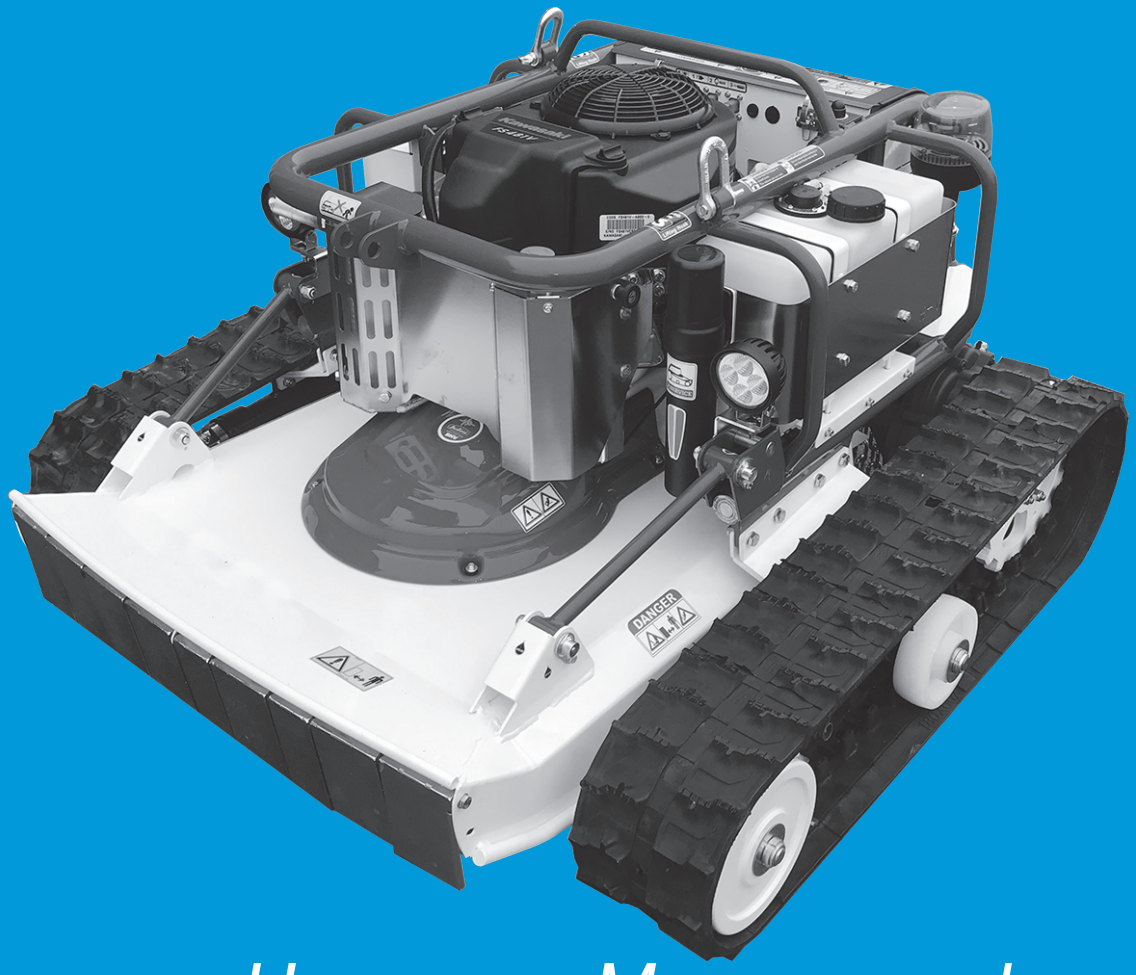
RADIO-CONTROLLED GRASSLAND MOWER



User Manual

MODEL:

XRot-Pro

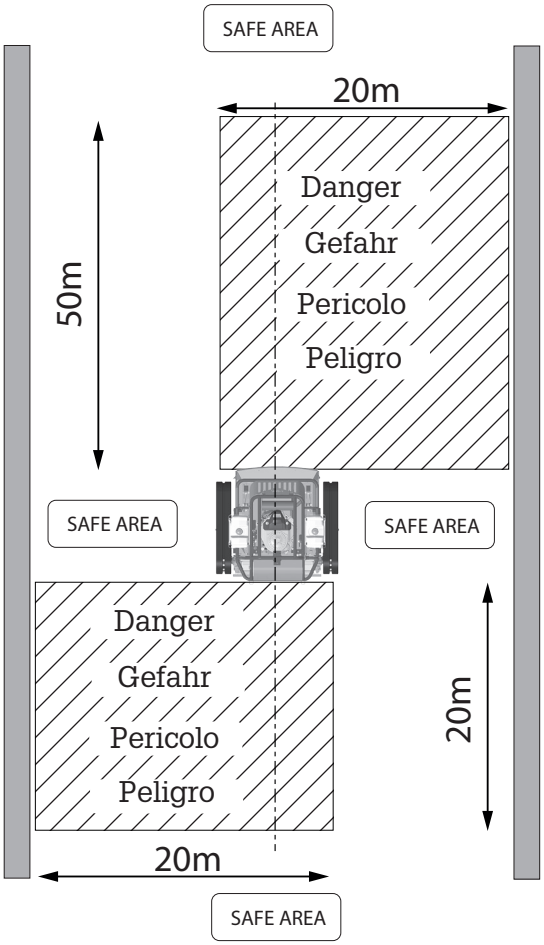
SERVICE

BHV

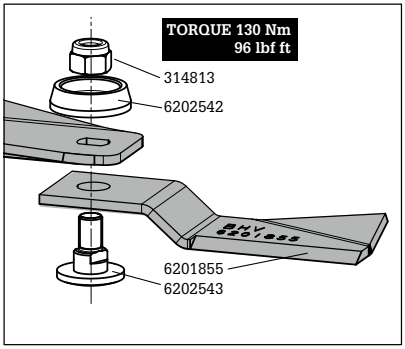
Barbieri Hybrid Vehicle

SAFETY QUICK REMIND

Safe and Danger area



Replacing parts for safety



Slope limitation

45° Stability safe limit
35° Fuel supply limit (engine could stop)
20° Lubrication limit (downhill)

A - INTRODUCTION

INTRODUCTION

This handbook must be considered as part of the machine. The seller of new and second-hand machines must record in the selling document that this booklet has been given along with the machine.

PICTURES USED IN THE HANDBOOK

Before starting use this machine, it is necessary to read carefully this hand-book, learn and observe all the safety rules indicated with the following symbols.

DANGER This symbol is used to highlight an important safety information. If this information is ignored, people are in danger either of possible injures - even serious ones - or death.

In these messages are also described the normal precautions which have to be taken to avoid the danger.

Ignoring these precautions can cause serious damages to the machine.

ATTENTION This warning is used in the handbook safety messages when the danger can cause minor or moderate damages and injuries.

The message can be used also for dangers which can cause damages to the machine or its components.

IMPORTANT It is used for precautions which have to be taken to avoid operations which can shorten the life of the machine or of its component.

NOTE This word is used to highlight information which refers to operations in progress.

Any time you see these symbols, whether on the machine or on the following of this manual you must pay attention to avoid danger to yourself and to other people.

Following some rules suggested by the common sense, you will avoid any break risk and your machine will function longer and more efficiently.

B - CONDITION AND PROPER USE

DEFINITION OF PROPER USE

- This machine have been designed for grass cutting and weed control in agriculture and public green, flat and sloped areas.
- The exact observance of use conditions, maintenance and reparation are the essential element for a correct use.
- The machine should be used, maintained and repaired only by people who have knowledge of the security rules.
- The general rules about accident prevention and public road circulation rules should be respected

IMPROPER USES

- Any other use is not allowed. The manufacturer is not responsible for damages caused by any use than the intended one. The user is fully responsible for any possible risk.
- Each arbitrary modification carried out on the machine could release the manufacturer from the responsibility for any damage or accident derived by the machine.

ONLY ONE OPERATOR

The machine was designed to be used by one operator only. The presence of other people in the closeness could be dangerous for the safety of both user and people.

ACCESSORIES ON THE MARKET (ONLY IF AUTHORIZED)

Any use of accessories different from the authorized ones by the manufacturer is not allowed. For further applications different from the authorized one or in case of misunderstanding of this handbook, please contact the technical department of the manufacturer.

BARBIERI s.r.l. - Technical department
36040 SOSSANO - (VI) - ITALY
Tel: 0444/885722 - Fax: 0444/885482
e-mail support@barbieri-fb.com

Descriptions, figures and technical features mentioned herein are non-binding for the Manufacturer. These are mentioned as mere information. The Manufacturer reserves the right to make any change at any time without notice, to improve the quality of the products without being bound to update this publication.

C - INDEX OF CONTENT

D - IDENTIFICATION NUMBER

In case of a trouble, when You contact Your dealer for a reparation or to ask for spare parts, it is necessary to identify the machine with the following data:

- Model and chassis number
- Engine type and number

MODEL AND CHASSIS NUMBER

Fig 1

ENGINE TYPE AND NUMBER

(Honda engine)

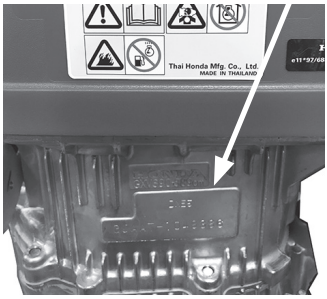


Fig 2

(Kawasaki engine)

DIMENSIONS (cm)

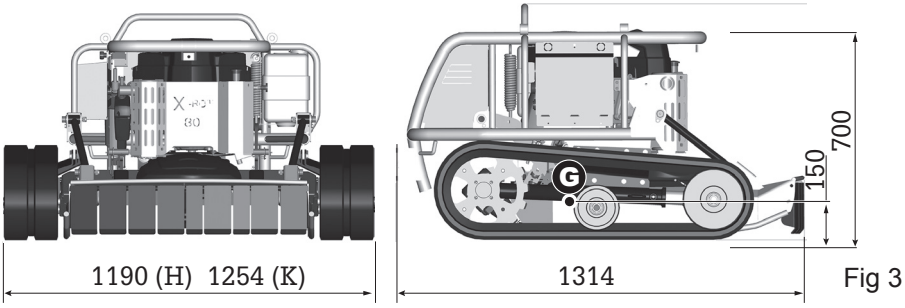


Fig 3

1 - TECHNICAL DATA

1.1 Technical data

ENGINE			GENERATOR	
Make	HONDA	KAWASAKI	Generator 1	Phases 68VAC - 80A
Model	GXV 390	FS481V	Generator 2	Monophase 17VAC - 10A
Engine type	Air cooled OHV petrol	Air cooled OHV petrol		
	Pressure lubrication	Forced lubrication		
Bore x stroke	88 x 64 mm	73 x 72 mm	**CUTTING DEVICE**	
Displacement	389 cm^3	603 cm^3 (2 cylinders)	Type	Mulcher back discharge
Compression ratio	7.7 : 1		Blade type	2 floating Multy-cut - 2600 rpm
Net power	7.6 kW@ 3 600 rpm	9.9 kW@ 3 600 rpm	Cutting Width	70 cm (Honda)- 80 cm (Kawa.)
Cont. rated power	5.2 kW@3 000 rpm		Height Adjust.	30 ÷ 150 mm stepless electric
Max. net torque	24.2 Nm@2500 rpm	38.4 Nm@1800 rpm	Drive	By belt with EM Clutch (Ogura)
Ignition system	Transistorised	Electronic		
Starting system	Electric START	Electric START	**RADIO CONTROL**	**2,4 GHz**
Air Filter	Paper + Foam cartridge	Paper + Foam cartridge	Transm. technology	AFA (Aut. Freq. Adjustment)
Fuel tank capacity	10 Lt	15 Lt	Controls	Optic - contactless
Fuel cons. @ rat power	2.5 L/hr - 3 000 rpm		Radio transm. distance	150 m
Engine oil capacity	1.1 Lt	2 Lt	Regulations compl.	Dir R&TTE 1999/5/CE 2006/42/CE PLe categoria 4 /SIL 3 ISO 13849-1:2008 / EN62061:2005"
			Weight	1,3 Kg

TRANSMISSION		DIMENSIONS	
Type	Hybrid-Electric motors 48V with reduction gear	Overall dimensions (cm)	119 x 131 x 68 125 x 131 x 70
Control	Stepless electric - speed control	Weight	320 Kg (H) - 370 kg (K)
Speed Range/ Max	0÷ 8 Km/h	Soil pressure (g/cm^2)	121 - 132
Max Slope	35°Uphill - Longitudinal 45°	Crawler contact area	(17,5x75/80x2) = 2625-2800 cm^2
Tilt ang/h-gravity point	65° / 15cm		
Motor type	Brushless Perm. Magnetes		
Power supply	3 Phases - 4Kw		
Motor power	1.5 kW		
Driver	BHV - 48V 100A		

1.2 Noise

The noise level was obtained during the equipment in action, in neutral position and the results are the following:

Honda engine GXV 390 (4 strokes) with original muffler

- *Acoustic pressure level (LpAm) .... 92,7 dB(A)*
- *Acoustic power level (LwA).....107,3 dB(A)*

Kawasaki engine FS481V (4 strokes) with original muffler

- *Acoustic pressure level (LpAm) .... 87,0 dB(A)*
- *Acoustic power level (LwA).....107,0 dB(A)*

1.3 Vibrations

The vibrations level was obtained with the machine at work at 3060 rpm (85% of the nominal condition of 3600 rpm) and the results are the following:

- *Not applicable*

LABELS AND WARNINGS POSITION

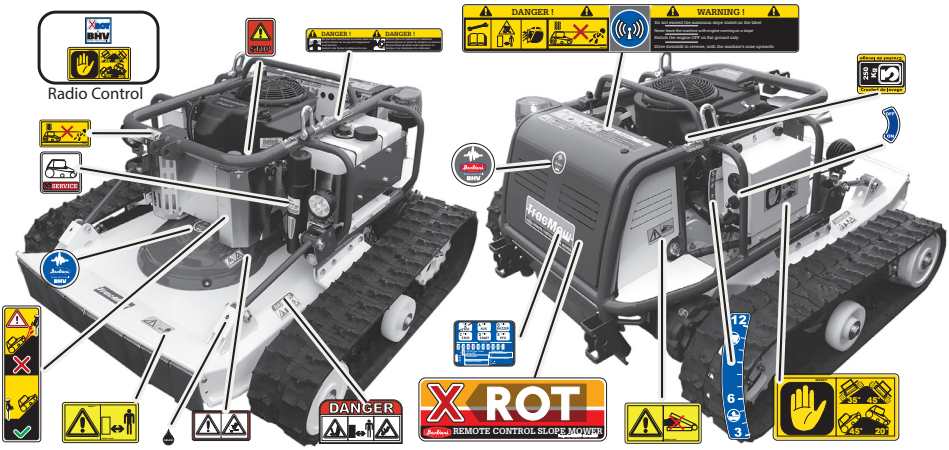


Fig 4

2 - SAFETY NORMS

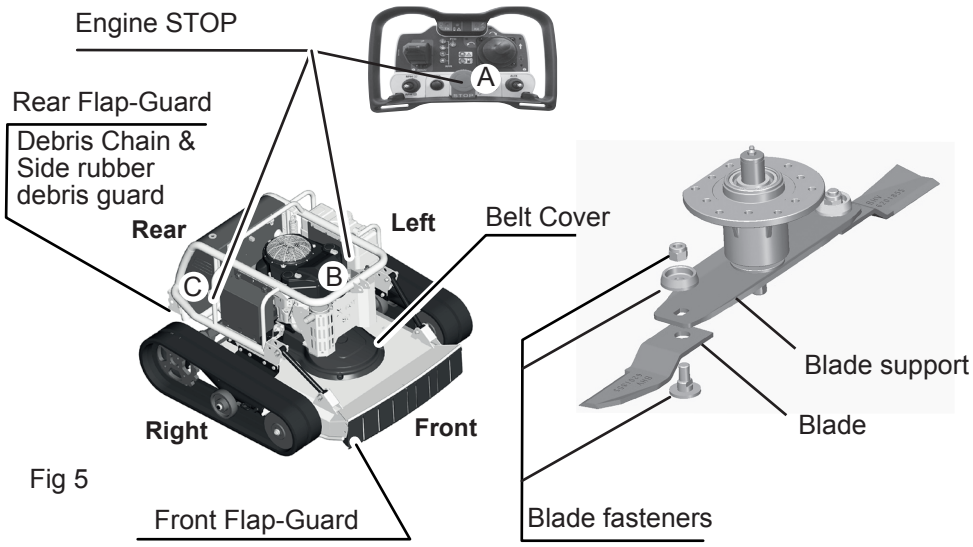


Fig 5

2.1 SAFETY DEVICES

The terms “FRONT” - “REAR” - “RIGHT” - “LEFT” used in this handbook and in the spare parts catalogue, are referred to the machine as shown in Fig. 5

SAFETY PARTS

The machine is equipped with a series of safety devices to comply with the Machinery Directive. All safety devices are necessary for the safe use of the machine and in case same of them are of missing, damaged or weared it is mandatory to replace them with genuine spare part. Do not attempt to repair a safety component.

DANGER

Do not use for any reason the machine with a wear, damaged, or missing safety element. Replace the safety component with genuine parts before to use the machine. The use of the machine without efficient safety element can cause injure or death.

In detail, the following devices are provided for safety:
1- engine STOP device (A), (B) and (C) (fig.5)
2- Automatic brake system in case of engine stop
3- Front and rear shield to stop the object throwed by the blade
4- Blades and blade fasteners
5- Relay for automatic engine stop in case of loss of the radio control signal
6- Transmission belt cover
7- Warning labels

2.2 WARNING LABELS AND SAFETY ADVICES

The most important warning labels are placed near to the danger around the machine. Be sure to understand the meaning of the lables in order to use a proper behavior to avoid any danger action. These labels are very important for the safe use of the machine along the time. **Keep these lable clean and in a good condition. In case of damage or lack of such a lables it is mandatory to replace them with original ones.**

CAUTION LABEL AND WARNINGS

Besides CE mark, safety pictures and indications are applied on the machine and mentioned in the fig. 4.

WARNING: BEFORE SERVICING
Read the technical instructions in the operation manual before servicing the machine.

WARNING: RISK OF INJURY
Stay away of the discharge opening of the mower deck because stones or other hard objects ejected from the mower may hit you.Use visor to protect from flying object

WARNING: RISK OF ENTANGLEMENT
Stay clear of the belt while it is running

DANGER FOR HAND AND FEET:
Cutting blade: Keep hands and feet away.

WARNING:
Radio controlled machine.
Keep away if engine is running

WARNING:
Danger of hand crushing

WARNING:
Exhaust gases are poisonous!
Never start the engine in not ventilated room

WARNING:
Petrol gases are explosive.
Do not refueling with free flames, sparks or while smoking

ATTENTION:
Do not work in slopes over the limits
Stability and engine lubric. can be lost

DANGER : RISK OF INJURY
On a slope, stay below never above the machine.

1) Before starting the engine, be sure that the SAFETY DEVICES are well working and fitting. Without these cares the operator might work in a danger situation.

2) This machine has been designed and manufactured for being used by one operator only who hold the Radiocontrol. Any other use is not permitted!

3) It is important to ensure a safe distance between the operator and the machine in the Work Field (see cap.5.12)

4) Before the machine is operating, read the Use and Maintenance manual thoroughly, so that you are fully aware of all the operating controls and safety aspects of the machine.

5) No modification to the machine or use of not genuine spare parts can be done without the Manufacturer consent. This praxis can lead to very dangerous and unpredictable situation and will anyway nullify the warranty.

6) Do not under any circumstances transport people or objects on the machine.

7) Before use, check that all the controls and safety components are assembled and in good condition (see chapter 2.1)

8) Move the controls gradually; sudden engagement could cause the loose of stability of the machine.

9) Check anytime that all the parts all well fixed

10) This machine have not to be used by children or inexperienced persons. Operators that are not duly trained of people that are under effect of alcohol or other substances.

11) Before operating the machine, check that the area is clear and free of debris and that there are no people within the Work Field. The operator will be held responsible for the safety of third parties, if these are found within the Work Field. Stop work in these cases.

12) Do not use the machine when you are tired

13) Keep away from cutting blades at all times while the machine is in operation. Observe carefully to avoid the danger area (See chap. 5.12).

14) Use only genuine spare parts and accessories especially the safety parts (chap.2.1) to guarantee the safety and the function of the machine.

15) Stop engine before refuelling

16) Handle the fuel with care to avoid spilling on the machine; clean any spillage immediately.

17) Avoid overfilling the fuel tank

18) Plan well your work before starting

20) The area next to the engine exhaust will most likely reach temperatures above 80°.

ATTENTION! Danger of scalding.

21) Keep the area of work clear and clean.

22) Only use the machine in clear visibility.

23) If you hit any objects during the work, stop the machine and check for any damage immediately. **For the blade and blade's fasteners integrity refer to par.7.1.6**

24) It is advisable to keep a first aid kit handy.

25) The speed of the machine must be convenient to the environment conditions

26) Never do maintenance or cleaning works when the engine running.

27) When possible, avoid working up or down-hill. Always travel across the slope.

28) Do not work on very steep slopes (max.35°).

29) During use, keep the hot sections of the engine (i.e. cylinder head, exhaust, etc.) clean to avoid a stack-up of debris that will overheat the engine.

30) Whenever possible, stop the machine on a flat ground.

31) Park the machine in an unaccessible place for children or unauthorized persons: stop the machine and remove the Start key from the dashboard.

32) Do not stop and leave the machine with the engine running. Reach a flat ground and stop the engine.

33) Follow carefully the maintenance instruction and replace always the damaged and worn parts with genuine spare part, if necessary.

34) Storage the machine after cleaning it, only.

35) If any, it is necessary to take heed of the specific safety norms in force in the Country where the machine is operating.

36) Never refuel in confined places, in vicinity of open flames or near the source of sparks. No smoking during fuel handling!

37) Never start the engine in a closed place. Exhaust fumes contain poisonous carbon monoxide, so sufficient ventilation should be provided when starting the engine indoors.

38) After storage of the machine for a long period, make a deep cleaning and lubricate the machine according to the lubrication program.

39) Pay particular attention to all safety screens (front and rear bulkheads). Damage or lack of them can cause serious accidents and even death.

DANGER
Do not attempt to use the machine if some safety protections are missing or damaged. Immediately restore these protections with original spare parts, before starting work.

3 - MACHINE PREPARATION

3.1 PACKAGING AND ENDOWMENT

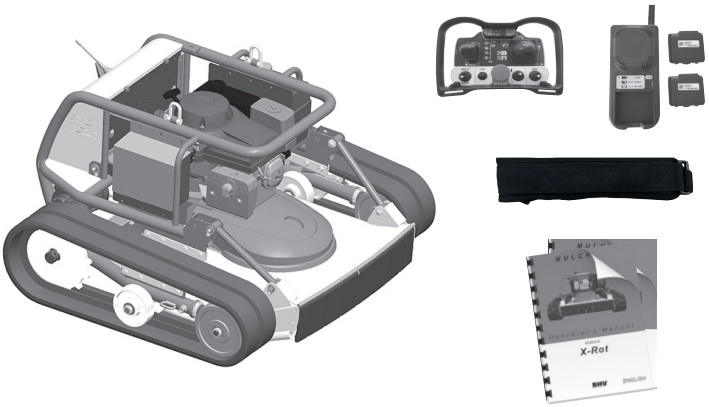


Fig 6

The machine is supply with:
1 x Basic Unit X-Rot
1 x Radio Control
2 x Lithium battery for Radio control
1 x Battery charger
1 x Radio control's hanging belt
1 x User Manual & Engine user manual
1 x Rod (for crawler replacement)

Before to use the machine, check the fuel and engine's oil level and read carefully the instruction manual about the safety regulation and the procedures to start and control the machine.

3.2 PRELIMINARY TESTS

Before to use the machine for the first time, it is necessary to verify:
- Engine oil level (see Cap. 7.1.1)
- Fuel level in the tank (see Cap. 7.1.3)
- Battery charge on the Radio receiver (see Cap. 7.1.5)

- The engine oil should be always on the mark of the upper level. Lack of oil will decrease the engine performance on the slope.
- The fuel level should be near to the max but not reaching the collar of the tank. In case of slope the fuel can spill out and create a danger of fire.
- The 2 battery set have to be charged before to start any work. One battery should be enough for one day operation but the 2nd one is required in case of need.

4 - COMPONENTS AND CONTROLS

4.1 NAME OF MAJOR COMPONENTS (fig.7)

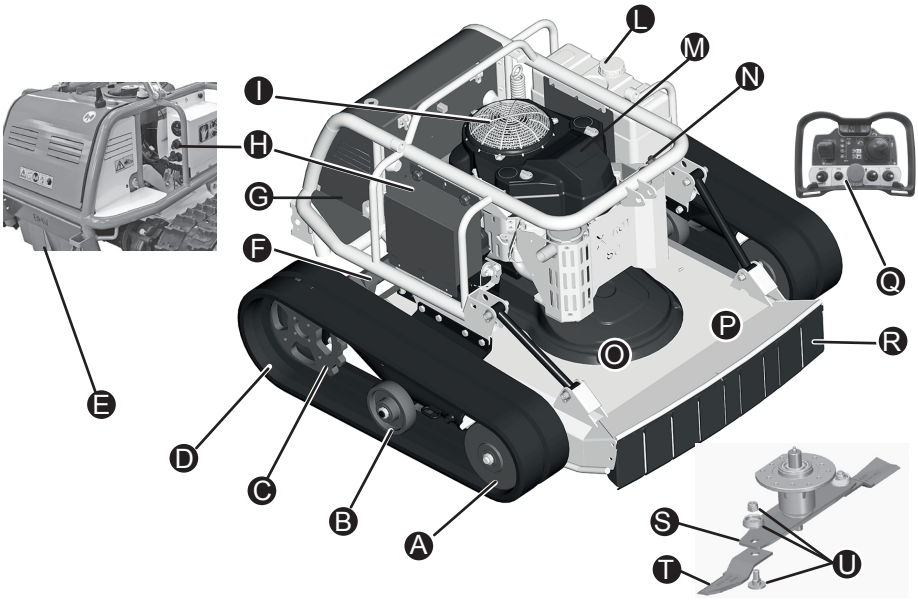


Fig 7

Basic Unit: Identification of the main components.

A) Tensor wheels
B) Crawler's roller
C) Drive wheel
D) Crawler Belt
E) ***Rear Flap-guard***
F) Drive motors
G) *Electric cabinet*
H) Battery case & Start key
I) Engine - Air inlet
L) Fuel Tank
M) Air filter
N) ***Emergency switch***
O) ***Belt case***
P) Mower deck
Q) Remote control
R) ***Front Flap-guard***
S) ***Blade support***
T) ***Blade***
U) ***Blade Fasteners***

(*) Safety Parts

4.2 ENGINE (fig.7 - I)

The machine is equipped by a high quality petrol engine made in USA and designed to assure a long operating life. The engine is provided by an electric start. To start the engine follow the procedure of Cap. 5.2.

The engine is also provided by a forced lubrication system which help to work in a sloping areas, nevertheless it is highly recommend not to exceed the 35°. The instruction of the max angle are reported on the bottom of the radio control.

IMPORTANT
Do not leave the machine in the slope with the engine running. The lubrication can be insufficient and cause the engine failure.

ATTENTION
Never stop the engine while the machine is on the slope. The engine stop will cause the switching off of the drive motors. For parking move the machine to a flat ground.

The first 50 working hours represent the run-in of the engine. During this first period we recommend not to use the machine at the full power.

It is also necessary to leave the engine running for few minutes at the idle speed for warming after starting. A sudden use at the max power just after starting cause a thermal shock to the engine components.

4.2.1 AIR FILTER (Fig.7 - M - Fig 27)

The engine is equipped by an air filter. In case of dry grass and dusty environment the air filter have to be cleaned very often (every 2 hours). If some flying grass are trapped by the net of engine inlet air (Fig. 7 - I) it means that probably also the air filter need to be cleaned out. (see cap. 7.1.2). The clogging of the air filter can cause a lose of engine power. In normal condition, the air filter should be cleaned every day.

4.2.2 FUEL TANK (Fig.7 - L)

The fuel tank have a capacity of 15 liters of petrol and should assure 6 hours of operation. Before to start any work remind to fill up the fuel tank. A reserve of fuel of 3 litres (marked by a pilot light on the radio control) warn that it is time to refuel. stop working and move the machine in a flat hard soil for refuelling.

DANGER
Pay attention while refuelling: The gas of petrol are highly explosive. Do not attempt to refuel if somebody are smoking or in presence of sparks or open flames.

4 - CONTROLS

4.3 MOWER DECK (fig.7 - p)

The mower deck has a special design to reduce the power required. It is connected directly to the engine by belt and disconnected by an EM clutch.

The engagement of the Mower is only possible if the engine is running at suitable speed. (see Cap.5.7). The blade system is made with a strong cutter for heavy duty operations. **The Blade and Blade Fasteners as well as the flap protection guard are safety components and should be verified often according to the maintenance schedule 7.2.1**. The cutting height can be adjust from the remote control and it is visible from an indicator on the right hand side of the machine (see Fig. 8). For maintenance of EM Clutch, Blades and transmission Belt please refer to Cap. 7.2.7.

4.4 ELECTRIC SYSTEM

The driving system of this mower is electric. The alternator driven by the petrol engine generates an electricity supply voltage of 48 V in a range (Extra-low voltage - **ELV**) which carries no risk of electrical shock.

The crawler are then driven by 2 brushless electric motors controlled electronically by 2 inverters with a sophisticate software that makes the machine easy to use and flexible.

The electric cabinet on the back of the machine have a easy access to the radio receiver and to the fuse and relays boxes (Fig 9). The electric system has a waterproof grade of **IP 54.**

Fig 8

4.5 TRANSMISSION

The transmission of the power to the crawler are made by 2 strong and silent gear reductors. The portal shape of the transmission allows to keep very low the centre of gravity of the machine which is 15 cm off the ground, only. The technology of these electric motors grants the maximal torque also at a standstill. These 2 features make this machine suitable for working on very sloping ground. Moreover in case of electric power failure, a passive breakage device save the machine from running downhill without any control.

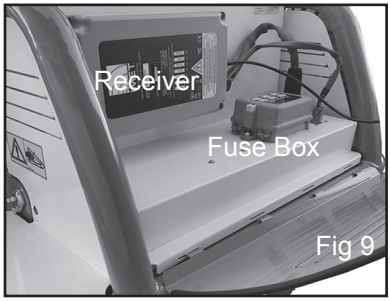


Fig 9

4.6 REMOTE CONTROL

The remote control is a heavy duty and reliable unit which allow to carry out all the controls and the adjustment of the machine. It works on a frequency of 2,4 GHz with the Transmission technology AFA (Automatic Frequency Adjustment) that automatically shift to a new free channel in case of noise on the transmission.

CONTROLS OF THE RADIO TRANSMITTER

Fig 10

1 Radio connection button
2 Engine Start button (with (1))
3 Engine's throttle
4 PTO Switch button
5 Cutting hight adjustment lever
6 Drive control Forw./Rev. - Left/Right
7 Aux actuator adjustment lever
8 Drive reference inverter switch
9 Alarm switch (motorstop)
10 Aux socket switch

5 - RULES FOR A SAFE USE

5.1 CONNECTING THE RADIO CONTROL

Turn the Starting Key switch to ON position. The buzzer will start to sound to warn that the Radio control is not connected.

To connect the Radio Control press the Green Button (1 - Fig.10) on the left hand side of the remote control and wait until the 2 warning lamps green (a) and blue (b) (see Fig. 11) start to blink; then push again the green button (1 - Fig.10). The warning lamps stop blinking and the Buzzer stop to sound : the radio control is now linked .

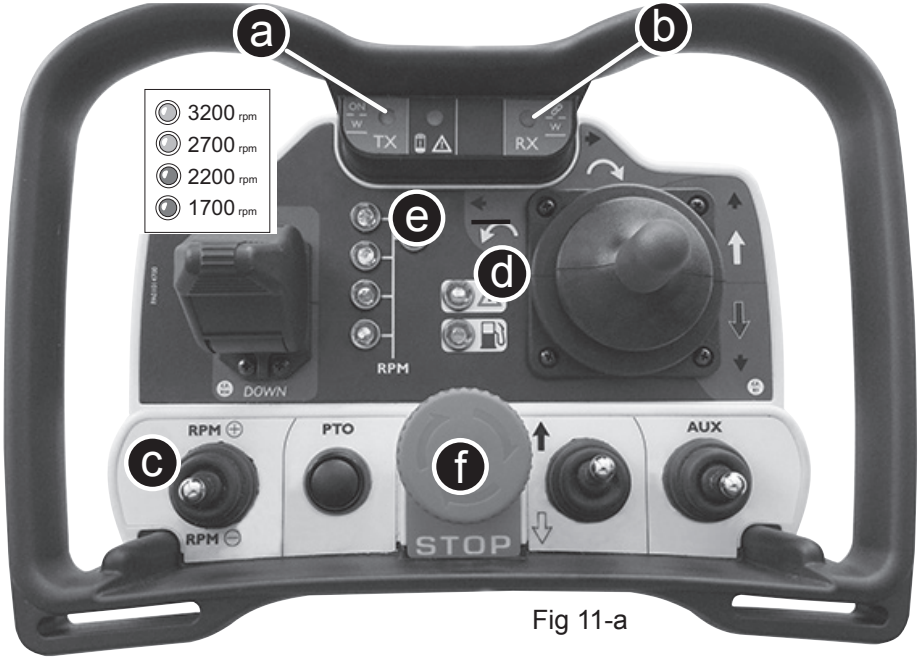


Fig 11-a

5.2 ENGINE START(fig.11)

Move the throttle lever up (c -Fig 11) to the maximum. To start the engine at low temperature, pull the starter (choke) (for Kawasaki engine only). Push both Buttons on the left hand side (Fig.10 (1) and (2)) until the engine starts.

Move the throttle lever down to reach the idle speed and let the engine warm up. The engine speed will be displayed by the Leds column (see Fig.11-a)

Fig 11-b

5.3 ENGINE STOP (fig. 11)

To stop the engine push anytime the Red STOP Button (Fig 11 - f) and the engine will suddenly stops. Just after stopping, remind to release the emergency Button (f) in its normal position. After this operation it is necessary to connect again the Radio control to the machine.The engine can be also turned OFF by Alarm Button on the top of the machine (Fig.7 (l)), or just turning the Star Key (Fig 7 (h1)) OFF or if the machine lose the Radio connection with the remote Control.

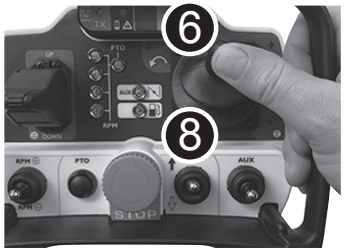


Fig 12

NOTE: **If possible it is always recommend to move the machine in a flat ground before to stop the engine. In case of emergency STOP as soon as possible start the engine and move the machine in suitable flat ground for parking.**

5.4 HOW TO DRIVE (fig.12 and 13)

Check that the lever (8) is set in the UPER position.

This lever reverse the motion. Move the Joystick (6) FORWARD gradually and continuously. The machine will move ahead. The machine can be easily controlled by a finger that controls both speed and direction. It is possible to reverse the Joystick function when the machine moves forward and towards you (Fig 13).

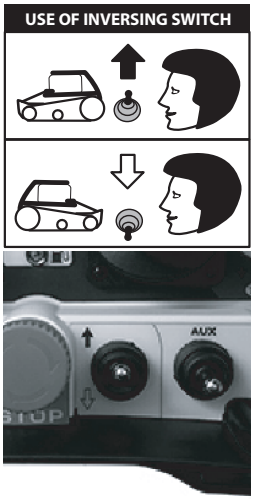


Fig 13

5.5 HOW TO DRIVE IN A SLOPE

In a slope it is recommend to drive in a longitudinal way and (if possible) with the left hand side downhill. To work on the slope it is not necessary to turn (A-A) because the machine can work in both direction. So the suggested path is A-B as represent in the Fig 14-a.

It is reccomend to work longitudinally and not up and down (Fig 14 -b). In this 2nd case the machine will drive much slower and the transmission will warm up.

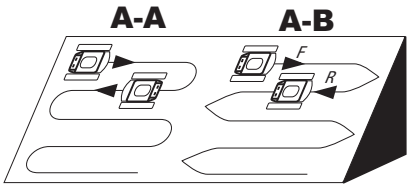


Fig 14-a

ATTENTION
Do not excede the 45° when drive longitudinally and the 20° when drive downhill.

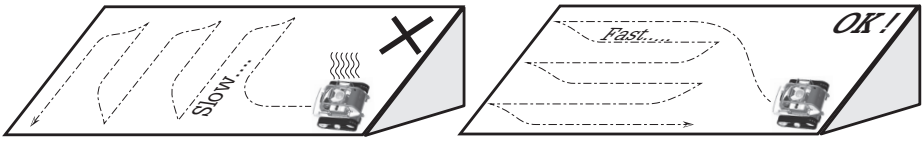


Fig 14-b

5.6 BRAKE SYSTEM AND PARKING

The machine is supplied with an automatic passive brakes which stops the machine while not driving. Nevertheless it is recommend to stop the engine only on a flat ground to avoid that for any reason the machine could move downhill.

5.7 PTO (Mowing blade - switching ON) (Fig 15)

If the machine is in running order is now possible to start the mowing blade. The blade starting require a big energy, therefore it is provide a control to prevent the blade starting with a low engine speed. Adjust the engine speed by the throttle (c) over the 2800 rpm (green leds (a) - Fig 15). With the green light it is possible to start the PTO by pressing the button (b). The green led (d) shows that the cut blade is ON.

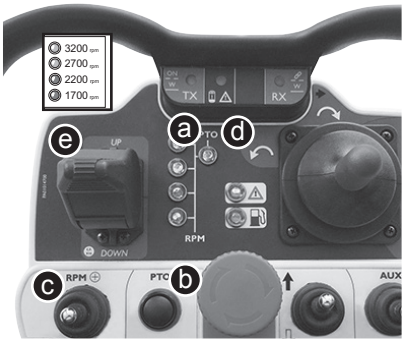


Fig 15

DANGER
Before to start the PTO be sure that you have taken all the precautions stated in para. 5.10 especially:
- the blade should be free (non in contact with the ground)
- no object that can be through from the blade lays on the working area
- no people or pets are inside the DANGER AREA (see para 5.12)

5.8 CUTTING HEIGHT ADJUSTMENT (Fig.15)

It is anytime possible to control the cutting height from the remote control. In case of thick high grass, it is recommend to adjust the mowing deck to 100 mm from the ground in order to allow the grass to exit. If necessary, make second stage with a lower height setting. To lift the blade up, move upwards the control lever (e). To lower the blade, move the control lever (e) down. The possible hight adjustment is from 5 to 12 cm.

5.9 AUXILIARY PORT

The machine can be equipped by an implement such as sprying pump, brush cutter, side arm, ect. These implements can be controlled from the remote controln as well. The implements should be plugged in the socket in the front panel behind the engine. From the left to the right in the Fig. 15-a the socket are:

- Battery 12V stabilized
- 12 V plug controlled by Radio Control (Aux)
- Plug with switching polarity for electric actuator

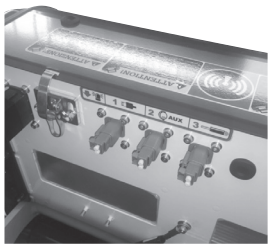


Fig 15-a

5.10 CONTROLS DURING THE USE

The electric drive transmission have been design to be maintenance free. Nevertheless as the machine is equipped by one engine it is necessary to mantein it and to make some controls everytime you use it. These maintenance operations include **safety devices which are crucial to assure the safety**. Moreover this machine normally works in a inacessible areas and in case of undesired stop it can be hard to rescue and restore the machine.

Before to start any work, check:
- Anything that was abnormal in the previous operations.
- the level of the Fuel. Replenish it every time
- the level of the oil of the engine: (near to MAX)
- clean the cartridge of the air filter
- the charge of the battery of the remote control
- **the condition of the blades (see par.7.1.6)**
- Oil leakage from mower gear case
- Loosen, broken or lost parts (**especially safety shield**), pins and clips
- deposits of grass and mud on the crawler's wheels.
- to reduce the fire hazard, and improve the cooling capacity, keep the engine, muffler (silencer), battery area, and fuel tank area free of debris
- After starting the engine **confirm the operation of safety switches**

5.11 ACCESS TO AND FROM THE WORK FIELD

A special care is necessary during the transportation and the access to the work field.

5.11.1 LOADING ONTO OR UNLOADING FROM A TRUCK

When loading the front mower onto a truck, turn off the truck's engine, apply the truck's parking brakes, and chock the wheels to avoid unexpected moving of the truck or trailer.

To load the machine onto a truck, fully lift up the mower deck and move straight forward at low speed. Drive on reverse when unloading it from the truck or trailer.

Use ramps with the same or better specifications mentioned below.

Specifications of the ramps

- Length	more than 4 times the height of the platform of the truck
- Width (effective width)	more than 30 cm
- Required quantity	2 ramps
- Capacity (one ramp)	more than 250 kg

- Ramps should have anti-skid surfaces.

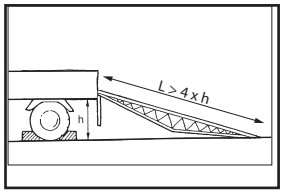


Fig 16

Bind the machine to the truck or trailer using the hitch points shown in the picture Fig 17. The machine is provided by hanging hook to be placed on the working ground by a truck crane. The machine weight is 370 Kg. Be sure to use belts and hook with a proper loading capacity.

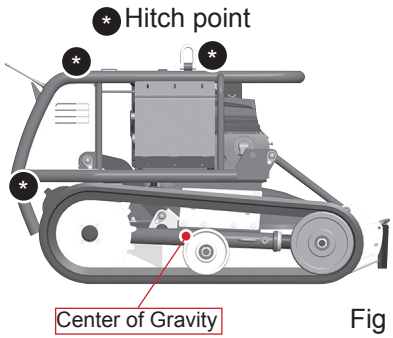


Fig 17

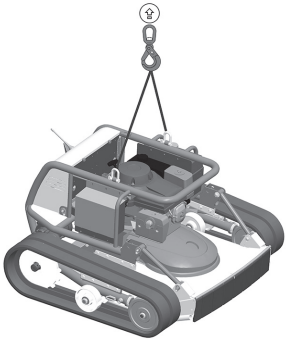


Fig 18

5.12 SAFETY IN THE WORK FIELD

It is mandatory to follow these rules to not create danger for the operator and for people, pets or things around the operation area.

a) Operate if you have a perfect control at your sight of the area of 20m radius around the machine, only. If the machine's moving area is not visible, change your position.

b) Do not allow any people or animal to approach the machine. A miscontrol of the drive can cause severe injury to the people or some object can be thrown out from the mower blade and hit somebody. The **danger area** is shown in Fig 19.

DANGER
Do not allow for any reason the people to enter into the DANGER AREA. This reccomandation include also the operator. Launched objects can cause severe injury.

c) Check the working area to remove any object that can be danger for the machine.

d) Place some warning tape or sign to alert people not to enter into the working area.

e) Check the slopes and the soil conformation to identify some danger areas. Select the position to operate in order to have the best visibility and safer place.

f) Avoid to perform maintenance in the work field because it is a dusty place. Moreover you get the risk to do excessive efforts and you don't have the necessary tools.

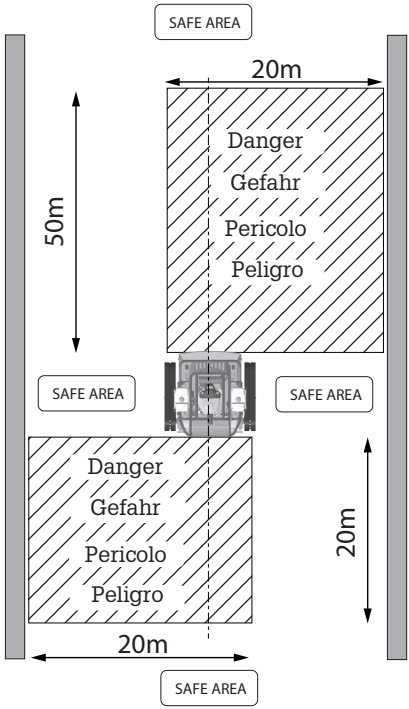


Fig 19 - Danger Area

TROUBLESHOOTING

GROUP	PROBLEM	CAUSE	REMEDY
Remote Control	It is not possible to connect	The key on the machine is turned OFF	Turn the key ON
		The mushrum emergency switch is not armed	Arm the switch in the Remote control
		The remote control's battery is low	Replace the battery and charge this one.
		If leds on receiver in the machine don't light on, internal fuse may be burned out	Replace the internal fuse
Power supply	No Bip tune on switch key turn ON	- Battery fuse is burned out - Fuse 1 in Fuse case is burned out - Machine Battery is low	- Replace Battery fuse inside Battery Box - Replace Fuse 1 in Fuse Box - charge the battery
Engine	The engine don't start	The starter motor do not work - Choke is not activated - Starter relays burned out - Fuse of starter (FUSE 1) is burned out	- Throttle to MAX until Choke warning light, is on. - Replace the Start Relay (E) - Replace Fuse 1
		The starter motor turn but engine do not start	- Check Fuel level - Check the spark on the spark plug - Check fuel circuit - Check function of STOP relays R3 and R6 - Check and clean the Air filter
		No petrol on the carburator drain screw	- Defective fuel pump - Crushed fuel pipeline - loose clamp
	Throttle is not working	- Actuator is not working - Actuator is moving	- Check the cable XC3 - Check fuse 5 and 6 - Actuator is defective - Check the connecting rod
	Engine grumbles and make smoke	Choke is still engaged	Reduce the engine speed until choke warning light turn OFF-(Honda) - Push the Choke knob
	Engine starts and stop - makes smoke	Oil level too hight	Check the oil level and in case drain oil out
Drive	The machine do not execute the command	One driver is not synchronize with the other	Switch off the engine and restart again
	The machine do not move at all	Communic. cable between drivesr is not connect	Verify the connection of the comm. cable
		Main Fuse (big ones) are melted	Replace the melted fuse
		Brake relay are defective	Remove all the brake relays and try again. If it is working, replace the defective relay with new one.
Heigh Adjust.	The Height adjustment doesn't work	- Actuator is not working - Actuator is moving	- Check the cable XC1 - Check fuse 5 and 6 - Actuator is defective - Check the connecting fork
Mowing deck	High vibration and noise in the machine	The blade is broken or bended	Stop the machine and replace the blade and fasteners
			(see par.7.1.6) - Use original parts, only

7 - MAINTENANCE

Main Maintenance points

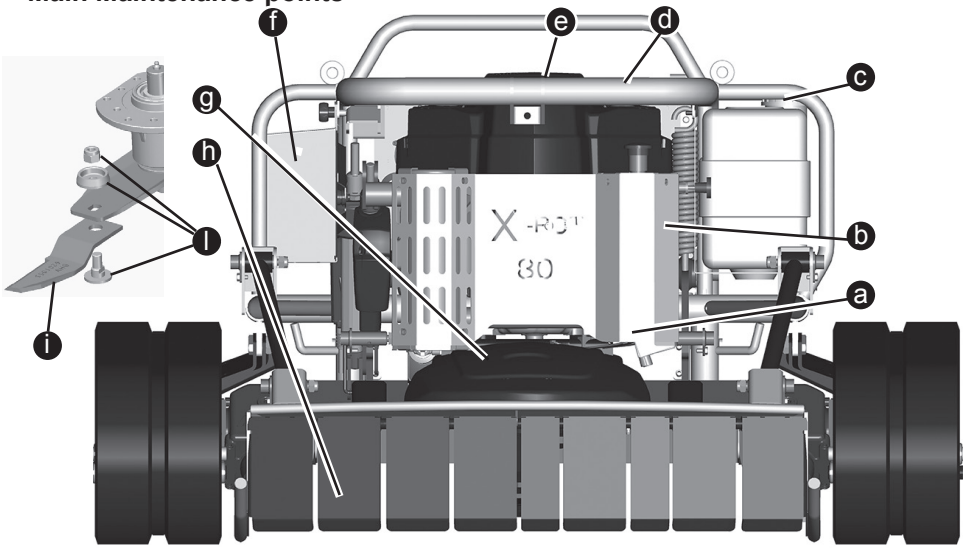
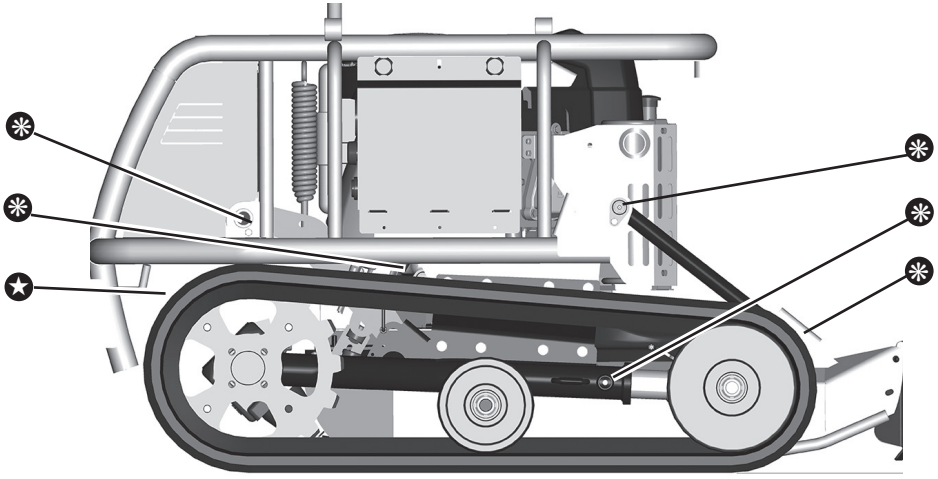


Fig 20

a) Engine oil Drain cap
b) Fuel Filter
c) Fuel tank cap
d) Engine oil filling cap
e) Air Filter
f) Battery
g) Mower Blade belt
h) Mower Flap-guards
i) Blade
l) Blade fasteners

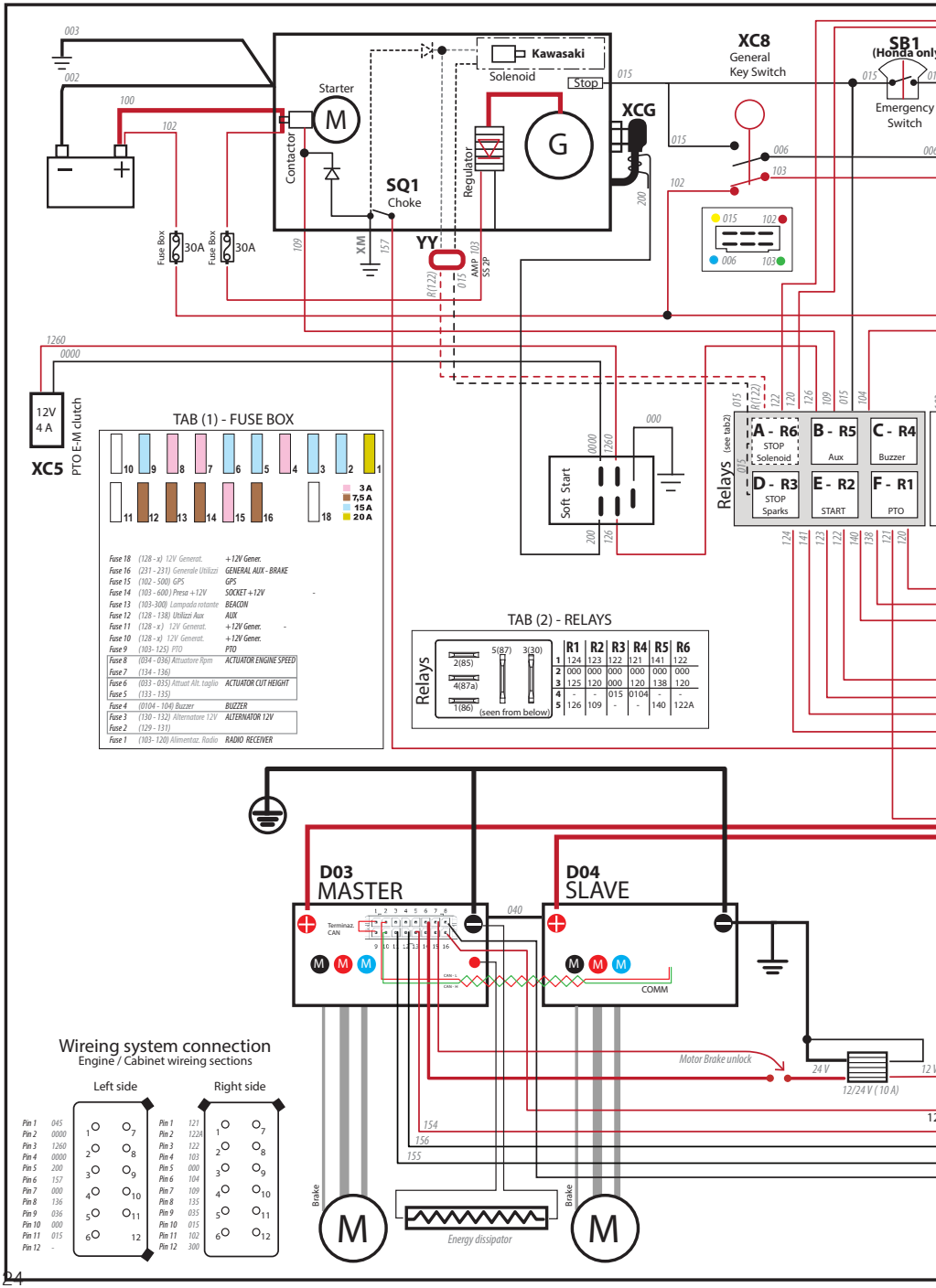
Lubrication Points

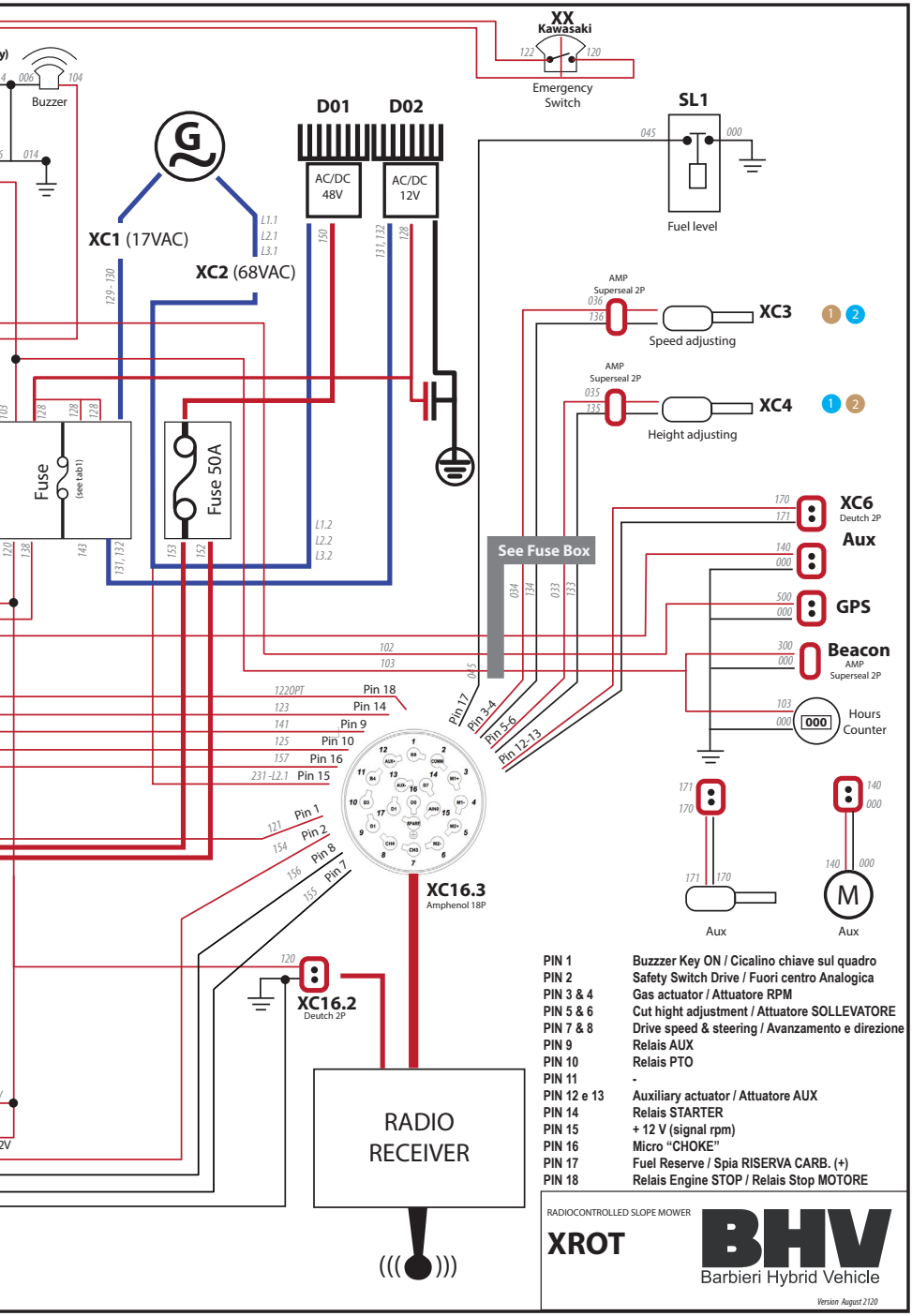


❋ Grease Nipple
★ Reductor oil filling cap

Fig 21

Electric scheme





PIN 1	Buzzzer Key ON / Cicalino chiave sul quadro
PIN 2	Safety Switch Drive / Fuori centro Analogica
PIN 3 & 4	Gas actuator / Attuatore RPM
PIN 5 & 6	Cut hight adjustment / Attuatore SOLLEVATORE
PIN 7 & 8	Drive speed & steering / Avanzamento e direzione
PIN 9	Relais AUX
PIN 10	Relais PTO
PIN 11	-
PIN 12 e 13	Auxiliary actuator / Attuatore AUX
PIN 14	Relais STARTER
PIN 15	+ 12 V (signal rpm)
PIN 16	Micro "CHOKE"
PIN 17	Fuel Reserve / Spia RISERVA CARB. (+)
PIN 18	Relais Engine STOP / Relais Stop MOTORE

RADIOCONTROLLED SLOPE MOWER

XROT

BHV
Barbieri Hybrid Vehicle

Version August 2120

7.1 TEST BEFORE USE

7.1.1 Control of the engine oil (Fig 20 (e))

To check the engine oil it is necessary that the machine is on a on a flat hard ground. Remove the oil dipstick (e) and check that the oil level is near the upper mark. For more detail about engine lubrication please refer to the engine manual.

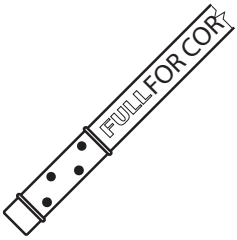


Fig 22

IMPORTANT
The oil level should never be under the MIN mark and not exceed the MAX level on he dipstick. The oil over the max quantity can damage the engine.

7.1.2 Engine's air Filter (Fig 20 (d))

For a good function of the engine it is important to check if the air filter or the cooling elements of the engine are free from clogging stubble deposited from the air flow. Clean often these element in case of dusty and dry conditions.

7.1.3 Refueling (for safety instruction see Cap. 4.22)

Filling up the fuel tank is often a not easy and safe operation to do on the field, therefore it is highly recommend to check the level of the fuel tank before to start working. A full tank allows to work 4 hours.

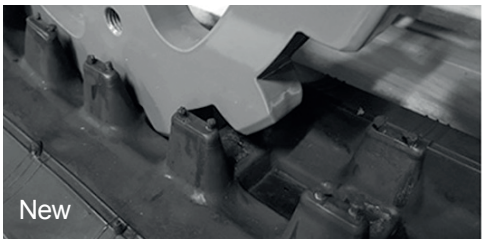
In case of refueling with a hot engine it is important to have a fuel tank with an extension pipe to avoid fuel spills. If the fuel comes into contact with the hot parts of the engine, the flame could ignite with the consequent bursting of the tank.

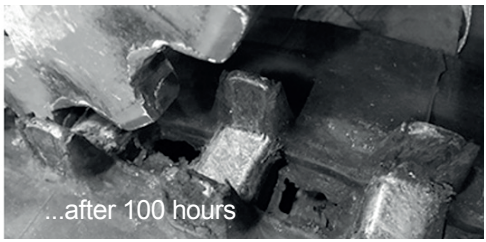
DANGER
Do not refuel in the presence of cigarettes or open flames. Starting a fire could cause severe burns.

7.1.4 Control of crawler tension and conditions

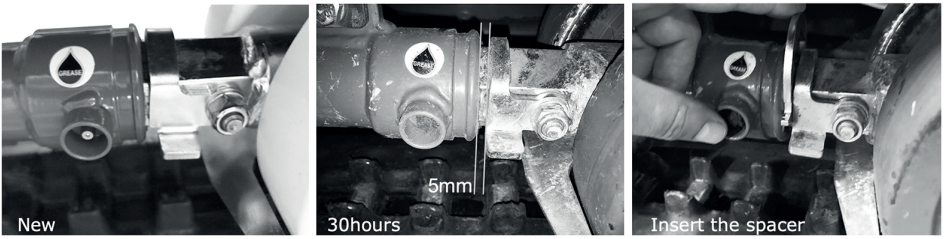
It is important to check the condition of the crawler to avoid they get out from the rollers. It is important to understand the use of the track tensor block at the cap. 7.2.10. If a compensator is required due to wear of the track, it is advisable to mount it without delay in order to avoid track derailment.

A lose crawler can easily get out from its position.Shims are supplied with





the machine that allow the tensor block to compensate for the play and return to do its function.



Their assembly is very simple and is represented in Fig. 23

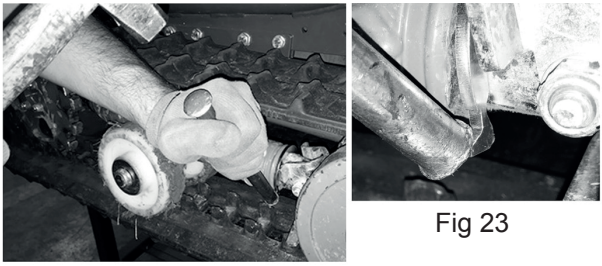
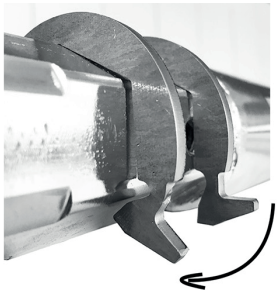


Fig 23



7.1.5 Radio Control battery charge

The battery of the radio control is a critical component of the machine. A low charge battery do not allow to start the engine and the machine cannot be controlled. This is why 2 battery are provided for safety. It is highly recomment to charge the 2 batteris before start any operation.

ATTENTION
If the battery of the radio control have low charge the engine will suddenly stop. This could happen in a very unpleasent situation. A sound alarm in the radio controll will advise the low battery few minute before to stop.

Fig 24

7.1.6 Control of the Cutting blades

The blades are the most stressed element of the machine and are subject to frequent impacts with stones or other objects that can compromise both the cutting efficiency (loss of the cutting edge) and the integrity itself (breakage of the blades or fixing bolts). For this reason, their integrity must be checked frequently and the fastening elements must be replaced at the prescribed intervals.

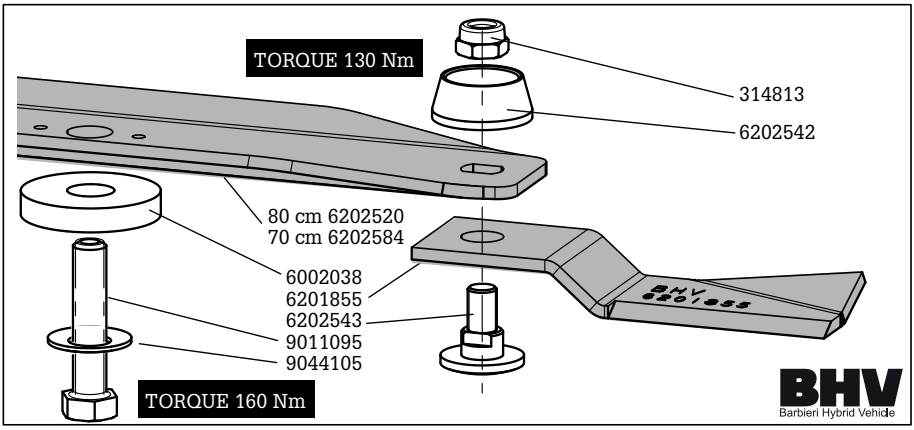
How to check the blade

The blade turn at a high speed so that a un-normal wearing or damage to one blade can cause a big vibration on the machine. To check the blade, lift the front of the machine and secure it.

- check that the blade support is straight and not bent.
- check that the blades have a regular shape and that they are not deformed
- check that the fixing bolts are well tightened (do not exceed the max tightening torque of 130 Nm)
- check that the blades are sufficiently sharp.

To sharpen the blades, follow the instructions in par. 7.2.7.
In case of loose bolts, replace the blade fixing bolts on both sides
In case of deformed blades, immediately replace the blades and fixing bolts
If the blade holder is deformed, replace it with a new holder.

DANGER
Do not attempt to work if the blade are not in perfect condition. Structural failure of the blades or their fastening systems can lead to serious and even fatal accidents.



7.2 MAINTENANCE AND ADJUSTMENT

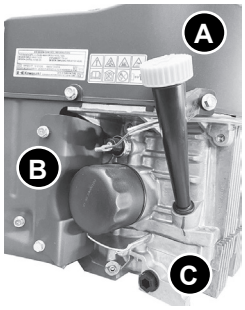
7.2.1 Maintenance schedule and Lubrication program

★	Replacement or servicing at authorizedservice facility recommended
▲	Clean or wash
❍	Inspect replenish or adjust
●	Replace

	Before Operation	Initial 50h	every 50h	every 200h	every 500h	Long Parking	REMARKS
Engine Oil	❍	●		●	●	●	Mantein specific level
Air cleaner	▲	▲		▲	●	▲	
Fuel	❍					❍	Keep fuel tank always full
Fuel filter					●		No dust or water inside
Battery condition				❍		❍	
Rubber pipes				❍		❍	
Remote control battery	❍					❍	Charge every time
Cutting blade BELT		❍		❍	●	❍	Adjust tension
Cutting blade condition	❍		●	❍		❍	See par.7.1.6
Cutting Blade fasteners	❍		●				See par.7.1.6
Front rear Flap-Guard	❍		❍	❍	❍	❍	See par.7.2.10
Transmission drive oil					★		
Crawler condition	❍					❍	
Grease up		❍	❍	❍	❍	❍	
Bolts and nuts	❍	❍	❍	❍	❍	❍	Generic bolt fastening
Electrical apparatus				▲		▲	
Safety switches	❍			❍		❍	

7.2.2 Changing engine oil and filters

Fig 24



For the engine oil always refer to the instruction manual of the engine manufacturer.

The first oil replacement has to be done after the first 50 working hours which represents the engine running-in period. This change remove the metallic suspended particles produced by the rotating parts.

Let the engine running for some minutes to warming up. Before starting the level checks or oil replacement, carry out a careful cleaning to avoid that external particles enter into the case.

Remove the cap with the dipstick (A) and the drain cap (C). Collect the exhaust oil into a bassin. Transfer the waste oil into a container suitable for its disposal. Close the drain cap end fill with new oil from the cap (A).

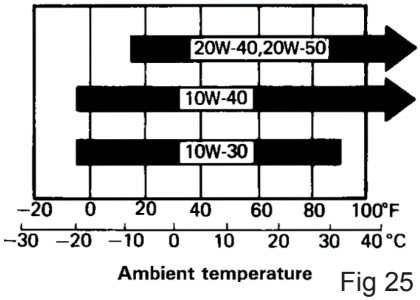


Fig 25

SAE 10W-30 is recommended for general, all-temperature.Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

The Engine oil (Agip Rotra MP) SAE 10W/30. The quantity is 1.1 Kg

Check the oil level as described in Cap. 7.1.1.

7.2.3 Control and replacement of gear box oil

The transmission oil must be replaced after 500 working hours unless some oil leaking appear on the gearbox. In this case it is necessary to repair the damaged gasket and replace the oil. This reparation have to be made by an authorized dealer.

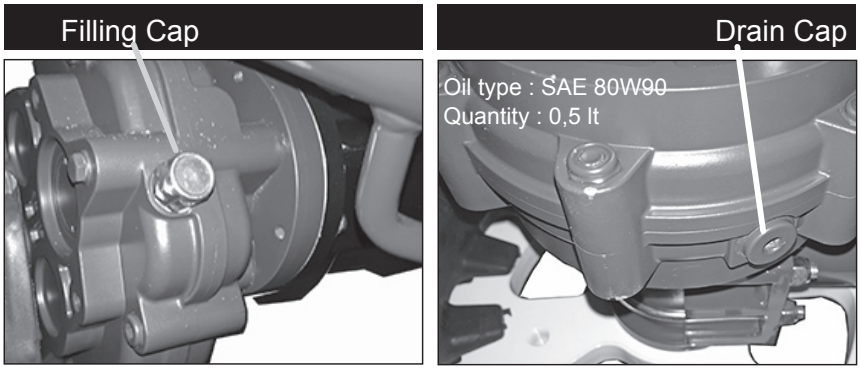


Fig 28

7.2.4 Lubrication of Joints

Following the lubrication program, Fill up the joint with grase every 50 hours. The Lubricatio point are shown in on the Fig. 21 and marked in the machine by a stickers.

7.2.5 Air filter cleaning (See Cap. 4.2.1)

Clean the air filter and all the engine's air cooling inlet anytime. This action will protect the engine life and assure an higher efficiency and less fuel consumption.

Remove the wing bolt. Draw the element out of the air-cleaner. The filter has 2 elements: one spunge and one paper filter element.

Remove all the grass particle from the spunge and (if necessary) wash the

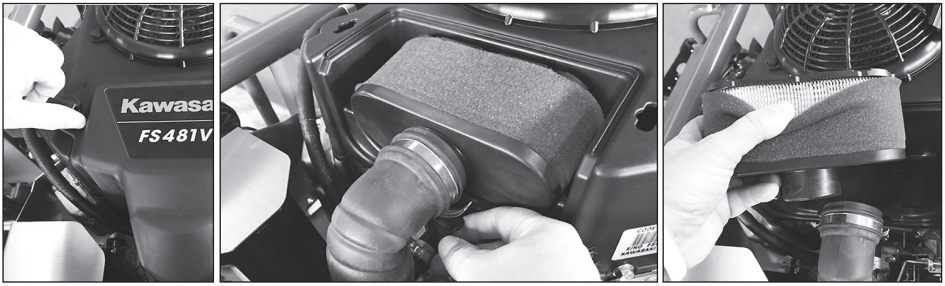


Fig 27

spunge. Dust the paper filter off by patting lightly while holding it with the other hand. When the element does not become clean only by patting, blow dust off the element with compressed air. Apply compressed air from inside to outside of the element.

After cleaning, install the element in reverse order of disassembly.

IMPORTANT

Never hit the element against a hard object like a concrete wall.
An element which has already been washed five times or is damaged should be replaced with a new one.
Never attempt to start the engine without the aircleaner element. Such operation will cause engine trouble.

7.2.6 PTO Belt adjustment

The belt can change its dimension after few hours of work, therefore it is recommend to adjust the belt tension according to the service schedule in Cap 7.2.1.

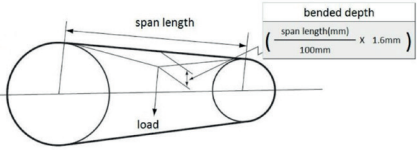
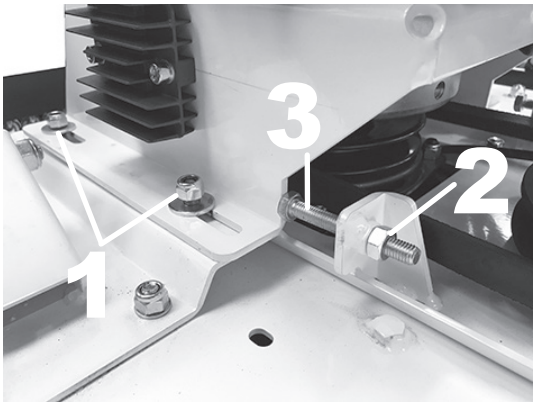


Fig 28

To adjust the belt, remove the belt cover. Check the tension applying 5 Kg force on the belt. The bended depth of the belt should not be more than 10 mm. If it is required, adjust the belt tension following these instruction.(Fig.29)



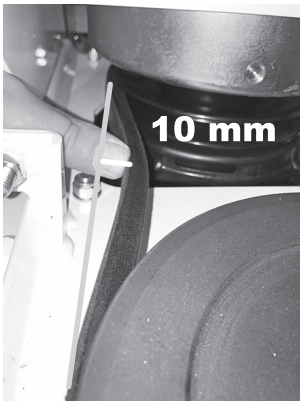


Fig 29

- release the nuts (1) of the engine's slide
- release the locking nuts (2)
- adjust the tension with the screws (3)
- lock the position by the nuts (2)
- fix the position of the engine slide (1)

In case it is necessary to replace the Belt, it is necessary to remove the sheet metal cover below the mower deck.(see Fig. 30).

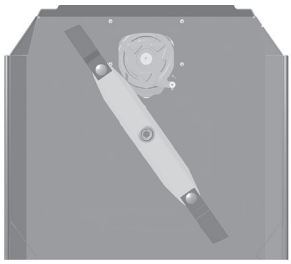


Fig 30

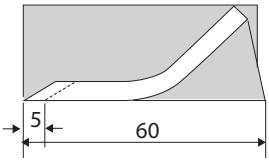
7.2.7 Blade sharpening and replacing

The blade of this mulching machine is turning very fast so that a small damage in one single blade can create an imbalance which turn in a strong noise and vibration. Anytime there is a un-normal noise it is reccomend to verify the condition of the blades. (see par. 7.1.6).

To check and remove the blade easily, lift the front of the machine by a crane in upright position. Secure the machine by a prop.

Unscrew the center bolt to remove the blade support. If possible use a pneumati tool or percussion screwdriver. Once you have removed the whole blade set, avoid to disassemble the blade from the blade support.

- Verify that the blade can rotate easily.
- Sharpen the blade symmetrically so that you have the same weight for the two blades. Do not exceed 5 mm of sharpening for 30 ° of inclination. In case it is necessary to disassemble the blade from the support, it is mandatory to replace the fastening bolts with the new ones.



- Re-assemle the blade support
- Lay down the machine carefully on the ground.

7.2.8 Crawler replacement

The Crawlers are wearing parts and their lifetime depend from the enviroment where the machine have been working.

To replace the crawlers it is necessary to lift the machine and positioning 4 props under the mower deck. To remove the tensor-lock see par. 7.2.10. Insert the threaded ROD (provide inside the electric cabinet (see picture) and a 13 key between the crawler chains as shown in the fig.31. Screw the long bolt inside the wheel support.

Remove the external wheel as shown in the picture and than the crawler belt is free to be removed.

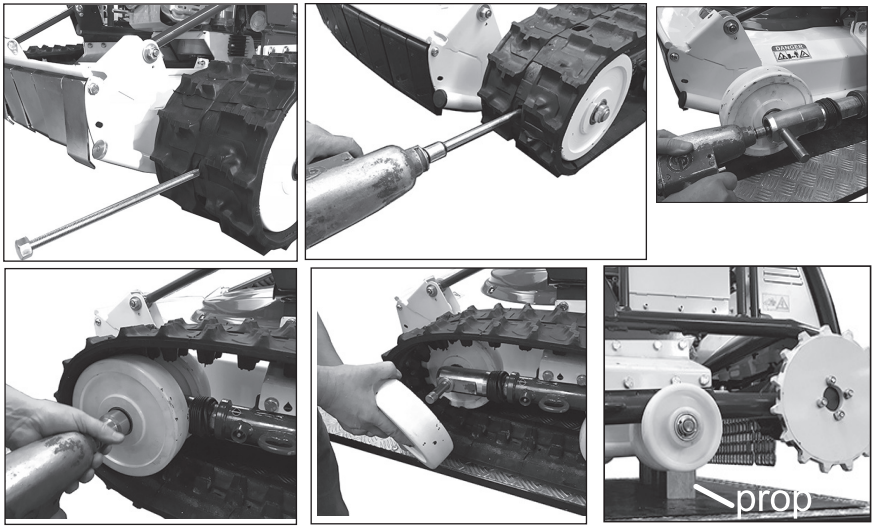


Fig 31

7.2.9 Battery of the remote control

The radio transmitter is supplied by 2 Li-MH batteries. Even if one battery is enough for one day operation, it is recommend to charge both batteries before starting the work.

To charge the battery a battery charger is supplied with the radio control.

Charger technical data

• Power supply voltage	230V AC
• Power demand	35mA AC/250mA DC (during charge)
• Charging current	650mA
• Battery	Ni-MH 3.6V 1.7 A/h
• Max. charging time	3 hours
• Type of charge	PVD
• Casing protection degree	IP30
• Operating t° (charge)	0°C ÷ +35°C

7.2.10 Debris chain, Rubber and Metal guards

The debris chains as well as the Rubber and Metal flap-guards which are in the front and rear side of the mower deck are safety components. They must be always efficient to assure the safety around the mower. They should be checked before starting the daily operations and in any case every 50 hours as recommended by the maintenance schedule. If any of those are bent or missing, they should be restored by the new original part before start working

DANGER
Do not attempt to start working without Chain, Rubber, and Metal flap-guards. The object launched by the blade could hit somebody and cause severe injuries and even death.

7.2.11 How to use the tensioner

It is very important to use the track tensioner correctly. The tensioner must be adjusted according to the working conditions.

IMPORTANT
Incorrect adjustment of the tensioner can cause the machine to stop during work caused either by the track block or by its coming out of its seat.

On the left is represented a work on level ground or with little slope but with several obstacles that can enter the track and cause it to stop.
In this situation it is advisable to remove the lock from the spring tensioner by lifting the locking yoke. If an obstacle enters between the track and the wheels, the tensioner absorbs the obstacle and does not block the advancement of the machine.

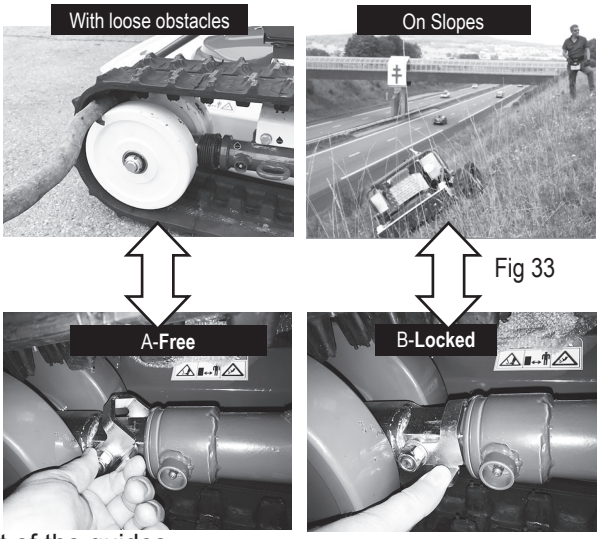


Fig 33

On the right is represented a steeply sloping job on a grassy ground. The tracks are heavily stressed laterally and tend to come out of the guides.
In this condition it is advisable to insert the lock to the spring tensioner by lowering the locking yoke. In case of strong lateral thrust, the block does not allow any space between the track and the wheels and does not allow the track to come out of the guides.

7.3 Notice for disposal

Li-NH Battery
The symbol of the crossed-out waste container on the device means that it must be handled separately from normal waste. The owner is responsible for handing over scrapped equipment to the designated points of collection for the recycling of electric or electronic waste material.
Waste separation contributes to protecting the environment and facilitates recycling.

Pb Battery
Dispose the battery properly because the lead included in a battery is highly polluting.
Exhausted batteries should be disposed of at the specific points of collection, as required by law.

Exhaust oil
Never disperse the waste oil it is highly polluting. few drops can pollute high quantity of water. Gather the waste oil in suitable container and deliver to the recycling service.

WARRANTY CLAIM

SECTION 8 - COMPLAINTS AND WARRANTY

The basic principle of the guarantee provisions is compliance with and observance of the relevant operating instructions.

Never attempt unauthorized modification of the mower as this could be very hazardous. Damaged or worn parts should be replaced with manufacturer genuine spare parts. Unauthorized parts may cause breakdown of the mower, accidents, and manufacturer warranty to expire.

If in doubt on causes and possible solutions for a certain trouble, please, call our authorized dealer.

This should be absolutely done during the warranty period, since any repair made by non-authorized workshops makes this warranty null and void.

Bear always in mind that the authorized dealer has all special tools, technical specifications and spare parts necessary for properly fixing the machine.

The guarantee can be applied only to devices which are properly used as defined in the first pages of this manual, and are handled according to the operating instructions and the maintenance instructions contained therein. The guarantee refers to the elimination of design defects, material or manufacturing failure that have occurred within the warranty period.

Parts which have become unusable as a result of improper repair work or or which are subject to natural wear and tear (see instructions in the operating instructions) are excluded from the guarantee.

The warranty will be void if the device is repaired outside an authorized workshop if it has been resold if no original spare parts are used, and if unauthorized changes have been made to the device.

In the case of justified warranty claims, the Manufacturer grants a claim for free replacement, as well as removal and installation of the defective parts. Without prejudice to the statutory warranty claims, further guarantees can not be claimed. Work under the guarantee does not trigger a new beginning of the guarantee period.

8.1 DEFINITION

For guarantee it intends the substitution of any machine's component for whom is ascertained the defect, after a test executed by our Technical Department. The transport cost are expressively excluded from the guarantee and are on client's charge. Are also excluded trouble caused by carelessness and incompetence as well as bearing to external causes (atmospherics agent, fire); last but not list are out the elements which are in contact with the ground (blades, knives, bumper, tyres). The guarantee decays if on the machine there are accessories and spare parts not furnished or authorized by the manufacturer.

8.2 WARRANTY STARTS: The warranty period starts on the date the vehicle is delivered to the first retail purchaser or put in service by an authorized Dealer.

8.3 DURATION

The period of warranty is:

-24 months for private utilization of the machine;

-12 months for commercial - municipality or renting operation.

In this period value the guarantee terms as specified on paragraph 8.1.

8.4 ENGINE WARRANTY

The conditions and the terms of warranty are those conceded by the engine's manufacturer; the on guarantee assistance will have to be strictly executed in the Authorized service centres. For further information see the engine manual delivered with the machine.

8.5 CLAIM FORM

It is always necessary indicate always:

1- Machine's type
2- Machine serial number
3- Parts name and code number
4- Quantity required
5- Circumstances of failure
6- Working time

We recommend to write here below these data for future communication.

XRot Pro

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