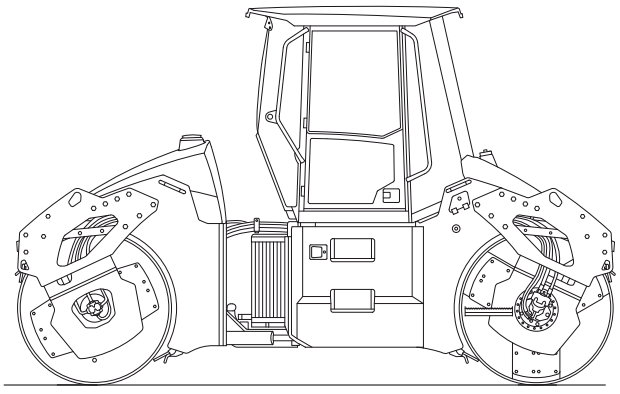
AMMANN

Operating manual

ARX 90
Deutz



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ARX 90
Articulated tandem roller

Deutz Tier 3

Operating manual

Edition 04/2014 EN
From Serial No. 4122002
Translation of Original Operating Manual

ES Prohlášení o shodě

(**Původní ES prohlášení o shodě /** *Original EC Declaration of conformity / Ursprüngliche EG-Konformitätserklärung*)

EC Declaration of conformity / EG-Konformitätserklärung

(**Překlad původního ES prohlášení o shodě /***Translation original EC Declaration of conformity / Übersetzung der ursprünglichen EG-Konformitätserklärung*)

Originální ES prohlášení o shodě je dodané s dokumenty během expedice stroje. / *The original EC Declaration of Conformity is supplied with documents during expedition of machine. / Das Original der EG-Konformitätserklärung wird mit den Unterlagen während des Versands der Maschine mitgeliefert.*

Výrobce / *Manufacturer / Hersteller:* **Adresa /** *Address / Adresse:* **IČ /** *Identification Number / Ident.-Nr:*	Ammann Czech Republic a.s. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic 000 08 753
Jméno a adresa osoby pověřené sestavením technické dokumentace podle 2006/42/ES a jméno a adresa osoby, která uchovává technickou dokumentaci podle 2000/14/ES / *Name and address of the person authorised to compile the technical file according to 2006/42/EC and name and address of the person, who keeps the technical documentation according to 2000/14/EC / Name und Adresse der mit der Zusammenstellung der technischen Dokumentation beauftragten Person gemäß 2006/42/EG und Name und Adresse der mit der Aufbewahrung der technischen Dokumentation beauftragten Person gemäß 2000/14/EG:*	Ing. Radek Ostrý Ammann Czech Republic a.s. Náchodská 145, CZ-549 01 Nové Město nad Metují, Czech Republic
Popis strojního zařízení / *Description of the machinery / Beschreibung der Maschineneinrichtung:*	
Označení / *Designation / Bezeichnung:*	Kloubový tandemový válec / *Articulated tandem roller / Knickgelenkte Tandemwalze*
Typ / *Type / Typ:*	ARX 90
Verze / *Version / Version:*	
Výrobní číslo / *Serial number / Maschinennummer:*	
Motor / *Engine / Motor:*	Deutz QSB TCD3,6 L4, vznětový, jmenovitý výkon (ISO 3046-1): 74,0 kW, jmenovité otáčky: 2200 min^{-1}. / *Deutz QSB TCD3,6 L4, Diesel, nominal power (ISO 3046-1): 74,0 kW, rated speed: 2200 RPM. / Deutz QSB TCD3,6 L4, Dieselmotor, Nennleistung (ISO 3046-1): 74,0 kW, Nenndrehzahl: 2200 min^{-1}* .
Prohlašujeme, že strojní zařízení splňuje všechna příslušná ustanovení uvedených směrnic / *We declare, that the machinery fulfils all the relevant provisions mentioned Directives / Wir erklären, dass die Maschineneinrichtung sämtliche entsprechenden Bestimmungen aufgeführter Richtlinien erfüllt:*	Strojní zařízení – směrnice 2006/42/ES / *Machinery Directive 2006/42/EC / Maschineneinrichtung – Richtlinie 2006/42/EG* Elektromagnetická kompatibilita – směrnice 2004/108/ES / *Electromagnetic Compatibility Directive 2004/108/EC / Elektromagnetische Kompatibilität – Richtlinie 2004/108/EG* Emise hluku – směrnice 2000/14/ES / *Noise Emission Directive 2000/14/EC / Lärmemissionen – Richtlinie 2000/14/EG*
Harmonizované technické normy a technické normy použité k posouzení shody / *The harmonized technical standards and the technical standards applied to the conformity assessment / Harmonisierte technische Normen und für die Beurteilung der Konformität verwendete Normen:*	ČSN EN ISO 12100, ČSN EN 500-1+A1, ČSN EN 500-4, ČSN EN ISO 4413, ČSN EN 13309:2001
Osoby zúčastněné na posouzení shody / *Bodies engaged in the conformity assessment / An der Konformitätsbeurteilung beteiligte Personen:*	Notifikovaná osoba č. 1016 / *Notified Body No.: 1016 / Notifizierte Stelle Nr.: 1016* Státní zkušebna zemědělských, lesnických a potravinářských strojů, a. s., Třanovského 622/11, 163 04 Praha 6–Řepy, ČR. / *The Government Testing Laboratory of Agricultural, Food Industry and Forestry Machines, Joint–stock company, Třanovského 622/11, 163 04 Praha 6–Řepy, Czech Republic / Staatliche Prüfanstalt für Land-, Forst- und Lebensmittelmaschinen, AG Třanovského 622/11, 163 04 Praha 6–Řepy, Tschechische Republik.*
Použitý postup posouzení shody / *To the conformity assessment applied procedure / Verwendetes Vorgehen der Konformitätsbeurteilung:*	Na základě směrnice 2000/14/ES příloha VI / *Pursuant to the Noise Emission Directive 2000/14/EC, Annex VI / Aufgrund der Richtlinie 2000/14/EG, Anlage VI*
Naměřená hladina akustického výkonu / *Measured sound power level / Gemessener Schallleistungspegel:*	L_{WA} = 106 dB
Garantovaná hladina akustického výkonu / *Guaranteed sound power level / Garantierter Schallleistungspegel:*	L_{WA} = 107 dB

Místo a datum vydání / *Place and date of issue / Ort und Datum der Ausgabe:* Nové Město nad Metují,

Osoba zmocněná k podpisu za výrobce / *Signed by the person entitled to deal in the name of manufacturer / Zeichnungsberechtigter für den Hersteller:*

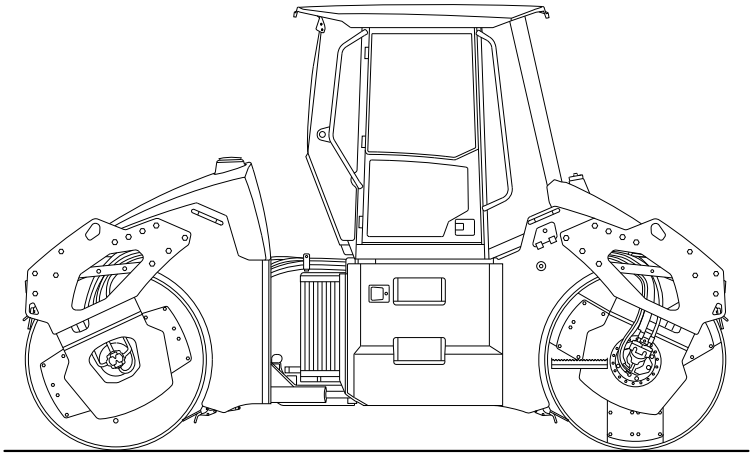
Jméno / *Name / Name:* Bc. Martin Čeřovský
Funkce / *Grade / Stelle:* Quality Control Manager
Podpis / *Signature / Unterschrift:*

Congratulations on your purchase of an AMMANN road roller. This modern compaction device is characterised by simple operation and maintenance and is the product of many years of AMMANN experience in the field of road roller engineering. In order to avoid faults due to improper operation and maintenance we request that you read this operating manual with great care and keep it for later reference.

With kind regards,

Ammann Czech Republic a.s. | Náchodská 145 | CZ-549 01 Nové Město nad Metují

☎ + 420 491 476 111 | Fax + 420 491 470 215 | info@ammann-group.com | www.ammann-group.com



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This manual consists of:

I. Specification manual

II. Operating instructions

III. Maintenance manual

The following explanations serve to familiarise the machinist (operator) with the roller and to support him during handling and maintenance. It is therefore absolutely necessary to provide the operator with these instructions and to ensure that he reads them carefully before using the road roller. This aids training comprehension during the first use of the road roller.

Subsequent faults due to improper operating are avoided.

Adherence to maintenance instructions increases the reliability and lifetime of the machinery. It reduces repair costs and down time.

AMMANN accepts no liability for continued safe functioning of the road roller if it is incorrectly operated and / or operating modes are employed which represent improper use.

In order to ensure the smooth operation of AMMANN compaction equipment, use for repairs only the original spare parts supplied by AMMANN.

All spare parts are available from your dealers or can be ordered at spareparts.machines@ammann-group.com, helpline: +41 62 916 66 66; should you need further information, contact support.machines@ammann-group.com, hotline: +420 776 667 775.

These instructions must always be kept available on the equipment.

Preface

Information, specifications, and recommended operation and maintenance instructions contained in this publication are basic and final information at the time of the printing of this publication. Printer's errors, technical modifications, and modifications of figures are reserved. All dimensions and weights are approximate and, therefore, not binding.

Ammann Czech Republic a.s. reserves the right to perform modifications without obligation to inform the machine user. If you identify any differences between the machine operated by you and the information contained in this publication, contact your local dealer.

SYMBOLS OF THE SAFETY NOTICES:

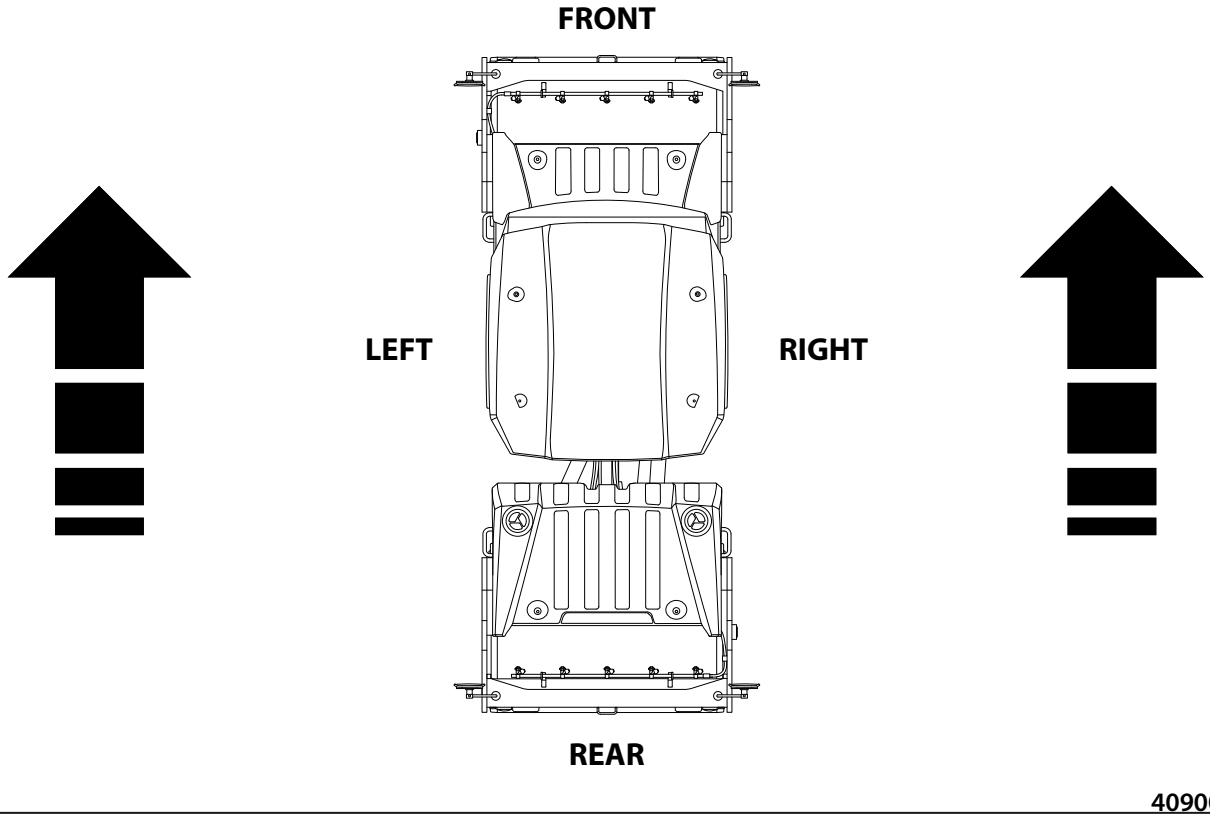
The notice warns of a serious risk of personal injury or other personal hazards.

The notice warns of possible damages to the machine or its parts.

The notice warns of the necessity of environmental protection.

! WARNING !

As used in this operating manual, the terms „right“, „left“, „front“ and „rear“ indicate the sides of the machine moving forward.



Content

Content

1. SPECIFICATION MANUAL

ARX 90
(Deutz Tier 3)

1.1. Basic specification

Machine description

Tandem roller with an articulated frame with two smooth steel driven vibrating drums. Steering using the articulated frame enables the setting of extended track (crabbing).

Machine application

ARX 90 rollers are intended for medium and large-sized compaction works in transport construction (roads and motorways, airfields) and building construction (industrial zones, etc.).

Rollers are suitable for compacting the asphalt mixtures up to a layer thickness (after compaction) of 150 mm (5,9 in), hydraulically consolidated mixtures up to a layer thickness of 220 mm (8,7 in), mixed soils up to a layer thickness of 320 mm (12,6 in), and sand and gravel materials up to a layer thickness of 420 mm (16,5 in).

The rollers are not suitable for the compaction of rockfill and loam and clay materials.

The machines of this line are designed for the operation under conditions according to ČSN IEC 721-2-1 (038900): WT, WDr, MWDr (i.e. a moderate climate zone, warm dry or hot dry zone with a limited ambient temperature range from -7 °C (19.4 °F) to +45 °C (113 °F).

The standard type of the machine is not intended for road traffic. For more information, please contact your dealer.

Please fill in the following data:

(see Pin label, Label of the Deutz engine)

Type of machine

.....

ICV/PIN (Serial number of the machine)

.....

Production year

.....

Type of engine

.....

Serial number of the engine

.....

The data mentioned in the table refer always when you contact the dealer or manufacturer.

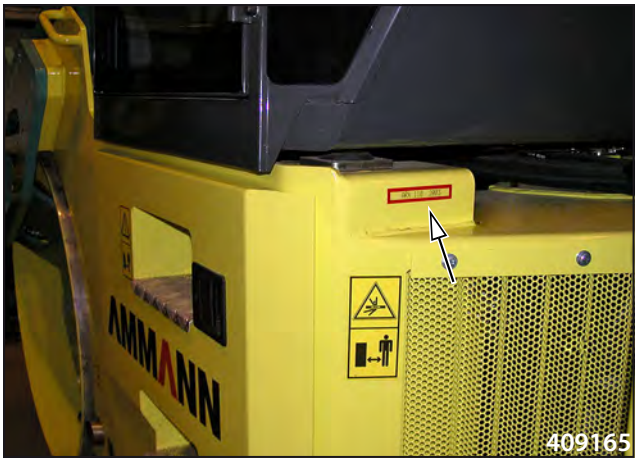
The machine that complies with the requirements as to health protection and safety is identified with a name plate with CE marking.

1 - Name - always mentioned only in the English version
2 - Type
3 - Serial number
4 - Operating weight
5 - Maximum weight
6 - Rated power
7 - Version
8 - Transport weight
9 - Front axle load
10- Rear axle load
11- Year of manufacture

Placing of the production label

Production label

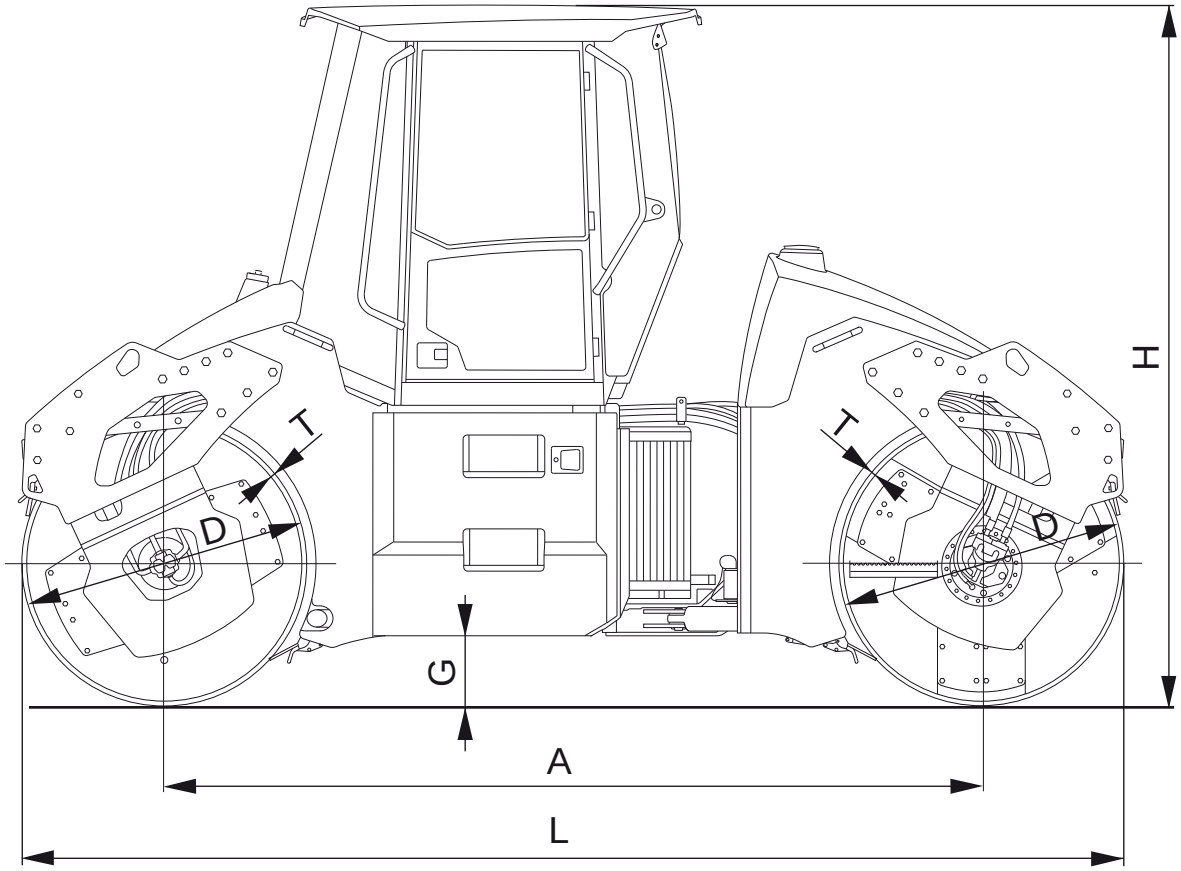
Machine's production number



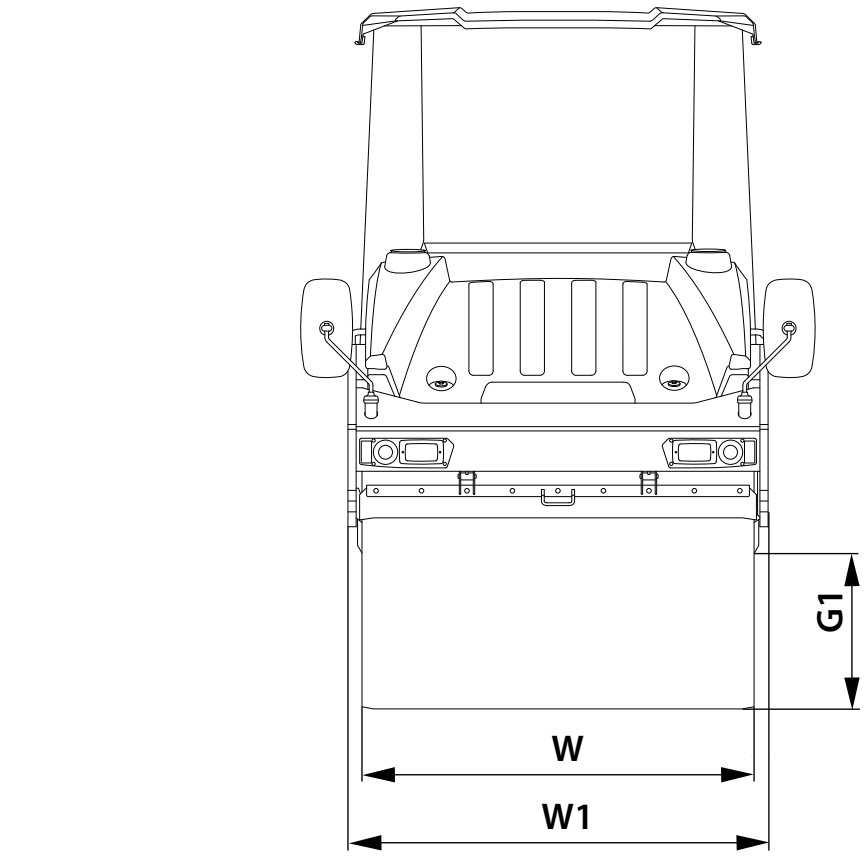
Label of the ROPS cabin

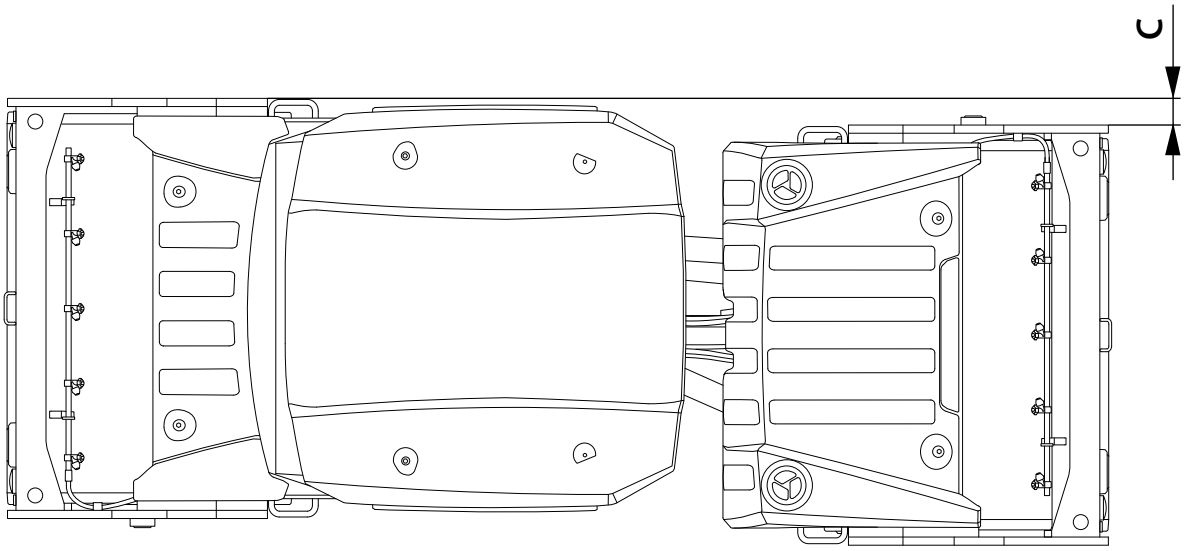
Deutz engine serial number.

1.2. Machine dimension scheme



	A	D	H	G1	G
mm	3500	1220	3000	780	300
in	137,8	48	118,1	30,7	11,8
	L	**T**	**W**	**W1**	**C**
mm	4720	19	1680	1800	170
in	185,8	0,7	66,1	70,9	6,7





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1.3. Technical data

Weight		ARX 90 T3	ARX 90 HF T3
Operating weight of CECE with cab, ROPS	kg (lb)	9540 (21030)	9540 (21030)
Operating load of CECE with cab, ROPS on front axis	kg (lb)	4860 (10710)	4860 (10710)
Operating load of CECE with cab, ROPS on rear axis	kg (lb)	4680 (10320)	4680 (10320)
Weight of half fluid capacities	kg (lb)	500 (1100)	500 (1100)
Operating weight of ISO 6016 with cab, ROPS	kg (lb)	10040 (22130)	10040 (22130)
Max. weight – cab + ROPS (6016) + accessories + weighing	kg (lb)	10970 (24180)	10970 (24180)
Maximum permitted weight according to ROPS	kg (lb)	13000 (28660)	13000 (28660)
Static linear load of front drum	kg/cm (lb/in)	28,9 (161,8)	28,9 (161,8)
Static linear load of rear drum	kg/cm (lb/in)	27,8 (155,7)	27,8 (155,7)
Cab weight	kg (lb)	440 (970)	440 (970)
Weight of Ammann edge cutter	kg (lb)	150 (330)	150 (330)
Weight of two-sided edge cutter	kg (lb)	300 (660)	300 (660)
Weight of Ammann spreader	kg (lb)	630 (1390)	630 (1390)
Driving characteristics			
Maximum transport speed	km/h (MPH)	11 (6,8)	11 (6,8)
Climbing ability without vibration	%	30	30
Climbing ability with vibration	%	25	25
Lateral stability during driving with vibration	%	15	15
Turning radius inner (edge)	mm (in)	5470 (215,4)	5470 (215,4)
Turning radius outer (contour)	mm (in)	7450 (293,3)	7450 (293,3)
Type of drive	-	Hydrostatic	hydrostatický
Number of driving axles	-	2	2
Oscillation angle	°	± 6	± 6
Angle of steering	°	± 31	± 31
Steering			
Type of steering	-	Joint	kloub
Steering control	-	Hydraulic	hydraulické
Linear hydraulic motors	-	1+1 (crab)	1+1 (crab)
Engine			
Manufacturer	-	Deutz	Deutz
Type	-	TCD3,6 L4	TCD3,6 L4
Power according to ISO 14396	kW (HP)	74,4 (100)	74,4 (100)
Number of cylinders	-	4	4
Cylinder capacity	cm^3 (cu in)	3621 (221)	3621 (221)
Nominal speed	min^{-1} (RPM)	2200	2200
Maximum torque	Nm (ft lb)/rpm	410/1600	410/1600
Engines complies with emission regulations	-	EU Stage IIIA, U.S. EPA Tier 3	EU Stage IIIA, U.S. EPA Tier 3
Cooling system of engine	-	Liquid	kapalinová

Brakes		ARX 90 T3	ARX 90 HF T3
Operating	-	Hydrostatic	hydrostatická
Parking	-	Mechanical multiple-disc	mechanická lamelová
Emergency	-	Mechanical multiple-disc	mechanická lamelová
Vibration			
Frequency I	Hz (VPM)	42 (2520)	46 (2760)
Frequency II	Hz (VPM)	55 (3300)	67 (4020)
Amplitude I	mm (in)	0,7 (0,028)	0,62 (0,024)
Amplitude II	mm (in)	0,34 (0,013)	0,23 (0,009)
Centrifugal force I	kN	84	97
Centrifugal force II	kN	70	70
Type of drive	-	Hydrostatic	hydrostatický
Watering			
Type of watering	-	Pressure	tlakové
Number of pumps	-	2	2
Number of filtrations	-	3	3
Fluid capacities			
Fuel	l (gal US)	210 (55,5)	210 (55,5)
Water for drum watering	l (gal US)	840 (221,9)	840 (221,9)
Engine (oil filling)	l (gal US)	9 (2,4)	9 (2,4)
Cooling system	l (gal US)	23 (6,1)	23 (6,1)
Hydraulic system	l (gal US)	60 (15,9)	60 (15,9)
Vibrating drum front	l (gal US)	7,5 (2)	7,5 (2)
Vibrating drum rear	l (gal US)	7,5 (2)	7,5 (2)
Drum cooling liquid	l (gal US)	2x90 (2x23,78)	2x90 (2x23,78)
Drum drive reducer	l (gal US)	2x2 (2x0,53)	2x2 (2x0,53)
Wiring			
Voltage	V	24	24
Battery capacity	Ah	2x55	2x55
Noise and vibration emissions			
Declared value of sound pressure A at operator's place (cab)	dB	82	82
Guaranteed sound power level A	dB	107	107
Highest weighted effective value of acceleration of vibrations transmitted to the whole body (cab)	m/s^2 (ft/s^2)	<0,5 (<1,6)	<0,5 (<1,6)
Total value of acceleration of vibrations transmitted to hands (cab)	m/s^2 (ft/s^2)	<2,5 (<8,2)	<2,5 (<8,2)

1.3. Technical data

Optional equipment
Air-conditioning
Installations for radio (antenna, 2 loudspeakers) (only a cab version)
Radio with CD
Reversing alarm
Lighting for road traffic
Lighting for night traffic
Beacon
Additional working headlights
Adjustable scrapers
Cutter/final compaction device
Two-edged cutter
Infrared thermometer
Fire extinguisher
Spreader AMMANN
Differential lock
ROPS 2D
Ammann set of tools
Biologically degradable oil
Different colour design (Ammann scheme), max. 2 different colours
Special colour design
Filters for the first 500 Mh
Filters for the first 2000 Mh
Additional documentation

Notes

2. OPERATION MANUAL

ARX 90
(Deutz Tier 3)

2.1.1. Safety Measures during Machine Operation

Safety measures given in the individual chapters of Enginering Documentation supplied with the Machine shall be added with Safety Precautions in force within a respective country that uses the Machine at workplace with regard to work organization, work process and personnel involved.

2.1.1.1. Compaction Work Commencement

- Constructional Supplier (Machine User) is liable to issue instructions for driver and maintenance before compaction work is started, that will include requirements on work safety provision during Machine operation.
- He must verify and mark:
  - utility lines
  - underground areas (direction, depth)
  - seepage or escape of hazardous materials
  - soil bearing capacity, slope of travelling plane
  - other obstractions incl. their removal.

  He must make Machine driver, who will carry out earth work, familiar with these conditions.
- He must specify Code of Practice (C.O.P.) part of which is work procedure for a given work operation and this work procedure will specify inter alia:
  - measures when working under extraordinary conditions (work within protective zones, within extreme slopes, etc.)
  - precautions for any natural disaster hazards
  - requirements on work performance while observing job safety principles
  - technical and organizational measures to secure safety of personnel, workplace and environment.

  He must make Machine driver evidently familiar with the Code of Practice.

2.1.1.2. Work Safety Secured by User

User shall promptly communicate any damage to the utility lines to their operator, and at same time he make measures to prevent unauthorized persons from entering endangered area.

He must ensure an employee does not work alone at a workplace. Another worker must always be in sight and within an ear-shot, who in case of accident will provide or call for help unless another effective form of monitoring or communication exists.

2.1.1.3 Ensurance of safety measures by the owner

- User shall provide for the Machine to be operated merely under those conditions and only for those purposes it is technically capable for under conditions set by manufacturer and respective standards.
- He must make sure the use of the Roller (Compacter) is used merely in such a way and at such workplaces where there is no hazard of making damage within nearby facilities, etc.
- He shall provide for regular inspection of operation, technical condition, regular machine maintenance in cycles per the Lubrication and Maintenance Manual. In cases of failing technical condition of the Machine to such an extent it poses hazard to safety of operation, persons, property or causes damage or impairs the environment, then the Machine must be put out of operation until a defect is repaired.
- He must specify who and what tasks may carry out under operation, maintenance or repair of the Machine.
- Any who drives the Machine (driver) and anybody who performs Machine maintenance or repairs must get familiar with the guidelines given in the Machine Operation Manual.
- He shall provide for fire extinguisher to undergo regular inspections.
- He must ensure the "Machine Operation Manual" and Operation Logbook are stowed at certain place inside seat box so always available to the driver.
- He shall furnish constant supervision by an appointed person during Machine operation under traffic on public roads, and he will in particular be liable to release instructions on securing the work safety.
- He must secure the removal of hazardous materials (fuel, oil, cooling liquid, brake fluid, etc.) from where these are spilled depending on their nature so as to avoid their adverse impact against environment, operation safety and persons' health.

2.1.1.4. ROPS Cab

- The ROPS cab must not be deformed and must not show signs of corrosion, cracks or breaks. It must be fixedly connected to the machine frame. No additional adjustments of the cab may be performed without approval of the manufacturer as such adjustments can cause a reduction in its strength. The screwed connections must comply with the specification and must be tightened to the specified torque, must be neither damaged nor deformed, and must not show signs of corrosion.

2.1.2. Reguirements on Driver's Qualification

- Only a driver trained under ISO 7130 and other local and national regulations designed for drivers of this group of machines may operate the Roller (Compacter).
- With no licence only the one who learns driving the Machine for the purpose of getting preliminary practice with the approval of User may drive the Machine, and such person has to be under direct and continuous surveillance of professional teacher or trainer.
- Licence holder is liable to take due care of the licence, and when requested, put it forward to the control authorities.
- Licence holder can make no registrations, changes or corrections in the licence card.
- He/she is liable to promptly report his/her licence loss to the authority that issued this licence.
- Driving the Roller alone may be performed by an employee mentally and physically fit, over 18 years old, who is:
  a) assigned by machine manufacturer for the assembly, testing and presentation of the Machine, for training the drivers, whereas he/she must be made familiar with safety work regulations in force at the workplace

  or

  b) assigned by Constructional Supplier to operate (carry out maintenance) and is evidently trained and acquainted with, or owns professional competence to operate and drive under special regulations (machinist licence, etc.).
- Machine driver must undergo training and examination concerning work safety regulations at least 1x every 2 years.

2.1.3. Driver's Liabilities

- Before starting to operate the Machine the driver will be liable to get familiar with the guidelines given in the documentation delivered with the Machine, with safety precautions in particular, and observe these thoroughly. This applies as well to the personnel in charge of maintenance, adjustments and repairs of the Machine.
- Do not drive the Roller unless made familiar with all the Machine functions, working and operating elements, and unless knowing exactly how to control the Machine.
- Follow safety signs located on the Machine, and keep them in legible condition. Replace or add those impaired or missing ones.
- Before work commencement the driver must get familiar with the workplace environment, i.e. with the slopes, utility line system, with necessary types of workplace protections with regard to the environment (noise, etc.).
- When finding out any health hazard, life hazard to persons, hazard to property, failures, during hardware accidents, or when finding symptoms of such hazards during operation, the driver must, unless able to remove such hazard by himself/herself, stop his/her work and secure the Machine against undesired starting, communicate this to a person accountable, and depending on chances, notify all the persons exposed to such hazard.
- Before Machine operation startup the driver will be liable to get familiar with the records and operation deviations found out in course of the previous work shift.
- Before work is started he/she must inspect the Machine, its accessories, check up control elements, communication and safety devices, whether these are operable in line with the Manual. When finding out a malfunction that might be hazardous to job safety, and he/she is not able to repair it, then he/she must not start running the machine and instead report such failure to the person accountable.
- During work with the Machine the driver must be fastened with the seat belt. The seat belt and its mounting shall not be damaged!
- When driver finds any defect during operation he/she must immediately stop the Machine, secure it safely against undesired ignition.
- During operation the driver shall follow the Machine run and record any defects found in the Operation Logbook.
- Driver shall keep his/her Operation Logbook designed to maintain records about Machine handover between the drivers, about the defects or repairs in course of operation, to write down major events during work shift.
- Prior turning on the engine the controls have to be in their zero position, no persons may stay within dangerous reach of the Machine.
- Indicate each Machine startup via an acoustic or light signal and this always before igniting the Machine engine.
- Confirm brake function and steering function before starting to run the Machine.
- Following the alarm an operator may start the Machine only when all the workers have left the danger area. At close (blind) workplaces it will be possible to start the operation only after a time necessary to leave danger area has elapsed.

2.1. Major Safety Precautions

- During Machine operation observe safety regulations, make no action that might endanger work safety, give full attention to Machine steering.
- Respect Code of Practice or instructions of a person responsible.
- When rolling (traversing) the Machine within a workplace adapt your speed to a terrain condition, to a work performed and weather conditions. Watch permanently the clearance so to avoid collision with any obstruction.
- Upon completion or stop of the Machine operation during which driver leaves the Machine, he/she must make measures against unauthorized use of the Machine or against spontaneous starting the engine. Remove key from the ignition box, disconnect the wiring via disconnector, lock the cabin, engine bonnet.
- When shutting down the Machine on roads the measures under regulations effective on roads shall be taken.
- When operation is completed, park the Machine at a proper parking place (flat, bearing area) so as not to endanger Machine stability, not to make the Machine interfere with traffic roads, not to expose the Machine to falling objects (rock), and where the Machine is safe against any natural disaster of other kind (floods, landslides, etc.).
- In the event that the machine has no cab or when the windows are open, the operator must wear ear protectors.
- When working with the Machine is ended all the defects, damage to the Machine and any repairs made shall be written down in the Operation Logbook. Upon immediate changing of drivers the driver will be liable to call attention of changing driver to any facts identified.
- Driver shall use personal protective equipment (PPE) - work clothing, safety shoes, the clothing shall not be too loose, impaired, hair protected with proper head piece. During maintenance (lubrication, refilling, replacement of working media) your hands must be protected with proper gloves. Use proper muffs when using Machine with no cabin or with open windows.
- Driver shall maintain the Machine equipped with fittings and outfit required.
- Maintain the Machine free of oil dirt or flammable materials. Keep the drive's stand, foot rests and runner areas clean.
- When the Machine comes into contact with high voltage observe the following principles:
  - try to leave with the Machine a hazardous zone
  - do not leave driver's stand
  - give warning to others to keep off and not touch the Machine.
- To keep the machine free of oil contaminants and inflammable materials.

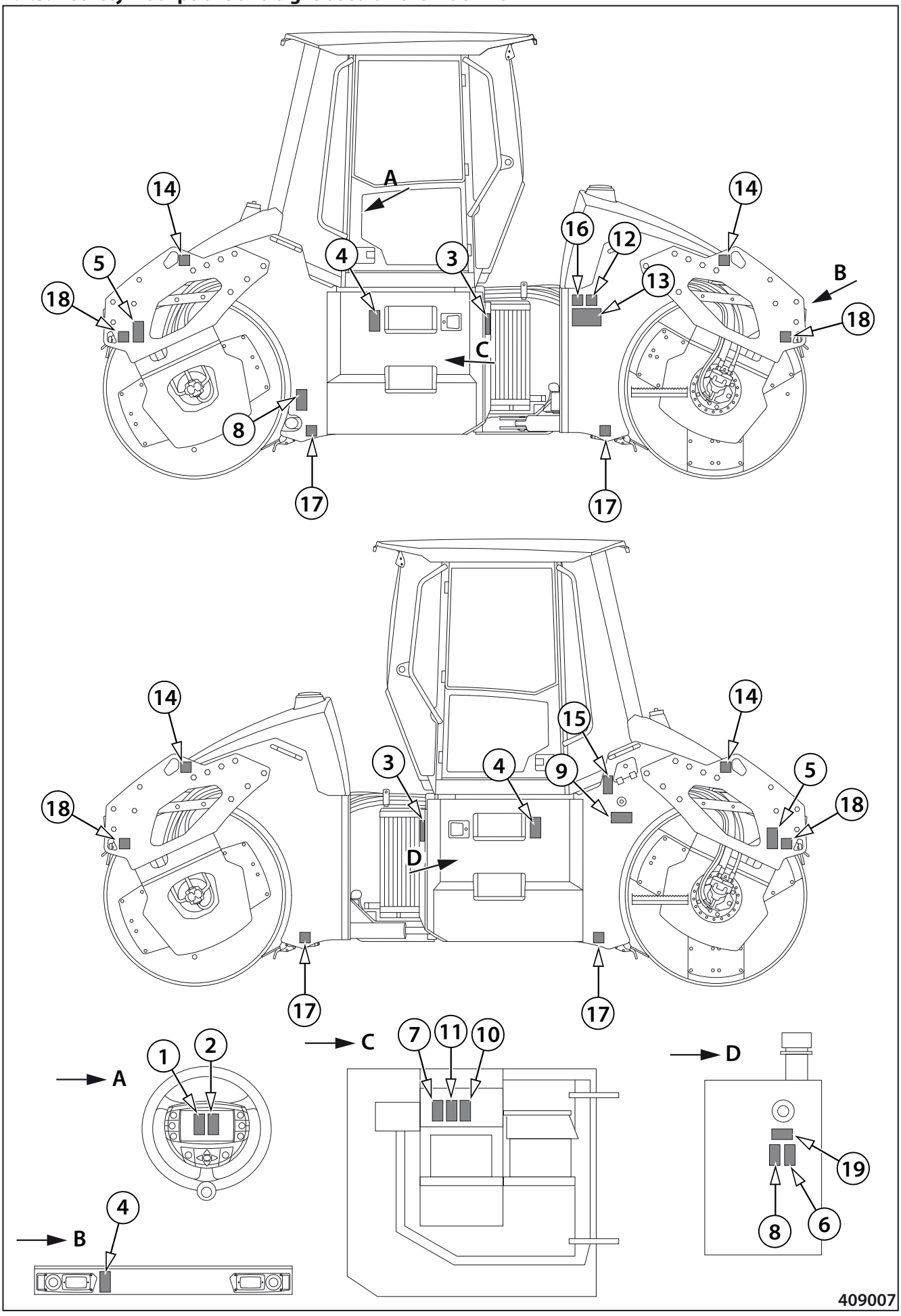
2.1.4. Forbidden activities - safety and guarantee

It is forbidden to:

- 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.
- To work in vibro-stroke mode in the long term!
- Quickly increase and decrease engine speed. It can damage the engine.
- Use the emergency brake for turning off the engine during normal operation of the machine.
- Operate the machine in the explosive environment and underground.
- To use the machine following ingestion of alcoholic bewerages or dopes.
- To use the machine if its operation might put its technical condition, safety (life, health) of persons, facilities or objects, or road traffic and its continuity, at risk.
- Put into operation and use the machine when other persons are within its hazardous reach - exception is training a driver by lector.
- Put into operation and use the machine when some of its safeguarding device (emergency brake, driving brake, horn, etc.) Has been dismantled or damaged.
- To roll and compact at such slopes where machine stability would be disrupted (turning over). Machine's static stability stated will lower by drive's dynamic effects.
- To roll and compact at such angles of slopes where hazard of soil breaking off (dropping) under the machine exists, or loss of adhesion followed by uncontrolled slip might occur.
- To control the machine in some other way than stated in driving manual.
- To roll and compact per bearing capacity of subsoil at such a distance from the edge of slope or trenches, where hazard of landslide or shoulder breaking off (dropping) together with the machine would occur.
- To roll and compact with vibration at such a distance from the walls, cuts, slopes, where their slip (slide) would happen and the machine covered in.
- To compact with vibration at such a distance from buildings or facilities and equipment within which the risk of them being damaged due to vibration transfer impact, would occur.
- To operate the machine unless driver control stand fixed properly.
- To move and transport persons on the machine.
- To operate the machine when within hazardous reach thereof are other machines or transportation means aside from those that operate in mutual concert with the machine.
- To operate the machine at places impossible to see from driver's stand, and where hazard to people or property could occur unless work safety has been secured through some other way like for instance via signalling by duly instructed person.
- To work with the machine at a protected zone of electric lines or substations.
- To cross electric cables if these are not properly protectedli against mechanical damage.
- To operate the machine under lowered visibility or at night, unless machine's working area and workplace are illuminated sufficiently.
- To leave driver's cockpit of the machine when the machine is running.
- Boarding or or getting off while on the run, jumping off the machine.
- Sit or stand on the outside parts of the machine when driving, or stand on the steps.
- Leave unsecured machine - move away from the machine without having prevented its misuse.
- Disable safeguarding, protective or locking systems or alter their parameters.
- Use the machine with oil, fuel, cooling liquid or other fillings leaking.
- Start the engine through some other way than given in the driving manual.
- Locate some other items (tools, accessories) aside from personal needs at driver's stand.
- Lay away material or other objects on the machine.
- Remove dirt while the machine is running.
- Perform maintenance, cleaning or repairs with the machine not secured against spontaneous move or accidental start, and when contact of a person with moving parts of the machine is not excluded.
- Contact of moving parts of the machine with human body or objects and tools held in hands.
- Smoke or handle open fire when checking or pumping fuels, refilling oils, lubricating the machine, or inspecting the accumulator or making up the accumulator.
- Carry rags soaked with flammable materials, or carry flammable liquids in free vessels on the machine (in engine bay).
- Let the engine run inside confined spaces.
- 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.
- Use pressure washing near the machine control unit.

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

2.1.5. Safety inscriptions and signs used on the Machine



1. Read Operation Manual!


2702bz

Use Operation Manual to make yourself thoroughly familiar with Roller Control and its Maintenance. (the symbol will be displayed on the display).

2. Switch ON Safety Belt!


2687bz

Switch ON safety belt before driving! (the symbol will be displayed on the display).

3. Pinch Points


2941bz

Maintain safety distance away from the Machine. Hazard of being clamped by the Machine between front and rear frame. (symbols located near steering joint)

4. Danger zone


2942bz

Keep a safe distance! (Symbol located on the rear rail, on the left and on the right on the front frame)

5. Danger zone


3352bz

Keep a safe distance from the cutter and compactor if in operation. (Option equipment according to the customer's wish. symbol located on the yoke over the edge cutter)

6. Injury Hazard


2601bz

Keep safety distance away from rotating pulley and belt. (symbol located on the hydraulic tank)

7. Adjust at Rest


2584bz

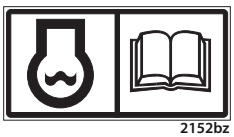
Carry out adjustment or maintenance with engine stopped. (symbol located on the left door of the engine compartment)

8. Risk of burn


2586bz

Do NOT touch Machine's hot parts unless you made certain these are cooled down sufficiently. (symbol located on the hydraulic tank and on the left side of the front frame over the exhaust)

9. Cooling liquid


2152bz

Cooling liquid is harmful to health. Read the operating manual! (symbol located on the right side of the front frame)

10. Explosion Hazard


3698bz

Read Operation Manual before Battery maintenance, or when starting via starting cables. (symbol located on the left door of the engine compartment)

11. Disconnect the Wiring


2668bz

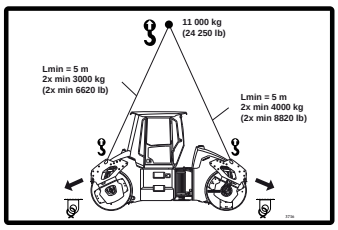
Before welding, please disconnect the wiring, alternator, Machine's electronics and Engine Control Unit. (symbol located on the left door of the engine compartment)

12. Max Machine Height

3218bz

Pay attention when passing through places with vertical constraint. (symbol located on the left on the rear frame)

13. Lifting & Rigging Plan



3716bz

To lift the Machine use rigging of sufficient loading capacity. Before lifting, please secure the Machine articulation. (symbol located on the left on the rear frame)

14. Lifting Points


2153bz

Use only these points to lift the Machine. (symbols located on both sides of the frame)

15. Cooling liquid


3227bz

Danger of scalding. Do not open the expansion tank lid until the liquid cools down below 50 °C (122 °F). (symbol located on the right side of the front frame)

16. Noise Emitted

3191bz

External noise of the Machine. (symbol located on the left side of the rear frame)

17. Jacking point


3208bz

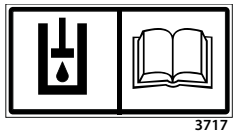
Place to install hand jack or fixed support of the Machine. (symbols located on both sides of the frames)

18. Sling Points


3048bz

The machine is to be rigged in these points. (Symbols located on the both sides of the frames)

19. Hydraulic oil level


3717

Maintain the proper hydraulic oil level. Read the operation manual! (symbol located on the hydraulic tank).

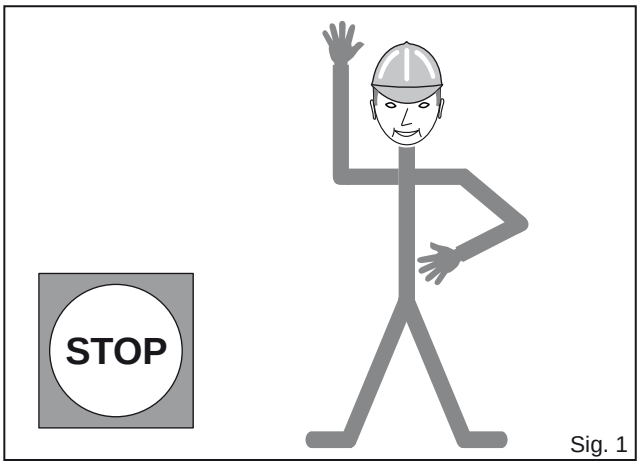
2.1.6. Hand Signals

Signals given by an assistant operator if the operator cannot see the travelling or working area or machine work devices.

SIGNALS FOR GENERAL COMMANDS

Stop

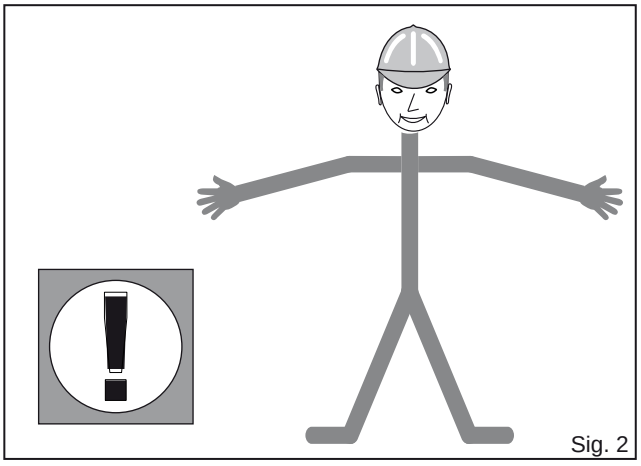
One arm erected with open palm in the direction of the driver, second arm akimbo.



Sig. 1

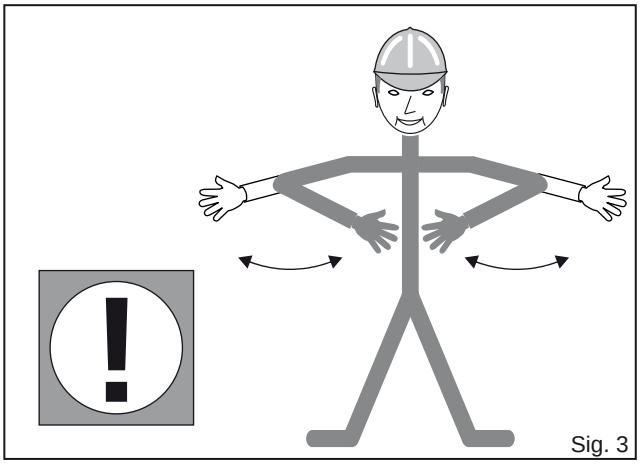
Attention

Both arms sideways raised horizontally - palms forward.


Sig. 2

Attention, Danger

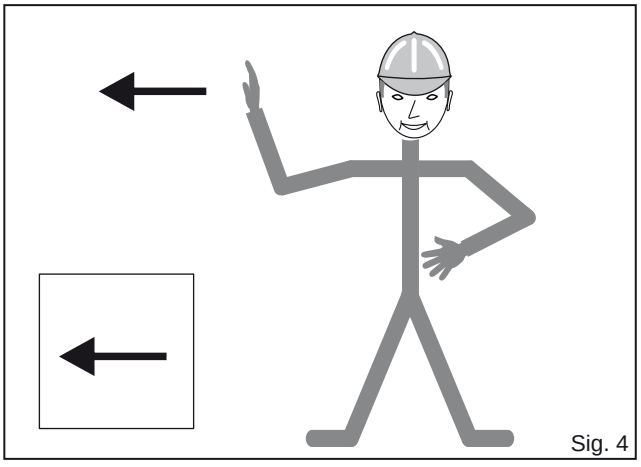
Swinging motion of both of the arms with antebrachium from the position of arms sideways raised horizontally to the position of arms sideways raised - arms bending across and back.


Sig. 3

SIGNALS FOR DRIVE

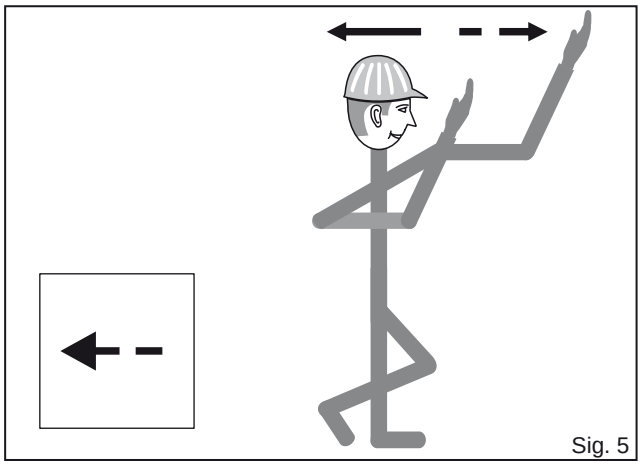
Departure with the Machine

One arm erected - bent with open palm, long motion of antebrachium in the direction of required motion, second arm akimbo.


Sig. 4

Low-speed cruising forward - towards me

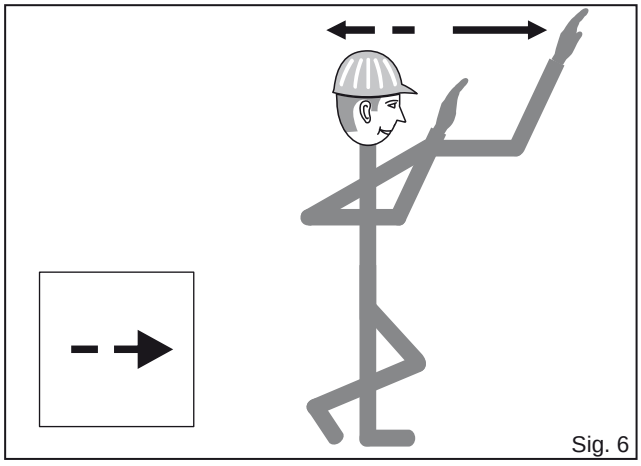
Both arms erected abreast bending across, with palms towards the body - short swinging movements of antebrachium towards the body and backward.



Sig. 5

Low-speed cruising backward - away from me

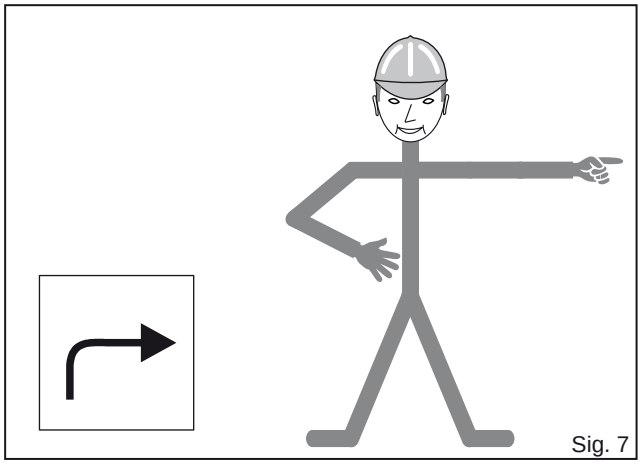
Both arms erected abreast bending across, with palms away from the body - short swinging movements of antebrachium away from the body and back.



Sig. 6

Driving to the right

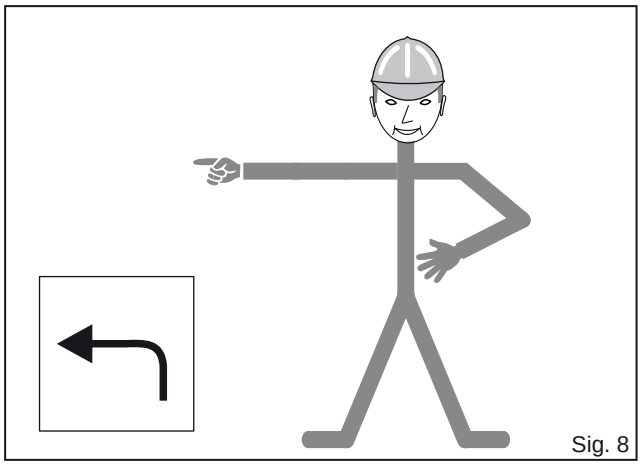
Left arm sideways raised, right arm akimbo.



Sig. 7

Driving to the left

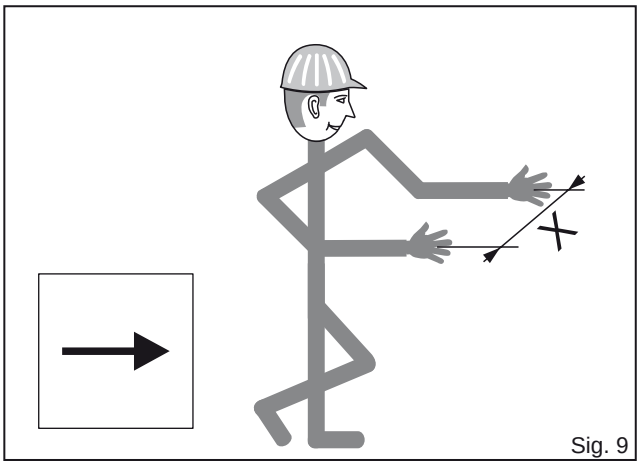
Right arm sideways raised, left arm akimbo.



Sig. 8

Short motion

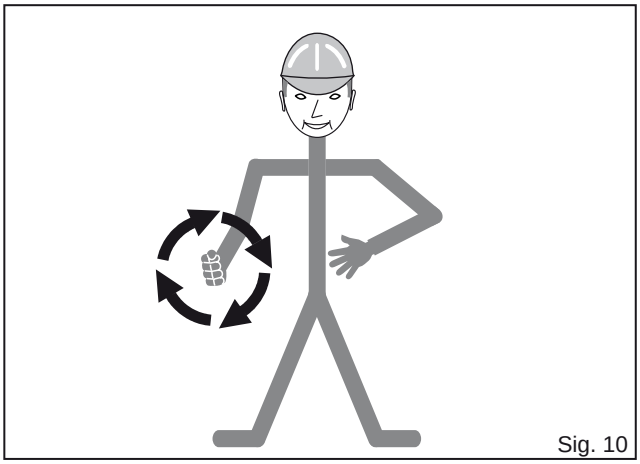
Both arms lifted forward bending across. Mark the „X“ distance between palms, then the motion signal follows.



Sig. 9

Engine start

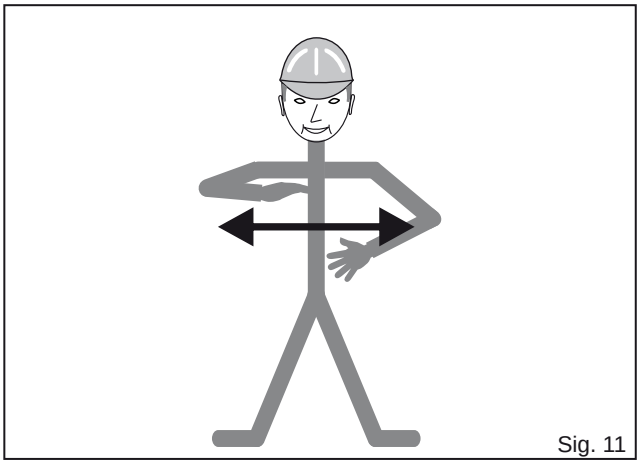
Circular motion of right hand's antebrachium, with the fist closed.



Sig. 10

Engine cut off

Oscillating motion of right hand sideways raised in front of the body to the sides.



Sig. 11

2.2. Ecological & Hygienic Principles

2.2.1. Hygienic Principles

When operating and storaging the machines a User will be liable to observe general principles of health and environmental protection, laws and regulations that relate to the given issue and are in force within a territory where the Machine is used.

- Oil proudcts, cooling system fillings, accumulator fillings, or painting materials incl. thinners are materials that pose health hazard. Workers coming into contact with these products during Machine operation or maintenance will be liable to follow general principles of one's own health protection, and abide by safety and hygienic guidelines of these products' manufacturers.

  We call your attention to the following in particular:

  - Eye and skin protection when handling accumulators
  - Skin protection when handling oil products, painting materials or cooling liquids
  - Washing your hands properly upon work completion or before meals, apply a proper reparation cream on your hands
  - When handling cooling systems, please follow the instructions given in the Manuals supplied with the Machine.
- Always maintain oil products, cooling system and accumulator fillings and painting materials incl. organic thinners and also the cleaning and preserving agents in their original properly designated packages. Do not allow storage of these materials in undesignaged bottles or other vessels due to the hazard of them being interchanged. Especially hazardous is the possibility of interchanging them with eatables or drinks.
- Upon skin, mucosa, eye contacts or inhalation of vapour, immediately apply the principles of first aid. Upon accidental use of these products get prompt medical attention.
- When operating the Machine with no cabin provided, or with cabin windows opened, always use ear defenders (muffs) of proper type and version.

2.2.2. Ecological Principles

- The fillings of Machine's individual systems and some of its parts become waste with hazardous properties against the environment when discarded.

  This category of waste products includes in particular:

  - Organic as well as synthetic lubricating materials, oil or fuels,
  - Cooling liquids,
  - Accumulator fillings and the accumulators themselves,
  - Cleaning & preservation agents,
  - All filters and filter elements dismantled,
  - All used and discarded hydraulic hoses or fuel hoses, metal rubbers and other Machine's elements, foulded with the abovementioned products.

Manufacturer and manufacturer-accredited contracting service organizations or dealers take back the following used materials or parts free of charge:

- Oils
- Accumulators

Handle the given materials and parts following their disposal in line with the respective national regulations on protection of individual components of environment, and in conformity with health regulations.

2.3. Preservation & Storage

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

Wash and clean the entire Machine carefully. Before parking the Machine for its preservation and storage, please warm up the engine to its operating temperature while running. Park the Machine on solid, flat surface at a safe place with no risk of natural disaster (floods, landslides, fire, etc.) to the Machine.

In addition:

- repair those spots with damaged paint
- lubricate all lubricating points, control cables, joints of the controls, etc.
- confirm water fillings are drained
- check that cooling liquid has antifreezing characteristics requiered
- check the state of accumulator charges, recharge them if necessary
- apply preservative grease over the chormed surfaces of piston rods
- we recommend to protect the machine against corrosion through spraying the preservation agent (applied spraying), and this in particular in places with potential of corrosion origin.

The Machine treated like that will need no special preparation prior to its subsequent putting into operation.

2.3.2. Machine Preservation & Storage for the Period Over 2 Months Long

To park the Machine the same principles will apply like at short-term preservation.

In addition it is recommended to:

- dismantle the accumulators, check their condition, and store in a cool, dry room (recharge the accumulators regularly)
- support the runner frame so the damping system shows minimal sag
- protect rubber elements through painting with spec. preservation agent
- inflate the tyres to a pressure required, and protect them from direct sunlight,apply preservation grease over the chromed surfaces of the piston rods
- preserve the machine via spraying with special agent, and this at places of possible corrosion origin
- blind the engine suction and discharge ports with double pe foil, and tighten this foil thoroughly with adhesive tape
- protect the headlamps, external back mirrors and other elements of external wiring through spraying a special agent and wrapping into pe foil
- preserve the engine per manufacturer's instruction manual - mark visibly the engine has been preserved.

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

NEVER start the engine in course of storage!

In case of Machine storage under field conditions, please check the parking place whether not exposed to the hazard of flooding, and that danger of any other type is not present!

Prior to restoration of Machine operation, please wash the preservation agents away with the use of high pressure stream of hot water incl. addition of normal degreasers while observing the Instructions for Use along with ecological principles.

Carry out the dewaxing (deconservation) and washing of the Machine at places equipped with intercepting sumps to trap the rinsing water as well as dewaxing agents.

2.3.3. Dewaxing and inspection of the supplied machine

- Check the machine against delivery documentation.
- Check whether any parts were damaged during transport or are missing. Inform the shipper of any discrepancies.

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

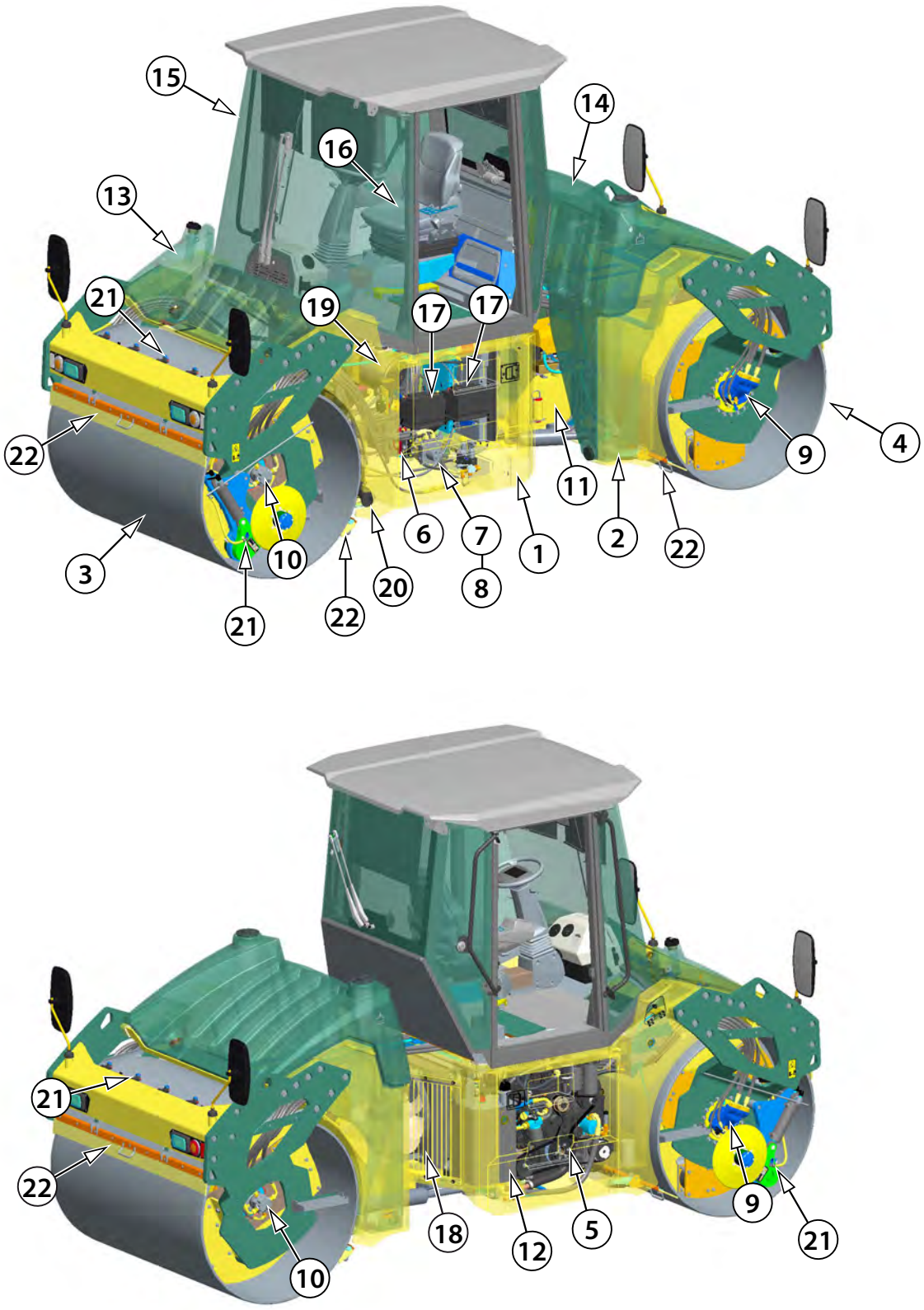
Remove conservation and wash the machine in places with catch basins available to collect rinse water and chemicals.

2.4. Machine Disposal Following Its Life Termination

During Machine disposal following its service life the User will be liable to follow national waste and environmental regulations and acts. We recommend to always contact in these cases:

- the specialized companies with respective authorization to deal professionally with these operations
- the Machine manufacturer or manufacturer-appointed accredited contracting service organizations put in charge by manufacturer.

In no event shall Manufacturer be liable for damage to User health or environmental damage that arises from non-observance of the abovementioned note.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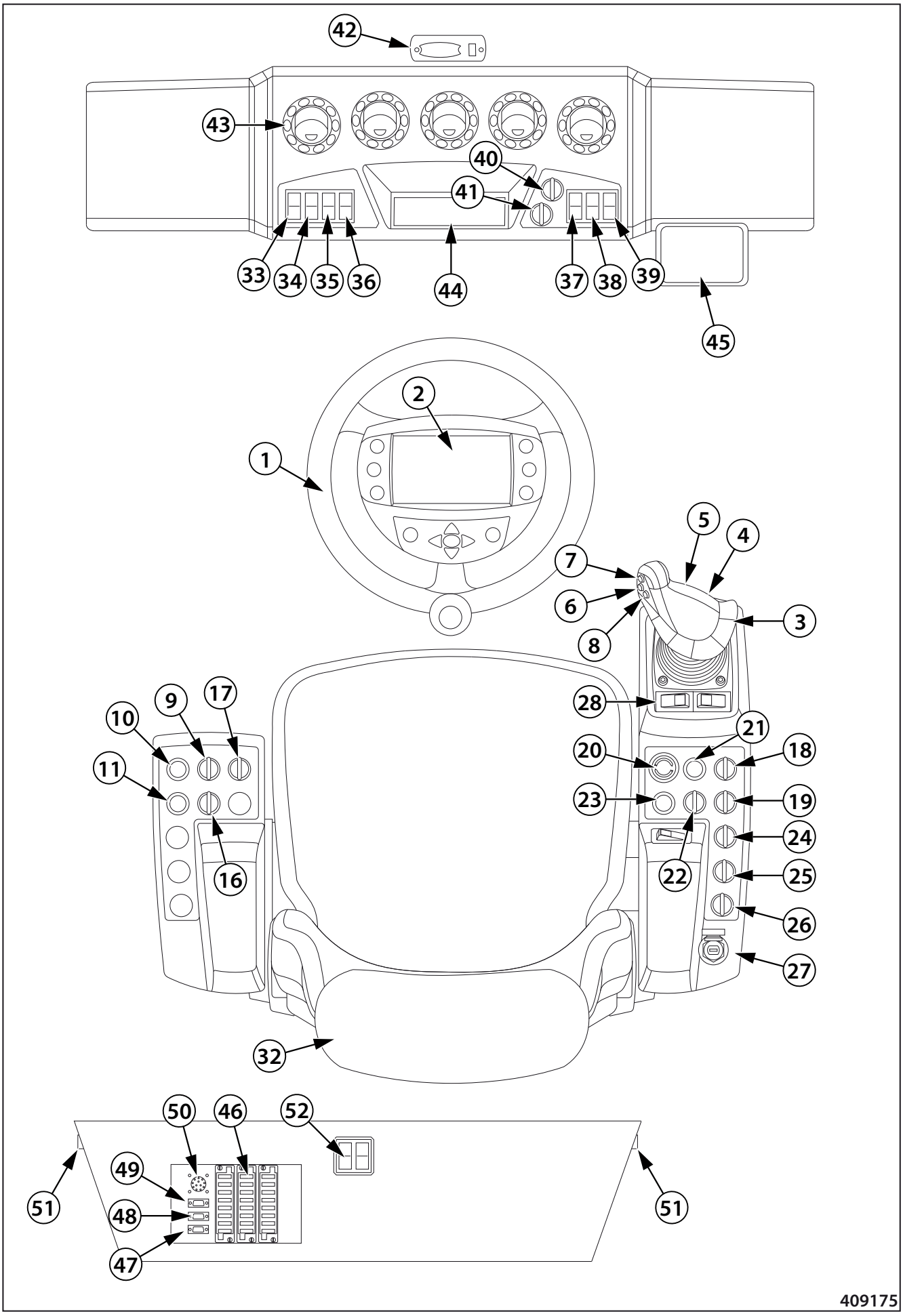
409008

Legend:

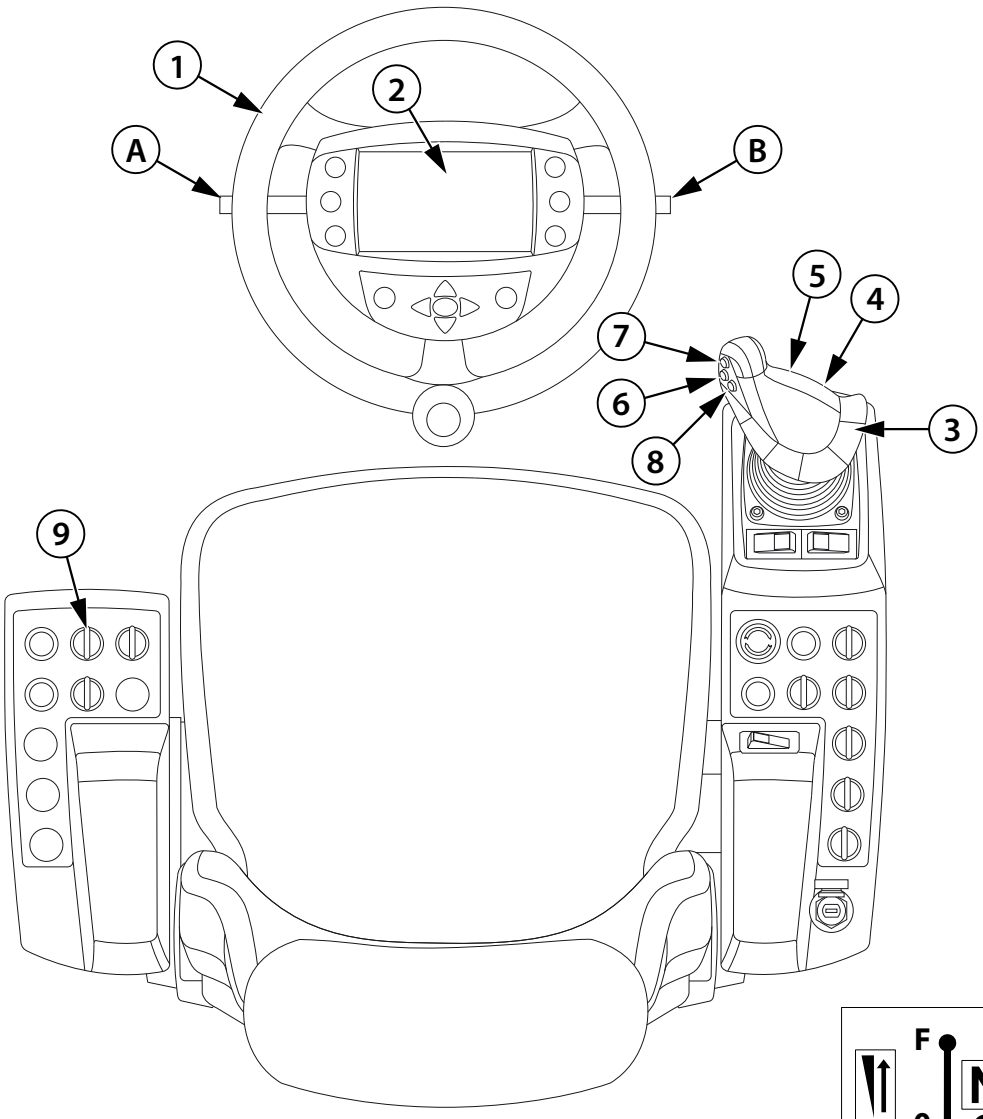
1 - Front frame
2 - Rear frame
3 - Front drum
4 - Rear drum
5 - Engine
6 - Hydrogenerator for travel (roll)
7 - Hydrogenerator for vibration of front drum
8 - Hydrogeneratorfor vibration of rear drum
9 - Travel hydraulic motor
10 - Vibration hydraulic motor
11 - Steering joint
12 - Hydraulics tank
13 - Fuel tank
14 - Sprinkling tank
15 - Cabin with integrated frame ROPS
16 - Driver's control stand
17 - Batteries
18 - Combined cooler
19 - Air filter
20 - Exhaust pipe
21 - Sprinkling jets
22 - Drum scrapers

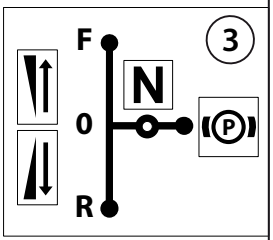
2.6. Controls & Dashboard Instruments



Dashboard and control panels

1 - Steering wheel
2 - Display unit
3 - Travel controls
4 - CRAB mode button - right
5 - CRAB mode button - left
6 - Vibration button
7 - Edge cutter button - up
8 - Edge cutter button - down
9 - Sprinkling pumps selector switch
10 - Sprinkling pushbutton
11 - Emulsion sprinkling button (only wheel version)
12 - Not assigned
13 - Not assigned
14 - Not assigned
15 - Not assigned
16 - Edge cutter selection (optional)
17 - Drum vibration switch
18 - Vibration amplitude selector switch
19 - Vibration mode selection switch (MAN/AUT)
20 - Emergency brake pushbutton
21 - Warning horn button
22 - Turn indicators switch
23 - Warning lights button
24 - Lights switch (parking/dipped) (optional)
25 - Rear lights switch (optional)
26 - Additional lights switch (optional)
27 - Ignition box
28 - Seat stop switch
29 - Not assigned
30 - Not assigned
31 - Not assigned
32 - Operator seat
33 - Rear window heating switch
34 - Glass washer switch
35 - Front wiper selector switch
36 - Rear wiper selector switch
37 - Heater fan switch
38 - Warning beacon switch
39 - Cab additional lights switch (optional)
40 - Fan speed switch (optional)
41 - Thermostat (optional)
42 - Cab light
43 - Ventilation nozzles
44 - Radio
45 - Retrovisor exterior
46 - Fuse box
47 - Connector of travel control unit
48 - Connector of steering control unit
49 - Connector of CAN BUS network
50 - Engine diagnostics
51 - Mounting socket
52 - Service switch





409176

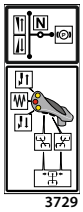
Steering wheel (1)

Lever A - Column tilting forward/rearward

Lever B - Steering wheel adjustment up/down

Display (2)

Multifunction instrument to display parameters of the engine and machine functions.


3729

Travel controller (3)

The travel controller is used for braking the machine and setting the direction and speed of travel.

Travel controller positions:

P - Parking brake - machine parking brake activated

N - Neutral - the machine is not braked, idle engine speed set up

0 - zero position - the engine working speed is adjusted

F - Forward travel

R - Reverse travel

The machine braking is indicated by lighting up the brake indicator lamp on the display (2).

The travel speed corresponds to the displacement of the travel controller from the zero position (0).


2721

CRAB mode buttons (4) and (5)

To set the drums in the CRAB mode, use the buttons on the travel control (3).

Pushbutton (4) - right

Pushbutton (5) - left

The function is displayed on the display (2).

Press both of the buttons (4), (5) to set the drums to the starting position


2612

Vibration button (6)

To turn on/off the function, press the button.

The function is displayed on the display (2).


3355

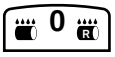
Edge cutter button - up (7)

Use the button, to adjust the edge cutter to the transport position.


3355

Edge cutter button - down (8)

Press the button to adjust the edge cutter to the working position.



3726C

Pumps sprinkling selector switch (9)

Select one of the two drum sprinkling pumps.

The pump operation is indicated on the display (2).

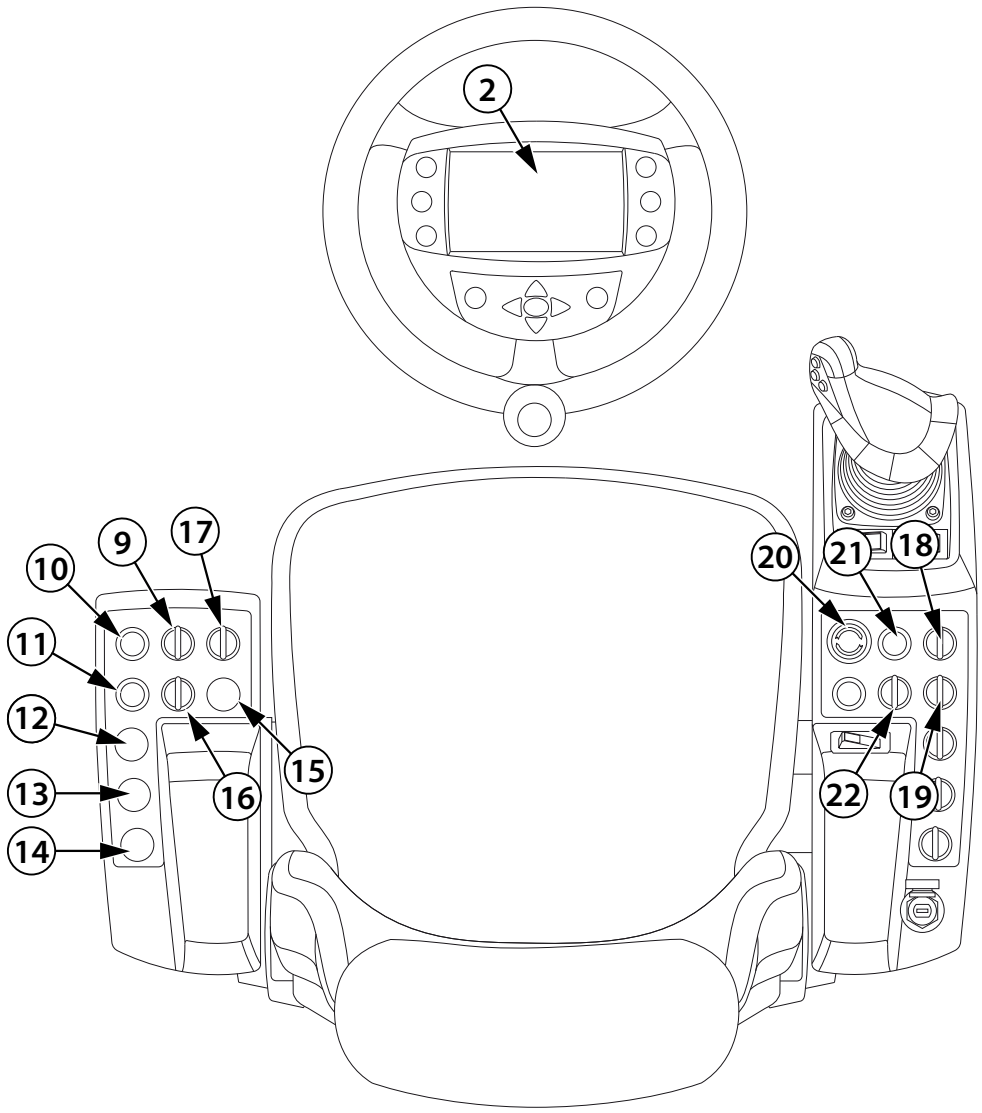
The selector switch has three positions:

1 - 1st pump ON

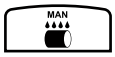
0 - OFF

2 - 2nd pump ON

2.6. Controls & Dashboard Instruments



409176A

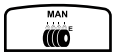


3726A

Sprinkling button (10)

Hold the button to enable the drum sprinkling function.

The function is displayed on the display (2).



3726B

Emulsion sprinkling button (11) (only wheel version)

Hold the button to enable the drum sprinkling function.

The function is displayed on the display (2).

Not assigned (12-15)


3355

Edge cutter selection switch (16)

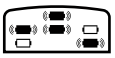
It is used for turning on the edge cutter (final compactor).

Left - left edge cutter / final compactor

Centre - OFF

Right - right edge cutter / final compactor

For sprinkling the edge cutter (final compactor), the sprinkling pump switch (9) must be on at the same time.


3726E

Drum vibration selector switch (17)

Left - front drum vibration

Centre - both drums' vibration

Right - rear drum vibration


3726F

Vibration amplitude switch (18)

Left - amplitude II switched ON

Right - amplitude I switched ON

3726G

MAN / AUT vibration mode selector switch (19)

It is used to switch ON vibrations in MAN or AUT mode.

MAN - manual mode, vibrations can be switched ON even with stationary Machine.

AUT - automatic mode to switch OFF/ON vibrations


2582

Emergency brake (20) pushbutton

Press the button to enable the machine emergency brake, which is indicated by lighting up the brake and charging indicator lamps on the display (2).

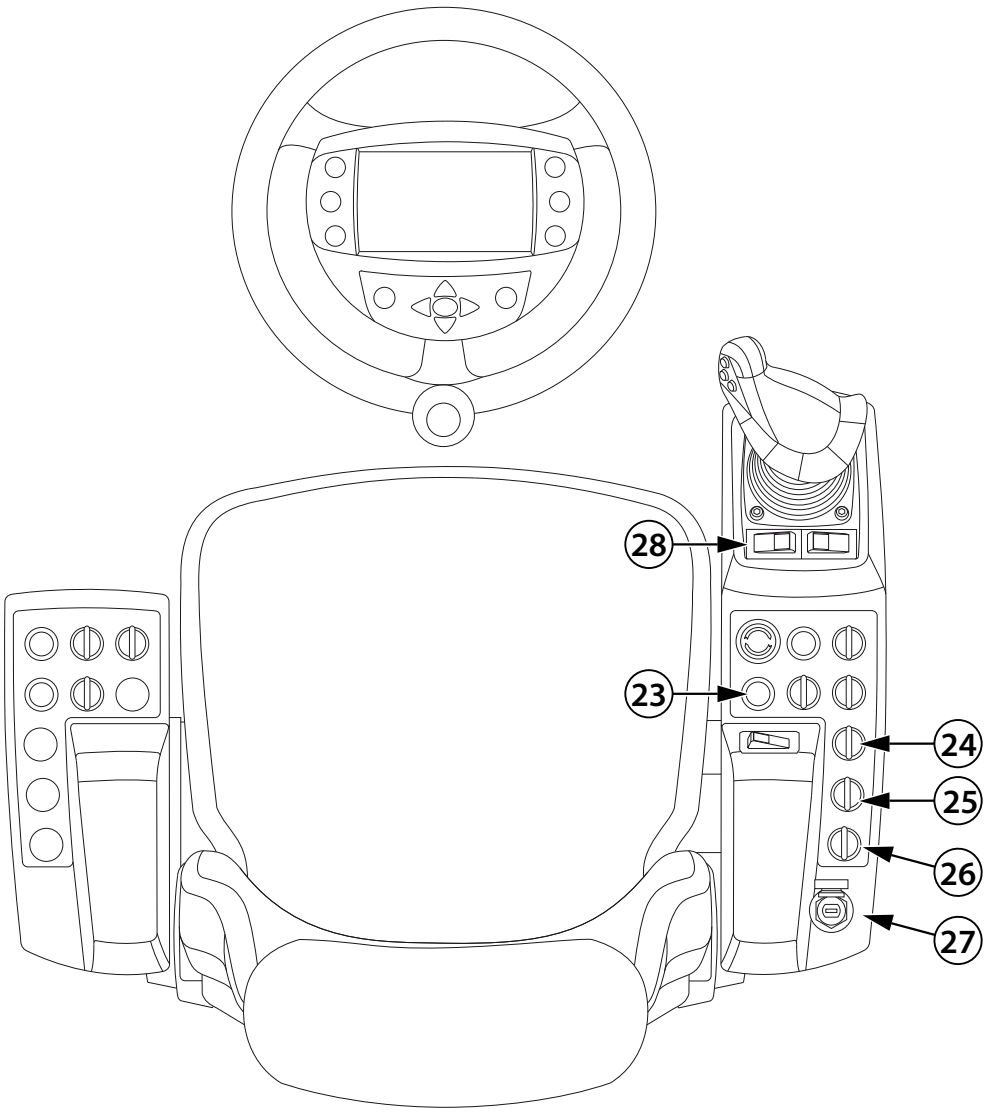
Engine will stop and stall!


3726H

Warning horn button (21)


3726CH

Turn indicators switch (22)



409176B


3726I

Alarm lights switch (23)

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

3726J

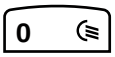
Lights switch (parking/dipped) (24)

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

Left - OFF

Centre - parking lights

Right - dipped lights



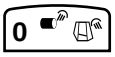
3726K

Rear lights switch (25)

It is used to turn ON/OFF rear lights.

Left - OFF

Right - ON



3726L

Additional lights switch (26) (optional)

It is used to switch ON/OFF additional lights.

Left - OFF

Centre - additional lights of drums

Right - additional lights of the cab

Ignition box (27)

Ignition box has three positions of „0-I-II". The key can be inserted and removed in "0" position 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 ignition box with cover once the key is pulled out.


3713

Seat stop switch (28)

After pressing the switch, the seat can be set to the final cross position.

Not assigned (29)

Not assigned (30)

Not assigned (31)

Operator seat (32)

Seat adjustment:

1 - Head rest position

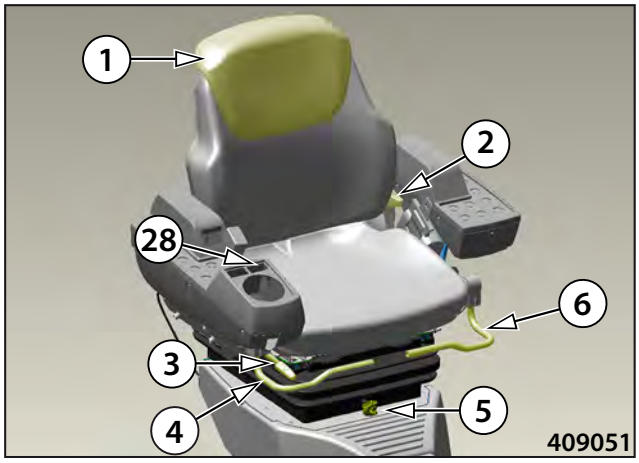
2 - Backrest position

3 - Seat shifting

4 - Seat angle position

5 - Seat springing stiffness according to weight indicator.

6 - Seat cross motion



After the lever 6 is lifted and the switch (28) pressed, the seat can be set to the final cross position.

Open the window before setting the seat in the final cross position!

Adjust your seat before driving !

Driver must be fastened with the seat belt while driving!

Seat switch:

Seat switch is located in its cushion.

It is used to interlock the engine starting or to stop the Machine if no operator sits on the seat.

If operator stands up from the seat while driving then the Machine will stop following 8 seconds.

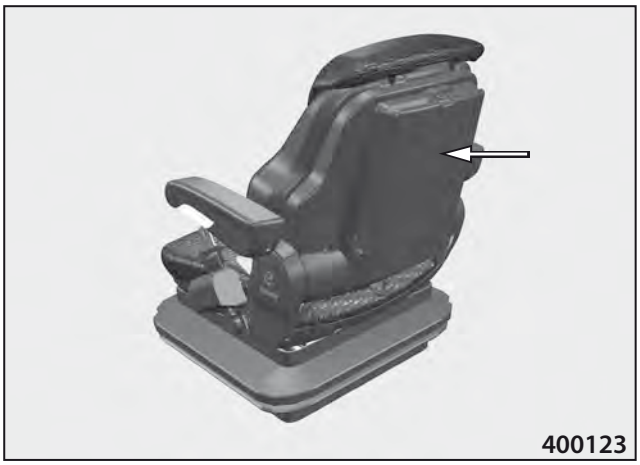
Machine starting to move:

The operator must sit on the seat and move the travel control (3) to the brake position (P) and then select the driving direction.

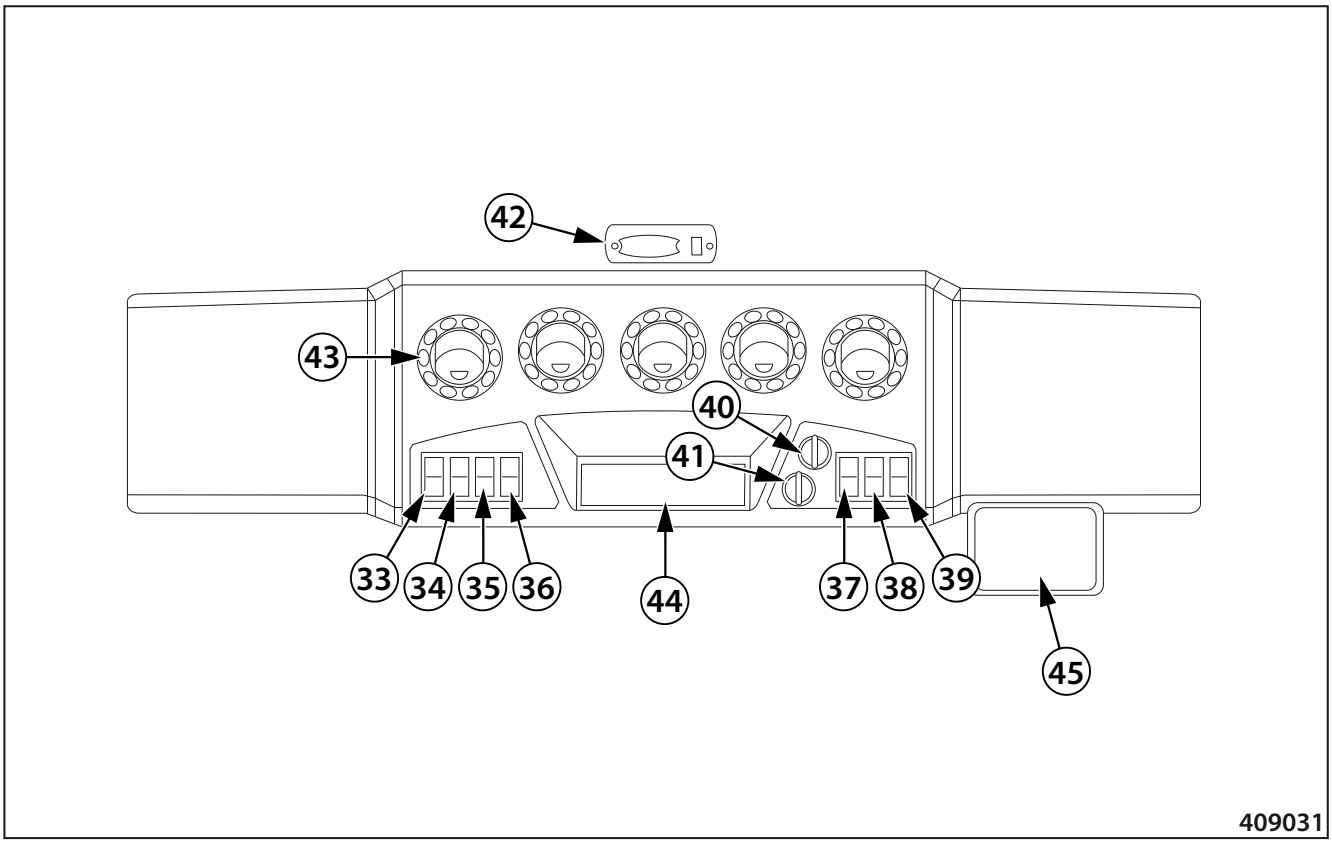
Do NOT load seat switch with other objects!

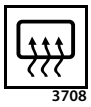
Documentation stowage box

The locker for documentation is located on the seat's rear side.



2.6. Controls & Dashboard Instruments




3708

Rear window heating switch (33)

It is used for turning on the rear window heating; the function is indicated by the indicator lamp in the switch.

- OFF
- ON


2260

Glass washer switch (34)

- Windscreen washing ON
- OFF
- Rear window washing ON


596625

Front wiper selector switch (35)

- Turned OFF
- Low speed ON
- High speed ON


596307

Rear wiper selector switch (36)

- Turned OFF
- Low speed ON
- High speed ON


2487

Heater fan switch (37)

It is used for turning on the cab heater fan; the function is indicated by the indicator lamp in the switch.

- OFF
- Low delivery ON
- High delivery ON


592348

Hazard beacon switch (38) (optional)

It is used to switch ON/OFF hazard beacon, indicator lamp in the switch signals this function.


596303

Cabin's additional lights switch (39)

It is used to switch ON/OFF additional lights, indicator lamp in the switch signals this function.

Air-conditioning
(Optional equipment)


594701

Fan speed switch (40)

Air flow control.

OFF - Switched off

1 - Minimum

2 - Medium

3 - Maximum


2441

Thermostat (41)

Outlet air temperature control.

OFF - Switched off

MIN

MAX


592305

Cabin lighting (42)

Ventilation nozzles (43)

Please adjust and swivel the dampers to alter the amount and direction of flowing air.

Radio (44)

(Optional equipment)

Rear mirror (45)

Maintain the mirrors clean and properly adjusted!

Cut-out box (46)

It contains F1 - F24 fuses.

F1 - 15A .....Mounting socket

F2 - 10A .....front parking lights, front headlamps, rear lights

F3 - 7.5A .....rear headlamps

F4 - 7.5A .....turn indicators, beacon, horn, cab lighting, coil of engine time relay (A10)

F5 - 7.5A .....switch box, lighting relay coils

F6 - 35A .....power supply of computer Rexroth RC20-10/30

F7 - 7.5A .....seat control

F8 - 7.5A .....working lights, drum lighting

F11 - 5A .....drum sensors (speed, frequency), el. magnets of vibration, water level sensor, infrathermometer, emulsion sprinkling relay

F12 - 5A .....emulsion sprinkling

F13 - 10A.....water sprinkling

F14 - 5A .....brake lights, reverse horn, alternator excitation

F15 - 5A .....total STOP, service mode

F16 - 1A .....memory of computer Rexroth RC20-10/30

F17 - 7.5A.....lever Gessmann, display

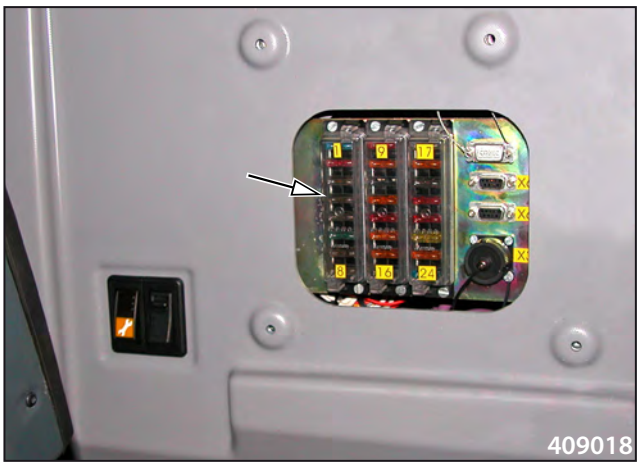
F18 - 3A .....diagnostic socket of engine

F21 - 10A.....autoradio

F22 - 10A.....heating control, rear window heating control, air-conditioning relay

F23 - 10A.....wipers, screen washers

F24 - 10A.....heating fans



In the engine compartment

F25 - 20A.....rear window heating

F26 - 5A .....front working lights

F27 - 5A .....rear working lights

F31 - 80A.....main fuse

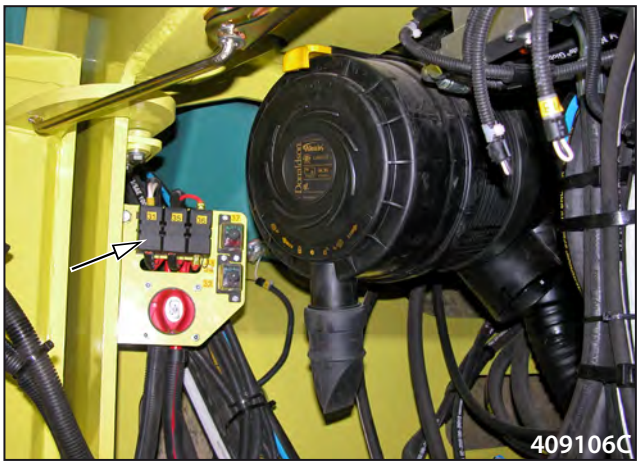
F32 - 15A.....air-conditioning

F33 - 10A.....fuel pump

F34 - 15A.....autoradio (memory)

F36 - 125A .....pre-heating

F37 - 30A.....engine electronics



Always replace the fuses with the ones of identical value!

ACE
AMN109

Connector of control unit ACE (47)

It is used for connecting an external computer unit (laptop) to the control unit of the ACE system to troubleshoot and set parameters.

CAN BUS
2679D

Connector of control unit ACAN1 (48)

Connector of the machine control unit.

Serves for connecting an external-computing unit (Notebook) to assure proper communication between control units.

CAN BUS
2679D

Connector of network CAN2 (49)

Connector of the machine control unit.

Serves for connecting an external-computing unit (Notebook) to assure proper communication between control units.

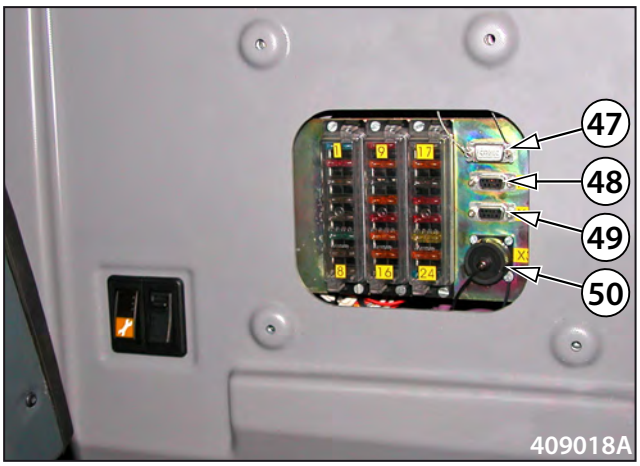
J1939
3003

Engine diagnostics (50)

It serves for connecting to ECM (Electronic Control Module) - engine control units and failure diagnostics.

Note

ECM processes the data concerning the engine function and controls the engine activity. The information concerning the engine activity and its failures is picked up by sensors and delivered to ECM. The control unit evaluates the inputs and transmits back the control commands for the correct activity of the engine. The failures and other data concerning the engine are identified and stored in the ECM memory. The data concerning the engine function and failures is delivered after connecting the service equipment (notebook) to the socket.



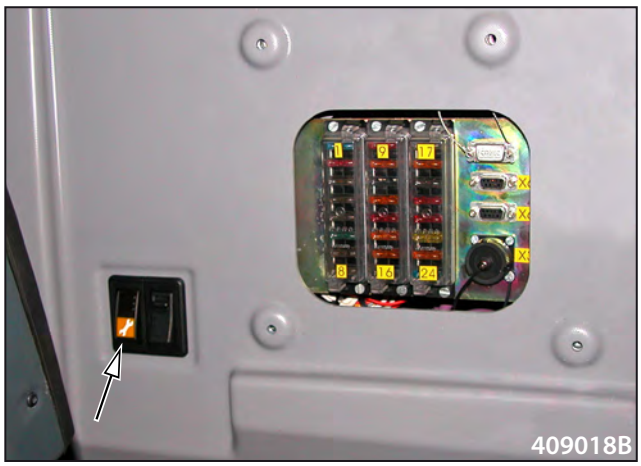
Mounting socket (51)

It is used for connecting a lamp or other equipment (24V).

Service switch (52)

It is used for disabling the seat sensor function. The engine will keep running, when the operator leaves the seat.

Use the switch only for service operations.



Heating control

It is used to switch ON the cabin heating.

Make continuous control from MIN position (valve closed) to MAX position (valve fully open) for the amount of liquid flowing to the heating body.

Adjust the heating valve before driving!

Cabin ventilation air filter

It includes replaceable cartridges, on which impurities from the sucked air are caught.

Fire extinguisher (Optional)

Place for the installation of a fire extinguisher.

! Attention !

The manufacturer recommends that the machine be equipped with a fire extinguisher.

Window washer tank

Fill with standardly available media.

Fill with antifreeze or drain before winter season starts!

Draw bar for window unlocking

Control lever

It is used for controlling the hand pump for releasing the machine brakes.

First-aid box stowage place

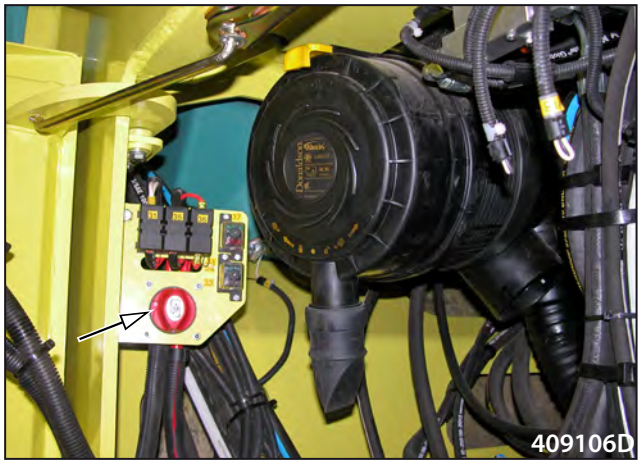
The Machine shall be equipped with first-aid box!

Battery disconnector

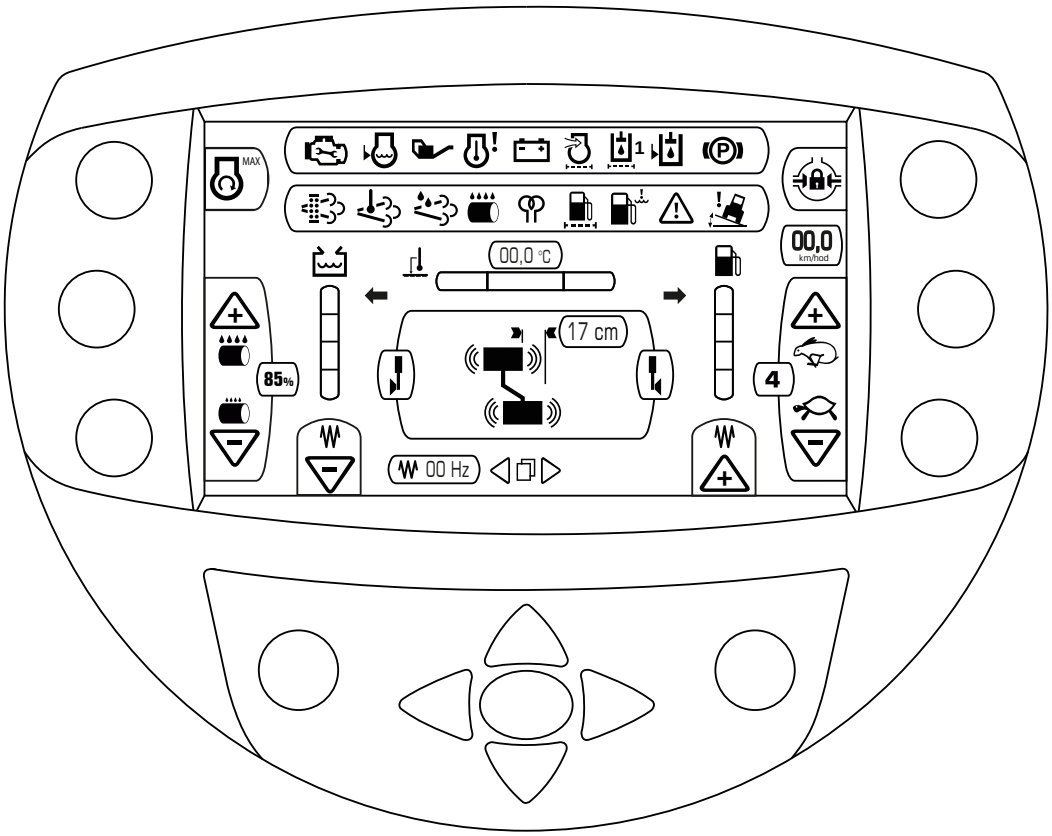
It is used to disconnect the battery from the Machine frame.

Position „0“ - Machine wiring disconnected.

Position „I“ - Machine wiring connected.



2.6.1. Display control



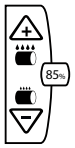
409026

Operation screen

AMN112

Maximum engine speed button

It is used for setting the maximum engine speed of 2200 min^{-1} (RPM)



AMN41

Drum sprinkling buttons

The buttons are used for setting the drum sprinkling intensity.

0% - drum sprinkling OFF

100% - continuous drum sprinkling

AMN42

AMN43

Vibration frequency buttons

The buttons are used for setting the vibration frequency.

ARX 90

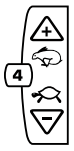
Frequency I - range 38 - 42 Hz (2280 - 2520 VPM)

Frequency II - range 45 - 55 Hz (2700 - 3300 VPM)

ARX 90 HF

Frequency I - range 38 - 46Hz (2280 - 2760 VPM)

Frequency II - range 57 - 67 Hz (3420 - 4020 VPM)



AMN44

Travel speed buttons

The buttons are used for setting the speed gears.

Speed gear	forward km/h (mph)	rearward km/h (mph)	engine speed rev/min
0	2 (1,2)	2 (1,2)	1600
1	2 (1,2)	2 (1,2)	1300
2	3 (1,9)	3 (1,9)	1600
3	4,5 (2,8)	4,5 (2,8)	1600
4	6 (3,7)	6 (3,7)	1600
5	11 (6,8)	11 (6,8)	1600-2200

Note

The speed gear 0 is set as starting gear after 15 minutes after the switch box is turned off.

Loading mode (speed gear 0)

Working functions of the machine are locked in the speed gear 0. Working functions of the machine disabled (vibration, sprinkling, crab)


AMN45

Differential lock button

It is used for turning on the differential lock.

The differential lock is used for preventing the drum from slipping when crossing difficult terrain.

Po překonání obtížného terénu uzávěrku diferenciálu vypněte!


AMN47

Engine failure indicator lamp

The indicator lamp indicates an engine failure.

The lighting indicator lamp during operation of the engine indicates a failure. The engine will stall - the machine will stop and the parking brake will be enabled.

The engine can be started only after the defect is repaired!


AMN48

Coolant level indicator lamp

The indicator lamp indicates low coolant level.

The lighting indicator lamp during operation of the engine indicates a failure. The engine will stall - the machine will stop and the parking brake will be enabled.

The engine can be started only after the failure is repaired and the coolant is refilled to the specified limit!


AMN49

Engine lubrication indicator lamp

The indicator lamp indicates an engine lubrication failure.

The engine can be started only after the defect is repaired!


AMN50

Engine overheating indicator lamp

The indicator lamp indicates a high temperature of the engine.

The lighting indicator lamp during operation of the engine indicates a failure. The engine will stall - the machine will stop and the parking brake will be enabled.

The engine can be started only after the defect is repaired!


2777

Battery charging indicator lamp

It indicates that the battery charging function is correct. After the key on the ignition box (27) is switched over to the position "I", the indicator lamp must light up and go out after the start-up.

Unless the indicator lamp goes out, find a failure!

The engine can be started only after the defect is repaired!


AMN51

Air filter clogging indicator lamp

The lighting indicator lamp indicates that the filter cartridge is clogged above the allowed limit.

Stop the machine and replace the filter cartridge immediately!

Indicator lamp of hydraulic oil filter clogging

The lighting indicator lamp indicates that the filter cartridge is clogged.

1 - Main filter of hydraulic oil

2 - Hydraulic oil filter of sprayer (optional)

Immediately replace the cartridge!

Indicator lamp of hydraulic oil level

The indicator lamp indicates low hydraulic oil level.

The lighting indicator lamp during operation of the engine indicates a failure. The engine will stall - the machine will stop and the parking brake will be enabled.

The engine can be started only after the failure is repaired and the oil is refilled to the specified limit!

Parking brake indicator lamp

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

Sprinkling pump indicator lamp

The indicator lamp indicates that the sprinkling pump is on.

Engine pre-heating indicator lamp

It indicates the engine warming up before the cold start.

The engine starts after the indicator lamp goes out!

Fuel filter indicator lamp

The lighting indicator lamp indicates that the filter cartridge is clogged.

Immediately replace the cartridge!

Fuel filter indicator lamp

The lighting indicator lamp indicates water in the fuel filter.

If this indicator lamp is lighting, clean the coarse fuel filter!

Danger warning

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

In case of a serious failure, the machine changes to the emergency mode (travel gear 0, working functions disabled).

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 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.

ROPS2D (Roll Over Preventative System)

(Optional)

The flashing indicator lamp and the audible alarm inform about the dangerous inclination of the machine when the roller moves crosswise in a slope, at the same time the vibration is interrupted - there is a danger of slide-slipping.

The vibration cannot be turned on, until the machine returns to a safe tilt.


2489

Indicator lamps of turn indicators


AMN59

Water level indicator

The indicator shows the water level in the tank.


595425

Fuel gauge indicator

The indicator shows the fuel level in the tank.


3355

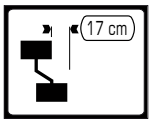
Edge cutter indicator lamp

The indicator lamp indicates that the edge cutter on the right side of the machine is enabled.


3355A

Edge cutter indicator lamp

The indicator lamp indicates that the edge cutter on the left side of the machine is enabled.



AMN60

Machine extended track indicator (CRAB)

The indicator shows the drum setting. Range 0-17 cm (0-6.7 in)


AMN61

Drum vibration indicator

The indicator shows the drum vibration.


AMN62

Infrathermometer indicator

The indicator shows the compacted surface temperature in the range of 0-200 °C (32-392 °F)

AMN64

Vibration indicator

The indicator shows the selected amplitude and frequency.

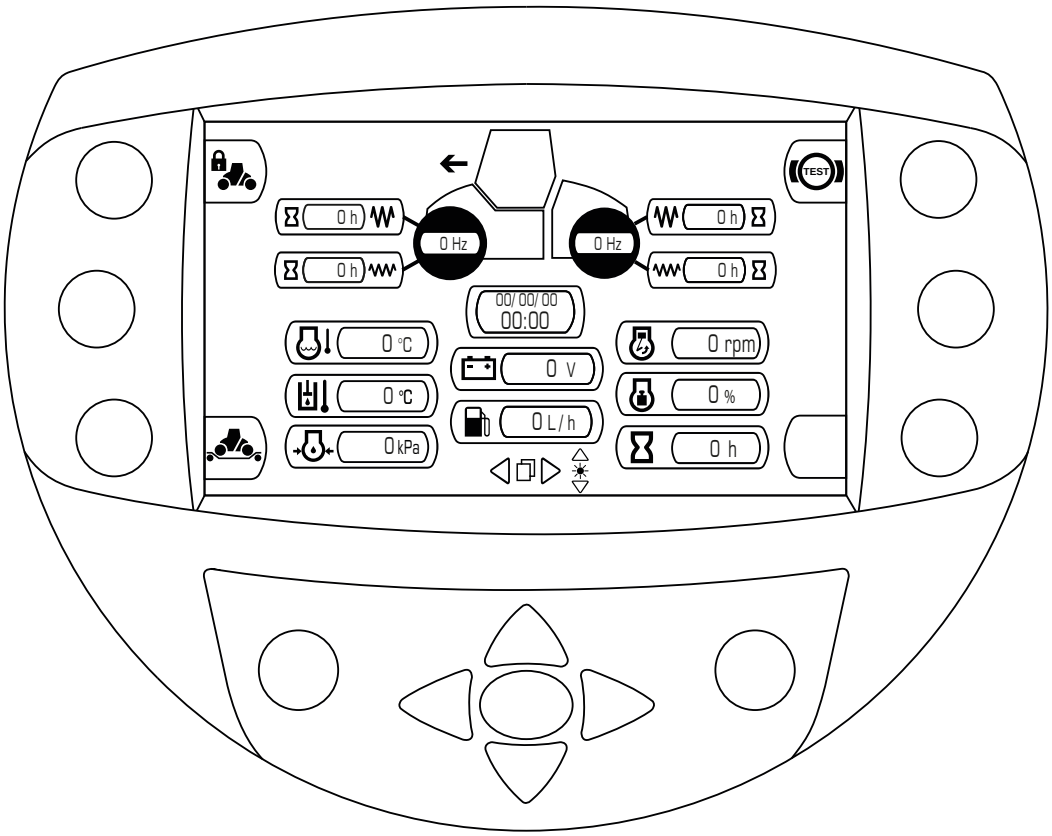

AMN66

Screen changing-over

Press the button to view the following screen for 15 seconds.

To set the following screen as the home screen, hold the button for 5 seconds.

2.6. Controls & Dashboard Instruments



409027

Information screen


AMN67

Ignition lock button

It is used for turning on/off the ignition lock.

The ignition lock prevents the engine from starting until PIN is entered.

Procedure:

- press the ignition lock button (the screen will display to enter PIN)
- enter PIN
- confirm by pressing the OK button for 4 seconds (audible signal will be heard).

After the ignition is off for more than 15 minutes, entering PIN will be required at the next engine start.


AMN68

Transport mode button

It is used for setting the machine to the transport mode. Activation and deactivation is done by entering PIN.

Transportation mode on the machine is set by the manufacturer and serves for shipment and transportation of the machine to a customer.

These functions are enabled in the transportation mode:

- differential lock is on
- speed gear 0 ON - speed 0 - 2km/h (0 - 1,2 MPH)

These functions are disabled in the transportation mode:

- working functions of the machine (vibration, sprinkling, crab)
- speed gear changing

Procedure:

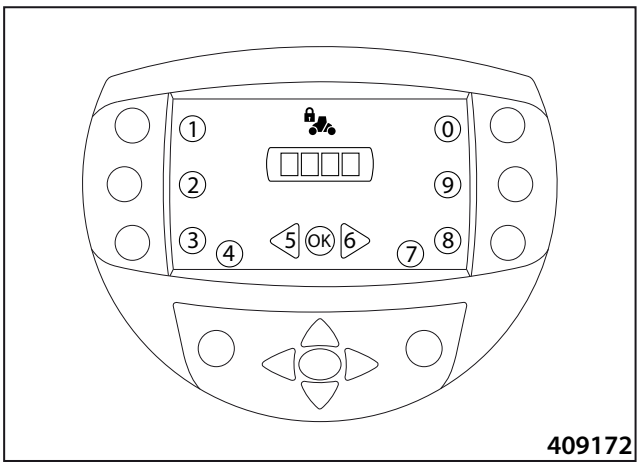
- press the transportation mode button (the screen will display to enter PIN)
- enter PIN
- confirm by pressing the OK button for 4 seconds (audible signal will be heard).

For activation and deactivation of the ignition lock function or transportation mode function, use the same PIN code.

See the PIN code on the PIN card in the documentation set. There are two PIN cards supplied with the machine.

In the event of the PIN card loss, you can get the correct PIN code for your machine by contacting:

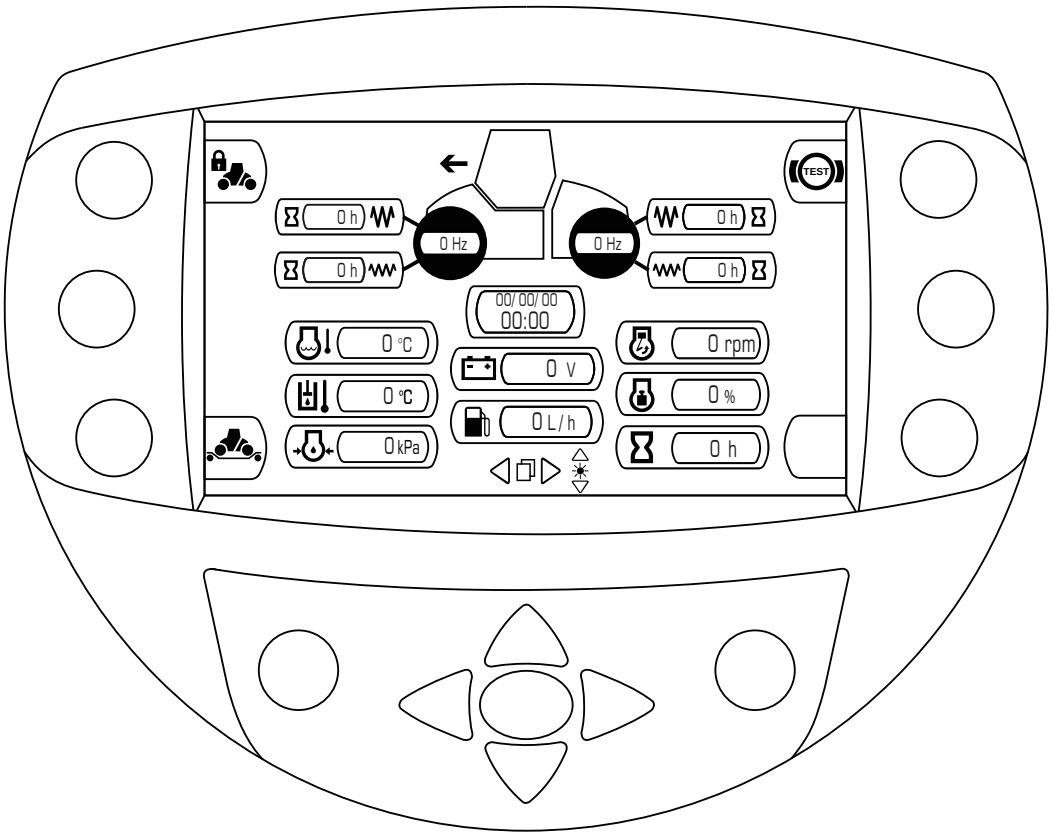
Ammann Technical Support
Hot line: +420776667755
support.machines@ammann-group.com.



409172

409173

2.6. Controls & Dashboard Instruments

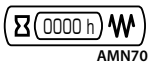


409027

AMN69

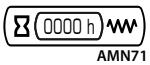
Brake test button

It is used for checking the machine brakes for correct operation (after the start-up, the operator is prompted to check the brakes every 24 hours).



AMN70

Worked hours indicator - amplitude II



AMN71

Worked hours indicator - amplitude I

AMN74

Date and time indicator

AMN114

Setting:

Hold the button OK pressed for 5 seconds.

Set the date and time using the arrows.

AMN65

Vibration frequency indicator


AMN76

Coolant temperature indicator


2635

Hydraulic oil temperature indicator

It shows the current hydraulic oil temperature.

Stop the machine and check the oil level or find a defect!


AMN113

Engine lubrication pressure

It shows the engine lubrication pressure in kPa.


2777

Current battery voltage indicator


595425

Current fuel consumption indicator


AMN77

Motor speed indicator


AMN75

Engine load indicator

It shows the current engine load in %.


AMN73

Counter of engine hours actually worked

It shows the total time, during which the machine has been in operation.


AMN66

Screen changing-over

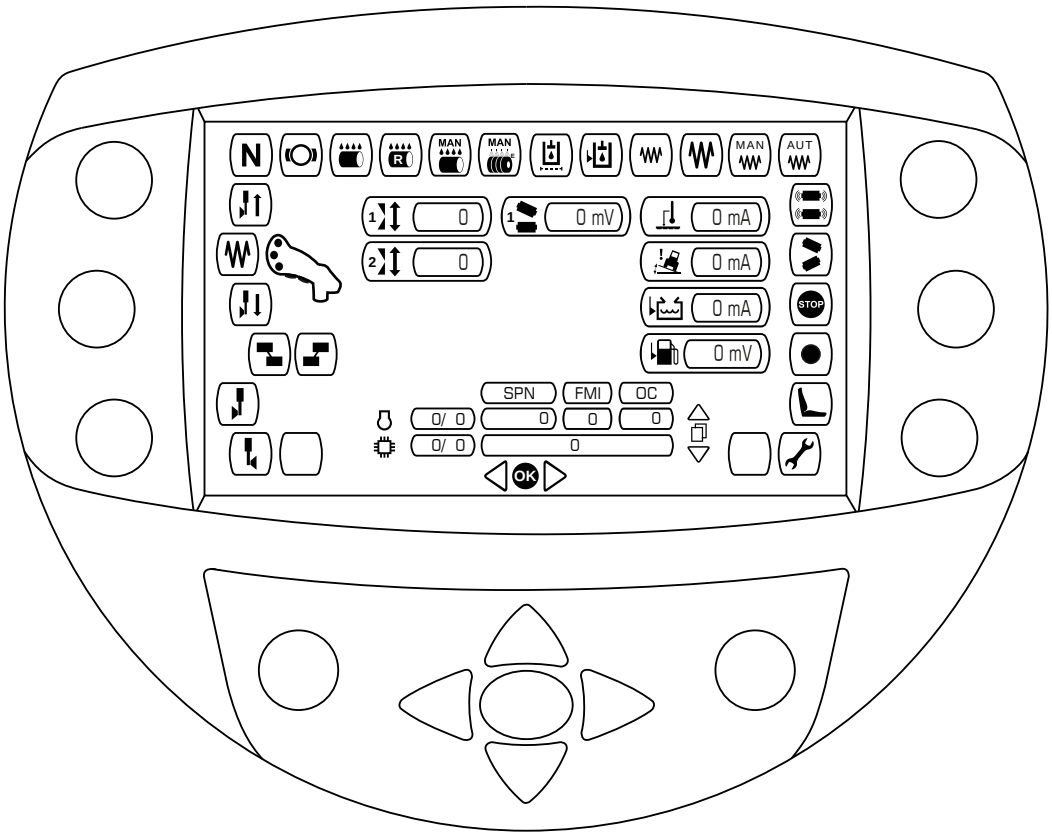
Press the button to view the following screen for 15 seconds.

To set the following screen as the home screen, hold the button for 5 seconds.


AMN105

Display backlight

The display backlight intensity can be adjusted using the buttons.



409028

Service screen

The screen is used for basic diagnostics of inputs into the machine control unit and for displaying error messages.

3355 **Edge cutter switch - right**

3355A **Edge cutter switch - left**

AMN79 **Extended track button (CRAB) - right**

AMN78 **Extended track button (CRAB) - left**

AMN80 **Edge cutter button - down**

2612 **Vibration button**

AMN81 **Edge cutter button - up**

AMN82 **Neutral sensor**

2703 **Brake sensor**

AMN83 **Sprinkling pump switch 1**

AMN84 **Sprinkling pump switch 2**

AMN116 **Manual water sprinkling button**

AMN117

Manual emulsion sprinkling button


3349

Indication switch of hydraulic oil filter clogging


591507

Hydraulic oil level switch


AMN85

Amplitude I sensor


2612

Amplitude II sensor

AMN86

Manual vibration sensor

AMN87

Automatic vibration sensor


AMN88

Drum vibration sensor


AMN89

Not assigned

AMN90

Emergency brake switch


AMN91

Not assigned


AMN92

Seat switch


3701

Service switch

AMN93

AMN94

Travel lever sensor - forward, rearward

AMN108

CRAB sensor


AMN62

Infrathermometer switch (Optional)


3400

Machine tilt sensor (Optional)


AMN97

Water level sensor


AMN98

Fuel level sensor

AMN101

SPN (Suspect Parameter Number)
(Failure source information)

AMN102

FMI (Failure Mode Identifier)
(Failure cause information)

AMN103

(Failure cause information)


AMN106

OC (Occur counter) - Occurrence counter


AMN107

Engine error message


AMN99

Machine error message

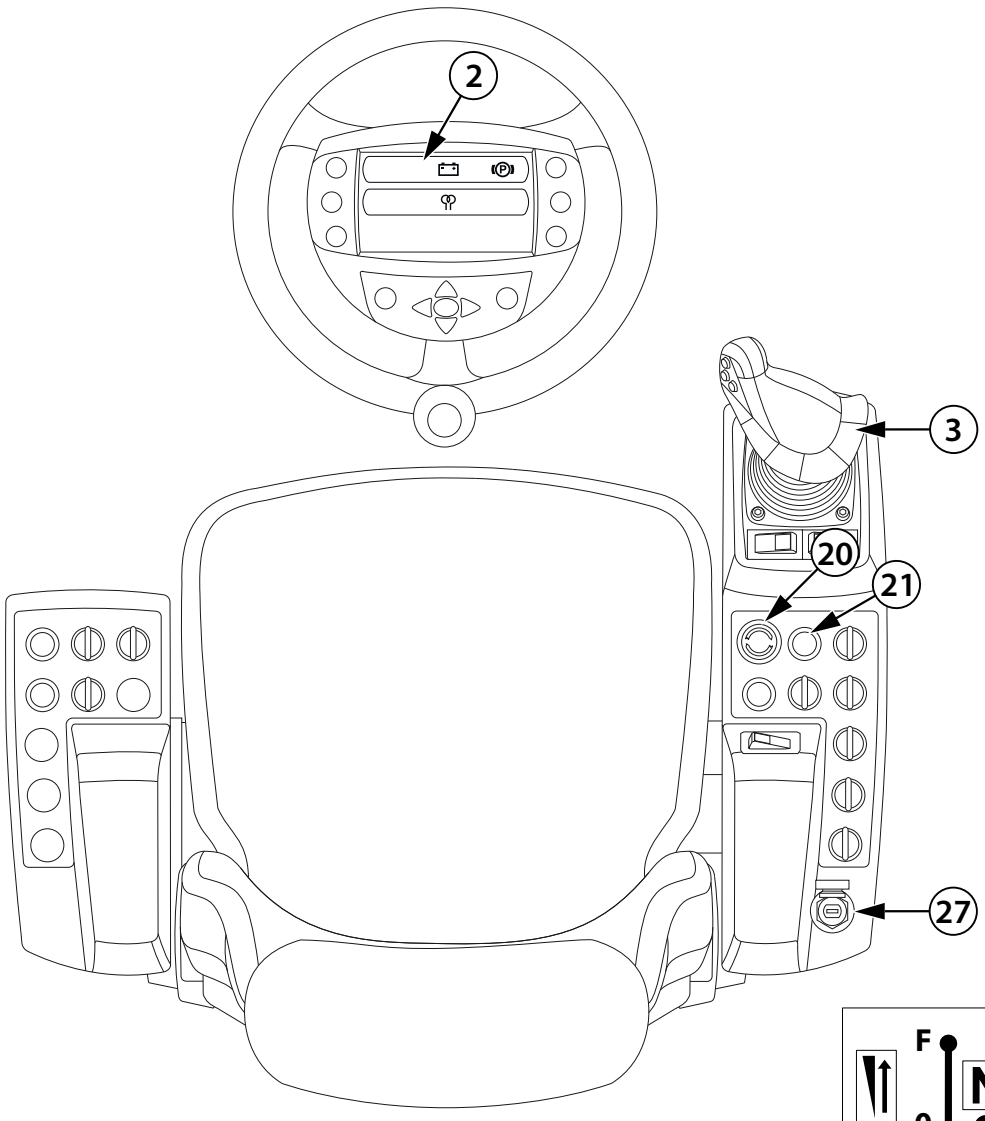
The OK button is used for switching over between error lists of the engine and machine control unit. The arrows are used for moving in the error list.

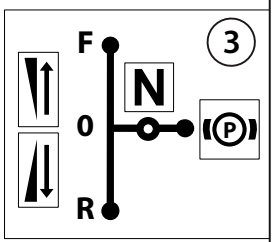
AMN104

Screen changing-over

Press the arrow to view the following screen for 15 seconds.

To set the following screen as the home screen, hold the arrow for 5 seconds.





409176C

2.7.1. Start-up of the engine

Check daily before engine starting the amount of oil in the engine and hydraulic tank, cooling liquid in the cooling circuit, fuel in fuel tank, water level in water tank. Confirm no loosened, worn or missing parts exist 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 3.6.9.

How to start:

- Switch ON the battery disconnector.
- Set the travel control (3) to the brake position (P).
- Sit down on the seat.
- Check that the emergency brake (20) is not enabled.
- Insert key in the ignition box (27) 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 (21) 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 machine moving-off is completed, the brake indicator lamp goes out.

Note

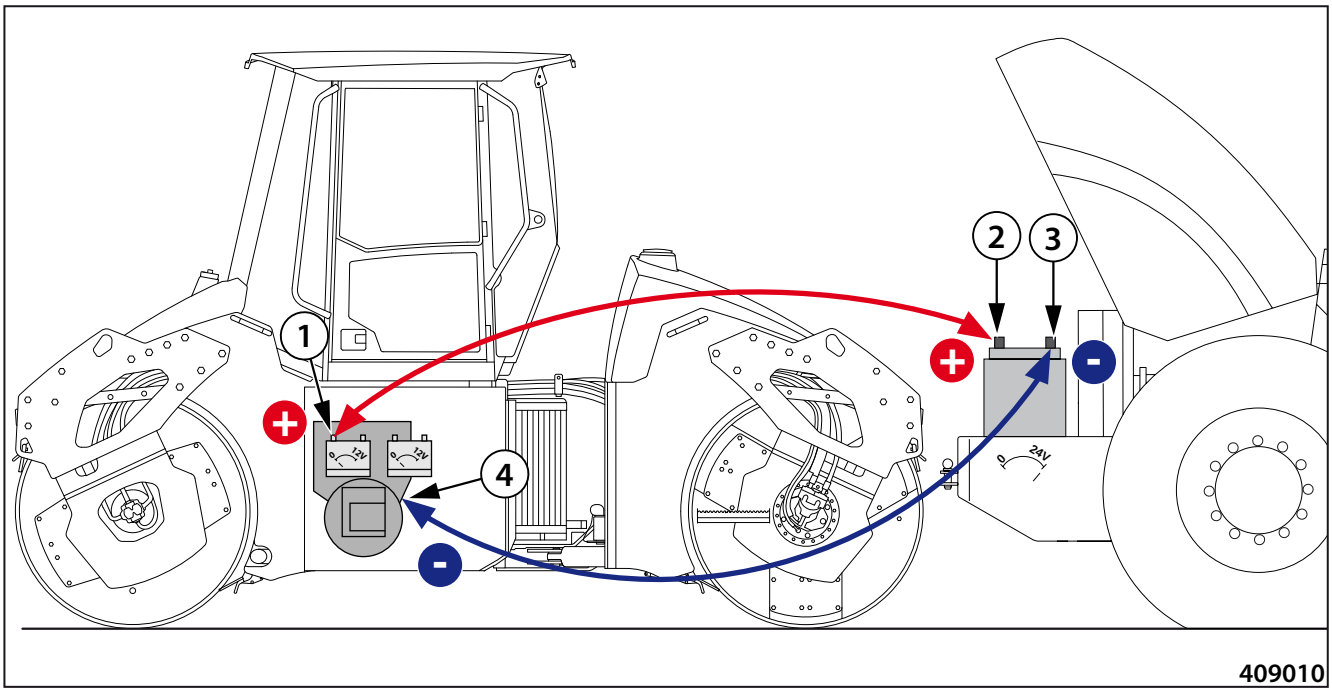
If starting is unsuccessful, please turn your key back to "I" position. Unless engine starts even after 3 attempts - please check the oil system.

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 40 °C (104 °F), do not load the engine at full power!


1
2
3
4
+
-
+
-
12V
12V
24V
409010

How to start via cables from external power source:

Starting voltage from external power source shall be the voltage of 24V.

Follow unconditionally the operation sequence below.

1/ Connect one end of (+) cable pole to (+) pole of the battery discharged.

2/ Connect second end of (+) cable pole to (+) pole.

3/ Connect one end of (-) cable pole to (-) pole of external battery.

4/ Connect the second end of (-) cable pole to such part of started Machine which is fix-wired with the engine (or with the engine block itself).

When started, disconnect the battery jump cables in reverse order.

Do not connect (-) pole cable to (-) pole of discharged battery of the Machine being started! There is risk of strong sparking in course of starting followed by explosion of battery-generated gas.

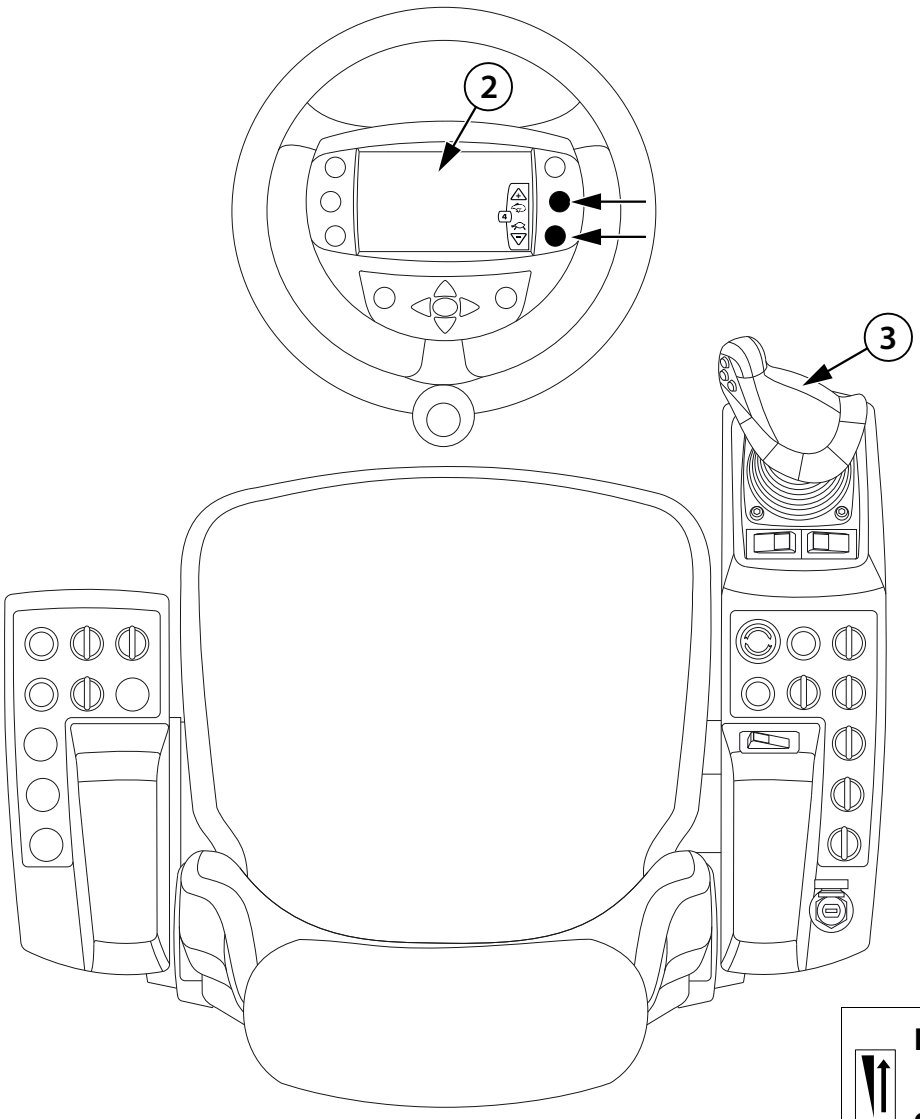
Make sure the non-insulated parts of the battery jump cable clamps do NOT contact each other!

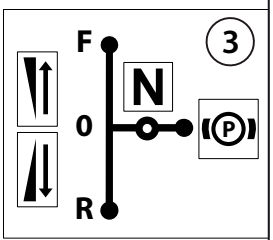
Make sure the jump cable connected to (+) pole of the battery does NOT come into contact with electrically conductive parts of the Machine - danger of short circuit!

Do NOT lean over the battery - risk of electrolyte burn!

Rule out any presence of flammable sources (open flame, burning cigarettes, etc.)

Do NOT confirm voltage presence in a wire through sparking via Machine frame!





409176D

2.7.2. Travel and reversing

Before starting to move, please check the area in front and behind the Machine is clear and with no persons or obstructions present!

Use loud horn to signal engine starting and wait long enough for those persons present to leave the in time the area round the Machine or the area beneath the Machine!

Operator must sit on the seat before the Machine starts moving! If the operator gets up from the seat during the Machine travel then the Machine will stop and brake.

Machine travel and reversation:

Select travel direction:

Start the engine.

Move the travel controller (3) from the parking brake (P) to the neutral position (N) - releasing of the brakes, the pilot lamp of the parking brake goes out. The engine idle speed is set up.

Move the travel controller (3) to the position (0) and select the travel direction (F/R). Setting the working speed of the motor according to the preset gear.

Travel speed selection:

The travel speed corresponds to the deflection of the travel control (3) from the zero position (0).

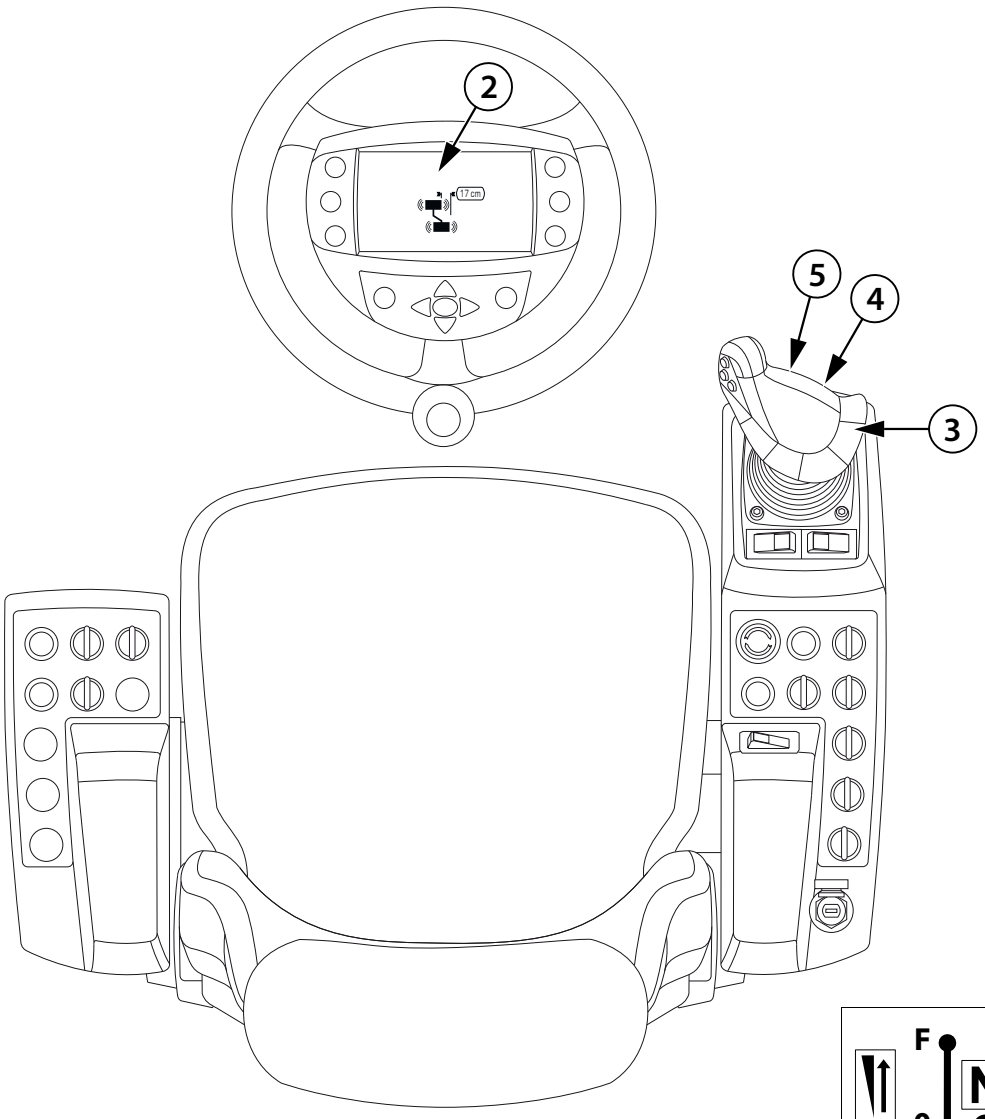
The travel speed can be changed using the speed buttons from MIN (turtle) do MAX (rabbit) on the display (2).

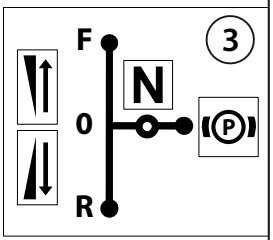
Speed gear	forward km/h (mph)	rearward km/h (mph)	engine speed rev/min
0	2 (1,2)	2 (1,2)	1600
1	2 (1,2)	2 (1,2)	1300
2	3 (1,9)	3 (1,9)	1600
3	4,5 (2,8)	4,5 (2,8)	1600
4	6 (3,7)	6 (3,7)	1600
5	11 (6,8)	11 (6,8)	1600-2200

Note

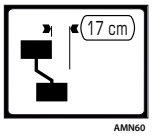
The speed gear 0 is set as starting gear after 15 minutes after the switch box is turned off. Working functions of the machine are locked in the speed gear 0 (vibration, sprinkling, crab).

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. The machine can start moving after the travel control (3) is changed to the neutral position (N) and the travel direction (F/R) is selected.





409176E



Function CRAB

The function is used for offsetting one of the drums when working at kerbs.

Drum offset

Press the button (4) to offset the front drum right.

Press the button (5) to offset the front drum left.

The drum setting is displayed on the display (2).

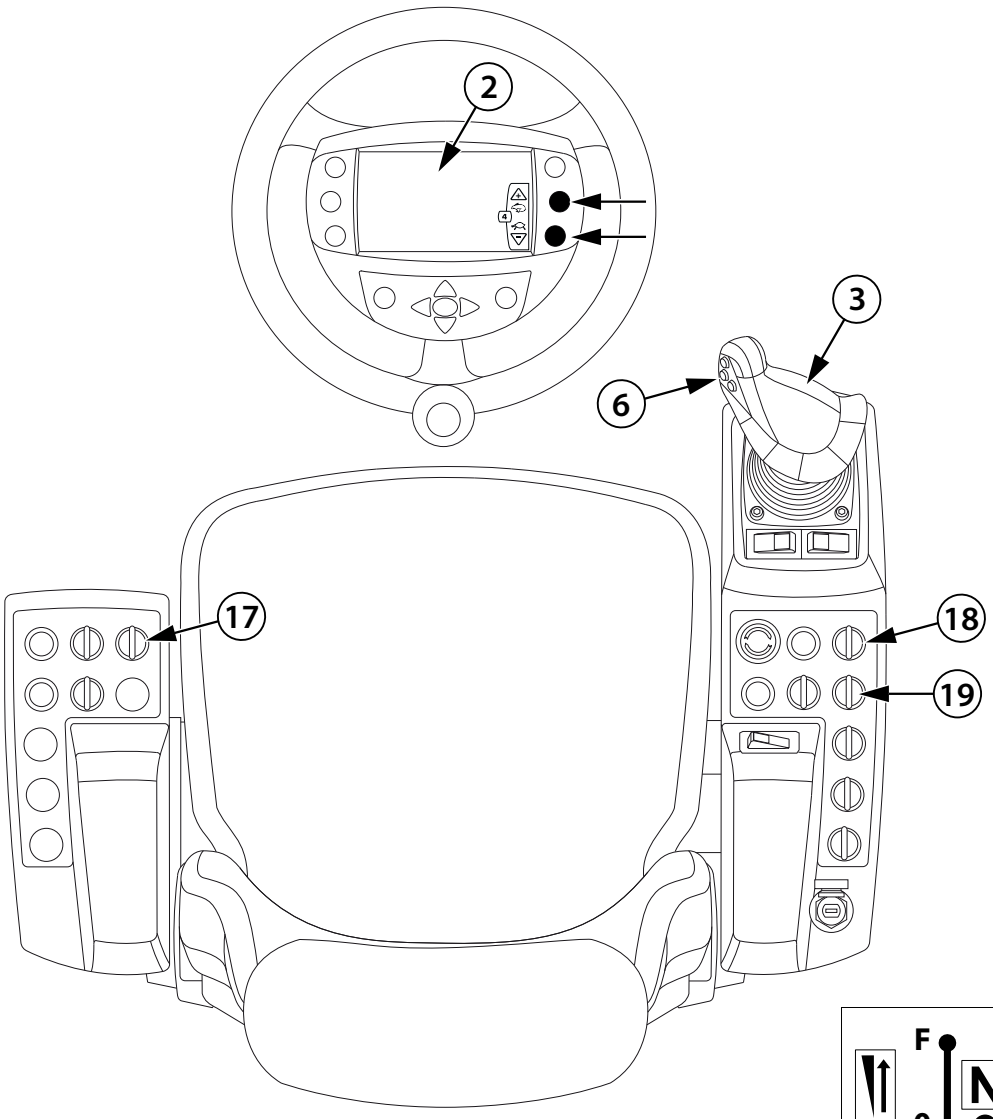
The maximum mutual drum offset to both sides is 17 cm (6.7 in).

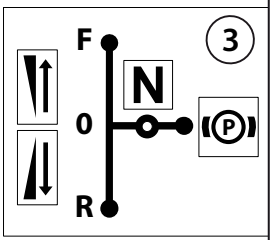
Drum offset reset

Press buttons (4) and (5) to cancel the drum offset (the drums will be set in one track).

Take special care when Machine travels in CRAB mode near constructed facilities so to avoid their damage due to any collision (hitting)!

If necessary, fold the external mirrors!





409176F

Machine travel and reversation incl. vibrations

Use the switch (17) to select the drum vibration.

Use the switch (18) to select a vibration amplitude.

Set a travel speed on the display (2).

Use the travel control (3) to select a direction.

Use the switch (19) to select the MAN mode.

Turning on:

Press the button (6) on the travel control (3) to turn on the vibration.

Turning off:

Turn off the vibration by pressing the button (6) on the travel control (3).

You can turn off the vibration by changing the travel control (3) to the brake position (P).

Note

The MAN mode allows you to turn on the vibration on a standing machine.

Automatic vibration switching ON/OFF mode (AUT):

Use the switch (19) to turn on/off this function.

Press button (6) on travel control (3) to switch ON vibration.

Vibration will automatically switch ON at travel speed over 1 km x hour^{-1} (0,6 MPH).

Vibration will automatically switch OFF at travel speed below 1 km x hour^{-1} (0,6 MPH).

The automatic vibration function remains enabled even after the travel control (3) has been moved through the position (0) and is in the neutral position (N).

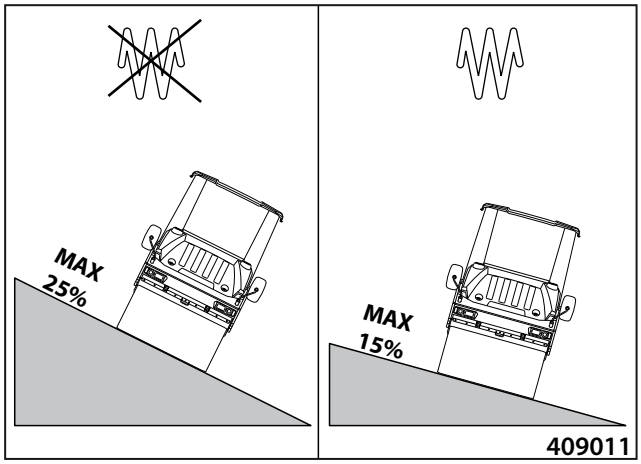
Turning off:

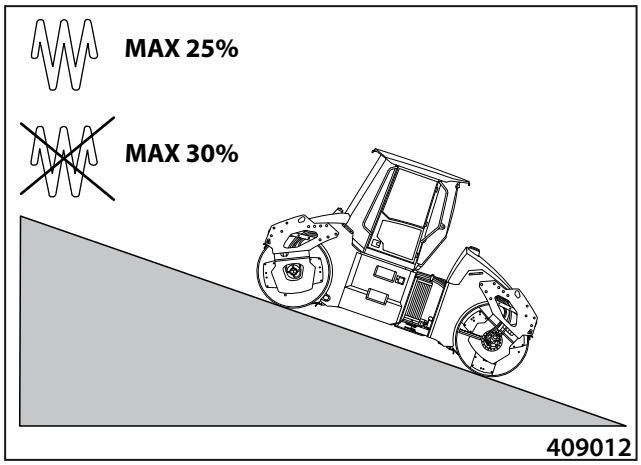
Turn off the vibration by pressing the button (6) on the travel control (3).

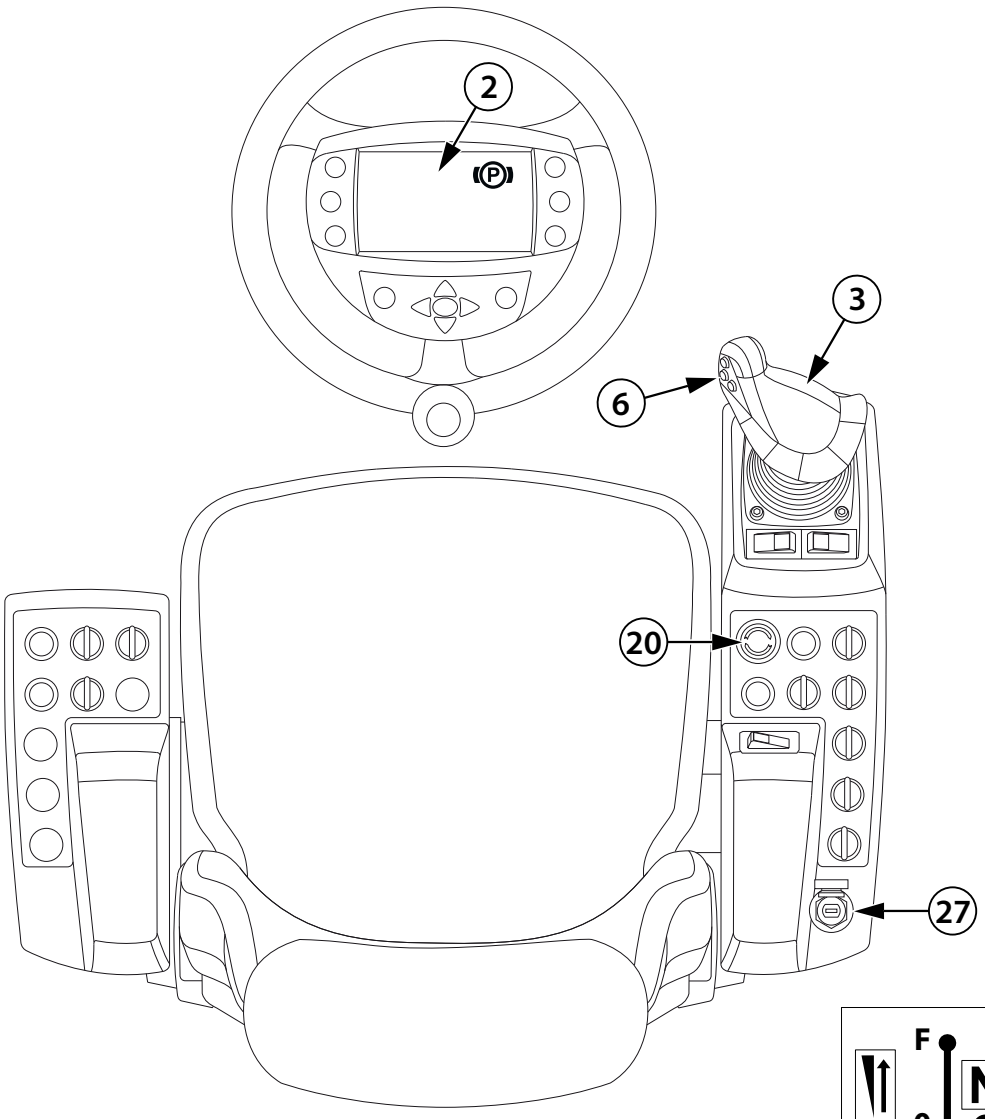
You can turn off the vibration by changing the travel control (3) to the brake position (P).

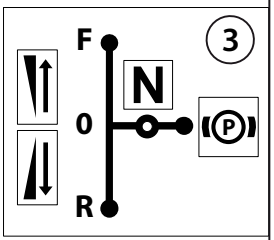
For the maximum permissible slope gradient when driving uphill and across the slope gradient, see figures.

The values given are lower depending on adhesive conditions and the machine instantaneous weight!









409176G

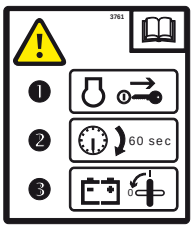
2.7.3. How to stop the Machine and its engine

Press the button (6) on the travel control (3) to switch off the vibration.

Stop the machine by changing the travel control (3) to the neutral position (N).

Brake the machine by changing the travel control (3) to the brake position (P).

Switch over the key in the ignition box (27) to "0" position, and tilt back the ignition box lid to close it.



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Switch off the battery disconnector no sooner than 60 seconds after removing the key from the ignition switch.

Keeping of the time limit is necessary for saving the data of the ECM motor.

Do not stop hot engine instantly but keep it running idle for 3 minutes. The engine and turbocharger will get cooled down slowly and evenly!

The travel control (3) must be always in the brake position (P)!

Switch OFF the battery disconnector during Machine shutdown!

2.7.4. Emergency stop of the Machine

Use in case of a failure when it is impossible to stop the engine using the key in the ignition box or by changing the travel control (3) to the brake position (P)!

How to switch ON:

After pressing the emergency brake button (20), the machine is braked and the engine stops.

The parking brake indicator lamp lights up on the display (2).

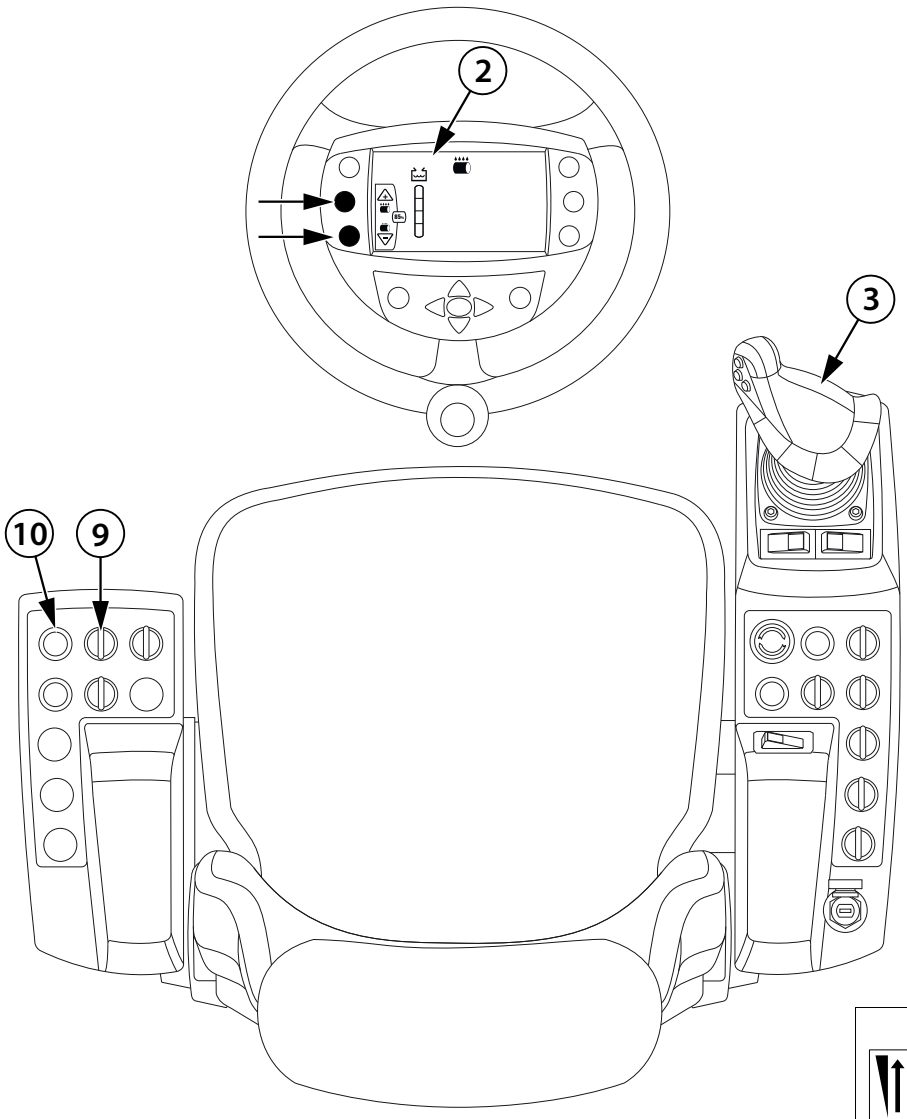
How to switch OFF:

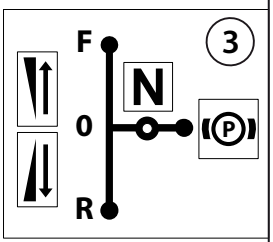
Turn the emergency brake button (20) in the direction of arrows.

The parking brake indicator lamp keeps lighting on the display.

Move the travel control (3) to the position (P); you can restart the engine in this position.

It is forbidden to use the emergency brake for turning off the engine during normal operation of the machine!





409176H

2.7.5. 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).

Following the engine stop, before leaving the Machine, please disconnect its battery disconnector.

Clean the Machine to remove dirt (scrapers and drums).

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!

2.7.6. Sprinkling

It is used to sprinkle the Machine drums.

The water level in the tank is displayed on the display (2).

How to switch ON:

Switch ON one of two sprinkling pumps via sprinkling pumps selector switch (9).

Set the sprinkling intensity on the display (2).

The sprinkling pump operation is indicated by the indicator lamp on the display (2).

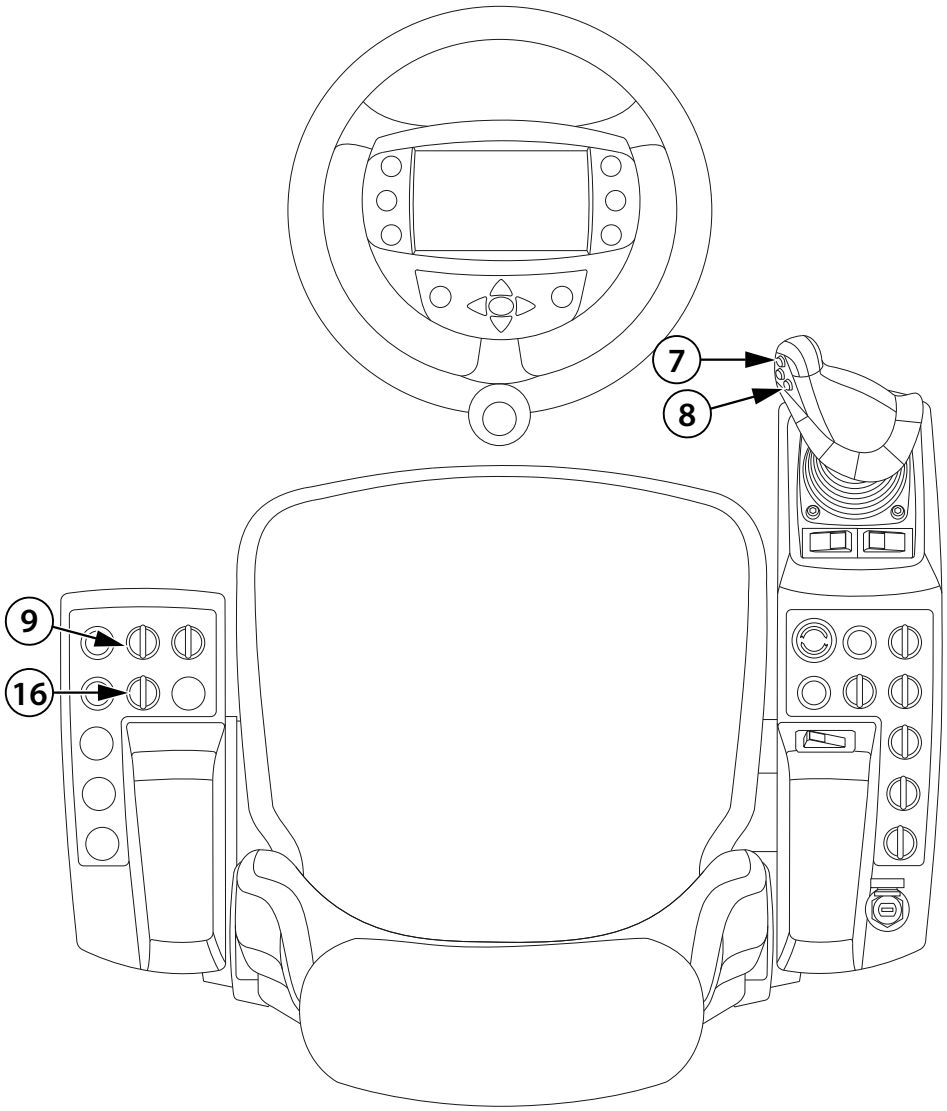
Using the watering button (9), (10), it is possible to switch on the additional watering of drums, e.g. before driving on a compacted bitumen surface.

How to switch OFF:

Change the sprinkling pump switch (9) to the centre position (0).

Check water level in the tank during Machine operation.

We recommend to alter the pumps following 100 motohours in order to ensure their uniform wear.



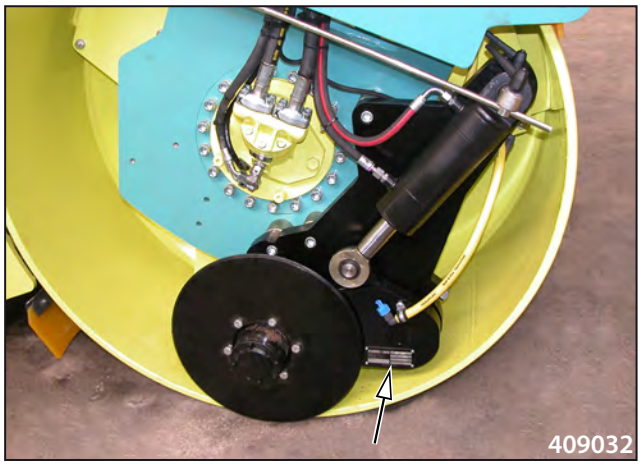
409176l

2.7.7. Ammann edge cutter (optional)

Edge cutter and compacter are options supplied upon request of the customer. They are not included as standard accessories of the machine.

To additional assembly use appropriate manual.

Edge cutter plate location.



Edge cutter plate

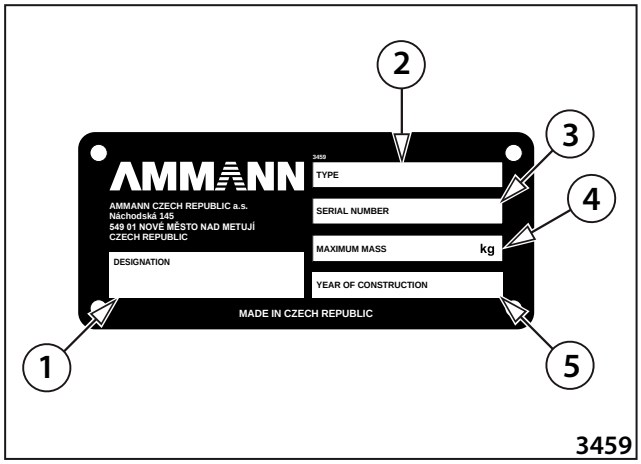
1 - Name - always mentioned only in the English version

2 - Type

3 - Serial number

4 - Maximum weight

5 - Year of manufacture



How to activate the cutter

Use the switch (16) to select the edge cutter (left/right).

Use the switch (9) to turn on the sprinkling pump.

Make sure nobody is endangered when the edge cutter is started!

The buttons (7), (8) serve for setting the cutter (final compaction device) to the required position.

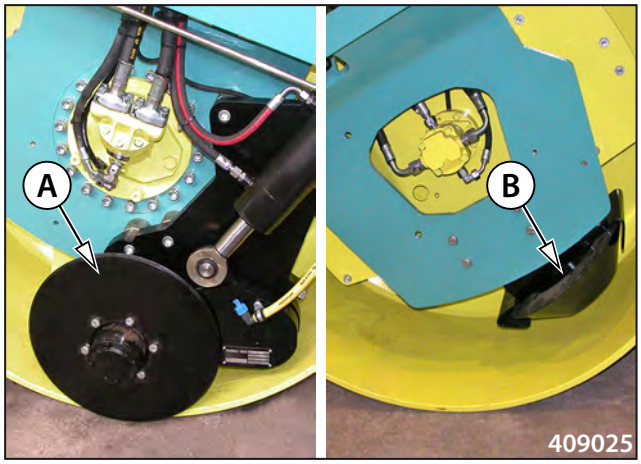
Upper button (7) - upward (setting to the transport position)

Lower button (8) - downward (setting to the working position)

The required position is being set while the button is pressed. After reaching the limit position in either direction, the cutter will automatically stop.

The cutting disc (A) can be replaced for the compacting disc (B).

To replace, remove the final compaction disc attachment. The not used cutting disc is to be fixed in the holder.



2.7.8. Spreader (optional)

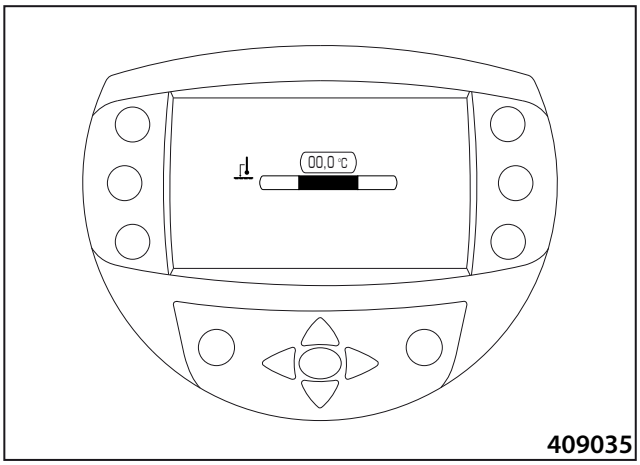
! ATTENTION !

Read and follow the instruction given in the Operating Manual of the spreader!

2.7.9. Infra thermometer (optional)

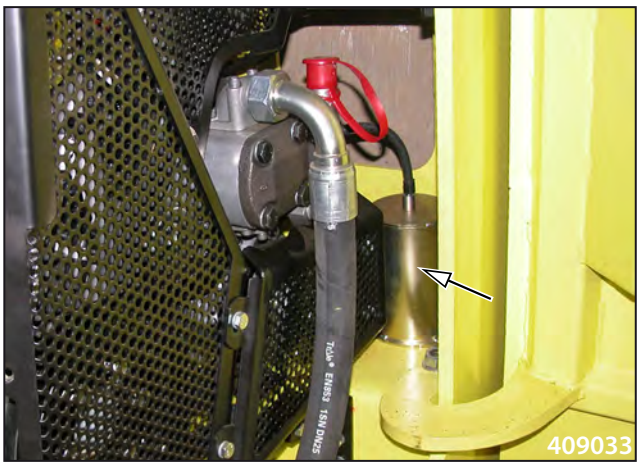
It is enabled by turning on the key in the ignition box (27) and it displays the temperature of the rolled bitumen surface using a sensor. The measured temperature is indicated on the display (2) in °C.

The green field shows the optimum temperature range for vibration compaction.



Adjustment of the upper and lower limit of the admissible asphalt temperature:

1. Holding the OK button for about 4 sec (audible signal)
2. The blue text Set lower limit will be displayed and the digital temperature data is flashing - you can increase/ decrease the set value using the up/down arrows.
3. Using the OK button switch over to the upper limit setting.
4. The red text Set higher limit will be displayed and the digital temperature data is flashing - you can increase/ decrease the set value using the up/down arrows.
5. By short pressing the OK button, you can anytime switch over between the upper and lower limit adjustment.
6. By holding the OK button pressed for about 4 seconds (audible signal), you save the set values in the memory.

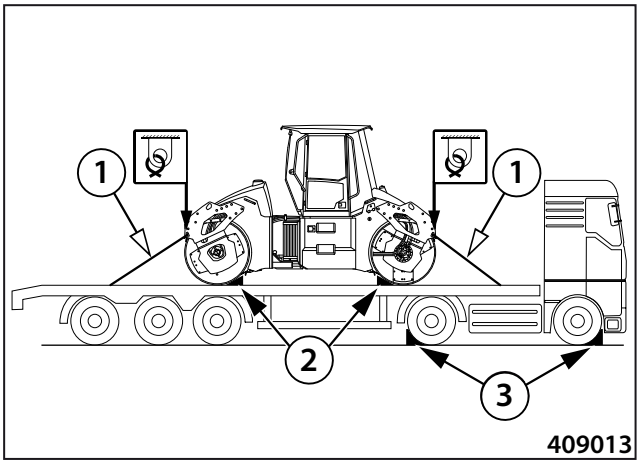


2.8. Machine transport

- The Machine may pass by its own axis between its workplaces.

When moving, observe the safety measures applicable to the working site.

- When on the road, the machine should be transported on a vehicle.



When transporting the machine on a vehicle, observe the regulations in force in the given territory.

When loading and unloading, the vehicle transporting the machine must be braked and mechanically protected against accidental movement using scotch blocks 3.

The machine on the vehicle must be properly tied and mechanically secured against longitudinal and lateral displacement as well as against tipping 1. The drums must be secured using scotch blocks 2.

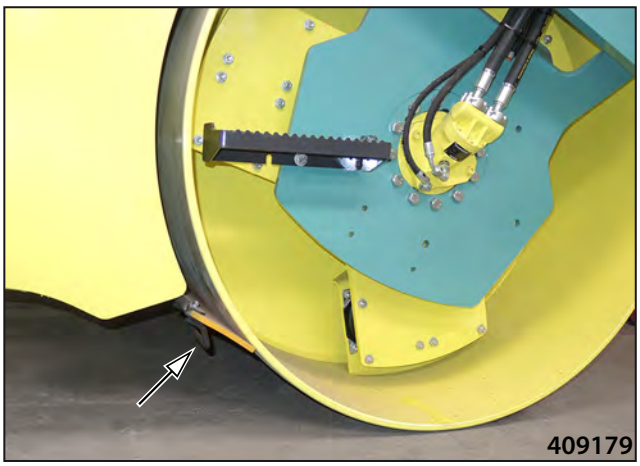
2.8. Machine transport

2.8.1. How to load the Machine

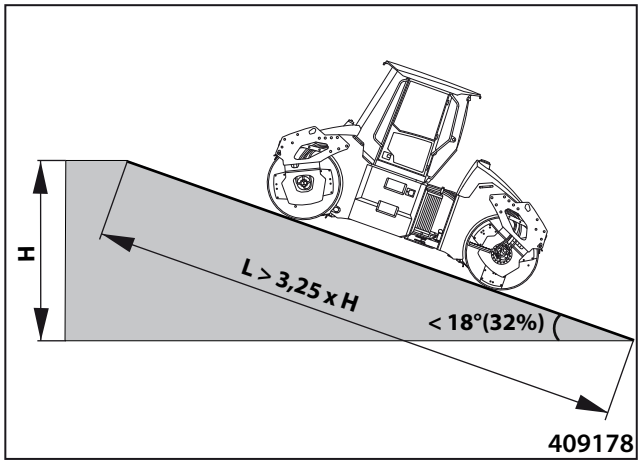
Use drive-up ramps or a crane to load the machine on the transporting vehicle.

2.8.1.1. Loading the machine on the transporting vehicle using a drive-up ramp

Set the scrapers to the working position.



The drive-up ramp must be of the prescribed parameters specified in the figure.

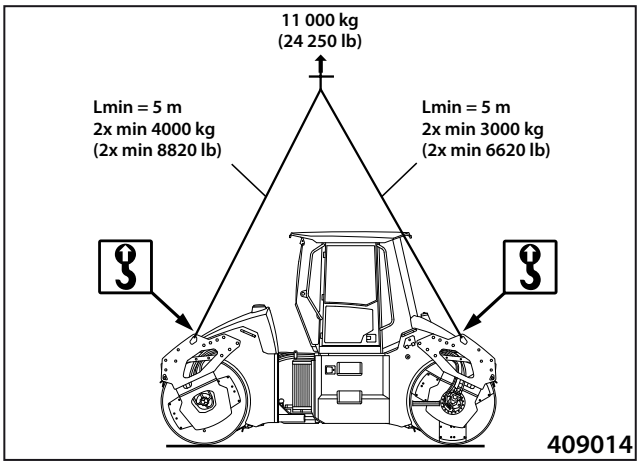


Nonobservance of the prescribed parameters of the drive-up ramp can result in damage of the machine.

2.8.1.2. Loading the machine on the transporting vehicle using a crane

For loading with crane the Machine is fitted with lifting lugs.

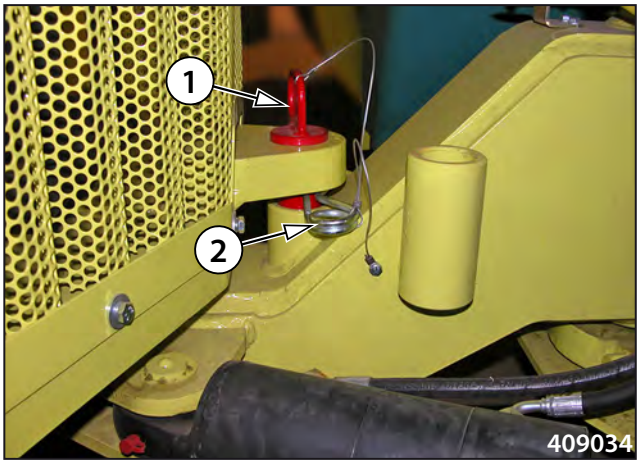
When loading and unloading the machine or its parts, it is necessary to observe the provisions of ČSN ISO 12480-1 and to use slings under ČSN EN 1492-4+A1.



Before lifting, the Machine joint must be secured against slight turning.

How to secure the joint:

Use pin 1 and safety pin (lock) 2 to secure the joint before loading.



Observe safety regulations when loading and unloading!

Use the crane of sufficient loading capacity!

Use corresponding and unbroken rigging of sufficient loading capacity!

The Machine must be tied to the lifting lugs on the Machine!

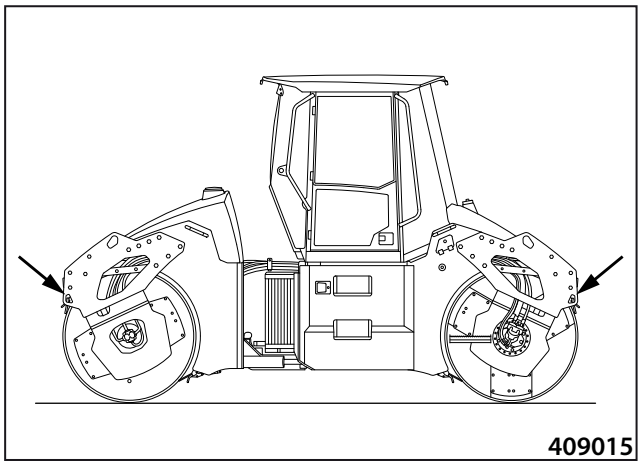
Only a trained person (slinger) may carry out the tying of the Machine!

Keep off the area beneath the hanging load!

2.9. Special conditions to use the Machine

2.9.1. Machine towing

To provide for towing the Machine is equipped with two lugs on front frame, and with two lugs on rear frame.



When towed the Machine shall be attached with both lugs !

When towing, please use undamaged towing cable or pull rod of sufficient loading capacity 1,5 higher than the weight of hauled Machine. It is forbidden to use a chain for hauling.

It will be necessary to maintain minimal deflection from direct angle of hauling. Max deflection will be possible within angle of up to 30°.

When towing, it is necessary to ensure the continuous movement. Do not exceed a towing speed of more than 2 km/hour (1.2 mph).

The machine should only be towed for the shortest possible distance – to extricate the machine if it gets stuck or is blocking traffic in case of breakdown. Do not tow the machine for a longer distance than 300 m (0.19 mi).

The hauling machine shall fit with its size the Machine broken. It shall have sufficient hauling force (performance), weight and brake effect.

When hauling downhill with the help of cable it will be necessary to attach next hauling machine to the rear part of the Machine broken. In this way it will be possible to avoid uncontrolled motion of the Machine damaged.

A sunken machine can be towed for a short distance if the engine is running and the travel drive and steering are working. The operator on the towed machine must steer the machine in the towing direction.

If the engine does not work, or there is a defect in the hydraulic system, you must short-circuit the hydraulic circuit and release the brake of the machine.

No person may stay on the towed machine!

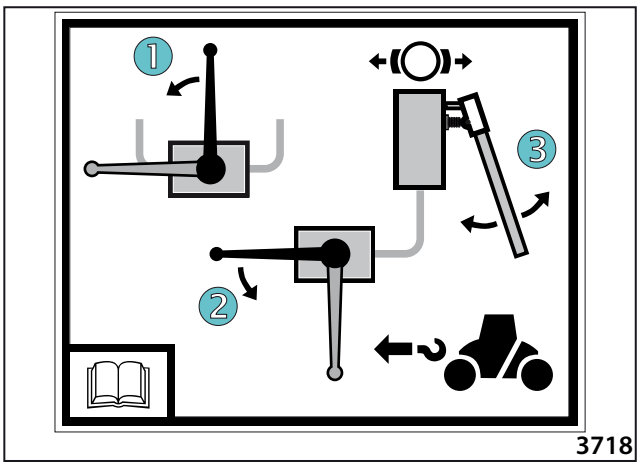
After the hydraulic circuit of the machine is short-circuited and the machine brake is released, all of the brakes are disabled!

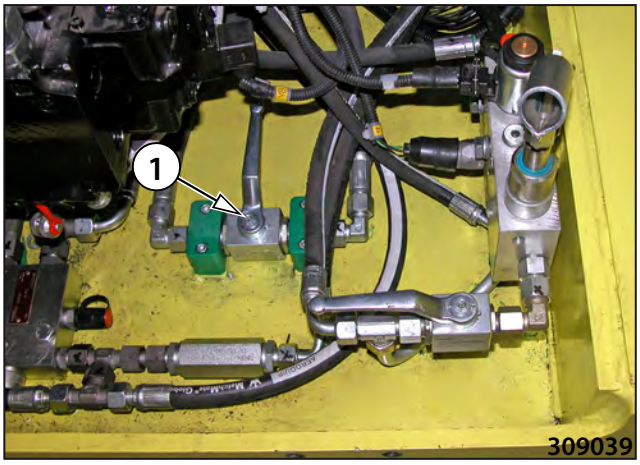
Before releasing the brake, secure the machine with wooden scotch blocks against motion!

Do not touch hot parts of the machine, burn hazard!

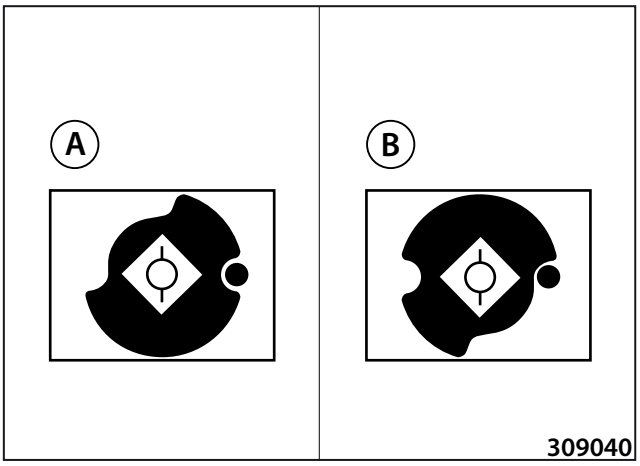
Travel pumps short-circuiting:

- Remove the lever 1.

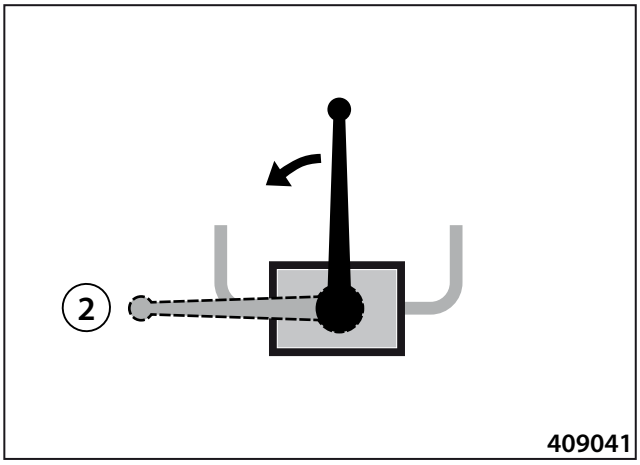




- Adjust washer to position B.



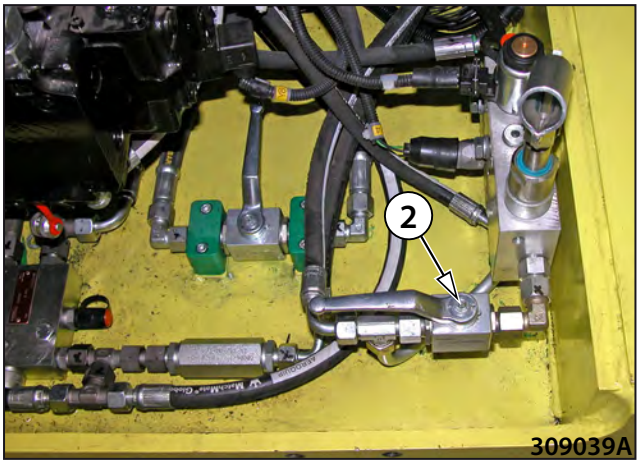
- Reinstall lever 1.
- Adjust the lever to the position 2.



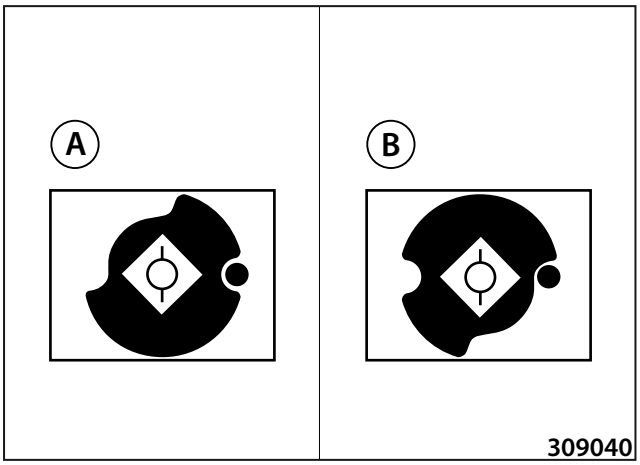
How to brake off:

Before braking off secure the Machine with wooden scotch blocks against starting to move!

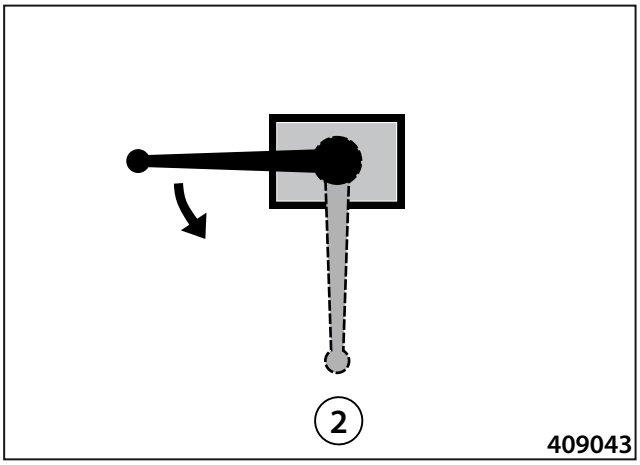
- Remove the lever 2.



- Adjust washer to position B.

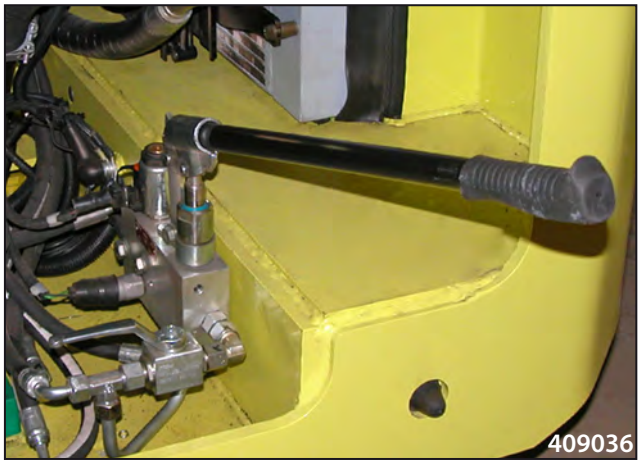


- Reinstall lever 2.
- Adjust the lever to the position 2.



Insert the lever into the pump and pressurize the brake circuit by at least 30 full strokes (one stroke = movement of the lever up and down).

Now the Machine is braked off, and it will be possible to tow it away.



2.9. Zvláštní podmínky použití stroje

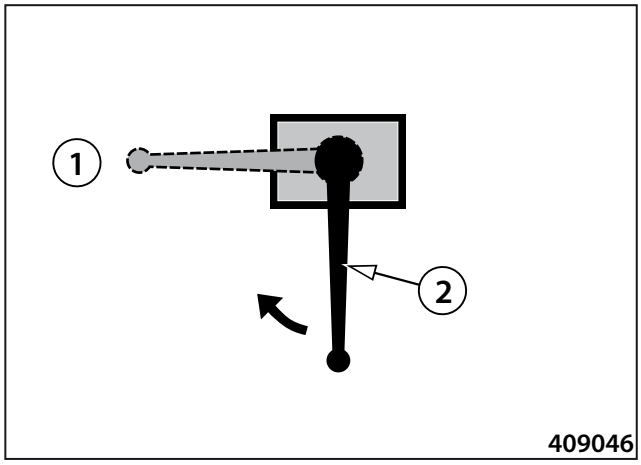
Due to leakage the pressure in the brakes may lower in course of towing.

Check the drum of the towed machine for the occurrence of braking or skidding. In such a case interrupt the towing and pump again using the lever in the manual hydrogenerator.

After completion of towing, chock the drums and restore the machine.

How to put into initial state

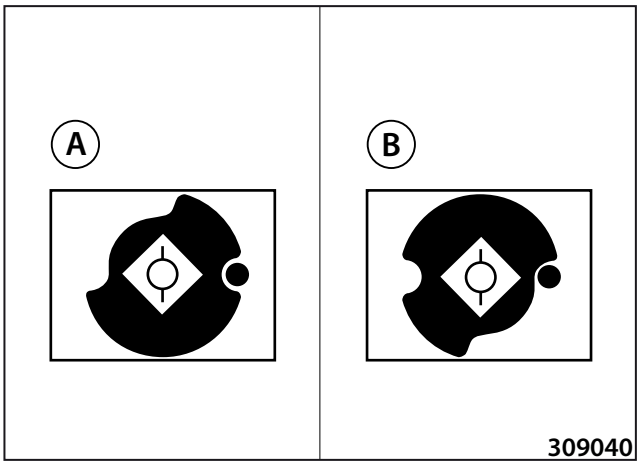
Den Hebel 2 in die Position 1 einstellen. Die Maschine bremst und die Parkbremse wird aktiviert.



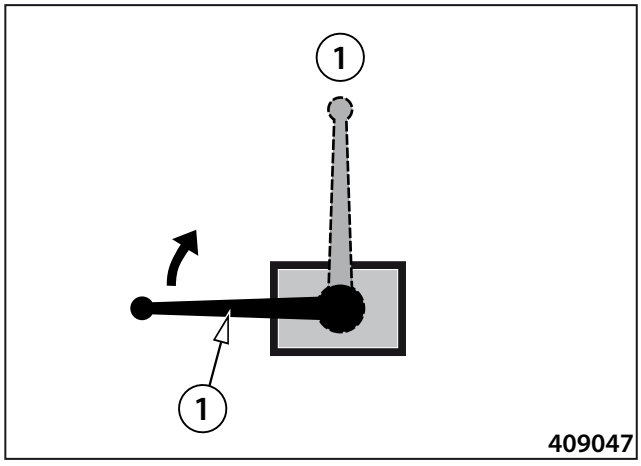
Remove the lever.

Adjust washer to position A.

Reinstall lever.



Set the lever 1 to the position 1.

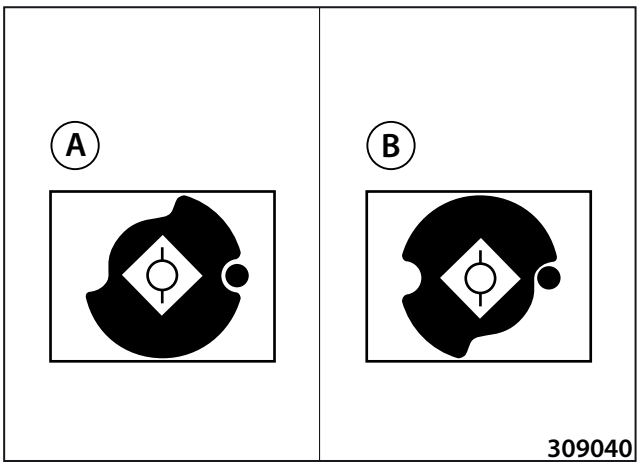


Remove the lever.

Adjust the washer to the position A.

Remount the lever.

Take out the control lever and lay up.



2.9.2. How to operate the Machine during its running-in

Do NOT load the Machine at its full capacity when putting the new Machine into operation or following its major overhaul during the first 30 hours!

2.9.3. Operating the Machine at low temperatures

Compacting during winter season depends on the content of fine particles and water in the soil being compacted. With the temperature dropping below freezing point the soil becomes more solid and harder to compact.

At the temperatures below 0 °C (32 °F) it is possible to compact only dry soils (and stony loose materials), or carry out rapid compaction of non-frozen materials (before soil gets frozen).

Set up the Machine for operation at low temperatures:

- Check concentration of engine cooling liquid.
- Exchange motor oil for the one recommended for given external temperature range.
- Use hydraulic oil of corresponding cinematic viscosity.
- Use winter diesel oil.
- Confirm battery has been recharged.

A precondition for proper starting at low temperatures is that the battery is OK. The Machine can be used at its full capacity only after the media have been heated to their operating temperatures.

2.9.4. Machine operation at high temperatures and humidity

The engine power lowers with the air temperature and moisture increasing. Due to the fact that both these factors reducing the engine power, are independent on each other, it is possible to describe their impact as follows:

- each 10 °C (18 °F) of temperature rise means power drop by up to 4 % (at constant humidity)
- each 10 % of RH increase means power drop by up to 2 % (at constant temperature).

At ambient temperatures when hydraulic oil temperature is constantly round 90 °C (194 °F), we recommend to exchange oil for the one with cinematic viscosity of 100 mm^2/s.

2.9.5. Machine operation at high altitudes

With the altitudes increasing the engine power drops due to lower atmospheric pressure and lower specific weight of intake air.

The engine power is affected by the environment in which the machine is working.

The machine may be used up to a maximum altitude of 3,658 m (12,000 ft).

2.9.6. Machine operation within very dusty environment

While in very dusty environment, please cut short the intervals of cleaning and replacing the air filter elements; and the replacement intervals of cabin dust filter, and cut short the intervals of cleaning the coolers.

Recommended interval of cleaning is 1x per week.

2.9.7. Driving with vibrations on compacted and hard materials

During Machine travel with vibration the drums may loose contact with the materials being compacted (so called vibro-stroke) due to high level of compaction of the background material or travel with vibration on hard materials. This condition will come to light in the form of increased vibration transfer into Machine frame and onto operator's control stand. The vibro-stroke can partly be eliminated through the increased travel speed.

It is banned to work in vibro-stroke mode in the long term!

In extreme cases there is Machine damage hazard or operator's health hazard!

3. MAINTENANCE MANUAL

ARX 90
(Deutz Tier 3)

3.1. Safety and other measures for machine maintenance

3.1.1. Safety of machine maintenance

Carry out lubrication, maintenance and adjustments:

- By professionally trained personnel
- In line with safety instructions given in the Operation Manual
- According to schedule given in the Lubrication Chart following the hours actually worked
- On the machine located on flat solid surface, secured against self-motion (scotch blocks), and this always with the engine OFF, key removed from ignition box, and the wiring cut off
- On machine parts cooled out
- After having cleaned the machine, lubrication points and maintenance locations
- Using proper, undamaged tools
- Through replacement with new original parts as per the Spare Parts Catalogue
- With sufficient lighting of the entire machine in the event of lowered visibility and at night
- so the guards and safety elements are reinstalled again upon work completion
- through retightening bolted connections - with torque specified, and through checking the connection tightness
- with the operation media heated - beware of burns - use recommended media, only

Upon completion of the adjustment or maintenance, please examine the function of all safeguard equipment!

3.1.2. Fire precautions during operation media exchanges

- In terms of fire hazard the flammable liquids used on the Machine have been divided into three hazard classes:

  IInd Hazard class - Diesel oil

  IVth Hazard class - mineral oils, lube greases
- Oil exchange point shall be located so it does not interfere with the explosion or fire hazard area.
- It shall be identified with notice boards and signs of no smoking and no use of open flame.
- Handling area shall be sized so the capture the amount to flammable liquid equal to the capacity of biggest vessel, transport container.
- It must be equipped with portable fire extinguishers.
- To handle the oil, Diesel oil, please use such vessels like metal barrels, canisters or sheet-metal cans.
- Transport containers shall be properly closed when stored.
- Vessels shall have one opening, be stored with the opening on top, and secured against any flowing out or dripping of their content.
- Vessels shall be designated with indelible inscription indicating the content and flammability class.

3.1.3. Ecological and hygienic principles

When operating or maintaining the Machines the user shall be liable to follow the general principles of health and environment protection according to the laws, ordinances and regulations in individual territories of the Machine use.

Hygienic principles

- Crude oil products, cooling system media, battery media and coating compositions incl. thinners are materials harmful to health. Workers coming into contact with these products during machine operation or maintenance shall be liable to follow the general principles of their own health protection and conform to the safety and hygienic manuals of these products' manufacturers.
- We call your attention to the following in particular:
  - eye protection and skin protection during work with the batteries
  - skin protection during work with crude oil products, coating compositions or cooling liquids
  - proper hand washing upon work completion and before any meal; use adequate reparation cream to treat your hands
  - adherence to the instructions given in this manual.

- Always store the crude oil products, cooling system media and battery media, and coating compositions incl. organic thinners, and also the cleaners and preserving agents, in the genuine, original and properly labelled packages. Do not admit any storage of these materials in unlabelled bottles or in any other vessels with regard to the hazard of mistaken identification (faulty change).
- When skin, mucosa, eyes are accidentally stained, or vapours inhaled, immediately apply the first aid principles. In the event of accidental use of these products get prompt medical attention.
- When working with the Machine in cases where the Machine has platform fitted, cabin windows are left opened, always use ear protectors of adequate type and version.

Ecological principles

The media of Machine's individual systems, and some of its parts after having been discarded (dismantled, media exchanged) become waste with hazardous properties against the environment.

- This category of waste products includes the following in particular:
  - Organic and synthetic lubricating materials, oils and fuels
  - Cooling liquids
  - Battery media and the batteries themselves
  - Cooling system media
  - Cleaners & preserving agents
  - All dismantled filters and filter elements
- All used and discarded hydraulic or fuel hoses, rubber-metal and Machine's other elements, made dirty due to the above-mentioned products.

The given materials and parts, when scrapped, shall be handled compliant to the respective national regulations on environmental protection, and in line with the health protection regulations, as well.

3.2.1. Engine oil

Engine oil has been specified as per its performance classification and viscosity classification.

Performance classification

Considering emission requirements for Tier 4 interim, the engine manufacturer requires so that only oils certificated by the firm Deutz are used.

Admissible oil according to DEUTZ QUALITY CONTROL (DQC):

DQC III

DQC IV

You can find the current list of oils corresponding to the classification at the website of the engine manufacturer Deutz (www.deutz.com).

If a trouble occurs because oil with incorrect classification is used, the guarantee will be lost.

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.

NOTE

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

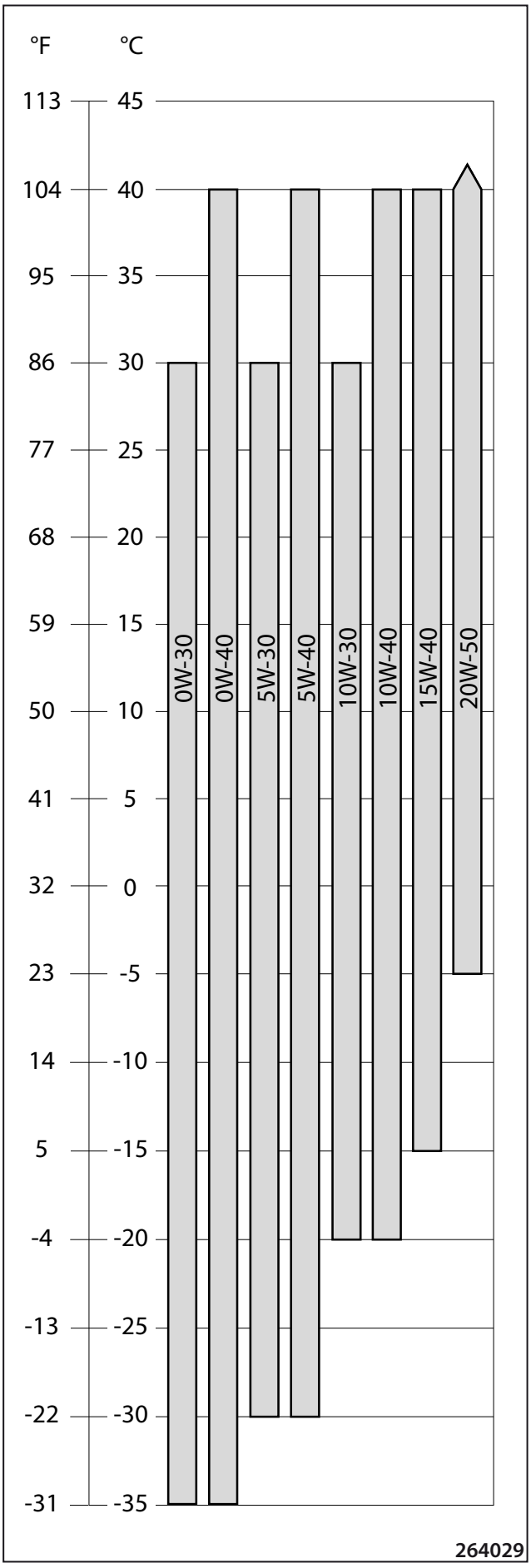
It is suitable to use general-purpose multi-grade oil in order that oil need not be exchanged because of ambient temperature changes.

Exceeding the upper temperature limit can reduce lubricating properties of the oil and cause high oil wear.

Halve the oil change interval if at least one of the following occurs:

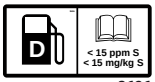
- **ambient temperature is permanently below -10 °C**
- **oil temperature during machine operation is below 60 °C.**

Viscosity classification



3.2. Media specification

3.2.2. Fuel



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Diesel oil is used as the engine fuel:

- EN 590
- ASTM D 975 S15

The engine manufacturer prescribes fuel with sulphur content not exceeding 0.0015 weight percent (0.0010 weight percent for the use of the machine in the EU).

Use of a fuel with a higher sulphur content means that the engine guarantee will be lost.

Therefore use winter Diesel fuel at outdoor temperatures below 0 °C (32 °F).

Never mix diesel with special additives.

3.2.3. Cooling liquid


2152

To fill the cooling circuit, use the agent Deutz Cooling System Conditioner and water in the specified ratio according to the following table.

Agent Deutz	Water	For temperatures up to
35 %	65 %	-22 °C
40 %	60 %	-28 °C
45 %	55 %	-35 °C
50 %	50 %	- 41 °C

The agent protects the cooling system against freezing, corrosion and overheating.

Never use the machine without the coolant.

Never use other than specified coolant, the engine may get damaged and the guarantee will be lost.

Water quality

The right water quality is important for conditioning the coolant. Clear, clean water within the following analysis values should always be used:

	min	max
ph value	6,5	8,5
Chlorine (Cl) [mg/l]		100
Sulphate (SO_4) [mg/l]		100
Total hardness [mmol/l]		3,56

The water must be conditioned if it deviates from the analysis values.

- pH value too low:
  - Addition of diluted sodium or potassium lye. Small trial mixtures are advisable.
- Total hardness too high:
  - Mixing with softened water (pH neutralized condensate or water softened by ion exchanger).
- Chlorides and/or sulphates too high:
  - Mixing with softened water (pH neutralized condensate or water softened by ion exchanger).

3.2.4. Hydraulic oil

Only the quality hydraulic oil of performance class under ISO 6743/ HV (corresponds to DIN 51524 part 3 HVLP; CETOP RP 91 H) shall be used for the Machine's hydraulic system.

Fill the Machines normally with hydraulic oil that has cinematic viscosity of 68 mm^2/s at 40 °C (104 °F) ISO VG 68. This oil is most appropriate for its use within the widest range of ambient temperatures.

Hydraulic oil synthetic type

Hydraulic system is able to be filled with synthetic oil which, if any leaks occur, will be degraded with no residues, via the microorganisms found in water and in soil.

Please consult always with oil manufacturer or dealer any switching from mineral oil to synthetic one or mixing the oils of various brands!

3.2.5. Gearbox oil

Use high quality oils complying with API GL-5 or EP or MIL-L-2105 C for lubricating the drum gearbox and axle (wheels) drive gearboxes.

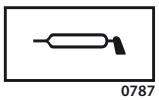
Viscosity SAE 80W/90 for outdoor temperature range -10 °C ÷ 30 °C (14 °F ÷ 86 °F).

Viscosity SAE 80W/140 for outdoor temperature range 20 °C ÷ 45 °C (68 °F ÷ 113 °F).

Operating temperature of oil shall not exceed 85 °C ÷ 90 °C (185 °F ÷ 194 °F).

3.2. Media specification

3.2.6. Lube grease



Use plastic lubricant with lithium content to lubricate the Machine under the following standards:

ISO 6743/9 CCEB 2

DIN 51 502 KP2K-30

3.2.7. Glass washer fluid

Use water (up to 0 °C temperature) and agent for motor vehicle glass washers when filling the glass washer tank.

Replace water with antifreeze agent at the temperatures below 0 °C (32 °F).

3.2.8. Drum cooling liquid

Mixture:

23 l (6,1 Gal US) of water

39 l (10,3 gal US) of calcium chloride - $CaCl_2$

3.2.9. Air Conditioning filling

Mixture:

1,2 kg (2,65 lb) coolant Halocarbon 134a

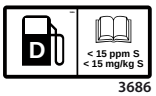
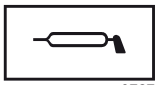
0,3 l (0,08 gal US) oil PAG 150

0,005 l (0,0013 gal US) contrast medium

3.2.10. Vibratory oil

For lubrication of vibrator use oil by:

SAE 40, API SC/CB

Part	Medium Type	Medium Amount l (gal US)	Brand
Engine	Engine oil under Section 3.2.1.	9 (2,4)	 2412
Fuel tank	Fuel under Section 3.2.2.	210 (55,5)	 3686
Hydraulic system	Hydraulic oil under Section 3.2.4.	60 (15,9)	 2158
Steering joint bearings, yoke bearings, steering swivel pins, suspensions	Lube grease under Section 3.2.6.	As required	 0787
Cooling system	Coolant under Section 3.2.3.	23 (6,1)	 2152
Vibration drum	Engine oil under Section 3.2.10.	2x7,5 (2)	 2412
Drum drive reducer	Gearbox oil according to chapter 3.2.5.	2x2 (0,53)	 2186
Glass washer tank	Liquid under Section 3.2.7.	2,75 (0,72)	 2260
Sprinkling tank	Water	840 (221,9)	 AMN59
Drum cooling liquid	Mixture according to chapter 3.2.8.	2x62 (16,38)	 2152
Air Conditioning filling	Mixture according to chapter 3.2.9.	-	 2441

3.4. Lubrication and Maintenance Chart

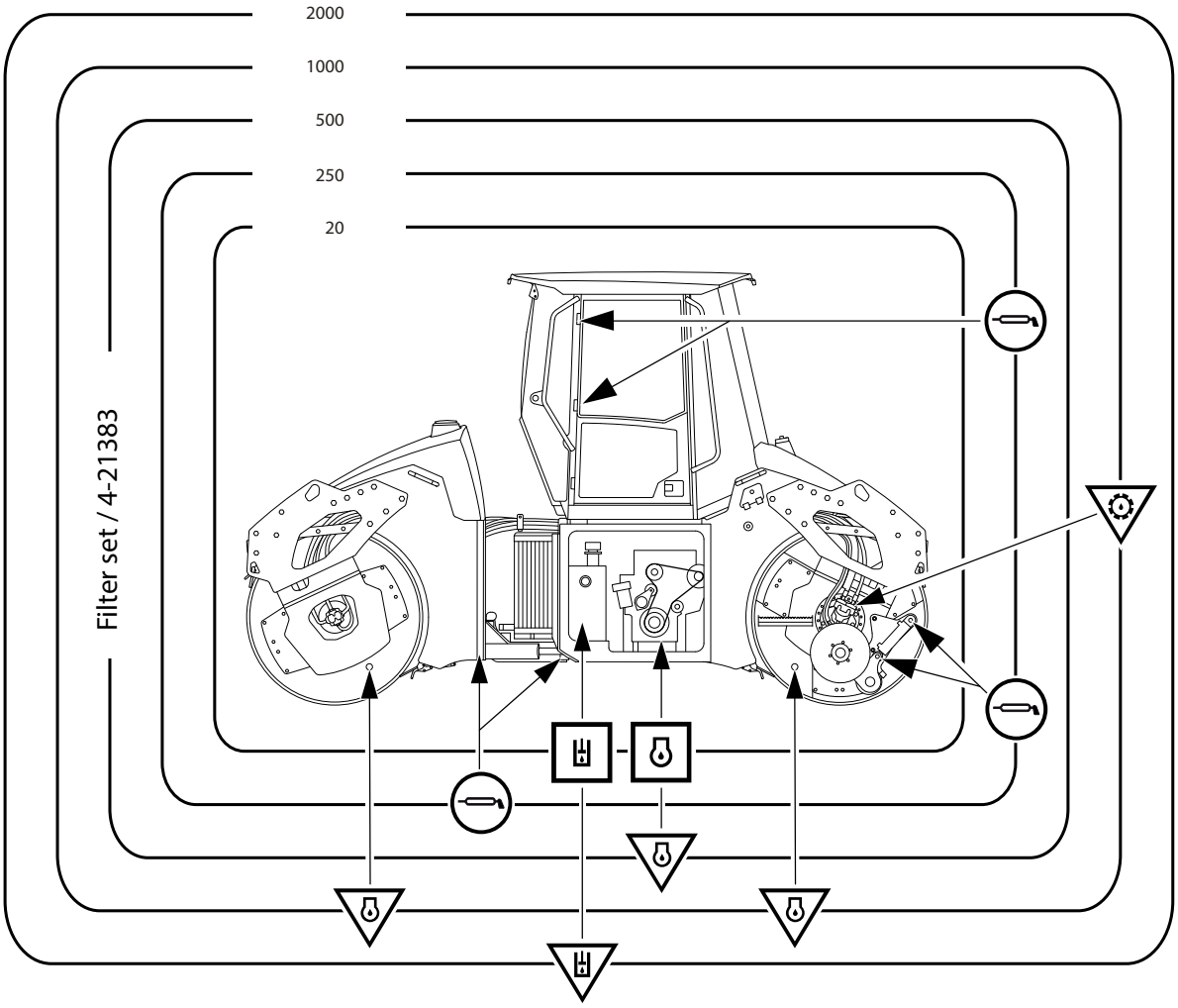
After 20 hours of operation (daily)	
3.6.1.	Engine oil level check
3.6.2.	Checking the engine for leaks
3.6.3.	Engine cooling liquid level check
3.6.4.	Inspect air filter vacuum valve
3.6.5.	Inspect fan condition
3.6.6.	Fuel level check
3.6.7.	Hydraulic tank oil level check
3.6.8.	Water tank refilling
3.6.9.	Inspect alarm and control devices
3.6.10.	Gearbox oil check
3.6.11.	Belt inspection (air-conditioning)
3.6.12.	Checking the exhaust system for leaks
After 250 hours of operation (3 months)	
3.6.13.	Watering filter cleaning
3.6.14.	Machine lubrication
After 500 hours of operation (6 months)	
3.6.15.	Inspect the engine belt
3.6.16.	Engine oil exchange
3.6.17.	Inspect engine induction manifold
3.6.18.	Air filter sensor check
3.6.19.	Engine cooling liquid level check
3.6.20.	Check of wiring
3.6.21.	Cleaning the water separator
3.6.22.	Checking the coolant level (Air-conditioning)
3.6.23.	Cleaning the air cleaner (Air-conditioning)
3.6.24.	Engine fuel filter exchange
3.6.25.	How to replace air filter elements

After 1,000 hours of operation (after 1 year)	
3.6.26.	Inspect engine cooling circuit
3.6.27.	Inspect the battery
3.6.28.	Inspection of the engine belts
3.6.29.	Exchanging oil in gearboxes *
3.6.30.	Vibrations system oil exchange
3.6.31.	Inspect the silencing system
3.6.32.	Water tank cleaning
3.6.33.	Air cooler cleaning
3.6.34.	Engine inspection
3.6.35.	Engine and machine diagnostics
3.6.36.	Checking engine belt (Air-conditioning)
3.6.37.	Checking the air conditioning compressor mounting (Air-conditioning)
After 2,000 hours of operation (after 2 years)	
3.6.38.	Engine coolant exchange
3.6.39.	How to replace hydraulic oil and filters
Maintenance as required	
3.6.40.	Deaerating (venting) the fuel system
3.6.41.	Cleaning of coolers
3.6.42.	How to clean cab ventilation filter
3.6.43.	Drain water from sprinkling circuit before winter season
3.6.44.	Adjustment of scrapers
3.6.45.	Machine cleaning
3.6.46.	Check the tightening of bolted connections

*** First after 200 motohours.**

LUBRICATION AND SERVICE PLAN

□	CONTROL
○	LUBRICATE
▽	EXCHANGE



	Engine oil:	**DQC III, DQC IV**	
	Hydraulic oil:	**ISO VG 68**	**ISO 6743/HV**
	Grease:	**ISO 6743/9**	**CCEB 2**
	Transmission oil:	**SAE 80W/90** **SAE 80W/140**	**API GL-5** **API GL-5**

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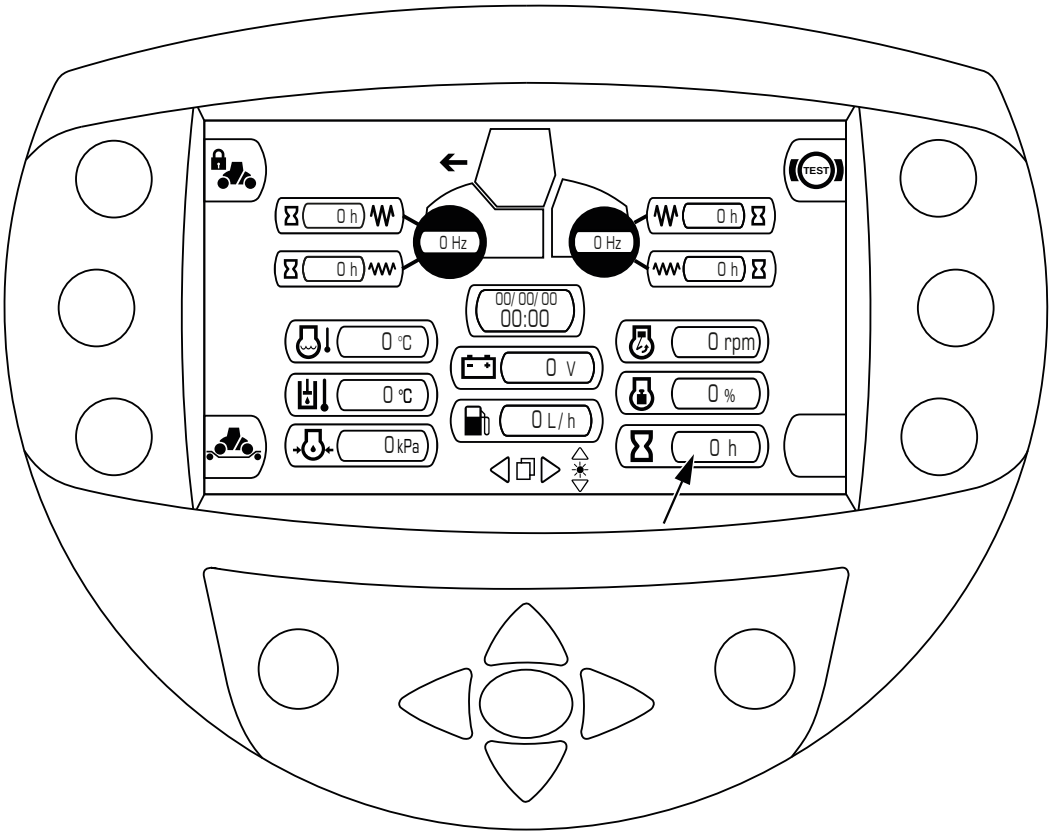
3.6. Lubrication and Maintenance Operations

Carry out lubrication and maintenance in regularly repeated intervals as per the everyday data reading on the counter of hours actually worked.



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This Manual includes only the basic engine information, others are given in the Engine Operaion and Maintenance Manual which is part of documentation supplied with the Machine.

Follow the instructions given in the Engine Operation and Maintenance Manual!

Removed or loose bolts, plugs, threaded joints of the hydraulics, etc. shall be tightened with the torque according to the charts in Section 3.6.46. unless a different value is given with the relevant operation.

Carry out the inspection of the Machine located on flat, solid surface secured against self-motion (scotch blocks), and this always with the engine OFF, key removed from ignition box, and with the wiring disconnected (unless otherwise required).

After the first 200 hours of working with a new machine (or after machine general overhaul), make the following operations:

3.6.29. Exchanging oil in gearboxes

After 20 hours of operation (daily)

3.6.1. Engine oil level check

- Pull out oil dipstick (1), wipe it.
- Put it back down to the stop and pull out again to read the oil level.

Note

If the engine was running, wait ca 5 minutes until oil descends into engine sump.

- Replenish oil through filler-neck with the filler plug removed (2).

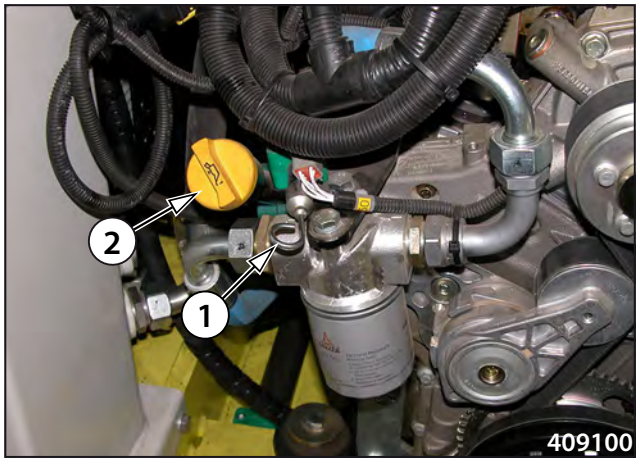
Note

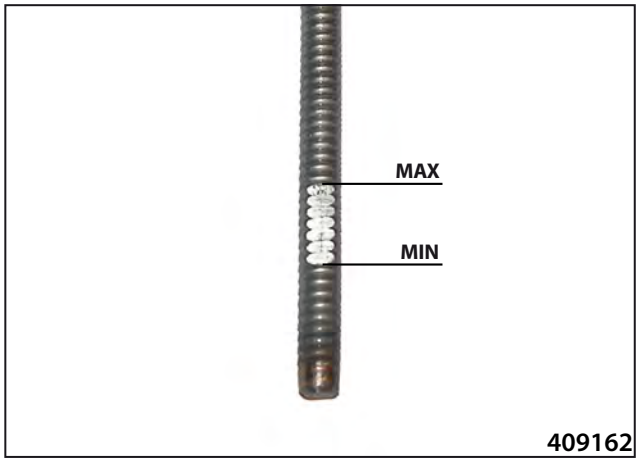
- Low division mark MIN shows lowest possible oil level, high division mark MAX shows the highest level.
- The amount of oil between MIN and MAX marks is 1,5 l (1.6 U.S. Quart).
- Following the refill, please wait ca 5 minutes until oil descends into the sump, then check the level.

Do NOT run the engine unless there is correct oil level in the engine.

Maintain the level between the division lines stamped on the dipstick.

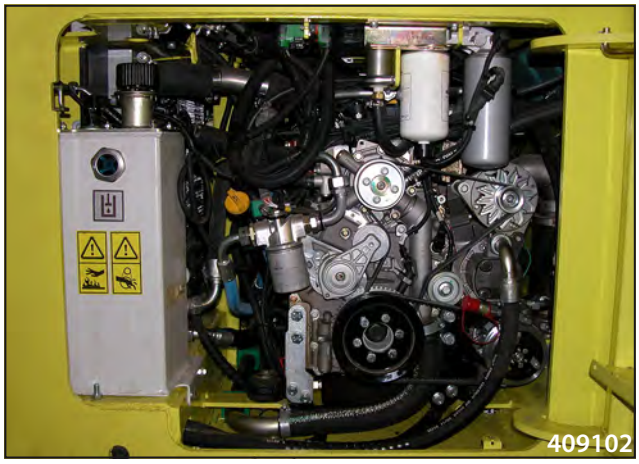
Refill the oil of identical type as stated in Section 3.2.1.





3.6.2. Checking the engine for leaks

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



3.6.3. Engine cooling liquid level check

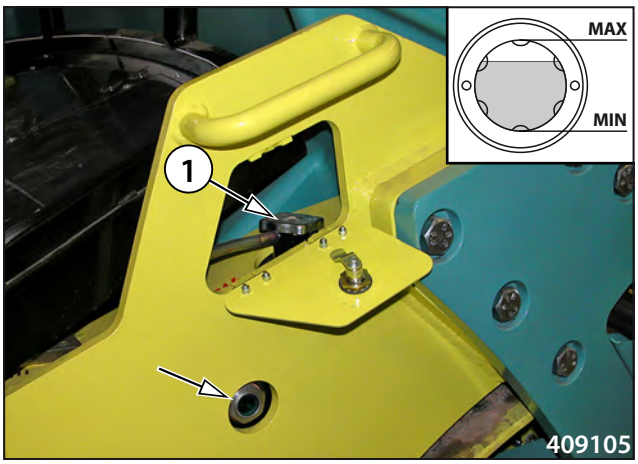
- Do it before starting the engine, visual inspection of the level.
- Top up through filler neck (1).
- Keep level between "MIN" and "MAX" lines.
- At higher losses find out any cooling system leakage and repair the cause.

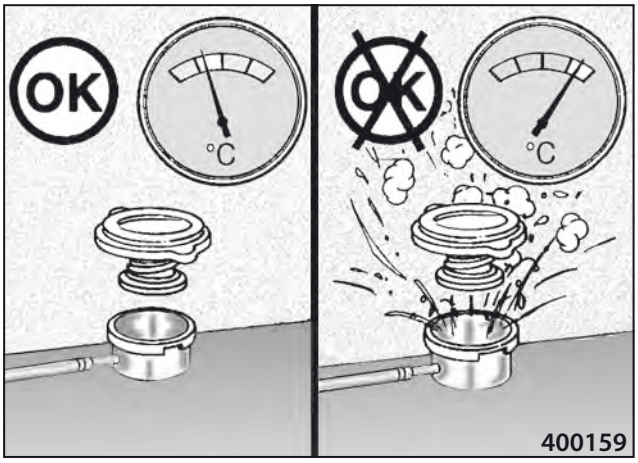
Wait to remove the filler plug only after engine coolant temperature drops below 50 °C (120 °F). If filler plug is removed at higher temperature then the hazard of vapour scald or coolant scald will occur due to inner overpressure effect.

Do NOT use any additives to repair cooling system leaking into the engine coolant!

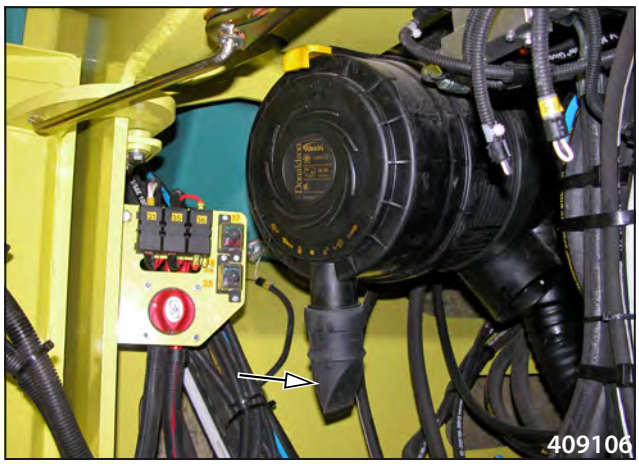
Do NOT refill cold coolant in hot engine! Danger of engine castings damaged.

Top up only with the coolant consisting of antifreeze agents of identical base under the Section 3.2.3.





3.6.4. Inspect air filter vacuum valve



- Clean the exit slit, press to remove any dust trapped.

Note

Any dust trapped in the dust valve will automatically be emptied with the Machine running.

Do NOT operate the Machine when dust valve is damaged.

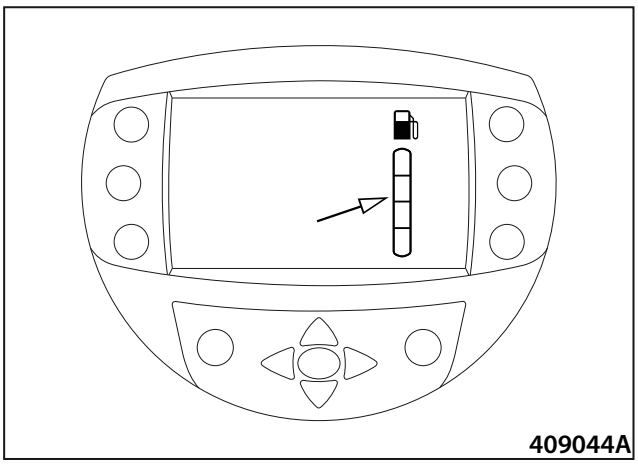
If air filter vacuum valve is damaged, replace it with new one of identical type!

3.6.5. Inspect fan condition

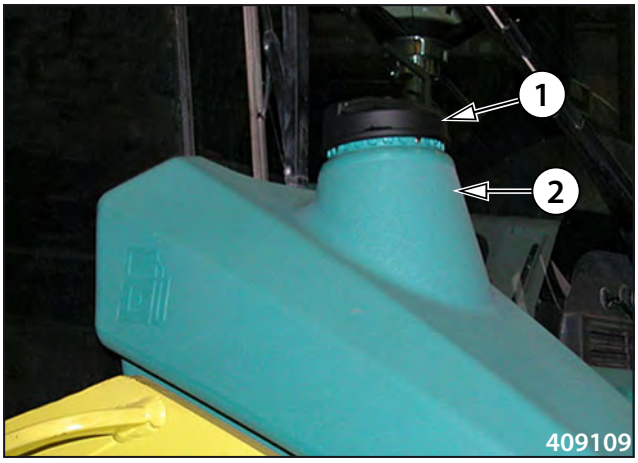
- Inspect visually the fan. If damaged (e.g. missing parts of material, cracks, shape changes, etc.), replace the fan.

3.6.6. Fuel level check

- Check the fuel quantity on the display and refill if need.



- Clean tank filler cap (1) and filler neck (2).
- Unlock the lock and remove the cap.
- Refill the tank up to the bottom edge of filler neck via the strainer.



Note

Fuel tank capacity is 210 l (55,5 gal US).

NO smoking and no use of open flame when at work.

Do NOT refill fuel while engine is running.

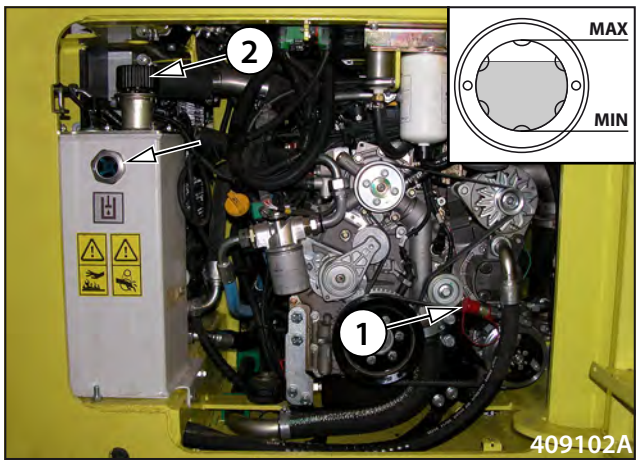
Do NOT use up fully the tank. When used up fully the entire fuel system must then be deaerated, which is rather hard and demanding.

Use solely a clean recommended fuel per Section 3.2.2.

NEVER replenish fuel in confined space.

Fuel must NOT be spilled.

3.6.7. Hydraulic tank oil level check



- Open the right door.
- Check oil level in oil gauge.
- Fill up oil via the filling device using quick-coupling (1), proceed as per Section 3.6.39.

Tank filler neck cap (2) has been sealed. If this seal is damaged during guarantee period, then the Machine guarantee will terminate.

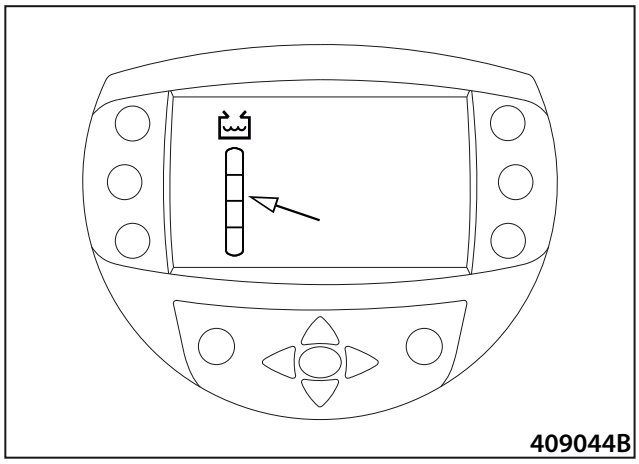
Conduct this filling method as emergency one - not recommended by manufacturer!

Oil level shall always be visible in oil gauge!

Refill required oil according to the Section 3.2.4..

Upon higher loss of oil, find out the cause of hydraulic system leaking (leaks through hose screw joints, screwed fitting of hydroelectric generators or of hydraulic motors, etc.), and repair the defects.

3.6.8. Water tank refilling



- Check the water quantity on the display and refill if need.

- Open the cap and refill with clean water via the strainer.

Before winter period, drain water from the water tank and sprinkling system!

Proceed according to Section 3.6.43.

3.6.9. Inspect alarm and control devices

Brake test

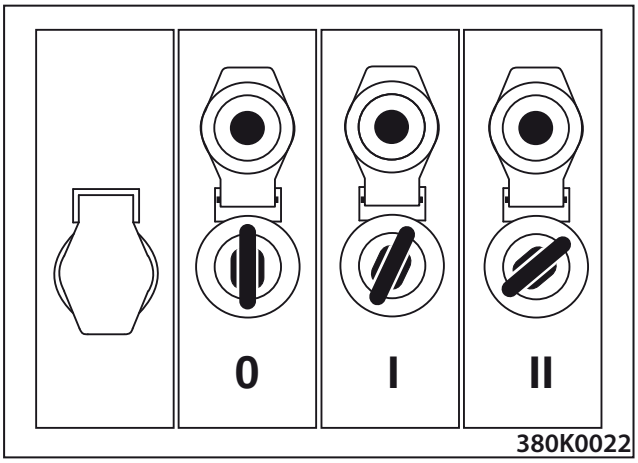
Always after the machine start-up (every 24 hours), the driver is asked for the brake testing.

The machine can continue in operating even when the brake test is not performed (the brake test record is saved in the machine control unit) ; the brake test can be carried out later.

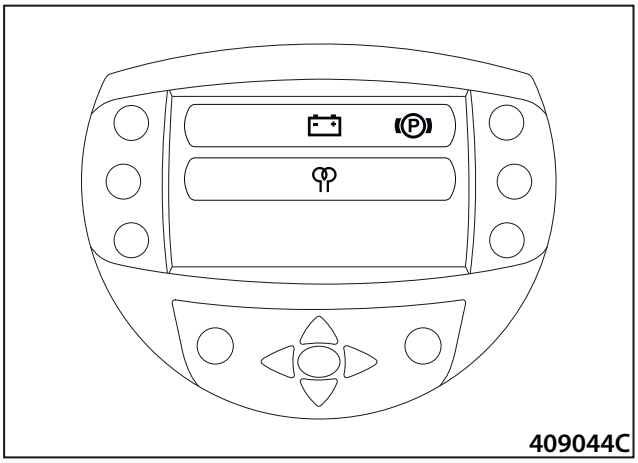
Procedure:

- Set the travel control (3) to the position P (parking brake enabled).
- Display the information screen.
- Turn on the BRAKE TEST - yellow backlight of the symbol, engine speed rise.
- Change the travel control (3) through the neutral position (N) forward (F).
- The test result successful = message TEST OK
- The test result unsuccessful = message TEST NOT OK Operation possible only in the emergency mode of the machine. Call the service.

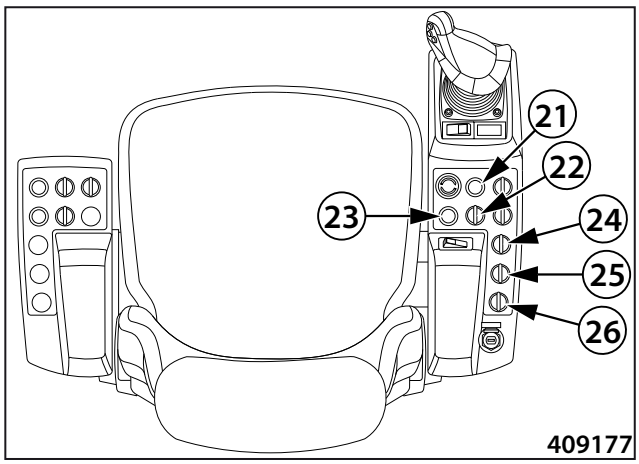
- Turn ON the ignition key into position I.

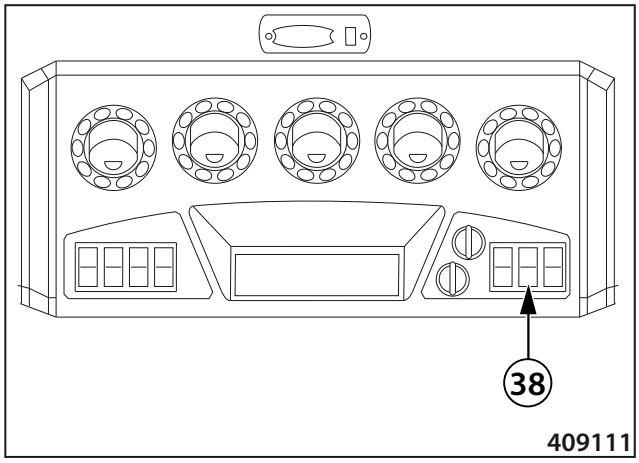


- The brake, charging and pre-heating indicator lamps will light up on the display.

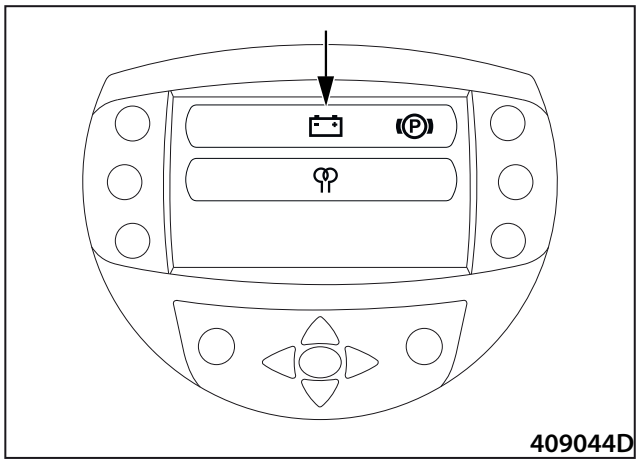


- Then test functions of the switches (21-26, 38).



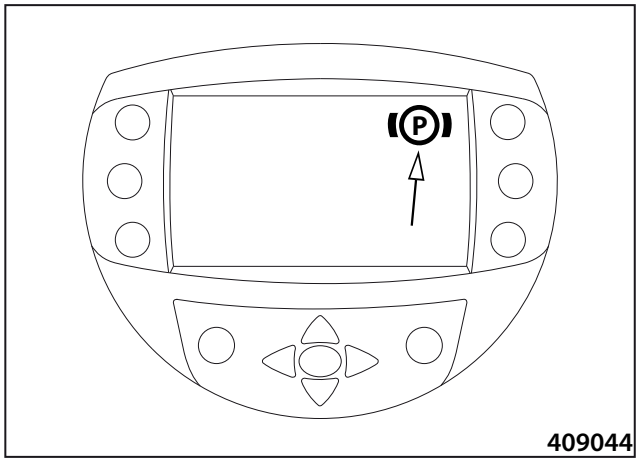


- Start the engine turning key to position "II".
- The charging indicator lamps must go out after the starting is completed.



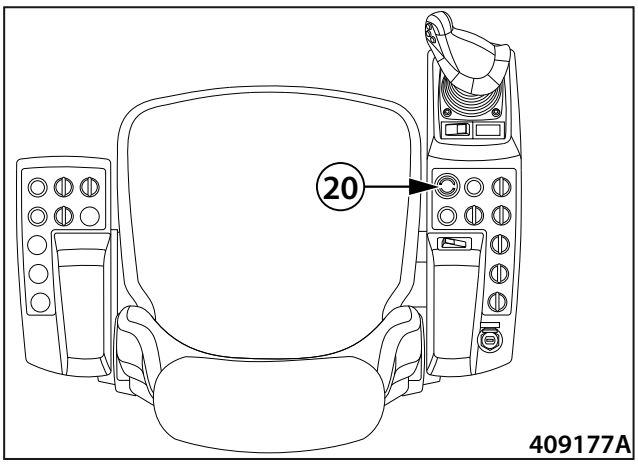
Start moving the Machine:

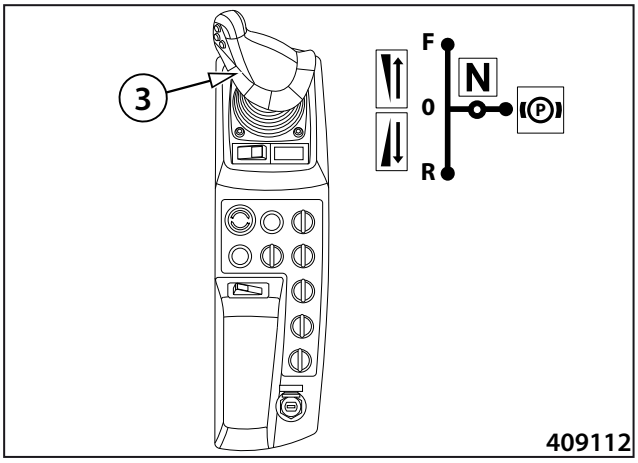
- After the machine moving-off is completed, the brake indicator lamp goes out.



Emergency brake push button function:

- Start moving the machine at low speed.
- Press the emergency brake button (20).
- The machine will stop, the parking brake will be enabled and the engine will stall.
- The brake indicator lamp lights up on the display (2).
- Set the travel control (3) to the brake position (P). Turn the ignition key to the position "0".
- Now you can start the engine again.





Use sound signal to indicate the engine start!

Before engine is started, check there is no hazard of any person if engine is started!

Use sound signal before Machine starts moving and wait long enough to any persons present can leave the area round the Machine (space beneath the Machine) in time!

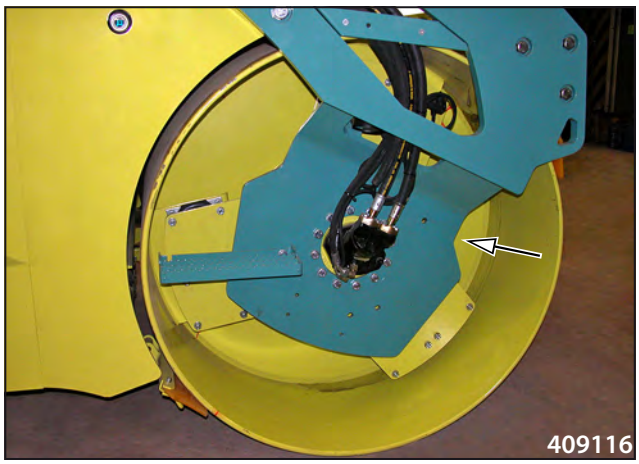
Make sure the area in front and behind the Machine is free, with no persons present within thereof!

During operation, check continuously the instruments and indicator lamps.

Promptly repair any failures!

3.6.10. Gearbox oil check

- Check the gearboxes visually for oil leaks.
- Remove detected faults.

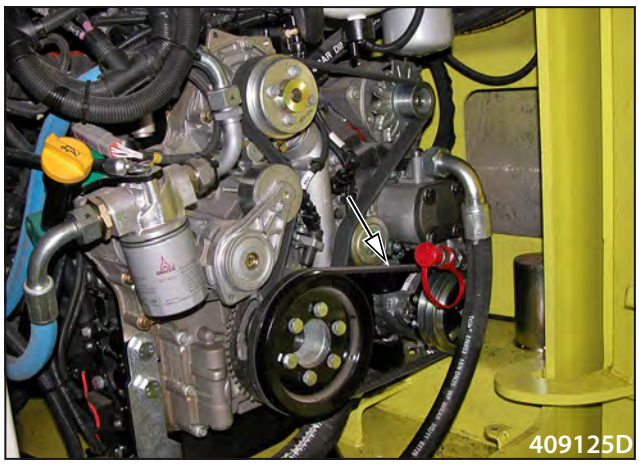


3.6.11. Belt inspection (air-conditioning)

- Make visual belt inspection, monitor any of its damage. Cracks perpendicular to the belt width are not considered a damage.

When longitudinal cracks occur on the belt, or belt edges are shattered, or extracted parts of material, then the belt must be replaced.

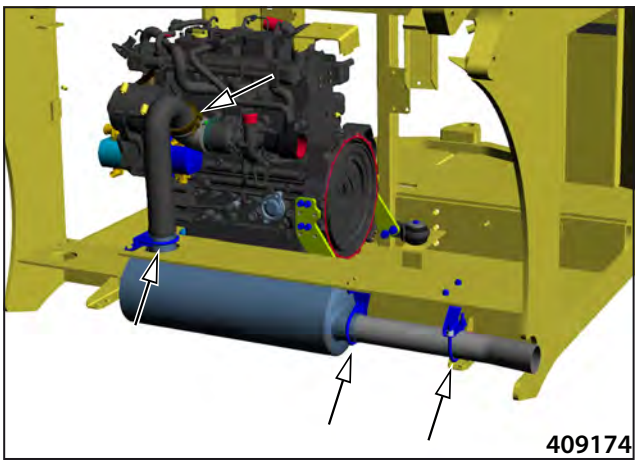
V-belt
Order number: 4-6160120117



3.6.12. Checking the exhaust system for leaks

- Check clips and pipings of the exhaust system.
- Remove detected faults.

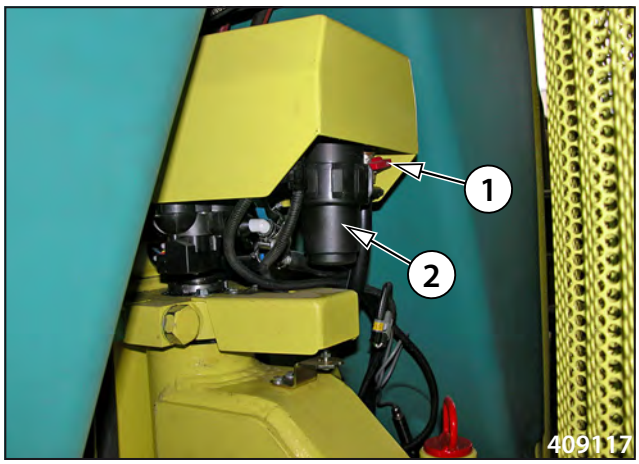
If the exhaust pipe with a flexible part between the engine and the catalytic converter shows any leak or damage, the machine cannot be operated until the defect is fixed.

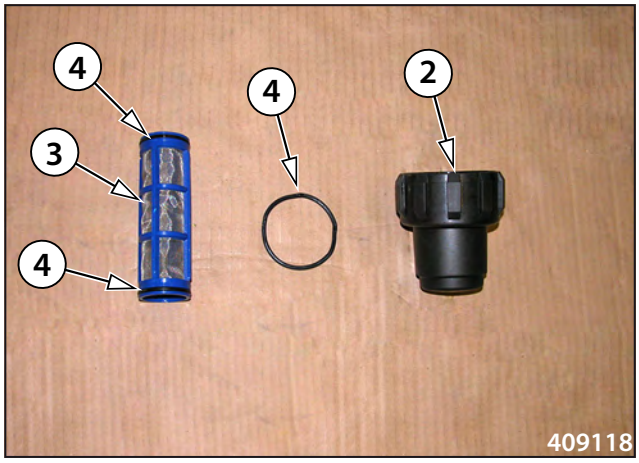


After 250 hours of operation (3 months)

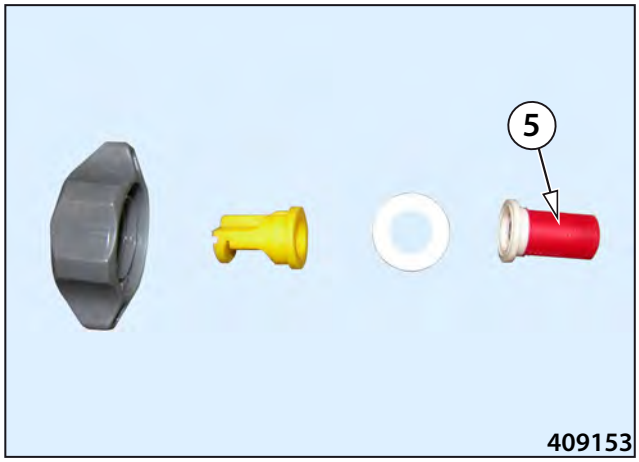
3.6.13. Watering filter cleaning

- Close water supply through the valve (1).
- Remove sprinkler filter vessel (2), replace the strainer (3) and clean it.
- Check the gasket (4).
- Replace if damaged.

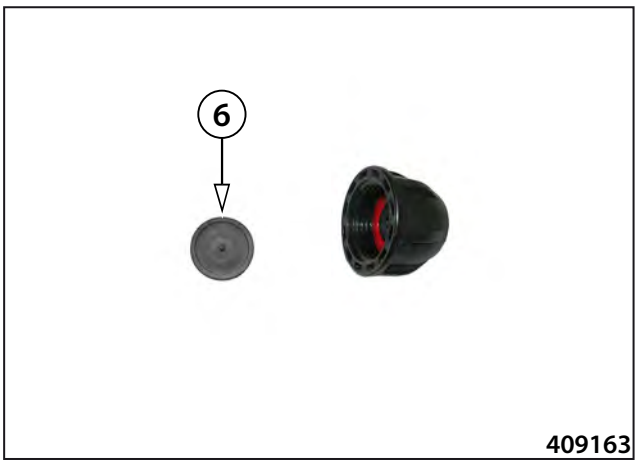




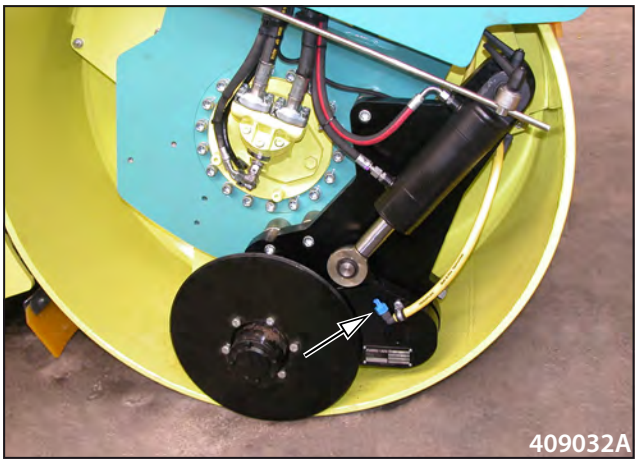
- Remove and clean sprinkler strainers (5).

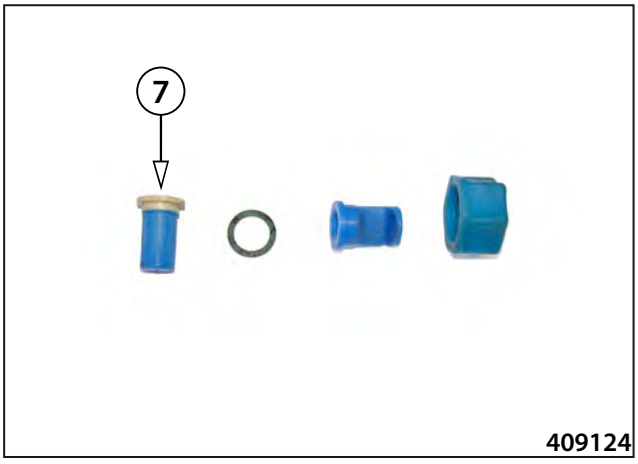


- Remove valves and clean diaphragms (6).



- Remove and clean the sprinkler strainers (7).





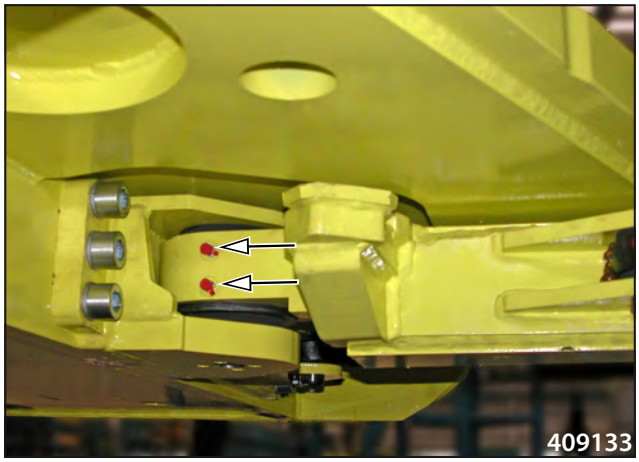
3.6.14. Machine lubrication

- 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 3.2.6.

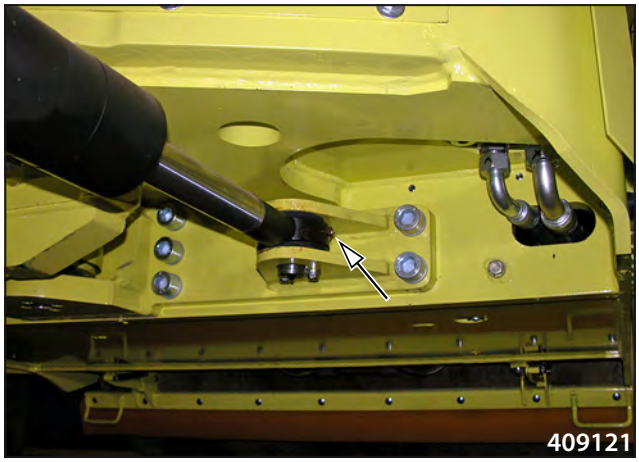
Steering joint

Bearings 2x



Linear hydraulic motors for steering

Pins 4x

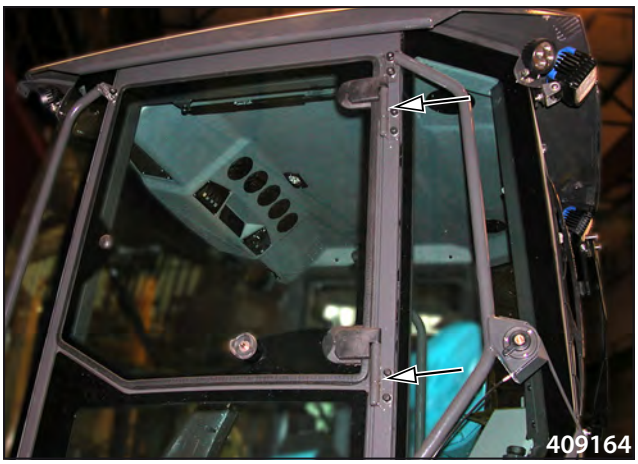


Linear hydraulic motor of edge cutter

pins 2x

Cabin door hinge pins

pins 4x

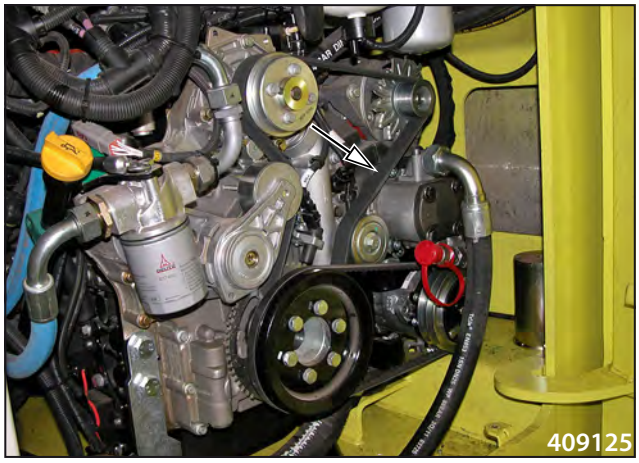


After 500 hours of operation (6 months)

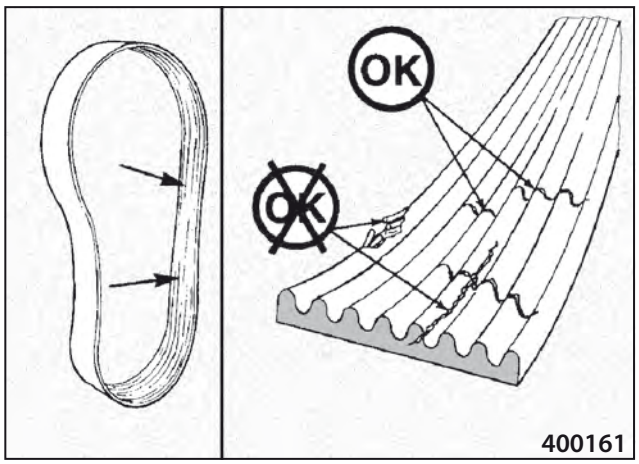
The set of filters after 500 engine hours can be ordered under the order number 4-21383. For the list of all spare parts, see the table in the end of this publication.

3.6.15. Inspect the engine belt

- Make visual belt inspection, monitor any of its damage. Cracks perpendicular to the belt width are not considered a damage.

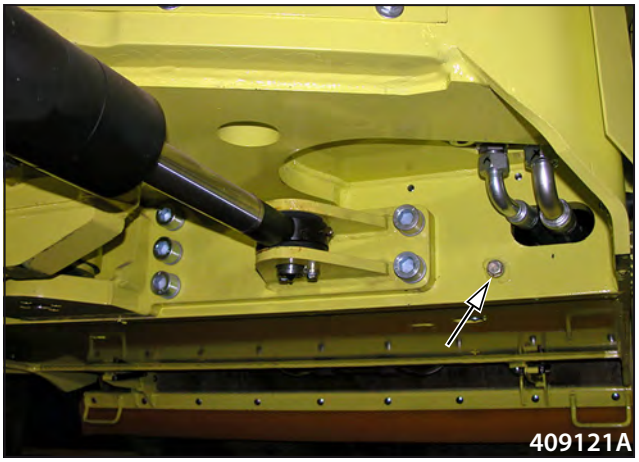


When longitudinal cracks occur on the belt, or belt edges are shattered, or extracted parts of material, then the belt must be replaced.



3.6.16. Engine oil exchange

- Prepare a suitable vessel. The drained volume is 9 l (2,4 gal US).
- Remove drain plug and let the oil flow out.

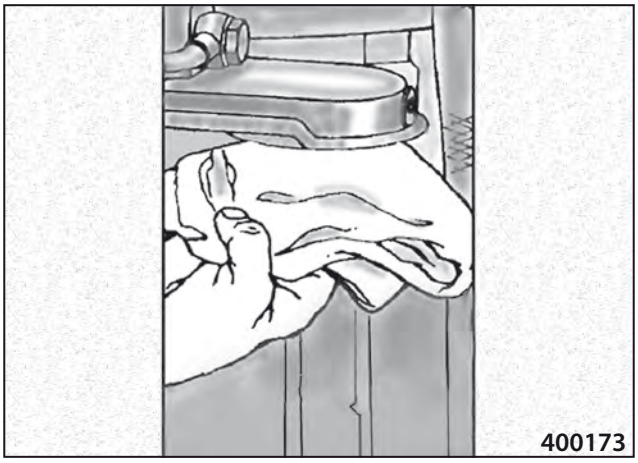


When draining the oil temperature shall not be over 60°C (140°F) - risk of burn.

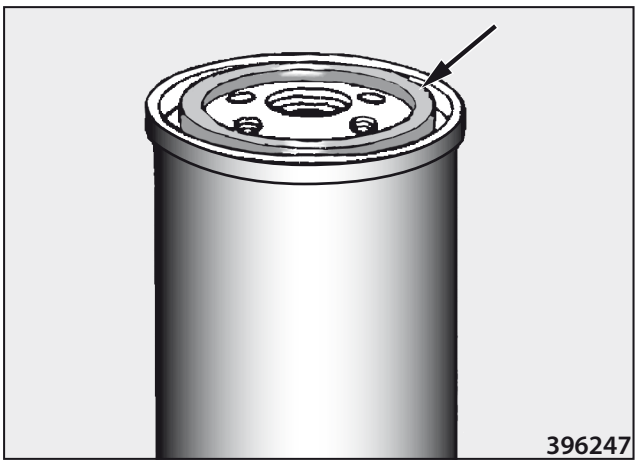
- Open the right door.
- Clean the surface round oil filter head. Remove the filter.

Filter element
Order number: 1229402

- Clean seating face for filter gasket.

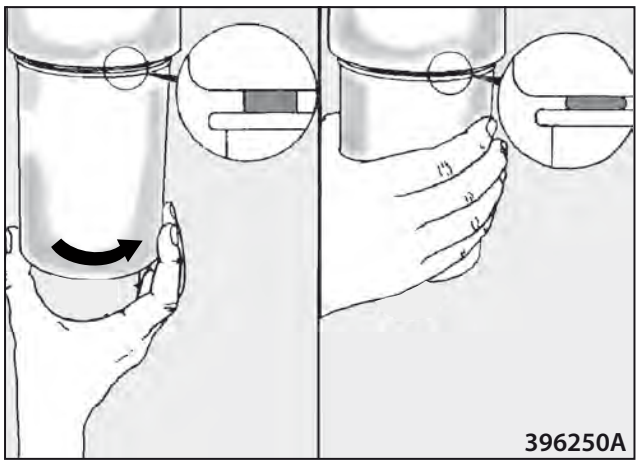


- Wipe the sealing with oil.

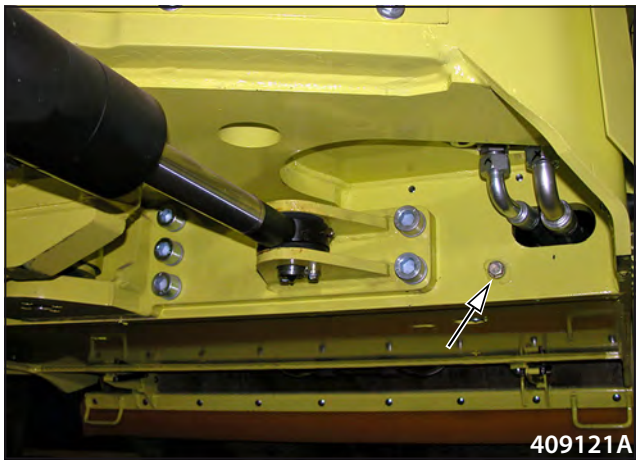


- Install the filter and tighten to 15-17 Nm.

Do not overtighten the filter, the thread and gasket may get impaired!



- Check the drain plug gasket, replace if damaged.
- Check the thread and clean seating face for gasket.
- Reinstall the plug.



Collect the oil drained, do not let oil soak into soil.

Dispose of oil compliant to regulations.

Store used filters in a separate container and handle them so these do not pollute the environment.

- Use filler neck to fill the engine with clean motor oil.

Note

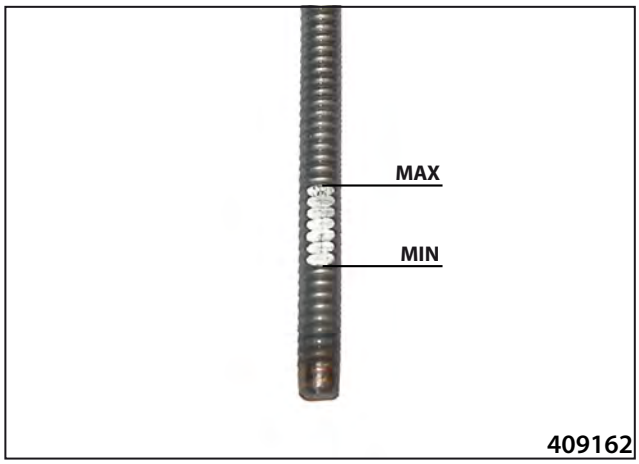
- Fill up to the dipstick's top division mark. Total sump capacity is 9 l (2,4 gal US).
- When oil is exchanged, start the engine and let it run at higher idle rmp for 2 - 3 min.
- Stop the engine and wait for ca 3 min until oil descends into the crankcase, then check the proper oil level.

Use original filters only.

Use recommended oil under Section 3.2.1, only.

To not overtighten the filter, its thread and gasket may get damaged.

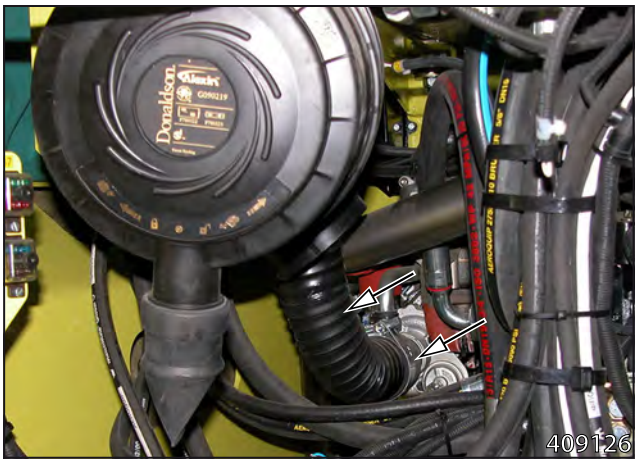
Check the tightness.

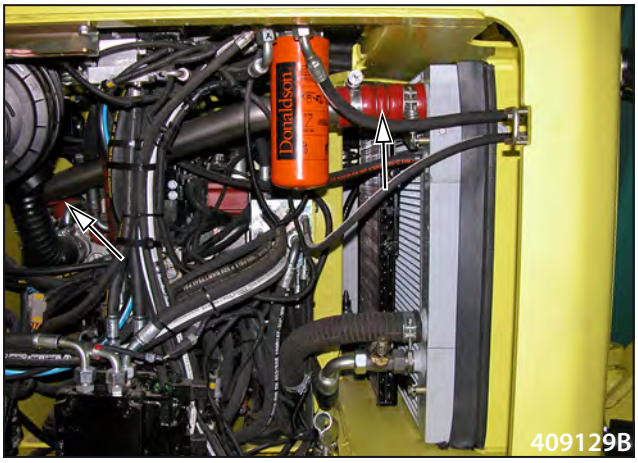


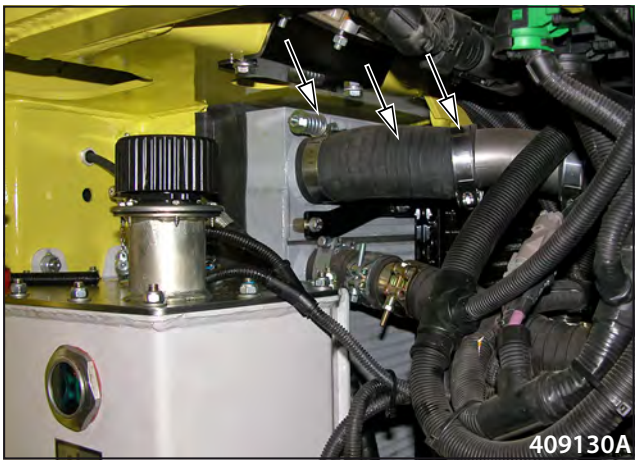
3.6.17. Inspect engine induction manifold

- Check the pipings and clips.

Do not operate the machine if the clips or pipings are damaged!

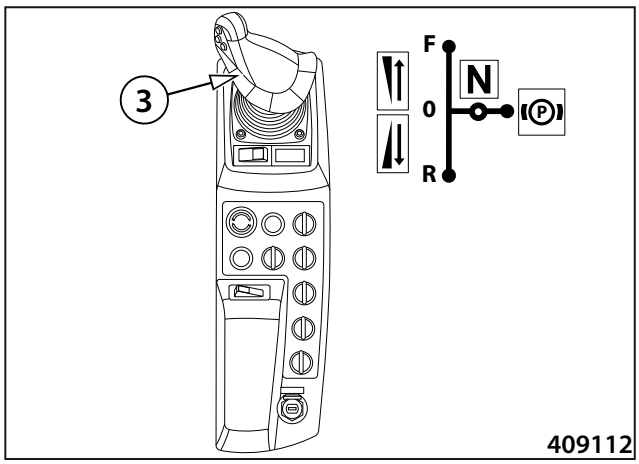






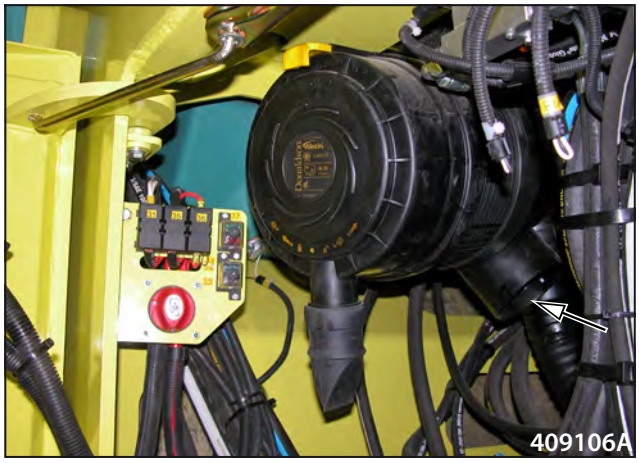
3.6.18. Air filter sensor check

- Set the travel control to the neutral position (N) - engine idle speed.

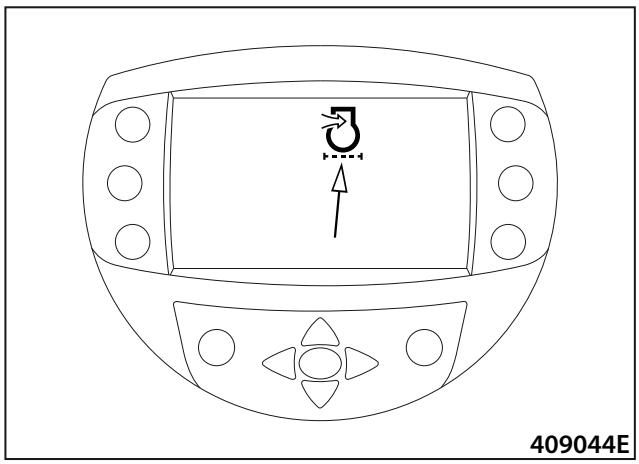


- Cover the air suction hole.

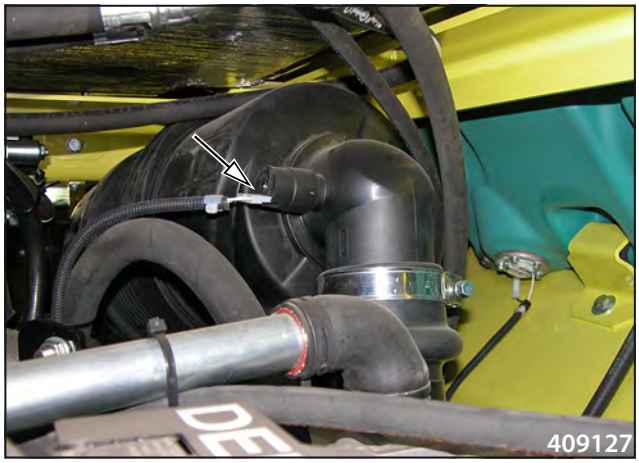
Do not use thin paper to cover it - beware of intake hole clogged!



- Once covered, the indicator lamp for air filter clogged shall light up.
- Unless indicator lamp goes ON, check the vacuum switch, contacts and feeder cables.



Indicator
Order number: 4-5358520057

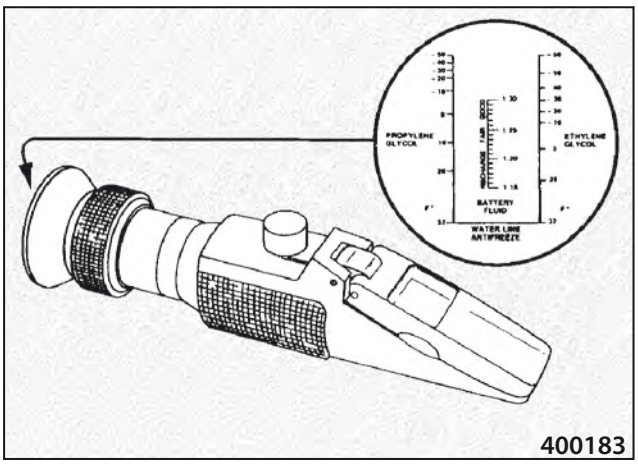


3.6.19. Engine cooling liquid level check

- Check the concentration via refractometer.

Inspect always before winter season. Unless concentration for -36 °C (-33 °F) has been measured, you must adjust it through adding antifreeze into the cooling system.

Add antifreeze according to Section 3.2.3.



3.6.20. Check of wiring

Check for any damage to cables, connectors, protective hoses, and their fastening, especially if in the vicinity of hot surfaces and moving parts of the machine including the engine. Replace damaged parts. Use only original spare parts.

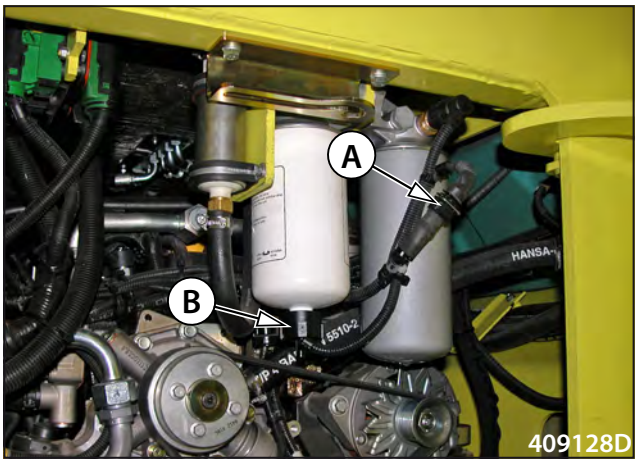
3.6.21. Cleaning the water separator

- Turn off the engine.
- Prepare a suitable vessel.
- Disconnect the connector (A).
- Loosen the valve (B).
- Drain the compound until clean fuel flows out.
- Tighten the valve. Tightening torque 1,6±0,3 Nm.
- Connect the electrical installation.

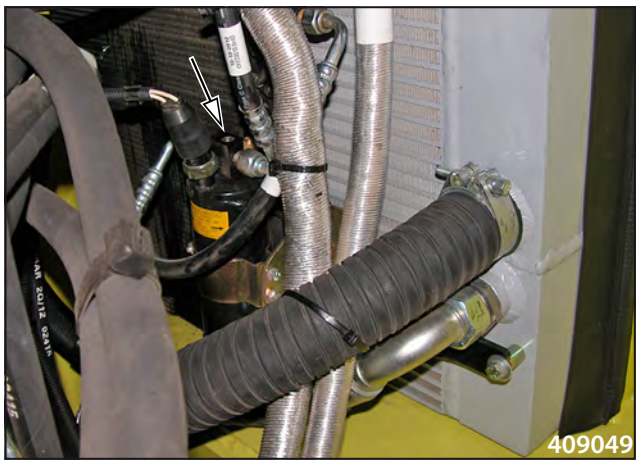
No smoking at work.

NEVER drain separator during engine run.

Retain drained fuel incl. its deposit (sediments) in a suitable vessel.

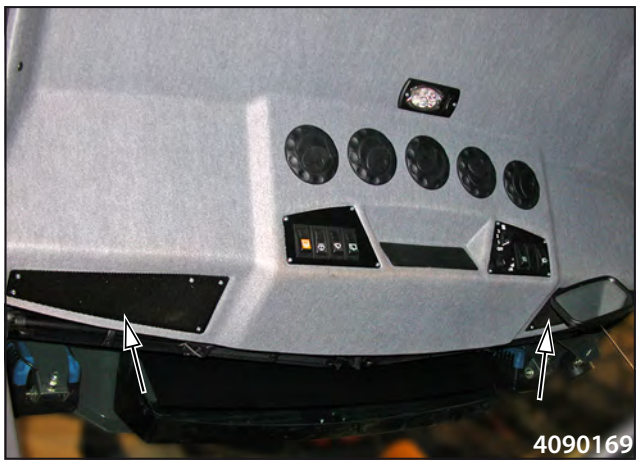


3.6.22. Checking the coolant level (Air-conditioning)



- Lift off the engine bonnet. Check the filter dehydrator sight hole while the air conditioning system is on and the engine is running at idle speed.
- The liquid flowing in the sight hole must be transparent.
- Fogging or foam indicates the lack of coolant and, thus, decreased unit functionality. Check the hoses, their connections, and the compressor for coolant leaks.
- To remove any defects, call an authorised service company.

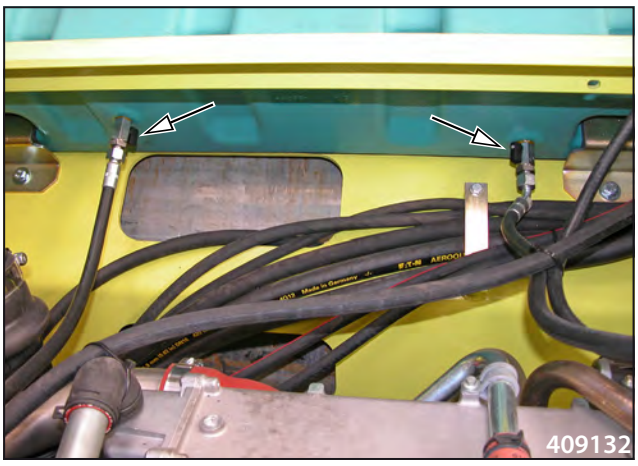
3.6.23. Cleaning the air cleaner (Air-conditioning)



- Remove the cover grille on both sides.
- Replace both filter elements.
- Beat the elements gently and wash them in a detergent solution. Should any element be damaged or should it not be possible to remove dirt, replace it with a new one.
- In case of work in a highly dusty environment, shorten the intervals of cleaning.

3.6.24. Engine fuel filter exchange

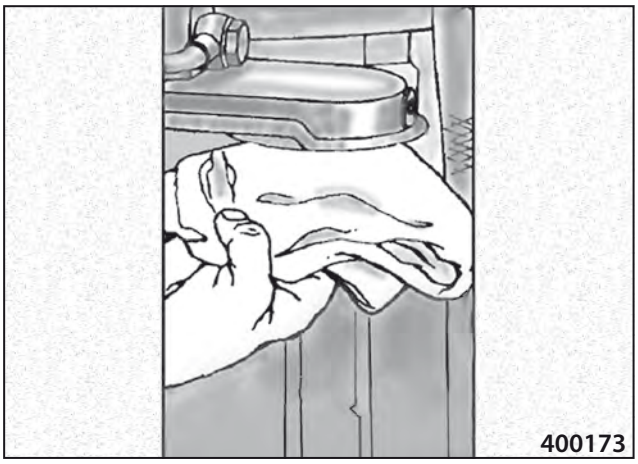
- Close fuel tank valves.



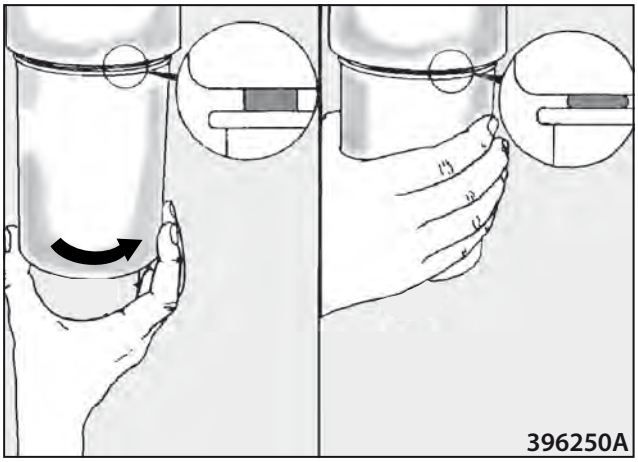
- Clean the fuel filter.
- Prepare a suitable vessel.
- Remove the filter.

Filter element
Order number: 1238008

- Clean the sealing face of filter holder.



- Lubricate sealing "O" ring with oil.
- Mount the filter. Tightening torque 17-18 Nm.



Fuel pre-filter

- Disconnect the connector.
- Clean the fuel filter.
- Prepare a suitable vessel.
- Remove the filter.

Filter element
Order number: 1229401

- Clean the sealing surface of the filter holder.
- Lubricate the "O" ring with oil.
- Mount the filter. Tightening torque 17-18 Nm.
- Connect the sensor connector.

- Open fuel tank valves.

Note

Deaerating (venting) the fuel system 3.6.40.

Inspect the filter tightness when engine is started!

Observe fire precautions during replacement!

Replace in ventilated rooms with no fire hazard.

Do not smoke or use open flame when at work.

Use the recommended original filters, only.

Make no over-tightening of filters, the thread and gasket may get damaged.

Avoid fuel leaking into soil.

Store used filters in environmentally friendly manner.

3.6.25. How to replace air filter elements

The proper maintenance of air filter and of the entire inlet piping, the rubber parts in particular, will ensure maximal protection of the engine against dust effects, and prolong the life of the element and its efficiency.

The inherent sign of fouled filter is the exhaust pipe that smokes, higher fuel consumption, output loss and engine temperature increased.

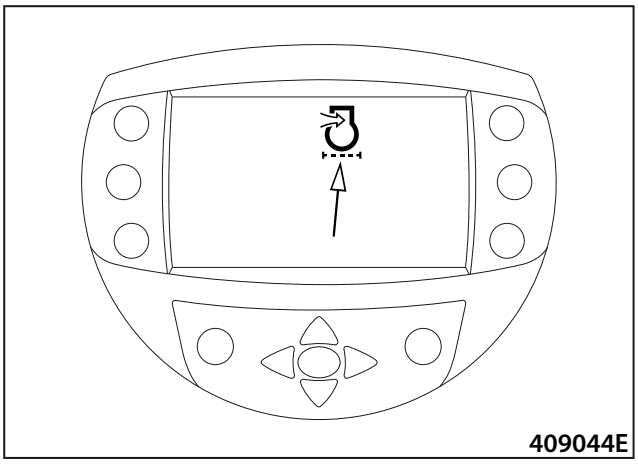
Principles of correct filter element replacement:

- Slowly pull out the clogged element as carefully as possible.
- Always clean the inner bodies of the cleaner in a way to avoid dust penetrating inside the engine feed piping.
- Clean the seating faces for gasket in the cleaner body.
- Examine the dust traces in the element removed, any traces would be an indication of its leakage in the filter body.
- Press the gasket on the new element, whether it is flexible.
- Make sure the gasket is seated properly.

NEVER use damaged elements!
Do NOT use other elements than those required!
Do NOT remove the elements just for checking purposes!
Do NOT left the filter opened longer than necessarily required!
NEVER operate the Machine with filter body damaged!

How to replace air filter element:

- The air filter comprises the main element and safety element.
- Replace the main element always when signalled by indicator lamp for air filter fouled.
- Replace the safety element always following the three replacements of the main element.
- Confirm the fixing and integrity of the air filter and intake piping.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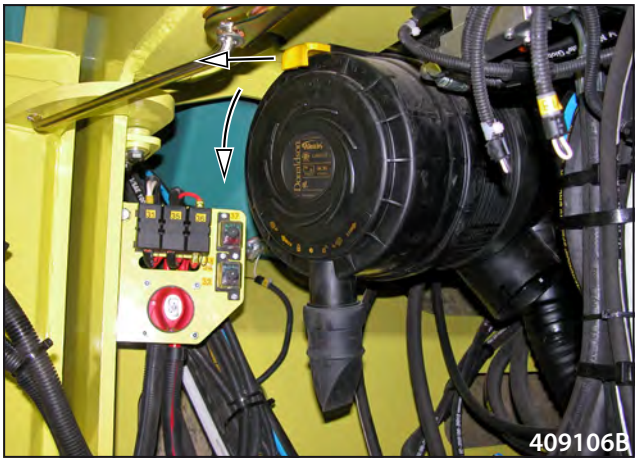
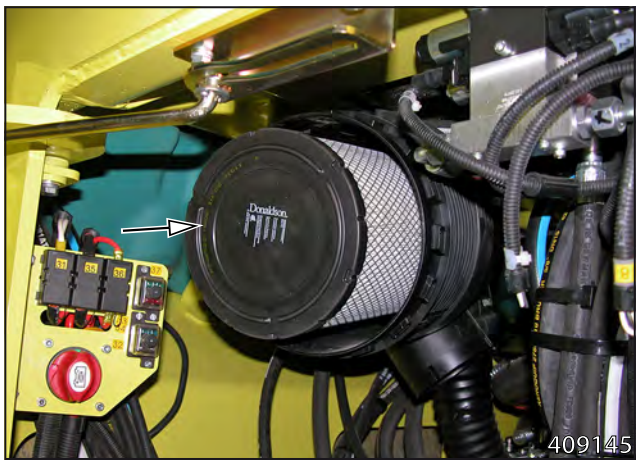
- Remove filter cap.


409106B

and replace the main filter element from the filter shell.

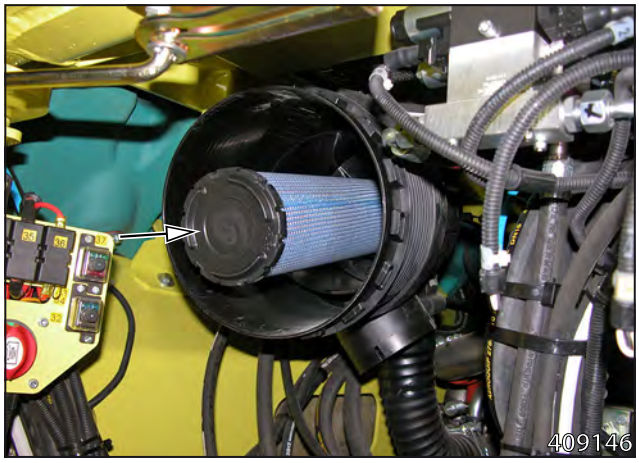
Insert
Order number: 4-5358520143



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

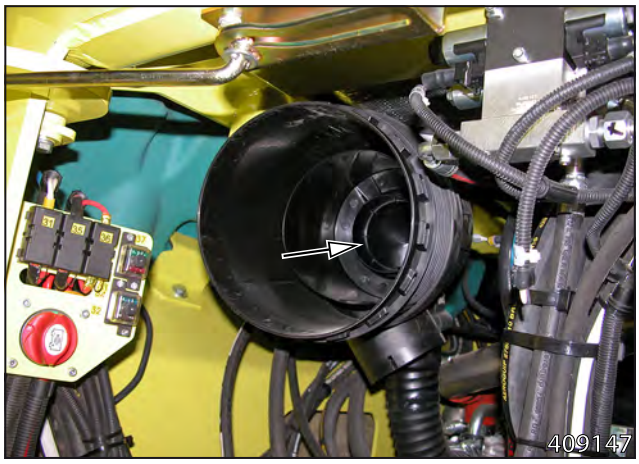
When safety element is damaged, please replace it with the new one of identical type as per identification!

Insert
Order number: 4-5358520141



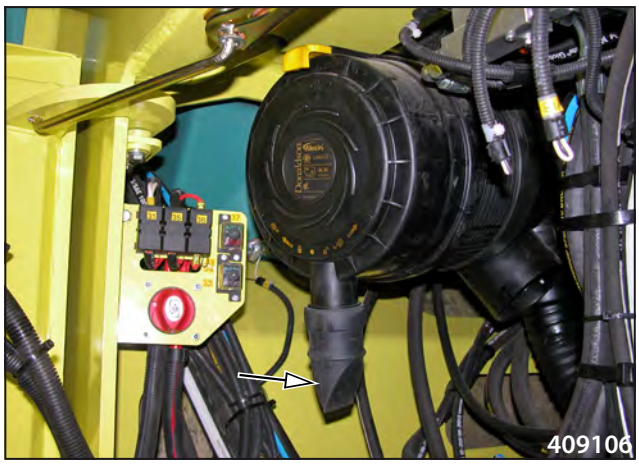
- Clean filter's inner space in such a way to avoid dust penetration into the inner feed piping to the engine.

NEVER use compressed air to clean the inner space.



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

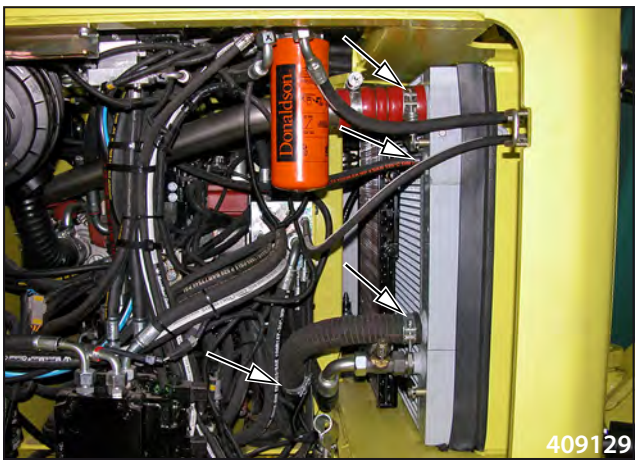
Replace instantly a damaged vacuum valve!



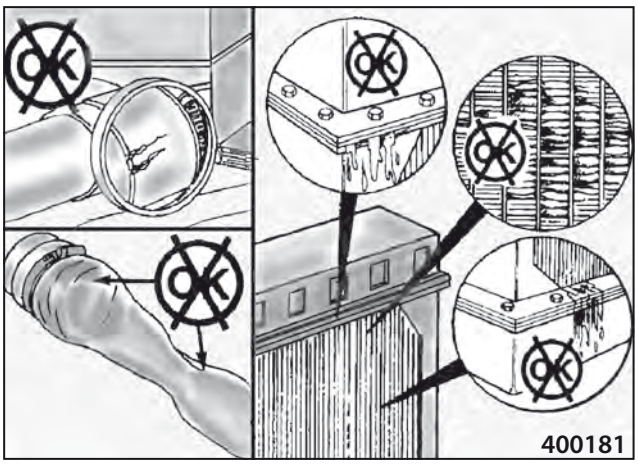
After 1,000 hours of operation (after 1 year)

3.6.26. Inspect engine cooling circuit

- Check the cooling circuit tightness. Confirm no pipes are damaged and no clamps are missing.

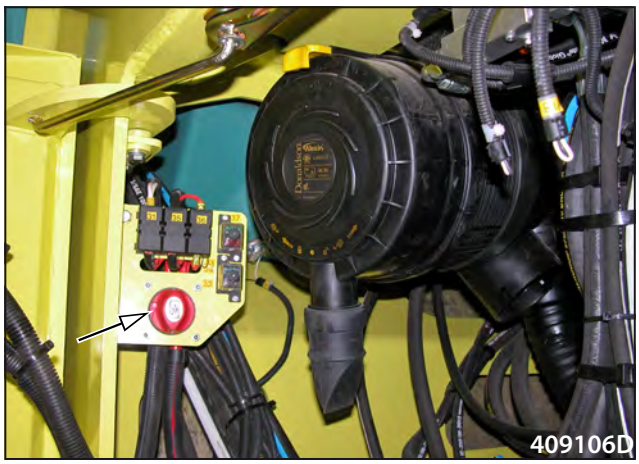


- Check the cooler fins for clogging. If the fins are clogged, then clean them, e. g. by blowing out the coolers with compressed air (steam or hot water) according to chapter 3.6.41



3.6.27. Inspect the battery

- Stop the engine and use disconnector to disconnect the wiring.



- Clean the battery surface.
- Inspect the condition of poles and terminals. Clean the poles and terminals. Apply thin layer of grease on terminals.
- If a maintenance-free battery is installed on the machine, it is not necessary to check the electrolyte level and the electrolyte is not filled up for the whole service life of the battery. Consult the battery discharge condition - the lowest permissible voltage level (measures on the battery terminals) under which the battery could be damaged and the charging procedure with the manufacturer.

Note

Unless the Machine is going to be used during winter season for a couple of months, remove the battery and store it so it is protected against any frost. Carry out inspections of the battery and its recharging before its storage and for the period it is stored.

Use rubber gloves and safety glasses when working with the battery.

Protect your skin with proper clothing against being stained by electrolyte.

Upon eye contact with electrolyte immediately flush eyes with large amounts of water for at least a couple of minutes. Get prompt medical attention.

Upon ingestion of electrolyte drink max amount of milk, water or solution of calcined magnesia in water.

Upon skin contact with electrolyte remove contaminated clothing, including shoes, wash affected spots as soon as possible with soap water or solution of soda and water. Get prompt medical attention.

Do not eat, drink, smoke, while at work!

Having finished the work, please wash your hands and your face thoroughly with water and soap!

Do not try whether wires are energized through contacting Machine frame.

Keep the battery dry and clean.

Recharge the undercharged battery.

Recharge the battery off the Machine.

Never disconnect the battery with the engine running.

Follow the battery manufacturer's manual when working with the battery!

Disconnect the battery during its repair, or when handling the wires and electric devices within the wiring circuit to avoid any short circuit.

To disconnect the battery you must first disconnect (-) pole of the cable. To connect, first connect (+) pole.

Never make direct conductive connection between the battery's both poles, short circuit will occur with the risk of battery explosion.

Do not turn the battery upside down, electrolyte may pour down.

Flush spilled electrolyte with water, and neutralize with lime.

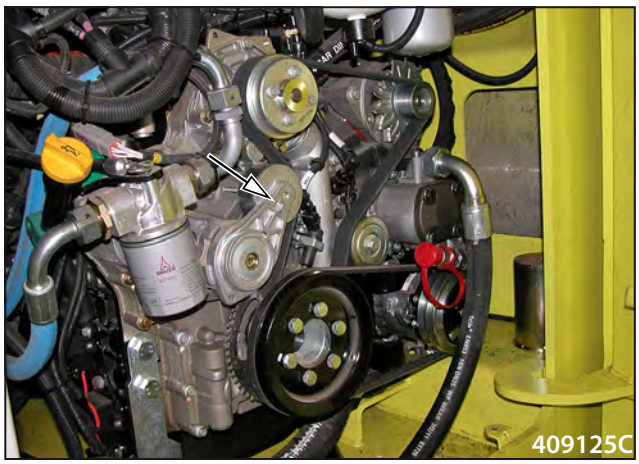
Hand over the aged battery that does not work, for its disposal.

3.6.28. Inspection of the engine belts

- Use the parking brake to stop the machine.
- Remove the engine covers.

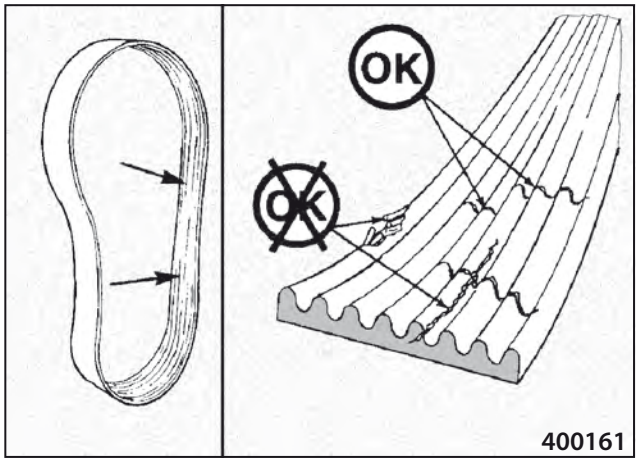
Inspection of the tightening pulley:

- Check the tightening pulley for correct operation.



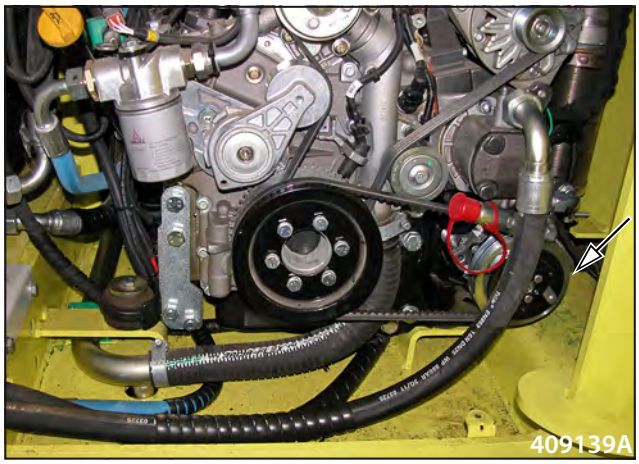
Inspection of the engine belt wear:

- Check the belt visually.
- If longitudinal cracks occur on the belt, or belt edges are shattered, or parts of material are extracted, then you must replace the belt.



Engine belt replacement:

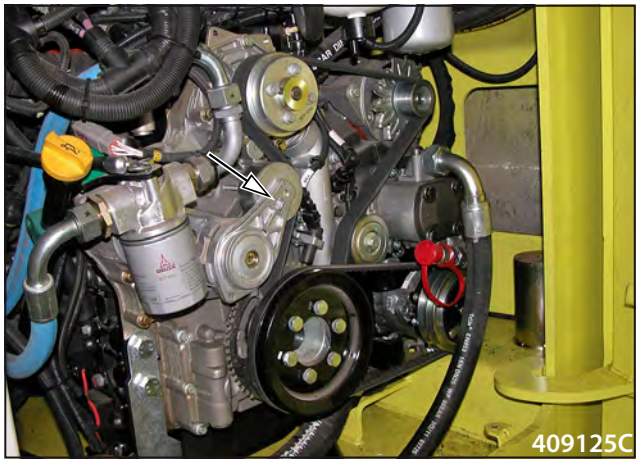
- Loosen screws and move the compressor.
- Take out the belt.



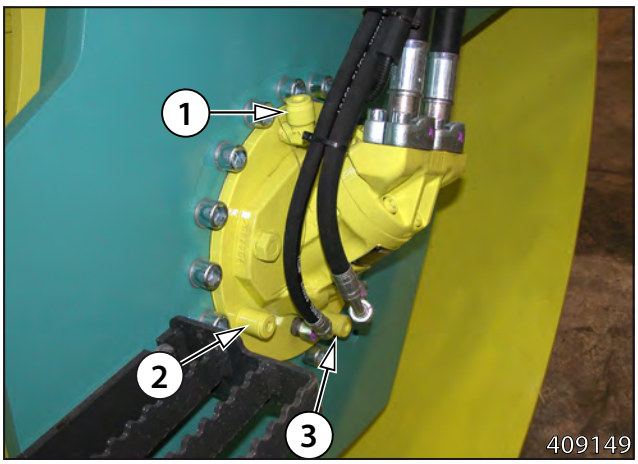
- Lift off the tightening pulley using a square lever.
- Take out the engine belt.
- Install the new belt.

Replace and tension the belt when the engine is off!

- Remount the engine covers.



3.6.29. Exchanging oil in gearboxes



Drum gearbox

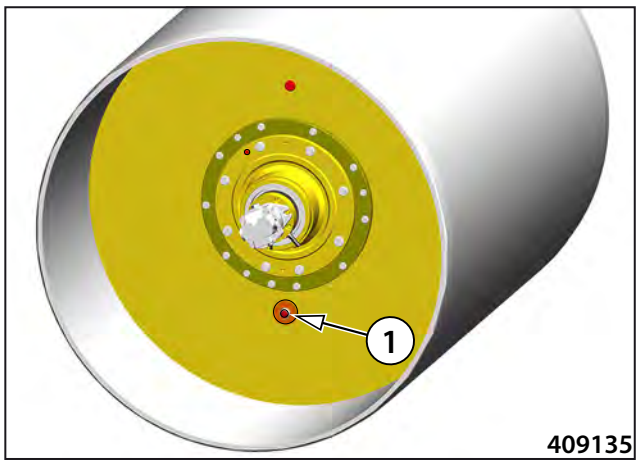
- Clean the area around plugs.
- Prepare a suitable vessel with the volume of approximately 2 l (0,5 gal US).
- Put appropriate vessel under the drain plug (3).
- Unscrew all plugs (1), (2), (3) and let oil drain.
- Mount the drain plug (3) after draining is finished.
- Refill recommended oil through the filling plug (1).
- Check oil level in the checking opening (2). The oil level must reach the lower edge of the opening or slightly flow out.
- Mount the plugs (1) and (2), replace damaged plug sealings.
- Fill up the same oil type, see Chapters 3.2.5.

Perform the first oil exchange after reaching 200 operation hours.

Do not touch the gearbox and adjacent parts if they are hot.

Avoid leakage of oil to the soil.

3.6.30. Vibrations system oil exchange



Oil draining:

- Clean the area around the plug.
- Position the machine so that the plug (1) is in the lowest position.
- Remove the plug and let the oil flow down into the vessel. The drained volume is 7,5 l (2 gal US).

Note

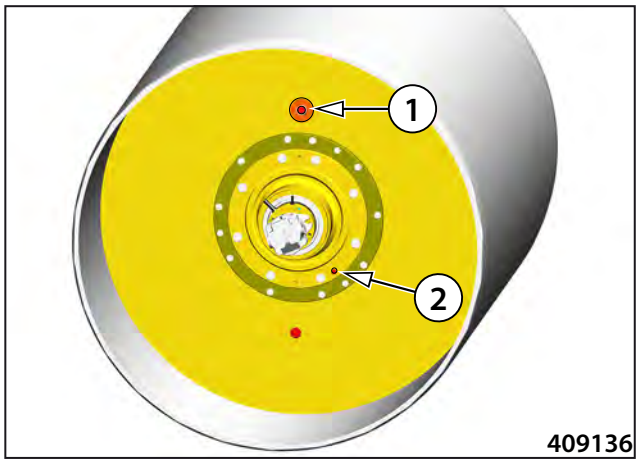
Exchange the oil when it is warm.

Let the drained oil cool down to below 50 C (120 °F).

Do not touch the hot parts of the machine.

Collect the drained oil.

Perform the disposal in accordance with the applicable the regulations.



Oil filling:

- Position the machine so that the plug (1) is in the highest position.
- Using the filler plug, pour in the recommended oil, see Chapter 3.3.

Oil level check:

- Check the oil level in the inspection hole (2).
- The oil level must reach the lower edge of the hole or flow out slightly.
- Remount the plugs and replace the plug seals.

Note

Follow the same procedure on the rear drum.

3.6.31. Inspect the silencing system

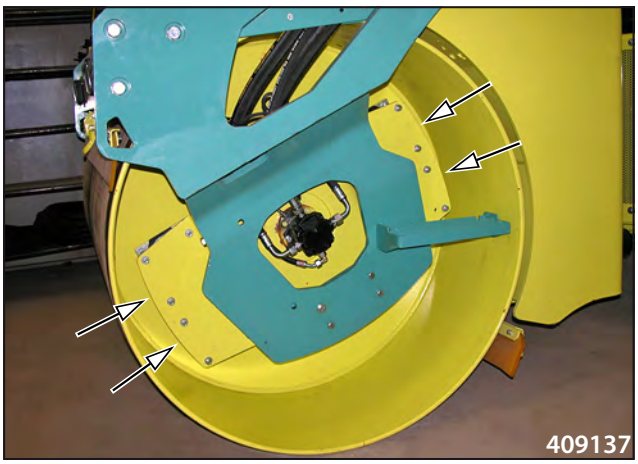
- Check the condition of rubber-metal, coherence (bond strength) between metal and rubber.

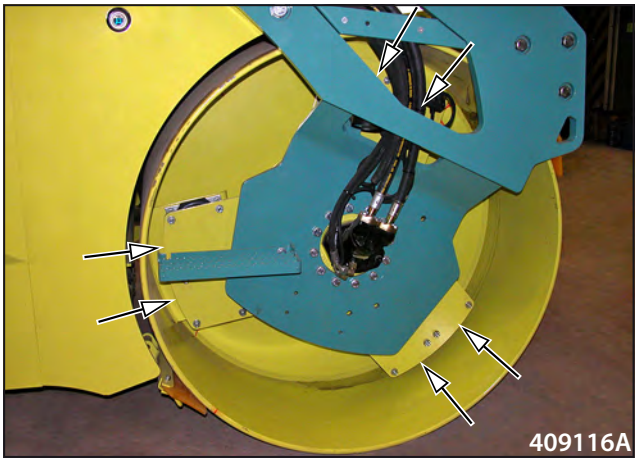
Replace the damaged ones.

Check the bolts and nuts of the following are tightened:

Rubber-metal of drums - LH side and RH side 2x 10.

Rubber mount
Order number: 4-9200000031



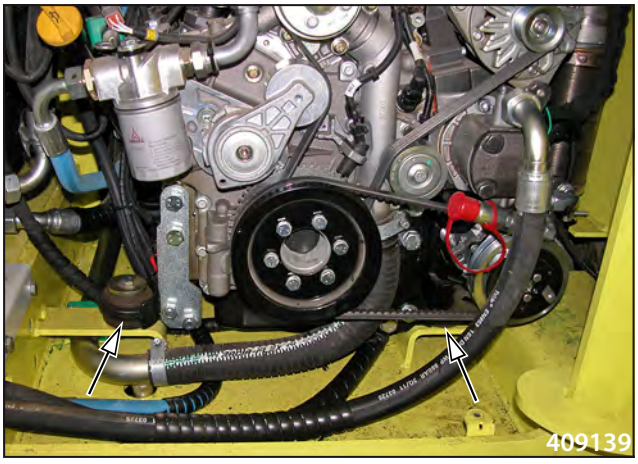


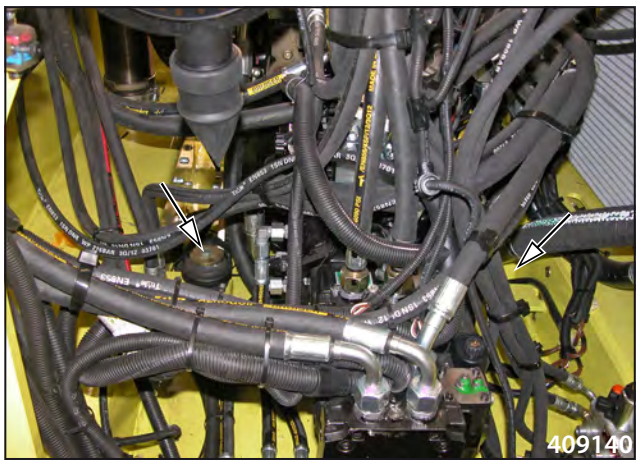
Rubber-metal of driver's compartment 4x.

Rubber mount
Order number: 1160051

Rubber-metal for the engine 4x.

Rubber mount
Order number: 1235638



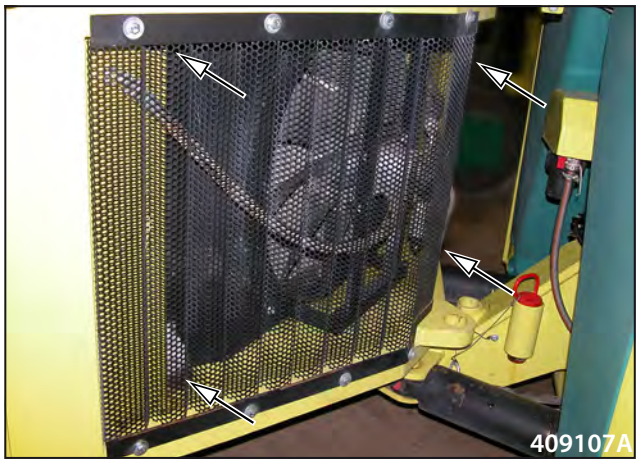


Rubber-metal components of the battery carrier 8x.

Rubber mount
Order number: 4-6160070611

Rubber-metal components of the cooler supports 4x.

Rubber mount
Order number: 4-6160070610



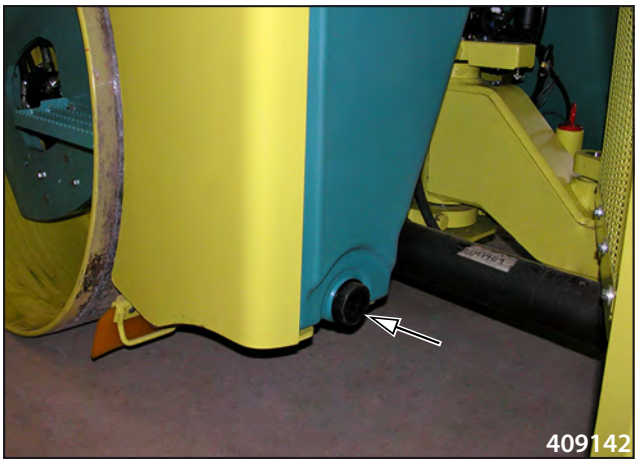
3.6.32. Water tank cleaning

- Dismount the caps of the filler necks of the tank.
- Clean the screens in the filler necks.

- Open the drain holes of the tank.
- Wash out the tank by water jet.

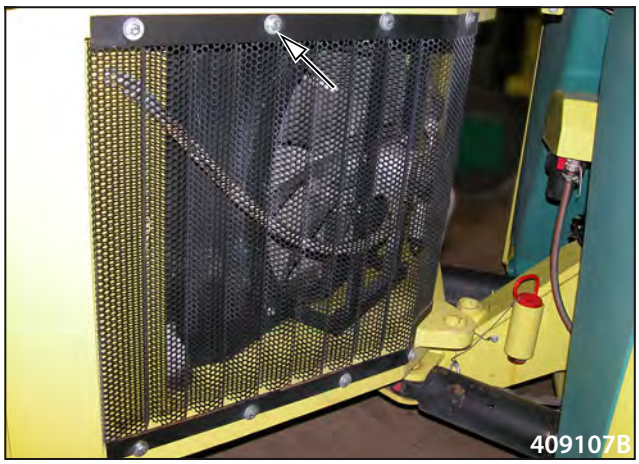
Before the winter season, discharge water from the water tank!

Follow the instructions as specified in Chapter 3.6.43.

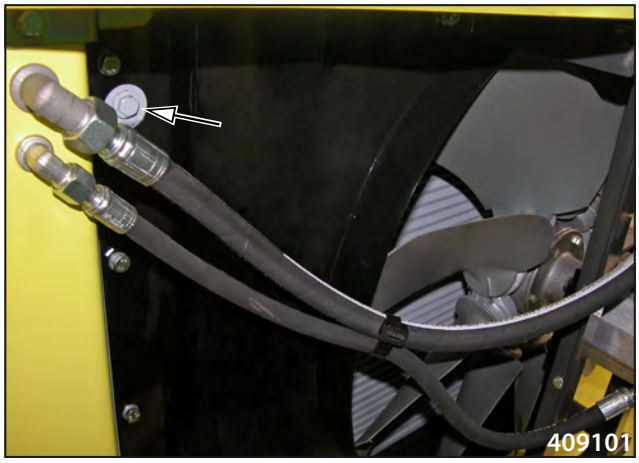


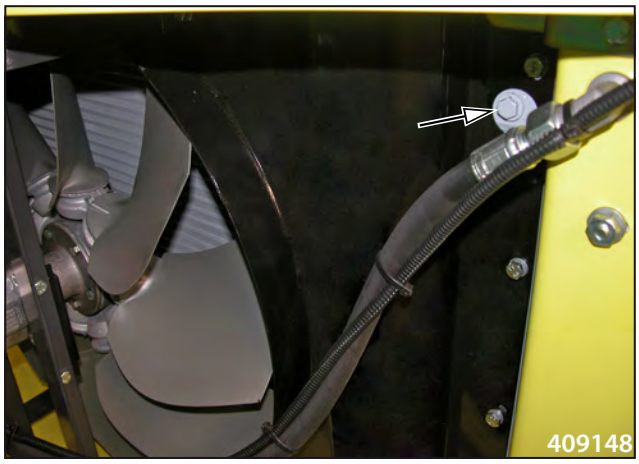
3.6.33. Air cooler cleaning

- Dismount the cover.

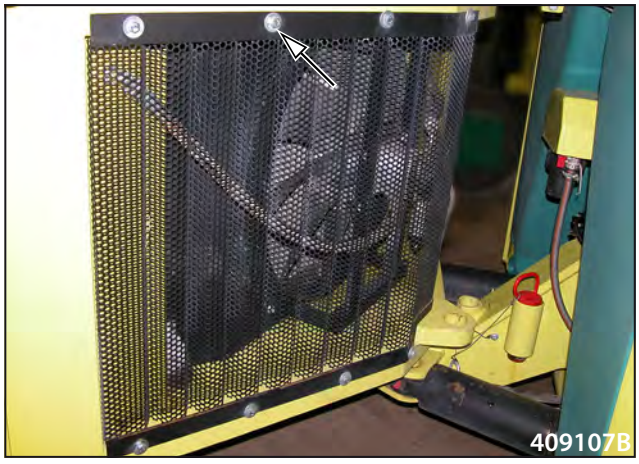


- Prepare a suitable vessel.
- Dismount the plugs.
- Drain the compound.
- Mount the plugs.



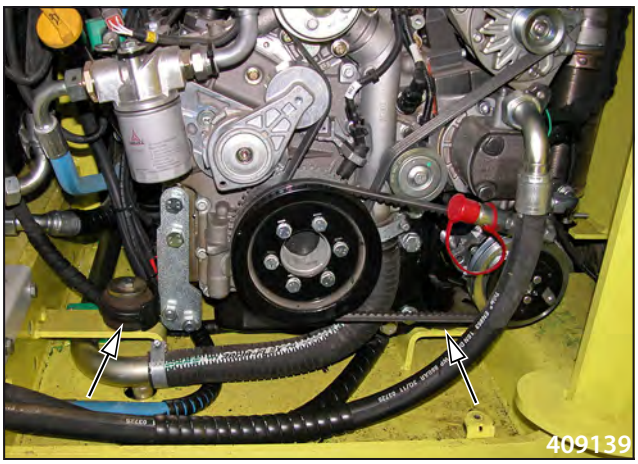


- Mount the cover.



3.6.34. Engine inspection

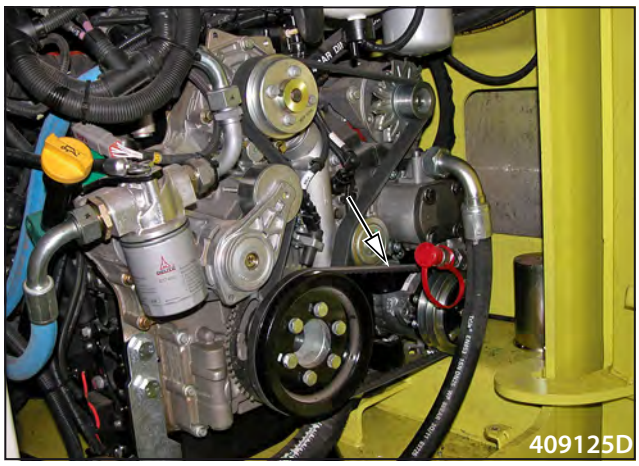
- Check the engine mounting in the machine frame.
- Check rubber-metals for condition, and for metal-rubber bond strength.
- Replace if damaged.
- Check screws and nuts for tightening:
- Check the engine. Replace damaged parts.
- Check the hose clips and connections.



3.6.35. Engine and machine diagnostics

- Contact the authorized service centre Deutz for carrying out diagnostics of the engine.
- Contact your dealer for carrying out diagnostics of the machine.

3.6.36. Checking engine belt (Air-conditioning)

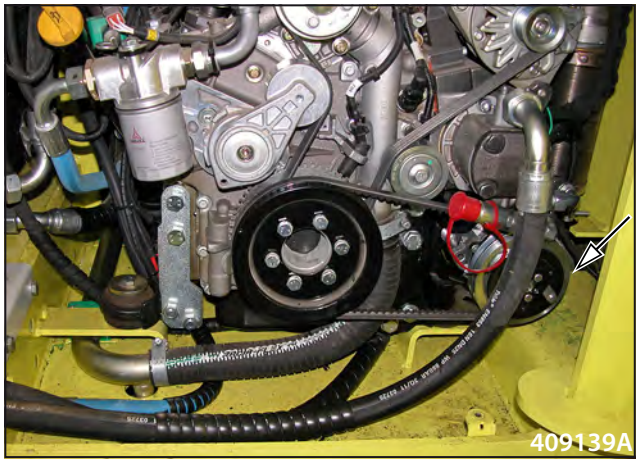


Inspection of the air conditioning belt tension:

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

Inspection of the air conditioning belt wear:

- Check the belt visually.
- If longitudinal cracks occur on the belt, or belt edges are shattered, or parts of material are extracted, then you must replace the belt.



Tensioning of the air conditioning belt:

- Loosen screws and move the compressor.

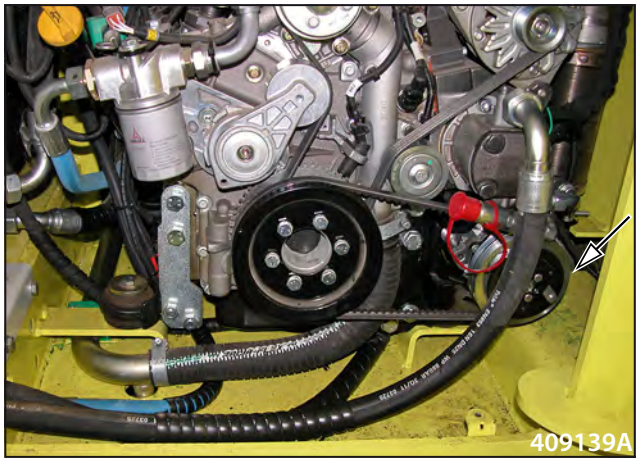
Air conditioning belt replacement:

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

V-belt
Order number: 4-6160120117

Replace and tension the belt when the engine is off!

3.6.37. Checking the air conditioning compressor mounting (Air-conditioning)



- Check the strength of the compressor attachment and the compressor bracket.

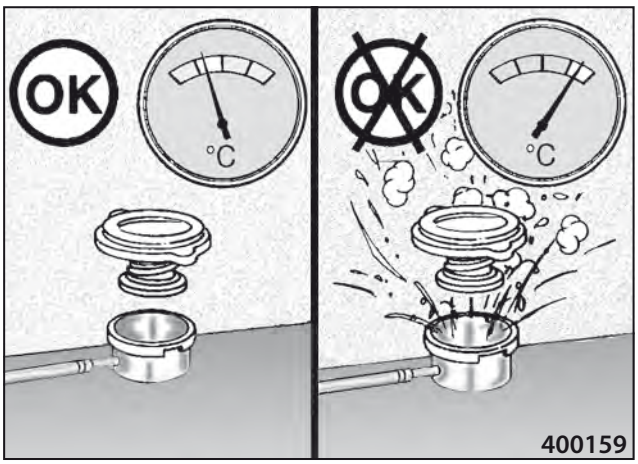
After 2,000 hours of operation (after 2 years)

3.6.38. Engine coolant exchange

How to drain cooling circuit:

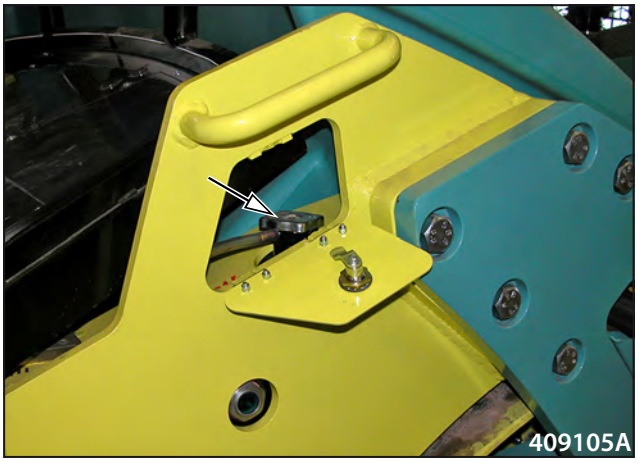
Before you drain the coolant from the cooling circuit let the engine run for 5 minutes for the liquid temperature to reach 50 °C (122 °F).

Do not open overpressure plug before coolant temperature drops below 50 °C (122 °F). If you open overpressure plug the liquid may splash out causing scald.

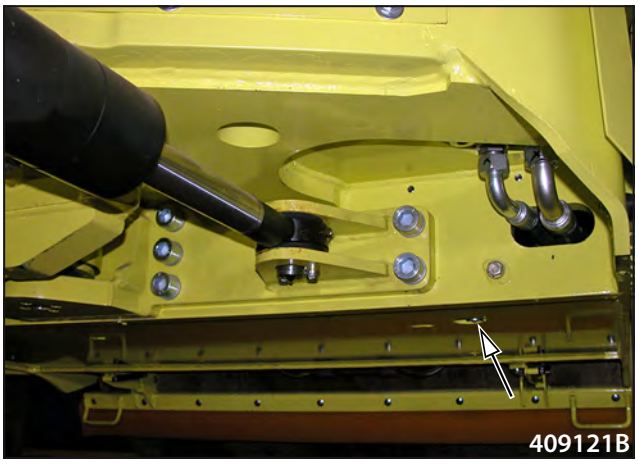


Stop the engine.

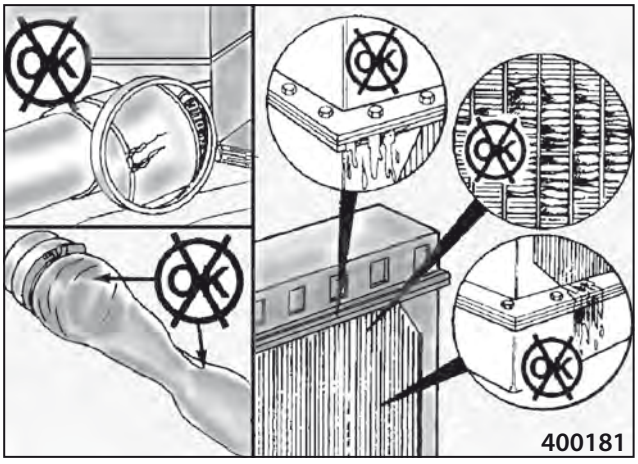
- Open the cooling system by removing the overpressure plug on the expansion tank.



- Remove the cooling circuit drain plug. Let the liquid pour down into the vessels set up. The drained amount is ca 23 l (6,1 gal US).



- Check whether pipes within the engine cooling system are not damaged, clips missing. Check the radiator condition whether not damaged, not leaking, and cooling gills not fouled with impurities. Clean and repair the radiator, if required.



Fill the cooling circuit

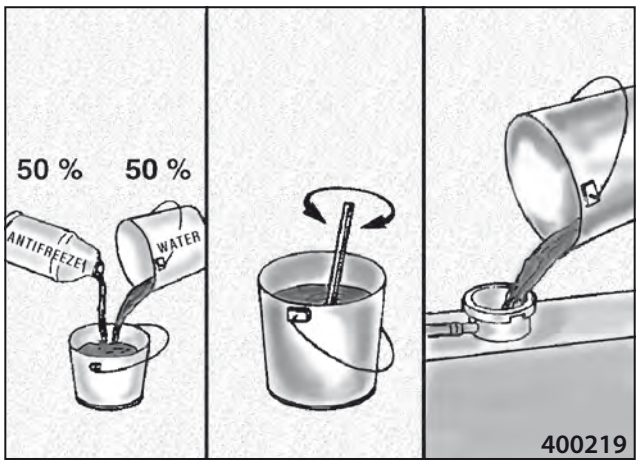
- Install the drain plug, fill the cooling system with new coolant at the ratio of min 50 % water + 50 % antifreeze.

Wear gloves to protect your hands!

Wear safety glasses or face shield to protect your eyes!

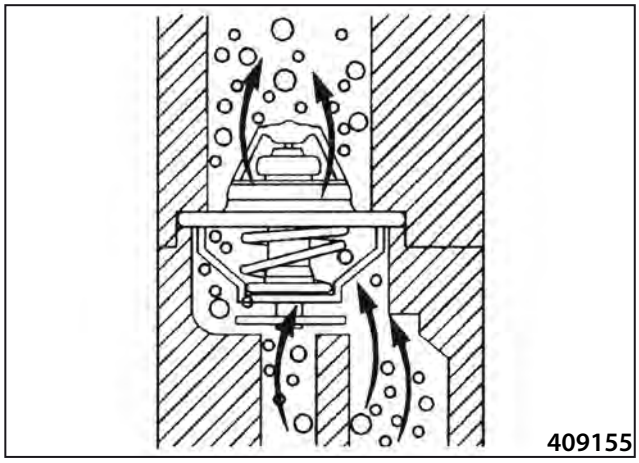
Fill with the coolant according to the Section 3.2.3.!

To make the change proceed as per the manual from antifreeze producer!



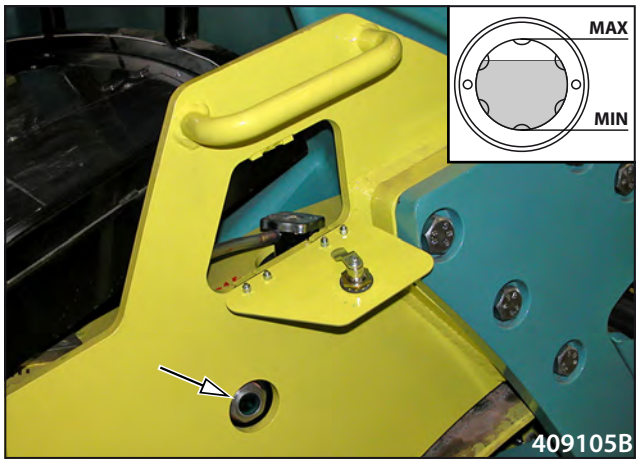
- Refill the coolant to max level. When filled wait ca 2-3 min until air escapes and the circuit gets filled. Max filling rate is 10 l/min [2,6 gal US/min]. Close the expansion tank with overpressure plug.

Start the engine and wait until the temperature reaches 82 °C (180 °F). Check during your waiting for any leakage of cooling liquid and check the level on the indicator.

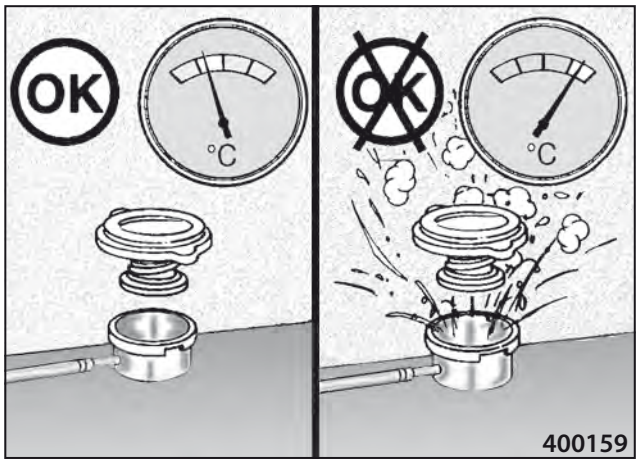


- Start the engine and let it run for 5 minutes for liquid temperature to reach 82°C (180°F).
- Stop the engine.
- Check the level height on water gauge.
- Confirm the coolant level on water gauge is between MIN and MAX.

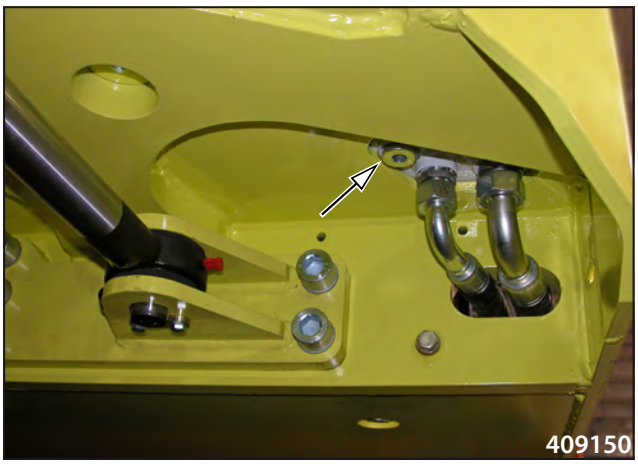
Do not open the overpressure plug before coolant temperature drops below 50 °C (122 °F). If you open overpressure plug the liquid may splash out causing scald!



Hand over the used liquid for its safe disposal under the regulations!



3.6.39. How to replace hydraulic oil and filters



- Prepare a suitable vessel. The drained volume is about 60 l (15.9 gal US).
- Unscrew drain plug and let oil pour down into the tank set up.

Carry out oil replacement before season starts, or following a long-term machine shutdown.

Drain oil when cooled down below 60 °C (140 °F).

Adhere to fire precautions!

Catch the oil being drained, and do not let it leak into ground.

Used oil is ecologically hazardous waste - hand it over for disposal.

How to fill hydraulic circuit:

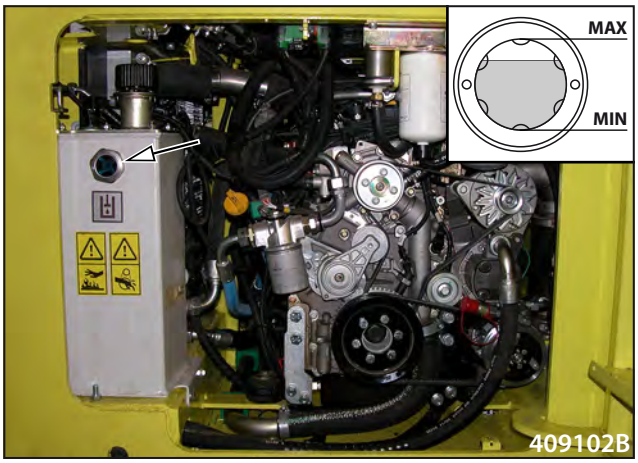
- Fill using the hydraulic unit.
- You can order the hydraulic unit from the machine manufacturer.

Hydraulic unit 230V
Order number: 1251998

Hydraulic unit110V
Order number: 1255297

Note

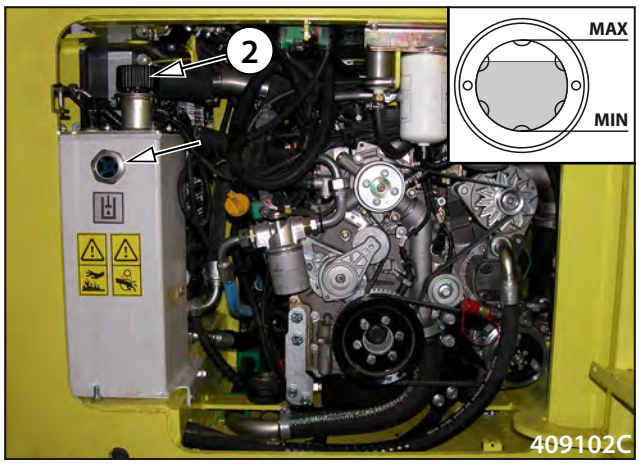
The hydraulic unit 230 V is intended for operation in 230-Volt networks (Europe), the hydraulic unit 110 V is intended for operation in 110-Volt networks (North America).



- Remove filling end piece cap, and put filling device quick--coupler onto the quick-coupler (1).
- Fill the hydraulic circuit till clean oil starts pouring down from the tank via its drain plug. Collect oil in clean tank.
- When reading ca 15 l (4 gal US) mount the drain plug back - inspect the gasket.
- Refill oil in the tank up to its max. level and then detach filling equipment.
- Order your filling equipment at your machine manufacturer or dealer.

Alternate filling via oil tank filler

- When this method is used, please reduce next exchange interval down to one half, i.e. 1000 hours or 1 year.
- Oil filler cap is sealed. With the seal damaged during guarantee period the guarantee will no longer exist!
- Through the filler neck (2) fill up the tank with the specified oil type.



Note

When filling via tank filler a large portion of used oil along with dirt will remain within, and the hydraulic unit life will be reduced.

Do NOT open hydraulic tank uselessly!

Use filler neck to fill hydraulic circuit ONLY as an emergency solution, and with this filling method, please lower the next exchange interval to one half, i.e. 1000 hour or 1 year!

When filler neck seal is broken during guarantee period the machine guarantee will cease to exit!

With the circuit filled, please confirm the hydraulic oil level LED does not light!

Start the engine, and with the speed increased, you must test machine functions so to fill up the circuits!

Replace oil and filter element always when destruction of internal parts of the units (hydromotors, hydrogenerators) has occured, or following a major overhaul of the hydraulic system!

Clean and flush the hydraulic tank, at the same time replace flter element and this always before new unit is installed!

Do housekeeping during work, and prevent system contaminated with materials that may cause damage to major units!

NEVER use any chemical cleaning agents to clean the hydraulic tank!

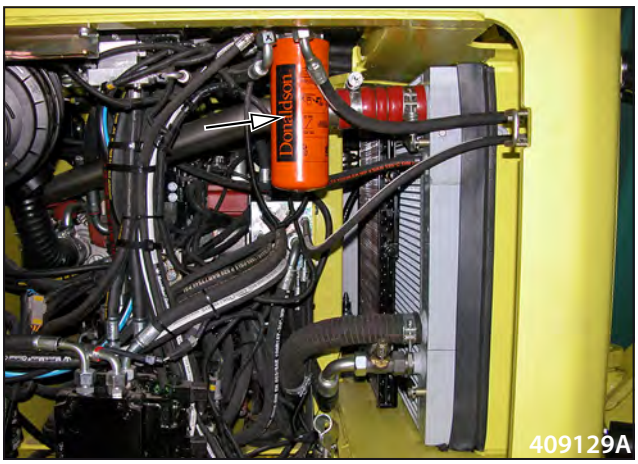
Use only those materials with no fibre-slip!

ALWAYS fill hydraulic tank with oil under Section 3.2.4.!

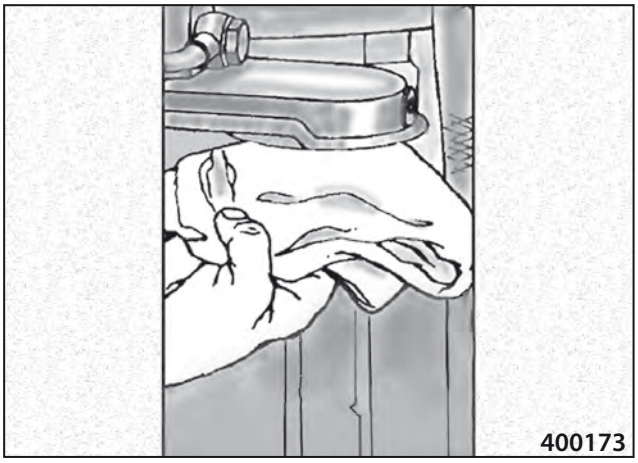
Observe fire and hygienic precautions!

How to replace pressure filter element

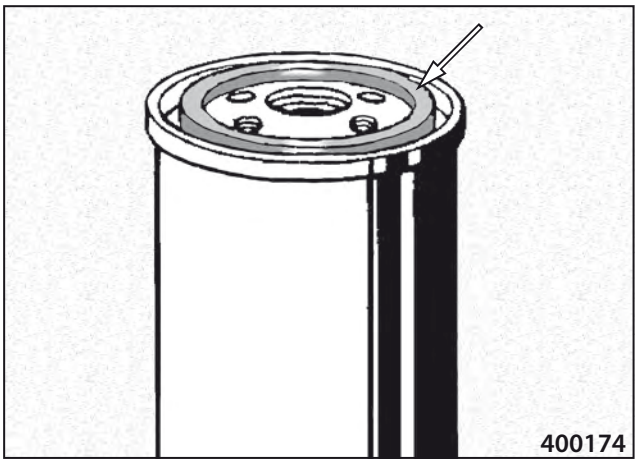
- Remove the filter.



- Clean the seating surface underneath.



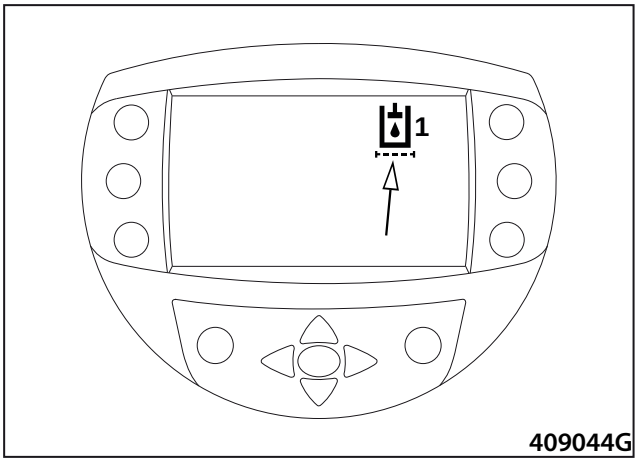
- Check the condition of sealing rings, and apply clean oil on the rings.
- Mount the new filter.



Filter element
Order number: 4-5358520121

Carry out the replacement ALWAYS during oil exchange or when pressure filter LED lights when oil operating pressure reaches 50 - 60 °C (122 - 140 °F).

Use ONLY original filtration elements per Spare Part Catalogue.



Used filter elements become ecologically hazardous waste - hand them over for disposal.

Maintenance as required

3.6.40. Deaerating (venting) the fuel system

Deaerate (vent) the fuel system before the first start:

- Unless fuel filters have been filled with fuel - upon filter replacement
- Upon fuel pump replacement
- Following fuel system repair
- Upon long term shutdown of the Machine
- When having run out of fuel from the tank.

Low-pressure piping blow-off and filter deaeration:

- Prepare a suitable vessel.
- Set the key to the „I" position.
- Loosen the bleeder screws on the fuel filter.
- Deaerate the system and tighten the screw.

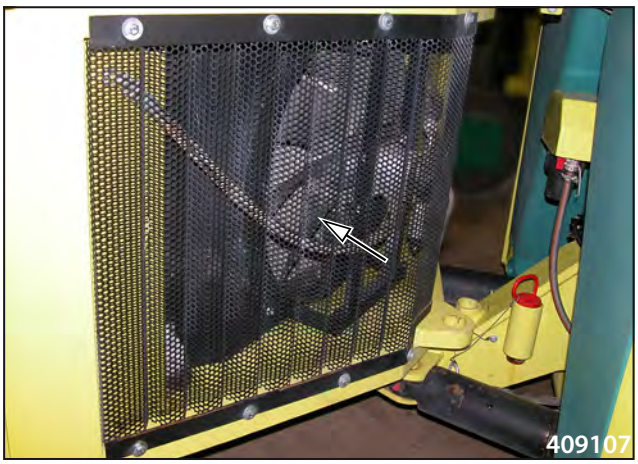
Do NOT bleed with the hot engine, leaking fuel may cause fire.

Follow safety regulations!

No smoking or use of open flame while at work on fuel system!

Retain any leaking fuel!

3.6.41. Cleaning of coolers



- Due to various working conditions no regular cleaning interval can be set.
- In case of work in very dusty environment, perform daily cleaning. Cooler fouling will show in a reduced cooling performance and increased temperatures of engine coolant and of hydraulic oil.
- Remove the cover.
- Clean with compressed air or pressure water (steam). Clean in the direction from the fan side.

Do NOT clean the radiator with too high pressure so to avoid its damage.

When radiator is contaminated with crude oil products, use a cleaner and proceed according to the manufacturer's manual! Find out a cause of contamination!

Clean the Machine at a workplace equipped with cleaner collection system to prevent soil contamination and water resource contamination!

NEVER use forbidden cleaners!

3.6.42. How to clean cab ventilation filter

- Remove the filter element.
- Beat out the element carefully and wash in a detergent solution. If filter element will become damaged or unable to be made rid of the impurities, please replace it with new one.

Clean regularly 1 x per month. Should it be you work in a very dusty environment then the cleaning intervals should be cut short.

Filter

Order number: 1263263

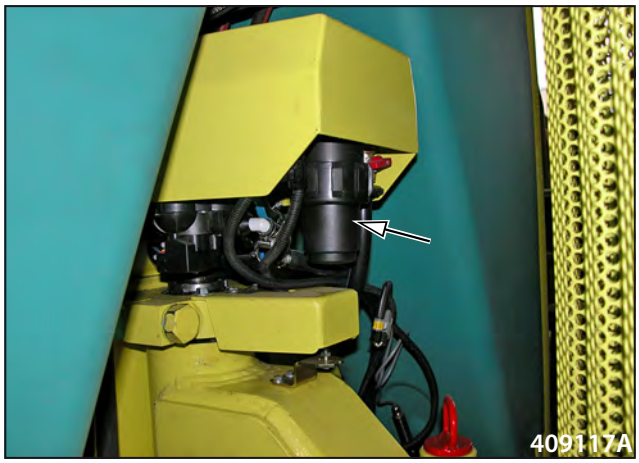
3.6.43. Drain water from sprinkling circuit before winter season

- Before winter season it will be necessary to drain water from the sprinkling circuit with regard to any potential damage to individual parts because of frost.

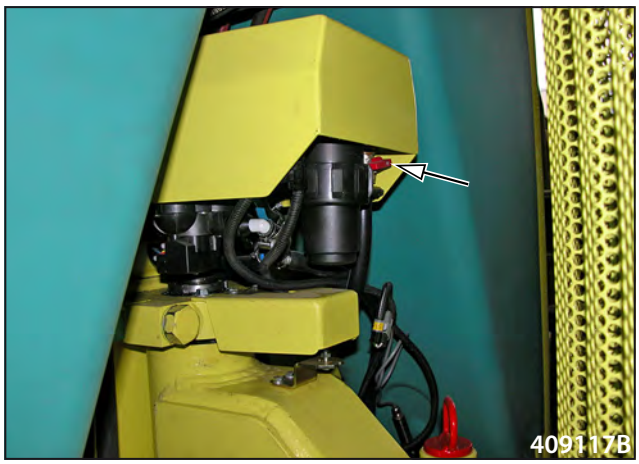
How to drain water from the sprinkling circuit:

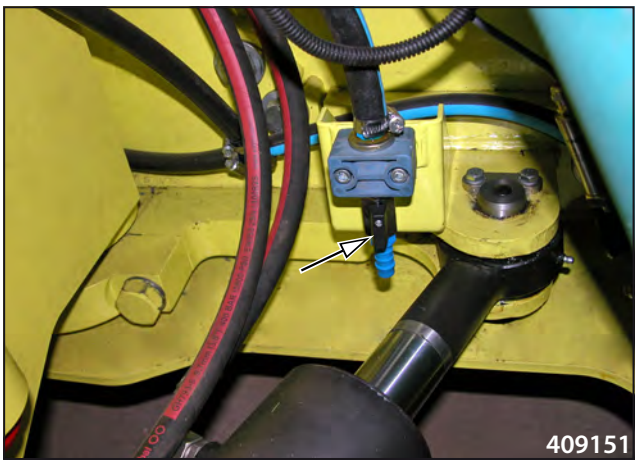
- Remove sprinkling water tank drain plug. Store the drain plug at a safe place.
- Tank's full capacity is 840 l (222 gal US).

- Remove and clean the vessel incl. sprinkling filter. Store the vessel complete with filter at a safe place.

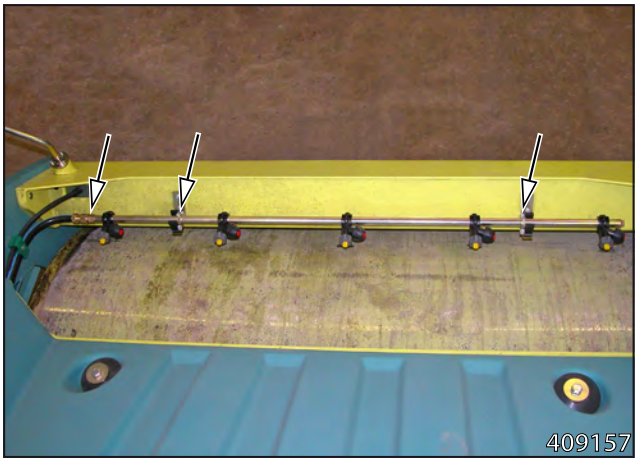


- Let the valve open.



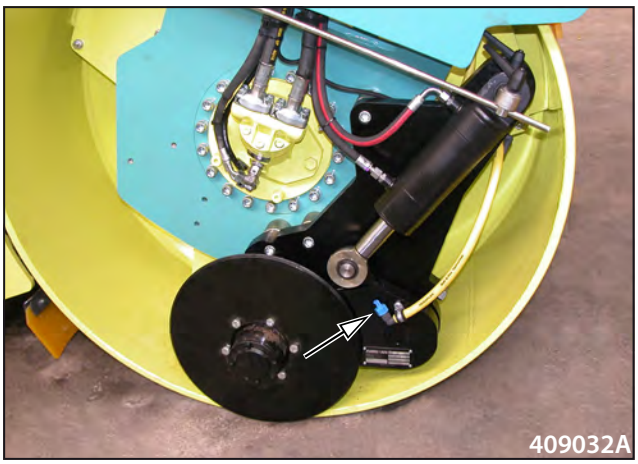


- Detach at least one sprinkler from each pipe on the front and rear sides of the Machine. Store the sprinklers at a safe place.
- Switch ON the sprinkling pumps for 20 sec. so these become drained.



- Dismount and clean the cutter sprinkler strainer.
- This procedure will guarantee you max drainage of the sprinkling circuit.
- when all the abovementioned operations are completed, please proceed in reverse steps, clean thoroughly the individual parts, first.

By draining the water from the sprinkling circuit in time you will avoid any potential damage that the manufacturer shall bear no responsibility for!



3.6.44. Adjustment of scrapers

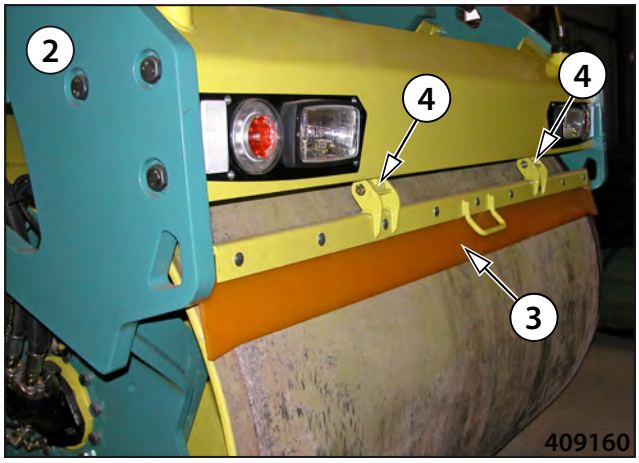
HINGED SCRAPERS

- The machine is equipped with four hingedle scrapers.

The scrapers setting:

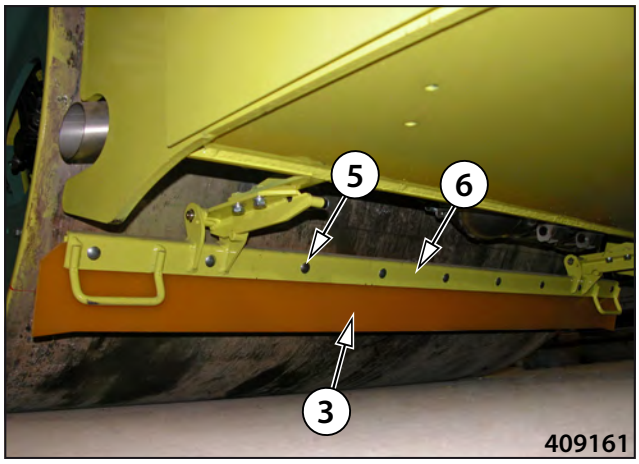
- In position (1), the scraper is set in the transport position.

- In position (2), the scraper is set in the service position.
- In the service position, the scraper blade (3) is pushed by means of the gas struts (4) to the drum body.



Replacement of the blade:

- In case of excessive wear and tear of the blade, set the scraper to position (1), dismount screws (5), and remove the blade (3) with strip (6).
- When mounting a new blade, follow the steps in the reverse order.
- At the same time, always check the correct function of the gas struts.



Blade
Order number: 4-16889

Only the correct function of the gas struts and the timely replacement of the worn-out scraper blade will ensure perfect cleaning of the drum!

Set up the correct function of the scraper upon the replacement of the blade!

3.6.45. Machine cleaning

- When the work is completed clean the Machine to get rid of major impurities.
- Carry out overall cleaning on regular basis, at least once per week. Total cleaning must be done daily if working on cohesive soils, cement or lime stabilizations.

Disconnect the disconnector.

Carry out the work with the engine stopped.

NEVER use aggressive or easily ignitable cleaners (e.g. petrol or easily or flash fuels).

Before pressure cleaning with water or steam, please blind all the ports into which a cleaner might penetrate (e.g. engine inlet port). With the Machine cleaned remove these blinds.

Do NOT expose electric parts or insulation material to direct water or steam streams. Always cover these materials (alternator's inner space, etc.).

Clean the Machine at a workplace equipped with cleaner collection system so to avoid soil or water recourse contaminations!

NEVER use banned cleaners!

3.6.46. Check the tightening of bolted connections

- Confirm regularly that no loosening of bolted connections has occurred.
- Use the torque spanners to do the tightening.

	TIGHTENING MOMENT			
	For the screws 8,8 (8G)		For the screws 10,9 (10K)	
Worm	Nm	lb-ft	Nm	lb-ft
M6	10	7,4	14	10,3
M8	24	25,0	34	25,0
M8x1	19	14,0	27	19,9
M10	48	35,4	67	49,4
M10x1,25	38	28,0	54	39,8
M12	83	61,2	117	86,2
M12x1,25	66	48,7	94	69,3
M14	132	97,3	185	136,4
M14x1,5	106	78,2	148	109,1
M16	200	147,5	285	210,2
M16x1,5	160	118,0	228	168,1
M18	275	202,8	390	287,6
M18x1,5	220	162,2	312	230,1
M20	390	287,6	550	405,6
M20x1,5	312	230,1	440	324,5
M22	530	390,9	745	549,4
M22x1,5	425	313,4	590	435,1
M24	675	497,8	950	700,6
M24x2	540	398,2	760	560,5
M27	995	733,8	1400	1032,5
M27x2	795	586,3	1120	826,0
M30	1350	995,7	1900	1401,3
M30x2	1080	796,5	1520	1121,0

The figures given in the chart are torques at dry thread (with coefficient of friction = 0,14). These figures do not apply to a lubricated thread.

3.6. Lubrication and Maintenance Operations

Chart showing the torques for cap nuts with sealing "O" ring - hoses

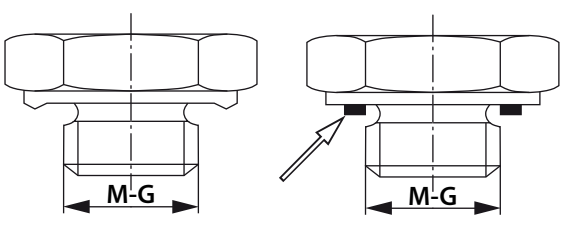
			Tightening moments for the sliding nuts with the tightening circle „O“ - hoses					
			Nm			lb ft		
Size spanner	Worm	Hose	Nominal	Min	Max	Nominal	Min	Max
14	12x1,5	6	20	15	25	15	11	18
17	14x1,5	8	38	30	45	28	22	33
19	16x1,5	8	45	38	52	33	28	38
		10						
22	18x1,5	10	51	43	58	38	32	43
		12						
24	20x1,5	12	58	50	65	43	37	48
27	22x1,5	14	74	60	88	55	44	65
		15						
30	24x1,5	16	74	60	88	55	44	65
32	26x1,5	18	105	85	125	77	63	92
36	30x2	20	135	115	155	100	85	114
		22						
41	36x2	25	166	140	192	122	103	142
46		28						
50	42x2	30	240	210	270	177	155	199
50	45x2	35	290	255	325	214	188	240
	52x2	38	330	280	380	243	207	280
		42						

Chart showing the torques for necks with sealing edge, or with flat gasket

	Tightening moments for the necks	
G -M	**Nm**	**lb ft**
G 1/8	25	18
G 1/4	40	30
G 3/8	95	70
G 1/2	130	96
G 3/4	250	184
G 1	400	295
G 11/4	600	443
G 11/2	800	590
10 x 1	25	18
12 x 1,5	30	22
14 x 1,5	50	37
16 x 1,5	60	44
18 x 1,5	60	44
20 x 1,5	140	103
22 x 1,5	140	103
26 x1,5	220	162
27 x 1,5	250	184
33 x 1,5	400	295
42 x 1,5	600	443
48 x 1,5	800	590

Chart showing the torques for plugs with flat gasket

	Tightening moments for the plugs	
G -M	**Nm**	**lb ft**
G 1/8	15	11
G 1/4	33	24
G 3/8	70	52
G 1/2	90	66
G 3/4	150	111
G 1	220	162
G 11/4	600	443
G 11/2	800	590
10 x 1	13	10
12 x 1,5	30	22
14 x 1,5	40	30
16 x 1,5	60	44
18 x 1,5	70	52
20 x 1,5	90	66
22 x 1,5	100	74
26 x1,5	120	89
27 x 1,5	150	111
33 x 1,5	250	184
42 x 1,5	400	295
48 x 1,5	500	369



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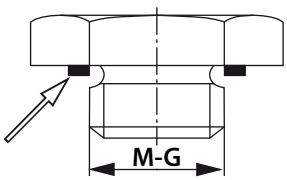

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3.7. Defects

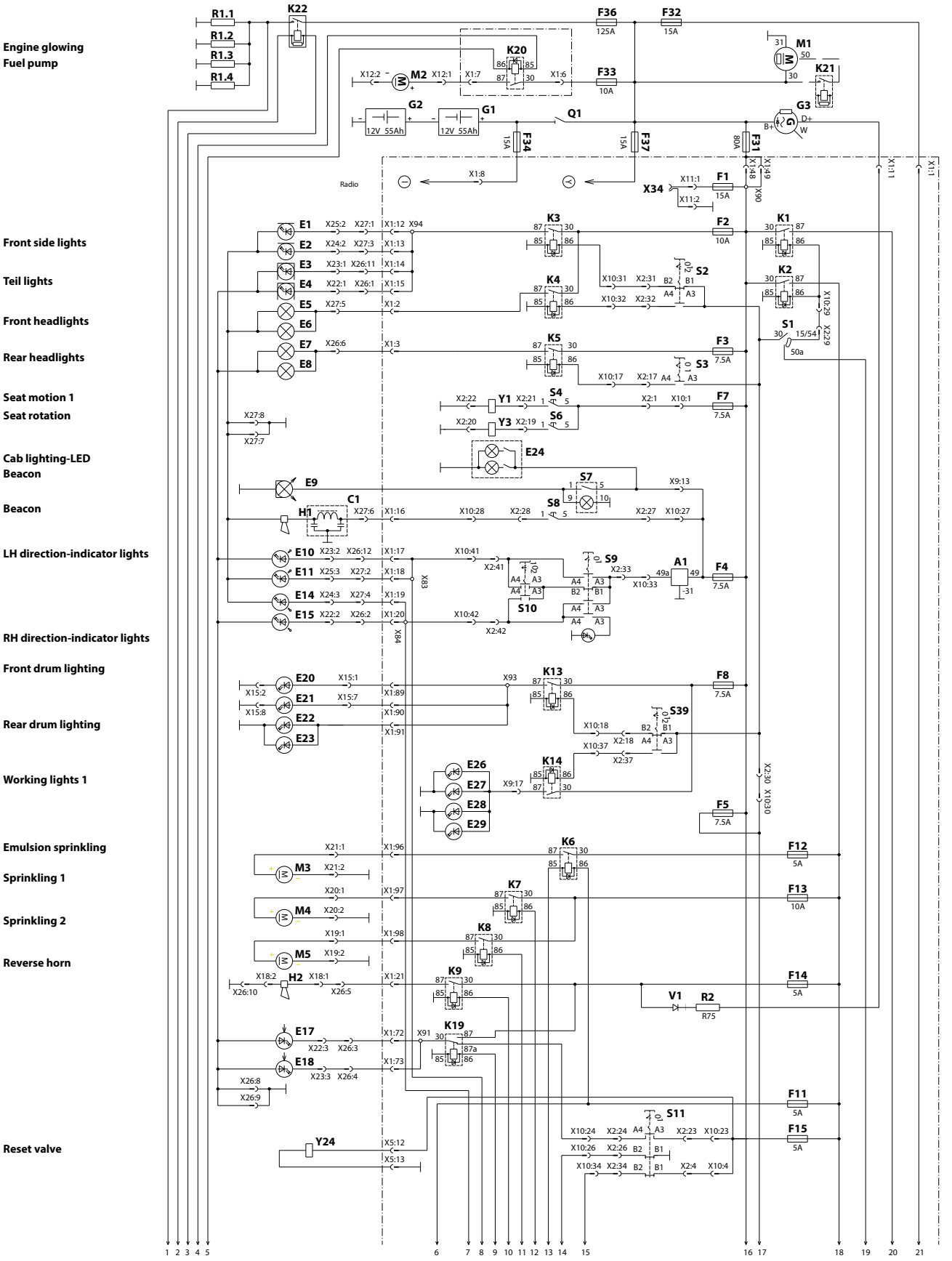
In most cases the defects are due to operating the Machine improperly. Therefore during any failure read thoroughly once more the instructions given in the Machine and Engine Operation and Maintenance Manual. Unless you will be able to specify the cause of a defect, please contact authorized dealer's or manufacturer's Help Desk (service assistance).

The troubleshooting of hydraulics and wiring requires expertise in the field of hydraulics and wiring, so we strongly recommend to hand over the troubleshooting process to the Help Desk of an authorized dealer or manufacturer.

Wiring diagram

Legend:

- A1 Flasher unit for direction indicator lamps
- A2 Computer Rexroth RC20-10/30
- A3 Infra thermometer
- A4 Gessmann lever
- A5 Display
- A6 Engine computer Bosch-Rexroth
- A7 Voltage changer 24V/12V
- A8 Air conditioner
- A9, 10 Time relay
- B1 Drum speed sensor
- B2 Front drum frequency sensor
- B3 Rear drum frequency sensor
- B4 Drum rotation sensor
- B5 Inclinometer
- B6 Fuel level float
- C1 Noise suppressing filter
- E1, 2 Front side lamps
- E3, 4 Rear lamps
- E5, 6 Front headlamps
- E7, 8 Rear headlamps
- E9 Warning beacon (optional)
- E10,11 Left direction indicator lamps
- E14,15 Right direction indicator lamps
- E16 Reversing headlamp (optional)
- E17,18 Brake lamps
- E20,21 Front drum lighting
- E22,23 Rear drum lighting
- E24 Cab light
- E25 Cab light
- E25 Engine bay lighting
- E26, 27 Working lights 1 - front
- E28, 29 Working lights 1 - rear
- E30, 31 Working lights 2 - front
- E32, 33 Working lights 2 - rear
- F1-24 Fuses
- F31-36 Fuses
- G1 Battery
- G2 Alternator
- H1 Horn
- H2 Reverse horn (optional)
- H3 Audible warning device
- K1-2 Auxiliary relay
- K1-2 Auxiliary relay
- K21-22 Contactors
- M1 Engine starter
- M2 Fuel pump
- M3 Sprinkling emulsion pump motor
- M4 Sprinkling pump motor 1
- M5 Sprinkling pump motor 2
- M6 Windscreen wiper
- M7 Rear screen wiper
- M8 Windscreen washer
- M9 Rear screen washer
- M10 Heater fan
- Q1 Battery cut off switch
- R1.1-1.4 Engine preheating
- R2 Resistor R75
- R3 Resistor R120
- R4 Glass heating
- S1 Ignition box
- S3 Front head-lamps switch
- S3 Rear head-lamps switch
- S4 Seat motion switch
- S6 Seat rotation switch
- S7 Warning beacon switch (optional)
- S8 Horn button
- S9 Warning lamps switch
- S10 Direction indicator lamps control switch
- S11 Emergency brake button
- S12 Service switch
- S13 Hydraulic tank float switch
- S14 Parking brake switch
- S15 Hydraulic oil temperature sensor
- S16 Water level sensor
- S17 Hydraulic oil filter pressure switch
- S19 Seat switch
- S20 Vibration AUT/ MAN
- S21 Low/ high vibration
- S22 Drum vibration – front / both / rear
- S23 Front/ rear drum steering
- S24 Edge cutter selection
- S25 Pump sprinkling selection
- S26 Water sprinkling
- S27 Emulsion sprinkling
- S29 Intermittent sprinkling
- S31 Vibration activated
- S32 Edge cutter - upwards
- S33 Edge cutter - downwards
- S34 CRAB to the left
- S35 CRAB to the right
- S36 Cooling liquid level
- S37 Engine air filter pressure switch
- S38 Water in fuel switch
- S39 Drum lighting switch
- S41 Windscreen wiper control switch
- S42 Rear screen wiper switch
- S43 Washers double push-button
- S44 Heating switch
- S45 Rear glass heating switch
- S46 Working lights switch
- S47 Air conditioner thermostat (optional)
- S48 Air conditioner overpressure fuse (optional)
- X1-50 Interface connector
- X34 Mounting socket
- X6 Engine connector (Deutz X23)
- X63 Engine diagnostic connector
- X37-58 Connectors J1939
- Y1 Solenoid for seat motion 1
- Y3 Solenoid for seat rotation
- Y4 Solenoid for cooling fan
- Y5 Solenoid for differential interlock (optional)
- Y6 Solenoid for differential interlock (optional)
- Y7 Solenoid for front drum vibration small amplitude
- Y8 Solenoid for front drum vibration large amplitude
- Y9 Solenoid for rear drum vibration small amplitude
- Y10 Solenoid for rear drum vibration large amplitude
- Y11 Solenoid valve for backward travel
- Y12 Solenoid valve for forward travel
- Y13 Brake solenoid valve
- Y14 Solenoid for left edge cutter selection (optional)
- Y15 Solenoid for left edge cutter sprinkling (optional)
- Y16 Solenoid for right edge cutter selection (optional)
- Y17 Solenoid for right edge cutter sprinkling (optional)
- Y18 Solenoid for edge cutter upwards (optional)
- Y19 Solenoid valve for edge cutter downwards (optional)
- Y20 Pressure relief valve – edge cutter, crab
- Y21 Solenoid valve for CRAB to the left
- Y22 Solenoid valve for CRAB to the right
- Y23 Air conditioner compressor electromechanical clutch (optional)
- Y24 Reset valve


Engine glowing
Fuel pump
Front side lights
Teil lights
Front headlights
Rear headlights
Seat motion 1
Seat rotation
Cab lighting-LED
Beacon
Beacon
LH direction-indicator lights
RH direction-indicator lights
Front drum lighting
Rear drum lighting
Working lights 1
Emulsion sprinkling
Sprinkling 1
Sprinkling 2
Reverse horn
Reset valve
R1.1
R1.2
R1.3
R1.4
K22
F36
125A
F32
15A
K20
M2
F33
10A
M1
K21
G2
12V 55Ah
G1
12V 55Ah
Q1
G3
F34
15A
F37
15A
F31
80A
Radio
X34
F1
15A
F2
10A
F3
7.5A
F4
7.5A
F5
7.5A
F7
7.5A
F8
7.5A
F11
5A
F12
5A
F13
10A
F14
5A
F15
5A
K1
K2
K3
K4
K5
K6
K7
K8
K9
K13
K14
K19
S1
15/54
50a
S2
S3
S4
S6
S7
S8
S9
S10
S11
S39
A1
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
E11
E14
E15
E17
E18
E20
E21
E22
E23
E24
E26
E27
E28
E29
H1
H2
C1
M3
M4
M5
V1
R2
R75
Y1
Y3
Y24
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

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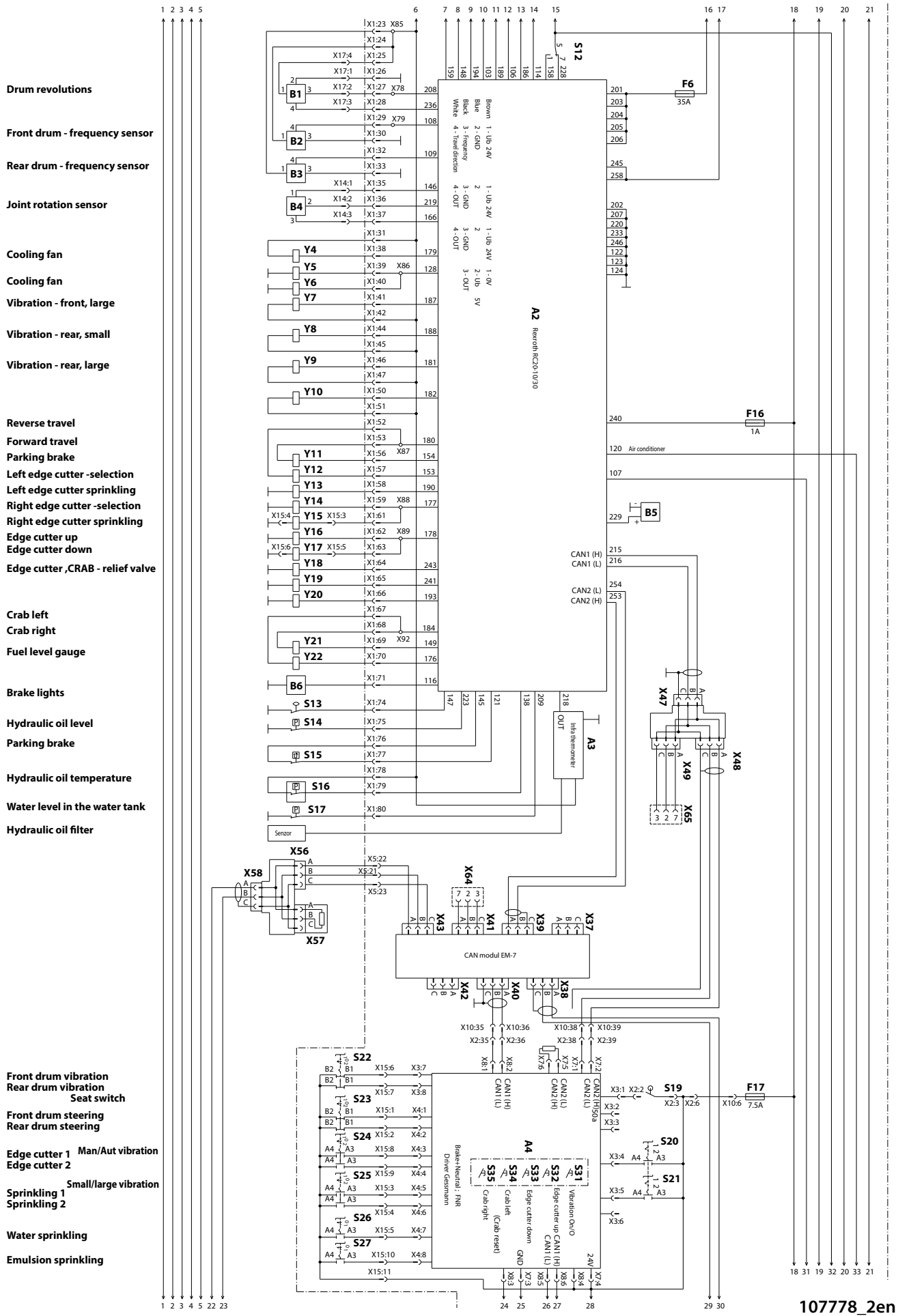
Wiring diagram

Legend:

A1 Flasher unit for direction indicator lamps
A2 Computer Rexroth RC20-10/30
A3 Infra thermometer
A4 Gessmann lever
A5 Display
A6 Engine computer Bosch-Rexroth
A7 Voltage changer 24V/12V
A8 Air conditioner
A9, 10 Time relay
B1 Drum speed sensor
B2 Front drum frequency sensor
B3 Rear drum frequency sensor
B4 Drum rotation sensor
B5 Inclinometer
B6 Fuel level float
C1 Noise suppressing filter
E1, 2 Front side lamps
E3, 4 Rear lamps
E5, 6 Front headlamps
E7, 8 Rear headlamps
E9 Warning beacon (optional)
E10,11 Left direction indicator lamps
E14,15 Right direction indicator lamps
E16 Reversing headlamp (optional)
E17,18 Brake lamps
E20,21 Front drum lighting
E22,23 Rear drum lighting
E24 Cab light
E25 Cab light
E25 Engine bay lighting
E26, 27 Working lights 1 - front
E28, 29 Working lights 1 - rear
E30, 31 Working lights 2 - front
E32, 33 Working lights 2 - rear
F1-24 Fuses
F31-36 Fuses
G1 Battery
G2 Alternator
H1 Horn
H2 Reverse horn (optional)
H3 Audible warning device
K1-2 Auxiliary relay
K1-2 Auxiliary relay
K21-22 Contactors
M1 Engine starter
M2 Fuel pump
M3 Sprinkling emulsion pump motor
M4 Sprinkling pump motor 1
M5 Sprinkling pump motor 2
M6 Windscreen wiper
M7 Rear screen wiper
M8 Windscreen washer
M9 Rear screen washer
M10 Heater fan
Q1 Battery cut off switch
R1.1-1.4 Engine preheating
R2 Resistor R75
R3 Resistor R120
R4 Glass heating
S1 Ignition box
S3 Front head-lamps switch
S3 Rear head-lamps switch
S4 Seat motion switch
S6 Seat rotation switch
S7 Warning beacon switch (optional)
S8 Horn button
S9 Warning lamps switch
S10 Direction indicator lamps control switch
S11 Emergency brake button
S12 Service switch
S13 Hydraulic tank float switch
S14 Parking brake switch
S15 Hydraulic oil temperature sensor
S16 Water level sensor
S17 Hydraulic oil filter pressure switch
S19 Seat switch
S20 Vibration AUT/ MAN
S21 Low/ high vibration
S22 Drum vibration – front / both / rear
S23 Front/ rear drum steering
S24 Edge cutter selection
S25 Pump sprinkling selection
S26 Water sprinkling
S27 Emulsion sprinkling
S29 Intermittent sprinkling
S31 Vibration activated
S32 Edge cutter - upwards
S33 Edge cutter - downwards
S34 CRAB to the left
S35 CRAB to the right
S36 Cooling liquid level
S37 Engine air filter pressure switch
S38 Water in fuel switch
S39 Drum lighting switch
S41 Windscreen wiper control switch
S42 Rear screen wiper switch
S43 Washers double push-button
S44 Heating switch
S45 Rear glass heating switch
S46 Working lights switch
S47 Air conditioner thermostat (optional)
S48 Air conditioner overpressure fuse (optional)
X1-50 Interface connector
X34 Mounting socket
X6 Engine connector (Deutz X23)
X63 Engine diagnostic connector
X37-58 Connectors J1939
Y1 Solenoid for seat motion 1
Y3 Solenoid for seat rotation
Y4 Solenoid for cooling fan
Y5 Solenoid for differential interlock (optional)
Y6 Solenoid for differential interlock (optional)
Y7 Solenoid for front drum vibration small amplitude
Y8 Solenoid for front drum vibration large amplitude
Y9 Solenoid for rear drum vibration small amplitude
Y10 Solenoid for rear drum vibration large amplitude
Y11 Solenoid valve for backward travel
Y12 Solenoid valve for forward travel
Y13 Brake solenoid valve
Y14 Solenoid for left edge cutter selection (optional)
Y15 Solenoid for left edge cutter sprinkling (optional)
Y16 Solenoid for right edge cutter selection (optional)
Y17 Solenoid for right edge cutter sprinkling (optional)
Y18 Solenoid for edge cutter upwards (optional)
Y19 Solenoid valve for edge cutter downwards (optional)
Y20 Pressure relief valve – edge cutter, crab
Y21 Solenoid valve for CRAB to the left
Y22 Solenoid valve for CRAB to the right
Y23 Air conditioner compressor electromechanical clutch (optional)
Y24 Reset valve


Drum revolutions
Front drum - frequency sensor
Rear drum - frequency sensor
Joint rotation sensor
Cooling fan
Cooling fan
Vibration - front, large
Vibration - rear, small
Vibration - rear, large
Reverse travel
Forward travel
Parking brake
Left edge cutter -selection
Left edge cutter sprinkling
Right edge cutter -selection
Right edge cutter sprinkling
Edge cutter up
Edge cutter down
Edge cutter ,CRAB - relief valve
Crab left
Crab right
Fuel level gauge
Brake lights
Hydraulic oil level
Parking brake
Hydraulic oil temperature
Water level in the water tank
Hydraulic oil filter
Front drum vibration
Rear drum vibration
Seat switch
Front drum steering
Rear drum steering
Edge cutter 1
Man/Aut vibration
Edge cutter 2
Small/large vibration
Sprinkling 1
Sprinkling 2
Water sprinkling
Emulsion sprinkling
A2 Rexroth RC20-10/30
A3 Infra thermometer
A4
CAN modul EM-7
S12
F6 35A
F16 1A
F17 7.5A
B1
B2
B3
B4
B5
B6
Y4
Y5
Y6
Y7
Y8
Y9
Y10
Y11
Y12
Y13
Y14
Y15
Y16
Y17
Y18
Y19
Y20
Y21
Y22
S13
S14
S15
S16
S17
S19
S20
S21
S22
S23
S24
S25
S26
S27
S31
S32
S33
S34
S35
Senzor
Air conditioner
CAN1 (H)
CAN1 (L)
CAN2 (L)
CAN2 (H)
X47
X48
X49
X65
X56
X57
X58
X64
X43
X41
X39
X37
X42
X40
X38
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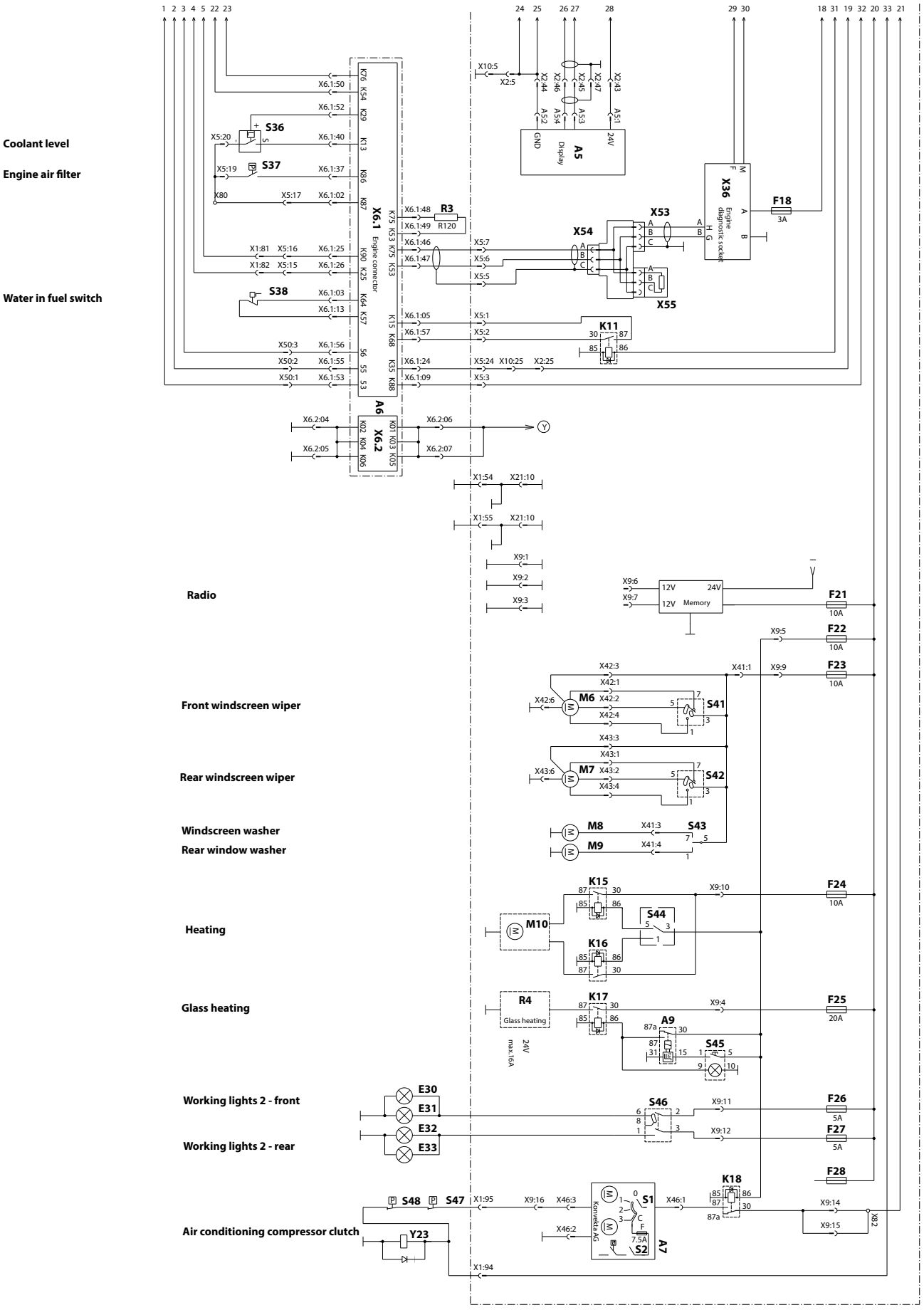
Wiring diagram

Legend:

A1	Flasher unit for direction indicator lamps
A2	Computer Rexroth RC20-10/30
A3	Infra thermometer
A4	Gessmann lever
A5	Display
A6	Engine computer Bosch-Rexroth
A7	Voltage changer 24V/12V
A8	Air conditioner
A9, 10	Time relay
B1	Drum speed sensor
B2	Front drum frequency sensor
B3	Rear drum frequency sensor
B4	Drum rotation sensor
B5	Inclinometer
B6	Fuel level float
C1	Noise suppressing filter
E1, 2	Front side lamps
E3, 4	Rear lamps
E5, 6	Front headlamps
E7, 8	Rear headlamps
E9	Warning beacon (optional)
E10,11	Left direction indicator lamps
E14,15	Right direction indicator lamps
E16	Reversing headlamp (optional)
E17,18	Brake lamps
E20,21	Front drum lighting
E22,23	Rear drum lighting
E24	Cab light
E25	Cab light
E25	Engine bay lighting
E26, 27	Working lights 1 - front
E28, 29	Working lights 1 - rear
E30, 31	Working lights 2 - front
E32, 33	Working lights 2 - rear
F1-24	Fuses
F31-36	Fuses
G1	Battery
G2	Alternator
H1	Horn
H2	Reverse horn (optional)
H3	Audible warning device
K1-2	Auxiliary relay
K1-2	Auxiliary relay
K21-22	Contactors
M1	Engine starter
M2	Fuel pump
M3	Sprinkling emulsion pump motor
M4	Sprinkling pump motor 1
M5	Sprinkling pump motor 2
M6	Windscreen wiper
M7	Rear screen wiper
M8	Windscreen washer
M9	Rear screen washer
M10	Heater fan
Q1	Battery cut off switch
R1.1-1.4	Engine preheating
R2	Resistor R75
R3	Resistor R120
R4	Glass heating
S1	Ignition box
S3	Front head-lamps switch
S3	Rear head-lamps switch
S4	Seat motion switch
S6	Seat rotation switch
S7	Warning beacon switch (optional)
S8	Horn button
S9	Warning lamps switch
S10	Direction indicator lamps control switch
S11	Emergency brake button
S12	Service switch
S13	Hydraulic tank float switch
S14	Parking brake switch
S15	Hydraulic oil temperature sensor
S16	Water level sensor
S17	Hydraulic oil filter pressure switch
S19	Seat switch
S20	Vibration AUT/ MAN
S21	Low/ high vibration
S22	Drum vibration – front / both / rear
S23	Front/ rear drum steering
S24	Edge cutter selection
S25	Pump sprinkling selection
S26	Water sprinkling
S27	Emulsion sprinkling
S29	Intermittent sprinkling
S31	Vibration activated
S32	Edge cutter - upwards
S33	Edge cutter - downwards
S34	CRAB to the left
S35	CRAB to the right
S36	Cooling liquid level
S37	Engine air filter pressure switch
S38	Water in fuel switch
S39	Drum lighting switch
S41	Windscreen wiper control switch
S42	Rear screen wiper switch
S43	Washers double push-button
S44	Heating switch
S45	Rear glass heating switch
S46	Working lights switch
S47	Air conditioner thermostat (optional)
S48	Air conditioner overpressure fuse (optional)
X1-50	Interface connector
X34	Mounting socket
X6	Engine connector (Deutz X23)
X63	Engine diagnostic connector
X37-58	Connectors J1939
Y1	Solenoid for seat motion 1
Y3	Solenoid for seat rotation
Y4	Solenoid for cooling fan
Y5	Solenoid for differential interlock (optional)
Y6	Solenoid for differential interlock (optional)
Y7	Solenoid for front drum vibration small amplitude
Y8	Solenoid for front drum vibration large amplitude
Y9	Solenoid for rear drum vibration small amplitude
Y10	Solenoid for rear drum vibration large amplitude
Y11	Solenoid valve for backward travel
Y12	Solenoid valve for forward travel
Y13	Brake solenoid valve
Y14	Solenoid for left edge cutter selection (optional)
Y15	Solenoid for left edge cutter sprinkling (optional)
Y16	Solenoid for right edge cutter selection (optional)
Y17	Solenoid for right edge cutter sprinkling (optional)
Y18	Solenoid for edge cutter upwards (optional)
Y19	Solenoid valve for edge cutter downwards (optional)
Y20	Pressure relief valve – edge cutter, crab
Y21	Solenoid valve for CRAB to the left
Y22	Solenoid valve for CRAB to the right
Y23	Air conditioner compressor electromechanical clutch (optional)
Y24	Reset valve


Coolant level
Engine air filter
Water in fuel switch
Radio
Front windscreen wiper
Rear windscreen wiper
Windscreen washer
Rear window washer
Heating
Glass heating
Working lights 2 - front
Working lights 2 - rear
Air conditioning compressor clutch
S36
S37
S38
S41
S42
S43
S44
S45
S46
S47
S48
M6
M7
M8
M9
M10
K11
K15
K16
K17
K18
R3
R4
A5
A6
A7
A9
X6.1
X6.2
X53
X54
X55
X36
F18
F21
F22
F23
F24
F25
F26
F27
F28
E30
E31
E32
E33
Y23
S1
S2
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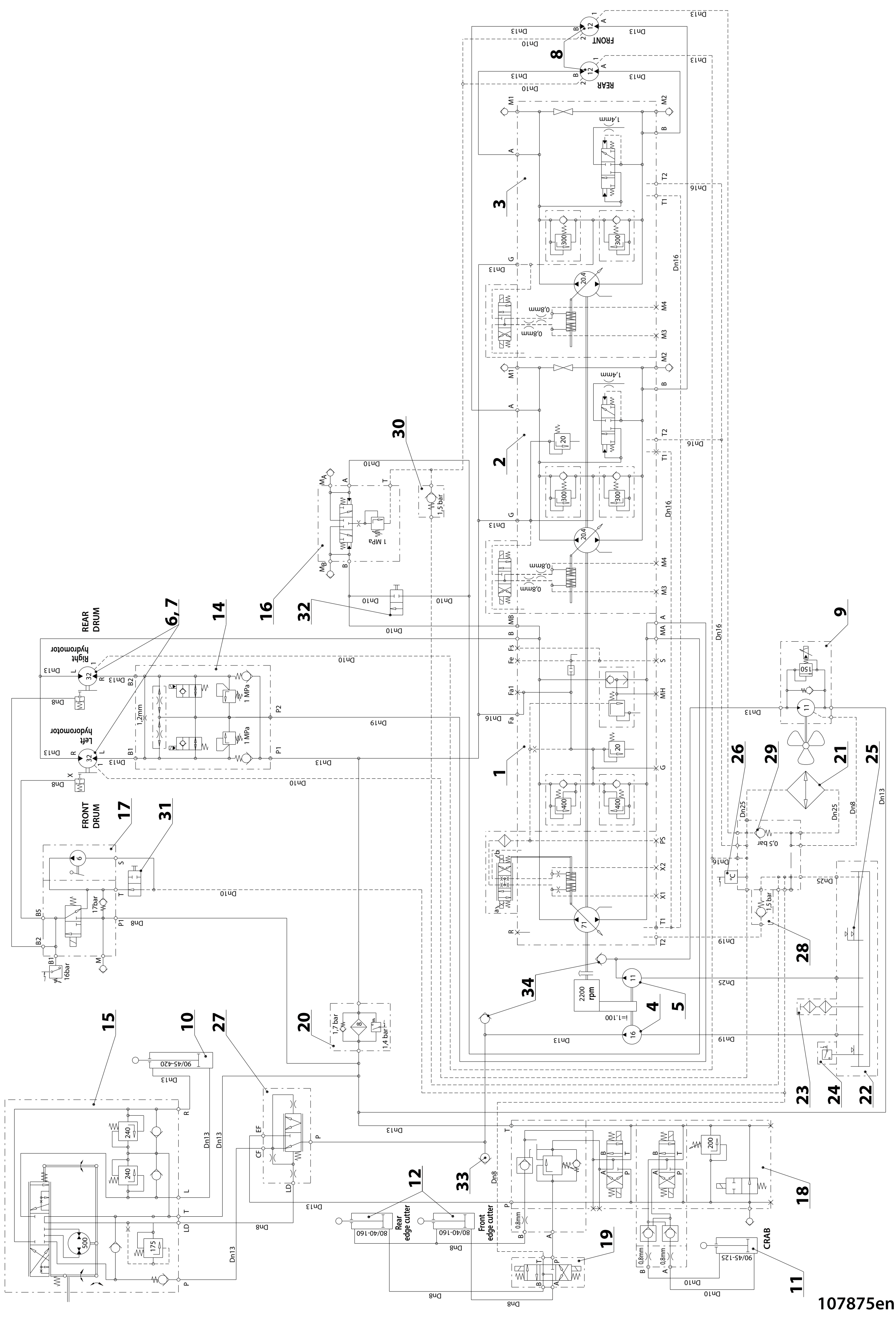
3.8. Attachments

Hydraulic system diagram ARX 90

Legend:

1. Travel pump
2. Vibration pump
3. Vibration pump
4. Steering pump
5. Cooling pump
6. Travel hydraulic motor
7. Travel hydraulic motor
8. Vibration hydraulic motor
9. Cooling hydraulic motor
10. Steering hydraulic motor
11. Crab hydraulic motor
12. Edge cutter hydraulic motor (option)
14. RTM module
15. Power steering
16. RTM and flushing block
17. Brake block
18. Edge cutter and crab block
19. Edge cutter switch
20. Filter
21. Combined cooler
22. Hydraulic tank
23. Filler neck
24. Level indicator
25. Oil level indicator
26. Temperature sensor
27. Priority valve
28. One-way valve (check valve)
29. One-way valve (check valve)
30. One-way valve (check valve)
31. Ball valve
32. Ball valve
33. Filling quick coupler
34. Measuring quick coupler
36. Travel pump


REAR DRUM
FRONT DRUM
Left hydromotor
Right hydromotor
FRONT
REAR
CRAB
Front edge cutter
Rear edge cutter
2200 rpm

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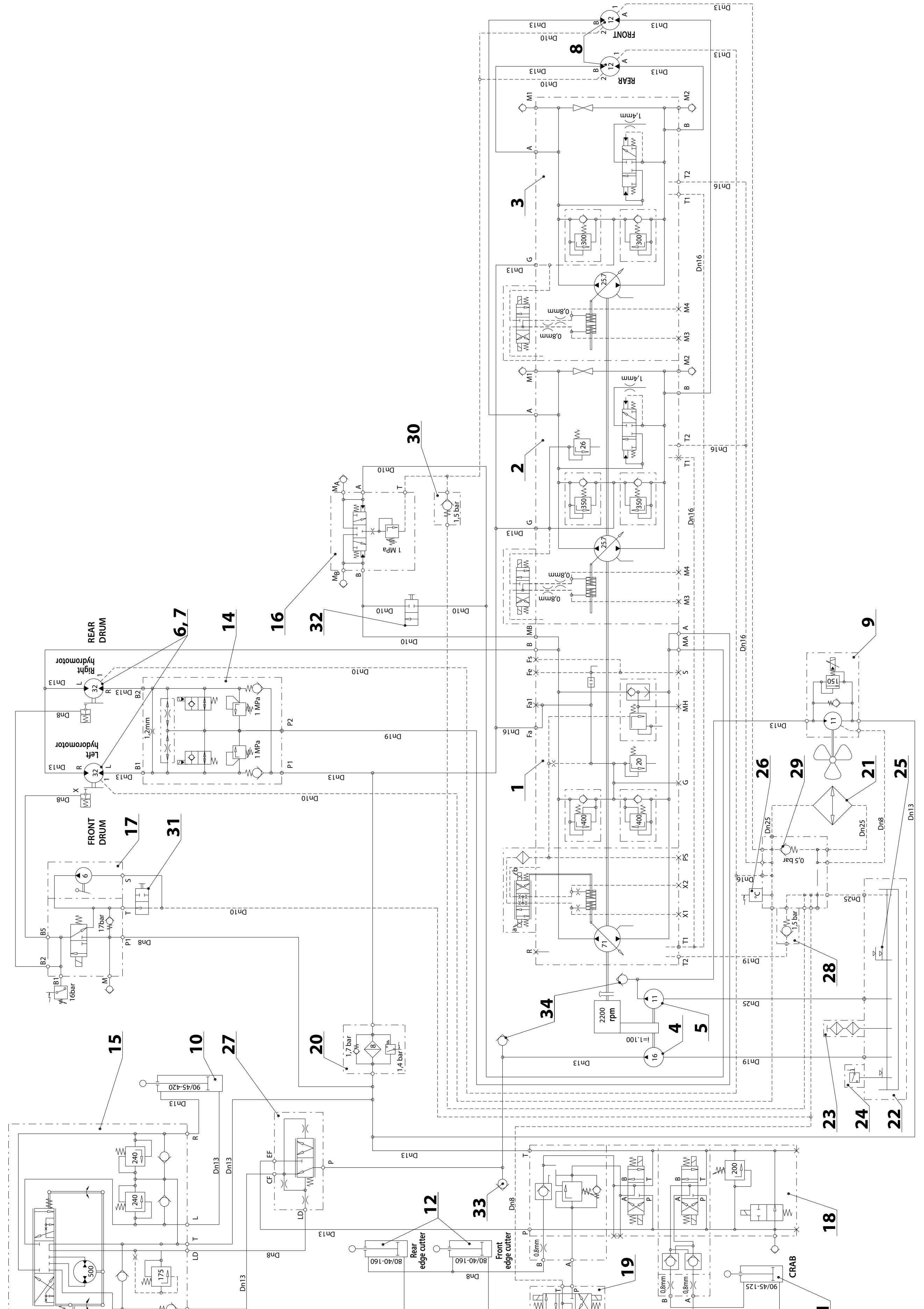
3.8. Attachments

Hydraulic system diagram ARX 90 HF

Legend:

1. Travel pump
2. Vibration pump
3. Vibration pump
4. Steering pump
5. Cooling pump
6. Travel hydraulic motor
7. Travel hydraulic motor
8. Vibration hydraulic motor
9. Cooling hydraulic motor
10. Steering hydraulic motor
11. Crab hydraulic motor
12. Edge cutter hydraulic motor (option)
14. Diferential lock
15. Power steering
16. Flushing block
17. Brake block
18. Edge cutter and crab block
19. Edge cutter switch
20. Oil filter
21. Combined cooler
22. Hydraulic tank
23. Filler neck
24. Level indicator
25. Oil level indicator
26. Temperature sensor
27. Priority valve
28. One-way valve (check valve)
29. One-way valve (check valve)
30. One-way valve (check valve)
31. Ball valve
32. Ball valve
33. Filling quick coupler
34. Measuring quick coupler


FRONT
REAR
REAR DRUM
FRONT DRUM
Right hydromotor
Left hydromotor
Rear edge cutter
Front edge cutter
CRAB
2200 rpm
i=1.100

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3.8. Attachments

Spare parts table for regular maintenance

Chapter	Spare part	Order number
After 20 hours of operation (daily)		
3.6.11.	V-belt	4-6160120117
After 500 hours of operation (after 6 months)		
3.6.16.	Filter element	1229402
3.6.18.	Indicator	4-5358520057
3.6.24.	Filter element	1238008
3.6.24.	Filter element	1229401
3.6.25.	Insert	4-5358520143
3.6.25.	Insert	4-5358520141
After 1,000 hours of operation (after 1 year)		
3.6.31.	Rubber mount	4-9200000031
3.6.31.	Rubber mount	1160051
3.6.31.	Rubber mount	1235638
3.6.31.	Rubber mount	4-6160070611
3.6.31.	Rubber mount	4-6160070610
3.6.36.	V-belt	4-6160120117
After 2,000 hours of operation (after 2 years)		
3.6.39.	Filter element	4-5358520121
Maintenance as required		
3.6.44.	Blade	4-16889

Content of the set of filters after 500 engine hours (4-21383)

Chapter	Spare part	Number of parts	Order number
3.6.16.	Filter element	1	1229402
3.6.24.	Filter element	1	1238008
3.6.24.	Filter element	1	1229401
3.6.25.	Insert	1	4-5358520143
3.6.25.	Insert	1	4-5358520141

Notes

Ammann Unternehmungen
Eisenbahnstrasse 25
CH-4901 Langenthal
Phone +41 62 916 61 61

www.ammann-group.com