



Operating Instructions

GS Twister





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Machine:

GS Twister



1. General

These operating instructions intend to set forth the correct use of the GS Twister.

They address all aspects related to the operation and daily maintenance of the GS Twister. They also pay attention to important aspects related to technical maintenance. The operating instructions must be carefully read in order to use the machine in a correct and safe way.

The text in these operating instructions is printed as follows:

Normal text is printed in normal type.

Important information is printed in bold.

The following pictograms are used to draw attention to issues that require special attention and/or involve risks for persons, the machine and/or the sweeping process.



Special attention

Text preceded by this symbol requires special attention



Warning

Instructions preceded by this symbol warn you about the risk of damage to the machine or failures if the instructions are not carefully followed.



Physical injury

Text preceded by this symbol warns of physical injury if the instructions are not carefully followed.



1.1 User

In these operating instructions, 'user' means: Anyone who is put into contact with the GS Twister or parts thereof under normal operating conditions.

The company or user itself has to see to it that each user is sufficiently qualified to handle this kind of machines and is able to comply with relevant provisions and safety aspects. A clear distinction is made between two groups of users:

"The operator" is the person who actually operates the machine in preparation or execution of the production process.

"The mechanic" is the person who carries out repairs or maintenance works to the machine.

The mechanic must be qualified to perform technical operations. The mechanic must have a solid understanding of technical matters and be able to read technical drawings.

Before the machine is operated or serviced by the operator or mechanic, they must have been adequately instructed. The first instruction is given by specialists from GS. This does not apply when a company already has several machines of the same type or if there is sufficient knowledge available within a company. GS cannot be held responsible in any way for works that have been carried out by an operator who is not or not sufficiently instructed or qualified.

1.2 Liability

These operating instructions and the data they contain have been drawn up with the utmost care. GS and/or your supplier are not liable for lack of clarity, mistakes and/or damages to the GS Twister. In addition, they are not liable for personal accidents caused by incorrect use or attempts to have the GS Twister serviced by others that are not qualified mechanics.



1.3 Warranty Conditions

The warranty terms, mentioned in the general terms and conditions of delivery, will lapse immediately by operation of law if:

1. Service activities and/or repairs have not been carried out strictly in accordance with the instructions.
2. Repair activities have not been carried out by service mechanics from GS Engineering or its official dealer, or have been carried out by the customer's mechanics without written approval from GS.
3. Changes have been made to the delivered product without prior written approval from GS.
4. Other than original GS parts are used.
5. Other than the prescribed lubricants are used.
6. The delivered product is handled improperly, carelessly, incorrectly and/or negligently.
7. The machine is used for other purposes than those it was designed and built for.

1.4 Machine Documentation

Each machine comes with:

- GS Twister operating instructions
- engine operating instructions
- warranty certificate



1.5 Machine Specifications of the GS Twister



Illustration 1

Working width	depending on tool
Engine power	Honda GX200 4.8 kW (6.5 hp) manual start
Transmission	HydroGear
Speed	Forward 0 to 6 km/h In reverse 0 to 3 km/h.
Lifting device	Standard mechanic
Hydro connection	2x by means of quick coupling
Brush width	85/90/101 cm



2. Safety

The GS Twister has been manufactured in accordance with regulations that are currently applicable. Nevertheless, this machine could cause dangers to man and machine if:

- it is not used in accordance with the operating instructions
- it is not operated by qualified personnel
- it is changed or used inexpertly
- safety instructions are not being observed

Therefore, anyone who is involved in the operation, maintenance and/or repair of the machine has to read and follow the safety instructions. If so desired, this could be confirmed by the user's signature.

Apart from the requirements and regulations mentioned in these operating instructions, the following regulations apply:

- general safety regulations
- country specific regulations

2.1 Safety Symbols

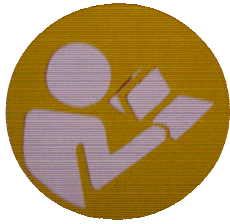
The safety symbols on the machine must be kept complete and legible. Damaged and illegible safety symbols must be replaced by new ones.



1. Applied to the machine casing, on the side, "hearing protection must be worn"



2. Applied to the machine casing, on the side, "eye protection must be worn"



3. Applied to the machine casing, on the side, "read operating instructions before use"



4. Applied to the machine casing, near the brush controller. "Brush rotating counter-clockwise or clockwise".



5. Applied on the backside of the chassis case; this is the CE mark and serial number.



2.2 Safety Aspects

- Safety aspects and pictograms included in these operating instructions as well as the safety symbols on the machine must always be observed by the operator.
- The procedures laid down in the operating manual must always be executed in the correct order.
- When operating the machine, the operator must always see to proper visibility so he can see the work area and the machine.
- He has to make sure that his attention is not distracted from his work and always has to act according to circumstances.
- With each movement the machine makes, the operator must be certain that there are no persons near the machine.
- It is not permitted to use the machine to transport people.
- Safety glasses must be worn when using the machine.
- Hearing protection must be worn when using the machine.
- The operator's clothing must be tight-fitting, preferably no loose clothing. In addition, the operator must wear sturdy shoes.
- All maintenance, repairs, remedy of failures and other, similar activities not mentioned in these operating instructions must be carried out by a mechanic.
- If the operator detects any defect or fault to the machine, a mechanic has to be informed immediately.

2.3 Safety Precautions

The machine is equipped with an overload protection.

The controls for forward and reverse motion movement must be held down during movement. If the controls are released, the machine will stop automatically (see also § 4.1).

2.4 Emergencies

An emergency means a situation in which people, animals and/or the machine are in danger or danger threatens them. If an emergency arises, the operator must bring the machine to a standstill and turn off the engine.

In case of damages to the machine or other situations in which machine parts could have been affected, the machine must be thoroughly checked. Only this way it can be guaranteed that also after an emergency, it is safe to operate the machine.



2.5 Non-advisable Use



It is strongly advised not to use the GS Twister on slopes with an angle of inclination of more than 5°.



It is advised not to drive the GS Twister without tools.



3 Sweeping Process

3.1 Recommended Application

The sweeper is mainly used for cleaning straight surfaces. The material to be swept will largely consist of leaves, rubbish, snow, sand, gravel or a combination hereof.



When sweeping certain materials, (large) clouds of dust may be raised. This is why protective glasses must be used.



Particles might fly up during the sweeping process. The operator has to make sure that there are no persons or animals in the direct surroundings of the machine.



Under normal circumstances, the machine generates a noise level of +/- 96 dB (A). Prolonged exposure to this noise level can result in serious hearing impairment. This is why hearing protection must be used.



3.2 Engine

The GS Twister is equipped with a Honda GX-200 engine. This is a 200cc four stroke overhead valve engine, power 4.8 kW which equals 6.5 hp.

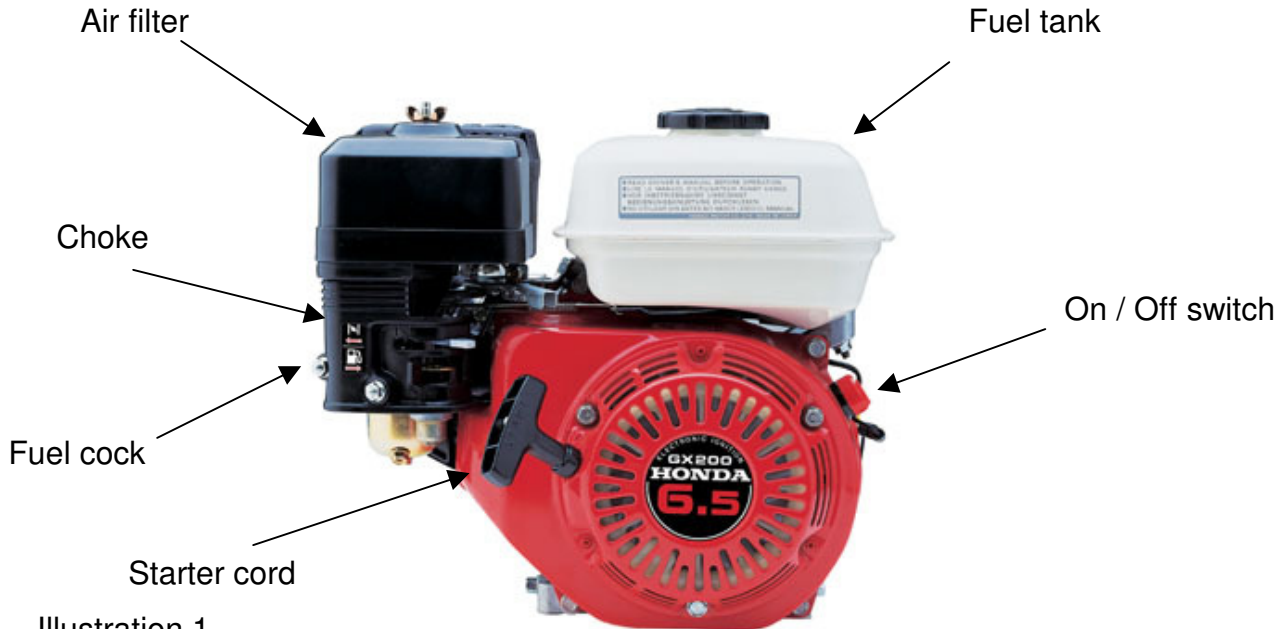


Illustration 1

3.2.1 Starting the Engine

Before the engine is started, the machine must be checked and found in good order.



When starting, the hydraulic control must be turned off. First turn off the hydraulic control, because failure to do so could lead to unexpected and dangerous situations.



The next steps are necessary to start the engine.

1. Check if the hydraulic controls have been turned off (brush in neutral position) (illustration 1)



Illustration 1 Lever is in middle position

Turn the engine switch to the position ON

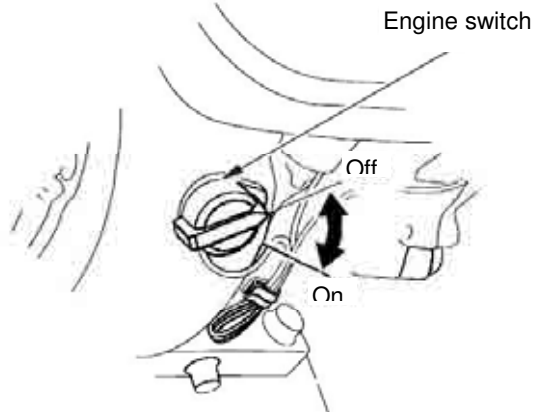


Illustration 2

Open the fuel cock (illustration 5)

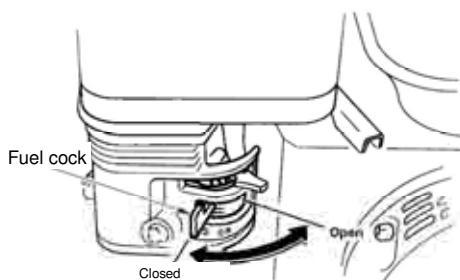


Illustration 3

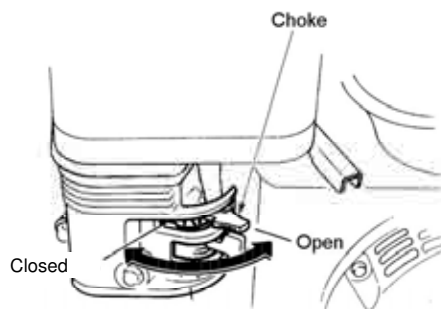


Illustration 4

Close the choke so you get a rich fuel mixture.



Pull the starter rope till the motor starts (illustration 5). When the engine reaches full revs, slowly push the choke back to the open position.

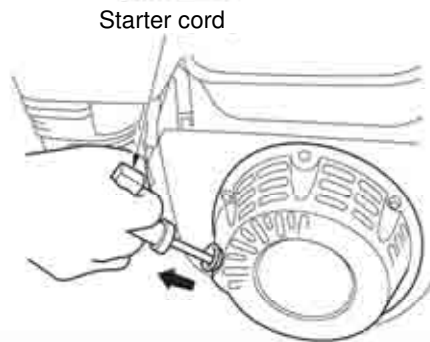


Illustration 5

3.2.2. Stopping the Engine

If you have to stop the engine after use, you must do the following:

- a.) By turning the engine switch to the OFF position, the engine will stop (see illustration 2, §3.2.1)
- b.) Open the fuel cock (see illustration 3, §3.2.1)

3.2.2 Refuelling

The engine runs on normal unleaded car petrol: Euro unleaded (use fresh petrol)



Do not mix oil with petrol



Do not fill the fuel tank in a closed space



Do not fill the fuel tank when the engine is running. Wait at least two minutes for the engine to cool down before refuelling.



Never turn on the engine when fuel has been spilled. Put the engine away from the spilled fuel, remove ignition sources and wait till the fuel has evaporated.



3.2.4 Checking and Filling Up of Engine Oil and Hydraulic Oil.

To lubricate the engine, we recommend the use of engine oil **SAE 30** at outside temperatures higher than 4 °C. Below 4 °C, we recommend **5W40** engine oil.

To check the engine oil level, the following steps must be carried out:

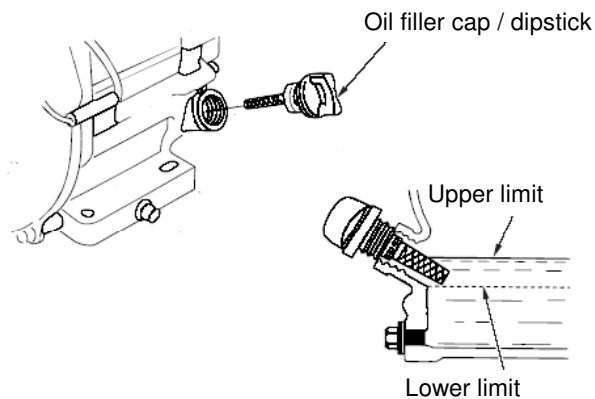
1. Remove the dipstick and wipe oil off with a cloth.
2. Screw down the dipstick, loosen it again, and remove the dipstick.
3. The oil level can be read at the bottom of the dipstick.
4. If the oil level is below the mark (indicated on the dipstick with "**ADD**", top up with oil and repeat steps 1 up to 3 and check if the level reaches the "**FULL**" mark.
5. Tighten the dipstick before the engine is started.



The oil level must be checked before starting the engine. If the engine has been running, you must wait at least 2 minutes before checking the oil level.

CAREFUL
The use of insoluble oil or two-stroke oil could shorten the life of the engine.

Illustration 1



Checking the oil level.
This applies to both the engine oil and hydraulic oil.

Type of engine oil
Type of hydraulic oil

SAE 5W40
HLP.46



Illustration 2 Dipstick hydraulic oil



If you are not sure of the oil level, the type of oil that must be used, or the steps that must be followed, have the oil level checked by a mechanic or ask the supplier for advice.

3.3 Sweeper

3.3.1 Starting and Stopping the Sweeper

The brush can only be operated when seated on the machine:

When pulling the lever up, the brush will sweep in forward direction.

When pushing the lever down, the brush will sweep in a reverse direction.

In the neutral position (middle), the brush is standing still.



Illustration 1
Brush sweeps in forward direction (normal)



Illustration 2
Brush sweeps in reverse direction



3.3.2 Adjustments

The GS Twister has two different brush adjustment possibilities. The right adjustment will result in the best sweeping results.

First of all, the distance between the brush and the surface to be swept can be adjusted: the brush height adjustment.

Secondly, it is possible to change the angle of the brush in relation to the direction of movement. When no collector box is used, a larger surface can be cleaned.

3.3.3 Brush Height Adjustment

In time, the diameter of the brush will decrease due to wear.

As a result of this, the sweeping pressure on the surface and consequently the cleaning of the surface will deteriorate. This can be compensated by the brush height adjustment (see illustration 1).



Illustration 1

3.3.4 Brush Angle Adjustment

The brush angle can be adjusted to obtain better sweeping capacity.

The brush attachment is equipped with a lever that you must pull up first to release it from the locking hole after which you can place the brush in an angled position, either left or right, by pushing the brush attachment away with your foot. See to it that the brush attachment is locked in the locking hole.



Illustration 1



Illustration 2

Lever for angle adjustment



3.3.5 Lifting the Brush



Illustration 1 Brush is in operating position



Illustration 2 Lifting the brush

3.3.6 Coupling the Brush

The brush can be coupled or uncoupled as a separate tool; this is made possible by a shaft connected to the brush casing.

Insert the shaft in the shaft hole and lock it with the locking pin (see illustration 2). Before the shaft is coupled, it is important that the coupling mechanism is properly greased.



Illustration 1



Illustration 2



3.3.7 Coupling the Hydraulic Hoses

After this, you have to couple the hydraulic hoses by pulling the sleeve of the quick coupler on the Twister forward and inserting the other part on the brush casing.



Illustration 1



Illustration 2

3.4 Driving

When the upper side of the pedal is pressed (illustration 1), the Twister will move forward. When the lower side of the pedal is pressed (illustration 2), the Twister will move backwards.

When the pedal is released it returns to its neutral position and the GS Twister will stop.



Driving forward

Illustration 1



Illustration 2

Driving backwards



You can change your speed with the throttle lever on the right of your seat.



Illustration 3



4 Maintenance and Inspection

4.1 Inspection Before Sweeping

Before starting the sweeping activities, several points must be checked first:

- check whether the machine is in good condition, if there are no loose parts due to vibration
- check the condition and setting of the brush
- check the condition and attachment of the collector box (if present)
- check the air pressure of the tyres (front 0.8 bar and rear 1.5 bar)
- check if there are no persons or animals in the immediate surroundings of the sweeper.

A visual check is enough.

After prolonged use, a lengthy standstill (more than 30 days) or damages caused by unforeseen circumstances, the sweeper must be thoroughly checked.

Bolts and nuts must be checked regularly for tightness

4.2 Maintenance After Sweeping

After sweeping, the machine can be cleaned with water. The use of a high-pressure spraying device is allowed.



During cleaning, the sweeper engine must be turned off.

4.3 Brush Check

Depending on the use, the brush hairs are liable to wear. It also occurs that hairs are being pulled loose by the sweeping process. As a result of this, it could be necessary to adjust the brush height. In case of severe wear, parts where a lot of hairs are missing from the brush or poor sweeping results, the brush must be replaced. This reparation must be carried out by a mechanic.

4.4 Maintenance and Repairs

Maintenance and repairs to the machine must be carried out by a mechanic.



4.4.1. Hydraulic system

Maintenance and repairs to the hydraulic system must be carried out by a mechanic. The hydraulic hoses installed on the machine must be replaced once every 5 years.

Do not use the machine when the hydraulic lines are damaged. After a mechanic has replaced the hydraulic lines, the machine can be used again.



However, if injuries do occur in case of a leaking line, do not use the machine and seek medical advice immediately.



Check the oil level of the hydraulic system after every 25 hours of use.
Hydraulic oil type **HLP.46**

4.4.2 Engine

The machine is equipped with an engine that must be serviced at regular intervals. Have the engine checked by a mechanic once a year or after a standstill of more than 30 days.



Check the oil level every 25 hours of use. Type of engine oil **SAE 5W40**

4.4.3 Service

The GS Twister, when normally used, must be serviced once a year by a qualified mechanic.

The motor oil level will be checked, changing the oil when necessary.

The hydraulic oil level will be checked, changing the oil when necessary.

The filters and sparking plug are changed.

The engine will be serviced and all rotating parts will be checked.



4.4.4 Tyre Pressure

The right tyre pressure is important for proper performance. The front tyres must have a pressure of 0.8 bar (illustration 1)

The back tyres must have a pressure of 1.5 bar.



Illustration 1

4.4.4 Chain Tensioning

As time goes by, the chain tension of the steering gear and drive could change. They can be tensioned as follows.

4.4.5.1 Steering Gear

The chain tension can be changed by turning the tensioning gears to the left or to the right. If you see that the chain sags between the steering wheel and steering gear, the chain is too loose. The chain must be drawn tight, allowing the steering wheel to turn smoothly.



Illustration 1



4.4.5.2 Drive

By turning the tensioning bar, it becomes longer or shorter and the drive chain is loosened or tightened.

The chain is drawn tight enough when it does not sag anymore.



Vrije ruimte ± 20 mm

Illustration 1



5 Accessories

The GS Twister as you have bought it now, is a tool carrier; this means that other tools can be mounted apart from the sweeping brush.

The GS Twister can also be equipped with a manure scraper or snow plow.

5.1 Collector Box

To collect the swept dirt, a collector box has been designed that can be mounted in front of the brush attachment. Since this accessory is much in demand, the mounting instructions are included in these operating instructions.

The collector box is available in a width of 85 cm or 101 cm.

5.1.2 Coupling the Collector Box

Put the GS Twister in front of the collector box and manually place the collector box over the sweeping brush attachment (illustrations 1 and 2). Lock the collector box by means of the bracket with the 2 handle grips. With the large handle, the collector box can be emptied quickly.



Illustration 1



Illustration 2

The distance between the lower side of the collector box and the surface to be swept (ground clearance) can be adjusted by means of the twist grips.

After mounting the collector box, you must adjust this distance to +/- 20 mm.

Depending on the material to be swept, you can place the collector box a little higher if necessary.



When adjusting the height of the collector box, you also have to adjust the height of the brushes. Always observe the clearance of +/- 20 mm. (measured from the surface to be swept till the lower side of the collector box).



Clearance ± 20 mm

Illustration 3

5.2 Other Optional Accessories

1. GS hydraulic side brush (see illustration 1)



(Illustration 1)

2. GS snow plow 90 cm. (see illustration 2)



(Illustration 2)



3. GS manure scraper 85 cm or
GS manure scraper 105 cm (see illustration 3)



(Illustration 3)

4. GS skid chain (see illustration 4)



(Illustration 4)

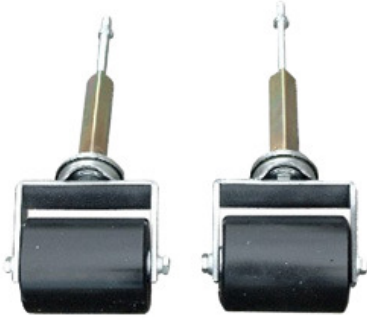
5. GS radial brush 90 cm. (see illustration 5)



(Illustration 5)



6.GS broad caster wheels (see illustration 6)



(Illustration 6)

7.GS set of broad tyres 16x6.50x8 or
GS exchange set tyres 16x6.50x8 (see illustration 7)



(Illustration 7)



Maintenance Dates



EC declaration of conformity for machines
(Directive 89/392/CEE, Annex II, paragraph A)

GS Engineering & Development
Ravenstein

Hereby declares that the
Sweeper - GS Twister

-conforms to the provisions of the Directive relating to machinery (directive 89/392/CEE, as amended lately) and the national legislation implementing this directive;

and furthermore declares that

-the following (parts of) harmonized standards have been applied:

EN292-1 Machine safety, part 1

Made in Ravenstein, the Netherlands, 01-01-2005

A handwritten signature in black ink, consisting of several loops and a long, sweeping stroke extending upwards and to the right.

Technical director
A.A.W. Giesbers