

Spearhead

MULTICUT 820



7th Edition – October 2013
Part No. 8999026

HANDBOOK

Spearhead MULTICUT 820 Handbook

7th Edition – October 2013

Please ensure that this manual is handed to the operator before using the machine for the first time. The operator must fully understand the contents of this manual before using this machine.
(If the machine is resold the Manual must be given to the new owner.)

Important Note

The information contained in this manual is correct at the time of publication. However, in the course of constant development, changes in specification are inevitable. Should you find the information given in this book different to the Machine it relates to please contact the “After Sales Department” for advice.

Spearhead Machinery
Green View
Salford Priors
Evesham
Worcestershire
WR11 8SW
Tel: 01789 491860
Fax: 01789 778683
www.spearheadmachinery.com
enquiries@spearheadmachinery.com

Spearhead MULTICUT 820

CE Declaration of Conformity, Conforming to EU Machinery Directive 2006/42/EC

We, Spearhead Machinery Ltd, Green View, Salford Priors,
Evesham, Worcestershire, WR11 8SW hereby declare that:

Product
Product Code.....
Serial No.....
Type.....

Manufactured by: Alamo Manufacturing Services (UK) Limited, Station
Road, Salford Priors, Evesham, Worcestershire, WR11 8SW

Complies with the required provisions of the Machinery Directive
2006/42/EC. The Machinery Directive is supported by the following
harmonized standards:

- BS EN ISO 14121-1 (2007) Safety of Machinery – Risk Assessment,
Part 1: Principles Part 2: Practical Guide and Examples of Methods.
- BS EN ISO 12100-1 (2010) Safety of Machinery – Part 1: Basic
Terminology and Methodology Part 2: Technical Principles.
- BS EN 349 (1993) + A1 (2008) Safety of Machinery – Minimum
Distances to avoid the Entrapment of Human Body Parts.
- BS EN 953 (1998) Safety of Machinery – Guards General
Requirements for the Design and Construction of Fixed and Movable
Guards.
- BS EN 982 (1996) + A1 (2008) Safety Requirements for Fluid Power
Systems and their Components. Hydraulics.

The EC Declaration only applies if the machine stated above is used in
accordance with the operating instructions.

Signed



(On behalf of Spearhead Machinery Ltd)

Status

General Manager

Date

.....

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Safety Recommendations

Beware of the following Potential Dangers associated with the use of this machine:

- Becoming trapped when hitching or unhitching
- Machine overbalancing when wing is raised.
- Getting caught on rotating power take off (PTO)
- Being hit or caught by any moving part, e.g. Blades, drive shaft and wings.
- Being hit by flying debris or machine parts due to machine damage
- Machine overbalancing when not in use
- Injection of high pressure oil from damaged couplings or hydraulic hoses
- Accidents due to collision with other machines, or debris left on road
- Beware of free-swinging blades over centering and falling when wings are folding.

ALWAYS:

- Ensure the operator has read this handbook and has been trained to use the machine.
- Ensure all safety guards are in place and all tractor windows closed.
- Impact resistant shielding to the tractor is recommended
- Before leaving the tractor cab always ensures that the wings are firmly on the ground, no weight is on the machine's hydraulics and the rotor has stopped spinning.
- Check that all guards are properly fitted and there are no damaged or loose parts. Particular attention should be given to the blades to ensure they are not damaged, cracked or missing
- Inspect work area for wire, steel posts, large stones and other dangerous materials and remove before starting work.
- Ensure that all warning labels are always visible and that they are not damaged, defaced or missing.
- Fit locking pins to height and strap to wings before transport and before unhitching when applicable.
- Wear ear defenders if operating without a quiet cab or with the cab windows open
- Ensure tractor guards are fitted correctly and are undamaged
- Work at a safe speed, taking into account terrain, passing vehicles and obstacles

Spearhead MULTICUT 820

- Ensure that the tractor meets the minimum weight recommendations of the machine manufacturer and that ballast is used if necessary
- Check that machine fittings and couplings are in good condition
- Follow the manufacturer's instructions for attachment and removal of machine from the tractor
- Ensure blades are of the type recommended by the manufacturer, are securely fitted and are undamaged
- Ensure hydraulic pipes are correctly routed to avoid damage from chafing, stretching, pinching or kinking.
- Check condition of tyres and tightness of wheel nuts.
- Ensure all blades have stopped spinning before folding wings into transport position.
- Disengage the machine, stop the engine and remove the key before leaving the tractor cab for any reason
- Clean up any debris left at the work site.
- Ensure that when you remove the machine from the tractor it is secured in a safe position using the stands provided.

NEVER:

- Never operate the machine with other people present, as it is possible for debris, including stones, to be discharged from the front and rear.
- Never operate the machine until you have read and understood this Handbook and are familiar with the controls.
- Never use a machine that is poorly maintained or has guards that are damaged or missing
- Never allow an inexperienced person to operate the machine without supervision.
- Never use or fit a machine onto a tractor if it doesn't meet the manufacturer's specification.
- Never use a machine if the hydraulic system shows signs of damage.
- Never attempt to detect a hydraulic leak with your hand, use a piece of card.
- Never allow children to play on or around the machine at any time.
- Never attempt any maintenance or adjustment without first disengaging the PTO, lowering the wings to the ground, stopping the tractor engine and applying the tractor parking brake.
- Never leave the cab without removing the ignition key.
- Never operate the tractor or any controls from any position other than from the driving seat.
- Never stop the engine with the PTO engaged.
- Never operate with blades missing.
- Never operate PTO above recommended speed, 1000 r.p.m.
- Never operate with wire around the rotor. Stop immediately.
- Never use the wing raised which may throw debris towards the cab.
- Never attempt to use the machine for any purpose other than that it was designed for.
- Never transport with the PTO engaged.
- Never enter the working area of the machine (risk of injury!).
- Never engage the P.T.O with wings folded.

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Safety



Warning

Avoid fluid escaping under pressure. Consult technical manual for services procedures.



Warning

Danger – flying objects keep safe distance from the machine as long as the engine is running.



Warning

Stay clear of mower blade as long as engine is running.



Warning

Stay clear of swinging area of implements.



Warning

Shut off engine and remove key before performing maintenance or repair work.



Warning

Check all nuts are tight every 8 hours.



Warning

Carefully read operator's manual before handling this machine. Observe instructions and safety rules when operating.

Spearhead MULTICUT 820

Introduction

The Spearhead 820 is a heavy-duty rotary mower for a set-aside, stubble and pasture topping. By carefully following the instructions in this handbook, the 820 will give many years of trouble free operation.

Safety First

Never start using the machine until the handbook has been read and understood. The 820 rotary mower is a potentially lethal machine if used incorrectly and it is essential that the operator fully understands the working before starting up.

Tractor Requirements

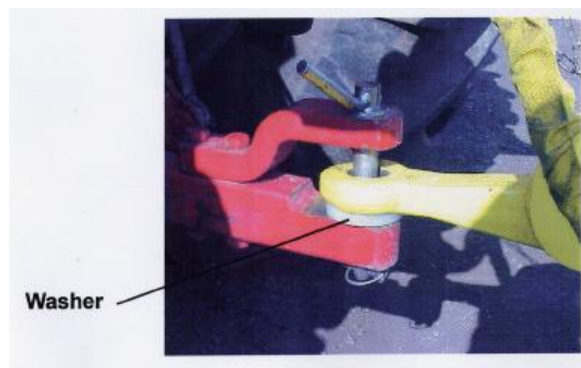
- Spearhead recommend tractors of plus 150 hp.
- A clevis drawbar must be used. Do not use the pick-up hitch.
- The tractor should have a minimum weight of 6000 kg.
- The tractor should have a 1,000rpm p.t.o. 1 $\frac{3}{4}$ " – 20 spline.
- Two external hydraulic services are required, single acting for height control and double acting for wings with float facility.

Attaching To The Tractor

It is essential to ensure that the tractor lift arms cannot foul the p.t.o. shaft, even when the tractor is on full lock. It is advisable to remove them altogether if there is any doubt.

The tractor drawbar should be extended to its maximum not less then 400mm from the p.t.o. This will enable turning in work without damaging the drive shaft. Never attach the mower using the pick-up hitch as this will cause damage to the drive shaft.

Fit the nylon washer between the mower drawbar and the tractor clevis, as shown, to reduce wear between the two parts. The nylon washer is a replaceable wearing part.

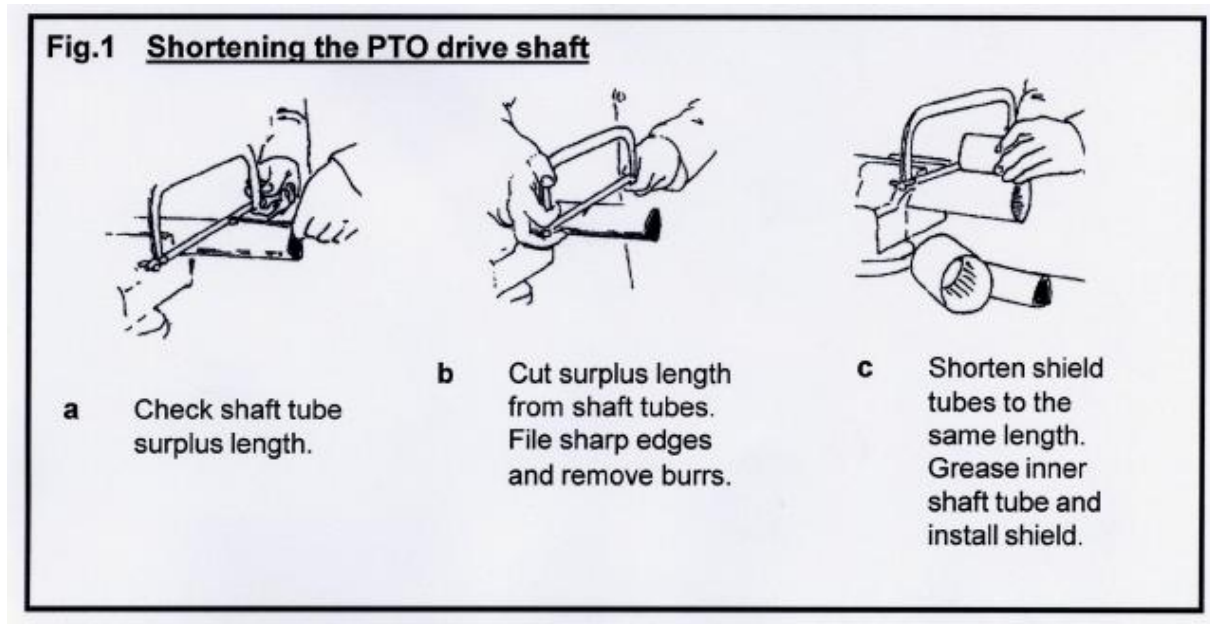


Warning

Do not attach machine to pick up hook. This will damage the P.T.O. shaft

Spearhead MULTICUT 820

Setting Up Your Machine



Before fitting the PTO for the first time, it may be necessary to adjust the length. There should be maximum engagement of the sliding tubes without bottoming at the shortest operation position. To check, first connect the mower to the tractor. Pull the PTO shaft apart and connect to the tractor PTO output shaft and the gearbox input shaft. Hold the half shafts next to each other in the shortest working position. If necessary, shorten the inner and outer guard tubes equally (Fig. 1). Shorten the inner and outer sliding profiles by the same length as the guard tubes. File all sharp edges and remove burrs. Grease sliding profiles.

To fit the PTO, first clean and grease. Press pins on the yoke and simultaneously push the PTO drive shaft onto PTO shaft of the tractor until pins engage.

The PTO shaft is fitted with a non-rotating safety guard. It should be secured to the machine and tractor with the two retaining chains provided.

Connect the three hydraulic hoses, two wing hoses to a double acting service, with a dump facility. This is particularly important for the spool valve that operates the wings as, when in work the wings must be able to follow the ground contours. The 3rd hose for the height ram only requires a single acting spool.

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Setting Up Your Machine

Levelling – Front To Rear

Once coupled to the tractor, check the mower is cutting level from the front to the rear of the machine. This is important to ensure each rotor will cut at the same height (Fig. 3). The machine has adjustable tie bars that can be lengthened to lower the front or shortened to raise the front of the machine by turning barrel nut (Fig. 2). Once satisfied the mower is cutting level, tighten locking nuts.

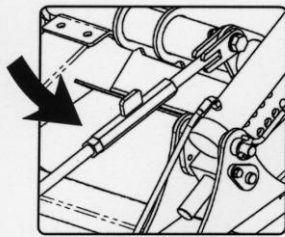


Fig.2 Levelling Adjuster

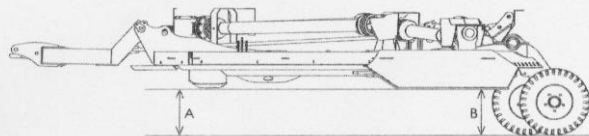


Fig.3 Height adjustments
The height at A should be 1" 25mm higher than at B.

Levelling – Wings LH & RH

With the machine in the working position and the wings folded down it may be necessary to alter the height of the wing to ensure each rotor is cutting level. Between each axle there is an adjustable link shortening this will raise the cutting height of the wing rotor and blades. We recommend the wing is set 12-25mm higher than the centre.



Warning

The machine is set at the factory with the centre deck 1" (25mm) higher at the front and the wings ½" (12mm) higher to the centre section, when mounted on the tractor drawbar at 16" (400mm).



When operating over uneven ground it is recommended to raise the front of the machine by adjusting the tie bars to prevent scalping or damage to the blades.

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Setting Up Your Machine

Height

To adjust the minimum cutting height, first raise the machine to take the weight off the centre height bar, lengthen the bar by turning the barrel and raising the minimum height stop. Lower the machine onto this stop to the new set cutting height. This adjustable barrel only controls the minimum cutting height, however the operator may raise and lower the machine via the hydraulic cylinder whilst the machine is in operation.

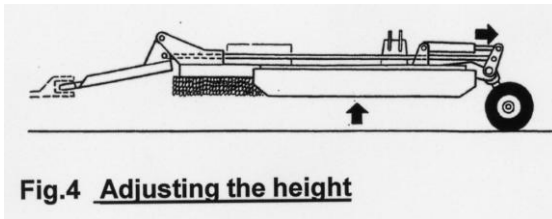
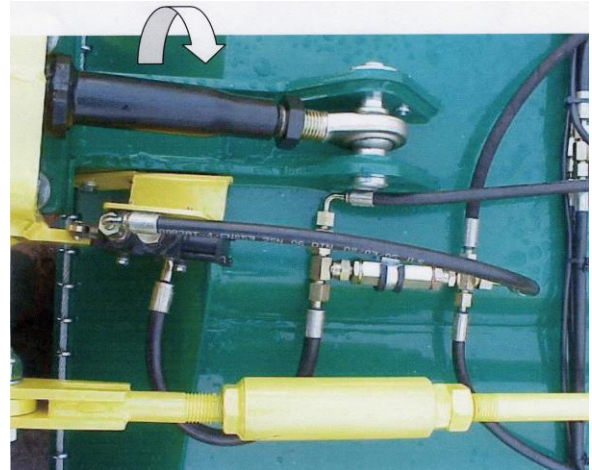


Fig.4 Adjusting the height



Wings

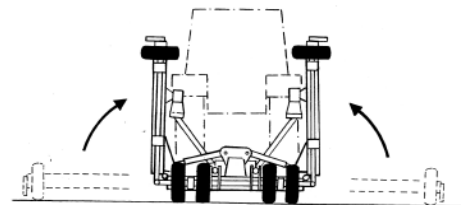
Before attempting to raise (Fig. 5) or lower the wings always ensure the machine is on level ground. To unfold the wings from transport position, first charge/pressurise the rams with oil before releasing the locking strap. Then power the wings over centre with the aid of the double acting rams. Lower both wings on the ground and release the hydraulic pressure by placing the spool in float position.



Warning

Do not pressurise the wing rams out once the wing wheels have contacted the ground. This will cause unnecessary strain on the machine and may result in damage not covered under warranty.

Fig.5 Wings



Warning

Do not attempt to raise or lower the wings until the machine is on level Ground. Never travel before both wings are either fully down or fully Up and the transport strap is correctly fitted.

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Operation

Once ready for work, raise the mower cutting height and slowly engage the PTO with the tractor engine at low revs to prevent shock damage to the machine. Slowly increase the engine revs to achieve the recommended PTO speed of 1000r.p.m. If at any time serious vibration occurs, **stop the engine immediately and check the lades, following all safety precautions.** Select a sensible forward speed bearing in mind the density of growth, the terrain, and the available horsepower.

The quality of finish is determined by the forward speed, i.e. a slow speed will produce a high quality of cut, where as faster forward speeds are used when high output is first priority.

When in work, always ensure the hydraulic spool valve that operates the folding of the wings is in float position to enable the wings to freely follow all contours of ground (Fig. 6).

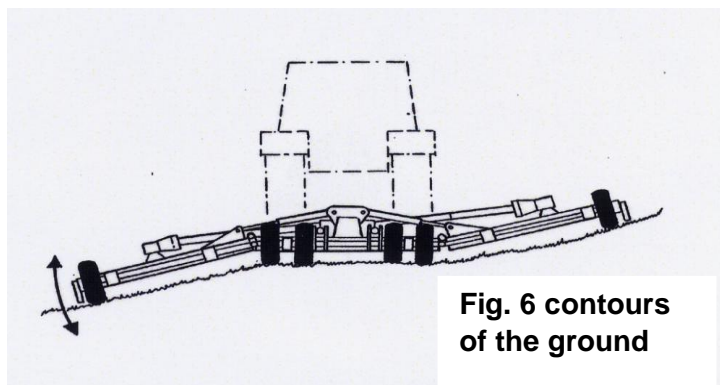


Fig. 6 contours of the ground

Whilst operating it is possible to continue working when turning as the 820 Rotary Cutter is fitted with a constant velocity joint on PTO shaft. However take care not to run the rear tractor wheel against the mower draw bar as this will result in serious damage to the tractor, the mower and, in particular, the PTO shaft. The constant velocity joint on the input PTO shaft, allows the PTO to be left in gear whilst turning out of work, e.g. on the headlands. **It is important not to turn sharply when the machine is in work as this will over-strain and shorten the life of the constant velocity joint.**

When operating in confined areas it is possible to cut going backwards, but it is advisable to slightly raise the machine, particularly if in scrub, where there is the risk of hitting hidden solid obstacles obscured by dense undergrowth.

Always exercise particular care when operating over uneven ground surfaces. Do not allow the blades and blade holder to frequently hit the ground.

Do not allow debris to build upon the cutting decks in dry conditions as this can be a fire hazard, in wet conditions it will place unnecessary strain on the machine and may foul the drive shaft causing damage.



Warning

Do not run the machine with the wings raised. The risk of debris and machine parts being ejected is greater as the chain skirting is ineffective in this position.

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Transportation

First disengage the PTO drive and $\frac{3}{4}$ raise the machine, fold the wings fully and secure with transport strap (Fig. 7). Never transport along public highways with the wings only supported by the hydraulics.

Please observe Public Highway Regulations, concerning the towing of implements, and securely attach a registration and lighting board.

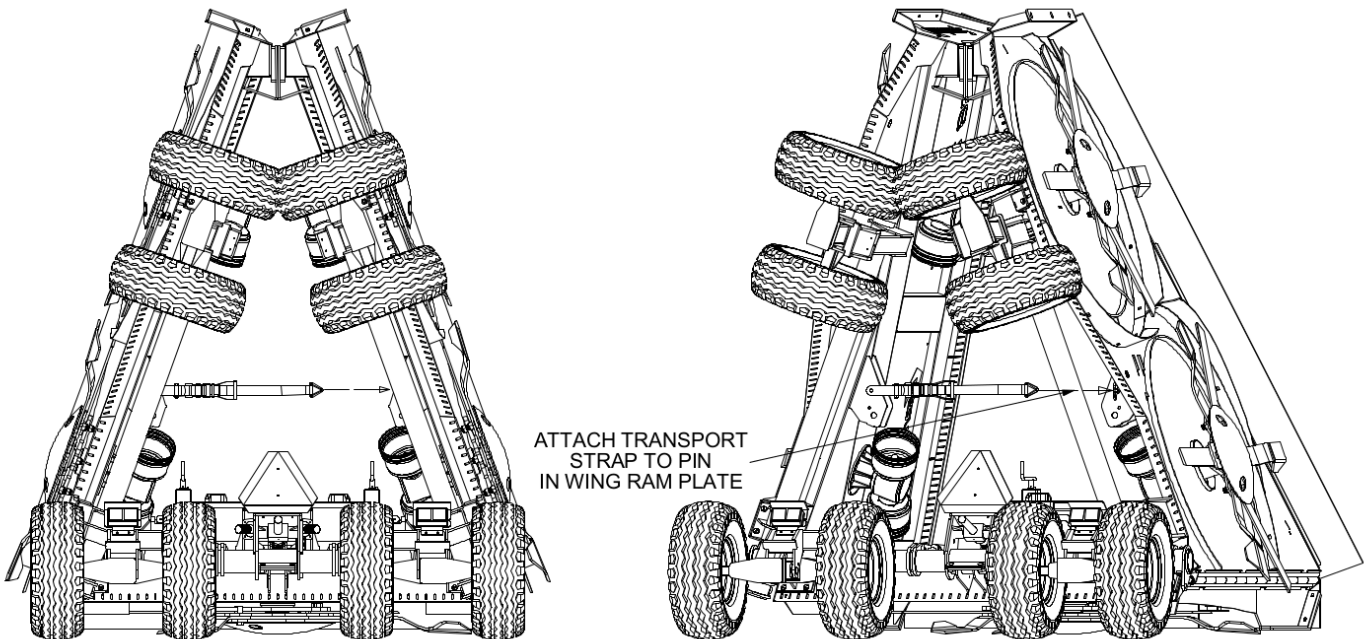


Warning

Avoid transporting machine at high speed over rough ground
Maximum speed on highway – 20mph (30kph).

Fig. 7 Transportation position

820 TRANSPORT POSITION:
OPERATOR MUST ENSURE THAT THE TRANSPORT RATCHET STRAP IS FITTED AND TIGHTENED UP TO STOP WINGS FROM MOVING AGAINST EACH OTHER.



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Machine Protection

When the machine is delivered new, the slip clutch tensioning bolts will be purposely left loose after initial PDI at Spearhead. This is to force the clutches to be slipped and reset before the customer uses their machine for the first time.

Refer to clutch settings on page 19/20/21.

To prevent gearbox damage all rotors are protected by slip clutches fitted to each of the five drive shafts. When cutting in extreme conditions where stumps, rocks and other such solid objects are likely to be found it is recommended that the operator reduces the engine revs to allow the blades to pivot more easily when striking solid objects, fit stump jumper plates to lower blade carriers, and procede with caution.

The clutch settings should not be altered without reference to Service and Maintenance. Never over-tighten the pressure springs on the slip clutches (Fig. 8) as this could result in severe damage to the gearbox and drive lines, as well as invalidating the warranty.

If the machine has been laid up for any length of time, there is a risk of the clutch plates rusting and seizing together. Never operate the machine in this condition, as there will be no protection to the driveline and gearboxes against shock loading. To free the clutch plates first slacken all pressure spring bolts and run up the machine for a short period, deliberately try to cause the clutch to slip. Finally re-tighten the tension spring bolts to their original length, taking great care not to over-tighten. Alternatively refer to page 19/20/21.

If in any doubt, consult Spearhead's Service Department or your local Spearhead Dealer for further advice.

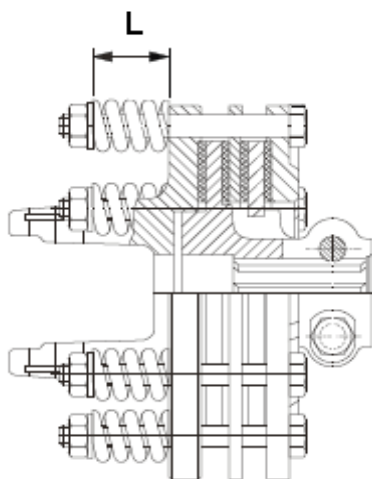


Fig. 8b Slip Clutch (WALTERSCHEID)



Service & Maintenance

Safety First

- Never leave the tractor seat without first disengaging the PTO and stopping the engine.
- Ensure all rotating parts have stopped turning.
- Never attempt any repairs, maintenance, service or any other checks with the machine carried on the tractor hydraulics.
- Always fully lower to the ground, or securely prop the machine on substantial servicing stands.
- Always replace all guards and retaining chains after servicing/maintenance completed.

It is imperative that the following checks are carried out in order not to invalidate your warranty; these are carried out **before the first operation, after the first hour, then after 4 hours.**

These checks are:

1. Wheel nuts and tyre pressure (60psi).
2. Gearbox bolts, including the splitter box.
3. Oils in all the 6 gearboxes.
4. Blade bolts are fully tightened and in particular the 5 castle headed nuts on the 5 blade rotors.
5. Retaining bolts on the drive shafts.
6. Grease all points including drive shaft tubes.
7. **After the first 50 hours drain and the gearboxes of oil.** Replace with EP90 gear oil.
8. All other nuts and bolt



Warning

Never carry out any servicing or maintenance work without first disengaging the PTO and then stopping the tractor engine before leaving the seat.

On delivery of your machine check that the dealer has completed the P.D.I form, ensure the warranty registration form is completed and returned.

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Servicing & Maintenance

Daily

- Grease all grease points, including rear axle pivot points (Fig. 9a), axle hinge (Fig. 9c), wheel arms (Fig. 9b), and front draw bar pivot (Fig. 9f).
- Check bolts are tight on all gearboxes.
- Check condition of blades and blade bushes ensure all retaining bolts are fully tight.
- Check wheel nuts are tight.
- Check tyre pressures - 60 P.S.I
- Check gearbox oil, replenish with EP90 gear oil as necessary to the correct level line on the dipsticks provided with each gearbox.

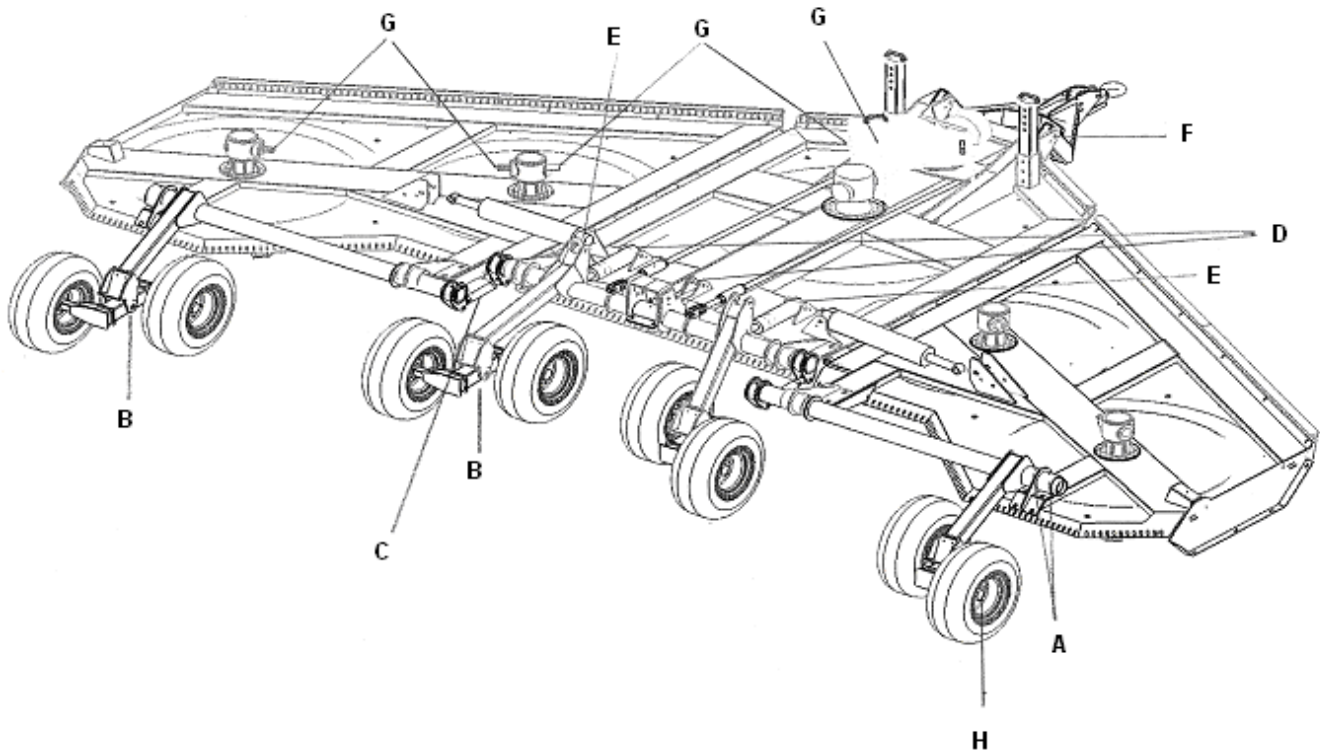


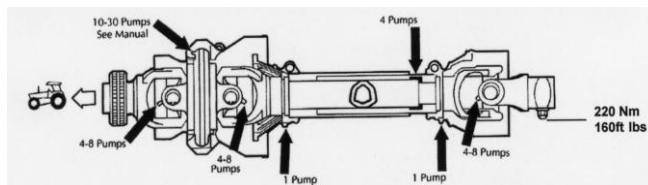
Fig.9. Greasing points

- A. Rear axle pivot point.
- B. Wheel arm pivot point.
- C. Axle adjuster.
- D. Height stop.
- E. Hydraulic rams
- F. Drawbar
- G. Drive shaft
- H. Wheel bearings

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Service & Maintenance – Every 8 hours

Fig. 10
Primary Input Shaft



- For maximum life and performance, the CV body must be greased regularly. Lubricate with the driveline in a straight position - up to 30 pumps of grease may be required.
- The metal drive tubes must be greased to operate properly.
- Shielding is subject to damage from abuse and weathering. Replace all damaged components and all shielding removed during maintenance.
- Do not use PTO adapters with CV drivelines. Replace special taper pin bolts only with genuine OEM parts, periodically check tightness of nuts.

- Dismantle and clean the main input P.T.O shafts sliding surfaces and re-grease; failure to do this will result in serious damage to the splitter gearbox.
- Grease all universal joints, (Fig. 10) paying particular attention to the constant velocity joint. If under-greased this constant velocity joint will soon fail.
- Grease the wing drive shaft tubes, (note the hole in the plastic tubing for access).
- Lubricate the retaining collar on all the drive shaft guards (Fig. 10).
- Grease PTO inner tube and push pins (Fig. 10).
- Check all bolts are tightened to the correct Torque (Fig.11).

Torque Settings

The Torque figures given below are recommended maximum settings only.

Size:	Tensile strength:	Description:	Torque setting: Nm.
M16	8.8	Gearbox bolts	280
M24	8.8	Axle clamps	750
M24	8.8	Blade bolts	540-800
		Wheel nuts	270

Servicing & Maintenance

Regularly

- Check there is no wrapping of string, plastic, grass or other debris between rotor boss and gearbox oil seal.
- Inspect gearbox seals for leaks.
- Clear grass and other debris from the deck.
- Regularly check the rotor boss retaining castle nut for tightness. First remove the split pin, select the correct size socket in 3/4" drive and fully tighten the nut. When replacing the split pin, do not slacken the nut to align the hole, always tighten. Failure to regularly check this nut will result in serious wear to hub, which is expensive to repair.
- **It is most important that all gearbox bolts are regularly checked to be very tight. When the machine is new there will be a 'bedding in' period where very frequent checking is important.**

Blades

Caution! When carrying out maintenance work on or near the blades be careful of free-swinging blades over-centering and falling. It is recommended that protective clothing including hardhat and goggles are worn.

The blades can be re-sharpened by grinding the cutting edges, care must be taken that the blades are of the same weight and length after grinding. Do not overheat when grinding as this will affect the hardness of the blades. All the blades are free swinging and swivel on hardened steel bushes, which are replaceable. When replacing blades, it is important that blades are replaced in sets, in order to retain balance of the rotor. Bushes must be replaced when new blades are to be fitted.

If the blades are showing any signs of severe wear, damage or cracking, they must be replaced immediately. Never attempt to weld the blades, as this will make them very brittle thus extremely dangerous. Do not take risks with the cutting blades - if in doubt, replace.

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Servicing & Maintenance

Slip Clutch Settings

We recommend that friction clutches be stored in a dry place with the spring pressure released. In use, the compression of the spring has to be adjusted periodically to compensate for lining wear and to maintain the setting at the original value.

Check the condition of the friction discs before use and following periods of storage. Release the tension from the spring, turn the clutch while holding the gearbox shaft stationary. Adjust the spring compression to the original setting (fig. 1).

Following seasonal use, unload the spring tension and stone clutch assembly in a dry place. Check condition of friction linings and reset spring compression to original height before use.

Should the assembly overheat due to frequent or prolonged clutch slipping, dismantle for inspection. The original thickness of the lining is 3.2mm, replace them when worn to 2.5mm. Clean up all contact surfaces and replace any damaged components before assembly.

BONDIOLI Manufacture (Belleville Spring)

Fig. No.	Position	Part No.	Setting 'h'	Machine
2	Centre	5770043	18.5 mm (fig 1)	820
2	Inner wing	5770213	19 mm (fig 1)	820
2	Outer wing	5770214	18 mm (fig 1)	820

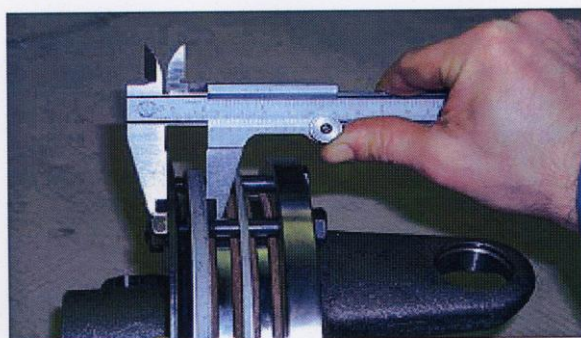


Fig 1

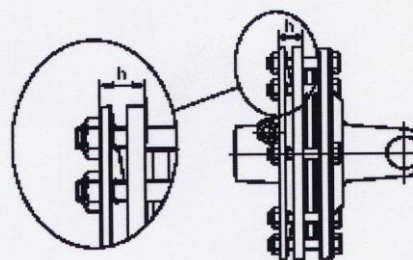


Fig 2



Warning

The slip clutch is there to protect the gearbox. If the blades strike a large obstacle they may get damaged or break - avoid these conditions.

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Servicing & Maintenance

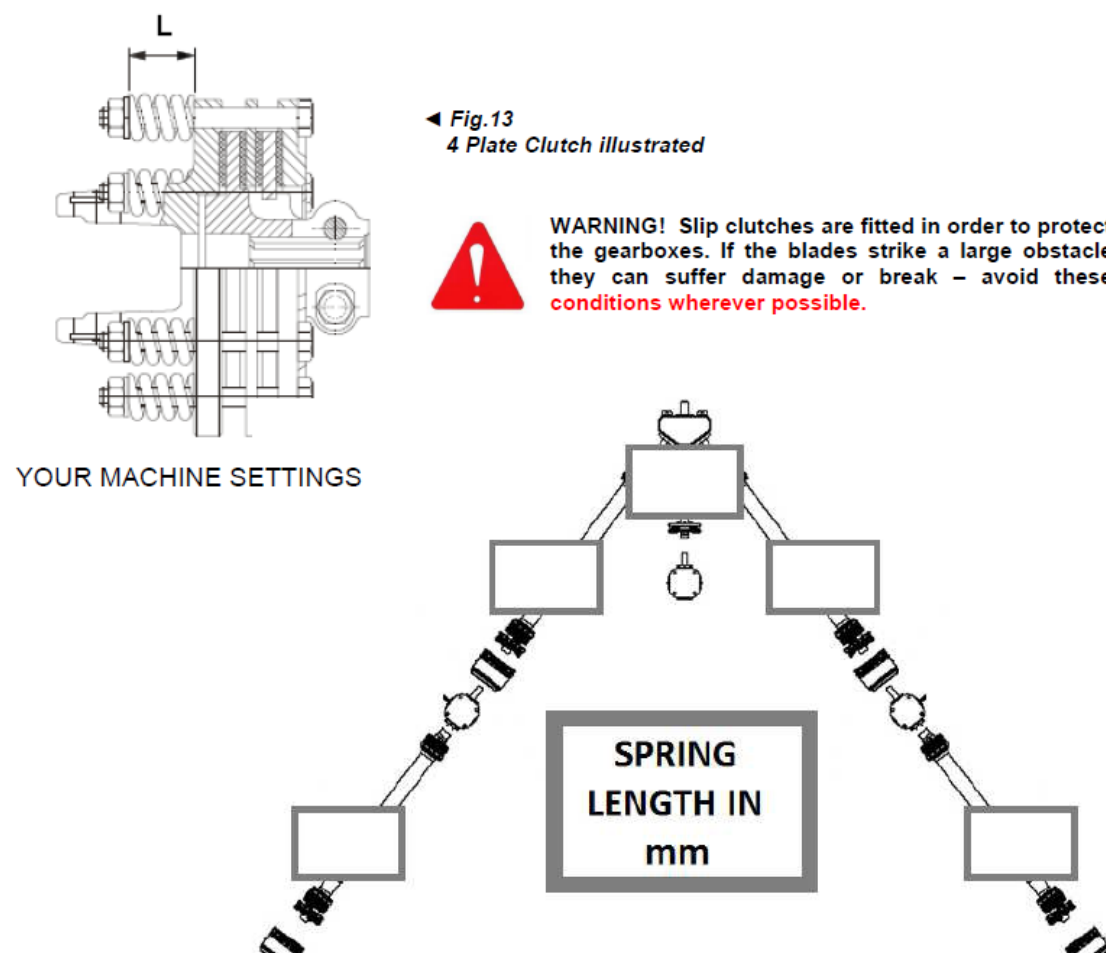
Slip Clutch Settings

WALTERSCHEID Manufacture (Coil Spring)

Check the condition of the friction discs before use and following periods of storage. Release the tension from the spring, turn the clutch while holding the P.T.O to ensure hub is not seized to linings.

Measure spring length before slackening nuts to vent, reset at same length.
Clutch settings listed for reference as clutch torque not spring length pre-set at factory.

Note: All spring lengths based on standard spring with a free length of 41.0mm.
Alternative spring 47.0mm long not covered by this chart.



Clutch settings below are for reference only. Measured spring lengths should be used first.

Position	Part No.	Setting (L)	Machine
Centre	5770441	35.0 mm	820
Centre	5770468	38.1 mm	820
Inner wing	5770442	37.8 mm	820
Outer wing	5770443	37.5 mm	820

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Servicing & Maintenance

Slip Clutch Settings

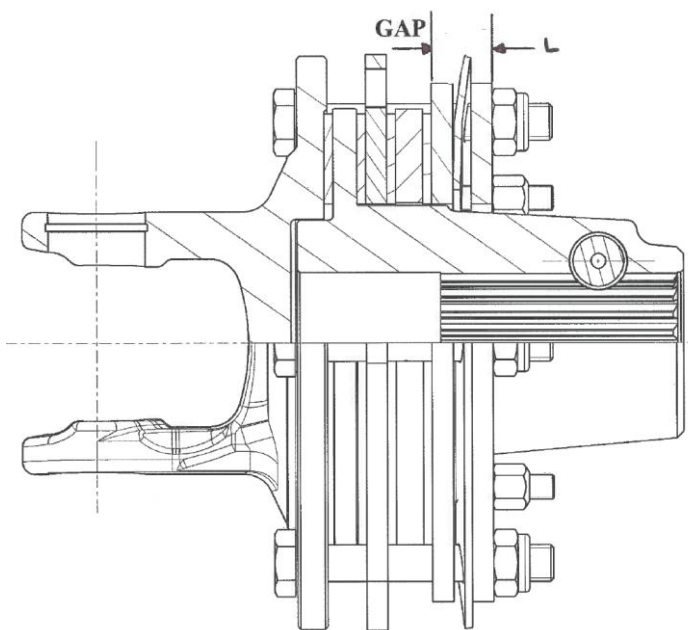
WALTERSCHEID Manufacture (Belleville Spring)

Check the condition of the friction discs before use and following periods of storage. Release the tension from the spring, turn the clutch while holding the P.T.O to ensure hub is not seized to linings. (SEE BELOW):



Warning

The slip clutch is there to protect the gearbox. If the blades strike a large obstacle they may get damaged or break - avoid these conditions.



TO ENSURE PROPER CLUTCH FUNCTION AFTER LONG PERIODS ON INACTIVITY, FRICTION CLUTCHES SHOULD BE RUN-IN TO PREVENT OXIDATION BUILD UP. THE CLUTCHES ARE SET TO THE PROPER TORQUE SETTING FROM THE FACTORY, USING THE FOLOWING PROCEDURE WILL PROVIDE THE MOST ACCURATE TORQUE SETTING:

- 1). TIGHTEN THE FOUR NUTS ON THE INNER CIRCLE WITH A 13MM SPANNER. THE NUTS SHOULD COMPRESS THE BELLEVILLE SPRING AND RELIEVE THE PRESSURE OFF THE FRICTION DISCS IN THE CLUTCH.
- 2). ROTATE THE SHAFTS BY ONE REVOLUTION, THIS CAN BE DONE BY RUNNING THE MACHINE.
- 3). RETURN THE FOUR NUTS TO THEIR ORIGINAL LOCATION AND ALLOW THE CLUTCH TO COOL IF NECESSARY. NOTE: THE THREADS ON THE END OF THE STUDS ARE DEFORMED TO PREVENT THE NUTS FROM BEING REMOVED.

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English

Type	Position	Part No.	Newtons	Setting (L)	Friction disc	Machine
K90/4T	Centre	5770500	1200Nm	18.00mm	4	500/730
K90/4T	Wing	5770503	1200Nm	21.00mm	4	730
K90/4T	Outer Wing	5770501	1200Nm	18.00mm	4	500
K90/4T	Inner Wing	5770502	1600Nm	20.90mm	4	730

Dansk

Type	Position	Reservedel nummer.	Newtons	Indstilling (L)	Belaegn timer	Maskine
K90/4T	Midtersektion	5770500	1200 Nm	18.00mm	4	500/730
K90/4T	Indre vinge	5770503	1200 Nm	21.00mm	4	730
K90/4T	Vinge	5770501	1200 Nm	18.00mm	4	500
K90/4T	Ydre vinge	5770502	1600 Nm	20.90mm	4	730

Deutsch

Type	Position	Teile nummer.	Newtons	Einstellung (L)	Reib scheiben	Maschine
K90/4T	Mitte	5770500	1200 Nm	18.00mm	4	500/730
K90/4T	Innen Flugel	5770503	1200 Nm	21.00mm	4	730
K90/4T	Flugel	5770501	1200 Nm	18.00mm	4	500
K90/4T	Außen Flugel	5770502	1600 Nm	20.90mm	4	730

Spearhead MULTICUT 820

Skids

When operating on abrasive soils, particularly in stubbles and similar conditions with thin ground cover, excessive skid wear may be expected. To provide extra protection and to prolong life of the skids, special hard facing rods are available.

Storage

Before storing away, thoroughly wash the machine removing all traces of grass and dirt. Great care must be taken when washing with high-pressure hoses, do not hold the water jet close to the paint work. Use steam cleaners with caution and be sure to remove all detergents to avoid any discoloration or damage to the paintwork.

Lubricate all grease points until fresh grease shows. Liberally apply used engine oil along the whole length of the hinges of each wing section. The centre clutch coupling and wing shafts must be removed and stored under cover. Smear grease on the chrome ramrods for protection.

After Storage

Disassemble clutches and with an emery cloth remove all traces of rust on the metal clutch plates. Check condition of the friction plates, if there is any sign of over heating, wear or cracking, replace with new. Do not attempt to use the machine with damaged slip clutch plates.

Reassemble the clutch units and tighten the bolts to achieve the correct spring length. Do not over tighten or the clutches will not work.

Check condition of tyres and pressure then follow the maintenance procedure covered in the servicing part of this manual. Pay particular attention to the condition of guards and blades.

Remember the *820 Rotary Cutter* is designed to withstand the most rigorous conditions and, with a little care and attention, will give many years of trouble free service. So as not to invalidate the warranty and to avoid problems, use only genuine parts and make sure the machine is not driven at a speed in excess of 1000r.p.m. on the PTO.

Trouble Shooting Guide

Broken or damaged blades

1. Raise cutting height to avoid striking the ground
2. Remove or avoid obstacles such as rocks
3. Check rotor speed
4. Ensure a steady feed into drive (Do not snatch the PTO)
5. Fit optional stump jumpers

Damaged blade holder

1. As above
2. Failure to keep tight centre retaining nut

Damage gearboxes

1. Seized slip clutch.
2. Telescopic shafts bottoming out
3. Engaging drive with too much power / revs
4. Lack of grease on sliding tubes of drive shaft

Damage to PTO shaft

1. Seized slip clutch
2. Telescopic tube bottoming out
3. Engaging drive with too much power / revs
4. Turning too sharp
5. Not enough overlap
6. Lack of grease
7. Build up of Debris under drive shaft

Gearbox overheating

1. Incorrect oil level
2. Incorrect grade of oil
3. Incorrect operating speed
4. Machine overloaded
5. Rubbish around the gearbox reducing air circulation

Slip clutches overheating

1. Machine overloaded
2. Incorrect operating speed
3. Incorrect setting
4. Blades hitting the ground

Oil leak from gearbox

1. Damaged shaft seal check for foreign matter (wire-string)
2. Faulty breather
3. Damaged gasket
4. Incorrect oil level

Metal fatigue on frame

1. Too fast a traveling / operating speed for conditions
2. Wings not floating i.e. following the ground contours (check tractor spool)
3. Used in a manner or condition contra to its intended purpose

Excessive skid wear

1. Set skids above the ground

Spearhead MULTICUT 820

Spearhead Machinery
Green View
Salford Priors
Evesham
Worcestershire
WR11 8SW

Tel: 01789 491860

Fax: 01789 778683

www.spearheadmachinery.com

enquiries@spearheadmachinery.com