GLOBAL GARDEN PRODUCTS

MJ66
MJ66 Hydro

WORKSHOP MANUAL

Rel. 1.0

YEAR OF MANUFACTURE **2013**

The Manufacture reserves the right to make any improvements to the product of a technical or commercial nature that may be necessary. There may be, therefore, differences between the various series of machines and that described here, though the basic features and various repair methods will remain the same.

MAP OF INTERVENTIONS

IMPORTANT NOTICE - The information contained herein is intended for Service Operations and professionals only, able to competently perform the operations described herein, using the appropriate equipment in order to safeguard security and performance of the machine. The manufacturer is not liable for damages or injuries arising from operations performed by individuals or inadequate facilities.

i.0 INDEX

i.0 INDEX

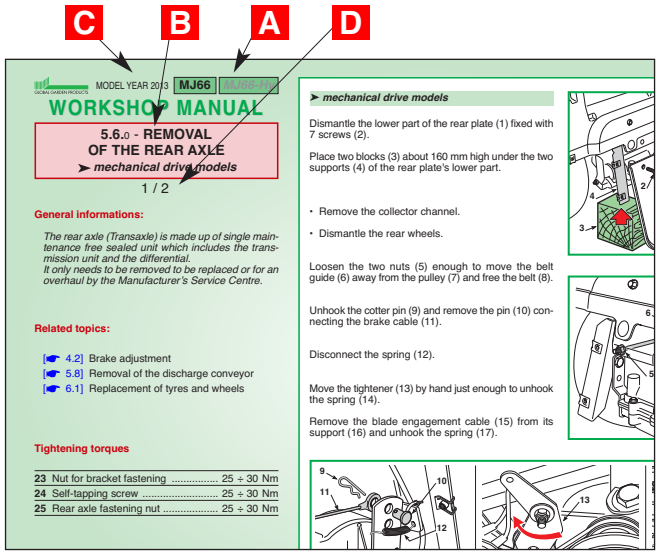
GENERAL INDEX

ii.0 INTRODUCTION

This manual has been compiled to help Service Centres with the maintenance, dismantling and repair of the following versions of the MJ66 lawn-tractor:

– mechanical drive with gear box;
– hydrostatic drive (hydro).
– electric start models;
– manual start models.

Each page of this manual states the following information:



A) Machine or machine series to which the page applies.

B) Page number, specifically:

– the first two figures separated by a point indicate the section and the chapter

– the third figure indicates the modification index.

C) Temporary validity of the page, with reference to the year of manufacture or serial numbers.

D) Page number and total number of pages dedicated to the subject.

The manual refers to the following symbols:

⚠ **Warns of operations that should be carried out with utmost care to avoid impairing the functionality and safety of the lawnmower**

⚠ **Warns of operations that should be carried out with utmost care to avoid injury to the operator.**

☛ **Reference to another procedure or part of the manual.**

➤ **This symbol highlights all those operations that require different working methods depending on the type of machine, subsequent modifications or accessories fitted.**

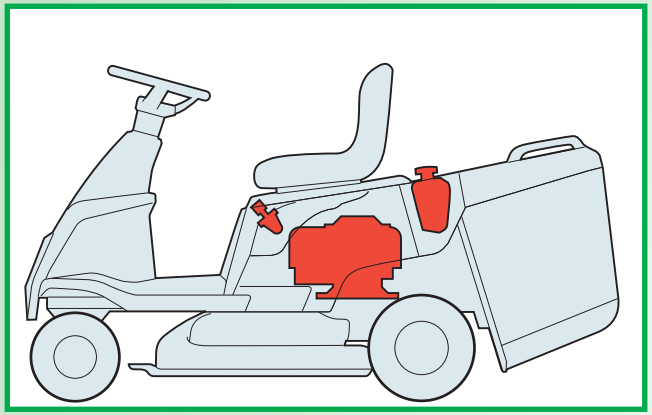
NOTE
Whenever a reference is made to a position on the machine “front”, “back”, “left” or “right” hand side, this is determined by facing the direction of forward travel.

The manual has left out the simplest and quickest operations that can be handled by a good mechanic, while concentrating more on specific aspects and the best servicing procedures.

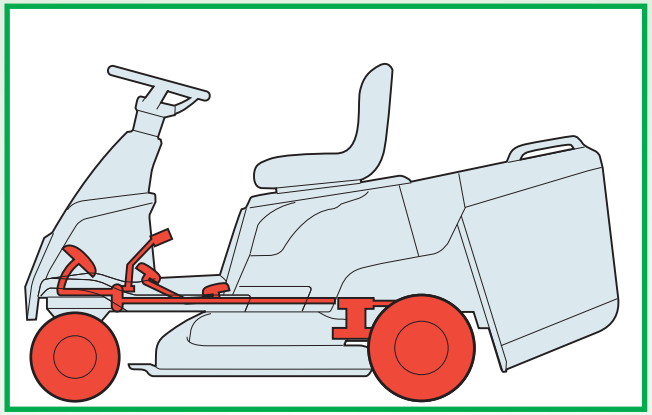
You are asked to read through this manual to acquire a basic understanding of the machine, which is necessary for working rationally without making errors or wasting time.

All problems related to use are fully covered in the user manual.

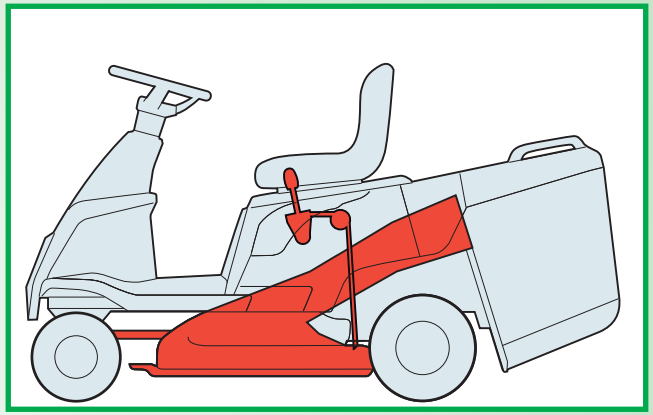
iii.0
MAP OF INTERVENTIONS



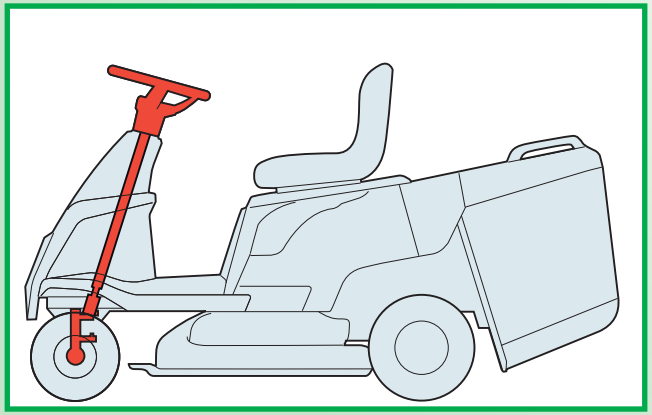
ENGINE - FUEL TANK



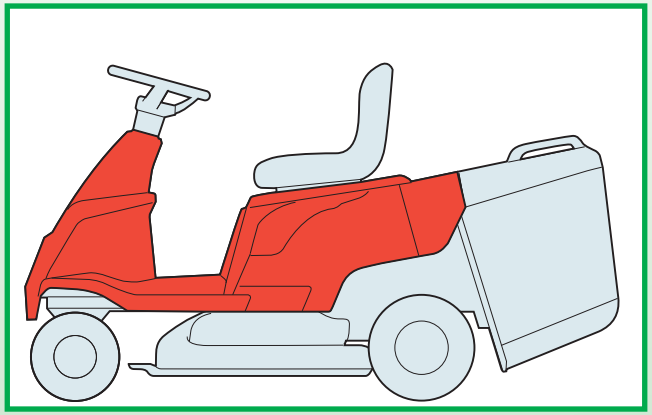
TRANSMISSION - BRAKE - WHEELS



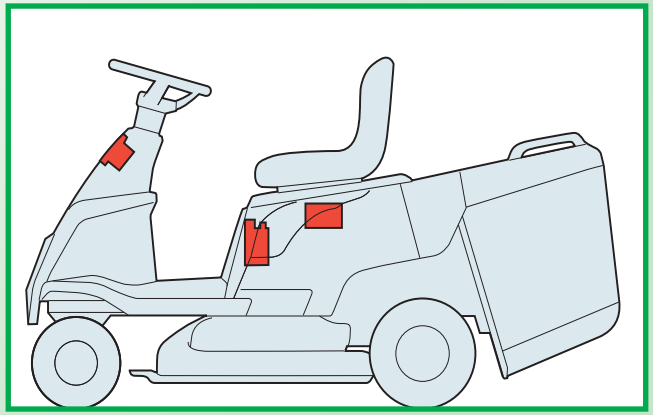
CUTTING DECK



STEERING



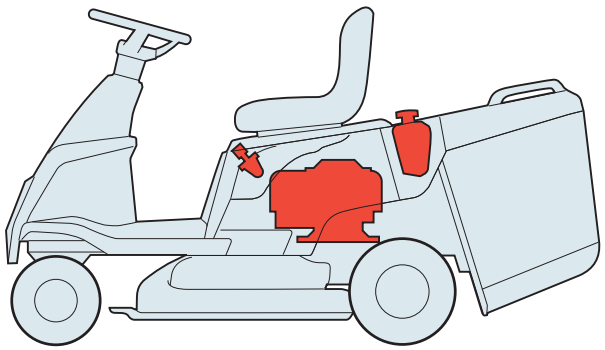
BODY



ELECTRICAL SYSTEM

BACK

iv.0
ENGINE - FUEL TANK



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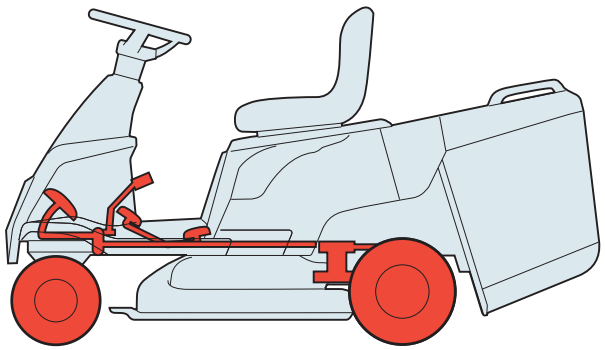
INDEX OF RELATED TOPICS:

Removal of external parts and main assemblies

Repairs



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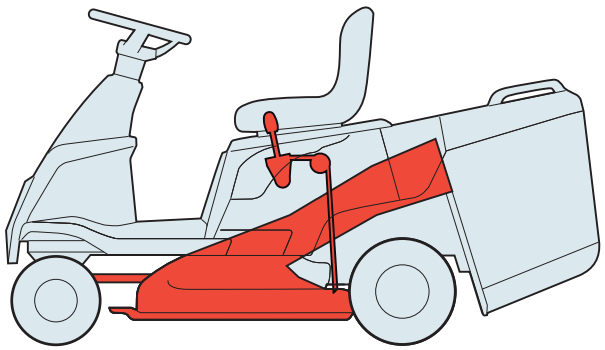
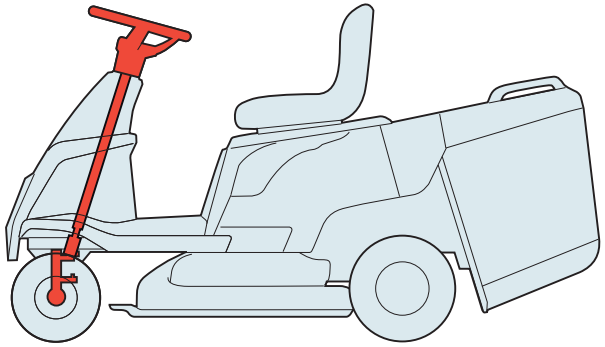


INDEX OF RELATED TOPICS:

Adjustments and tuning

Removal of external parts and main assemblies

Repairs



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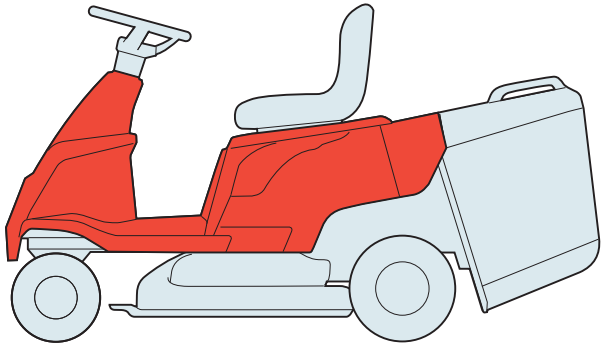

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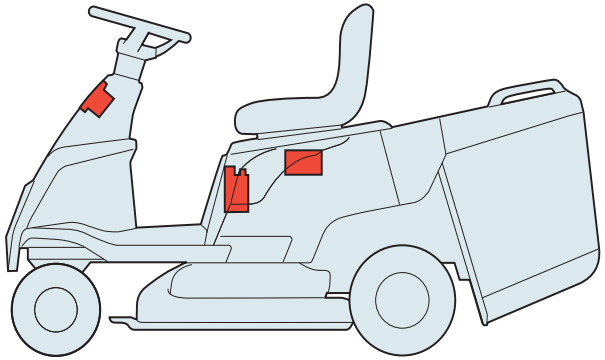

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INDEX OF RELATED TOPICS:

Informazioni

WORKSHOP MANUAL

1.1.0 IDENTIFICATION AND PROCEDURES

General informations:

This chapter covers all the main aspects of the relationship between the Manufacturer and the Service Centres.
A close collaboration between the Manufacturer and the Service Centres is conclusive for solving problems in the most effective way as well as maintaining an image of efficiency and reliability.
Compliance with these brief and simple guidelines will facilitate this task and prevent general misunderstandings and time-wasting for both the manufacturer and the service centre.

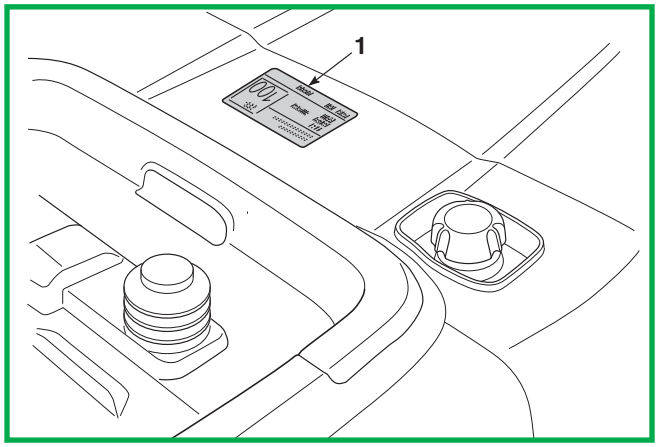
Related topics:

A) Identification

1) Machine

Each machine has a label (1) under the seat which shows the technical specifications, the model and the serial number.

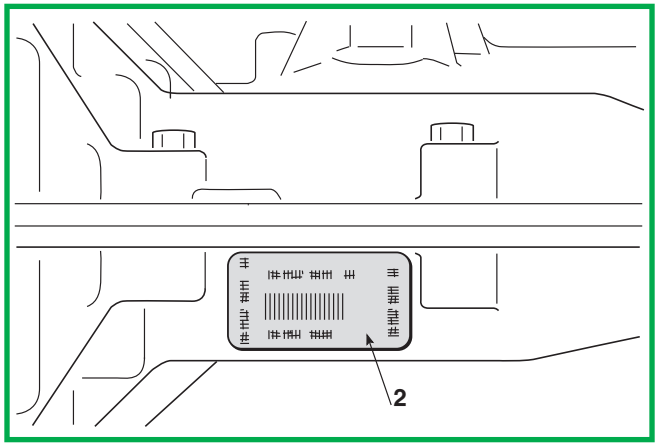
The model and serial number must be shown on each repair sheet when requests are made under guarantee, and are indispensable for spare part orders.



2) Transmission (Rear axle)

The transmission unit (both mechanical and hydrostatic) is made up of an engine block including the rear axle. This unit is made by another manufacturer to our precise technical specifications which differentiate it from similar items by this same Manufacturer.

The serial number on the label (2) clearly identifies the product and its specifications. This number must always be quoted when requesting spare parts or any information from the Manufacturer.



3) Engine

The engine is made to precise technical specifications which differentiate it from similar items by this same Manufacturer.

The serial number on the label clearly identifies the product and its specifications. This number must always be quoted when requesting spare parts or any information from the Manufacturer.

B) Guarantee validity

The guarantee is supplied under the terms and the limits of the contractual relations in being. As far as the engine and the transmission unit are concerned, the conditions given by their respective manufacturers apply.

1.1.0 IDENTIFICATION AND PROCEDURES

General informations:

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Related topics:

C) Service repairs after guarantee period

The Service Centre has to make out a report containing the machine's serial number, a summary of the problem, the repairs carried out and any spare parts used for each repair done on the machine.

A copy of this report must be retained to be made available to the Manufacturer together with the parts in case of any subsequent disputes with Customers.

D) Fault notification

The Manufacturer welcomes any notifications of faults that recur with particular frequency. It gives the opportunity for a careful inspection of the problem and the implementation of corrective action at production level.

Similarly, the Manufacturer will notify of any faults discovered on the machines produced, with recommendations for the most suitable procedures for their remedy.

E) Spare parts request

When requesting spare parts, the code number must be given, referring to the exploded charts for the year of manufacture, shown on the identification label [☛ point A].

2.1.0 SAFETY REGULATIONS

General informations:

This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

[☛ 2.2] Tools
[☛ 7.3] Safety microswitches operation check

A) Qualification of operators

All maintenance, disassembly and repairs must be carried out by expert mechanics who are familiar with all the accident prevention and safety regulations after reading through the procedures in this manual.

B) Safety measures

All the machines are manufactured in accordance with the strict European safety regulations in force.

To maintain these levels of safety in the longer term, the Service Centres should work to this end by making appropriate checks every time there is the chance to do so.

Particularly, every time there is work done on the machine the Service Centre should:

1) check:

- **that safety microswitches are working correctly;**
- **that the casings and protection covers have not been removed;**
- **that the labels with instructions or provisions have not been removed or have become illegible (these form an integral part of the safety system).**

2) they should also:

- **restore to proper working order any safety devices which have been manipulated or removed;**
- **reattach inefficient, damaged or missing casings and protection covers;**
- **replace illegible labels;**
- **not endorse any repair or modification on the machine or the engine which results in a change in performance or use that is incorrect or different from the purpose for which it was designed and approved;**
- **warn the Customer that the failure to comply with the above points results in the automatic annulment of the Guarantee and the Manufacturer declines all responsibility, as also shown in chapter 1 of the Instruction Booklet.**

C) Precautions during servicing

The operations described in this manual do not entail particularly hazardous situations besides the normal hazard related to mechanical operations and that can be avoided by taking the necessary care and attention normally required for this type of work.

As well as following the usual accident prevention regulations that apply to most repair shops, we recommend you:

- **disconnect the ignition key *(➤ in electric start models)* and the spark plug cap before starting any work on the machine;**
- **protect hands with suitable working gloves, especially when working near the cutting unit;**
- **check that you do not cause accidental petrol leaks or other losses;**
- **do not smoke when working on the tank or when handling petrol;**
- **do not inhale oil or petrol fumes;**
- **clean up all traces of spilt petrol immediately;**
- **test the engine in a well-ventilated environment or where there are adequate exhaust fume extraction systems;**
- **do not pollute the environment with oil, petrol or other waste and dispose of all waste in accordance with the laws in force;**
- **ensure that other persons cannot accidentally carry out actions that may physically endanger those working on the machine.**

D) Necessary equipment

All the operations can be carried out with the tools normally used in a good garage.
Some operations require special equipment and tools.

E) Symbols and terms used for safety purposes

Some paragraphs in this manual are preceded by symbols which indicate the following:

WORKSHOP MANUAL

2.1.0 SAFETY REGULATIONS

General informations:

This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

[☛ 2.2] Tools
[☛ 7.3] Safety microswitches operation check

Operations that should be carried out with utmost care to avoid impairing the functionality and safety of the lawnmower.

Operations that should be carried out with utmost care to avoid injury to operators.

“WARNING” stresses the risk of injury to oneself and others if instructions and regulations are not observed.

WORKSHOP MANUAL

2.2.0 TOOLS

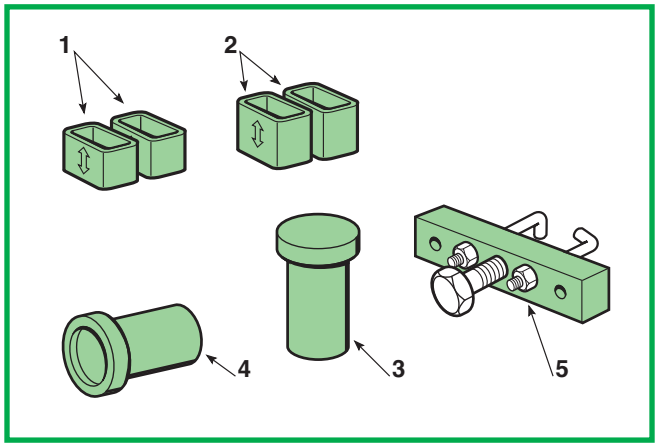
General informations:

This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

All work can be carried out using the tools normally available from a good workshop. However, it is advisable to have a set of special tools (1 ÷ 5).

These tools (1 ÷ 5) are to be used whenever is given in this text.



1. Blocks H = 26 mm for adjusting the cutting deck
2. Blocks H = 32 mm for adjusting the cutting deck
3. Bush for assembly of blade bearings
4. Stopper for assembly of wheel bearings
5. Blade pulley extractor

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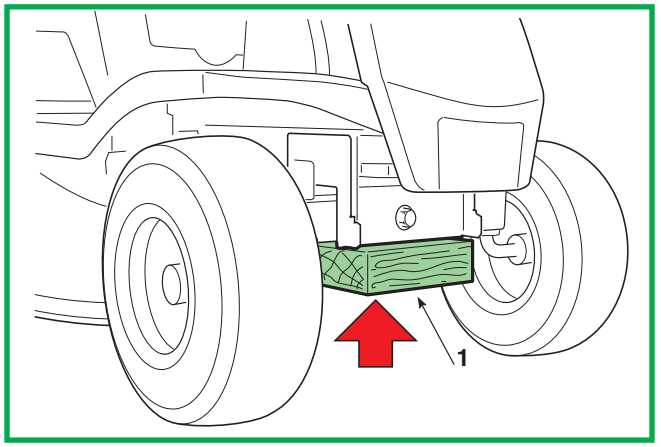
2.3.0 LIFTING AND LOWER ACCESSIBILITY

General informations:

This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

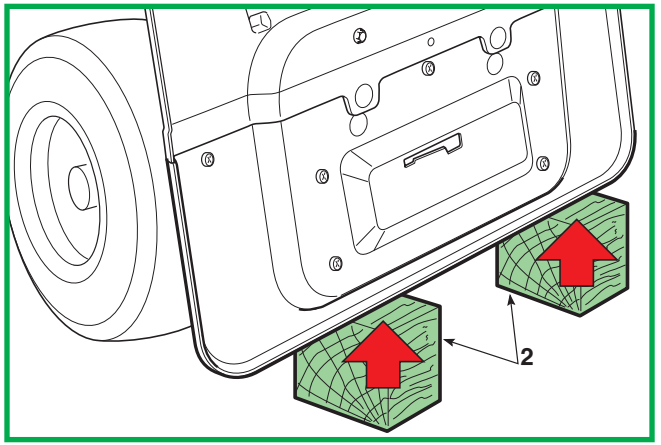
Related topics:

⚠ The machine must never be lifted using a hoist or other lifting equipment which uses cables.



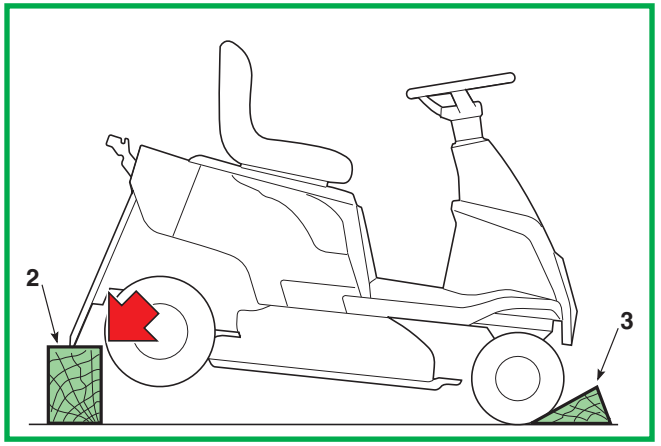
A) Front

ONCE THE PARKING BRAKE HAS BEEN ENGAGED, the lawn-tractor can be lifted using a jack which pushes on the underside of the frame, placing a wood block (1) between the base of the jack and the frame and checking to see that the free movement of the front spring equaliser has not been obstructed.



B) Rear

Place two suitable blocks (2) beneath the lower edge of the plate.
In any case, an appropriately sized wedge (3) should be placed behind the opposite wheels to stop the lawn-tractor from accidentally moving backwards.



WORKSHOP MANUAL

2.3.0 LIFTING AND LOWER ACCESSIBILITY

General informations:

This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

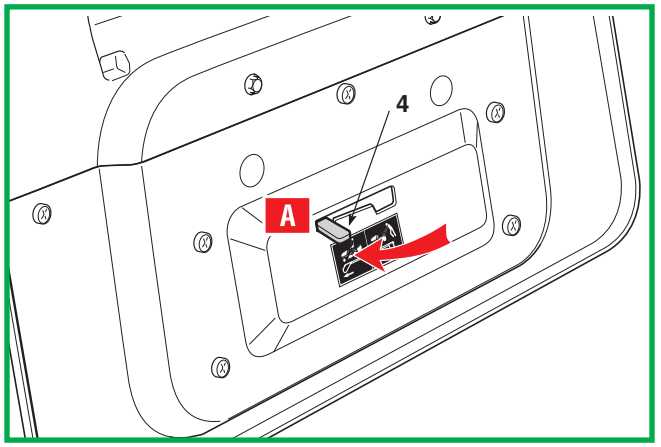
C) Vertical positioning

⚠ WARNING! Two people will be needed for this operation. When lifting and tipping backwards, only solid parts should be gripped (steering wheel, frame, rear plate, etc.) and NEVER parts of the bodywork in plastic.

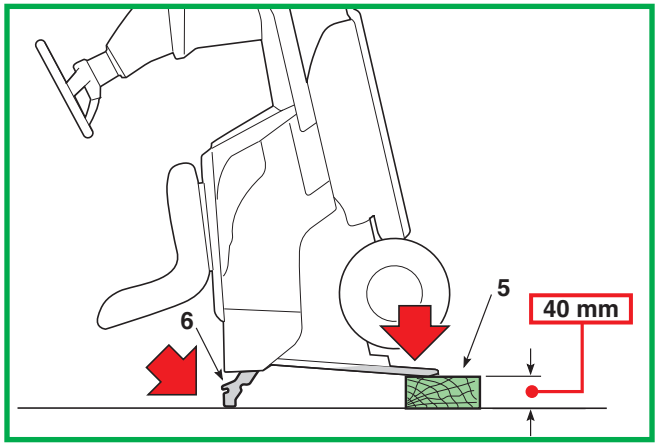
The tank must be checked before putting the lawn-tractor in a vertical position to make sure that there is no more than 1 litres of fuel inside.

➤ ***hydrostatic drive models***

Move the drive disengage lever (4) to «A» (blocked) to reduce its protruding from the rear plate.



To assure full stability, the machine must only be rested on the points shown, inserting a block (5) of about 40 mm under the lower edge of the plate and taking care not to damage the parts in plastic and the grass-catcher mounts (6).



To assure full stability, the machine must only be rested on the points shown, taking care not to damage the parts in plastic and the grass-catcher mounts (2).

⚠ WARNING! Before carrying out any type of work make sure that the machine is completely stable, and avoid operations that could cause it to fall over.

⚠ WARNING! Be just as careful when putting the machine back on a flat surface; two people are needed for this operation.

WORKSHOP MANUAL

2.4.0
PRACTICAL HINT

General informations:

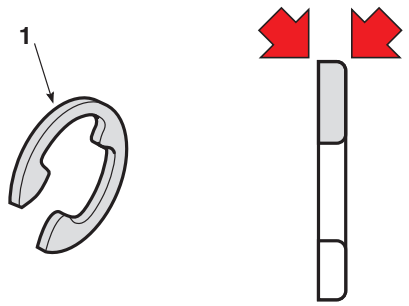
This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

A) Fitting snap rings

One side of the “Benzing” snap rings (1) has a rounded edge and the other a sharp edge.

For maximum grip the rounded part needs to be facing towards the element to be held (2), with the sharp edges on the outside.

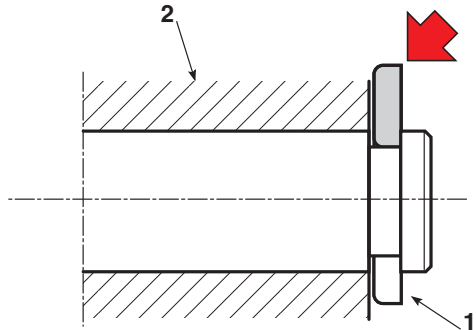


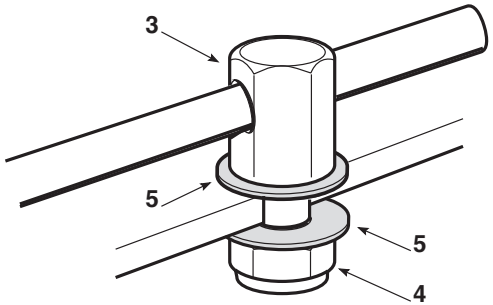
B) Joint pivot pins

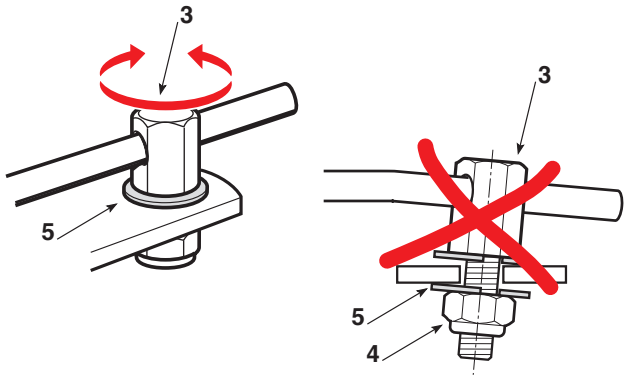
There are a large number of pivot pins, usually connected to rods, that need to be able to move in various directions.

A typical situation has the pin (3) fixed by a self-locking nut (4) with two anti-friction washers (5) in between the pin (3) and the support element, and between this and the nut (4).

Since these are joints, the nut must never be tightened completely but only so much that it can ensure the free rotational movement of the pin on its axis without, however, creating excessive free play which could result in the parts concerned becoming misaligned and failing to work correctly.







2.4.0 PRACTICAL HINT

General informations:

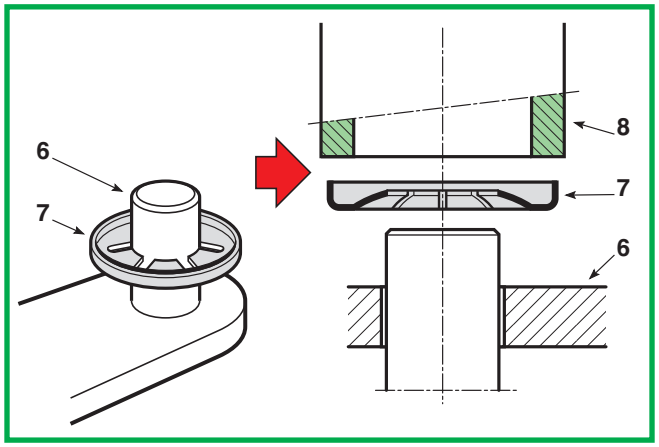
This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

C) Crown fasteners

Some pin ends (6) are secured by crown fasteners (7). During dismantling, these fasteners are always damaged and lose their hold, **so they should never be reused.**

On assembly, make sure it is inserted in the right direction and push the fastener (7) onto the pin using a pipe or socket spanner (8) with the right diameter, so that it can be fitted without deforming the fastener "crown".
A deformed fastener should always be replaced.



3.1.0 CRITERIA FOR MAINTENANCE

General informations:

This chapter deals with the criteria for routine maintenance.

Related topics:

The Instruction Handbook has a number of operations to be carried out by the Customer for a minimum of basic maintenance, and other operations not always within his capacity.

For this reason the Service Centre should undertake to keep the machine in perfect working order in two ways:

a) Tuning the machine whenever possible.

b) Proposing a regular maintenance programme to the Customer to be carried out at prearranged intervals (for example, at the end of the summer or prior to a long period of inactivity).

a) Occasional tuning

- Check working order of safety devices and renew illegible or missing labels
- Check type pressures
- Clean air filter
- Check engine oil level
- Check for fuel leaks
- Align cutting deck
- Sharpen and balance the blade and check the condition of the hub
- Check for wear in the belts
- Check the blade brake and engagement
- Grease front wheels lever joint pins and bushes
- Check tightness of engine screws
- Check all those items indicated in the engine manual

b) Regular maintenance

- **All work carried out in section a), plus:**

- Check battery charge
- Check tension of belts
- Adjust drive engagement
- Adjust brake
- Adjust blade engagement
- Adjust blade brake
- Check steering allowance
- Check front bearings
- General lubrication
- Clean away grass cuttings and wash exterior
- Clean and wash inside cutting deck and collector channel
- Clean and wash grass-catcher
- Touching up of any damaged paint

WORKSHOP MANUAL

4.1.0 - ADJUSTING THE ENGAGEMENT AND CHECKING THE BLADE BRAKE

General informations:

The blade is run from the engine using a «V» belt and is engaged by a stretcher worked from the lever.

After a certain amount of use the belt can become longer which can result in malfunctioning, i.e.:
– belt slipping = belt stretched
– difficulty in disengaging, with a stiff lever and the blade continuing to run = belt shortened
In both cases the stretcher needs to be adjusted.

The blade has a brake which stops rotation within five seconds:
Longer braking times do not comply with safety regulations, but adjusting the brake so that it stops quicker than this can cause the belt to slip on the shoe resulting in overheating with the typical smell of burnt rubber.

Related topics:

[☛ 5.2] Removal of the side guards
[☛ 6.4] Replacement of the drive belt
[☛ 6.11] Replacing the blade engagement cable

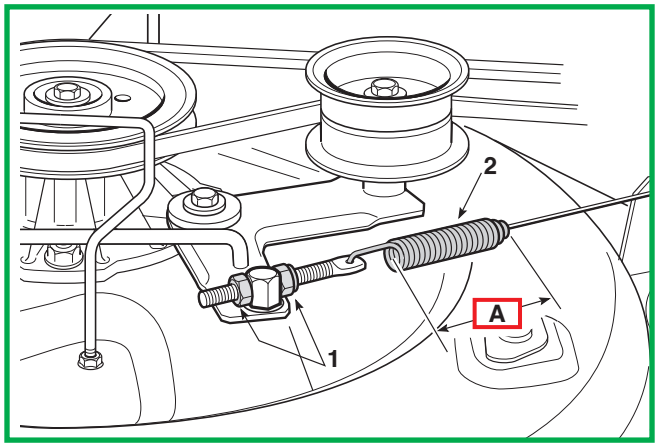
A) Adjusting blade engagement

- Remove left guard.

With the cutting deck in its lowest position, suitably turn the adjuster nuts (1) until the spring (2) reaches the length "A":

120 - 124 mm

measured from the outer edge of the eyelet with the blades engaged.



⚠

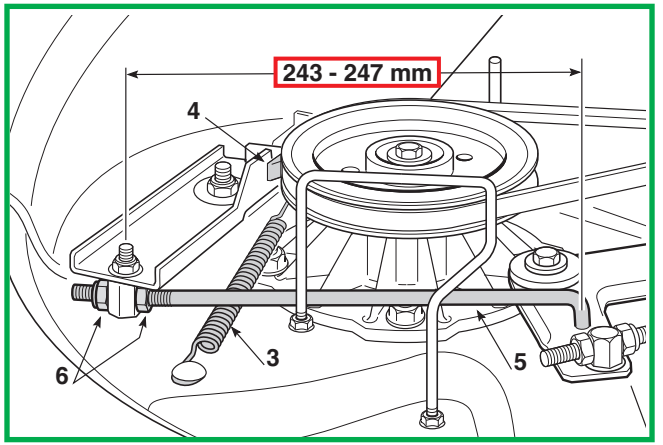
- Reassemble the left guard.

B) Checking the blade brake

⚠

Correct operation of the brake, which must ensure that the blade stops within 5 seconds from disengagement; **longer stopping times do not comply with the safety standards**.

Braking force comes from the spring (3) working the shoe (4) and is not adjustable; if the blade should not stop within 5 seconds from disengagement, the only possible reason is that the wheelbase between the two tie rod pins (5) is not correct, it must be 243 - 247 mm to allow the shoe (4) to operate correctly.



If not, adjust the nuts (6) to get the right size.

MAP BACK

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4.2.0 BRAKE ADJUSTMENT

General informations:

The machine's reduced braking capacity is regained by regulating the control cable's adjuster.

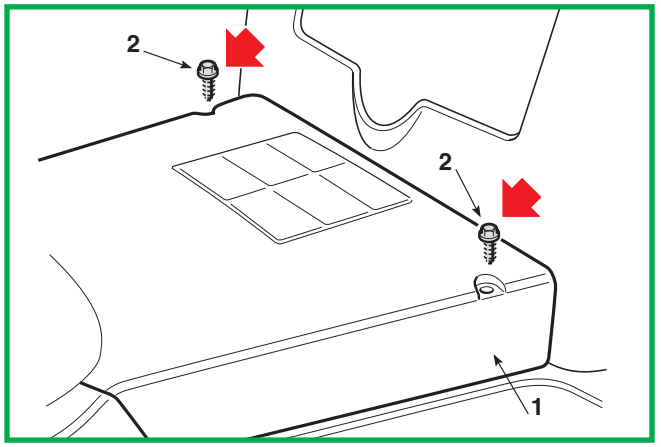
Related topics:

[☛ 1.1] Identification and procedures
[☛ 5.1] Removal of steering column covers
[☛ 6.1] Replacement of tyres and wheels
[☛ 6.9] Brake cable replacement
[☛ 6.13] Replacement of the brake pads and disc (➤ mechanical drive models)

- Remove the steering column's rear guard.

Remove the guard (1) fixed by the two screws (2).

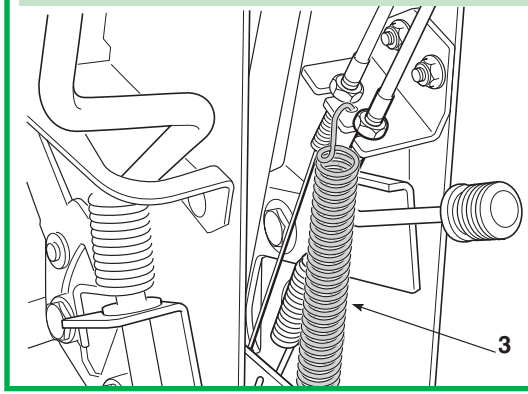
Only make the adjustment when the parking brake is engaged.



➤ *mechanical drive models*

Remove the recall spring (3) to make the brake spring (4) accessible.

Adjust the register (5) till the spring (4) is 59 - 61 mm long.



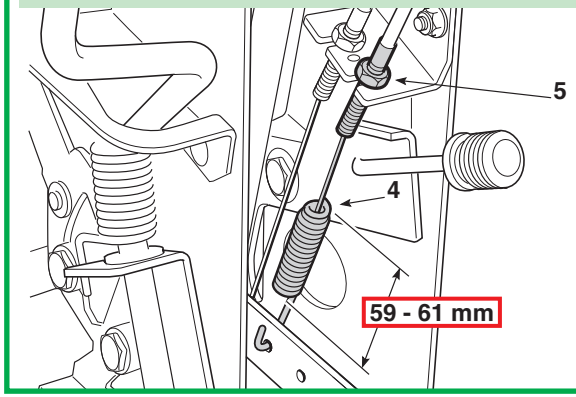
➤ *hydrostatic drive models*

- Remove the rear right-hand wheel.

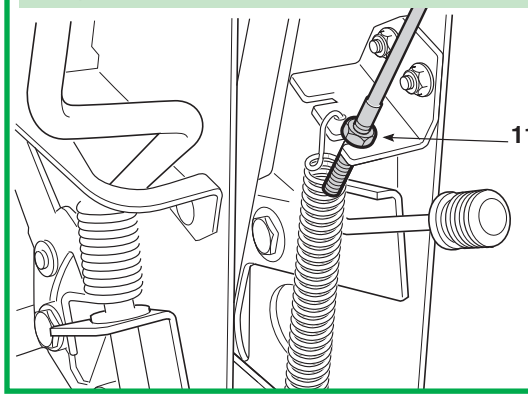
Adjust the register (11) till the spring (12) is 59 - 61 mm long.

Never go under these amounts to avoid overloading the brake unit.

➤ *mechanical drive models*



➤ *hydrostatic drive models*



4.2.0 BRAKE ADJUSTMENT

General informations:

The machine's reduced braking capacity is regained by regulating the control cable's adjuster.

Related topics:

[☛ 1.1] Identification and procedures
[☛ 5.1] Removal of steering column covers
[☛ 6.1] Replacement of tyres and wheels
[☛ 6.9] Brake cable replacement
[☛ 6.13] Replacement of the brake pads and disc (➤ mechanical drive models)

To assemble, follow the steps described in reverse order.

- Reassemble the steering column's rear guard.

⚠

When the adjustments have been made, the parking brake should prevent the lawn-tractor from moving on a slope of 30% (16°) with the driver in position.

➤ *mechanical drive models*

⚠

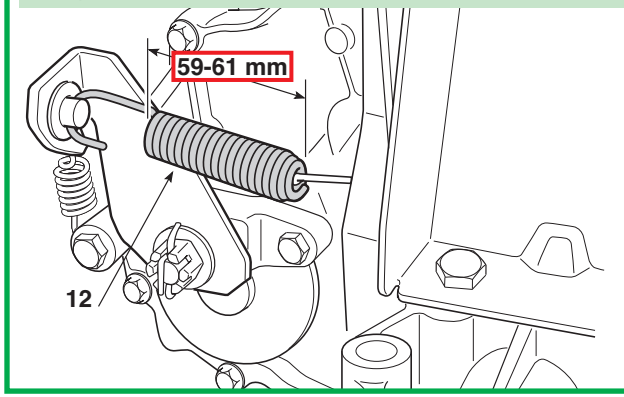
If brake adjustments should still not be enough or be irregular, disconnect the pin (6) from the lever (7) and check that the latter has a 20mm vacuum stroke (measured vertically in correspondence to the pin axle) before starting the braking action; if it has not, you can adjust vacuum stroke with the nut (8), unless brake pads or disc are worn and require replacement.

When connecting the pin (6) be sure to use the uppermost hole in the lever (7) and then check the length of the spring again (4).

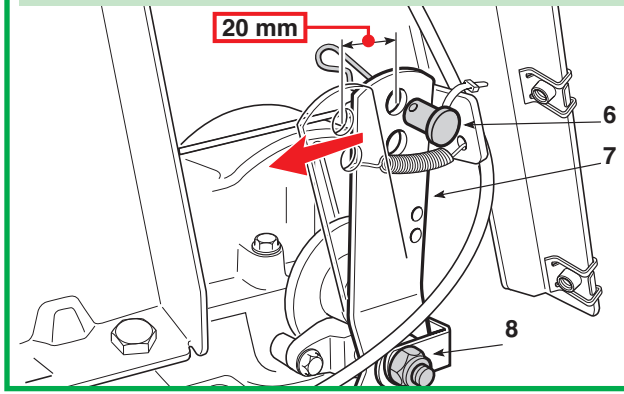
➤ *hydrostatic drive models*

If braking is still poor or unsteady even after making the adjustment, you cannot make any further adjustments from the outside. Therefore you need to dismantle the whole rear axle of the machine and contact one of the manufacturer's Service Centres.

➤ *hydrostatic drive models*



➤ *mechanical drive models*



4.3.0 DRIVE BELT ADJUSTMENT

General informations:

If it seems that the forward drive is not working properly after a long period of use or after replacing the belt, this may be caused by a change in the length of the belt.

- *A loose belt reduces output from the transmission and limits forward movement power;*
- *a belt which is too tight increases noise and results in jerky movements or tipping up when engaging the drive.*

In these cases the stretcher will need to be adjusted.

Related topics:

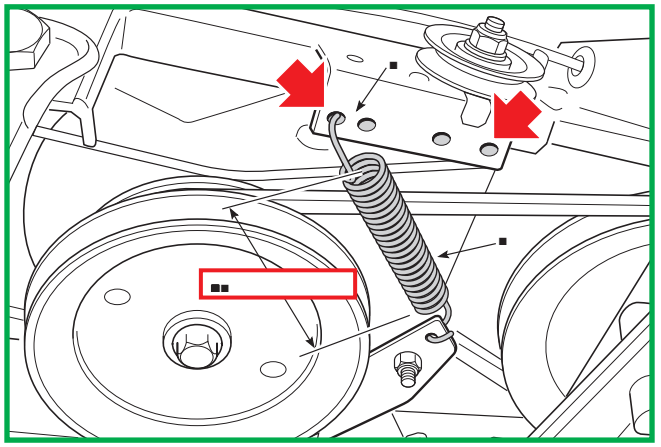
[☛ 4.4] Regulating the drive lever engagement cable
[☛ 5.2] Removal of the side guards
[☛ 6.3] Replacement of the drive belt
[☛ 6.10] Replacing the drive engagement cable

- Remove the left guards.

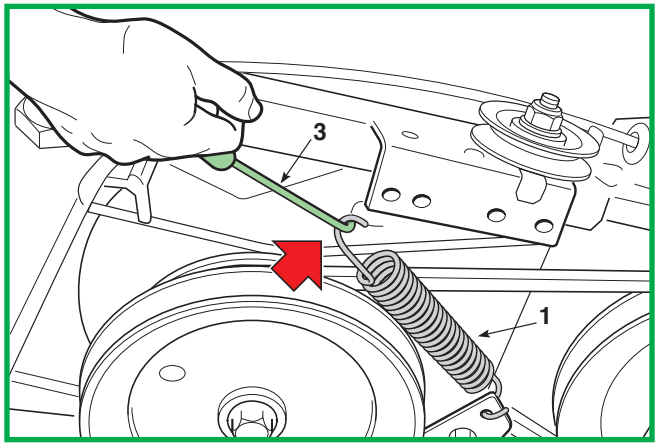
You obtain correct spring (1) tension by moving the hooking position to one of the holes (2) until you have an “A” quota of:

85 - 105 mm

measured on the outer side of the coils, with drive commands in the rest position and the parking brake disengaged.



Moving the spring (1) requires a certain effort and is easier when a specific tool (3) is used to hook and move the end of the spring.



- Reassemble the left guards.

4.4.0 REGULATING THE DRIVE LEVER ENGAGEMENT CABLE

General informations:

Engagement must be regulated correctly to make sure the drive belt operates in the best possible way without slipping or being too tight.

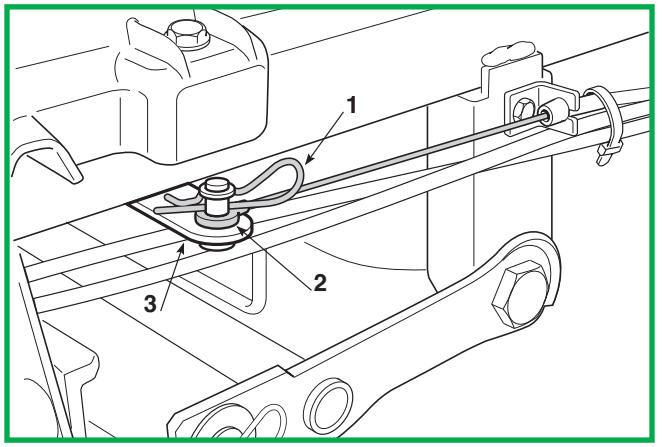
Related topics:

[☛ 4.3] Drive belt adjustment
[☛ 5.1] Removal of steering column covers
[☛ 5.2] Removal of the side guards
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.10] Replacing the drive engagement cable

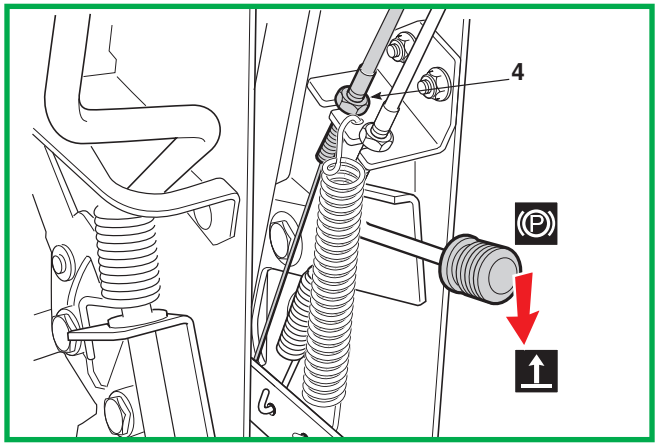
➤ *mechanical drive models*

- Remove the steering column's rear guard.
- Remove the right-hand guard.
- Remove the conveyor.

Unhook the cotter pin (1) and disconnect the eyelet (2) of the lever cable (3).

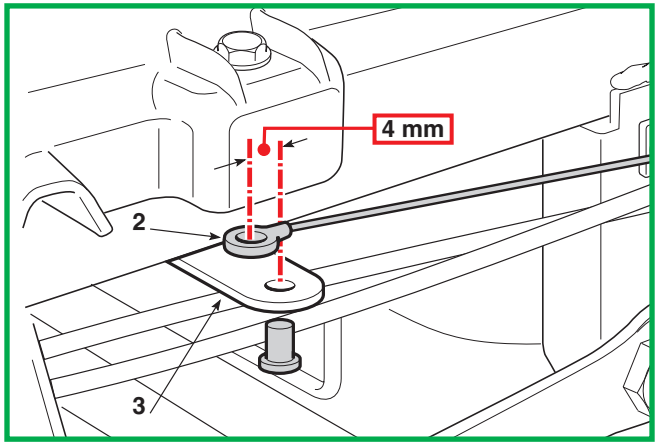


With the parking brake **disengaged**, regulate the register (4) until you get a 4 mm wheelbase between the hole on the eyelet (2) and the one on the lever (3).



When assembling, make sure the cable is not too tight, to avoid the belt slipping.

- Regulate belt tension.
- Reassemble the conveyor.
- Reassemble the right-hand guard.
- Reassemble the steering column's rear guard.



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4.5.0 DRIVE PEDAL ADJUSTMENT

General informations:

This operation should be carried out every time the rear axle, the pedal or the control rod is removed in order to get the correct travel for the pedal and to enable reaching the envisaged speeds both forwards and in reverse.

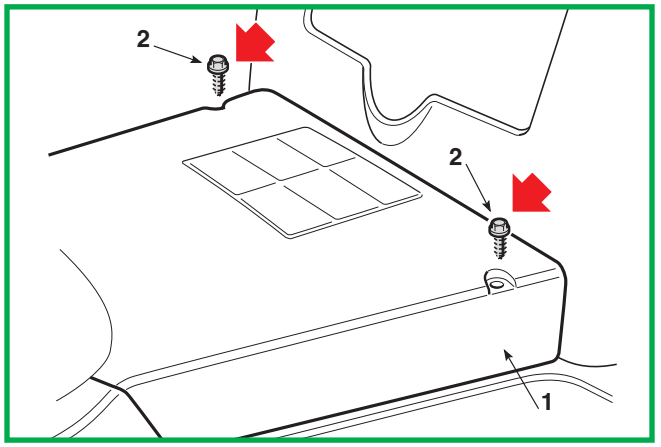
Related topics:

[☛ 5.1] Removal of steering column covers
[☛ 5.6a] Removal of the rear axle
[☛ 7.10] Fitting safety microswitches

➤ *hydrostatic drive models*

- Remove the steering column's rear guard.

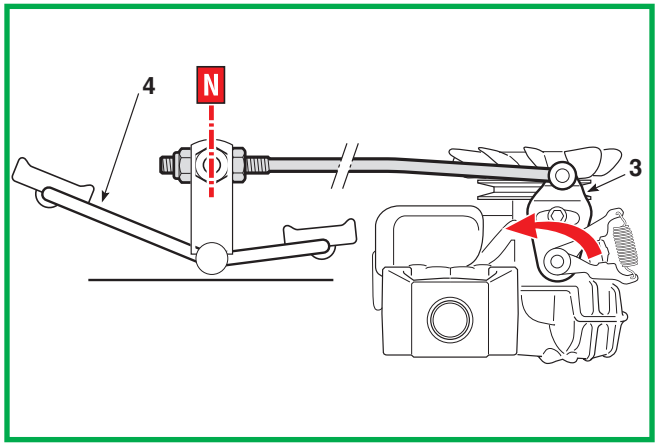
Remove the guard (1) fixed by the two screws (2).



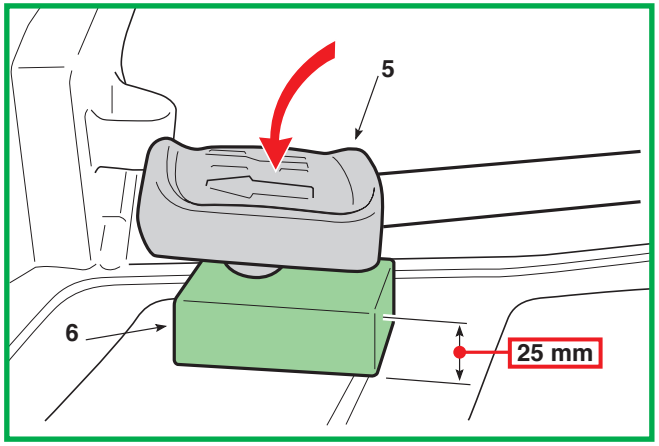
A) Adjusting the pedal in the “neutral” position

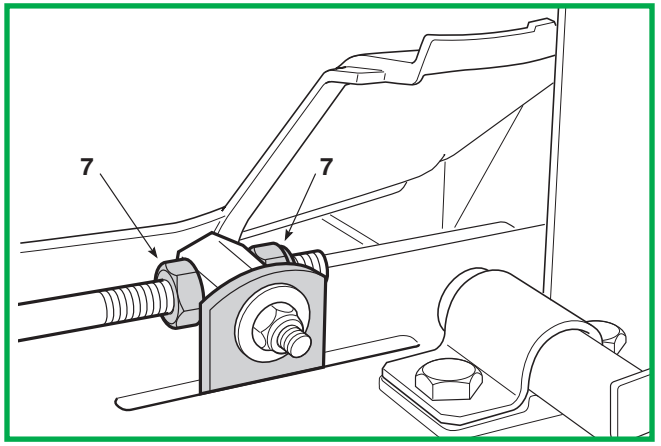
Regulating consists in adjusting the position of the pedal (4) with the hydrostatic group lever (3), which is brought to the forward maximum speed position by a spring.

To reach the forward and reverse speeds set (thus establish the pedal's “neutral” position), the edge of the reverse gear pedal (5) at rest must be 25 mm from the footplate with the hydrostatic group lever (3) on "neutral”.



This is obtained by placing a block (6) under the pedal (5) and working on the nuts (7) until the desired situation is reached. Taking care not to change the position of the lever (3) by mistake during adjustment.





4.5.0 DRIVE PEDAL ADJUSTMENT

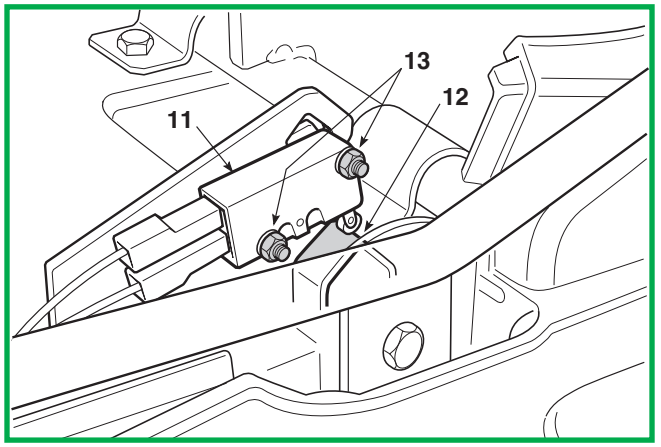
General informations:

This operation should be carried out every time the rear axle, the pedal or the control rod is removed in order to get the correct travel for the pedal and to enable reaching the envisaged speeds both forwards and in reverse.

Related topics:

[☛ 5.1] Removal of steering column covers
[☛ 5.6a] Removal of the rear axle
[☛ 7.10] Fitting safety microswitches

B) Adjusting the “neutral” position of the microswitch



⚠ This is a very important adjustment for the operation of the safety devices regarding permitting starting and stopping of the machine during work.

The neutral position "N" is signalled by the microswitch (11) of the cam (12).

After checking that the adjustment “A” has been correctly completed, make sure that the pedal is released and in neutral "N" then loosen the fastening screws (13) of the microswitch and position it in line with the tip of the cam, so that it stays pressed down.

By moving the pedal to the forward gear, neutral position and reverse gear you should hear the click of the button at each gear change before the wheels start moving.

To assemble, follow the steps described in reverse order.

- Reassemble the steering column's rear guard.

4.6.0 ALIGNING THE CUTTING DECK

General informations:

The cutting deck is lowered by a level controlled cable, and is moved by two trace rods at the front and back.

In order to get a good cut it is essential that the cutting deck is parallel with the ground crosswise, and slightly lower at the front.

Related topics:

[☛ 2.2] Special tools
[☛ 5.2] Removal of the side guards
[☛ 5.7] Removal of the cutting deck

Tyre pressures

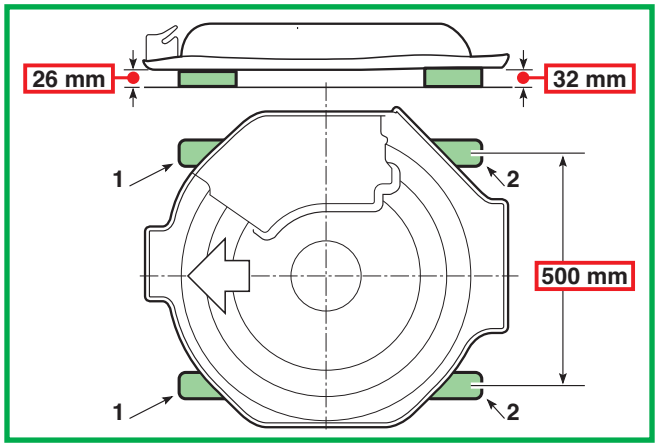
Front	.....	(Tyres 11 x 4.00-4)	1,5 Bar
	.....	(Tyres 13 x 5.00-6)	1,5 Bar
Rear	.....	(Tyres 13 x 5.00-6)	1,5 Bar
	.....	(Tyres 15 x 5.50-6)	1,0 Bar

Check the tyre pressures. If one or more tyres have been replaced and there are found to be differences in diameter, **do not attempt to compensate these differences by giving different tyre pressures**.

- Remove the left guard.

Having placed the lawn-tractor on a flat, solid, regular base (e.g. a workbench), place spacers under the cutting deck with about 500 mm between them:

– at the front 26 mm (1)
– at the back 32 mm (2)

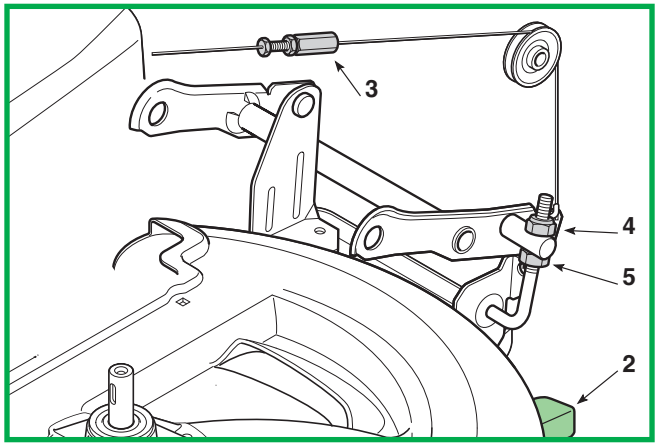


Put the height lever in position «1» and completely loosen the adjuster (3).

Loosen the nut (4) and locknut (5) of the left-hand rear rod, and the front nuts (6) and locknuts (7) till you stand the deck on the spacers.

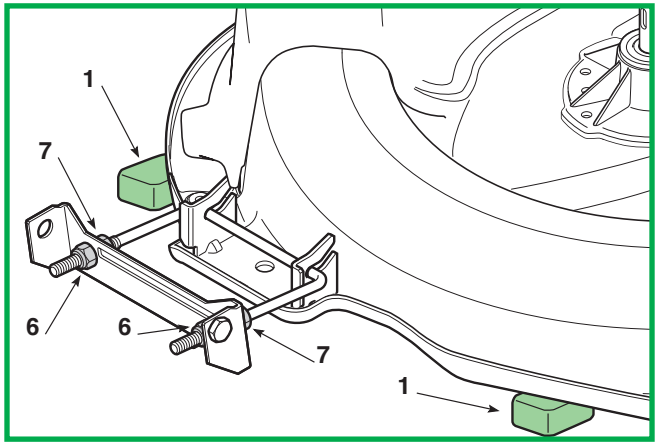
Adjust the register (3) till the control cable is tight and the cutting deck's rear right-hand side starts to lift.

Screw the left nut (4) until the left side starts to lift, then block the locknut (5).



Adjust both front nuts (6) till the situation is the same at the front, then block the locknuts (7).

- Reassemble the left guard.



4.7.0 CHECK ON BLADE ALIGNMENT

General informations:

Excessive vibration when cutting and an uneven cut can be due to misalignment of the blade owing to deformation of the flange or the shaft as a result of accidental knocks.

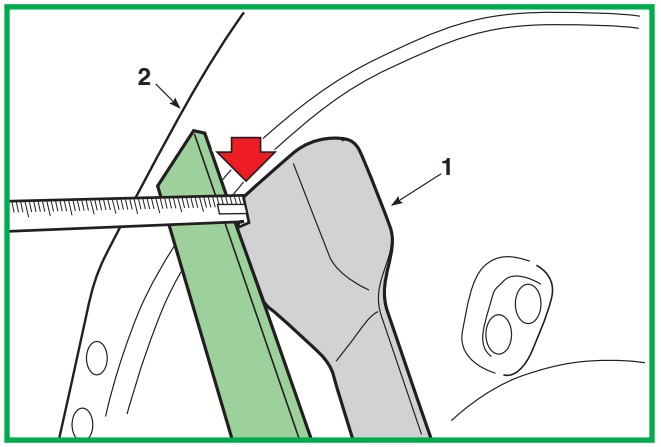
Related topics:

[☛ 2.3] Lifting and lower accessibility
[☛ 6.5] Replacement of the support and shaft of the blade

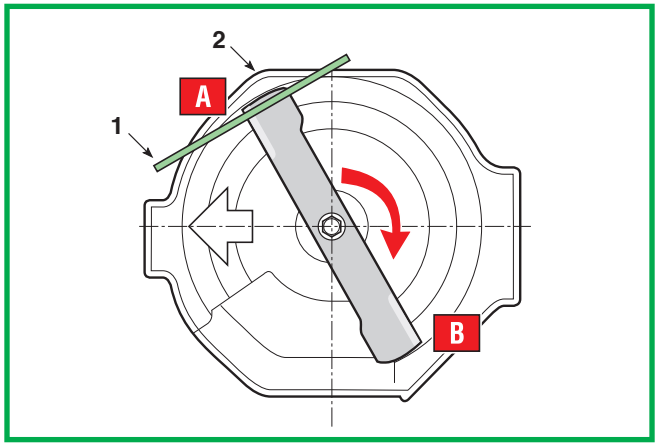
- Put the machine into a vertical position

Always wear strong gloves when handling the blade.

Disengage the blade, place a straight metal rod (1) on a point around the edge of the deck (2), turn the blade by hand and check the distance between the rod and the two ends “A” and “B”. The distance should be the same, and any difference should not exceed 2 - 3 mm.



If higher amounts are found, check that the blade is not distorted. If this is not the case, check the support or the shaft for the blade, replacing if necessary, and check the condition of the point where the flange rests on the cutting deck.



Always replace a damaged blade and do not attempt to repair or straighten it. Always use manufacturer’s genuine spare parts!

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4.8.0 REMOVING, SHARPENING AND BALANCING THE BLADE

General informations:

A badly sharpened blade causes grass to become yellow and reduces grass collection capability. If not balanced, excessive vibration can be caused during use.

Related topics:

[☛ 2.3] Lifting and lower accessibility

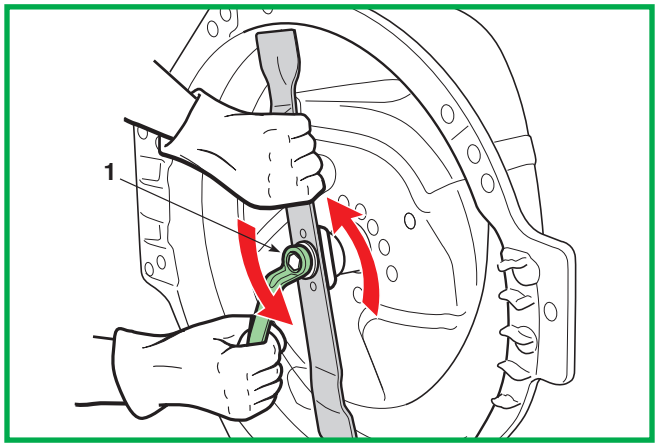
Tightening torques

1	Screw for blade	45 ÷ 50 Nm

Always wear protective gloves when handling the blade and protect eyes when sharpening.

A) Removing and reassembling

For removing a blade it must be firmly held and the central screw (1) undone.



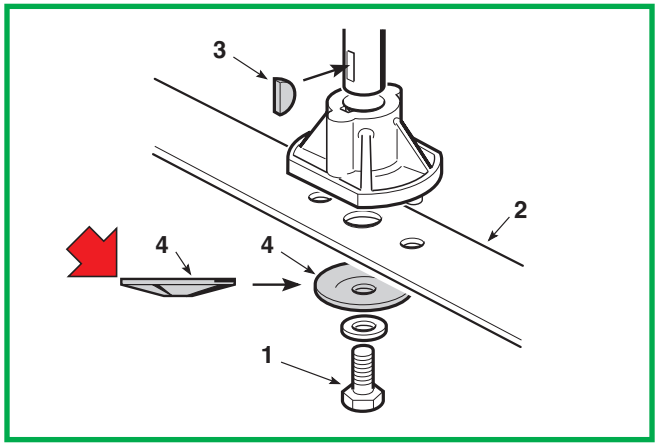
On assembly, be careful to:

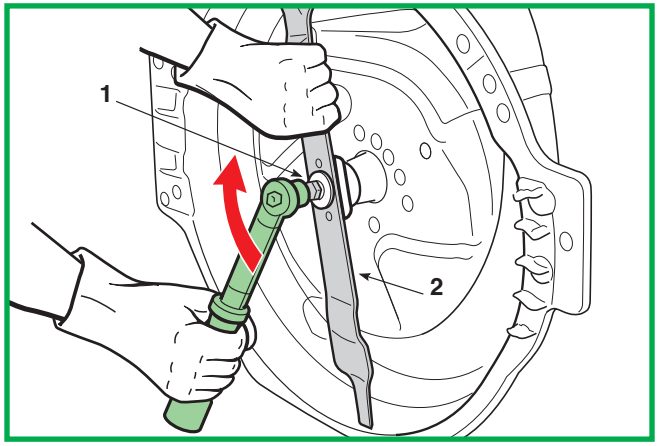
– correctly position the keys (3) on the shafts;

– correctly locate the blade, with the fins facing towards the inside of the plate;

– fit the flexible disc (4) so that the concave part is pressing against the knife;

– tighten the screw (1) with a torque wrench set to 45-50 Nm.





4.8.0 REMOVING, SHARPENING AND BALANCING THE BLADE

General informations:

A badly sharpened blade causes grass to become yellow and reduces grass collection capability. If not balanced, excessive vibration can be caused during use.

Related topics:

[☛ 2.3] Lifting and lower accessibility

Tightening torques

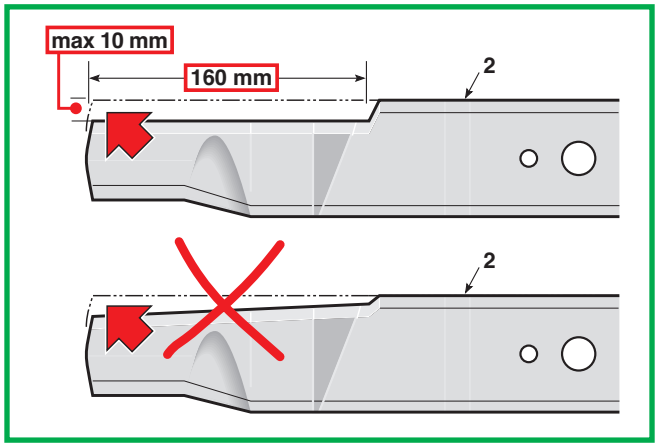
1	Screw for blade	45 ÷ 50 Nm

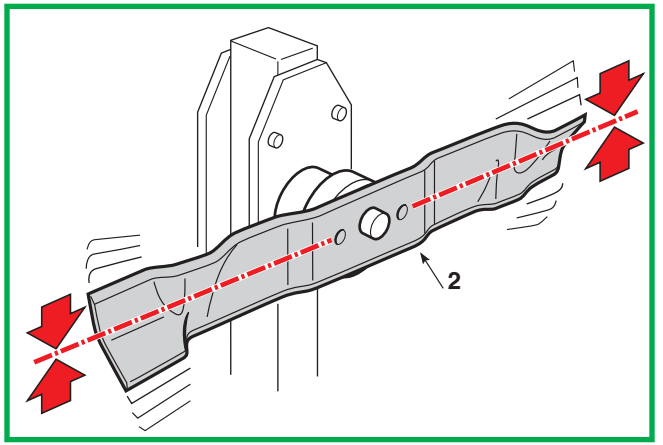
B) Sharpening and balancing

Always sharpen both cutting edges of the blade **(2)** using a medium grade grinder. Sharpening must only be done from the rounded side, removing as little as possible.

The blade is to be replaced when the cutting edge has worn down to 10 mm.

Using the appropriate equipment, check the balance to make sure that there is a maximum difference of 1 gram between one side and the other.





WORKSHOP MANUAL

5.1.0 REMOVAL OF STEERING COLUMN COVERS

General informations:

You have to remove the steering column covers to reach:

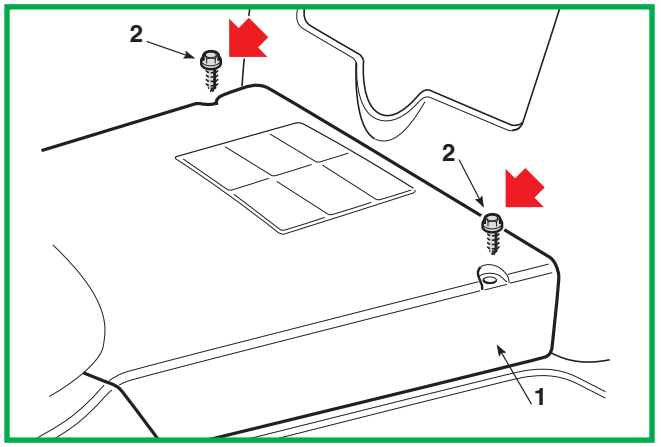
- *from the back,*
  - *the registers;*
  - *brake and drive engagement cables;*
  - *the micro-switches on blade engagement and parking brake;*
- *from the front,*
  - *the steering column and bushes;*
  - *registers of brake cables and drive engagement (➤ mechanical drive models).*

Related topics:

A) Removal of rear cover

Remove the central cover (1) fixed with two screws (2).

Unscrew the four screws (3) and remove the rear cover(4).



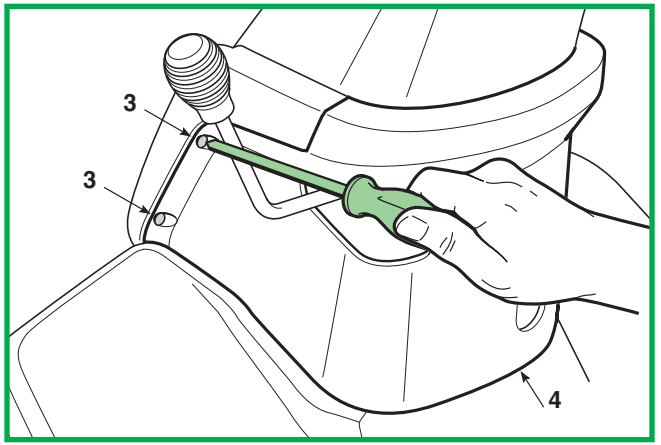
B) Removal of front cover

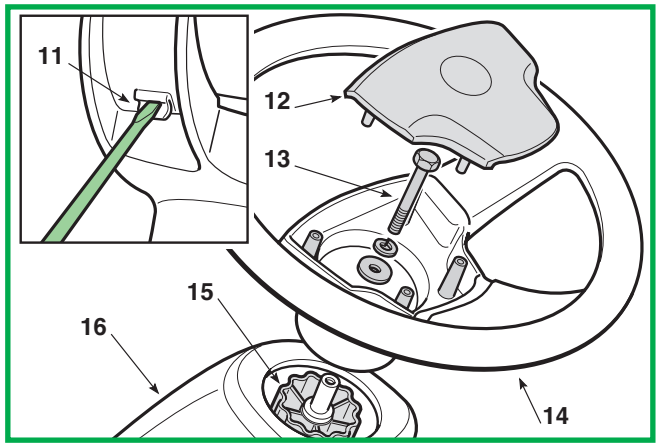
Remove the rear cover as shown in point «A».

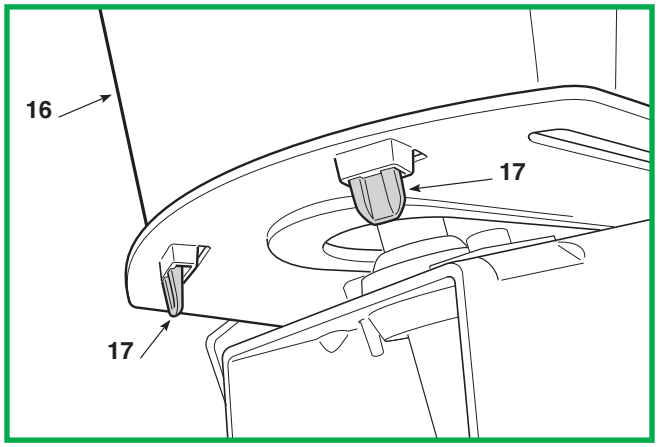
Using a screwdriver, unhook the two central hooks and two right and left hooks (11) that secure the steering wheel cover (12).

Unscrew the central screw (13), dismantle the steering wheel (14) and extract the steering column extension (15).

Dismantle the upper part of the dashboard (16), unhooking the three hooks (17).







WORKSHOP MANUAL

5.1.0 REMOVAL OF STEERING COLUMN COVERS

General informations:

You have to remove the steering column covers to reach:

- *from the back,*
- *– the registers;*
- *– brake and drive engagement cables;*
- *– the micro-switches on blade engagement and parking brake;*

- *from the front,*
- *– the steering column and bushes;*
- *– registers of brake cables and drive engagement (➤ mechanical drive models).*

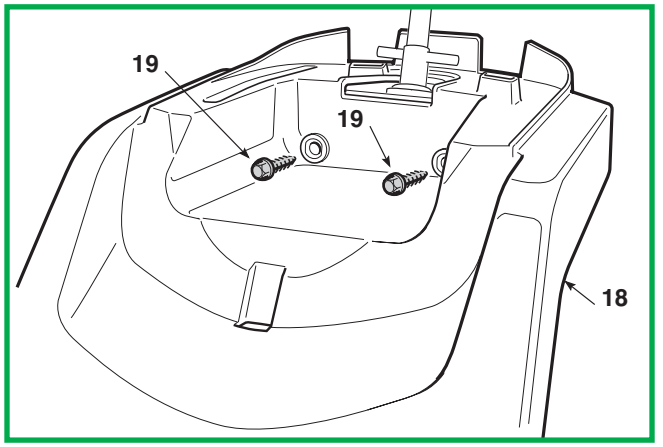
Related topics:

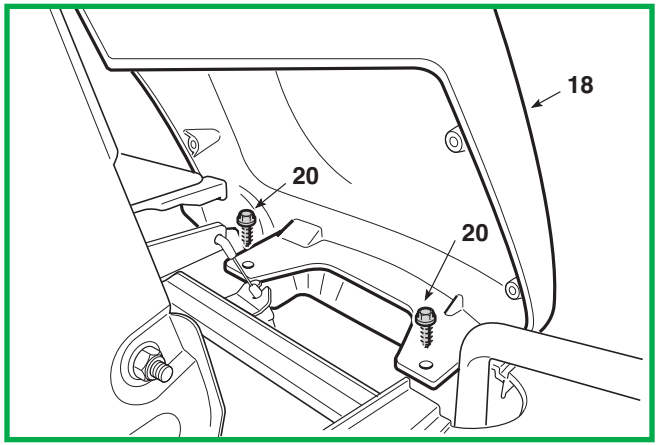
The front cover (18) is fixed by:

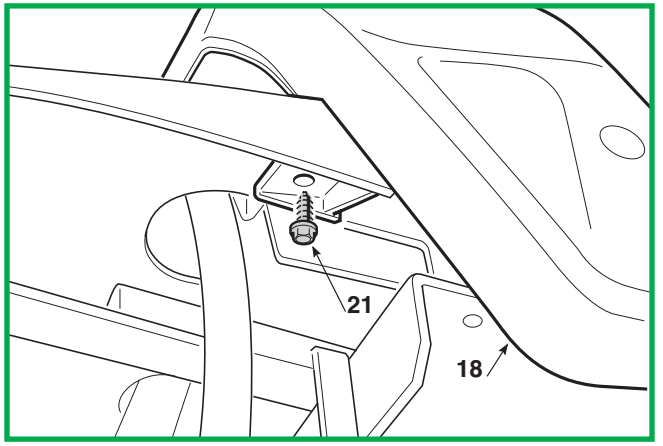
– two upper screws (19);

– two lower screws (20) inside the cover;

– two lower screws (21) under the footstep.







WORKSHOP MANUAL

5.2.0 REMOVAL OF THE SIDE GUARDS

General informations:

Removing the side guards allows you to reach the blade control belt and parts regulating the cutting deck and blade engagement.

Related topics:

Tightening torques

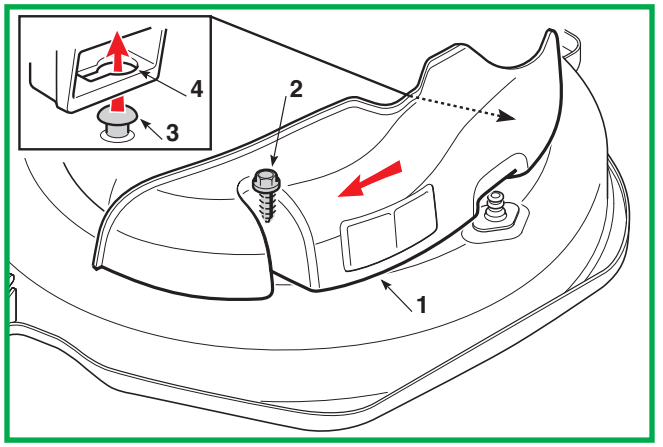
2 - 6 - 12 Guards fastening screws ..... 8 ÷ 10 Nm

A) Removing the left-hand guards

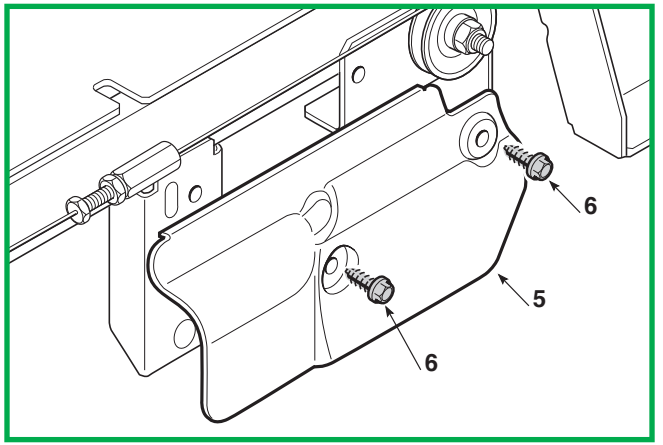
The front left-hand guard (1) is fixed to the cutting deck by a screw (2) and a pin (3) inserted in an inner eyelet (4).

Unscrew the screw (2) and pull the guard (1) forward enough to release the pin (3) from the eyelet (4).

The rear left-hand guard (5) is screwed (6) to the frame.



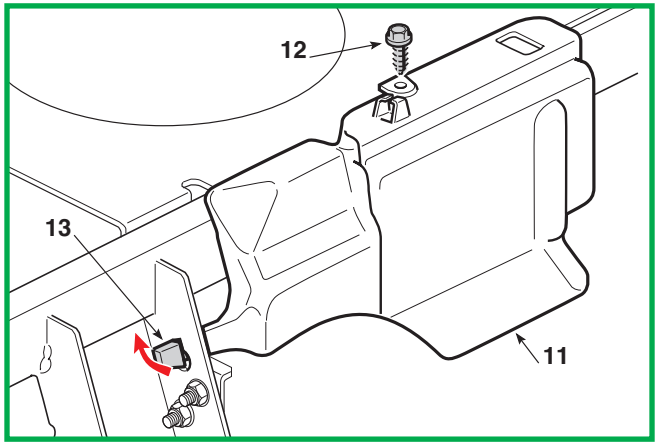
IMPORTANT - When mounting please make sure the pin (3) remains inserted in the eyelet (4) correctly and that the guard is fixed stably.



B) Removing the right-hand guard

The right-hand guard (11) is fixed by the screw (12) and fastener tooth (13), inserted in a specific seat.

IMPORTANT - When mounting please make sure the tooth (13) is hooked correctly and that the guard is fixed stably.



WORKSHOP MANUAL

5.3.0 REMOVAL OF THE WHEEL COVER

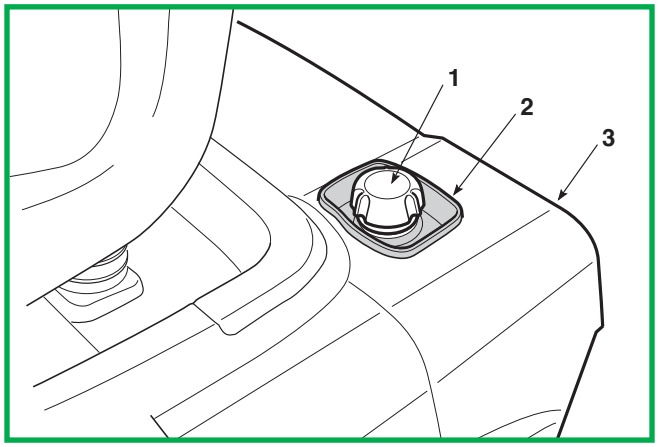
General informations:

You need to remove the wheel cover completely to replace it, to remove the engine and tank and to access the seat's micro-switch, placed under the cross-piece supporting the two springs.

Related topics:

[☛ 6.7] Replacing the accelerator and adjusting the carburettor

NOTE - The wheel cover has two different connected parts which must be dismantled in the sequence shown.

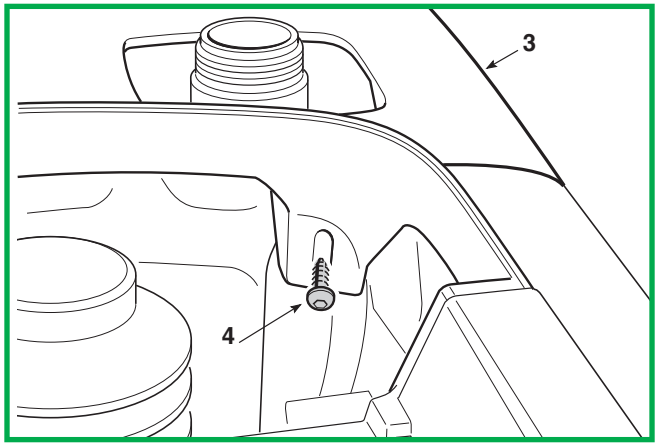


A) Rear

Unscrew the tank cap (1) and remove the fuel guard (2).

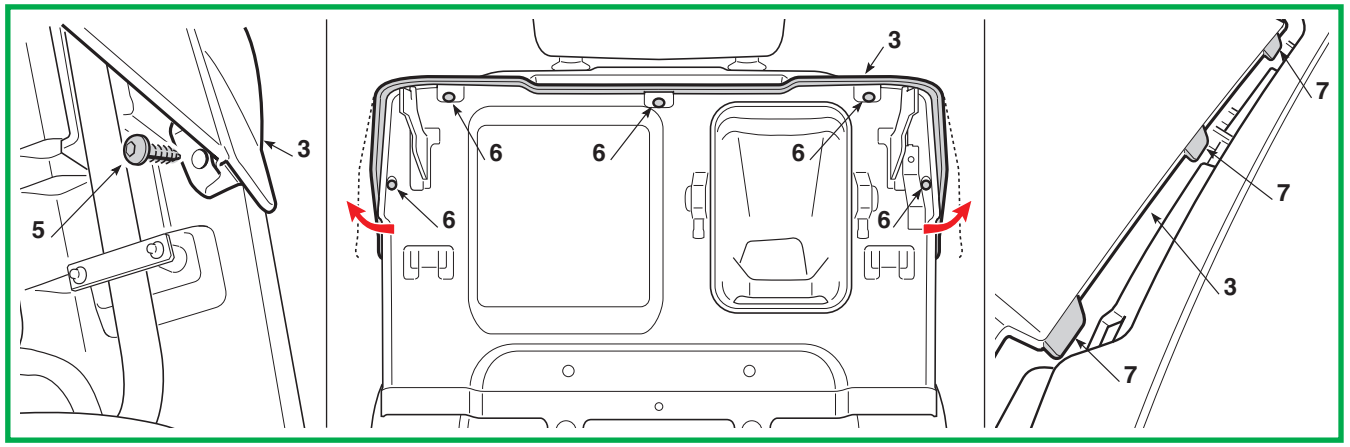
The rear part (3) of the wheel cover is fixed to the frame by:

– 2 screws (4) in the space under the seat;
– 2 rear screws (5).



Fixing the wheel cover's rear part (3) is completed by 5 screws (6) on the rear plate.

NOTE - Removing the rear part (3) is facilitated by widening the two side elements slightly and lifting the rear part just enough to disconnect the three fins (7).



5.3.0 REMOVAL OF THE WHEEL COVER

General informations:

You need to remove the wheel cover completely to replace it, to remove the engine and tank and to access the seat's micro-switch, placed under the cross-piece supporting the two springs.

Related topics:

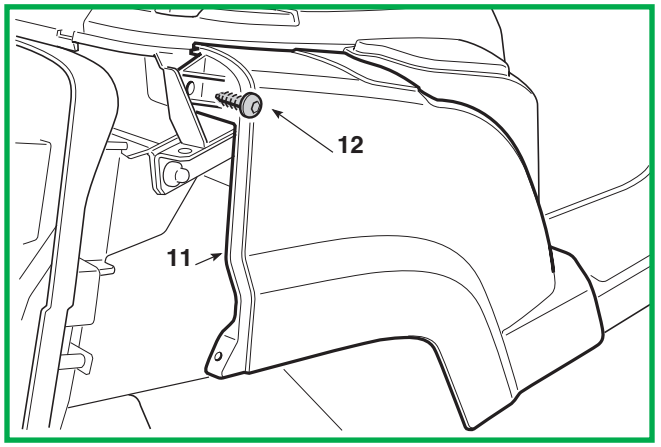
[☛ 6.7] Replacing the accelerator and adjusting the carburettor

B) Sides

The sides (11) (both left and right) are each fixed by:

– 1 screw on the rear part (12);
– 1 screw on the front part (13);
– 1 screw on the lower part (14);
– 1 side fin (15), hooked to the central element and released using a screwdriver.

When mounting, be careful to insert the side fin (15) correctly.



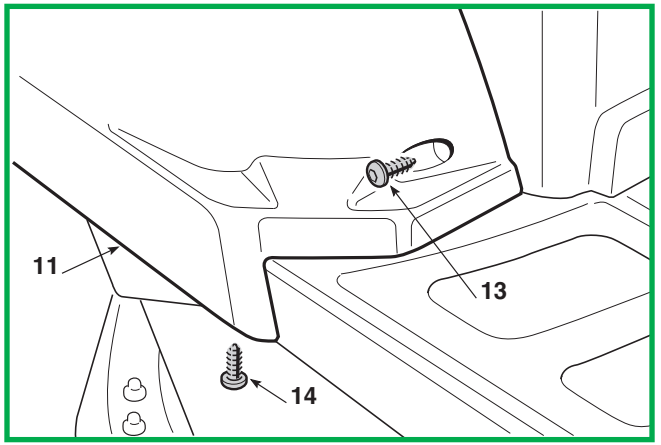
C) Central element

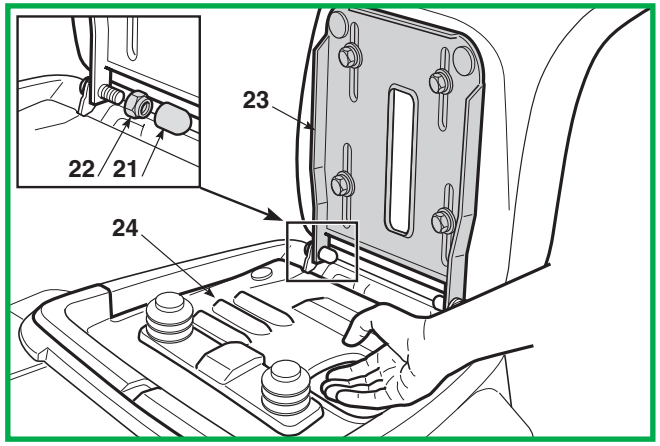
• Disconnect the accelerator cable.

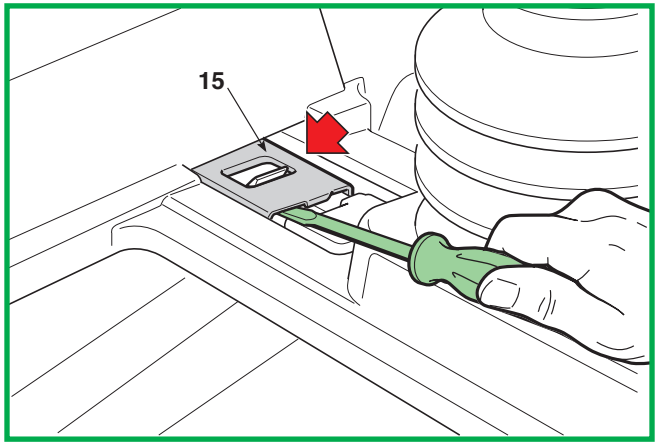
Remove the covering caps (21) and unscrew the two nuts (22) to remove the seat and the relative support plate (23).

Remove the closing panel (24).

Disconnect and remove the battery (25) charger con-







WORKSHOP MANUAL

5.3.0 REMOVAL OF THE WHEEL COVER

3 / 3

General informations:

You need to remove the wheel cover completely to replace it, to remove the engine and tank and to access the seat's micro-switch, placed under the cross-piece supporting the two springs.

Related topics:

[☛ 6.7] Replacing the accelerator and adjusting the carburettor

nector (26), the fuse holder (27) and pull out the wire and connector (28).
Remove the electronic card box (29), fixed by two screws (30).

➤ ***in the electric start models:***

Disconnect ignition block wire connectors.

The wheel cover central element (31) is fixed by:
– 2 screws on the front lower part (32);
– 2 screws on the side lower part (33);
– 2 screws on the rear part (34);
– 2 screws in the space under the seat (35);

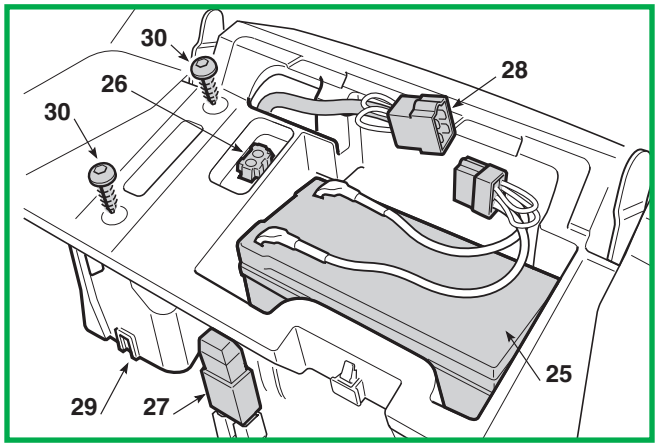
To remove the cover, unscrew the rear screw (36) fixing the upper part of the fuel tank.

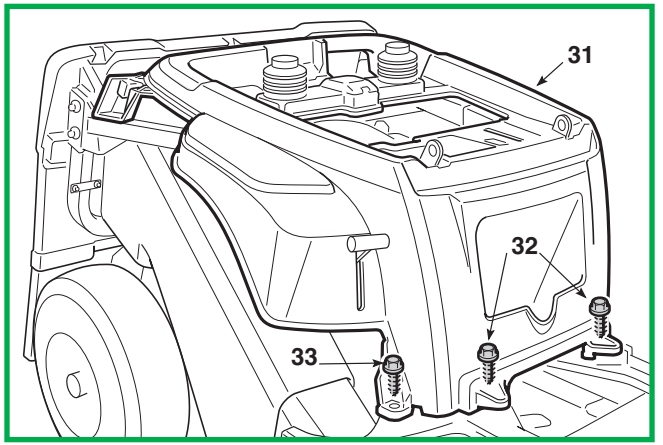
To assemble, follow the steps described in reverse order.

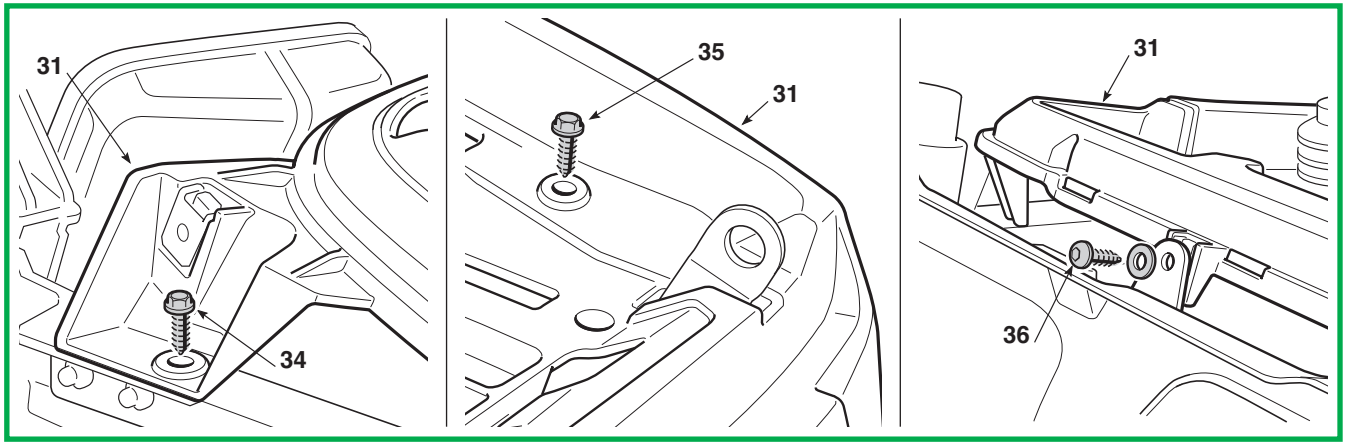
➤ ***in the electric start models:***

Connect ignition block wire connectors.

• Reattach the accelerator cable.







5.4.0 REMOVAL OF THE TANK

General informations:

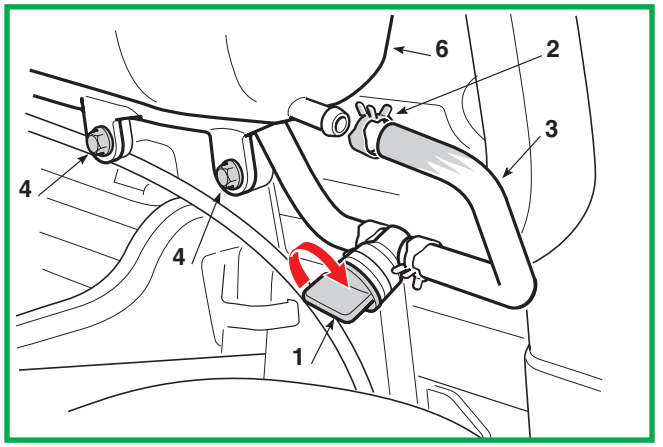
You only need to remove the tank when it needs replacing.

Related topics:

[☛ 5.3] Removal of the wheel cover
[☛ 5.8] Removal of the discharge conveyor

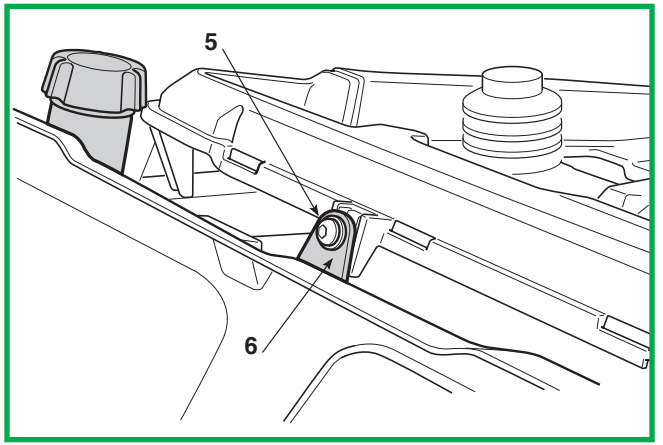
- Remove the wheel cover's rear part (Point «A»).
- Remove the collector channel.

Close the fuel tap (1).



Remove the clamp (2), disconnect the fuel tube (3) and empty the tank collecting all the fuel in a suitable container, **taking care not to cause any leakage**.

Unscrew the two lower screws (4) and the upper screw (5) fixing the tank (6) and remove the tank through the machine's right side.



When mounting, reverse the operations described above, taking care to:

– always replace the fuel tube if it is deteriorated;
– replace clamps correctly;
– check there are no fuel leaks.

- Reassemble the collector channel.
- Reassemble the wheel cover's rear part (Point «A»).

WORKSHOP MANUAL

5.5.0 REMOVAL OF THE ENGINE

General informations:

Since there are different types of drive, the stages described here refer to those shared or similar in all types of engine.

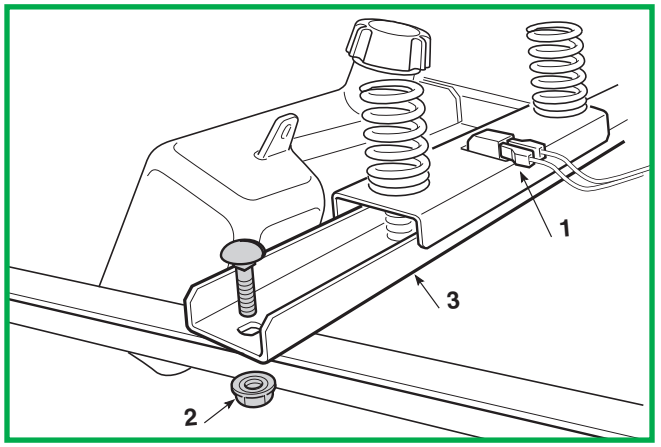
Related topics:

[☛ 2.2] Tools
[☛ 5.2] Removal of the side guards
[☛ 5.3] Removal of the wheel cover
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.3] Replacement of the drive belt
[☛ 6.7] Replacing the accelerator and adjusting the carburettor

Tightening torques

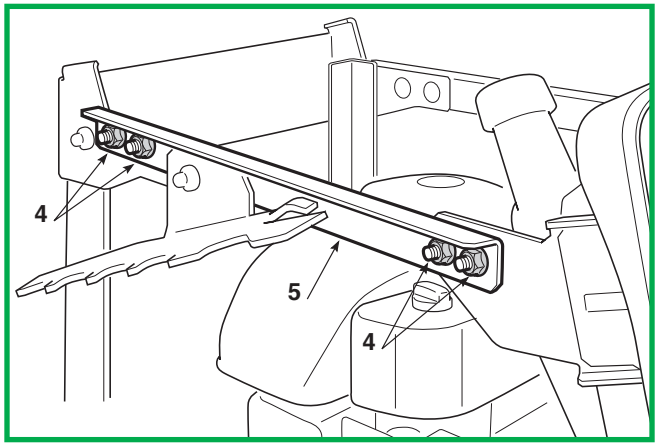
2	Cross-tie fastening nuts	25 ÷ 30 Nm
4	Arbor fastening nuts	25 ÷ 30 Nm
6	Screw for pulley	45 ÷ 50 Nm
–	Screws for engine fastening	35 ÷ 40 Nm

- Remove the collector channel.
- Remove the left and right side guards.
- Remove all wheel cover parts.
- Remove the drive belt
- Disconnect the accelerator cable.



Detach the fuel tube, **taking care not to cause any leakage**.

Disconnect all electric and earthing connections from the engine making sure you label them so no errors can be made when they have to be reconnected.

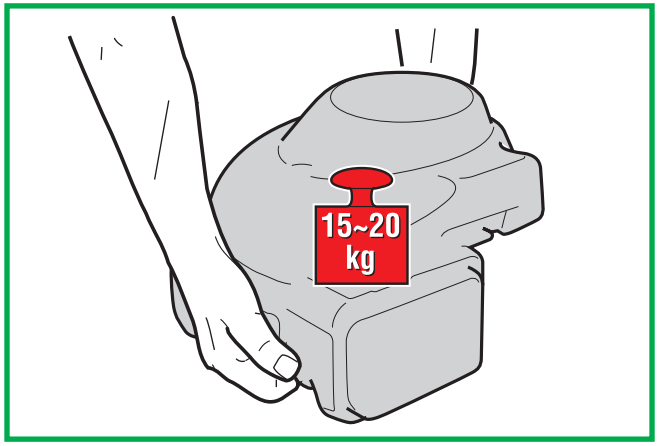


Disconnect the two connectors (1) of the seat micro-switch.

Unscrew the nuts (2) and remove the cross-tie (3).

Unscrew the 4 nuts (4) and remove the left-hand arbor (5) to make the engine accessible.

Having identified and unscrewed the screws fixing the engine to the chassis, grasp the former firmly and lift it with due care, remembering that it weighs about 15-20 kg.



NOTE
Some types of engine are held with screws of different length and in different positions, so it is best to label them so that no errors are made on assembly.
If the pulley (5) has to be dismantled, unscrew the central screw (6) and extract the pulley (5) from the shaft.

WORKSHOP MANUAL

5.5.0 REMOVAL OF THE ENGINE

2 / 2

General informations:

Since there are different types of drive, the stages described here refer to those shared or similar in all types of engine.

Related topics:

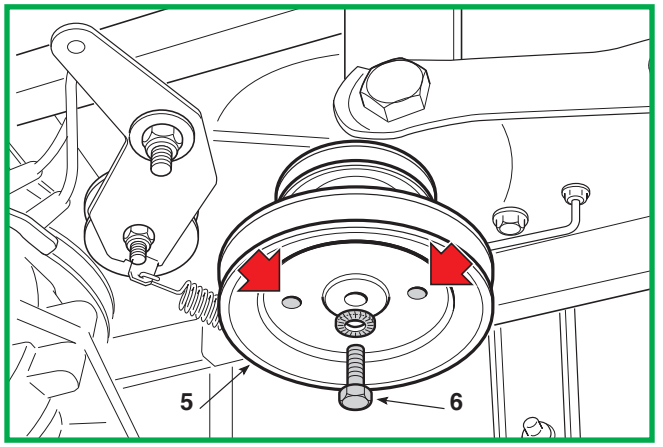
[☛ 2.2] Tools
[☛ 5.2] Removal of the side guards
[☛ 5.3] Removal of the wheel cover
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.3] Replacement of the drive belt
[☛ 6.7] Replacing the accelerator and adjusting the carburettor

Tightening torques

2	Cross-tie fastening nuts	25 ÷ 30 Nm
4	Arbor fastening nuts	25 ÷ 30 Nm
6	Screw for pulley	45 ÷ 50 Nm
–	Screws for engine fastening	35 ÷ 40 Nm

If it is difficult to remove, use the special extractor inserted into the holes of the pulley, but do not completely undo the screw (6) so that the extractor puts pressure on the head of the screw and does not damage the shaft's threaded hole.

To reassemble, reverse the order of the previous operations.



⚠ Remember to fit the clamps back on the fuel pipe and **check that it does not leak**.

Carefully restore all electric and earthing contacts.

Reattach the accelerator cable and ...

- Adjust the «MINIMUM» position.
- Reassemble the drive belt.
- Reassemble all wheel cover parts.
- Reassemble the left and right side guards.
- Reassemble the collector channel.

WORKSHOP MANUAL

5.6.0 - REMOVAL OF THE REAR AXLE

➤ *mechanical drive models*

General informations:

The rear axle (Transaxle) is made up of single maintenance free sealed unit which includes the transmission unit and the differential.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

Related topics:

[☛ 4.2] Brake adjustment
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.1] Replacement of tyres and wheels

Tightening torques

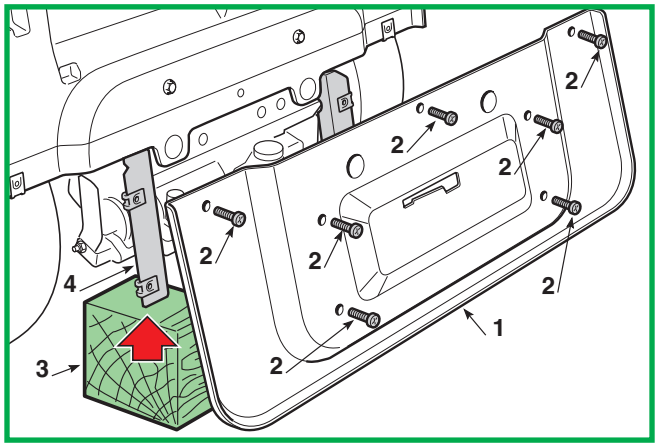
23	Nut for bracket fastening	25 ÷ 30 Nm
24	Self-tapping screw	25 ÷ 30 Nm
25	Rear axle fastening nut	25 ÷ 30 Nm

MAP BACK

➤ *mechanical drive models*

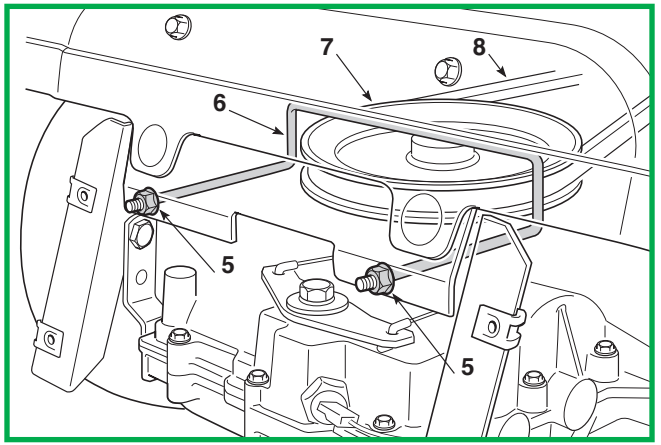
Dismantle the lower part of the rear plate (1) fixed with 7 screws (2).

Place two blocks (3) about 160 mm high under the two supports (4) of the rear plate's lower part.



- Remove the collector channel.
- Dismantle the rear wheels.

Loosen the two nuts (5) enough to move the belt guide (6) away from the pulley (7) and free the belt (8).

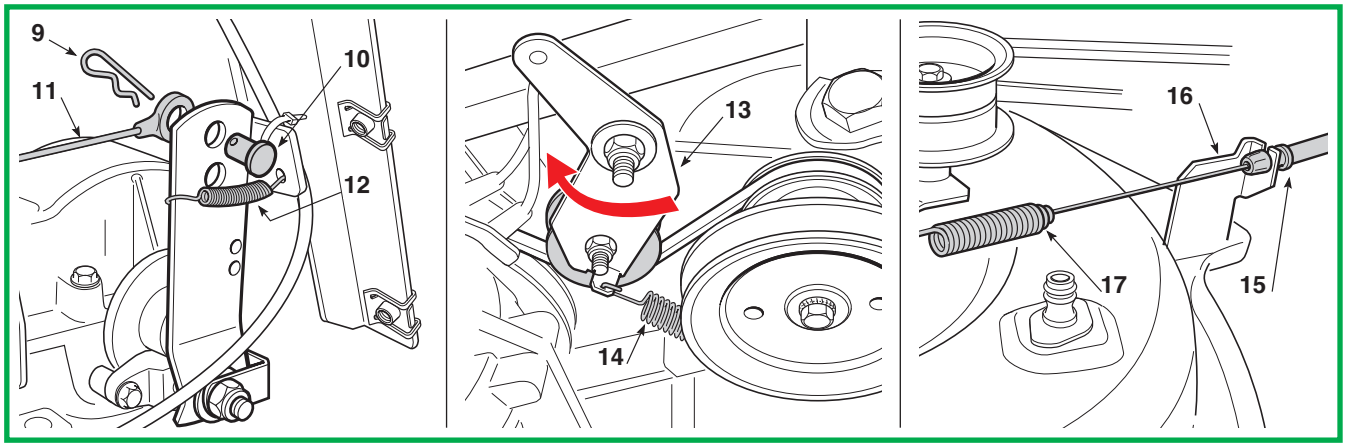


Unhook the cotter pin (9) and remove the pin (10) connecting the brake cable (11).

Disconnect the spring (12).

Move the tightener (13) by hand just enough to unhook the spring (14).

Remove the blade engagement cable (15) from its support (16) and unhook the spring (17).



WORKSHOP MANUAL

5.6.0 - REMOVAL OF THE REAR AXLE

➤ *mechanical drive models*

General informations:

The rear axle (Transaxle) is made up of single maintenance free sealed unit which includes the transmission unit and the differential.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

Related topics:

[☛ 4.2] Brake adjustment
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.1] Replacement of tyres and wheels

Tightening torques

23	Nut for bracket fastening	25 ÷ 30 Nm
24	Self-tapping screw	25 ÷ 30 Nm
25	Rear axle fastening nut	25 ÷ 30 Nm

Unscrew the screw (18) and disassemble the lever (19) controlling the speed gear.

Disconnect the "neutral" signal micro-switch (20) cables.

The group is supported by two brackets (21) and fixed to the frame by two screws (22) with relative nuts (23).

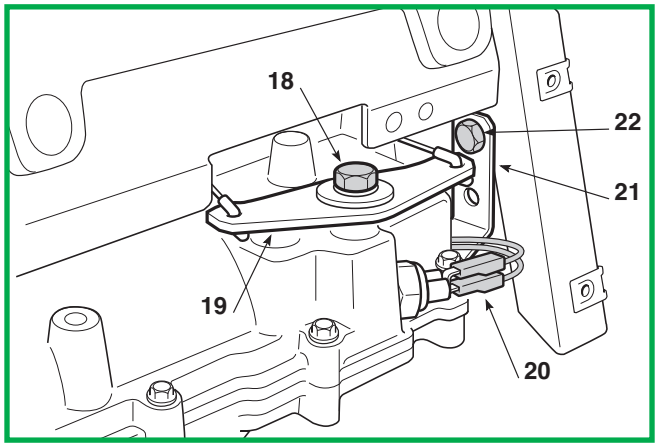
Loosen the two lower screws (24) to allow the brackets (21) to sway a little and unscrew the nuts (23); then carefully unscrew the four nuts (25), supporting the group suitably so that it cannot fall.

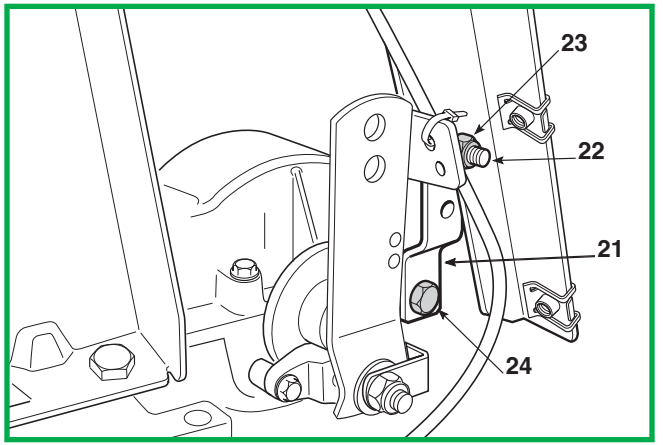
Reverse the above operations when reassembling, taking special care over screws (25) of the self-tapping type which, if not screwed correctly, could damage inner threads, risking incorrect fixing.

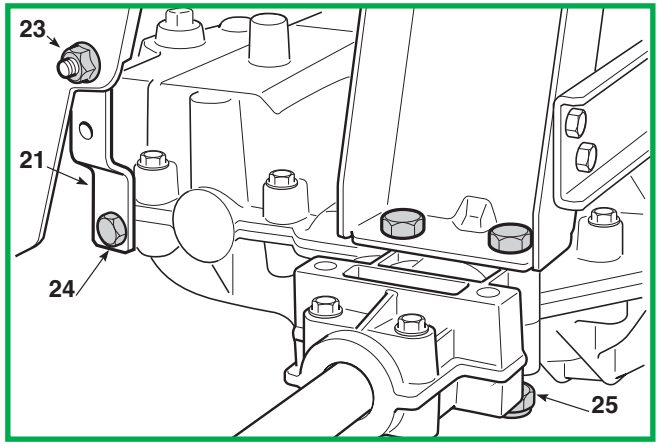
Make sure the spacers (26) are correctly assembled on the shafts.

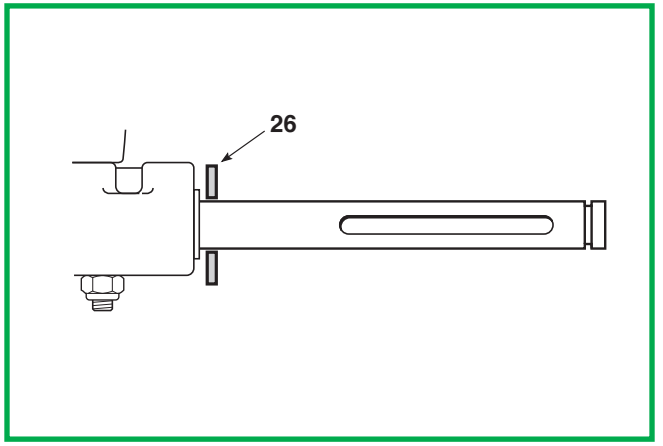
Reattach all the connections, and then …

- Check the brake.
- Reassemble the rear wheels.
- Reassemble the collector channel.









WORKSHOP MANUAL

5.6a.0 - REMOVAL OF THE REAR AXLE

➤ *hydrostatic drive models*

General informations:

The rear axle (Transaxle) is made up of single maintenance free sealed unit which includes the transmission unit and the differential.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

Related topics:

[☛ 2.3] Lifting and lower accessibility
[☛ 4.2] Brake adjustment
[☛ 5.5] Removal of the engine
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.1] Replacement of tyres and wheels

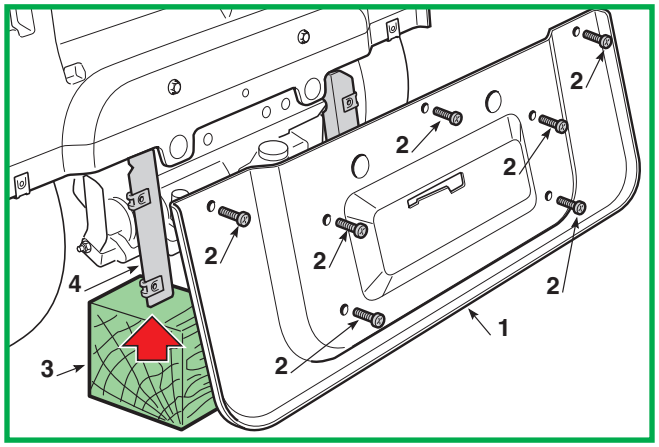
Tightening torques

18-19	Screw for bracket fastening	25 ÷ 30 Nm
21	Rear axle fastening nut	25 ÷ 30 Nm

MAP BACK

➤ *hydrostatic drive models*

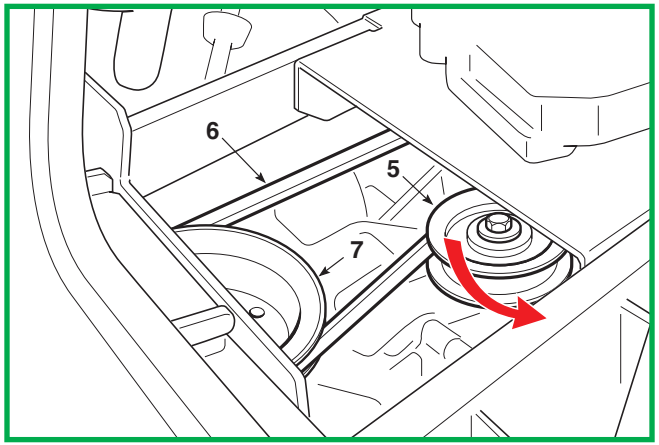
Dismantle the lower part of the rear plate (1) fixed with 7 screws (2).



Place two blocks (3) about 160 mm high under the two supports (4) of the rear plate's lower part.

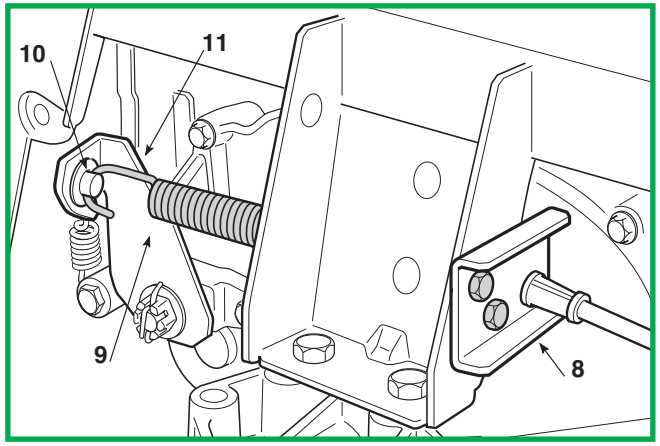
- Remove the collector channel.
- Dismantle the rear wheels.

Engage the parking brake to slacken the belt and obtain greater operating convenience.

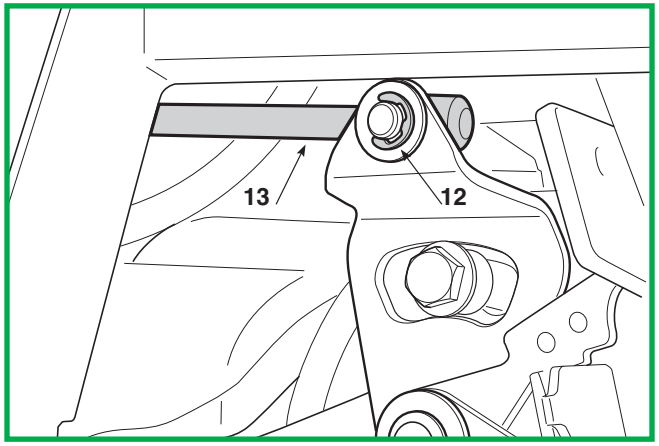


Move the tightener (5) to free the belt (6) from the pulley (7).

Dismantle the brake cable support (8) to be able to unhook the spring (9) from the lever (11) pin (10).



Remove the elastic ring (12) and disconnect the control bar (13).



WORKSHOP MANUAL

5.6a.0 - REMOVAL OF THE REAR AXLE

➤ *hydrostatic drive models*

General informations:

The rear axle (Transaxle) is made up of single maintenance free sealed unit which includes the transmission unit and the differential.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

Related topics:

[☛ 2.3] Lifting and lower accessibility
[☛ 4.2] Brake adjustment
[☛ 5.5] Removal of the engine
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.1] Replacement of tyres and wheels

Tightening torques

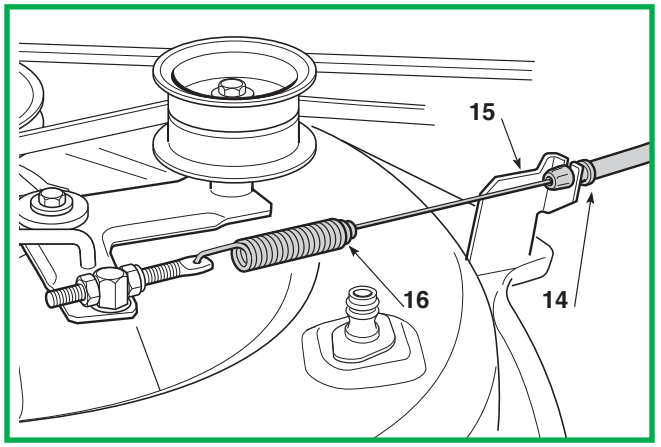
18-19	Screw for bracket fastening	25 ÷ 30 Nm
21	Rear axle fastening nut	25 ÷ 30 Nm

Remove the blade engagement cable (14) from its support (15) and unhook the spring (16).

The unit is supported by a bracket (17) from the rear right-hand side.

Loosen the upper nut (18) to give a minimum of movement to the bracket (17), unscrew the nut (19) and slide out the relative screw (20).

Carefully unscrew the four frame fastener nuts (21), adequately supporting the unit so it does not fall.

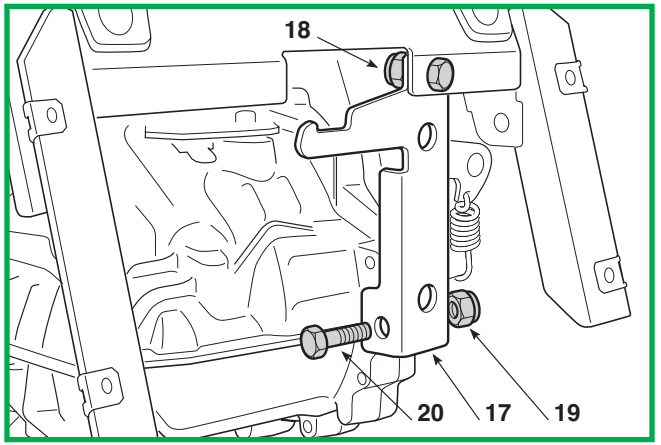


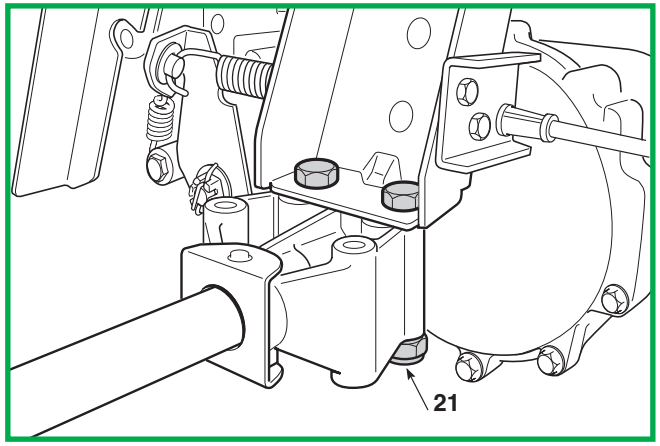
To reassemble, reverse the order of the previous operations.

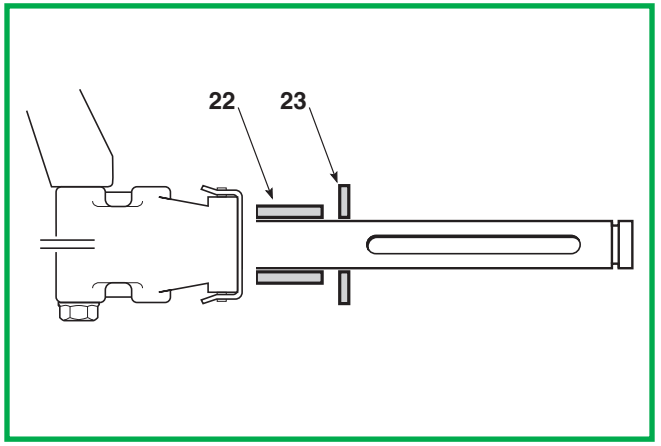
Make sure the spacers (22-23) are correctly assembled on the shafts.

Reattach all the connections, and then …

- Check the brake.
- Reassemble the rear wheels.
- Reassemble the collector channel.







WORKSHOP MANUAL

5.7.0 REMOVAL OF THE CUTTING DECK

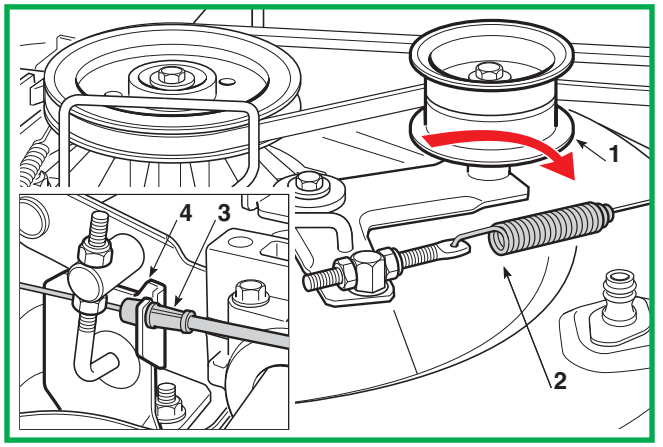
General informations:

By removing the cutting deck you can carry out all revision operations and replace the hub, bearings and blade shaft more comfortably and easily.
With some practice and experience it is possible to do this job with the deck still in position.

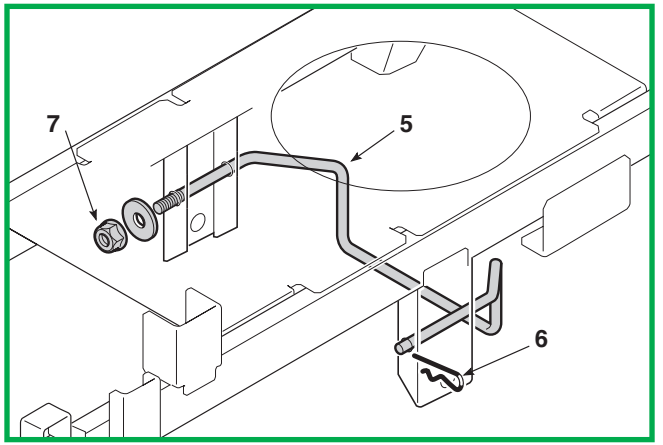
Related topics:

[☛ 4.6] Aligning the cutting deck
[☛ 5.2] Removal of the side guards
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.1] Replacement of tyres and wheels

- Remove the collector channel.
- Remove the left and right side guards.
- Remove the left-hand rear wheel.



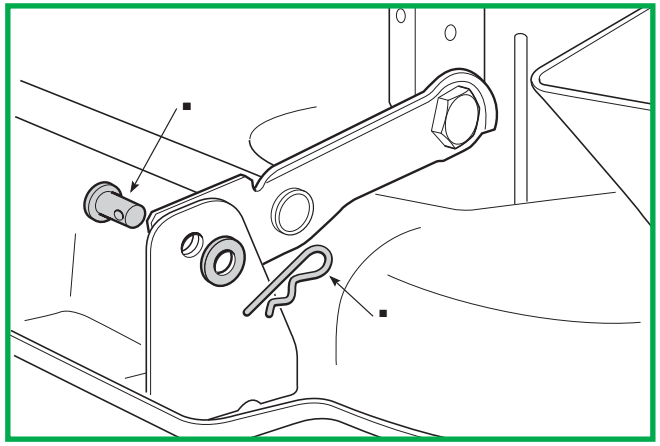
Move the tightener (1) by hand just enough to unhook the spring (2) and remove the control cable (3) from its support (4).

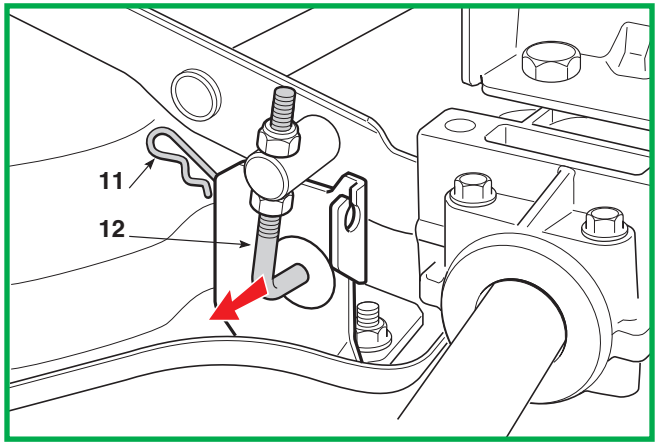


Disassemble the belt guide blade (5), fixed by a cotter pin (6) from the left side and by a nut (7) from the right.

Unhook the cotter pin (8) and extract the pin (10) supporting the deck from the right.

Unhook the cotter pin (11) and extract the pin (12) supporting the deck from the left.





MAP BACK

5.7.0 REMOVAL OF THE CUTTING DECK

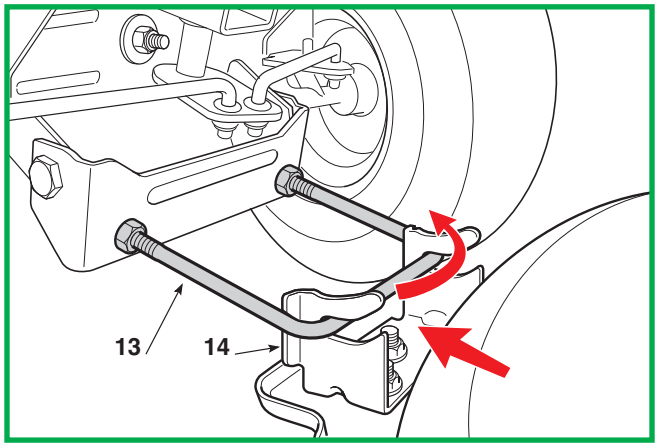
General informations:

By removing the cutting deck you can carry out all revision operations and replace the hub, bearings and blade shaft more comfortably and easily.
With some practice and experience it is possible to do this job with the deck still in position.

Related topics:

[☛ 4.6] Aligning the cutting deck
[☛ 5.2] Removal of the side guards
[☛ 5.8] Removal of the discharge conveyor
[☛ 6.1] Replacement of tyres and wheels

Check there are no blocks, the deck can be removed, moving it forward slightly to unhook the front balance wheel (13) from the bracket (14).



After assembly, ...

- Check alignment of the cutting deck.

⚠

- Reassemble the left and right side guards.
- Reassemble the collector channel.

WORKSHOP MANUAL

5.8.0 REMOVAL OF THE DISCHARGE CONVEYOR

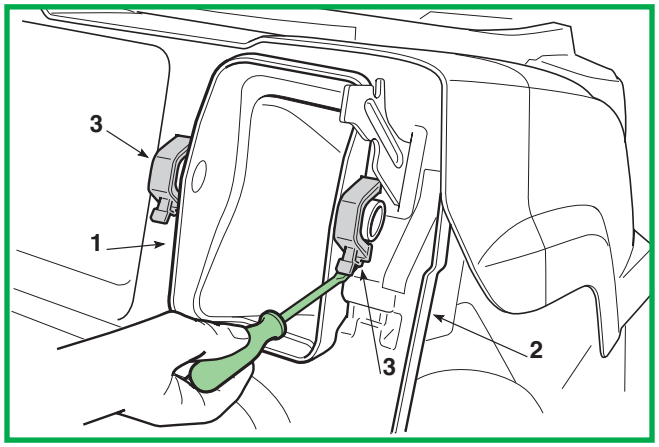
General informations:

Removing the collector channel gives you access to the machine's main mechanical parts from the right side and let you remove the engine, tank, rear axis and cutting deck.

Related topics:

The conveyor (1) is connected to the rear plate (2) by two plastic clamps (3), removable with the help of a screwdriver.

On assembly, ensure the free vibration of the conveyor at each plate height variation.



6.1.0 REPLACEMENT OF TYRES AND WHEELS

General informations:

The tyres used are of the "Tubeless" type and so every repair of a hole in the tyre must be done by a tyre specialist according to the methods used for this type of tyre.

Related topics:

[☛ 4.6] Aligning the cutting deck

Tyre pressures

Front	.....	(Tyres 11 x 4.00-4)	1,5 Bar
	.....	(Tyres 13 x 5.00-6)	1,5 Bar
Rear	.....	(Tyres 13 x 5.00-6)	1,5 Bar
	.....	(Tyres 15 x 5.50-6)	1,0 Bar

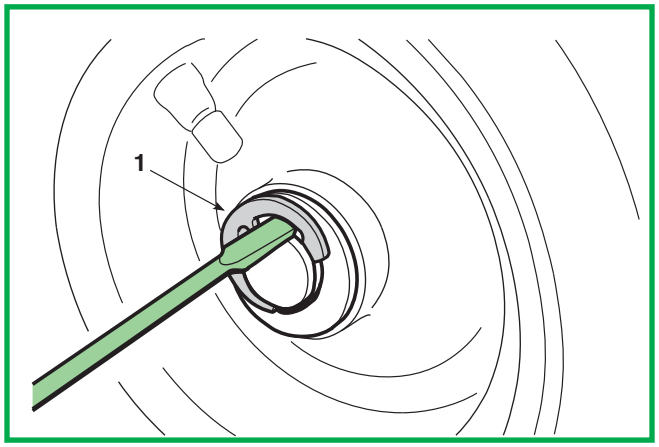
A) Tyres

After replacing one or more tyres or the wheels, it is always necessary to check the pressure and to check the alignment of the cutting deck.

⚠ Replace distorted wheel rims as they could impair the tyre's hold.

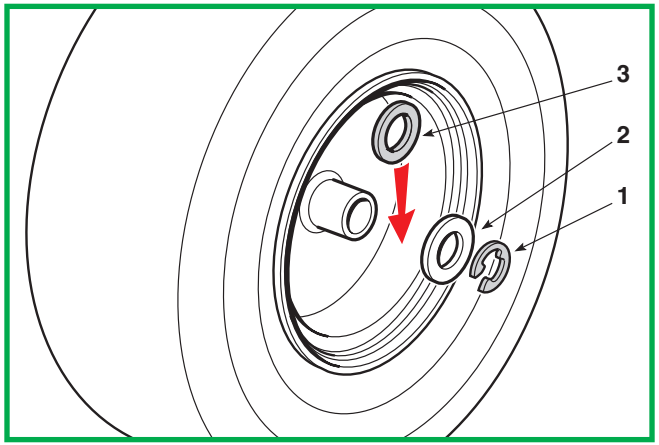
B) Wheels

The wheels are held by a snap ring (1) which can be removed with the help of a screwdriver.



NOTE
If a wheel is jammed onto the shaft, use a releasing spray directing around the splining hole.

On assembly it is advisable to spread grease on the shaft to facilitate the next wheel removal.



For the front wheels: replace the shoulder washer (2) and the flexible ring (1) with the bevel facing inwards.

For the rear wheels: replace the shoulder washer (2) and the flexible ring (1) with the bevel facing inwards and check the axial gap of the wheel on the shaft; if it is greater than 3 mm, a spacer (3) must be fitted between the wheel hub and the shoulder washer (2).

WORKSHOP MANUAL

6.2.0 REPLACEMENT OF FRONT WHEEL BEARINGS

General informations:

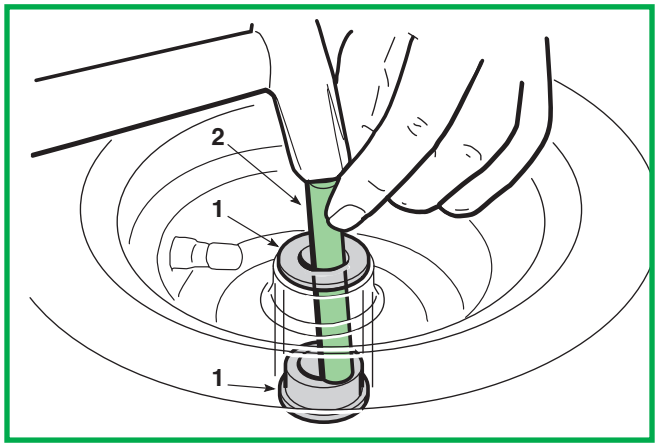
Related topics:

[☛ 2.2] Tools
[☛ 2.3] Lifting and lower accessibility
[☛ 6.1] Replacement of tyres and wheels

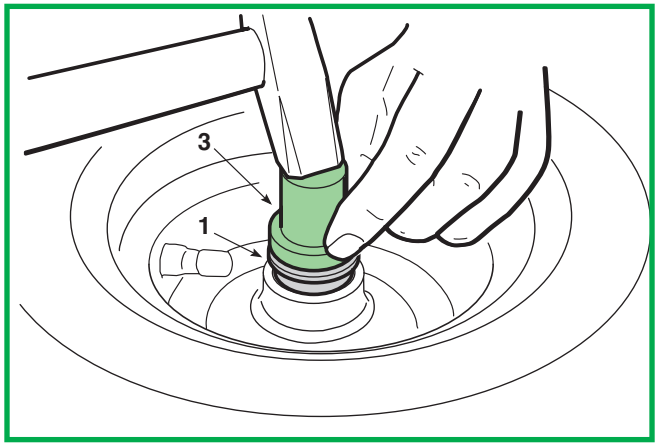
- Dismantle the front wheel.

The front wheel bearings (1) are force splined into the front wheel hub.

To be able to remove a bearing a 10 - 12 mm round bar (2) is needed. Insert this from the opposite side and hammer it on various points around the internal circumference of the bearing.



The new bearing must be inserted with the help of a plastic mallet or a bronze pad (3) **working only on the outer ring of the bearing.**



WORKSHOP MANUAL

6.3.0 REPLACEMENT OF THE DRIVE BELT

General informations:

Related topics:

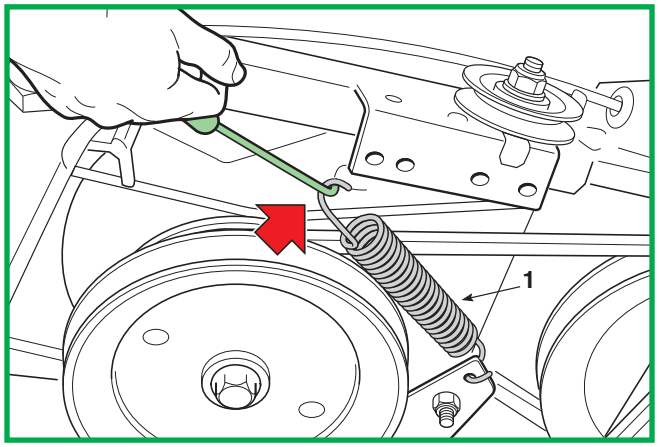
[☛ 4.3] Drive belt adjustment
[☛ 5.2] Removal of the side guards
[☛ 5.8] Removal of the discharge conveyor
[☛ 8.2] Belts assembly

Tightening torques

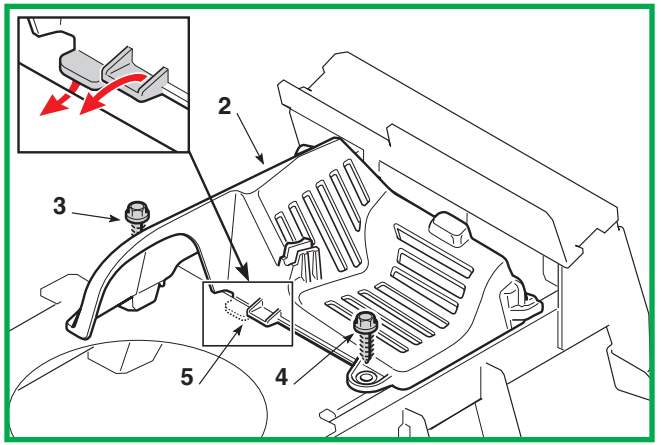
13	Pulley tightener fixing screws	25 ÷ 30 Nm

- Remove the left and right side guards.
- Remove the collector channel.

Unhook the drive belt tightener spring (1).



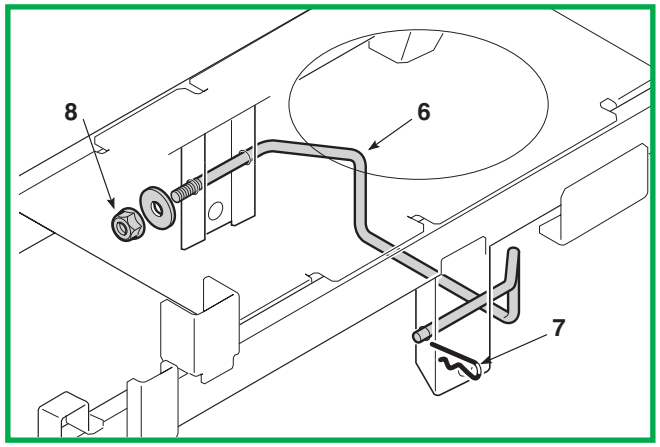
Remove the guard (2), fixed by a screw (3) from the right, by a screw (4) from the left and by a hook (5).

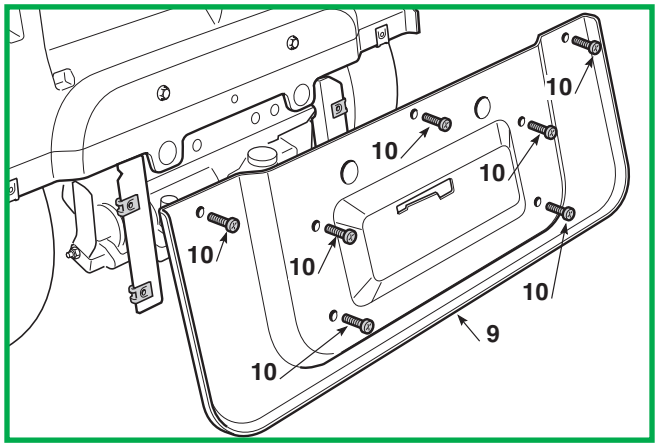


Disassemble the belt guide blade (6), fixed by a cotter pin (7) from the left side and by a nut (8) from the right.

➤ ***mechanical drive models***

Dismantle the lower part of the rear plate (9) fixed with 7 screws (10).





MAP BACK

6.3.0 REPLACEMENT OF THE DRIVE BELT

General informations:

Related topics:

[☛ 4.3] Drive belt adjustment
[☛ 5.2] Removal of the side guards
[☛ 5.8] Removal of the discharge conveyor
[☛ 8.2] Belts assembly

Tightening torques

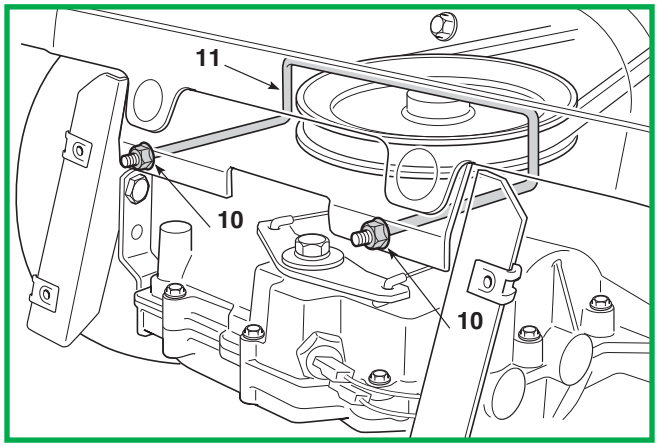
13	Pulley tightener fixing screws	25 ÷ 30 Nm

Loosen the nuts (11) of the belt guide (12).

Loosen the screws (13) on the tightener (14) just enough to free the drive belt (15) from its pin (16).

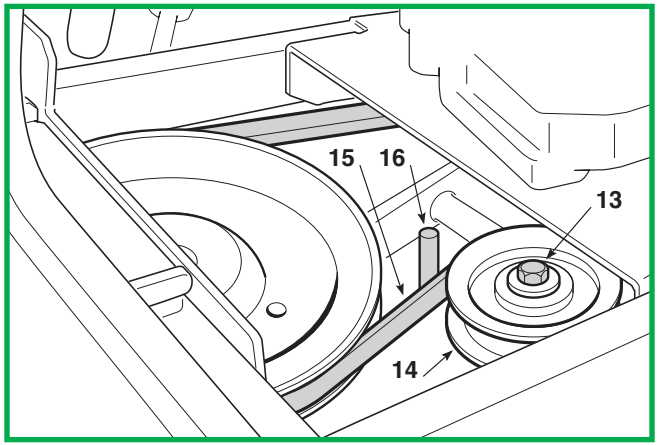
Loosen the nuts (17) on the two belt guides (18) of the drive belt.

With the parking brake disengaged, you can extract the drive belt (15).



➤ ***hydrostatic drive models***

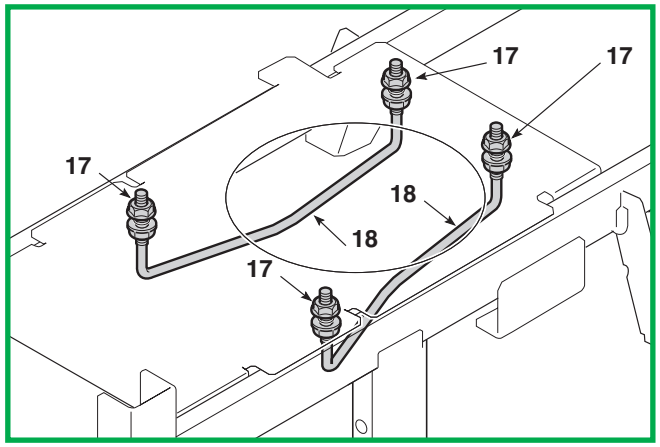
Hold the two parts of the belt (21) to release it from the pulley (22).

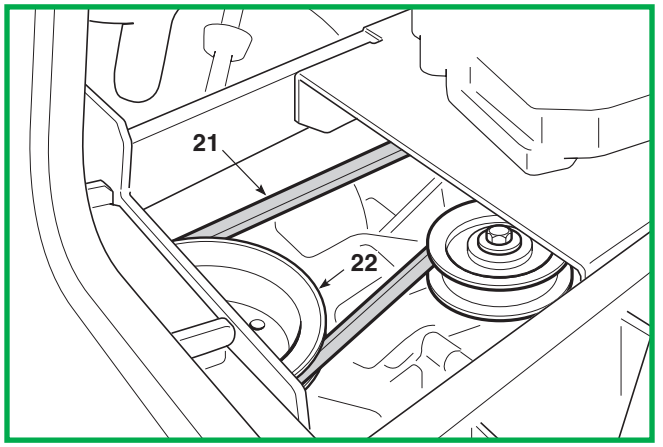


On assembly, follow the procedures described above in reverse order.

When assembly is completed, …

- Reassemble the collector channel.
- Reassemble the left and right side guards.
- Adjust the drive engagement.





WORKSHOP MANUAL

6.4.0 REPLACEMENT OF THE BLADES BELT

General informations:

Related topics:

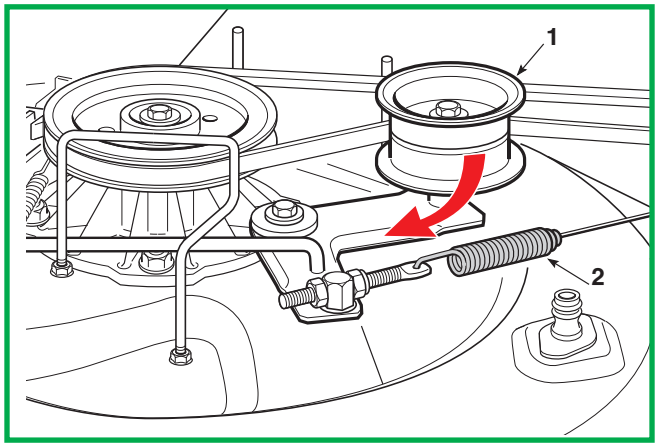
[☛ 4.1] Adjusting the engagement and checking the blade brake
[☛ 5.2] Removal of the side guards
[☛ 8.2] Belts assembly

Tightening torques

6	Pulley tightener fixing screw	25 ÷ 30 Nm

- Remove the collector channel.
- Remove the left and right side guards.

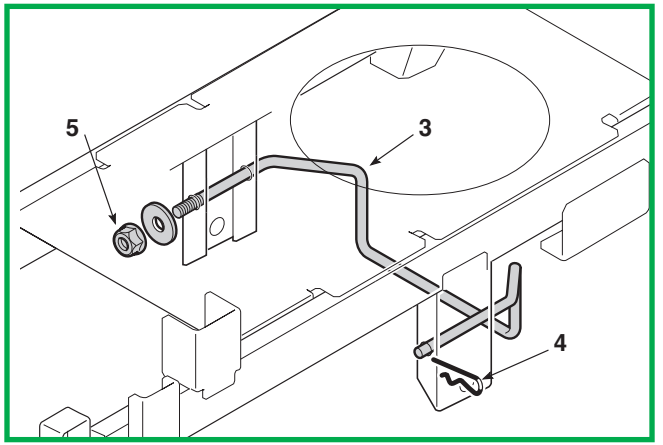
Move the tightener (1) by hand just enough to unhook the spring (2).



Disassemble the belt guide blade (3), fixed by a cotter pin (4) from the left side and by a nut (5) from the right and remove the blade belt from the engine pulley.

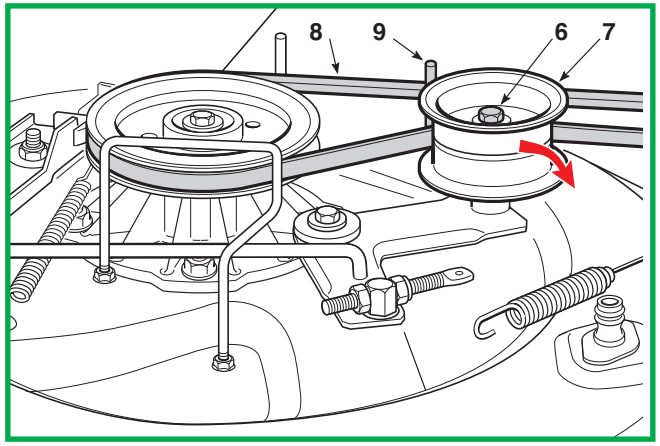
Loosen the screw (6) on the tightener (7) just enough to free the belt (8) from its pin (9).

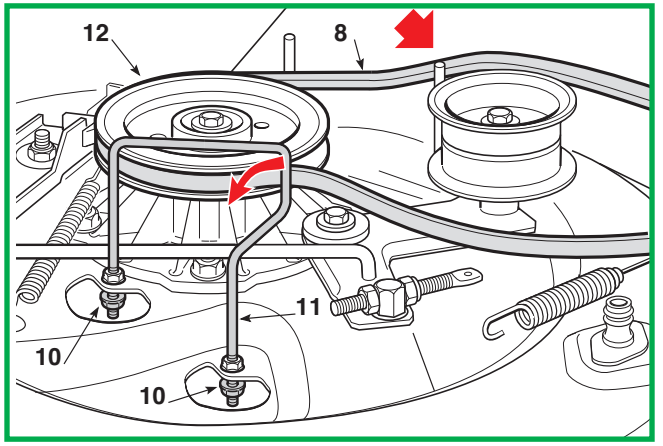
Loosen the two lower nuts (10) holding the belt guide (11) just enough to free the belt (8) from the pulley (12) and then remove it from the pulley side.



Once assembly is completed, …

- Adjust the blade engagement.
- Reassemble the left and right side guards.
- Remove the collector channel.





WORKSHOP MANUAL

6.5.0 REPLACEMENT OF THE SUPPORT AND SHAFT OF THE BLADE

General informations:

Related topics:

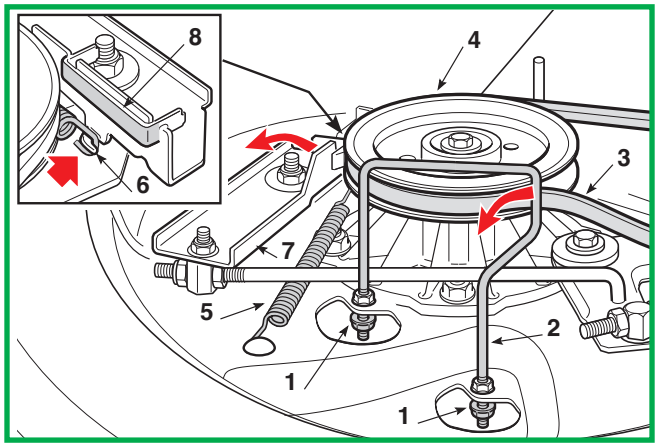
[☛ 2.2] Tools
[☛ 4.7] Check on blade alignment
[☛ 4.8] Removing, sharpening and balancing the blade
[☛ 5.2] Removal of the side guards
[☛ 5.7] Removal of the cutting deck

Tightening torques

9	Pulley tightener fixing screw	20 ÷ 30 Nm
14-15	Plate fastening bolts	25 ÷ 30 Nm
17	Nuts for flanged support	25 ÷ 30 Nm

- Remove the left and right side guards
- Remove the cutting deck.
- Disassemble the blade and extract the hub.

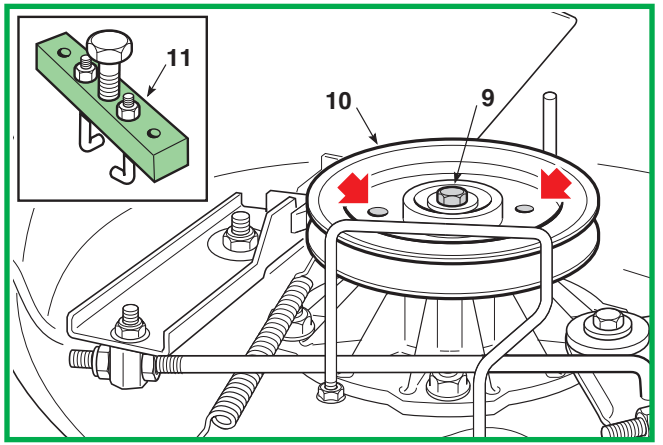
Loosen the two lower nuts (1) holding the belt guide (2) just enough to free the belt (3) from the pulley (4).



Unhook the spring (5) from the tooth (6) and move the lever (7) sideways with the blade brake shoe (8).

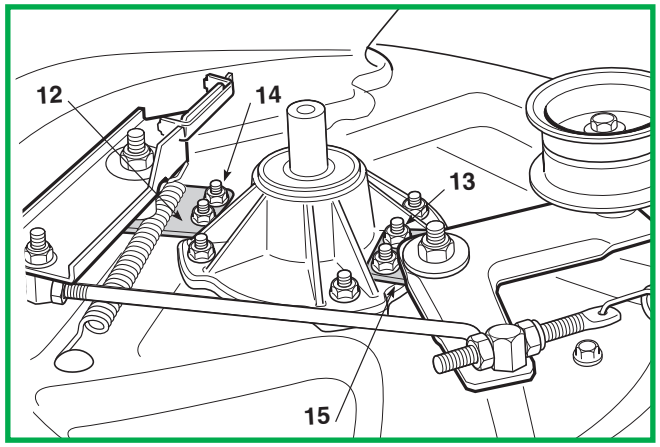
Unscrew the central screw (9) and disassemble the pulley (10).

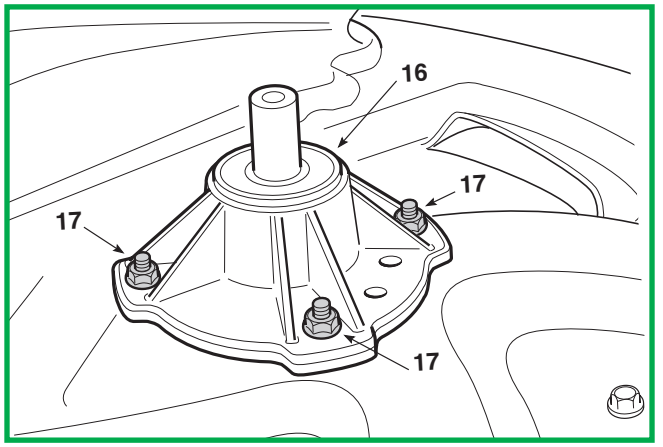
NOTE - Disassembling the pulley can be made easier using the specific extractor (11).



Remove the supporting plates of the blade brake (12) and the tightener (13) unscrewing the respective nuts (14) and (15).

Dismantle the flange support (16) by unscrewing the





MAP BACK

6.5.0 REPLACEMENT OF THE SUPPORT AND SHAFT OF THE BLADE

General informations:

Related topics:

[☛ 2.2] Tools
[☛ 4.7] Check on blade alignment
[☛ 4.8] Removing, sharpening and balancing the blade
[☛ 5.2] Removal of the side guards
[☛ 5.7] Removal of the cutting deck

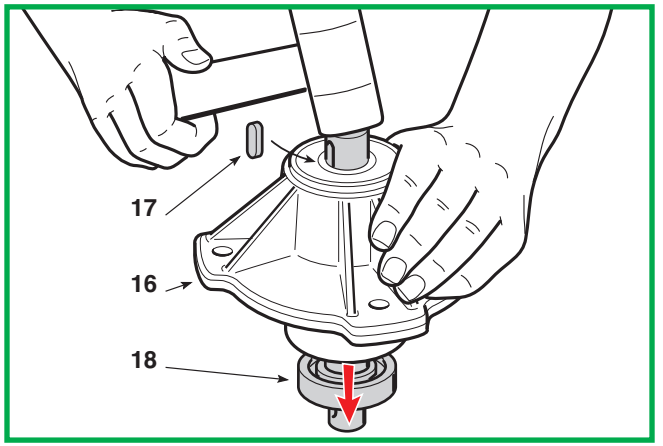
Tightening torques

9	Pulley tightener fixing screw	20 ÷ 30 Nm
14-15	Plate fastening bolts	25 ÷ 30 Nm
17	Nuts for flanged support	25 ÷ 30 Nm

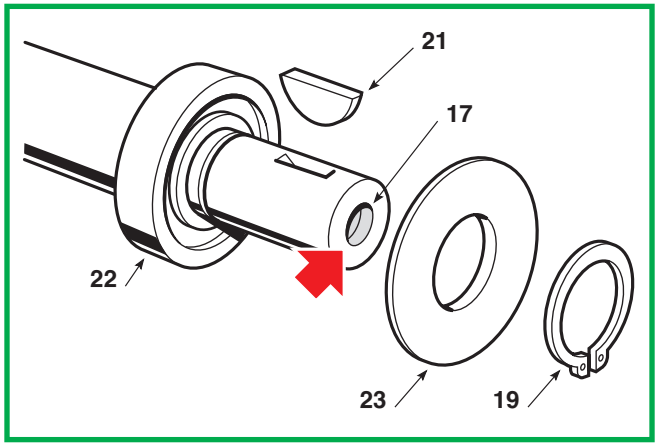
four fastening nuts (17).

The entire support (16), including shafts and bearings, is a spare part available as single assembly unit.

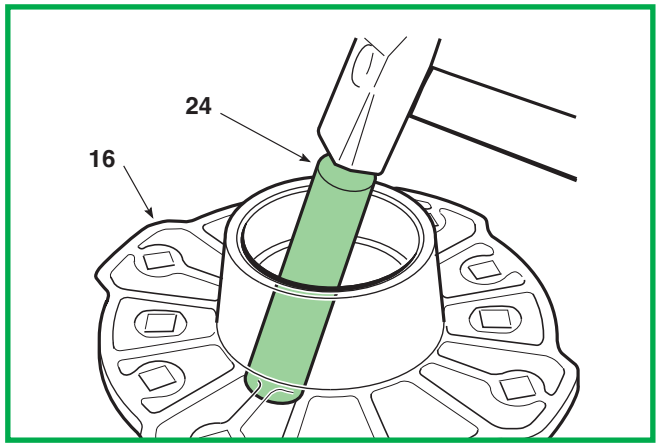
If you should want to just replace the shaft or bearings, remove the key (17) and hit the shaft with a plastic mallet on the pulley side in order to remove the shaft together with the lower bearing (18).



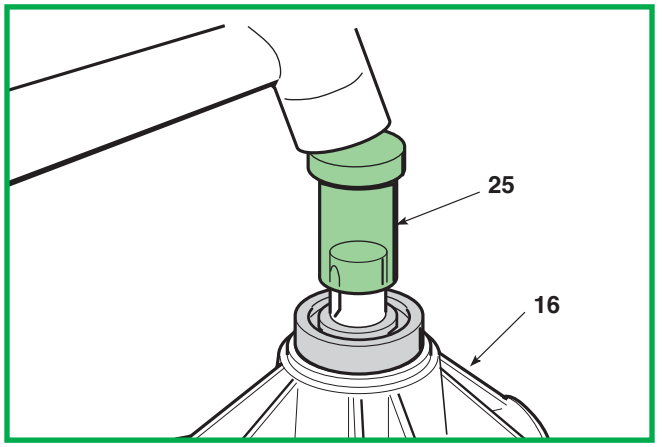
After having removed the snap ring (19), the dust cover (20) and the spline (21), the bearing (22) splined onto the shaft can be removed using a normal extractor, taking care to close up the threaded hole (23) with a screw to prevent the point of the extractor from damaging the thread.



The second bearing still in place must be removed by hitting it from the inside of the flange using a 12 ÷ 15 mm diameter round bar (24).



On reassembling, first put the shaft into the hole of the lower bearing and insert this into the support. Fit on the



6.5.0 REPLACEMENT OF THE SUPPORT AND SHAFT OF THE BLADE

General informations:

Related topics:

[☛ 2.2] Tools
[☛ 4.7] Check on blade alignment
[☛ 4.8] Removing, sharpening and balancing the blade
[☛ 5.2] Removal of the side guards
[☛ 5.7] Removal of the cutting deck

Tightening torques

9	Pulley tightener fixing screw	20 ÷ 30 Nm
14-15	Plate fastening bolts	25 ÷ 30 Nm
17	Nuts for flanged support	25 ÷ 30 Nm

upper bearing and, using the special bush (25) **which works on the inner ring**, hit it squarely with a mallet until the bearing is fully driven home.

Mount the support (16) on the deck, tightening the nuts (17).

If you should need to replace one or both plates (12) and (13), be careful over correct assembly position.

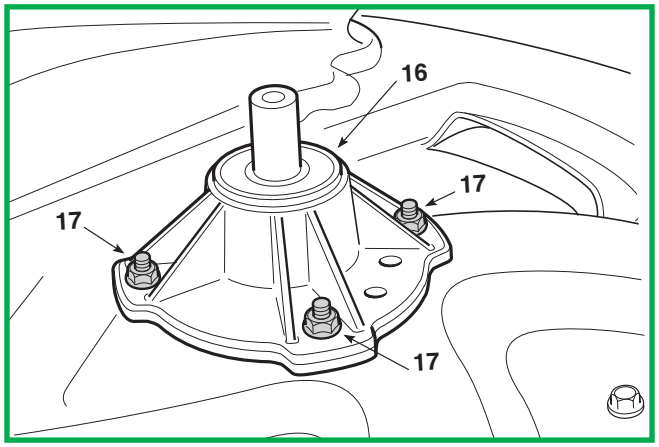
Per agevolare il riconoscimento, le piastre sono contrassegnate con:

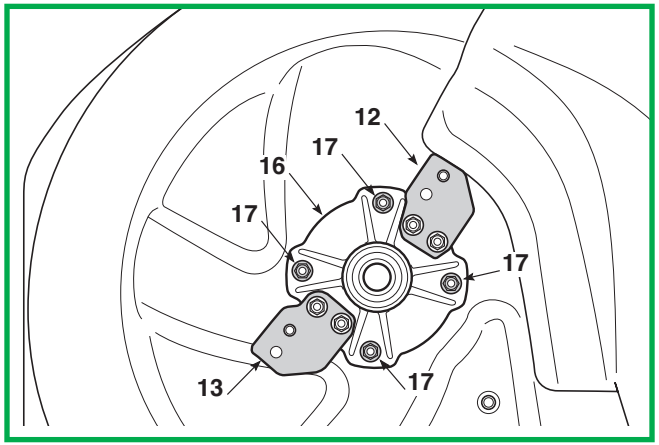
To help recognition, plates are marked with:

«B» = Plate supporting blade brake (12);
«T» = Plate supporting tightener (13).

On completion of assembly of the supports, ...

- Reassemble the hubs and start sharpening, balancing and assembling the blade.
- Remove the cutting deck.
- Reassemble the left and right side guards





WORKSHOP MANUAL

6.6.0 DISASSEMBLE THE STEERING COLUMN AND REPLACE BUSHES

General informations:

Related topics:

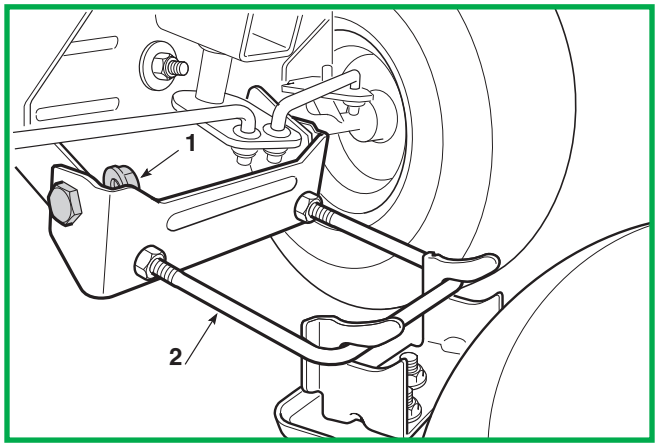
[☛ 5.1] Removal of steering column covers

Tightening torques

13	Screws fixing plate	13 ÷ 15 Nm

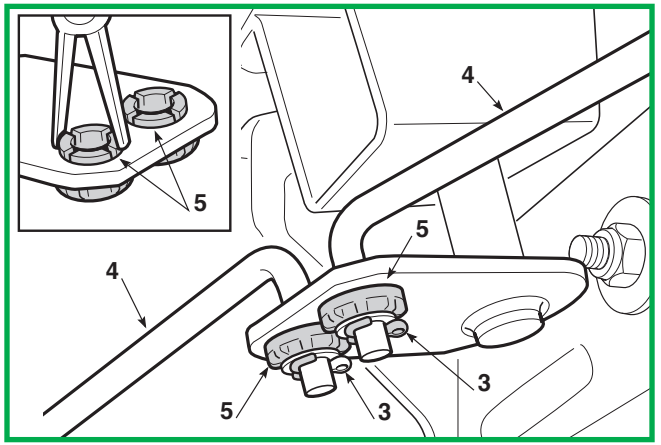
- Remove the steering column guards

Unscrew the two nuts (1) and remove the cutting deck's balance wheel (2), being careful that the deck's front part does not fall.



Remove the cotter pins (3) and extract the two terminals of the steering (4) tie-rods from the bushes (5).

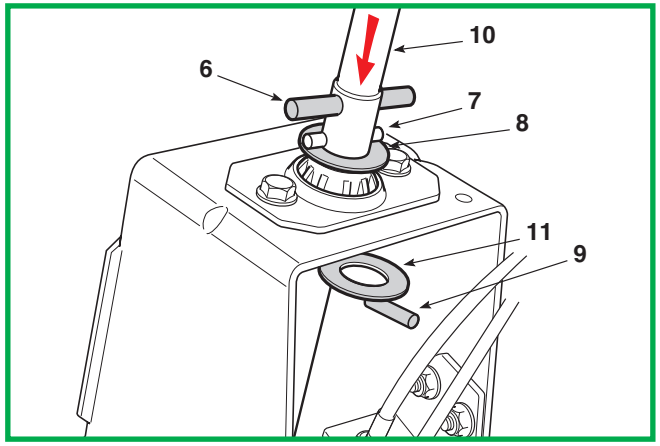
f the bushes (5) should need replacing due to excessive play, they can be extracted using pliers.

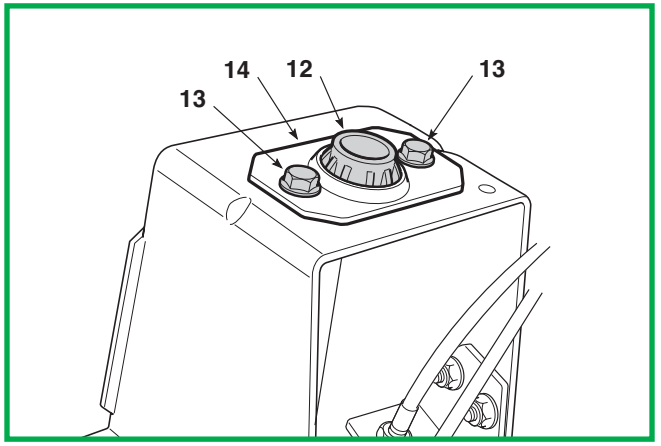


Extract the steering wheel pin (6), the upper pin (7) and remove the shoulder washer (8).

Extract the lower pin (9) and extract the column(10) making sure not to lose the shoulder washer (11).

To replace the upper bush (12), unscrew the two screws (13) holding the plate (14) and remove the bush.





6.6.0 DISASSEMBLE THE STEERING COLUMN AND REPLACE BUSHES

General informations:

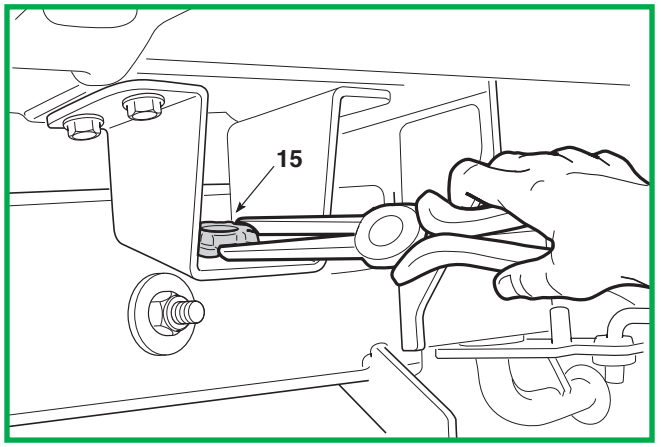
Related topics:

[☛ 5.1] Removal of steering column covers

Tightening torques

13	Screws fixing plate	13 ÷ 15 Nm

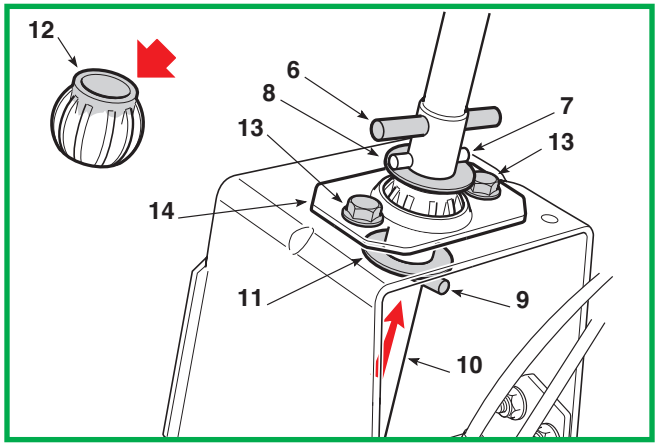
The lower bush (15) can be removed by extracting it from above, with pliers.



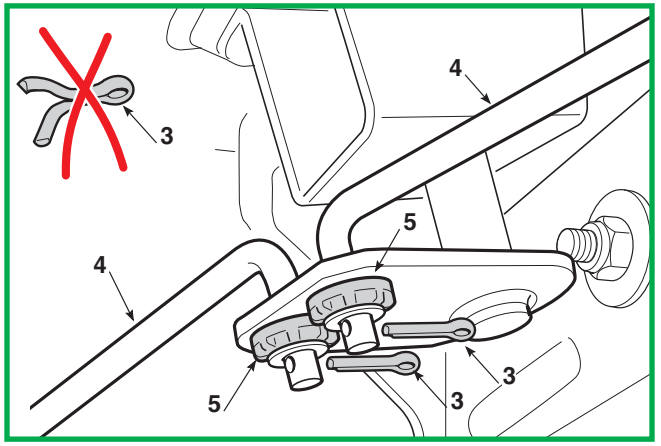
When mounting,

– make sure the upper bush (12) is mounted with the part sticking out upwards;
– refit the plate (14) without tightening the screws (13);
– reassemble the steering column (10) making sure to replace the shoulder washers (8) and (11), the three pins (6), (7), (9), so they remain centred with the steering column;
– fully tighten the two screws (12).

IMPORTANT - The cotter pins (3) must always be replaced for user safety reasons.



• Reassemble the steering column guards.



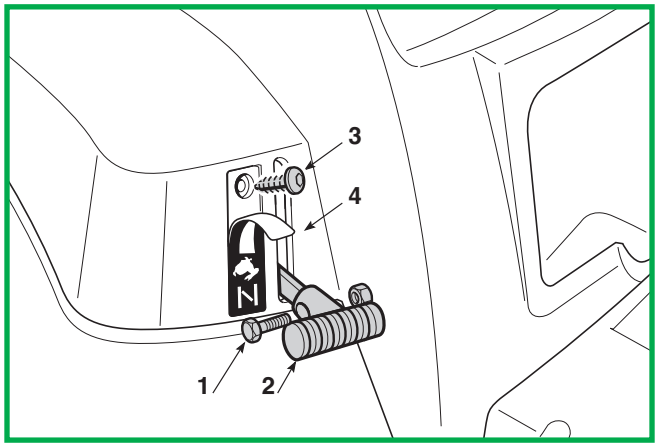
WORKSHOP MANUAL

6.7.0 - REPLACING THE ACCELERATOR AND ADJUSTING THE CARBURETTOR

General informations:

Related topics:

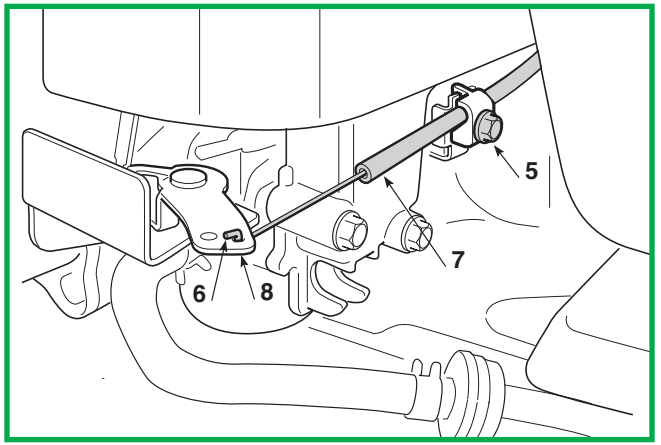
Unscrew the screw (1), disassemble the knob (2) and unscrew the two screws (3), on the adhesive label (4), holding the accelerator to the wheel cover.



From the engine side, loosen the terminal screw (5), disconnect the wire (7) terminal (6) from the lever (8) and remove the accelerator with the wire.

To assemble, put the accelerator lever in «MIN» and connect the wire (7) terminal (6) to the lever (8).

Move the lever (8) to the specific «MIN» position for each type of engine and indicated in the relevant instruction booklet. Then secure the wire (7) to the terminal (5).



⚠ When mounting, always replace the adhesive label (4), as its presence and integrity are fundamental for correct engine use.

6.8.0 REPLACEMENT OF THE LIFTING CABLE

General informations:

Related topics:

[☛ 4.6] Aligning the cutting deck

Put blocks beneath the cutting deck in line with the centre lines of the blades:

– at the front 26 mm (1)
– at the back 32 mm (2)

Put the height lever in position «1» and completely loosen the adjuster (3).

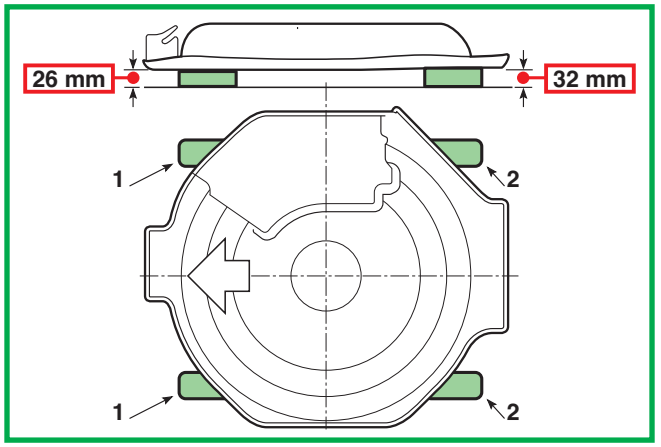
Unscrew the nut (4) and remove the drive pulley (5) to extract the cable (6).

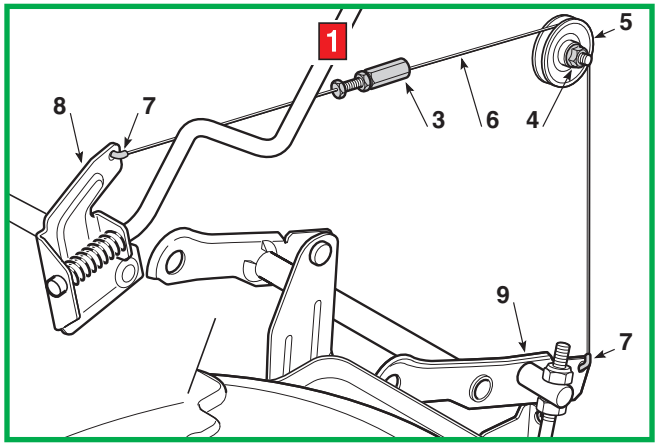
Unhook the end (7) of the cable (6) from the control lever (8) and from the plate's lifting lever (9) to remove the cable.

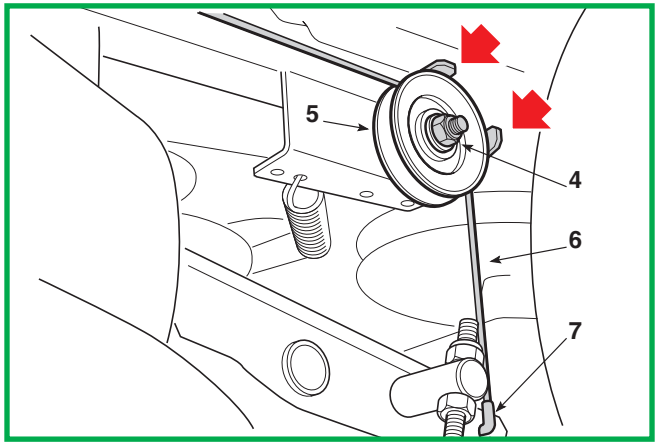
To assemble, follow the steps described in reverse order.

After restoring adjuster tension (3), the cutting deck should return to the alignment conditions previous to cable replacement. If this is not the case…

• Adjust the alignment of the deck.







WORKSHOP MANUAL

6.9.0 BRAKE CABLE REPLACEMENT

General informations:

Related topics:

[☛ 4.2] Brake adjustment
[☛ 5.1] Removal of steering column covers
[☛ 5.2] Removal of the wheel cover
[☛ 6.1] Replacement of tyres and wheels

- Remove the steering column's rear guard.

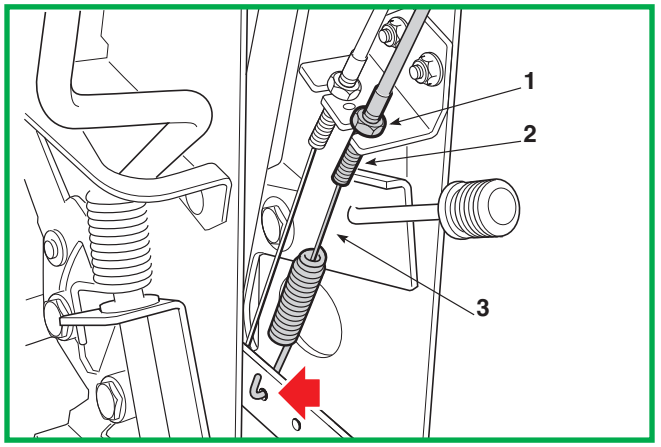
➤ ***mechanical drive models***

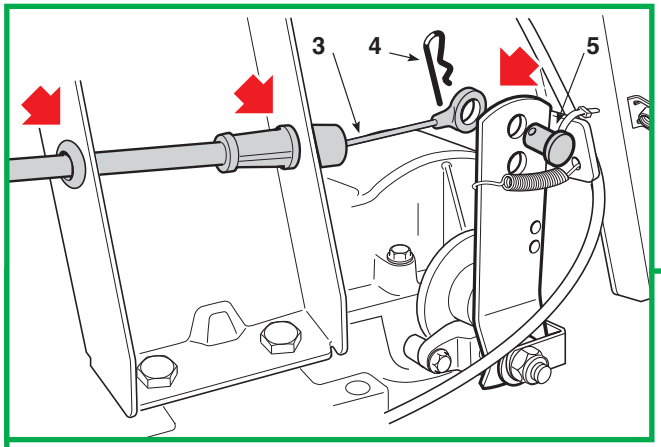
- Remove the left-hand rear wheel.

Loosen the nut (1) on the register (2) and disconnect the cable (3) terminal.

Unhook the cotter pin (4) and remove the pin (5) connecting the brake cable (3).

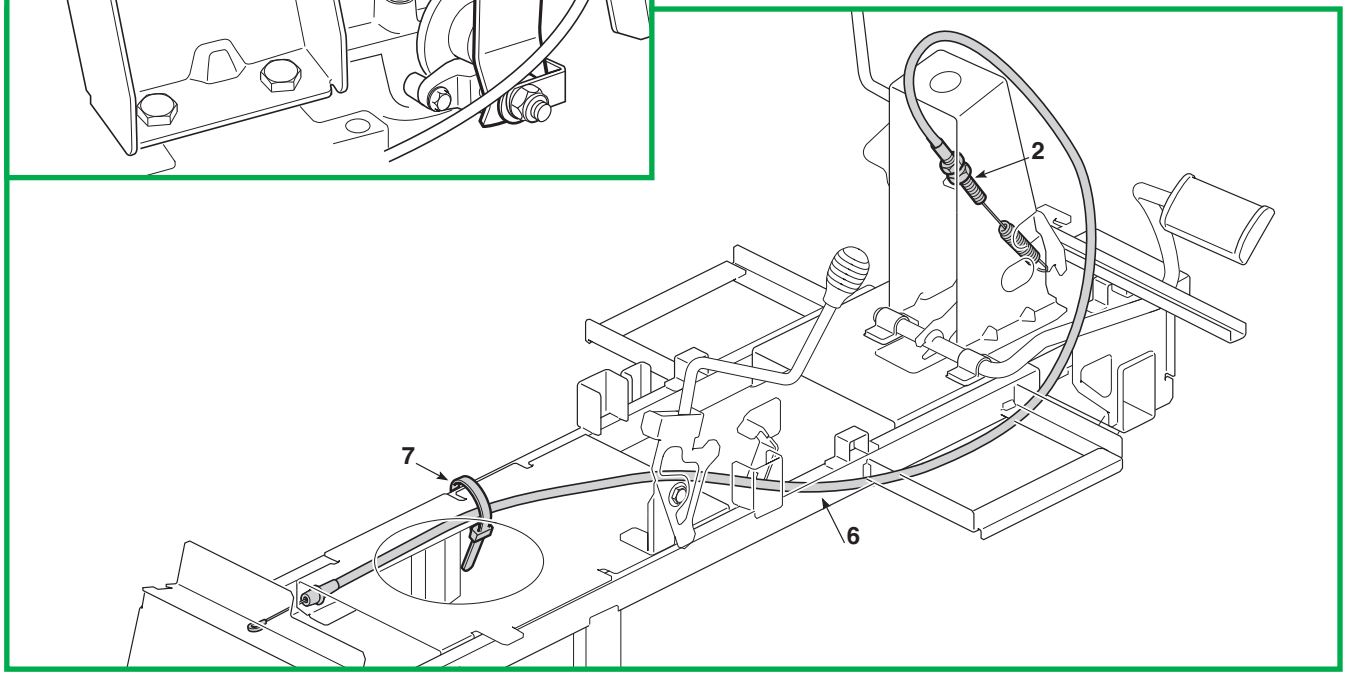
Remove the clamp (6) and extract the cable (3).





When mounting, restore the cable route (3) following layout instructions, making sure you replace the clamp (6).

- Reassemble the left-hand rear wheel.



WORKSHOP MANUAL

6.9.0 BRAKE CABLE REPLACEMENT

2 / 2

General informations:

Related topics:

[☛ 4.2] Brake adjustment
[☛ 5.1] Removal of steering column covers
[☛ 5.2] Removal of the wheel cover
[☛ 6.1] Replacement of tyres and wheels

MAP

➤ ***hydrostatic drive models***

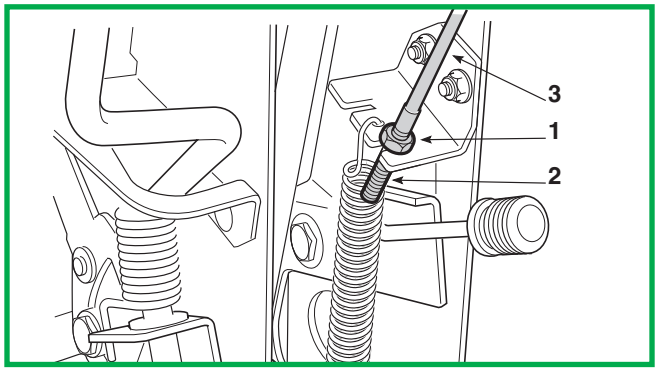
- Remove the right-hand guard.
- Remove the right-hand rear wheel.

Loosen the nut (1) and remove the cable (3) register (2).

Unscrew the two screws (11) and dismantle the brake cable (3) support (12) to be able to unhook the spring (13) from the lever (15) pin (14).

Remove the cable (3) from the support (12).
Remove the clamp (16) and extract the cable (3).

When mounting, restore the cable route (3) following layout instructions, making sure to hook the support cable (12) on again and replace the clamp (16).



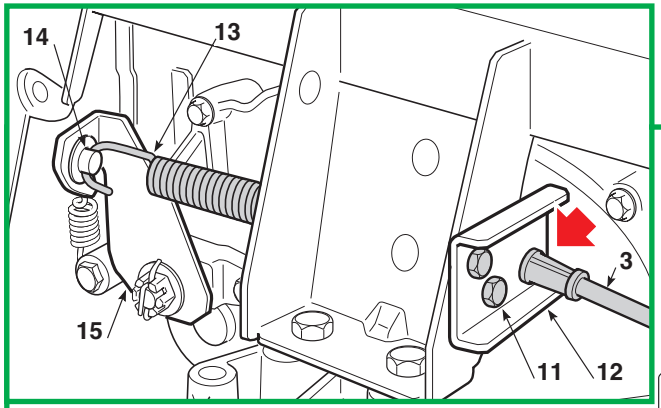
- Reassemble the right-hand guard.
- Reassemble the right-hand rear wheel.

After assembly,

- Reassemble the steering column's rear guard.

⚠

- Regulate the brake.



WORKSHOP MANUAL

6.10.0 REPLACING THE DRIVE ENGAGEMENT CABLE

General informations:

...

Related topics:

[☛ 4.4] Regulating the drive lever engagement cable
[☛ 5.1] Removal of steering column covers
[☛ 5.2] Removal of the side guards
[☛ 5.8] Removal of the discharge conveyor

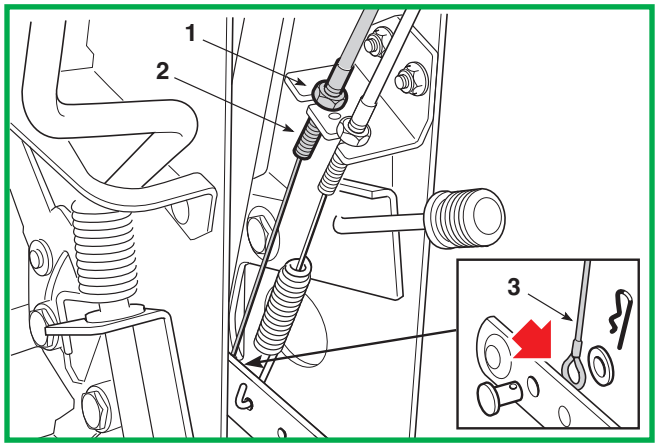
➤ *mechanical drive models*

- Remove the collector channel.
- Remove the steering column's rear guard.
- Remove the right-hand guard.

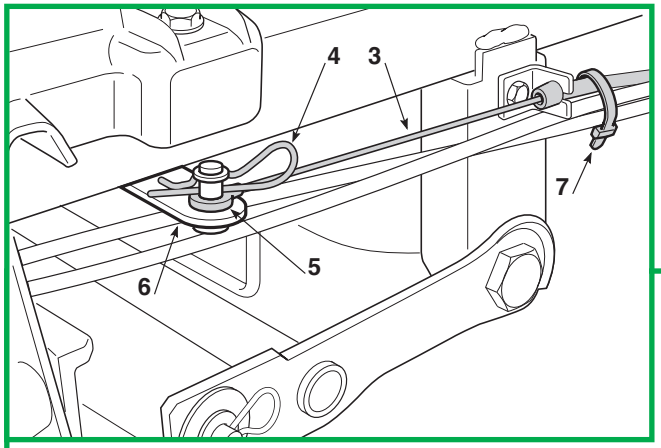
Loosen the nut (1) on the register (2) and disconnect the cable (3) terminal.

Unhook the cotter pin (4) and disconnect the eyelet (5) of the lever cable (6).

Remove the clamps (7) and (8) and extract the cable (3).
When mounting, restore the cable route (3) following

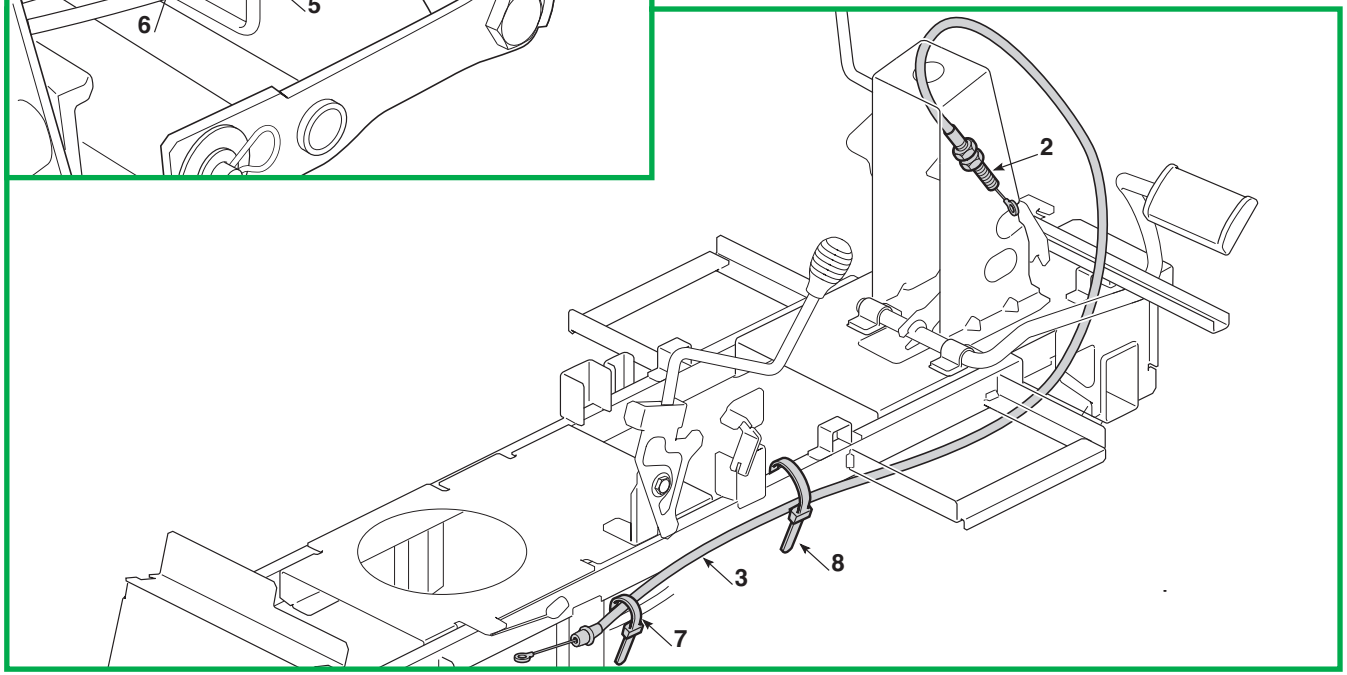


layout instructions, making sure you replace clamps (7) and (8).



- Reassemble the right-hand guard.
- Reassemble the steering column's rear guard.
- Reassemble the collector channel.

- Regulate the drive engagement cable.



WORKSHOP MANUAL

6.11.0 REPLACING THE BLADE ENGAGEMENT CABLE

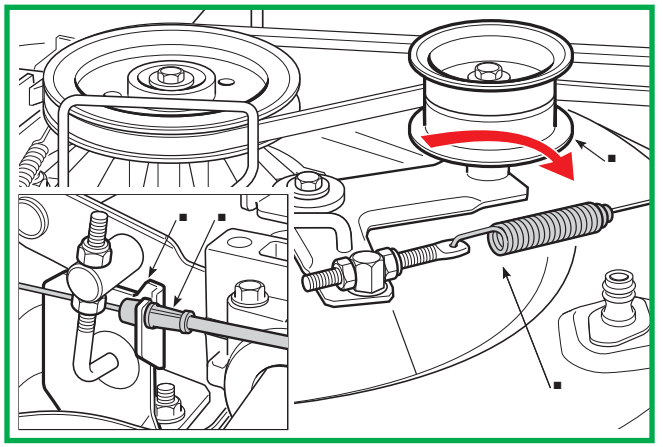
General informations:

...

Related topics:

[☛ 4.1] Adjusting the engagement and checking the blade brake
[☛ 5.1] Removal of steering column covers
[☛ 5.2] Removal of the side guards

- Remove the steering column's rear guard.
- Remove the left guards.

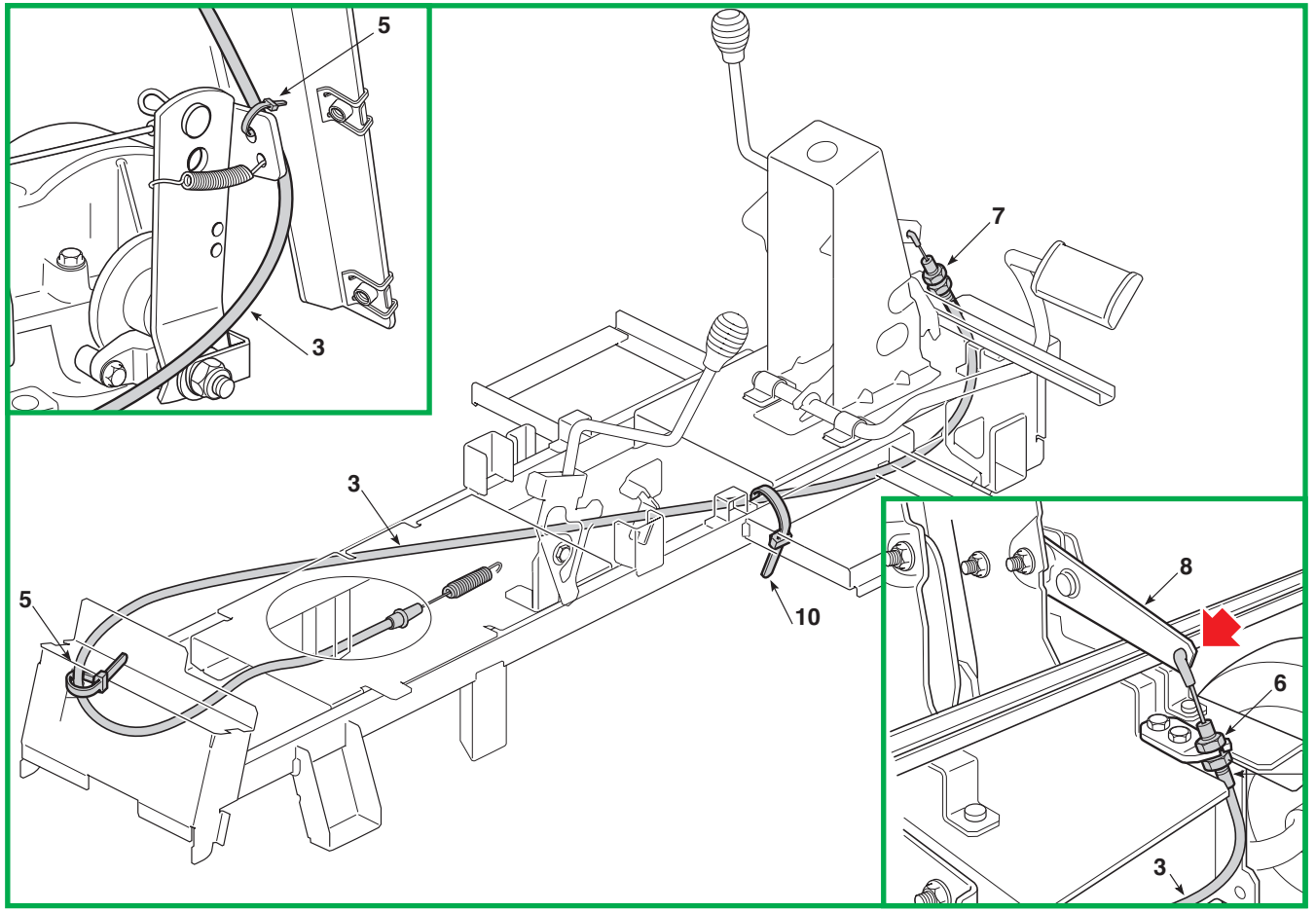


Move the tightener (1) by hand just enough to unhook the spring (2).

Using pliers, disconnect the cable (3) from the support (4).

Remove the clamp (5) and extract the cable (3).

Loosen the register (7) nut (6) and disconnect the ca-



WORKSHOP MANUAL

6.11.0 REPLACING THE BLADE ENGAGEMENT CABLE

General informations:

...

Related topics:

[☛ 4.1] Adjusting the engagement and checking the blade brake
[☛ 5.1] Removal of steering column covers
[☛ 5.2] Removal of the side guards

ble terminal (3) from the control lever (8) and from the supporting plate (9).

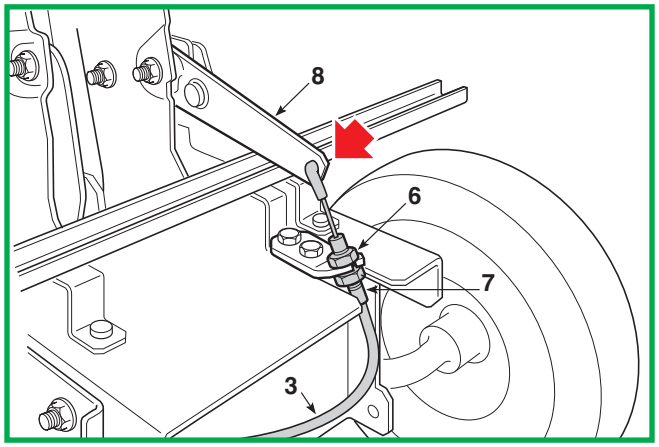
Remove the clamp (9) and extract the cable (3).

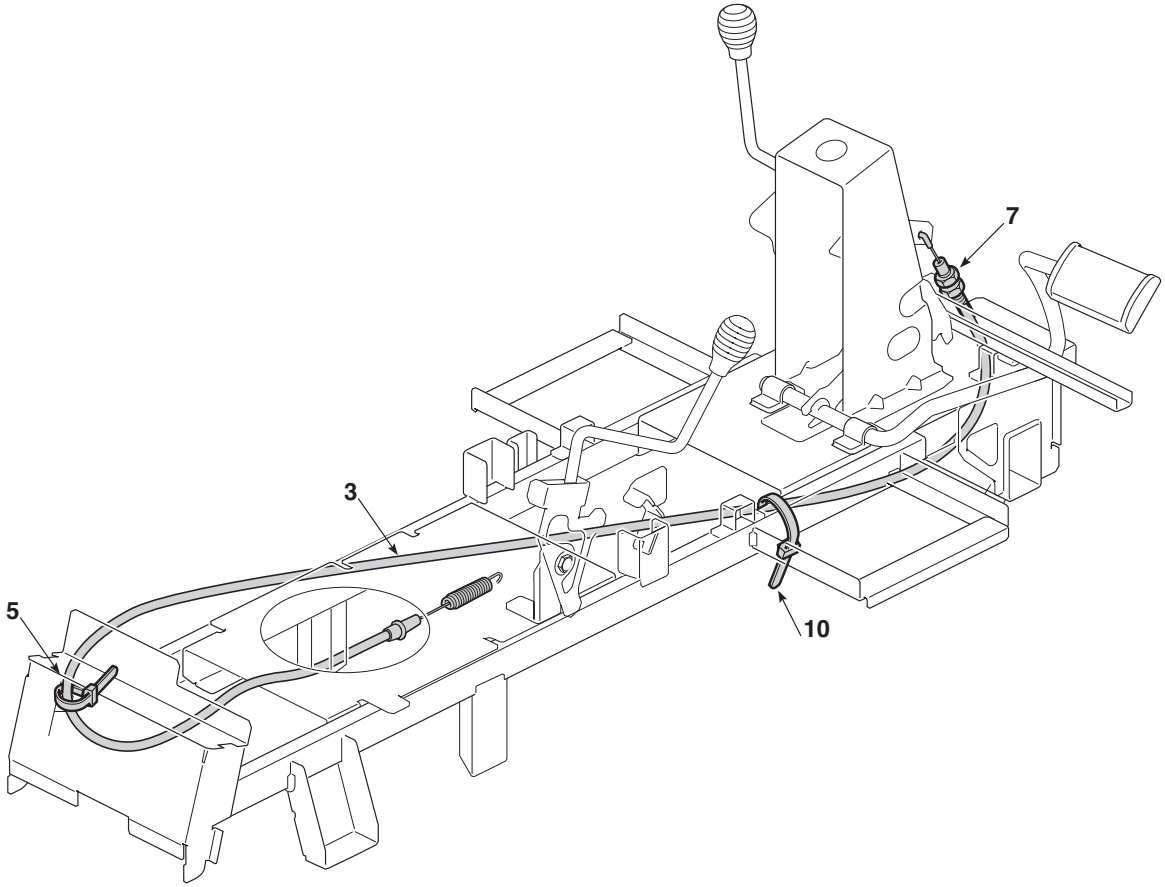
When mounting, restore the cable route (3) following layout instructions, making sure you replace clamps (5) and (9).

- Remove the left guards.
- Remove the steering column's rear guard.

⚠

- Regulate blade engagement and brake.





WORKSHOP MANUAL

6.12.0 REPLACING AND REGULATING THE GEAR CABLE

General informations:

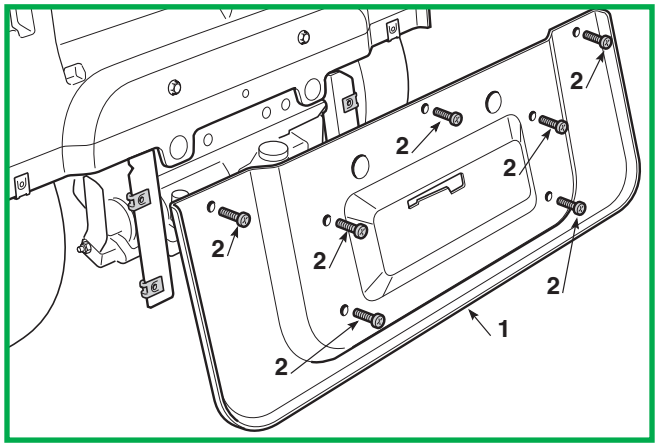
...

Related topics:

[☛ 5.3] Removal of the wheel cover
[☛ 5.8] Removal of the discharge conveyor

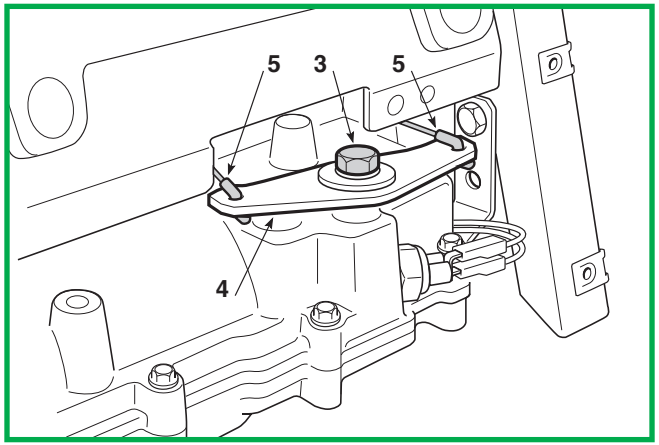
➤ *mechanical drive models*

- Remove the collector channel.
- Remove the right-hand side of the wheel cover.



Dismantle the lower part of the rear plate (1) fixed with 7 screws (2).

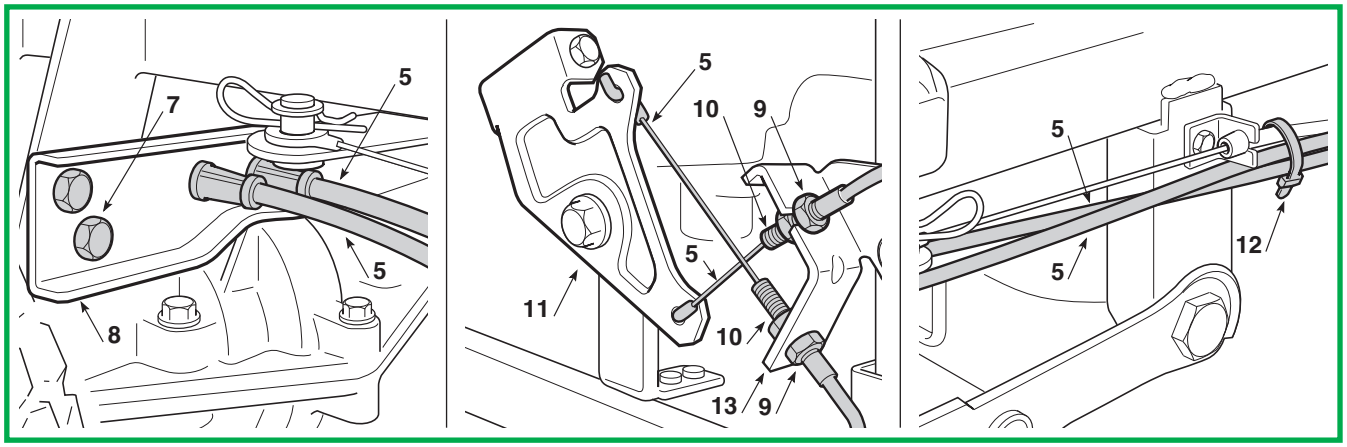
Unscrew the screw (3), dismantle the speed gear control lever (4) and disconnect the two cable terminals (5).



Unscrew the two screws (7), dismantle the supporting bracket (8) to facilitate the next operations and, using a pliers, disconnect the cables (5) from the bracket (8).

Loosen the nuts (9), remove the registers (10) and disconnect the cable terminals (5) from the lever (11).

Remove the clamp (12) and extract the cables (5).



6.12.0 REPLACING AND REGULATING THE GEAR CABLE

General informations:

...

Related topics:

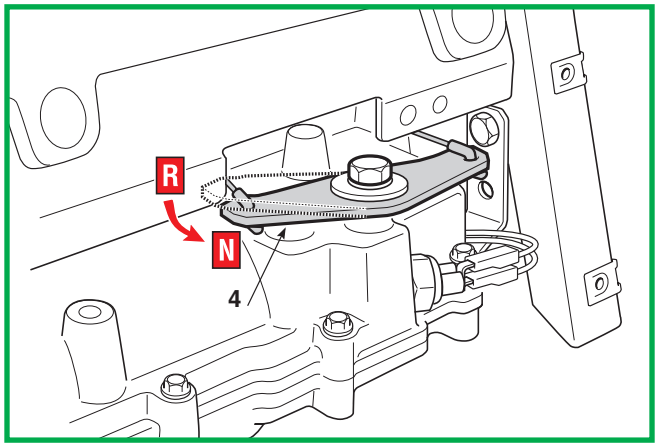
[☛ 5.3] Removal of the wheel cover
[☛ 5.8] Removal of the discharge conveyor

When mounting, restore the cable route (5) following layout instructions, complying with positions marked «F» and «R» on the lever (4), on the register bracket (13) and on the support (8), and making sure you replace the clamp (12).

- **Regulate the cables**

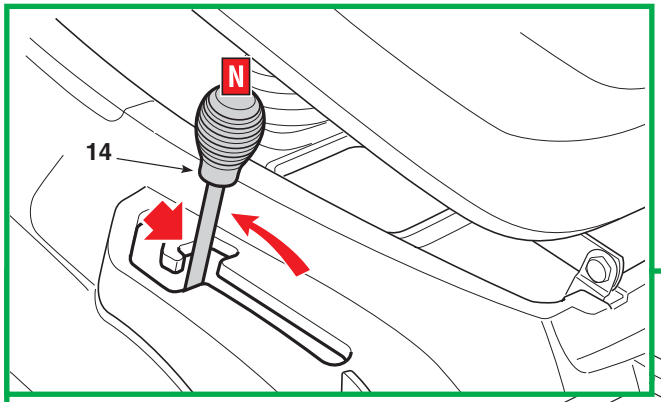
Move the left side of the lever (4) fully forward, corresponding to reverse gear «R» and then move it back a notch, corresponding to "neutral" «N» on the gear.

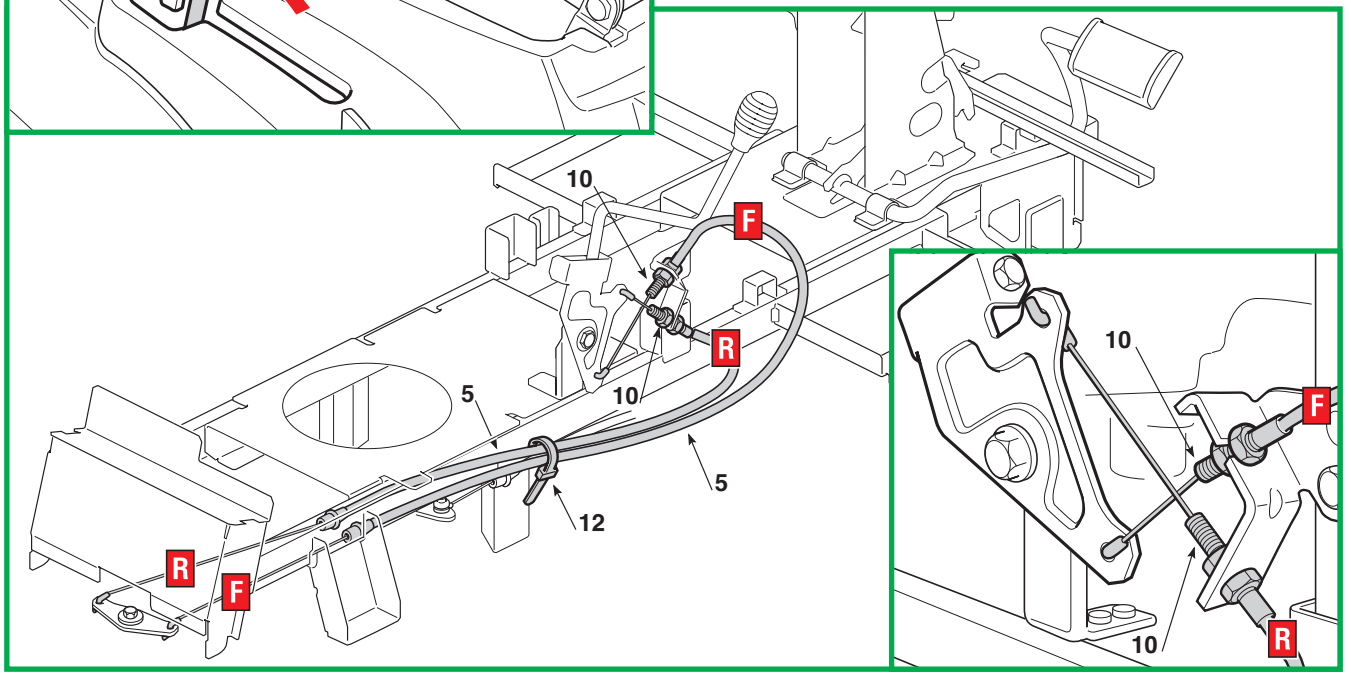
Move the gear lever (14) to «N» and move it slightly backwards without touching the plastic on the wheel cover.



Holding the lever (14) steady, adjust the registers (10) so that you tighten them both to the same extent, without them being too tight.

- Reassemble the right-hand side of the wheel cover.
- Reassemble the collector channel.





WORKSHOP MANUAL

6.13.0 REPLACEMENT OF THE BRAKE PADS AND DISC

General informations:

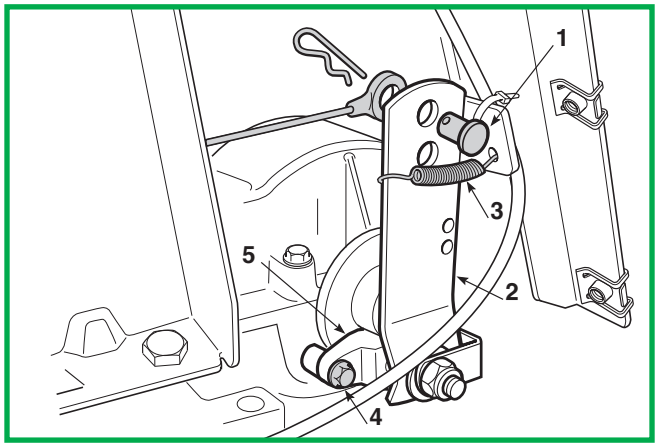
Related topics:

[☛ 4.2] Brake adjustment
[☛ 6.1] Replacement of tyres and wheels

➤ *mechanical drive models*

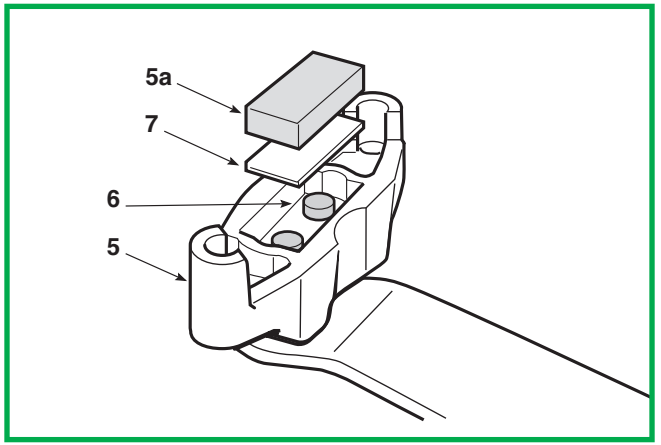
- Remove the left-hand rear wheel.

Remove the pin (1) on the brake cable from the lever (2), unhook the spring (3) and unscrew the two screws (4) holding the support (5).



The support (5) contains a pad (5a) separated from the control pistons (6) by a plate (7).

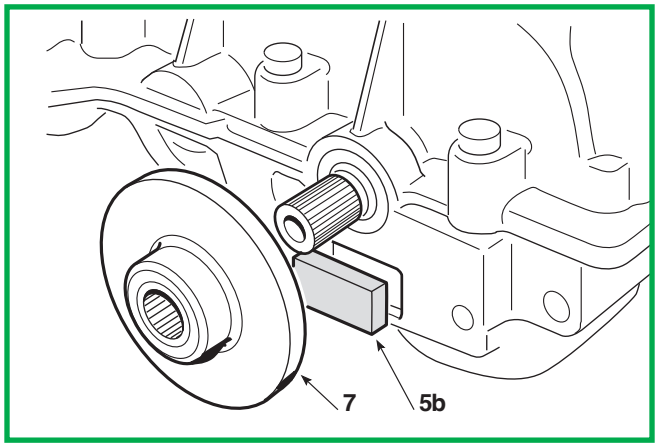
The other pad (5b) can be reached by taking off the disc (8).



If there is oil on the pads, clean with solvent and go over them with fine-grade abrasive paper.

⚠ Both pads should be replaced if the depth of either of them is less than 5 mm.

⚠ Renew the disc if it is damaged, distorted or less than 4 mm thick.



6.13.0 REPLACEMENT OF THE BRAKE PADS AND DISC

General informations:

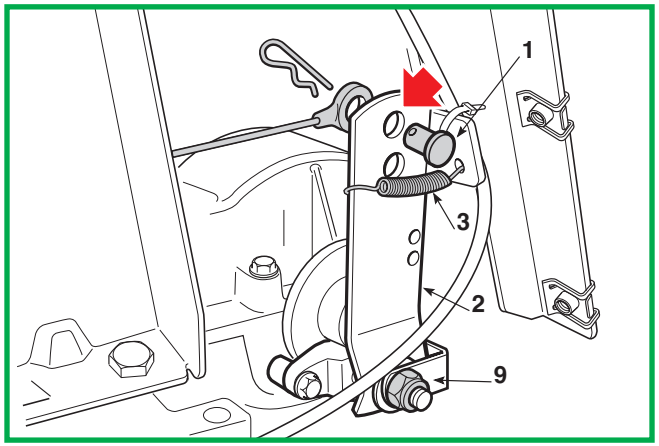
Related topics:

[☛ 4.2] Brake adjustment
[☛ 6.1] Replacement of tyres and wheels

On reassembly, carefully reposition all the components and refit the complete support.

When connecting the pin (1) take care to use the lever's (2) upper hole and to replace the spring (3).

NOTE
During all these operations it is better to not unscrew or loosen the central screw (9) to avoid altering the calibration of the cam driving the pistons.



If it has been moved, the lever's free movement will have to be checked.

When fully reassembled ...

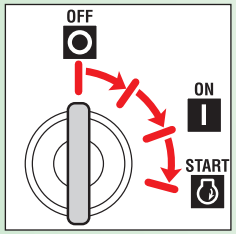
- Check the brake adjustment.

7.1.0 TROUBLESHOOTING OF THE ELECTRICAL SYSTEM

General informations:

In the following some of the problems connected to the malfunctioning of the electrical system are shown, with their probable cause and the remedial action to be taken. Should the problem continue after the appropriate checks, seek assistance from your local Service Centre.

Faulty electronic cards must always be replaced without trying to repair them or replace single components.



Related topics:

[☛ 7.2] Table for the cutting in of the safety devices
[☛ 7.3] Safety microswitches operation check
[☛ 7.4] Terminal board supply check
[☛ 7.5] Starter relay operation check
[☛ 7.6] Electronic card operation check
[☛ 7.7] Recharge circuit check
[☛ 7.8] Care and maintenance of the sealed battery
[☛ 7.9] Engine coil check

MAP BACK

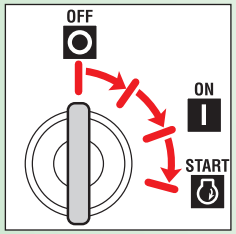
PROBLEM	CAUSE	REMEDY
➤ *In electric start models*		
1. With the key in the «START» position, the starter motor lacks power (poor starting)	The battery is not supplying enough current	Recharge the battery
	Badly earthed battery, or the starter relay or motor not earthed	Check and put right
	Starter relay is faulty	Check that the starter relay activates
2. With the key in the «START» position, the starter motor does not run	Starting not permitted	After checking that the conditions are met, check all the microswitches and the relative wiring
	Battery terminal crossed	Check connections. WARNING! In this case, the circuit board could be damaged and you need to replace it since it is no longer usable! The recharge circuit is damaged too.
	Starter relay is faulty	Check that the starter relay activates]
	The battery is not supplying the card	Check the connection cables and the battery connector
		Check the battery's condition
	Battery or card not earthed to frame	Check and put right
	10 A fuse blown	Replace fuse (10 A)
	Fault in the electronic card	Try replacing the card with one that is known to work
3. The starter motor runs but the engine does not start	No fuel flow	Check the stop cock and the fuel filter
	Impaired starter system	Check that spark plug caps are fastened correctly
		Check that the spark plug electrodes are clean and that the gap is correct
4. The starter motor continues to turn after engine has started, and does not stop when the key is removed	Mechanical difficulties with the contact breakers of the starter relay	Replace the starter relay
	Starter works erratically for mechanical or electrical reasons, taking excessive current and causing binding of relay contacts	Check the starter motor

7.1.0 TROUBLESHOOTING OF THE ELECTRICAL SYSTEM

General informations:

In the following some of the problems connected to the malfunctioning of the electrical system are shown, with their probable cause and the remedial action to be taken. Should the problem continue after the appropriate checks, seek assistance from your local Service Centre.

Faulty electronic cards must always be replaced without trying to repair them or replace single components.



Related topics:

[☛ 7.2] Table for the cutting in of the safety devices
[☛ 7.3] Safety microswitches operation check
[☛ 7.4] Terminal board supply check
[☛ 7.5] Starter relay operation check
[☛ 7.6] Electronic card operation check
[☛ 7.7] Recharge circuit check
[☛ 7.8] Care and maintenance of the sealed battery
[☛ 7.9] Engine coil check

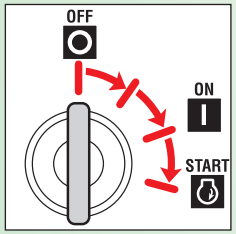
PROBLEM	CAUSE	REMEDY
5. The starter motor operates as soon as the key is in the «ON» position, and can be turned off only by removing the key	Fault in the card	Replace the card
	Starter block operating faults	Replace the block
6. The engine stops while in use	Insufficient charge	Check that the charging cable has not detached
		Check that there are no current leakages caused by cables with damaged insulation
		Check that the regulator is working properly
		Check the 10 A fuse
	The safety devices have cut in or are faulty	Check the functioning of the microswitches and their wiring
	Accidental disconnection of an electrical wire	Check all wiring
	Starting of engine not permitted	After checking that the conditions are met, check all the microswitches and their wiring
7. The 10 A fuse blows	Short circuit or overload on the power side of the electronic card (start-up unit, starter relay and recharger connectors)	Find and replace the defective user
	Faults in the battery charging circuit	Check that the regulator is working properly

7.1.0 TROUBLESHOOTING OF THE ELECTRICAL SYSTEM

General informations:

In the following some of the problems connected to the malfunctioning of the electrical system are shown, with their probable cause and the remedial action to be taken. Should the problem continue after the appropriate checks, seek assistance from your local Service Centre.

Faulty electronic cards must always be replaced without trying to repair them or replace single components.



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[☛ 7.3] Safety microswitches operation check
[☛ 7.4] Terminal board supply check
[☛ 7.5] Starter relay operation check
[☛ 7.6] Electronic card operation check
[☛ 7.7] Recharge circuit check
[☛ 7.8] Care and maintenance of the sealed battery
[☛ 7.9] Engine coil check

PROBLEM	CAUSE	REMEDY
➤ *In manual start models*		
11. The engine does not start	Starting not permitted	After checking that the conditions are met, check all the microswitches and their wiring
	Malfunction in the electronic card	Try replacing the card with one that is known to work
	No fuel flow	Check the stop cock and the fuel filter
	Impaired starter system	Check that spark plug caps are fastened correctly
		Check that the spark plug electrodes are clean and that the gap is correct
	Engine coil malfunctioning	Check
12. The engine stops while in use	The safety devices have cut in or are faulty	Check the microswitch's operation and the relevant wiring
	Accidental disconnection of an electrical wire	Check all wiring
	Starting of engine not permitted	After checking that the conditions are met, check all the microswitches and the relative wiring

7.2.0 TABLE FOR THE CUTTING IN OF THE SAFETY DEVICES

General informations:

Related topics:

[☛ 7.3] Safety microswitches operation check

MAP BACK

⚠ The following tables show the various situations in which the safety devices intervene.

–/– = Uninfluential

➤ *In electric start models*

A) STARTING («START» position)

OPERATOR	GRASS-CATCHER	BLADE	TRANSMISSION	PARKING	ENGINE
Absent	–/–	–/–	–/–	**Disengaged**	Does NOT start
–/–	–/–	–/–	**Engaged**	–/–	Does NOT start
–/–	–/–	**Engaged**	–/–	–/–	Does NOT start

B) WHILE CUTTING

OPERATORE	GRASS-CATCHER	BLADE	TRANSMISSION	PARKING	ENGINE
Absent	–/–	–/–	**Engaged**	–/–	Stops
Absent	–/–	**Engaged**	–/–	–/–	Stops
Absent	–/–	–/–	–/–	**Disengaged**	Stops
–/–	**Missing**	**Engaged**	–/–	–/–	Stops
–/–	–/–	**Engaged**	–/–	**Engaged**	Stops
–/–	–/–	–/–	**Engaged**	**Engaged**	Stops

➤ *In manual start models*

A) STARTING («START» position)

OPERATOR	GRASS-CATCHER	BLADE	TRANSMISSION	PARKING	ENGINE
Absent	–/–	**Engaged**	–/–	–/–	Does NOT start
–/–	–/–	–/–	**Engaged**	–/–	Does NOT start
–/–	**Missing**	**Engaged**	–/–	–/–	Does NOT start
–/–	–/–	**Engaged**	–/–	**Engaged**	Does NOT start

B) WHILE CUTTING

OPERATOR	GRASS-CATCHER	BLADE	TRANSMISSION	PARKING	ENGINE
Absent	–/–	–/–	**Engaged**	–/–	Stops
Absent	–/–	**Engaged**	–/–	–/–	Stops
–/–	**Missing**	**Engaged**	–/–	–/–	Stops
–/–	–/–	**Engaged**	–/–	**Engaged**	Stops

7.3.0 SAFETY MICROSWITCHES OPERATION CHECK

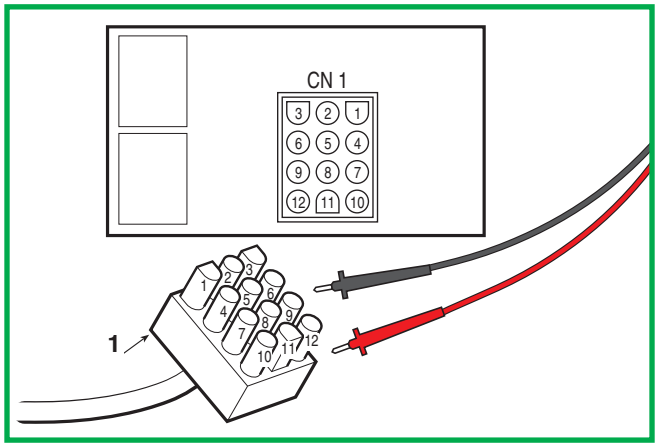
General informations:

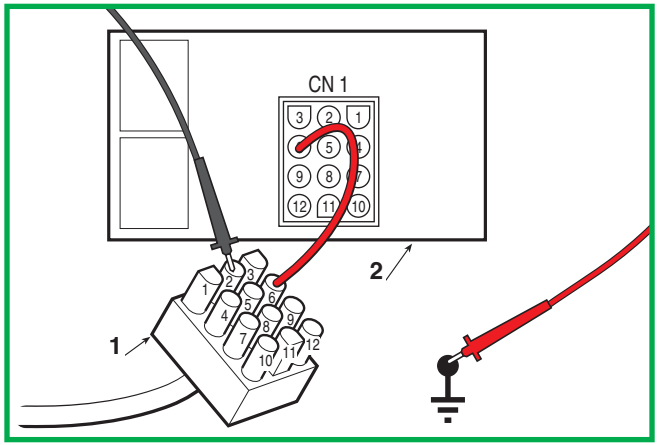
Related topics:

➤ ***in electric start models***

This check is made by detaching all the connectors and using the Ohm-meter tester. This operation should be done without the driver on board, by making contact with the ferrules on the contacts of the wiring connector (1) and should give this result:

N° Contacts	Tester reading and condition	
"GRASS-CATCHER ATTACHED" MICROSWITCH		
1 - 6 (CN1)	∞ (without g. catcher)	O (with g. catcher)
SEAT MICROSWITCH		
7 - 6 (CN1)	∞ (absent)	O (seated)
PARKING MICROSWITCH		
5 - 6 (CN1)	O (out)	∞ (engaged)
BLADE MICROSWITCH		
4 - 6 (CN1)	∞ (engaged)	O (disengaged)
"IN NEUTRAL" SIGNALLER		
8 - 4 (CN1)	∞ (drive)	O (neutral)
STARTER UNIT		
+ Battery - 10	∞ (OFF)	O (ON)	O (START)
+ Battery - 11	∞ (OFF)	∞ (ON)	O (START)





ENGINE STOP

This operation must be done by making a bridge between contacts 6 (CN1) of the wiring connector (1) and the card connectors (2), so making contact with the ferrules of the electronic card (2). You should obtain the following result:

N° Contacts	Tester reading and condition
2 - Earthing to frame	O (Always)

7.3.0 SAFETY MICROSWITCHES OPERATION CHECK

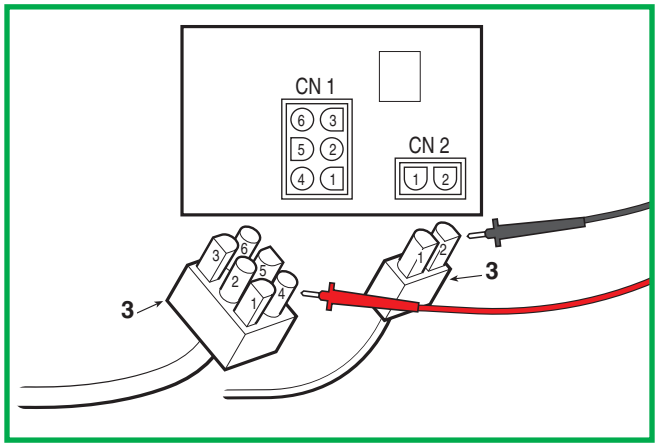
General informations:

Related topics:

➤ ***in manual start models***

This check is made by detaching all the connectors and by using the Ohm-meter tester. This operation should be done without the driver on board, by making contact with the ferrules on the contacts of the wiring connectors (3) and should give this result:

N° Contacts	Tester reading and condition	
"GRASS-CATCHER ATTACHED" MICROSWITCH		
1 - 3 (CN1)	∞ (without g. catcher)	O (with g. catcher)
SEAT MICROSWITCH		
1 - 5 (CN1)	∞ (absent)	O (seated)
PARKING MICROSWITCH		
1 (CN1) - 2 (CN2)	O (out)	∞ (engaged)
BLADE MICROSWITCH		
1 - 6 (CN1)	∞ (engaged)	O (disengaged)
"IN NEUTRAL" SIGNALLER		
1 - 4 (CN1)	∞ (drive)	O (neutral)



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7.4.0 TERMINAL BOARD SUPPLY CHECK

General informations:

Related topics:

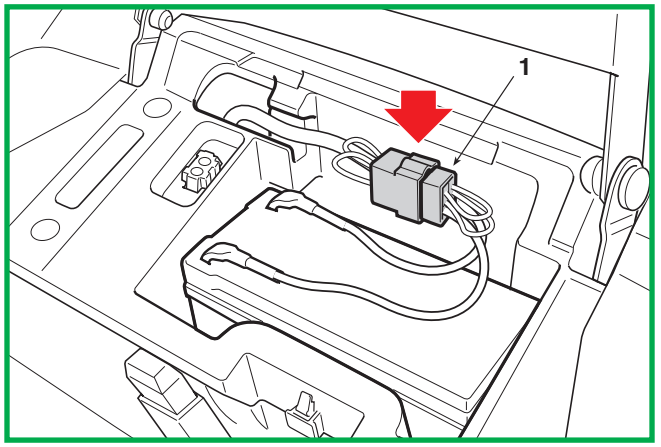
➤ ***in electric start models***

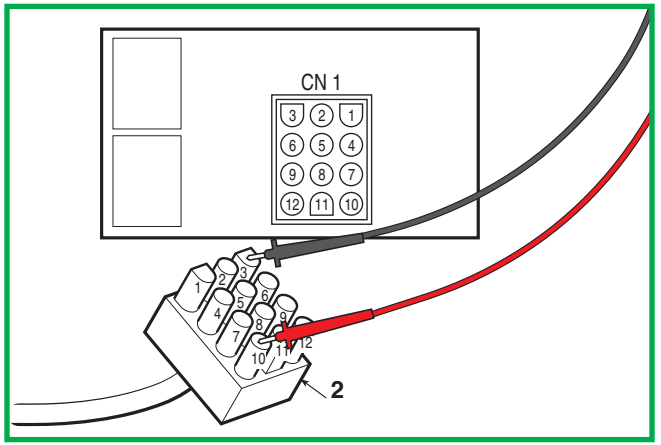
Check that the battery connector (1) is connected correctly.

– The key in the «ON» position

This check is done with the Voltmeter tester (Volt DC 0 - 20), with the red ferrule on terminal 10 and the black one on terminal 6 of the wiring connector (2).

The reading shows the battery voltage, which should never go below 11 Volts.





7.5.0 STARTER RELAY OPERATION CHECK

General informations:

Related topics:

➤ *in electric start models*

WARNING! - Remove the cap of the sparking plug, since the safety systems that normally prevent accidental starting of the engine are cut out when the checking procedure is carried out.

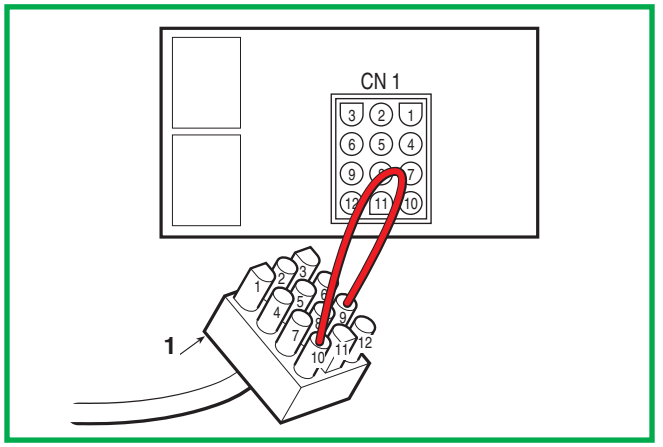
To do this requires:

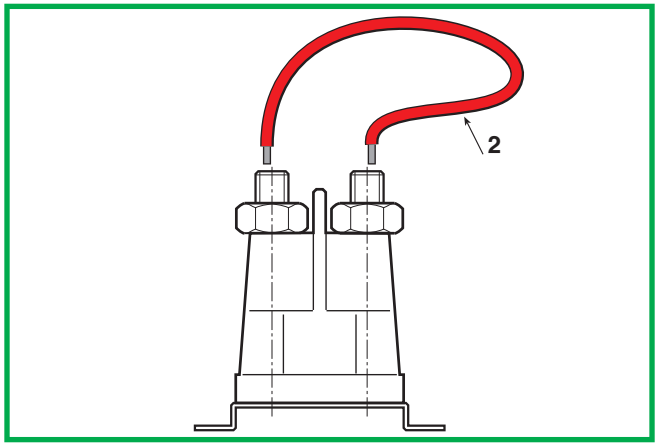
– engaging the parking brake;
– disengaging the blade;
– the key in the «ON» position.

Disconnect connector CN1. On making a bridge between terminals 10 and 9 of the wiring connector (1), you should hear the click of the relay bobbin and the starter motor should come into action.

If the relay clicks but the starter motor does not go, make a bridge (2) with a large section cable (5 mm^2) between the power contacts of the relay.

If the starter motor comes into operation, look for the fault in the relay or replace it.





7.6.0 ELECTRONIC CARD OPERATION CHECK

General informations:

Related topics:

➤ *in electric start models*

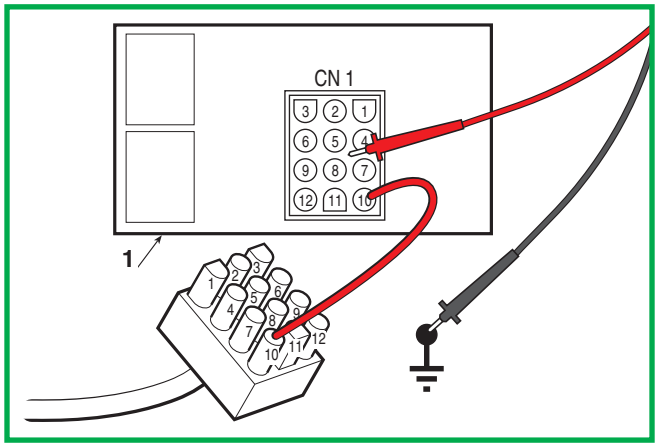
Safety and service supply check

This check is done by positioning a jumper between terminal 10 of the wiring (2) and terminal 10 of the card (1) in order to supply power to the card.

– The key in the «ON» position.

With the Voltmeter tester (Volt DC 0 ÷ 20), earth the black ferrule and the red one on terminals 4-5-7-8 of the wiring connector (1). In every case, the tester should indicate the battery's voltage.

This value should never go under 11 Volts.



7.7.0 RECHARGE CIRCUIT CHECK

General informations:

Related topics:

[☛ 7.8] Care and maintenance of the sealed battery

➤ *in electric start models*

The job of the charge system is to supply a flow of current to the battery at a maximum voltage of 14.7 Volts; a defective system might not charge the battery correctly (requiring frequent charging).

Before checking the recharge circuit, make sure that:

– the connections are correct;
– the earth connections are firmly attached;
– the battery is charged and not sulphated [see 7.8];
– the fuse is not blown.

Checking the lower charging limit

Start the engine and keep it running at a minimum. With the voltmeter tester, measure the voltage at the battery terminals. If the value does not rise but tends to fall, even slowly, it means that the regulator is not charging sufficiently and must be replaced.

If the voltmeter shows no value it means that the fuse is blown.

7.8.0 CARE AND MAINTENANCE OF THE SEALED BATTERY

General informations:

Related topics:

➤ *in electric start models*

A) General information

In a sealed “dual” battery, the electrolyte for each element is carefully measured out during manufacture and sealed at source, in order to ensure maximum performance during the battery’s entire life.

With a battery of this type, it is not necessary to add water or acid, and the cover must never be opened or removed.

B) Recommendations for correct use

To keep the battery performing at optimum levels and to increase its life, various precautions should be taken:

– always keep the battery fully charged;

– always recharge a flat battery within 1 month, otherwise the elements could be damaged and no longer able to take the charge (sulphated);

– always recharge the battery before and after periods of prolonged inactivity or storage.

C) Rules for recharging the battery

Recharging is a particularly important operation for the life of the battery and must be carried out according to these instructions:

– do not recharge the battery when its case is broken or damaged;

– carefully read the instructions for using the battery charger and the battery;

– use the appropriate battery charger;

– recharge at a room temperature of between 10° and 30°C;

– check that the battery does not heat to beyond 50°C while recharging. If it should do so, stop recharging immediately and dispose of the battery since it will be unusable.

With the battery disconnected (and at rest for at least 12 hours) and the tester in voltmeter function, measure the voltage between the terminals. The amount given (open circuit voltage) gives an indication of the operations to be carried out, as per the following table:

Battery voltage with open circuit	Battery state	Operation to be carried out
> 12,6 Volt	Fully charged	None
< 12,4 Volt	Low charge	Recharge

Check the battery voltage at least 12-24 hours after recharging.

7.9.0 ENGINE COIL CHECK

General informations:

This control is needed when the engine does not start and aims to contain and identify causes.

Related topics:

[☛ 4.8] Removing, sharpening and balancing the blade
[☛ 6.3] Replacement of the drive belt
[☛ 6.4] Replacement of the blades belt
[☛ 8.2] Belts assembly

If the engine does not start, check engine coil operations.

WARNING! - This procedure inhibits all safety systems so it is best to:

- **disassemble the blade;**
- **release the two belts from their respective pulleys.**

Remove the brown cable powering the circuit board (connected to the engine) and try to start the engine.

If the engine starts, the problem is probably in the wiring, in the micro-switches or in the electronic circuit board.

If it does not start, the problem could be with the engine coil or be another cause in the engine.

WARNING! - Reconnect the brown cable to reconnect safety devices.

- Reassemble belts and blade

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7.10.0 FITTING SAFETY MICROSWITCHES

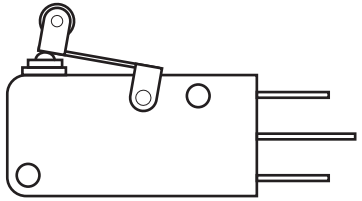
General informations:

Related topics:

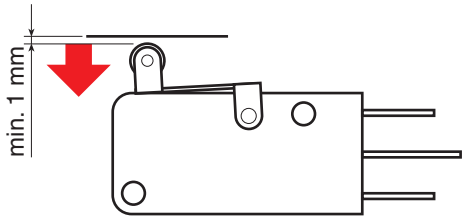
IMPORTANT

If the microswitches are to function correctly, it is important to follow the exact assembly positions by referring to the drawings that indicate the various usages of each type.

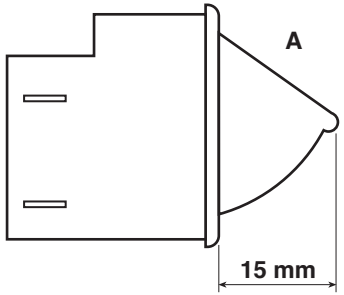
A = Free
B = Activated

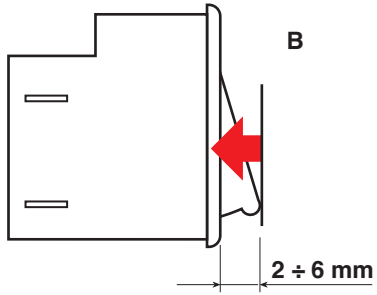


A



B





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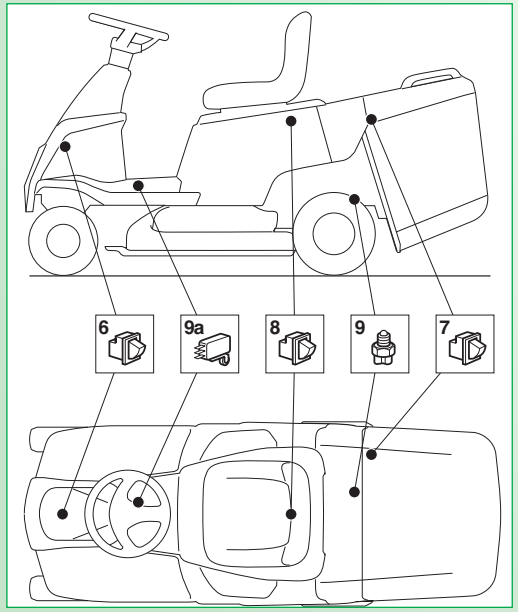
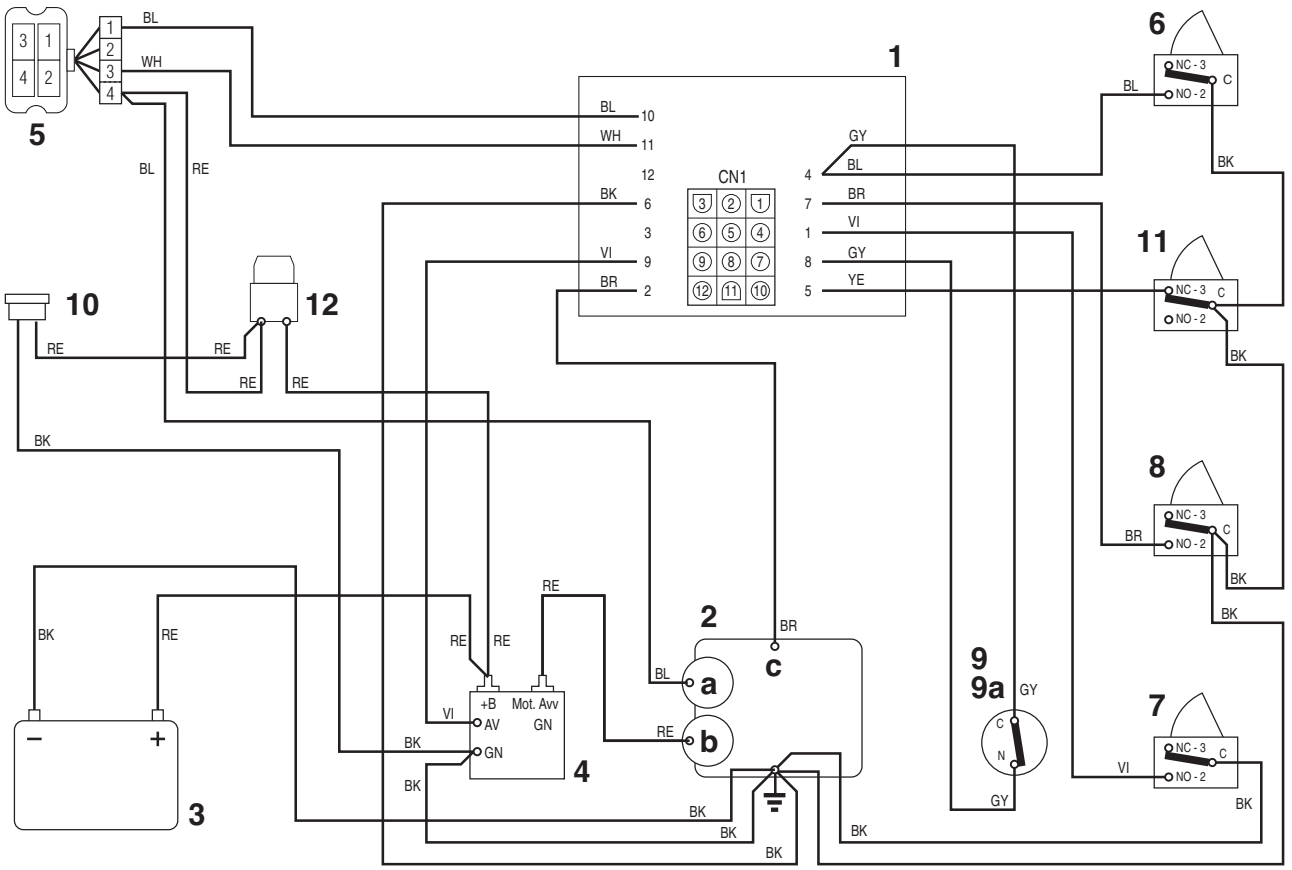
7.11.0 ELECTRICAL DIAGRAMS

General informations:

Related topics:



➤ *electric start models*



1	Electronic card
2	Engine
2a	Generator
2b	Starter motor
2c	Motor stop
3	Battery
4	Starter relay
5	Key ignition switch
6	Blade microswitch
7	Grass-catcher microswitch
8	Seat microswitch
9	Neutral microswitch
	(➤ mechanical drive models)
9a	Neutral microswitch
	(➤ hydrostatic drive models)
10	Recharger connector
11	Brake microswitch
12	Fuse (10 A)

CABLE COLOURS

BK	Black
BL	Blue
BR	Brown
GY	Grey
RE	Red
VI	Violet
WH	White
YE	Yellow

MAP BACK

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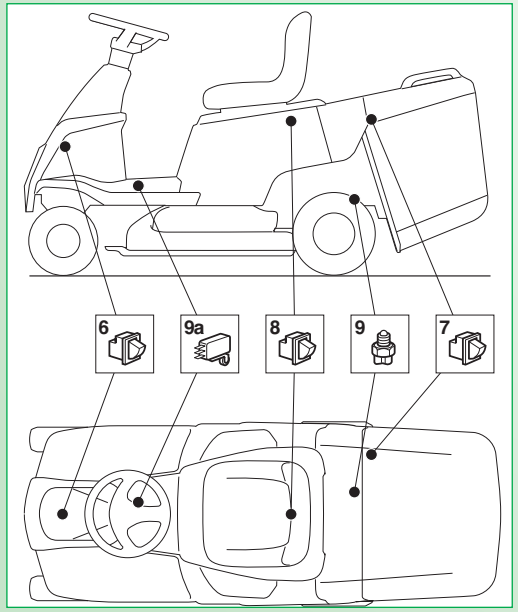
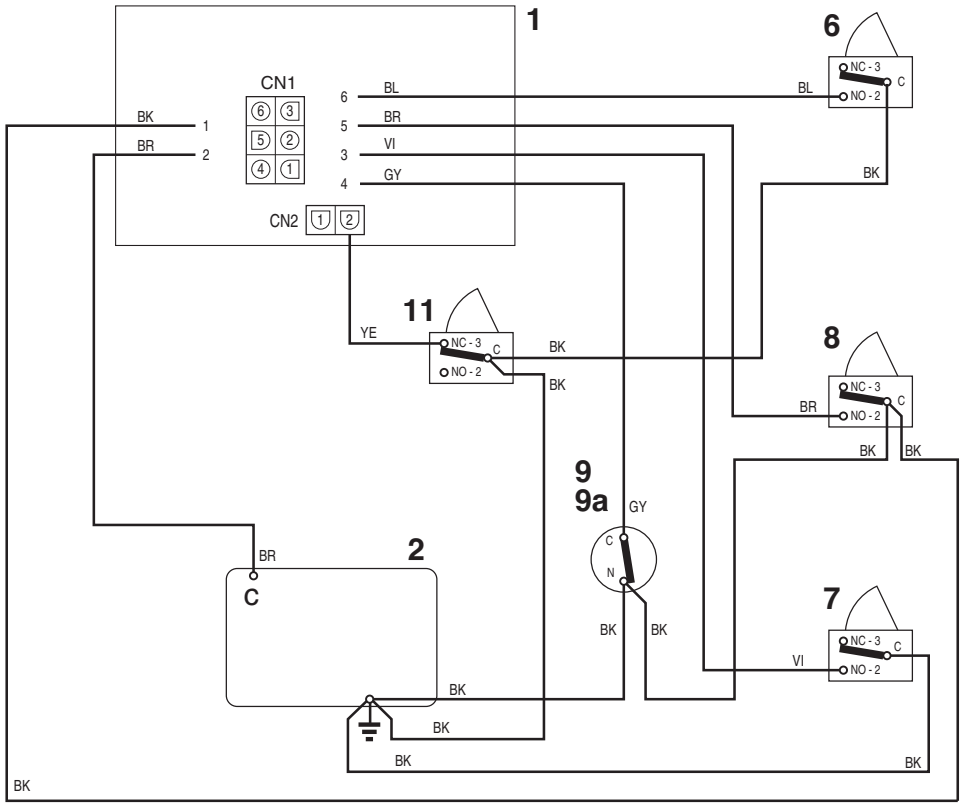
7.11.0
ELECTRICAL DIAGRAMS

General informations:

Related topics:



➤ *manual start models*



1	Electronic card
2	Engine
2c	Motor stop
6	Blade microswitch
7	Grass-catcher microswitch
8	Seat microswitch
9	Neutral microswitch (➤ *mechanical drive models)*
9a	Neutral microswitch (➤ *hydrostatic drive models)*
11	Brake microswitch

CABLE COLOURS

BK	Black
BL	Blue
BR	Brown
GY	Grey
VI	Violet
YE	Yellow

MAP BACK

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8.1.0 TIGHTENING TORQUES AND ADJUSTMENTS SUMMARY

General informations:

Related topics:

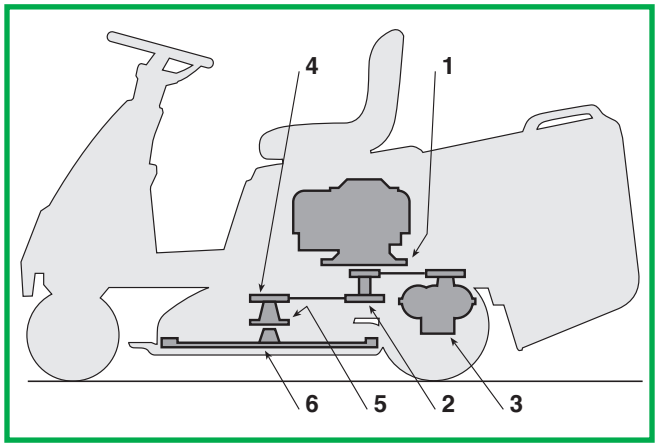
[☛ 4.1] Adjusting the engagement and checking the blade brake
[☛ 4.2] Brake adjustment
[☛ 4.3] Drive belt adjustment

A) Tightening torques

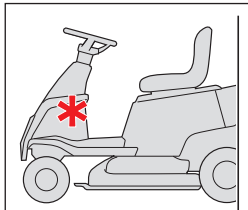
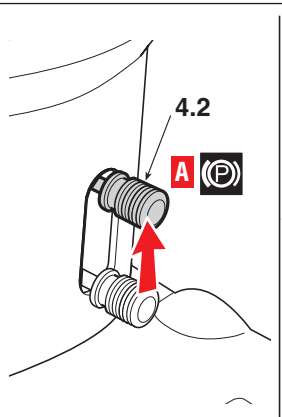
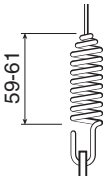
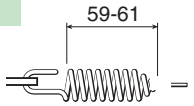
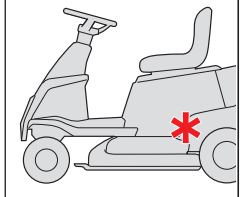
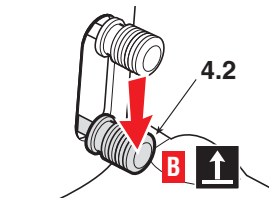
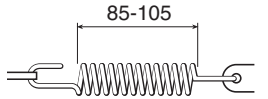
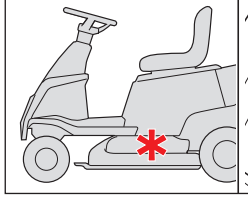
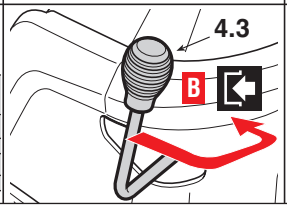
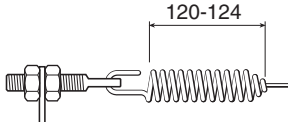
Below are the specified tightening torques for the fixing bolts on the main parts.

1	Screws for engine fastening	35 ÷ 40 Nm
2	Screw for engine pulley	45 ÷ 50 Nm
3	Screws for rear axle brackets	25 ÷ 30 Nm
4	Blade pulley screw	25 ÷ 30 Nm
5	Nuts for flanged supports	25 ÷ 30 Nm
6	Screw for blade	45 ÷ 50 Nm

Every section in this manual gives values for all the components involved in each operation.



B) Adjustments

Operation	Position	Position of controls	Adjustment
a) Brake adjustment			➤ *mechanical drive models*  ➤ *hydrostatic drive models* 
b) Drive belt adjustment			
c) Adjust blade engagement			

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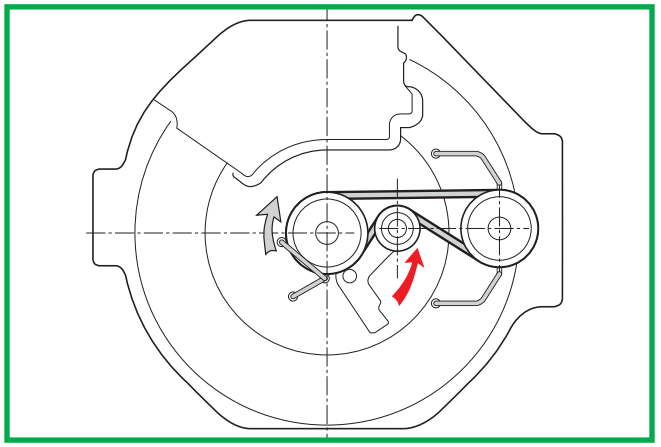
8.2.0
BELTS ASSEMBLY

General informations:

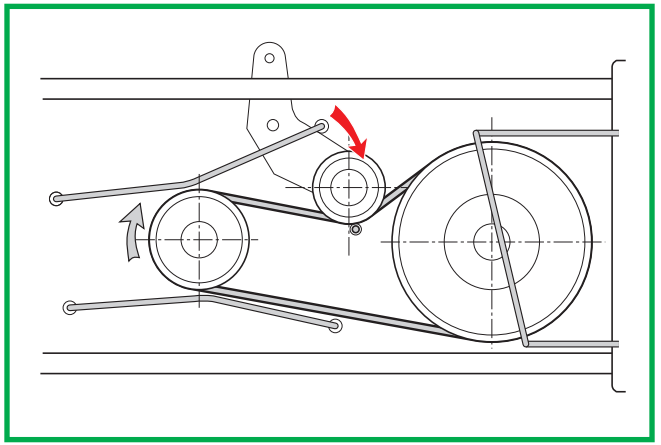
Related topics:

Blade belt development



Drive belt development

➤ ***mechanical drive models***



Drive belt development

➤ ***hydrostatic drive models***