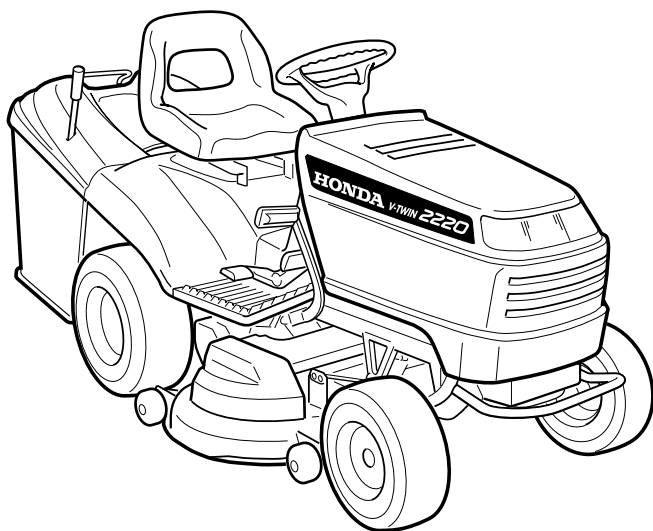


TONDEUSE AUTOPORTEE  
LAWN-TRACTOR  
RASENTRAKTOR  
MINITRACTOR CORTADOR DE CESPED  
TRATTORINO RASAERBA  
ZITMAAIER



**HF2216**  
**HF2220**

MANUEL D'UTILISATION  
OPERATOR'S MANUAL  
GEBRAUCHSANWEISUNG  
MANUAL DE INSTRUCCIONES  
MANUALE DI ISTRUZIONI  
GEBRUIKERSHANDLEIDING

## INTRODUCTION

Dear Customer,

thank you for having chosen one of our products. We hope that you will get complete satisfaction from using your new lawn-tractor and that it will fully meet all your expectations.

This manual has been compiled in order that you may get to know your machine and to be able to use it safely and efficiently. Don't forget that it forms an integral part of the machine, so keep it handy so that it can be consulted at any time, and pass it on to the purchaser if you resell the machine.

This new machine of yours has been designed and made in line with current regulations, and is safe and reliable if used for cutting and collecting grass exactly following the instructions given in this manual (**proper usage**). Using the machine in any other way or ignoring the instructions for safe usage, maintenance and repair is considered "**incorrect usage**" which will invalidate the guarantee, and the manufacturer will decline all responsibility, placing the blame with the user for damage or injury to himself or others in such cases.

Since the product is continually being improved, you may find slight differences between your machine and the descriptions contained in this manual. Certain modifications can be made to the machine without prior warning and without the obligation to update the manual, although the essential safety and function characteristics will remain unaltered. In case of any doubts, do not hesitate to contact your Dealer. And now enjoy your work!

## AFTER-SALES SERVICE

This manual gives all the necessary instructions for using the machine and the basic maintenance that may be carried out by the user.

For all information not contained here, contact your Dealer

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# 1. SAFETY

## 1.1 HOW TO READ THE MANUAL

Some paragraphs in the manual containing information of particular importance for safety and operation are highlighted at various levels of emphasis, and signify the following:

**NOTE**

or

**IMPORTANT**

These give details or further information on what has already been said, and aim to prevent damage to the machine.

**⚠ WARNING!**


**Non-observance will result in the risk of injury to oneself or others.**


**⚠ DANGER!**

**Non-observance will result in the risk of serious injury or death to oneself or others.**

This manual describes various versions of the machine, which mainly differ in:

- type of transmission: with mechanical gear-change or with hydrostatic continuous speed adjustment;
- the inclusion of components or accessories which may not be available in some areas;
- special equipments fitted.

The symbol  highlights all differences in usage and is followed by the indication of the version to which it refers.

The symbol “” makes a reference to another part of the manual where further information or clarification can be found.

**NOTE**

Whenever a reference is made to a position on the machine “front”, “back”, “left” or “right” hand side, this is determined by facing the direction of forward travel.

**IMPORTANT**

For all usage and maintenance operations on the engine or the battery which are not described in this manual, consult the relevant manuals which form an integral part of all the documentation supplied with the machine.

## 1.2 SAFETY REGULATIONS

(read carefully before using the machine)

### A) TRAINING

- 1) Read the instructions carefully. Be familiar with the controls and the proper use of the equipment.
- 2) Never allow children or people unfamiliar with these instructions to use the lawnmower. Local regulations can restrict the age of the operator.
- 3) Never mow while people, especially children, or pets are nearby.
- 4) Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- 5) Do not carry passengers.
- 6) All drivers should seek and obtain professional and practical instruction. Such instruction should emphasise:
  - the need for care and concentration when working with ride-on machines;
  - control of a ride-on machine sliding on a slope will not be regained by the application of the brake. The main reasons for loss of control are:
    - insufficient wheel grip;
    - being driven too fast;
    - inadequate braking;
    - the type of machine is unsuitable for its task;
    - lack of awareness of the effect of ground conditions, especially slopes;
    - incorrect hitching and load distribution.

### B) PREPARATION

- 1) While mowing, always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- 2) Thoroughly inspect the area where the equipment is to be used and remove all objects which can be thrown by the machine.
- 3) **DANGER!** Petrol is highly flammable:
  - store fuel in containers specifically designed for this purpose;
  - refuel outdoors only and do not smoke while refuelling;
  - add fuel before starting the engine. Never remove the cap of the fuel tank or add petrol while the engine is running or when the engine is hot;
  - If petrol is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until the petrol vapours have dissipated;
  - replace all fuel tank and container caps securely.
- 4) Replace faulty silencers.
- 5) Before using, always visually inspect to see that the blades, blade bolts and cutter assembly are not worn or damaged. Replace worn or damaged blades and bolts in sets to preserve balance.
- 6) On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.

### C) OPERATION

- 1) Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.

- 2) Mow only in daylight or good artificial light.
- 3) Before attempting to start the engine, disengage all blade attachment clutches and shift into neutral.
- 4) Do not use on slopes of more than 10° (17%).
- 5) Remember there is no such thing as a “safe” slope. Travel on grass slopes requires particular care. To guard against overturning:
  - do not stop or start suddenly when going up or downhill;
  - engage the clutch slowly and always keep the machine in gear, especially when travelling downhill;
  - machine speeds should be kept low on slopes and during tight turns;
  - stay alert for humps and hollows and other hidden hazards;
  - never mow across the face of the slope.
- 6) Use care when pulling loads or using heavy equipment:
  - use only approved drawbar hitch points;
  - limit loads to those you can safely control;
  - do not turn sharply. Use care when reversing;
- 7) Stop the blades rotating before crossing surfaces other than grass.
- 8) Never operate the machine with defective guards, or without safety protective devices in place.
- 9) Do not change the engine governor settings or overspeed the engine. Operating the engine at excessive speed can increase the hazard of personal injury.
- 10) Before leaving the operator’s position:
  - disengage the power take-off and lower the attachments;
  - change into neutral and set the parking brake;
  - stop the engine and remove the key.
- 11) Disengage drive to attachments, stop the engine and remove the ignition key:
  - before clearing blockages or unclogging chutes;
  - before cleaning, checking or working on the machine;
  - after striking a foreign object. Inspect the machine for damage and make repairs before restarting and operating the equipment;
  - If the machine starts to vibrate abnormally (check immediately).
- 12) Disengage drive to blades when transporting or not in use.
- 13) Stop the engine and disengage drive to the attachment:
  - before refuelling;
  - before removing the grass catcher.
- 14) Reduce the throttle setting during engine run-out and, if the engine is provided with a shut-off valve, turn the fuel off at the conclusion of mowing.

## **D) MAINTENANCE AND STORAGE**

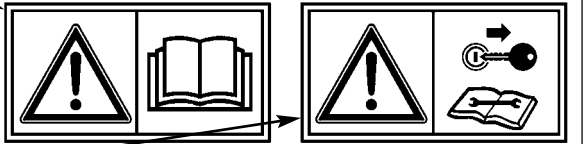
- 1) Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
- 2) Never store the equipment with petrol in the tank inside a building where fumes may reach an open flame or spark.
- 3) Allow the engine to cool before storing in any enclosure.
- 4) To reduce the fire hazard, keep the engine, silencer, battery compartment and petrol storage area free of grass, leaves, or excessive grease.
- 5) Check the grass catcher frequently for wear or deterioration.
- 6) Replace worn or damaged parts for safety.
- 7) If the fuel tank has to be drained, this should be done outdoors.
- 8) On multi-bladed machines, take care as rotating one blade can cause other blades to rotate.
- 9) When the machine is to be stored or left unattended, lower the cutting deck.

### 1.3 SAFETY DECALS

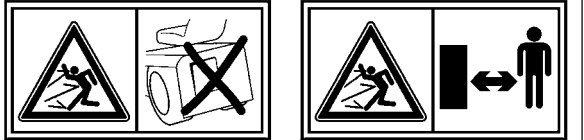
Your machine must be used with care. Therefore, decals have been placed on the machine, to remind you pictorially of the main precautions to take during use. These decals are to be considered an integral part of the machine.

If a decal should fall off or become illegible, contact your Retailer to replace it. Their meaning is explained below.

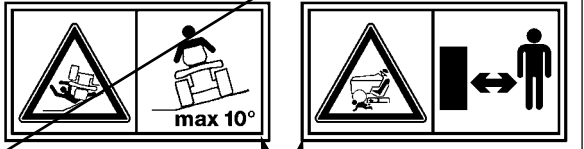
**Warning:** Read the Operator's Manual before operating this machine.



**Warning:** Disconnect the ignition key and read the instructions before carrying out any repair or maintenance work.



**Danger! Ejected objects:** Do not operate without either the stone-guard or grass-catcher in place.



**Danger! Ejected objects:** Keep bystanders away.

**Danger! Machine rollover:** Do not use this machine on slopes greater than 10°.

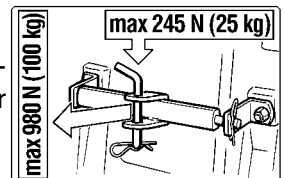
**Danger! Dismemberment:** Make sure that children stay clear of the machine all the time when engine is running.



**Danger of cutting yourself.** Blades in movement. Do not put hands or feet near or under the opening of the cutting plate.

### 1.4 REGULATIONS FOR TOWING

A kit for towing a small trailer is available on request. This accessory is to be fitted as per the instructions provided. When using, do not exceed the recommended drawbar loads stated on the decal and follow the safety instructions, (☛ 1.2, C-6).



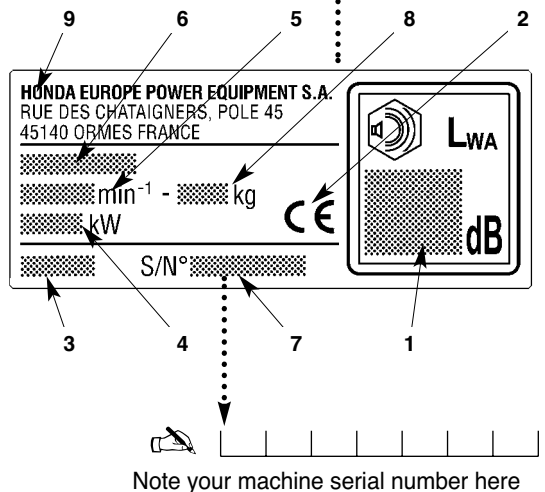
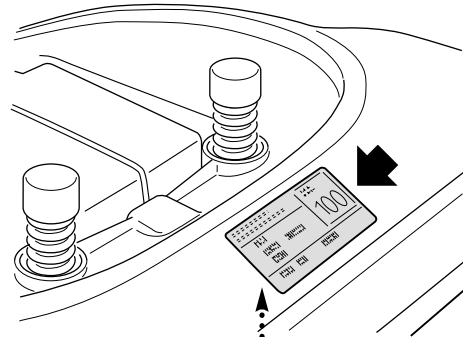
## 2. IDENTIFICATION OF THE MACHINE AND COMPONENTS

### 2.1 IDENTIFICATION OF THE MACHINE

The plate located near the battery housing has the essential data of each machine.

The serial number (7) must be quoted when you require technical assistance or spare parts.

1. Acoustic power level according to directive 2000/14/CE
2. Conformity mark according to directive 98/37/EEC
3. Year of manufacture
4. Nominal power
5. Operating engine speed in r.p.m
6. Type of machine
7. Serial number
8. Weight in kg
9. Name and address of Manufacturer



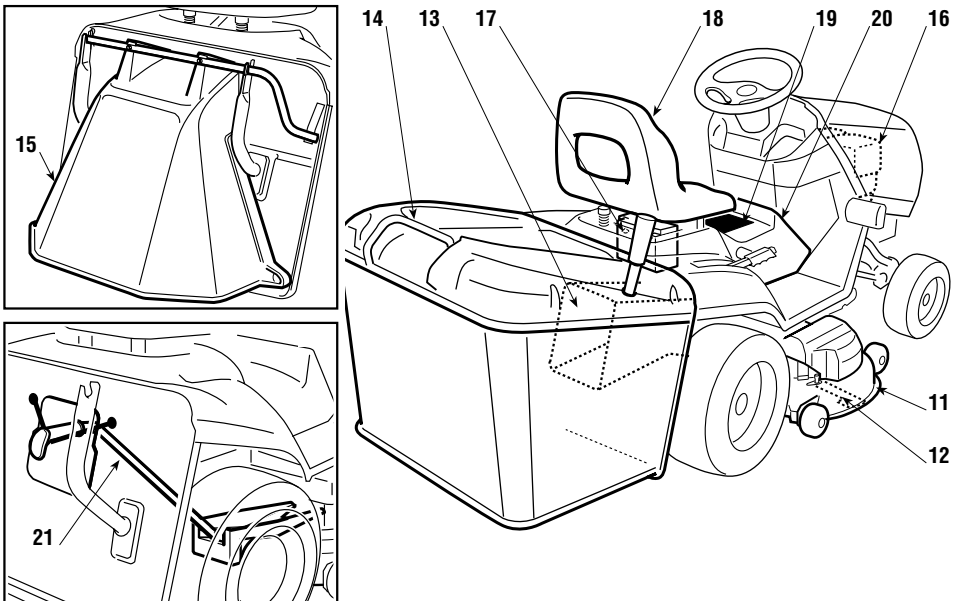
### 2.2 IDENTIFICATION OF MAIN COMPONENTS

Various main components can be seen on the machine, and these have the following functions:

11. **Cutting deck:** this is the guard enclosing the rotating blades.



12. **Blades:** these are what cut the grass. The wings at the ends help convey the cut grass towards the collector channel.
13. **Collector channel:** this is the part connecting the cutting deck to the grass-catcher.
14. **Grass-catcher:** as well as collecting the grass cuttings, this is also a safety element in that it stops any objects drawn up by the blades from being thrown outside of the machine.
15. **Stone-guard or deflector (available as optional part):** this can be fitted in place of the grass-catcher and prevents objects drawn up by the blades from being thrown outside of the machine.
16. **Engine:** this moves the blades and drives the wheels. Its specifications and regulations for use are described in a specific manual.
17. **Battery:** provides the energy for starting the engine. Its specifications and regulations for use are described in a specific manual.
18. **Driver seat:** this is where the machine operator sits. It has a sensor for detecting the presence of the operator which is a safety device.
19. **Decals for regulations and safety:** give reminders on the main provisions for working safely, each of which is explained in chapter 1.
20. **Inspection hatch:** for access to make several adjustments.
21. **Mulching plug:** it finely chops the grass cuttings and leaves them on the lawn, instead of collecting them in the grass-catcher.



### 3. UNPACKING AND ASSEMBLY

For storage and transport reasons, some components of the machine are not directly installed in the factory, but have to be assembled after their removal from the packing. Final assembly is carried out by following these simple instructions.

**IMPORTANT**

The machine is supplied without engine oil or fuel. Before starting up the engine, fill with oil and fuel following the instructions given in the engine manual.

#### 3.1 UNPACKING

When unpacking the machine, take care to gather all individual parts and fittings, and do not damage the cutting deck when taking the machine off the base pallet. The packing contents:

- the machine;
- the steering wheel;
- the seat;
- the grass-catcher brackets;
- the grass-catcher components;
- the battery charger CB01;
- the mulching plug (☛ 5.8);
- an envelope containing:
  - the operator's manuals and documents,
  - the nuts and bolts including a pin for blocking the steering wheel,
  - 2 starter keys and a spare 6.3 A fuse.

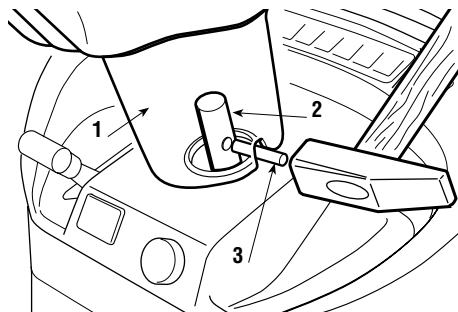
**NOTE**

To prevent damaging the cutting deck when getting the machine down from the pallet, take it to the maximum height and be very careful. ☑ For hydrostatic drive models: to make it easier to get the machine off the pallet and to move it, the drive disengage lever should be put in position «B» (☛ 4.33).

#### 3.2 FITTING THE STEERING WHEEL

Put the machine on a flat surface and straighten up the front wheels.

Fit the steering wheel (1) onto the protruding shaft (2) with the spokes directed towards the seat.



Line up the hole in the steering wheel hub with the hole in the shaft and insert the pin supplied (3) using a hammer, ensuring that the end comes completely through to the opposite side.

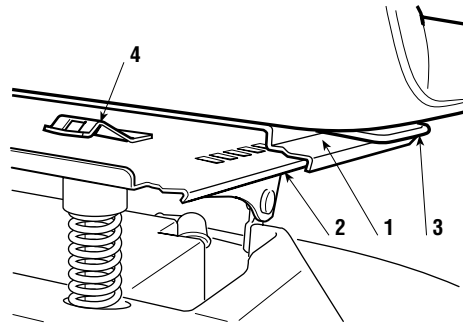
**NOTE**

To avoid damaging the steering wheel, use a punch of the same size as the pin when hammering it in the last part

**3.3 FITTING THE SEAT**

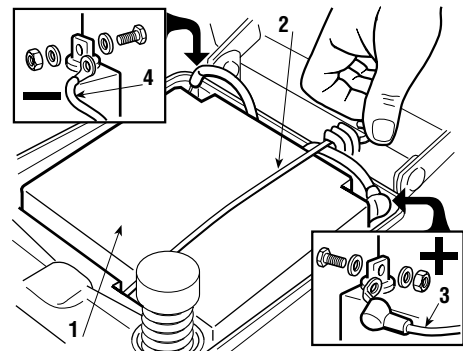
Raise the adjustment lever (3) and fit the seat (1) in the slide (2), introducing it from the steering wheel's side, till the seat engages in one of the 6 positions.

At this point the seat is engaged and cannot be completely removed unless the lever (4) is pressed, freeing it from its retainer

**3.4 CONNECTING THE BATTERY**

The battery (1) is situated under the seat and is held in place by a spring (2).

Connect the red cable (3) to the positive terminal (+) and the black cable (4) to the negative terminal (-) using the supplied screws and following the illustrated sequence.



**IMPORTANT**

Always fully charge the battery according to the instructions in the battery's manual (➔ 6.2.5).

**IMPORTANT**

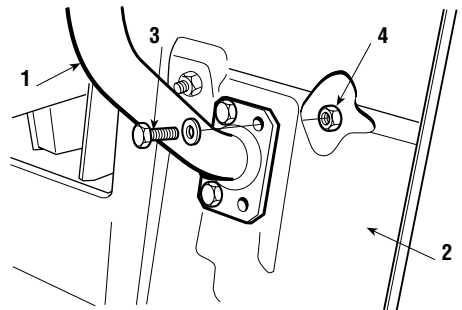
To prevent the safety device in the electronics card from cutting in, never start the engine until the battery is fully charged!

**⚠ WARNING!**

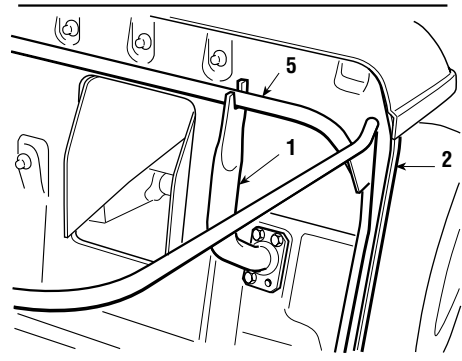
**Follow the battery manufacturer's instructions regarding safe handling and disposal.**

### 3.5 FITTING THE GRASS-CATCHER BRACKETS

Fit the two brackets (1) on the rear plate (2), using for each bracket three screws (3) which are supplied, as shown, without fully tightening the nuts (4).

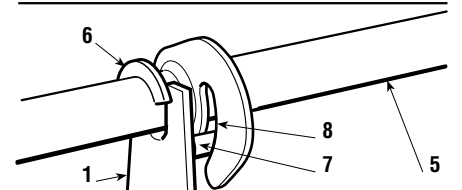


Hook the upper part of the grass-catcher frame (5) onto the brackets and centre it up with the rear plate (2).



Adjust the position of the two brackets (1) to the stop (6) so that, when turning the grass-catcher frame, the pin (7) slots into the seat (8) correctly.

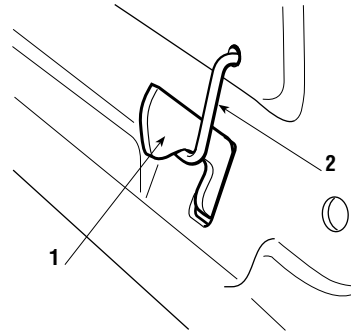
Check again that the frame (5) is properly centred with the rear plate (2) and that it rotates correctly, as shown above, and then fully tighten the screws (3) and the nuts (4).



### 3.6 REMOVAL OF THE STOP FROM THE HOOKING PAWL OF THE GRASS-CATCHER

For transport purposes, the pawl (1) hooking the grass-catcher is held onto the rear plate by a stop (2).

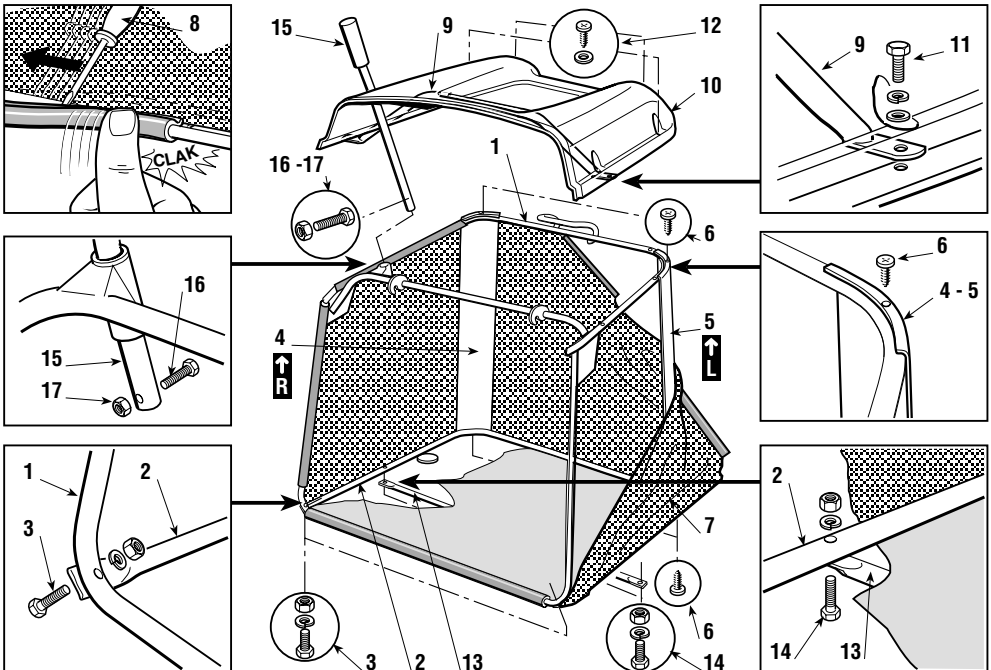
This stop must be removed before fitting the grass-catcher brackets, and is not to be subsequently used.



### 3.7 GRASS-CATCHER ASSEMBLY

The grass-catcher is assembled in four stages:

**A)** First of all assemble the frame, joining the upper part (1) to the lower part (2) using the supplied screws and nuts (3) as shown. Position the angle plates (4)

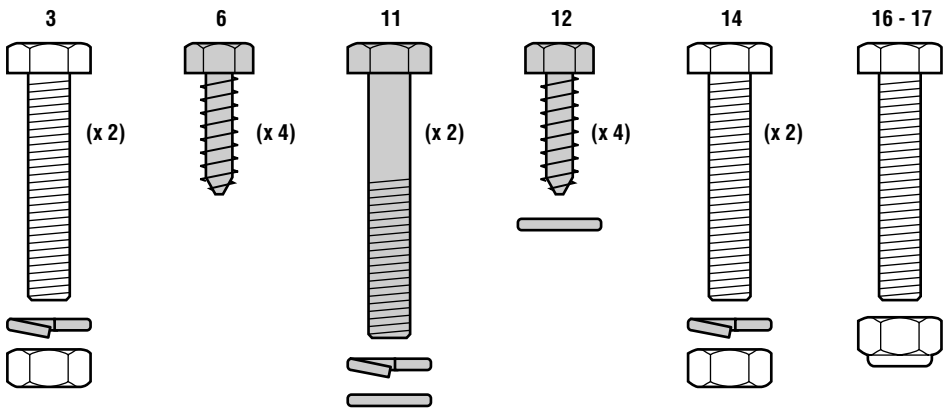


and (5), making sure that they are for the right (R ↑) and left (L ↑), sides, and attach them to the frame using the four self-threading screws (6).

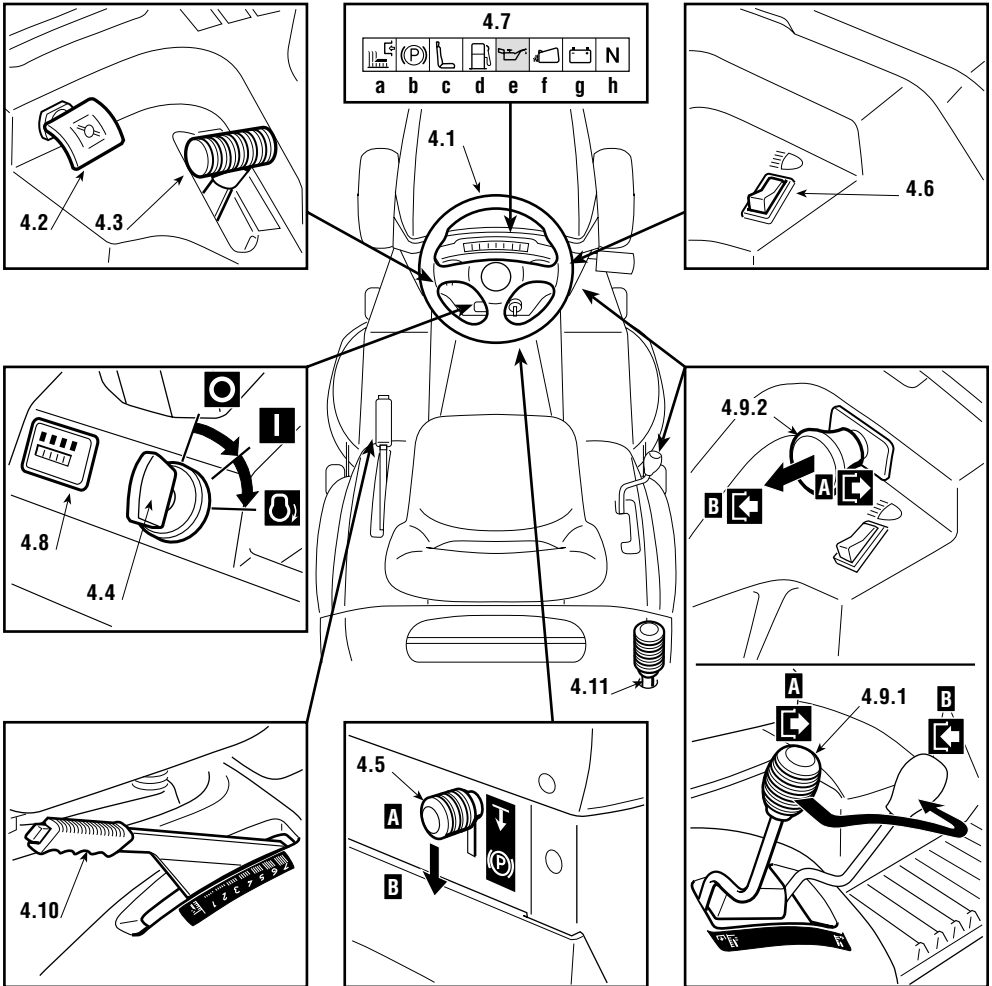
**B)** Insert the frame in the canvas cover (7) making sure it is correctly positioned on the base perimeter. Hook the plastic profiles onto the frame tubes with the aid of a screw-driver (8).

**C)** Insert the handle (9) into the holes of the canvas cover (10). Attach this to the frame using the screws (11), following the indicated sequence, and then the self-threading screws (12) at the rear.

**D)** Attach the stiffening bar (13) under the frame with screws and nuts (14) keeping the flat part turned towards the canvas. Insert the emptying lever (15) in its position and put in the limit stop screw (16) with its nut (17).



## 4. CONTROLS AND INSTRUMENTS



### 4.1 STEERING WHEEL

Turns the front wheels.





### 4.2 CHOKE CONTROL (▶ HF2220)


This enriches the mixture so must only be used for the time necessary when starting from cold.

### 4.3 ACCELERATOR LEVER

Regulates the engine's r.p.m. The positions are indicated on a plate showing the




following symbols:

	«CHOKE»	(  HF2216) for starting from cold
	«SLOW»	for minimum engine speed
	«FAST»	for maximum engine speed

- The «CHOKE» position (  HF2216) enriches the mixture so must only be used for the time necessary when starting from cold.
- When moving from one area to another, put the lever in a position between «SLOW» and «FAST».
- When cutting, go to the «FAST» position.

#### 4.4 KEY IGNITION SWITCH

This key operated control has three positions:

	«OFF»	everything is switched off;
	«ON»	activates electric power;
	«START»	engages the starter motor.

On being released at the «START» position, the key will automatically return to «ON».

#### 4.5 PARKING BRAKE LEVER

This lever is to stop the machine from moving when it has been parked. There are two positions:

«A»	= Brake off
«B»	= Brake engaged

- The brake is engaged by fully pressing the pedal (4.21 or 4.31) and moving the lever to position «B». When you take your foot off the pedal it will be blocked by the lever in the down position.
- A pilot lamp will warn that the brake is engaged (4.7.b).
- To disengage the parking brake, press the pedal (4.21 or 4.31). The lever will return to position «A».











#### 4.6 LIGHT SWITCH

For turning on the lights when the key (4.4) is in the «ON» position.

#### 4.7 PILOT LAMPS AND AUDIBLE WARNINGS

There is a panel on the dashboard with a set of pilot lamps which work when the key (4.4) is in the «ON» position.

– The lighting of these lamps means:

- a)  blades engaged;
- b)  parking brake engaged;
- c)  seat without operator;
- d)  low fuel;
- e)  (  HF2220) problems in the engine oil;
- f)  missing grass-catcher or stone-guard;
- g)  insufficient battery recharge;
- h) N transmission in “neutral” position.

– There are two types of audible warning:

- a) **continuous** the electronic card’s protection device has cut in;
- b) **intermittent** warning that the grass-catcher is full.



#### 4.8 HOUR COUNTER

This starts working every time the key is put into the «ON» position and shows the number of hours the engine has been running.

#### 4.9 BLADE ENGAGEMENT AND BRAKE CONTROL

##### For models with engagement by lever


• The lever (4.9.1) has two positions, as shown on the label:

-  «A» = Blades disengaged
-  «B» = Blades engaged

- – If the blades are engaged when safety conditions have not been complied with, the engine shuts down and cannot be restarted (☛ 5.2).
- – The “Blades engaged” condition is indicated by a pilot lamp (4.7.a).
- – On disengaging the blades (position «A»), a brake is simultaneously activated which stops their rotation in few seconds.

### ► For models with engagement by electromagnetic clutch

- The pushbutton (4.9.2) is for engaging the blades by an electromagnetic clutch:

●  «A» Pressed = Blades disengaged

●  «B» Pulled = Blades engaged

- – If the blades are engaged when safety conditions have not been complied with, the engine shuts down and cannot be restarted (☛ 5.2).
- – The “Blades engaged” condition is indicated by a pilot lamp (4.7.a).
- – On disengaging the blades (position «A»), a brake is simultaneously activated which stops their rotation in few seconds.

#### 4.10 CUTTING HEIGHT ADJUSTING LEVER

There are seven positions for this lever, shown as «1» to «7» on the label, which correspond to various heights of between 3 and 9 cm.

- To go from one height to another, press the release button at the end of the lever.

#### 4.11 LEVER FOR TIPPING THE GRASS-CATCHER

This lever, when pulled out from its hole, is to tip the grass-catcher to empty it and reduce the effort required by the operator.

► For mechanical drive models:

4.21 CLUTCH / BRAKE PEDAL

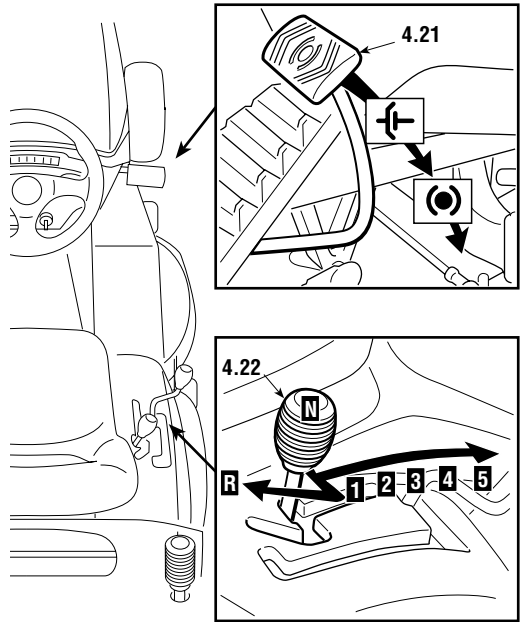
This pedal has a double function - during the first part of its travel it acts as a clutch, engaging and dis-engaging drive to the wheels, and in the second part it acts as a brake on the rear wheels

**IMPORTANT**

Do not maintain the pedal in half way of clutch engagement or dis-engagement; this can cause overheating and damage the transmission belt.

**NOTE**

When the machine is in movement, keep your foot off the pedal.



4.22 SPEED CHANGE LEVER

This lever has seven positions for the 5 forward speeds, the neutral position «N», and reverse «R». To go from one speed to another, press the pedal (4.21) half way and move the lever as per the indications on the label.

**⚠ WARNING!**

Reverse must only be engaged when the machine is stopped.

► For hydrostatic drive models:

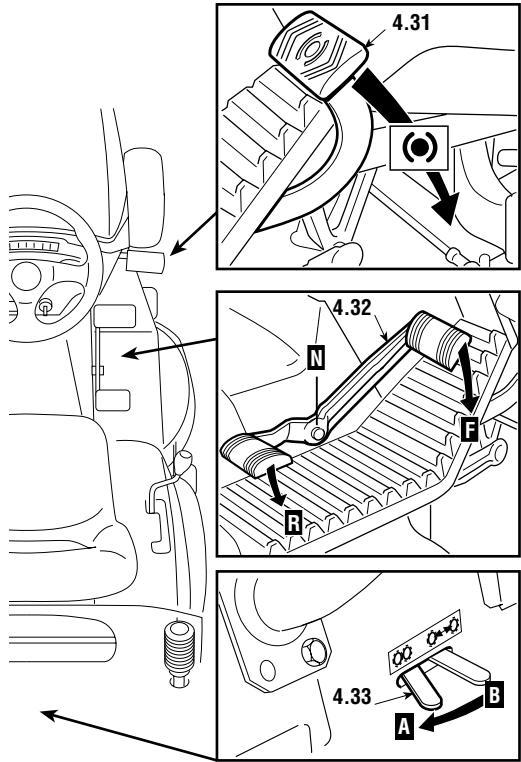
4.31 BRAKE PEDAL

This pedal works the brake on the rear wheels.

4.32 DRIVE ENGAGEMENT PEDAL

This pedal engages drive in the wheels as well as modulating the machine's

- forward and reverse speeds.
- – To engage forward drive just press it in the «F» direction with your toe-cap, noting that increasing the pressure on the pedal progressively increases the speed of the machine
- – Reverse is engaged by pressing the pedal with the heel, in the «R» direction.
- – The pedal automatically goes into neutral «N» when released.
- – The neutral condition «N» is shown by the lighting of a pilot lamp (4.7.h).



**⚠ WARNING!** Reverse must only be engaged when the machine is stopped.

**NOTE** If the drive pedal is used, whether forwards or for reverse, when the parking brake (4.5) is engaged, the engine stops.

**4.33 LEVER TO RELEASE THE HYDROSTATIC TRANSMISSION**

This lever has two positions as shown on the label:

- «A» = Transmission engaged: for all usage conditions, when moving and during cutting;
- «B» = Transmission released: considerably reduces the effort required for moving the machine by hand, with the **engine turned off**.

## 5. HOW TO USE THE MACHINE

### 5.1 SAFETY RECOMMENDATIONS

#### **⚠ DANGER!**

The machine must only be used for the purpose for which it was designed (cutting and collection of grass).

Do not tamper with or remove the safety devices fitted to the machine. **REMEMBER THAT THE USER IS ALWAYS RESPONSIBLE FOR DAMAGE AND INJURIES TO OTHERS.** Before using the machine:

- read the general safety regulations ( ↗ 1.2), paying particular attention to driving and cutting on slopes;
- carefully read the instructions for use, become familiar with the controls and on how to quickly stop the blades and engine;
- never put your hands or feet next to or beneath the rotating parts and always keep away from the discharge opening.

Do not use the machine when in a precarious state of health or under the effect of medicines or other substances that can reduce your reflex actions and your ability to concentrate. It is the user's responsibility to assess the potential risk of the area where work is to be carried out, as well as to take all the necessary steps to ensure his own safety and that of others, particularly on slopes or rough, slippery and unstable ground. Do not leave the machine stopped on highgrass with the engine running to avoid the risk of starting a fire.

#### **⚠ WARNING!**

This machine must not be used on slopes greater than 10° (17%) ( ↗ 5.5).

#### **IMPORTANT**

All the references relating to the positions of controls are those described in chapter 4.

### 5.2 WHY THE SAFETY DEVICES CUT IN

The safety devices work in two ways:

- by preventing the engine from starting if all the safety requirements have not been met;
- stopping the engine if even just one of the safety requirements is lacking.

To start the engine it will be necessary that:

- the transmission is in “neutral”;
- the blades are not engaged;
- the operator is seated or the parking brake is engaged.

The engine stops when:

- the operator leaves his seat when the blades are engaged;
- the operator leaves his seat when the transmission is not in “neutral”;
- the operator leaves his seat with the transmission in “neutral” but without engaging the parking brake;
- the grass-catcher is lifted or the stone-guard is removed when the blades are engaged

The table below shows various operating conditions, **highlighting** why the safety device shuts down the engine.

OPERATOR	GR.-CATCHER	BLADES	TRANSMISSION	BRAKE	ENGINE	PILOT LAMPS
<b>A) PILOT LAMPS ON</b> (Key in «ON» position)						
Sitting	YES	Disengaged	«N»	Engaged	Stopped	□■□□□□■
Sitting	NO	Disengaged	«N»	Disengaged	Stopped	□□□□■
<b>B) WHEN STARTING</b> (Key in «START» position)						
Sitting	-/-	Disengaged	<b>1...5 - F / R</b>	Engaged	Does NOT start	□■□□□□□
Sitting	-/-	<b>Engaged</b>	«N»	Engaged	Does NOT start	■□□□□□■
<b>Absent</b>	-/-	Disengaged	«N»	<b>Disengaged</b>	Does NOT start	□□■□□□■
<b>C) WHEN MOVING ONLY</b> (Key in «ON» position)						
Sitting	YES	Disengaged	<b>1...5 - F / R</b>	<b>Engaged</b>	Stops	□■□□□□□
<b>Absent</b>	YES	Disengaged	«N»	<b>Disengaged</b>	Stops	□□■□□□■
<b>D) WHEN CUTTING</b> (Key in «ON» position)						
Sitting	<b>NO</b>	<b>Engaged</b>	-/-	Disengaged	Stops	■□□□■□□
<b>Absent</b>	YES	Disengaged	«N»	<b>Disengaged</b>	Stops	□□■□□□■
<b>Absent</b>	YES	<b>Engaged</b>	-/-	Engaged	Stops	■□□□□□□

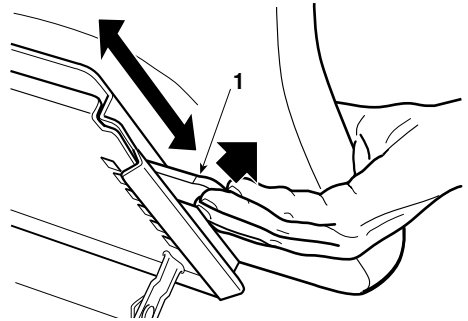
### 5.3 DIRECTIONS BEFORE STARTING THE WORK

Before starting to work it is necessary to carry out several of checks and operations to ensure that the work gives the best results and is done in maximum safety.

#### 5.3.1 SEAT ADJUSTMENT

The sliding seat can be adjusted into six positions.

The position is changed by pulling up the handle (1) and sliding the seat along to the notch of the position wanted.



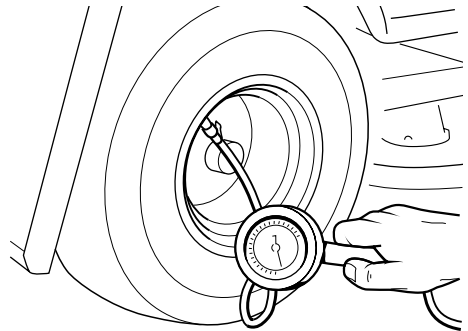
#### 5.3.2 TYRE PRESSURE

Having the correct tyre pressure is the main condition for ensuring that the cutting deck is horizontal and thus mows evenly.

Unscrew the valve caps and connect a compressed air line with a gauge to the valves.

The pressures are:

FRONT	1.0 bar
REAR	1.2 bar

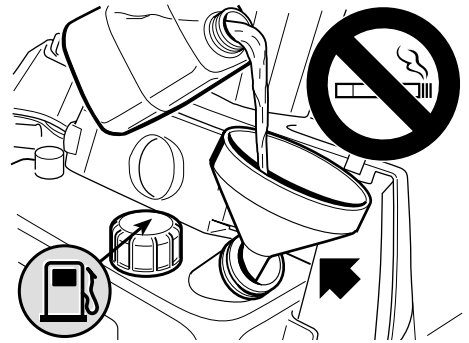
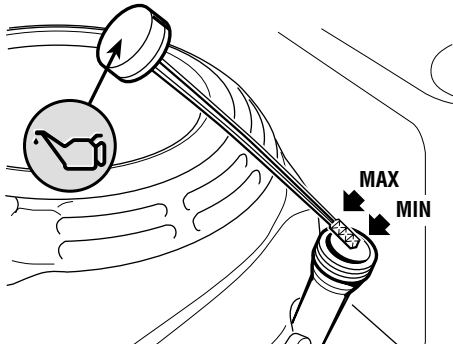


#### 5.3.3 FILLING WITH OIL AND FUEL

##### NOTE

The type of oil and fuel to use is given in the engine manual.

With the engine stopped, check its oil level. Exactly following the methods



described in the engine manual, this must be between the MIN and MAX marks on the dipstick.

Refuel using a funnel, but do not completely fill the tank. The tank's capacity is about 7 litres.

**⚠ DANGER!** Refuelling should be carried out in an open or well ventilated area with engine stopped. Always remember that petrol fumes are inflammable. **DO NOT TAKE A NAKED FLAME TO THE TANK'S OPENING IN ORDER TO SEE THE TANK'S CONTENTS AND DO NOT SMOKE WHEN REFUELLING.**

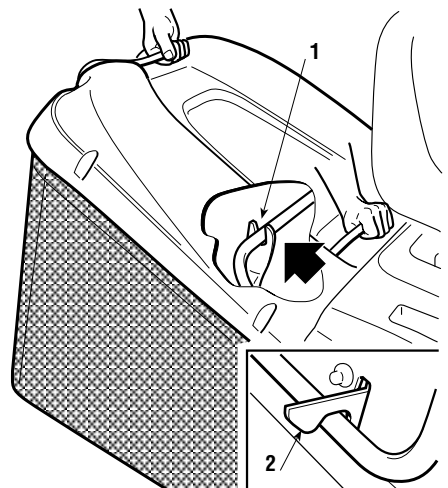
#### 5.3.4 FITTING THE PROTECTION AT THE EXIT (GRASS-CATCHER OR STONE-GUARD)

**⚠ WARNING!** Never use the machine without having fitted the exit protection!

Attach the grass-catcher inserting the upper tube of the frame into the slots of the 2 brackets (1).

Make sure that the lower tube of the opening of the grass-catcher clicks onto the pawl (2).

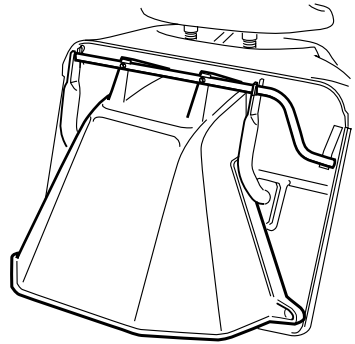
If the hook is too stiff or too loose, adjust the return spring (☛ 6.3.6)





If you would like to mow without using the grass-catcher, an optional stone-guard kit (☛ 8.2) is available.

This has to be attached to the rear plate as indicated in the relevant instructions.



### 5.3.5 CHECKING THE EFFECTIVENESS OF THE SAFETY DEVICES

Check that the safety systems are working properly by simulating the various situations of usage shown in the table (☛ 5.2) and making sure that the correct result is achieved for each situation.

### 5.3.6 CHECKING THE BRAKING SYSTEM

Make sure that the machine's braking capacity is adequate for the conditions of usage. Avoid starting the machine if you have doubts on the brake efficiency.

If necessary, adjust the brake (☛ 6.3.4) and if you still have doubts on its efficiency, consult your Dealer.

### 5.3.7 CHECKING THE BLADES

Check that the blades are sharpened properly and firmly fixed to their hubs.

- A badly sharpened blade pulls at the grass and causes the lawn to turn yellow.
- A loose blade causes unusual vibrations and can be dangerous.

#### **⚠ WARNING!**

**Wear strong gloves when handling the blades.**

## 5.4 USING THE MACHINE

### 5.4.1 STARTING

**⚠ DANGER!** All starting operations have to be effected in an open or well ventilated area! ALWAYS REMEMBER THAT EXHAUST GASES ARE TOXIC!

To start the engine:

- engage the parking brake on sloping ground;
- put the transmission into neutral («N») (☛ 4.22-mechanical model- or 4.32 - hydrostatic model-);
- disengage the blades (☛ 4.9);
- when starting from cold, use the choke (☛ HF2220) or put the accelerator lever in the «CHOKE» position shown on the label (☛ HF2216) ;
- if the engine is already warm, put the lever between «SLOW» and «FAST»;
- put in the key and turn to «ON» to make electrical contact, then turn to «START» to start the engine;
- release the key once the engine has started.

When the engine has started, put the accelerator in the «SLOW» position and close the choke (☛ HF2220).

**IMPORTANT**

The choke must be closed as soon as the engine is running smoothly. Using when the engine is already warm can foul the spark plugs and cause the engine to run erratically.

**NOTE**

Should you have difficulties in starting do not persist with using the starter motor as this can run down the battery or flood the engine. Turn the key to the «OFF» position, wait for a few seconds and then repeat the operation. If the malfunction continues, refer to chapter «7» of this manual and to the engine manual.

**IMPORTANT**

Always bear in mind that the safety devices prevent the engine starting when:

- the blades are engaged;

- the transmission is not in neutral («N»).
  - the operator is absent with the parking brake disengaged.
- In these cases, once the situation has been corrected, the key must first be turned back to “OFF” before the engine can be restarted..

#### 5.4.2 STARTING AND MOVING WITHOUT MOWING

**⚠ WARNING!** This machine has not been approved for use on public roads. It has to be used (as indicated by the highway code) in private areas closed to traffic.

**NOTE**

When moving the machine, the blades must be disengaged and the cutting deck put at its highest position (position «7»).

**▶ For mechanical drive models:**

- Put the accelerator control between the «SLOW» and «FAST» positions, and the gear change lever in the 1st speed position (☛ 4.22).
- Keep the pedal pressed down and disengage the parking brake. Slowly release the pedal which will turn from «brake» to «clutch», thus operating the rear wheels (☛ 4.21).

**⚠ WARNING!** The pedal has to be released gradually as a sudden engagement may cause tipping up and loss of control of the vehicle.

- Gradually reach the desired operating speed using the accelerator and gear lever. To change the gear speed the clutch must be used pushing the pedal down half way (☛ 4.21).

**▶ For hydrostatic drive models:**

- When moving the machine from one area to another, put the accelerator lever in a midway position between «SLOW» and «FAST».
- Disengage the parking brake and release the brake pedal (☛ 4.31).
- Press the drive pedal (☛ 4.32) in direction «F» and go to the required speed by progressively increasing pressure on the pedal and moving the accelerator appropriately.

- **⚠ WARNING!** Drive must be engaged in the way already described
- (☛ 4.32) to prevent sudden engagement from causing tipping up and
- loss of control of the vehicle, particularly on slopes.

### 5.4.3 BRAKING

First, reduce the machine's speed by reducing the engine's r.p.m. and then push the brake pedal (☛ 4.21 -mechanical model or 4.31 -hydrostatic model) to further reduce the speed until the machine stops.

#### ▶ For hydrostatic drive models:

- **NOTE** The machine already slows down considerably by just
- releasing the drive pedal.

### 5.4.4 REVERSE

Reverse must be engaged ONLY when the machine is stopped.

#### ▶ For mechanical drive models:

- Push down the pedal until the machine stops and then insert reverse by moving the lever sideways and putting it into position «R». (☛ 4.22). Gradually
- release the pedal to engage the clutch and then begin moving in reverse.

#### ▶ For hydrostatic drive models:

- When the machine is stopped, start the reverse movement by pressing the
- drive pedal in the «R» direction (☛ 4.32).

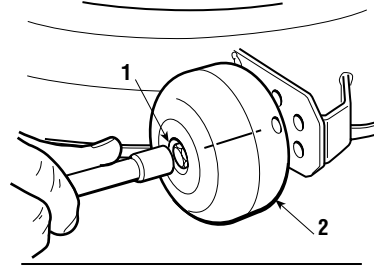
### 5.4.5 GRASS CUTTING

When you have reached the area to be mowed, make sure that the grass-catcher or stone-guard is correctly fitted and that the cutting deck anti-scalp wheels are positioned at the required height.

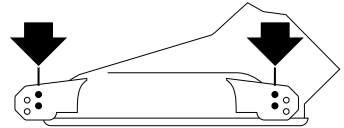
Each anti-scalp wheel can be fitted at two different heights: the low position

always leaves a space between the ground and the edge of the cutting deck to prevent the deck from damaging the lawn if the ground is uneven. The higher position excludes this possibility.

To change the position, unscrew and remove the pin (1) then reposition the wheel (2) in the upper and lower hole of the wale shown on the figure.



**⚠ WARNING!** This work is to be done to all four wheels, WITH THE ENGINE OFF AND THE BLADES DISENGAGED.



To start cutting:

- put the accelerator into the «FAST» position;
- bring the cutting deck to the highest position;
- engage the blades (☛ 4.9);
- start moving forwards onto the grass area very gradually and with particular caution, as already described;
- adjust the forward speed and the cutting height (☛ 4.10) according to the lawn condition (height, density and dampness of the grass). On flat ground, these general conditions can be followed

<b>High and dense grass - wet lawn</b>	<b>2,5 km/h</b>
<b>Average condition grass</b>	<b>4 ... 6 km/h</b>
<b>Low grass - dry lawn</b>	<b>over 6 km/h</b>

**▶ For hydrostatic drive models:**

- The speed is controlled in a gradual and progressive way by the pressure on
- the drive pedal.

**⚠ WARNING!** When cutting on sloping ground, the forward speed must be reduced to ensure safe conditions (☛ 1.2 - 5.5).

In any case, the speed should always be lowered if you note a reduction in engine speed, since a forward speed that is too fast compared to the amount of grass being cut will never mow the grass well.

Disengage the blades and put the cutting deck in the highest position whenever you need to get past an obstacle.

### 5.4.6 EMPTYING THE GRASS-CATCHER

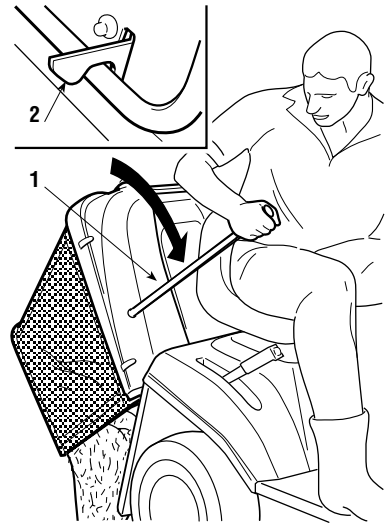
#### NOTE

This operation can only be done with the blades disengaged, otherwise the engine stops.

Do not let the grass-catcher become too full as this may block the collector channel.

When the grass-catcher is full there is an intermittent audible warning. At this point:

- lower the engine speed;
- go into neutral (N) (☛ 4.22 -mechanical model- or 4.32 -hydrostatic model-) and stop forward movement;
- engage the parking brake on slopes;
- disengage the blades (☛ 4.9) and the audible signal will stop;
- pull out the lever (1) and tip up the grass-catcher to empty it;
- close up the grass-catcher so that it hooks onto the pawl stop (2).



#### NOTE

At times the audible warning may be heard at the moment of engaging the blade even when the grass-catcher has been emptied. This is due to grass-cuttings left on the sensor of the micro-switch. To stop the signal, disengage the blade and then immediately engage it again

### 5.4.7 UNBLOCKING THE COLLECTOR CHANNEL

Cutting very tall or wet grass, particularly at too high speed, can cause the collector channel to become blocked. Should this happen, it will be necessary to:

- stop forward movement immediately, disengage the blades and stop the engine;
- take off the grass-catcher or stone-guard;
- remove the accumulated cuttings, reaching them from the exit of the collector channel.

#### ⚠ WARNING!

This job must only be performed with the engine turned off.

### 5.4.8 END OF MOWING

When you have finished mowing, disengage the blades, lower the engine speed and ride the machine with the cutting deck in the highest position.

### 5.4.9 END OF WORK

Stop the machine, put the accelerator lever in the «SLOW» position and turn off the engine by putting the key into the «OFF» position.

This automatically closes the fuel valve.

#### **⚠ WARNING!**

**Always take out the ignition key if leaving the machine unattended!**

### 5.4.10 CLEANING AND STORAGE

After each mowing, clean the outside of the machine, empty the grass-catcher and shake it to remove residual grass and earth.

#### **⚠ WARNING!**

**Always empty the grass-catcher and do not leave containers full of cut grass inside a room.**

Clean the plastic parts of the body with a damp sponge using water and detergent, taking care not to wet the engine, the electrical parts or the electronic card located under the dashboard.

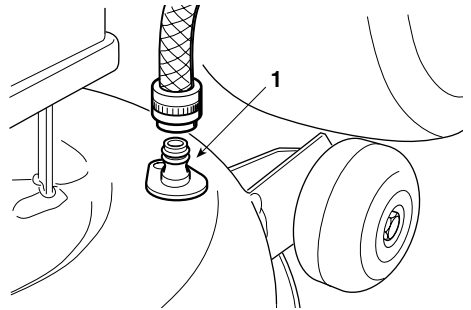
#### **IMPORTANT**

Never use hose-nozzles or harsh detergents for cleaning the body and engine!

For washing the inside of the cutting deck and the collector channel the machine must be on firm ground with:

- the grass-catcher or stone-guard fitted;
- the operator seated;
- the engine running;
- the transmission in neutral;
- the parking brake engaged;
- the blades engaged.

Connect a water hose to each of the pipe fittings (1) one at a time, and running water through for a few minutes each, with the blades turning.



When washing, the cutting deck should be in the fully lowered position. Take off the grass-catcher, empty and rinse it, and then put it in a position where it can dry quickly.

► **For models with electromagnetic clutch**

**IMPORTANT**

- To avoid unpairing the efficient working of the electromagnetic clutch:
- prevent the friction from coming into contact with oil;
  - do not direct jets of high-pressure water directly onto the clutch unit;
  - do not clean the clutch with petrol.

Put the machine away in a dry place protected from weather and, if possible, cover with a cloth.

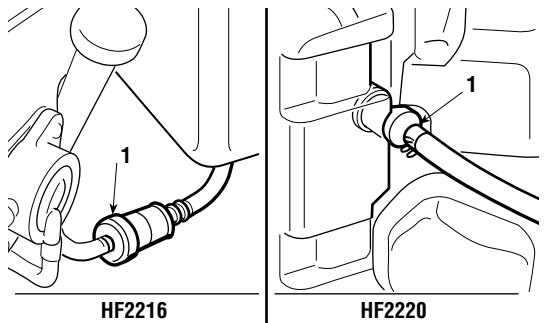
**5.4.11 STORAGE AND INACTIVITY FOR LONG PERIODS**

If the machine is likely to be unused for a long period (more than 1 month), disconnect the cables from the battery and follow the instructions in the engine manual. Lubricate all joints as directed (► 6.2.1).

**⚠ WARNING!**

**Carefully remove any dry grass cuttings which may have collected around the engine or silencer to prevent their catching fire the next time the machine is used!**

Empty the fuel tank by disconnecting the tube situated at the inlet of the fuel filter (1) and follow the instructions in the engine booklet. Re-connect the fuel line.





**⚠ DANGER!** Engine fuel is highly flammable. Store fuel in containers specifically designed for this purpose. Replace caps of all fuel tanks and containers securely.

**IMPORTANT** The battery must be kept in a cool and dry place. Before a long storage period (more than 1 month), always charge the battery, and then recharge before using again (☛ 6.2.5).

The next time the machine is used, check that there are no fuel leaks from the tubes, fuel cock or carburettor.

#### 5.4.12 USEFUL INFORMATION

##### A) Card protection device

The electronic card has a self-resetting protector which breaks the circuit if there is a fault in the electrical system. It results in the stopping of the engine and an audible signal which can only be stopped by removing the key.

The circuit automatically resets after a few seconds but the cause of the fault should be ascertained and dealt with to avoid re-activating the protection device.

**IMPORTANT** To avoid activating the protection device.

- do not reverse the leads on the battery terminals;
- do not use the machine without its battery or damage may be caused to the charging regulator;
- be careful to not cause short-circuits.

##### B) Warning lights

The fuel warning light (☛ 4.7.d) informs you that there are only 2 litres of fuel left in the tank, which is enough for 30-40 minutes of normal work.

**IMPORTANT** If, while running:

- the battery warning light comes on (☛ 4.7.g): see chapter 7 of this manual.

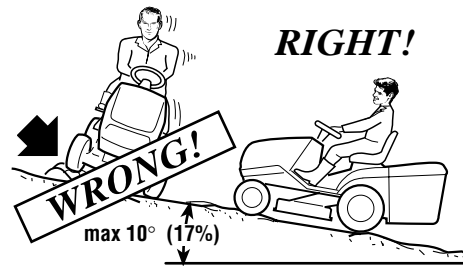
- the oil warning light comes on (☛ 4.7.e) (☛ HF2220): this means that there is not enough lubrication and so the engine must be stopped immediately.

### 5.4.13 SUMMARY OF THE MAIN ACTIONS TO BE CARRIED OUT WHEN USING THE MACHINE

To ...	You must ...
Start the engine (☛ 5.4.1)	Ensure that all the conditions allowing starting are met, and then turn the key
Go forward (☛ 5.4.2)	Move the accelerator; ☛ for mechanical drive models: push the pedal right down, engage the gear (☛ 4.22) and then gradually release the pedal; ☛ for hydrostatic drive models: press the drive pedal forward; (☛ 4.32);
Brake or stop (☛ 5.4.3)	Reduce the engine speed and press the brake pedal
Reverse (☛ 5.4.4)	Stop the machine; ☛ for mechanical drive models: put into neutral, push the pedal right down, engage reverse, (☛ 4.22) and then gradually release the pedal; ☛ for hydrostatic drive models: press the drive pedal back (☛ 4.32).
Cut the grass (☛ 5.4.5)	Fit the grass-catcher or stone-guard, adjust the height of the cutting deck wheels and move the accelerator; engage the blades and adjust the cutting height. ☛ for mechanical drive models: push the pedal right down, engage the gear (☛ 4.22) and then gradually release the pedal; ☛ for hydrostatic drive models: press the drive pedal forward; (☛ 4.32);
Empty the grass-catcher (☛ 5.4.6)	Stop forward movement, disengage the blades, and move the lever for tipping up the grass-catcher.
Unblock the collector channel (☛ 5.4.7)	Stop forward movement, disengage the blades and turn off the engine; remove the grass-catcher and clean the channel.
End mowing (☛ 5.4.8)	Disengage the blades and reduce the engine speed.
Stop the engine (☛ 5.4.9)	Reduce the engine speed, wait a few seconds, turn the key and close the fuel stopcock.
Store the machine (☛ 5.4.10)	Engage the parking brake, remove the key and, if necessary, wash the machine, the inside of the cutting deck, the collector channel and the grass-catcher.

## 5.5 USING ON SLOPES

Only mowing in any case on the maximum gradients already mentioned (**max 10° - 17%**), lawns on a slope have to be mowed moving up and down and never across them, taking great care when changing direction that the highest wheels do not hit obstacles (such as stones, branches, roots, etc.) that may cause the machine to slide sideways, tip over or otherwise cause loss of control.



**⚠ DANGER!** **REDUCE SPEED BEFORE ANY CHANGE OF DIRECTION ON SLOPES, and always engage the parking brake before leaving the machine stopped and unattended.**

**⚠ WARNING!** **Take care when beginning forward movement on sloping ground to prevent the risk of tipping up. Reduce the forward speed before going on a slope, particularly downhill.**

**⚠ DANGER!** **Never use reverse to reduce speed going downhill. Control of the machine may be lost, particularly on slippery surfaces.**

➤ **For mechanical drive models:**

**⚠ DANGER!** **Never ride the machine on slopes in neutral gear or with the clutch disengaged. Always engage a low gear before leaving the machine stopped and unattended.**

➤ **For hydrostatic drive models:**

Go down slopes without touching the pedal (☛ 4.32) in order to take advantage of the braking effect of the hydrostatic drive when the transmission is not engaged.

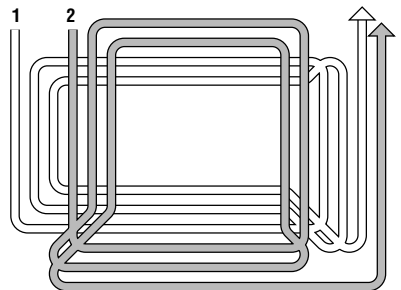
## 5.6 TRANSPORTING

**⚠ WARNING!** **If the machine has to be transported on a truck or a trailer, use access rails of sufficient strength, width and length, for loading.**

**Load the machine with the engine stopped, no driver seated, only by pushing the unit, with the appropriate number of people. While being transported, lower the cutting deck, engage the parking brake and fasten the machine securely with ropes or chains to the hauling device.**

## 5.7 ADVICE ON HOW TO OBTAIN A GOOD CUT

1. To keep a lawn green and soft with a good appearance it should be cut regularly and without damaging the grass.
2. It is always better to cut the grass when dry.
3. The blades must be in good condition and well sharpened so that the grass is cut straight without any ragged edge that leads to yellowing at the ends.
4. The engine must run at full speed, both to ensure a sharp cut of the grass and to get the necessary thrust to push the cuttings through the collector channel.
5. The frequency of mowing should be in relation to the rate of growth of the grass, which should not be left to grow too much between one cut and the next.
6. During hot and dry periods, the grass should be cut a little higher to prevent the ground from drying out.
7. If the grass is very tall, it should be cut twice in a twenty-four hour period. The first time with the blades at maximum height, possibly reducing the cutting width, and the second cut at the height wanted.
8. The appearance of the lawn will improve if you alternate the cutting in both directions.
9. If the collector system tends to get blocked with grass, you should reduce the forward speed since this may be too high for the condition of the grass. If the problem persists, the probable causes are either badly sharpened blades or deformed wings.
10. Be very careful when mowing near bushes or kerbs since these could distort the horizontal position of the cutting deck, and damage its edge as well as the blades.



## 5.8 MULCHING FUNCTION

### 5.8.1. SAFETY RECOMMENDATIONS

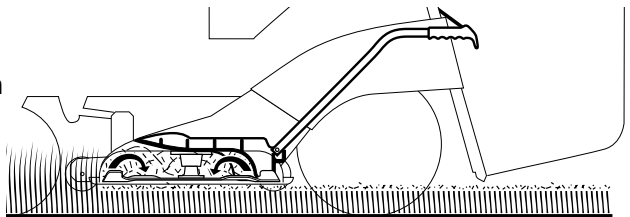
#### **⚠ DANGER!**

- Always fit and dismantle the accessory with the engine off, after removing the ignition key and after engaging the parking brake.
- Apply the “mulching” accessory checking that the fitted parts have been fastened correctly and securely.
- You always need to work with the grass-catcher or stone-guard fitted properly even when using the “mulching” accessory.

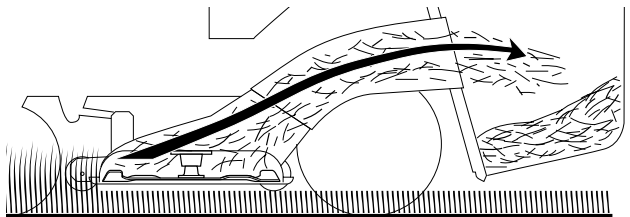
### 5.8.2. HOW TO USE THE MACHINE

The action of the mulching plug in the cutter housing recycles the grass inside the cutter housing, reducing it to finely-chopped shreds, which are then spread evenly over the lawn. This eliminates the need to collect the grass, and protects your lawn from drying out in hot weather. Once shredded in this way, the grass cuttings break down quickly, enriching the soil. The use of the mulching plug helps conserve the environment, by eliminating waste and reducing the noise made by your mower.

“Mulching” – Chopping and depositing grass on the lawn



Cutting and collecting grass cuttings



### 5.8.3. STANDARDS OF USE

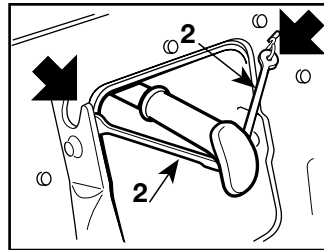
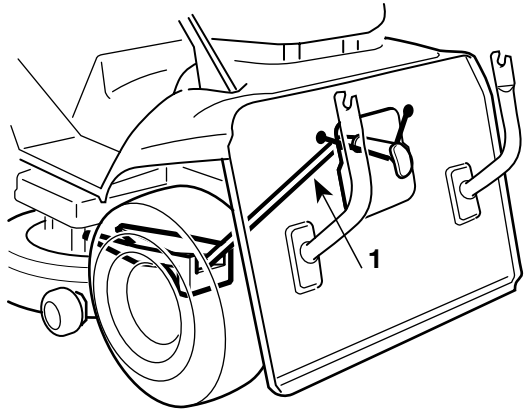
#### A) Assembly

Make sure that the inside of the cutting deck is sufficiently clean and free of

encrusted grass and mud which could make it difficult to insert the deflector cap.

Put the cutting deck into position "7", then remove the grass-catcher and insert the mulching plug (1) in the outlet, pushing it right inside the collector channel until it blocks.

Hook the two elastic tie-rods (3) onto the holes provided and refit the grass-catcher.



### IMPORTANT

It is important to attach the elastic tie-rods (2) correctly, to ensure that the mulching plug is secured inside the cutting deck and to prevent it from touching the rotating blades. For this very reason, you need to replace the worn elastic tie-rods in time.

## B) Grass cutting

For efficiency reasons, the lawn should be mowed at frequent, regular intervals, in order to reduce the height of grass to be cut.

Always avoid removing a large quantity of grass, to avoid blocking the cutting deck or overloading the engine and the cutting parts.

Regulate the forward speed depending on the lawn conditions and the quantity of grass removed.

## C) Removing

Reverse the order of the steps described above.

## 6. MAINTENANCE

### 6.1 SAFETY RECOMMENDATIONS

**⚠ WARNING!** Before cleaning, maintenance or repair work, take out the ignition key and read the relevant instructions. Wear suitable clothing and strong gloves when dismantling and refitting the blades and in all other hazardous situations for hands.

**⚠ WARNING!** Never use the machine with worn or damaged parts. Faulty or worn-out parts must always be replaced and not repaired. Only use genuine spare parts: those that are not of an equivalent quality may damage the machine or endanger the safety of yourself and others.

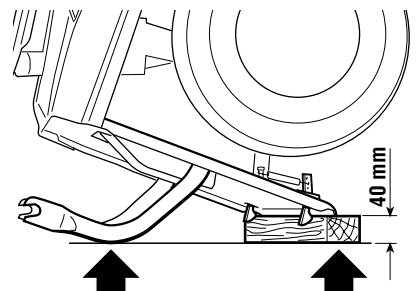
**IMPORTANT** Never get rid of used oil, fuel or other pollutants in unauthorised places!

#### 6.1.1 LIFTING THE MACHINE VERTICALLY

If you need to have easy access to the lower part of the machine it is possible to lift it vertically.

**⚠ WARNING!** This operation can be dangerous. To perform it safely, use a suitable lifting equipment. Assistance of other persons can be necessary. In case of doubts, please contact your dealer.

Make sure that the tank does not contain more than 2 litres of fuel and insert a block of around 40 mm beneath the rear plate. Lift the machine from the front, being careful to hold on to parts that offer a firm grip, and rest it on the points shown, taking care not to damage the grass-catcher's brackets. Please make sure there are no leaks from the engine oil filling cap.



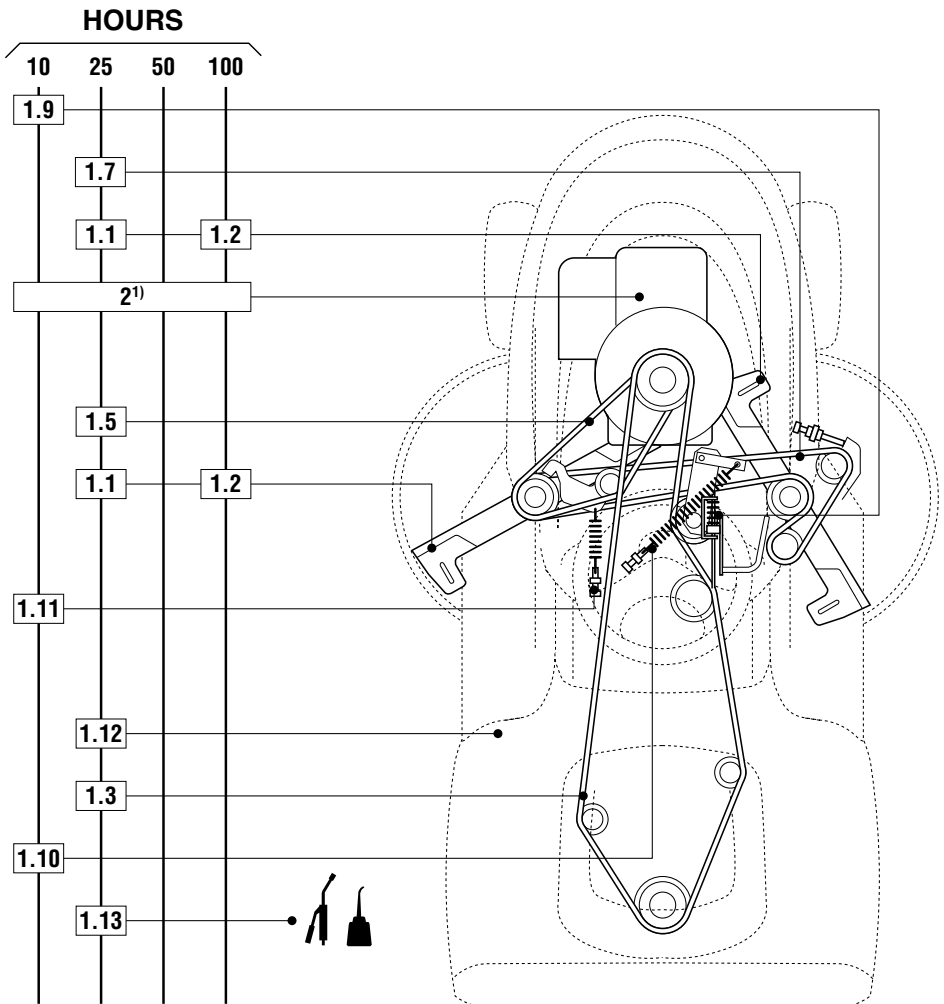
**⚠ DANGER!** Be sure of the good stability of the machine before carrying out any type of work on the machine and avoid operations which may cause it to fall over.

## 6.2 PERIODIC MAINTENANCE

### 6.2.1 MAINTENANCE AND GENERAL LUBRICATION

Follow the diagrams which show the points requiring checks, lubricating and routine maintenance, together with the type of lubricant to be used and the frequency required.

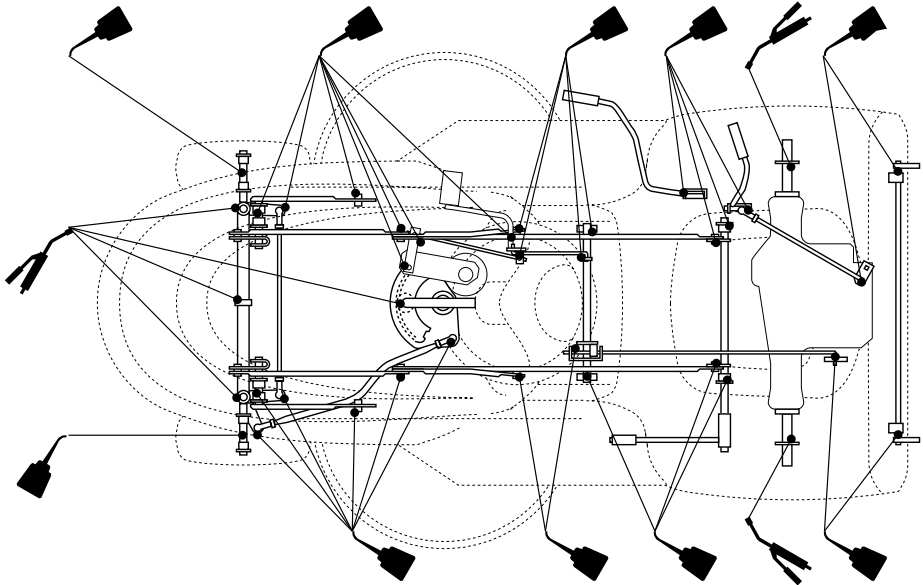
#### a) Periodic maintenance (☛ 6.2.2)



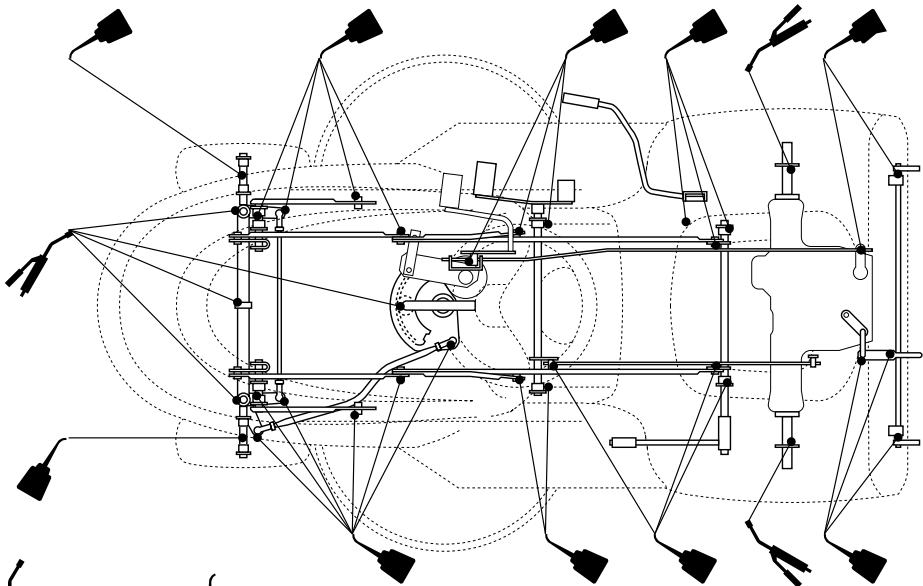


### b) Lubrication

► For mechanical drive models:



► For hydrostatic drive models:



**6.2.2 GUIDE TO SCHEDULED MAINTENANCE**

This table is to help you maintain your machine’s safety and performance. It shows the main maintenance and lubrication work, indicating the frequency with which it should be carried out. To the right of each item there is a box where you write the date or after how many hours of operation the work was carried out.

WORK	HOURS	DONE (DATE OR N° OF HOURS)						
<b>1. MACHINE</b>								
1.1 Check of tight fixing and sharpness of blades	25							
1.2 Blade replacement	100							
1.3 Check the transmission belt	25							
1.4 Transmission belt replacement <sup>2)</sup>	–							
1.5 Check the blade drive belt	25							
1.6 Blade drive belt replacement <sup>2)</sup>	–							
1.7 Check the belt connecting blades	25							
1.8 Replacement of belt connecting blades <sup>2)</sup>	–							
1.9 Check and adjustment of brake	10							
1.10 Check and adjustment of drive	10							
1.11 Check engagement and brake of blade	10							
1.12 Check all fastenings for tight fitting	25							
1.13 General lubrication <sup>3)</sup>	25							
<b>2. ENGINE<sup>1)</sup></b>								
2.1 Engine oil change <sup>4)</sup>	.....							
2.2 Check and cleaning of air filter	.....							
2.3 Air filter replacement	.....							
2.4 Check fuel filter	.....							
2.5 Fuel filter replacement	.....							
2.6 Check and cleaning of spark plug points	.....							
2.7 Replacement of spark plug	.....							

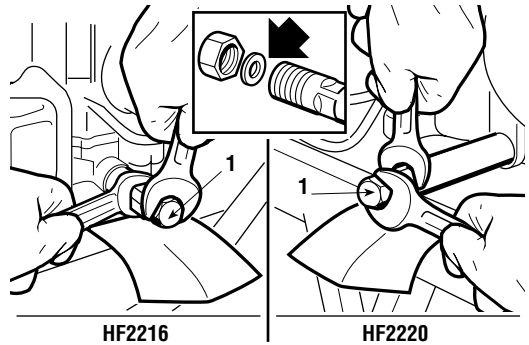
- 1) See the engine manual for the full list and frequency.
- 2) Replace at the first signs of wear, contacting your Dealer.
- 3) General lubrication should also be carried out whenever the machine is to be left unused for a long period.
- 4) Operation to be done also after the first 20 hours of operation.

### 6.2.3 ENGINE

Follow all the instructions in the engine manual.

Use a piece of cardboard or a similar object under the drain tube to prevent oil drops on the frame of the unit.

To empty the engine oil, unscrew the oil plug (1). When refitting the plug, make sure the seal is positioned correctly.



### 6.2.4 REAR AXLE

This is a sealed single unit which does not require maintenance. It is permanently lubricated and this lubricant does not need changing or topping up.

### 6.2.5 BATTERY

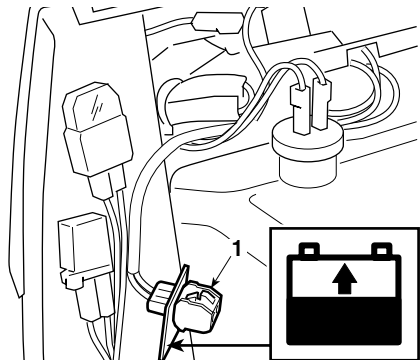
To ensure long life to the battery it is essential to keep it carefully maintained. The battery on your machine must be charged **before using for the first time** and, subsequently, before storing the machine and before the **next time of starting up**.

A flat battery **must** be recharged as soon as possible, otherwise irreparable damage could be caused to the elements inside the battery.

#### IMPORTANT

Recharging must be done by using the "CB01" battery charger supplied with your machine. Other recharging systems can irreversibly damage the battery.

- follow the instructions given in the relative instruction booklet,
- follow the instructions given in the battery booklet.



The machine has a connector (1) for recharging, to be connected to the corresponding connector of the special “CB01” maintenance battery-charger.

**IMPORTANT**

Do not connect any other device than the “CB01” charger to this connector.

## 6.3 CHECKS AND ADJUSTMENTS

### Summary of the main situations where work may be required

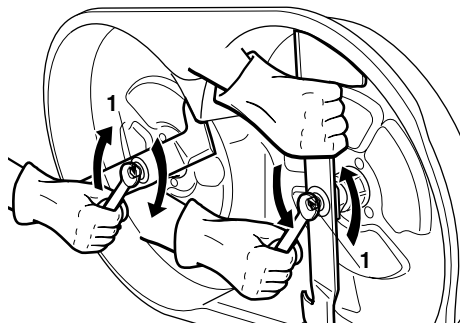
Every time that ...	You will need to ...
The blades vibrate	Check the bolts (☛ 6.3.1) or balance the blades (☛ 6.3.1).
The blades tear the grass and the lawn becomes yellow	Sharpen the blades (☛ 6.3.1).
The cut is uneven	Adjust the alignment of the cutting deck (☛ 6.3.2).
The blades engage in an abnormal way	Regulate the blade engagement adjuster (☛ 6.3.3).
The machine does not brake	Adjust the brake spring (☛ 6.3.4).
Forward movement is erratic	Adjust the stretcher spring(☛ 6.3.5).
The grass-catcher jumps around and tends to open up.	Adjust the spring (☛ 6.3.6).

### 6.3.1 DISMANTLING, SHARPENING AND BALANCING BLADES

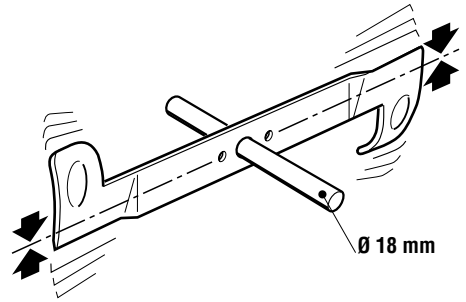
Blades that are badly sharpened tear at the grass, reduce collection and make the lawn turn yellow.

**⚠ WARNING!** **Wear strong gloves when handling the blades.**

To remove a blade, hold it firmly and undo the central bolt (1) **in the direction indicated by the arrow for each blade, noting that one of the fixing bolts has a right-hand thread and the other one has a left-hand thread.**



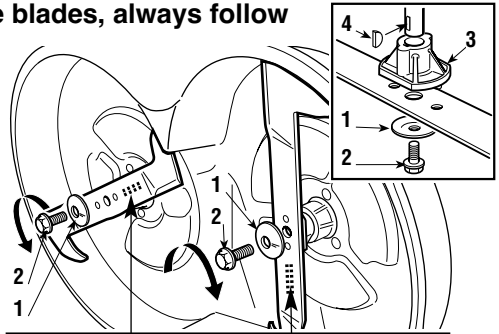
Sharpen the two cutting edges using a medium grade grinding wheel and check the balance by holding the blade up with a round 18 mm  $\varnothing$  bar inserted in the central hole.



**⚠ WARNING!** Damaged or bent blades must always be replaced; never try to repair them! ALWAYS USE MANUFACTURER'S GENUINE REPLACEMENT BLADES BEARING THE SYMBOL **▲**!

**⚠ WARNING!** The blades differ, are at 90° to one another, and are contra-rotating. When installing them, make sure that they are correctly positioned by referring to the code number marked on the outside of each one.

**⚠ WARNING!** When re-fitting the blades, always follow the indicated sequence, making sure that the blades' wings are facing towards the interior of the cutting deck and that the cupped side of the cup washer (1) is pressing against the blade. Fully tighten the fixing screws (2), preferably using a torque wrench set at 45-50 Nm. If the shaft hub (3) came off when dismantling the blade, make sure that the key (4) is firmly in its correct position.



HF2216 →	82004348/0	82004347/0
HF2220 →	82004350/0	82004349/0

### 6.3.2 CUTTING DECK ALIGNMENT

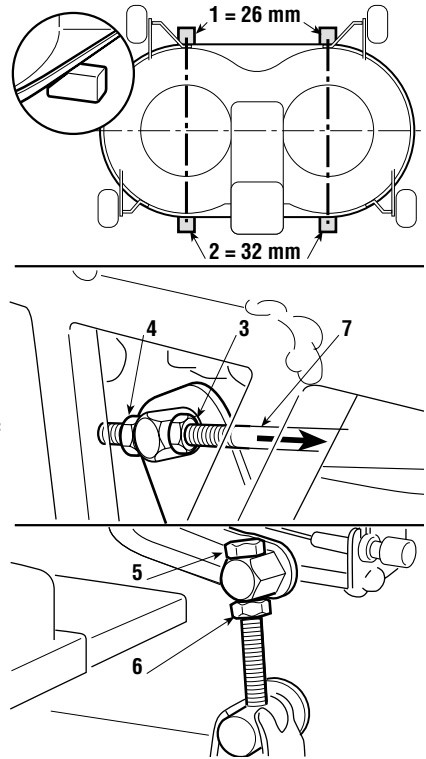
The cutting deck should be properly set to obtain a good cut.

#### NOTE

For achieving good results from cutting, the front part should always be 5 - 6 mm lower than the rear.

– Put the machine onto a flat surface and check the tyre pressures;

- put 26 mm blocks (1) under the front edge of the deck and 32 mm blocks (2) under the rear edge, and then put the lifting lever into position «1»;
- loosen the nuts (3), the screws (5) and the locknuts (4 – 6) on both the right and left side, so that the deck is resting firmly on the blocks;
- push the two connecting rods (7) to the back and screw down the two nuts (3) on each rod until the front part of the deck just begins to rise both at the right and the left, and then tighten the relevant locknuts (4);
- turn both the rear screws (5) until the rear of the deck begins to rise both at the right and the left, and then tighten the relevant locknuts (6).

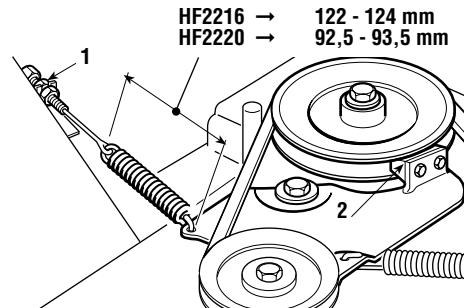


If you are unable to get the cutting deck adjusted properly, consult your Dealer.

### 6.3.3 ADJUSTMENT TO THE ENGAGEMENT AND BRAKE OF THE BLADES

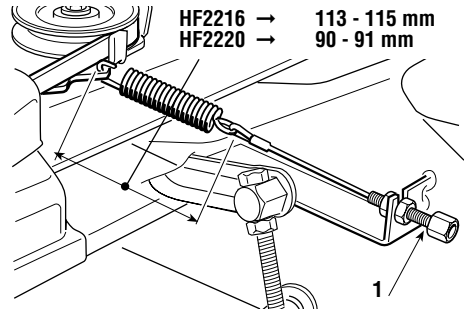
#### For models with lever operated engagement

- When the lever is operated to disengage the blades, this also activates the blade brake for stopping the blades within a few seconds.
- A badly functioning blade brake is usually due to wear in the brake lining (2) and this will need to be changed by your Dealer.
- A stretched cable and changes in the length of the belt can impair the blades' engagement or rotation.
- To compensate this, turn the adjusting nut (1) till the correct spring length is reached (measured from the outer ends of the spring with the blades engaged).



### ► For models with electromagnetic clutch

- If there is an unusual rotation due to the belt; turn the adjusting nut (1) till the correct spring length is achieved (measured from the outer ends of the spring).
- If the electromagnetic clutch does not manage to drive the belt or the blades do not stop within few seconds, immediately contact a your Dealer.



### 6.3.4 BRAKE ADJUSTMENT

If the braking distance becomes longer than the amount indicated (☛ 5.3.6), the brake spring will need to be adjusted.

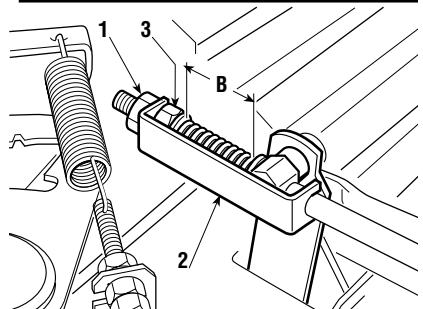
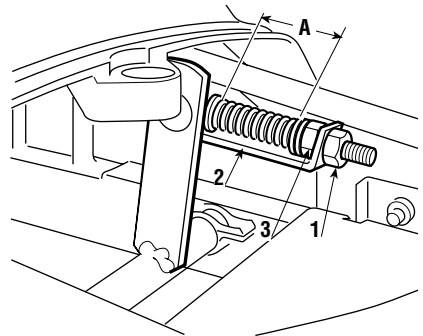
The adjustment will need to be made while the parking brake is engaged. Access for making this adjustment is by taking off the inspection hatch beneath the seat.

Loosen the nut (1) which holds on the bracket (2) and turn the nut (3) until the length of the spring is:

**A** = 47.5 - 49.5 mm (► For mechanical drive models)

**B** = 45 - 47 mm (► For hydrostatic drive models)

measured inside the washers. When the adjustment has been made, tighten the nut (1).



#### IMPORTANT

Do not screw below these values to avoid overloading the brake unit.

#### ⚠ WARNING!

If the brake still does not work properly even after this

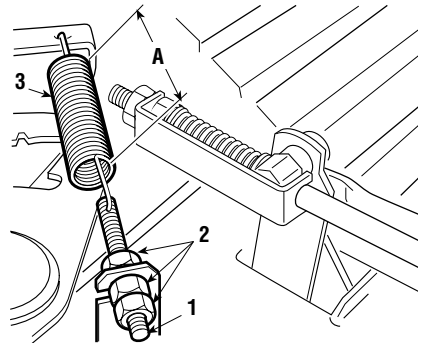
**adjustment, immediately contact your Dealer. DO NOT ATTEMPT OTHER WORK ON THE BRAKE THAN DESCRIBED HERE.**

**6.3.5 ADJUSTING THE TENSION OF THE DRIVE BELT**

If you should notice that forward drive power has dropped, it will be necessary to adjust the tension of the spring of the stretcher to return to former conditions.

Access for making this adjustment is by taking off the inspection hatch beneath the seat.

Loosen the locking nuts (2) and tighten or loosen the screw (1) as much as necessary for a length "A" of the spring (3) of:



**A = 114 - 116 mm** (▶ For mechanical drive models)

**A = 109 - 111 mm** (▶ For hydrostatic drive models)

measured to the outside of the end of the spring. When the adjustment has been made, tighten the nuts (2).

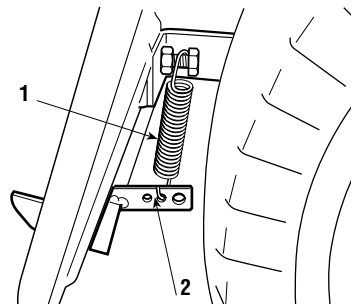
**NOTE**

When replacing the belt, take great care when using for the first few times as engagement may be sudden until the belt is sufficiently run in.

**6.3.6 ADJUSTMENT OF THE SPRING OF THE PAWL FOR HOOKING THE GRASS-CATCHER**

If the grass-catcher tends to jump about and to open up when going over rough ground, or if it has difficulty in hooking back on after being emptied, the tension of the spring will need to be adjusted(1).

Change the hooking point by using one of the holes (2) until the required result is achieved.





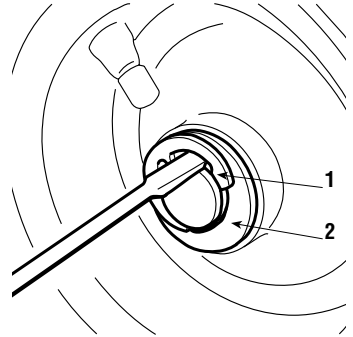
## 6.4 DISMANTLING AND REPLACEMENT

### 6.4.1 REPLACING WHEELS

Stop the machine on a flat surface and put a block under a load-bearing part of the frame on the side that the wheel is to be changed.

The wheels are held by a snap ring (1) which can be eased off with a screwdriver.

The rear wheels are directly coupled to the differential axle shaft and fastened by a key that forms part of the wheel's hub.



#### NOTE

Should you substitute one or both rear wheels, ensure that they are of the same diameter, and check that cutting deck is horizontal to prevent an uneven cut.

#### IMPORTANT

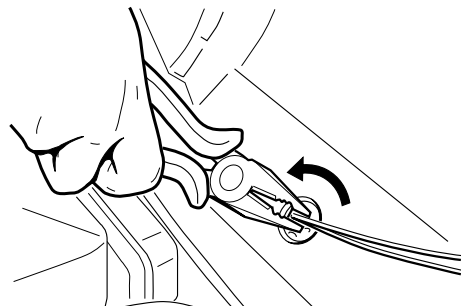
Before re-fitting a wheel, smear some waterproof grease on the axle and carefully re-fit the snap ring (1) and washer (2).

### 6.4.2 REPLACING AND REPAIRING TYRES

The tyres are of the «Tubeless» type and therefore all puncture repairs will have to be carried out by a tyre-repair expert in accordance with the methods for this kind of tyre.

### 6.4.3 REPLACING BULBS

The bulbs (18W) have a bayonet fitting and are installed in the bulb holder which can be taken out by turning it anti-clockwise, using pliers.



#### 6.4.4 REPLACING A FUSE

The general and power circuits of the electrical system are protected by a 6.3 A delayed fuse (1).

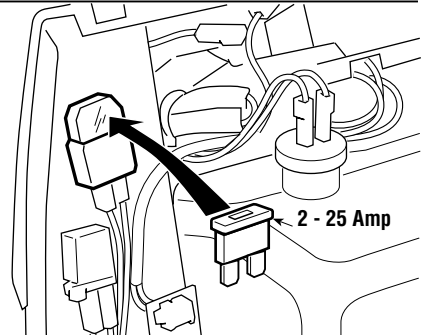
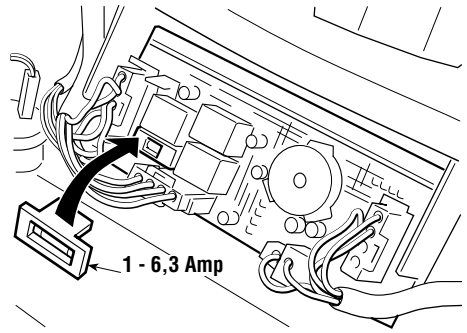
When the fuse blows, the machine stops and all the lights on the dashboard go out.

A 25 A fuse (2), is also provided for protecting the recharge circuit.

**IMPORTANT**

A blown fuse must always be replaced by one of the same type and ampere rating, and never with one of another rating.

If you cannot find out why the fuse has blown, consult your Dealer.



#### 6.4.5 REPLACING BELTS

Replacing belts is quite a complicated process of dismantling and subsequent adjustment and must only be carried out by your Dealer.

**NOTE**

Replace the belts as soon as they show obvious signs of wear! ALWAYS USE GENUINE REPLACEMENT BELTS!

## 7. TROUBLESHOOTING

PROBLEM	LIKELY CAUSE	SOLUTION
1. With the key at «ON» the dashboard remains off with no audible signal.	<p>The protection of the electronic card has cut in due to:</p> <ul style="list-style-type: none"> <li>– badly connected battery</li> <li>– battery terminals crossed</li> <li>– completely flat battery or eroded battery plates</li> <li>– fuse blown</li> <li>– bad earthing to the engine or the frame</li> </ul>	<p>Put the key in the «OFF» position and look for the cause of the problem:</p> <ul style="list-style-type: none"> <li>– check connections (☛ 3.4)</li> <li>– check connections (☛ 3.4)</li> <li>– recharge battery (☛ 6.2.5)</li> <li>– replace fuse (6.3 A - delayed) (☛ 6.4.4)</li> <li>– check connections of black earth leads</li> </ul>
2. With the key at «ON» the dashboard remains off, but there is an audible signal.	<p>The protection of the electronic card has cut in due to:</p> <ul style="list-style-type: none"> <li>– electronic card wet</li> <li>– earthed micro-switches</li> </ul>	<p>Put the key in the «OFF» position and look for the cause of the problem:</p> <ul style="list-style-type: none"> <li>– dry using tepid air</li> <li>– check connections</li> </ul>
3. With the key on «START» the dashboard comes on but the starter motor does not run.	<ul style="list-style-type: none"> <li>– insufficiently charged battery</li> <li>– badly earthed starter motor</li> <li>– you are not ready for starting (☛ 5.2)</li> </ul>	<ul style="list-style-type: none"> <li>– recharge the battery (☛ 6.2.5)</li> <li>– check earth connections</li> <li>– disengage the blades (if the problem continues, check the relevant micro-switch)</li> <li>– put the transmission in neutral (N)</li> </ul>
4. With the key on «START» the starter motor runs but the engine does not start.	<ul style="list-style-type: none"> <li>– insufficiently charged battery</li> <li>– faulty fuel supply</li> <li>– faulty ignition</li> </ul>	<ul style="list-style-type: none"> <li>– recharge the battery (☛ 6.2.5)</li> <li>– check the level in the tank (☛ 5.3.3)</li> <li>– check the wiring of the fuel open command</li> <li>– check fuel filter</li> <li>– check that spark plug caps are firmly fitted</li> <li>– check that the electrodes are clean and have the correct gap</li> </ul>
5. Starting is difficult or the engine runs erratically.	<ul style="list-style-type: none"> <li>– fault in carburation</li> </ul>	<ul style="list-style-type: none"> <li>– clean or replace the air filter</li> <li>– flush out the float chamber</li> <li>– empty fuel tank and refill with fresh fuel</li> <li>– check and, if necessary, replace fuel filter</li> </ul>
6. Weak engine performance during cutting.	<ul style="list-style-type: none"> <li>– forward speed too high in relation to cutting height (☛ 5.4.5)</li> </ul>	<ul style="list-style-type: none"> <li>– reduce the forward speed and/or raise the cutting deck</li> </ul>

PROBLEM	LIKELY CAUSE	SOLUTION
7. Engine stops when blades are engaged	– you are not ready to engage the blades (☛ 5.2)	– sit firmly on the seat (if problem continues, check micro-switch) – check that the grass-catcher or stone-guard are correctly in position (if problem continues, check micro-switch)
8. The battery warning light does not turn off after a few minutes' work	– recharging of the battery insufficient	– check connections
9. The oil warning light comes on while working (▶ HF2220)	– problems in lubricating the engine	Turn the key immediately to «STOP»: – top up the oil level (☛ 5.3.3) – replace the filter (if the problem continues, contact your Dealer)
10. The engine stops and an audible signal is heard	The protection of the electronic card has cut in due to: – earthed micro-switch – battery contains electrolyte but is not charged – overvoltage caused by the charge regulator – badly connected battery (poor contact) – engine badly earthed	Turn the key to «STOP» and look for the cause of the problem: – check connections – recharge battery (☛ 6.2.5) – contact your Dealer – check connections i (☛ 3.4) – check engine earth connection
11. The engine stops with no audible warning	– battery disconnected – no earth contact on engine – problems in the engine	– check connections (☛ 3.4) – check the earth connection on the engine – contact your Dealer
12. The blades warning light stays lit when the blades are disengaged (▶ models with lever operated engagement)	– the lever does not return to the disengaged position due to accumulated grass cuttings at the end of its stroke	– free the joint of all the grass (accessed from the inspection hatch)
13. The blades do not engage  (▶ models with lever operated engagement)	– cable lengthened or belt loosened	– turn the adjusting nut (☛ 6.3.3)

PROBLEM	LIKELY CAUSE	SOLUTION
(▶ models with electromagnetic clutch)	<ul style="list-style-type: none"> <li>– belt loosened</li> <li>– problems in the electromagnetic clutch</li> </ul>	<ul style="list-style-type: none"> <li>– turn the adjusting nut (☛ 6.3.3)</li> <li>– contact your Dealer</li> </ul>
14. Uneven cut and poor grass collection	<ul style="list-style-type: none"> <li>– cutting deck not parallel to the ground</li> <li>– blade cutting badly</li> <li>– forward speed too high compared to height of grass (☛ 5.4.5)</li> <li>– collector channel is blocked</li> <li>– cutting deck full of grass</li> </ul>	<ul style="list-style-type: none"> <li>– check the tyre pressures (☛ 5.3.2)</li> <li>– re-align the cutting deck to the ground (☛ 6.3.2)</li> <li>– check that the blades are fitted properly (☛ 6.3.1)</li> <li>– sharpen or fit new blades (☛ 6.3.1)</li> <li>– check the tension of the belt and control cable of the blade engagement lever (▶ models with lever engagement) (☛ 6.3.3)</li> <li>– reduce forward speed and/or raise the cutting deck</li> <li>– wait for the grass to dry</li> <li>– remove the grass-catcher and empty the collector channel (☛ 5.4.7)</li> <li>– clean the cutting deck(☛ 5.4.10)</li> </ul>
15. Unusual vibrations while working	<ul style="list-style-type: none"> <li>– the blades are imbalanced</li> <li>– blades loose</li> <li>– fixing bolts loose</li> </ul>	<ul style="list-style-type: none"> <li>– balance or replace the damaged blades (☛ 6.3.1)</li> <li>– check that the blades are firmly fitted (☛ 6.3.1) (remember the left-hand thread of the right hand blade)</li> <li>– check and tighten all the fixing bolts of the engine and frame</li> </ul>
16. With the engine running, the machine does not move when the drive pedal is pressed. (▶ for hydrostatic drive models)	<ul style="list-style-type: none"> <li>– disengage lever in position «B» (☛ 4.33)</li> </ul>	<ul style="list-style-type: none"> <li>– put into position «A»</li> </ul>

If problems continue after having carried out these operations, contact your Dealer.

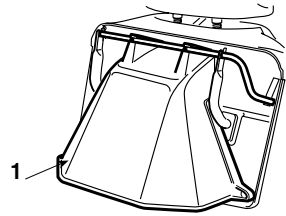
### **⚠ WARNING!**

**Do not take on complicated repair work if you don't have the necessary equipment and the technical knowledge. The guarantee is automatically revoked and the manufacturer declines all responsibility for any repairs which are badly done.**

## 8. ACCESSORIES (OPTIONAL)

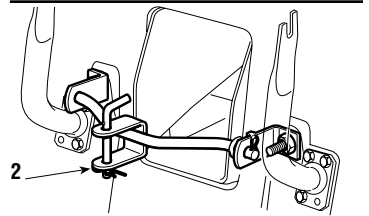
### 1. STONE-GUARD KIT

For use in place of the grass-catcher when the cuttings are not to be collected.



### 2. TOWING HITCH

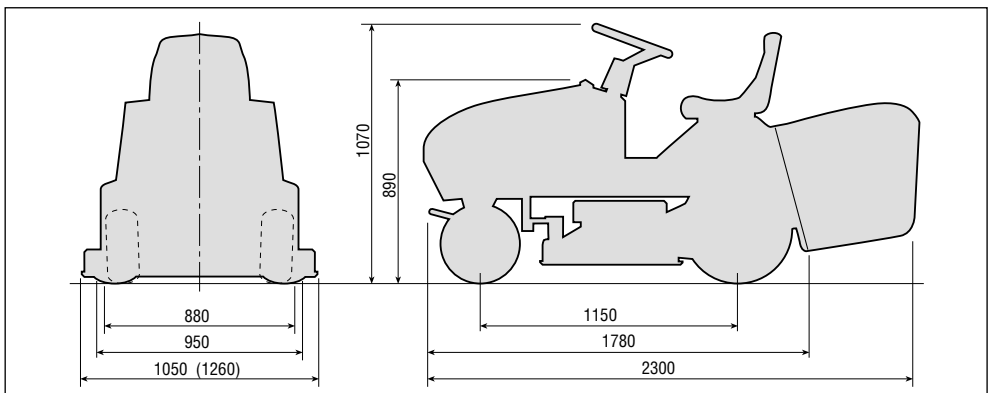
For towing a small trailer.



## 9. SPECIFICATIONS

MODEL	HF2216 S	HF2216 H	HF2220 SL	HF2220 HL
Electric system .....	12 V	12 V	12 V	12 V
Battery .....	20 Ah	20 Ah	20 Ah	20 Ah
Engine: HONDA type .....	GCV530	GCV530	GXV620	GXV620
Operating engine speed .....	2700 r.p.m.	2700 r.p.m.	2800 r.p.m.	2800 r.p.m.
Front tyres .....	15 x 6.00-6	15 x 6.00-6	15 x 6.00-6	15 x 6.00-6
Rear tyres .....	18 x 8.50-8	18 x 8.50-8	18 x 8.50-8	18 x 8.50-8
Front tyres pressure .....	1.0 bar	1.0 bar	1.0 bar	1.0 bar
Rear tyres pressure .....	1.2 bar	1.2 bar	1.2 bar	1.2 bar
Weight .....	221 kg	224 kg	239 kg	242 kg
Forward speed:				
in Forward drive .....	–	0 - 7.9 km/h	–	0 - 8.2 km/h
in 1st .....	2.0 km/h	–	2.1 km/h	–
in 2nd .....	3.4 km/h	–	3.5 km/h	–
in 3rd .....	5.2 km/h	–	5.4 km/h	–
in 4th .....	5.8 km/h	–	6.0 km/h	–
in 5th .....	8.7 km/h	–	9.1 km/h	–
in Reverse .....	2.5 km/h	0 - 4.1 km/h	0 - 2.6 km/h	0 - 4.2 km/h
Inside turning circle				
left inside .....	1.7 m	1.7 m	1.5 m	1.5 m
Cutting height .....	3 ÷ 9 cm	3 ÷ 9 cm	3 ÷ 9 cm	3 ÷ 9 cm
Cutting width .....	101 cm	101 cm	121 cm	121 cm
Grass-catcher capacity .....	300 liters	300 liters	300 liters	300 liters
Garanteed sound power .....	100 dBA	100 dBA	105 dBA	105 dBA
Sound pressure level at the ear measured in compliance with 2000/14/EC .....	86 dBA	86 dBA	90 dBA	90 dBA
Real measured value of acceleration on seat. Value measurement has been performed with rated rpm with operator sitted and on a smooth uniform cement surface (EN 1031/02.93) .....	1.5 m/s <sup>2</sup>	1.5 m/s <sup>2</sup>	2.6 m/s <sup>2</sup>	2.6 m/s <sup>2</sup>

The data in the brackets (.....) refer to the model "HF2220".



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