GreenMech
The Professionals' Choice

ARBORIST 150P

OPERATORS MANUAL

GreenMech Ltd • The Mill Industrial Park • Kings Coughton • Alcester • Warwickshire • B49 5QG • UK
Tel: **01789 400 044** • Email: **sales@greenmech.co.uk** • Web: **www.greenmech.co.uk**

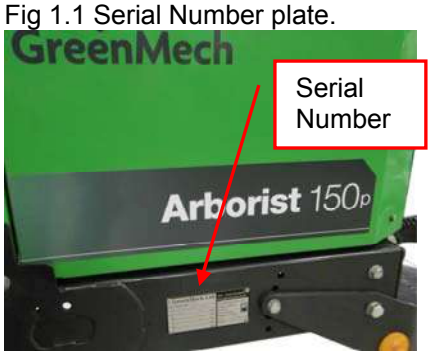
INTRODUCTION

This manual explains the proper operation of your machine. Read these instructions thoroughly before operating and maintaining the machine. Failure to do so could result in personal injury or equipment damage. Consult your GreenMech supplier if you do not understand the instructions in this manual.

CAUTION! This symbol indicates important safety messages in this manual. When you see this symbol, be alert to the possibility of injury to yourself or others, and carefully read the message that follows.

Keep this manual in box provided and treat as part of machine. Locate and note here serial number and quote it in any communications. This is important when ordering spares. Remember to include all numbers and letters.

Fig 1.1 Serial Number plate.



VIN Number……

Serial Number……..

Write in the number!

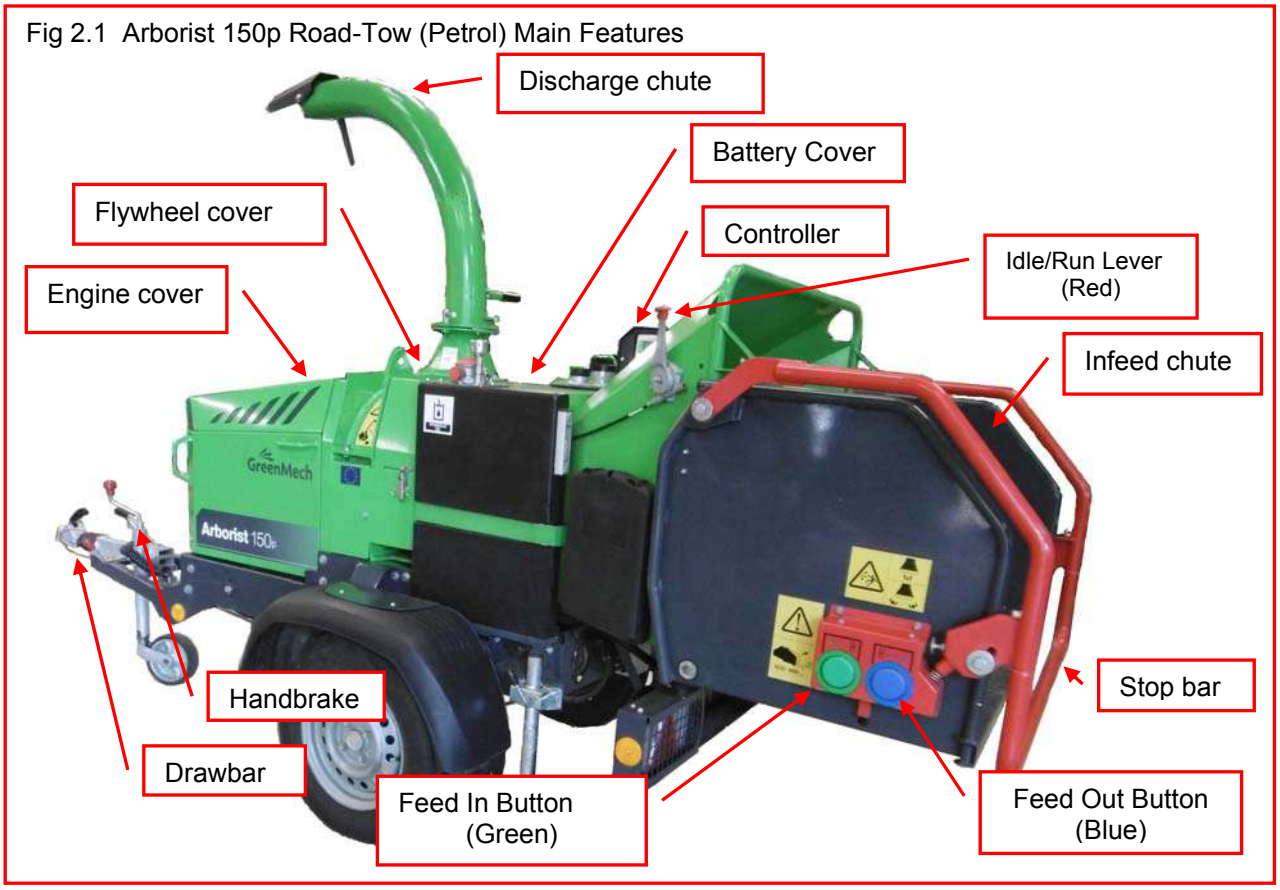
This manual covers the following models.
Arborist 150p trailed (Road-Tow) chipper - stop bar, petrol engine

The information in this manual is correct at the time of publication. However, in the course of development, changes to machine specifications are inevitable. Should you find any information to vary from the machine in your possession please contact your GreenMech dealer for up to date information.
This manual may contain standard and optional features and is not to be used as a machine specification.

PURPOSE

CAUTION! This machine is designed solely to chip wood and must not be used for any other purpose. The machine should only be used by trained operators who are familiar with the content of this instruction manual. It is potentially hazardous to fit or use any parts other than genuine GreenMech parts. The company disclaims all liability for the consequences of such use, which in addition voids the machine warranty.

Fig 2.1 Arborist 150p Road-Tow (Petrol) Main Features



TECHNICAL SPECIFICATIONS Arborist 150p Road Tow (petrol) model	
	Arborist 150p petrol
Max Capacity	230mm X 160mm (9inch x 6inch)
Infeed Chute	970mm x 790mm
Chipper Flywheel	500mm x 25mm
Speed	1800 rpm
Chipping Blades	4 round disc blades
Feed Rollers	2 x Hydraulic
Power Control	No-Stress Electronic Feed Roller Controller
Hydraulic capacity	30 Lt
Fuel Capacity	27Lt
Power Units	37HP Vanguard air-cooled petrol
Sound Power Lwa	116dBa
Sound Pressure LPa	92dBa
Length	3273mm
Width	1290mm
Height (Work)	2425mm
Weight	695kg

Noise
Noise levels vary depending on type of material being processed. Also duration of operation is variable. Noise emission tests have been carried out and guaranteed sound power level (**Lwa**) is displayed on each model as follows:
Arborist 150p - 116dB(A)

Minimise noise by switching to idle or stopping engine whenever chipping is not in progress.

⚠ CAUTION! Operators must wear appropriate ear protection. Bystanders must be kept away from proximity of machine.

Lifting Points
There is a single central lifting point by base of discharge chute.

⚠ CAUTION! Lift with extreme care. The machine may tilt because single lifting point may not be directly over centre of gravity.

Drawbar and hitch
Ball type hitch with overrun brake, safety cable and electric connection cable.

⚠ CAUTION! Ensure that towing vehicle is correctly suited to trailer weight and drawbar (nose) loading. If necessary check with national vehicle legislation.

3.1 ENSURE! :

All Operators must be fully trained in the use of their machine.
(Certificated Operator training courses are available on request.)
Operators Manual is read and understood.
Enclosed HSE guidance notes are read and understood.
Appropriate Personal Protective Equipment (PPE) is worn, including non-snag clothing, gloves, eye and hearing protection.
Machine is positioned on level ground and machine is level with infeed chute at not less than 600mm (23.62 inches) above ground level (fig 3.4.3).
Handbrake is applied and if necessary wheels are chocked, when machine is detached from towing vehicle.
All guards are fitted and in good condition.
Blades are in good condition and secure.
All blades are sharpened or replaced in “Sets”.
All fasteners are checked regularly for tightness.
Only “WOODEN” materials free of nails etc., are fed into machine.
Correct First Aid Kit including large wound dressing is available on site.
Fire extinguisher is available on site.

3.2 NEVER! :

Work on machine until chipper flywheel is stationary and engine or PTO has stopped.
Operate machine without protective clothing (Eye protection, Earmuffs, and Gloves), or high visibility clothing when working on roadside.
Operate with loose articles of clothing, including loose cuffs on gloves.
Work under a raised component without adequate safety support.
Operate machine with untrained personnel or with individuals present who are not involved in chipping work operation.
Leave machine unattended with engine running at full operating speed. (See section 4)
Put any part of your body into infeed chute while machine is running.
Operate machine whilst under the influence of alcohol or drugs.
Operate machine inside a building or confined space.
Climb on infeed chute.
Impede or obstruct Stop control.

3.3 ALWAYS! :

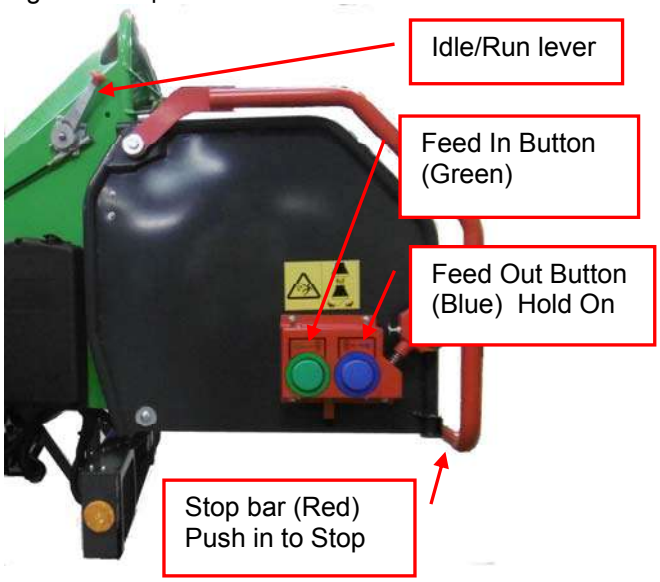
Check machine before starting (see Section 4 Preparation and Section 5.1 Operation: Pre-work checks).
Be aware of potential hazards in work area, i.e. uneven ground, tree roots, trip/slip hazards, obstructions and type of materials being fed into machine.
Feed from a side.
Keep clear of discharge area.
Have a second trained operator within easy reach of machine.
Maintain strict discipline at all times.
Service machine at specified periods. (see Section 6: Routine Maintenance).
Note direction of discharge chute and if necessary note wind direction to prevent debris from being blown into highway or where it could affect members of the public.
Keep machine level.
Check route to worksite for gradients, undulations and obstructions.
Remove key before doing any maintenance.

3.4 Safety Controls and Switches

Emergency Stop/Control Bar (fig 3.4.1)
In the event of an emergency, push stop bar to STOP feed rollers.

Once the emergency has been rectified, press Green button to restart rollers to continue Feed In or press and hold Blue button to Feed Out to eject material.
Stop bar returns to work position but does not restart feed rollers.
If stop be tripped accidentally in normal working conditions, i.e. NOT an emergency, then Feed In can be recovered by pressing Green button.
To reverse feed rollers (Feed Out) press and hold Blue button. To regain Feed In press Green button.

Fig 3.4.1 Stop Bar and Feed control Buttons



Engine Stop button (fig 3.4.2).
To stop engine, press red stop button on control unit, and/or turn key anticlockwise to '**0**' position.
To restart, reset key clockwise to **1** and press Start.
To disable machine, remove key.

⚠ CAUTION! Do not restart engine until hazard has been removed.

Fig 3.4.2 Engine Stop/Start

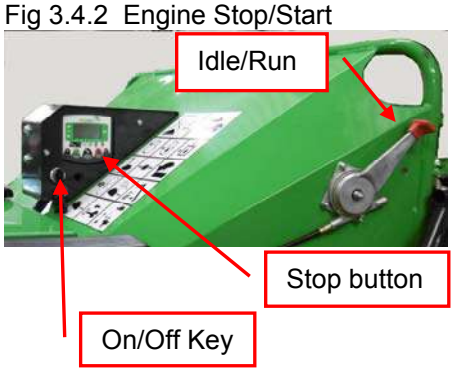
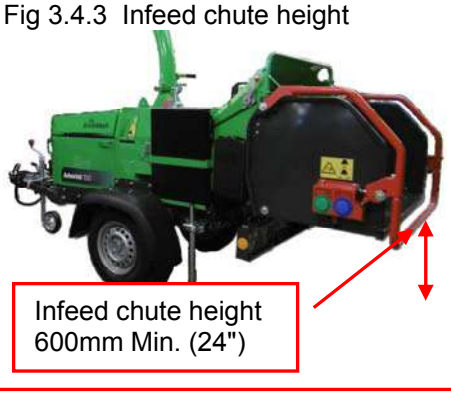


Fig 3.4.3 Infeed chute height



Infeed chute height

⚠ CAUTION! Ensure Infeed chute is at correct safety height.

3.5 Control cut-outs

Cut-out switch under engine cover prevents starting with covers removed.
Engine overheating is protected by thermal cut-out switch in coolant circuit.
Low engine oil pressure is protected by pressure switch in engine oil pump.

3.6 No Stress system

Speed sensor disables feed roller FEED IN or FEED OUT mode when engine speed is below factory pre-set value.
Overload sensor stops and restarts rollers during Feed In.

3.7 *Number not used*

3.8 SYMBOLS on the MACHINE

These relate to operator safety, correct use and maintenance of machine. Check that all personnel understand and are familiar with meanings before using machine.

Important Safety symbols

Take correct action shown on display box below stated hazard box (see table)

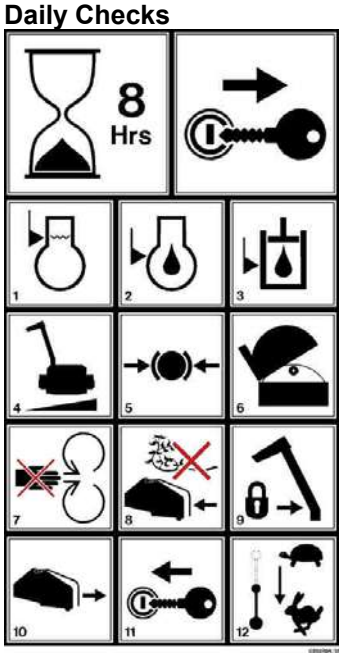
General Safety

Caution!		**Remove Key**		**Do NOT start engine**
Caution!	**Beware flying object hazard**	**Beware noise hazard**	**Beware trapping hazard**	**Brakes off -incorrect**
Read instruction manual	**Wear helmet & visor**	**Wear ear protectors**	**Wear proper clothes**	**Brakes on -correct**
Machine not level -incorrect	**Beware flying object hazard**	**Beware flying object hazard**	**Beware exposed drives hazard**	**Caution!**
Machine level -correct	**Keep bystanders away**	**Position and lock discharge chute**	**Fit all guards**	**Keep nuts tight**

Important Operating Checks Notice

Before use carry out daily stated checks in order shown (see table)

Daily Checks



Every 8 Hours – Daily checks		**Remove key stop engine**
1. Check coolant level	**2. Check engine oil level**	**3. Check hydraulic oil level**
4. Check machine is level	**5. Check brakes are on**	**6. Check chipper flywheel is clear of debris**
7. Check all guards are in place	**8. Check infeed chute is clear of debris**	**9. Lock discharge chute**
10. Check stop bar	**11. Start engine**	**12. Increase from Idle to Run**

Important Safety Information

Caution! Beware of thrown object hazard

Action: Stand to side of infeed chute, NOT in centre.

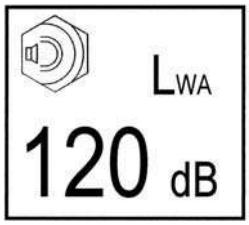
Caution! Beware of thrown object hazard

Action: Keep away from fast discharge chute

Face shield must be worn

Lift Point

Sound level (typical)



Ear defenders must be worn

Ear defenders must be worn

Caution!

Do not climb into infeed chute

Caution! Infeed chute trapping hazards

Keep hands clear. Do not climb in

Caution!

Do NOT operate with infeed chute at less than 600mm from ground .

Transport Lock

Lock this component before moving machine

Caution! Beware Crushing hazard!

Do NOT work or park directly up or down slope.

Maintenance Information

Radiator cleaning

8 Hours	40 Hours
Check radiator screen	Blow out radiator core

Petrol Filler

Hydraulic Filler

Grease point

40 hours / weekly

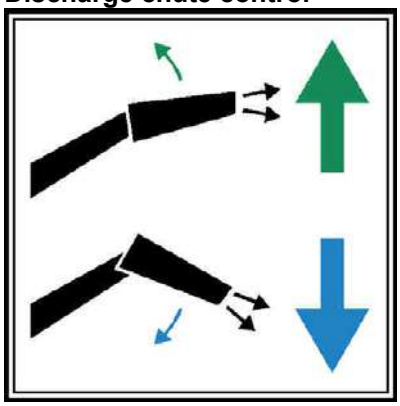
High temperature Grease 40 hours

Operating Information

Chipper Flywheel cleaning

Caution!	Read Manual!	Remove key
Caution! Sharp edges	1) Wear protective gloves	2) Release cover bolts
3) Open chipper covers	4) Lock / Block flywheel	5) Clean blade nut and bolt recess
6) Remove blade nut	7) Clean blade spigot and flywheel recess	8) Replace and Tighten to 200Nm
9) Replace all covers	10) Secure covers	11) Replace key

Discharge chute control



Green is UP: Blue is DOWN

Feed Roller controls Left hand shown

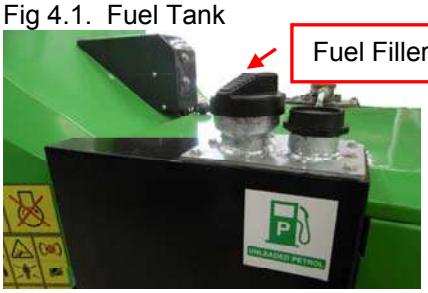
Feed In Feed Out

Green Blue

4.1 Initial Fuelling and Parking

Fill fuel tank with correct fuel (Fig 4.1).
Top up hydraulic tank if necessary, with correct oil.
See Section 6.

Fig 4.1. Fuel Tank



4.2 Infeed Chute

Position chipper on firm and level ground.
1) Apply vehicle handbrake. If machine is detached from vehicle, set jockey wheel clamp to allow jack screw to lift drawbar clear of vehicle hitch, apply trailer handbrake (fig 4.2) and chock wheels.
2) Set drawbar jockey wheel height to level machine body.
3) Release infeed chute catches (fig 4.2), and gently lower infeed chute to work position.
4) Check height of infeed chute (fig 4.3) and adjust for safe working height (Fig 3.4.3)
5) Set rear stand.

To obtain correct infeed chute height see 4.2 below to adjust drawbar if necessary.

Fig 4.2 Infeed Chute Catches

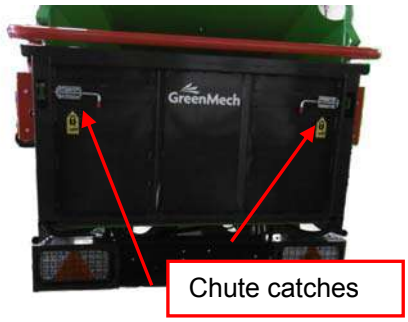
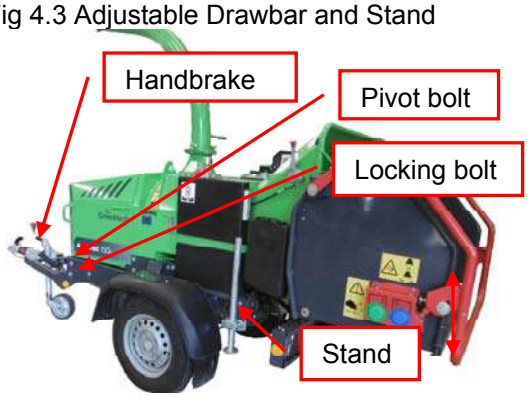


Fig 4.3 Adjustable Drawbar and Stand



4.3 Drawbar adjustment

1) Support front of chipper with suitable jack.
2) Remove height adjustment locking bolts on each side (fig 4.3).
3) Adjust jack until chute correct safe height from ground.
4) Refit bolts in their new position and tighten securely.
5) Remove jack.

CAUTION! A loaded towing vehicle increases height of infeed chute.

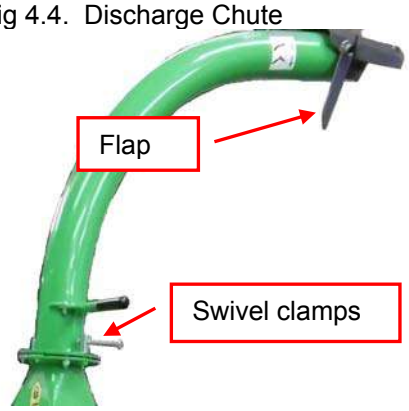
CAUTION! Infeed chute must not be used at less than 600mm from ground. (fig 3.4.3). Adjust drawbar of Road tow models as necessary.

CAUTION! Before travelling, always fold up and secure infeed chute flap.

4.4 Discharge Chute (Fig. 4.4)

Release swivel clamps, point chute in desired direction and tighten clamps.
Set flap at desired height and tighten clamp.

Fig 4.4. Discharge Chute

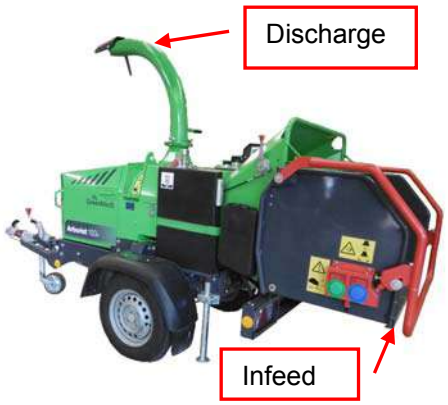


⚠ CAUTION! Do not point discharge chute towards infeed area.

4.5 Work Position

Typical work position (fig 4.5) shown with infeed chute down and discharge chute pointing away from infeed.

Fig 4.5 Work position (typical)



5.1 Pre-Work Checks:

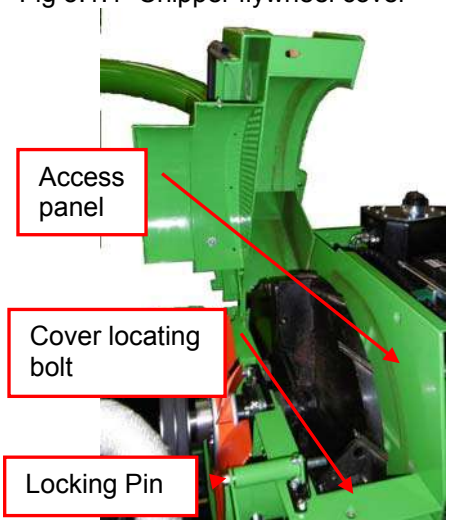
Check machine is stationary, Key in OFF position or removed, and hand brake applied if separated from vehicle.
Check that machine is level and infeed chute is not less than 600mm from ground (fig 3.4.3).
Check engine oil level (See Engine instruction manual).
Check hydraulic oil level (See Section 6).
Check fasteners for tightness and hydraulic connections for leaks.
Check condition of blades.

Undo bolt on chipper flywheel cover.
Raise engine cover. Check nothing is rotating.
Remove bolt retaining chipper flywheel cover.
Using discharge chute handle as a lever, swing back cover onto stop to expose chipper flywheel and blades. (fig 5.1.1)

⚠ CAUTION! Beware sharp edges of blades and unexpected movement.

Note: Locking pin will spring towards chamber to prevent flywheel from turning.
Retract locking pin and carefully rotate chipper flywheel to check tightness of blade bolts and condition of blades (fig 5.1.2).
Remove any loose wood material.
If any bolts are loose, refer to Maintenance Section 6.7 for further action.
Retract and hold locking pin and replace chipper flywheel cover. Tighten all bolts securely.
Remove any loose material and dust from radiator and engine bay
Replace all covers and secure.

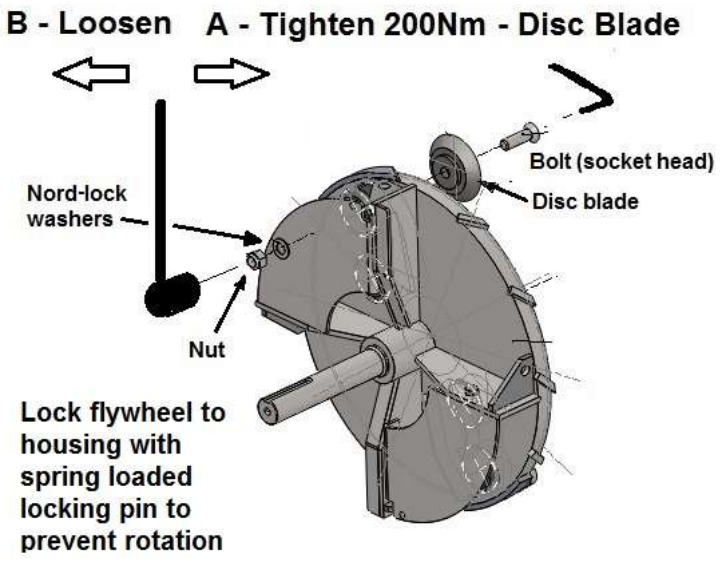
Fig 5.1.1 Chipper flywheel cover



Check discharge chute is in desired position pointing away from infeed and all clamps are tight. (see Section 4.4)
Check work area and erect signs and cone off discharge area if necessary.
Check **ALL** safety procedures have been followed.

⚠ CAUTION! Always work with chipper level, preferably with the infeed direction slightly down the slope to minimise the risk of material falling back out.

Fig 5.1.2. Flywheel and blades



5.2 Starting Machine

⚠ CAUTION! Beware sharp edges and dust. Wear protective gloves and eye shield!

Check all other personnel are clear of machine.
Check that feed roller stop bar is free to move.
Turn the ON - OFF key to position **I**. Wait for the pre-glow countdown to cease and chipper speed 0 rev/min to be displayed.
Press green START button to start chipper.
Move IDLE/RUN lever to increase speed to operating speed.
Press Green Feed In button when ready to start loading chipper.

Fig 5.2.1a Engine Controls

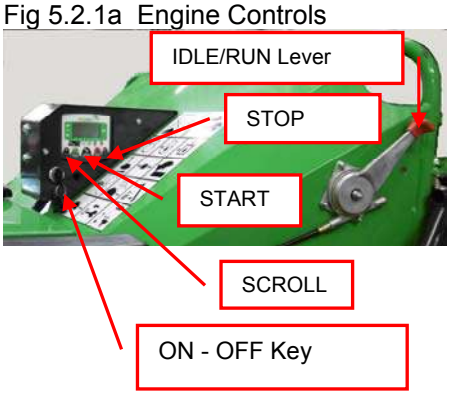
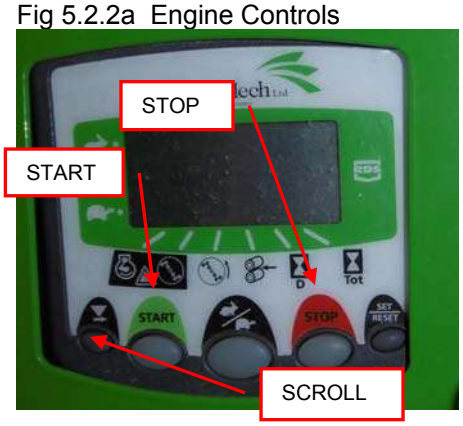


Fig 5.2.2a Engine Controls



5.3 Stopping Machine

1) Push stop bar to STOP feed rollers.
2) Set hand lever to IDLE and allow chipper flywheel to slow down (fig 5.2).
3) Press red STOP button or switch key Off to stop engine .
4) Switch ON - OFF key to position 0.
5) Wait for chipper flywheel to stop.

⚠ CAUTION! Chipper flywheel will take several seconds to stop due to its inertia.

5.4 Blockages

Stop engine and REMOVE key to secure place.

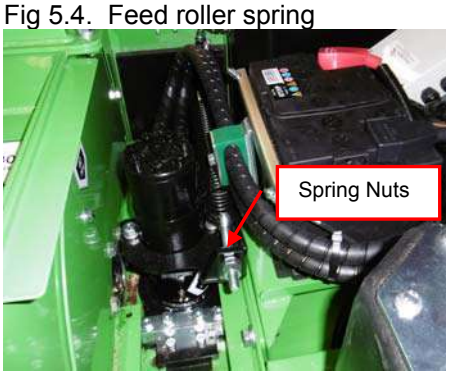
⚠ CAUTION! Chipped material is inflammable. Expect large volume and prevent from falling into engine compartment. All material must be removed.

Open chipper chamber. See 5.1 Pre-work checks.
Look into chamber to identify problem if possible, before reaching in.
Open discharge chute and fold down at hinge to inspect and clear.
Clean out discharge chute thoroughly with a suitable rod to pass around bends as necessary.

⚠ CAUTION! Beware sharp edges of blades and unexpected movement of flywheel due to resistance of engine. Wear protective gloves.

Check if chipper flywheel is free to rotate. Pull top of flywheel in operating direction of rotation. If flywheel rotates freely proceed to (6) below.
If flywheel does NOT rotate freely, proceed as follows:
1) Loosen nuts to release feed roller spring (Fig 5.4) and pull roller away from fixed roller.
2) Inspect blades from infeed chute and if necessary enter with care to clear material.
3) Carefully remove excess loose material from around chipper flywheel and note any obstructions.
4) Carefully rotate chipper flywheel in reverse direction by full revolution to release blocked material. Use bar against paddle blades for aid.
5) Carefully remove all material, checking for obstructions.
Check rotation of chipper flywheel.
Check condition of blades. See 5.1.6
Note: Always attempt to find reason for blockage. e.g. blunt blades, slack drive belts.
6) Re-assemble all covers with correct fasteners and check for security.
7) Start machine as 5.2 and check operation.
Note: If machine will not run, repeat process or contact dealer for technical advice.

Fig 5.4. Feed roller spring

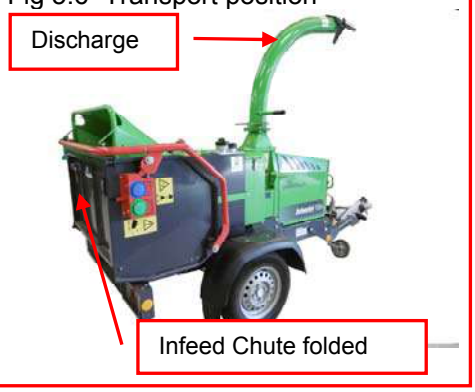


5.5 *Number not used*

5.6 Preparing For Transport On Completion Of Work (Fig 5.6)

Check that engine has stopped and chipper flywheel is stationary.
Remove surplus material from infeed chute and all machine surfaces.
Unlock, and remove covers to remove debris.
Replace and secure covers.
Swivel discharge chute into transport position, normally facing forward, and secure.
Fold up Infeed Chute and secure with catches.
If detached, re-attach trailer to vehicle, raise jockey wheel, connect safety cable and electric services.

Fig 5.6 Transport position



5.7 Operating Hints

Check that chipper flywheel is at full speed, rpm readout should be above 1700 rpm.
NOTE: "No Stress" system will only allow FEED IN (Forwards) and FEED OUT operation of feed rollers when machine is running at FULL operating speed and not overloaded.
Reduce chipper speed to IDLE whilst further material is collected for chipping.
Take care when feeding wood into machine to allow for awkward shapes to "KICK" when contacting feed rollers.
Position end of larger sections of wood inside infeed chute and then support other end whilst pushing wood into feed rollers.
NOTE: If chipper becomes blocked do not continue to feed. It will make removal of blockage more difficult. See 5.4.

⚠ CAUTION! Do not release discharge chute clamps when chipping is in progress. Elevation of discharge is altered by means of adjustable flap (fig. 4.4).

⚠ CAUTION! Keep working area around the machine clear at all times and check only authorised personnel are present.

ROUTINE MAINTENANCE SCHEDULE

 CAUTION! Always remove key and check for rotation before carrying out any maintenance.

Note: Engine/ drive cover is secured closed with a hexagon headed release requiring spanner. Replace and secure when task is completed.

Action	Section	Page
DAILY		
Check engine oil level	6.2	6-4
Check hydraulic oil level	6.4	6-4
Check fuel level	6.5	6-4
Check all drive belts	6.6	6-4
Check condition of blades and retaining bolts	6.7	6-5
Note: Special tools may be required		
Clean inside engine cover	6.8	6-6
Check feed roller stop bar function	3.4	3-2
First 5 hours		
Change engine oil and filter	Refer to engine manual	
First 50 hours		
Check drive belt tensions	6.9	6-6
Check battery levels	6.13	6-7
Check wheel and tyre condition and pressures	6.14	6-8
Check brake condition and operation	6.15	6-8
Check hydraulic connections	6.18	6-9
Check all mountings	6.19	6-9
Check feed roller stop bar function	3.4	3-2
Service engine	Refer to engine manual	
Weekly in addition to Daily actions		
Clean engine cover	6.8	6-6
Check drive belt tension	6.9	6-6
Steam clean machine	6.10	6-6
Clean air cleaner	6.11	6-7
Check electrical connections	6.12	6-7
Check battery levels	6.13	6-7
Check feed roller stop bar function	3.4	3-2
Check wheel and tyre condition and pressures	6.14	6-8
Check and adjust brakes	6.15	6-8
Grease all bearings and pivots	6.16, 6.1	6-8
Check hydraulic connections	6.18	6-9
Check all mountings	6.19	6-9
250 hours in addition to Daily and Weekly actions		
Check all fluid levels	6.2, 6.4	6-4
Check brake condition and operation	6.15	6-8
Check condition of bearings and pivots	6.16	6-8
Service engine	Refer to engine manual	
Check axle mounting bolts for tightness	6.19	6-9
Replace return filter element	6.20	6-9
1000 hours in addition to 250 hour actions		
Change hydraulic oil when replacing filter element	6.21	6-9

ENGINE MAINTENANCE **REFER TO ENGINE MANUAL**

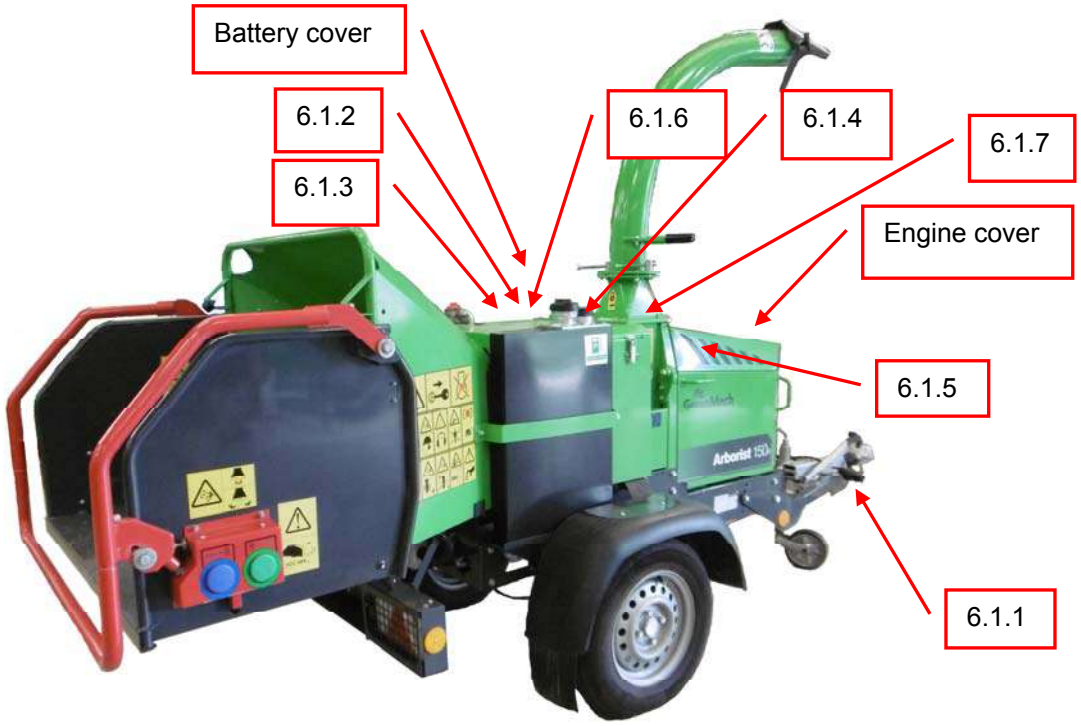
WHEELS AND BRAKES **REFER ALSO TO AL-KO CHASSIS MANUAL**

Tyre Pressure **2.7 bar (40 lb/in^2)**

Recommended lubricants	**Specification**
Hydraulic Oil	ISO 32
Grease	Complex grease EP2 (high temperature)
Engine	Synthetic 5W - 30

6.1 Lubrication Points (see 6.14)

Fig 6.1 Lubrication points Arborist 150p model



Grease except where stated

6.1.1	Drawbar	2 nipples
6.1.2	Feed roller slide	Clean and grease sparingly
6.1.3	Sliding Feed roller bearing	1 nipple under battery cover
6.1.4	Fixed Feed roller bearing	1 nipple under battery cover under hoses
6.1.5	Chipper flywheel front bearing	1 nipple (Fig 6.1.3) under flywheel cover
6.1.6	Chipper flywheel rear bearing	1 nipple (Fig 6.1.2) under battery cover
6.1.7	Chipper flywheel labyrinth	1 Nipple in flywheel boss

Note 1: Do not over-grease bearings as damage to seals may occur.
40 hours requires only one full pump of hand operated cartridge gun.
Note 2: Use high temperature grease on chipper flywheel bearings

Detail of nipples under top and engine covers (all models)

Fig 6.1.2 Nipples and slides under top cover

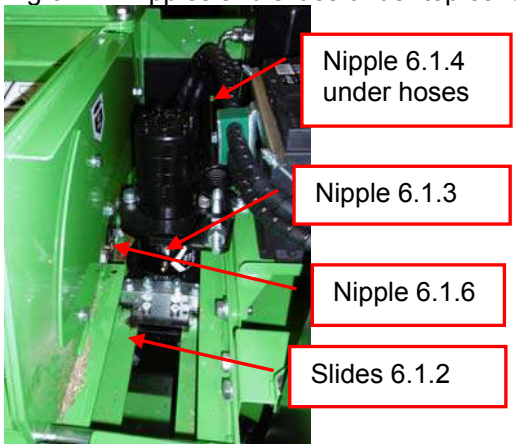
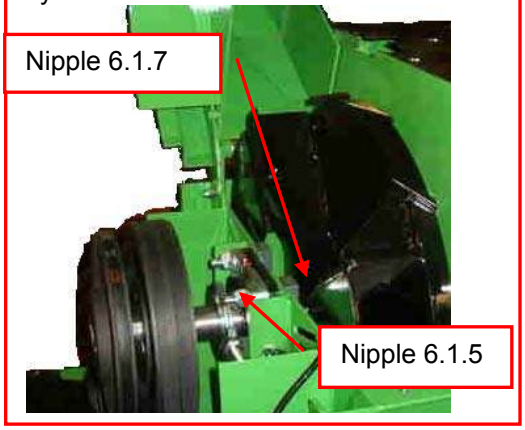
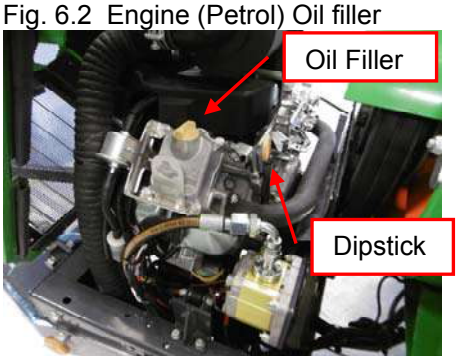


Fig 6.1.3 Nipples under engine and flywheel covers



6.2 Engine Oil (Under engine cover)
Check daily (fig 6.2). Refer to engine manual to refill.

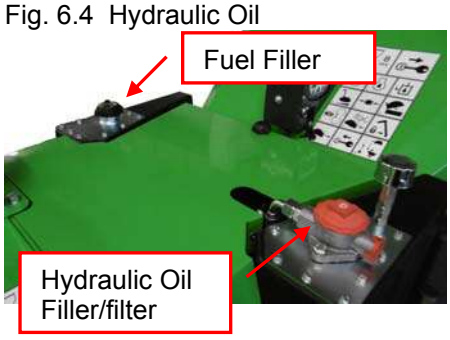
Fig. 6.2 Engine (Petrol) Oil filler



6.3 *Number not used (Air-cooled engine)*

6.4 Hydraulic Oil
Check daily (fig 6.4). If below mark check for leaks and refill to correct level.
1000 hours. Remove drain plug, drain tank and refill with clean oil of correct specification. Replace filter (6.18)

Fig. 6.4 Hydraulic Oil



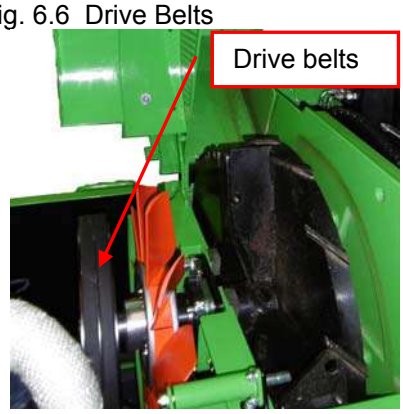
6.5 Fuel Level
Check daily before work and fill as required.

⚠ CAUTION! Use clean fuel only. If in doubt, use a funnel with a filter.

⚠ CAUTION! Do not use any form of synthetic fuel.

6.6 Drive Belts (Under engine cover)
Check daily (Fig 6.6), before work, condition of all drive belts and replace if worn.
See section 6.9 for adjustment and replacement instructions.

Fig. 6.6 Drive Belts



6.7 Disc Blade Cleaning - Replacement

Blade design permits relocation in at least two rotated positions before regrinding or replacement is required.

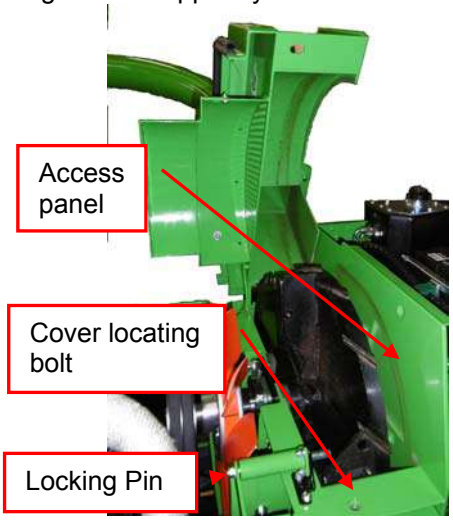
1 Check engine is switched off, and start key removed.

2 Raise engine cover, and check any rotation has stopped.

⚠ CAUTIONS for Blade cleaning

- Blades have sharp edges. Wear protective gloves.
- Flywheel paddles and vanes create shearing and trapping points at edges of exposed housing. Do not place hands or fingers on or near flywheel and housing edges.
- Flywheel rotation is resisted by engine compression in either direction. Beware unexpected movement when manually rotating flywheel between blade positions.
- Tools can slip if not fully engaged. Clean fasteners thoroughly before applying tools.
- Ensure flywheel is prevented from rotating when applying force to tools on blade fasteners.

Fig 6.7.1 Chipper flywheel cover



Follow procedure as on symbol instructions (Section 3.8):

1) Wear protective gloves.

2) Remove access panel under battery cover.

3) Using discharge chute handle as a lever, swing back cover on to stop to expose flywheel and blades. (fig 6.7.1)..Flywheel locking pin will spring towards chamber.

4) Locate and retract flywheel locking pin, and carefully turn flywheel until locking pin engages hole in flywheel to prevent anticlockwise turn (viewed from blade nut).

5) Thoroughly clean debris from nut faces and bolt head socket (access panel engine side).

6) Using socket tool, loosen nut anticlockwise. Support blade bolt with hexagon key as required and remove blade and fasteners (fig 6.7.2).

7) Thoroughly clean debris from flywheel blade housing and all components to be replaced. Inspect condition of nuts and bolts and replace if any signs of wear. (Fig 6.7.3 and fig 6.7.4)

8) Replace blade with Nord-Lock washers ensuring that flywheel is blocked for opposite rotation. Tighten to correct torque: 200Nm.

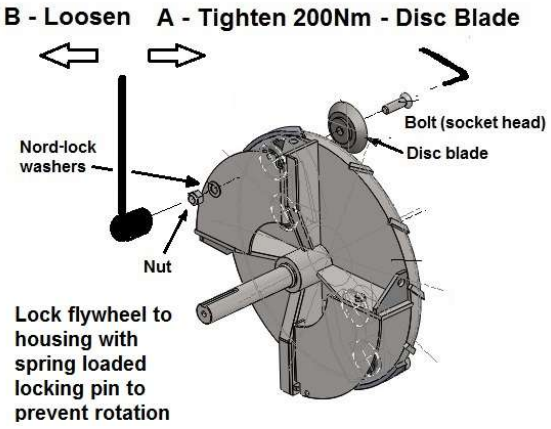
Retract locking pin and carefully rotate flywheel to next blade and repeat next blade removal (from 4 above) until all blades cleaned and replaced securely.

9) Replace chipper cover with locking pin held retracted. Replace access panel.

10) Check all covers are secure.

11) Replace key to start machine.

Fig 6.7.2. Flywheel and blades



⚠ CAUTION! Blades must only be sharpened by grinding angled back face on a bench grinder. Grinding of front face will upset gap, which is factory set. Do not sharpen with hand held equipment.

All blades must be sharpened in “sets” with equal amounts removed to maintain balance. See 6.24

Note. If any blades are worn below flat annular section a complete set should be replaced.

Fig 6.7.3 Blade fastening assembly

Fig 6.7.4 Nord-Lock washer pair

Note fewer teeth facing each other

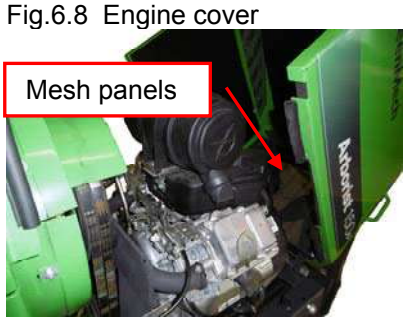
6.8 Engine cover

Daily

Open cover to check for debris. (fig.6.8)
Remove debris and clean mesh panels.
Close and secure cover.

⚠ CAUTION! A build up of debris risks overheating of engine and a risk of fire.

Fig.6.8 Engine cover



6.9 Drive belts

Belt Replacement

Remove engine cover.

Chipper Drive (Fig 6.9.1)

Belts are tensioned by weight of engine
Place jack underneath engine or tray and raise until belts are sufficiently slack to be removed.

Pump Drive (petrol engine)- Feed rollers (Fig 6.9.2)

1 Remove chipper drive belts from engine pulley (Fig 6.9.1).
2 Release clamp bolts and pivot bolt to permit belt adjustment or removal.
3 Remove old belts and fit new set of belts ensuring they lay snugly in pulley grooves.
4 Lever pump bracket to tighten belt.
5 Tighten pivot bolt and clamp bolt.
6 Replace all covers and secure.

Fig 6.9.1 Chipper Belt

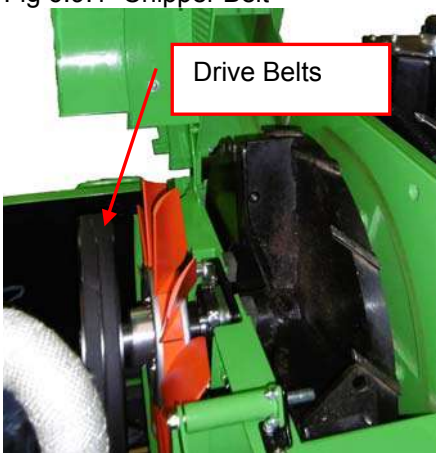
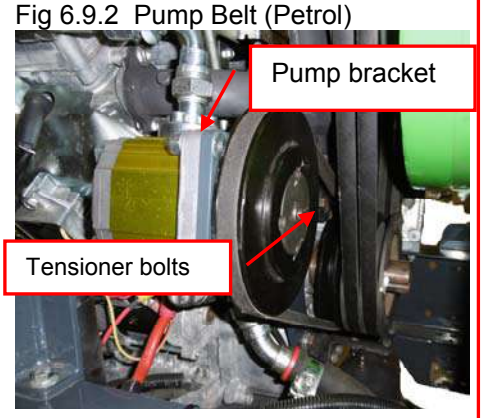


Fig 6.9.2 Pump Belt (Petrol)



6.10 Steam Cleaning

Weekly and every 250 hours

1 Check all covers are fitted and closed.
2 Steam clean machine surfaces.
3 Clean electrical components with a damp rag, spray with WD40 and then wipe with dry rag.

⚠ CAUTION! Do not steam clean directly on to electrical components, e.g. control boxes.

6.11 Air Cleaner (under engine cover)

Weekly

1 Remove cover clips (fig 6.11) and release.
2 Slide out element and either blow out with air-line or gently tap on smooth ground to release debris.
3 Replace cover.

Fig 6.11 Air Cleaner (Petrol)

6.12 Electrical connections

Weekly

Check all wiring loom connections are secure.

⚠ CAUTION! Poor connections will affect engine security cut-outs and may prevent starting.

6.13 Battery

First 50 hours and weekly

1 Remove battery cover.
2 Release clamp stays to access battery (Fig 6.13).
3 Check electrolyte level and top up if required.
4 Reposition battery, and secure stays.
5 Refit cover and secure.

Removal

1 First disconnect negative (-) cable (black cap).
2 Disconnect positive (+) cable (red cap).
3 Remove clamp and carefully lift out battery.
4 Replace by connecting positive cable before negative.
5 Secure battery as 6.13.4 above.

Fig 6.13 Battery

⚠ CAUTION! Gases are explosive. Electrolyte is corrosive. Avoid sparks and spillage.

6.14 Tyres and Wheels

50 hours and 250 hours

Check condition of tyres.
Check pressures and inflate to 2.7bar (40lb/in^2) pressure as required.
Check wheel nuts are tight to 110Nm (80lbft) torque.

6.14.1 Tyre sealant

Tyres installed with Air-Seal Products water based sealant have either green valve cap or green ring around valve. Tyres will operate in same fashion as normal pneumatic tyre.
Note If valve core is depressed to deflate tyre, valve recess may become blocked with plug of sealant. To unblock either remove valve core to allow air to blow plug out or alternatively blow plug back into tyre with airline.
For replacement supply, consult GreenMech or distributor.

6.15 Brakes

50 hours, weekly and 250 hours

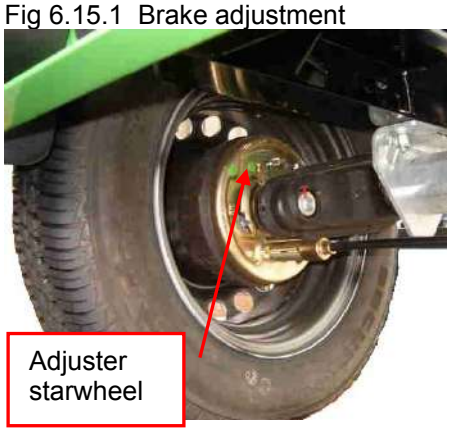
Check operation and effectiveness of overrun and handbrake.

100 hours

Adjust brakes as follows

2 Chock machine, release handbrake fully off and check drawbar is fully extended.
3 Jack up both wheels and support on axle stands.
4 Remove inner bung (fig 6.15.1) to expose adjuster 'starwheel'.

Fig 6.15.1 Brake adjustment

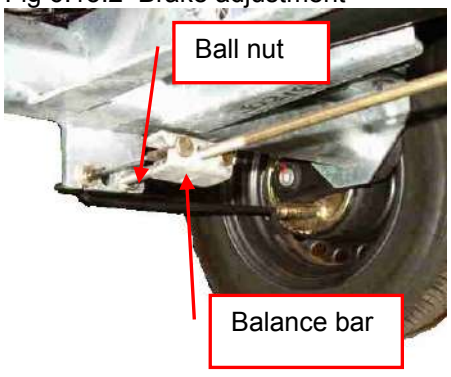


5 Adjust starwheel with screwdriver until tight whilst rotating each wheel forwards until tight.
6 Slacken until wheel rotates freely in forward direction.

⚠ CAUTION! Reverse rotation of wheel may prevent correct adjustment.

7 Check brake linkage has 4 to 6mm movement at cable.
8 Repeat for opposite wheel.
9 Check balance bar is straight and pulls both cables evenly (fig 6.15.2).
10 Adjust ball nut to remove any slack from brake rod.
Note: Servicing of brakes may be required more often if above average mileage is covered.
Refer to AL-KO brake manual or GreenMech for details for brake shoe replacement and other servicing

Fig 6.15.2 Brake adjustment



6.16 Bearings and Pivots

weekly

See paragraph 6.1 for routine lubrication.

250 hours

Check rotating components for excessive movement and noise in operation.
Replace as required.
Note: Wheel bearings are maintenance free and do not require attention.

6.17 *Paragraph number not used.*

6.18 Hydraulic connections

50 hours

With circuit diagram to follow hose routings, check all hoses and connections for leaks and damage.
Replace any worn or damaged hoses with correct type and length.
Check routing before removal.
Replace hose free of strains, twists or kinks.

⚠ CAUTION! Ensure any residual pressure is released before dismantling.

⚠ CAUTION! Ensure hoses are refitted free of twists and kinks.

6.19 Mountings

250 hours

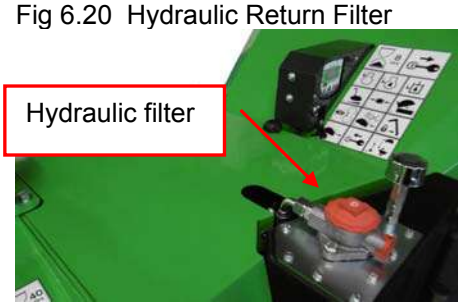
Check that all mounting bolts are tight.

6.20 Hydraulic Return Filter

250 hours (Fig 6.20)

1 Check oil is cool.
2 Unscrew filter cover (spring under cover) and carefully lift out element; it may require gentle prising out, discard safely (fig 6.20).
3 Fit a new filter element to correct specification and replace cover and spring.

Fig 6.20 Hydraulic Return Filter



⚠ CAUTION! Do not overtighten.

6.21 Hydraulic Oil change

1000 hours

Remove hydraulic oil with suction pump at filter/filler and replace with new oil and filter of correct specification.
Replace suction filter.
Dispose of waste oil according to local authority environmental procedures.

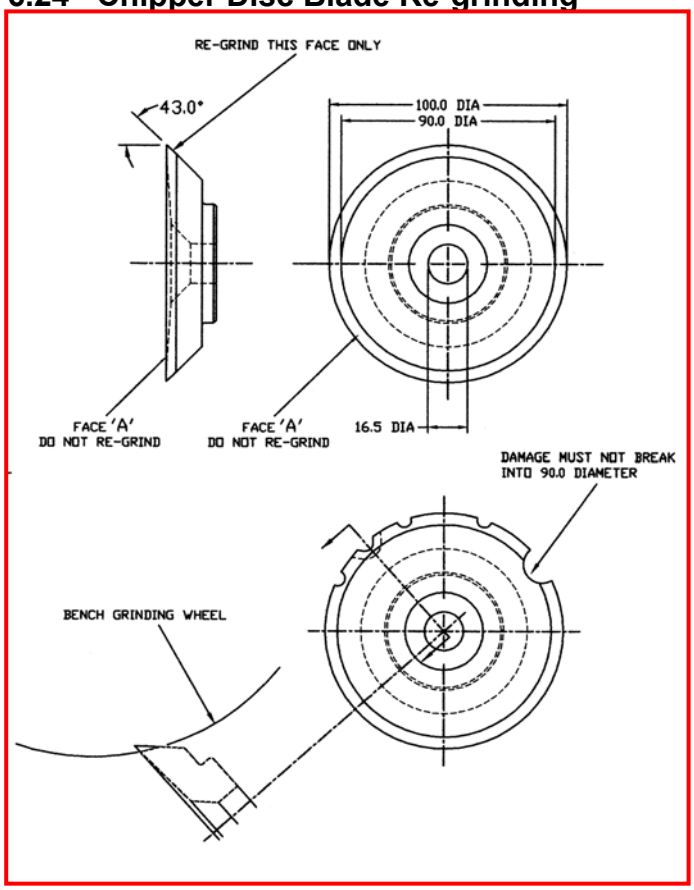
6.22 Fuses and No Stress system

There are two fuses.
A 40 amp in-line fuse protects engine pre-heat and start circuit.
A 20 amp fuse protects No Stress Power Protection System.
Note Operating speeds for No Stress system are factory set for particular machine builds and must not be readjusted.

6.23 Fault finding

Fault	Check	Action	Page
Engine will not start	Battery	Recharge	6-7
	Fuel	Fill tank	6-4
	Oil pressure	Check Oil level	6-4
	Thermal cut-out	Check operation	6-4
	Fuses	Check	6-9
Engine not at correct speed	Engine control	Check operation	5-2
Chipper flywheel will not start	Drive belts	Replace	6-7
Feed rollers do not turn	Stop bar	Check action	3-2
	Hydraulics	Check solenoid valve	
Feed will not reverse	Stop bar and buttons	Check action	3-2
	Hydraulic valve	Check operation	
Discharge does not flow	Discharge chute	Check for blockage	5-3
	Chipper flywheel	Check for blockage	5-3
Unusual noise(s)	Chipper flywheel and bearings	Check and replace	5-3 6-6

6.24 Chipper Disc Blade Re-grinding



Examine set of chipper disc blades for damage. If front face 'A' is worn, blade must be scrapped. If chips have broken off cutting edge they can be re-dressed provided that they do not go inside 90mm diameter area.

Always regrind worst damaged blade first, as this will establish target weight for remaining blades.

If large chips exist over less than 30% of circumference, blade may be re-ground provided large damaged area is not used for chipping.

Chips may be repaired by grinding a cutting edge around damaged area using a bench grinder.

With chipper blade mounted on a mandrel re-grind remainder of cutting edge at 43º as shown

Re-grind in increments of approximately 0.01mm (0.004") until sharp edge is restored.

If re-grinding breaks into 90mm diameter area, blade must be scrapped.

After re-grinding weight of blades within a set must not vary by more than +/- 1gm (0.03oz). Weight of each blade must not be less than 560gm (20oz)

Note: Disc Blades (and optional Duo blades) use a patent Nord-Lock washer pair together with a thinner Nyloc type locking nut at an increased torque setting of 200Nm.
See fig 6.7.3 and Fig 6.7.4.
Ensure that both washers are assembled as a pair with faces of fewer teeth facing each other (fig 4). Thread lubricant is recommended to ensure even torque. Do not use thread adhesive (e.g. Loctite).

Reuse:
Nord-Lock washers can normally be re-used when cleaned and re-lubricated.
Nyloc nuts should always be inspected for damage before reuse.

7.1 Storage

Thoroughly clean machine and note any replacement parts required.
Carry out 250 hour service if not already done. Refer to Section 6
Fit replacement parts when available.
Remove battery Refer to 6.13
Drain fuel
If machine is to be stored for more than 3 months, place on axle stands to remove weight from wheels.

7.2 Removal from Storage

Charge battery and refit	Refer to 6.13
Check tyre pressures	Refer to 6.14
Check brake operation	Refer to 6.15
Carry out machine preparation as necessary	Refer to Section 4

8 Disposal

When machine is finally scrapped, the following items should be disposed of only at authorised waste disposal facilities.

Engine oil. Hydraulic oil. Antifreeze. Battery. Tyres

If in doubt, consult Local Authority environmental department.

Major non-ferrous items such as covers and hydraulic hoses may also be disposed of separately.

GreenMech
The Professionals' Choice

GreenMech Ltd • The Mill Industrial Park • Kings Coughton • Alcester • Warwickshire • B49 5QG • UK
Tel: **01789 400 044** • Email: **sales@greenmech.co.uk** • Web: **www.greenmech.co.uk**