



# 102 - 122

# 102 - 122 *hydro*

by  GLOBAL GARDEN PRODUCTS

# WORKSHOP MANUAL

Rel. 4.0

SERIAL NUMBER

**134001→**

HYDROSTATIC DRIVE MODELS

SERIAL NUMBER

**155011→**

MECHANICAL DRIVE MODELS

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.



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## CONTENTS

### 1. Rules and procedures of the service centre

*This chapter deals with the main aspects in the relationship between the Manufacturer and the Service Centres. Close co-operation between the Manufacturer and Service Centres is important for best resolving problems and for maintaining an image of efficiency and reliability to present to the Customer. Complying with these short and simple suggestions will help us in this task, avoiding for both you and us all those possible misunderstandings which result in a mutual waste of time.*

### 2. General regulations

*This chapter deals with general aspects of working and the main rules for ensuring that the work is done properly and maintains the machine's safety.*

### 3. Maintenance

*This chapter deals with the criteria for routine maintenance.*

### 4. Adjustments and tuning

*This chapter deals with the adjustments to be made to remedy the more frequent performance failures, which are usually resolved by quick checks and tunings.*

### 5. Removal of external parts and main assemblies

*For doing more difficult jobs, greater accessibility may be required. This can be done by taking the unit concerned off and working at the bench, or by removing the hood and external parts. Whether or not this will be useful is at the discretion of the mechanic's experience.*

### 6. Repairs

*This chapter deals with all the more complex work connected with the replacement or repair of malfunctioning or worn parts. The descriptions must follow a logical sequence and can include operations not specifically connected to a particular type of repair. In this case, careful reading of the entire procedure can help you omit all those operations not connected with the case in hand without, however, overlooking anything that may be necessary.*

### 7. Electrical system

*This chapter deals with the problems and checks connected with the electrical system. All work can be done using a tester without having to use special equipment. The electrical diagrams can be useful to you for understanding how the system functions and to facilitate the pinpointing of any problems.*

### 8. Technical data

*This chapter summarises all the main information regarding the machine.*



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## INTRODUCTION

This manual has been compiled to help Service Centres with the maintenance, dismantling and repair of the following versions of the 102-122 machine:

- mechanical drive with gear box;
- hydrostatic drive (hydro).

### NOTE

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



**This symbol indicates an operation to be carried out with special care so as not to impair the machine's performance and safety.**



**This symbol indicates an operation to be carried out with special attention to ensure the physical safety of the person executing the work.**



**This symbol indicates that a special tool should be used [see 2.3].**

Descriptions of the more simple operations, which are easily carried out by a good mechanic, have been omitted, with greater detail being given to the more specific aspects of the machine, and suggestions on the most appropriate methods for achieving the best repairs.

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

Remember that problems connected with usage are fully covered in the User's instruction handbook which, being frequently updated, more closely coincides with the product. Finally, exploded drawings of the spare parts, which are also periodically updated, complete the technical literature in your hands and can be of use to you for reconstructing the entire assembly sequence.

### NOTE

Each page of the manual has these indications:

- years of production of the machine concerned;
- page number and total number of pages necessary for the description of the operation;
- indication of additional pages.

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## 1.1 IDENTIFICATION

### a) Machine

Each machine has a label attached **(1)** in the battery area 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.**

### b) Transmission (Rear axle)

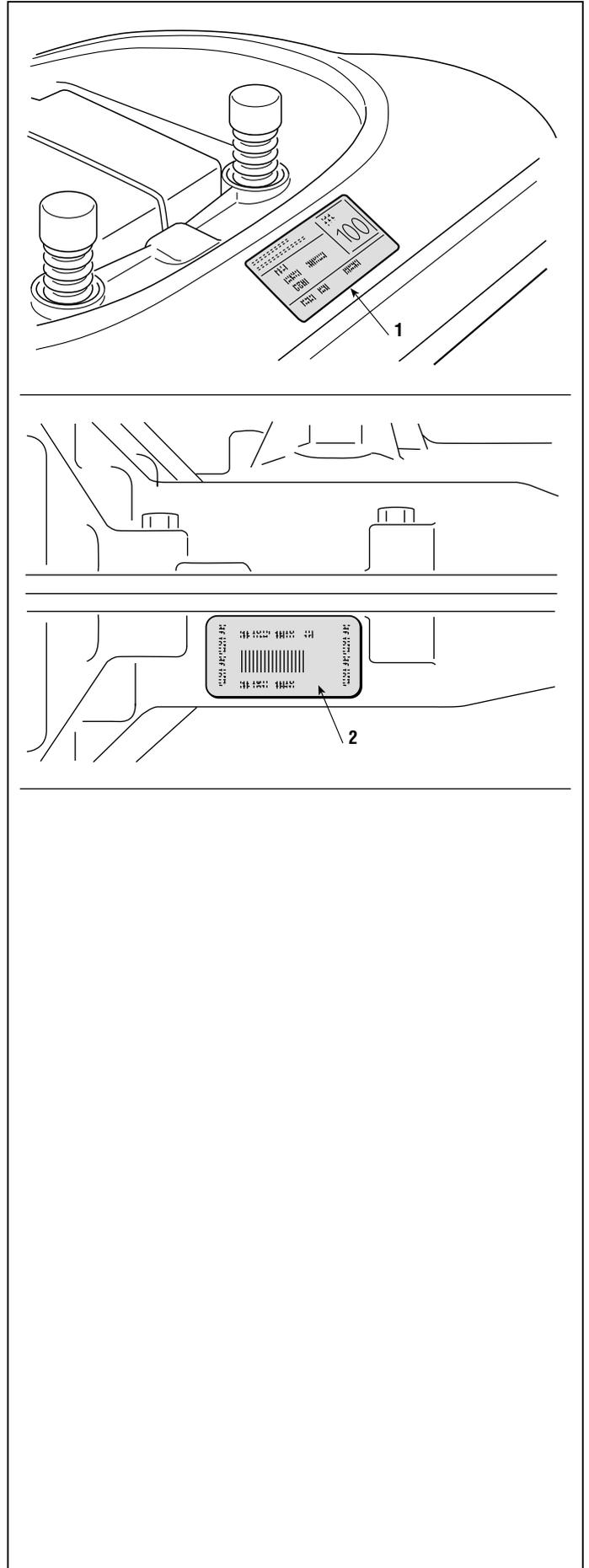
The transmission unit (both mechanical and hydrostatic) is made up of an engine block including the rear axle. This unit is made by another manufacturer to our precise technical specifications which differentiate it from similar items by this Manufacturer.

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

### c) Engine

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

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





◀◀	<b>1.2.0 - GUARANTEE VALIDITY</b>	▶▶	from <b>2000</b> to •••• page 1 / 1
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## 1.2 GUARANTEE VALIDITY

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



◀◀	<b>1.3.0 - SERVICE REPAIRS AFTER GUARANTEE PERIOD</b>	▶▶	from <b>2000</b> to •••• page 1 / 1
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### 1.3 SERVICE REPAIRS AFTER GUARANTEE PERIOD

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

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



◀◀	<b>1.4.0 - FAULT NOTIFICATION</b>	▶▶	from <b>2000</b> to ••••
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## 1.4 FAULT NOTIFICATION

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

At the same time the Manufacturer will notify of any faults met on the machines produced, with recommendations for the most suitable procedures for their remedy.



◀◀	<b>1.5.0 - SPARE PARTS REQUEST</b>	▶▶	from <b>2000</b> to •••• page 1 / 1
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## 1.5 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.



◀◀	<b>1.6.0 - SAFETY REGULATIONS</b>	▶▶	from <b>2000</b> to ●●●●
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## 1.6 SAFETY REGULATIONS

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

To maintain these levels of safety in the longer term it would be helpful if the Service Centres 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:

### a) check:

- that the safety microswitch is working correctly [see 7.3];
- 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).

### b) they should also:

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

## WARNING!

**Repair or maintenance work which is carried out well is a fundamental requisite for keeping the same level of safety envisaged at the design stage and built in during production.**

In this handbook some of the paragraphs are preceded by the following signs, which indicate:



**OPERATION TO BE CARRIED OUT VERY CAREFULLY SO AS NOT TO IMPAIR THE MACHINE'S PERFORMANCE AND SAFETY.**



**OPERATION TO BE CARRIED OUT WITH PARTICULAR REGARD FOR THE PHYSICAL SAFETY OF THE PERSON EXECUTING THE WORK.**



◀◀	<b>2.1.0 - LEVEL OF STAFF TRAINING</b>	▶▶	from <b>2000</b> to •••• page 1 / 1
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## 2.1 LEVEL OF STAFF TRAINING

All maintenance, dismantling and repair work on the machine must be carried out by trained mechanics who know of all the safety and accident prevention regulations, and after they have read the procedures described in this handbook.



◀◀	<b>2.2.0 - PRECAUTIONS WHILE WORKING</b>	▶▶	from <b>2000</b> to ••••
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## 2.2 PRECAUTIONS WHILE WORKING



Work carried out on the machine is not as a rule any more dangerous than any other normal mechanical work and accidents are preventable with the normal care and attention taken for this type of work.

As well as the usual safety regulations connected with typical workshop conditions, we recommend:

- **Taking out the ignition key before beginning any repair work.**
- **Protecting hands with suitable work gloves, especially when working on the blades or handling the parts in steel plate.**
- **Ensuring that the work being done does not result in accidental loss or leakages of fuel.**
- **No smoking near the engine or the fuel tank.**
- **Ensuring that other persons cannot accidentally carry out actions that may physically endanger whoever is working on the machine.**

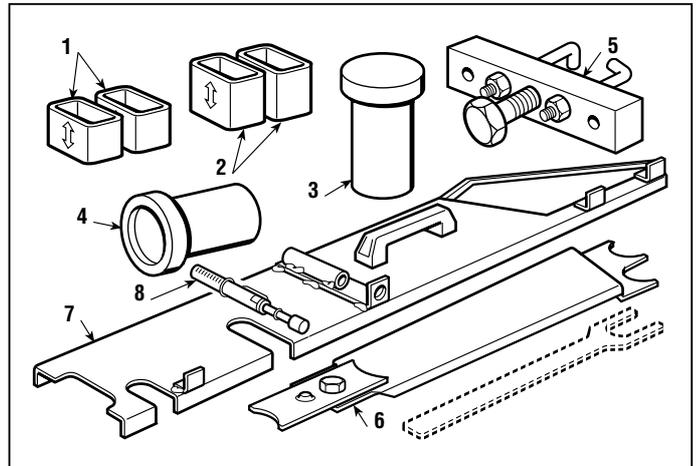


## 2.3 TOOLS

All work can be carried out using the tools normally available in a good workshop. However, it is advisable to have a kit of special tools **(1 ÷ 8)** which are already part of a set (Code no. 82180040/2) or which can be made following the instructions given in chapter 8.3.

These tools **(1 ÷ 8)** are to be used where there is the symbol «@» in this text.

1. Blocks H = 26 mm for adjusting the cutting deck
2. Blocks H = 32 mm for adjusting the cutting deck
3. Bush for assembly of blades bearings
4. Stopper for assembly of wheel bearings
5. Pulley extractor
6. Pulley centre distance checking template
7. Blades connection belt tension checking template
8. Dynamometer





◀◀	<b>2.4.0 - SLINGS</b>	▶▶	from <b>2000</b> to ●●●●
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## 2.4 SLINGS



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

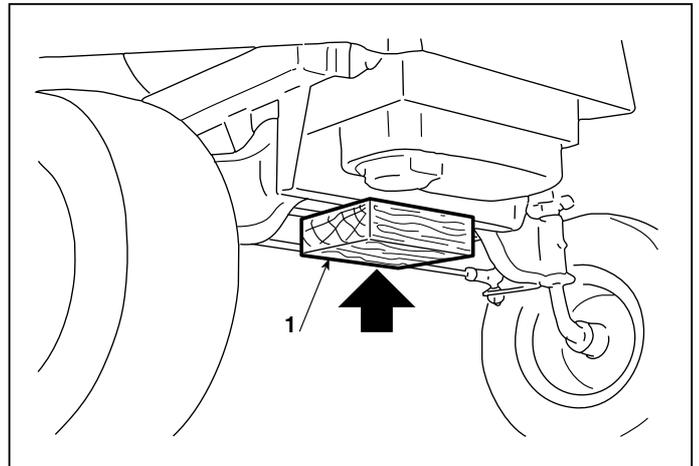


## 2.5 LIFTING



### A) Front

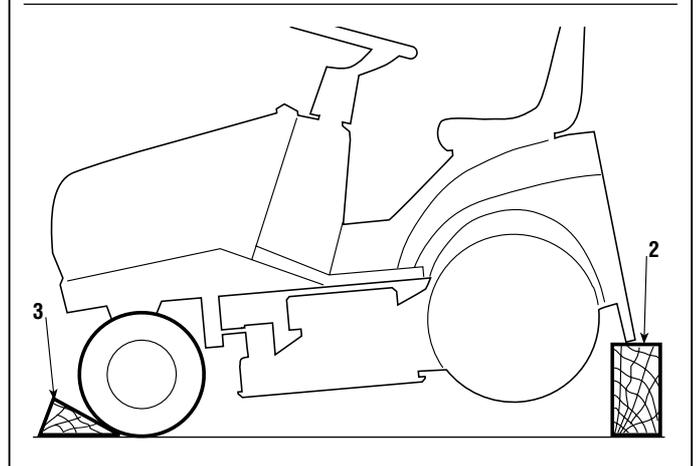
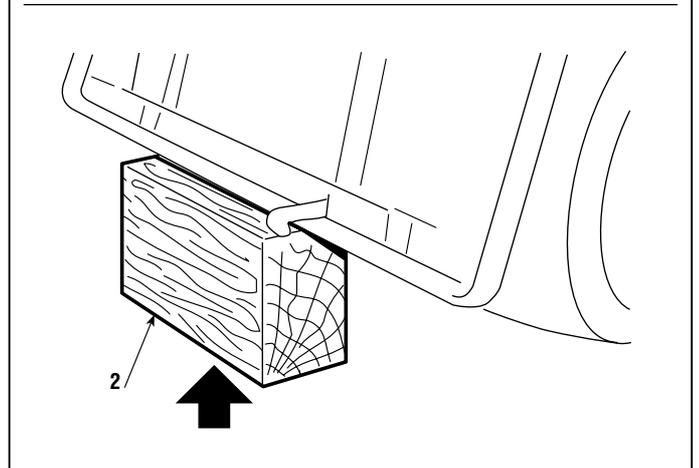
ONCE THE PARKING BRAKE HAS BEEN ENGAGED, the machine can be lifted using a jack which pushes on the underside of the frame, placing a wood block **(1)** between the base of the jack and the frame and checking to see that the free movement of the front spring equaliser has not been obstructed.



### B) Rear

Place a suitable block **(2)** beneath the lower edge of the plate.

In any case, an appropriately sized wedge **(3)** should be placed behind the opposite wheels to stop the machine from accidentally moving backwards.





◀◀	<b>2.6.0 - VERTICAL POSITIONING</b>	▶▶	from <b>2000</b> to ••••
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## 2.6 VERTICAL POSITIONING

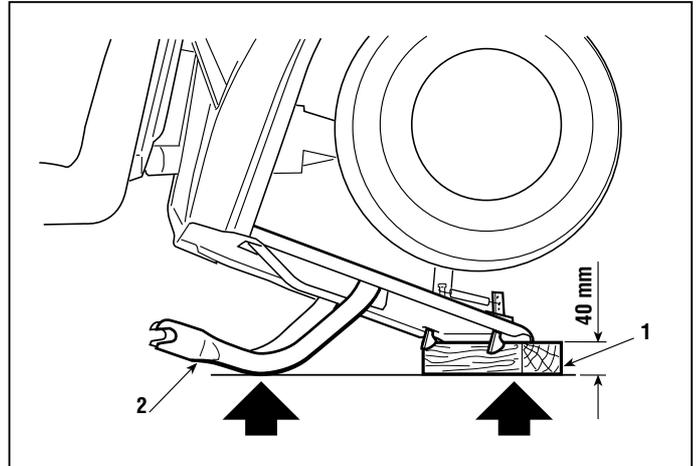


**WARNING! Two people will be needed for this operation. When lifting and tipping backwards, only solid parts should be gripped (steering wheel, frame, rear plate, etc.) and NEVER parts of the bodywork in plastic.**

The fuel tank must be checked before putting the machine in a vertical position to make sure that there is no more than 2 litres of fuel inside.

To assure full stability, the machine must only be rested on the points shown, inserting a block **(1)** of about 40 mm under the lower edge of the plate and taking care not to damage the grass-catcher mounts **(2)**.

**WARNING! Make sure that the machine is completely stable before carrying out any work, and avoid doing anything that could cause it to fall.**



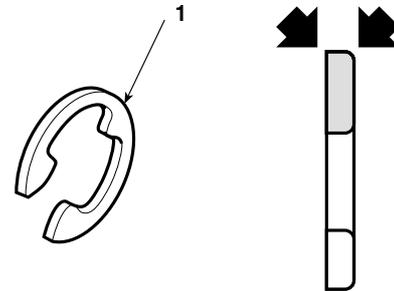


## 2.7 PRACTICAL HINTS

### A) Fitting snap rings

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

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

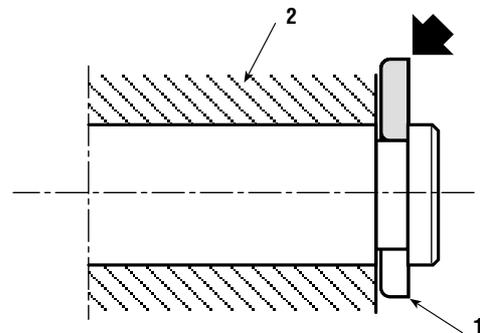


### B) Joint pivot pins

There are a lot of pivot pins, usually connected to rods, that should 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)**.

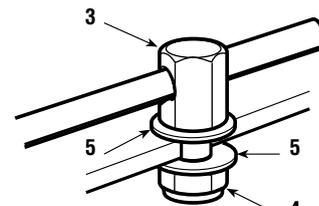
Since these are joints, the nut must never be tightened completely but only so much that it can ensure the free rotational movement of the pin on its axis without, however, creating excessive free play which could result in the parts concerned becoming misaligned and failing to work correctly.



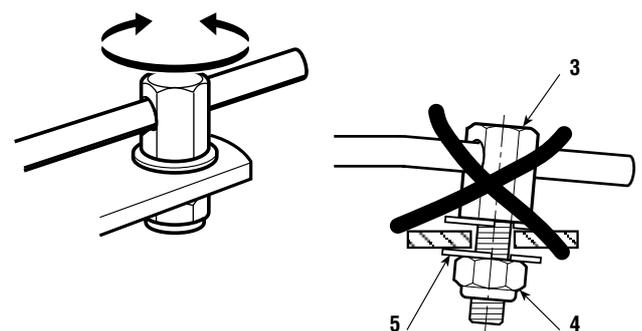
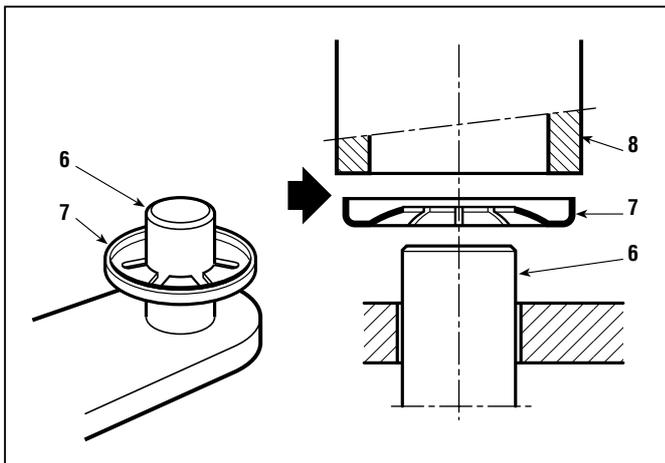
### C) Crown fasteners

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.**





◀◀	<b>3.1.0 - CRITERIA FOR MAINTENANCE</b>	▶▶	from <b>2000</b> to ••••
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## 3.1 CRITERIA FOR MAINTENANCE

The Instruction Handbook has a number of operations to be carried out by the Customer for a minimum of basic maintenance, and other operations which are 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 [see 3.2].
- b) Proposing a routine 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) [see 3.3].



◀◀	<b>3.2.0 - OCCASIONAL TUNING</b>	▶▶	from <b>2000</b> to ••••
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## 3.2 OCCASIONAL TUNING

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



◀◀	<b>3.3.0 - ROUTINE MAINTENANCE</b>	▶▶	from <b>2000</b> to ••••
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## 3.3 ROUTINE MAINTENANCE

– All work carried out in section 3.2, plus:

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



◀◀	<b>4.1.0 - BLADE ENGAGEMENT ADJUSTMENT</b>	▶▶	from <b>2000</b> to ••••
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## 4.1 BLADE ENGAGEMENT ADJUSTMENT

The blades are moved by the engine by means of a "V" belt and are engaged by a stretcher operated by the lever (▶ in models with lever operated engagement) or by a combined clutch/brake group (▶ in models with electromagnetic engagement). After a certain amount of use, the belt and the cable can change in length (▶ in models with lever engagement) which can result in malfunctioning, i.e.:

- belt slipping = belt or cable stretched
- difficulty in disengaging, with a stiff lever and the blades continuing to run = belt shortened

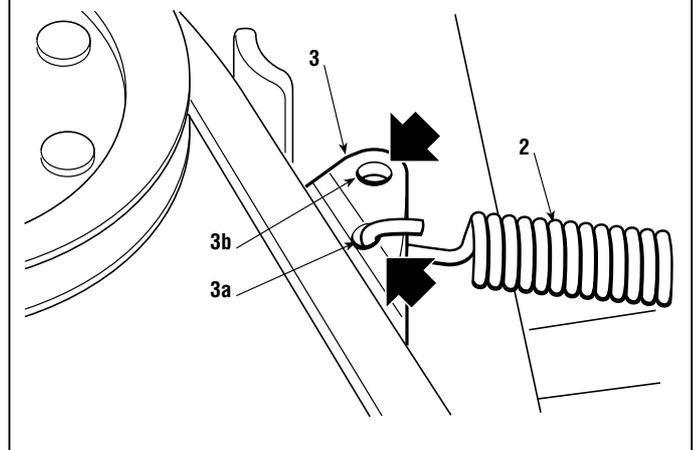
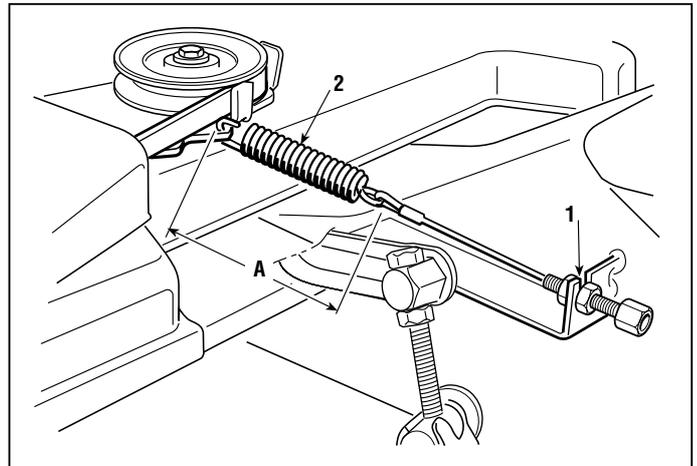
In both cases the stretcher needs to be adjusted.

With the cutting deck in the lowest position, identify the adjuster **(1)** located under the left footboard and suitably turn the nuts until, with the blades engaged, the length of spring **(2)** equals «**A**», which varies depending on the different versions of the machine, that is:

- 122 ÷ 124 mm** - for mod. 102 - lever operated engagement
- 92,5 ÷ 93,5 mm** - for mod. 122 - lever operated engagement
- 113 ÷ 115 mm** - for mod. 102 - electromagnetic engagement
- 90 ÷ 91 mm** - for mod. 122 - electromagnetic engagement

### NOTE

The coupling position of spring **(2)** on the plate **(3)** is different for model 102 (hole **3a**) and model 122 (**3b** - single hole in the plate).





◀◀	<b>4.2.0 - BLADES BRAKE ADJUSTMENT</b>	▶▶	from <b>2000</b> to ••••
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## 4.2 BLADES BRAKE ADJUSTMENT

*Disengaging the blades causes a brake to come into action. This is to stop the blade turning within five seconds.*

*Longer braking times do not comply with safety regulations, but adjusting the brake so that it stops more quickly than this can cause premature wear of the brake pad ( ▶ in models with lever operated engagement) or the slipping of the belt on the pulleys, resulting in overheating and the typical smell of burnt rubber.*

- ☛ Check that the engagement spring is adjusted to the right length [see 4.1].

Correct brake operation must ensure that the blades stop within 5 seconds of disengagement.

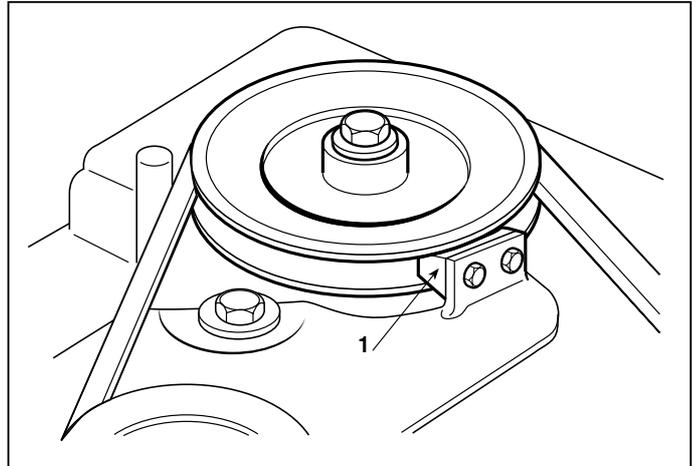
If this is not the case:

▶ **For models with lever operated engagement:**

check that the brake pad **(1)** is not worn.

▶ **For models with electromagnetic clutch:**

since this problem is due to malfunction of the electromagnetic clutch, the clutch must be replaced if the checks described [see 7.3 and 7.7] do not lead to any improvement.





◀◀	<b>4.3.0 - BRAKE ADJUSTMENT</b>	▶▶	from <b>2000</b> to ●●●●
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## 4.3 BRAKE ADJUSTMENT

Reduced braking power is corrected by adjusting the spring on the brake rod, which is reached through the inspection hatch beneath the seat.

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 holds on the bracket (2) and turn the nut (3) until the length of the spring (4) is:

**A** = 47.5 ÷ 49.5 mm ▶ For mechanical drive models

**B** = 45 ÷ 47 mm ▶ For hydrostatic drive models:

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.



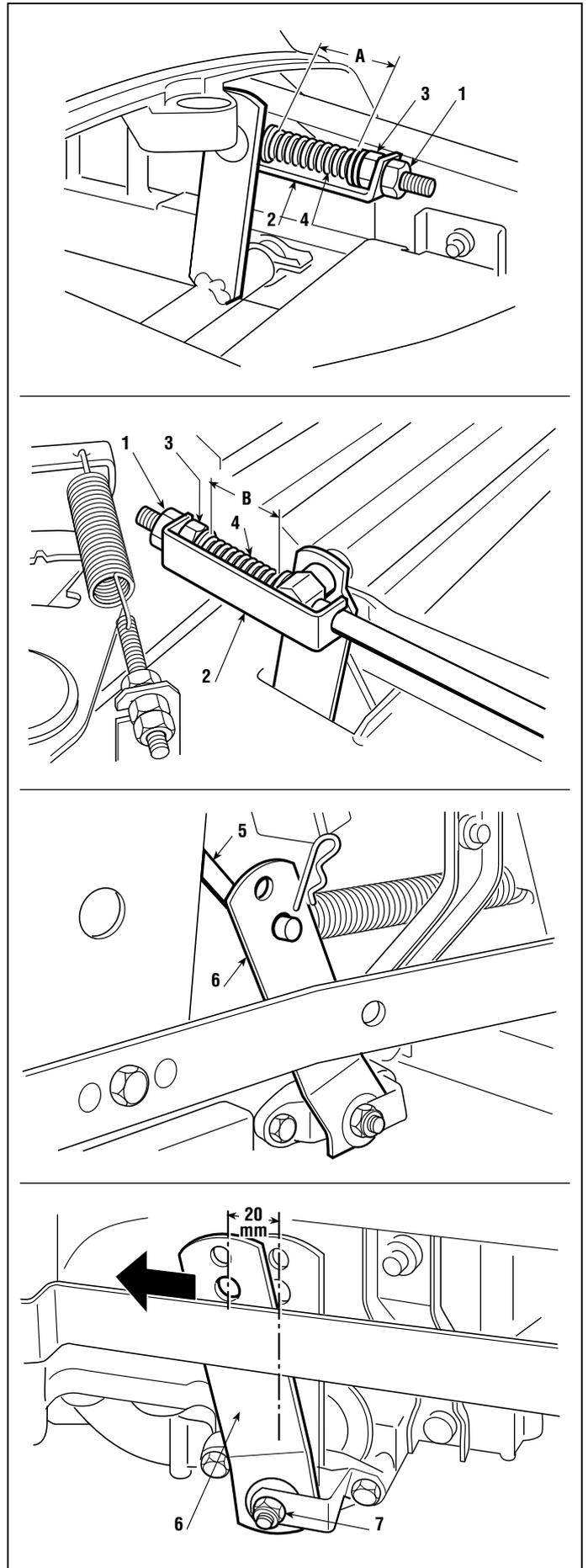
When the adjustments have been made, the parking brake should prevent the machine from moving on a slope of 30% (16°) with the driver in position.

### ▶ In mechanical drive models:



If braking is still poor or unsteady even after making the adjustment, remove the control rod (5) from the lever (6) and check that the latter has an idle stroke of 20 mm (measured on the vertical in correspondence with the pin axis) before braking starts; otherwise the idle stroke can be adjusted using the screw (7), unless the brake pads or disc are so worn that they need replacing [see 6.11].

When connecting the rod (5) be sure to use the **lower** hole in the lever (6) and then check the length of the spring again (4).





◀◀	<b>4.3.0 - BRAKE ADJUSTMENT</b>	▶▶	from <b>2000</b> to •••• page ◀ 2 / 2
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► *In hydrostatic drive models*



If braking is still poor or unsteady even after making the adjustment, you cannot make any further adjustments from the outside. Therefore you need to dismantle the whole rear axle of the machine [see 5.6] and contact one of the manufacturer's Service Centres



◀◀	<b>4.4.0 - DRIVE BELT ADJUSTMENT</b>	▶▶	from <b>2000</b> to ●●●●
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## 4.4 DRIVE BELT ADJUSTMENT

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 drive and limits forward movement power;
- a belt which is too tight increases noise and results in jerky movements or tipping up when engaging the drive.

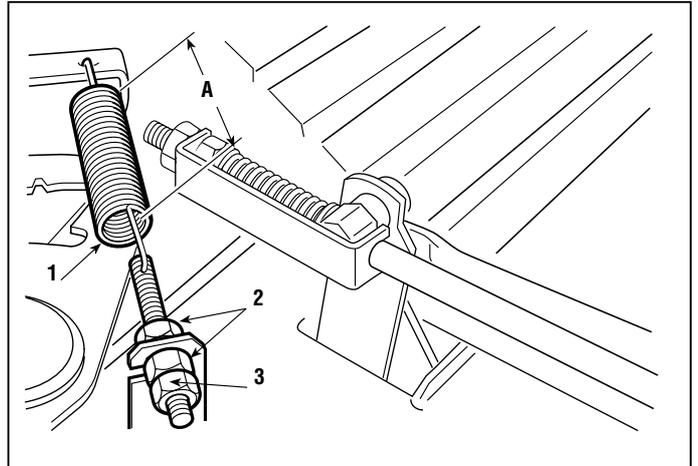
In these cases the stretcher will need to be adjusted.

The stretcher can be accessed from the inspection hatch beneath the seat; adjust the tension of spring **(1)** using nuts **(2)** to set length «**A**» of:

- 114 ÷ 116 mm ► in mechanical drive models
- 109 ÷ 111 mm ► in hydrostatic drive models

measured from the outer ends of the springs with the drive commands disengaged.

Following adjustment, fully tighten the nuts **(2)** and the locknut **(3)**.





◀◀	<b>4.5.0 - DRIVE PEDAL ADJUSTMENT</b>	▶▶	from <b>2000</b> to ••••
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## 4.5 DRIVE PEDAL ADJUSTMENT ( ▶ *Hydrostatic drive models* )

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

### A) Adjusting the pedal in the “neutral” position

The pedal position is to be adjusted starting with the lever **(1)** of the hydrostatic unit in the “neutral” position. This position «N» is easily recognised, since it is held fast by a check ball.

The pedal **(2)** is in the ideal position when the lever **(1)** of the hydrostatic unit is “neutral”, and the lower rubber edge **(3)** on the reverse side is 24 -27 mm from the footboard.

This is obtained by opening the inspection hatch beneath the seat and by turning the nuts **(4)** appropriately until the required measurement is reached. Take care not to accidentally modify the position of the lever **(1)** during the adjustment.

### B) Adjusting the “neutral” position of the micro-switch



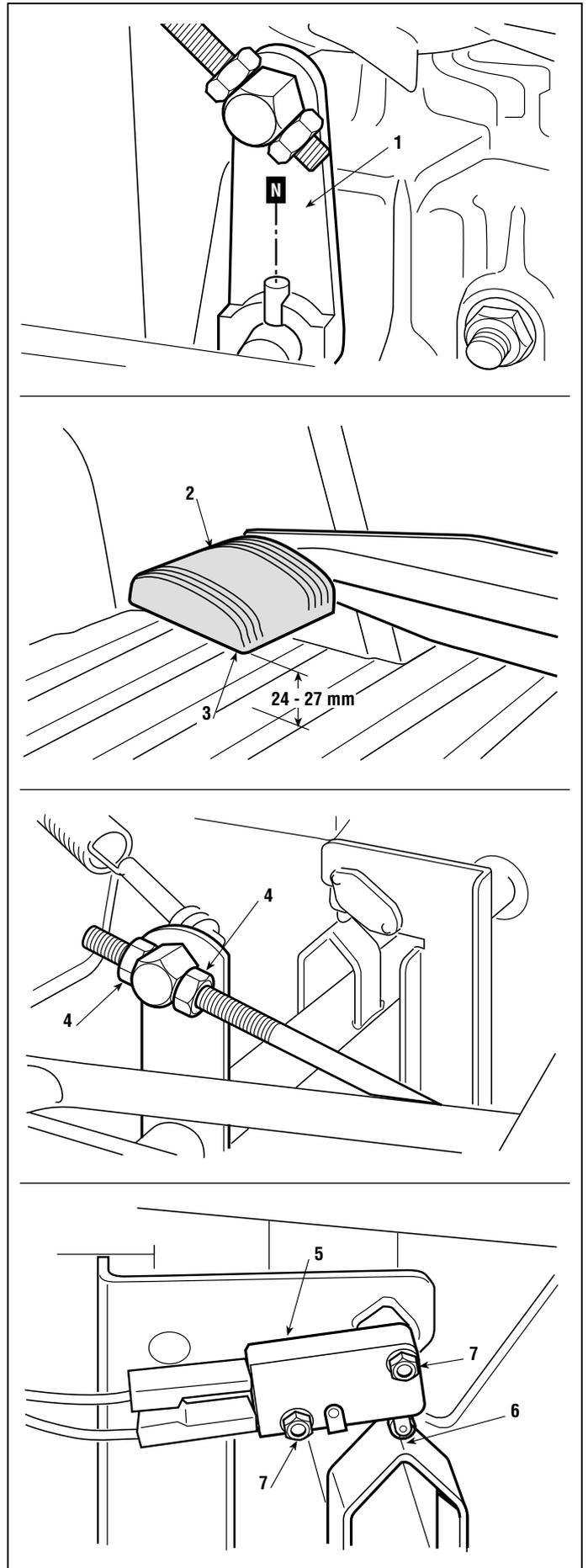
#### **IMPORTANT!**

**This is a very important adjustment for the correct operation of the safety devices for starting and stopping of the machine during work.**

The “neutral” position «N» is indicated by the microswitch **(5)** of the cam **(6)**, which is reached by the inspection hatch beneath the seat.

After having ensured that adjustment “A” has been made correctly, with the pedal released and thus in neutral position «N», slacken off the microswitch fixing screws **(7)** and position it in line with the tip of the cam, so that it remains pressed [see 7.11].

By moving the pedal in the forward, neutral and reverse positions, make sure that the push-button clicks at every position change before the wheels start moving.





◀◀	<b>4.6.0 - ALIGNING THE CUTTING DECK</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 2 ▶

## 4.6 ALIGNING THE CUTTING DECK

Lowering of the cutting deck is controlled by a linkage operated by the lever and is guided by two front articulation connecting rods.

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.

Two types of adjustment are possible:

- a) combined adjustment to the parallel and minimum front and rear height, to be done in the case of cutting irregularities;
- b) longitudinal deck position adjustment, only needed if the original position was lost during cutting deck replacement and the correct distance from the engine pulley must be reset.

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

### A) Combined adjustment to the parallel and the minimum front and rear height

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 **(1)** @ code 60700000/0,
- at the rear 32 mm **(2)** @ code 60700001/0;

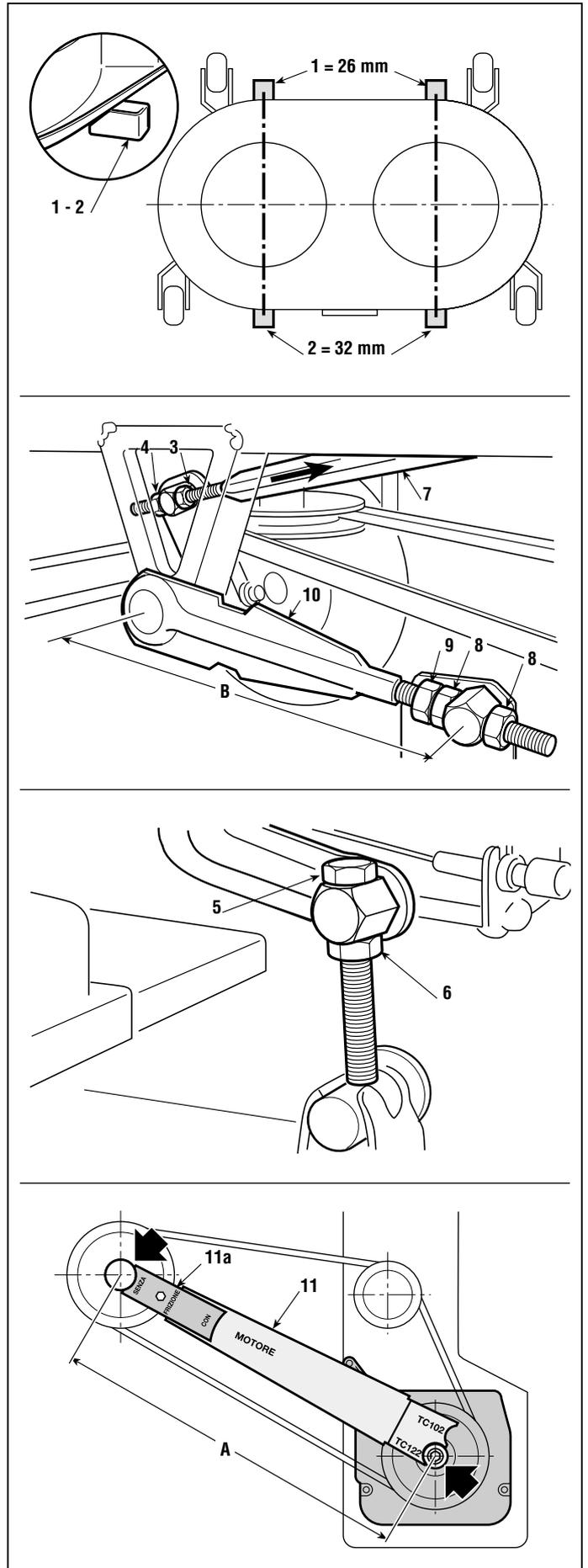
then set the lifting lever to position «1» and slacken off the nuts **(3)**, screws **(5)** and locknuts **(4 - 6)** on both the right and left hand sides, so that the deck rests firmly on the blocks.

Turn both the rear screws **(5)** until the rear of the deck begins to rise both at the right and the left, and then tighten the relevant locknuts **(6)**.

Push the two connecting rods **(7)** to the back and screw down the two nuts **(3)** on each rod until the front part of the deck just begins to rise both at the right and the left, and then tighten the relevant locknuts **(4)**.

### B) Adjustment of the longitudinal position

Put the machine onto a flat and stable surface (such





◀◀	<b>4.6.0 - ALIGNING THE CUTTING DECK</b>	▶▶	from <b>2000</b> to ••••
			page ◀ 2 / 2

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 **(1)** @ code 60700000/0,
- at the rear 32 mm **(2)** @ code 60700001/0;

then set the lifting lever to position «1» and slacken off the nuts **(3)**, screws **(5)** and locknuts **(4 - 6)** on both the right and left hand sides, so that the deck rests firmly on the blocks.

Slacken off the nuts **(8)** and locknut **(9)** of the two front connecting rods **(10)** and adjust nuts **(8)** of the front left connecting rod to set the exact distance «**A**» of:

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

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

This operation is facilitated by using the checking caliper **(11)** @ code 60205000/0 illustrated in chap. 8.3, suitably positioning the engine side terminal **(11a)** depending on whether the electromagnetic clutch is present or not.

Distance «**B**» is set by using the corresponding front right connecting rod nuts **to obtain the same measurement, so that the outlet is perfectly centred with respect to the collector channel**; then fully tighten the nuts **(8)** and locknut **(9)**.

## NOTE

It is very important that distance «**B**» is the same on both the left and right hand sides, to prevent the belt from rubbing against the collector channel.

Turn both the rear screws **(5)** until the rear of the deck begins to rise both at the right and the left, and then tighten the relevant locknuts **(6)**.

Push the two connecting rods **(7)** to the back and screw down the two nuts **(3)** on each rod until the front part of the deck just begins to rise both at the right and the left, and then tighten the relevant locknuts **(4)**.



## 4.7 STEERING ALLOWANCE ADJUSTMENT

*The steering allowance should never be excessive if driving is not to be impaired.*

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

If the movement is due to the ring gear / pinion coupling, it will be necessary to adjust the arrangement of the set of blocks between the ring gear and the frame.

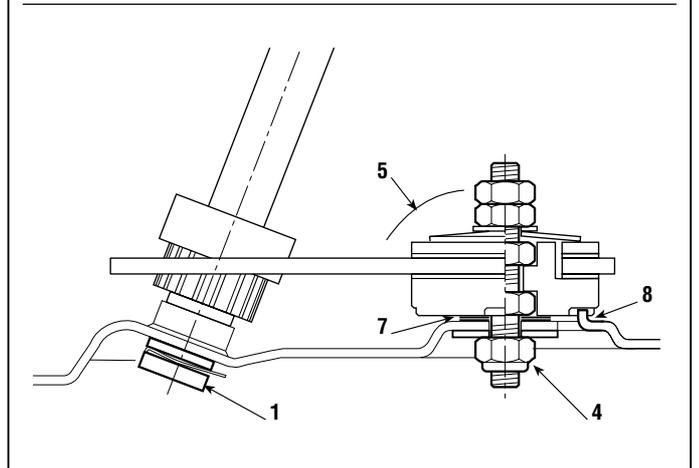
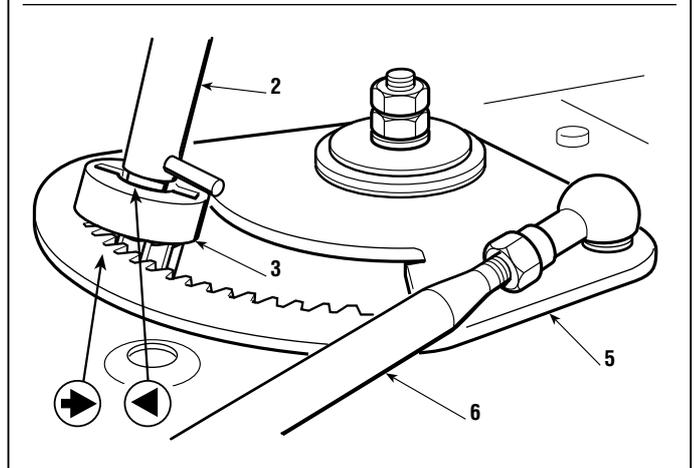
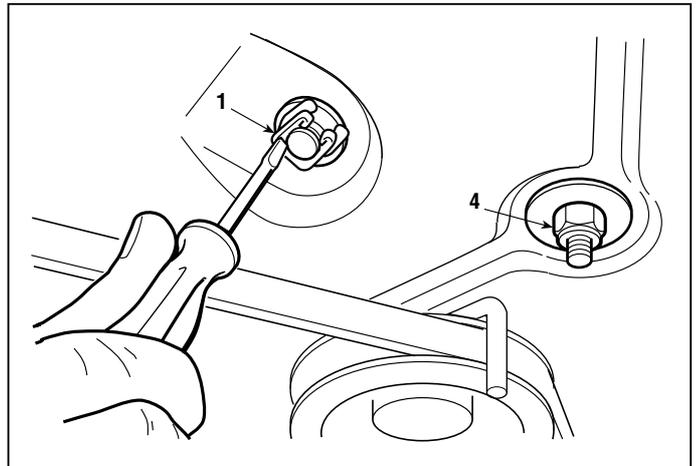
Release the spring **(1)** and lift the steering column **(2)** enough to be able to draw out the pinion **(3)**. Undo the nut **(4)** and take out the whole ring gear shaft **(5)** without dismantling the tie-rod **(6)**. Take away one or both of the blocks **(7)** under the ring gear depending on the amount of free play to be reduced.



Reassemble the pinion and the ring gear shaft, lining up the two reference points ( → - ◀ ) punched on them, and making sure that the notch **(8)** on the frame slots into one of the housings in the bush.

Put the whole assembly back together and fully tighten the nut **(4)**.

If the movement is still there after having removed all the spacers, check and, if necessary, replace the ring gear/pinion unit [see 6.3], or look for other possible causes.



### Tightening torque

<b>4</b> Nut for Ring gear .....	45 ÷ 50 Nm
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◀◀	<b>4.8.0 - STEERING GEOMETRY ADJUSTMENT</b>	▶▶	from <b>2000</b> to <b>••••</b>
			page 1 / 1

## 4.8 STEERING GEOMETRY ADJUSTMENT

The correct steering geometry is given by the values of the centre distance between the joints of the tension rod and the wheel connecting 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
- the machine does not maintain a straight line when the steering wheel is straight = adjustment of tie-rods.

### NOTE

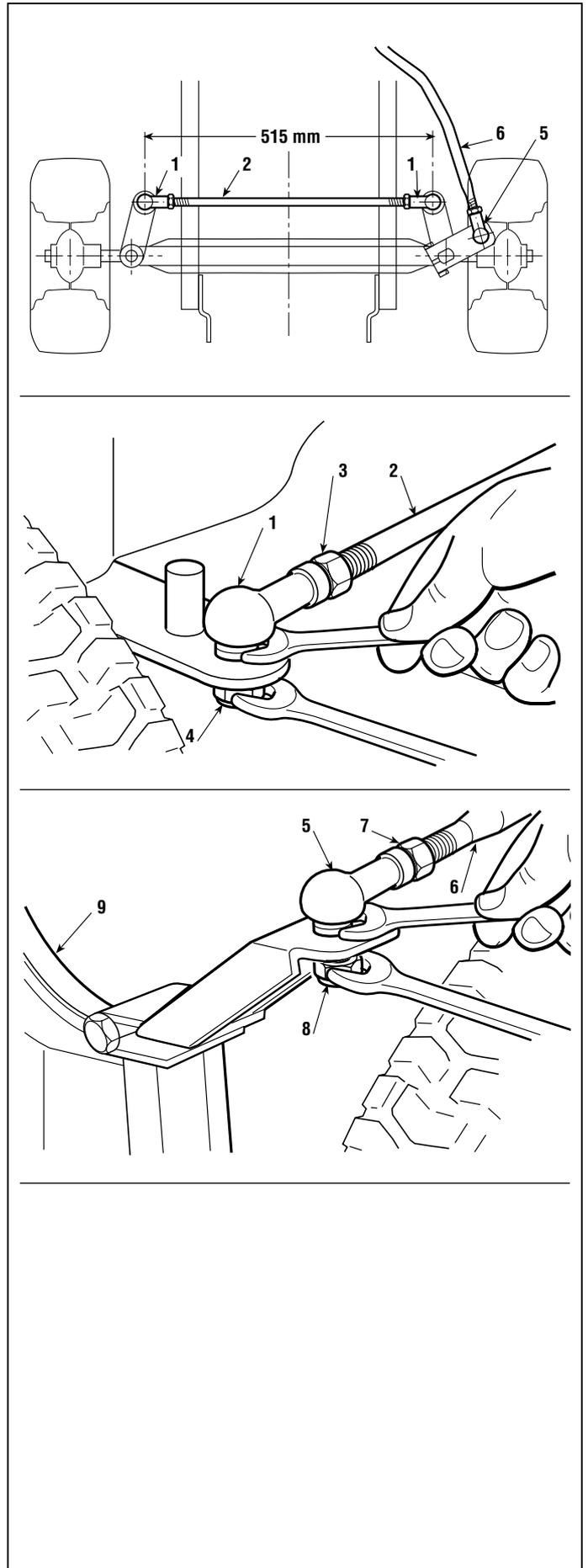
Before any other action, check that the joint fastenings have not become loose.

### A) Toe-in adjustment

An exact toe-in is achieved with a centre distance of 515 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 or unscrew them on the rod **(6)** as much as necessary. 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, dismantle the articulated joint **(5)** and screw or unscrew it on the tie-rod **(6)** as much as necessary. On assembly, fully tighten the locknut **(7)** and the fastening nut **(8)** and check that the tie-rod, in its travel, **does not interfere with parts or accessories of the engine** even with the equaliser **(9)** angled in both directions.



### Tightening torques

- 3 - 7** Locknuts for articulated joints ..... 25 ÷ 30 Nm
- 4 - 8** Nuts for articulated joints ..... 45 ÷ 50 Nm



◀◀	<b>4.9.0 - CHECKING BLADES ALIGNMENT</b>	▶▶	from <b>2000</b> to <b>••••</b>
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## 4.9 CHECKING BLADES ALIGNMENT

*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.*

➔ Put the machine into a vertical position [see 2.6].



**Always wear strong gloves when handling the blades.**

To check the alignment of the blades, one of them must first be removed and refitted after having removed the shaft key **(2)**, to permit independent blade rotation.

### NOTE

Take note of the unscrewing and screwing direction of the central screw of each blade **(1)** [see 4.10]. 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.

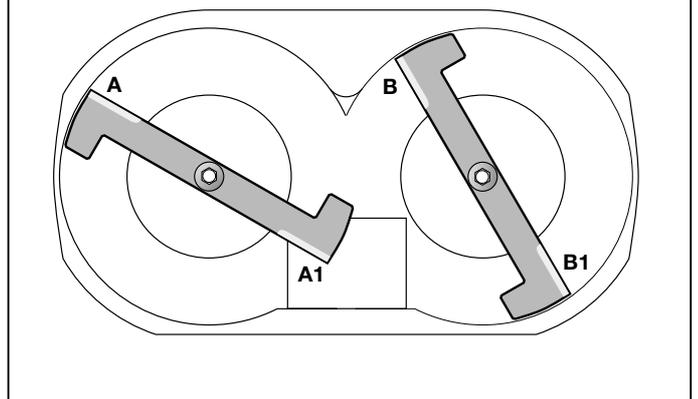
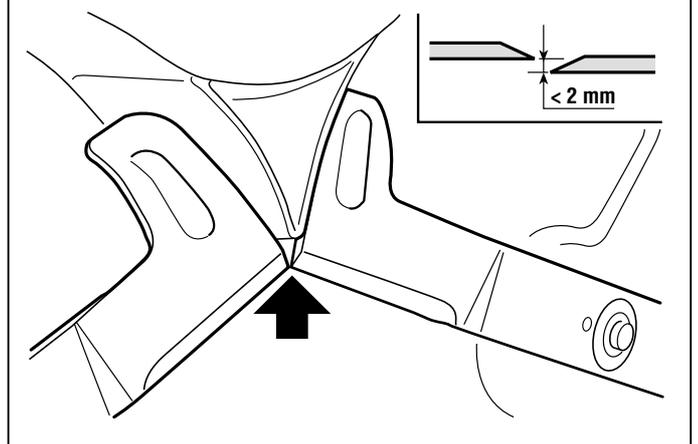
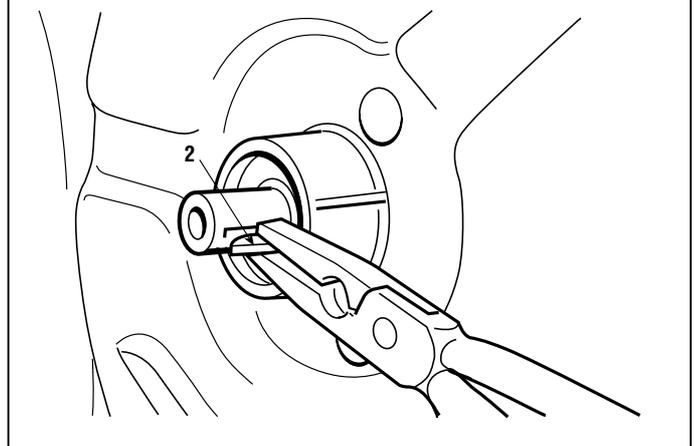
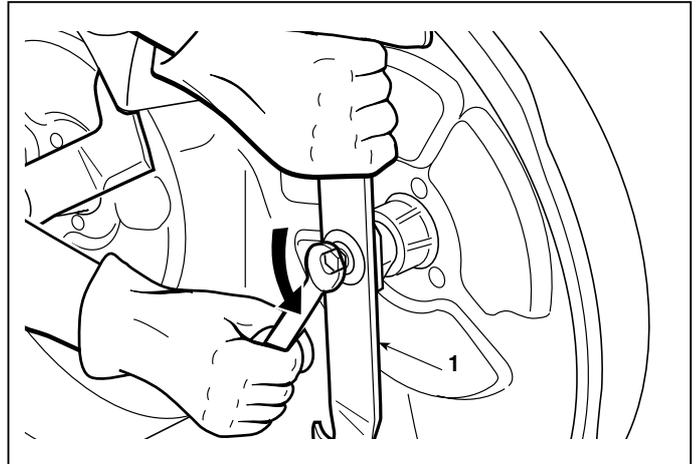
If higher amounts are found, check that the blades are not distorted. If this is not the case, check the supports or the shafts for the blades [see 6.9], replacing if necessary, and check the condition of the point where the flanges rest on the cutting deck.



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



Having made the check, remember to refit the shaft key **(2)** and check that the rotating blades do not interfere with each other during a whole revolution.





◀◀	<b>4.10.1 - SHARPENING AND BALANCING OF THE BLADES</b>	▶▶	from <b>2000</b> to ●●●●
			page 1 / 1

## 4.10 SHARPENING AND BALANCING OF THE BLADES

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

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

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.

### A) Sharpening

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

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

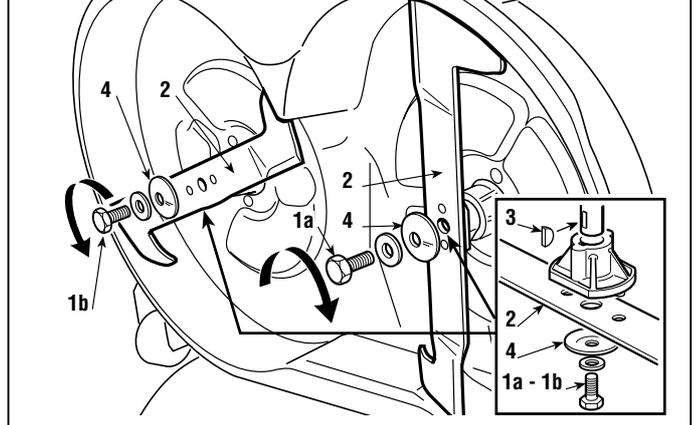
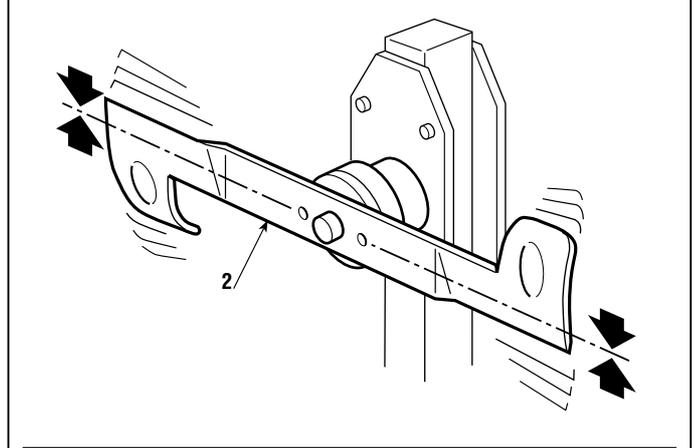
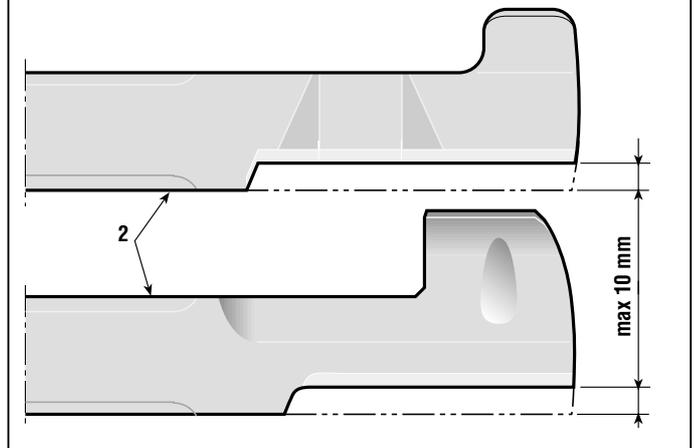
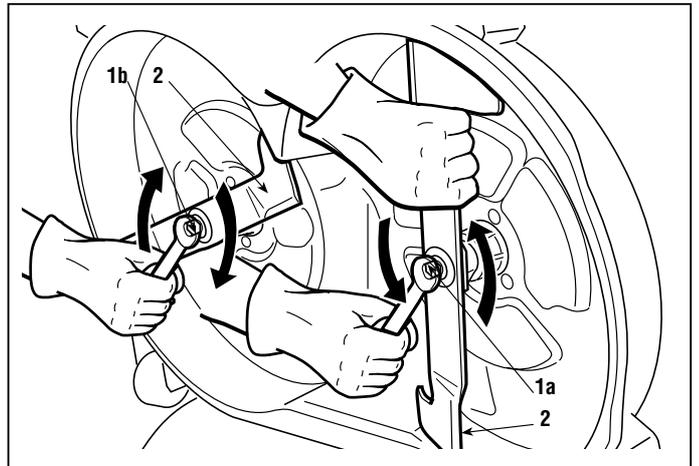
### B) Balancing

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.

**!** On reassembly, be sure to position the right and left blades correctly, as well as that the splines (3) are correctly positioned on the shafts, the wings on the blades are turned towards the inside of the deck and that the concave part of the spring disc (4) is pressing against the blade.

### Tightening torques

<b>1a</b>	Screw for left blade .....	45 ÷ 50 Nm
<b>1b</b>	Screw for right blade .....	45 ÷ 50 Nm





◀◀	<b>5.1.0 - REMOVAL OF FRONT HOOD</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 1

## 5.1 REMOVAL OF FRONT HOOD

*The removal of the front hood gives greater accessibility to:*

- the engine and its accessories
- the silencer and protection devices

To remove the hood, disconnect the connector to the lights **(1)**.

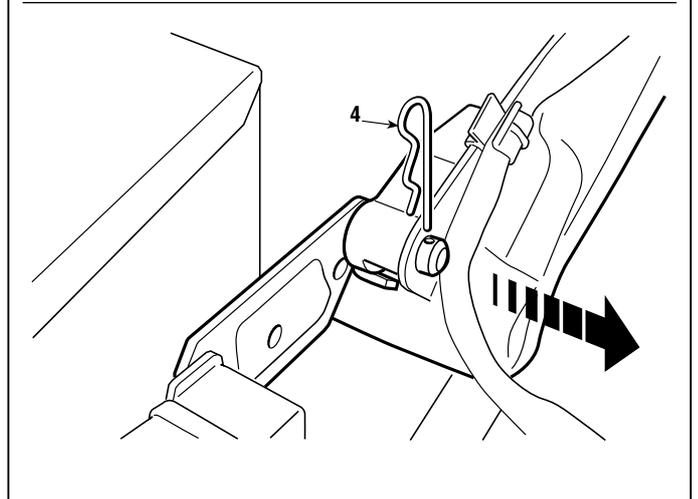
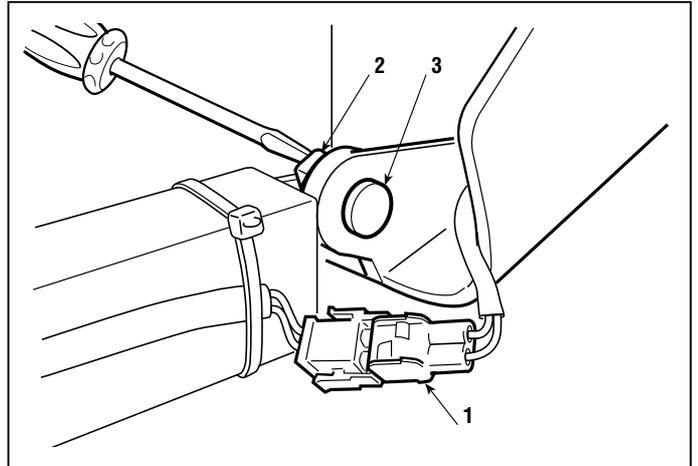
The hood can be secured in two ways.

### A) Fixing with springs

Unhook the two fastener springs **(2)** and pull out the pins **(3)**.

### B) Fixing with a split pin

Take out the split pin **(4)** from the right-hand side and remove the hood by moving it to the right.





◀◀	<b>5.2.0 - REMOVAL OF THE WHEEL COVER</b>	▶▶	from <b>2000</b> to <b>••••</b>
			page 1 / 2 ▶

## 5.2 REMOVAL OF THE WHEEL COVER

Removing the wheel cover gives access to:

- the mount for the lever to raise the deck;
- the supports of the footboards.

Remove the spring **(1)** fixing the battery, ensuring that accidental short circuits are not caused; first disconnect the black cables (earth), then the red cable (positive) and remove the battery **(2)**.

► **For models with lever operated engagement:** unscrew the blade engagement lever knob **(3)**

► **For mechanical drive models:** unscrew the gear lever knob **(4)**.

Remove the caps **(5)** from the springs and undo the screws inside **(6)**.

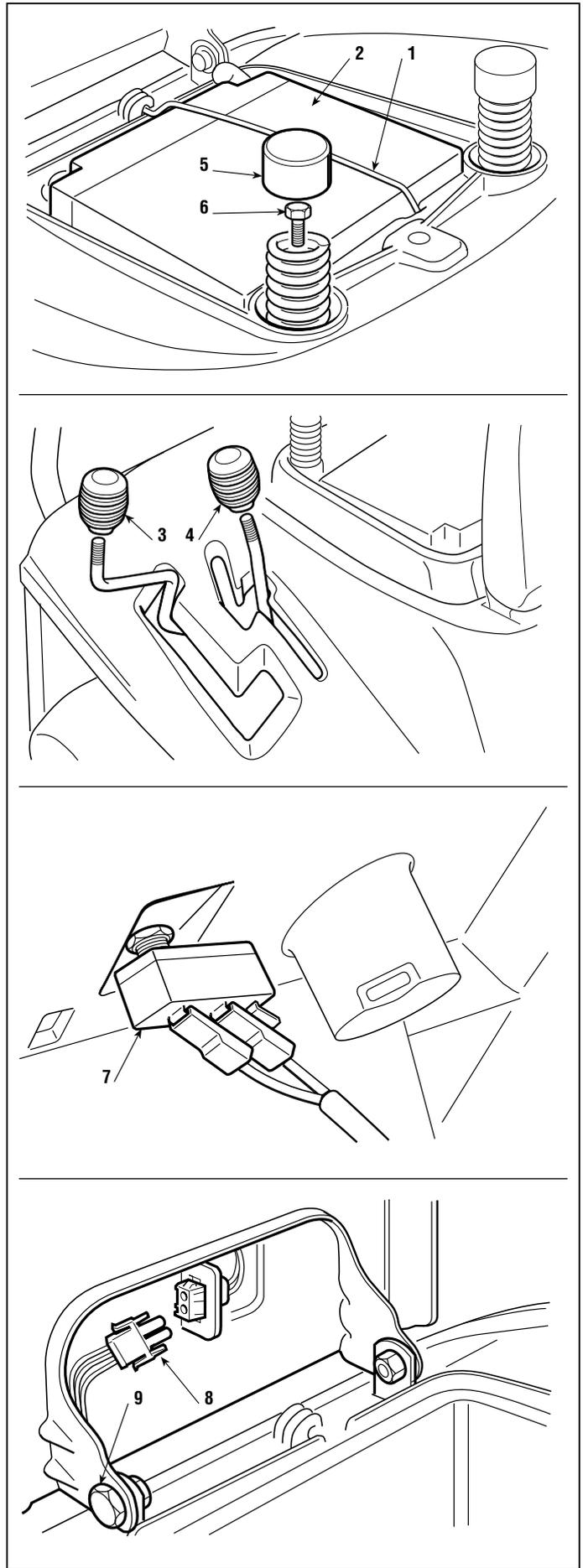
► **Up to serial no. 156930,** disconnect the seat microswitch cables **(7)**, marking them so that they can be replaced correctly during assembly.

► **From serial no. 156931,** disconnect the seat operator present signal connector **(8)**.

Remove the seat after having dismantled the two pins **(9)**.

The cover **(10)** is fixed by two screws **(11)** located under the side footboards and two screws **(12)** fixing it to the rear plate.

The cover can be removed after setting the cutting height adjustment lever to position «7» and the engagement lever ( ► *in models with lever operated engagement*) to the «blades engaged» position.

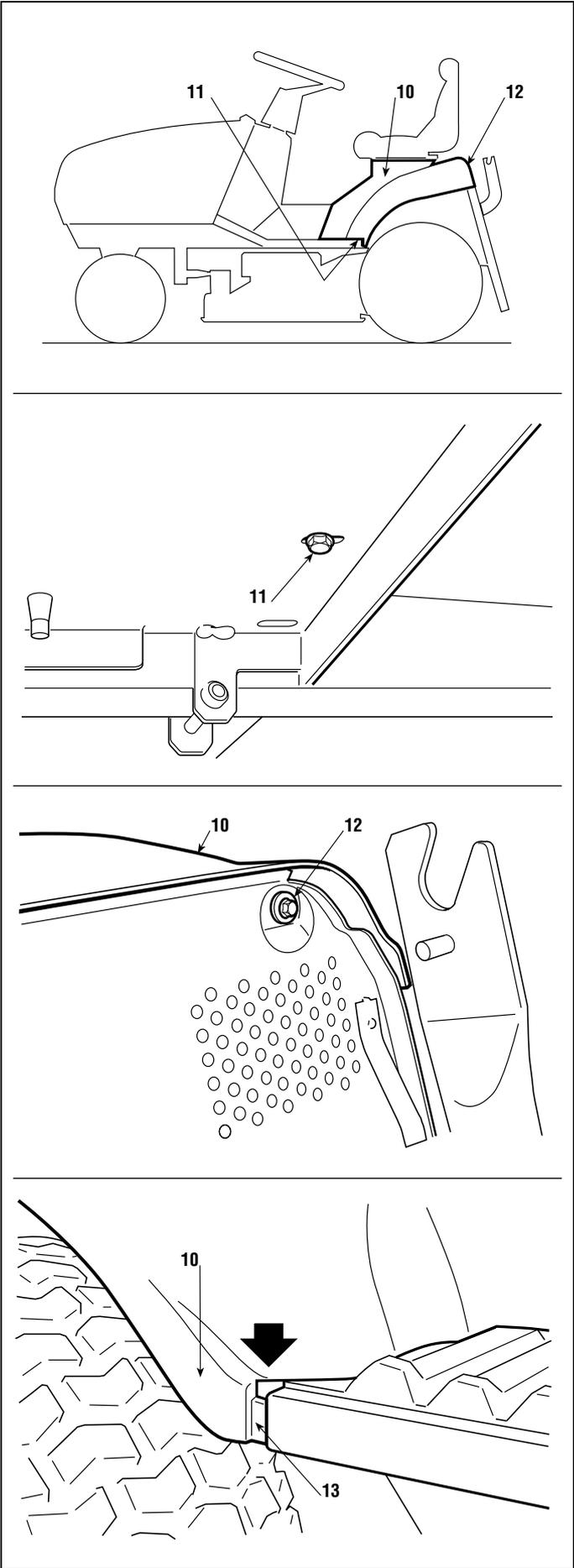




On reassembly, ensure that the two side tabs **(13)** of the cover are correctly inserted into the housings in the footboards.



Remember to restore the electrical connections of the seat and check that the conditions provided by the safety systems allowing starting are met [see 7.2].



### Tightening torques

<b>11</b>	Lower cover fixing screw .....	4.0 ÷ 4.5 Nm
<b>12</b>	Upper cover fixing screw .....	4.0 ÷ 4.5 Nm



<b>5.3.0 - REMOVAL OF THE COLLECTOR CHANNEL</b>	from <b>2000</b> to <b>••••</b> page 1 / 1
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## 5.3 REMOVAL OF THE COLLECTOR CHANNEL

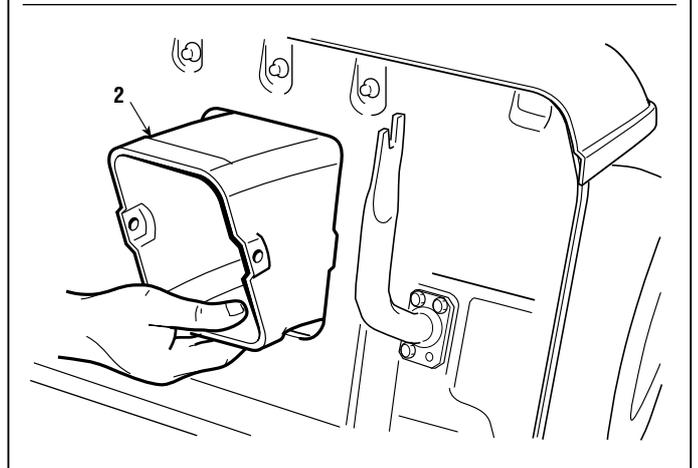
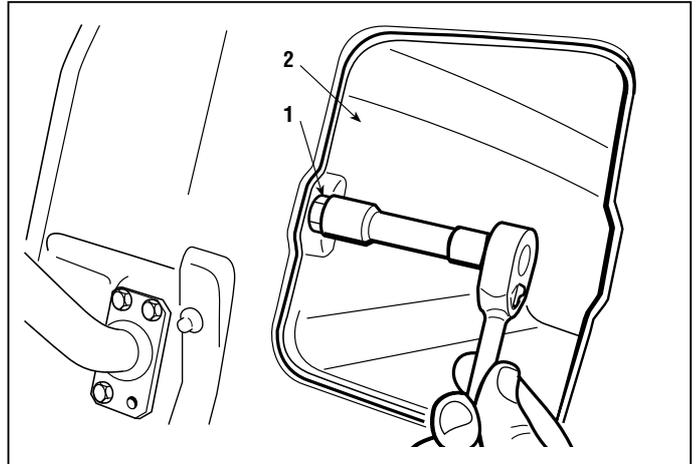
Removing the collector channel gives access to:

- the small side wheels of the drive belt;
- the traction engagement control rod (► in hydrostatic drive models).

Removal of the collector channel is indispensable for dismantling the cutting deck and if the rear plate is to be removed.

Undo the rear plate inner fixing screws **(1)** and pull out the collector channel **(2)**.

On reassembly, ensure that the collector channel is properly housed on the cutting deck outlet, then fully tighten the screws **(1)**, checking that the collector channel can move freely when the cutting height is changed.



### Tightening torque

**1** Screws for collector channel ..... 25 ÷ 30 Nm



◀◀	<b>5.4.0 - REMOVAL OF THE DASHBOARD</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 1

## 5.4 REMOVAL OF THE DASHBOARD

The dashboard is removed to make the following more accessible:

- the accelerator;
- the ignition block,
- various electrical components.

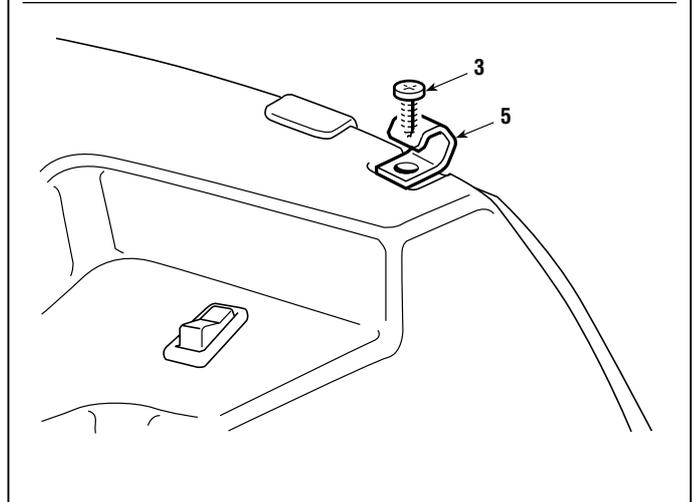
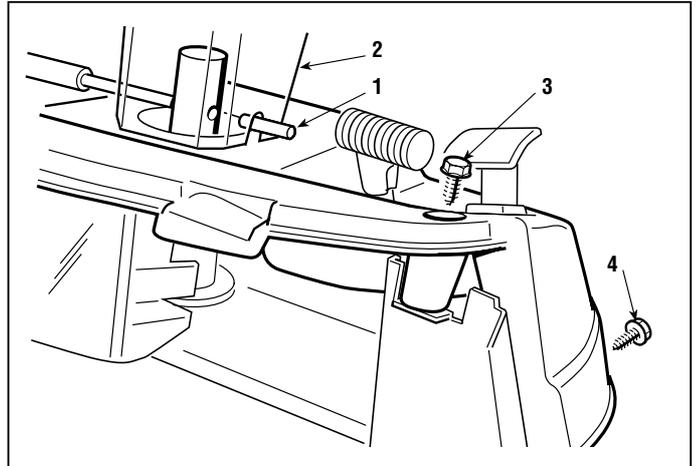
With some drives it could be necessary to remove the dashboard before it is possible to dismantle the fuel tank.

Use a 5 mm diameter round bar to remove the pin **(1)** and take out the steering wheel **(2)**.

Disconnect the end of the accelerator cable from the engine and disconnect all electrical connections and the starter cable (where fitted).

At this point it is possible to remove the dashboard, which is fixed to the frame by four self-threading screws **(3)** and **(4)**. The screws **(3)** are covered by plastic caps on some models.

On reassembly, on some models, the direction of the springs **(5)** must be adjusted in relation to the position of the hood, to ensure fastening.





◀◀	<b>5.5.0 - REMOVAL OF THE ENGINE</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 2 ▶

## 5.5 REMOVAL OF THE ENGINE

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

➤ Remove the front hood [see 5.1].

➤ **For models with lever operated engagement:** disengage the blades to slacken the belt.

➤ **For models with electromagnetic clutch:** loosen and detach the adjuster (1) to slacken the belt.

It is also advisable to slacken the transmission belt for easier access to the parts involved; this is done by ...

➤ **In mechanical drive models:** engaging the parking brake.

➤ **In hydrostatic drive models:** slackening the stretcher [see 4.4].

➤ **For models with lever operated engagement:** undo the central screw (2) and take out the pulley (3) from the shaft.

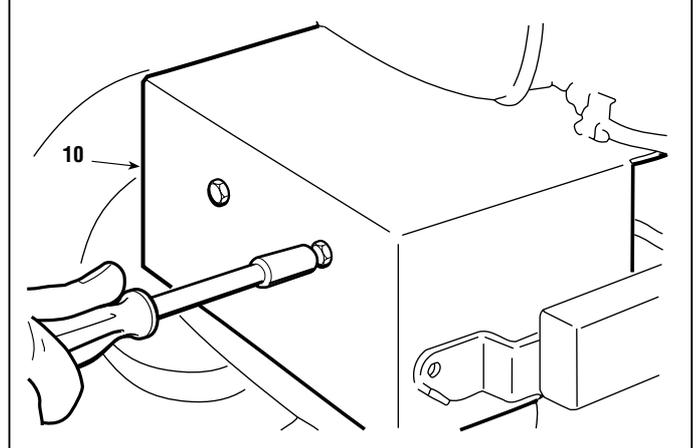
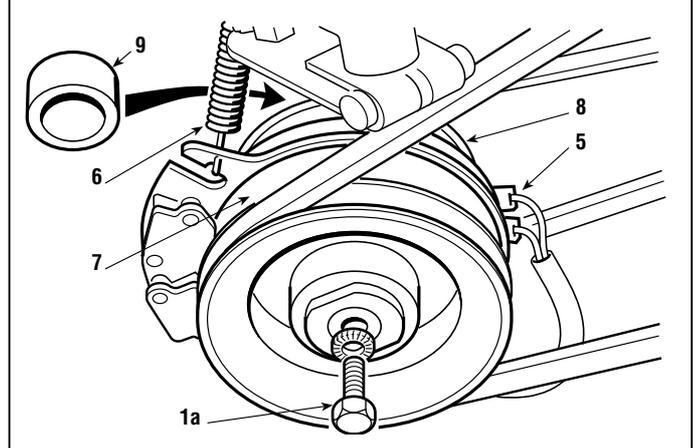
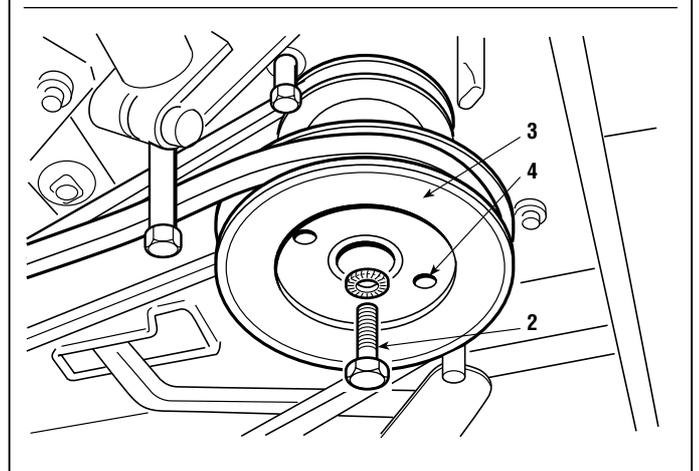
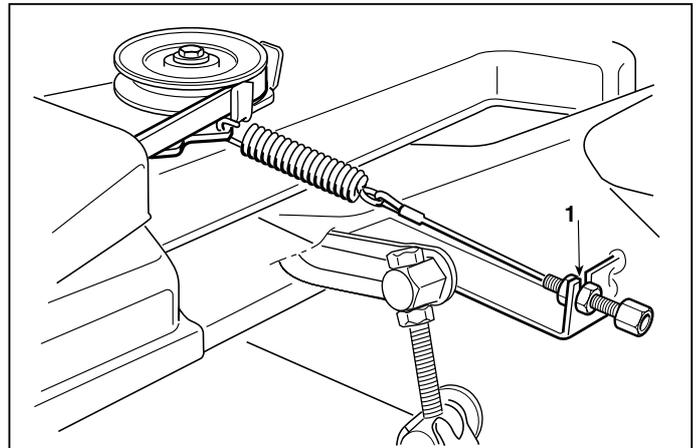
If it is difficult to take out, use the special extractor @ code 60253000/0 inserted into the holes (4) of the pulley, but do not completely undo the screw (2) so that the extractor puts pressure on the head of the screw and does not damage the threaded hole of the shaft.

➤ **For models with electromagnetic clutch:** disconnect the connector (5), unhook the check spring (6) from the clutch side and undo the central screw (1a); remove the clutch (7) from the shaft, together with the transmission control pulley (8) and spacer (9).

Remove the protection from the exhaust (10) (if fitted), and disconnect the cable control from the accelerator and all the electrical wires.



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





Find and undo all the screws holding the engine to the frame, grip the engine firmly and lift it, taking the necessary care.

**NOTE**

Some engines 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 reassembly.

On reassembly, fully tighten the screws for the engine and the pulley to the amo

units shown.

► **For models with electromagnetic clutch:** ensure that the pin **(11)** is inserted into the clutch spline **(7)** and remember to refit the spring **(6)**.



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

Reattach all the electrical and earth contacts and refit the protection covers.

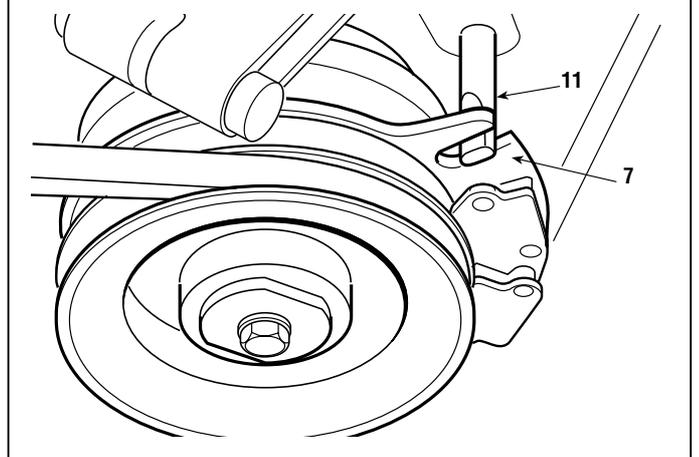
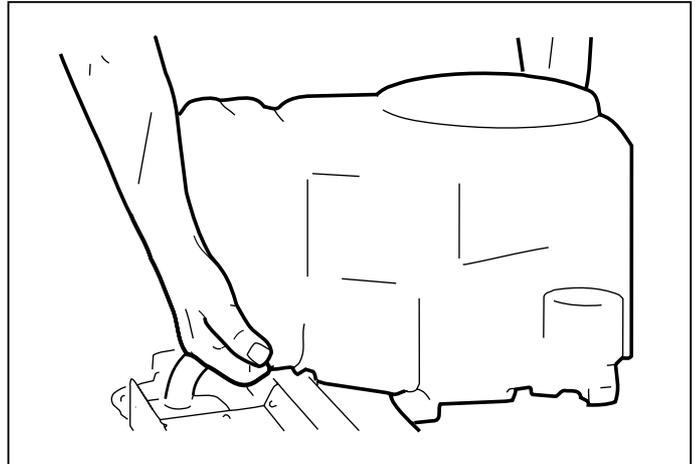
► **For hydrostatic drive models:** reset the stretcher spring tension should it have been slackened [see 4.4].

Reattach the accelerator cable and ...

➡ Adjust the «MINIMUM» position [see 6.10].

➡ Refit the front hood [see 5.1].

► **For models with electromagnetic clutch:** reset the adjuster **(1)** and check the spring tension [see 4.1].

**Tightening torques**

<b>1-1a</b> Screw for pulley .....	45 ÷ 50 Nm
- Screws for engine fastening .....	25 ÷ 30 Nm



◀◀	<b>5.6.0 - REMOVAL OF THE REAR AXLE</b>	▶▶	from <b>2000</b> to <b>••••</b>
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## 5.6 REMOVAL OF THE REAR AXLE

The rear axle (Transaxle) is made up of a single maintenance free sealed unit which includes the transmission unit (► mechanical or ► hydrostatic) and the differential and doesn't need any maintenance.

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

➤ Remove the collector channel [see 5.3].

Put a block **(1)** of around 160 mm under the rear plate and take off the rear wheels.

Through the outlet, grip the two ends of the belt **(2)** and pull it enough to free it from the race of the pulley **(3)**, so overcoming the resistance of the stretcher on the jockey pulley.

The dismantling procedure differs slightly depending on the various types of drives used.

### ► In mechanical drive models:

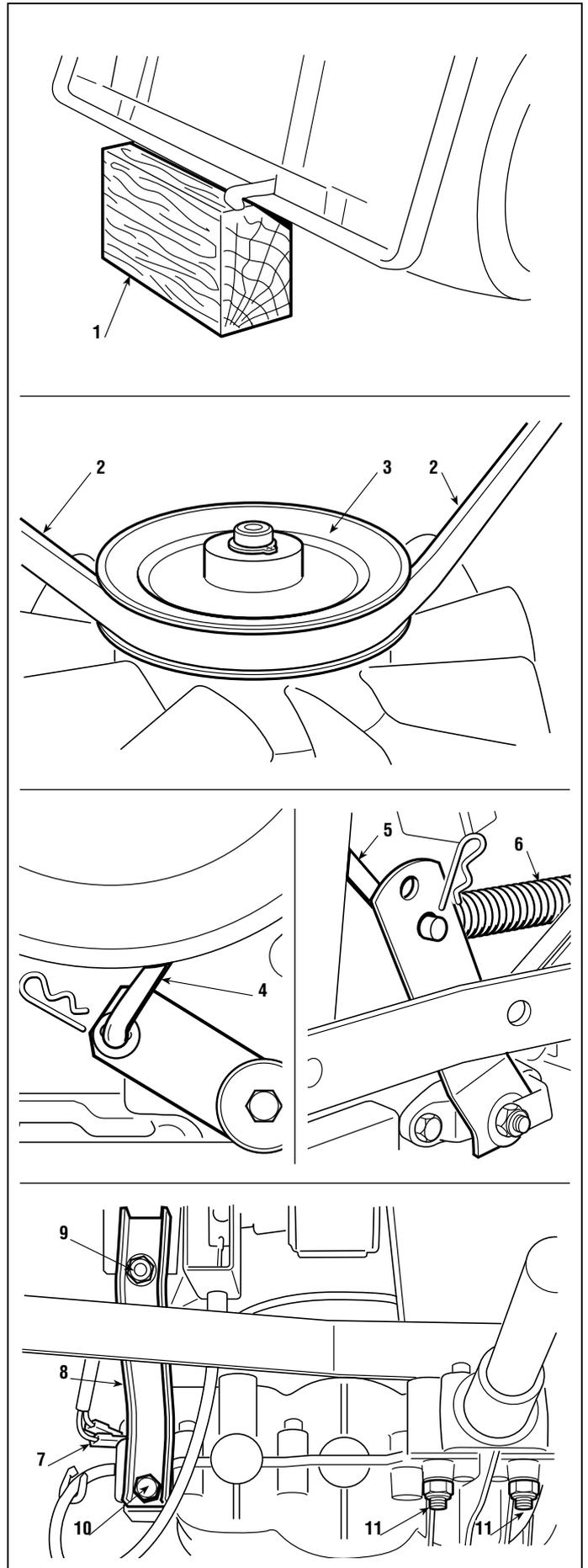
Disconnect the gear lever rod **(4)**, the brake control rod **(5)** with spring **(6)** and then disconnect the "neutral" signal microswitch cables **(7)**.

The unit is supported by two brackets **(8)** with their screws **(9)** and **(10)** and is attached to the frame by four screws **(11)**.

Loosen the two screws **(9)** to give a minimum of movement to the brackets **(8)** and undo the two screws **(10)**. Then carefully undo the four lower screws **(11)**, holding up the unit so that it does not fall.

### ► In hydrostatic drive models

Remove the drive control rod **(12)** by unscrewing the relative pin nut **(13)** and the brake rod **(14)** by unscrewing the nut **(15)** under the lever.





Unscrew the release lever nut **(16)** to disconnect the rod **(17)** from the lever **(18)**.

The unit is held up by a support **(19)** and fastened to it by a screw with a nut **(20)**, and it is attached to the frame by four screws **(21)**.

Undo the nut **(20)** and then carefully undo the four lower screws **(21)**, holding up the unit so that it does not fall.

Repeat the above operations in reverse for reassembly, taking the following precautions.

► **In mechanical drive models:** be particularly careful about the two self-tapping screws **(10)** which, if not screwed in correctly, could damage the internal threads, with the risk of incorrect fixing.

► **In hydrostatic drive models:** refit the blade engagement cable **(22)** (► *in lever operated engagement models*) so that it is under the release lever **(18)** and do not fully tighten nut **(16)**, so that correct movement of lever **(18)** is guaranteed.

Reattach all the connections, and then ...

☛ Check the brake [see 4.3]

► **In hydrostatic drive models:** if the control rod has been replaced or completely pulled down:

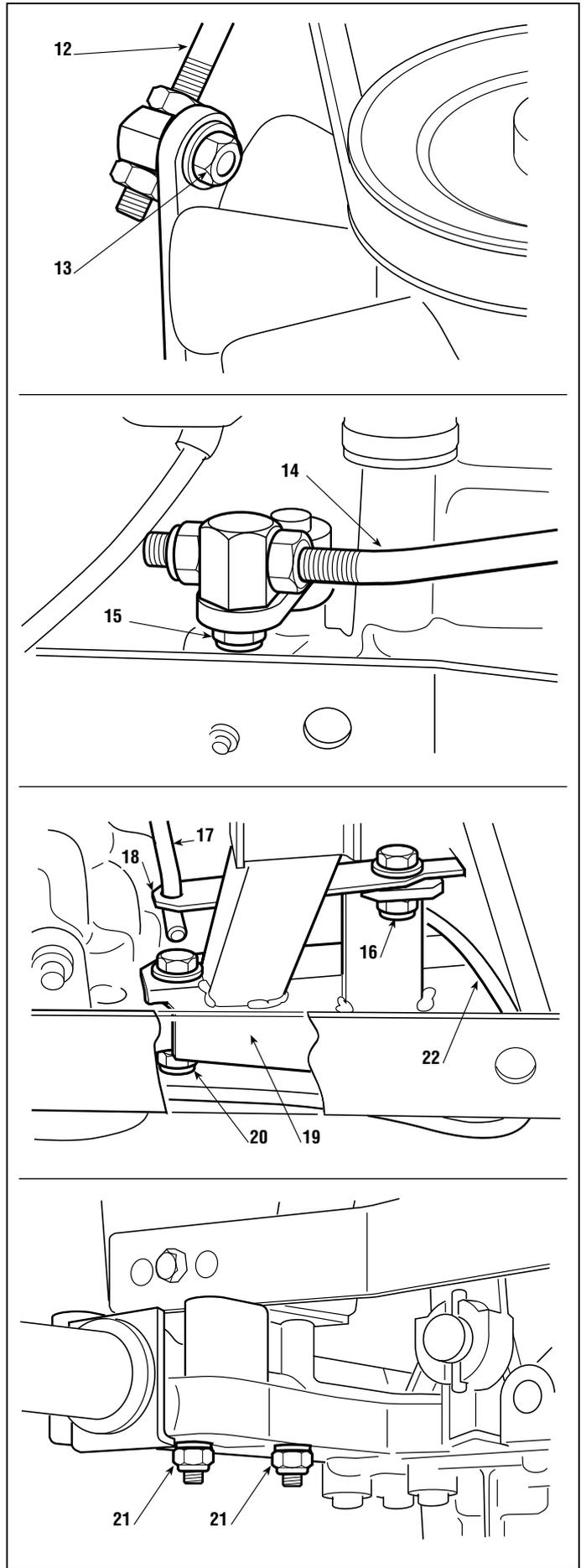
☛ Adjust the travel and the position of "neutral" for the pedal [see 4.5].

When assembly is completed ...

☛ Refit the collector channel [see 5.3].

**Tightening torques**

<b>11 - 21</b> Screws for rear axle fastening ..	25 ÷ 30 Nm
<b>9</b> Screws for brackets .....	25 ÷ 30 Nm
<b>10</b> Self-tapping screws .....	25 ÷ 30 Nm
<b>20</b> Rear axle support nut .....	25 ÷ 30 Nm





◀◀	<b>5.7.0 - REMOVAL OF THE CUTTING DECK</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 1

## 5.7 REMOVAL OF THE CUTTING DECK

Removing the cutting deck facilitates all operations involving the blade connecting toothed belt and the overhaul and replacement of the hubs, bearings or blade shafts..

With some practice and experience it is possible to do this work with the deck still in position.

➡ Remove the collector channel [see 5.3]

After having put the cutting height lever in position «1», loosen the engagement cable adjuster (1) and take it out.

- **For models with lever operated engagement:**  
Unhook the blade engagement spring (2).
- **Up to year 2001:**  
Slacken off the left pin (3) just enough to free the belt (4) from the engine pulley (5).
- **From year 2002:**  
Shift the mobile guide pulley (3a) backwards just enough to free the belt (4) from the motor pulley (5).

Unscrew the two nuts (6) of the two front connecting rod pins (7), without loosening or changing the position of thenuts (8) and locknuts (9).

Remove the two split-pins (10) of the rear pins and then, having checked that there are no obstructions, the deck can be removed by extracting it in such a way that all the pins leave their housings.

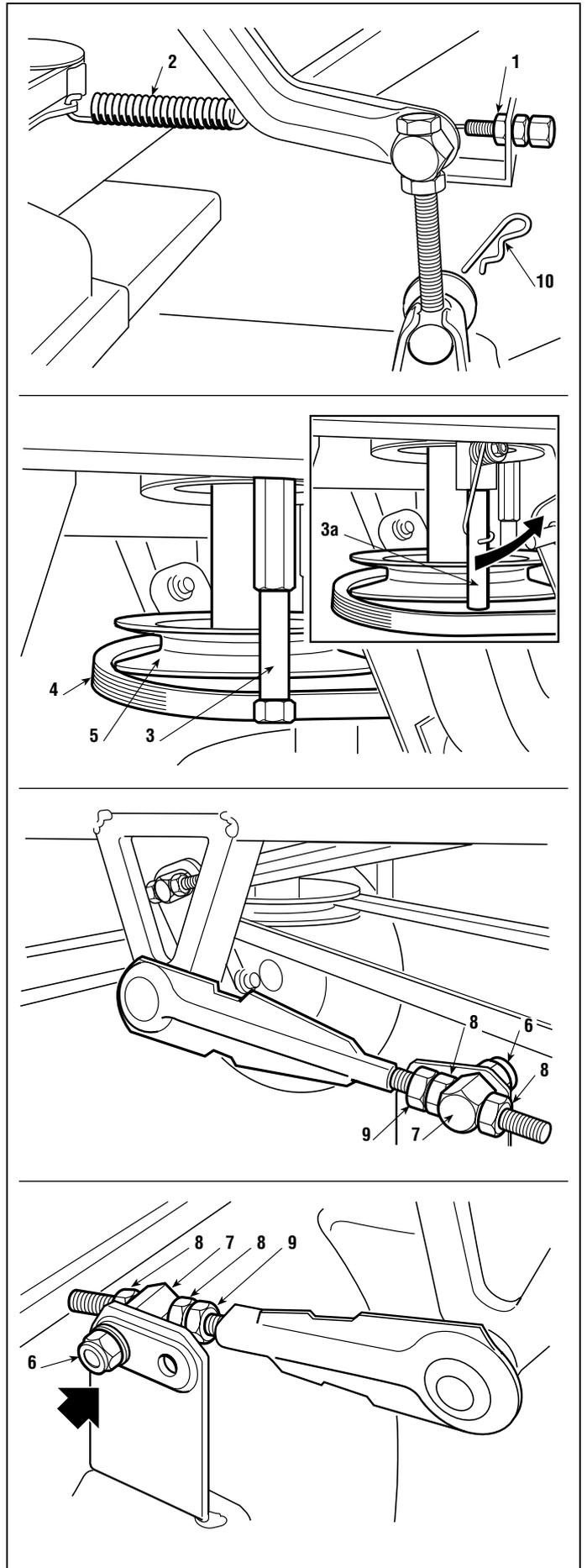
On reassembly ensure that the two rear holes of the corner joints are used for fixing the pins (7), without locking the relative nuts (6) and remember to tighten the belt guide pin (3) to the prescribed value.

After having restored all the connections, ...

- ➡ Refit the collector channel [see 5.3].
- ➡ The deck must be properly adjusted [see 4.6] if the nuts and locknuts (8 - 9) were accidentally moved.

### Tightening torque

<b>3</b> Belt guide pin .....	8 ÷ 12 Nm
-------------------------------	-----------





## 6.1 REPLACEMENT OF TYRES AND WHEELS

### A) Tyres

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.

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 [see 4.6].



### WARNING

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

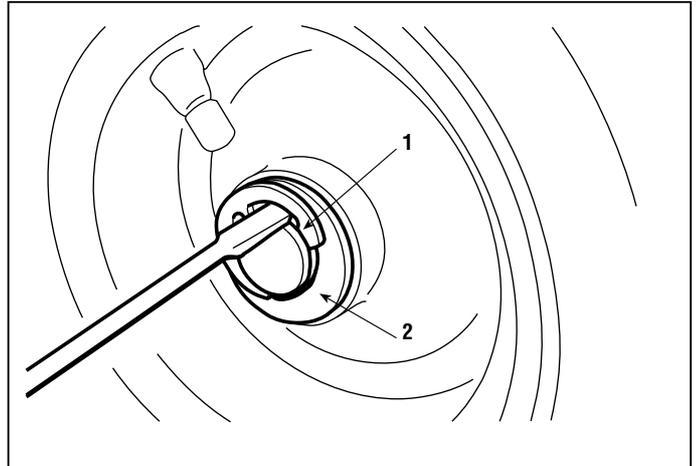
### B) Wheels

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 it around the splining hole.

When reassembling, smear grease over the shaft in order to make it easier to dismantle the wheel; reposition the spacer washer **(2)** and the snap ring **(1)** with the rounded edge facing inwards.



### Tyre pressures

Front	.....	1.5 Bar
Rear	.....	1.2 Bar



◀◀	<b>6.2.0 - REPLACEMENT OF FRONT WHEEL BEARINGS</b>	▶▶	from <b>2000</b> to ●●●●
			page 1 / 1

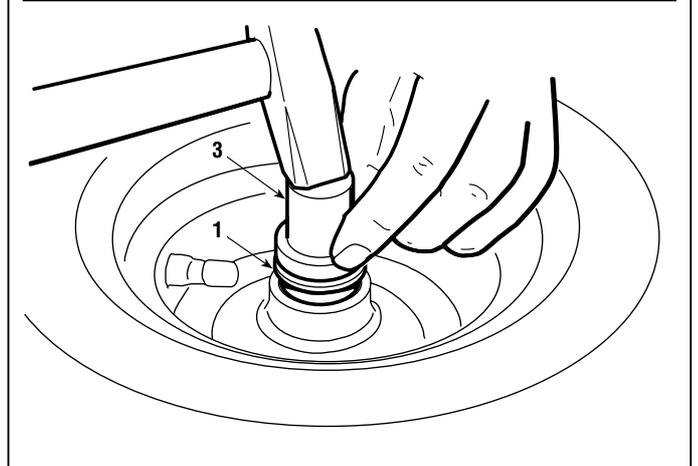
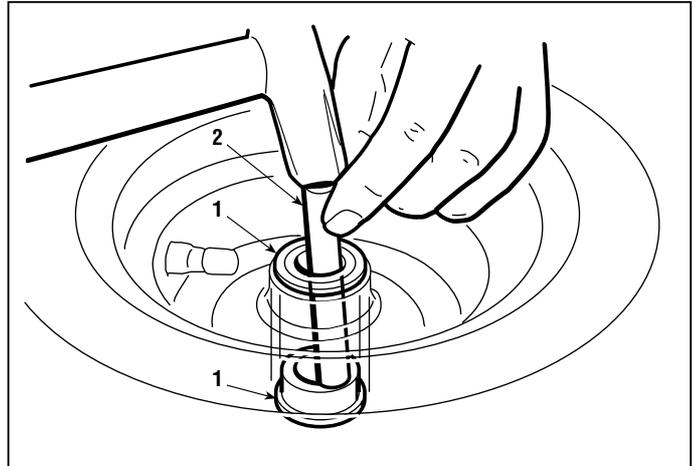
## 6.2 REPLACEMENT OF FRONT WHEEL BEARINGS

➡ Dismantle the front wheel [see 6.1].

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

A 10 – 12 mm diameter round bar **(2)** must be used to extract a bearing, inserted from the opposite side and struck with a hammer around various points of the inner circumference of the bearing.

The new bearing must be fitted with the help of a plastic mallet or of a bronze pad **(3)** @ code 60800031/0 **that only acts on the bearing's outer ring.**





◀◀	<b>6.3.0 - DISMANTLING THE STEERING PINION AND RING GEAR</b>	▶▶	from <b>2000</b> to <b>••••</b>
			page <b>1 / 1</b>

## 6.3 DISMANTLING THE STEERING PINION AND RING GEAR

Unhook the spring (1) and lift the steering column (2) just enough to be able to draw out the pinion (3), making sure that the upper bush of the steering column does not come out.

Unscrew the nut (4) and take out the whole ring gear shaft (5) after dismantling the tie-rod (6).

To dismantle the ring gear (5), undo the two upper nuts (7) and (8) and take out the various components.

On reassembling be very careful to restore the exact sequence and to fully tighten the nut (9) which holds the stud (10).

First screw down the nut (7) without fully tightening it, so that the cup washer (11) can fulfil its purpose, that of allowing rotation without free play but sufficiently freed from the ring gear. Then fully tighten the locknut (8).

► **From year 2002:**  
Insert the split pin (8a).

**⚠**  
Reassemble the pinion and ring gear axle, matching the two reference points (→ - ◀) punched on them and ensuring that the notch (12) on the frame slots into one of the bush housings. In the case of a new pinion and ring gear, 2 0.8 mm spacers (13), code 22672150/0 must be fitted between the ring gear bush and the frame.

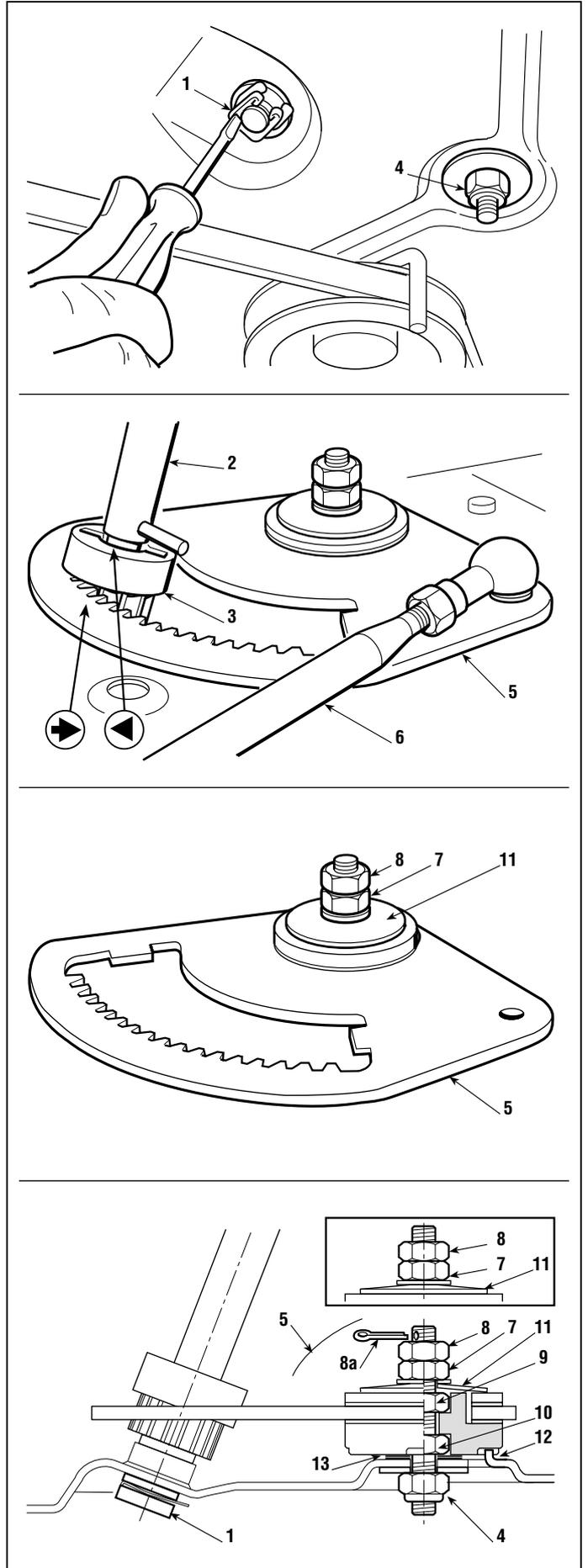
Put the whole assembly back together in the reverse order, bearing in mind that it is best to attach the ring gear before the pinion, and fully tighten the nut (4).

Lastly .....

➡ Check the steering geometry [see 4.8].

### Tightening torques

<b>4</b> Nut for ring gear .....	45 ÷ 50 Nm
<b>9</b> Nut for the stud .....	45 ÷ 50 Nm





## 6.4 REPLACEMENT OF THE DRIVE BELT

- Dismantle the engine pulley [see 5.5] to release the belt.
- Remove the collector channel [see 5.3].

It is advisable to slacken the transmission belt to work on the parts involved more easily.

This is done by ...

➤ **In mechanical drive models:** engaging the parking brake.

➤ **In hydrostatic drive models:** slackening the stretcher [see 4.4].

Dismantle the drive pulley (1) and the stretcher pulley (2), fixed by nuts (3) and (4) respectively, and slacken the belt guide (5) enough to free the belt (6).

➤ **In mechanical drive models:** only slacken off the fixing nuts (7) of the two small front wheels (8).

➤ **In hydrostatic drive models:** slacken off the fixing nuts (7) of both small wheels (8a) and remove the pin (9) from the brake rod to allow passage of the belt.

On reassembly ensure the exact positioning of the belt (6) with respect to the pulleys, the small side wheels and the containment guides [see 8.2.4], with special reference to its passage through the belt guide fork (5).

Always refit the dust covers (10) of the wheels (8).

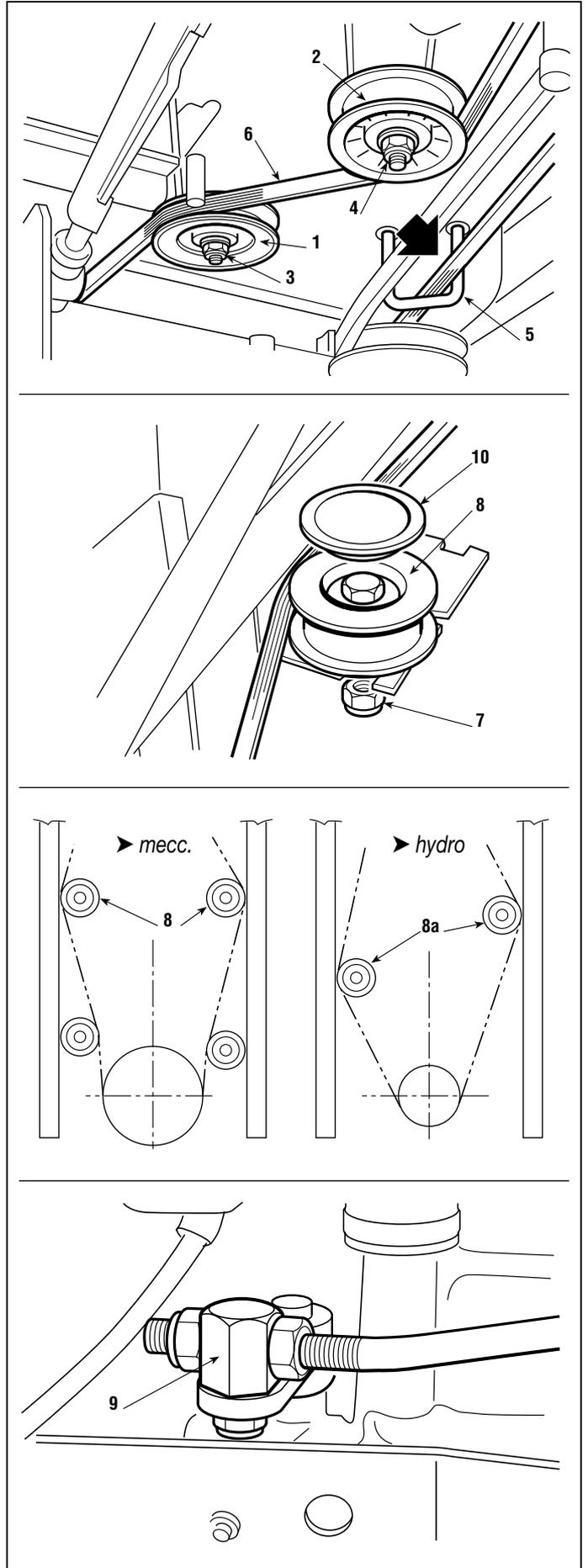
When assembly is completed ...

- Refit the engine pulley [see 5.5].
- Adjust the drive engagement [see 4.4].
- Refit the collector channel [see 5.3].

➤ **In hydrostatic drive models:** tighten the spring of the stretcher [see 4.4].

### Tightening torques

<b>3 - 4</b> Nuts for pulleys .....	25 ÷ 30 Nm
<b>7</b> Nuts for small wheels .....	25 ÷ 30 Nm





◀◀	<b>6.5.0 - REPLACEMENT OF THE SMALL WHEELS FOR THE DRIVE BELT</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 1

## 6.5 REPLACEMENT OF THE SMALL WHEELS FOR THE DRIVE BELT

➡ Remove the collector channel [see 5.3].

It is advisable to slacken the transmission belt to work on the parts involved more easily.

This is done by ...

➤ **In mechanical drive models:** engaging the parking brake.

➤ **In hydrostatic drive models:** slackening the stretcher [see 4.4].

The small side wheels **(1)**, two or four depending on the type of drive, are fixed to the frame by a nut **(2)**, with a spacer **(3)** between which is of different height, **(3a)** or **(3b)**, depending on the assembly position and type of drive.

When reassembling, you should bear in mind that:

➤ **In mechanical drive models:** the tall spacer **(3a)** must be fitted under the small right front wheel **(1a)** and the low one **(3b)** under the other three **(1b)**.

➤ **In hydrostatic drive models:** the tall spacer **(3a)** must be fitted under the small right wheel **(1a)** and the low one **(3b)** under the left wheel **(1b)**.

Always refit the dust covers **(4)** of the wheels **(1)**.

Once assembly is completed ...

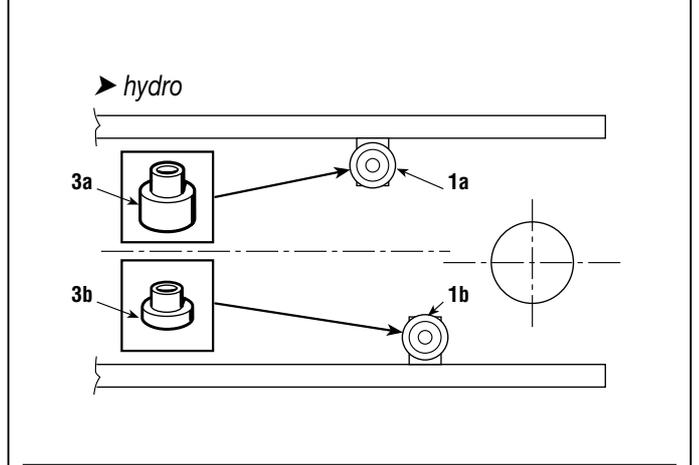
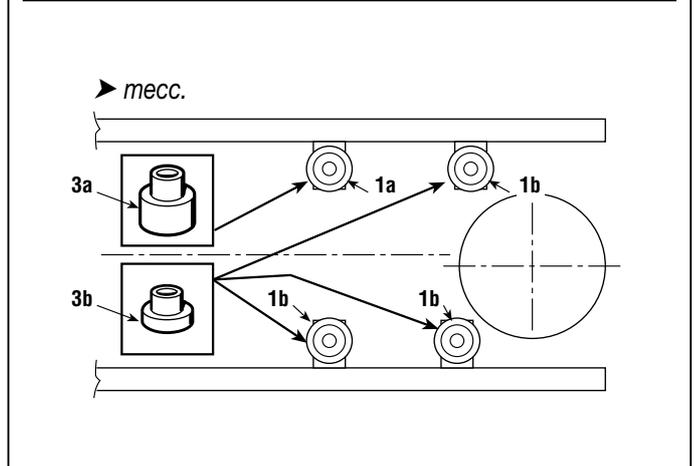
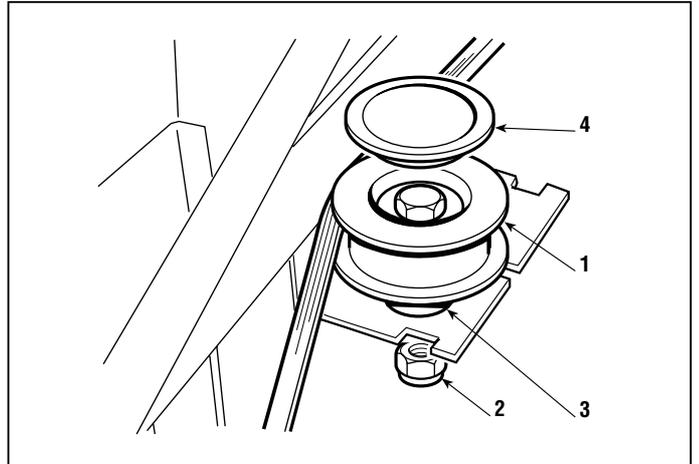
➡ Adjust the drive engagement [see 4.4].

➡ Refit the collector channel [see 5.3].

➤ **In hydrostatic drive models:** tighten the spring of the stretcher [see 4.4].

### Tightening torque

**2** Nuts for small wheels ..... 25 ÷ 30 Nm





## 6.6 REPLACEMENT OF THE BLADES CONTROL BELT

- ▶ **For models with lever operated engagement:** disengage the blades to slacken the belt.
- ▶ **Up to year 2001:**  
Slacken off the left pin (1) just enough to free the belt (2) from the pulley (3).
- ▶ **From year 2002:**  
Shift the mobile guide pulley (1a) forwards just enough to free the belt (2) from the motor pulley (3).

- ▶ **For models with electromagnetic clutch:** there is no pin (1) and it is enough to tug at a section of the belt to free it from the pulley.

Set the cutting deck to the lowest position to obtain greater access, then dismantle the upper casing (4) and almost totally undo the nut (5) without dismantling the jockey pulley (6) so that the belt can be removed.

- ▶ **For models with lever operated engagement:** engage the blades to withdraw the brake pad (7) from the pulley (8).

Keeping the blade locked, undo the screw (9) and dismantle the control pulley (8) to remove the belt.

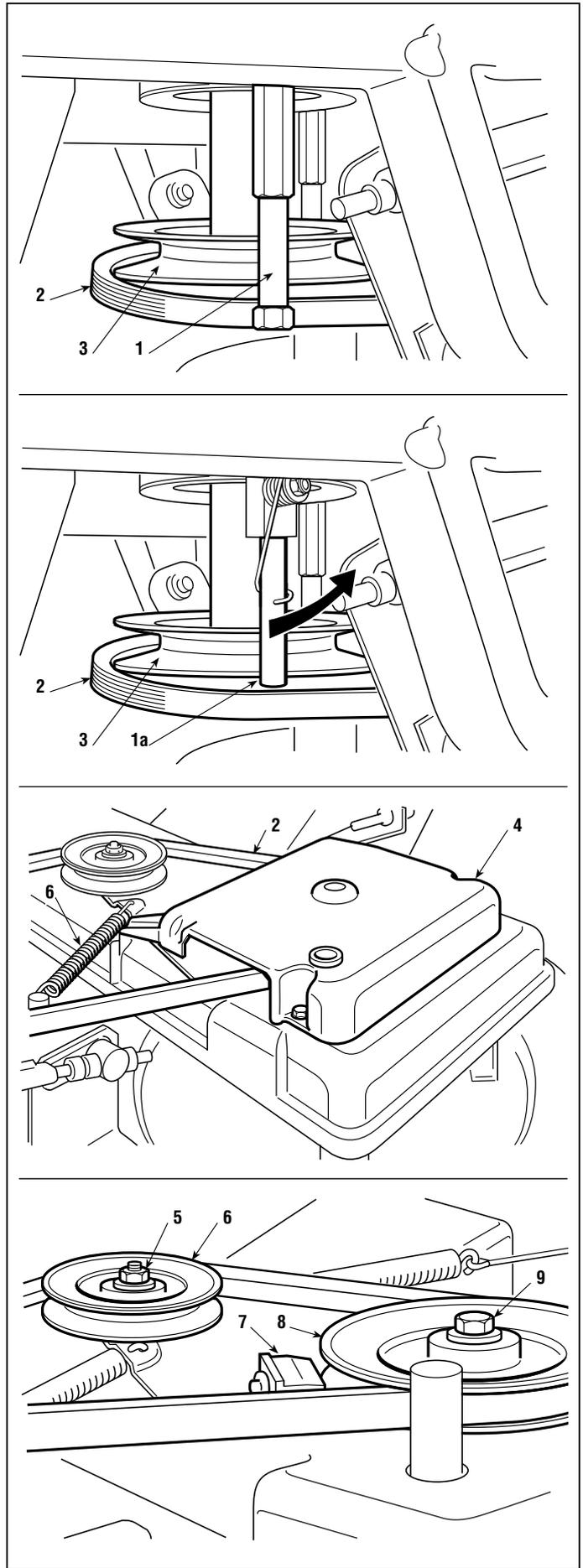
On reassembly, ensure that the belt is positioned perfectly in line with respect to the pins and rims [see 8.2.5] and remember to tighten the pin (1 - ▶ **in lever operated engagement models**).

When it has been reassembled, it is a good idea to ...

- ➔ Check the adjustment of the blade engagement lever [see 4.1].

### Tightening torques

1 Belt guide pin .....	8 ÷ 12 Nm
5 Nut for idle pulley .....	20 ÷ 25 Nm
9 Screw for pulley .....	20 ÷ 25 Nm





◀◀	<b>6.7.0 - REPLACEMENT OF THE BLADES CONNECTION BELT</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 2 ▶

## 6.7 REPLACEMENT OF THE BLADES CONNECTION BELT

Set the cutting deck to the lowest position to obtain greater access, then slacken off and uncouple the adjuster **(1)** to unload the spring **(2)**.

Dismantle the upper casing **(3)**, undo screw **(4)** and dismantle the control pulley **(5)**; undo the articulation screw **(6)** and remove the stretcher plate **(7)**.

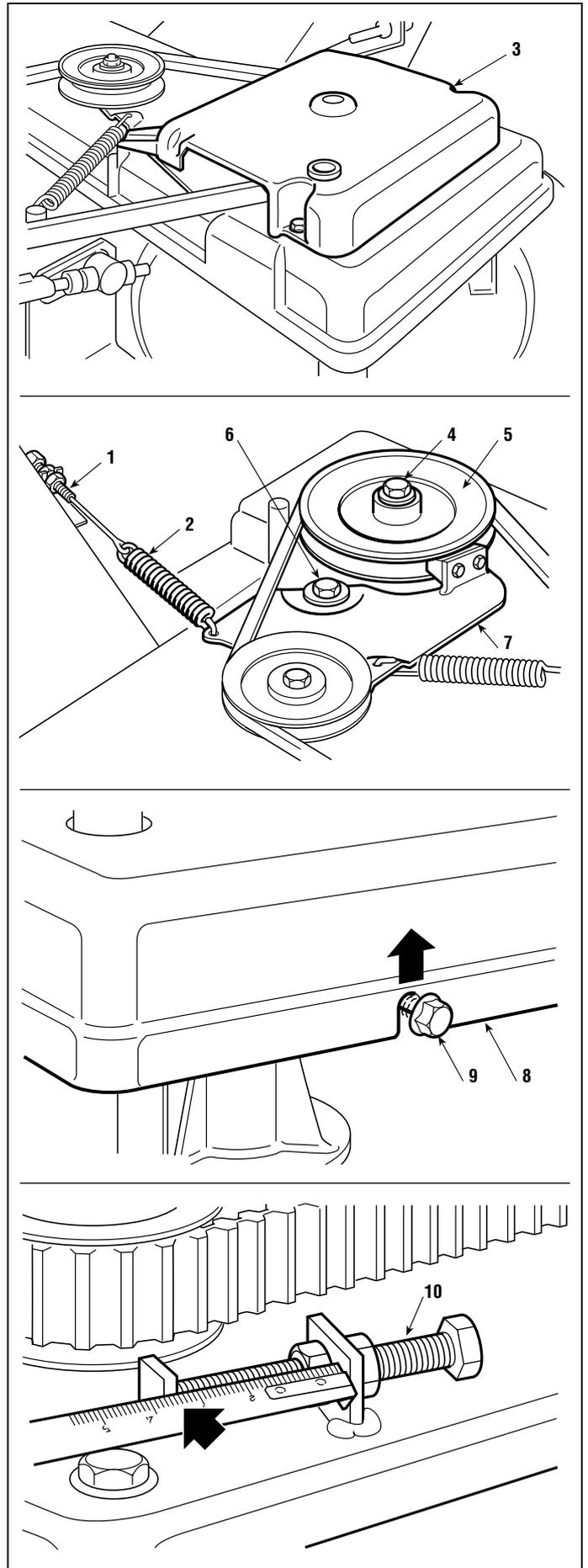
Remove the protection casing **(8)**, slackening off the six surround screws **(9)** and extract it from its slots.

Record the reading on the adjuster **(10)** (this must be reset at reassembly to give a preliminary belt adjustment) and slacken it off completely.

Dismantle the pin **(11)**, slacken off the fixing nuts of the three pins **(12)** and the pulleys **(13)** and **(14)** to allow removal of the belt.

Fit the new belt so that, when the two long sections are held taut, the two blades are at 90° to each other.

Refit everything by reversing the operations described above. Reset the adjuster reading recorded previous-





◀◀	<b>6.7.0 - REPLACEMENT OF THE BLADES CONNECTION BELT</b>	▶▶	from <b>2000</b> to ••••
			page ◀ 2 / 2

ly and check that the blades are at 90° to each other before locking the pin (11) and pulleys (13) and (14).

### NOTE

**On reassembly, check that the washer under the pin (11) is not damaged and that the outer pin rollers run freely.**

Use the specific tool (15) @ Code 60205001/0 to check the piston (16) @ Code 60208000/0 for the belt give values and the force applied, and use the stretcher until a give of 9 ÷ 10 mm is obtained, exerting a force of:

- 3.8 kg mod. 102,
- 4.8 kg mod. 122.

Reassemble the casing, stretcher and blades control belt, taking care over their exact positioning with respect to the pins and containment guides [see 8.2.6].

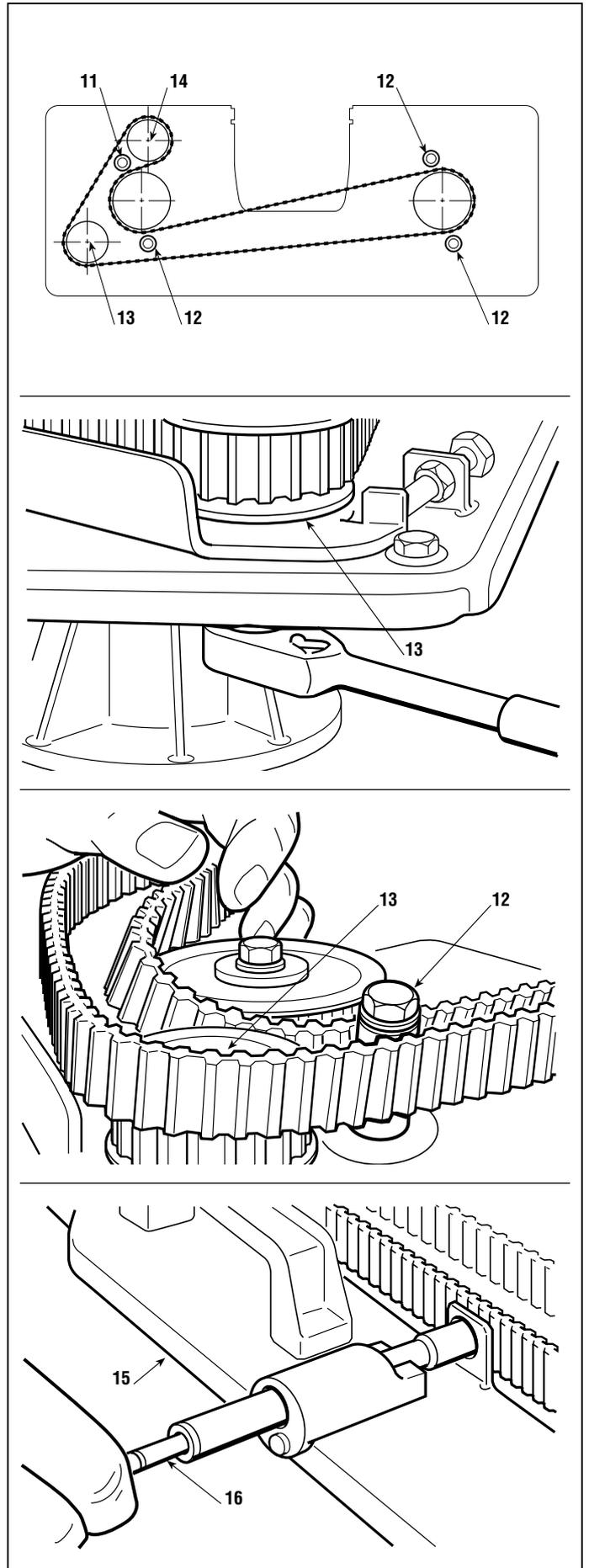
When refitting the spring (2), make sure that it is connected to the hole provided for each model [see 4.1].

Finally, when reassembly is complete, it is advisable to ...

- ☛ Check the adjustment of the blades engagement spring [see 4.1]

### Tightening torques

4 Blade pulley screws .....	20 ÷ 25 Nm
6 Stretcher plate articulation screw .....	35 ÷ 40 Nm
11 - 12 Pin fixing nuts .....	30 ÷ 35 Nm
13 - 14 Pulley fixing nuts .....	30 ÷ 35 Nm





<b>6.8.0 - REPLACEMENT OF THE BLADES ENGAGEMENT CABLE</b>	from <b>2000</b> to <b>••••</b> page 1 / 1
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## 6.8 REPLACEMENT OF THE BLADES ENGAGEMENT CABLE (► For lever operat- ed engagement models)

➡ Remove the right-hand rear wheel [see 6.1].

With the cutting deck in the lowest position and the lever in the disengaged position, loosen the adjuster **(1)**, remove it from its housing and unhook the spring **(2)**.

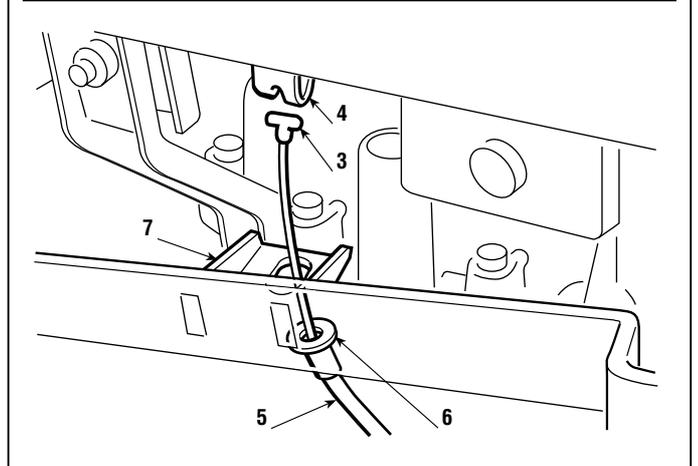
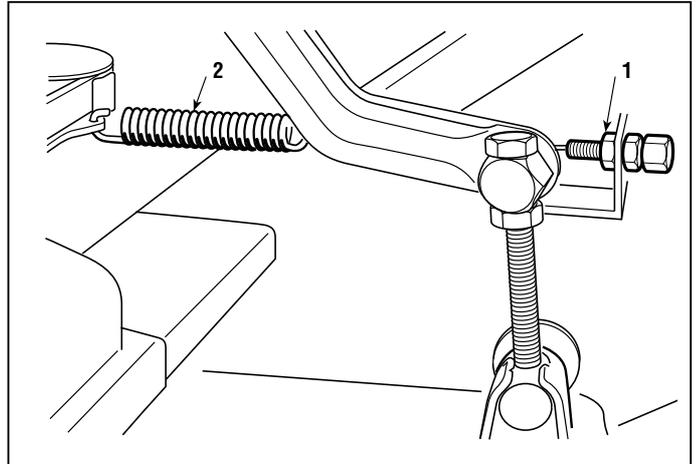
Take the end barrel **(3)** off the fork **(4)** which is near the joint for the lever, and take out the whole cable **(5)**.

On reassembling, make sure that the washer **(6)** is positioned between the bracket **(7)** and the cable sheath **(5)**.

When refitting the spring **(2)**, make sure that it is connected to the hole provided for each model [see 4.1].

Once assembly is completed ...

➡ Adjust the blades engagement spring [see 4.1].





◀◀	<b>6.9.0 - REPLACEMENT OF THE SUPPORTS AND SHAFTS OF THE BLADES</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 2 ▶

## 6.9 REPLACEMENT OF THE SUPPORTS AND SHAFTS OF THE BLADES

➤ Remove the cutting deck [see 5.7].

### NOTE

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

➤ Remove the blades control belt and the blades connection belt [see 6.6 - 6.7]

➤ Remove the blades [see 4.10] and take off the hubs.

Extract the two toothed pulleys **(1)** from the blade shafts, undo the seven screws **(2)** fixing the plate **(3)** and remove it.

Dismantle the flanged support **(4)** by unscrewing the three fixing screws **(5)**.

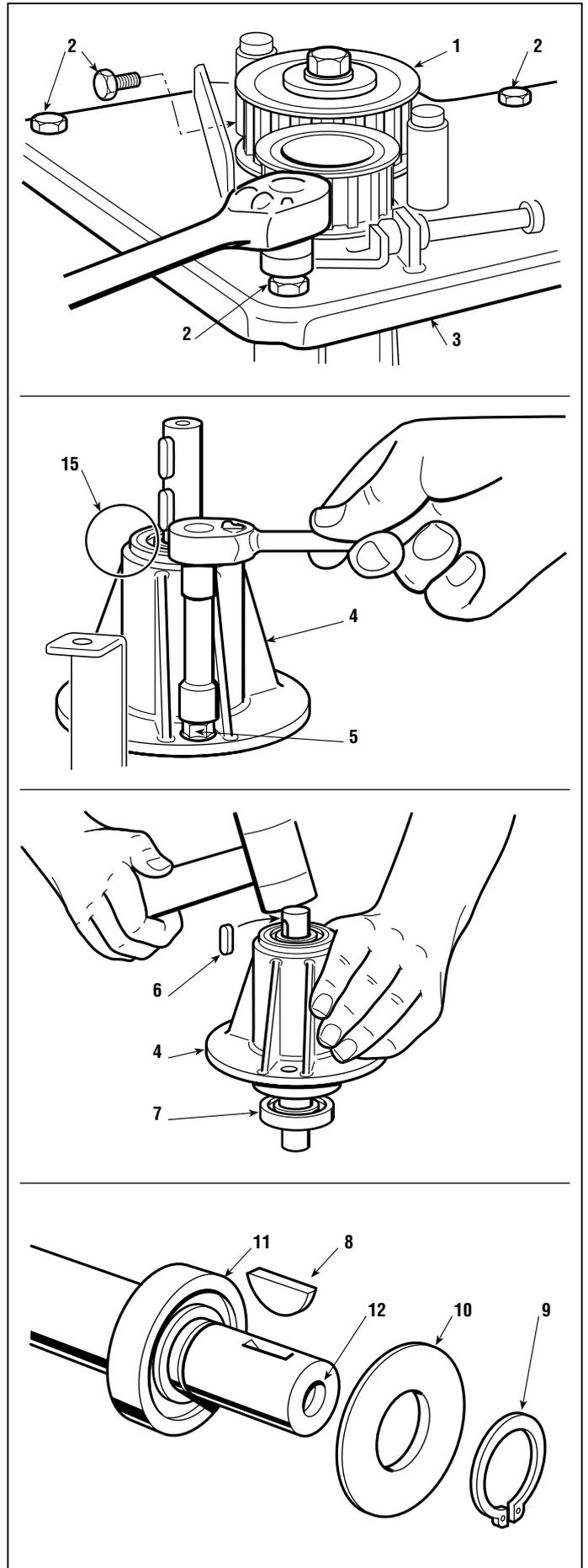
**The entire support (4), including shafts and bearings, is a spare part available as a single assembly unit.**

If only the shaft or bearings are to be replaced, remove the key or the two keys **(6)** and hit the shaft on the pulley side with a plastic mallet to extract the shaft together with the lower bearing **(7)**.

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, being careful to close the threaded hole **(12)** with a suitable screw to prevent the tip 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 reassembly, having first inserted the shaft in the lower bearing hole and inserted everything into the support, fit the upper bearing using the specific stopper @ Code 60800030/0 **(14)** that acts on the inner ring, hitting it squarely with a mallet until the bearing is fully driven home.



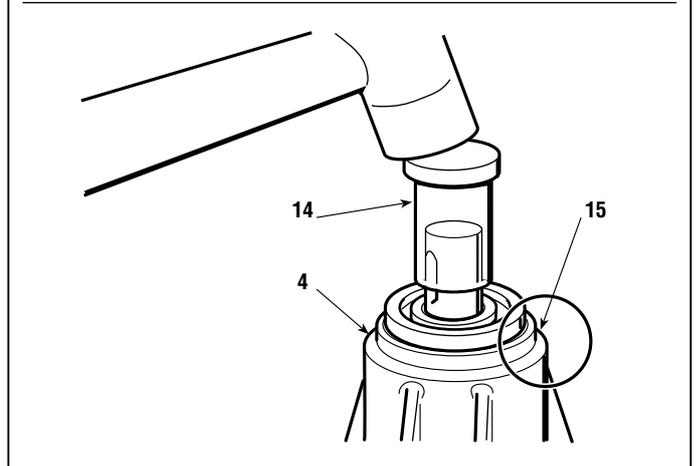
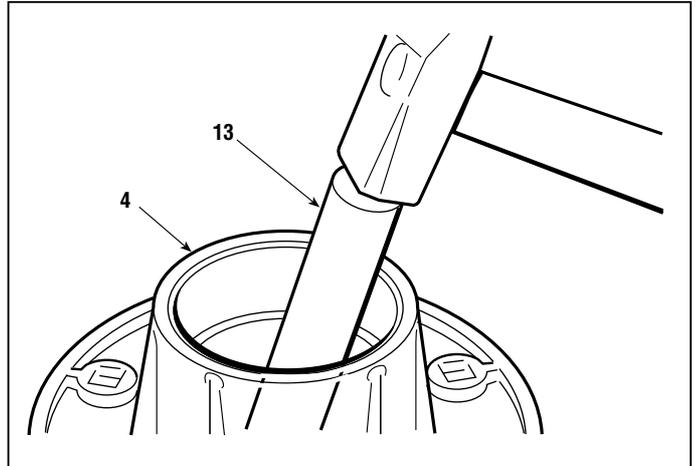


## 6.9.0 - REPLACEMENT OF THE SUPPORTS AND SHAFTS OF THE BLADES

from **2000** to **••••**  
page **2 / 2**

Refit the flanged supports onto the deck, **fully tightening the nuts (5)** and checking that the support with the longer shaft is on the left.

When refitting the plate (3), **the holes corresponding to the support axes must meet perfectly in the centring step (15)** cut into the upper part of each support.



### Tightening torques

<b>2</b> Plate fixing screws .....	30 ÷ 35 Nm
<b>5</b> Flanged support fixing nuts .....	25 ÷ 30 Nm



◀◀	<b>6.10.0 - REPLACEMENT OF THE ACCELERATOR</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 1

## 6.10 REPLACEMENT OF THE ACCELERATOR

➔ Remove the dashboard [see 5.4].

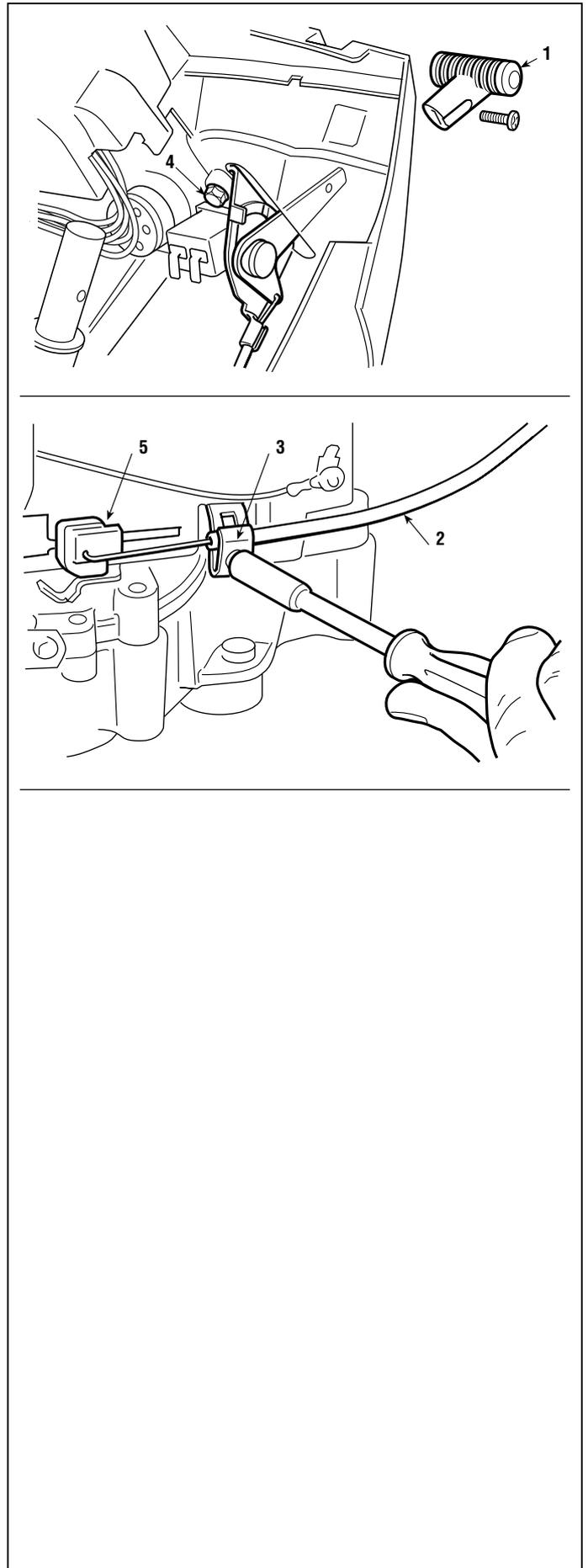
Take off the knob **(1)** and disconnect the cable **(2)** from the connection terminal **(3)** on the engine.

Undo the two fixing screws **(4)** and take out the accelerator together with the wire.

On reassembling, 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 ...

➔ Refit the dashboard [see 5.4].





<b>6.11.0 - REPLACEMENT OF THE BRAKE PADS AND DISC</b>	from <b>2000</b> to <b>••••</b> page <b>1 / 1</b>
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## 6.11 REPLACEMENT OF THE BRAKE PADS AND DISC (► In mechanical drive models)

➡ Remove the left-hand rear wheel [see 6.1].

Disconnect the control rod **(1)** from the lever **(2)** and undo the two screws **(3)** which hold on the support **(4)**.

The support **(4)** contains a pad **(5a)** separated from the control pistons **(6)** by a plate **(7)**. The other pad **(5b)** can be reached by taking off the disc **(8)**.

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



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



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

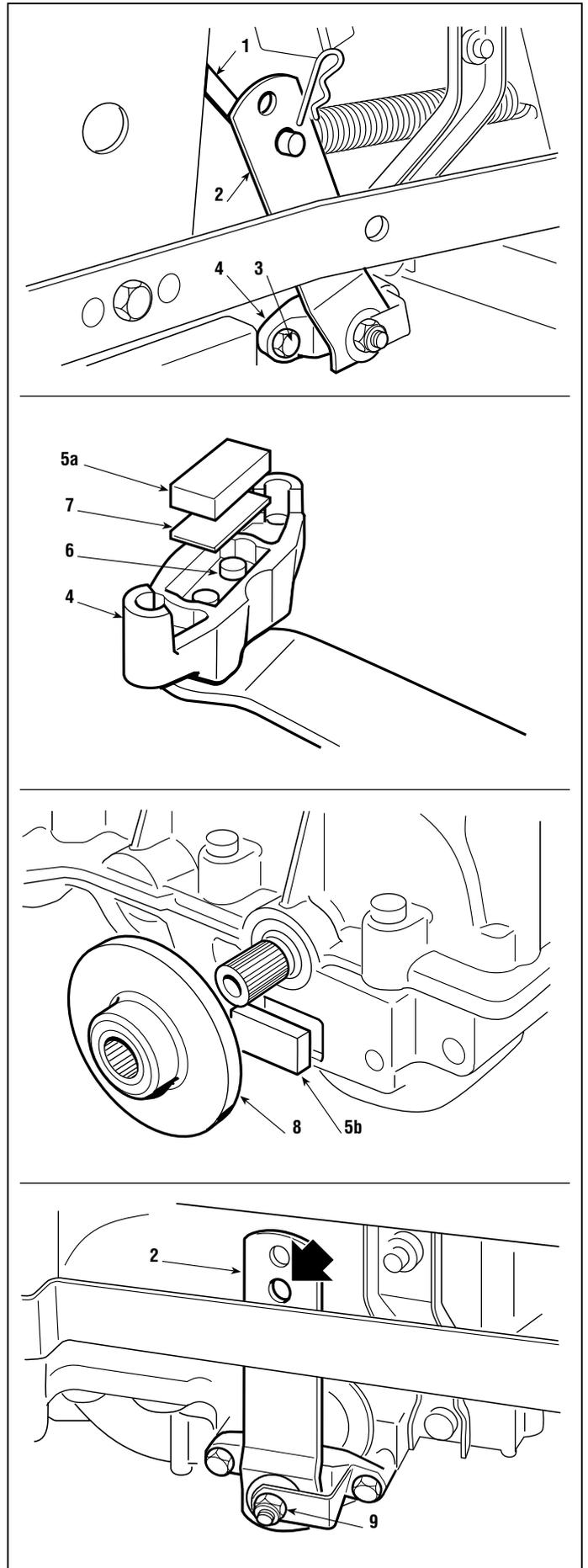
On reassembly, carefully reposition all the components and refit the complete support. When connecting the rod **(1)** be sure to use the lower hole in the lever **(2)**.

### NOTE

During all these operations it is better to not unscrew or loosen the central screw **(9)** to avoid altering the calibration of the cam driving the pistons. If it has been moved, the lever's free movement will have to be checked [see 4.3].

When fully reassembled ...

➡ Check the brake adjustment [see 4.3].

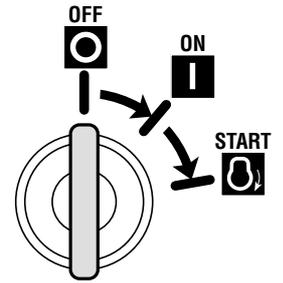




◀◀	<b>7.1.0 - GUIDE TO THE IDENTIFICATION OF PROBLEMS IN THE ELECTRICAL SYSTEM</b>	▶▶	from <b>2000</b> to ●●●●
			page 1 / 3 ▶

## 7.1 GUIDE TO THE IDENTIFICATION OF PROBLEMS IN THE ELECTRICAL SYSTEM

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



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

PROBLEM	CAUSE	REMEDY
<b>1. Activation of the self-resetting protection <sup>1)</sup> ....</b>		
<b>a) ... on inserting the key in position «ON»</b>	Battery terminal crossed	Check the battery connections
	Short circuit to earth	Check connectors, wiring and microswitches
<b>b) ... in position «START» or after a few seconds use:</b>	Sulphated battery (it no longer accepts recharging)	Replace the battery
	Flat battery	Recharge the battery [see 7.10]
	Faulty or wet electronic card	Check and dry with low pressure tepid air (hair-dryer)
	Disconnected or missing battery	Reconnect the battery. It must always be connected.
	Battery terminals corroded or with poor contact	Check and clean the connections
<b>c) ... after several minutes' use:</b>	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 [see 7.9]
	Battery disconnected or faulty during use	Check the battery or wiring
<b>2. The dashboard remains off with the key in position «ON»</b>	The battery is not supplying the card	Check the connection cables Check the battery's condition [see 7.10]
	Battery or card not earthed to frame	Check and put right
	6.3 A fuse blown	Replace fuse (6.3 A - delayed)
	Battery terminal crossed	Check connections. <b>WARNING!</b> Immediately remove the key to avoid irreparably damaging the card, which would no longer be usable even if the terminal was put right!

<sup>1)</sup> The cutting in of the self-resetting protection of the electronic card is signalled by a beep, except in cases where the battery is missing, flat or with the terminal crossed. The signal stops when the key is returned to position «OFF»; then wait a few seconds before returning to position «ON».



◀◀	<b>7.1.0 - GUIDE TO THE IDENTIFICATION OF PROBLEMS IN THE ELECTRICAL SYSTEM</b>	▶▶	from <b>2000</b> to ●●●●
			page ◀ 2 / 3 ▶

PROBLEM	CAUSE	REMEDY
<b>3. The dashboard switches on but, with the key in position «START», the starter does not turn or lacks power (poor starting)</b>	The battery is not supplying sufficient current	Recharge the battery [see 7.10]
	Badly earthed battery, or the starter relay or engine not earthed	Check and put right
	Starting not permitted [see summary logic table 7.2]	After checking that the conditions are met, check all the microswitches [see 7.3] and the relative wiring.
	Malfunction in the electronic card	Try replacing the card with one that is known to work
	Starter relay is faulty	Check that the starter relay is activated [see 7.6]
<b>4. The starter turns but the engine does not start</b>	No fuel flow	Check the leads for the carburettor solenoid valve opening control (B&S 28N707) or check the fuel stopcock and filter.
	Impaired starter system	Check that the spark plug cap is positioned correctly
Check that the spark plug electrodes are clean and have the correct gap.		
<b>5. The starter continues to turn after engine has started, and does not stop when the key is removed</b>	Mechanical difficulties with the contact breakers of the starter relay	Give several light knocks to the casing of the relay. If this does not free it, replace it.
	Loose earth connection to frame causing sparks and vibrations of the relay contacts with consequent mechanical jamming	Check for good earth connections to relay
	Starter works erratically for mechanical or electrical reasons taking excessive current and causing binding of relay contacts	Check the starter
<b>6. The starter operates as soon as the key is in the «ON» position, and can be turned off only by removing the key</b>	Fault in the card	Replace the card
<b>7. The battery warning light does not come on with the key in position «ON» but the machine operates</b>	Fault in the electronic circuit or in the signalling LED	Replace the card ( <b>NOTE:</b> You can finish the work in any case, but you need to replace the card or signalling LED as soon as possible)
<b>8. The battery warning light remains on</b>	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 [see 7.9]
<b>9. Abnormal, uncontrolled lighting up of the LEDs or irregular card operation</b>	Faulty or wet electronic card	Check and dry with low pressure tepid air (hair-dryer)
	Bad earthing of the electronic card	Check and put right



◀◀	<b>7.1.0 - GUIDE TO THE IDENTIFICATION OF PROBLEMS IN THE ELECTRICAL SYSTEM</b>	▶▶	from <b>2000</b> to ●●●●
			page ◀ 3 / 3

PROBLEM	CAUSE	REMEDY
<b>10. The engine stops while in use for reasons not due to the safety devices cutting in</b>	The safety devices have cut in or are faulty	Check the operation of the microswitch operation and the relevant wiring [see 7.3 and 7,8]
	Accidental detaching of an electrical wire	Check all wiring
	Starting of engine not permitted [see summary logic table 7.2]	After checking that the conditions are met, check all the microswitches [see 7.3] and the relative wiring.
<b>11. The 6.3 A fuse cuts in</b>	Short circuit or overload on the power side of the card (ignition block, starter relay, headlamps and recharger connector)	Find and replace the defective user [see 7.4 – 7.5 and 7.6]
	Short circuit or damage to the electronic card protection (power side)	Try changing the card with one that is known to work. If the problem stops, replace the faulty card.



◀◀	<b>7.2.0 - SUMMARY TABLE FOR THE CUTTING IN OF THE SAFETY DEVICES</b>	▶▶	from <b>2000</b> to ●●●●
			page 1 / 1

## 7.2 SUMMARY TABLE FOR THE CUTTING IN OF THE SAFETY DEVICES



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

### Note

- Pilot lamp on    ○ Pilot lamp off
- \* Pilot lamp uninfluential

### A) STARTING («START» position)

OPERATOR	GRASSCATCHER	BLADES	DRIVE	PARKING	ENGINE	PILOT LAMPS
Seated	Uninfluential	Engaged	Uninfluential	Uninfluential	DOESN'T start	● * ○ * * * ● *
Seated	Uninfluential	Disengaged	Engaged	Uninfluential	DOESN'T start	○ * ○ * * * ● ○
Absent	Uninfluential	Disengaged	Neutral	Disengaged	DOESN'T start	○ ○ ● * * * ● ●
<b>Seated</b>	<b>Uninfluential</b>	<b>Disengaged</b>	<b>Neutral</b>	<b>Uninfluential</b>	<b>Starts</b>	○ * ○ * * * ● ●
<b>Absent</b>	<b>Uninfluential</b>	<b>Disengaged</b>	<b>Neutral</b>	<b>Engaged</b>	<b>Starts</b>	○ ● ● * * * ● ●

### B) WHILE MOVING OR CUTTING

OPERATOR	GRASSCATCHER	BLADES	DRIVE	PARKING	ENGINE	INDICATORS
<b>Seated</b>	<b>Fitted</b>	<b>Engaged</b>	<b>Uninfluential</b>	<b>Uninfluential</b>	<b>Runs</b>	● * ○ * * * ○ *
<b>Absent</b>	<b>Uninfluential</b>	<b>Disengaged</b>	<b>Neutral</b>	<b>Engaged</b>	<b>Runs</b>	○ ● ● * * * ○ ●
Absent	Uninfluential	Disengaged	Neutral	Disengaged	Stops	○ ○ ● * * * ○ ●
Seated	Uninfluential	Uninfluential	Engaged	Engaged	Stops	* ● ○ * * * ○ ○
Seated	Missing	Engaged	Uninfluential	Uninfluential	Stops	● * ○ * * * ○ *
Absent	Uninfluential	Engaged	Uninfluential	Uninfluential	Stops	● * ● * * * ○ *
Absent	Uninfluential	Disengaged	Engaged	Uninfluential	Stops	○ * ● * * * ○ ○



## 7.3 SAFETY MICROSWITCHES AND SWITCHES OPERATION CHECK

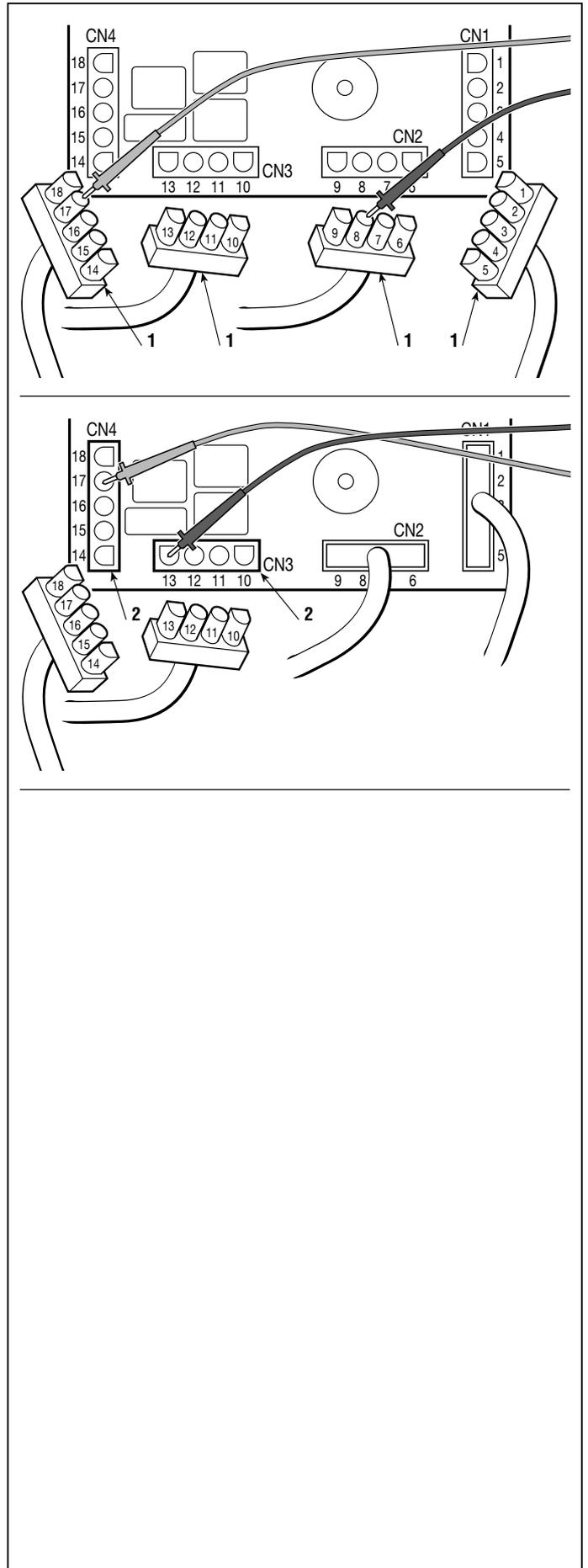
This check is made by detaching all the connectors and by using the tester in the Ohm-meter function. This operation must be performed without the operator aboard, making contact with the ferrules on the contacts of the wiring connector **(1)** and must give these results:

No. of Contacts	Tester reading and condition		
GRASS-CATCHER ATTACHED MICROSWITCH			
6 - 7	∞ (without g.catc.)	O (with g.catcher)	
OPERATOR PRESENCE			
6 - 3	∞ (absent)	O (seated)	
PARKING MICROSWITCH			
6 - 2	O (free)	∞ (engaged)	
BLADES MICROSWITCH (OR PUSH-BUTTON)			
6 - 1	∞ (engaged)	O (disengaged)	
"IN NEUTRAL" SIGNAL			
17 - 8	O (drive)	∞ (neutral)	
GRASS-CATCHER FULL MICROSWITCH			
17 - 9	∞ (empty)	O (full)	
FUEL WARNING LIGHT			
6 - 4	O (reserve)	∞ (full)	
OIL PRESSURE WARNING LIGHT			
17 - 16	O (always)		
IGNITION KEY			
14 - 18	∞ (OFF)	O (ON)	O (START)
14 - 15	∞ (OFF)	∞ (ON)	O (START)

### ENGINE STOP

This operation must be done making contact with the ferrules on the contacts of connector CN3 and CN4 **(2)** of the card, keeping all other connectors connected, and must give this result:

No. of Contacts	Tester reading and condition
17 - 13	O (Always)



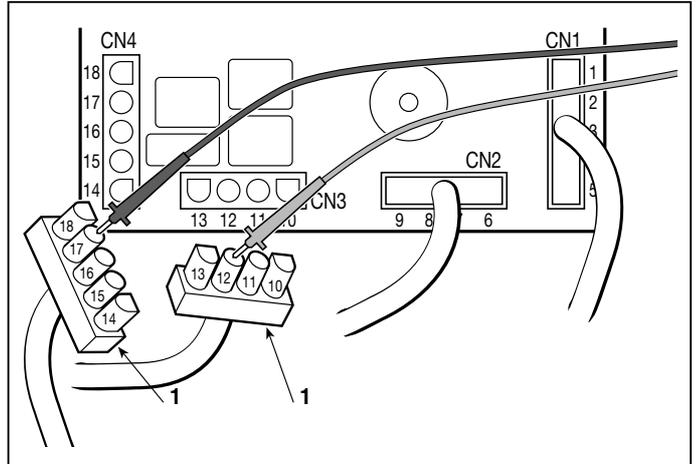


◀◀	<b>7.4.0 - TERMINAL BOARD SUPPLY CHECK</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 1

## 7.4 TERMINAL BOARD SUPPLY CHECK

This check is made with the tester operating as a Voltmeter (Volts DC 0 ÷ 20), with the black ferrule on terminal 17 and the red one on terminal 12 of the female connector **(1)** of the wiring.

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





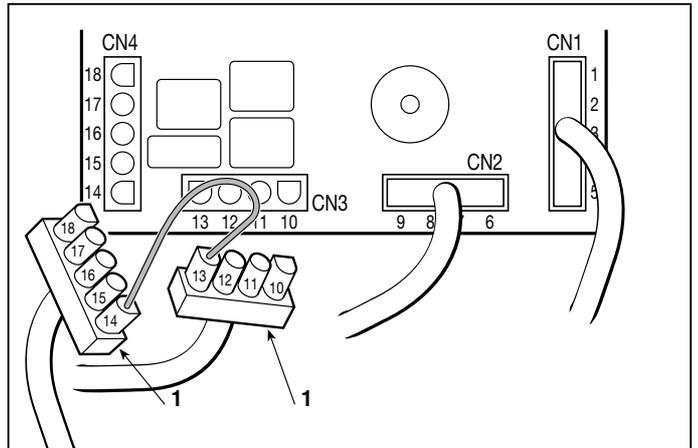
<b>7.5.0 - CARBURETTOR SOLENOID VALVE OPERATION CHECK</b>	from <b>2000</b> to <b>••••</b> page 1 / 1
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## 7.5 CARBURETTOR SOLENOID VALVE OPERATION CHECK (where fitted)

To make this test it is necessary to have:

- The key in the «ON» position
- Connectors CN4 and CN3 disconnected

When a bridge is made between contacts 14 and 13 of the wiring connector **(1)**, the carburettor solenoid valve bobbin must be heard to click.





◀◀	<b>7.6.0 - STARTER RELAY OPERATION CHECK</b>	▶▶	from <b>2000</b> to <b>••••</b>
			page 1 / 1

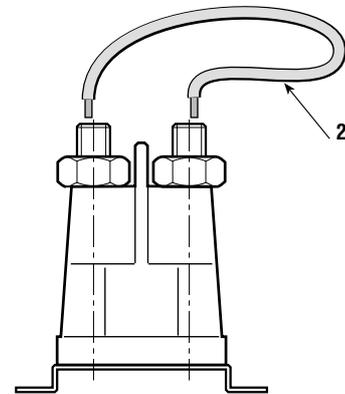
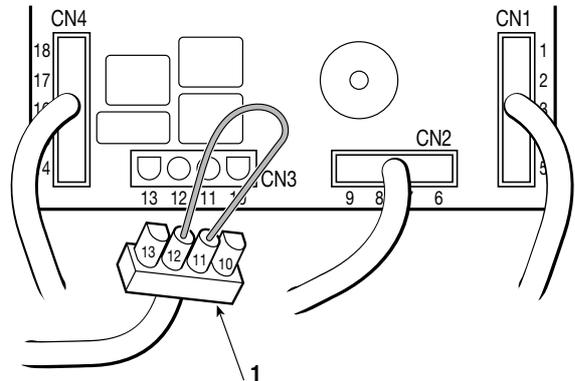
## 7.6 STARTER RELAY OPERATION CHECK

Detach connector CN3 and then, when a bridge is made between terminals 11 and 12 of connector CN3 I of the wiring **(1)**, the relay bobbin must be heard to click and the starter must start.

If the bobbin clicks but the starter does not start, make a bridge **(2)** with a large section cable (5 mm<sup>2</sup>) between the power contacts of the relay.

If the starter comes into operation, look for the fault within the relay or replace it. Otherwise, check the starter together with its wiring.

If after these tests the engine starts and does not stop with the key control, the CN3 connector will have to be reattached to the electronic card to reset the switching off function.





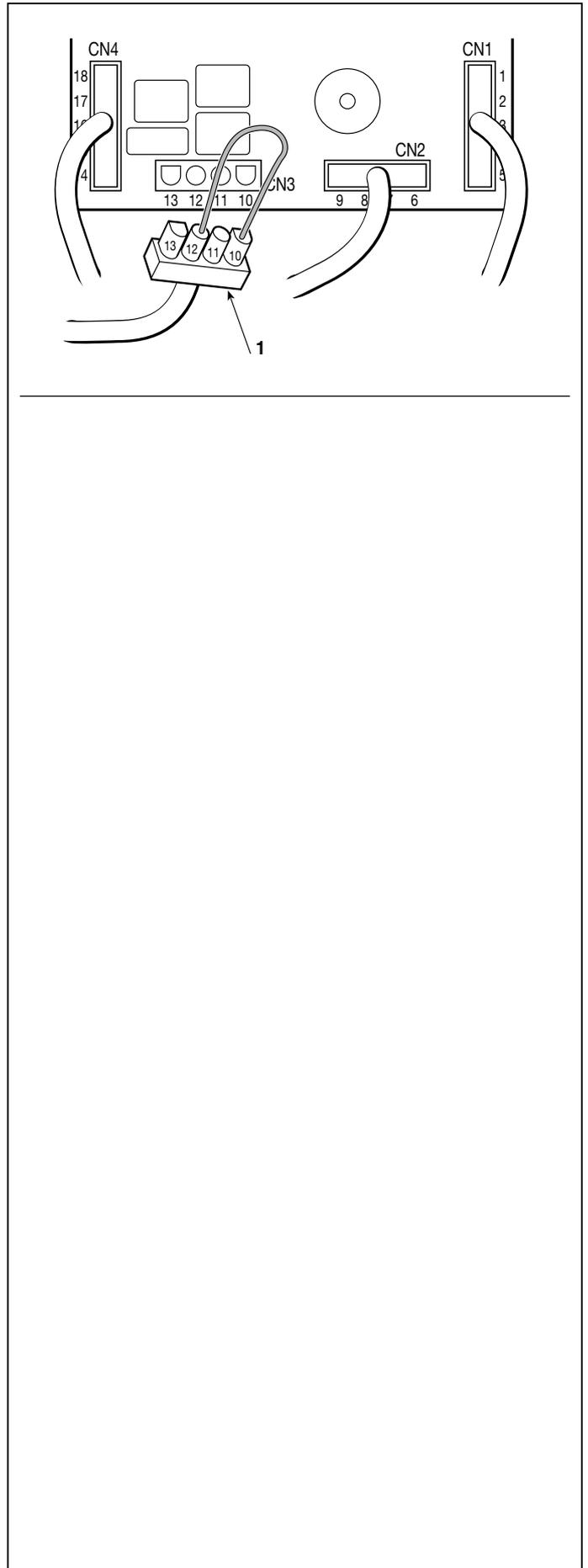
◀◀	<b>7.7.0 - ELECTROMAGNETIC CLUTCH OPERATION CHECK</b>	▶▶	from <b>2000</b> to ●●●●
			page 1 / 1

## 7.7 ELECTROMAGNETIC CLUTCH OPERATION CHECK ( ▶ *In models with electromagnetic engagement* )

Detach connector CN3 and then, when a bridge is made between terminals 10 and 12 of connector CN3 of the wiring (1), the moving part of the clutch must be heard to click, due to excitation of the electric winding.

If this does not occur, check the wiring and the operation of the control push-button [see 7.3] and ensure that the card is operating correctly [see 7.8].

The clutch must be replaced if engagement does not take place after these checks.





## 7.8 ELECTRONIC CARD OPERATION CHECK

### A) Card power supply

To make this test it is necessary to have:

- The key in the «ON» position
- Connectors CN1 and CN2 disconnected **(1)**

All the pilot lamps except those for fuel and oil should light up in this situation.

### B) Safeties and services check

This check is made with the tester operating as a Voltmeter (Volts DC 0÷20), with the black prod on earth and the red one on the following terminals of connectors CN1 and CN2 of the card **(2)** and must give the following readings:

Gr. catcher attached microsw.	= Terminal 7	4 - 6 V
Operator present	= Terminal 3	4 - 6 V
Brake microswitch	= Terminal 2	0 - 3 V
Blades microsw.(or pushbutton)	= Terminal 1	0 - 3 V
“Neutral” signal	= Terminal 8	10-12 V
Grasscatcher full microswitc	= Terminal 9	10-12 V
Fuel warning light	= Terminal 4	0 - 1 V

### C) Pilot lamps switch-on test

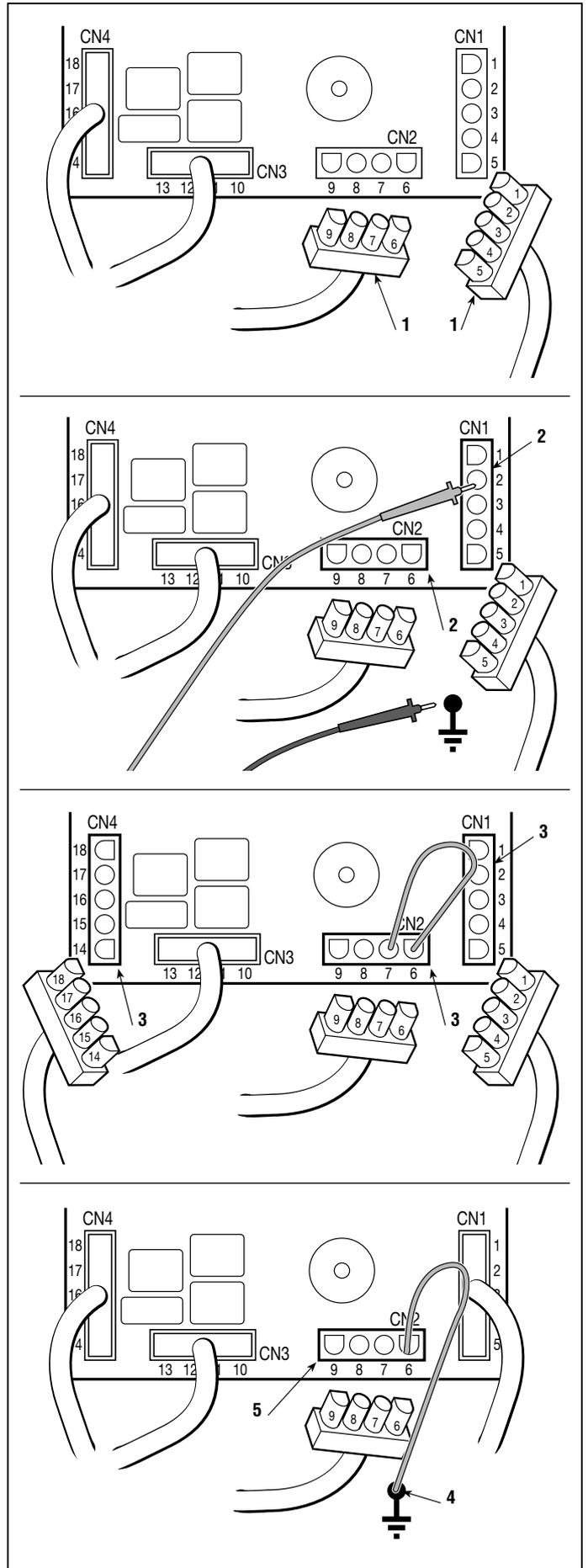
Making a bridge between the following terminals of connectors CN1, CN2 and CN4 **of the card (3)** should produce the following effects:

Gr.-catcher warning light	= Terminals 6 - 7	off
Seat warning light	= Terminals 6 - 3	off
Brake warning light	= Terminals 6 - 2	off
Blades warning light	= Terminals 6 - 1	off
Fuel warning light	= Terminals 6 - 4	on
Oil pressure warning light	= Terminals 17-14	on + buzzer
“Neutral” warning light	= Terminals 17 - 8	off

### D) Self-resetting protection operation check

For this test, put everything in the same situation as in point «A».

On connecting terminal 6 of connector CN2 **of the**





◀◀	<b>7.8.0 - ELECTRONIC CARD OPERATION CHECK</b>	▶▶	from <b>2000</b> to •••• page ◀ 2 / 2
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**card (5)** to the frame earth **(4)**, everything should switch off and the warning buzzer should start operating.

**NOTE**

During this test, the self-setting protection reaches very high temperatures (around 160 °C) which are to be considered normal. Similarly, there might be some smoke inside the transparent box which is due to the overheating of the powder inside.



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



◀◀	<b>7.9.0 - RECHARGE CIRCUIT CHECK</b>	▶▶	from <b>2000</b> to ●●●●
			page 1 / 1

## 7.9 RECHARGE CIRCUIT CHECK

The job of the voltage 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 protection to cut in.

Before checking the recharge circuit, make sure that:

- all connections are correct;
- the earth connections are firmly connected, especially the earth connection to the regulator;
- the battery is charged and not sulphated [see 7.10].

### 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 amount tends to fall, even slowly, it means that the regulator is not charging sufficiently and must be replaced.

### 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 slowly rise and settle at 14-15 Volts after about 10-15 minutes.

If this value is exceeded to the extent that the engine stops due to the self-resetting protection cutting in (at approximately 16 Volts) it means that the regulator is charging too much and must be replaced.



◀◀	<b>7.10.0 - CARE AND MAINTENANCE OF THE SEALED BATTERY</b>	▶▶	from <b>2000</b> to ●●●●
			page 1 / 2 ▶

## 7.10 CARE AND MAINTENANCE OF THE SEALED BATTERY

### A) General information

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

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

### B) Recommendations for correct use

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

- always keep the battery fully charged;
- always recharge a flat battery within 1 month, otherwise the elements could be damaged and no longer able to take the charge (sulphated);
- always recharge the battery before and after periods of prolonged inactivity or storage.

### WARNING!

Only recharge with a constant voltage battery charger. Use of other types of battery charger could damage the battery. The following model is available for the purpose:

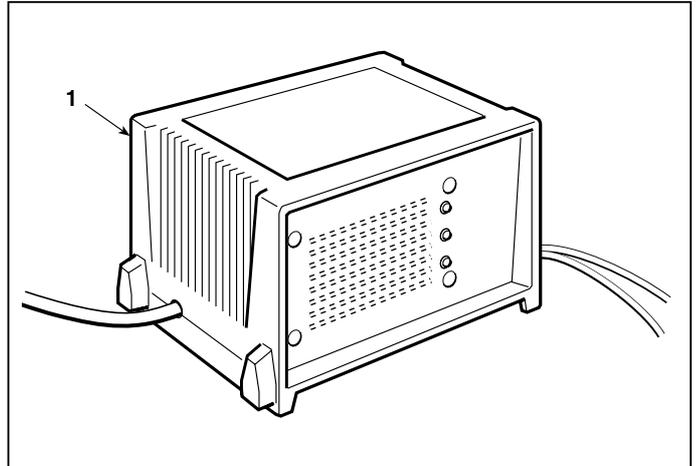
- 4 amp **(1)**, code no. 82180060/0

which fully recharges 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 a suitable 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.





◀◀	<b>7.10.0 - CARE AND MAINTENANCE OF THE SEALED BATTERY</b>	▶▶	from <b>2000</b> to ••••
			page ◀ 2 / 2

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

Battery voltage with open circuit	Battery state	Operation to be carried out
> 12.6 Volt	Fully charged	None
< 12.4 Volt	Flat	Recharge

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



◀◀	<b>7.11.0 - FITTING SAFETY MICROSWITCHES</b>	▶▶	from <b>2000</b> to <b>2002</b>
			page 1 / 1

## 7.11 FITTING SAFETY MICROSWITCHES

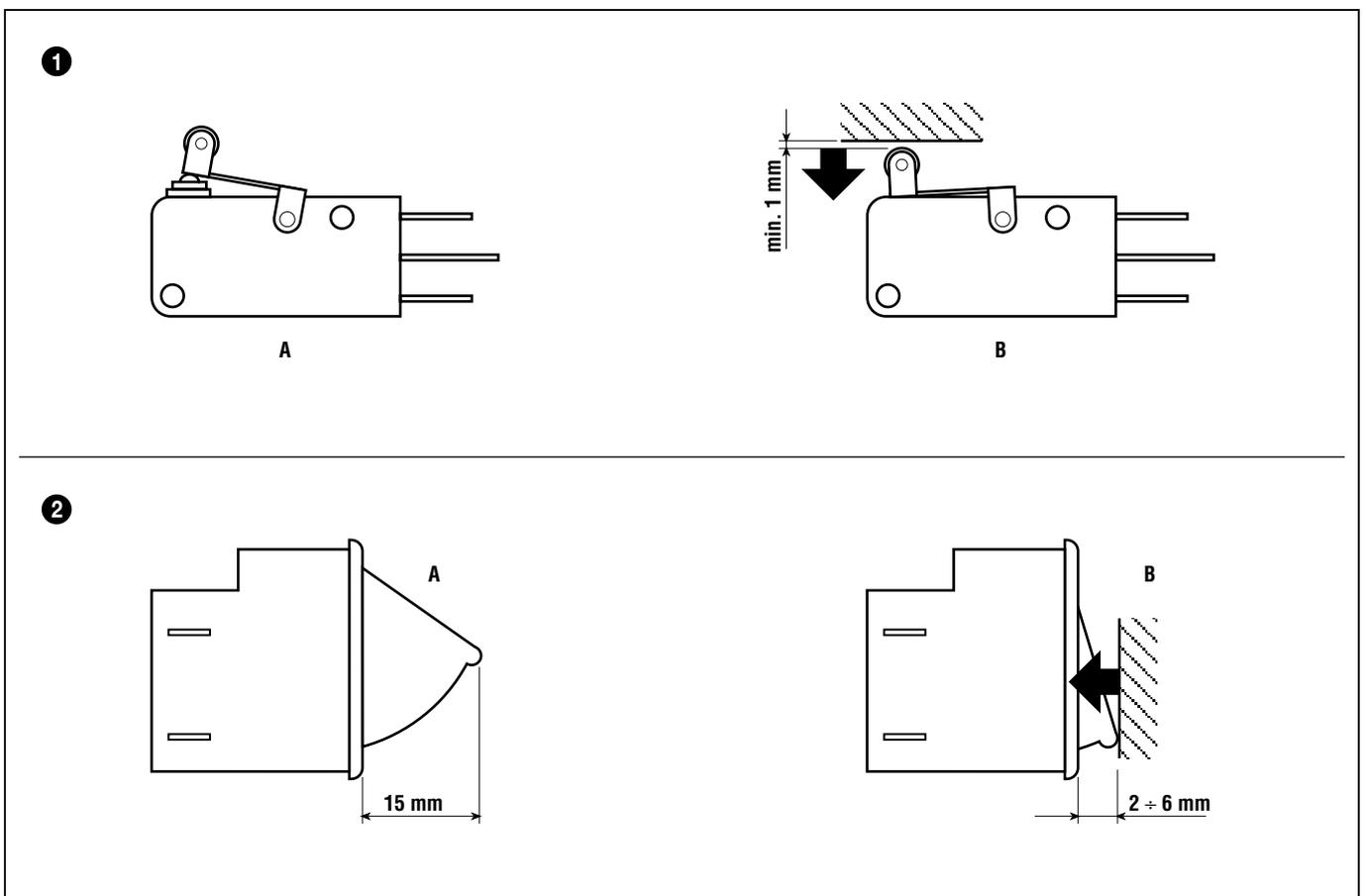


### IMPORTANT

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





◀◀	<b>7.11.1 - FITTING SAFETY MICROSWITCHES</b>	▶▶	from <b>2003</b> to ••••
			page 1 / 1

## 7.11 FITTING SAFETY MICROSWITCHES

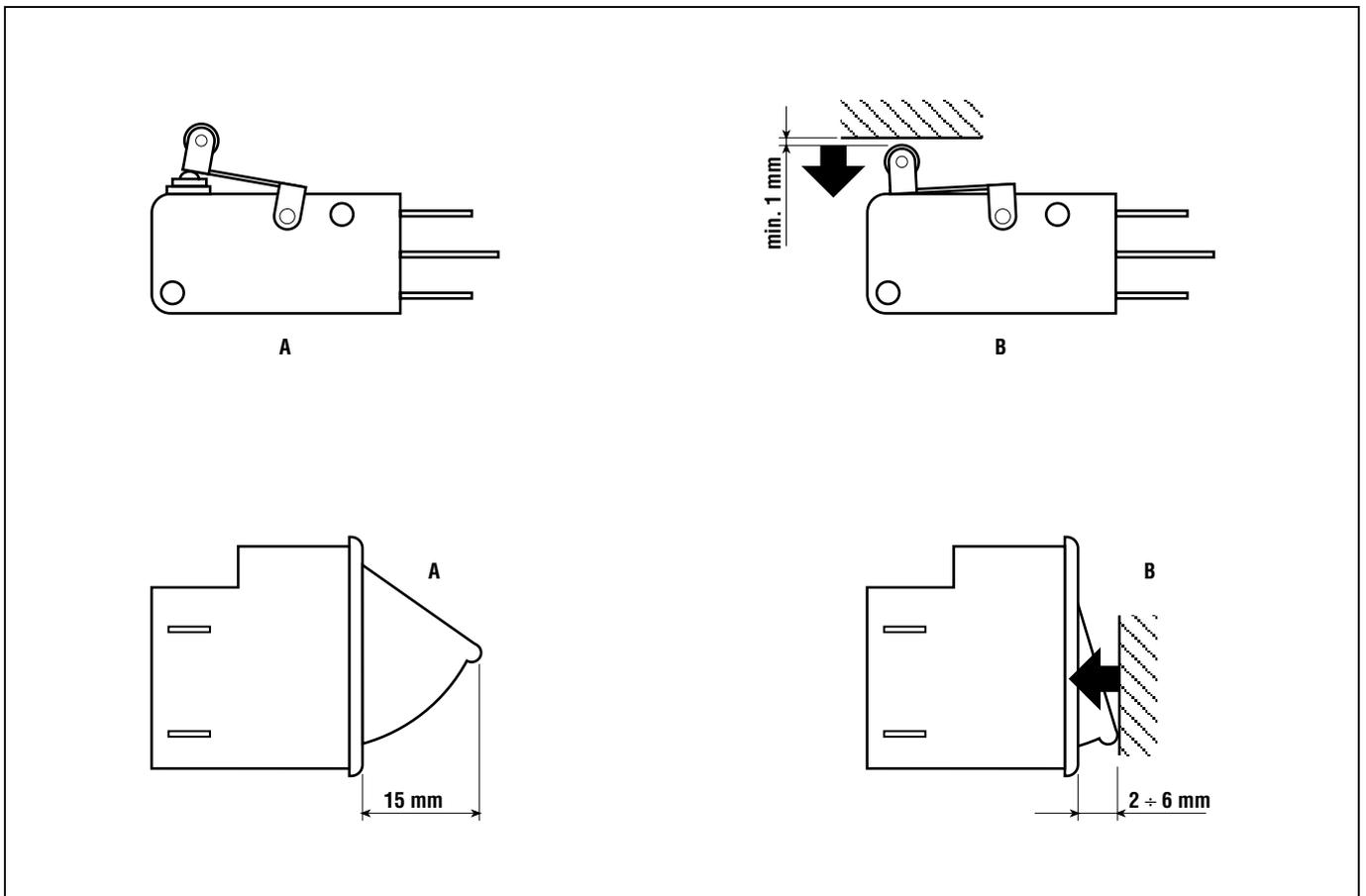


### IMPORTANT

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

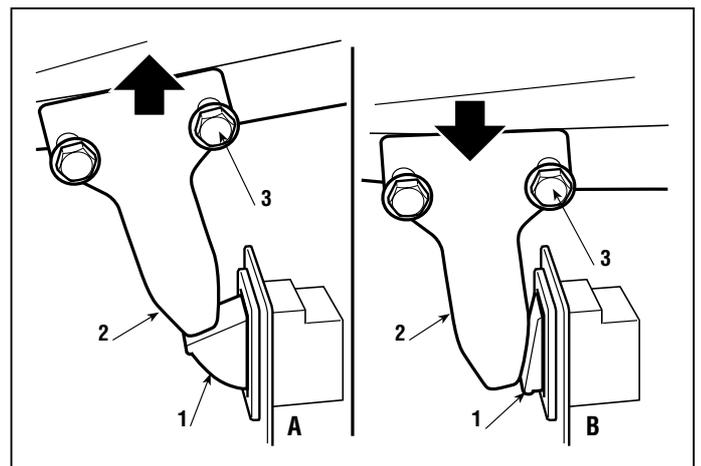


Adjust the seat safety microswitch **(1)** only by changing the position of the cam **(2)**, after loosening the two fixing screws **(3)**.

This adjustment is correct when you have checked the following:

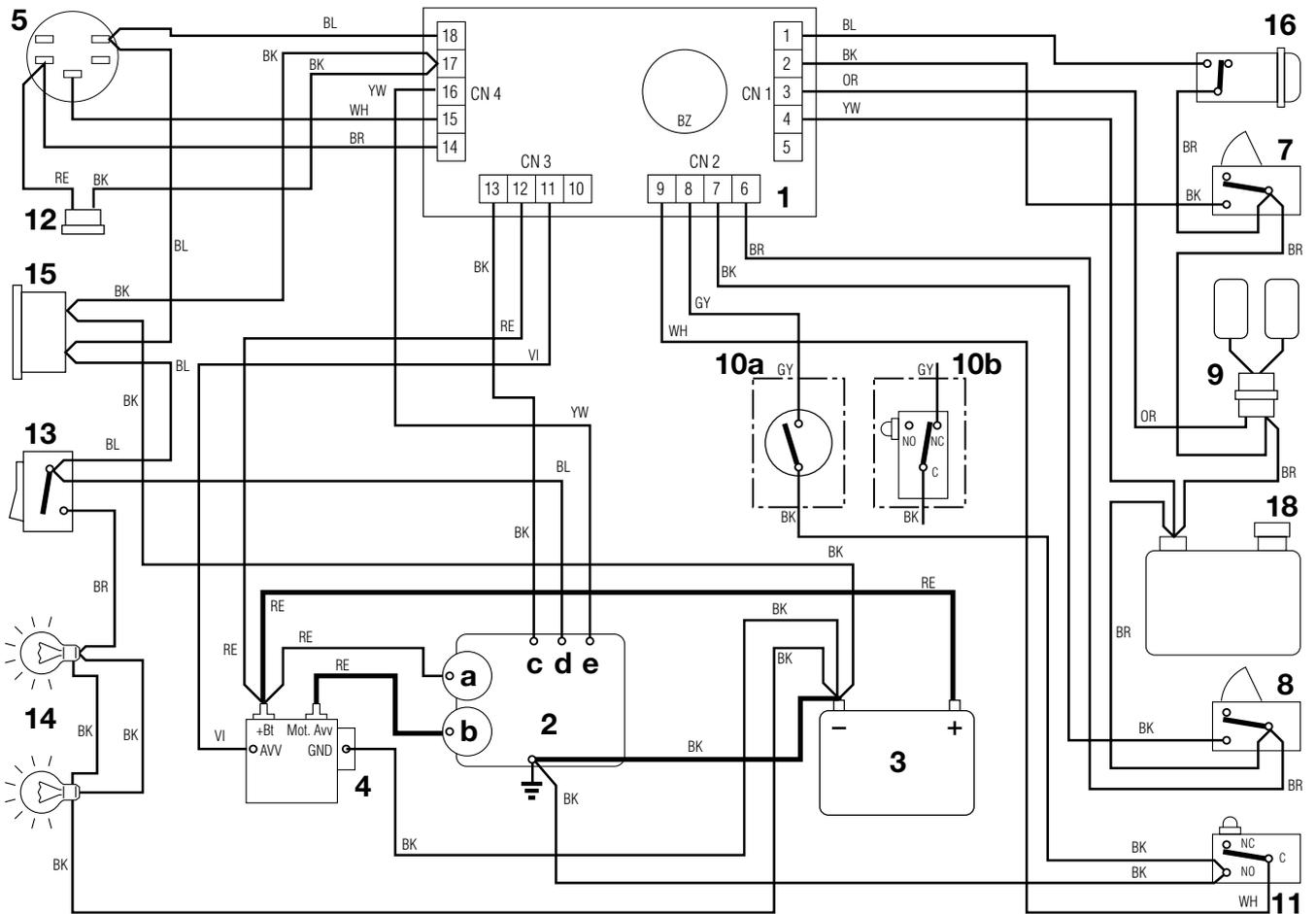
**A** = seat free: the lower edge of the cam **(2)** should be touching the microswitch button without activating it.

**B** = seat with the driver in position: the lateral edge of the cam **(2)** should press the push-button, leaving at least 2-3 mm more travel.





**1** ▶ Models with lever operated engagement



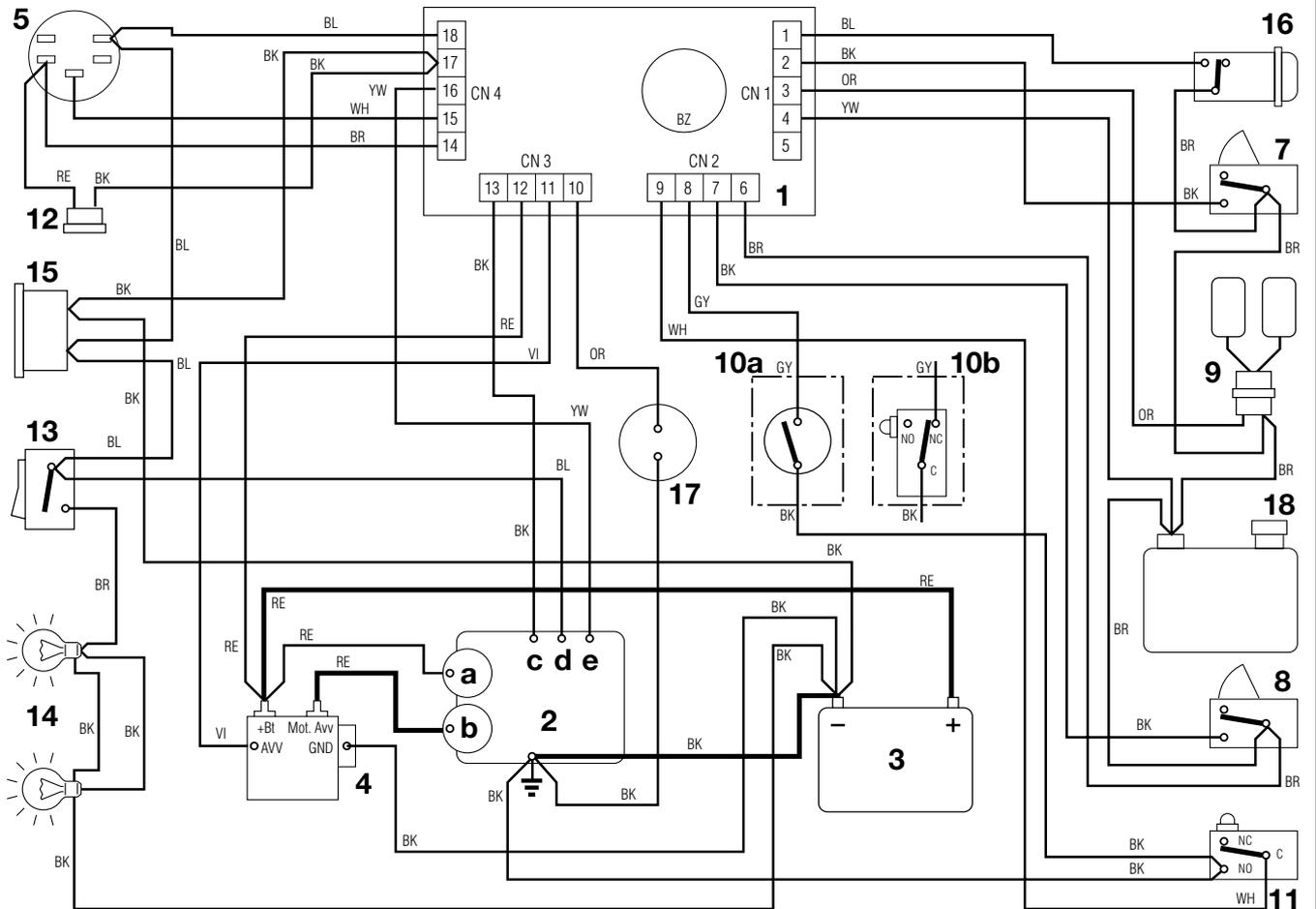
- 1** Electronic card
- 2** Engine
- 2a** Generator
- 2b** Starter
- 2c** Engine stop
- 2d** Carburettor
- 2e** Oil
- 3** Battery
- 4** Starter relay
- 5** Key ignition switch
- 6** Blades microswitch
- 7** Brake microswitch
- 8** Grasscatcher microswitch
- 9** Operator present
- 10a** Neutral microswitch (▶ Mechanical drive models)
- 10b** Neutral microswitch (▶ Hidrostatic drive models)
- 11** Grass-catcher full microswitch
- 12** Recharge connector
- 13** Light switch
- 14** Lights
- 15** Hour counter
- 18** Fuel tank

**CABLE COLOURS**

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



**1** ▶ Models with electromagnetic engagement



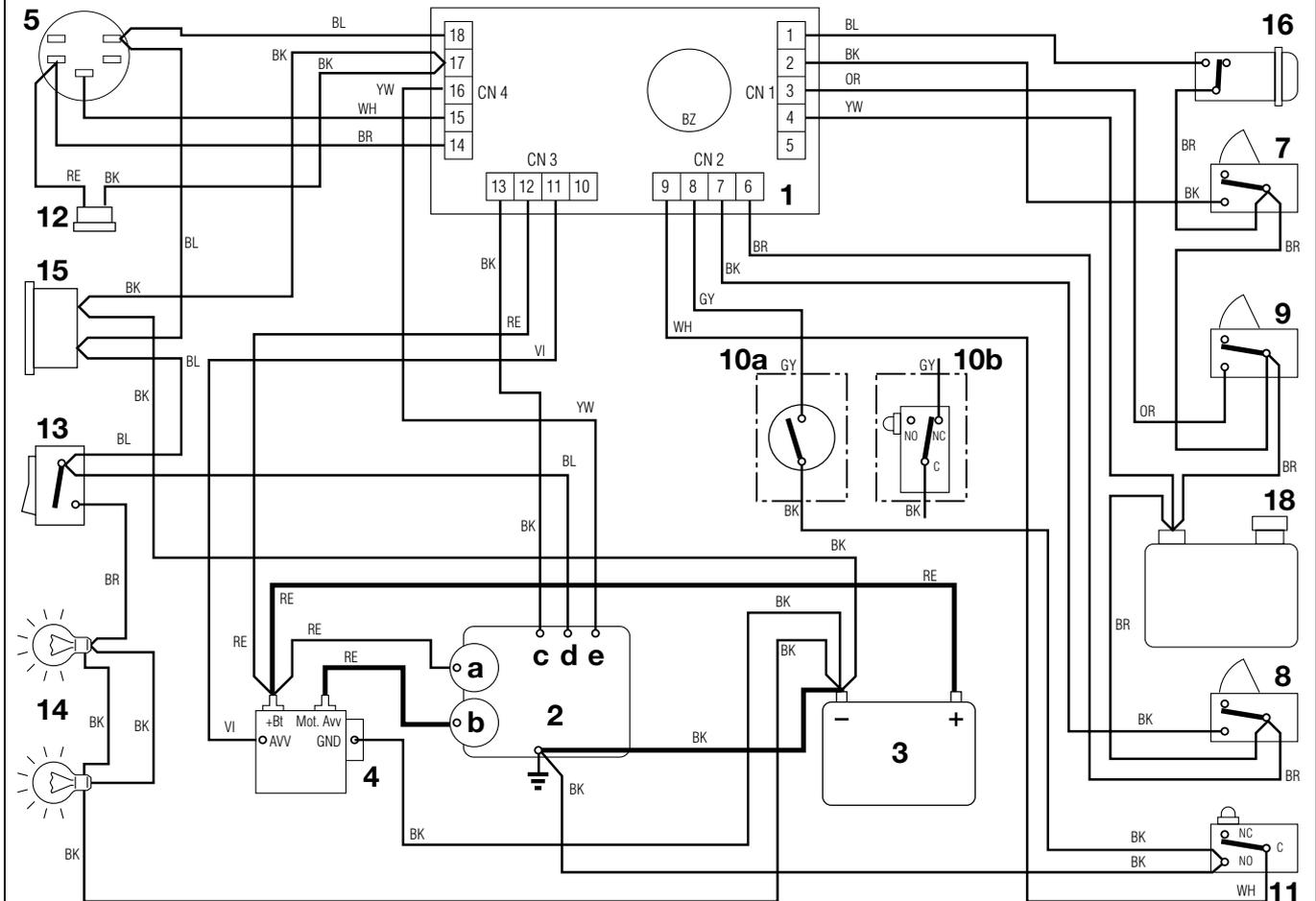
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- 11** Grass-catcher full microswitch
- 12** Recharge connector
- 13** Light switch
- 14** Lights
- 15** Hour counter
- 16** Clutchswitch
- 17** Clutch
- 18** Fuel tank

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**1** ▶ Models with lever operated engagement



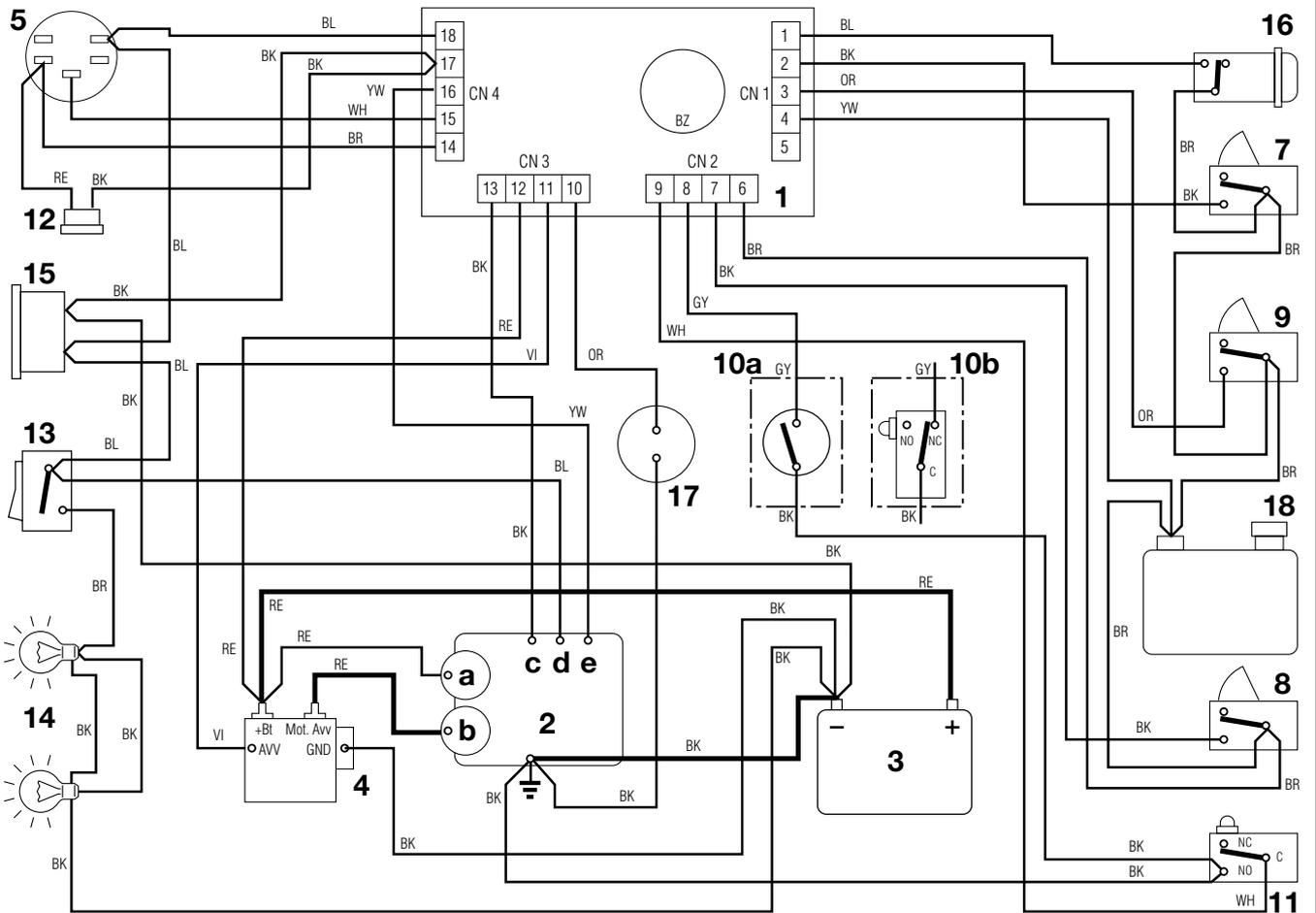
- 1** Electronic card
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**1** ▶ *Models with electromagnetic engagement*



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- 2** Engine
- 2a** Generator
- 2b** Starter
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- 2d** Carburettor
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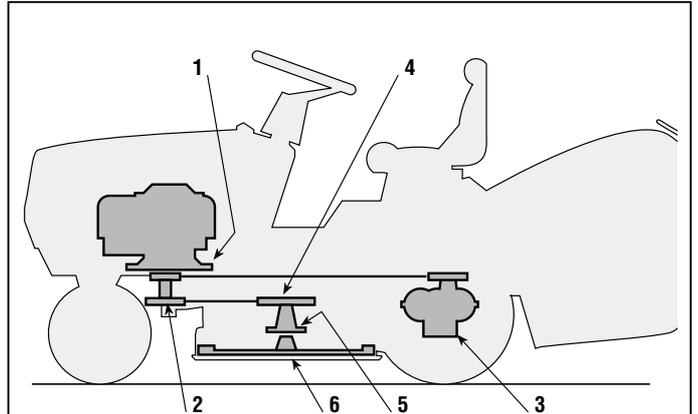


## 8.1 SUMMARY OF TIGHTENING TORQUES

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

- 1** Screws for engine fastening ..... 25 ÷ 30 Nm
- 2** Screw for pulley ..... 45 ÷ 50 Nm
- 3** Screws for rear axle fastening ..... 25 ÷ 30 Nm
- 4** Blade pulley screws ..... 25 ÷ 30 Nm
- 5** Flanged support fixing nuts ..... 25 ÷ 30 Nm
- 6** Screw for blade ..... 45 ÷ 50 Nm

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

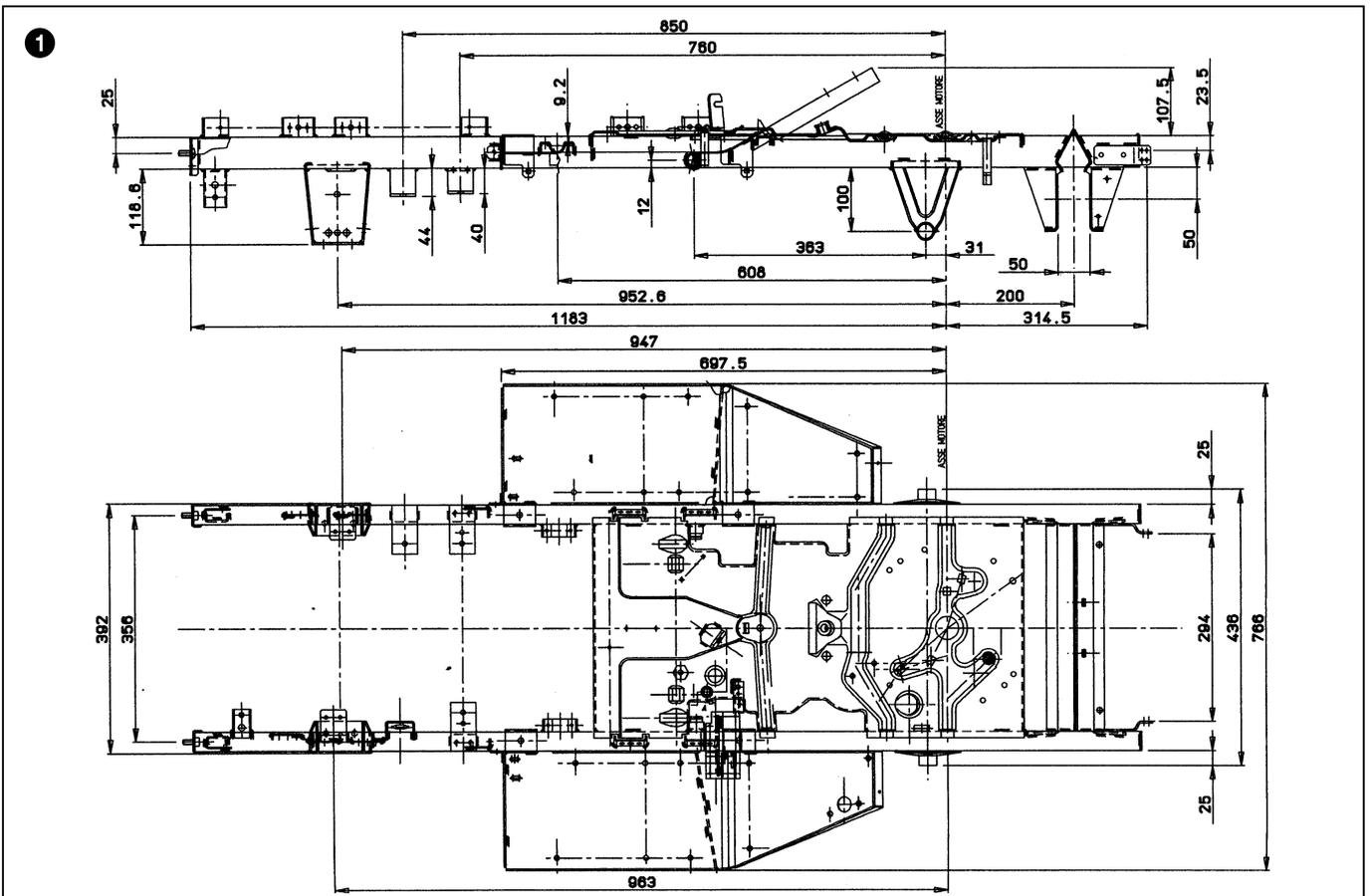




◀◀	<b>8.2.0 - SUMMARY OF MAIN ASSEMBLY AMOUNTS AND CHECKS</b>	▶▶	from <b>2000</b> to ••••
			page 1 / 5 ▶

## 8.2 SUMMARY OF MAIN ASSEMBLY AMOUNTS AND CHECKS

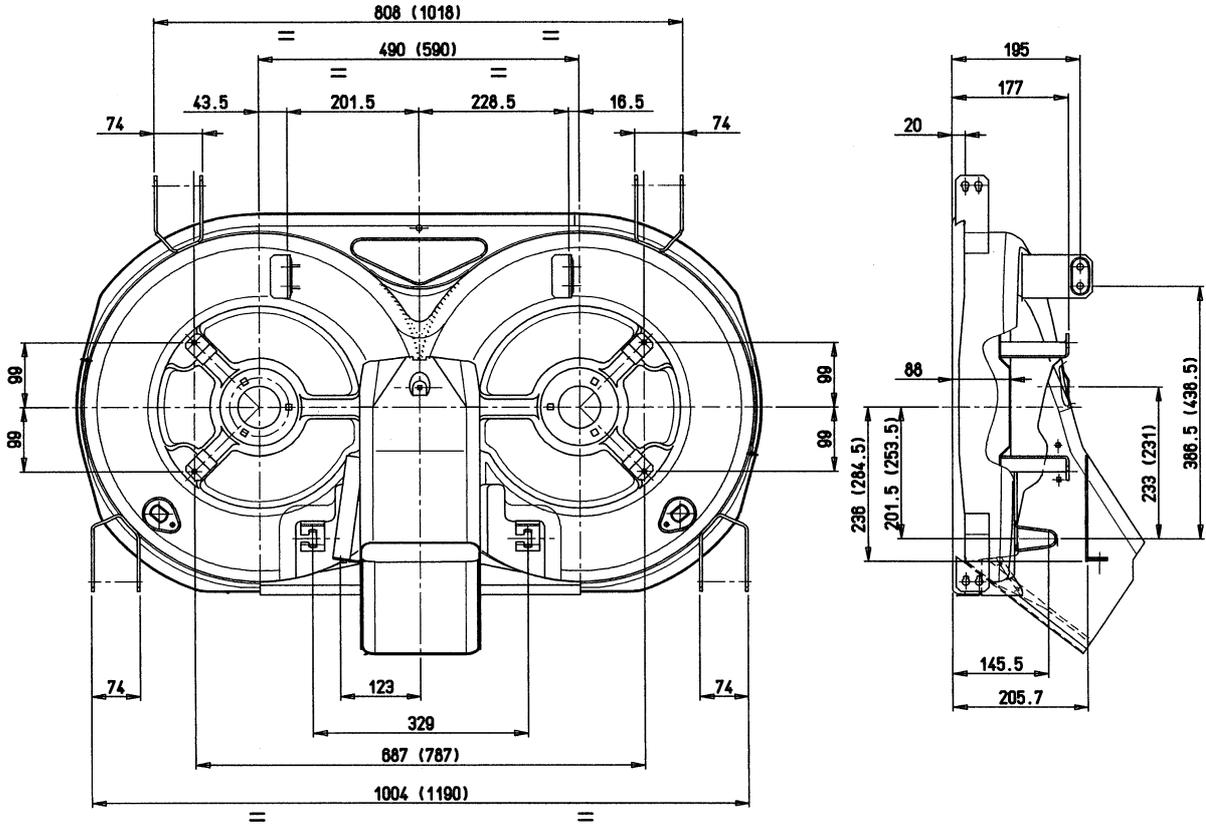
- 1 Frame
- 2 Cutting deck
- 3 Steering geometry
- 4 Drive belt development
- 5 Blades control belt development
- 6 Blades connection belt development
- 7 Gearbox control rod assembly ( ▶ *in mechanical drive models* )
- 8 Drive control rod assembly ( ▶ *in hydrostatic drive models* )
- 9 Drive rod assembly ( ▶ *in mechanical drive models* )



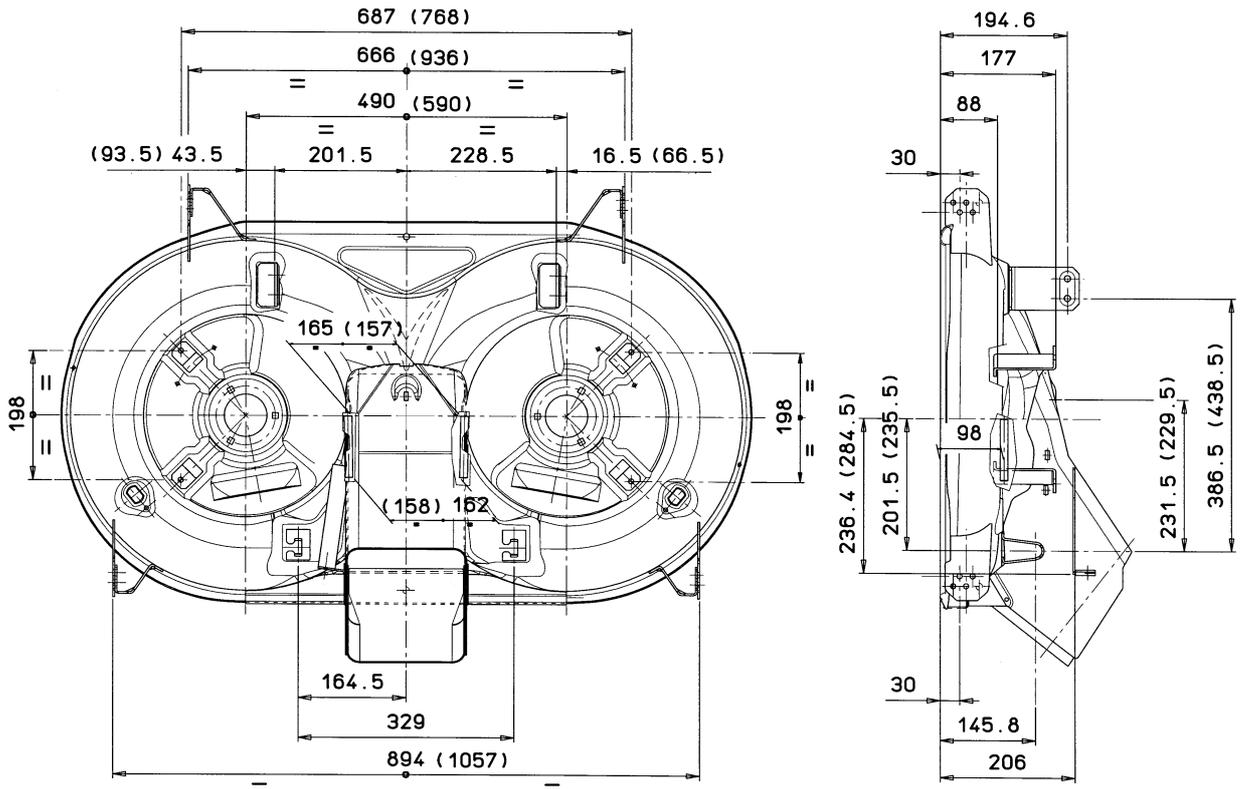


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► Square profile cutting deck



► Round profile cutting deck

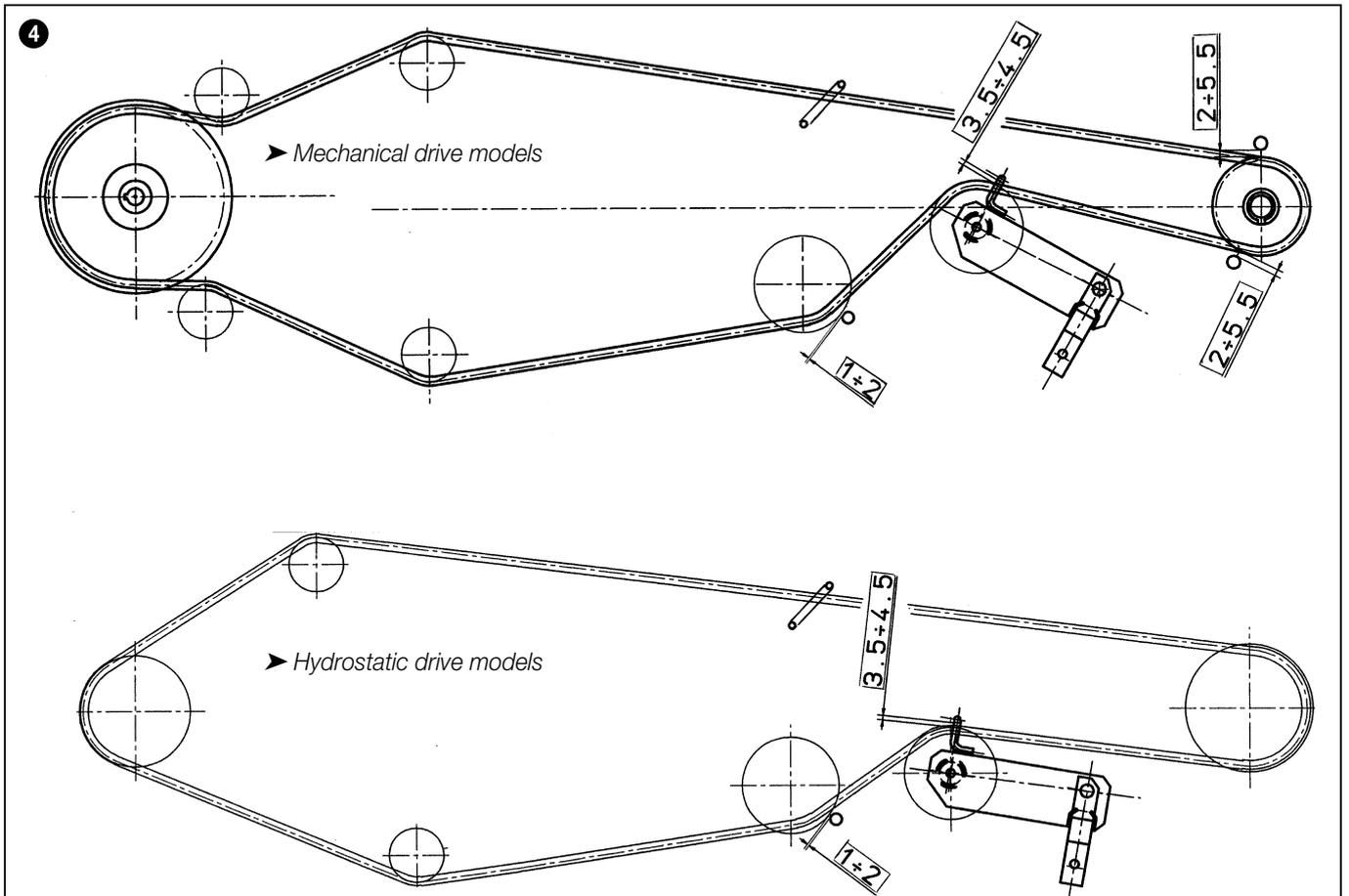
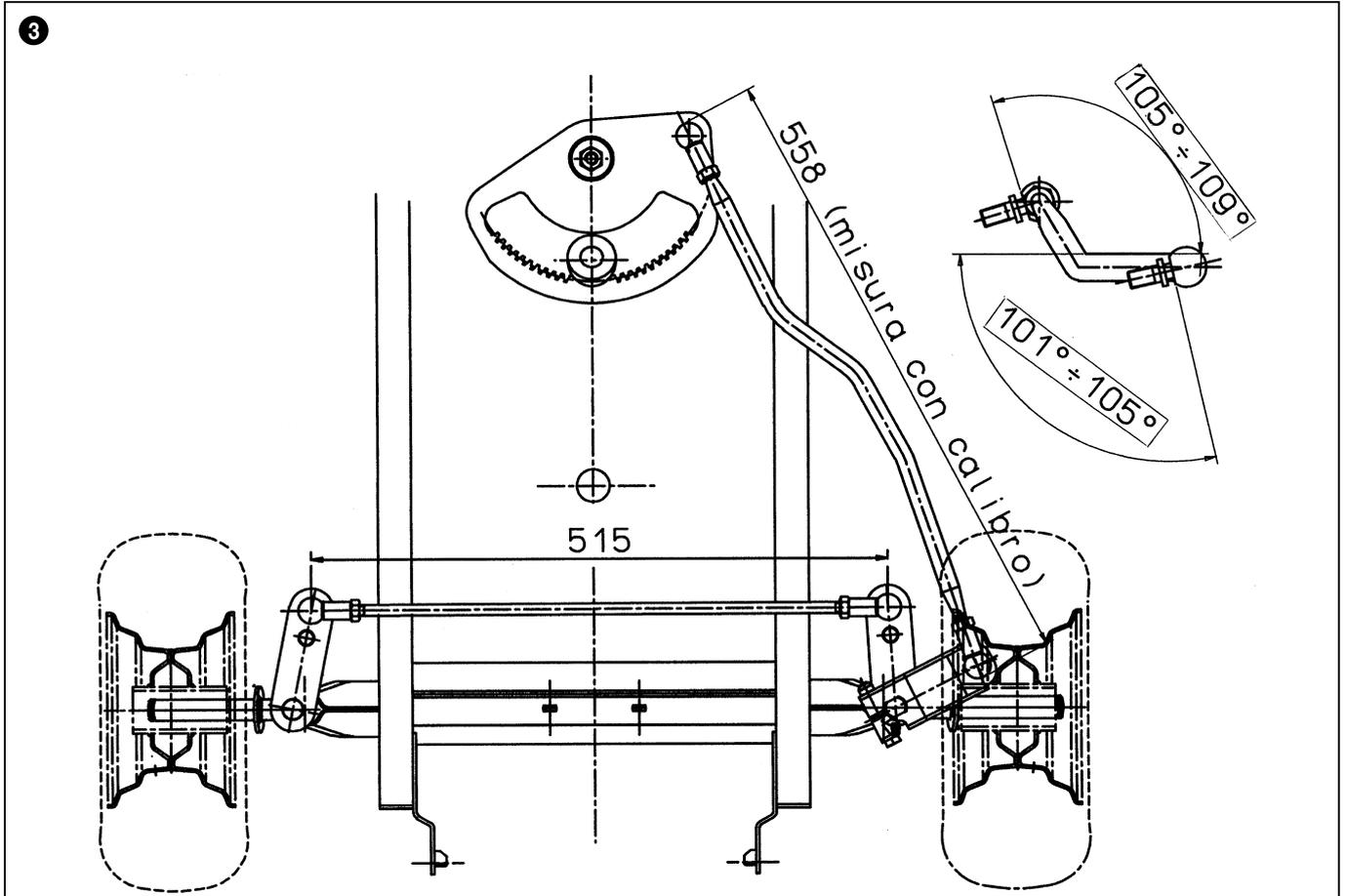




## 8.2.0 - SUMMARY OF MAIN ASSEMBLY AMOUNTS AND CHECKS



from 2000 to ....  
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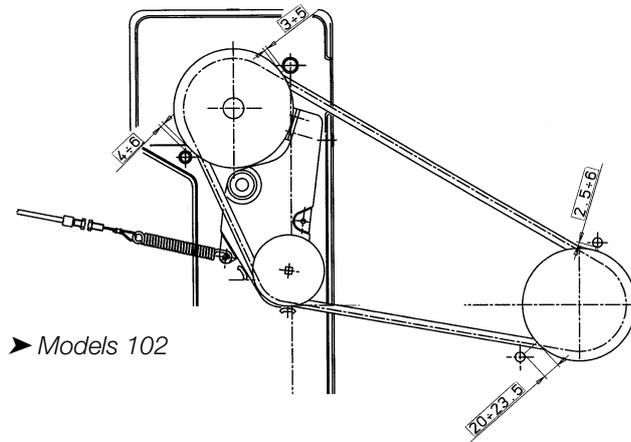


## 8.2.0 - SUMMARY OF MAIN ASSEMBLY AMOUNTS AND CHECKS

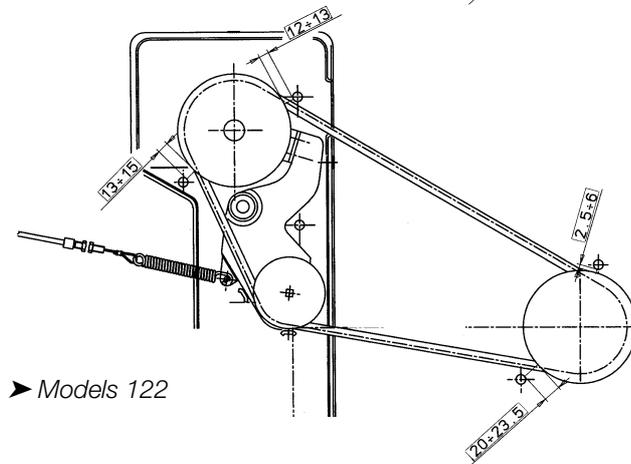
from 2000 to ••••  
page ◀ 4 / 5 ▶

5

► Models with engagement by lever

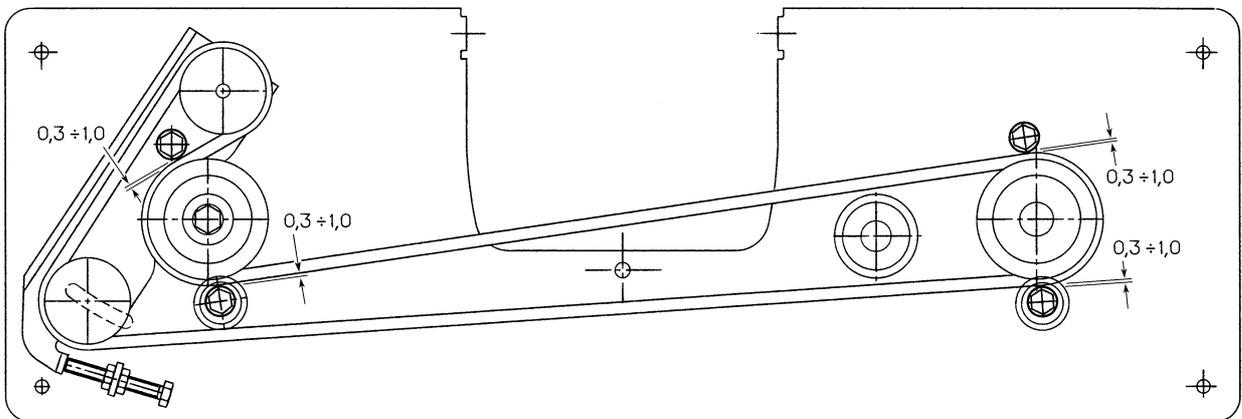


► Models 102



► Models 122

6





<b>8.2.0 - SUMMARY OF MAIN ASSEMBLY AMOUNTS AND CHECKS</b>	from <b>2000</b> to ••••
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