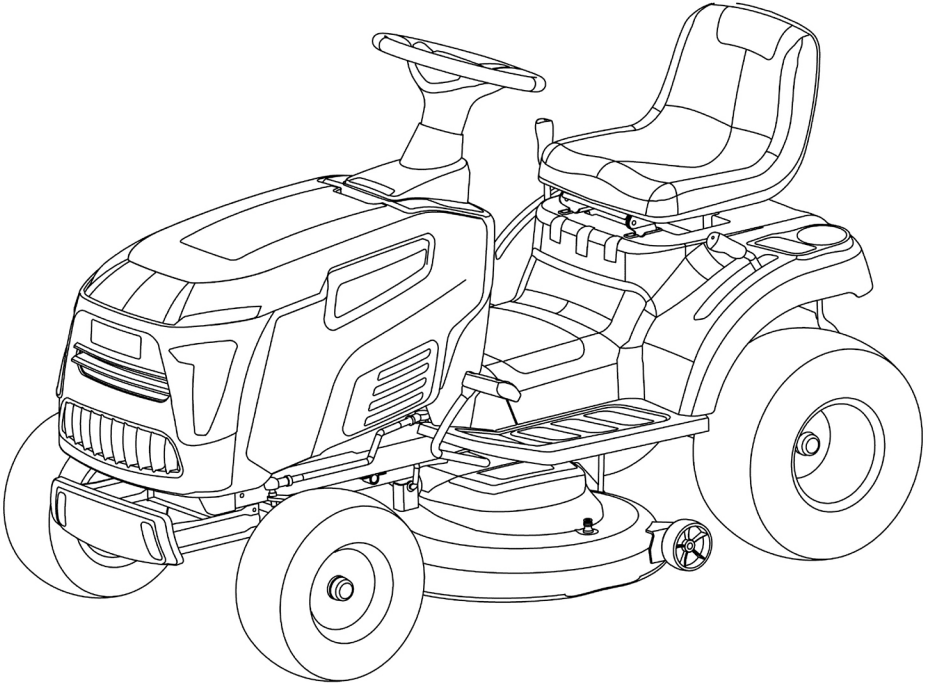


# **BWM HST15/38, HVT19/42 User's Manual**



# INTRODUCTION

## Dear Customer,

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

This manual has been written to help you become familiar with the machine and use it safely and efficiently. Do not forget that it is an integral part of the machine, so keep it close at hand for future reference and pass it on to the purchaser if you sell the machine.

This new lawn mower has been designed and built in compliance with current standards, and is safe and reliable if used for cutting and collecting grass following the instructions given in this manual (**proper usage**). If you use the machine in any other way or ignore the instructions for safe use, maintenance and repair, it is considered "**incorrect usage**". In this case, the warranty is automatically voided and the manufacturer is not held responsible for damage or injury to oneself or others.

Since we regular improve our products, you may find slight differences between your machine and the descriptions contained in this manual. Modifications can be made to the machine without notice and without the obligation to update the manual, although the essential safety and function characteristics will remain unaltered. If in doubt, do not hesitate to contact your dealer. And now enjoy your work!

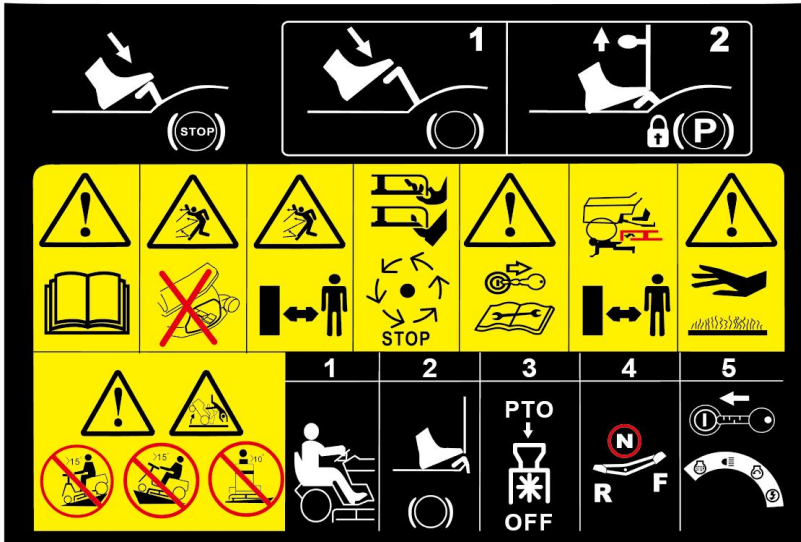
## AFTER-SALES SERVICE

This manual gives all the necessary instructions for using the machine and carrying out basic maintenance.

**Any adjustments or maintenance operations not described in this manual must be carried out by your Dealer or a specialized Service Centre. Both have the necessary knowledge and equipment to ensure that the work is done correctly without affecting the safety of the machine.**

This will help you keep your new purchase in peak performance and maintain its value over time.

For any replacement, contact your dealer.

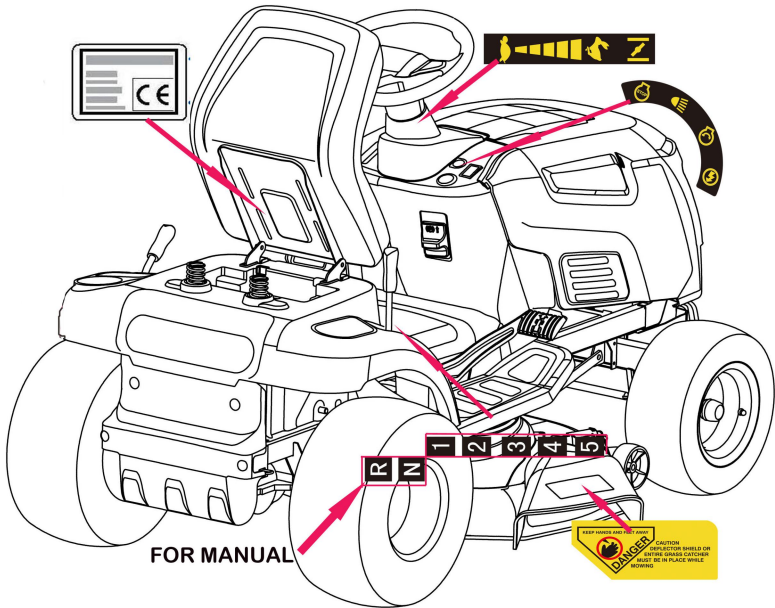
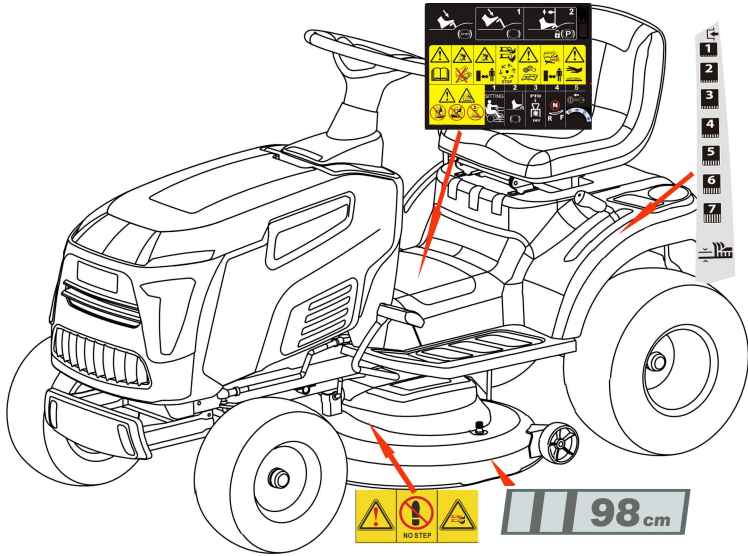


## IMPORTANT

The lawnmower must always be used with utmost caution. So that safety precautions and operating instructions are always readily on hand, labels have been affixed to the machine showing pictographs illustrating the main operating precautions

Because these labels, according to applicable safety standards, are considered an integral part of the machine, the user is therefore responsible for replacing them in the event of their becoming detached or illegible.

### LABEL POSITION



## TABLE OF CONTENTS

1. SAFETY .....	5
2. IDENTIFICATION OF THE MACHINE AND COMPONENTS .....	11
3. UNPACKING AND ASSEMBLY .....	13
4. CONTROLS AND INSTRUMENTS .....	19
5. HOW TO USE THE MACHINE .....	22
5.1 SAFETY RECOMMENDATIONS .....	22
5.2 WHY THE SAFETY DEVICES CUT IN .....	22
5.3 DIRECTIONS BEFORE STARTING WORK .....	23
5.4 USING THE MACHINE .....	24
5.5 USING ON SLOPING GROUND .....	29
5.6 TRANSPORTING .....	31
5.7 LAWN MAINTENANCE .....	31
6. MAINTENANCE .....	32
6.1 SAFETY RECOMMENDATIONS .....	32
6.2 SCHEDULED MAINTENANCE .....	32
6.3 CHECKS AND ADJUSTMENTS .....	34
6.4 DISMANTLING AND REPLACEMENT .....	34
6.5 LUBRICATION .....	36
7. TROUBLESHOOTING .....	37
8. SPECIFICATIONS .....	42
9. WARRANTY CONDITIONS .....	44
9.1 WARRANTY PERIOD .....	44
9.2 EXCLUSIONS .....	44

# 1. SAFETY

## 1.1 HOW TO READ THE MANUAL

Some paragraphs in the manual containing important information regarding safety and operation are emphasized in the following ways.

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

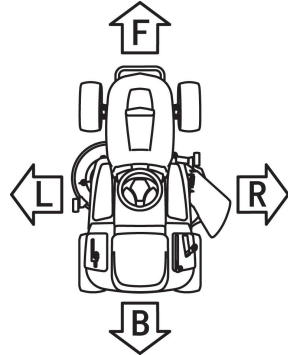
**▲ WARNING!** *Non-observance will result in the risk of injury to oneself or others.*

**▲ 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

**NOTE** Positions on the machine, such as “front”, “back”, “left” or “right” hand side, refer to the direction of forward travel

**IMPORTANT** For all operations regarding the use and maintenance of the engine not described in this manual, refer to the relevant manuals which form an integral part of all the documentation supplied with the machine.




## 1.2 GENERAL SAFETY REGULATIONS

**▲ WARNING!** *Read carefully before using the machine.*

### A) TRAINING

1) Read the instructions carefully. Be familiar with the controls and how to use the equipment properly.

2) Never let children or people unfamiliar with these instructions use the machine. Local regulations can restrict the age of the user.

 3) Never mow while people, especially children, or pets nearby; Never mow while dark.

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;
- you can not use the brake to regain control of a ride-on machine sliding down a slope.

The main reasons for loss of control are:

- insufficient wheel grip;
- over-speeding;
- inadequate braking;
- the type of machine is unsuitable for its task;
- unawareness of the effect of ground conditions, especially slopes;
- incorrect hitching and load distribution

## B) PREPARATION



1) While mowing, always wear sturdy footwear and long trousers.

Do not operate the equipment barefoot or wearing open sandals.

2) Thoroughly inspect the area where the equipment is to be used

and remove all objects which can be ejected from 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 you spill petrol, do not start the engine and move the machine away from the area of spillage. Do not create any source of ignition until the petrol vapours have evaporated;

- put back and tighten all fuel tank and container caps securely.

4) Replace faulty silencers.

5) Before use, always inspect the machine to check 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, remember that the rotation of one blade can cause other blades to rotate

## C) OPERATION



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

2) Mow only in daylight or good artificial light.

3) Before starting the engine, disengage the blades and shift into neutral.

4) Do not use the machine on slopes with longitudinal gradients of more than 15° (27%); do not use the machine on slopes with lateral gradients above 10° (18%).

5) Remember there is no such thing as a “safe” slope. Travelling on grass slopes requires particular care. To guard against overturning:

- do not stop or start suddenly when going up or downhill;
- engage the drive 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;
- use counterweight(s) or wheel weights whenever advised in the instructions manual.

7) Stop the blades before crossing surfaces other than grass.

8) Never use the machine with damaged guards, or without the 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 risk of personal injury.

10) Before leaving the driving seat:

- disengage the blades and lower the attachments;
- go into neutral and apply the parking brake;
- stop the engine and remove the ignition key.

11) Disengage the blades, stop the engine and remove the ignition key:

- before clearing blockages or unclogging the collector channel;
- before cleaning, checking or servicing the machine;
- after striking a foreign object. Inspect the machine for damage and make repairs before restarting and operating the machine;

- If the machine starts to vibrate abnormally (check for the causes immediately).

12) Disengage the blades for transport or whenever they are not in use.

13) Stop the engine and disengage the blades:

- before refuelling;
- before making height adjustment unless adjustment can be made from the operator’s position.

14) Reduce the throttle during engine run-out. If the engine is provided with a shut-off valve, cut off the fuel when you have finished mowing.

15) Watch out for traffic when crossing or near roadways.



16) Never direct discharge of material toward bystanders nor allow anyone near the machine while in operation.

17) Use genuine spare parts. Genuine spare parts and attachments have been designed specifically for this machine. Use of non-original spare parts and attachments will jeopardize the safety of the person and/or machine.

18) Do not mow during thunderstorms. No protection against lightning strikes.

19) Long-term exposure to noise can result in permanent hearing impairment. So always use approved hearing protection and reduce working hours.

20) Do not use the tractor lawnmower and/or any accessories attached to it in the event of fatigue, illness, or after the consumption of alcohol, drugs or medications that impair reaction time and/or ability to focus.

21) The lawnmower shall not be operated without either the entire grass catcher or self-closing discharge opening guard in place.

22) During work wear solid shoes with non-slip soles and protective clothes. Do not use the equipment if you are barefoot or wearing sandals.

23) To reduce the impact of noise and vibration emission, limit the time of operation, use low-vibration and low-noise operating modes as well as wear personal protective equipment.

Take the following points into account to minimise the vibration and noise exposure risks:

- Only use the machine as intended by its design and these instructions.
- Ensure that the machine is in good condition and well maintained.
- Use correct accessories for the machine and ensure they are in good condition.
- Keep tight grip on the steering wheel.
- Maintain this machine in accordance with these instructions and keep it well lubricated (where appropriate).
- Plan your work schedule to spread any high vibration tool use across a longer period of time.
- Prolonged use of the machine exposes the user to vibrations that can cause a range of conditions collectively known as hand-arm vibration syndrome (HAVS) e.g. fingers going white; as well as specific diseases such as carpal tunnel syndrome. To reduce this risk when using the machine, always wear protective gloves and keep your hands warm.

**IMPORTANT**

Anyone using the riding lawn mower should first be acquainted with the instructions in this manual and completely familiarize themselves with the controls to ensure correct and safe machine use.

## 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 fire hazards, 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 purposes.
- 7) If the fuel tank has to be drained, this should be done outdoors.
- 8) On multi-bladed machines, remember that the rotation of one blade can cause other blades to rotate.
- 9) When the machine is to be parked, stored or left unattended, lower the cutting means unless a positive mechanical lock is used.

### IMPORTANT

The blades are sharp, risk of a serious injury! Before carrying out any inspection, cleaning, and repair operations on the cutting parts, stop the engine and take out the ignition key. Next, disconnect the spark plug wire and keep the cap away from the plug to prevent accidental starting.

## 1.3 SAFETY LABELS

Your machine must be used with care. This is why labels with illustrations have been placed on the machine, to remind you of the main precautions to take during use.

These labels are to be considered an integral part of the machine.

Should a label come off or become illegible, contact your dealer to replace it. Their meaning is explained below.



### Warning:

Read the instructions before operating this machine.



### Danger!

### Risk of injury.

Blades in movement, the blade will continue turning for some time after switching off the engine or disabling the blade control.

**Warning:**

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

**Warning:**

No step on the deck or discharge guard.



**Warning:** Do Not Step.

**Danger!****Ejected objects:**

Do not operate without the discharge guard or grass-catcher in place.

**Danger!****Ejected objects:**

**Warning:** Keep bystanders away.

**Danger!****Dismemberment:**

Make sure that children stay clear of the machine at all time when engine is running

**Warning!**

Never use pressure lances to wash the transmission system.

**Danger!****Risk of burns**

Wait for the engine to completely cool down before making any adjustments or servicing the engine itself.

**Warning:**

KEEP HAND AND FEET AWAY FROM THE BLADES

**Danger!****Risk of serious injury.**

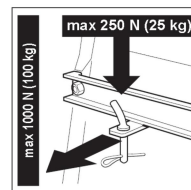
Keep hands and feet away before the blade and all the moving parts to come to a halt.

**Danger!****Risk of overturning on steep gradients**

WARNING! Do not use the machine on slopes on slopes with longitudinal gradients greater than 15°(27%). Do not use the machine on slopes on slopes with lateral gradients greater than 10°(18%).

**1.4 REGULATIONS FOR TOWING**

A kit for towing a small trailer is available on request, this accessory is to be fitted following the instructions provided, when using the towing kit. Do not exceed the recommended loads stated on the label and follow the safety instructions.

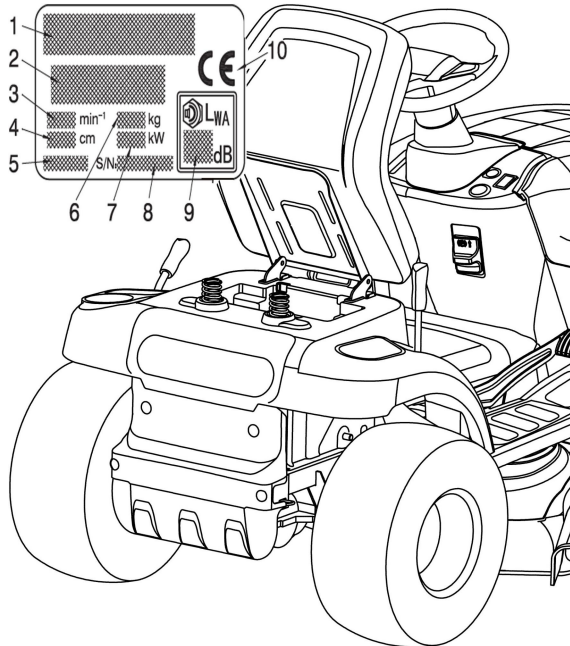


## 2. IDENTIFICATION OF THE MACHINE AND COMPONENTS

### 2.1 IDENTIFICATION OF THE MACHINE

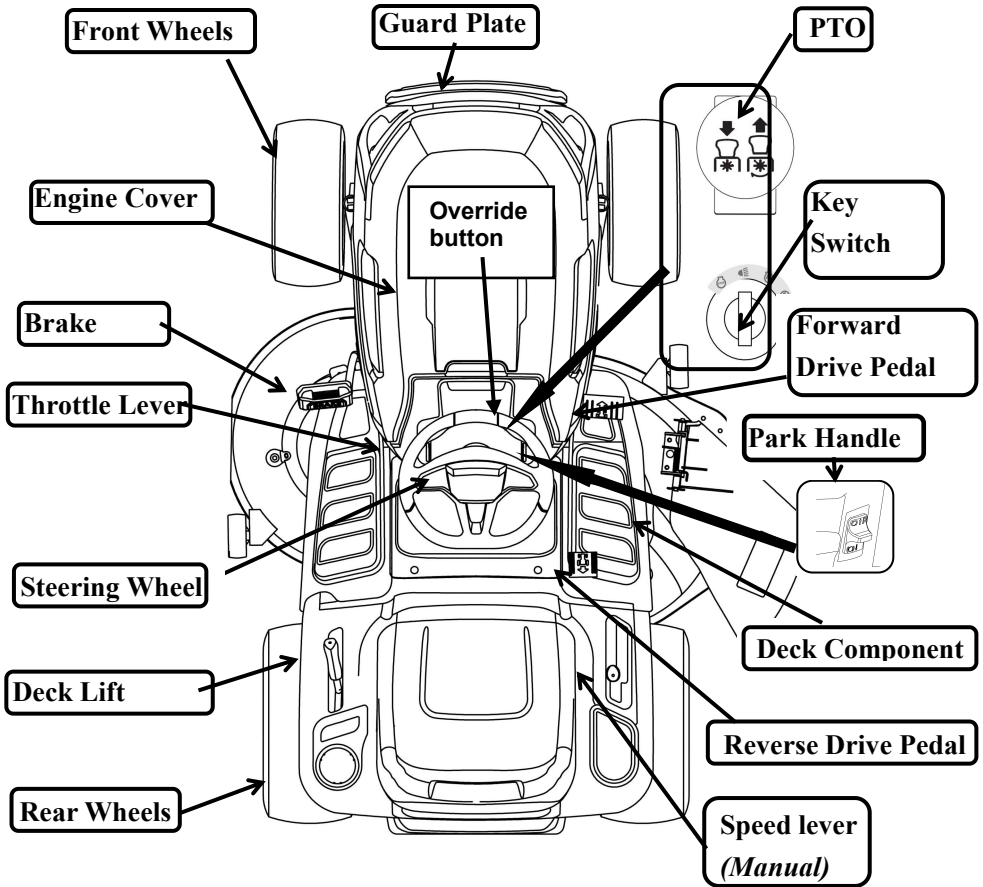
The label located in the seat bracket has the essential data of each machine

1. Name and address of manufacturer.
2. Designation of the machine
3. Type of machine
4. Cutting width
5. Mass of machine
6. Nominal power of engine
7. Serial number
8. Year of manufacture
9. Acoustic power level according to directive 2000/14/CE
10. Conformity mark according to directive 2006/42/EC



## 2.2 IDENTIFICATION OF MAIN COMPONENTS

The main components of the machine as following:



### 3. UNPACKING AND ASSEMBLY

For storage and transport purposes, some components of the machine are not installed in the factory and have to be assembled after unpacking. Follow the instructions below

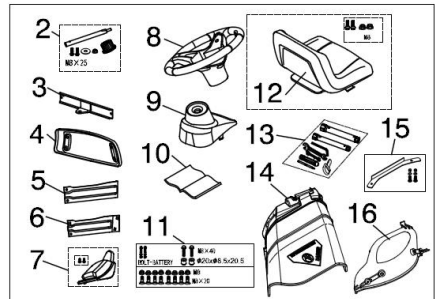
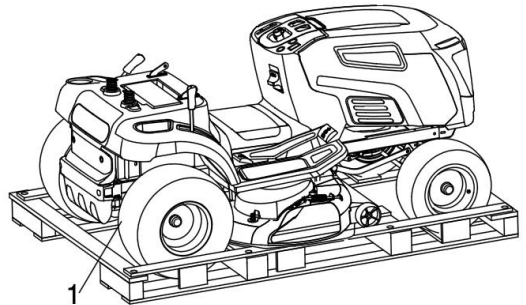
**IMPORTANT**

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

#### 3.1 UNPACKING

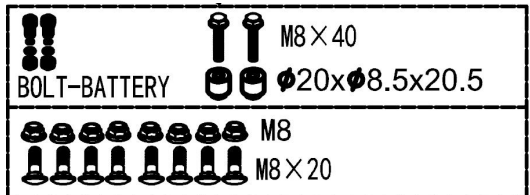
When unpacking the machine, take care to gather all individual parts and fittings, and do not damage the cutting deck when taking the machine off the pallet.

1. machine body
2. Steering connect shaft and Splined hub
3. Towing kit
4. Bumper
5. Bumper bracket L
6. Bumper bracket R
7. Steering wheel cover
8. Steering wheel
9. Steering shaft cover
10. instruction manual
11. Nuts, bolts, washer, bushing
12. Seat
13. Tools and starter key
14. Side deflector (only at the LT86SH)
15. Reinforce and washer, bolt, nut (only at the LT108SH)
16. Mulching kit (if applicable)



**NOTE**

*To prevent damage to the cutting deck, raise it to its maximum height and take utmost care when taking the machine off the pallet*



### 3.2 FITTING THE STEERING WHEEL

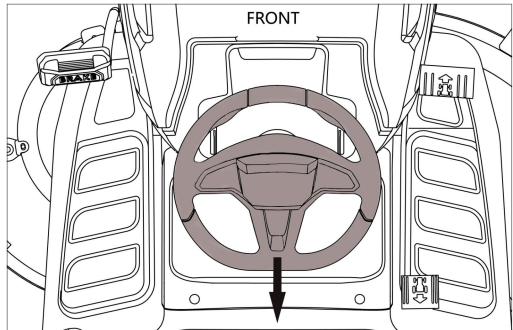
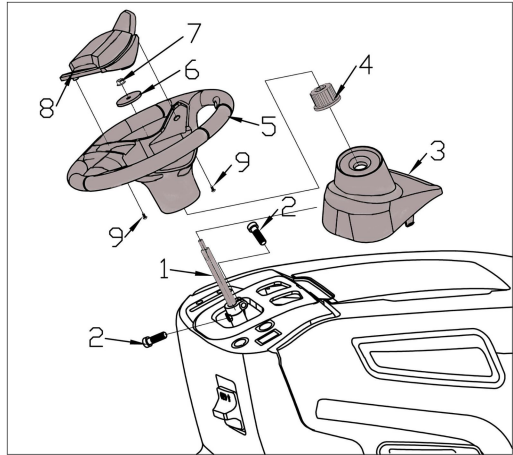
Put the machine on a flat surface and straighten up the front wheels.

a. Fit the shaft (1) onto the couplings and tightening the screw M8x25 (2). (Use the hex wrench 5 in accessories tools.)

b. Fit the steering shaft cover (3).

c. Inset the splined hub (4) to shaft (1), mounting steering wheel (5), spacer (6) and tightening nut M8 (7). (Use the open end wrench 13-15 in accessories tools.)

d. Inset the steering wheel cover (8) into steering wheel and tightening two screws ST4.8x16 (9). (Use the cross screwdriver in accessories tools.)

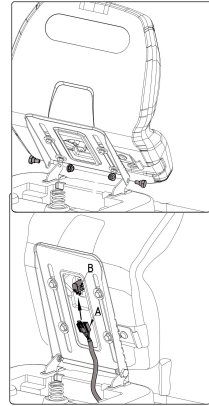


#### NOTE

*Pay attention to the direction when mounting the steering wheel.*

### 3.3 FITTING THE SEAT

1. Release 2pcs M8 nuts and 2pcs screws from seat bracket in the machine. (Use the open end wrench 13-15 in accessories tools.)
2. Mount the seat on the seat bracket using the released 2pcs M8 nuts and 2pcs screws.
3. Connect the wire harness A and switch B under the seat.



### 3.4 CONNECTING THE BATTERY



**# The electrolytic fluid is a solution of sulphuric acid.**

**Danger: Sulphuric acid is poisonous**



**Danger: Sulphuric acid is corrosive Sulphuric acid can cause blindness or severe burns.**



**Danger: Keep out of reach of children.**



For EU countries only

Never place any electric power tools in your household refuse.

To comply with European Directive 2012/19/EC concerning old electric and electronic equipment and its implementation in national laws, old electric power tools have to be separated from other waste and disposed of in an environment-friendly fashion, e.g. by taking to a recycling depot.

Recycling alternative to the return request:

As an alternative to returning the equipment to the manufacturer, the owner of the electrical equipment must make sure that the equipment is properly disposed of if he no longer wants to keep the equipment. The old equipment can be returned to a suitable collection point that will dispose of the equipment in accordance with the national recycling and waste disposal regulations. This does not apply to any accessories or aids without electrical components supplied with the old equipment.



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Subject to technical changes.



1) Fit the battery in its housing.


### IMPORTANT

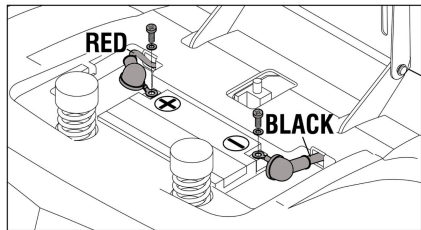
Position the battery with the polarities (+) and (—)

2) Connect the battery connectors to the machine connection leads and tighten the 2 screws. then cover the protective cap for the 2 wire is in place.(Use the open end wrench 8-10 and cross screwdriver in accessories tools)

3) Secure the battery with the small rubber strap.

### NOTE

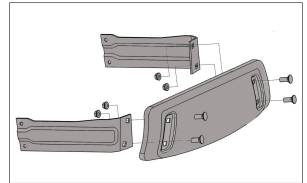
This machine used the battery: **12 V**  **18Ah**.  
The battery is fully charged before leaving the factory. If the battery is found be insufficient, please use a 12V1A charger to charge the battery



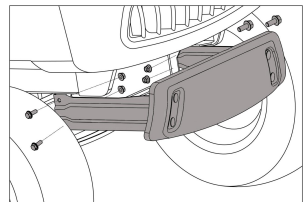
to

## 3.5 MOUNTING THE FRONT BUMPER

a. Mounting the bumper bracket L and bumper bracket R on the bumper, using 4pcs M8 nuts and 4pcs M8x20 screws. (Use the open end wrench 13-15 in accessories tools.)



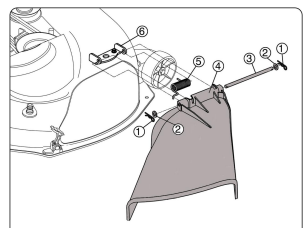
b. Mounting the front bumper on the bottom of the frame using the 4pcs M8 nuts and 4pcs M8x20 biots. (Use the open end wrench 13-15 in accessories tools.)



## 3.6 MOUNTING THE SIDE DEFLECTOR

a. Insert the elastic pin (1) and washer (2) into the right end of the pin (3);

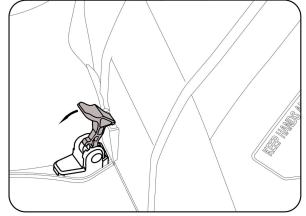
b. Insert the pin shaft into the side deflector (4), bracket (6) and torsion spring (5) in sequence, and insert the washer (2) and elastic latch (1) at the other end.



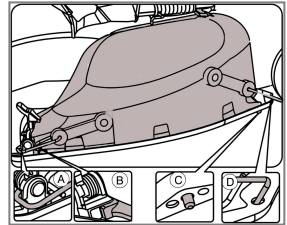
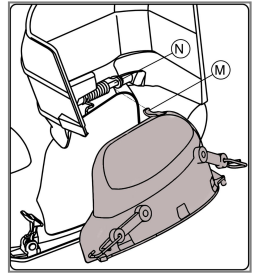
Note: When you need to open the side deflector, please press the self-locking button first, and do not force it to open.

### 3.7 MOUNTING THE MULCHING KIT(if applicable)

If you decide to mow the grass, mulching it and leaving it on the grass, a "mulching" kit is available upon request. This has to be assembled on the cutting deck as indicated in the bellows,

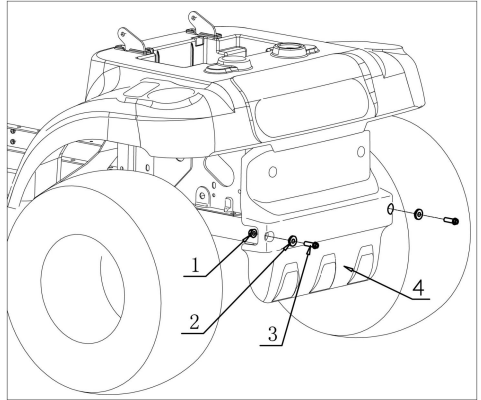


- a. Press the self-locking button to open the side deflector;
- b. Pass the lug boss (M) on the mulching kit through the bottom of the pin (N), insert the lower left corner of the mulching kit into the space under the self-locking parts base (Figure B), and insert the right dowel pin into the hole of deck (Figure C);
- c. Hang the left hook into the groove on the base of the self-locking parts (Figure A), and the right hook into the hole of the deck (Figure D).

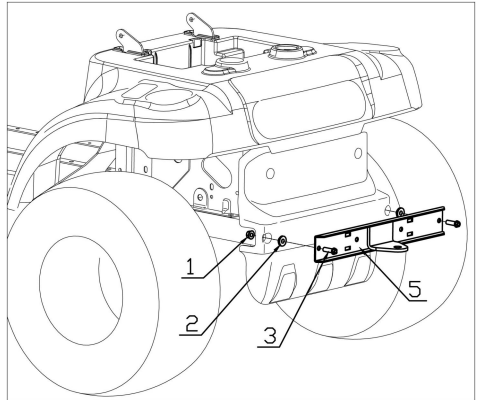


### 3.8 MOUNTING THE TOWING KIT

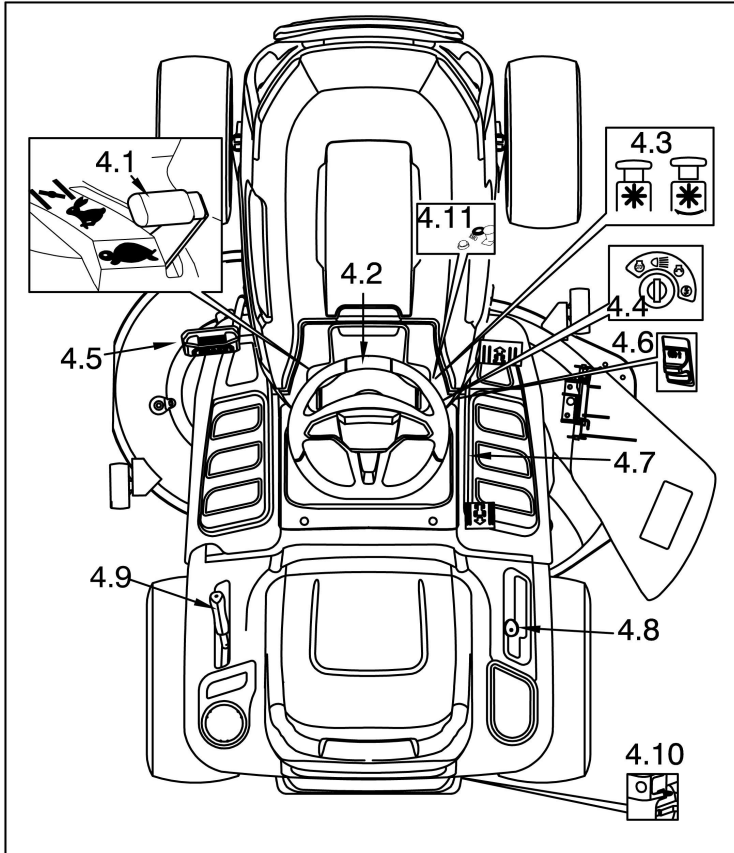
- a. Remove the tension arm bushing (2), the hexagonal flange bolts M8×20 (3), and the hexagonal flange locking nuts M8 (1) that secured the gearbox cover (4);



- b. Insert the bushing (2) into the two holes where the bolts were just removed, align the towing plate (5), and then install the hexagonal flange bolts M8×40 (3), hexagonal flange locking nut M8 (1), and then tighten the bolt.



## 4. CONTROLS AND INSTRUMENTS



### 4.1 THROTTLE LEVER

This regulates the engine revs, The positions are indicated on a label showing the following symbols:



«CHOKE» cold starting



«SLOW» for minimum engine speed



«FAST» for maximum engine speed

– The «CHOKE» position 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, shift into «FAST».

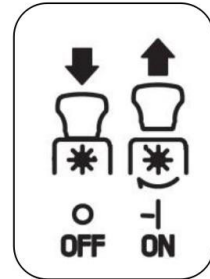
## 4.2 STEERING WHEEL

Turns the front wheels.

## 4.3 BLADE START/STOP KNOB

The blade start/stop knob is located on the RH console in front of the key switch.

The blade start/stop knob operates the electric clutch. Pull the knob upward to engage the blades, or push the knob downward to disengage the blades.



## 4.4 KEY IGNITION SWITCH

This key operated control has four positions:



«OFF» everything is switched off.



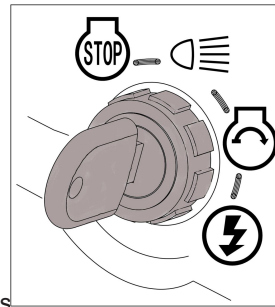
«ON» activates all parts.



«START» connects the starter Motor. If you release the key on «START», it will automatically return to «ON».



The key sends power to the head lights when the switch is in the position.

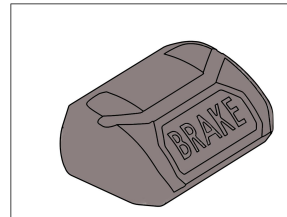


## 4.5 Brake Pedal

The brake pedal is located on the left front side of the board. The brake pedal can be used for sudden stops or **setting the parking brake**.

### NOTE

When the machine is moving, keep your foot off the pedal



## 4.6 PARKING BRAKE LEVER

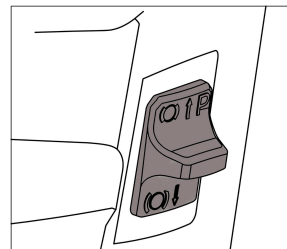
With machine stopped:

- 1) Keep the pedal pressed;
- 2) Lift the parking brake lever and keep lifted;
- 3) Release the pedal.



This way, the rear wheels remain braked.

To release the parking brake, fully press the pedal (the parking brake lever is automatically released and returns to down position).



### NOTE

*The engine only can be started at the parking position. Sitting on*

the machine and either parking brake lifted or brake pedal pressed only.

## 4.7 DRIVE ENGAGEMENT

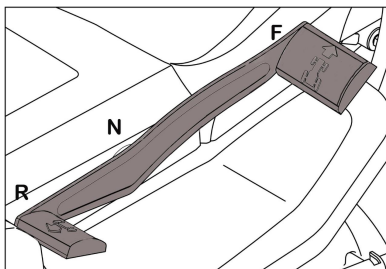
*(for hydrostatic transmission model)*

This pedal engages drive in the wheels as well as modulating the machine's forward and reverse speeds.

—To engage forward drive, press it towards «F» with your toecap. As you increase the pressure on the pedal, the speed of the machine increases.

—Reverse is engaged by pressing the pedal with the heel towards «R».

—The pedal automatically goes into neutral «N» when released.



**WARNING!**

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

**NOTE**

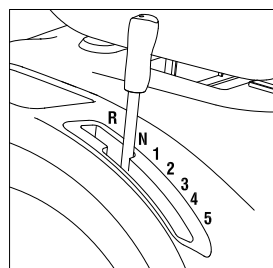
*Make sure the parking brake has been released before driving the mower.*

## 4.8 SPEED CHANGE LEVER

*(for manual gear model)*

This lever has seven positions for the 5 forward speeds, the neutral position «N», and reverse «R».

When shift the speed change lever, press the pedal to disengage the drive belt and shift the lever as shown on the label.



Never directly shift the lever from forward to reverse or from reverse to forward before the machine comes to stop.



**WARNING!**

***Only shift into reverse when the machine has stopped moving completely.***

## 4.9 CUTTING HEIGHT ADJUSTMENT LEVER



Lifts or lowers the blade deck and thereby adjusts the grass cutting height.

There are seven positions for this lever (shown as «1» to «7» on the label), which correspond to various heights between 30 and 90 mm.

## 4.10 SEE DESCRIPTION IN 5.3.5

## 4.11 Reverse Mode Operation Button (RMO)

The reverse mode operation knob is located on the RH console to the left of the blade start/stop knob. The blades will stop when traveling reverse. If keep the blades rotating when traveling reverse, please press the button RMO.

**NOTE:** *Mowing in reverse is not recommended.*

## 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 grass).*

*Do not tamper with or remove the safety devices fitted on the machine.*

**REMEMBER THAT THE USER IS ALWAYS RESPONSIBLE FOR DAMAGE AND INJURY TO OTHERS.** *Before using the machine:*

- read the general safety regulations, paying particular attention to driving and cutting on slopes;*
- carefully read the instructions for use, make sure you are familiar with the controls and know how to stop the blades and the engine quickly;*
- never put your hands or feet next to or beneath the rotating parts and always keep away from the exit.*

*Do not use the machine when in a precarious state of health or under the effect of medicine or any 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, and to take all the necessary precautions to ensure his own safety and that of others, particularly on slopes or rough, slippery and unstable ground.*

*Do not leave the machine on high grass with the engine running to avoid the risk of starting a fire.*

*Do not use the machine without the side deflector in place.*

#### **⚠ WARNING!**

*Do not use the machine on lawns with gradients of more than 15° (27%). Do not use the machine on lawns with side gradients above 10° (18%). If the machine is likely to be used mostly on sloping ground fit counterweights beneath the cross-member of the front wheels. These improve stability at the front and reduce the chances of tipping over.*

#### **IMPORTANT**

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

### 5.2 WHY THE SAFETY DEVICES CUT IN

The safety devices work in two ways:

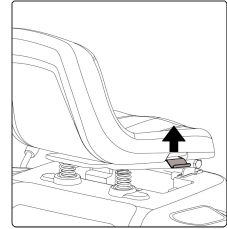
- they prevent the engine from starting if all the safety requirements have not been met;*
  - they stop the engine if even just one of the safety requirements is lacking.*
- a)** To start the engine, it is necessary that:
- the blades are not engaged;*
  - the parking brake is engaged and the transmission is disengaged;*
  - the operator sits on the seat;*
- b)** The engine stops when:
- the operator leaves his seat while mowing or driving;*

### 5.3 DIRECTIONS BEFORE STARTING WORK

Before starting to mow, it is necessary to carry out several checks and operations to ensure you can work efficiently and in maximum safety.

#### 5.3.1 Seat adjustment

To adjust the position of the seat, lift the seat adjustment lever up, Slide the seat forward or rearward to the desired position; then release the adjustment lever. Make sure seat is locked into position before operating the tractor.



#### 5.3.2 Tyre pressure

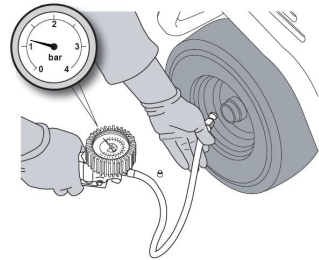
Having the right tyre pressure is the main condition for ensuring that the cutting deck is horizontal and mows evenly.

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

The pressures are:

FRONT 1.2 bar (15 x 6.0-6)

REAR 1.0 bar (18 x 8.5-8)



#### 5.3.3 Checking the fuel and oil

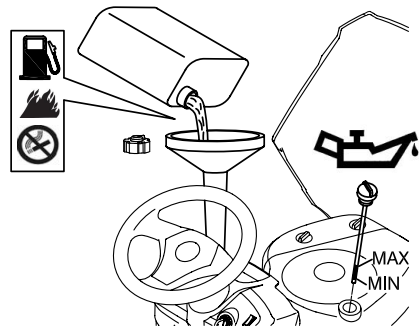
**NOTE**

*The engine manual indicates what type of oil and fuel you can use.*

*and fuel you can use.*

With the engine off, check the oil level. According to the instructions 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 7.5 litres.



**⚠ DANGER!**

***Refuelling should be carried out in an open or well-ventilated area with the engine off.***

***Always remember that petrol fumes are inflammable.***

***DO NOT USE A NAKED FLAME TO LOOK INSIDE THE TANK AND DO NOT SMOKE WHEN REFUELLING***

**IMPORTANT**

*Do not drip petrol onto the plastic parts to avoid damaging them. In the event of accidental spills or leaks, rinse immediately with water. The warranty does not cover for damage to plastic parts of the bodywork or the engine caused by petrol.*



### 5.3.4 Checking machine safety and efficiency

1. Check that the safety devices function as described. (see 5.2)
2. Check that the brake is in perfect working order.
3. Do not start mowing if the blades vibrate or if you are unsure whether they are sharp enough. Always remember that:
  - A badly sharpened blade pulls at the grass and causes the lawn to turn yellow.
  - A loose blade causes unwanted vibrations and can be dangerous.

#### **⚠ WARNING!**

*Do not use the machine if you are unsure whether it is working safely or efficiently. If in doubt, contact your Dealer immediately to make the necessary checks and repairs.*

### 5.3.5 Hydrostatic transmission disengagement lever

This lever has two positions as shown on the label:

«A» = Transmission engaged: for all uses, when moving and during cutting;

«B» = Transmission disengaged:

this makes it much easier to move the machine by hand, with the engine stopping.

Depending on the different hydrostatic transmission, there are two types of operation method which should be operated according to the label stuck on the machine.

## 5.4 USING THE MACHINE

### 5.4.1 Starting

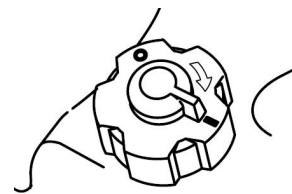
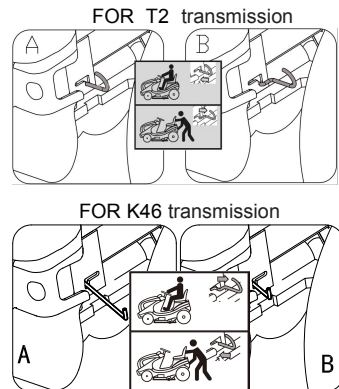
#### **⚠ DANGER!**

*The engine must be started in an open or well-ventilated area!*  
**ALWAYS REMEMBER THAT EXHAUST GASES ARE TOXIC!**

To start the engine:

- open the fuel stopcock (to “I”);
- close the engine cover;
- lift the cutting deck raised as high as possible.
- disengage the blades;
- shift the gear lever to neutral or release the pedal;
- operate the parking brake;
- when starting from cold, move the throttle to the «CHOKE» position shown on the label;
- if the engine is already warm, position the lever between «SLOW» and «FAST»;
- put in the ignition 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, move the throttle to «SLOW».



**IMPORTANT**

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

**NOTE**

*If there are engine starting problems, do not insist as you can risk running the battery flat and flooding the engine. Turn the key to «OFF», wait for a few seconds and then repeat the operation. If the malfunction persists, refer to the engine manual.*

**IMPORTANT**

*Always bear in mind that the safety devices prevent the engine from starting if safety requirements have not been met. 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.***

When moving the machine, the blades must be disengaged and the cutting deck raised as high as possible. (position«7»)

For Hydrostatic transmission models : Position the throttle between «SLOW» and «FAST», Disengage the parking brake and release the brake pedal. Press the drive pedal in direction «F» and reach the required speed by gradually increasing pressure on the pedal and working the throttle.

For Mechanical transmission models: Position the throttle between «SLOW» and «FAST» and the gear lever in first gear.

Keep the brake pedal pressed down and release the parking brake, release the brake pedal slowly to start forward movement of the machine.

**▲ WARNING!**

***The brake pedal has to be released gradually as a sudden engagement may cause the machine to tip over and the driver to lose control.***

Gradually reach the desired speed using the throttle and gear lever.

To change gear, the clutch must always be used by pushing the brake pedal.

#### 5.4.3 Braking

First slows down the machine by reducing the engine speed, and then push the brake pedal right down to lower the speed even more until the machine stops.

#### 5.4.4 Reverse

**IMPORTANT**

***Reverse must be engaged only when the machine has stopped completely.***

Press the brake pedal until the machine stops. and then go into reverse by shifting the lever sideways and into position «R». **(for manual gear model)**

Gradually release the brake pedal to engage the clutch and then begin moving in reverse.

When the machine is stopped, start the reverse movement by pressing the drive engagement pedal in the «R» direction (**for hydro transmission model**).

#### 5.4.5 Grass cutting

To start cutting:

- move the throttle to «FAST»;
- raise the cutting deck as high as possible;
- engage the blades;
- start moving forwards on the grass very slowly and with utmost caution, as already described;
- regulate the cutting height and speed considering the conditions of the lawn. (the height, density and dampness of the grass).

#### **▲ WARNING!**

***When cutting on sloping ground, reduce your speed to ensure safe conditions.***

Whatever the conditions, always reduce the speed if you notice a drop in engine speed

- if you travel too fast compared to the amount of grass being cut, you will not be able to mow the grass well.

Disengage the blades and raise the cutting deck as high as possible whenever you need to get past an obstacle.

#### **IMPORTANT**

***This machine has not been approved for mowing when it going reverse. The blades will stop when the machine go reverse by press the drive pedal towards «R». Press the override button (right of the steering wheel) can keep the blades rotating when the mower moving reverse.***

#### 5.4.6 End of mowing

When you have finished mowing, disengage the blades, lower the engine speed and ride the machine with the cutting deck raised as high as possible.

#### 5.4.7 End of work

Stop the machine, move the throttle to «SLOW» and turn off the engine by turning the key to «OFF».

When the engine has stopped, close the fuel stopcock.

#### **▲ WARNING!**

***To avoid backfire, position the throttle on «SLOW» for 20 seconds before stopping the engine.***

#### **▲ WARNING!**

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

#### **IMPORTANT**

***To keep the battery charged, do not leave the key in the «ON» position when the engine is not running.***

#### 5.4.8 Cleaning the machine

After use, clean the outside of the machine, empty the discharge chute, and shake it to remove grass and other debris.

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 circuit board located under the dashboard.

**IMPORTANT**

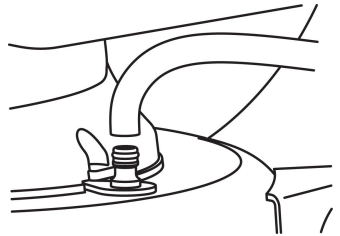
*Never use hose nozzles or harsh detergents to clean the bodywork or the engine!*

When washing the inside of the cutting deck, the machine must be on firm ground with:

- the discharge chute fitted;
- the operator seated;
- the engine running;
- the transmission in neutral;
- the blades engaged.

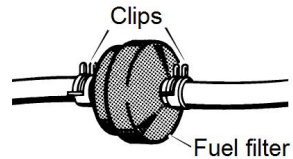
Connect a water hose to each of the pipe fittings one at a time and run water through each one for a few minutes, with the blades moving.

When washing, the cutting deck should be lowered right down.

**5.4.9 Storage and inactivity for long periods**

If you intend not to use the machine for a long period (more than 1 month), disconnect the battery cables and follow the instructions in the engine instruction manual.

Empty the fuel tank by disconnecting the tube situated at the inlet of the fuel filter and follow the instructions in the engine manual.

**▲ 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!*

Put the machine away in a dry, sheltered place and preferably covered with a cloth.

**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.*

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

**5.4.10 Card protection device**

The electronic circuit board 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 the

switching off of the lamp.

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

**IMPORTANT**

*To avoid activating the protection device:*

- do not invert 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 not to cause short-circuits.

#### 5.4.11 Summary of main steps to follow when using the machine

To...	You must...
Start the engine	Open the fuel stopcock, ensure that all the conditions allowing starting are met, and then turn the key.
Go forward	push the pedal right down, engage the gear and then gradually release the pedal.
Brake or stop	Reduce the engine speed and press the brake pedal.
Reverse	Stop the machine; put into neutral, push the brake pedal right down, engage reverse, and then gradually release the brake pedal.
Cut the grass	Fit the discharge chute; apply the throttle; engage the blades; adjust the cutting height, push the pedal right down, engage the gear and then gradually release the pedal.
Finish mowing	Disengage the blades and reduce the engine speed.
Stop the engine	Reduce the engine speed, wait a few seconds, turn the key and close the fuel stopcock.
Store the machine	Engage the parking brake, remove the key and, if necessary, wash the machine, the inside of the cutting deck.



## 5.5 USING ON SLOPING GROUND

Only mow on slopes with gradients up to the maximum already mentioned.

Lawns on a slope have to be mowed moving up and down and never across them. When changing direction, take great care that the wheels facing up the slope do not hit any obstacles (such as stones, branches, roots, etc.) that may cause the machine to slide sideways, tip over or make you lose control



### **DANGER!**

***REDUCE SPEED BEFORE ANY CHANGE OF DIRECTION ON SLOPES, and always apply the parking brake before leaving the machine at a standstill and unattended.***

### **WARNING!**

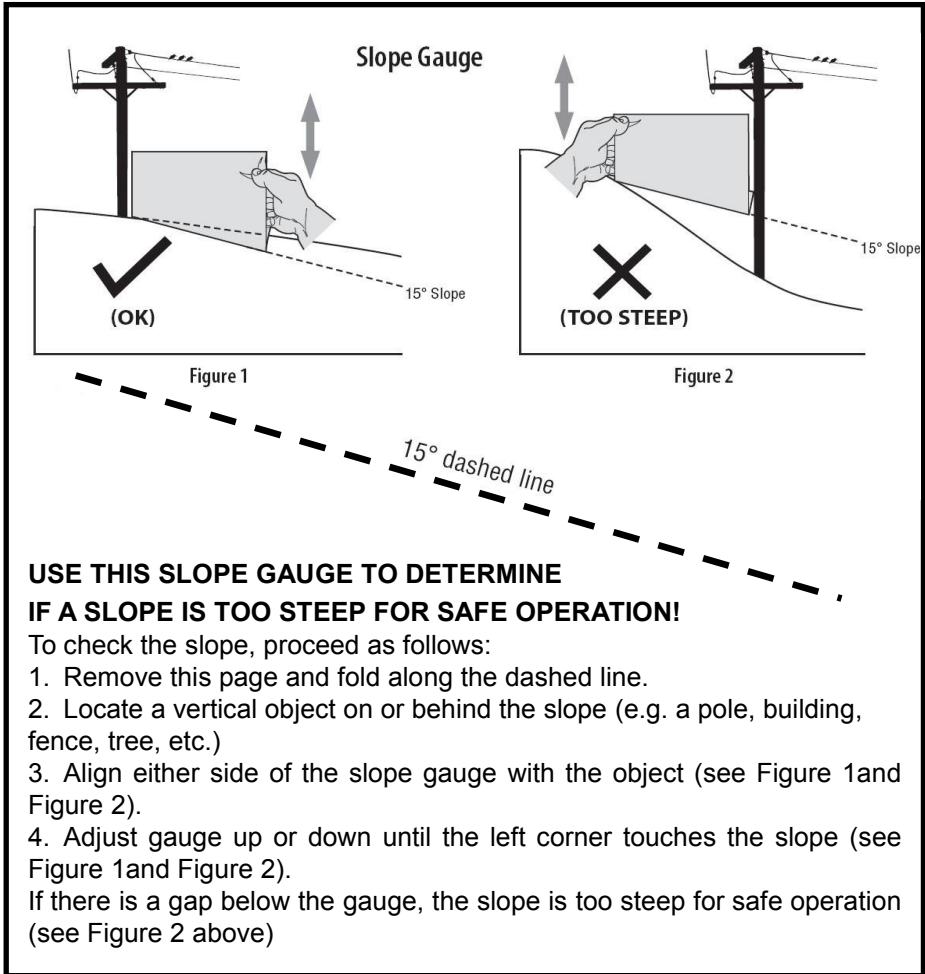
***Start moving forwards very carefully on sloping ground to prevent the risk of tipping over. Reduce the forward speed before going on a slope, particularly downhill.***

### **DANGER!**

***Never use reverse to reduce speed going downhill: this could cause you to lose control of the vehicle, especially on slippery ground.***

### **DANGER!**

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



**WARNING!** Slopes are a major factor related to tip-over and accidents which can result injury or death. Do not operate machine on slope in excess of 15 degrees, all slopes require extra caution.

## 5.6 TRANSPORTING

**▲ WARNING!** *If the machine is transported on a truck or trailer, use suitable equipment for lifting and enough people for the weight involved and the type of lifting system used. The machine must never be lifted by rope and tackle. During transport, close the fuel stopcock, lower the cutting deck, apply the parking brake and fasten the machine securely with ropes or chains to the hauling device.*

## 5.7 LAWN MAINTENANCE

1. To keep a lawn green, soft and attractive, it should be cut regularly without damaging the grass. A lawn can be composed of different types of grass. If the lawn is cut frequently, grass and roots grow more vigorously, forming a solid grassy bed. If the lawn is cut less frequently, higher grass and weeds start growing (plus daisies and clovers, etc.).

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 a 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. The grass 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.

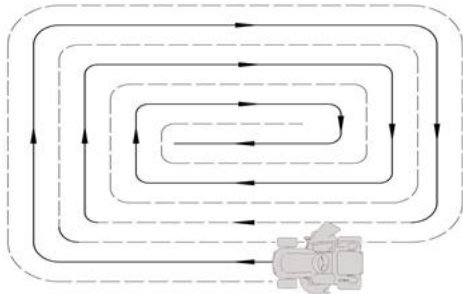
7. The best height of the grass on a well-kept lawn is approx. 4-5 cm. With one cut, you do not need to remove more than a third of the total height. If the grass is very tall, it should be cut twice in a twenty-four hours period – the first time with the blades at maximum height, possibly reducing the cutting width, and the second cut at the desired height.

8. When you mow large areas, start by turning to the right so that the cut grass will discharge away from shrubs, fences, drive-ways, etc. After one or two rounds, mow in the opposite direction making left turns until finished.

9. The appearance of the lawn will improve if you alternate cutting in both directions.

10. If the collector system tends to get blocked with grass, you should reduce the forward speed as it 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.

11. Be very careful when mowing near bushes or kerbs as these could distort the horizontal position of the cutting deck and damage its edge as well as the blades.





## 6. MAINTENANCE

### 6.1 SAFETY RECOMMENDATIONS

**▲ WARNING!** *Before cleaning or doing maintenance work, take out the ignition key and read the relevant instructions. Wear adequate clothing and work gloves whenever your hands are at risk.*

**▲ WARNING!** *Never use the machine with worn or damaged parts. Faulty or worn-out parts must always be replaced and not repaired. Only use original spare parts: Parts that are not of the same quality can damage the equipment and affect your safety and that of others*

**IMPORTANT** *Never dispose of used oil, fuel, batteries or other pollutants in unauthorised places!*

### 6.2 SCHEDULED MAINTENANCE

#### 6.2.1 Programmed maintenance

Operation	Hours	Completed (Date or Time)							
<b>1. MACHINE</b>									
1.1 Check engine oil	Before each use								
1.2 Tyres pressure check	Before each use								
1.3 Safety checks & Controls	Before each use								
1.4 Checking damage on products <sup>(2)</sup>	Before each use								
1.5 Cleaning global product	After each use								
1.7 Check of fastening and sharpness blades <sup>(2)</sup>	Each 25 hours								
1.8 Transmission belt check	Each 25 hours								
1.9 Blade blet check	Each 25 hours								
1.10 Bolt and screw check	Each 25 hours								
1.11 General Lubrication <sup>(3)</sup>	Each 25 hours								
1.12 Blade replacement	Each 100 hours								
1.13 Global maintenance review made by Authorized Dealer or Service Center)	Every year								

**2. ENGINE**

<b>2.1: First Oil change<sup>(1)</sup></b>	<b>Each 20 hours</b>								
<b>2.2 Engine oil change <sup>(1)</sup></b>	<b>Each 50 hours</b>								
<b>2.3 Air filter cleaning <sup>(1)</sup></b>	<b>Each 50 hours</b>								
<b>2.4 Check and adjust Spark Plug <sup>(1)</sup></b>	<b>Each 100 hours</b>								
<b>2.5 Fuel tank and fuel filters cleaning<sup>(1)</sup></b>	<b>Each 100 hours</b>								
<b>2.6 Air filter replacement <sup>(1)</sup></b>	<b>Every year</b>								
<b>2.7 Spark plug replacement<sup>(1)</sup></b>	<b>Every year</b>								

1) See the engine manual for the full list and frequency.

2) At the first signs of wear, contact your dealer to replace the part.

3) General lubrication of all joints should also be carried out whenever the machine is to be left unused for a long period.

The above table is there to help you maintain your machine’s safety and performance. It shows the main maintenance and lubrication operations and their frequency. To the right of each item, there is a box where you can write the date or after how many operating hours the work was carried out.

**▲ WARNING!**

*All checks, adjustments and replacements not described in chapters 6.3 and 6.4 of this manual must be carried out by your Dealer or a specialized Service Center. Both have the necessary knowledge and tools to ensure that the work is carried out correctly without affecting the safety of the machine.*

**6.2.2 Engine**

**IMPORTANT**

*Follow all the instructions in the engine manual.*

To empty the engine oil, unscrew the oil plug when refitting the plug, make sure the seal is positioned correctly

**6.2.3 Battery**

The battery must be carefully maintained to ensure long life. The machine battery must always be charged:

- before using the machine for the first time after purchase;
- before leaving the machine disused for a long period;
- before starting up the machine after a long period of disuse.

Carefully read and observe the battery recharging instructions in the booklet provided with the battery. Failure in following the instructions or in charging the battery could permanently damage the battery cells.

A flat battery must be recharged as soon as possible.

**IMPORTANT** Recharging must be done using a battery charger at **constant voltage**. Other recharging systems can irreversibly damage the battery

### 6.3 CHECKS AND ADJUSTMENTS

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 5-6mm lower than the rear.

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

– Put 30 mm blocks under the front edge of the deck and 35 mm blocks under the rear edge, and then put the deck lift handle into position «2»;

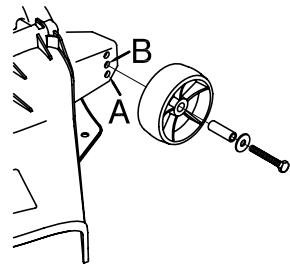
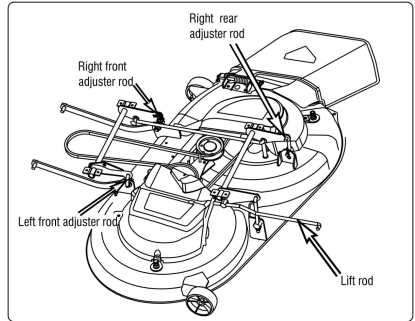
– Adjust the left front adjuster rod, right front adjuster rod and right rear adjuster rod keep the deck in touch with the blocks;

–Adjust the lift rod keep the deck in touch with the blocks.

In the flat lawn, if need, you can change the position of wheel to obtain a lower cut.

**IMPORTANT** In the heave lawn, you must set the wheel in the hole «A».

In case of any doubts, do not hesitate to contact your retailer.

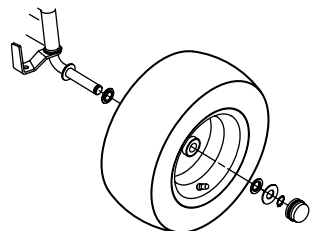


### 6.4 DISMANTLING AND REPLACEMENT

#### 6.4.1 Replacing wheels

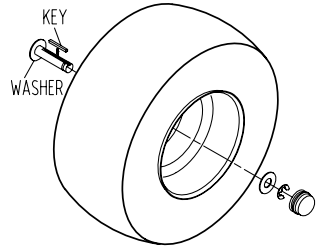
Stop the machine on flat ground and put a block under a load-bearing part of the frame on the side that the wheel is to be changed.

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



**NOTE**

*If you have to replace one or both rear wheels, they have the same diameter, and check that cutting deck is horizontal to prevent an uneven cut. You must make sure the key and washer are securely lodged in place.*



**IMPORTANT**

*Before remounting the wheel, apply grease to the axle. Put the snap ring and supporting washer back in place.*

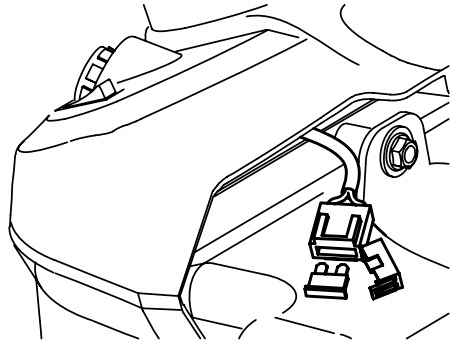
**6.4.2 Replacing and repairing the tyres**

The tyres are “Tubeless” and so all punctures must be repaired by a tyre repairer following the procedures required for this kind of tyre.

**6.4.3 Replacing a fuse**

The machine is fitted with 20A fuses. When it blows, the machine stops, the dashboard light switches off, and the battery gradually runs out, the machine will have problems starting.

Remove the fuse and replace with a same type fuse.



**IMPORTANT**

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

**6.4.4 Dismantling, replacing and remounting the blades**

**▲ WARNING!**

*Always wear work gloves when handling the blades. Before you inspect or remove the blade, stop the engine and disconnect the wire to the spark plug.*

**▲ WARNING!**

*Damaged or bent blades must always be replaced; never try to repair them! Only use genuine blades. Make sure the blades are correctly balanced. Make sure you put them back in the right place by referring to the code and rotate direction stamped on the outside of each blade.*

Blade models please refer to the chapter “SPECIFICATIONS”.

**1. Dismantling**

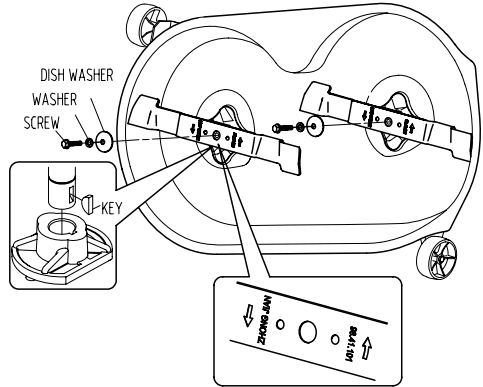
Loosen anticlockwise the screw.

**2. Remounting**

Make sure the printed code on the blade to face the operator who remounted the blade.

Check that the concave part of the disc washer presses against the blade.

Remount the shaft hubs, making sure the key are securely lodged in place.



### 3. Tightening the screws

Tightening clockwise with a torque wrench calibrated to 40~45N.m.

### 6.4.5 Replacing the belt

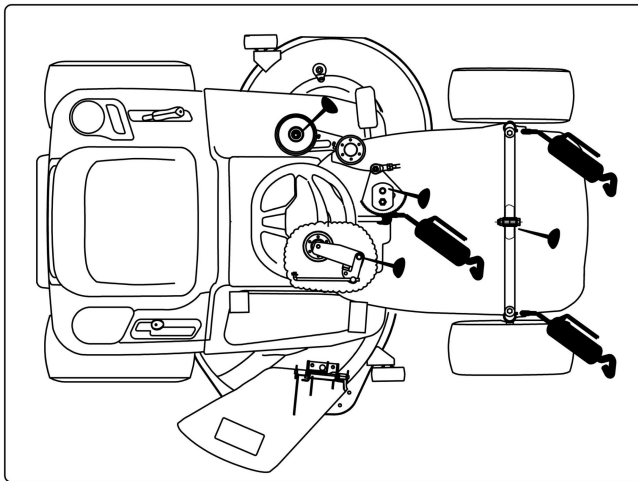
The belt replacement must be carried out at a Licensed Service Centre. Replace the belts as soon as they show obvious sign of wear!

**⚠ WARNING!** ALWAYS USE GENUINE REPLACEMENT BELTS!

### 6.5 LUBRICATION

Apply grease with an injector to the areas shown. apply two or three shots of grease, and wipe off excess grease.

Lubricate the areas shown with engine oil. wipe the area clean, apply a few drops of oil, then wipe up drips or spills.



**IMPORTANT** Do not dirty the belt or brake shoe or tire with the grease or oil, oil or grease will damage them.

## 7. TROUBLESHOOTING



### **WARNING!**

### **Danger**

### **Injury hazard if engine is started inadvertently**

Protect yourself against injury. Before carrying out any work on this mower:

- Switch off the engine.
- Remove the ignition key.
- Actuate the parking brake.
- Wait until all moving parts have come to a standstill and the engine has fully cooled.
- Pull the spark plug connector off the engine so that the engine cannot inadvertently start.

Faults which occur while you are using your mower often have simple causes which you should know and may be able to rectify yourself. If you are in any doubt however, your dealer or service center will be happy to provide assistance.

<b>Problem</b>	<b>Possible cause(s)</b>	<b>Remedy</b>
<b>Lighting does not function</b>	1. Headlight wire connector not connected.	Stop the key to «STOP» position and connect the headlight wire.
	2. Bulbs defective.	Stop the key to «STOP» position and replace the bulbs.
	3. Battery not connected correctly.	Connect red cable to the (+) battery terminal and black cable to (-) battery terminal. (par. 3.4)
	4. Ignition switch defective	Replace ignition switch
	5. Battery defective	Test and recharge or replace the battery
	6. Short-Circuit in wire harness	Contact your Dealer or Service center

Problem	Possible cause(s)	Remedy
<b>Start motor will not turn engine</b>	1. Starting conditions have not been met	Check that all starting conditions are met (par. 5.4.1)
	2. No fuel in fuel tank.	Stop the key to «STOP» position and refuel the fuel tank. (par. 5.3.3)
	3. Poor contact between cable and battery pole.	Check the connections.(par. 3.4)
	4. Battery flat or defective	Test and recharge or replace the battery.
	5. Fuse defective.	Replace fuse. If the fuse blows repeatedly, determine the cause (usually a short-circuit). (par. 6.4.3)
	6. Clogged air filter	Clean air filter.
	7. Spark Plug defective.	Check the connection of spark plug socket, Clean or replace the spark plug.
	8. Brake pedal defective.	Contact your Dealer or Service center.
	9.Clutch/brake switch not pushed down.	Press the PTO Button to the OFF position. (par. 4.3)
	10. Start relay defective	Replace the start relay.
	11.Ignition switch start defective	Replace ignition switch start.

Problem	Possible cause(s)	Remedy
<b>Engine runs unevenly</b>	1. Carburetor problem	Contact your Dealer or Service center.
	2. Air filter blocked.	Clean or replace the air filter.(See engine manual)
	3. Fuel tank ventilation blocked.	1.Check and replace the fuel filter if necessary;(see engine manual or or contact your Dealer or Service center.) 2. Empty the fuel tank and refuel with fresh fuel;
	4. Grass is too high	Reduce the travelling speed according to the height of the grass and/or raise the cutting height.
<b>Engine feels weak</b>	1. Air filter blocked.	Clean or replace the air filter.(See engine manual)
	2. Engine speed too low	Increase throttle.
	3. Travelling speed too high.	Set to a lower travelling speed.
	4. Spark Plug defective.	Replace the spark plug; see engine manual.
	5. Fuel tank ventilation blocked	1.Check and replace the fuel filter if necessary;(see engine manual or or contact your Dealer or Service center.) 2. Empty the fuel tank and refuel with fresh fuel;



Problem	Possible cause(s)	Remedy
<b>Battery does not charge</b>	1. Fuse defective.	Replace fuse. If the fuse blows repeatedly, determine the cause (usually a short-circuit). (par. 6.4.3)
	2. Poor contact between battery poles and cables.	Check the connections.(par. 3.4)
<b>Machine doesn't move</b>	1.Brake is engaged	Keep the brake pedal pressed down and release the parking brake, release the brake pedal slowly to start forward movement of the machine. (par. 5.4.2)
	2. Gearbox disengaged ( Hydrostatic Gear)	Engage the gearbox. (par. 5.3.5)
	3.Drive belt detached	Fit belt in place .
	4.Drive belt defective or worn	Replace drive belt.
<b>Strong vibrations</b>	1. Blades loose.	Check and tighten all the blades ( see Torque tightening par. 6.4.4) or contact your Dealer or Service center.
	2. Engine loose.	Check and tighten all the engine and frame bolts
	3. Unbalance in one or both blades resulting from damage.	Contact your Dealer or Service center.
	4. Cutting-means assembly is full of grass	Clean the cutting-means assembly
	5.Engine mounting not securely tightened	Tighten engine mounting or contact your Dealer or Service center.
	6. Belt damaged	Replace Belt

Problem	Possible cause(s)	Remedy
<b>Uneven or poor cutting results</b>	1. Blades blunt or worn	Sharpen or replace mowing blades
	2. Different air pressures in tires on left and right side.	Check the tyre pressure.(par. 5.3.2)
	3.Cutting deck adjustment.	Check deck adjustment (6.3 or Contact your Dealer or Service center)
	4.Long and/or wet grass	Adapt cutting level and driving speed to the mowing conditions.
	5.Travelling speed too high.	Set to a lower travelling speed.
	6. Grass stuck under cutting deck	Cleaning inside the deck properly (Use a suitable accessory to access the cleaning of the cutting deck)
	7.Cutting drive belt Slipping	Replace the cutting drive belt

If problems persist after having performed the above operations, contact your Dealer or Service center.

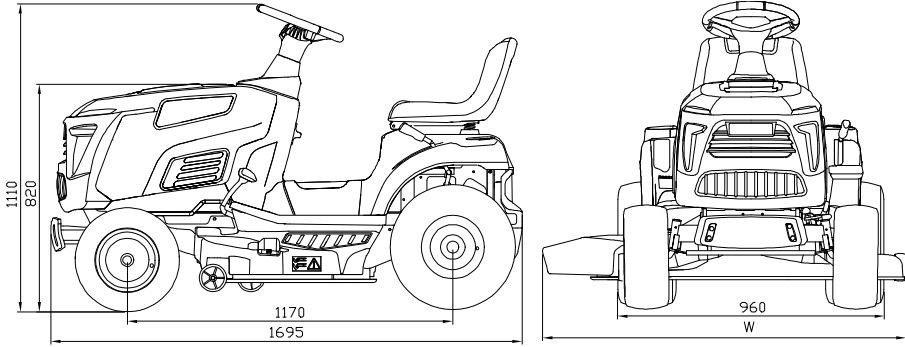
## 8. SPECIFICATIONS

### 8.1 TECHNICAL DATA TABLE

Model	HST15/38	HVT19/42	
Engine model	LC1P92F-1	LC2P73F	
Engine displacement	452 cm <sup>3</sup>	586 cm <sup>3</sup>	
Nominal power:	7.8 kW	9.8 kW	
Max. engine speed:	2600min <sup>-1</sup>	2400min <sup>-1</sup>	
Blade model:	BLT9801	BLT10801	
Cutting width	98 cm	108 cm	
Sound pressure level at the operator	L <sub>pA</sub> : 87.7dB(A) K <sub>pA</sub> : 3 dB(A)	L <sub>pA</sub> : 87.5dB (A) K <sub>pA</sub> : 3 dB(A)	
Measured sound power level	L <sub>WA</sub> : 99.4 dB(A), K <sub>WA</sub> : 0.99 dB(A)	L <sub>WA</sub> : 99.2 dB(A), K <sub>WA</sub> : 0.88 dB(A)	
Guaranteed sound power level (2000/14/EC)	L <sub>WA</sub> :100 dB(A)	L <sub>WA</sub> : 100 dB(A)	
Vibration	Hand-arm	a <sub>h</sub> : 2.8 m/s <sup>2</sup> , K <sub>h</sub> : 1.5 m/s <sup>2</sup>	a <sub>h</sub> : 3.1 m/s <sup>2</sup> , K <sub>h</sub> : 1.5 m/s <sup>2</sup>
	Whole body	a <sub>h</sub> : 0.9 m/s <sup>2</sup> , K <sub>h</sub> : 1.5 m/s <sup>2</sup>	a <sub>h</sub> : 0.9 m/s <sup>2</sup> , K <sub>h</sub> : 1.5 m/s <sup>2</sup>
Mass	168.5 kg	174.5 kg	
Driving speed	Forward:0-8.8 km/h, Reverse 0-4.5 km/h		

	For all models
Blade screw tightening torque	40–45 Nm
Cutting height (on 7 levels)	30 – 90 mm
Front wheels	15 × 6.00-6
Rear wheels	18 × 8.50-8
Front wheel inflation pressure	1.2 bar
Rear wheel inflation pressure	1.0 bar
Electrical system	12 Vd.c.
Battery	18 Ah
Min. turning radius	45 cm
Capacity of fuel tank	7.5 L

8.2 Machine Dimensions



<b>Model</b>	<b>HST15/38</b>	<b>HVT19/42</b>
<b>W(mm)</b>	<b>1290</b>	<b>1390</b>

## **9. WARRANTY CONDITIONS**

### **9.1 WARRANTY PERIOD**

The warranty period for the lawn tractor is 3 years domestic warranty, 6 months commercial warranty from the purchase date. Engine warranty is 2 years.

### **9.2 EXCLUSIONS**

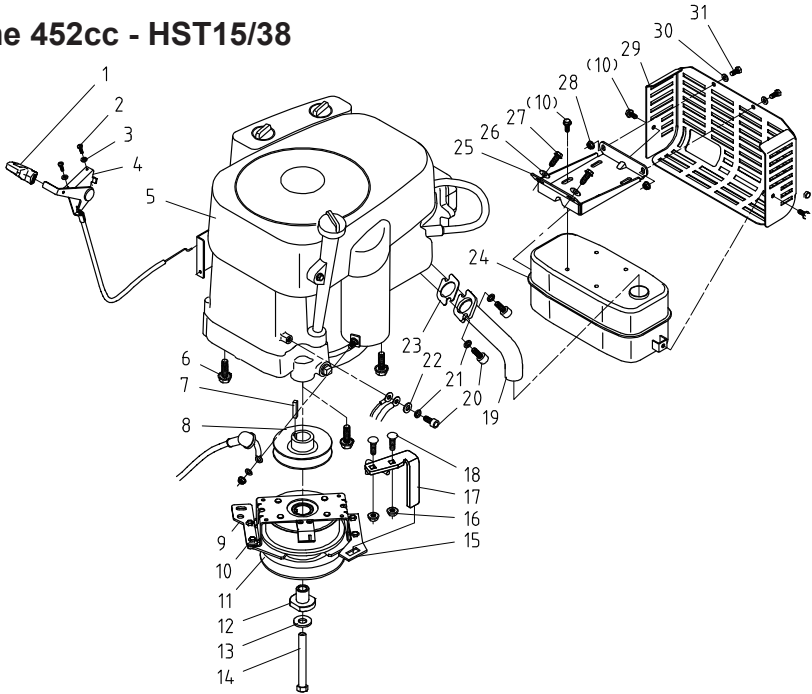
Warranty will not cover:

- Pieces worn out due to normal wear and tear.
- Misuse, negligence of care, and lack of maintenance.
- Failures due to using non genuine replacement parts.

Warranty will be voided if the machine has been modified in any way.

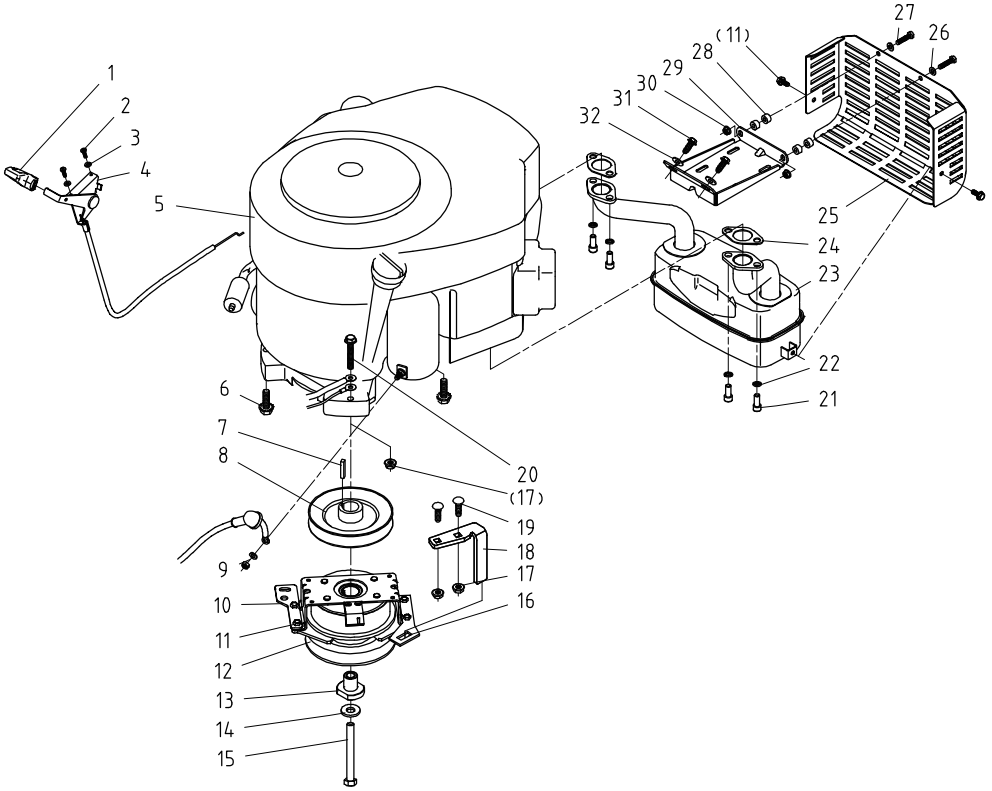
# Spare Parts Diagram

## 1.1 Engine 452cc - HST15/38



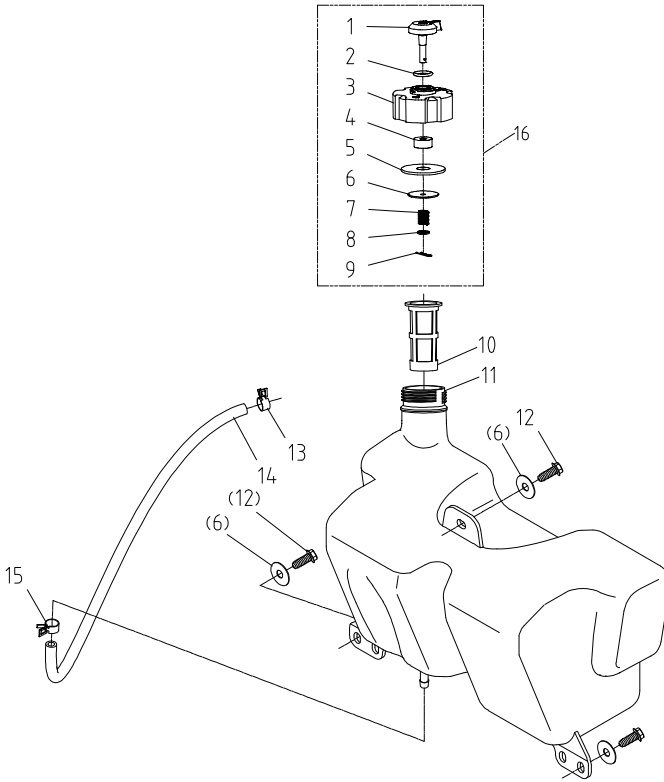
Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
1	20084362	Choke Knob	1	16	20061348	Flange Lock Nut M8	2
2	20051803	Screw M4×16	2	17	20085757	Clutch Baffle (Small Bin)	1
3	20061531	Washer 4	2	18	20061299	Bolt M8×20	2
4	20071241	Throttle Cable	1	19	20074428	Exhaust Pipe	1
5	20071183	Engine	1	20	20060850	Screw 5/16"-18 -3/4"	3
6	20061285	Tapping Screw 3/8"-16-1 1/4"	4	21	20061453	Spring Washer 5/16"	3
7	20070519	Flat Key 6.35×30	1	22	20061431	Washer 8	1
8	20070850	Engine Pulley Weldment	1	23	20070868	Gasket	1
9	20088530	Support	1	24	20071214	Muffler	1
10	20082800	Tapping Screwm6*16	10	25	20084296	Bracket	1
11	20085206	Electric Clutch	1	26	20061541	Big Washer 8	2
12	20085758	Clutch Step Bushing	1	27	20082799	Flange Bolt 5/16-18Tx3/4	2
13	20078309	Taper Washer 12	1	28	20061346	Flange Lock Nut M6	2
14	20062410	Bolt, 7/16"-20- 3",Unf	1	29	20071219	Front Shield	1
15	20085121	Clutch Clamp Plate	1	30	20061539	Big Washer 6	2
				31	20061184	Bolt M6×16	2

# 1.2 Engine 586cc - HVT19/42



Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
1	20084362	Choke Knob	1	17	20061348	Flange Lock Nut M8	3
2	20051803	Screw M4×16	2	18	20085859	Clutch Baffle (Small Bin)	1
3	20061531	Washer 4	2	19	20061299	Bolt M8×20	2
4	20071440	Throttle Cable	1	20	20061254	Flange Bolt M8×40	1
5	20084880	Engine	1	21	20060850	Screw 5/16"-18 -3/4"	4
6	20061285	Tapping Screw 3/8"-16-1 1/4"	3	22	20061453	Spring Washer 5/16"	4
7	20070519	Flat Key 6.35×30	1	23	20084879	Muffler	1
8	20071187	Engine Pulley Weldment	1	24	20070868	Gasket	2
9	20061482	Washer 6	1	25	20085348	Front Shield	1
10	20088530	Support	1	26	20061539	Big Washer 6	2
11	20082800	Tapping Screw M6×16	6	27	20061197	Bolt M6×25	2
12	20085206	Electric Clutch	1	28	20085755	Washer Φ6.2*Φ12*6	4
13	20085758	Clutch Step Bushing	1	29	20084296	Bracket	1
14	20078309	Taper Washer 12	1	30	20061346	Flange Lock Nut M6	2
15	20062410	Bolt, 7/16"-20- 3",Unf	1	31	20082799	Flange Bolt 5/16-18Tx3/4	2
16	20085121	Clutch Clamp Plate	1	32	20061541	Big Washer 8	2

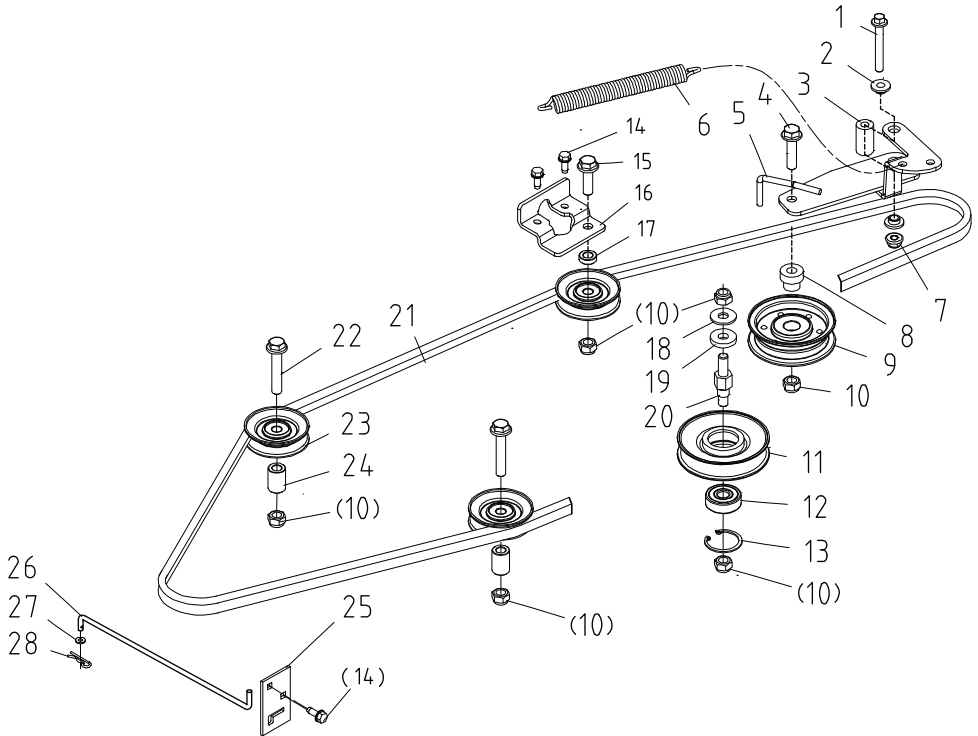
## 2. Fuel Tank



Item	Part Number	Description	QTY
<b>1-16</b>	<b>40052984</b>	<b>Fuel Tank Assembly</b>	
1	20059754	Fuel Tank Cap Lever	1
2	20071493	O Ring	1
3	20059760	Fuel Tank Cap	1
4	20059763	Fuel Tank Cap Filter	1
5	20090126	Fuel Tank Cap Seal	1
6	20071676	Gasket 6×25×1.5	4
7	20059764	Fuel Tank Cap Spring	1
8	20061445	Washer 5	1
9	20059765	Split Pin	1
10	20059766	Filter Cap	1
11	20071228	Fuel Tank	1
12	20082800	Tapping Screw6*1	3
13	20062744	Clip Φ10	1
14	20070865	Fuel Hose	1
15	20071161	Clip Φ10	1
16	20071747	Fuel Tank Cap Asy	

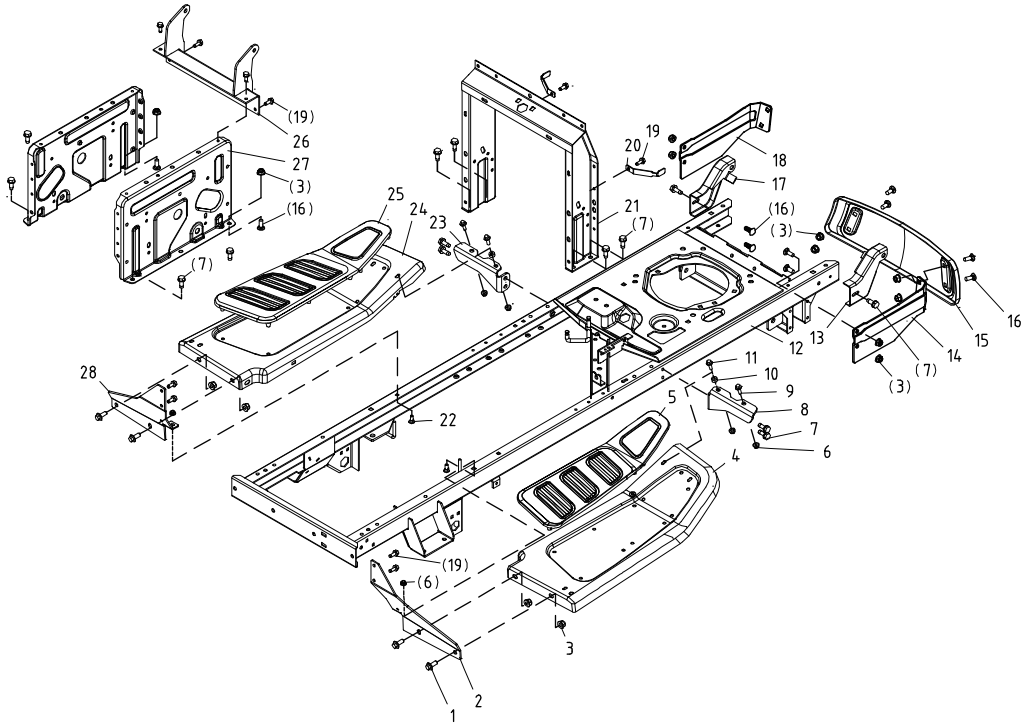


### 3. Drive Belt Assembly



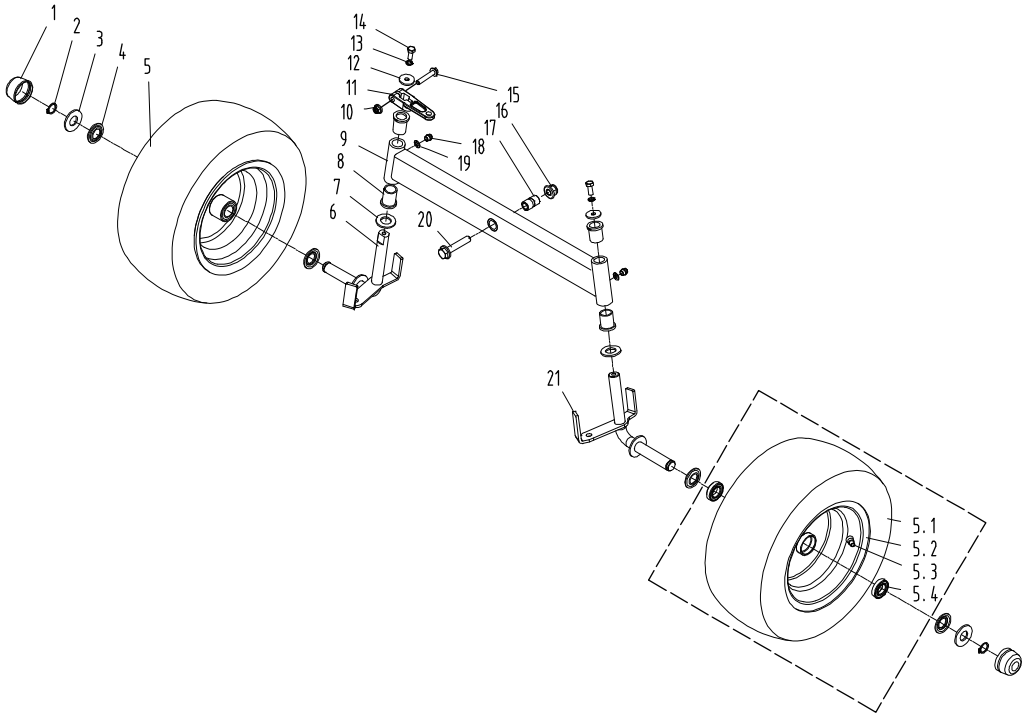
Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
1	20061275	Flange Bolt M8×60	1	15	20061284	Flange Bolt M10×1.25×35	1
2	20070780	Bushing	2	16	20088482	Guide Pulley Base Plate	1
3	20084436	Spacer $\phi 8 \times \phi 18 \times 33$	1	17	20088483	Washer $\phi 10 \times \phi 18 \times 7$	1
4	20062521	Flange Bolt M10×1.25×40	1	18	20061542	Big Washer 10	1
5	20090612	Driving Tention Arm Weldment	1	19	20062499	Washer $\phi 27 \times \phi 10.5 \times 5$	1
6	20070875	Spring	1	20	20084441	Tensioning Wheel Bolt	1
7	20061336	Flange Nut M8	1	21	20085198	V Belt Lg4-1030	1
8	20071180	Tention Pulley Bushing	1	22	20062515	Flange Bolt M10×1.25×50	2
9	20071213	Tention Pulley	1	23	20071208	Driving Guide Pulley	3
10	20061403	Lock Nut M10×1.25	6	24	20084442	Guide Pulley Cushion Sleeve	2
11	20070536	Tention Pulley	1	25	20084655	Oil Drain Rod Seat	1
12	20061626	Bearing 6301-2Rs	1	26	20085197	Oil Discharge Push Rod (K46Side)	1
13	20061549	Snap Ring 37	1	27	20061445	Washer 5	1
14	20082800	Tapping Screwm6*16	4	28	20059765	Split Pin	1

## 4. Chassis



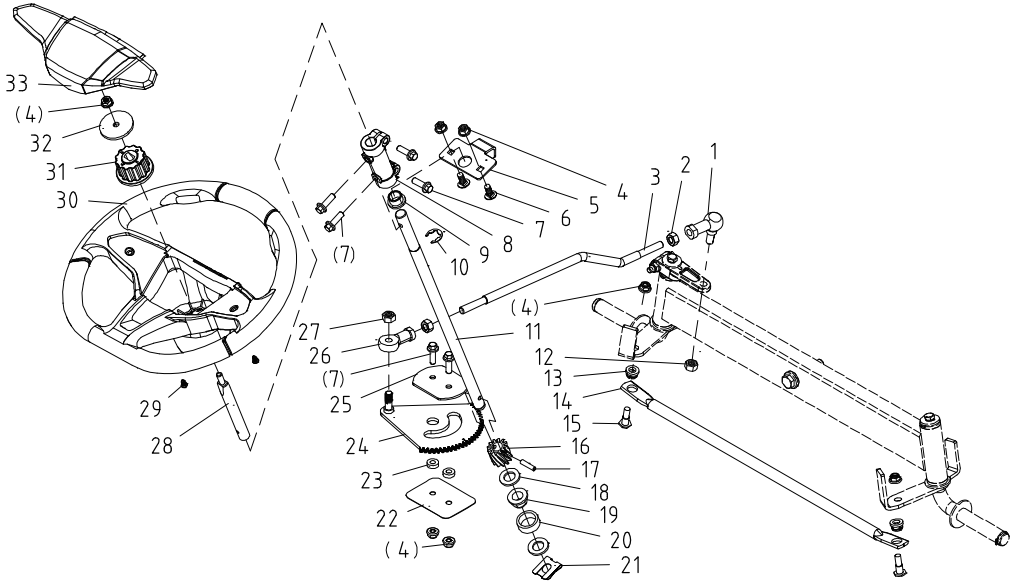
Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
<b>1-28</b>	<b>40053014</b>	<b>Frame Assembly</b>		15	20085086	Bumper	1
1	20061274	Flange Bolt M8×20	4	16	20061299	Bolt M8×20	10
2	20084428	Right Pedal Hanger	1	17	20084403	Engine Cover Bracket Left	1
3	20061348	Flange Lock Nut M8	14	18	20088532	Left Bumper Rod	1
4	20084430	Right Pedal	1	19	20082800	Tapping Screwm6*16	10
5	20084393	Right Foot Pad	1	20	20084384	Steering	2
6	20061385	Hexagon Flange Lock Nut M6	6	21	20084401	Steering Bracket	1
7	20082799	Flange Bolt 5/16-18Tx3/4	14	22	20061289	Bolt M6X16	2
8	20084427	Pedal Front Support Right	1	23	20084422	Pedal Front Support Left	1
9	20061200	Flange Bolt M6×16	2	24	20084429	Left Pedal	1
10	20070916	Bushing	2	25	20084388	Left Foot Pad	1
11	20061196	Flange Bolt M6×25	2	26	20084417	Seat Front Beam Weldment	1
12	20088080	Chasis	1	27	20084399	Side Plate	2
13	20084375	Engine Cover Bracket Right	1	28	20084414	Left Pedal Hanger	1
14	20088534	Right Bumper Rod	1				

# 5. Front Axle



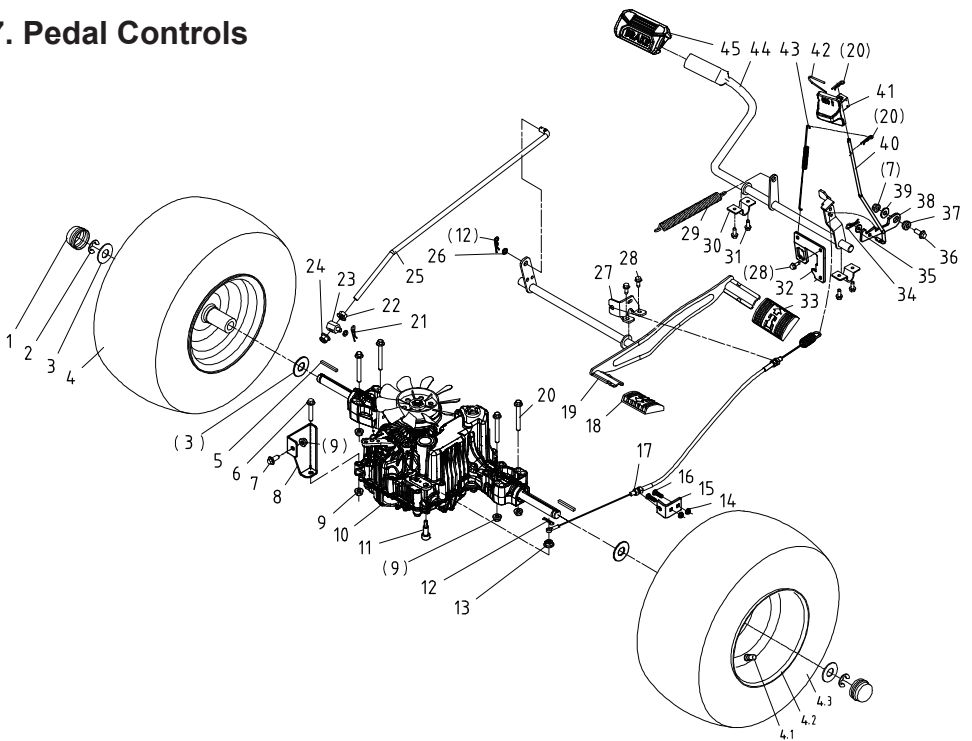
Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
<b>1-21</b>	<b>40052982</b>	<b>Front Axle Assy</b>		10	20061348	Flange Lock Nut M8	1
1	20068187	Hub Cover	2	11	20070941	Turnng Arm	1
2	20061488	Snap Ring 19	2	12	20091656	Washer	2
3	20071143	Washer $\Phi 20 \times \Phi 43 \times 3$	2	13	20061533	Spring Washer 8	2
4	20071144	Washer	4	14	20061291	Bolt M8x20	2
5	20086529	Wheel, Front - Assy. 15x6-6	2	15	20061256	Flange Bolt M8x45	1
5.1	20083980	Tyre, Front - 15x6-6	2	16	20061359	Flange Lock Nut M12x1.25	1
5.2	20071149	Wheel Rim - Front	2	17	20084370	Liner Tube	1
5.3	20061665	Valve, Z2-01-1, GB/T3900-1997	2	18	20061649	Oil Injection Nozzle	2
5.4	20061595	Bearing 61904-2Rz	4	19	20061482	Washer6	2
6	20084372	Front Axle Rh	1	20	20085752	Flange Bolt M12x1.25x55	1
7	20061444	Washer 20	2	21	20084367	Front Axle Lh	1
8	20070566	Bushing	4				
9	20084364	Front Axle Weldment	1				

## 6. Steering



Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
<b>1-33</b>	<b>40052987</b>	<b>Steering Assy</b>		17	20061569	Pin 6×26	1
1	20085366	Joint Bearing M10	1	18	20061437	Washer 16	2
2	20061399	Nut M10	2	19	20070612	Hexagon Bushing	1
3	20084461	Steering Drag Rod	1	20	20071127	Bushing	1
4	20061348	Flange Lock Nut M8	7	21	20085898	Snap Ring 16	1
5	20084463	Square Hole Card Board	1	22	20070939	Tie Plate	1
6	20061299	Screw M8×20	2	23	20070932	Bushing	2
7	20061298	Flange Bolt M8×35	6	24	20084464	Steering Gear Plate Weldment	1
8	20083389	Couplings	1	25	20070942	Double Hole Board	1
9	20082643	Hatch Bushing	1	26	20061641	Joint Bearing Sijk10C	1
10	20061548	Snap Ring 15	1	27	20061403	Lock Nut M10×1.25	1
11	20084458	Steering Column	1	28	20084465	Steering Wheel Rod A	1
12	20061419	Lock Nut M10	1	29	20051824	Tapping Screw St4.8X16	2
13	20084462	Elastic Rubber Bush	2	30	20082707	Steering Wheel	1
14	20084456	Steering Drag Rod	1	31	20079969	Splined Hub	1
15	20084459	Pin Screw M8×28	2	32	20082683	Washer	1
16	20084457	Steering Gear Left	1	33	20082679	Steering Wheel Cap	1

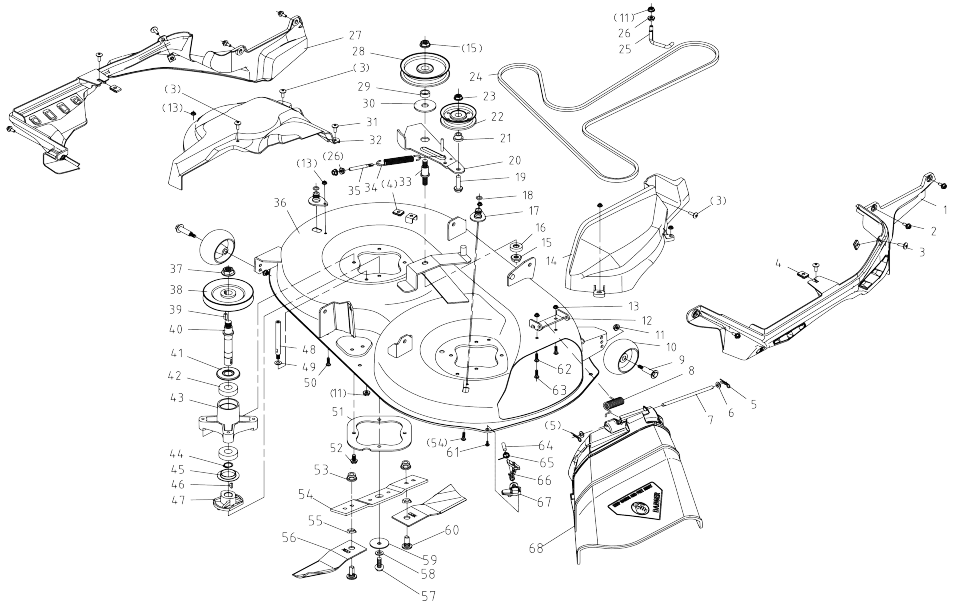
# 7. Pedal Controls



Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
1	20068187	Hub Cover	2	22	20061369	Hexagon Nut 10X1.25	4
2	20061430	Retainer Ring 15	2	23	20085748	Pull Rod Pin	1
3	20071143	Washer Φ20×Φ43×3	4	24	20061403	Lock Nut M10×1.25	1
4	20086530	Wheel, Rear - Assy. 18x8.5-8	2	25	20085194	Traveling Pull Rod (K46)	1
4.1	20061665	Valve Z2-01-1, GB/T3900-1997	2	26	20061497	Washer 10	1
4.2	20060810	Wheel Rim - Rear	2	27	20088861	Cable Fixing Plate	1
4.3	20083979	Tyre, Rear - 18x8.5-8	2	28	20082800	Tapping Screw6*16	4
5	20071174	Flat Key 4.85×60	2	29	20084574	Brake Reset Tension Spring	1
6	20061254	Flange Bolt M8×40	1	30	20084532	U-Shaped Clamp	2
7	20061274	Flange Bolt M8×20	1	31	20082799	Flange Bolt 5/16-18Tx3/4	4
8	20085196	Rear Fixed Plate Of Hydraulic Axle (K46)	1	32	20089015	Brak Switch Sert Plate	1
9	20061348	Flange Lock Nut M8	6	33	20068230	Forward Pedal	1
10	20086645	Transaxle,Hydro,Ttc,K46Dr	1	34	20070582	Cotter Pin	3
11	20086191	Bow-Tie Cotter Pin 2(K46)	1	35	20061482	Washer 6	1
12	20070582	Cotter Pin	4	36	20061250	Flange Bolt M8×25	1
13	20061407	Nut M10	1	37	20088842	Step Cover	1
14	20061385	Flange Lock Nut M6	2	38	20090105	Parking Hook	1
15	20085192	Cable Support	1	39	20061541	Big Washer 8	1
16	20061289	Bolt M6X16	2	40	20090104	Drag Link,Brake Parking	1
17	20088865	Brake Cable (K46)	1	41	20085155	Brake Handle Ra3002	1
18	20068229	Reverse Pedal	1	42	20084581	U Bolt	1
19	20084591	Foot Lever Weldment	1	43	20070894	Clutch Lever Spring	1
20	20061310	Flange Bolt 8×65	4	44	20088848	Brake Foot Bar Weldment(Manual)	1
21	20070576	Spring Pin	1	45	20082728	Brake Pedal	1

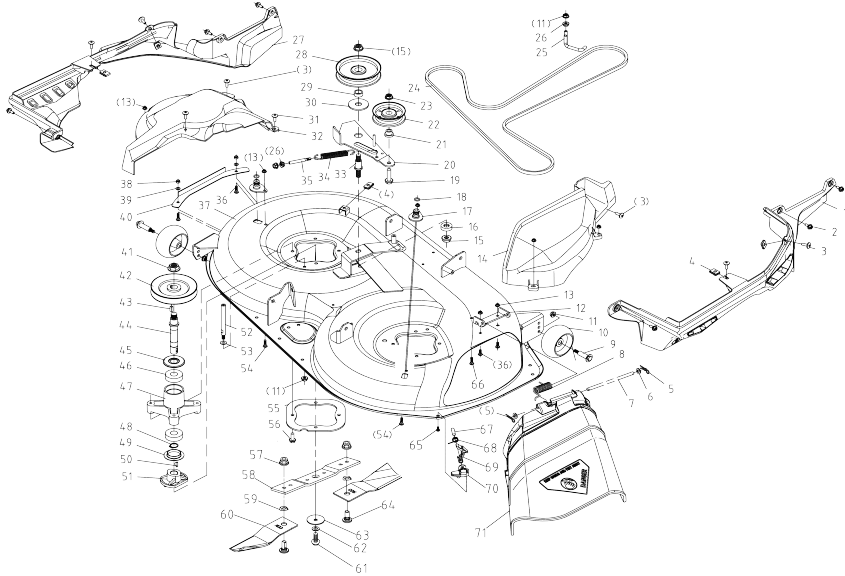


# 9.1 Deck - HST15/38



Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
<b>1-68</b>	<b>40053083</b>	<b>Cutting Deck Assy 98cm (38")</b>		37	20070627	Nut For Blade Axle	2
1	20086269	Belt Cover Right, Big	1	38	20070638	Pulley	2
2	20082801	Hexagon Head Tapping Screw 6.3X11.5	6	39	20061650	Flat Key C6×18	2
3	20060893	Screw M6×16	7	40	20070622	Blade Spindle	2
4	20070630	Buckle Nut M6	5	41	20071285	Hood, Bearing	2
5	20070576	Spring Pin	2	42	20061625	Bearing 6204-2Rz	4
6	20061544	Washer 8	2	43	20054347	Blade Seat	2
7	20082335	Pin Φ8×168	1	44	20061488	Snap Ring 19	2
8	20086192	Torsion Spring	1	45	20070635	Hood, Bearing	2
9	20085378	Wheel Axle	2	46	20061651	Halfmoon Key 4×16	2
10	20088559	Wheel	2	47	20054345	Sleeve	2
11	20061348	Flange Lock Nut M8	3	48	20070892	Stud Screw	1
12	20084843	Hinge	1	49	20061541	Big Washer 8	1
13	20061385	Flange Lock Nut M6	7	50	20061249	Screw M6×30	2
14	20086316	Right Shield	1	51	20088737	Deck Disc Reinforcement Plate	2
15	20061359	Flange Lock Nut M12×1.25	2	52	20061265	Flange Bolt M8X35	8
16	20070897	Bushing	1	53	20061419	Flange Lock Nut M10	4
17	20070624	Water Nozzle	2	54	20091857	Fixing Plate	1
18	20055756	O Ring 11.2×2.65	2	55	20062509	Saddle Washer	4
19	20062521	Flange Bolt M10×1.25×40	1	56	20074322	Blade	4
20	20084840	Cut Tention Arm Assembly	1	57	20061267	Bolt	2
21	20071180	Tention Pulley Bushing	1	58	20061497	Washer 10	2
22	20071213	Tention Pulley	1	59	20070623	Dish Washer	2
23	20061405	Flange Lock Nut M10×1.25	1	60	20062381	Blade Bolt	4
24	20071680	V Belt 48X900 (Akx2279)	1	61	20051827	Tapping Screw St4.8×13	1
25	20088529	Clutch Belt Stop Rod Solder	1	62	20061289	Bolt M6×16	2
26	20061336	Flange Nut M8	3	63	20061301	Bolt M6×25,Gb/T12-1988	1
27	20086267	Left Guard	1	64	20086275	Self Locking Pin	1
28	20070908	Idleness Pulley	1	65	20086276	Self Locking Torsion Spring	1
29	20070898	Bushing	1	66	20086278	Self Locking Buckle Ral3020	1
30	20070896	Washer Φ17.3×Φ55×Δ4	1	67	20086277	Self Locking Base Black	1
31	20060923	Screw M6×12	1	68	20086249	Discharge Chute	1
32	20086315	Left Shield	1	69	BLT9801	38" blade kit	2
33	20070899	Idleness Pulley Shaft	1				
34	20070875	Spring	1				
35	20084542	Adjusting Screw Rod	1				
36	20084846	Deck Weldmentside Black Spray Molding	1				

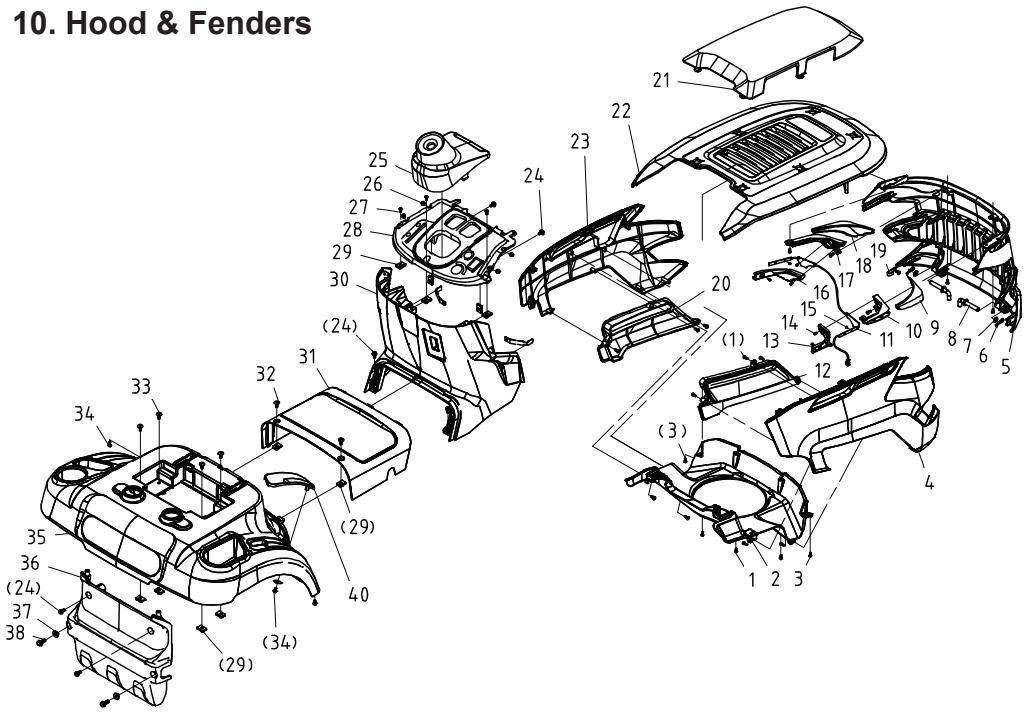
## 9.2 Deck - HVT19/42



Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
<b>1-71</b>	<b>40053085</b>	<b>Cutting Deck Assy 108cm (42")</b>		37	20084872	Deck Weldmentside Black Spray Molding	1
1	20086269	Belt Cover Right ,Big	1	38	20061421	Hexagon Lock Nut M6	2
2	20082801	Hexagon Head Tapping Screw6.3X11.5	6	39	20061482	Washer 6	2
3	20060893	Screw M6×16	7	40	20086368	Reinforce Platetm Black Spray Molding	1
4	20070630	Buckle Nut M6	5	41	20070627	Nut For Blade Axle	2
5	20070576	Spring Pin	2	42	20070638	Pulley	2
6	20061544	Washer 8	4	43	20061650	Flat Key C6×18	2
7	20082335	Pin Φ8×168	1	44	20070622	Blade Spindle	2
8	20086192	Torsion Spring	1	45	20071285	Hood, Bearing	2
9	20085378	Wheel Axle	2	46	20061625	Bearing 6204-2Rz	4
10	20088559	Wheel	2	47	20054347	Blade Seat	2
11	20061348	Flange Lock Nut M8	3	48	20061488	Snap Ring 19	2
12	20084843	Hinge	1	49	20070635	Hood, Bearing	2
13	20061385	Flange Lock Nut M6	7	50	20061651	Halfmoon Key 4×16	2
14	20086316	Right Shield	1	51	20054345	Sleeve	2
15	20061359	Flange Lock Nut M12×1.25	2	52	20070892	Stud Screw	2
16	20070897	Bushing	1	53	20061541	Big Washer 8	1
17	20070624	Water Nozzle	2	54	20061249	Screw M6×30	2
18	20055756	O Ring 11.2×2.65	2	55	20088737	Deck Disc Reinforcement Plate	2
19	20062521	Flange Bolt M10×1.25×40	1	56	20061265	Flange Bolt M8X35	8
20	20084840	Cut Tention Arm Assembly	1	57	20061419	Flange Lock Nut M10	4
21	20071180	Tention Pulley Bushing	1	58	20091857	Fixing Plate	1
22	20071213	Tention Pulley	1	59	20062509	Saddle Washer	4
23	20061405	Flange Lock Nut M10×1.25	1	60	20074322	Blade	4
24	20071679	V Belt 48X920 (Axx2337)	1	61	20061267	Bolt	2
25	20088529	Clutch Belt Stop Rod Solder	1	62	20061497	Washer 10	2
26	20061336	Flange Nut M8	3	63	20070623	Dish Washer	2
27	20086267	Left Guard ,Big	1	64	20062381	Blade Bolt	4
28	20070908	Idleness Pulley	1	65	20051827	Tapping Screw St4.8×13	1
29	20070898	Bushing	1	66	20061301	Bolt M6×25,Gb/T 12-1988	1
30	20070896	Washer Φ17.3×Φ55×Δ4	1	67	20086275	Self Locking Pin	1
31	20060923	Screw M6×12	1	68	20086276	Self Locking Torsion Spring	1
32	20086315	Left Shield	1	69	20086278	Self Locking Buckle Rai3020	1
33	20070899	Idleness Pulley Shaft	1	70	20086277	Self Locking Base Black	1
34	20070875	Spring	1	71	20086249	Discharge Chute	1
35	20084542	Adjusting Screw Rod	1	72	BLT10801	42" blade kit	2
36	20061289	Bolt M6×16	4				

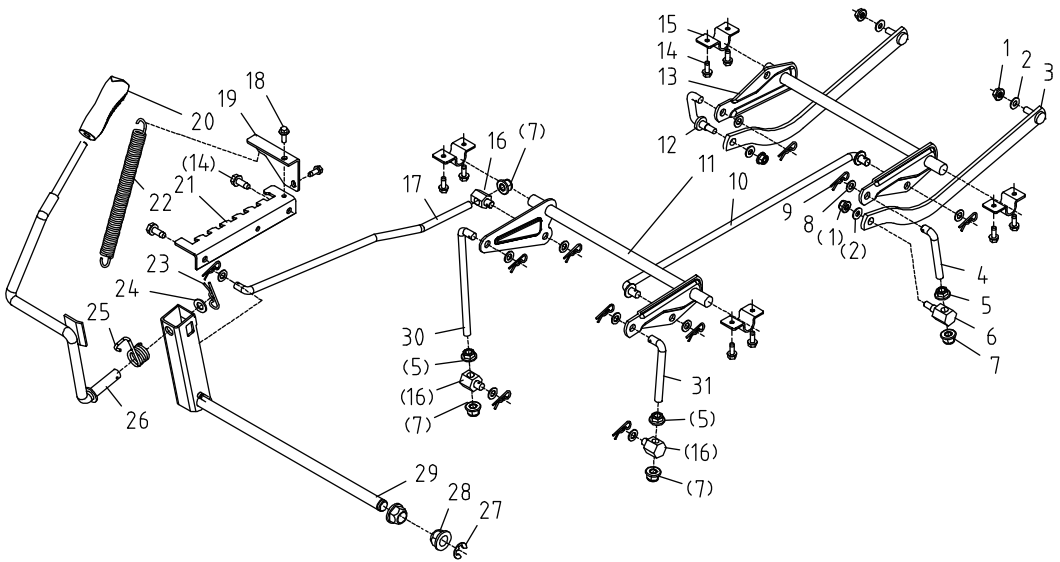


# 10. Hood & Fenders



Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
		Electric Assembly ,Hydraulic Pressure,Side		21	20085392	Decorative Cover A Grey	1
1	20061038	Screw St4.8×16	29	22	20085250	Upper Cover A	1
2	20084507	Air Director	1	23	20085240	Left Side Cover A	1
3	20084497	Screw St4.8×20	2	24	20082800	Screw 6X16	6
4	20085244	Right Side Cover A	1	25	20084503	Steering Wheel Cover	1
5	20085247	Front Cover A	1	26	20075146	Handle Anti-Vibration Rubber	4
6	20070576	Spring Pin	2	27	20061013	Screw M6×16	3
7	20061497	Washer 10	2	28	20084494	Panel	1
8	20078136	Pin	2	29	20070630	Buckle Nut M6	9
9	20085248	Right Light Cover A	1	30	20084495	Shield	1
10	20085239	Right Light Base A	1	31	20085331	Maintenance Cover Orange	1
11	20085768	Light Ttm186	1	32	20060893	Screw M6×16	2
12	20085246	Left Air Intake Hood A	1	33	20060919	Screw M6×25	4
13	20085872	Right Lamp Rear Cover Black	1	34	20084298	Tapping Screw St4.8X16	3
14	20051768	Tapping Screw St2.9X12	4	35	20085242	Side Row Rear Seat	1
15	20051777	Tapping Screw St3X8	4	36	20084803	Gear Box Cover	1
16	20085871	Left Lidht Rear Cover Black	1	37	20084446	Tention Arm Axle Sleeve	2
17	20085245	Right Light Base A	1	38	20061274	Flange Bolt M8×20	2
18	20085241	Right Light Base A	1	39	20071676	Gasket 6.5×25×1.4	1
19	20050895	Ignition Wire Clamp Gjb25D	4	40	20084501	Stall Decorative Plate	1
20	20085243	Left Air Intake Hood A	1				

# 11. Suspension



Item	Part Number	Description	QTY	Item	Part Number	Description	QTY
1	20061348	Flange Lock Nut M8	4	17	20084726	Lifting Pull Rod(Side Row)	1
2	20061541	Big Washer	4	18	20082800	Tapping Screwm6*16	2
3	20084556	Front Stay Bar Weldment	2	19	20085316	Spring Hanging Plate Electroplating	1
4	20084557	Front Right Derrick	1	20	20070900	Handle	1
5	20061369	Hexagon Nut 10X1.25	3	21	20084549	Ratchet Plate	1
6	20084533	Pin	1	22	20084564	Lifting Helping Spring	1
7	20061405	Flange Lock Nut M10×1.25	4	23	20071251	Cotter Pin Φ3	1
8	20061497	Washer 10	10	24	20062529	Washer 14X1.5	1
9	20070576	Spring Pin	10	25	20071354	Right Spring	1
10	20084722	Lifting Link Rod Weldment(Side Row)	1	26	20084535	Level Weldment	1
11	20084723	Rear Arm Weldment(Side Row)	1	27	20061473	Retainer Ring 12	1
12	20084553	U Derrick Weldment	1	28	20070612	Hexagon Bushing	2
13	20084560	Front Arm Weldment	1	29	20084537	Level Weldment	1
14	20082799	Flange Bolt 5/16-18Tx3/4	10	30	20084727	Rear Left Adjusting Lever	1
15	20084532	U-Shaped Clamp	4	31	20085749	Rear Right Adjusting Lever, Electroplated	1
16	20085750	Pin Joint Electroplated	3				

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