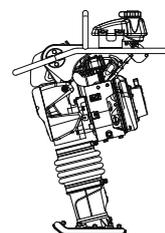


Mikasa

TAMPING RAMMER

MTX-85DY



INSTRUCTION MANUAL

en

We thank you for selecting Mikasa Tamping Rammer.
For your safe and proper operation, please read this manual and
be always sure to keep it ready for reference.



<http://www.mikosas.com>

302-06301



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1. INTRODUCTION

- This instruction manual describes the proper methods for using the tamping rammer, as well as simple checks and maintenance. Be sure to read this instruction manual before using the rammer, in order to get full use of the excellent performance of this machine, to improve your operation and to perform work effectively.
- After reading this manual, store it in a handy location for easy reference.
- For details about the engine in this machine, see the separate instruction manual for the engine.
- For inquiries about repair parts, parts lists, service manuals, and repair of the machine, please contact the shop where you purchased it, or the Mikasa Website. In addition, parts lists are available on the MIKASA website at: <http://www.mikasas.com/english/>

The illustrations in this manual might slightly differ in part from the machine you actually purchased due to design changes.

2. APPLICATION, STRUCTURE AND POWER TRANSMISSION

Application

This rammer is small size and lightweight, but it has strong impact force. Therefore, it will get the strong compaction effect to the ground.

There is the strong compaction effect to the most soils except soft soil containing too much moisture.

Use the rammer to the construction works of roads, embankments and foundation works, and backfill works of gas lines, water lines and other pipe lines.

Warning About Incorrect Applications And Techniques

Do not use the rammer for the pile driving work, and compacting work on the rock and hard ground that is over compacted more than compaction ability of the rammer. Furthermore, in case of using the rammer on sloping ground such as the side of embankments, it may cause an accident and machine trouble like an abnormal wear due to unstable operation.

Structure

The upper section of the rammer that functioned as a weight consists of the engine section, gear reducer section, reciprocating section. And handle and the fuel tank section are fitted to the upper section with shock absorber.

The lower section of the rammer that compact the ground consists of the spring cylinder section to generate sliding motion, the sloping section to tilt machine forward, foot section to compact the ground, and bellows and protect sleeve to cover the sliding section.

Power Transmission

The rammer has the air-cooled, 4-cycle, single-cylinder diesel engine as power unit. And it is equipped the drive shaft of engine with the centrifugal clutch.

With increasing engine speed, the centrifugal clutch expands and engages with the clutch drum integrated with the pinion gear. The engine speed is reduced to the speed required for tamping by the reduction ratio of the pinion gear and crank gear.

The rotary motion of crank gear is converted to the reciprocating motion through the connecting rod. This reciprocating motion generates jumping motion of the foot up and down through the strong coil spring of spring cylinder. The rammer generates strong impact force to the ground by its own weight and the jumping motion of foot.

3. WARNING SIGNS

The triangle shaped  marks used in this manual and on the decals stuck on the machine indicate common hazards. Be sure to read and observe the cautions described.

 Warning labels indicating hazards to humans and to equipment.	
 DANGER	Denotes an extreme hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, is likely to result in serious injury or death.
 WARNING	Denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in serious injury or death.
 CAUTION	Denotes a hazard. It calls attention to a procedure, practice, condition or the like, which, if not correctly performed or adhered to, could result in injury to people and may damage or destroy the product.
CAUTION (without at )	Failure to follow the instructions may result in damage to property.

4. CAUTIONS FOR SAFETY

4.1 General Cautions

WARNING

- Do not work with this machine, when
 - you are tired or sick and not feeling well.
 - you have taken medicine or drug.
 - you have had a drink alcohol.



CAUTION

- Please read the operation manual well and work safely by using the machine properly.
- For handling of the engine, please read to the attached engine operation manual.
- Please understand of the structure of this machine well.
- Make sure to do the inspection and check the machine conditions before starting operation.
- Please use protective equipment such as helmet, protective shoes, protective gloves, etc., and wear appropriate work clothes for making your work safe.
- Always wear noise protection equipment such as ear muffs or ear plugs and protective eyeglasses.
- The decals shown operation method, warning and etc. stuck on the machine are very important for your safety. Clean the machine so that the decals can be read easily. If it is difficult to read the decals, please replace with new ones.
- It is dangerous if children touch the machine. Please be careful about storage location and storage method for the machine.
- Stop the engine before maintenance work.
- We are not responsible for any accidents occurred due to the fixing without using genuine parts (foot and etc.) and equipment modifications.



4.2 Precautions When Adding Fuel

DANGER

- When adding fuel.
 - Be sure to work in a well ventilated location.
 - Be sure to work in a clear and flat location without any combustibles nearby.
 - Be sure to stop the engine and wait until it has cooled down.
 - Do not use any flames (smoking and etc.) while adding fuel.
 - Do not overfill tank. If you spill some diesel fuel, wipe it all up.
 - Tighten the tank cap securely after adding fuel.



4.3 Precautions About Where To Use The Machine

DANGER

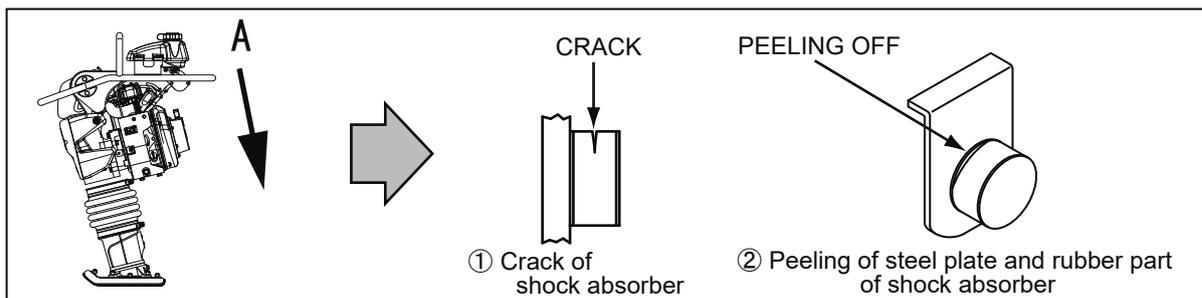
- Do not run the engine in any enclosed or narrow area, such as indoors or in a tunnel. Engine exhaust gases contain poisonous carbon monoxide. This gas is colorless and odorless, and can cause death if inhaled.
- Do not operate the machine near flames.



4.4 Precautions Before Starting Work

CAUTION

- If you use the machine for a long time, be careful to watch for signs of vibration syndrome. Since this machine vibrates, work for a long time may have a negative effect on your body. Take sufficient breaks while working.
- Before starting to operate the machine, check the safety for people around and obstacles nearby.
- When starting the engine, the rammer may jump suddenly. Hold the handle firmly and then pull the recoil starter.
- Always be careful around ground condition at job site. Operate the rammer in stable position and balance.
- Keep your foot away from the foot of the rammer during work. The foot of the rammer may crush your foot.
- Do not touch the muffler, muffler cover and main body of the engine during work or soon after work, because they are very hot.
- If you find trouble or damage of the machine during work, stop work immediately. Before leaving or moving the machine, be sure to stop the engine.
- When lifting the rammer with the handle, be careful not to pinch your fingers between the handle and main body.
- Push down the rear end of the handle as shown in the left figure (A) and check that there is no damage on the shock absorbers. If it found the damaged shock absorbers, replace them with new ones by left and right set.



⚠ DANGER

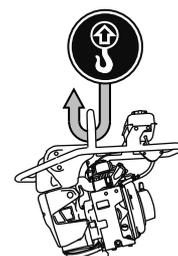
- Take the utmost care not to fall over the rammer during work, stored or stopped. Tie down the rammer with cable (wire or rope) when stopped or stored so that it cannot fall.
- If the rammer falls over when children are nearby, they may have a serious accident.
- If the foot of the rammer is worn, the rammer will be especially unstable.
- If the foot of the rammer is severe worn, replace it with new one.
- If the rammer falls over during work, it will move to forward due to kicking motion of the foot while falling over. And if the ground is solid, the rammer will move quickly so it is very dangerous. After ensuring that the operator and people around are safe, move the throttle lever to the engine stop position and make sure the rammer stops.
- Take careful note of safe especially when working on the public road, because a serious accident can occur easily.



4.5 Precautions While Lifting

⚠ DANGER

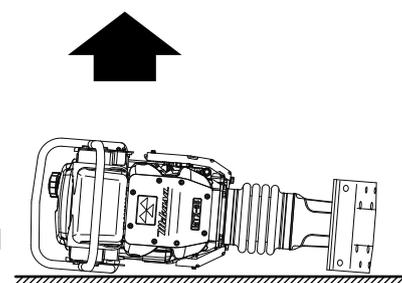
- Before lifting the machine, make sure that there is no damage to parts on the machine (especially the shock absorber and the hook), loosening or missing of the bolt, and the machine must be in a safe condition.
- Stop the engine before lifting the machine.
- Use adequate lifting cable (wire or rope) of sufficient strength for support to the machine.
- Do not lift it higher than necessary for safety.
- Do not use a damaged lifting cable.
- Use one point lifting hook for lifting the machine and lift straight upwards. Do not use any other points (such as the handle) for lifting.
- Never lift or lower the machine rapidly with hydraulic excavator.
- Never allow any person or animal to stand underneath the machine while lifting.
- Be careful not to an accident when using any lifting equipment. Before using the lifting equipment, make sure that there is no trouble or damage.



4.6 Transportation And Storage Precautions

⚠ DANGER

- Stop the engine before transporting or storing the machine.
- After the engine and main body have cooled down enough, transport or store the machine.
- Drain any fuel before transporting or storing the machine.
- Maintain upright position of this rammer on a level floor during transporting or storing. If it has to lay down the rammer of necessity, drain the fuel, tighten the tank cap, and then lay down it with muffler side down. After it lies down, make sure that there are no oil or fuel leaks.
- Tie down the rammer with cable (wire or rope) so that it cannot move or fall over.
- When lifting the rammer with the handle, be careful not to pinch your fingers between the handle and main body.
- When transporting the rammer, use MC-1A of Mikasa Carry or similar product.



4.7 Maintenance Precautions

WARNING

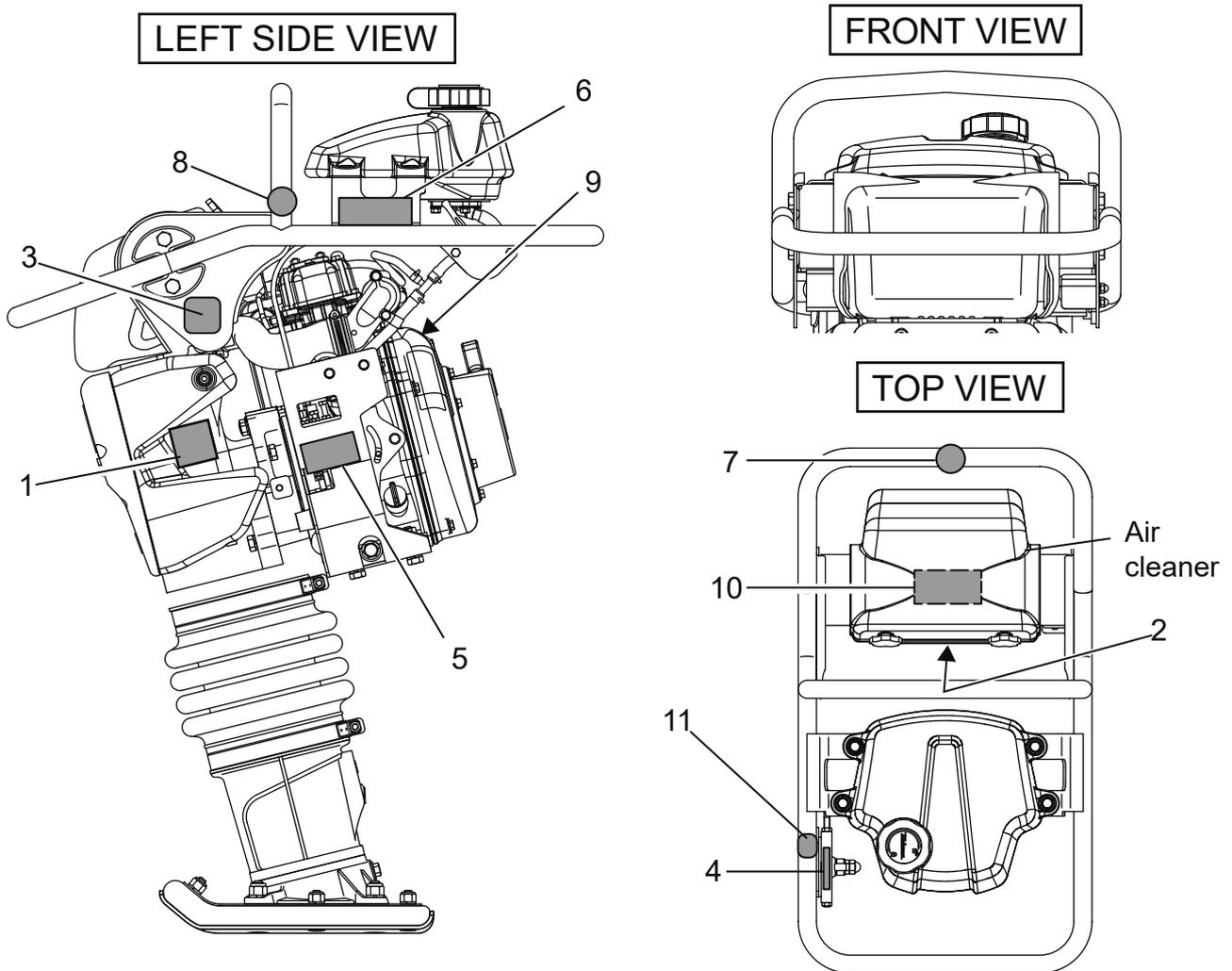
- Ensure safety for maintenance. It needs appropriate maintenance for keeping the machine performance. Keep the machine in good condition with attention to the machine's condition always.

CAUTION

- Be sure to stop the engine before maintenance of the machine.
- Do not touch the muffler, muffler cover and main body of the engine until they have cooled down enough to prevent burn.
- Do not touch the lubrication oil and engine oil until they have cooled down enough to prevent burn.
- When maintenance of the machine with disassembling, be sure to refer the service manual and always work safely.
- After maintenance of the machine, check that the parts are assembled properly and machine conditions for safety.



4.8 Label Position

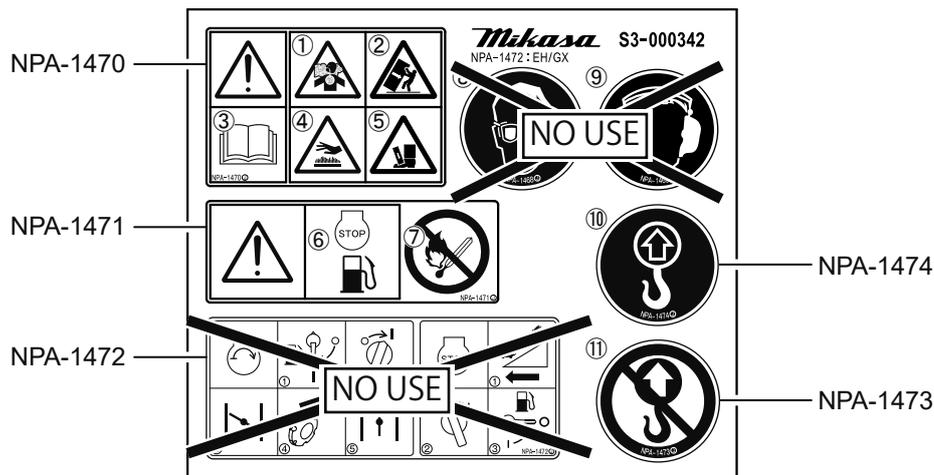


4.9 Label List

REF No.	PART No.	PART NAME	Q' TY	LABEL No.	REMARK
1	9202-21980	PLATE, SERIAL NO./MTX-85DY	1	NPA-2198	
2	9202-10870	DECAL, CAUTION/CONBI PL4	1	NPA-1087	
3	9202-10100	DECAL, EC NOISE REQ. LWA108	1	NPA-1010	
4	9202-11690	DECAL, LEVER OPERATION	1	NPA-1169	
5	9209-00100	DECAL, CAUTION ICONS / MT	1	NPA-1470	
6	9209-00100	DECAL, FUEL CAUTION	1	NPA-1471	
7	9209-00100	DECAL, DO NOT LIFTING	1	NPA-1473	
8	9209-00100	DECAL, LIFTING POSITION	1	NPA-1474	
9	9201-09360	DECAL, DO NOT LAY DOWN	1	NPA-936	
10	9209-00280	DECAL, AIR CLEANER	1	NPA-1246	
11	9209-00280	DECAL, MACHINE STOP	1	NPA-1248	

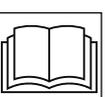
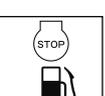
4.10 Descriptions Of The Symbols On The Warning Decals

Part code No. 9209-00100 DECAL, SET /MT /EXP, EU



Part code No. 9202-10870 DECAL, COUTION/CONBI PL4



- | | |
|--|--|
| <p>①  Lethal exhaust gas hazards.
The exhaust gas contained poisonous carbon monoxide can cause death if inhaled.
Falling hazards.</p> | <p>⑦  Fire hazards.
Do not use any flames (smoking and etc.) while adding fuel.</p> |
| <p>②  Falling hazards.
Take the utmost care not to fall over the rammer during work, stored or stopped.</p> | <p>⑧  Eye hazards
Always use eye protection during operating the machine.</p> |
| <p>③  Read the manual carefully.
Always read the operation manual and have good understanding of operation before working.</p> | <p>⑨  Hearing hazards.
Always use ear plugs during operating the machine.</p> |
| <p>④  Burn hazards.
Never touch the hot exhaust manifold, muffler or cylinder. Allow these parts to cool before servicing the machine.</p> | <p>⑩  Lifting position.
Use one point lifting hook for lifting the machine.</p> |
| <p>⑤  Crush hazards.
During work, keep your foot away from the foot of the rammer. The foot of the rammer may crush your foot.</p> | <p>⑪  No lifting position.
Do not use any other points (such as the handle) except one point lifting hook for lifting the machine.</p> |
| <p>⑥  Refueling hazards.
Do not add fuel until the engine has cooled down after stopping it.</p> | <p>⑫  Read the manual carefully.
Always read the operation manual and have good understanding of operation before working.</p> |

5. SPECIFICATIONS

5.1 Body

Model			MTX-85DY
Dimensions	Overall height		1063
	Overall width	mm	410
	Overall length		740
Plate Size	Length	mm	340
	Width		285
Fuel Tank Capacity	L		2.6
Rammer Body Oil Grade			API SE or later SAE 10W-30
Rammer Body Oil Capacity	cc		820
Number of Blow	Hz/v.p.m		10.9~11.6/656~698
Impact Force	kN/kgf		15.7/1,600
Jumping Stroke	mm		50~80
Operating Weight	kg		93

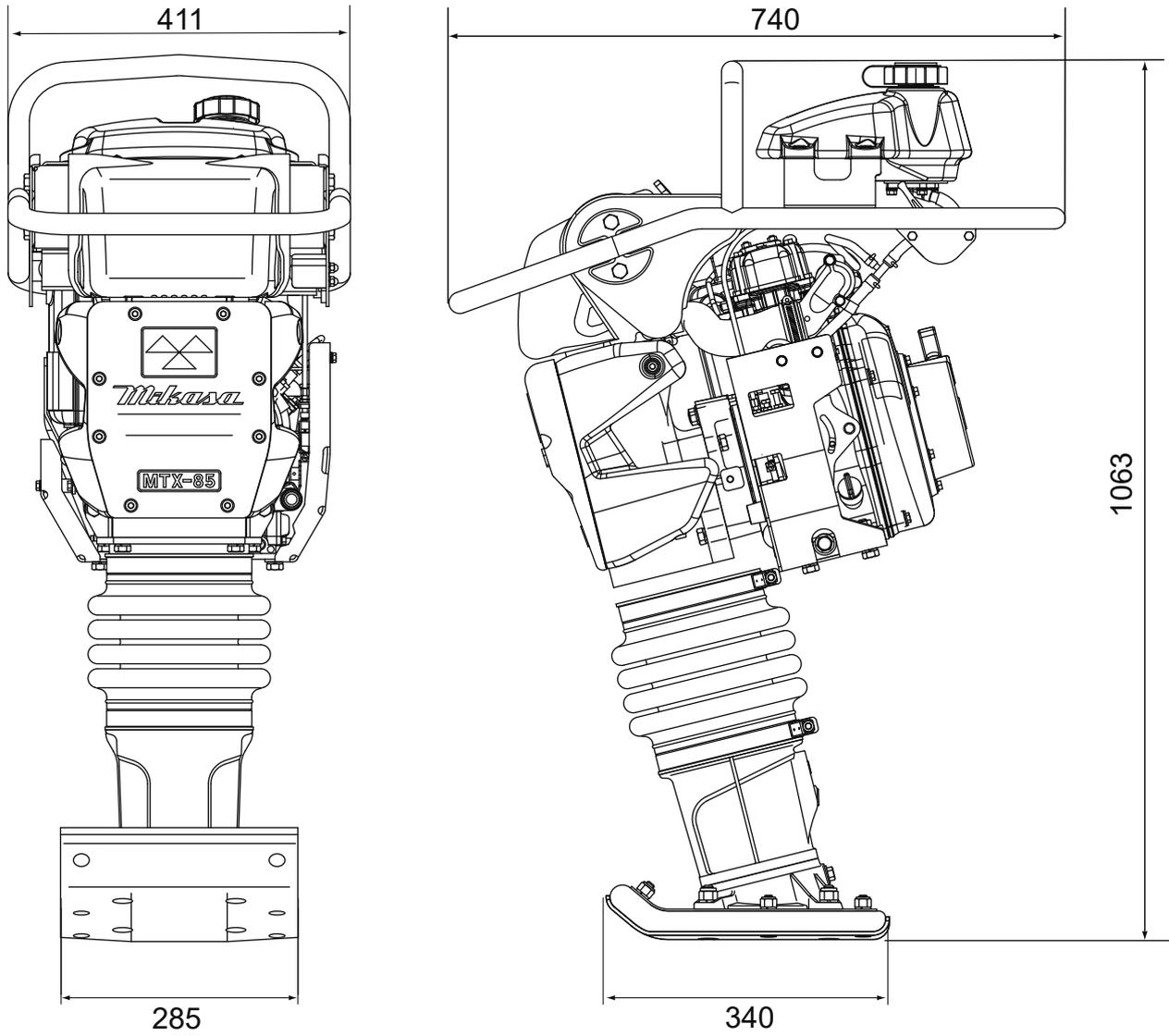
5.2 Engine

Model			Yanmar L48N
Type			Air-Cooled 4 Stroke, diesel engine.
Piston Displacement	cc		219
Max. Output ※	kW(PS)/rpm		3.5 (4.7)/3600
Fuel			Automotive Diesel Fuel
Engine Oil Grade			API CD or later SAE 10W-30
Engine Oil Capacity	cc		800
Starting System			Recoil starter
Operating Engine Speed	rpm		3300

※ Based on "SAE J1349"

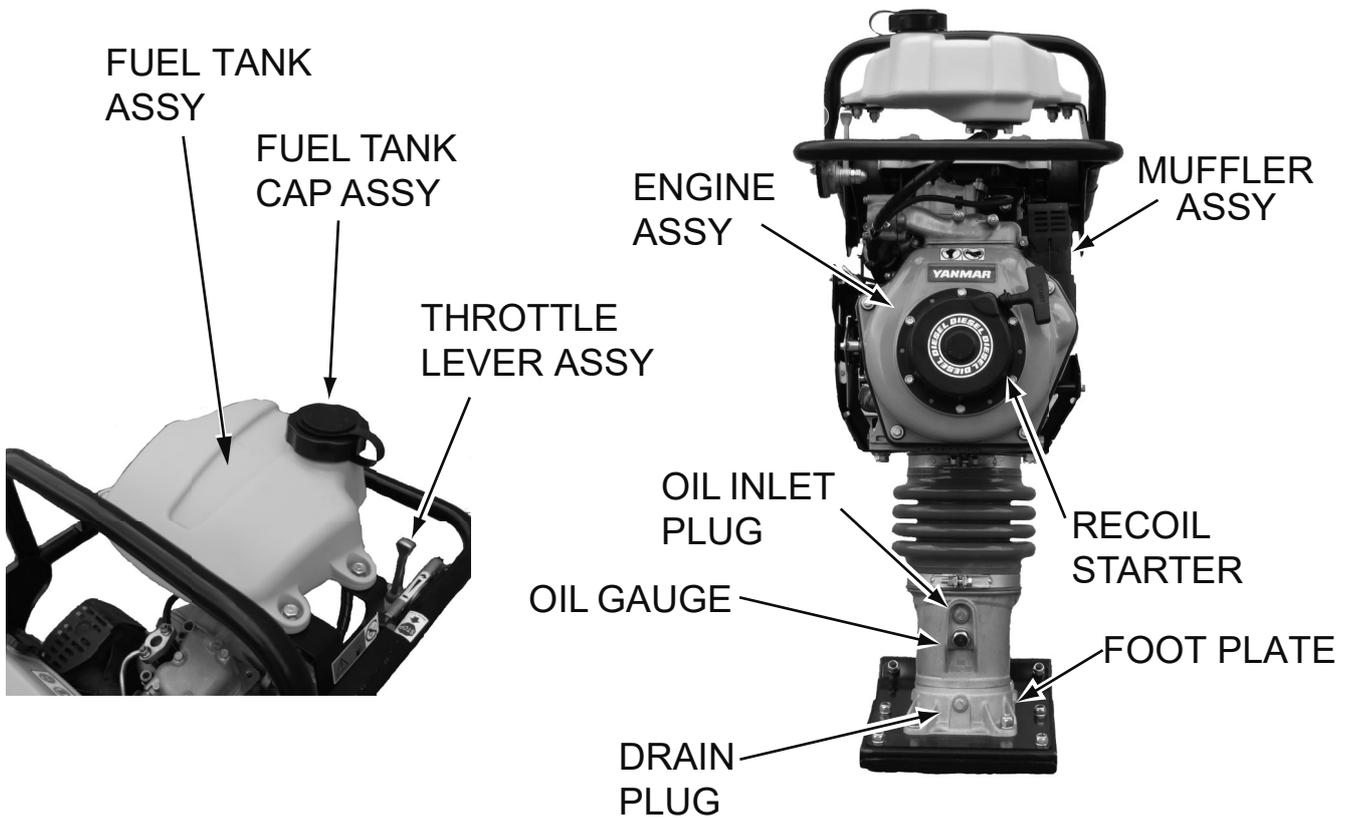
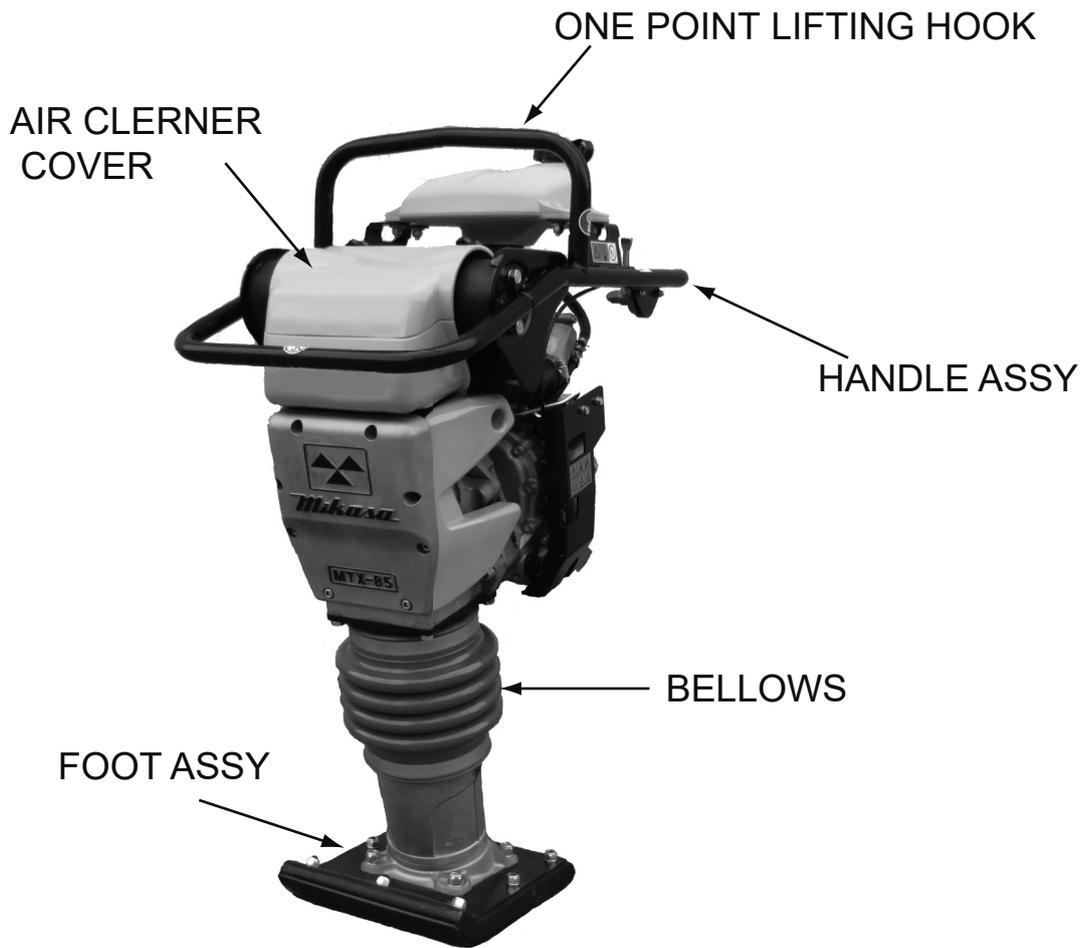
6. APPEARANCE

6.1 Appearance Dimensions



※ Specifications are subject to change without notice.

6.2 Control Unit Positions And Names



7. INSPECTION BEFORE OPERATION

⚠ WARNING

- Check the machine while the engine is stopped. You may be caught in a rotating part and be seriously injured.
- Check the machine after it has cooled down. Since the muffler is very hot, you may be burned.



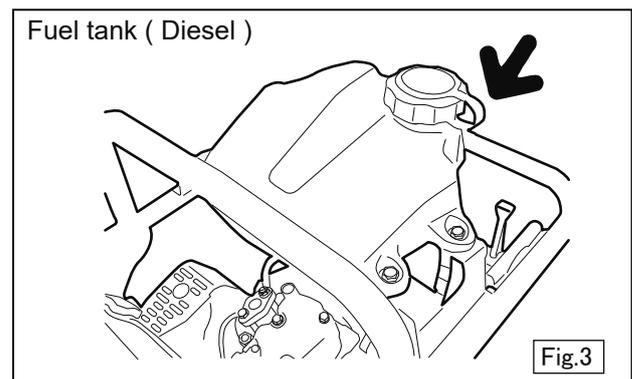
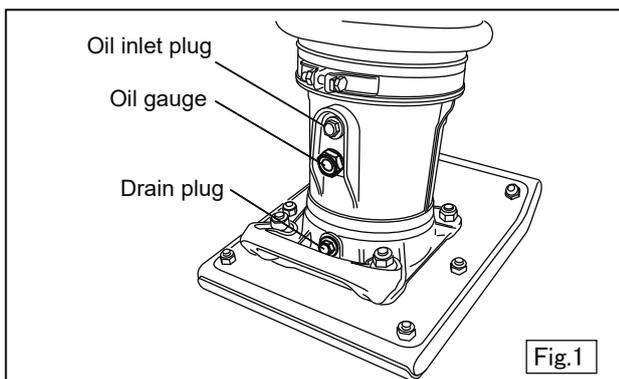
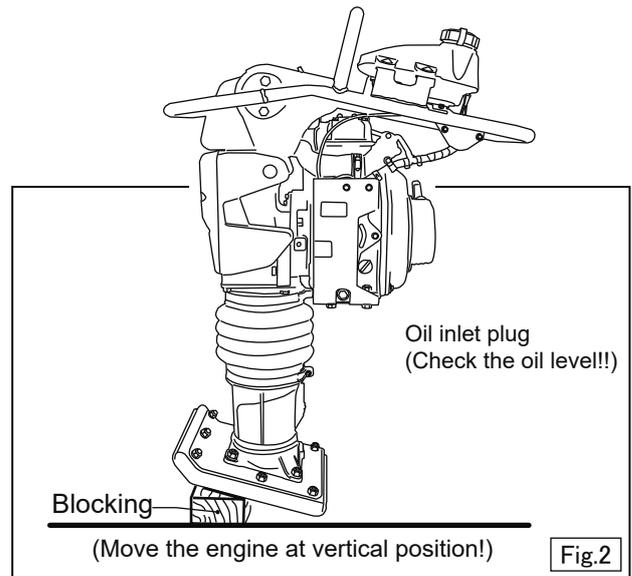
Inspection points	Inspection items
Appearance	Flaws, deformity, dirt
Air cleaner	Dirt, flaws, deformity
Bolts, nuts	Loose or missing
Handle	Flaws, deformity, cracks, breaks
Rubber damper	Flaws, deformity, cracks, breaks
Engine oil	Leaks, oil level, dirt
Main body oil	Leaks, oil level, dirt
Fuel tank	Leaks, fuel level, dirt
Fuel system	Leaks, wear, loose parts

It is extremely important that this section be read carefully before attempting to operate the rammer.

Do not use your rammer until this section is thoroughly understood.

6. Fill the fuel tank with automobile diesel fuel. (Fig.3)

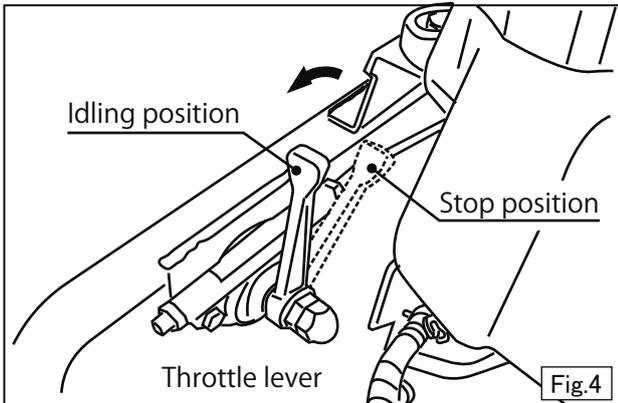
1. Clean each parts of the machine so that there is no mud or dirt on them.
2. Make sure that all bolts and nuts are not loosened. If they are loosened, retighten them to prevent an accident and trouble.
3. Replace any missing or damaged safety and operation decals.
4. Check the main body oil through the oil gauge on the protection sleeve on level ground. (Fig.1)
5. Check the engine oil. For checking the engine oil level, move the engine to vertical position and check that the oil is filled at the oil inlet (800cc). (Fig.2)



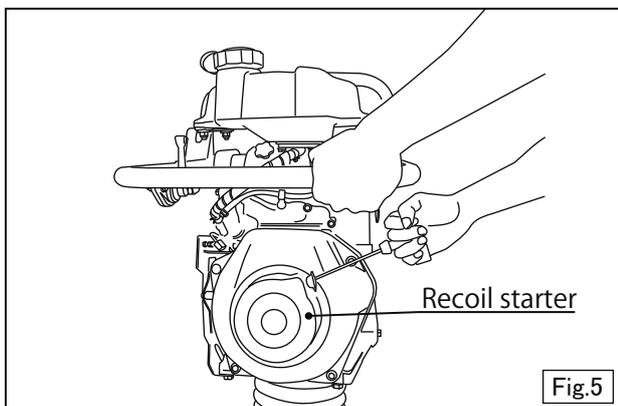
8. OPERATION

8.1 Starting

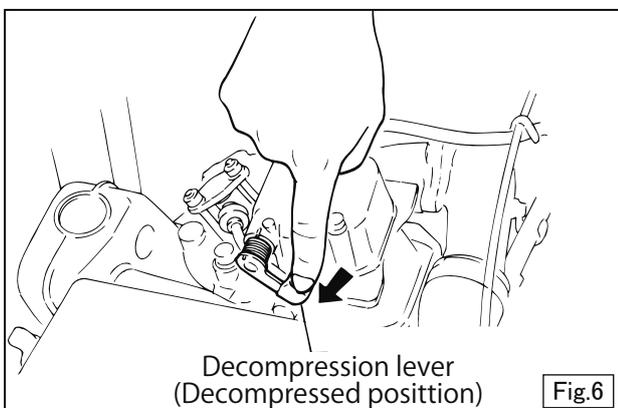
1. Move the throttle lever to idling position. (Fig.4)



2. Grip the recoil starter handle and pull it slowly until you feel a strong resistance. (Fig.5)



3. Slowly return the recoil starter handle to the original position.
4. Push the decompression lever down and release it. (Fig.6)
The decompression lever will return automatically when the recoil starter handle is pulled.



5. Grip the recoil starter handle and hold the handle firmly. Then, pull the recoil starter handle with a strong and even motion.

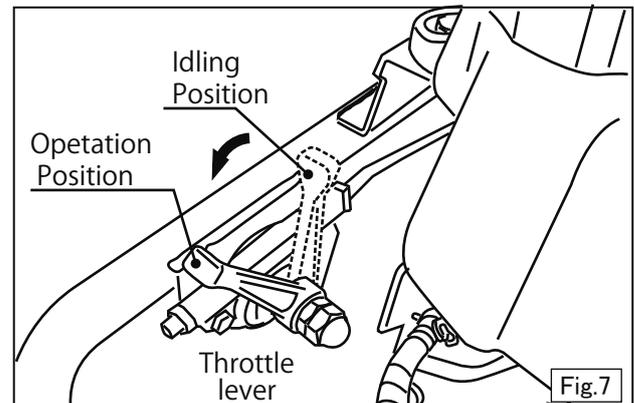
6. Slowly return the recoil starter handle to the original position.
7. After starting engine, warm up it for about five minutes by idling speed and check for fuel leakage or abnormal sounds in the meantime.

CAUTION

In cold weather, the engine should be started at operation position of the throttle lever. (Fig.7) In this case, note that the rammer will jump soon after starting engine, so move the throttle lever to idling position quickly.

Do not pull the recoil starter rope all the way to the end.

Be careful to the snap back of the recoil rope when pulling it, as this may cause injury.



8.2 Operation

Move the throttle lever quickly from the idling position to operation position for starting tamping action.

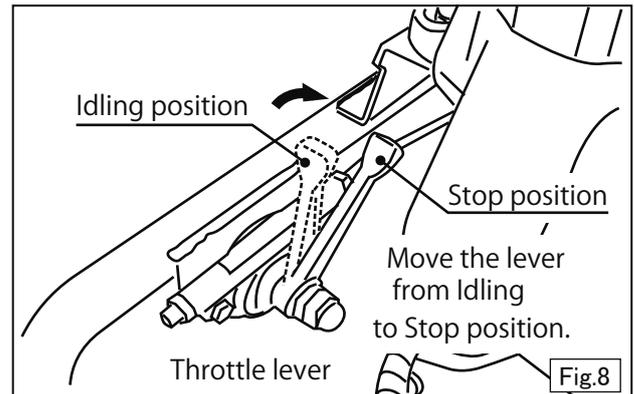
Do not move the throttle lever slowly, as this may cause damage to the clutch or irregular tamping action.

CAUTION

In cold weather, the rammer can be warmed up by moving the throttle lever quickly from the operation position to idling position several times until the rammer operates smoothly.

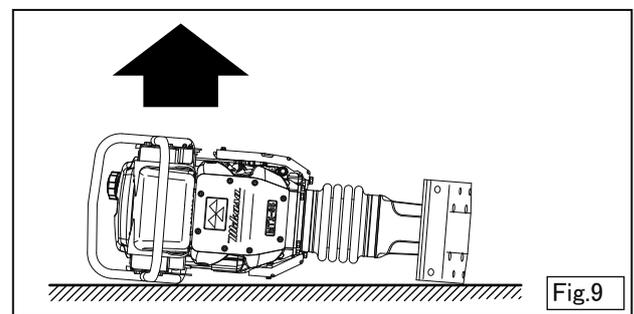
9. STOPPING THE MACHINE

1. Move the throttle lever quickly from the operation position to idling position.
2. Run the engine at idling speed for five minutes for cool down for maximum engine life.
3. Move the throttle lever quickly from the idling position to stop position. (Fig.8)



10. TRANSPORTATION

1. Stop the engine before transporting the machine.
2. Do not move the machine until the engine and main body have cooled down enough.
3. Drain any fuel before transporting the machine.
4. Maintain upright position of the rammer on a level floor during transporting. If it has to lay down the rammer unavoidably when transporting, drain the fuel, tighten the tank cap and then lay down it with muffler side down. (Fig. 9)
5. Tie down the rammer with cable (wire or rope) so that it cannot move or fall over during transporting.



11. STORAGE

1. Store the machine the same procedure as [10. Transportation].
2. Slowly pull the recoil starter handle until the point of resistance (the point in the compression stroke where the intake and exhaust valves are closed). This helps to prevent rust while the engine is not in use.
3. Put a cover on the machine to prevent depositing dirt.
4. Store the machine in dry place away from direct sunlight.

12. PERIODIC CHECKS AND ADJUSTMENTS

⚠ WARNING

- Check the machine while the engine is stopped. You may be caught in a rotating part and be seriously injured.
- Check the machine after it has cooled down. Since the muffler is very hot, you may be burned.



12.1 Table Of Scheduled Checks

How often?	Place to check	Item to check	Reference
Daily (before starting operation)	Appearance	Flaws, deformity, dirt	
	Air cleaner	Dirt, flaws, deformation	
	Bolts, nuts	Loose or missing parts	
	Handle	Flaws, deformity, cracks, breaks	
	Rubber damper	Flaws, deformity, cracks, breaks	
	Engine oil	Leaks, oil level, dirt	Engine oil
	Main body oil	Leaks, oil level, dirt	Engine oil
	Fuel tank	Leaks, fuel level, dirt	Diesel Fuel
	Fuel system	Leaks, wear, loose parts	
After first 50 hours	Engine oil / Main body Oil	Replace	Engine oil
	Oil filter	Cleaning	
Every 80 to 100 hours	Air cleaner element (Primary)	Cleaning	
Every 100 to 150 hours	Air cleaner element (Secondary)	Cleaning	
Every 200 hours	Engine oil / Main body oil	Replace, after the first 50 hours	Engine oil
	Oil Filter	Cleaning, after the first 50 hours	
Every 2 years	Fuel hose	Replace	
	Intake pipe	Replace	

Regarding the check and maintenance of the engine in details, please refer to the attached engine operation manual.

⚠ CAUTION

- The above table shows the check frequency for standard condition.
- The check frequency may vary depending on the condition in which the machine is used.

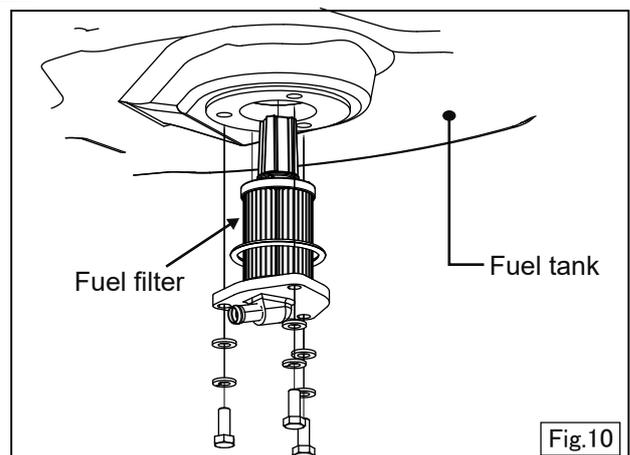
12.2 Inspection And Maintenance Work Contents

1. Daily inspection

- Thoroughly remove dirt and oil from the engine and control area.
- Clean or replace the air cleaner element as necessary.
- Check and retighten all fasteners as necessary.
- Check the main body for oil leaks. Repair or replace as necessary.

2. 50 hours service

Remove and clean the fuel filter, and inspect the fuel tank condition. (Fig. 10)



● **Change the main body oil.**

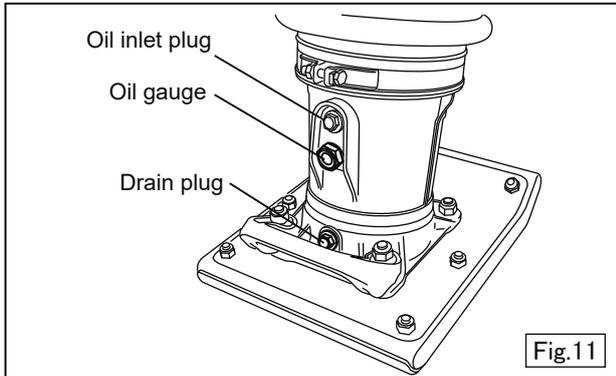
Remove the drain plug on the foot plate (Fig. 11) and drain the oil. Refill with approximately 820 cc of engine oil of API service categories SE or higher, SAE 10W-30. The oil level should be the halfway point of the oil gauge.

INITIAL OIL CHANGE:

After 50 hours of operation.

SECOND OIL CHANGE OR LATER:

Every 200 hours of operation.



● **Change the engine oil.**

Remove the drain plug (Fig. 12) and drain the oil. Refill with approximately 800 cc of engine oil of API service categories CD or higher, SAE 10W-30.

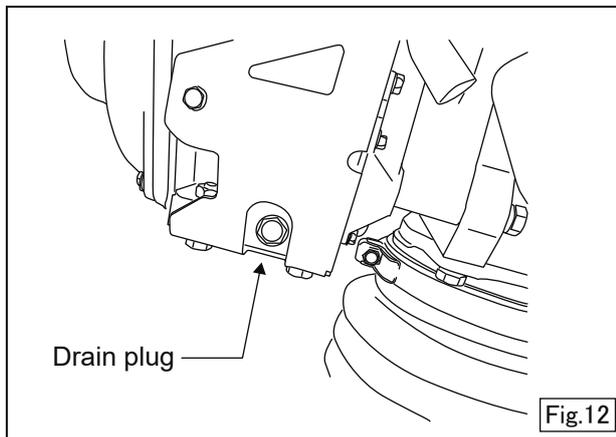
Please refer to the engine operation manual for details of change the engine oil.

INITIAL OIL CHANGE:

After 50 hours of operation.

SECOND OIL CHANGE OR LATER:

Every 200 hours of operation.

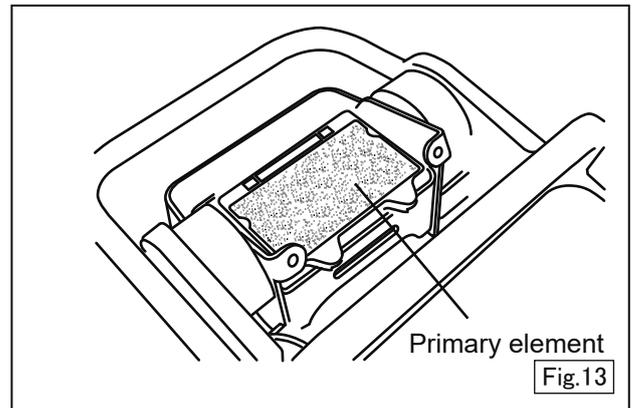


3. **Cleaning the air cleaner**

Remove the upper air cleaner cover on the main body. And then remove the air cleaner cover on the air cleaner assembly.

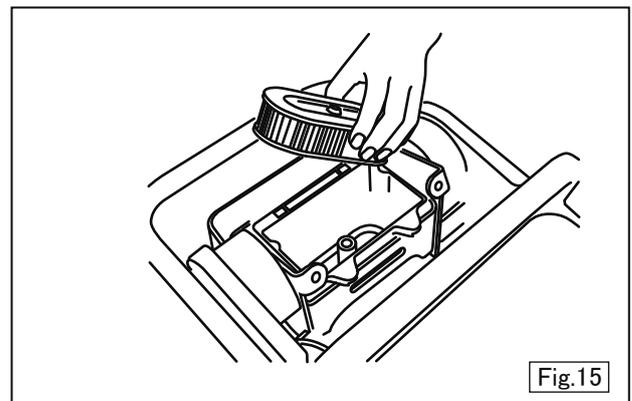
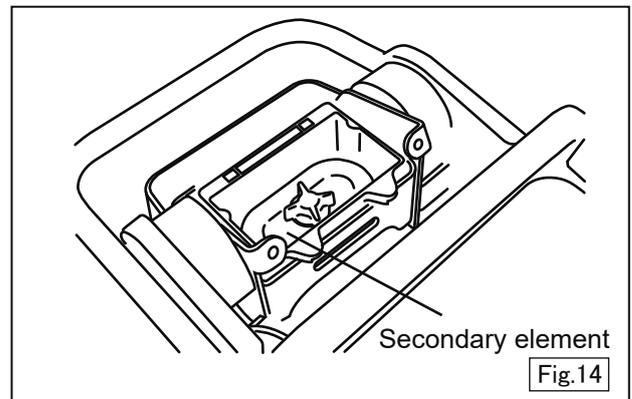
● **Primary element(clean every 80 to 100 hours)**

If the primary element (Fig. 13) is dirty, wash it with gasoline or kerosene. Then dip it in engine oil (SAE 10W-30) and wring it so that 25 to 30 cc of engine oil remains on it.



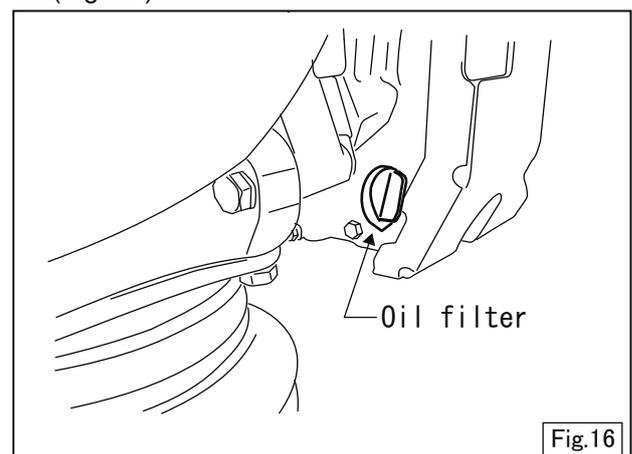
● **Secondary element(clean every 100 to 150 hours)**

If the secondary element (Fig. 14) under the primary element is dirty, wash it with neutral detergent and dry it well. Then reuse it. (Fig.15)



4. **Cleaning the oil filter of engine**

Clean the oil filter of engine every oil change. (Fig. 16)



Replace it every 1000 hours of operation.
Please refer to the engine operation manual for details of cleaning the oil filter of engine.

5. **Checking Fuel line**

Check the fuel line for damage or looseness.
Replace it every 2 years, even if it does not show any abnormality.

6. **Cleaning the machine**

If the machine is cleaned by using high pressure washer, do not spray directly to the air cleaner, engine and fuel tank. Otherwise engine trouble may occur.

13. TROUBLE SHOOTING

1. Diesel Engine

- Regarding the troubleshooting of the diesel engine, please refer to the engine operation manual.

2. Rammer itself

- Engine runs normally, but tamping stroke is not stable or it does not tamping.
 - Operating speed of throttle lever too slow.
 - Main body oil in excess.
 - Clutch slips.
 - Spring failure.
 - Engine Speed improper.

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