

STIGA



WORKSHOP MANUAL

VILLA 2000-2019



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1 General instructions

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General

This Manual do not cover repair instructions for the motors. Regarding motors, contact the respective representative in the actual country.

This Manual and its specifications are valid for machines in their original design. In case of modified or changed machine, i.e. the motor is replaced, the manual accordance is limited.

The manual is divided in the following chapters:

Chapter 1 is this chapter

Chapter 2 Chassis

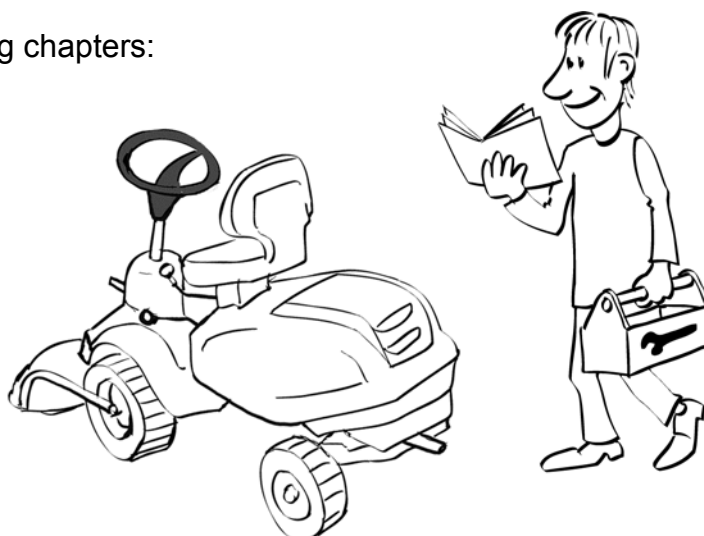
Chapter 3 Steering

Chapter 4 Hydraulic system

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1.1 Introduction

1.1.1 Responsibility declaration

In spite of the great care we have taken there may be errors in this publication. The author cannot be made liable for incorrect or missing information. GGP SE reserves the right to regularly change product specifications without prior notice. All the information in this book is based on the information available at the time of production. Illustrations and photographs may be arranged schematically, which implies that one picture may cover several models and therefore not correspond exactly with all models.

1.1.2 How this manual is used

To make this manual easy to understand we have divided the machine into its main systems and components. These parts are now the different chapters in the book.

Each chapter is divided up into sections.

There is a quick-guide on the cover of this book, which refers to the different chapters. In each chapter there is a detailed table of contents so that you can easily and quickly find what you are looking for.

For example, if you are looking for information on the Accessory Lifter you will find this in chapter 3, Chassis and Body. On the first page in chapter 3 there is a detailed table of contents which refers to the correct section, in this case section 3.1.

Always check that you are reading the right chapter for your particular machine before starting the repair work.

1.1.3 Abbreviations

The following abbreviations are used in this manual:

HST Hydrostatic Transmission

PTO Power Take Off

1.2 Safety Precautions

This manual has been written primarily for trained mechanics working in a well-equipped workshop. Nevertheless, the manual contains such detailed information that it can also be of use to owners who wish to carry out simple service and repairs on their machine.

A basic knowledge of repairs, tools and repair instructions is, however, always a prerequisite for first-rate results.

A qualified mechanic should always be consulted if the owner does not have sufficient knowledge to carry out repairs.

During the warranty period all service must be carried out by an Authorised Workshop for the warranty to be valid.

The following basic points should be observed if the machine is to function perfectly:

- Follow the service schedule.
- Be on the alert for sudden vibrations or abnormal noise to avoid major breakdowns.
- Always use Genuine Spare Parts
- Follow the descriptions in this manual carefully. Do not take any short cuts.

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1.2.1 Symbols and general warnings



Warning!

This symbol indicates a risk of personal injury or damage if the instructions are not followed.



Note!

This text indicates a risk of damage to the material or risk of unnecessarily complicated work if the instructions are not followed.

1.2.2 Warm parts

Please observe that engine and exhaust system picks up a lot of heat during use. This applies above all to the silencer of machines equipped with catalytic converter.

To avoid injuries, allow the machine to cool before any kind of repairs are made to or near parts of the engine or exhaust system.

1.2.3 Moving parts

The machines are all equipped with v-belt transmissions. Always stop the engine and remove the starter key before inspections or repairs are carried out.

Always use extreme caution when testing systems with moving parts to avoid injuries.

Always use Genuine Spare Parts during service work.

1.2.4 Lifting and blocking up

Before work under the machine, always make sure that lifting devices and jack-stands are approved for the weight. Work safe!

1.2.5 Cleanliness

Clean the machine before starting repairs. Dirt that penetrates into sensitive components can seriously influence the service life of the machine.

1.2.6 Tightening torque

Unless otherwise stated the tightening torque in the tables in the section Technical specifications must be used for the different sizes of screws. This does not refer to self-tapping screws, which are mainly used for the assembly of body parts.

1.2.7 Sharp edges

Watch out for sharp edges, especially when working with the mower deck. The blades can be very sharp. Always wear gloves when working with the blades.

1.2.8 Replacement parts

Always use Genuine Spare Parts during service work.

1.2.9 Inspection

Each part dismantled in conjunction with service work must be inspected. Examine for: wear, cracks, out of roundness, straightness, dents, discolouring, abnormal noise and jamming.



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1.3 Guarantee

1.3.1 Component guarantee, chassis

The guarantee is valid provided that the prescribed basic services have been carried out at an authorised service workshop during the relevant guarantee period. The services must be verified in the service book.

1.3.2 Exeptions

The extended warranty does not cover damage due to the following:

- Neglect by users to acquaint themselves with accompanying documentation.
- Carelessness.
- Incorrect and non-permitted use or assembly.
- The use of non-genuine spare parts.
- The use of accessories not supplied or approved by the manufacturer.

Neither does the warranty cover:

- Wearing components such as blades, belts, wheels, battery and cables.
- Normal wear.
- Engine and transmission. These are covered by the respective manufacturer's warranties, with separate terms and conditions.

The purchaser is covered by the national laws of each country. The rights to which the purchaser is entitled with the support of these laws are not restricted by this warranty.

1.3.3 Conditions for validity of the warranties

The fully completed warranty card must be sent to Stiga's subsidiary or distributor.

In the event of a claim, the service history must be confirmed with a copy of the service book.

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1.4 Unpacking and assembly

Every Stiga machine has undergone an extensive control programme before delivery. The machines are delivered as completely assembled as possible.

Thanks to this the assembly on delivery is rapid and easy.

The correct and careful assembly of the machine on delivery is a simple way of ensuring satisfied customers!



Note!

The machine shall remain placed on the pallet during the unpacking and assembly.

1.4.1 Unpacking

Open up the crate and release the part as follows:

1. Check the air pressure in the tyres. The pressure is designated on the floor mat. The air pressure in the tyres is of critical importance for the performance and handling of the machine. The correct air pressure for mowing is:

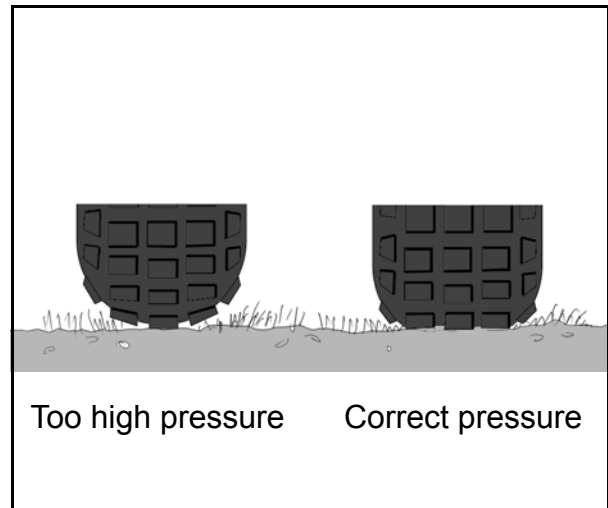
Front: 0,4 bar (6 psi)

Rear: 1,2 bar (17 psi)

When using some accessories it may be necessary to increase the pressure somewhat. However, the maximum permitted pressure is always 1.2 bar (17 psi).

Too high pressure in the tyres leads to that the machine drives poor due to:

- A small surface in contact to the ground.
 - Hard tyre = less flexibility = self cleaning characteristic deteriorate.
2. Remove the following parts from the package and put them on the floor.
 - The battery (some models).
 - The steering wheel.
 - The plastic bag, containing owners manuals, and assembly screws.



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1.4.2 Battery

The battery is a valve regulated type.

Depending on the battery type, load and assemble the battery, following the actual instruction below.

Valve regulated battery

This battery needs limited maintenance. It has no electrolyte levels or plugs.



Warning!

Do not wear rings, metallic bracelet, chain round the neck or similar metal objects when working with the battery. It can cause short-circuit, burns and fire.



Warning!

The battery must be fully charged before being used for the first time. The battery must always be stored fully charged. If the battery is stored while discharged, serious damage will occur.

Charging with the engine

The battery can be charged using the engine's generator as follows:

1. Install the battery in the machine as shown below.
2. Place the machine outdoors or install an extraction device for the exhaust fumes.
3. Start the engine according to the instructions in the user guide.
4. Allow the engine to run continuously for 45 minutes.
5. Stop the engine. The battery will now be fully charged.



Charging using battery charger

When charging using a battery charger, a battery charger with constant voltage must be used.

The battery can be damaged if a standard type battery charger is used.

Installation of battery

See also the respective installation manual, delivered with the machine.

After the battery is charged, remove the motor casing and install it in the machine. Connect first the red cable to plus (+) and then the black cable to minus (-).



If the cables are disconnected/connected in the wrong order, there is a risk of a short-circuit and damage to the battery.



If the cables are interchanged, the generator and the battery will be damaged.



The engine must never be driven with the battery disconnected. There is a risk of serious damage to the generator and the electrical system.

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1.4.3 Assembly

The assembly procedure shall take place in a clean, well illuminated and dry place.

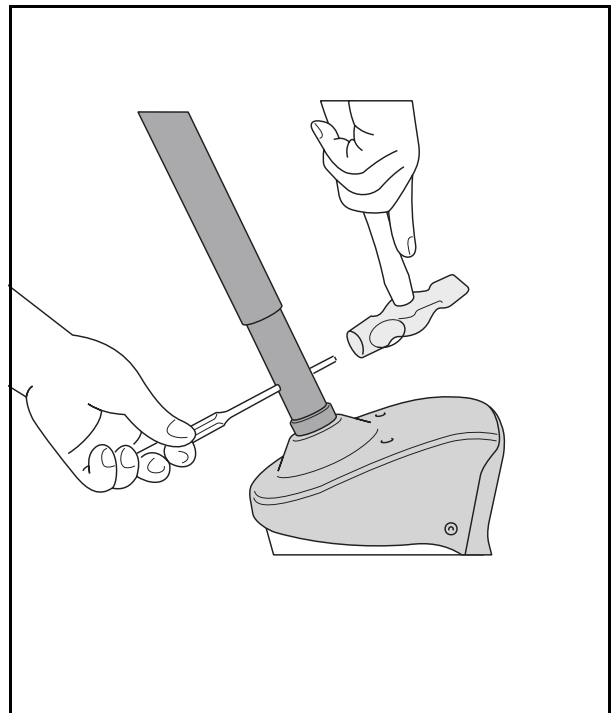
Assemble the machine as follows:

Assembly of steering wheel

The machine is delivered with two shims, one with a thickness of 0.5 mm and one with a thickness of 1.0 mm.

In order to minimise the axial play in the steering column, the shim washers (0.5 mm) and/or (1.0 mm) must be installed on the steering column between the steering column jacket and the bracket as follows.

1. Install the steering column jacket on the steering column and secure by knocking in the tension pin approximately 1/3 of its length.
2. Pull the steering column jacket and the steering column up.
3. From the outside, check whether no washers, the 0.5 mm washer, the 1.0 mm washer or both washers can be inserted into the gap. The washer/washers must not be forced in, as there must be a little axial play.
4. Pull out the cotter pin and dismantle the steering wheel jacket.
5. Install the washer/washers in accordance with point 3 above.
6. Install the steering column jacket on the steering column and secure by knocking in the tension pin fully. Use a counterhold. Also make sure that the logo on the steering wheel is in the correct position.



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Assembly of seat (adjusting wings under)

Release the catch (S) and fold up the seat bracket.

NOTE! To facilitate installation of the seat, apply a drop of oil to the four screws before screwing them into the seat.

Install the mounting in the rear (upper) holes as follows:

1. Install the shoulder washers (F) on the screws (K).
2. Insert the screws through the slots in the bracket. Place a washer (I) between the seat and the bracket.
3. Tighten the screws in the seat. Tightening torque: 9 ± 1.7 Nm.



If the screws are tightened more than 9 ± 1.7 Nm, the seat will be damaged.

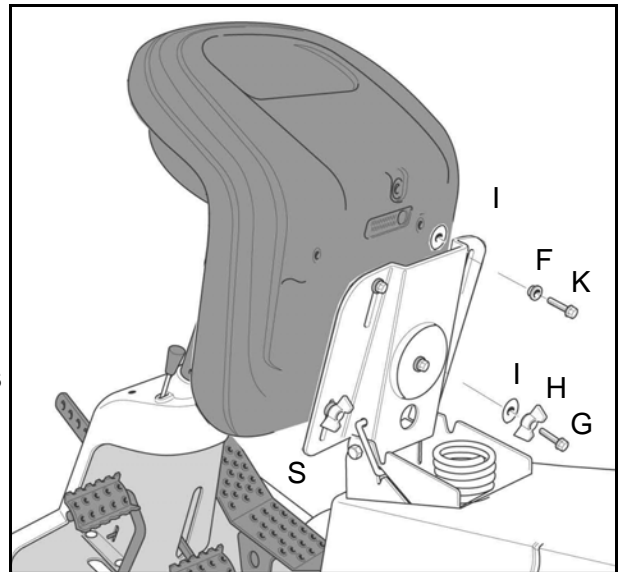
4. Check that the seat moves easily in the slots in the bracket.

Install the mounting in the front (lower) holes as follows:

1. Install the screw knobs (H) on the screws (G).
2. Install a washer (I) on each screw.
3. Insert the screws through the slots in the bracket and tighten by hand in the seat.
4. Fold the seat down and place it in the desired position.
5. Tighten the screw knobs (H) by hand.



The screw knobs (H) and the seat will be damaged if tools are used.



Towing plate

Fitting according to customer requirements.

Engine oil

Check the oil level in the engine and top up if necessary.

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1.4.4 Final checks

Removing from pallet

All the above measures shall have been done with the machine standing on the pallet. Now, loosen ev. remaining attachments and roll off the machine from the pallet.

Accessories

Fit and adjust accessories.

Test driving



Warning!

**Do not drive without a work equipment (mower deck) attached.
Risk for turning over.**

Drive the machine for a few minutes. Test all the functions. Pay special attention to the safety functions. If the machine is to be delivered with mower deck or other accessories, fit these before test driving the machine.

HST oil

Check the oil level in the HST's expansion tank after test driving, and top up if necessary.

Steering chain / Steering wire

Check that the steering chain / steering wire is sufficiently taut. Adjust if necessary.

Miscellaneous

Give the machine a general inspection.

- Is the machine clean?
- Is there any oil leakage?
- Abnormal noise or rattle?

Receipt

By filling in the guarantee certificate you guarantee that the delivery service has been correctly conducted.

Remember to make sure that the customer receives all the documentation when the machine is collected / delivered.



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1.5 Service

Every new machine is delivered with a service book. This service book is part of the active post-market programme and shall be kept in a safe place during the entire lifetime of the machine. Hand over the service book if the machine is sold in 2:nd hand.

Service should generally be carried out at least every 50 operating hours (exception of the first service), although in accordance with the conditions below.

There are three different grades of service events. Every service event consists of a number of service points as described in the following paragraphs. Every service point has a number which refer to a describing text after the schedules.

Some service points do not coincide with the scheduled service intervals, but shall be performed in connection with a scheduled service when possible. E.g. some items shall be performed at every second service and some also between two services. These service points are described with procedure and interval in the respective "Instruction for use".

Typical service points wich not coincide with scheduled service intervals are:

- Cleaning/changing air filter in some motors.
- Change of oil in some motors.
- Valve adjustments for some motors.
- Change of spark plug in some motors.



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1.5.1 First Service

The first service shall be performed within 5 hours of running and includes the service points as per the table below.

This service is very important to safeguard the continuing function of the machine.

Number	Service point
1	Safety check.
2	Tyres, air pressure.
3	Engine oil, change. Machines with filter, replace it together with the oil.
4	Oil level in HST, check (Valid for machines with HST only).
5	Belt transmissions, check.
6	Steering adjustment.
21	Test driving.

1.5.2 Intermediate Service

The intermediate service shall be conducted between two basic services. That means 50 hours after a basic service.

Number	Service point
1	Safety check.
2	Tyres, air pressure.
3	Engine oil, change.
4	Oil level in HST, check. (Valid for machines with HST only).
6	Steering adjustment.
8	Air filter, cleaning.
11	Cooling fins, clean.
12	Lubrication

The intermediate service is not as extensive as the Basic Service and can therefore be conducted by the customer, or by an authorised Service Workshop. Regardless of who conducts the service, it must be documented in the service book.



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1.5.3 Basic Service

The basic service shall be conducted every 100 hours or once every year, whichever first occurs.

The Basic Service must always be conducted by an authorized Service Workshop, and documented with a stamp in the service book.

Number	Service item
1	Safety check
2	Tires, air pressure
3	Engine oil, change. Machines with filter, replace it together with the oil.
4	Oil in HST, check.
5	Belt transmissions, check
6	Steering adjustment
8	Air filter for engine, clean/replace

Number	Service item
10	Cooling fins, clean
11	Spark plug, check/replace
13	Transmission, check
14	Speed check
15	Bearing boxes, check**
16	Exhaust system, check*
17	Electrical system, check*
18	Mower deck, check**
19	Blades, check**
20	Power take-off, check
21	Control check
22	Valve play***
23	Test driving

*) See also "Safety check".

***) See also the mower deck manual.

***) See the motor manual.



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1.5.4 Description of service points

1. Safety check

Check the safety functions. It is often appropriate to do this check in conjunction with test driving. The following items shall be checked at all machines:

- No leakage on fuel lines and connections.
- No mechanical damages to the electrical cables. All insulation intact.
- The muffler shall be undamaged and its screws tightened. No exhaust leakage in connections.

The electrical check items at the respective machine up to model 2004 are listed in the tables below. For models 2005 and up, see the respective "Instructions for use".

Models with manual gearbox

Test	Status	Action	Result
1	PTO activated. No gear activated.	Turn the key and make a start attempt.	Motor shall not start.
2	PTO not activated. A gear is activated.	Turn the key and make a start attempt.	Motor shall not start.
3	Motor running. PTO activated.	Operator rises from the seat.	Motor shall stop.
4	Motor running. A gear activated.	Operator rises from the seat.	Motor shall stop.
5	Motor running.	Disconnect cable from the shut off valve.	Motor shall stop after a few minutes.

HST models

Test	Status	Action	Result
1	Brake pedal not pressed. PTO not activated.	Turn the key and make a start attempt.	Motor shall not start.
2	Brake pedal pressed. PTO activated.	Turn the key and make a start attempt.	Motor shall not start.
3	Motor running. PTO activated.	Operator rises from the seat.	Motor shall stop.
4	Motor running.	Disconnect cable from the shut off valve.	Motor shall stop after a few minutes.



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2 Tyres, air pressure

Check the air pressure. Adjust if necessary. The recommended air pressure is designated at the floor mat.

3 Engine oil and oil filter

See "Motors" at page 18. and the "Instructions for use", delivered with the machine, see "Instructions for use" at page 19. See also the engine manufacturer manual.

4 Oil, HST

See the "Instructions for use", delivered with the machine.

5 Belt transmissions, check

Check the condition of all the belts and belt tensioners.

6 Steering, adjustment

See section 3.

7 Not applicable

8 Engine air filter

See the "Instructions for use", delivered with the machine. See also the engine manufacturer manual.

9 Not applicable

10 Cooling fins

Remove protective covers from the engine and cleans between cooling fins. Use a brush and compressed air. See also the engine manufacturer manual.

11 Spark plug

Remove the spark plug and clean it or replace if necessary. See also the engine manufacturer manual.

12 Lubrication

Lubricate the 5 nipples and all moving parts such as wires and levers. See section 2.

13 Transmission

Listen for abnormal noise.

Manual models: Check that the drive function works properly at all gears. Adjust if required.

14 Speed check

Check that the speed corresponds to the specified value.

15 Bearing boxes

Listen for abnormal noise from the bearings. Check that there are no wear, play or seizure.

16 Exhaust system

Check that there are no cracks, leakage or other damages. Check the attachment devices. See also the engine manufacturer manual.

17 Electrical system

Check that there are no damaged cables, contacts or other devices. Check that all cables are properly secured to the chassis and with cable holders. Check that there is no friction between cables and chassis, which can result in cable damage and short circuit.

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18 Mower deck



Warning!

The blades are sharp. Always wear gloves when working with the blades to avoid injury.

Check if there are collision damages or wear at the deck body and painting. Align, repair and touch up the painting as required.

Check the tightening of the bearing boxes screws and tighten.

Rotate the blades and check the the shafts are correct, not bent, no abnormal bearing noise and no plays.

Check the belts and their tensions, see section 4.

Check that the lifting mechanism moves evenly, not jammed and no play and that it locks in desired position.

Check the electrical function of the electrical mower lifter (if applicable).

Check the plastic guide bar between the blades. Replace if required.

19 Blades



Warning!

The blades are sharp. Always wear gloves when working with the blades to avoid injury.

Check that the blades are sharp. Replace if necessary.

20 Power take-off (PTO)

Check that the magnetic clutch (if applicable) engage the work equipment rotation in the desired time and that it not slips during normal load. Replace the clutch if necessary.

Check that the power take-off belt (if applicable) engage the work equipment rotation in the desired time and that it not slips during normal load. Adjust if necessary. See section 5.

Check that the power take-off brake (if applicable) brakes the rotation movement in the desired time. Adjust if necessary. See section 5.

21 Control check

Check that all controls function properly, that there are no jammings or excessive plays. Adjust if nesaccary. See section 6.

22 Valve play

See the engine manual regarding procedure and interval.

23 Test driving

Drive the machine during a few minutes and make the following attentions in different speeds and turnings in right and left. Check that all functions work evenly and proper and without any abnormal noise.

- Brake function
- Clutch function
- Power take-off
- Steering

Check that there are no abnormal vibrations.



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1.6 Technical specifications

1.6.1 General tightening torque

Unless otherwise stated, the following tightening torque are applicable for screws and nuts on the machine:

Tightening torques

Thread	Torque
M5	5 Nm
M6	9 Nm
M8	22 Nm
M10	45 Nm

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2 Chassis and body

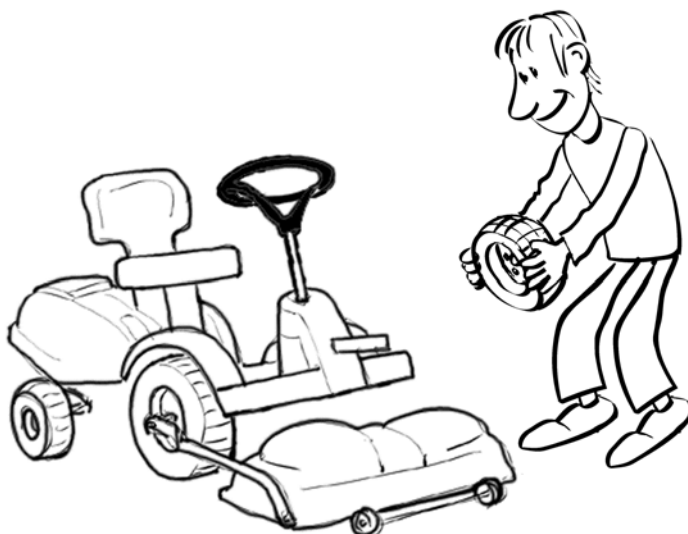
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General

To facilitate the driving, handling of work equipment and to make it comfortable for the driver, the machines are equipped with a various number of aid equipments. These equipments are mainly the same for all the machines covered by this manual, but in some cases configured in different ways. Where divergences occur between the machines, particular instructions are given for each particular equipment.

This chapter gives a brief description of the equipments and describes their repair and replacements.



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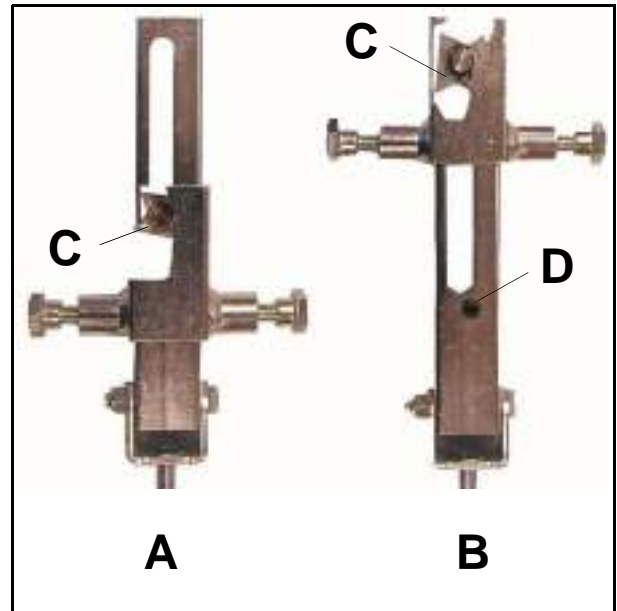
2.1 Lifting mechanism, manual

2.1.1 Description

The work equipment lifting arm is automatic locked in elevated position by pressing down the lifting pedal. Next time the pedal is pressed, the mechanism will release and the arm drops down.

The locking function is created in the lifting lock. The principle is described below and shown in the figure.

- A. Locked in lifted position by the ratchet (C).
- B. Unlocked. Ratchet (C) is released.
- C. Ratchet which is tilted by the pin (D) every time the pedal is pressed down.



2.1.2 Dismantling

To dismantle the lifting lock it is normally necessary to dismantle the steering console. Nevertheless, it is possible for a skilful person to dismantle the lifting lock without releasing the steering console.

The dismantling is performed as follows:

1. Dismantle the steering wheel by tapping out the pin.

If applicable, observe the spacers and the location when disassembly the steering wheel.

See section 1.

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2. Remove the screws for the top cover.

If applicable, remove also the following:

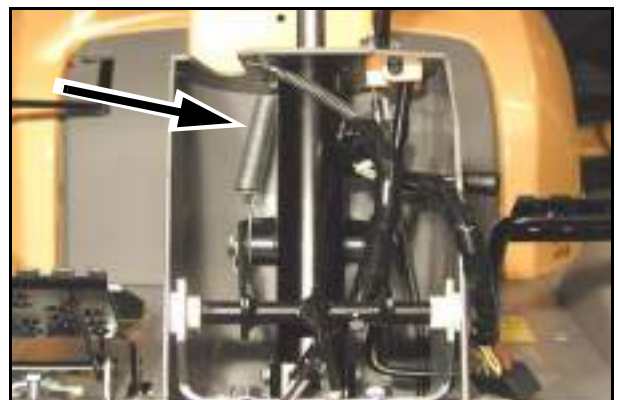
- The bullet from the throttle handle by twisting and pulling it simultaneously.
- The ignition switch nut. To avoid damage at the plastic cover, use a 22 mm ring wrench.
- The cutting height switch by pressing its locking tabs at the underside.



3. Dismantle the front cover by unscrewing the two screws at the under side.



4. Unhook the return spring.

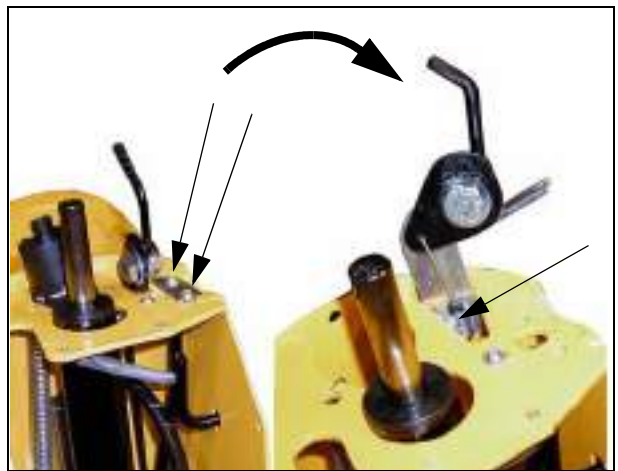


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5. Dismantle the lifting pedal located on the lifting arm.



6. Loosen the throttle control as follows:
1. Loosen the lever.
2. Observe where the wire conductor is fitted to reassemble in the same position.



7. Remove the screws that hold the steering console at the floor plate, and lift off the steering console.



8. Remove the screws that hold the lifting fork at the lifting lock.



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9. Remove the nut that holds the lifting lock on the underside of the floor plate, and remove the lifting lock.



10. Carefully dismantle the left bearing in the support with a screwdriver.



11. Remove the lifting fork from the support.



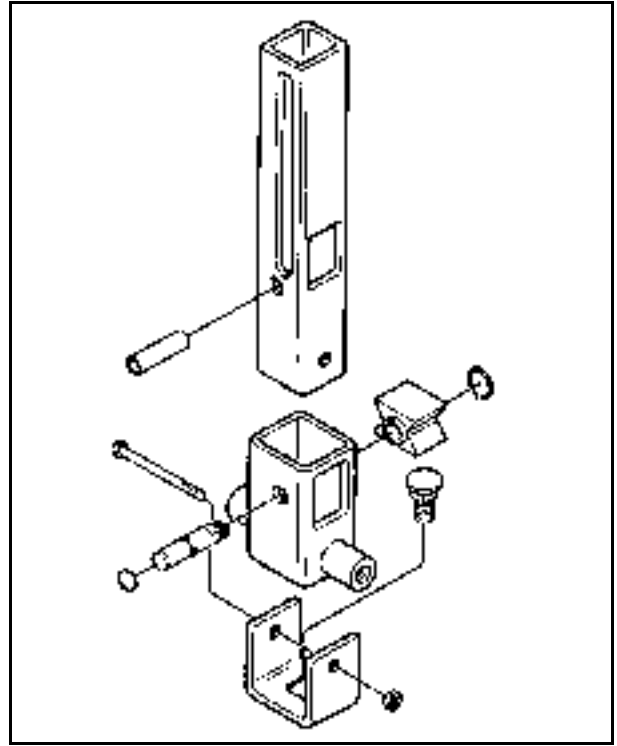
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2.1.3 Repair of lifting lock

The lifting lock can be purchased as a complete spare part.

The parts can be lubricated with a thin lubricant, e.g. silicon spray, 5-56, WD40, or the like, if the lock jams.

- ! **Note!**
Viscous lubricant such as consistent grease must not be used.

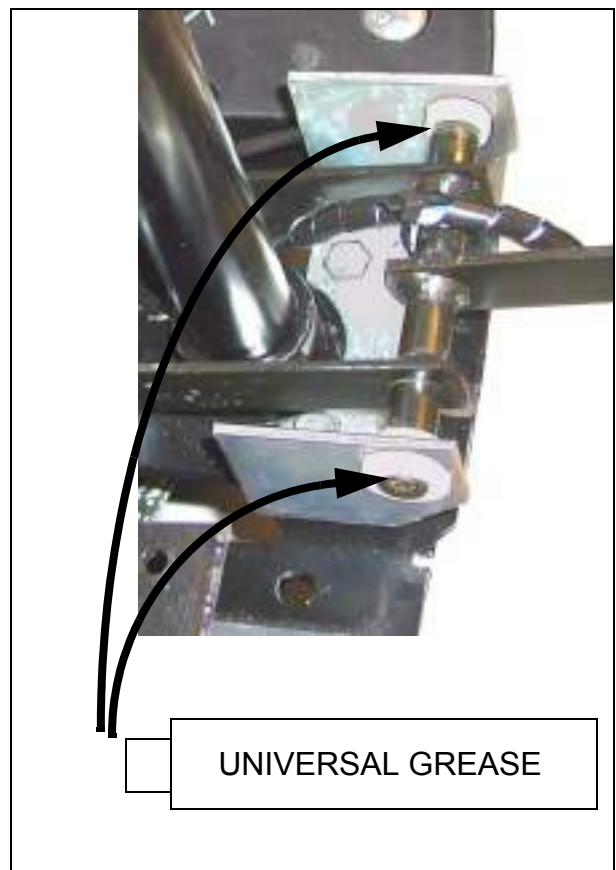


2.1.4 Assembly

Assemble in reverse order.
Check that the accessory lifter functions as intended by repeatedly lifting and lowering it.

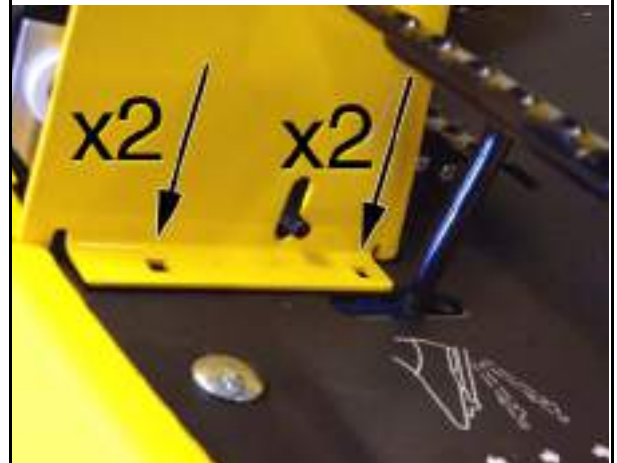
- ! **Note!**
Pay attention to the following notes during the assembly:

- A. Apply a thin layer of universal grease to the plastic bushings at the lifter arm.
- B. It does not matter how the lifting lock is fitted since it is symmetrical.



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- C. When fitting the throttle control, install the wire conduit as observed at the dismantling.
- D. Fit the top cover before the consol screws are tightened.
The consol is aligned against the top cover.
- E. If applicable, observe the spacers and the location when reassembly the steering wheel.
See section 1.



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2.2 Lubrication chassis

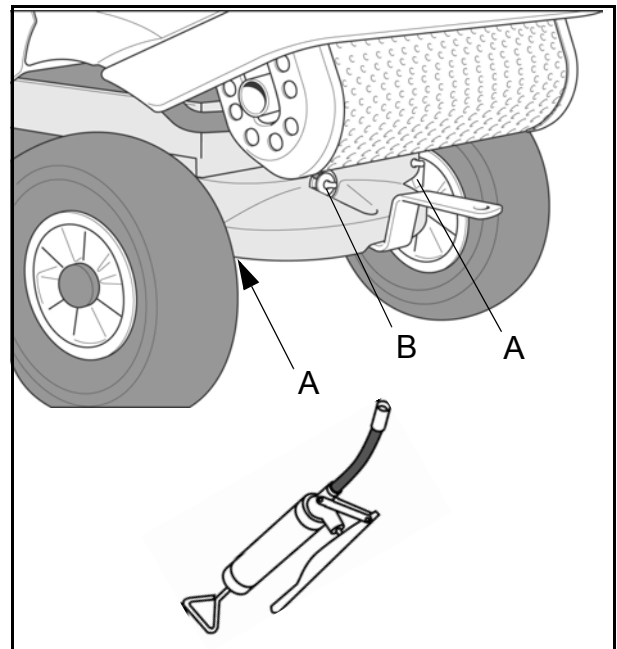
All moving parts shall be lubricated once per season, although at least every 50 operating hours.

- ! Note!
Lubrication is equally important for a machine that is only used for a few hours per year.
- ! Note!
The lubricant provides not only protection from wear but also from rust.
- ! Note!
The machine should always be lubricated before prolonged storage.

2.2.1 Steering pivot pins and beam pivot

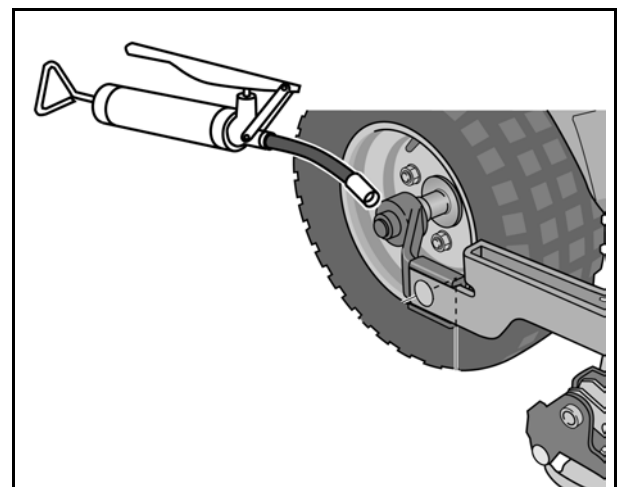
Use a grease gun, filled with universal grease and lubricate the steering pivot pins (A) and the beam pivot (B). Lubricate until grease emerges.

- ! Note!
To lubricate the beam pivot (B) it might be necessary to dismount the towing hitch.



2.2.2 Implement mountings

Lubricate the lubricating cup for the mountings using a grease gun until grease penetrates along side the shaft.



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2.2.3 Control wires

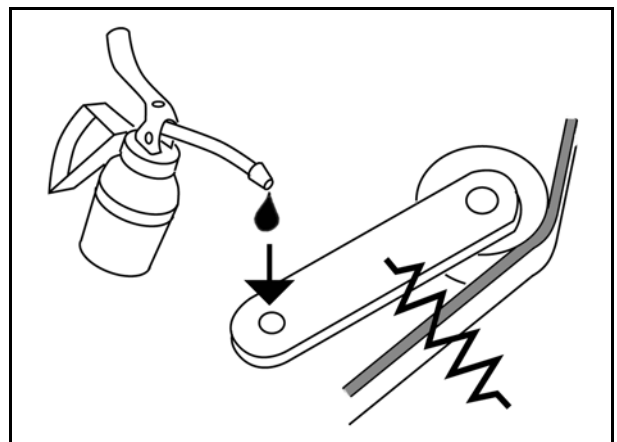
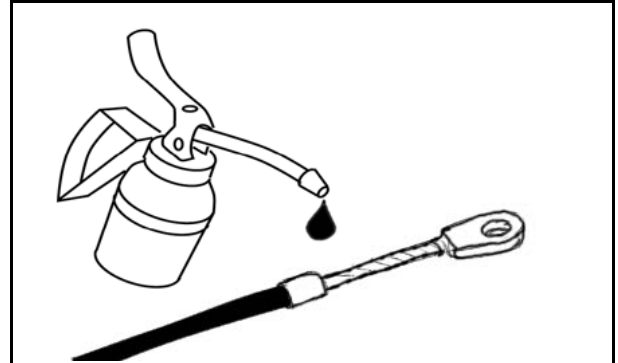
Drop a little universal oil or lubricating spray in the ends of the control wires two or three times a year.

This procedure must be carried out by two persons. One lubricates and one activates the lever



Note!

Wires on machines used in freezing conditions should not be lubricated with engine oil since this can lead to the control cables seizing in the cold. The wires on such machines should be lubricated with a fluent, strongly penetrating lubricant, e.g. 5-56 or WD40.



2.2.4 Tensioning arms

Lubricate the bearing points with an oil can when each control is activated. Ideally carried out by two persons.

2.2.5 Steering chain

The steering chain must be lubricated with chain spray two or three times per season. If the chains are heavily fouled: dismantle the chains and wash them. Refit and lubricate them.

2.2.6 Bearings

Plastic bearings, e.g. the brake pedal bearing, hydrogear pedal bearing and steering-column bearing, must be lubricated with grease or lubricating spray at least once per year.

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3 Steering

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3.1.2 Dismantling.....2	bearings..... 6
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General

The Villa and Ready machines are equipped with a mechanical steering system, working with wires or chains, depending on the model.

This chapter contains a brief description of the function and describes repair, replacements and adjustments of stressed parts of the steering system.

This chapter is valid for the actual machines where the actual system occur.



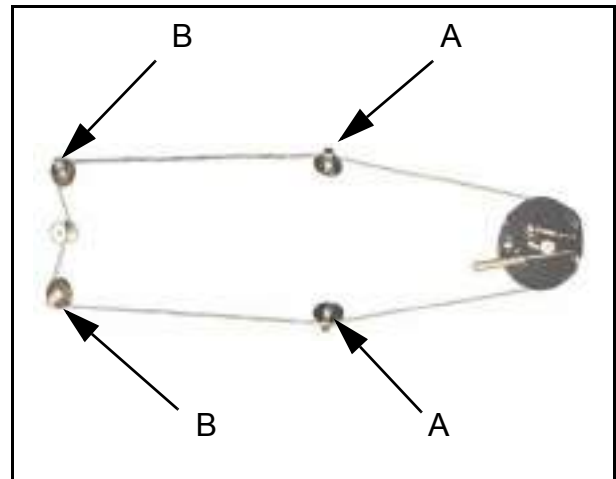
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3.1 Steering wire/chain

3.1.1 Description

There are two configurations regarding to transmit the steering power from the steering wheel to the rear wheels:

- **Wire**; One single wire with a defined location at the drive pulley.
- **Chain/wire**; Two wires, left and right, fitted to a chain which is connected to the steering pulley.



3.1.2 Dismantling

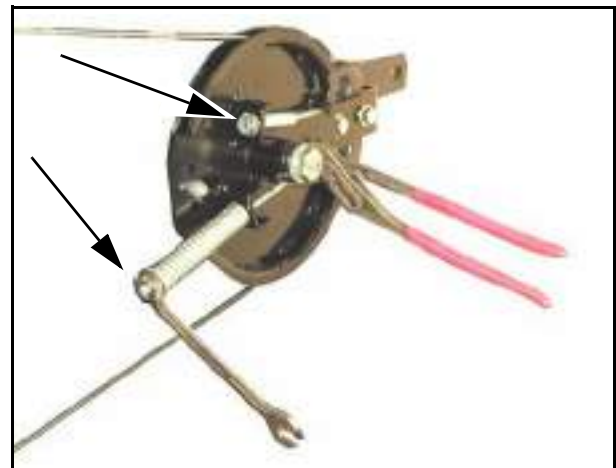
1. Wire:

Remove the four steering pulleys (A and B). Use a 15 mm and a 17 mm wrench.

Chain/Wire:

Remove the two steering pulleys (A). Use a 15 mm and a 17 mm wrench.

2. Remove the nut and screw, holding the wire ends (C). Use a 13 mm wrench and a pliers to hold the wire ends.



3. Remove the wire from the machine.

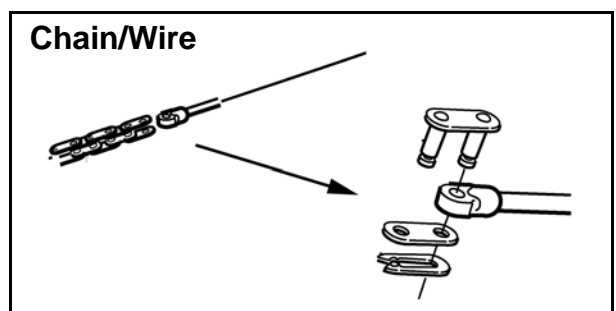
Wire:

Pull out the wire rivet from the steering pulley and release the wire.



Chain/Wire:

Open the chain locks and release the wires from the chain.



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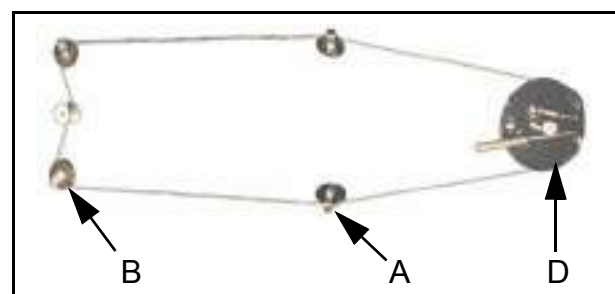
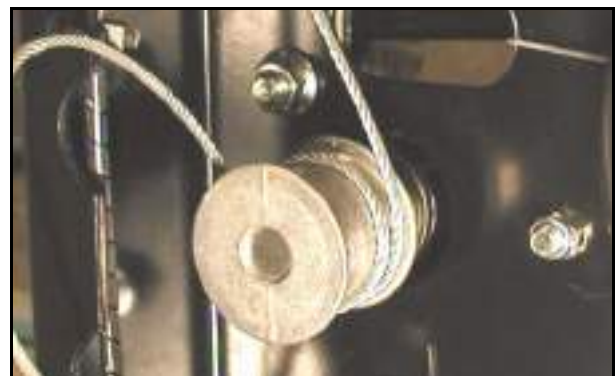
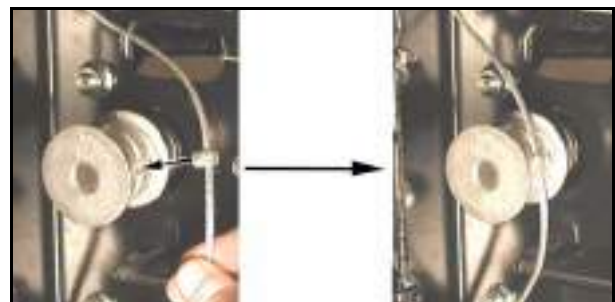
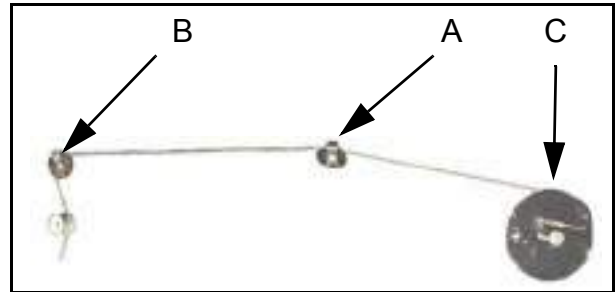
3.1.3 Assembly

One single wire

- Assemble the left wire part into the two left steering pulleys (A and B). Fit the pulleys into their respective place.
See "3.1.4 Steering pulleys".
- Locate the wire in the recess (C) in the steering disc and fasten with the screw. Use a 13 mm wrench and a pliers to hold the wire ends.
- Turn the steering wheel until the wire rivet hole is facing backwards and push in the rivet.
- Turn carefully the steering wheel 1,5 turn to the left and simultaneously check that the wire winds up correctly upwards on the drive pulley.
Keep the left wire part stretched by blocking or holding the rear wheels.
- Assemble the right wire part into the two right steering pulleys (A and B). Fit the pulleys into their respective place.
See "3.1.4 Steering pulleys".
- Turn the wire 1,5 turns to the right on the drive pulley. Keep the wire stretched.
- Keep the wire stretched and locate the wire in the recess (D) in the steering disc and fasten with the parts below. Use a 13 mm wrench and a pliers to hold the wire ends.
 - Spring
 - Washer
 - M8 self locking nut

Adjust the wire.

See "3.1.5 Adjusting the steering wire".

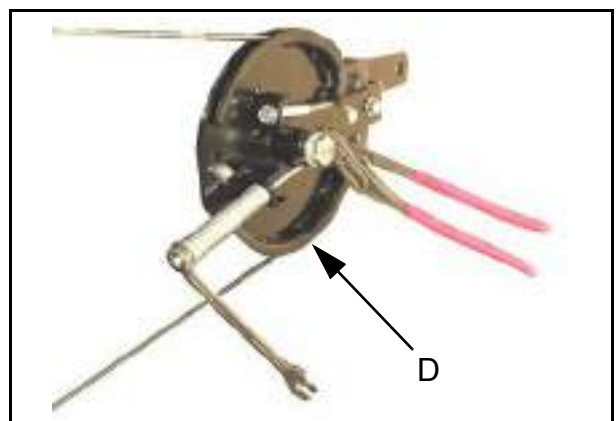
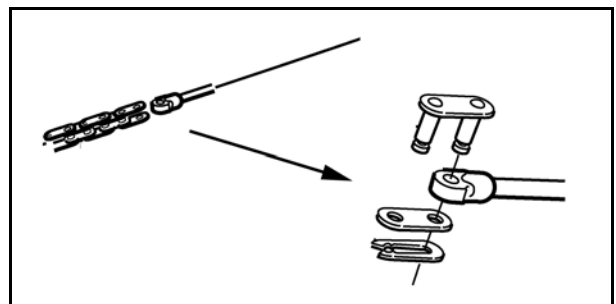
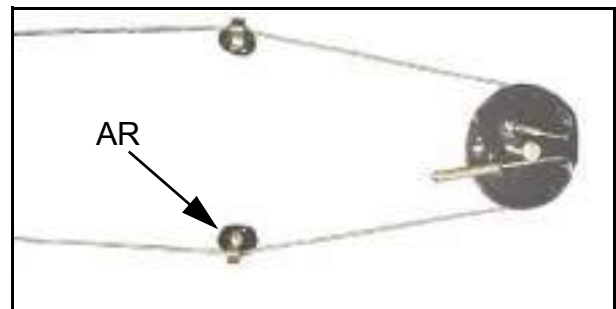
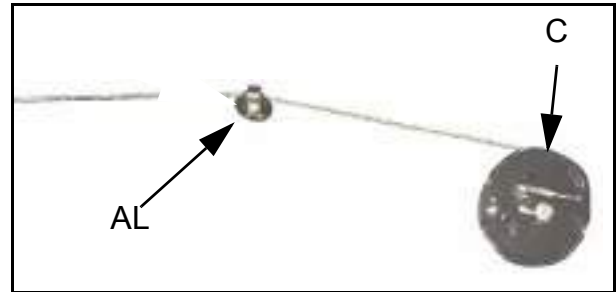


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Chain/Wire

1. Assemble the left wire part into the left steering pulley (AL). Fit the pulley into place. See “3.1.4 Steering pulleys”.
2. Locate the wire in the recess (C) in the steering disc and fasten with the screw. Use a 13 mm wrench and a pliers to hold the wire end.
3. Assemble the right wire part into the right steering pulley (AR). Fit the pulley into place. See “3.1.4 Steering pulleys”.
4. Connect the wires to the chain with the chain locks.
5. Stretched up the wire and locate it in the recess (D) in the steering disc and fasten with the parts below. Use a 13 mm wrench and a pliers to hold the wire ends.
 - Spring
 - Washer
 - M8 self locking nut

Adjust the wire.
See “3.1.5 Adjusting the steering wire”.

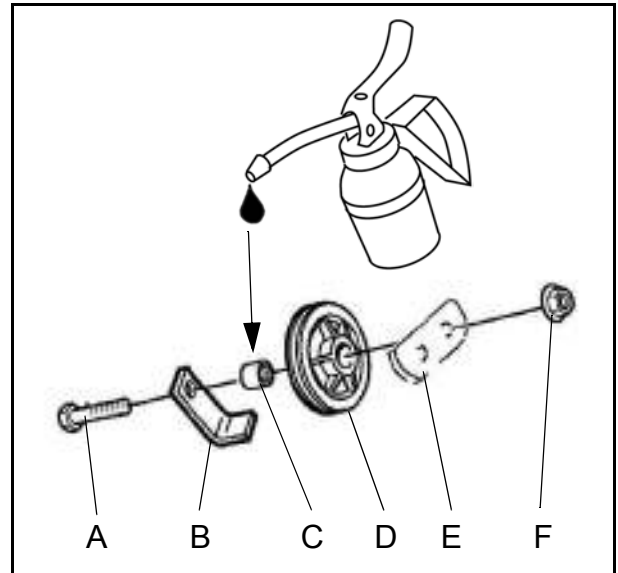


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3.1.4 Steering pulleys

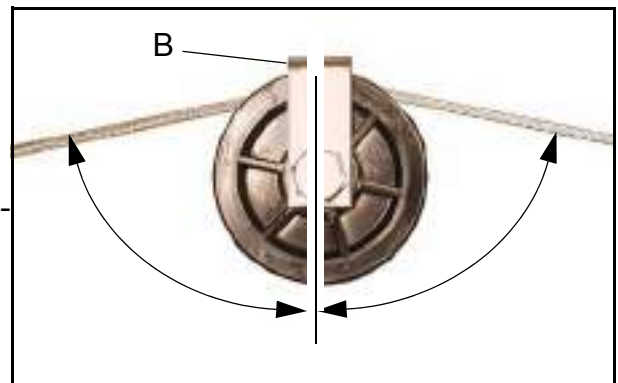
Every single steering pulley consists of the following parts:

- A. Screw
- B. Cable holder
- C. Bushing
- D. Steering pulley
- E. Part of the frame
- F. Nut



Assembly instructions:

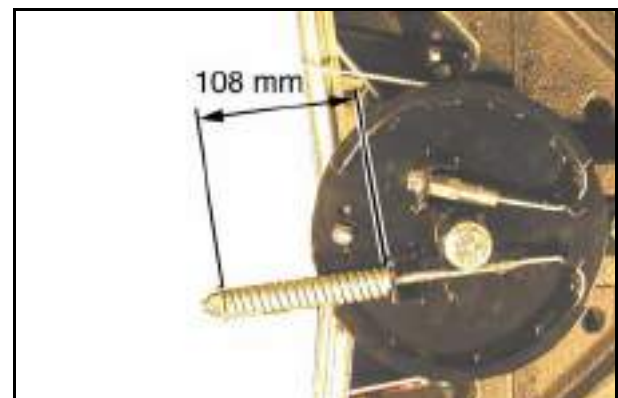
- Check the wear, specially of the steering pulley, and replace defective parts.
- Apply a thin layer of machine oil to the bushing (C).
- The cable holder (B) shall be centered according to the wire, i.e. the angles in the figure shall be equal.



3.1.5 Adjusting the steering wire

Screw the nut and compress the spring until its length is 108 mm. Hold the wire with a pliers.

Turn the wheels fully out in both directions. Check that there is no abnormal noise or abnormal resistance.



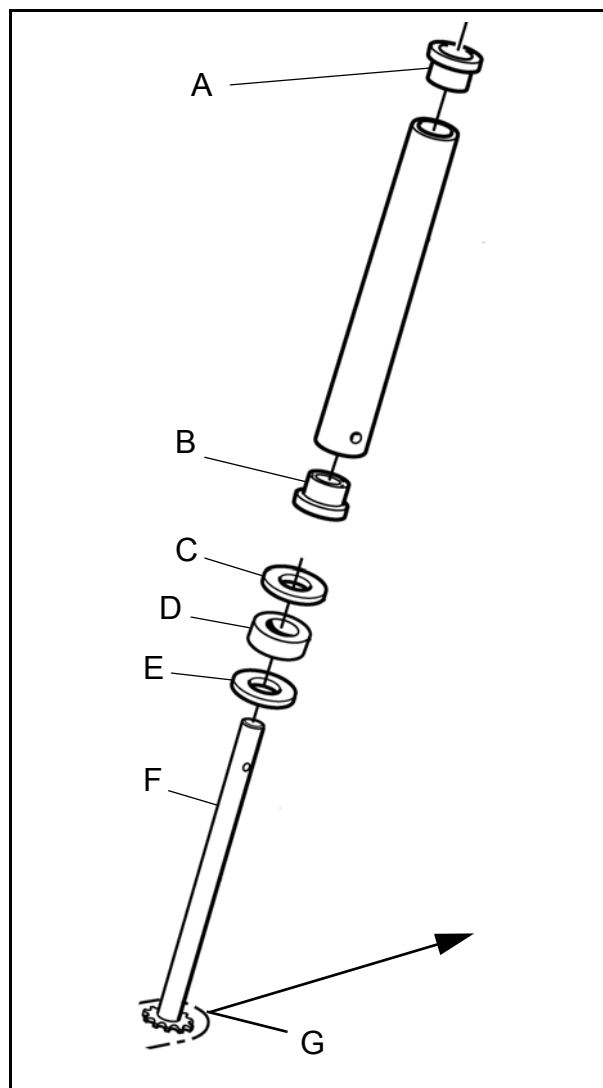
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3.2 Bearings, steering shaft

The steering shaft bearings consist of two sliding bearings of the composite type (A and B).

3.2.1 Replacement of sliding bearings

1. Remove the steering wire or wires. See "3.1.2 Dismantling".
2. Remove the steering wheel. See section 1.
3. If the machine is equipped with chain and wire, release the chain from the sprocket.
4. Pull out the steering rod (F) downwards. Don't remove the washers and spacer (C, D and E).
5. Replace the two bearings (A and B).
6. Assemble the steering rod (F) with its washers and spacer (C, D and E).
7. Assemble the steering wheel. See section 1.
8. Instructions for the chain, if applicable:
 - A. Apply a mark with a marking pencil at the middle link of the chain (ev. there already is a mark).
 - B. Turn the steering wheel to straight forward position, i.e. the logo shall be correct readable from the operators position.
 - C. Connect the chain to the sprocket with the mark (G) backwards.
9. Assemble the steering wire or wires. See "3.1.3 Assembly".



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4 Hydraulic system

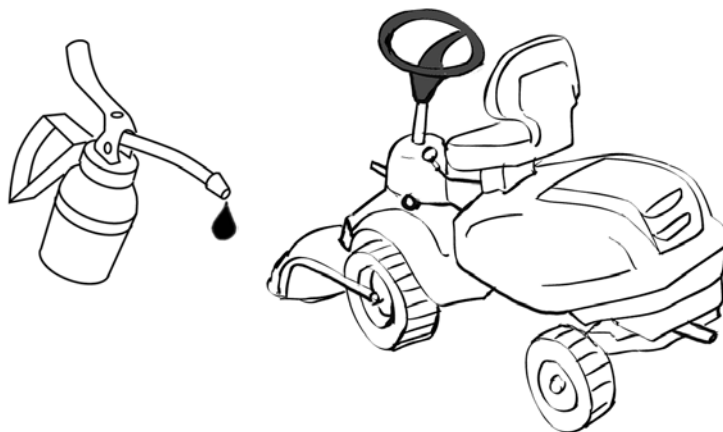
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General

The engine power in Villa and Ready machines are transferred by a 5 gear gearbox alternatively a stepless hydrostatic transmission (HST) to the front wheels. The steering is performed by the rear wheels.

This chapter contains a brief description of the hydrostatic transmission and the oil filling procedure. Other measures are not applicable.



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