



POWER BY



A10 CRAWLER EXCAVATOR

OWNER'S HANDBOOK

ACHILLES MACHINERY

In this Operating Manual, the operation, repair, lubrication, maintenance, adjustment and trouble shooting of A10 hydraulic excavator are introduced so as to provide its operators with basic knowledge for efficient, economical and proper operating of the excavator.





Before operating the excavator, operators must read this Manual carefully and completely so as to guarantee correct and standardized operation. This manual will offer you step-by-step guidance on everyday safety routines.

The Manual only provides you with basic knowledge, operators, however, have to enhance their skills and proficiency and become familiar with the performance of the excavator through practice and experience. It is of utmost importance that every care is taken to ensure safety.

In this Manual, matters concerning techniques by “*”.

We are working hard to improve our products, and increase their efficiency by continually improvement. Therefore, illustration may include optional equipment. ACHILLES MACHINERY products and specifications are subject to improvements and changes without notice.

Please keep this Manual within easy access in the cab for convenience of use.

Chapter 1 Basics of safety

1. Please do not operate when drinking alcohol, taking medicine, or in poor health.
2. When operate, please wear safety helmet, safety shoes and safety clothing. Please wear protective equipment such as protective glasses, dust mask, sound insulation device, protective gloves and safety belt according to the work. And before use, confirm the function of each protective appliance is normal.

Please keep the seat clean. If the pedal, handrail is stained with oil, grease, ice, snow, mud, it is easy to cause slipping and falling. In addition, please check whether there is dirt on the shoes.

3. When going up and down, please be careful to hold the handrails to avoid slipping on the soles of feet, and please do not be caught by the operating handle

Chapter 2 Operation of safety

1. Make sure there is no one around the machine.





2. Please do not touch wires or obstacles during operation.

3. Please do not turn or cross in the inclined area, otherwise it will lead to rollover or oblique sliding, which is very dangerous.,please turn on flat ground. When going up and down hills, please drive along the maximum incline.

4. Please do not swing or rotate or dig in the inclined area, otherwise there will be a risk of rollover. If the operation is carried out in the inclined area, the operation should be carried out after leveling the position of the machine.

Please do not drive the machine on stones or work on soft mounds.

When climbing in the inclined area, if the machine is driven to the stone or protruding part, or driving on the uneven road surface, there will be the danger of turning over. So please avoid such places when climbing.

5. When driving and climbing, please turn the rotating frame and working device to the front, so that the bottom of the bucket leaves the ground 20~40cm, so that in the dangerous situation can immediately drop the bucket to the ground to ensure stable driving. Never swing up or down the ramp.

In addition, please never drive sideways or horizontally in a sloping area of more than 15 degrees. Otherwise there is a risk of rollover.

6. When going up and down soft ramps, if the body may skid, please immediately lower the bucket to brake.

7. When driving near cliffs or roadbeds, sufficient leeway should be left or proper reinforcement should be taken to avoid ground collapse. Also, stay away from Rolling Stones.

8. It is dangerous to dig a hole under a cliff. Please do not carry out such operations. Otherwise it will cause cliffs, ground collapse or Rolling Stones.

9. If the operation site or road condition is not good, the excavator stability will decrease, and it may cause accidents or even rollover due to operation errors. Therefore, it is necessary to level the road or avoid obstacles while leveling the operation site. In addition, when driving on Bridges or buildings, allowable loads should be investigated and reinforced when strength is insufficient.

10. Generally, it is more likely to roll over when excavator body is placed horizontal than forwards and backward. Therefore, when the working device is





under heavy load, please do not carry out lateral rotation.

11. In the case of rain or water, wooden boards, iron plates, etc. are easy to slip. Please be more careful when working in such slippery places.

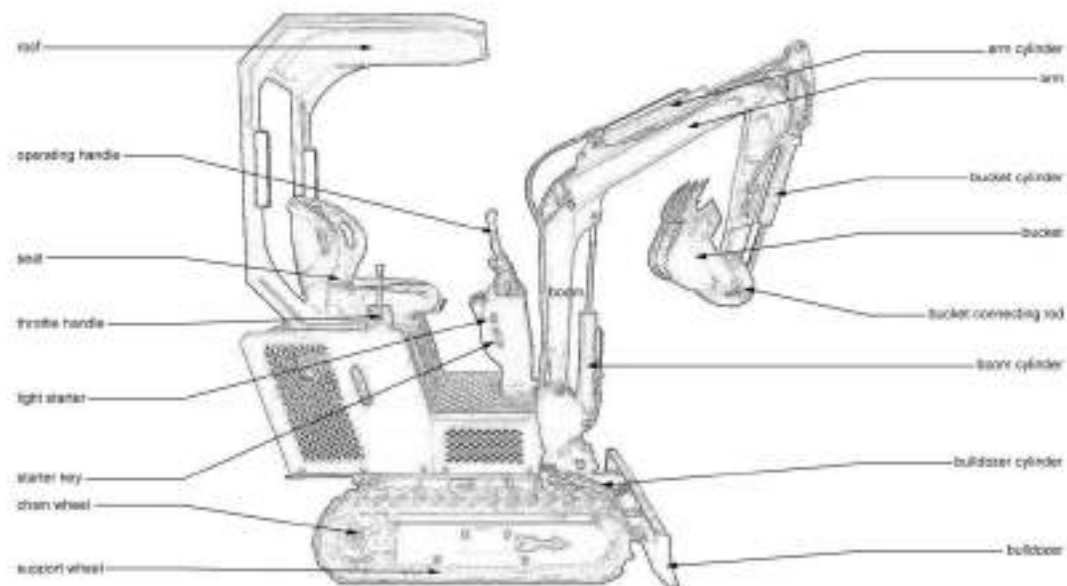
12. When working in places with electrical wiring, gas pipes, water and sewage, etc., experts should be present and operate with caution.

13. After the bucket teeth are stuck in a rock, etc., when the bucket teeth come out, it may overturn due to the reaction force. Therefore, be sure to pay full attention when working.

In addition, please never drive with the bucket inserted into the ground or excavate with the body suspended. This is dangerous.

14. When working in a building, pay full attention to the strength of the overhead, exits, passages and the ground.

Chapter 3 General Configuration



Type	A10	Technical specifications	
Weight	1800 kg	Traveling speed	0~2.5 km/h
Bucket capacity	0.025 m ³	Swing speed	0~12 rpm



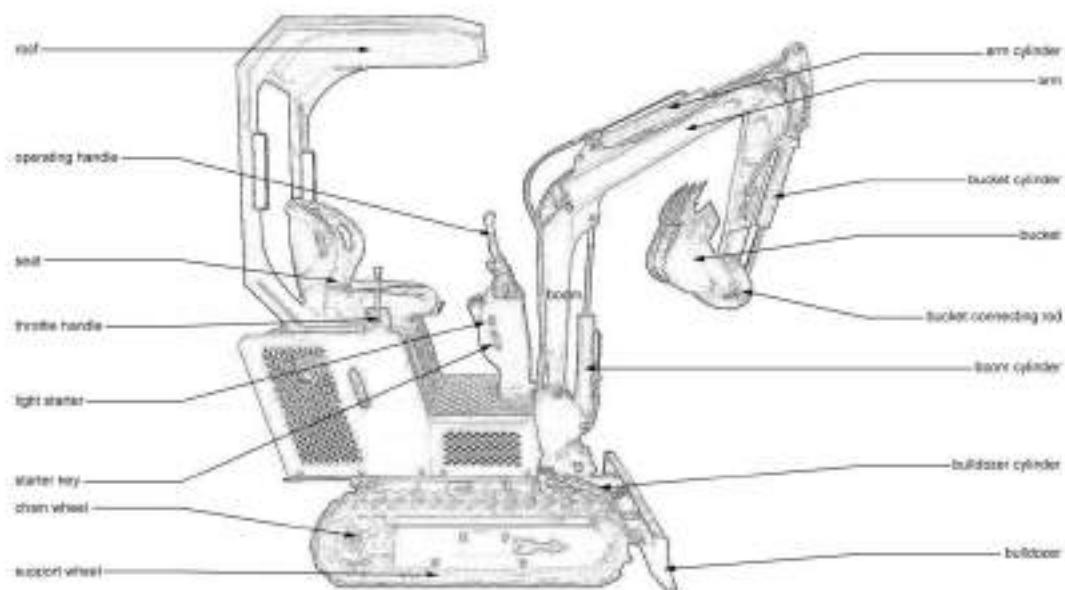


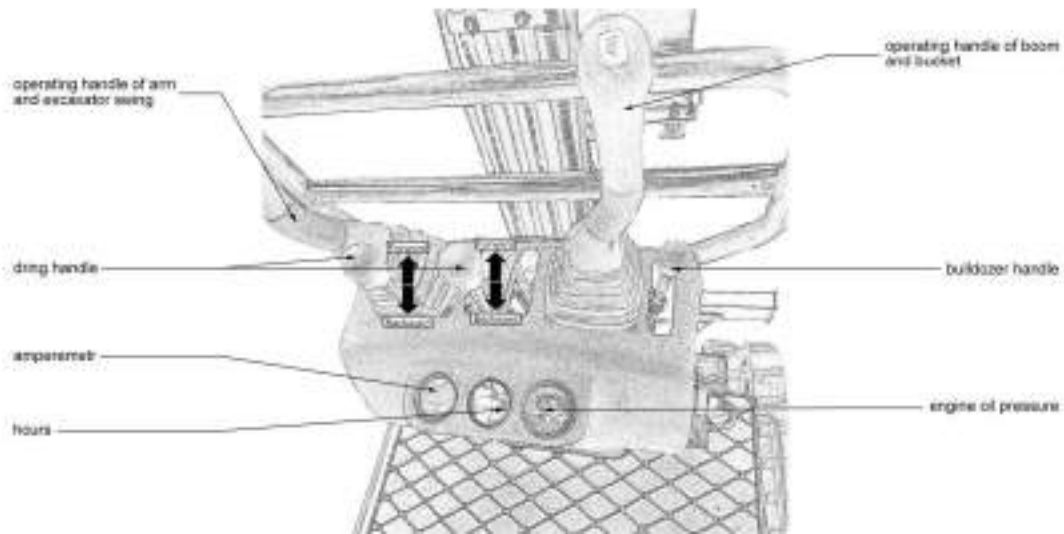
Engine	KOOP	Grade ability	58% (30°)
Rated power	8.6 kw	Max. digging force	10 kN

Chapter 4 Technical Specification

Overall length	2650mm
Overall width	940mm
Platform ground clearance	380mm
Max.digging height	2490mm
Max.dumping height	1750mm
Max.digging depth	1650mm
Max.vertical digging depth	1320mm
Max.ground digging diameter	2400mm
Min.gyration radius	1190mm
Max.bulldozing height	325mm
Max.bulldozing depth	175mm

Chapter 5 Instruments, Handle, Switches and its Functions





1. First way, please insert the start key in position.
2. Please pull down the throttle handle and increase it to the maximum

* Please do not add metal key chain, it will obstruct the signal transmission of the key and the switch, cause the engine to fail to start normally.

Oil pressure indicator

1. The engine is working, if the lubrication system is abnormal, oil pressure indicator will light.
2. Please stop the engine to check oil volume.

Hours

1. It displays the cumulative excavator operating time.
2. Work 1 hour, it will add 1.

* The hour timer sometimes fogs up due to water droplets. This is not a malfunction. After the water vapor evaporates, the fog disappears.





Driving handle

Please sit on the seat, When bulldozer and front idler are located in front, push driving handle to go forward, pull driving handle to go backward.

* If bulldozer and front idler are located in rear, excavator will travel in the opposite direction to driving handle direction.

Working device operating handle in front.

* If hydraulic oil temperature is lower, working device operating handles are decreased responsiveness, it feels a little heavy, which does not affect operation, it is best to perform warm-up operation.

* When disassembling hydraulic equipment, please follow the following steps:

- Reduce the engine speed, bucket contact the ground.
- Stop the engine, move the handle in all directions.
- Please wait more than 10 minutes to remove residual pressure from the hydraulic circuit.

In order to prevent danger, the above steps are indispensable.

* When pull up arm, if arm towards directly below direction, there may be a momentary pause, it is not malfunction, please do not worry.

Bulldozer operating handle

When do bulldozing, please left hand operate 2 units driving handles, right hand operate bulldozer operating handle

Chapter 6 Inspection before operation

Daily check list

Daily inspection items	Project
	The problematic part of the last use
	Check and replenish coolant





	The amount of oil in each part	(1) Inspection and replenishment of fuel
		(2) Inspection and replenishment of engine oil
		(3) Inspection and replenishment of hydraulic oil
	Grease - filled parts of working units	(1) Bucket pin
		(2) Swing pivot pin
		(3) Boom root
		(4) Boom cylinder boss
		(5) Stick root
		(6) Stick cylinder boss
		(7) Dozer blade cylinder boss
		(8) Swing cylinder boss
		(9) Dozer blade cylinder boss
		(10) Dozer blade root pin
	Inspection and cleaning of water and sediment in oil-water separator	
	Inspection and cleaning of radiator and hydraulic oil cooler	
	Inspection and cleaning of batteries, wiring, and engine surroundings	
	Inspection of the roof installation part	
	Precautions when washing the car with this machine	

Inspection and replenishment of fuel

1. Please use the fuel scale table to check.
2. When the fuel is low, please open the fuel tank cover to replenish.

*Be sure to stop the engine when refueling.

*Please never go near fire.

*After the operation is over, fill up the fuel tank and tighten the fuel tank cap securely.

*When replenishing fuel, be sure to use the fuel tank's oil filter.

*Please pay full attention when refueling to prevent dirt or moisture from entering the fuel tank.





*As long as there is oil in the fuel tank, there is generally no air in the fuel system. If air is mixed in, exhaust it.

*After the fuel is refilled, please close the fuel tank cover.

Check and replenish hydraulic oil

1. Please remove the addition port of the hydraulic oil tank after the oil temperature is completely reduced. Otherwise, it will cause burns due to the spray of hydraulic oil.
2. Park the machine body in a horizontal place, make the front working device in the middle swing position, make the stick and bucket in the maximum pull up position, and make the bucket connecting rod and the dozer contact the ground.
3. Please check whether the hydraulic oil is in the center of the oil level gauge at room temperature (10°C~ 30°C).
4. If it is in the center of the oil level gauge, it is normal.
5. When the amount of oil is insufficient, please replenish it through the oil filler.
6. When the hydraulic oil is mixed with water and other impurities, the hydraulic oil must be replaced overall.

*When replenishing hydraulic oil, please clean the surrounding sand or dirt, and be sure to use the same brand of hydraulic oil.

Inspection and cleaning around the battery, wiring, and engine

The wire harness and the sheath of the battery (+) pole wire will naturally deteriorate due to contact with the corners of various parts and damage. So please check the following related items.

1. The wire harness must not be damaged, and the wire clamp must not be loose.
2. The connection part of the terminal and the wiring board (socket) must not be loose.





3. The switches must be able to operate normally.

*If the wiring harness and the battery (+) pole wire are damaged, it will cause a short circuit, so be sure to check.

*If dirt or fuel adheres to the battery, wiring, muffler, or engine, it may cause a fire. Therefore, please check before working every day

Wash A10 excavator precautions

1. If water enters the electrical system, it will cause malfunction of the machine. Therefore, do not directly spray water on electrical components such as sensors and connectors.

2.If the car is washed with the engine started, water droplets may be sucked in from the suction port of the air cleaner, which may cause the engine to malfunction. So please turn off the engine before washing the car. In addition, please be careful not to sprinkle water on the air filter.

Chapter 7 Start and stop engine

Pay attention to start engine in winter

1) Pull the throttle handle back to the end.

2) Turn the starter key warm up, keep at least 5 seconds.

2) Turn the start key to start.

Warm-up operation

After starting, please perform no-load warm-up operation to make the idling operation reach a stable state (about 5 minutes).

*If the hydraulic oil temperature is low, the responsiveness of the operating handle of the working device will become poor, so be sure to perform the warm-up operation.

*During the period of low hydraulic oil temperature, the operating handle will feel a little heavier, which does not affect the operation of the machine.





Inspection of each part

After the engine has warmed up, please confirm the following.

- Is the oil indicator light off?
- Is the exhaust gas color normal?
- Is there any abnormal sound or vibration? Is there any leakage of oil, fuel, water, etc.?
- ◆In the following cases, please turn off the engine immediately.

1. The speed drops sharply or rises sharply.
2. Suddenly make an abnormal sound.
3. The exhaust gas color becomes worse.
4. During operation, the oil indicator light is on.

Stop engine

Push the throttle handle to the end, let the engine idle for about 5 minutes, and cool down slowly.

1. Slowly operate the left and right working device operating handles, and place the working device on the ground.
2. Turn off the starter key , stop the engine, and remove the key.

*Before stopping engine, make the bucket touch the ground. Please do not rely on the weight of working device to make it contact the ground.

*When engine stop, please do not leave the working device in the air. Otherwise, the device will slowly fall due to its own weight, causing an accident.

Chapter 8 A10 excavator operation





Turn

*Please do not turn (turn around, etc.) when driving on a steep slope, otherwise there will be a risk of overturning. Please turn on a flat ground.

*Please make sure that there is no one around before turning.

*When turning, please try to avoid forced in-place turning or turning back. Turning should be done by increasing the number of zigzag turns.

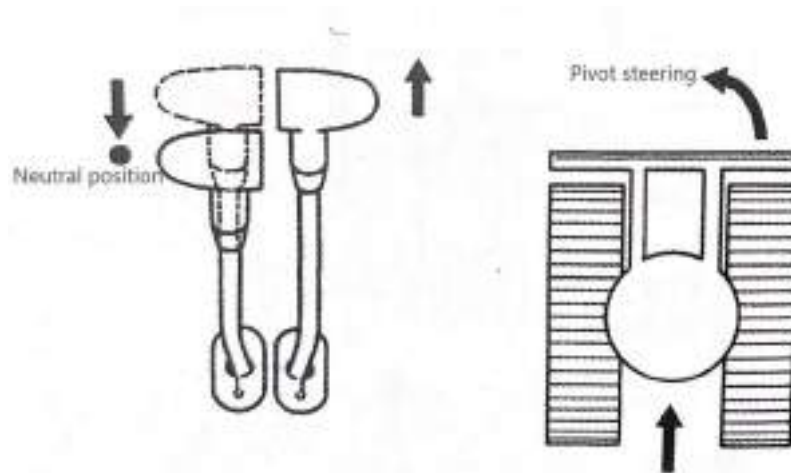
*If you are negligent...

It may cause injury accidents.

The following is an explanation of the operation method when the bulldozer is at the front.

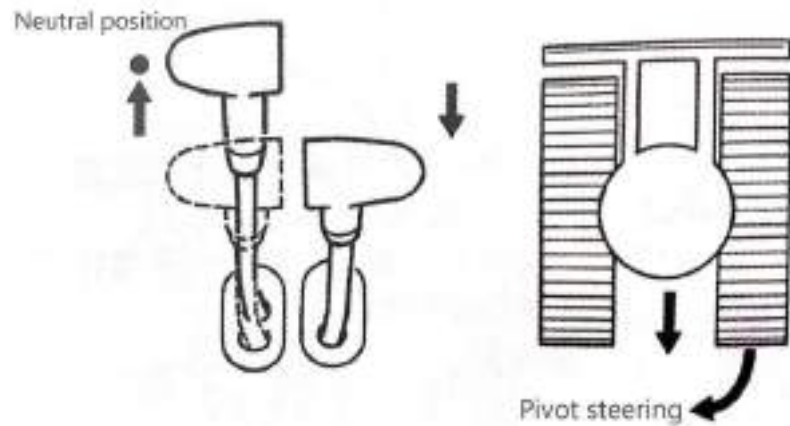
■Steering while driving (pivot steering)

1. When moving forward, if the left (right) driving handle is placed in the neutral position, then turn left (right).



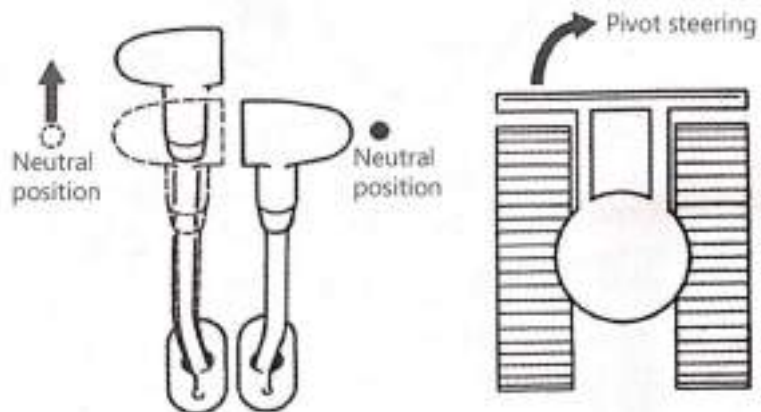
2. When moving backward, if the left (right) driving handle is placed in the neutral position, then turn left (right).



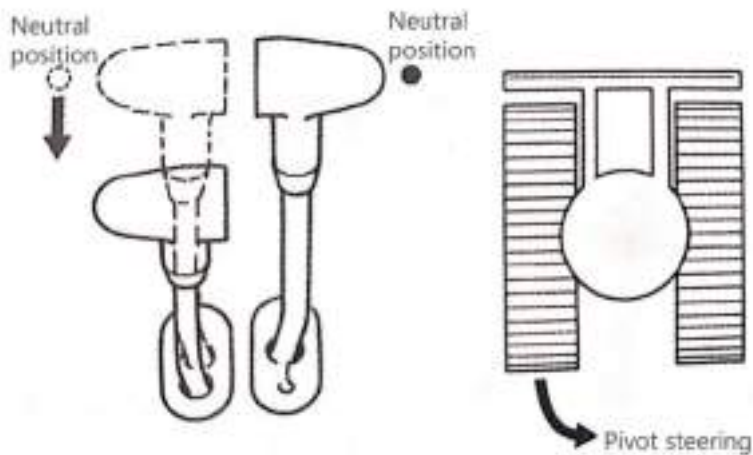


■Turning at stop (pivot steering)

1. If the left (right) driving handle is operated forward, turn to the right (left).



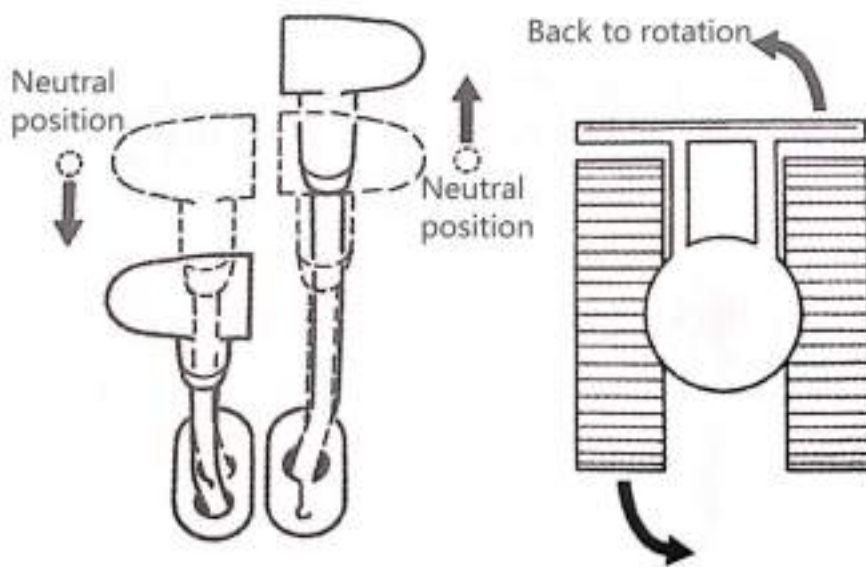
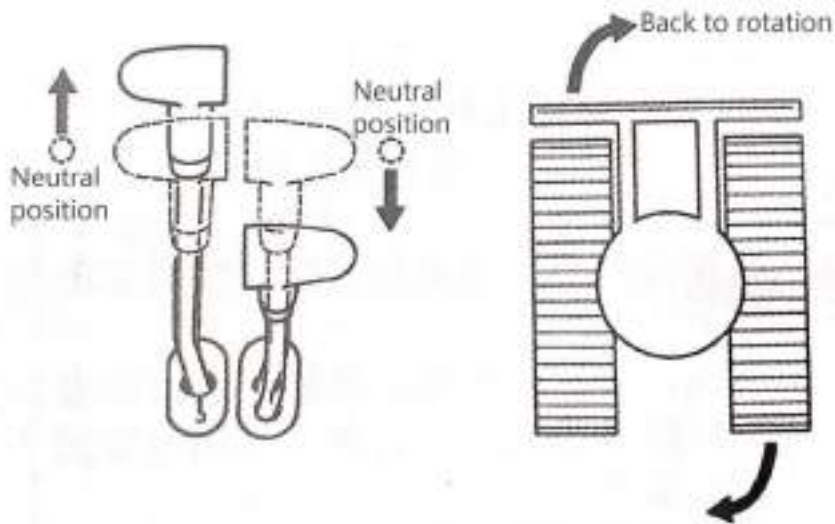
2. If you operate the left (right) driving handle backwards, turn to the right (left).





■Back to rotation

1. If the left (right) travel handle is operated forward and the right (left) travel handle is operated backward, then turn right (left) on the spot.



Up and down ramp

1. When going up ramp, please lift the bucket so that the lower part of the bucket is 20 ~ 40cm away from the ground before driving.





2. When going down ramp from a steep slope where the crawler is easy to slip, please lower the bucket to the ground and go down ramp under the push of the bucket. When descending from a slope that is not steep, place the bucket at a height that can immediately touch the ground.

3. When going up and down, please adjust the throttle handle and drive slowly.

*When driving on a sloping area, be sure to make the revolving frame and the crawler frame parallel to each other.

If you are negligent...

The body may rotate in the opposite direction, causing injury accidents due to overturning.

Chapter 9 A10 excavator park on a sloping area

Parking

1. Please park the machine on a flat, firm ground. Stand the stick upright and lower the bucket and dozer to the ground.

2. Return the throttle handle to the rising position on the low-speed side, and let the engine idle for about 5 minutes to slowly cool the engine.

3. Please turn off the starter key , then turn off the engine and remove the key.

4. When leaving parking A10 excavator, please close all the covers .

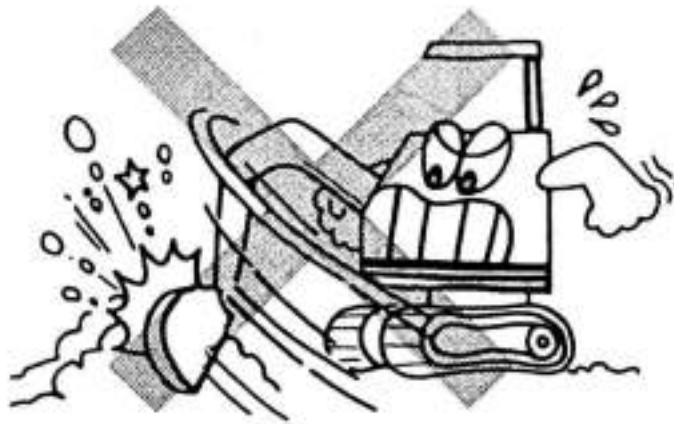
*Parking parking A10 excavator on sloping areas can be dangerous. Therefore, please do not park your vehicle on a sloping area.

*When parking A10 excavator on a sloping area as a last resort, insert the bucket into the ground before braking.

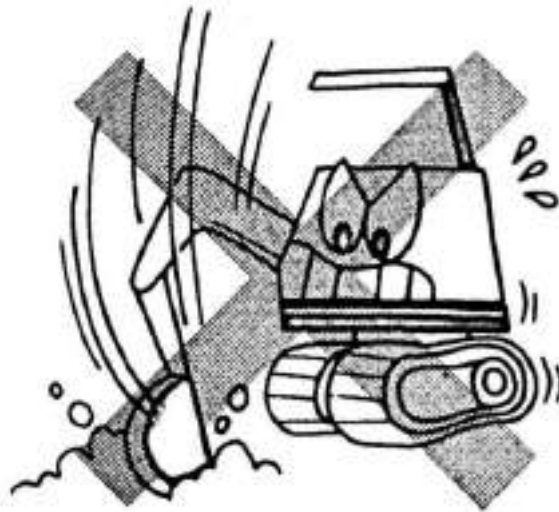
Prohibited work

1. It is forbidden to use rotational force for work. (Using a bucket for horizontal pushing operations, etc.)



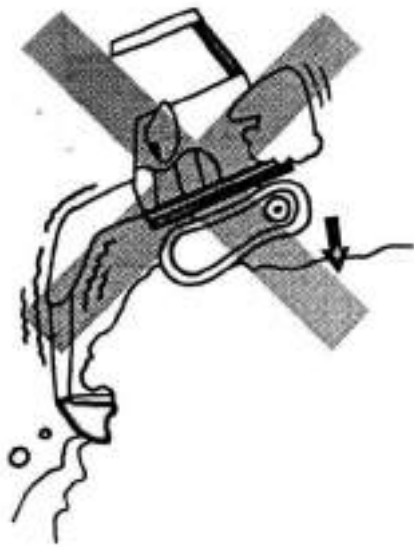


2. It is forbidden to use the falling gravity of the bucket to work. (Using a bucket for piling operations, etc.)

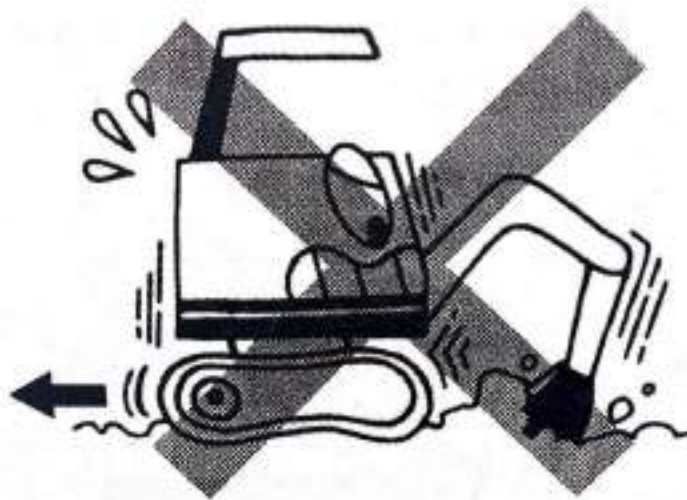


3. It is forbidden to use the falling gravity of the main body to perform operations. (Using the falling force of the body to perform excavation operations, etc.)





4. It is forbidden to use driving power for work. (Insert the bucket into the ground to drive, etc.)



5. The bucket removes soil. (It is forbidden to remove soil by hitting the end of the bucket)





Precautions during operation

1. Pay attention to the bulldozer.

When carrying out deep excavation in front of the dozer blade, be careful not to make the boom collide with the dozer blade.



2. Pay attention to the folding of the working device.

When folding (removing) the working device during driving and transportation, be careful not to make the bucket collide with the dozer.





3. Pay attention to the collision of the bulldozer.

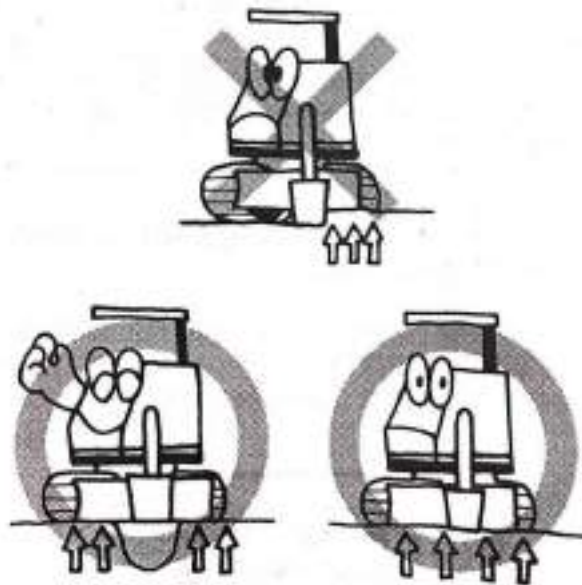
Do not let the bulldozer hit the rock. Otherwise it will cause premature damage to the bulldozer and the cylinder.



4. When using a bulldozer to support, both sides need to be supported at the same time.

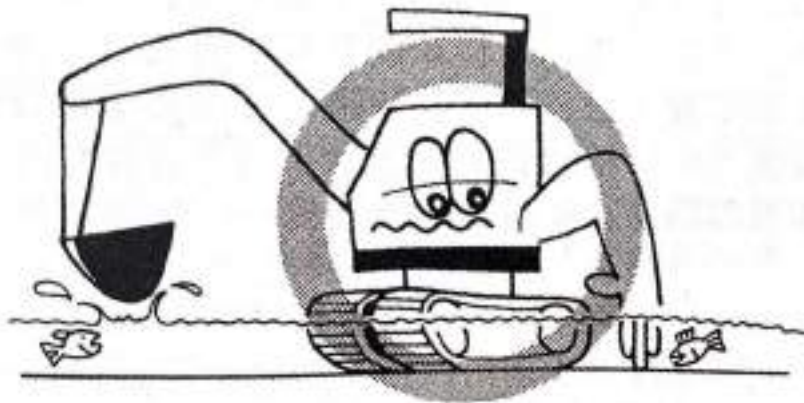
When the dozer blade is used as a support foot, it is prohibited to use only one side of the dozer blade for support.





5. Pay attention to the allowable water depth.

When working in water, please confirm that each plug and cock are firmly tightened, and then use it in the depth of the water below the upper surface of the idler crawler.



Important matters

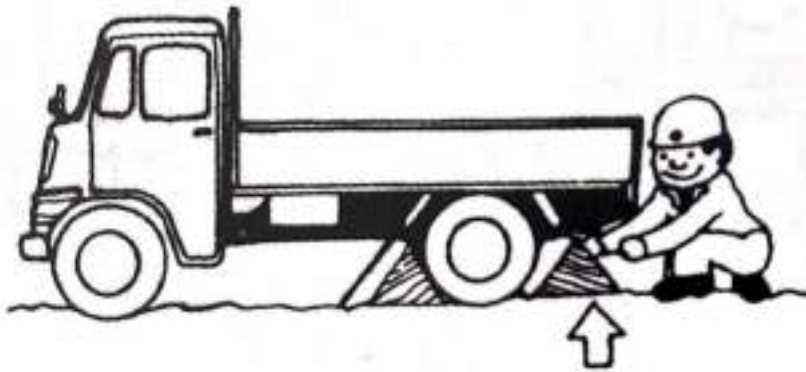
*After the work is finished, be sure to remove the soil from each part and rinse it, and then add grease to the fulcrum.





Chapter 10 Loading and transportation

1. Put the parking brake on the truck and apply the brake I before and after the tires to ensure that the wheels will not turn.



2. Set up a loading and unloading platform with sufficient strength and width, and then proceed to loading.
3. When you have to use the loading and unloading board, please work in a flat and solid place. The loading and unloading board used should have sufficient strength and width and length. The loading and unloading board should be hooked parallel to the left and right, and should be aligned with the track. In addition, the length of the loading and unloading board should be more than 4 times the height (H) of the truck bed. In addition to using the loading and unloading board with hooks to prevent the loading and unloading board from deviating from the truck, it is also necessary to check the various parts for cracks before use. In addition, please place a spacer under the loading and unloading plate to prevent the loading and unloading plate from bending.
4. When loading the machine on the truck, the working device should face the direction of travel (upper side), the stick should be perpendicular to the loading and unloading plate or slightly pulled up, and the height between the bucket and the loading and unloading plate should be 20 ~ 40cm.
5. Before moving the machine to the truck bed, please stop temporarily in the state shown in the figure below, make the bucket lightly touch the truck bed, and then move forward slowly. Then, make the car body level.





6. It is dangerous to adjust the direction on the loading and unloading board. If it is necessary to adjust the direction, be sure to get off the loading and unloading plate first, and then install the loading and unloading plate after adjusting the direction.

7. When the machine advances to the designated position on the truck bed, while the stick is pulled up, while paying attention to the balance of the truck, slowly rotate the upper rotating body by 180 degrees.

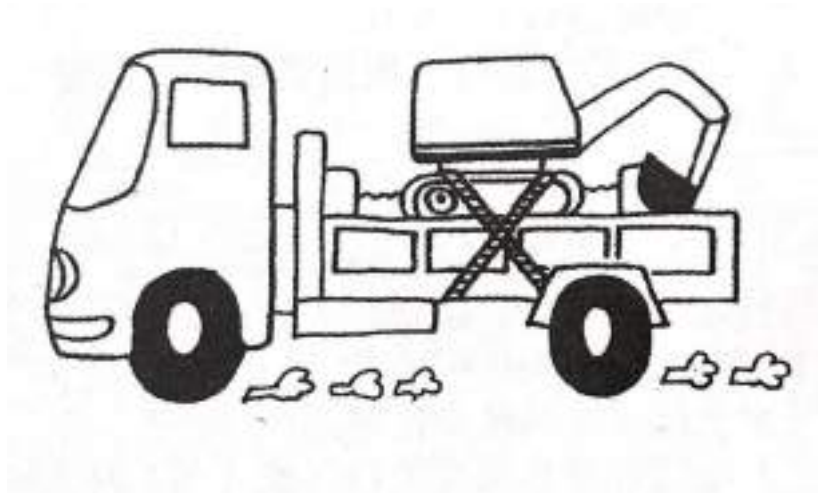
8. Lower the bucket onto the truck bed, stop the engine.

9. Use steel wire ropes to firmly fix the machine on the truck bed.

*If A10 excavator is loaded with the stick extended, it will endanger the driver or the surrounding people due to the reaction force generated by the deviation of A10 excavator gravity .

Unloaded from truck

1. Make the working device face the direction of travel, and move forward to the front of the loading and unloading plate while the stick and the truck box surface are kept vertical or slightly pulled up.



2. Before driving the machine onto the loading and unloading board, stop temporarily, make the bucket lightly touch the ground or the loading and unloading board, and then move forward slowly to avoid the machine's center of gravity from moving too fast.





3. When the machine advances to about half of the entire crawler, please stop the machine and slowly raise the boom to open the loading and unloading board.

4. Please move forward with the bucket lightly touching the ground, and remove the machine from the loading and unloading plate. At this time, please take corresponding protective measures to avoid damaging the road.

Chapter 11 Wash A10 excavator precautions

If the high-pressure car washing machine is used improperly, it will cause personal injury, or damage or damage the machine, and cause the machine to malfunction. Therefore, please use it correctly according to the instructions and labels of the high-pressure car washer.

*When wash A10 excavator, in order not to damage the machine, please make the cleaning nozzle spread and spray water, and stay more than 2 meters away. If you spray water directly or improperly at short distances,

1. Fire may be caused by damage to the foreskin of electrical wiring or disconnection.
2. Due to the rupture of the hydraulic hose, it will be injured by the spray of high-pressure oil.
3. Cause damage or damage to the machine, and cause the machine to malfunction.

Example

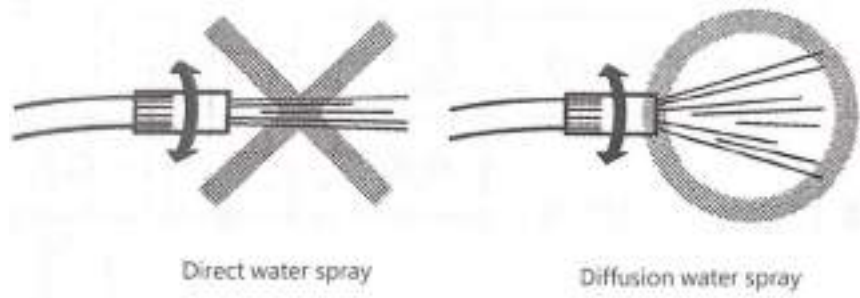
- (1) Peeling of seals and labels
- (2) Failures caused by water ingress in electronic components, engines, safety cabs, etc.
- (3) Damage to rubber, resin parts, glass, etc. such as tires and oil seals
- (4) Peeling of paint and electroplating layer

It is strictly forbidden to spray water directly to wash A10 excavator

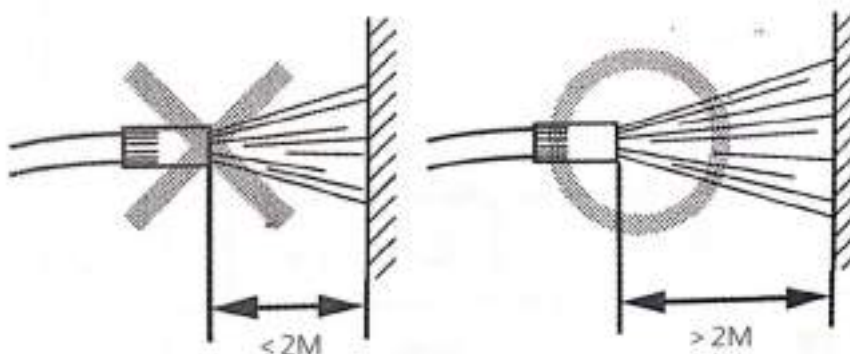




Wash A10 excavator at close range is strictly prohibited



A10 excavator washing at close range is strictly prohibited



Chapter 12 Maintenance and Lubrication

Regular and Periodical Check and Maintenance List

Proper lubrication and maintenance will guarantee good operation, prolong the service life and reduce the wear of the excavator.

No	Item	Maintenance Content
Pre-start Inspection		
a	Walk around the excavator and check if there is anything abnormal	
b	Cooling water	Check its level and refill
c	Engine oil in sump	Check its level and refill
d	Fuel	
e	Hydraulic tank	Check and refill
f	Electric circuit	Check
Every 100-hour Maintenance		





a	Oil in swing drive case	Check and refill
b	Fuel tank	Drain water and sediment
c	Lubrication	
1	Shaft ,on boom cylinder piston side	1 lubricating point
2	Shaft, on boom rear side	1 lubricating point
3	Shaft ,on boom cylinder rod side	1 lubricating point
4	Shaft ,on arm cylinder piston side	1 lubricating point
5	Boom/ arm connecting shaft	1 lubricating point
6	Shaft, on arm cylinder rod side	1 lubricating point
7	Shaft on bucket cylinder piston side	1 lubricating point
8	Arm/connecting rod connecting shaft	1 lubricating point
9	Bucket / arm connecting shaft	1 lubricating point
10	Connecting rod connecting shaft	2 lubricating point
11	Shaft ,on bucket cylinder rod side	1 lubricating point
12	Bucket/connecting rod connecting shaft	1 lubricating point
First 250-hour Maintenance		
a	Fuel filter	Replace filter
b	Engine valve clearance	Check and adjust
Every 250-hour Maintenance		
No	Item	Maintenance Content
a	Final driving box	Check and refill
b	Engine oil sump and oil filter	Replace oil and filter
c	Fan belt	Check tightness
d	Hydraulic oil filter	Replace filter
e	Swing ring	3 lubricating points
f	Battery	Add distilled water every 2-3 months
Every 500-hour Maintenance		
a	Pinion shaft gear of swing drive	Lubricate with grease
b	Radiator and hydraulic oil cooler	Clean
c	Fuel filter	Replace filter
Every 1000-hour Maintenance		
a	Swing drive case	Replace engine oil





Every 2000-hour Maintenance		
a	Hydraulic oil tank	Replace engine oil
b	Inlet filter for hydraulic oil	Clean
c	Final driving box	Replace engine oil
d	DC generator and starter motor	Check
e	Shock absorber for engine	Check
f	Engine valve clearance	Check and Adjust
Every 4000-hour Maintenance		
a	Water pump of engine	Check
When necessary		
a	Cooling system	Clean
b	Air filter	Check and clean or replace
c	Track	Check and adjust its tightness
d	Track shoe bolt	Check and tighten
e	Bucket tooth	Replace

Unscheduled Maintenance

1. Clean the internal of the cooling system, replace the cooling fluid, add antifreeze agent or replace the anticorrosion unit as per Table below.

Type of cooling	Clean cooling system or replace cooling fluid
Permanent anti-freezing	Every year or 2000 hours (whichever occurs first)
Non-permanent (contains glycol)	Every 6 months (in spring and autumn)
No antifreeze is used	Every 6 months or 1000 hours (whichever occurs first)

Use city tap water as cooling water. If river water or other water is to be used, it must be treated first.

*The antifreeze is combustible and must be kept away from fire.

*When adding antifreeze into cooling water, it is recommended to use a dosimeter to control the concentration of the mixture.

2. Clean filter

Use compressed air. Blow the filter from inside to outside and from





outside to inside repeatedly with dry compressed air at a pressure lower than 7kg/cm², and check it.

*When compressed air is used, the operator must wear goggles or other protective apparatus.

*If there are wrinkles on the filter or any washer or seal is damaged, the filter must be replaced.

Use water. Flush the filter from inside to outside and from outside to inside repeatedly with tap water pressure lower than 3kg/cm². Dry and check the filter.

Use cleaning fluid.

3. Check the tightness of the track.
4. Replace bucket tooth.
5. Adjust the bucket clearance

Chapter 13 Problems of Backhoe Excavator and Treatment Measures

If the small backhoe excavator is in a bad condition, please diagnose according to the following table and take appropriate measures.

If there is something you don't understand, please consult the dealer or the maintenance factory designated by our company.

	Status quo	Reason	Treatment measures
Engine	Difficulty at startup	(1) Fuel does not flow.	(1) Check the fuel tank and remove the deposit (2) Check the fuel filter. If it is dirty, replace it.
		(2) Air or water is mixed into the fuel delivery system.	(1) Check the piping and pipe collar. If it is





			damaged, replace it with a new product or repair it. (2) Exhaust.
		(3) The viscosity of the oil increases when it is cold, and the rotation of the engine itself is heavy.	(1) Pour hot water into the radiator. (2) Use different engine oils according to temperature. (Use SAE10W30 in winter)
		(4) The battery power is quickly exhausted, the rotation force is weakened, and the compression momentum is not exceeded.	(1) Charge the battery.
	When the output power is insufficient	(1) Insufficient fuel.	(1) Replenish fuel.
		(1) The air filter is clogged.	(1) Clean the filter element.
	When it stops suddenly	(1) Insufficient fuel.	(1) Replenish fuel.
	When the exhaust gas color is abnormally dark	(1) Poor fuel. (2) Excessive oil.	(1) Replace with high-quality fuel. (2) Adjust to normal oil volume.
	When the radiator's siren sounds	(1) Poor sealing of the water pump. (2) The fan belt is elongated or broken. (3) The thermostat is defective. (4) The coolant is insufficient. (5) The radiator net and radiator fins are covered with dust. (6) The rust on the cylinder head and crankcase contaminates the coolant. (7) Defective radiator cover (evaporation). (8) Corrosion of coolant	(1) Replacement. (2) Adjust or replace. (3) Replacement. (4) Supplement to the prescribed amount. (5) Cleaning. (6) Replace the coolant and add rust inhibitor. (7) Replacement. (8) Flushing. (9) Reduce the load. (10) Replacement. (11) Add to normal oil volume. (12) Adjustment. (13) Replace with high-quality fuel.





		channels. (9) Continuous overload operation. (10) Damaged radiator gasket (decreased coolant). (11) Insufficient oil. (12) The fuel injection timing is bad. (13) Poor fuel.	
Hydraulic equipment	Working device (boom, stick, bucket) rotating, driving, insufficient dozing force, slow speed or no action	(1) The amount of hydraulic oil is insufficient. (2) Oil leaks from hoses and piping joints.	(1) Replenish hydraulic oil. (2) Reinforce or replace.
	The machine does not move even if it is rotated	(1) It is locked by the rotation lock pin.	(1) Pull up the handle of the rotation lock pin to release the lock.
Driving device	Can't drive smoothly	(1) The track got stuck in a stone. (2) The track is too tight or too loose.	(1) Remove the stones. (2) Adjustment.

Afterword

Due to limited time in which to compile this Manual, there are some errors and omissions inevitably in it. We will work on its improvement by future corrections and additions and we look forward to your opinions and suggestions.

Please tick the following questions in the Form below or write your opinions or suggestions in the blank provided and mail it back to us.

		yes	no
1. Is it easy to find information in the Manual?			
2. Is the Manual easy to read?			
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4. Is the information sufficient?		
5. Is important information emphasized sufficiently?		
6. Are illustrations in the Manual easy to understand?		
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