



FD 450

Hydrostatic Lawnmower

OPERATOR'S MANUAL **EN**



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Translation of the original manual.
All information, illustrations and technical specifications in this manual are based on the latest information available at the time of publication.
Subject to change without prior notice.

1. INTRODUCTION

Dear Customer,

we thank you for the trust and preference you have placed in our Grillo FD 450 and we are confident that the use of your new machine will fully meet your requirements.

For optimal use and maintenance over time, please carefully read and follow the instructions in this booklet; this will enable you to obtain the best results and safeguard your purchase.

Please keep this manual, which should always accompany the machine as an integral part of it.

Reading the operator's manual is very important.

2. DESCRIPTION AND INTENDED USE

The Grillo FD 450 is a ride-on mower designed for grass cutting and collection and foliage collection.

Any other use is considered as improper use.

This machine must only be used by personnel who are familiar with its specific features, safety regulations and all that concerns accident prevention.

Any improper use of the machine will invalidate the warranty and relieve the manufacturer of all responsibility; any risk resulting from improper use will be borne by the user.

Maintenance and repair of the machine must be carried out by qualified personnel following the procedures specified by the manufacturer. Any alteration or tampering will invalidate the warranty and relieve the manufacturer of all responsibility for damage or accidents.

MARKINGS IN THE MANUAL

This manual contains warnings highlighted in bold and marked with these symbols:



CAUTION

This symbol and the text that follows it contain information that highlights possible, even very serious, risks to the safety of the operator and anyone working on the machine if they do not consider the written information and procedures.



IMPORTANT

This heading informs the operator of actions or conditions that could damage the machine.

Read these messages carefully to avoid injury or damage to the machine.

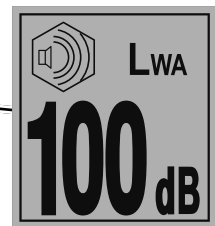
The retailer is responsible for inspecting the machine before delivery and for completing the inspection form "PRE-DELIVERY INSPECTION".

On this occasion the retailer will provide the customer with all the information necessary to use the machine.

The customer will receive the machine in optimum condition.

3. SAFETY DECALS

Danger of moving parts



Sound power level

Dangers and warnings

Danger
consult the
manual



Danger
of bursting

Danger
of burns



Fire hazard

Danger
transmission
parts



Danger
of gas inhalation



Danger of sharp blades and
danger of objects thrown by
the rotation of the blades



Danger of moving parts



Danger of overturning



Danger of sharp blades and
danger of objects thrown by
the rotation of the blades

4. GENERAL SAFETY RULES

ACCIDENT PREVENTION RULES

On the machine and in this manual there are warnings and indications accompanied by this symbol:



it indicates the presence of a potential hazard for which particular caution should be taken for your own safety and for the safety of others who may be within the operating range of the machine.



All accident prevention rules in this manual are important and must be observed. Always keep the manual handy and read it carefully to learn how to use the machine safely. Do not allow anyone to use the machine without having received comprehensive instructions.

EXPLANATION OF WARNING DECALS

Danger of injury caused by sharp blades and objects thrown by the rotation of the blades



Do not put your hands or feet under or into the lawnmower when the engine is running. Do not work with the lawnmower on gravel or foreign bodies that can be aspirated and spun by the blades, making them very dangerous.

Keep people at least 15 m away when the machine is running.

Risk of injury caused by moving parts



The grass catcher can be raised and tilted, keep a safe distance from the machine in operation.

Danger of injury caused by transmission parts



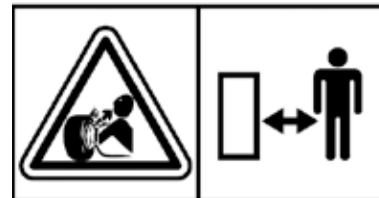
When the engine is running, never touch pulleys or belts, do not carry out maintenance and keep hands away from the designated area.

Danger of machine overturning



Do not use the lawnmower on slippery ground or on slopes with a gradient greater than 12° (21%).

Danger of bursting



Rim separation or tyre bursting can cause serious injury or even death. Be sure to maintain tyre pressure at the levels recommended in this manual, excessive pressure can cause the tyre to burst.

If a tyre is damaged or cut, do not use it, it could burst. To replace or repair it, contact a specialised centre.

Danger of burns



Take particular care not to come into contact with hot engine parts.

Danger of gas inhalation



Exhaust fumes can cause serious damage to health or death.

If it is necessary to start the engine in an enclosed space, use an extension piece to the exhaust pipe to blow out the smoke. Work in a well ventilated area.

Danger of fire



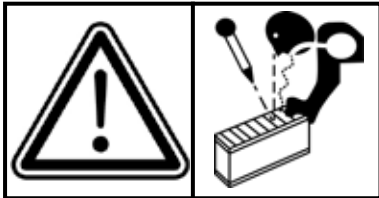
Handle fuel with care as it is highly flammable; do not refuel while smoking, near open flames or sparks, when the engine is running.

Danger of explosion



Keep the battery away from flames or sparks. The gases that may escape are highly explosive.

Danger from acid



The acid contained in the battery is highly toxic if inhaled. It can also cause skin burns, puncture clothing and cause blindness if in contact with the eyes.

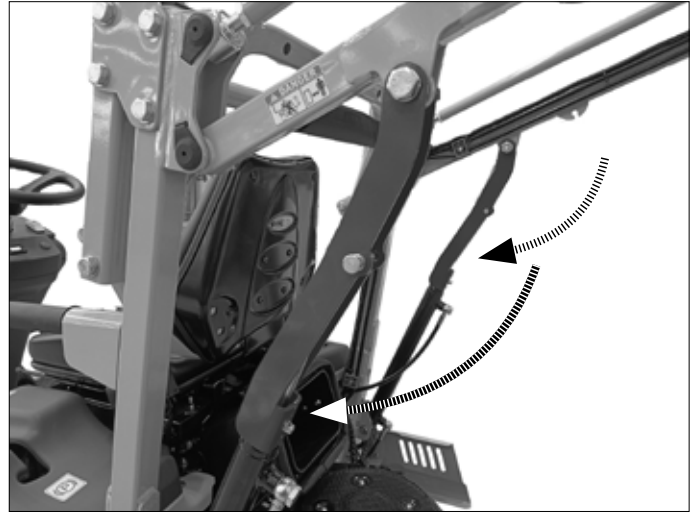
PERSONAL PROTECTION EQUIPMENT



Before using the machine the appropriate personal protection equipment must be worn: body protection, protective gloves, safety footwear, hearing protection, goggles.

SAFETY BLOCKS WITH GRASS CATCHER LIFTED

⚠ CAUTION: if the motor is serviced with the grass catcher lifted, insert the two red-painted safety blocks on the two hydraulic cylinders that support it. Do not access the engine compartment without first inserting the blocks. Do not leave the machine parked with the grass catcher lifted without having inserted the two red safety blocks.



ROLL-BAR

⚠ CAUTION: the roll-bar safety device must always be kept raised and tightened during work. Use the seat belt as well.



5. GENERAL WARNINGS TO KEEP IN MIND



WARNING: Read carefully before operating the machine.

Caution is the main requirement in accident prevention! Carefully read the following warnings when using the machine, even before starting work. Improper use can be dangerous. Observe the following precautions:

- Read this manual completely before starting and running the machine;
- Before handing the machine over to other people, make them aware of the safety rules and how to use the machine;
- Pay particular attention to the safety decals on the machine;
- Before starting work, always wear appropriate work wear, long trousers, gloves, safety shoes and goggles;
- The use of hearing protection equipment is recommended when using the machine continuously. Use earplugs or earmuffs that comply with current regulations.

SAFETY IN THE WORKING ENVIRONMENT

- Before switching on the machine, check that there are no animals or people nearby, especially children; the minimum distance is 15 m;
- Before reversing, check that there are no people or obstacles behind the machine;
- Check the ground before mowing, that there are no stones, sticks or foreign bodies, which could be thrown away dangerously;
- Be very careful when working with the lawnmower on land with sandy areas or gravel driveways. Sand and gravel can be aspirated and spun by the blades, making them very dangerous;
- Be careful when working near a road;
- Do not operate near ditches or embankments which may collapse under the weight of the machine, especially if the ground surface is uneven or wet.

DRIVING AND BEHAVIOURAL SAFETY

- Keep ignition keys out of the reach of children;
- Do not allow passengers in the machine;
- Children under 16 years of age must not use the machine;
- Do not use the machine when fatigued or under the influence of alcohol, drugs or medications that impair the physical or cognitive abilities of the operator;
- Be careful while driving and avoid abrupt turns, especially at maximum speed;
- Drive at low speed on uneven ground;
- Slow down on slopes and descents, and always steer slowly;
- Only work in sunlight or with good artificial light;
- Lift and empty the grass catcher only when the machine is stationary and on level ground;
- Do not leave the machine on a slope;
- Before getting off the lawnmower, switch off the PTO, lower the cutting deck if lifted, switch off the engine, apply the parking brake and remove the ignition key.

FURTHER SAFETY MEASURES

- If you hit a foreign object, disengage the blade, stop the engine, remove the ignition key and inspect the cutting device for damage. If damaged, repair it before putting the lawnmower back into operation;
- If the machine begins to vibrate abnormally after a knock, immediately carry out a general check to identify the reason for the anomaly. If necessary, request the assistance of an authorised Grillo workshop;
- Rotation of the mower blade is very dangerous, never put your hands or feet under the cutting deck;
- Always engage the red safety blocks on the grass catcher lifting cylinders before servicing the machine with the grass catcher lifted;
- Before checking, adjusting, repairing or simply cleaning the lawnmower, disengage the cutting deck transmission and switch off the engine;
- Do not place any weight on the seat, as this could deactivate the ignition safety device;
- Do not lift the grass catcher when the machine is running;
- Do not tamper with or disable the safety devices;
- Do not change the engine settings, especially the maximum revs;
- Do not have anyone check the machine while you are driving with the engine running;
- Do not move the machine without the cutting deck, the machine could become unbalanced and driving could be dangerous.

FUEL AND FIRE HAZARD

- Only refuel outdoors, always switch off the engine, stay away from sparks or flames, do not smoke! Securely replace tank and fuel container caps;
- Avoid fuel spills. After filling the tank clean up any spillage on the machine before starting the engine;
- Store fuel in containers specifically designed for this purpose;
- If it is necessary to empty the tank, do so outdoors or in a ventilated area;
- Caution! To reduce the risk of fire, always keep the engine compartment, muffler, exhaust manifold, battery, fuel tank area and fuel line clean and free from grass, leaves and dust;
- Do not store the machine in buildings where the fuel vapours could reach flames and sparks;
- Allow the engine to cool down before storing the machine in an enclosed area.

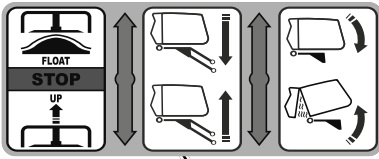
SAFE REPLACEMENTS

- Deformed or damaged blades must always be replaced, never repaired;
- Replace the muffler if it is worn or damaged;
- The transmission belts are manufactured especially for this lawnmower, do not replace them with other compatible ones, use genuine belts;
- Always use genuine Grillo spare parts and accessories.

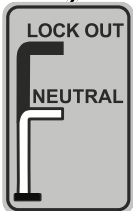
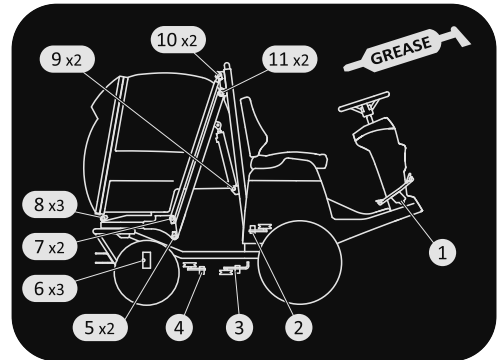
6.A IDENTIFICATION OF USE DECALS - RH SIDE

RIGHT HAND SIDE refers to the side of the machine for the operator sitting in the driver's seat

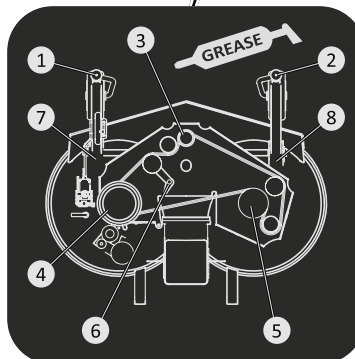
Control levers



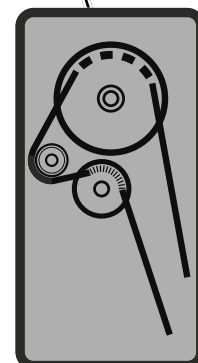
Machine grease points



Bypass hydrostatic transmission



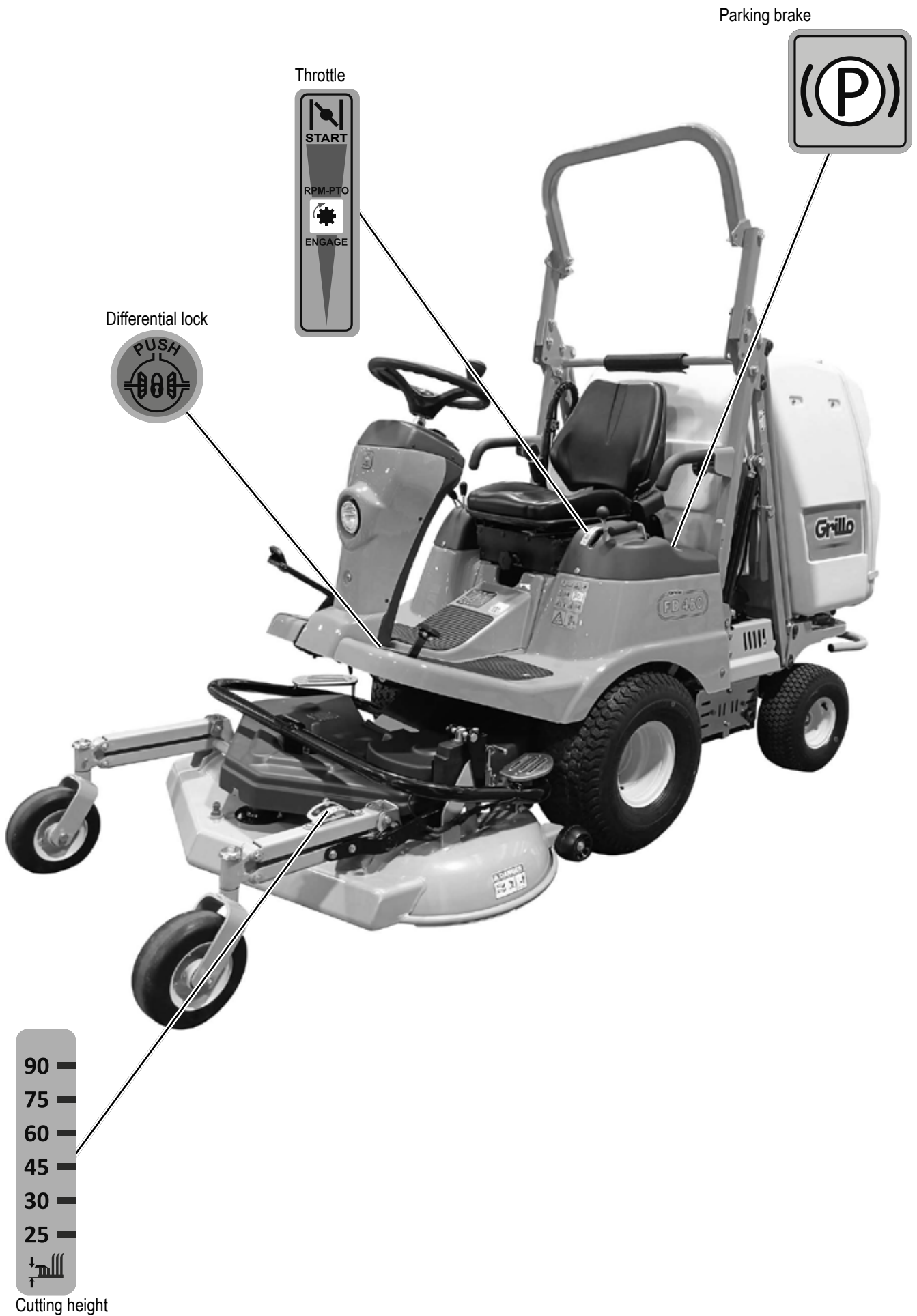
Cutting deck grease points



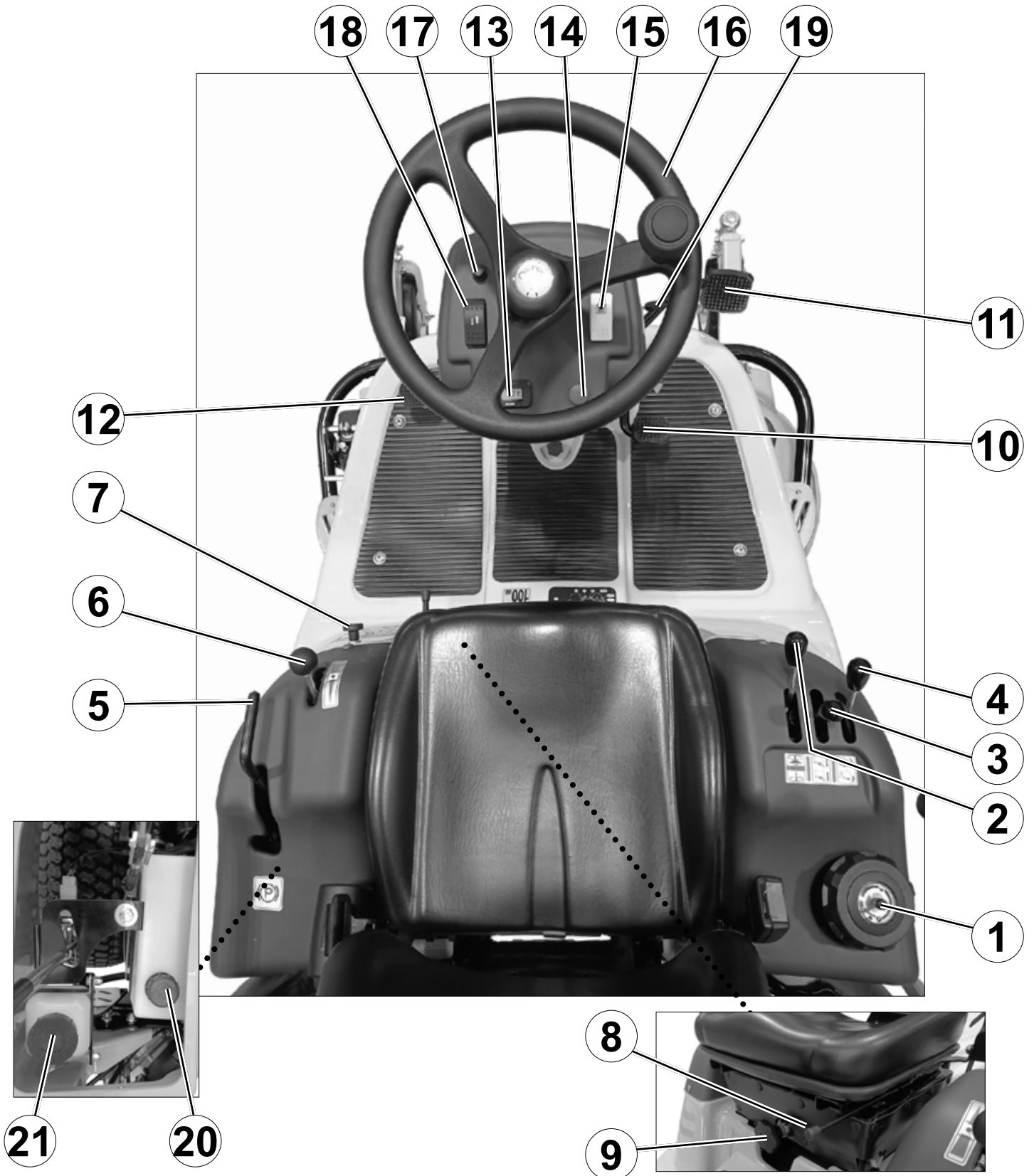
PTO-cutting deck belt tensioner

6.B IDENTIFICATION OF USE DECALS - LH SIDE

LEFT HAND SIDE refers to the side of the machine for the operator sitting in the driver's seat.



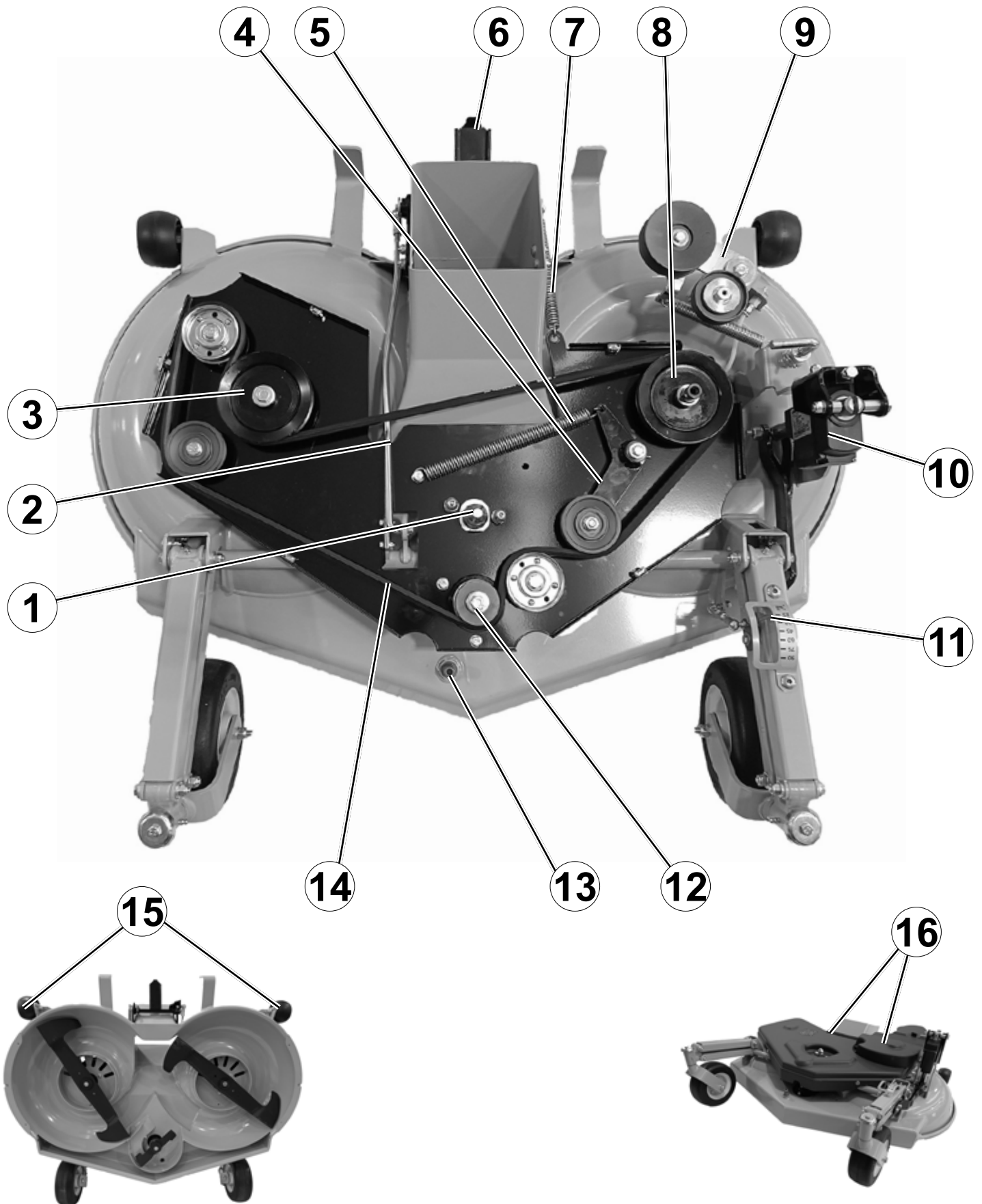
7. IDENTIFICATION OF MACHINE CONTROLS AND FUNCTIONS



1. FUEL TANK CAP WITH LEVEL INDICATOR
2. CUTTING DECK LIFTING LEVER
3. GRASS CATCHER LIFTING LEVER
4. GRASS CATCHER TIPPING LEVER
5. PARKING BRAKE LEVER
6. THROTTLE
7. CHOKE LEVER
8. SEAT ADJUSTMENT LEVER
9. SEAT SUSPENSION ADJUSTMENT KNOB
10. REVERSE PEDAL
11. FORWARD PEDAL

12. DIFFERENTIAL LOCK PEDAL
13. HOUR METER
14. WARNING LIGHT
15. PTO BUTTON
16. STEERING WHEEL
17. FUSE
18. CUTTING HEIGHT ADJUSTMENT BUTTON
19. IGNITION KEY
20. HYDRAULIC OIL TANK CAP
21. HYDROSTATIC TRANSMISSION EXPANSION TANK CAP

8. IDENTIFICATION OF CUTTING DECK COMPONENTS

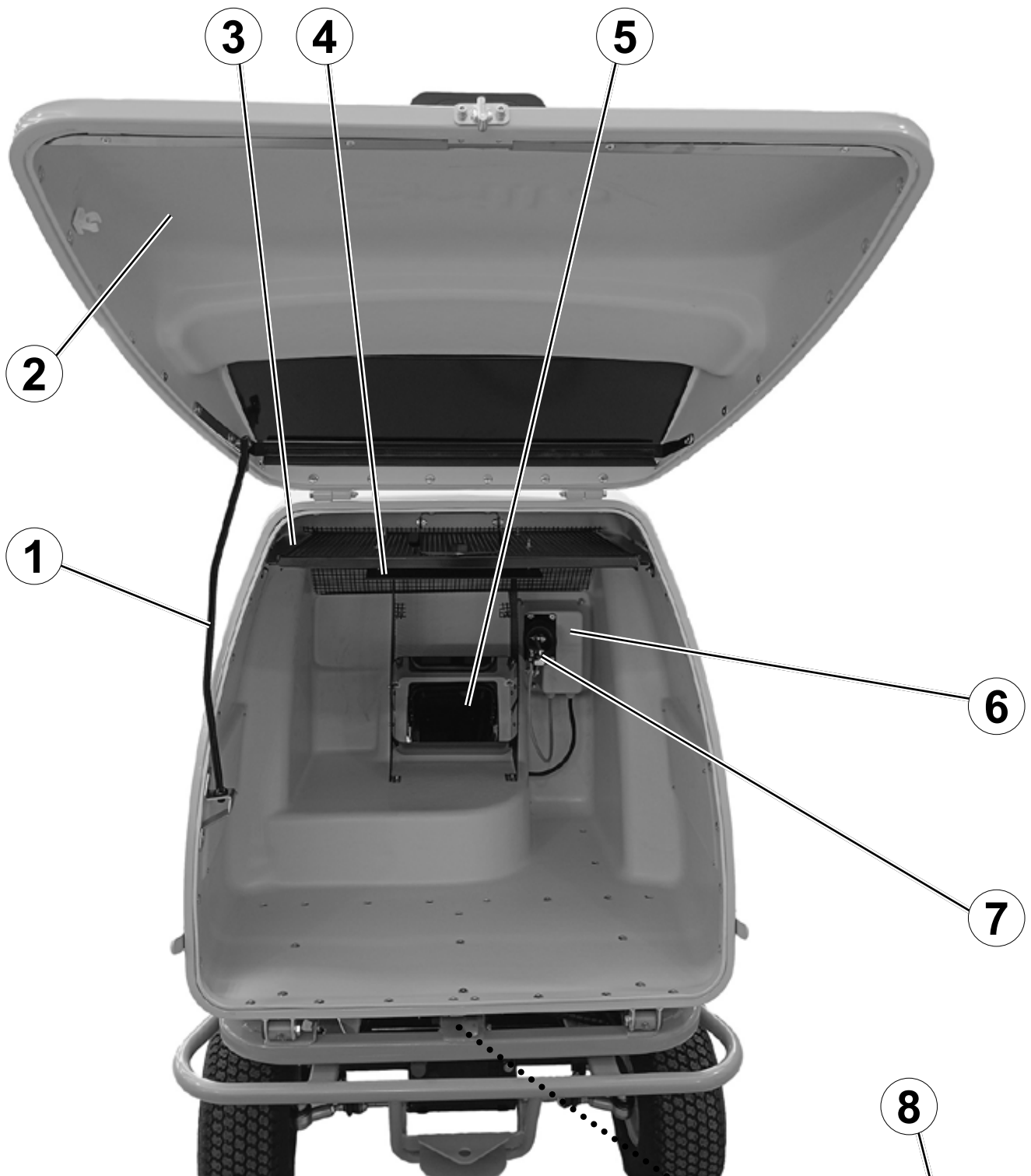


1. CUTTING DECK FRONT COUPLING/ATTACHMENT PIN
2. CUTTING DECK INCLINATION ADJUSTMENT ROD
3. RIGHT BLADE PULLEY
4. DRIVE BELT TENSIONER
5. TENSIONER SPRING
6. CUTTING DECK REAR ANCHORAGE
7. CUTTING DECK REAR ANCHORAGE SPRING
8. LEFT BLADE PULLEY

9. PTO BELT TENSIONER
10. CUTTING HEIGHT ELECTRIC ACTUATOR
11. CUTTING HEIGHT INDICATOR
12. FRONT BLADE PULLEY
13. CONNECTION NOZZLE FOR WASHING HOSE
14. DRIVE BELT
15. ANTI-SCALP WHEEL
16. TRANSMISSION PROTECTION COVER

9. IDENTIFICATION OF GRASS CATCHER COMPONENTS

REAR VIEW WITH OPEN GRASS CATCHER



1. LIFTING ROD
2. GRASS CATCHER DOOR
3. REMOVABLE GRID
4. FIXED GRID
5. LOADING CHUTE
6. ELECTRIC MOTOR
7. FULL GRASS CATCHER MICROSWITCH
8. LATCH

10. TECHNICAL SPECIFICATIONS

MODEL: FD 450, hydrostatic lawnmower with front cutting deck and direct grass loading.

ENGINE: BRIGGS & STRATTON 7220 Professional Series, 656 cc OHV, net power 18 HP (max power 22HP)200 rpm, 4-stroke 2-cylinder petrol engine, oil pump.

FUEL TANK CAPACITY: 17 litres.

HYDRAULIC OIL CIRCUIT CAPACITY: 3.8 litres.

STARTER: electric 12 V.

DRIVE: hydrostatic 2-wheel drive with parking brake and differential.

DIFFERENTIAL LOCK: mechanical with pedal control.

DRIVING SYSTEM: steering wheel with hydraulic drive, with pedal operated forward and reverse gears.

PTO: electromagnetic, with integrated blade brake.

SPEED: 0-11 km/h continuously variable.

WHEELS: front 20x10.00-8 GARDEN; rear 15x6.00-6 GARDEN.

SEAT: sprung with adjustable slides and seat belt included.

STEERING WHEEL: mounted on steering column, with knob.

TURNING RADIUS: 30 cm.

AUTOMATIC FEATURES: blade disengagement when the grass catcher is full, grass catcher door opening.

BRAKE: disc parking brake.

GRASS CATCHER: 450 litres capacity. Hydraulic lifting and unloading system with automatic door opening.

DISCHARGE HEIGHT: 170 cm.

REAR OVERHANG: 45 cm.

CUTTING DECK: 3 blades with central collection.

CUTTING HEIGHT: from 2.5 to 9 cm continuously variable with electric adjustment from the driver's seat.

CUTTING WIDTH: 113 cm.

HOURLY MOWING CAPACITY: 6000 m²/h.

ATTACHMENTS: cutting deck with collection 113 cm, mulching kit, leaves collection kit.

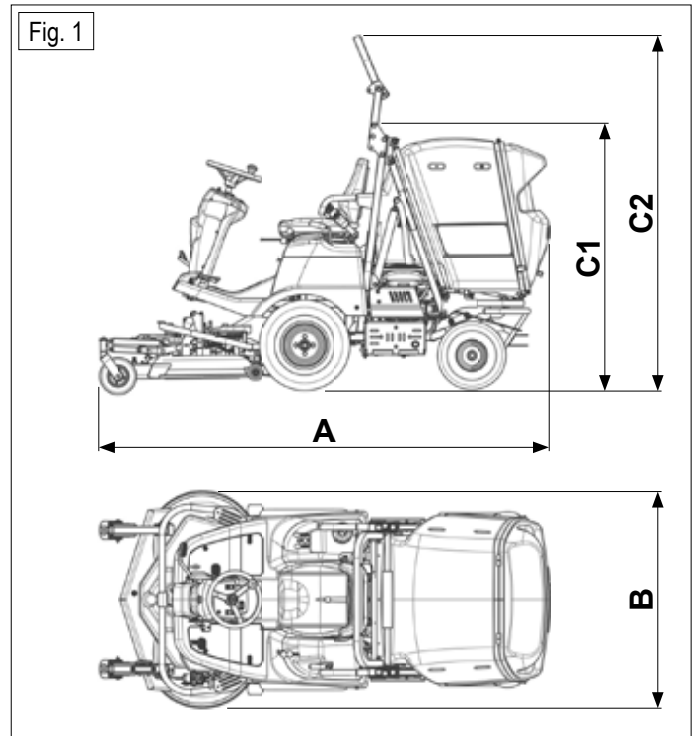
ATTACHMENTS: 113 cm cutting deck with collection, mulching kit; leaves collection kit.

SIZE (with cutting deck - fig. 1):

- Length: 268 cm;
- Width: 119 cm;
- Height: 146 cm (roll-bar lowered) - 194 cm (roll-bar raised).

WEIGHT:

- without cutting deck: 375 kg;
- with cutting deck: 450 kg.



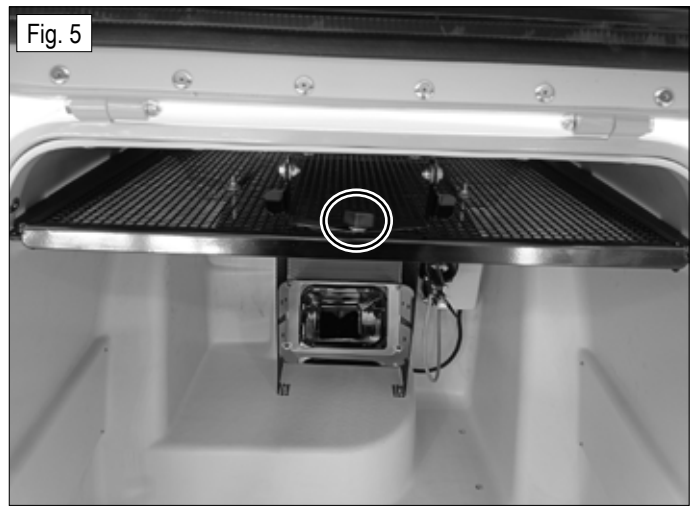
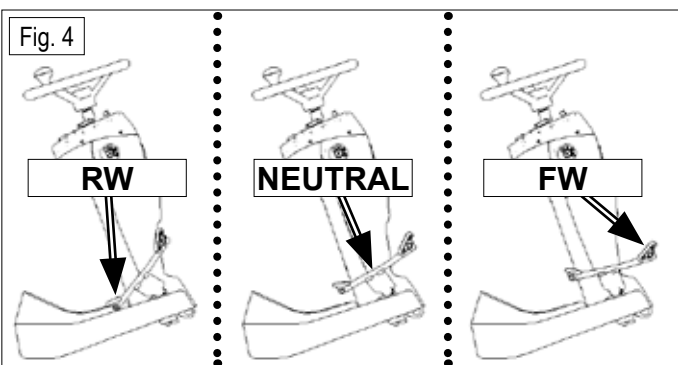
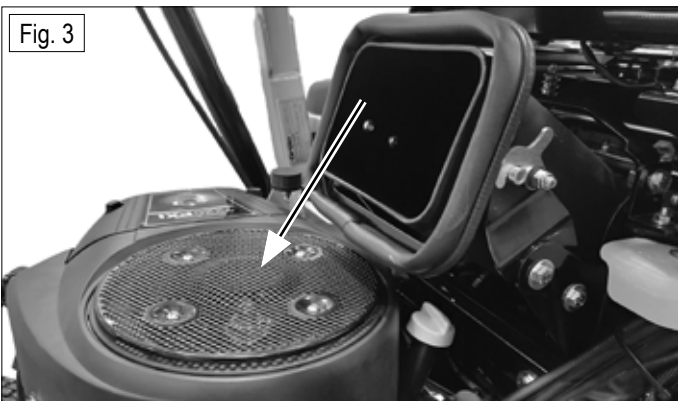
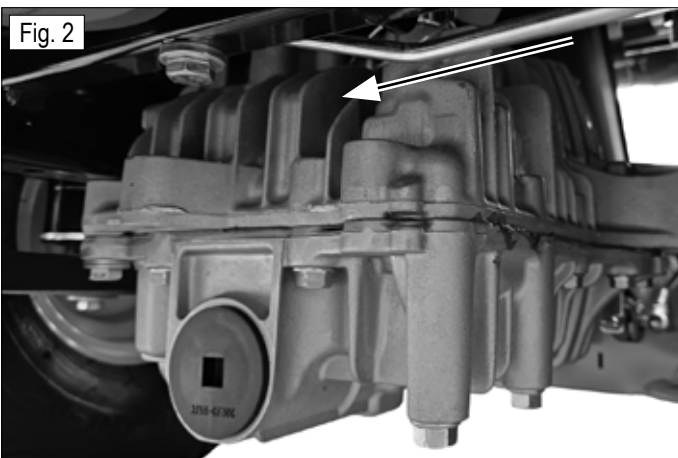
11. OPERATING INSTRUCTIONS

11.1 CHECKS TO BE CARRIED OUT BEFORE STARTING THE ENGINE

Check that:

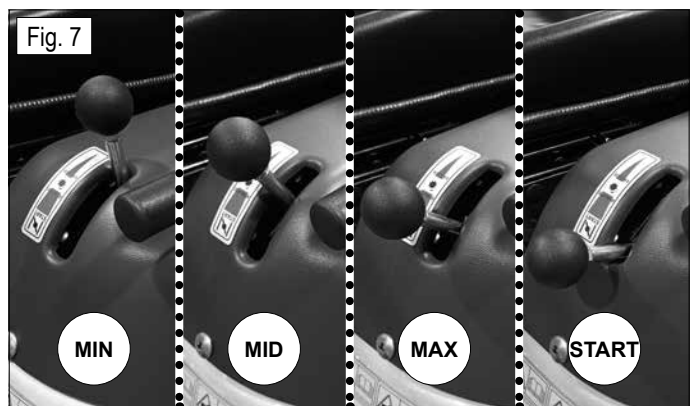
- The hydrostatic transmission cooling fins are well clean (fig. 2);
- The intake grille for the engine cooling is clean (fig. 3);
- The engine oil is level;
- The hydraulic oil is level;
- The forward/reverse pedal is in the neutral position (fig. 4/ NEUTRAL);
- The engine air filter is well clean;
- The grid inside the basket is well clean; to remove it, unscrew the wing nut (fig. 5) and pull the grid out;
- The cutting deck and loading chute are well clean and correctly fitted (fig. 6);
- The PTO switch (fig. 10/B) is off;
- There is sufficient fuel inside the tank.

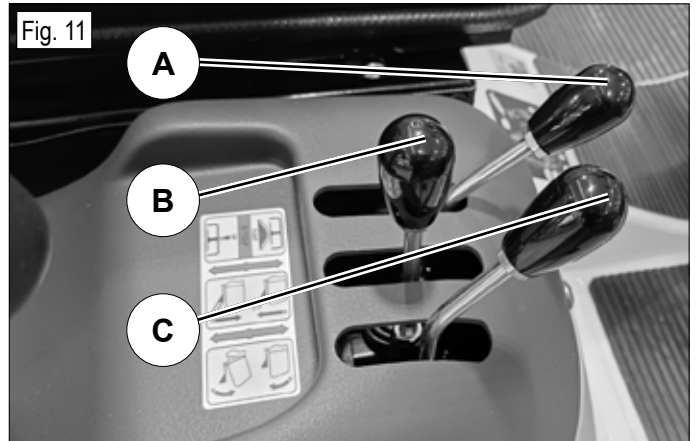
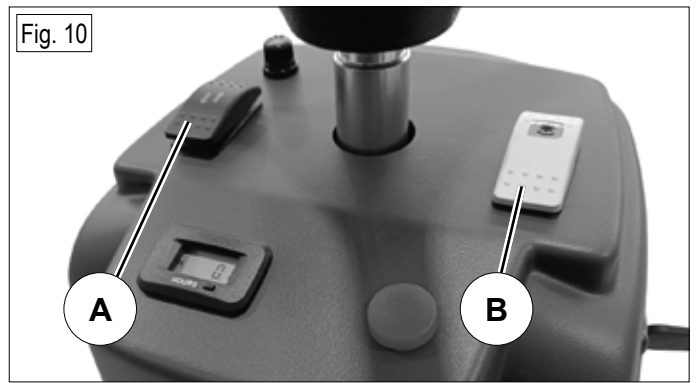
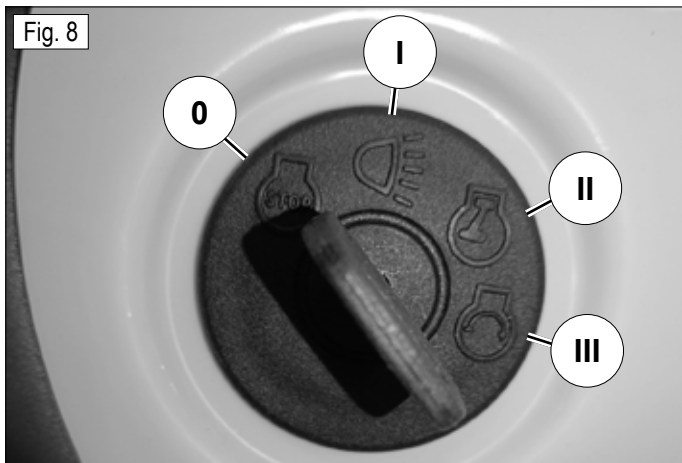
For detailed fluid levels see 15. Ordinary maintenance and lubrication.



11.2 STARTING THE ENGINE


1. Set the throttle lever to the middle position (fig. 7/MID);
2. If the engine is cold, activate the choke by moving the throttle lever to the end stroke (fig. 7/START);;
3. Insert the key into the steering column;
4. By turning the key one position (fig. 8/I) the electrical circuit is powered: the control unit performs a safety and function check and a red led lights up on the dashboard;
5. By turning the key to the last position (fig. 8/III) the engine is started;
6. Release the key after starting, it will return to the working position (fig. 8/II); to switch on the work-light the key must be turned back one position (fig. 8/I);
7. Move the throttle lever to idle (fig. 7/MIN).







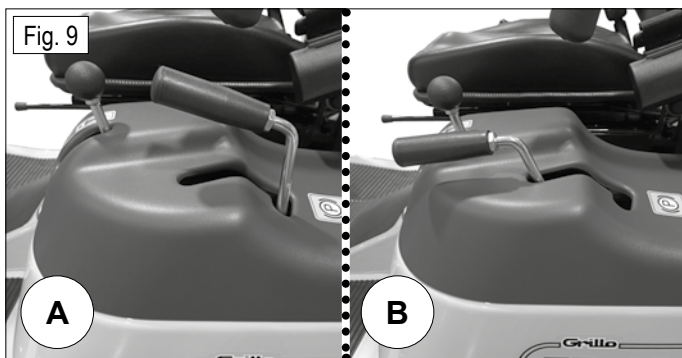
11.3 STARTING THE MACHINE

1. Adjust the seat and carry out the necessary checks as described above;
2. Start the engine;
3. Release the parking brake by removing the lever from the housing and bringing it forward (fig. 9/B);
4. Adjust the cutting height using the button (fig. 10/A);
5. Move the throttle to halfway (fig. 7/MID);
6. Engage the PTO (fig. 10/B);
7. Always check the operation of the PTO safety devices before starting work, i.e. that:
 - The PTO disengages automatically by getting up from the seat;
 - The blades stop in less than 5 seconds;
8. Move the throttle lever to full revs (fig. 7/MAX);
9. Press the travel pedal gently (fig. 4/FW) and start work. Use the lower part of the pedal (fig. 4/RW) for reverse;
10. To stop, simply release the forward pedal which will return to the neutral position (fig. 4/NEUTRAL);
11. When the grass catcher is full, a sensor automatically disengages the blade rotation, preventing clogging of the loading chute;
12. To discharge the grass: lift the grass catcher upwards by operating the central lever on the hydraulic distributor (fig. 11/B) and empty the grass catcher using the most external lever (fig. 11/C).

 **IMPORTANT:** do not engage the blades with the engine at full speed, but bring the engine to half speed and then engage the PTO (fig. 7/MID).

 **IMPORTANT:** during mowing, the cutting deck lifting lever must be kept in the FLOAT position (fig. 11/A).

 **IMPORTANT:** always engage the blades a few metres before entering the area to be mowed. This cleans the cutting deck and the loading chute and does not strain the clutch.



11.4 WORK CONCLUSION

Once finished mowing, disengage the blades and empty the grass catcher. Then:


1. Remove the foot from the forward pedal to stop;
2. Set the throttle to minimum;
3. If the cutting deck was raised, lower it to the ground;
4. Switch the engine off by turning the key to the STOP position and apply the parking brake (fig. 9/A) by pulling back the lever and positioning it in the housing;
5. Finish by cleaning the machine.


11.5 ORDINARY MACHINE CLEANING


At the end of each job, proper cleaning ensures a long service life for the machine and prevents most common inconveniences.


The best way to clean the machine is with compressed air or a blower/vacuum cleaner.

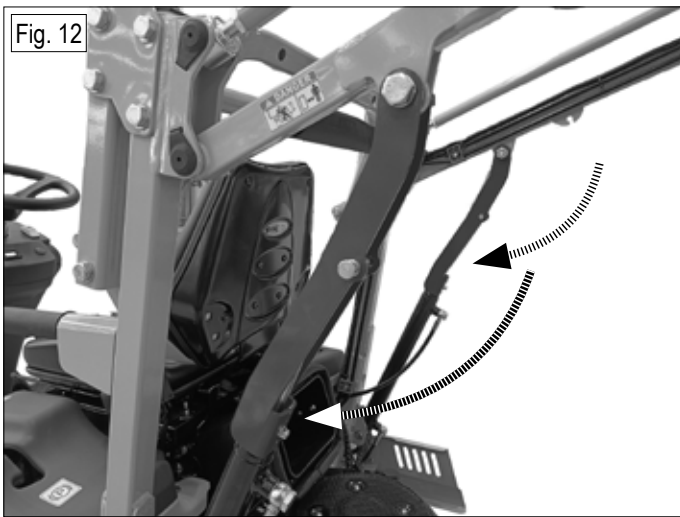
If necessary, use water for the body parts, the cutting deck, the loading chute and the grass catcher; avoid wetting directly the electrical sensor inside the grass catcher.

 **CAUTION:** always wear appropriate clothing and goggles before starting any cleaning work.

 **CAUTION:** to reduce the risk of fire, it is very important to keep the engine compartment, muffler, exhaust manifolds, battery, fuel tank area and fuel line clean and free from grass, leaves and dust.

 **IMPORTANT:** do not use a high-pressure washer in the engine compartment and wherever there are electrical components.

 **CAUTION:** if you clean the machine with the grass catcher lifted, insert the two red safety blocks on the hydraulic cylinders (fig. 12).



WASHING THE CUTTING DECK

Only and exclusively for washing the cutting deck, and in any case observing all other general safety instructions, this operation must be carried out with the engine running.

The machine must be placed on a solid floor, then lower the cutting height to the minimum, plug the connection nozzle (fig. 13) into the water hose and allow the water to run for a few minutes with:

- The operator sitting in the driver's seat;
- The engine running;
- The forward pedal in NEUTRAL;
- The blades engaged.

When finished, clean the grass catcher grid as well.

After using water, run the transmissions for a few minutes, including the cutting deck transmission, to ensure that all components have dried.



11.6 USEFUL RULES FOR CORRECT USE

The machine can work even under severe conditions without clogging problems. A few measures must be taken and all devices must be correctly registered.

- Before starting work, check that the cutting deck and the loading chute are perfectly clean and free of grass and dirt;
- Check that the loading chute is correctly positioned and secured with the two clamps (fig. 14);
- Check the ground before mowing: ensure there are no stones, twigs, roots or foreign bodies;
- When mowing, keep the engine at full revs and adjust the forward speed according to the height of the grass. Be careful and slow down when coming across tall or dense grass;
- Check that the blades are not worn, the cutting edge is sharp and the vanes are not damaged. Sharpen the mower blades frequently; the cut will be better and the engine will run at lower consumption;
- Keep the grid inside the grass catcher clean: to remove it, manually open the cover of the grass catcher and unscrew the locking knob (fig. 5);
- If the grass is wet or very tall, do not mow with the cutting deck in the lowest position, but rather set it to an intermediate position and proceed at a moderate speed;
- Engage the blades a few metres before entering the area to be

mowed.



IMPORTANT: the blades must be fitted correctly. Do not invert the position of the blades.



CAUTION: only use the hydraulic lift of the cutting deck for short travel distances, to overcome obstacles, to step on kerbs or curbs.



11.7 SLOPING TERRAIN AND DIFFERENTIAL

Steep terrain should be negotiated in uphill/downhill direction as far as possible, taking great care when changing direction and ensuring that the wheels uphill do not encounter any obstacles (stones, branches, roots, etc.) that could cause the machine to lose control. If the drive wheels tend to slip, use the hydraulic control to lift the cutting deck slightly in order to put more weight on the drive wheels and thus have more traction. Consider the various situations and be careful on damp ground and wet grass as the machine may slip. When driving downhill, start at low speed and avoid driving over dry or cut grass as the wheels may lose grip.

It is possible to engage the differential lock by pressing the pedal to the left of the steering column (fig. 15) in the condition of wheel slip, or to load the lawnmower on vehicles with ramps. Only engage the differential lock if necessary



CAUTION: avoid slopes that are too steep; comply with the safety limits set out in the manual max 12° (21%).



12. SAFETY DEVICES

12.1 ELECTRONIC SAFETY

On the FD 450, an electronic control unit receives signals from the microswitches located on the seat, forward pedal, parking brake and grass catcher. Based on these signals, the control unit generates logic blocks for the safety of the machine and the operator.

Specifically, always remember that:

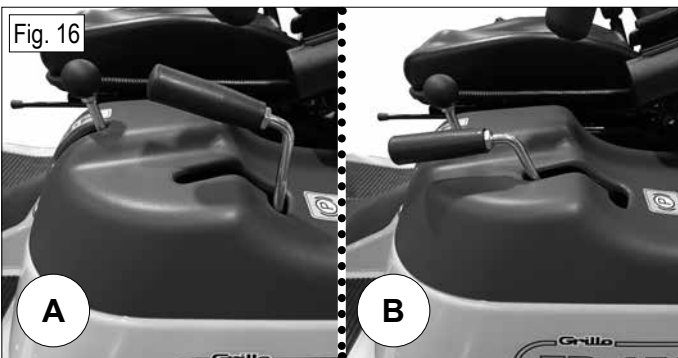
- The engine:
 - Switches off if the operator gets up from the seat with the parking brake off;
 - Switches off if the travel pedal is pressed with the parking brake on;
 - Will not start if the driver is not seated in the driver's seat, unless the parking brake has been applied first;
 - Will not start if the drive pedal is not in NEUTRAL position;
- The PTO:
 - Does not activate if the parking brake is applied;
 - Does not activate if the grass catcher is open or full.

12.2 PARKING BRAKE

The FD 450 is equipped with a hydraulic drive system, therefore in order to brake it is sufficient to release the travel pedal. To engage the parking brake, pull the lever (fig. 16/A) and position it in the housing. To release the parking brake, simply remove the lever from the housing and bring it forward (fig. 16/B). If the parking brake is applied and the travel pedal is depressed, the engine shuts down.

In this condition the blades cannot be engaged.

With the parking brake applied, it is possible to leave the driver's seat with the engine running.



12.3 ROLL-BAR

- Roll-over protection is not ensured if the roll-bar is in the lowered position;
- Do not operate the machine on uneven terrain or on slopes with the roll-bar in the lowered position;
- Only lower the roll-bar when absolutely necessary;
- Do not wear the safety belt when the roll-bar is lowered;
- Drive slowly and carefully;
- Raise the roll-bar as soon as conditions permit;
- Be careful when working under canopy. Ensure that there are no low branches or other obstacles that could become entangled with the roll-bar.

To lower the roll-bar, proceed as follows:

1. Park the machine on a flat surface;
2. Disengage the PTO, lower the cutting deck and engage the parking brake;
3. Switch off the engine and remove the key;
4. Remove the two bolts shown in fig. 18/A, rotate the upper part of the arch downwards, then refit the bolts as in fig. 19/A;
5. Remove the bolts shown in fig. 19/B, rotate the masts of the arch downwards, then refit the bolts as in fig. 20/C.

To raise the roll-bar, proceed as follows:

1. Park the machine on a flat surface;
2. Disengage the PTO, lower the cutting deck and engage the parking brake;
3. Switch off the engine and remove the key;
4. Remove the bolts shown in fig. 20/C, rotate the masts of the arch upwards, then refit the bolts as per fig. 19/B;
5. Remove the bolts shown in fig. 19/A, rotate the upper part of the arch upwards, then refit the bolts as in fig. 18/A.

⚠ CAUTION: in order to avoid serious injuries due to the machine overturning, keep the roll-bar raised (fig. 17) and use the safety belt. In addition, make sure that the seat is securely fastened via the securing latches behind the backrest.

⚠ CAUTION: only lower the roll-bar when absolutely necessary, for short periods and raise it immediately as soon as conditions permit.



13. ORDINARY ADJUSTMENTS

13.1 SEAT ADJUSTMENT

Before starting work, it is recommended to position the seat in the most comfortable position and with the most control over the machine. To adjust the seat forwards or backwards, move sideways the lever on the left-hand side of the seat (fig. 21/A), then move the seat. To adjust the seat suspension, turn the knob clockwise to harden the springing, and counter-clockwise to soften the springing (fig. 21/B). To tip the seat, pull the lever on the back of the backrest (fig. 22).

Fig. 18

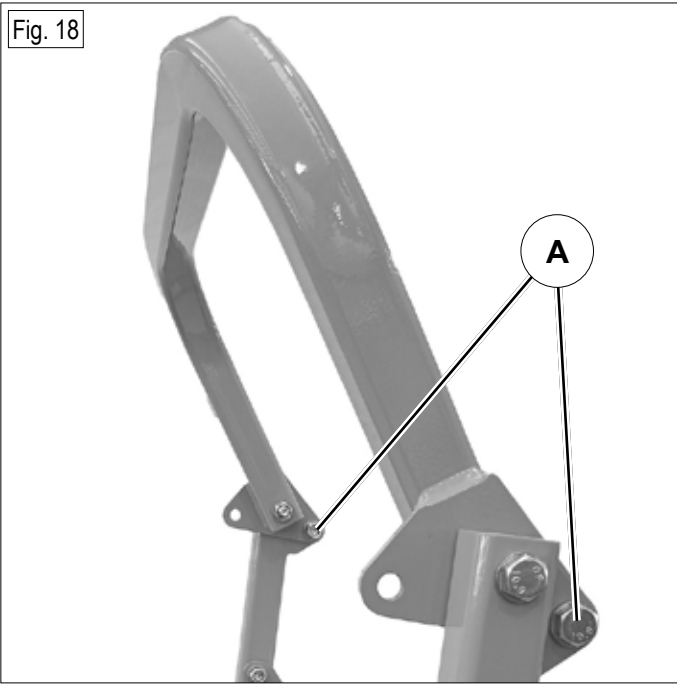


Fig. 21

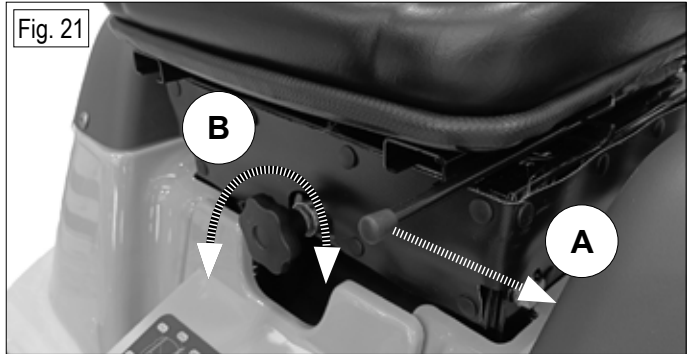


Fig. 19

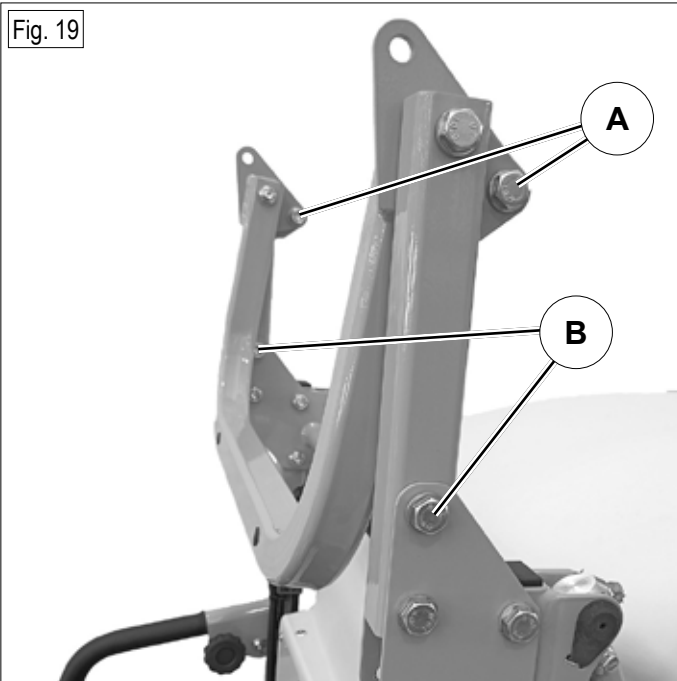
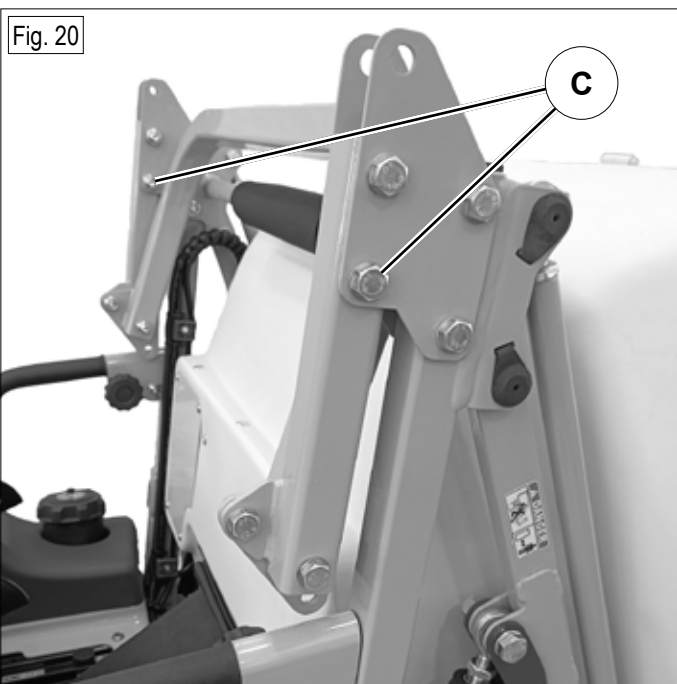


Fig. 22



Fig. 20



13.2 CUTTING HEIGHT ADJUSTMENT

To adjust the cutting height use the button (fig. 23/A), pressing it upwards to raise it and downwards to lower it.

In the event of uneven ground, dips or bumps, it is advisable to operate the cutting deck in the highest cutting setting in order to avoid impact on the blades. To this purpose, there are two anti-scalp wheels at the rear of the cutting deck (fig. 25), their height above the ground can be adjusted in three positions by means of the fixing holes to the cutting deck.

For correct use, set the height of the wheels at the closest position but not in contact with the ground.


 **IMPORTANT:** during cutting, the cutting deck lifting lever must be kept in the floating "FLOAT" position, moving it all the way forward (fig. 24/A).

Fig. 23

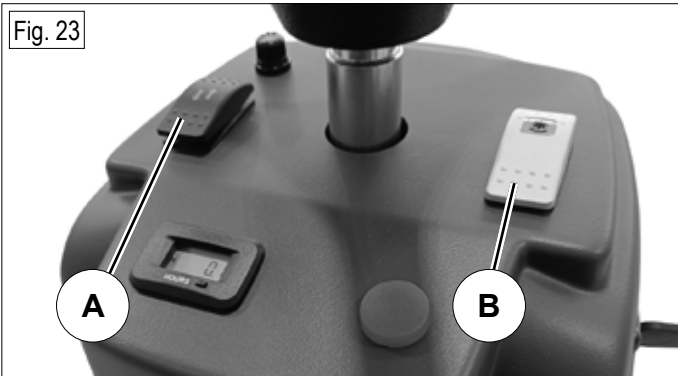


Fig. 24

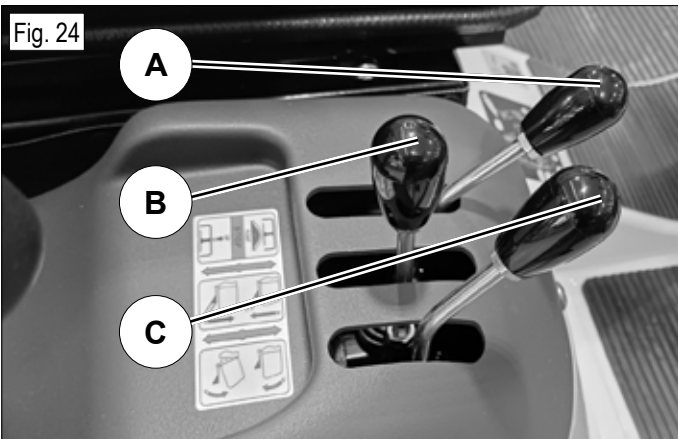


Fig. 25



14. EXTRAORDINARY ADJUSTMENTS

 **CAUTION:** the adjustment procedures described below require technical skills and expertise.

It is advisable to contact an authorised Grillo centre to undertake these procedures.

14.1 ADJUSTING THE PARKING BRAKE

If the parking brake is ineffective, it is possible to adjust it using the adjuster located under the fairing on the left side (fig. 26): by loosening the lock nut and loosening or tightening the adjuster it is possible to vary the tension of the cable connected to the lever.

Fig. 26

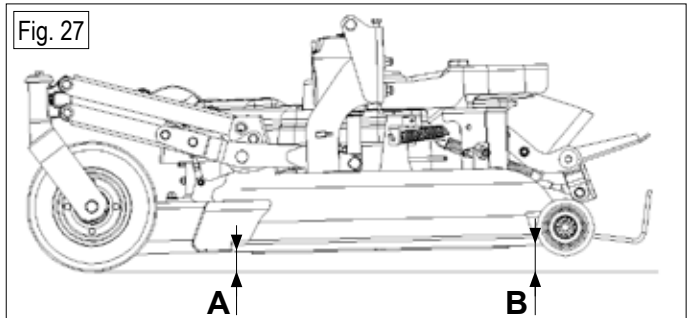


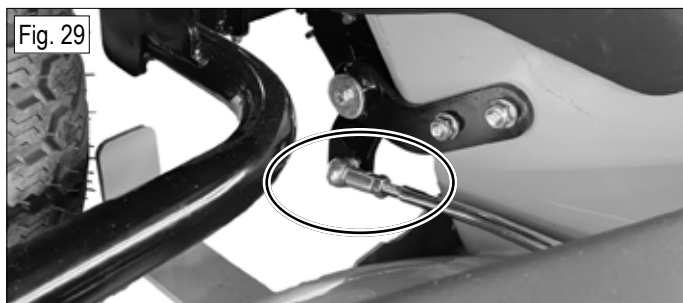
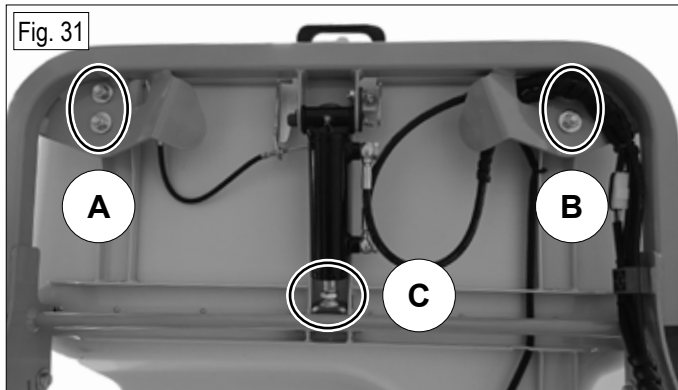
14.2 ADJUSTING THE CUTTING DECK

Good planarity of the cutting deck is essential for an evenly mowed lawn. Place the lawnmower on a smooth, level surface, make sure the distributor lever is floating and lower the cutting height to the minimum. Then:

1. Check the correct tyre pressure (1.5 bar);
2. Check the distance of the edge of the cutting deck from the ground at the points indicated (fig. 27). In A the measurement must be 15/20 mm, in B it must be greater than A by about 5/10 mm;
3. If necessary intervene:
 - On the front wheel slots (fig. 28) to adjust the difference in height between the left and right-hand sides;
 - On the adjuster at the rear of the cutting deck (fig. 29) to adjust the tilt.

Fig. 27






14.3 ADJUSTING THE GRASS CATCHER ALIGNMENT

For good operation, it is very important to ensure a perfect coupling between the grass catcher and the loading chute in the closed position (fig. 30).

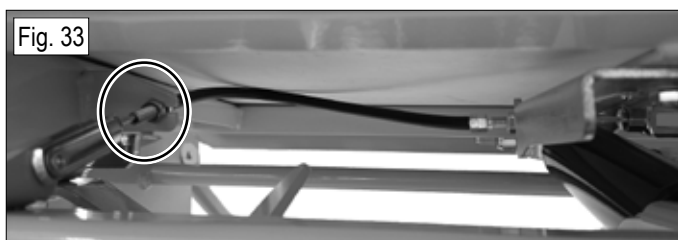
To do this, proceed as follows:

1. Bring the grass catcher into the fully closed position and check the coupling with the chute;
2. If the gasket does not seal properly or is too flattened, loosen the bolts securing the grass catcher to the rear part (fig. 31/A and 31/B);
3. Loosen the safety nut at the top of the central hydraulic cylinder rod. Tighten or loosen the cylinder rod (fig. 31/C) to obtain the desired movement of the grass catcher, so that the seal is slightly flattened and the grass catcher is aligned with the chute;
4. If necessary, the position can also be adjusted by acting on the lifting cylinders (fig. 32): lengthening the rods of the cylinders moves the grass catcher further and upwards from the chute, shortening the rods of the cylinders moves the grass catcher closer and downwards towards the chute.

 **IMPORTANT:** for correct operation of the hydraulic grass catcher lift, the cylinders must be adjusted evenly to the left and right hand sides.

14.4 ADJUSTING THE GRASS CATCHER OPENING

To adjust the automatic door opening angle, use the adjuster shown in fig. 33. By loosening the lock nut and unscrewing or screwing the adjuster, it is possible to change the tension of the connected cable and thus anticipate or delay the opening of the grass catcher when unloading.

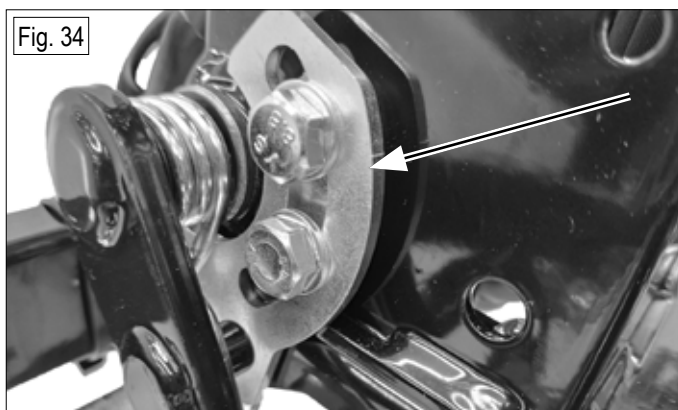


14.5 ADJUSTING THE TRAVEL PEDAL NEUTRAL POSITION

If the machine does not come to a complete stop when the drive pedal is in neutral, the neutral position of the forward/reverse pedal can be adjusted using the adjuster provided.

The neutral position adjustment is to be carried out with the engine running and with the machine safely placed on stands, with the front wheels raised off the ground.

Remove the steering column cover then loosen the two bolts and adjust the forward spring retaining bracket (fig. 34) so that the wheels come to a complete stop; retighten the two bolts when the adjustment is complete.

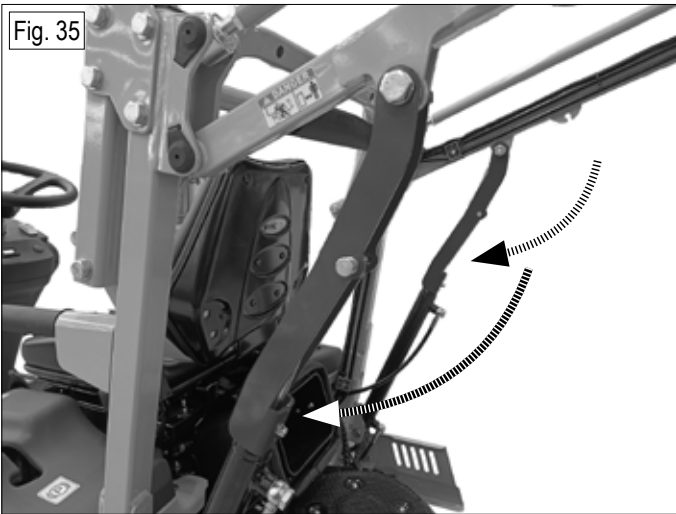


15. ORDINARY MAINTENANCE AND LUBRICATION

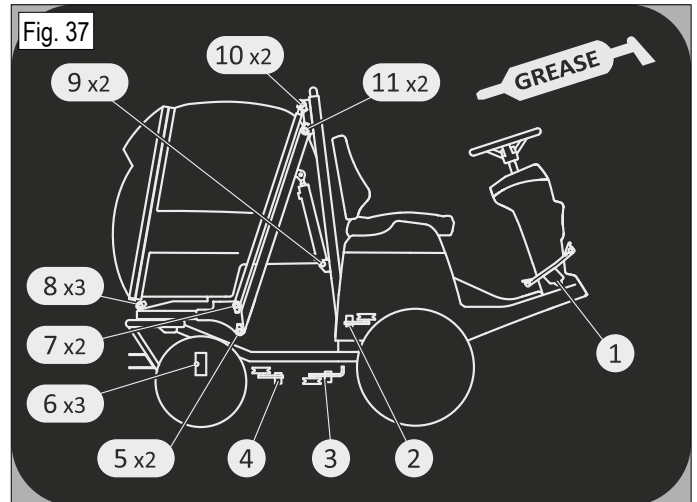
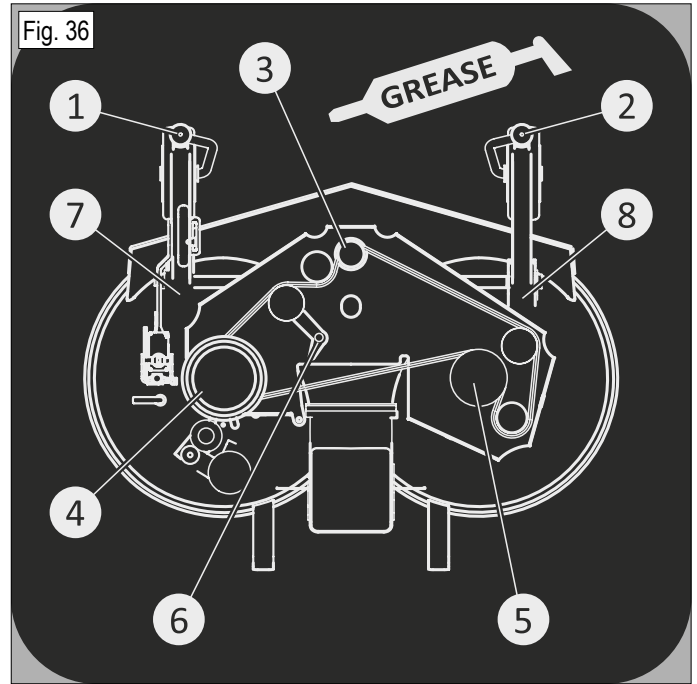
⚠ CAUTION: if the machine or part of it has to be lifted, always use suitable tools such as supports and safety locks.

- Always wear appropriate clothing and work gloves before starting any cleaning, maintenance or repair work;
- Do not leave the machine in service without safety devices or lifted, in places accessible to inexperienced persons, especially children;
- Never dispose of waste oil, fuel or any other pollutant in the environment!
- Regular maintenance and correct lubrication help to keep the machine in perfect working order.

⚠ CAUTION: if you inspect the machine with the grass catcher lifted, apply the two red safety blocks on the hydraulic cylinders (fig. 35).



⚠ IMPORTANT: lubricate with grease every 40 hours all points shown in the diagrams.



15.1 LUBRICATION

GREASE LUBRICATION POINTS

Consult the location of the lubrication points according to the diagrams on the machine.

For the cutting deck, the diagram (fig. 36) shows the components to be lubricated (1 to 8) on which there is a single grease nipple.

The components are:


1. Left swivel wheel;
2. Right swivel wheel;
3. Front blade hub;
4. Left-hand blade hub;
5. Right-hand blade hub;
6. Belt tensioner of the cutting deck transmission;
7. Left arm of the cutting deck;
8. Right arm of the cutting deck.

For the machine body, the diagram (fig. 37) shows the components to be lubricated (1 to 11), followed by the number of grease nipples present.

The components are:

1. Forward/reverse pedal, grease nipple under the footplate;
2. Belt tensioner of the PTO;
3. Belt tensioner of the engine transmission;
4. Belt tensioner of the hydrostatic transmission and hydraulic pump;
5. Lower lifting arms: bottom pins, right/left side;
6. Rear axle: centre pivot and right/left spindles;
7. Upper lifting arms: lower pins, right/left side;
8. Grass catcher: right/left hinges and central tipping cylinder;
9. Grass catcher lifting cylinders: right/left side;
10. Upper lifting arms: top pins, right/left side;
11. Lower lift arms: top pins, right/left side.

15.2 ENGINE MAINTENANCE

 **IMPORTANT:** check the engine periodically, keep the air filter clean and the engine oil level.

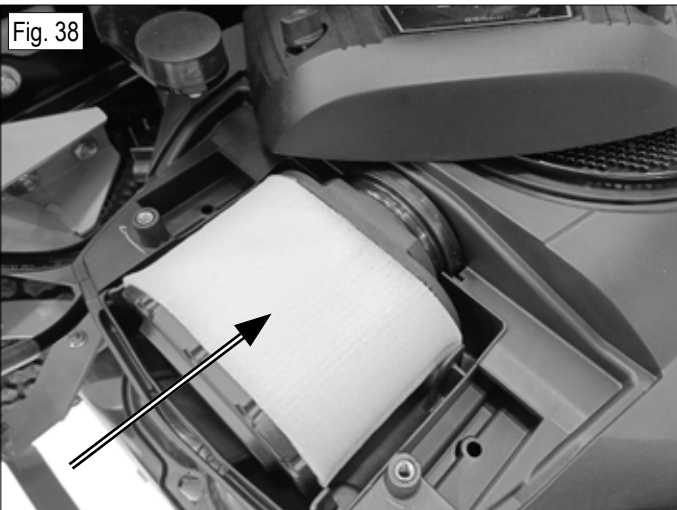
MANUAL ACCESS TO THE ENGINE COMPARTMENT

To access the engine if the machine breaks down, engage the parking brake, switch off the engine, hold down the grass catcher tipping lever and simultaneously push the grass catcher towards the rear of the machine. The grass catcher will pivot allowing access to the engine compartment.

AIR FILTER

Check and clean the air filter (fig. 38) every 4 hours. For maintenance intervals and procedures follow the rules contained in this manual (ref. 18. Maintenance schedule); for further details consult the engine manual. If working in very dusty environments, it is advisable to clean the air filter every 2 hours or as needed. If the filtration element is damaged, replace it.

Fig. 38



ENGINE OIL

For lubrication intervals and procedures follow the rules contained in this manual (ref. 18. Maintenance schedule); for further details consult the engine manual.

Then change the oil every 100 hours or every year. For the engine, use SAE 30 oil in a quantity of 1.9 litres.

To check the oil level, use the oil dipstick (fig. 39) when the engine is cold. To drain all the oil from the engine, connect a rubber hose to the end of the oil drain plug (fig. 40), then loosen the end part while holding the fixed part of the plug in place with a counter spanner; drain the oil into a container.

Protect the belts from coming into contact with the oil.


 **IMPORTANT:** it is essential to change the oil and oil filter after the first 20 hours of operation.

Fig. 39

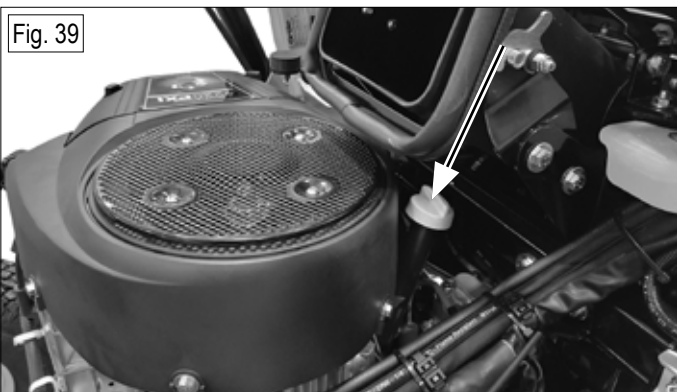
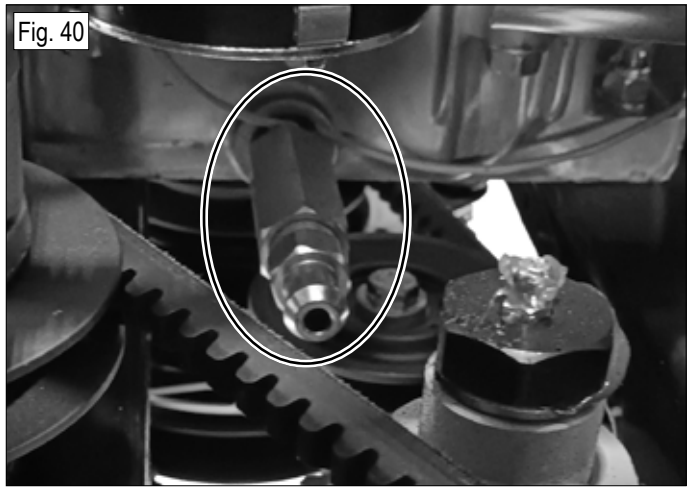


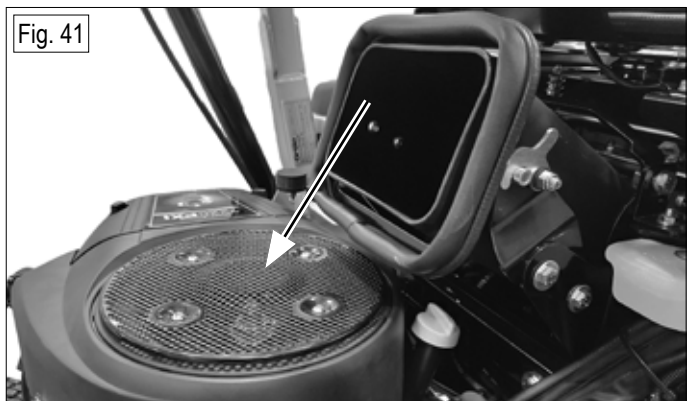
Fig. 40



ENGINE COOLING SYSTEM

In order not to impair the air flow, check that the protective grille on the top of the engine (fig. 41) is always well clean.

Fig. 41




15.3 BATTERY MAINTENANCE


The battery does not require any special maintenance.

It is sufficient to check that the voltage is not lower than 12.5 Volts and recharge it if necessary.


To recharge the battery it is necessary to disconnect the cables and remove the battery from the machine (ref. 16.7 Battery Replacement).


It is recommended to periodically check the good condition of the positive (red) electrical cables connecting the battery with the fuses, starter motor and alternator, and always in the event of a workshop service. Check that they are secure, not marked by wear, and not in contact with sharp edges or sharp parts of the machine.

 **CAUTION:** charging has to be carried out in a dry and ventilated area, free of sparks and heat sources.

 **CAUTION:** do not reverse the polarity of the battery, and be careful not to cause a short circuit.

 **CAUTION:** the gases released by the battery are explosive, keep it away from flames or sparks.

 **IMPORTANT:** do not attempt to start the machine if the battery is not correctly secured and connected: the alternator and the control unit could be damaged.

 **CAUTION:** damage to electrical cables can cause short circuits and fire hazards.

16. EXTRAORDINARY MAINTENANCE

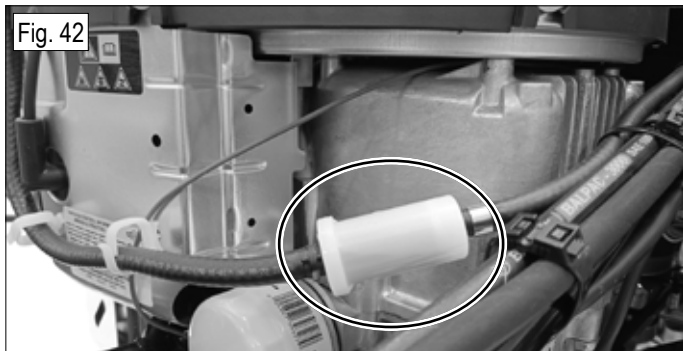
⚠ CAUTION: the operations contained in this chapter require technical skills and special equipment. It is advisable to contact an authorised Grillo centre.

16.1 FUEL SYSTEM MAINTENANCE

FUEL FILTER AND FUEL CIRCUIT

The fuel filter cartridge is located on the left-hand side of the machine, near the engine (fig. 42). For maintenance intervals and methods follow the rules contained in this manual (ref. 18. Maintenance schedule); for further details consult the engine manual.

Fig. 42



16.2 MAINTENANCE OF THE FRONT HYDROSTATIC TRANSMISSION

Periodically check the level in the hydraulic oil expansion tank when the oil is cold.

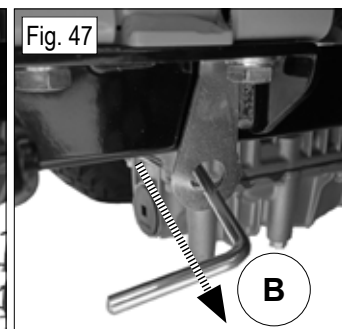
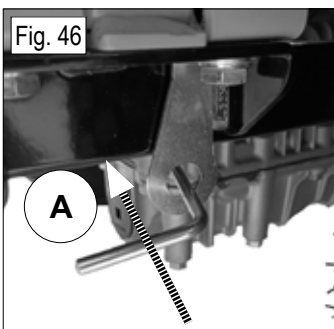
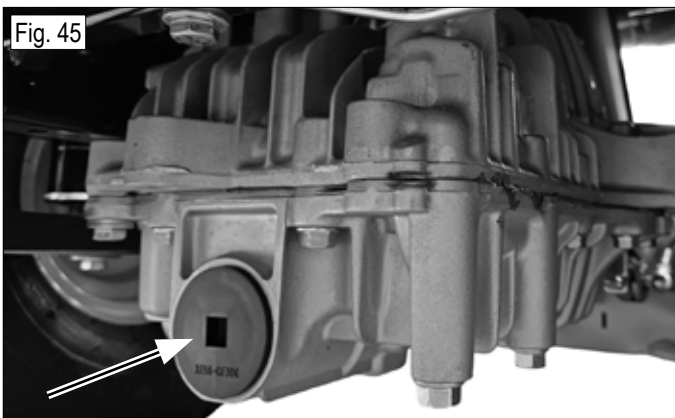
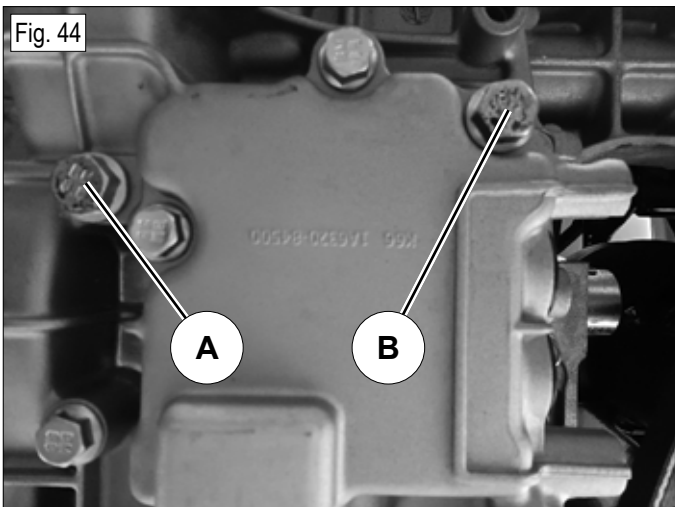
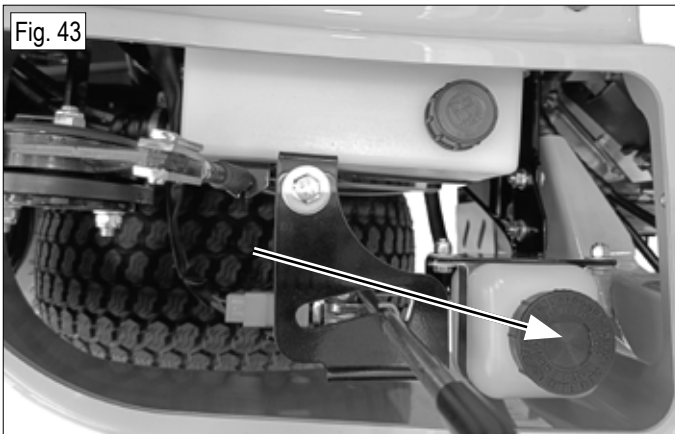
To check or top up the oil level, unscrew the oil level plug (fig. 43).

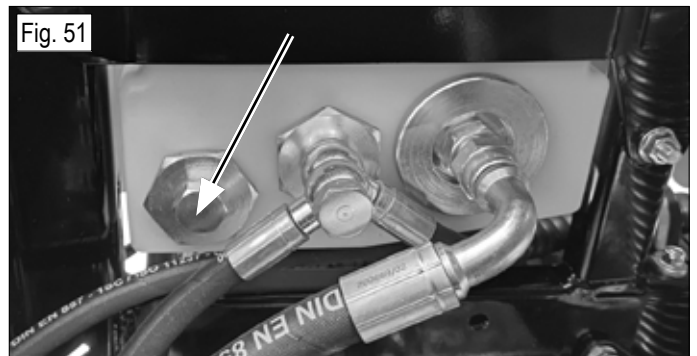
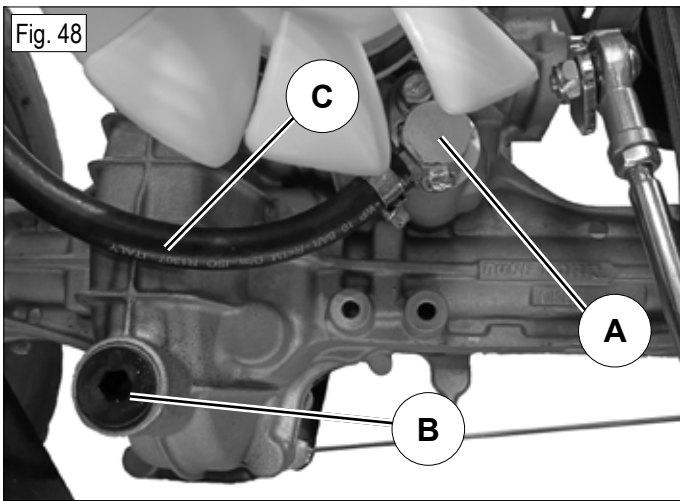
Visually check the oil level in the expansion tank: when the engine is cold, the oil level should be approximately 1 cm from the bottom of the expansion tank.

To replace the hydraulic oil in the front hydrostatic transmission, proceed as follows:

1. Unscrew the two drain plugs (fig. 44 ref. A and B);
2. Remove the left-side bonnet to access the oil filler cap in the tank (fig. 43);
3. Unscrew the hydrostatic transmission oil filter and clean it; replace it if necessary (fig. 45);
4. When draining is complete, screw the two plugs back on and refit the filter;
5. Engage the bypass valve by pushing the rod towards the inside of the machine (fig. 46) to allow the oil to drain from the main hydrostatic circuit;
6. Remove the fitting on the hydrostatic transmission (fig. 48/A) and fill the hydraulic chamber of the transmission with oil;
7. Remove the plug on the hydrostatic transmission (fig. 48/B) and fill the mechanical chamber of the transmission with oil;
8. Refit the plug and the connection, then fill the expansion pipe (fig. 48/C) with oil, bringing the oil level to approximately 1 cm from the bottom of the expansion tank;
9. Bleed the hydrostatic transmission as follows:
 - Place the machine safely on stands with the front wheels raised off the ground, make sure the bypass valve is engaged (fig. 46);
 - Start the engine, wait a few minutes and make a few gear changes (forwards and backwards) using the travel pedal;
 - Disengage the bypass valve by pulling it towards the outside of the machine (fig. 47) and carry out a few gear changes (forwards and backwards) using the travel pedal;
10. Place the machine back on the ground and check its travel and halting; in the event of reduced performance, loss of power or noise, repeat bleeding (point 9);

11. Visually check the oil level in the expansion tank (fig. 43). When the engine is cold, the oil level should be approximately 1 cm from the bottom of the expansion tank;





16.3 HYDRAULIC SYSTEM MAINTENANCE

HYDRAULIC SERVICES DISTRIBUTOR

The hydraulic lever distributor (fig. 49) operates at a maximum operating pressure of approximately 140 bar.

Lever 2 makes the cutting deck floating or can lift it.

Lever 3 lifts / lowers the grass catcher.

Lever 4 tips the grass catcher for unloading.

Check the level in the hydraulic oil tank periodically, when the oil is cold.

To check the level or to top up the oil, pull out the oil level cap (fig. 50).

Check the level by using the dipstick of the oil tank cap: the level must be between the two notches at the end of the dipstick. Check the level inserting the cap on and off completely each time. To remove the oil, loosen the drain plug on the side of the tank (fig. 51).

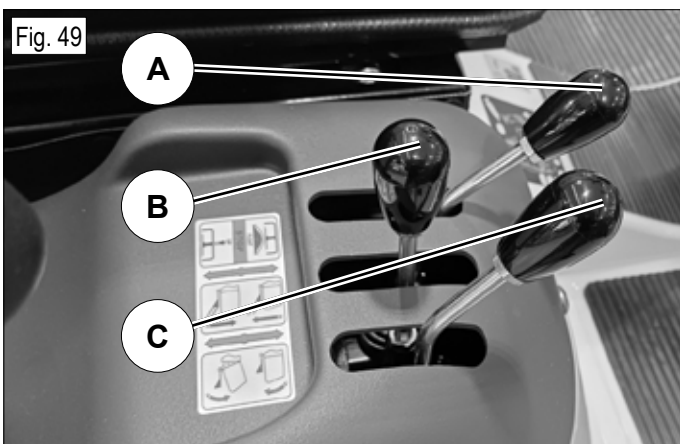
Change the hydraulic oil the first time after 100 hours, then every 400 hours. It is not necessary to bleed the hydraulic system.

The oil must be changed before 100 hours if:

- The oil is dark in colour;
- The oil is off-white in colour (oil is contaminated with water);
- There are black residues (partial deterioration of the oil).

Use hydraulic oil OSO 48 in a quantity of 3.8 litres including filling the circuit.

 **IMPORTANT:** pay particular attention to any contamination that could enter the circuit and cause serious damage to the machine.



16.4 CUTTING DECK MAINTENANCE AND COMPLETE DISASSEMBLY

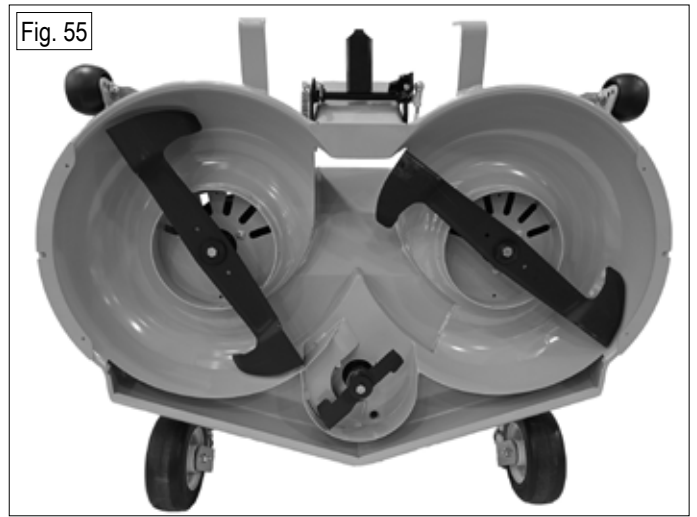
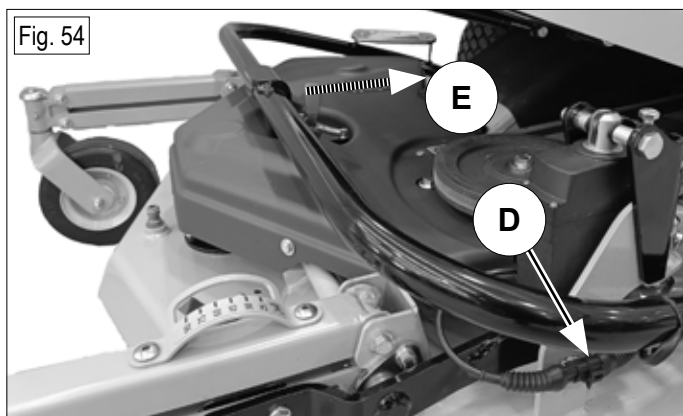
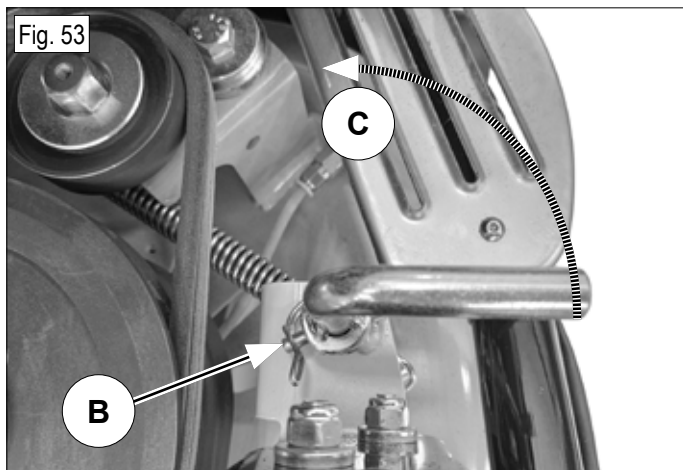
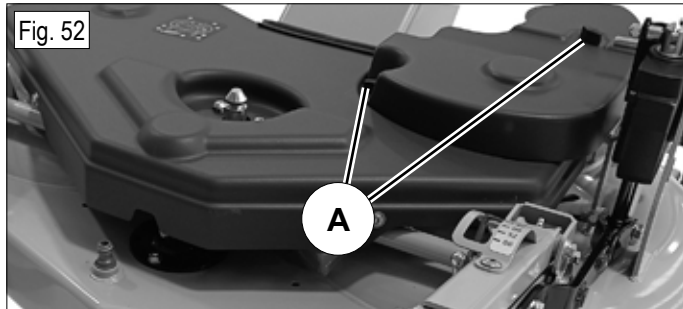
Proceed as follows to remove the cutting deck:

1. Remove the loading chute;
2. Lower the cutting deck bringing the distributor lever to the FLOAT position (fig. 49/A) and lower the cutting height completely;
3. Remove the guard above the cutting deck by unscrewing the two knobs (fig. 52/A);
4. Remove the cotter pin (fig. 53/B);
5. Loosen the belt by turning the lever on the tensioner anti-clockwise (fig. 53/C);
6. Remove the PTO belt;
7. Unfasten the connector of the electric actuator for the height adjustment (fig. 54/D);
8. Move the frame/plate quick coupling lever backwards (fig. 54/E);
9. Remove the cutting deck from the machine and place it vertically on its supports (fig. 55).

To reassemble the cutting deck follow the procedure in reverse order.

⚠ CAUTION: carry out the operation with the engine switched off and the brake applied.

⚠ CAUTION: when refitting the plate, check that the loading chute is correctly connected.

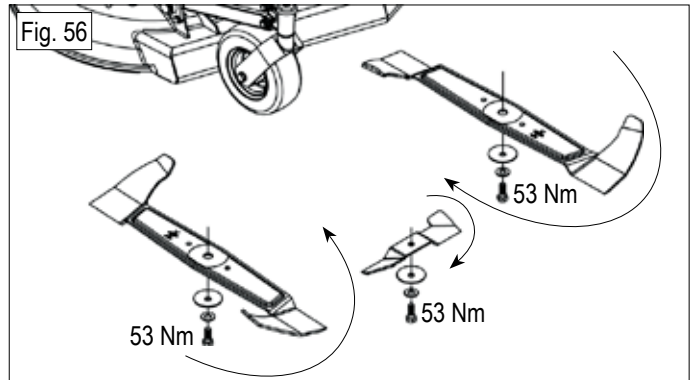


SHARPENING THE BLADES


An unsharpened blade tears up the grass, giving the lawn an unsightly appearance. It is necessary that sharpening is always carried out on the cutting edges of all blades evenly. Also, if the blades do not cut properly, they tend to become unbalanced, causing the lawnmower to vibrate. Pay attention to the direction of rotation and correct assembly of the blades (fig. 56).

⚠ CAUTION: never attempt to repair damaged blades. Damaged blades must be replaced.

🔧 IMPORTANT: the central bolt of the right-hand blade (looking from the driver's seat) has a left-hand thread. The tightening torque of the blade central fixing bolt is 53 Nm.



16.5 DRIVING BELT MAINTENANCE

 **IMPORTANT:** only use genuine belts.

REPLACING THE PTO BELT

To replace the PTO belt:

1. Remove the guard above the cutting deck by unscrewing the two knobs (fig. 52/A);
2. Remove the cotter pin (fig. 53/B);
3. Loosen the belt by turning the lever on the tensioner anti-clockwise (fig. 53/C);
4. Remove the belt and replace it;
5. Reposition the belt on the pulley at the clutch side, checking that it passes between the bracket and the roller (fig. 57);
6. Tension the belt by turning the lever on the tensioner clockwise;
7. Fit the cotter pin;
8. Refit the guard over the deck.


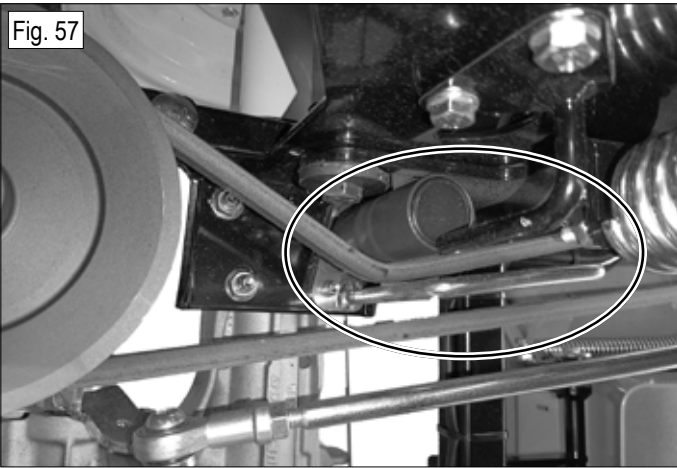
 **IMPORTANT:** the PTO belt does not need adjustment as it is self-adjusting.

Fig. 57



REPLACING THE CUTTING DECK BELT

To replace the cutting deck belt:

1. Disengage the cutting deck from the machine (see 16.4 Cutting deck maintenance and complete disassembly);
2. Disassemble the pulley by unscrewing the central bolt (fig. 58/A);
3. Remove the cutting deck guard by loosening the screws on the edge (fig. 58/B);
4. Unhook the tensioner spring (fig. 59);
5. Remove the belt and replace it according to the diagram (fig. 59);
6. Re-hook the spring;
7. Refit the cutting deck guard;
8. Reassemble the pulley.


 **IMPORTANT:** the cutting deck belt does not need adjustment as it is self-adjusting.

Fig. 58

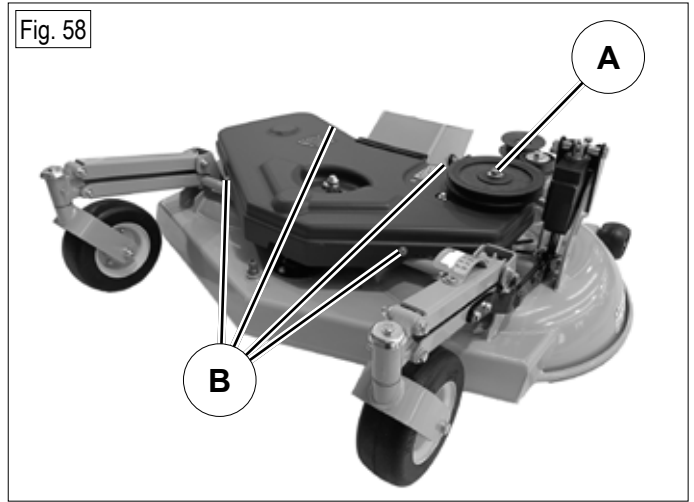
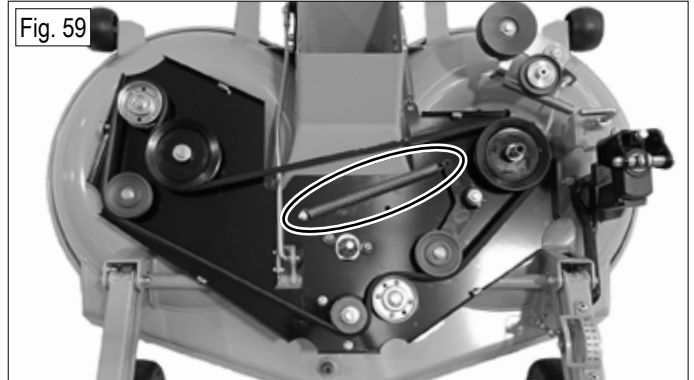


Fig. 59



REPLACING THE HYDRAULIC PUMP AND HYDROSTATIC TRANSMISSION BELT

To replace the hydraulic pump and hydrostatic transmission belt:

1. Unhook the tensioner spring (fig. 60);
2. Remove the pump support (fig. 61);
3. Remove the belt and replace it;
4. Reassemble the pump support, taking care that the elastic coupling is correctly fitted;
5. Re-hook the spring.


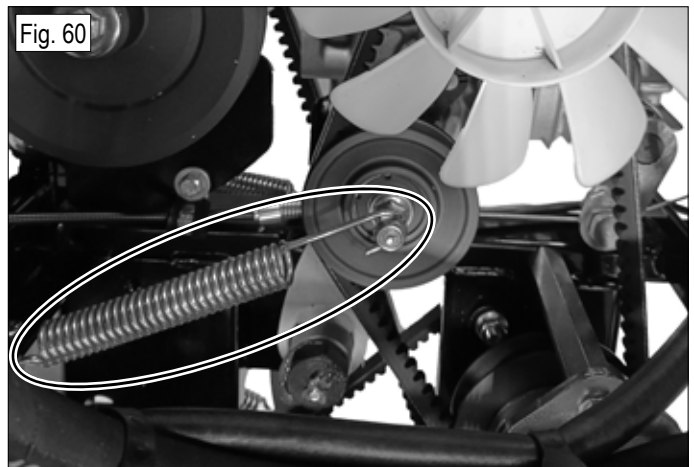
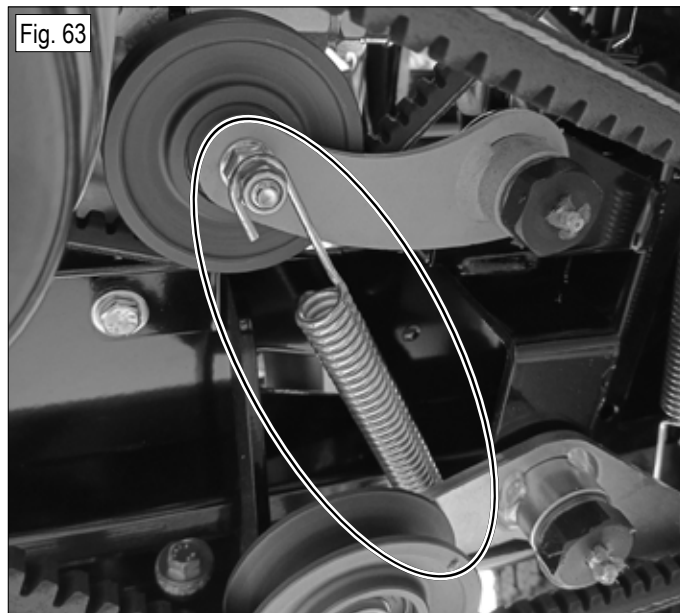
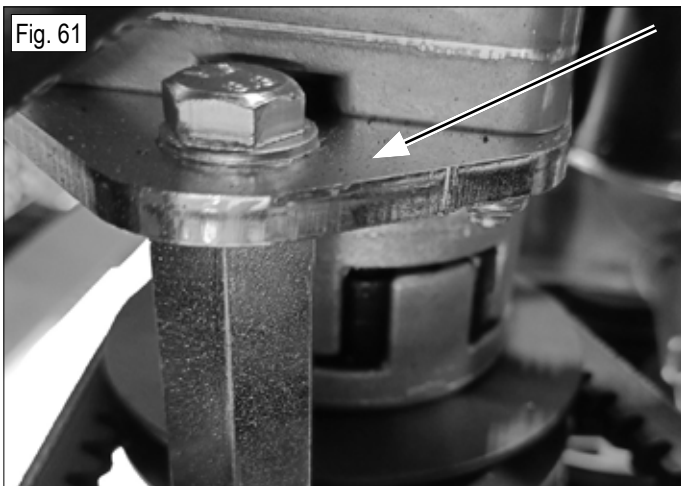
 **IMPORTANT:** the hydraulic pump and hydrostatic transmission belt does not need adjustment as it is self-adjusting.

Fig. 60



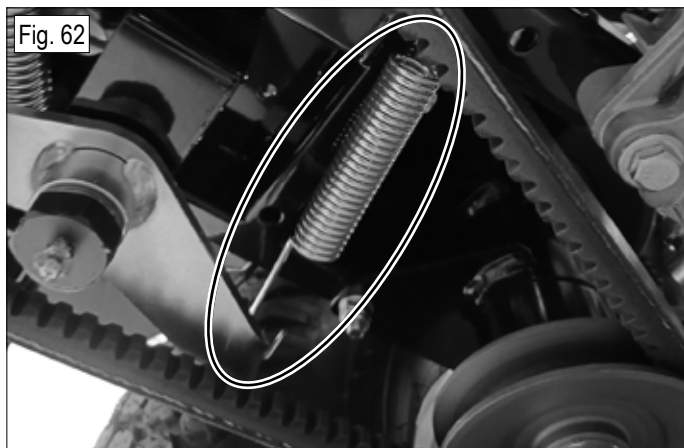


REPLACING THE CLUTCH BELT

To replace the clutch belt:

1. Unhook the tensioner spring (fig. 62);
2. Remove the belt and replace it;
3. Re-hook the spring.


 **IMPORTANT:** the clutch belt does not need adjustment as it is self-adjusting.



REPLACING THE ENGINE TRANSMISSION BELT

To replace the engine transmission belt:

1. Unhook the tensioner spring (fig. 63);
2. Remove the belt and replace it;
3. Re-hook the spring.

 **IMPORTANT:** the engine transmission belt does not need adjustment as it is self-adjusting.


16.6 ELECTRICAL SYSTEM MAINTENANCE

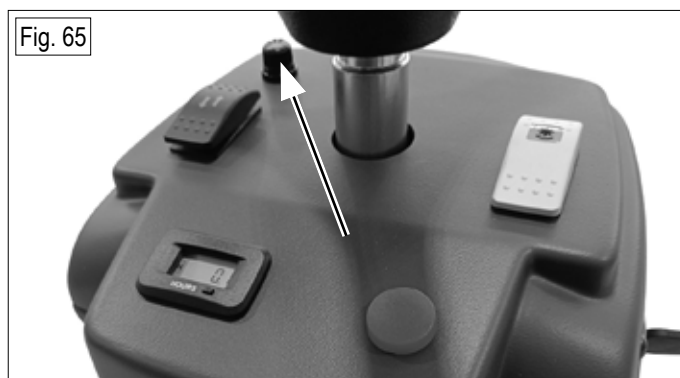
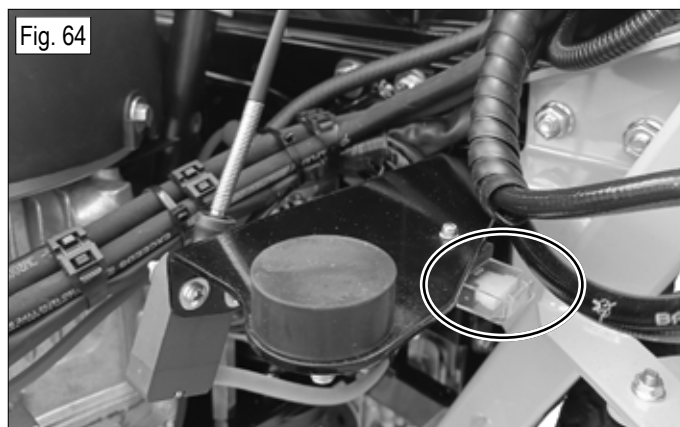
FUSES

The electrical system is protected by 2 fuses.

- The 25A fuse protects the entire electrical system (if interrupted it causes the machine to be completely inoperative); it is located on the right-hand side of the machine near the engine (fig. 64);
- The 16A fuse protects the services (if interrupted, only starting of the engine is possible); it is located in the dashboard (fig. 65).

If electrical problems persist after the fuses have been replaced, contact the authorised service centre. Never attempt to undertake major repairs without having the necessary means and expertise.

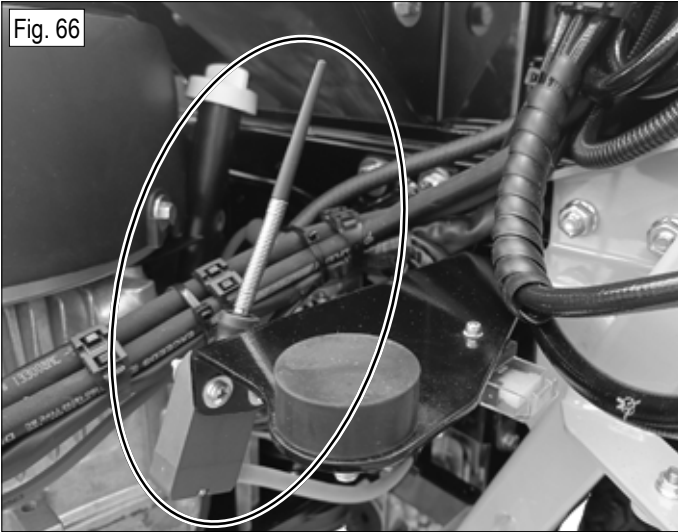
 **IMPORTANT:** do not replace fuses with fuses of a different rating than those indicated in the manual and on the relevant decal.



GRASS CATCHER POSITION MICROSWITCH

A safety microswitch detects whether the grass catcher is in the working position (fig. 66). Otherwise the cutting deck does not operate. The microswitch is located next to the loading chute, to the right of the operator.

Fig. 66

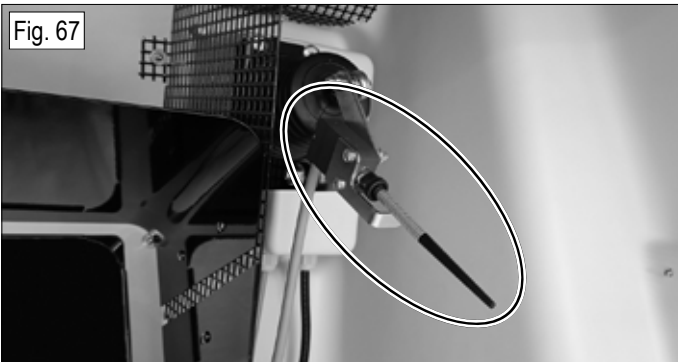


FULL GRASS CATCHER MICROSWITCH

The full grass catcher microswitch is fitted inside the grass catcher and is attached to an electric gear-motor that provides a swinging movement (fig. 67). It sends a signal to automatically disengage the blades when the grass catcher is full.

It is important to adjust the position of the microswitch according to the type of grass to be cut, to ensure that the grass catcher is completely filled. Under normal cutting conditions, the full grass catcher microswitch should be adjusted to the middle position. It is advisable to set it at a downward angle for wet or very tall grass, and upward for short or dry grass.

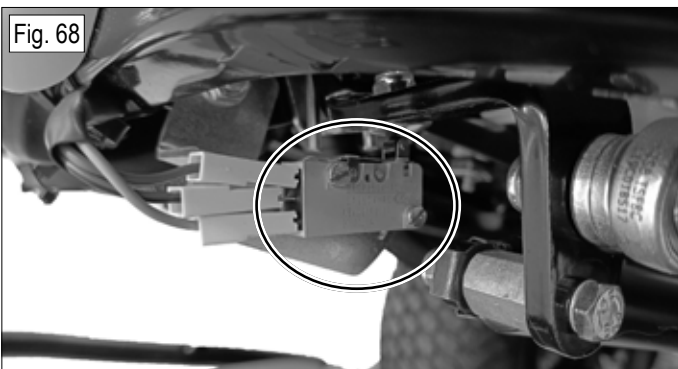
Fig. 67



NEUTRAL POSITION MICROSWITCH

A microswitch (fig. 68) is attached to the travel pedal signalling the neutral position of the machine.

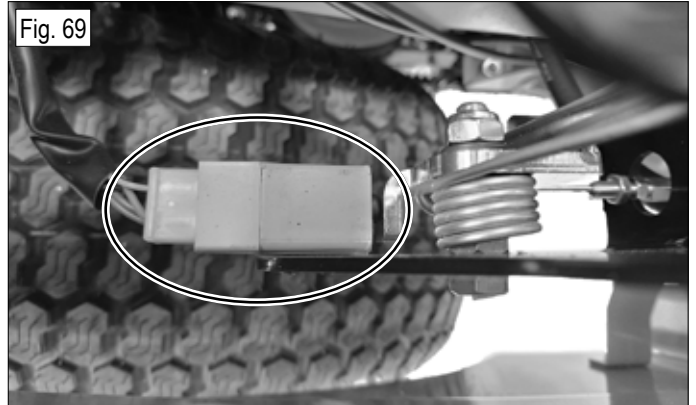
Fig. 68



PARKING BRAKE MICROSWITCH

The parking brake lever activates a microswitch (fig. 69) that signals that the brake is applied and allows the engine to keep running even if the operator leaves the driver's seat.

Fig. 69



OPERATOR PRESENCE MICROSWITCH

The operator presence microswitch is located under the seat and detects the presence of the operator when seated in the driver's seat.

HOURLY METER

The hour meter (fig. 70) is located on the dashboard and indicates the hours the machine has worked.

- Pressing the button below the screen once will display how many hours remain until the next engine oil change (OIL flashing, followed by the number of hours remaining);
- Pressing the button again will display how many hours remain until the next lubrication at the greasing points (LUBE flashing, followed by the number of hours remaining);
- Pressing the button again will return to the working hours screen.

When there are 10 hours left for oil / 5 hours left for grease, the OIL / LUBE signs will start to flash. They will continue counting the missing hours, until they show the OIL NOW / LUBE NOW writing: at this point it is advisable to carry out maintenance in a short time.

Once maintenance has been carried out, to reset the hour count go to the screen to be reset (e.g. OIL) and hold down the button until a series of zeros (000000) appears.

The count is automatically reset.

Fig. 70

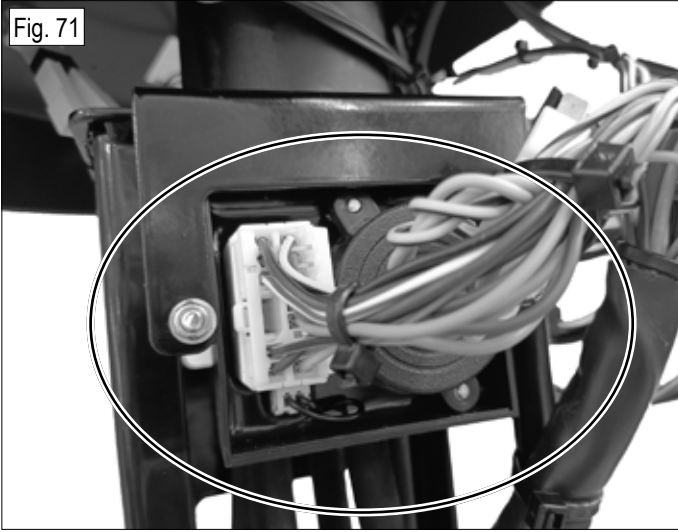


ELECTRONIC CONTROL UNIT

Inside the driving column is an electronic control unit (fig. 71), which processes all the electrical functions of the machine such as PTO, electrical push-buttons, safeties and engine start consent.

Its malfunction can cause problems with the electrical drives of the machine.

Fig. 71



16.8 WHEEL MAINTENANCE

Use only TubeLess 4-ply (4PR) tyres in sizes 20x10.00-8 for the front and 15x6.00-6 for the rear.

Routinely check the tyre inflation pressure, which should be 1.5 bar (22 psi) for all four wheels.

Always ensure that the valve protection cap is in place. The purpose of the cap is to prevent foreign bodies from entering the valve, damaging it and causing pressure loss; always tighten the cap by hand.

In the event of impacts against curbs or other obstacles, it is important to visually check the condition of the tyres: a bulge in the sidewall, for example, may indicate an internal structural damage that would make the tyre unusable.

16.7 BATTERY REPLACEMENT

To replace the battery (fig. 72) disconnect the cables (**first the negative BLACK one and then the positive RED one**) and after releasing the retaining rubber band remove the flat battery.

Insert the new battery and connect the cables (**first the positive RED one and then the negative BLACK one**) then re-attach the retaining rubber band.

⚠ CAUTION:

- Do not reverse the polarity of the battery;
- Do not operate the lawnmower without the battery;
- Take care not to cause a short circuit.

Fig. 72




17. TROUBLESHOOTING GUIDE

FD 450 - TROUBLESHOOTING GUIDE		
PROBLEM	CAUSE	SOLUTION
The warning light on the dashboard remains off with the key in any position besides the STOP position.	The battery does not supply any current	<ul style="list-style-type: none"> - Check the connection cables - Recharge the battery - Check the integrity of the fuses - Check the ground connections on the engine
The warning light on the dashboard is switched on, the key is in a position other than STOP, but the starter motor does not rotate	The battery does not supply sufficient current	<ul style="list-style-type: none"> - Recharge the battery - The battery has no ground connection - Check the integrity of the fuses
	No start consent	<ul style="list-style-type: none"> - The forward/reverse pedal is not in neutral - PTO switch on - Sit in the driver's seat to activate the microswitch, or apply the parking brake - High engine temperature - Check for a defective microswitch - Faulty ignition key block
Difficult starting or irregular engine operation	Combustion issues	<ul style="list-style-type: none"> - Check that the choke is applied (if the engine is cold) - Clean or replace the air filter - Check that the carburettor jets are clean - Check that the spark plug gives a spark - Check that there is no air intake in the fuel circuit
	Deposits or contamination in the fuel	<ul style="list-style-type: none"> - Check and, if necessary, replace the fuel filter - Consult the engine manual
The starter motor rotates but the engine does not start	No fuel flow	<ul style="list-style-type: none"> - Check the fuel level in the tank - Check (and replace if necessary) the fuel filter
Drop in motor efficiency during cutting	High forward speed in relation to cutting height	<ul style="list-style-type: none"> - Reduce the forward speed - Place the cutting deck in a higher cutting position
	Cutting deck transmission	<ul style="list-style-type: none"> - Check the integrity of the bearings and belt tensioners of the cutting deck - Lubricate the cutting deck using the grease nipples indicated - Check the cleanliness of the loading chute and the cutting deck
The motor switches off when the blades are activated	<ul style="list-style-type: none"> - Blades - Belt tensioners 	<ul style="list-style-type: none"> - Check the integrity of the bearings and belt tensioners of the cutting deck - Check the blades and transmission for obstructions
Irregular cutting and insufficient collection	Incorrect inclination of the cutting deck	<ul style="list-style-type: none"> - Check tyre pressure - Restore the correct inclination of the cutting deck
	Blade inefficiency	<ul style="list-style-type: none"> - Check the correct fitting of the blades - Sharpen or replace the blades
	High forward speed in relation to cutting height or lawn conditions	<ul style="list-style-type: none"> - Reduce the forward speed - Place the cutting deck in a higher cutting position
	Clogging of the loading chute	<ul style="list-style-type: none"> - Remove the cutting deck and empty the chute from grass - Check the engine revs - Clean the grass catcher grid - Adjust the full grass catcher microswitch
Vibrations during operation	Unbalanced blades	<ul style="list-style-type: none"> - Balance or replace blades if damaged - Check the integrity of the bearings and belt tensioners
	Accidental knocks on kerbs, walls, etc.	<ul style="list-style-type: none"> - Check blade, frame and engine fixing bolts and tighten any loose bolts

FD 450 - TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
The blades do not engage	<ul style="list-style-type: none"> - Parking brake applied - Faulty switch - Defective clutch - Defective full grass catcher microswitch - Defective grass catcher position microswitch - Grass catcher full or open 	<ul style="list-style-type: none"> - Release the parking brake - Check the PTO button - Check the function and integrity of the clutch - Check the fuses - Check the operation and adjustment of the microswitches - Check the microswitch connectors

 **CAUTION!** If problems persist after carrying out the actions described in this manual, contact the authorised service centre. Never attempt to carry out major repairs without having the necessary means and technical expertise.

IF YOU HIT A STONE OR ANOTHER FOREIGN BODY:

1. Disengage the blades;
2. Lift the cutting deck;
3. Switch off the engine and apply the parking brake;
4. Check the bolts securing the blades and the integrity of the cutting deck;
5. Check that the foreign body has not entered the loading chute or is jammed.

18. MAINTENANCE SCHEDULE

FD 450 - MAINTENANCE SCHEDULE							
MAINTENANCE ITEM		EVERY 8 HOURS	FIRST 20 HOURS	EVERY 40 HOURS	EVERY 50 HOURS	EVERY 100 HOURS	BEYOND
Engine oil	Check the level	●					
	Change		● (FIRST CHANGE)			●	
Engine oil filter	Replace		● (FIRST CHANGE)				● (EVERY 200 HOURS)
Air filter	Check	●					
	Replace					*	
Hydraulic system oil	Check		●		●		
	Change					● (FIRST CHANGE)	● (EVERY 400 ORE)
Hydrostatic transmission oil	Change		● (FIRST CHANGE)				● (EVERY 200 ORE)
Check the sharpness and fixing of the blades			●		●		
Grease lubrication				●			
Check the good condition of the positive electrical cables				●			
Check the tyre pressure (1.5 bar - 22 psi)				●			
Check the cleanliness of the engine grille		●					
Check the cleanliness of the hydrostatic transmission fins		●					

● recommended task

* task to be carried out if necessary

19. LUBRICATION CHART

FD 450 - LUBRICATION CHART			
Engine oil	SAE 30	1.9 L	Change after the first 20 hours of work and every 100 hours thereafter
Hydrostatic transmission oil	10W60	2.5 L	Change after the first 20 hours of work and every 200 hours thereafter
Hydraulic system oil	OSO 46	3.8 L	Change after the first 100 hours of work and every 400 hours thereafter

20. STORAGE AND PROLONGED INACTIVITY

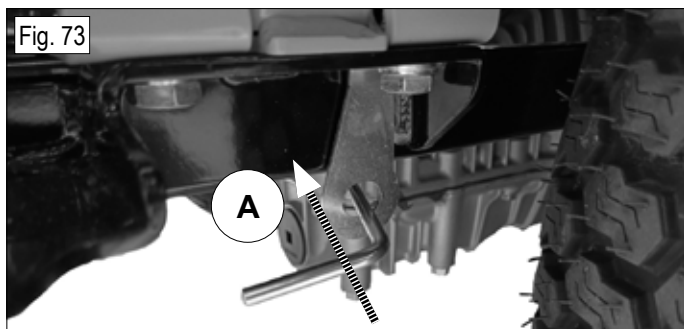
Store the machine in a dry place, protected from the elements. Clean the machine from soil and grass residues and if possible cover it with a tarpaulin when the engine is cold. If the machine is not to be used for an extended period of time (more than 1 month), proceed as follows:

- Disconnect the positive (red) battery cable and follow the instructions in the engine instruction booklet;
- Also lubricate all the joints according to the indicated points.

21. TOWING THE MACHINE WITH THE ENGINE OFF

To move the machine with the engine switched off, the bypass valve of the hydrostatic transmission must be actuated by pushing the appropriate rod towards the inside of the machine (fig. 73/A).

⚠ CAUTION: in this way the effectiveness of the braking device is invalidated.



22. TECHNICAL ASSISTANCE SERVICE

22.1 ASSISTANCE

This manual provides instructions for the use of the machine and for its routine maintenance.

For extraordinary maintenance, for all operations requiring technical skills and expertise, please contact your authorised Grillo dealer.

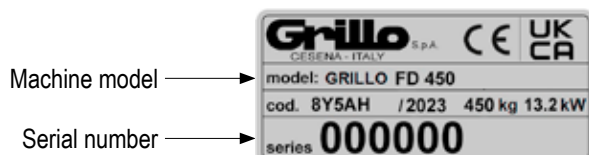
22.2 IDENTIFICATION DATA

If it is necessary to contact an authorised service centre, for maintenance information, always provide:

machine model

serial number

The machine's serial number plate is located on the front of the frame under the seat (fig. 74).



We advise the customer to note down this additional information in the spaces below. It may be useful for the service department.

PURCHASE DATE

GRILLO DEALER

22.3 SPARE PARTS

It is recommended to use only genuine spare parts to ensure product safety and durability.

22.4 WARRANTY

The warranty is provided in the manner and within the limits specified by current law. The retailer must hand over the machine's warranty certificate to the end customer, printing a copy of the registration from the Grillo website. Transport, servicing and wear parts remain at customer's expense. Any tampering or improper use not specifically authorised by Grillo will invalidate the warranty.

The engine follows the conditions specified by its manufacturer.

22.5 HOW TO ORDER SPARE PARTS

Contact our authorised centres.

Please indicate the serial number of the machine and the code of the component to be replaced.

It is possible to identify the part number by consulting the Grillo website: the spare parts tables for the machine will be available by entering the serial number.

23. TRANSPORT WARNINGS

TOWING HITCH

This machine can be used for towing only occasionally and with certain limitations.

The towing hitch is a service to be used occasionally and consciously, therefore the following limitations must be observed:

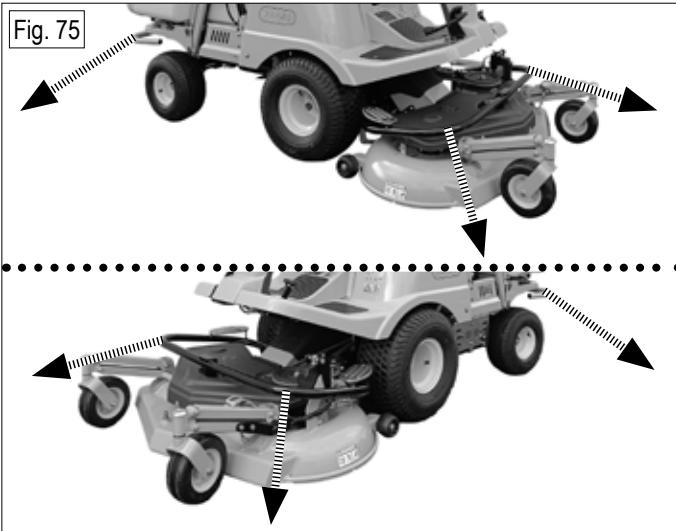
- Weight of the towed mass (on wheels) less than 130 kg;
- Non-continuous towing (max 300 m without stopping) on a plain or light slope (max 10%).



IMPORTANT: use beyond the limits may impair or cause serious damage to the hydrostatic transmission.

LIFTING AND TRANSPORT

If the machine is to be transported on a truck or trailer, lower the cutting deck, apply the parking brake and secure it to the means of transport using ropes, cables or chains (fig. 75). When lifting, the ropes can be hitched at the point indicated by the arrows (fig. 76). Check that the crane, hoists and ropes have sufficient lifting capacity. The total weight of the machine is 450 kg.



IMPORTANT: fully lower the cutting deck when the machine is lashed for transport.

24. DISPOSAL

Waste products such as waste oil or fuel, used lubricants, filters, batteries or other such consumable parts can cause harm to people, animals and the environment. They must therefore be disposed of properly. Contact a recycling centre or your retailer for information on proper disposal.



Grillo S.p.A. Via Cervese 1701- 47521 Cesena (FC)- Italy
www.grillospa.it - E-mail: grillo@grillospa.it



**DECLARATION OF CONFORMITY / DICHIARAZIONE DI CONFORMITÀ
/ DÉCLARATION DE CONFORMITÉ / KONFORMITÄTSEKRLÄRUNG / DECLARACIÓN DE CONFORMIDAD**

The undersigned / lo sottoscritto / Je soussigné / Der Unterzeichner / Yo suscrito

Ing. Andrea Pinza

as legal representative of: / in qualità di legale rappresentante della ditta: / en qualité de représentant légal de la société: / als rechtlicher Vertreter der Firma: / en calidad de representante legal de la empresa:

GRILLO SPA – Via Cervese, 1701 – 47521 CESENA (FC) – ITALY

declare that the following machinery: / dichiaro che la macchina di seguito indicata: / déclare que la machine suivante: / Hiermit erkläre ich, dass folgende Maschine: / declara que la siguiente máquina:

Model Modello Modèle Modell Modelo	Function Funzione Dénomination Bezeichnung Función	From serial number Dal numero di serie Du numéro de série Ab Seriennummer Desde número de serie
FD 450	Lawnmower / Rasaerba / Tondeuse / Rasenmäher / Cortacésped	759804

fulfils all the relevant provisions of the following directives: / è conforme a tutte le disposizioni pertinenti delle seguenti direttive: / satisfait à l'ensemble des dispositions pertinentes des directives suivantes: / allen einschlägigen Bestimmungen folgender Richtlinien entspricht: / cumple todas las disposiciones pertinentes de las siguientes directivas:

CE		UK CA	
2006/42/CE 2000/14/CE 2014/30/UE	UNI EN ISO 5395	S.I. 2008 No. 1597 S.I. 2001 No. 1701 S.I. 2016 No. 1091	EN ISO 5395

Sound power level / Potenza sonora / Niveaux sonores / Schalleistung / Potencia acústica

Model Modello Modèle Modell Modelo	Cutting width Larghezza di taglio Largeur de coupe Schnittbreite Ancho de corte	Measured sound power level Potenza sonora misurata Puissance sonore mesurée Gemessene Schalleistung Potencia acústica mesurada	Guaranteed sound power level Potenza sonora garantita Puissance sonore garantie Garantierte Schalleistung Potencia acústica garantizada	Uncertainty Incertezza Incertitude Unsicherheit Incertidumbre
FD 450	113 cm	99 dBA	100 dBA	1 dBA

Values determined according to / Valori determinati in accordo a / Niveaux sonores selon / Werte bestimmt gemäß / Valores determinados conforme a
2000/14/CE - VI.1

Measure sound pressure at the operator's ear / Pressione sonora misurata all'orecchio dell'operatore /
Niveaux sonores au niveau des oreilles de l'utilisateur / Gemessener Schalldruck am Ohr des Nutzers / Presión acústica medida a la oreja del usuario

Model Modello Modèle Modell Modelo	Sound pressure Pressione sonora Niveau sonore Schalldruck Presión acústica	Uncertainty Incertezza Incertitude Unsicherheit Incertidumbre
FD 450	86.5 dBA	1 dBA

Vibrations / Vibrazioni / Vibrations / Schwingungen / Vibraciones

Model Modello Modèle Modell Modelo	Whole body Corpo intero Au corps entier Gesamter Körper Cuerpo entero	Uncertainty Incertezza Incertitude Unsicherheit Incertidumbre	Hand/arm Mano/braccio Main/bras Hand/Arm Mano/brazo	Uncertainty Incertezza Incertitude Unsicherheit Incertidumbre
FD 450	0.59 m/s ²	0.05 m/s ²	6.64 m/s ²	0.10 m/s ²

Juridical person authorised to compile the technical file: / Persona giuridica autorizzata a costituire il fascicolo tecnico: / Personne morale autorisée à constituer le dossier technique: / Juristische Person, die bevollmächtigt ist, die technischen Unterlagen zu erstellen: / Persona juridica facultada para elaborar el expediente técnico:

GRILLO SPA – Via Cervese, 1701 – 47521 CESENA (FC) – ITALY

Person empowered to draw up the declaration on behalf of the manufacturer: / Persona autorizzata a redigere la dichiarazione a nome del fabbricante: /
Personne ayant reçu pouvoir pour rédiger cette déclaration au nom du fabricant: / Ermächtigte Person zur Ausfertigung der Erklärung im Namen des Herstellers: / Persona apoderada para redactar esta declaración en nombre del fabricante:

Ing. Andrea Pinza

GRILLO SPA – Via Cervese, 1701 – 47521 CESENA (FC) – ITALY

Managing Director / Amministratore Delegato / Directeur Général / Stellvertretender Geschäftsführer / Director Adjunto

Grillo S.p.A.

Ing. Andrea Pinza -

Andrea Pinza

Cesena, 10/12/2024

The spare parts catalogues are available on line at http://www.grilloagrigarden.co.uk/spare_parts_lists
Le tavole ricambi sono disponibili online all'indirizzo http://www.grillospa.it/tavole_ricambi
Les vues éclatées son disponibles en ligne sur http://www.grillofrance.fr/vues_eclatees
Die Ersatzteillisten sind online verfügbar unter <http://www.grillodeutschland.de/ersatzteillisten>
Los despieces son disponibles on line en <http://es.grillospa.it/despieces>

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Grillo
AGRIGARDEN MACHINES