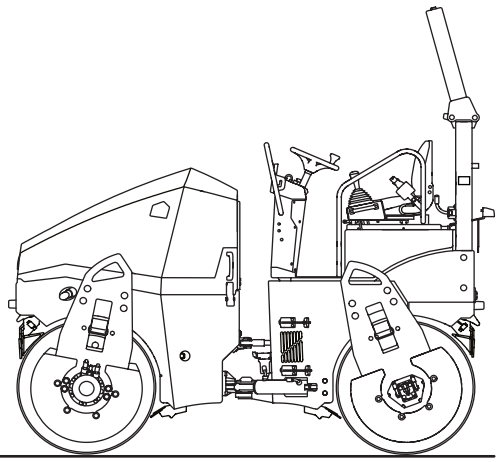
ARX 36-2
ARX 40-2
ARX 45-2

TANDEM ROLLER
KUBOTA D1803-CR-TE5
EU Stage V / U.S. EPA Tier 4f



OPERATING MANUAL

EDITION 07/2021 EN
ARX 36-2 KU St V / T4f Product Identification Number 3004563 -
ARX 40-2 KU St V / T4f Product Identification Number 3006302 -
ARX 45-2 KU St V / T4f Product Identification Number 3004985 -

AMMANN

		ARX 36-2	ARX 40-2	ARX 40-2C	ARX 45-2	ARX 45-2C
		EU Stage V / U.S. EPA Tier 4f				
Engine						
Manufacturer	-	Kubota	Kubota	Kubota	Kubota	Kubota
Type	-	D1803-CR-TE5	D1803-CR-TE5	D1803-CR-TE5	D1803-CR-TE5	D1803-CR-TE5
Power according to SAE J1995	kW	32.8	32.8	32.8	32.8	32.8
Number of cylinders	-	3	3	3	3	3
Cylinder capacity	cm^3 (cu in)	1826 (111)	1826 (111)	1826 (111)	1826 (111)	1826 (111)
Nominal speed	min^{-1} (RPM)	2400	2400	2400	2400	2400
Maximum torque	Nm (ft lb)/rpm	150.5 / 1500	150.5 / 1500	150.5 / 1500	150.5 / 1500	150.5 / 1500
Average fuel consumption	l/h (gal US/h)	3.6 (1)	3.6 (1)	3.6 (1)	3.6 (1)	3.6 (1)
Engines complies with emission regulations	-	EU Stage V, U.S. EPA Tier 4 Final	EU Stage V, U.S. EPA Tier 4 Final	EU Stage V, U.S. EPA Tier 4 Final	EU Stage V, U.S. EPA Tier 4 Final	EU Stage V, U.S. EPA Tier 4 Final
Cooling system of engine	-	Liquid	Liquid	Liquid	Liquid	Liquid
Brakes						
Operating	-	Hydrostatic	Hydrostatic	Hydrostatic	Hydrostatic	Hydrostatic
Parking	-	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc
Emergency	-	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc	Mechanical multiple-disc
Vibration						
Frequency I	Hz (VPM)	41 (2460)	41 (2460)	41 (2460)	41 (2460)	41 (2460)
Frequency II	Hz (VPM)	55 (3300)	55 (3300)	55 (3300)	55 (3300)	55 (3300)
Amplitude I	mm (in)	0.6 (0.024)	0.6 (0.024)	0.6 (0.024)	0.6 (0.024)	0.6 (0.024)
Amplitude II	mm (in)	0.4 (0.016)	0.4 (0.016)	0.4 (0.016)	0.4 (0.016)	0.4 (0.016)
Centrifugal force I	kN	39.3	42.4	42.4	45	45
Centrifugal force I High eccentricity	kN	50.7	53.8	53.8	56.4	56.4
Centrifugal force II	kN	51.9	55	55	57.6	57.6
Type of drive	-	Hydrostatic	Hydrostatic	Hydrostatic	Hydrostatic	Hydrostatic
Watering						
Type of watering	-	Pressure	Pressure	Pressure	Pressure	Pressure
Number of pumps	-	1	1	2	1	2
Number of filtrations	-	2	2	2	2	2
Fluid capacities						
Fuel	l (gal US)	57 (15.1)	57 (15.1)	57 (15.1)	57 (15.1)	57 (15.1)
Water for drum watering	l (gal US)	340 (89.8)	340 (89.8)	340 (89.8)	340 (89.8)	340 (89.8)
Engine (oil filling)	l (gal US)	7 (1.8)	7 (1.8)	7 (1.8)	6.8 (1.8)	7 (1.8)
Cooling system	l (gal US)	7.3 (1.9)	7.3 (1.9)	7.3 (1.9)	6.7 (1.8)	7.3 (1.9)
Hydraulic system	l (gal US)	53.5 (14.1)	53.5 (14.1)	53.5 (14.1)	53.5 (14.1)	53.5 (14.1)
Spraying emulsion	l (gal US)	-	-	18 (4.8)	-	18 (4.8)

2.1.4 Forbidden activities – safety and guarantee

The following is forbidden

- Using the machine in case of an evident defect of the machine.
- Using the machine when any of the operating fluid levels is low.
- To repair the engine without authorization – except common changes of operating fluids and filters, only an authorized service organization is allowed to intervene in the engine, including the peripheral components of the engine (for example, the alternator, the starter, the thermostat, the electrical installation of the engine.
- Increasing and decreasing the engine speed rapidly; you could damage the engine.
- Operate the machine in potentially explosive atmospheres (ATEX) and underground areas.
- Using the machine after ingestion of alcoholic beverages or drugs.
- Using the machine if its operation might endanger its technical condition, safety (life, health) of persons, facilities or objects, or road traffic and its continuity.
- Putting the machine into operation and using the machine when other persons are within its danger zone – the exception is a training of a driver by an instructor.
- Putting the machine into operation and using the machine when a safety device (emergency brake, hydraulic locks, etc.) has been removed or damaged.
- Travelling and compacting in such slopes where the machine stability would be broken (overturning). The stated machine static stability is reduced by dynamic effects of the drive.
- Travelling and compacting in such gradients of slopes where there is a risk of soil breaking off (dropping) under the machine or of loss of adhesion and of uncontrolled slip.
- Controlling the machine in some other way than stated in the operation manual.
- Travelling and compacting with vibration according to the bearing capacity of the subsoil in such a distance from the slope edge or trenches where there is a risk of landslide or shoulder breaking off (dropping) together with the machine.
- Travelling and compacting with vibration in such a distance from walls, cuts and slopes where there is a risk of landslide and the machine could be covered up with soil.
- Compacting with vibration in such a distance from buildings or facilities and equipment within which there is a risk of damage due to transmission of vibration.
- Moving and transporting persons on the machine.
- Working with the machine if the operator´s stand is not properly attached.
- Working with the machine when the bonnet, cab or platform is lifted off.
- Working with the machine if there are other machines or means of transport in its danger zone, except those that operate in mutual cooperation with the machine.
- Working with the machine at a place that is not seen from the operator's stand and where hazard to people or property could occur unless the occupational safety is ensured through some other way, e.g. by a duly instructed signalling person.
- Working with the machine in a protected zone of electric lines or substations.
- Crossing electric cables if they are not properly protected against mechanical damage.
- Working with the machine in reduced visibility or at night unless the machine's working area and the workplace are illuminated sufficiently.
- Leaving the seat of the machine operator when the machine is running.
- Getting in or off on the run, jumping down from the machine.
- Sitting on the railing or external parts of the machine during a drive.
- Leaving the machine unattended – moving away from the machine without having prevented its misuse.
- Disabling safety, protective or locking systems or altering their parameters.
- Using a machine from which oil, fuel, coolant or other operating fluid is leaking.
- Starting the engine in a different way than given in the operation manual.
- Placing other items (tools, accessories) than items for personal use on the operator's stand.
- Placing materials or other items on the machine.
- Removing dirt while the machine is running.
- Performing maintenance, cleaning or repairs with the machine not secured against spontaneous movement or accidental start, and if a person can come in contact with moving parts of the machine.
- Touching moving parts of the machine with the human body or items and tools held in hands.
- Smoking or handling an open fire when checking or pumping fuels, replacing and refilling oils, lubricating the machine and inspecting the battery and refilling the battery.
- Conveying rags saturated with inflammable materials and inflammable liquids in loose vessels on the machine (in the engine compartment).
- Leave the engine running in enclosed, unventilated areas. Exhaust fumes are dangerous to life.
- Making modifications on the machine without the prior consent of the manufacturer.
- Travelling with the seat belt not fastened.
- Moving electrical conductors.
- Using other than original spare parts.
- Intervening in electrical and electronic units in any manner.
- Using the pressure washing near the control unit of the machine.
- Filling the hydraulic circuit during the guarantee period in a different way than using the hydraulic unit.
- Working long-term in the vibro stroke mode!
- Operating the machine with the regeneration switch in the OFF position. The diesel particulate filter (DPF) can be destroyed.

Non-observance of the above provisions can impact on the assessment of a complaint and effectiveness of the engine guarantee period.

2.3 Preservation and storage

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

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

In addition:

- repair paints where damaged.
- lubricate all lubrication points
- confirm that water fillings are drained
- check that the coolant has the required antifreeze properties
- check that the batteries are charged and/or recharge them if necessary
- lubricate chromed surfaces of piston rods with preservative grease
- We recommend you to protect the machine against corrosion with a preservative coating (applied by spraying), especially where corrosion can occur.
- Check the tyre pressure.

2.3.2 Preservation and storage of the machine for a period over 2 months

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

In addition it is recommended to:

- remove the batteries, check for condition and store them in a cool and dry room (charge the batteries regularly)
- support the drum frame so that the shock-absorbing system shows minimal sag
- protect the rubber elements by coating with special preservative agent
- cover the suction and exhaust pipe of the engine with double PE foil and tighten it carefully with sealing tape
- spray a special liquid on the headlights, external rear-view mirrors and other elements of the external electrical installation and wrap in PE foil to protect them
- When storing the machine outdoors, protect the ROPS frame by wrapping it in PE film carefully secured with adhesive tape. Prolonged exposure to rain may cause damage to the ROPS frame.
- preserve the engine according to the manufacturer's manual – mark visibly that the engine is preserved.

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

Never start the engine during storage!

When the machine is stored under field conditions, check that the parking place is not exposed to danger of flooding due to floods and that there is no other type of danger in this area (landslip etc.)!

Brake test button (A)

Used to check the correct brake function.

Calibration button (B)

Used to calibrate functions:

- start ramp HARD / SOFT
- activation of the left travel lever
- infra thermometer setting °C / °F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Beacon and rear light change-over switch (1)

- To the gear 1: The beacon is ON.
- To the gear 2: The rear light is ON.

It is possible that the machine is equipped with a beacon but the corresponding change-over switch is missing. In such a case, the beacon will start in continuous operation as soon as the ignition key is set to the position I.


AMN45

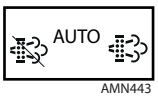
Differential lock button (2)

It is used for turning on the differential lock.

The differential lock prevents the drum from slipping when crossing a difficult terrain.

The differential lock is used for improving surface adhesion of the tyres, stability and controllability.

Turn the differential lock off after the difficult ground has been overcome!



AMN443

Regeneration switch (3)

It is used to activate DPF regeneration.

Left position – regeneration OFF

- It is used to interrupt regeneration in emergency situations only, such as machine operation in an explosive or flammable environment.
- Do not suppress regeneration unless is it absolutely necessary.

Repeated suppression of regeneration results in DPF damage. Prolonged operation of the machine with suppressed regeneration will destroy the diesel particulate filter (DPF).

Centre position – AUTO

- Active regeneration is automatic without operator input (according to Chapter 2.7.14.2.2).

Leave the AUTO position set for the whole duration of machine operation. This will prevent diesel particulate filter (DPF) damage.

Right position – parking active regeneration ON

- It is used to activate parking active regeneration.

Perform DPF regeneration according to Chapter 2.7.14 Principles of use of the machine with a diesel particulate filter (DPF).

Seat

Seat adjustment

1 Backrest inclination adjustment

2 Seat springing stiffness

3 Longitudinal seat travel

4 Cross seat travel

Seat springing stiffness

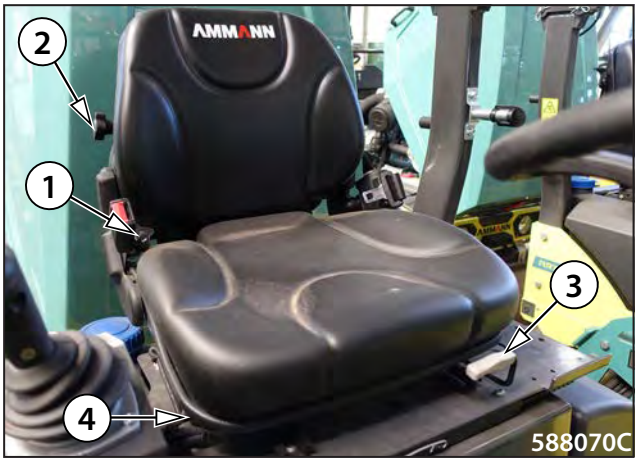
Turn the switch (2) to set stiffness according to driver's weight between 50 and 120 kg (110 - 265 lb).

Adjust the seat before driving the machine.

The driver must be fastened with the safety belt while driving.

Non-observance of this instruction can lead to death or serious injury.

During travel of the machine, the driver must have his legs on the machine platform; there is a risk of injury when the machine turns.



Longitudinal seat travel

- After raising the lever (3), it is possible to move the seat in the longitudinal direction forward - rearward.

Seat cross travel

- After raising the lever (4), it is possible to move the seat in the cross direction to the left and right.

Seat switch

The seat switch is located in the seat cushion.

If the driver is not sitting on the seat, the seat switch is deactivated and the operation of the machine is restricted in one of the following ways – blocking of engine start, blocking of moving off, stopping of the machine or switching off the engine.

These restrictions vary depending on:

- the time period for which the seat switch is deactivated,
- the position of the travel control (if it is in the parking brake "P" position or outside this position)

Engine start blocking

If the driver is not sitting on the seat, engine start is blocked unless the travel control is in the parking brake position (P).

To enable engine start, set the travel control to the parking brake position (P).

2.7.2 Drive and reverse drive

Before moving off, check that the articulation joint of the machine is locked.

Use the warning horn to signal that the engine is starting and wait long enough so that all persons could leave the area around the machine or under the machine in time!

Before moving off, check that the area in front of and behind the machine is empty and that there are no persons or obstructions there!

The operator must not control the machine from the ground. If he did so anyway and is not sitting on the seat when the travel control is moved from the parking brake position (P), the machine does not disengage the brake and will not move, and after 5 seconds the engine will be stopped.

The operator must not leave the operator seat when operating the machine. If he does so anyway and leaves the seat when the travel control is in deflected form the parking brake position (P), the machine behaves according to the seat switch description (Chapter 2.6).

Engine speed

The engine speed is set automatically by moving the travel control (11).

- Idle engine speed (D)
  - Parking brake position (P)
  - Neutral position (N)
- Increased engine speed (C)
  - Zero position (0)
  - Forward travel (F)
  - Reverse travel (R)

Selection of the travel direction

- Selection of the travel direction is set on the active travel control. Set and leave the inactive travel control in the parking brake position (P).
- Start the engine.
- Move the travel control (11) from the parking brake (P) to the neutral position (N) – releasing of the brakes, the parking brake indicator lamp (30) goes out. The engine idle speed is set.
- Move the travel control (11) to the position (0) and select a travel direction (F/R). The engine working speed is set.

When the driver releases the travel control (11), it does not return to the zero position automatically. The travel control remains in the selected position.

When the driver quickly moves the travel control (11) through the zero position (0) from the selected direction of the machine travel, e.g. due to a dangerous situation, the machine stops and the parking brake is engaged (panic response).

When the driver moves travel control (11) from the selected direction of machine travel to the neutral position, e.g. due to a dangerous situation, the machine stops but the parking brake is not engaged. This may cause counting movement of the machine when driving down the slope, due to leakages form the hydraulic system.

2.7.5 Machine parking

Shut down the machine on a flat and solid surface where there is no potential natural hazard (e.g. landslides, flooding).

Change the travel control (11) to the brake position (P).

Switch over the key in the ignition box (19) to the position "0", take out the key from the ignition box and close the lid.

Turn off the battery disconnector if it is installed in the machine.

Clean the machine from dirt.

Check the whole machine and repair defects that occurred during operation.

Lock the cover of the dashboard and the engine bonnet with a padlock.

Note

The padlock is not delivered in the machine equipment.

Protect the dashboard and the engine compartment from unauthorized access of others by locking the dashboard cover and the engine bonnet.

It is forbidden to use the parking brake for bringing the machine to a stop.

2.7.6 Panic response

The immediate stop of the machine using the travel control (11) applies to all of the travel modes of the machine. When the travel control (11) is changed to the opposite position through (0) within 1 second, the machine will stop – the parking brake will be engaged and the engine will keep running, i.e. panic response. When the machine vibration is on, the vibration will stop also when the manual vibration mode is selected. The machine can start moving again after the travel control (11) is changed to the parking brake position (P) and the travel direction (F/R) is selected.

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

Lowering procedure of the ROPS frame

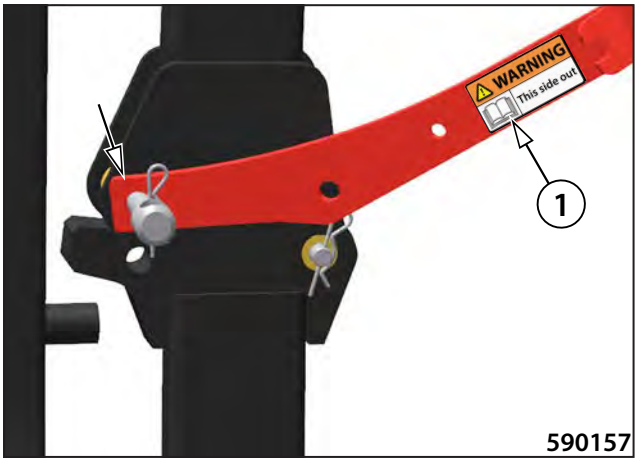
Remove the cotter pins on the front pins of the ROPS frame.

Remove the front pins of the ROPS frame.

Put the fixture on the outside of the frame and install the front pins of the ROPS frame from the outside of the ROPS frame.

Put the fixture on the frame so that the warning label (1) on the fixture points out of the machine.

Secure the front pins with the cotter pins from the outside of the ROPS frame.



Remove the cotter pins of the rear pins of the ROPS frame.

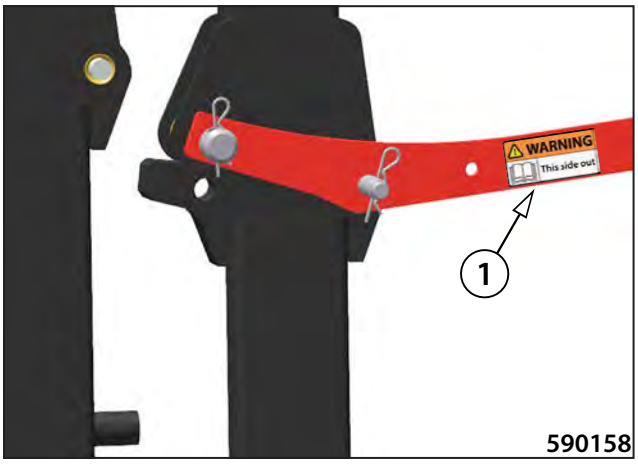
Loosen the rear pins by ca. 1–2 turns.

Put on the fixture.

Secure the rear pins with the cotter pins from the outside of the ROPS frame.

Note:

Insert the cotter pins of the rear pins into the hole further away from the pin shoulder.



Using the ROPS frame fixture lower the frame completely.

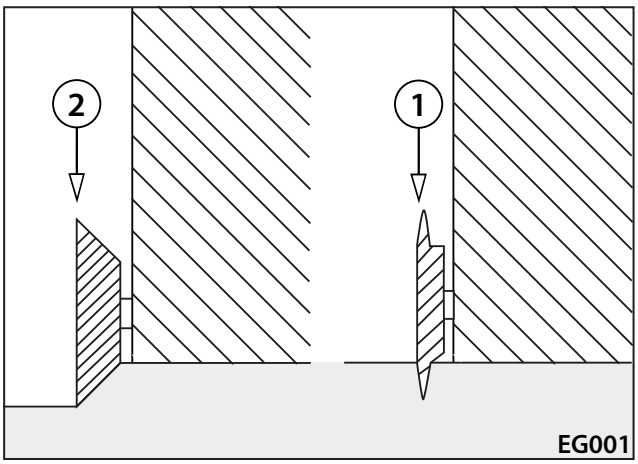
Take extra care when lowering the ROPS frame. There is a risk of injury due to the falling ROPS frame.

2.7.12 Edge cutter (optional equipment)

The edge cutter set contains a cutting and compaction disc.

The cutting disc (1) is used to cut the road at the desired location and align the road edges.

The compaction disc (2) is used to finish the compaction of road edges.



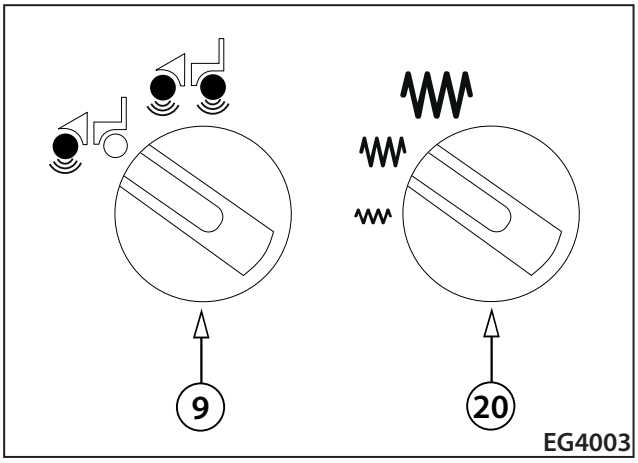
Note

If one of the discs is not in use, attach it to the holder provided.

Edge cutter pre-adjustment

Before working with the edge cutter, set the vibrating drum selector (9) to the left (front drum).

Set the vibration amplitude selector switch (20) to the middle position (low frequency – low amplitude) or to the position fully in the left (high frequency – low amplitude).



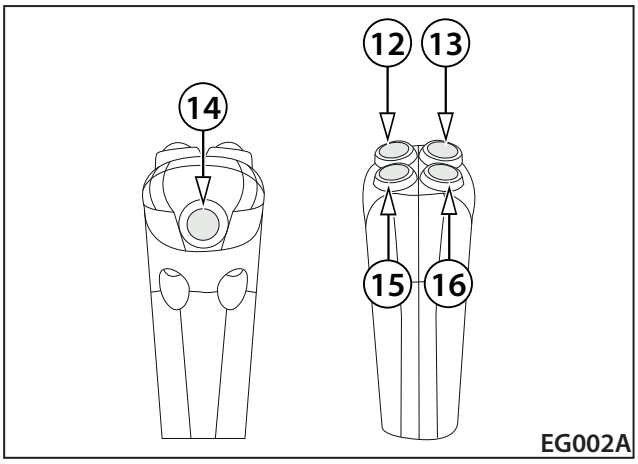
It is forbidden to change the vibration amplitude while driving.

Note

The edge cutter only works flawlessly with a pre-adjusted edge cutter.

Control procedure

Set the desired height of the edge cutter using its up (15) and down (16) button.



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

Turn on drum sprinkling using the sprinkling button (13).

Turn on edge cutter sprinkling using the edge cutter sprinkling button (14).

Note

The water inlet of edge cutter sprinkling only works when continuous drum sprinkling is on.

Turn on vibration with the vibration switch (12).

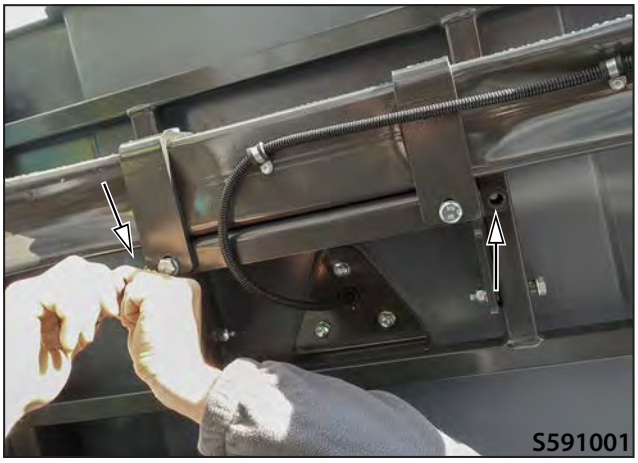
Note

After turning on vibration, the edge cutter automatically rises and is inoperative.

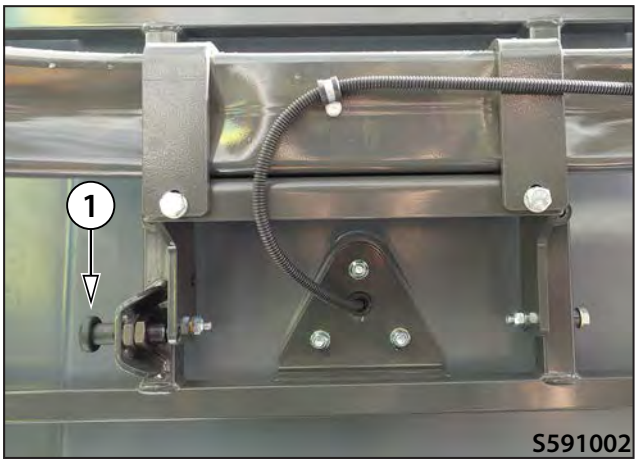
2.7.15 Lowering and raising of the plastic canopy

Lowering procedure

Remove the screws (2x) at the bottom of the plastic canopy.



Release the canopy by pulling out the lever (1) slightly and lower the canopy.



3 MAINTENANCE MANUAL

ARX 36-2
ARX 40-2
ARX 45-2
(Kubota Tier 4 Final)

Every 500 hours of operation, but at least once a year	
3.6.25	Fuel filter replacement
3.6.26	Electrical installation inspection
3.6.27	Replacement of the main cartridge of the air filter
3.6.28	Replacement of the fuel separator filter
3.6.29	Check of rubber-metals of the engine cooler
After 500 hours of operation	
3.6.30	Hydraulic oil change and filter replacement **
Every 1,000 hours of operation	
3.6.30	Hydraulic oil change and filter replacement **
3.6.31	Air filter cartridges replacement
3.6.32	Damping system check
3.6.33	Swinging support check
3.6.34	Articulation joint check
3.6.35	Oil separator cartridge replacement
3.6.36	Fuel tank cleaning
3.6.37	Check and adjustment of valve clearances
Every 2000 hours of operation	
3.6.38	Engine coolant change
3.6.39	Engine belt replacement
Every 3000 hours of operation	
3.6.40	DPF replacement
3.6.41	Turbo-blower check
3.6.42	EGR valve check

3.6.7 Check of the sprinkling emulsion level

Open the lid.

Remove the tank cap.

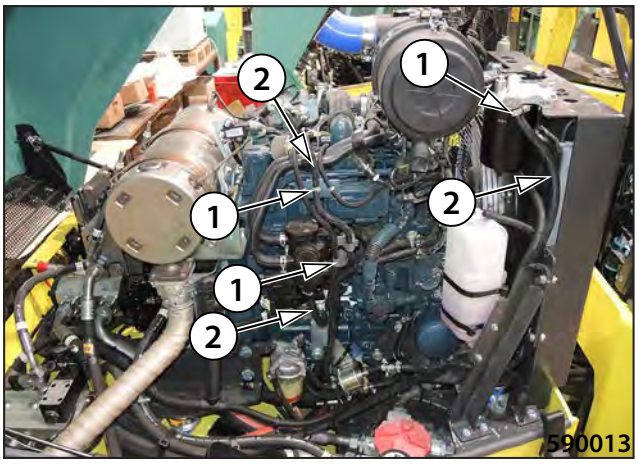
Refill the emulsion.

Refill only emulsion of the same grade according to the chapter 3.2.6

Stop the emulsion soaking into the ground.

3.6.8 Check of hoses and clips

Check visually clips (1) and fuel hoses (2). If clips are loosened or hoses worn out, ensure remedy.



3.6.17 Cleaning the water separator on the fuel filter

If the red ring goes up from the bottom, drain the water from the separator.

Close the stop cock (1).

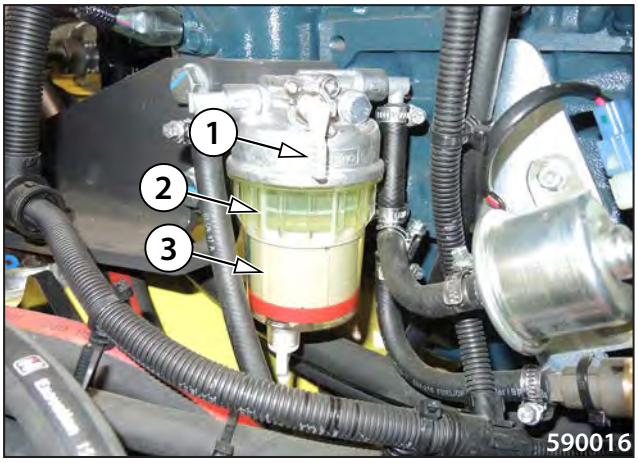
Unscrew the filter housing (2).

Clean the filter element (3).

Screw in the filter housing back (2)

Open the stop cock (1).

Turn the ignition on. The fuel pump will vent the system automatically.



Fuel filter cartridge
Order number: 1503944

Do not smoke while working!

Check the water separator for leaks.

Stop the fluid soaking into the ground.

3.6.26 Electrical installation check

Check cables, connectors, protective hoses and their attachments for damage, in particular if they are near hot surfaces and moving parts of the machine including the engine. Replace damaged parts. Use only original spare parts.

3.6.27 Replacement of the main cartridge of the air filter

Remove the filter cap.

Take out the main cartridge.

Air filter cartridge, external
Order number: 1503942

Fill the cooling system through the hole in the expansion tank.

Remove the filling plug only after the temperature of the engine coolant has dropped below 50 °C (120 °F). If you remove the plug at a higher temperature, there is a risk of steam or coolant scalding due to an internal overpressure.

The level must not drop below the lower mark.

Refill only with a coolant containing antifreeze agents on the same basis according to Chapter 3.2.3.

Do not use any additives to repair the cooling system leakage into the engine coolant!

Do not refill cold coolant into a hot engine. There is a danger of damage to the engine castings.

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

Stop the oil soaking into the ground.

3.6.39 Engine belt replacement

Contact the Kubota service for engine belt replacement.

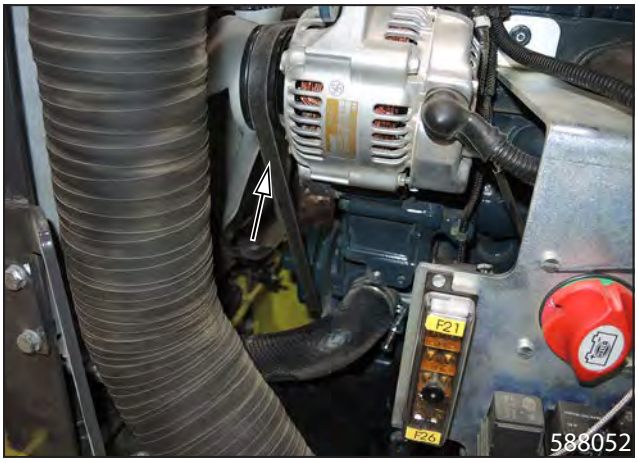
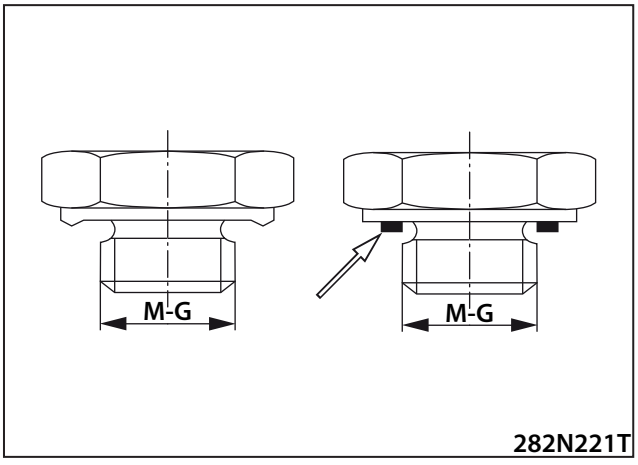


Table of tightening torque values for necks with tightening edges or with flat gaskets

	Neck tightening torques	
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
10×1	25	18
12×1.5	30	22
14×1.5	50	37
16×1.5	60	44
18×1.5	60	44
20×1.5	140	103
22×1.5	140	103
26×1.5	220	162
27×1.5	250	184
33×1.5	400	295
42×1.5	600	443
48×1.5	800	590

Table of tightening torques for plugs with flat gaskets

	Plug tightening torques	
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
10×1	13	10
12×1.5	30	22
14×1.5	40	30
16×1.5	60	44
18×1.5	70	52
20×1.5	90	66
22×1.5	100	74
26×1.5	120	89
27×1.5	150	111
33×1.5	250	184
42×1.5	400	295
48×1.5	500	369



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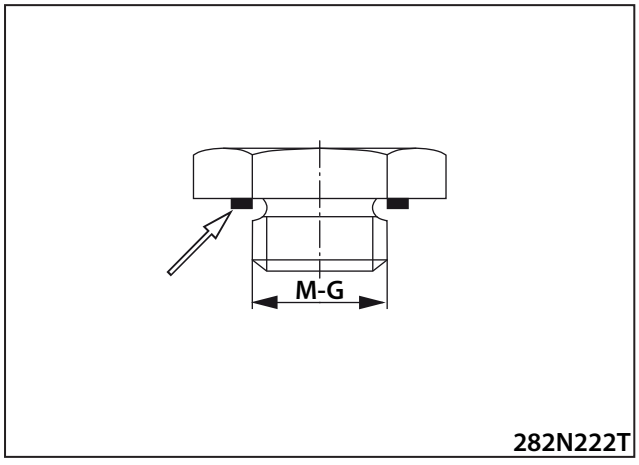

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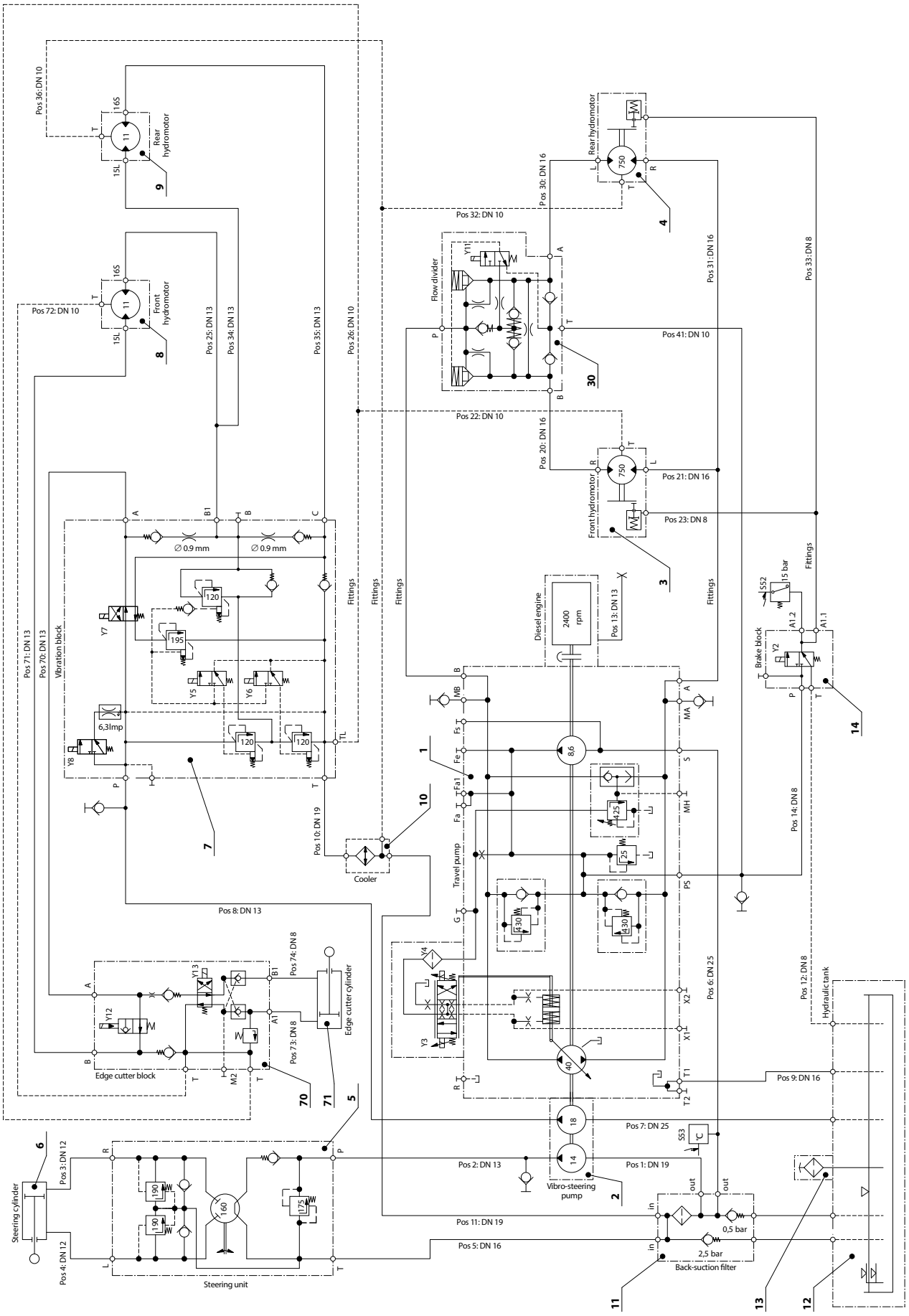
Pos 36: DN 10
Rear hydromotor
Pos 72: DN 10
Front hydromotor
Pos 25: DN 13
Pos 34: DN 13
Pos 35: DN 13
Pos 26: DN 10
Pos 71: DN 13
Pos 70: DN 13
Vibration block
Ø 0.9 mm
Ø 0.9 mm
6,3lmp
Pos 10: DN 19
Cooler
Pos 8: DN 13
Edge cutter block
Pos 74: DN 8
Pos 73: DN 8
Edge cutter cylinder
Steering cylinder
Pos 3: DN 12
Pos 4: DN 12
Steering unit
Pos 32: DN 10
Pos 30: DN 16
Rear hydromotor
Flow divider
Pos 31: DN 16
Pos 33: DN 8
Pos 41: DN 10
Pos 22: DN 10
Pos 20: DN 16
Front hydromotor
Pos 21: DN 16
Pos 23: DN 8
Diesel engine
2400 rpm
Pos 13: DN 13
Fittings
Brake block
15 bar
Travel pump
Pos 14: DN 8
Pos 6: DN 25
Pos 12: DN 8
Hydraulic tank
Pos 9: DN 16
Pos 7: DN 25
Vibro-steering pump
Pos 2: DN 13
Pos 1: DN 19
Pos 11: DN 19
Pos 5: DN 16
0,5 bar
2,5 bar
Back-suction filter

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