

OPERATION AND MAINTENANCE
Serie JOKER
06381198 Edition 02 (English)

MANUFACTURER



Technology as a passion.

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MODELS AND VERSIONS



JOKER 8 DS
JOKER 10 DS
JOKER 12 S

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GENERAL INFORMATION



ORIGINAL INSTRUCTIONS

INTRODUCTION

This manual contains a description of how the machine operates and instructions about how to correctly use the machine and perform the main routine and supplementary servicing operations.

This manual is divided into chapters for practical consultation.

This manual must always be consigned together with the machine if this is transferred or sold. If the manual is damaged or lost, order a new copy from the manufacturer or from the previous owner. This manual is an integral part of the machine

The confidence you have shown in our company by choosing equipment carrying our trademark will be amply repaid by the excellent service it will give you over the years.

Correct use and normal routine maintenance will generously rewarded in performance, output and savings.



HOW TO READ THE MANUAL



Certain sections of this manual containing information of particular importance in relation to safety or operation, are highlighted in the following way:



DANGER

Failure to comply with the instructions could lead to serious danger and serious personal injuries or harm to third parties.



WARNING

Failure to comply with the instructions could cause personal injuries or harm third parties.



IMPORTANT

The information is given with the intention of preventing damage to the machine or causing damage.

This manual is your operation and maintenance guide.

You are advised to strictly comply with the instructions herein and to consider the manual as an integral part of the product: it must be kept near the machine and consigned to all future users.

The illustrations, descriptions and specifications in this manual are not binding.

Our Company reserves the right to make any modifications dictated by technical or commercial requirements at any moment considered necessary.

Consult the specific manuals for safe operation and maintenance instructions about those parts of the machine manufactured by third parties.



All indications as to the "front", "rear", "right" and "left" parts of the machine refer to the operator on the machine.

A series of symbols have been made to make the texts easier to understand. Their meanings are described below:



Warning



Environment



Recycling



Legislation



Information



Instructions



Check



Clean with compressed



Adjustment



Lubrication



Greasing



Fluid changes

Manual update

The information, descriptions and illustrations in this manual reflect the state-of-the-art at the time the machine was marketed.

The manufacturer reserves the right to make any modifications dictated by technical or commercial requirements at any time.

Such modifications do not oblige the manufacturer to modify the vehicles marketed up to that time nor to consider this publication to be inadequate.

Any integrations the manufacturer may provide must be kept together with the manual and will be considered an integral part of this latter.

Copyright

The copyrights of this manual belong to the manufacturer of the machine. This manual contains texts, drawings and illustrations of a technical kind that can neither be wholly nor partly disclosed or transmitted to third parties without written authorization from the manufacturer of the machine.



Standard symbols

Standard symbols have been used to ensure the machine is used in the best way.

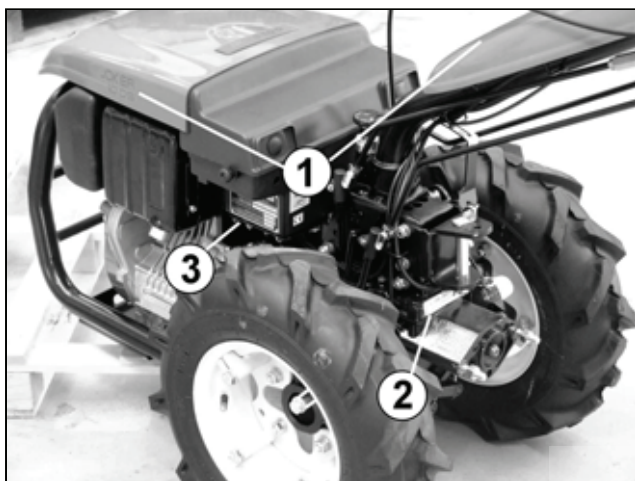
	Hydraulic circuit filter		Driving beam		Oil
	Dipped beam		Transmission		Field light
	Differential lock		Parking light		Power take-off
	Side lights.		Power take-off rotation		Hazard lights
	Clutch		Indicator light		Parking brake
	Turn indicator		Four-wheel drive		Trailer turn indicator
	Guard lowered		Horn.		Forward direction
	Battery charger		Low speeds		Safety belts
	Work hours		Normal speeds		Idle
	Fuel level		Fast speeds		Clockwise rotation
	Fuel filter		Idle		Counter-clockwise rotation
	Engine preheating		Direction reverser		Air ventilation
	Engine air filter		Rotational accelerator		Air heating
	Engine oil pressure		Linear accelerator		Air conditioning
	Engine oil filter		Power lift		Windscreen wiper
	Engine temperature		Power lift - Up		Windscreen wiper and window washer
	Air valve		Power lift - Down		Rear window wiper
	Hydraulic circuit		Power lift – Floating mode		Rear window wiper and window washer

MACHINE IDENTIFICATION

Model identification table

Model	Type of machine.
JOKER 8 DS	KR60
JOKER 10 DS	KRA0
JOKER 12 S	KR90 KR90F

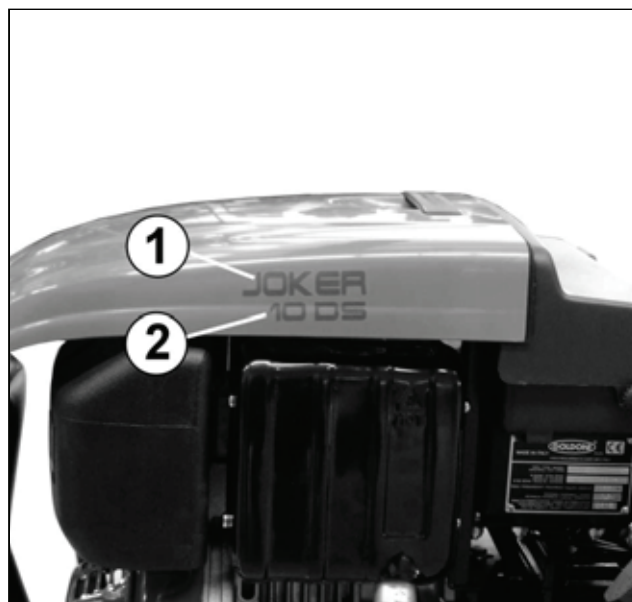
Identification criteria



The machine is identified in three different ways:

- ① With decals.
- ② Punch marks on chassis.
- ③ With a metal plate.

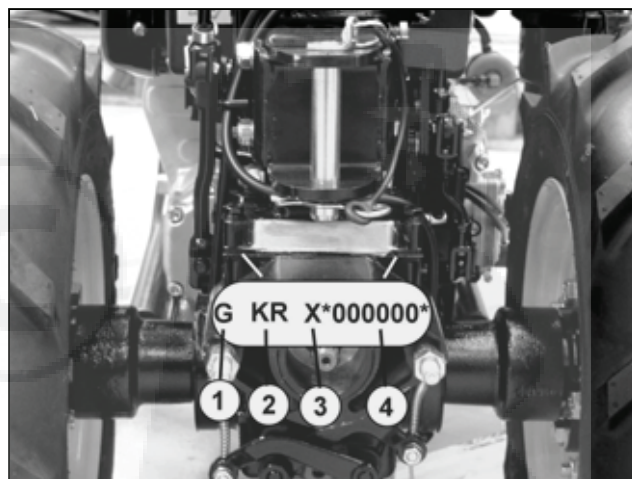
Decals



The decals affixed to the bonnet indicate:

- ① Series
- ② Model

Punch marks on chassis



- ① Manufacturer's code.
- ② Type of machine.
- ③ Production series.
- ④ Identification number (serial number).

Metal plate



The metal plate is placed on top of the tools box.



The metal plate gives the following information:

- ① CE marking
- ② Manufacturer's code.
- ③ Commercial denomination
- ④ Type of machine.
- ⑤ Production series.
- ⑥ Identification number (serial number).
- ⑦ Weight with std wheels and tiller
- ⑧ Power rating in kW according to SAE J 1349 Honda GX 340
- ⑧ Power rating in kW according to 80/1296/EC - ISO 1585
Lombardini 15LD 315 Lombardini 15LD 400
- ⑨ Year of production

To find the CE certificate of conformity of the machine you have purchased, find the "Machine Type" ④ on the metal data plate and compare it with the "Machine Type" value on the various different certificates provided.

DECLARATION OF CONFORMITY

Declaration of conformity are at the end of the manual.

IDENTIFICATION OF THE COMPONENTS

The machine consists of a series of main components which are each identified by a metal data plate and/or by punch marks.

Engine

Metal data plate and punched code number.



See engine's operation and maintenance manual.

AFTER SALES

Warranty

Engine: conditions and terms established by the manufacturer

Tractor: within the terms laid down by our Certificate of Warranty.

Assistance

Contact the AUTHORIZED sales network



The Assistance Service provides specialized personnel able to work on our products. It is the only Service authorized to work on products covered by the warranty.

Use of Genuine Spare Parts and compliance with the scheduled servicing operations according to the prescribed frequency will preserve the qualities of the machine over time and will entitle you to the WARRANTY that covers the product throughout the established period.

Spares



To order spares: Contact our Spares Assistance centres with the following information: **model, series and serial number of the machine**, punched on the data plate.

SAFETY

 **WARNING**
Correct use of the machine, strict compliance with the regulations described in this publication and with all the precautions able to avoid dangerous situations will prevent accidents or injuries, allow the machine to operate better and for much longer and will reduce the risk of faults to the minimum.

 **WARNING**
GOLDONI S.p.A. declines all objective and subjective liability for failure to apply and comply with the rules of conduct described in this manual

SAFETY REGULATIONS

 **DANGER**
There is no substitute for prudence to make your work safer and to prevent accidents.
The following recommendations are important for all users of our machines:

 **IMPORTANT**
Failure to follow the regulations relieves our firm from all liability.

 **DANGER**
Do not go downhill with the clutch disengaged or the gear shift in neutral.
Use the engine to brake the machine.

 **DANGER**
Check to make sure that all revolving parts on the machines (PTO, cardan couplings, pulleys etc.) are fully guarded.

 **DANGER**
Do not wear loose clothing, jewelry, neck chains or bracelets and take care if your hair is very long as it could become caught up in parts of the machine and implements.

 **DANGER**
Do not leave the engine running in an closed room: the exhaust fumes are poisonous.

 **DANGER**
Do not leave the machine with engine running near flammable substances.

 **DANGER**
After any maintenance work, grease and remove the grease from the engine to prevent the risk of a fire.

 **DANGER**
The machine must only be used by one operator.
Never use the machine to transport persons, animals or things.

 **WARNING**
Do not tamper with the machine or the implements in any way.

 **WARNING**
Before starting the engine make sure that the gear shift and the PTO are in neutral.

 **WARNING**
Engage the clutch gradually to prevent the machine from suddenly moving off or pitching up at the front.

 **WARNING**
Always stop the engine before proceeding with any maintenance, repairs or other operations on the machine or implements and if present the electrical start, remove the ignition key.

 **WARNING**
Always park the tractor so that its

stability is guaranteed by engaging a gear (1st gear uphill and reverse downhill). Use a chock for greater safety.

 **WARNING**
Before driving the machine, check to be sure that there are no bystanders or animals within its range of action.

 **WARNING**
Do not leave the machine unattended with the engine running and if present the electrical start, the ignition key on the dashboard

 **WARNING**
Whenever the PTO is in use, the drive shaft must be covered by the special guard.

 **WARNING**
The operator must check to make sure that all parts of the tractor, especially the safety devices, are in a good working condition and that they always conform to the purpose for which they were designed. They should be kept in a perfectly efficient condition. If you note any defects or faults, fix or repair them in good time. If necessary contact your nearest Assistance Centre.

 **IMPORTANT**
Follow the traffic code when driving on the roads.

 **IMPORTANT**
Check the nuts and bolts of the wheels and safety frame from time to time, always with the engine shut off.

 **IMPORTANT**
Do not use the differential lock near or in bends and avoid using it in fast gears or with engine running at a high rate.

 **DANGER**
Do not drink fuels / lubricants / fluids. If these substances accidentally splash

into the eyes, thoroughly rinse the affected part with plenty of water.

 **WARNING**
Lengthy or repeated contact of the skin with fuels / lubricants / fluids should be avoided as skin disorders or other damage could ensue.

SAFETY OPERATIONS

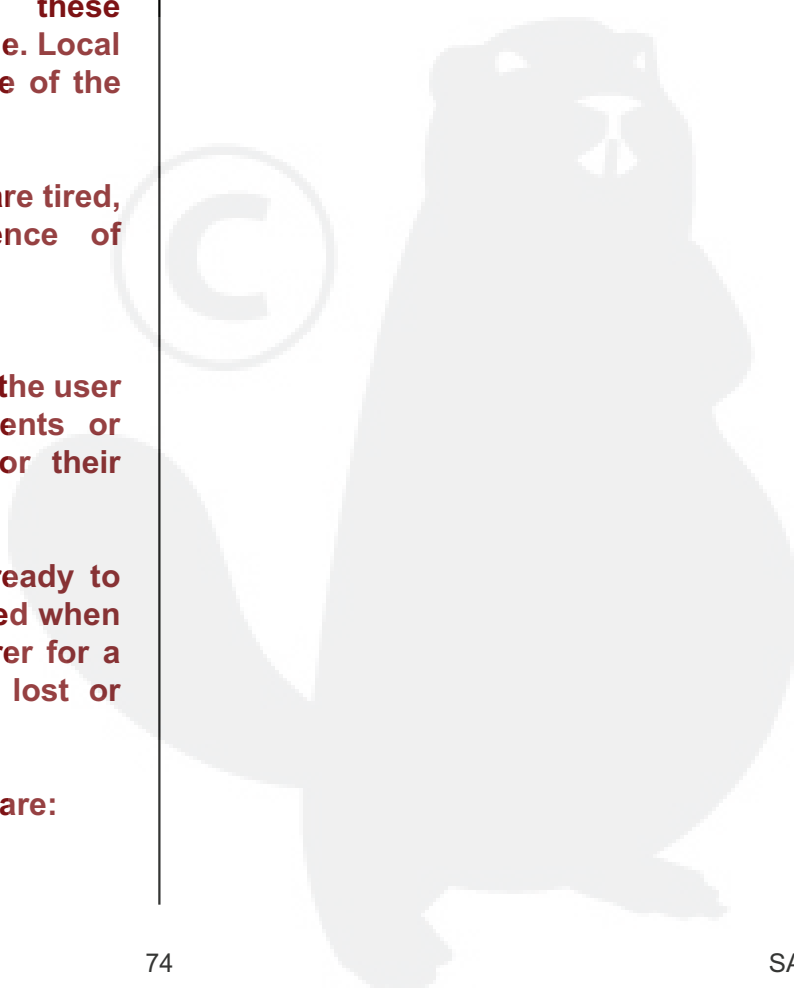
Training

- Read the instructions carefully. Become familiar with the controls and how to correctly use the machine.
- The machine must only be used by authorized and properly trained persons. Besides having read the instructions in this manual, the operator must have received sufficient training on how to use the machine correctly. The operator should consult the manufacturer if he has any doubts about how to use the machine or if he fails to understand any of the instructions in this manual.
- The machine is only suitable for use in the agricultural / forestal sectors. Use differing from that specified is considered improper.
- Never ever allow children or persons who are unfamiliar with these instructions to use the machine. Local regulations can restrict the age of the operator.
- Do not use the machine if you are tired, unwell or under the influence of medicines, alcohol or drugs.
- Remember that the operator or the user is responsible for any accidents or risks to which third parties or their property may be subjected.
- The manual must always be ready to hand, so that it can be consulted when necessary. Ask the manufacturer for a replacement if the manual is lost or damaged.

The main reasons for loss of control are:

- insufficient wheel grip;
- driving too fast;

- the type of machine is unsuitable for its task;
- lack of awareness of the effect of the ground conditions, especially slopes.



Preparation

- Check the machine with care before starting up each time
- The decals affixed to the machine provide important information: it is in the interests of your safety to comply with these indications.
- Make sure that the safety decals are in a good condition. If the decals are damaged or illegible, they must be replaced with other originals obtained from the manufacturer and affixed in the positions indicated in the operation and maintenance manual.
- Arbitrary modifications to this machine will relieve the manufacturer from all liability for resulting damage or injuries to the operators, to third parties and to things.
- The manufacturer cannot make provisions for every reasonably foreseeable improper use able to lead to a potential danger.
- Always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.
- Thoroughly inspect the area where the equipment is to be used.
- **WARNING-Fuel is highly flammable.**
- Store fuel in containers specifically designed for this purpose.
- Refuel outdoors only and do not smoke while refueling.
To avoid the risk of the machine catching fire, periodically check the fuel pipe and replace it if it appears to be damaged to an extent that could impair its tightness.
- Refuel before starting the engine. Never remove the plug of the fuel tank or add fuel while the engine is running or hot.
- If fuel is spilled, do not attempt to start

the engine but move the machine away from the place of spillage and avoid creating any source of ignition until fuel vapors have dissipated.

- Securely tighten the plugs on the tank and containers.
- Replace faulty silencers.
- Clean all foreign materials from the machine (dirt, tools, objects in general) that could impair the way it operates or injure the operator.

Operation

- Do not operate the engine in a confined space where dangerous monoxide fumes can collect.
- Operate only in daylight or in good artificial light.
- Before attempting to start the engine, disengage all the PTOs, shift the gear and reverse shuttle to the neutral position and DO NOT press the Gear Stop lever.
- Take the greatest care when changing direction or when pulling the machine towards yourself.
- Before beginning to use the machine, check to make sure that the safety systems function correctly. Do not begin work unless they function correctly.
- It is absolutely forbidden to remove or tamper with the safety devices. Modifications to the machine could lead to safety problems. In such cases, solely the user will be responsible for any deriving accidents.
- Whenever the handlebars are adjusted or turned, make sure that the safety components fully perform their functions.
- If you must cross a steep slope, consult section: Danger of tipping over.

Remember there is no such thing as a safe slope. Driving up and down grassy slopes requires particular care to avoid overturning:

- do not stop or start suddenly when driving on slopes;
- engage the clutch slowly. Always keep the gear engaged, especially when traveling downhill;
- maintain a low speed on slopes and

around tight turns;

- stay alert for humps and hollows and other hidden hazards;
- take the greatest care when working across the face of a slope.

Use care when pulling loads or using heavy equipment:

- limit loads to those you can safely control;
- do not turn sharply;
- take care when reversing;
- use counterweights or wheel ballast to increase the stability.
- Watch out for traffic when crossing or driving alongside roads.
- Do not allow anyone near the machine while it is operating.
- Never operate the machine with defective guards or without the protective safety devices in their correct positions.
- Do not change the engine governor settings or over-rev the engine. Operating the engine at an excessive speed can increase the hazard of personal injury.

Before leaving the operator's position:

- disengage the drive to any attachments and lower them;
- change into neutral;
- turn off the engine.

Disengage the drive to the implements, stop the engine, disconnect the spark plug wires and if the electrical start is present, remove the ignition key

- before clearing blockages;
- before checking, cleaning, or working on the machine;
- after striking a foreign object. Inspect the machine for damage and make repairs before restarting and operating the equipment;
- if the machine starts to vibrate abnormally (check immediately).

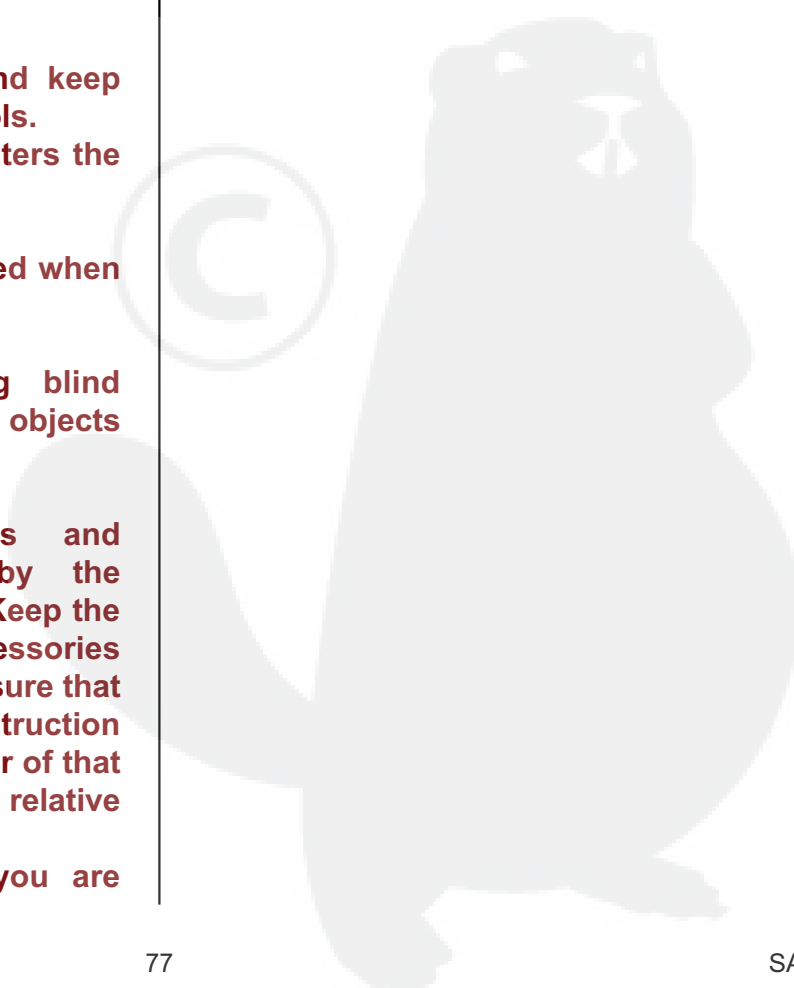
- Disengage the drive to the implements when transporting or not in use.

Switch off the engine and disengage drive to attachment:

- before refueling;
- before adjusting the implements.
- Reduce the speed of the engine before stopping it. Shut off the fuel supply once you have stopped working if the engine is equipped with a shut-off valve.
- Read, understand and follow all instructions in the manual and on the machine before starting.
- Inspect the machine before each job. Only use original spare parts to repair or replace damaged, very worn or missing components. Make the necessary adjustments before you start work.
- Make sure that all drives are in neutral before starting the engine.
- Start the engine with care and keep your feet well away from the tools.
- Stop the machine if anyone enters the area in which you are working.
- Never leave machine unattended when it is running.
- Take care when approaching blind corners, shrubs, trees, or other objects that may impair visibility.
- Only use the accessories and implements recommended by the manufacturer of the machine. Keep the safety decals visible when accessories or implements are fitted. Make sure that you have fully read the Instruction Manual of that accessory and/or of that implement and comply with the relative safety instructions.
- Do not use the machine if you are

under the influence of medicines, alcohol or drugs.

- Walk, do not run with the machine.
- Do not wear headphones to listen to music or the radio. Safe service and operation requires your full attention. Do not wear radio or music headphones. Safe service and operation requires your full attention.



Maintenance and Storage

- Keep all nuts, bolts and screws perfectly tightened so as to be sure that the machinery operates in safe conditions.
- Never store the equipment with fuel in the tank inside a building where fumes could reach an open flame or spark.
- Allow the engine to cool before storing the machine in a closed place.
- To reduce the risk of fire, keep the engine, silencer, battery compartment and fuel storage area free of grass, leaves, or excessive grease.
- For safety reasons, replace worn or damaged parts.
- If the fuel tank has to be drained, this should be done outdoors.
- When machine is to be parked, stored or left unattended, lower the attachment unless a positive mechanical lock is used.

Putting back into service after storage

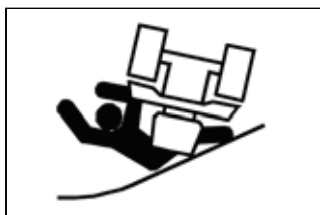
Comply with the following instructions before using the machine for the first time or after a long idle period:

- Make sure that the machine is not damaged in any way.
- Check the mechanical components, which must be in a good condition with no signs of rust.
- Carefully grease all mobile parts.
- Make sure that there are no oil leaks.
- Check the engine oil level.
- Check the transmission oil level.
- Make sure that all the protections are in their correct places.

Parking Safely

- Stop the machine on level ground, not on a slope. Fit a chock under the wheels if necessary.
- Disengage PTO and stop the attachments.
- Lower the implements to the ground.
- Turn off the engine and if the electrical start is present, remove the ignition key.
- Wait until the engine and all moving parts have stopped before you leave the operator's station.
- Close the fuel shut-off valve if the machine is equipped with this component.

Avoid Tipping



- Slopes are a major factor related to loss of control and tip-over accidents, which can result in severe injury or even death. All operations that take place on sloping ground require extra caution.
- Do not work on muddy or soft ground.
- Do not work on excessively steep slopes.
- Take the greatest care when working on slopes.
- Always make sure that you have a firm foothold on slopes.
- Always work the soil across slopes, never in the uphill or downhill directions.
- Watch out for holes, ruts, bumps, rocks or other hidden objects. Uneven terrain could cause the machine to overturn. Tall grass can hide obstacles.
- Take the utmost care on wet grass. Tires may lose their grip on slopes even though the brakes are functioning properly.
- Choose a low ground speed so you will not have to stop or shift gear on the slope.
- Always keep the gear engaged when going down slopes. Never coast downhill with the machine in neutral.
- Avoid starting, stopping or turning on slopes. If the tires lose their grip,

disengage the PTO and proceed slowly, straight down the slope.

- Keep all movement on slopes slow and gradual. To not make sudden changes in speed or direction as this could cause the machine to tip over.
- Take the greatest care when using the machine near ravines, ditches, embankments or bodies of water. The machine could suddenly tip over if a wheel goes over the edge or the edge caves in. Allow for a safety area between the machine and any hazard.
- The risk of tipping over increases to a considerable extent if the tires have been regulated with a narrow track width and the machine is driven at high speed.
- Comply with the manufacturer's recommendations for wheel weights or counterweights, which can increase stability when work is carried out on slopes or when front or rear-mounted implements are used. Remove the weights when they are not required.
- Slopes are a major factor related to loss of control and tip-over accidents, which can result in severe injury or even death. All operations that take place on sloping ground require extra caution.

Stay Clear of Rotating

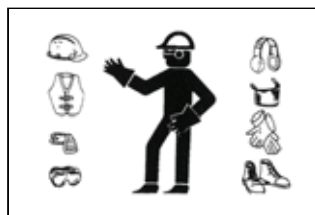


- Entanglement in rotating driveline can cause serious injury or death.
- Wear close fitting clothing.
- Stop the engine and make sure that the PTO driveline has stopped before going near the PTO shaft.

Checking Wheel Hardware

- A serious accident could occur causing serious injury unless the wheel hardware is securely tightened.
- Check the tightness of the wheel hardware often during the first 100 hours of operation.
- The wheel hardware must be tightened to the specified torque value using the correct procedure whenever it works loose.

Wear Appropriate Clothing



- Wear close fitting clothing and safety equipment appropriate for the job.
- The following equipment is required:
 - safety goggles or safety glasses with side shields
 - a hard hat when working with the machine
 - protective gloves (in neoprene for chemical products, in leather for heavy-duty work)
 - protective ear muffs or ear plugs
 - respirator or filtering mask
 - close fitting, waterproof clothing
 - reflecting garments
 - safety footwear

Practice Safe Maintenance

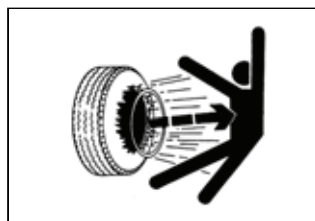


- The only authorized interventions are the ones described in the **MAINTENANCE** chapter. All other interventions must be carried out by the technicians of workshops authorized. Your dealer will be able to provide information about your nearest authorized servicing center.
- Routine servicing of the machine may only be carried out by qualified, trained adults. Become fully familiar with the procedure before performing servicing work.
- Do not operate the machine in a confined space where dangerous monoxide fumes can collect.
- Keep all nuts, bolts and screws perfectly tightened so as to be sure that the machinery operates in safe conditions.
- Never ever tamper with the safety devices. Check them regularly to make sure that they function properly.
- Prevent grass, leaves and other debris from building up on the machine. Clean up spilled oil or fuel and remove any fuel-soaked debris. Allow the machine to cool before storing.
- Never make adjustments or repairs with the engine running. Wait for all movement in the machine to stop before making adjustments, cleaning or repairing.
- Replace the safety instruction decals if damaged.
- Keep hands, feet, clothing, jewelry and long hair well away from moving parts and control levers to prevent them from getting caught.
- Securely support any machine components that must be raised for service work. Use stands or lock service latches to support the components when needed.
- Remove the spark plug wire (for gasoline engines) before making any repairs. If the electrical start is present, disconnect the battery, first disconnect the negative terminal and then the positive one. First install the positive terminal and then the negative one.
- Before servicing the machine or implement, carefully relieve the pressure from all components with stored energy, such as hydraulic components or springs.
- Keep all parts in a good condition and properly installed. Repair all damage immediately. Replace worn or broken parts.
- Charge the batteries in an open, well-ventilated area, well away from sparks. Unplug the battery charger before connecting or disconnecting it to or from the battery. Wear protective clothing and use insulated tools.

Prevent Fires

- Remove grass and debris from the engine compartment and silencer area before and after using the machine.
- Always shut off the fuel valve, if installed, when the machine is stored or transported.
- Do not park the machine near an open flame or source of ignition, such as a water heater or a boiler.
- Frequently check the fuel lines, the tank, plugs and fittings for cracks or leaks. Replace them if necessary.
- Never store the machine with fuel in the tank inside a building where fumes could reach an open flame or spark.
- Allow the engine to cool before storing the machine in a closed place.

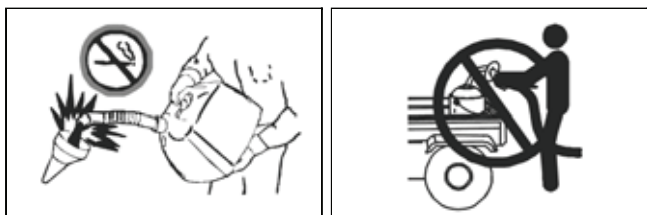
Tire Safety



Explosive separation of a parts of tire and rim can cause serious injury or death:

- Never attempt to mount a tire without the proper equipment and experience to perform the job.
- Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. Heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.
- When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand on one side and NOT in front of or over the tire assembly.
- Check tires for low pressure, cuts, blisters, damaged rims or missing lug bolts and nuts.

Handling Fuel Safely



To avoid personal injury or property damage, use extreme care in handling fuel. Fuel is extremely flammable and fuel vapors are explosive.

- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only approved non-metal, portable fuel containers. If using a funnel, make sure it is plastic and has no screen or filter.
- Never remove the fuel tank cap or add fuel with the engine running. Allow engine to cool before refueling.
- Never add fuel to or drain fuel from the machine indoors. Move machine outdoors and provide adequate ventilation.
- Clean up spilled fuel immediately. If fuel is spilled on clothing, change clothing immediately. If fuel is spilled near machine, do not attempt to start the engine but move the machine away from the area of spillage. Avoid creating any source of ignition until fuel vapors have dissipated.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light such as on a water heater or other appliance.
- Prevent fire and explosion caused by static electric discharge. Static electric discharge can ignite fuel vapors in an ungrounded fuel container.
- Never fill containers inside a vehicle or

on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before fueling.

- Remove fuel-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment with a portable container, rather than from a fuel dispenser nozzle.
- Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until the fueling is complete. Do not use a nozzle lock-open device.
- Never overfill fuel tank. Replace fuel tank cap and tighten securely.
- Replace all fuel container caps securely after use.
- For gasoline engines, do not use gas with methanol.

Methanol is harmful to your health and to the environment.

Handling Waste Product and Chemicals

Waste products, such as, used oil, fuel, coolant, brake fluid, and batteries, can harm the environment and people:

- Never ever use beverage containers for waste fluids: someone may drink from them.
- Contact your local Recycling Center or authorized dealer for information about how to recycle or dispose of waste products.
- Use oil must be collected and must not be dispersed in the environment since, in accordance with the current laws, it is classified as dangerous waste and as such, must be taken to an authorized collection center.

ECOLOGY



It is of fundamental importance to safeguard the environment. Incorrect waste disposal can alter the environment and the ecological system.



Do not discard fluids like fuels, lubricants, coolants or other, in the environment.



Do not use food or drink containers, which could lead to mistakes, to drain off fluids like fuels, lubricants, coolants or other.



Do not dispose of parts of the cooling system (such as radiators, fluids, tanks, etc.) in the environment.



Contact an authorized organization or ask your dealer for advice about how to recycle or dispose of waste products in the correct way.



ALWAYS place a vessel under the drain hole so as to collect the fluid when draining a tank or reservoir.

SAFETY DEVICES

The machine is equipped with the following safety devices.

- Device that prevents the last reverse speed from being engaged when the machine is used in the soil working or ploughing direction.
This device is necessary because this speed would exceed the limits allowed by the Machinery Directive 2006/42.
- Device that prevents the reverse speed from being engaged when the PTO is engaged.
- Gear Stop device that disengages the clutch if the operator accidentally abandons the handlebars.

SAFETY DECALS



DANGER

Safety decals have been affixed to various parts of the machine. They indicate potential dangers.



IMPORTANT

The decals must be kept clean and legible. If damaged, they must be replaced.



IMPORTANT

Some of the machine components can be equipped with the manufacturer's specific safety decals.

TECHNICAL SPECIFICATIONS

INFORMATION ON THE MACHINE

Intended uses

The two-wheeled tractor is a self-propeller agricultural machine with one axle, equipped with a rotating soil-working unit.

These machines are used for preparing the soil (breaking up the grassy turf, weeding, surface cultivation) in places that cannot be reached by tractors with larger implements. They are therefore used for small areas, between the rows in orchards, on the edge of ditched and in confined spaces (greenhouses).

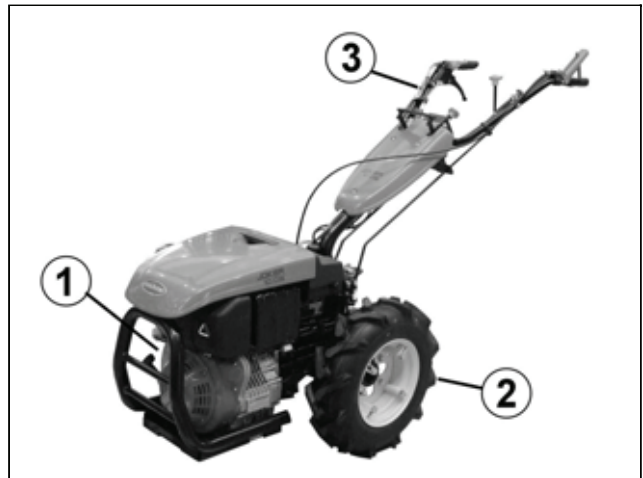
The machine consists of a bearing frame fitted with an internal combustion engine that drives the wheels, a PTO to which a cultivator with a horizontal shaft is generally connected, but which can also be connected to other tools (snow ploughs, mowing bars, etc.).

The machine is controlled by an operator on the ground, who steers it by means of a handlebar on which most of the controls are installed.



All uses of the machine differing from those described above are to be considered unauthorized and dangerous.

Description



- ① Engine
- ② Driving wheels
- ③ Handlebars

TECHNICAL SPECIFICATIONS

			JOKER 8 DS	JOKER 10 DS	JOKER 12 S
Engine	Type		Lombardini 15LD 315	Lombardini 15LD 400	Honda GX 340
			Diesel		Gasoline
	Rated power	Kw (hp) / rpm	5,0 (6,8) / 3600	7,3 (10) / 3600	7,1 (9,5) / 3600
	Cylinders	N	1		
	Engine starts.		Electrical Pull		Pull

		JOKER 8 DS	JOKER 10 DS	JOKER 12 S
Transmission	N° speed gears	4 FWD + 3 REV with reverse shuttle Soil working direction 4 FWD + 2 REV with reverse shuttle Mowing direction		
	Clutch	Dry plate with manual control by means of Gear Stop		
	Differential lock	Operated with a lever		
	Wheel release	Operated with a lever		
	Safety device	Engagement of last reverse gear inhibited		

		JOKER 8 DS	JOKER 10 DS	JOKER 12 S
Power take-off	Type	With 1 speed, independent of the machine's ground speed.		
	Safety device	Reverse gear inhibited with PTO engaged		

		JOKER 8 DS	JOKER 10 DS	JOKER 12 S
Driver's position	Handlebars	Assembled on elastic shock absorbers, adjustable in 9 height positions. Single column that swivels through 180°. Can be adjusted in 3 positions in the soil working direction and 2 positions in the mowing position.		
	Safety device	Gear Stop		
	Implement hitch end fitting	Fixed		

DIMENSIONS AND WEIGHTS

Table of Machine Dimensions and Weights

			JOKER 8 DS	JOKER 10 DS	JOKER 12 S
Max length	mm		1768		1822
Min - max width	mm	5.00x10" Adjustable disc	555 - 668		
Weight with std wheels	Kg		132	153	116

Engine

For the engine dimensions and weights:



See engine's operation and maintenance manual.

WHEELS

Tyres

 **WARNING**
The tyres must only be changed by competent persons in possession of the necessary equipment and technical know-how.

 **DANGER**
It is absolutely essential to avoid:

- Improper use.
- Overloads (even localized).
- Unsuitable pressure.
- Unsuitable rim and tyre couplings.

Tyre life and performance depends on use of the correct operating pressure: if the pressure is too low, the tyre will quickly wear out while an excessive pressure will reduce the lugging power and make the wheels more liable to slip.

A correct tyre pressure depends on various factors:

- The operating conditions.
- Machine load.
- Machine model.
- The tyre make.
- The tyre size.

You are therefore advised to consult your dealer or the tyre manufacturer.

The values given below are only approximate as they depend on the conditions described above:

Table of tyre inflation pressures

Tyre	Bar (MAX)	kPa (MAX)
5.00x10"	1,2	120
6.50/80x12"	1,2	120

SPEEDS

Speed Chart

In **km/h** - with engine at 3600 Rpm (the values are purely indicative).
The data are calculated with wheels: 5.00x10"

Soil working direction				
	First speed gear.	Second speed gear.	Third speed gear.	Fourth speed gear.
Forward	1.12	1.72	4.24	6.18
Reverse	0.79	1.21	2.99	/

Mowing direction				
	First speed gear.	Second speed gear.	Third speed gear.	Fourth speed gear.
Forward	0.79	1.21	2.99	4.35
Reverse	1.12	1.72	/	/

In **km/h** - with engine at 3600 Rpm (the values are purely indicative).
The data are calculated with wheels: 6.50/80x12"

Soil working direction				
	First speed gear.	Second speed gear.	Third speed gear.	Fourth speed gear.
Forward	1.33	2.05	5.05	7.36
Reverse	0.93	1.44	3.56	/

Mowing direction				
	First speed gear.	Second speed gear.	Third speed gear.	Fourth speed gear.
Forward	0.93	1.44	3.56	5.18
Reverse	1.33	2.05	/	/

NOISE AND VIBRATIONS

Refer to the certificates of conformity supplied with the machine for information about the noise levels.

Refer to the certificates of conformity supplied with the machine for information about the vibration levels.

Noise level information



The values of the noise produced by the two wheeled tractors described in the Operation and Maintenance Manual, are given in compliance with Directive 2006/42 concerning noise levels perceived by the driver of two wheeled tractors.



Since it is impossible for the manufacturer to foresee the normal working conditions in which the two wheeled tractors will be operated by the user, the noise levels have been defined in accordance with the methods and conditions described in Machine Directive 2006/42 concerning noise levels perceived by the driver of two wheeled tractors.

Recommendations for the user



IMPORTANT

Remember that the agricultural tractor may be employed in different ways, and may be connected to an infinite number of implements. In order to ensure that drivers are protected against risks deriving from exposure to noise, the entire tractor-implement group must be considered.



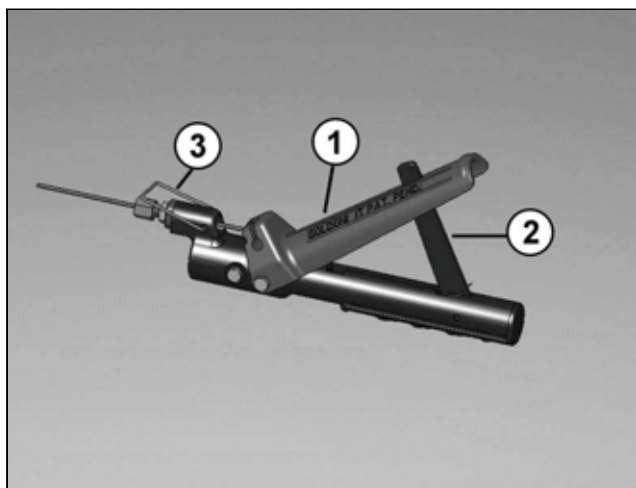
IMPORTANT

In view of the aforementioned noise levels and the consequent health risk, the user must take the appropriate precautions, as described in Machine Directive 2006/42 and implementing norm EN 709: 2010.

OPERATING INSTRUCTIONS

CONTROLS AND INSTRUMENTS

Gear Stop



The Gear Stop is a safety system that comprises two levers to be operated in sequence.

To move the lever ① need to unlock the safety lever ② first.

When in the released position with the lever raised, the clutch is disengaged, the two-wheeled is at a standstill and, if on, the engine will not switch off.

When in the work position with the lever lowered, the clutch is engaged, the two-wheeled enbloc with the gearbox and with the PTO if engaged.

Accidental release of the handlebars or the Gear Stop allows the clutch to can be disengaged and the two-wheeled tractor to consequently stop.



IMPORTANT

To use the two-wheeled tractor in stationary conditions (for pumps, circular saws, etc.) that require the PTO, move the gearshift lever to the neutral position, select the PTO lever and accelerate the engine to a medium rate.

Gradually depress the Gear Stop and connect the retainer latch ③



IMPORTANT

To tow trailers or the tanks of spraying equipment that require the engine to be

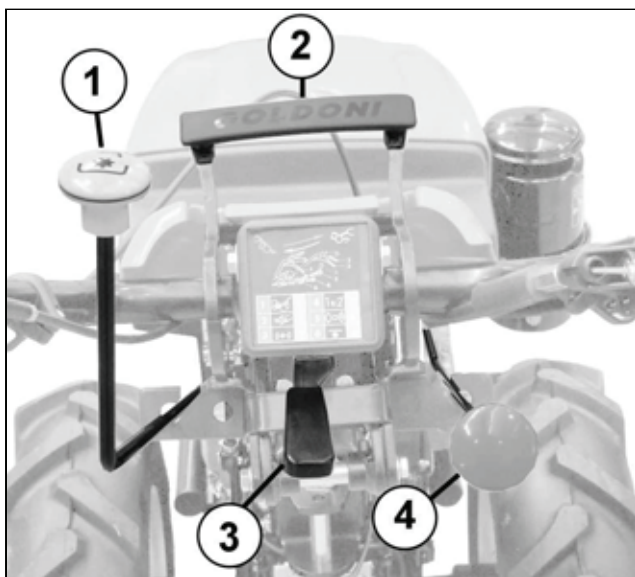
running but for which the machine must remain at a standstill for long periods of time, release the Gear Stop, move the gearshift and reverse shuttle to the neutral position then slowly depress the Gear Stop and lock it in the work position with the retainer latch ③



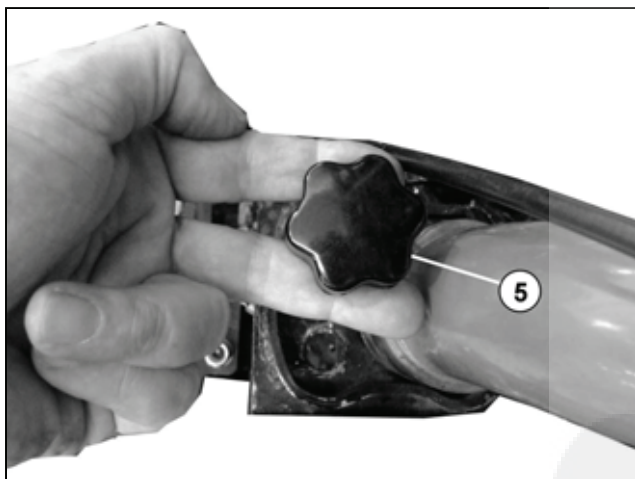
ATTENZIONE

The operation of the Gear Stop should always be carried out gradually to avoid too rapid maneuvers.

Handlebar controls



- ① PTO control rod
- ② Reverse shuttle lever: forward, neutral, reverse selection.
- ③ Vertical handlebar release lever
- ④ Speed selector rod



- ⑤ Handlebar rotation releasing knob

Left handlebar

JOKER 8 DS JOKER 10 DS



JOKER 12 S

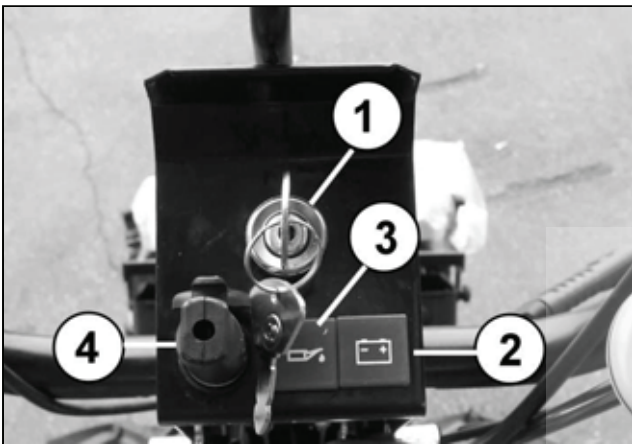


- ① Gear Stop lever
- ② Engine stop switch

Right handlebar



- ① Differential lock lever
- ② Hand throttle.
- ③ Wheel releasing lever



- ① Ignition switch
- ② Battery charge indicator - red.
- ③ Engine oil pressure indicator.
- ④ 1-pin socket 12V

Engine controls



See engine's operation and maintenance manual.

STARTING AND STOPPING THE ENGINE

Before starting the engine



To start the engine, it is advisable to shift the gears, the PTO and the reverse shuttle to the neutral position and leave the Gear Stop ① lever in the raised position so as to disengage the clutch. Move the red engine stop switch ② to the ON position.

How to start the engine



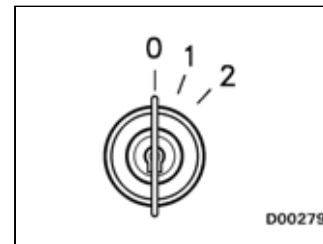
See engine's operation and maintenance manual.



IMPORTANT

Carefully follow the instructions to start the engine pulling strap

Ignition switch



- Insert the key and turn it as described below:

Forward 0
No circuit powered.

Forward 1
Insert the key and turn it clockwise to the first position (the electrical circuit will be powered).

Forward 2
Engine starts.

Each starting attempt should last for just a few seconds.

Do not make consecutive attempts to start the engine without having waited at least 20 sec. between one attempt and the next, otherwise the battery will quickly run down and the starter motor could be damaged.



WARNING

Do not keep operating the starter motor when the engine has already started.

Damage to the starter motor due to failure to comply with these instructions will not be covered by the warranty.

After the engine has started:

- Release the key. It will automatically return to the operating position

Engine stop switch



The motor stop switch is on the rh handlebar connected to the throttle lever. It is red in colour and can be turned to one ON position for starting the engine or to two OFF positions to turn off the engine.

How to stop the engine

JOKER 12 S



Before the engine is stopped, the Gear Stop lever (1) must be raised so as to disengage the clutch. Allow the engine to idle, move the gearshift lever to the idle position, remember to disengage the PTO if used then move the red engine stop switch (2) to any of the two OFF positions.

JOKER 8 DS JOKER 10 DS

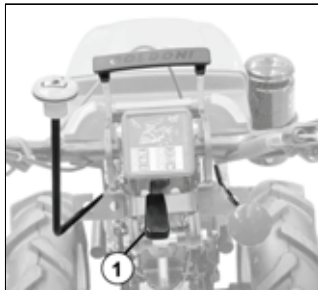


- Allow the engine to idle.
- Release the Gear Stop lever.
- Move the gearshift lever to the idle position.
- Remember to disengage the PTO if used.
- Turn the ignition key to position 0
- Pull the knob Engine stop switch

HOW TO START AND STOP THE MACHINE

Handlebars

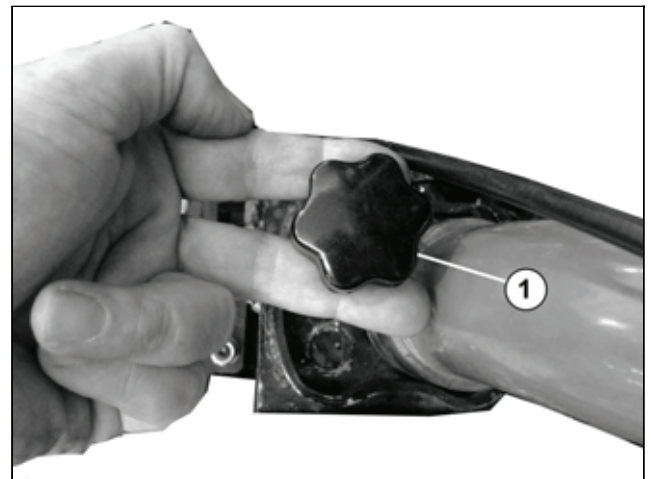
! IMPORTANT
To prevent accidents and dangerous situations, the machine settings and adjustments must only be made when the machine is off.
The adjustments must always be made in compliance with the instructions in this operation and maintenance manual.



The handlebars can be adjusted vertically, with the lever ①.

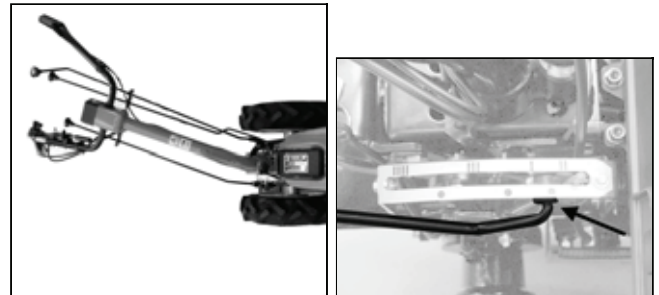


Vertical adjustment comprises 9 work positions.



The handlebar is horizontal adjustable pulling the knob ①.

Left handlebar



! IMPORTANT
In this position, the speed selector rod must be removed from its retainer block by taking out the split pin, then fitted back into the same block but from the opposite side, by turning it through 180°.

Right handlebar

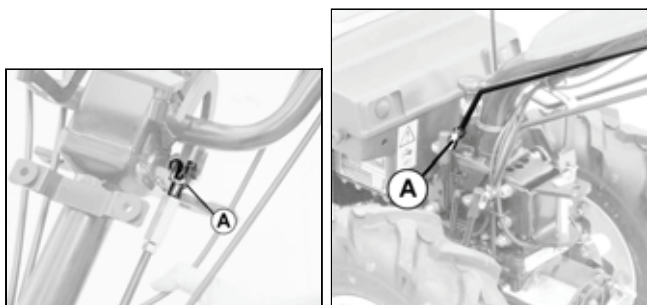


Horizontal rotation comprises 3 positions in the soil working condition and 2 positions in the mowing condition.

**IMPORTANT**

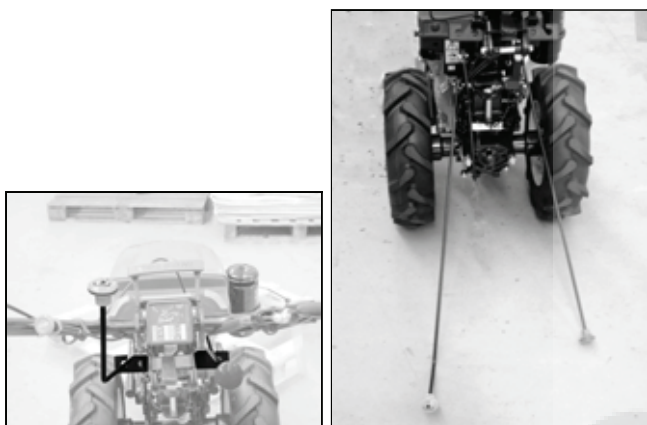
The handlebars turn through 180° in the clockwise direction after the split pins that hold the linkage **A** in place have been detached. They must be set back in place in the inverted position once the handlebars have been turned.

- Release and remove the cover.



A Reverse shuttle lever: forward, neutral, reverse selection.

- Release the two rods from their housings on the handlebars



- Reverse handlebars in the clockwise direction.



Fit the two rods back in their seats in the handlebars

Fit the reverser rod back in place and lock it with the split pins

Fit the cover back on the handlebars

**IMPORTANT**

When the handlebars are turned from the mowing position to the normal one (soil working direction), make sure that the safety systems, e.i. the pin that prevents the PTO from being engaged when the machine is reversing and the reverse gear from being engaged when the PTO is engaged, operate in the correct way.

Safety frame

The machine is equipped with a front guard to protect the engine from damage caused by impact.



Hand throttle



The throttle lever is located in the front right-hand side of the machine.
Increase or decrease the engine rate by gradually moving the lever.

How to start the machine



DANGER

The machine could respond in a dangerous way if the Gear Stop lever is depressed too sharply.



IMPORTANT

Before starting the machine, make sure you become familiar with its main controls: transmission, PTO, diff lock, how to stop the engine and the Gear Stop.



IMPORTANT

Lengthy clutch disengagements could wear out the thrust bearing.

- Allow the engine to idle.
- Release the Gear Stop lever.
- Select the transmission ratio (consult the Gearbox chapter).
- Gradually depress the Gear Stop lever to disengage the safety linkage in the device.
- Gradually accelerate the engine.

How to stop the machine

- Allow the engine to idle.
- Release the Gear Stop lever.
- Move the gearshift lever to the idle position.
- Remember to disengage the PTO if used.

TRANSMISSION

Gearbox

The machine consists of a transmission comprising a gearbox, PTO and reverse shuttle, each controlled by a lever.

The speed at which you drive the machine must be chosen to suit:

- The work required.
- The implement used.
- The type of ground.



Consult the **TECHNICAL SPECIFICATIONS**

Gearshift lever



① The lever can be moved in four positions (plus neutral):

- 2** Second speed gear.
- N** Neutral.
- 1** First speed gear.
- N** Neutral.
- 3** Third speed gear.
- N** Neutral.
- 4** Fourth speed gear.



Selection is not synchronized.
To shift gear:

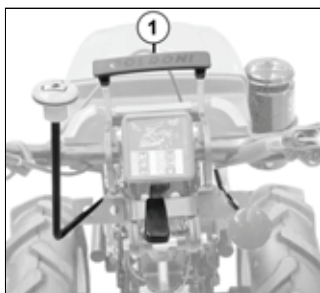
- Release the Gear Stop lever.
- Select the required range.
- Gradually depress the Gear Stop lever to disengage the safety linkage in the device.



WARNING

Engagement of the reverse gear and/or the consequent engagement of the forward speed gear must ALWAYS be performed with the engine idling and with the wheels of the machine at a standstill.

Reverse shuttle lever



① The lever has two positions (plus neutral):



Forward.



Neutral.



Reverse.

Selection is not synchronized.

Proceed as described to select the forward or reverse speed:

- Release the Gear Stop lever.
- Stop the machine.
- Select the forward or reverse speed.
- Gradually depress the Gear Stop lever to disengage the safety linkage in the device.

Differential lock



DANGER

When the differential lock is engaged, the tractor cannot be steered.



IMPORTANT

Do not use the differential lock near or in bends and avoid using it in fast gears or with engine running at a high rate.



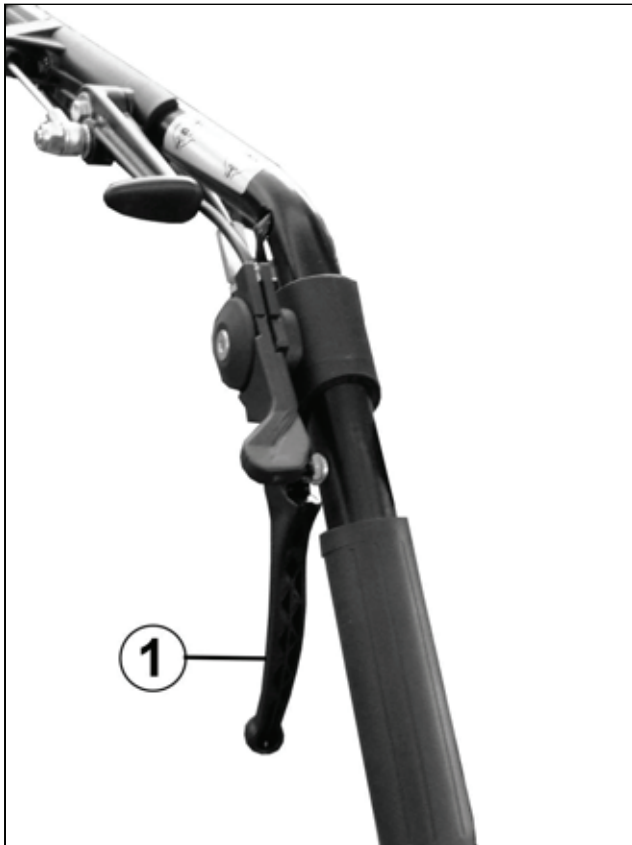
The tractor is equipped with a mechanical differential lock on both axles.

Use recommended for ploughing work or if one of the two driving wheels possesses insufficient grip owing to muddy, rugged or slippery ground.

The diff lock is mechanically controlled by means of the lever. It is unlocked by releasing the lever.

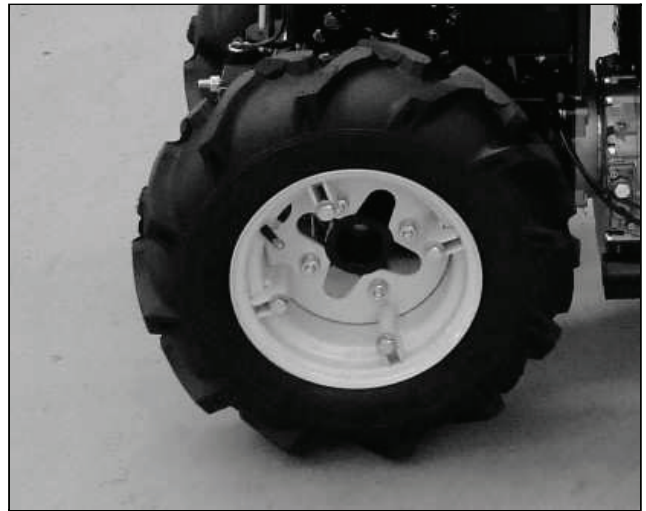
To get the most out of the device, engage the differential lock before the wheels begin to slip. Do not engage the lock while one wheel is already slipping.

Wheel release



The wheels can be released by means of the lever ① to allow the machine to be moved when the engine is off.

Track width adjustment



The wheel track can be changed by moving the wheel disc on his flange.

• Models with fitted wheel axle



The track width is adjusted by means of the screw ①

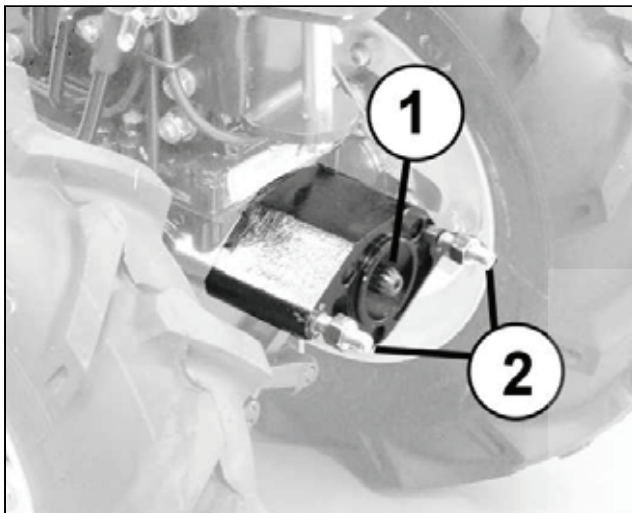
POWER TAKE-OFF

Rear power take-off (PTO)

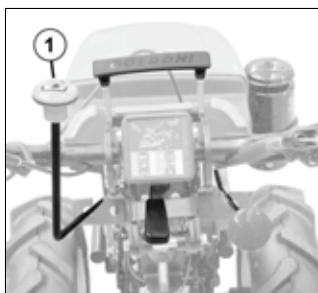
WARNING when the PTO is not used, move the mode selector lever to the Neutral or Independent position (depending on the model or version). This prevents the shaft of the PTO and other spinning components from accidentally turning.

WARNING Do not remove or damage the protective plate

WARNING Cover the PTO shaft with the guard when not in use.



- ① Power take-off
- ② Implement coupling bolts.



The PTO  is engaged by means of the PTO lever  and, when the machine is at a standstill, with the Gear Stop raised.

The tractor is equipped with a rear power take-off able to function in the following mode:

- **Independent.**

The PTO operates at a speed of 923 RPM.
20x17 DIN 5482 profile
Turning direction: clockwise.

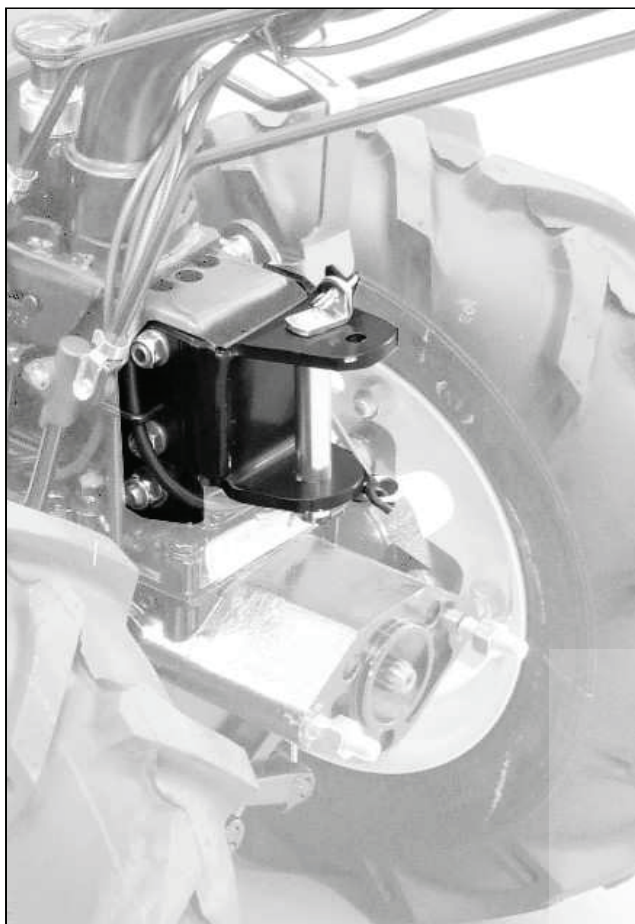
IMPORTANT The two-wheeled tractor is equipped with a safety device that prevents the reverse gear from being engaged when the PTO is engaged, in the normal operating direction. Set the PTO to the neutral position before engaging the reverse gear.

TOWING ATTACHMENTS



The ease with which the machine can be driven also depends on the correct use and successive height adjustment of the towing device.

Tow hook



The machine can be equipped tow hook for the use of small trailers or the tanks of spraying equipment.

BALLAST

Ballast (optional)



WARNING

when the machine is used for light work or for travelling or towing on the roads, the ballast would stress the moving parts unnecessarily and should therefore be removed.

If very heavy implements are hitched to the tractor, the longitudinal stability of this latter may be impaired. This can be corrected by using one of the various types of ballast available as optionals.

20 kg front ballast is recommended for ploughing work



The weights can be applied in pairs to wheels for a total 42 kg.



SCHEDULED SERVICING



WARNING

Check the levels:

- Before using the machine
- With the machine at a standstill and the engine off (for at least the past hour).
- On a flat surface.

SCHEDULED SERVICING

The user must have the machine itself regularly serviced to ensure that it continues to function correctly, and to benefit from the manufacturer annual warranty coverage. Most especially, the user must, at this expense, have all the following routine servicing work performed on his machine by his manufacturer area "Dealer" or "Authorized Workshop" in accordance with the peremptory conditions and terms indicated below.

A series of symbols have been made to make the texts easier to understand. Their meanings are described below:



Instructions



Check



Clean with compressed



Adjustment



Lubrication



Greasing



Fluid changes



Part replacements



Set intervals



Washing



Work hours



When necessary.



Top up the level



Top up the level



Top up the level

 **DANGER**
Do not wear loose clothing, jewelry, neck chains or bracelets and take care if your hair is very long as it could become caught up in parts of the machine and implements.

 **DANGER**
Do not leave the engine running in an closed room: the exhaust fumes are poisonous.

 **DANGER**
Do not leave the machine with engine running near flammable substances.

 **DANGER**
After any maintenance work, grease and remove the grease from the engine to prevent the risk of a fire.

 **WARNING**
Do not tamper with the machine or the implements in any way.

 **WARNING**
Always stop the engine before proceeding with any maintenance, repairs or other operations on the machine or implements and if present the electrical start, remove the ignition key.

 **WARNING**
Always park the tractor so that its stability is guaranteed by applying the parking brake and engaging a gear (1st gear uphill and reverse downhill) and applying the parking brake. Use a chock for greater safety.

 **WARNING**
Before driving the machine, check to be sure that there are no bystanders or animals within its range of action.

 **WARNING**
Do not leave the machine unattended with the engine running and if present the electrical start, the ignition key on the dashboard

 **WARNING**
The operator must check to make sure that all parts of the tractor, especially the safety devices, are in a good working condition and that they always conform to the purpose for which they were designed. They should be kept in a perfectly efficient condition. If you note any defects or faults, fix or repair them in good time. If necessary contact your nearest Assistance Centre.

 **IMPORTANT**
Check the nuts and bolts of the wheels and safety frame from time to time, always with the engine shut off.

 **DANGER**
Safety decals have been affixed to various parts of the machine. They indicate potential dangers.

 **IMPORTANT**
The decals must be kept clean and legible. If damaged, they must be replaced.

 It is of fundamental importance to safeguard the environment. Incorrect waste disposal can alter the environment and the ecological system.

 Do not discard fluids like fuels, lubricants, coolants or other, in the environment.

 Do not use food or drink containers, which could lead to mistakes, to drain off fluids like fuels, lubricants, coolants or other.

 Contact an authorized organization or ask your dealer for advice about how to recycle or dispose of waste products in the correct way.



Do not dispose of parts of the cooling system (such as radiators, fluids, tanks, etc.) in the environment.



ALWAYS place a vessel under the drain hole so as to collect the fluid when draining a tank or reservoir.



Routine scheduled maintenance

WARNING
The following table shows the maintenance intervals.

Extraordinary Maintenance: 

JOKER 12 S

Working hours		Hours	20	10	50	50	100	150	300	400	800	
		Months	1			3	6		12		12	
	Engine oil											
	Fuel filter											
	Fuel tank											
	Dry air filter					 A			 B			
	Air filter in oil bath					 A						
	Spark plugs											
	Gearbox housing											
	Gear Stop											
	Cables.											
	Electrical system											

A: Internal vent carburetor with dual element type only.
Cyclone type every 6 months or 150 hours.

B:
Cyclone type every 2 years or 600 hours.

JOKER 8 DS
JOKER 10 DS

Working hours		Hours	50	10	16	50	150	250	400	500	800	
		Months	12					6		12	12	
 	Engine oil											
	Engine oil filter											
	Fuel filter											
	Fuel tank											   
	Dry air filter			 								 
	Air filter in oil bath			 								  
	Gearbox housing											
	Gear Stop											 
	Cables.											 
	Electrical system											 

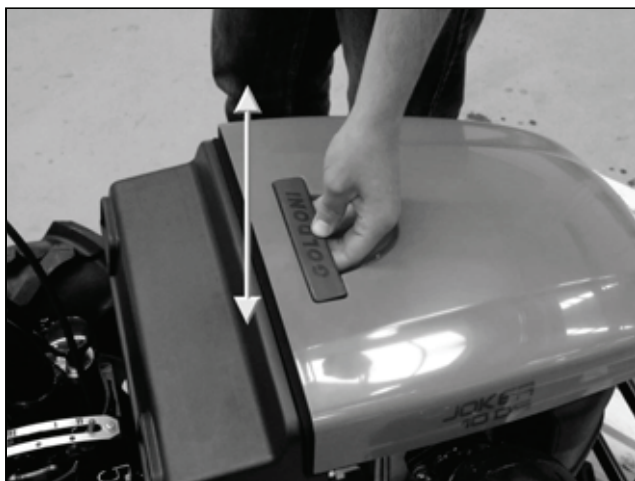
ENGINE UNIT

Engine



Consult the specific manual for the safety notes and operation and maintenance instructions for certain of the components manufactured by other companies.

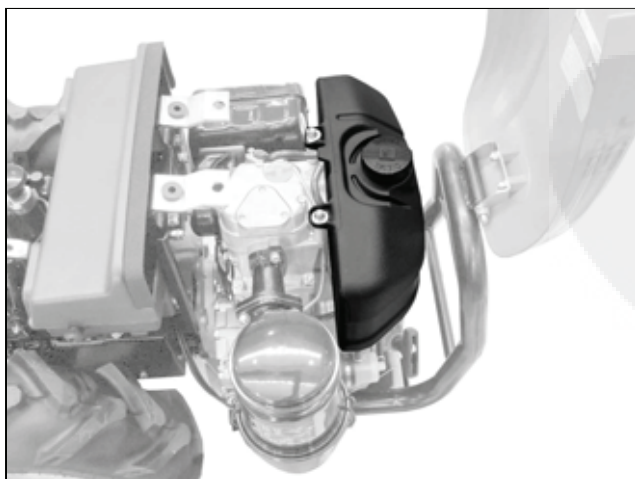
Fuel tank



- Pull upwards in the relative groove in the bonnet.



See engine's operation and maintenance manual.



Check



Check:

- To make sure that there is sufficient fuel for the whole job.
- To make sure that there are no dents or abrasions on the tank.



Clean



Clean the zone surrounding the tank plug.



Top up level



Use good quality fuel with the technical specifications described in the engine's operation and maintenance manual.



WARNING

Top up the fuel level when the engine is off. Do not smoke near fuel or when the tank is being filled.



Replace



Replace the fuel plug with a genuine spare if it is missing or damaged.

Replace the tank with a genuine spare if it has been damaged by scratches, abrasions or dents.



Do not discard fluids like fuels, lubricants, coolants or other, in the environment.

Dry air filter

WARNING
 Stop the engine and wait until it has cooled down before proceeding with any servicing operations.



See engine's operation and maintenance manual.

 Check



10



Figure 1

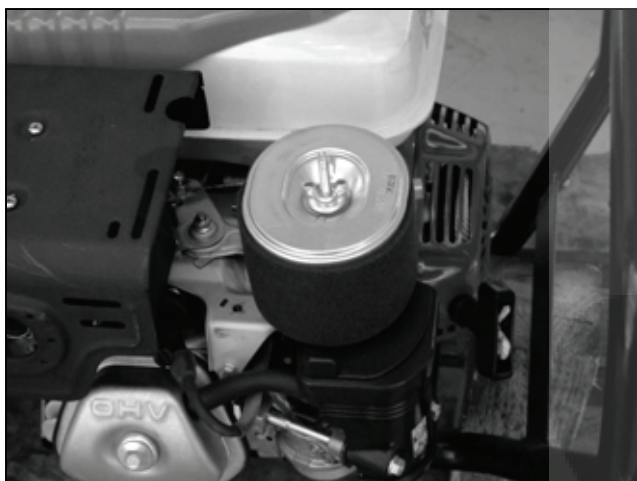


Figure 2



Figure 3



Clean with compressed



Keep the following parts clean:

Unscrew the knob that fixes the protection (figure 1), remove the protection (figure 2), take out the filter (figure 3) and clean it:

carefully tap the filter on a hard, flat surface with the perforated part pointing downwards.

Gently blow compressed air at a pressure of **no more than 7 bar** through all the pleats (figure 4) in the direction opposite to that of the arrow stamped on the filter itself.



Replace



The internal filter changes colour when dirty

Air filter in oil bath

WARNING
 **Stop the engine and wait until it has cooled down before proceeding with any servicing operations.**



See engine's operation and maintenance manual.

JOKER 12 S

 Check



10



Figure 1



Figure 2

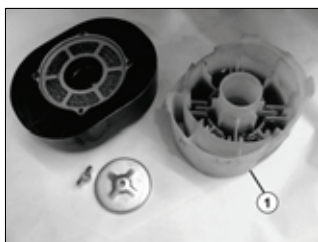


Figure 3



Clean with compressed



Keep the following parts clean:

Unscrew the knob that fixes the protection (figure 1), and remove the filter from the oil reservoir. Clean the filter by lightly blowing compressed air at a pressure of **not more than 7 bar** through all the pleats (figure 2).



Replace



Replace the oil in the basket **①** (figure 3)

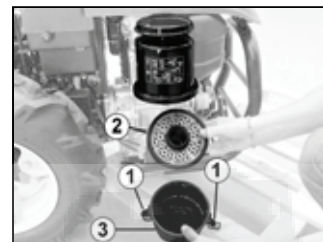
JOKER 8 DS JOKER 10 DS



Check



10



Clean with compressed



Keep the following parts clean:

Uncouple the two levers **①**, and remove the filter **②** from the oil reservoir.

Clean the filter **②** by lightly blowing compressed air at a pressure of **not more than 7 bar** through all the pleats.



Replace



Replace the oil in the basket **③**

TRANSMISSION UNIT

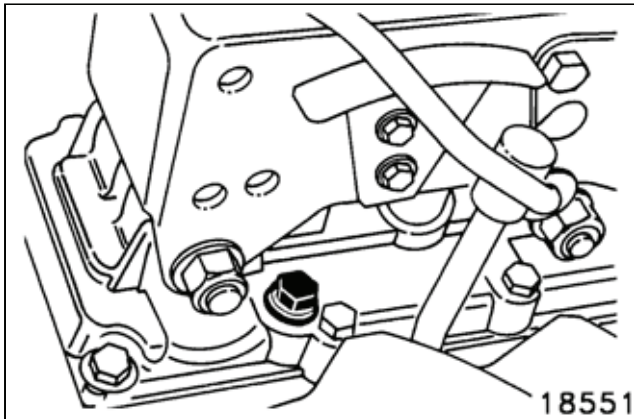
Gearbox housing

These parts of the tractor all use the same oil.

 Check



50



Check the oil level by means of the dipstick (MIN-MAX)

If necessary, top up with oil of the recommended type.

We recommend Arbor oil by FL Selenia: **GEAR SYNT 220 PG**



Clean with compressed



400

Keep the following parts clean:

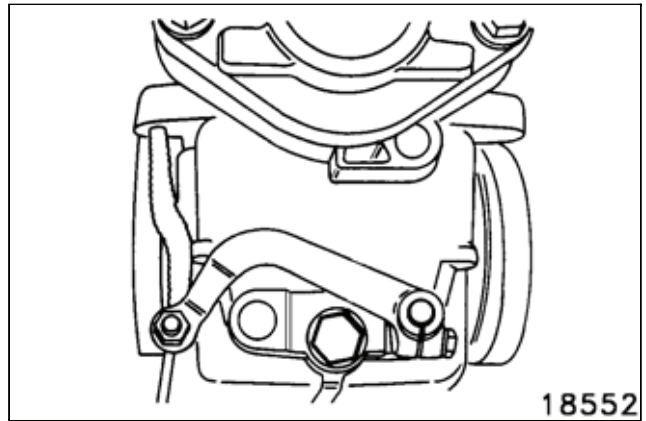
- The outside of the plug and the surrounding area.



Replace



Plug oil draining



Replace the oil in the casing, which requires about 2 liters of fluid.

We recommend Arbor oil by FL Selenia: **GEAR SYNT 220 PG**

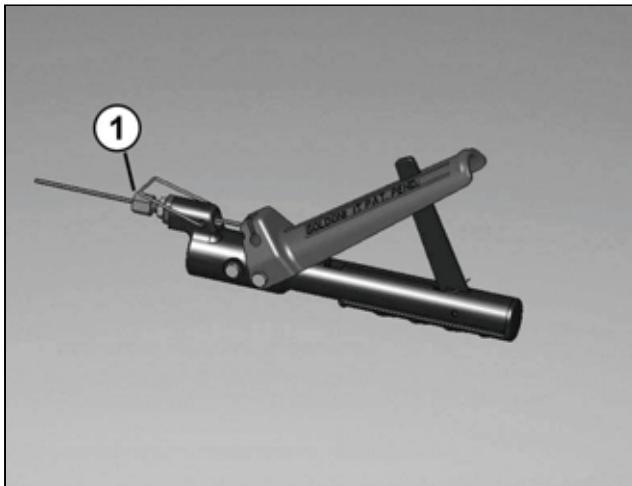


IMPORTANT

The service must only be carried out by the dealer or by specialized technicians.

Gear Stop

WARNING
 The Gear Stop is an important part of the machine, its proper functioning is essential.
 Frequently inspect the proper functioning of the Gear Stop and adjust if necessary.



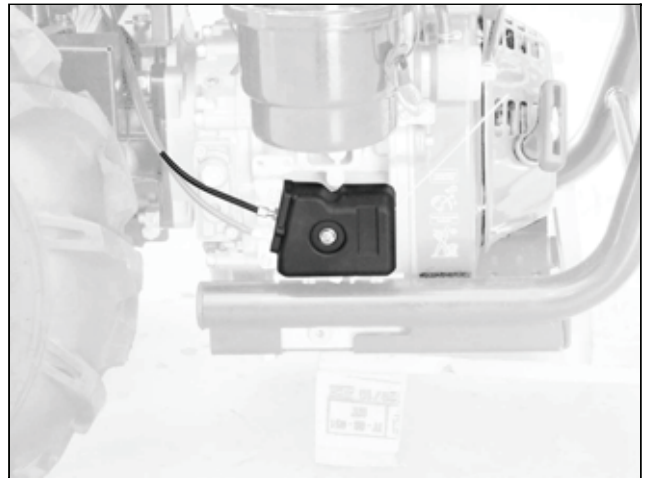
Adjustment



Periodically check the idle travel of the command.
 Use the adjuster ① if there is too much play

Hand throttle

JOKER 8 DS JOKER 10 DS



JOKER 12 S



Adjustment

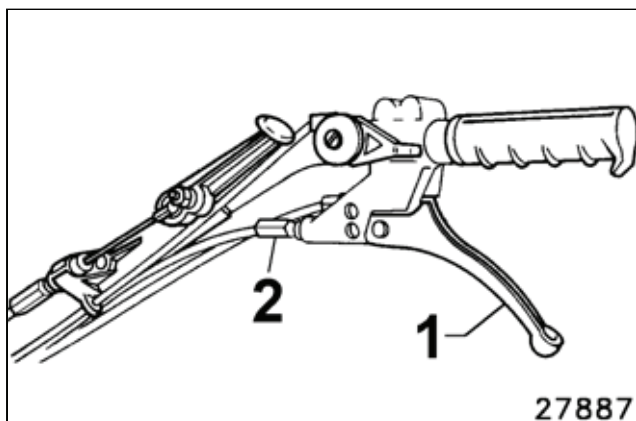


Periodically check the idle travel of the command.
 The travel of the throttle lever is regulated with the adjuster screws at the end of the accelerator cable, on the engine.



See engine's operation and maintenance manual.

Wheel release

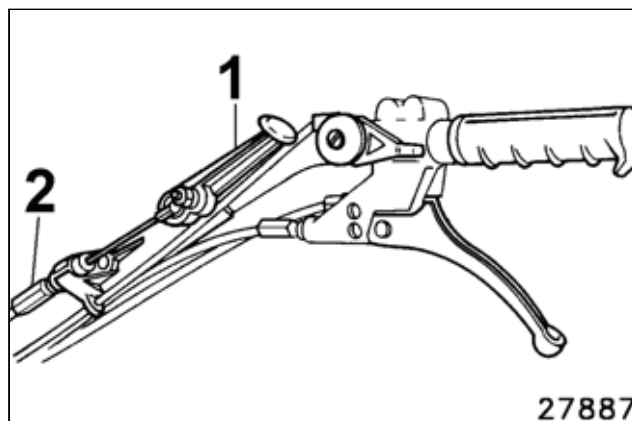


Adjustment



Periodically check the idle travel of the command. There must be 2 mm free travel on the lever ① before the wheels begin to release. This play is adjusted by means of the screw ②.

Differential lock



Adjustment



Periodically check the idle travel of the command. The idle travel of the diff lock lever ① must be 2 - 4 mm in the LOCKED position. It must be completely released when the lever is in the RELEASED position. Use the adjuster screw ② to regulate the correct travel.

ELECTRICAL SYSTEM

WARNING
 Always disconnect the battery's ground cable (negative pole with the “-” symbol) before working on the electrical system.

Battery

WARNING
 Work on the battery requires particular care: battery acid is corrosive and the gases released are inflammable.



Figure 1



To access the battery open the bonnet and remove the protection removing the two side knobs (figure 1)

Check

 150

Make sure that the terminals are fixed to the battery poles
 Make sure that the battery is firmly fixed to the machine.

Clean



Keep the battery clean with a damp, antistatic cloth.
 Keep the battery poles and cable terminals clean.

Greasing



Lightly grease the poles and terminals when necessary.
 Use Vaseline-based grease, not normal grease.

Idle periods

If the machine remains idle for a long period of time:

- Charge the battery as indicated by the manufacturer.
- Disconnect both the cables.
- Store the battery in a cool, dry, well ventilated place.

Replace



If the battery must be replaced, make sure the new one possesses identical technical specifications (the values are given on the actual battery itself).

RECOMMENDED LUBRIFICANTS AND FLUIDS

Original lubricants

Genuine Lubricants ARBOR by FL SELENIA

ARBOR UNIVERSAL 15W-40 oil

- Viscosity at 40° C (mm²/s) 110
- Viscosity at 100° C (mm²/s) 14
- Viscosity at -15° C (mPa.s) 3450
- Index of viscosity 135
- Flash point V.A. (°C) 220
- Pour point (°C) -36
- Mass Volume at 15 °C (kg/l) 0.886

GEAR SYNT 220 PG oil

- Viscosity at 40° C (mm²/s) 220
- Viscosity at 100° C (mm²/s) 37
- Index of viscosity 219
- Flash point V.A. (°C) 225
- Pour point (°C) -33
- Mass Volume at 15 °C (kg/l) 1.002

ARBOR TRW 90 oil

- Viscosity at 40° C (mm²/s) 135
- Viscosity at 100° C (mm²/s) 14.3
- Viscosity at -26° C (mPa.s) 108000
- Index of viscosity 104
- Flash point V.A. (°C) 220
- Pour point (°C) -27
- Mass Volume at 15 °C (kg/l) 0.895

ARBOR MTA 90 oil

- Viscosity at -40° C (mPa.s) 28000
- Viscosity at 40° C (mm²/s) 35.5
- Viscosity at 100° C (mm²/s) 7.5
- Index of viscosity 160
- Flash point V.A. (°C) 200
- Pour point (°C) -40
- Mass Volume at 15 °C (kg/l) 0.870
- Colour red

ARBOR MP Extra grease

- NLGI grade 2
- Manipulated penetration (60)(dmm) 285
- Dropping point (°C) 190
- 4 weld load balls (kg) 300
- Basic oil viscosity at 40°C (mm²/s) 200

Original protective fluids

ARBOR original protective fluids by FL SELENIA

PARAFLU 11 antifreeze fluid

- Density at 15°C (g/cc) 1.135
- pH (dil. 50%) 7,7
- Alkaline reserve (ml HCl 0.1 N) 16
- Boiling point (dil. 50%) (°C) 108
- Graining point (dil. 50%) (°C) -38
- Foam at 88°C (cc) 50

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