User guide Phoenix 400

27/11/2019

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Summary

Generality

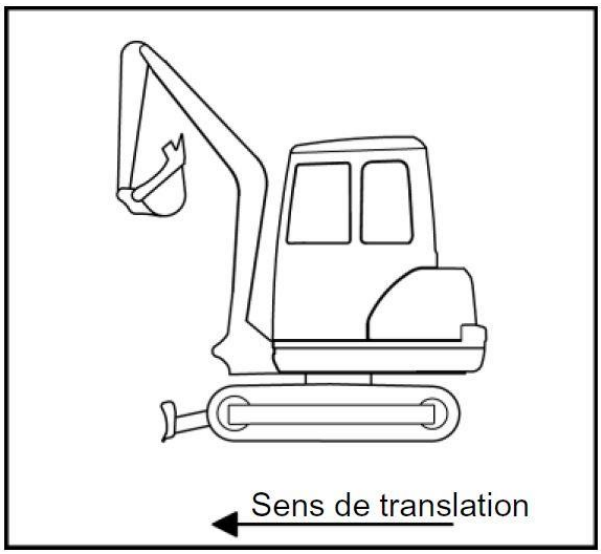
For all machines mentioned in this documentation, the security prescriptions have to be respected as well as the safety instructions and rules related to the excavator's use.

The operator is responsible for the following :

- Respect of the local, regional and national legal dispositions,
- Respect of the legal dispositions (laws, rules, directives….) prescribed by this user guide in order to guaranty the safety during work,
- To ensure that this user guide is avalaible to the operators and the maintenance staff using this machine and that the informations, notes, warning and safety rules are respected in their details.

The informations, indications and datas given in this user guide apply to all models designed by the SAS HHO in France. The indications concerning only one particular model are brought to light.

The indications « front » of « translational direction » refers to the operator point of vue on his seat. The expression « front » implies that the blade is in the front as shown on the illustration.



Conformity declaration CE (European Conformity)

Evey part of the mini-excavator have been designed by SAS HHO in France. By the conformity declaration CE, the compagny SAS HHO confirms the conformity of the excavator with the directives and current standards at the moment of delivery. It confirms the respect of the norms and other appliable reglementations in Europe. Any modifications unautorised by the constructor or any part added after delivery may have an illicit influence on the stability of the excavator thus the conformity declaration CE will be invalid and the warranty voided.

ORIGINAL

CE

DECLARATION CE DE CONFORMITE DES MACHINES

Nous déclarons sous notre responsabilité :

Fabricant :

SAS HHO
74 rue principale
17500 St Hilaire du bois
SIRET : 801 203 142 000 14

Que le produit désigné ci-après en raison de sa conception et de son type ainsi que du modèle mis en circulation par nos soins répond aux exigences fondamentales en matière de sécurité et de santé définies par la directive CE concernée.
Nous déclinons toutes responsabilités en cas de montage non conforme aux notices de montage fournies avec les machines dans les versions : soudé ou soudé/ peinte.
Cette déclaration est invalidée par toute modification non approuvée par nos services.

Produit :

N° de série :

Année de construction :

Masse en ordre de marche :

Directives CE Applicables **: Directive Machines CE (2006/42/CE)**

Conforme aux norme NF EN 474-5 +A3, NF EN 474-1 +A4

Les documents techniques de montage et d'utilisation ont été réalisé par le service habilité pour la documentation de la SAS HHO

Date et signature du fabricant : _____

Qualité du signataire : _____

Operator and maintenance

For the use, maintenance, restauration and technical security controls of the excavator, the owner must clearly define the competences of the person using the material.

Only the persons able to use the excavator alone and who have received proper instructions for handling the machnie are allowed to use it.

Original spare parts can be ordered directly from HHO-Canada Inc or via its partners. It is then necessary to precise the denomination of the model, the serial number as well as a picture of the part if need be.

Commitment, responsibility and warranty

The knowledge of the rules and secutity prescriptions are the fondamental conditon for the proper functionning of the excavator and its safe use.

The dispositions of this user guide and, the security rules in particular, must be followed by all excavator's users or person working with and near this machine, as well as local the rules and accident prevention prescriptions in place must be respected.

Dangers during the excavator's use

Excavators are built following the present technical knowledge and in conformation with the recognised safety rules. However, the use of a excavator can present dangers for the health, even the life of its user or a third person and dammaging the excavator itself or other goods or materials. The use of the excavator is only allowed for specific works for which it is design, if it is in perfect condition regarding the safety rules.

Any defaults that can affect the safety must be repared immediately upon discovery.

Warranty and responsibility

The extend, time and conditions of warranty are specified in the manufacturer terms and contitions. Regarding the warranty rights that occurs from an incorrect documentation, the user guide present at the time of delivery is in order.

Beyond the terms and conditions, the following terms are applicable : a right to the warranty is excluded for the dammages caused to poeple and materials due to one or more of the following causes :

- The use of the instrument not in accordance to the prescriptions and the expected use,
- Incorrect start, drive and/or maintenance of the instrument,
- The use of the instrument with faulty safety features or safety and protection features not correctly installed or out of order,
- Ignorance or non-respect of the instructions of this user guide,
- Use by an underqualified user,
- Incorect repairs done on the instrument,
- Modification of the instrument without authorisation,
- Unsufficient monitoring of parts subject to wear and tear,
- Damages caused by a foreign object or by a major force,

To assume his own responsabilities, the owner must:

- Make sure that the safety features are respected, as well as the local safety guidelines
- Take every measures necessary so that there is no unauthorized use of the excavator
- To ensure an use conform to its design and a work conform to the contractual usage condictions of the excavator.

Security symbols

	General danger
	Suspended load
	Can tip over when moving
	Hot surface
	Slippery
	Hand piching
	Pinch
	Eye protection required
	Ear protection required
	Hard hat required
	Hand protection required
	Foot protection required
	Body proteciton required

General operating rules

The equipment mentions in this present user guide are destined to the excavation, the digging of earth, rock and other materials, loadind, transport and unloading operations as well as landscaping. As fas as possible, the loading, transport and unloading of the bucket's content should be done without any translation of the excavator. The maximum lifting weight allowed for the bucket should not be exceeded.

The use conform to its destination also implies :

- The respect of all indications in this user guide,
- The execution of all maintenance works prescribed at the recommended intervals,
- The respect of the mandatories control's due date to prevent any accidents.

Forbidden use:

Any use not in accordance with the present user guide, or any divergence from the dispositions in the following section are considered as a forbidden use. It is the same in case of a non respect of the standards and directives stated in this user guide.

Any non-compliant use can lead to risks. Exemples of non-compliant or abusive uses :

- The use of the excavator to lift loads without the proper lifting equipment,
- The use of the excavator in contaminated environment,
- The use of the excavator in a closed location without proper a ventilation,
- The use of the excavator in extreme ambiant temperature (cold or hot),
- The use of the excavator to work underground,
- The use of the excavator to transport people in the bucket,
- The use of the excavator to demolish walls with the bucket...

Noise emission and vibrations

The values presented in this user guide have been recorded during one test cycle on the same excavator. They may apply to the same instrument with the basic equipments. The values recorded are present in the technical caracteristics.

Noise emission

Noise emissions have been evaluated following the procedure defined by the norm ISO4871 for an optimal precision on the detemination of the accoustic level based on the directive 200/14/CE, annexe VI.

The noise emission values indicated here are not valid for the determination of noise emission in a workplace.

Noises whose audio level is above 85dB (A) may cause hearing damages..
Above 80dB (A) an auditive protection is recommended.
Above 85 dB (A), the user must imperatively use an auditive protection.

Vibrations

The excavator vibrations have been observed on the same equipment.

The user's exposure to vibrations over a ling period must be evaluated by the workplace manager, according the the directive 2002/44/CE, so that all the individuals factor may be taken into account.

Hydraulic Danger

In case of hydraulic oil projection in the eyes, rince imediatly with water and consult a medical professionnal.

The skin and clothes must not be in contact with hydraulic oil. Any part of the skin which was in contact with hydraulic oil must be thouroughly washed several times with water and soap as soon as possible, otherwise oil can cause irritation and dermatitis.

In case of projection or spill of hydraulic oil on clothes, change immediately.

If a person inhaled hydraulic oil vapors (mist), one must immediately seek medical attention.

If an hydraulic oil leek is obseved on the excavator, do not turn it on or if it is on, turn it off immediately upon noticing.

Do not look for oil with bare hands, always use a tool, rag or other. Always were protective clothes, gloves and goggles when reparing the hydraulic system.

Technical caractéristics

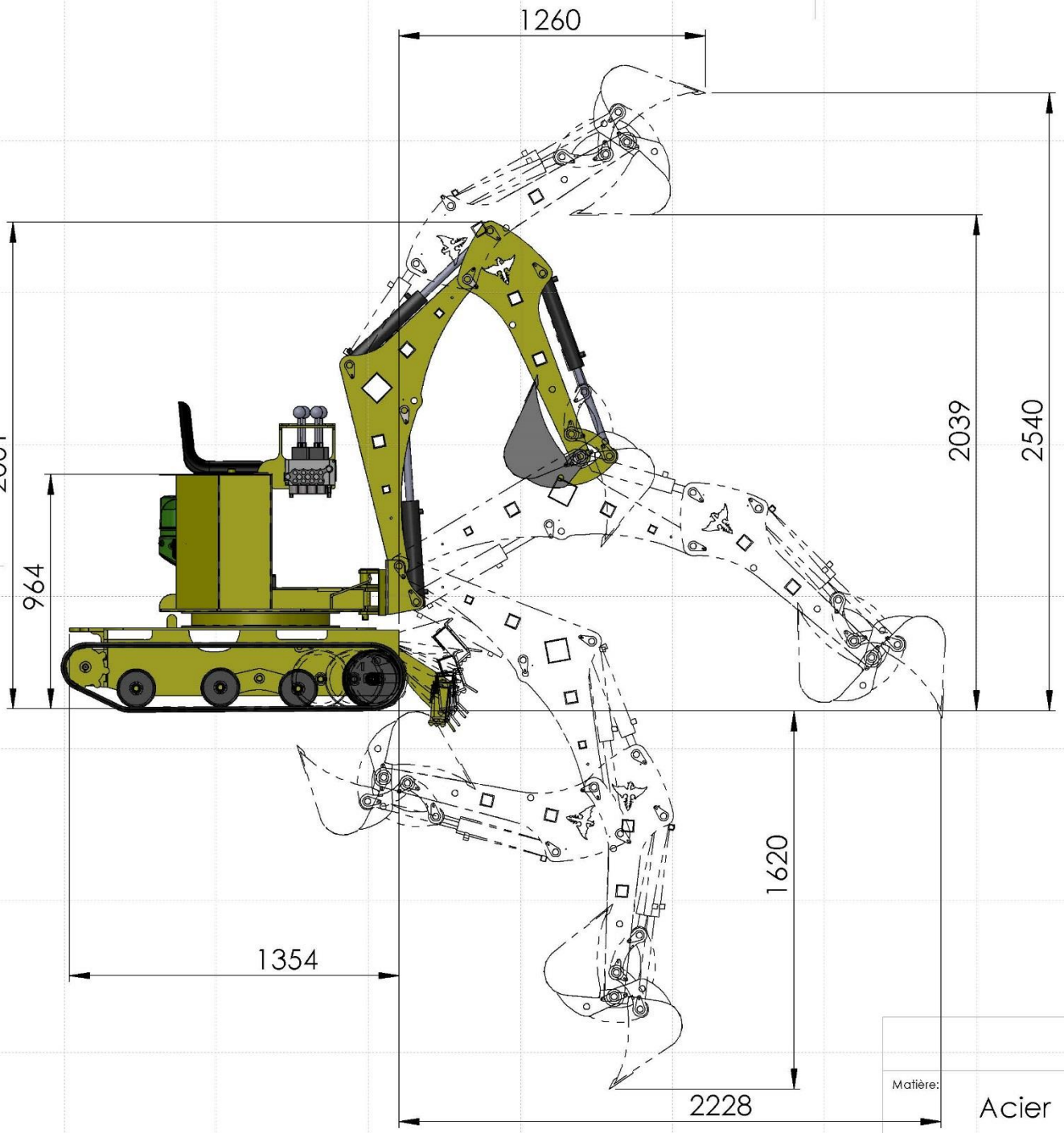
Manufacturer :	SAS HHO - France
Type :	Mini Excavator
Model :	Phoenix 400
Version :	2019
Origin :	EU - France
Empty weight :	680 kg
Total height :	2 m
Width:	840 mm
Frame length :	2738 mm
Rotation angle:	110° / 200° left or right
Max height :	2.6 m
Max height under closed bucket :	2 m
Max digging depth :	1.6 m
Bucket tearing force :	1.5 ton
Traction motor :	Orbital
Hydraulic oil tank capacity:	37 L
Tracks dimensions :	180x72x43

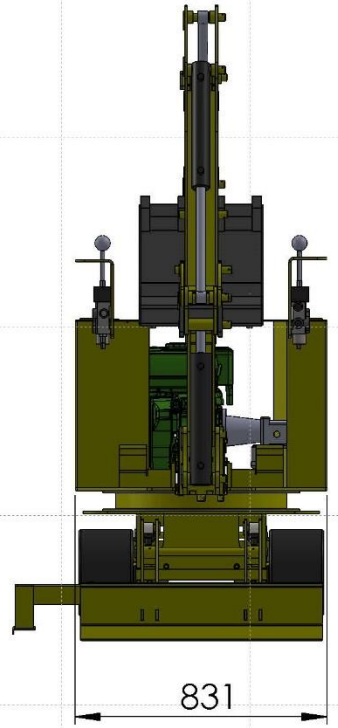
Standard motor and pump :

6.5 hp motor	
Fuel :	Gasoline
Motor :	6.5 Hp
Type :	Mono – cylinder, 4 strokes
Cooling system :	Air
Power :	5.5 KW
Displacement :	196 cc
Consumption (at 100% power) :	1.9L/h
Fuel tank capacity :	3.7 L
Hydraulic system	
Hydraulic pump :	Double gear pump 2.5 + 2.5 cc
Pressure :	145 bars
Flow rate :	2 x 5.5 l/min

9.5 hp motor	
Fuel :	Gasoline
Motor :	9.5 Hp
Type :	Mono – cylinder, 4 strokes
Cooling system :	Air
Power :	7.1 KW
Displacement :	277 cc
Consumption (at 100% power) :	2.4L/h
Fuel tank capacity :	7.4 L
Hydraulic system	
Hydraulic pump :	Double gear pump 3.2 + 3.2 cc
Pressure :	145 bars
Flow rate :	2 x 6.4 L/min

14 hp motor	
Fuel :	Gasoline
Motor :	14 Hp
Type :	Mono – cylinder, 4 strokes
Cooling system :	Air
Power :	10.5 KW
Displacement :	429 cc
Consumption (at 100% power) :	3 L/h
Fuel tank capacity :	7.4 L
Hydraulic system	
Hydraulic pump :	Double gear pump 6 + 6 cc
Pressure :	145 bars
Flow rate :	2 x 7 L/min





Poids en ordre de marche 640 kgs

Date de dernière mise à jour:
jeudi 10 novembre 2016 11:24:20

Matière: Acier

No. DE PLAN

Phoenix 400

A4

SAS HHO - France

FEUILLE 1 SUR 1

First time use

Before using the excavator for the first time, a full visual control must be done to check any damages that may have occurred during transport or assembly. All the attachments must also be checked as well as the tracks' tension and the liquids levels (oils and fuel) and the excavator should be fully greased (see p17 for the grease points and p20 for the maintenance schedule).

Excavator's running-in period

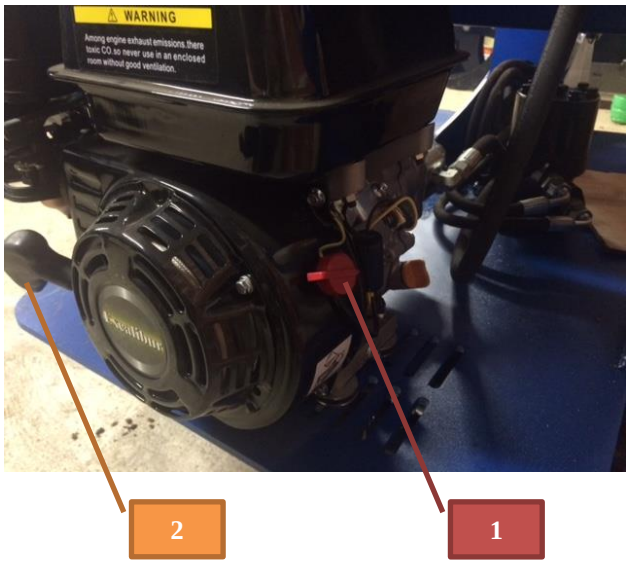
Each new equipments have been tested before leaving the factory but still need a running-in period of 45 to 50h. During the first 50 hours of use, is is imperative not to work full loads with the excavator and to follow theses rules :

- Only warm up the excavator at medium engine speed with slow movements; do not warm up at low engine speed
- Do not submit the excavator to unecessary strong stresses.

Particular maintenance instructions

- Change the motor oil after the first 5 hours of use,
- Check the hydraulic oil for any visible impurity.

Starting up



To stat up the excavator :

- Turn the comutator on the position ON (1)
- Check if the fuel line is open (4)
- Open the choke (3)

Once these conditions are met, pull on the cord (2) to start the motor, wait 10 seconds then close the choke.

To turn off the motor, turn the comutator (1) to the position OFF.

The procedure shown here is for the 6,5 hp motor and is the same for all motors. The 9,5 hp and 14 hp motors use an ignition key as a comutator and can be started by either pulling the cord (2) or turning the ignition key.

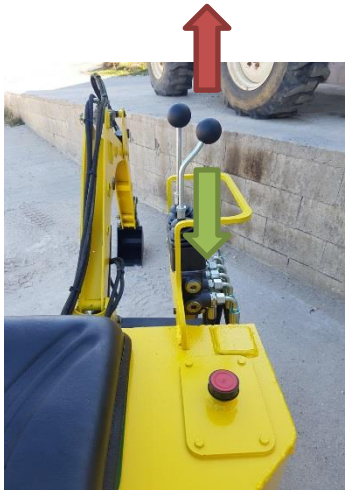
How to operate the excavator

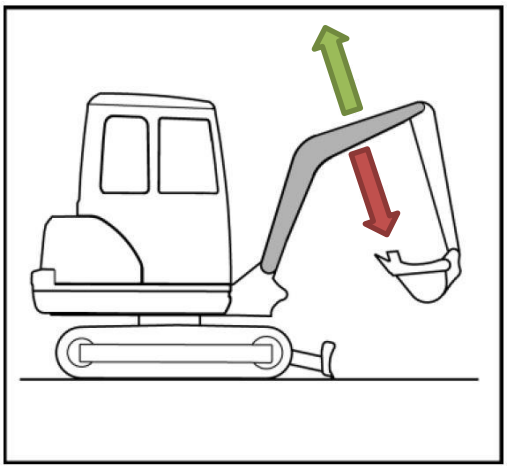
When using a command, it is possible that the machine stops for a moment before moving. It is because the cylinder activated by this command does not have a high enough pressure to move right away thus causing a delay. This is not a malfunction and is typical for this hydraulic system.

Commandds for the boom

To lift the boom, pull the back-right lever (3) toward you

To lower the boom, push the back-right lever (3) away from you



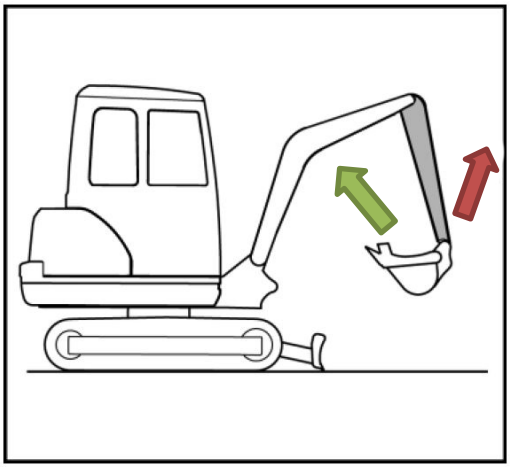


While moving the boom, be careful that the boom or the bucket don't come in contact with the blade

Commands for the stick

To extend the stick, push the back-left lever (2) away from you

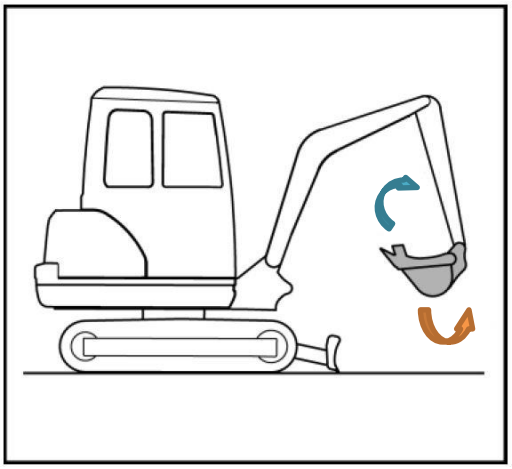
To retract the stick, pull the back-left lever (2) toward you



Commands for the bucket

To close the bucket, push the back-right lever (3) to the left

To open the bucket, push the back-right lever (3) to the right



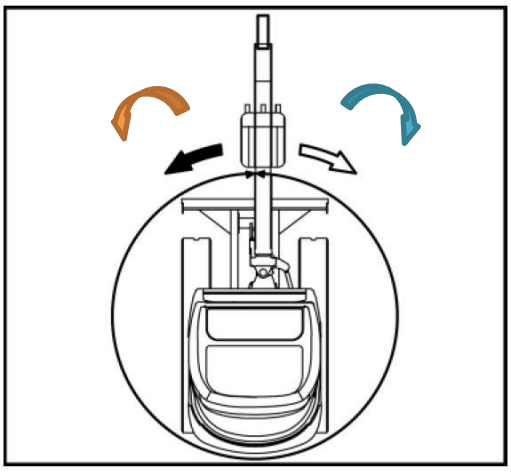
While moving the bucket, be careful that it doesn't come in contact with the blade.

Rotation of the turret

Before any rotation, be careful of your environment so that the excavator does not come in contact with an obstacle or a person. While rotating, nobody must be in the rotary field. Do not turn abruptly from left to right, doing this might cause premature degradation of the swing gear and motor.

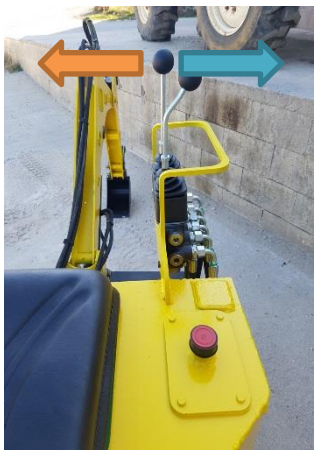
To swing to the left, push the back-left lever (2) to the left

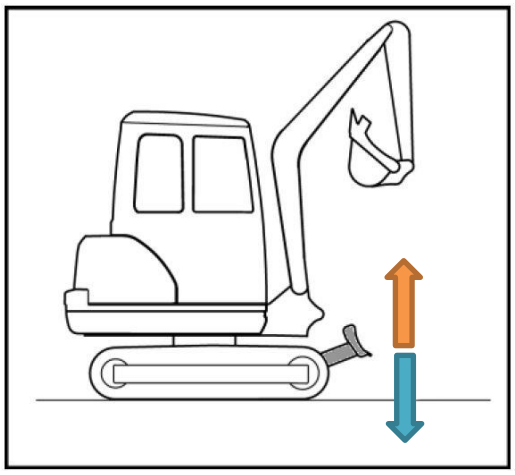
To swing to the right, push the back-left lever (2) to the right



Commands for the blade

While moving the blade, be careful that nobody is close.



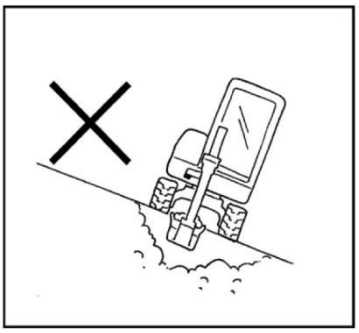


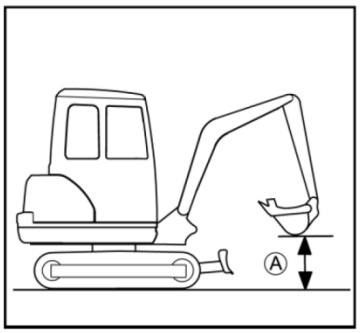
To lower the blade, push the front left lever (1) to the right

To raise the blade, push the front left lever (1) to the left

Translation (moving)

While operating the excavator, you must imperatively follow the safety rules mentioned below :





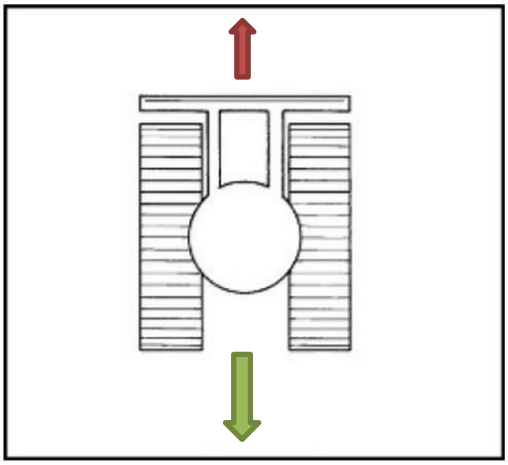
- While working on a hillside, be mindful of the orientation of the excavator toward the slope (see illustration).
- Max lateral tilt angle : 18% or 10°
- Max longitudinal tilt angle : 27% or 15°
- While moving, always keep the bucket as low as possible, around 200 to 400mm away from the ground (distance Ⓐ).
- Control the ground integrity, look out for holes or other obstacles before moving.
- While approaching a mound or a ditch, move slowly and carefully because of the higher risks of landslides.
- While going downhill, move slowly and avoid any uncontrolled acceleration.
- While moving, always have the blade raised as high as possible.

Moving forward :

The two front levers control the tracks. The left lever controls the left track and the right lever controls the right track.

To move forward, push both levers away from you, release the levers to stop moving.

To move backward, pull the two levers toward you, release the levers to stop moving.



Turning

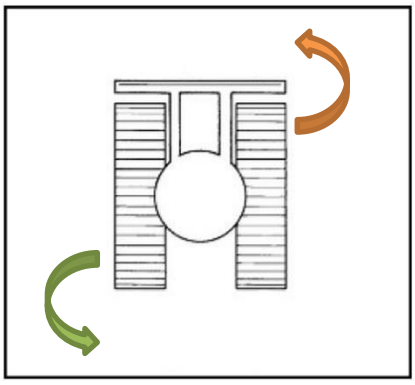
The indications given here are for a turn done with the blade in front of the excavator, if the blade is on the back, the movements are going to be opposite to those described here.

While turning, be sure that nobody is in the turning radius of the excavator.

Left turn

Do not touch the front right lever and pull the front left lever toward you.

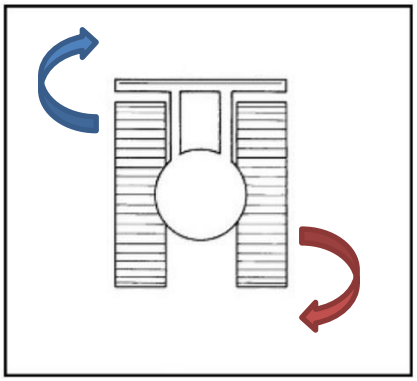
Making a left turn is also possible by pushing the front right lever away from you.



Right turn

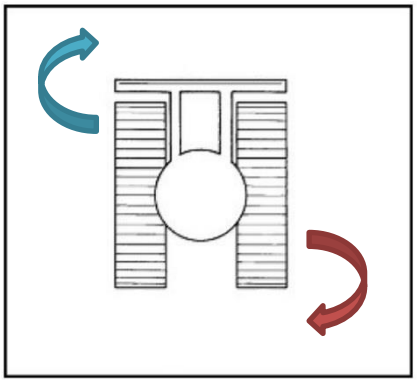
Do not touch the front left lever and pull the front right lever toward you.

Making a left turn is also possible by pushing the front left lever away from you.



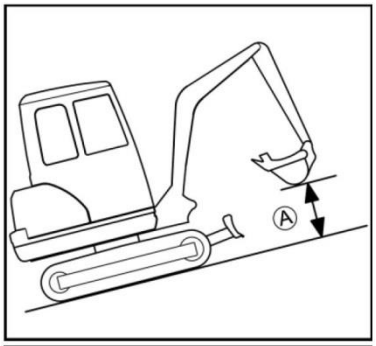
U-turn

Push both front levers in opposite directions. The tracks will move in opposite directions and the excavator will pivot around its axis.



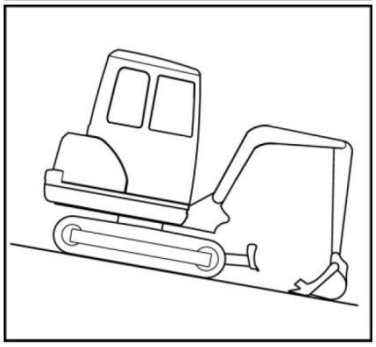
Moving on a slope

The operator must be extremely cautious while moving on a slopped terrain because of a higher risk of tilting the excavator

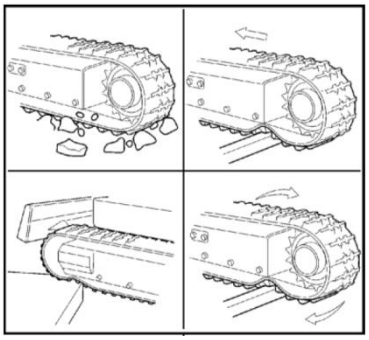


While moving uphill, lift the bucket 200 to 400mm away from the ground

While going downhill, if the ground allows it, let the bucket slide on the ground.



Information on the rubber tracks :



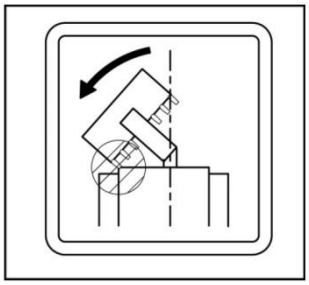
- Turning or making a U-turn on sharp objects or moving on stairs cause an extreme solicitation of the tracks and may break or weaken the rubber as well as the metallic internal structure.
- Be careful that no objects are trapped in the tracks. They can cause extreme solicitation leading to weakening or breaking the rubber or the metallic internal structure.
- Avoid any contact between the tracks and oil.
- If oil or gas have been spilled on the rubber tracks, clean it immediately.
- Avoid tight turns as much as possible on a floor with a high friction coefficient like on an asphalt road or on cement.
- To avoid any corrosion, do not work in a place with contact with salt or salt water.

Excavation works

While working with the excavator, one must obey the following safety rules :

- While working with the excavator, always have the front blade on the ground except when moving.
- Do not try to break concrete or rock with the bucket with the turret turning controls.
- While digging, do not lower the bucket in free fall.
- Do not overextend the cylinder, always leave a safety margin.
- Do not move the excavator while the bucket's teeth are in the ground.
- For excavation works, do not sink the bucket too deep, it is best to scrape the ground with the bucket flat. This method reduces the stress on the bucket.
- While working near or on water, the excavator can be sink up to the base of the turret.
- After working near or on water, to avoid any rust, it is best to grease the entire excavator until the older grease has been completely replaced with new one.
- It is forbidden to use the excavator as a lifting equipment.

While using bigger or deeper buckets, before doing any maneuver, check if the bucket does not come in contact with the excavator of the operator.



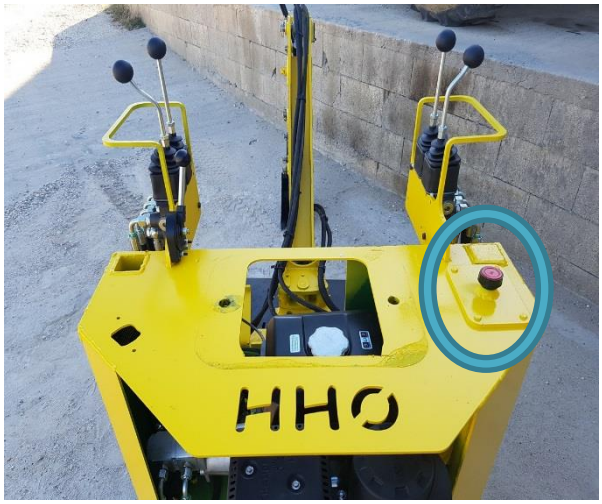
Liquids level control and maintenance

Motor oil

The motor oil level can be checked from ether sides by unscrewing the gauge and controlling the level on the graduation.

Hydraulic oil

The hydraulic oil level can be check with the red plug at the right of the turret, the level should be around the half of the gauge.



If need be, add oil by removing the 4 screws then the steel plate.

Grease points

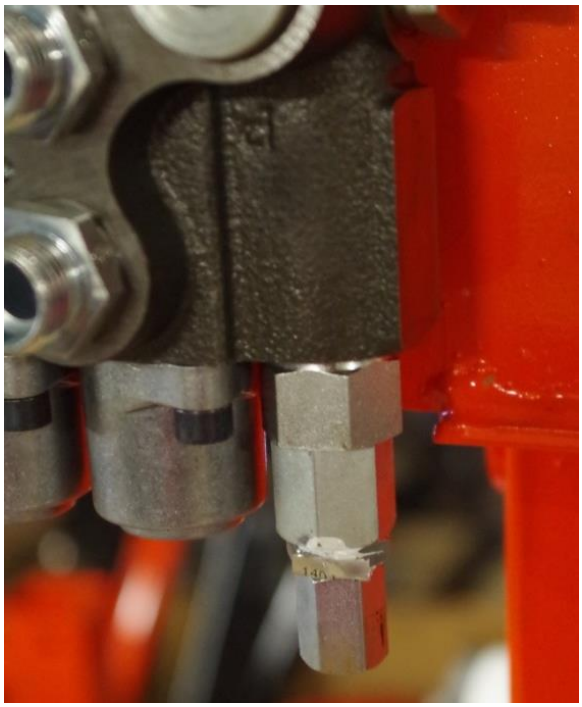
Any axis has a grease point. Greasing the excavator must be done at least once a week or once a day if used intensively. The slewing ring also have 4 greases points.

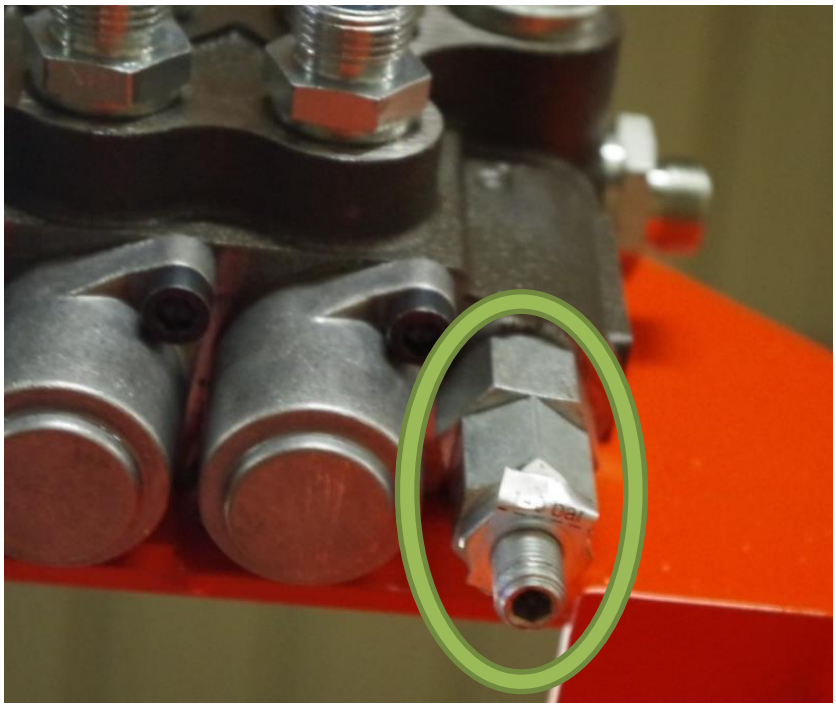
Pressure control

After the first hours of service, the excavator can lack a little power, it would be then necessary to control the hydraulic pressure.

A manometer able to sustain at least 150 bar (2200 psi) is needed.

First you need to take off the plug of the safety valve then with an allen wrench tighten or loosen the bolt as circled in green





- If the excavator lacks power, tighten the bolt ¼ turn at a time until the required pressure of 150 bar (2200psi) is attained**; Do not overtighten, this might cause permanent damages to the hydraulic pump**

- If the motor is stalling, loosen ¼ turn at a time until the require pressure is attained.

Check oil level regularly.

Motor's maintenance schedule

For more information on the maintenance for the Kohler motor, please consult to the motor's manual.

Regular maintenance needs to be done every month or at the indicated time used Maintenance		Before each use	First month or after 50 hours	Every 3 months or 100 hours	Every 6 months or 200 hours	Every years or 300 hours
Motor oil	Check level	X				
	Change		X	X		
Air filter	Check	X				
	Clean			X (1)		
	Replace					X (2)
Sediment cup	Clean			X		
Spark plug	Check/clean			X		
	Change					X
Spark arrester	Clean			X		
Vavle clearance	Check / Adjust					X (3)
Fuel tank strainer	Clean					X (3)
Combustion chamber	Clean	After 300 hours				
Fuel line	Clean	After 2 years (replace if need be)				

(1) Service more frequently in dusty area
(2) Replace only the foam part
(3) Theses services should only be done by the dealer or a professional unless the owner possesses the necessary tools and knowledge.

Excavator's maintenance schedule :

Regular maintenance Every month or after the time described in this table		Before each use	First month or 50 hours	Every 3 months or 100 hours	Every 6 months or 200 hours	Every years or 300 hours
Operation						
Hydraulic oil	Check level	X	X (1)			
	Change					X
Oil strainer	Check		X (1)			
	Clean		X (1)			
	Replace					X
Tank	Clean		X (1)			X
Pins	check	X				
Bolts	Check / Tighten	X				
Grease	To do	X				
Rubber tracks	Tension	X				
	Check	If 2 or more links are missing, change the track				
Hydraulic hoses	Check / Tighten	X				X (2)
	Check	If a leak is present, change the hose immediately				

(1) Drain the tank, if there is not too much sediments, filter the oil and use it again.
(2) Change the hose if the metal threads are visible and rusted.