PREDATOR

TREE STUMP GRINDERS

POWERFULCOMPACT

50

Serial no.

Safety Operating & Service Instructions

Tracked Tree Stump Grinders

Last updated Feb 2007 PW

ENGLISH

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CE DECLARATION OF CONFORMITY

This is to confirm that the machine entitled *PREDATOR 50* conforms with the essential health and safety requirements.

Description of machinery:

Self powered intended to grind away tree stumps & surface roots.

Model: AP/50SG06/TR

Serial No.

Relevant directives complied with by the machine:

The Machinery Directive 89/37/EC

Harmonised Standards:
BS EN 292-1: Safety of Machinery.
Basic Concepts, General Principles for Design:
Basic Terminology, Methodology.
BS EN 292-2: Safety of Machinery. Basic Concepts, General Principles for Design: Technical Principles & Specification.

Business name and address of 'responsible persons':

Arborplant The Log House, Kiln Lane, Binfield Heath, Oxon RG9 4EN.

Authorised persons empowered to sign:

P Watts (MD)

Positions in company:

Director, Production Manager

Signature: **Date:**

INTRODUCTION.

Congratulations for purchasing your Predator tree stump grinder. If you have any questions regarding the operation or service of the machine, please contact your supplying dealer.

PURPOSE OF MACHINE.

The Predator tree stump grinder is designed to grind away tree stumps of any diameter from above ground level to below ground level.
By the nature of its function the cutter on this machine has been designed to tolerate a certain amount of contact with soil, vegetation and other natural material that may be found around the
base of a tree. It is not however designed specifically to cut through soil or materials other than timber. To ensure the maximum life of the cutters and to keep the cutters sharp, contact with soil, rock, flint brick and other hard materials around the base of the tree stump should be kept to an absolute minimum.

Our tree stump grinders are designed to give safe and dependable service if operated according to the instructions.

This manual contains important health and safety information and explains the machine controls. Read and understand this manual before operating the tree stump grinder. Take the time to familiarise yourself with the machine controls before attempting to operate it and slowly build upto operating the machine at its full capability. Failure to do so could result in personal injury, death, equipment damage, damage to property, or injury to a member of the general public.

Ensure that all operators are adequately trained for operating this machine especially with safe working practices.

This manual covers the operation and general maintenance of the machine. All information in this manual is based on the latest product information available at time of publication.

NOTE -Also supplied with this manual is an engine manual, registration card, COSHH for the battery.

All the information you need to operate the machine safely and effectively is contained within this manual and the engine manual.

Arborplant's policy of constantly improving their products may involve major or minor changes to the machine and therefore reserve the right to make changes at any time without notice and without incurring any obligation. This policy may result in minor discrepancies between the actual Tree stump grinder and the text in this manual.

NOTE
THIS MANUAL SHOULD BE CONSIDERED A PERMANENT PART OF THE MACHINE AND SHOULD REMAIN WITH THE MACHINE IF RESOLD.

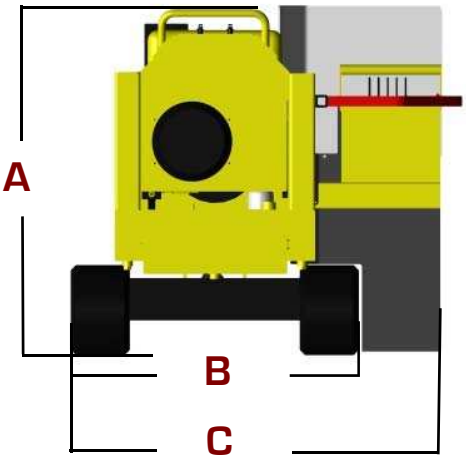
SPECIFICATIONS.

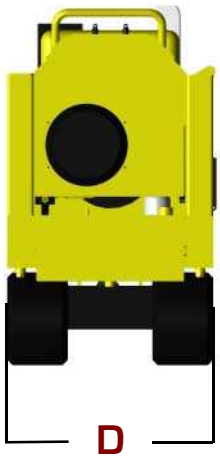
ENGINE - Hatz 50hp / 37Kw, air cooled, 3 cylinder, electric start, diesel silent pack engine.

ENGINE OIL - Refer to Engine Manual

ENGINE FUEL - Ordinary diesel fuel should be used with this engine. DO NOT mix any additives. Read the engine manual for full details.

FUEL TANK CAPACITY	30 Litres
HYDRAULIC TANK CAPACITY	60 Litres. Type AF45
CUTTER WHEEL RPM	1800 (+/- 200)
LENGTH	2650mm
WIDTH (C)	1500mm
WIDTH (D)	780mm
WIDTH (B)	1160mm
HEIGHT (A)	1500mm
WEIGHT	1500 Kg
CUTTING DEPTH	480mm
CUTTING HEIGHT	650mm
SLEW	1300mm
CUTTER TEETH	8
TIPS per cutter.	4
CUTTER WHEEL DIA.	570mm.





SERIAL NUMBERS.

Serial numbers relating to the Predator tree stump grinder can be found on the main chassis on top of the machine.

Serial numbers relating to the engine can be found on the side of the engine.
Under no circumstances should any of these numbers be removed or defaced in any way.
These numbers should be quoted in any correspondence with your supplying dealer.

NOTICES.

Whenever you see the symbols shown below, heed their instructions! Always follow safe operating and maintenance practices.

DANGER.
This danger symbol indicates potential danger situations that can quite probably cause severe injury or death if the danger is not avoided and can also cause serious damage to machinery.

WARNING.
This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in severe personnel injury.

CAUTION.
This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to, or destruction of, equipment.

IMPORTANT.
This message is used in situations where failure to take due measures can shorten the working life of the machine.

NOTE.
This note symbol indicates points of particular interest for more efficient and convenient operation.

PUTTING INTO SERVICE.

All Predator machines have a full pre-delivery inspection before leaving the factory and are ready to use. The teeth might show signs of use. This is part of pre delivery tests. Read and understand the instruction manual and become familiar with the stump grinder controls before attempting to operate the machine. Ensure that all operators are adequately trained for operating this machine especially with safe working practices.

New machines can require slight adjustments to pressure settings after a few hours of use. If this is the case follow procedures within this manual or contact your supplying dealer.

SAFETY INFORMATION.

FUEL.

DANGER

Diesel fuel can be injurious to the skin - wash off as soon as possible. If taken internally seek immediate medical attention. Refer to your local fuel supplier for MSDS leaflet.

Store diesel only in approved containers, in well ventilated, unoccupied buildings away from naked flames. Do not fill the fuel tank while the engine is running.

EXHAUST FUMES.

DANGER

Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odourless, colourless and can cause death if inhaled.
Avoid inhaling exhaust fumes and never run the engine in a closed building or confined area.

HOT PARTS.

DANGER

Engine components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running - or immediately after it is turned off.
Never operate the engine with heat shields or guards removed.

ELECTRICAL SHOCKS.

DANGER

Never touch electrical wires or components while the engine is running - they can be sources of electrical shock.

ROTATING CUTTER.

DANGER

When the engine is turned off the cutter wheel could continue to rotate for a short while.
The teeth are sharp and could cause damage or injury even whilst not in motion.

BATTERIES.

DANGER

Batteries contain Acid which is corrosive and poisonous.
Handle battery with care - if splashed there is a risk of burns and / or serious damage to eyes.
Wash affected area immediately with lots of clean water and seek medical advice.
Read the battery MSDS sheets as supplied.

EXPLOSIVE GASES.

DANGER

Explosive gases given off from battery, keep sparks and flames away.

PERSONAL SAFETY.

The following personal protective equipment (P.P.E.) must be worn by the person operating this machine and also all personnel within a 20 metre radius of the machine.

Forestry safety helmet to EN 397 fitted with steel mesh visor to EN 166 and full ear protection to EN 352-3.

Heavy duty gloves to EN 388.

Close fitting heavy duty non snag clothing and steel toe protection boots to EN 345.

Dust mask if the ground is very dry.

NOISE.

WARNING

Noise levels of 103 dB(A) have been recorded at the working position.

VIBRATION

WARNING

As required by the supply of Machinery (Safety) Regulations 1992, this unit has been designed to reduce the risk from vibration (and noise) to the lowest level.

The nature /variation of working conditions makes definite rms acceleration values incalculable, but it is understood that the acceleration level over an 8 hour day (A(8)) is lless than 2.5m/sec ^{2}

In order to reduce the effects of vibration, the following points ought to be adhered to:

Keep hands warm.
Exercise hands and fingers regularly during work.
Minimise the grip strength on the controls
Break up the working periods, if possible
Maintain the equipment – as instructed

SAFE OPERATION.

MANOEUVRING ON SOFT GROUND.

Avoid driving on very soft or unstable ground. The machine could sink, slide, slew or turn over.

INCLINED SURFACES.

WARNING

Manoeuvring on inclined surfaces is dangerous. Expand the track base and reduce the manoeuvring speed in order to avoid the risk of tipping the machine over and skidding.

As far as possible avoid turning on inclined surfaces. When you have to turn on slopes, try to do it on solid, non slippery sections.

Avoid traversing along steep slopes, since there's always the danger of overturning the machine.

This machine is rated to climb slopes of up to 20°. Operating on slopes is undertaken at users risk.

Before trying to go up a slope, make sure that the engine and the hydraulic system has reached normal operating temperature. This will help prevent stalling.

CLOTHING.

WARNING

DO NOT wear rings, bracelets, watches, jewellery or any other items that could be caught in the machine controls. Always wear full protective clothing.

SMOKING.

WARNING

DO NOT smoke when refueling.

CHILDREN.

WARNING

DO NOT allow children or anyone who has not received instruction to operate the machine.

CLIMBING.

WARNING

DO NOT climb on the machine at any time.

SAFETY OF THE GENERAL PUBLIC.

WARNING

The Stump Grinder Cutter can eject debris at high speed - always maintain a 20 metre exclusion zone for the general public.

SAFE AREA.

WARNING

Maintain the 20 metre exclusion zone as a safe working area around yourself and the stump grinder. Keep this area clear from debris build up. Mark the area out with hazard tape. Keep the area clear of animals as well as people.

KEEP CLEAR.

WARNING

All operatives must keep well away from the cutter when the engine is running.

STARTING.

CAUTION

Always start the engine in the open air and allow to warm before operating.
Never operate the starter key for more than fifteen seconds at one time.

EMERGENCY STOPPING.

Push the RED STOP button and turn the ignition key to the off position.

SAFE USE.

WARNING

Prior to starting cutter ensure the front control panel is rotated and securely located into its position for cutter control. Ensure cutter guards are fitted, secure and intact.

With the engine switched off visually inspect the cutter wheel and ensure that there is no obvious damage to the cutting teeth, that all teeth retaining bolts are tight and that there is no debris trapped in the cutting teeth. Under no circumstances must the engine be running or the ignition key be in the ignition switch whilst you carry out this inspection.

ALWAYS ENSURE THAT THE CUTTER ARM IS IN THE UP POSITION AND CLEAR OF ANY OBSTACLES BEFORE TRYING TO DRIVE THE MACHINE OR BEFORE SELECTING THE CUTTER.

HAZARDOUS BRASH.

WARNING

Some species of trees and bushes are poisonous and can irritate the skin or give respiratory problems. DO NOT work in confined areas and if in doubt wear a respiratory mask in addition to the P.P.E already described. Seek professional advice if you are unsure what you are dealing with.

DUST

WARNING

If the ground is very dry, a large amount of airborne dust might occur. In this situation a respiratory mask should be worn.

WARNING

P.P.E.

There can be some reduction in vision and hearing and it gets hot when wearing personal protective equipment for long periods - take regular breaks.

STOPPING.

CAUTION

Always stop the engine and remove the ignition key before making any adjustments, refueling, or cleaning.

WARNING

SAFE CUTTER.

Remove ignition key to avoid accidental starting. Ensure cutter wheel has stopped rotating before undertaking any maintenance or adjustments to the machine.

WARNING

SPEED.

When being driven, the stump grinder can move and turn with surprising speed.

Be aware of the size, shape and weight of the stump grinder when operating the track control levers. This is particularly important to bear in mind if you are driving the unit in a public area.

Always operate the track controls carefully and gently.

Be aware that the stump grinder is a powerful machine and moves with considerable force.

TRANSPORTING THE MACHINE.

The stump grinder can be transported to site either on a trailer or on a low bed truck.

MOVING MOUNTED ON A TRAILER.

WARNING

When manoeuvring by hand always use the jockey wheel. Do not attempt to support the weight of the draw bar yourself.

If moving the trailer and stump grinder off of the vehicle draw-bar, ensure the hand brake is on and
(if fitted) the rear jack stand is in the down position and the trailer wheels are chocked prior to attempting to move the stump grinder from the trailer.
If working on a gradient always ensure trailer wheels are adequately chocked. Failure to do so may result in the over centre brakes de-activating and allowing the trailer to roll. Turn the trailer to an appropriate position and chock both wheels.
Do not move the trailer with the stump grinder engine running.

LOADING THE MACHINE.

WARNING

Always perform the machine loading and unloading operation with the low bed truck parked on a solid and level surface.

Remember to use a purpose designed ramp or a loading platform for loading and unloading the stump grinder. The ramp must be strong enough to support the weight of the machine. Make sure the slope of the ramp is less than 20°.

Before loading the machine be sure to thoroughly clean the ramp and the bed. Ramps or beds that are dirty with oil, mud or ice are slippery and dangerous.

SLOPES - under 20º

WARNING

Avoid steering when going up or down the ramps since this can be extremely dangerous. If it is absolutely necessary to steer, first drive the machine back down to the ground and off the ramps or back onto the vehicle / trailer bed and then change the direction of travel and start back up or down the ramp again.

Never operate any control levers except for the drive control levers when going up or down a ramp. Actuating other levers can cause the machine to become unbalanced and tip over.
The machine will pivot on its tracks with a see-saw type action as it is driven over the point where the ramp meets the trailer / vehicle bed. Be careful when going over this point. Drive slowly on ramps.

Always ascend and desend steep slopes with cutter wheel up hill.
It is not reccomended to work on slopes more than 20º

STRAPS & CHAINS

WARNING

Fasten retention chains, straps or cables to the machine chassis. Do not put chains, straps or cables over or against hydraulic hoses. Make sure that chains , straps or cables do not cause damage to rubber tracks.
Fasten each corner of the machine and fasten the front arm to the trailer / vehicle bed with a chain / strap or a suitable anchor.

OPERATION INSTRUCTIONS.

BEFORE STARTING ENGINE.

CAUTION

Ensure that you have read and understood this manual.

Check engine oil level. Top up if necessary.

Check diesel.

Check hydraulic oil level.

Visually check around the machine for fuel, oil, & hydraulic oil leaks.

Ensure the engine cover, cutter guard chains and rear access cover are in place and tightened securely.

Inspect the cutter wheel to ensure no foreign objects or dangerous matter are trapped in the cutters and that the cutter retention bolts are tight and that the cutters are in generally good condition.

Ensure that the cutter wheel bolts are fitted and tight.

Ensure that cutter wheel is not touching or is obstructed by anything and that there are no operators, personnel, members of the public or animals in close proximity to the machine.

Observe the condition of the terrain / surface under the machine and on which you (the operator) are standing and make sure that you are confident that you are going to be able to maintain full control of the machine on this terrain / surface.

STARTING THE ENGINE.

Ensure red emergency stop button is out. Twist cutter mode button to start mode. Turn ignition key one position clockwise. Wait till lights stop flashing. This is the preheat mode and will vary depending on ambient temperatures.

Then turn further to engage starter motor. Once the engine starts, let go of the key to allow it to spring back into its normal running position. See Engine Manual for further information.

USE OF RUBBER TRACKS

CAUTION

Avoid manoeuvring on hard, stony and uneven surfaces such as rock, gravel, etc.
Avoid keeping the rubber tracks in direct sunlight for more than 3 months.
Avoid excessive steering manoeuvres on asphalt and concrete surfaces since these cause excess pad wear. Avoid driving on asphalt surfaces when their temperature exceeds 60°C since this causes both excess pad wear and damage to the asphalt surface.
Manoeuvres with a loose track on an irregular surface can cause the pad to detach and /or damage to the rubber track.
Rubber tracks are designed only for use on soft terrain, not for hard and abrasive surfaces such as sand, stone, minerals, etc. Use of rubber tracks on these surfaces can cause premature wear and deformation hence reducing the useful life of the tracks.
Avoid contact between sharp concrete edges etc. and the rubber track.
Fuels or synthetic oils must never come in contact with the rubber track. If this does happen then they must immediately be cleaned.
Avoid using rubber tracks in marine and seaside environments since saline air or salt in general corrode adhesion between rubber and metal inner core.

OPERATING INSTRUCTIONS. (If radio control, refer to the next section for controls)

Do not use or attempt to start the stump grinder without the cutter guards, engine covers and access covers securely in place. Failure to do so may result in personal injury or loss of life.

Start the stump grinder following the correct starting procedure. Check that the engine is running smoothly.
If it is not stop and investigate.
Once the engine is warm and you are ready to start driving.
Pull the cutter lift lever backwards to ensure that the cutter arm is at its highest position.

Use the track control levers at the rear of the machine to drive the stump grinder in the desired direction.

Pushing both track levers forwards at the same time drives the stump grinder forwards.

Pulling both track levers backwards at the same time drives the stump grinder backwards.

Pushing the right track lever only turns the machine to the left.
Pulling the right track lever only turns the machine to the right.
Pushing the left track lever only turns the machine to the right.
Pulling the left track lever only turns the machine to the left.

1. Right track
2. Left track

With practice a combination of these lever movements can be used to gain accurate proportional driving and steering control.
Position the stump grinder directly in front of the stump with the cutter directly over the front edge of the stump.

DANGER

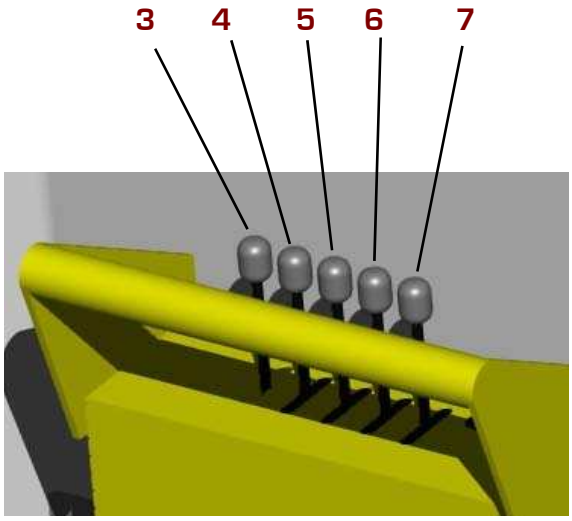
Before starting the stump grinding operation check the area around the base of the tree stump is clear of any foreign objects such as cloth, string, plastic, glass, rubber, stones, bricks, metal, or any other materials that could be picked up and ejected by the cutter.

Use the tracks expand lever to fully expand the width of the tracks to their outermost position. Pushing the lever forwards will expand the track base.

TRACK WIDENING **CAUTION**

Take care when widening or narrowing the tracks. Obstacles e.g. stumps, walls etc, could cause unnecessary wear to the rubber tracks and its mechanism and could also cause a track to come off. Also take care that no people or obstacles may be caught between the tracks and the machine or between the tracks and other obstacles.

Make sure the control panel is fully open and locked in position so the control panel cannot move.



3. Lift / Lower
4. Variable width
5. Left track
6. Right track
7. Slew

Use the cutter slew lever to slew the cutter to the left or the right so that it is clear of, and to the side of, the stump.
Pushing the lever forwards will slew the cutter to the left.
Pulling the lever backwards will slew the cutter to the right.

Use the cutter lift / lower lever to lower the cutter down until it is just below the level of the top edge of the tree stump ready for the first cut. ensure that the cutter wheel is to the side of, and clear of the stump.

Pulling the lever backwards will raise the cutter.
Pushing the lever forwards will lower the cutter.

The possible depth of cut will vary based on the type of tree stump and its condition. I ie. hardwood or softwood, wet or dry, fresh cut or old and decayed. It is recommended that the first cut is considered a test cut and as such the depth of this cut should be kept to a minimum, i.e less than 25mm (less than 1"). Based on the performance of the first cut the depth of the next cut can be increased or reduced. Maximum depth of cut is 65mm. (2.5") See Figure 1 on page 16 for the start position.

Make sure the control panel is locked in place. All guards and screens fitted to the machine must be in place and intact. Further guards might be required to protect third party property.

Position yourself near the machine at the main control panel and atatch the safety strap as shown making sure the key is plugged into the holder. Safety helmet, visor and ear defenders must be worn along with steel toe cap boots, heavy full length trousers and gloves. When the cord is pulled out accidentally or deliberately the cutter wheel will stop.

Use guards to protect property, vehicles and people from flying debris.

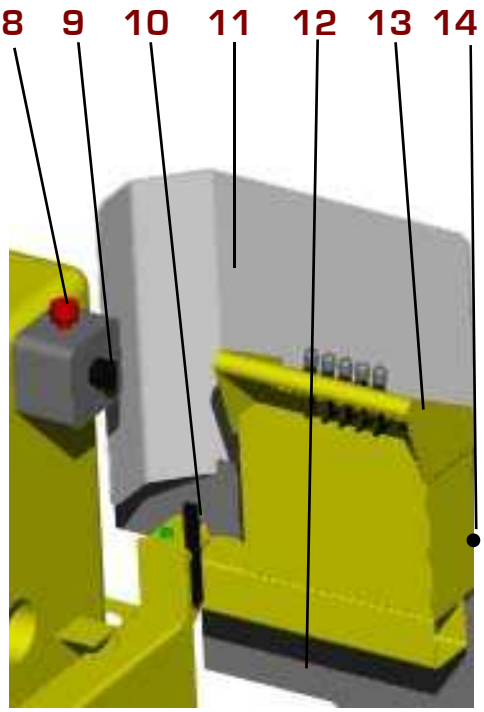
Turn the cutter selection button clockwise one step. The cutter wheel will start rotating. Use the manual lever to increase the engine revs

Use the cutter slew lever to carefully and slowly slew the cutter across the front of the tree stump taking the first cut. If the machine becomes excessively noisy or an excess of vibration or obvious resistance to cutting is experienced stop cutting immediately and back the cutter away from the tree stump. Turn off the engine and investigate the cause.

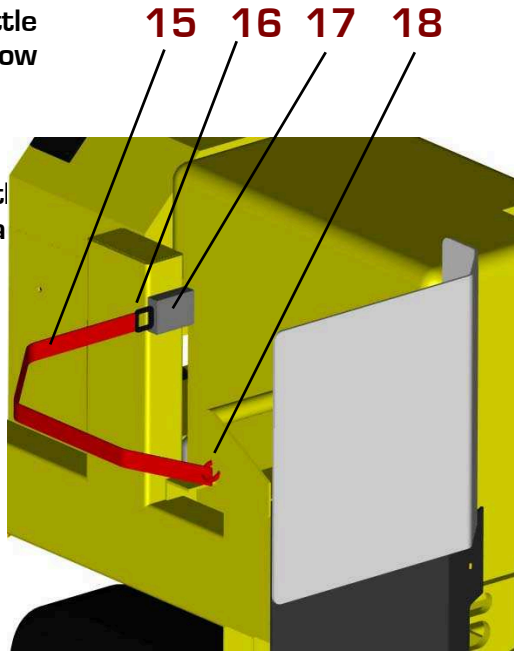
The slew speed of the cutter can be adjusted by turning the slew speed control knob.
Turning the knob clockwise will reduce slew speed.
Turning the knob counter clockwise will increase slew speed.

After completion of the first cut, i.e when the cutter has passed completely across the tree stump and is clear of the opposite side of the stump, the arm can be lowered a little by pushing the lift/lower lever forward. The machine is now ready for the return cut in the opposite direction.

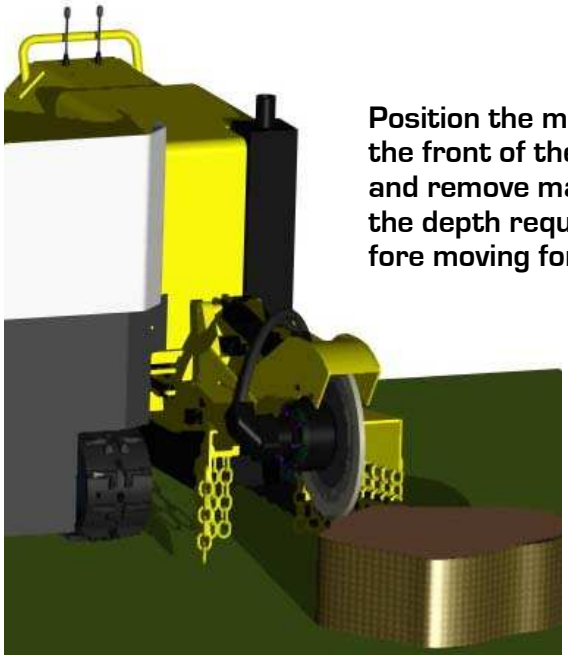
Repeat this until the desired depth is achieved. Then lift t arm to a height above the stump, inch forward using the tra levers and start the whole process again.



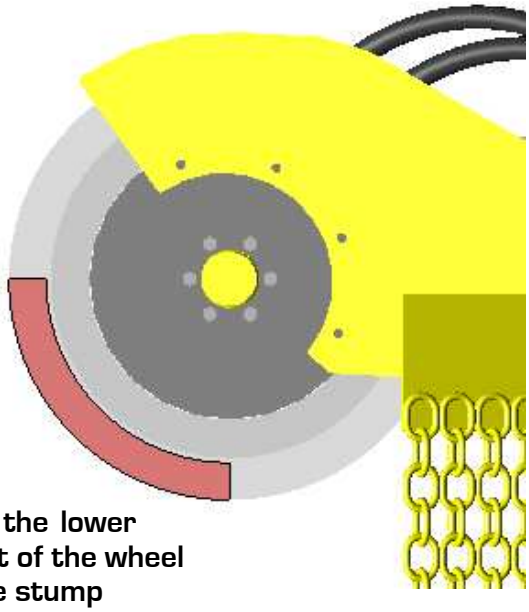
8. Emergency stop button
9. Cutter engage switch
10. Control panel lock
11. Polycarbonate screen
12. Polyurethane mat
13. Control Panel
14. Slew speed knob
15. Safety cord
16. Safety Key
17. Key holder
18. Safety cord fixing



Careful attention should be paid when cutting at ground level to avoid the cutter making contact with large stones or solid objects that may be unearthed by the grinding process. When such objects are identified the cutting /grinding process should be stopped, the machine switched off with the ignition key removed and the objects removed from the cutting area before the cutting / grinding process is restarted.
To stop the cutter wheel rotating reduce the engine speed and turn the cutter selection switch counter clockwise.



Position the machine at the front of the stump and remove material to the depth required before moving forward.



Use only the lower front part of the wheel to cut the stump

EMERGENCY STOPPING

Push the RED STOP button. Turn off ignition key.
To release the emergency stop button, twist counter clockwise.

BLOCKAGES.

It is possible that foreign matter such as hard soil, clay, stones or pieces of timber may become trapped between the cutter wheel and its cowl either slowing or stopping the cutter. This will be accompanied by the engine starting to labour and excessive noise from the hydraulic system. If this happens proceed as follows:

Stop the cutter wheel by turning the cutter selection switch.
Stop the engine, remove ignition keys. Ensure cutter wheel has stopped turning.
Carefully try to rotate the cutter wheel backwards by hand to release the trapped object.
Remove any objects trapped between the cutting teeth and /or trapped inside the cutter cowl.

Thoroughly inspect the cutter wheel and make sure that there is no damage to any of the cutting teeth and that all cutting teeth retention bolts are tight and secure. Replace any damaged cutting teeth.
Restart engine and proceed carefully with grinding operation.

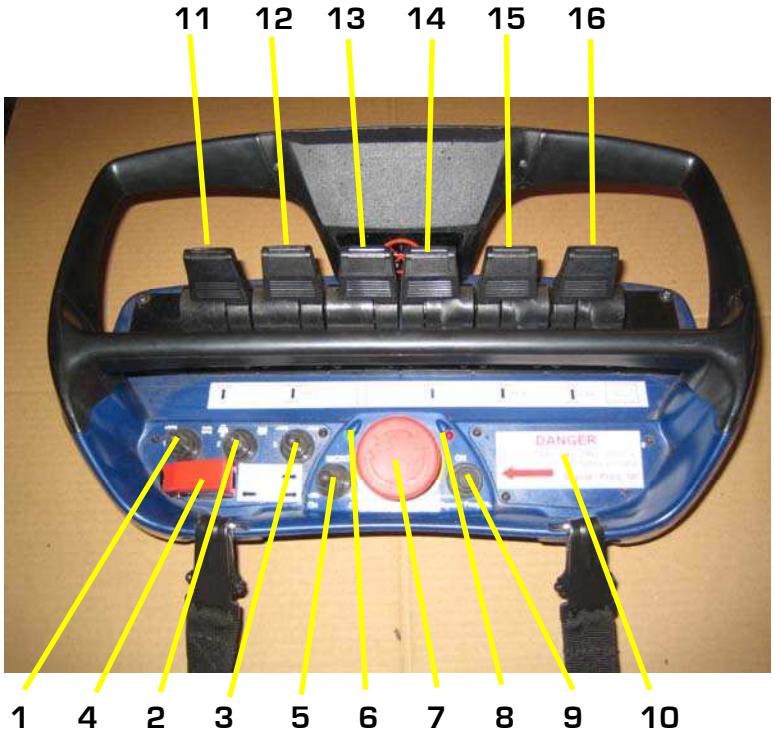
Radio Control (option)

Unauthorized tampering with the radio control system automatically invalidates warranty

The radio control unit is highly sophisticated and offers fine control to the movements of the machine. Fine tuning of the controls can be made only by a qualified technician or under his instruction.
The manoeuvre levers give fully proportional operation and are sprung loaded to return to zero position, i.e. "dead-man's-handle". When the manoeuvre levers are moved from zero position the respective hydraulic function starts to operate slowly and increases in speed as the lever is moved further from zero position and vice versa as the lever is moved back towards zero position.
For safety reasons all manoeuvre levers must be in their zero/neutral positions for a start-up to be made. If any lever is not in its zero/neutral position during start-up, the control unit will blink and beep the same number of times as the number of the lever to indicate which manoeuvre lever is faulty. The control unit can be used but the faulty lever will be locked and disengaged. (eg. if it beeps and blinks five times, it is the 5th lever from the LEFT which is faulty or giving the problem signal).
The micro speed button (5) slows down all the movements. This return sprung switch can be used to reduce the operating speed.
With impulses from the sprung loaded toggle switch to the left, *towards ON (tortoise)*, reduces speed. Movement of the switch to the right, *towards OFF (hare)*, will produce 100% movement once again. Green LED : Flashing - speed reduction. Not flashing - normal speed .

The large red emergency stop button (7) turns off the radio control unit when pushed in. It also stops the cutter wheel. IT DOES NOT STOP THE ENGINE ON THE MACHINE. *The main emergency stop switch is located on the machine.* Twist the switch (7) clockwise until it springs out, then push the On button (9) to turn the unit on. The red LED light (8)will show that the unit is on.

1. **Blank (future requirements)**
2. **Engine stop switch**
3. **Blank (future requirements)**
4. **Cutter switch with safety cover**
5. **Micro speed selection switch**
6. **Green LED**
7. **Emergency stop**
8. **Red LED**
9. **On/Signal/Freq shift**
10. **DANGER**
11. **Arm lift / lower lever**
12. **Left track forward / back**
13. **Blank (future requirements)**
14. **Variable width**
15. **Right track forward / back**
16. **Slew left right**



DANGER

Switch **(4)** is the cutter selection switch. This must be in the off position to start the machine.

Switch **(2)** will cut the engine on the machine when pushed either left or right. The control unit must be ON and synchronized in order for this or any other controls to work.
Levers **(11, 12, 13, 14, 15, 16)** are all proportional and operate in the same way as described earlier in the manual. Switches 1,3 and lever 13 are used either for spares or future requirements.

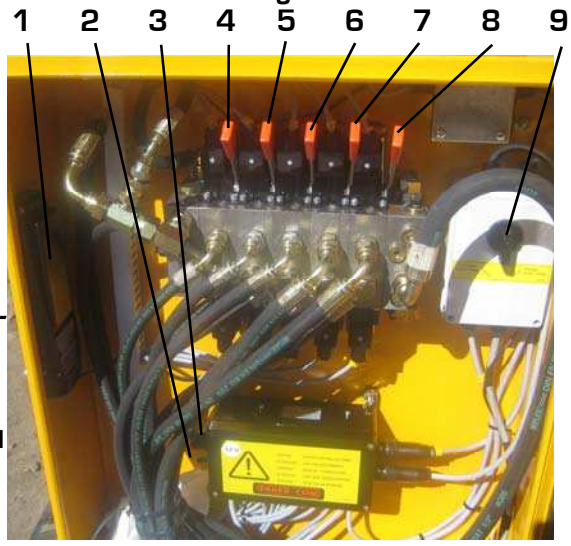
Operating Instructions

Place a newly charged battery in the radio control unit.
Start the grinder at the main ignition on the machine.
Twist out the emergency stop switch on the radio control unit.
Switch (4) is the cutter selection switch. This must be in the off position.
Press ON/SIGNAL/FREQ.-SHIFT (9), and the red LED will light continuously.
The grinder is now ready for operation.
The operator must be aware of all manoeuvre lever and switch functions before operation is started.
The emergency stop on the control unit stops all operations from the unit.
The emergency stop on the machine is the main emergency stop switch which also stops the engine.
The switch (2) on the control unit stops the engine but the control unit must be on and in signal.
The emergency stop on the control unit should always be in the depressed position whenever the unit is not in use. This applies even for short stoppages, for example, if the operator wishes to move.

Stand at least 3 metres from the machine if possible. If the cutter wheel of the machine is at position 12 on a clock in plan view, the best position to stand is either 10 or 2.
Make sure nobody else is within 20 metres of the machine.
Wear all PPE as described earlier in the manual.
Only engage wheel when it is safe to do so.
Follow operating instruction set out earlier in this manual for grinding.
When finished switch off cutter wheel with button (4) and then switch off engine with button (2). Then push red stop button on the radio control unit. Then turn off the ignition on the machine.
Store the radio control unit in a safe, dry place away from vibration, dust and high temperatures.

Control Cabinet

Open the control cabinet/cowl door to access the lever control, radio receiver and battery charger.
On the right hand side of the receiver is a switch, plug socket and some LED lights.
The switch should remain in the radio control position at all time, which is towards the door.
The plug (2) is for attachment of the cable for operation if the radio controls fail. It is also used for setting up the controls for fine adjustment.
The battery charger charges the spare battery whilst the machine is running.



1. Spare battery and charger.
2. Radio control on switch.
3. Plug for cable use
4. Manual lift lower lever
5. Manual slew lever left/right
6. Manual variable width lever
7. Manual left track forward/back
8. Manual right track forward/back
9. Cutter engage/disengage switch *for use during manual operation. Must be disengaged to start machine.*

It is highly recommended that use of the manual controls is only as a last resort to finish a job if the remote controls packs up and the controls with the use of the cord also fails.

BATTERY CHARGER AND BATTERY CHARGING.

There are two chargers available with the machine. One is located inside the control cabinet. The other option is 240V. The battery pack is rechargeable and of Nickel Cadmium (NiCd) type. The normal charging time for an empty uncharged battery, is approximately 12-14 hours. The battery charger is constructed so that no damage will occur from long continuous charging. The batteries effective operation time is about 8 hours on one charge.
When the battery is approaching time for charging, the control unit beeps three (3) times as a warning and at the same time the LED starts to blink on the control unit. The battery must be used until the LED goes out, after which it can be changed. If the battery capacity is too LOW the control unit cannot be activated.
In order to reduce battery loading and for safety reasons, the control unit is turned off automatically, after the unit has been idle for more than approximately five minutes.

MAINTENANCE.

DANGER

Always immobilise engine, let engine cool down and remove ignition keys before undertaking any maintenance work on the machine.

VIBRATION

WARNING

Stump grinders are machines that are subject to vibration. Be aware that vibration can work nuts and bolts loose. Check periodically all fixings for security.

PARTS

CAUTION

Only fit genuine MultiTip cutters and retaining bolts.
Only fit genuine engine spares.
Only fit genuine Predator stump grinder spares. Failure to do so will result in the invalidation of the warranty and may result in damage to the grinder, personal injury or even loss of life.

SAFETY

DANGER

When maintaining your engine refer to the appropriate COSHH sheets from your suppliers.

GENERAL CLEANING.

CAUTION

Keep the stump grinder and engine clear from excessive dust, wood chippings and debris build up especially around the fuel filler cap, hydraulic oil tank fillers, engine bay and battery area. Cleaning should be done with a stiff brush or cloth. DO NOT USE steam cleaners, water jets, or highly flammable liquids to clean the machine.

SERVICE SCHEDULE. (see also engine manual)

DAILY CHECKS BEFORE STARTING

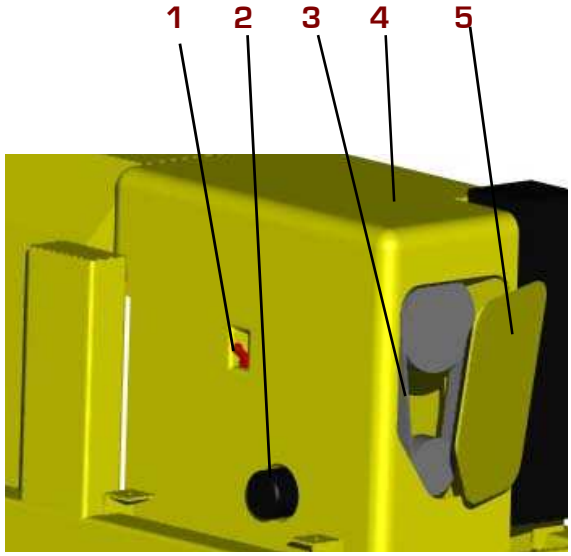
Check engine oil (1) - Top up if necessary.
Refer to MSDS sheets from your oil supplier and engine manual.

Check hydraulic oil level. - When the stump grinder is on level ground the oil should show near the bottom of the gauge.

Check for engine oil / hydraulic oil leaks.

Check fuel level. To avoid condensation build up in fuel tank, keep tank full.

Check that access covers, and guards are securely fitted.



1. Oil dip stick & filler
2. Engine oil filter
3. Engine cooler belt
4. Top Cover
5. Front cover

Check tracks for correct tensioning and damage.

Check condition of cutters. Make sure that all cutter retaining bolts are tight and that there is no
debris that may break loose when the cutter is started.

Make sure wheel is tight, there is no wobble and it turns freely.
Check and clean air filter and remove any debris from within the engine covers (5) and main, top cover (4). Check engine cooler belt (3)

Apply two pumps of grease to the hub at the grease point at the centre of the wheel.
Purge grease into pivot bracket points (55)

Open Back door and check hydraulic oil cooler. If it is clogged with dust, blow out with air line. Failure
to clean this cooler could result in excessive hydraulic oil temperatures and cause damage to hydraulic components.

25 HOUR FIRST SERVICE (To be repeated every 25 hours)
Perform all the daily checks.
Check engine mounts making sure nuts are tight.
Check round machine make sure nothing is working loose.
Check tracks for correct tensioning and damage.
Refer to engine manual for cleaning of air cooling system.

50 HOUR FIRST SERVICE.

Repeat 25 hour service.
Change engine oil and filter
Change fuel filters
Change hydraulic oil and filter
Check fuel pipes and clamp bands.

100 HOUR FIRST SERVICE.

Repeat standard 50 hour service. (inc 25 hour service)
Check battery electrolyte level-Refer to COSHH safe batteries – supplied.
Change oil in track drive gearbox.
Grease undercarriage widening pins and slides.

EVERY 100 HOUR STANDARD SERVICE. (To be repeated every 100 hours of use.)

50 Hour standard service. (inc 25 hour service).
Check battery electrolyte level-Refer to COSHH safe batteries – supplied.
Grease undercarriage widening pins and slides.

EVERY 200 HOUR STANDARD SERVICE. (To be repeated every 200 hours of use.)

Replace hydraulic oil and filters

SERVICE & MAINTENANCE INSTRUCTIONS.

SPARES SUPPLY.

All spares required for the stump grinder can be purchased direct from the dealer from whom the machine was purchased.

CHECKING FUEL LEVEL.

WARNING

Do not smoke when refueling
Keep fuel away from naked heat sources.
Wipe up any spillages
Diesel fuel can be injurious to the skin, wash thoroughly on completion of refueling.
Refer to engine manufacturers instructions.

FILLING

IMPORTANT

The fuel tank should be kept as full as practicable to prevent water condensation and should not be allowed to run dry. Take care to ensure water does not contaminate the fuel.
Scrupulous cleanliness should be observed at all times. The fuel injection equipment is made to very fine tolerances and even the smallest particle of dirt entering the system can cause damage.
Add more fuel if required ensuring area around filler cap is clean.
Refit fuel cap.

CHANGING FUEL FILTER.

Change inline fuel filter by loosening clips, removing and replacing new filter. Be sure to insert the
new filter with the arrow in the direction of the flow
Main filter – see engine manual.
Bleed fuel system - refer to engine manual.
Close engine cover and redo engine cover retention clips.
Run and test.

IMPORTANT

CHECKING ENGINE OIL.

See engine manual
In order for the engine to function properly, maintain the oil at the proper level and change the oil
and oil filter in accordance with the maintenance schedule. Not only do dirt and metal particles collect in the oil, but the oil itself loses its lubrication quality if used for too long.

REVVING ENGINE

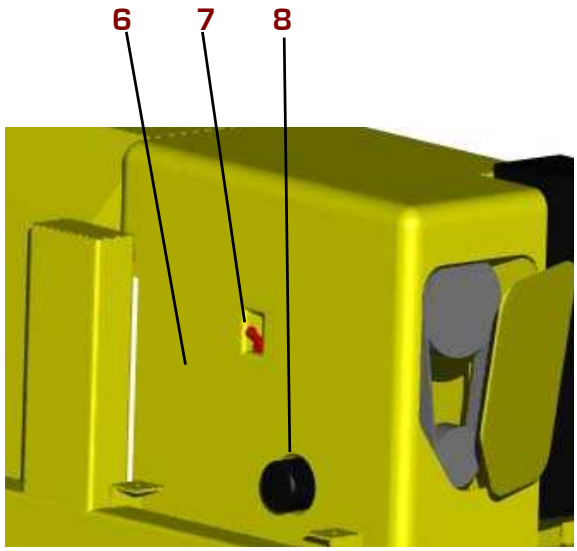
CAUTION

Revving the engine straight from a cold start before the oil has had chance to circulate to every part of the engine can cause engine seizure. Allow the engine to run at no more than fast idle speed until warm.

Over filling the engine with oil can cause serious damage.

OIL CHANGING - See engine manual

Undo oil drain plug located at bottom of sump under engine.
Drain oil into large container.
Replace oil drain plug and tighten.
Refill through filler point Use this dipstick to check level.
Do not overfill.



6. Side panel
7. Oil dipstick and filler
8. Engine oil filter

CHANGING ENGINE OIL FILTER - See engine manual.

As above, but remove panel (6)
After draining oil, undo filter (8)
Replace filter with new and tighten.
Refill with oil to level.

CHANGING HYDRAULIC OIL FILTERS.

There are two hydraulic filters on this machine. One suction (90 micron) located within the main tank frame (9). and a 10 micron return filter (12) located to the rear of the engine under the hydraulic pump.
The hydraulic oil filters must be changed on a yearly basis regardless of use or 100 hours after any kind of servicing / maintenance work has been carried out on the hydraulic system.

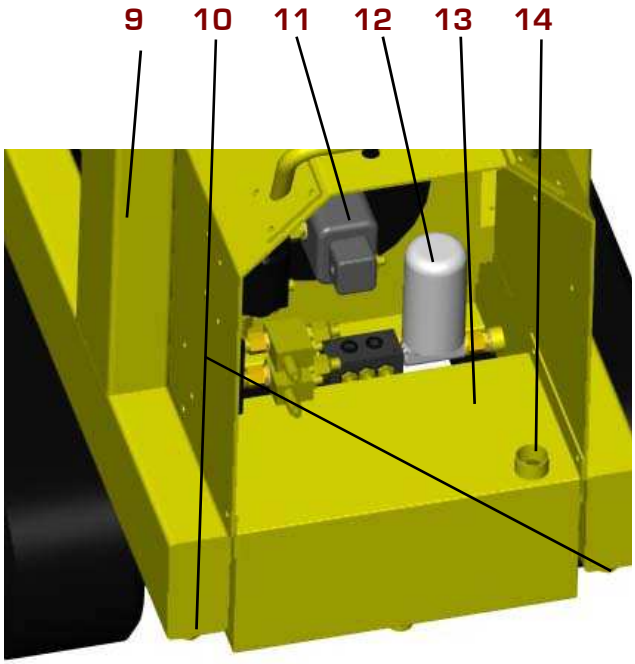
The hydraulic tank (9) on this machine is an integral part of the machine mainframe. The allocated drain points (10) for the hydraulic tank are two plugs located at the rear underside of the two box sections that form the sides of the mainframe.

Place a clean dry container under each plug fitting and loosen each fitting until hydraulic fluid starts to drain into the container. Each container should be capable of holding approximately 40 litres.

Thoroughly clean area around the filters before unscrewing filter canister (12) to avoid oil contamination.

When fluid has stopped draining unscrew filter canisters (12) from housings and replace with new. Tighten.

Re-tighten both plugs and refill hydraulic system via filler cap to the bottom of the level gauge.



9. Main frame / Hydraulic tank
10. Drain plugs
11. Pump
12. Filter
13. Fuel Tank
14. Fuel filler

GREASING CUTTER WHEEL BEARING.

There is a grease nipple provided on the outside of the cutter wheel hub next to the hydraulic motor. Apply two shots of grease from a standard grease gun.

BLUNT TEETH **CAUTION**

Using the stump grinder with blunt cutters will over stress the cutter wheel and cause the cutter wheel bearings to fail prematurely.

The cutter wheel bearings are a serviceable part and should be replaced on a regular basis.
It is recommend the bearings are changed yearly for optimum performance.

If the bearings start to make a rumbling noise or a high pitched whine expert advice should be sought as this could be the first signs of bearing failure.

ELECTRICAL. **NOTE**

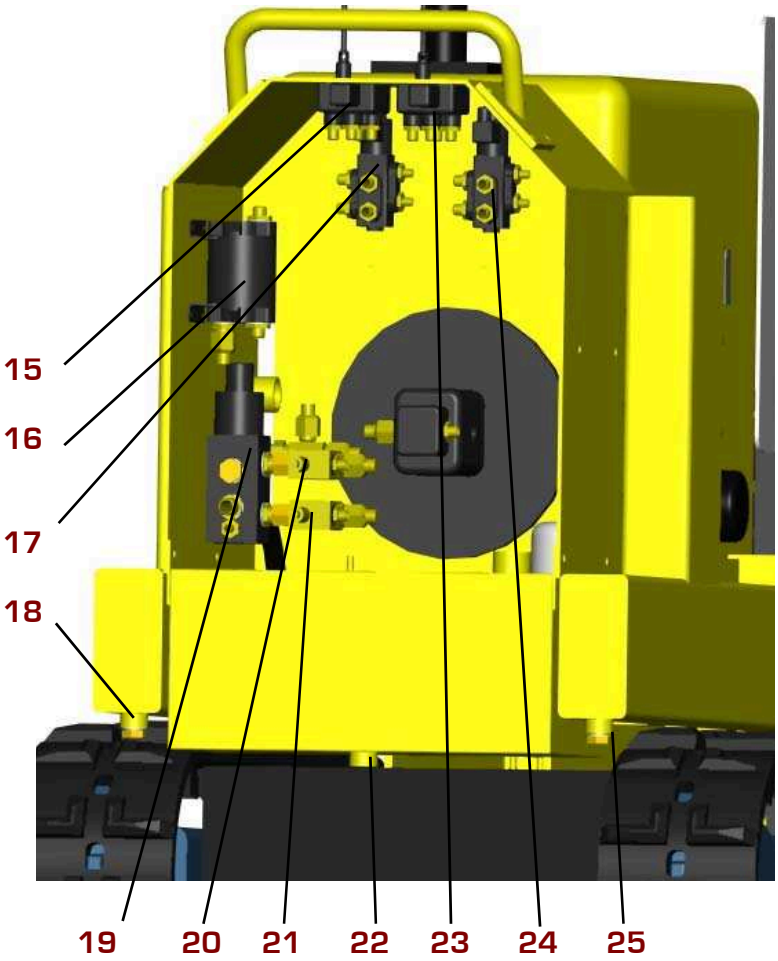
There is a main fuse located in the control box near the emergency stop button. This controls the main 12 V dc supply to the complete electrical system.

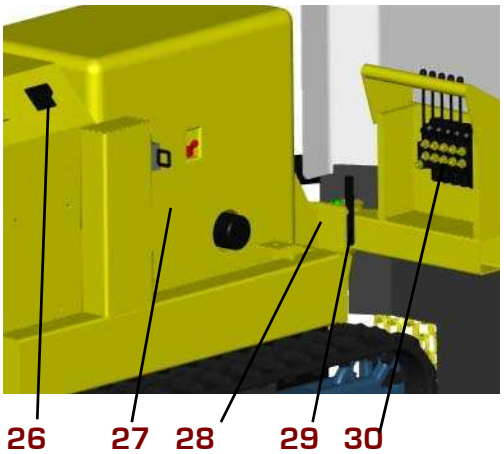
Failure of the fuse is indicative of a fault in the electrical system and the machine should be returned to the dealer from whom the machine was purchased or to Arborplant Ltd so that the cause of the fault can be found and safely rectified. To simply replace the fuse without investigating the cause of failure and not carrying out the correct rectification work could be dangerous and detrimental to the safe operation of the stump grinder.

FURTHER INFORMATION **NOTE**

ANY FURTHER TECHNICAL INFORMATION CONCERNING REPAIRS, SERVICING OR MAINTENANCE CAN BE OBTAINED FROM YOUR SUPPLYING DEALER OR ARBORPLANT BY REQUEST.

15. Left track rear lever valve
16. Geared flow divider
17. Left track selector valve
18. Hydraulic oil drain plug
19. Track / grind diverter valve
20. Wheel brake pressure valve
21. Wheel pressure valve
22. Fuel drain plug
23. Right track rear lever valve
24. Right track selector valve
25. Hydraulic oil drain plug





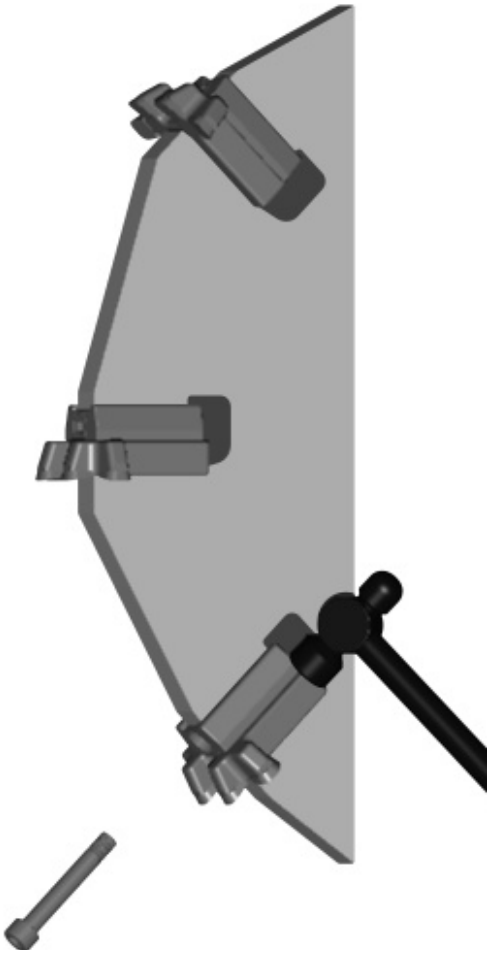
26. Hatz electric panel
27. Hatz engine
28. Control panel bracket
29. Control panel lock spring
30. 5 bank lever valve

Maintenance Of Your Multi-Tip System

Congratulations for purchasing your Multi-Tip stump grinding cutting system.

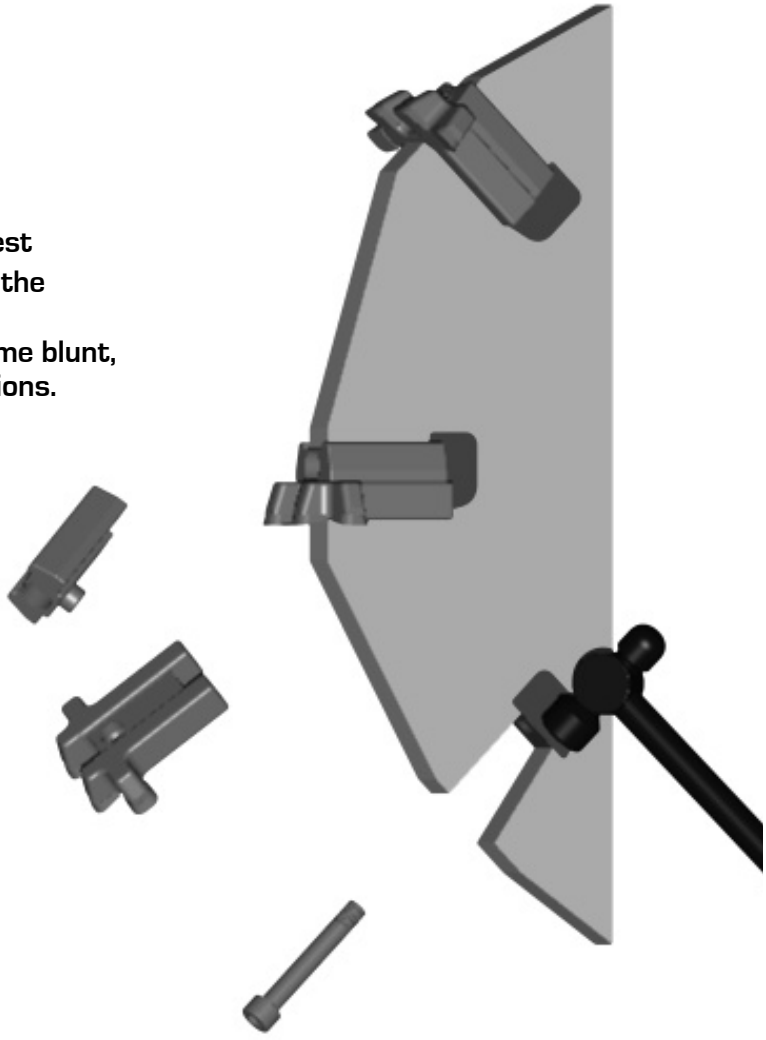
Please look after this system as set out below to insure a long and trouble free life span of the wheel and the components.

Safety is paramount. Please take note of all the enclosed recommendations and safety notes overleaf.



1. Remove bolt and tap behind tooth with a small hammer. Avoid hitting tips. Use safety goggles.

Tip - The leading teeth that are furthest from the centre of the wheel do most of the cutting.
By changing these as soon as they become blunt, you can re-use them in non-leading positions.

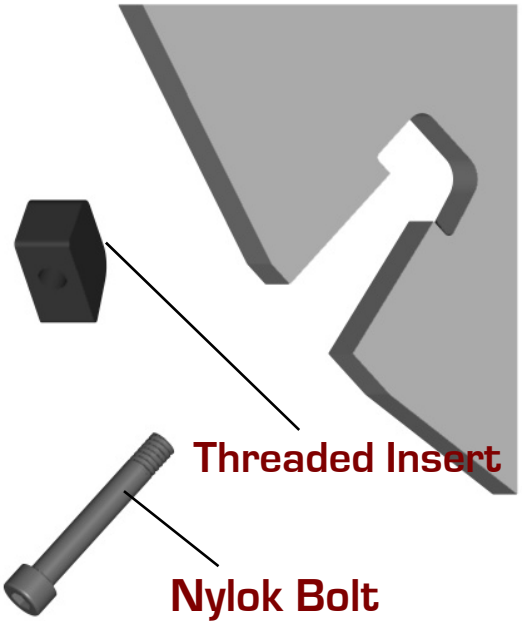


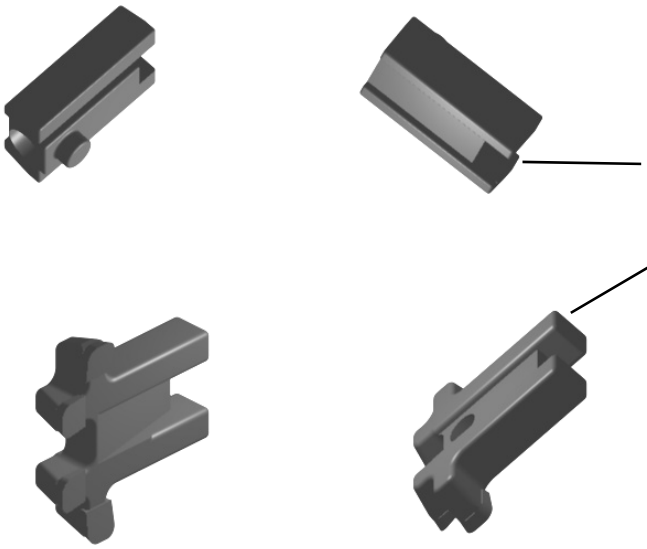
2. The keeper plate and tooth can be separated once out of the slot.
Check the groove in the top of the keeper plate and the edges underneath that locate with the tooth. If these are damaged, replace.

3. Check the condition of the slot.
If it is badly worn, change wheel.

4. Check threads in Insert and on Bolt.
If damaged, replace. If re-using, make sure they are clean and free from dirt.

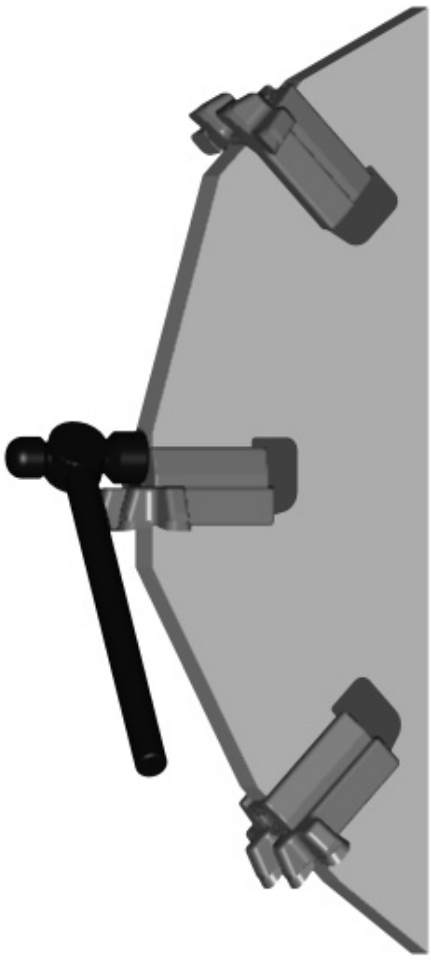
The bolt can be re-used up to five times before it needs replacing, providing it isn't damaged.
Only use bolts supplied by Multi-Tip.





5. Check condition of keeper plate.
If badly worn or damaged, replace.
Replace tooth with new.

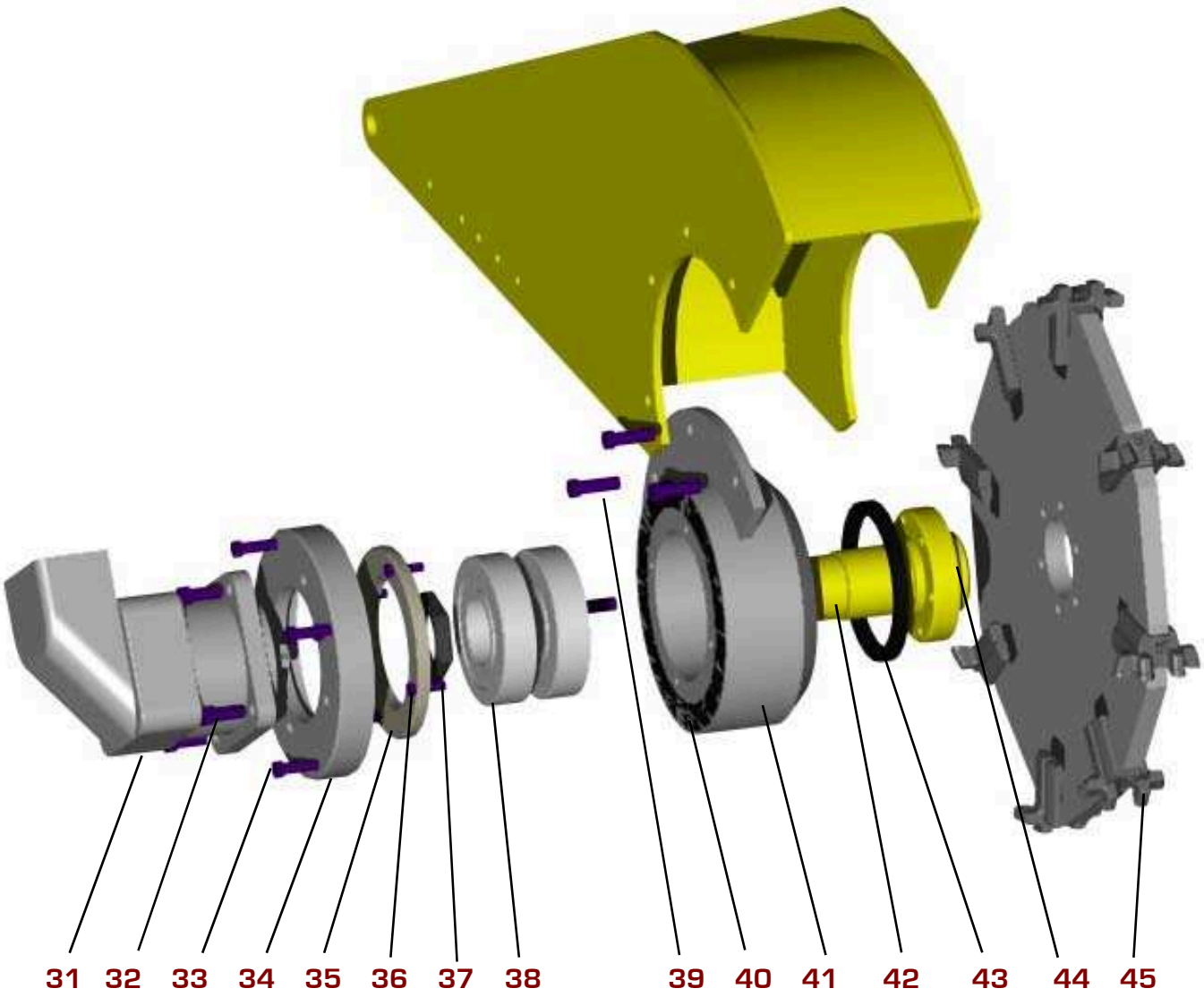
6. Make sure all surfaces are clean and free from dirt. Re-fit the threaded insert, then the new tooth and keeper block together. Tap the front of the keeper block until it is located. Insert the bolt and wind up to a torque setting of 55Nm (40 ft-lb)
After ten minutes of use stop and check bolt tightness.



If the assembly can not be tightened sufficiently into the wheel, do not use.

Never use this system without all components in place and secure.

MAINTENANCE OF CUTTER HEAD



31. Motor
32. Motor mounting bolts
33. Mounting plate bolts
34. Motor mounting plate
35. Bearing keeper plate
36. Bearing keeper bolts
37. Stub shaft nut
38. Hub bearings
39. Hub mounting bolts
40. Silicone sealer
41. Hub
42. Stub shaft
43. Lip seal
44. Wheel mounting bolts
45. Wheel Teeth (see previous page)

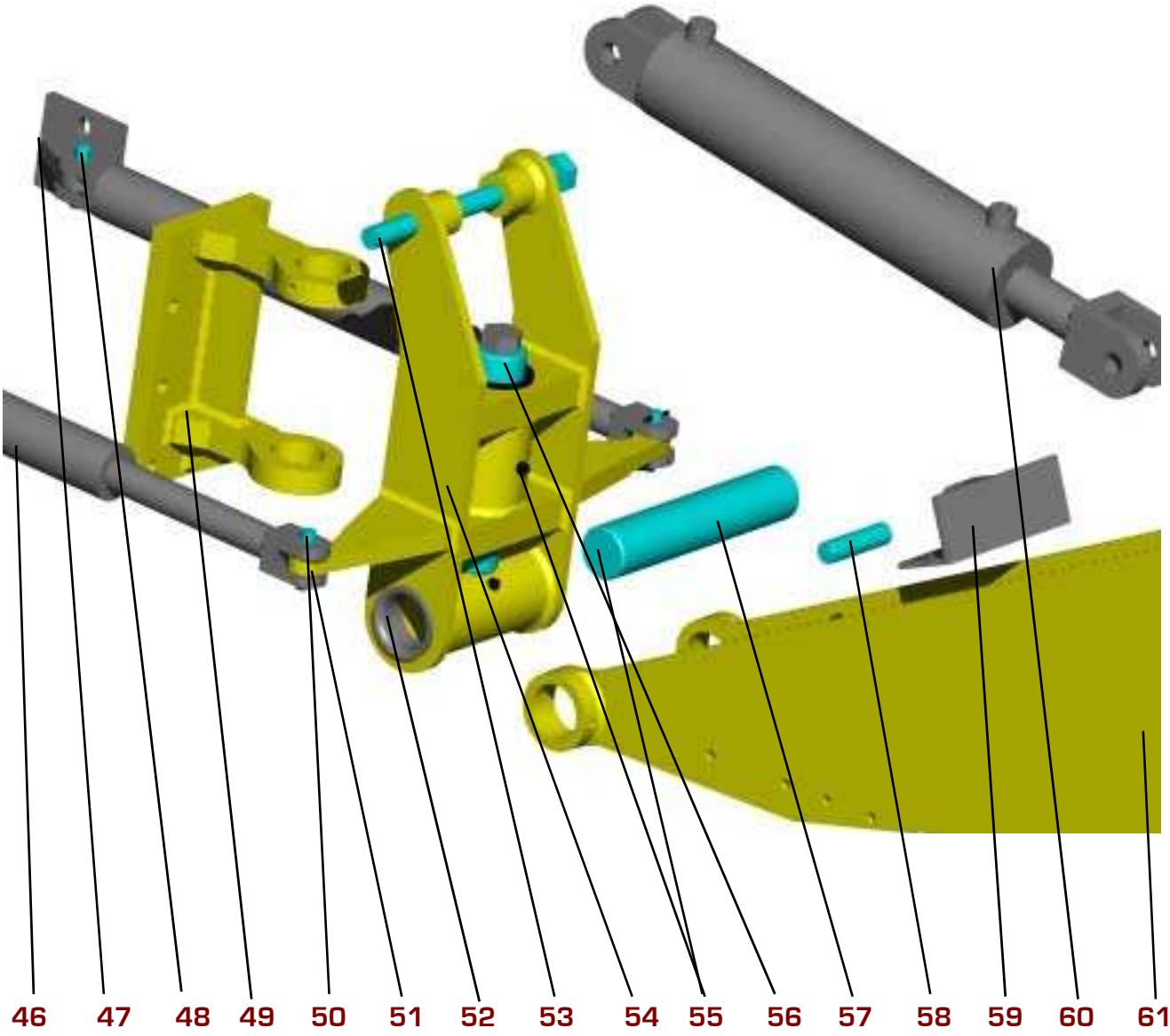
Grease hub daily through centre of stub shaft at centre of wheel. <u>Two pumps only</u>

Check wheel for wobble before use each day

Check bolts regularly.

See 'Tooth and Wheel Maintenance' on previous page.

MAINTENANCE OF LINKAGE



46. Slew cylinder
47. Slew cylinder anchor
48. Slew cylinder end pin
49. Pivot bracket
50. Slew rod end pin
51. Hardened bush 12mm
52. Hardened bush 50mm
53. Pivot pin
54. Slew bracket
55. Grease nipples
56. Slew pivot pin
57. Boom pivot pin
58. Arm clevis pin
59. Lift cylinder anchor
60. Lift cylinder
61. Arm

Grease linkage daily at points (55). Purge until grease is visible.

When servicing knock out slew cylinder rod end pin (50) grease and replace.

To separate pivot and slew brackets, remove slew pivot pin by removing the bolt in the top and jack out with a long M12 bolt through the centre of the pin.

To remove arm, remove boom pivot pin by first removing grub screws in arm and knock pin out with hammer and bolster.

MAINTENANCE OF TRACKED UNDERCARRIAGE

RUBBER TRACK TENSION

When the tracked undercarriage is lifted the rubber track must sag 10-15 mm.
When tension decreases it must be re-tightened to prevent the track from coming off.
Do not over tighten. If you continue to pump grease into the cylinder once the track is already tight, you will compress the cylinder spring and cause excessive damage.

CORRECT INSPECTION AND MAINTENANCE PROCEDURES.

Always perform maintenance on a solid and level surface.

Never grease or lubricate or perform maintenance on the machine while it is in motion.
Solidly support the undercarriage if it needs to be lifted up for maintenance.
Use great care when maintaining the hydraulic system since oil is very hot when the machine has just finished working.

Circuits are under high pressures even when the machine is not working.
Keep all components properly installed and in good condition.
Immediately repair all damage and replace worn or broken parts.
Remove any build-ups of grease, oil or debris.
Check for oil leaks and /or damaged hydraulic hoses.
Use recommended lubricants. Do not mix different brands of lubricants.
Use only original spare parts.

Keep undercarriage widening cylinder and track-stretcher grease nipples clean.
Intervals for periodic maintenance are indicated for normal work conditions. If the tracked undercarriage is used in severe work conditions then maintenance must be performed at shorter intervals.

Dispose of lubricants in an ecologically safe way. Thoughtless disposal of lubricants can damage the environment. Become familiar with local anti-pollution laws and regulations before disposing of lubricants.
Use suitable containers when draining lubricants. Do not use beverage or food containers that might tempt someone to drink from them. Never pour lubricants on the ground or in a canal, pond or watercourse. Comply with current environmental protection regulations when disposing of lubricants.

IMPORTANT

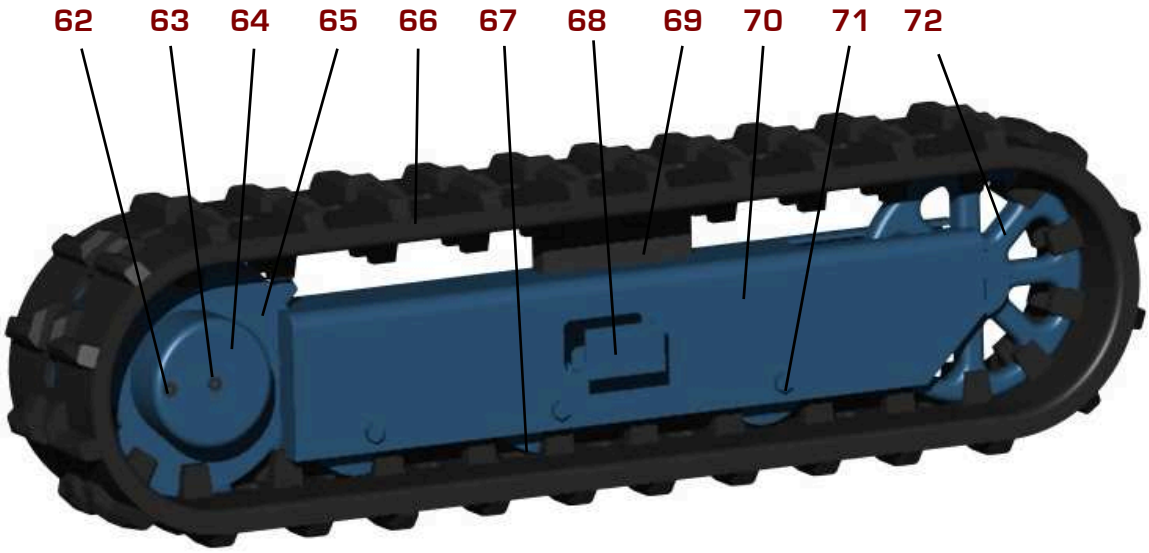
GEAR OIL

Avoid using oils with different characteristics and brands

CHOICE OF TYPE OF REDUCTION UNIT OIL

We recommend, for reduction units, using gear oils with E.P. additives and viscosity class according to ISO VG 150 or SAE 80W/90.

When temperature variation ranges are very high we recommend using synthetic oils with E.P. properties and minimum 165 viscosity index and viscosity class VG



62. Gearbox drain plug
63. Gearbox filler plug
64. Gearbox
65. Drive Sprocket
66. Rubber track
67. Roller
68. Adjuster cover plate
69. Nylon guide block
70. Side frame
71. Roller bolt
72. Front idler wheel
73. Grease nipple
74. Grease valve

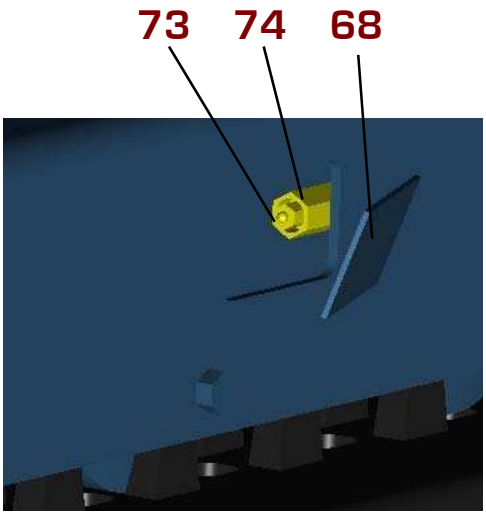
TRACK LOOSENING / TIGHTENING PROCEDURES.

The grease contained in the hydraulic track is pressurized. Never loosen grease valve (74) for more than one turn. If the valve is loosened too much you risk expelling grease under pressure and possible serious injury to the machine operator. Also never loosen grease nipple (73).

Remove gravel or mud from between the sprocket and the track.

Remove the screws and take off cover (68) to access the adjustment system.
To loosen the track turn valve (74) counter-clockwise no more than one turn. One turn of valve (74) is sufficient for loosening the track.

If grease does not start to drain out then slowly rotate the track.



Tighten the valve (74) by turning clockwise till tight. Clean all traces of extruded grease.
To tighten the track connect a grease gun to grease nipple (73) and pump grease until the track tightens so that there is 10-15 mm of sag. Then stop

FRONT IDLER LOCKING

DANGER

It is not normal for the track to remain tight after turning valve 1 counter-clockwise or for it to remain loose after introducing grease into grease nipple 2. Never try to remove the tracks or disassemble the track-stretching cylinder since pressure of the grease inside the track is extremely dangerous.

REMOVING THE RUBBER TRACK.

WARNING

Stop your machine on a solid and level surface. Jack up side of machine under main frame and support it in safe condition.

Remove the cover plate 68) on side of track frame that gives access to the adjustment system.

To loosen a track slowly unscrew valve (74) counter-clockwise for no more than one turn. One turn of valve (74) is sufficient for loosening the track.
If grease does not start to drain out then slowly rotate the track.

Insert 3 steel tubes in the space between the rollers and the tracks. Rotate the driving gear in reverse so that the steel tubes proceed with the track and contract the front idler wheel. Exercise force sideways to slide the track and lift it off the front idler wheel.

INSTALLING THE RUBBER TRACK.

WARNING

Make sure that you are always in safe conditions with the machine lifted before performing the track installation operation.

Mesh the track links in the sprocket and place the other end of the track on the front idler wheel.
Rotate the driving gear in reverse slowly and push the track soles into the frame
Position the track using a steel tube and turn the driving gear again.
Make sure the track links mesh correctly with the sprocket and with the front idler wheel.
Adjust track tension as set out previously. Replace cover and lower back onto the ground.

UNDERCARRIAGE GREASE POINTS

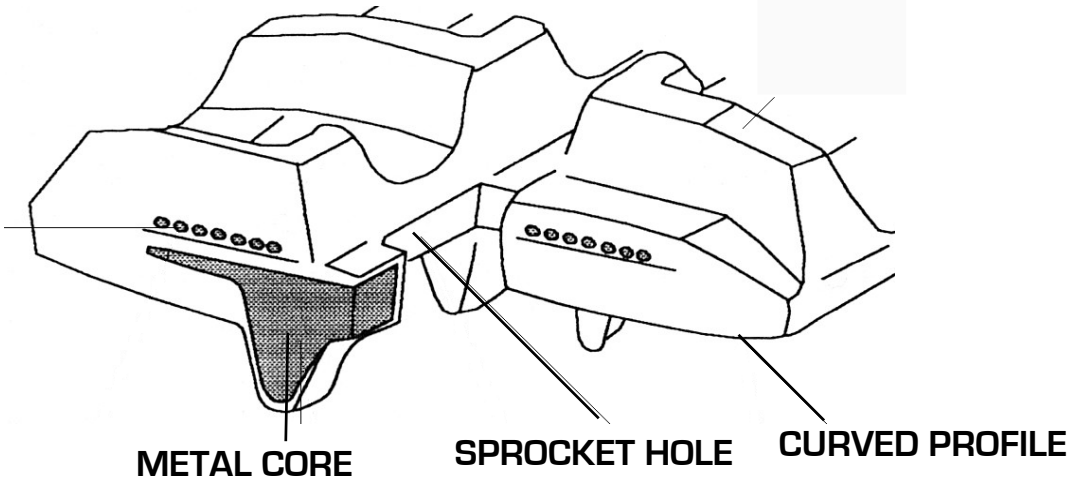
IMPORTANT

Perform this maintenance procedure every 100 work hours, using lithium grease with EP2 consistency.

Clean grease nipples before connecting them to the grease gun.
Clean all grease that exits out after greasing.

Lubrication should be at more frequent intervals if the tracked undercarriage is used in particularly severe operating conditions.

Grease points for the tracked undercarriage widening cylinder pins can be found when tracks are extended out. Grease more regularly if working in dusty or wet conditions.



The structure of the rubber track is shown above. The steel cables and metal core are embedded in the rubber. The carved profiles function gives stability on soft terrain. The wheel guides, located on the inside of the track, preventing the track from sliding off the guide rollers.

BREAKAGE OF STEEL CABLES.

CAUTION

Excess track tension can cause steel cables to break in the following conditions:
When stones or foreign matter accumulate between the track and the undercarriage frame.
When the track slips off its guide system.
In case of great friction such as rapid changes in direction.

BREAKAGE OF METAL CORES.

Excess track tension can cause the metal cores to bend or break just like the steel cables as stated above.

Other causes include:
Improper contact between track and sprocket.
Rotation of internal rollers.
Operation on sandy terrain.

MAINTENANCE OF DRIVE GEARED MOTORS.

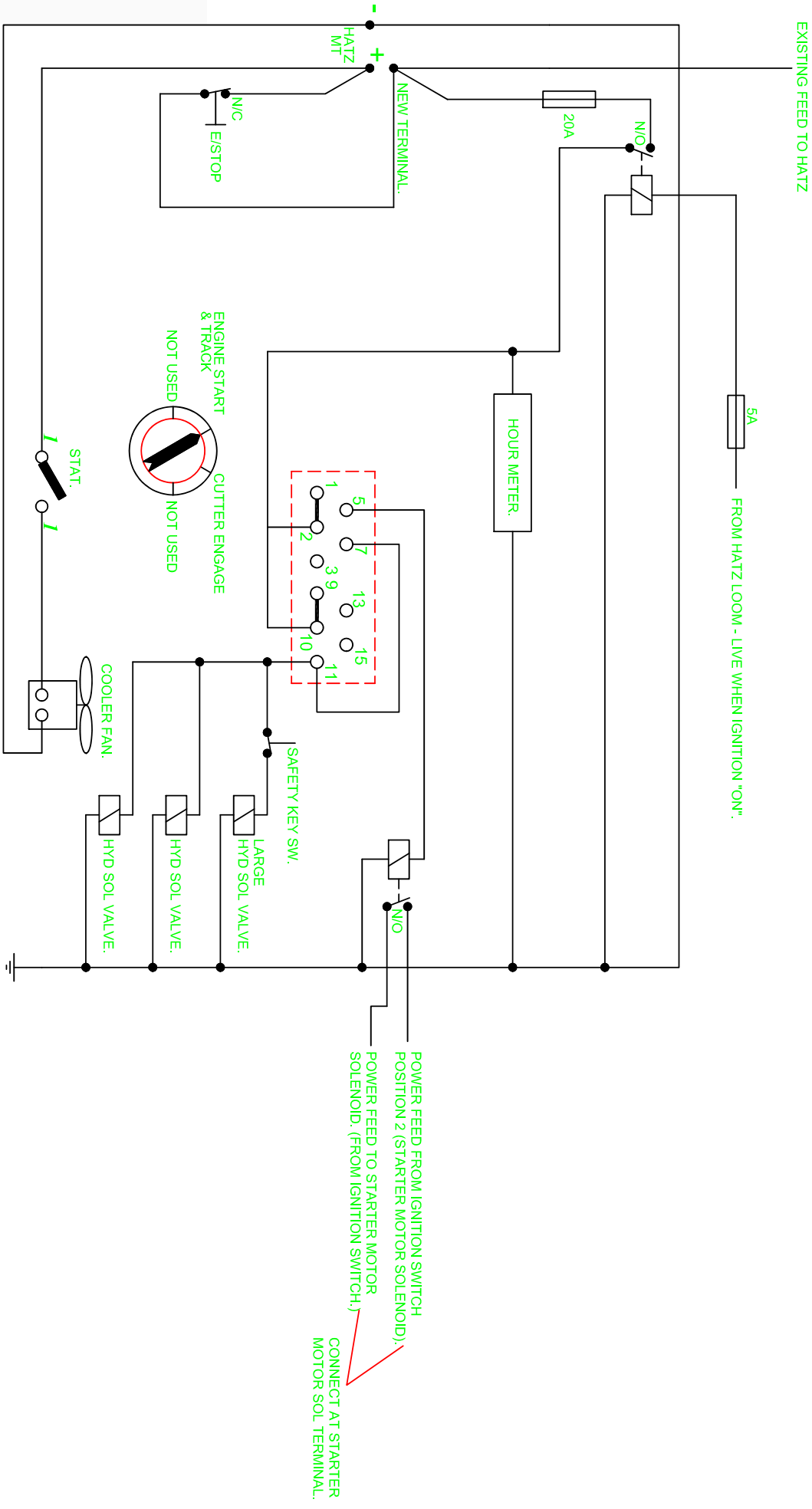
CHECKING THE OIL LEVEL IN THE REDUCTION UNIT.

Stop the hydraulic geared motor with plugs (62 & 63) aligned horizontal. Remove the plugs and check that the oil level is up to their holes. Top up as necessary, filling through one of the holes and Using the other to check the oil level.

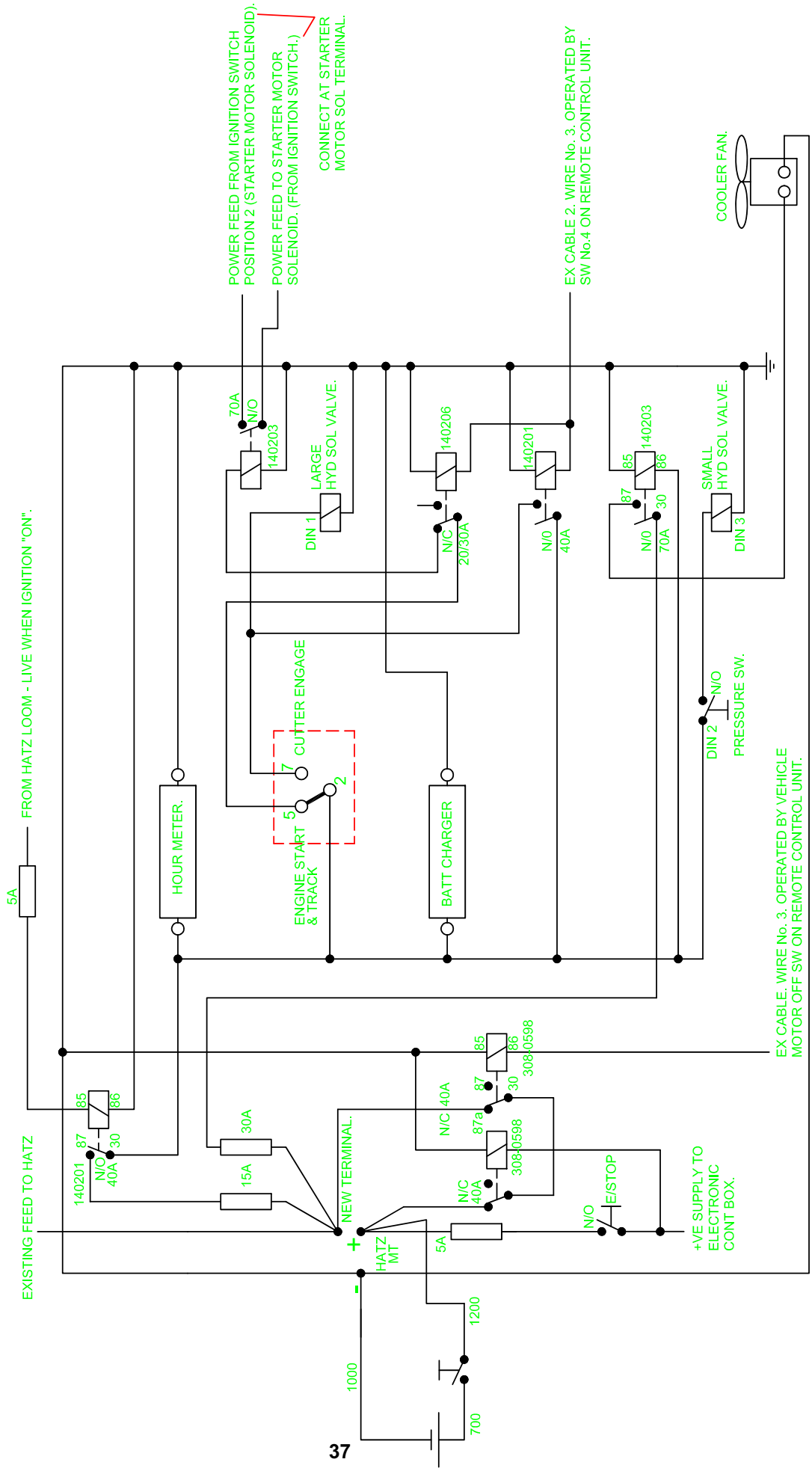
REPLACEMENT OF OIL IN THE GEARBOX.

Replace the oil after the first 100 operating hours and then at subsequent 1000 hour I ntervals. Proceed as follows to perform the replacement: - stop the reduction unit with the plugs (62 & 63) aligned vertically with (62) at the bottom - remove both plugs and drain out all the oil; - now position the plugs horizontally and fill the reduction unit through one hole, using the other to check the oil level.

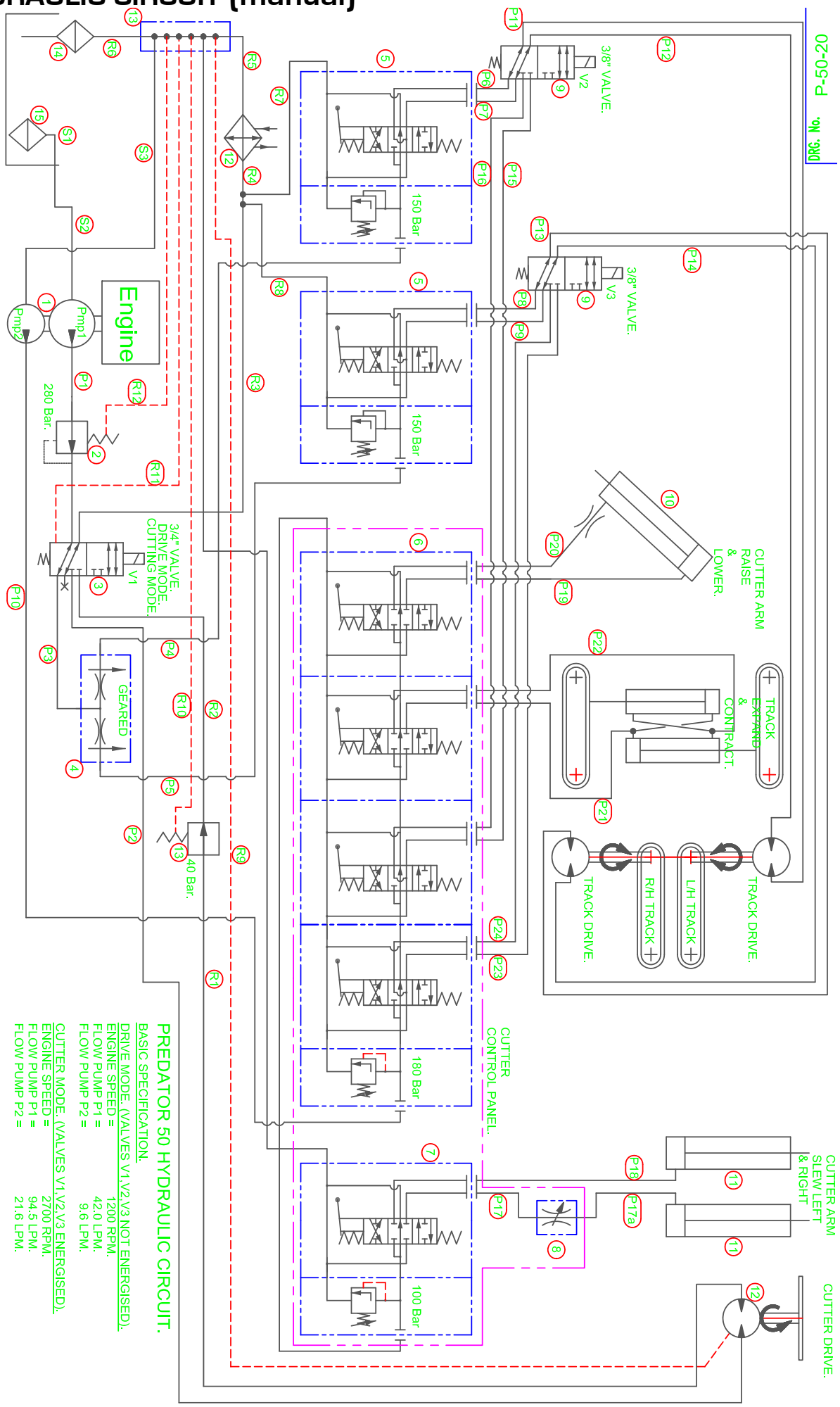
WIRING DIAGRAM (manual)



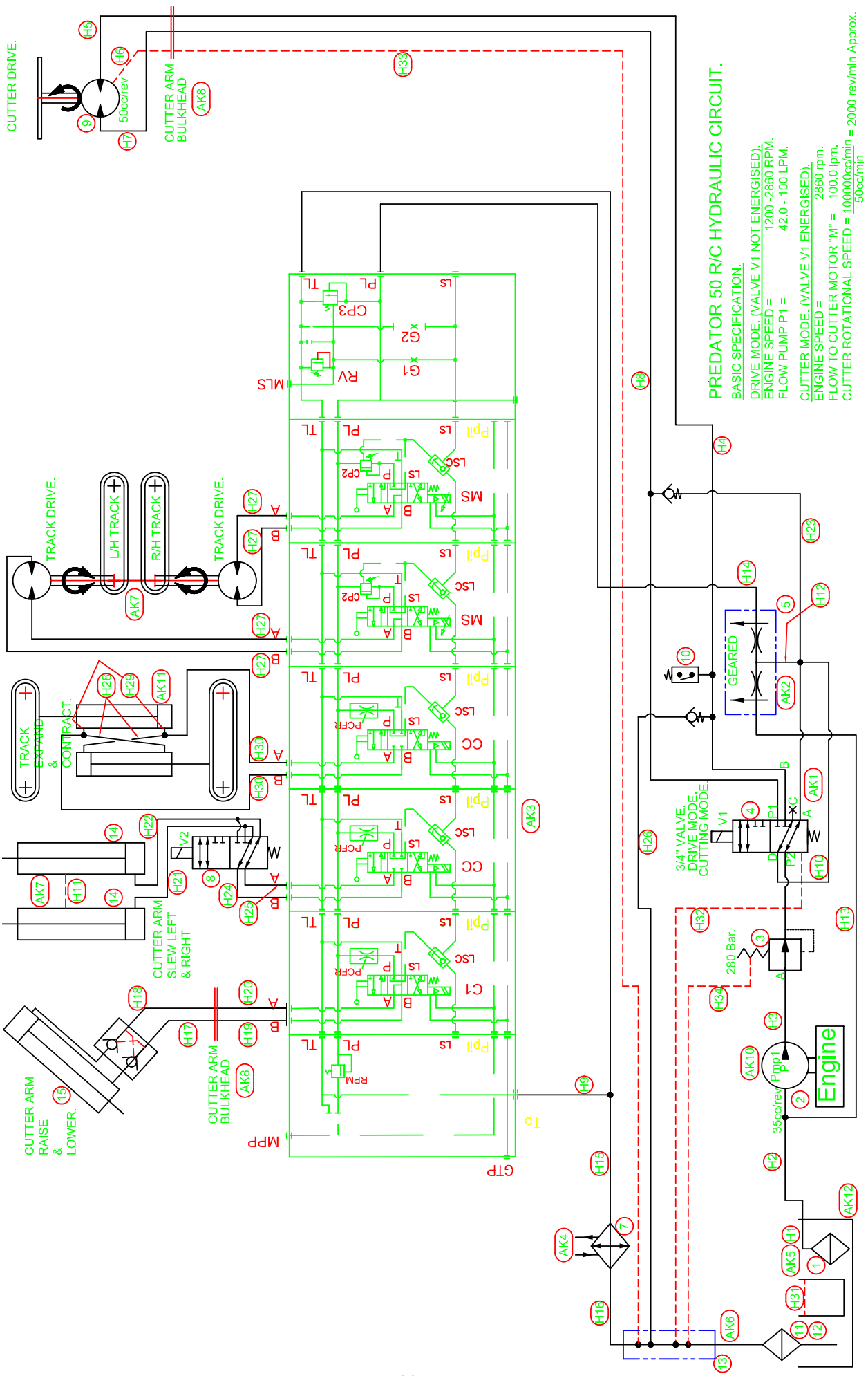
WIRING DIAGRAM (radio control)



HYDRAULIC CIRCUIT (manual)



HYDRAULIC CIRCUIT (radio control)

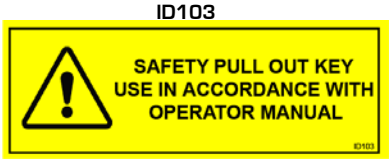


DECALS

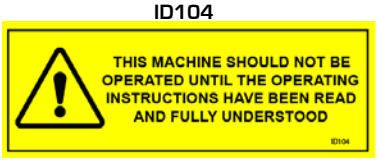
ID101

ID102

ID103



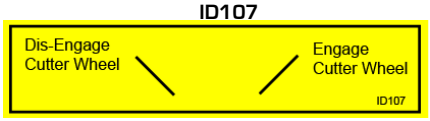
ID104



ID105

ID106

ID107



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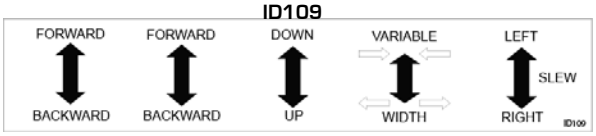

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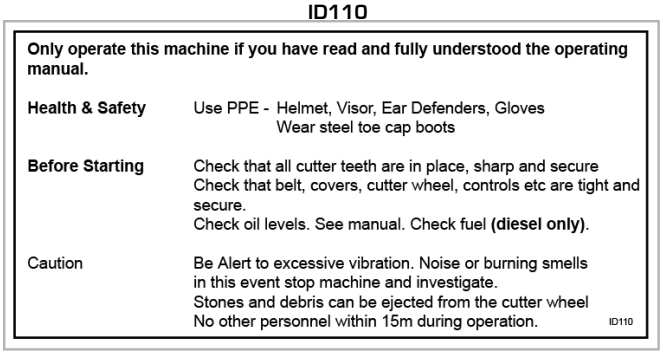

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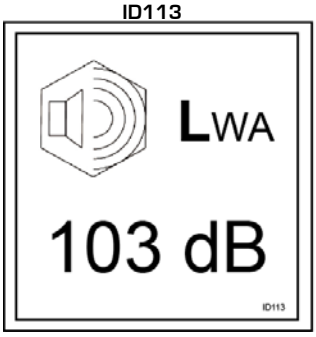


ID117

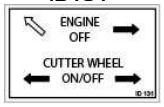
ID122

ID119

ID124

ID125

ID131



ID126

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ID129

ID132

ID130

ID128

ID120

ID115

Warranty Validation Form - To be completed and sent back to Predator Manufacturing at the address on the reverse of the manual within 14 days of putting machine into service.

Purchaser Information:

Company Name:.....

Contact:.....

Address:.....

Post Code:.....

Telephone numbers:.....

Machine Information:

Model:..... Engine Type :.....

Serial Number :..... Serial Number :.....

Dealer Information:

Dealer Name:..... Street Address:.....

City: .....State:.....Post Code:.....

I have been advised and instructed and will advise and instruct all users of this machine of the following:
Operation and safety aspects of operating the equipment including:
Not to reach into cutter wheel area.
To stop machine and remove key before performing any type of maintenance.
Not to operate the machine without the cutter wheel guard in place.
Customer has been furnished with all parts and operators manuals.
Customer has been instructed on equipment maintenance schedules and procedures.
Customer has been advise that the engine or power unit that is used on this machine is warranted by the engine manufacturer and Predator. All engine warranty issues should be addressed to the local engine dealer.
Customer understands the importance of air and oil filter maintenance, and the importance of staying within the angle of operation of the engine. If either of these is not adhered to, the engine warranty is *VOID*.
All operation and warning decals are properly displayed on equipment.
Customer understands it is his responsibility to train all operators on operator safety.

I have inspected this equipment and find it in good working condition. To the best of my knowledge, the customer and his personnel are aware of the above procedures.

Date: _____ Signed: _____

Dealer Representative
The equipment has been thoroughly checked by the above named dealer representative, and I am satisfied with his instructions.

Date: _____ Signed: _____
Purchaser

WARRANTY STATEMENT.

The Predator Tree Stump Grinder is guaranteed free from defects caused by faulty materials or workmanship for a period of 12 months from the date of purchase.

Warranty does NOT apply if abuse or neglect causes damage to the machine or if it has been improperly maintained.

This warranty takes effect upon delivery to the original retail purchaser.
The manufacturer, at its option, will replace or repair, at a point designated by the manufacturer, any parts which appear to have been defective in material or workmanship. The manufacturer is not responsible for consequential damages.

The owner is responsible for all regular maintenance as explained in the operators' manual. Neglect in regular maintenance or failure to replace normal wear items such as teeth, keepers, bolts, lubrication oils, filters, belts, bearings, etc. may void warranty.

This warranty is expressly in lieu of any other warranties, expressed or implied, including any implied warranty or merchantability of fitness for a particular purpose and of any non-contractual liabilities including product liabilities based upon negligence or strict liability. The manufacturer will not be liable for consequential damages resulting from breach of warranty.

The manufacturer will not reimburse the customer or dealer labour cost incurred for installing "bolt-on" or "slip-on" items, such as pumps and motors, bearings, belts, pulleys, etc. The manufacturer will provide replacement parts at no cost to the customer for defective parts during the warranty period.

Defective parts must be returned to the manufacturer. It will be the customers' responsibility to install the replacement parts unless arrangements are made with the selling dealer. The manufacturer will not reimburse travel cost to servicing dealer unless prior approval has been obtained from the manufacturer. It is the customers responsibility to deliver the machine to dealers facility, unless other arrangements have been agreed to between the selling dealer and the customer.
The manufacturer may elect, at its discretion, to reimburse reasonable labour cost to customer or dealer for major defect repairs. Prior approval must be obtained from the manufacturer

IT IS NECESSARY TO RETURN THE WARRANTY VALIDATION FORM TO PREDATOR WITHIN FOURTEEN (14) DAYS FROM DELIVERY DATE TO VALIDATE THIS WARRANTY.

MACHINES USED FOR LEASE OR RENTAL - WARRANTY IS LIMITED TO 90 DAYS.

Engines are warranted by the engine manufacturer and their dealers and not by Predator or it's dealers. See engine manuals for details.

NORMAL WEAR
Warranty will not cover repair when normal use has exhausted the life of a part.

For purposes of this warranty statement the warranty will apply to the original purchaser only and is not transferable.

This warranty statement does not affect your Statutory Rights.

PRODUCTION DIVISION, PREDATOR, HENLEY ON THAMES.