

Excavator 36"

Operator's Manual

MODEL NUMBER : DUEEXCAV-36

SERIAL NUMBER :

Both model number and serial number may be found on the main label.
You should record both of them in a safe place for future use.

FOR YOUR SAFETY

**READ AND UNDERSTAND THE ENTIRE MANUAL BEFORE
OPERATING MACHINE**

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INTRODUCTION

You are now the proud owner of an excavator. This excavator is a product of quality engineering and manufacturing. It is made of quickly fine materials and under rigid quality control systems. It will give you long, satisfactory service. To obtain the best use of your excavator, please read this manual carefully. It will help you become familiar with the operation of the excavator and contains many helpful hints about excavator maintenance. It is policy to utilize as quick as possible every advance in our research. The immediate use of new techniques in the manufacture of products may cause some small parts of this manual to be outdated. Distributors and dealers will have the most up-to-date information. Please do not hesitate to consult with them.



NOTE

Carefully read through this entire operator's manual before using this unit. Take special care to heed the cautions and warnings.

Specifications

Item No.	DUEEXCAV-36	
Operating Weight	1085 kg	
Standard bucket	Volume	0.023 m ³
	Width	350 mm
Digging Force (Bucket)	12.3 kN	
Engine	420 cc, Gas	
Starting	Key-type Starter Switch and Shutdown	
Swing Speed	8.8 rpm	
Travel Speed	1.8 km/h	
Gradeability	25°	
Ground Contact Pressure	29 kPa	
Boom Swing	Left	45° (L)
	Right	85° (R)
Track Shoe Type	Rubber Crawler	
Pump Capacity	2x13 L/min	
Hydraulic Reservoir	13.5 L	
Hydraulic Pressure	17.5 Mpa	
Parking Brake	Hydraulic Lock Type	
Sound Pressure Level at the Operator's Station (LpA)	82.5dB, K=4dB	
Vibration Value	Arm	2.17 m/s ² , K=0.5
	Whole Body	7.65 m/s ² , K=0.5

In some specific operating conditions of the machine, the actual noise emission may be different from the values determined using the noise test code.

RECYCLING AND DISPOSAL



This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or check with your local authority or local stores for advice of environmental safe recycling.

SYMBOLS

GB

The instruments and operation elements have been marked with a series of symbols in order to simplify the operation of your excavator. These symbols represent important information about the production or instructions on its use.

Recognize Safety Information
This is the safety alert symbol. When you see this symbol on your machine or in this manual, be alert for the potential of personal injury. Follow the precautions and safe operating practices highlighted by this symbol. A signal word — DANGER, WARNING, or CAUTION — is used with the safety alert symbol. DANGER identifies the most serious hazards. DANGER and WARNING signs are located near specific hazards. General precautions are on CAUTION labels.



Read these instructions carefully.



Wear eye protection.



Wear hearing protection.



Wear safety helmet



Keep your hands away!



Do not start engine by shorting across starter terminals



Do not touch parts that are hot from operation. Serious burns may result.



Keep out of this area to avoid serious personal injury or death.



Be careful with your hands.



Be aware, objects may be thrown while in use.



Do not use the bare hand for checking on possible leakages.



Stay away from the machine during boom movement.



Keep away from rotating parts.



Keep away from fan.



Keep hands away from moving parts. Moving parts can crush or cut.



Keep bystanders away.



Pay attention to safety when working in front of the machine.



Tipping hazard!



When leaving the excavator, please put the bucket close to the ground and remove the key.



Shut off the engine, disconnect spark plug wire, and make certain all moving parts have stopped before cleaning, repairing, or inspecting the unit.



In case of equipment malfunction, shut down the engine immediately.



Gasoline and its vapors are extremely flammable and explosive.



Do not touch hot parts such as exhaust etc.



The exhaust fumes are dangerous, containing carbon monoxide. Staying in the environment can lead to unconsciousness and death.



3-Point Lifting



Alarm lamp "Battery charge"



Ground wire disconnect switch (Negative switch)



Tie down the excavator



Grease



Gas



Hydraulic Oil



Cooling Fans



Lamp



Noise - Sound Power Level



Horn Button



Horn Position



Hours



Power Indicator



Gas level



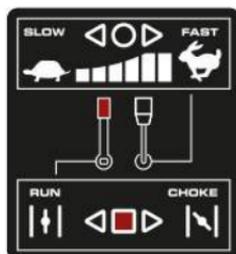
Gas Indicator



Machine parameter label



Always check the hydraulic oil lever before using the machine



THROTTLE CONTROL The throttle control regulates the speed of the engine. The throttle control moves between Slow and Fast positions



Power Outlet 12V,15A



ENGINE ON/OFF/START SWITCH The engine switch has three positions. OFF - engine will not start or run. ON - engine will run. Start - engine will ignite



Pull back the black control lever to raise the dozer or narrow the track spacing. Pushing the lever forward to lower the dozer or widen the track spacing.



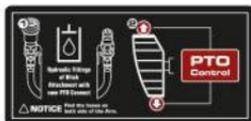
Step on the front of the pedal to swing the boom to left. Step on the rear of the pedal to swing the boom to the right.



Manual Tube



Hold the lever towards to right side to unlock the seat, then do adjustment.

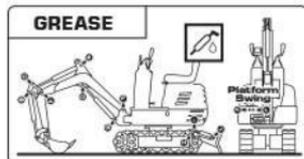


Press the PTO control pedal to control the attachments connected to the PTO hydraulic hoses.



Avoid Work Site Hazards Avoid contact with gas lines, buried cables and water lines. Call utility line location services to identify all underground utilities before you dig. Prepare work site properly. Avoid operating near structures or objects that could fall onto the machine. Clear away debris that could move unexpectedly if run over. Avoid boom or arm contact with overhead obstacles or overhead electrical lines. Never move any part of machine or load closer than 3 m (10 ft) plus twice the line insulator length to overhead wires.

Keep bystanders clear at all times. Keep bystanders away from raised booms, attachments, and unsupported loads. Avoid swinging or raising booms, attachments, or loads over or near personnel. Use barricades or a signal person to keep vehicles and pedestrians away. Use a signal person if moving machine in congested areas or where visibility is restricted. Always keep signal person in view. Coordinate hand signals before starting machine. Operate only on solid footing with strength sufficient to support machine. When working close to an excavation, position travel motors away from the hole. Reduce machine speed when operating tool on or near ground when obstacles may be hidden (e.g., during snow removal or clearing mud, dirt, etc.).



Periodically grease the excavator



Using 3-point Lifting way or ramp to load or unload the excavator.

Warning: Apply the parking brakes of the truck, and block the drive wheels from both sides.

Warning: use blocks or struts under the ramps and the truck bed.

Warning: Block the crawlers and tie down the excavator.

Warning: To avoid personal injury or death: After loading the machine on the truck, swivel the upper body around to the back of the truck and lock the swing frame with the swing lock pin. Lower the bucket and dozer onto the truck bed and then lock the boom with the lever before getting off. It is prohibited to operate the machine when operator stands on the ground.

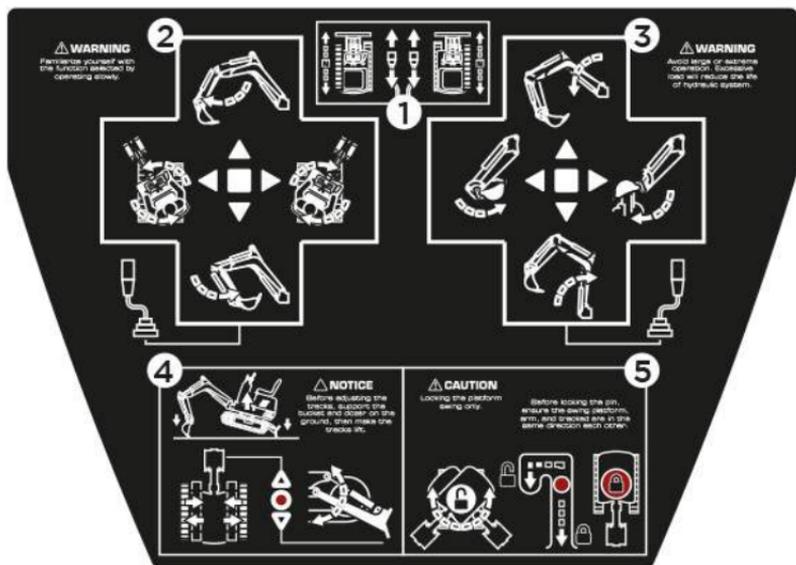
Avoid Machine Tip Over

-Do not jump if the machine tips. You will be unlikely to jump clear and the machine may crush you.

- Load and unload from trucks or trailers carefully. Be sure truck is wide enough and on a firm level surface. Use loading ramps and attach them properly to truck bed. Avoid trucks with steel beds because tracks slip more easily on steel.
- Be careful on slopes. Use extra care on soft, rocky or frozen ground. Machine may slip sideways in these conditions. When traveling up or down slopes, keep the bucket on uphill side and just above ground level.
- Be careful with heavy loads. Using oversize buckets or lifting heavy objects reduces machine stability. Extending a heavy load or swinging it over side of undercarriage may cause machine to tip.
- Ensure solid footing. Use extra care when operating near banks or excavations that may cave-in and cause machine to tip or fall.

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LIFTING CAPACITY



1. Pushing the both drive levers forward, moves the excavator forward, and vice-versa. The front of the excavator is the direction where the dozer is present. Only operate one side drive lever to change the direction when the excavator is stationary or travelling; Operate the left and right drive lever in opposite directions to achieve left and right spin turn.
2. Operation of the Arm and Unit Swing.
3. Operation of the Boom and Bucket.
4. Move the switching lever up and down to switch the mode of control lever for dozer and tracks.
5. Instruct user to lock or unlock the swing frame with the swing lock pin.

SAFETY

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

⚠ IMPORTANT Indicates that equipment or property damage could result if instructions are not followed.

📌 NOTE Gives helpful information.

SAFE OPERATION

The best insurance against accidents is to abide by the safety regulations.

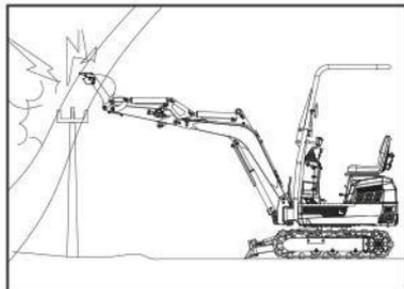
Read and understand this section carefully, before operating the excavator.

Every user, however experienced, should carefully read and understand this section and those of the attachments and accessories before taking the excavator into operation. The owner is obliged to inform the operators of these instructions in detail.

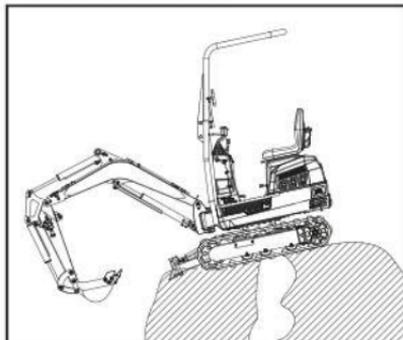
Keep this manual in the toolbox.

1. BEFORE OPERATION

1. Make yourself acquainted with the excavator and be aware of its limits. Read this operator's manual carefully before starting the excavator.
2. Obey the danger, warning and caution labels on the machine.
3. Track width 720-900mm. Operate in the correct track.
4. Do not use the excavator under the influence of alcohol, medication or other substances. Fatigue is also dangerous.
5. Check the surroundings carefully before using the excavator or when attachments are being attached.
 - The excavator is not intended to be used in a contaminated environment.
 - Neither the excavator as a whole nor its internal components are intended for use in potential explosive atmospheres.
 - Pay attention to the overhead clearance with electric wires.



- Check for pipes and buried cables.
- Check for hidden holes, hindrances, soft ground and overhangs.



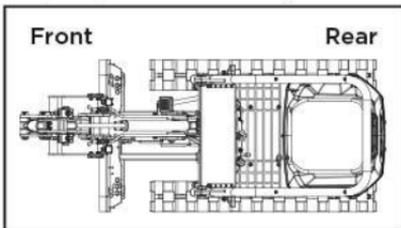
- During excavator use do not allow any persons within the working range.
6. Do not allow other persons to use the machine before having informed him on the exact operation and work instructions, and be assured that the operator's manual has been read and understood.
 7. Do not wear baggy, torn or too large clothing when working with the excavator. Clothing can get caught in rotating parts or control elements which can cause accidents or injuries. Wear adequate safety clothing, e.g. safety helmet, safety shoes, eye protection, ear protection, working gloves, etc., as necessary and as prescribed by laws or statutes.
 8. Do not allow passengers to get on any part of the excavator seat during operation.
 9. Check mechanical parts for correct adjustments and wear. Exchange worn or damaged parts immediately. Check nuts and bolts regularly for tight fitment. (for details see "Care and Maintenance").
 10. Keep your excavator clean. Heavy soiling, grease, dust and grass can inflame and cause accidents or injuries.
 11. Use only authorized attachments.
 12. Before starting the excavator, be absolutely sure that the excavator has been filled with

fuel, lubricated, greased and undergone other maintenance work.

- Do not modify the excavator, otherwise it could lead to unforeseen safety problems.

2. STARTING OF THE EXCAVATOR

- Get into and out of the machine safely. Always face the machine. Always use handrails and available steps and keep yourself well balanced. Do not hold any of the control levers and switches. Do not jump on or off the machine, whether stationary or in motion.
- Start and control the excavator only from the operator's seat. The driver should not lean out of his seat when the engine is running.
- Before starting the engine, make sure that all control levers are in their neutral positions.
- Do not start the engine by jumping the starter connections. Do not try to circumvent using the starter switch, otherwise the engine could start suddenly and the excavator could move.
- Make sure that the dozer is on the front side. (The dozer must be raised.) If the swing frame has been turned 180°, i.e. the dozer is, seen from the operator, "behind", then the travel direction is opposite to the drive direction of the levers (when activating the drive lever forwards, the excavator, seen from the operator, will move backwards).



- Do not run the engine in closed or badly ventilated rooms. Carbon monoxide is colourless, odourless and deadly.
- Keep all safety equipment and covers in place. Replace damaged or missing safety devices.
- Precautions against tipping over. In order to secure safe operation, keep away from steep slopes and embankments. Do not swing the bucket downwards. Lower the dozer during digging. Keep the bucket as low as possible

while driving upwards. Turn slowly on slopes. Do not keep the excavator near the edges of trenches and banks, as the earth can give way due to the weight of the excavator.

- Watch out at all times where the excavator is being moved to. Keep an eye out for hindrances.
- Keep enough distance from trench and bank edges.
- For your safety, the maximum gradeability of the machine should not exceed 25°.

Safety for children

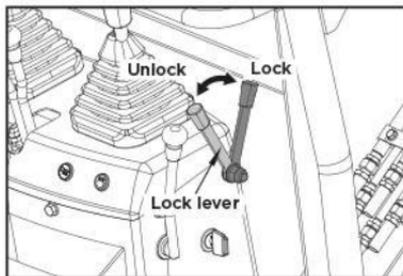
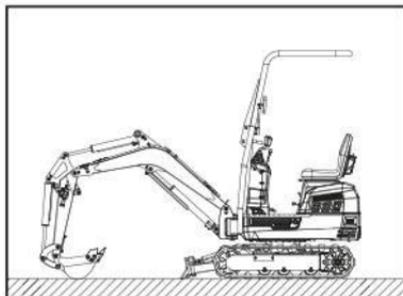
Tragedy can occur if the operator is not alert to the presence of children. Children generally are attached to machines and the work they do.

- Never assume that children will remain where you last saw them.
- Keep children out of the work area and under the watchful eye of another responsible adult.
- Be alert and shut your machine down if children enter the work area.
- Never carry children on your machine. There is no safe place for them to ride. They may fall off and be run over or interfere with your control of the machine.
- Never allow children to operate the machine even under adult supervision.
- Never allow children to play on the machine or on the implement.
- Use extra caution when backing up, look behind and down-make sure area is clear before moving.
- When parking your machine if at all possible park on a firm, flat and level surface. Lower the implements to the ground, remove the key from the ignition and chock the crawlers.

3. AFTER OPERATION

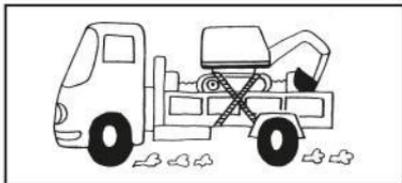
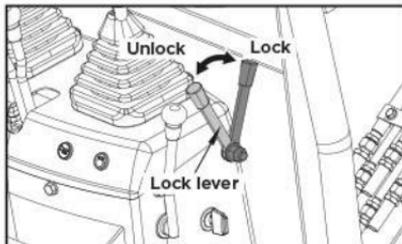
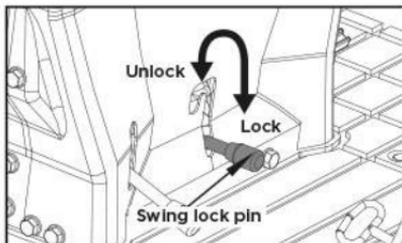
Before leaving the machine,

- Bring the excavator to hard even ground.
- Lower the attachments and the dozer blade on the ground.
- Stop the engine.
- Lock all control levers.
- Remove the key.



4. SAFE LOADING AND TRANSPORT OF THE EXCAVATOR

1. Observe all regulations concerning the transport of excavators on public roads.
2. Use adequately long and robust ramps when loading on a truck. (for details see "TRANSPORTING THE EXCAVATOR ON A TRUCK"); You can also lift the machine onto the truck. (for details see "LIFTING OF THE EXCAVATOR").
3. Do not change the running direction and to avoid a tipping over, do not try to swing the attachment crosswise to the loading ramps.
4. After loading of the excavator on a truck, swivel the upper body around to the back of the truck and engage the swing lock pin. Lower the attachment on the loading plane, release the pressure from the hydraulic system and lock the boom with the lever. Block the crawlers with blocks and wire down the excavator. After loading the excavator on a truck, tie down the undercarriage of the excavator with a strong steel wire on the truck.



5. Do not brake abruptly with the excavator loaded. Fatal accidents could happen.

5. MAINTENANCE

Before doing maintenance work on the excavator, place the machine on even solid ground, lower the attachments on the ground, stop the engine and release the cylinder pressure by actuating the levers. When dismantling hydraulic parts, make sure that the hydraulic oil has cooled down sufficiently to avoid burns.

Start maintenance work carefully, e.g. loosen screws slowly so that oil will not squirt out.

1. Before doing work on the engine, the exhaust system, the heat protection shield and the hydraulics, let the excavator cool down sufficiently.
2. Turn off the engine at all times when filling with fuel. Avoid spilling and over-filling of fuel.

3. Smoking is prohibited while fuelling and handling the battery! Keep sparks and fire away from the fuel tank and battery. Flammable gases escape from the battery.
4. When the battery is dead, it can be started by pull the recoil starter.
5. To avoid short-circuiting the battery, always remove the earth cable first and attach the plus cable first.
6. Keep a first-aid box and a fire extinguisher at hand at all times.
7. Leaking hydraulic fluid has enough pressure to penetrate the skin and cause serious injuries. Leakages from pin holes can be totally invisible. Do not use the bare hand for checking on possible leakages. Always use a piece of wood or cardboard. It is strongly recommended you use a face mask or eye protection.

Should injuries occur with leaking hydraulic fluid, contact a doctor immediately. This fluid can cause gangrene or serious allergic reactions.



8. To avoid leakage of battery acid which contains heavy metals, do not throw the battery away.
9. Observe all laws and regulations concerning the disposal of used oil, coolants, solvents, hydraulic fluids, battery acids and batteries.
10. To avoid fire, do not heat the hydraulic components (tanks, pipes, hoses, cylinders) before they have been drained and washed.
11. Use a face mask or eye protection to protect the eyes and respiratory system against dust and other foreign particles.



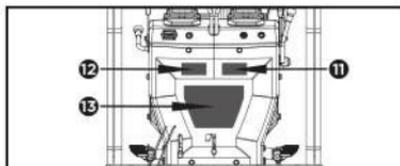
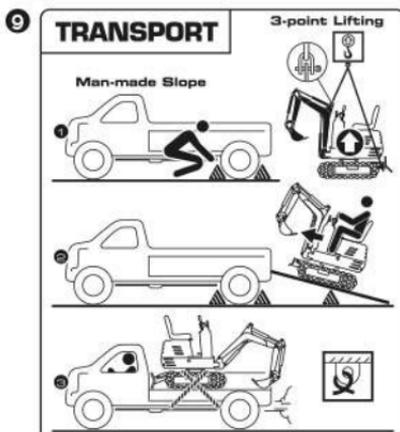
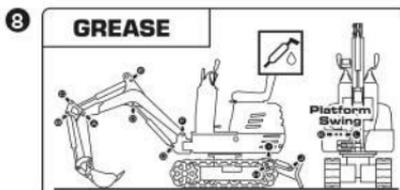
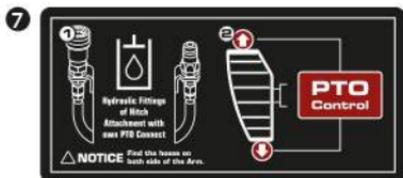
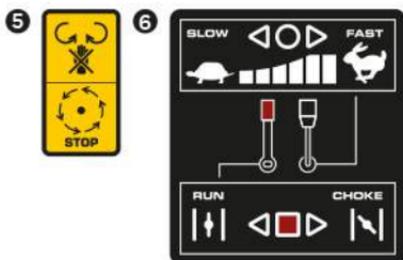
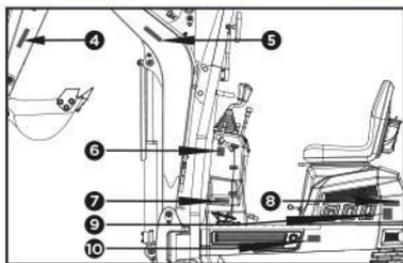
12. Do not crawl under the excavator if the excavator is only supported by the boom and arm or the dozer. The excavator can tip over or lower itself due to hydraulic pressure loss. Always use safety struts or other appropriate supports.
13. Use no parts which are lined with asbestos. Do not use these kind of parts even if they can be installed.
14. Fire prevention

Excavator and some attachments have components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcing or sparks.

The following fire prevention guidelines will help to keep your equipment up and running efficiently and keep the risk of fire to a minimum.

- Blow off all accumulated debris near hot engine exhaust components such as cylinder head of gasoline engine and exhaust manifold as well as exhaust pipes and muffler more frequently when working in severe conditions.
- Clean out all accumulated flammable debris such as leaves, straw, pine needles, branches, bark, small wood chips and any other combustible materials from inside the machine belly pans or lower unit structures as well as from area in proximity to the engine.
- Inspect all fuel lines and hydraulic hoses for wear or for deterioration. Replace them immediately if they begin to leak.
- Examine electrical wiring and connectors frequently for damage. Repair any wires that are loose or frayed before operating the machine. Clean all electrical connections and tighten all electrical connections as necessary.
- Inspect the exhaust system daily for any signs of leakage. Check for broken pipes and muffler and also for loose or missing bolts, nuts and clamps. If any exhaust leaks or fractured parts are found, repairs must be completed prior to operation.
- Always keep a multipurpose fire extinguisher on or near the machine. Be familiar with the operation of the fire extinguisher.

6. DANGER, WARNING AND CAUTION LABELS



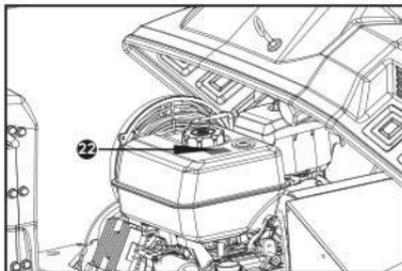
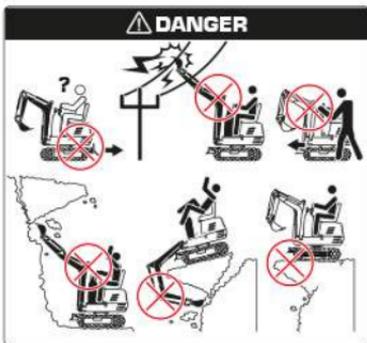
11

LIFTING CAPACITY (with 100kg for Counterweight)

Boom (kg)	1.5m		2.0m		2.5m	
	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic	Hydraulic
1000	1000	1000	1000	1000	1000	1000
1200	1200	1200	1200	1200	1200	1200
1400	1400	1400	1400	1400	1400	1400
1600	1600	1600	1600	1600	1600	1600
1800	1800	1800	1800	1800	1800	1800
2000	2000	2000	2000	2000	2000	2000
2200	2200	2200	2200	2200	2200	2200
2400	2400	2400	2400	2400	2400	2400
2600	2600	2600	2600	2600	2600	2600
2800	2800	2800	2800	2800	2800	2800
3000	3000	3000	3000	3000	3000	3000

NOTE: The lifting capacity is limited by the actual configuration of the machine. The lifting capacity is limited by the actual configuration of the machine. The lifting capacity is limited by the actual configuration of the machine.

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7. CARE OF DANGER, WARNING AND CAUTION LABELS

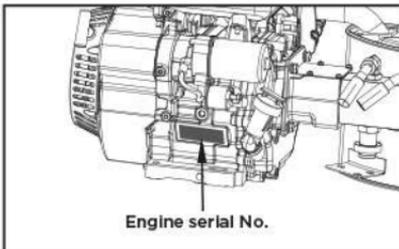
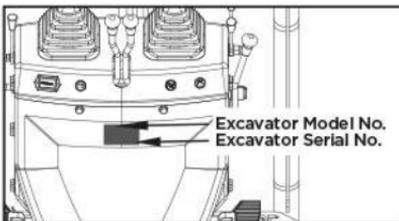
- (1) Keep danger, warning and caution labels, clean and free from obstructing material.
- (2) Clean danger, warning and caution labels with soap and water, dry with a soft cloth.
- (3) Replace damaged or missing danger, warning and caution labels with new labels from your dealer.
- (4) If a component with danger, warning and caution label(s) affixed is replaced with new part, make sure new label(s) is (are) attached in the same location(s) as the replaced component.
- (5) Mount new danger, warning and caution labels by applying on a clean dry surface and pressing any bubbles to outside edge.

DEALER SERVICE

Your dealer is always ready to help so that your excavator offers the best performance. After having carefully read this manual, you will realize that much of the routine maintenance can be done by yourself. Your dealer is responsible for servicing and the delivery of spare parts. When ordering spare parts from your dealer, always mention the serial number of the excavator and the engine.

Note these numbers right away in the supplied lines.

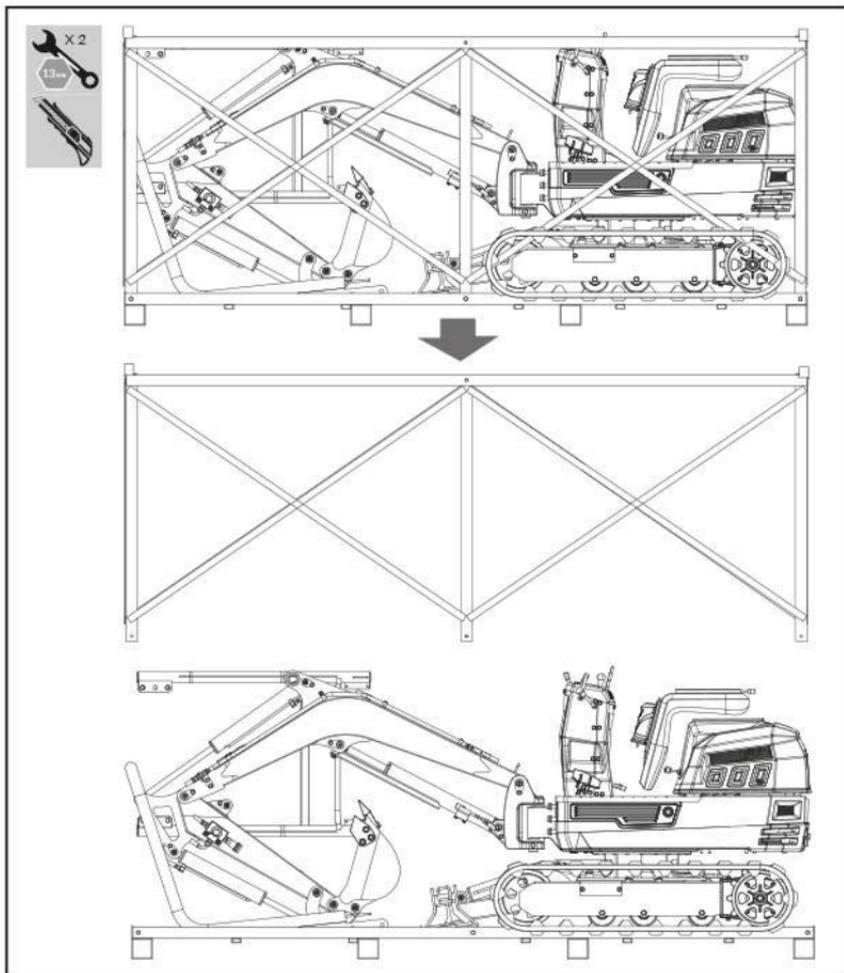
Excavator Model No. _____
 Excavator Serial No. _____
 Engine Serial No. _____



UNPACKING THE CONTAINER

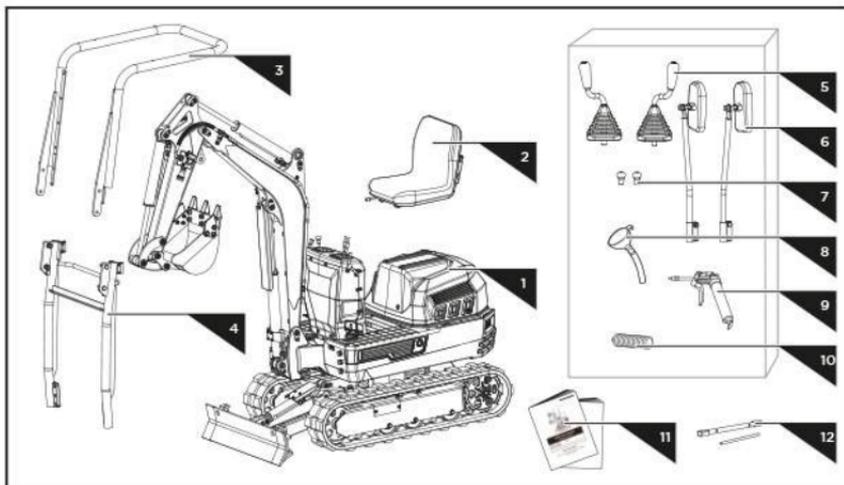
GB

Remove the M8 fixing bolts that fix the iron frame and take off the iron frame. Lift the machine down.



CONTENTS SUPPLIED

The mini excavator comes partially assembled and is shipped in carefully packed package. After all the parts have been removed from the package, you should have:



1. Main Body
2. Operator's Seat
3. TOPS Canopy Support
4. Handhold
5. Control Levers for Front Attachments
6. Rearview Mirror
7. Drive Lever Knobs
8. Funnel
9. Grease Gun
10. Grease
11. Operator's Manual & Engine Manual
12. Tools for Spark Plug Assembly

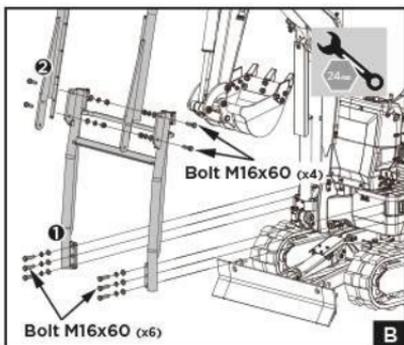
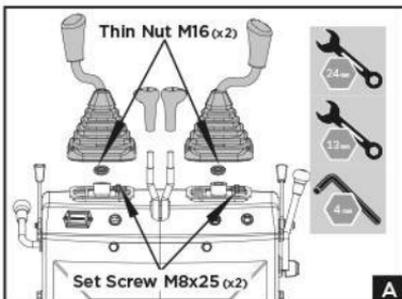
Following the assembly directions below, you will assemble the machine in a few minutes.

Control Levers Assembly

1. Take off the thin nut M16 from the control lever and loosen the set screw M8x25 and the nut on the side of the fixing hole.

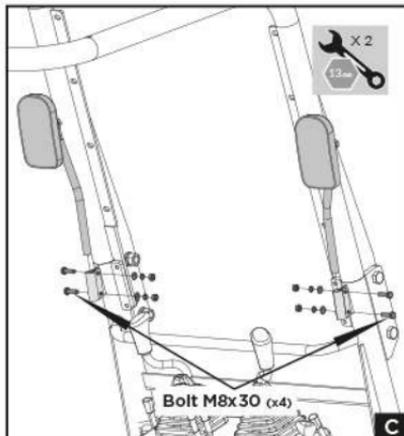
Slide the control lever through the rubber sleeve and the thin nut M16 into the fixing hole on the control cabinet. Rotate it to an angle suitable for operation and lock the thin nut M16 to secure it. Tighten the set screw M8x25 and nut from the side. Repeat the same steps to mount the other lever.

2. Screw the knobs to the drive levers.



Rearview Mirror Assembly

Screw out the M8x30 bolts, washers and nuts from the mirror connectors. Fasten the connector to the brackets on the handlebar with the bolts, washers and nuts, making sure the mirrors face backwards as shown in the Fig. C.



Handhold and TOPS Canopy Support Assembly

- (1) Attach the handhold to the swing platform

Screw out the M16x60 bolts and washers from the swing platform. Attach the the lower end of the handhold to the swing platform. Align the mounting holes and secure the connection with the bolts and washers.

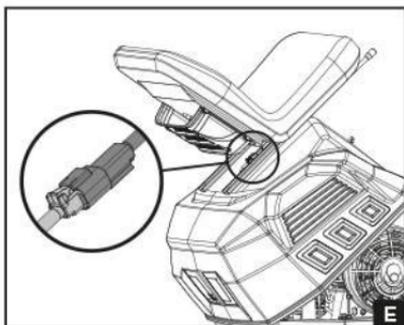
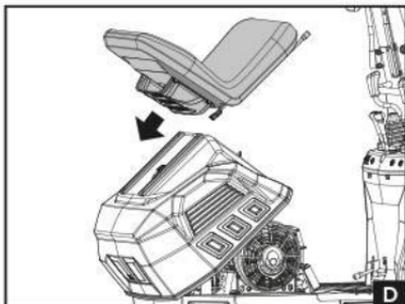
- (2) Attach the TOPS canopy support to the handhold

Screw out the M6x60 bolts, washers and nuts from the handhold. Position the TOPS canopy support against the upper end of the handhold. Align the holes and secure the support using the bolts, washers and nuts.

Operator's Seat Assembly

Open the engine hood and install the seat from front to rear.

Install the seat to the midway position, connect the terminals on the seat switch wiring, and then adjust the seat to the proper position.



NOTE

This machine is equipped with a seat switch interlock. For safety, the engine can only be started when the operator is seated and it will automatically shut off if the operator leaves the seat during operation.

DESCRIPTION OF MACHINE PARTS

TOPS Canopy Support

Operator's Seat

Rearview Mirror

Arm Cylinder

Boom

Arm

Bucket Cylinder

Bucket Link

Bucket

Boom Cylinder

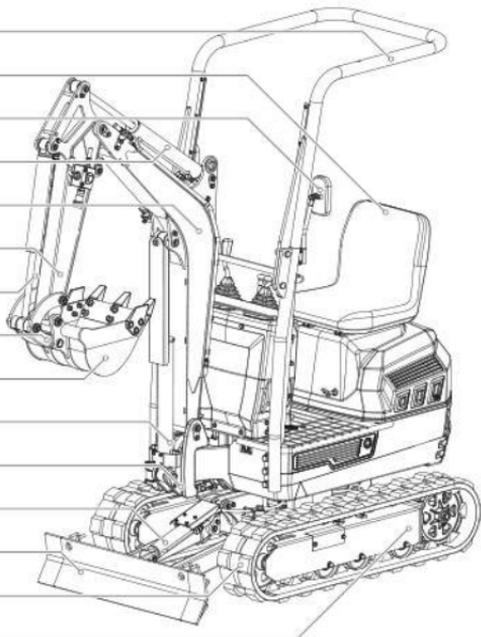
Swing Bracket

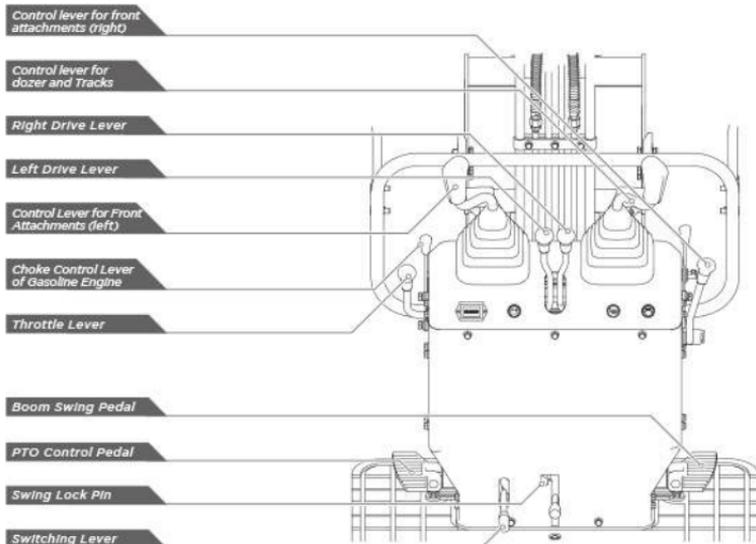
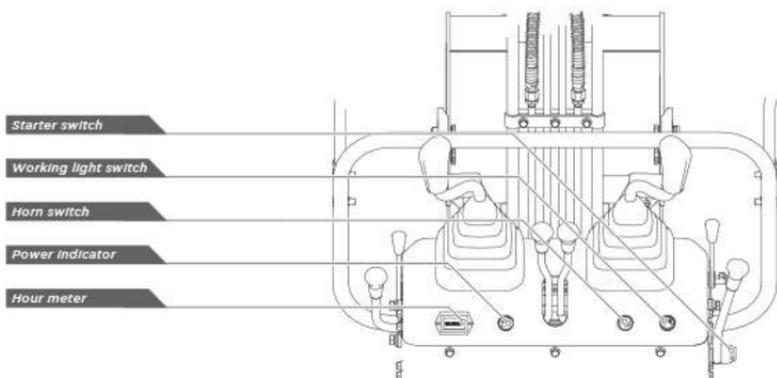
Dozer Cylinder

Dozer

Front Idler

Drive Sprocket





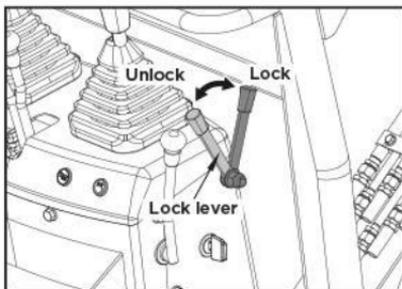
BEFORE START

HANDLING THE SAFETY DEVICES

Control lever lock

⚠ CAUTION *When the excavator is not used or left unattended, be sure to place the bucket on the ground and lock the control levers. The front attachment may fall : it's dangerous. Also remove the key.*

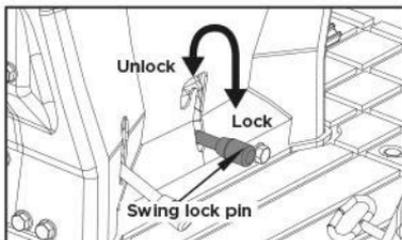
The attachment control lever lock is located on the right side alike.



Swing lock pin

This pin is used to lock the swing frame. Set the lock pin to the "Lock" position and the swing frame gets locked to the track frame.

⚠ IMPORTANT *Before locking the lock pin, be sure to place the swing frame and the track frame parallel with each other.*



DAILY CHECKS

In order to avoid damage, it is important to check the condition of the excavator before starting.

⚠ CAUTION *Do maintenance work on the excavator only on even ground with the engine off and the safety devices in the "Lock" position.*

Checks

Walk around the excavator and check for visual damage and wear.

Check fuel level.

Check engine oil level.

Check hydraulic fluid level.

Check air filter for clogging.

Check hour meter.

Check the light system.

Check the condition of the danger, warning and caution labels. (See "DANGER, WARNING AND CAUTION LABELS" in "SAFE OPERATION")

OPERATION OF THE ENGINE

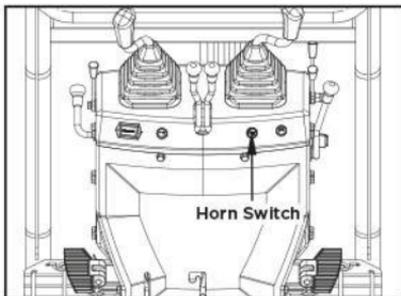
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CAUTION Read "SAFE OPERATION" at the beginning of this operator's manual.

Obey the danger, warning and caution labels on the excavator.

Exhaust gases are poisonous. Do not let the engine run in closed quarters without sufficient and adequate ventilation.

Always start the engine from the operator's seat. Do not start the engine while standing next to the excavator. Before starting the engine, sound the horn to get the attention of persons standing nearby.



IMPORTANT Do not use start help spray or similar fluids.

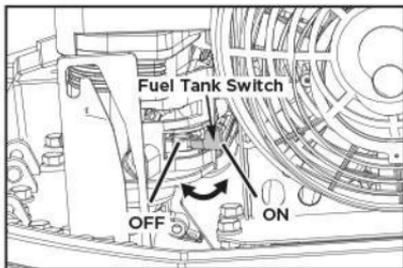
In order not to overload the battery and starter, avoid start-ups of more than 10 sec.

When the engine does not start in 10 sec., please set the interval to 20 sec. or more, and restart.

STARTING THE ENGINE

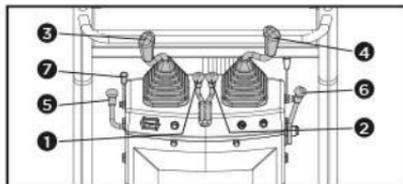
CAUTION The operator should always conduct the routine checks (see "MAINTENANCE").

NOTE The engine fuel tank switch was set at "ON" position before leaving factory. No need to move the fuel tank switch lever when starting the engine. Only when the engine failed to be started, open the engine hood, check and make sure that the fuel tank switch is in the "ON" position.



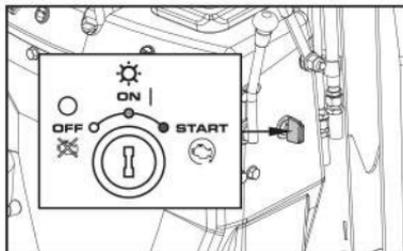
Start the engine in the following manner:

1. Before starting the engine, make sure that all control levers are in the neutral positions.

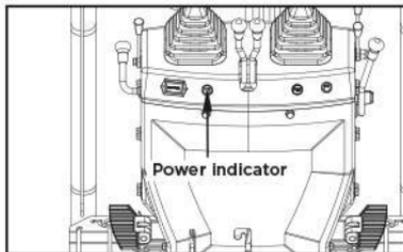


- (1) Left drive lever
- (2) Right drive lever
- (3) Attachment control lever (left)
- (4) Attachment control lever (right)
- (5) Throttle lever
- (6) Control lever for dozer and tracks
- (7) Choke control lever of gasoline engine

- To start a cold engine, move the choke control lever to the CHOKE position. To restart a warm engine, leave the choke lever in the RUN position.
- Move the throttle lever away from the SLOW position, about 1/3 of the way toward the FAST position.
- Active the Key Ignition Switch by turning it fully clockwise toward "START". Release the key as soon as the engine starts, it will automatically return to the Run "ON" position. Do not active the key continuously for more than 5 to 10 seconds at a time.



- If the choke lever has been moved to the CLOSE position to start the engine, gradually move it to the RUN position as the engine warms up.
- Check if power indicator have gone out. If the power indicator does not go out, stop the engine and check for the cause.



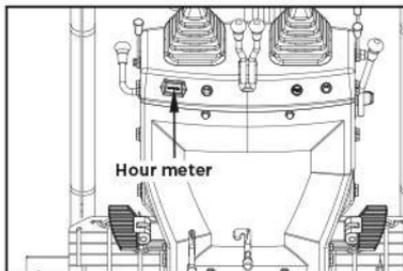
When the power indicator light is off, first check whether the fuse is blown. After the fuse is replaced, the fuse is normal, indicating that the battery is dead and needs to be charged; if the fuse is still blown after replacement, it is necessary to find professional maintenance personnel to repair the circuit.

Hour meter

The hour meter shows the total operating hours of the excavator.

Meter reading

The meter counts up 1 for one operating hour. The electric meter is still counting if the engine stops but the key is in the "ON" position.



Checkpoints after Starting the Engine

After starting the engine, but before starting operation, check following points:

- Put the throttle lever in the "LOW" position and let the engine idle for approx. 5 minutes. This allows the engine lubricant to warm up and penetrate every part of the engine.



NOTE

This idling is usually called "Warm-up".

- Once the engine has warmed up, check:
 - the alarm lamp "Battery charge" goes out when accelerating the engine.
 - the colour of the exhaust gas is normal and no abnormal noises or vibrations are heard or felt.
 - no fluid is leaking from pipes or hoses.
- Should any following conditions arise, stop the engine immediately.**
- The engine revolution increases or decreases suddenly.
 - Sudden abnormal noises.
 - Exhaust gas is black.



IMPORTANT

In these cases, the excavator must be checked and serviced according to the directions of the dealer.

⚠ IMPORTANT *Let the engine warm up after start-up.*

Let the engine warm up after start-up for approx. 10 minutes under no load conditions. If the hydraulic fluid temperature is too low, the operation will be affected.

Do not operate the excavator under full load before the engine is warmed up enough.

STOPPING THE ENGINE

⚠ WARNING *Do not keep the bucket or dozer in the lifted position, as a person could accidentally touch the levers and cause serious accidents.*

Lower all work attachments on to the ground, otherwise accidents could occur.

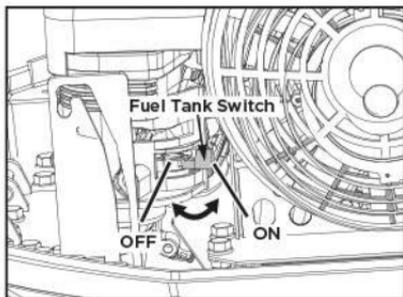
Let the engine idle for approx. 5 minutes to let it cool down.

1. Put the throttle lever in idle position.
2. Lower the work attachments carefully on the ground by activating the levers.
3. To stop the engine, turn the key to the "OFF" position and remove the key.

Stop Fuel Tank Switch

⚠ CAUTION *In the case of an emergency, or should the engine in idle position and key in the off position, still run, do like as below.*

Open the engine hood and push the stop lever back and hold until the engine stops.



⚠ IMPORTANT *If the engine does not stop with the key, contact your dealer.*

EXCAVATOR OPERATION

CONTROL OBSERVATIONS DURING OPERATION

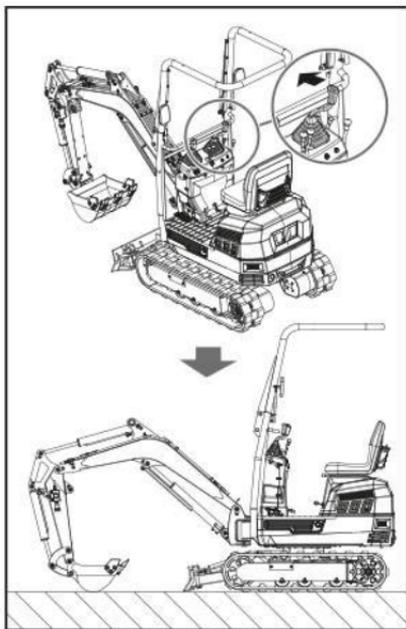
Stop the Engine immediately if:

After starting the engine, but before starting operation, check following points:

- Sudden increase or decrease in engine revolution occurs.
- Sudden abnormal noises occur.
- Exhaust gases turn suddenly very dark.

Make following control observations during operation to be sure that everything functions normally.

⚠ WARNING *When the engine stops suddenly, push forward the right handrail to let the bucket fall down, so as not to cause misoperation, resulting in injury due to the bucket fall.*



RUNNING-IN OF THE NEW EXCAVATOR

The operation and care of the new excavator influences its life span. Your new excavator has been carefully checked and tested before leaving the factory. In spite of this, all movable components must run-in during the first 50 work hours. Do not work with full revolution and full loads during this period. It is most important to run-in your excavator properly in order to achieve its full performance and longevity. During the running-in, the following points should be adhered to in all cases.

Do not Work with Full Revolutions or Full Loads during the First 50 Working Hours.

- Let the engine warm up sufficiently in the cold season.
- Do not let the engine rev-up more than necessary.

Oil Change in the Run-in Stage.

The lubrication oil plays a specially important role during the run-in phase of the excavator. The numerous movable parts are not yet run-in, so that many fine metal particles can develop and cause damage or shorten the lifetime of many components. Pay attention to the oilchange intervals and execute them sooner rather than later as necessary. See the subject "Care and Maintenance" for more details on the oil-change intervals.

STARTING

CAUTION *No persons, other than those familiar with the excavator, are allowed to use the excavator.*

Do not allow any person other than the operator to ride on the excavator.

Adjusting the Operator's Seat

1. Adjusting the Operator's Seat

CAUTION *Before adjusting the operator's seat, make sure that no one puts hands on the engine bonnet behind the seat.*

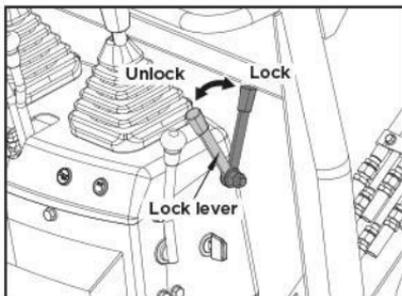
After having adjusted the seat, make sure that the seat adjuster has clicked into position.

To and fro : While holding up the to-and-fro adjustment lever, reposition the seat to and fro.

2. Bring the lock lever into the "Unlock" position.

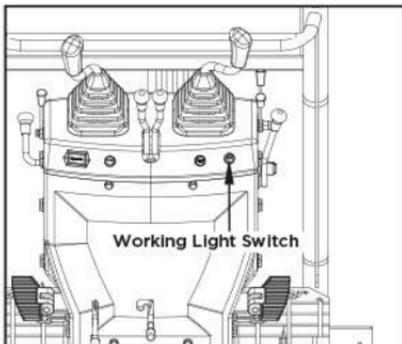
CAUTION *Check safety aspects all around the excavator.*

Please bring the lock lever into the "Unlock" position, and raise the lower side of the bucket from the ground by 20 to 40 cm.



Working Light Switch

If the key is in the "ON" position, the lights will be switched on by tipping the switch.

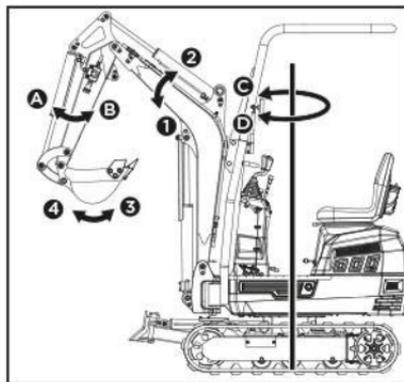
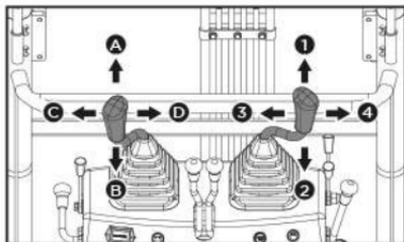


IMPORTANT *The ambient lighting of the machine must be above 500Lux.*

Night operation

CAUTION *Visibility is reduced in darkness, so that the working light alone is not enough. Prepare additional lighting, observe safety rules as well as special regulations for night work.*

Drive lever



Lever position		Movement
Left Front Attachment Control Lever	A	Arm out
	B	Arm in
	C	Swivel to left
	D	Swivel to right
Right Front Attachment Control Lever	1	Boom lower
	2	Boom raise
	3	Bucket dig
	4	Bucket dump

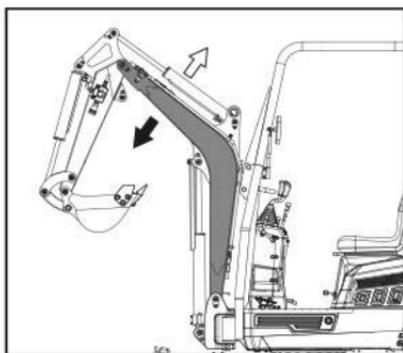
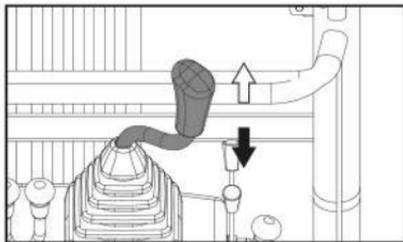
**NOTE**

See "SWIVEL MOVEMENT AND SWING MOVEMENT".

OPERATION OF THE BOOM

To raise the boom, pull the attachment control lever back.

The boom is equipped with a cushion cylinder which prevents excavated material in the bucket from fall-in out. By low hydraulic oil temperature, (e.g. right after starting the engine) the cushioning function will only be effected after a certain delay (approx. 3 to 5 seconds). This condition results from the viscosity of the hydraulic oil and is no sign of a malfunction.

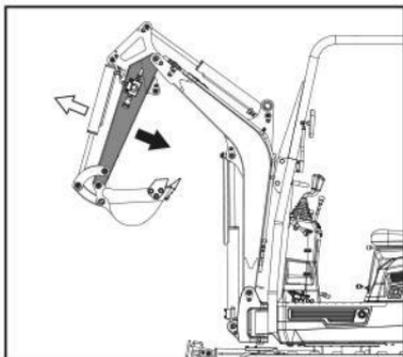
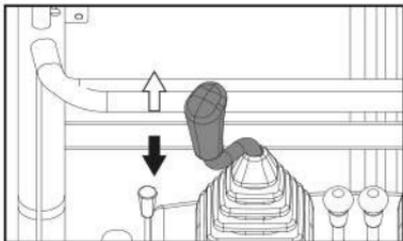
**IMPORTANT**

When lowering the boom, make sure that it does not hit the dozer and that the bucket teeth do not touch the dozer.

OPERATION OF THE ARM

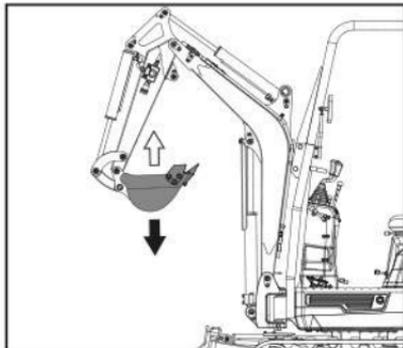
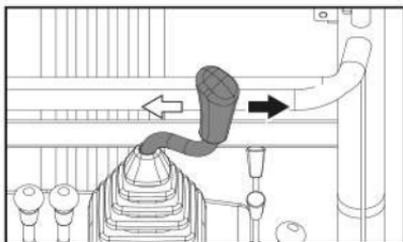
Pull back the left attachment control lever and the arm will be pulled in. To move the arm out, push the control lever towards the front.

▲ IMPORTANT *When pulling in the arm, the movement may stop for a short moment when the arm is in its vertical position. This is caused by the fact that at this position the maximum load for the arm and bucket is reached, and the hydraulic pressure in the cylinder is not high enough. This is a characteristic of the hydraulic system and is not a sign of a malfunction.*



OPERATION OF BUCKET

To dig with the bucket, move the right attachment control lever from the neutral position towards the left. Moving the control lever towards the right pushes the bucket outwards and dumps its contents.



SWIVEL (UNIT SWING) OPERATION

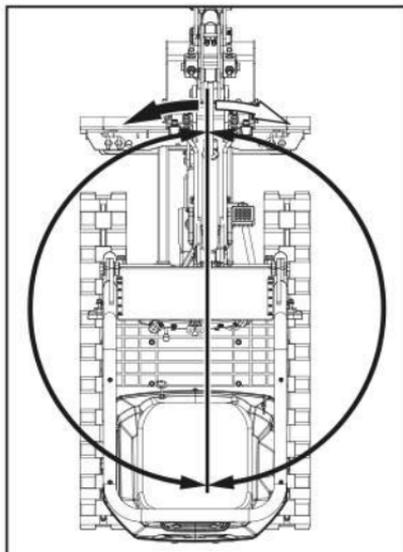
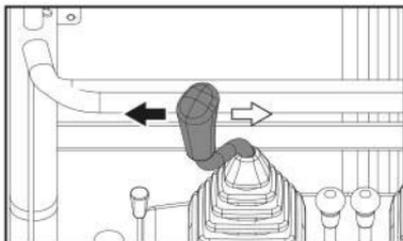
▲ CAUTION *When working in groups, always let the others know what you are going to do before you do it.*

Keep away from the working area.

⚠ IMPORTANT Do not operate the left attachment control lever abruptly from the right to the left (or vice versa). Because of the law of inertia, this causes an impact load on the swing gear and the swing motor. Additionally, the lifetime of the excavator will be shortened.

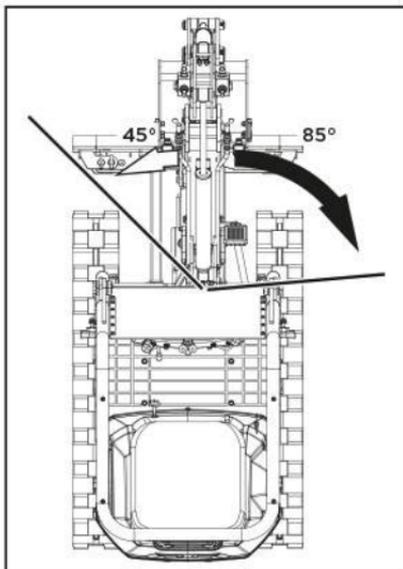
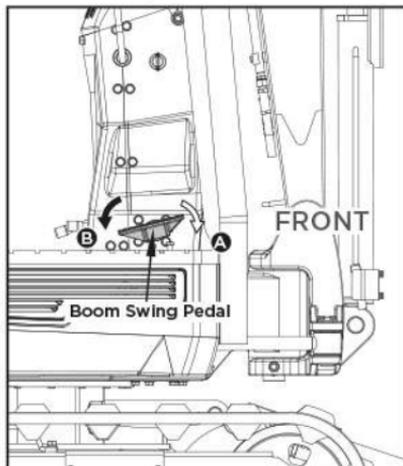
Unlock the swing lock pin before carrying out swivel operations.

1. Tilt the control lever to the left and the upper structure will turn to the left.
2. Tilt the control lever to the right and the upper structure will turn to the right.



BOOM SWING OPERATION

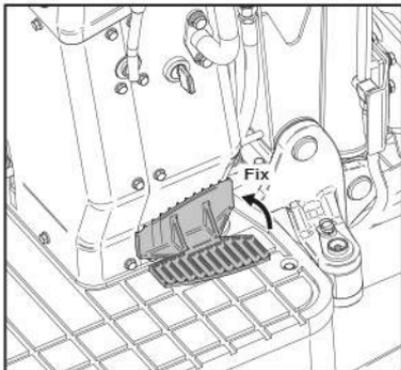
1. Step on the front of the pedal to swing the boom to the left.
2. Step on the rear of the pedal to swing the boom to the right.



BOOM SWING PEDAL

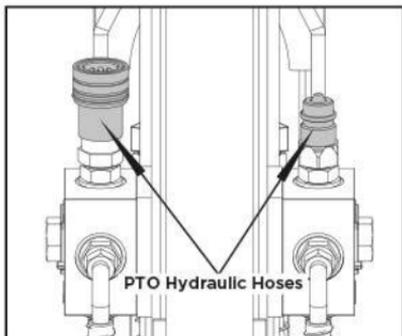
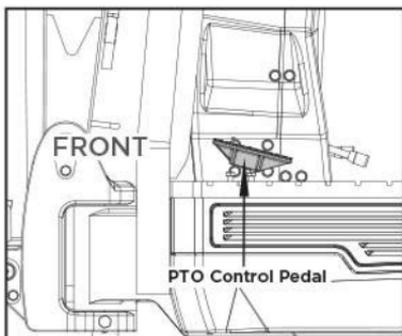
⚠ WARNING Always keep your toes within the edge of foot step; otherwise there is a possibility that your toes will be caught between swing frame and boom or boom cylinder.

⚠ CAUTION When boom swing operation is not in use, fold the boom swing pedal forward to fix the pedal from unexpected moves.



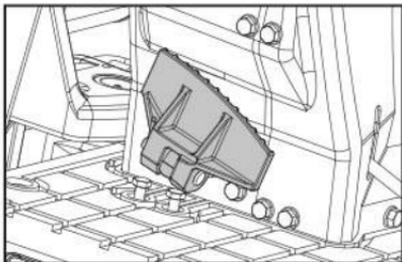
PTO CONTROL OPERATION

Press the PTO control pedal to control the attachments connected to the PTO hydraulic hoses.



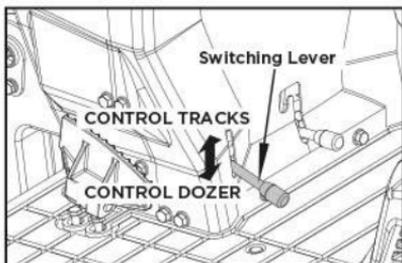
PTO CONTROL PEDAL

⚠ CAUTION When PTO control operation is not in use, fold the PTO control pedal forward to fix the pedal from unexpected moves.



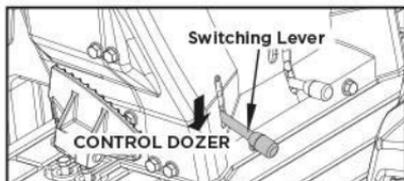
SWITCHING LEVER OPERATION

Move the switching lever up and down to switch the mode of control lever for dozer and tracks.

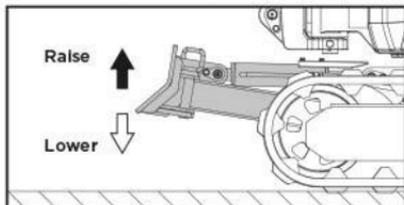
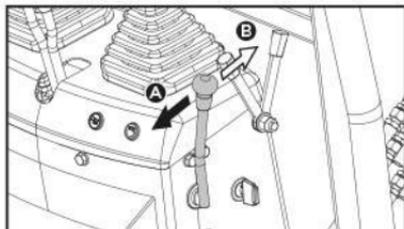


OPERATION OF DOZER

1. Move the switching lever downward to the CONTROL DOZER position.



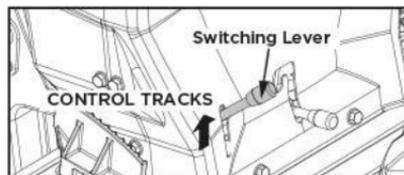
2. To lift the dozer, pull control lever for dozer backward. Push the control lever forward to lower the dozer.



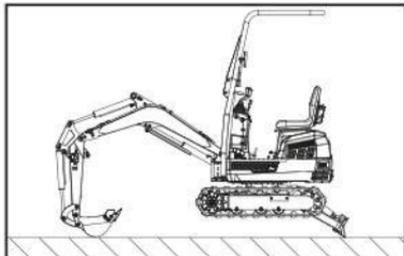
3. While undertaking earth moving work, control both drive levers with the left hand and the control lever for dozer with the right hand.

OPERATION OF TRACKS

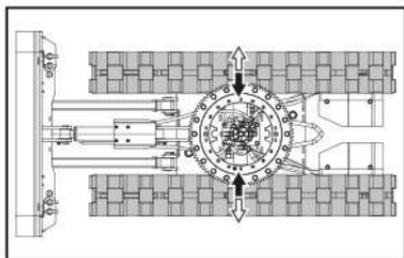
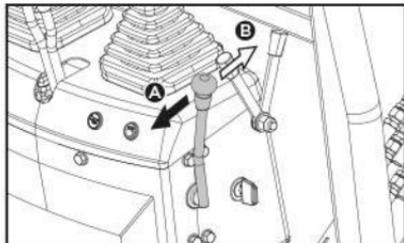
1. Move the switching lever upward to the CONTROL TRACKS position.



2. Swivel the unit 180°, lower the bucket and dozer blade to support on the ground as shown in the figure below to lift up the crawler.



3. To narrow the track spacing, pull the control lever of the tracks backward. Push the control lever forward to widen the track spacing.



NOTE

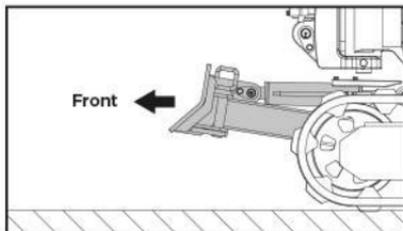
The retractable tracks are in travel mode when retracted and in work mode when extended.

DRIVING

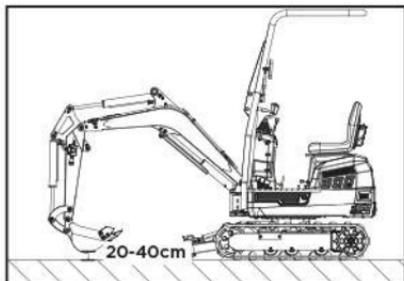
⚠ WARNING Before starting the engine, make sure that no further persons are in the excavator surroundings.

Before operating the excavator, check the crawler direction. (Idle and dozer to the front of the excavator).

Avoid travelling across a slope or working sideways on a slope.

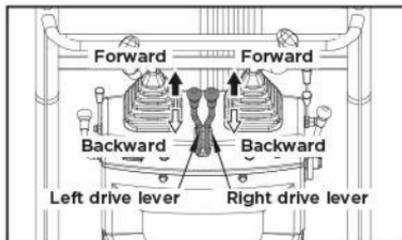


1. Adjust the engine speed from idling to an intermediate speed.
2. Raise the dozer and hold the bucket about 20 to 40 cm off the ground.

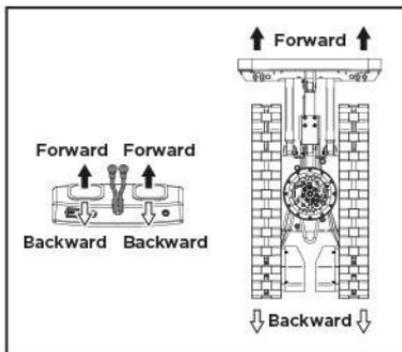


Drive Levers (Right, Left)

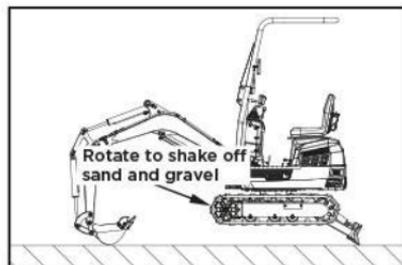
⚠ WARNING If the swing frame has been turned 180°, i.e. the dozer is, seen by the operator, "behind", then the travel direction is opposite to the drive direction of the levers (when activating the drive lever forwards, the excavator, seen by the operator, will move backwards).



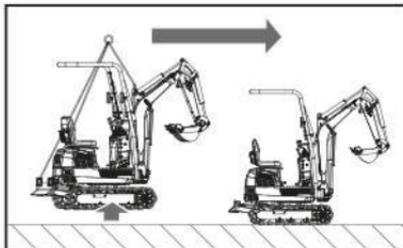
Pushing both drive control levers forward simultaneously, moves the excavator forward. Similarly, pulling both drive control levers backward simultaneously, moves the excavator backward. The front of the excavator is the direction where the dozer is present.



⚠ IMPORTANT If the crawler is clogged with sand or gravel while working on soft ground, lift up one crawler with the help of the boom, arm and bucket and let the crawler rotate to shake off the sand and gravel.



⚠ IMPORTANT When driving in the muddy ground, if the excavator is stuck in the mud and cannot move, it should be lifted to a safety zone with the hoisting belt as shown in the drawing below.



⚠ IMPORTANT The excavator cannot travel on the muddy road with the slewing platform perpendicular to the tracks, so as to prevent the tracks from being involved in the mud.



URNS

⚠ CAUTION Do not change direction on steep slopes, or the excavator could tip over.

Before changing direction, beware of persons in the working area.

Pivot Turn

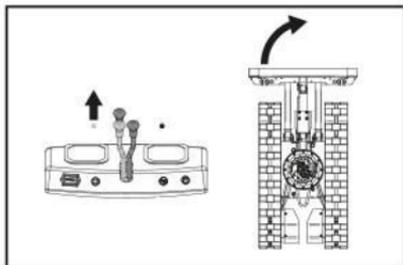
📌 NOTE Movement as illustrated shows turning motion with the dozer positioned facing the front.

When the dozer is facing the back, the turning direction is reversed.

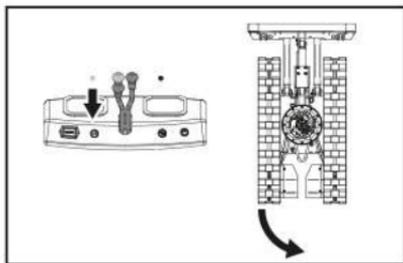
(For example, push the left (right) drive lever forward; right (left) crawler, seen by the operator, will move backward from the operator.)

Change of Direction while Stationary

1. Push the left drive lever forward; the excavator will turn to the right.

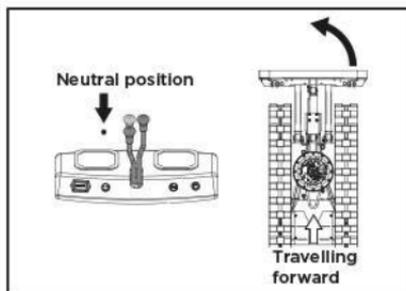


2. Pull the left drive lever backward, back of the excavator will turn to the right.

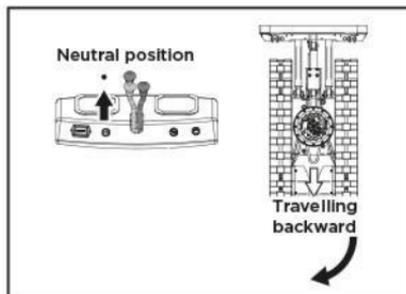


Change of Direction while Travelling

1. While travelling forward, pull back the left drive lever into the neutral position, and keep pushing the right lever in the forward position, the excavator will turn to the left.

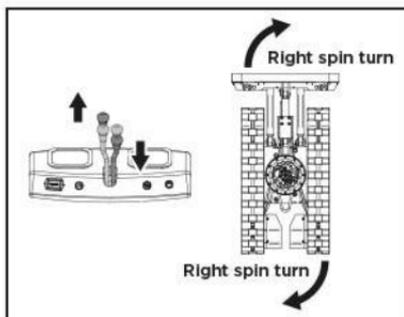
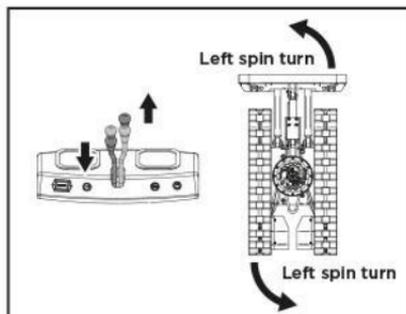


2. While travelling backward, push back the left drive lever into the neutral position, and keep pulling the right lever in the backward position, back of the excavator will turn to the right.



Spin Turn

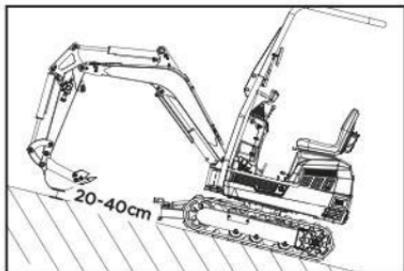
When both drive levers are activated in the opposite directions, both crawlers will rotate with the same speed but in opposite directions, the excavator will rotate in place. Centre of rotation is the centre of the excavator.



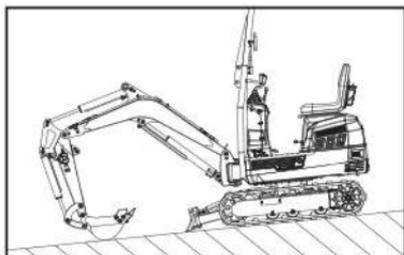
UP AND DOWNHILL TRAVELLING

While travelling uphill, keep the lower edge of the bucket approx. 20 to 40cm above the ground. Although the excavator will not slip easily because of the crawlers, it is safer to let the bucket slide over the ground while travelling downhill. Always choose slow speed for uphill and downhill travelling.

[UPHILL TRAVELLING]

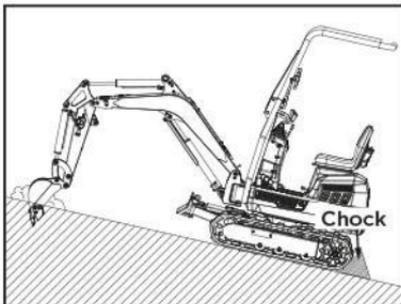


[DOWNHILL TRAVELLING]



PARKING ON A SLOPE

⚠ WARNING When the excavator is parked or left unattended on a slope, be sure to put the bucket on the ground and place all control levers in neutral position, then brace the crawlers with chocks.



IMPORTANT INFORMATION ON EXCAVATOR OPERATION

⚠ CAUTION After work, clean the machine and lubricate all movable parts.

Check oil level.

⚠ IMPORTANT **IMPORTANT:** Do not try to crush concrete or boulders using side swings with the bucket. Also avoid using side sweeps of the bucket to move earth piles.

Under all circumstances avoid the following operations:

- Excavation using the gravitational impact of the machine.
- Compacting of gravel or soil using the dropping action of the bucket.
- Excavation using the travelling power of the machine.

Do not try to drop or shake off soil adhering to the bucket in the manner shown in the explanation below. This can cause damage to the machine.

Adhering soil can be shaken off when the bucket is being emptied by moving the bucket out to the maximum stroke of the cylinder. Should this not suffice, swing out the arm as far as possible and operate the bucket back and forth.

Do not hit the dozer with the boom cylinder! Make sure that the boom cylinder does not hit the dozer when carrying out deep excavation. If necessary swivel the upper structure so that the dozer is at the back of the machine.

Pay attention when pulling in the bucket! When pulling in the bucket (for driving or transportation) avoid hitting the dozer.

Avoid collisions!

When moving the excavator, pay attention so that the dozer does not collide with obstructions such as boulders etc..

Such collisions substantially shorten the life span of the dozer and the cylinder.

Support the machine correctly!

When stabilizing the machine with the dozer, lower the whole dozer fully on to the ground.

If the water or mud level reaches higher than the top of the tracks, the swivel bearing, swivel motor gear and ring gear may be exposed to mud, water and other foreign objects.

The excavator must be properly pressure washed after each use.

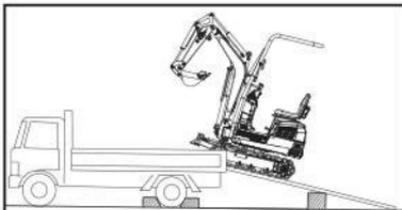
- Thoroughly clean the area around the swivel bearing, swivel motor gear and ring gear to remove foreign objects.
- Refer to operator's manual for proper swivel bearing, swivel motor gear and ring gear lubrication procedures.
- Reinstall any protective covering if removed earlier.

TRANSPORTING THE EXCAVATOR ON A TRUCK

GB

⚠ DANGER No directional changes should be made when the excavator is on the ramp. Should a change of direction be necessary, drive off the ramp completely and make the turn.

⚠ DANGER When driving forwards or backwards onto the truck, or when swinging the upper body, make sure that neither the cabin or the gates of the truck will be damaged.



⚠ DANGER When the excavator reaches the point between the ramps and the truck bed, halt and then move very slowly until the excavator reaches the horizontal position.

⚠ DANGER Move the excavator onto the truck only with the arm completely pulled in. Otherwise the truck cabin could be damaged when swinging the upper body around.

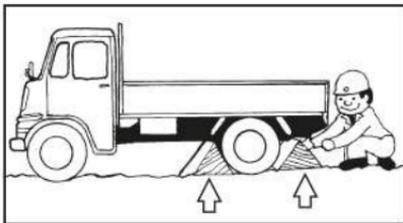
⚠ DANGER Do not jack up the machine using its boom to load or unload the excavator from the truck. Dangerous situation could arise.

Transporting on a Truck

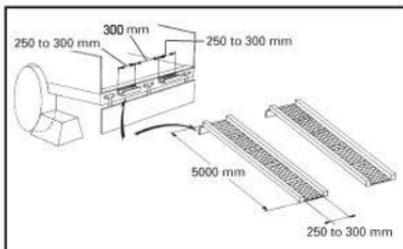
⚠ WARNING After loading the machine on the truck, lower the bucket and dozer onto the truck bed. Lock the swing frame with the swing lock pin.

Prepare a platform to load or unload the excavator. Take following steps when using ramps.

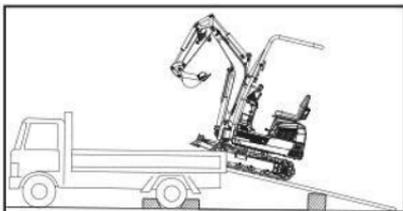
1. Apply the parking brakes of the truck, and block the drive wheels from both sides.



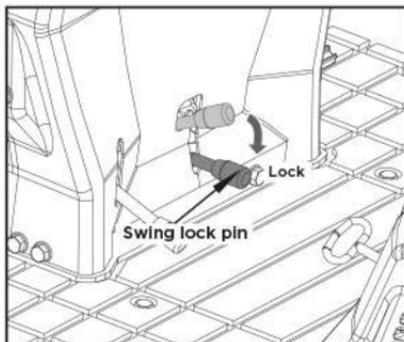
2. Use fixing plates to secure the ramp properly. Connect the ramps directly with the truck bed.



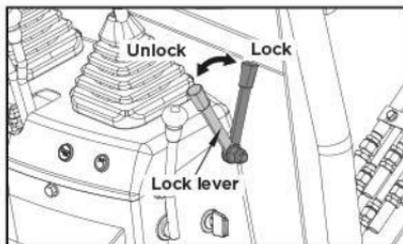
3. For additional safety, use blocks or struts under the ramps and the truck bed.



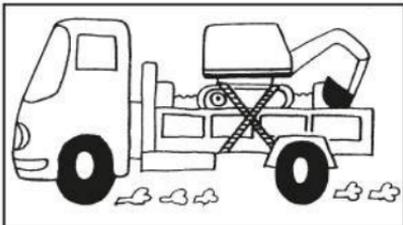
4. Completely align the ramps and the crawlers and then drive the excavator slowly up the ramps with the dozer in the front. After ensuring that the crawlers are completely on the truck bed, swivel the upper body around to the back of the truck.
5. Lock the swing frame with the swing lock pin.



6. Lower the bucket and dozer onto the truck bed and then lock the boom with the lever before getting off.



7. Block the crawlers and tie down the excavator.



8. Before unloading, remove the swing lock pin and then raise the dozer and bucket from the truck bed.

LIFTING OF THE EXCAVATOR

⚠ DANGER *The correct instructions for safe handling are described here. Read these carefully before moving the machine. Make sure that the operating personnel read the operator's manual carefully.*

Basics when Lifting with Chains / Straps

1. The lifting and crane operation is to be undertaken according to the guidelines described.
2. As the accessories for lifting mentioned in this instruction are only given as reference, the standards concerning strength, control and other details are based on the respective applicable guidelines.

Safety Aspects when Lifting with Chains / Straps

1. Do not lift loads that exceed the maximum load capacity of the crane.
2. Choose correct tackle suitable to the weight, size and form of the load.
3. First assess the centre of gravity of the load, position the hook directly over the load and lift the load so that the centre of gravity of the load lies as low as possible.
4. The steel wires must be fixed in the middle of the hook.
5. The load must be lifted vertically from the ground.
6. Do not enter the working area under suspended loads and do not move the load over other persons. The load must be moved in an area where the equilibrium can be balanced out easily.

General guidelines for lifting

⚠ WARNING *Do not lift the excavator other than at the 3 points as illustrated.*

1. Lifting position. (see below illustration)
 - (1) Pull in the boom completely towards rear.
 - (2) Pull in the arm completely.
 - (3) Pull in the bucket completely.
 - (4) Swing the boom in the central position.
 - (5) Swing the upper body 180° to make sure the dozer is seen from the operator behind.
 - (6) Insert the swing lock pin.
2. Attaching the chains / straps.
 - (1) Always hook the excavator at three points. (one on the boom and right and left of the dozer blade)

⚠ WARNING *The dozer must be raised.*

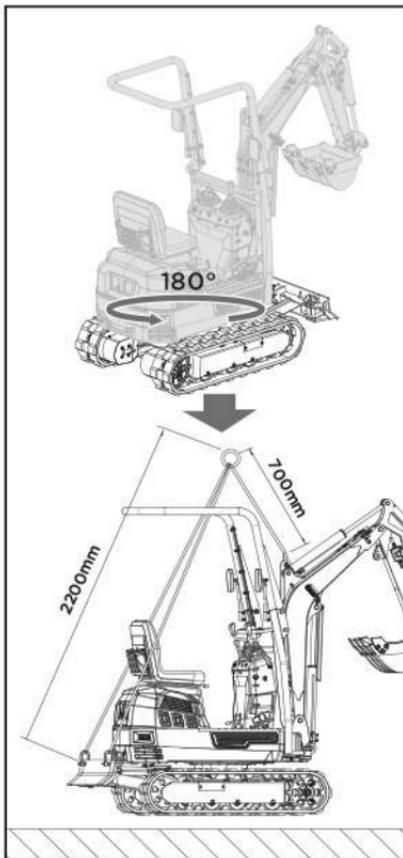
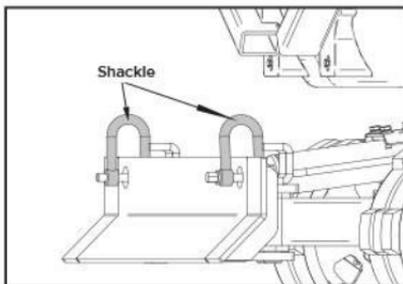
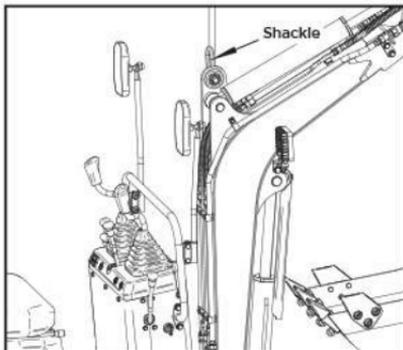
- (2) Always use a shackle on each lifting hole when attaching the straps.
- (3) Use cushioning material at all places where the straps contact the machine.

3. Tackle

Choose components with enough strength.

4. Lifting

- (1) Lift slowly and safely
- (2) Do not enter the excavator area when lifting.
- (3) Lift the excavator horizontally. (Modify connections according to needs)



MAINTENANCE

MAINTENANCE INTERVALS

No.	Check points	Intervals	Hour meter indicator														Consequently	Ref. page	
			50	100	150	200	250	300	350	400	450	500	550	600	1000	2000			
1.	Fuel	Check	Daily check															41	
2.	Engine oil	Check	Daily check															42	
		Change	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 hrs
3.	Hydraulic oil	Check	Daily check															43	
		Change															○	○	every 1000 hrs
4.	Lubrication points	Check	Daily check															43	
5.	Cooling Fan	Check	Daily check															44	
6.	Electrical lines	Check	Daily check															45	
7.	Air Cylinder / Cooling fin	Clean	Daily check															45	
8.	The Whole Machine	Clean	Daily check															45	
9.	Battery condition	Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 hrs	46
10.	Greasing of swing bearing teeth	Check	○	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 hrs	47	
11.	*Air filter element	Clean	○	○	○	○	○	○	○	○	○	○	○	○	○	every 50 hrs	48		
		Change			○				○				○	○	○	every 200 hrs	50		
12.	Greasing of swing ball bearings	Check		○		○		○		○		○	○	○	every 100 hrs	50			
13.	Fuel pipes and hoses	Check			○				○			○	○	○	every 200 hrs	50			
		Change													every 2 years	52			
14.	Hydraulic return filter element	Change											○	○	every 1000 hrs	51			
15.	Hydraulic suction filter element	Change											○	○	every 1000 hrs	51			
16.	Spark Plug	Check	○	○	○	○	○	○	○	○	○	○	○	○	every 50 hrs	49			
		Change									○			○	○	every 500 hrs	52		

* Clean the air filter more frequently if used in dusty conditions.

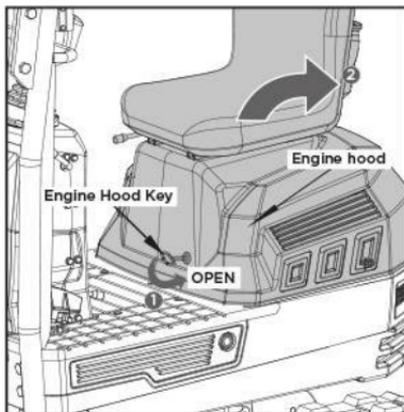
OPENING AND CLOSING OF PARTS

Opening/Closing of the Engine Hood

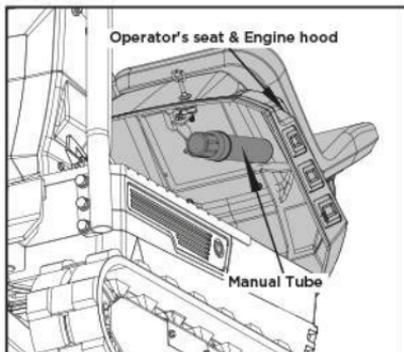
CAUTION Do not open the engine hood before stopping engine.

CAUTION Do not touch the exhaust muffler or the exhaust pipe; serious burns can occur.

Turn the key in the direction indicated by the arrow as shown in the below Figure to open the engine hood.



Keep the Tools and Operator's Manual in the Manual Tube



DAILY CHECKS

For your own safety and to assure the long life span of your machine, a careful check should be made before each operation.

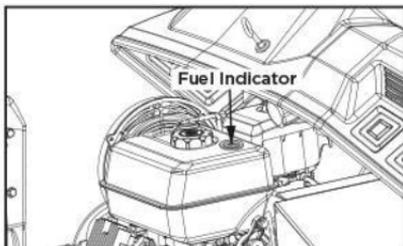
Check Fuel Level

CAUTION Stop the engine before fuelling.

CAUTION Do not smoke while fuelling.

IMPORTANT Use unleaded gasoline with a pump octane rating of 86 or higher.

1. Check the fuel level on indicator.
2. Open the tank cap slowly, and fill with recommended gasoline. Do not overfill.
3. Securely close the tank cap.



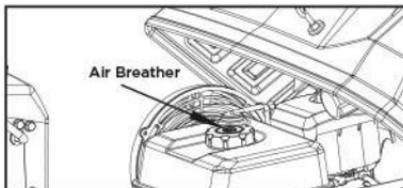
Fuel tank capacity	6 L
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IMPORTANT Always fill up fuel after a day's work.

⚠ IMPORTANT See "PURGING OF THE FUEL SYSTEM" in "OTHER ADJUSTMENTS AND REPLACEMENTS".

⚠ IMPORTANT Fuel tank cap has an air breather. Make sure to clean the air breather when filling up with fuel.

If the air breather is clogged with mud, the fuel tank becomes under-pressurized.

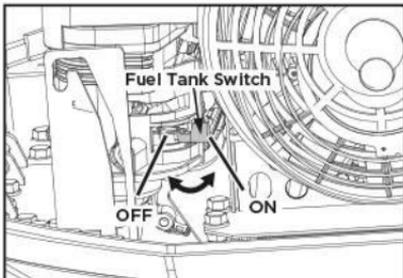


Draining the Water or Air from the Fuel Tank

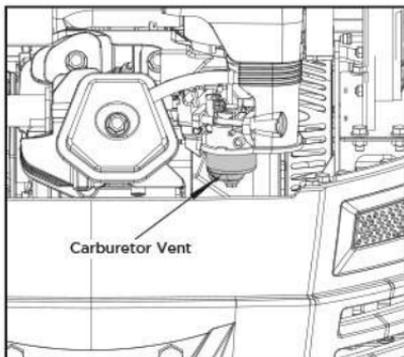
⚠ DANGER When draining water or air from the fuel, always keep away from flames.

If the gasoline engine is not used for a long time, the problem that the engine cannot be started may occur when the engine is just started. The following operations are required:

1. Close the fuel tank switch.



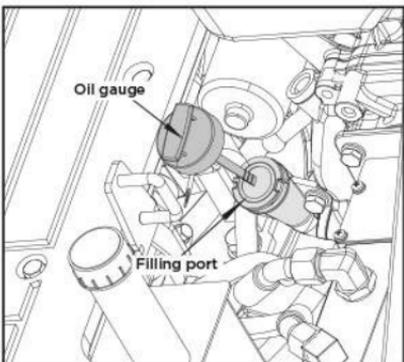
2. Unscrew the bolt at the carburetor vent port to drain the water or gas from the fuel.
3. Close the bolt at the carburetor vent.
4. Turn on the fuel tank switch.
5. Start the engine.



Check Engine Oil Level

⚠ CAUTION Stop the engine before checking the oil level.

Insert the oil gauge rod fully into the prepared opening, remove again and check the oil level; if necessary fill with oil. The machine must be on level ground when checking the oil level.



⚠ IMPORTANT Use engine oil with the correct viscosity. (according to the outside temperature)

⚠ IMPORTANT After stopping the engine, wait five minutes, then check oil level. (Excavator must be on level ground.)

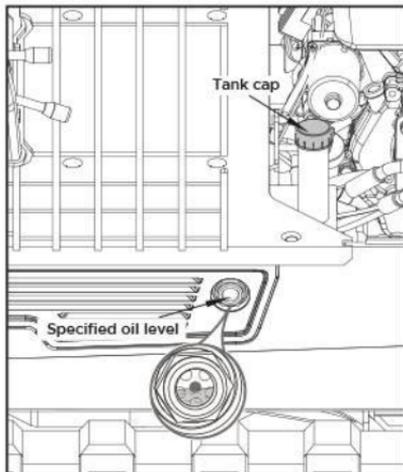
Check Hydraulic Oil Level

CAUTION First lower all attachments on the ground then stop the engine.

IMPORTANT Before filling with oil, wipe away all sand and dust from around the oil port. Make sure you use an identical type of hydraulic fluid.

IMPORTANT The excavator has been filled with hydraulic fluid before delivery. See "RECOMMENDED OILS". (Do not mix different makes!)

1. Move the excavator on to level ground. Extend every cylinder rod up to its centre position, place the bucket in contact with the ground.
2. Check the oil level as to whether it lies on the centre mark under normal temperature 10 to 30 °C.
3. Enough oil is present if the oil level lies between the markings.
4. Should the oil level be too low, add enough oil through the oil port before starting the engine. This step is important for the protection of the hydraulic system.



Lubrication Points

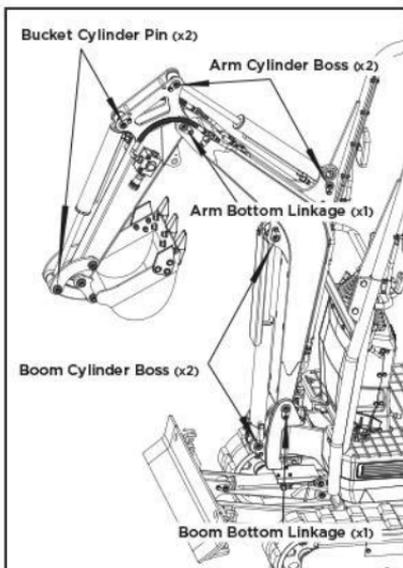
CAUTION First lower all attachments on the ground then stop the engine.

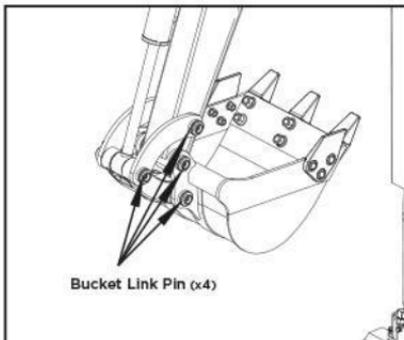
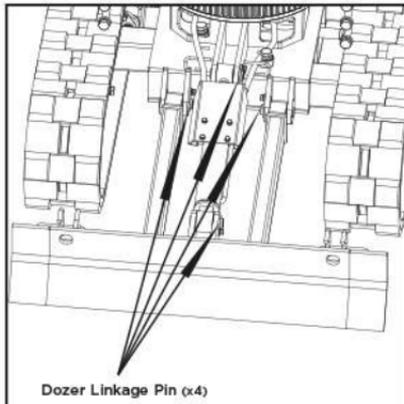
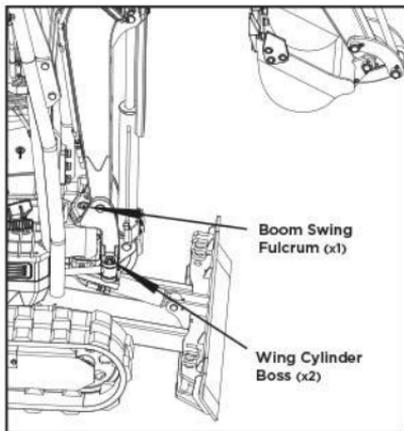
CAUTION While greasing, take care not to step on the bucket teeth.

CAUTION When doing excavation work in water, generously grease the following points. After finishing work, grease again.

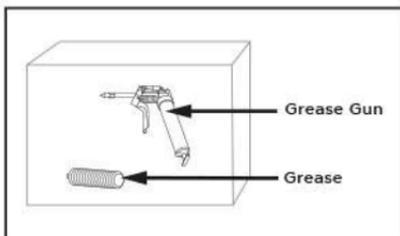
Grease the marked grease nipples shown by arrows in the illustration below:

1. Boom bottom linkage 1 place
2. Arm bottom linkage 1 place
3. Boom cylinder boss 2 places
4. Arm cylinder boss 2 places
5. Bucket cylinder pin 2 place
6. Boom swing fulcrum 1 places
7. Wing cylinder boss 2 place
8. Dozer linkage pin 4 places
9. Bucket link pin 4 places





NOTE The grease gun and grease are stored in the box.

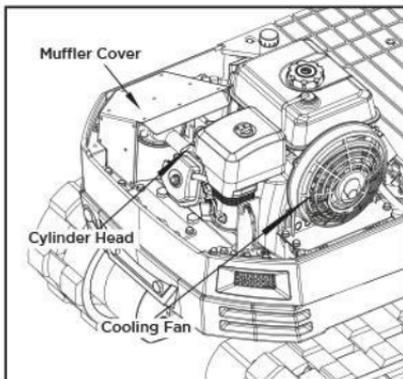


Check Cooling Fan

CAUTION Always stop the engine before checking the Cooling Fan.

CAUTION Wear eye protection when cleaning with compressed air.

1. When the weather is hot, check the cooling fan more frequently whether the operation is normal; Check the dust on the cooling fan of the gasoline engine cylinder head. If there is a lot of dust, please use compressed air to clean it.
2. Check whether the muffler chimney and muffler cover have oxidation. Check whether the insulation layer of muffler cover is complete.



⚠ IMPORTANT *Cooling fan must be clean in order not to overheat the engine and allow free flow of air through the system.*

Cleaning of Engine and Electrical Wiring

⚠ CAUTION *Always stop the engine before cleaning the wiring, cables and engine.*

Before starting, check whether flammable substances have gathered on the battery, the cables and wiring, the muffler or on the engine. Remove thoroughly.

Checking the Electrical Circuit

Check the electrical circuitry for disconnections, shorts or loose terminals.

Washing the Whole Machine

⚠ IMPORTANT *Do not wash the excavator with the engine running. Water could enter the air filter and damage the engine. Make sure that the air filter is kept dry.*

REGULAR CHECKS AND MAINTENANCE WORK EVERY 50 SERVICE HOURS

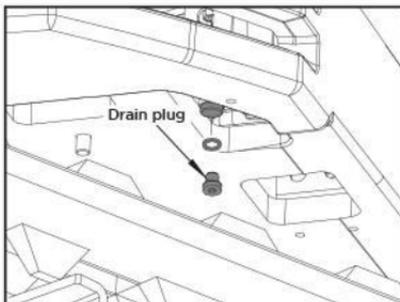
Engine Oil Change

⚠ CAUTION *First stop the engine and wait long enough for the oil to cool down.*

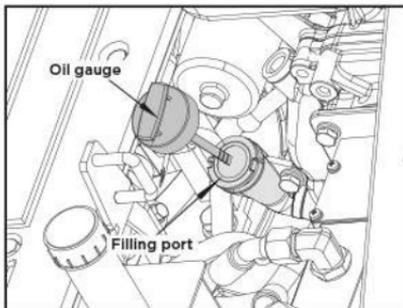
1. Remove the drain plug on the underside of the engine and drain all oil.

⚠ IMPORTANT *Place a suitable container below the engine to catch the used oil. Dispose of used engine oil according to local laws. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation.*

2. Re-tighten the drain plug.



3. Fill with new oil up to the required level.



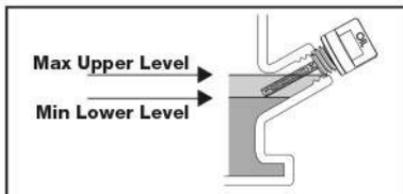
4. Let the engine idle for approx. 5 min. Check the engine oil level. To check the engine oil level, insert the oil gauge completely into the respective port opening and pull out again. If the oil level lies between both markings, no oil must be added.

⚠ IMPORTANT *Regardless of the service hours, an engine oil change is due every 1 year.*

Engine oil volumes	1.1 L
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Engine Oil Capacities:

420cc - 37.2 oz (1.1 liter)



Note: Total oil capacity could be as much as 4 additional ounces over volumes above due to engine mounting angle and proper draining.

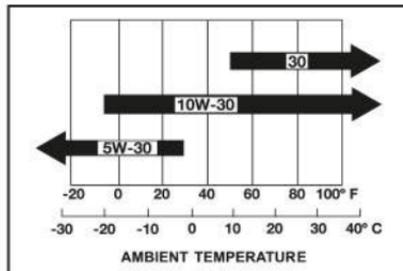
NOTE Running the engine with a low oil level can cause engine damage.

Engine Oil Recommendations

Engine oil affects performance and service life. Use 4-stroke automotive detergent oil.

SAE 10W-30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area warrants.

The SAE oil viscosity and service classification are in the API label on the oil container. Use API SERVICE category SJ engine oil, or higher.

**Battery Service**

CAUTION Batteries contain sulphuric acid which can cause severe burns. Avoid all contact with skin, eyes or clothing. Antidote - External: Rinse with plenty of water. Internal: Drink large quantities of water or milk.

Call a physician immediately. Eyes: Rinse with plenty of water for 15 minutes and get prompt medical attention. Keep batteries out of the reach of children.

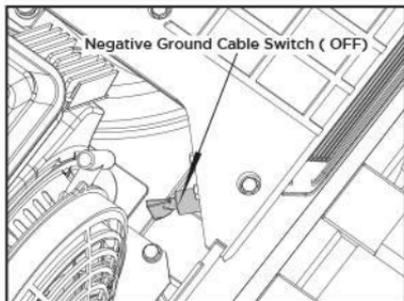
CAUTION Before inspection or dismantling the battery, be sure to turn off the engine and turn the starter switch to the "OFF" position.

CAUTION When removing the battery, always disconnect the negative ground cable first. The reverse when installing a battery, always connect the ground cable last. This prevents a possible explosion caused by sparks.

CAUTION Always wear eye protection when working with the battery.

1. Check whether the battery appearance is deformed.
2. If the battery is deformed, replace it.
3. Clean the battery cover (ventilation hole) without dust.
4. Check whether the battery terminal connection is loose. If it is loose, retighten it. Pay attention to tightening the positive screw, and make sure that the tool that used do not touch the cover.

WARNING Before tightening the positive screw, make sure to turn off the negative ground cable switch first.



Battery Charging

⚠ CAUTION *When the battery is being activated, hydrogen and oxygen gases in the battery are extremely explosive. Keep open sparks and flames away from the battery at all times, especially when charging the battery.*

⚠ CAUTION *When disconnecting the cable from the battery, start with the negative terminal first.*

When connecting the cable to the battery, start with the positive terminal first.

⚠ CAUTION *Do not check battery charge by placing a metal object across the terminals.*

1. To slow charge the battery, connect the battery positive terminal to the charge positive terminal and the negative to the negative, then recharge in the standard fashion.
2. A boost charge is only for emergencies. It will partially charge the battery at a high rate and in a short time.

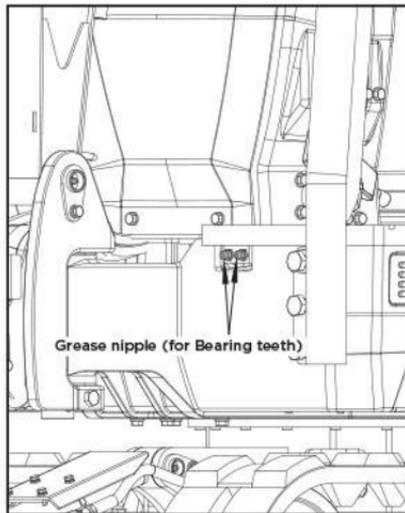
When using a boost-charged battery, it is necessary to recharge the battery as early as possible.

Failure to do this will shorten the battery's service life.

3. When exchanging an old battery for new one, use battery of equal specification.

Greasing of Swing Bearing Teeth

1. Fill with grease through the grease nipple (at the right end side).
2. Grease at each 90 (1.58 rad.) position of the swing frame.
3. Fill with approx. 50g of grease (approx. 20 pumps with the grease gun). Distribute the grease over the teeth.



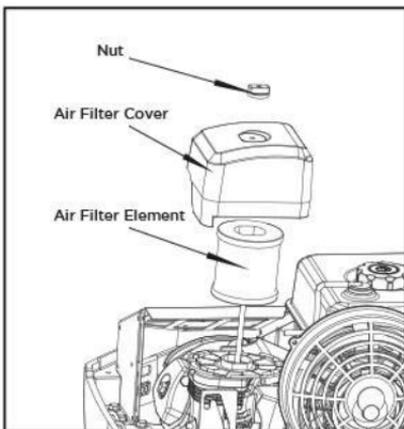
Inspection and Cleaning of the Air Filter Element

Open the engine hood and remove the dustcover. Take out only outer element, clean the element, case interior and reassemble. During reassembly, take care to install the dust-cover so that its TOP mark (arrow) faces upwards. Do not remove the inner element.

⚠ IMPORTANT *Should the machine be used in extremely dusty areas, the air filter element must be inspected and cleaned more frequently than in the specified maintenance periods.*

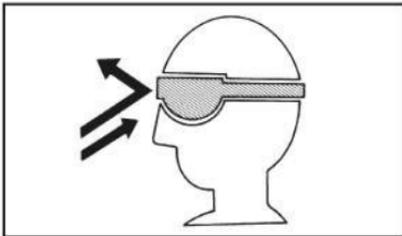
⚠ IMPORTANT *The air filter has a dry element, keep free from oil.*

⚠ IMPORTANT *Do not run the engine without the air filter.*



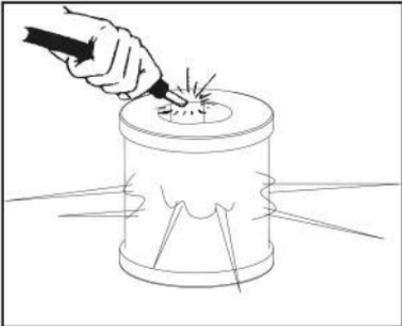
Air Filter Maintenance

⚠ CAUTION *Wear eye protection.*



Cleaning with compressed air

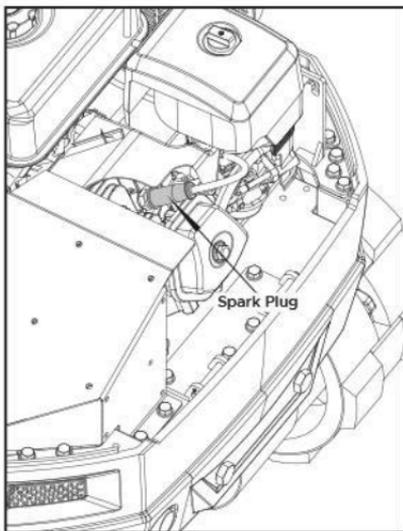
Pressure of compressed air must be under 205 kPa (2.1 kgf/cm²), and the cartridge should be blown clean from the inside to the outside until the dust deposits are completely clear.



⚠ IMPORTANT *If the air suction is still inadequate, or the colour of the exhaust gases is abnormal even after the cleaning, the air filter element must be replaced.*

Checking Spark Plug

Use the special spark plug socket to remove the spark plug and check whether the ignition needle has carbon deposits. If yes, clean the carbon deposits. Replace if defective.



Spark Plug Service

- E6TC(Torch)andE6RTC(Torch)recommended for 79cc and 98cc engines only
- F6TC, F6RTC plug recommended

Cross References:

- Champion plug cross reference is: RN9YC (some tables show RN9YCC)
- NGK plug cross reference: BPR6ES
- BOSCH plug cross reference is: WR6DC

⚠ CAUTION *Using an incorrect spark plug may cause engine damage.*

1. When engine is cool, disconnect the spark plug cap and remove any debris from the spark plug area with high pressure air.
2. Remove the spark plug with a 13/16-inch spark plug wrench.
3. Inspect the spark plug. Replace it if the electrodes are worn or if the insulator is cracked or chipped. Spark plug gap should be set to 0.027 - 0.030 inches.
4. Install the spark plug carefully to avoid cross threading. Screw in spark plug by hand until it stops turning.
5. Tighten the spark plug with a 13/16-inch spark plug wrench. Tighten 1/4 turn after the spark plug seats.

⚠ CAUTION *A loose spark plug can overheat and damage the engine. Overtightening the spark plug can damage the threads in the cylinder head.*

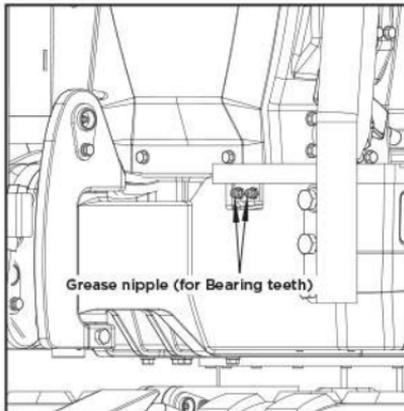
6. Attach the spark plug cap. Ensure spark plug cap snaps into place securely.

EVERY 100 SERVICE HOURS

Do all 50 hour servicing at the same time.

Greasing of the Swing Bearing

1. Grease through the respective grease nipple.
2. Grease at each 90° (1.58 rad.) position of the swing frame.
3. Using the grease gun, apply 5 shots at every position.



EVERY 200 SERVICE HOURS

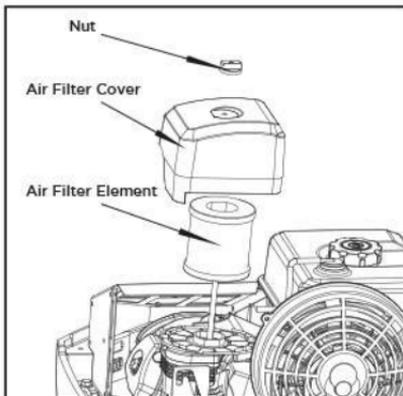
Do all 50 hour and 100 hour servicing at the same time.

Replacing Air Filter Element

Open the engine hood and remove the dustcover.

Remove and replace the outer element and inner element with new elements.

When reassembling, install the dust-cover so that its TOP mark (arrow) faces up-wards.



▲ IMPORTANT Shorten the replacement period if using in lots of dust or sandy areas.

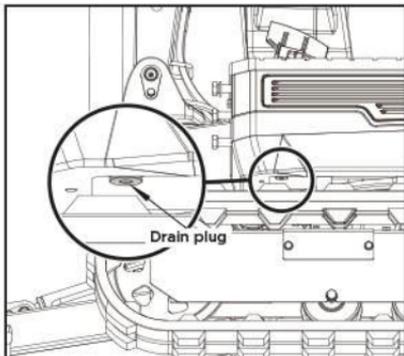
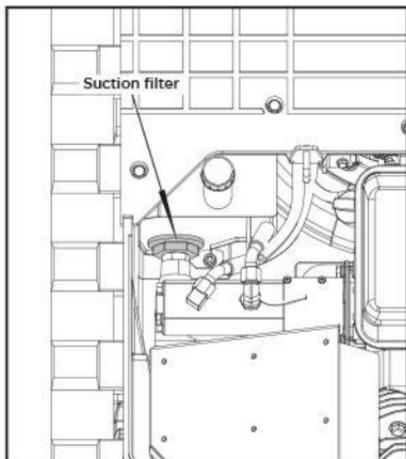
Checking Fuel Line

1. Check to see that all lines and hose clamps are tight and not damaged.
2. If hoses and clamps are found worn or damaged, replace or repair them at once.

EVERY 1000 SERVICE HOURS

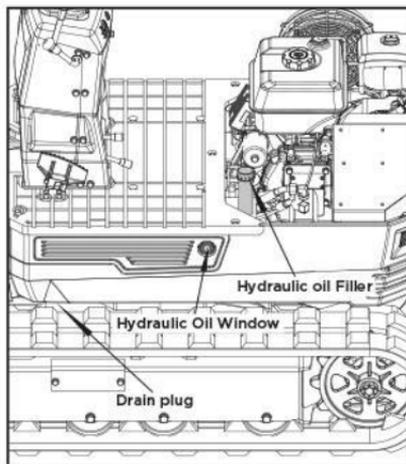
Do all 50, 100, 200 and 500 hour servicing at the same time.

Hydraulic Oil Change (Including Replacing of the Suction Filter and the Return Filter in the Hydraulic Tank)



Check the oil window position of hydraulic oil. If it is lower than $\frac{1}{3}$ of the oil window position, add oil.

Hydraulic oil volumes	Hydraulic tank	approx. 13.5 L
	Whole oil volumes	approx. 25 L



Hydraulic Oil Check

- Changing and filling up of hydraulic oil
 - Use only the recommended oils mentioned in the operator's manual when changing or topping up oil.
 - When filling up oil, do not mix oils of different makes.
- Changing the return filter and oil
 - The filter must be changed more often because of contamination resulting from the frequent assembly and disassembly of the hoses.
 - Use the correct replacement filter.
 - Oil change according to operating hours.

	Hydraulic oil Return Filter	Suction Filter
Normal excavator work	every 1000 Hrs.	1000 Hrs.

ANNUAL SERVICING**Electrical Wiring and Fuses**

Check the terminals periodically for proper connections. Loose wiring or damaged cables can cause improper functioning of the electrical system. Short circuiting, electrical leaks and other expensive problems could arise. Check wiring and replace damaged components immediately. If a fuse blows out soon after having been replaced, contact your nearest dealer. Never use a fuse other than specified.

Replacing Spark Plug

Do replacement after 1 year or 500 hours of use.

BIENNIAL SERVICING**Replacing Fuel Hose**

Replace the hoses and clamps.

(See "Checking Fuel Line" every 200 hours maintenance.)

OTHER ADJUSTMENTS AND REPLACEMENTS

ADJUSTMENT OF CRAWLERS

To loosen the crawlers, follow the following procedure:

CAUTION Do not crawl under the excavator.

1. Remove the side plate cover and loosen the nut M20 inside with a 30mm plum wrench.
2. Adjust the hexagonal bolt M20x120 and rotate it clockwise to tighten the track; The track becomes loose when it rotates counterclockwise.
3. After adjustment, fix the nut M20 with a plum spanner.

NOTE Tighten torque must be between 98 to 108 Nm (10 to 11 kgf-m)

4. Install the side plate cover.

IMPORTANT If the crawlers are too tight, wear is increased.

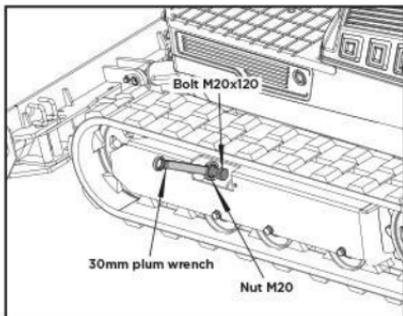
IMPORTANT If the crawlers are too loose, the crawler shoes may collide with the sprocket, and wear is increased.

The crawler may dislocate or come off.

IMPORTANT Clean the crawler after every use.

IMPORTANT Should the crawler tension be heightened due to mud sticking, lift the crawler with the help of the boom, arm and bucket, idle the engine and remove the mud from the crawler, especially from the openings of the link plate, carefully.

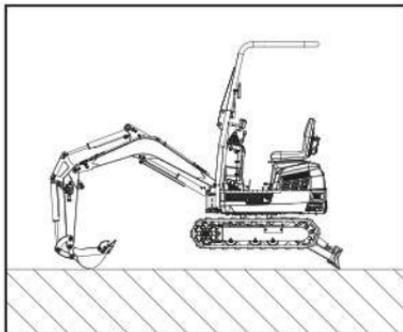
Tension the crawlers as specified:

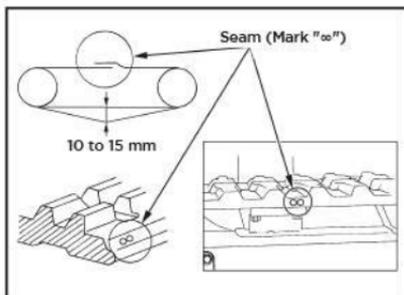


1. Tension the crawler in the lifted position, so that the distance (clearance between the track roller and the inside surface of the crawler) is 10 to 15 mm (see illustration). (In this case, the crawler seam is positioned on the top centre between the idler and the sprocket.

DANGER Do not work under the machine in this condition.

DANGER For your safety do not rely on hydraulically supported devices, they may leak down suddenly drop or be accidentally lowered.





⚠ IMPORTANT Make sure that no obstacles, such as stones, are caught in the crawler. Remove such obstacles before adjusting the crawler tension.

⚠ IMPORTANT Crawler seam

The ends of the rubber crawler are joined with a seam. When adjusting the crawlers, the seam must be positioned on the top centre between the idler and the sprocket.

If the seam is positioned incorrectly, the crawlers will be tensioned too loosely, and a further readjustment will be necessary.

⚠ IMPORTANT Rotate the crawler after adjustment one to two times to check the tension.

⚠ IMPORTANT Additionally the following points are to be observed when adjusting rubber crawlers.

(1) If the crawler slackens more than 0.98 in. (25 mm), readjust them.

(2) Check crawler tension 30 hours after initial use and readjust if necessary. Check and adjust thereafter every 50 service hours.

Special Information when Using Rubber Crawlers

1. When turning, preferably make a slow swing turn. Avoid spin turns to lessen lug wear and ingress of dirt.
2. If too much dirt and sand clog the crawlers. In this case move the machine for a short distance straight backwards to let the earth and sand fall off, then a turn can be made.
3. Avoid using rubber crawler on riverbeds, stony underground, ferro-concrete and iron plates. The rubber can be damaged as well as crawler wear increasing.

CHANGING THE BUCKET

⚠ CAUTION When the coupling pins are removed or installed, chips may come off. Always use gloves, goggles and a helmet.

⚠ CAUTION When the change of the equipment must be performed with the engine running, always work as a 2-person team.

One person sits in the operator's seat and the other works on the machine.

⚠ CAUTION Do not use your fingers to center the holes, since they may be injured or even cut in case of sudden or uncontrolled movements.

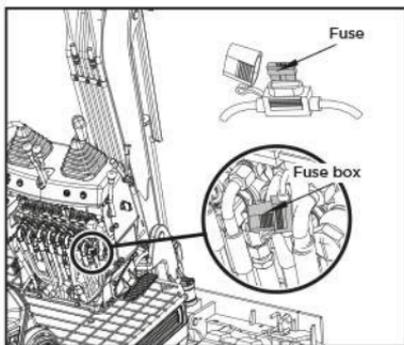
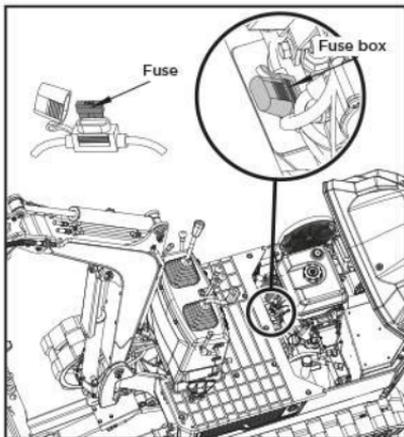
⚠ CAUTION Read the manual of the attachment to do a correct operation safely when other attachments are installed.

FUSES

Replacing Fuses

Slow blow fuse is provided to protect the electrical circuits. If the fusible link is blown, check the electrical circuits for problems and then replace with a new compatible slow blow fuse.

1. Remove the cover of the fuse box.
2. Replace the burn out fuse with the new fuse having the same capacity



Fuse Capacities and Circuits

No.	Capacity	Circuit
1.	10A	Working relay fuse
2.	10A	Working lamp, Horn, Hour meter fuse

TROUBLESHOOTING

If the excavator does not give the desired performance, or when problems arise, refer to the table below and take appropriate measures.

Trouble		Cause	Countermeasure
Engine	Starting difficulties	The fuel tank switch closed	Make sure that the fuel tank switch is in the "Open" position.
		Air or water in the fuel system	See the instruction in section "Draining the water or air from the fuel tank" to remove the water and air.
		Oil viscosity is too high so that the engine runs sluggishly in winter	Use the engine oil for Winter use.
		Battery is almost dead; Starter motor doesn't work	Do recoil start to recharge the battery
		The spark plug doesn't ignite.	Replace the spark plug
		Low Engine oil level	Add the engine oil
	Insufficient engine power	Low fuel level	Check fuel and add if necessary
		Clogged air cleaner	Clean the air filter element
	Engine suddenly stops	Low fuel level	Check fuel and add if necessary Purge the fuel system
	Abnormal exhaust gas colour	Poor fuel	Use high quality fuel
		Too much engine oil	Drain engine oil to prescribed oil level
		Choke lever closes the choke valve in the carburetor	Open the choke valve
Hydraulic system	Boom, arm, bucket, drive, swing and dozer power is too low	Hydraulic oil level too low	Add oil
		Leakages of hoses and / or joints	Replace hose or joint
	Non- function of swing motor	Swing lock pin is in lock position	Remove swing lock pin in unlock position
Drive system	Deviation of drive direction	Blocked through stones	Remove
		Crawler too loose or too tight	Adjust accordingly

OPERATION IN COLD WEATHER CONDITIONS

PREPARATION FOR OPERATION IN COLD WEATHER

1. Replace engine oil and hydraulic oil with those of viscosities suitable for cold weather.
2. In cold weather, battery power drops, and the battery fluid may freeze if the battery is not sufficiently charged. To prevent the battery fluid from freezing, be sure to keep the battery charged at least 75% or more of its capacity after operation. To ease next starting, it is recommended to keep the battery stored in closed or heated rooms.

PROCEDURE AFTER WORK CARRIED OUT

Clean the excavator thoroughly after work and wipe dry. Otherwise mud and earth on the crawlers could freeze if the temperature drops below the 0 C mark. Operation of the excavator is then not possible. Store the excavator in a dry place; if not possible, store on wooden planks or on mats. If the excavator is kept on damp or muddy ground, the crawlers could freeze overnight. Operation of the excavator is then not possible.

Additionally, the hydraulic cylinders piston rods must be rubbed dry. Otherwise severe damage could occur if dirty water seeps through the seals.

LONG STORAGE

CAUTION Do not clean the excavator with the engine running.

CAUTION To avoid the danger of exhaust fume poisoning, do not operate the engine in a closed building without proper ventilation.

CAUTION When storing, remove the key from the starter switch to avoid unauthorized persons from operating the excavator and getting injured.

Should the Excavator be Stored for a Longer Period of Time, Observe Following Procedures:

1. The whole excavator should be cleaned thoroughly and in all cases stored indoors. If the excavator has to be kept outdoors, lay out wooden planks on even ground, place the excavator on the planks and cover completely.
2. Do an oil change and grease the excavator.
3. Heavily grease the visible sections of the piston rods.
4. Remove the battery and store indoors.

IMPORTANT Wash the excavator after stopping the engine.

If you wash the excavator while running the engine, water may get into the air cleaner through the intakes causing engine problems.

Carefully, wash but do not splash water over the air cleaner.

Observe Following Procedures when the Machine is to be Operated after Long Storage.

1. Wipe off the grease from the hydraulic cylinder rods.
2. Turn on the engine and activate the attachments and the drive mechanisms without load in order to circulate the hydraulic oil. (If the machine is stored for longer than one month, undertake steps (1) and (2) once every month)

PERIODIC REPLACEMENT OF IMPORTANT COMPONENT PARTS

To ensure safety in operation, you are strongly requested to inspect and service the machine at regular intervals. For added safety, ask your dealer to replace the following important component parts.

These parts are prone to degradation in material or subject to wear and tear with time. It is difficult to judge how much they have been affected at regular inspection. It is therefore necessary to replace them with new ones, whether wear is visible or not after a specified time of use.

If any of them is found worn even before the specified use, it must be repaired or replaced the same way as other parts.

If any of the hose clamps is found deformed or cracked, the hose clamp must also be replaced.

For the hydraulic hoses other than the ones to be replaced periodically, inspect them for the following points. If found unusual, tighten them up, replace them.

When replacing the hydraulic hoses, change their O rings and sealings with new ones.

For replacement of the important parts, contact your dealer.

At the following periodic inspections, check the fuel hoses and hydraulic hoses as well.

Inspection Interval	Check Points
Daily Checks	Oil leak at fuel and hydraulic hose connections and points
Every month	Oil leak at fuel and hydraulic hose connections and points Damages at fuel and hydraulic hose (cracks, chafing)
Every year	Oil leak at fuel and hydraulic hose connections and points Interference, deformation, degradation, twist and other damages (cracks, chafing) of fuel and hydraulic hoses

List of important component parts

No.	Component Parts	Used Place	Q'ty	Period
1	Pump Outlet Hose 1	Pump External Outlet - Valve Left Inlet	1	Every 2 years or 4000 hours
2	Pump Outlet Hose 2	Pump Internal Outlet - Valve Right Inlet	1	
3	Rotary Motor Hose 2	Left Valve 1 Upper Port - Rotary Motor flange Lower Port	1	
4	Rotary Motor Hose 1	Left Valve 1 Lower Port - Rotary Motor End Cap Upper Port	1	
5	Upper Oil Pipe Of Bucket Rod Cylinder Valve	Left Valve 2 Upper Port - Track Side Push Cylinder Rodless Cavity	1	
6	Lower Oil Pipe Of Bucket Rod Cylinder Valve	Left Valve 2 Lower Port - Track Side Push Cylinder Rod Cavity	1	
7	Valve-Swivel Joint Oil Hose (C)	Left Valve 3 Upper Port - Swival Joint (C)	1	
8	Valve-Swivel Joint Oil Hose (F)	Left Valve 3 Lower Port - Swival Joint (F)	1	
9	Valve-Switching Valve Oil Hose (P)	Left Valve 4 Upper Port - Switching valve (P)	1	
10	Valve-Swivel Joint Oil Hose (G)	Left Valve 4 Lower Port - Swival Joint (G)	1	
11	PTO Oil Hose 2	Left Valve 5 Upper Port - PTO Steel Pipe (Left)	1	
12	PTO Oil Hose 1	Left Valve 5 Lower Port - PTO Steel Pipe (Right)	1	
13	Valve-Swivel Joint Oil Hose (B)	Left Valve 6 Upper Port - Swivel Joint Oil Hose (B)	1	
14	Valve-Swivel Joint Oil Hose (D)	Left Valve 6 Lower Port - Swivel Joint Oil Hose (D)	1	
15	Upper Oil Pipe Of Bucket Rod Cylinder Valve	Left Valve 7 Upper Port - Bucket Cylinder Steel Oil Pipe	1	
16	Lower Oil Pipe Of Bucket Rod Cylinder Valve	Left Valve 7 Lower Port - Bucket Cylinder Steel Oil Pipe	1	
17	Boom Cylinder Oil Hose 1	Left Valve 8 Upper Port - Boom Cylinder Rod Cavity	1	
18	Boom Cylinder Oil Hose 2	Left Valve 8 Lower Port - Boom Cylinder Rodless Cavity	1	
19	Side Swing Cylinder Oil Hose 2	Left Valve 9 Upper Port - Boom Cylinder Rodless Cavity	1	
20	Side Swing Cylinder Oil Hose 1	Left Valve 9 Lower Port - Boom Cylinder Rod Cavity	1	
21	Bucket Cylinder Oil Hose	Bucket Cylinder - Bucket Cylinder Steel Pipe	2	
22	Oil Hose for Bucket Arm Cylinder	Bucket Arm Cylinder - Bucket Arm Cylinder Steel Pipe	2	
23	Swival Joint Oil Drain Hose	Swival Joint Oil Drain - Four-way Elbow Joint	1	
24	Rotary Motor Oil Drain Hose	Rotary Motor Oil Drain - Four-way Straight Joint	1	
25	Valve Oil Return Hose	Valve (T) - Four-way Inlet	1	
26	Radiator Oil Inlet Pipe	Oil Return Filter Outlet - Radiator Oil Inlet	1	
27	Tank Oil Return Hose	Radiator Oil Outlet - Hydraulic Oil Tank	1	
28	Dozer Cylinder Oil Hose	Swivel Joint (A) - Dozer Cylinder Rodless Cavity	1	
29		Swivel Joint (G1) - Dozer Cylinder Rod Cavity	1	

No.	Component Parts	Used Place	Q'ty	Period
30	Track Side Push Cylinder Rod Cavity Hose	Swivel Joint (E) - Track Side Push Cylinder Rod Cavity	1	Every 2 years or 4000 hours
31	Track Side Push Cylinder Rodless Cavity Hose	Swivel Joint (G2) - Track Side Push Cylinder Rodless Cavity	1	
32	Drive Motor Oil Drain Hose	Drive Motor Oil Drain - Swing Unit Platform Mounting Base Elbow	2	
33	Travel Motor Oil Hose	Left Motor C Upper Port, Left Motor F Lower Port, Right Motor F Upper Port, Right Motor D Lower Port	4	
34	Switching valve (A)-Swivel Joint (A) Oil Hose	Switching valve (A) - Swivel Joint (E) Oil Hose	1	
35	Switching valve (B)-Swivel Joint (E) Oil Hose	Switching valve (B) - Swivel Joint (A) Oil Hose	1	
36	Three-way Globe Valve Oil Hose	Spare Iron Hydraulic Cylinder Oil Pipe - Three-way Globe Valve	2	
37	Thumb Clamp Hydraulic Cylinder Oil Pipe	Three-way Globe Valve - Thumb Clamp Hydraulic Cylinder	2	

To prevent serious damage to the hydraulic system, to use only a hydraulic hose approved by dealer.

RECOMMENDED OILS

FUEL RECOMMENDATIONS

Use unleaded gasoline with a pump octane rating of 86 or higher. These engines operate best on unleaded gasoline.

Do NOT use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank. Use only proper fuel containers that are properly marked.

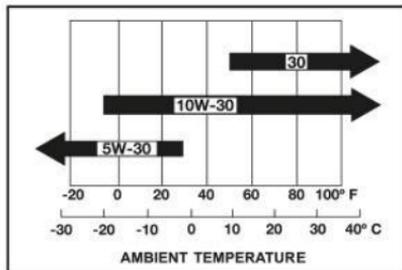
Maximum recommended ethanol content: 10%. This is not compatible with E15.

ENGINE OIL RECOMMENDATIONS

Engine oil affects performance and service life. Use 4-stroke automotive detergent oil.

SAE 10W-30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area warrants.

The SAE oil viscosity and service classification are in the API label on the oil container. Use API SERVICE category SJ engine oil, or higher.



HYDRAULIC OIL RECOMMENDATIONS

IMPORTANT Before delivery, the hydraulic oil used was an ISO 32 viscosity grade.

The recommended hydraulic oil type:

10W AW32

ASLE H-150

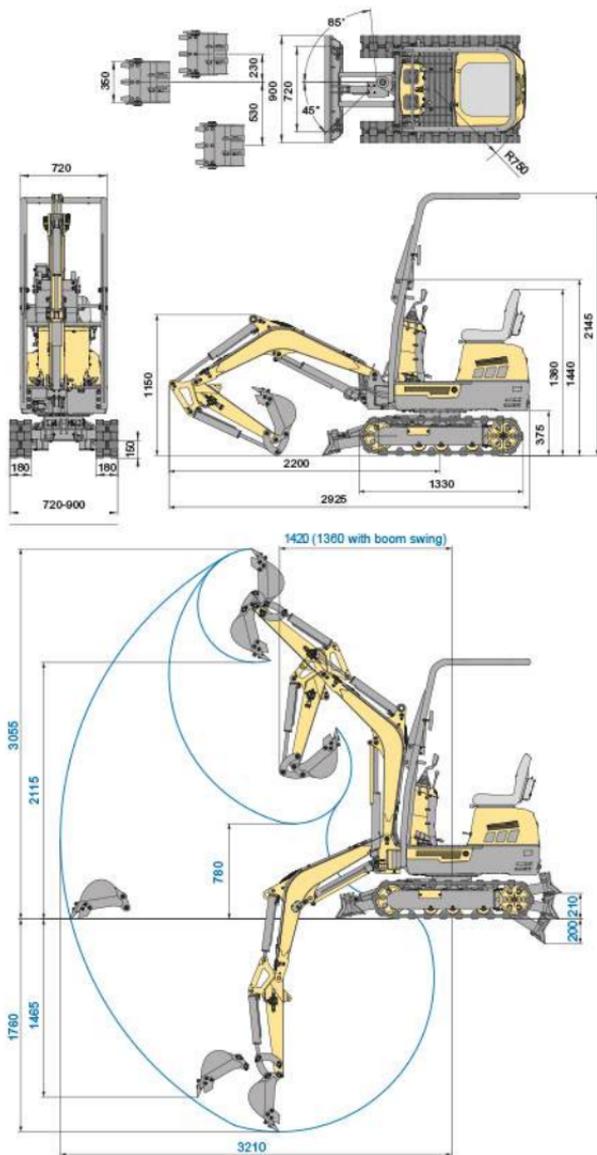
ISO 32

GREASE RECOMMENDATIONS

Application	Shell	Mobil	Exxon
Grease	Shell Alvania EP2	Mobilux EP2	BEACON Q2

MAIN DIMENSIONS

GB



EXCAVATOR

LIFTING CAPACITY

- The lifting capacities are based on ISO 10567 and do not exceed 75% of the static tilt load of the machine or 87% of the hydraulic lifting capacity of the machine.
- The strokes are as follows.
 - The load point corresponds to the front bolt part of the arm.
 - The machine positions are (i) over-front (Blade up), (ii) over-front (Blade down), and (iii) over-side.
 - The operating cylinder is the boom cylinder.
- The bucket of the excavator, the hook, the sling and other lifting accessories are taken into consideration for the loads.

Machine conditions:

No bucket, all others according to standard regulations.

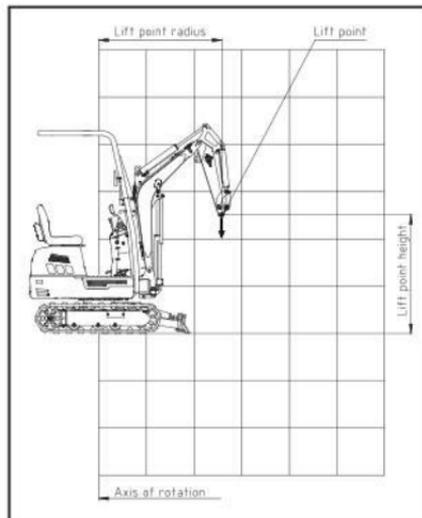
⚠ WARNING *It is forbidden to lift loads greater than those values mentioned in the lifting capacity tables.*

⚠ WARNING *A The values mentioned in the table are valid only on even, hard ground. When lifting on soft ground, the machine can tilt over due to the fact that the load is concentrated only on one side of the machine.*

The table values are calculated at the end of the arm without the bucket. In order to find the allowable loads for machines with bucket, the bucket weight must be subtracted from the values in the table.

Machine Information

Boom Length	1450 mm
Boom Width	124 mm
Arm Length	800 mm
Arm Width	96 mm
Track Shoe Width	180 mm
Track Width	520 mm
Track Pitch	72 mm
Track Link Count	40



LIFTING CAPACITY

MODEL DUEEXCAV-36

(i) OVER FRONT (BLADE UP)

kg

HEIGHT (mm)	LOAD RADIUS (mm)						
	0	500	1000	1500	2000	2500	3000
3000							
2500							
2000					160		
1500					155	110	
1000				230	150	105	
500				220	140	100	
0				210	140	100	
-500			440	210	140		
-1000			450	220			
-1500							
-2000							

(ii) OVER FRONT (BLADE DOWN)

kg

HEIGHT (mm)	LOAD RADIUS (mm)						
	0	500	1000	1500	2000	2500	3000
3000							
2500							
2000					180*		
1500					200*	210*	
1000				340*	250*	225*	
500				485*	310*	250*	
0				540*	350*	265*	
-500			405*	520*	350*		
-1000			730*	440*			
-1500							
-2000							

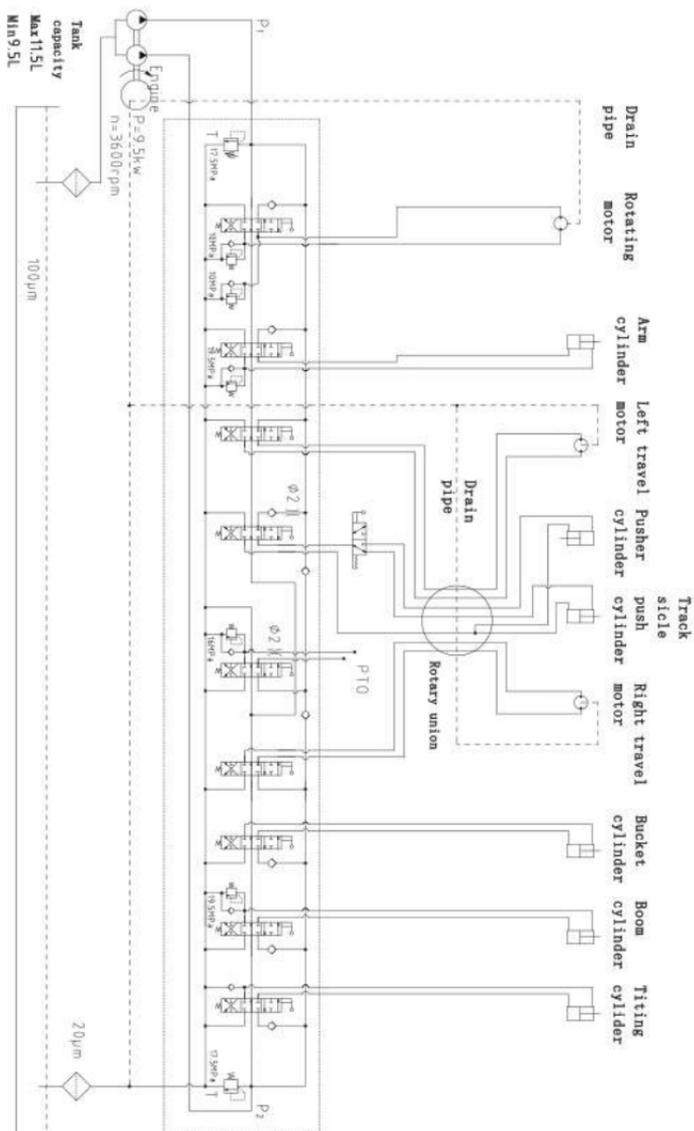
*Hydraulic lifting capacity

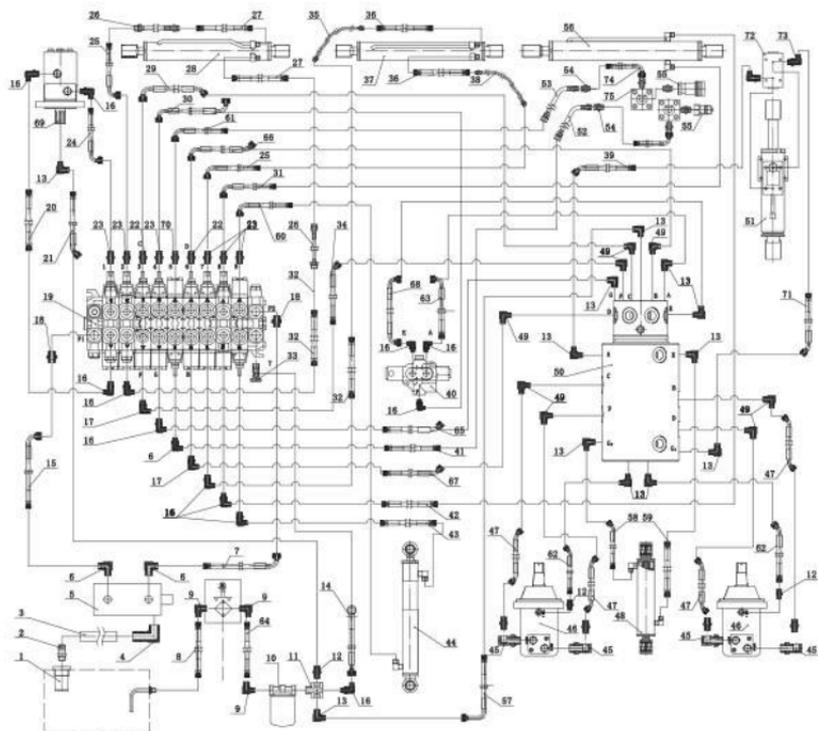
(iii) OVERSIDE (TRACK WIDTH 520 mm)

kg

HEIGHT (mm)	LOAD RADIUS (mm)						
	0	500	1000	1500	2000	2500	3000
3000							
2500							
2000					130		
1500					130	90	
1000				180	120	85	
500				170	115	80	
0				165	110	80	
-500			320	165	110		
-1000			330	170			
-1500							
-2000							

HYDRAULIC SYSTEM DIAGRAM





Parts List

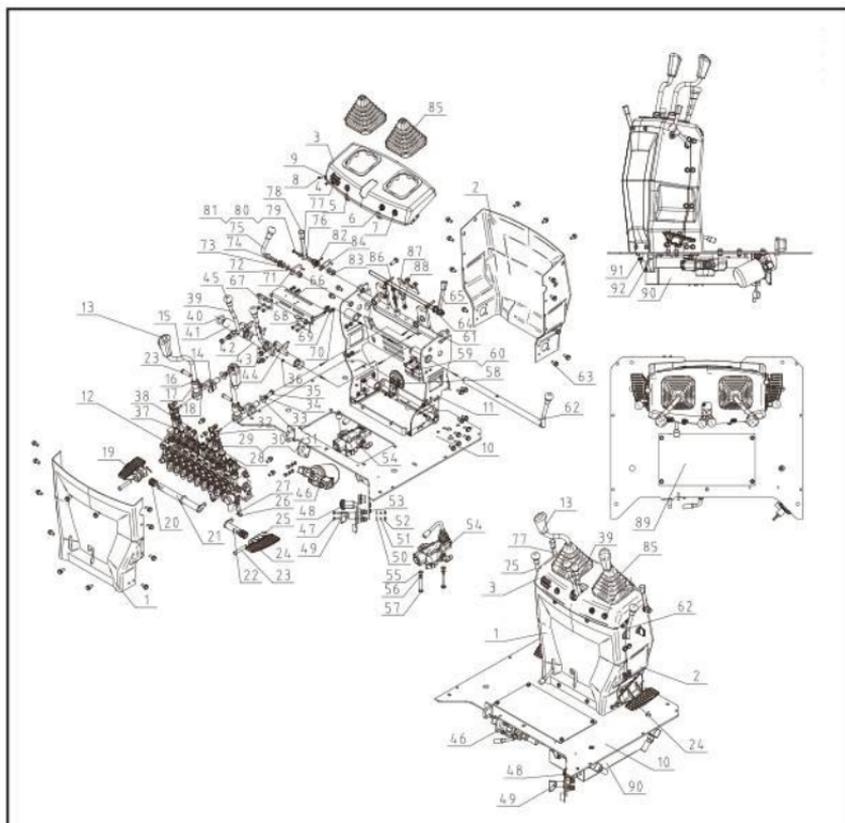
No.	Description	Q'ty
1	Oil Filter	1
2	Oil Suction Angle Connector	1
3	Pump Oil Inlet Pipe	1
4	Pump Inlet Angle Connector	1
5	Double Gear Pump	1
6	Angle Connector	3
7	Pump Right Outlet Hose 2	1
8	Tank Oil Return Hose	1
9	Angle Connector	2
10	Oil Return Filter	1

No.	Description	Q'ty
11	Four-way Joint	1
12	Straight Connector	3
13	Angle Connector	14
14	Valve Oil Return Hose	1
15	Gear Pump Oil Outlet Hose 1	1
16	Transition Joint	10
17	Angle Transition Joint	2
18	Straight Connector	2
19	Control Valve	1
20	Rotating Motor Oil Hose 1	1

No.	Description	Q'ty
21	Rotating Motor Oil Drain Hose	1
22	Straight Connector	2
23	Straight Connector	7
24	Rotating Motor Oil Hose 2	1
25	Upper Oil Pipe Of Bucket Rod Cylinder Valve	1
26	Steel Oil Pipe for Bucket Arm Cylinder	2
27	Oil Hose for Bucket Arm Cylinder	2
28	Outline Drawing for Bucket Arm Cylinder	1
29	Valve-Swivel Joint Oil Hose (C)	1
30	Valve-Switching Valve Oil Hose (P)	1
31	Boom Cylinder Oil Hose 1	1
32	Lower Oil Pipe Of Bucket Rod Cylinder Valve	1
33	G1/2 Hollow Bolt	1
34	Valve-Swivel Joint Oil Hose (F)	1
35	Bucket Cylinder Steel Oil Pipe 1	1
36	Bucket Cylinder Oil Hose	2
37	Outline Drawing for Bucket Cylinder	1
38	Bucket Cylinder Steel Oil Pipe 2	1
39	Dozer Cylinder Oil Hose With Guard Spring	2
40	Switching Valve	1
41	PTO Oil Hose 1	1
42	Boom Cylinder Oil Hose 2	1
43	Side Swing Cylinder Oil Hose 1	1
44	Outline Drawing for Boom Rotary Cylinder	1
45	Right Angle Combination Joint	4
46	Hydraulic Motor 315ml/r	2
47	Travel Motor Oil Hose	4
48	Outline Drawing for Track Side Push Cylinder	1

No.	Description	Q'ty
49	Angle Connector	8
50	Revolute Joint	1
51	Outline Drawing for Dozer Cylinder	1
52	Standby Oil Cylinder Steel Oil Pipe 1	1
53	Standby Oil Cylinder Steel Oil Pipe 2	1
54	Joint of Plywood	2
55	Quick Connector	1
56	Outline Drawing for Boom Cylinder	1
57	Swival Joint Oil Drain Hose	1
58	Track Side Push Cylinder Rodless Cavity Hose	1
59	Track Side Push Cylinder Rod Cavity Hose	1
60	Side Swing Cylinder Hose	1
61	PTO Oil Hose 2	1
62	Drive Motor Oil Drain Hose	2
63	Switching valve (A)-Swivel Joint (E) Oil Hose	1
64	Radiator Oil Inlet Pipe	1
65	Valve-Swivel Joint Oil Hose (G)	1
66	Valve-Swivel Joint Oil Hose (D)	1
67	Valve-Swivel Joint Oil Hose (B)	1
68	Switching valve (B)-Swivel Joint (A) Oil Hose	1
69	Rotating Motor	1
70	Straight Connector	1
71	Dozer Cylinder Oil Hose	1
72	Hydraulic Lock	1
73	Transition Joint	2
74	Three-way Globe Valve Oil Pipe	2
75	Three-way Globe Valve	2

PARTS DIAGRAM



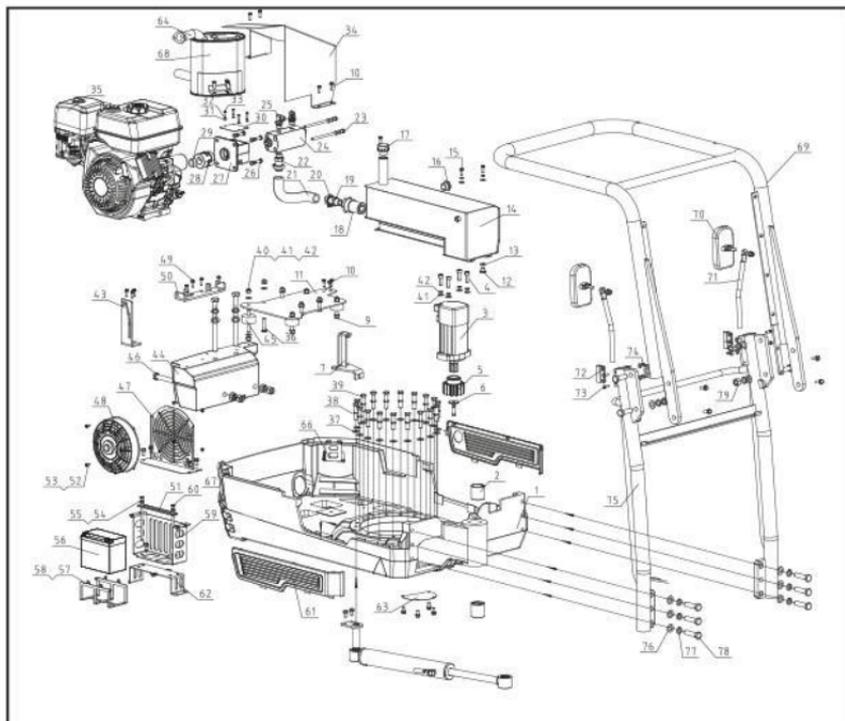
Parts List

No.	Description	Q'ty
1	Control Cabinet-Rear Plate	1
2	Operation Dashboard-Front Guard Plate	1
3	Control Cabinet-Top Plate Weldment	1
4	Timer	1
5	Power Indicator	1
6	Horn Switch	1
7	Work Light Switch	1

No.	Description	Q'ty
8	Cross Recessed Pan Head Screw M4x16	2
9	Lock Nut M4	2
10	Control Cabinet-End Plate Weldment	1
11	Control Cabinet-Inner Support Frame Weldment Assembly	1
12	Multi-Way Valve Assembly	1
13	Operating Ball Knob	2

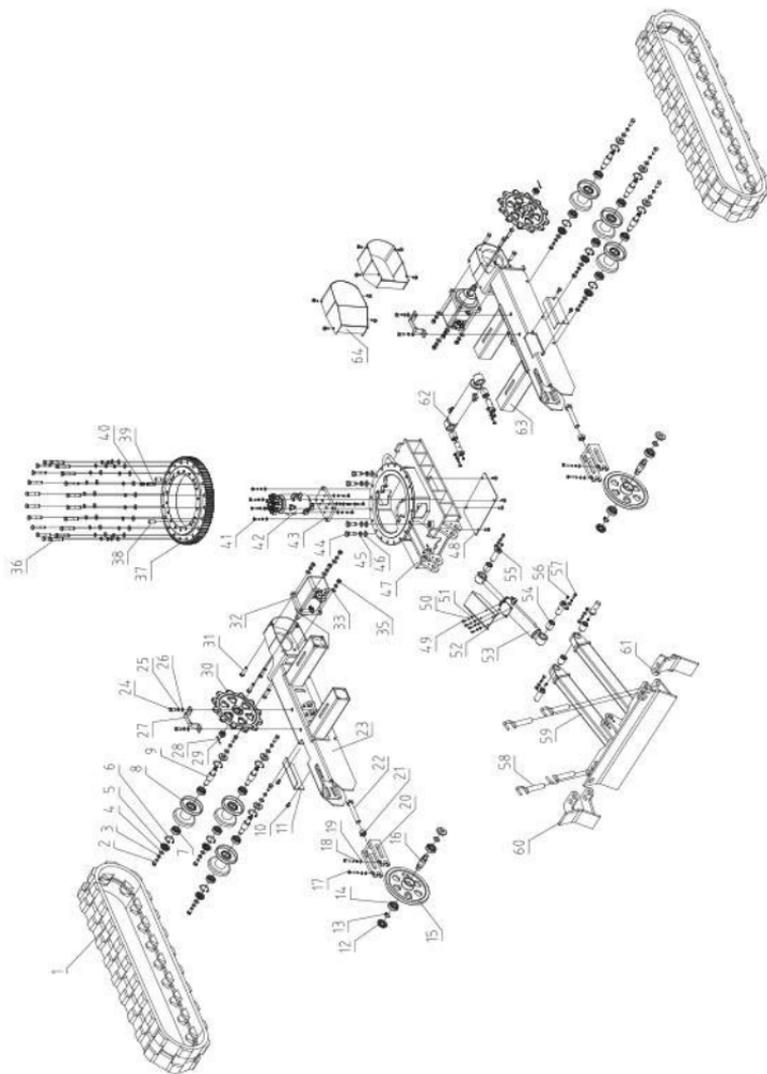
No.	Description	Q'ty
14	Operating Control Lever-Universal Joint Weldment	2
15	Left/Right Handle Lever	2
16	Nut M16	2
17	Operating Control Lever-Direction Block	2
18	Hexagon socket set screws with flat point M8x25	4
19	PTO Control Pedal	1
20	Pedal Shaft Spring	2
21	PTO Control Pedal-Shaft Weldment	1
22	Boom Swing Pedal-Shaft Weldment	1
23	Pin D10x45	4
24	Boom Swing Pedal	1
25	Cotter Pin D3x20	4
26	Pin D5x18	10
27	Pedal Connecting Rod	2
28	Straight Joint Bearing SQZL8-R5 JB/T5306	4
29	Connecting Rod M8x80	4
30	Nut M8	19
31	Nut M8 with reverse thread	4
32	Elbow Lever Knob Joint Bearing SQ8-R5 JB/T5306	4
33	Flat Washer D10	2
34	Spring Washer D10	2
35	Bolt M10x25	2
36	Oil Cup M6	5
37	Connecting Rod	3
38	Cotter Pin D2x16	10
39	Left/Right Handle Weldment	2
40	O-Ring 35x4	4
41	Left Traveling Operation Sleeve Weldment	1
42	Dozer Shaft Sleeve Weldment	1
43	Bolt M8x45	1
44	Right Traveling Operation Sleeve Weldment	1
45	Dozer Ball Knob	3
46	Oil Filter	1
47	Bolt M6x20	7
48	Cigarette Lighter Socket	1
49	Battery Negative Switch	1
50	Flat Washer D6	8
51	Spring Washer D6	8
52	Nut M6	2
53	Battery Negative Switch Mounting Plate	1

No.	Description	Q'ty
54	Switching Valve	1
55	Flat Washer D8	5
56	Spring Washer	5
57	Bolt M8x65	2
58	Horn	1
59	Electric Relay	2
60	Bolt M6x16	4
61	Copper Sleeve	2
62	Rotating Shaft Weldment	1
63	Flange Bolt M8x16	50
64	Lever Lock Rotating Shaft Weldment	1
65	Locking Lever	1
66	Locking Plate for Lever	1
67	Left Locking Plate	1
68	Right Locking Plate	1
69	Small Flat Washer D6	4
70	Lock Nut M6	5
71	Throttle Cable Plate Weldment	1
72	Flat Washer D12	4
73	Wave Spring Washer D12	2
74	Wear Washer D12-2	2
75	Cable Lever Weldment	1
76	Choke Lever Shaft	1
77	Locking Lever	1
78	Locking Handle	2
79	Flat Washer D5	1
80	Spring Washer D5	1
81	Bolt M5x12	1
82	Choke Torsion Spring	1
83	Lock Nut M12	3
84	Choke Cable Plate Weldment	1
85	Handle Sleeve	2
86	Pressure Spring	1
87	Steel Ball D6	1
88	Bolt M8x25	7
89	Engine Cover Plate Weldment	1
90	Radiator	1
91	Oil Cup M10x1	2
92	PD610 Straight Fitting	2



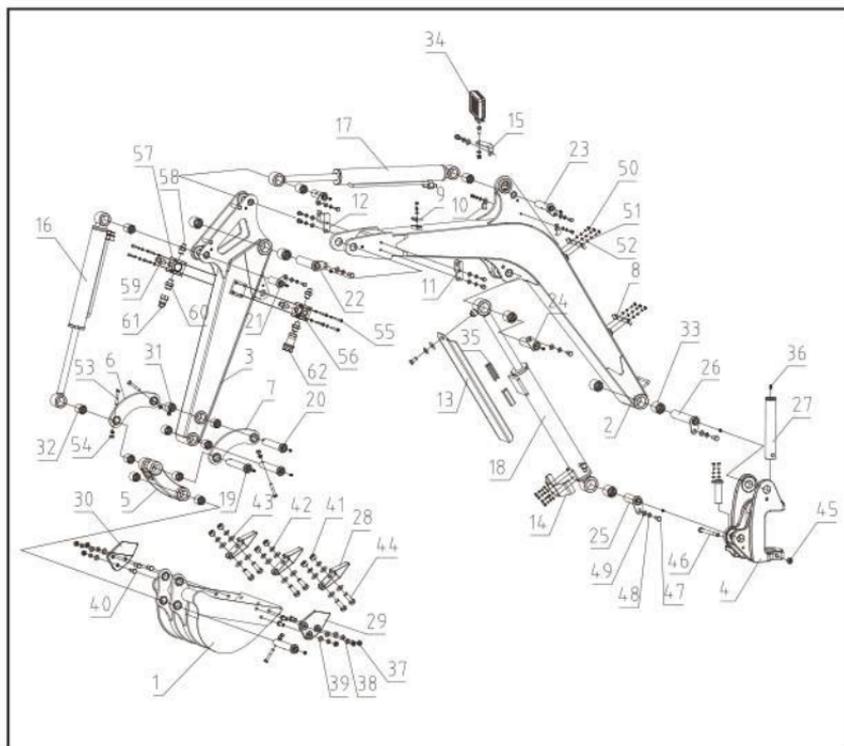
No.	Description	Q'ty
1	Swing Unit Platform	1
2	Steel Sleeve	2
3	Rotary Motor	1
4	Hex Socket Head Cap Screw M10x35	4
5	Small Gear	1
6	Thick Washer	1
7	Swivel Joint Mounting Bracket	1
9	All Metal Lock Nut M10	4
10	Flange Bolt M8x16	22
11	Engine Mounting Plate Weldment	1
12	Bolt M14x1.5	1
13	Washer D14	1
14	Hydraulic Oil Tank Weldment	1
15	Hex Socket Head Cap Screw M8x20	3
16	Threaded Round Sight Glass A20	1
17	Hydraulic Oil Tank Cover	1
18	Oil suction filter	1
19	Straight Connector	1
20	Clamp 25-38	1
21	Suction Hose	1
22	Oil Pump Suction Fitting 1/2	1
23	Bolt M8x160	4
24	Gear Pump 3.7x2	1
25	Swivel-Type Right-Angle Adapter 1/2	2
26	Bolt M8x25	5
27	Gear Pump Frame	1
28	Coupler KSP24	1
29	Coupler Sleeve	1
30	Gear Pump Frame Cover Plate	1
31	Flat Washer D4	4
32	Spring Washer D4	4
33	Cross Recessed Pan Head Screw M4x14	4
34	Engine Guard Plate	1
35	Engine	1
36	Bolt M10x45	4
37	Flat Washer D12	18
38	Spring Washer D12	18
39	Bolt M12x55	18
40	Nut M10	12
41	Flat Washer D10	16

No.	Description	Q'ty
42	Spring Washer D10	16
43	Motor Cover Turnover Support	1
44	Counter Weight	1
45	Shock Absorber	4
46	Bolt M16x195	4
47	Cooling Fan Mounting Frame	1
48	Fan	1
49	Flange Bolt M8x20	4
50	Engine Guard Plate Bracket	1
51	Battery Fixing Plate	1
52	Lock Nut M6	4
53	Hex Socket Head Cap Screw M6x12	4
54	Flat Washer D8	18
55	Spring Washer D8	18
56	Battery	1
57	Battery Basket	1
58	Battery Sling	2
59	Battery Mounting plate	1
60	Battery Lock Hook	2
61	Left and Right Decorative Panels	2
62	Battery Bracket	1
63	Gear Mudguard	1
64	Connecting Hose Weldment For Muffler	1
65	Muffler - Inside Tank	1
66	LH Mesh Panel Welding	1
67	RH Mesh Panel Welding	1
68	muffler assembly	1
69	TOPS Canopy Support	1
70	Rearview Mirror	2
71	Rearview Mirror Mounting Rod	2
72	Rearview Mirror Bracket	2
73	Bolt M8x20	4
74	Nut M8	4
75	Handhold	1
76	Flat Washer D16	14
77	Spring Washer D16	14
78	Bolt M16x60	10
79	Nut M16	6



No.	Description	Q'ty
1	Rubber Track	2
2	Bolt M12x30	12
3	Spring Washer D12	40
4	Washer	12
5	Seal B20x47x7	12
6	Circlip A47	12
7	Bearing 6204-2Rs	12
8	Supporting Roller	6
9	Supporting Roller Axle	6
10	Flange Bolt M8x16	16
11	Track-tension Adjusting Hole Cover	2
12	Seal D52xD28x7	4
13	Circlip A25	4
14	Bearing 6005-2Rs	4
15	Front Idler	2
16	Front Idler Axle	2
17	Bolt M8x50	2
18	Flat Washer 8	16
19	Spring Washer 8	16
20	Front Idler Fixing Frame	2
21	Nut M20	2
22	Hex Bolt M20x130	2
23	Right Side Frame Weldment	1
24	Bolt M10x25	4
25	Flat Washer 10	4
26	Spring Washer 10	4
27	Track Roller Frame	2
28	Cotter Pin 4x45	2
29	Axle Nut 1-20UNEF	2
30	Drive Sprocket	2
31	Bolt M12x50	8
32	Hydraulic Motor	2

No.	Description	Q'ty
33	Flat Washer 12	28
34	Key Ø25	2
35	Hexagon Lock Nut M12	8
36	Blot M12x70	20
37	Central Swing Circular Support	1
38	Pin 16x35	2
39	Central Swing Circular Support-Lubricating Joint	1
40	PD610 Straight Fitting	4
41	Blot M8x30	8
42	Central Rotary Joint	1
43	Central Rotary Joint Mounting Plate	1
44	Guide Limit Bolt M16x45	4
45	Flat Washer 16	4
46	Spring Washer 16	4
47	Base Weldment	1
48	Base Lower Cover Plate	1
49	Bolt M6x16	4
50	Flat Washer 6	4
51	Spring Washer 6	4
52	Dozer Cylinder Guard Plate	1
53	Dozer Cylinder	1
54	Bucket Shaft Sleeve	6
55	Dozer Cylinder Pin Weldment	6
56	Oil Cup M6	12
57	Bolt M8x20	6
58	Pin	4
59	Dozer	1
60	Right Dozer	1
61	Left Dozer	1
62	Track Side Hydraulic Cylinder	1
63	Left Side Frame Weldment	1
64	Motor Cover Weldment	2



No.	Description	Q'ty
1	Shovel Weldment	1
2	Boom Weldment	1
3	Arm Weldment	1
4	Boom Swing Frame	1
5	Connecting Rod	1
6	Arm Rocker-Right	1
7	Arm Rocker-Left	1
8	Boom Oil Hose Pressing Plate-Long	2
9	Boom Oil Hose Pressing Plate-Short	1
10	Boom Oil Hose Clamp	2
11	Quick Coupler Fixed Plate-Left	1
12	Quick Coupler Fixed Plate-Right	1
13	Boom Cylinder Protective Plate	1
14	Boom Cylinder Connector Protective Plate	1
15	Light Mounting Plate	1
16	Bucket Cylinder	1
17	Arm Cylinder	1
18	Boom Up&Down Cylinder	1
19	Shovel Swivel Pin Weldment	1
20	Shovel Pin Weldment	3
21	Arm Cylinder Pin Weldment-Short	2
22	Boom Upper Pin Weldment	1
23	Arm Cylinder Pin Weldment-Long	1
24	Boom Cylinder Pin Weldment-Long	1
25	Boom Cylinder Pin Weldment-Short	1
26	Boom Lower Pin Weldment	1
27	Boom Swing Frame Pin Shaft 40X240	1
28	Bucket Teeth	3
29	Bucket cutter plate-Left	1
30	Bucket cutter plate-Right	1
31	Bucket Shaft Sleeve 32x25x30	8

No.	Description	Q'ty
32	Bucket Shaft Sleeve D32xd25x40	4
33	Bucket Shaft Sleeve D40xd30x40	6
34	Work Light	1
35	Guide Plastic Block	2
36	Oil Cup M6	11
37	Nut M10	6
38	Spring Washer 10	6
39	Flat Washer 10	6
40	Bolt M10x30	6
41	Nut M14	6
42	Spring Washer 14	6
43	Flat Washer 14	12
44	Bolt M14x40	6
45	Lock Nut M10	1
46	Bolt M10x130	1
47	Bolt M8x20	6
48	Spring Washer 8	6
49	Flat Washer 8	6
50	Bolt M6x16	2
51	Spring Washer 6	10
52	Flat Washer 6	2
53	Bolt M8x50	4
54	Nut M8	8
55	Hex Socket Head Cap Screw M6x40	8
56	Three-way Globe Valve(Left)	2
57	Three-way Globe Valve(Right)	2
58	Straight Connector	2
59	Straight Connector	2
60	Straight Connector	2
61	Male Quick Coupling	1
62	Female Quick Coupling	1

ATTACHMENTS (SOLD SEPARATELY)

The simple construction of these attachments allows one person to install them on excavators for quick job changeovers.

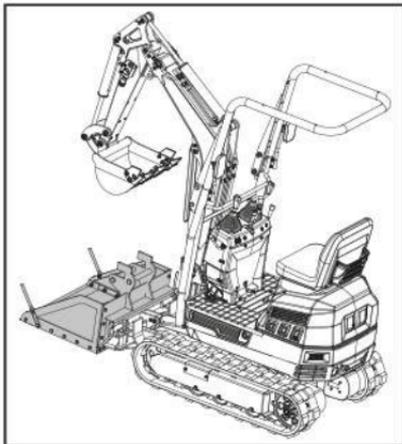
With the help of attachments, your excavator can become many additional tools for a wider variety of jobs, which makes the machine more efficient.

BLADE BOX BUCKET DUABLBXBK-E36

The blade box bucket can be mounted to either the dozer blade or the standard bucket, enabling two work modes without complex installation. This design streamlines operations for enhanced convenience and efficiency.

Specification

Overall Dimension	685x740x550 mm
Weight	53 kg



Mode 1



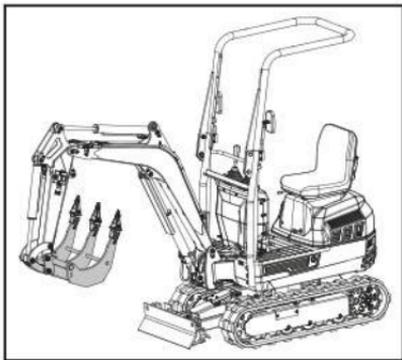
Mode 2

ROOT RAKE DUARTRAKE-E36

The root rake delivers precise control during grading, trenching, or material sorting. It can efficiently clear rocks, roots, and demolition waste.

Specification

Overall Dimension	530x600x150 mm
Weight	41 kg



RAKE RIDDLE BUCKET DUARAK-E36

The rake riddle bucket is suitable for a wide range of applications, including agriculture, horticulture, small-scale construction, demolition, landscaping, and waste processing. It is an ideal excavator attachment for screening solid materials, recovering submerged rocks and reclaiming landscaping materials.

Specification

Overall Dimension	600x600x505 mm
Weight	25 kg

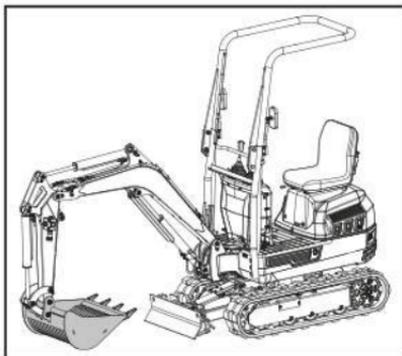


RIDDLE BUCKET DUAREBK-E36

The riddle bucket is suitable for a wide range of applications, including agriculture, horticulture, small-scale construction, demolition, landscaping, and waste processing. It is an ideal excavator attachment for screening solid materials, recovering submerged rocks and reclaiming landscaping materials.

Specification

Overall Dimension	430x600x190 mm
Weight	27 kg

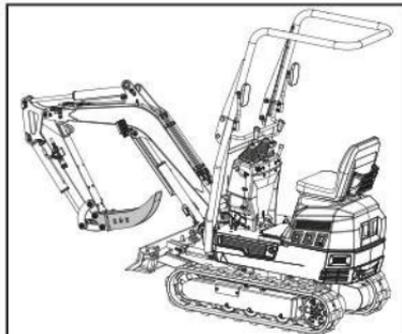


MICRO TRENCHING BUCKET DUAMTBK-E36

The micro trenching bucket excavates narrow trenches efficiently with minimal disruption for laying various utility lines. It significantly reduces damage to lawns and paved gardens, requires minimal excavation work, allows for easy backfilling, and enables quick landscape restoration.

Specification

Item No. S	Overall Dimension	Weight
DUAMTBK-E36	540x165x180mm	10.6 kg

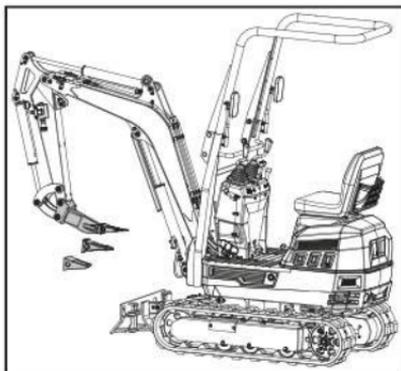
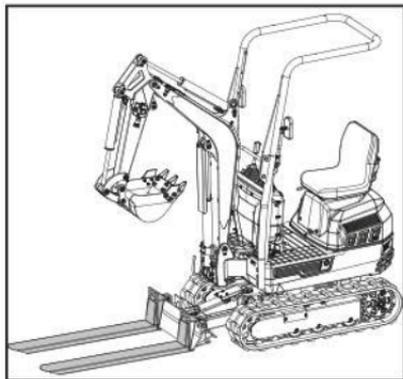


PALLET FORKS DUAFRK-E36

The pallet forks are connected to the dozer blade. This setup enables the machine to transport, load, and unload various palletized materials.

Specification

Overall Dimension	1250x720x290 mm
Weight	28.8 kg



GRADING BUCKET DUABK-E36-16/DUABK-E36-28/ DUABK-E36-20

The grading bucket is a versatile attachment for excavators, designed primarily for fine grading, leveling, and spreading materials like soil, gravel and sand. Its wide, shallow profile allows for creating precise slopes and flat surfaces with high efficiency.

DUABK-E36-16 Specification

Item No. S	Overall Dimension	Weight
DUABK-E36-16	400x350x320 mm	13.5 kg
DUABK-E36-28	700x350x320 mm	21 kg
DUABK-E36-20	500x350x320 mm	15 kg

RIPPER TOOTH DUARIPPER-E36

The ripper tooth set includes three specialized tips for diverse applications.

The penetration tooth delivers maximum penetration force for fracturing hard rock and concrete.

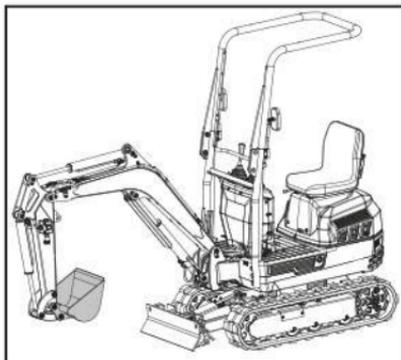
The flat tooth excels at surface stripping and scraping tasks like asphalt removal.

The Frost Tooth is specifically engineered to efficiently break up frozen ground and compacted materials.

This versatile selection ensures optimal performance across various ground conditions.

Specification

Overall Dimension	500x160x160 mm
Weight	11.34 kg



DIGGING BUCKET DUADGBK-E36

The narrow digging bucket is designed for precise digging in confined spaces. Its slim profile allows it to tackle tasks such as trenching for utilities, digging foundations for walls or posts, and working close to obstacles where a standard bucket would not fit.

Specification

Overall Dimension	500x250x260 mm
Weight	15.69 kg

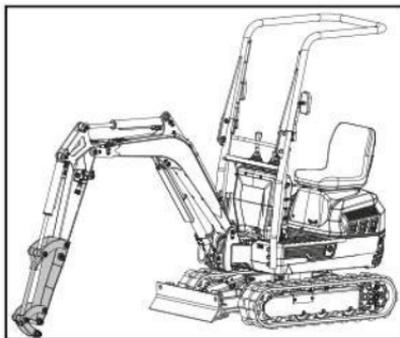


STICK EXTENSION DUASKEXT-E36

The stick extension increases the excavator's digging reach, enabling a wider working range and more efficient operation.

Specification

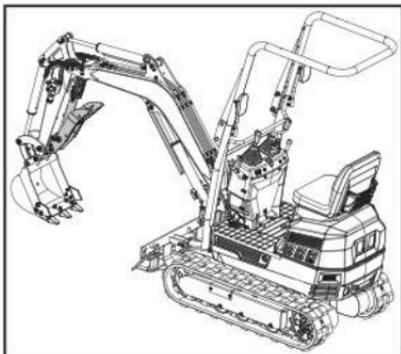
Overall Dimension	650x190x160 mm
Weight	17.8 kg



HYDRAULIC THUMB included with excavator

The hydraulic thumb acts as a versatile grip for your mini excavator. It works against the bucket to securely pick up, hold, and place irregular objects like rocks and debris. This attachment significantly improves efficiency and control in material handling, demolition, and landscaping tasks.

Overall Dimension	600x160x250 mm
Weight	15.5 kg

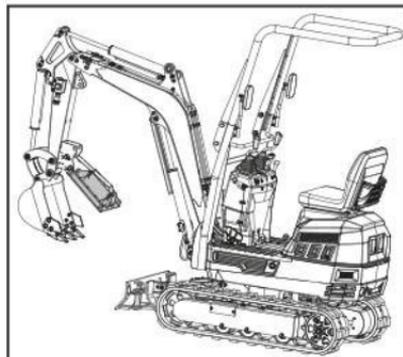


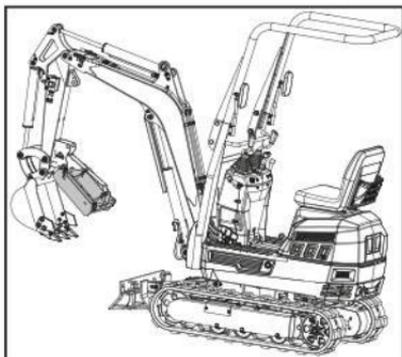
CLAW DUACLW-E36

The clamp without cover can be used to collect leaves, gravel and straw. The complete claw with cover is ideal for material of small particles like sand and soil.

Specification

Overall Dimension	367x355x164 mm
Weight	30 kg



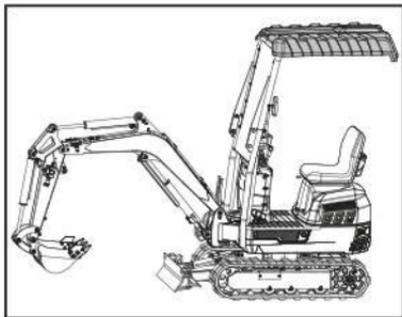


CANOPY

The canopy provides essential overhead protection for the operator against falling objects, sunlight, rain and other weather conditions. It is designed for easy installation and disassembly.

Specification

Overall Dimension	1105x917x209 mm
Weight	14.7 kg

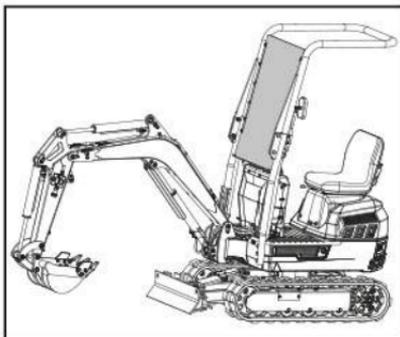


FRONT WINDSHIELD included with the excavator

The front windshield acts as a shield against airborne dust, mud and other debris, providing the operator with an unobstructed view for safer and more precise operation. This enhances both comfort and operational efficiency.

Specification

Overall Dimension	950x607x5 mm
Weight	3.2 kg

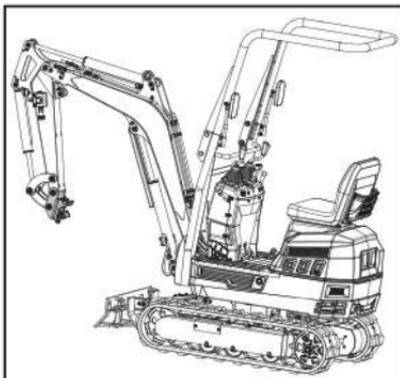


QUICK COUPLER

The quick coupler features a simple design and easy operation, enabling faster attachment changes and improved work efficiency.

Specification

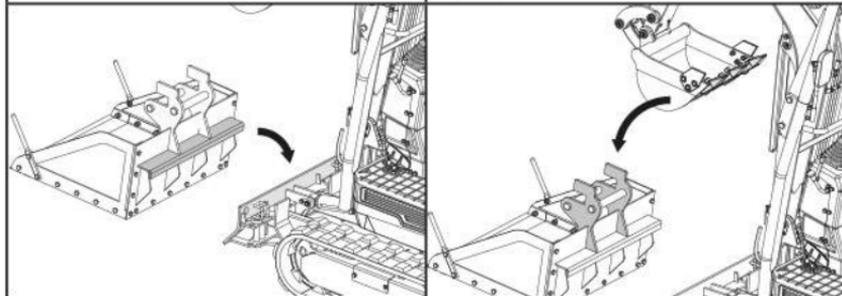
Overall Dimension	220x165x140 mm
Weight	8 kg



Blade Box Bucket DUABLBXBK-E36

Model 1 - Lower the dozer blade to the ground. Attach the blade box bucket to the dozer blade and securely hook it onto the top edge of the blade.

Model 2 - Adjust the standard bucket to the proper height and angle. Attach the blade box bucket to the standard digging bucket and secure its hooks between the teeth of the digging bucket.



Root Rake DUARTRAKE-E36

Rake Riddle Bucket DUARAK-E36

Riddle Bucket DUAREBK-E36

Ripper Tooth DUAMTBK-E36/31296

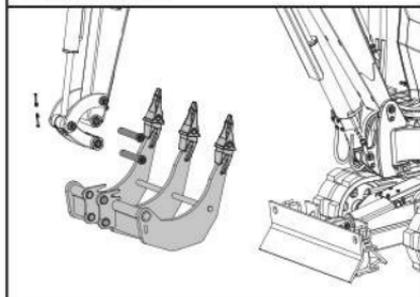
Grading Bucket DUABK-E36-16/
DUABK-E36-28/DUABK-E36-20

Digging Bucket DUADGBK-E36

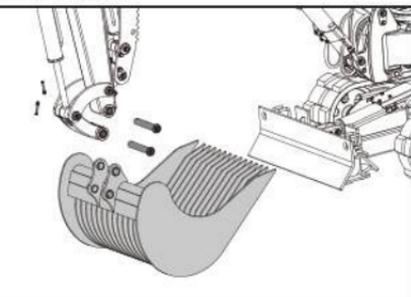
Quick Coupler

Stop the machine and lower the bucket to the ground. Remove the bucket pins and detach the standard bucket from the machine. Install the attachment onto the machine using the pins removed in the first step.

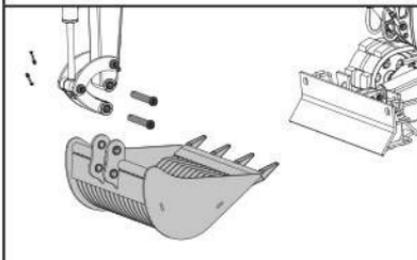
DUARTRAKE-E36



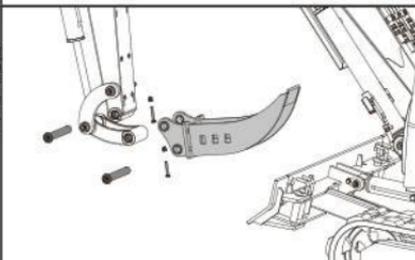
DUARAK-E36



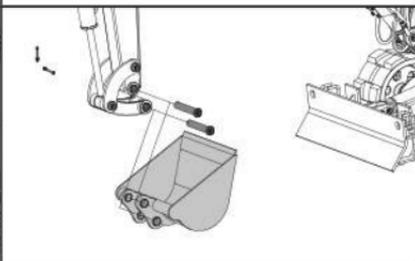
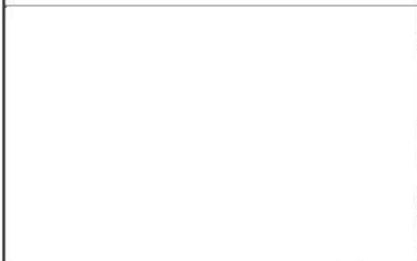
DUAREBK-E36



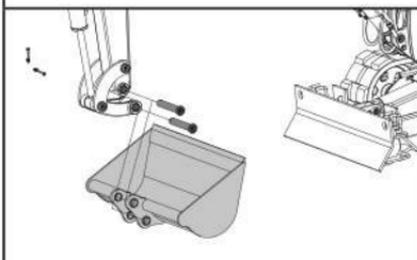
DUAMTBK-E36



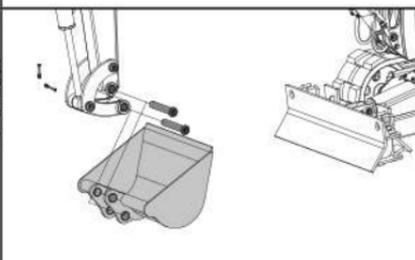
DUABK-E36-16



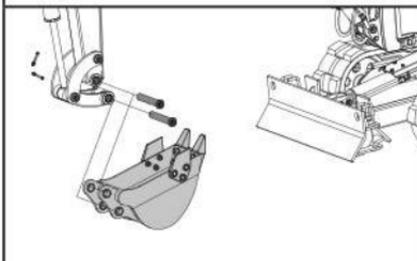
DUABK-E36-28



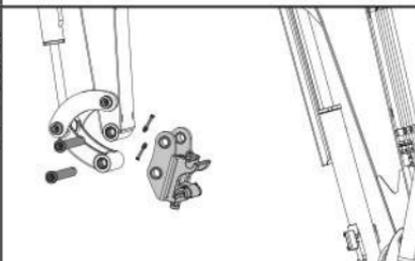
DUABK-E36-20



DUADGBK-E36

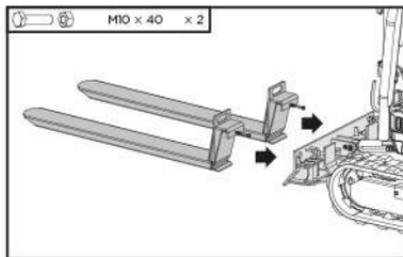


QUICK COUPLER



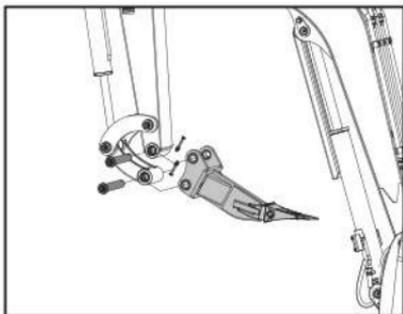
Pallet Forks DUAFRK-E36

Stop the machine and lower the dozer blade to the ground. Slightly loosen the bolts M10x40 and nuts attached to the pallet forks. Lift the dozer blade a little and hook the two pallet forks to it. Tighten the bolts to secure the connection.



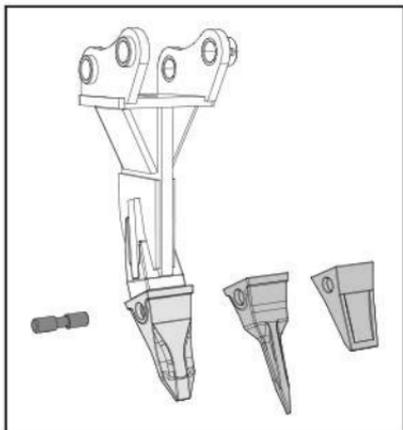
Ripper Tooth DUARIPPER-E36

Stop the machine and lower the bucket to the ground. Remove the bucket pins and detach the standard bucket from the machine. Install the ripper tooth onto the machine using the pins removed in the first step.



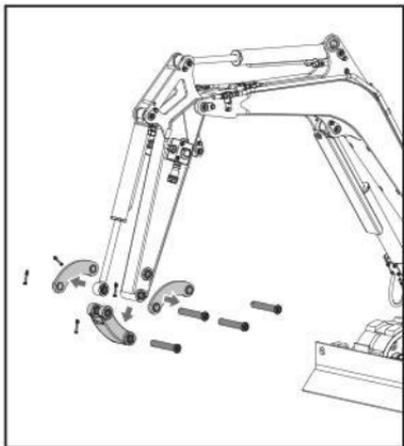
Replace Different Tips

Remove the retaining pin and detach the ripper tooth tip. Then, install a different tip and reinsert the pin to secure it.

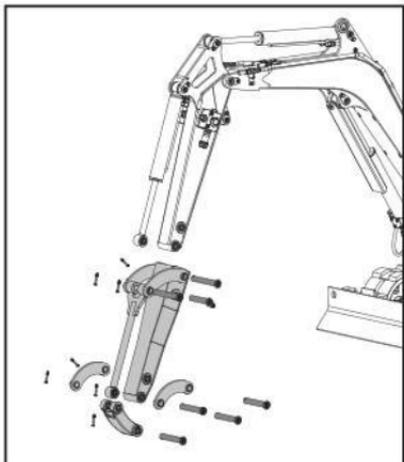


Stick Extension DUASKEXT-E36

1. Disconnect the standard bucket from the arm. Remove the entire linkage assembly including the arm rockers and connecting rod from both the arm and the cylinder.

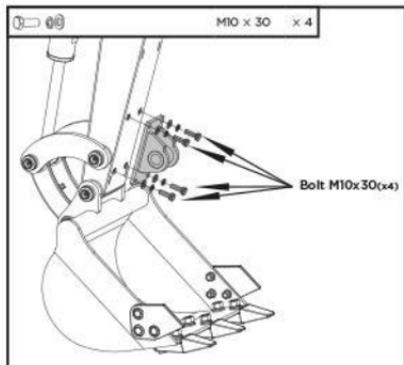


2. Install the stick extension onto the arm and connect the cylinder, and then secure both connections with the provided pins. Re-assemble the linkage assembly removed in the first step to the stick extension and tilt cylinder.

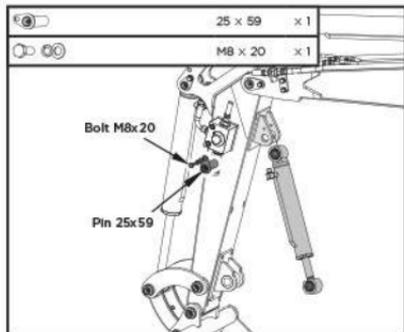


Hydraulic Thumb

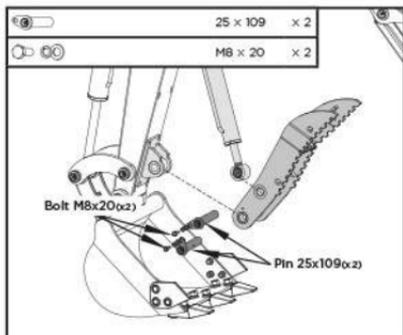
1. Demount the pre-assembled bolts M10x30, flat washers and spring washers from the thumb bracket.
2. Position the thumb bracket onto the arm and align the mounting holes. Install the bolts with flat washers and spring washers demounted in Step 1, and tighten them securely.



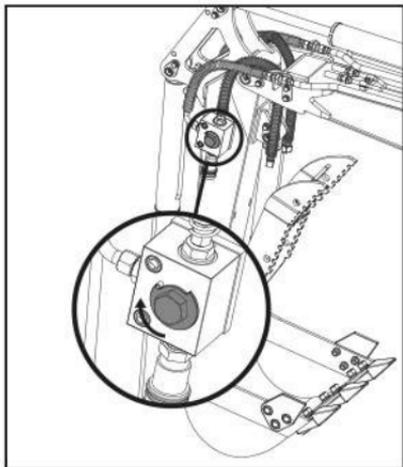
3. Connect the cylinder base end to the cylinder bracket on the arm. Secure the connection using pin 25x59 and its retainer including bolt M8x20 and washers.



4. Align the mounting holes of the hydraulic thumb, with the lower ones to the thumb bracket and upper ones to the cylinder rod end. Insert the pins 25x109 into both connections and secure them with bolts M8x20 with washers.



5. Connect the hydraulic hoses from the hydraulic thumb to the excavator's auxiliary hydraulic port. Then, use an adjustable wrench to loosen the angle valve's hex bolt clockwise until it stops.

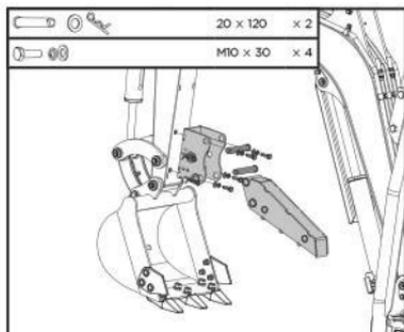


Thumb

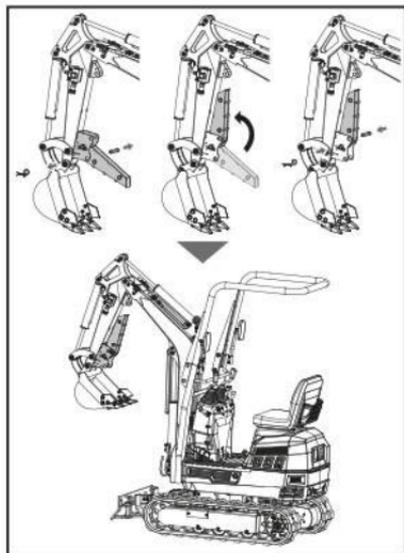
Demount the pre-assembled pins 20x120, washers and R-pins from the thumb bracket.

Attach the bracket to the arm and align the holes. Tighten the four bolts M10x30 with washers into the threaded holes to secure the connection.

Insert the bigger end of the thumb into the bracket, align the holes and fasten with two pins, washers and R-pins.



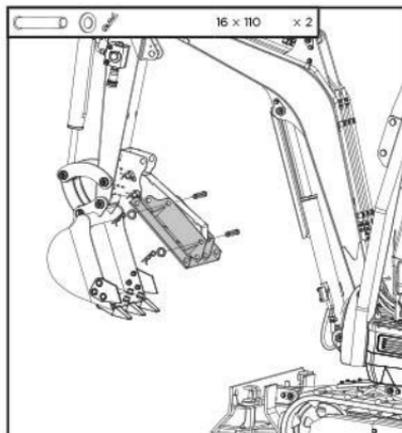
When the thumb is not in use, pull out the lower R-pin and the pin shaft, fold up the thumb into the bracket and fix it in the upper position with the previously pulled out parts.



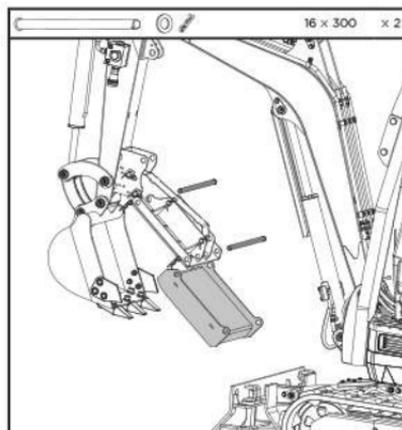
CAUTION Never use the thumb and claw when working with round or cylindrical material.

Claw DUACLW-E36

1. Demount the pin shafts 16x110, washers and R-pins from the clamp. Position the clamp to thumb and align the holes. Insert the two pins through the holes. Install the washers and secure the pins with the R-pins.

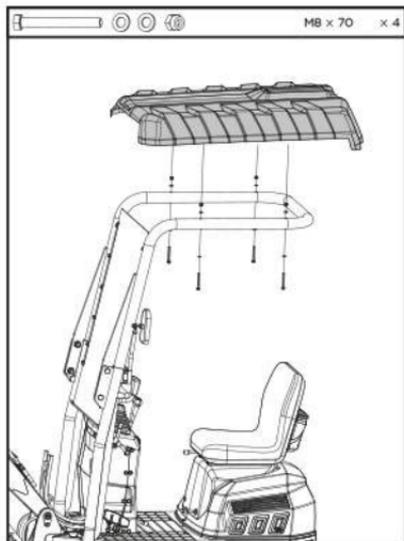


2. Demount the pre-assembled pin shafts 16x300, washers and R-pins from the claw cover. Attach the cover to the clamp from outer side and align the holes. Insert the pin shafts through the holes, install the washers and secure with R-pins.



Canopy

Position the canopy top onto the frame. Align the mounting holes in the canopy with the corresponding holes in the frame as shown. Fasten the canopy top in place with the provided bolts M8x70, washers and nuts.



Front Windshield

Position the front windshield against the bracket. Place the pressure plate over the windshield on one side and align all the mounting holes. Connect them loosely with bolts M8x25, washers and nuts. Repeat the process for the other side. Securely tighten all the fasteners.

