with oil, fuel, cooling liquid or other media leaking therefrom.
- To start the engine in some other way than stated in the Operation Manual
- To locate other items (tools, instruments) at driver's control stand aside from items of personal needs.
- To lay away any material or other objects onto the Machine
- To remove any dirt or waste while the Machine is in operation
- To carry out maintenance, cleaning or repairs with the Machine not secured against its self-motion and accidental starting, and unless contact between operator and moving parts of the Machine is excluded.
- To touch moving parts of the Machine with human body or objects and tools held in hands.
- To smoke and handle open fire when checking or filling in fuels, changing or filling up oils, lubricating Machine, and when inspecting battery and filing up battery
- To carry rags soaked with flammable materials on the Machine (inside engine compartment), and flammable liquids stored in free vessels.
- Leave the engine running in enclosed, unventilated areas. Exhaust fumes are dangerous to life.
- Drive with open doors.
- Perform any adjustments on the machine without the prior consent of the manufacturer.
- Drive without the seat belt fastened.
- Shift electrical conductors.
- Use other than original spare parts.
- Interfere in the electrical and electronic units in any manner.

The additional load (optional equipment) consists of 4 blocks mounted under the machine frame and 2 or 4 blocks mounted into the frame. It is therefore considered to be the integral part of the Machine. Any handling of this weight is hazardous and is banned.

Please do not hesitate to contact your dealer, if required!

Breaching these provisions can influence the judgement of a possible complaint and effectiveness of the engine guarantee period.

2.3.1 Short-term preservation and storage for a period of 1 – 2 months

Wash and clean thoroughly the entire Machine. Before shutting down the Machine for preservation and storage, please heat the engine to its operating temperature while running. Park the Machine on paved, flat surface, in safe location with no danger of of damage to the Machine due to natural disasters (floods, landslides, fire origination, etc.).

In addition:

- Repair spots where paint has been impaired,
- Lubricate all lubricating points, actuator cables (cable assemblies), joints of the actuators, etc.,
- Check water media have been drained,
- Confirm cooling liquid has the antifreezing properties required,
- Check condition of the battery charges; let them be recharged if required,
- Spread chromated surfaces of piston rods with preservation fat,
- We recommend to protect your Machine against corrosion through spraying the preservation agent (spray-applied), and this especially in places of corrosion hazard.

The Machine treated like that needs no special preparation (set-up) before its subsequent putting into operation.

2.3.2 Preservation and storage for a period over 2 months

For machine shut-down, the same principles are applicable as for the short-term preservation.

In addition it is recommended to:

- support the machine or mark one of its tyres at the point of its contact with the ground and move the machine so that the marked spot is not in the lowest point; move the machine once a month.
- inflate the tyres to specified pressure and protect them against sun rays; regularly check tyre pressure once a month,
- remove the accumulators, check their condition and charge them to full and store them in a cold dry room, and recharge them once a month,
- use a special agent to protect rubber components,
- apply preservative agent on chromed surfaces of piston rods,
- preserve the machine by spraying with a special agent, especially at points of possible corrosion (bonnet hinges, fuel tank lid, hose fittings, door locks, switches, etc.),
- blind the suction and exhaust pipe of the engine with double PE foil and tighten it carefully with sealing tape,
- protect the headlamps, external rear-view mirrors and other elements of the external wiring by a special agent and wrapping in PE foil,
- preserve the engine according to the manufacturer's manual – place a visible tag that preservation of the engine is in progress,
- if you are not using a winter fuel, add additives into diesel oil.

In case of the shutdown of the machine for more than 4 months:

- **drain the DEF (AdBlue) tank**
- **fill in the tank with new DEF (AdBlue)**
- **replace the DEF filter**
- **heat the engine to the operating temperature and load the engine to pressurise the system and inject DEF (AdBlue).**

Following 6 months we recommend to inspect the condition of preservation and renew it if required.

If storing the Machine under field conditions, please check the parking place is not exposed to any flooding hazard due to deluges, or whether any other type of risk occurs within such area!

NEVER start the engine in course of storage!

Before restoration of the Machine service, please dewax and wash the preservation agents away with high pressure stream of hot water added with normal degreasers while observing Directions for Use along with ecological principles.

Carry out dewaxing and washing of the Machine at places equipped with collection sumps to catch rinsing water and dewaxing agents.

3726T

Light switch (parking/low beam) (10)

It is used for turning on/off the parking and low beam lights.

Left – OFF

Centre – parking lights

Right – low beam lights

3726V

Working lights switch (11)

It is used for turning on working lights.

Left – OFF

Right – ON


2582

Emergency brake button (12)

The machine emergency brake is enabled by pressing the button and is indicated by lighting up the brake and charging indicator lamps on the display (2).

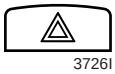
The machine stops moving and the engine stalls!


3726H

Warning horn button (13)


3726CH

Turn signals switch (14)


3726I

Warning lights switch (15)

It is used for turning on/off the warning lights – the function is indicated by flashing the indicator lamp in the warning light switch.

3726W

Edge cutter switch (16)

It is used for turning on the edge cutter.

Left – OFF

Right – ON

After turning the switch to the right position, edge cutter controllers on the travel lever (3) are enabled.

Ignition box (19)

There are three positions "0-I-II" of the ignition box. The key can be inserted and removed in position "0" only.

Turn a bit the key to RH side to enable first the "I" position and then "II" position.

"II" position is used to start the engine.

Protect the ignition box with the protective cover after the key is pulled out.

Fuse box (38)

Fuse (F1) - 15 A Socket 24 V

Fuse (F2) - 10 A Front lights, parking lights, number plate lighting

Fuse (F3) - 7.5 A Rear lights

Fuse (F4) - 10 A Beacon, turn signal lights, brake lights, horn

Fuse (F5) - 7.5 A Power supply of control elements of armrests and switchboards

Fuse (F6) - 35 A Control unit

Fuse (F7 - 7.5 A Seat shifting

Fuse (F8) - 20 A Power supply of the 24/12 V converter

Fuse (F11) - 5 A Valves, sensors

Fuse (F12) - 5 A Emulsion sprinkling

Fuse (F13) - 5 A Water sprinkling

Fuse (F14) - 5 A Reverse horn, alternator excitation

Fuse (F15) - 10 A Locking power supply / emergency brake

Fuse (F16) - 1 A Control unit

Fuse (F17) - 7.5 A Armrest power supply

Fuse (F18) - 15 A Engine diagnostic socket, EAT power supply

Fuse (F21) Reserve

Fuse (F22) - 10 A Power supply of controls inside the cab

Fuse (F23) - 10 A Wipers and screen washers

Fuse (F24) - 10 A Heating

Fuse (F25) - 20 A Glass heating

Fuse (F26) - 15 A Working lights 2 – cab

Fuse (F27) - 10 A Radio 12 V

Fuse (F28) - 7.5 A Socket 12 V

Fuse (F30) - 80 A Main power supply fuse

Fuse (F31) - 15 A Engine ECU

Fuse (F32) - 20 A Air-conditioning

Fuse (F33) - 10 A Fuel pump

Fuse (F34) - 30 A EAT

Fuse (F35) Reserve

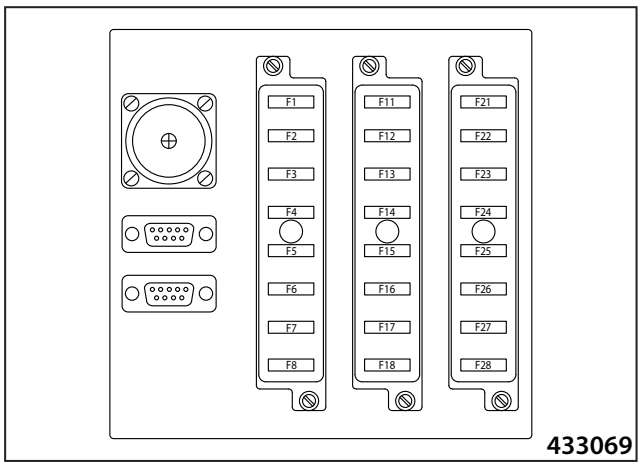
Fuse (F36) - 7.5 A Memories

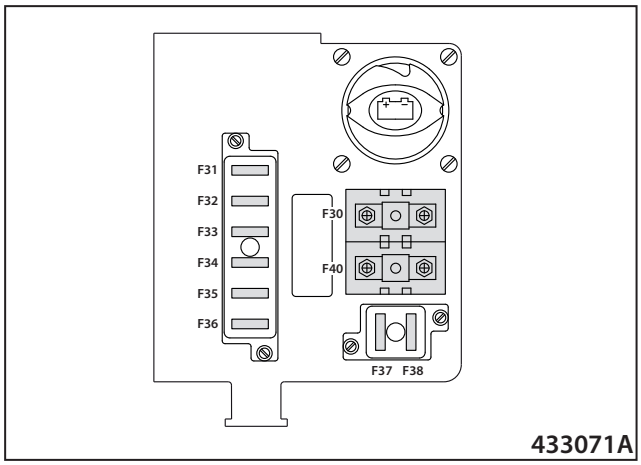
Fuse (F37) - 15 A EAT sensors

Fuse (F38) - 5 A EAT sensor

Fuse (F40) - 70 A Pre-heating

Replace fuses only with fuses of identical value!






2703

Parking brake indicator lamp

The lighting indicator lamp indicates that the parking brake is enabled.

The flashing indicator lamp indicates that the wheel blocking protection is enabled while driving.


2704

Brake overheating indicator

The lighting indicator lamp indicates high temperature in the brake circuit. The machine reduces its speed automatically.


AMN118

Indicator lamp of clogged SCR catalyst (Selective Catalytic Reduction) – crystallisation

The indicator lamp signals the requirement to regenerate the SCR catalyst.


AMN119

Indicator lamp of DPF (Diesel Particulate Filter) **cleaning**

The machine is not equipped with a DPF.


AMN120

Indicator lamp of high temperature of exhaust gases

The indicator lamp signals the SCR (Selective Catalytic Reduction) regeneration in progress or exceeding of limit temperature of combustion gases at normal operation.


AMN128

DEF (AdBlue) level indicator lamp

The indicator lamp indicates low level of DEF (AdBlue). Refill DEF (AdBlue). The indicator lamp signals problems with quality/quantity of DEF (AdBlue).

DEF (AdBlue) handling danger. Proceed according to chapter 3.6.5.

Use only DEF (AdBlue) according to the specification in Chap. 3.2.6.

Fill DEF (AdBlue) according to Chapter 3.6.5.


AMN58

Danger warning

The indicator lamp and an audible signal indicate a diagnostic error of the machine electronics.

If there is a serious fault, the machine changes to its safe condition – the machine stops, the parking brake is enabled, and/or the engine stalls.

An error message will be displayed. After the machine is turned off using the key, the error will be reset. After the next start-up, the machine can be operated in a usual way.

If there is a serious fault, the machine cannot be started until such a fault is removed.

If the error occurs repeatedly, shut down the machine and call the service. For easier communication with the service, check error messages on the service screen (3rd screen) and copy down codes of all diagnosed errors of the engine control unit and machine control unit.

2.7.1 Engine start

Before starting the engine, daily check the oil level in the engine and hydraulic tanks, coolant level in the cooling circuit and fuel level in the fuel tank. Check that there are no loosened, worn or missing parts on the machine.

Start the engine only from the driver's control stand! Use alarm horn to signal the engine starting and check nobody is endangered by starting the engine!

The operator must perform the daily brake test according to chapter 3.6.11.

Conditions to start the engine:

- the emergency brake is disabled,
- the driver sits on the seat – the seat switch is enabled,
- the travel control is in the parking brake position,
- the service switch is disabled,
- no fault is detected.

How to start:

- Switch ON the battery disconnector.
- Sit down on the seat.
- Set the travel control (3) to the brake position (P).
- Check that the emergency brake (12) is not activated.
- Check that the service switch (45) is not enabled.
- Insert key in the ignition box (19) in "0" position and switch over to "I" position.
- The unlock code prompt appears on the display (2) if the ignition lock function was enabled.
- Enter the unlock code and confirm by holding the OK button until the operation screen is displayed.
- The brake, charging and pre-heating indicator lamps will light up on the display.
- Wait until the pre-heating indicator lamp goes out.
- Use the alarm horn (13) to indicate the engine starting.
- Turn the key to "II" position to start the engine.
- The charging indicator lamps must go out after the starting is completed.
- After the travel control is changed to the neutral position, the brake indicator lamp goes out.

Note

If starting is unsuccessful, please turn your key back to "I" position. Unless engine starts even after 3 attempts - please check the oil system.

Do NOT start the engine for over 30 seconds. Wait 2 minutes before any next starting.

Following the engine start let the engine idle at increased rpm for 3÷5 min.

Do NOT let the engine idle for over 10 minutes – any idling longer then that may cause fouling of injectors, piston rings, or valves to get seized!

If the coolant temperature does not reach at least 60 °C (140 °F), do not load the engine at full power!

2.7.5 Panic response

- The immediate stop of the machine using the travel control (3) applies to all of the travel modes of the machine. When the travel control (3) is changed to the opposite position through (0) within 1 second, the machine will stop – the parking brake will be enabled, the engine will keep running, i.e. panic response. The machine can start moving again after the travel control (3) is changed to the brake position (P) and the travel direction (F/R) is selected.
- When the machine vibration is on, the vibration will stop also when the manual vibration mode is selected.

It is forbidden to use the panic response for common stopping the machine. Enable the panic response only in emergency when the machine must be stopped immediately.

2.7.6 Machine parking

- Shut down the Machine on flat and solid surface at a point with no potential of natural hazard (landslides, possible flooding, etc.)
- Set the travel control (3) to the brake position (P).
- Secure the machine with wheel chocks or other suitable means preventing unintended movement.
- Following the engine stop, before leaving the Machine, please disconnect its battery disconnector.
- Remove dirt from the machine (scrapers and tyres).
- Make overall inspection of the Machine and repair any defects that have occurred during operation.
- Lock the Machine covers and its cabin.

Do NOT stop hot engine instantly, but instead let it idle for 3 minutes. The engine and turbocharger will cool down slowly and evenly!

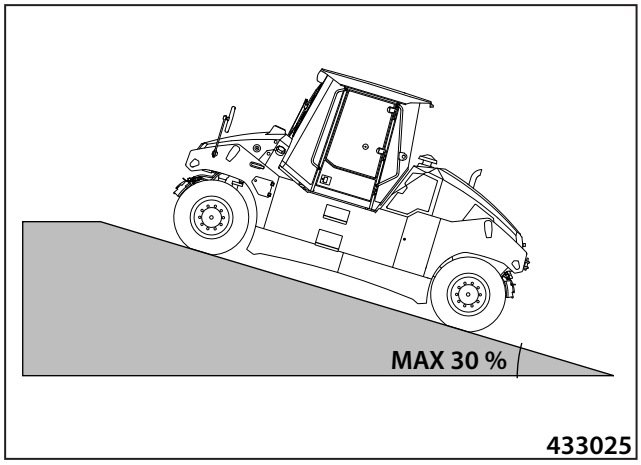
2.8.1 Machine loading

- Use a loading ramp or crane to load the machine onto the transport vehicle.

2.8.1.1 Loading the machine using a ramp

When loading the machine using a ramp, all safety regulations related to loading of the machine valid in the place of loading must be adhered to. The ramp must have appropriate loading capacity, antislip surface and must be stored on a flat surface. We recommend that you adhere to regulation BGR 233.

The maximum allowable inclination of the access ramp is 30%.



Non-adherence to the prescribed parameters of the ramp may result in damage to the machine.

When loading the machine, a second person must be present to signal approach onto the ramp. See the list of hand signals in chapter 2.1.6.

Pay increased attention when loading the machine. Improper handling can cause serious injury or death.

3 MAINTENANCE MANUAL

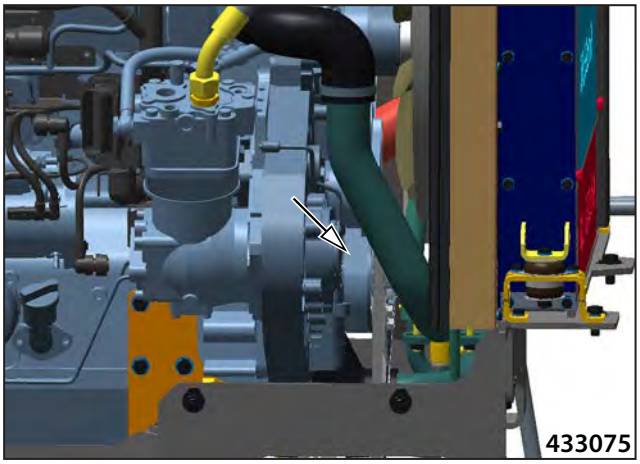
ART 280
(Deutz Tier 4 Final)

Every 500 hours of operation (6 months)	
3.6.17	Engine cooling liquid check
3.6.18	Engine oil change
3.6.19	Fuel filter replacement
3.6.20	Replace air filter elements
3.6.21	Check of wiring
3.6.22	Air conditioning coolant check
3.6.23	Clean cab ventilation filter
3.6.24	Air filter sensor check
3.6.25	Checking the wheel screws and nuts for tightening *
3.6.26	DEF filter replacement
3.6.27	Check of the machine weight sensor
3.6.28	Check of the inclinometer
Every 1000 hours of operation (1 year)	
3.6.29	Batteries check
3.6.30	KM nuts tightening check and front wheels lubrication
3.6.31	Air cooler cleaning
3.6.32	Belt check (air-conditioning)
3.6.33	Air conditioning compressor mounting check
3.6.34	Inspect the silencing system
3.6.35	Engine belt inspection
3.6.36	Water tank cleaning
3.6.37	Engine and machine diagnostics
3.6.38	Oil change in travel gearboxes **
Every 2000 hours of operation (2 years)	
3.6.39	Hydraulic oil change and filter replacement
3.6.40	Cleaning and checking the air conditioning system

3.6.6 Fan inspection

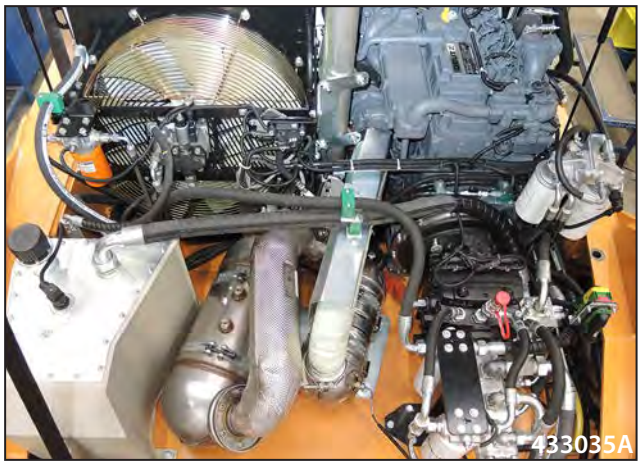
- Visually check the fan. If you find, for instance, any missing parts of the material, cracks, deformations, etc. - replace the fan.

- Check visually the belt. If any longitudinal cracks, smooth, bright flats occur on the belt, or belt's edges are frayed, or parts of the material are torn out, it is necessary to adjust or replace the belt. Belt tightening every 500 hours.



3.6.7 Checking the engine for leaks

- Check the engine and engine compartment visually for oil leaks.
- Remove detected faults.



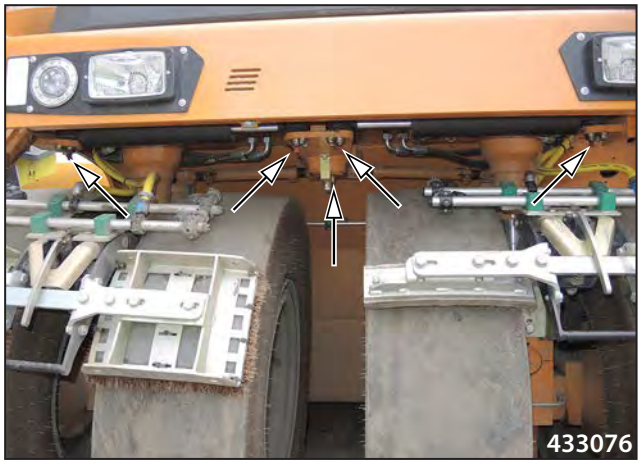
Every 250 hours of operation (3 months)

3.6.14 Machine lubrication

- Take off the caps on the greasing nipples.
- Step by step, put on the greasing nipple of high-pressure press and lubricate till the old grease starts pouring out.
- Reinstall the greasing nipple caps.

Use only the recommended lube greases, refer to Section 3.2.7.

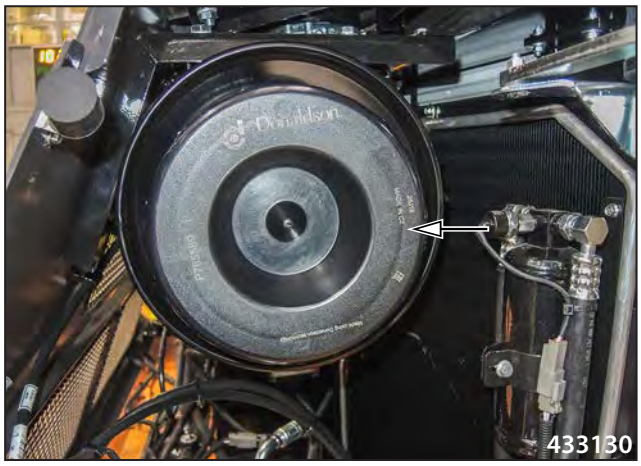
Steering pins 5x



Door hinges 6x

Edge cuter pins 2x

- Replace the main filter element from the filter shell.



Air filter element (set)
Order number: 1229388

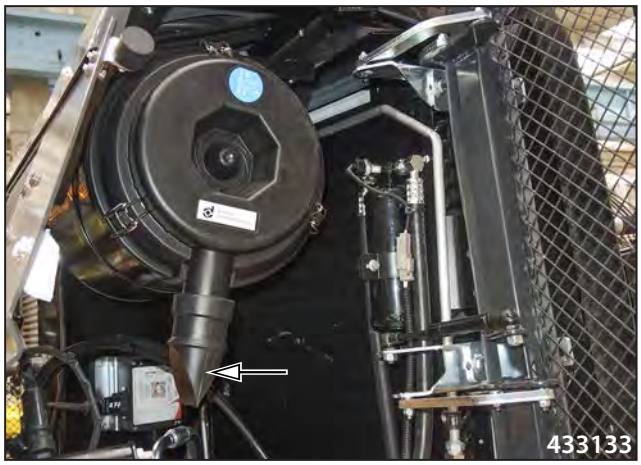
- Replace the safety element from the filter shell and check it.
- Replace the safety element always following three replacements of the main element.

When safety element is damaged, please replace it with the new one of identical type as per identification!

- Clean filter's inner space in such a way to avoid dust penetration into the inner feed piping to the engine.

NEVER use compressed air to clean the inner space.

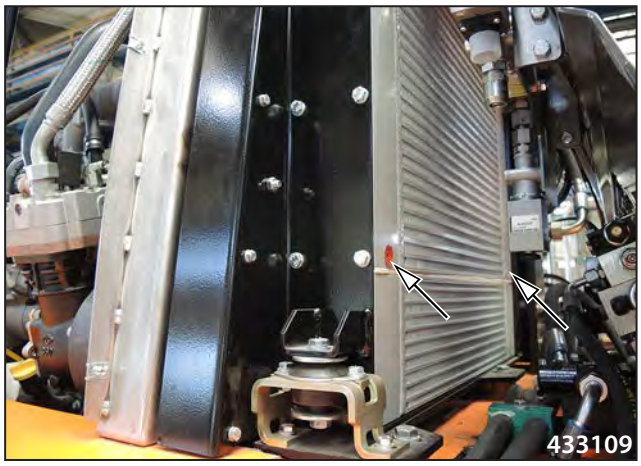
- Take off the air filter dust valve, clean it and reinstall.



Replace the dust valve immediately if it is damaged!

3.6.31 Air cooler cleaning

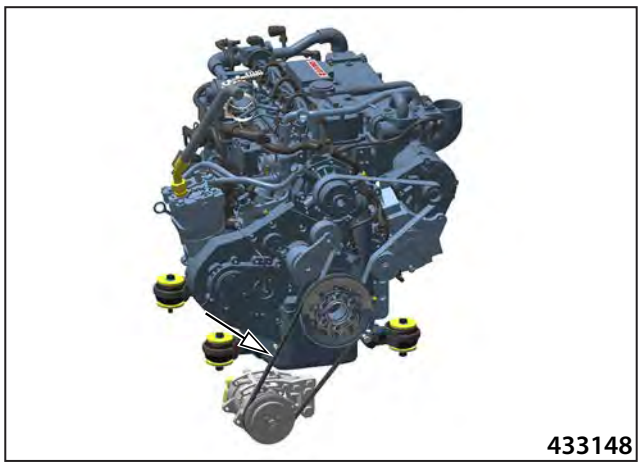
- Dismount the side cover.
- Prepare a suitable vessel.
- Dismount the plugs.
- Drain the compound.
- Mount the plugs.
-



3.6.32 Belt check (air-conditioning)

Checking the air-conditioning belt for tension:

- Press with your thumb at the spot where the belt length between pulleys is the longest, using 110 N (25 lb) strength.
- The max. slack is 10 mm (0.39 in).

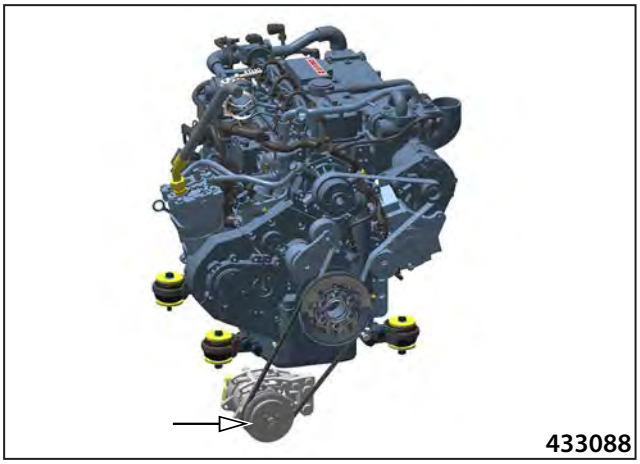


Checking the air-conditioning belt for wear:

- Visually inspect the belt.
- If longitudinal cracks appear on the belt, or the belt edges are ragged, or some material parts are pulled off, the belt must be replaced.

Tensioning the air-conditioning belt:

- Loosen the screws and move the compressor.



Replacing the air-conditioning belt:

- Loosen the screws and move the compressor.
- Take out the belt.
- Insert the new belt.

Change and tension the belt when the engine is not running!

Every 6000 hours of operation (4 years)

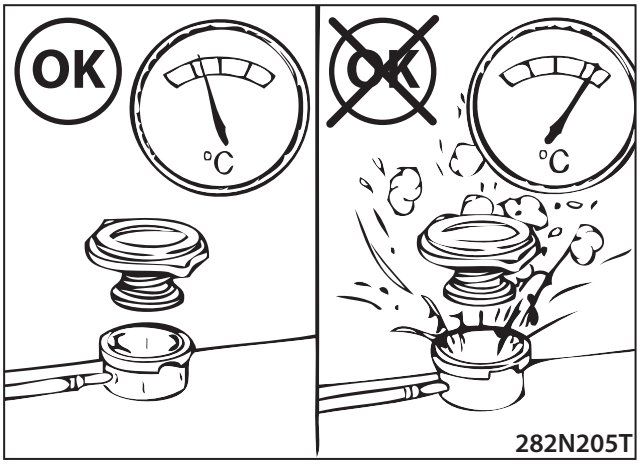
3.6.41 Engine coolant change

Draining the cooling circuit:

Before draining the coolant from the cooling circuit let the engine run for 5 minutes so that the liquid temperature can reach 50 °C (122 °F).

Do not open the pressure plug before the coolant temperature drops below 50 °C (122 °F). Beware of gushing of the coolant and scalding when opening the pressure plug.

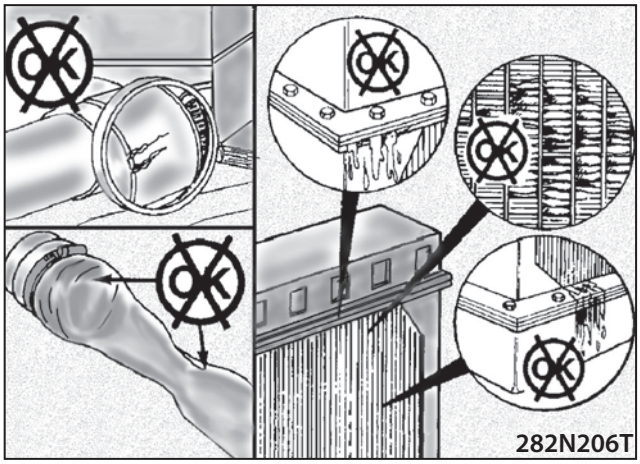
- Open the cooling system by removing the overpressure plug on the expansion tank.



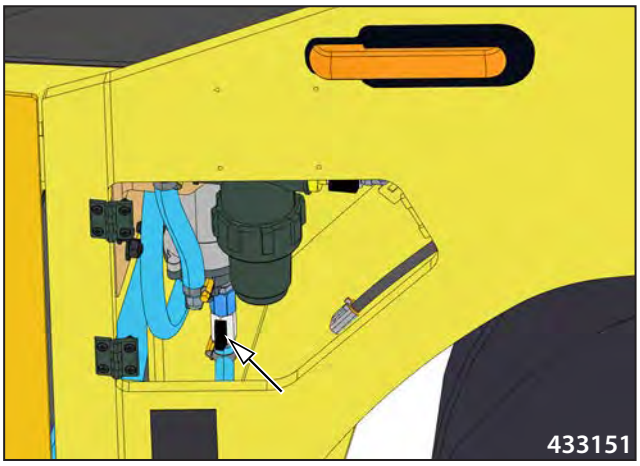
- Stop the engine.
- Remove the drain plug.
- Let the fluid drain into the prepared pans.
- The drained volume is about 27 l (7.1 gal US).

Note

Check the cooling system for defective hoses and missing hose clips. Check the cooler for damage and leakage and the cooling fins for clogging. Clean and repair it, if necessary.



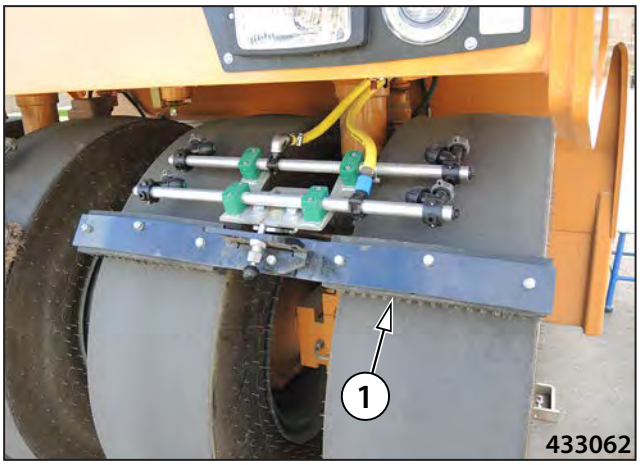
- Open the emulsion sprinkling valve and let the emulsion flow out.
- The drained volume of the emulsion is 64 l (16.9 gal US).

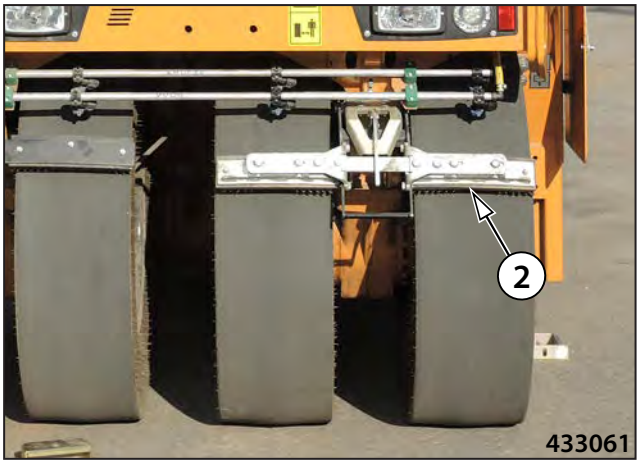


Catch the drained emulsion into a suitable container and do not let it soak into the ground.

3.6.49 Brush scrapers cleaning

- Check condition of front brushes (1), rear brushes (2) – clean them and repair them.





Error codes	Bodas-Service display	Error description
8646	Sprinkling pump 1 output	Incorrect level of the sprinkling relay signal 1
8648	Sprinkling pump E output	Incorrect level of the emulsion sprinkling relay signal
8649	Cutter left valve output	Incorrect level of the magnet signal for the left cutter
864A	Cutter right valve output	Incorrect level of the magnet signal for the right cutter
864B	Cutter up valve output	Incorrect level of the magnet signal for the up cutter
864C	Cutter down valve output	Incorrect level of the magnet signal for the up cutter
8651	Tires press up out error	An error detected at the tyre air pressure filling output.
8652	Tires press down out error	An error detected at the tyre air pressure release output.
8653	Dynamic Brake Valve error	Error at the dynamic brake output
8654	Dynamic Brake Discharge error	Error at the dynamic brake relief output
9000	pwron supply VB low	Start condition not fulfilled – low battery voltage
9001	pwron supply VSS	Start condition not fulfilled – low voltage VSS_1, VSS_2 or VSS_3.
9002	pwron hwmonitor 1	Start condition not fulfilled – the RC unit hardware diagnostic test failed.
9003	pwron sequence - startcondition	Start condition not fulfilled – safety start condition not fulfilled (seat switch, P level, parking brake status).
9005	pwron engine speed	Start condition not fulfilled – low engine speed after the start.
9006	pwron hwmonitor 2	Start condition not fulfilled – the RC unit hardware diagnostic test failed.
9007	pwron sequence - Imobilizer	Start condition not fulfilled – locked by the ignition lock.
900A	pwron safout cable brake	Start condition not fulfilled – a safety SAFOUT output has a broken cable.
900B	pwron safout short circuit	Start condition not fulfilled – a safety SAFOUT output is short-circuited.
9010	pwron powerswitch 1	Start condition not fulfilled – the main switch of power outputs is locked due to a RC unit hardware error – VP voltage.
9011	pwron powersupply	Start condition not fulfilled – there is no voltage at the power supply inputs of power outputs.
9012	pwron powerswitch 2	Start condition not fulfilled – the main switch of power outputs cannot be closed.
9013	pwron reverse power	Start condition not fulfilled – the main switch current flows in opposite direction – the power output connected to the ext. power supply.
9014	pwron emergency stopp	Start condition not fulfilled – the emergency stop button is pressed.
9015	pwron Safety input error	Error of safety inputs at the start-up.
9016	pwron safout unaviable	Start condition not fulfilled – one or more SAFOUT safety outputs not available.