KIROGN®

OPERATORS MANUAL

L.E.M.® CUTTER

KIROGN ORIGINAL EQUIPMENT ENSURES

Security for the operator

Robust components

Quality service

Good value

ORIGINAL KIROGN ATTACHMENTS

& CERTIFICATES

SARL KIROGN - Villexavier - BP 127 - 17504 JONZAC Cédex - FRANCE -
Tél. 33 (0)5 46 48 08 57 - Fax 33 (0)5 46 48 42 31 - Fax magasin 33 (0)5 46 48 28 19

Dear client,

You have just taken delivery of

KIROGN L.E.M. ® cutting equipment

We thank you for having chosen our equipment and advise you to read this manual before using your machine.

This manual will give you a better understanding of your KIROGN cutting equipment and enable you to get the best possible service from it for many years.

You will find in this manual instructions for the operation, maintenance and servicing of this tool.

We would particularly bring to your attention, advice concerning safety.

If necessary, do not hesitate to contact the KIROGN company directly.

GENERAL GUARANTEE CONDITIONS

1) Duration :

- The purchaser of new equipment benefits from a year's guarantee against defects in construction or material, as from the delivery date.
- The date of delivery is the date of invoice from KIROGN showing the date of delivery to the user.
- KIROGN must be advised of this delivery by the return of the guarantee card within eight days.

2) Implementation :

- KIROGN provides a guarantee after the return of a completed guarantee card.
- A claim must be made within a maximum period of 30 days from the date of incident.
- The guarantee is expressly limited to replacement or return of parts recognised as defective by our examiner. The user can never claim compensation for losses due to reason of machine immobilisation, accidents to personnel or those things which may arise as a result of defect or fault in construction of the equipment sold. The carriage costs incurred by the exchange of parts is payable by the client.
- The exchange or discount document for spare parts does not extend the original guarantee period.

Our guarantee is limited to parts made by ourselves.
Those parts bought in from other manufacturers are guaranteed according to their manufacturers guarantee.

3) Non implementation :

- KIROGN's guarantee does not apply to pieces which from their conception may be used on other types of machinery and by other manufacturers (e.g. PTO shafts, tyres etc...)
- KIROGN's guarantee does not apply to pieces where normal wear and tear are expected (e.g. knives, sawblades, belts etc ...) nor to attachments which are mounted onto parts which no longer benefit from guarantee.
- All guarantees are void in the case of default in payment of the equipment or the parts concerned.
- Also, the guarantee is withdrawn and the constructor is absolved from all responsibility ;

a) When the equipment has been modified,
b) When it has been repaired by those other than the constructor or his agents,
c) When the original parts have been replaced by imitations,
d) When damage is due to negligence (e.g. introduction of impurities into the hydraulic circuit), bad use, excessive loading however brief, or the inexperience of the operator.

We reserve to ourselves the right to make improvements judged to be beneficial to our range without being obliged to make the same modifications to those already delivered.

JURISDICTION

In case of dispute the sole and exclusive judgement is to be made by the Commercial Tribunal of Jonzac in the last resort, who rule on the conditions of sale and mode of payment.

Our payments or settlements of bills are made neither by substitution or can be overridden from this exclusive clause of competence.

TITLE

By conventional agreement, we reserve to ourselves title to the merchandise up to the last day prior to payment in full, conforming to the terms of French law N° 80.335 of 12 May 1980.

WARNING - ATTENTION

IMPORTANT :

Sir,

Due to our introduction of interchangeable equipment called "adaptable" to the KIROGN cutting systems, we wish to share with you following information.

This particular activity may have nothing to do with the KIROGN company. For obvious reasons of SECURITY we bring to your intention the risks which such "adaptations" can bring : our company has no certificates of conformity for non KIROGN manufactured parts. Should non-original equipment be used, our responsibility as manufacturer, and our guarantee will be totally void.

For your satisfaction, only KIROGN and its agents are duly empowered to suggest equipment and "adaptations". These must be certified and of original KIROGN manufacture, conforming to the regulations to which our equipment is subject.

For your own safety and that of your employees, and in order to avoid all possible risks when using this "adaptation", we strongly impress on your supplier the need to print on delivery and invoice dockets :

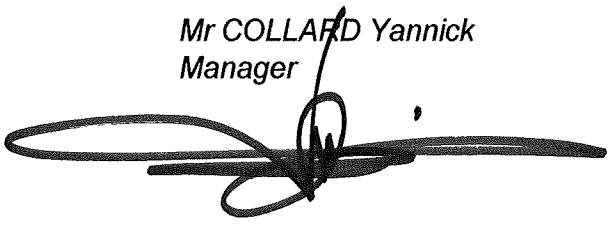
"ORIGINAL KIROGN PARTS"

KIROGN invented the cutting equipment with care and a continuing concern to offer equipment which gives high performance, economy and security.
This work continues for your benefit.

We are available to comment and give advise on this matter and will reply to your requests with the best price and service conditions and with respect to normal practices.

Yours sincerely.

Mr COLLARD Yannick
Manager



CERTIFICATE OF CONFORMITY

. The manufacturer undersigned :

STE KIROGN
BP 127 - VILLEXAVIER
17504 JONZAC CEDEX
France

hereby declares that :

MAKE : ***KIROGN***

TYPE : ***L.E.M.® cutting equipment***

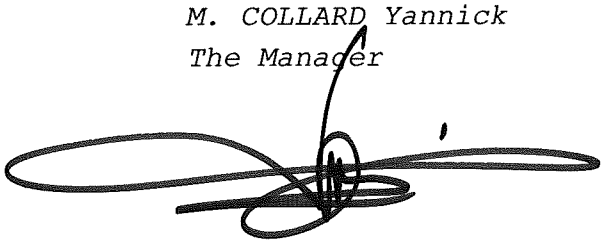
Serial number :

conforms with the provisions of the "Machines" Directive (Directive 98/37/CE), modified to meet national requirements.

otherwise, conforms of norm NF P 98-780.

Made in Villexavier
on

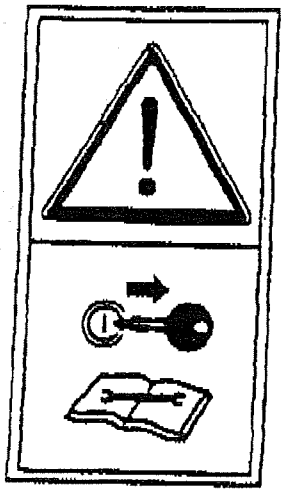
M. COLLARD Yannick
The Manager

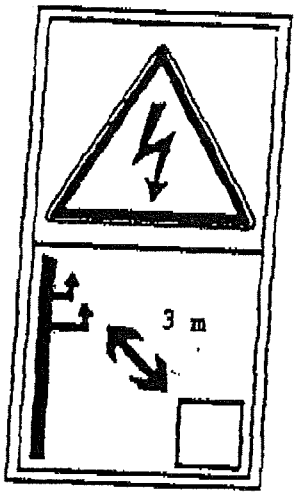


1

SPECIFICATIONS

I) REMINDER OF THE ADVICE SIGNS :





Compulsory
hearing protection

ROTATION SPEED OF THE BLADES OR DISHES

MAX : 2600 rpm
RECOMMENDED : 2200 rpm

II) INSTRUCTIONS CONCERNING THE AERIAL NOISE :

. *The sound level of the KIROGN cutter equipped with circular saw blades is in the region of 95 db at 2200 rpm. (when the machine is not cutting vegetation).*

. *This sound level makes necessary the wearing of ear defenders, or the tractor must be equipped with a sound proofed cab (or other means of protection).*

III) REMINDER OF THE CONFORMITY PLATE :

IV) WEIGHT :

- ***ATTENTION** : The cutting head is modular, its weight depends on wether one or more modules have been taken off or added. You must make absolutely sure that the weight of your KIROGN cutter head can be supported on the arm or carrying frame destined to receive the tool. Scrupulously respect the instructions of the constructor of the arm or carrying frame on this subject.*

LEM® WEIGHT AND MODULE WEIGHT WHEN FITTED WITH CIRCULAR SAWS :

LEM 6002 :	**151 Kgs**	LEM 6502 :	**153 Kgs**	LEM 7002 :	**155 Kgs**
LEM 6021 :	**195 Kgs**	LEM 6521 :	**199 Kgs**	LEM 7021 :	**205 Kgs**
LEM 6004 :	**236 Kgs**	LEM 6504 :	**242 Kgs**	LEM 7004 :	**250 Kgs**
LEM 6041 :	**280 Kgs**	LEM 6541 :	**287 Kgs**	LEM 7041 :	**295 Kgs**
Module 1 blade	**44 Kgs**	Module 1 blade :	**46 Kgs**	Module 1 blade :	**50 Kgs**
Module 2 blades	**88 Kgs**	Module 2 blades :	**92 Kgs**	Module 2 blades :	**100 Kgs**

- IMPORTANT : you must add to the weight of your cutting head, that of the adaption bracket and hydraulic kit which we supply you for mounting.

2

SECURITY

I) SAFETY CHECKS :

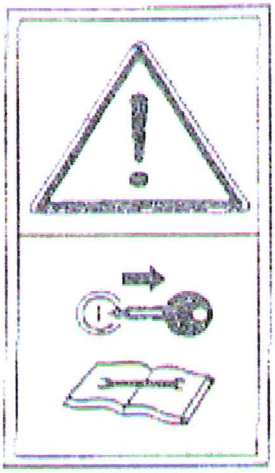
1) Reminder of signs and guides :

a) Caution - risk of projectiles : Maintain a security zone in relation to the machine :

. You must ensure that during work no persons are near the cutting blades.

. You must remove all people from the machine work area during operation.

b) Beware danger : Stop the motor and therefore the blades before proceeding with any maintenance or repairs.



. Never go near the machine whilst it is working.

2) **Protection against the risks associated with moving parts of the transmission :**

This protection is assured by the presence of removable guards. A tool aids removal allowing access to the transmission.

3) **Protection against accidental contact with the cutting head :**

The cutting heads are provided with rigid deflectors which must always be kept in place during operation. Great care must be taken during operation and storage.

4) **Protection against vegetative projectiles and falling objects :**

a) Protection in the work zone :

The risk of projectiles and foreign objects is always there during cutting.

** In order to plan against these risks, place signs on the road far enough away that a projectile or falling object cannot reach a person who may be found close to the cutting work.*

b) Operator protection :

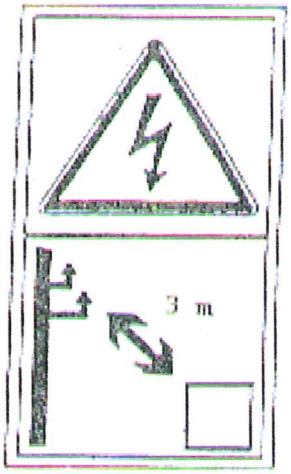
When the cutter is equipped with saw blades, the cut branches can be of a very large diameter and found at a height of 10 metres. If the tractor is in the zone of the falling branches, the operator is therefore subject to risks of falling wood and by penetration of falling objects into the cab.

** In this case it is necessary to use a cab equipped with a protective structure, against falling objects which must satisfy FOPS regulations, according to the ISO 8083 standard. It must also be protected, (on the cab side or where a risk exists against the penetration of objects into the cab), which must satisfy the FOPS regulations according to the NF ISO 8084 standards.*

5) **Protection against the risk of contacting the cutting components :**

** During work the cutting blades are not protected at the front or the sides, it is therefore necessary to put signs on the highway to warn all people when the work is in progress.*

c) *Beware risk of electrocution : Keep a sufficient distance from power lines :*

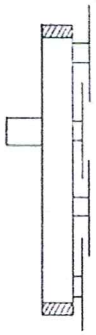


. The cutting blades can work at the height of the electric power lines ; you must keep a minimum distance of 3 metres away in order to avoid electrocution.

d) *Obligatory hearing protection :*

If the tractor does not have a sound proofed cab, you must use ear defenders or another means to protect your hearing.

e) *Recognise the cutter head's working position :*



The striped red and white marking at the extremities of the cutter head help the opperator view the head when in work.

In particular when working in dense vegetation you must always be able to monitor the cutter head.

f) *Maximum rotational speed of the cutting tools :*

ROTATIONAL SPEED OF BLADES OR DISHES
MAX : 2600 rpm
RECOMMENDED : 2200 rpm

In all cases the speed of blade rotation should not exceed 2600 rpm.

NEVER GO BEYOND THIS SPEED

6) ***Protection against damage to the blades and their balance :***

. *The rotating blades were designed and constructed to ensure good cutting, by the effect of centrifugal force, when used correctly, they do not stress, break or come apart.*

. *The cutters work by impact (flail knifes) and are balanced before delivery. The operator must be careful to ensure that they remain balanced. To do this, frequent checks of the blade condition must be made, and change them immediately (by diagonally opposing pairs) where they show signs of distortion, wear, or are chipped.*

Never sharpen worn blades.

THE KIROGN LEM® CUTTING HEAD IS EQUIPPED WITH A HYDRAULIC BLOCK DESIGNED TO LIMIT THE INPUT PRESSURE AND THE HYDRAULIC OIL FLOW BEFORE SUPPLYING THE MOTOR. THIS HYDRAULIC UNIT IS DESIGNED TO TAKE AN INPUT FLOW OF 200 L/MIN AT A PRESSURE OF 250 BAR MAXIMUM.

ATTENTION

NEVER CONNECT YOUR LEM TO A SUPPLY GREATER THAN THIS.

Fitting a Hydraulic supply is possible on to a carrier as long as it has :
a supply less than 200 L/min
and/or a pressure less than 250 bar.

b) Confirmation of safety :

KIROGN blades have been checked by severe impact tests, carried out according to the EN 706 standard 1996, ensuring optimum security for the operator when used according to the operating conditions laid out by KIROGN.

II) SAFETY INSTRUCTIONS WHEN USING THE MACHINE :

YOU MUST

1) General advice :

WHEN WORKING IN A PUBLIC OR DANGEROUS AREA DO NOT FORGET TO PUT UP SIGNS WARNING OF MOVING MACHINERY AT WORK, WHICH CONFORM TO REGULATIONS.

- *The operator must provide an audible warning before going out onto a road.*

- *Make sure that no one is near the machine before starting off.*

- *Before working make sure that the blade's guard has been removed.*

- *The cutting blades must be stopped when leaving the site.*

- *Before moving off on the road you must retract the head so as to cause the minimum obstruction and fit the blade guard with the help of gloves.*

- ***Before any inspection stop the tractor engine.***

- *For all inspections on the machine particulary the blades you must wear gloves.*

- *In order to guarantee good functioning and safety, only replacement parts from KIROGN are recommended. If non-original parts are fitted KIROGN takes no responsibility. Any guarantee will be void.*

2) *Advice concerning the cutting blades :*

- *Before starting work each day check the tightness of the components (hydraulic connectors and hoses, disc nut, knife bolts …), the condition of the dishes and the saw blades : any bent parts must be replaced.*

  Any parts of the system which have been subject to impact, deformation or wear must be replaced.

- *Maintenance of the blades must be done according to our advice on page 36 of this book.*

- *Use appropriate gloves when handling the cutting blades.*

- *The blades must be in perfect condition and checked in detail in order to limit vibrations resulting from unbalanced rotational forces.*
  All chipped or scored blades must be changed
  VERY IMPORTANT.

- ***Never grind the knives (this causes dynamic imbalance).***

  The blades and bolts must be changed in pairs on the same dish to give maximum safety and thereby not create the above phenomenon.

NEVER

- *Use spare parts not made by KIROGN.*

- *Remove the certification plate which states the machine N° and type.*

- *Make adjustments or repairs to the blades, drive line or tractor while in motion.*

- *Overule the manufacturers instructions.*

- *Get out of the tractor when the blades are turning.*

- *Leave an untrained person, unsupervised with the machine.*

- *Never abruptly stop the oil flow to the hydraulic motor. It is better to progressively slow down the speed of the cutting elements to its slowest setting. Then turn off the tractor engine, turn the oil flow to the shut off position, in order that an amount of oil is left in the hydraulic circuit and pipes, which avoids any oxidation during non-active periods.*

- *Modify the structure or system designed by the manufacturer.*

3

STARTING YOUR MACHINE

I) HYDRAULIC CONNECTIONS :

The cubic capacity of the hydraulic motor mounted on the cutter is a function of the hydraulic supply from your hedgecutter. The balance between the supply from your hedgecutter and the cubic capacity of the motor allows us to limit the rotational running speed of the cutting components.

In every case the rotational speed of the cutting components must be less than 2600 rpm. We recommend a working speed of 2200 rpm.

Output of your hedgecutter	Motor capacity	Maximum speed of cutter rotation
. from 40 to 59 L/min	19 cc	2600 rpm
. from 60 to 69 L/min	30 cc	
. from 70 to 89 L/min	36 cc	
. from 90 to 140 L/min	45 cc	

II) UNIVERSAL KIROGN HYDRAULIC BLOCK :

1) All our L.E.M.® cutting heads are equipped with a universal hydraulic block with a primary function of limiting the cutting rotation speed of the blades. This universal block is fitted to two types of motors :

a) 36 cc Motor :

With this hydraulic motor, the minimum flow must be 70 litres and maximum 89 litres.

b) 45 cc Motor :

With this hydraulic motor, the minimum flow must be 90 litres and maximum 140 litres.

2) The universal block limits the cutter pressure circuit to 150 bar. In every case the maximum pressure allowed to enter the universal block must not exceed 250 bar.

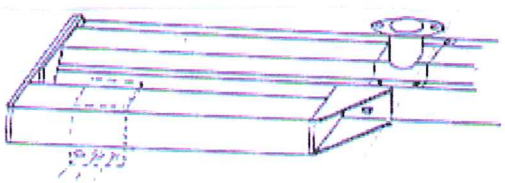
III) SETTING UP : INSTALLATION :

Setting up procedure :

1) Fix the adapting bracket on to the arm :

Ensure the bracket complies with the make and type of hedgecutter. This piece supports the cutting tool and must therefore be checked by the user.

2) Fix the cutting head on to the bracket :



The cutting head is held by the mounting bracket, this piece can be adjusted along the square of the cutting head to obtain a satisfactory offset.

3) Connect the flexible hoses :

Ensure the flexible hose kit complies with the make and type of hedgecutter. The kit assures the feed between the cutter and the hedgecutter.

4) Check the running of the tools :

. Check by stages the security of the pivot clamps and the cutting components, also the nuts and bolts of the cutting head.
. Before going out to work with the tractor, the user must make sure that there is no one near the machine.

5) Starting the blades :

Take off the blade protection guard then slowly turn the motor accelerating progressively.

6) Stopping the blades :

Do not cut the flow to the hydraulic motor at full power, better to slow down the motor progressively which will allow a reduction in the phenomenon of inertia.

IV) DISTANCE AND SAFETY INFORMATION :

Operator protection :

. *The operator must be seated in the tractor before starting up the hedgecutter and therefore the cutting equipment. The operator must be aware of the operational and safety procedures of the tractor (or carrier) as well as those of the hedgecutter and blade.*

. *The operator must have a closed cabin, or wear eye protectors which have side protection or a mask to EN 165, this type which complies with the basic regulations and relative specifications for the protection against fast moving objects, low energy category (conforms to 7.1 and 7.22.2 of the EN 166: 1994).*

. *Where a tractor is furnished with a cabin equipped with a protective structure against falling objects, which must satisfy the tests of FOPS according to the regulations of the ISO 8083 standard, and a protection, (on the sides or where a risk exists) against penetration of objects into the cabin which must satisfy the tests OPS according to the NF ISO 8084 standards.*

4

USE

I FUNCTION OF THE WORKING PARTS :

a) Configuration :

The blades are constructed principally to be fitted to the arms of hedgecutter.
The hedgecutter arm must correspond to the requirements of the KIROGN technique :

- *Ability to support the weight of the cutter,*
- *Hydraulic supply according to the cutter.*

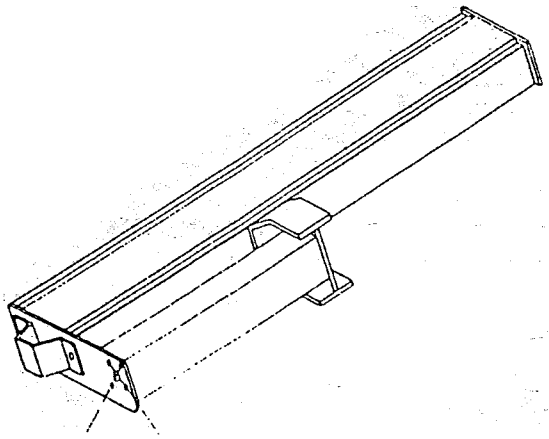
The carrier will principally be a tractor having a slow forward speed transmission capable of a working speed from 300 to 600 m/h.

b) The principal parts of the machine :

. Fittings :

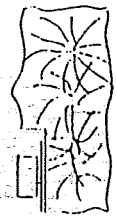
The cutter is fixed onto the arm by a bracket (optional), which itself is fixed onto a square bar. The length of the square bar allows modification of the cutter position along the bar (greater or lesser reach).

YOU CAN ADJUST THE POSITION OF THE BLADES :



BLADE OR KNIFE POSITION ?

. Your cutter is held on a square bar having 4 holes at the ends. By using the 4 holes you can choose between two positions : The regular position for saw blades, or angled for the knife blades.



POSITION SAW BLADES
You must work within the axis of the cut and maintain the blades in line.

POSITION KNIVES
To improve the quality of cut you must angle the knives.

. The body of the cutter :

. The L.E.M.® is made of a profiled, anodized, inoxidizable LIGHT alloy body whose strength structure is higher than steel, giving to the mecanical structure a rigidity without comparison. This profile can receive additional cutting lengths (modules), always retaining it's rigid and supreme quality finish.

. The L.E.M.® body protects the transmission and keeps the rigidity of the cutter.

II) METHODS OF USE : INFORMATION :

. *This machine is designed for pruning hedges and trees. The equipement has been especially designed for the removal of excess vegetation.*
This operation is effective on old or annual growth. (cutting dry or green wood).
The machine is designed to accept circular saw blades or dishes with mobile knives, and these parts must be original KIROGN parts.

. *Do not use the cutters at soil level. The blades are only designed for pruning vegetation above ground level (hedges, trees, woodland boundaries …).*

ADAPT THE CUTTING TOOL ACCORDING TO THE WORK SITE

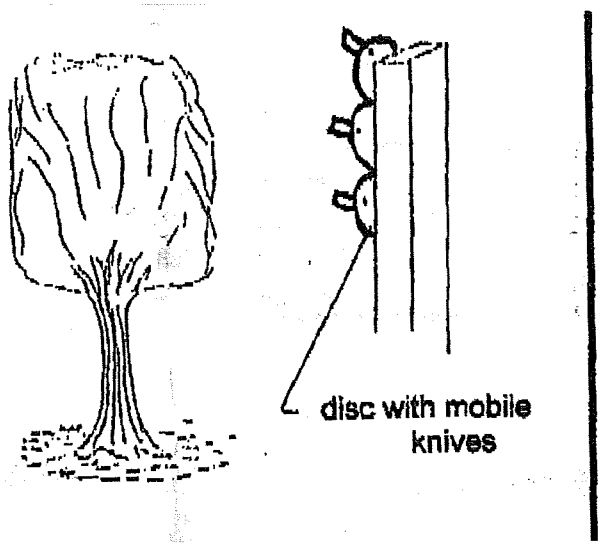
We advise you to use the dishes with mobile knives for :
- *Cutting green wood : maximum 20 mm*
- *Cutting dry wood : maximum 15 mm.*

When cutting more than 20mm green or 15mm dry wood use the circular saw blades.

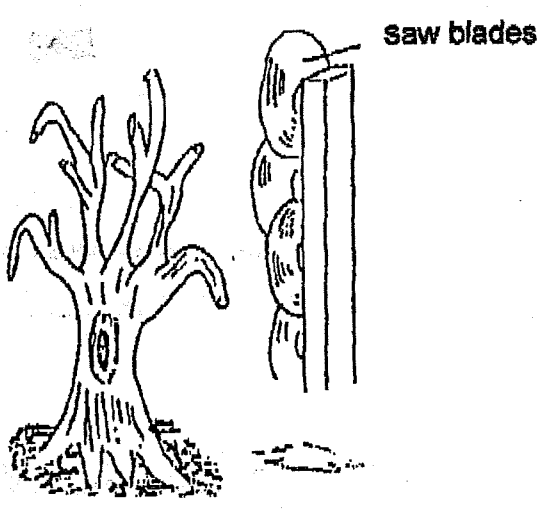
IMPORTANT

We advise our clients to match the cutting tool to the size of branches to be cut.

Good maintenance of the cutting tools is essential to achieve good work.



Use the dishes with mobile knives for cutting green wood of less than 20 mm and 15 mm for dry wood.



Use to saw blades to cut green wood over 20 mm and dry wood over 15 mm.

FITTING THE REVERSIBLE BLADES

IMPORTANT :

. ***All the blades must be mounted so that they turn in the same direction but they can turn either clocwise or anti-clockwise depending on the mounting chosen.***

. ***In order to permit the vegetation to fall on one side or the other you can mount the blades accordingly :***

Ejection to the side of the tractor

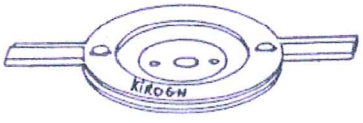
Ejection to the other side

. Cutting blades :

DOUBLE DISH WITH MOBILE KNIVES :

. EFFICIENCY :

Adapts in place of the saw blades, the double dish with mobile knives prunes annual growth. (green or dry wood).



. SAFETY :

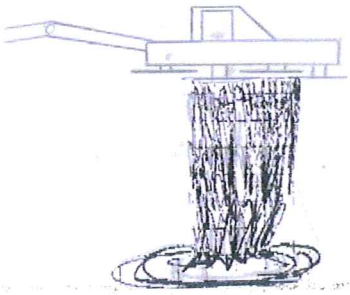
The dish is clamped, the knife can turn 360° on it's axle without hitting the central drum. The system allows the blades to retract in case of obstacles.

. SPEED AND QUALITY OF CUT :

With these dishes, your cutter will absorb an exceptional volume of vegetation while maintaining a fine quality of cut.

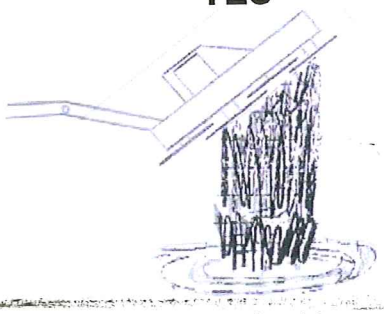
ADDITIONAL ADVICE

NO



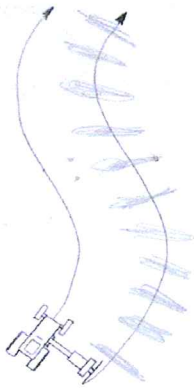
- *The weight of cut branches exerts excessive pressure on the blades.*
- *Risk of projection towards the tractor.*

YES



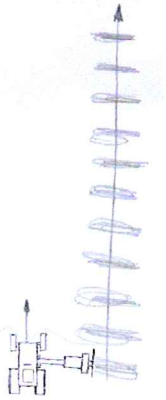
- *The ejection of cut branches is easier.*
- *Reduction of projections toward the tractor.*

NO



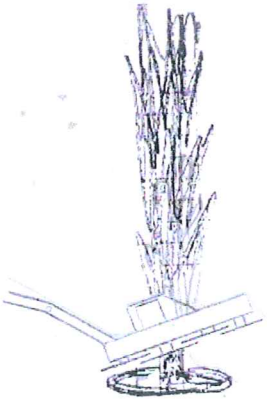
- *Risk of blade deformation.*

YES



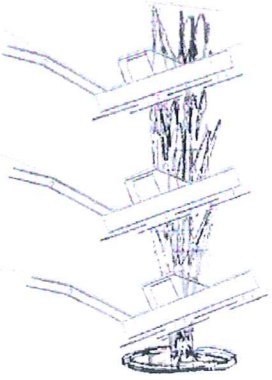
- *The forward progression of the blades must mark out a straight line, not a succession of curves.*

NO



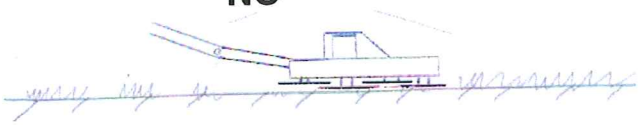
- *Never cut a hedge or branch at it's base.*

YES



- *If the hedge is more than 2 metres high lop it off in stages.*

NO



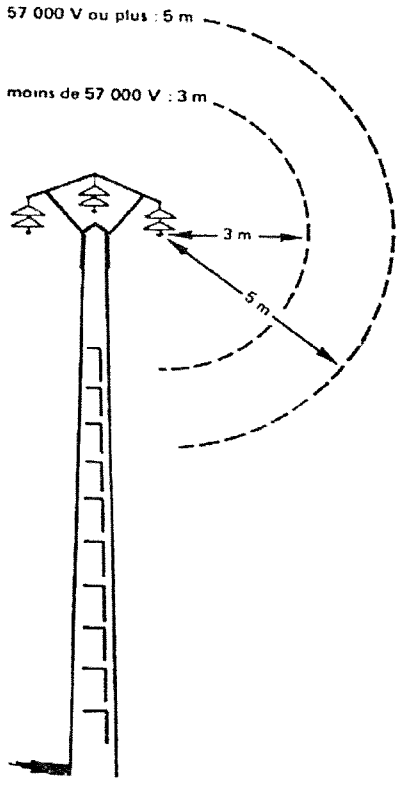
The cutter is not designed to work at soil level.

III) PREPARATIONS BEFORE STARTING WORK :

You must be absolutely sure that whilst preparing to use the cutting head and when working with it that there is no one in the proximity of the cutting equipment.

. Article : 172

- *Every business manager planning work besides electric lines or installations must inform the power supply company, who will instruct their local representative from the energy distributor, or the line owner or public or private installation owner to ascertain the power level in the lines or installations, in order to provide assurance that when carrying out work, personnel will not be at risk with tools, machinery, engines which they use, or any part of their material. Keep away from the harmful conducting parts normally under tension, and particulary at a distance of less than :*



a) three metres for lines or installations with high tension (value efficient for alternating current) existing in a normal regime between any two conductors less than 57000 V ;
b) five metres for lines or installations of high tension (value efficient for alternating currents) for any charge equal or larger than 57000 V.
A calculation must be made to determine the minimum distance between the power lines and the part which may receive a shock, in all cases, off all possible movements of conducting lines under power in pipework or electrical installations and also all movements, shifting, swinging, surging (notably in case of a rupture of a component) or possible branch falls during work.

IV) RISKS OUTSIDE THE CONTROL OF THE DESIGNER :

- *Inadequate forward speed selection with regard to the size of material to be cut ;*

- *Dangerous positioning or inappropriate use of blades ;*

- *Failure of energy supply in the circuit ;*

- *Failure or malfunction in the hedgecutter control system ;*

- *Overturning and unforseen destruction due to instability of the complete assembly ;*

- *Inadequate lighting in the work area ;*

- *Risks due to dangerous environment ;*

- *Inadequate vision from the drivers seat ;*

- *Inexperienced operator ;*

- *...*

This list is not exhaustive, nevertheless the aim is to bring to your attention the importance of safety and security during the use of this tool.

5

MODULARITY

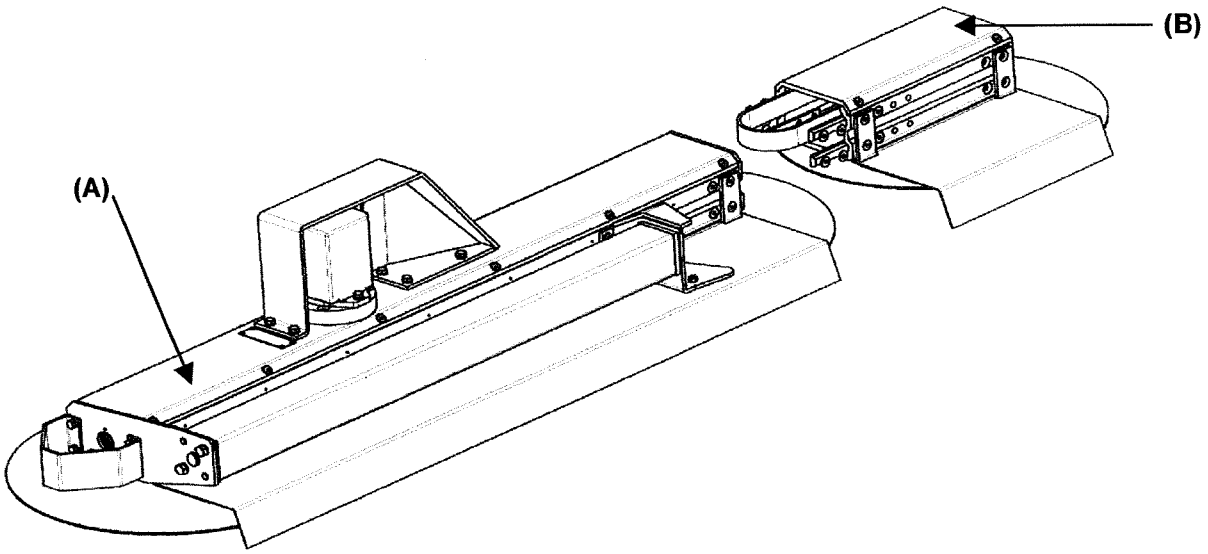
KIROGNS EXCLUSIVE PROCESS

I) WHAT IS THE MODULAR KIROGN CONCEPT ?

It provides you with the ability to quickly adjust the length of the blade assembly to suit the needs of the area being pruned by adding 1, 2 or 3 blades.

Thanks to a simple assembly design it is easy to add or remove additional cutting modules, enabling you to turn 4 blades into 5, or 4 blades into 6, and so on.

Your cutter is made of a basic module equipped with a hydraulic motor (A) onto which you can add an additional module (B).



II) HOW TO CHOOSE THE ADDITIONAL MODULES :

1) Consult your retailer : *he will be able to advise you on the various solutions with regard to adding additional modules.*
SAFETY : *.Adding a module increases the weight and length of your L.E.M.® cutter. Check that your hedgecutter or carrier arm is capable of supporting this extra weight without changing the the constructors safety and work requirements.*

.The constructor is the only one able to give this information. On request KIROGN will give you the module weight. *See also P.09.*

2)How to choose the right module :

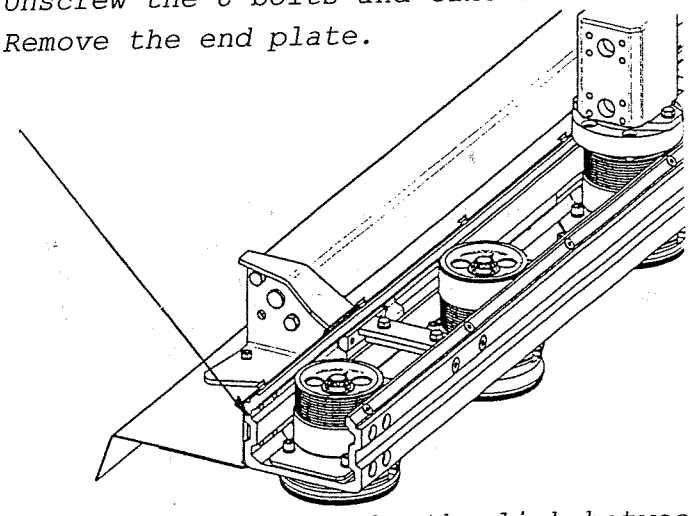
. This decision depends on the type of work to be undertaken.
. The cutter must be comfortable in it's workplace.
. BLADE DIAMETER : it is best to use a blade with diameter the same as ones on the base unit.

III) HOW TO FIT THE ADDITIONAL MODULE :

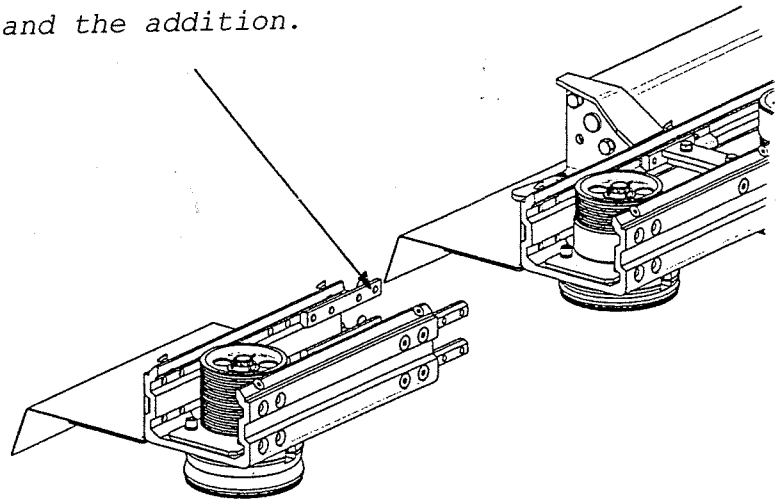
Fitting :

N°1 : *Unscrew the 8 bolts and take off the cover plate.*

N°2 : *Remove the end plate.*



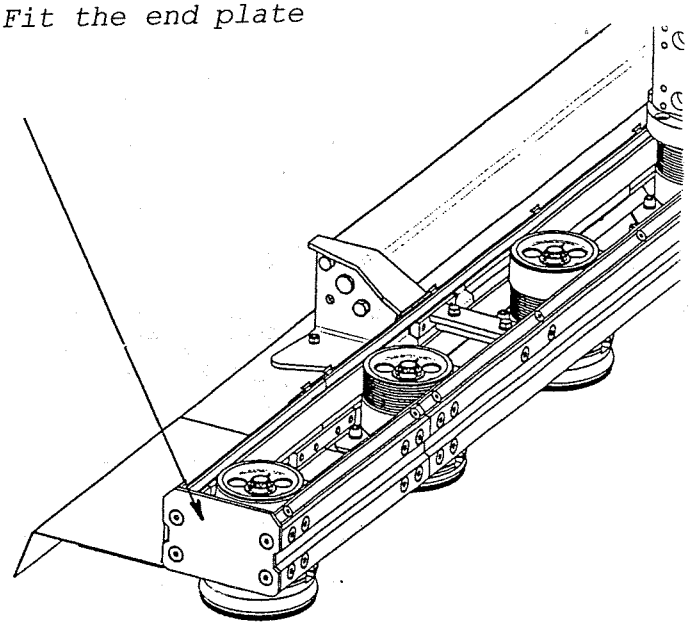
N°3 : *Fit the 4 bars to make the link between the basic module and the addition.*



N°4 : *Fit the additional module.*

N°5 : *Fit the belt then tension as shown page N°35.*

N°6 : *Fit the end plate*



N°7 : *Fit the top cover of the L.E.M.®.*

6

MAINTENANCE

I) MAINTENANCE :

NEVER SERVICE A MACHINE WHEN ITS RUNNING

MAINTENANCE AND SERVICE INTERVALS	FREQUENCY OF SERVICE	MAINTENANCE	
		BY USER	BY SPECIALIST
a) Check hoses, nuts and bolts	Every 2 hrs	X	
b) Clean interior and exterior completely	Every 8 hrs	X	
c) Grease the pulleys	Every 10 hrs	X	
d) Check belts tension	Every 8 hrs	X	
e) Check the movement of the dishes and swinging blades	Every 2 hrs	X	
f) Check the cutting blades	Every 1 hr	X	
g) Sharpen the saw blades	Every 8 hrs		X
h) Align the saw blades	Each sharpening		X
i) Check general blade condition	Every 10 sharpenings		X

This list is neither exhaustive or contractual, its only aim is to help service your equipment, in any case do not hesitate to contact our service department.

a) LUBRICATION :

LUBRICATION CONDITIONS

The cutter is lubricated when first made.

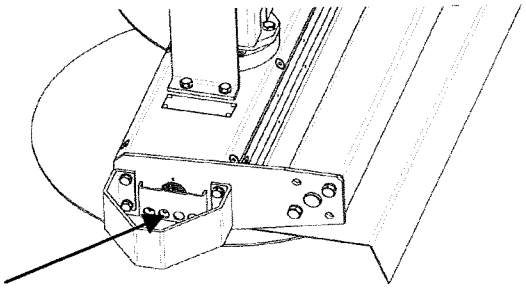
LUBRICATION INTERVALS

Every 10 hours of use.

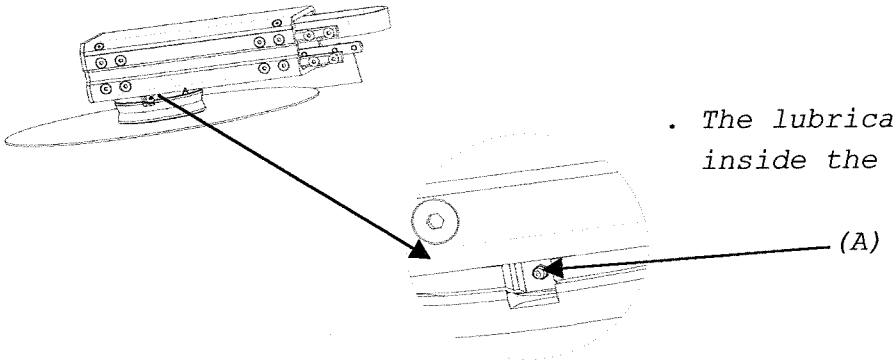
TYPE OF LUBRICATING PRODUCT

We advise you to use : type EP2 ISO : LXBCF B2

CENTRALISED LUBRICATION :



. *The L.E.M.® cutter is fitted with a centralised lubrication system for the base unit. If an additional module has been fitted it will not have centralised lubrication to it's bearing. Lubricate as shown below.*



. *The lubrication system is placed inside the flange (A).*

b) BELT TENSION :

IMPORTANT : ***It is imperative that the belts are tensioned after the first 8 hours of use.***
You may wish to obtain a tool which is designed to test the belt tension of the LEM®. It's a supplementary tool ref. n° 0496 0800.

TO TENSION THE BELTS :

1) *Loosen the 4 bolts on each of the bearing blocks but not the one on the hydraulic motor.*

2) *Start tensioning at the motor bearing and move out to both ends.*

3) *Tensioning is done with the tensioning screws placed inside each bearing block.*

4) *Have the belts rigid but not under tension.*
Make 2 marks on the belt, measure the distance between those 2 marks = 400 mm tension progressively up to 402,5 mm.

It is reccommended that the belt tension is checked again after having manually turned the belt around one circuit.

Do not forget to move the belt around the pulley while tensing.

c) DISH MAINTENANCE :

To optimise your return on the investment in KIROGN L.E.M.® cutter you must take care.

- *All maintenance work to be done with : cutter stopped, power source off and PTO disengaged.*

- *Before each work period check all bolts, screws and general condition of the machine.*

- *Knives on dishes must be free from any marks in order to maintain a clean cut. If this is not the case immediately change both blades per dish. We advise you to change bolts at the same time.*

- *Never sharpen knives, they have been heat treated and are balanced as specified by KIROGN.*

d) SAW BLADE MAINTENANCE :

To optimise your return on the investment in the KIROGN L.E.M.® cutter, regular sharpening and aligning is necessary.

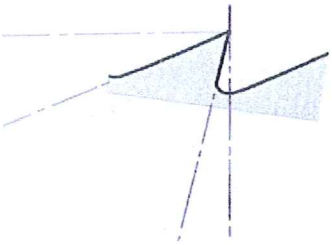
On average, depending on the various circumstances that you can meet, wood diameter, wood type, cutting period etc…, sharpening and condition checking may take place every 8 hours of work.

The saw blade can undergo deformation which will reduce performance. If this happen's, ask a saw blade specialist to check the blades and service accordingly.

e) ADVICE FOR MAINTAINING SAW BLADES :

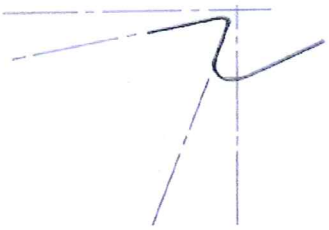
I) Sharpening :

YES



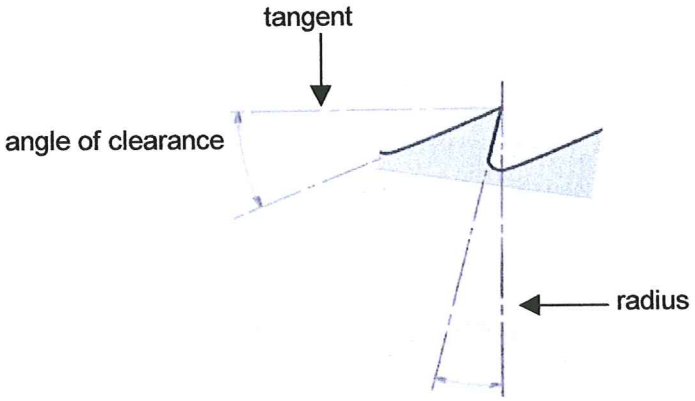
YES

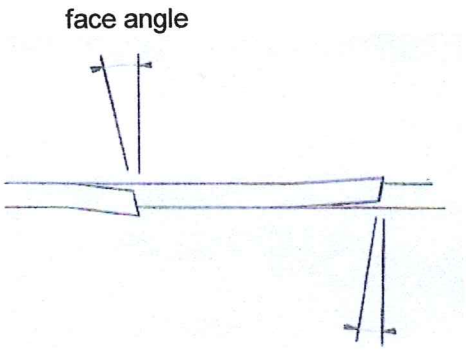
NO



NO

The saw teeth are sharpened very precisely to a shape that is in proportion to the angle of attack & the angle of clearance.





The recommended angle of attack must be set between 5° for cutting hard wood and 10° for cutting green wood.

The recommended angle of clearance must be set between 14° for cutting hard wood and 18° for cutting green wood.

The recommended face angle with alternating chamfers must be set between 5° for cutting hard wood and 15° for cutting green wood.

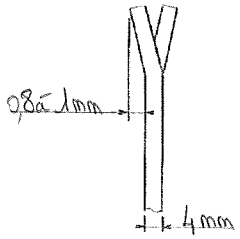
The quality of the cut and in the same manner the length of life of the blade depends to a great extent on respecting these values.

II) The set :

YES **NO**

This feature permit's the blade to clear a passage wider than the body of the saw. The alternating cutting faces also eject the saw dust away from the machine and enhance the work rate.

To obtain a clean cut and also to lessen the possibility of friction and vibration between the blade and the wood the set is indispensable.



The blades diam.600, 650 and 700 having a body width of 4mm must have a set of between 0.8 and 1mm to each side.

III) Structural strength and stability :

The two service operations of sharpening and setting will help to keep the blades in good condition. Vibration, bending and stretching can be avoided.

Servicing can be carried out by a specialist saw sharpening workshop.

As a first'in the field' check, lay a straight edge against the blade and look for contortions.

Secondly tap the blade with a hammer and listen to the ring note and lenght. It should ring like a bell, if not, further inspection is required.

YES **NO**

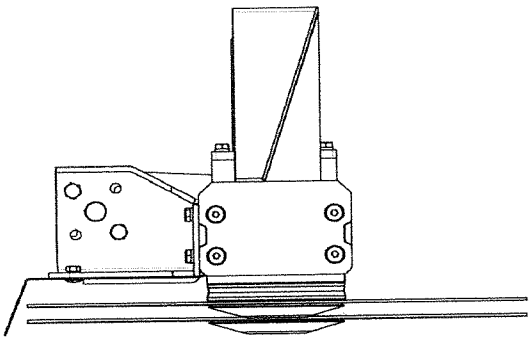
II) EMERGENCY REPAIRS :

NEVER WORK ON THE L.E.M.® CUTTER WHEN THE MOTOR IS RUNNING

a) PLACE THE L.E.M.® CUTTER ON THE FLOOR :

All maintenance to be done with the L.E.M.® cutter on a wooden pallet laying on a flat surface.

Use appropriate lifting devices.
Protect hands with gloves.



Saw blades must never be in direct contact with the wooden pallet or the floor otherwise you may bend them.
(the protective rear cover does not eliminate possible distortion of the blade).

b) FAILURE IDENTIFICATION :

POSSIBLE FAILURES	CAUSES & REMEDY
Hydraulic motor joint leaking	*Change the joint after checking the drainage circuit (max.pressure 0.7 K in continuous flow)*
Belts "jumping"	*Tension belts as shown in manual*
"Regular purr"	*Check lubrication* *Change bearings*
Irregular noise as "Tac-Tac" with speed variation depending on rotation speed	*Check pulley, check bearings*
Numerous stops of the cutter while working	*. Check blade sharpness* *. Check pressure on limiter "150 bar"* *. Check rotation speed 2200 RPM*
Heating up of the bearing blocks	*Check that there are no foreign bodies in bearing blocks*
Noisy hydraulic motor when starting or stopping the cutter bar	*Engage and disengage the motor at low speed*
White smoke from the cutter body	*Tension belts*

This list is not exhaustive, nevertheless the aim is to facilitate dectection of technical problems. Do not hesitate to consult our technical department.