

WS 160 P

Technical manual

ts-industrie.eu

TS INDUSTRIE®

Notice originale

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DECLARATION OF CONFORMITY

The **TS INDUSTRY** Company

Industrialization Ost 42
47906 KEMPEN (Germany)

Tel.: +49 2152 / 9934601

HEREBY DECLARE THAT THE MACHINE:

Brand : ***TS INDUSTRY***

Type : **WS/160P**
Engine power:**27,97 kW**
Technical documentation held by Mathieu Willerval.

that the product complies with the following European directives:

- **2006/42/EC** Directive « machine »
- **2014/30/EU** Electromagnetic Directive
- **2016/1628** Directive « pollution ».
- **2000/14/EC** Noise Directive.

Conformity assessment procedure relating to Directive 2000/14/EC Annex V.

Installed power at 3600 rpm	*Measured Acoustic Power Level*	*Guaranteed Acoustic Power Level (Lwa)*
27,97 Kw	**115 dBA**	**117 dBA**

References of the harmonized standards used:

- **EN 13525/A2**

In accordance with technical instruction SG/SAFSL/SDTPS/2016-700 published on 08/31/2016 by the Ministry of Agriculture, Agrifood and Forestry and by the Ministry of Labor, Employment, Vocational Training and Social Dialogue.

Done in RONCHIN, March 26, 2025

Mathieu Willerval (TS-INDUSTRIE Manufacturing Director)

ATTENTION !

Our machines undergo strict quality control before delivery.

Since the machine is no longer under our responsibility once it leaves the factory, an additional check must be carried out by the dealer before delivery to the customer.

It is necessary to check:
- external damage due to transport etc.
- the proper fastening of all screws and hydraulic hose fittings
- the oil, water and fuel level
- complete functional control of all parts

This check is confirmed by a stamp and a signature on the **machine delivery slip**. The right to the guarantee is not valid without the return of the machine delivery slip duly completed and signed!

In addition, it is necessary to check that the parts are properly tightened after the first use and that there are any friction points in the hydraulic hose passages!
Schedule an appointment with your client directly about this.
Regular inspections must be observed in accordance with these operating instructions!

Quality control – an important step for customer satisfaction!
Make your contribution!

It is strictly forbidden to use the machine if the emergency stops, cables, or any other safety or control device are damaged or not present.

For your safety, in the event of breakage of the red side cables or the emergency stop buttons, please refer to the parts diagram or to the spare parts department to order the parts.

GUARANTEES

Regulation of warranty rights

Warranty rights, in accordance with the manufacturer's General Conditions of Sale, are valid on new TS-industrie chippers, for an initial period of two (2) years (or 650 hours of use of the machine in total), from the date of invoicing from the reseller to the end customer. Provided that this invoicing occurs within 12 months following the date of the invoice sent by TS-industrie to the authorized reseller. The invoice sent by the reseller to the end customer is authentic.

Only the registration of the new chipper on the site www.ts-industrie.eu entitles you to a third year of warranty (or 1000 hours of machine use in total). This mandatory registration of the machine must be carried out by the authorized TS-industrie dealer, at the latest within one month of the sale. It must be accompanied by the sales invoice to the first owner of the machine. The new grinder warranty covers all parts and components of any new TS-industrie grinder that has a material or manufacturing defect.

The following are expressly covered by the warranty: the body of the machine, the cutting disc, etc.

Original parts must be kept unchanged until the final settlement of the warranty claim for reasons of preservation of evidence. In the case of warranty, the machine subject to the claim (or the old part) must be made available to the manufacturer or distributor free of charge.

Engine components are covered independently by the legal guarantee of conformity of their respective manufacturer. Their warranty is conditional on compliance with the engine maintenance plan, carried out by the dealer network of the corresponding engine manufacturer, upon presentation of supporting documents.

Any technical modification to the machines and/or their parts will result in the loss of warranty rights. The same applies to cases of improper handling or the use of lubricants, spare parts or accessories not authorized or prescribed by the manufacturer. Damage and deterioration due to transport caused by normal wear and tear after the machine has been put into service, in principle, does not give rise to any warranty rights.

The delivered machine must be subject to mandatory visual checks or inspections
prescribed in accordance with the existing maintenance plan according to the specified intervals. Warranty rights are extinguished in the event of non-compliance with the mandatory visual checks and the inspection plan. Another condition for warranty entitlement is the submission of full documentation on the mandatory visual checks and inspections carried out.

All warranty and maintenance work must be carried out by an approved TS-industrie distributor.

The warranty applies to normal use of the product. It therefore covers defects attributable to materials and manufacturing or assembly faults.

GEOGRAPHICAL COVERAGE: Refer to the general warranty conditions available on the sitewww.ts-industrie.eu



No modification of the equipment and/or electronic programming is permitted. Any unauthorized modification could affect operation or safety and possibly shorten the life of the equipment.

DON'T FORGET TO REGISTER YOUR MACHINE OTHERWISE THE WARRANTY BECOMES VOID

www.ts-industrie.eu
Tab: Services / Guarantees

Preface

Thank you for choosing the TS-industrie wood chipper
Your TS-industrie chipper has been manufactured with the greatest care and the strictest quality standards. In order to meet these requirements, including the most professional requirements, we ask you to read this operating manual carefully and to observe the warnings and maintenance instructions in particular.
Only by complying with all maintenance work mentioned in the prescribed maintenance intervals can we guarantee the full manufacturer's warranty for your TS-industrie chipper.

The user manual includes several types. An explanation is provided in the introduction to help you find your way around quickly using the small pictograms.





Serial number identificaition

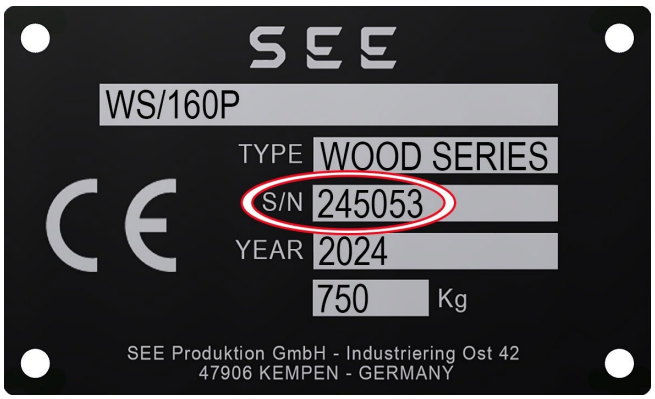
When ordering replacement parts or requiring technical information, please always have your chipper's serial number with you.

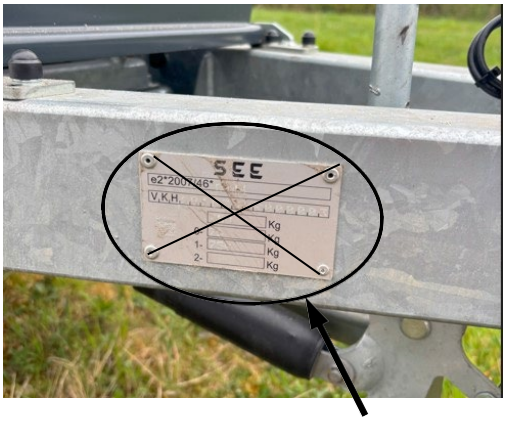
Manufacturer's plate



The serial number **manufacturer TS-INDUSTRIE** always includes a **six-digit number**

Manufacturer serial number





Do not give the license plate number trailer approval

Safety instructions

1. The machine must only be used in full compliance with the operating instructions!

2. The operating instructions for the drive motor must also be observed for motor-driven machines.

3. Raising the length of the feeding shelf *(if it exists)* should only be performed when the cutting wheel is stopped.

4. Maintenance, cleaning, adjustment work and removal of the protective device must only be carried out with the engine stopped, the ignition switched off and the transmission disengaged.*(machines PTO)* and tools when stationary. Remove the ignition key so that accidental starting becomes impossible.

5. Foreign bodies mixed with the material to be ground, e.g. iron parts, stones, must be removed before putting the machine into operation.

6. Check that all protective devices are installed after maintenance or repair.

7. The chipper must not be operated in closed rooms due to the inherent risk of poisoning.

8. The cutting wheel should only be accessible when it is at a complete stop. This means that the drive motor is stopped and the ignition is in position 0.

9. The machine operator must ensure, by taking responsibility, that no third party is in the work and danger zone.

10. It must be ensured that only verified original spare parts are used during repairs.

11. Only trained persons who have reached the age of 18 may operate the chipper.

12. Safety shoes and tight-fitting clothing, as well as work gloves with tight cuffs, a safety helmet and safety glasses must be used.

13. The chipper must be placed in the correct position during transport:
A) Lift the hopper shelf *(if it exists)* and check if the lock is engaged.
B) Tilt the chipper into transport position and check that the safety bolts are engaged.
C) Move the discharge channel so that it does not protrude beyond the machine to the side.
D) Lift all supports if necessary.

14. When driving on public roads, lighting must comply with the Highway Code of the country of registration.

15. The chipper must be stable during operation and then stopped by tilting. A safety measure must then be taken to keep it stopped.

16.
a) Single-axle motorized chippers are pulled by towing vehicles; a parking brake can be applied if equipped.
If they do not have brakes, the immobilizing chocks supplied with the machines must be used.

b) In mode without towing vehicle, the supports (Jockey wheel at the front and stand at the rear) must be lowered.

17. For safety reasons, a minimum distance of 10 meters from the machine to the ejection must be respected. **The ejection must always be handled by the operating personnel**.

18. Inserting hands into the feed opening is only permitted when the engine is stopped and the cutting wheel is at a standstill with the engine stopped.

19. The factory-set permissible working pressure must not be changed.

20. Only trunks reaching a maximum diameter of **16 cm** can be processed with the chipper.

21. The hydraulic system should be professionally inspected annually.
Hydraulic hoses should be replaced every 5 years.

22. When loading the chipper, do not hold the feed hopper. To feed short pieces or shrubby wood, use only sturdy wooden sticks or other wooden tools (branch pushers). Our chippers may only be used for manual loading. Never use mechanical loading (grapple).
Do not move in the ejection area.

23. Carry out a daily functional check before commissioning, in particular the safety device (**tightening the coupling linkage**, hood locks, engine hood safety switches and chimney access). The operating capacity and proper attachment of the knives and hammers must also be checked.

24. The operator must be fully instructed before commissioning.

25. The grinding wheel should only be accessible when it is at a complete stop and the drive motor is switched off (remove the ignition key).

26. Projection hazards. It must be taken into account that parts such as wood chips can be thrown out of the hopper into the work area. Personal protection must always be worn. (see page 12). The order must be made on the side of the hopper.

27. Instructions for all motor-driven machines:
The engine must be tilted to a maximum of 25° during operation (driving). If the oil quantity is too low, engine lubrication at 25° is no longer guaranteed!

28. Caution on sloping terrain. The machine operator must ensure that the machine is safely immobilized and remains stable while working.

29. After coupling the machine to the towing vehicle, remove the jockey wheel.

30. The machine should only be loaded with wood. Ensure that no stones or metal parts enter the machine.

31. The machine may not be used to transport materials or people under any circumstances.

32. The machine cannot be used to push or pull anything.

33. Battery acid is highly corrosive. Avoid contact with eyes, skin, and clothing. Rinse any spills immediately with water and seek medical advice if necessary.

34. Before touching the electrical circuit, always disconnect the cable connected to the terminal**-** of the battery.

35. The work must be carried out by a **qualified technician.** All assembly, disassembly and/or special maintenance work must be carried out by an authorized distributor.

36. In the feed hopper, take care not to get caught by loose clothing on the roughness formed by the teeth of the feed belt.

37. Clean the anti-rejection protection flap regularly so that it remains transparent (replace it if necessary).

Pictograms

Protective glasses and a helmet must be worn!



Wear protective gloves with tight cuffs!



Wear protective shoes!



Never climb into the engine hopper while it is running.



Pictograms

Only touch machine parts when they are at a complete standstill!

Attention feed rollers!

Maintain sufficient distance from rotating machine parts!

Never open or remove safety devices while they are in operation!



Read the operating instructions before using!

Turn off the engine before maintenance and repair work and remove the key!

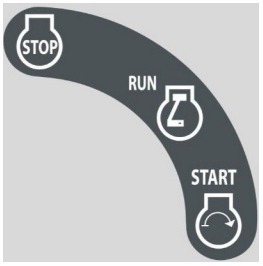
Only touch machine parts when they are at a complete standstill!

Maintain sufficient distance from rotating machine parts!



Pictograms

Key switch.



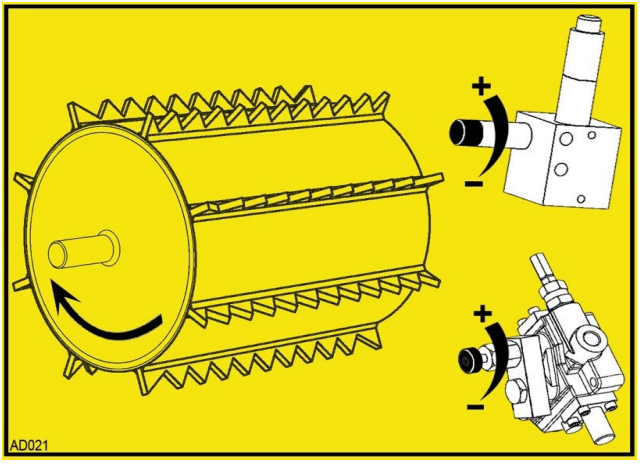
Engine hood lock.



Do not remain in the ejection area with a running machine! Danger zone.



Feed roller rotation speed adjustment.



Hydraulic oil to use: HV46



Fill the fuel tank with gasoline SP98 or SP95.



Pictograms

Keep hands and faces away from moving parts.

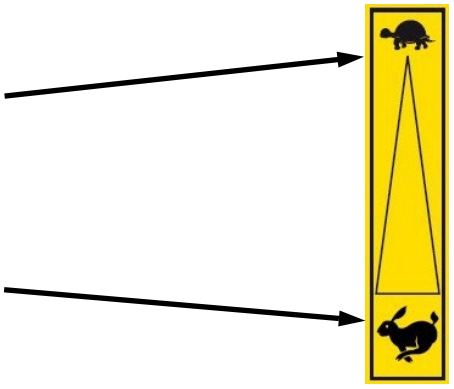


STOP feed rollers.



Minimum engine speed.

Maximum engine speed.



For road transport, raise the shelf and lock it.

Always drive with the jockey wheel removed from its support.



Wheel chock.



Tire pressure.



Do not climb on the wings.

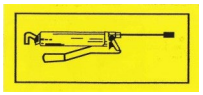


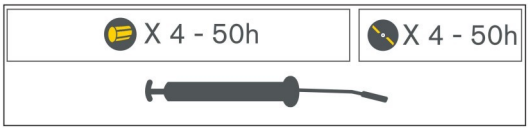
Pictograms

Machine model.



Lubrication point.

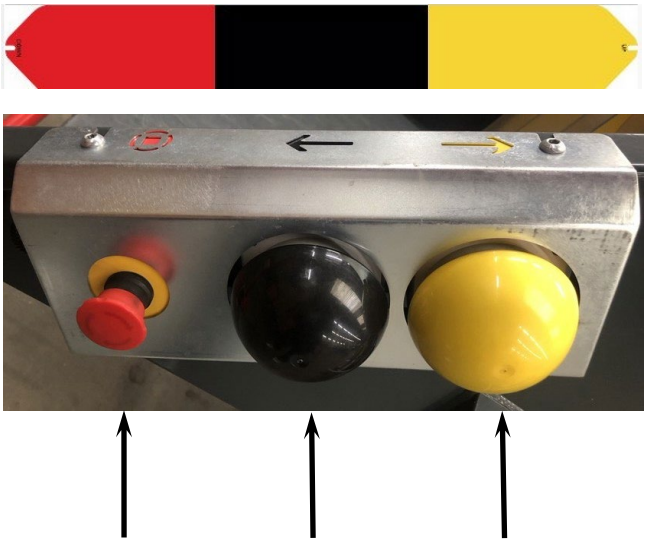




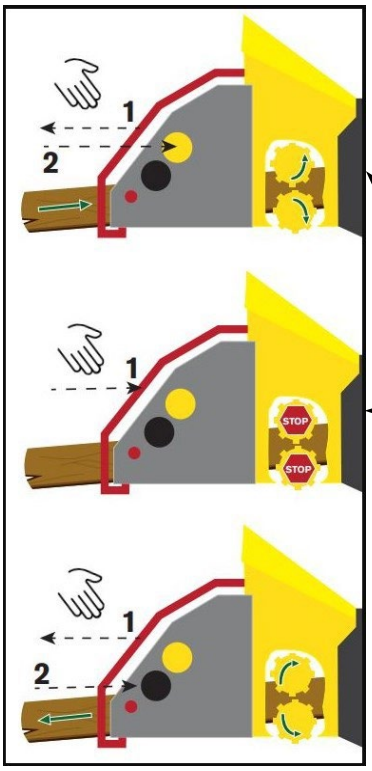
The noise level of the machine at work does not exceed the value displayed on the machine sticker.



Control and emergency stop buttons.



Emergency stop button - reverse movement - forward movement



Feed roller rotation controls
Crushing of materials
(forward movement at maximum speed)
Stopping the rotation of the feed rollers
Removing the materials (reverse)

Transport security

1) Make sure you follow the laws issued by the current traffic code.
2) Make sure your equipment always has clean and working signal lights for other drivers.
3) Reduce your speed on bumpy roads and surfaces.
4) Empty and completely clean the hopper of all branch residue.
5) Orient the chimney as far forward as possible and lower the chimney cap as much as possible.
6) On the road, raise the shelf and lock it.
7) On the road, raise the rear stand.
8) Remove the jockey wheel.

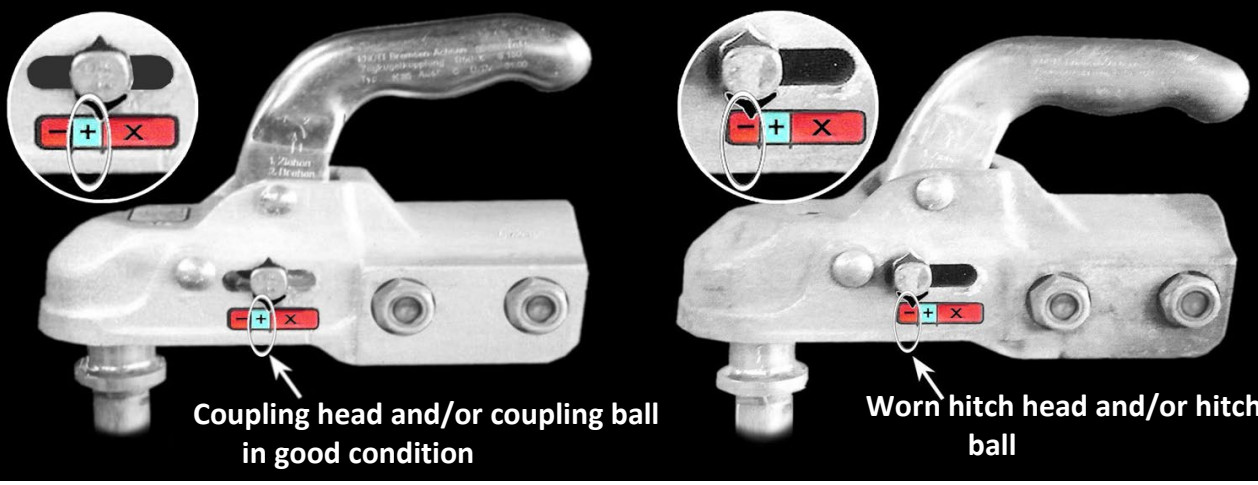




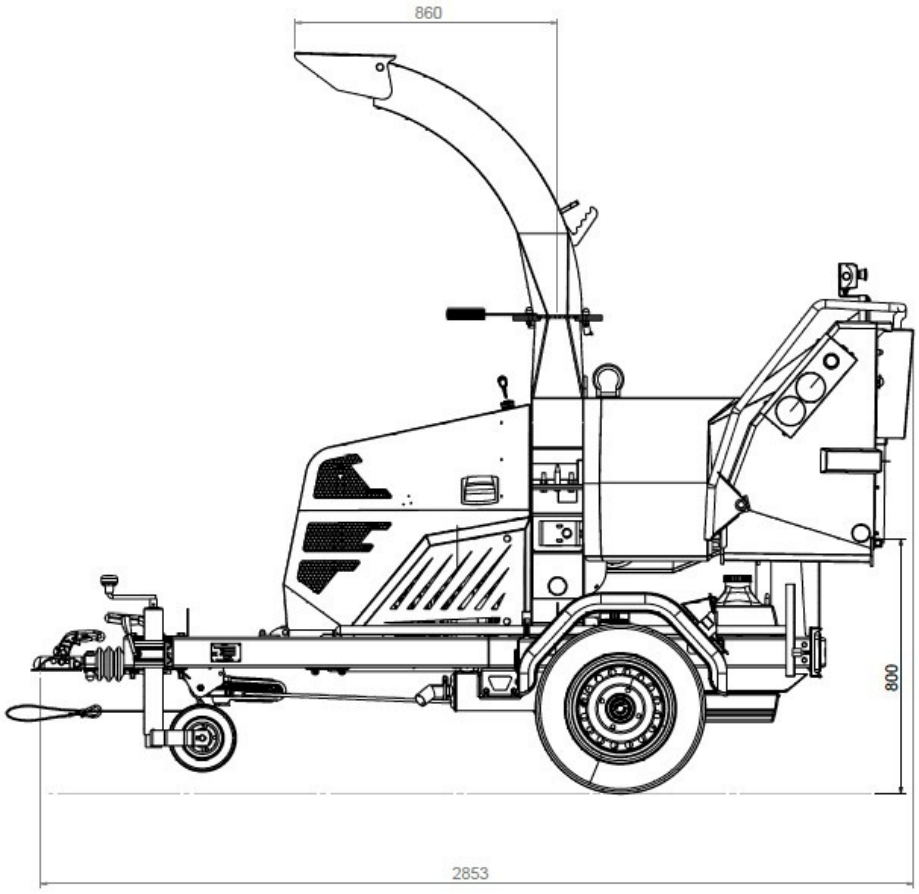
<u>Hitch wear indicator</u>:

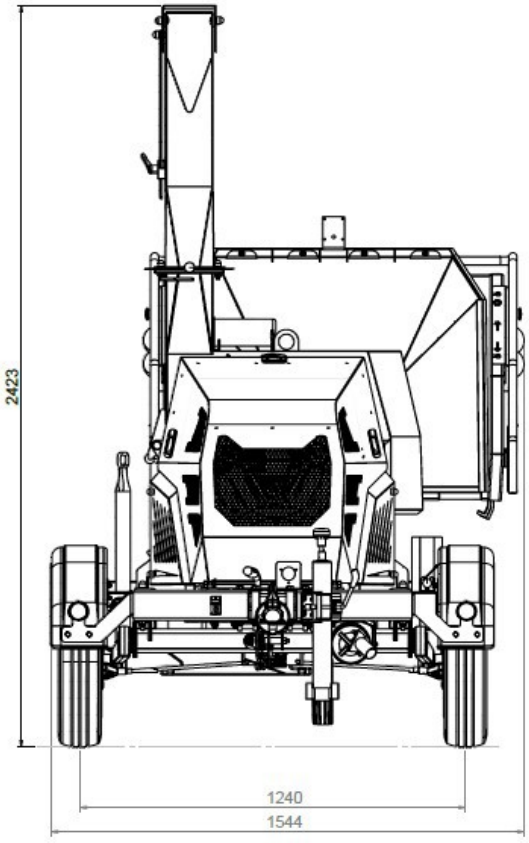
Check what the wear indicator indicates each time you attach the machine. Always change the vehicle's towing hitch head and/or ball if the cursor is in the MINUS zone, otherwise you risk losing the chipper on a speed bump or when reversing against a curb.

<u>YOU ARE RESPONSIBLE IN THE EVENT OF AN ACCIDENT</u>



Dimensions and functions





FUNCTION:

The WS 160 P wood chipper is a machine designed for mechanically shredding wood and similar organic materials. The aim is to reduce the volume of branches, shrubs and bushes by cutting them into small pieces for transport or return to their natural environment.

The wood is manually placed in the feed hopper and fed into the crushing cell. Hydraulically driven toothed feed rollers transport the wood to a cutting disc equipped with knives. These knives, together with the horizontal and vertical counter knives, form the cutting mechanism in which the wood is cut.

The wood chips, accelerated by the grinding disc and fan blades, are transported out of the machine through the exhaust chimney. The machine is powered by a powerful 38 hp twin-cylinder petrol engine.

GENERAL DESCRIPTION OF THE MACHINE

The chipper **WS 160 P** is intended for crushing branches up to**160 mm** in diameter. The machine includes the following main elements:

A : the road chassis
B : the feed hopper
C : the engine and its various transmissions
D : the exhaust chimney
E: the engine hood
F : the machine hood
G : the control panel



A. The chassis.
The chassis supports the various components of the chipper. It allows the machine to be moved independently.



B. The feed hopper.
It is composed of a folding tablet **(1)** ,
of a feed hopper**(2)**, of two feed rollers (feeders)**(3)** and a steering wheel

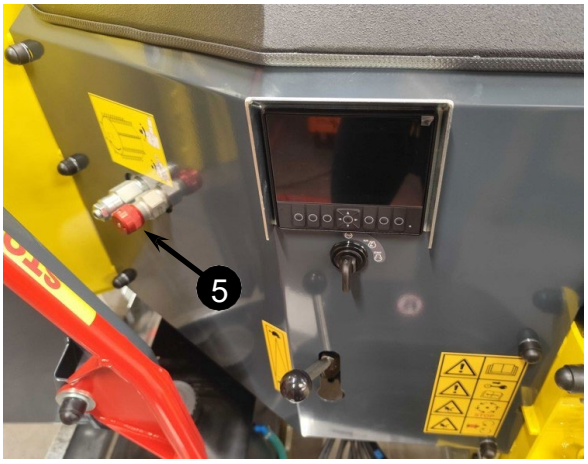
coupe.

Feed rollers:

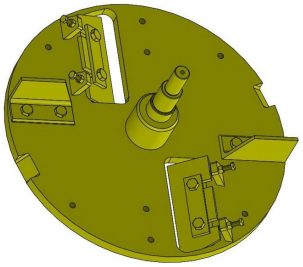
They drive the material towards the cutting wheel at a constant (adjustable) speed. An anti-jamming system stops them when the cutting wheel speed drops too low (jamming at the grinding level), they start rotating again automatically when the wheel has regained a sufficient speed to grind correctly.

They can be operated in both direction of rotation (forward and reverse) using yellow and black control push buttons **(4)** located on both sides of the tablet. Their rotation speeds are adjustable using the wheel**(5)** located on the right side of the hopper depending on the diameter of the material to be ground.



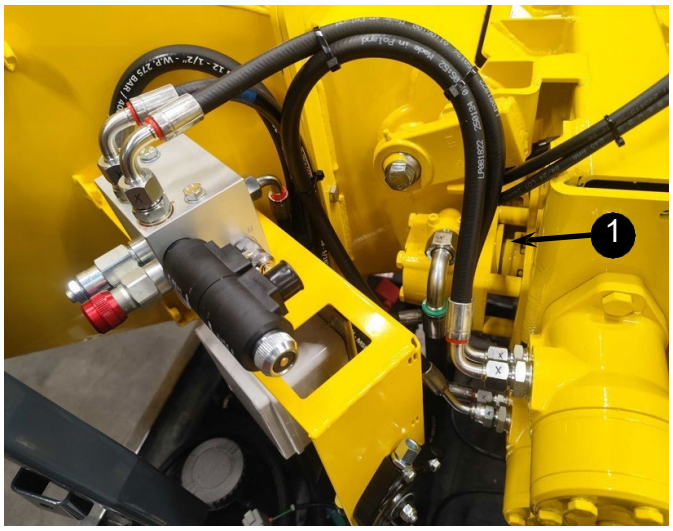


Cutting wheel:
The centerpiece of the machine, this cuts and grinds the material brought in by the feed roller. It starts rotating by accelerating the motor and turns continuously.
Its speed is fixed.



C. The engine and its transmissions.

The petrol engine is located in front of the grinding cell, it provides the energy necessary to drive the cutting wheel and to drive the pump **(1)** of the hydraulic circuit.
The engine is a 38hp twin-cylinder petrol engine. For further information on the engine, please refer to the manufacturer's manual.
The outgoing shaft is fitted with a pulley **(2)** operating 3 belts which drive the cutting wheel in direct drive, via a free wheel **(3)** The hydraulic circuit pump on the other side operates the hydraulic motors of the feed rollers.



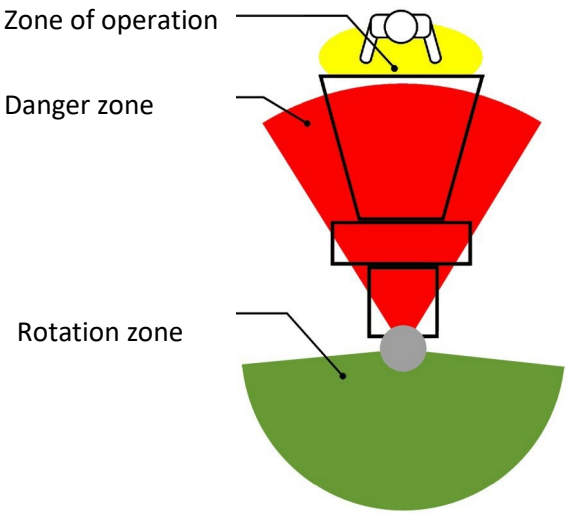


D. Blow-out chute.

This allows the evacuation of chips, its upper part can be oriented horizontally through 270°.

Its cap is adjustable in vertical inclination.

Noticed :
Wood chip residue may be ejected when the chipper is started.



An electrical safety device stops the engine and prevents it from starting if the hood is opened to access the cutting wheel.

E. The engine hood.

The engine hood protects the user from the moving parts of the machine, allowing them to work in complete safety.
An electrical safety device stops the petrol engine and prevents it from starting if the engine hood is opened.



F. The machine hood.

The machine hood locked by two M12 nuts protects the moving parts of the machine allowing the user to work in complete safety.
First you have to open the engine hood (se**e E**) before you can open the machine hood.

G. The control panel.

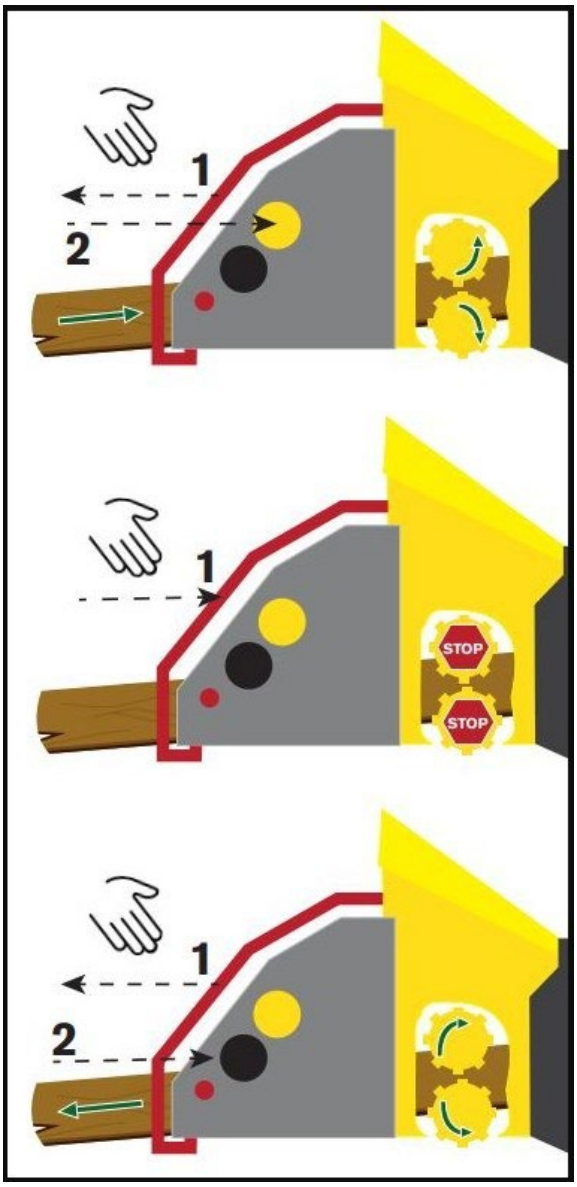
The control panel consists of a TS.Cockpit screen**(1)**, a key switch**(2)**, of an accelerator handle**(3)**, a wheel for adjusting the speeds of the feed rollers**(4)**.



OPERATION OF FEED CONTROLS

The **chipper** is equipped with an electrically controlled hydraulic distributor operated on each side of the shelf by two 'mushroom' push buttons for forward and reverse gear and a red "handrail" control bar for stopping the feed rollers.

<u>NB</u>: pour que les rouleaux ameneurs tournent en marche AV, le régime moteur doit être au maximum



<u>FORWARD CONTROL:</u>

1: To be able to operate the rollers in forward motion, the red handrail must not be operated
2: Press the push button **YELLOW** to operate the rollers in forward motion

<u>FEEDERS STOP CONTROL:</u>

1: Push the red handrail to stop the feed rollers

<u>REVERSE CONTROL:</u>

1: To be able to operate the rollers in forward motion, the red handrail must not be operated
2: Press the push button **noir** to operate the rollers in reverse gear

<u>USE</u>: The feeders can be controlled directly from the front step to the rear step without going through the red handrail

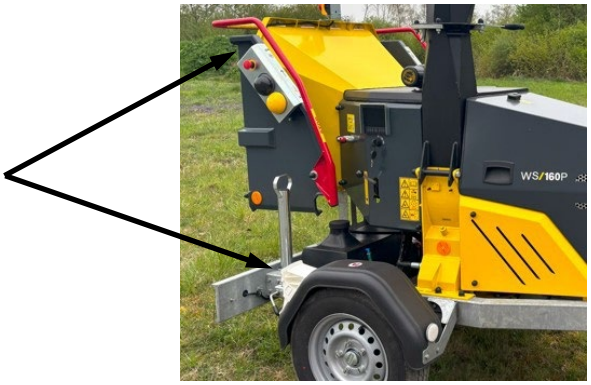
COUPLING TO A VEHICLE

When attaching a chipper to a vehicle, the following steps should be followed.

Adjust the height of the tow bar with the jockey wheel so that the tow bar is above the vehicle tow bar.
Lower the jockey wheel (with the tow bar open) to engage it with the vehicle tow ball.
Check the engagement!
Then connect the breakaway chain to the vehicle and insert the connector for the lighting. **Remove the jockey wheel from the machine and store it in the trunk of the towing vehicle. Check the lighting.**

IMPORTANT: Check that the coupling head wear cursor is in the green zone in the coupling state (see page 17).

Lift the rear kickstand and lock the tablet.



PRE-OPERATION CHECKS

Each operator must read and understand all markings and must take the safety precautions described in this section for safe and efficient operation of the chipper. A pre-use checklist is provided to the user. It is important to follow this checklist for everyone's safety and to maintain the machine in good condition.
Before using the machine the following points must be checked:

1) Is the machine sufficiently lubricated according to the lubrication schedule indicated in the user manual?

2) Check the different levels for the engine, namely:

- the engine oil level
- the fuel level

3) Check the oil level in the hydraulic circuit.

4) Check that the air filter is clean.

5) Ensure that the covers are properly closed and locked.

6) The chipper should not be operated in closed rooms but in the open air due to the risk of poisoning from the motor and wood dust from the chipper.

7) After adjusting and locking the chimney and the ejection cap, only operating personnel are authorized to modify their positions.

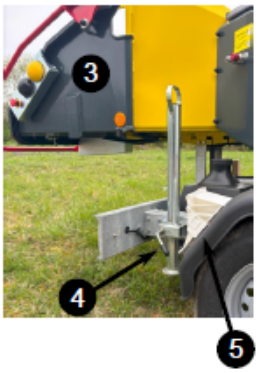
ATTENTION !

If for some unknown reason the grinder has difficulty grinding the material, and you have to stop it: do not restart the engine without having eliminated the cause and clearing the material from the cutting wheel!!!

Ensure the machine is positioned parallel to the ground before use.

SET UP
Before starting, it is necessary to ensure that the machine is stable.





1) Check that the chimney (1) rotates and the cap at the upper (open) (2) end are locked

2) Lower the hopper tablette (3) and the rear stability stan (4) (Put the wheel chocks (5) on if necessary).

3) Turn on the ignition by turning the key to the position (6) Start and let the engine warm up.

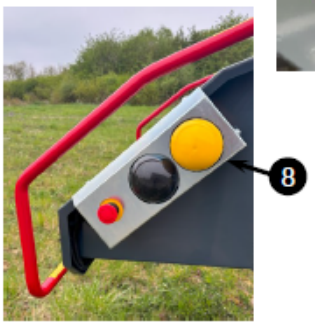


4) Accelerate fully to bring the engine speed (7) to maximum.



5) Rotate the feed rollers by pressing on the yellow button (8)

6) Start the operation.



Insertion of material and handling

CONSIGNES PENDANT LE BROYAGE

It is important to ensure the stability of the operating personnel!

Place the plants in the bottom of the hopper and insert them with the largest end (branch) into the introduction cylinder (saw the wood at an angle at the end if necessary).

As soon as they have absorbed the material, stand to one side as ejections may occur due to the irregularities of the branch..

The inserted material is automatically crushed and thrown in the direction in which the ejection chute has been previously set.

After inserting the material, attention must also be paid to the ejection of the branches and the ejection direction must be readjusted if necessary. The ejection distance is controlled by the ejection cap.

When cutting pruning waste, logs and dead wood, the formation of projectiles is prevented because the materials are generally inserted next to each other lengthwise and fed into the feed chute..

If the feed stops (blockage by too much material or by forks) press the Black reverse control button (the feeder turns backward) and the cutting material is pushed back. Cut the quantity of material into small pieces, saw the fork and restart the feed.
The hopper can be cleaned using a wooden element. Caution**:**
Do not touch the hopper while the machine is running. If necessary, feed small branches with a wooden stick or pusher! Never feed the cutting material into the hopper with a metal stick or pusher. It is also forbidden to stay in the danger zone! If the wood is robust or hard, it is advisable to reduce the rotational speed of the feed roller if the engine speed drops so that the engine can reach its nominal speed again.

In the event of a blockage in the area of the discharge channel, the chimney can only be opened after the cutting wheel and drive motor have stopped and the jammed wood can be cleared with a suitable tool.

Noise emissions
The chipper produces a guaranteed acoustic power according to directive 2000/14/EC estimated at:

Type	Power acoustic LWA [dB]	Sound pressure level [dB(A)]
WS/160P	115	117



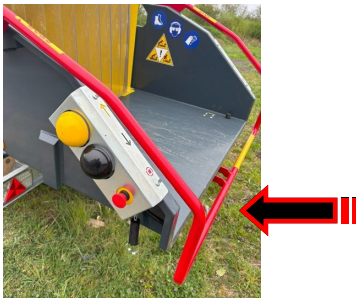
MISE HORS SERVICE

Allow the grinder to empty for a few minutes to thoroughly remove any residual material. in front of the feed roller and into the grinding body. Without this action, the residues could lock the cutting wheel on the next start.

1) Ensure the branch pusher is in good condition. It should be used at the end of the project to push the last debris into the feed elements.



2) Push the red handrail forward to stop the feed rollers



3) Return the engine to idle speed.



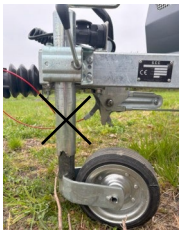
4) Stop the engine by turning the ignition key to position 0.



5) Lift the kickstand and lock the tablet.



6) After coupling the machine to the towing vehicle (see page 17), remove the jockey wheel.



BIO
LUBRIFIANT
DÉGRADABLE



BIO LUBRICANTS TO REDUCE POLLUTION RISKS

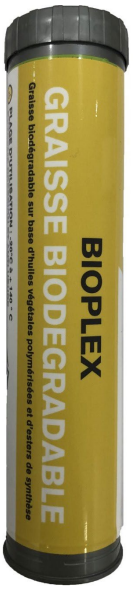
The chippers**TS INDUSTRY** already naturally enter the sustainable development cycle through their function: the resulting chippings can be used for composting, mulching or for heating.

Forests, parks, construction sites near a body of water or a watercourse, etc., chippers**TS INDUSTRY** often intervene in natural environments presenting direct risks to the environment in the event of leakage or accidental loss of hydraulic lubricant.
That's why**TS INDUSTRY** adopts an eco-responsible approach by equipping its chippers with**biodegradable hydraulic lubricants that combine environmental protection and high performance**as a replacement for traditional oils and fats.

Complies with the agricultural orientation law No. 2006-11 drawn up and published in the official journal of 06/01/2006.

The advantages of Bio Lubricants:

-Prevention of the risk of environmental pollution
- High biodegradability
- Non-toxic (made from rapeseed and sunflower)
- Renewables
- Very high viscosity index
- Enhanced anti-wear, anti-corrosion and anti-oxidant properties
- Increased user security
- Increased hardware longevity
- Low volatility



SECURITE D'ENTRETIEN

Caler la machine, enlever la clé de contact et attendre que toutes les pièces mobiles se soient immobilisées avant de procéder à l'entretien ou à la réparation.
S'assurer de bien réinstaller tous les écrans protecteurs après l'intervention.

All machines are tested before leaving the production plant. The hydraulic tank is filled to the upper mark of the level indicator with hydraulic oil upon delivery.

After 50 hours of operation, the filter must be changed. After that, the change is carried out according to the maintenance schedule. The first inspection is an integral part of the warranty conditions.

Only trained personnel are authorized to carry out maintenance and repair work.
The engine manufacturer's operating instructions must be followed for engine maintenance.

The bearings are already lubricated upon delivery and the freewheel is filled with oil. It is recommended to carry out a check before putting the machine into operation.

LUBRICANT abilities: Fuel: 30 l.

Hydraulic oil: 11 l.

Engine: refer to the engine manufacturer's maintenance instructions

LUBRICANT recommended:

1) Grease for bearings and various components:
Use a high performance, extreme pressure (EP) multi-purpose SAE grease.
"TS-INDUSTRY BIOPLEX"

2) Hydraulic oil:
Use an AFNOR NFE 48603 Types HV iso VG 46 grade oil
"MINERVA BIO HYDRO 46"

3) Engine oil: refer to theengine manufacturer's maintenance instructions

PERIODICITE DES ENTRETIENS
MOTEUR:

PERIODICITE DES ENTRETIENS MACHINE

Number of hours	Operations
Daily	**-Checking the operation of the safety devices and red handrail** -Engine oil level check -Checking the vehicle/trailer coupling -Check wheel tightness -Tire pressure check -Lighting control -Check the cleanliness of the engine air cooling circuit
The 1alsotimes after 4 a.m.	- Check that all fixing screws are correctly tightened - Check the tension of the cutting wheel transmission belts
The 1alsotimes after 8 p.m.	-Replacement of the oil in the freewheel of the cutting flywheel drive (then every 2000 hours)
Every 50 hours	-Lubrication of the two cutting wheel bearings - Lubrication of feeder bearings - Control of horizontal and vertical knives and counter knives - Check and remove branch wrapping around the bearing axles - Check the tension of the cutting wheel belts -Hydraulic oil level check -Replacement of hydraulic oil filter**the first time**then every 200 hours (or every 2 years)
Every 200 hours	-Replacement of hydraulic oil filter (or every 2 years)
Every 300 hours	-Battery electrolyte level check
Every 400 hours	-Replacement of hydraulic oil (or every 2 years)
Every 2000 hours	-Replacement of the oil in the freewheel of the cutting wheel drive

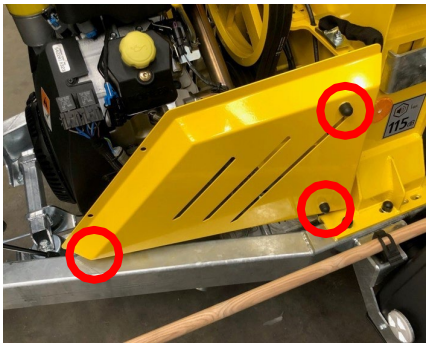
HOOD OPENINGS

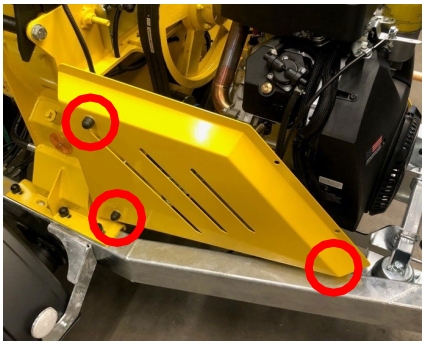
The engine hood has a lock (1) which uses a special key to prevent access to non-trained people from the use of the machine. Always ensure that this lock is securely locked before setting off.
The machine cover is fixed by two M12 (2) screws to access the cutting wheel as well as the feeders. Always ensure that both nuts are securely tightened before each start and before setting off.



FIXING THE SIDE COVERS







LUBRICATION POINTS

Procédez au graissage et à l'entretien de la machine moteur arrêté et clé de contact retirée

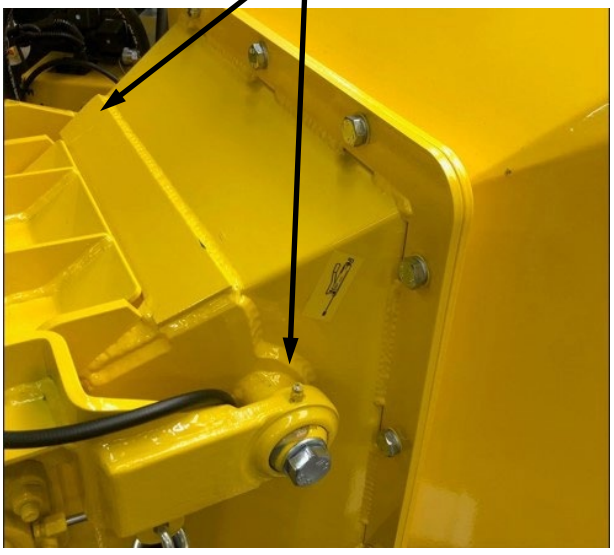
The lubrication of the feeder bearings and the cutting wheel is grouped together and is located on the left side of the machine below the key switch.

FEED BEARINGS

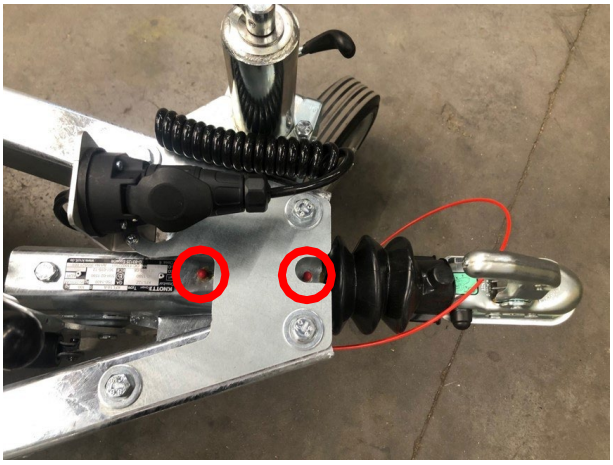


DISC BEARINGS

GRAISSAGE ROTATION BRAS AMENEUR



GRAISSAGE TETE D'ATTELAGE

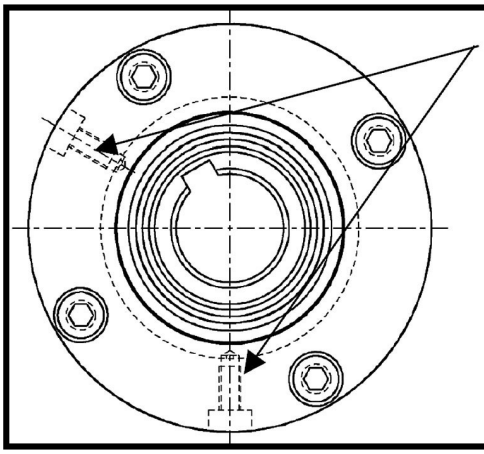


CUTTING FLYWHEEL FREEWHEEL

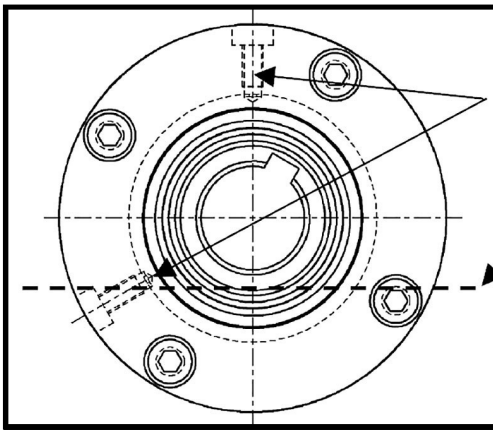


Perform maintenance on the machine with the engine off and the ignition key removed.

Attention!
The first oil change should be carried out after 20 hours of use!
During the first oil change, all particles accumulated during the "running-in" procedure must be removed from the freewheel. This is why this oil change helps ensure optimal life for the freewheel.
The following oil changes must be carried out at least every 2000 hours of operation.



Oil change procedure:
Turn the freewheel until a drain hole points vertically downward.
Remove the two drain screws and their seals.
Collect and process the used oil in accordance with current recycling standards.
Clean the freewheel with flushing oil, then process the used flushing oil in accordance with current recycling standards.



Filling procedure:

Turn the freewheel until a drain hole points vertically upwards.

Pour oil through the vertical hole until it comes out through the opposite hole.

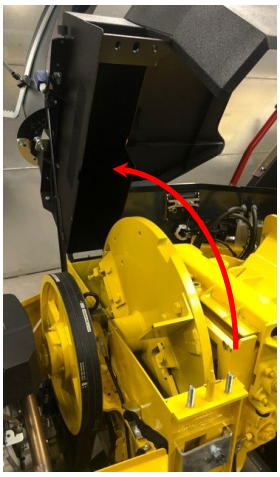
Replace the two screws with their gaskets.

Ambient temperatures from 0° to 50° C	Ambient temperatures from -15° to +15° C
Oil for reducer or hydraulic circuit **ISO-VG 46/68**	Oil for reducer or hydraulic circuit **ISO-VG 32**
Attention! Oils containing friction-reducing additives such as molybdenum disulfide cannot be used.	

DISASSEMBLY FOR REPLACEMENT OF KNIVES AND COUNTER-KNIVES

Toutes les 50 heures, vérifier l'état des couteaux et contre-couteaux. En s'usant l'arête des contre-couteaux et des couteaux s'arrondit, ce qui est matérialisé par des copeaux filandreux et une baisse de rendement.

Pour cette intervention il est impératif de retirer la clé de contact.



ACCESS TO KNIVES AND COUNTER-KNIVES

To access the cutting wheel:

Remove the two M12 nuts closing the machine cover.

Open the machine hood by pivoting it on the hinge to the stops.



RETURNING OR REPLACING COUNTER-KNIVES

The cutting wheel has a horizontal and a vertical counter-knifeopposite the knives. If the cutting edge is not sharp enough, the counter knives should be turned over, if not already done, or replaced with a new set. Both counter knives are designed so that they can be turned once, which provides an intact edge and doubles the service life.

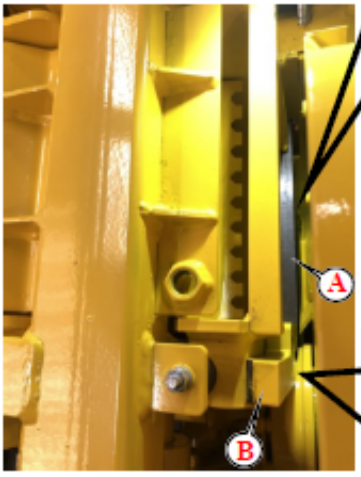
HORIZONTAL COUNTERKNIFE A

To replace or rotate the horizontal counterknife, proceed as follows:

1. Loosen the clamping plate screw and remove the clamping plate(1).
2. Screw the special wrench(2) thread into the horizontal counterknife.
3. Strike the special wrench block with a hammer and pop out the horizontal counterknife.
4. Rotate or replace the counterknife; clean the contact surfaces.
5. Correctly align the counterknife with the mounting bevel and reinsert it into the holder. Check for proper adjustment
6. Replace the clamping plate and tighten the screw



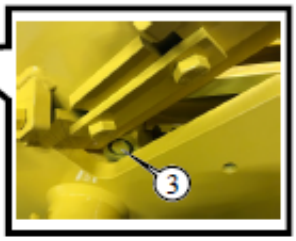




VERTICAL COUNTERKNIFE B

To replace or rotate the vertical counterknife, proceed as follows:

3. Rotate the cutting disc so that the tools can be inserted through the knife window (see page 35 for knife removal)
4. Loosen and remove the screw(3) on the vertical counterknife
5. Rotate or replace the counterknife; clean the contact surfaces
6. Align the counterknife correctly; check for proper adjustment
7. Tighten the screw securely (250 Nm)



REPLACING KNIVES

Instructions:

The knives and counter-knives are made of special steel and must not be re-welded. Knives must only be changed by trained and qualified personnel.

Chipped knives result in poor cutting quality and make feeding more difficult, making the knives blunt again.

When mounting the knives, the gap between the knives and the fixed counter-knives must be readjusted.

With a larger than normal gap (1mm), defibration or uneven cutting may occur in addition to higher power consumption. If the gap is less than1 mm, the blade may touch the counter knives during operation.

- The M16 screws with hexagonal heads of the knives are factory-mounted, degreased and without thread lock at a torque of 221 N.m (22 M.kg).

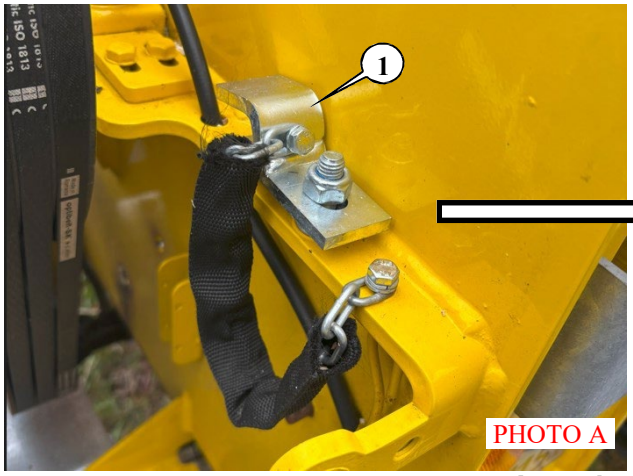


PHOTO A

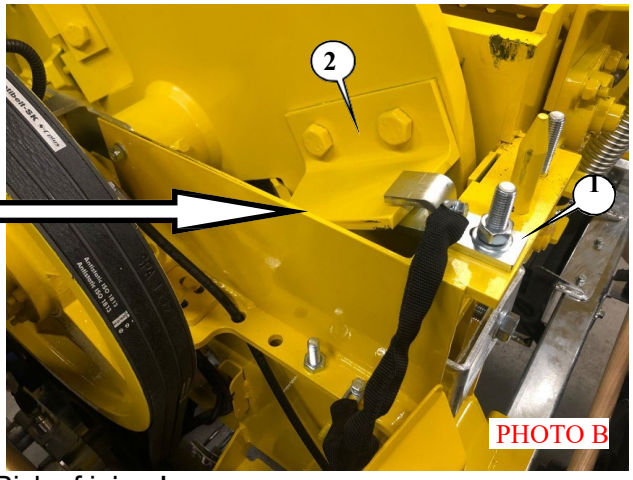
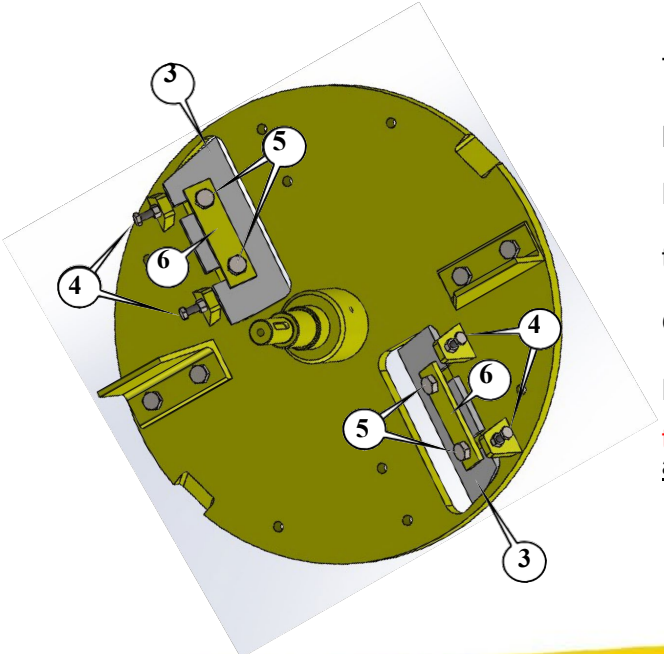


PHOTO B

Attention : Risk of injury!

When working on the cutting disc or cutting tools, the disc must always be temporarily blocked with the disc lock **1** on a ventilation blade 2 (PHOTO B)

Once maintenance is complete, do not forget to put the disc lock back in its initial position. (PHOTO A) **before restarting the machine**



To change the knives 3 , proceed as follows:

Loosen the 2 adjustment screws **4** of each knife.

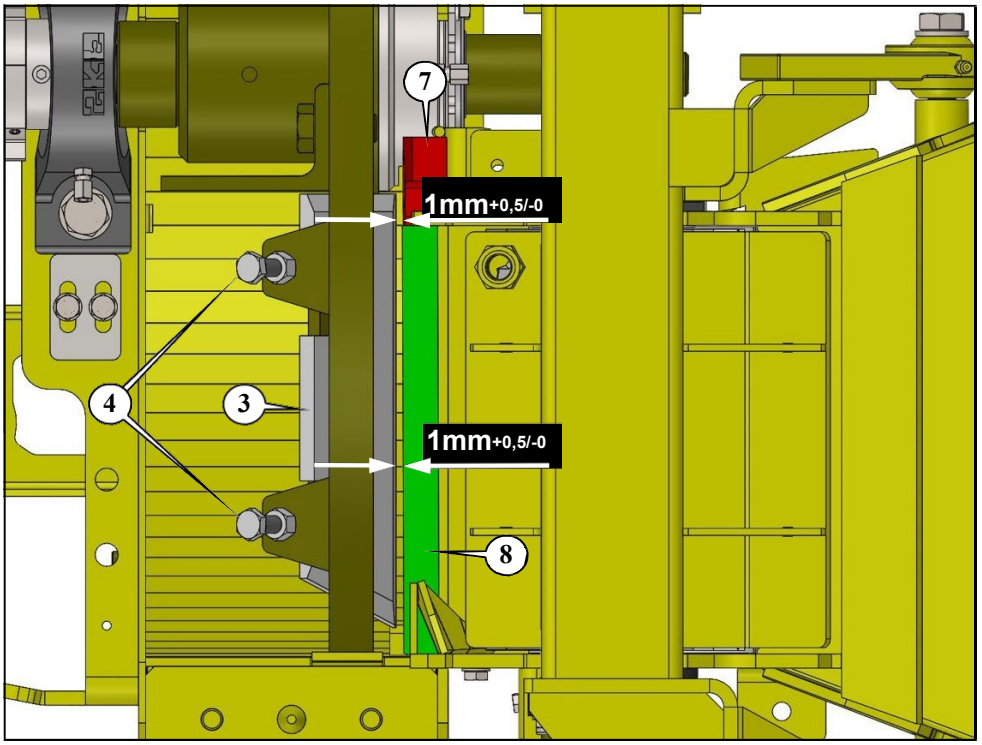
Remove the 2 screws**5** of each knife, as well as

the support plates **6** .

On the steering wheel, clean the contact faces of the knives.

Reassemble screws **5** new class 8.8, degreased and without thread lock. Tighten them very lightly temporarily in order to adjust the clearance between knives and counter-knives.

REPLACING KNIVES*(suite)*



Position a knife**3** facing the vertical counter-knife**7** , check the parallel clearance between the two which must to be of**1mm$^{+0,5/-0,5}$** along the entire length.

Do the same with the horizontal counter-knife**8** .

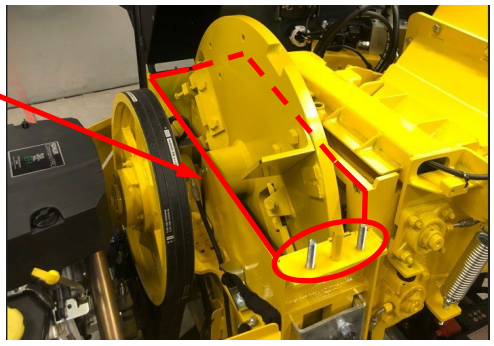
Use the two stop screws**4** during adjustment to move the knife. Once the adjustment is complete, make sure that they are properly in contact with the knife and lock the locknut of the two stop screws. Do the

same for the second knife.

Tighten the M16 screwsnew**5 from knives to torque wrench with a torque of 221N.m (22 M.kg). Tightening the screws to the correct torque is essential to prevent them from**

accidentally loosening. Remove the disc lock and return it to its original

position.(PHOTO A).



Clean the support surfaces where the machine hood

rests. Close the machine hood and then the engine

hood.

Start the machine and check that everything is in working order.

KNIFE SHARPENING

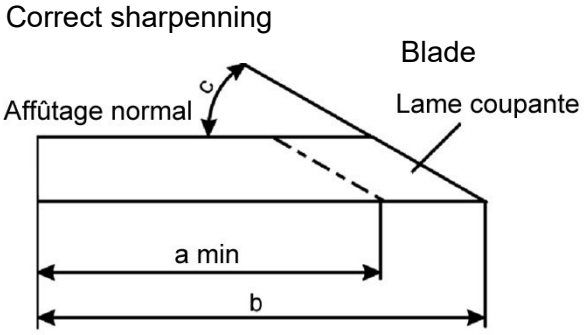
Knives should be sharpened or changed as soon as they appear chipped or if insertion becomes more difficult (i.e. the blades push the wood back).

IMPORTANT : Sharpening must be carried out by a professional on a machine specially adapted for this purpose, and not using a portable grinder.
The knives can be sharpened several times, taking care to respect an equivalent weight for the two knives in order to maintain the original dynamic balance.

Pass this sharpening instruction on to your sharpener or customers. Set the

angle correctly (30°).

The minimum length after sharpening must not be less than **80 mm**. The length of the new knife is **95 mm**.



Side a [mm]	Side b [mm]	Angle C [°]
80	95	30

Respect the sharpening angle of 30°

Use only screws type: TH 16 X 40 cl. 8.8 Standard DIN EN 24017 tight with a torque of 221 N.m (22 M.kg)

Tightening the screws to the correct torque is essential to prevent them from accidentally loosening.

ADJUSTING THE CUTTING WHEEL BELTS

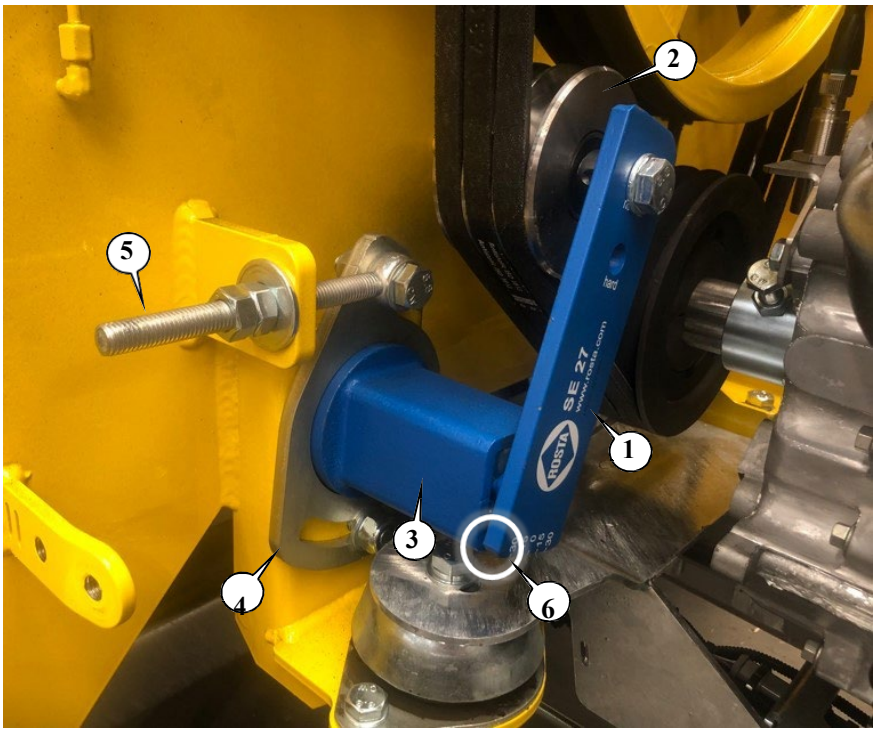
Cette intervention doit être réalisée par un technicien qualifié

The engine power is transmitted to the cutting disc by three V-belts.

BELT TENSIONER

The cutting disc belt drive is equipped with a self-tensioning spring system, called a belt tensioner, which always keeps the belts in an optimal state of tension.

The belt tensioner consists of a lever arm **1** , a pulley with ball bearing **2** of a base with a rubber spring core **3** , of a fixing plate **4** and a tensioning device **5**



To adjust the belt tensioner or change the V-belts, proceed as follows:

1. Remove the ignition key
2. For better access, remove the right side cover (see page 29)
3. Loosen the fixing plate **4** , the base **3** as well as the tension device **5**

4. If the V-belts need to be changed, the belt tensioner must be completely loosened; the belts can now be replaced.
5. Set the desired belt pre-tension using the tensioning device **5** ; To do this, set the reference tension **6** between the base **3** and the arm **1** on 7.5°

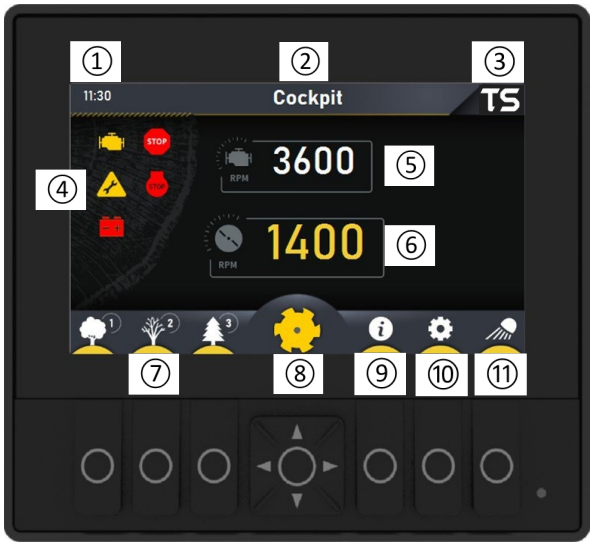
6. Check the belt tension
7. When the belt tension is correct, tighten all screws

Ecran TS.COCKPIT

The TS.COCKPIT is a new-generation on-board computer that precisely controls the machine and facilitates remote maintenance. Its intelligent system ensures working comfort and perfect machine management.
The TS.COCKPIT allows you to easily manage the machine's various functions, including No-stress, which allows you to optimally control grinding sessions depending on the branches to be ground.



General screen

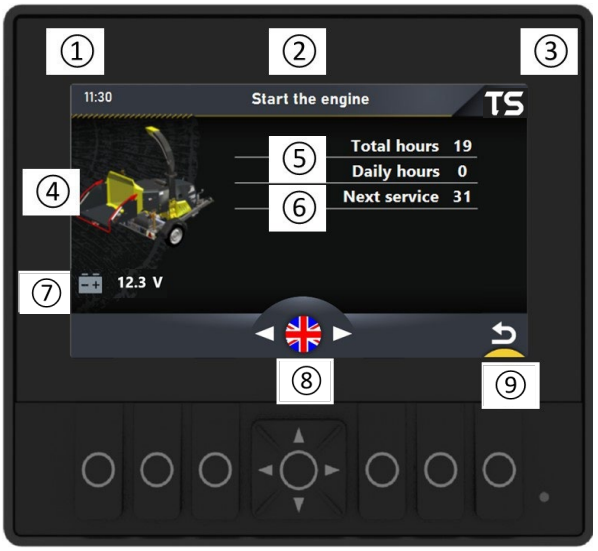


The main screen displays the following information:

- ① Real time
- ② Error and information messages
- ③ Brand logo
- ④ Information and warning symbols (engine, grinding, maintenance) (see page 46)
- ⑤ Engine RPM
- ⑥ Cutting disc RPM
- ⑦ 3 sets of use for “No-stress” (see page 45)
- ⑧ Feed roller (rotates when the roller is in motion; flashes yellow when a “No-stress” occurs)
- ⑨ Access to the information menu
- ⑩ Access the settings menu
- ⑪ Option (if installed)

Additional information: In case of an emergency, for example, the LED on the keys will start flashing red and the display backlight will flash. The error or information message will be displayed at the top ②. It is there to show the user that something is wrong. It is clearly visible, even from a distance.

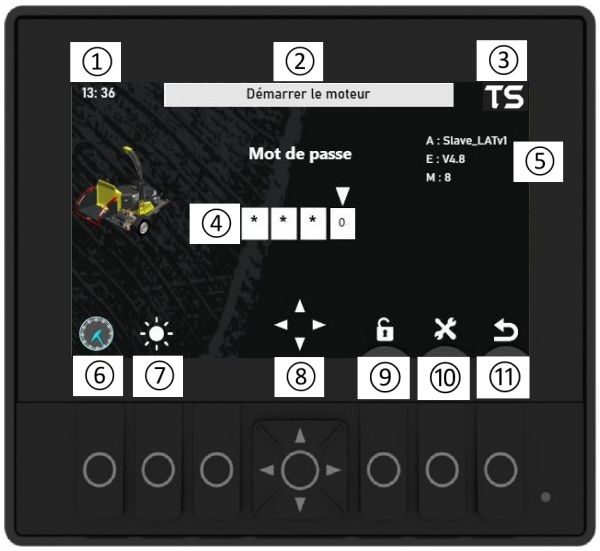
Information screen menue



The information screen displays the following information:

- ① Real time
- ② Error and information messages
- ③ Brand logo
- ④ Machine image
- ⑤ Total hours + daily hours
- ⑥ Next service (initial and regular service)
- ⑦ Battery charge level
- ⑧ Change language (EN,FR,DE,NL,ES)
- ⑨ Return to the main screen

Parameters



The settings menu screen displays the information:

- ① Real time
- ② Error and information messages
- ③ Brand logo
- ④ Password :
- ⑤ (3 levels: user / dealer / OEM)
- ⑥ Program number (PLC / screen / machine)
- ⑦ Access the date/time menu
- ⑧ Access the brightness menu
- ⑨ Navigation cursor
- ⑩ Unlocking password level
- ⑪ Access to machine management parameters + information
- Return to the main screen

User password:**3003 (Level 1)**

Menu screen Time



The date/time screen displays the following information:

- ① Time zone selection
- ② Time zone validation
- ③ Navigation cursor
- ④ Date/time validation
- ⑤ Return to the settings screen

Luminosity



The screen displays the following information:

- ① Navigation cursor
- ② Return to the settings screen

Machine management



The machine management screen displays the following information, differentiated by 3 access levels:

- ① User level
- ② Menu

Level 1: fewer options are displayed
Level 2: everything is displayed
Level 3: reserved for the manufacturer

- ③ ④ Navigation cursor
- Return to the settings screen

User password:**3003 (Level 1)**

Service history

Historique des services

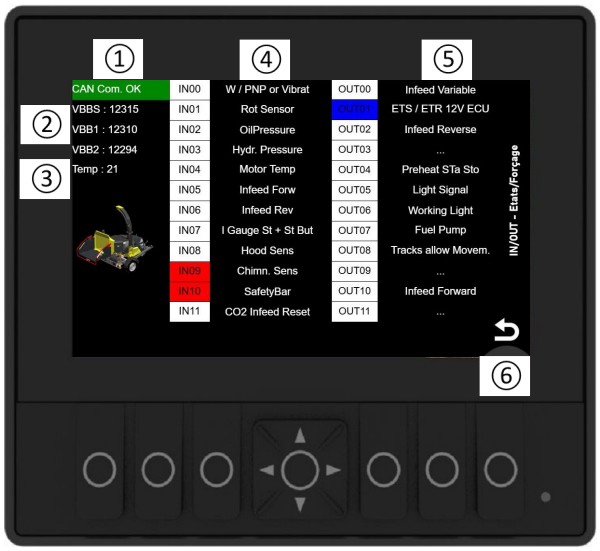


The Service History screen displays the following information:

- ① Total hours + daily hours
- ② Next service (initial and regular service)
- ③ First service check performed + number of all services
- ④ Reset the total number of daily hours
- ⑤ Confirmation of active service request
- ⑥ Return to the machine management menu screen + info

Screen IN/OUT

IN/OUT - Etats/Forçage

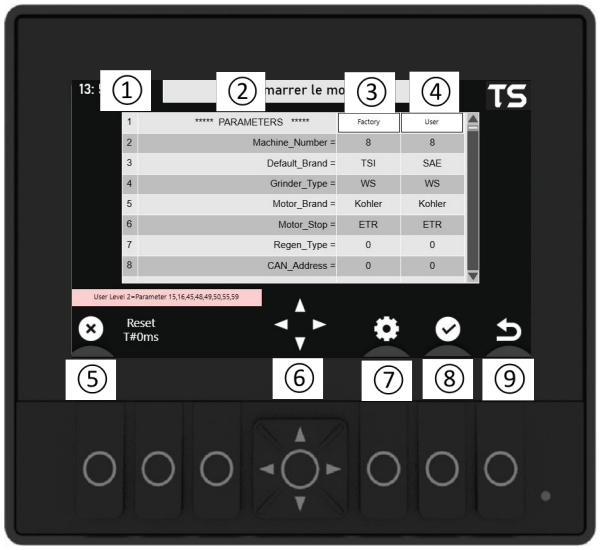


The IN/OUT menu screen - States/Forcing displays the following information:

- ① CAN communication status
- ② Voltages on the 3 inputs (in mV)
- ③ Internal controller temperature (in °C)
- ④ Input status (Digital ON/OFF)
- ⑤ Output status (Digital ON/OFF)
- ⑥ Return to the machine management menu screen + info

Machine parameters

Paramètres machine



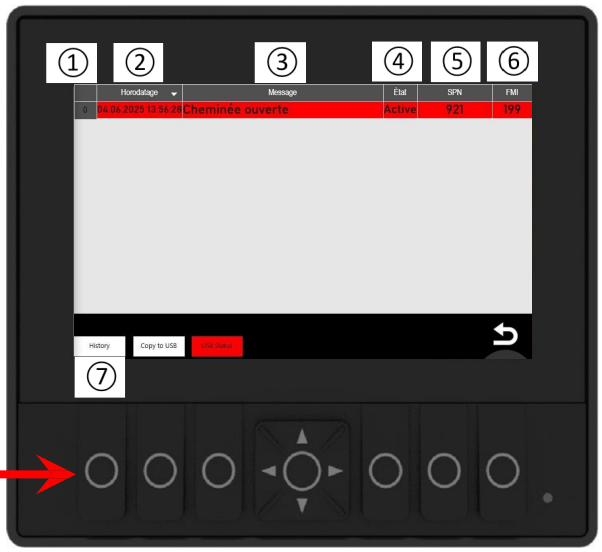
The machine settings menu screen**(Level 2)** displays the following information:

- ①
- ② Machine parameter number
- ③ Machine parameter name
- ④ Factory settings (cannot be changed)
- User settings (some data can be changed)
- ⑤ Factory Reset
- ⑥ Navigation cursor
- ⑦ Changing the selected parameter
- ⑧ Validation of the selected parameter
- ⑨ Return to the machine management menu screen + info

Toute modification des sécurités ou de la programmation faite en dehors de notre usine est sous l'entière responsabilité de la personne qui a effectué ces changements.

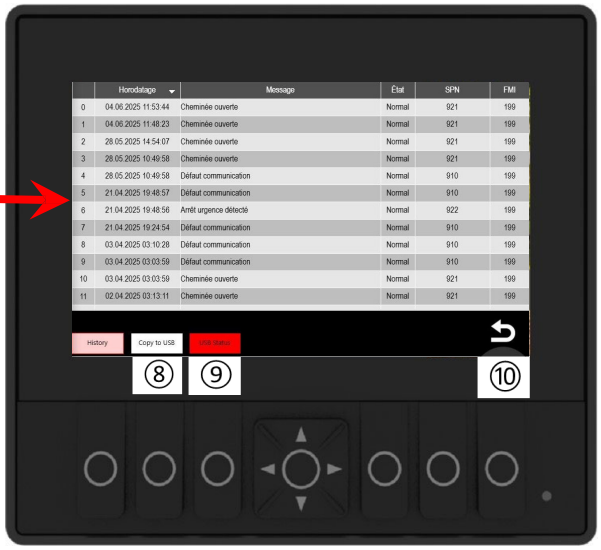
Error history

Historique des défauts



The fault history menu screen displays the following information:

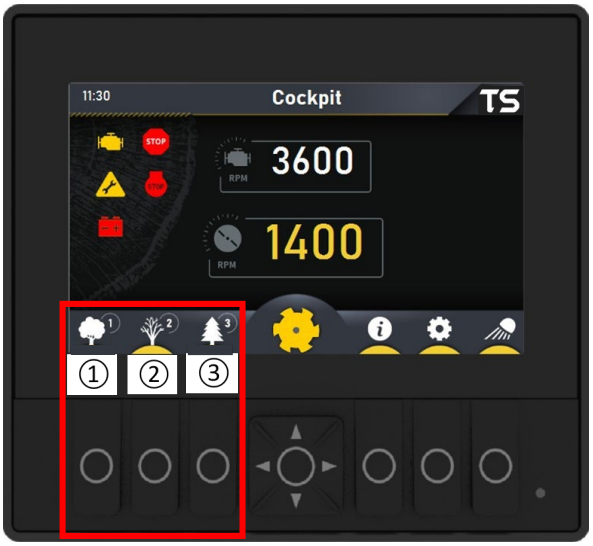
- ① Entry numbering
- ② Timestamp (time and date)
- ③ Written message
- ④ Status (active / not active)
- ⑤ Code SPN
- ⑥ Code FMI
- ⑦ Viewing History (see below)



The fault history display screen can show up to 5000 entries (20 active entries at a time)

- ⑧ Copy errors and history information to USB drive
- ⑨ USB flash drive status indication
- ⑩ Return to the machine management menu screen + info

« No-stress » Settings



The T**S.COCKPIT** has 3 engine usage ranges with associated No-Stress ranges.

Each key has its own pictogram which will be displayed under the logo of the selected beach.

Above range 2 has been selected.

Touch ① **:** The No-Stress management of the feed roller uses an extended speed range.

Suitable for shredding medium-sized pruning branches.

Touch ② **:** The No-Stress management of the feed roller uses a medium speed range.

Suitable for shredding leafy branches and temporarily for shredding conifers and plants.

Touch ③ **:** The No-Stress management of the feed roller uses a restricted speed range for optimal ventilation.

Suitable for crushing conifers and heavy plants for optimal ventilation.

Symbols

	Setting 1 chipping
	Setting 2 chipping
	Setting 3 chipping
	Selected function
	Return to previous screen
	Access to the information screen
	Access the settings menu
	Access to the management menu
	Reset daily counter
	Engine oil change validation
	Validation of the action performed

	Work light*(option)*
	Battery voltage
	Preheating before starting
	Flashing: service to be done Fixed: fault (high engine temperature, etc.)
	Red light: fault requiring the machine to be stopped (oil pressure too low, maximum temperature reached, low battery voltage, slipping problem, cutting tool blocked on start-up, etc.)
	Engine malfunction
	Access the brightness menu
	Access the date/time menu

THE TANKS

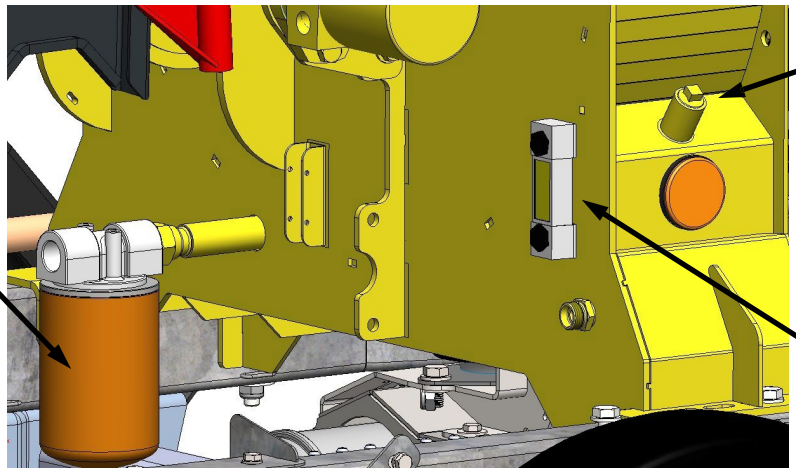
The machine has two tanks:

the **hydraulic oil tank**11 liters including:

The hydraulic filter

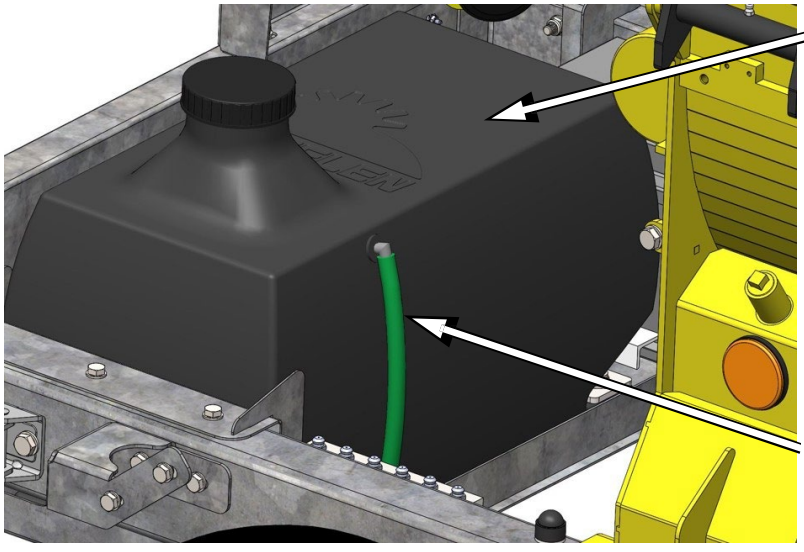
(hydraulic oil filter replacement**the first time** at 50 hours then every 200 hours or every 2 years)

Ref: TSHCS50P25A



The filler cap

The oil level gauge

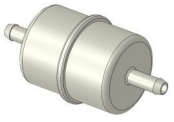


The **fuel tank** with a capacity of 30 liters

Fuel filler level

Fuel filter
(see engine maintenance manual)

Ref: AMIS/0020



EMERGENCY STOP BUTTONS

The machine also has three emergency stop buttons located on the sides and at the top of the grinding cell.

When pressed, these punch buttons have two functions:

1) stop the gasoline engine

2) instantly stop the forward movement of the feed rollers



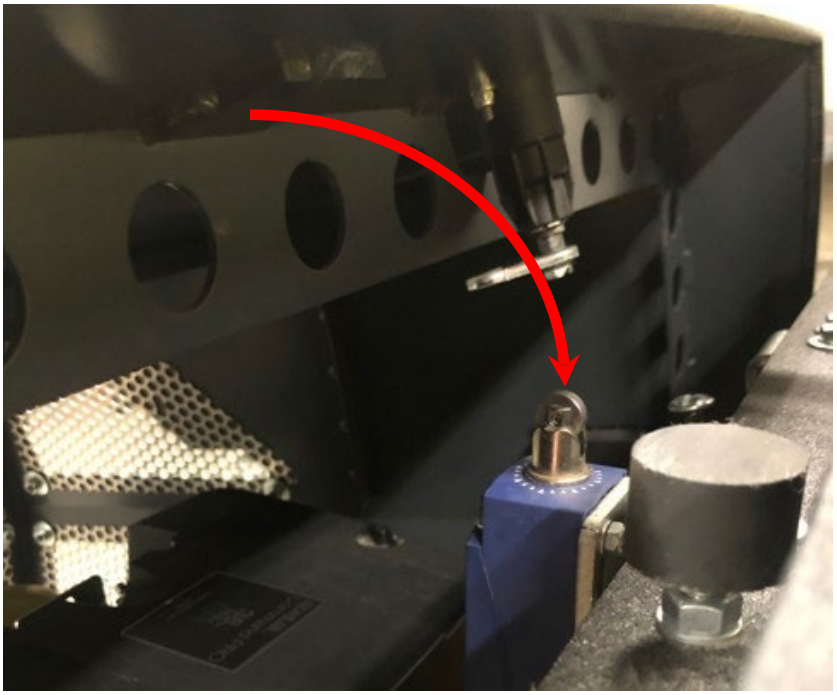
For your safety, in the event of breakage of the emergency stop buttons, please refer to the parts diagram to order the parts.

THE SECURITY OF ACCESS TO MAILS

The machine has a safety device for opening the engine hood / machine hood.

This is a mechanical sensor attached to the engine hood. Electrical contact is made when the engine hood is closed.
This safety feature stops the motor if it is opened.

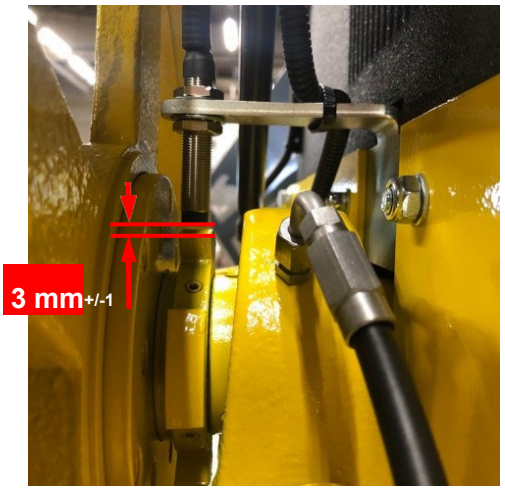




INDUCTIVE SENSOR ROTATION FLYWHEEL

An M12 (Ø12) inductive sensor placed behind the freewheel indicates the steering wheel rotation speed and manages no-stress (see page 39).

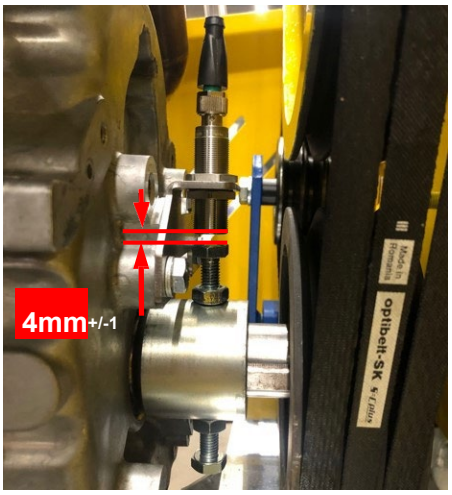
The distance between this sensor and the indexing finger fixed opposite it on the pulley is**3 mm $^{+/-1}$.**



INDUCTIVE MOTOR ROTATION SENSOR

An M18 (Ø18) inductive sensor placed on the side of the motor shaft indicates the rotation of the motor to the S-COCKPIT (see page 39).

The distance between this sensor and the double indexing finger fixed opposite on the motor shaft is**4 mm $^{+/-1}$**



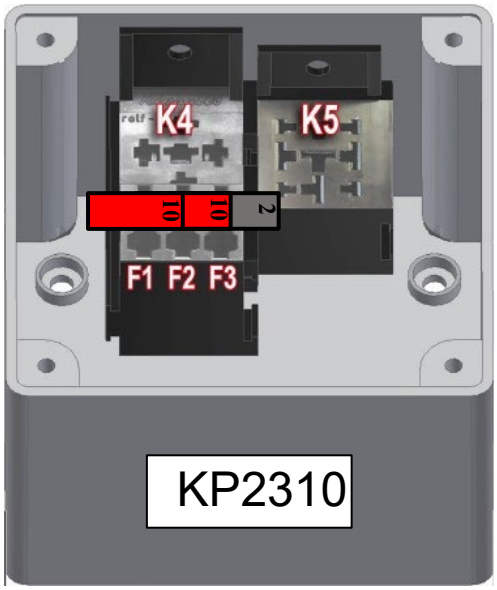
We draw your attention to the fact that if the engine starts and stops after a few seconds and displays a "SLIP ERROR" message on the TS-COCKPIT, you must always look for the cause of the problem: cutting wheel blocked by residues from the previous grinding, loose or broken belts, freewheel problem, defective sensor.

FUSES/RELAYS

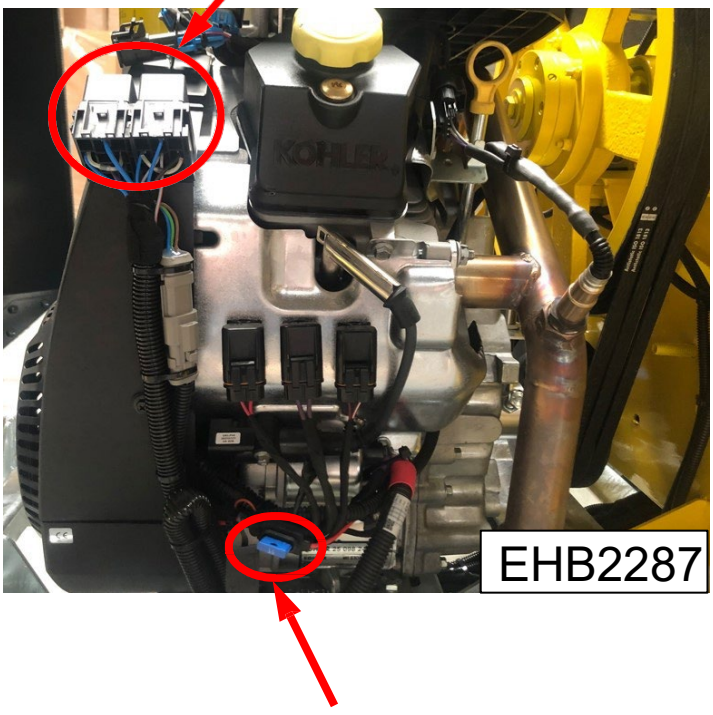
The machine's various electronic components are partially protected against overloads by easily accessible fuses. If a blown fuse is detected, it is necessary to determine the cause before replacing it.

If the fault is recurring, for example due to a damaged component or a short circuit, it must first be corrected. Only in this way can long-term operation be guaranteed. The same procedure applies to replacing defective relays.
If in doubt, contact after-sales service or a dealer.

Most fuses and relays are located in the gray plastic box behind the control panel (see page 50: KP2310) or directly on the motor (see page 52: EHB2287).



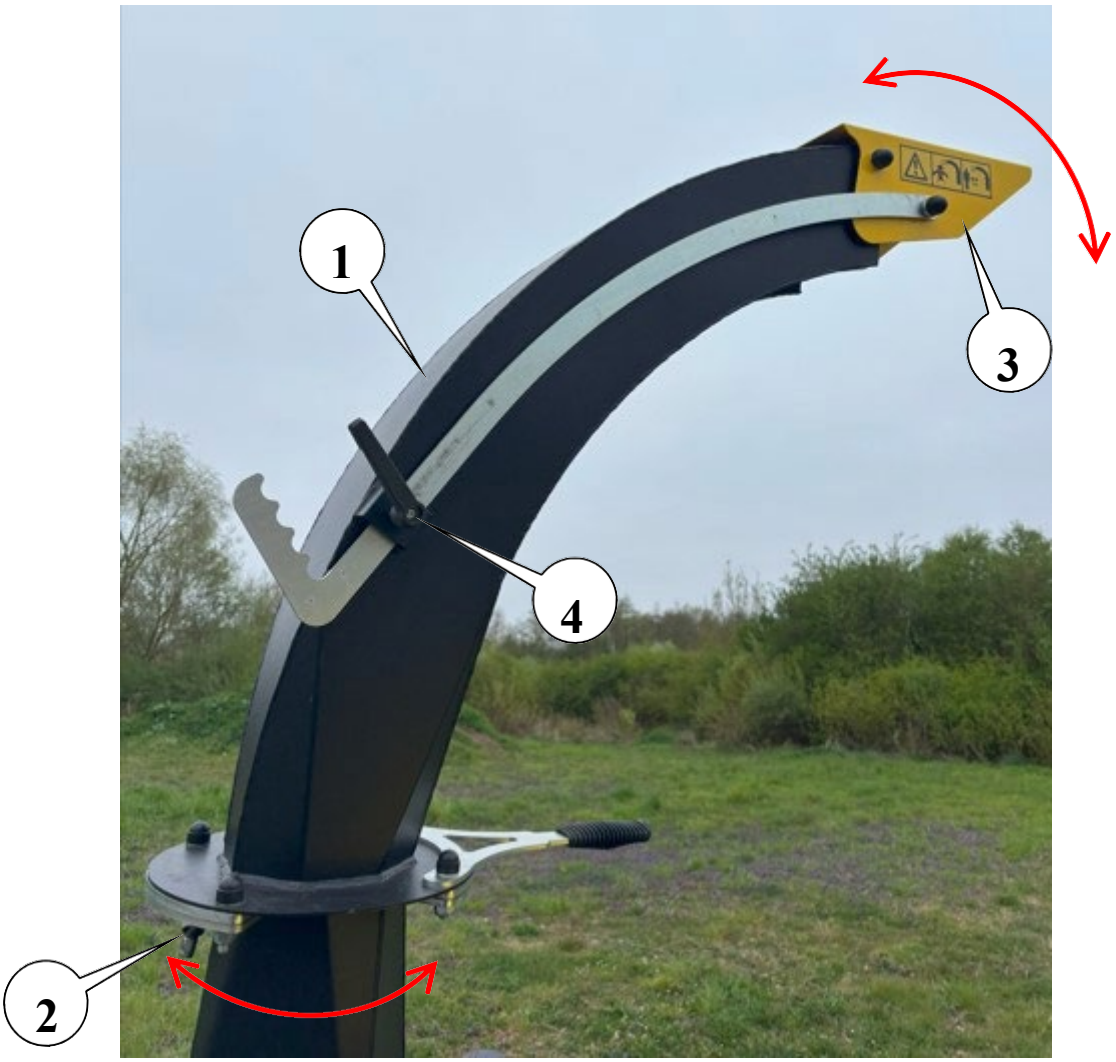
The engine start and stop relays are located on the side of the engine.



A permanent 12 Volt protection fuse**15A** is located in the fuse holder next to the starter.

EXHAUST CHIMNEY

The blow out chute (1) can be rotated 270° by unlocking the lock located under the base (2).
Description and Operation
The hood (3) can be rotated up and down by unlocking the handle (4) located on the side of the chute.



Troubleshooting

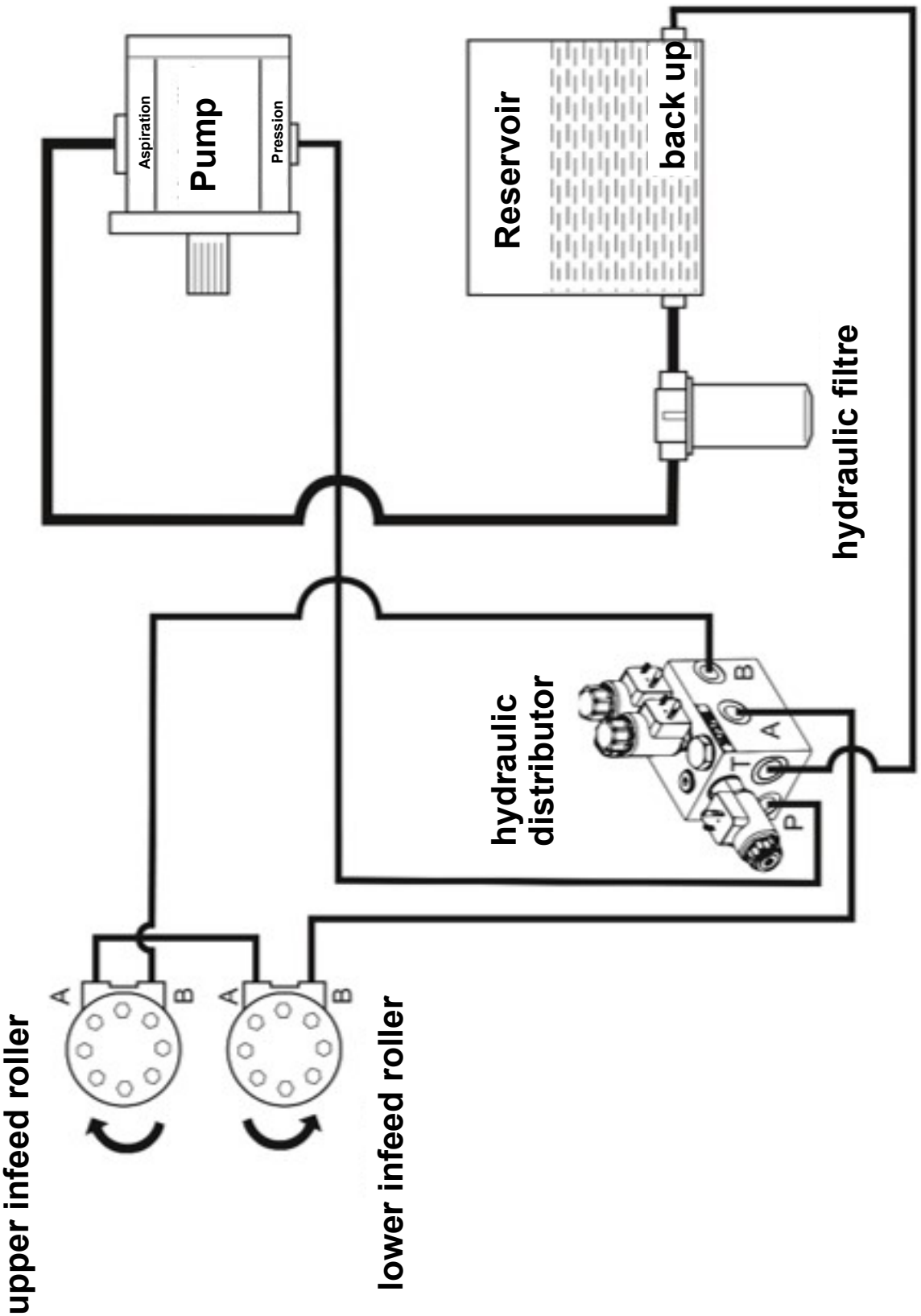
In this section, we have compiled a list of problems, their causes, and the solutions to be implemented if you encounter them.
If you encounter a problem not listed in the troubleshooting section, please contact your dealer. Make sure you have your owner's manual and your chipper's serial number handy.

Issue	Cause possible	Solution
The engine will not start	-Safety punch engaged	-Disengage the safety
	-The hood is open	-Control the closing hoods
	-The hood safety sensor is incorrectly adjusted or defective	-Check this one(see p.41)
	-15A fuses blown	-Replace the fuse(see p. 48)
	-The battery is discharged	- Charge or replace the battery
	-THE cables power supply are damaged	-Check electrical circuits
Decrease in engine power	-Clogged air filter	-Clean the air filter
	-Dull knives	-Sharpen or replace the knives.
	- Clogged fuel filter	-Replace the filter
The engine stops untimely **Tively and does not restart anymore**	-The engine hood is not properly closed	- Check the closure
	-the engine hood safety sensor is faulty	-the last controller (see p.41)
	-There is no more fuel	-Put fuel in
The feeder/belt assembly refuses to turn in forward and reverse gears	- Feeder speed dial fully tightened	-Loosen the adjustment wheel on the distributor
	-Engine hydraulic or defective pump	- Check or replace the defective part
	-Too little oil in the tank	- Check the oil level
The machine is having difficulty Grind	-Dull knives	-Sharpen or replace the Knives.
	-Belts defective Or Insufficiently tense	-Replace and/or tender the Belts
The forward feeder does not regulate, even below the NoStress sensor intervention threshold	-Electrical or hydraulic problem	-Contact your dealer

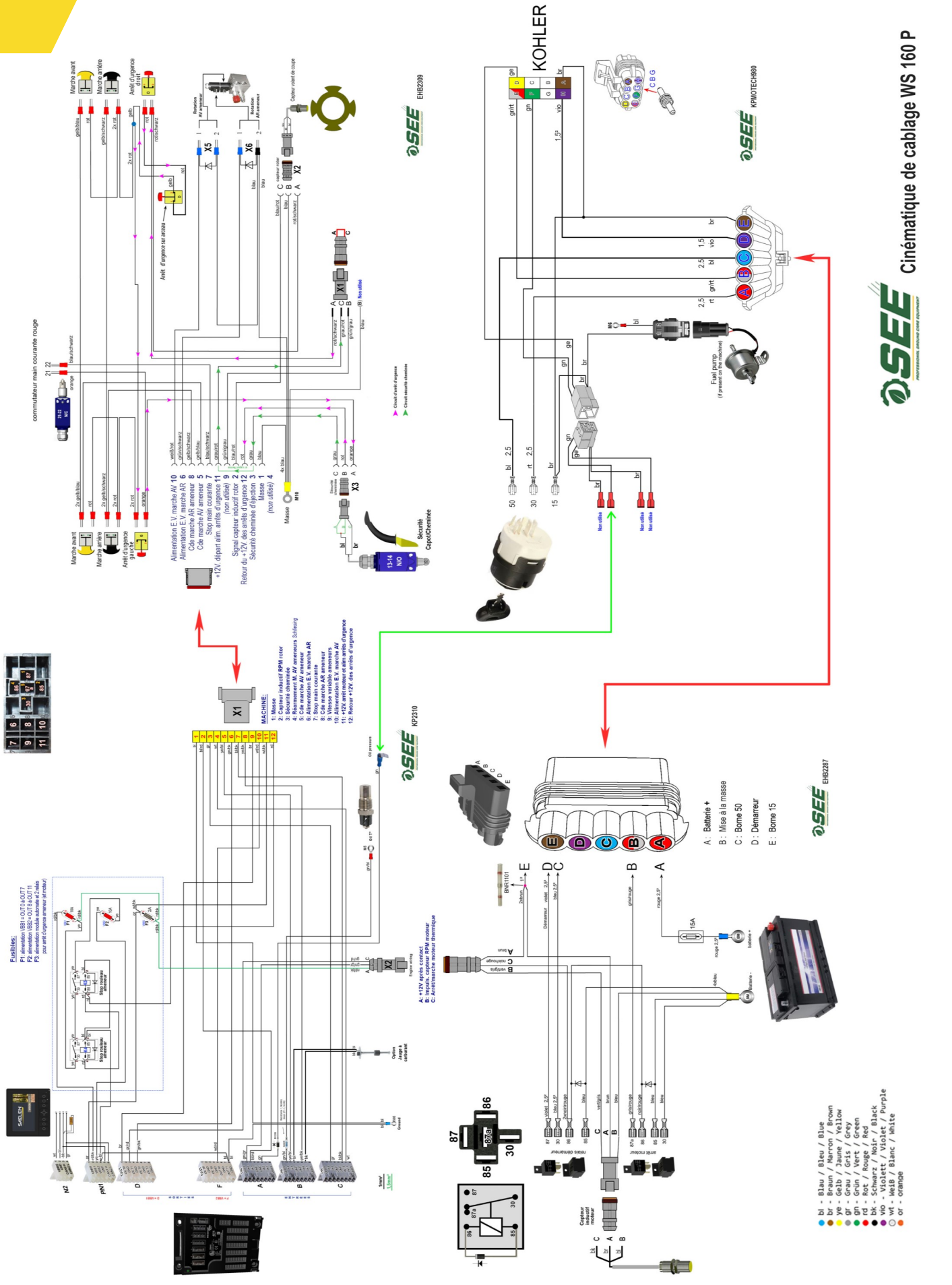
Specifications

	WS/160P
Ability:	160 mm
Length:	2853 mm (closed shelf) 3690 mm (open shelf)
Width:	1544 mm
Height:	2423 mm
Weight:	750 Kg
Number of knives:	2
Cutting wheel diameter:	655 mm
Cutting wheel weight:	86,5 Kg
Engine power:	38 hp KOHLER ECH980 EFI twin cylinder.
Fuel tank capacity:	30 L
Engine speed:	3600 tons/min
Cutting wheel speed:	1300 Tr/mn
Anti-jamming:	YES
Hydraulic power supply:	YES
Hydraulic capacity:	11 L
Hydraulic pressure:	150 bars
Road axle:	YES
Number of wheels:	2
Tire size:	155 R13 C
Tire air pressure:	4.5 bars
CO2 REDUCTION System:	Non

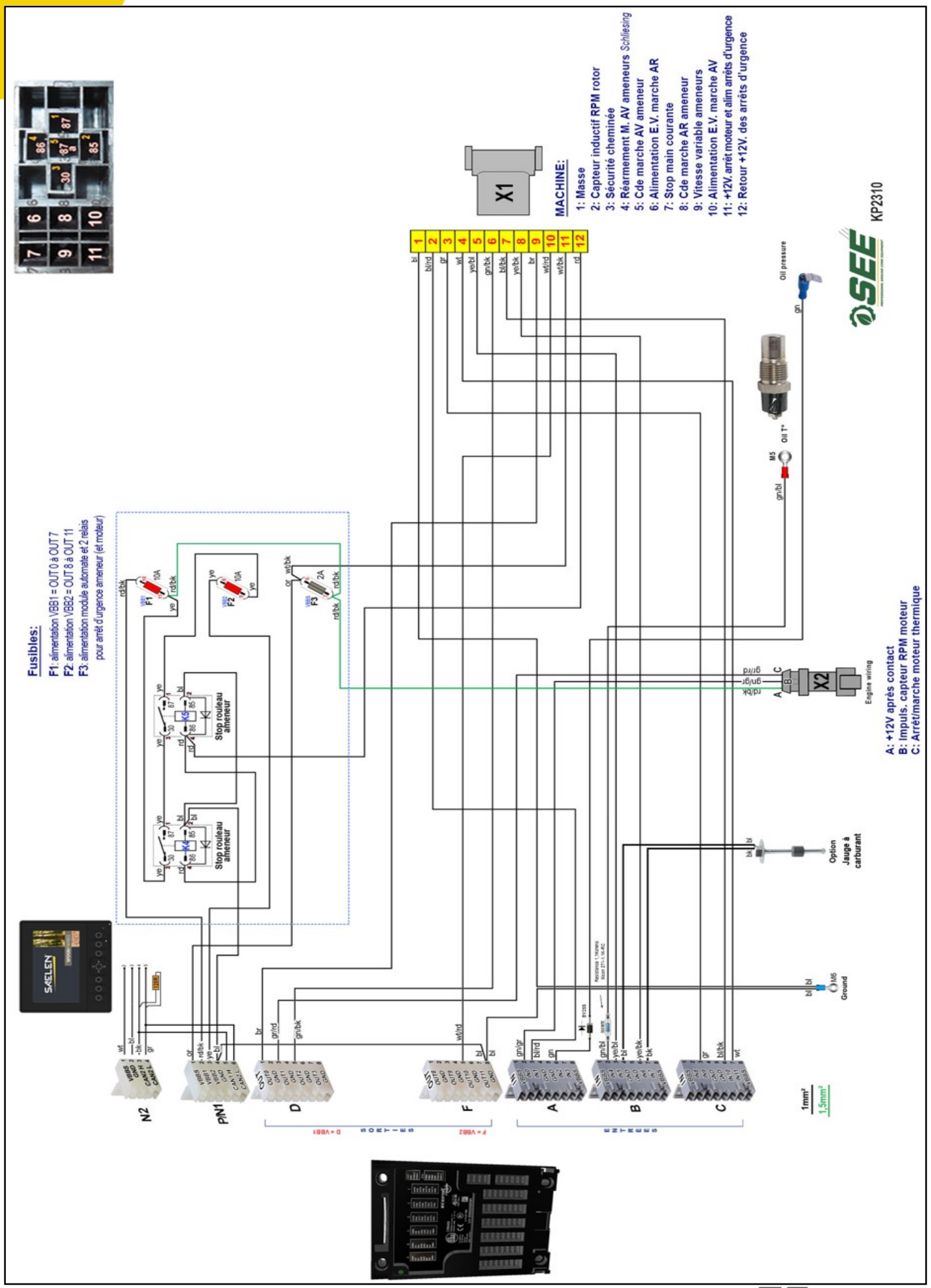
Branchement hydraulique



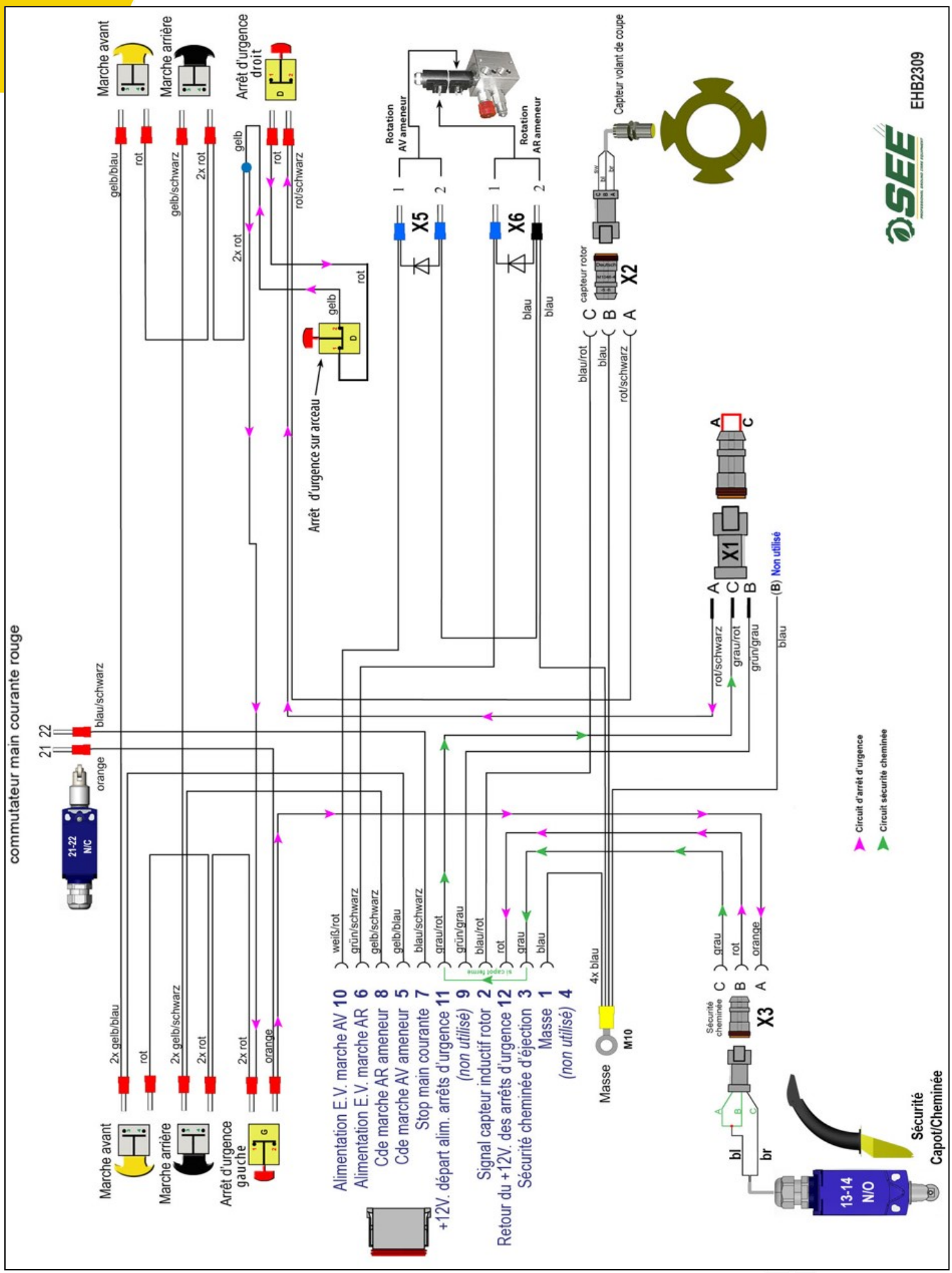
Electrical diagram WS/160 P



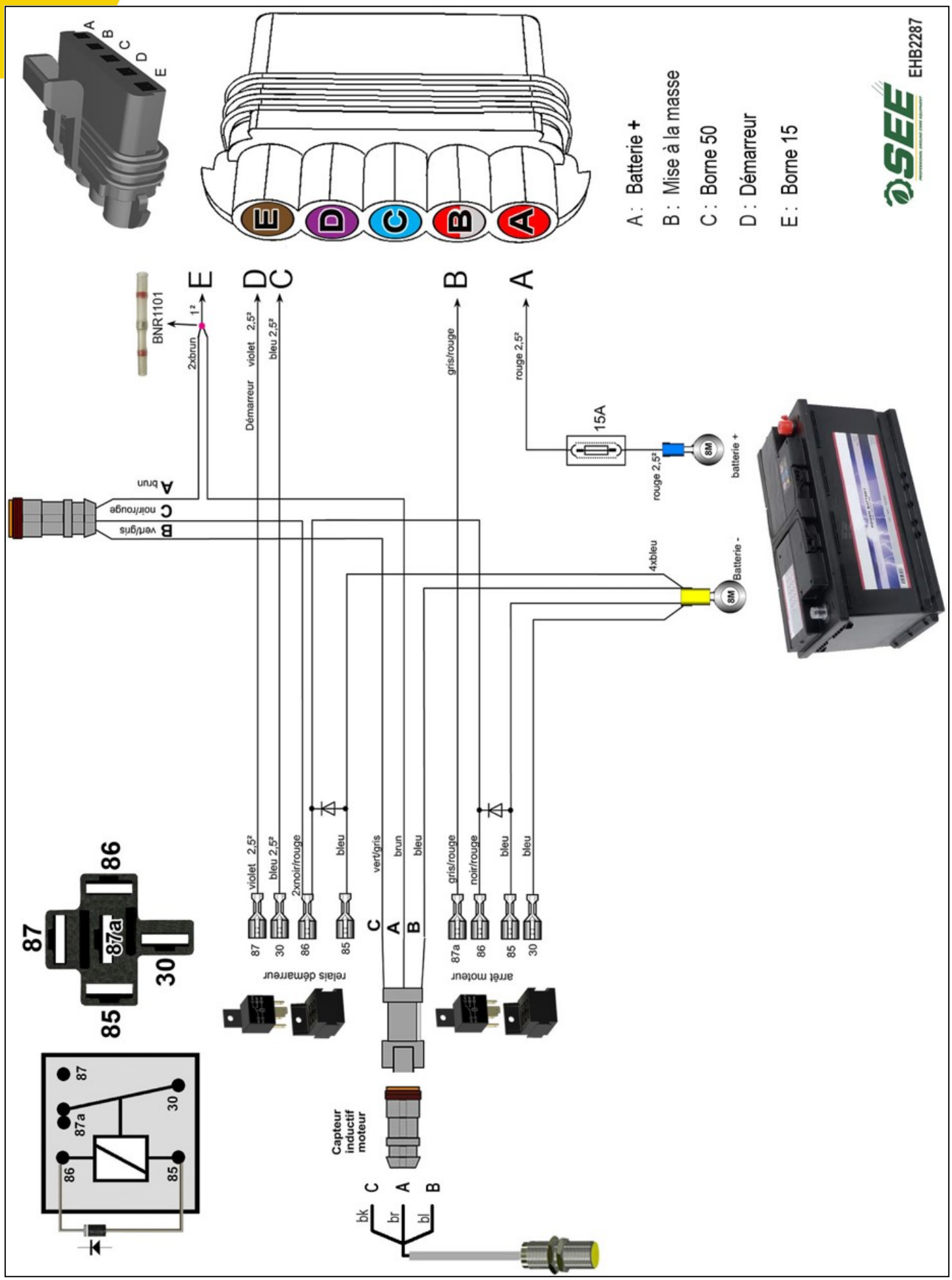
Electrical diagram KP2310



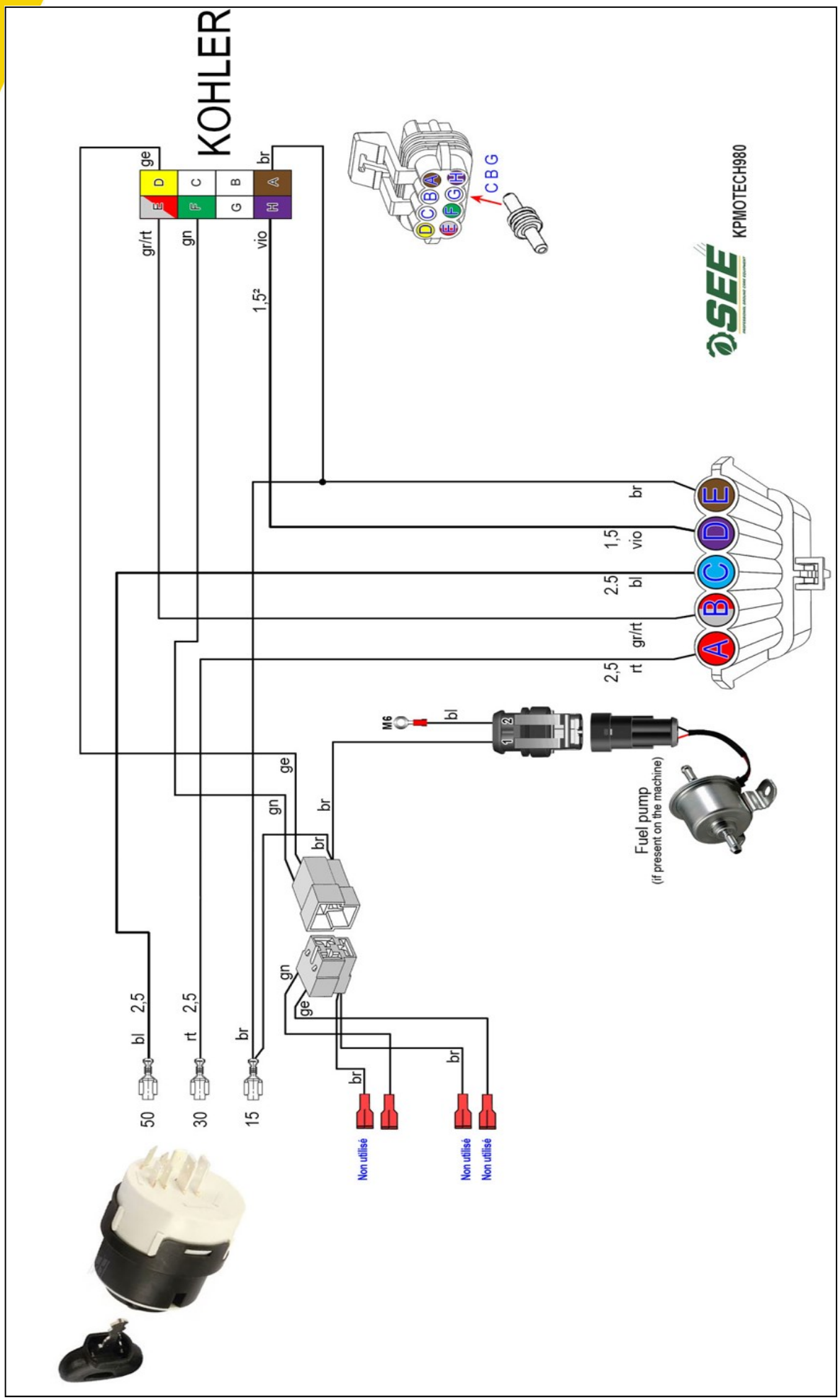
Electrical diagram EHB2309



Electrical diagram EHB2287



Electrical diagram KPMOTECH980





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