

DENNIS G860

CASSETTE MOWER

INSTRUCTION MANUAL

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DENNIS 86cm CASSETTE CYLINDER MOWER MODEL G860

INTRODUCTION

The reliability and quality of performance of the DENNIS G860 depends upon some simple care maintenance carried out regularly. This manual has been prepared to allow the user to carry out all such work.

It is advisable to read the instructions carefully. Proper care and attention will enable the machine to give a continuous, satisfactory, and reliable service.

Failure to carry out regular lubrication and maintenance as outlined in this manual may render any guarantee or warranty invalid.

In the case of any difficulty, or if further information or advice is required, our Service Department is always at your call. In the interests of speed and accuracy of information please quote the serial numbers of the machine and engine when making enquiries.

For the mower, this is to be found on a plate attached to the side frame. The engine number is stamped on either the crank case or the gear casing facing towards the front of the machine.

DESCRIPTION

Manufactured with a 34" (86cm) cutting width this mower is powered by a 5.5 h.p. or 8 h.p. air cooled single cylinder four stroke petrol engine (either Kubota or Honda). The rear roller and cutter are controlled independently via belt clutches operated from the console on the upper handlebar. A parking brake is fitted for added safety when working on sloping ground.

In the design of the machine, special attention has been given to the importance of easy service and maintenance with the construction based on a sectional assembly system. These are the Engine Unit, the Cassette Unit, the Rear Roller Unit, and the Front Roller Unit, each of which can be readily removed individually from the main Frame Chassis Unit.

The interchangeable cassette system allows a variety of cassettes to be used for varying applications.

IMPORTANT SAFETY INSTRUCTIONS

In order to operate the machine safely please follow these Health and Safety guidelines.

TRAINING

Read the instructions contained in this manual with care. If you are in any doubt please ask your employer or contact us direct at **DENNIS**. Be familiar with the controls and the proper use of the equipment.

On the job training courses are available from Dennis. Contact the factory or you dealer for details.

Never allow children or people unfamiliar with these instructions to use the mower. Local regulations or insurance may restrict the age of the operator.

Never mow while people, especially children, or pets are nearby.

Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.

PREPARATION

While mowing always wear substantial footwear and long trousers. Do not operate the mower in barefoot or in open sandals.

Thoroughly inspect where the equipment is to be used and remove all stones, sticks, wire, bones and other foreign objects.

WARNING:- Petrol is highly flammable and will damage grass if spilt.

- A) Store fuel in containers specifically designed for this purpose.
- B) Refuel out doors and do not refuel whilst smoking.
- C) Add fuel before starting the engine. Never remove the cap of the fuel tank or add petrol while the engine is running or when the engine is hot.
- D) If petrol is spilled do not attempt to start the engine but move the machine away from the area of spill and avoid creating any sources of ignition until the vapours have dissipated.

Replace damaged or faulty silencers.

Before using the machine always inspect the safety devices including the cut off switch and the blades for excessive wear or damage. Replace if necessary.

OPERATION

Do not operate the engine in a confined space where dangerous CARBON MONOXIDE fumes can collect.

Mow only in daylight or good artificial light.

Avoid operating the machine in wet grass where feasible.

Always be sure of your footing on slopes.

Walk. Never run.

Walk across the face of slopes, never up and down.

Exercise extreme care on slopes when changing direction.

Do not mow excessively steep slopes. MAX 20% slope for engine.

Use extreme caution when reversing or pulling the machine towards you.

Stop the blades if the mower has to be tilted for transportation when crossing surfaces other than grass and when transporting the mower to and from the area to be mown.

Never operate the mower with defective guards or shields or without the safety devices, for example without the deflector plate or grassbox in place.

Do not change the engine governor settings or overspeed the engine.

Disengage all blades and drive clutches before starting.

Start the engine carefully following the instructions with feet well away from the blades.

Do not tilt the mower when starting the engine.

Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.

Never pick up or carry the mower while the engine is running.

OPERATING INSTRUCTIONS

PREPARATION FOR USE

Before commencing ensure the turf is free from stones or other obstructions which may damage the cassette unit.

Set the height of cut to the required level (see page 8)

Check the engine.

Fill the fuel tank 3/4 full with unleaded petrol.

Always check the oil levels of the machine prior to commencing.
Full details are given in the ENGINE Manual, which accompanies this book.
This should be read carefully before starting the engine.
A daily check is recommended.
(Recommended grade oil is SAE 10-40 Multigrade).

Disengage the cutter clutch. This is a red lever located on the handle bar console on the left hand side when at the operators position.

Set the throttle control on the handlebars console to the idle position.

Ensure toggle on /off switch to ON position. This is situated on the right hand side of the handlebar console facing the operator.

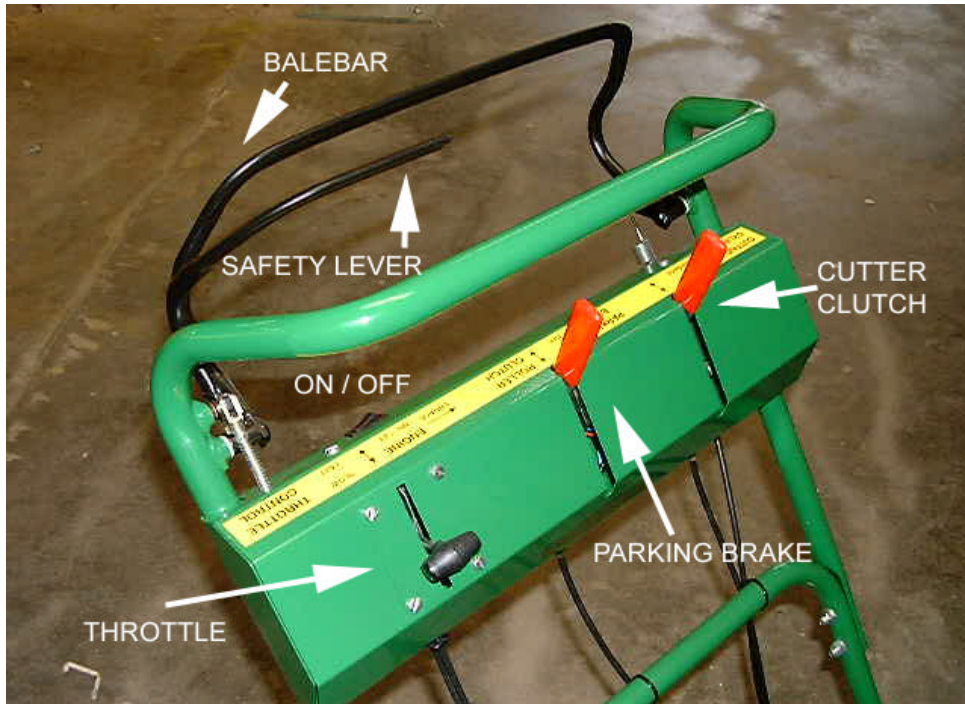
The engine may now be started according to the manufacturer's instructions.

IMPORTANT INFORMATION

Please read all the details in this section and familiarize yourself and all machine operators with the contents.

CONTROLS

All controls with the exception of the choke and starter chord are located on the handlebar console. Decals indicate the location and operation of each.



SAFETY LEVER

Located on the right hand side of the upper handlebar this L shaped black lever is made from flattened tubular section. It operates an electrical contactor within the console which interlocks other functions such as cutter clutch and parking brake. This lever is spring loaded to return to off position when released.

BALE BAR

Located closest to the operator on the upper handlebar assembly this black lever made from flattened tubular section goes across the width of the handle and is pivoted on both sides. It operates, via a spring loaded cable assembly, the roller clutch mechanism which is located under the guard adjacent to the engine. The lever is designed to engage the safety lever when it is operated (pushed forward), and releases the safety lever when let go. The spring returns it to the off position. The machine will move forwards when the bale arm is pushed towards the upper handlebar and can be "clamped " under ones hand onto the handlebar for comfortable operation.

CUTTER CLUTCH

Located on the left hand side of the console with a red lever. Forwards to engage, back to disengage. The lever is interlocked with the safety lever and the engine will cut out if engaged without firstly operating the safety lever. The lever operates, via a spring loaded cable, the cutter clutch mechanism located under the chaincase on the left sideplate.

PARKING BRAKE

Located in the centre of the console as a red lever. Forwards to engage the brake, back to release. The lever system is interlocked with the safety lever and the engine will cut out if the safety lever is operated with the parking brake on.

The lever operates, via a cable, a braking mechanism located under the guard next to the engine.

THROTTLE

Located on the right hand side of the console as a black lever. Forwards for low revs, backwards for more. The mechanism is a piano wire type. Do not overstrain.

ON/ OFF SWITCH

Located on the right hand side of the console facing the operator position. This switch isolates the engine and cuts off the spark. Ensure it is in the ON position before attempting to start the engine and for added safety put to OFF position when the machine is stopped for added safety.

TO COMMENCE CUTTING

Once the engine is running and the choke has been turned off set the throttle to middle position.

Disengage the PARKING BRAKE, engage the SAFETY LEVER with your right hand and engage the CUTTER CLUTCH with the left hand. The cutter will commence rotating.

Push the BALEBAR forwards to the handlebar and the machine will move forwards. A slow engagement is possible to avoid the machine skidding or jolting forwards.

It is possible to hold the BALEBAR against the handlebar with one hand as the balebar clamps the safety lever in the on position.

When it is required to disengage the roller clutch use your right hand to hold the safety lever in the on position otherwise the engine will stop if the cutter clutch is still engaged.

Practice with the controls will soon bring confidence in operation.

Accidental release in the case of a fall or slip will automatically stop the machine and, if the cutter clutch was engaged the engine will stop.

TRANSPORT (disengaging the cassette drive)

To ensure the safety of operator and machine we strongly recommend disengaging the cutter drive when transporting under power between sites. Disengage the cutter clutch when using the sorrel roller and slitter.

ENGINE INFORMATION

The G860 is fitted with either the Kubota GH170, Kubota GH 250 (8hp) or Honda GX160 petrol engine. Both are single cylinder, overhead valve, 4 stroke, forced air cooled engines. For full specifications please refer to the manufacturers instruction manual included.

Starting the engine:

Once the preparatory steps have been completed as outlined on page 5 the engine may be started (see manufacturer operating manual for full details).

Switch on the fuel tap.

Switch the handlebar console cut off switch to ON.

Set the throttle control to a half open position.

Shift the choke lever to the appropriate position (Kubota engine set to START : Honda engine set to the CLOSE position). The choke is not required if the engine is warm or the air temperature high.

Grasp the recoil start handle until resistance is felt, then pull it with force.

Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.

Once the engine is started gradually `open' the choke lever (move the lever towards the RUNNING, or OPEN position). Warm-up running of 3-5 minutes is recommended.

Stopping the engine:

Set the throttle control to the `closed' position.

Switch the handlebar console cut off to OFF

Close the fuel tap.

ENGINE MAINTENANCE

(See manufacturer instructions for full maintenance details)

Check oil level	Daily
Change engine oil	After 50 working hours (Initial change after 20 hours)
Clean spark plug	Every 100 hours
Clean air filter	Every 50 hours
Overhaul	Every 500 hours

GENERAL ADJUSTMENTS

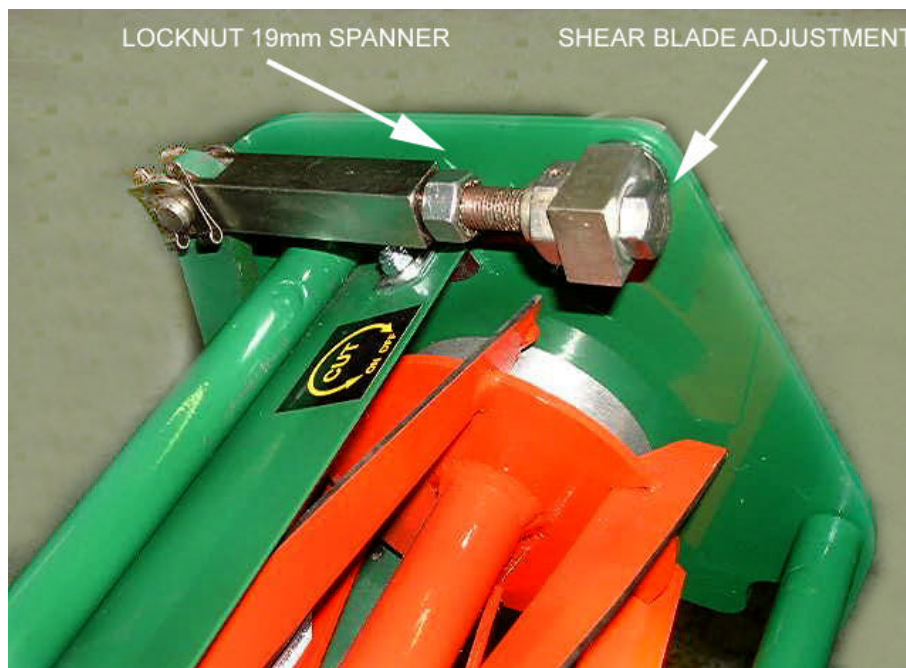
The DENNIS G860 is supplied with a tool wallet containing set spanners and a plug spanner. Sizes for adjustment are quoted in mm.

SHEAR BLADE ADJUSTMENT.

Correct setting of the shear blade is essential to effective cutting of grass. If the set is too far away it will result in bruised grass and poor results. If set too hard on it will cause excessive wear on the drive system and "dull" the bottom blade and cylinder because of heat build up. Never operate the cylinder for more than a few seconds without cutting grass. Never attempt any adjustment or maintenance whilst the engine is running.

Beware – Cylinders and bottom blades are sharp, wear gloves to protect your hands and fingers.

The cylinder cassette can be set either in situ in the machine or on the removed cassette. To remove the cassette see page 10. If adjusted in situ we strongly recommend that the spark plug lead is removed for added safety.

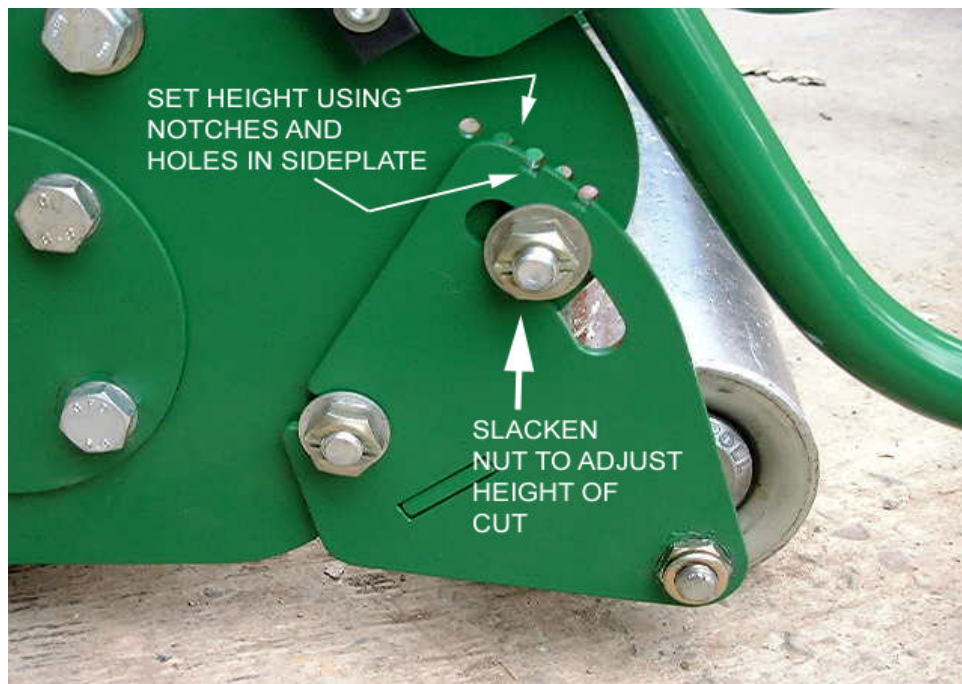


The adjustment is facilitated by turning the spring loaded bolts on either side of the cutter cassette in the direction indicated by the decals. The shear blade carrier is pivoted in the cassette sideplate and as the "ear" is moved back the blade gets closer to the cylinder. Adjust until both sides are just in contact with the cylinder. Do not tighten one side excessively as this will cause twist in the bottom blade.

The cutting cylinder should just brush against the shear blade. The correct setting is an audible whisper of cylinder moving against the shear blade - we suggest gloves be worn for this part of the operation. The unit should just cut 80 g.s.m. (photocopy paper) along its length. Heavy contact of the blade and cylinder will result in rapid wear.

SETTING FOR HEIGHT OF CUT

Always stop the engine before adjusting the height of cut. Failure to do this may result in severe injury.



The length of grass after cutting, or depth of scarification / dethatching / brushing, depends on the setting of the front roller in relation to the main frame of the machine.

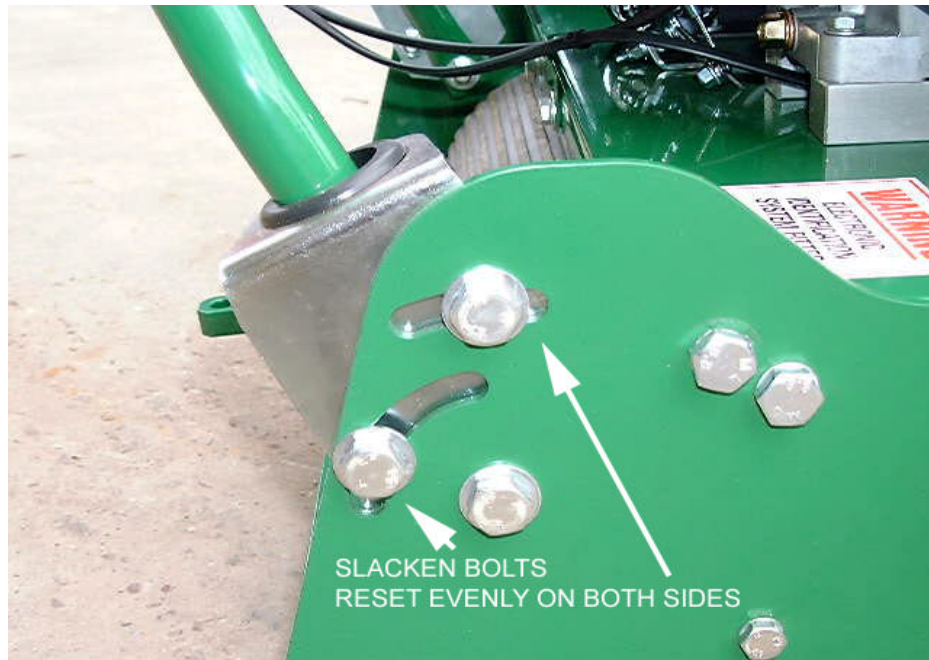
Slacken the two clamp nuts on the front roller quadrants (use 19mm spanner). Rotate the quadrants (pivoted on lower nuts) by equal amounts to bring the roller to the correct height. Ensure that the indicator points are even on both sides when related to the series of holes. Failure to adjust evenly will lead to an uneven cut to the turf.

A setting bar is available from DENNIS for ease of setting accurately. Test at both ends of the cassette.

NOTE - Do not attempt to use the dethatcher cassette or brush cassette on too low a setting as this will damage the blades and brush. Do not attempt to scarify on a low setting when ground conditions are dry as this may cause the clutch to slip.

HANDLEBAR ADJUSTMENT

The height of the handlebars can be adjusted to suit various operators. Simply slacken the "grommet plates" on either side. Set to the correct position and retighten the bolts.



GRASS BOX

Before attempting to tip the grassbox always disengage the cutter and , when on sloping ground where there is a risk of the machine moving away apply the parking brake.

The grassbox fits in a tubular framework which is pivoted for easy stowage. The box rests in the framework and can be manually lifted or tipped by pivoting on the front tube.

The box is made from high strength polyethylene and is equipped with lipped edges for easy gripping

REMOVING THE CASSETTE UNIT

To remove the cassette unit for maintenance or to exchange cassettes always switch off the machine and follow the procedure below:-



Undo the 5/8" UNF Bolt located on the right hand side of the machine on the centreline of the cutter shaft. Use the 24mm spanner provided

Slide the cassette unit along the tie bars as far as it will go until the cassette coupling is clear of the three pins in the driving coupling.

Remove the unit from the chassis by lifting in a swinging motion from the back.

To replace the cassette unit :-

Place the front slots of the cassette unit frames on the front tie bar.

Carefully lower the unit in a downward swinging motion until the rear slots of the cassette unit frame rest on the rear cross bar.

Move in a lateral direction away from the retaining bolt until the three holes of the cassette coupling are in full engagement with the three pins of the driving coupling.

Retighten the 5/8th UNF Bolt until it locates snugly in the frame.

Do not over tighten as this will cause the shaft of the cutter to distort.

ROUTINE MAINTENANCE

ENGINE

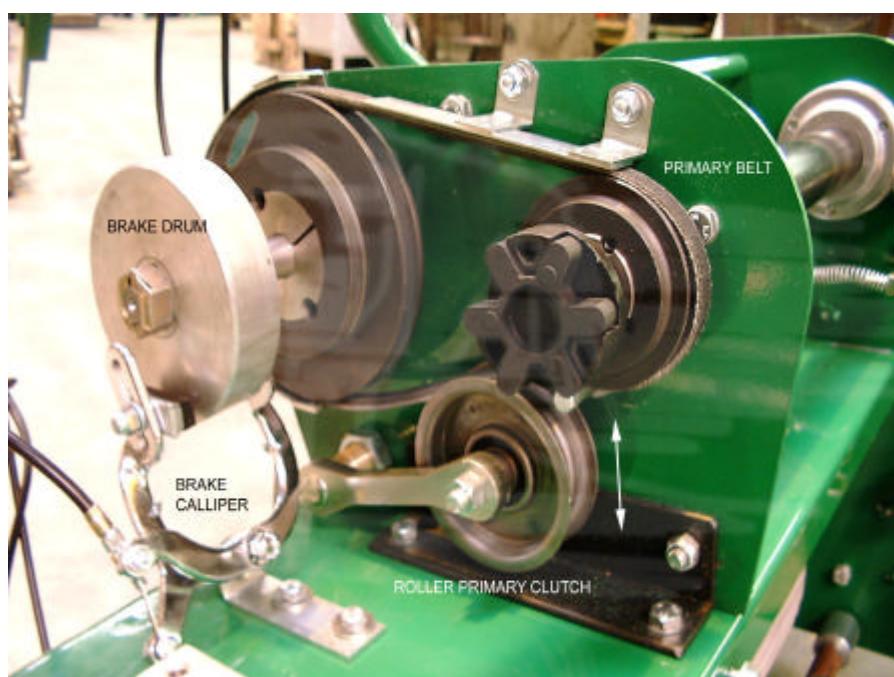
Comprehensive details of the engine maintenance are given in the Engine Manual, which accompanies this book.

DRIVING BELTS

ROLLER CLUTCH

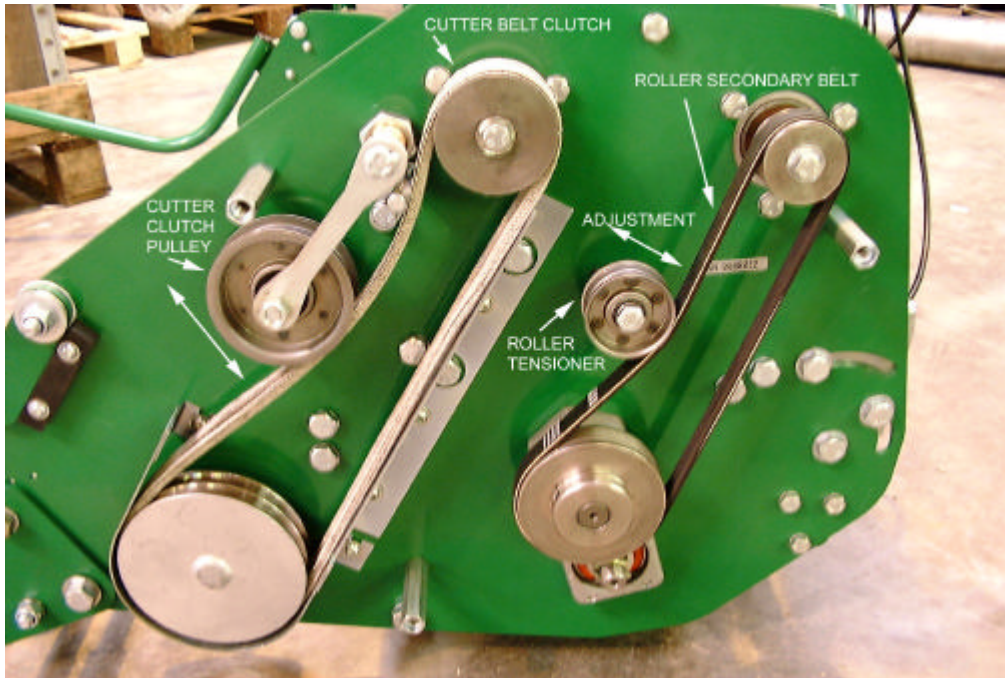
The Dennis G860 has three belt systems on the machine.

The primary drive belt for the roller clutch is located adjacent to the engine under the cover. This belt is of a special construction and not a normal vee belt. The tensioner pulley moves up onto the belt via a cable control. This is adjustable using a 13mm spanner on the adjuster block on the plate next to the engine.



The secondary roller drive is via a hard wearing TBA poly-V type belt located under the main drive casing on the machine. To ensure the best performance of this belt the following instructions should be carefully followed.

Belt tension is the single most important factor necessary for long, satisfactory service life of any belt drive. Under-tensioning leads to belt slip causing rapid wear; over tensioning means excessive strain on belt and bearings. Between these two extreme conditions is a reasonable range of tension within which the belt will operate. Belt tension can be assessed by the 'deflection' method.



“Belts will be sufficiently tensioned if the deflection force applied at mid span to produce a deflection equal to 16mm per meter of span distance falls between 5 and 9 Newtons per Rib” (TBA Belting).

In practical terms this relates to about 5mm of deflection under moderate finger pressure on the non tensioner side.

Correction can be made by adjustment of the belt tensioner.

Remove the driving belt cover. The belt tensioner is retained in a slotted hole allowing adjustment to be made once the holding hexagon headed bolt has been loosened. When adjusted correctly the tensioner pulley should still rotate easily with finger pressure. Ensure the tensioner bolt is secure before replacing the cover.

If fitting new belts it is advisable to observe the drive for the first 20-30 minutes. It may be necessary to make an adjustment to compensate for the normal drop in tension during the run-in period.

Do not overtighten the belt as this may cause excessive wear on the bearings.

CUTTER CLUTCH

This is a dual belt system under the chaincase on the side of the machine. These belts are of a special construction and are not normal vee belts. The tensioner pulley moves up onto the belt via a cable control. This is adjustable using a 13 mm spanner on the adjuster block on the left hand sideplate of the machine.

NOTE

When adjusting the clutching belts on both the cutter and roller clutch systems it is very important to ensure that the drive fully disengages when the operating lever is disengaged. Failure to adjust properly could cause injury.

PARKING BRAKE ADJUSTMENT (Rear Axle Drive)

The parking brake assembly is mounted on the end of the rear axle spindle under the cover adjacent to the engine. The assembly comprises an aluminium drum and a cycle type caliper operated by a cable. Adjustment is by altering the cable length either by the caliper or on the handlebar console after removing the console cover. This system operates dry and no lubrication is required except to keep the cable and pivot point freely operating.

GENERAL LUBRICATION

REAR ROLLER

The main drive roller is split into three sections incorporating a differential gear system running in an oil bath. Every six months the old oil should be drained off and the bath replenished with 1 pint (550ml) of clean oil.

FRONT ROLLER

The bearings used on the front rollers are pre packed with grease and rubber shielded, therefore requiring no additional greasing.

SCARIFIER / DE-THATCHER / BRUSH CASSETTES

No grease or oiling is required.

CONTROL LEVERS AND CABLES

(every two months)

To keep the controls free from rust and corrosion apply a small charge of oil to the throttle and clutch control levers every two months. Oil flow can be assisted by working the levers open and closed a few times after the lubrication is applied. Apply a small charge of oil or grease to the pivots of the BALEBAR and SAFETY LEVER.

FRONT ROLLER ADJUSTERS

(every two months)

Apply a small quantity of copper grease or similar to the adjuster studs to prevent corrosion and ease adjustment.

STORAGE

The machine should always be kept in a clean dry place, free from condensation. After use ensure that the machine is thoroughly clean, dry and free from grass and mud. Before off season storage smear a thin layer of grease on to the cutter blades and the shear blade.

WD40 or similar can be sprayed onto the machine to protect it.

Under no circumstances must the machine be steam cleaned as this may remove grease from the pre packed bearings. If pressure washers are used avoid spraying onto belts and the engine.

Because of the nature of lead free petrol we recommend that if the machine is being left unused for more than 2 weeks the carburetor is run dry. Allow the engine to run out of fuel with the fuel tap switched off.

If you are in any doubt as to safe operation, adjustment or maintenance call your dealer or the DENNIS works.

G860 GUIDE TO CASSETTE USES

6 Blade Cylinder For cutting fine turf areas.

Verti-Cutter Used from ground +3mm to ground -3mm to control thatch, cutting lateral growths and standing up lying grasses ready for cutting. Good for removing mosses. Start at (say) +3mm.
Note - not for cutting soil, only thatch.

RESULT Speed improvement on greens, reduced end of season maintenance, reduced annual meadow grass. Promotes healthy plant growth, promotes strong roots, and maximizes fertilizer penetration.

Scarifier Used for ground to ground -6mm controlling thatch, removing thatch, cutting lateral growth, pruning roots, removing moss, aerating top layer for ingress of water, air, fertilizer and seed. Choice of 1mm or 2mm thick blades (generally 1mm used in summer, 2mm used in winter). Do not try to cut too deep - must be adjusted to suit conditions. Keep engine revs reasonably high with a slow forward movement to remove as much material as possible. The machine may tend to walk along on its own in some conditions.

RESULT Speed increase of playing surface. Maximizes fertilizer penetration & promotes strong healthy plant growth and strong roots.

Brush Used for light scarifying, brushing, removing debris, pine needles moss, excess top dressing etc. Set at +3mm to +1mm for ground debris depending on conditions.

Sorrel Roller

Not driven.

Used for surface pricking. Lets air, water, fertilizer into the root zone. Good for over seeding and preparing damaged areas for repair. Reduces surface tension.