

# KREBER

MACHINES FOR INDUSTRIAL AND HOUSING CONSTRUCTION

\* trowels \* milling machines \* vibrators \* vibrating strips \* soil compactors \* petrol saws \*  
\* grinders \* spare parts \* service \*

87 – 200 Wąbrzeźno, ul. Okrężna 22; tel. (0-56) 68 864 48

# TROWEL K - 436 B USER MANUAL



**DECLARATION OF CONFORMITY**

MANUFACTURER: KREBER Maszyny Budowlane Sp. z o.o.  
ul. Okrężna 22  
87-200 Wąbrzeźno

**The manufacturer declares with full responsibility that:**

Trowel

**Type: K-436 B**

**serial number .....**

measured sound power level  $L_{wa (measured)} = 98,8 \pm 2,2$  dB  
guaranteed sound power level  $L_{wa} = 101$  dB

meets the following requirements:

- Council Directive 2006/42/EC of 17.05.2006, introduced into Polish legislation by the Regulation of the Minister of Economy of October 21, 2008. on the essential requirements for machines (Journal of Laws of 2008 No. 199, item 1228).
- Council Directive 2006/95/EC of 12.12.2006, introduced into Polish legislation by the Regulation of the Minister of Economy of August 21, 2007 on the essential requirements for electrical equipment (Journal of Laws of 2007 No. 155, item 1089).
- Council Directive 2004/108/EC of November 20, 2006, introduced into Polish legislation by the Act of 13 April 2007 on electromagnetic compatibility (Journal of Laws of 2007 No. 82, item 556).

*Details of the body that carried out the EC type-examination:  
Instytut Zaawansowanych Technologii Wytwarzania (Institute of Advanced Manufacturing Technology)  
ul. Wrocławska 37a; 30-011 Kraków; Notification number: 1455*

Person authorized to prepare and store  
technical documentation  
**Kamil Filipowicz**

PROXY  
**Marek Uciński**

Wąbrzeźno on 30 March 2021

INSTYTUT ZAAWANSOWANYCH TECHNOLOGII WYTWARZANIA, ZAKŁAD CERTYFIKACJI  
THE INSTITUTE OF ADVANCED MANUFACTURING TECHNOLOGY, CERTIFICATION DEPARTMENT



## CERTYFIKAT ZGODNOŚCI WE CERTIFICATE OF EC CONFORMITY

Nr / No.: 023/011/CE/2016

Nazwa i adres posiadacza certyfikatu: Name and address of certificate holder:	<b>KREBER Maszyny Budowlane Sp. z o.o.</b> <b>ul. Fijewo 24 87-220 Radzyń Chełmiński</b>
Nazwa wyrobu: Product name:	<b>Zacieraczka</b>
Nazwa handlowa wyrobu: Product trade name:	<b>Zacieraczka</b>
Typ wyrobu (seria, typowość odmiany, opis wyrobu): Type (series, variations, product description):	<b>K-436B</b> <b>Opis wyrobu - wg załącznika do niniejszego certyfikatu</b> <i>product description - see annex to this certificate</i>
Nazwa i adres producenta: Name and address of the manufacturer:	<b>KREBER Maszyny Budowlane Sp. z o.o.</b> <b>ul. Fijewo 24 87-220 Radzyń Chełmiński</b>
Symbol PKWiU: PCGS (Polish Classification of Goods and Services) symbol:	<b>28.24.12.0</b> Symbol ICS: <b>91.220</b> ICS symbol:

**Wyrób spełnia wymagania zawarte w następujących dokumentach odniesienia : PN -EN 12649+A1:2011;**  
*The product meets the requirements of the following reference documents :*

**a tym samym domniemywa się, że wyrób spełnia zasadnicze wymagania zawarte w Ustawach /**  
*and thus the product shall be presumed to comply with the essential requirements of the following Acts /*

**Rozporządzeniach MG / Dyrektywach UE:**

Regulations of the Minister of Economy / UE Directives:  
- Dz.U. 2008 nr 199, poz. 1228 z dnia 21.10.2008 / Machinery Directive 2006/42/EC  
- Dz.U.2007 nr 82, pos.556 z dnia 13.04.2007 / EMC Directive 2004/108/EC

Zgodnie z raportem z oceny zgodności:  
According to the conformity assessment report:

przeprowadzonej przez:  
accomplished by: **Zakład Certyfikacji IZTW**  
The Certification Department of IAMT  
Zgodnie ze sprawozdaniem z badań:  
According to the research report:  
SB-01-015/16 z dnia 5.02.2016

przeprowadzonych przez:  
accomplished by: **Laboratorium IZTW**  
The Laboratory of IAMT

Wg programu certyfikacji nr:  
Certification program no.: **PRC-01-3**

Umowa o stosowanie certyfikatu nr:  
Certificate usage agreement no. **ZC/009/2016 z dnia 11.02.2016**

Termin ważności:  
Certificate is valid:                      od **11.02.2016**                      do **10.02.2021**  
from    until

KIEROWNIK ZAKŁADU CERTYFIKACJI  
HEAD OF THE CERTIFICATION DEPARTMENT

Krzysztof Wcisło



DYREKTOR INSTYTUTU  
DIRECTOR OF THE INSTITUTE

dr Maria Zybura - Skrabalak

Kraków, data 11.02.2016

Posiadacz certyfikatu jest zobowiązany informować Zakład Certyfikacji IZTW o każdych zmianach, modyfikacjach, które zostały wprowadzone lub które planuje wprowadzić do typu maszyny, której egzemplarz przebadano – Rozporządzenie MG z dnia 21.10.2008 (Dz.U. nr 199 z 2008 r., poz. 1228, zał.6.). Certyfikat dotyczy wyłącznie egzemplarzy wyrobu posiadających identyczne właściwości (parametry), jak przedstawiony do badań wzór (wzory), oraz odpowiadających wymaganiom określonym powyżej.  
The certificate holder is obliged to inform The Certification Department IAMT about every alteration and modification applied, or planned to be applied to the device, which sample was examined, according to the Regulation of the Minister of Economy dated 21.10.2008 (The Journal of Laws of the Republic of Poland year 2008, no. 199, pos. 1228, Annex No. 6). The certificate applies only to the copies of the product having properties identical to the tested specimen, and fulfilling the requirements specified above.

Zakład Certyfikacji Instytutu Zaawansowanych Technologii Wytwarzania, ul. Wrocławska 37a, 30-011 Kraków  
The Institute of Advanced Manufacturing Technology, Certification Department, ul. Wrocławska 37a, 30-011 Cracow

## To users

Handing the K-436 B type trowel over for operation, we want to familiarize you with its proper operation, construction, maintenance and scope of application for finishing concrete surfaces. Before commencing operation, the technical supervision, department manager and operator should read this manual.

**Failure to follow these instructions may void your warranty.**

We will be grateful for any suggestions regarding the operation of our products.

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## 1. Intended use and scope of application

K-436 B trowel is used for trowelling and smoothing resin, concrete and surface hardening floors. The used electric engine allows to work in closed unventilated rooms which is not recommended for combustion engine machines. Quick and easy replacement of blades and trowelling disc greatly facilitates operation and influences work efficiency.

## 2. Safety instructions

- An employee who has read the operating instructions may be allowed to work with the trowel.
- Check the technical condition of the trowel before each start-up!
- It is forbidden to work with a machine that has damaged or disassembled covers and protection elements.
- The operator should use ear protectors when working with the machine.

**- Provide adequate ventilation of the rooms during work. The exhaust gas contains toxic carbon monoxide. It is a colourless and odourless gas that can cause loss of consciousness or death!!**

**- It is forbidden to use the machine in closed and potentially explosive rooms!!**

- Stop the engine before each refuelling. In case of a fuel spill, remove it thoroughly and do not start the engine before the residual fuel vapours evaporate.
- There is no risk of mechanical vibrations during the operation of the trowel.
- Do not use open fire during work and refuelling.
- Before starting troweling, check if the surface on which the machine is to work is free from so-called "Foreign bodies" such as nuts, bolts, metal parts, protruding reinforcement or expansion joints. They can cause serious damage to the machine and endanger persons in the vicinity of the machine as well as the operator.
- The machine may only be transported with the engine switched off and the plate removed.
- All maintenance work should only be carried out with the engine switched off.
- Repairs and overhauls may only be carried out by an authorized service centre or the manufacturer.

**The machine may not be used for work that is not in accordance with its intended use!**

**DISREGARD OF THE ABOVE RECOMMENDATIONS MAY LEAD TO SERIOUS DAMAGE TO HEALTH AND LOSS OF LIFE.**

### 3. Charakterystyka techniczna zacieraczki

Type	K – 436 B
Drive	- petrol engine
Weight	- 85 kg
Efficiency	- ~ 150 – 200 m <sup>2</sup> /h
Working dimension	- Ø 900 mm

The measured noise at the operator's workplace:	- 89,6 ± 1,4 dB (A)
The measured sound power of the device:	- 102,1 ± 1,1 dB (A)
Declared sound power level of the device:	- 103 dB (A)
Vibration acceleration value affecting the operator (seat):	- 19,64 ± 2,09 (m/s <sup>2</sup> )

### 4. General description of the trowel

- |                           |                                 |
|---------------------------|---------------------------------|
| 1. Gas lever              | 7. V-belt cover                 |
| 2. Blades adjustment knob | 8. Protective cover             |
| 3. Steering handles       | 9. Blade mounting shaft         |
| 4. Safety switch          | 10. Blades                      |
| 5. Steering lever         | 11. Manual transport handle     |
| 6. Engine                 | 12. Mechanized transport handle |

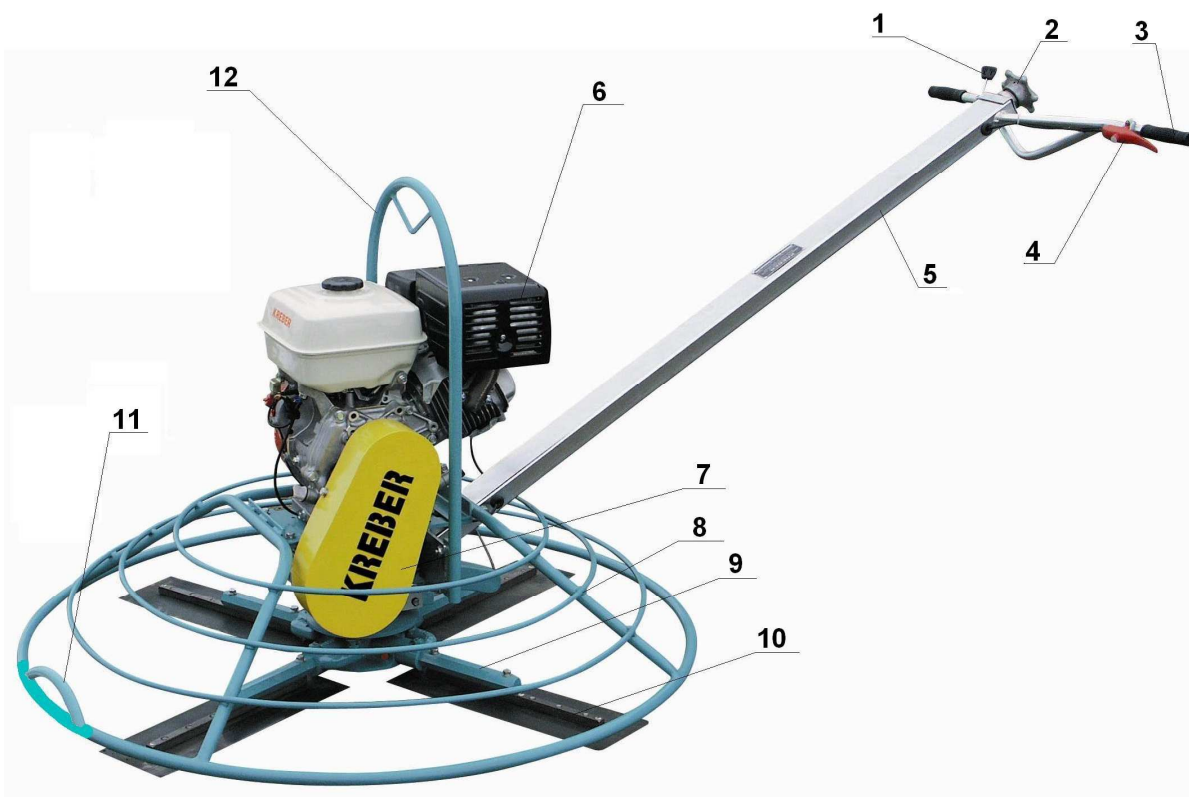


Fig. 1

## 5. Technical characteristics of the engine

Type	- HONDA GX – 160 / GX – 200
Ignition	- Spark
Start-up	- manual
Fuel	- Unleaded gasoline

## 6. General engine description

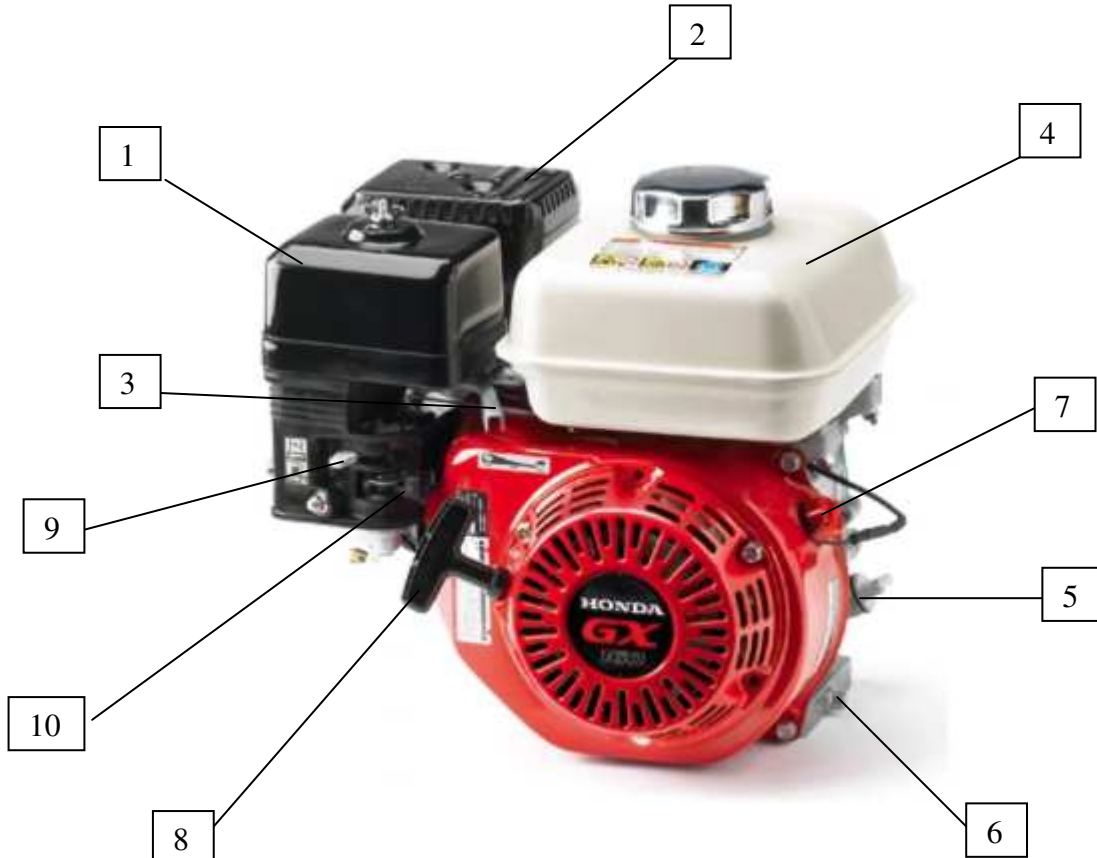


Fig. 2

- |                            |                      |
|----------------------------|----------------------|
| 1. Air filter              | 7. Engine switch     |
| 2. Muffler                 | 8. Starter grip      |
| 3. Throttle lever          | 9. Choke lever       |
| 4. Fuel tank               | 10. Fuel valve lever |
| 5. Oil filler cap/dipstick |                      |
| 6. Oil drain plug          |                      |

**Detailed information on operation and information about the engine is included in the attached engine manual issued by the manufacturer.**

## 7. Actions before machine start-up

- check the technical condition of the trowel,
- check engine oil level,
- refuel (unleaded petrol),
- make sure that covers and safety devices are not damaged or removed. If they are missing or damaged, do not start the machine,
- check the degree of wear of the blades and discs, in case of high wear replace with new ones,
- check all screw connections,
- make sure the surface on which the machine is to work is free of "foreign objects" (see safety instructions).

## 8. Operator's work site

Operator's work site is located behind the machine from the handle side. The operator holds the steering handles with both hands and moves the machine in the working direction. The safety switch (item 1 fig. 3) is on the operator's left hand side.



Fig. 3



## 9. Start-up of the machine

To start-up the machine hold the safety switch (item 1 fig. 3) and follow the **User manual of HONDA engine** described in item 14.

## 10. Ustawienie robocze łopatek

This operation is performed by means of the adjustment knob (item 1 fig. 4). The angle of the blades depends on the grade and degree of hardness of the floor.



Fig. 4

## 11. Mounting the trowel plate

The machine should be placed on the plates (plate) in such a way that the blades are under the clamping profile (Fig. 5) Then set the angle of the blades according to the height of the clamping profile with the adjustment knob (Fig. 4, item 1).

**Before transporting the machine, the trowels must be removed!**

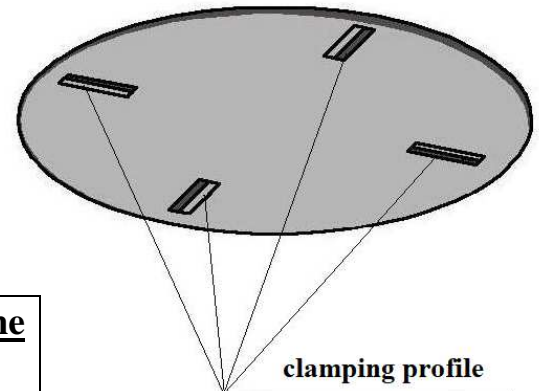


Fig. 5

## 12. Replacing the blades

Should the blades wear, replace them with new ones. Each of the blades is fixed with two M6 screws. When installing new blades pay attention to the technical condition of the bolts (thread) and spring washers. If damaged, they should be replaced. The heavy load that occurs during operation of the machine can cause the blades to tear off, endangering people nearby.

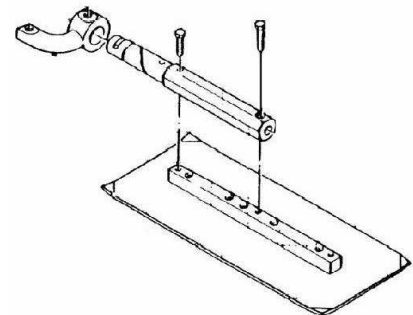


Fig. 6

## 13. Maintenance of the crosspiece

Before starting the machine daily, lubricate the cross with a grease gun (item 1 fig. 7).

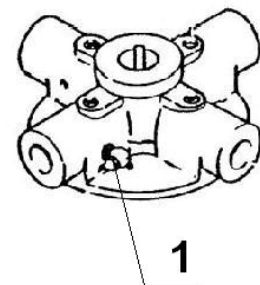


Fig. 7

## 14. User manual of HONDA engine

### INTRODUCTION

Thank you for purchasing a Honda engine. We want to help you to get the best results from your new engine and to operate it safely. This manual contains information on how to do that; please read it carefully before operating the engine. If a problem should arise, or if you have any questions about your engine, consult your servicing dealer.

All information in this publication is based on the latest product information available at the time of printing. Honda Motor Co., Ltd. reserves the right to make changes at any time without notice and without incurring any obligation. No part of this publication may be reproduced without written permission.

This manual should be considered a permanent part of the engine and should remain with the engine if resold.


Review the instructions provided with the equipment powered by this engine for any additional information regarding engine startup, shutdown, operation, adjustments or any special maintenance instructions.

United States, Puerto Rico, and U.S. Virgin Islands:

We suggest you read the warranty policy to fully understand its coverage and your responsibilities of ownership. The warranty policy is a separate document that should have been given to you by your dealer.

### SAFETY MESSAGES

Your safety and the safety of others are very important. We have provided important safety messages in this manual and on the engine. Please read these messages carefully.

A safety message alerts you to potential hazards that could hurt you or others. Each safety message is preceded by a safety alert symbol  and one of three words, DANGER, WARNING, or CAUTION.

These signal words mean:


-  **DANGER** You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
-  **WARNING** You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
-  **CAUTION** You CAN be HURT if you don't follow instructions.

Each message tells you what the hazard is, what can happen, and what you can do to avoid or reduce injury.

### DAMAGE PREVENTION MESSAGES

You will also see other important messages that are preceded by the word NOTICE.

This word means:

-  **NOTICE** Your engine, other property, or the environment can be damaged if you do not follow instructions.

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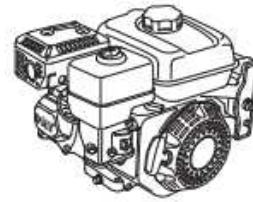
GX160UD-GX200UD-GX200D

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Printed in India

## HONDA

### OWNER'S MANUAL MANUEL DE L'UTILISATEUR MANUAL DEL PROPIETARIO

## GX160 • GX200



The illustrations herein are mainly based on: PTO shaft type S, with fuel tank

- The illustration may vary according to the type.

**⚠ WARNING: ⚠**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

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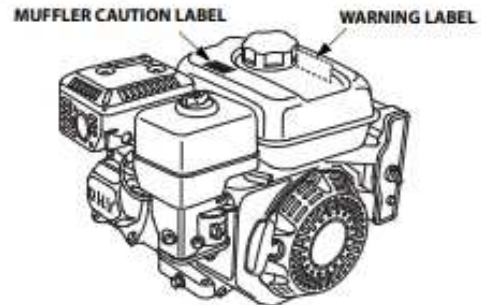
## SAFETY INFORMATION

- Understand the operation of all controls and learn how to stop the engine quickly in case of emergency. Make sure the operator receives adequate instruction before operating the equipment.
- Do not allow children to operate the engine. Keep children and pets away from the area of operation.
- Your engine's exhaust contains poisonous carbon monoxide. Do not run the engine without adequate ventilation, and never run the engine indoors.
- The engine and exhaust become very hot during operation. Keep the engine at least 1 meter (3 feet) away from buildings and other equipment during operation. Keep flammable materials away, and do not place anything on the engine while it is running.

## SAFETY LABEL LOCATIONS

These labels warn you of potential hazards that can cause serious injury. Read them carefully.

If a label comes off or becomes hard to read, contact your Honda servicing dealer for a replacement label.



(The label should be located either on the fuel tank, fan cover or packaged loosely with the engine to be applied by the manufacture.)

WARNING LABEL	For EU	Except EU
	attached to product	supplied with product
<b>WARNING</b> Gasoline is Highly Flammable and explosive. Turn engine off and let cool before refueling. The engine emits toxic poisonous carbon monoxide. Do not run in an enclosed area. Read Owner's Manual before operation.	supplied with product	attached to product
<b>ATTENTION</b> L'essence est très inflammable et explosive. Arrêtez le moteur et laissez-le refroidir avant de le ravitailler. L'essence produit des gazes toxiques et nocifs de monoxyde de carbone. Ne pas utiliser dans un espace clos. Lire le manuel de propriétés avant l'utilisation.	supplied with product	supplied with product

MUFFLER CAUTION LABEL	For EU	Except EU
	not included	supplied with product
<b>CAUTION</b> HOT MUFFLER CAN BURN YOU. Stay away if engine has been running.	supplied with product	attached to product
<b>ATTENTION</b> L'ÉCHAPPEMENT CHAUD PEUT VOUS BRÛLER. S'ÉLOIGNER QUAND LE MOTEUR FONCTIONNE.	supplied with product	supplied with product



Gasoline is highly flammable and explosive. Stop the engine and let cool before refueling.



The engine emits toxic poisonous carbon monoxide gas. Do not run in an enclosed area.

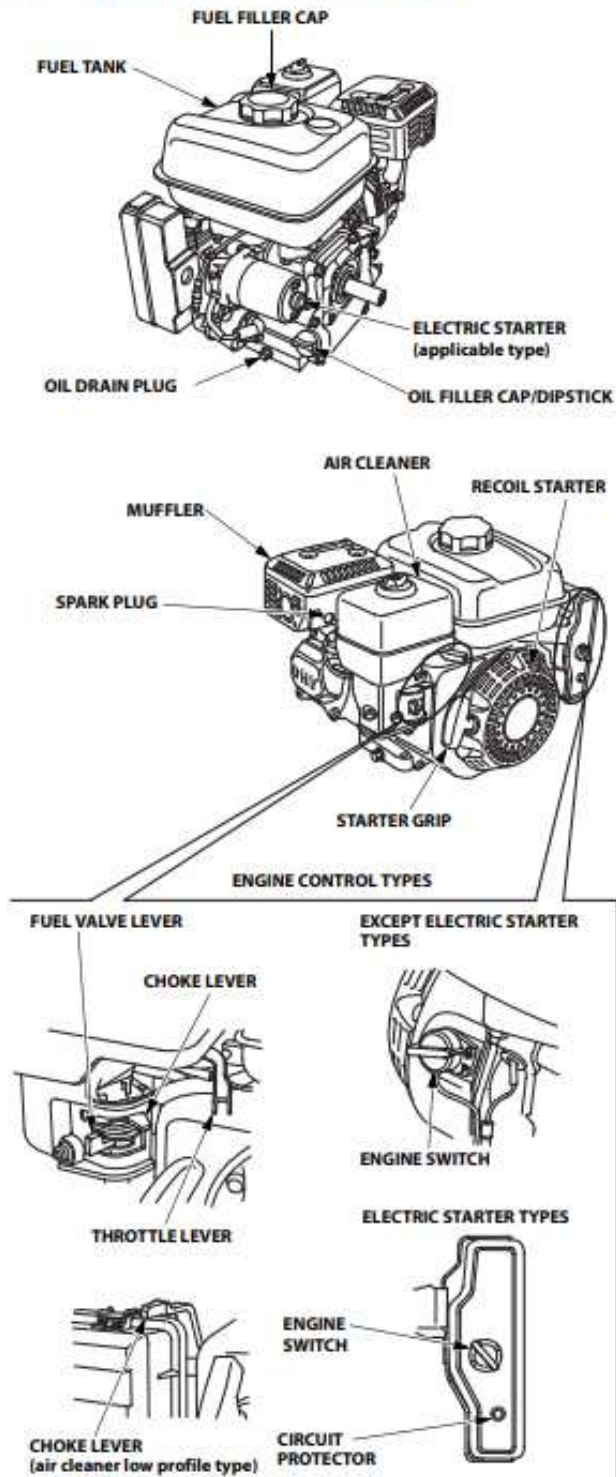


Read Owner's Manual before operation.



Hot muffler can burn you. Stay away if engine has been running.

## COMPONENT & CONTROL LOCATIONS



## FEATURES

### OIL ALERT<sup>®</sup> SYSTEM (applicable types)

"Oil Alert is a registered trademark in the United States"

The Oil Alert system is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase can fall below a safe limit, the Oil Alert system will automatically stop the engine (the engine switch will remain in the ON position).

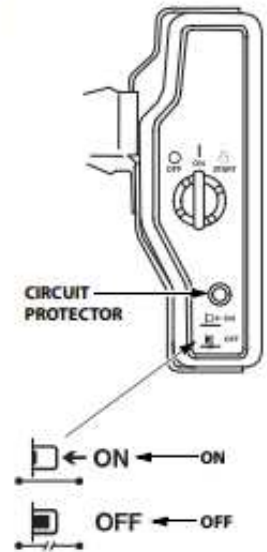
If the engine stops and will not restart, check the engine oil level (see page 8) before troubleshooting in other areas.

### CIRCUIT PROTECTOR (applicable types)

The circuit protector protects the battery charging circuit. A short circuit, or a battery connected with reverse polarity, will trip the circuit protector.

The green indicator inside the circuit protector will pop out to show that the circuit protector has switched off. If this occurs, determine the cause of the problem, and correct it before resetting the circuit protector.

Push the circuit protector button to reset.



## BEFORE OPERATION CHECKS

### IS YOUR ENGINE READY TO GO?

For your safety, to ensure compliance with environmental regulations, and to maximize the service life of your equipment, it is very important to take a few moments before you operate the engine to check its condition. Be sure to take care of any problem you find, or have your servicing dealer correct it, before you operate the engine.

#### **⚠ WARNING**

Failure to properly maintain this engine, or failing to correct a problem before operation, could result in a significant malfunction.

Some malfunctions can seriously hurt or kill you.

Always perform a pre-operation inspection before each operation and correct any problems.

Before beginning your pre-operation checks, be sure the engine is level and the engine switch is in the OFF position.

Always check the following items before you start the engine:

#### Check the General Condition of the Engine

1. Look around and underneath the engine for signs of oil or gasoline leaks.
2. Remove any excessive dirt or debris, especially around the muffler and recoil starter.
3. Look for signs of damage.
4. Check that all shields and covers are in place, and all nuts, bolts, and screws are tightened.

#### Check the Engine

1. Check the fuel level (see page 8). Starting with a full tank will help to eliminate or reduce operating interruptions for refueling.
2. Check the engine oil level (see page 8). Running the engine with a low oil level can cause engine damage.

The Oil Alert system (applicable types) will automatically stop the engine before the oil level falls below safe limits. However, to avoid the inconvenience of an unexpected shutdown, always check the engine oil level before startup.

3. Check the reduction case oil level on applicable types (see page 9). Oil is essential to reduction case operation and long life.
4. Check the air filter element (see page 10). A dirty air filter element will restrict air flow to the carburetor, reducing engine performance.
5. Check the equipment powered by this engine.

Review the instructions provided with the equipment powered by this engine for any precautions and procedures that should be followed before engine startup.

## OPERATION

### SAFE OPERATING PRECAUTIONS

Before operating the engine for the first time, please review the *SAFETY INFORMATION* section on page 2 and the *BEFORE OPERATION CHECKS* on page 4.

#### Carbon Monoxide Hazards

For your safety, do not operate the engine in an enclosed area such as a garage. Your engine's exhaust contains poisonous carbon monoxide gas that can collect rapidly in an enclosed area and cause illness or death.

#### **⚠ WARNING**

Exhaust contains poisonous carbon monoxide gas that can build up to dangerous levels in closed areas.

Breathing carbon monoxide can cause unconsciousness or death.

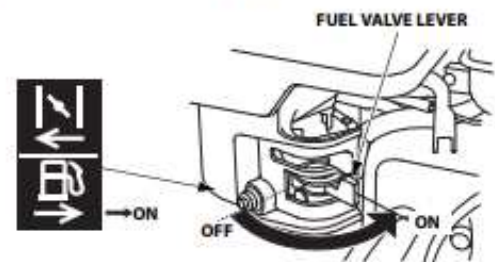
Never run the engine in a closed, or even partly closed area.

Review the instructions provided with the equipment powered by this engine for any safety precautions that should be observed with engine startup, shutdown, or operation.

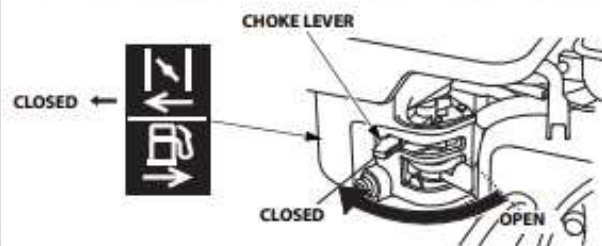
Do not operate the engine on slopes greater than 20° (36%).

### STARTING THE ENGINE

1. Move the fuel valve lever to the ON position.



2. To start a cold engine, move the choke lever to the CLOSED position.

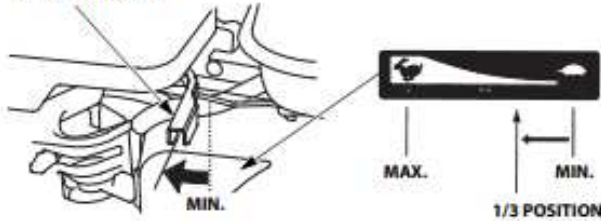


To restart a warm engine, leave the choke lever in the OPEN position.

Some engine applications use a remote-mounted choke control rather than the engine-mounted choke lever shown here. Refer to the instructions provided by the equipment manufacturer.

3. Move the throttle lever away from the MIN. position, about 1/3 of the way toward the MAX. position.

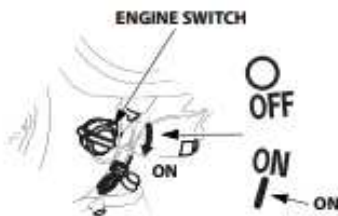
### THROTTLE LEVER



Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever shown here. Refer to the instructions provided by the equipment manufacturer.

4. Turn the engine switch to the ON position.

### EXCEPT ELECTRIC STARTER TYPES



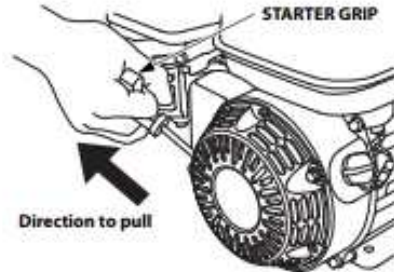
### ELECTRIC STARTER TYPES



5. Operate the starter.

### RECOIL STARTER:

Pull the starter grip lightly until you feel resistance, then pull briskly in the direction of the arrow as shown below. Return the starter grip gently.



### NOTICE

Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.

### ELECTRIC STARTER (applicable types):

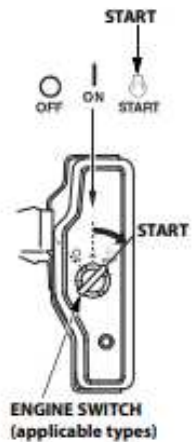
Turn the key to the START position, and hold it there until the engine starts.

If the engine fails to start within 5 seconds, release the key, and wait at least 10 seconds before operating the starter again.

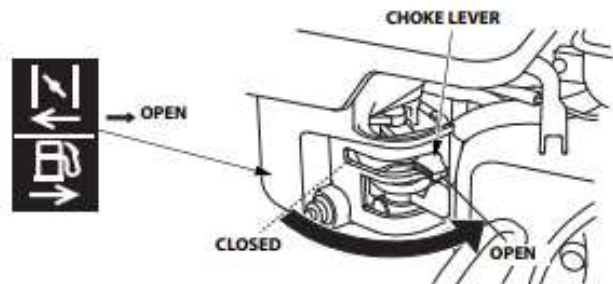
### NOTICE

Using the electric starter for more than 5 seconds at a time will overheat the starter motor and can damage it. This type of overheating is not covered under warranty.

When the engine starts, release the key, allowing it to return to the ON position.



6. If the choke lever was moved to the CLOSED position to start the engine, gradually move it to the OPEN position as the engine warms up.

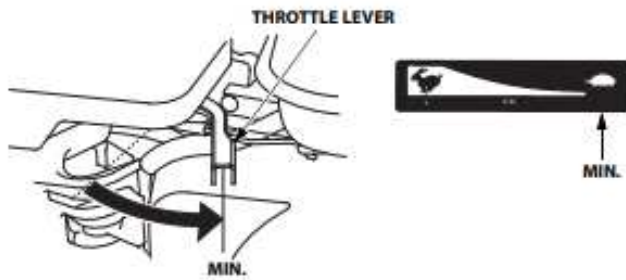


## STOPPING THE ENGINE

To stop the engine in an emergency, simply turn the engine switch to the OFF position. Under normal conditions, use the following procedure. Refer to the instructions provided by the equipment manufacturer.

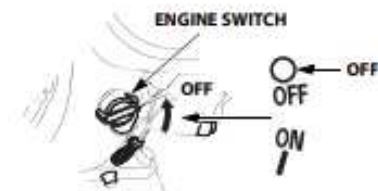
1. Move the throttle lever to the MIN. position.

Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever shown here.

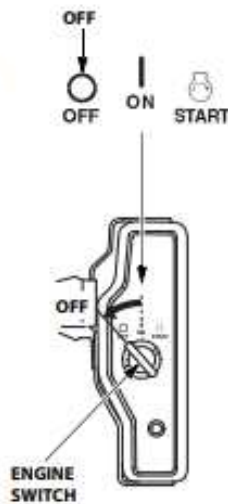


2. Turn the engine switch to the OFF position.

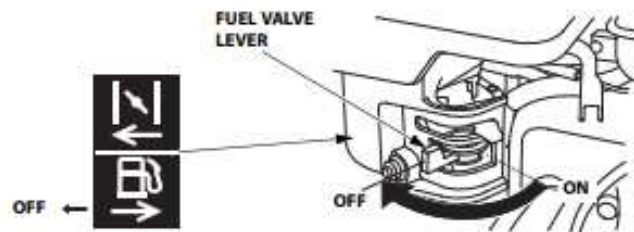
### EXCEPT ELECTRIC STARTER TYPES



### ELECTRIC STARTER TYPES



3. Move the fuel valve lever to the OFF position.

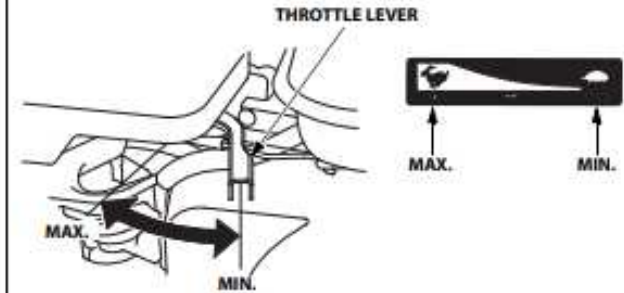


## SETTING ENGINE SPEED

Position the throttle lever for the desired engine speed.

Some engine applications use a remote-mounted throttle control rather than the engine-mounted throttle lever shown here. Refer to the instructions provided by the equipment manufacturer.

For engine speed recommendations, refer to the instructions provided with the equipment powered by this engine.





## SERVICING YOUR ENGINE

### THE IMPORTANCE OF MAINTENANCE

Good maintenance is essential for safe, economical, and trouble-free operation. It will also help reduce pollution.

#### ⚠ WARNING

Failure to properly maintain this engine, or failing to correct a problem before operation, could result in a significant malfunction.

Some malfunctions can seriously hurt or kill you.

Always follow the inspection and maintenance recommendations and schedules in this owner's manual.

To help you properly care for your engine, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a Honda technician or other qualified mechanic.

The maintenance schedule applies to normal operating conditions. If you operate your engine under severe conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

**Maintenance, replacement, or repair of the emission control devices and systems may be performed by any engine repair establishment or individual, using parts that are "certified" to EPA standards.**

### MAINTENANCE SAFETY

Some of the most important safety precautions follow. However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.

#### ⚠ WARNING

Improper maintenance can cause an unsafe condition.

Failure to properly follow maintenance instructions and precautions can cause you to be seriously hurt or killed.

Always follow the procedures and precautions in this owner's manual.

### SAFETY PRECAUTIONS

- Make sure the engine is off before you begin any maintenance or repairs. To prevent unintentional startup, disconnect the spark plug cap. This will eliminate several potential hazards:
  - **Carbon monoxide poisoning from engine exhaust.**  
Operate outside, away from open windows or doors.
  - **Burns from hot parts.**  
Let the engine and exhaust system cool before touching.
  - **Injury from moving parts.**  
Do not run the engine unless instructed to do so.
- Read the instructions before you begin, and make sure you have the tools and skills required.
- To reduce the possibility of fire or explosion, be careful when working around gasoline. Use only a non-flammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks and flames away from all fuel related parts.

Remember that an authorized Honda servicing dealer knows your engine best and is fully equipped to maintain and repair it. To ensure the best quality and reliability, use only new Honda Genuine parts or their equivalents for repair and replacement.

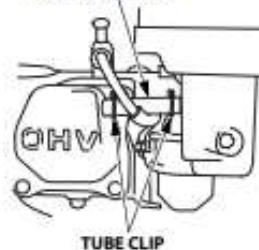
## MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD (3) Perform at every indicated month or operating hour interval, whichever comes first.		Each Use	First Month or 20 Hrs	Every 3 Months or 50 Hrs	Every 6 Months or 100 Hrs	Every Year or 300 Hrs	Refer to Page
Engine oil	Check level	o					8
	Change		o		o		9
Reduction case oil (applicable types)	Check level	o					8-10
	Change		o		o		10
Air cleaner	Check	o					10
	Clean			o (1)	o*(1)		10-12
	Replace					o**	
Sediment cup	Clean				o		12
Spark plug	Check-adjust				o		12
	Replace					o	
Spark arrestor (applicable types)	Clean				o (4)		13
Idle speed	Check-adjust					o (2)	13
Valve clearance	Check-adjust					o (2)	Shop manual
Combustion chamber	Clean		After every 500 Hrs. (2)				Shop manual
Fuel tank & filter	Clean				o (2)		Shop manual
Fuel tube	Check		Every 2 years (Replace if necessary) (2)				Shop manual

- \* Internal vent carburetor with dual element type only.
- Cyclone type every 6 months or 150 hours.

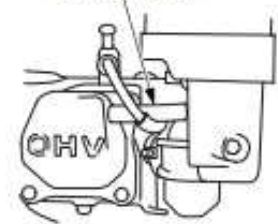
#### INTERNAL VENT CARBURETOR TYPE

#### BREATHER TUBE



#### STANDARD TYPE

#### BREATHING TUBE



- \*\* • Replace paper element type only.
- Cyclone type every 2 years or 600 hours.

- (1) Service more frequently when used in dusty areas.
- (2) These items should be serviced by your servicing dealer, unless you have the proper tools and are mechanically proficient. Refer to the Honda shop manual for service procedures.
- (3) For commercial use, log hours of operation to determine proper maintenance intervals.
- (4) In Europe and other countries where the machinery directive 2006/42/EC is enforced, this cleaning should be done by your servicing dealer.

Failure to follow this maintenance schedule could result in non-warrantable failures.

## REFUELING

### Recommended Fuel

Unleaded gasoline		
U.S.		Pump octane rating 86 or higher
Except U.S.		Research octane rating 91 or higher
		Pump octane rating 86 or higher

This engine is certified to operate on unleaded gasoline with a pump octane rating of 86 or higher (a research octane rating of 91 or higher). Refuel in a well ventilated area with the engine stopped. If the engine has been running, allow it to cool first. Never refuel the engine inside a building where gasoline fumes may reach flames or sparks. You may use unleaded gasoline containing no more than 10% ethanol (E10) or 5% methanol by volume. In addition, methanol must contain cosolvents and corrosion inhibitors. Use of fuels with content of ethanol or methanol greater than shown above may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of the fuel system. Engine damage or performance problems that result from using a fuel with percentages of ethanol or methanol greater than shown above are not covered under the Warranty.

If your equipment will be used on an infrequent or intermittent basis, please refer to the fuel section of the **STORING YOUR ENGINE** chapter (see page 13) for additional information regarding fuel deterioration. Never use gasoline that is stale, contaminated, or mixed with oil. Avoid getting dirt or water in the fuel tank.

### ⚠ WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured when handling fuel.

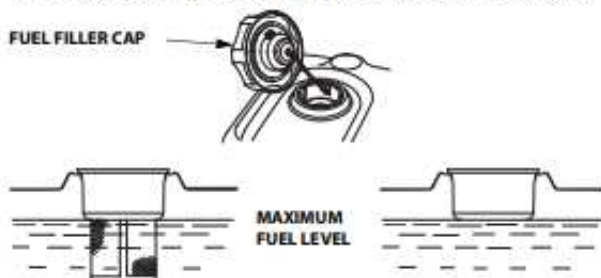
- Stop the engine and let it cool before handling fuel.
- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

### NOTICE

Fuel can damage paint and some types of plastic. Be careful not to spill fuel when filling your fuel tank. Damage caused by spilled fuel is not covered under the Distributor's Limited Warranty. Move at least 1 meter (3 feet) away from the fueling source and site before starting the engine.

For refueling, refer to the manufacturer's instructions provided with the equipment. See the following for a Honda supplied standard fuel tank refueling instruction.

1. With the engine stopped and on a level surface, remove the fuel filler cap and check the fuel level. Refill the tank if the fuel level is low.
2. Add fuel to the bottom of the maximum fuel level limit of the fuel tank. Do not overfill. Wipe up spilled fuel before starting the engine.



Refuel carefully to avoid spilling fuel. Do not fill the fuel tank completely. It may be necessary to lower the fuel level depending on operating conditions. After refueling, screw the fuel filler cap back on until it clicks.

Keep gasoline away from appliance pilot lights, barbecues, electric appliances, power tools, etc.

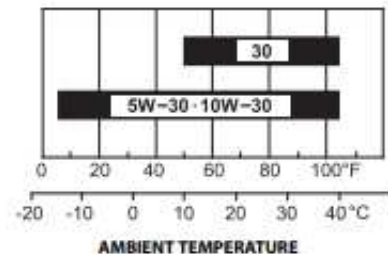
Spilled fuel is not only a fire hazard, it causes environmental damage. Wipe up spills immediately.

## ENGINE OIL

Oil is a major factor affecting performance and service life. Use 4-stroke automotive detergent oil.

### Recommended Oil

Use 4-stroke motor oil that meets or exceeds the requirements for API service category SJ or later (or equivalent). Always check the API service label on the oil container to be sure it includes the letters SJ or later (or equivalent).



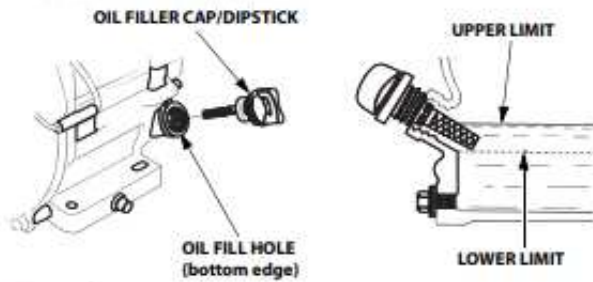
SAE 10W-30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

### Oil Level Check

Check the engine oil level with the engine stopped and in a level position.

1. Remove the oil filler cap/dipstick and wipe it clean.
2. Insert the oil filler cap/dipstick into the oil filler neck as shown, but do not screw it in, then remove it to check the oil level.
3. If the oil level is near or below the lower limit mark on the dipstick, fill with the recommended oil (see page 8) to the upper limit mark (bottom edge of the oil fill hole). Do not overfill.

4. Reinstall the oil filler cap/dipstick.



**NOTICE**

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the Distributor's Limited Warranty.

The Oil Alert system (applicable types) will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, always check the engine oil level before startup.

**Oil Change**

Drain the used oil when the engine is warm. Warm oil drains quickly and completely.

1. Place a suitable container below the engine to catch the used oil, then remove the oil filler cap/dipstick, oil drain plug and sealing washer.
2. Allow the used oil to drain completely, then reinstall the oil drain plug and a new sealing washer, and tighten the oil drain plug securely.

**TORQUE:** 18 N·m (13 lbf·ft, 1.8 kgf·m)

**NOTICE**

Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash, pour it on the ground, or pour it down a drain.

3. With the engine in a level position, fill with the recommended oil (see page 8) to the upper limit mark (bottom edge of the oil fill hole) on the dipstick.

Engine oil capacity: GX160: 0.58 L (19 US oz, 0.51 Imp qt)  
GX200: 0.6 L (20 US qt, 0.53 Imp qt)

**NOTICE**

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the Distributor's Limited Warranty.

The Oil Alert system (applicable types) will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, fill to the upper limit, and check the oil level regularly.

4. Install the oil filler cap/dipstick and tighten securely.



Wash your hands with soap and water after handling used oil.

**REDUCTION CASE OIL (applicable types)**

**Recommended Oil**

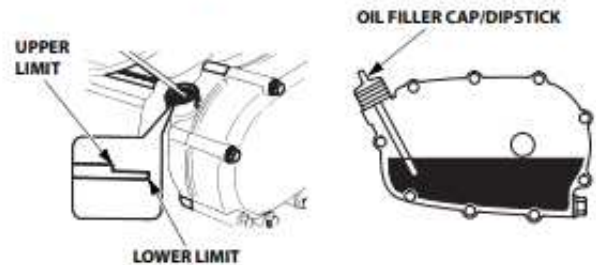
Use the same oil that is recommended for the engine (see page 8).

**Oil Level Check**

Check the reduction case oil level with the engine stopped and in a level position.

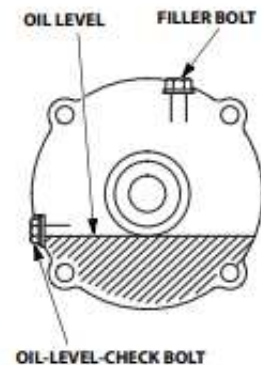
**2 : 1 Reduction Case With Centrifugal Clutch**

1. Remove the oil filler cap/dipstick and wipe it clean.
2. Insert and remove the oil filler cap/dipstick without screwing it into the filler hole. Check the oil level shown on the oil filler cap/dipstick.
3. If the oil level is low, add the recommended oil to reach the upper limit mark on the dipstick.
4. Screw in the oil filler cap/dipstick and tighten securely.



**6 : 1 Reduction Case**

1. Remove the oil-level-check bolt and washer, and see whether the oil level is at the edge of the bolt hole.
2. If the oil level is below the check bolt hole, remove the filler bolt and washer. Add oil until it starts to flow out the check bolt hole with the recommended oil (see page 8).
3. Install the oil-level-check bolt, filler bolt and new washers. Tighten them securely.



## Oil Change

### 2 : 1 Reduction Case With Centrifugal Clutch

Drain the used oil while the engine is warm. Warm oil drains quickly and completely.

1. Place a suitable container below the reduction case to catch the used oil, then remove the oil filler cap/dipstick, drain plug and washer.
2. Allow the used oil to drain completely, then reinstall the drain plug and a new washer, and tighten the plug securely.

#### NOTICE

Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash or pour it on the ground or pour it down a drain.

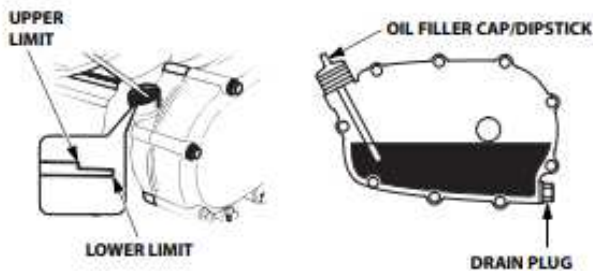
3. With the engine in a level position, fill with the recommended oil (see page 8) to the upper limit mark on the dipstick. To check the oil level, insert and remove the dipstick without screwing it into the filler hole.

Reduction case oil capacity: 0.50 L (17 US oz, 0.44 Imp qt)

#### NOTICE

Running the engine with a low reduction case oil level can cause reduction case damage.

4. Screw in the oil filler cap/dipstick securely.



Wash your hands with soap and water after handling used oil.

### 6 : 1 Reduction Case

Drain the used oil while the engine is warm. Warm oil drains quickly and completely.

1. Place a suitable container below the reduction case to catch the used oil, then remove the filler bolt, oil-level-check bolt and washers.
2. Drain the used oil completely into the container by tipping the engine toward the oil-level-check bolt hole.

#### NOTICE

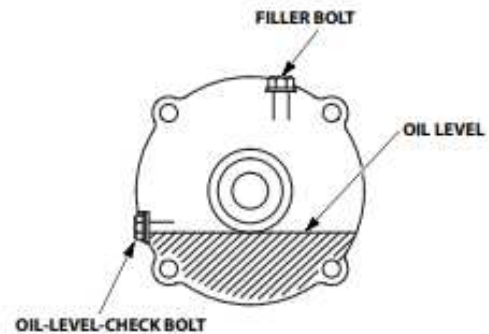
Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash or pour it on the ground or pour it down a drain.

3. With the engine in a level position, fill with the recommended oil (see page 8) until it starts to flow out the check bolt hole.

#### NOTICE

Running the engine with a low reduction case oil level can cause reduction case damage.

4. Reinstall the oil-level-check bolt, filler bolt and new washers, and tighten them securely.



Wash your hands with soap and water after handling used oil.

## AIR CLEANER

A dirty air cleaner will restrict air flow to the carburetor, reducing engine performance. If you operate the engine in very dusty areas, clean the air filter more often than specified in the MAINTENANCE SCHEDULE.

#### NOTICE

Operating the engine without an air filter, or with a damaged air filter, will allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered by the Distributor's Limited Warranty.

## Inspection

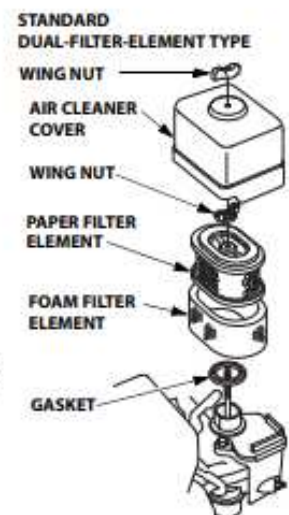
Remove the air cleaner cover and inspect the filter elements. Clean or replace dirty filter elements. Always replace damaged filter elements. If equipped with an oil-bath air cleaner, also check the oil level.

Refer to pages 10–12 for instructions that apply to the air cleaner and filter for your engine type.

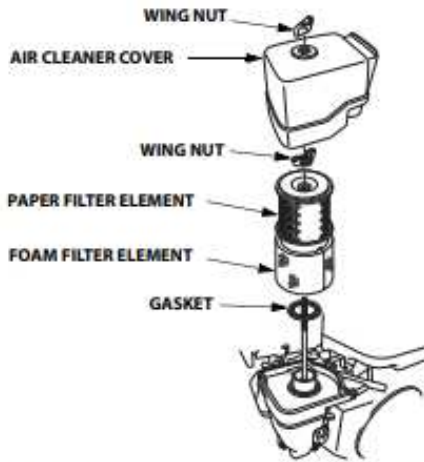
## Cleaning

### Dual-Filter Element Types

1. Remove the wing nut from the air cleaner cover, and remove the cover.
2. Remove the wing nut from the air filter, and remove the filter.
3. Remove the foam filter element from the paper filter element.
4. Inspect both air filter elements, and replace them if they are damaged. Always replace the paper air filter element at the scheduled interval (see page 7).



## CYCLONE DUAL-FILTER ELEMENT TYPE

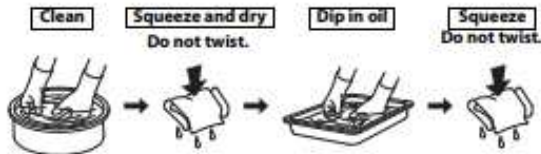


5. Clean the air filter elements if they are to be reused.

Paper filter element: Tap the filter element several times on a hard surface to remove dirt, or blow compressed air [not exceeding 207 kPa (2.1 kgf/cm<sup>2</sup>, 30 psi)] through the filter element from the inside. Never try to brush off dirt; brushing will force dirt into the fibers.



Foam filter element: Clean in warm soapy water, rinse, and allow to dry thoroughly. Or clean in non-flammable solvent and allow to dry. Dip the filter element in clean engine oil, and then squeeze out all excess oil. The engine will smoke when started if too much oil is left in the foam.



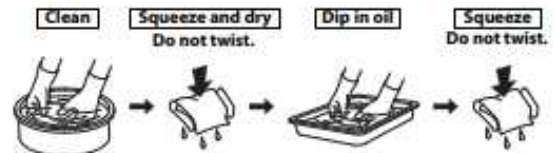
6. CYCLONE TYPE ONLY: Tap the air cleaner cover several times on a hard surface to remove dirt, or blow compressed air [not exceeding 207 kPa (2.1 kgf/cm<sup>2</sup>, 30 psi)] through the air cleaner cover from the outside.



7. Wipe dirt from the inside of the air cleaner case and cover using a moist rag. Be careful to prevent dirt from entering the air duct that leads to the carburetor.
8. Place the foam air filter element over the paper element, and reinstall the assembled air filter. Be sure the gasket is in place beneath the air filter. Tighten the air filter wing nut securely.
9. Install the air cleaner cover, and tighten the wing nut securely.

## Oil-Bath Type

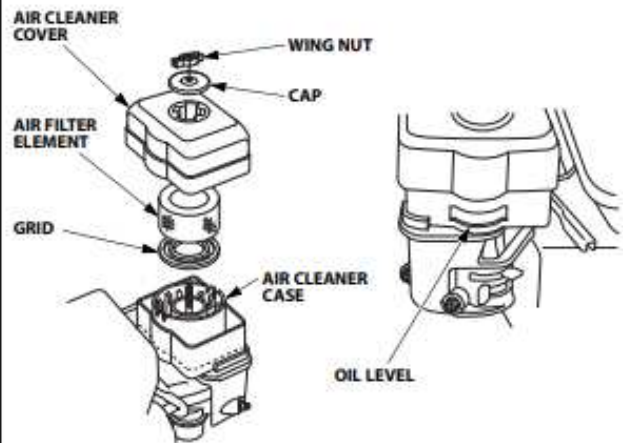
1. Remove the wing nut, and remove the air cleaner cap and cover.
2. Remove the air filter element from the cover. Wash the cover and filter element in warm soapy water, rinse, and allow to dry thoroughly. Or clean in non-flammable solvent and allow to dry.
3. Dip the filter element in clean engine oil, then squeeze out all excess oil. The engine will smoke if too much oil is left in the foam.



4. Empty the used oil from the air cleaner case, wash out any accumulated dirt with non-flammable solvent, and dry the case.
5. Fill the air cleaner case to the OIL LEVEL mark with the same oil that is recommended for the engine (see page 8).

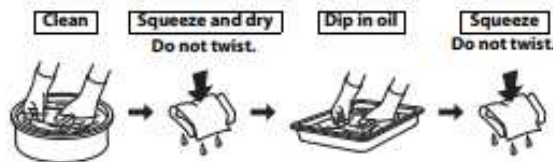
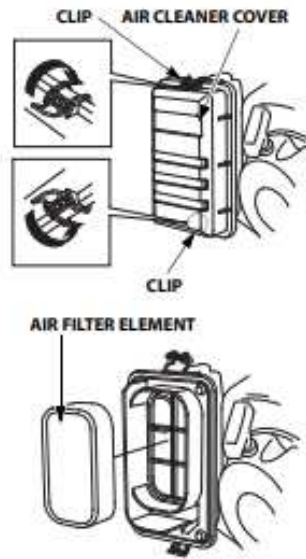
Oil capacity: 60 cm<sup>3</sup> (2.0 US oz, 2.1 Imp oz)

6. Reassemble the air cleaner, and tighten the wing nut securely.



## Low Profile Types

1. Unsnap the air cleaner cover clips, remove the air cleaner cover, and remove the air filter element.
2. Wash the element in a solution of household detergent and warm water, then rinse thoroughly, or wash in non-flammable or high flash point solvent. Allow the element to dry thoroughly.
3. Soak the air filter element in clean engine oil and squeeze out the excess oil. The engine will smoke during initial startup if too much oil is left in the element.



4. Reinstall the air filter element and the cover.

## SEDIMENT CUP

### Cleaning

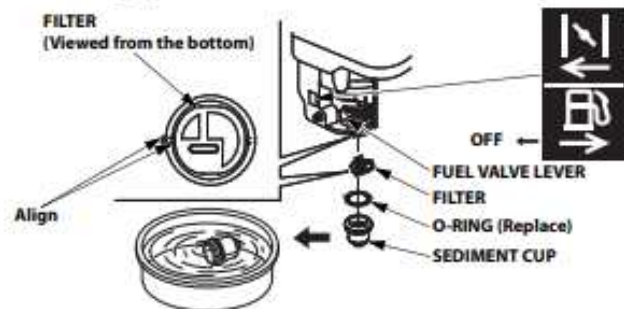
### ⚠ WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured when handling fuel.

- Stop the engine and let it cool before handling fuel.
- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Keep away from your vehicle.
- Wipe up spills immediately.

1. Move the fuel valve lever to the OFF position, and then remove the sediment cup, O-ring and filter.
2. Wash the sediment cup and filter in non-flammable solvent, and dry it thoroughly.



3. Reinstall the filter, new O-ring, and the sediment cup. Tighten the sediment cup securely.

4. Move the fuel valve lever to the ON position and check for leaks.

## SPARK PLUG

**Spark Plugs:** BPR6ES (NGK)  
W20EPR-U (DENSO)

This spark plug has the correct heat range for normal engine operating temperatures.

### NOTICE

*An incorrect spark plug can cause engine damage.*

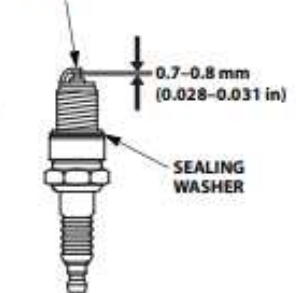
For good performance, the spark plug must be properly gapped and free of deposits.

1. Disconnect the spark plug cap, and remove any dirt from around the spark plug area.
2. Remove the spark plug with a 21 mm (13/16 in) spark plug wrench.
3. Inspect the spark plug. Replace it if damaged or badly fouled, if the sealing washer is in poor condition, or if the electrode is worn.
4. Measure the spark plug electrode gap with a wire-type feeler gauge. Correct the gap, if necessary, by carefully bending the side electrode. The gap should be: 0.7–0.8 mm (0.028–0.031 in)
5. Install the spark plug carefully, by hand, to avoid cross-threading.
6. After the spark plug is seated, tighten with a 21 mm (13/16 in) spark plug wrench to compress the sealing washer.

### SPARK PLUG WRENCH



### SIDE ELECTRODE



When installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer.

When reinstalling a used spark plug, tighten 1/8–1/4 turn after the spark plug seats to compress the washer.

**TORQUE:** 18 N·m (13 lbf·ft, 1.8 kgf·m)

### NOTICE

*A loose spark plug can overheat and damage the engine. Overtightening the spark plug can damage the threads in the cylinder head.*

7. Attach the spark plug cap to the spark plug.

## SPARK ARRESTER (applicable types)

In Europe and other countries where the machinery directive 2006/42/EC is enforced, this cleaning should be done by your servicing dealer.

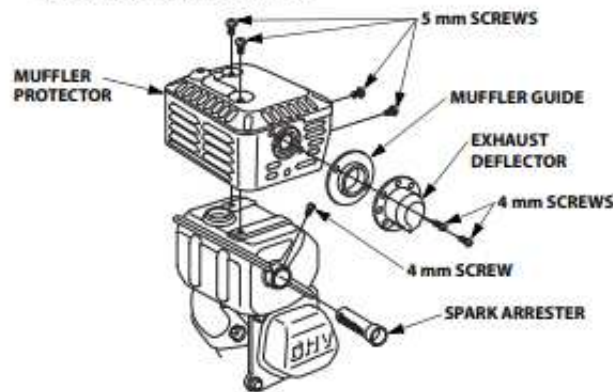
The spark arrester may be standard or an optional part, depending on the engine type. In some areas, it is illegal to operate an engine without a spark arrester. Check local laws and regulations. A spark arrester is available from authorized Honda servicing dealers.

The spark arrester must be serviced every 100 hours to keep it functioning as designed.

If the engine has been running, the muffler will be hot. Allow it to cool before servicing the spark arrester.

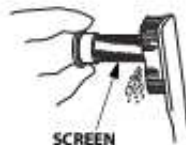
### Spark Arrester Removal

1. Remove the air cleaner (see page 10).
2. Remove the two 4 mm screws from the exhaust deflector, and then remove the deflector and muffler guide (applicable types).
3. Remove the four 5 mm screws from the muffler protector and remove the muffler protector.
4. Remove the 4 mm screw from the spark arrester, and remove the spark arrester from the muffler.



### Spark Arrester Cleaning & Inspection

1. Use a brush to remove carbon deposits from the spark arrester screen. Be careful not to damage the screen. Replace the spark arrester if it has breaks or holes.
2. Install the spark arrester, muffler protector, exhaust deflector, and muffler guide in the reverse order of removal.
3. Install the air cleaner (see page 10).



## IDLE SPEED

### Adjustment

1. Start the engine outdoors, and allow it to warm up to operating temperature.
2. Move the throttle lever to its minimum position.
3. Turn the throttle stop screw to obtain the standard idle speed.



Standard idle speed: 1,400  $\frac{+100}{-100}$  rpm

## HELPFUL TIPS & SUGGESTIONS

### STORING YOUR ENGINE

#### Storage Preparation

Proper storage preparation is essential for keeping your engine trouble-free and looking good. The following steps will help to keep rust and corrosion from impairing your engine's function and appearance, and will make the engine easier to start when you use it again.

#### Cleaning

If the engine has been running, allow it to cool for at least half an hour before cleaning. Clean all exterior surfaces, touch up any damaged paint, and coat other areas that may rust with a light film of oil.

#### NOTICE

*Using a garden hose or pressure washing equipment can force water into the air cleaner or muffler opening. Water in the air cleaner will soak the air filter, and water that passes through the air filter or muffler can enter the cylinder, causing damage.*

#### Fuel

#### NOTICE

*Depending on the region where you operate your equipment, fuel formulations may deteriorate and oxidize rapidly. Fuel deterioration and oxidation can occur in as little as 30 days and may cause damage to the carburetor and/or fuel system. Please check with your servicing dealer for local storage recommendations.*

Gasoline will oxidize and deteriorate in storage. Deteriorated gasoline will cause hard starting, and it leaves gum deposits that clog the fuel system. If the gasoline in your engine deteriorates during storage, you may need to have the carburetor and other fuel system components serviced or replaced.

The length of time that gasoline can be left in your fuel tank and carburetor without causing functional problems will vary with such factors as gasoline blend, your storage temperatures, and whether the fuel tank is partially or completely filled. The air in a partially filled fuel tank promotes fuel deterioration. Very warm storage temperatures accelerate fuel deterioration. Fuel deterioration problems may occur within a few months, or even less if the gasoline was not fresh when you filled the fuel tank.

Fuel system damage or engine performance problems resulting from neglected storage preparation are not covered under the *Distributor's Limited Warranty*.

You can extend fuel storage life by adding a gasoline stabilizer that is formulated for that purpose, or you can avoid fuel deterioration problems by draining the fuel tank and carburetor.

#### Adding a Gasoline Stabilizer to Extend Fuel Storage Life

When adding a gasoline stabilizer, fill the fuel tank with fresh gasoline. If only partially filled, air in the tank will promote fuel deterioration during storage. If you keep a container of gasoline for refueling, be sure that it contains only fresh gasoline.

1. Add gasoline stabilizer following the manufacturer's instructions.
2. After adding a gasoline stabilizer, run the engine outdoors for 10 minutes to be sure that treated gasoline has replaced the untreated gasoline in the carburetor.
3. Stop the engine.

## Draining the Fuel Tank and Carburetor

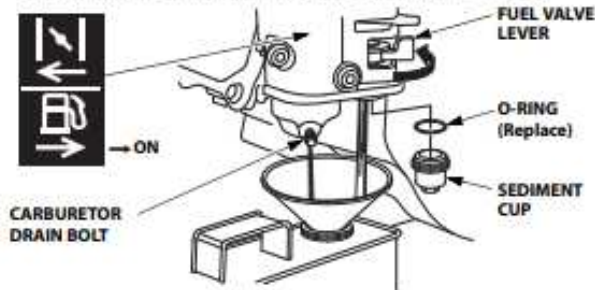
### ⚠ WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured when handling fuel.

- Stop the engine and let it cool before handling fuel.
- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Keep away from your vehicle.
- Wipe up spills immediately.

1. Place an approved gasoline container below the carburetor, and use a funnel to avoid spilling fuel.
2. Move the fuel valve lever to the OFF position. Loosen the carburetor drain bolt by turning 1 to 2 turns counterclockwise and drain the fuel from the carburetor (see page 6).
3. Remove the sediment cup, and then move the fuel valve lever to the ON position and drain the fuel from the fuel tank (see page 4).



4. After all fuel has drained into the container, tighten the carburetor drain bolt securely.
5. Reinstall a new O-ring and sediment cup.
6. Move the fuel valve lever to the OFF position.

### Engine Oil

1. Change the engine oil (see page 9).
2. Remove the spark plug (see page 12).
3. Pour a teaspoon 5–10 cm<sup>3</sup> (5–10 cc) of clean engine oil into the cylinder.
4. Pull the starter rope several times to distribute the oil in the cylinder.
5. Reinstall the spark plug.
6. Pull the starter rope slowly until resistance is felt. This will close the valves so moisture cannot enter the engine cylinder. Return the starter rope gently.

### Storage Precautions

If your engine will be stored with gasoline in the fuel tank and carburetor, it is important to reduce the hazard of gasoline vapor ignition. Select a well ventilated storage area away from any appliance that operates with a flame, such as a furnace, water heater, or clothes dryer. Also avoid any area with a spark-producing electric motor, or where power tools are operated.

If possible, avoid storage areas with high humidity, because that promotes rust and corrosion.

Keep the engine level in storage. Tilting can cause fuel or oil leakage.

With the engine and exhaust system cool, cover the engine to keep out dust. A hot engine and exhaust system can ignite or melt some materials. Do not use a plastic sheet as a dust cover.

A nonporous cover will trap moisture around the engine, promoting rust and corrosion.

If equipped with a battery for electric starter types, recharge the battery once a month while the engine is in storage.

This will help to extend the service life of the battery.

### Removal from Storage

Check your engine as described in the *BEFORE OPERATION CHECKS* section of this manual (see page 4).

If the fuel was drained during storage preparation, fill the tank with fresh gasoline. If you keep a container of gasoline for refueling, be sure it contains only fresh gasoline. Gasoline oxidizes and deteriorates over time, causing hard starting.

If the cylinder was coated with oil during storage preparation, the engine will smoke briefly at startup. This is normal.

### TRANSPORTING

If the engine has been running, allow it to cool for at least 15 minutes before loading the engine-powered equipment on the transport vehicle. A hot engine and exhaust system can burn you and can ignite some materials.

Keep the engine level when transporting to reduce the possibility of fuel leakage. Move the fuel valve lever to the OFF position (see page 6).



## TAKING CARE OF UNEXPECTED PROBLEMS

### ENGINE WILL NOT START

Possible Cause	Correction
Battery discharged.	Recharge battery.
Fuse burnt out.	Replace fuse (p. 15).
Fuel valve lever OFF.	Move lever to ON position.
Choke open.	Move lever to CLOSED position unless the engine is warm.
Engine switch OFF.	Turn engine switch to ON position.
Engine oil level low (Oil Alert models).	Fill with the recommended oil to the proper level (p. 8).
Out of fuel.	Refuel (p. 8).
Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor (p. 14). Refuel with fresh gasoline (p. 8).
Spark plug faulty, fouled, or improperly gapped.	Gap or replace spark plug (p. 12).
Spark plug wet with fuel (flooded engine).	Dry and reinstall spark plug. Start engine with throttle lever in MAX. position.
Fuel filter restricted, carburetor malfunction, ignition malfunction, valves stuck, etc.	Take engine to your servicing dealer, or refer to shop manual.

### ENGINE LACKS POWER

Possible Cause	Correction
Filter element(s) restricted.	Clean or replace filter element(s) (p. 10–12).
Bad fuel; engine stored without treating or draining gasoline, or refueled with bad gasoline.	Drain fuel tank and carburetor (p. 14). Refuel with fresh gasoline (p. 8).
Fuel filter restricted, carburetor malfunction, ignition malfunction, valves stuck, etc.	Take engine to your servicing dealer, or refer to shop manual.

### FUSE REPLACEMENT (applicable types)

The electric starter relay circuit and battery charging circuit are protected by a fuse. If the fuse burns out, the electric starter will not operate. The engine can be started manually if the fuse burns out, but running the engine will not charge the battery.

1. Remove the 6 × 12 mm special screw from the rear cover of the engine switch box, and remove the rear cover.
2. Remove the fuse cover, then pull out and inspect the fuse.

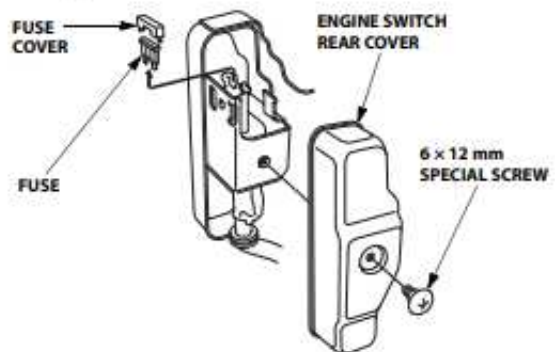
If the fuse is burnt out, discard the burnt-out fuse. Install a new fuse with the same rating as the one that was removed, and reinstall the cover.

If you have questions regarding the rating of the original fuse, contact your Honda servicing dealer.

#### NOTICE

*Never use a fuse with a rating greater than the one originally equipped with the engine. Serious damage to the electrical system or a fire could result.*

3. Reinstall the rear cover. Install the 6 × 12 mm screw and tighten it securely.

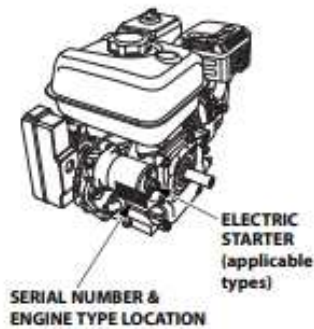


Frequent fuse failure usually indicates a short circuit or an overload in the electrical system. If the fuse burns out frequently, take the engine to a Honda servicing dealer for repair.

## TECHNICAL INFORMATION

### Serial Number Location

Record the engine serial number, type and purchase date in the spaces below. You will need this information when ordering parts and when making technical or warranty inquiries.



Engine serial number: \_\_\_\_\_

Engine type: \_\_\_\_\_

Date Purchased: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

### Battery Connections for Electric Starter (applicable types)

Use a 12-volt battery with an ampere-hour rating of at least 18 Ah.

Be careful not to connect the battery in reverse polarity, as this will short circuit the battery charging system. Always connect the positive (+) battery cable to the battery terminal before connecting the negative (-) battery cable, so your tools cannot cause a short circuit if they touch a grounded part while tightening the positive (+) battery cable end.

#### ⚠ WARNING

A battery can explode if you do not follow the correct procedure, seriously injuring anyone nearby.

Keep all sparks, open flames, and smoking materials away from the battery.

#### ⚠ WARNING

The battery contains sulfuric acid (electrolyte), which is highly corrosive and poisonous.

Getting electrolyte in your eyes or on your skin can cause serious burns.

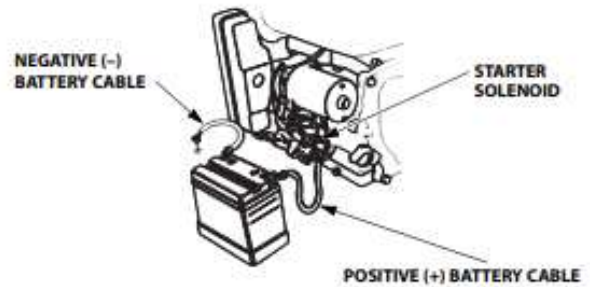
Wear protective clothing and eye protection when working near the battery.

KEEP CHILDREN AWAY FROM THE BATTERY.

**WARNING:** Battery posts, terminals, and related accessories contain lead and lead compounds. **Wash your hands after handling.**

1. Connect the battery positive (+) cable to the starter solenoid terminal as shown.
2. Connect the battery negative (-) cable to an engine mounting bolt, frame bolt, or other good engine ground connection.
3. Connect the battery positive (+) cable to the battery positive (+) terminal as shown.
4. Connect the battery negative (-) cable to the battery negative (-) terminal as shown.

5. Coat the terminals and cable ends with grease.

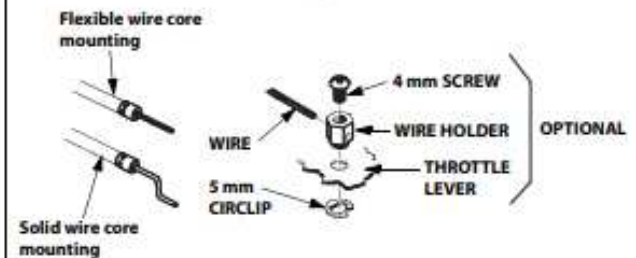
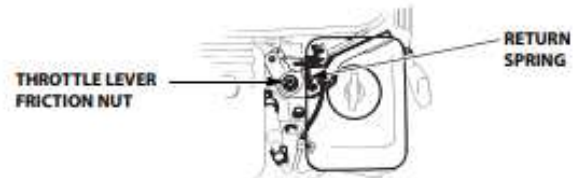


### Remote Control Linkage

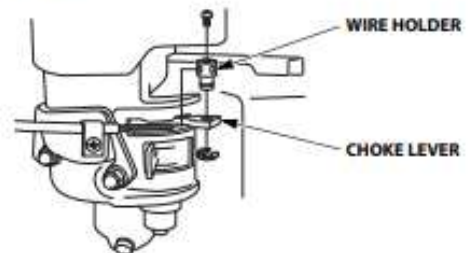
The throttle and choke control levers are provided with holes for optional cable attachment. The following illustrations show installation examples for a solid wire cable and for a flexible, braided wire cable. If using a flexible, braided wire cable, add a return spring as shown.

It is necessary to loosen the throttle lever friction nut when operating the throttle with a remote-mounted control.

#### REMOTE THROTTLE LINKAGE



#### REMOTE CHOKE LINKAGE



## Carburetor Modifications for High Altitude Operation

At high altitude, the standard carburetor air-fuel mixture will be too rich. Performance will decrease, and fuel consumption will increase. A very rich mixture will also foul the spark plug and cause hard starting. Operation at an altitude that differs from that at which this engine was certified, for extended periods of time, may increase emissions.

High altitude performance can be improved by specific modifications to the carburetor. If you always operate your engine at altitudes above 610 meters (2,000 feet), have your servicing dealer perform this carburetor modification. This engine, when operated at high altitude with the carburetor modifications for high altitude use, will meet each emission standard throughout its useful life.

Even with carburetor modification, engine horsepower will decrease about 3.5% for each 300 meter (1,000 foot) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

### NOTICE

*When the carburetor has been modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use. Operation at altitudes below 610 meters (2,000 feet) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes, have your servicing dealer return the carburetor to original factory specifications.*

## Emission Control System Information

### Emission Control System Warranty

Your new Honda complies with both the U.S. EPA and State of California emission regulations. American Honda provides the same emission warranty coverage for Honda Power Equipment engines sold in all 50 states. In all areas of the United States, your Honda Power Equipment engine is designed, built, and equipped to meet the U.S. EPA and California Air Resources Board emission standard for spark ignited engines.

### Warranty Coverage

Honda Power Equipment engines certified to CARB and EPA regulations are covered by this warranty to be free from defects in materials and workmanship that may keep it from meeting the applicable EPA and CARB emissions requirements for a minimum of 2 years or the length of the Honda Power Equipment Distributor's Limited Warranty, whichever is longer, from the original date of delivery to the retail purchaser. This warranty is transferable to each subsequent purchaser for the duration of the warranty period. Warranty repairs will be made without charge for diagnosis, parts, and labor. Information about how to make a warranty claim, as well as a description of how a claim can be made and/or how service can be provided, can be obtained by contacting an authorized Honda Power Equipment dealer or by contacting American Honda at the following:

Email: [powerequipmentemissions@ahm.honda.com](mailto:powerequipmentemissions@ahm.honda.com)

Telephone: (888) 888-3139

The covered components include all components whose failure would increase an engine's emissions of any regulated pollutant or evaporative emissions. A list of specific components can be found in the separately included emissions warranty statement.

Specific warranty terms, coverage, limitations and manner of seeking warranty service are also set forth in the separately included emissions warranty statement. In addition, the emissions warranty statement can also be found on the Honda Power equipment website or at the following link:

<http://powerequipment.honda.com/support/warranty>

## Source of Emissions

The combustion process produces carbon monoxide, oxides of nitrogen, and hydrocarbons. Control of hydrocarbons and oxides of nitrogen are very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Honda utilizes appropriate air/fuel ratios and other emissions control systems to reduce the emissions of carbon monoxide, oxides of nitrogen, and hydrocarbons.

Additionally, Honda fuel systems utilize components and control technologies to reduce evaporative emissions.

### The U.S., California Clean Air Act, and Environment Canada

EPA, California, and Canadian regulations require all manufacturers to furnish written instructions describing the operation and maintenance of emission control systems.

The following instructions and procedures must be followed in order to keep the emissions from your Honda engine within the emission standards.

### Tampering and Altering

#### NOTICE

*Tampering is a violation of federal and California law.*

Tampering with or altering the emission control system may increase emissions beyond the legal limit. Among those acts that constitute tampering are:

- Removal or alteration of any part of the intake, fuel, or exhaust systems.
- Altering or defeating the governor linkage or speed-adjusting mechanism to cause the engine to operate outside its design parameters.

### Problems That May Affect Emissions

If you are aware of any of the following symptoms, have your engine inspected and repaired by your servicing dealer.

- Hard starting or stalling after starting.
- Rough idle.
- Misfiring or backfiring under load.
- Afterburning (backfiring).
- Black exhaust smoke or high fuel consumption.

### Replacement Parts

The emissions control systems on your new Honda engine were designed, built, and certified to conform with EPA, California, and Canadian emissions regulations. We recommend the use of Honda Genuine parts whenever you have maintenance done. These original-design replacement parts are manufactured to the same standards as the original parts, so you can be confident of their performance. Honda cannot deny coverage under the emission warranty solely for the use of non-Honda replacement parts or service performed at a location other than an authorized Honda dealership; you may use comparable EPA certified parts, and have service performed at non-Honda locations. However, the use of replacement parts that are not of the original design and quality may impair the effectiveness of your emissions control system.

A manufacturer of an aftermarket part assumes the responsibility that the part will not adversely affect emissions performance. The manufacturer or rebuilder of the part must certify that use of the part will not result in a failure of the engine to comply with emissions regulations.

## Maintenance

As the power equipment engine owner, you are responsible for completing all required maintenance listed in your owner's manual. Honda recommends that you retain all receipts covering maintenance on your power equipment engine, but Honda cannot deny warranty coverage solely for the lack of receipts or for your failure to ensure that all scheduled maintenance has been completed.

Follow the MAINTENANCE SCHEDULE on page 7.

Remember that this schedule is based on the assumption that your engine will be used for its designed purpose. Sustained high-load or high-temperature operation, or use in dusty conditions, will require more frequent service.

## Air Index

### (Models certified for sale in California)

An Air Index Information label is applied to engines certified to an emission durability time period in accordance with the requirements of the California Air Resources Board.

The bar graph is intended to provide you, our customer, the ability to compare the emissions performance of available engines. The lower the Air Index, the less pollution.

The durability description is intended to provide you with information relating to the engine's emission durability period.

The descriptive term indicates the useful life period for the engine's emission control system. See your *Emission Control System Warranty* for additional information.

Descriptive Term	Applicable to Emission Durability Period
Moderate	50 hours (0–80 cc, inclusive) 125 hours (greater than 80 cc)
Intermediate	125 hours (0–80 cc, inclusive) 250 hours (greater than 80 cc)
Extended	300 hours (0–80 cc, inclusive) 500 hours (greater than 80 cc) 1,000 hours (225 cc and greater)

## Specifications

### GX160 (PTO shaft type S, with fuel tank)

Length x Width x Height	304 x 362 x 346 mm (12.0 x 14.3 x 13.6 in)
Dry mass [weight]	15.1 kg (33.3 lbs)
Engine type	4-stroke, OHV, single cylinder
Displacement [Bore x Stroke]	163 cm <sup>3</sup> (9.9 cu-in) [68.0 x 45.0 mm (2.7 x 1.8 in)]
Net power (in accordance with SAE J1349*)	3.6 kW (4.8 bhp, 4.9 PS) at 3,600 rpm
Max. Net torque (in accordance with SAE J1349*)	10.3 N-m (7.6 lb-ft, 1.05 kgf-m) at 2500 rpm
Engine oil capacity	0.58 L (19 oz, 0.51 Imp qt)
Fuel tank capacity	3.1 L (0.82 US gal, 0.68 Imp gal)
Cooling system	Forced air
Ignition system	Transistor type magneto ignition
PTO shaft rotation	Counterclockwise

### GX200 (PTO shaft type S, with fuel tank)

Length x Width x Height	313 x 376 x 346 mm (12.3 x 14.8 x 13.6 in)
Dry mass [weight]	16.1 kg (35.5 lbs)
Engine type	4-stroke, OHV, single cylinder
Displacement [Bore x Stroke]	196 cm <sup>3</sup> (12.0 cu-in) [68.0 x 54.0 mm (2.7 x 2.1 in)]
Net power (in accordance with SAE J1349*)	4.3 kW (5.8 bhp, 5.8 PS) at 3,600 rpm
Max. Net torque (in accordance with SAE J1349*)	12.4 N-m (9.1 lb-ft, 1.26 kgf-m) at 2500 rpm
Engine oil capacity	0.6 L (20 oz, 0.53 Imp qt)
Fuel tank capacity	3.1 L (0.82 US gal, 0.68 Imp gal)
Cooling system	Forced air
Ignition system	Transistor type magneto ignition
PTO shaft rotation	Counterclockwise

\* The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3,600 rpm (Net Power) and at 2,500 rpm (Max. Net Torque). Mass production engines may vary from this value.

Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed of the engine in application, environmental conditions, maintenance, and other variables.

## Tune-up Specifications GX160/200

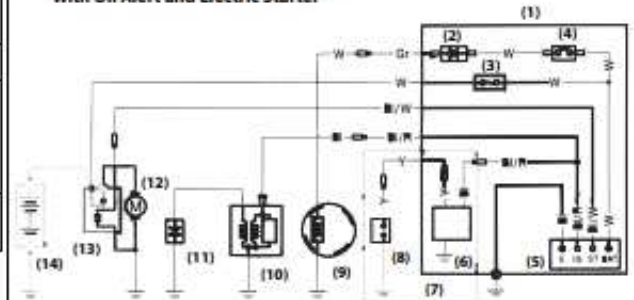
ITEM	SPECIFICATION	MAINTENANCE
Spark plug gap	0.7–0.8 mm (0.028–0.031 in)	Refer to page: 12
Idle speed	1,400 <sup>±200</sup> rpm	Refer to page: 13
Valve clearance (cold)	GX200 IN: 0.15 ± 0.02 mm EX: 0.20 ± 0.02 mm	See your authorized Honda dealer
	GX160 IN: 0.08 ± 0.02 mm EX: 0.10 ± 0.02 mm	
Other specifications	No other adjustments needed.	

## Quick Reference Information

Fuel	Unleaded gasoline (Refer to page 8)	
	U.S.	Pump octane rating 86 or higher
	Except U.S.	Research octane rating 91 or higher Pump octane rating 86 or higher
Engine oil	SAE 10W-30, API SJ or later, for general use. Refer to page 8.	
Reduction case oil	Same oil as engine oil, see above (applicable types).	
Spark plug	BPR6ES (NGK) W20EPR-U (DENSO)	
Maintenance	Before each use:	
	<ul style="list-style-type: none"> <li>• Check engine oil level. Refer to page 8.</li> <li>• Check reduction case oil (applicable types). Refer to page 8–10.</li> <li>• Check air filter. Refer to page 10.</li> </ul>	
	First 20 hours:	
	<ul style="list-style-type: none"> <li>• Change engine oil. Refer to page 9.</li> <li>• Change reduction case oil (applicable types). Refer to page 10.</li> </ul>	
	Subsequent: Refer to the maintenance schedule on page 7.	

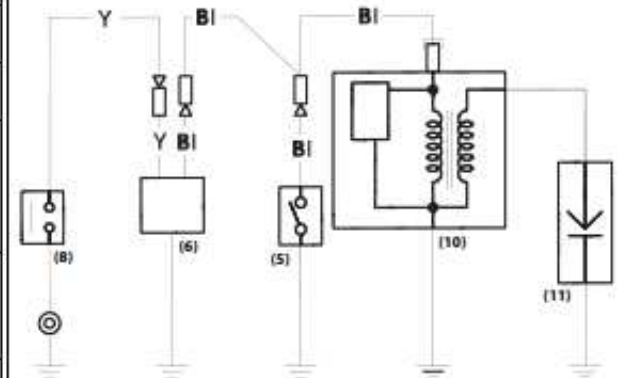
## Wiring Diagrams

### With Oil Alert and Electric Starter



	IG	E	BAT	ST
OFF	○—○			
ON				
START				○—○

### With Oil Alert and Without Electric Starter



	IG	E
OFF	○—○	
ON		

- |                              |                       |
|------------------------------|-----------------------|
| (1) CONTROL BOX              | (8) OIL LEVEL SWITCH  |
| (2) RECTIFIER                | (9) CHARGING COIL     |
| (3) FUSE                     | (10) IGNITION COIL    |
| (4) CIRCUIT BREAKER          | (11) SPARK PLUG       |
| (5) ENGINE SWITCH            | (12) STARTER MOTOR    |
| (6) OIL ALERT UNIT           | (13) STARTER SOLENOID |
| (7) Type with Oil Alert unit | (14) BATTERY (12 V)   |

Bl	Black	Br	Brown
Y	Yellow	O	Orange
Bu	Blue	Lb	Light blue
G	Green	Lg	Light green
R	Red	P	Pink
W	White	Gr	Gray

## CONSUMER INFORMATION

### Warranty and Distributor/Dealer Locator Information

#### United States, Puerto Rico, and U.S. Virgin Islands:

Visit our website: [www.honda-engines.com](http://www.honda-engines.com)

#### Canada:

Call (888) 9HONDA9

or visit our website: [www.honda.ca](http://www.honda.ca)

#### For European Area:

Visit our website: <http://www.honda-engines-eu.com>

#### Australia:

Call (03) 9270 1348

or visit our website: [www.hondampe.com.au](http://www.hondampe.com.au)

### Customer Service Information

Servicing dealership personnel are trained professionals. They should be able to answer any question you may have. If you encounter a problem that your dealer does not solve to your satisfaction, please discuss it with the dealership's management. The Service Manager, General Manager, or Owner can help. Almost all problems are solved in this way.

#### United States, Puerto Rico, and U.S. Virgin Islands:

If you are dissatisfied with the decision made by the dealership's management, contact the Honda Regional Engine Distributor for your area.

If you are still dissatisfied after speaking with the Regional Engine Distributor, you may contact the Honda Office as shown.

#### All Other Areas:

If you are dissatisfied with the decision made by the dealership's management, contact the Honda Office as shown.

#### (Honda's Office)

When you write or call, please provide this information:

- Equipment manufacturer's name and model number that the engine is mounted on
- Engine model, serial number, and type (see page 16)
- Name of dealer who sold the engine to you
- Name, address, and contact person of the dealer who services your engine
- Date of purchase
- Your name, address and telephone number
- A detailed description of the problem

#### United States, Puerto Rico, and U.S. Virgin Islands:

##### American Honda Motor Co., Inc.

Power Equipment Division  
Customer Relations Office  
4900 Marconi Drive  
Alpharetta, GA 30005-8847

Or telephone:  
(770) 497-6400  
(888) 888-3139 Toll free  
M-F 8:30am - 7:00pm ET

#### Canada:

##### Honda Canada, Inc.

180 Honda Blvd.  
Markham, ON, L6C 0H9

Telephone: (888) 9HONDA9 Toll free  
(888) 946-6329  
Facsimile: (877) 939-0909 Toll free

#### Australia:

##### Honda Australia Motorcycle and Power Equipment Pty. Ltd.

1954-1956 Hume Highway  
Campbellfield Victoria 3061

Telephone: (03) 9270 1111  
Facsimile: (03) 9270 1133

#### For European Area:

##### Honda Motor Europe Logistics NV.

European Engine Center

<http://www.honda-engines-eu.com>

#### All Other Areas:

Please contact the Honda distributor in your area for assistance.

# HONDA

## 15. Checking the oil level in the engine

**The oil level can only be checked when the engine is switched off and cool.** Take the dipstick (Fig. 8) out and clean with a clean cloth. Then insert it all the way back into the oil pipe without screwing the cap on. Check the oil level after removing it. If the oil level is too low (below the minimum level mark), add the correct oil without exceeding the maximum level.

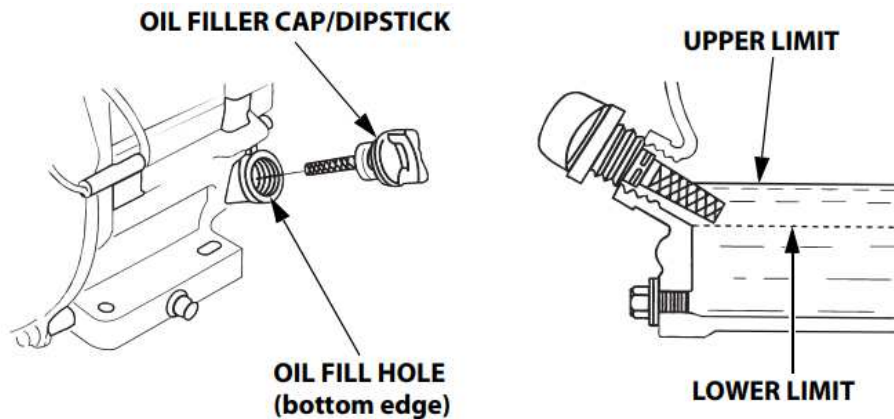


Fig. 8

## 16. Recommended engine oil

**SF type SAE 10 W 30** oil should be used in case of shortage.

**Using other oils may damage the engine and void the warranty.**

## 17. Reducer

The reducer (reducers) used is the so-called maintenance-free reducer, i.e. does not require daily oil level control.

## 18. Activities after completion of work

After finishing work, make sure that the machine is thoroughly cleaned. Thoroughly grease all working parts such as the crosspiece.

**THESE OPERATIONS MAY ONLY BE PERFORMED WITH THE ENGINE OFF!**

## 19. Machine storage

If it is necessary to stop the machine for a long time (1-6 months), e.g. in winter, store the machine in a dry and heated place. Thorough cleaning and maintenance of the machine (e.g., lubrication of crosses) is recommended.

## 20. Transport

K-436 B trowel can be transported using a manual transport handle and steering handles in case of short distances or e.g. a mobile crane when we want to lift the trowel and move it to another place using the transport handles (Fig. 1 item 12).

## 21. Technical Inspection Table

OPERATIONS	Frequency (man hours)				
	Before start-up	25	50	100	(6-months)
Air filter check	X				
Air filter replacement				X	
Spark plugs check	X				
Spark plugs replacement				X	X
Engine oil check	X				
Engine oil change				X	X
Oil control in gears	X				
Hydraulic filter replacement				X	
Oil change in the hydraulic system				X	
Fuel filter check		X			
Fuel filter replacement					
Checking the technical condition of the machine	X				
Crosspiece maintenance	X				
Technical inspection of the machine					X

Technical inspections with a frequency of 200 operating hours or every 6 months may only be carried out by the manufacturer's authorized service centre.

**Non-compliance with the recommended maintenance intervals may cause damage to the machine and void the warranty!**



## WARRANTY CARD

This document authorizes the buyer .....

to the warranty service of KREBER Maszyny Budowlane Sp. z o.o.

Machine type **K- 436 B** Serial number of the machine .....

Engine **HONDA GX 160 / GX 200** Engine number .....

Sale date ..... Sale document number .....

The pre-sales inspection was carried out on ....., the instruction manual was attached to the machine and the customer was trained in the operation of the machine / device.

.....  
date and stamp of the seller

.....  
the buyer's signature

### List of repairs during the warranty period

item	Date of receipt for repair	Repair date	Description of repair activities	Signature and stamp

## WARRANTY TERMS AND CONDITIONS

KREBER Maszyny Budowlane Sp. z o. o. based in Wąbrzeźno guarantees the proper operation of machines and devices within 12 months from the date of sale and provides free repair of damage caused by material, design or assembly defects within 14 days from the date of notification of the fault and delivery to an authorized service center.

1. Under the warranty, the seller undertakes to:
  - failure removal within 14 days of delivery of the machine/device to an authorized service centre
  - covering the costs of spare parts and labour (if warranty repair is justified)
2. Warranty repairs will be made only on the basis of a valid warranty card. A valid warranty card is a card with all the Buyer's headings filled in, i.e. the name and address of the buyer, date and place of purchase of the machine / device, type and number of the machine / device, engine model and its number as well as the seller's stamp and buyer's signatures.
3. Carrying out repairs on one's own or in plants not authorized by KREBER Maszyny Budowlane Sp. z o. o. without the guarantor's knowledge and consent will void the warranty.
4. The date of acceptance for repair is the delivery of the machine/device to an authorized service centre and signing the report of acceptance for repair.
5. The costs associated with reporting a fault, delivery of the machine/device to an authorized service centre, insurance and freight are covered by the claimant.
6. The choice of how to rectify the fault of the machine/device is up to the guaranteeing party.
7. Use of the machine/device contrary to its intended use and non-compliance with the instructions contained in the operating manual will void the warranty.
8. The warranty does not apply to parts and components the natural wear and tear of which occurs before the end of the warranty period, and in particular to all rubber components, gaskets, sealants, quick couplings, clutch linings, etc.
9. Under the guarantee, in no case will KREBER Maszyny Budowlane Sp. z o. o. be liable for the consequences of a fault in a machine/device, i.e. secondary damage, loss of profit, etc.
10. The liability of the guarantor under the warranty for hidden defects of goods is excluded in accordance with article 558 item 1 of the Polish Civil Code.
11. The warranty expires completely in the following cases:
  - after 12 months from the date of sale of the machine/device
  - if the machine is used contrary to its intended use and the operating manual
  - in the event of damage or absence of machine/device identification markings
  - if the warranty card is filled in incorrectly or not at all
12. The warranty card is filled out and delivered to the buyer by an authorized point of sale, which immediately sends its copy to the headquarters of KREBER Maszyny Budowlane Sp. z o.o.

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Buyer's signature