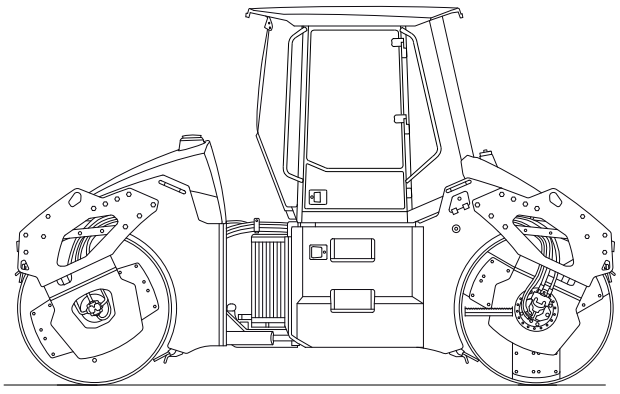
AMMANN

Operating manual

ARX 90
Deutz



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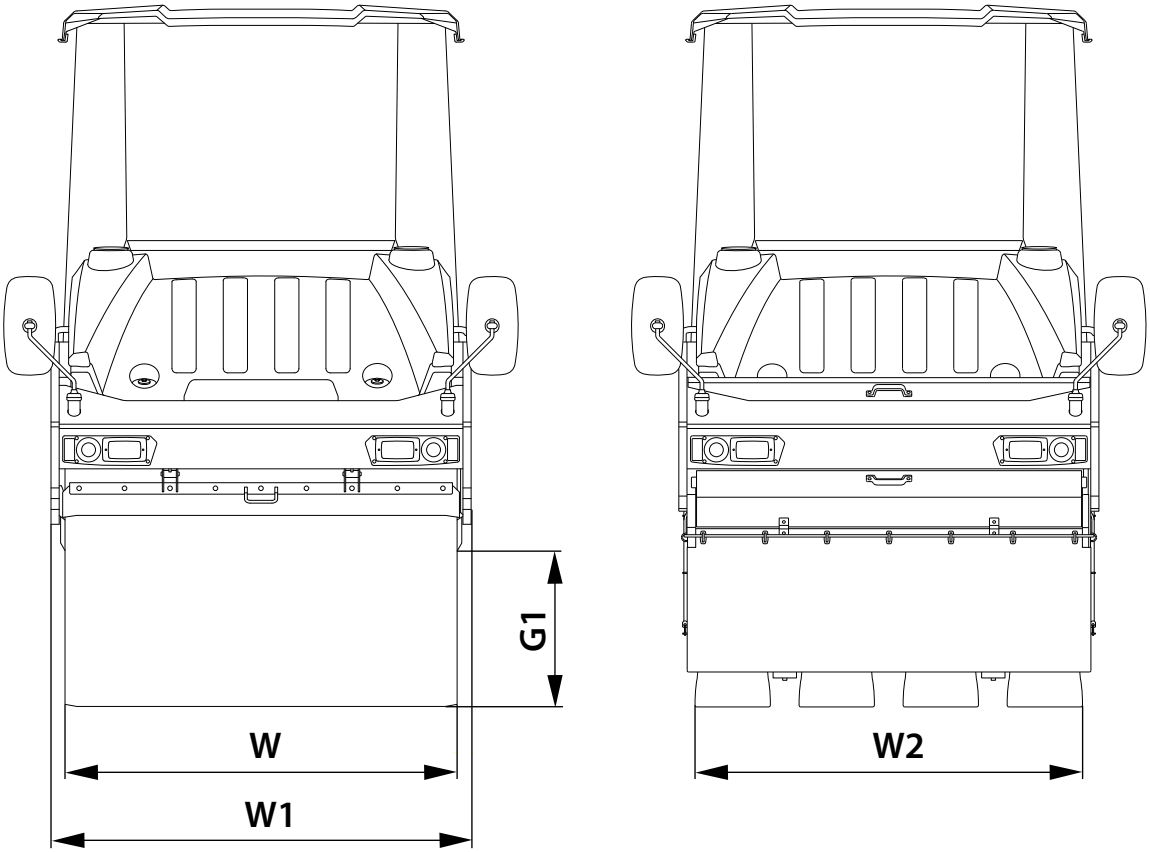
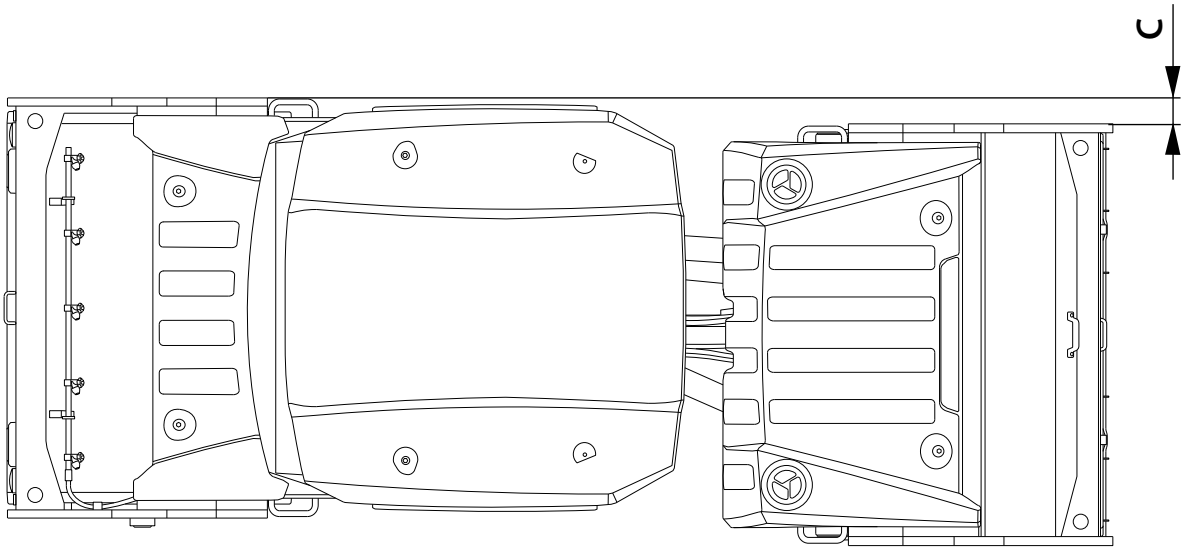




409200

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

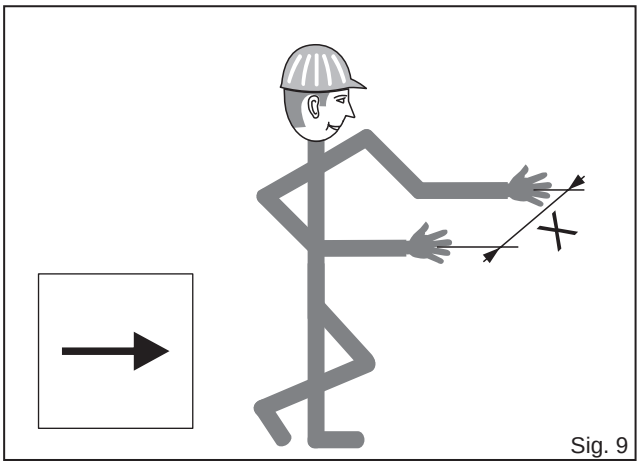
  b) assigned by Constructional Supplier to operate (carry out maintenance) and is evidently trained and acquainted with, or owns professional competence to operate and drive under special regulations (machinist licence, etc.).
- Machine driver must undergo training and examination concerning work safety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

Short motion

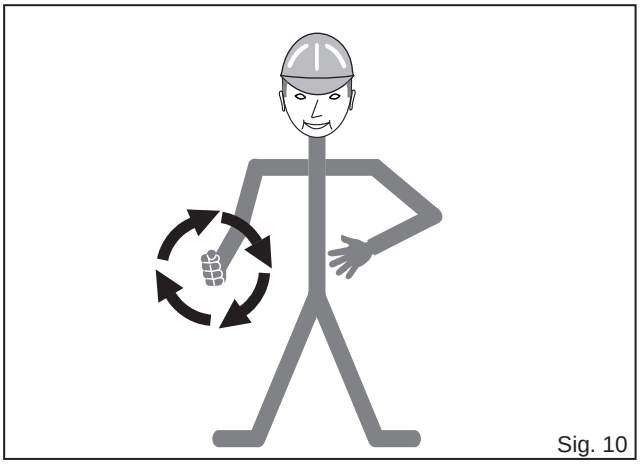
Both arms lifted forward bending across. Mark the „X“ distance between palms, then the motion signal follows.



Sig. 9

Engine start

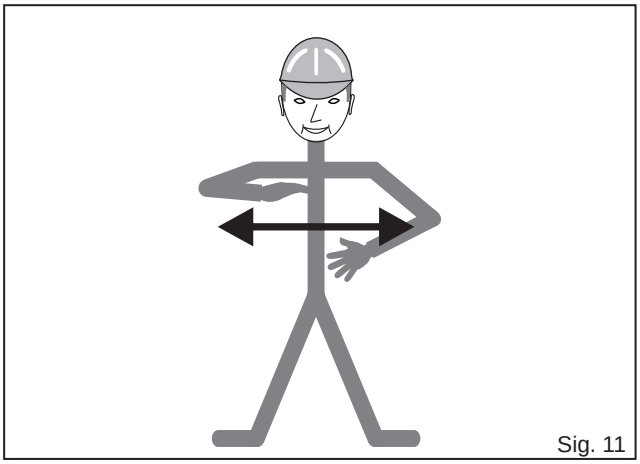
Circular motion of right hand's antebrachium, with the fist closed.



Sig. 10

Engine cut off

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



Sig. 11

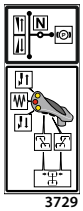
Steering wheel (1)

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.



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).

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

Vibration button (6)

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

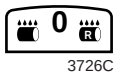
The function is displayed on the display (2).

Edge cutter button - up (7)

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

Edge cutter button – down (8)

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



Pumps sprinkling selector switch (9)

Select one of the two drum sprinkling pumps.

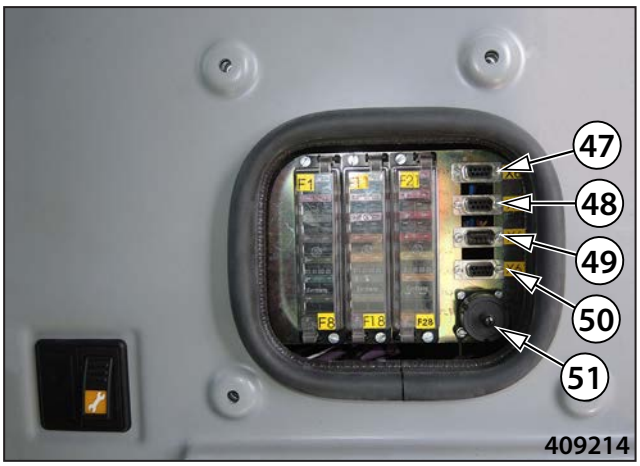
The pump operation is indicated on the display (2).

The selector switch has three positions:

1 - 1st pump ON

0 - OFF

2 - 2nd pump ON



CAN BUS
2679D

Connector CAN2 (47)

Serves for connecting an external computing unit (Notebook) to assure proper communication between the engine, computer, RC display and travel control.

CAN BUS
2679D

Connector CAN 1 (Diagnostics) (48)

Serves for connecting an external computing unit (Notebook) to assure proper communication between the travel control and RC computer. After the computer is connected to this bus using the Bodas program, you can use the computer, set parameters, diagnose failures, etc.

CAN BUS
2679D

Connector ACU (Diagnostics) (49)

Serves for connecting an external computing unit (Notebook). Using the program ACE Parameter Manager, you can change parameters in ACU or download them to a computer.

ACE
AMN109

Connector CAN 3 (ACE) (50)

Serves for connecting an external-computing unit (Notebook) to assure proper communication between the ACU, ACE display and RC computer.

J1939
3003

Engine diagnostics (51)

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.

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 - 2,5 km/h (0 - 1,6 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.

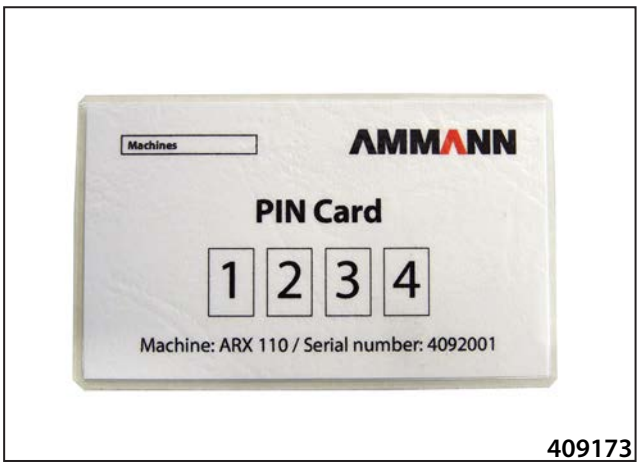
In the event that you fail to enter a correct PIN code for the third time, wait for 15 minutes and enter a correct PIN code.

If you lose your PIN card, you can get the correct PIN code for your machine by contacting you dealer.

Spreader selection button

It serves for selecting the spreader according to the type.

1 - Ammann spreader



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	2,5 (1,6)	2,5 (1,6)	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	10,5 (6,5)	10,5 (6,5)	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 – only the drum offset cancellation function enabled).

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.

2.7.6.2. Emulsion sprinkling

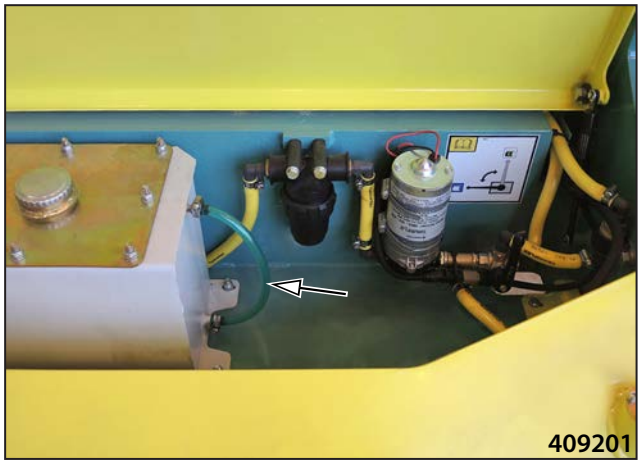
It is used for sprinkling the machine tyres with emulsion. The separation emulsion (anti-adhesive agent) ensures effective separation of the tyres and the compacted surface.

Advantages of the use of an anti-adhesive agent:

- There are no trails on the compacted surface thanks to the effective separation effect
- Extremely low consumption of the anti-adhesive agent
- The surface can be processed at higher temperatures
- The surface does not suffer from the rolling so much thanks to the lower water consumption
- The anti-adhesive agent does not cause corrosion of the rubber tyres
- The penetration of the excessive anti-adhesive agent does not have any other negative effects
- The anti-adhesive agent is biologically degradable

The emulsion level in the tank is shown through a level gauge.

Before driving, check the emulsion level in the tank.



Turning on:

Set the lever to the vertical position.

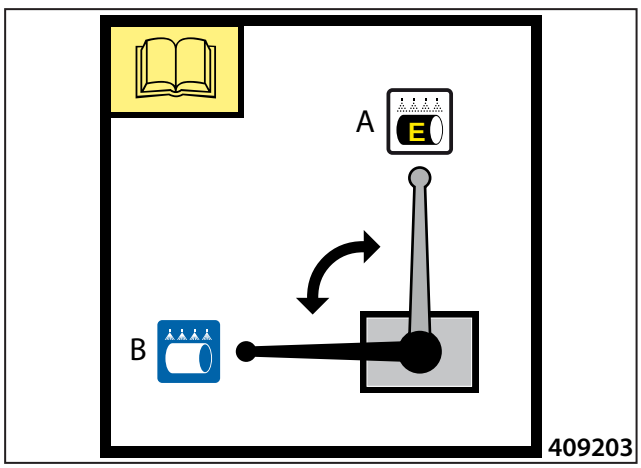
A) Sprinkling the tyres with emulsion

B) Sprinkling the tyres with water

Turn on the emulsion sprinkling button (11). The sprinkling is running while the button is pressed.

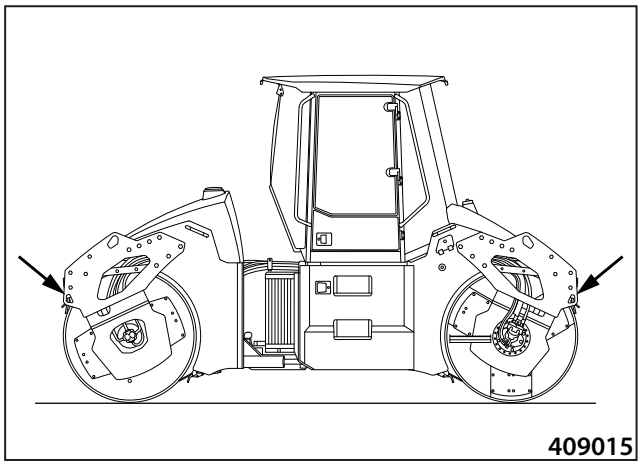
The operation of the tyre sprinkling pump is indicated by the indicator lamp on the display (2).

Apply the separation emulsion all around the tyres.



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.

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.

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.

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.

Then the machine can be towed.

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!

3.2. Media specification

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 final, 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 LA

DQC IV LA

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

The machine manufacturer uses oil filling according to classification DQC IV-10, typ Valar Egida FNA 104 Low SAPS 10W-40.

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.

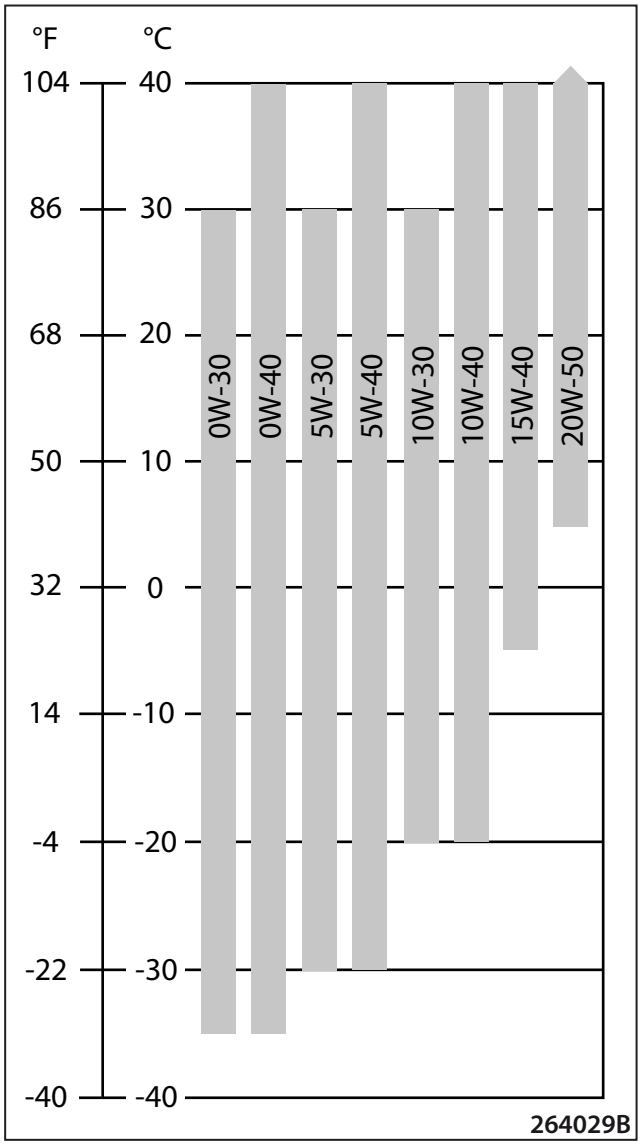
It is suitable to use general-purpose multi-grade oil in order that oil need not be exchanged because of ambient temperature changes.

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



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).

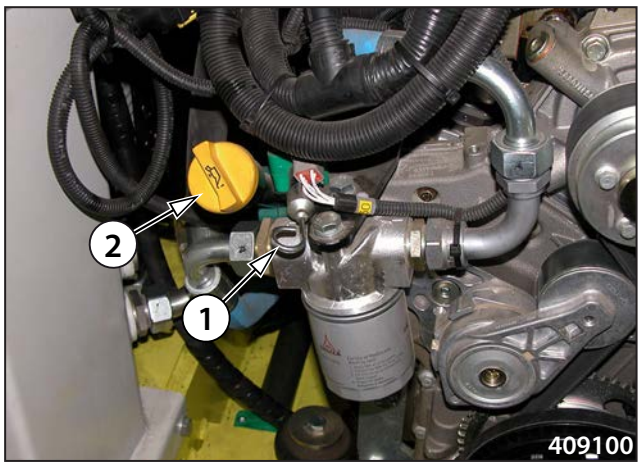
Note

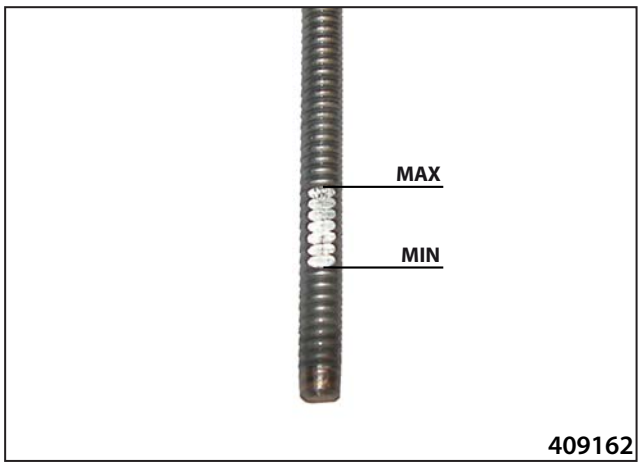
- Low division mark MIN shows lowest possible oil level, high division mark MAX shows the highest level.
- The amount of oil between MIN and MAX marks is 1,5 l (1.6 U.S. Quart).
- Following the refill, please wait ca 5 minutes until oil descends into the sump, then check the level.

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.

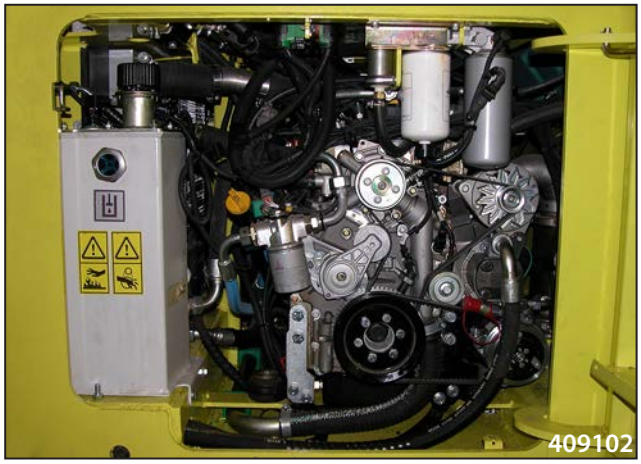
Refill the oil of identical type as stated in Section 3.2.1.





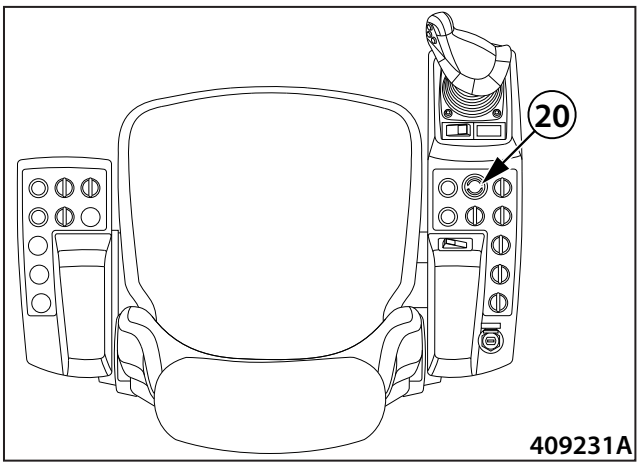
3.6.2. Checking the engine for leaks

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



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.

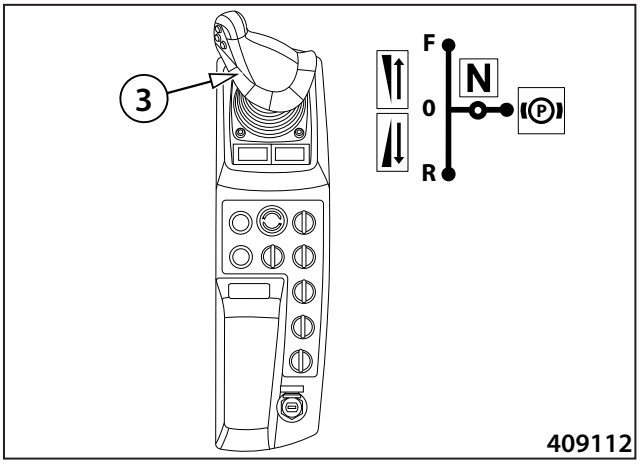


Use sound signal to indicate the engine start!

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!



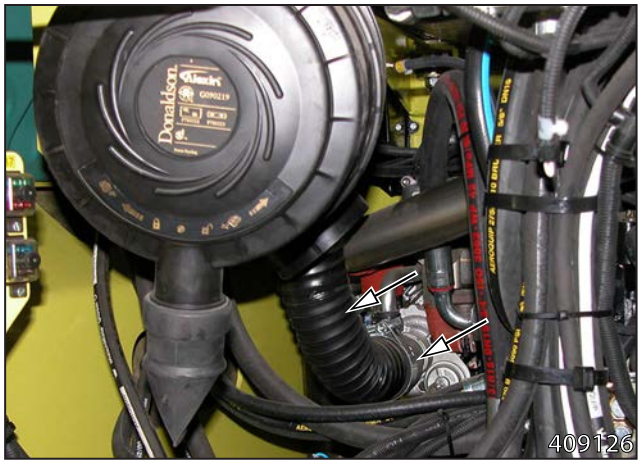
During operation, check continuously the instruments and indicator lamps.

Promptly repair any failures!

3.6.19. Inspect engine induction manifold

- Check the pipings and clips.

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



3.6.28. Clean cab ventilation filter

- Remove the filter element.
- Knock out the cartridge carefully.
- If filter element will become damaged or unable to be made rid of the impurities, please replace it with new one.

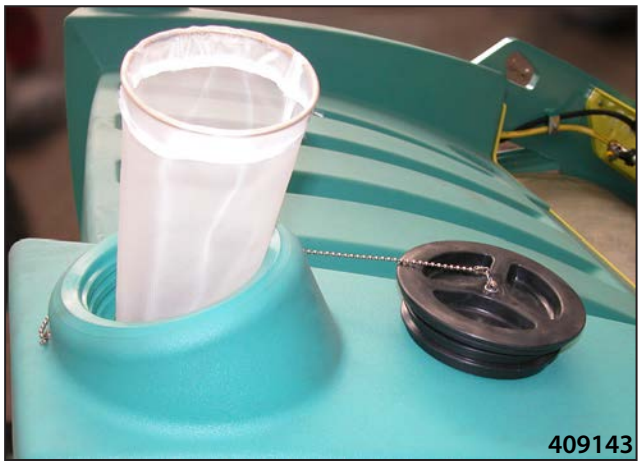
Clean regularly 1 x per month. Should it be you work in a very dusty environment then the cleaning intervals should be cut short.

Filter

Order number: 1263263

3.6.35. Water tank cleaning

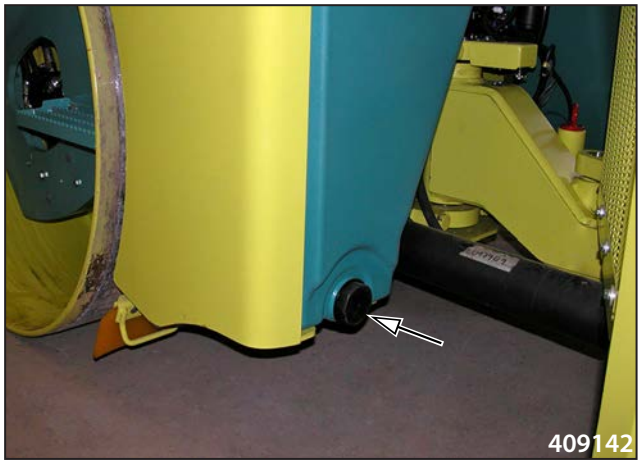
- Dismount the caps of the filler necks of the tank.
- Clean the screens in the filler necks.



- 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 3.6.47.



3.6.43. Vent plug replacement

Remove the vent plug.

Mount the new vent plug.

Vent plug
Order number: 1281431

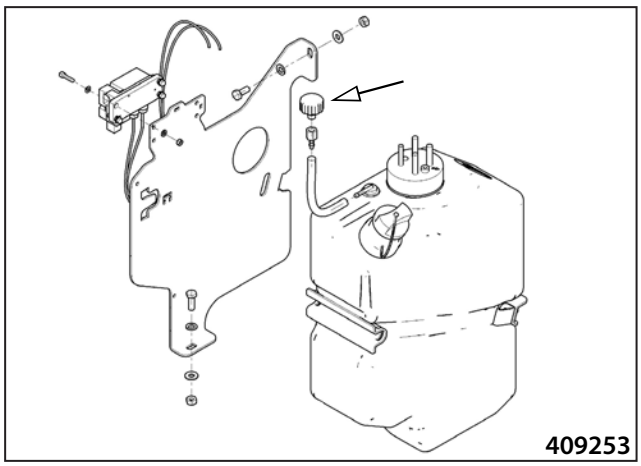
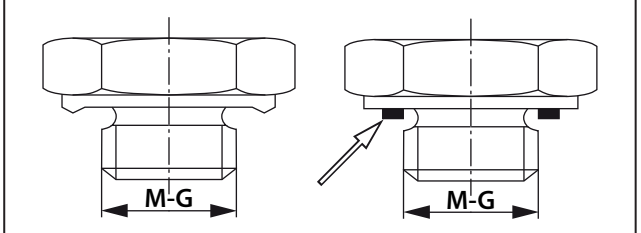


Chart showing the torques for necks with sealing edge, or with flat gasket

	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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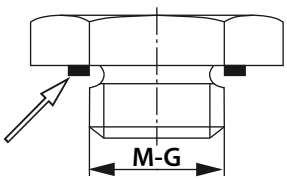

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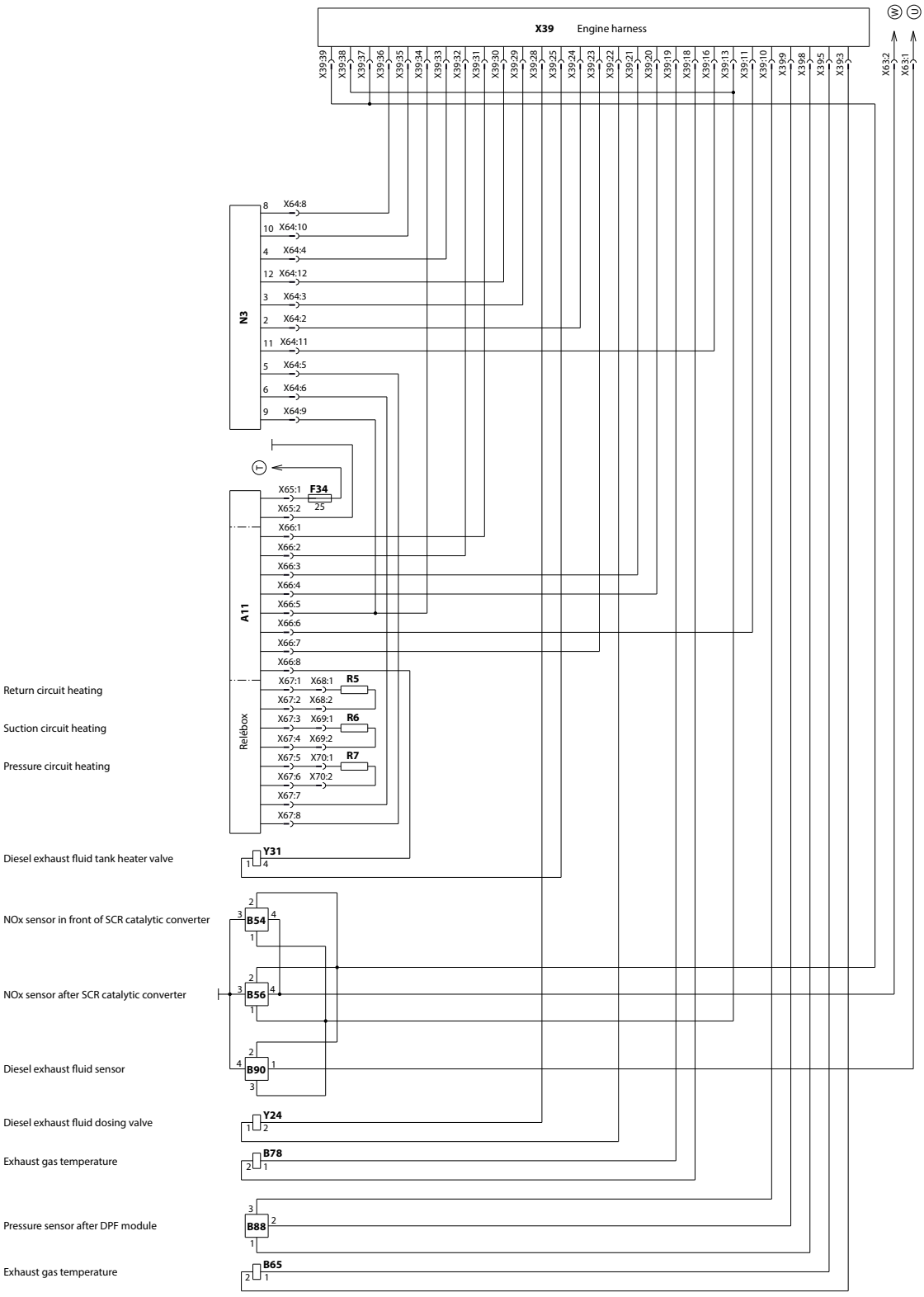
X39 Engine harness
X39:39
X39:38
X39:37
X39:36
X39:35
X39:34
X39:33
X39:32
X39:31
X39:30
X39:29
X39:28
X39:25
X39:24
X39:23
X39:22
X39:21
X39:20
X39:19
X39:18
X39:16
X39:13
X39:11
X39:10
X399
X398
X395
X393
X632
X631
N3
X64:8
X64:10
X64:4
X64:12
X64:3
X64:2
X64:11
X64:5
X64:6
X64:9
A11
X65:1 F34
X65:2
25
X66:1
X66:2
X66:3
X66:4
X66:5
X66:6
X66:7
X66:8
Relébox
X67:1 X68:1 R5
X67:2 X68:2
X67:3 X69:1 R6
X67:4 X69:2
X67:5 X70:1 R7
X67:6 X70:2
X67:7
X67:8
Return circuit heating
Suction circuit heating
Pressure circuit heating
Diesel exhaust fluid tank heater valve
Y31
NOx sensor in front of SCR catalytic converter
B54
NOx sensor after SCR catalytic converter
B56
Diesel exhaust fluid sensor
B90
Diesel exhaust fluid dosing valve
Y24
Exhaust gas temperature
B78
Pressure sensor after DPF module
B88
Exhaust gas temperature
B65

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