GLOBAL GARDEN PRODUCTS

TH - TH4

WORKSHOP MANUAL

Rel. 3.1

YEAR OF MANUFACTURE **2011 ➡ 2014**

The Manufacturer 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.2 INDEX

i.2 INDEX

GENERAL INDEX

ii.0 INTRODUCTION

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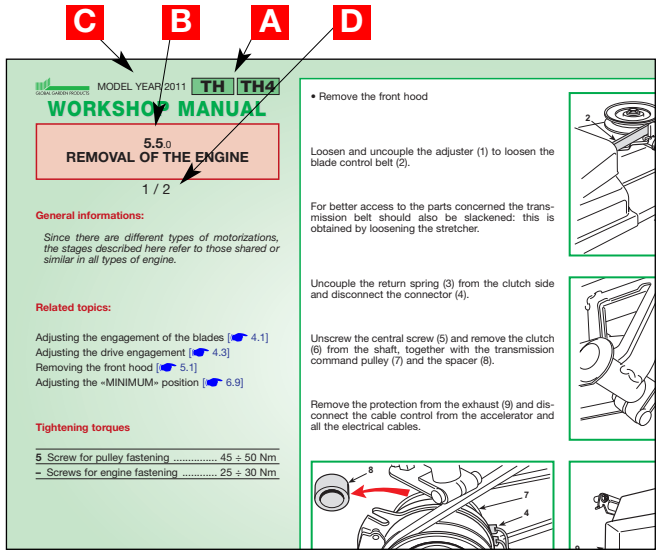
Each page of this manual states the following information:

A) Machine or machine series to which the page applies.
– The code **TH** indicates that the page applies to two-wheel drive machines.
– The code **TH4** indicates that the page applies to four-wheel drive machines.



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.

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 machine.**

⚠ **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 and the accessories fitted.**

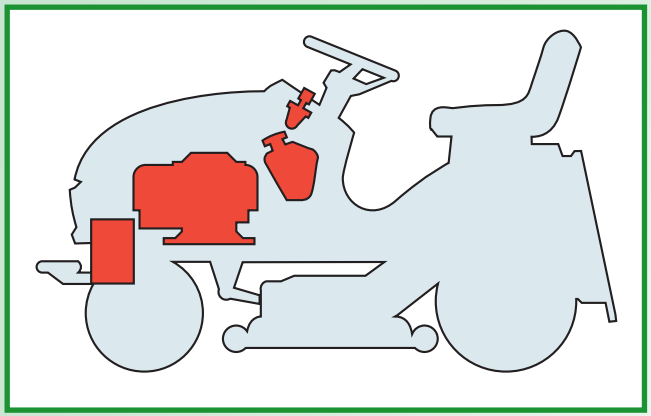
NOTE
Whenever a reference is made to a position on the machine “front”, “back”, “right” or “left” side, this is determined by facing the direction of forward travel.

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.

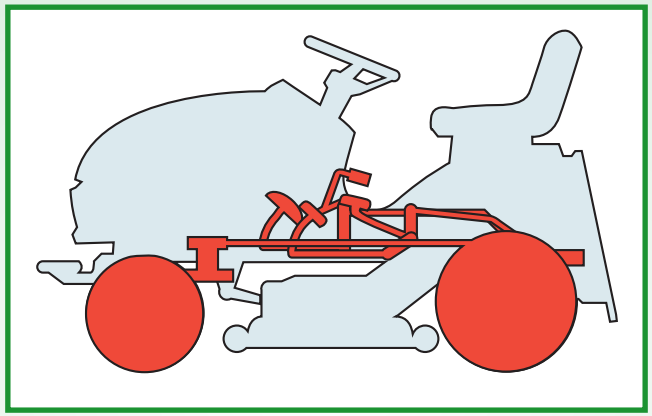
You are asked to read through this manual to acquire a basic understanding of the machine, which is necessary for working rationally without making errors or wasting time.

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

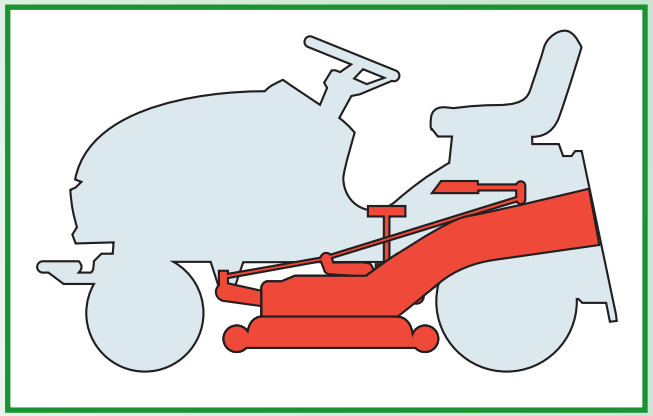
iii.0
MAP OF INTERVENTIONS



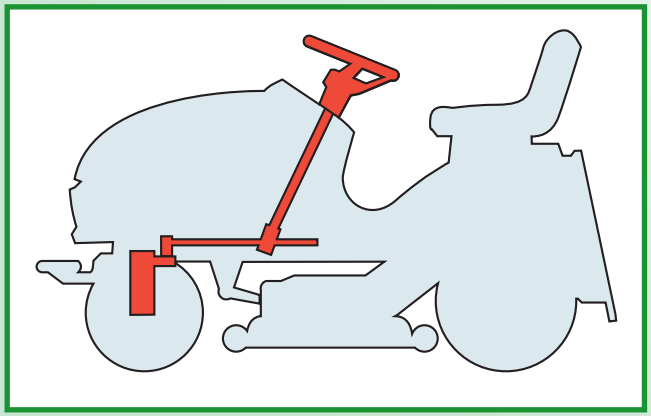
ENGINE - FUEL TANK



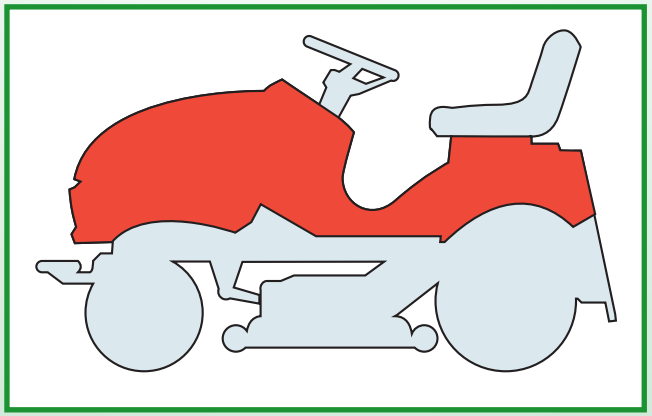
TRANSMISSION - BRAKE - WHEELS



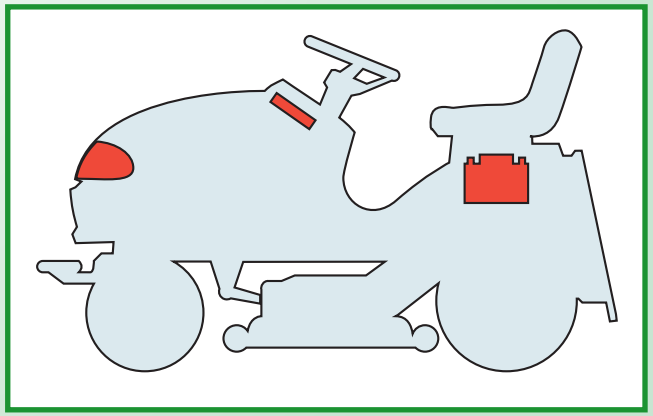
CUTTING DECK



STEERING



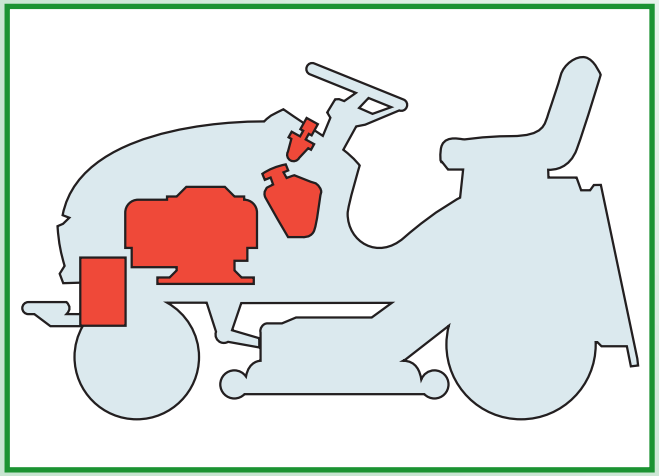
BODY



ELECTRICAL SYSTEM

BACK

iv.0
ENGINE - FUEL TANK



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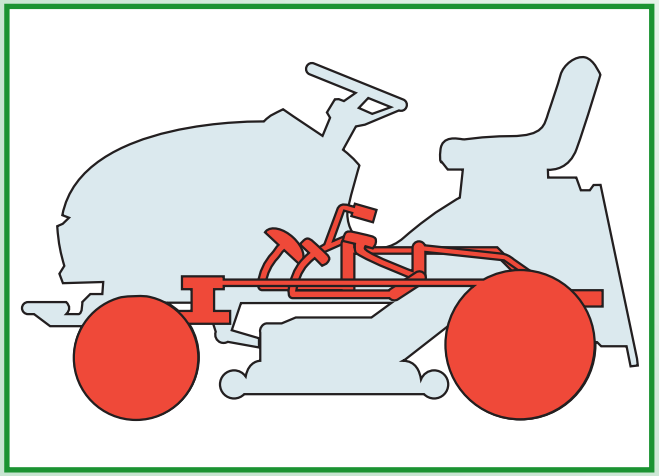
Repairs



INDEX OF RELATED TOPICS:

Adjustments and tuning

Removal of external parts and main assemblies

Repairs

Info

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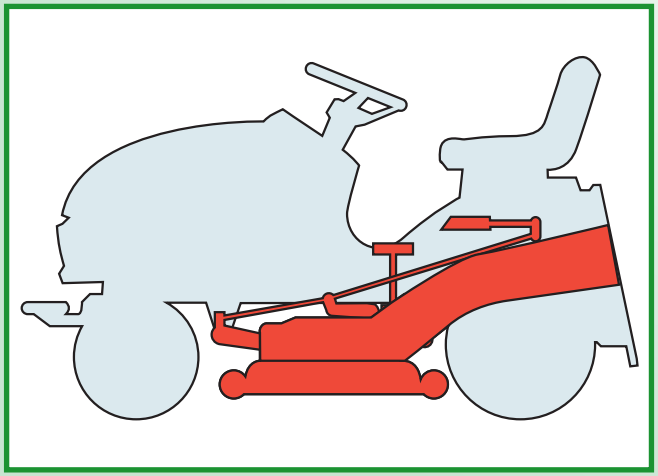
CUTTING DECK



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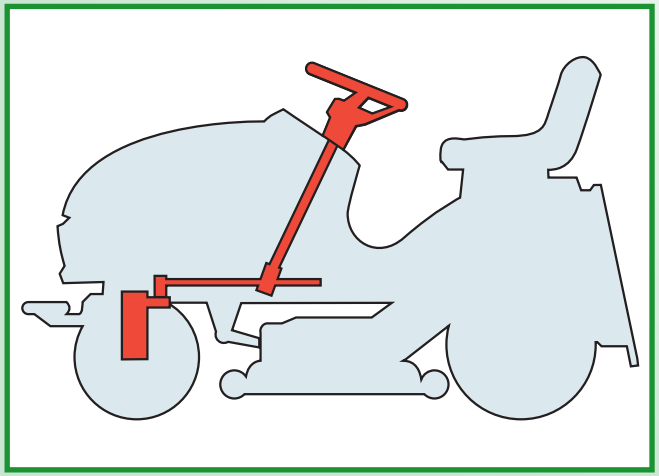
Repairs



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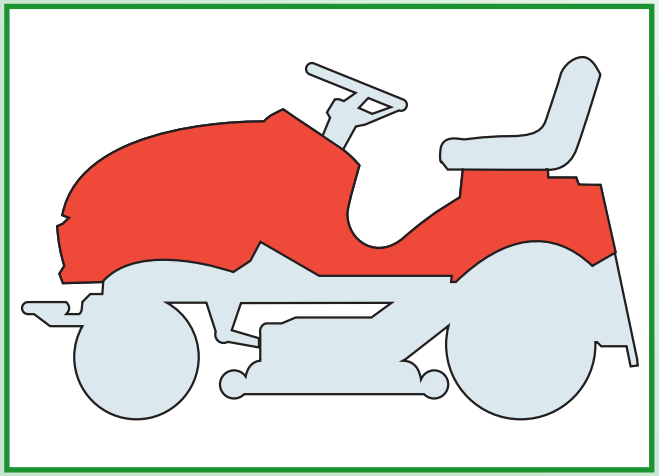

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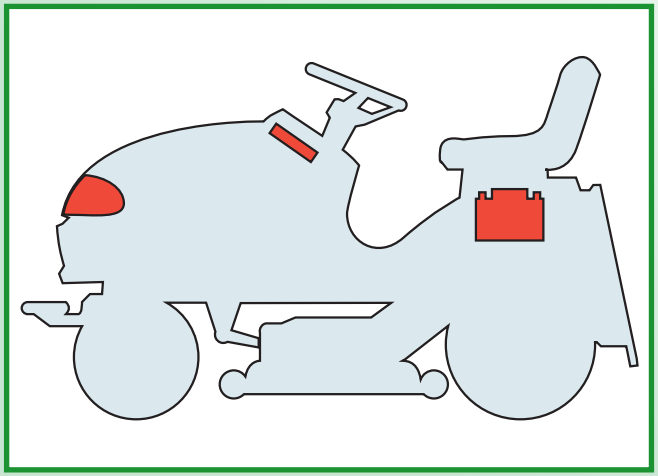

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INDEX OF RELATED TOPICS:

Info

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.

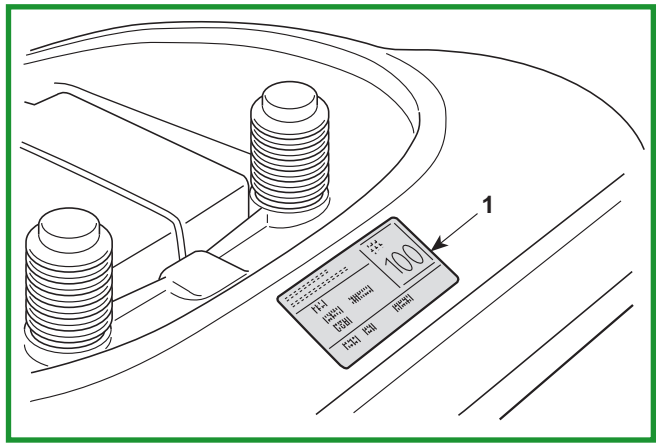
Related topics:

A) Identification

1) Machine

Each machine has a label attached (1) near the battery housing which shows the technical specifications, the model and the serial number.

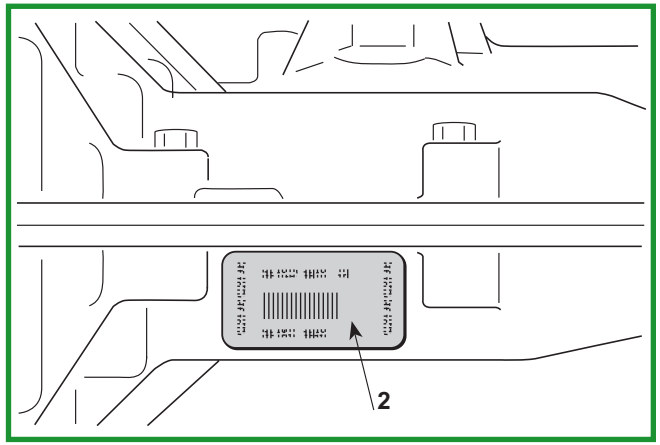
The model and serial number must be shown on each repair sheet when requests are made under guarantee, and are indispensable for spare part orders.



2) Transmission

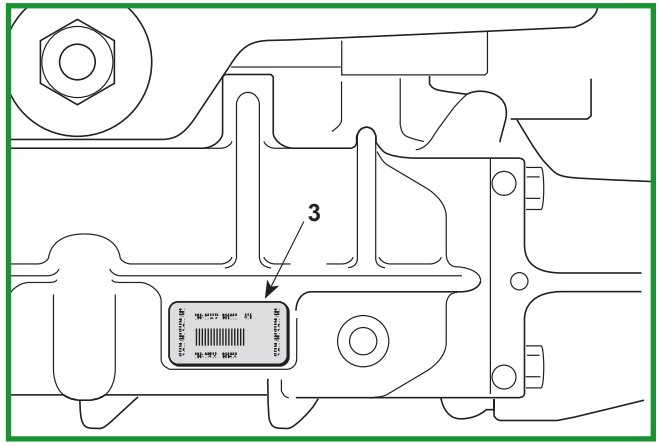
➤ ***Model TH:*** is fitted with a rear hydrostatic engine block transmission unit, including the differential and rear axle.

➤ ***Modello TH4:*** is fitted with two hydrostatic engine block transmission units, the front is equipped with a hydraulic distributor, and a rear one which includes the differential and rear axle.



These units are made by another manufacturer according to precise technical specifications which differentiate them from similar items by this same Manufacturer.

The serial number on the label (2 – rear unit) or (3 – front unit) 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.

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:

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.

C) Service repairs after guarantee period

The Service Centre has to make out a report containing the machine serial number, a summary of the problems, 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 [see point “A”].

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:

Special tools [☛ 2.2]
Safety microswitches operation check [☛ 7.3]

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;**
- **reassemble inefficient, damaged or missing casings and protection covers;**
- **replace illegible labels;**
- **do not carry out operations or modifications on the machine or on the engine that could affect their performance or lead to an improper or different use from the one for which it has been 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:

- **Take out the ignition key before beginning any repair work.**
- **protect hands with suitable protective 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 which has a strong impact on the environment. 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.**

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:

Special tools [☛ 2.2]
Safety microswitches operation check [☛ 7.3]

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:

⚠

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

⚠

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.

2.2.0 TOOLS

General informations:

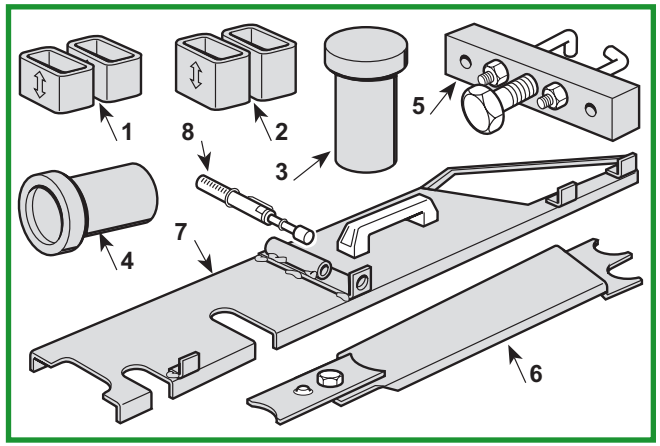
This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

All work can be carried out using the tools normally available from a good workshop. However, it is advisable to have a series of special tools (1 ÷ 8).

The use of these tools is described in the 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. Buffer for assembly of wheel bearings
5. Pulley extractor
6. Template to check the centre distance of pulleys
7. Template to check the blade connection belt tension
8. Dynamometer



WORKSHOP MANUAL

2.3.0 LIFTING AND STABILISING

General informations:

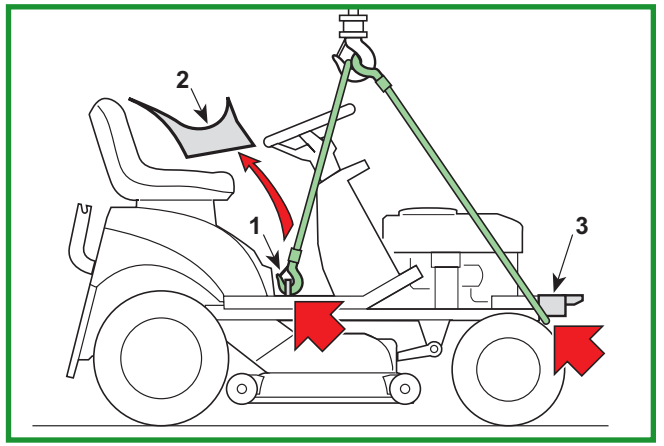
This chapter covers the main aspects of a servicing procedure and the general rules for guaranteeing a successful service which respects the safety of the machine.

Related topics:

A) Lifting

There are four points on the machine that are to be used when lifting it:

- 2 central eyelets (1) accessible from the inspection hatch (2), to support the weight of the machine;
- 2 front extensions (3) on the frame beams, to balance the machine during lifting.

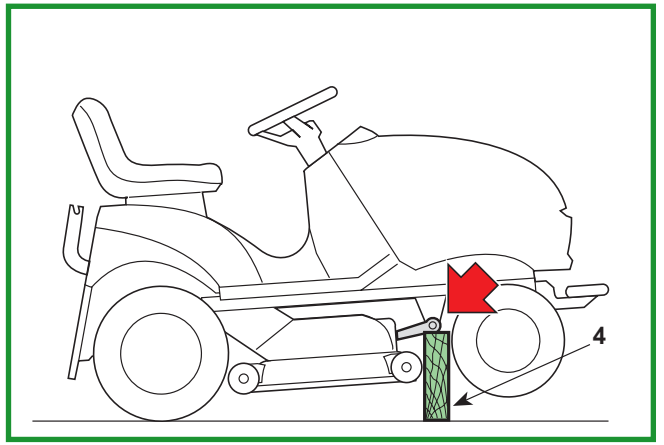


Lifting of the machine should be carried out using a hoist and adequately strong cables equipped with safety hooks and only hooked onto the previously mentioned four points.

To balance the weight of the machine, the two front cables should be about 30%, longer than those attached to the central eyelets.

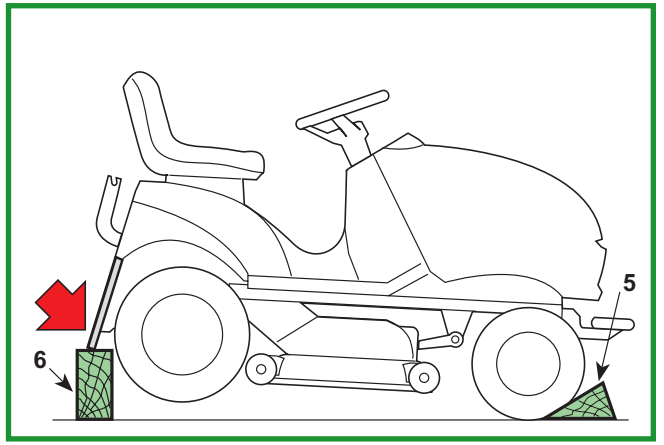
B) Stabilising the front part

With the parking brake is engaged, the front part of the machine can be lifted using a wooden block of about 100 x 270 x 550 mm (4) placed under the front axle of the cutting deck lifting levers.



C) Stabilising the rear part

An appropriately sized wedge (5) should be placed in front of the front wheels, to prevent the machine from accidentally moving, the rear part can be lifted using a block of about 100 x 150 x 550 mm (6) placed beneath the lower edge of the plate.



Always ensure that the machine is stable before starting work in its lifted position.

2.4.0 PRACTICAL HINTS

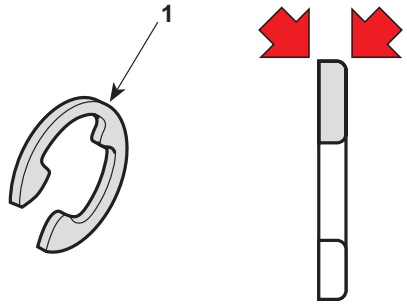
General informations:

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:

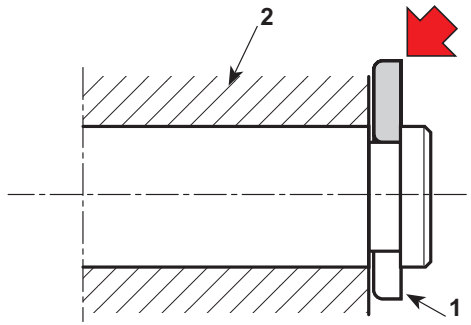
A) Fitting snap rings

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 edge on the outside.

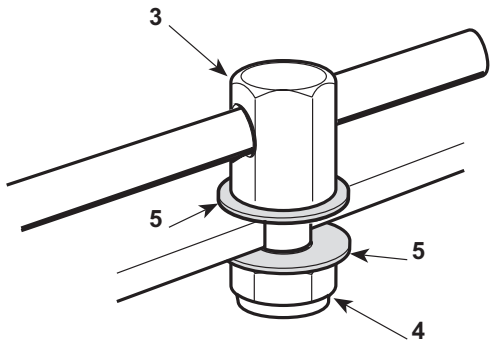


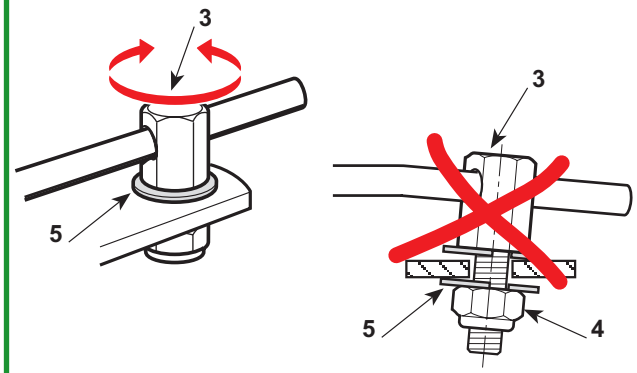
B) Joint pivot pins

There are a large number of joint 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 HINTS

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.

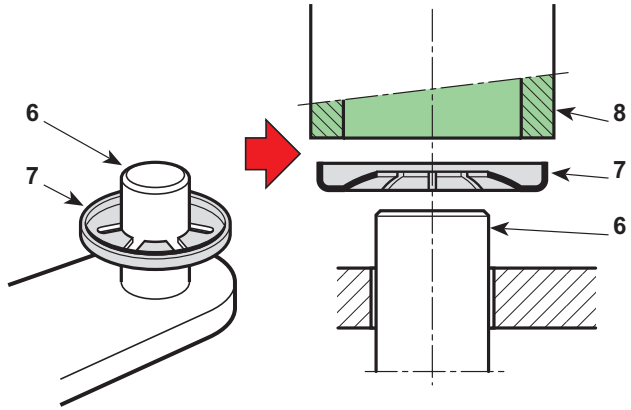
Related topics:

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 operation of safety devices and renew illegible or missing labels
- Check tyre pressures
- Clean air filter
- Check engine oil level
- ***(➤ Model TH4)*** Check the oil level of the transmission
- Check for fuel leaks
- ***(➤ Model TH4)*** Check for leaks in the hydraulic system
- Align cutting deck
- Sharpen and balance the blades and check the condition of the hubs
- Check for wear in the belts
- Check the engagement and the blade brake
- Grease front wheels lever joint pins and bushes
- Check and tighten engine fixing screws
- All the operations indicated in the engine manual

b) Regular maintenance

– All work carried out in section a), plus:

- Check battery charge
- Check tension of belts
- Drive belt adjustment
- Adjust brake
- Adjust blade engagement
- Check steering allowance
- ***(➤ Model TH)*** Check front bearings
- General lubrication
- ***(➤ Model TH4)*** Check and/or replace the transmission oil
- 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

4.1.0 ADJUSTING THE ENGAGEMENT AND CHECKING THE BLADE BRAKE

General informations:

The blades are driven by the engine by means of a "V" belt and are engaged by an electromagnetic clutch.
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 the blades continuing to run = belt shortened*

In both cases the stretcher needs to be adjusted.

Disengaging the blades causes the cutting in of a brake, incorporated in the electromagnetic clutch, whose task is to stop the blades from rotating within five seconds.

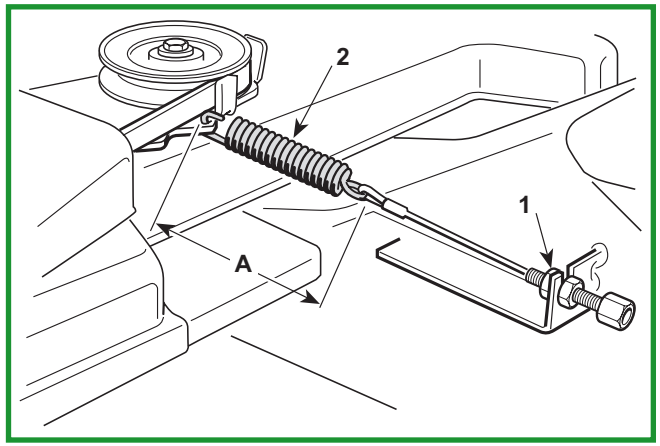
Related topics:

Replacement of blade control belt [☛ 6.6]
Electromagnetic clutch operation check [☛ 7.7]

A) Adjusting blade engagement

With the cutting deck in its lowest position, look for the adjuster (1) which is placed under the footboard on the left side and turn the nuts, with the blades engaged, until the spring (2) reaches a variable length "A" according to the different versions of the machine, as follows:

A = 113 ÷ 115 mm - for mod. 102
A = 90 ÷ 91 mm - for mod. 122



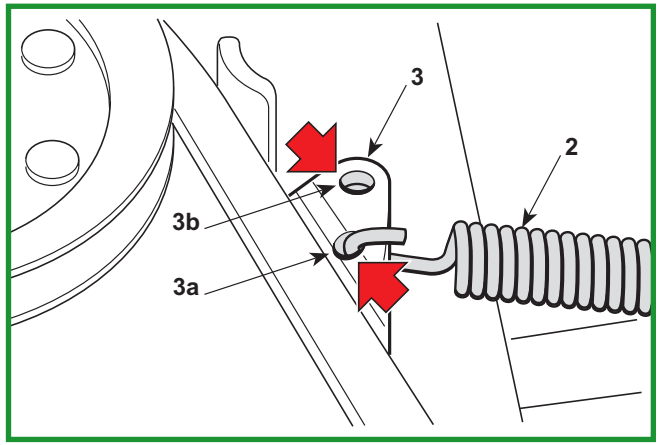
NOTE
The hook position of the spring (2) on the plate (3) is different for the model 102 (hole 3a) and the model 122 (3b – the only hole on the plate).

B) Checking the blade brake

⚠

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

If the blades do not stop within 5 seconds from disengagement, appropriate checks must be made to the electrical system and the clutch must be replaced if no result is achieved.



4.2.1 BRAKE ADJUSTMENT

General informations:

Reduced braking power is corrected by adjusting the spring on the brake rod, which is accessible by removing the rear right wheel.

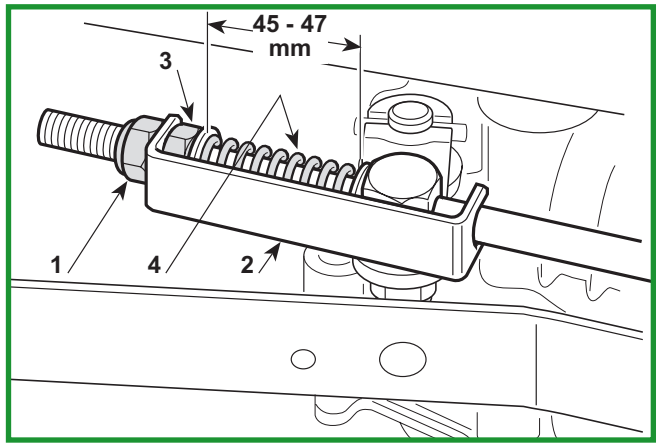
Related topics:

Identification of transmission unit [☛ 1.1]
Removal of the rear axle [☛ 5.6]

The adjustment is to be made with the parking brake engaged and consists of altering the length of the spring (4) to the best measurement. The braking capacity is increased by screwing the nut (3) down on the rod (and thus shortening the length of the spring).

Loosen the nut (1) which retains the bracket (2) and then turn the nut (3) so that the length of the spring (4) is 45 - 47 mm measured from the inside of the washers.

When the adjustment has been made, tighten the nut (1).
Never go under these amounts to avoid overloading the brake unit.

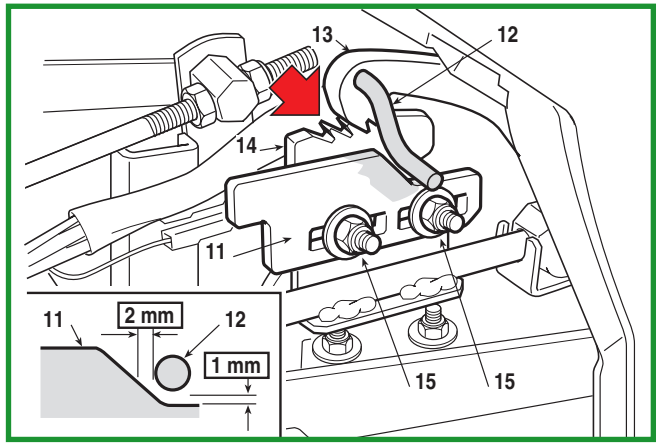


⚠
When the adjustments have been made, the parking brake should prevent the machine from moving on a slope of 30% (16°) with the driver in position.

⚠
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.

➤ ***models with cruise control:***

To adjust the release cam (11) position to the pin (12), position the pawl (13) on any tooth on the rack (14), loosen the nuts (15) and adjust the cam (11) to achieve the condition indicated in the illustration.



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, mainly when going uphill;*
- *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.

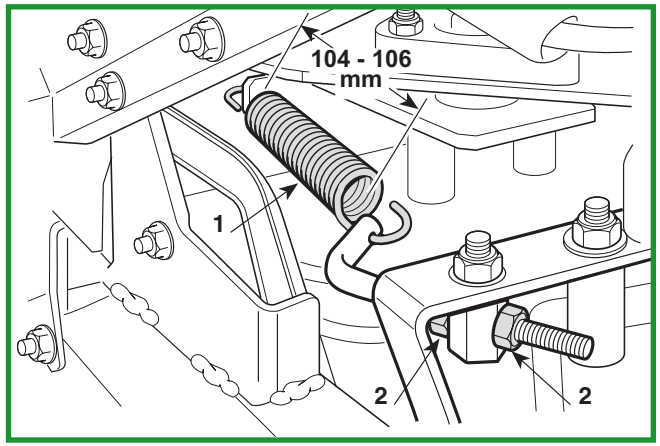
Related topics:

Replacement of drive belt [☛ 6.4]

The tensioner is to the right of the steering unit and accessible from the front hood, turning the wheels fully to the right.

Adjust the tension of the spring (1) by suitable working on the nuts (2) until a measure of 104 ÷ 106 mm is obtained, measured on the outside of the turns with a gauge, with the transmission controls in neutral.

When the adjustment has been made, tighten the nuts (2).



4.4.0 DRIVE PEDAL ADJUSTMENT IN FORWARD GEAR

General informations:

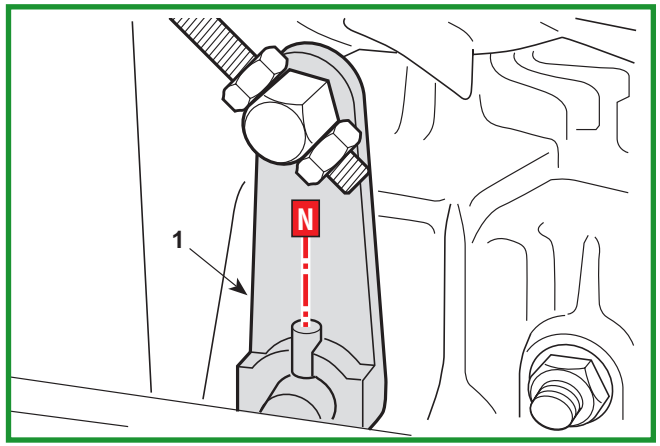
This operation should be carried out every time the rear axle, the pedal or the control rod is removed in order to get the correct travel for the pedal and to enable reaching the envisaged speeds both forwards and in reverse.

Related topics:

Fitting safety microswitches [☛ 7.12]

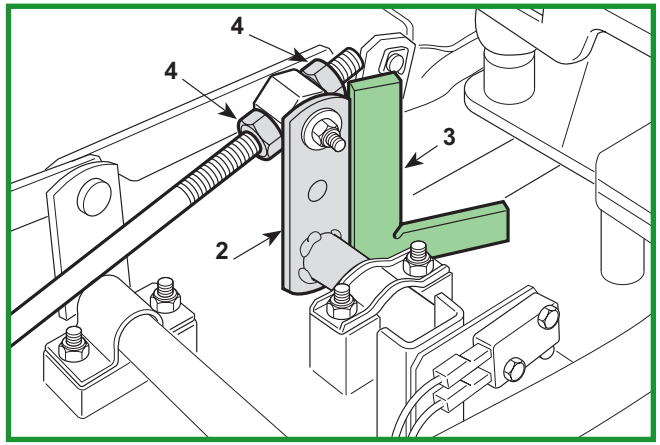
A) Adjusting the pedal in the “neutral” position

Adjustment of the pedal position must be carried out with the hydraulic unit lever in the “neutral” position (1); this position «N» can be easily recognised as it is forced to stay there by a fastening sphere.



Open the inspection hatch which is placed at the base of the seat; the drive control pedal is in its ideal position when the lever
(1) of the hydrostatic unit is in “neutral”, and the internal lever (2) on the pedal axle is perfectly vertical.

This is obtained using a bracket (3), by working on the nuts (4) until reaching the desired situation. Taking care not to accidently change the position of the lever (1) during the adjustment.

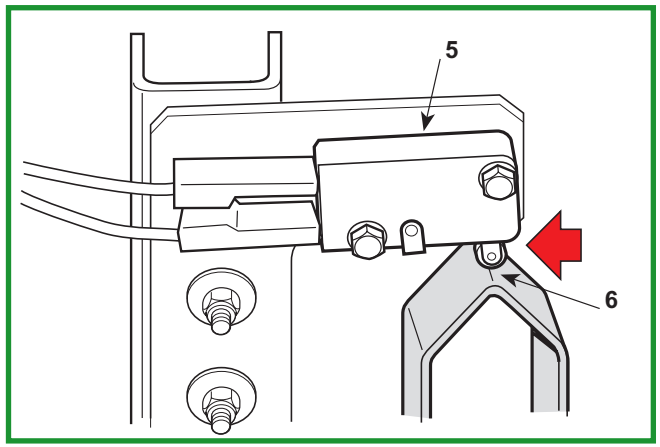


B) Adjusting the “neutral” position of the microswitch

⚠

IMPORTANT!
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 (5) of the cam (6), accessible from the inspection hatch which is placed at the base of the seat.



4.4.0 DRIVE PEDAL ADJUSTMENT IN FORWARD GEAR

General informations:

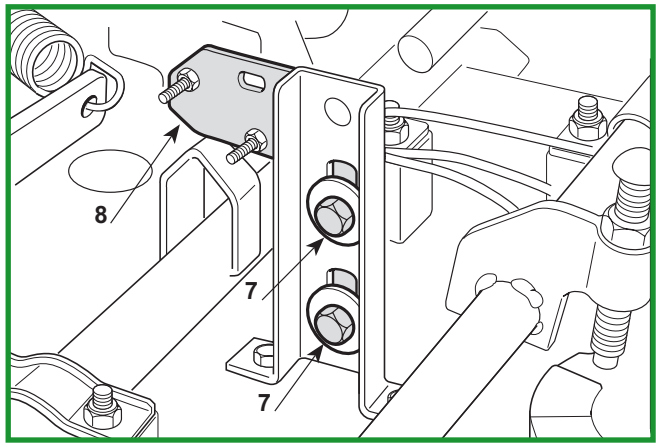
This operation should be carried out every time the rear axle, the pedal or the control rod is removed in order to get the correct travel for the pedal and to enable reaching the envisaged speeds both forwards and in reverse.

Related topics:

Fitting safety microswitches [☛ 7.12]

After checking that the adjustment “A” has been correctly made, make sure that the pedal is released and in neutral "N" then loosen the screws (7) that fasten the microswitch support (8), until the roller is in line with the tip of the cam, so that the microswitch remains activated.

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



4.5.0 ALIGNING THE CUTTING DECK

General informations:

Lowering of the cutting deck is controlled by a linkage activated by the lever and is moved by two connecting rods at the front; the descent is limited by a cam that returns the deck to the preset height. 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.
There are three types of possible adjustments:

- ***a)*** *synchronization of the control lever to the height setting cam;*
- ***b)*** *a combined adjustment to the parallel and the minimum front and back height, to be carried out if the cutting is irregular;*
- ***c)*** *adjustment of the longitudinal deck position, is only necessary when, during cutting deck replacement operations, the original position has been lost and the correct distance to the engine pulley must be restored.*

Related topics:

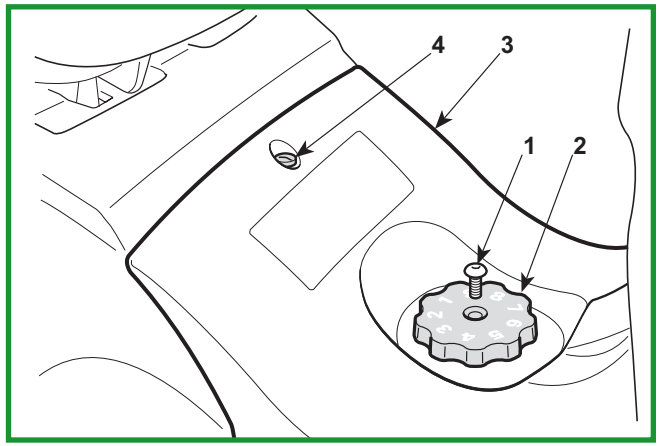
Special tools [☛ 2.2]

Inflation pressure

Front	1,0 Bar
Rear	1,4 Bar

MAP BACK

Check the tyre pressures. If one or more tyres have been replaced and differences in diameter are found, **do not attempt to compensate these differences by giving different tyre pressures**, but make the adjustments as in point “A”.



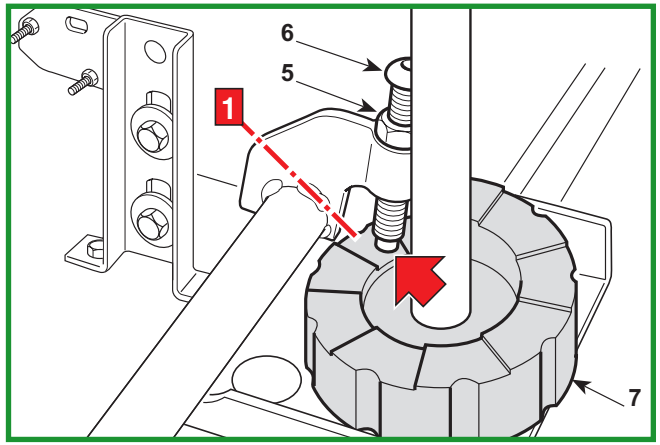
A) Synchronization of the control lever with the cam

This adjustment is fundamental to allow use of all nine positions of cutting height.

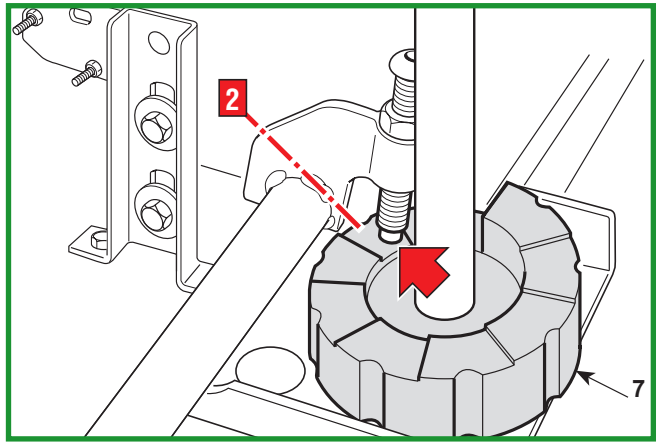
Loosen the screw (1) and remove the handle (2).

Remove the inspection hatch (3) secured by the screw (4).

Loosen the locknut (5) and the screw (6) and move the cam (7) into position "1" by using the control lever in its completely lowered position.



Turn the screw (6) until the tip can be placed on the cam step (7) corresponding with position "1", then tighten the screw by half a turn and fasten the nut (5).



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There are three types of possible adjustments:

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- ***b)*** *a combined adjustment to the parallel and the minimum front and back height, to be carried out if the cutting is irregular;*
- ***c)*** *adjustment of the longitudinal deck position, is only necessary when, during cutting deck replacement operations, the original position has been lost and the correct distance to the engine pulley must be restored.*

Related topics:

Special tools [☛ 2.2]

Inflation pressure

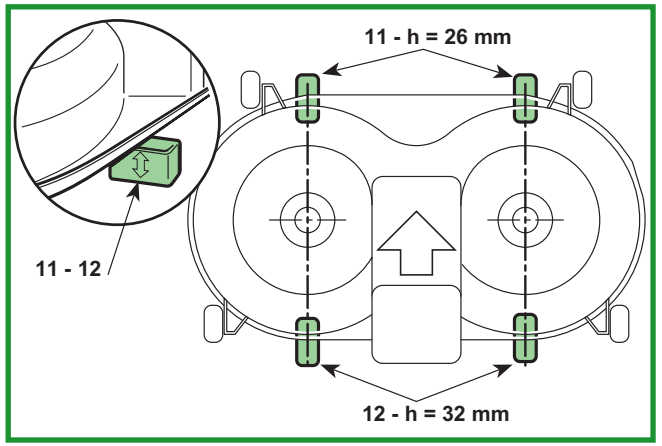
Front	1,0 Bar
Rear	1,4 Bar

MAP BACK

B) The combined adjustment to the parallel and the minimum height front and back

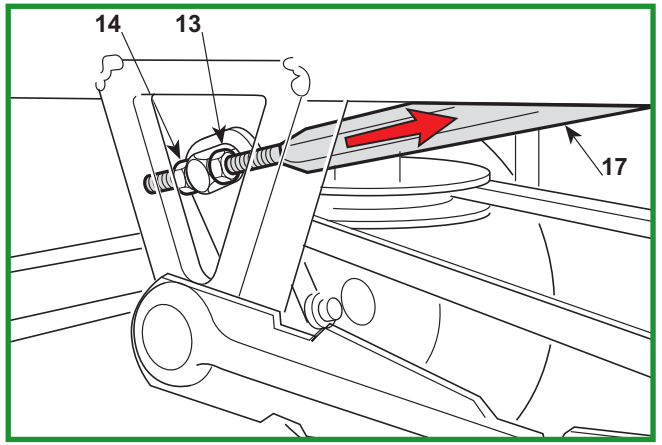
Put the machine onto a flat and stable surface (such as a work bench) and put blocks beneath the cutting deck in line with the centre lines of the blades:

– at the front 26 mm (11)
– at the back 32 mm (12).



Move the cam (7) to position "2" and loosen the nuts (13), the screws (15) and the locknuts (14-16) on the right and left-hand side, so that the deck is resting firmly on the blocks.

Turn both the rear screws (15) until both the left and right side of the rear part of the deck begin to rise and then tighten the locknuts (16).

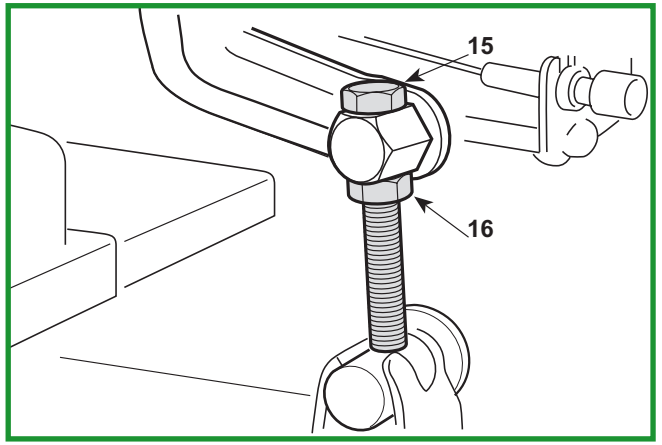


Push the two connecting rods backwards (17) and tighten the nuts to the respective rods (13) until both the left and right side of the front part of the deck begin to rise and then tighten the locknuts (14).

C) Adjustment of the longitudinal position

Put the machine onto a flat and stable surface (such as a work bench) and put blocks beneath the cutting deck in line with the centre lines of the blades:

– at the front 26 mm (11)
– at the back 32 mm (12)



Move the cam (7) to position "2" and loosen the nuts (13), the screws (15) and the locknuts (14-16) on the right and left-hand side, so that the deck is resting firmly on the blocks.

4.5.0 ALIGNING THE CUTTING DECK

General informations:

Lowering of the cutting deck is controlled by a linkage activated by the lever and is moved by two connecting rods at the front; the descent is limited by a cam that returns the deck to the preset height. 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.
There are three types of possible adjustments:

- ***a)*** *synchronization of the control lever to the height setting cam;*
- ***b)*** *a combined adjustment to the parallel and the minimum front and back height, to be carried out if the cutting is irregular;*
- ***c)*** *adjustment of the longitudinal deck position, is only necessary when, during cutting deck replacement operations, the original position has been lost and the correct distance to the engine pulley must be restored.*

Related topics:

Special tools [☛ 2.2]

Inflation pressure

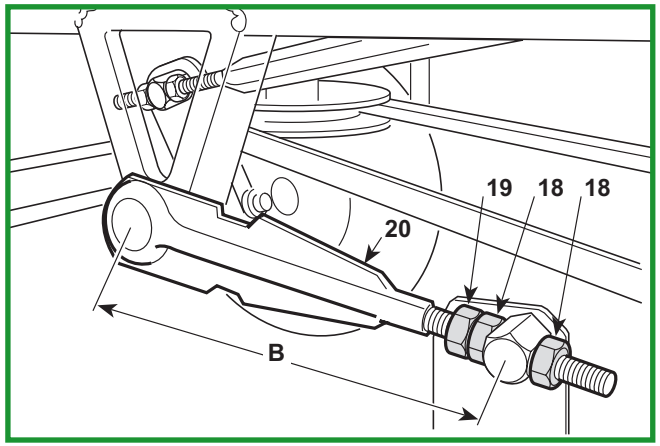
Front	1,0 Bar
Rear	1,4 Bar

MAP BACK

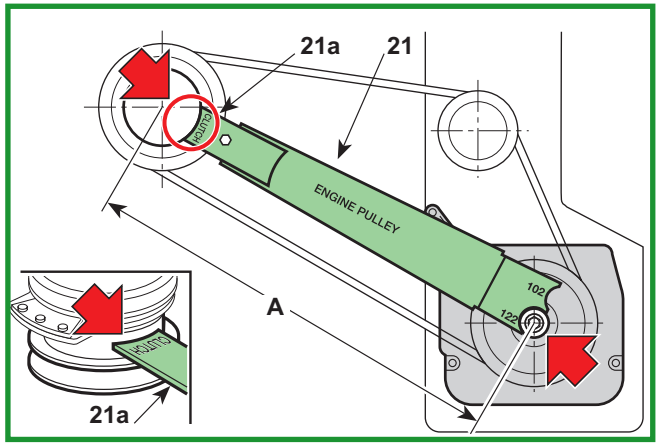
Loosen the nuts (18) and the locknut (19) of the two front connecting rods (20) and adjust the nuts of the front left connecting rod (18) until achieving the length "A" of:

- 489 mm (mod. 102)
- 474 mm (mod. 122)

between the hub centre of the engine pulley and the centre of the left blade shaft.



To make this operation easier use the control gauge (21) with the engine side terminal (21a) placed at the foreseen side for the electromagnetic clutch.



Take the length "B" obtained and adjust the nuts of the front left connecting rod **until achieving the same length, so that the outlet is perfectly centred with the collector channel**; then fully fasten the nuts (18) and the locknuts (19).

NOTE
It is very important that the length "B" is the same on both the right and the left side so that the belt doesn't scrape on the collector channel.

Turn both the rear screws (15) until both the left and right side of the rear part of the deck begin to rise and then tighten the relative locknuts (16).

Push the two connection rods backwards (17) and tighten the nuts to the respective rods (13) until both the left and right side of the front part of the deck begin to rise and then tighten the locknuts (14).

4.6.0 STEERING GEOMETRY ADJUSTMENT

General informations:

The correct steering geometry is given by the values of the centre distance between the joints of the tie-rod and the wheel connection rod. Any faults caused by knocks or accidents result in reduced driving precision and increased wear on the tyres. These can be overcome as follows:

- *uneven or excessive wear on the front tyres = toe-in adjustment (➤ **Model TH only**),*
- *the machine does not maintain a straight line when the steering wheel is straight = adjustment of tie-rod.*

Furthermore, the steering allowance should never be excessive if driving is not to be impaired.

Related topics:

Tightening torques

3 - 4	Nuts and locknuts of the rod joints	75 ÷ 85 Nm
7 - 8	Nuts and locknuts of the tie-rod joint	125 ÷ 135 Nm
34	Nut for toothed sector bearing fastening	45 ÷ 50 Nm

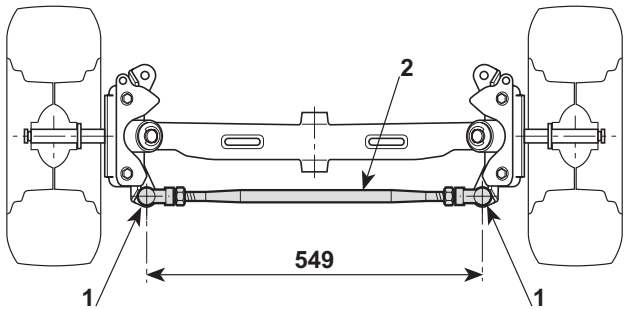
MAP BACK

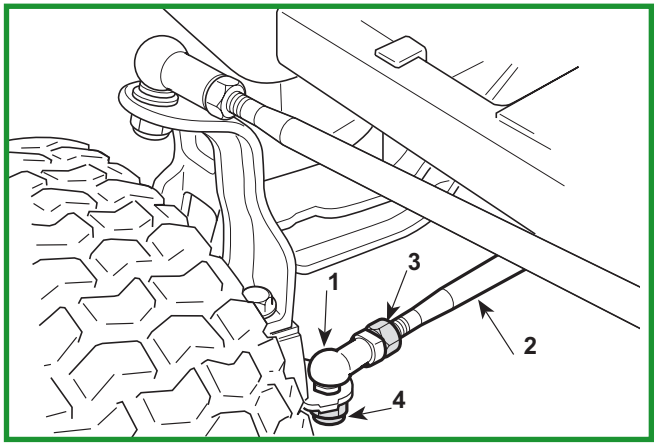
NOTE
Before any other action, check that the joint fastenings have not become loose.

A) Toe-in adjustment

➤ ***Model TH only***
An exact toe-in is achieved with a centre distance of 549 mm which is measured between the centres of the articulated joints (1) of the wheel connection rod (2).

If a different distance is found, dismantle one or both the joints and screw the necessary amount down or up on the rod.
On assembly, fully tighten the locknuts (3) and the fastening nuts (4) of the joints.





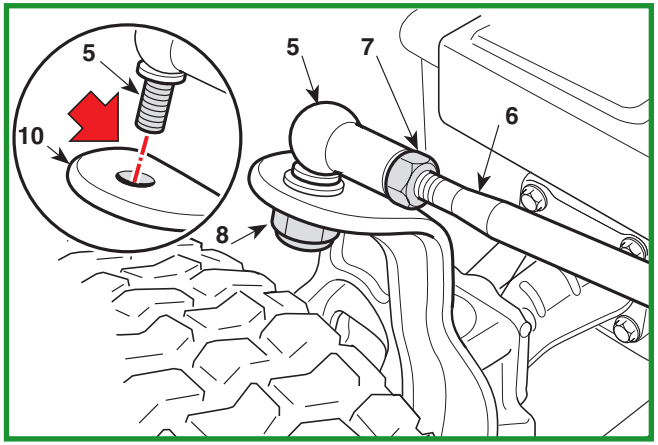
B) Adjustment of the steering wheel

Firstly check the toe-in (point "A" and align the front wheels.

If the steering wheel is not straight:

- unscrew the nuts (8) and remove both joints (5);
- align the front wheels and steering wheel;
- screw the joints (5) in or out of the tie rods (6) enough to align the joint pins (5) with the rod holes (10).

On assembly, fully tighten the locknuts (7) and the fastening nuts (8).



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- *uneven or excessive wear on the front tyres = toe-in adjustment* ***(➤ Model TH only)****,*
- *the machine does not maintain a straight line when the steering wheel is straight = adjustment of tie-rod.*

Furthermore, the steering allowance should never be excessive if driving is not to be impaired.

Related topics:

Tightening torques

3 - 4	Nuts and locknuts of the rod joints	75 ÷ 85 Nm
7 - 8	Nuts and locknuts of the tie-rod joint	125 ÷ 135 Nm
34	Nut for toothed sector bearing fastening	45 ÷ 50 Nm

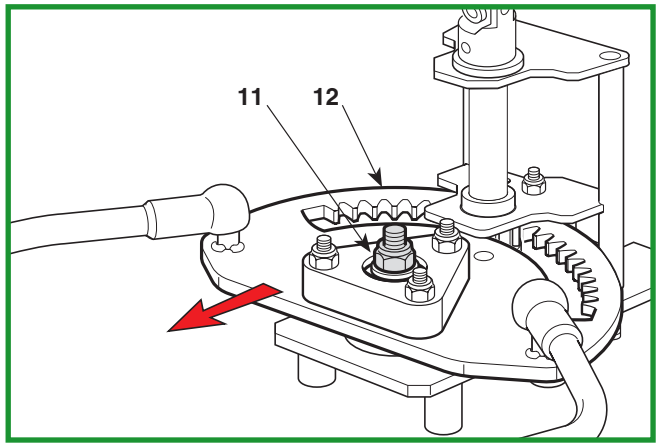
MAP BACK

C) Steering allowance adjustment

Check that the movement is not caused by loose linkage nuts and tighten all the nuts of the tie-rods and ball joints.

If allowance is due to coupling between the pinion and toothed sector, adjust the reciprocal positions between the two parts.

Loosen the nut (11) and move the toothed sector (12) longitudinally until allowance is reduced to a minimum between sector teeth and the pinion; then tighten the nut (11) and grease concerned parts.



4.7.0 CHECKING BLADES ALIGNMENT

General informations:

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

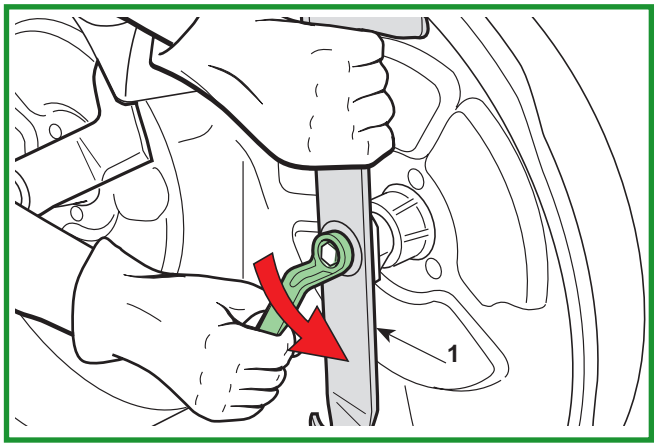
Related topics:

Removing the blades [☛ 4.8]
Removal of the cutting deck [☛ 5.8]
Replacement of the supports of the blades [☛ 6.8]

Tightening torques

- Screw for left blade ..... 45 ÷ 50 Nm
- Screw for right blade ..... 45 ÷ 50 Nm

- Remove the cutting deck.

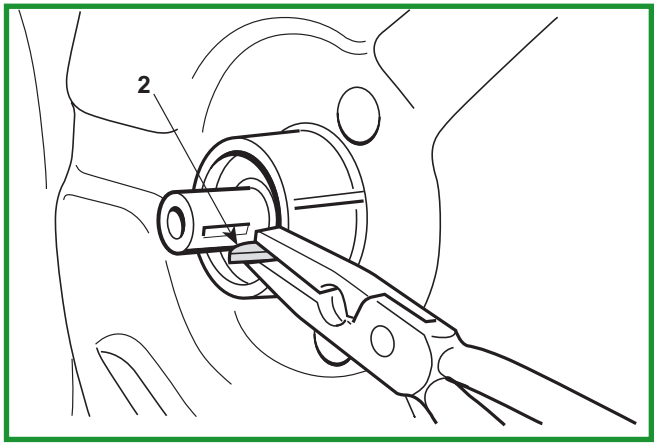


⚠ **Always wear protective gloves when handling the blades.**

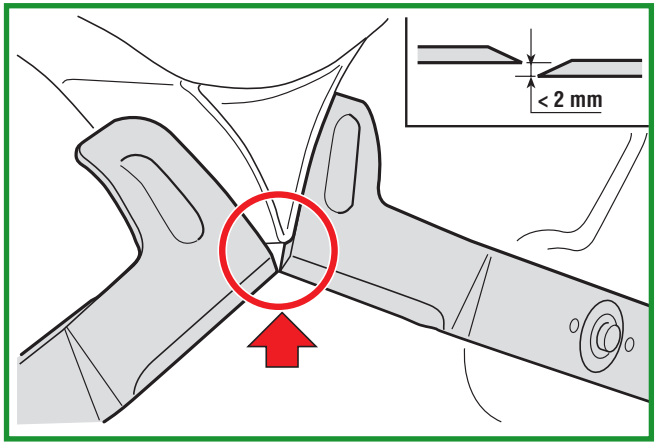
To check the blades alignment, one blade must be dismantled and replaced after having removed the key from the shaft (2) to permit independent rotation of the blades.

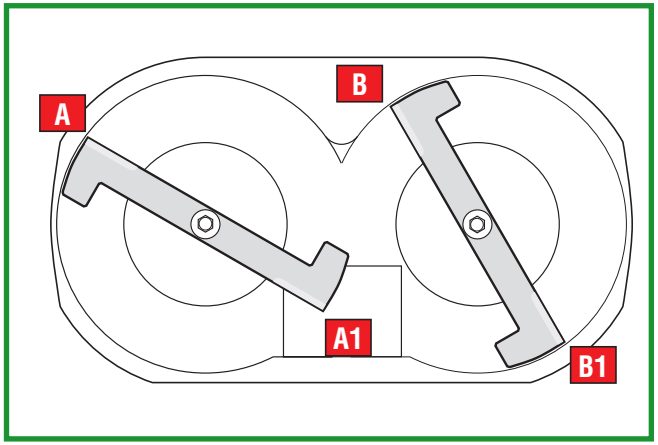
NOTE
Remember the direction of unscrewing and tightening of the central screw of each blade (1).

With the blades disengaged, firmly hold each blade and bring the cutting edges together in the various positions possible (A-B; A-B1; A1-B1; A1-B). At each position they should be aligned to within 2 mm.



If higher amounts are found, check that the blades are not distorted. If this is not the case, check the blade supports or shafts [see 6.9], replacing if necessary, and check the condition of the point where the flanges rest on the cutting deck.





4.7.0 CHECKING BLADES ALIGNMENT

General informations:

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

Related topics:

Removing the blades [☛ 4.8]
Removal of the cutting deck [☛ 5.8]
Replacement of the supports of the blades [☛ 6.8]

Tightening torques

-	Screw for left blade	45 ÷ 50 Nm
-	Screw for right blade	45 ÷ 50 Nm

MAP BACK

⚠
IMPORTANT!
Always replace damaged blades and do not attempt to repair or straighten them. Always use manufacturer's genuine spare parts!

⚠
When the checks have been made, remember to replace the key in the shaft (2), and check that the blades do not interfere with rotation during a complete turn.

- Reassemble the cutting deck.

4.8.0 REMOVING, SHARPENING AND BALANCING THE BLADES

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:

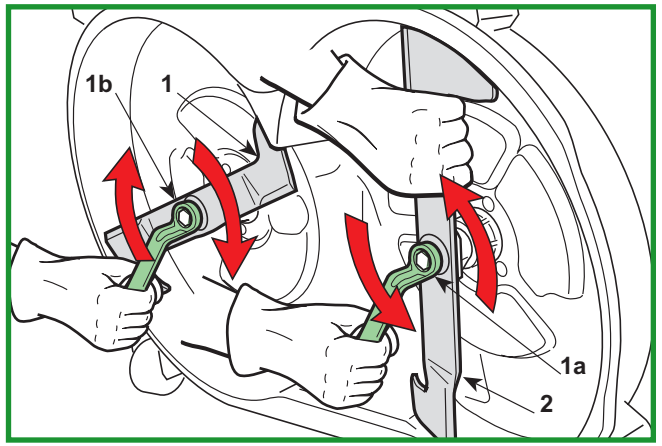
Tightening torques

1a	Screw for left blade	45 ÷ 50 Nm
1b	Screw for right blade	45 ÷ 50 Nm

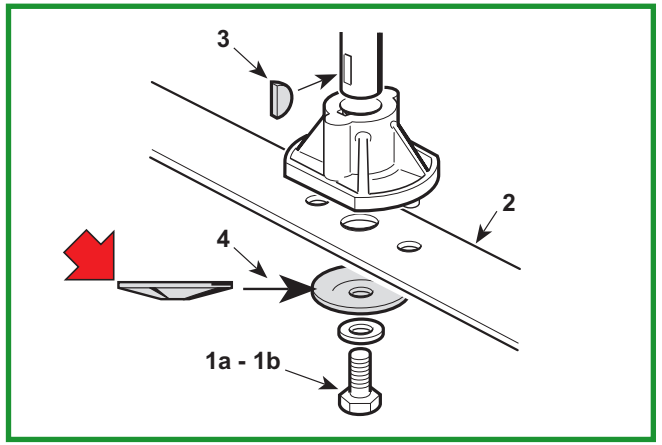
Always wear protective gloves when handling the blades and protect eyes when sharpening.

A) Removing and reassembling

For removing a blade it must be firmly held and the central screw (1) undone, bearing in mind that:
- the screw on the left blade (1a) is unscrewed anti-clockwise
- the screw on the right blade (1b) is unscrewed clockwise.

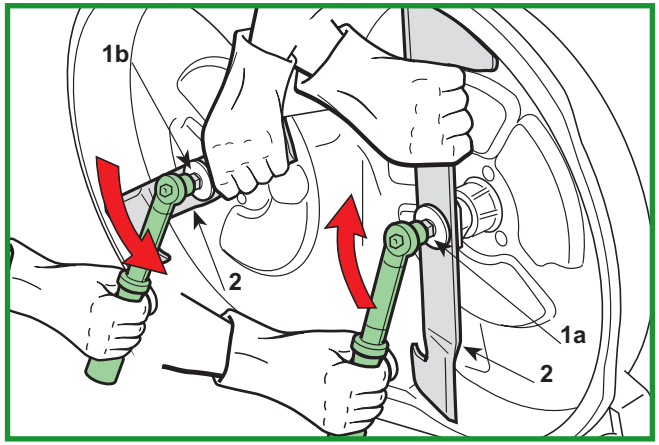


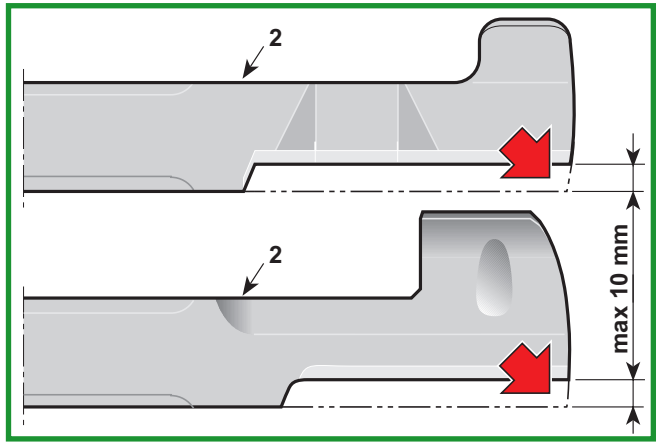
On assembly, be careful to:
- correctly position the keys (3) on the shafts;
- correctly locate the right and left blades, with the fins facing towards the inside of the plate;
- fit the elastic disc (4) so that the concave part is pressing against the knife;
- tighten the screws (1 – 1a) with a torque wrench set to 45-50 Nm.



B) Sharpening and balancing

Always sharpen both cutting edges of the blade (2)





4.8.0 REMOVING, SHARPENING AND BALANCING THE BLADES

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:

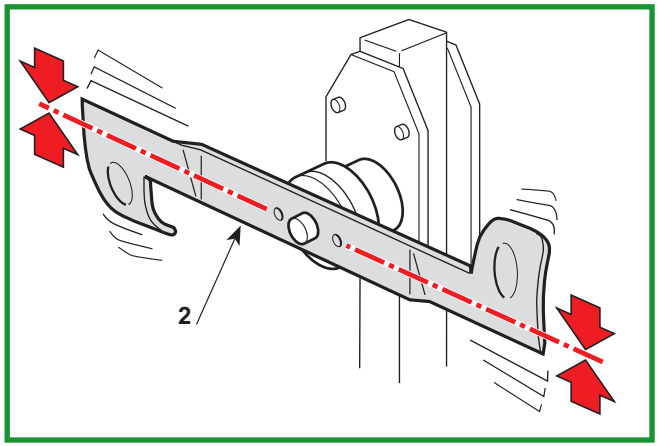
Tightening torques

1a	Screw for left blade	45 ÷ 50 Nm
1b	Screw for right blade	45 ÷ 50 Nm

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 2 grams between one side and the other.



4.9.0 CHANGING OIL IN THE HYDRAULIC CIRCUIT

General informations:

Oil in the hydraulic circuit is subject to high pressures and temperatures and is thus susceptible to deteriorating in time.
For this reason, oil must be changed after the first 50 hours of operation and, subsequently, every 200 hours.

Related topics:

Guide to understanding the hydraulic system
[☛ 8.1]

Tightening torques

6	Front drain caps	13 ÷ 16 Nm
8	Front breather cap	13 ÷ 16 Nm
9	Rear inspection cap	20 Nm
11	Rear quick coupling	25 Nm

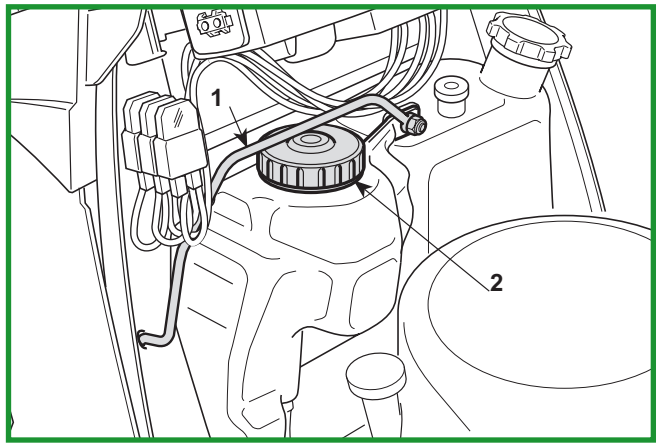
Technical informations

-	SAE 10W30 oil	~ 4 litres

MAP BACK

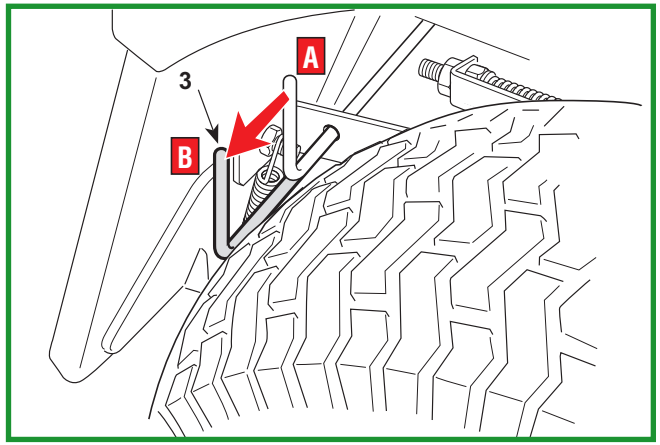
A) Draining oil from the transmission units and hydraulic circuit

NOTE - Oil is easily drained when hot, after removing the protection arch (1) and unscrewing the tank cap (2).



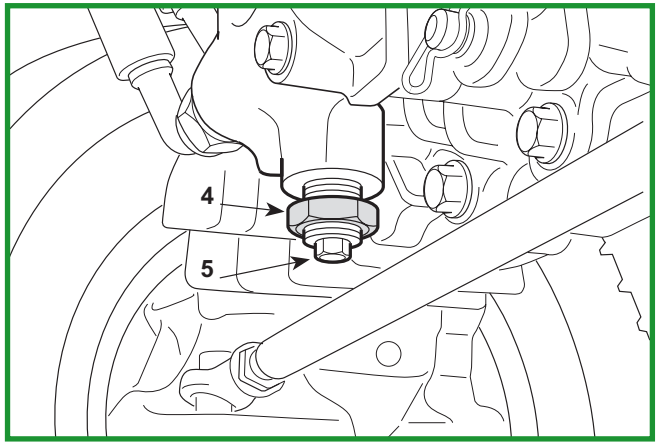
Both transmission by-pass valves must be open to drain oil from the transmission units and hydraulic circuit. This is achieved:

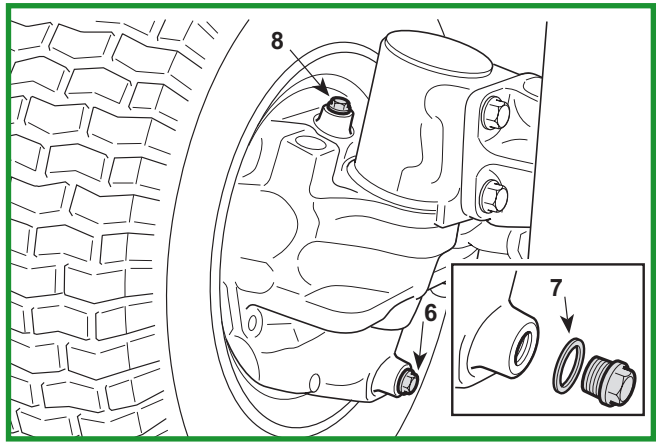
– at rear transmission, moving the rod (3) to the release position «B»;
– at front transmission, loosening the locknut (4) and unscrewing the screw (5) about 3 turns, avoiding to undo completely the screw.



Place a container to collect oil near each front wheel and unscrew the two drain caps (6) being careful not to lose the sealing washers (7).

When oil flow starts to slow, unscrew the breather cap (8) near the right wheel.





4.9.0 CHANGING OIL IN THE HYDRAULIC CIRCUIT

2 / 3

General informations:

Oil in the hydraulic circuit is subject to high pressures and temperatures and is thus susceptible to deteriorating in time.
For this reason, oil must be changed after the first 50 hours of operation and, subsequently, every 200 hours.

Related topics:

Guide to understanding the hydraulic system
[☛ 8.1]

Tightening torques

6	Front drain caps	13 ÷ 16 Nm
8	Front breather cap	13 ÷ 16 Nm
9	Rear inspection cap	20 Nm
11	Rear quick coupling	25 Nm

Technical informations

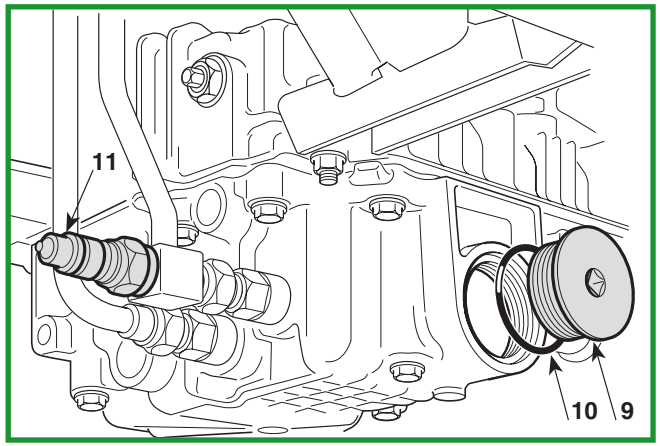
-	SAE 10W30 oil	~ 4 litres

MAP BACK

Place a container to collect oil near the rear transmission.

Using a 3/8” spanner, unscrew the inspection cap (9) being careful of the gasket underneath (10) and unscrew the quick coupling (11) to facilitate oil flow.

NOTE - Draining the circuit may take several minutes.
When oil no longer drips from the drain holes,
– tightly screw-in the two front caps (6) with their gaskets (7);
– fully screw-in the inspection cap (9) being careful to correctly reposition the sealing ring (10);
– screw-in the quick coupling (11) without tightening it in order to trap air in the rear unit and facilitate front unit filling.



B) Filling the transmission units and hydraulic circuit

NOTE - Filling must be performed from the tank, with by-pass devices (3) and (5) open, after making sure that the breather valve (8) is also open.

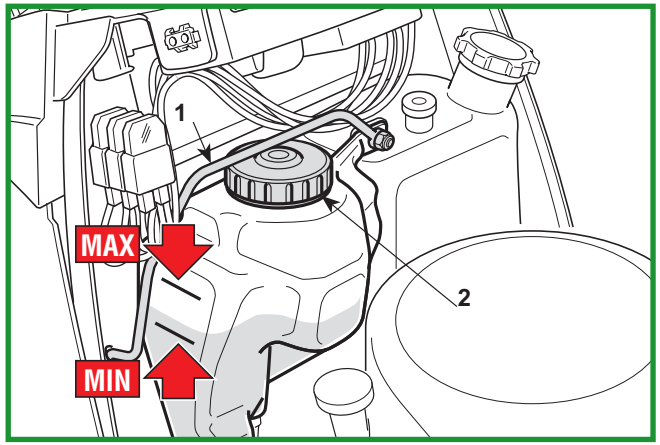
- **Front transmission unit**

Fully fill the oil tank and keep the breather hole under control (8); as soon as oil starts to spill, replace the screw (8) fully tightening it and fill the tank again.

- **Rear transmission unit**

Unscrew the quick coupling (11) so that it acts as a breather to eliminate air and place a container under it to collect oil when all air is drained.

Constantly check the oil level in the tank and top up to compensate rear transmission filling.



NOTA - The tank must never be emptied to prevent emitting air in the circuit.

When oil starts to flow out continuously, screw-in and fully tighten the quick coupling (11). At this point filling is complete.

- **Final operations**

IMPORTANT NOTE - In the first hours of use, after emptying and topping up with hydraulic oil, the oil

4.9.0 CHANGING OIL IN THE HYDRAULIC CIRCUIT

General informations:

Oil in the hydraulic circuit is subject to high pressures and temperatures and is thus susceptible to deteriorating in time.
For this reason, oil must be changed after the first 50 hours of operation and, subsequently, every 200 hours.

Related topics:

Guide to understanding the hydraulic system
[☛ 8.1]

Tightening torques

6	Front drain caps	13 ÷ 16 Nm
8	Front breather cap	13 ÷ 16 Nm
9	Rear inspection cap	20 Nm
11	Rear quick coupling	25 Nm

Technical informations

-	SAE 10W30 oil	~ 4 litres

MAP BACK

level in the tank could decrease quite noticeably and the transmission may be rather unstable.

This is absolutely normal since due to small amounts of air in the transmission units.

To prevent the user from having to question himself on whether the work is being performed correctly or not, it is recommended to perform an additional “dynamic” bleed operation following the procedure below.

- Remove the fuel tank cap (2) and close the filler with a cloth, or something similar, which prevents any dirt or dust from entering but still allows the air to filter.

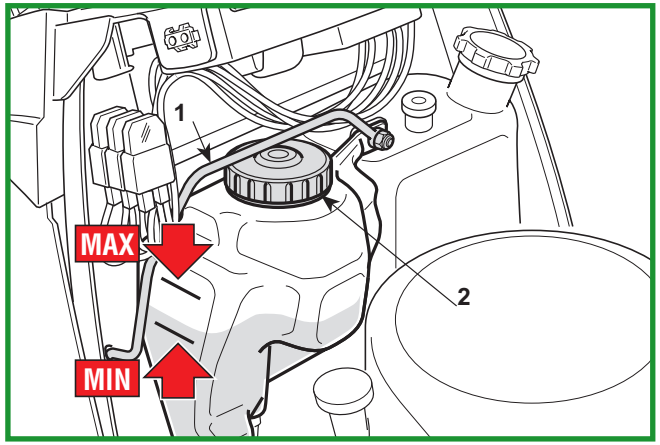
- With the engine running at minimum speed,
  - push the forward run pedal to around 3/4 of its stroke, and keep the machine running for about 1 minute, without pushing the pedal down all the way.
  - push the reverse run pedal to around 3/4 of its stroke, and keep the machine running for about 2 minutes, without pushing the pedal down all the way.

- With the engine running at maximum speed,
  - push the forward run pedal to around 3/4 of its stroke, and keep the machine running for about 1 minute, without pushing the pedal down all the way.
  - push the reverse run pedal to around 3/4 of its stroke, and keep the machine running for about 2 minutes, without pushing the pedal down all the way.

- With the engine running at maximum speed,
  - push the forward run pedal all the way down, and keep the machine running for about 1 minute.
  - push the reverse run pedal all the way down, and keep the machine running for about 1 minute.

Switch the engine off, check the oil level in the tank and top-up so that it is between the two «MIN» and «MAX» marks.

Check for leaks in the pipes and fittings, then replace the tank cap (2) and replace the protection arch (1).



5.1.0 REMOVING THE FRONT HOOD

General informations:

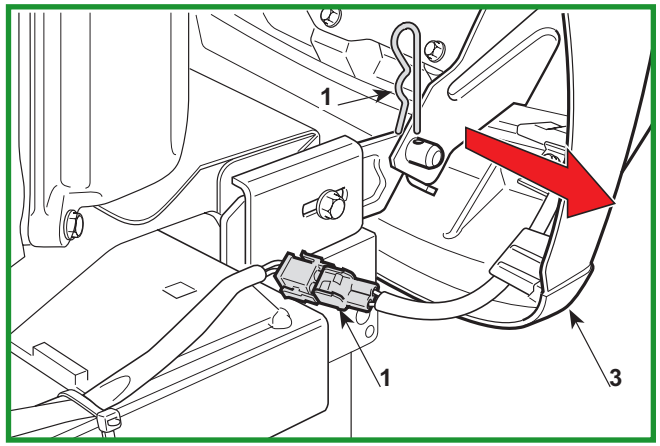
The removal of the front hood gives greater accessibility to:

- *the engine and its accessories*
- *the silencer and guards.*

Related topics:

To remove the hood, disconnect the headlight connector (1).

Take out the split pin (2) from the right-hand side and remove the hood (3) by moving it to the right.



5.2.0 REMOVAL OF WHEELS COVER

General informations:

Removing the wheel cover gives access to:

- *the support of the deck lifting lever;*
- *the supports of the footboards*

Related topics:

Removal of the dashboard and front cover [☛ 5.4]

Tightening torques

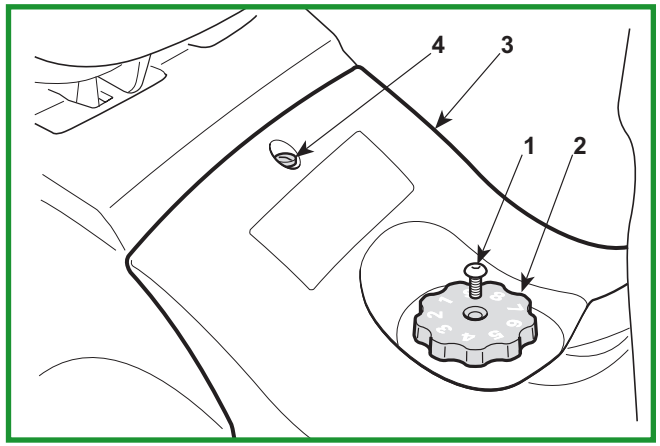
9	Lower fastening screw of cover	4,0 ÷ 4,5 Nm
10	Upper fastening screw of cover ...	4,0 ÷ 4,5 Nm

- Remove the dashboard and front cover.

Loosen the screw (1) and remove the handle (2).

Remove the inspection hatch (3) which is secured by the screw (4).

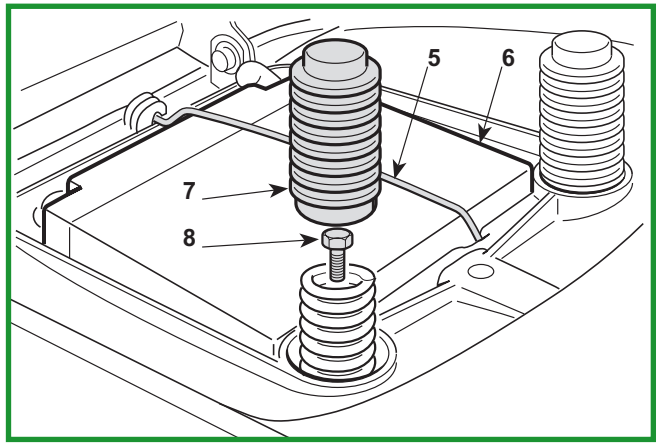
Dismantle the spring (5) which holds the battery in place, taking care to prevent it from accidentally short-circuiting. First disconnect the black earth cables, then the positive red cable and remove the battery (6).

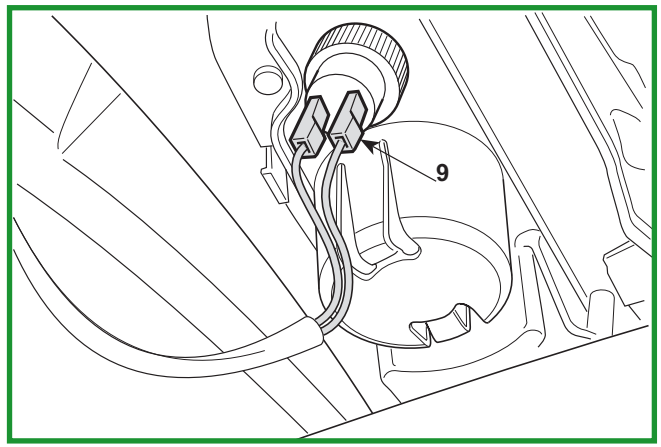


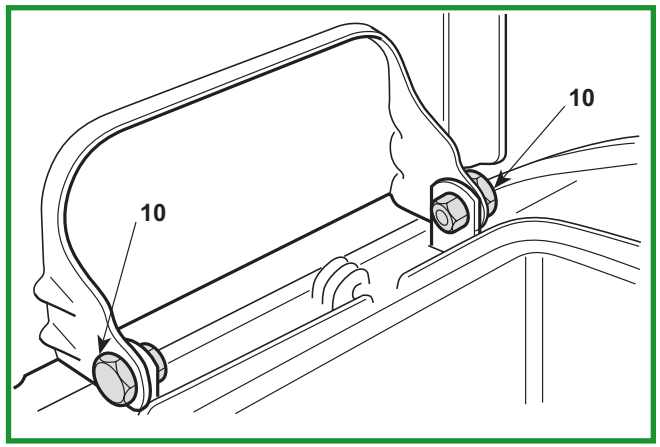
Remove the caps (7) from the springs and undo the screws inside (8).

Disconnect the cables from the auxiliary mains socket (9), taking care to label them so that no reversal errors are made on assembly.

Remove the seat after having taken out the two pins (10).







5.2.0 REMOVAL OF WHEELS COVER

General informations:

Removing the wheel cover gives access to:

- *the support of the deck lifting lever;*
- *the supports of the footboards*

Related topics:

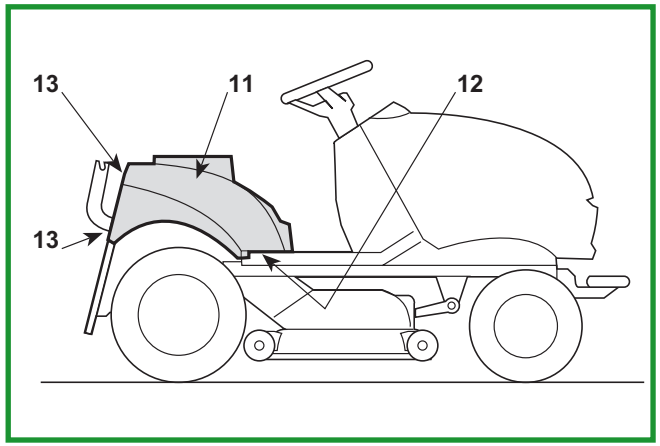
Removal of the dashboard and front cover [☛ 5.4]

Tightening torques

9	Lower fastening screw of cover	4,0 ÷ 4,5 Nm
10	Upper fastening screw of cover ...	4,0 ÷ 4,5 Nm

The cover (11) is fixed by two screws (12) located under the side footboards and four screws (13) fixing it to the rear plate.

The cover can be removed after the cutting height adjustment lever has been set to its highest position (11).

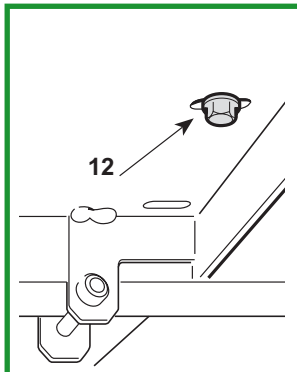


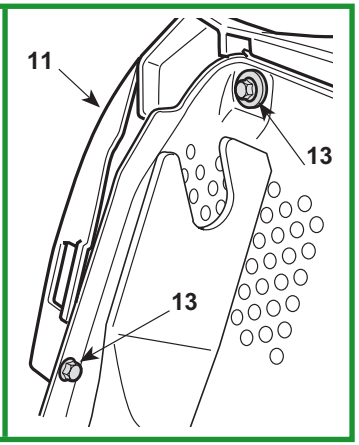
For assembly, follow the procedure described above in reverse, taking care to correctly insert the two side tongues (14) of the cover in the housings in the footboards.

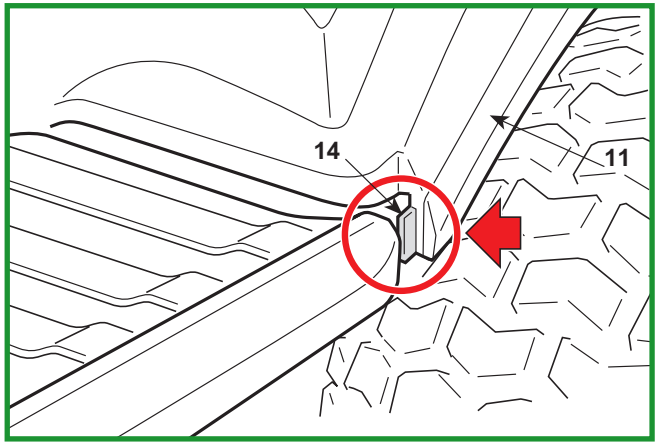
When connecting the cables (9) make sure to replace them in the right position:

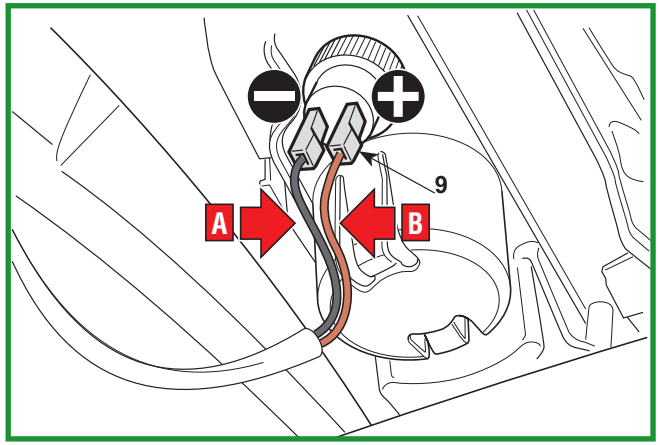
A = Black = Terminal « – »
B = Brown = Terminal « + »

- Reassemble the dashboard and front cover









5.3.0 REMOVAL OF THE COLLECTOR CHANNEL

General informations:

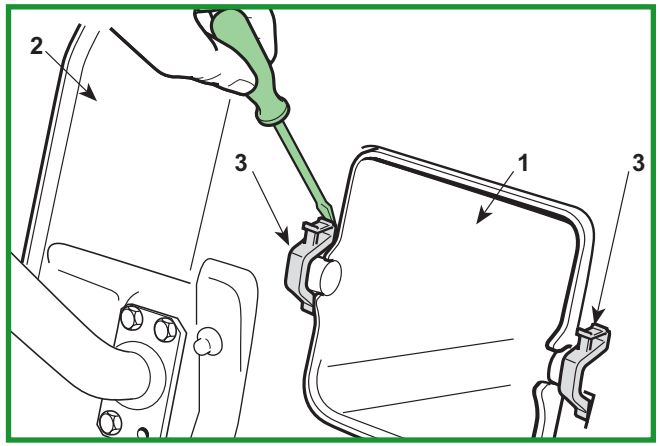
Removing the collector channel gives access to:
– the small side wheels of the transmission belt;
– the control rod of the drive engagement

Removing the collector channel is necessary to dismantle the cutting deck and if the rear plate is removed.

Related topics:

The collector channel (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 movement of the collector channel at each plate height variation.



5.4.0 REMOVAL OF THE DASHBOARD AND FRONT COVER

General informations:

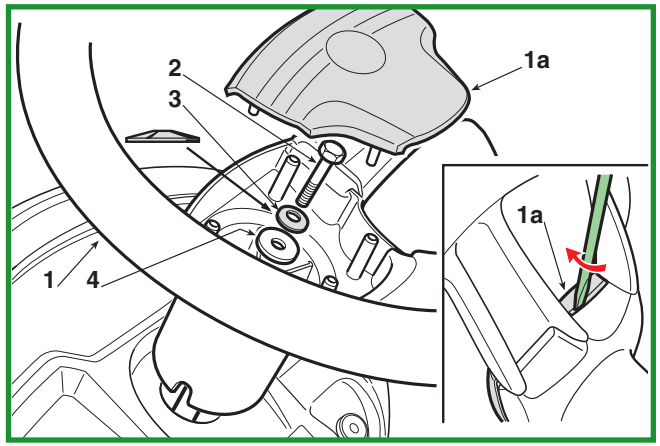
Removing the dashboard gives better access to:
- *the accelerator,*
- *the ignition block,*
- *various electrical components.*

Related topics:

A) Removing the dashboard

Use a screwdriver to remove the central cover (1a) of the steering wheel (1), being careful not to damage it.

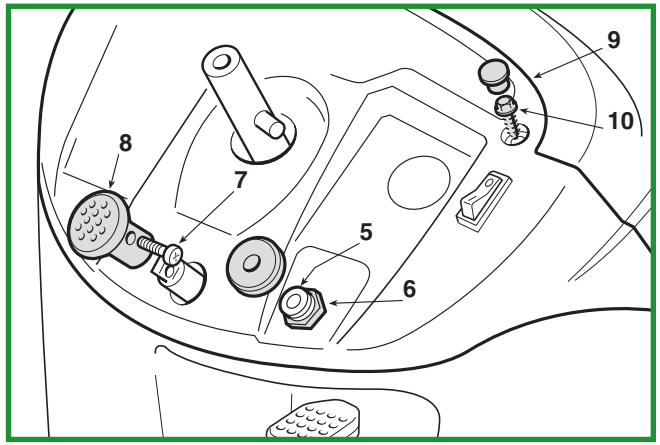
Unscrew the screw (2), remove the Belleville washer (3) and washer (4) and remove the steering wheel (1).



Unscrew the nut (5) and dismantle the ignition key block (6) without disconnecting the electrical cables, to prevent assembly errors.

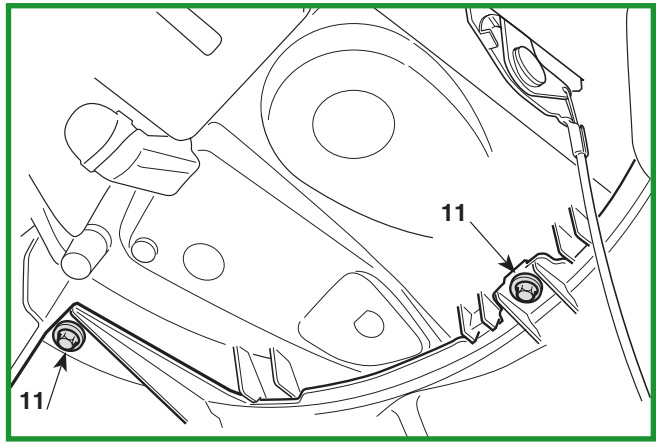
➤ ***models with cruise control:***

Loosen the screw (7) and remove the control knob (8).



Disconnect the accelerator cable terminal from the engine and disconnect all remaining electrical connections and the starter cable (where present).

The dashboard can now be removed (9); it is fixed by two upper screws (10) covered with plastic caps, and three lower screws (11).



On assembly, follow the steps described in reverse, being careful to restore wheel alignment with the steering wheel, install the Belleville washer (3) with the concave part facing down and fully tighten the screw (2).

5.4.0 REMOVAL OF THE DASHBOARD AND FRONT COVER

General informations:

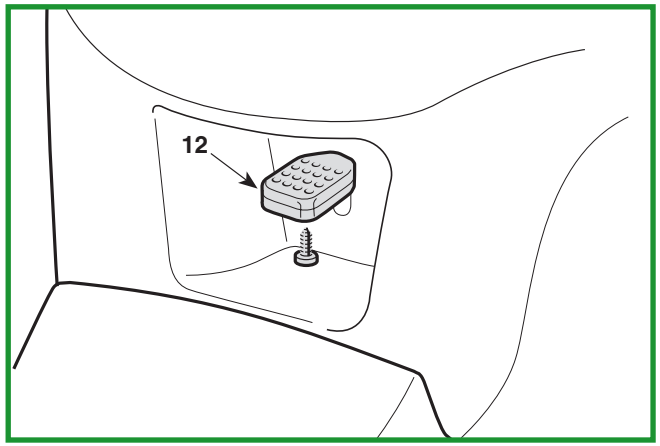
Removing the dashboard gives better access to:
- *the accelerator,*
- *the ignition block,*
- *various electrical components.*

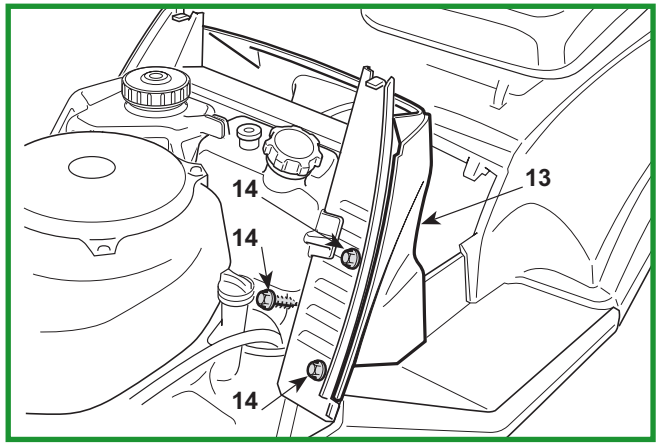
Related topics:

B) Removing the front cover

- Remove the dashboard [see point “A”].

Unscrew the parking brake lever knob (12) and dismantle the front guard (13) fixed to the chassis by six screws (14).





5.5.1 REMOVAL OF THE ENGINE

General informations:

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

Related topics:

Adjusting the engagement of the blades [☛ 4.1]
Adjusting the drive engagement [☛ 4.3]
Removing the front hood [☛ 5.1]
Adjusting the «MINIMUM» position [☛ 6.9]

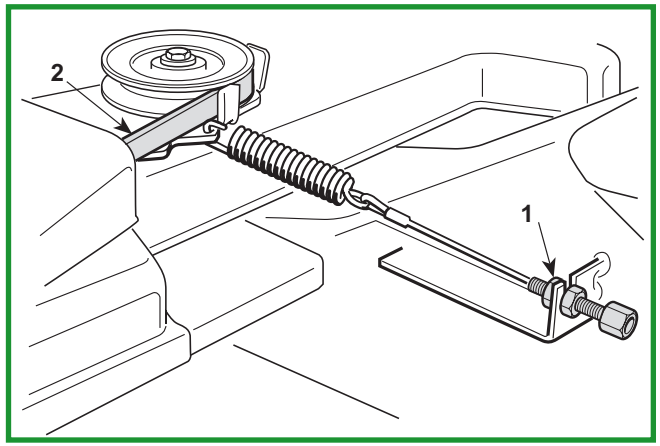
Tightening torques

5	Screw for pulley fastening	45 ÷ 50 Nm
–	Screws for engine fastening	25 ÷ 30 Nm

MAP BACK

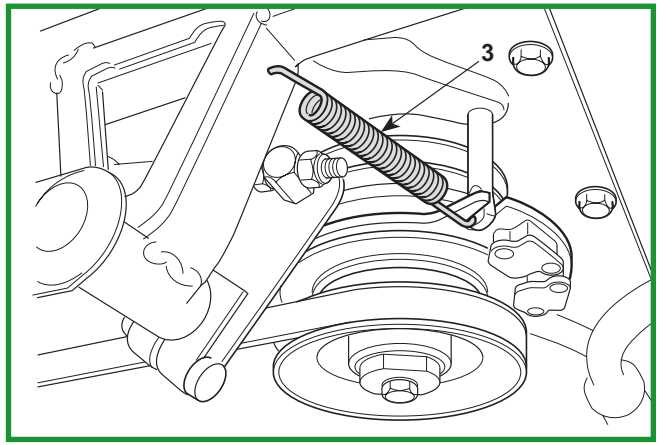
• Remove the front hood

Loosen and uncouple the adjuster (1) to loosen the blade control belt (2).



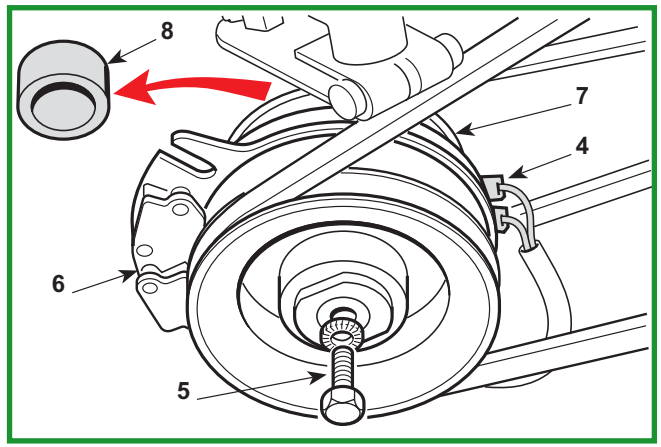
For better access to the parts concerned the transmission belt should also be slackened: this is obtained by loosening the stretcher.

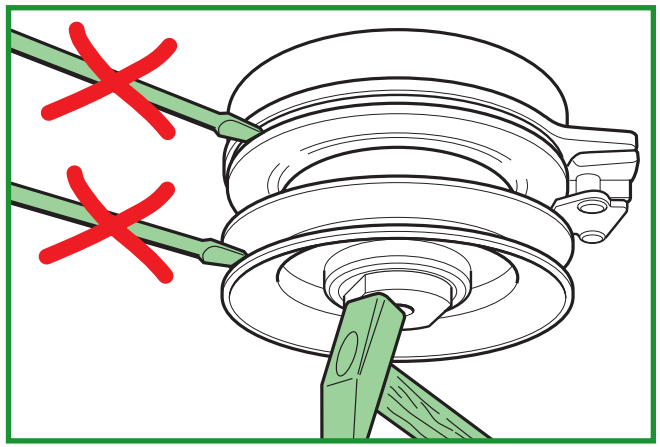
Uncouple the return spring (3) from the clutch side and disconnect the connector (4).



Unscrew the central screw (5) and remove the clutch (6) from the shaft, together with the transmission command pulley (7) and the spacer (8).

IMPORTANT - To remove the clutch (6) from the engine shaft, **absolutely do not use a lever to force the pulleys or the outer cover**. In case of difficulty, apply an unlocking spray and gently tap on the hub with a hammer, to facilitate extraction.





5.5.1 REMOVAL OF THE ENGINE

General informations:

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

Related topics:

Adjusting the engagement of the blades [☛ 4.1]
Adjusting the drive engagement [☛ 4.3]
Removing the front hood [☛ 5.1]
Adjusting the «MINIMUM» position [☛ 6.9]

Tightening torques

5	Screw for pulley fastening	45 ÷ 50 Nm
–	Screws for engine fastening	25 ÷ 30 Nm

Remove the protection from the exhaust (9) and disconnect the cable control from the accelerator and all the electrical cables.

⚠ Detach the fuel line pipe, **taking care not to spill fuel.**

Having identified and unscrewed the screws that fix the engine to the chassis, lift it by using adequate means and with due care, remembering that it weighs about 45-50 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.

On assembly, fully tighten the engine and clutch fixing screws to the amounts shown.

Reassemble the spacer (8), with the countersink facing the engine.

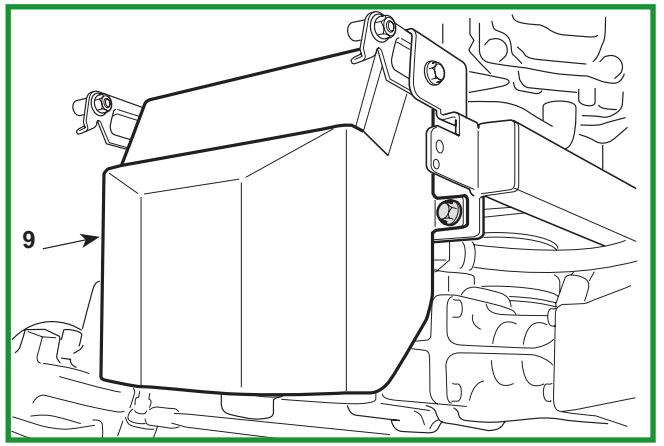
Ensure that the pin (10) is inserted in the groove in the clutch (6) and remember to replace the spring (3).

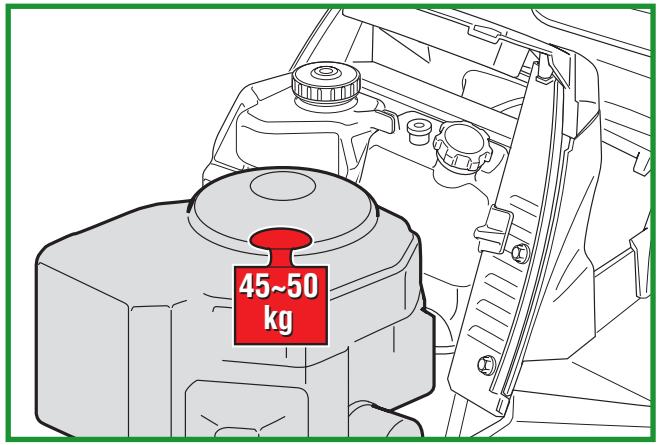
⚠ Remember to fit the clamps back on the fuel pipe and **check that it does not leak.**

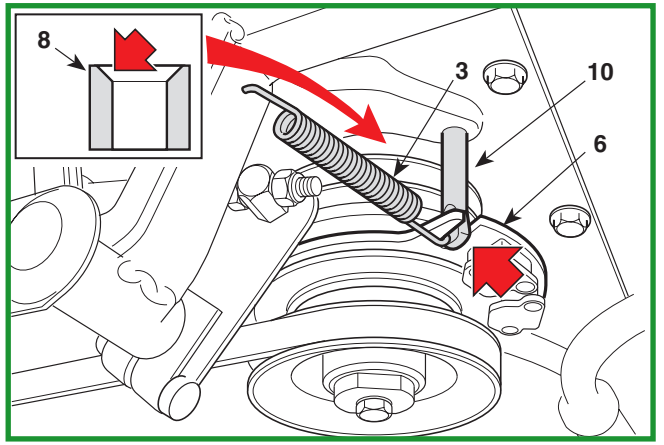
Refit the protection (9) and restore accurately the mass and all the electrical contacts, taking care to secure them in such a way that they do not interfere with the movement of the two steering tie rods.

Reattach the accelerator cable and ...

- Adjust the «MINIMUM» position.
- Reassemble the front hood.
- Replace the adjuster (1) and check the tension of the spring.
- Reset the tension of the stretcher spring if it has been loosened.







5.6.0 REMOVAL OF THE REAR AXLE

General informations:

The rear axle (Transaxle) is made up of a single sealed block which includes the hydrostatic transmission unit and the differential, and doesn't require maintenance.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

Related topics:

Lifting of the machine [☛ 2.3]
Brake adjustment [☛ 4.2]
Drive pedal adjustment [☛ 4.4]
Empting the hydraulic circuit [☛ 4.9]
Removal of the collector channel [☛ 5.3]
Removal of the wheels [☛ 6.1]

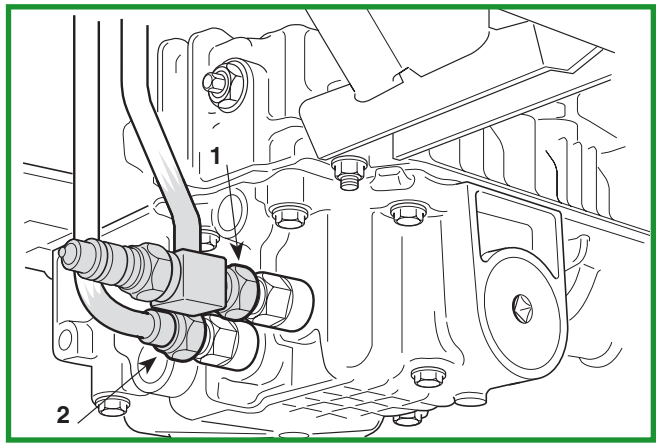
Tightening torques

1-2	Hydraulic system fittings	23 ÷ 25 Nm
16	Rear axle support nut	25 ÷ 30 Nm
17	Rear axle fastening nuts	25 ÷ 30 Nm

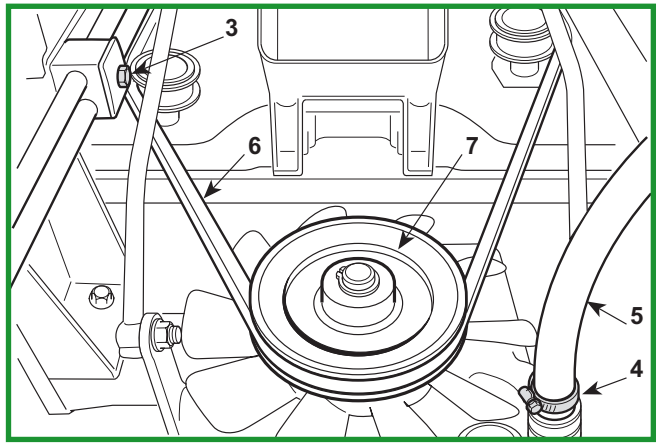
- Lift the rear part of the machine.
- Remove the collector channel.
- Remove the rear wheels.

➤ ***Model TH4 only***
- Completely empty the oil from the hydraulic system

Disconnect the rear fittings of the hydraulic system pipes (1) and (2) and loosen the fixing block screw (3) to permit pipe mobility.
Remove the clamp (4) and remove the rubber pipe (5).
Plug the remaining open holes so that dust or impurities cannot enter.

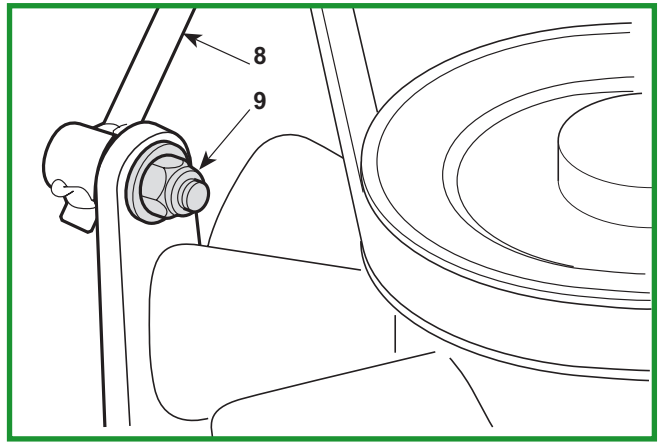


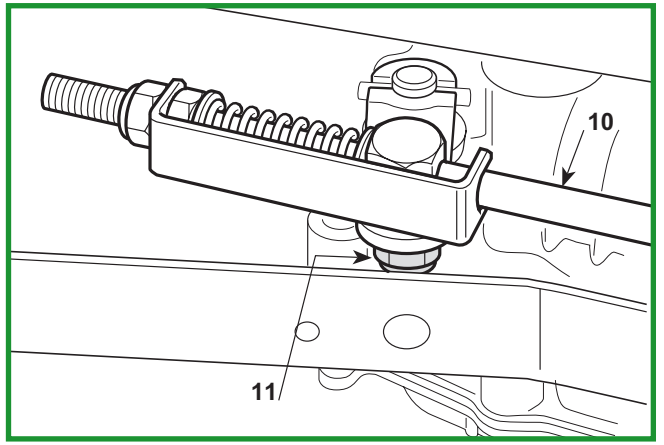
Using the outlet firmly hold the two branches of the belt (6) pulling it just enough to free it from the pulley throat (7), overcoming the resistance of the guide pulley stretcher.



Dismantle the drive control rod (8) by unscrewing the nut (9) of the relative pin.

Dismantle the brake rod (10) by unscrewing the nut placed under the lever (11).





5.6.0 REMOVAL OF THE REAR AXLE

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It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

Related topics:

Lifting of the machine [☛ 2.3]
Brake adjustment [☛ 4.2]
Drive pedal adjustment [☛ 4.4]
Empting the hydraulic circuit [☛ 4.9]
Removal of the collector channel [☛ 5.3]
Removal of the wheels [☛ 6.1]

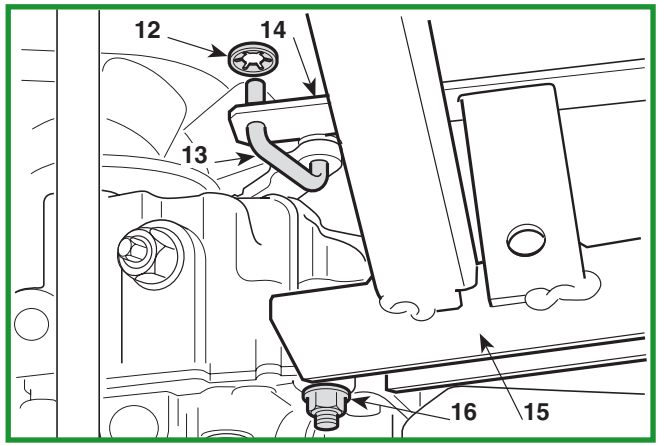
Tightening torques

1-2	Hydraulic system fittings	23 ÷ 25 Nm
16	Rear axle support nut	25 ÷ 30 Nm
17	Rear axle fastening nuts	25 ÷ 30 Nm

Remove the ring gear fastener (12) from the clamp (13) of the release lever connection (14).

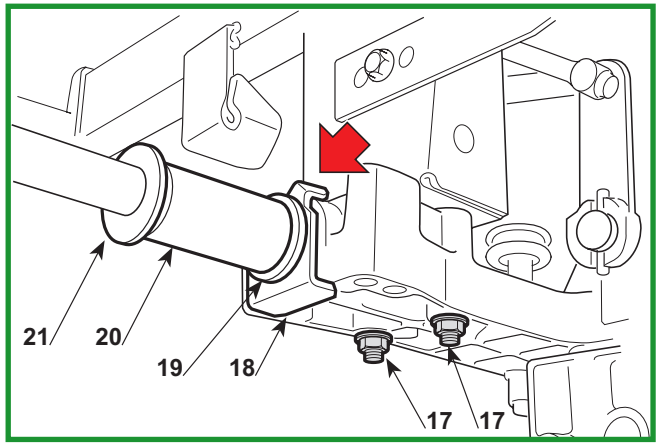
The unit is supported by a support (15) fixed by a screw with nut (16) and is fixed to the chassis by four screws with relative nuts (17).

Undo the nut (16) and then carefully undo the nuts of the four lower screws (17), that hold up the unit so that it does not fall.



On assembly follow the above indicated steps in reverse order, taking care that the ring gear fastener must always be replaced (12).

Check that the spacers (18 - 19 - 20 - 21) are correctly fitted to the shafts, in the sequence given.



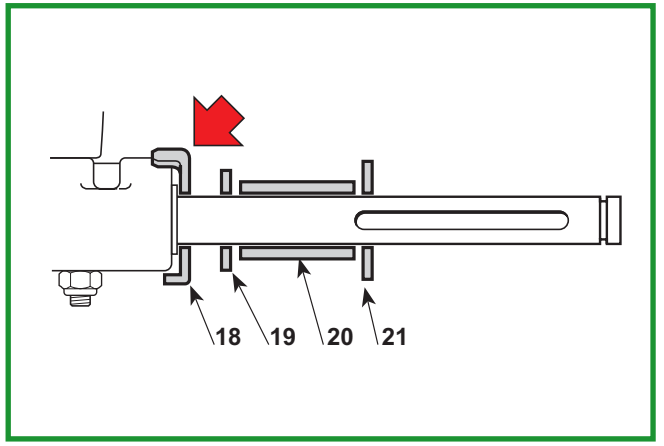
Reattach all the connections, and then …

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

If the the drive control rod has been replaced or completely pulled down:

- Adjust the travel and the position of "neutral" for the pedal

➤ ***Model TH4 only***
Reconnect the rear fittings of the hydraulic system pipes (1) and (2), tightening them to the prescribed value and reassemble the rubber pipe (5) with the clamp (4).
Tighten the screw (3) to return the pipes in position.



- Completely fill the hydraulic system

WORKSHOP MANUAL

5.7.1 REMOVAL OF THE FRONT AXLE

General informations:

The front axle is made up of a sealed single block which includes the hydrostatic transmission unit and a torque transfer box and doesn't require maintenance.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

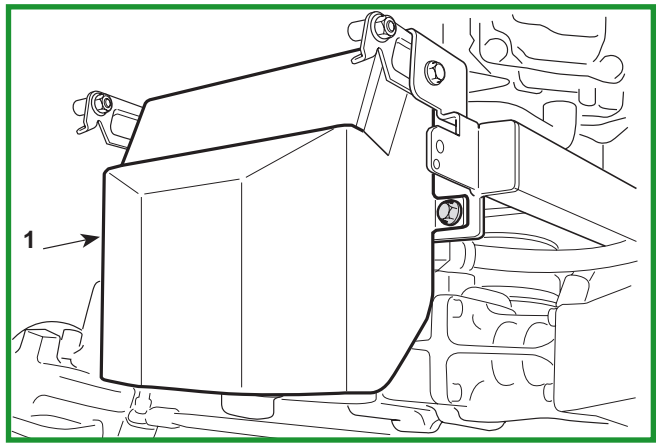
Related topics:

Lifting of the machine [☛ 2.3]
Brake adjustment [☛ 4.2]
Drive pedal adjustment [☛ 4.4]
Steering geometry adjustment [☛ 4.6]
Empting the hydraulic circuit [☛ 4.9]
Removal of the wheels [☛ 6.1]

Tightening torques

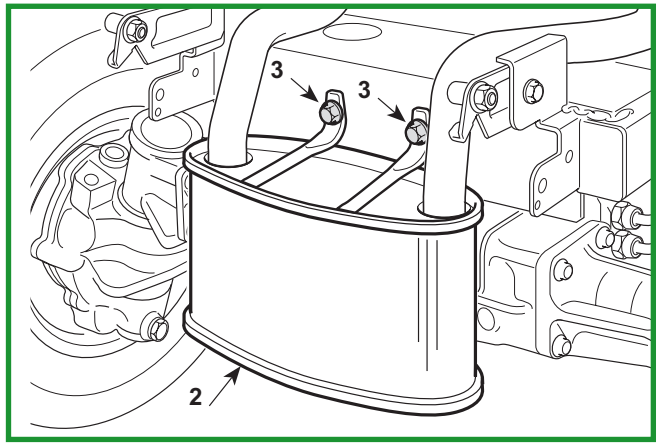
4 - 5	Hydraulic system fittings	23 ÷ 25 Nm
8	Steering tie-rod joint nut	125 ÷ 135 Nm
11	Front axle fastening nut	280 Nm
14 - 16	Screws for bracket fastening	45 ÷ 55 Nm

- Lift the front part of the machine.
- Remove the front wheels.
- Completely empty the oil from the hydraulic system.



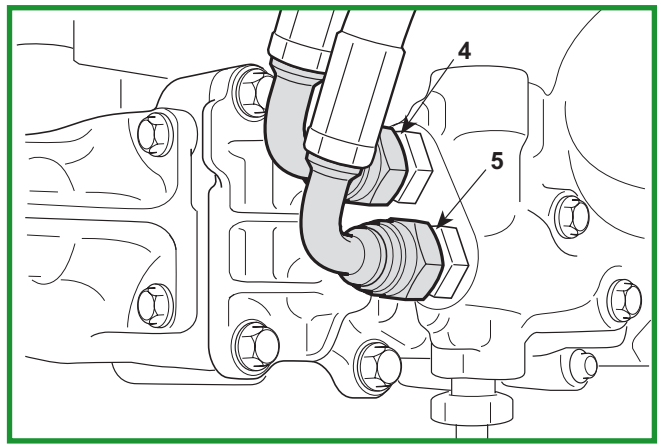
Remove the silencer guard (1) and the silencer (2) fixed by the screws (3).

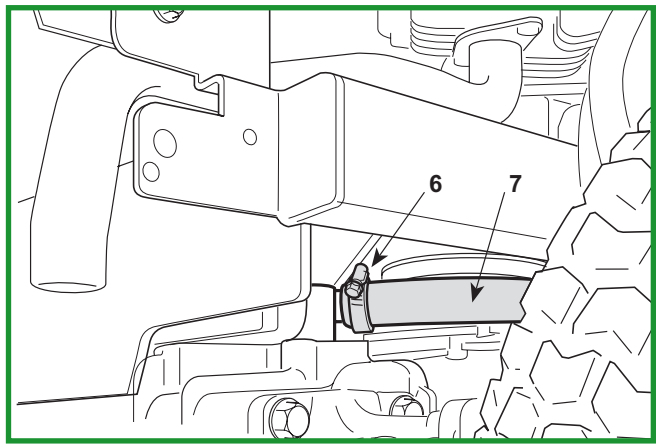
Disconnect the front fittings of the hydraulic system pipes (4) and (5), marking them so that they can be correctly repositioned.



Remove the clamp (6) and slide out the rubber pipe (7).

Plug the open holes so that dust or impurities cannot enter.





5.7.1 REMOVAL OF THE FRONT AXLE

General informations:

The front axle is made up of a sealed single block which includes the hydrostatic transmission unit and a torque transfer box and doesn't require maintenance.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

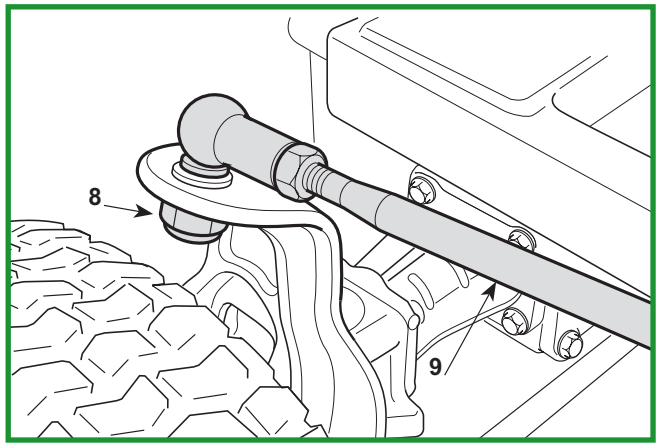
Related topics:

Lifting of the machine [☛ 2.3]
Brake adjustment [☛ 4.2]
Drive pedal adjustment [☛ 4.4]
Steering geometry adjustment [☛ 4.6]
Empting the hydraulic circuit [☛ 4.9]
Removal of the wheels [☛ 6.1]

Tightening torques

4 - 5 Hydraulic system fittings	23 ÷ 25 Nm
8 Steering tie-rod joint nut	125 ÷ 135 Nm
11 Front axle fastening nut	280 Nm
14 - 16 Screws for bracket fastening	45 ÷ 55 Nm

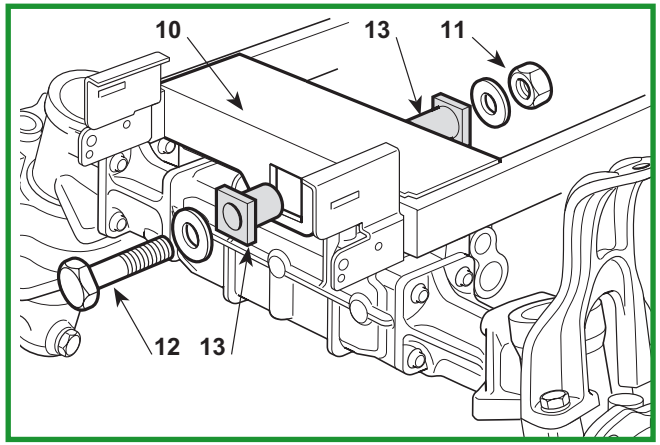
Unscrew the nuts (8) and remove both steering tie-rods (9).



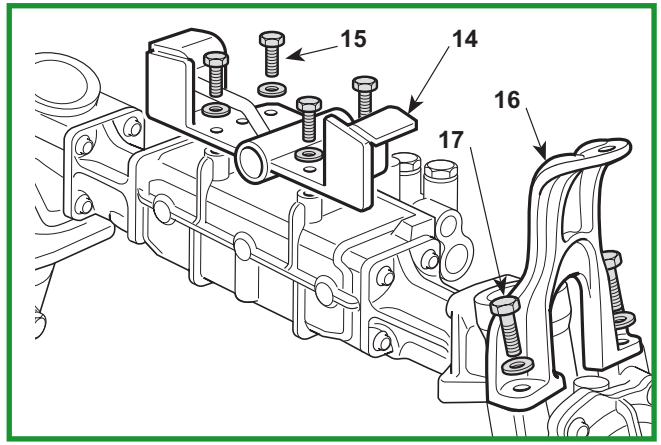
The unit is supported by a support (10) to which it is fixed by a screw (11) with a nut (12).

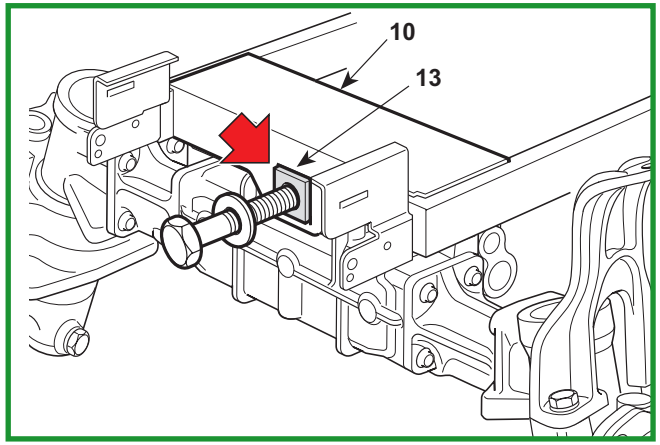
Unscrew the nut (11) and then carefully undo the screw (12) and the bush square (13), holding up the unit so that it does not fall.

If the unit needs to be replaced, the supporting bracket should be removed (14), which is fixed by the screws (15) and the tie-rod bracket of the steering (16) is fixed by the screws (17).



On assembly follow the above indicated steps in reverse order, taking care to correctly reposition the bush square (13) into their respective housings in the support (10).





5.7.1 REMOVAL OF THE FRONT AXLE

3 / 3

General informations:

The front axle is made up of a sealed single block which includes the hydrostatic transmission unit and a torque transfer box and doesn't require maintenance.
It only needs to be removed to be replaced or for an overhaul by the Manufacturer's Service Centre.

Related topics:

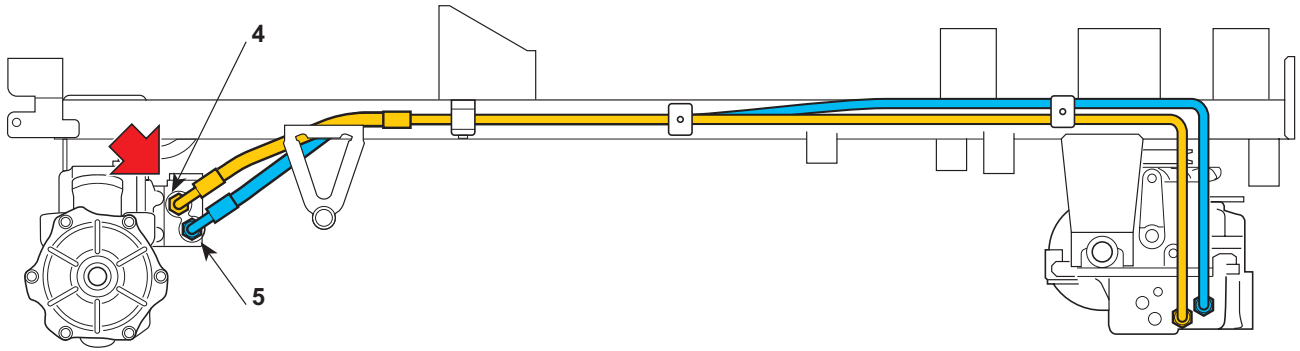
Lifting of the machine [☛ 2.3]
Brake adjustment [☛ 4.2]
Drive pedal adjustment [☛ 4.4]
Steering geometry adjustment [☛ 4.6]
Empting the hydraulic circuit [☛ 4.9]
Removal of the wheels [☛ 6.1]

Tightening torques

4 - 5 Hydraulic system fittings	23 ÷ 25 Nm
8 Steering tie-rod joint nut	125 ÷ 135 Nm
11 Front axle fastening nut	280 Nm
14 - 16 Screws for bracket fastening	45 ÷ 55 Nm

When reassembling the fittings (4) and (5) take care to respect the positions indicated on the connection diagram.

- Reassemble the front wheels.
- Check front wheel and steering wheel alignment.
- Completely fill the hydraulic system.



5.8.0 REMOVAL OF THE CUTTING DECK

General informations:

Removing the cutting deck facilitates all operations concerning the blade connection cogged belt and the revision and replacement of hubs, bearings and blade shafts.
With some practice and experience it is possible to do this work with the deck still in position.

Related topics:

Aligning the cutting deck [☛ 4.5]
Removal of the collector channel [☛ 5.3]

- Remove the collector channel.

After moving the cutting deck into position «1», loosen the adjuster of the cable (1) and slide it away from its housing.

Unscrew the two nuts (2) of the two pins (3) from the two front connecting rods (4), without loosening or changing the position of the nuts (5) and locknuts (6).

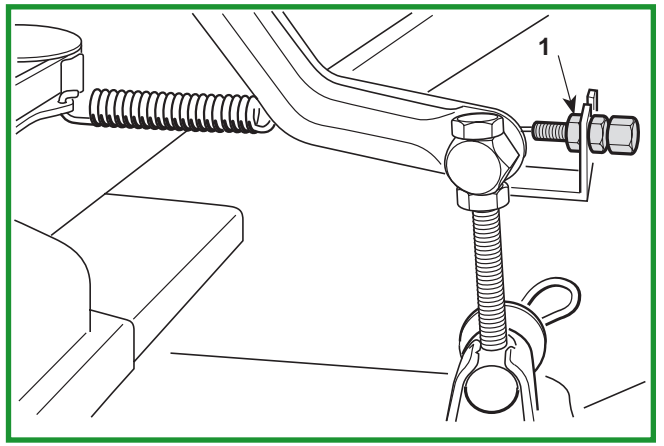
NOTE - For some preparations, the pins (3) are fixed using the split pins (2a).

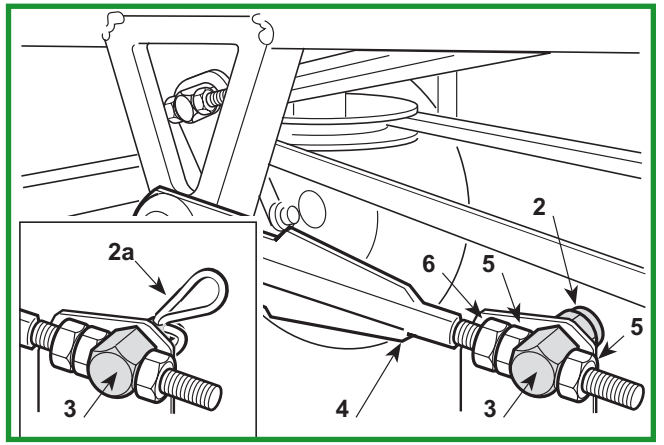
Remove the two flexible split pins (7) of the rear pins (8). Then check that there are no obstructions, the deck can be removed by pulling it out so that all the pins come out of housings.

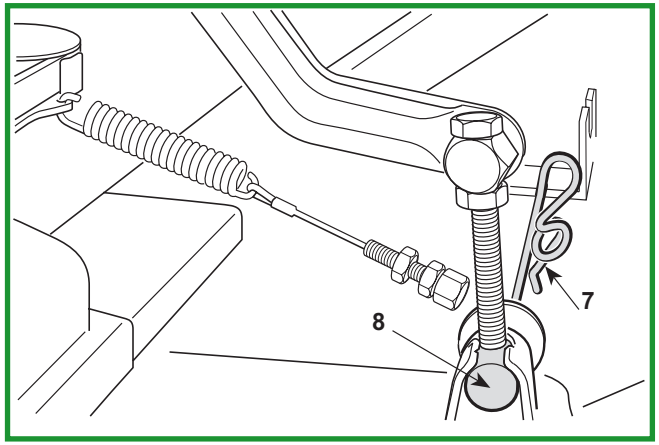
On assembly ensure that the two rear holes of the corner joints (9) are used for fixing the pins (3), without fixing the relative nuts (2).

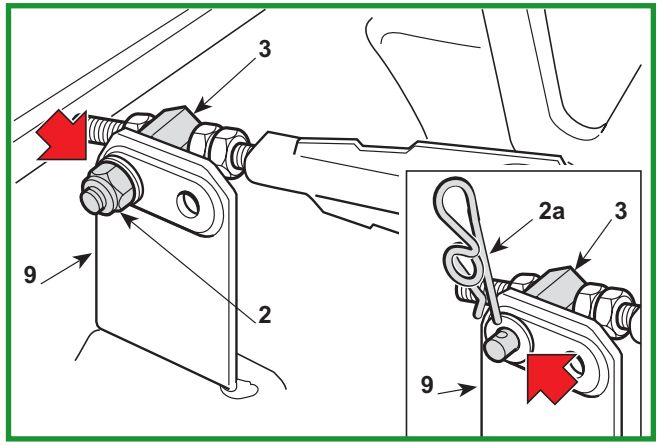
After having replaced all the connections, ...

- Reassemble the collector channel.
- Carry out a complete adjustment of the deck [see 4.5], if the nuts and locknuts (5 - 6) have been accidently moved.









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:

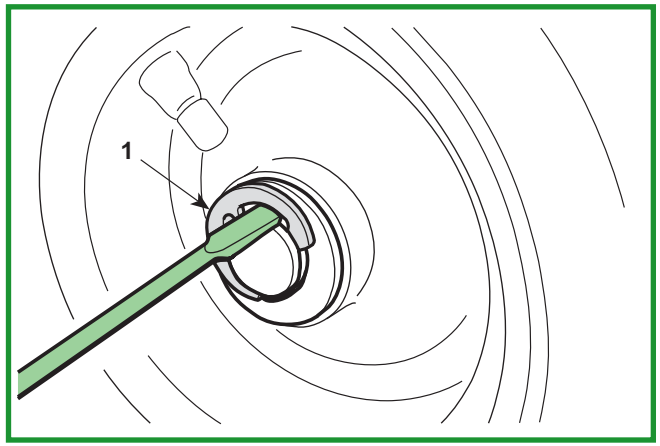
Aligning the cutting deck [☛ 4.5]

Inflation pressure

Front	1,0 Bar
Rear	1,4 Bar

A) Pneumatici

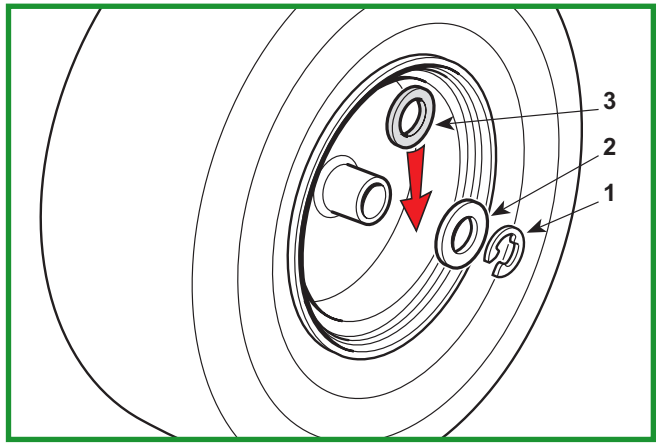
After replacing one or more tyres or the wheels, it is always necessary to check the pressure and to check the alignment of the cutting deck.



⚠
WARNING
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 snap ring (1) with the bevel facing inwards.

For the rear wheels: replace the shoulder washer (2) and the snap 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).

6.2.0 REPLACEMENT OF FRONT WHEEL BEARINGS

General informations:

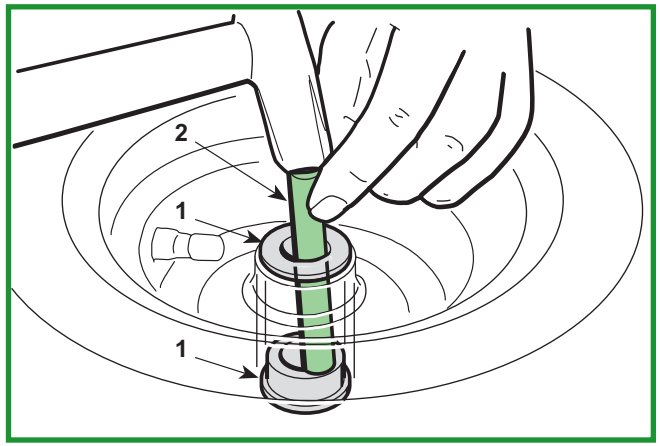
Model TH only

Related topics:

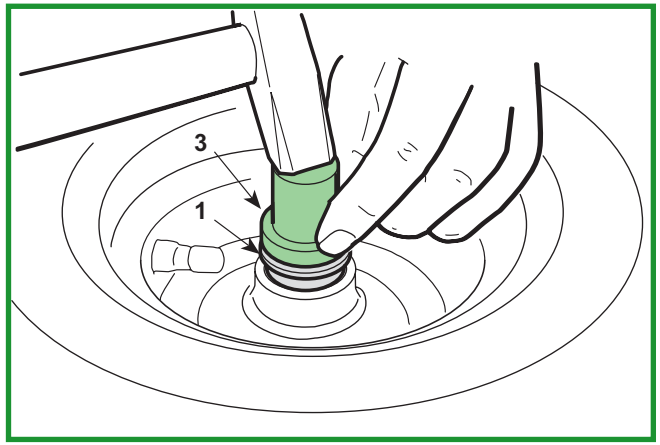
Special tools [☛ 2.2]
Lifting of the machine [☛ 2.3]
Removal of the wheels [☛ 6.1]

- 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 buffer (3) **working only on the outer ring of the bearing.**

6.3.0 DISMANTLING OF THE STEERING COMPONENTS

General informations:

Related topics:

Adjusting the drive engagement [☛ 4.3]
Steering geometry adjustment [☛ 4.6]

Tightening torques

19	Nut for pulley fastening	25 ÷ 30 Nm
21	Screws for steering unit fastening	50 ÷ 55 Nm
24	Nuts for support fastening	35 ÷ 40 Nm
31	Nuts for bearing support fastening	25 ÷ 30 Nm
34	Nut for toothed sector bearing fastening	55 ÷ 60 Nm

NOTE
Removing steering parts requires removing the entire unit from the vehicle.

A) Removing the steering unit from the vehicle

Remove the wire clamp (1), accessible through the inspection hatch in front of the seat.

➤ ***For TH4 only***

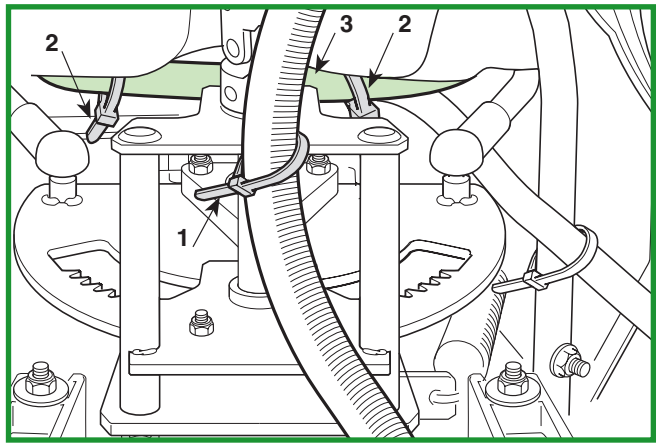
Remove the two clamps (2) to free the hydraulic system pipe (3).

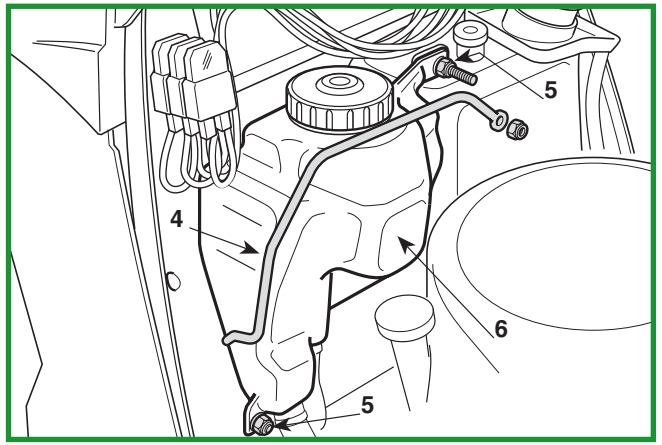
Remove the protective bow (4), unscrew the two nuts (5) and laterally move the oil tank (6), being careful not to spill oil.

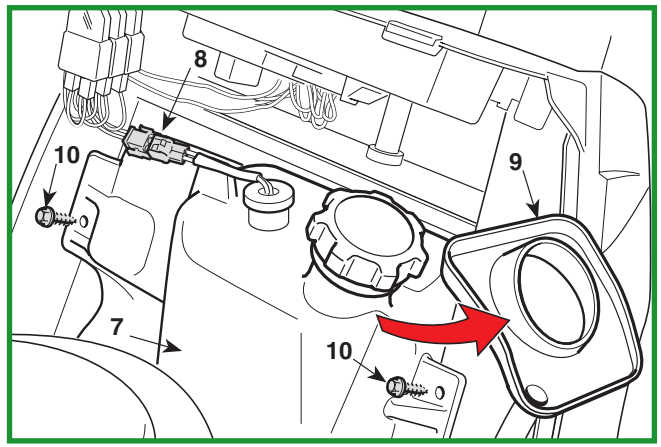
Empty the tank of petrol (7).

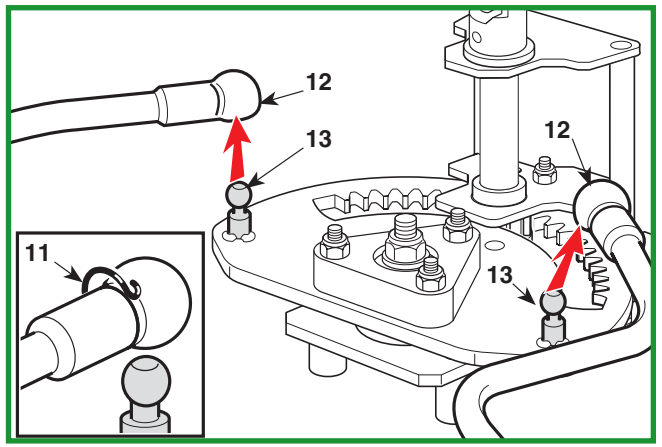
Detach the level indicator connector (8), remove the petrol guard (9) and unscrew the two screws (10) to remove the tank (7).

Extract the retention spring (11) and disconnect each articulated head (12) from their relevant pins (13).









6.3.0 DISMANTLING OF THE STEERING COMPONENTS

General informations:

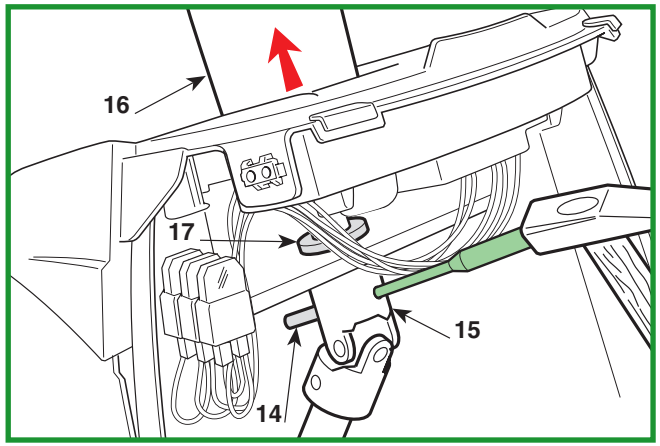
Related topics:

Adjusting the drive engagement [☛ 4.3]
Steering geometry adjustment [☛ 4.6]

Tightening torques

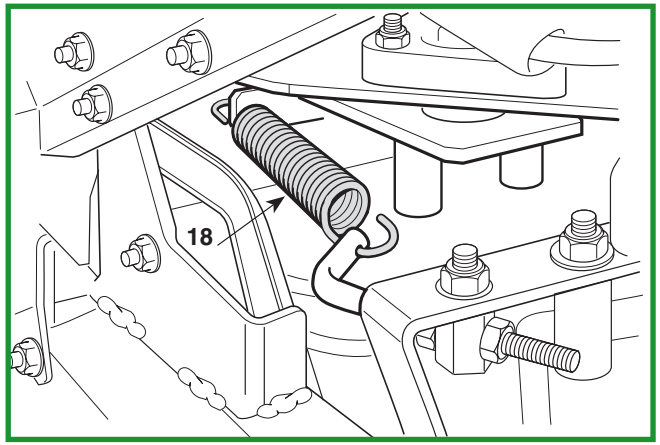
19	Nut for pulley fastening	25 ÷ 30 Nm
21	Screws for steering unit fastening	50 ÷ 55 Nm
24	Nuts for support fastening	35 ÷ 40 Nm
31	Nuts for bearing support fastening	25 ÷ 30 Nm
34	Nut for toothed sector bearing fastening	55 ÷ 60 Nm

Using a drift of suitable diameter, extract the pin (14) from the upper cardan joint (15) and extract the steering wheel (16) with relevant column, being careful not to remove the bushing (17).



Unhook the spring (18) from the drive belt tensioner.

Working from the lower part of the vehicle, unscrew the nut (19) and remove the pulley (20) to access the steering unit fastening screws.

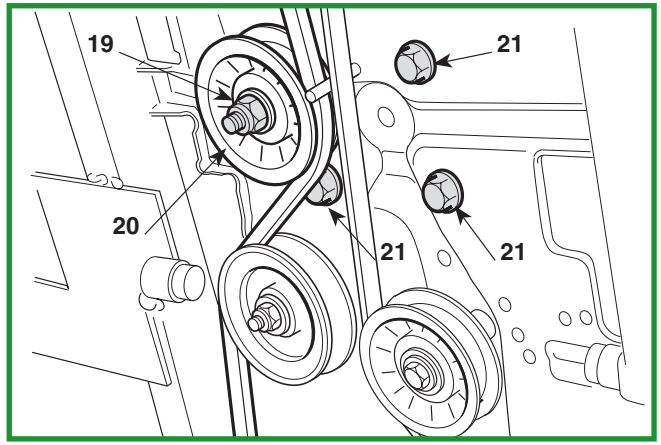


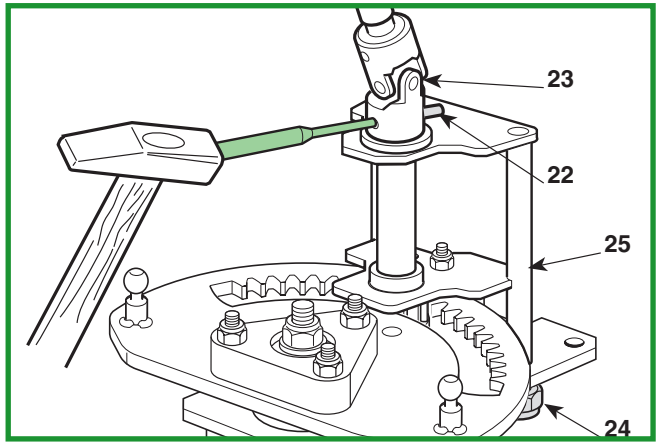
Unscrew the 4 screws (21) and remove the unit.

B) Part removal

Extract the pin (22) and remove the lower cardan joint (23).

Unscrew the two nuts (24) and remove the support (25).





6.3.0 DISMANTLING OF THE STEERING COMPONENTS

General informations:

Related topics:

Adjusting the drive engagement [☛ 4.3]
Steering geometry adjustment [☛ 4.6]

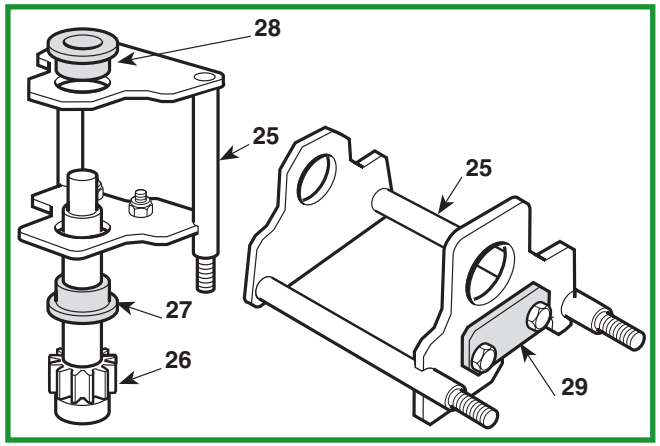
Tightening torques

19	Nut for pulley fastening	25 ÷ 30 Nm
21	Screws for steering unit fastening	50 ÷ 55 Nm
24	Nuts for support fastening	35 ÷ 40 Nm
31	Nuts for bearing support fastening	25 ÷ 30 Nm
34	Nut for toothed sector bearing fastening	55 ÷ 60 Nm

Slide out the shaft with the pinion (26) and lower bushing (27).

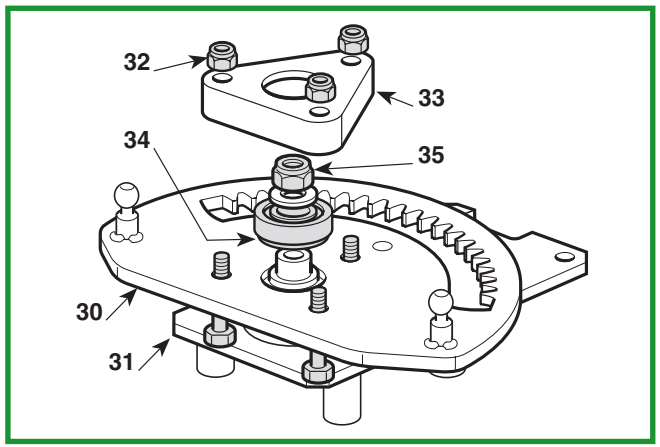
Remove the upper bushing (28).

Check sliding plate wear (29) and replace if necessary.



Check toothed sector allowance (30) compared to the support (31); if excessive, replace the bearing.

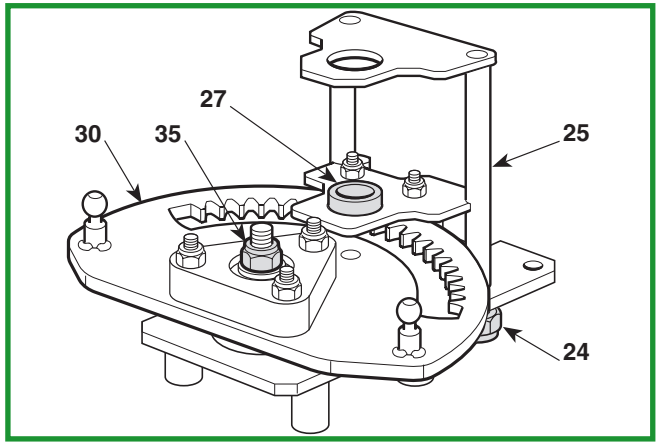
Unscrew the three nuts (32), remove the support (33) and slide out the bearing (34), secured by the nut (35) to replace.



C) Part reassembly and allowance adjustments

Reassemble the lower bushing (27) and support (25) fully tightening the two nuts (24).

Loosen the nut (35) to let the toothed sector (30) move.



6.3.0 DISMANTLING OF THE STEERING COMPONENTS

General informations:

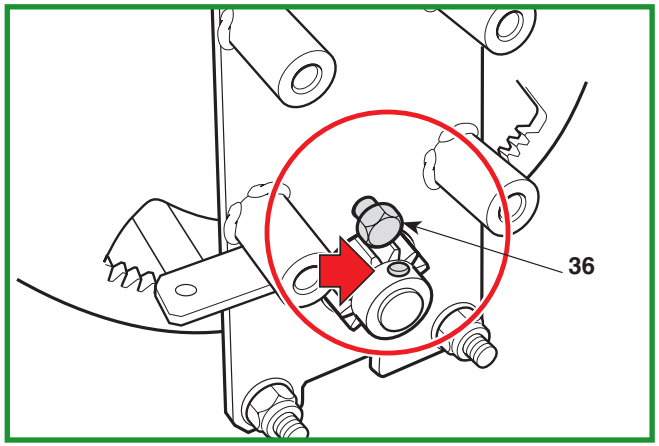
Related topics:

Adjusting the drive engagement [☛ 4.3]
Steering geometry adjustment [☛ 4.6]

Tightening torques

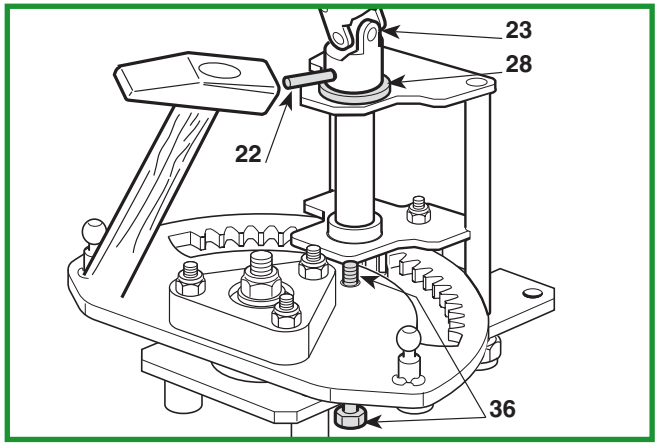
19	Nut for pulley fastening	25 ÷ 30 Nm
21	Screws for steering unit fastening	50 ÷ 55 Nm
24	Nuts for support fastening	35 ÷ 40 Nm
31	Nuts for bearing support fastening	25 ÷ 30 Nm
34	Nut for toothed sector bearing fastening	55 ÷ 60 Nm

Place an M8 screw (36) in the toothed sector hole and reassemble the shaft with pinion (30) so that the pin and tooth face the screw head (36).



Reassemble the upper bushing (28) and cardan joint (23) with relevant pin (22) then remove the screw (36).

Move the toothed sector (30) longitudinally until allowance is reduced to a minimum between sector teeth and the pinion. Then tighten the nut (35) and grease concerned parts.

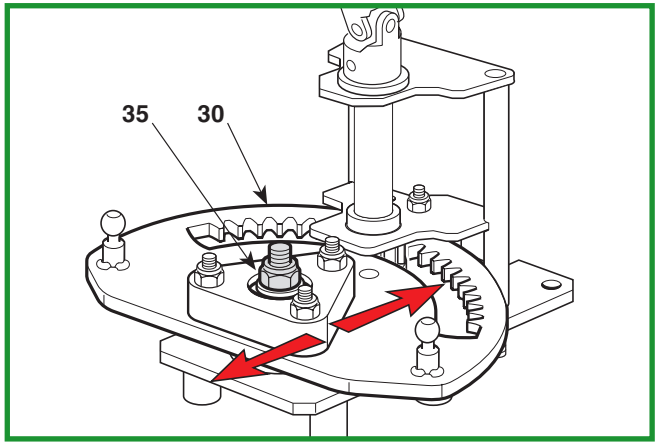


D) Steering unit reassembly on the vehicle

Follow the steps in point "A" in reverse order.

When assembly is completed:

- Check front wheel and steering wheel alignment.
- Adjust the drive belt.



6.4.0 REPLACEMENT OF DRIVE BELT

General informations:

Related topics:

Adjusting the drive engagement [☛ 4.3]
Removal of the collector channel [☛ 5.3]
Removal of the engine [☛ 5.5]
Belt assembly [☛ 9.2]

Tightening torques

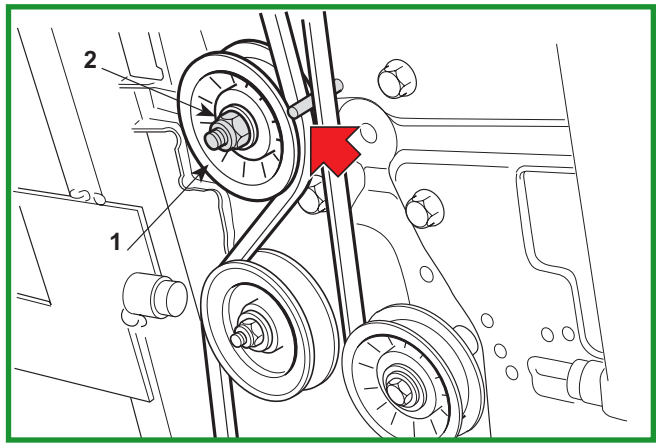
2	Nut for pulley fastening	25 ÷ 30 Nm
3	Nut for small wheel fastening	25 ÷ 30 Nm

- Dismantle the engine pulley to release the belt.
- Remove the collector channel.

To operate the parts concerned more easily, the transmission belt should also be slackened.

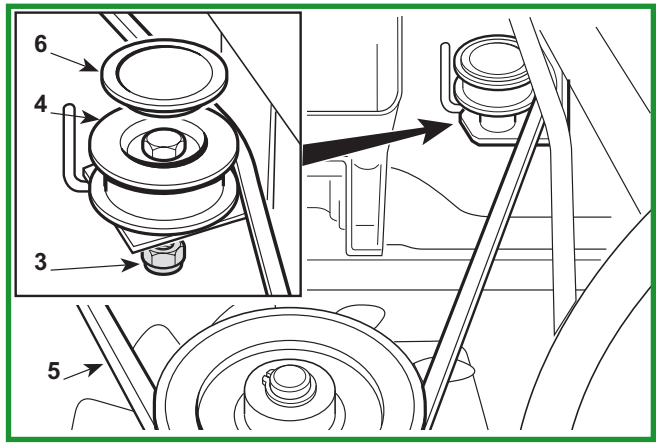
This is obtained by loosening the stretcher.

Dismantle the stretcher pulley (1) which is fixed by the nut (2).



Loosen the nut (3) of the right rear wheel (4) just enough to allow passage of the belt (5) and to remove the belt.

On assembly, make sure that the belt (5) is correctly positioned in the pulleys, the small side wheels and inside the rims.



Always reassemble the dust cover (6).

When assembly is completed, …

- Reassemble the engine pulley.
- Adjust the drive belt.
- Reassemble the collector channel.

6.5.0 REPLACEMENT OF SMALL WHEELS FOR THE DRIVE BELT

General informations:

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Related topics:

Adjusting the drive engagement [☛ 4.3]
Removal of the collector channel [☛ 5.3]
Belt assembly [☛ 9.2]

Tightening torques

2	Nuts for small wheel fastening	25 ÷ 30 Nm

- Remove the collector channel.

To operate the parts concerned more easily, the transmission belt should also be slackened. This is obtained by loosening the stretcher.

The four small side wheels are fixed to the chassis with a nut (2).

The small wheels differ in material, spacer length and type of assembly.

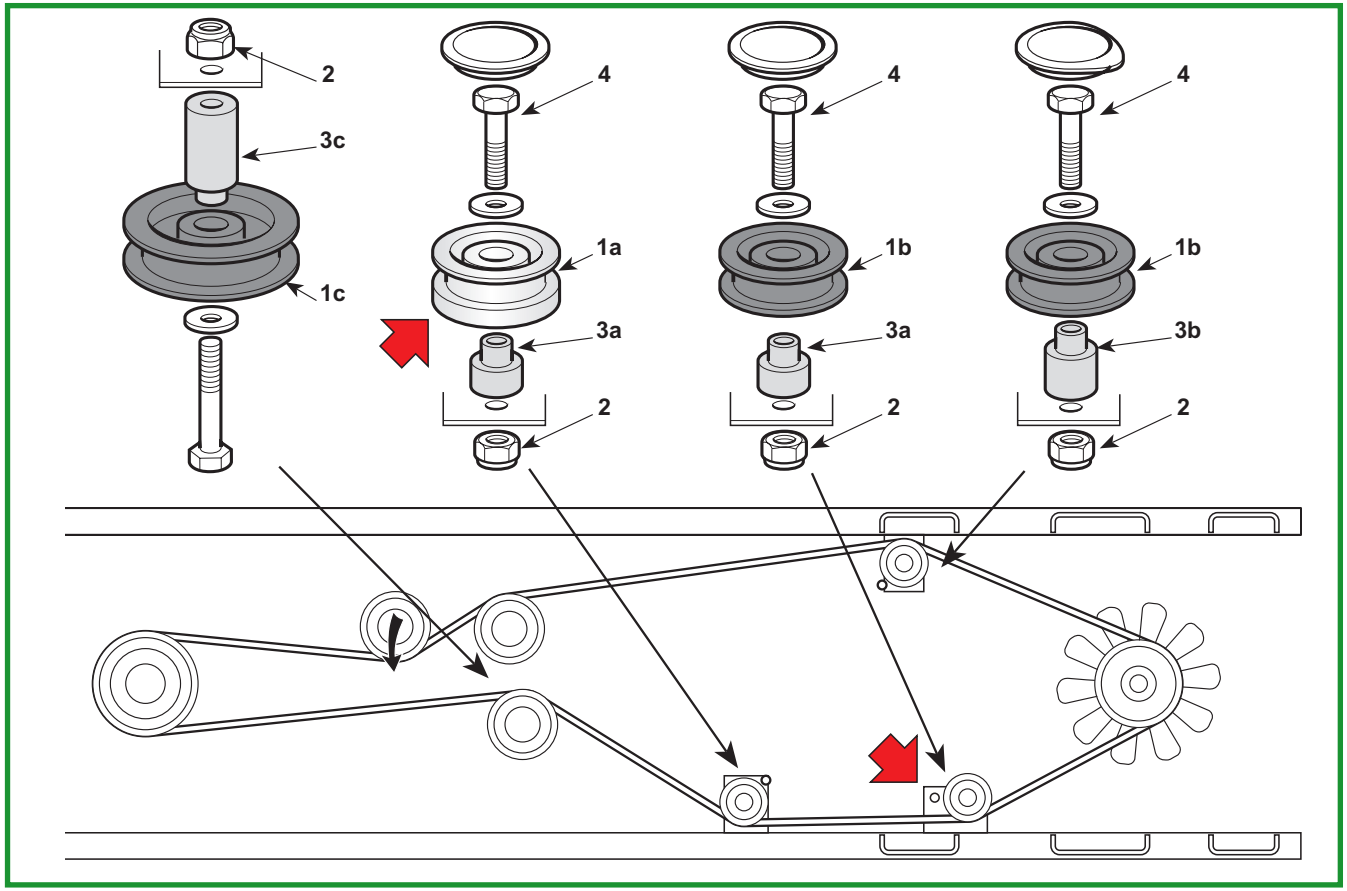
The small wheels differ in:
– material **(1a - metal)** or **(1b and 1c - plastic)**;
– spacer length **(3a - short)**, **(3b - medium)** or **(3c - long)**;
– type of assembly.

On assembly it is important to follow both specifications, as shown on the diagram, taking into account that the left rear small wheel should be placed in the rear hole of the chassis plate.

Always reassemble the dust covers (4).

Once assembly is completed ...

- Adjust the drive engagement.
- Reassemble the collector channel.



6.6.0 REPLACEMENT OF BLADE CONTROL BELT

General informations:

Related topics:

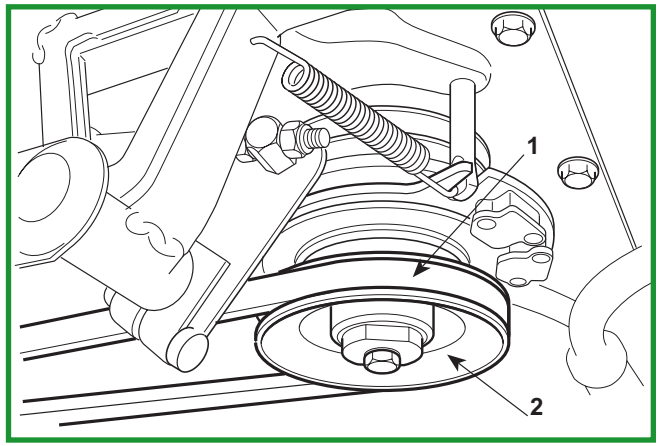
Adjusting the engagement of the blades [☛ 4.1]
Belt assembly [☛ 9.2]

Tightening torques

4	Nut for guide pulley fastening	20 ÷ 25 Nm
7	Screw for pulley fastening	20 ÷ 25 Nm

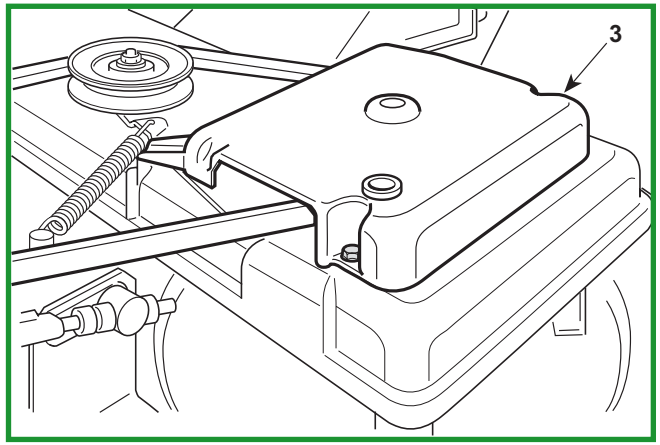
NOTE - The blade belt guards could have different configurations and fixings; in any case they must all be removed, after having identified all the fixing points.

Pull a branch of the belt (1) to free it from the engine pulley (2).



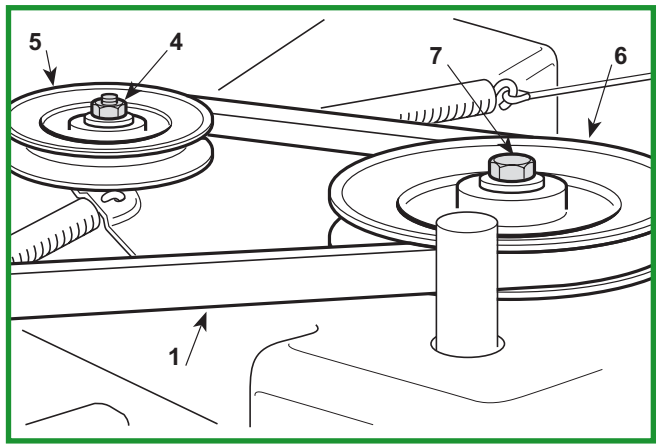
Set the cutting deck in the lowest position, to obtain greater accessibility, and then dismantle the upper casing (3).

Loosen the nut almost completely (4) without dismantling the guide pulley (5) so it is possible to slide the belt out



Keeping the blade locked, unscrew the screw (6) and dismantle the command pulley (7) to remove the belt (1).

On assembling, make sure that the belt is correctly positioned to the pins and in the pulley rims.



When assembly has been carried out, it is recommended..

- Check the blade engagement adjustment.

6.7.0 REPLACEMENT OF BLADE CONNECTION BELT

General informations:

Related topics:

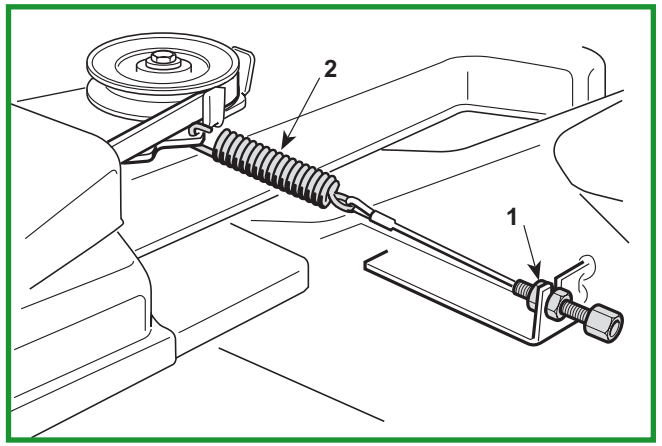
Special tools [☛ 2.2]
Adjusting the engagement of the blades [☛ 4.1]
Belt assembly [☛ 9.2]

Tightening torques

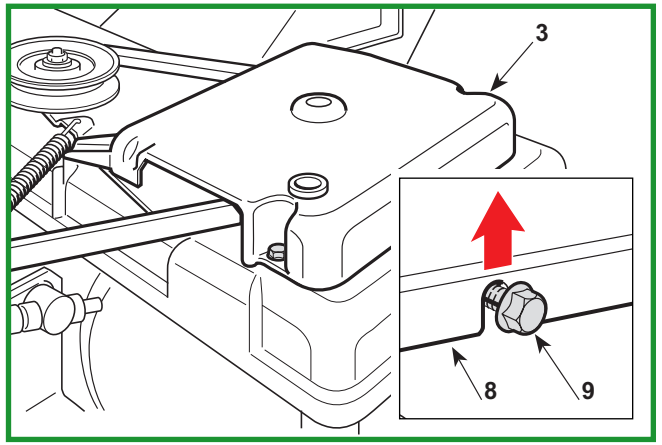
4	Screws for blade pulley fastening ...	20 ÷ 25 Nm
6	Joint screw for the stretcher plate ..	35 ÷ 40 Nm
11 - 12	Nuts for pin fastening	30 ÷ 35 Nm
13 - 14	Nuts for pulley fastening	30 ÷ 35 Nm

NOTE - The blade belt guards could have different configurations and fixings; in any case they must all be removed, after having identified all the fixing points.

Set the cutting deck in the lowest position, to obtain greater accessibility, then loosen and uncouple the adjuster (1) to release the spring (2).

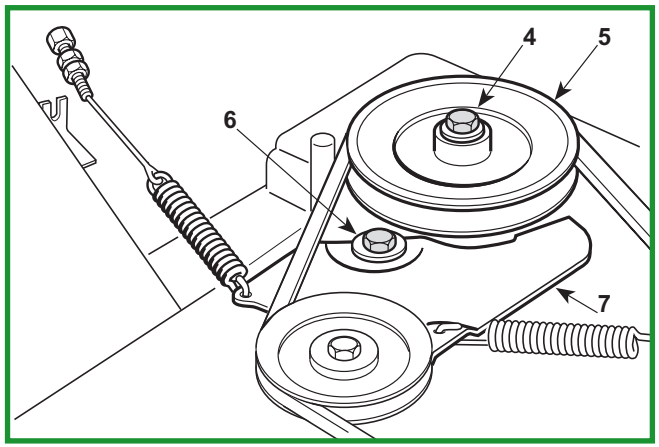


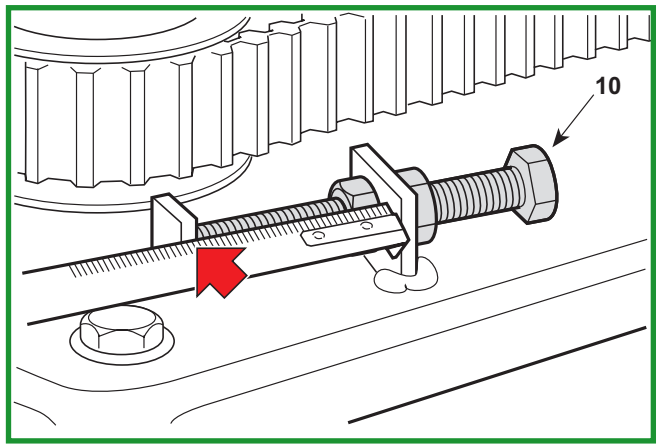
Dismantle the upper casing (3), unscrew the screw (4) and dismantle the command pulley (5); unscrew the joint screw (6) and remove the stretcher plate (7).



Take off the protective casing (8) by loosening the six perimeter screws (9) and sliding it away from its slots.

Take the adjuster length (10) (that should be restored on assembly to obtain a preliminary belt adjustment) and completely loosen it.





WORKSHOP MANUAL

6.7.0 REPLACEMENT OF BLADE CONNECTION BELT

General informations:

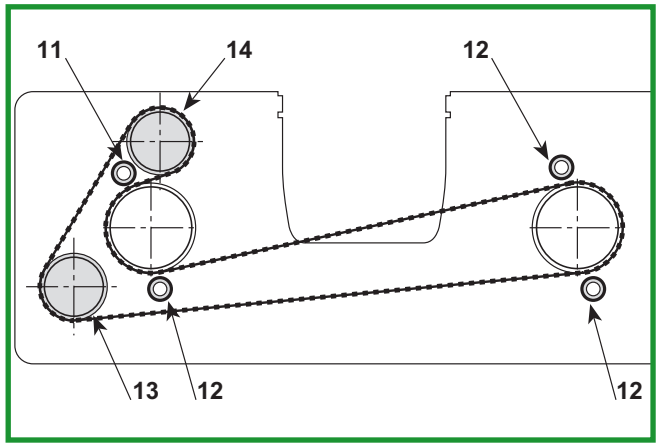
Related topics:

Special tools [☛ 2.2]
Adjusting the engagement of the blades [☛ 4.1]
Belt assembly [☛ 9.2]

Tightening torques

4	Screws for blade pulley fastening ...	20 ÷ 25 Nm
6	Joint screw for the stretcher plate ..	35 ÷ 40 Nm
11 - 12	Nuts for pin fastening	30 ÷ 35 Nm
13 - 14	Nuts for pulley fastening	30 ÷ 35 Nm

Dismantle the pin (11); loosen the fastening nuts of the three pins (12) and of the pulleys (13) and (14), to dismantle the belt.

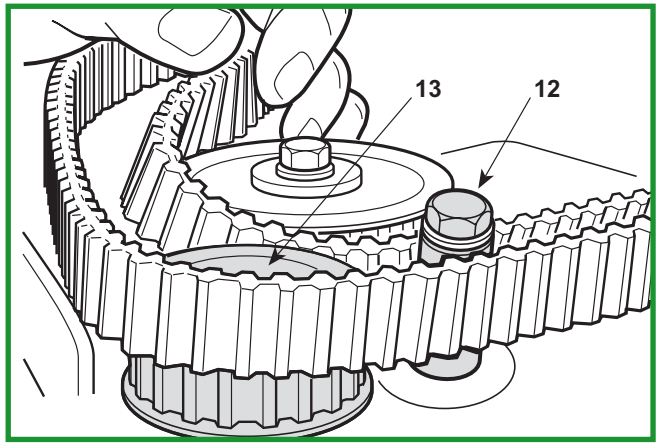


Assemble the new belt so that when keeping the two arms taut, the blades are at 90° from each other.

To reassemble perform the operations described above in reverse, before locking the pin (11) and the pulleys (13) and (14), restore the previously detected adjuster length and check that the blades are at 90°.

Using the specified tool (15) check on the piston (16) the belt yield values and the applied force, and regulate the stretcher until obtaining a yield of 9 ÷ 10 mm, applying a force of:

- 3,5 kg mod. 102
- 4,2 kg mod. 122

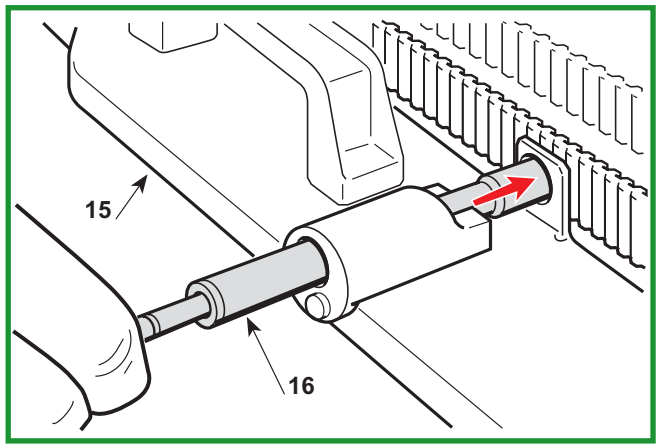


Reassemble the casing, the stretcher and the blade control belt, noting the exact position of the pins and the pulley rims.

On reassembly of the spring (2), take care to fix it to the hole foreseen for each model.

Finally, when assembly is complete it is recommended to…

- Check the adjustment of the blade coupling spring.



WORKSHOP MANUAL

6.8.0 REPLACEMENT OF THE SUPPORTS AND SHAFTS OF THE BLADES

General informations:

Related topics:

Special tools [☛ 2.2]
Removing the blades [☛ 4.8]
Removal of the cutting deck [☛ 5.8]
Removal of blade control belt [☛ 6.6]
Removal of blade connection belt [☛ 6.7]

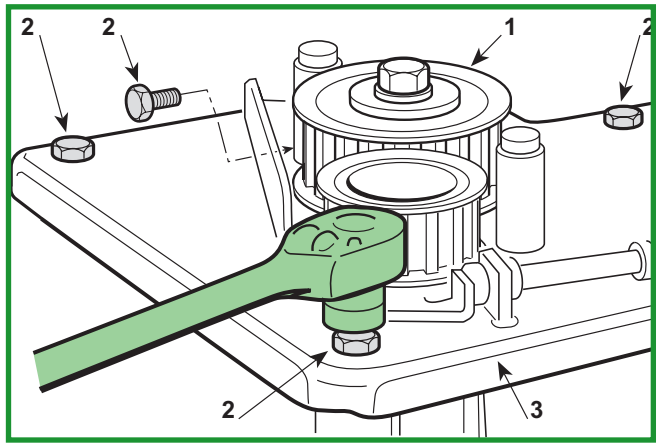
Tightening torques

2	Screws for plate fastening	30 ÷ 35 Nm
5	Nuts for flange support fastening	25 ÷ 30 Nm

- Remove the cutting deck.

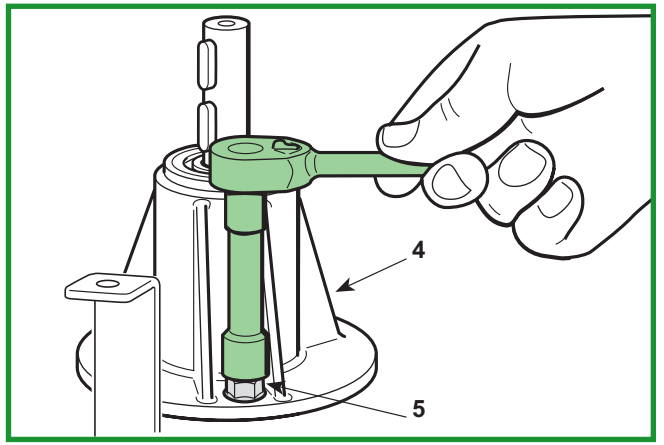
NOTE
This operation is not strictly necessary as, with a little practice and experience, it is possible to dismantle the deck supports without removing the deck.

- Remove the blade control belt.
- Remove the blade connection belt.
- Remove the blades and take off the hubs.



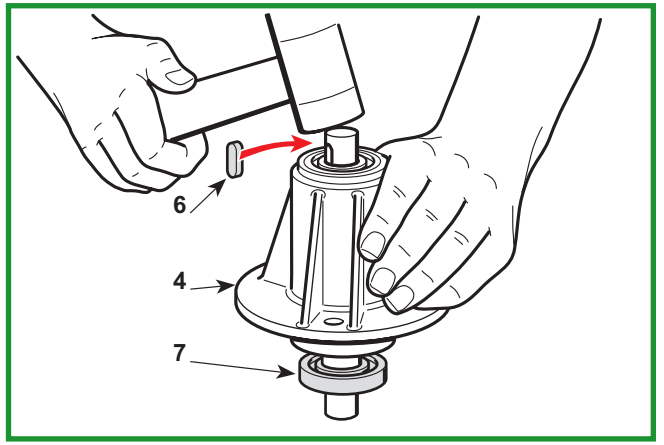
Pull out the two cogged pulleys (1) from the blade shafts, unscrew the seven screws (2) that fix the plate (3) and remove it.

Dismantle the flange support (4) by unscrewing the three fastening nuts (5).



The entire support (4), 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 or the two keys (6) and hit the shaft with a plastic mallet on the pulley side in order to remove the shaft together with the lower bearing (7).



6.8.0 REPLACEMENT OF THE SUPPORTS AND SHAFTS OF THE BLADES

General informations:

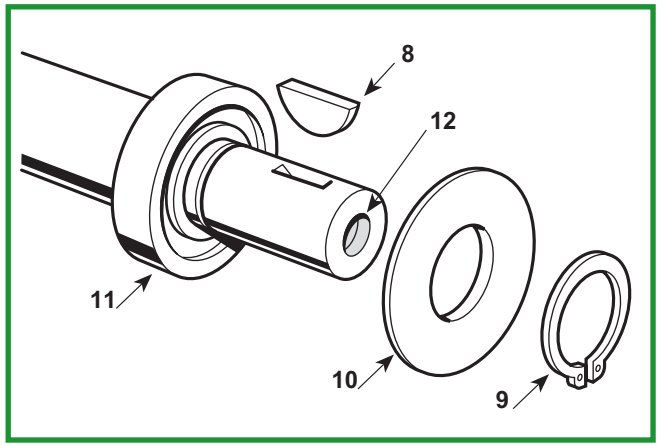
Related topics:

Special tools [☛ 2.2]
Removing the blades [☛ 4.8]
Removal of the cutting deck [☛ 5.8]
Removal of blade control belt [☛ 6.6]
Removal of blade connection belt [☛ 6.7]

Tightening torques

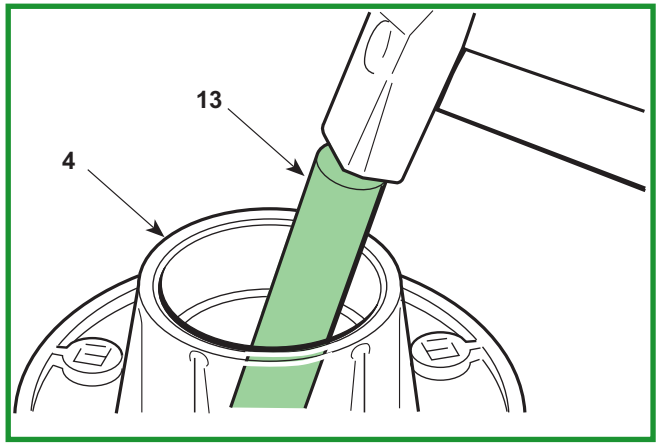
2	Screws for plate fastening	30 ÷ 35 Nm
5	Nuts for flange support fastening	25 ÷ 30 Nm

After having removed the key (8), the snap ring (9), and the dust cover (10) the bearing (11) splined onto the shaft can be removed using a normal extractor, taking care to close up the threaded hole (12) with a screw to prevent the point of the extractor from damaging the thread.



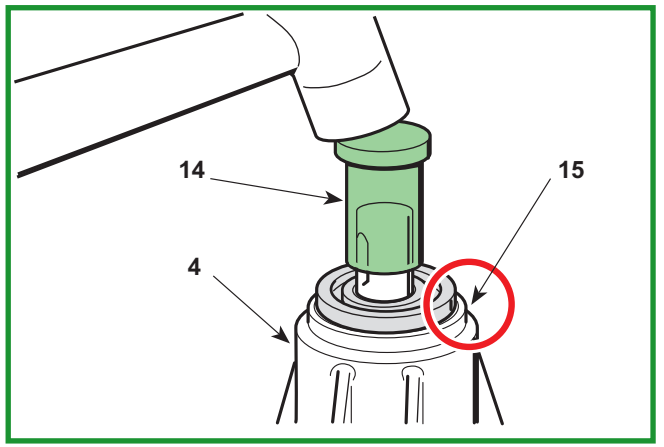
The second bearing still in place must be removed by hitting it from the inside of the flange using a 12 ÷ 15 mm diameter round bar (13).

On assembling, first put the shaft into the hole of the lower bearing and insert this into the support. Fit on the upper bearing and, using the special buffer (14) **which works on the inner ring**, hit it squarely with a mallet until the bearing is fully driven home.
Reassemble the flange supports onto the deck, **fully tightening the nuts** (5) and checking that the support with the shaft is longer than that on the left.



On reassembly of the plate (3), **the holes lined up with the support axles should perfectly match with the centring step** (15) on the upper part of each support.

- Reassemble the blades.
- Reassemble the blade connection belt.
- Reassemble the blade control belt.



6.9.0 REPLACEMENT OF THE ACCELERATOR

General informations:

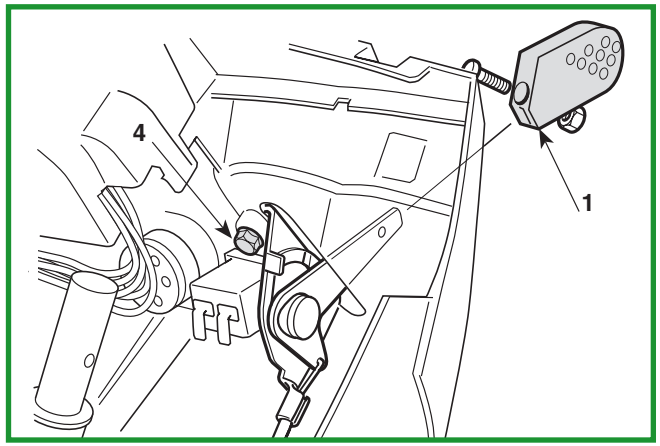
Related topics:

Removal of the dashboard [☛ 5.4]

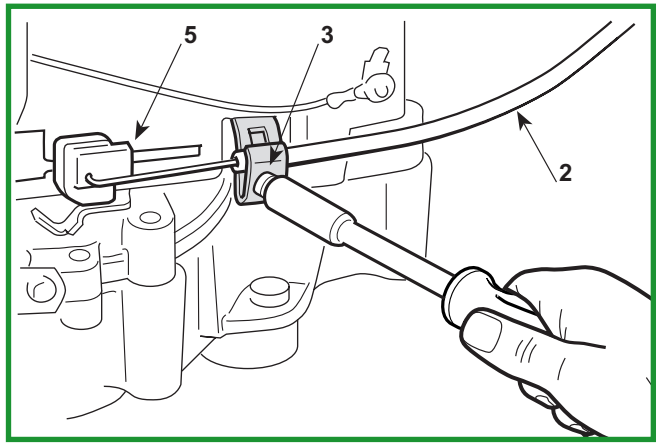
- Remove the dashboard.

Take off the knob (1) and disconnect the end of the cable (2) from the connection terminal (3) on the engine.

Undo the two screws (4) and take out the accelerator together with the cable.



On assembly, put the accelerator lever in the "MINIMUM" position, connect the end of the cable (2) to the terminal (3) on the engine after having moved the cursor (5) in the same "MINIMUM" position specific to each type of engine and shown in the instruction booklet.



When assembly is completed, …

- Reassemble the dashboard.

6.10.1 REPLACEMENT OF THE PIPES OF THE HYDRAULIC SYSTEM

General informations:

The hydraulic circuit has two different types of pipes:
- *rigid pipes with flexible ends, and screwed on fittings for the delivery and return of high pressure oil to and from the two transmission units;*
- *flexible hoses to connect the transmission units to the tank, at low pressure (atmospheric pressure).*

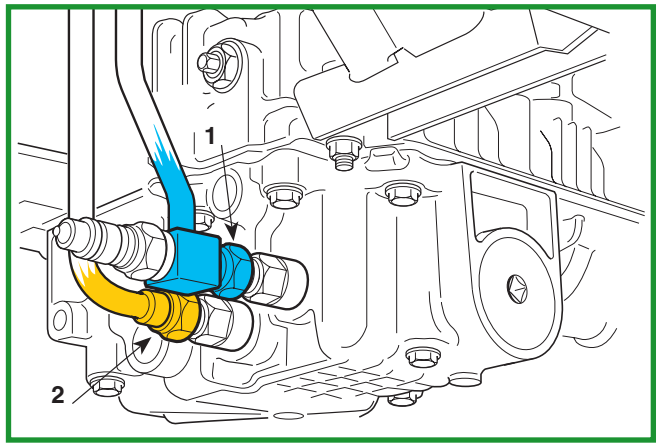
Related topics:

Lifting of the machine [☛ 2.3]
Empting the hydraulic circuit [☛ 4.9]
Removal of the collector channel [☛ 5.3]
Removal of the wheels [☛ 6.1]

Tightening torques

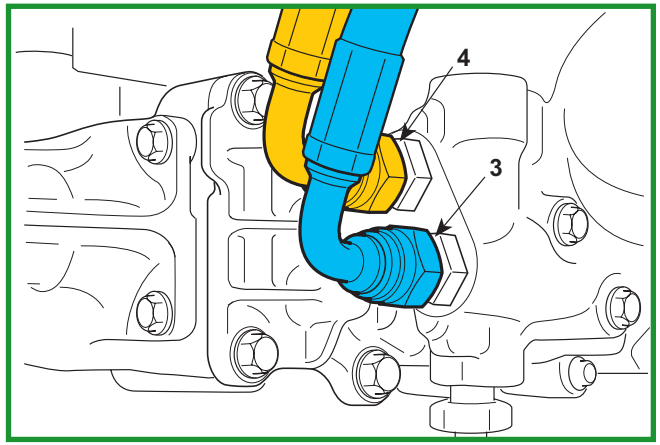
1-2	Hydraulic system fittings	25 ÷ 30 Nm
3-4	Hydraulic system fittings	35 ÷ 40 Nm

- Lift the front part of the machine.
- Dismantle the front left wheel.
- Remove the collector channel.
- Completely empty the oil from the hydraulic system



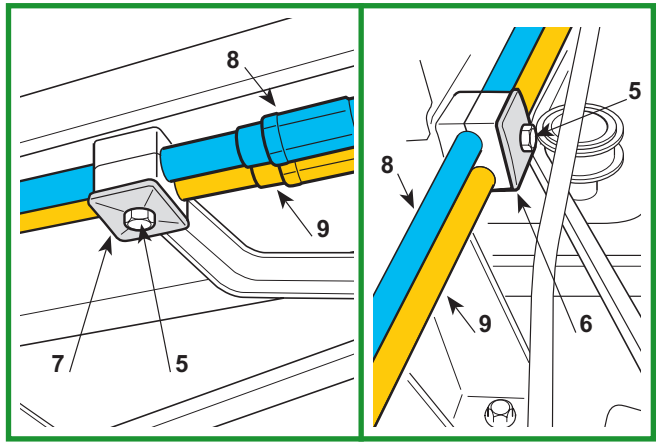
A) High pressure pipes

The high pressure pipes are those that connect the rear transmission to the front transmission and that run along the left beam of the chassis.



Unscrew the screws (5), remove the plate (6) and (7) from the fixing blocks.

Disconnect the rear fittings (1) and (2) and the front fittings (3) and (4) from the pipes of the hydraulic system and remove the pipes (8) and (9).



The pipes differ, so on assembly take care not to invert their position (8) and (9), and to correctly fit the front and rear fittings into their attachments on the transmission.

After connecting the two front fittings (3) and (4), check that the swing of the front transmission doesn't

6.10.1 REPLACEMENT OF THE PIPES OF THE HYDRAULIC SYSTEM

General informations:

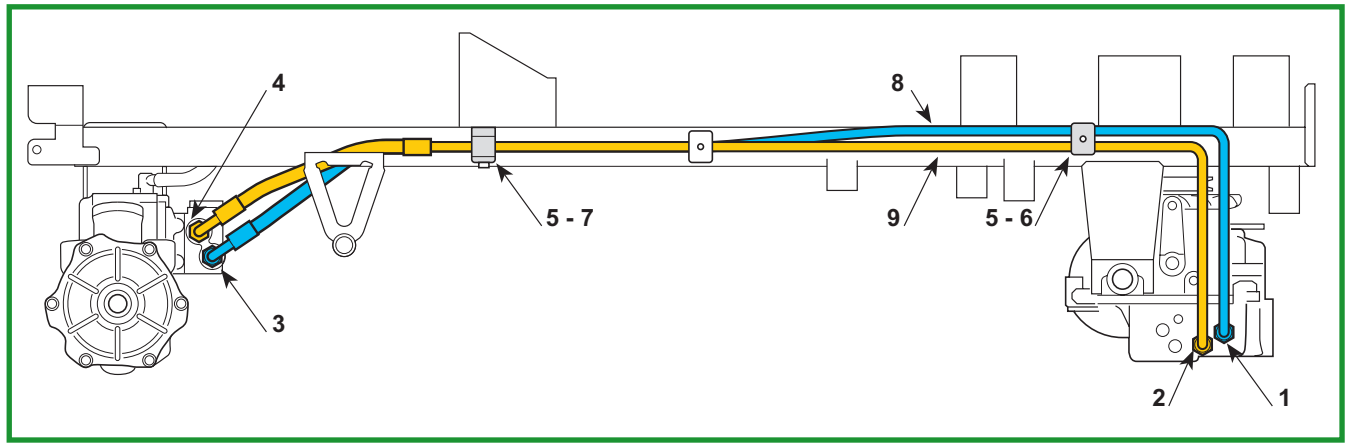
The hydraulic circuit has two different types of pipes:
- *rigid pipes with flexible ends, and screwed on fittings for the delivery and return of high pressure oil to and from the two transmission units;*
- *flexible hoses to connect the transmission units to the tank, at low pressure (atmospheric pressure).*

Related topics:

Lifting of the machine [☛ 2.3]
Empting the hydraulic circuit [☛ 4.9]
Removal of the collector channel [☛ 5.3]
Removal of the wheels [☛ 6.1]

Tightening torques

1-2	Hydraulic system fittings	25 ÷ 30 Nm
3-4	Hydraulic system fittings	35 ÷ 40 Nm

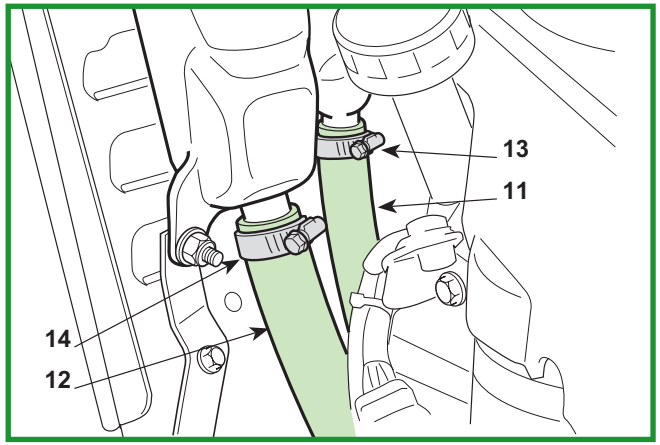


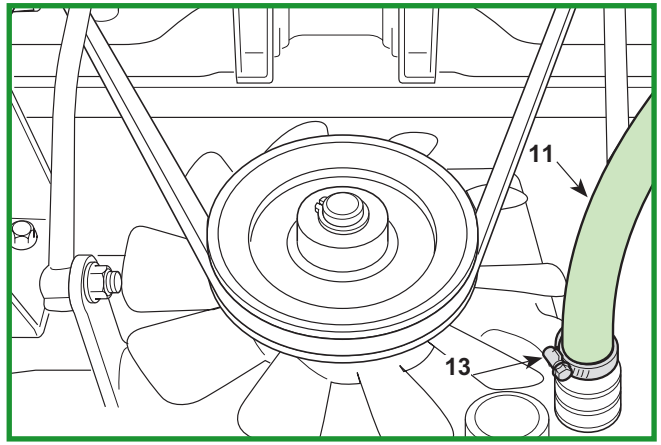
cause the flexible tubes to scrape against the chassis.

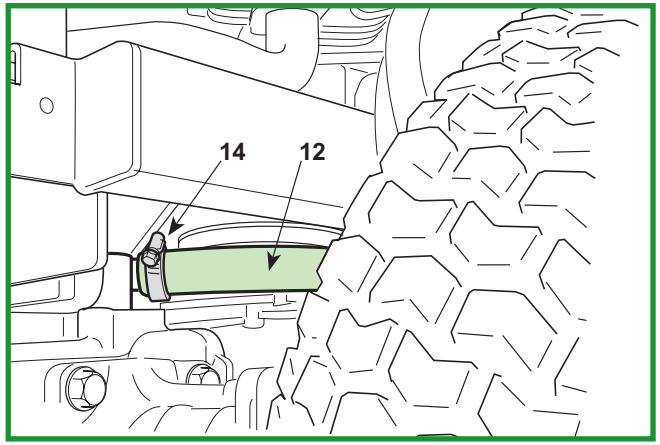
B) Low pressure pipes

The low pressure pipes connect the oil tank to the two transmission units.

The two pipes (11) and (12) are fixed to the attachments on the fuel tank and to the transmission unit fittings by the pipe clamps (13) and (14).







6.10.1 REPLACEMENT OF THE PIPES OF THE HYDRAULIC SYSTEM

General informations:

The hydraulic circuit has two different types of pipes:
- *rigid pipes with flexible ends, and screwed on fittings for the delivery and return of high pressure oil to and from the two transmission units;*
- *flexible hoses to connect the transmission units to the tank, at low pressure (atmospheric pressure).*

Related topics:

Lifting of the machine [☛ 2.3]
Empting the hydraulic circuit [☛ 4.9]
Removal of the collector channel [☛ 5.3]
Removal of the wheels [☛ 6.1]

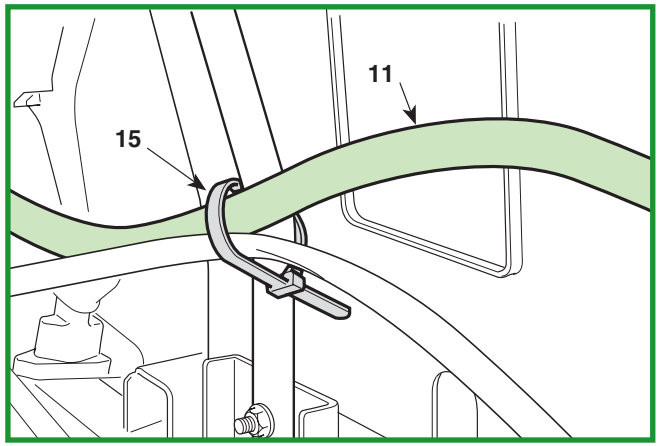
Tightening torques

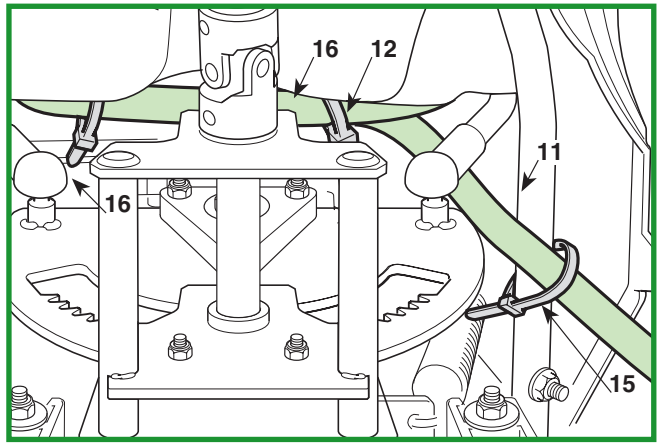
1-2	Hydraulic system fittings	25 ÷ 30 Nm
3-4	Hydraulic system fittings	35 ÷ 40 Nm

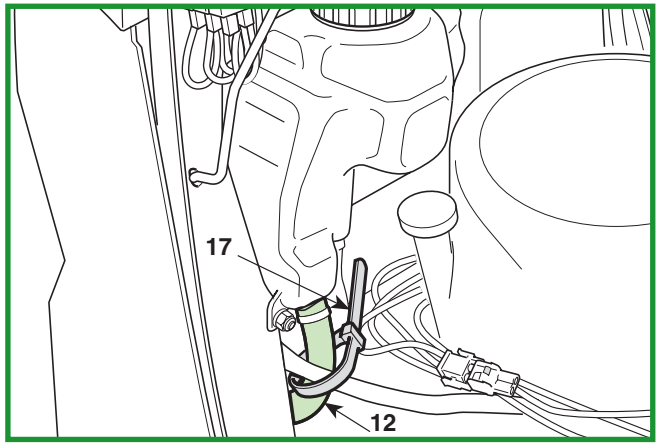
On assembly take care to restore the correct pipe positions, fixing them to the chassis at the points indicated on the diagram, using:

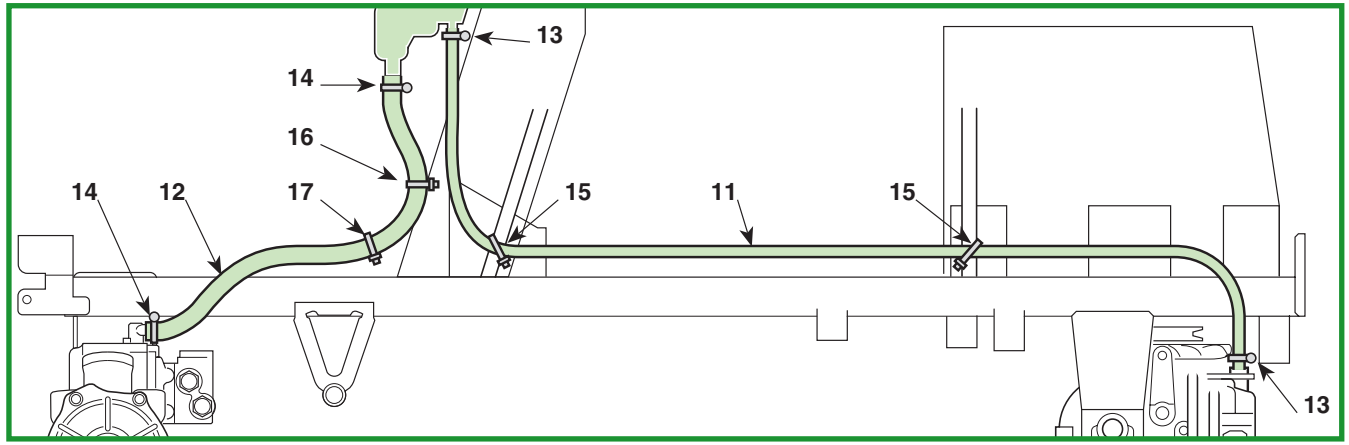
- 2 clamps (15) on the right side for the rear pipe (11);
- 2 central clamps (16) and 1 clamp (17) for the front pipe (12), checking that the pipe does not come into contact with the steering tie-rod or other moving parts.

- Fill the hydraulic system.
- Reassemble the collector channel.







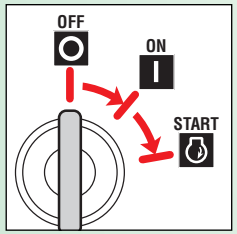


7.1.0 TROUBLESHOOTING OF THE ELECTRICAL SYSTEM

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 circuit boards must always be replaced without trying to repair them or replace single components.



Related topics:

Table for the cutting in of the safety devices [☛ 7.2]
Microswitches operation check [☛ 7.3]
Starter relay operation check [☛ 7.6]
Replacing the clock battery [☛ 7.9]
Recharge circuit check [☛ 7.10]
Care and maintenance of the battery [☛ 7.11]

PROBLEM	CAUSE	SOLUTION
1. Activation of the self-resetting guard [1]		
a) .... on inserting the key in position «ON»:	Battery poles crossed	Check the battery connections
b) ... in «START» position or after a few seconds of use, following an attempt at starting with outside means:	Sulphated battery (it no longer accepts recharging)	Replace the battery
	Faulty circuit board	Check
	Disconnected or missing battery	Reconnect the battery, which must always be connected
	Battery connections oxidized or with poor contact	Check and clean the connections
c) ... after several minutes of use:	Poor or missing earth contact on the charge regulator	Check the earth connections and the screws fastening the regulator
	Overvoltage from a malfunction in the regulator	Check the recharge circuit
	Battery disconnected or faulty during use	Check the battery or wiring
2. With the key in position «ON» the dashboard remains off	The battery is not supplying the circuit board	Check the connection cables
		Check the battery condition
	Battery or circuit board not earthed to frame	Check and put right
	10 A fuse blown	Replace the fuse (10 A)
	Battery poles crossed	Check connections.

1) Activation of the self-resetting guard of the electronic circuit board is signalled by a sound warning signal, except when the battery is missing, flat or with its pole reversed. The warning signal stops when the key is moved back to the «OFF» position; wait for a few seconds before returning in the «ON» position.

NOTE
The self-setting guard reaches very high temperatures (around 180 °C) which are to be considered normal. Similarly, there might be some smoke inside the box which is due to the overheating of the powder inside.

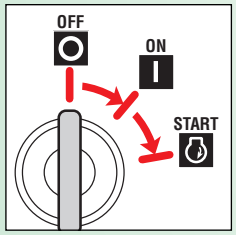
⚠ **WARNING! Do not touch this component of the circuit board until it has cooled down.**

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 circuit boards must always be replaced without trying to repair them or replace single components.



Related topics:

Table for the cutting in of the safety devices [☛ 7.2]
Microswitches operation check [☛ 7.3]
Starter relay operation check [☛ 7.6]
Replacing the clock battery [☛ 7.9]
Recharge circuit check [☛ 7.10]
Care and maintenance of the battery [☛ 7.11]

PROBLEM	CAUSE	SOLUTION
3. The dashboard switches on but, with the key in the «START» position, the starter motor does not turn or lacks power (poor starting)	The battery is not supplying sufficient current	Recharge the battery
	Badly earthed battery, or the starter relay or engine not earthed	Check and put right
	Starting not permitted	After checking that the conditions are met, check all the microswitches [see 7.3] and the relative wiring
	Malfunction in the electronic circuit board	Try replacing the circuit board with one that is known to work
	Defect in the starter relay	Check that the starter relay is activated
4. The starter motor turns but the engine does not start	No fuel flow	Check the wiring of the carburettor solenoid valve opening control (if provided) or check the fuel stopcock and filter
	Impaired starter system	Check that the spark plug cap is securely fastened
		Check that the spark plug electrodes are clean and have the correct gap
5. 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 motor works erratically for mechanical or electrical reasons taking excessive current and causing binding of relay contacts	Check the starter motor
6. The starter motor operates as soon as the key is in the «ON» position, and can be turned off only by removing the key	Faults in the circuit board	Replace the panel/circuit board group (**NOTE:** It is possible to complete the work in any case, but the panel/circuit board group must be replaced as soon as possible)
	Starter block operating faults	Replace the unit
7. The battery light does not come on when the key is in the «ON» position but the machine works	Faults in the electronic circuit or in the signalling LED	Replace the panel/circuit board group (**NOTE:** It is possible to complete the work in any case, but the panel/circuit board group must be replaced as soon as possible)

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.
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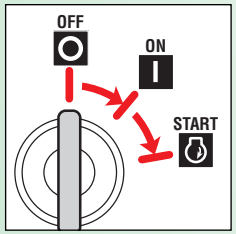

Related topics:

Table for the cutting in of the safety devices [☛ 7.2]
Microswitches operation check [☛ 7.3]
Starter relay operation check [☛ 7.6]
Replacing the clock battery [☛ 7.9]
Recharge circuit check [☛ 7.10]
Care and maintenance of the battery [☛ 7.11]

PROBLEM	CAUSE	SOLUTION
8. The battery light remains switched on	Insufficient charge	Check that the charging cable has not detached
		Check that there are no current leakages caused by cables with damaged insulation
		Check the recharge circuit
	Charger fuse blown	Replace fuse (25 A) and check the recharge circuit
9. The battery light is blinking	Recharge overvoltage	Check the recharge circuit
	Battery insufficiently charged at start-up	Recharge the battery
10. Faulty start-up and uncontrolled switching on of the LED or erratic working of the circuit board	Faulty circuit board	Check
	Badly earthed electronic circuit board	Check and put right
11. The engine stops while in use for reasons not due to the guard cutting in	The safety devices have cut in or are faulty	Check the operation of the microswitches and the relevant wiring
	Accidental detaching of an electric cable	Check all wiring
	Starting of engine not permitted	After checking that the conditions are met, check all the microswitches [see 7.3] and the relative wiring
12. The 10 A fuse blows	Short circuit or overload on the power side of the circuit board (start-up unit, starter relay, lights and recharger connector)	Find and replace the defective user
	Short circuit or damage to the circuit board protection system (power side)	Replace the panel/circuit board group with one that is known to work; if the problem does not reoccur replace the faulty group definitively
13. The 25 A fuse blows	Faults in the battery recharge circuit	Replace fuse (25 A) and check the recharge circuit

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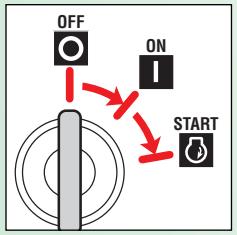
Faulty electronic circuit boards must always be replaced without trying to repair them or replace single components.



Related topics:

Table for the cutting in of the safety devices [☛ 7.2]
Microswitches operation check [☛ 7.3]
Starter relay operation check [☛ 7.6]
Replacing the clock battery [☛ 7.9]
Recharge circuit check [☛ 7.10]
Care and maintenance of the battery [☛ 7.11]

PROBLEM	CAUSE	SOLUTION
14. No sound signal for the "grass-catcher full" condition	Malfunctioning or faulty blade microswitches and grass-catcher signalling	Check the microswitches and wiring. **WARNING!** - Check that the blade microswitch stops the engine or prevents if from being started if the acknowledgement conditions are not met
	Malfunctioning or faulty electronic circuit board	Replace the panel/circuit board group with one that is known to work; if the problem does not reoccur replace the faulty group definitively
15. The clock does not keep time after the machine is switched off.	Buffer battery flat	Replace

7.2.0 TABLE FOR THE CUTTING IN OF THE SAFETY DEVICES

General informations:

Related topics:

Microswitches operation check [☛ 7.3]

⚠

This table shows the various situations in which the safety devices intervene.

● Pilot light switched on
❍ Pilot light switched off
✳ Pilot light uninfluential

–/– = Uninfluential

A) STARTING («START» position)

OPERATOR	GRASS-CATCHER	BLADES	TRANSMISSION	PARKING	ENGINE	PILOT LIGHTS	
–/–	–/–	–/–	**Engaged**	–/–	DOES NOT start	✳ ✳ ✳	✳ ✳ ❍
–/–	–/–	**Engaged**	–/–	–/–	DOES NOT start	✳ ● ✳	✳ ✳ ✳
Absent	–/–	–/–	–/–	**Disengaged**	DOES NOT start	❍ ✳ ✳	● ✳ ✳

B) WHILE CUTTING

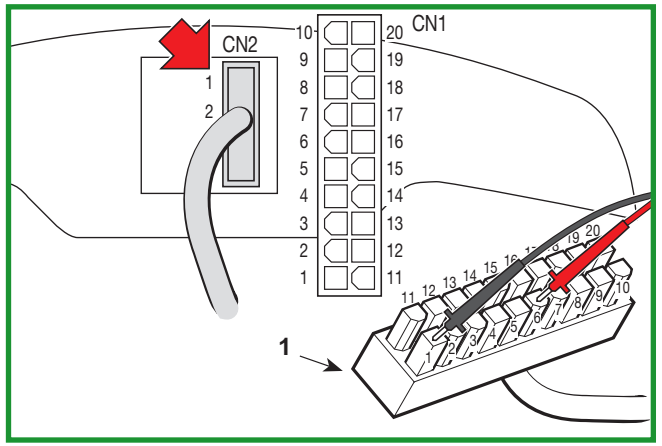
OPERATOR	GRASS-CATCHER	BLADES	TRANSMISSION	PARKING	ENGINE	PILOT LIGHTS	
Absent	–/–	–/–	**Engaged**	–/–	Stops	✳ ✳ ✳	● ❍ ✳
Absent	–/–	**Engaged**	–/–	–/–	Stops	✳ ✳ ●	● ✳ ✳
–/–	**Missing**	**Engaged**	–/–	–/–	Stops	✳ ● ●	✳ ✳ ✳
–/–	–/–	**Engaged**	–/–	**Engaged**	Stops	● ✳ ●	✳ ✳ ✳
Absent	–/–	–/–	–/–	**Disengaged**	Stops	❍ ✳ ✳	● ✳ ✳

7.3.0 SAFETY MICROSWITCHES OPERATION CHECK

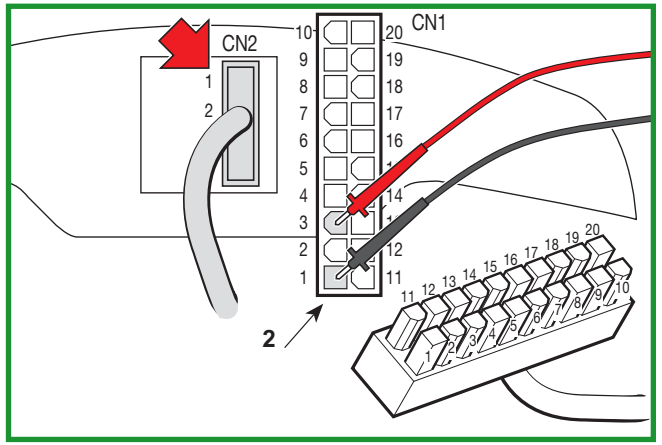
General informations:

Related topics:

This check is done by disconnecting connector CN1 and using the tester in Ohmmeter mode. This operation should be done, without the operator on board, by making contact with the ferrules on the contacts of the connector of the wiring (1) and should give this result:



Contacts N°	Tester reading and condition		
ATTACHED GRASS-CATCHER MICROSWITCH			
1 - 6	∞ (without g.catc.)	O (with g.catcher)	
OPERATOR'S PRESENCE			
1 - 14	∞ (absent)	O (seated)	
PARKING MICROSWITCH			
1 - 17	O (free)	∞ (engaged)	
BLADE SWITCH			
1 - 16	∞ (engaged)	O (disengaged)	
"IN NEUTRAL" SIGNAL			
1 - 7	O (gear)	∞ (neutral)	
FULL GRASS-CATCHER MICROSWITCH			
1 - 13	∞ (empty)	O (full)	
FUEL LEVEL GAUGE (if present)			
1 - 5	O (in reserve)	∞ (from 1/2 to full)	
1 - 8	O (full)	∞ (from reserve to 1/2)	
OIL LIGHT (if fitted)			
1 - 15	O (always)		
STARTER UNIT			
+ Battery - 11	∞ (OFF)	O (ON)	O (START)
+ Battery - 12	∞ (OFF)	∞ (ON)	O (START)



ENGINE STOP

This operation must be done with the ferrules in contact on the contacts of the connector CN1 of the circuit board and must give the following result:

Contacts N°	Tester reading and condition
17 - 13	O (Always)

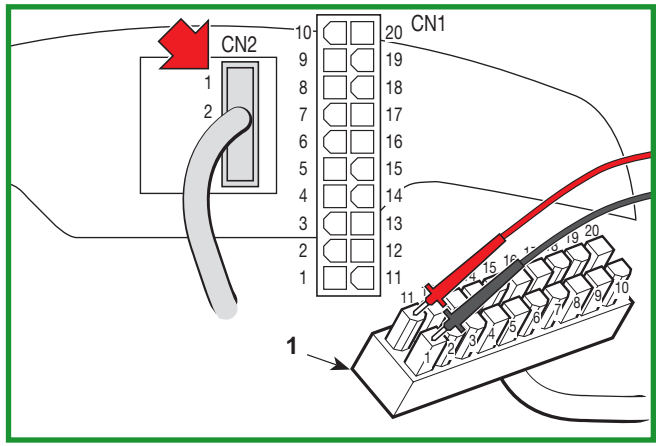
7.4.0 TERMINAL BOARD SUPPLY CHECK

General informations:

Related topics:

This check is done with the tester in Voltmeter function (Volt DC 0 ÷ 20), with the black ferrule on terminal 1 and the red ferrule on terminal 11 of the wiring connector (1).

– Key in the «ON» position



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

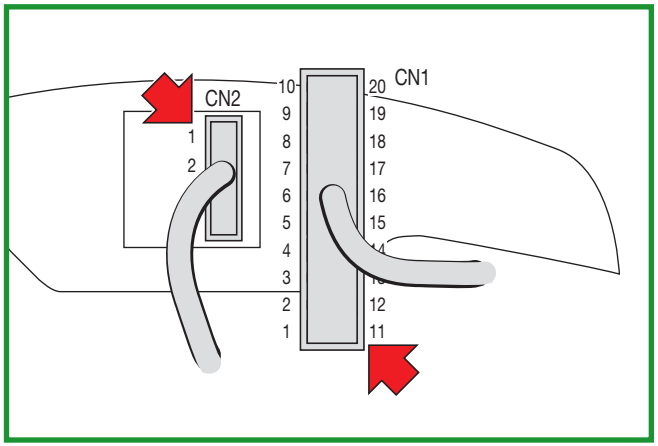
7.5.0 CARBURETTOR SOLENOID VALVE OPERATION CHECK

General informations:

Related topics:

Connector CN1 must be connected to make this check.

When the key is set to “ON”, a click must be heard from the carburettor solenoid valve coil.



7.6.0 STARTER RELAY OPERATION CHECK

General informations:

Related topics:

WARNING! – Remove the cap of the spark plug (or spark plugs), since the safety systems that normally prevent accidental starting of the engine are cut out when the checking procedure is carried out.

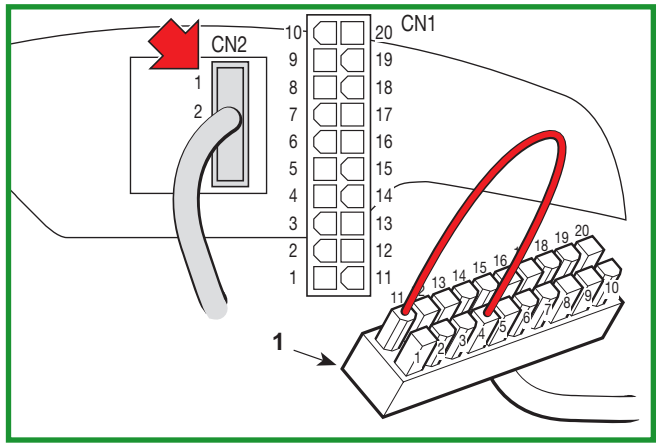
To do this check requires:

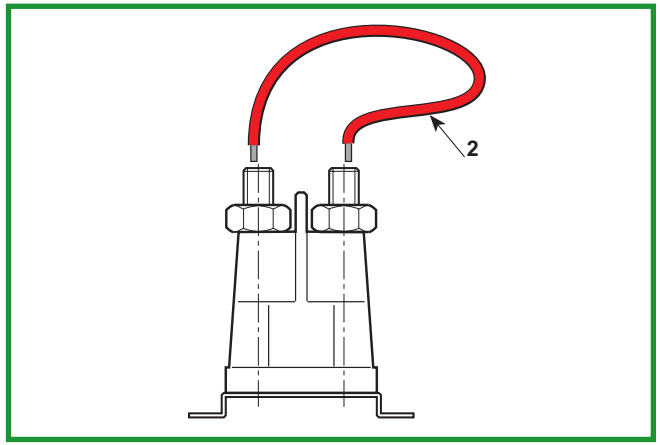
– engage the parking brake;
– disengage the blades;
– key in the «ON» position

Detach the connector CN1, in making a bridge between the terminals 11 and 4 of the connector CN1 (1), the click of the relay coil should be heard and the starter motor should come into action.

➤ ***only with B&S and Tecumseh engines:***
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 within the relay or replace it. Otherwise, check the starter motor together with its wiring.





7.7.0 ELECTROMAGNETIC CLUTCH OPERATION CHECK

General informations:

Related topics:

Microswitches operation check [☛ 7.3]

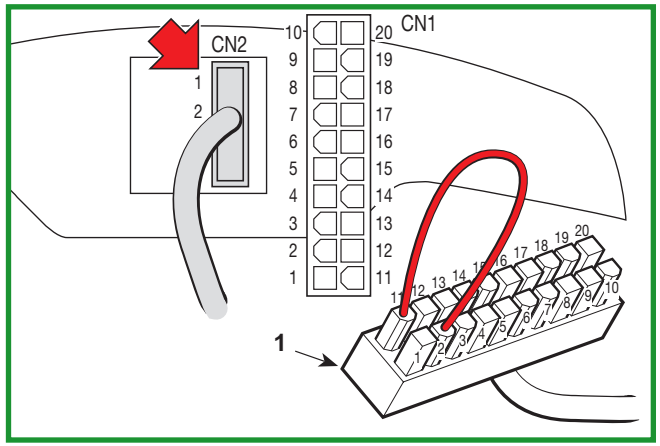
WARNING! - This check must be made with the engine off.

Disconnect connector CN1 and make a bridge between terminals 2 and 11 of wiring connector CN1 (1).

With the key set to «ON», when the switch is operated a click must be heard from the moving part of the clutch, due to excitation of the electric winding.

If this is not so, check the wiring and the operation of the control switch.

If not engaged after these checks, the clutch requires replacement.



7.8.0 GRASS-CATCHER TIPPING CONTROL OPERATION CHECK

General informations:

Related topics:

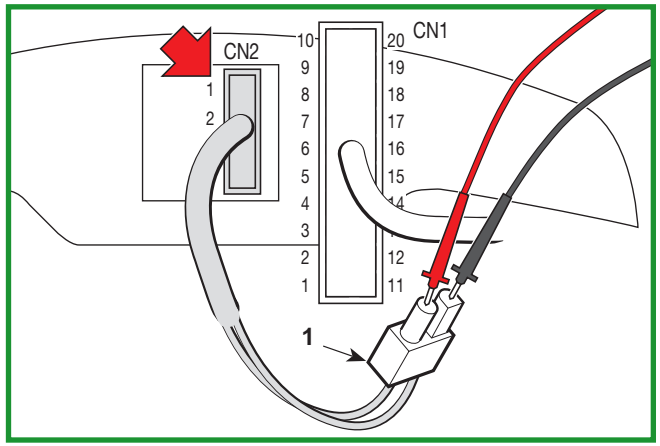
To make this test it is necessary to have:

– key in the «ON» position,
– connector CN2 connected,
– operator seated,
– blades disengaged.

The check is made with the tester in Voltmeter mode (0 ÷ 20 Volts DC) and with the ferrules on the connector (1) output wiring terminals.

When one of the two buttons is pressed the instrument reading shows the battery voltage (positive or negative); this value must never fall below 11.5 Volts.

If no voltage is detected it means that the 15A fuse has blown or that there is a fault in the actuator circuit board.



7.9.0 REPLACING THE CLOCK BUFFER BATTERY

General informations:

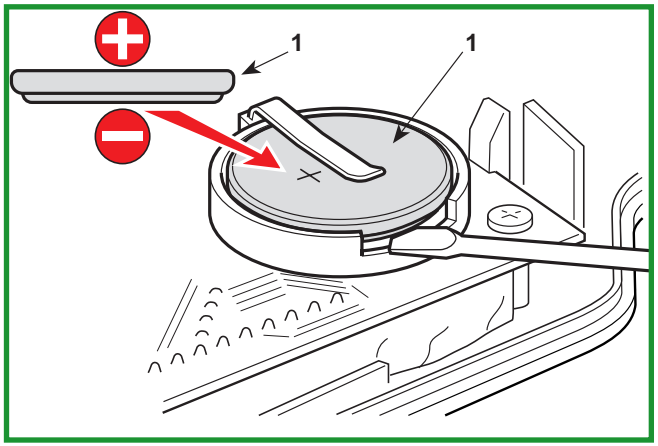
Related topics:

NOTE - The lower panel/circuit board group guard, fixed by two nuts, must be removed to carry out this operation.

Use a screwdriver to remove the flat battery (1).

Only use 3 Volt 24 mm Ø batteries of types CR 2450 or CR 2430.

When fitting the new battery make sure that the end marked «+» faces towards the fastener spring.



7.10.0 RECHARGE CIRCUIT CHECK

General informations:

Related topics:

Care and maintenance of the battery [☛ 7.11]

The job of the charge regulator is to supply a flow of current to the battery at a constant voltage of about 14 -15 Volts, cutting in every time that the output voltage from the generator exceeds this threshold.

A faulty regulator may recharge the battery insufficiently (therefore needing frequent recharging) or, otherwise, may supply overloading that causes the self-resetting guard to cut in.

Before checking the recharge circuit, make sure that:

- all connections are correct;
- the earth connections are firmly connected, especially the earth connections to the regulator;
- the battery is charged and not sulphated
- the charger fuse is not blown.

A) Checking the lower charging limit

Start the engine and keep running at minimum with the headlights on.
With the tester in the voltmeter function, 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 charger fuse is blown.

B) Checking the upper charging limit

Start the engine and take it to maximum speed. With the tester in the voltmeter function, measure the voltage at the battery terminals: the amount should rise slowly and settle at 14-15 Volts after about 10-15 minutes.

If this level is exceeded to a point where the engine stops due to the self-resetting guard cutting in (at about 16 Volts), it means that the regulator is charging too much and must be replaced.

7.11.0 CARE AND MAINTENANCE OF THE SEALED BATTERY

General informations:

Related topics:

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 entire life of battery.

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 be able to take the charge (sulphation);
- always recharge the battery before and after periods of prolonged inactivity or storage.

WARNING!
Recharge only with a constant voltage battery charger Using other types of battery chargers could damage the battery.

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 poles. 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 Volts	Fully charged	None
< 12,4 Volts	Low charge	Recharge

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

7.12.0 FITTING SAFETY MICROSWITCHES

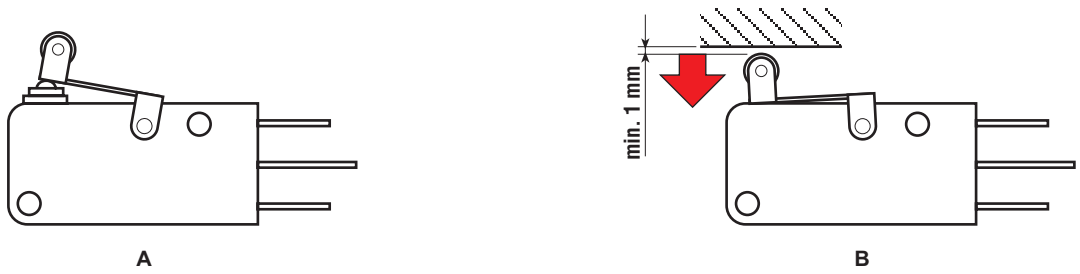
General informations:

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



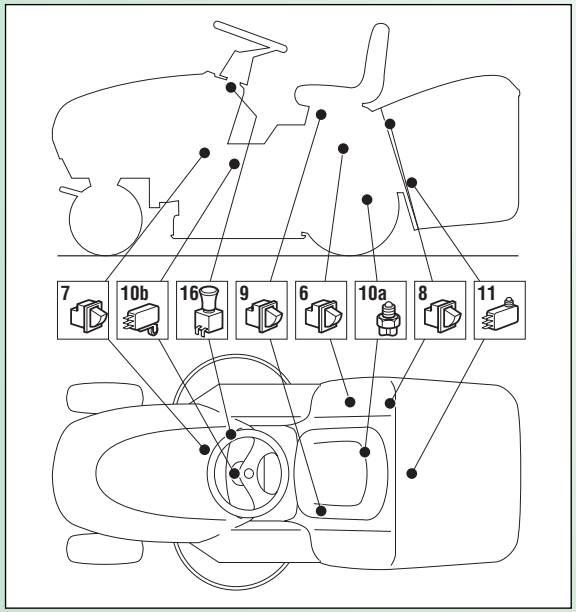
WORKSHOP MANUAL

7.13.1 ELECTRICAL DIAGRAMS

1 / 2

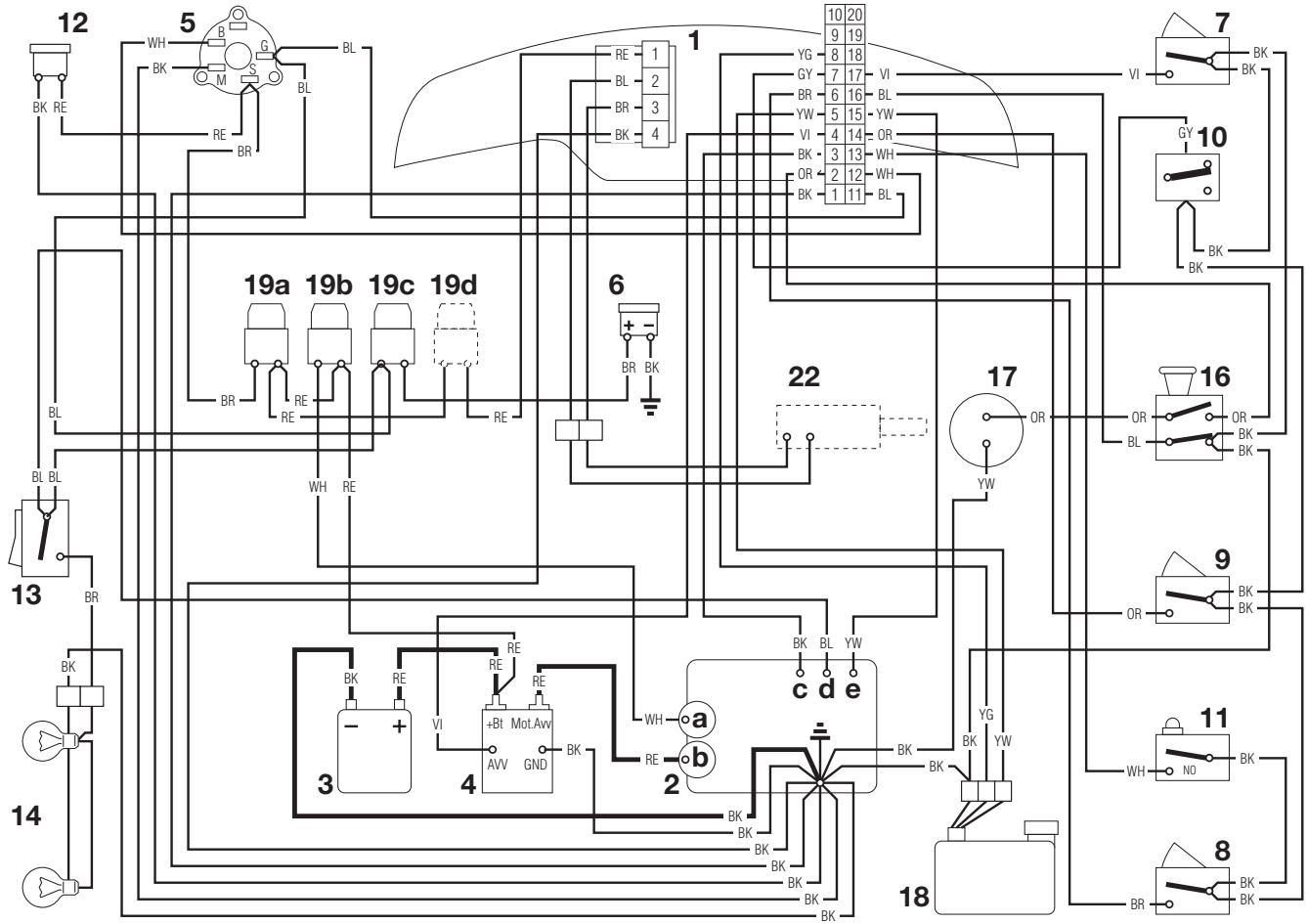
General informations:

Related topics:



MAP BACK

➤ ***Engines: B&S***



1	Circuit board
2	Engine
2a	Generator
2b	Starter motor
2c	Engine stop
2d	Carburettor
2e	Oil
3	Battery
4	Starter relay
5	Key ignition switch
6	Auxiliary socket
7	Brake microswitch
8	Grass-catcher microswitch
9	Operator's presence microswitch
10	Neutral microswitch
11	Full grass-catcher microswitch
12	Recharge connector
13	Headlight switch
14	Headlights
16	Clutch switch
17	Clutch
18	Tank
19a	10A fuse
19b	25A fuse
19c	5A fuse
19d	15 A Fuse (➤ in electric tipping models)
22	Actuator (➤ in electric tipping models)

CABLE COLOURS

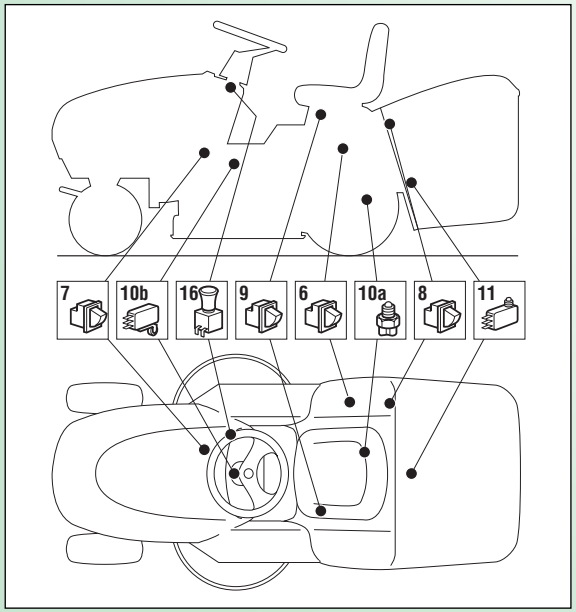
BK	Black
BL	Blue
BR	Brown
GY	Grey
OR	Orange
RE	Red
VI	Violet
YW	Yellow
WH	White

WORKSHOP MANUAL

7.13.1 ELECTRICAL DIAGRAMS

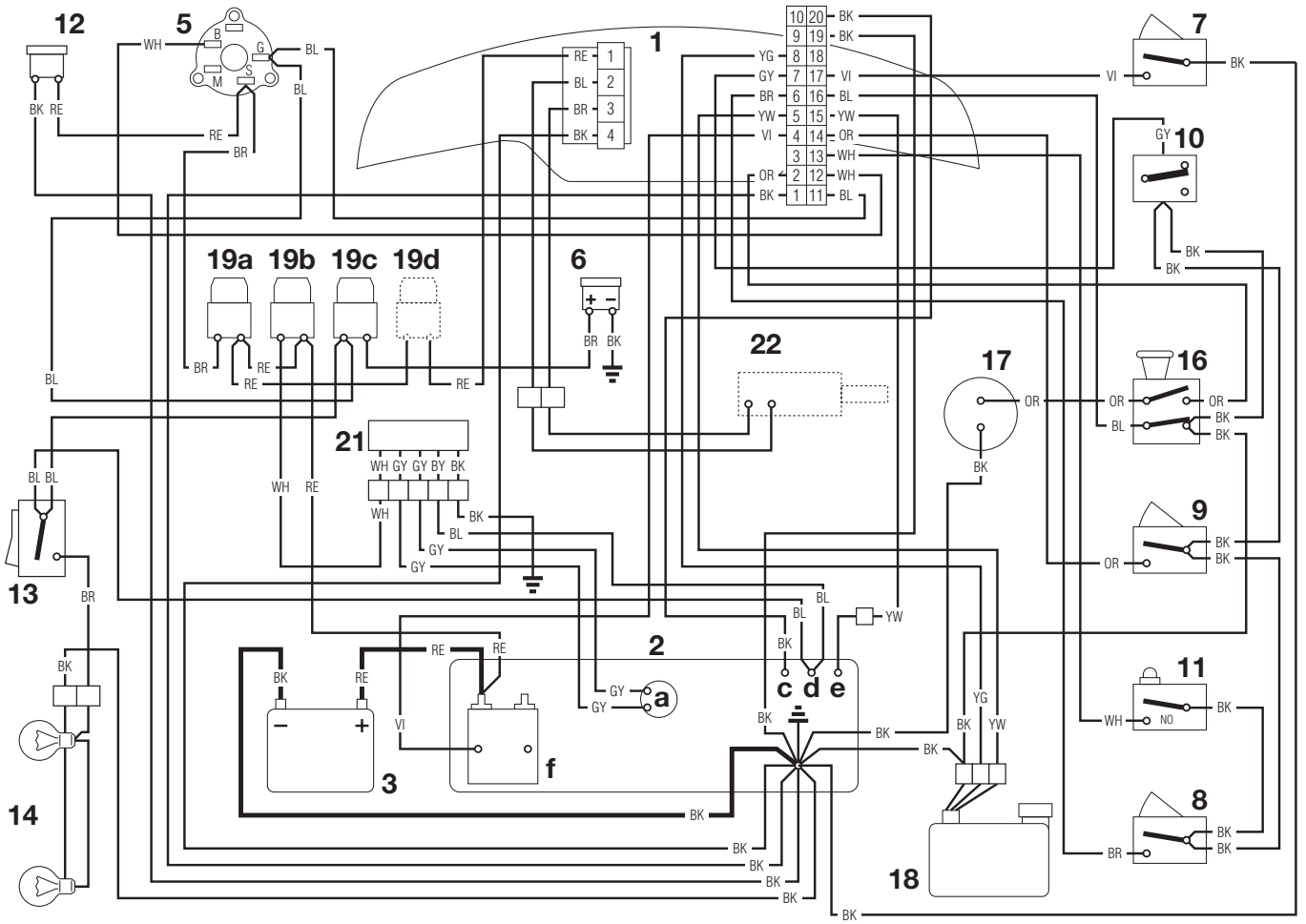
Informazioni generali:

Argomenti correlati:



MAP BACK

➤ Engines: Honda GXV660



1	Circuit board
2	Engine
2a	Generator
2c	Engine stop
2d	Carburettor
2e	Oil
2f	Starter relay
3	Battery
5	Key ignition switch
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11	Full grass-catcher microswitch
12	Recharge connector
13	Headlight switch
14	Headlights
16	Clutch switch
17	Clutch
18	Tank
19a	10A fuse
19b	25A fuse
19c	5A fuse
19d	15 A Fuse (➤ in electric tipping models)
21	Charge regulator
22	Actuator (➤ in electric tipping models)

CABLE COLOURS

BK	Black
BL	Blue
BR	Brown
BY	Black-Yellow
GY	Grey
OR	Orange
RE	Red
VI	Violet
YW	Yellow
WH	White

8.1.0 GUIDE TO UNDERSTANDING THE HYDRAULIC SYSTEM

General informations:

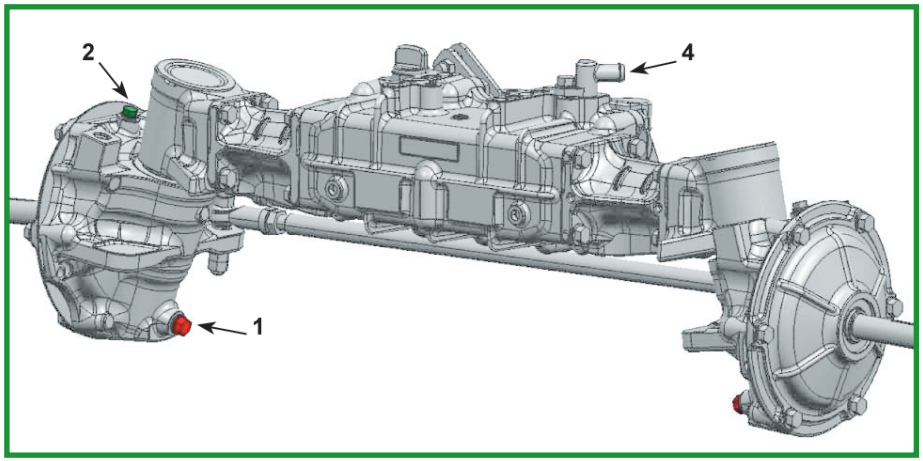
The information provided forms a basic understanding of the working principles of the hydraulic system when using the machine.

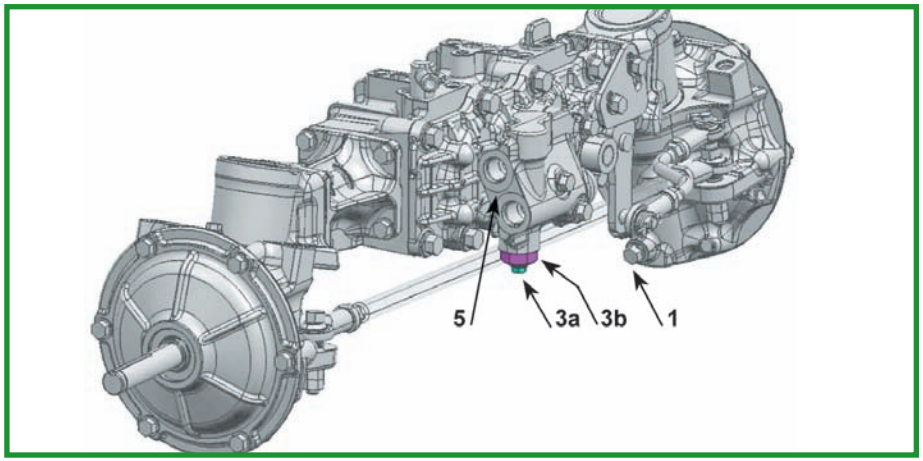
Related topics:

Checking the hydraulic system [☛ 8.2]

A) Front axle components:

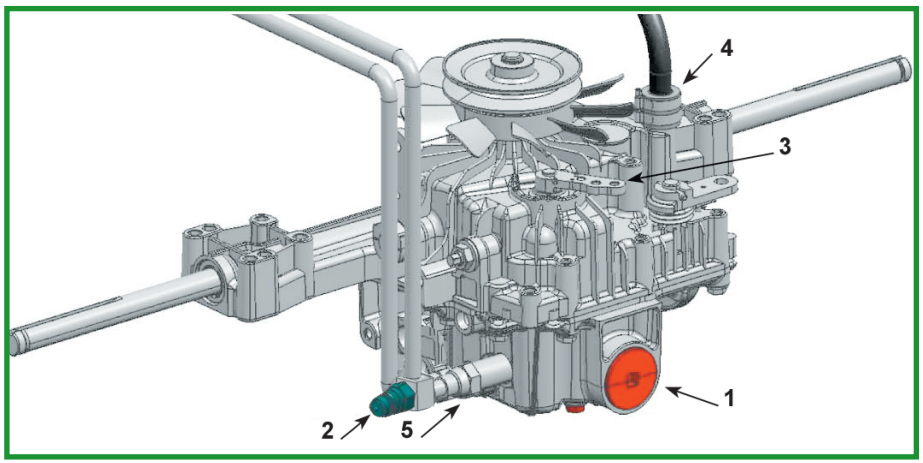
1. Oil drain cap
2. Breather cap
3a. Transmission release screw (by-pass)
3b. Nut
4. Fittings for entrance of low pressure oil
5. Fitting for high pressure pipes





B) Rear axle components:

1. Oil drain cap
2. Quick coupling and breather
3. Transmission release lever (by-pass)
4. Fitting for entrance of low pressure oil
5. Fitting for high pressure pipes



8.1.0 GUIDE TO UNDERSTANDING THE HYDRAULIC SYSTEM

General informations:

The information provided forms a basic understanding of the working principles of the hydraulic system when using the machine.

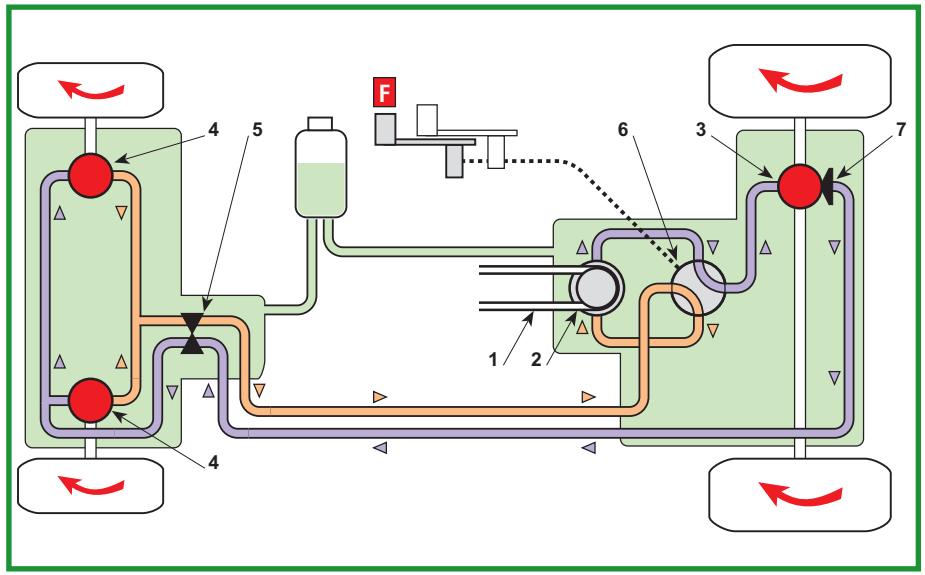
Related topics:

Checking the hydraulic system [☛ 8.2]

C) Working principles

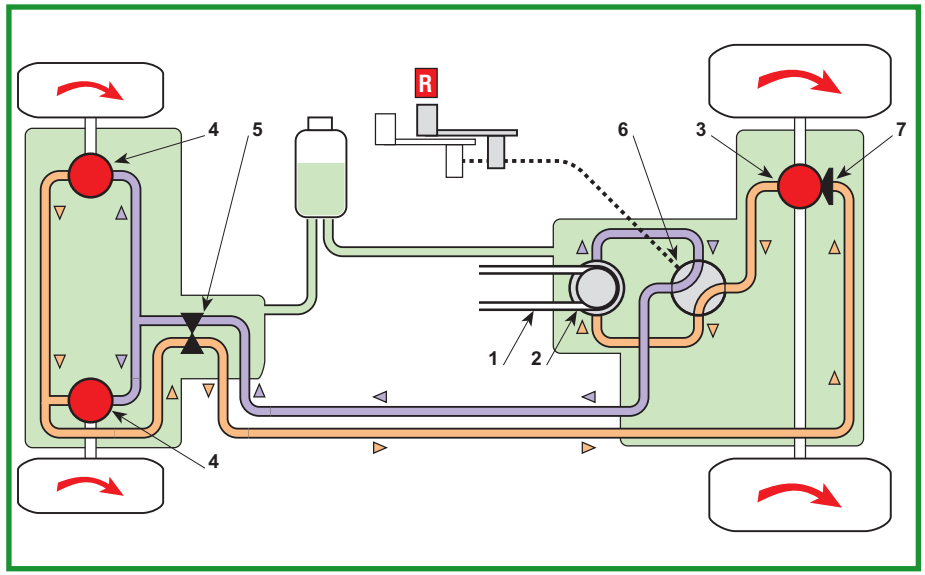
1. In forward gear

- The pump (2), is activated by the transmission belt (1), which keeps the oil under pressure; by pressing the pedal for forward gear, the lever (6) sends oil to the hydraulic engine (3) in the rear unit.
- With the rear by-pass valve closed (7), the hydraulic engine moves the rear wheels and sends the oil under pressure to the front transmission.
- With the front by-pass valve closed (5), the oil is divided between the two front hydraulic engines (4), moving the front wheels and then going back to the pump.



2. In reverse gear

- The pump (2), is activated by the transmission belt (1), which keeps the oil under pressure; by pressing the pedal into reverse gear, the lever (6) sends oil to the front transmission.
- With the front by-pass valve closed (5), the oil is divided between the two front hydraulic engines (4), moving the front wheels and then going back to the rear transmission.
- With the rear by-pass valve closed (7), the oil under pressure activates the hydraulic engine (3) of the rear wheels and goes back to the pump.



8.1.0 GUIDE TO UNDERSTANDING THE HYDRAULIC SYSTEM

General informations:

The information provided forms a basic understanding of the working principles of the hydraulic system when using the machine.

Related topics:

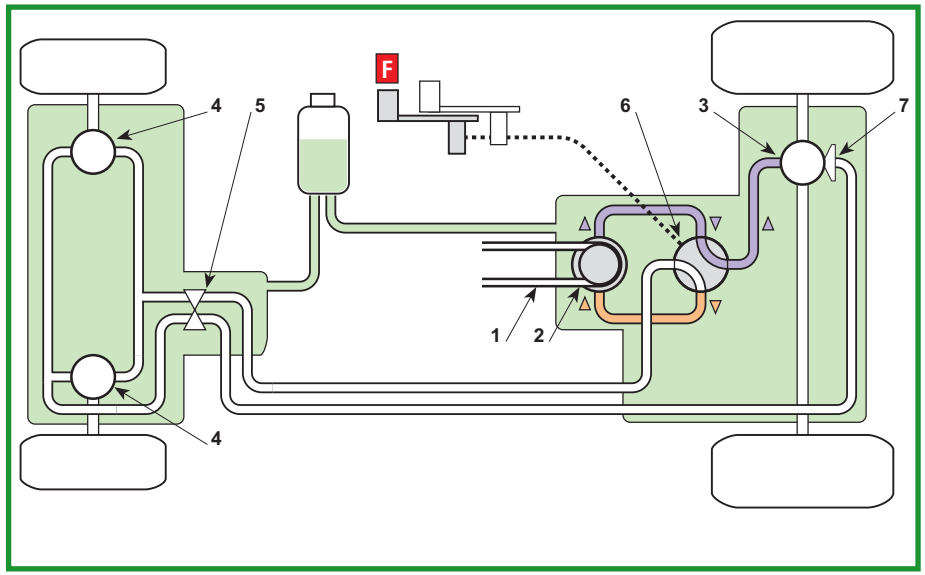
Checking the hydraulic system [☛ 8.2]

3. Both by-passes open

– The pump (2), activated by the transmission belt (1), keeps the oil under pressure.

a) In forward gear

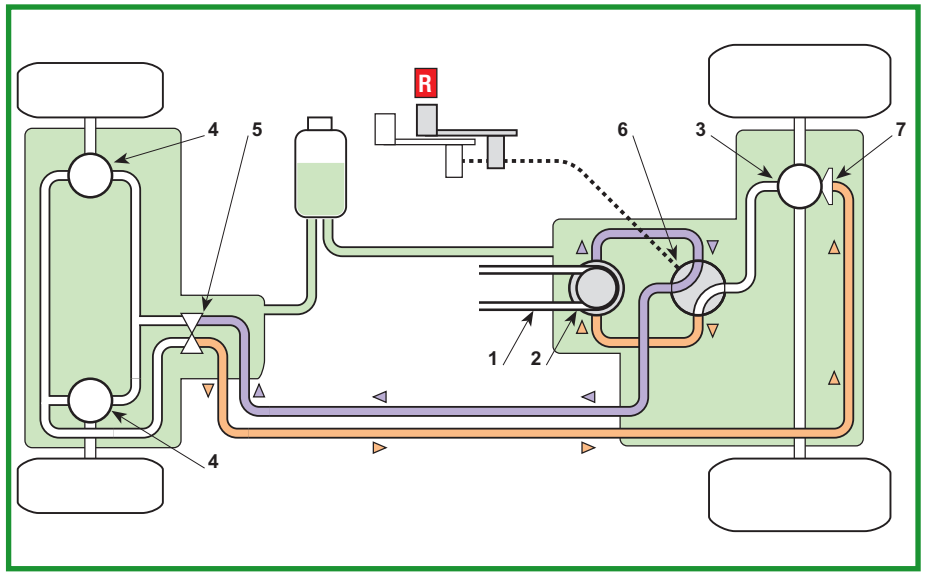
– By operating the pedal in forward gear, the by-pass opens causing a fall in pressure and therefore the hydraulic engine (3) is not activated and the oil does not reach the front transmission.



b) In reverse gear

– By operating the pedal in reverse gear, oil reaches the front transmission but on finding the by-pass open (5) does not activate the hydraulic engines (4) and so goes back to the pump.

– In this case, the machine can be moved manually without difficulty both forwards and backwards.



8.1.0 GUIDE TO UNDERSTANDING THE HYDRAULIC SYSTEM

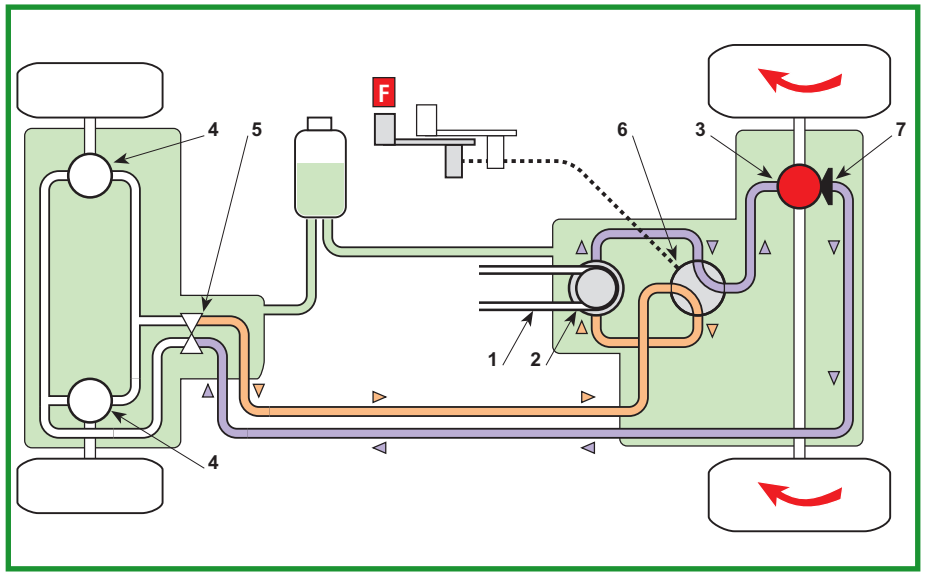
General informations:

The information provided forms a basic understanding of the working principles of the hydraulic system when using the machine.

Related topics:

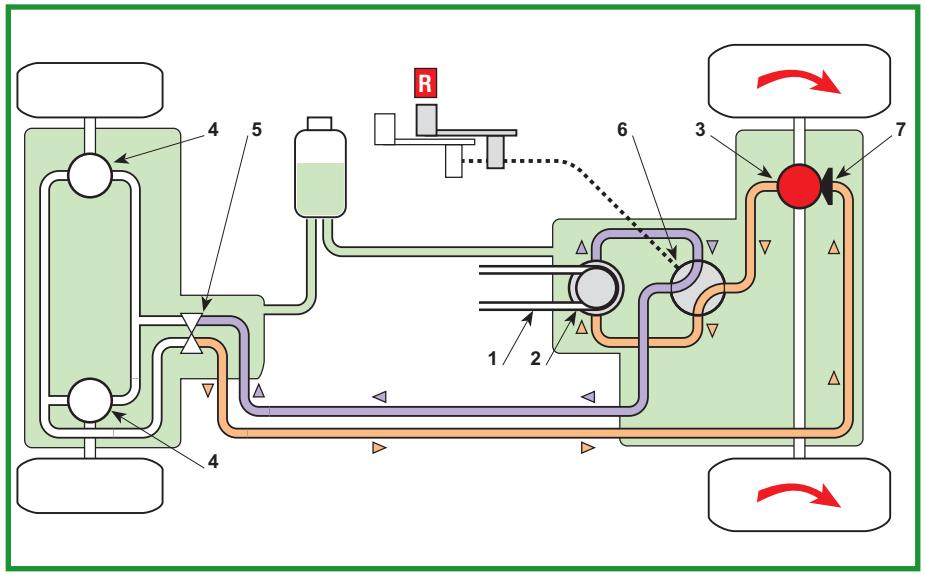
Checking the hydraulic system [☛ 8.2]

4. Rear by-pass closed and the front by-pass open



– In forward and reverse gears, the same situations indicated in points 1 and 2 occur, with the difference that the front by-pass open (5) impedes the two front hydraulic engines from being activated (4).

– In this case, the machine only works with the rear wheel drive.



8.1.0 GUIDE TO UNDERSTANDING THE HYDRAULIC SYSTEM

General informations:

The information provided forms a basic understanding of the working principles of the hydraulic system when using the machine.

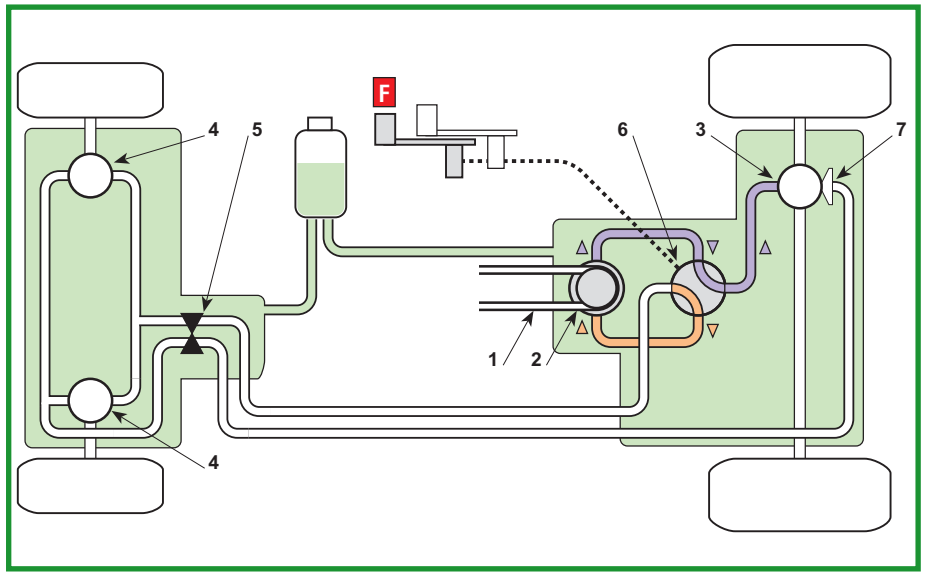
Related topics:

Checking the hydraulic system [☛ 8.2]

5. Rear by-pass open and the front by-pass closed

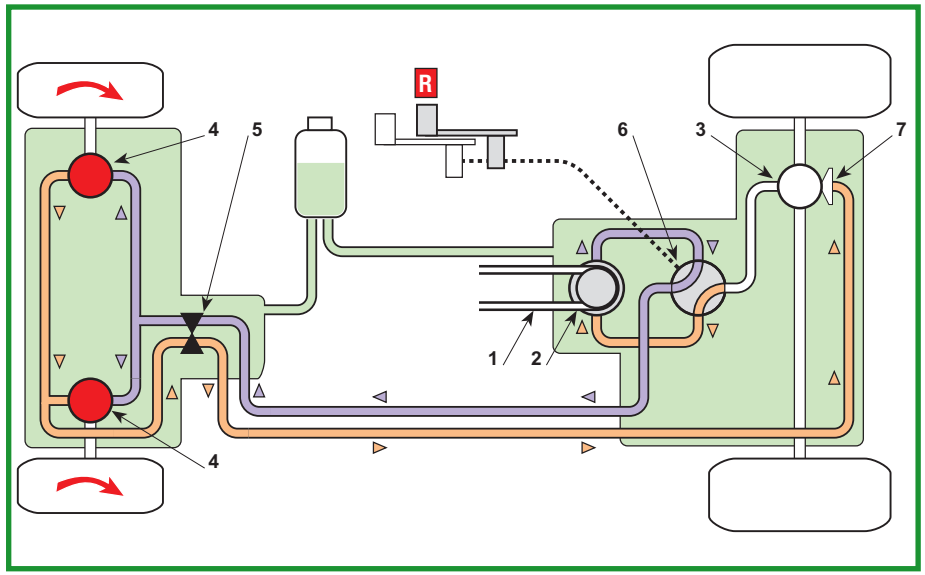
a) In forward gear

– In forward gear, the by-pass opens (7) preventing the oil under pressure to activate the rear hydraulic engine (3) and from reaching the front transmission; in this case, the machine remains without front and rear wheel drive.



b) In reverse gear

– In reverse gear, the oil under pressure reaches the front transmission and can be divided between the two hydraulic engines (4), but the opening of the bypass (7) stops the hydraulic engine from being activated (3); in this case, the machine will only work in reverse, with front wheel drive only.



8.2.0 CHECKING THE HYDRAULIC SYSTEM

General informations:

If any transmission problems should arise (insufficient power or general malfunction) it is recommended to carry out a series of preliminary tests to exclude the possibility that the malfunction has been generated upstream of the transmissions; if the tests listed below do not help in identifying and resolving the problem, it will be necessary to remove the unit in question so that the necessary repair work can be done.

Related topics:

Guide to understanding the hydraulic system
[☛ 8.1]

a) Engine tests

– Check that the engine reaches the maximum foreseen rpm.

b) Machine tests

– Check that the belt is not worn, dirty or soaked in oil and check that the tension regulator is adjusted properly.
– Check that the pedals and levers are all intact and regulated properly.
– Check that the wheel hubs are intact and that the front wheels have keys which are part of the hub.

c) Transmission unit and hydraulic system tests

– Check that the rear transmission fan is intact.
– Check that the rear by-pass is closed and that the control tie-rod is able to complete its travel stroke to achieve complete opening and closing.
– Check that the front by-pass is closed and the locknut is firmly tightened.
– Check that the connection pipes have not been inverted.
– Check that there are no leaks in the hydraulic system and, where necessary, bleed the circuit to eliminate any residual air from the system.

9.1.0 TIGHTENING TORQUES AND ADJUSTMENTS SUMMARY

General informations:

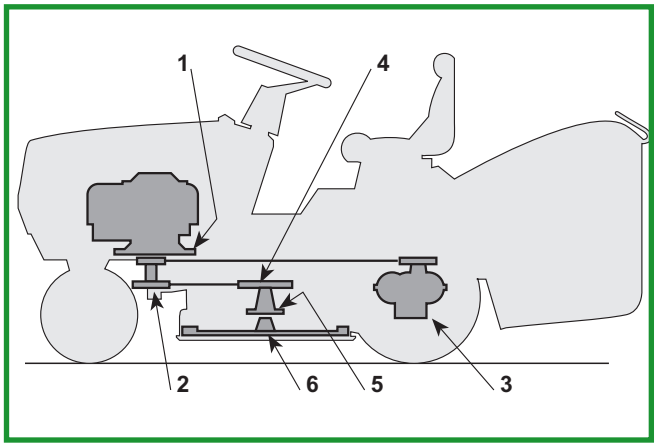
Related topics:

Brake adjustment [☛ 4.2]
Adjusting the drive engagement [☛ 4.3]
Adjusting the engagement of the blade brake [☛ 4.1]

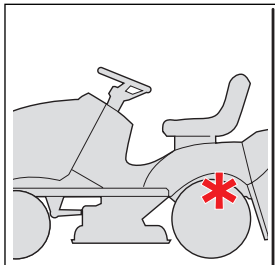
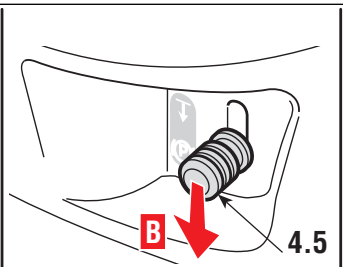
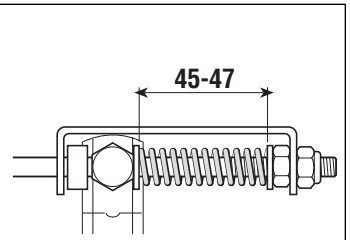
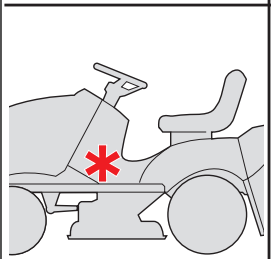
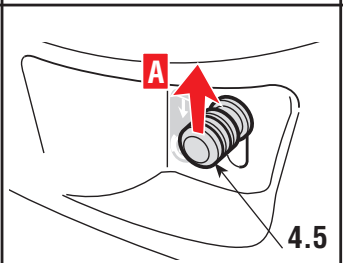
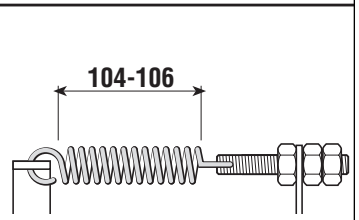
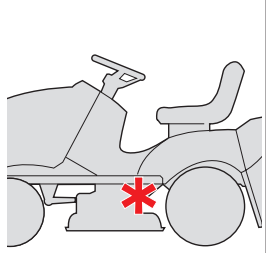
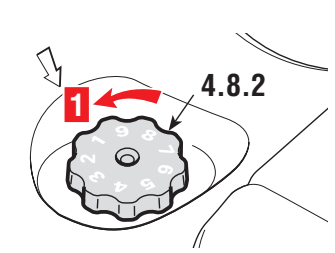
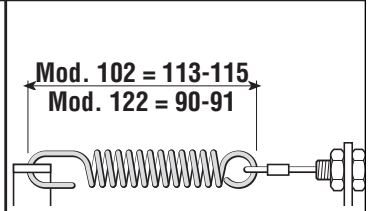
A) Tightening torques

Tightening torques values for the fixing bolts on the main components:

1 Screws for engine fastening ..... 25 ÷ 30 Nm
2 Screw for engine pulley fastening .. 45 ÷ 50 Nm
3 Screws rear axle fastening ..... 25 ÷ 30 Nm
4 Screws for blade pulley fastening .. 25 ÷ 30 Nm
5 Nuts for flange support fastening .. 25 ÷ 30 Nm
6 Screws for blades fastening ..... 45 ÷ 50 Nm



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

Operation	Position	Position of controls	Adjustment
a) Brake adjustment			
b) Drive belt adjustment			
c) Adjusting blade engagement			

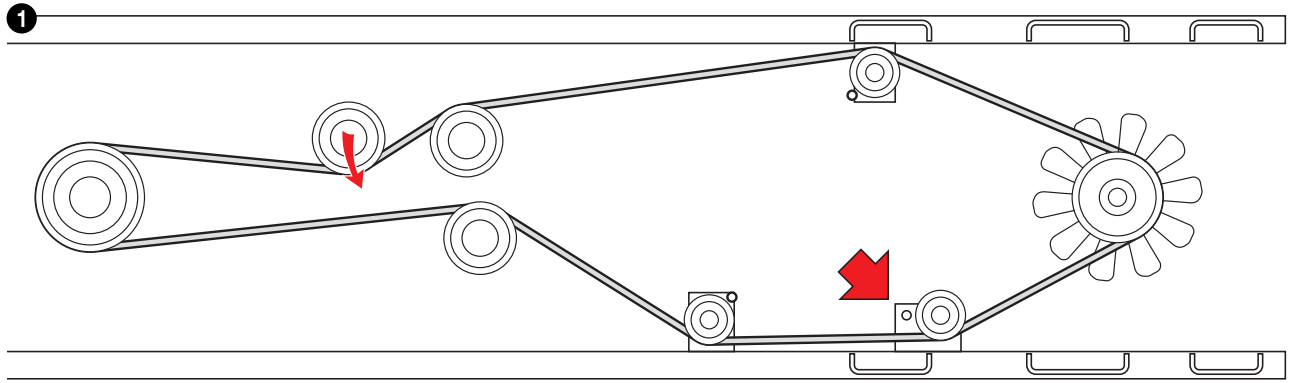
WORKSHOP MANUAL

9.2.0 BELTS ASSEMBLY

General informations:

Related topics:

Replacement of drive belt [☛ 6.4]
Replacement of blade control belt [☛ 6.6]
Replacement of blade connection belt [☛ 6.7]



1 Drive belt development
2 Blade control belt development
3 Blade connection belt development