

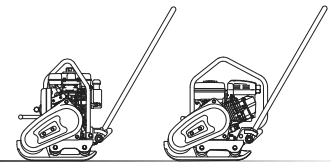
Mikasa

PLATE COMPACTOR

MVC-F60

MVC-F70

MVC-F80



INSTRUCTION MANUAL

en

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




<http://www.mikasas.com>

Contents of "Declaration of Conformity"
Please refer the EC DECLARATION OF CONFORMITY
in this manual as well.

402-03027



1) DECLARATION OF CONFORMITY

2) Manufacturer's name and address.	Mikasa Sangyo Co., Ltd. 1-4-3, Kanda-Sarugakucho, Chiyoda-ku, Tokyo, 101-0064, JAPAN
3) Name and address of the person who keeps the technical documentation.	Yoshiharu Nishimaki, engineer R&D Division, Mikasa Sangyo Co., Ltd. Shiraoka-city, Saitama, Japan
4) Type: Vibratory Plates	
5) model	See NEXT PAGE for DETAILS
6) Equipment item number	
7) Serial number	
8) power source cont. output <max. output>	
9) Measured sound power level(dB)	
10) Guaranteed sound power level(dB)	
11) Operator's sound pressure level(dB)	
12) Conformity assessment according to Annex:	VIII (Full Quality Assurance procedure)
13) Name and address of the Notified Body	Société Nationale de Certification et d'Homologation (SNCH) 11, route de Luxembourg L-5230 Sandweiler LUXEMBOURG
14) Related Directive	Directive 2000/14/EC and, to be followed by Directive 2005/88/EC , relating to the noise emission in the environment by equipment for use outdoors.
15) Declaration	The equipment referred in this document, fulfills with all the requirements of Directive 2000/14/EC
16) Other related Community Directives	2006/42/EC, 2005/88/EC, 2014/30/EU, 2002/88/EC(2004/26/EC) EN500-1, EN500-4
17) EC Conformity Certificate No:	SNCH*2000/14*2005/88*0472*05
18) Place and date of the declaration	Tokyo, Japan August, 2019 Signed by:  _____ Keiichi YOSHIDA Director, R&D Division Mikasa Sangyo Co., Ltd.

5) model	MVC-F60H (VAS)(FLD)	MVC-64VH /64VH(W)	MVC-F70H	MVC-F80H (VAS)(FLD)	MVC-82VH /82VHW	
6) Equipment item number	352088, 352089, 352090, 352096, 352099, 352158, 352191, 352195, 352196, 352218, 352219, 352226, 353325	352201, 352202	352532, 352534, 352549	352564, 352565, 352572, 352579, 352581, 352603, 352607, 352610, 352611, 352612, 352613, 352614, 352615, 352616 352619	352608, 352609	
7) Serial number	For serial number, please refer it on front page.					
8) power source cont. output <max.output>	Honda GX120 2.1kW <2.6kW>	Honda GX120 2.1kW <2.6kW>	Honda GX160 2.9kW <3.6kW>	Honda GX160 2.9kW <3.6kW>	Honda GX160 2.9kW <3.6kW>	
9) Measured sound power	101	101	102	101	101	
10) Guaranteed sound power level(dB)	105	105	105	105	105	
11) Max. Sound pressure	89	89	91	90	90	

Hand-Arm Vibration Level

MODEL	Ahv (m/sec ²)	MODEL	Ahv (m/sec ²)	Remarks
MVC-F60H VAS	3.3	MVC-F60H	7.3	Vibration Level is in comply with EU Directive2002/44/EC and the value is shown as 3 axis min. vibration level.
MVC-64VH(W)	3.3	MVC-F70H	5.8	
MVC-F80H VAS	3.8	MVC-F80H	6.7	
MVC-82VH(W)	3.5			Test course (Crushed gravel) is in comply with EN500-4.
MVC-F60H(FLD)	11.4			The above values are subject to change in case that the machine is modified or/and the required regulations change.
MVC-F80H(FLD)	8.4			

*FLD = Folding

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1. INTRODUCTION

- This operation manual describes the proper operation, basic inspection and maintenance procedures of the plate compactor. Please read this operation manual before use in order to maximize the excellent performance of this machine and make your work more efficient and effective.
- After reading the manual, please keep it in a handy location for easy reference.
- For the handling the engine, please refer to the separate engine operation manual.
- For inquiries about repair parts, parts lists, service manuals, and repairs, please contact the store where you purchased the product, our sales office, or the Mikasa Parts Service Center. For parts lists, please visit our homepage at: <http://www.mikasas.com/> where you can access Mikasa WEB parts lists.

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

Plate compactor is the machine that compacts the ground and it intends to make the surface smooth, by transmitting vibration through vibrating plate, which power generated from single rotor in vibrator case.

This machine is suitable for making the ground surface smooth, such as leveling the soil and beaching, finishing the asphalt paving.

Warning About Incorrect Applications And Techniques

This machine is hard to move forward on a soil with much water (especially clay soil). It is not suitable for such application. This machine is difficult to level a ground include big stones due to insufficient compacting force. Plate compactor is mainly applied for compacting surface smooth and it is not effective for jobs that requires heavy compaction. In case of compacting ground deeply into lower layer, it is recommended to use Tamping Rammer, Vibro Compactor or Vibration Roller of which compacting force is rather effective. Please use this compactor for compacting surface on soil, sediment, beaching and asphalt. It is not recommended for use this machine for the other applications.


Structure






The upper part is made up of Power source, Handle, Belt Cover, Water Tank for sprinkling and Guard Hook which are fixed by Engine Base. The Engine base is fixed on Vibrating Plate by Shock Absorbing Rubber. The lower part is made up of Vibrating Plate and Vibrator Unit that has an Eccentric rotary shaft built in. The power source is transmitted from the centrifugal clutch on engine output shaft to the Eccentric rotary shaft through V-belt.

Power Transmission

Air-cooled Single Cylinder Engine is amounted as power source and Centrifugal Clutch is fixed on engine output shaft. Centrifugal Clutch engages by running up the engine and engine R.P.M. is reduced to suitable number for compacting. The rotation of engine is transmitted from V-pulley integrated with Clutch Drum to Vibrator Pulley through V-belt. Vibrator Pulley rotates Eccentric Rotor Shaft that is contained in Vibrator Case. The generated vibration created from Eccentric Rotor is transmitted to Vibrating Plate. Vibration of Vibrating Plate carries the machine forward; the vibration with the weight of the machine makes the compaction of the ground possible.

3. WARNING SIGNS

The triangle shaped  marks used in this manual and on the decals stuck on the main body 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, or
 - you have had a drink.



CAUTION

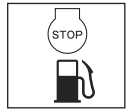
- Please read the operation manual well and work safely by using the machine properly.
- For handling of the engine, please refer to the separate engine operation manual.
- Please have a good understanding of the structure of this machine.
- Make sure to do work start inspection, regular self inspection and specified self inspection.
- To make your work safe, please use protective equipment (use specified helmet, protective shoes, etc.) and wear appropriate work clothes.
- Always use noise protection equipment such as ear muffs or ear plugs.
- Always check the machine to make sure it is in normal condition before operating the machine.
- The nameplates attached to the machine (nameplates showing operation method, warning, etc.) are very important for your safety. Clean the machine so that the nameplates can be read easily. If it is difficult to read the nameplate, please replace the old one with a new one.
- It is dangerous for young children to come near the machine. Please pay careful attention to the method of storing and the storage location for this machine. Especially the engine start key has to be taken out every time you finish your work, and keep it in a designated location.
- To do maintenance work, stop the engine and remove the battery wiring.
- We are not responsible for accidents that have occurred after the machine was refurbished without approval from the manufacturer.



4.2 Refueling Precautions

DANGER

- Always refuel in a well ventilated area.
- Make sure to stop the engine and wait until the engine cools down when refueling.
- Select a flat surface area with no flammable material around for refueling. Be careful not to spill the fuel. Wipe off well if there is any spill.
- Never put fire near the machine during refueling. (Especially, be careful about smoking.)
- If you fill to the top of the fuel tank inlet, fuel might spill out from the tank, and it becomes dangerous
- After refueling, tighten the tank cap well.



4.3 Location And Ventilation Precautions

DANGER

- Do not run the machine in an unventilated location, such as indoors or inside a tunnel. The exhaust gas from the engine contains toxic gases such as carbon monoxide and is very hazardous.
- Do not operate the machine near open flames.



4.4 Precautions Before Starting

CAUTION

- Check each part to see if it is tightened properly. Vibration causes loosening of bolts, which results in unexpected serious malfunctions of the machine. Tighten the bolts securely.

4.5 Precautions During Work

CAUTION

- Before starting the machine, make sure it is safe to start by checking your surroundings for people and objects.
- Always pay attention to your footing. Work in an area where you can maintain a good balance of the machine and a safe comfortable posture.
- The engine and muffler become very hot. Do not touch immediately after the machine stops because they are still very hot.
- If you notice deterioration of machine operation during your work, stop your work immediately.
- Before moving away from the machine, be sure to turn the engine off. Also when the machine is transported, stop the engine and close the fuel cock.



4.6 Lifting Precautions

DANGER

- Before lifting, check the machine parts (especially the hook and anti-vibration rubber) for any damage and loosened or missing bolts.
- Stop the engine and shut the fuel cock while lifting.
- Use a sufficiently strong wire rope.
- For lifting, use only one point hoisting hook, and do not lift at any other part.
- When the machine is hoisted, never let people or animals come underneath.
- For safety reasons, do not lift to a height that is higher than necessary.



4.7 Transportation And Storage Precautions

WARNING

- Stop the engine during transportation.
- Transport after the engine and the machine are cooled down.
- Always drain the fuel before transporting.
- Securely fix the machine to prevent it from moving or falling during transportation.



4.8 Maintenance Precautions

WARNING

- Appropriate maintenance is required to ensure safe and efficient operation of the machine. Always pay attention to the machine's condition and keep it in good condition. Pay special attention to the parts used for lifting, if they are not maintained properly, it might result in a serious accident.
- Start maintenance work after the machine has cooled down completely. The muffler, in particular, becomes very hot, and there is a danger of burn. The engine, engine oil and vibrator also become very hot. Be careful not to get burned.

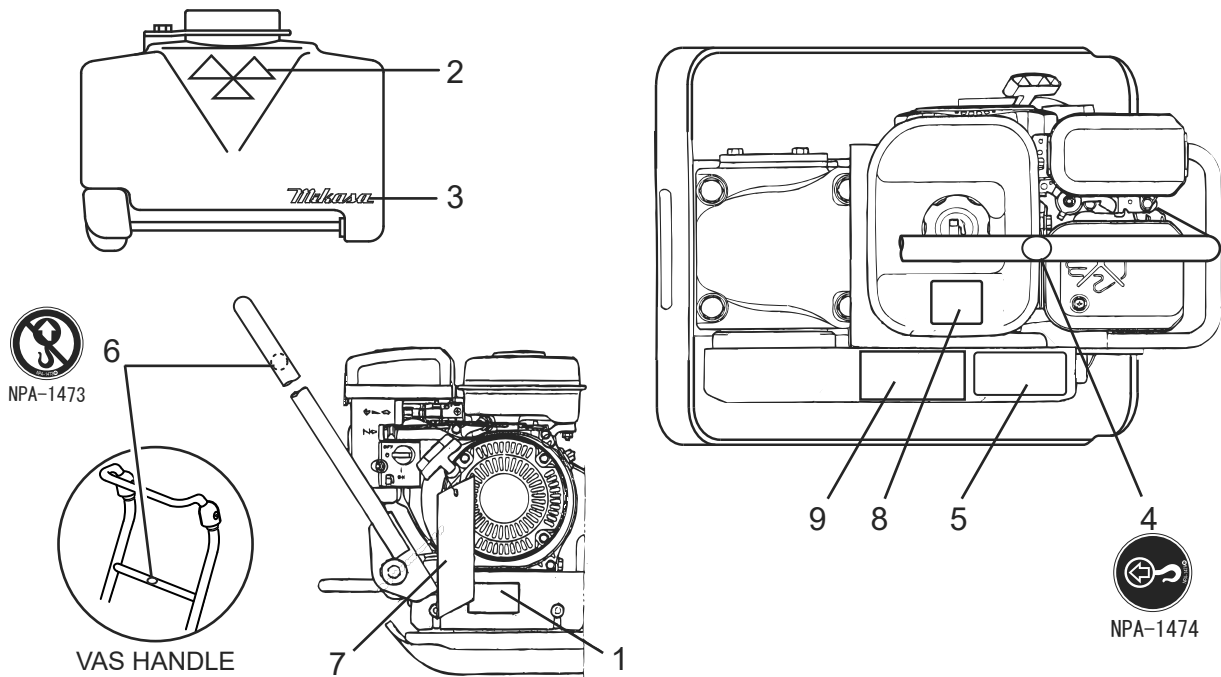
CAUTION

- Always stop the engine before inspection and adjustment. If you are caught in a rotating part, serious injury might occur.
- After maintenance work, check the security parts to see if they are securely installed. Special attention should be paid when checking bolts and nuts.
- If disassembly is involved in maintenance, refer to the maintenance instruction manual to make your work safe.



4.9 Label Position

MVC-F60/F70/F80

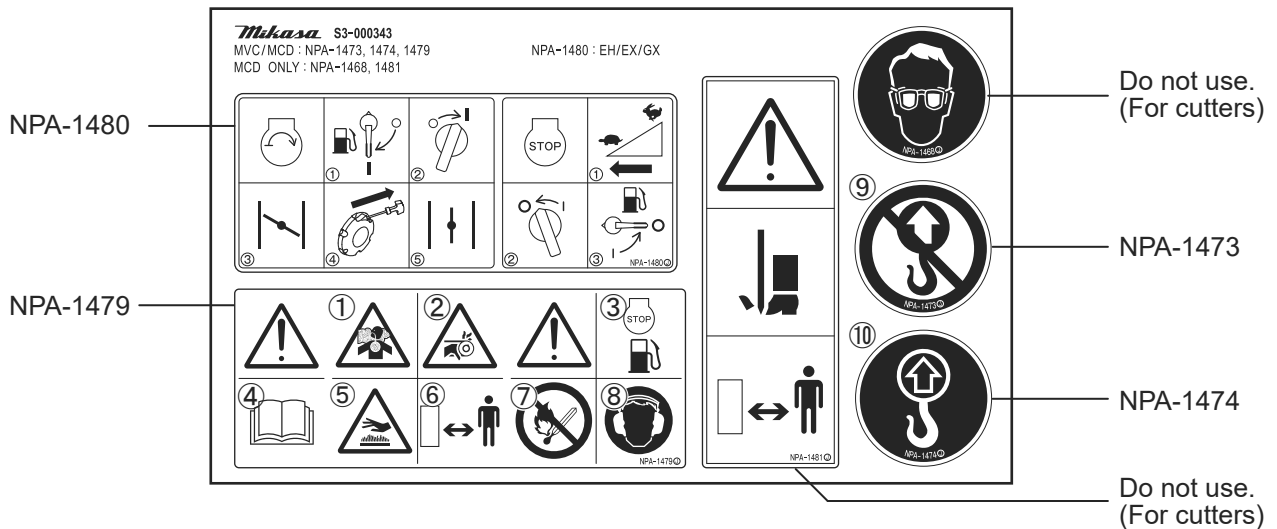




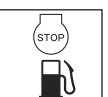


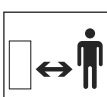




※ Specifications are subject to change without notice.

REF No.	PART No.	PART NAME	Q' TY	LABEL No.	REMARK
1	_____	PLATE, SERIAL NO. / EU	1	_____	
2	9201-01410	DECAL, MIKASA MARK 120X60	1	NP-141	WATER TANK
3	9201-14000	DECAL,MIKASA MARK 125MM	1	NP-1400	WATER TANK
4	9209-00090	DEAL,LIFTING POSITION	1	NPA-1474	
5	9209-00090	DEAL,CAUTION ICONS	1	NPA-1479	Warnig labels
6	9209-00090	DECAL,DO NOT LIFTING	1	NPA-1473	
7	9202-00870	DECAL, WITHOUT ENGINE OIL	1	NPA-87	
8	9202-10330	DECAL,EC NOISE REQ.LWA105	1	NPA-1033	
9	9209-00090	DECAL,ENGINE HANDLING /GS	1	NPA-1480	Starting, and stopping

4.10 Descriptions Of Symbols Used On Warning Labels

P/N 9209-00090 DECAL, SET /MVC, MCD /EXP,EU (NPA-1479, 1473, 1474)



- | | |
|---|--|
| <p>①  Danger: poisonous exhaust gas
Carbon monoxide poisoning may occur if the exhaust gas is inhaled. Do not operate the machine in a poorly ventilated area.</p> <p>②  Be careful not to get caught in the rotating parts.
During operation, be careful not to have your fingers, body, clothes, etc. come in contact with the rotating parts such as the V-belt and clutch.</p> <p>③  Refueling Hazard.
Don't fill the fuel tank while the engine is running or hot.</p> <p>④  Read the manual carefully.
Always read the operation manual and have good understanding of operation before your work.</p> <p>⑤  Be careful not to get burned.
Accidental burn may occur if you touch the hot parts (engine, muffler, etc.) during operation or immediately after the machine stops.</p> | <p>⑥  Be careful not to approach danger source.
During operation, Be careful not to approach hot parts and rotating parts.</p> <p>⑦  Fire hazard
Stop the engine when refueling. Fire may occur if a flame is near the tank fuel port.</p> <p>⑧  Danger of hearing damage caused by noise
Always use ear plugs while operating the machine.</p> <p>⑨  Do not lift the machine at this point.
Lifting by the handle is prohibited.</p> <p>⑩  Lifting position.
For lifting, use only one point hoisting hook, and do not lift at any other part.</p> |
|---|--|

Starting, and stopping

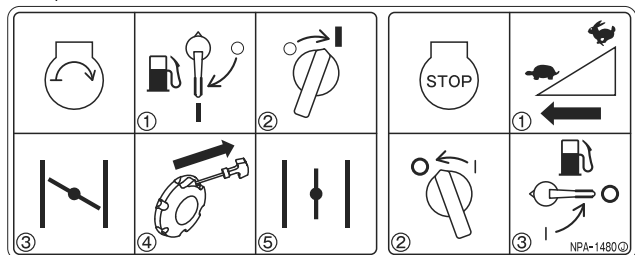
P/N 9209-00090 DECAL, SET /MVC, MCD /EXP, EU

START

- ① Open Fuel Cock to start
- ② Turn Stop Switch to "I"(ON) position
- ③ Close Choke Lever
- ④ Pull Recoil Starter to start
- ⑤ Return Choke Lever to open

STOP

- ① Return Throttle Lever fully until "O"(OFF) position to stop work
- ② After cooling down enough, stop the engine to move Stop Switch to "O"(OFF) position
- ③ Close Fuel Cock at the end



5. SPECIFICATIONS

5.1 Body

Model		MVC-F60H (VAS)	MVC-F70H	MVC-F80H (VAS)
Model		Honda GX120	Honda GX160	Honda GX160
Overall Length	mm	925 (915)	925	925 (915)
Overall Width	mm	350	420	450
Overall Height	mm	865 (995)	865	865 (995)
Plate Size (W X L)	mm	350 x 510 (570)	420 x 510	450 x 570
Operating Weight	kg	73 (78)	81	87 (90)
Travelling Speed	m/min	25	25	25
Vibrating Frequency	Hz(vpm)	93 (5600)	93 (5600)	93 (5600)
Centrifugal Force	kN(kgf)	10.1 (1030)	12.0 (1220)	13.7 (1400)
Vibrating unit		SAE 10W-30	SAE 10W-30	SAE 10W-30
Lubrication oil in vibration case	cc	140	140	140
Water Tank Capacity	liters	11	11	13
V-Belt Size		RPF3310	RPF3310	RPF3310

- Remarks:** 1) VAS = Vibration Absorbing System
 2) Machine weight when it is equipped with a revolving type moving cart will increase to 2kg each weight.

5.2 Engine

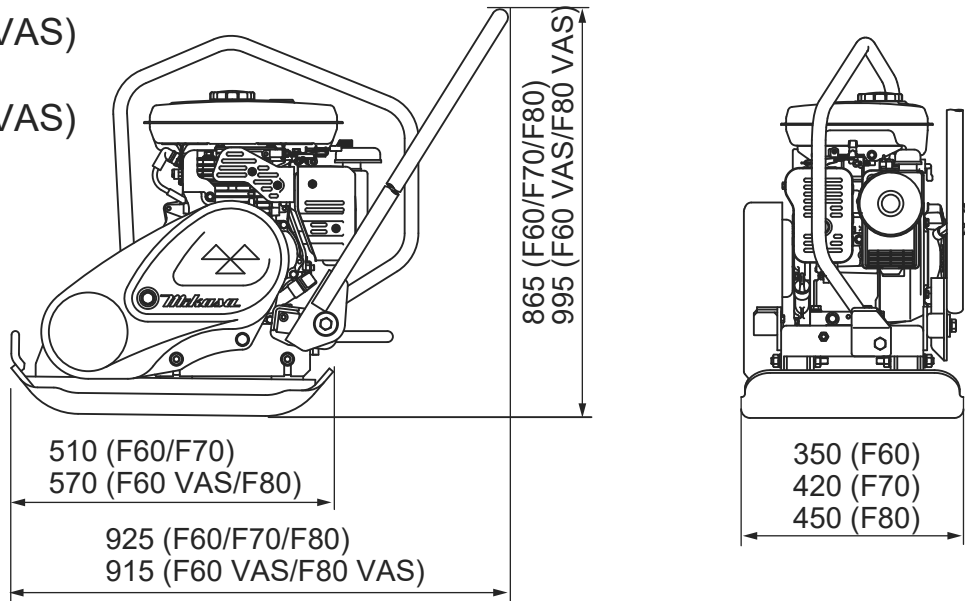
Manufacturer		Honda	Honda
Model		GX120 (petrol)	GX160 (petrol)
Max. Output		2.6kW(3.5PS) /4000min ⁻¹	3.6kW(4.9PS) /4000min ⁻¹
Fuel Tank Capacity	liters	2.5	3.6
Lubricant capacity	cc	600	600
Starting system		Recoil starting	Recoil starting
Set R.P.M	rpm	3600	3600

(The specifications may be changed without notice)

6. APPEARANCE

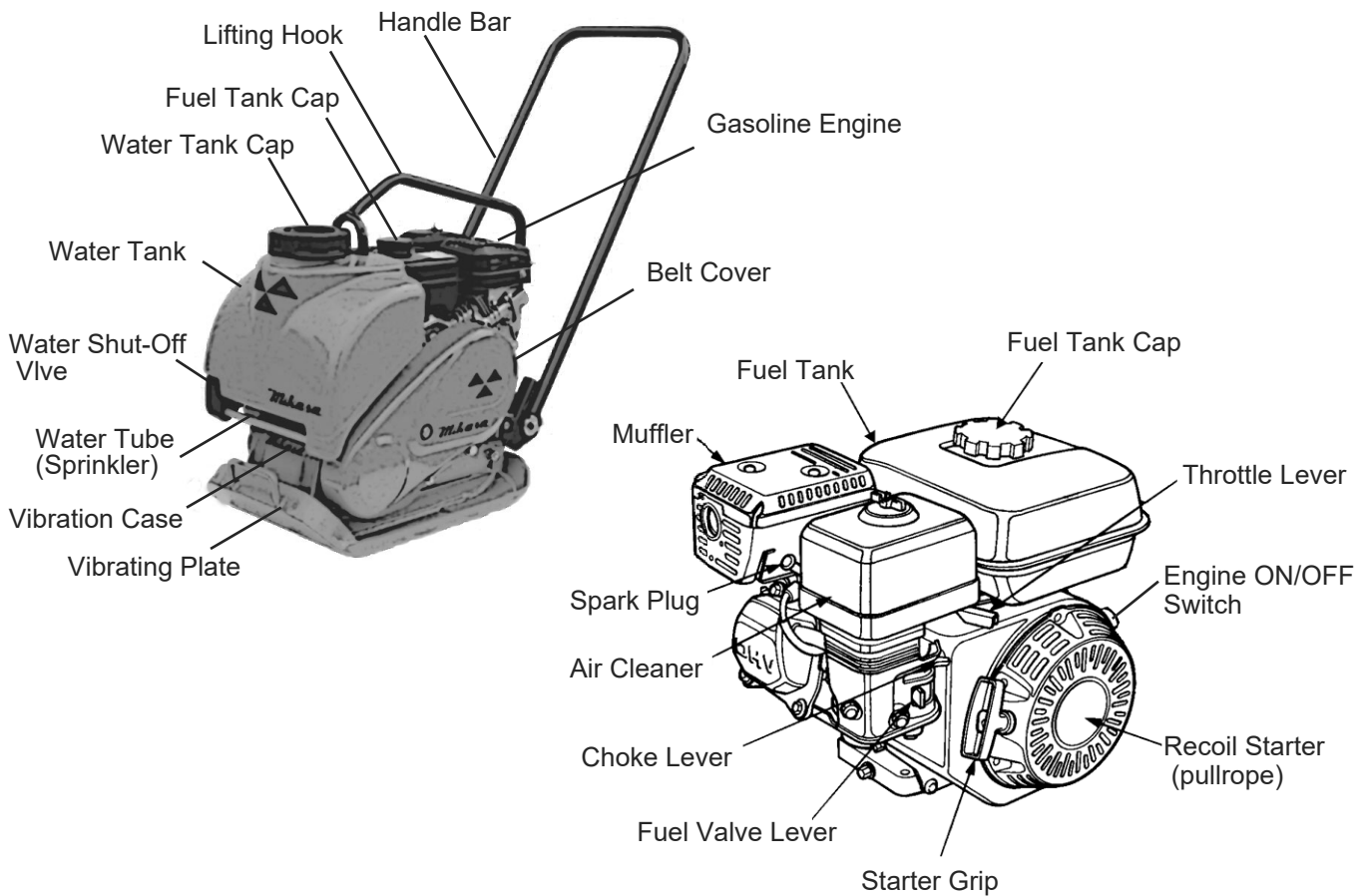
6.1 Appearance Dimension

MVC-F60(VAS)
MVC-F70
MVC-F80(VAS)



※ The illustration is shown for model, "MVC-F60"
※ Specifications are subject to change without notice.

6.2 Control Unit Positions And Names



※ The illustration is shown for model, "MVC-F60"

7. INSPECTION BEFORE OPERATION

⚠ DANGER

Conduct inspection while the engine is stopped. If you get caught in the rotating parts, you may suffer serious damage. Conduct inspection after making this machine level and checking that the body does not move.

● Refer to the "Regular Check and Adjustments" on page 17 for the inspection points before starting operation.

1. Clean each part of the machine well to maintain dirt and dust-free condition. Pay special attention to the soil adhered to the bottom of the vibrating plate, engine cooling air inlet, and the carburetor and air cleaner area to keep those parts clean.
2. Check each part for any looseness of bolts. Vibration causes bolts & nuts to loosen, which might result in unexpected accident or malfunction.
3. Inspect the guard hook, belt cover and anti-vibration rubber, as well as to check the function of speed adjustment wire and speed adjusting lever.
4. Check V-belt tension. The belt should have about 10 – 15mm of flexibility when pushed strongly with a finger at the mid-point between the axes. If V-belt is loosened, power is not transmitted well, which reduces compacting force and shortens the life of V-belt. In addition, the generated compaction force will lead to irregular vibrations when the engine revolutions are increased, and may result in a machine failure.
5. Set the engine on a level surface to check the oil level. If the oil level is low, add oil. Use the following engine oil.

Quality: Gasoline engine oil, Grade SE or above

**Viscosity: SAE No. 30 at 20°C and above (summer)
SAE10W-30**

Temperature	Use oil
More than 25°C	SAE#30
10 ~ 25 °C	SAE#30, #20
10 ~ 0 °C	SAE#20
Less than 0 °C	SAE#10

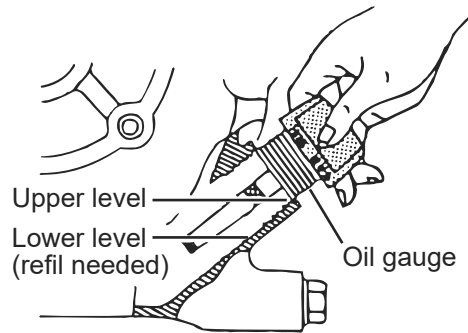


Fig. 1

6. Set the machine on a level surface, then remove the oil gauge of the vibrator. Check the oil gauge to see if the oil is at the specified level. Use engine oil SAE10W-30 as lubrication oil. Recommended oil quantity is 140cc.

Remove the oil plug in Vibrator Assembly and check the oil level. Make sure the oil quantity is set at level of plug hole for checking. Every month or every 200 hours of operation, replace the oil.

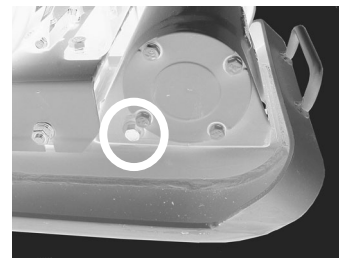


Fig. 2

7. A regular grade gasoline or diesel oil should be used in the engine. When filling the fuel tank, make sure the fuel filter is used.

⚠ DANGER

- Never refuel this machine while leaving the engine running. There is danger of fire.
- Never smoke, or put other flames close to this machine while refueling. Serious hazards such as burns and fire may result.
- Choose a place free from flammable substances for refueling. Be careful not to spill fuel. In case fuel should be spilled, wipe off the spilled fuel completely.

8. Pour water into the water tank for sprinkling work.

Note:

Pour water only. If you should put liquids other than water, the resin, tank cap seal, etc. may deteriorate or swell, leading to leakage or damage.

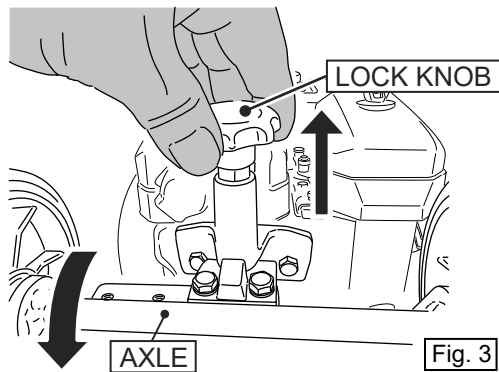
The water tank can be removed by pulling it upward. When mounting the water tank again, insert the hook into the groove of the water tank securely. The amount of sprinkling water can be adjusted by the cock.

HOW TO USE REVOLVING TYPE MOVING CART

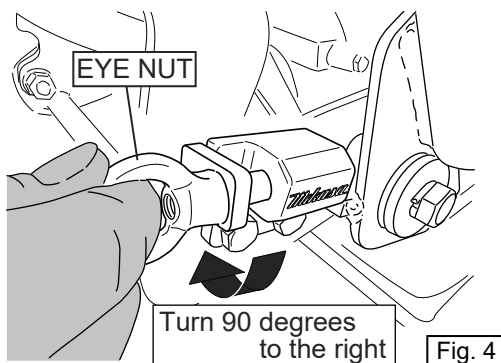
For removal and reattachment of wheel, select a flat and hard surface area.

● From Stopped Condition To Carrying Condition

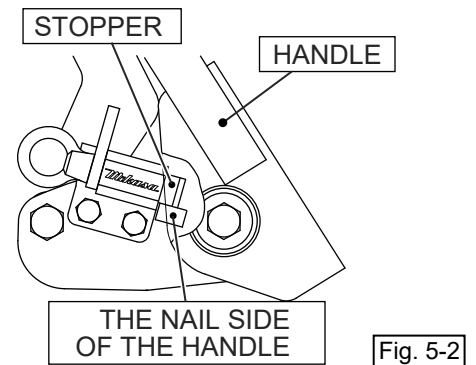
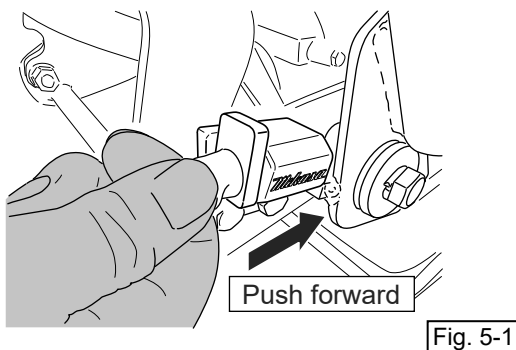
1. Disengage the hook at the end of lock wire from the lock holder.
2. Pull up the lock knob to revolve the axle and let the wheel touch the ground. (Fig. 3)



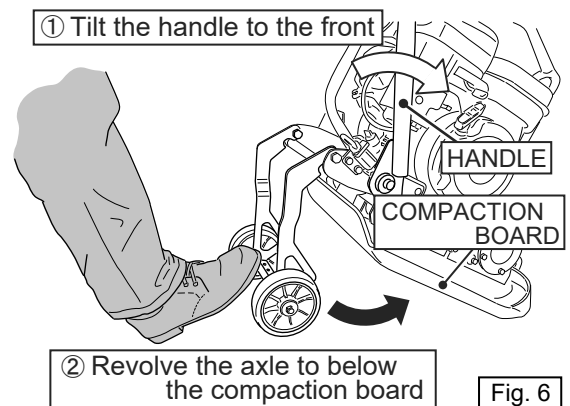
3. To defeat behind the steering wheel and secure it with the handle stopper. Turn to the right 90 degrees of eye nut handle stopper.(Fig. 4)



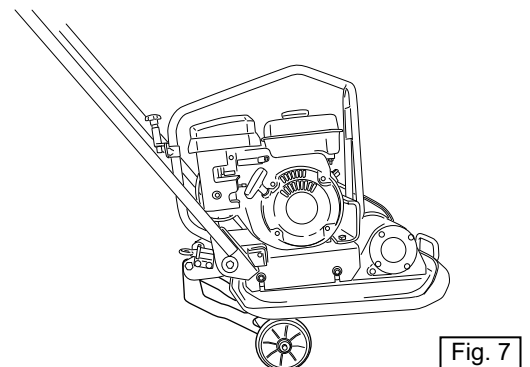
Push forward the eye nut. Tip of the stopper goes into the top of the nail side of the handle. Draw back the handle if stopper is hard.(Fig. 5-1, 5-2)



4. Tilt the handle to the front to let the rear end of the compaction board move up from the ground. Then, revolve the axle to below the compaction board until the axle arm touches the compaction board. (Fig. 6)



5. Pull back the handle to the rear, then raise the compaction board slightly from the ground to move the machine. (Fig. 7)



● **From Carrying Condition To Stopped Condition**

1. Let the end of the compaction board touch the ground, then tilt the handle forward to make the wheel move away from the ground. (Fig. 8)

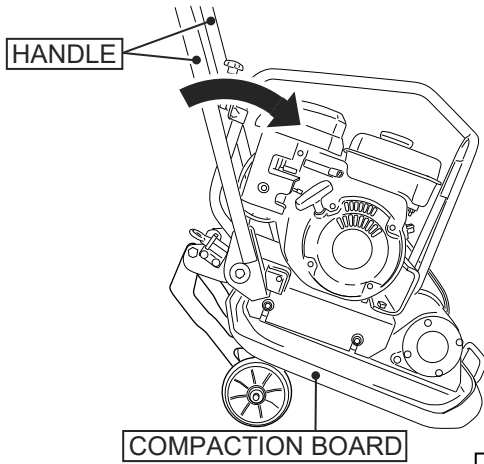


Fig. 8

2. Turn the axle rearward, and let the compaction board touch the ground. (Fig. 9)

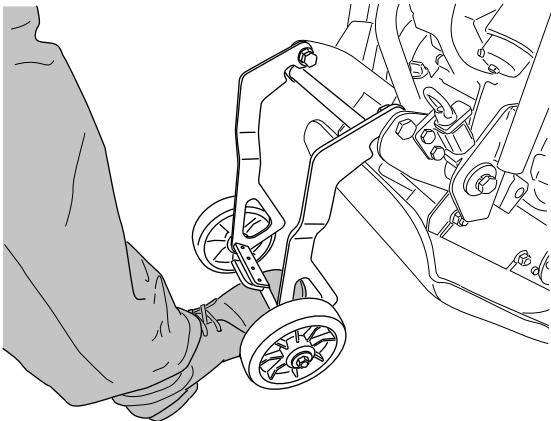


Fig. 9

3. Raise the axle and revolve it to the stored position. (Fig. 10)

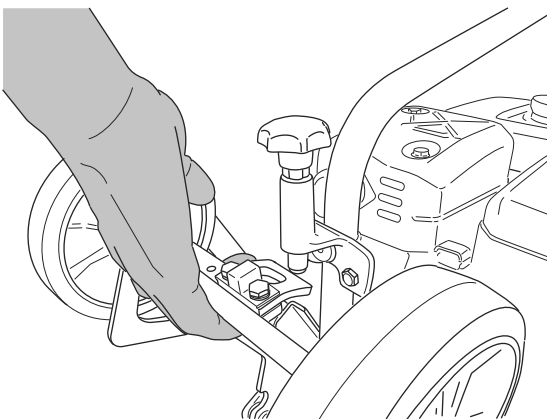


Fig. 10

4. After the lock pin stopper touches the lock pin, the lock pin moves up, and once it fits into the stopper hole, it moves down automatically. Revolve until the lock pin is set to this locked condition. (Fig. 11)

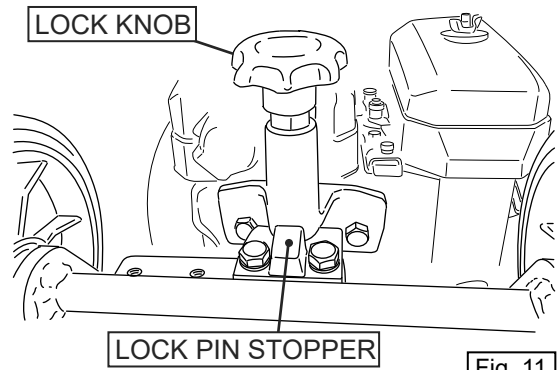


Fig. 11

5. Turn to the left 90 degrees from pulling the handle of the eye nut stopper, please release the handle. (Fig. 12)

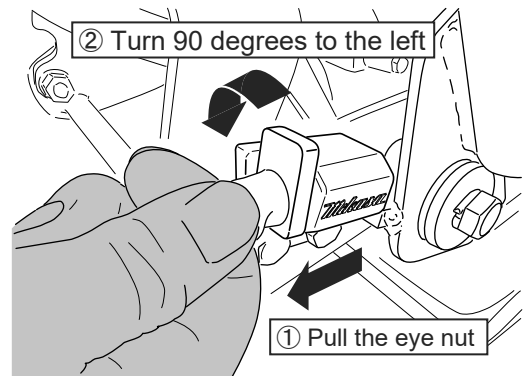


Fig. 12

6. This completes the storing.

8. OPERATION

8.1 Starting

⚠ DANGER

The engine exhaust gas contains carbon dioxide and is very dangerous. Do not use this machine where ventilation is poor.

1. Turn the lever of the fuel cock downward and feed fuel. (Figs.13)

Fuel cock (HONDA)

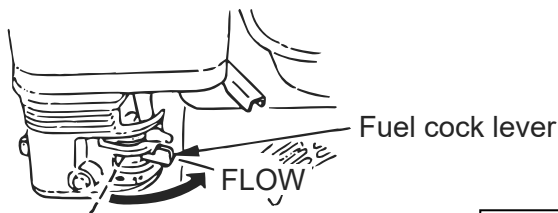


Fig. 13

2. Turn the stop switch to "ON (I)" position. (Fig.14)

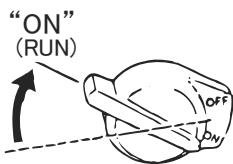


Fig. 14

3. Open the speed control lever half. (Fig.15)

Speed control lever

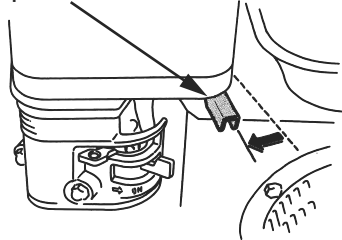


Fig. 15

4. When it is cold or the engine does not start easily, close the choke lever. (Figs. 16)

Choke (HONDA)

Choke lever

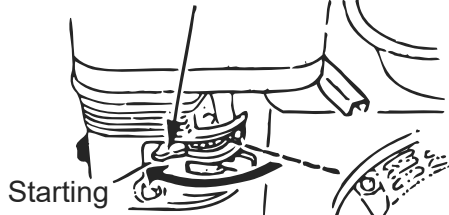


Fig. 16

5. Grip the starting knob of the recoil starter. When you pull the rope a little, you will feel some resistance. Then pull it at a stroke. Be careful not to pull the rope too strongly, or the rope may break or come off. (Fig.17)

Starter Grip (HONDA)

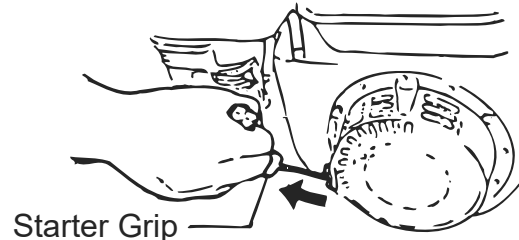


Fig. 17

6. When the engine has started, return the speed control lever to the low speed position immediately. Listening to the sound of the explosion, return the choke lever gradually to the fully open condition. (Fig.18)

Choke (HONDA)

Choke lever

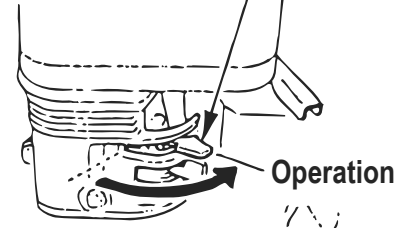


Fig. 18

7. After the start, be sure to conduct the warm-up operation at low speed for 2-5 minutes. This is particularly important when it is cold. During this time, check for any abnormalities such as gas leakage.

Note:

If you leave the speed control lever half-open, the centrifugal clutch turns into a slipped state. This may cause a failure of the centrifugal clutch, and also cause abnormal vibration of this machine, which is very dangerous. So, as soon as the engine has started, return the speed control lever to the low-speed position.

8.2 Operation

1. If you open the speed control lever at a stroke, this machine starts vibration and moves forward. If you open it slowly, the clutch may slip, so open the speed control lever at a stroke without hesitation. (Refer to Fig.15 on page 13.)
2. When this machine is used on cohesive soils, the vibrating plate does not move over the ground easily and the travel speed becomes slow. Check that clay is not adhering to the bottom of the compaction board. The compaction force of this machine does not act effectively on cohesive soils or soils of a high moisture ratio. In this case, use other machine such as a rammer, or dry the soils and decrease the moisture ratio.
3. When conducting sprinkling work, open the cock of the water tank.
4. When you stop the operation, return the speed control lever at a stroke.

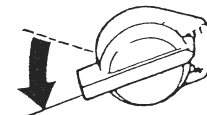
9. STOPPING THE MACHINE

1. When you finish the work and stop the engine, return the speed control lever to the low speed position, and keep the engine running at low speed for 3-5minutes. When the temperature of the engine has decreased, stop the engine.

CAUTION

If you stop the engine while it is still hot, this machine will be affected adversely, causing, for example, burning of the oil film on the inner wall of the cylinder, which may accelerate wear of the inner wall of the cylinder. This may result in a shorter life of this machine, or cause unexpected failure.

2. Turn the engine switch to the OFF position, then the engine stops. (Fig. 19)



“OFF”
(Stop)

Fig. 19

3. Close the lever of the fuel cock. (Fig. 20)

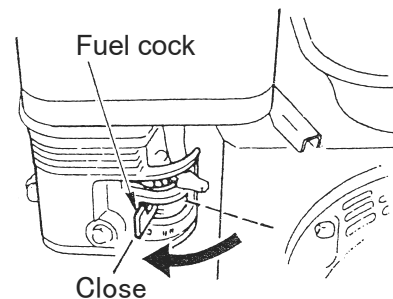


Fig. 20

4. When you have conducted sprinkling work, close the cock of the water tank.

10. TRANSPORTATION

10.1 Loading And Unloading

WARNING

- Make sure there is no breakage of guard frame and anti-vibration rubber nor loosened or missing bolts.
- Always stop the engine when lifting.
- Use an intact wire rope without any deformation with sufficient strength.
- Slowly lift upward without applying any impact. Never let people or animals go under the lifted machine.
- For safety reasons, do not lift to a height that is higher than necessary.

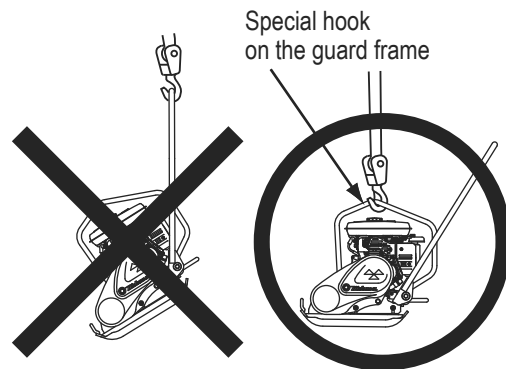


Fig. 21

1. Use a crane for loading and unloading the machine.
2. Designate a person to guide the loading and unloading, and always work under the instruction of that person.
3. When lifting, always use a hook. (Fig. 21) Never lift by using the hook on the handle.

10.2 Transportation Precautions

WARNING

- Stop the engine when the machine is transported.
- Always drain the fuel before transportation.
- Fix the machine securely to prevent the machine from moving or falling.

11. STORAGE

1. Wash with water to remove any dust and dirt from all parts of the machine.
2. Store in a dry area away from direct sunlight after putting the cover over the machine to prevent dust and dirt buildup. (When storing this machine for an extended period of time)
3. Drain the fuel from the fuel tank, fuel pipe, and carburetor completely.
4. Conduct fueling and replenishment/change of oil without omission. Remove the spark plug, put a few drops of engine oil into the cylinder, and rotate the engine manually for spreading the oil inside sufficiently.
5. Securely cover the air cleaner and muffler air inlets and exhaust port.
6. Do not leave the machine outdoors. Keep it indoors.
7. Do not store this machine by laying it on its side (or backward).

12. REGULAR CHECK AND ADJUSTMENT

12.1 Inspection And Maintenance Schedule Table

Check frequency	Check parts	Check items	Oils
Daily (before starting)	Appearance	Flaw, deformation	
	Fuel tank	Leakage	
	Fuel system	Leakage	
	Engine oil	Leakage, oil level, dirt	Engine oil
	Shock absorber	Crack, damage, wear	
	Vibrator oil	Leakage	Engine oil
	Air cleaner element	Dust, deformation	
	Guard frame	Breakage, flaw, loosened or missing bolts and nuts	
	Bolts and nuts	Looseness, missing	
Every 20 hours	Engine oil	Replace only after] the first 20 hours	Engine oil
Every 100 hours	Engine oil	Change	Engine oil
	Engine oil filter	Washing	
	Vibrator oil	Leakage, oil level, dirt	Engine oil
Every 200 hours	V-belt for vibrator	Flaw, deformation	
	Clutch	Dirt, flaw, wear	
	Engine bolt	Wear, deformation, degradation	
Every 300 hours	Vibrator oil	Change	Engine oil
	Fuel filter	Change	
Every 2 years	Fuel pipes	Change	
As necessary in time	Air cleaner element	Change	

For details about the check and maintenance of the engine, 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.

For check of bolt and nut looseness and tightening, please see the following tightening torque list.

Tightening torque list (unit: kgf-cm, 1kgf-cm=9.80665N-cm)

		Thread diameter							
		6mm	8mm	10mm	12mm	14mm	16mm	18mm	20mm
Material	4T(SS41)	70	150	300	500	750	1,100	1,400	2,000
	6-8T(S45C)	100	250	500	800	1,300	2,000	2,700	3,800
	11T(SCM3)	150	400	800	1,200	2,000	2,900	4,200	5,600
	When the mating material is aluminum.	100	300~350	650~700	(Bolts used on the machine are all right-hand thread.)				

12.2 Opening Engine Oil

Perform the first engine oil change after 20 hours of operation, then change at every 100 hours.

12.3 Changing Air Cleaner

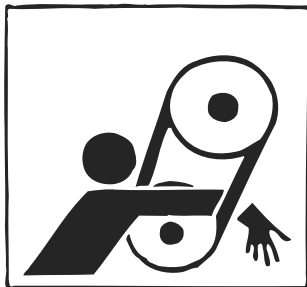
When the air cleaner element becomes dirty, the engine does not start smoothly, and sufficient output cannot be obtained. Machine operation will be affected and the engine life will be shortened greatly. Do not forget to clean the element. (For details, please see the separate engine operation manual.) If the element cannot be cleaned, replace it with a new one.

12.4 Checking/Changing V-belt and Clutch

CAUTION

- When the vibration weakens during operation, or this machine does not vibrate at all though the engine rotates normally, conduct the inspection or change of the V-belt and clutch without regard to the regular inspection of every 200 hours.
- Always stop the engine before inspection and adjustment. If you are caught in a rotating part, serious injury might occur.

1. Checking V-belt
Remove the belt cover and check that V-belt is properly stretched every 200 hours. Press on the portion midway between the two shafts with your fingers strongly. The belt is properly stretched if that portion bows by about 10-15 mm.
2. Checking the clutch
Inspect Clutch concurrently with the inspection of V-belt. Check visually for burning of each clutch-shoe. Check for wear the lining shoe or the like, in the operation check. If the shoe wears, power transmission is not performed properly and Clutch slips. Check wear or any damage to V-groove also. If V-groove is stained, clean it thoroughly.
3. Checking Bolt, Engine
The part of Bolt, Engine is made of rubber material, of which the inferiority like fatigue or worn leads V-belt tension low. Whenever checking V-belt, inspect this part for the reason as well as Shock Absorbing Rubber. (Fig.22)



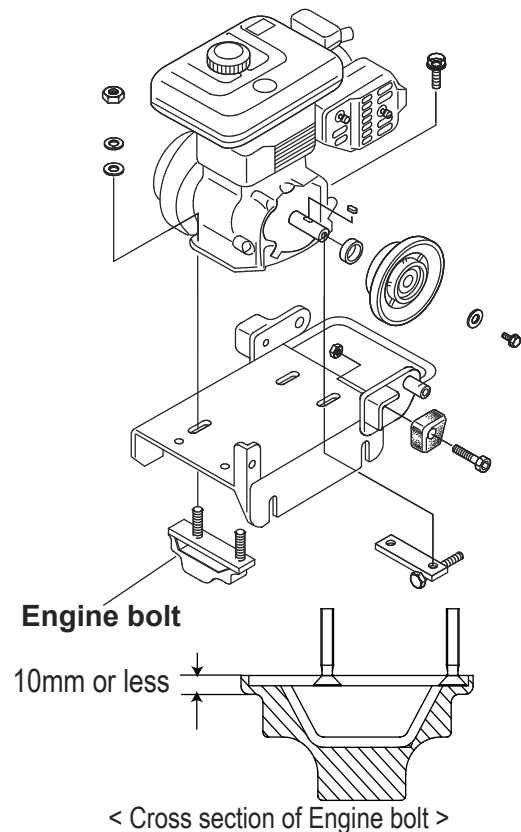
12.5 Inspection and Change of Vibrator Oil

Make this machine level, and remove the oil level plug off the vibrator. Check that vibrator oil is provided up to the mouth level. The oil level plug is on the right side of the vibrator case (opposite to the belt side). (Refer to Fig.1 on page 9.)

Use the engine oil #10W-30 for vibrator oil. Refer to page 7 for the amount. Drain the vibrator oil completely by removing the plug and tilting the body once a month or every 200 hours' operation. Replace with new oil.

12.6 Inspection and Change of Engine Bolt

Replace immediately when it was found the wear, deformation or degradation of elastic rubber material, which may cause V-belt come off or the engine to vibration damage directly and excessively. (Fig.22)



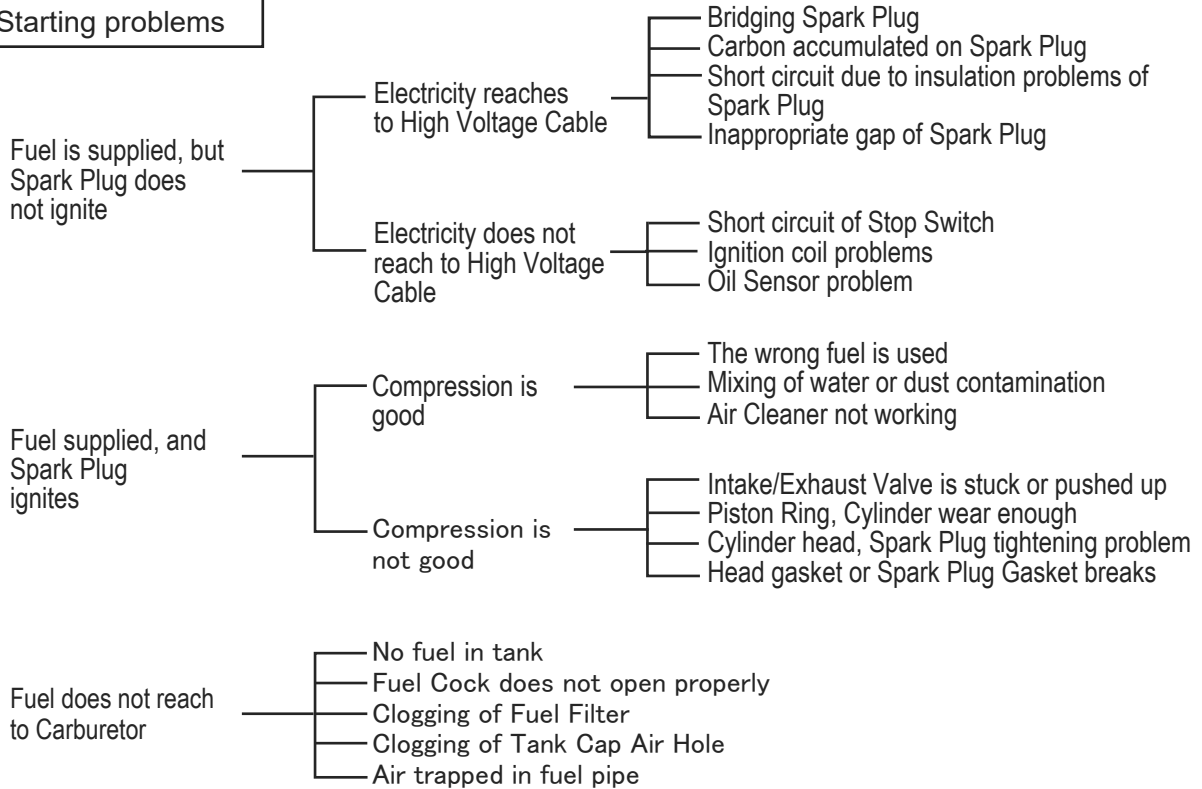
Indication of replacement:

Replace Engine bolt immediately when the thickness is less than 10 mm combined with metal plate and rubber

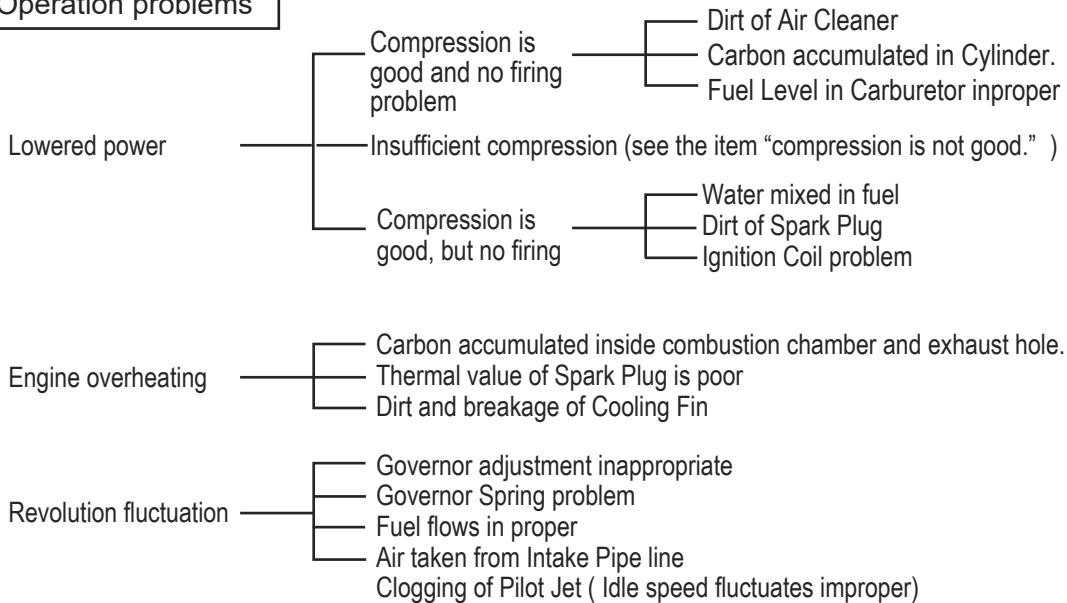
Fig. 22

13. TROUBLESHOOTING

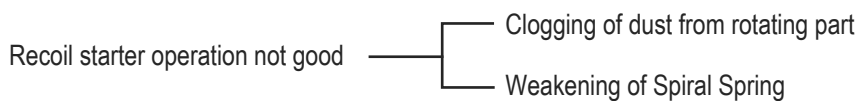
(1) Starting problems



(2) Operation problems



(3) Recoil starter problems



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