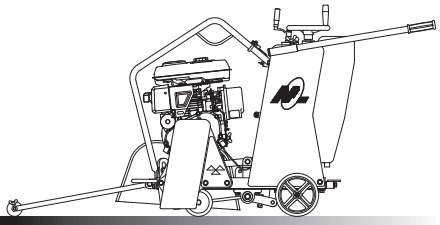
Mikasa

CONCRETE CUTTER

# MCD-218CEH



## OPERATION MANUAL

en

http://www.mikasas.com

602-02803

# EC Declaration of Conformity

| | |
|---|---|
| 1 Manufacturer's name and address | **Mikasa Sangyo Co., Ltd.**<br>1-4-3, Kanda-Sarugakucho, Chiyoda-ku, Tokyo, 101-0064, Japan |
| 2 Description of the equipment | |
| 2.1 Product | Joint Cutters ( Concrete Cutters ) |
| 2.2 Type | MCD-218CEH |
| 2.3 Version(s) | — |
| 2.4 Measured sound power level dB(A) | 115 |
| 2.5 Guaranteed sound power level dB(A) | 116 |
| 2.6 Motor type : Net power | Air cooled , 4 stroke SI engine ( Honda GX390 ) : 8.7 kW |
| 3 Conformity assessment procedure | Annex VIII of 2000/14/EC as last amended by 2005/88/EC |
| 4 Notified Body's name and address | TÜV Rheinland LGA Products GmbH<br>Tillystraße 2, 90431, Nürnberg, Germany<br>Notified Body number: NB 0197 |
| 5 Comply with relevant provisions and requirements of the following directives and standards | 2000/14/EC , 2006/42/EC , 2014/30/EU<br>EN 500-1:2006 +A1:2009 , EN 500-4:2011 |
| 6 Signature |  2nd Jun. 2022<br>Keiichi Yoshida : Director, General Manager R&D Division |
| 7 Technical documentation keeper | Engineer , R&D Division , Mikasa Sangyo Co., Ltd.<br>15-1,Shimoosaki,Shiraoka-city,Saitama,349-0203,Japan |

| | |
|---|---|
| Reference data | MCD-218CEH |
| Hand-arm vibration level ※ Ahv $m/s^2$ | 8.3 |

※ Directive 2002/44/EC compliant. Test course (crushed gravel) is in comply with EN 500-4

# Table of contents

# 1. Introduction

Thank you for purchasing Mikasa MCD-218CEH type CONCRETE CUTTER.

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

The illustrations and Figures in this manual may be different from the machine you actually purchased due to design changes and other reasons for improvement.

# 2. Machine overview

**Application**
Mikasa Concrete Cutter is used to cut the concrete or asphalt road surface by Diamond Blade that is attached on its Blade shaft. Please choose machine type by cutting depth, and then choose appropriate blade to match the spot situation, such as material age, presence or absence of reinforcement in the concrete.

**Warning of a false use and misuse**
Please use this machine to cut plain concrete, reinforced concrete and asphalt only.
Do not cut sediment, for that it flies into pieces and injuries man around the machine.
This cutter can be equipped with diamond blade only. Do not attach resinoid blade on this machine. Please pour water to blade at cutting except using dry-type blade, for that conglutination of the blade or Blade chip flies into pieces.
Do not use this machine in the state that you turned more than the number of turn in accord with the blade, for that conglutination of the blade or Blade chip flies into pieces.
Do not use this machine in instability, or in a rough ground, for that conglutination of the blade or Blade chip flies into pieces. Do not use this machine to cut a secondary product concrete.

**Structure**
Engine of Concrete Cutter is fixed on a main body base, and conveys power to Blade shaft with the V belt. The way of adjustment of V-belt tension is making Engine slide.
Belt cover, Handle guide, Handle for elevating the blade, and Blade cover which can be put on and off easily is attached on Engine Base. Cutting depth is adjusted by rotating Handle for elevating the blade through Blade Arm that is equipped with Front wheel The way to travel the machine is pushing the machine directly.

**Power Transfer**
Air-cooled petrol engine is amounted on Mikasa Concrete Cutter as power source.
V-pulley is attached on Engine shaft for driving Blade shaft, and Diamond Blade is attached on Blade shaft. The cutting depth can be adjusted to change the Front wheel position by Handle.
The way of driving the machine while cutting is pushing the handle.

# 3. Warning labels

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 human 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.

Precautions (without a triangular mark): Failure to follow the instructions may result in damage of property.

# 4. Precautions for safety

## 4.1 General precautions WARNING

⚠ **WARNING:**

- **Do not work in the following conditions.**
  - ○ If you do not feel well due to overwork or illness.
  - ○ If you are taking any medicine.
  - ○ If you are under the influence of alcohol.

⚠ **CAUTION:**

- Read this instruction manual carefully and handle the machine as described so that you can work safely.
- For details about the engine, refer the separate instruction manual for the engine.
- Make sure you thoroughly understand the construction and operation of the machine.
- Please check each part before work, and execute the scheduled check and alignment regularly.
- To work safely, always wear protective clothing (helmet, safety glasses, safety shoes, ear plugs etc.) and appropriate work clothes.
- Please wear Hearing protector ( noise protective equipment of ear muff or ear stoppers) by all means.
- Always check the machine to make sure that it is normal before starting operation.
- The decals on the machine body (operating methods, warning decals, etc.) are very important to ensure safety. Keep the machine body clean so that they can be read at all times. If any decal cannot be read, replace it with a new one.
- It is very dangerous if children come into contact with the machine. Take the utmost care how and where the machine is stored.
- Before performing any maintenance, be sure to turn the engine off.
- Mikasa does not accept any liability for accidents or problems caused as a result of not using genuine Mikasa parts or if the machine has been modified.

## 4.2 Precautions when adding fuel

⚠ **DANGER:**

- **When adding fuel.**
  - ○ Be sure to work in a well ventilated location.
  - ○ Be sure to turn the engine off and wait until it has cooled down.
  - ○ Take the machine to a clear flat location without any combustibles nearby. Be careful not to spill any fuel. If you do spill some gasoline, wipe it all up.
  - ○ Do not allow any open flames nearby while adding fuel. (In particular, smoking while adding fuel is strictly prohibited.)
- Adding fuel until it comes too close to the top of the inlet may cause the fuel to overflow. That is dangerous. Follow the instructions in the engine manual about the specified fuel level.
- When through adding fuel, tighten the tank cap securely.

## 4.3 Precautions where to use the machine

**⚠ DANGER:**

- Do not run the engine in an unventilated location, such as indoors or in a tunnel. The exhaust gas from the engine is carbon monoxide and is deadly.
- Do not operate the machine near open fires.

## 4.4 Precautions before operation

**⚠ CAUTION:**

- Check the clamping condition of each part. Cause the big failure that does not think that a screw loosens by vibration. Tighten the screw well.
- Confirm that the diamond blade does not have anomaly such as deficit of the blade chip or the crack of the board.

## 4.5 Precautions when working

**⚠ CAUTION:**

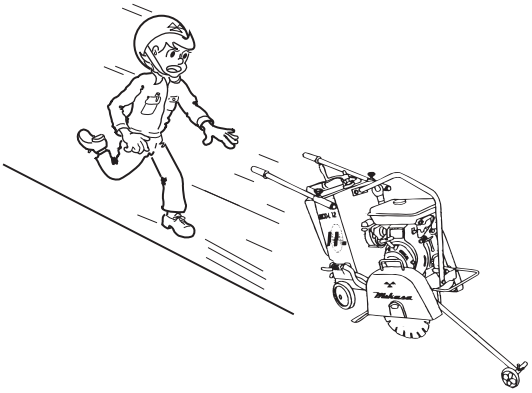
- When starting and working with the machine, confirm that neighboring people and obstruction are safe.
- Always pay attention to foothold and work in easy position that allow to keep your machine in good balance.
- Be careful not to touch muffler and engine body as it becomes hot in operation or just after operation.
- Discontinue operation promptly whenever your machine goes deficient or you notice any abnormality.
- Be sure to stop engine before leaving the machine. Also shutdown engine for transporting the machine, and close the fuel cock.
- Mount blade cover by all means, and use it.
- Because engine turns blade when start, be careful enough. Do not bring legs close especially.
- Be careful enough so that be not rolled up your hand or clothes in reel (inside of the belt cover).


**⚠ DANGER:**

**Precautions in inclined area**

**When you use machine on inclined area, various risk is accompanied. Adhere rigidly to the following precautions to a minimum, and try for further safety retention. When you cannot get safety, never use it.**

- Do not leave machine in the inclined area. There is danger to cause a serious accident when machine begins to move by any chance.
- In the inclined area, grasp a handle well, and never separate a hand from machine. Machine begins to move in tare weight at the moment when you separated a hand, and there is danger to cause a serious accident.

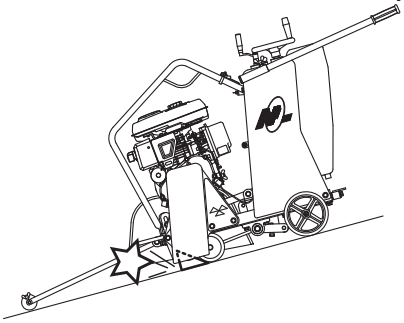


- In the inclined area, never take off the clutch for manual operation traveling. When took off a gear by any chance, the machine becomes free, and be in danger of running uncontrollably. Chew the traveling clutch by all means, and put resistance on machine.

## 4.5 Precautions when working

**⚠ DANGER:**

- Because there is the danger that machine runs uncontrollably when a grip falls out from the handle, warn you enough.
- When you work in inclined area, be located in the upper part of the slope for machine by all means, and let machine face straight it below for a slope, and work.
- Stop the machine at flat space. When you stop machine in inclined area out of necessity, lower straight machine after having stopped the engine by all means, do ring stopper to the front wheel for safe retention by all means. When be collided by an automobile and be shaken in right and left, even if you put on ring stopper down the front wheel, the machine climbs ring stopper and begins to move, and be careful this risk is very likely. Even if you put on ring stopper down the back wheel, there is not effect. In addition, **a parking brake of the rear wheel is not a thing to guarantee certain fixation of the machine.Use ring stopper for a front wheel on the occasion of a stop by all means.**



- When put ring stopper, never go in the front side of the machine. When machine has begun to move by any chance. There is the danger of serious injury or decease, by the physical truncation with blade and the conflict of machine.
- If hand touches the blade when put ring stopper, there is danger injured seriously. Put ring stopper from the non blade cover side of the machine by all means.
- In case of stop, when water is in the water tank, the center of gravity rises and the balance worsens . Even if you put ring stopper to the front wheel at the time, it is very dangerous that the front wheel climbs over ring stopper and begins to move. In this case pull water out of the water tank by all means.
- When a road surface gets wet in inclined area, ring stopper in itself slips depending on an angle, and effect is gone. Stop on the dry road surface by all means, when you stop it in inclined area out of necessity.
- Do not work on blade installation disassembly in inclined area, because it is dangerous.
- Do not work on to cross the slope. There is danger that tumble of the machine or the damage of the blade cause a serious accident.

## 4.6 Precautions in lifting

**Loading and unloading by crane needs the lifting license. Be sure to work by crane licensing holder.**

**⚠ DANGER:**

- Be sure to work with sling by crane license holder.
- Before work of lifting, check any damage of body parts (especially, Lifting hook, etc) or looseness / omission of screws, and be sure safe.
- Stop the engine at the time of the lifting, and close the fuel cock.
- Use enough strength of wire rope.
- The work of lifting uses only one-point lifting hook, and do not lift in other point (handles).
- Never put any person or animal under the lifted machine.
- For safety, do not lift up the machine more than required height.

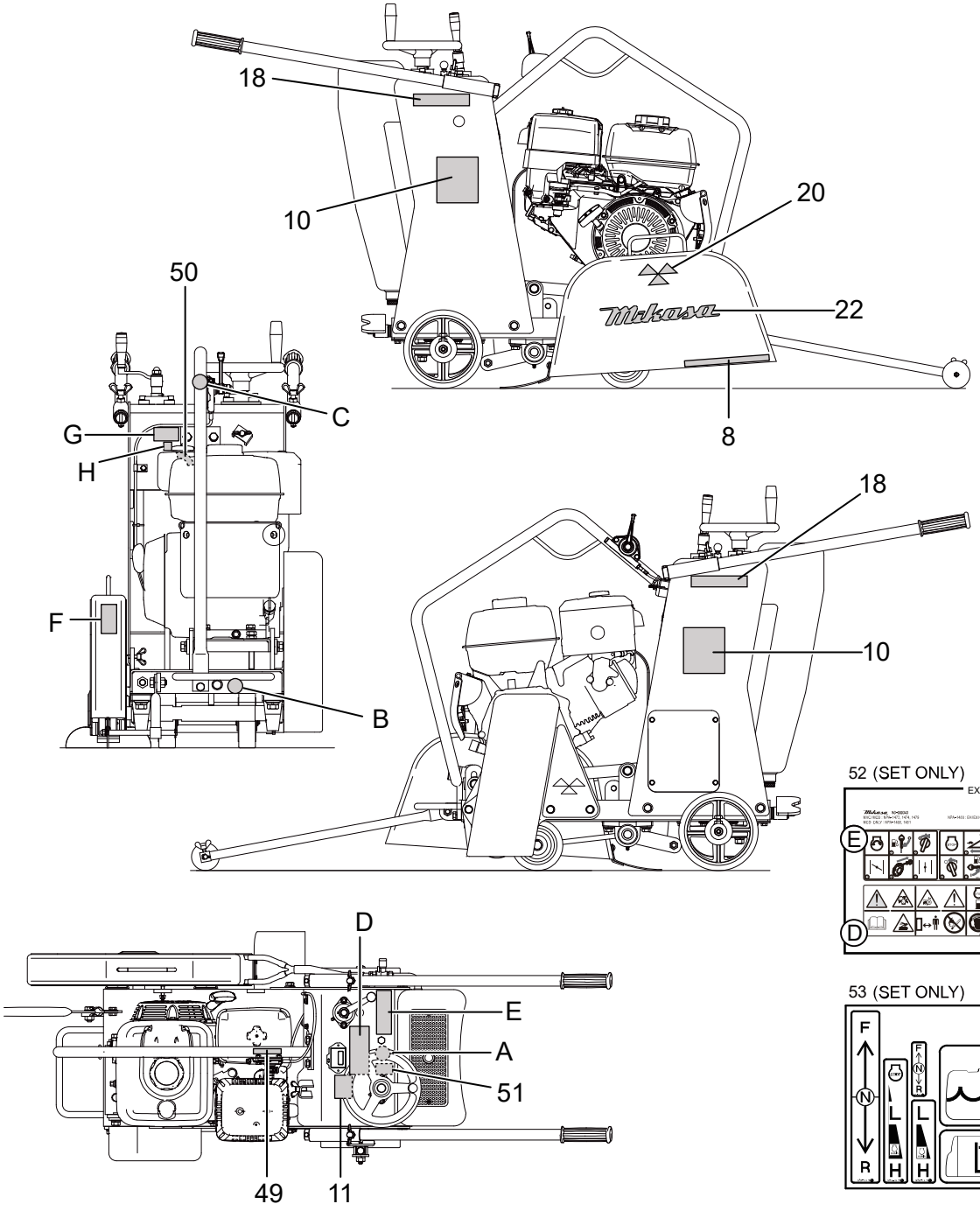
## 4.7 Precautions in transportation / safekeeping

| | | |
|---|---|---|
| ⚠ **WARNING:** | ● Stop the engine at the time of transportation.<br>● Carry it after engine and body got cold well.<br>● By all means drain fuel before transporting the machine .<br>● Fix the machine well not to move and fall down. | |

## 4.8 Precautions in maintenance

| | | |
|---|---|---|
| ⚠ **CAUTION:** | ● Appropriate maintenance is always required for safety operation and to maintain performance of the machine. Pay full attention in the condition of the machine, and maintain good condition. Especially improper maintenance of lifting-related part becomes cause of serious accident.<br>● Do work after lower temperature of machine. Especially muffler becomes high temperature, and there is danger that burn itself. In addition, be careful not to burn itself enough, because engine or engine oil become hot.<br>● Do the check alignment in situation that stopped engine by all means. There is badly injured danger when you are rolled up in a reel.<br>After maintenance fulfillment, check the installation of safety protection parts and safety of the machine. Especially, check bolts and nuts thoroughly.<br>When you do maintenance with dismantlement, refer to maintenance manual regularly, and work safely. |  |

## 4.9 **Decal Position**

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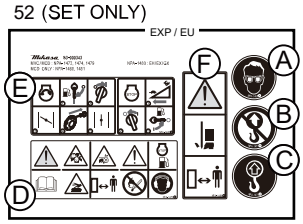
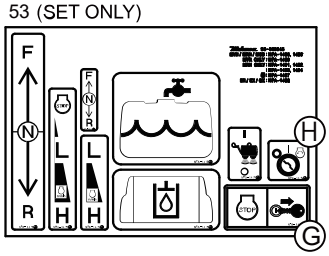



53 (SET ONLY)

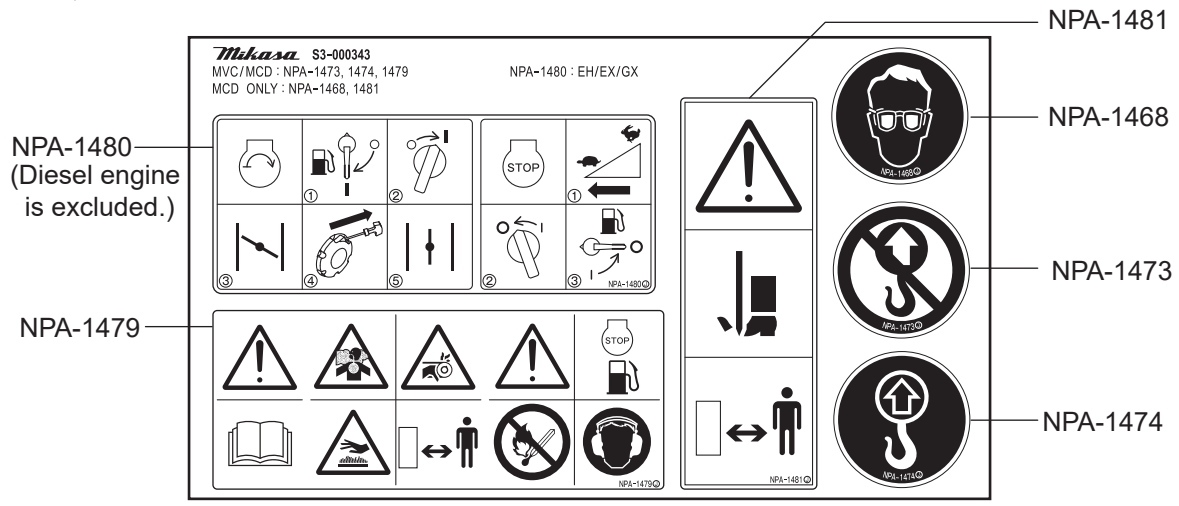



| NO. | PART NO. | PART NAME | Q'TY | REMARKS |
|---|---|---|---|---|
| 8 | 9202-10120 | DECAL, INDICATOR/MCD12-200 | 1 | |
| 10 | 9201-09690 | DECAL, EMBLEM/CUTTER | 2 | |
| 11 | 9202-22500 | PLATE, SERIAL NO./218CEH | 1 | |
| 18 | 9201-13010 | DECAL, MODEL LOGO. 218CEH | 2 | |
| 20 | 9201-01410 | DECAL, MIKASA MARK 120X60 | 1 | |
| 22 | 9201-01510 | DECAL, MIKASA MARK 440MM | 1 | |
| 49 | 9202-11690 | DECAL, LEVER OPERATION | 1 | |
| 50 | 9201-08800 | DECAL, KEY SWITCH | 1 | |
| 51 | 9202-10700 | DECAL, EC NOISE REQ. LWA116 | 1 | |
| 52 | 9209-00090 | DECAL, SET/MVC-MCD/EXP, EU | 1 | |
| 53 | 9209-00120 | DECAL, SET/MVH-MRH | 1 | |

## 4-10. Descriptions of symbols used on warning labels

Decal for new European machine directives

PART/NO. 9209-00090 DECAL, SET /MVC, MCD /EXP,EU




① **Lethal Exhaust Gas Hazard.**
Carbon monoxide poisoning may occur if the exhaust gas is inhaled. Do not operate the machine in a poorly ventilated area.

② **Rotaing Parts Hazard.**
Keep hands clear from all moving parts (such as inside the belt cover) to prevent injury.

③ **Refueling Hazard.**
Stop the engine and let cool before refueling.

④ **Read the manual carefully.**
Read and fully understand the operation manual before operating the machine.

⑤ **Burn Hazard.**
Never touch the hot parts. Allow these parts to cool before servicing the machine.

⑥ **Keep safe distance.**
Be careful not to approach danger source during operation.

⑦ **Fire hazard.**
Keep away any flames and sparks from the machine.

⑧ **Noise hazard.**
Always wear ear protection while operating the machine.

⑨ **No lifting position.**
Do not use any other points (such as the handle) except one point lifting hook for lifting the machine.

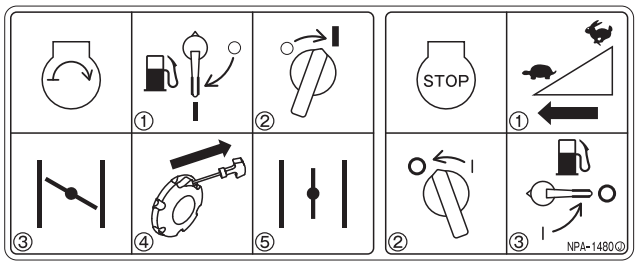
⑩ **Lifting position.**
Use one point lifting hook for lifting the machine.

⑪ **Blade hazard.**
Keep feet clear from blade to prevent injury.

## Starting and stopping for gasoline engine

**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 the engine.
⑤ Return Choke Lever to open.

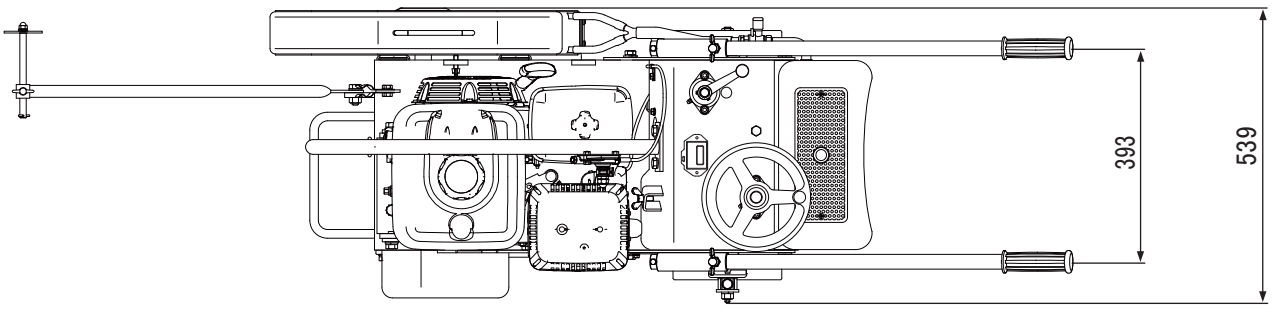


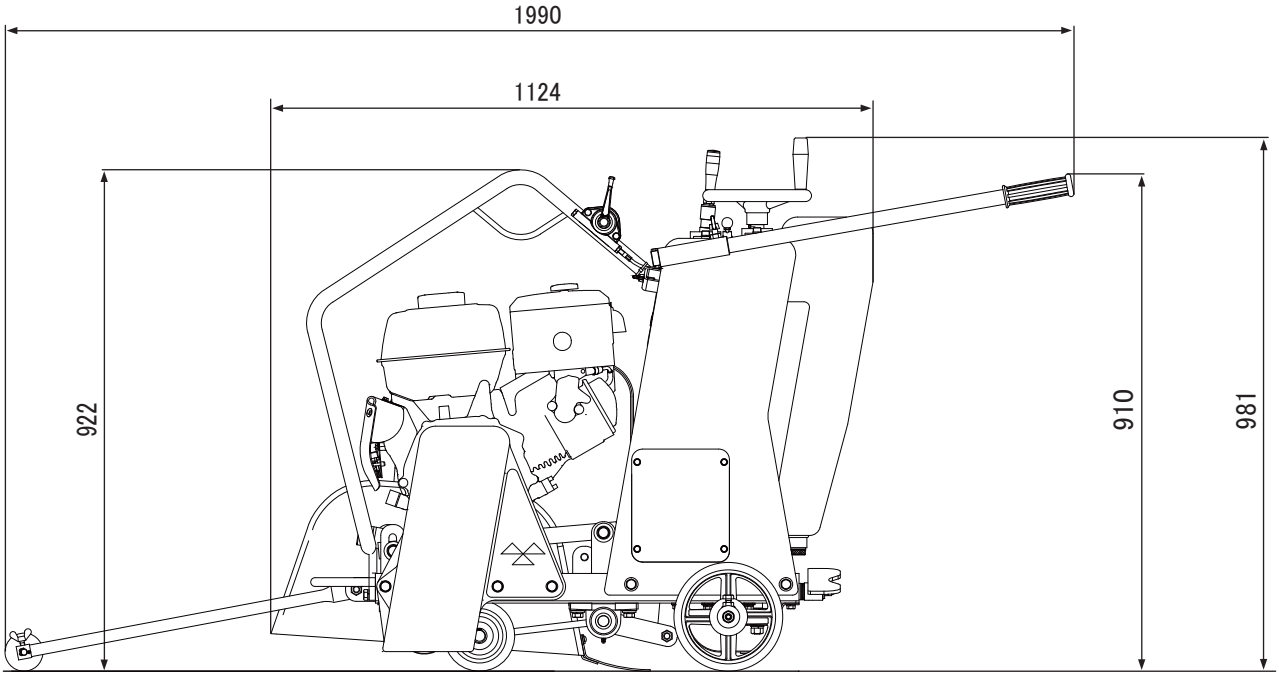

**STOP**

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

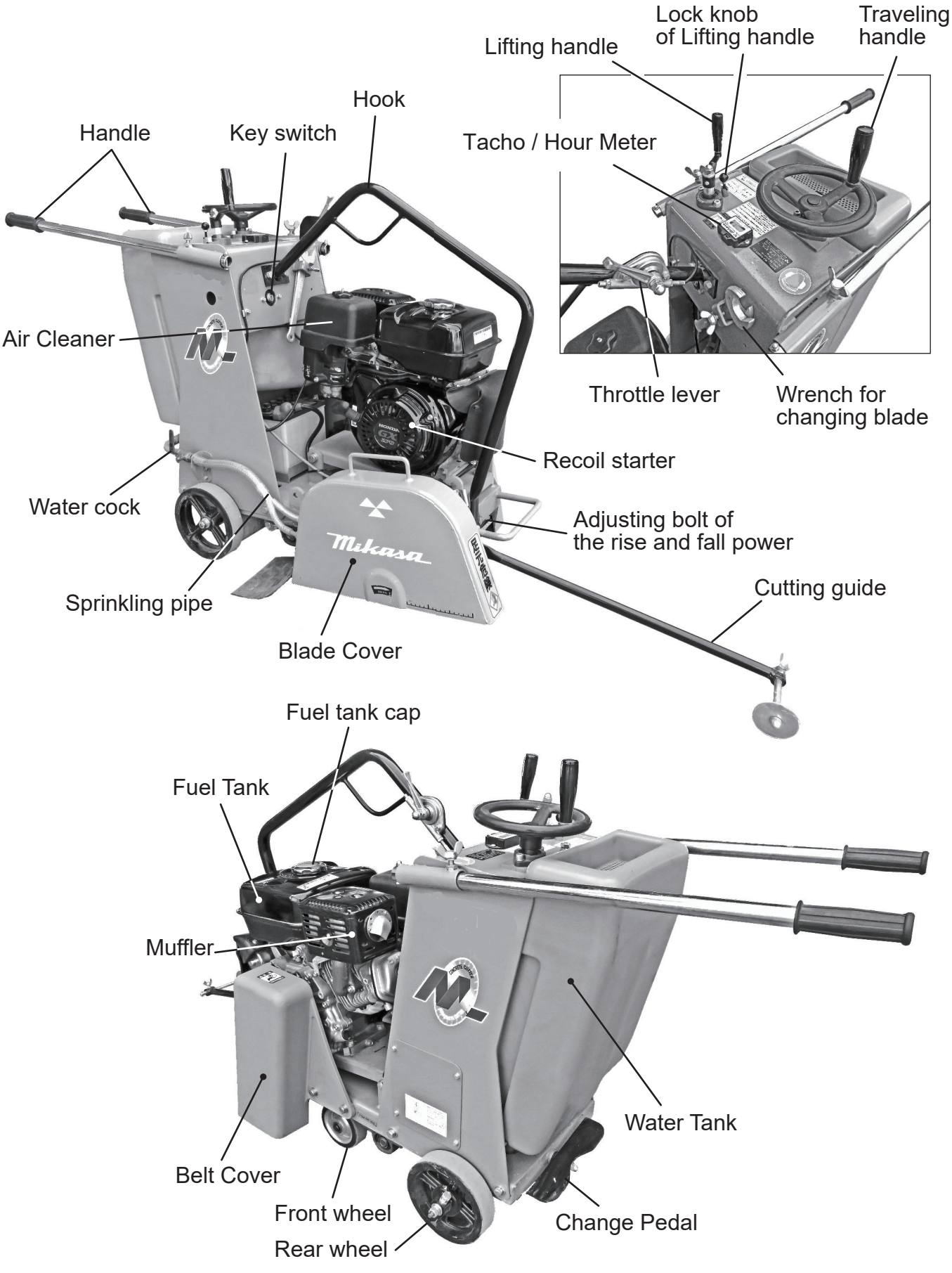
# 5. General view

## 5.1 Dimensions (mm)



## 5. 2 Parts and Component



# 6.Specifications

## 6. 1 Main Body

| | | |
|---|---|---|
| Model | MCD-218CEH | |
| Power source ( Engine model ) | GX390 (electric start) | |
| Dimensions (when main body is level)<br>Overall Length (on operating)<br>Overall Width<br>Overall Height | <br>1990mm<br>588mm<br>981mm | |
| Weight | 184kg | |
| Traveling system | Semi-auto drive | |
| Adjusting for cutting depth | Manual lifting screw system | |
| Cooling System of blade | Centrifugal injection type | |
| Water tank capacity | 45 liters | |
| Arbor size | Standard: 27mm (Option: 25.4mm) | |
| Blade size and maximum cutting depth | Blade size (Outer diameter)<br>(10 inch) 254 mm<br>(12 inch) 305 mm<br>(14 inch) 356 mm<br>(16 inch) 407 mm<br>(18 inch) 457 mm | Maximum cutting depth<br>70 mm<br>95 mm<br>120 mm<br>145 mm<br>170 mm |
| Limitation of Blade size | under 18 inch | |

※ Weight includes weigh of machine, lubricants, 50% of fuel and 50% of water tank capacity.
※ Specifications are subject to change without notice.

## 6. 2 Engine (motor)

| | |
|---|---|
| Maker and Engine Model | Honda GX390 |
| Type | Air-cooled 4cycle gasoline, electric start |
| Max. Output | 8.7kW/3600min$^{-1}$<br>(11.8PS/3600rpm) |
| Fuel tank capacity | 6.1 liters |

# 7. Before starting your operation

⚠DANGER

Do the check alignment in situation that stopped engine by all means. There is badly injured danger when you are rolled up in a reel.
Level the machine, and check it after the machine confirmed that it does not move.

★ The check point before the work see "each part check schedule list" mentioned in 17 pages.

**7.1. Engine oil** (Fig.1, 2)

With the engine positioned horizontally, check oil-with oil gauge.
Replenish through filler port as necessary.

Use following oil
(10W-30 is in use when shipped).
SAE#30 (for normal temperature)
SAE#20 (for 10 or lower)
SAE#10W-30

SAE#10W-30 oil can be used throughout the year regardless of ambient temperature (up to ambient temperature -20 ℃ ).

When it is used in normal temperature, its consumption tends to increase . Pay additional attention at the time of daily check. As for quality of oil, be sure to use SE grade or better. Degraded quality or decreased quantity may induce damage by seizure.

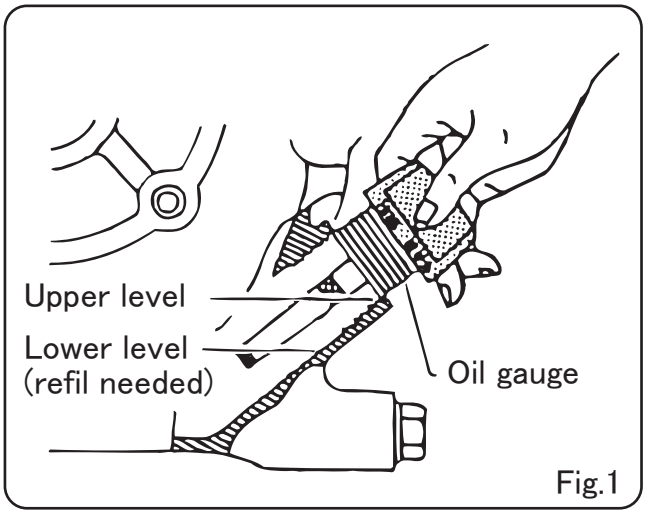


Fig.1

**7.2. Fuel (Fig. 2)**

Use lead-free automobile gasoline. For replenishment, be sure to shutdown engine and use strainer provided at filler port.
Wipe off any spilled fuel clean.

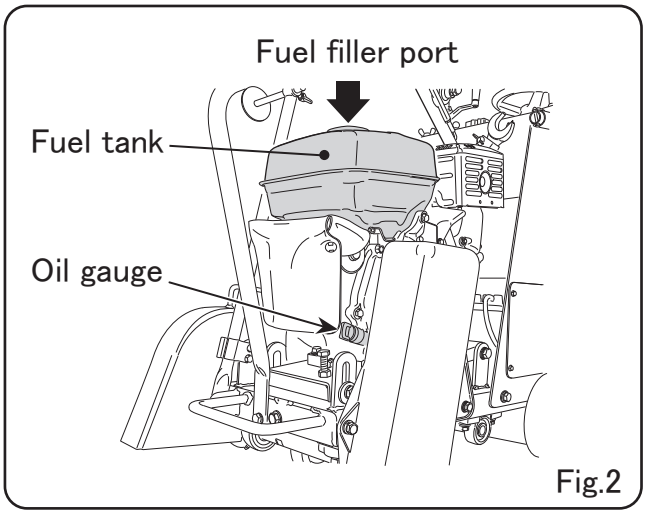


Fig.2

**⚠ DANGER**

- Stop the engine when refueling.
- Never refueling near a naked flames or a source of sparks
- Do not fill the fuel tank completely because the fuel might spill.
- Wipe up any spilled fuel.

**7.3. Worm gear of Drive shaft (Fig. 3)**

Grease the grease fittings and gears.

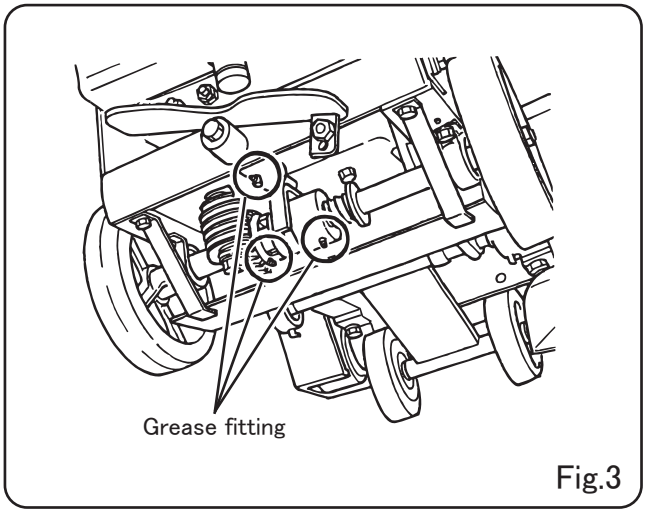


Fig.3

### 7.4. Water tank (Fig. 4)

Fill up the water tank (45 liters). Open the water cock and make sure that water coming out from delivery pipe in the blade cover.

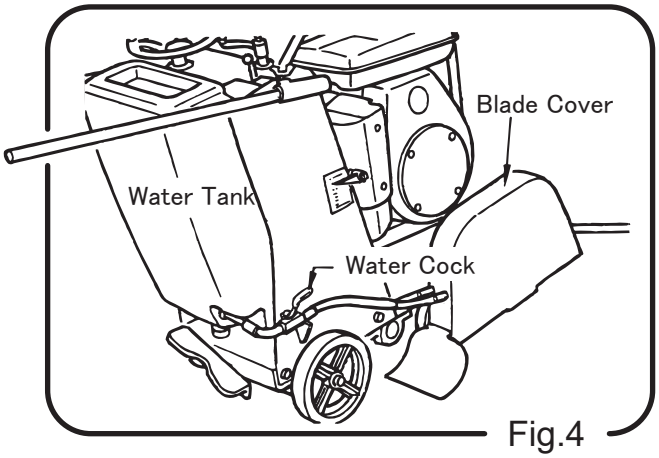


Fig.4

### 7.5. V-belt

Check the V-belt between engine and blade shaft for sag or defect. Tension is normal if the deflection is 10 -15 mm when depressed at midway between the two shafts. Adjust tension as necessary.

When replacing, all four belts (A-33 for 214, A-34 for 218) should be replaced. Use the replaced yet usable parts as supplement. For adjustment of tension, move the engine base to upper or downward. ( Fig.5)

**How to adjust the V-belt**

① Loosen the 4 ( four ) bolt.
② Loosen the Nut of Adjust bolt.
③ Turn the adjust bolt to the clockwise for tighten the V-belt.
④ Tighten the Nut of adjust bolt.
⑤ Tighten the 4 ( four ) bolts.

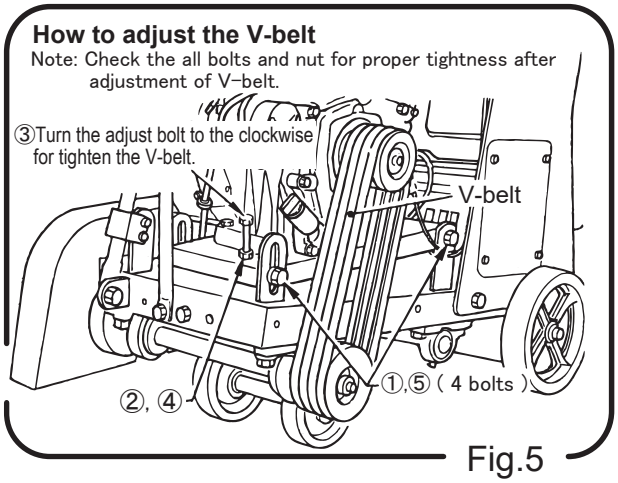


Fig.5

### 7.6.

Check each bolt and nut for proper tightness.

### 7.7. Installing the blade:

Install Flange (IN), Diamond Blade and Flange (OUT) in such order to the blade shaft and tighten sufficiently with Nut (left hand thread). ( Fig. 6 )

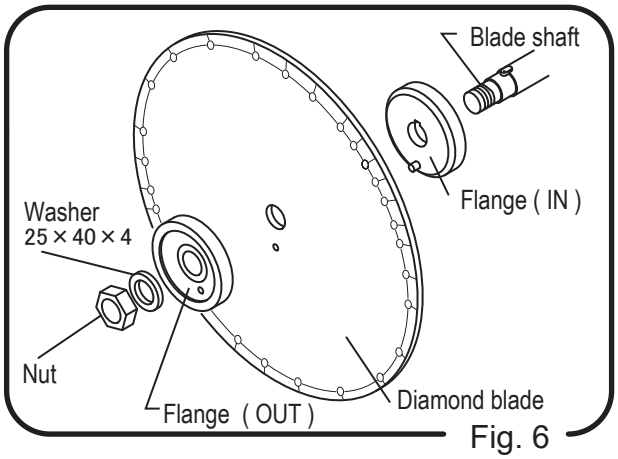


Fig. 6

### 7.8.

After blade has been tightened, check the cooling water and install blade cover.

### 7.9.

Set the cutter guide, aligning it with the blade. (Fig. 7)

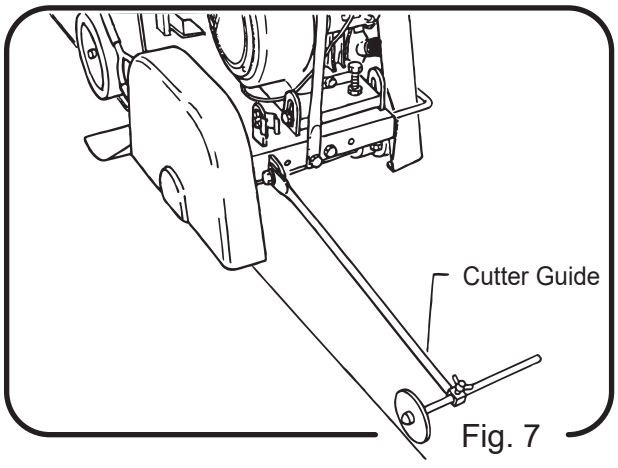


Fig. 7

### 7.10. How to lift or lower the machine: (Fig. 8)

For lifting or lowering the machine, set the knob unlock position which located beside of Crank handle for lifting and lowering. Turn the handle guide to the clockwise for cutting concrete and to the counter clockwise for lifting machine.

When decided the cutting depth, set the knob at lock position for lock the position of machine.

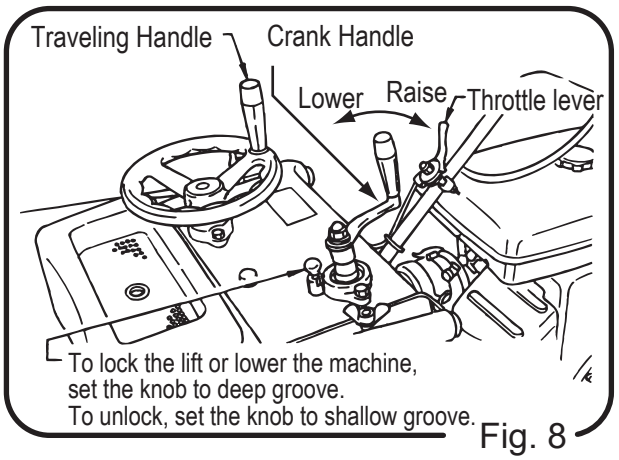


Fig. 8

### 7.11. Adjustment of the force for lifting system

Adjusting the force for lifting or lowering the machine. Adjusting can be made by turning the adjust bolt at front of the machine. (Fig. 9)

a) Turning the Adjust - bolt clockwise, causes the descending force to reduced. Machine can be lifted with small force.

b) Turning the Adjust-bolt counter - clockwise, causes the descending force to increase.

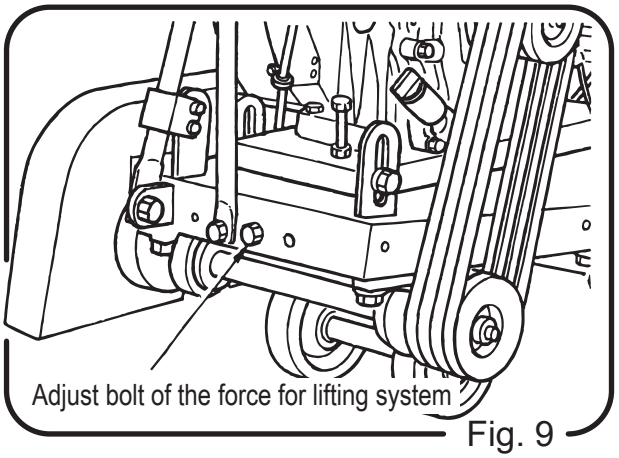


Fig. 9

### 7.12. Cut depth reading method

Cut depth is distance from the reading point of Fig. 8-1 to blade tip.

There is blade tip in circumference of blade.

When you cut asphalt or concrete road with diamond blade, the line trace (trace of line) of turn happens on the side surface of blade.

Search the line trace of reading point, and read distance from circumference to it with the scale of blade cover. (Fig.10)

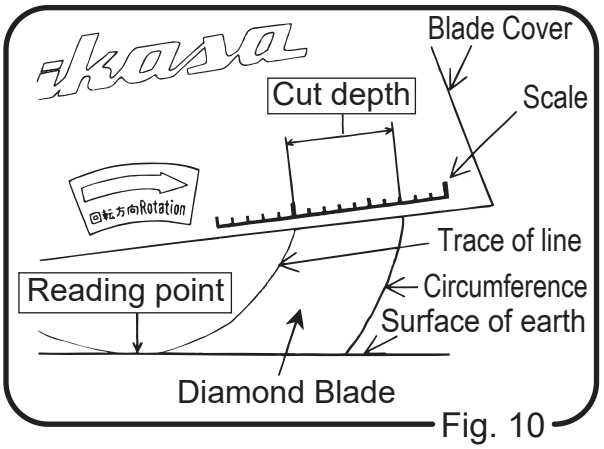


Fig. 10

# 8. Operation

## 8.1 Starting

1 Move the fuel cock lever to the “ON” position. (Fig. 11)

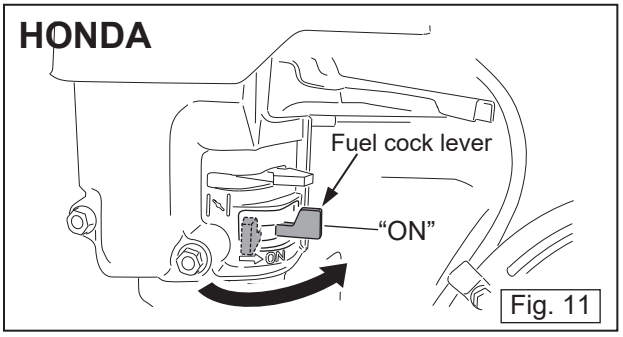


Fig. 11

2 To start a cold engine, move the choke lever to the “CLOSED” position. To restart a warm engine, leave the choke lever in the “OPEN” position. (Fig. 12)

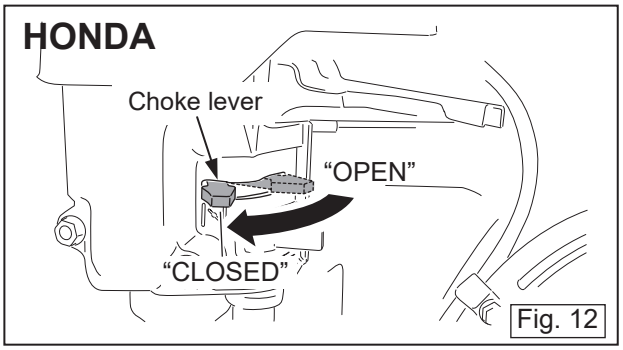


Fig. 12

3 Move the throttle lever to the idle position. (Fig. 13)

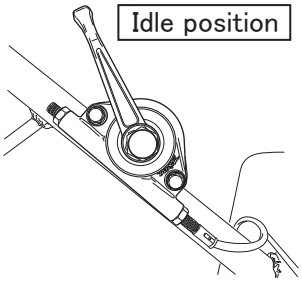


Fig. 13

4 When the engine is stopped, the hour tachometer is always displaying "Operation Time". (Fig.14)

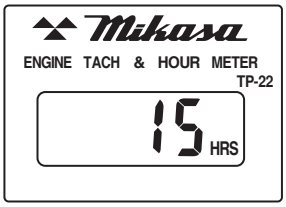


Fig. 14

5 Insert the key to the key switch.

6 Turn the key to the "Run" position. (Fig.15)

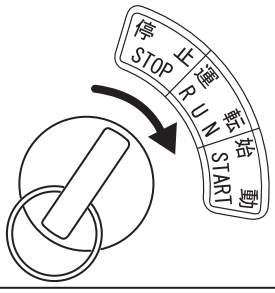


Fig.15

7 Operate the starter.

## Recoil Starter

7.1 Pull the starter grip lightly until you feel resistance. Then, pull it briskly all the way out. (Fig.16)

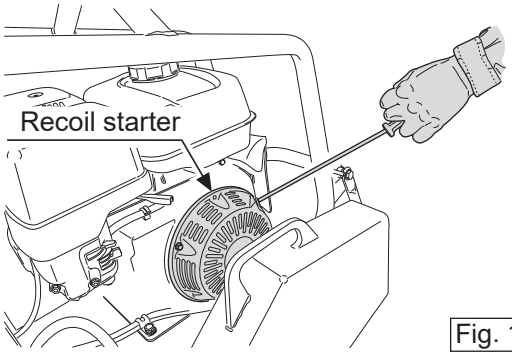


Fig. 16

**CAUTION**

- Do not pull the starter grip all the length of the rope.
- Be careful not to pull it too hard as it might break or come off.
- Return it gently to prevent damage to the recoil starter.

## Erectric Starter

7.1 Turn the key further to the “START” position to start the engine. After the engine is started, take your hand off the key. (Fig.17)

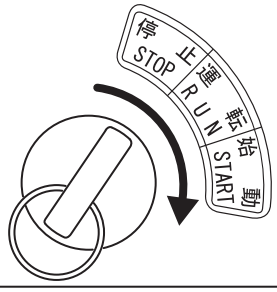


Fig.17

**CAUTION**

- When the engine does not start within 5 seconds, release the key, and wait for about 10 seconds at the “RUN” position before restarting.
- Do not use the electric starter for more than 5 seconds to prevent damage of the starter motor.
- While the engine is running, never turn the key switch to the “START” position.
  If using the recoil starter, turn the key switch to the “RUN” position.

**DANGER**

**BE CAREFUL when the engine started, Cutting blade also starts to rotate.**

8 After starting engine, return the choke lever gradually to the full opened position.
Allow the engine to warm up at idle speed for 3-5 minutes. The warm-up procedure should particularly be followed in cold weather. While the engine is warming up. check the engine for fuel leaks or possible problem.

9 During operation, the hour tachometer is displaying “Engine Speed”. (Fig.18)

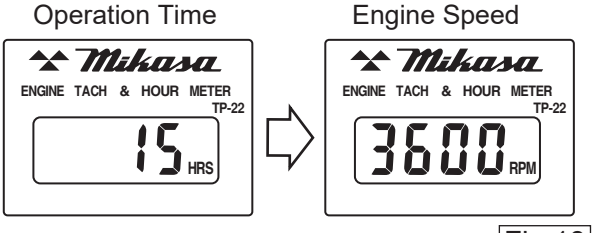


Fig.18

## 8. 2 Operation

**8.2.1.** Align the cutting guide with pre-determined cutting line. Aligning is easier if it is done with the machine lifted. (Fig. 7)

**8.2.2.** Move the speed control lever slowly to the normal operation and set the engine speed at high speed. (Fig. 8)

**8.2.3.** With water cock opened, spray cooling water to the blade. At least 5-6 liters per minute of cooling water is required.
As the standard, if water mist is being sprayed to the extent that water does not flow, the cooling will be sufficient. Adjust the amount of water with cock. (Spray on a little heavier side when there is sufficient water.)
(Fig. 4)

**8.2.4.** To cut-in with the blade at the bottom, turn Crank handle to the counter clockwise, and cut down while adjustment the lowering speed so that engine speed is not reduced excessively. After cutting down, set the knob to the lock position which located beside of Crank handle to lock the machine.
(Fig. 8)

**8.2.5.** To travel, switch the drive shaft by means of switching pedal and use traveling lever to proceed with cutting. (218). (Fig. 19)

**8.2.6.** Upon completion of cutting, set the knob to unlock position and turn the Crank handle to the clockwise for lifting the machine. After lifting - up, set the knob to lock position.

**8.2.7.** Close the water cock.

**8.2.8.** Return the speed control lever and lower the engine speed.

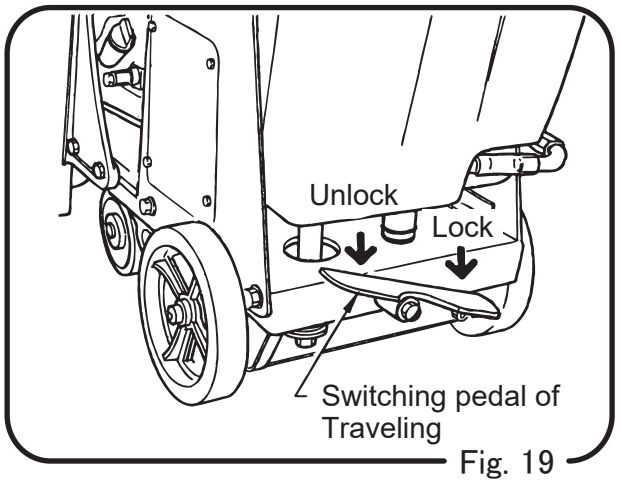


Fig. 19

** For deep cutting operation, rather than cutting deeply in one pass, use the way of 2-3 time cutting passes.

# 9. STOPPING THE OPERATION

**9.1.** Before shutting off the engine, allow the engine to idle for 2-3 minutes and then turn the key to STOP position.) (Fig. 20)

**9.2.** Close the fuel cock.

⚠ CAUTION

**Just after cut, be careful to burns in each machine part becoming the high temperature.**

**9.3.** With tightening nut (left hand thread) removed, take off the blade.

**9.4.** Erect the cutter guide.

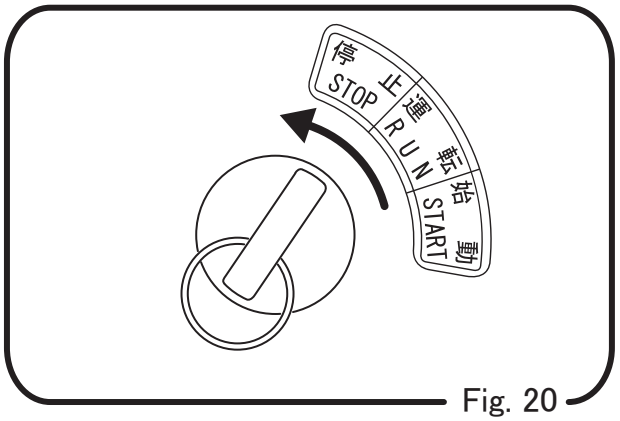


Fig. 20

# 10. TRANSPORT

| | | |
|---|---|---|
| ⚠WARNING | • Before work of lifting, check any damage of body parts (especially, Lifting hook, etc) or looseness / omission of screws, and be sure safe.<br>• Stop the engine at the time of the lifting, and close the fuel cock.<br>• The work of lifting uses only one-point lifting hook, and do not the work of lifting in other point (handles).<br>• Use enough wire rope of the strength.<br>• Never put any person or animal under the lifted machine.<br>• For safety, do not lift the machine up than required height. | |

## 10.1. Loading and unloading

Be sure to work the license holder of crane operation and slings.

**10.1.1. Lifting work**

Do loading and unloading by cranes.

**10.1.2.**

In loading and unloading select a leader, and work by instructions of a leader by all means.

**10.1.3.**

Lift the machine with the guard hook by all means, to hook fittings. Never lift the machine with handle, to hook fittings.

**10.1.4.**

Movement in a lifting motion does not do sudden unloading. Take down a machine from a rear wheel by all means.

When suddenly unloaded a machine from a front wheel, FRAME ( FRONT WHEEL ) may protect other machine part.

When FRAME ( FRONT WHEEL ) warped and transformed it, A V- pulley touches the ground, and the back of a V- belt may be worn.

In that case, coordinate setting with bolt (14X40) and nut (M14) for lowest position setting of lifting device. (Fig.21)

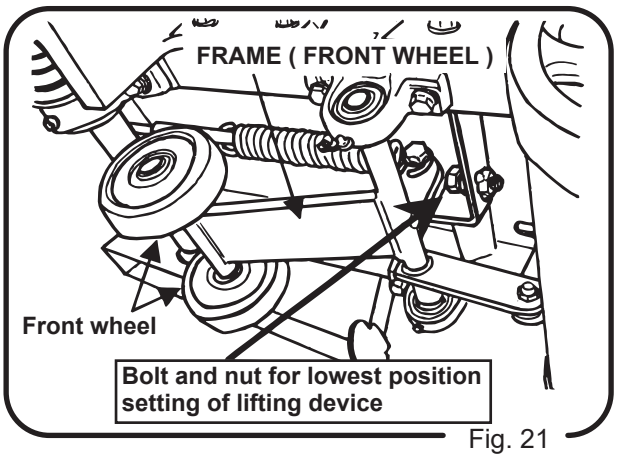


Fig. 21

⚠CAUTION **Do not do loading and unloading that use a gangboard, because it is very dangerous.**

## 10.2. Precautions in transportation

| | | |
|---|---|---|
| ⚠WARNING | • **Stop the engine at the time of the transportation, and close a fuel cock.**<br>• **Remove a blade at the time of transportation by all means.**<br>• **By all means drain fuel before transporting the machine .**<br>• **Fix the machine well not to move and fall down.** | |

# 11. Storage

**11.1.**

Clean the machine by removing residual mortar and water.

**11.2.**

Drain water of the water tank and the pipe.

**11.3.**

Supply grease to the pillow block and grease nipple of each part .

Particularly, pillow block of the blade shaft should be well greased a few times by means of grease gun after work.

**11.4.**

Put cover so that garbage and dust do not appear.

Store it in the space which no hit rays of the sun with a little moisture. (Fig.22)

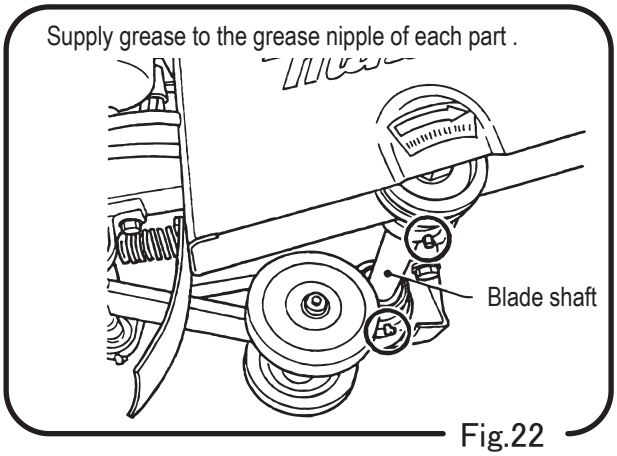


Fig.22

**11.5. Proper storage:**

**For long term storage after work;**

1. Drain fuel from fuel tank, piping and carburetor.
2. With spark plug removed, drip a few drops of engine oil into cylinder and rotate engine manually to let the oil reach everywhere inside the cylinder.
3. Pull the recoil starter and leave it where compression is felt.
4. Store the machine away, covered and in such place as it is free from direct sun, moisture and dust.
5. Keep the machine indoors without leaving it outdoors.
6. Do not overthrew the machine sideways, and do not keep it.

**About engine**

For daily and periodical inspection or simple maintenance services, see engine manual separated provided.

# 12. Periodic check and coordination

## 1. Each part check schedule list

| Check schedule | Check point | Check item | Type of oils |
|---|---|---|---|
| Daily ( before work ) | Visual inspection | Crack、Skewness | |
| | Fuel tank | Leak、Quantity of Fuel、Dirt | Gasoline |
| | One-point lifting hook | Falling off、Breakage、Crack、Looseness & falling off of bolt & nuts | |
| | Fuel system | Leak | |
| | Fuel filter | Dirt | |
| | Engine oil | Leak、Quantity of oil、Dirt | Engine oil |
| | Air cleaner | Dust of sponge | |
| | Blade | Crack、Damage | |
| | Lifting device | Function validation、Grease | Grease |
| | Bolt, nuts | Looseness、Falling off | |
| 20 hours | Engine oil | First time | Engine oil |
| Every 6 months or 100 hours. | Engine oil | Change | Engine oil |
| | Lifting device (Fig.21) Lifting screw | Crack、Curve、Greasing | Grease |
| | Pillow block (Fig.22) | Greasing | Grease |
| | Spark plug | Check-Clean | |
| | Spark arrester (optional part ) | Clean | |
| | Fuel tank & filter | Clean | |
| Every year or 200 hours | V-belt | Crack、Tension | |
| | Air-cleaner element | Replace | |
| | Spark plug | Replace | |
| | Engine idle speed | Check-Adjust | |
| | Engine valve clearance | Check-Adjust | |
| 300 hours | Engine combustion chamber | Clean | |
| Every 2 years | Fuel line | Change | |
| Irregular time | Air-cleaner element | Change of necessary | |
| | Pillow block | Wear、Abnormal noise、Creak、Wobble | |

- Check schedule (time to check) is for normal condition.It depends on use conditions.
- Refer the attached engine instruction manual for the details of check & maintenance for engine.
- In order to avoid deficient reassembly, watch carefully normal status of installation before removing or disassembling any part.

Follow the Table of Tightening Torque to tighten the bolts and nuts.

**Table of Tightening Torque (kgf-cm)**

| Material | Screw diameter | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 6mm | 8mm | 10mm | 12mm | 14mm | 16mm | 18mm | 20mm |
| 4T(SS400) | 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(SCM435) | 150 | 400 | 800 | 1,200 | 2,000 | 2,900 | 4,200 | 5,600 |
| In case counter part is made from aluminum | 100 | 300～350 | 650～700 | | | | | |

※For indication in SI Unit (International Unit System), use the conversion of 1kgf-cm=9.80665N-cm

# 13. Troubleshooting

## 1. Gasoline engine

### (1) Starting problems

- Fuel is supplied, but the spark plug does not ignite.
  - Electricity reaches the high voltage cable.
    - Gap bridging on the spark plug.
    - Carbon or oil fouling on the spark plug.
    - Short circuit due to faulty insulation of the spark plug.
    - Faulty gap of the spark plug.
  - Electricity does not reach the high voltage cable.
    - Short circuit of the ON-OFF switch.
    - Ignition coil problems.
    - Dirt or faulty gap of the ignition coil.
    - Breaking or short circuit of the ignition coil.
- Fuel is supplied, and the spark plug ignites.
  - Compression is good.
    - Improper fuel is used.
    - Water or foreign materials are entered in the cylinder.
    - Clogging of the air cleaner.
  - Compression is not good.
    - Intake/exhaust valve is stuck or warped.
    - Piston ring, cylinder wear.
    - Cylinder head, spark plug tightening problem.
    - Head gasket, spark plug gasket breakage.
- Fuel does not reach the carburetor.
  - No fuel in the fuel tank.
  - Fuel cock is not open.
  - Clogging of the fuel filter.
  - Clogging of the air vent of tank cap.
  - Air in the fuel pipe.
- Too low starter speed.

### (2) Operation problems

- Low output or engine speed dose not increase.
  - Clogging of the air cleaner.
  - Clogging of the fuel filter.
  - Clogging exhaust system due to carbon deposits.
  - Carbon deposits on the piston top and cylinder.
  - Improper the fuel is used.
  - Dirt or wet of the spark plug.
  - Carburetor ploblems.
  - Ignition coil problems.
- Engine Overheats.
  - Engine overloaded.
  - Improper the spark plug heat range.
  - Dirt and breakage of the cooling fins.
  - Too much engine oil.
- Engine speed fluctuates.
  - Improper the governor adjustment.
  - Fuel does not flow properly.
  - Air is intruded from intake pipe system.

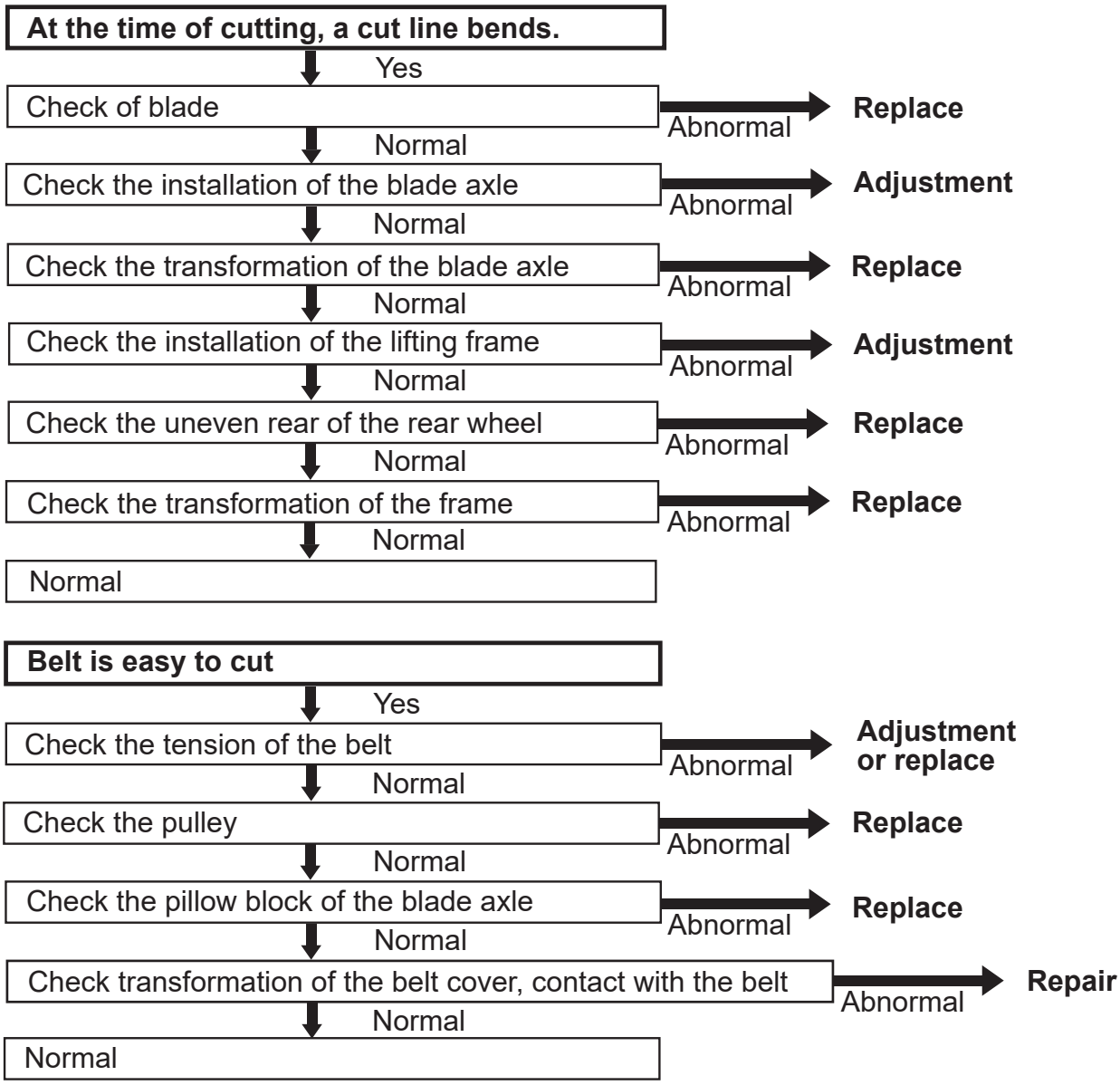
### (3) Recoil starter problems

- Recoil starter operation is not good.
  - Clogging of foreign materials at the rotating part.
  - Recoil spring problems.

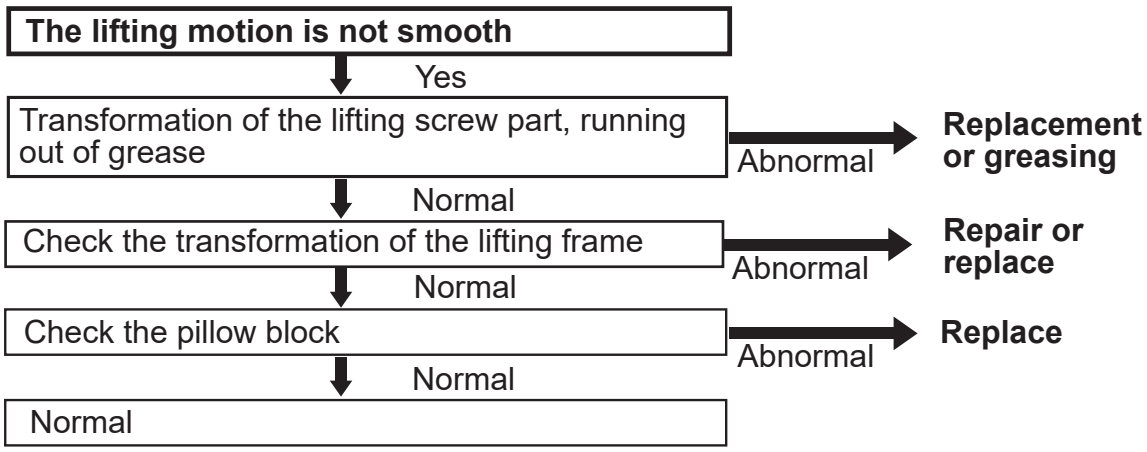
# 13. Troubleshooting

## 2. Machine

### (1) Blade system




### (2) Height Adjusting System



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PRINTED IN JAPAN