Mini Crawler Excavator
User Manual

Read Carefully Before Use
Keep for Future Reference

Preface

Congratulations on your new mini excavator!

Welcome to the user manual for the mini excavator. We are thrilled to provide you with a comprehensive guide to operating and maintaining this powerful and versatile machine. Whether you're a seasoned professional or a newcomer to the world of construction and excavation, this manual is designed to be your reliable companion throughout your journey with the mini excavator.

Within these pages, you'll find detailed instructions, safety guidelines, and valuable tips to ensure that you operate the mini excavator efficiently, effectively, and, most importantly, safely. We aim to empower you with the knowledge and confidence needed to harness the full potential of this equipment while prioritizing the well-being of both yourself and those around you. From assembling and starting up the mini excavator to executing complex digging and lifting tasks, we've covered every aspect to make your experience seamless. Additionally, you'll discover insights into routine maintenance procedures that will keep your mini excavator in prime condition, prolonging its lifespan and optimizing its performance.

Safety is paramount, and we emphasize the importance of adhering to the provided guidelines. This manual clearly explains safety protocols, operational best practices, and hazard mitigation techniques. By prioritizing safety, you're protecting yourself and creating a secure environment for your team and job site.

Remember, this manual is not just a technical document; it's a guide tailored to your needs. We encourage you to familiarize yourself with its content, explore its sections, and refer back to it whenever needed. Our commitment is to empower you with the knowledge necessary to make the most of your mini excavator, elevating your capabilities and contributing to successful projects.

Thank you for choosing our mini excavator. Your journey starts here, and we're excited to embark on it together. Let's dig in!

Disclaimer

Read this disclaimer completely and carefully before proceeding with the rest of the manual content.

1. **Product Modifications**

   Any modifications or alterations to AHM products void any warranties and may result in damage or injury. AHM shall not be liable for any damages resulting from such modifications or alterations.

2. **Compliance with Laws**

   Customers shall be liable for ensuring that the use of AHM products complies with all applicable laws and regulations in their respective jurisdictions. AHM shall not be responsible for any violations of laws or regulations resulting from the use of AHMName products.

3. **Correct Use**

   Always use AHM products only as directed in the accompanying manuals. Failure to follow instructions may result in injury or damage.

   Always ensure the assembly, installation, operation, maintenance, or repair of AHM products is carried out by a competent person.

   Regular maintenance should be performed throughout the lifecycle of AHM products. You are responsible for ensuring the products operate as intended.

   Always wear appropriate protective gear.

4. **Third-Party Products**

   AHM Name shall not be liable for any damages or losses resulting from the use of third-party products in conjunction with AHM products. Customers shall refer to the third-party's guidelines and/or warranties (if any) for any third-party products used.

5. **Limitation of Liability**

   AHM Name shall not be liable for any direct, indirect, punitive, incidental, special, or consequential damages to property or life, whatsoever arising out of or connected with the use or misuse of AHM products. In no event shall AHM Name’s liability exceed the value of the products sold.

6. **Warranty**

   Refer to the sales page for warranty information.

This disclaimer states the entire obligation of AHM with respect to AHM products. If any part of this disclaimer is determined to be void, invalid, unenforceable, or illegal, including but not limited to the warranty disclaimers, liability disclaimers, and liability limitations set forth above, the invalid or unenforceable provision will be deemed superseded by a valid and enforceable provision that most closely matches the intent of the original provision and the remainder of the agreement shall remain in full force and effect.

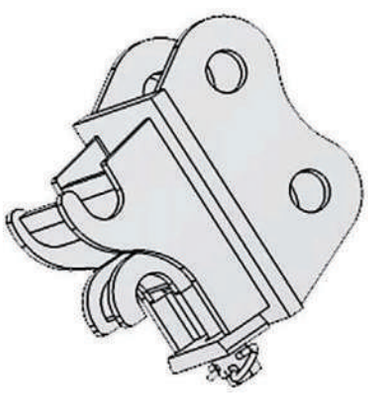
Contents

1 Overview

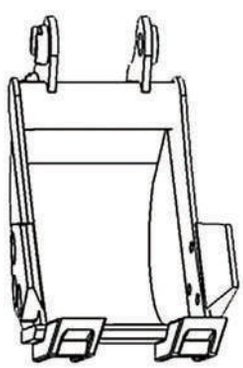
1.1 About the Machine

This excavator is versatile and applicable to farming, landscaping, ditching and fertilization in gardens, vegetable greenhouses, agricultural transformation, indoor demolition, small earthwork, civil engineering, road recovery, basement and indoor construction, concrete breaking, cable burying, water supply line laying, garden cultivation, desilting, and the like. Your excavator is designed for lasting performance, featuring a robust BRIGGS & STRATTON gasoline engine. With this trusted engine, you can expect durability and consistent power for your operations. Moreover, the versatility of this excavator extends to its compatibility with a wide range of work equipment. Whether you require a quick hitch, log grapple, ripper, leveling bucket, auger, or narrow bucket, this excavator can serve your needs.

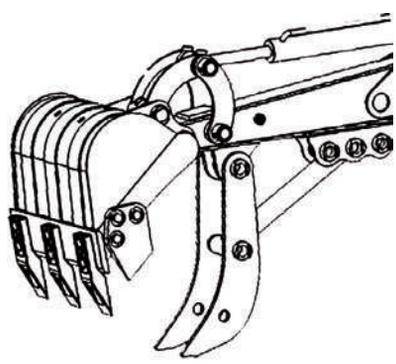
1.2 Work Equipment Compatibility



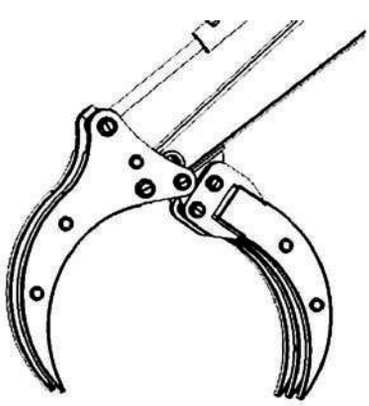
Quick Hitch



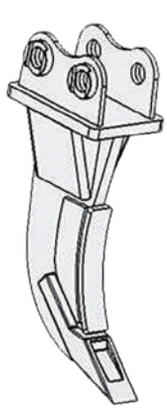
Narrow Bucket



Mechanical Thumb

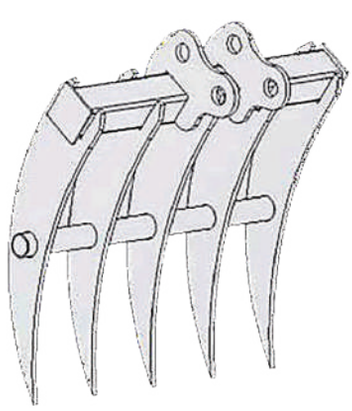


Log Grapple



Ripper

Auger



Rake

2 Safety Information

2.1 General Safety

Danger

- **ALWAYS** follow federal, state and local laws, codes and regulations concerning the use of construction machinery.
- Read this manual before actually operating the excavator. Familiarize yourself with the instructions that provide crucial information about the specific model's controls, maintenance requirements, and safety precautions.
- **ONLY** guarantee or allow persons with holistic knowledge of the safe operation of an excavator to operate, inspect, or maintain the excavator.
- When operating, inspecting, and maintaining the excavator, strictly follow all the precautions and safety information mentioned in this manual.
- **DO NOT** operate, inspect, or maintain the excavator when alcohol, drugs, medicines, fatigue, or lack of sleep impair your faculties or judgment. **NEVER** allow any persons under such conditions to operate, inspect, or maintain this heavy machinery.
- Operating heavy equipment requires your full attention. Avoid distractions and remain focused on the task at hand.
- **IMMEDIATELY** stop using the excavator and contact Customer Service if it shows any signs of anomalies or malfunctions, such as noise, vibration, odor, leakage, error alarms, etc. **NEVER** attempt to resume using the excavator if the issues persist without resolution.

2.2 Operation Temperature Safety

Warning

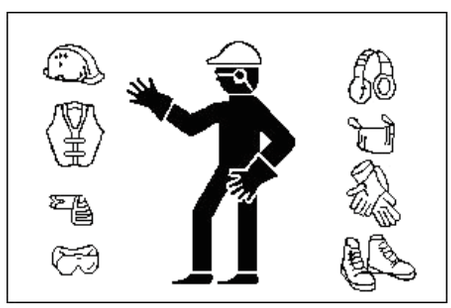
- For proper functioning and expected performance of the excavator, **DO NOT** operate the excavator if the ambient temperature is higher than 113 °F (45 °C) or lower than 5 °F (–15 °C).

  Operating the machine under an ambient temperature higher than 113 °F (45 °C) can cause the engine to overheat, compromise your energy efficiency, and shorten the hydraulic system's service life.
- If the excavator works at an ambient temperature below 5 °F (–15 °C), the gaskets and other rubber parts may freeze or harden, causing early and excessive wear to the excavator.
- Under cold temperatures, the excavator may take some time to warm up before working normally. After starting the engine, let it run idle for a couple of minutes and allow all systems a few minutes to get ready.
- **ONLY** use the rubber track at temperatures between –13 °F and 131 °F (–25 °C and 55 °C).
- If the excavator must work in such conditions, please consult Customer Service.

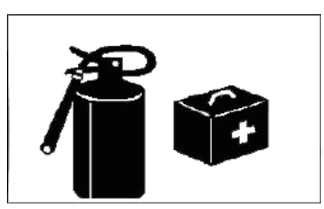
2.3 Personal Safety

⚠ Warning

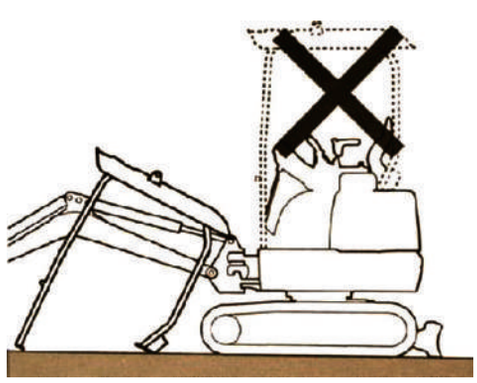
- **DO NOT** wear loose clothes or accessories that may get caught in the moving parts of your excavator in operation. Wear clothes that are oil-repellent. Replace them if grim or grease start to build up. Fabrics coated or soaked with grim can burn in proximity to heated machinery.
- **ALWAYS** use personal protective equipment (PPE) suitable to your task. Always wear ANSI and OSHA-approved eye, breathing, and hand protection while using this product. Nonslip and steel-toe footwear is also highly recommended. Other equipment such as ear, head, and body protection may also be necessary depending on your work, work environment, and other equipment.



- **ALWAYS** keep a fire extinguisher and first-aid kit in an easily accessible place.



- Familiarize yourself with the protocols for using the first-aid kit and operating the fire extinguisher. Ensure that you provide training to other individuals who will be operating the excavator. This ensures that everyone is prepared to handle potential emergencies effectively.
- Display the contact details of the nearest Emergency Room (ER) prominently in the operator's area. Make sure that all personnel operating the excavator are well-informed about this information.
- Do not operate with the cab cover removed. Ensure the protective barriers, guards, screens, or covers are properly installed and secured before operating the excavator. Do not remove any safety devices except when inspecting and servicing the excavator. Always check that the safety devices are in good condition before operating.

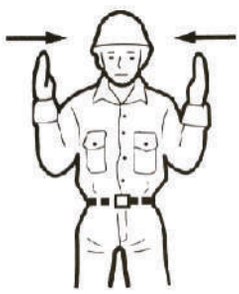


2.4 Operation Safety

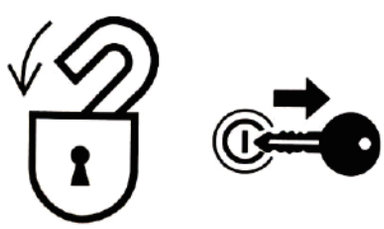
⚠Warning

2.4.1 General Operation Safety

- Due to the nature of construction work, a signalman or flagman is necessary. Always ensure that you and any person involved fully understand the gestures and signals used by your signalman or flagman. If such communication fails at any time, use an intercom.



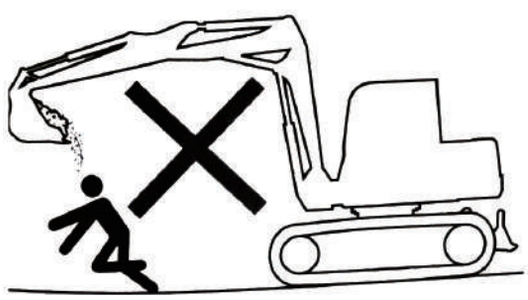
- Before commencing any operations, run a comprehensive drill rehearsal to ensure every participant comprehends, can effectively respond to, and proficiently practice the designated signals and emergency protocols.
- Clean the soles of your shoes of any dirt, grease, or gravel on your soles before going into the cab. Operating the excavator pedal with dirt and grease on the soles may result in uncontrollable throttle or accidental falling from the cab.
- **NEVER** place any plastic or glass bottle in the cab, which could catch fire.
- **ALWAYS** lower your working device to the ground and shut the engine down before leaving the driver's seat. Store the key(s) in a designated place that is inaccessible to unauthorized use.



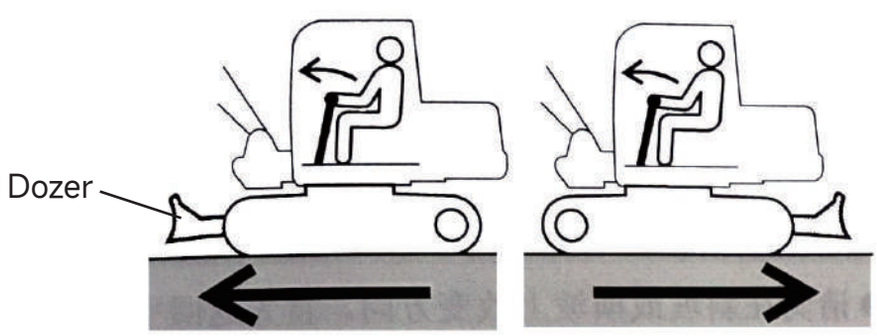
- **ALWAYS** check that the control rod/joystick is in neutral before starting or stopping the engine.
- Do not enter or exit the excavator by jumping. **ALWAYS** mount the excavator as depicted. **NEVER** attempt to get on and off a moving excavator. **NEVER** use the control rod/joystick as a handle.
- If the excavator must work in such conditions, please consult Customer Service.

- **NEVER** carry any persons with the excavator.

- **AWLAYS** circle the excavator to check for anomalies before entering the cab and operating.
- **ONLY** start the excavator when no one is within its operation radiuses.
- **NEVER** start the engine if you see a **"DO NOT OPERATE"** warning label or similar signs in the driver's cab, the control rod, or the start switch.
- **NEVER** move the bracket over any person. Debris falling off could cause serious injuries or even death.



- **ALWAYS** visually check that the dozer is in front of the driver's seat before operating. If the dozer is at the rear of the driver's seat, the controls for turning and traveling will operate in reverse, contrary to the intended direction for the excavator's movement.



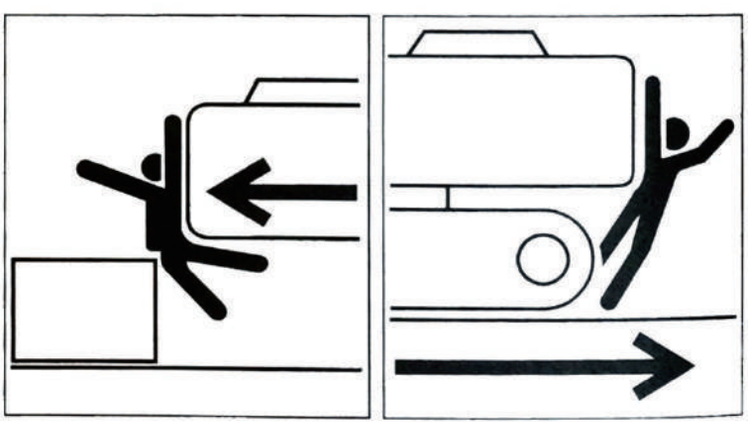
- **DO NOT** operate on soft or damp soil ground, on which this excavator may tilt or fall over. **DO NOT** operate on unstable ground. If the ground vibrates or shakes as you drive over, cease driving and exit the excavator immediately.

- This excavator is designed for digging, bulldozing, and ditching. It does not have a compatible hoisting apparatus, so consult a professional before operating it for that purpose.

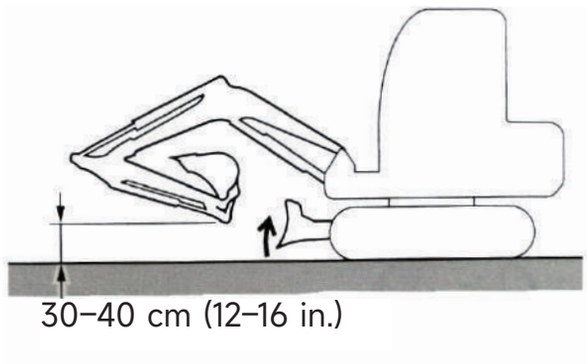
- **ALWAYS** know the locations of obstacles such as ditches, utility lines (like gas, power, and water), and things that might fall (like trees, overhead wires, or stones on a cliff).

2.4.2 Travel Safety

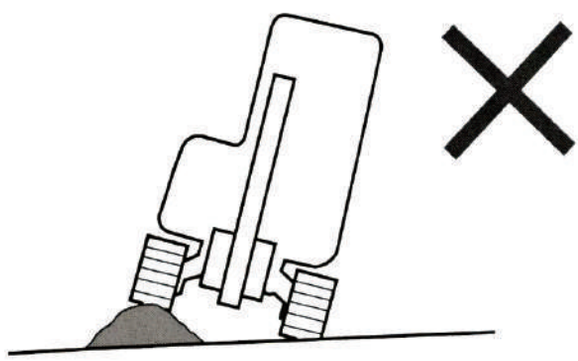
- **ALWAYS** check with the signalman or flag man that no person is standing within the operating radius of the excavator.



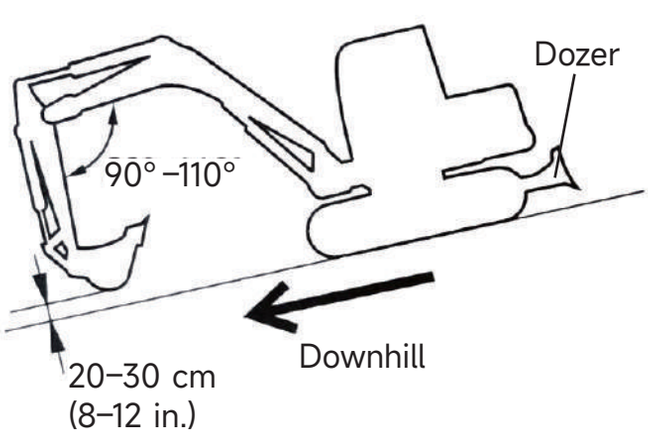
- **ALWAYS** confirm that there is no obstruction before the dozer that may topple the excavator while traveling. Raise the dozer and bucket as shown above the ground by 30 cm to 40 cm, depending on the specific terrain.

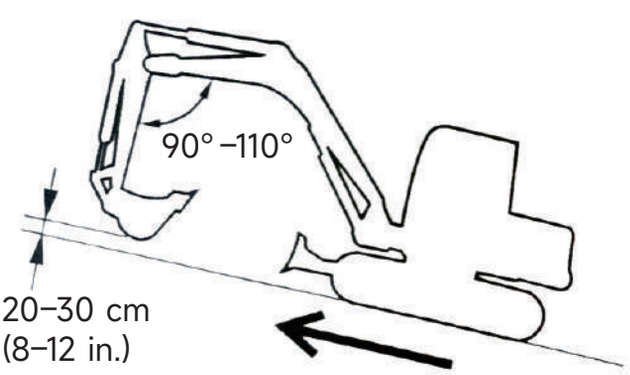


- **AVOID** traveling as shown below. Lower the dozer closer to the ground and travel slowly if you must. **DO NOT** attempt to climb obstacles that will tilt the excavator to an angle of 10° or higher.

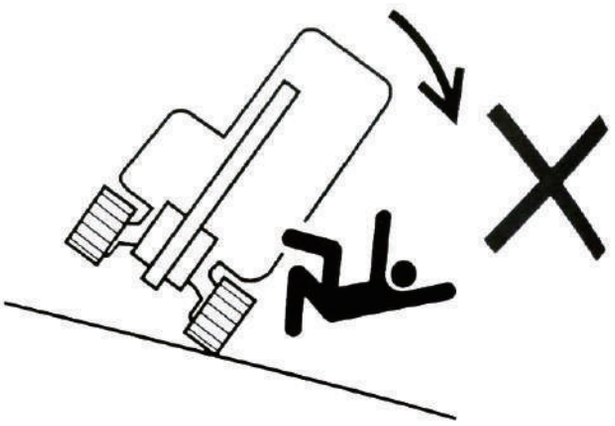


- Maintain a low speed while traversing rough terrain; avoid abrupt starts, stops, or sudden changes in direction. Such actions could cause the working device to contact the ground, jeopardizing the excavator's balance and potentially harming nearby structures.
- Exercise caution when navigating slopes. Ensure the excavator's stability when moving on slopes or inclines. Refrain from operating on excessively steep slopes where the excavator's stability is compromised (maximum angle: 30°, lateral tilt: 10°). The excavator's stability can vary depending on the specific work conditions, potentially falling below the mentioned values.
- Before traveling downhill, swing the cab 180° so the dozer is at your back. Adjust the arm and boom in the position as shown, and pay close attention to the slope ahead.

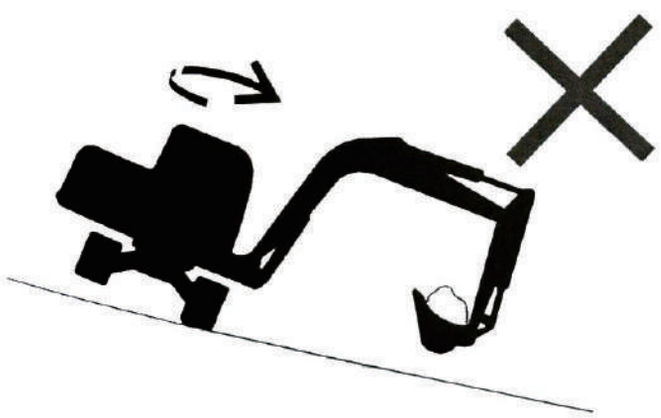


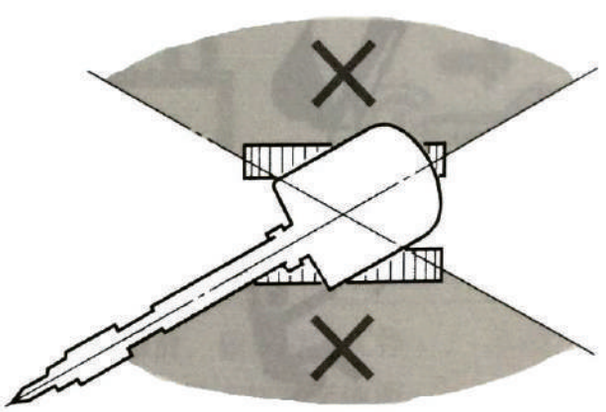


- Before traveling uphill, lower the dozer and bucket to 20–30 cm above the ground and ensure the dozer is ahead. Lower the dozer into the ground and shut down the excavator in case of emergency.
- **NEVER** go backwards on slopes. The arm and boom are heavier than the cab when equipped with a crashing hammer, crusher, or a long bucket rod. **DO NOT** dig or operate laterally with a rod (boom) toward the downhill direction.
- Avoid altering your direction while on a slope or a cross slope. Instead, navigate back to level ground before selecting a new path. This approach helps maintain stability and safety during directional changes.



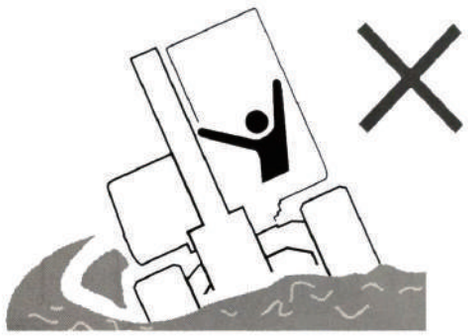
- **NEVER** swing the cab on slopes. The excavator is more susceptible to rolling in the lateral direction than the longitudinal one. Exercise caution when executing lateral turns (swings) when the bucket is heavy. **NEVER** swing the cab abruptly when the bucket carries a heavy load, even on level ground.





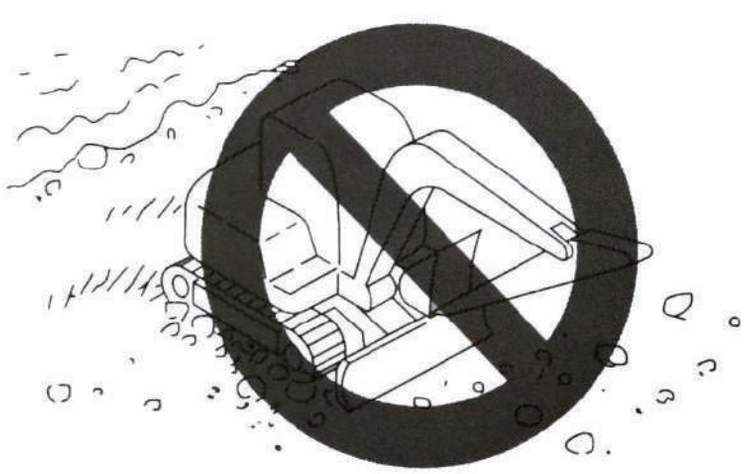
- While moving across gentle slopes covered with grass, leaves, or on wet metal plates or frozen ground, be cautious of potential slipping hazards. Ensure the excavator is not positioned sideways on the slope to prevent unintended slipping incidents.
- Exercise **EXTREME CAUTION** when operating the excavators on snow or ice. Objects on the road shoulder or roadside may be concealed beneath the snow, rendering them invisible. This poses a risk of the excavator overturning or colliding with these snow-covered objects. Therefore, exercise caution while operating the excavator in such conditions. Consult professional advice on operating an excavator under extreme weather conditions.

- Steer clear of entering areas with soft ground, as the excavator's weight may induce tilting, leading to the risk of collapse or sinking. If you find it necessary to operate in such conditions, it's advisable to seek professional guidance or assistance beforehand.



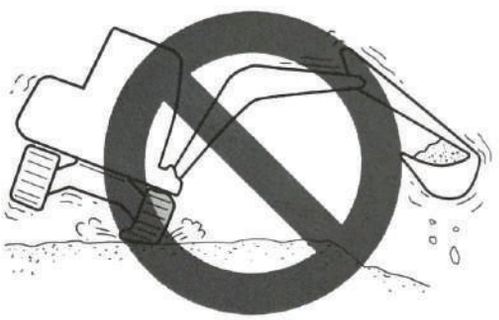
- **ALWAYS AVOID** driving and turning on gravel, highly uneven hard rock, steel beams, scrap iron, or near the edge of a plate, can damage the rubber track.

- Navigating across riverbeds or ground with gravel could lodge gravel in the track, potentially causing track damage or derailment. Refrain from utilizing this excavator in marine environments. The salt content may corrode the steel track core.



- **DO NOT** travel on newly paved asphalt roads or similarly heated surfaces, as this **WILL** compromise the service life of the rubber track. **NEVER** travel with the rubber track removed for better traction, as this **WILL** shorten the service life of the sprockets.

- Due to the rubber composition of the entire track, rubber tracks may not offer the same stability as steel tracks. Exercise caution during lateral turns and swings.

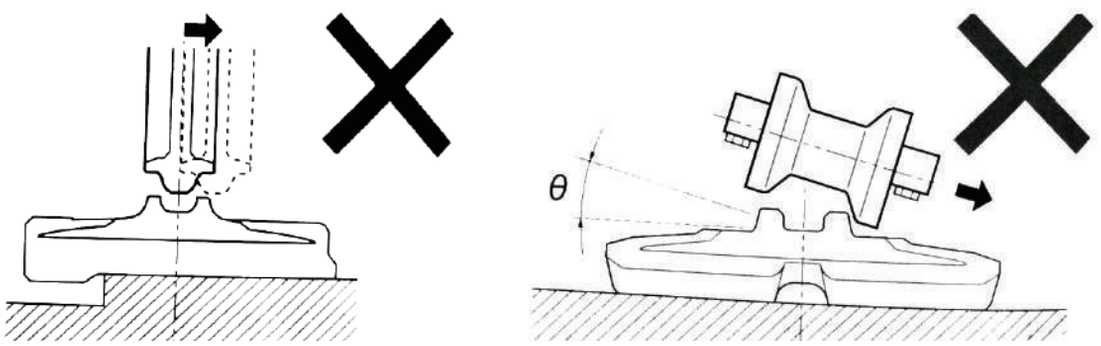


- When the vehicle encounters obstacles like pebbles, rocks, or other substantial steps (20 cm or higher), ascend at a perpendicular angle without changing direction on the steps.

- **DO NOT** change the direction as you go up a slope.

- Refrain from positioning one track on a slope or protruding surface while the other track is on a flat area (where the excavator inclines 10° or higher). Travel with both tracks on the flat surface.

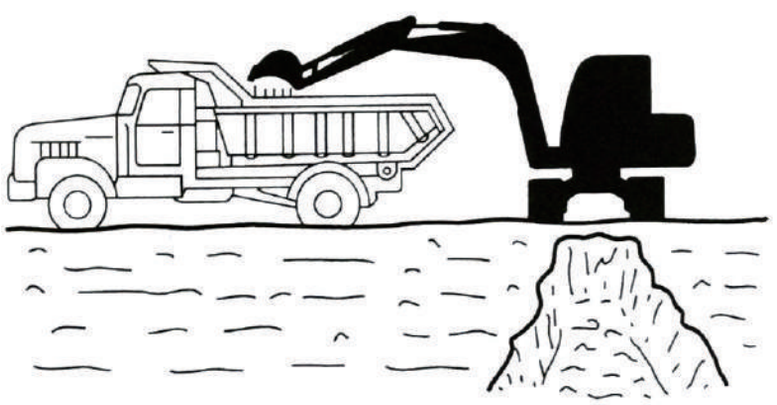
- **NEVER** change direction or swing the cab when the track is loose, as shown. If the excavator travels in reverse, the sprockets **WILL** derail from the rubber track. Similarly, the track **WILL** detach if you swing the cab in any direction.



2.4.3 Load & Unload Safety

⚠ Warning

- **NEVER** raise the bucket over anyone, not even a driver sitting in the cockpit.
- **ALWAYS** ensure the driver's safety when loading. Do not apply the load until the driver arrives at a safe place. **ONLY** load/unload from the back of a vehicle.

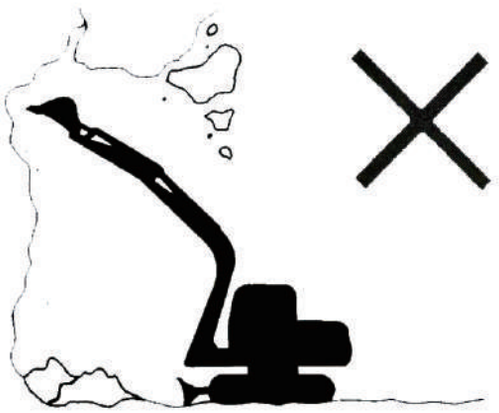


2.4.4 Excavation Safety

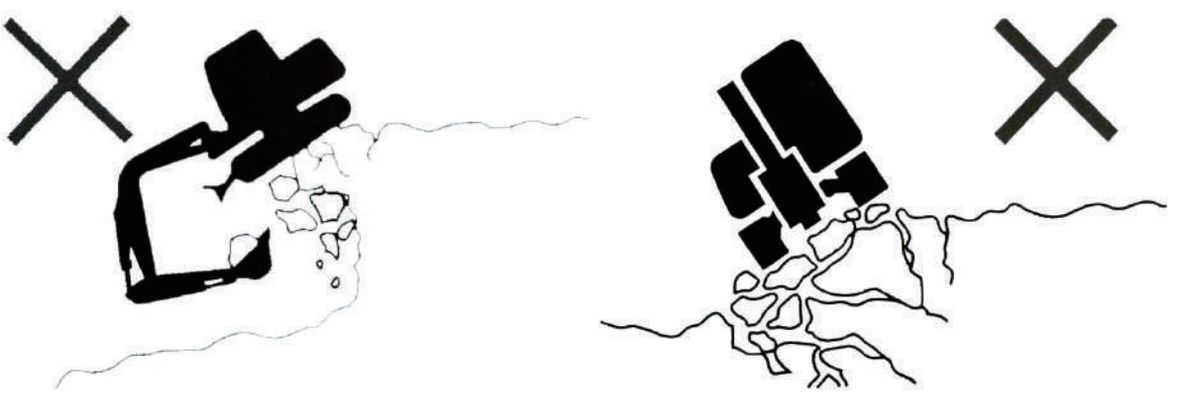
⚠Warning

- **NEVER** excavate at the base of steep embankments, as this can cause ground subsidence and pose significant risks. Also, avoid operating the excavator in areas prone to falling rocks or debris, as these conditions are hazardous.

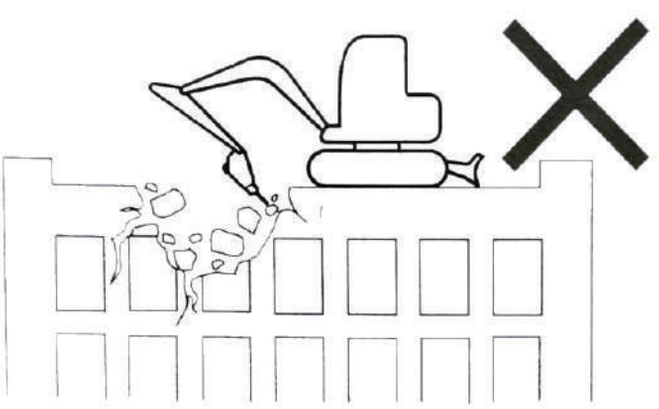
  Keep a safe distance between the excavator and the edge of the site. **NEVER** dig the ground in front of the excavator when near an edge.



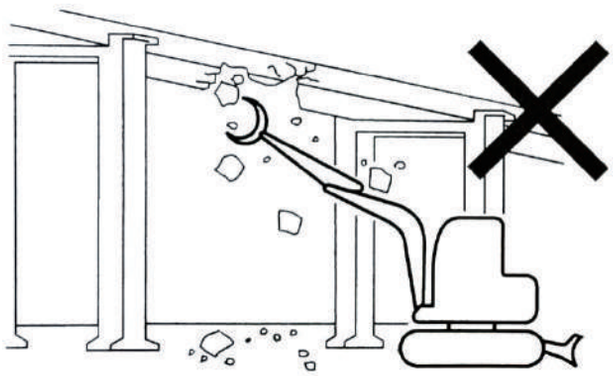
- Refrain from disassembling components underneath the excavator. The unstable ground could result in the excavator tipping over. Before operating atop a building or other structure, thoroughly assess their strength and structural integrity. In the event of a collapse, it could lead to substantial damage or destruction.



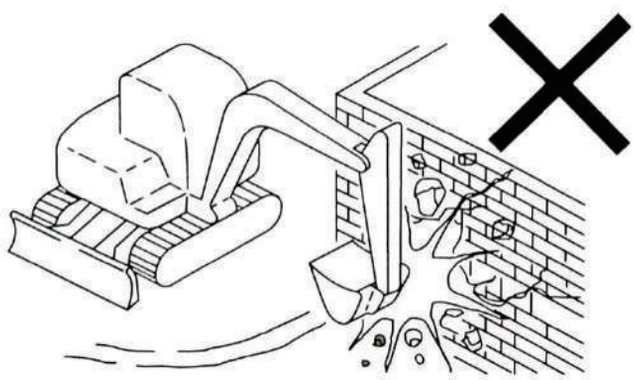
- Avoid excavating from an elevated position. This poses a risk of objects falling or buildings collapsing, potentially causing severe injuries or significant destruction.



- **NEVER** disassemble from under a bridge or similar structures, as you can be crushed with brutal force—causing severe injuries, death, or significant destruction.



- **NEVER** use the boom and arm to swing and smash against structures for demolition purposes. This action can propel heavy debris forcefully, leading to substantial property damage, severe personal injuries, or even loss of life.



2.4.5 Hoisting Safety

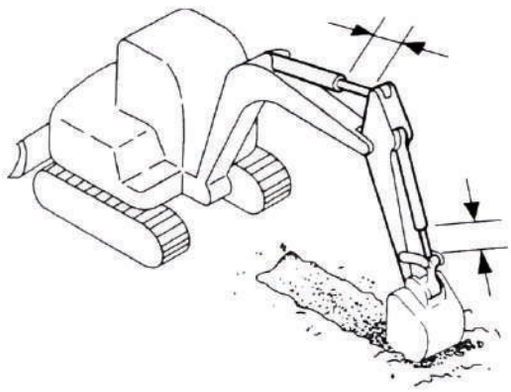
⚠ Warning

- All rated lifting capacities are determined under the assumption of stable and level ground conditions. For secure lifting, users must incorporate appropriate safety margins when encountering specialized work conditions, such as soft or uneven terrain, non-horizontal surfaces, lateral loads, sudden or dynamic loads, hazardous environments, and personnel experience. Before operating the excavator, operators and other personnel must be well-acquainted with the operation manual and adhere strictly to the equipment's safety operation procedures.
- If the chain or hoisting device isn't properly connected, the bucket linkage or hoisting device might fail, leading to severe injury or even fatalities.
- While using the excavator as a crane, do not attempt to extract stumps from the ground, as the load on the excavator becomes uncertain under such circumstances.
- It is strictly prohibited for anyone to be positioned above, below, or near the lifted object, or within the vicinity of the working area. Exercise vigilance regarding airborne debris.
- This excavator lacks protective equipment to shield the operator from airborne debris. Hence, refrain from using this excavator in hazardous locations where the operator is susceptible to being struck by flying debris.

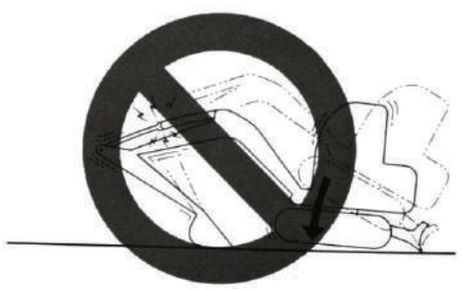
2.4.6 Hydraulic Cylinders Safety

⚠Warning

- **DO NOT** extend the hydraulic cylinders past the max length.



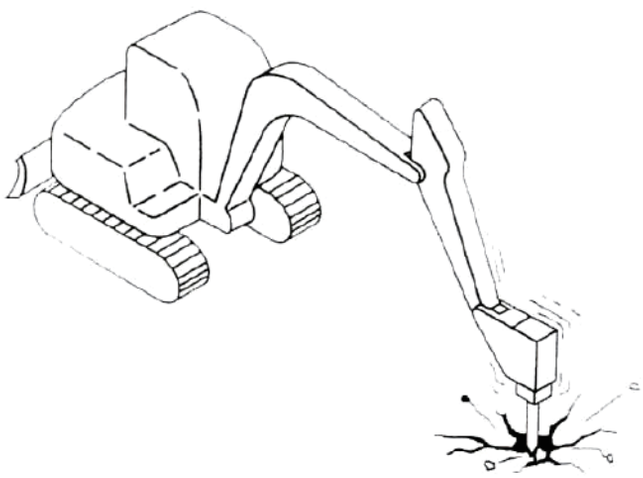
- **NEVER** raise the whole excavator by lowering the dozer. The entire weight of the excavator and driver **WILL** damage the dozer cylinder. **NEVER** use the dozer for digging.



- **AVOID** forcefully striking the bucket against the ground. This **WILL** damage the boom, arm cylinders, and other crucial connections.

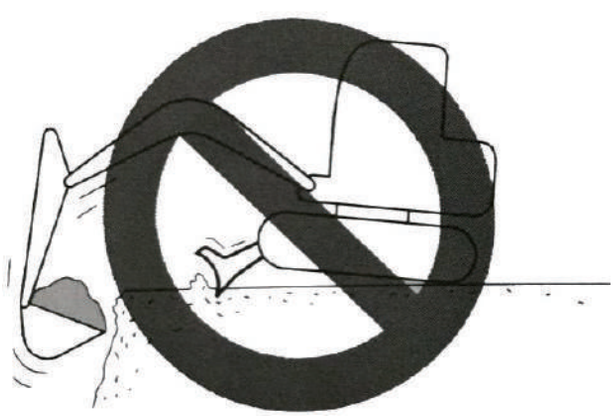
- **DO NOT** use the boom and arm to support the full weight of the excavator, as this **WILL** damage the hydraulic systems and pose a hazard to the operator and other personnel.

- When dealing with hard rock, employ a crushing hammer (not included) to break the rock into smaller fragments. This approach safeguards the excavator from potential damage and proves more cost-effective.

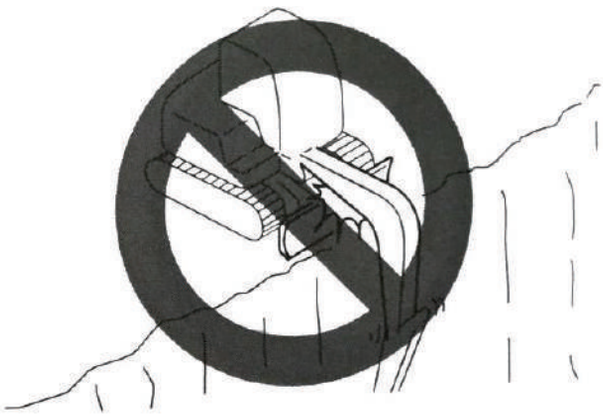


- Striking rocks with the dozer can damage both the dozer and its cylinder. Take caution when retracting the dozer.

- When digging, pay attention to the position of your dozer's control rod to prevent it from dropping accidentally.



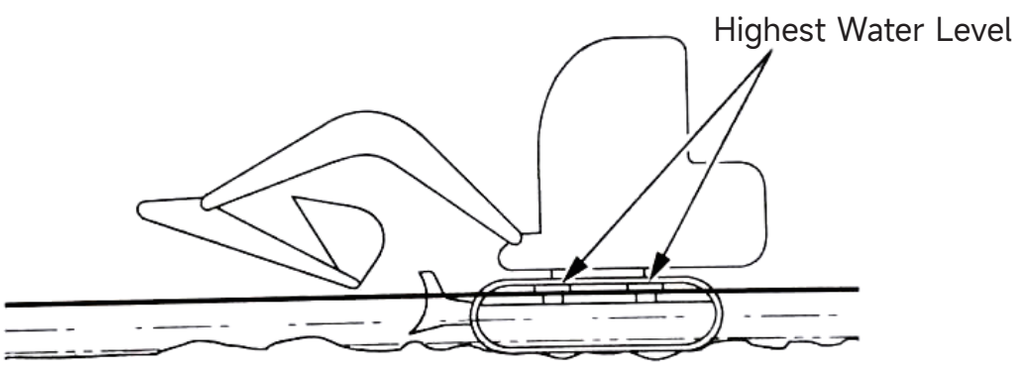
- Exercise caution when deep digging with the front blade to prevent collision with the boom, dozer, and bucket. Swing the cab so the dozer is at the rear. Exercise caution as you dig, being careful not to carry too heavy a load.



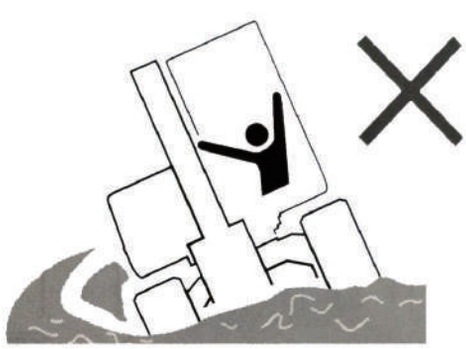
2.4.7 Water Safety

⚠Warning

- **NEVER** submerge the cab in water. This will immerse the radiator and burn it. If you must operate in water, ensure the water doesn't cover the whole track. Apply sufficient lubricating oil for any parts that have been underwater when on land.



- **ONLY** wade through the water when you know it will not compromise the excavator's safe operation or your safety. Drive through at a stable, slow speed.



2.4.8 Mud Escaping

One-Track Entrapment

Follow the steps below to escape mud entrapment.

1. Check if just one of the tracks is trapped. If so, proceed to the next step. If not, see the below for both tracks' entrapment.
2. Set the angle between the arm and boom to somewhere between 90° and 110°.
3. Retract the bucket, lay the bottom against sturdy ground, and raise the bucket to raise the whole excavator up.
4. Lay a sturdy plank under the raised track. Raise the bucket and move out of the entrapment.

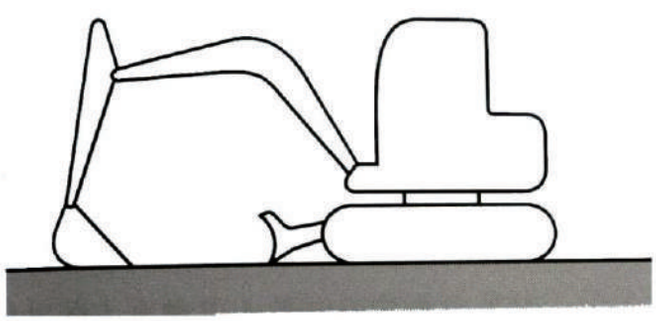
Two-Track Entrapment

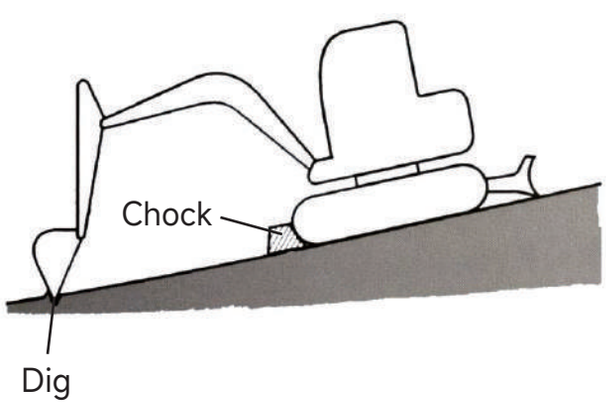
1. Repeat Steps 1–3 in One-Track Entrapment.
2. Lay two sturdy planks or similar-shaped objects under the lifted tracks, ensuring the planks are inserted into the end of the tracks.
3. Use the bucket as a leverage point while traveling out of the entrapment.

2.4.9 Parking Safety

⚠ Warning

- If possible, park the excavator on flat, solid, safe ground. If such a surface is unavailable, park it as shown.





2.4.10 Worksite Safety

Danger

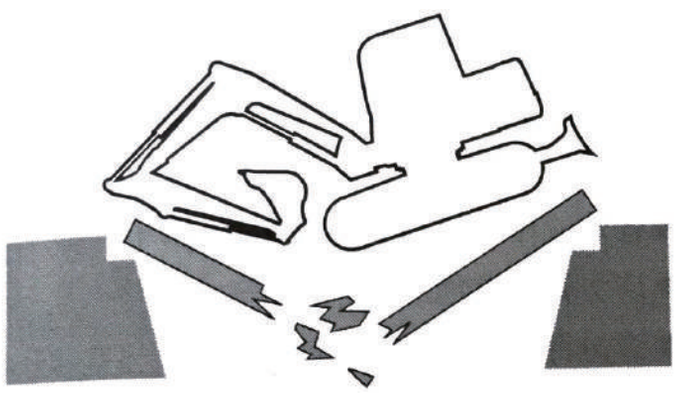
- **ALWAYS** keep your worksite free of any sparks or flame. The fuel, lubricating oil, grease, and anti-freeze inside the excavator are flammable. Keep the welding and soldering devices away from the excavator.
- **NEVER** smoke at and around the worksite.
- **NEVER** use your cellphone or any other similar device when filling the fuel or lubricating oil.
- Keep your worksite well-lit at all times. Use additional illumination when necessary. **DO NOT** operate the excavator if you don't have a clear vision.

- Keep your worksite well-ventilated. **NEVER** operate your excavator in a closed area with poor ventilation. If natural ventilation is impossible, install a fan and lengthen the exhaust pipe to ensure the fume doesn't get denser inside the closed worksite.

- Some construction materials may contain asbestos. Exercise **EXTREME** care and discretion when dealing with the material. Ensure all personnel wear either a half-face or full-face respirator paired with a **NIOSH-rated N100**, **R100**, or the more common P100 filter.

  Do not use compressed air to clean your worksite. **DO NOT** polish or grind materials containing asbestos. All personnel must wear a respirator if working indoors and there is asbestos dust. Install a ventilation system with a polymer filter before working on asbestos material. Limit authorized personnel access to the work site and follow the national and local codes and regulations concerning the disposal and handling of asbestos.
- **DO NOT** put any body part into any moving parts of the excavator. The clearance may change when the excavator moves. Inform your ground personnel, evacuate any bystanders, and enclose your worksite with barriers or hurdles before operation.

- **ALWAYS** inspect the terrain and ground in the worksite before operation. Inspect the building structure for indoor operation, ensuring it can bear the excavator's operating mass. When walking on a structure like a bridge, make sure the structure can bear the excavator's operating mass.



- **DO NOT** operate on soft or damp soil ground, on which this excavator may tilt or fall over. **DO NOT** operate on unstable ground. If the ground vibrates or shakes as you drive, cease driving and exit the excavator immediately.
- **ALWAYS** know the locations of obstacles such as ditches, utility lines (such as gas, power, water), and things that might fall (like trees, overhead wires, or stones on a cliff).

2.5 Oil Safety

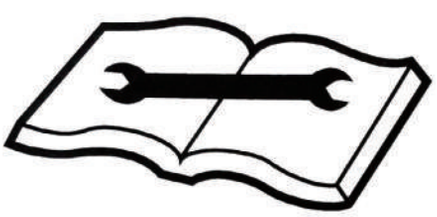
⚠Warning

- **DO NOT** remove the fuel tank cap or fill the fuel while the engine is running or still hot. When filling oil, watch out not to splash the oil onto the excavator's hot surfaces or electronic components.
- Smoking should be **PROHIBITED** on the worksite.
- **IMMEDIATELY** clean the fuel or lubricating oil overspills.
- **AWLAYS** wait till the engine has cooled before refueling. Always fill the fuel tank in a well-ventilated location. Refuel carefully and clean overspills or splashes **IMMEDIATELY**.
- Avoid filling the fuel tank to maximum capacity; leave room for oil expansion. Immediately address any fuel spillage. Ensure the fuel tank is securely fastened. If the tank cover is absent, replace it with an identical one. Refrain from using unauthorized tank covers that lack proper ventilation, as this could lead to internal pressure buildup.
- Ensure that the fuel used contains sulfur content below 0.05–0.0015%. In the United States or Canada, employ ultra-low sulfur fuel. The use of high-sulfur fuel may result in acid corrosion of the engine cylinder.
- Fuel additives are not recommended, as some additives may degrade engine performance. Additionally, metals like zinc, sodium, magnesium, silicon, and aluminum should be limited to one part per million (1 ppm mass) or less.

2.6 Maintenance Safety

⚠Warning

- **ONLY** replace damaged parts with identical ones. If such parts can’t be procured locally, contact Customer Service.



- **ONLY** replace damaged parts with identical ones. If such parts can’t be procured locally, contact the Customer Service.
- **DO NOT** modify the excavator. Unauthorized retrofitting of the excavator may cause injury or even death, for which the manufacturer and importer of the excavator will not be held liable.
- **ALWAYS** check that the labels and signages are legible. If damaged, replace them with identical ones.

- **ALWAYS** keep the excavator clean, especially parts that the driver steps on or holds on to. Wipe grim, grease, dirt, snow, or ice off of them to prevent accidental falling.
- **ALWAYS** check the inlets and outlets of the engine for any obstructions.

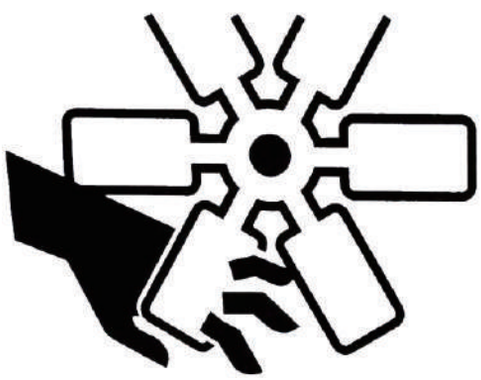
- Prevent fuel, lubricating oil, salt, or chemical solvents from coming into contact with the track. These substances can corrode the welding seams of the track steel core, leading to rust or detachment. Should any of these substances adhere to the track, promptly rinse it off with water.

- **ALWAYS** mark the excavator with a "**DO NOT OPERATE**" sign if any malfunction arises. Hang the sign in a prominent location, preferably on the joysticks.

- Use explosion-proof lamps when examining fuel, lubricating oil, coolant, or battery electrolyte. Failure to do so could lead to severe injuries or fatalities caused by an explosion.

- **NEVER** use damaged tools, tools with poor performance, or tools with other purposes to service this excavator.

- **ALWAYS** be mindful of the rotating and moving parts. **NEVER** drop or insert any objects into a fan or fan belt, which could tear the objects into pieces and send them flying.



- **ALWAYS** lower all the movable working equipment onto the ground or at the lowest position before maintenance or repair under the excavator.

- **ALWAYS** make sure to immobilize the tracks using chocks before performing any work beneath the raised excavator or equipment. Always use a sturdy and stable support such as a wooden block or jack to ensure secure fixation. Do not engage in any work under the excavator or the working device if the equipment isn't stably fixed.
- **ALWAYS** secure the hood before servicing under it.

- When handling heavy objects or accessories during removal or installation, ensure they are secure and stable. Restrict unauthorized individuals from accessing the area where such items are stored.
- Refrain from lubricating or mechanically adjusting the excavator when the engine is active, even if the excavator is not operating. If maintenance must be carried out, use at least two operators. One should be seated in the driver's seat, prepared to shut down the engine if necessary promptly. Do not touch the control rods/joysticks. The other person performing maintenance should stay clear of moving parts.
- Salt, potassium chloride, ammonium sulfate, potassium sulfate, and lime superphosphate can damage the track. If any such substances stick to the track, clean it immediately with water.
- If the excavator will not be used for a prolonged period (three months or longer), disassemble the rubber tracks and store them away from direct sunlight or rain. You can also cover them completely with water-repellent canvas.

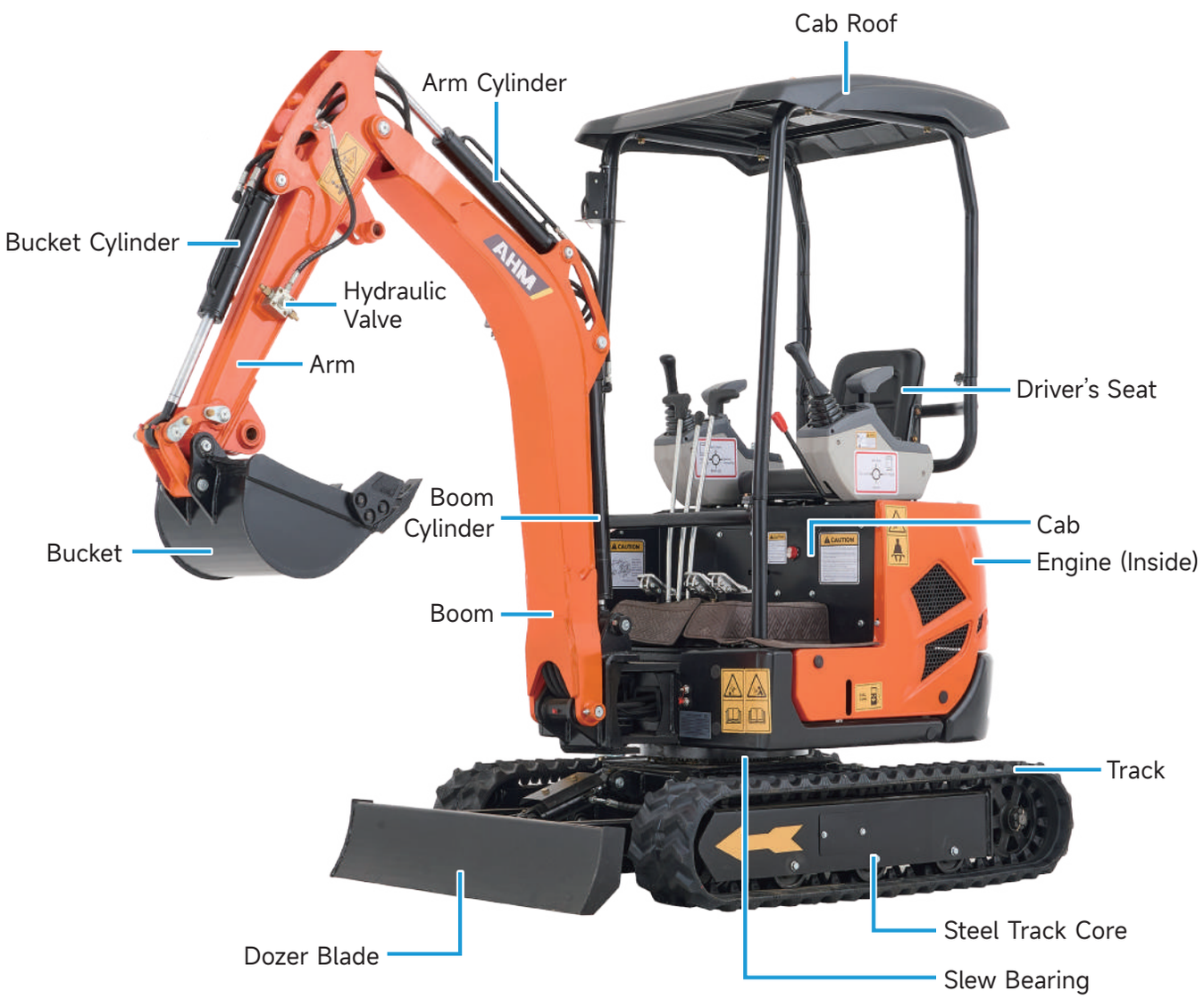
3 Specifications

Model		AX-17	AX-17J
			
Engine	Model	BRIGGS & STRATTON 3864	
	Rated Power	23 hp	
	Rated Speed	3600 rpm	
	Max. Torque	35 lbf ft (47.4 N m)	
	Displacement	38.3 in^3 (627 cm^3)	
	Oil Capacity	0.4 gal. (1.7 L)	
	Recommended Oil Type	CF-4, 15W-40	
Fuel Tank Volume		2.25 gal. (8.5 L)	
Hydraulic Oil Tank Volume		2.8 gal. (10.6 L)	
Fuel Type		Gasoline	
Hydraulic Oil Type		ISO VG 68	
Fuel Consumption		0.95 gal./h (3.6 L/h)	
Max. Side Swing Angle		45° to the Left; 55° to the Right	
Max. Traveling Speed		1.55 mi/h (2.5 km/h)	
Main Pump	Rated Pressure	3191 psi (22 MPa)	
	Max. Pressure	3626 psi (25 MPa)	
	Nominal Flow	0.33 fl oz/r (10 mL/r)	
	Oil Flow	9.5 gal./min. (36 L/min.)	
Slewing Speed		9 rpm	
Travel Motor Model		BMT-390-266-3014	
Track Width		9.1 in. (230 mm)	
Overall Track Length		59.2 in. (1503 mm)	

Control System	**Battery Voltage**	12 V
	Battery Capacity	45 Ah
	Max. Starting Current	360 A
Platform Ground Clearance		16.1 in. (409 mm)
Min. Clearance		5.6 in. (143 mm)
Min. Swing Radius		32.3 in. (820 mm)
Bucket Volume		1.06 ft^3 (0.03 m^3)
Bucket Width		15.8 in. (400 mm)
Max. Bucket Digging Force		2923 lbf (13 kN)
Rated Weight Capacity		330.7 lb. (150 kg)
Max. Weight Capacity		551.2 lb. (250 kg)
Max. Digging Depth		88.9 in. (2258 mm)
Max. Digging Height		111.8 in. (2840 mm)
Max. Dumping Height		70.1 in. (1781 mm)
Max. Digging Radius		134.5 in. (3417 mm)
Max. Dozer Height		5.1 in. (130 mm)
Max. Dozer Depth		11.7 in. (298 mm)
Max. Slope Grade		30°
Max. Overall Length		130.7 in. (3319 mm)
Overall Width		43.3 in. (1100 mm)
Overall Height		89.8 in. (2280 mm)
Hydraulic Hose Reserved for Attachment	**ID.**	0.23 in. (6 mm)
	OD.	0.63 in. (16 mm)
	No.	2
	Pressure Resistance Value	≥ 3626 psi (≥ 25 MPa)
	Hydraulic Valve Port Type	M16

4 Product Diagram

Model: AX-17



Model: AX-17J


Windshield Wiper
Cab Roof
Windshield
Headlight
Arm Cylinder
Bucket Cylinder
Hydraulic Valve
Arm
Bucket
Boom Cylinder
Boom
Dozer Blade
Driver's Seat (Inside)
Cab Door
Engine (Inside)
Track
Steel Track Core
Slew Bearing
AHM

5 Accessories List

No.	Item	Qty.
A	Pipe Wrench	1
B	Adjustable Wrench	1
C	13 × 15 mm Wrench	1
D	17 × 19 mm Wrench	1
E	22 × 24 mm Wrench	1
F	24 × 27 mm Wrench	1
G	Grease Gun	1
H	Grease Gun Nozzle	1

No.	Item	Qty.
I	5 mm Hex Wrench	1
J	6 mm Hex Wrench	1
K	8 mm Hex Wrench	1
L	10 mm Hex Wrench	1
M	Socket	1
N	G3/8 Male to M14 Male Thread Adapters	2
O	G3/8 Male to M16 Male Thread Adapters	2
P	370 mm Hydraulic Hoses* (Connector Size: M14)	2

* The two hydraulic hoses (P) are used to connect a hydraulic thumb (not included) to the excavator's three-way hydraulic valves.

Before connecting the hoses to the valves, replace the valves' M16 connectors with the provided G3/8 to M14 adapters (N) to convert them to M14 connectors.

6 Operation

6.1 Pre-Operation Checks

1. Circle the excavator to check for anomalies, inform the coworkers of the imminent task, and tell the signalman/flagman to stand by.

2. (AX-17J Only) Press and hold the door lock on the door handle, then pull to open the door.

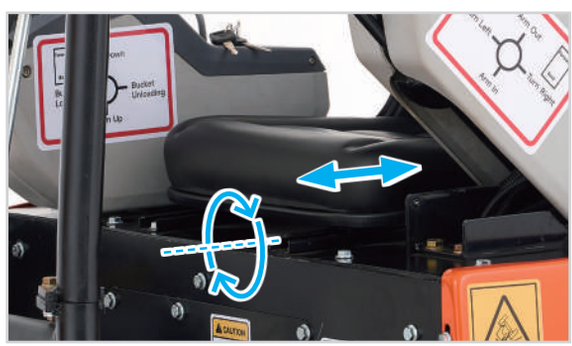
3. Enter the cab in the way depicted. Sit in the driver's seat, ensuring that there are no obstructions on the dashboard or around the joysticks.

   If you see any signs indicating the excavator is out of order, exit the cab.

> **⚠ Warning**
>
> **NEVER** start or operate the excavator from a place other than the driver's seat.

4. Ensure that all control rods/joysticks are in the neutral position.
5. Ensure that you can comfortably reach all the controls without stretching or straining.

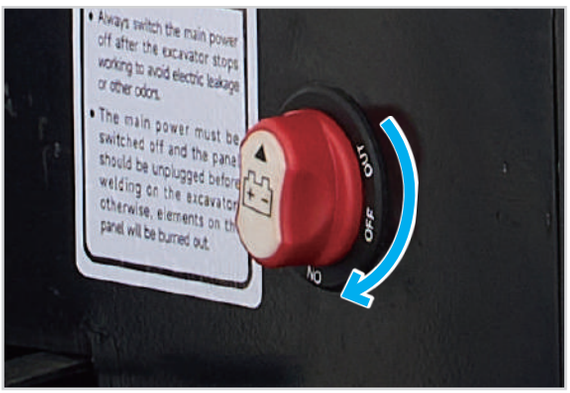
   To adjust the seat position, turn the rod beneath the seat and move the seat forward or backward as needed.



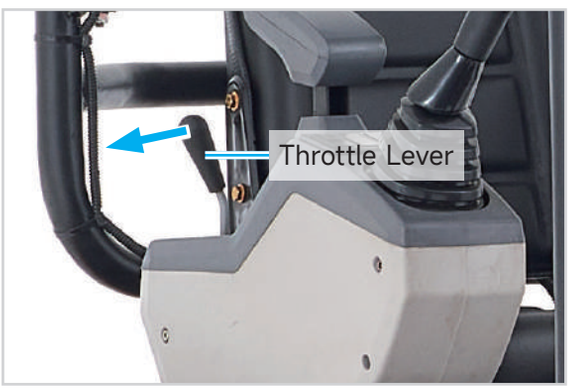
6. Fasten the seat belt and buckle up.
7. (AX-17J Only) Close the cab door.

6.2 Starting the Engine

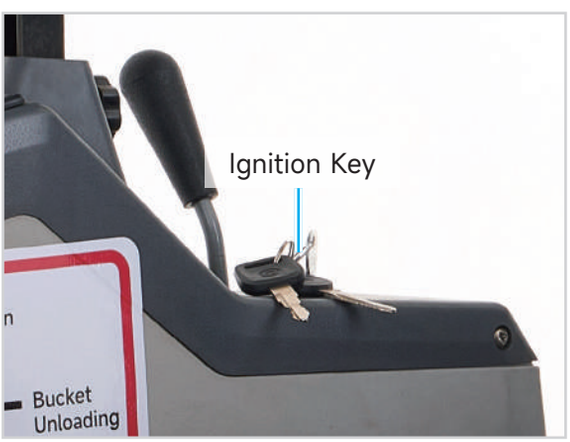
1. Locate the red power switch beneath the seat, then turn it to **ON**.



2. Locate the throttle lever, which should look as shown. Hold its end and pull the lever backward.



3. Insert the ignition key, then turn it clockwise to start the engine.



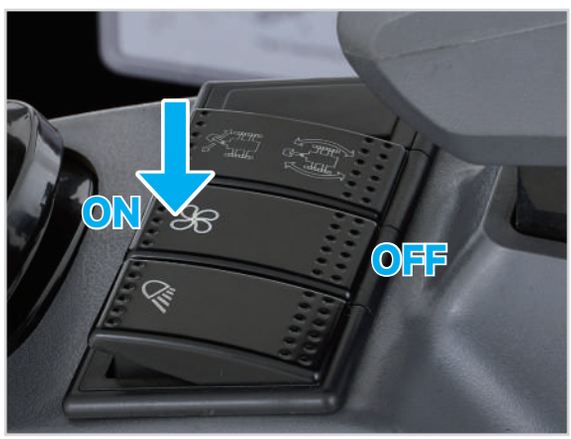
4. If you are operating at a high altitude or the specific conditions make it hard for the engine to start, pull the engine choke lever a little bit to facilitate the ignition.

   After the engine starts, remember to return the lever to its original position.

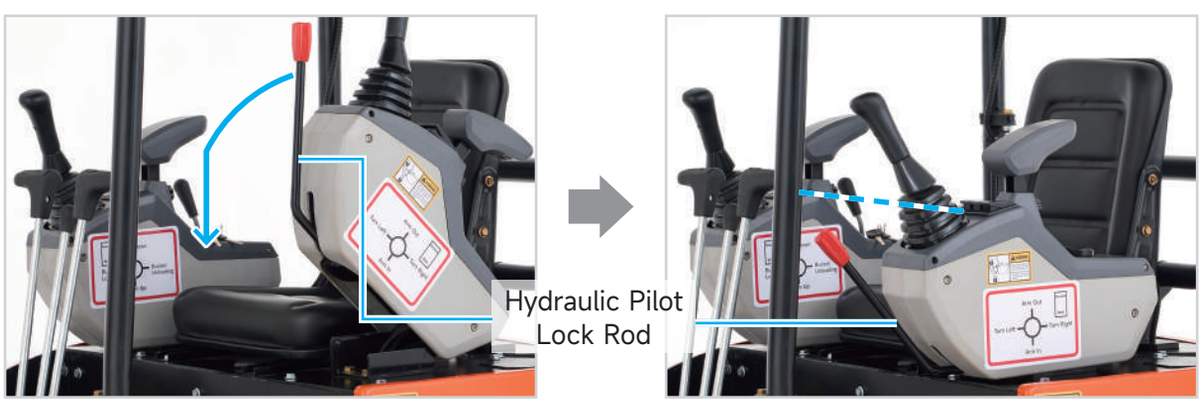
5. Wait for a couple of minutes for the engine and hydraulic oil to warm up.

Note
A proper warm-up procedure ensures adequate and safe machine usage, the best machine performance, and fuel efficiency.

6. Flip the air-cooling switch to the “ON” position as needed to improve the excavator’s heat dissipation performance.



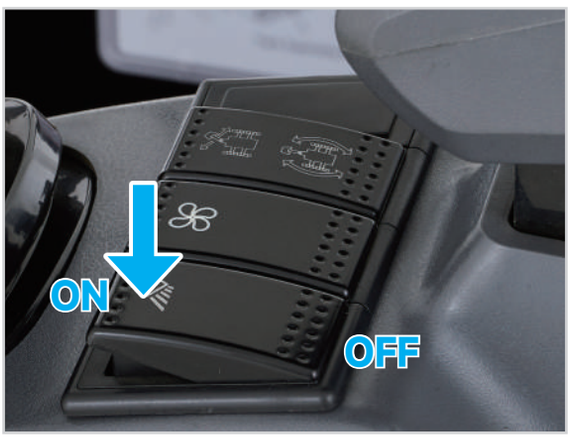
7. When ready to operate, push the hydraulic pilot lock rod down until the left control console is level with the right one.



6.3 Familiarization with the Basic Functions

6.3.1 Headlight(s)

Locate the headlight power switch on the left control console. Turn it on and off to check that the headlight(s) light(s) up and shut(s) off.



6.3.2 Excavation Timer

Locate the excavation timer on the left control console. It works automatically as soon as the power is turned on, recording the total working hours of the whole system.

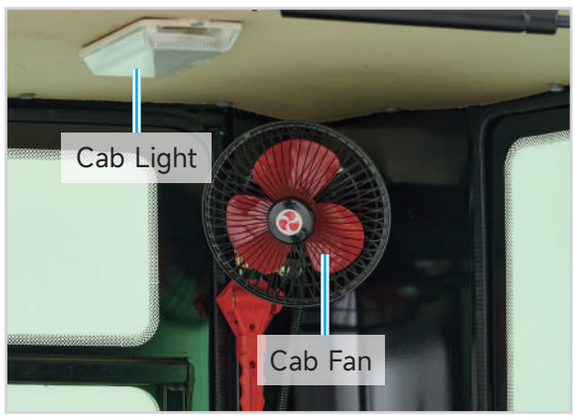
Note
If you notice that the timer already shows a small amount of operating time when you first turn the power on, it's because of factory testing conducted before the excavator left the factory.

6.3.3 Windshield Wiper (AX-17J Only)

Locate the windshield wiper's motor in the front of the cab. Flip its power switch to I to turn on the wiper as needed.

6.3.4 Cab Fan (AX-17J Only)

Locate the fan in the rear corner of the cab. Flip its power switch to I to turn on the fan as needed.



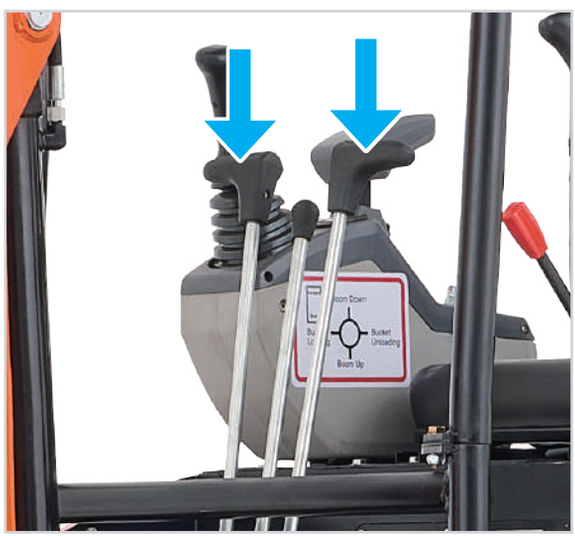
6.3.5 Cab Light (AX-17J Only)

Locate the cab light at the top of the cab. Flip its power switch to I to turn on the fan as needed.

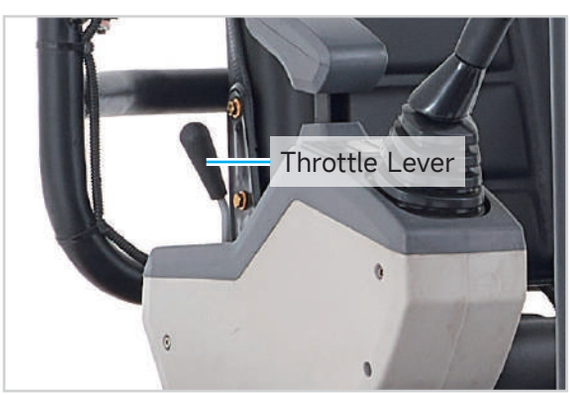
6.4 Forward & Backward Travel & Steering

1. Make sure that your excavator has started and warmed up as stated in **§6.2 Starting the Engine** on Page **30**.

2. Use the two travel rods as shown to control the travel.
   - To move your excavator forward, push them together away from you.
   - To move your excavator backward, pull them together towards you.
   - To move only one of the tracks, push or pull either of the two travel rods.
   - To turn left while traveling, push the right travel rod while pulling the left one.
   - To turn right while traveling, push the left travel rod while pulling the right one.

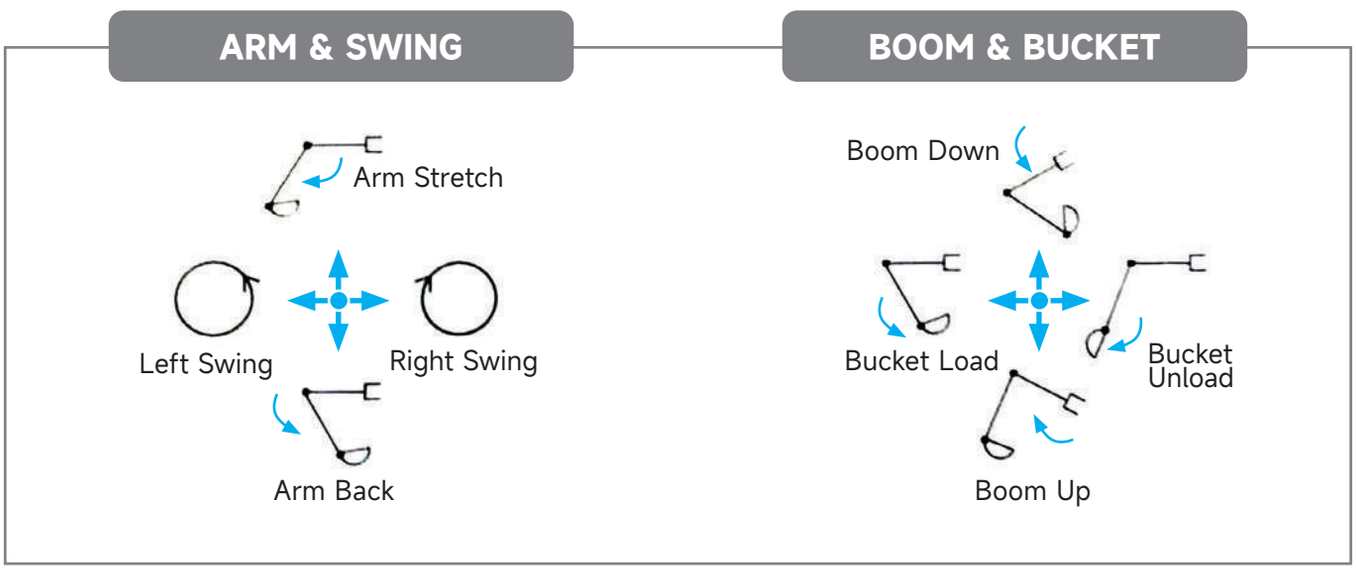


3. Use the throttle lever to adjust the speed.
   - To speed up the excavator, hold its end and pull it backward.
   - To slow down the excavator, hold its end and push it forward.



6.5 Basic Excavation

1. Make sure that your excavator has started and warmed up as stated in **§6.2 Starting the Engine** on Page **30**.
2. Steer the excavator to where the digging is expected to be carried out.
3. Refer to the figure below for a basic understanding of the excavation joysticks.



4. Start excavating with the two joysticks.

The left joystick controls the arm and swing:

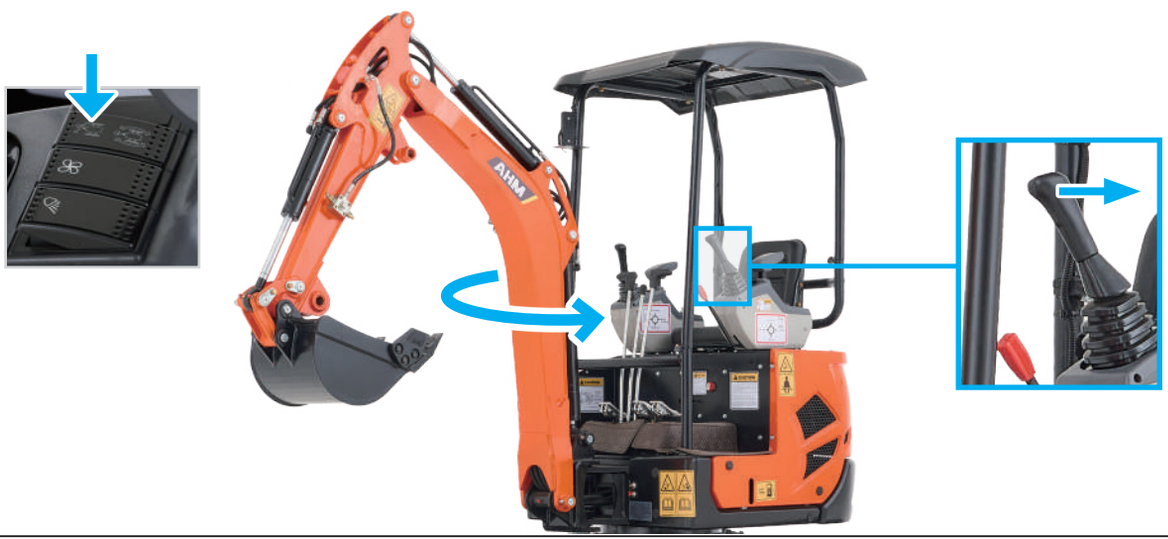
- To extend the arm (aka dipper, stick, or crowd), push it forward.

- To retract the arm, pull it toward you.

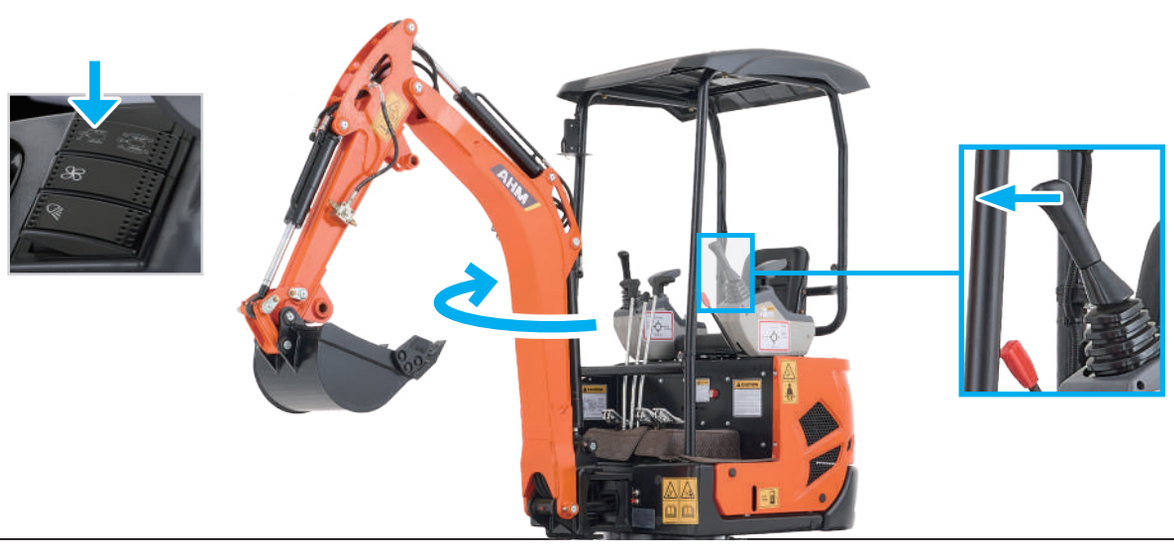
- To swing the cab left, push it to your left.

- To swing the cab right, push it to your right.

- To swing the arm left, flip the side swing power switch to  , then push the left joystick to your left.

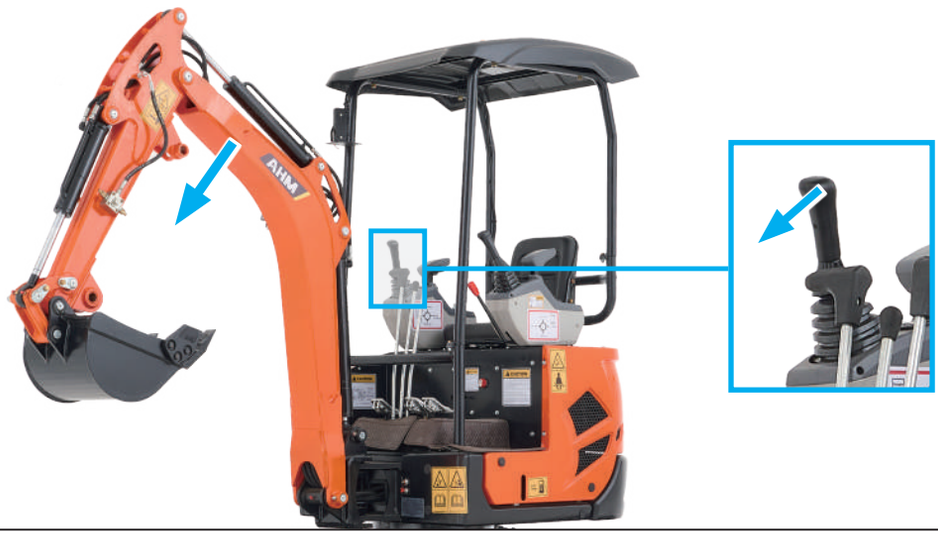


- To swing the arm right, flip the side swing power switch to  , then push the left joystick to your right.

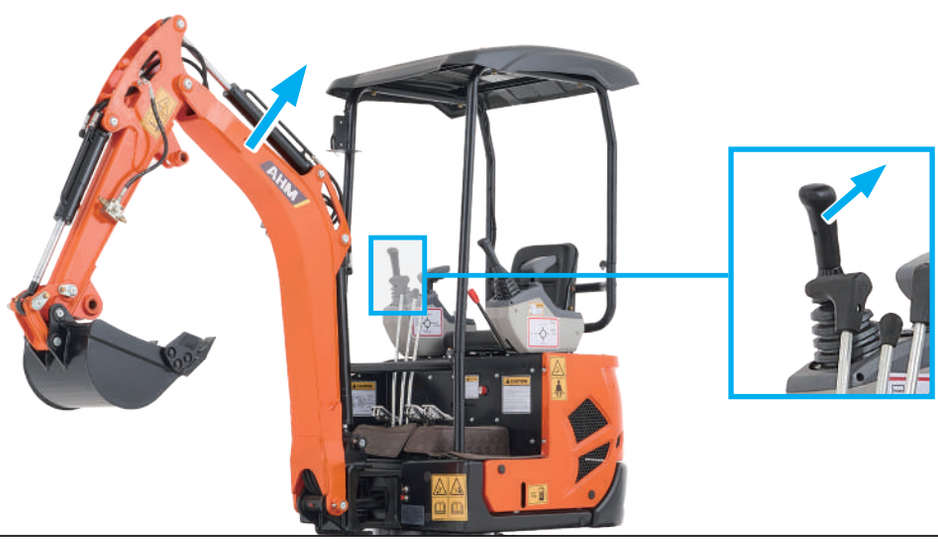


The right joystick controls the boom and bucket:

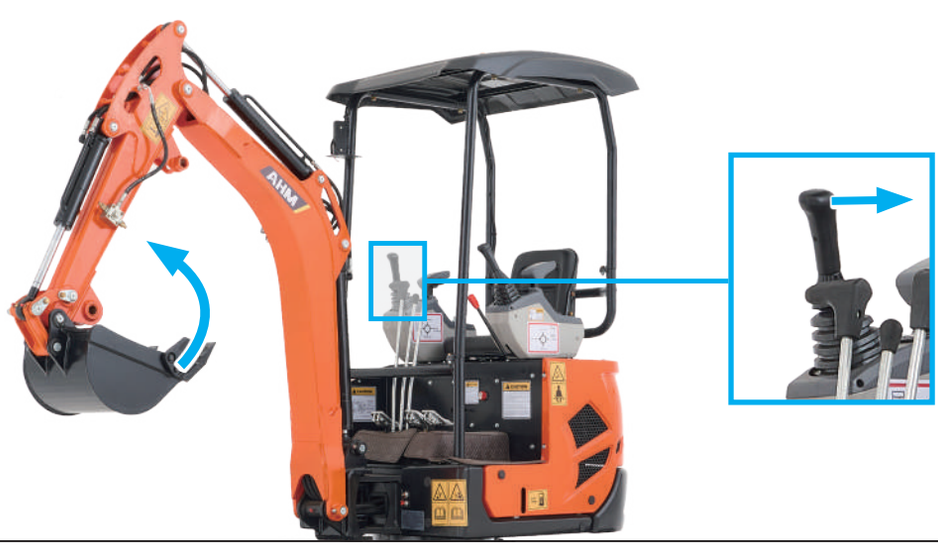
- To lower the boom, push it forward.



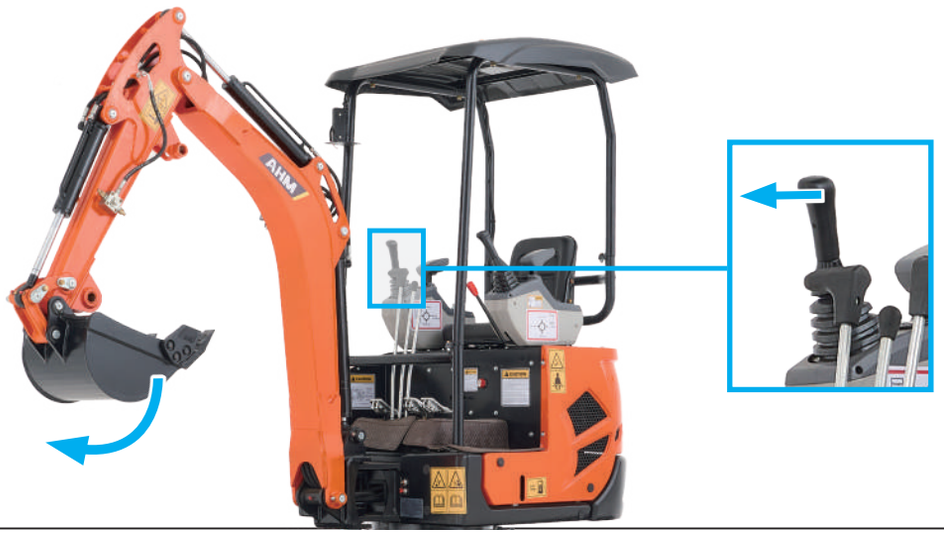
- To raise the boom, pull it toward you.



- To load the bucket, push it left.

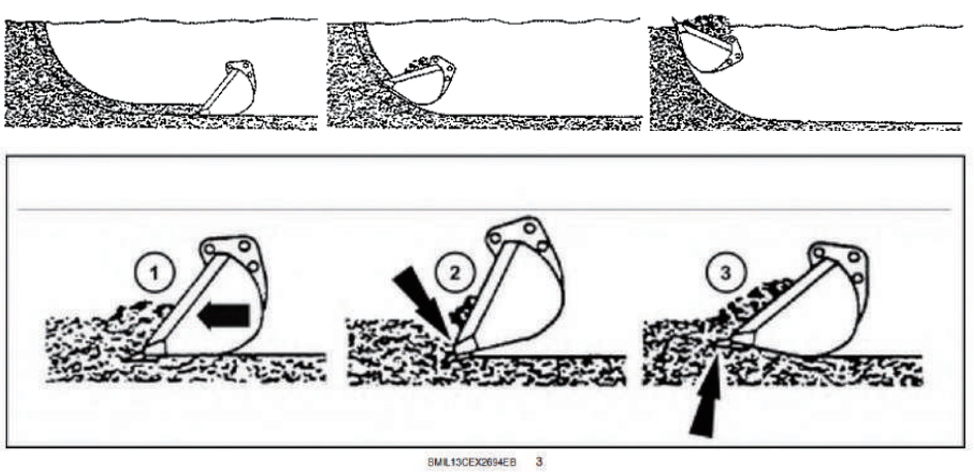


- To unload the bucket, push it right.



⚠ Warning

- For better results on hard ground, angle the arm cylinder roughly perpendicular to the arm and bucket 30° to the ground so that you exert the largest excavating force. For soft ground, angle the bucket 60° to the ground.



BMIL13CEX2694EB 3

1. Correct
2. Incorrect. The bucket will dig in and cause a stall.
3. Incorrect. The bucket is pushed upwards. This will also increase the cycle time.

- Achieving a seamless mastery of excavation demands consistent practice, honed skills, and proficient handling of the excavator. Prior to the actual operation, engage in practice sessions in an open area that is robust enough to support the excavator's movement safely and devoid of any onlookers. For optimal outcomes, consider seeking guidance from an experienced excavator owner or enrolling in professional training.

6.6 Basic Bulldozing

⚠ Warning

ALWAYS make sure the rods are at the neutral before powering up the whole system.

1. Make sure that your excavator has started and warmed up as stated in **§6.2 Starting the Engine** on Page **30**.
2. Steer the excavator to where the bulldozing is expected to be carried out.
3. Start bulldozing with the rod as shown.
   - To raise the dozer, pull it towards you.
   - To lower the dozer, push it away.

6.7 Changing the Attachment

⚠ Warning

The bucket is fastened to the arm through two bolts and nuts. Installing and removing the bolts requires strength and care. **ALWAYS** wear protection and exercise care. Use at least two people to handle the bucket.

Note

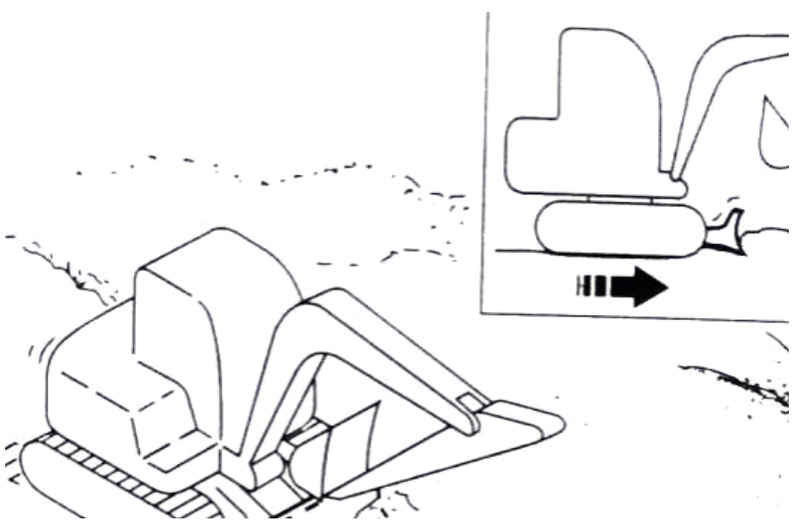
The steps below only provide general instructions for changing the attachment. For details on attaching a new attachment to this excavator, refer to the attachment's separate manual.

1. Ensure the machine is parked on level ground.
2. Lower the bucket's flat surface onto the ground to prevent bucket movement.
3. Shut off the engine.
4. Wait until the engine and hydraulic oil have cooled to ambient temperature.
5. Remove the two nuts as shown.
6. Remove the bolts and keep them where they won't be compromised by metal debris or sand grains.
7. Have two people carry the attachment to be installed and align it with the two holes on the arm.
8. Replace the bolts and tighten the nuts.

6.8 Leveling

1. Make sure that your excavator has started and warmed up as stated in **§6.2 Starting the Engine** on Page **30**.
2. Steer the excavator to where the digging is expected to be carried out.
3. Position the bucket in proximity to the excavator.
4. Gradually push the soil from the side of the mound.
5. As the mound reduces in height, shift the topsoil from the peak.

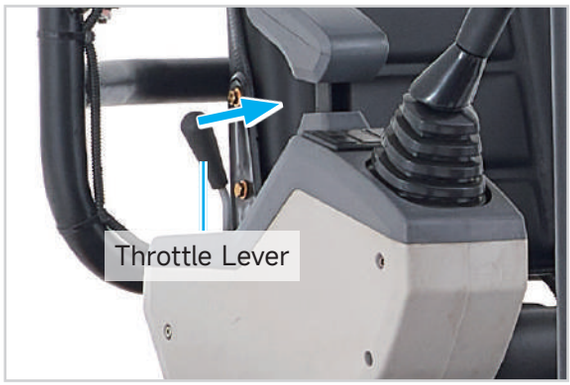
   If the load causes excessive strain on the machine, adjust by raising or lowering the bucket.



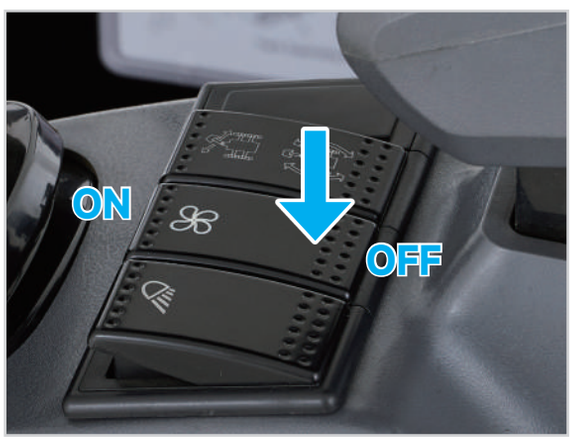
6.9 Shutting Off the Engine

1. Park the excavator on stable, level ground. Ensure the area is free from obstacles and hazards.
2. Fully lower the boom, arm, and bucket until they rest securely on the ground.
3. Ensure all control rods and joysticks are returned to their neutral positions.
4. Pull the hydraulic pilot lock rod all the way up.

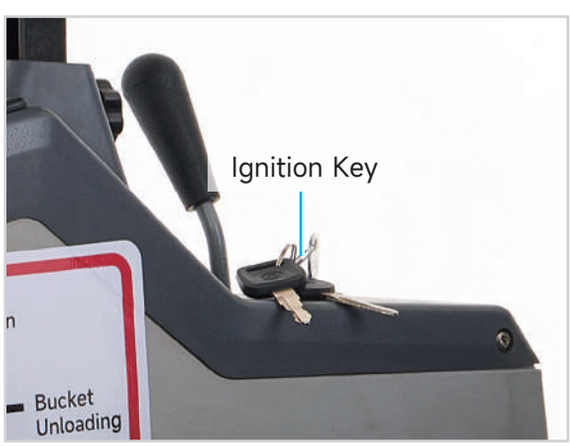
5. Hold the throttle lever's end and push it forward to decrease the engine speed to low idle gradually.



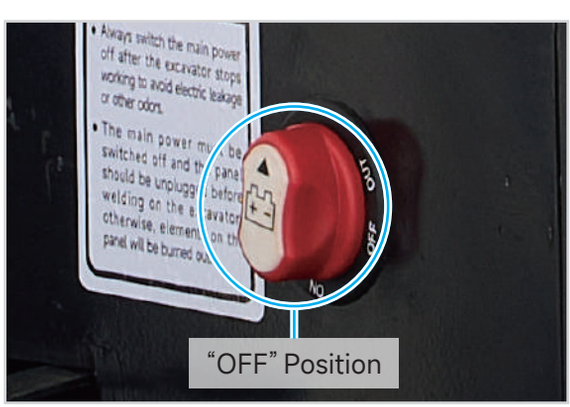
6. Allow the engine to run at idle for a few minutes to cool down.
7. If you activated the air-cooling function before, flip the air-cooling switch to the "OFF" position.



8. Turn the ignition key counterclockwise to shut off the engine.



9. Turn the red power switch to the "OFF" position.



10. Unbuckle the seat belt and exit the cab.

6.10 Transportation

⚠ Warning

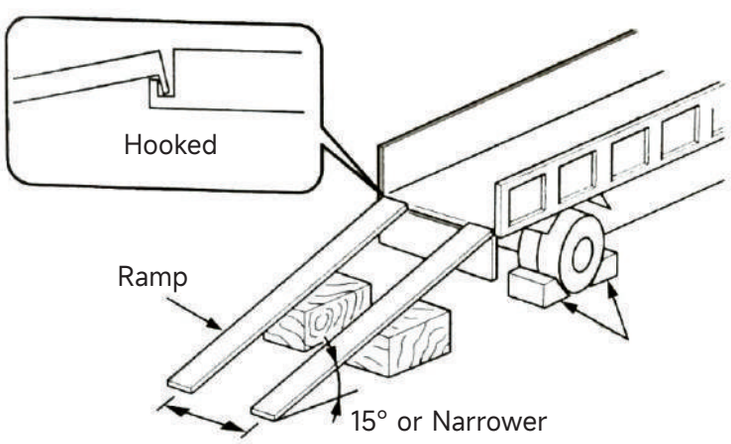
- **DO NOT** employ the attachment for loading or unloading the excavator, as this could cause it to roll or fall.
- To prevent the excavator from sliding, ensure the truck and the loading surface are clean and free of oil, sand, ice, snow, or other foreign materials. Clear the tracks.

1. Select a sturdy, level ground area at a safe distance from the roadside.
2. Place a warning sign near the transportation area to alert passing pedestrians and vehicles.
3. Securely fasten two ramps with adequate strength and dimensions to the truck bed.

   The incline angle must not exceed 15°. If the ramps are too steep, utilize a support pillar or block underneath them.

   Make sure that the ramps are wide enough for full contact with both tracks.

   Refer to the picture for the truck and ramp preparation.



4. Steer the excavator slowly onto the ramps, making sure the tracks are fully on the ramp.

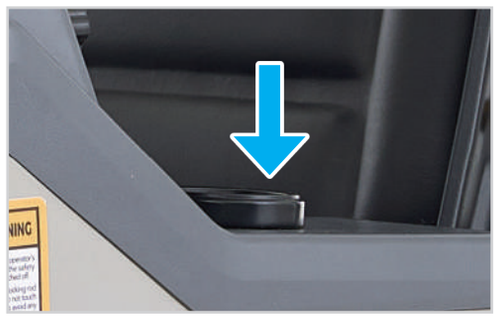
⚠ Danger

DO NOT change direction when on the ramps. Travel slowly and steadily.

5. Stop when the whole excavator is inside the truck bed.
6. Turn off the engine as stated in **§6.9 Shutting Off the Engine** on Page **40**.
7. Use chocks to immobilize the tracks and prevent movement. If possible, secure the machine to the truck using a cable or chain.
8. Lock the trunk doors and lids, if any.

7 Maintenance

Refer to the excavation timer located as shown. Maintain your excavator according to the schedules below.



7.1 Checks Before Maintenance

Always do the following before performing any maintenance to the machine to ensure your safety:

- Read and understand **§2 Safety Information** on Pages **2–23** before proceeding with any inspection or maintenance procedures.
- Do not perform any maintenance unless authorized in this chapter for this machine.
- Avoid working on the machine while the engine is running unless you are required to do so in the procedure.

  If the engine must remain running during a procedure, always have a person in the cab who can correctly operate the machine and is in clear contact with you at all times.
- Contact Customer Service if you are unable to perform the procedures listed in this manual or if additional procedures are required.
- Always use the proper tools when performing any maintenance procedures.

7.2 General Maintenance Schedule

No.	Item	Qty.	Interval (h)	
			10	50
1	Engine Oil Level	1	★	
2	Hydraulic Oil Level	1	★	
3	Fuel Level	1		★
4	Oil-Water Separator	1		★
5	Fuel Pipe Check	----	★	
6	Work Equipment Pivots	----	★	
7	Hydraulic Hose & Pipelines	----	★	
8	Bucket Teeth	3		★
9	Seat Belt	1	★	
10	Bolts and Nuts Torque	----		●

Note:
★ : Routine Maintenance Interval
● : Maintenance Prior to Initial Use

7.3 Greasing, Replacement, & Periodical Check Schedule

No.	Item	Interval (h)							
		100	250	500	1000	1500	2000	2500	4000
1	Greasing of Swing Bearing		★						
2	Greasing of Swing Bearing Gears	★							
3	Changing Engine Oil	●	▲	★					
4	Changing Hydraulic Oil					△	★	△	
5	Changing Hydraulic Oil Suction Filter Elements				★				
6	Fuel Pipe Crack/Bent Check		★						
7	Changing of Oil-Water Separator			★					
8	Fuel Hose Leakage/Crack Check		★						
9	Fuel Hose Leakage/Crack Check		★						
10	Changing of Bucket								
11	Connection of Bucket								
12	Removal of the Traveling Handle								
13	Replacement of the Seat Belt								
14	Track Deflection Check			★					
15	Tensioner Maintenance			★			★		

Note:
★: Routine maintenance interval
▲: Maintenance interval of engine oil
△: In situations where crushing conditions are frequent, halve the replacement intervals for hydraulic oil and filters.
☆: Under dusty environments, shorten the maintenance interval.

7.4 Work Equipment Pins Lubrication

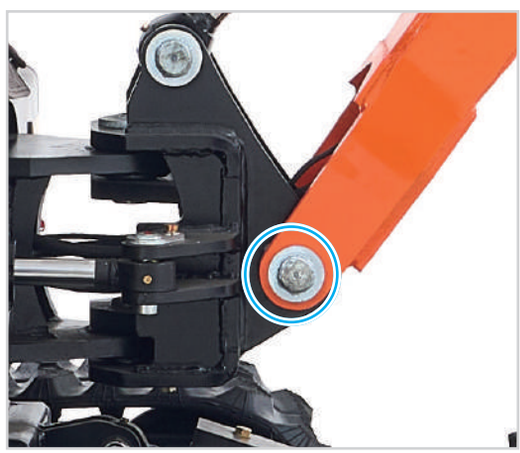
Parts		Qty.	Interval (h)						
			50	100	250	500	1000	2000	2000
Pivots	Boom Base Pivot	10	★						
	Boom Base Cylinder Pivot								
	Bucket and Connecting Rod Pivots								
	Others	6	★						
Swing	Swing Bearing	2				★			
	Swing Bearing External Meshing Gear	1					★		

Note:
Using lithium grease is recommended.
★: Routine Maintenance interval

7.4.1 Locations of Work Equipment Pins

- Pivots between the bucket and connecting rodrod

- Pivot at the base of the boom



- Pivots of the boom cylinder

- Others:

  Pivot between boom and arm; pivots of arm cylinder; pivots of bucket cylinder.

7.4.2 Lubricating the Slew Bearing

1. Turn off the engine as stated in **§6.9 Shutting Off the Engine** on Page **40**.
2. While the upper structure remains stationary, apply grease (not included) to the two grease nozzles until the old grease overflows.

⚠ Warning
DO NOT over-grease, as it can damage the seal of the swing support, leading to grease leaks and dust entry, exacerbating wear and tear.

3. Initiate the engine to raise the bucket clear of the ground. Rotate the cab by 45 degrees (1/8 circle).
4. Repeat **Steps 1–2** until the bucket rotates a full circle.

7.4.3 Lubricating the Meshing Gear of Slew Bearing

1. Turn off the engine as stated in **§6.9 Shutting Off the Engine** on Page **40**.
2. Ensure the grease is stored free from contamination on top of the external meshing gear of the slewing bearing.

   If necessary, add approximately 1.1 pounds (0.5 kg) of grease. Any contaminated grease should be replaced with fresh grease.

Note
Lithium grease is recommended.

7.5 Engine Maintenance

Refer to the engine's manual for engine maintenance.

7.6 Greasing, Replacement, & Periodical Check Schedule

Item	Qty.	Interval (h)								
		10	50	100	250	500	1000	1500	2500	4000
Oil Level Check	1	★								
Drain Pipe Cleaning	1				★					
Suction Filter Elements Replacing	1						★			
Hose& Pipeline Check					★					
				★						
Change the hose	24									★

Note:
★ : Routine Maintenance Interval

7.7 Hydraulic System

7.7.1 Checking the Hydraulic Cylinders

⚠ Warning

- Hang a "**DO NOT OPERATE**" sign on the joystick to prevent accidental machine activation during inspection.
- It is recommended that you have the hydraulic cylinders checked and serviced by a certified mechanist for your safety and for a longer service life.

1. Turn off the engine as stated in **§6.9 Shutting Off the Engine** on Page **40**.
2. Allow sufficient time for the hydraulic system to cool down completely to avoid exposure to hot and pressurized components.

⚠ Warning

The hydraulic system will remain hot after working. Wait for it to completely cool down before handling it.

3. Bleed air completely from the hydraulic oil reservoir.
4. Perform the following checks on the hydraulic cylinders.
   - Inspect the hydraulic cylinders for any signs of leakage, such as oil spots, drips, or accumulated oil around seals and connections.
   - Examine the cylinders' exterior surface for dents, scratches, or any damage that could affect its performance.
   - Check the rod and piston for any signs of wear, corrosion, or scoring. Run your fingers along their surfaces to detect irregularities.

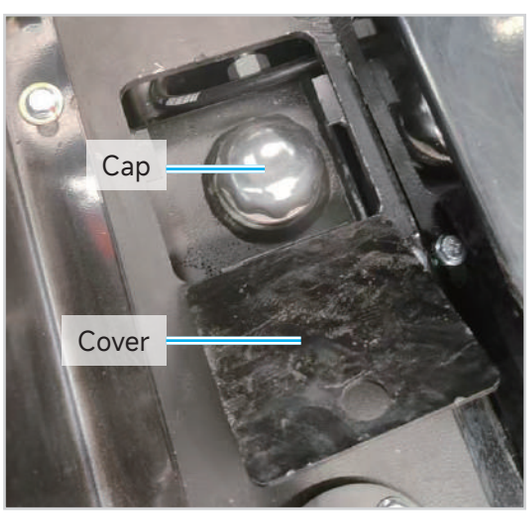
   - Gently check the rod seals and wiper seals for cracks, tears, or deterioration.
5. If the cylinders require disassembly for a more thorough inspection, contact Customer Service.
6. Execute one of the following depending on your checking result:
   - If everything is in order:
     a. Reassemble any components that were disassembled.
     b. Remove any safety measures.
     c. Test the hydraulic cylinders' functionality through controlled movements.
   - If you encounter any abnormal behavior or suspect an issue during testing:
     a. Immediately turn off the engine.
     b. Contact Customer Service.
     c. Reassemble any components that were disassembled.
7. Keep a detailed record of the inspection, including findings and actions taken, for future reference and maintenance tracking.

7.7.2 Checking the Hydraulic Oil Level

⚠ Warning
NEVER start the engine with no hydraulic oil.

1. Ensure the machine is parked on level ground.
2. Fully retract the arm cylinder and extend the bucket cylinder outward to position the machine.
3. Lower the bucket onto the ground.
4. Turn off the engine following **Steps 3–9** in **§6.9 Shutting Off the Engine** on Pages **40–41**.
5. Check the hydraulic oil level gauge.
6. The normal level should range between 1/2 and 2/3 of the tank. If the hydraulic oil falls below 1/2, refill it. For instructions, see **§7.7.3 Refilling the Hydraulic Oil** on Page **49**.

7.7.3 Refilling the Hydraulic Oil



1. Open the hydraulic oil tank cover.
2. Carefully open the oil cap while releasing the pressure slowly.

⚠ Warning
The hydraulic oil tank is pressurized. Failure to do so may result in oil spraying out and causing potential hazards. **ALWAYS** exercise caution when working with pressurized systems.

3. Infuse the right type of hydraulic oil until 2/3 of the tank by checking the hydraulic oil level gauge.
4. Add and tighten the cap.
5. Close the cover.

7.7.4 Replacing the Hydraulic Oil Suction Filter Element

1. Turn off the engine as stated in **§6.9 Shutting Off the Engine** on Page **40**.
2. Allow sufficient time for the hydraulic system to cool down completely to avoid exposure to hot and pressurized components.

⚠ Warning
DO NOT proceed until the hydraulic oil cools down, as it may be very hot.

3. Locate the hydraulic oil tank cap. Clean the top of the hydraulic oil tank to prevent dirt from entering the system.
4. Carefully open the cap to release pressure.

> **⚠ Warning**
>
> The hydraulic oil tank is pressurized. Failure to do so may result in oil spraying out and causing potential hazards. **ALWAYS** exercise caution when working with pressurized systems.

5. Loosen and remove the hydraulic oil-pickup filter element cap.
6. Loosen and remove the drain plug at the bottom of the hydraulic oil tank to drain the oil.
7. Remove the hydraulic oil pickup filter and the levers.
8. Thoroughly clean the filter and the inside of the hydraulic tank. Utilize a hydraulic oil-pickup pump to extract any remaining oil residue from the tank's bottom.
9. Position the filter and levers back.
10. Clean and reinstall the drain plug at the tank's bottom.
11. Attach the hydraulic oil-pickup filter element cap to the outlet.
12. Add oil. For instructions, see **§7.7.3 Refilling the Hydraulic Oil** on Page **49**.
13. Replace and tighten the oil tank cap.

7.7.5 Checking Hoses & Pipelines

> **⚠ Danger**
>
> - Any sprayed fluid can penetrate your skin, resulting in serious injury. Always use a paperboard to check for leakage. Furthermore, exercise extreme caution to keep your hands and body away from pressurized oil. In the event of an accident, seek immediate medical attention from a doctor experienced in treating trauma. Any fluid that penetrates the skin must be removed within a few hours to prevent complications like gangrene.
> - Leaked hydraulic oil and lubricant may pose a fire hazard or cause personal injury.

1. Turn off the engine as stated in **§6.9 Shutting Off the Engine** on Page **40**.
2. Wait until the engine and the hydraulic system cool down completely.
3. Check the whole machine for any missing parts, loose pipe clamps, twisted hoses, pipelines, or hoses rubbing against each other.
4. Thoroughly tighten, repair, or replace any loose, damaged, or missing pipe clamps, hoses, pipes, oil coolers, and flange bolts.

> **⚠ Warning**
>
> **DO NOT** bend or subject any pressure pipelines to impacts. **NEVER** install bent or damaged hoses or pipelines.

7.8 Checking the Battery

- For a longer battery life, turn off the headlight(s) when not needed.
- For a longer battery life, the single ignition time should not exceed 10 seconds, and there should be a minimum interval of 60 seconds between two ignitions.

  If the machine fails to ignite three times in a row, stop igniting and proceed with troubleshooting.
- If you find it hard to start the engine, replace the battery with an identical one.

7.9 Checking the Bucket Teeth

Check if the bucket teeth are worn or loosened daily. If they have become shorter than 5.2 inches (130 mm), replace them with a new bucket.

⚠ Warning
Exercise extreme care when changing the teeth. Wear goggles or safety protections.

7.10 Checking the Bolts and Nuts Tightening Torque

⚠ Warning
ONLY use a torque wrench to check the torques of bolts and nuts.

Check the toques of bolts and nuts at the initial 50 hours or prior to initial use and then every 250 hours. Tighten them to the set torque if needed. Replace the damaged ones with identical ones. For required torques, see the table below.

Metric Bolts and Nuts			
Thread Dimensions	**Standard Torque (N·m)**	**Thread Dimensions**	**Standard Torque (N·m)**
M6	12±3	M14	160±30
M8	28±7	M16	240±40
M10	55±10	M20	460±60
M12	100±20	M30	1600±200

7.11 Miscellaneous Checking Schedule

Parts	Quantity	Interval (h)							
		10	50	100	250	500	1000	2000	4000
Bucket Teeth Check		★							
Changing the Bucket	—	If needed							
Adjusting the Bucket Connecting Rod	1	If needed							
Replacing Traveling Lever	2	If needed							
Checking and Replacing the Fuse	1	★	Every 3 years						
Checking the Track for Deflection	2					★			
Maintaining the Tensioner	2						★		
Checking the Fuel Injection Timing	—	If needed							
Measuring the Engine Compression Pressure	—						■		
Checking the Starter & the A/C Generator	—						■		
Checking the Bolts and Nuts Torque	—		◆		★				

Note:
★ : Maintenance interval under normal conditions
◆ : Maintenance needed at the first inspection
■ : Contact Customer Service.

7.12 Checks after Maintenance

Always do the following after performing any maintenance to the machine:

- Ensure all steps listed in this manual have been followed.
- If necessary, have a coworker inspect your work for correct and proper completion.
- Check for leaks in the system you have maintained.
- Be sure no abnormal sounds are coming from the engine or hydraulic system.
- Check for any loose or abnormal movement in the system you have maintained.
- Check for any overheating in the system you have maintained.

After performing maintenance or repairs to the machine, always take time to inventory your tools, parts used, and nuts and bolts to be sure none of these items were left on or inside the machine.

8 Troubleshooting

8.1 Mechanism System

Problems	Possible Causes	Possible Solutions
Noisy structural components	The loose fasteners make noise.	Inspect and tighten the fasteners.
	Aggravated abrasion between bucket and end face of bucket rod	Adjust the clearance to less than 1 millimeter.
Bucket teeth have dropped during the operation.	Deformed spring and weakened elasticity of bucket tooth pin	Change the bucket tooth pin.
	Unmatched bucket tooth pin and seat	
The crawler has tangled up.	Loose crawler	Tighten the crawler.
	The driving wheel moves fast in front of a rugged road.	The guide wheel shall move slowly in front on a rugged road.

8.2 Hydraulic System

Problems	Possible Causes	Possible Solutions
The whole excavator does not move.	Due to the low oil level in the hydraulic oil tank, the main pump cannot draw any oil.	Add enough hydraulic oil.
	The oil filter is blocked.	Change the filter and clean the system.
	Engine couplings (such as plastic plates and elastic plates) are damaged.	Change the engine couplings.
	The main pump is damaged.	Change or repair the main pump.
	The servo system pressure is low or zero.	Adjust to regular pressure. If it fails to increase the pressure of the servo overflow valve, disassemble it to wash; if the spring is fatigued, add a washer or change the spring.
	The safety valve is set at low pressure or stuck.	Adjust to regular pressure. If it fails to increase the pressure, disassemble and wash. If the spring is fatigued, ass a washer or change the spring.
	The oil suction pipe of the main pump explodes or comes off.	Change the oil suction pipe with an identical one.
The unilateral crawler fails to move.	The main pump supplying fuel to the unilateral crawler is damaged.	Change the main pump to an identical one.
	The main valve rod is stuck, and the spring is broken.	Replace the broken spring and fix the stuck main valve rod.
	The traveling motor is damaged.	Change the traveling motor.
	The upper and lower chambers of the swivel joint are connected.	Change the oil seal or clean the assembly.
	The fuel pipe of the traveling system explodes.	Replace the exploded fuel pipe of the traveling system.

Problems	Possible Causes	Possible Solutions
The whole excavator moves slowly or is powerless.	Low hydraulic oil level	Add enough hydraulic oil.
	Low engine rpm	Adjust engine rpm.
	Low system safety valve pressure	Adjust to the specified pressure.
	Serious leak inside the main pump	Replace or repair the pump.
	The traveling motor, rotation motor, and cylinder are worn to different degrees, which causes internal leaks.	Change or repair the worn parts.
	The aged sealing components, worn hydraulic elements, and degraded oil of an old excavator cause the operation speed to become powerless, along with the increase in temperature.	Change hydraulic oil, change sealing components of the whole machine, and adjust the fit clearance and pressure of hydraulic components.
	The blocked engine filter causes a serious decrease in loaded rpm and even flames out.	Change the element.
	The blocked hydraulic filter accelerates abrasion of the pump, motor, and valve and leads to an internal leak.	Clean and change the elements according to the maintenance schedule.
	Serious wear between the main valve rod and valve hole causes a serious internal leak.	Repair the valve rod.
The right and left traveling systems do not move (no other abnormalities).	The central rotation connector is damaged.	Change the oil seal and change the groove if it is damaged.
	The high-pressure chamber and low-pressure chamber of the traveling operation valve are connected.	Repair the traveling operation valve to correct the connection between the high-pressure and low-pressure chambers.
	Serious leak inside the traveling operation valve	Replace the traveling operation valve.
	Low overloaded pressure of the traveling valve of the main valve or stuck valve rod	Adjust the overloaded pressure of the traveling valve or repair the stuck valve rod.
	The left and right traveling reducers fail.	Repair or replace the failed left and right traveling reducers.
	The left and right traveling motors fail.	Repair or replace the failed left and right traveling motors.
	The oil pipe explodes.	Replace the exploded oil pipe.
Deviation during traveling (no other abnormalities)	Wrong adjustment of variable point of main valve or serious internal leak of a pump	Adjust the variable point of the main valve correctly or repair the pump with a serious internal leak.
	The internal or external spring of one traveling valve core of the main valve is damaged or tightened.	Repair or replace the damaged or tightened internal or external spring of the traveling valve core in the main valve.
	The traveling motor leaks inside due to abrasion.	Repair or replace the traveling motor to fix the internal leakage caused by abrasion.
	The sealing component of the central rotation connector is aged and damaged.	Change the sealing component.
	The left and right crawlers are of different tightening.	Adjust the tension of the left and right crawlers to ensure they are equally tightened.

Problems	Possible Causes	Possible Solutions
Boom (bucket rod and bucket) move in one direction only.	The main valve core is stuck, or the valve rod spring breaks.	Repair or replace the stuck main valve core or the broken valve rod spring.
The main valve core is stuck, or the valve rod spring breaks.	The boom valve rod is stuck or of low overloaded pressure.	Repair or replace the stuck boom valve rod or adjust the overloaded pressure to the correct level.
	Leaked fuel supply pipe, damaged O-ring, or loose pipe fitting	Repair or replace the leaked fuel supply pipe or damaged O-ring, or tighten the loose pipe fitting.
The boom (bucket rod and bucket) drops too quickly, or the cylinder drops at a certain height even when it is not operated due to dead weight.	Low-overloaded valve pressure	Adjust or replace the overloaded valve to restore the correct pressure settings.
	Serious internal leak of cylinder	Change the sealing component, repair the inner wall or groove of the cylinder, or change the cylinder.
	Loose oil pipe fitting or damaged O-ring	Tighten the loose oil pipe fittings or replace the damaged O-rings.
The boom (bucket rod and bucket) works powerlessly.	Serious internal leak of multi-way valve	Repair or replace the multi-way valve to eliminate internal leakage.
	Low overloaded pressure	Adjust or replace the overload relief valve to restore the correct pressure.
	Serious internal leak of oil cylinder	Change the oil seal.
	The main valve is disabled due to an internal leak.	Repair or replace the main valve to eliminate internal leakage.
The boom (bucket rod and bucket) moves even if it is not operated.	Multi-way valve core is stuck or has a serious internal leak.	Repair or replace the multi-way valve core to fix the sticking issue or eliminate internal leakage.
	Multi-way valve rod spring breaks.	Replace the broken multi-way valve rod spring.
	The working cylinder leaks, or the working device drops due to dead weight.	Repair or replace the leaking working cylinder.
	The overload relief valve pressure is too low, or the spring is broken.	Adjust to the specified pressure. Change the spring if it is broken.
Hot hydraulic oil	Wrong grade of hydraulic oil for excavator	Change the hydraulic oil.
	The hydraulic oil cooler surface is polluted by oil and dirt, which blocks the air hole.	Clean the hydraulic oil cooler surface to remove oil and dirt blocking the air holes.
	The hydraulic oil level is low.	Add enough hydraulic oil.
	The hydraulic components, such as the motor, main valve, oil cylinder, or sealing components, are seriously worn and cause internal leaks, which increase the oil temperature.	Change the elements in time.
No action of rotation (no other abnormalities)	Hydraulic oil pipe breaks.	Repair or replace the broken hydraulic oil pipe.
	The rotary valve rod on the main valve is stuck.	Repair the rotary valve rod on the main valve to fix the sticking issue.
	The rotary motor is damaged.	Repair or replace the damaged rotary motor.
	The rotation support is damaged.	Repair or replace the damaged rotation support.

Problems	Possible Causes	Possible Solutions
Indifferent left and right rotation speed (no other abnormalities)	The right and left rotation of the multi-way valve is of different overloaded pressure.	Adjust the overloaded pressure settings on the multi-way valve to equalize the left and right rotation speeds.
	The rotation valve rod of the multi-way valve is slightly stuck.	Adjust or move the valve rod to free it from being stuck.
Delayed or powered rotation (no other abnormalities)	Serious external leak of hydraulic oil pipe	Change pipe fitting and sealing components.
	Low overloaded pressure for rotation of the multi-way valve	Adjust the overload pressure setting on the multi-way valve to correct the low pressure for rotation.
	The serious internal leak of the rotary motor	Repair or replace the rotary motor to fix the internal leak.
	The high-pressure and low-pressure chambers of a multi-way valve are connected, and a sand hole is drilled in the valve body due to casting, which causes one-way action or linked action.	Replace the defective multi-way valve body to fix the casting defect causing the chambers to connect.
The rotation mechanism moves even when it is operated.	The main valve rod spring breaks.	Replace the broken main valve rod spring.
The excavator makes abnormal noises and shakes during operation.	The hydraulic oil level is low.	Add enough hydraulic oil.
	The oil contains too much moisture and air.	Replace the hydraulic oil with clean, moisture-free oil to remove excess moisture and air.
	The safety valve of the multi-way valve makes a noise.	Inspect and repair or replace the safety valve of the multi-way valve to eliminate the noise.
	Damaged coupling	Replace the damaged coupling.
	Vibration caused by loose pipe clamp	Tighten or secure the loose pipe clamp to eliminate the vibration.
	Blocked filter	Clean or replace the blocked filter.
	Air exists in the oil suction hose.	Release the air.
	Uneven engine rpm	Inspect and repair or adjust the engine's governor and fuel system to stabilize the uneven engine rpm.
	The bearing of the working device is not lubricated or scraped.	Apply lubrication oil or change the shaft or sleeve.
The oil cylinder is powerless or has oil leakage.	Damaged sealing components	Change the sealing components.
	A groove is found on the piston rod due to abrasion or detachment of the chromium coating of the piston rod, which causes oil leakage.	Repair or replace the damaged piston rod to eliminate the groove and prevent oil leakage.
	The air in the cylinder causes a shaking noise during operation.	Release the air.

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Contact Us

Thank you for choosing our products! If you have any questions or comments, contact us and we'll address your issues ASAP!

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User Manual

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