Spearhead Machinery
Operator Instruction Manual For

ROLLICUT 500/600

5.0-6.0m cut width, 540 PTO input

Vegetation control folding rotary amenity mower

8999170EN v1.1

IMPORTANT
Verification Of Warranty Registration

Dealer Warranty Information & Registration Verification

It is imperative that the selling dealer registers this machine with Spearhead before delivery to the end user.

Failure to do so may affect the validity of the machine warranty.

To register machines go to the Spearhead Machinery Limited web site at:

https://my.spearheadmachinery.com/warranty/machine-registration/

Should you experience any problems registering a machine in this manner please contact the Spearhead Service Department on 01789 491867.

Confirm to the customer that the machine has been registered in the section below.

Registration Verification

Model Type:		**Rollicut**
Model Number:		**9**_____
Serial Numbers:	**Machine:**	**S**_____
	Cutting Implement:	**S**_____
	Other:	
Name Of Owner:		
Name Of Installing Dealer:		
Dealer Address:		
Dealer Signature:		
Date Of Delivery / Installation:		
Date Of Warranty Registration:		

IMPORTANT

At the point of transfer of ownership record the above information. Note the serial number of your machine and always quote it in any communication with us or your dealer. (The serial number plate is located on the machine mainframe.) This is particularly important when ordering spares. Remember to include all numbers and letters.

The information given throughout this manual is correct at the time of publication. However, in the course of constant development of Spearhead machines, changes in specification are inevitable. Should you find the information given in this book to be at variance with the machine in your possession, you are advised to contact the Spearhead Service department where up-to-date information will be provided.

The manual can contain standard and optional features and is not to be used as a machine specification. The machine has been tested and is considered safe if carefully used. Ensure your operator is properly trained in its use and maintenance.

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Rollicut Series Rotary Mower

This manual covers the Rollicut series of folding rotary mowers which are available in 5.0m and 6.0m cut widths.

Rollicut folding rotary mowers can be specified in either Standard or Proline model specifications and each come with a different range of features.

5.0m Rollicut machines features three rotors on all body's. 6.0m Rollicut machines features four rotors on each wing body and three rotors on the rear body.

They are fitted with hydraulic rams which provide a folding ability making the machine legal for road transportation.

These trailed amenity machines can be specified with various specifications to suit the end users specific requirements.

These machines are designed to be operated at 540 rpm.

It is essential that the safety guards (including the front and rear rollers) are always fitted during operation and that the machine is operated in line with the procedures and practices detailed in this manual.

IMPORTANT

This operator's manual should be regarded as part of the machine. Suppliers of both new and second-hand machines are advised to retain documentary evidence that this manual was provided with the machine.

This machine is designed solely for ground vegetation control and must not be used for any other purpose. Use in any other way is considered as contrary to the intended use. Compliance with, and strict adherence to, the conditions of operation, service, and repair, as specified by the manufacturer, also constitute essential elements of the intended use.

This machine should be operated, serviced, and repaired only by persons who are familiar with its characteristics and who are acquainted with the relevant safety procedures.

Accident prevention regulations, all other generally recognised regulations on safety and occupational medicine, and all road traffic regulations must always be observed.

Any arbitrary modifications carried out to this machine may relieve the manufacturer of liability for any resulting damage or injury.

It is potentially hazardous to fit or use any parts other than genuine **Spearhead** parts.

The company disclaims all liability for the consequences of such use which, in addition, voids the machine warranty.

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Contents List

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1 Machine Description

1.1 Intended Usage

1.1.1 Allowed Uses

The Rollicut series of rotary mowers are designed for light-duty amenity mowing excelling in parkland, golf course, orchard and topping applications and is the perfect choice for coupling to compact tractors.

They are designed for use on level, undulating or inclined ground and for a duty cycle of 1000 hours per annum. They will cut vegetation up to 20mm thickness.

Rollicut machines require a tractor with a minimum of 60hp (Rollicut 500) and 70hp (Rollicut 600).

1.1.2 Improper Uses

DANGER! Spearhead declines any and all liability for damages caused by the machine to persons, animals or property, resulting from use in any other way than described in this manual, or due to damage caused by negligence or by not observing the instructions contained in this manual.

The machine, due to its typical construction, may also be suitable for uses other than from those foreseen by the manufacturer. For this reason Spearhead has selected, as non-exhaustive examples, a series of improper uses that can be reasonably foreseen, which are:

- Using the machine for hedge cutting.
- Using the machine for stubble mulching purposes.

The uses listed above and those not specifically indicated in this manual, including reasonably foreseeable improper uses, are definitively prohibited.

Figure 1.1 Spearhead Rollicut
(Standard 600 model illustrated)

1.2 General Arrangement

The layout and naming convention used throughout this manual for each of the machines are shown in the tables below. The numbering and positioning of the Standard specification relevant item can be found in Section 1.2.1 for Standard Rollicut machines.

Rollicut Proline specification machines contain additional features not fitted to the Standard Rollicut specification. The numbering and positioning of these additional features are illustrated in Section 1.2.2.

A Standard specification Rollicut machine can be specified at manufacture to come with some of the features of the Rollicut Proline. It is important to examine the machine and the machine order to determine what features are fitted to the specific Rollicut machine being viewed. Further guidance to the various Rollicut machine options can be seen in Section 1.5.2.

Standard Components

Item No.	Description
1	Centre Chassis
2	PTO Support Bracket
3	Extendable Drawbar
4	Towing Eye
5	Towing Eye Wear Pad
6	Left-Hand Wing Body
7	Left-Hand Wing Arm
8	Right-Hand Wing Body
9	Right-Hand Wing Arm
10	Body Cover
11	Rubber Protection Flap
12	Front/Rear Roller
13	Rear Body
14	Body Mount Frame
15	Rear Lift Frame
16	Hydraulic Wing Ram
17	Body Gearbox
18	Splitter Gearbox
19	Blade
20	Blade Carrier
21	Rotor Spindle

Item No.	Description.
22	Skid
23	Height Adjustment
24	Wing PTO Driveshaft
25	Input PTO Driveshaft
26	Wing Transport Lock
27	Rear PTO Driveshaft
28	Light Cluster
29	Marker Light
30	SMV Board
31	Wheel
32	Wheel Chock
33	PTO Cone
34	Main Drive Pulley
35	Rotor Pulley
36	Belt Tensioner
37	Pulley Mount
38	Jack
39	Belt
40	Splitter Gearbox Guard
41	7-pin Electrical Connection
42	Rear Body Transport Lock

Table 1.1 – Rollicut Standard Machine Components

1.2.1 Rollicut – Standard Specification

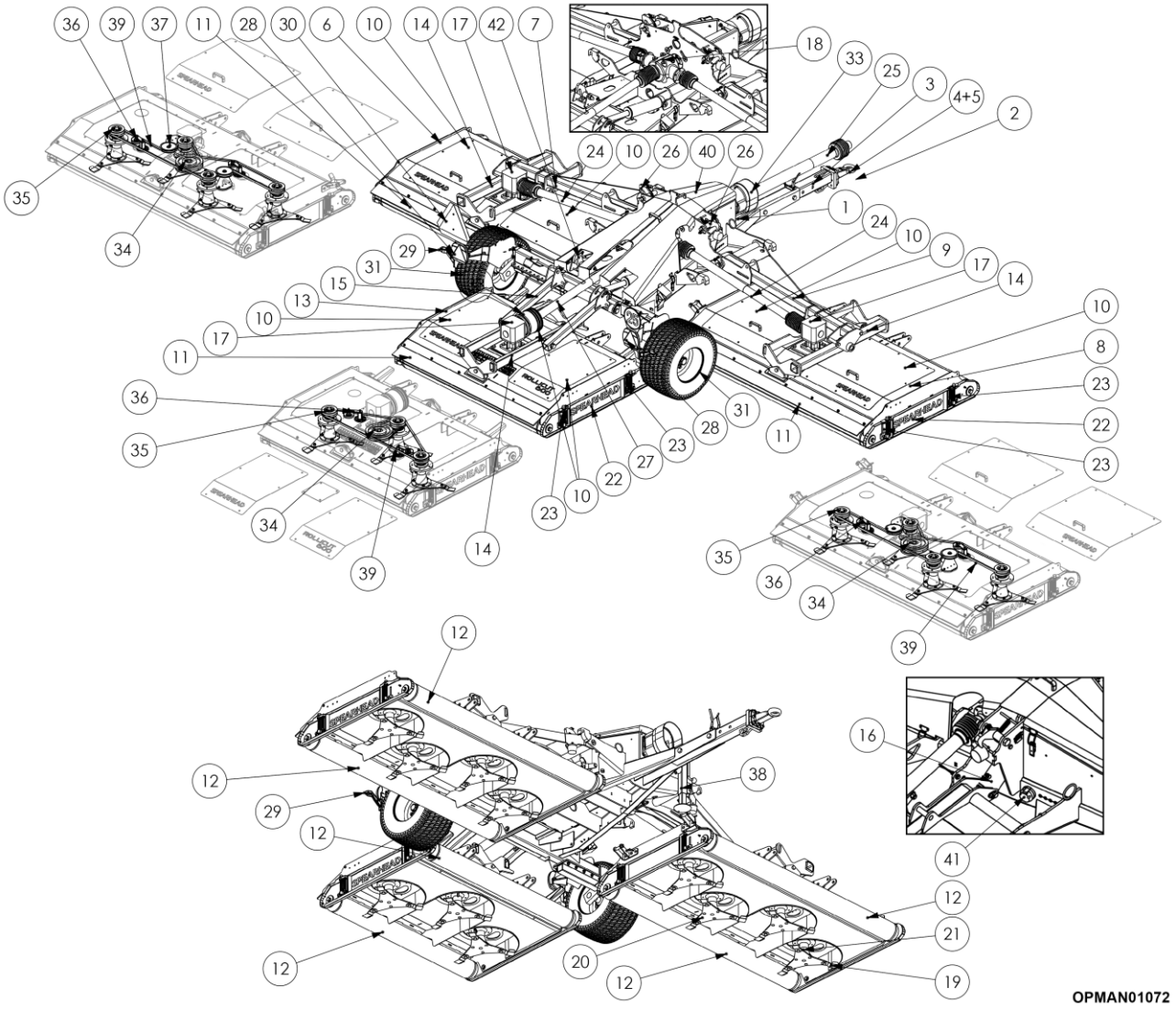


Figure 1.2 – Rollicut Standard Specification General Arrangement
(600 model illustrated)

1.2.2 Rollicut Proline - Additional Components

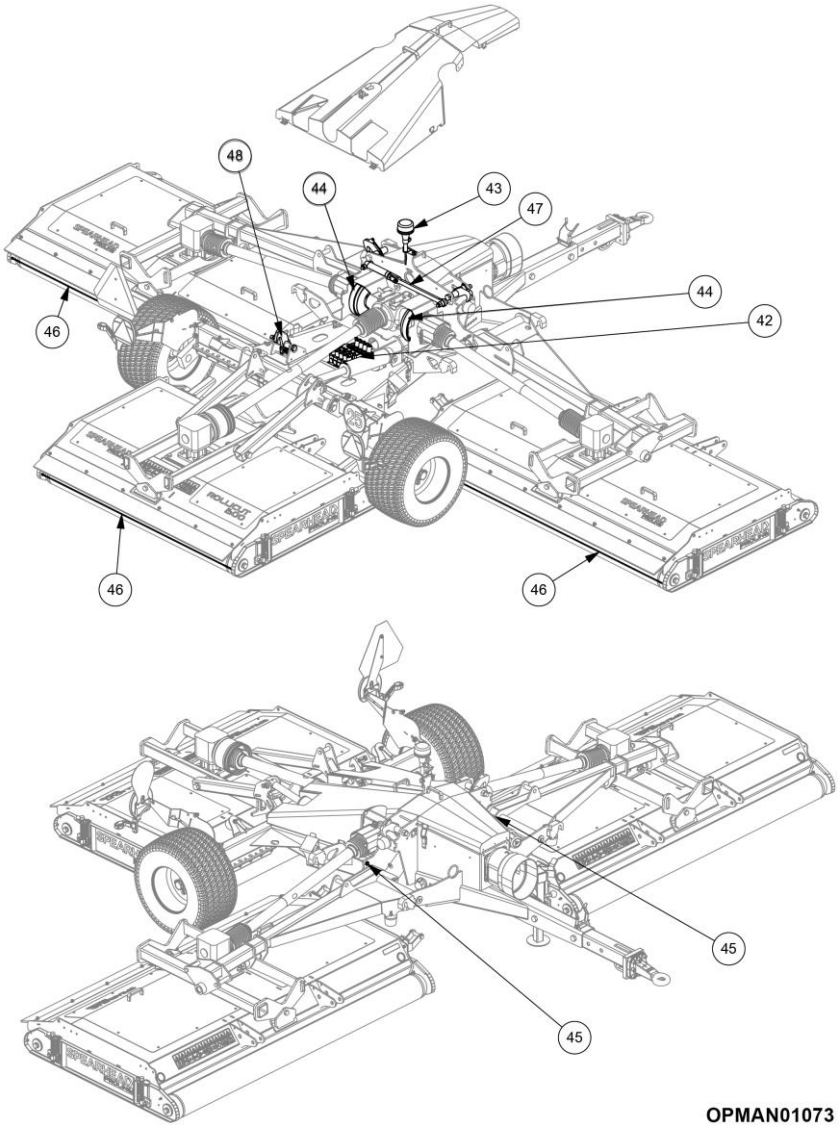


Figure 1.3 – Rollicut Proline Specification Additional Features General Arrangement
(600 Proline model illustrated)

Item No.	Description
42	Valve Block
43	Beacon
44	Wing Clutches
45	Wing Sensors
46	Scraper Wire
47	Hydraulic Wing Transport Locks
48	Hydraulic Rear Body Transport Lock

Table 1.2 – Rollicut Proline Additional Machine Components

1.3 Machine Identification

Each machine is equipped with a serial plate; see Figure 1.4 that includes the following data in this order:

1. UKCA Conformity Marking.
2. Machine Whole Goods Code (WGC).
3. Serial number of the machine.
4. Mass in kg.
5. Production Year (year of construction).
6. Design conformity standard.
7. Machine Product Group Code.
8. EU Authorised Representative QR scan code.
9. Manufacturer marking with name and address.
10. EAC Eurasian/Russian Conformity Marking.
11. EC European Conformity Marking.
12. Product Group Code.

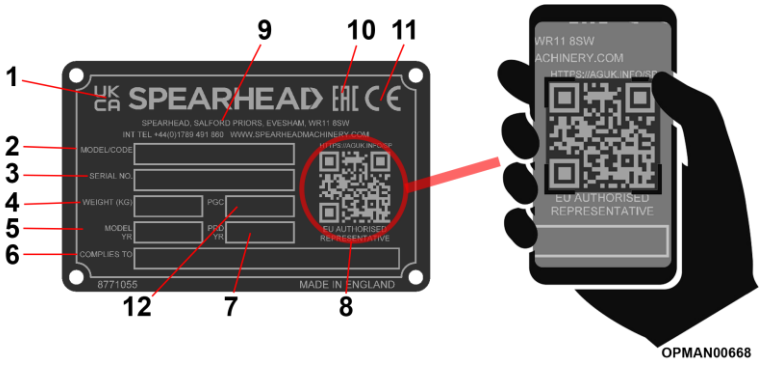


Figure 1.4 – Serial Plate

Data on the Spearhead manufacturer's plate should always be referred to when requesting assistance and/or requiring replacement spare parts.

This data can identify the machine and its characteristics and specification for its particular time of manufacture, certifying that it responds to current regulations. For this reason the plate should never therefore be removed nor be used for other purposes; if the machine is dismantled, it should be destroyed to prevent any form of abuse.

By utilising a smart phone and scanning the Authorised Representative QR scan code found on the right-hand side of the serial plate (ref 8, Figure 1.4) using a suitable QR scanning App, you can find details for Spearhead Machinery authorised representatives for its various territories.

The serial plate is located on the left-hand side of the front of the machine near the documents tube; see Figure 1.5.

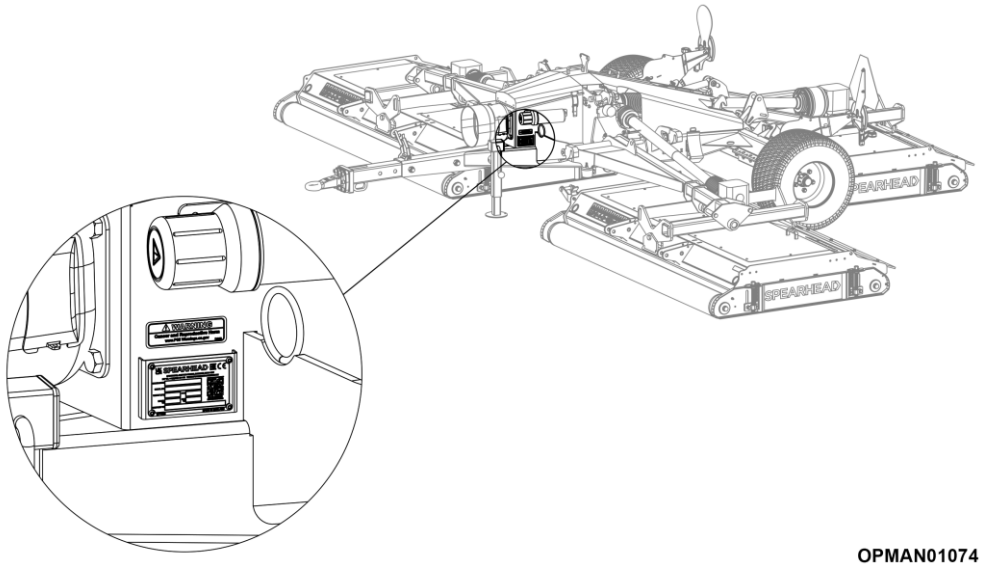


Figure 1.5 – Serial Plate Location

1.4 Rotation Definitions & Conventions

This instruction manual refers to relative rotational directions. The terms clockwise and anti-clockwise are defined by looking down at the machine from above, with the tractor being at the front; see Figure 1.6/1.7. To eliminate confusion the following definitions will be used throughout this operator's manual.

In order to create a consistent and quality cut and through-flow of material through and out of the machine, Rollicut machines have anti-clockwise rotating rotors which are in turn fitted with right-hand (RH) blades. The rotation direction of each of the rotors is stated in Figure 1.6 for the Rollicut 500 and Figure 1.7 for the Rollicut 600.

Rollicut 500

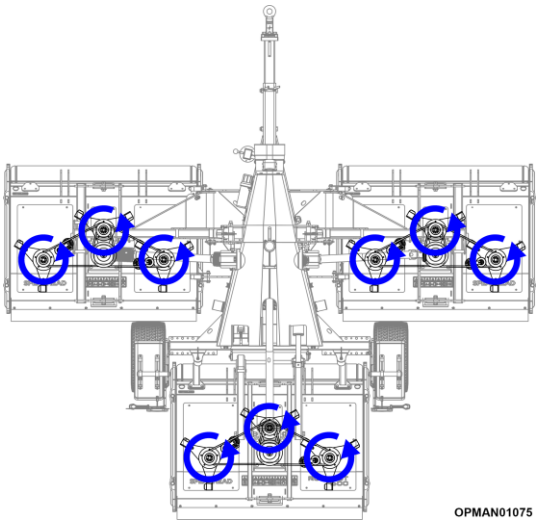


Figure 1.6

Rollicut 600

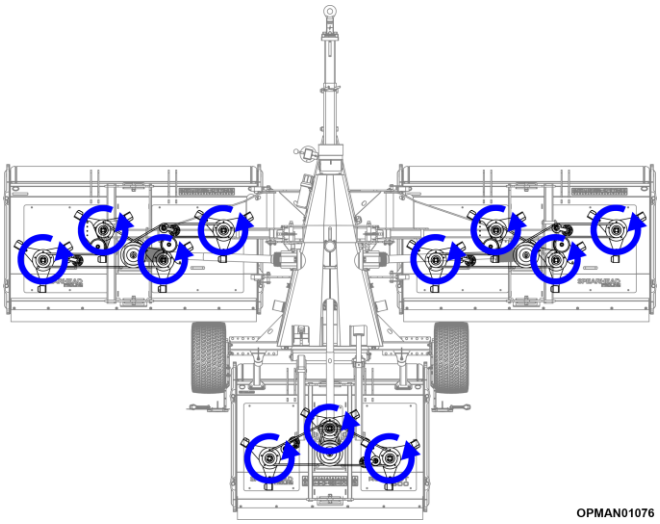


Figure 1.7

Additionally, other references to 'clockwise' and 'anti-clockwise' actions by the operator conform to international right-hand thread conventions for 'screw down' and 'un-screw' respectively.

This convention also extends to the definition of PTO drive rotation from the prime mover, see Figure 1.8.

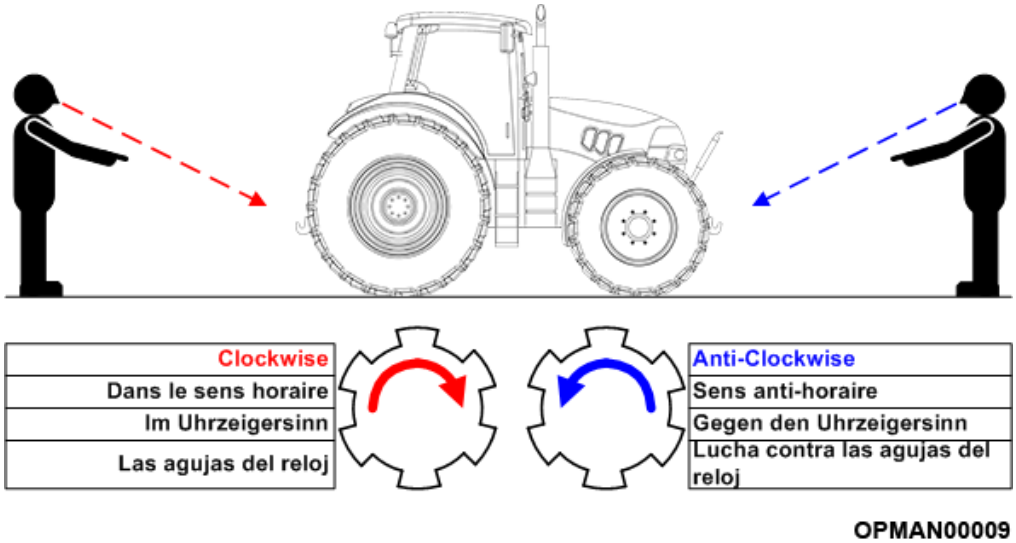


Figure 1.8 – Tractor PTO Driveshaft Rotation Definitions

1.5 Machine Specification

1.5.1 Standard Specification

			Rollicut	500	600
Tractor			Recommended Minimum Tractor HP	60hp (45kW)	70hp (53kW)
PTO			Speed	540rpm	
			Size	1” 3/8 input and output	
			Protection	Slip clutch and overrun	
Machine (1) (2)	Mass		Standard	2500kg (5512lbs)	TBC
			Proline	TBC	3160kg (6967lbs)
			Hitch	Multi-positional Drawbar	
			Cutting Width (A)	4.85m (15’ 11”)	5.99m (19’ 8”)
			Working Width (B)	4.97m (16’ 4”)	6.12m (20’ 1”)
			Working Length (C)	4.83m (15’ 11”)	
			Transport Width (D)	2.66m (8’ 9”)	
			Transport Length (E)	4.37m (14’ 4”)	
			Transport Height (F)	2.57m (8’ 6”)	3.13m (10’ 4”)
			Body Height (top to skid)	490mm (1’ 8”)	
			Wing Working Angles	45° up/15° down	
			Wheels	2	
Gearbox			Lubricant	EP80-90W or GL-4/GL-5	
	Oil Capacity		Splitter	TBC	
			Bodys (x3)	1.3 litres (2.3 pints)	
Blades			Quantity	27	33
			Tip Speed	49mps (9645 fpm)	
Cutting Capacity			Height	0mm – 110mm (0" – 4.3")	
			Diameter	20mm (13/16”)	
Driveline			Approval	ASAE Category 4	
			Protection	Slip clutch and overrun on input PTO driveshaft. Belts on wings and rear body	

Table 1.3 – Rollicut 500/600 Specification – Standard & Proline

Notes:

(1) Spearhead constantly reviews and improves product designs and reserve the right to change this information. Actual machines may vary from the above specification. Contact your Spearhead Sales representative if you have any queries.

(2) All dimensions are determined from computer models, so actual measurements may vary slightly.

The following machine figure guides for working dimensions (Figure 1.9), are illustrated using a Rollicut 600 Proline.

The following machine figure guides for transport dimensions (Figure 1.10), are illustrated using a Rollicut 600 Proline.

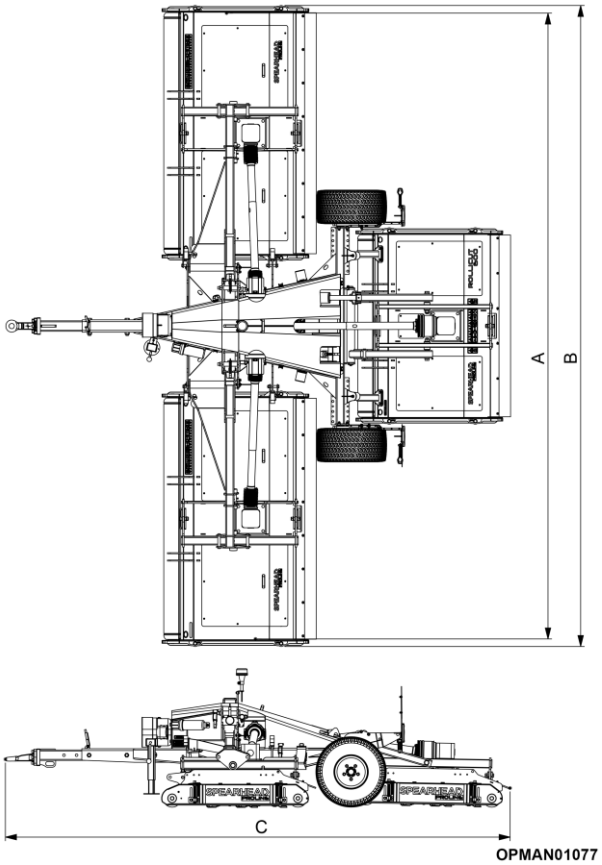


Figure 1.9 Working Dimensions
(600 Proline model illustrated)

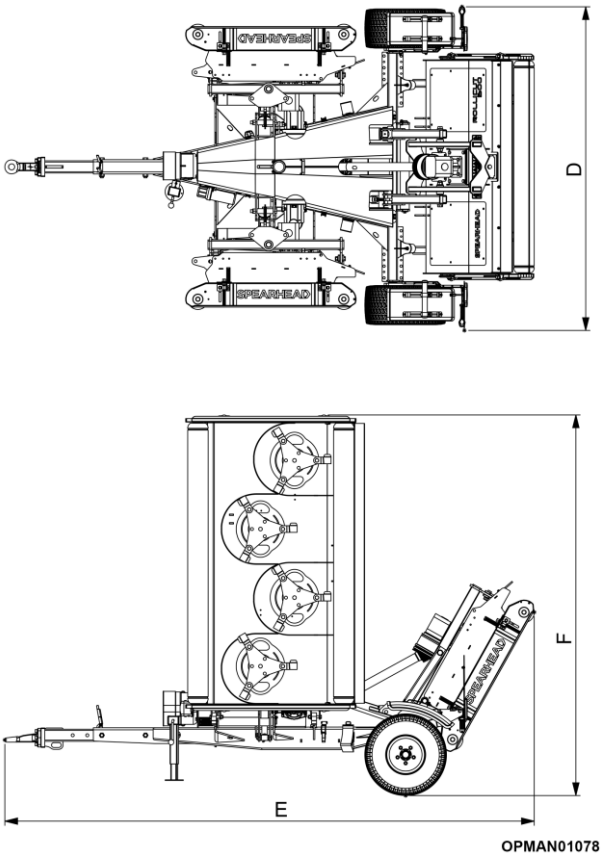
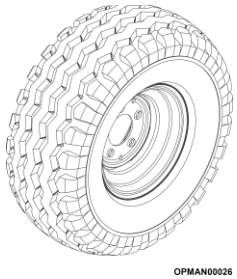
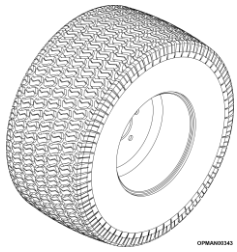
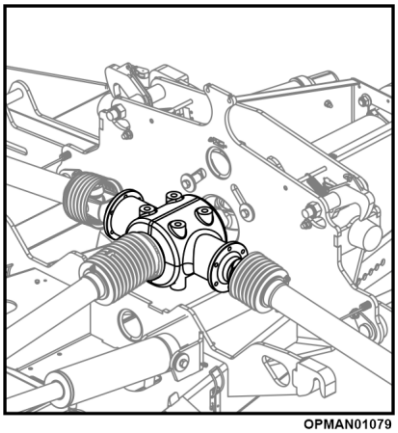
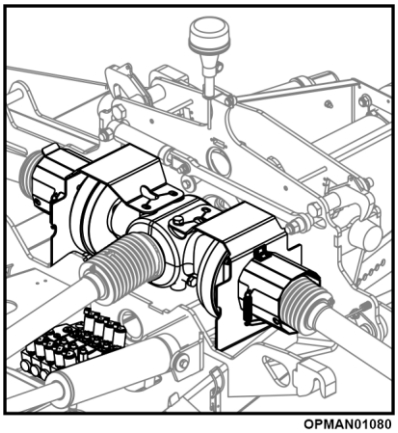


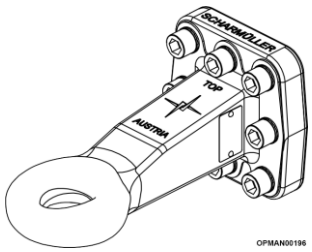
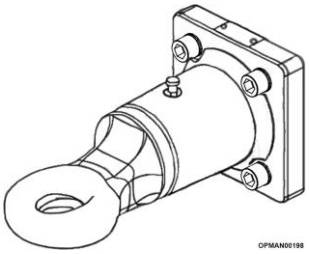
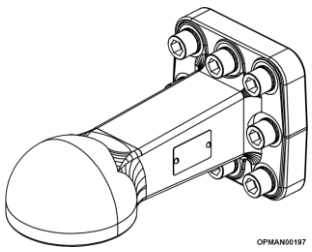
Figure 1.10 Transport Dimensions
(600 Proline model illustrated)

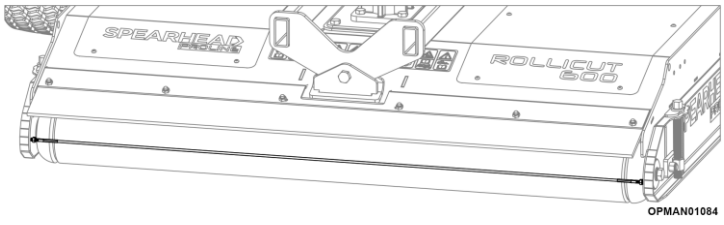
1.5.2 Machine Options

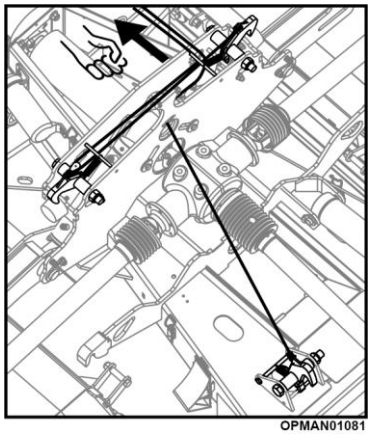
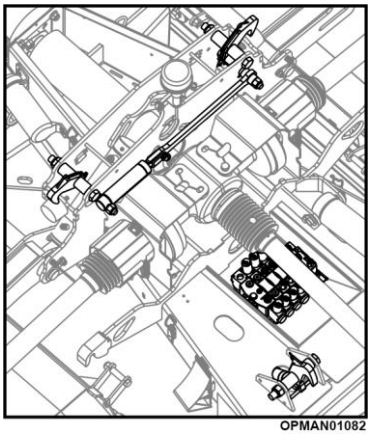
Rollicut machines can be ordered in a variety of different specifications to fit the user's requirements.

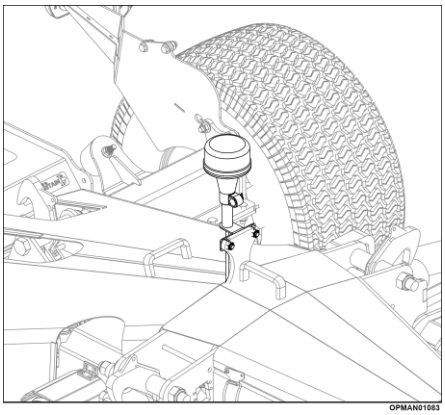
Option	Picture	
1.5.2.1 Tyres		
	Road	Turf

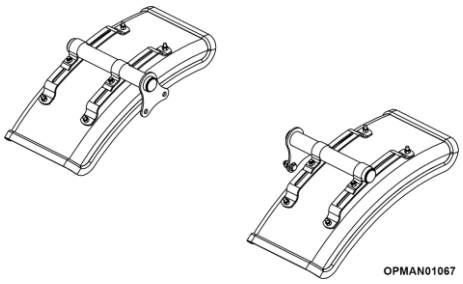
Option	Picture	
1.5.2.2 Wing Driveline		
	Standard	Proline Automatic Disengage

Option	Picture		
1.5.2.3 Towing Eye			
	Standard	Swivel	K80

Option	Picture
1.5.2.4 Front and Rear Roller Scraper Wires	
	Standard on Rollicut Proline

Option	Picture	
1.5.2.5 Body Locking		
	Standard	Proline

Option	Picture
1.5.2.6 Beacon	
	Standard on Rollicut Proline

Option	Picture
1.5.2.7 Mudguard Kit	

2 Safety

2.1 Level Of Danger

The operator must read, understand and follow all of the Safety instructions. Serious injury or death may occur unless care is taken to follow the warnings and instructions provided. The level of safety is indicated in three levels and the following notation is used throughout this operator instruction book;

DANGER! Level 1; alerts for imminent death or critical injury.

WARNING! Level 2; warns of serious injury or possible death.

CAUTION! Level 3; indicates possible injury.

IMPORTANT: Special instruction related to either the machine, tractor or the working environment

NOTE: Special instruction related to either the machine, tractor or the working environment

2.2 Terminology

The indicated levels of danger refer to specific risk situation that may occur during machine use and may involve the same machine, the operator and any exposed persons. With the purpose of highlighting situations or operations that may result in risks, the meanings of terms used in this manual are indicated here:

- WORKING ZONE: Any area in and/or around a machine where the presence of an exposed person constitutes a risk to the health and safety of said person.
- BYSTANDER: A person fully or partly in a hazardous area.
- OPERATOR: The person or personnel in charge of the installation, the operation, the adjusting, the cleaning, the repairing and the moving of the machine.
- USER: the person, entity or company, who purchased or rented the machine and intends to use it according to the intended use foreseen by the manufacturer.
- SPECIALISED PERSONNEL: any person specifically trained and approved to carry out maintenance or repair interventions that require particular knowledge of the machine, its operation, the installed safety devices, intervention modes. It must be capable of recognising danger present on the actual machine, therefore avoiding at risk situations.
- RISK: a combination of the probability and seriousness of injury or damage to health which can arise in a dangerous situation.
- GUARD: a part of the machine that is used to specifically guarantee protection by way of a material barrier.
- PROTECTION DEVICE: a device that reduces risk (unlike the guard) either on its own or together with the guard.
- INTENDED USE: the use of the machine in accordance with the information provided in the operators manual.
- REASONABLE FORESEEABLE MISUSE: the use of the machine different to the information provided in the operator's instructions, which may be the result of readily predictable human behaviour.
- GENUINE SPEARHEAD DEALER/ AUTHORIZED TRACTOR DEALER: The Genuine Spearhead Dealer/ Authorized Tractor Dealer, legally authorised by the Manufacturer, is formed by specialised staff able to carry out all types of assistance, maintenance and repair work, even of a certain complexity, required to maintain the machine in perfect working order.

WARNING! Carefully read the guidance as stated in this manual relating to safe use. If the instructions described are not followed, a situation may arise which causes irreparable damage to the machine or property, or injury - even severe - to people or animals. Spearhead declines all responsibility for damage caused by not complying with the safety and injury prevention regulations described below. Spearhead also declines any responsibility for damage caused by improper use of the machine and/or as a result of modifications made without prior authorisation by the manufacturer.

2.3 Safe Use

DANGER! It is prohibited to use the machine in ways that are different from the indications contained in this operators manual.

Never operate the tractor or machinery until you have read and completely understood this manual and the tractor operator's and each of the safety messages given and those displayed on the tractor or implement.

Safety is of upmost importance to the manufacturer and should be of the same level of importance for the operator/owner. Spearhead machines have been designed to ensure the greatest level of protection to operating personnel and bystanders. However, in practice implementing the safety as guided in this operator manual is up to **you**. Only **you** can prevent serious injury or death from unsafe practices.

2.3.1 Health and Safety Executive (HSE) Guide Sheets

In Great Britain, it is important to take note of the health and safety guidance given by the Health and Safety Executive (HSE) with regards to safely operating agricultural machinery safely in addition to the safety guidance given in this rotary mower operator's manual and the tractor operator's manuals.

Health and Safety Executive (HSE) – Power take-offs and power take-off drive shafts (guide sheet)
https://www.hse.gov.uk/pubns/ais40.pdf

Health and Safety Executive (HSE) – Safe use of agricultural mowers (guide sheet)
https://www.hse.gov.uk/pubns/ais25.pdf

Health and Safety Executive (HSE) – Working safely with agricultural machinery (guide sheet)
https://www.hse.gov.uk/pubns/INDG241.pdf

Health and Safety Executive (HSE) – Using tractors safely (guide sheet)
https://www.hse.gov.uk/pubns/indg185.pdf

It is important for personnel and operators to follow the guidance and requirements of local and national health and safety laws and regulations of where the works are being carried out. Contact the governing body of the local jurisdiction to obtain detailed information on the subject to ensure that the works are being carried out correctly and safely.

2.3.2 Health and Safety Executive (HSE) Safe Stop Campaign

In Great Britain, Spearhead Machinery endorses the "Safe Stop" campaign promoted by the Health and Safety Executive (HSE) to give guidance on how to safely prepare the machine and personnel and operate the machine and what to do in emergency cases.

The 'Safe Stop' campaign focusses on the importance of following the 'Safe Stop' procedure:

- Engage handbrake
- Controls in neutral
- Switch off engine
- Remove key

https://www.hse.gov.uk/agriculture/topics/machinery/safe-use-1.htm

Figure 2.1

It is important for personnel and operators to follow the guidance and requirements of local and national health and safety laws and regulations of where the works are being carried out. Contact the governing body of the local jurisdiction to obtain detailed information on the subject to ensure that the works are being carried out correctly and safely.

2.3.3 Operators Manual

2.3.3.1 **IMPORTANT:** Read, understand and follow the safety messages stated throughout this section and the rest of this operator's manual. Serious injury or death may occur unless care is taken to follow the warnings.

2.3.3.2 **IMPORTANT:** Ensure the operator's manual is complete, readable, and easily accessed by the operator and accompanying personnel. If in doubt replace, by contacting your local Spearhead dealer or Spearhead Machinery directly.

2.3.3.3 **DANGER!** It is prohibited to use the machine in ways that are different from the indications contained in this operators manual.

2.3.3.4 **IMPORTANT:** Read the input PTO driveshaft operator's manual before using the machine.

2.3.3.5 **IMPORTANT:** It is required that all operators and personnel carrying out maintenance on this machine familiarise themselves with the machine and this operator manual to ensure they are aware of the dangers of incorrect use or improper or incorrect repairs.

2.3.3.6 **IMPORTANT:** If the operator cannot read the manuals for themselves or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, safety practices and operating instructions to the operator.

2.3.4 Personnel Preparation

2.3.4.1 **DANGER!** It is prohibited to use or have the machine used by personnel that are incompetent and not properly trained in the use of the tractor and machine controls and who are in poor health and physical condition or under the use of drugs or alcohol.

2.3.4.2 **IMPORTANT:** Ensure that the operator is aware of the correct emergency stop procedure if the tractor and machine is required to stop suddenly.

2.3.4.3 **DANGER!** It is forbidden to drive the agricultural tractor attached to the machine or have it driven by personnel without an appropriate driving licence.

2.3.4.4 CAUTION! On Proline specification machines, ensure that the Minipilot joystick and control box cables are routed correctly between tractor and machine.

Ensure that the cables are placed through the hose guide bracket found on the front of the machine chassis between the tractor and the machine and are distanced from the input PTO driveshaft and anywhere where the operator could potentially trip or entangle themselves potentially causing them to fall or cause injury.

2.3.4.5 It is mandatory to use suitable clothing; PPE for example. Strictly avoid long or loose clothing that could be caught in any way by moving parts. Wear suitable helmets, glasses, gloves, footwear, etc.

2.3.4.6 **WARNING!** When operating the machine do not wear loose or trailing clothing which may became snagged or entangled in moving parts.

2.3.4.7 CAUTION! Wear suitable clothing and PPE to cater for the working environment. In some geographical locations, wildlife such as bees or insects or larger wildlife could impact the wellbeing of the operator, machine and other bystanders. Inspect the work location before commencing work.

2.3.4.8 CAUTION! Ensure maintenance personnel wear suitable PPE clothing when maintaining the machine to ensure a reduced risk of impact or skin injuries. Frequent or prolonged contact with hydraulic oil may cause dermatitis and other skin disorders including (more rarely) skin cancer when not wearing impenetrable gloves. Worn parts may have sharp edges.

Follow the guidance of the lubricant manufacturer with regards to handling oils, solvents, cleansers and other chemical agents.

2.3.4.9 **IMPORTANT:** It is required that all operators and personnel carrying out maintenance on this machine familiarise themselves with the machine and this operator manual to ensure they are aware of the dangers of incorrect use or improper or incorrect repairs.

2.3.4.10 CAUTION! If the agricultural tractor has no closed cabin, the operator is required to use extra Personal Protection Equipment. Ear protectors are required and a dust mask if the working ground lifts a considerable amount of dust along with safety glasses. If your health is compromised during work or afterwards, stop immediately and seek professional medical advice immediately.

2.3.4.11 **DANGER!** Ensure you never smoke or have an open flame near the tractor or machine.

2.3.4.12 CAUTION! Personnel should take regular breaks during work to minimise fatigue and ensure alertness in work.

2.3.4.13 **IMPORTANT:** Personnel and operators should make themselves aware of local and national highway laws and regulations and contact the Department of Transport of your Local Highway Authority to obtain detailed information on the subject.

2.3.4.14 **IMPORTANT:** Personnel and operators should make themselves aware of local and national laws and regulations where they can and cannot carry out works with regards to wildlife and habitats.

2.3.4.15 **IMPORTANT:** Ensure a full risk assessment of the work site is conducted by a qualified body before beginning the works evaluating risks to the operator, machine, bystanders and other road users if applicable.

2.3.4.16 **IMPORTANT:** If the operator cannot read the manuals for themselves or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, safety practices and operating instructions to the operator.

2.3.5 Tractor And Machine Preparation For Work

Tractor Preparation

2.3.5.1 **IMPORTANT:** Before starting, safety checks on tractor and machine must be carried out with regard to functionality, road safety and accident prevention rules.

2.3.5.2 CAUTION! Check that the agricultural tractor on which the machine is installed is of adequate power, weight and configuration, compatible with the model fitted and fitted with a seat belt.

The tractor should exceed the weight of the machine by at least 20%. For machine weights see Section 1.5.

2.3.5.3 CAUTION! Before proceeding to take the machine into the work area ensure that driving vision is not impaired by tractor, cab or implement for clear vision of ground hazards and bystanders while seated in the driver's seat.

Adjust rear view mirrors in order to see clearly the machine and all items behind.

2.3.5.4 CAUTION! Where a machine is used in conjunction with tractors not fitted with a glazed safety cab, a clear polycarbonate safety screen together with a mesh guard must be fitted to the tractor between the operator and the cutting unit. A polycarbonate safety screen must be used on cabs where windows are likely to be left open for ventilation purposes. It is essential that cab windows on the operating side, through which the machine is observed, are intact, clean and closed. Otherwise, a clear polycarbonate safety screen must be fitted where grass trimming operations are carried out.

2.3.5.5 CAUTION! If the agricultural tractor has no closed cabin, the tractor must be equipped with a "Rollover Protection Structure" (ROPS) which must always be locked in position.

2.3.5.6 CAUTION! Ensure that the tractor destined to be used with the machine has a vertical escaping, bonnet mounted exhaust to reduce potential fire risk when the machine is in operation. If the tractor is equipped with a under frame exhaust seek a different tractor of use.

2.3.5.7 CAUTION! If two or more tractors/machines are being used in close proximity in the working area, enclosed cabs must be used.

2.3.5.8 CAUTION! Do not mount the machine with trucks or other vehicles on the public highway.

2.3.5.9 **IMPORTANT:** Ensure the tractor is fitted with sufficient hydraulic and electrical capabilities to operate and control all aspects of the specific model of machine intending to be operated.

2.3.5.10 **IMPORTANT:** Ensure that permissible axle loads are not exceeded.

2.3.5.11 **IMPORTANT:** Ensure that the correct fire extinguisher is carried inside the tractor at all times and is easily accessible.

2.3.5.12 **IMPORTANT:** Before preceding to start work ensure that steering and braking give proper operation and are in good condition.

2.3.5.13 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that all tractor machine lighting is working correctly.

2.3.5.14 **IMPORTANT:** Ensure the tractor is fitted with flashing warning beacons and Slow Moving Vehicle (SMV) sign if required. Check the local jurisdiction to determine what requirements are required to be switched on and shown when the machine is working.

2.3.5.15 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that the tractor tyres are clear of mud and dirt build up.

2.3.5.16 **IMPORTANT:** Ensure the tractor is fitted with a clevis or K80 hitch to fit the machine to the tractor. Tractor pick-up hitches should not be used.

Machine Fitting

2.3.5.17 **WARNING!** When moving the rotary mower not fitted to the tractor ensure the machine is lifted or moved using suitable equipment using the correct procedure described in the operators manual.

2.3.5.18 **IMPORTANT:** Ensure that the supplied wear pads for the towing eyes are placed between the tractor and machine. If the wear pads are beyond repair, replace before using the machine.

2.3.5.19 CAUTION! Ensure that the supplied towing eye specified with the machine is suitable for the hitch on the tractor which is pulling it.

2.3.5.20 CAUTION! Ensure that a suitable size towing pin is used to fit the tractor to the machine.

2.3.5.21 **IMPORTANT:** Ensure that the drawbar is extended sufficiently to ensure that the rear wheels of the tractor do not catch the machine when turning.

2.3.5.22 **IMPORTANT:** Ensure that the drawbar safety chain is securely fixed in position between the machine drawbar and the tractor.

2.3.5.23 **IMPORTANT:** Ensure that the hydraulic hoses and electrical cables are placed through the hose guide bracket found on the front of the machine chassis between the tractor and the machine.

Machine General Inspection

2.3.5.24 CAUTION! Ensure that the tractor and rotary mower are correctly inspected using their designated pre-delivery inspection (PDI) sheet before first use.

2.3.5.25 **WARNING!** Check all key components. Inspect and replace all damaged components with genuine Spearhead parts and ensure the machine is running correctly again before resuming cutting operations.

2.3.5.26 **IMPORTANT:** The condition of the blades must be checked before beginning daily work and they must all be replaced if damaged or missing before proceeding to use the machine.

2.3.5.27 **IMPORTANT:** The condition of all guarding and rubber flaps must be checked before beginning daily work and they must all be replaced if damaged or missing before proceeding to use the machine.

2.3.5.28 **IMPORTANT:** Ensure that the wear skids and front and rear rollers specified and supplied with the machine are fitted to the machine. If not, replace. Prolonged use of the machine with no wear skids or front and rear rollers will cause permanent wear to the main body fabrications.

2.3.5.29 **IMPORTANT:** Check the machine to ensure all safety and instruction decals are in position as stated in Section 2.5.2. Replace any missing or damaged decal prior to proceeding to use the machine by sourcing from a local Spearhead dealer.

2.3.5.30 CAUTION! Check the machine daily for hydraulic system leaks. If any component in the system is faulty, replace the component before preceding to use the machine.

2.3.5.31 CAUTION! Ensure all hydraulic hoses, lines and connections are in good condition and tight before applying pressure.

2.3.5.32 **DANGER!** Ensure that the body locks are fully engaged and working correctly to ensure that the wings or rear body do not suddenly drop and potentially crush personnel, bystanders and cause an accident with other road users in the event of a mechanical or hydraulic failure or inadvertent tractor operator input.

2.3.5.33 **WARNING!** On Ecoline specification machines, before proceeding to take the machine onto the public highway ensure that the ropes which release each of the wing and rear bodies are routed correctly to safely prevent the machine from accidentally moving during transport and allow the release the of the bodies when required correctly.

2.3.5.34 **WARNING!** On Ecoline specification machines, before proceeding to take the machine onto the public highway ensure that the tractor levers/buttons which operate the hydraulic lift are locked in position, to avoid the machine lowering during transport.

2.3.5.35 **IMPORTANT:** On Proline specification machines, ensure that both wing position sensors activate correctly when the machine wings are raised. The rotor should automatically stop. Further indication should be given via the indicator light found at the rear of the sensor which should illuminate when the body is raised.

2.3.5.36 **IMPORTANT:** On Proline specification machines, before proceeding to use the machine at work or taking the machine onto the public highway ensure that all operations of the machine which are operated by the Minipilot joystick and control box work correctly.

2.3.5.37 **IMPORTANT:** On Proline specification machines, before proceeding to take the machine onto the public highway ensure that the Minipilot joystick and control box are isolated and switched off via the emergency stop button to avoid the machine from moving during transport.

2.3.5.38 **IMPORTANT:** Ensure all machine rollers are set-up positioned in the same position.

2.3.5.39 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that all tyres are inflated correctly. See Section 5.7.1 for machine tyre pressures.

2.3.5.40 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that all machine lighting is working correctly.

2.3.5.41 **IMPORTANT:** Before returning the machine back to work ensure the machine has been thoroughly inspected and checked using the Machine Inspection Record; see Section 5.11.

Ensure that when the machine inspection is carried out that the machine is stationary and not running.

Where parts are broken, damaged and deemed not fit for use; replace with genuine Spearhead parts using the online Interactive Parts facility at:
https://my.spearheadmachinery.com/parts/public-interactive-parts-database/

You will require the machine serial number. Assistance to its location can be found in Section 1.3.

Controls

2.3.5.42 **IMPORTANT:** On Ecoline specification machines, ensure that the wing and rear body wing lock release rope in placed through the rear window of the tractor and running directly as possible to the machine in order to ensure that the system works correctly.

2.3.5.43 **IMPORTANT:** On Ecoline specification machines, ensure all hydraulic connections are correctly fitted and seated into the tractor spools and test all functions to ensure that everything works correctly before placing the machine into work.

2.3.5.44 **IMPORTANT:** On Proline specification machines, test all functions of the Minipilot joystick and control box to ensure that everything works correctly before placing the machine into work.

2.3.5.45 **IMPORTANT:** On Proline specification machines, ensure that all operation instructions on the Minipilot control box are readable and clean to ensure that the machine can be understood and operated correctly by the operator.

2.3.5.46 **IMPORTANT:** On Proline specification machines, utilise a plastic bag to cover the Minipilot joystick and control box assembly to protect it from the elements and ensure its wellbeing and protection. Ideally store the joystick and control box in a safe and dry place.

2.3.5.47 CAUTION! On Proline specification machines, ensure that the Minipilot joystick and control box cables are routed correctly between tractor and machine.

Ensure that the cables are placed through the hose guide bracket found on the front of the machine chassis between the tractor and the machine and are distanced from the input PTO driveshaft and anywhere where the operator could potentially trip or entangle themselves potentially causing them to fall or cause injury.

2.3.5.48 CAUTION! On Proline specification machines, securely fit the Minipilot joystick and control box assembly to the tractors armrest using the correct procedure of fitting as shown in the operators manual.

2.3.5.49 **IMPORTANT:** On Proline specification machines, before proceeding to take the machine onto the public highway ensure that the Minipilot joystick and control box are isolated and switched off via the emergency stop button to avoid the machine from moving during transport.

Driveline

2.3.5.50 **IMPORTANT:** It is mandatory to use the type of input PTO driveshaft supplied with the machine by Spearhead and for the same type to be sourced again when a replacement is required.

2.3.5.51 **IMPORTANT:** Ensure that before first use the input PTO driveshaft is the correct item for the tractor in which the machine is intended to be attached to and is prepared, greased and shortened to the correct length required following the guidance in the relevant section of the operators manual.

Spearhead does not accept returns on modified/prepared or used input PTO driveshafts, so please take extended time to ensure the item is correct and safe for the tractor application. See Section 3.3.

2.3.5.52 **IMPORTANT:** Do not use PTO adaptors on input PTO driveshafts. This can cause examples such as excessive vibration and driveline failures due to changes in the machines intended use. PTO adaptors also increase the exposed working length of the PTO driveshaft increasing the probability of entanglement with external objects. If the driveshaft is incorrect for the tractor; request another driveshaft from your local Spearhead dealer.

2.3.5.53 **WARNING!** Never connect the power takeoff unless the tractor engine is stopped.

2.3.5.54 **IMPORTANT:** Do not connect the machine to a tractor with a PTO directly connected to the tractor transmission.

2.3.5.55 **DANGER!** At all times ensure that the PTO driveshaft guards are in position, securely fitted, in good condition and that the tractor PTO driveshaft shield is fitted.

2.3.5.56 **IMPORTANT:** Replace any of the PTO driveshaft or coupling guards if any of the following are evident; cracks or damages or any part of the PTO driveshaft is exposed. Ensure the PTO driveshaft guard is not free to rotate, and the anti-rotation chains are securely fitted and effective before starting the PTO.

2.3.5.57 **IMPORTANT:** Make sure that the maximum number of revolutions of the PTO is set to the specific specification of the particular machine in question; 540 rpm, before powering it. Over-speeding a driveline may result in driveline components and attachment. If in any doubt, contact your local Spearhead dealer or Spearhead directly.

2.3.5.58 **IMPORTANT:** Ensure that the taper locks and clamping element are tight and to the correct torque settings.

2.3.5.59 **IMPORTANT:** Ensure that the belt pulleys are aligned using a straight edge and belt tensions are set correctly depending on if the belt is brand new or previously used.

2.3.5.60 **IMPORTANT:** Check the condition of the belts, if there is any sign of melting, wear or cracking; replace with new. Do not attempt to use the machine with damaged belts.

Fasteners

2.3.5.61 **IMPORTANT:** Periodically (every 8 hours) verify that the screws and bolts are tightened and secure.

2.3.5.62 **IMPORTANT:** Ensure that the specific torque settings of special fasteners are adhered to using the settings stated in the specific section of the operators manual.

2.3.5.63 **IMPORTANT:** Pay special attention to blade bolts for their condition and ensure that they tightened to the specific torque setting required stated in the specific section of the operators manual.

Gearbox Oil And Lubrication

2.3.5.64 **IMPORTANT:** Using the types of lubricating oils indicated by Spearhead and follow the recommended guidelines of the lubricant manufacturer. Check oil levels and grease points daily to ensure the longevity of your components on your machine following the maintenance section of this operators manual.

Follow the guidance of the lubricant manufacturer with regards to handling oils, solvents, cleansers and other chemical agents.

2.3.5.65 CAUTION! Check the machine daily for gearbox and hydraulic system oil leaks. If any component in the system is faulty, replace the component before preceding to use the machine.

2.3.5.66 CAUTION! When working with/checking the gearbox on the machine always wear safety glasses and impenetrable gloves. Use paper or cardboard to search for leaks and not hands or any other body parts.

2.3.5.67 CAUTION! Keep hands and body away from pin holes and nozzles ejecting gearbox. Ingested or penetrated gearbox oil in the body can become gangrenous. Removal must be carried out professionally by a suitable Doctor.

2.3.5.68 **IMPORTANT:** Warm the gearbox oil of the rotary mower at idle speed before working at the correct 540 rpm cutting speed. Forcing the rotary mower to work at high rpm using cold oil will lead to cavitation and permanent damage to driveline components.

2.3.5.69 **IMPORTANT:** Ensure that the specific torque settings of the gearbox fasteners are adhered to using the settings stated in the specific section of the operators manual.

2.3.5.70 CAUTION! Ensure all hydraulic hoses, lines and connections are in good condition and tight before applying pressure.

Guarding

2.3.5.71 **DANGER!** Do not operate the rotary mower with guards missing. Ensure that the correct guards are properly fitted to the machine and tractor at all times and that they are in good condition and function as they are intended to. If guards are missing; replace before using the machine.

2.3.5.72 **DANGER!** It is forbidden to alter, tamper with or bypass any of the components on the machine including the safety devices provided by the manufacturer. e.g. guarding.

Spearhead claims no responsibility to damages to operators, personnel or property by the factory fitted guards being not fitted or in poor repair.

2.3.5.73 **IMPORTANT:** The condition of all guards must be checked before beginning daily work and they must be replaced if damaged or missing before proceeding to use the machine.

2.3.5.74 CAUTION! Keep rubber flap protection guards and front and rear rollers in position at all times. They are an essential part of the machines guarding. The machine must not be operated with any of these components missing.

Cleanliness

2.3.5.75 **WARNING!** It is forbidden to deposit items on the machine which can harm persons or animals, or damage property should they fall.

2.3.5.76 CAUTION! Check the machine daily for gearbox and hydraulic oil leaks. If any component in the system is faulty, replace the component before preceding to use the machine.

2.3.5.77 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that the rotary mower is clear of any cut material collected.

2.3.5.78 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that the tractor tyres are clear of mud and dirt build up.

2.3.5.79 **IMPORTANT:** Check inside the belt cover inspection guards found on each of the machine bodies for dirt and debris accumulation. Excessive accumulation may cause component failure or a risk of a fire hazard.

2.3.6 Work Site Preparation

Risk

2.3.6.1 **IMPORTANT:** Ensure a full risk assessment of the work site is conducted by a qualified body before beginning the works evaluating risks to the operator, machine, bystanders and other road users if applicable.

Land Geography

2.3.6.2 **WARNING!** Verify that the ground on which the tractor moves is level and sturdy, before using the machine.

2.3.6.3 CAUTION! Ensure the environment where the machine is required to operate has adequate lighting. Insufficient or excessive lighting may pose a risk to the operator or bystanders. Ensure you have at least 90m (300 ft) clear visibility ahead of you to identify passers-by and potential risks and disturbances to yourself and/or tractor/machine and ensure you have sufficient time to adjust/stop.

Hazards

2.3.6.4 **WARNING!** Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Inspect the area before mowing. Foreign objects should be removed from the site prior to beginning work to prevent machine damage to the operator, bystanders or the environment. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator.

2.3.6.5 **WARNING!** Inspect the work area for overhead or underground electrical power lines. Gas pipes, other cables and any other kind of structure which could be detrimental to the machine or create risk for operator/personnel/bystanders. These should be either removed, marked to keep away from or if preventative methods cannot be easily placed alternative methods of landscape maintenance should be considered.

If short buried utility lines are located; contact your local utility maintenance provider responsible for the work site and do not use the machine until the issue has been addressed and made safe.

2.3.6.6 **WARNING!** In overgrown or high grass before proceeding inspect for, remove or mark potential hazards and mow at an **intermediate** height. Then repeat the process of inspection and hazard prevention and mow at the required **finished** height. Increased work site observation will be required to maintain safety through the mowing operation.

2.3.6.7 **WARNING!** Ensure that there are no fire sources present or near the destined working area of the machine. Do not drive into burning debris if it is present or if the area is freshly burnt out.

2.3.6.8 **WARNING!** Keep all raised wings at 3 metres (10 ft) or greater distance from all power lines and overhead obstructions.

Public Bystanders

2.3.6.9 **IMPORTANT:** Ensure that before out carrying out work procedures that the working zone is correctly prepared if applicable to warn bystanders and road users of the works being carried out and how they should act as a response.

If applicable, the working zone should be prepared with:

- Grass cutting warning signs to warn bystanders and road users that the works are being carried out.
- One lane only signs to warn road users of one lane being occupied potentially by the working machine.
- Hold left/right signs (depending on the direction of travel of traffic) to direct road users of the correct way to pass by the working machine.

2.3.6.10 **IMPORTANT:** Ensure that all warning signs are moved at the same speed as the works are being carried out.

2.3.6.11 **IMPORTANT:** Carry out work during non-disruptive work hours. Outside rush hour.

2.3.6.12 **IMPORTANT:** Debris material must be collected or swept away from the working zone once the works have been carried out.

2.3.7 Machine At Work & Observation

Operator Conduct

2.3.7.1 **WARNING!** All operation related to the tractor and machine should always be carried out from the driver's seat with seat belt buckled whether working or transporting the machine on the public highway.

2.3.7.2 **WARNING!** It is forbidden to abandon the driver's seat on the agricultural tractor with the combustion engine running when the machine is running. The machine should always be monitored from the cab of the tractor.

2.3.7.3 **WARNING!** Never approach the machine or leave the tractors seat until the rotors have completely stopped, and the tractor has been stopped using the "Safe Stop" procedure.

2.3.7.4 CAUTION! Personnel should take regular breaks during work to minimise fatigue and ensure alertness in work.

2.3.7.5 **DANGER!** Do not enter the working zone of the PTO shaft when the machine and tractor are running. It is dangerous to approach the rotating parts of the machine.

2.3.7.6 **WARNING!** Never carry passengers in the tractor unless it is fitted with an approved seat and seat belt.

2.3.7.7 **WARNING!** Never carry passengers on the machine.

Working Procedure

2.3.7.8 **WARNING!** Keep your forward speed to a level appropriate to the operating conditions. High-speed manoeuvres are very dangerous, particularly on uneven ground where there is risk of overturning. Reduce speed in poor towing conditions.

2.3.7.9 **WARNING!** Never operate the machine with the rotor moving in raised position, even for short distances.

2.3.7.10 **IMPORTANT:** Do not exceed the mowers rated cutting capacity and use the machine to cut any non-intended material. See Sections 1.5.1.

If the overgrowth required by the machine to be cut is greater than the machines maximum cutting capacity, use **intermediate stages** of cutting in order to ensure the wellbeing of the machine and reduce hazardous risks to operator and bystanders **before the final cutting height is achieved**.

2.3.7.11 CAUTION! Gearboxes and drivebelts can become very hot when in work. Ensure that the gearbox is sufficiently cool before going anywhere near the gearbox.

2.3.7.12 CAUTION! Ensure that the bodies of the machine are clear of excess debris. Gearboxes and other driveline components can become hot when in work and debris could cause risk of a fire hazard.

2.3.7.13 **WARNING!** Pay special attention when working with the machine and do not allow the machine to touch fixed objects such as road drains, walls, shafts, curbs, guard rails, tracks etc. as these could break the blades which could cause debris to be thrown at very high speed from the machine. A fire hazard could be created in contacting objects as well. As a precaution raise the cutting height of the machine to ensure they do not collide when the machine is in work.

2.3.7.14 **DANGER! Avoid wire**. It can be extremely dangerous if wire catches in the rotor, and every care must be taken to ensure this will not happen. Inspect the working area before commencing.

2.3.7.15 **WARNING!** Check all key components including blades and blade carriers. Blades can fail from impact and objects can be thrown at great velocity. Inspect and replace all damaged components with genuine Spearhead parts and ensure the machine is running correctly again before resuming cutting operations.

Stop mowing immediately if blades strike a foreign object.

2.3.7.16 **WARNING!** Do not mow in standing water to avoid possible blade failure.

2.3.7.17 **IMPORTANT:** Stop and do not use the machine when there is vibration in the machine, as this may cause breakage and extended serious damage. Find the cause of the vibration or have it inspected by your local Spearhead dealer and do not use the machine until the cause is identified and eliminated.

2.3.7.18 **IMPORTANT:** During work you may be required to adjust your mowing speed to compensate for changes in terrain such as slopes, grass type and density and depending on the cut height you desire to achieve. You should also adjust your speed to compensate for external factors such as overhead obstructions and debris/foreign objects.

2.3.7.19 **WARNING!** Failure to have sufficient load over the front axle (20% +) or to drive at inappropriate speeds on undulating terrain may result in a loss of directional control.

2.3.7.20 **IMPORTANT:** Make sure that the maximum number of revolutions of the PTO is set to the specific specification of the particular machine in question; 540 rpm, before powering it. Over-speeding a driveline may result in driveline components and attachment. If in any doubt, contact your local Spearhead dealer or Spearhead directly.

2.3.7.21 **WARNING!** Avoid mowing in reverse with the PTO engaged. Disengage the mower and raise the machine then reverse. Then lower the machine, engage PTO and drive forward again.

2.3.7.22 **WARNING!** Avoid turning sharply with the machine or lifting the machine which cause the driveline to “knock”.

2.3.7.23 **WARNING!** During work, if the tractor requires refuelling ensure the machine is stopped and halted using the “Safe Stop” procedure.

Bystander Observation

2.3.7.24 **DANGER!** When lowering the machine ensure bystanders stay clear to avoid crushing.

2.3.7.25 **DANGER!** It is forbidden to approach, stand close or touch the machine when the machine is running. It is the operators responsbility to check before starting up the machine and during work that bystanders who may inadvertently get in the way of cut material being thrown are kept away from the tractor and machine. Machines are capable under adverse conditions of throwing objects great distances at high velocity. Stop the rotors until all bystanders are well clear (90 m/300 ft+).

2.3.7.26 **WARNING!** While the tractor is running all personnel should keep well clear of the area around the machine (90m/300 ft+) as there are numerous crushing, shearing, impact dangers caused by the machine operation.

2.3.7.27 **WARNING!** Use constant observation of nearby bystanders. Road users and other members of the public may not see the risk of the machine. If a potential risk is possible for the machine or other bystanders; safely stop the machine! Evaluate the situation and begin work again once the risk has been assessed.

2.3.8 Transporting The Machine

Operator Conduct

2.3.8.1 **WARNING!** All operation related to the tractor and machine should always be carried out from the driver’s seat with seat belt buckled whether working or transporting the machine on the public highway.

2.3.8.2 **WARNING!** It is forbidden to abandon the driver’s seat on the agricultural tractor with the combustion engine running when the machine is running. The machine should always be monitored from the cab of the tractor.

2.3.8.3 CAUTION! Personnel should take regular breaks during work to minimise fatigue and ensure alertness in work.

2.3.8.4 **WARNING!** Never carry passengers in the tractor unless it is fitted with an approved seat and seat belt.

2.3.8.5 **WARNING!** Never carry passengers on the machine.

2.3.8.6 **IMPORTANT:** When driving on public roads respect other road users and obey the highway laws of the local jurisdiction.

Transport Procedure

2.3.8.7 **WARNING!** Ensure that the rotors have completely stopped before folding the machine between working and transport position.

2.3.8.8 **DANGER!** When transporting the machine do not engage the tractor PTO.

2.3.8.9 **WARNING!** On Ecoline specification machines, before proceeding to take the machine onto the public highway ensure that the ropes which release each of the wing and rear bodies are routed correctly to safely prevent the machine from accidentally moving during transport and allow the release the of the bodies when required correctly.

2.3.8.10 **DANGER!** Ensure that the body locks are fully engaged and working correctly to ensure that the wings or rear body do not suddenly drop and potentially crush personnel, bystanders and cause an accident with other road users in the event of a mechanical or hydraulic failure or inadvertent tractor operator input.

2.3.8.11 **WARNING!** On Ecoline specification machines, before proceeding to take the machine onto the public highway ensure that the levers/buttons which operate the hydraulic lift are locked in position, to avoid the machine lowering during transport.

2.3.8.12 **IMPORTANT:** On Proline specification machines, ensure that both wing position sensors activate correctly when the machine wings are raised. The rotor should automatically stop. Further indication should be given via the indicator light found at the rear of the sensor which should illuminate when the body is raised.

2.3.8.13 **IMPORTANT:** On Proline specification machines, before proceeding to take the machine onto the public highway ensure that the Minipilot joystick and control box are isolated and switched off via the emergency stop button to avoid the machine from moving during transport.

2.3.8.14 **WARNING!** Keep all raised wings at 3 metres (10 ft) or greater distance from all power lines and overhead obstructions.

2.3.8.15 **IMPORTANT:** The tractor and machine will respond different between working and transport position. A machine in transport position will have a higher centre of gravity so will be more likely to make the tractor and machine unstable at lower speeds. The operator is required to adjust their driving characteristics/speed in order to ensure safety to bystanders and other vehicles.

2.3.8.16 **WARNING!** Failure to have sufficient load over the front axle (20% +) or to drive at inappropriate speeds on undulating terrain may result in a loss of directional control.

2.3.8.17 **IMPORTANT:** Use low speeds and smooth, gradual steering action in order to ensure safety to bystanders and other vehicles when on curves, hills, rough or uneven surfaces or wet roads.

2.3.8.18 **IMPORTANT:** Allow clearance for implement swing while turning.

2.3.8.19 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that the machine bodies are clear of any cut material collected.

2.3.8.20 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that the tractor and machine tyres are clear of mud and dirt build up.

2.3.8.21 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that all tyres are inflated correctly. See Section 5.7.1 for machine tyre pressures.

2.3.8.22 **IMPORTANT:** Ensure the tractor is fitted with flashing warning beacons and they are switched on, if required. Contact the local jurisdiction authority for guidance on machine preparation.

2.3.8.23 **IMPORTANT:** Before proceeding to take the machine onto the public highway ensure that all machine lighting is working correctly.

2.3.8.24 CAUTION! Do not tow the machine with trucks or other vehicles on the public highway.

2.3.8.25 **IMPORTANT:** Ensure that the drawbar safety chain is securely fixed in position between the machine drawbar and the tractor.

2.3.8.26 **WARNING!** Transport the machine only at safe speeds and at a maximum speed of 20 mph (32 kph). Serious accidents and injuries can result from operating or transporting this equipment at unsafe speeds. Drive for the conditions and reduce speed if required.

2.3.9 Machine Storage

2.3.9.1 **WARNING!** It is mandatory to stop the tractor and use the “Safe Stop” procedure before leaving the driver’s seat. Only mount or dismount the tractor when machine/tractor are at standstill and stopped.

2.3.9.2 CAUTION! When the machine is not in use, use the machine jack in order to support the machine ensuring that the machine is placed on a level ground to ensure the machine is secure and will not move or suddenly fall down. Ensure the jack is not overloaded with excess weight.

2.3.9.3 CAUTION! When the machine is not in use and not connected to a tractor, use chocks in order to ensure the machine is secure and will not move.

2.3.9.4 **WARNING!** On Ecoline specification machines, before proceeding storing the machine ensure that the ropes which release each of the wing and rear bodies are routed correctly to safely prevent the machine from accidentally moving during storage.

2.3.9.5 CAUTION! When the machine is not in use, ensure that the body locks are fully engaged and working correctly to ensure that the wings or rear body do not suddenly drop and potentially crush personnel, bystanders and other users in the event of a mechanical or hydraulic failure.

2.3.9.6 **IMPORTANT:** Store the machine in a safe place which is protected from the elements, to ensure its wellbeing and protection from damage to components for when the machine is to be recommissioned and used again.

2.3.9.7 **IMPORTANT:** Inspect under of the belt inspection covers before storage to check for dirt and debris accumulation and another items which may be found which should be removed from the machine.

2.3.9.8 CAUTION! Check the machine daily for gearbox and hydraulic oil leaks. If any component in the system is faulty, replace the component as soon as possible to ensure damage is not caused to the environment, wildlife and habitats and general health and safety risks to bystanders.

2.4 Safe Maintenance

Location

2.4.1.1 **WARNING!** It is mandatory to stop the tractor and use the “Safe Stop” procedure before engaging in maintenance operations.

2.4.1.2 **DANGER!** Disconnect the PTO shaft connecting the gearbox of the machine to the tractor PTO before starting any maintenance or adjustment.

2.4.1.3 **WARNING!** It is mandatory for the machine to be lifted adequately and with suitable lifting accessories and harness in the positions as stated in Section 3.1 and according to the regulations in force in the country where these operations take place along with the recommendations of Spearhead.

2.4.1.4 **DANGER!** When raising the machine make sure that personnel are distanced from the machine to ensure they are not hit by falling components; for example swinging blades.

2.4.1.5 **IMPORTANT:** Store the machine in a safe place which is protected from the elements, when the work is completed to ensure its wellbeing and protection from damage to components.

Personnel

2.4.1.6 **IMPORTANT:** Maintenance on the machine should be performed by only skilled and specialized personnel, in strict compliance with the instructions in this manual, and any worn or damaged parts should be replaced.

2.4.1.7 CAUTION! When working with/checking the driveline and hydraulic system on the machine always wear safety glasses and impenetrable gloves. This also applies to working with gearboxes and gearbox oil. Use paper or cardboard to search for leaks and not hands or any other body parts.

2.4.1.8 CAUTION! Ensure maintenance personnel wear suitable PPE clothing when maintaining the machine to ensure a reduced risk of impact or skin injuries. Frequent or prolonged contact with oil may cause dermatitis and other skin disorders including (more rarely) skin cancer when not wearing impenetrable gloves. Worn parts may have sharp edges.

Follow the guidance of the lubricant manufacturer with regards to handling oils, solvents, cleansers and other chemical agents.

2.4.1.9 CAUTION! Keep hands and body away from pin holes and nozzles ejecting gearbox/hydraulic oil. Ingested or penetrated oil in the body can become gangrenous. Removal must be carried out by a medical professional.

2.4.1.10 CAUTION! Always wear protective gloves when handling blades, knives, cuttings edges or worn components with sharp edges.

2.4.1.11 CAUTION! Components such as gearboxes and drivebelts can become hot when in work. Ensure that they are sufficiently cool before going anywhere near these components for maintenance. As a precaution though wear gloves and safety glasses when servicing these potentially hot items or any other potentially hot item on the machine.

2.4.1.12 **DANGER!** Engine exhaust fumes and some of their constituents and certain vehicle components contain or emit chemicals known to the state of California to cause cancer, birth defects or other reproductive harm. See Section 2.10 with regards to Proposition 65.

2.4.1.13 **DANGER!** When folding the machine make sure that personnel are distanced from the machine to ensure they are not hit by falling components; for example swinging blades.

Parts & Components

2.4.1.14 **IMPORTANT:** Always use genuine Spearhead parts when carrying out repairs and maintenance with thoughts to longevity and reliability of the machine and personnel safety.

2.4.1.15 **IMPORTANT:** Do not modify or alter implement functions or components.

2.4.1.16 **DANGER!** Do not weld or repair rotating mower components such as blade carriers and blades. They may cause vibrations and component failures being thrown from the machine.

2.4.1.17 **DANGER!** Replace bent, damaged, cracked or broken blades immediately with new blades.

Do not attempt to straighten, weld or weld hard-facing blades to avoid blade failures and throw broken blades from the machine.

2.4.1.18 **DANGER!** When required to work on the machine with the wings raised, ensure that the body locks are fully engaged and working correctly to ensure that the wings or rear body do not suddenly drop and potentially crush personnel in the event of a mechanical or hydraulic failure, especially when working on the underside of the machine.

2.4.1.19 CAUTION! Relieve hydraulic pressure before disconnecting lines or working on the system. This can be done by pushing and pulling/pushing the selected tractor lever/button. Only once this has been completed and then suitable safety glasses and impenetrable gloves have been put on can the hydraulic hoses be removed from the tractor.

2.4.1.20 CAUTION! Ensure all hydraulic hoses, lines and connections in good condition and tight before applying pressure.

2.4.1.21 **IMPORTANT:** Do not change any factory-set hydraulic settings to avoid component or equipment failures.

2.4.1.22 **IMPORTANT:** Do not change any factory-set belt settings to avoid component or equipment failures. Ensure to use the correct setting for new or used belts.

2.4.1.23 **IMPORTANT:** Ensure that the belt pulleys are aligned using a straight edge and belt tensions are set correctly depending on if the belt is brand new or previously used.

2.4.1.24 **IMPORTANT:** Check the condition of the belts, if there is any sign of melting, wear or cracking; replace with new. Do not attempt to use the machine with damaged belts.

2.4.1.25 **DANGER!** If the underside of the machine is required to be lifted to be worked on ensure that the machine is supported with solid stands. Not via an adjustable hydraulic jack or an overhead crane.

2.4.1.26 **DANGER!** If the machine is required to be worked on ensure that the ground is level, sturdy and solid and that the machine is suitably chocked in order to ensure it doesn't move or fall.

2.4.1.27 **IMPORTANT:** Always replace guards that have been removed for service or maintenance and ensure they are fit for use, give complete protection and work as intended. If not, replace them before proceeding to use the machine.

2.4.1.28 CAUTION! Ensure a good footing by standing on solid, flat surfaces when getting onto the machine to carry out work.

2.4.1.29 CAUTION! Never use the PTO or PTO guards as a step.

2.4.1.30 **IMPORTANT:** Comply with the laws in force in the country of installation on the use and disposal of products used for cleaning and performing maintenance on the machine, considering the recommendations of the manufacturer and local guidelines on the given products.

2.4.1.31 **IMPORTANT:** Before returning the machine back to work ensure the machine has been thoroughly checked over using the Machine Inspection Record; see Section 5.9.

Ensure that when the machine inspection is carried out that the machine is stationary and not running.

Where parts are broken, damaged and deemed not fit for use; replace with genuine Spearhead parts using the online Interactive Parts facility at:
https://my.spearheadmachinery.com/parts/public-interactive-parts-database/

You will require the machine serial number. Assistance to its location can be found in Section 1.3.

2.5 Safety & Operational Decals

Rollicut machines are equipped with safety and operational decals warning about residual risks present on the machines that were not possible to eliminate. Some give guidance in how to best operate and care for the machine. Safety decals are yellow in colour and placed in strategic positions around each of the respective dangers. Operational decals are generally white in colour and are placed in locations close to the respective item required to be maintained. Section 2.5.1 specifies the meaning of each of the symbols contained in the decals and their particular positioning on the machine is stated in Section 2.5.2. The operator must memorise the meaning of these decals.

All decals should be kept clean and replaced immediately if they are fully/partially detached or damaged by purchasing them through a local Spearhead dealer.

2.5.1 Definitions

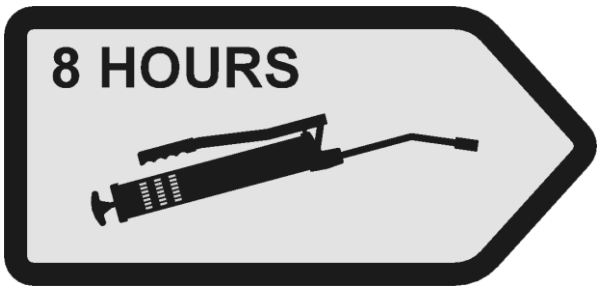
1

Figure 2.2 – 8770630 Safety Decal

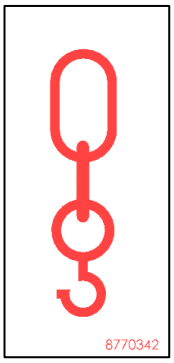
a	Warning: - Remove key, read instruction manual	The original machine operators manual should be read before using the machine giving guidance to operation and maintenance
b	Instruction: - Check the tightness of fasteners	The tightness of all fasteners around the machine should be checked at least once every 8 hours
c	Danger: - Do not stand and ride on the machine	The machine should be at no point be ridden on; whether in transport or during work
d	Danger: - Cutting hazard from rotating blades	Personnel should keep at distance from the machine when the machine is operating
e	Danger: - Flying debris	Personnel should keep at distance from the machine when the machine is operating due to the risk of items being flung from the machine
f	Danger: - Crushing hazard if unsupported	Personnel should keep at distance from the machine when the machine is unsupported as of the risk of the wing and other items falling posing potential entrapment or crushing
g	Danger: - Pinch point hazard	Personnel should keep at distance from the machine when the machine is operating as of the risk of entrapment or crushing by components
h	Danger: - Wear ear protection	Personnel should wear hearing protection when in close proximity to the machine in operation to prevent permanent hearing damage
i	Warning/Instruction: - Explosion hazard	Check the working site before proceeding to use the machine.
j	Warning/Instruction: - Clear body of debris	It is important to ensure that the machine bodys are clear of debris to stop the risk of fire. Never drive over fire with the tractor and machine.

Table 2.1 – 8770630 Safety Decal Definitions

2.



3.



4.

5.

Figure 2.3 – Other Safety & Instruction Decals

2	Instruction: - Grease every 8 hours	Placed and pointed towards components of the machine which should be greased at least once every 8 hours
3	Instruction: - Designated lifting point	Placed at positions on machine where safe lifting should be carried out
4	Instruction: - P65 cancer and reproductive harm	Operating, servicing and maintaining this equipment can expose you to chemicals which are known to the State of California to cause cancer and birth defects or other reproductive harm.
5	Warning/Instruction: - PTO operating speed	Indication to the correct operating speed of the machine when in work. 540RPM

Table 2.2 – Other Safety & Instruction Decal Definitions

For the placement of these decals on each of these machines, please refer to Section 2.5.2.

2.5.2 Placement

Figure 2.4 states the particular positions safety and instruction decals are placed on each of the Rollicut rotary mower models.

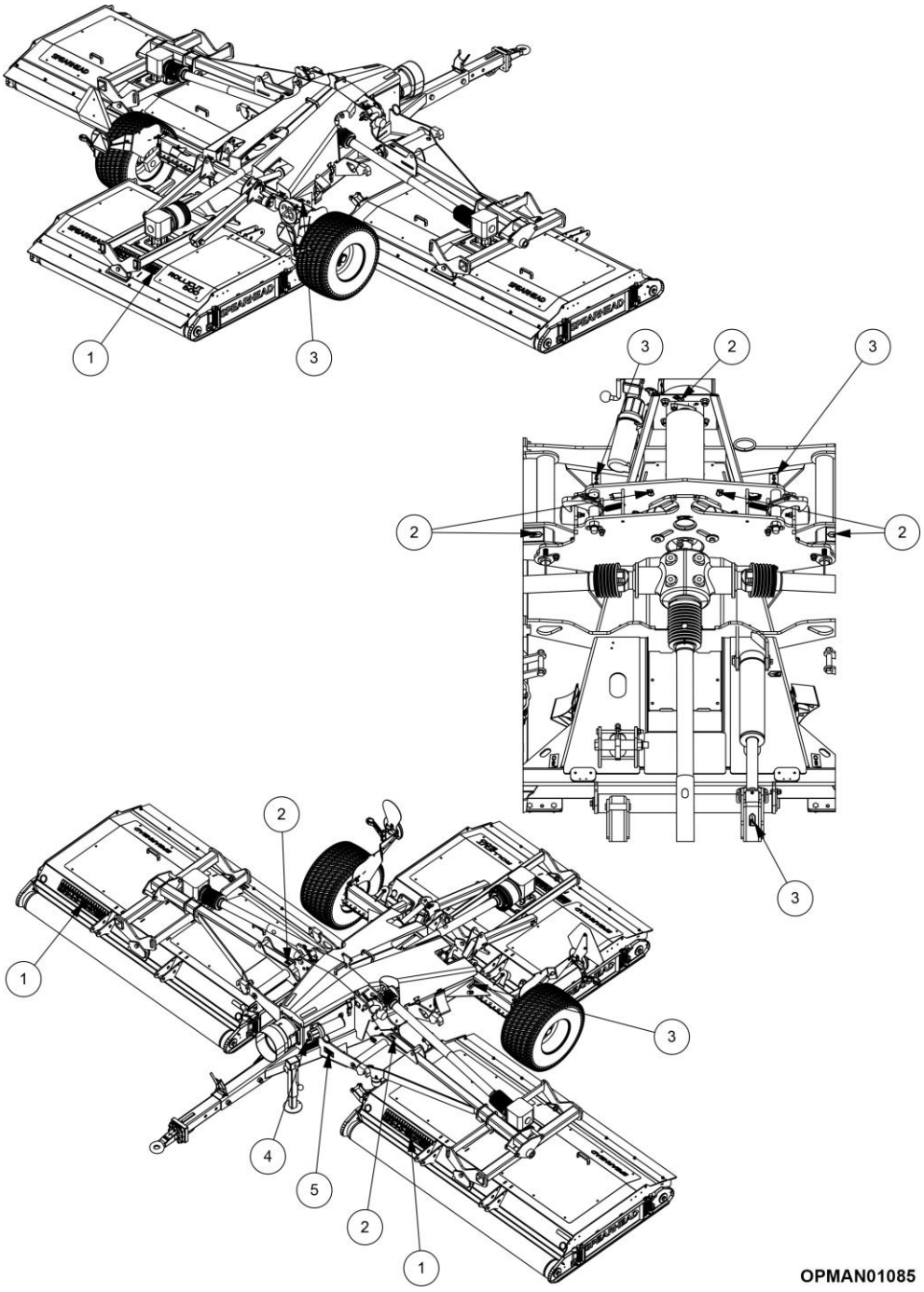


Figure 2.4 – Rollicut Safety & Instructional Decal Placement
(600 model illustrated)

2.5.3 Replacement

It is of upmost importance that safety decals are kept clean and replaced if they are no longer legible, damaged or lost completely. Safety decals can be purchased readily from a local Spearhead dealer.

Spearhead safety decals have the replacement part number found in the bottom right of the decals.

For more extensive guidance on ordering spare parts and how to go about finding the correct part number; see Section 7.

2.6 Guards

DANGER! For safe operation it is essential that that all guards, protection flaps and rollers must be kept in position on the machine whenever the machine is running. Spearhead disclaim all responsibility for any damage or injury arising as a result of guards, protection flaps or rollers being removed, or other than in accordance with these instructions.

WARNING! Inspect guards twice daily or immediately if damage is suspected.

Always replace guards that have damage or wear which could impair their performance. Typical damage to inspect for is as follows;

Driveline, belt and clutch guards and side skids	Distorted or with sharp outer edges.
PTO guards + driveline	Cracked, missing portions revealing moving parts
Rubber flap guards	Missing rubber flap sections to permit stones or similar objects to be ejected beneath it in normal conditions

Table 2.3 – Permanent Protection Guard Damages

2.6.1 Mandatory Guards

The General arrangement figure found in Section 1.2 and the list below show the mandatory guards required. These along with the danger decals and warning decals are necessary for safe cutting operations with this machine:

- PTO coupling guards
- Input PTO driveshaft guard
- Centre chassis gearbox guards
- Wing clutch guards (Proline model only)
- Wing driveshaft guards
- Cutting body cover guards (centre and wing bodies)
- Side skids
- Front roller
- Rear roller
- Rear rubber flap guards

2.7 Sound

The air noise level created by the machine under operating conditions was detected using a sound level meter with integrator.

The measurements were carried out in accordance with ISO 1680-2 with the machine.
Tests performed under the conditions indicated by the standard produced the following results:

Machine	Tractor With Open Cab	Tractor With Closed Cab
Rollicut 500	86dB	76dB
Rollicut 600	88db	78dB

Table 2.4 – Rollicut Sound Readings

2.8 Personal Protective Equipment

Operators should be wearing sufficient personal protection equipment (PPE) to protect them from hearing, respiratory and impact damages.

When working in an unsealed cab or where windows and apertures are open to the environment, operators are advised to wear suitable eye and ear protection and a facemask (depending on conditions).

When handling cutting surfaces or hydraulic equipment, operators are advised to wear suitable gloves.

When clearing blockages and wire, or working with pressurised hydraulic components, operators are advised to wear suitable eye protection and suitable gloves.

Ensure that non-baggy clothing is worn to reduce the chance of entanglement and snagging on components.

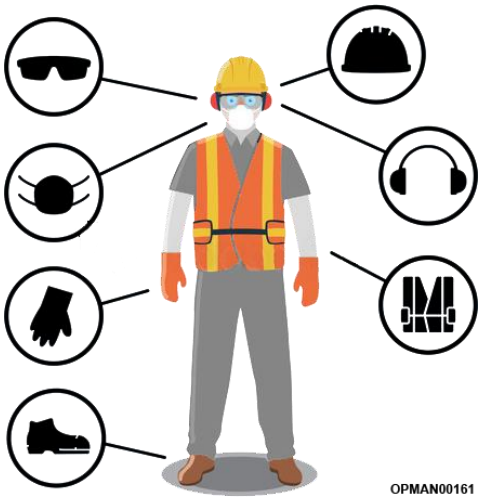


Figure 2.5- PPE Items

When working at the work site, but off the tractor unit, operators are advised to wear a 'high-viz' garment.

2.9 The Machine & The Environment

Below are the minimum provisions to be followed in order to reduce the risk of environmental impact connected to the use of the machine:

- If the Country where the machine is used foresees specific sound emission limits, it is best to adapt to the provisions in these standards, if necessary, being supplied with suitable protective equipment (earplugs, muffs, etc.).
- **It is mandatory** to respect current legislation of the country where the machine is used, related to use and disposal of lubricants and products used for machine cleaning and maintenance, observing the recommendations of the manufacturer of those products.
- If replacing worn parts or during demolition, one must follow anti-pollution laws foreseen in the country where the machine is used.
- **It is prohibited** to pour products used for cleaning or polluting substances into the sewerage drain, on the ground, in watercourses, or into the environment.
- **It is mandatory** to collect products used for cleaning and polluting substances in appropriate containers, store them and deliver them to companies authorised for their disposal.

2.9.1 Disposal

When Spearhead equipment reaches the end of its economic working life it should be disposed of responsibly, either through an approved recycling centre or by compliance with all regulations in force in the destination territory.

In most instances Spearhead machines can be broken into its constituent parts with the use of basic workshop equipment. Table 2.5 contains a typical list of constituent materials, together with disposal guidelines.

When undertaking a machine breakdown, take care to ensure that heavy parts are always adequately supported to avoid injury.

To avoid environmental contamination, take containment precautions to retain control of liquids in order.

It is the owner's responsibility to ensure the machine is disposed of in accordance with all applicable regulations.

Material	Typically found in;	Disposal guideline
Steel	Structural components, fixed guards, fasteners and driveline	Can be dismantled and recycled. Take care when handling heavy and/or sharp objects
Aluminium	Pump and gearbox housings, serial number plates	Can be dismantled and recycled. Take care when handling heavy and/or sharp objects. Take appropriate actions for oil contaminated products
Copper	Wiring, electrical components	Can be recycled using appropriate recovery procedures.
Hydraulic oil	Tank, hydraulic components	Dispose of in accordance with all applicable regulations
Rubber	Hoses, flexible guards, seals, 'O' rings	Dispose of in accordance with all applicable regulations
Plastics	Clips, caps, cable ties, decals, filter housings, document holders, bushes, electrical components, plugs, connectors, wire insulation	Dispose of in accordance with all applicable regulations
Filter element	Filter housings	Dispose of in accordance with all applicable regulations
Cork / paper	Gaskets	Dispose of in accordance with all applicable regulations

Table 2.5 – Machine Breakdown Component Disposal

2.10 Proposition 65

Figure 2.6 – P65 Cancer And Reproductive Harm Decal

Operating, servicing and maintaining this equipment can expose you to chemicals including gasoline, diesel fuel, lubricants, petroleum products, engine exhaust, carbon monoxide, and phthalates, which are known to the State of California to cause cancer and birth defects or other reproductive harm.

To minimize exposure, avoid breathing exhaust, do not idle the engine except as necessary, service your vehicle in a well-ventilated area and wear gloves and wash your hands frequently when servicing your vehicle. Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov.

This website, operated by California's Office of Environmental Health Hazard Assessment, provides information about these chemicals and how individuals may be exposed to them.

3 Machine Preparation

3.1 Lifting The Machine

WARNING! Do not lift by drawbar or axle alone. Damage may occur which will invalidate warranty. Use recommended lifting point locations.

Rollicut machines should be lifted using the four designated lifting loops in each of the four corners of the centre chassis; as shown in Figure 3.1.

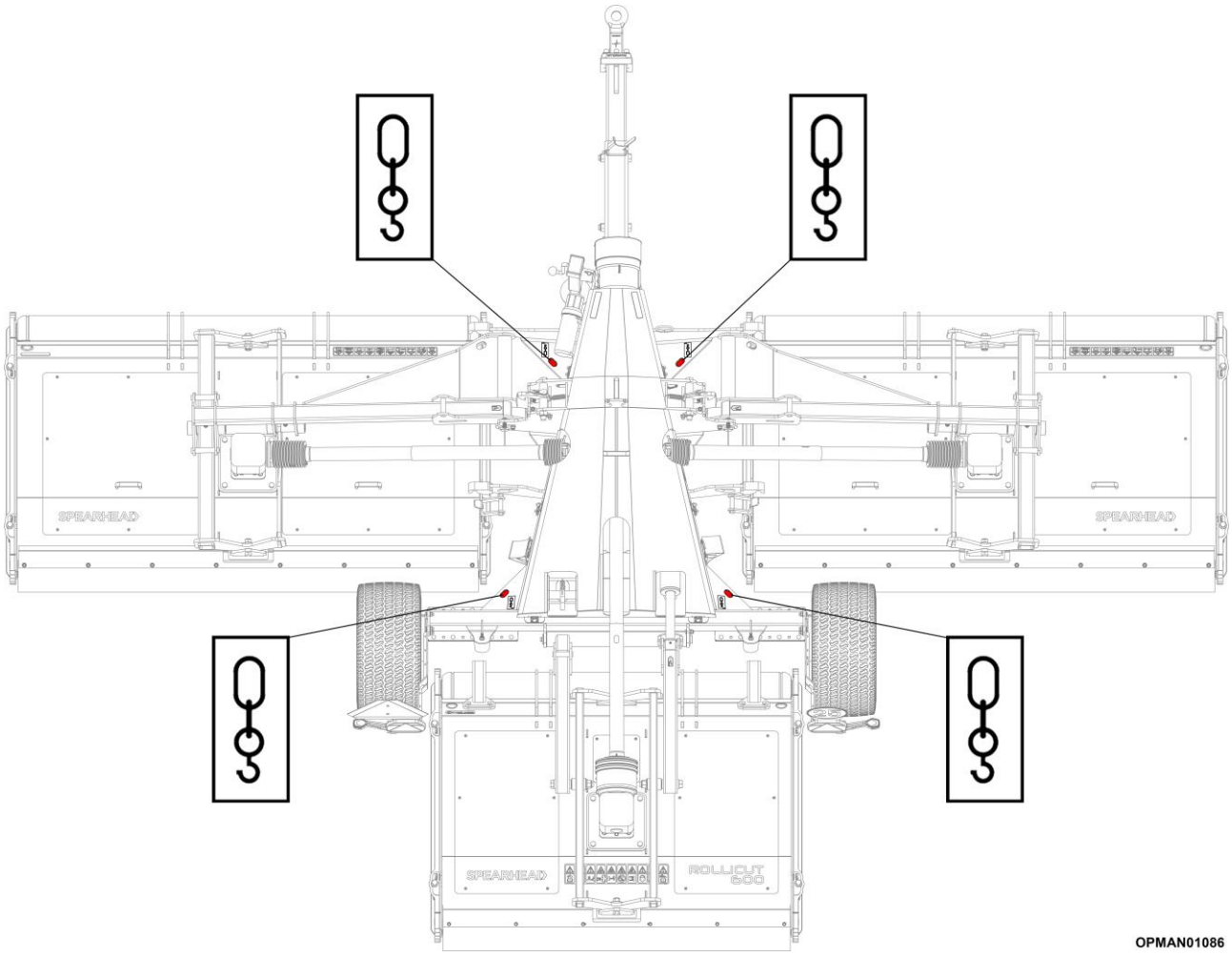


Figure 3.1 Shipping Position – Rollicut
(600 model illustrated)

Ensure that the machine is guided by personnel when positioning the machine to where it is required to be placed. This is to ensure that the machine and/or equipment/personnel do not get hit by the machine.

Ensure that wherever the machine is going to be positioned afterwards is sturdy and level, so that the machine does not end up becoming unstable and will potentially move or fall over. Rollicut machines are able to be left folded or unfolded.

When transporting the machine with the wings and rear body raised, ensure that the body locks are fully engaged and working correctly to ensure that the wings or rear body don't suddenly drop and potentially crush personnel, bystanders and cause an accident with other road users in the event of a mechanical or hydraulic failure or inadvertent tractor operator input.

Rollicut machines should be left on a sturdy and level ground utilising the drawbar jack; see Figure 3.2 and further support must be given with the supplied wheel chocks. These can be found on both sides of the centre chassis, see Figure 3.2. Both chocks must be placed under one of the wheels to stop the machine from rolling. Ensure that the body locks are fully engaged and working correctly to ensure that the wings or rear body do not accidentally fall in storage, either manually for the Rollicut Standard or hydraulically for the Rollicut Proline.

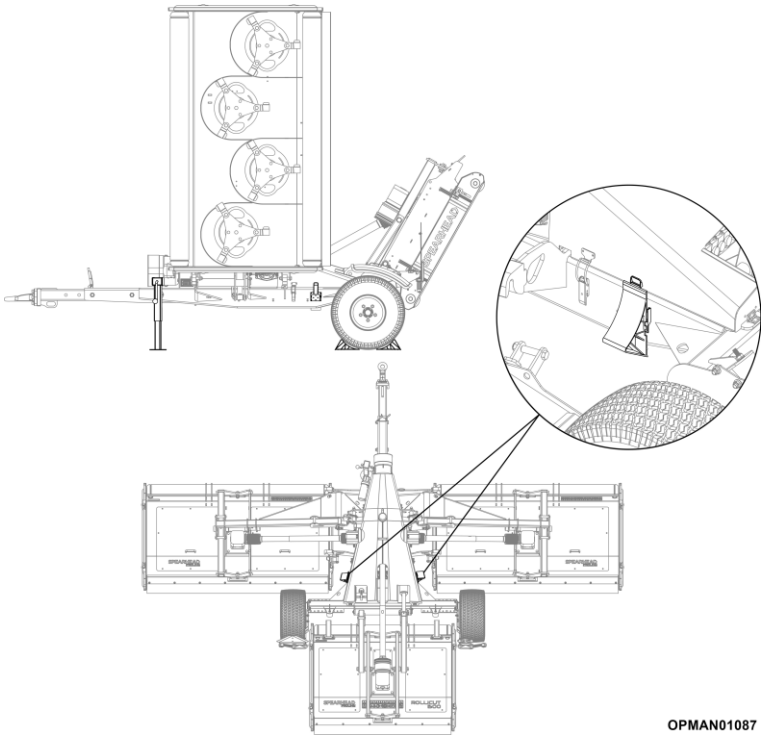


Figure 3.2 – Rollicut Storage
(600 model illustrated)

Standard

Proline

Wings Rear Body

Figure 3.3 – Rollicut Body Locks Engaged – Standard & Proline

3.2 Post-delivery/First Use Inspection

3.2.1 Tractor Inspection

It is important to read the tractor manufacturer's operators manual to ensure that a complete inspection to the manufacturer's recommendations is carried out on the tractor ensuring it is in correct working condition and has the correct safety measures in place for use. It is important before use to check the suitability of the tractor using the manufacturer's manual to ensure it meets the requirements to fit and operate correctly with the machine.

3.2.2 Machine Adjustment

The machine when received from Spearhead is virtually complete and components are set correctly, requiring minimum time to ready the machine for use. Spearhead machines are tested after manufacture.

It is important to assess the machine to ensure that it is of the correct specification ordered from Spearhead or local Spearhead dealer. Information with regards to the specification of the machine can be found on the machines serial plate. Guidance to the location of the serial plate can be found in Section 1.3.

Before use, it is important to inspect the machine following the guidance in this operators manual to ensure it is correctly set-up and is suitable for the attaching tractor using the inspection guidance sheet in Section 5.11.

3.3 Input PTO Driveshaft

3.3.1 Input PTO Driveshaft Setup & Adjustment (first use)

Equipment Required

- Tape Measure
- Marker Pen

The PTO of your machine will be delivered as it left the manufacturer, so will require to be shortened to give the correct effective length between the machine and the power take-off of the tractor.

In order to determine the correct length of the finished driveshaft, hook the machine to the tractor and proceed to install the two uncoupled/unprotected semi-shafts to their respective tractor/ machine PTO's. For guidance on fitting input PTO driveshafts; see Section 4.5.1.

Place the tractor/ machine in the position so the two halves of the shafts are at the minimum distance between the two ends; see Figure 3.4. At this point, verify any interference of the outer tube with the yoke inner tube and establish how much the outer tube needs to be shortened.

The minimum distance "Dmin" (see Figure 3.4), occurs between the joints during steering. Verify that in the condition of maximum extension "Dmax", which generally occurs when the machine is aligned going sleeply downslope, the coupling between the two tubes is still sufficient.

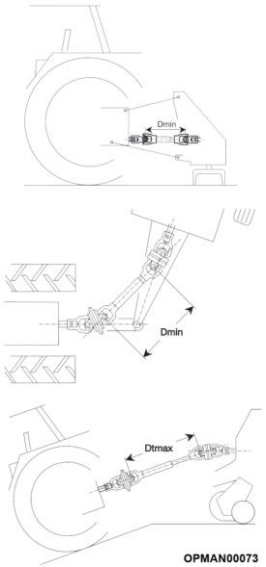


Figure 3.4 – Max/min Input Driveshaft Overlap

The input PTO driveshaft should be shortened to ensure:

- At least 25mm (1") clearance at the shortest point (Dmin) between the end of the driveshaft and the universal joint
- At least 1/3 of the driveshafts length overlap engagement at the longest point (Dmax) between the two CV tube halves

Check and ensure that the driveshaft has been sufficiently maintained and prepared before proceeding to use using the machine following the guidance given in Section 5.2.2.

3.3.2 Bottoming Out Test

Equipment Required
- Coloured tape
- Tape measure
- Marker pen or plastic scriber

It is important to test whether the driveshaft has been sufficiently shortened to protect against “bottoming out” by:

3.3.2.1 Disconnecting the input PTO driveshaft and fully compress the two halves of the driveshaft together

3.3.2.2 Placing a piece of coloured tape on the inner shield 5mm (3/16”) away from the end of the outer shield

3.3.2.3 Reattach the PTO driveshaft between the tractor and machine.

3.3.2.4 Slowly drive the tractor **without** the PTO driveshaft engaged and make the machine turn the tightest turn possible and follow the most severe terrain expected.

3.3.2.5 If at **any** point the outer shield end becomes any closer than 50mm (2”) away from the placed tape, then shorten the input PTO driveshaft and then test again.

To effectively shorten and modify the input PTO driveshaft; see Section 3.3.4.

NOTE: Determining the minimum and maximum lengths and during subsequent verifications, it is important to bear in mind that ground subsidence may cause further reduction or increase in the distance between the PTO’s.

3.3.3 Engagement Test

Equipment Required
- Coloured tape
- Tape measure
- Marker pen or plastic scriber

It is important to test whether the driveshaft has been sufficiently shortened to make sure there is sufficient overlap and engagement between the CV tubes by:

3.3.3.1 With the input PTO driveshaft attached, place the tractor and machine on the steepest slope possible, Dmax (see Figure 3.4).

3.3.3.2 Place a piece of coloured tape on the inner shield 5mm (3/16”) away from the end of the outer shield.

3.3.3.3 Disconnecting the input PTO driveshaft and split the two CV tube halves.

3.3.3.4 Measure the distance between the coloured tape and the end of the inner shield. This gives the amount of overlap between the CV tubes.

3.3.3.5 It is important that at least a 1/3 of the length of the inner shield is engaged with the outer shield. If it’s too short then a new longer driveshaft should be fitted.

If an input PTO driveshaft is too short then a new longer driveshaft should be fitted.

Please contact your local Spearhead dealer for guidance on purchasing a new/replacement input PTO driveshaft.

To effectively shorten and modify the input PTO driveshaft see Section 3.3.4.

NOTE: When determining the minimum and maximum lengths and during subsequent verifications, it is important to bear in mind that ground subsidence may cause further reduction or increase in the distance between the PTO’s.

3.3.4 Modifying & Shortening The Input PTO Driveshaft

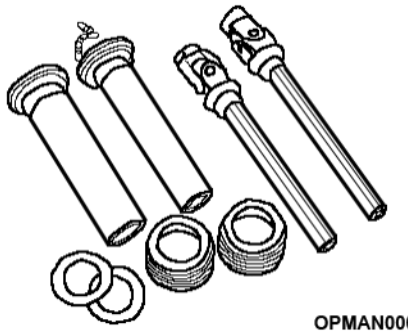
Bondioli & Pavesi, the manufacturer of the PTO driveshafts which comes with all Rollicut machines **do not recommend** modifications to its products. This is further supported by Spearhead.

NOTE: Bondioli & Pavesi and Spearhead declines all responsibility for damage and/or injury caused by modifying ANY of the power take-off driveshafts on Rollicut machines in any other way than described in this manual. **If you are unsure of the procedure**, or need additional assistance, please **contact your local Spearhead dealer, qualified service centre or Spearhead**.

Equipment Required

- Tape measure
- Marker pen or plastic scriber
- Hacksaw or angle grinder (with cutting disc)
- Flat hand file or angle grinder (with sanding disc)
- NLGI #2 Molybdenum Disulphide grease with paint brush/distributor

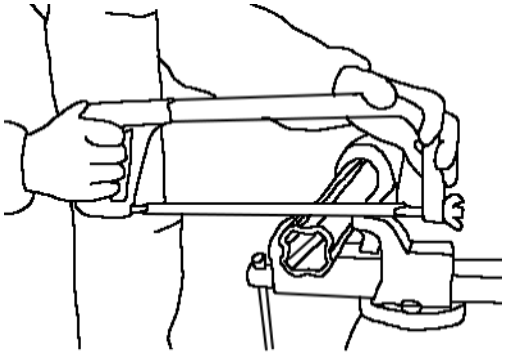
Proceed as follows to shorten the input PTO driveshaft:



OPMAN00067

Figure 3.5

3.3.4.1 Remove shielding.



OPMAN00068

Figure 3.6

3.3.4.2 Shorten drive tubes by the required length. In normal conditions, telescopic tubes must always overlap **by at least a ½ of their length**. During manoeuvres, when the driveshaft is not rotating, the telescopic tubes must have a suitable overlap to maintain the tubes aligned and allow them to slide properly. See Section 3.3.3.

If the driveshaft has a single chain restraint system (splined inner tube), the tubes can be shortened by a limited amount (**normally no more than 70mm**) to avoid eliminating the splined ring connecting the two shield tubes.

If the driveshaft is fitted with a greasing system incorporated in the inner drive tubes, the tubes can be shortened by a limited amount to avoid damage to the lubrication system. Carefully measure and shorten each drive tube equally.

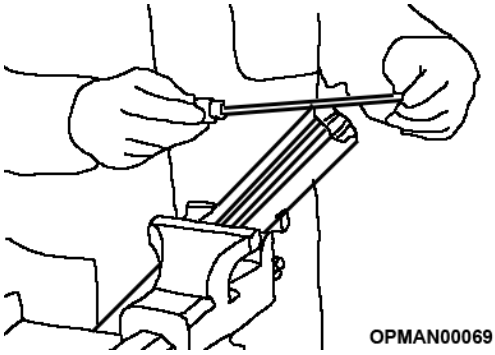


Figure 3.7

3.3.4.3 Carefully deburr the ends of the tubes with a file and remove any chippings from the tubes.

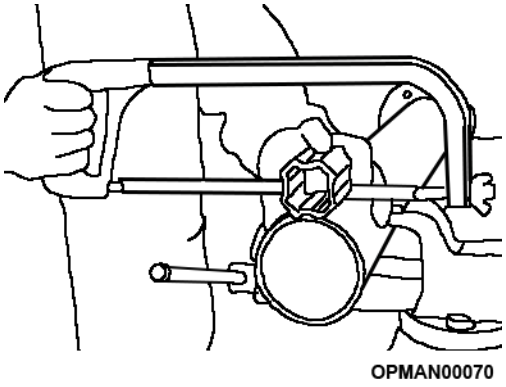


Figure 3.8

3.3.4.4 Shorten shield tubes one at a time by cutting the same length that was cut from the drive tubes. If the driveshaft is equipped with Single Chain Restraint System, shortening the driveshaft will involve removal of the plastic ring which connects the shield tubes. If it is necessary to remove this collar, add a retaining chain to the tractor side of the driveshaft shield.

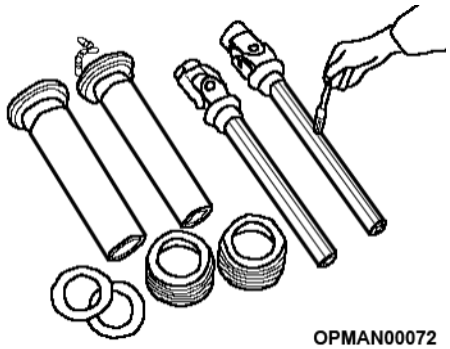


Figure 3.9

3.3.4.5 Grease the internal drive tube. Reassemble the shield on the driveshaft.

NOTE: SFT driveshaft with 4-tooth profiles must be reinstalled in such a way that the grease fittings on the cross kit bearings are aligned.

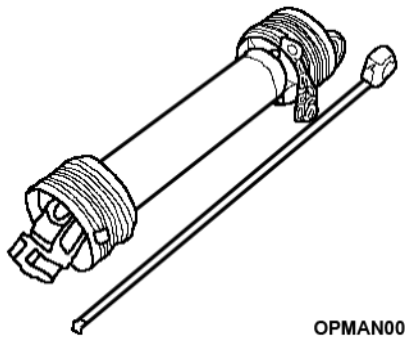


Figure 3.10

3.3.4.6 Check the length of the driveshaft at the minimum and maximum positions of the machine. See Figure 3.4 for guidance on Dmin/Dmax lengths.

If further adjustment is required; repeat the process.

3.3.5 Fitting The PTO Driveshaft

For guidance on fitting the Power Take Off (PTO) driveshaft between the machine and tractor; see Section 4.5

3.4 Wheels & Tyre Installation

There may be on some occasions, dependent on the type of delivery chosen for the machine to be delivered to the dealer/customer where wheels and tyres could be removed from the machine and will be required to be refitted to the machine when it arrives and before its first use. An example of this could be if the machine has been delivered inside a container.

For guidance on removing and installing tyres see Section 5.8.

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4 Usage Instruction

4.1 Operator Requirements

IMPORTANT: Read, understand and follow the safety messages stated throughout this section and the rest of this operator's manual. Serious injury or death may occur unless care is taken to follow the warnings.

Safe operation of the Rollicut machine is down to the responsibility of the qualified operator. A qualified operator has thoroughly read and understood the machine and attaching tractor operator's manuals and is experienced in the correct and safe operation of both machines and all associated safety guidance. In addition to the safety information contained in this manual, warning and operational decals are fixed around the machine; see Section 2.5.2. The connecting tractor will also have them as well with information given in the tractor operator's manual.

If any part of the operation safe use of the machine is not completely understood, consult a local Spearhead dealer or Spearhead for complete explanation.

If the operator cannot read the manuals for themselves or does not completely understand the operation of the equipment, it is the responsibility of the supervisor to read and explain the manuals, safety practices and operating instructions to the operator.

Personal Protection Equipment (PPE)

See Figure 4.1

- Always wear safety glasses
- Hard hat
- Steel toe safety footwear
- Gloves
- Hearing protection
- Close fitting clothing
- Respiration or filter mask (depending on working conditions)

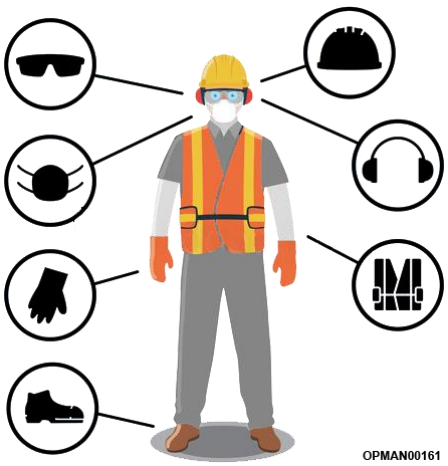


Figure 4.1 - PPE Items

DANGER! Do not use drugs or alcohol immediately before or while operating the tractor and machine. Drugs and alcohol will affect an operator's alertness and concentration and ability to operate the collective machinery safely.

Before operating the tractor and machine, a machine operator on prescription or over-the-counter medication must consult a medical professional regarding any side effects of the medication that would hinder their ability to operate the equipment safely.

Supervisors must **never** allow anyone to operate the collective machinery when it is known that their alertness or coordination is impaired. Serious injury or death could occur to the operator and/or bystanders if the operator is under the influence of drugs or alcohol.

Figure 4.2 – Do Not Use Drugs Or Alcohol

4.2 Tractor Requirements

The tractor used to operate the machine must have sufficient capacity to lift, pull and operate the Power Take Off (PTO) at the machines rated speed (540 rpm) while travelling at a working ground speed for the conditions and quantity of material of the work site. Operating the machine with a tractor which does not meet the requirements set by Spearhead may cause the tractor and/or machine damage, potentially risking danger to the operator and bystanders.

The working tractor **MUST** effectively offer the following characteristics to fit any of the Rollicut machines.

Tractor Requirement (1)	**Machine**	
	Rollicut 500	**Rollicut 600**
Driver Protection	Approved cab (for country of use) with protective structure or Roll Over Protection Structure (ROPS) and seat belt. See local tractor standards (2)	
Safety Devices	Slow Moving (SMV) emblem, lighting, PTO master shield. See local tractor standards (3)	
Horsepower Requirement	60hp (45kW) (4)	70hp (53kW) (4)
Attachment	Standard hitch to meet the requirements of Section 1.5.2.3	
Hydraulic	2 single acting hydraulic spool valves (6) On Rollicut Proline machines fitted with the Minipilot option, the tractor must be able to supply a hydraulic flow requirement set at 60 l/min (6)	
Front/Rear End Weights	Required in order to maintain the 20% weight required on the front or rear axle (5)	
Power Take Off (PTO)	540 RPM 1” 3/8 6-spline	

Table 4.1 - Tractor Requirements and Capabilities

Notes:

(1) Spearhead constantly reviews and improves product designs and reserve the right to change this information. Contact your Spearhead Sales representative if you have any queries.
(2) The tractor must be fitted with a locally approved cab or Roll Over Protection Structure (ROPS) and have a seat belt to protect the operator from falling from the tractor or during a rolling over incident. Only operate the tractor when seated in the operator’s seat with the seat belt securely fastened.
(3) All guarding must be maintained to perfect working condition. Always replace shields and guards that were removed for access to service or repair the tractor or machine. Never operate machine/tractor without all safety devices in position.
(4) Variations in power requirement can depend on the vegetation to be cut, terrain condition, operator experience and the physical condition of the machine and/or tractor. Running a machine on an overly large tractor may cause damage through overpowering the machine in heavy working conditions.
(5) Front end weight is critical to maintain steering control and prevent the tractor from rearing up. Front weight and weight carriers can be purchased through an authorized tractor dealership.
(6) Spearhead Rollicut machines can be supplied with either 2 spool or Minipilot hydraulic systems, depending on the specification requirement of the first owner.

4.3 Connecting & Disconnecting Hydraulic Hoses & Electric Cables

CAUTION! Relieve hydraulic pressure before disconnecting lines or working on the system. This is achieved on Standard machines using the tractors hydraulic control levers/buttons in a back/forth in/out motion. On Proline machines fitted with Spearhead's Minipilot control system, place each of the cutting bodies into float utilising the Minipilot control box and then switching off the control box. Only once this has been completed and suitable safety glasses and impenetrable gloves have been put on can the hydraulic hoses be removed from the tractor.

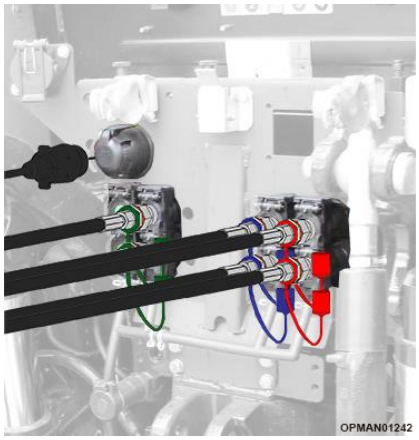
4.3.1 Connecting

With the tractor switched off and secured in position on level ground, relieve the hydraulic pressure from the tractor. This is achieved on Standard machines using the tractors hydraulic control levers/buttons in a back/forth in/out motion. On Proline machines fitted with Spearhead's Minipilot control system, place each of the cutting bodies into float utilising the Minipilot control box and then switching off the control box; see Section 4.10.5.

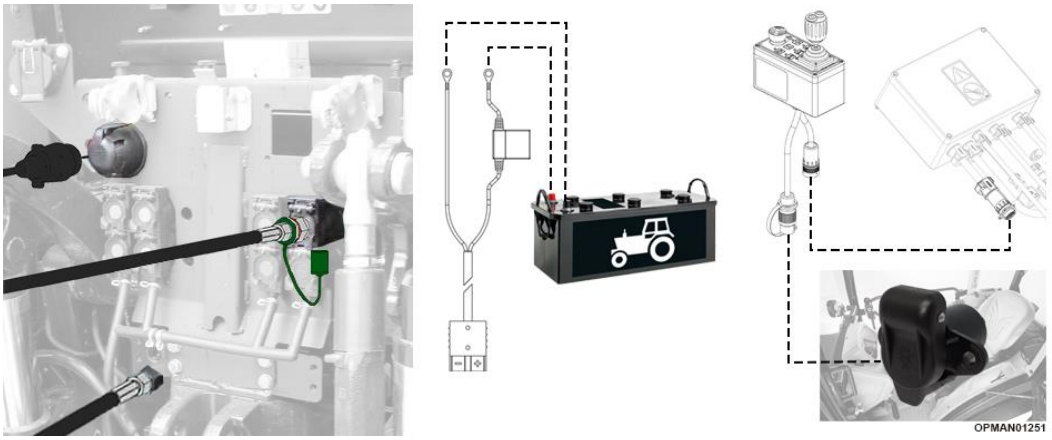
Rollicut machines feature quick release hydraulic couplers and when connecting the hoses to the tractor it is important to keep the hoses, quick couplers and swivels free of contamination and dirt. If any component is deemed dirty ensure that it is cleaned with some clean rag before proceeding to fit the hoses. Never disconnect a hydraulic hose and leave quick coupler ends exposed. Utilise the coloured plastic caps supplied on the hoses to keep them contaminant free. Ensure that the tractors hose ports are capped or clean before connecting the hydraulic hoses from the machine.

The electrical connections between the lights on the machine and the tractor should also be kept clean to ensure a reliable connection and reduce corrosion.

Rollicut Standard – 3 Spool



Rollicut Proline – Minipilot Controls



Exterior Connections Interior Connections

Figure 4.3
– Rollicut Hose & Electrical Connections

Ensuring that the quick couplers are clean; proceed to fit the hydraulic hoses. Rollicut machines can be specified with either standard 3-spool double acting or single spool Minipilot control hydraulic set-ups on the higher specification Rollicut Proline; see Figure 4.3.

Under the preference of the operator and which service they wish to use on the tractor, fit the hoses into separate banks of service on the tractor for each of the hoses; see Figure 4.3. For all machines it is important to ensure that the hydraulic hoses are positively seated into the tractor.

Minipilot controls require only one spool in order to provide oil to the hydraulic system. It is important to place the return hose straight into the freeflow return on the tractor and not use any quick couplings. This hose is supplied without a quick release coupling for this reason.

Fully seat the 7-pin machine electrical plug into the tractors rear socket to power the rear lights. Fit the clutch power supply cable onto the positive and negative terminals of the tractor battery. Connect the joystick cable from the control box to the Minipilot joystick. Finally connect the joystick power cable to the tractors interior 12 volt supply plug.

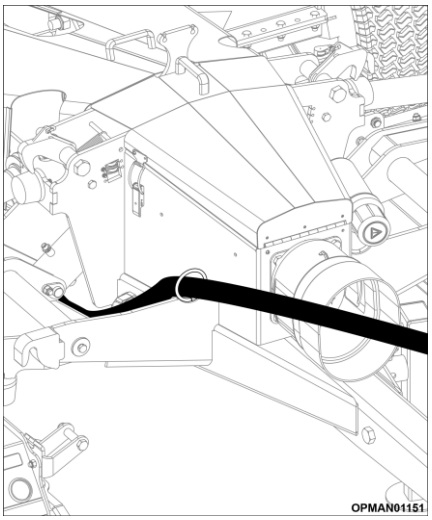


Figure 4.4
– Rollicut Drawbar Hose Guide

IMPORTANT: Ensure that all the hydraulic hoses and the lighting cable are collated together and placed through the hydraulic hose guide on the machine; see Figure 4.4. This is to ensure that they do not touch the input PTO driveshaft, bind when turning or get pinched/kinked in use.

For guidance as to the layout of the hydraulic hoses, see the full hydraulic hosing diagrams found in Section 5.6.7.

On Standard Rollicut machines with manual body locks, ensure that the rope is not placed through this guide to ensure the rope pulls straight towards the machine to ensure the body locks will pull smoothly when the machine is required to be folded down ready for work.

With relation to Figure 4.3, there may be some variances in the layout of all of these items depending on the tractor manufacturer. Figure 4.3 is for visual reference only. Ensure that the operator fully understands the operations of the tractor before proceeding to use the machine by fully reading the tractor manufacturers operator manual.

Before proceeding to take the machine onto the road, ensure that all lights work correctly.

4.3.2 Disconnecting

IMPORTANT: Whether the machine is going to be left folded or unfolded, the machine should be secure with one of the wheels chocked from both sides, so it doesn't move. If the machine is destined to be left folded ensure that the machine is safely secured with the body locks fully engaged to ensure that the wings do not drop. If the machine is destined to be left unfolded, ensure that the machine is on the machine stand.

With the tractor switched off and secured in position on level ground, relieve the hydraulic pressure from the tractor. This is achieved on Standard machines using the tractors hydraulic control levers/buttons in a back/forth

in/out motion. On Proline machines fitted with Spearhead's Minipilot control system, place each of the cutting bodies into float utilising the Minipilot control box and then switching off the control box; see Section 4.10.5.

Rollicut machines feature quick release hydraulic couplers so they can be removed by first pushing in and then pulling out the connections. When disconnecting the hoses to the tractor it is important to keep the hoses, quick couplers and swivels free of contamination and dirt. Never disconnect a hydraulic hose and leave the quick coupler end exposed. Utilise the coloured plastic caps supplied on the hoses to keep them contaminant free. Ensure that the tractors hose ports are capped and clean before leaving the hydraulic hoses with the machine. If any component is deemed dirty ensure that it is cleaned with some clean rag.

Rollicut Proline machines specified with the Minipilot control system feature a freeflow return to the tank of the tractor; see Figure 4.3. When removing the hydraulic hoses it is important to utilise hydraulic hose blanking caps on both the tractor freeflow return and the Rollicut return hydraulic hose in order to keep them contaminant free. If any component is deemed dirty ensure that it is cleaned with some clean rag.

The electrical connections between the lights on the machine and the tractor can be removed similarly by pulling on the quick release hydraulic coupling connections. Like the hydraulic hoses, the electrical connections should be kept clean to ensure a reliable connection and reduced corrosion.

4.4 Hitching & Unhitching The Machine

DANGER! Always switch off the tractor completely, place the transmission in park, and set the parking brake before attempting to connect or disconnect the machine from the tractor

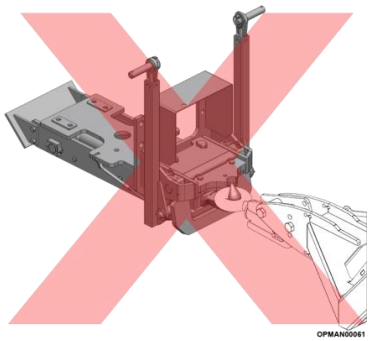


Figure 4.5
Do Not Use Tractor Pick Up Hitch!

WARNING! Only use clevis hitches for connecting to the trailed machine. Hook hitches should not be used.

Spearhead claims no responsibility to damages to operator, personnel or machine by a hook hitch being used to trail.

4.4.1 Hitching

The machine will be required to be adjusted using the adjustable jack to make the towing eye the same level as the hitch of the tractor.

This section of instructions is written on the assumption that the machine is being connected to the tractor whilst it is being held up by the machine jack and is on a level, firm surface with wheel chocks in place.

This section of instructions have been illustrated using a machine fitted with a standard, UK hitch, however, the same procedure can be applied to the Euro hitch option.

To adjust the machine to the correct height:

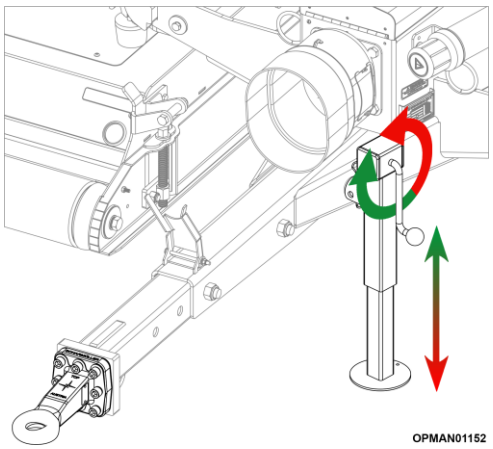


Figure 4.6

4.4.1.1 Turn the handle on the jack to bring the tractor clevis and machine towing eye to the correct height; see Figure 4.6.

4.4.1.2 Once the mower is at the same height as the tractor, carefully reverse the tractor to the mower and line up towing eye with the clevis pin hole.

Make sure that there are no bystanders or other personnel in between tractor and machine during this process.

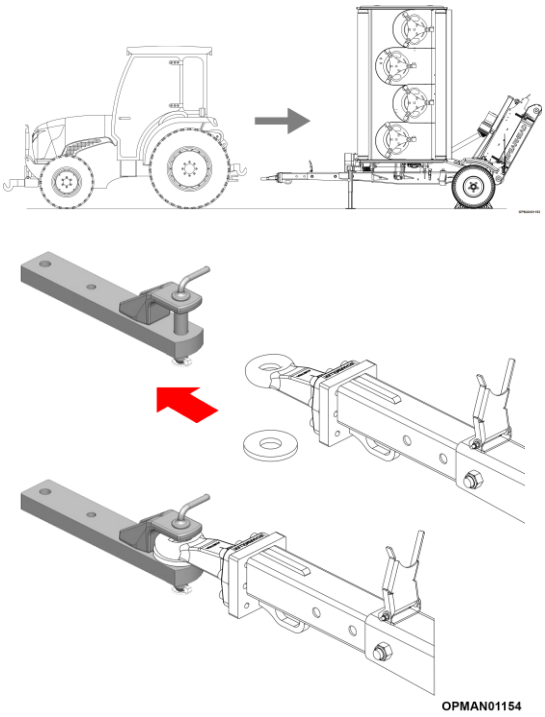


Figure 4.7

4.4.1.3 Switch off the tractor, apply the handbrake and relieve hydraulic pressure in the hydraulic hoses. This is achieved on Standard machines using the tractors hydraulic control levers/buttons in a back/forth in/out motion. On Proline machines fitted with Spearhead's Minipilot control system, place each of the cutting bodies into float utilising the Minipilot control box and then switching off the control box

4.4.1.4 Wear pads should be placed between the towing eye and the clevis hitch; see Figure 4.7. (standard and swivel towing eye only)

Wear pads are supplied with the machine and should be periodically replaced when they become worn out to maximise longevity of the towing eye.

4.4.1.5 Install the towing pin and retaining lynch pin.

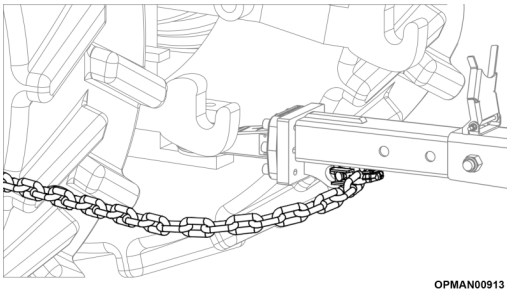


Figure 4.8

4.4.1.6 Further safety precautions should be placed between the tractor and machine with the addition of the safety chain. This should be securely fastened to the carrying tractor in a secure, permanent location and looped through the lower ring on the machine drawbar as shown in Figure 4.8.

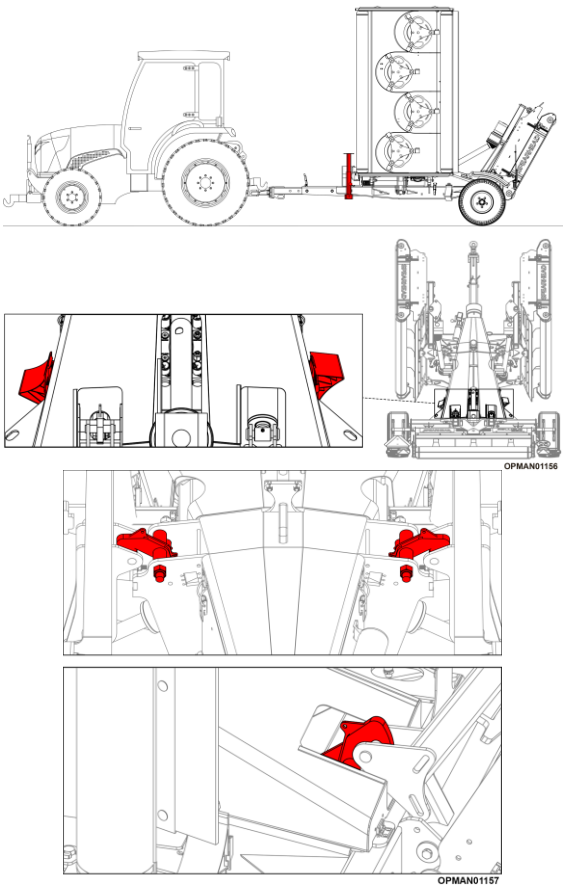


Figure 4.9

4.4.1.7 Invert the raised jack. Remove the wheel chocks and place them back into their holders.

4.4.1.8 Proceed to fit the hydraulic hoses, 7-pin electrical supply and input PTO driveshaft.

Remember to place the hydraulic hoses and electrical cables through the provided hose guide on the front of the chassis.

Ensure that the body locks are engaged.

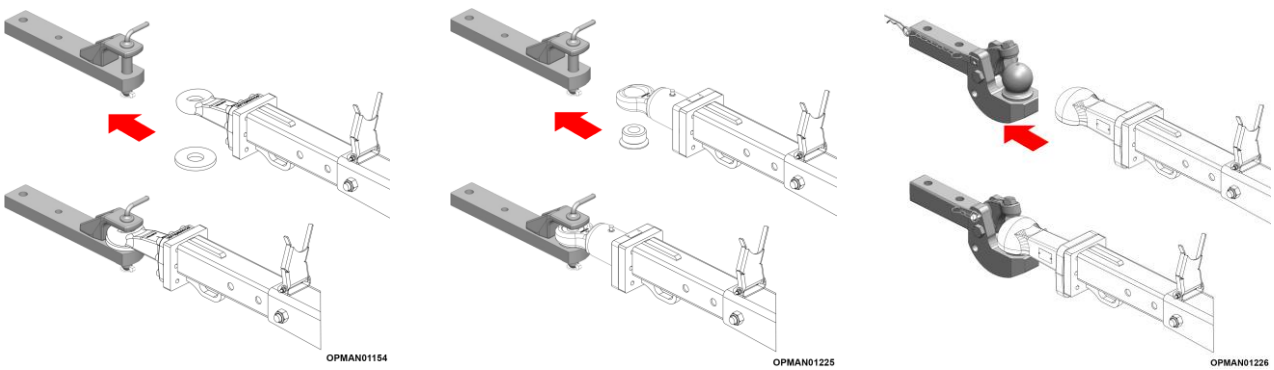
On Rollicut Standard machines place the wing and rear body release ropes through the rear window of the tractor ensuring that the rope pulls straight towards the machine to ensure the body locks will pull smoothly when the machine is required to be folded down ready for work.

On Rollicut Proline machines specified with the Minipilot control system, fit the joystick controls inside the tractor cab using the Nylon strap provided around the preferred tractor armrest. Plug in all electrical components of the Minipilot system to the relevant parts of the machine and tractor following the guidance given in the relevant sections of this operators manual and ensure that the machine hydraulic body locks are engaged and the flashing warning beacon is working correctly.

4.4.1.9 Check that all machine front and rear rollers on all body's are set equally or proceed to Section 4.7 if any amendments are required to be made before beginning work.

4.4.1.10 Check that all lights work correctly before taking the machine onto the public highway.

Spearhead offers three different towing hitch options for Rollicut machines; standard, swivel and K80.



Standard Swivel K80

Figure 4.10 – Rollicut Towing Eye Options

4.4.2 Unhitching

DANGER! Always switch off the tractor completely, place the transmission in park, and set the parking brake before attempting to connect or disconnect the machine from the tractor

Unhitching the machine is a reverse operation of the hitching process stated in the previous section.

IMPORTANT: Unhitching and planning to store the machine should be carried out on a level and firm ground to prevent the machine from becoming unstable. The supplied machine stand with the machine should always be used. If the machine is destined to be left folded ensure that the machine is safely secured with the body locks, fully engaged to ensure that the wings do not drop.

4.4.2.1 Position the machine to be removed on a flat, hard surface. Switch off the tractor, apply the handbrake and relieve hydraulic pressure in the hydraulic hoses. This is achieved on Standard machines using the tractors hydraulic control levers/buttons in a back/forth in/out motion. On Proline machines fitted with Spearhead's Minipilot control system, place each of the cutting bodies into float utilising the Minipilot control box.

4.4.2.2 Remove the provided wheel chocks from the machine and place in front and behind one of the wheels. Both chocks must be placed either side of one of the wheels to stop the machine from rolling.

These can be found on the either side towards the rear of the centre chassis, see Figure 3.2.

4.4.2.3 Remove and invert the jack and adjust the height of the jack using the handle to eventually raise the machine and relieve the weight of the machine off the tractor hitch.

4.4.2.4 Remove the input PTO driveshaft between tractor and machine following the guidance in Section 4.5.

If the machine is not destined to be used for an extended period, fully disconnect the input PTO driveshaft and consider bringing it indoors to maintain its condition.

4.4.2.5 Remove the hydraulic hoses and 7-pin electrical supply to the machine from the tractor. Ensure that all ends are capped and stored off the floor and with the machine. Ensure all electrical components are protected from water.

If the machine is going to be left folded ensure that the body locks are fully engaged.

On Rollicut Standard machines remove the body release rope from the tractor and securely place it on the machine to ensure it doesn't get damaged or entangled round any components.

On Rollicut Proline machines specified with the Minipilot control system, the joystick and its electrical connections can be disconnected and removed from the tractor.

4.4.2.6 Ensuring the machine will remain stationary, remove the towing eye pin from the drawbar along with the retention chain and gently drive the tractor away.

4.4.2.7 Collect the towing eye wear pad and safely store it somewhere so it is available for next use of the machine.

For extended guidance on how to safely store the machine; see Section 5.12.

4.4.3 Safety Towing Chain

Further safety precautions should be placed between the tractor and machine with the addition of the drawbar safety chain. This should be securely fastened to the carrying tractor in a secure, permanent location and looped through the drawbar on the machine as shown in Figure 4.11.

The safety chain is there as a precautionary safety measure to aid the controlling of the machine in case the towing eye becomes disconnected from the tractor drawbar.

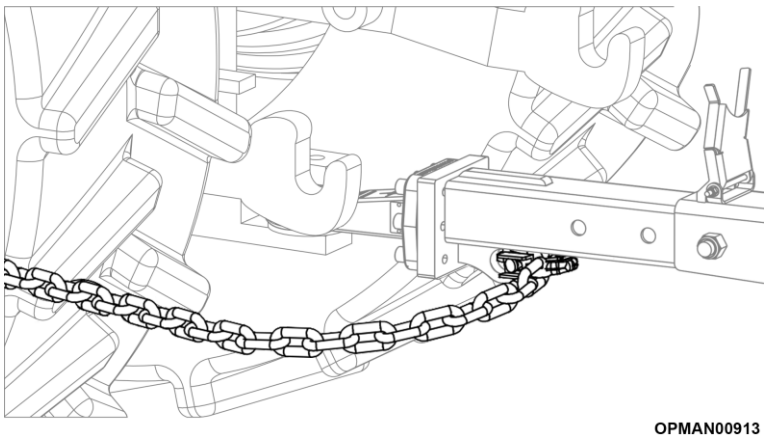


Figure 4.11 – Safety Towing Chain
(standard towing eye illustrated)

DANGER! Never attach the chain to the tractor with a pin without a retaining lynch pin. Always ensure that the safety chain is securely fitted between the tractors and machine.

4.5 PTO Driveshaft

CAUTION! Many of the equipment components listed in this section used to carry out processes are heavy (25kg/60lbs+), and special lifting procedures are recommended to reduce potential user lifting injuries. Use mechanical lifting assistances, two people and other proper lifting techniques when connecting the input PTO driveshaft between the machine and tractor.

4.5.1 Fitting & Removal Of The Input PTO Driveshaft

Fitting

Make sure before proceeding to try to fit the input PTO driveshaft between the tractor and machine that the specification of the driveshaft is the correct speed, size and has the correct quantity of splines for the machine and the tractor can offer the machines required PTO speed.

Furthermore, ensure that it's been adjusted to the correct length for use between the machine and the given tractor as stated in Section 3.3.1.

DANGER! Do not use PTO adaptors to attach a non-matching implement driveline to a tractor PTO. Use of an adaptor can double the operating speed of the implement resulting in excessive vibration, thrown objects, blade/belt/driveline failures due to changes in the machines design intended use. PTO adaptors also increase the exposed working length increasing the probability of entanglement with external objects. If the driveshaft is incorrect for the tractor; contact your local Spearhead dealer for assistance.

WARNING! When attaching the machine input PTO driveshaft to the tractor power take-off, it is important that the connecting yoke spring activated locking collar slides freely and the locking balls are seated securely in the groove on the tractors output PTO driveshaft.

Push and pull the input PTO driveshaft back and forth several times to ensure it is securely attached. An input PTO driveshaft not attached correctly to the tractor PTO could come loose and result in personal injury and damage to the machine.

Both the input PTO driveshaft yoke and tractor PTO must be dirt free and a light smearing of grease should be applied prior to attachment.

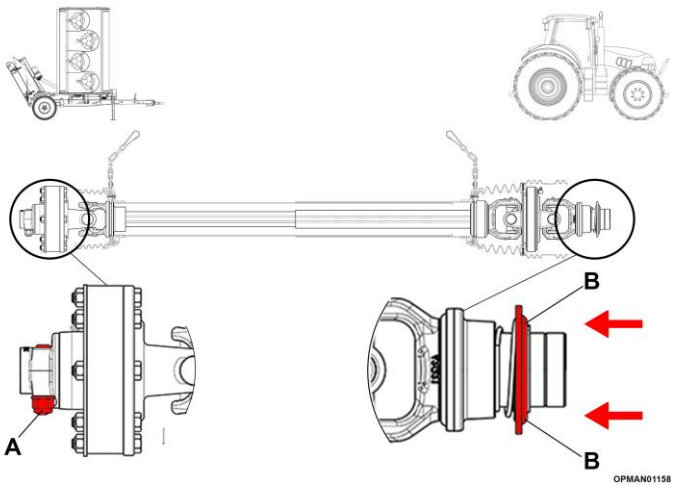


Figure 4.12 – Rollicut Input Driveshaft Fitting & Removal

Fitting - Machine End

	Equipment Required • Torque wrench (see required settings in Torque Settings section) • 22mm hex socket • NLGI #2 Molybdenum Disulphide grease with paint brush/distributor

Proceed as follows:

4.5.1.1 Proceed to remove the taper pin, flat washer and nut from the machine end of the input PTO driveshaft. See Figure 4.12 (A).

4.5.1.2 Install the input PTO driveshaft onto the splitter gearbox lining up the slot in the splitter gearbox driveshaft with where the input PTO driveshaft taper pin will be placed. Replace the removed taper pin, flat washer and nut and tighten to a torque of 230Nm (170 ft/lbs).

It is best practice, when fitting the input PTO driveshaft to wipe a small quantity of grease (NLGI #2 Molybdenum Disulphide) onto the splines to aid assembly and later removal.

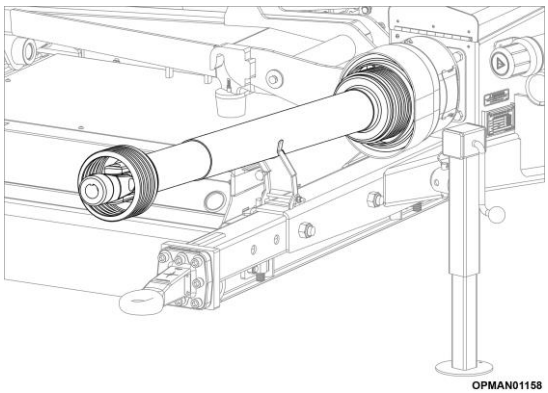


Figure 4.13 – Fit To Rollicut

Fitting - Tractor End

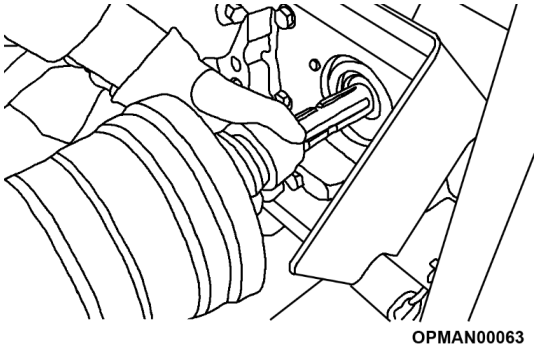


Figure 4.14 – Fit Input Driveshaft To Tractor

Proceed as follows:

4.5.1.3 Pull the input PTO driveshaft yoke collar back and align the grooves and splines with those of the PTO output driveshaft of the tractor; see Figure 4.12 (B).

4.5.1.4 Push the driveshaft yoke onto the tractor output PTO driveshaft, release the locking collar and position the yoke of the input PTO driveshaft until the locking collar balls are seated onto the tractors output PTO driveshaft; see Figure 4.14.

4.5.1.5 To ensure that the input PTO driveshaft is secure, push and pull the driveshaft back and forth several times.

It is best practice, when fitting the input PTO driveshaft to wipe a small quantity of grease (NLGI #2 Molybdenum Disulphide) onto the splines to aid assembly and later removal.

Removal

	**Equipment Required** • 22mm (M14) socket or spanner • NLGI #2 Molybdenum Disulphide grease with paint brush/distributor

Removing the input PTO driveshaft works in a reverse fashion from what is stated in the fitting section; by removing the driveshaft from the tractor end first. Ensure that the PTO is disengaged, tractor engine is stopped and the handbrake is applied before proceeding to remove the driveshaft.

It is best practice, when removing the input PTO driveshaft, to wipe a small quantity of grease (NLGI #2 Molybdenum Disulphide) onto the splines of the exposed driveshaft end to prevent corrosion.

If the machine is not going to be used for an extended length of time the input PTO driveshaft should be removed completely and stored indoors to maintain its condition.

Proceed as follows:

4.5.1.6 Pull the input PTO driveshaft yoke collar back and pull back the driveshaft off the splined output shaft of the tractor; see Figure 4.12 (B).

4.5.1.7 If the driveshaft is not destined to be removed completely, utilise the machines PTO support bracket to rest the input PTO driveshaft on; see Figure 4.15. This will ensure that the driveshaft doesn't get contaminated with dirt.

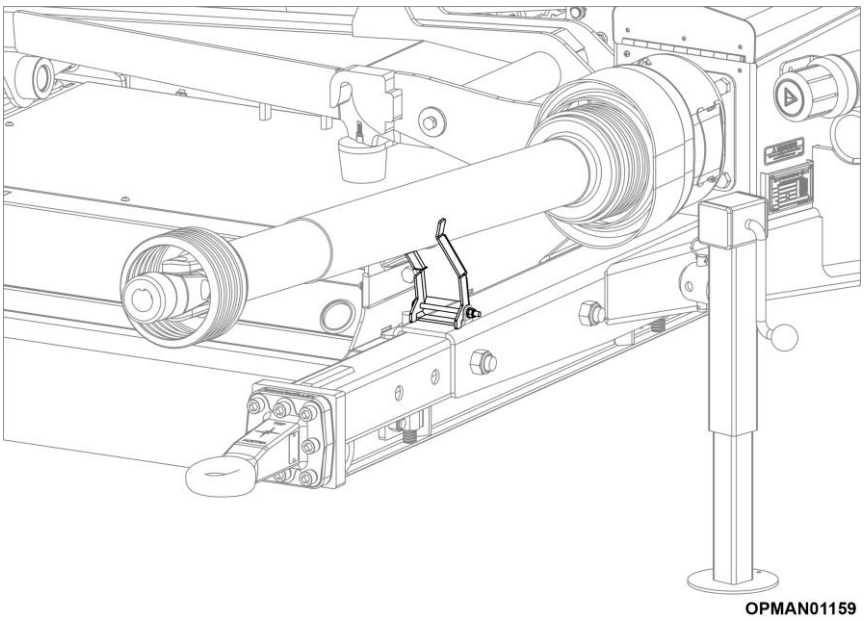


Figure 4.15 – PTO Support Bracket

4.5.1.8 To then completely remove the driveshaft, remove the taper pin, flat washer and nut from the machine end; see Figure 4.12 (A).

4.5.1.9 Refit the removed taper pin, flat washer and nut for safe keeping.

4.5.1.10 It is best practice, when removing the input PTO driveshaft to wipe a small quantity of grease (NLGI #2 Molybdenum Disulphide) onto the splines at each end to aid later refitting to the tractor.

4.5.2 PTO Driveshaft Specifications

Rollicut machines have a 540 rpm specification.

DANGER! Do not use PTO adaptors to attach a non-matching implement driveshaft to a tractor PTO. Use of an adaptor can double the operating speed of the implement resulting in excessive vibration, thrown objects, blade/belt/driveline failures due to changes in the machines design intended use. PTO adaptors also increase the exposed working length increasing the probability of entanglement with external objects. If the driveshaft is incorrect for the tractor; contact your local Spearhead dealer for assistance.

It is important to only operate at these speeds as a **maximum** and that the input PTO driveshaft is of the correct specification for the machine and tractor. See Table 4.2 for input PTO driveshaft speed options and the spline quantity options.

Machine	PTO Speed	Number Of Splines
Rollicut 500/600	540 rpm	6

Table 4.2 – Input Driveshaft/PTO Speed Options

Rollicut machines feature a fixed slip clutch with overrun on the input PTO driveshaft.

NOTE: Some tractors offer the ability to change the PTO operating speed between 540/1000 RPM. Ensure that the correct PTO operating speed is selected for the machine. Refer to the tractor owner's manual for instructions on how to change PTO operating speed before proceeding to start the machine.

4.6 Unfolding & Folding The Machine

The machine when received from Spearhead is virtually complete and components are set correctly, requiring minimum time to ready the machine for use.

WARNING! When operating a fully assembled machine, do not release the body locking mechanism until the hoses are attached to the tractor and each of the wing lift ram cylinders are filled with oil. Always ensure that bystanders are kept well away from the falling area of the wings.

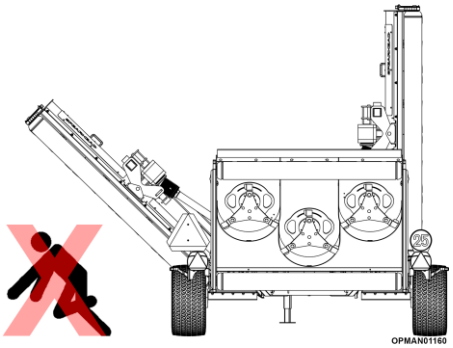


Figure 4.16 – Bystanders Under Wing

4.6.1 Standard

Unfolding

To lower the wings of the machine, connect the hydraulic hoses of the machine to the tractor; see Section 4.3. Once the hoses have been connected and seated properly, enter the tractor cab and use the tractors hydraulic control levers/buttons to completely fill the wing lift ram cylinders with oil.

If the machine from is being fitted to the tractor for the first time, follow the guidance in Section 4.4 to safely hitch the machine to the tractor.

This gives guidance to how to safely fit hydraulic hoses, electrical connections and input PTO driveshaft along with how to ensure the machine remains stable.

Ensuring yourself and any bystanders/operator are kept well away from the falling area of the wing, proceed to the following:

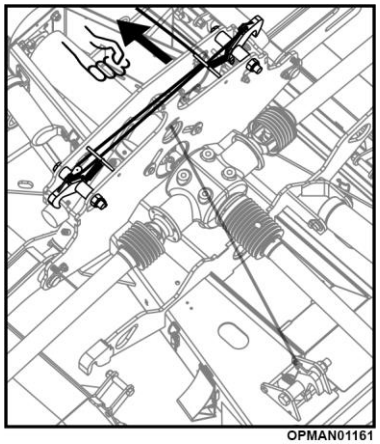


Figure 4.17

To lower the wings:

4.6.1.1 Pull and continue to hold the body lock release rope to allow the locks to release from holding the wings.

4.6.1.2 Use the tractor spool control lever/button controls to lower the wings to the ground.

All Rollicut machines feature double-acting wing rams. Rollicut Standard machines feature a single-acting rear body ram which uses the weight of the machine to lower the rear body to the ground. Rollicut Proline machine feature a double-acting rear body ram.

4.6.1.3 Release the body lock release rope.

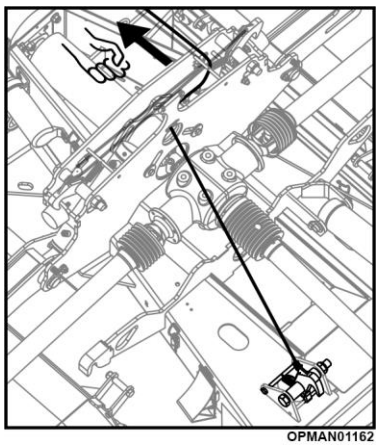


Figure 4.18

To lower the rear body:

4.6.1.4 Pull and continue to hold the body lock release rope to allow the lock to release from holding the rear body.

4.6.1.5 Use the tractor spool control lever/button controls to place the hydraulics into float to lower the rear body to the ground.

All Rollicut machines feature double-acting wing rams. Rollicut Standard machines feature a single-acting rear body ram which uses the weight of the machine to lower the rear body to the ground. Rollicut Proline machine feature a double-acting rear body ram.

4.6.1.6 Release the body lock release rope.

WARNING! If the machine wings fall down rapidly; have the cylinders and/or hoses checked/repaired/replaced before proceeding to use the machine again.

Folding

To fold the machine:

4.6.1.7 Place the tractor hydraulics out of their float setting.

4.6.1.8 From the tractor seat, ensuring that bystanders are kept well away from the falling/raising area of the wing, use the tractor spool control lever/button controls to lift the wings off the ground.

Inspect to ensure that that the body locks are engaged.

4.6.1.9 Ensuring that bystanders are kept well away from the falling/raising area of the rear body, use the tractor spool control lever/button controls to lift the rear body off the ground.

Inspect to ensure that that the rear body lock is engaged.

4.6.1.10 If the machine from now is not planned to be stored, follow the guidance in Section 4.4 to safely unhitch the machine from the tractor.

This gives guidance to how to safely remove hydraulic hoses, electrical connections, and input PTO driveshaft along with how to ensure the machine remains stable.

4.6.2 Proline

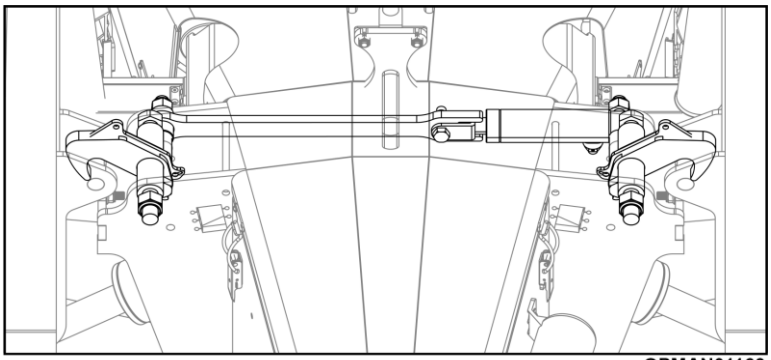


Figure 4.19

Unfolding

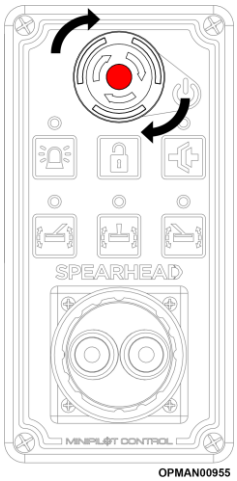
To lower the wings of the machine, connect the hydraulic hoses and electrical connections of the machine to the tractor; see Section 4.3. Ensure all hoses have been connected and seated properly.

If the machine is being fitted to the tractor for the first time, follow the guidance in Section 4.4 to safely hitch the machine to the tractor.

This gives guidance to how to safely fit hydraulic hoses, electrical connections and input PTO driveshaft along with how to ensure the machine remains stable.

Ensuring yourself and any bystanders/operator are kept well away from the falling area of the wing, proceed to the following:

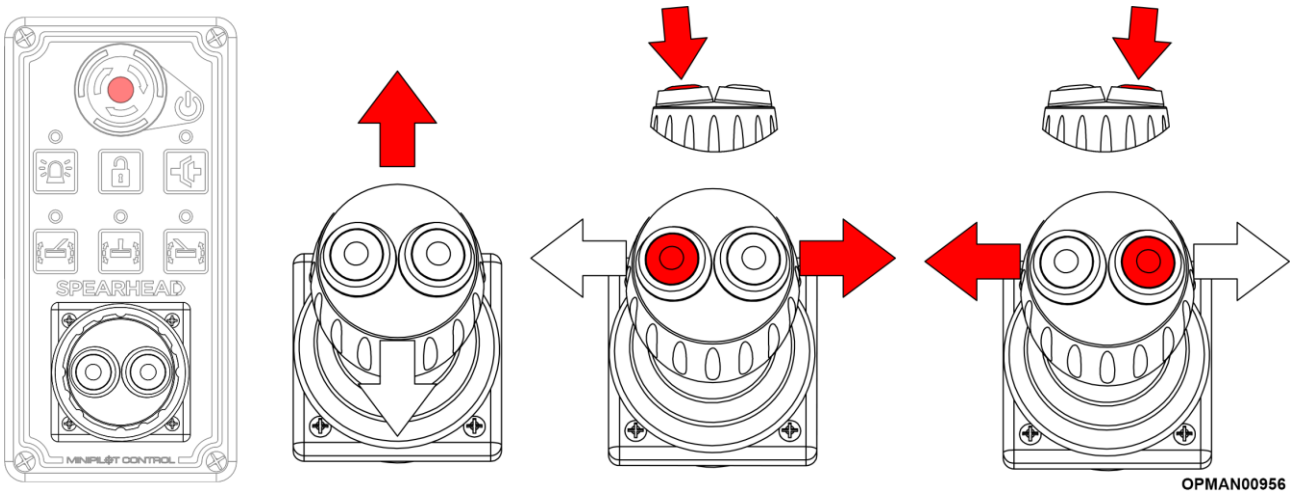
Powering On The Switchbox



4.6.2.1 Ensuring all components are correctly plugged in, switch on the power on the Minipilot switchbox by rotating the red power/emergency stop button clockwise which will release it up. The centre of the button will illuminate red indicating that power is supplied to the system and is working.

Figure 4.20

Fill Hydraulic Ram Cylinders



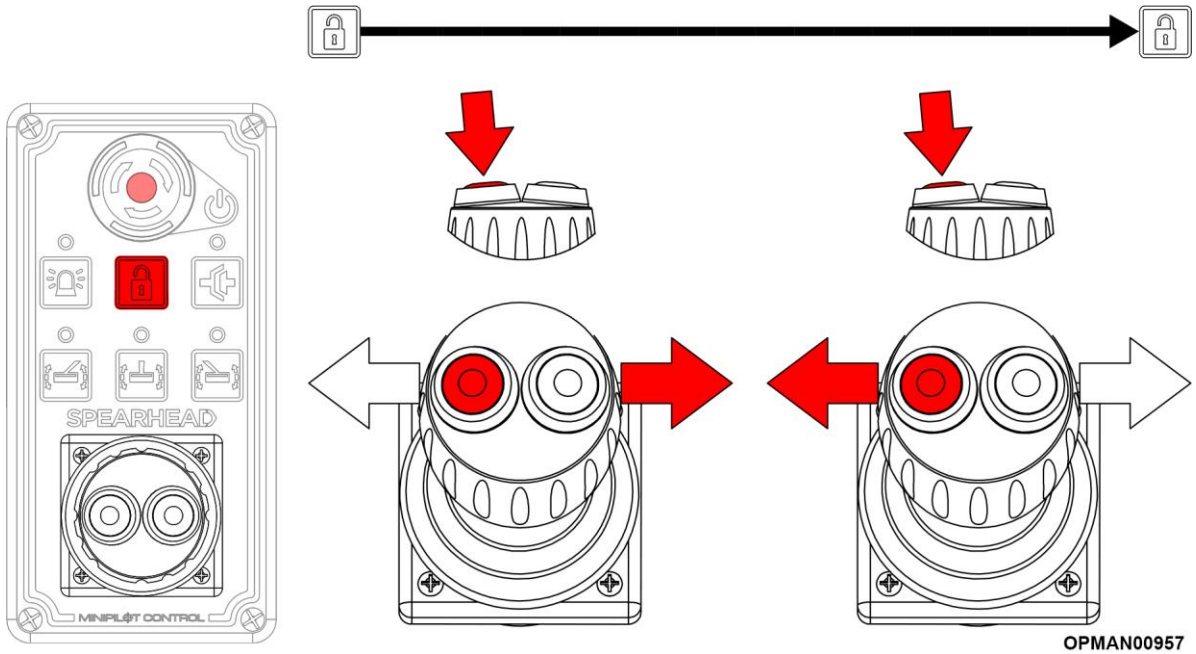
Centre Body Left-hand Wing Body Right-hand Wing Body

Figure 4.21

4.6.2.2 Use the joystick and go through all functions to fill hydraulic ram cylinders of the machines in a manner of if you wanted to raise the machine; see Figure 4.21.

- Try to raise the centre body by pushing the joystick forward
- Try to raise the left-hand wing body by pressing the left-hand button on the joystick and pushing the joystick to the right at the same time.
- Try to raise the right-hand wing body by pressing the right-hand button on the joystick and pushing the joystick to the left at the same time.

Unfolding The Left-hand Wing



1 2 3

Figure 4.22

Once all hydraulic rams are filled with oil:

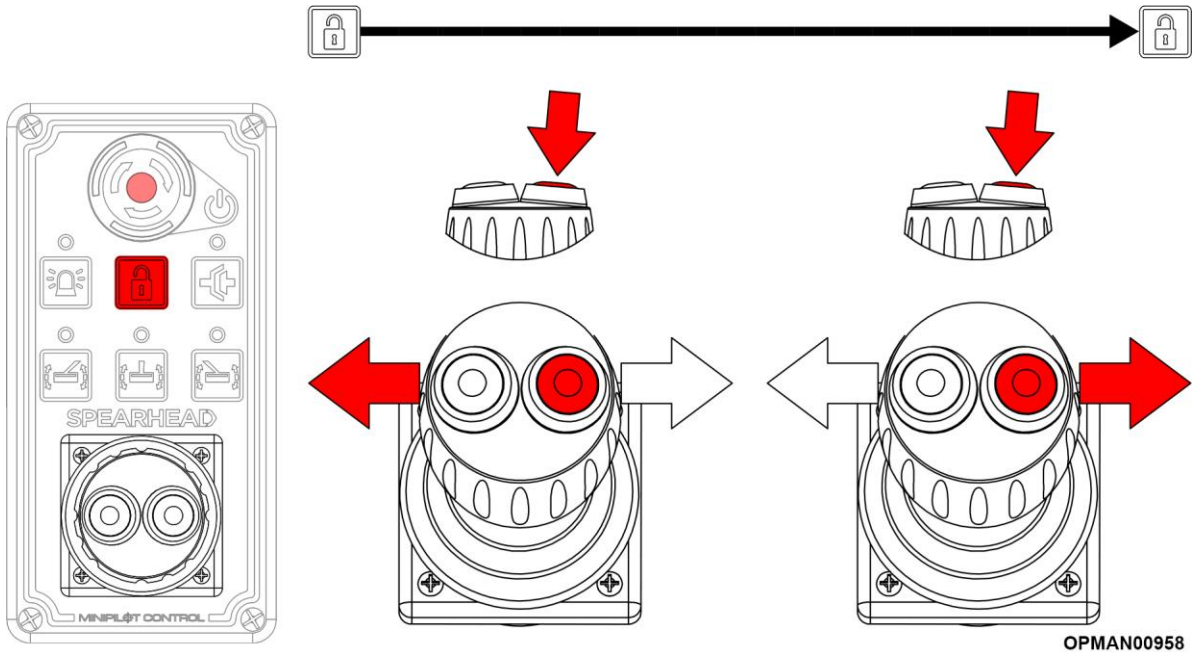
4.6.2.3 Press and hold the body lock button on the control box; see Figure 4.22 (1) to pull the body lock latches open.

4.6.2.4 Press and hold the left-hand button on the joystick and push the joystick to the right at the same time to raise the left-hand wing to its fullest extent; see Figure 4.22 (2).

4.6.2.5 Press and hold the left-hand button on the joystick and push the joystick to the left to lower the left-hand wing to the ground; see Figure 4.22 (3).

WARNING! If the machine wings fall down rapidly; have the cylinders and/or hoses checked/repaired/replaced before proceeding to use the machine again.

Unfolding The Right-hand Wing



1 2 3

Figure 4.23

4.6.2.6 Press and hold the body lock button on the control box; see Figure 4.23 (1) to pull the body lock latches open.

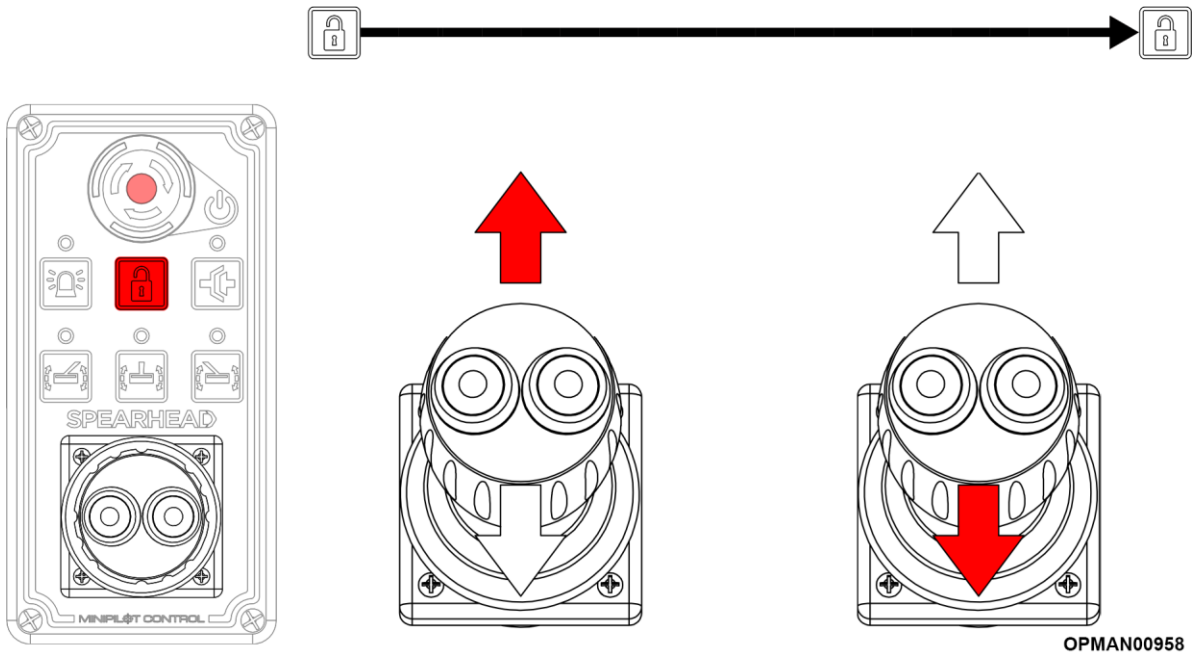
4.6.2.7 Press and hold the right-hand button on the joystick and push the joystick to the left at the same time to raise the right-hand wing to its fullest extent; see Figure 4.23 (2).

4.6.2.8 Press and hold the right-hand button on the joystick and push the joystick to the right to lower the right-hand wing to the ground; see Figure 4.23 (3).

4.6.2.9 Release the body lock button.

WARNING! If the machine wings fall down rapidly; have the cylinders and/or hoses checked/repaired/replaced before proceeding to use the machine again.

Lowering The Centre Body



1 2 3

Figure 4.24

4.6.2.10 Press and hold the body lock button on the control box; see Figure 4.24 (1) to pull the body lock latches open.

4.6.2.11 Push the joystick forward to raise the centre body to its fullest extent; see Figure 4.24 (2).

4.6.2.12 Pull the joystick back to lower the centre body to its fullest extent; see Figure 4.24 (3).

4.6.2.13 Release the body lock button.

WARNING! If the machine body falls down rapidly; have the cylinder and/or hose checked/repaired/replaced before proceeding to use the machine again.

Folding

To fold the machine:

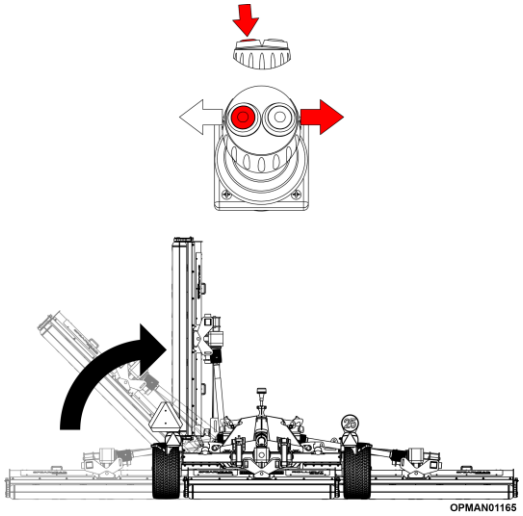


Figure 4.25

4.6.2.14 To raise the left-hand wing, press and hold the left-hand button on the joystick and push the joystick to the right at the same time to raise the left-hand wing.

The body lock should automatically engage when it gets to its position and lock that wing ready for transport.

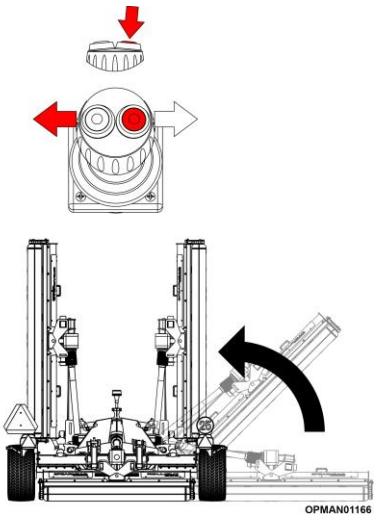


Figure 4.26

4.6.2.15 To raise the right-hand wing, press and hold the right-hand button on the joystick and push the joystick to the left at the same time to raise the right-hand wing.

The body lock should automatically engage and lock that wing ready for transport.

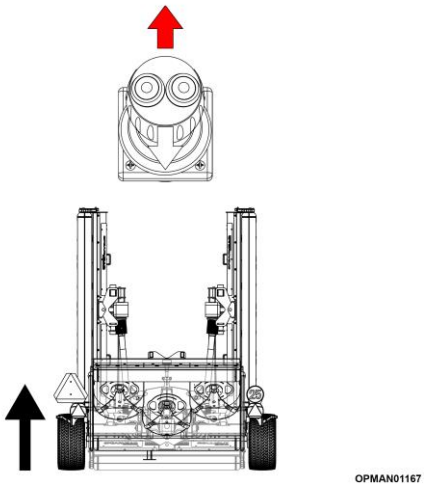


Figure 4.27

4.6.2.16 Finally raise the centre body by pushing the joystick forward.

The body lock should automatically engage and lock that wing ready for transport.

4.6.2.17 Switch off the tractor and inspect the machine to ensure that the wings and rear body are locked in position.

4.6.2.18 If the machine from now is not planned to be stored, follow the guidance in Section 4.4 to safely unhitch the machine from the tractor.

This gives guidance to how to safely remove hydraulic hoses, electrical connections and input PTO driveshaft along with how to ensure the machine remains stable.

4.7 Setting Cutting Height

	Equipment Required • 24mm hex spanner

IMPORTANT: Ensure that the PTO is disengaged, tractor engine is stopped and the handbrake is applied before proceeding to adjust the rear rollers of the machine.

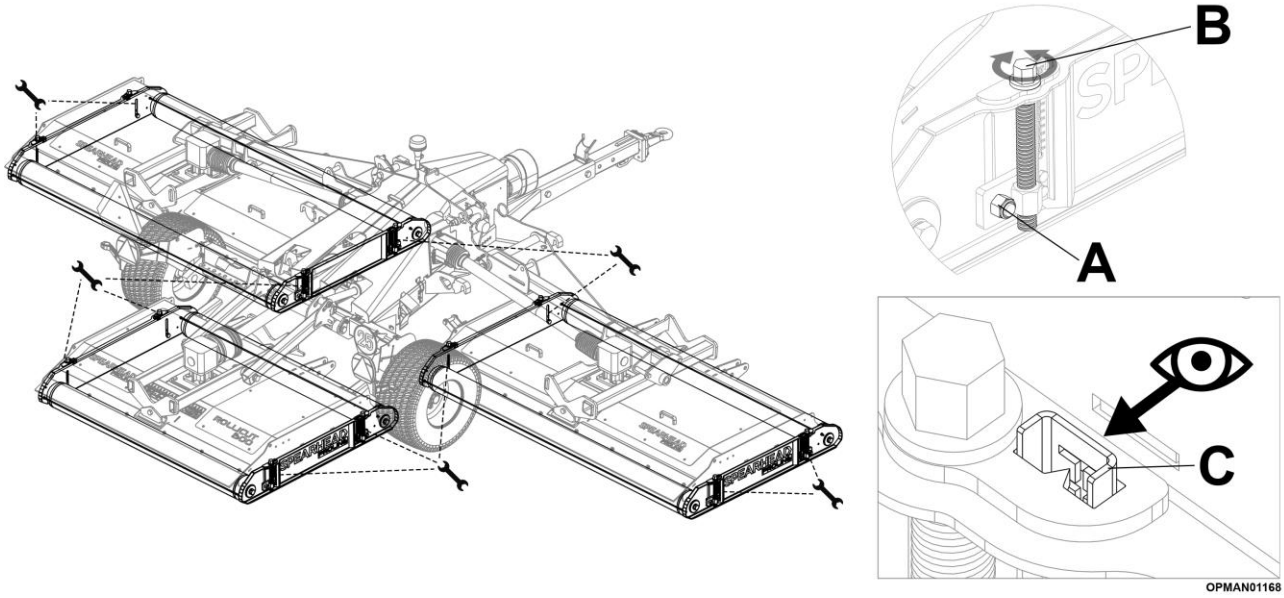


Figure 4.28 – Rollicut Roller Adjustment
(Rollicut 600 Proline Model Illustrated)

With reference to Figure 4.28, to alter the minimum height of cut:

4.7.1.1 Unfold all body's of the machine using the guidance given in Section 4.6.

Proceed to adjust each machine body separately:

4.7.1.2 Loosen the four nuts found on each end of the skids on both ends of the machine body's; see Figure 4.28 (A).

4.7.1.3 Turn each of the four height adjustment bolts equally to raise or lower the machine skids and rollers to alter the cutting height of the machine; see Figure 4.28 (B).

4.7.1.4 Use the mark on the height gauge to as a guide to the achieved cutting height setting; see Figure 4.28 (C).

See Table 4.3 for guidance on how to gain a desired guide height with the machine.

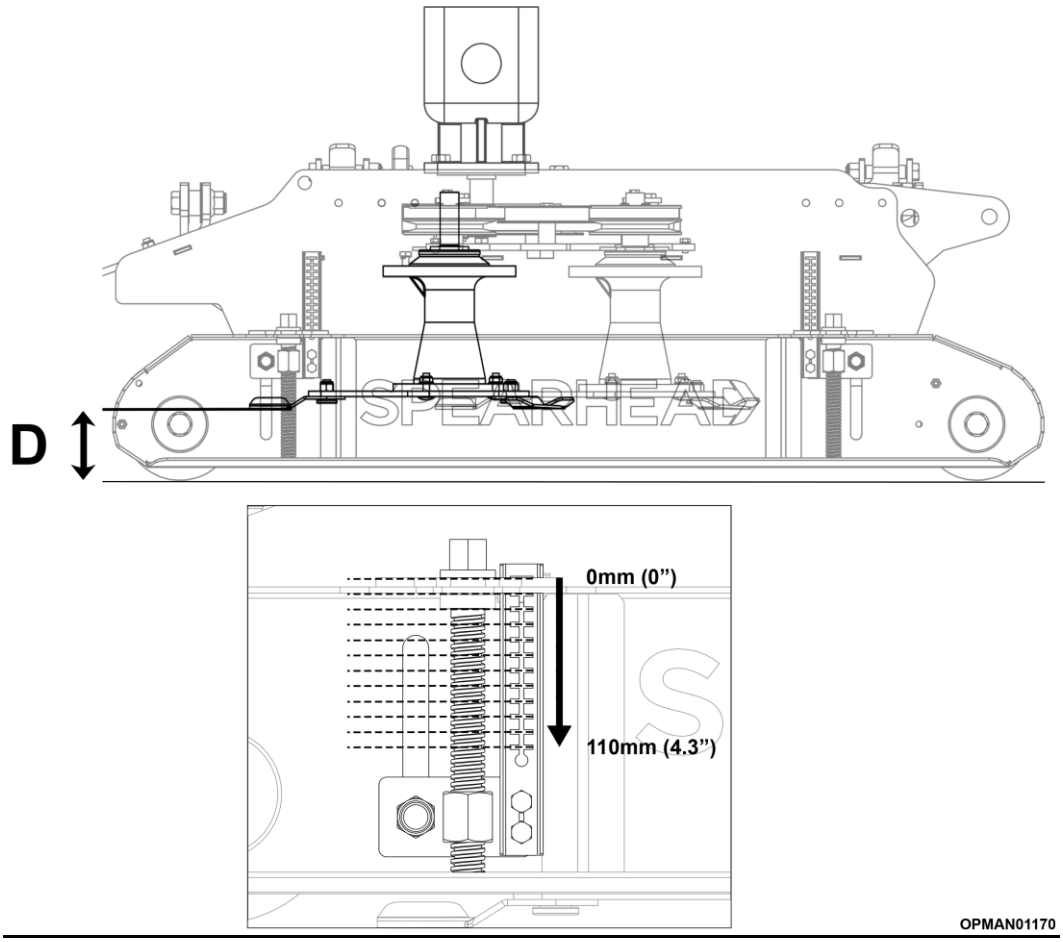
4.7.1.5 Retighten the four nuts found on each end of the skids on both ends of the machine body's; see Figure 4.28 (A) to secure the skids from adjusting their position.

4.7.1.6 Repeat the process on the other two machine body's.

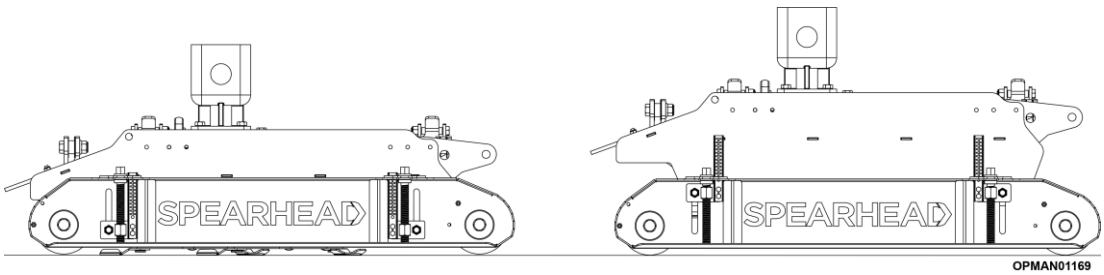
4.7.1.7 Test the machine to see if the desired cutting height is achieved.

If the desired cutting height is not achieved; repeat the process on another setting.

Table 4.3 shows a **reference** guide as to the desired cut height that will result.



Lowest Setting **Highest Setting**



0mm (0") cutting height 110mm (4.3") cutting height

Figure 4.29 – Rollicut Roller Cutting Height Adjustment

Mark "B" – see Figure 4.28	Cutting Height "D" – see Figure 4.29
1 (lowest setting)	0mm (0")
2	10mm (0.3")
3	20mm (0.8")
4	30mm (1.2")
5	40mm (1.6")
6	50mm (2")
7	60mm (2.3")
8	70mm (2.8")
9	80mm (3.1")
10	90mm (3.5")
11	100mm (3.9")
12 (highest setting)	110mm (4.3")

Table 4.3
Rollicut Guide Cutting Height Values

This table of data is just for reference to create a ballpark figure for the customer to start from and assumes:

- Tyre pressures are correct
- A brand-new machine with no worn components
- The machine is perfectly manufactured and there is no tolerance variation in components

Due to this Spearhead shows the data below as a reference holding no responsibility for the machine not achieving the **exact** quantities given in the table below. It is important for the operator to try out the machine at the work site with the expectation that they will need to adjust the machine after to get exactly what they require to fit the working conditions.

Figure 4.30 - Tyre Sinking

NOTE: Keep in mind that the tyres may sink in soft conditions when the machine is in use altering the actual cut height; see Figure 4.30. As a safe precaution, set the cutting height slightly higher on set-up to cater for this sinking. Assess the working area after and then adjust the machine again if required.

4.8 Work Site Assessment

4.8.1 Foreign Debris Hazards

The destined work site to use the machine should be thoroughly checked and familiarised following the guidance given in Section 2.3.5 to assess the working area for hazards; removable and fixed.

Items should be assessed, removed or clearly marked (e.g. if too heavy to move) before mowing:

- Items and ground characteristics which could cause a reduction in the tractors stability, traction and operator safety and ease of control in operation
- Insufficient lighting
- Foreign objects which could be picked up and then flung by the machine damaging and causing risk to bystanders, operator, tractor or the nearby environment. Items seen on the surface and buried deeply in the material. For example rocks, tree stumps and manhole covers
- Foreign objects which could be picked up and then damage the machine; for example wire.
- Low level objects which could come into collision with the tractor and/or machine
- Items which could create a fire risk

In overgrown areas which could potentially hide debris that could be struck by the blades, the area should be: inspected and large debris removed, mowed at an intermediate height and then re-inspected closely with any remaining debris being removed. Then mow at the desired final height. This will also bring benefits to operations with reduced power requirements to mow, reduce wear and tear on the machine drivetrain, spread cut material better, reduce windrowing, and give a better overall finish.

Always wear your seaat belt securely fastened and only operate the tractor and mower with the Roll-over Protection Structure (ROPS) in the raised position. If the tractor or mower hits a tree stump, rock, or bump, a sudden movement could throw you off of the seat and under the tractor and/or mower. The seat belt is your best protection from falling off the tractor and the ROPS provides protection from being crushed during a tractor roll-over.

Figure 4.31 – Inspect The Work Site

It is important to inspect the machine to ensure all mandatory fixed and removable guarding is in position and in correct working order before proceeding to use the machine. For guidance on the various guarding found on Rollicut machines; see Section 2.6.

WARNING! Extreme care should be taken when operating near loose objects such as gravel, rocks, wire, and other debris. Inspect the area before mowing. Foreign objects should be removed from the site to prevent machine damage and/or bodily injury or even death. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator. Stop mowing immediately if blades strike a foreign object.

IMPORTANT: Repair all damage and make certain the blade rotor is balanced before resuming mowing.

WARNING! Many varied objects, such as wire, cable, rope, or chains, can become entangled in the cutting area of the mower body. These items can swing outside the confines of the safe cutting area of the machine at greater velocities than the blades. Such a situation is extremely hazardous and could result in serious injury or even death. Inspect the cutting area for such objects before mowing. Remove any like object from the site. Never allow the blades to contact such items.

4.8.2 Stopping The Machine In An Emergency

DANGER! If the machine hits an object, becomes jammed, suddenly develops vibration or any other potentially harmful change happens to the machine.

Stop the machine immediately!

If you hit a solid object or foreign debris:

4.8.2.1 Return the tractor to idle engine speed immediately.

4.8.2.2 Disengage the PTO.

4.8.2.3 Wait for all machine rotating parts to stop, then raise the mower and move the tractor and machine off the object.

4.8.2.4 Once manoeuvred off the object, on Rollicut Proline machines specified with Spearhead's Minipilot control system, switch off the power to the control box by pressing the main red centre button to ensure the machine does not unintentionally move; see Figure 4.32.

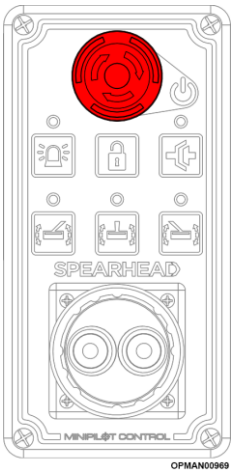


Figure 4.32

4.8.2.5 Stop the tractor.

4.8.2.6 With **extreme** caution, if a blocked foreign component has caused the machine to suddenly operate incorrectly or altogether ensure that all the correct levels of Personal Protection Equipment (PPE) is worn for safety purposes. **Consider gaining extra personnel** for assistance.

4.8.2.7 If the cause of sudden incorrect running of the machine is due to the machine colliding or hitting a foreign object, inspect the area and remove, or mark the location of the debris so it's not hit again.

4.8.2.8 Inspect the condition of the machine and make any needed repairs **before** proceeding to use the machine again. Make sure the blades are not damaged and the rotor shaft is balanced before resuming operation.

4.8.3 Bystanders

DANGER! Machines are capable under adverse conditions of throwing objects for great distances 90m (300 ft) or more and causing serious injury or death. Follow safety messages carefully.

It is of upmost importance that the tractor and machine is stopped immediately if a bystander comes within 90m (300 ft) while operating. The engine should be idled and the PTO disengaged. Do not restart work until the bystander is well past the 90m (300 ft) and then reassessed that there aren't any other new bystanders inside the danger zone.

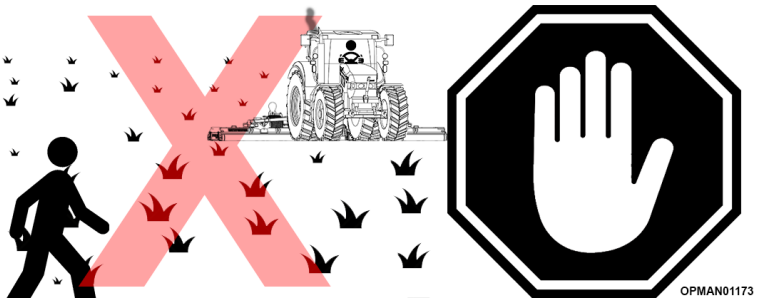


Figure 4.33 –Bystanders Out Of Working Area

It is of upmost importance to inspect the destined worksite before commencing work following the guidance given in Section 2.3.5 and Section 4.9.

4.8.4 Weather

Mow only in conditions where you have clear visibility in daylight or with adequate artificial lighting. Never mow in darkness or foggy conditions where you cannot clearly see **at least 90m (300 feet)** in front and to the sides of the tractor and mower. Make sure that you can clearly see and identify passersby, steep slopes, ditches, drop-offs, overhead obstructions, power lines, debris and foreign objects.

If you are unable to clearly see these type of items do not begin mowing.

Ensure lights work correctly on the tractor and machine.

4.8.5 Fire

Follow the following guidelines to reduce the risk of equipment and grass fires while operating, servicing, and repairing the machine and tractor:

- Ensure the **tractor is equipped with a fire extinguisher** in an easy to access location
- **Do not** operate the machine on a tractor with an underframe exhaust
- **Do not** smoke or have an open flame near the machine and tractor
- **Do not** drive into burning debris or freshly burnt areas
- Never allow clippings or debris to collect near drivelines and gearboxes
- Periodically shut down the tractor and machine and clean clippings and collected debris from the machine body

Figure 4.34 – Beware Of Fire Hazards

4.9 Safe Driving Practices

In order to safely operate the machine in work with the tractor requires the operator to have a thorough knowledge and experience of the tractor they are using and safety precautions they should take whilst driving with the attached machine.

With regards to the tractor and the surrounding environment it is important that the operator can:

4.9.1.1 Ensure the tractor and machine has been properly serviced and maintained. Do not operate the tractor with weak/faulty brakes or worn tyres.

4.9.1.2 Ensure the tractor has the capacity to handle the weight of the machine; see Section 1.5.1

Failure to have at least 20% sufficient load over the front axle or to drive at inappropriate speeds on undulating terrain may result in a loss of directional control.

4.9.1.3 Ensure the tractor operating controls are set for safe transport. Consult the tractor manufacturers operators manual.

WARNING! Transport only at speeds where the machine and tractor can be maintained in control. Drive **conservatively**. Serious accidents and injuries can result from operating this equipment at high speeds.

4.9.1.4 Before using the tractor and machine ensure that the machine is only operated at safe speeds; on and off road (including work).

DANGER! Steering should be taken at slow speeds to maintain machine stability. Violently changing direction will greatly reduce machine stability resulting in loss of steering control, potentially turning over the machine and/or tractor causing serious injury, or even death

4.9.1.5 The operator should start at slow speeds and familiarise themselves of the operating and handling characteristics of the tractor in combination with the fitted machine off road before proceeding to drive the machine onto the public highway. Gentle steering and braking should be adhered to maintain control and overall stability

4.9.1.6 Tractor independent brakes should be locked together and the differential lock should be disengaged.

4.9.1.7 Before transporting the tractor and machine, determine the legal maximum transport speeds for the equipment conforming to local jurisdictions and comfortable transport speeds for the operator. Only increase speeds safely when conditions allow or the operator is comfortable to do so.

Figure 4.35 – Follow Safe Driving Practices

Transport the machine only at safe speeds which allow you to properly control the machine and at a **maximum** speed of 20 mph (32 kph). Drive for the conditions and reduce speed if required. Increasing speeds, operating down a hill or on wet or rain slick roads; increases stopping distances.

4.9.1.8 On Rollicut Proline machines specified with Spearhead's Minipilot control system, when the machine is out of use ensure to switch off the power to the control box by pressing the main red centre button to ensure the machine does not unintentionally move.

4.9.1.9 Make certain that the local jurisdiction legal safety requirement items are fitted. For example a "Slow Moving Vehicle" (SMV) sign is installed and tractor flashing warning lights. Check the local jurisdiction to determine whether the flashing warning beacons are required to be switched on when the machine is working.

Make sure all these safety awareness items are clearly visible and legible and follow all local traffic regulations. If the item is in anyway not working correctly or is faded; replace.

DANGER! The machine may be taller and wider than the tractor. Be careful when operating or transporting the machine to prevent the machine from running into or striking sign posts, barriers, walls, cars or any other solid objects. Such an impact could cause the tractor and/or machine to violently change direction or balance resulting in loss of steering control, serious injury, or even death.

4.9.1.10 Be aware of other road users and bystanders and make the machine aware to other users. Check your side view mirrors frequently and remember vehicles will approach quickly because of the tractor's slower speed. Gain eye contact with other people to gauge they've seen the tractors presence.

4.9.1.11 When operating on public roads, have consideration for other road users. Pull to the side of the road occasionally to allow all following traffic to pass. Do not exceed the legal speed limit set in your local jurisdiction for agricultural tractors. Always stay alert when transporting the tractor and machine on public roads. Use caution and reduce speed if other vehicles or pedestrians are in the area.

4.9.1.12 Make sure all tractor and machine lighting are functioning correctly (if fitted). Older tractors may not feature as many/bright lights as modern tractors. Consider upgrading the lights by consulting your authorized tractor dealer to ensure that the tractor and machine presence is seen.

4.9.1.13 On Rollicut Proline machines specified with Spearhead's Minipilot control system, the machine will be fitted with a flashing beacon. Ensure that the beacon is working correctly to aid visibility of the machine.

4.9.1.14 Be extremely cautious when the piece of equipment that is being towed is wider than the tractor tire width and/or extends beyond the lane of the road.

4.9.1.15 It is of upmost importance that safety decals are kept clean and replaced if they are no longer legible, damaged or lost completely. Safety decals can be purchased readily from a local Spearhead dealer.

4.10 Using The Machine

4.10.1 Engaging The Power Take-off (PTO)

Only operate the machine from the tractor operator's seat with the seatbelt securely fastened. The tractor must be equipped with a ROPS cab.

WARNING! Do not let the blades turn when the bodies are raised for any reason; including clearance or for turning. Raising the mower body exposes the cutting blades which creates a potentially serious hazard and could cause serious injury or even death from objects thrown from the blades.

WARNING! Do not put hands or feet under mower bodies. Blade contact can result in serious injury or even death. Stay away until all motion has stopped and the bodies are securely blocked up.

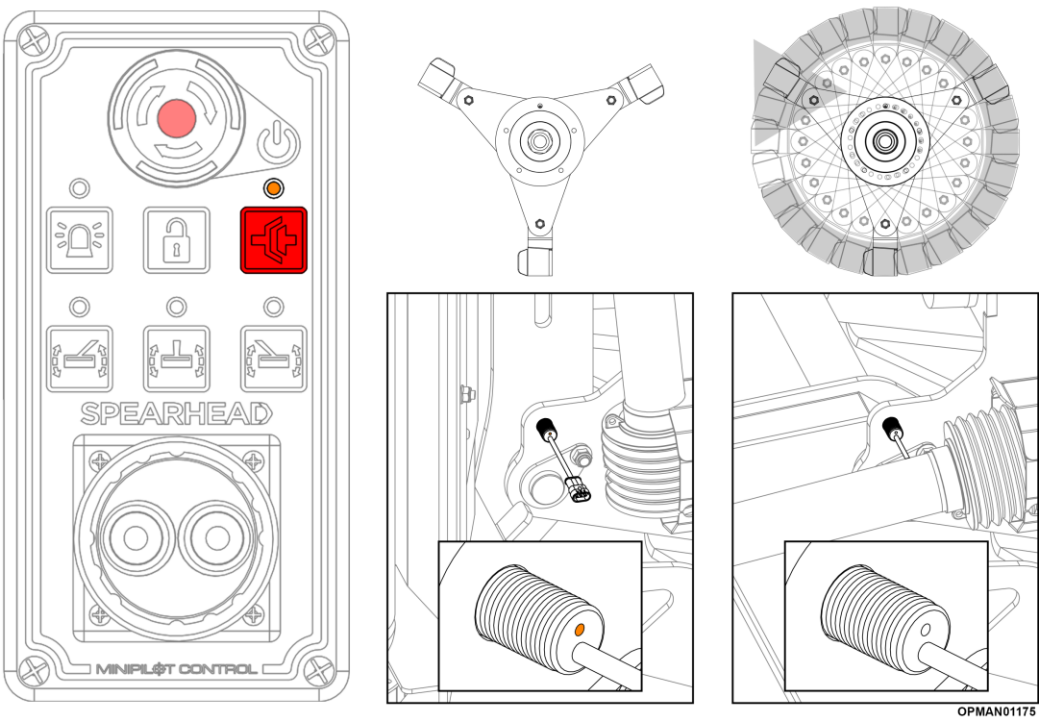
Before engaging the PTO, make certain that the area is clear of bystanders and passersby. The machine must be completely lowered to its desired cutting position. **Never** engage the PTO with the implement in the raised position.

4.10.1.1 Set the tractor engine at idle RPM before engaging the PTO and ensure all rotors are lowered to the ground.

4.10.1.2 Shift/press the PTO control to the on position.

4.10.1.3 On Proline machines ensure that all rotors are engaged and rotating.

Indication to whether the rotor is engaged are the wing sensor lights should NOT be illuminated; see Figure 4.36.



Folded (light illuminated) **Rotor Stationary**

Unfolded (light not illuminated) **Rotor In Motion**

Figure 4.36

4.10.1.4 Slowly increase the engine speed until the PTO is operating at the rated speed.

IMPORTANT: If you hear unusual noises or see or feel abnormal vibrations, disengage the PTO immediately. Inspect the implement to determine the cause of the noise or vibration and repair the abnormality before proceeding to use the machine.

4.10.2 Disengaging the Power Take-off (PTO)

To shut down the machine:

4.10.2.1 First bring the tractor to a complete stop.

4.10.2.2 Decrease engine RPM to idle then disengage the PTO.
The machine will come to a complete stop within a suitable amount of time.

IMPORTANT: Do not engage or disengage the machine at a high RPM unless there is an emergency situation.

Park the tractor on a level surface, place the transmission in park or neutral and apply the parking brake, lower the machine to the ground, shut down the engine, remove the key, and wait for all motion to come to a complete stop before exiting the tractor.

4.10.3 Minipilot Controls – Rollicut Proline

Rollicut Proline machines come equipped with a higher specification which includes the Spearhead Minipilot control system which gives increased user comfort through the ability to control all the various features of the machine through one control unit called the “control box”.

This control box features multiple buttons and switches controlling the machines:

- Flashing beacon.
- Individual folding and unfolding of the machines wing bodies.
- Raising and lowering of the machines centre body.
- Locking of the machine wings when folded to ensure they’re safe during transportation purposes.
- Individual wing float control.

The control box also has a combined power on and power off/emergency stop switch with twist to reset feature.

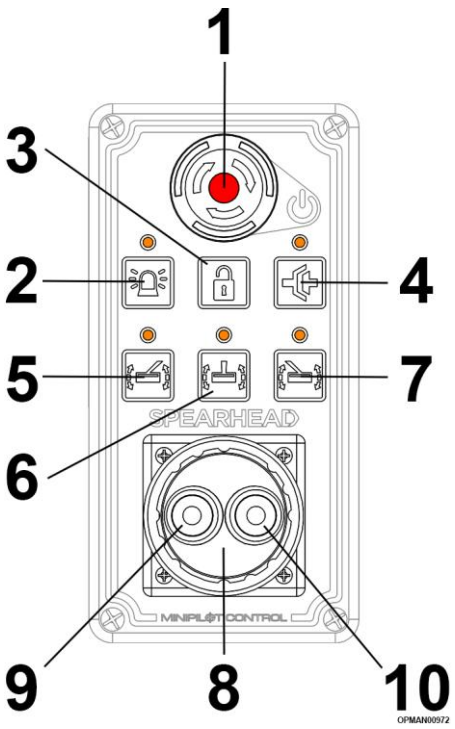


Figure 4.37

No.	Description.
1	Pull out main power on with combined push power off/emergency stop switch with twist to reset with red illuminating light.
2	Flashing beacon light with orange illuminating light.
3	Body locks.
4	No function.
5	Left-hand wing float.
6	Centre body float.
7	Right-hand wing float.
8	Joystick with twisting function.
9	Left-hand control button to aid secondary functions.
10	Right-hand control button to aid secondary functions.

Combined Functions	
8 + Forwards	Raise Centre Body
8 + Backwards	Lower Centre Body
9 + Left	Lower Left-hand wing
9 + Right	Raise Left-hand wing
10 + Left	Raise Right-hand wing
10 + Right	Lower Right-hand wing

4.10.4 Forward & Power Take-off Speed

Once the power take-off has been engaged following the guidance given in Section 4.10.1, start off driving at a slow speed and gradually increase while maintaining complete control of the tractor.

Moving slowly at first will prevent the tractor from rearing up and loss of steering control. The tractor should never be operated at speeds that cannot be safely handled or which will prevent the operator from stopping quickly during an emergency. If the power steering or engine ceases operating, stop the tractor immediately as the tractor will be difficult to control.

Spearhead Rollicut machines are designed to cut vegetation up to 20mm (13/16”) diameter. Sharp blades will produce a cleaner cut and require less power. Travel at a speed that allows the mower sufficient time to cut through the vegetation and maintain the PTO operating speed to prevent overloading the mower and tractor. Choose a driving pattern that gives maximum pass length and least turning.

Speed for mowing will dependent upon the height, type, and density of the material to be cut. Recommended speed for efficient mower performance is between 2 and 5 mph (3-8 kmh). Operate the machine at its full rated PTO speed (540 rpm), to maintain blade speed for a clean cut. See the front of the centre chassis of the machine for a guidance decal on the rated required operating speed for the machine.

Figure 4.38 – Tractor Driving Guidance

Refer to the tractor operator’s manual or instrument panel for the engine speed and gear to provide the required PTO and desired ground speed. Make sure that the machine is operating at its full rated speed before entering the vegetation to be cut. If it becomes necessary to temporarily regulate engine speed, increase or decrease the throttle gradually.

WARNING! Do not exceed the rated PTO speed for the machine. Excessive PTO speed can cause driveline or blade failures resulting in serious injury or death. See the front of the centre chassis of the machine for a guidance decal on the rated required operating speed for the machine.

Forward speed is achieved by transmission gear selection and not by the engine operating speed. The operator may be required to experiment with several gear range combinations to determine the best gear and range which provides the most ideal performance from the mower and most efficient tractor operation. As the severity of cutting conditions increase, the ground speed should be decreased by selecting a lower gear to maintain the proper operating PTO speed.

Under certain conditions, tractor tires may flatten some grasses down preventing them from being cut at the same height as the rest of the width of the cutting area. When this occurs, reduce the tractor ground speed while maintaining the operating speed of the PTO. A slower ground speed will permit grasses to partially rebound and be cut. Taking a partial cut may also help produce a cleaner cut.

WARNING! Never use any Rollicut machine in reverse direction. Seek alternate methods of cutting if a desired area cannot be accessed with the machine and tractor.

WARNING! Do not mow with two machines in the same area except with cabbed tractors with the windows closed.

4.10.5 Float

Rollicut hydraulic rams can be placed into “float” to allow the machine to follow ground contours more easily, giving a better overall finish.

Depending on if the Rollicut machine in question is of Standard or Proline specification will determine whether the operator is required to use the tractors controls or the Minipilot control box controls as supplied with the Minipilot system.

On Standard specification machines, the operator is required to ensure the spool on the tractor is placed into float in order for the machine bodies to rise and fall with ground contours automatically.

On Proline machines fitted with Spearhead’s Minipilot control system, with the system already switched on and working, with reference to Figure 4.39 press the left-hand body float button (A), centre body float button (B) and right-hand body float button (C) found on the control box to allow each of the respective hydraulic rams to float in order for the machine bodies to rise and fall with ground contours automatically. Indication of the particular hydraulic ram being in float will be shown by an illuminated orange light above each respective buttons on the control box. To stop the float feature; simply press the float button again on the control box which will cause the illuminated orange light to then go out and the float feature to disengage.

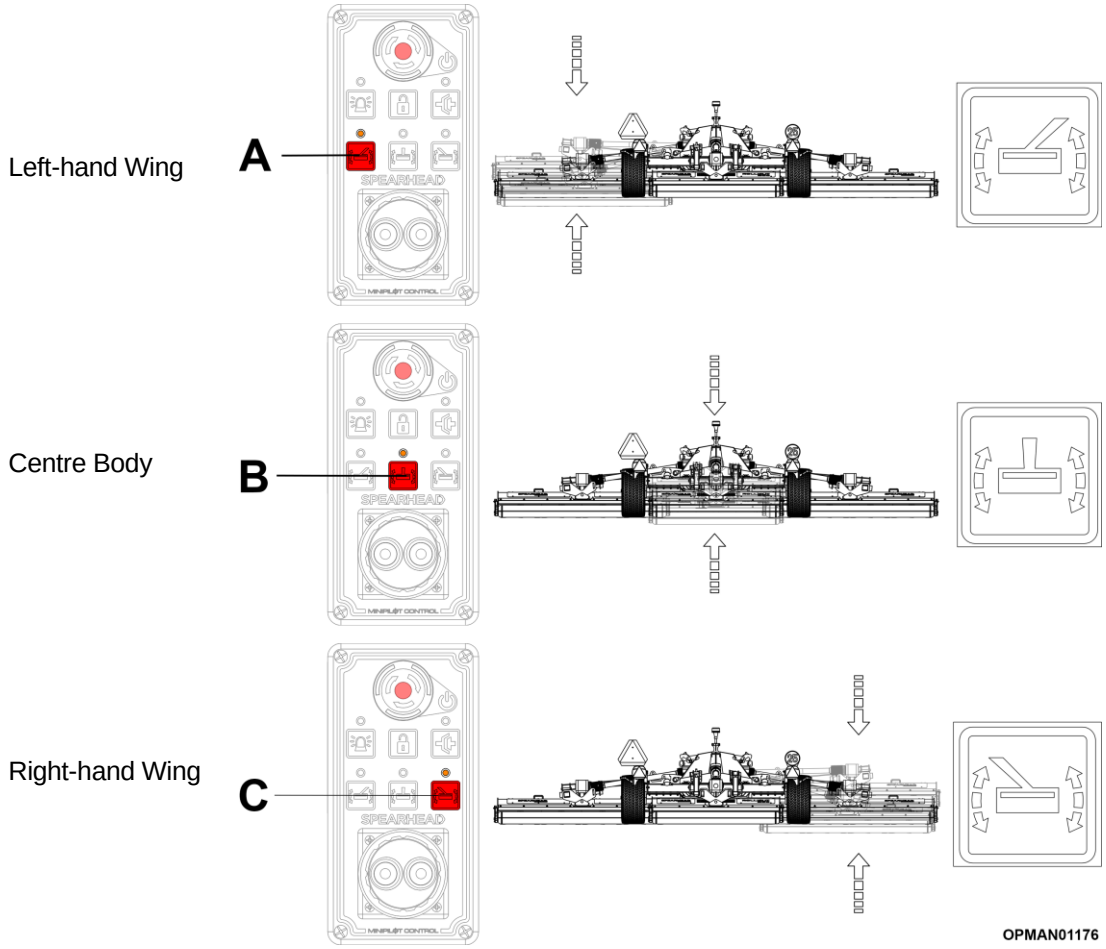
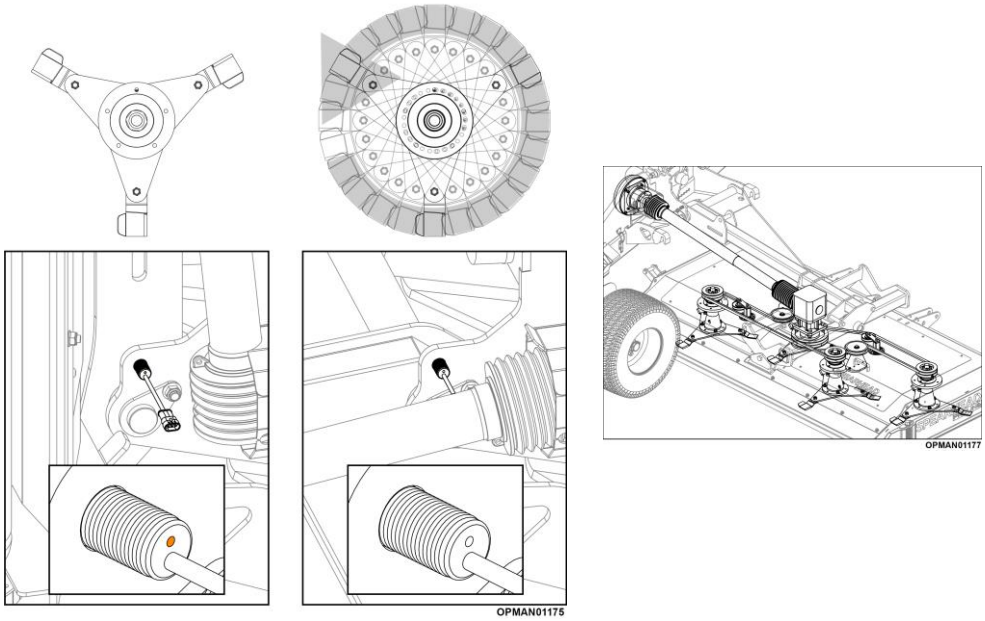


Figure 4.39

4.10.6 Proline Automatic Wing Disengage

Rollicut Proline machines feature automatic wing rotor disengage control via the Proline Minipilot control system.

The system works via an electric clutch found on the wings which automatically engages and disengages the rotor without an input from the operator when the wing reaches a specific angle when its raised. This increases user comfort by not requiring the operator to leave the cab of the tractor by means of a pre-set sensor found on each wing of the machine.



Stopped
(light illuminated)
Rotor Stationary

Working
(light not illuminated)
Rotor In Motion

Figure 4.40

4.10.7 Cornering

Drive the tractor with the 3-Point lift arms in the raised position and place the tractor PTO selector lever into neutral in order to protect the mower driveline and drawbar when turning sharply.

Perform turns with the tractor and mower at slow speeds to determine how the tractor handles with the attached mower. Determine the safe speed to maintain proper control of the tractor when making turns. When turning with an attached implement, the overall working length of the unit is increased. Allow additional clearance for the mower when turning.

To avoid overturns, drive the tractor with care and at safe speeds, especially when operating over rough ground, crossing ditches or slopes, and turning corners.

Use extreme caution when operating on steep slopes. Keep the tractor in a low gear when going downhill. **Do not** coast or free-wheel downhill.

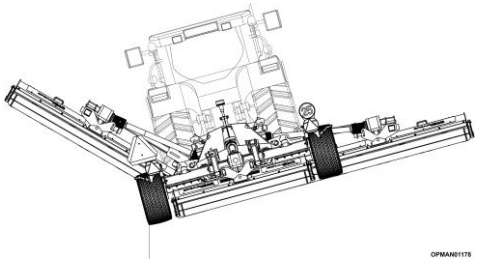


Figure 4.41 – Tractor Stability

When reaching the end of the cutting path; raise the machine before turning. **Never** raise the mower wings while the blades are turning.

When turning, reduce the tractor engine RPM to around 50% of the usual working RPM when cutting with the machine. Remaining at working RPM can cause premature wear on the input PTO driveshaft and place pressure on the tractor PTO driveshaft and could cause extensive mechanical damage to the machine and tractor.

4.10.8 Crossing Ditches & Steep Inclines

WARNING! Damage resulting from bottoming out the input PTO driveshaft inner profile and its outer housing may allow the input PTO driveshaft to come loose from the tractor which could cause bodily injury to the operator or bystanders and/or extensive damage to the tractor or machine.

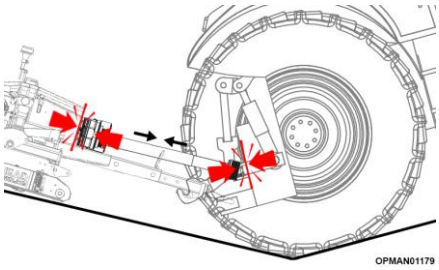


Figure 4.42 – Beware Of Bottoming Input Driveshaft

When crossing ditches with steep banks or going up sharp inclines, it is possible that the two halves of the input PTO driveshaft can become excessively overlapped so much that it will bottom out. This type of operation is deemed abusive and can cause serious damage to the tractor and machine drivelines by pushing the PTO into the tractor and through the support bearings or downward onto the PTO driveshaft, breaking it off, tractor or mower end.

When confronted with an incline or ditch, **do not approach from an angle which is perpendicular or straight on** as damage due to over collapsing the input PTO driveshaft may occur. When crossing such terrain, the implement should be fully lowered for a lower centre of gravity and added stability.

Inclines and ditches **should be approached along a line which is at an angle** as shown in Figure 4.43. This type of path will reduce the possibility of bottoming out the driveshaft and resulting in damage to machine and/or tractor. If the gradient is so steep that such an approach increases the possibility of a tractor roll-over, select an alternate crossing path.

When operating the tractor and machine across slopes and inclines, through ditches, and other uneven terrain conditions, it is important to maintain sufficient body to ground clearance. Blade contact with the ground may cause soil, rocks and other debris to be thrown out from under the mower resulting in possible injury and/or property damage. Ground contact also produces a severe shock load on the mower drive and to the mower blade resulting in possible damage and premature wear.

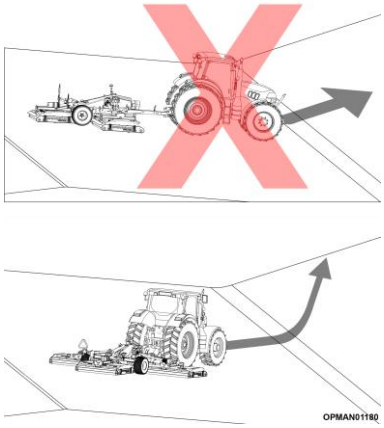


Figure 4.43 – Approach Ditches At An Angle

4.11 Road Transporting The Machine

IMPORTANT: Fully read and understand Section 4.9 with regards to safe driving practice.

Fold the machine, following the guidance given in Section 4.6.

IMPORTANT: Ensure that the body locks are engaged to ensure that the wings or rear body do not drop when being transported. On Rollicut Proline machines ensure the electric Minipilot controls are switched off.

DANGER! When the wings are folded for transport, the centre of gravity is raised and possibility of overturning is increased. Drive slowly and use extreme caution when turning on hillsides. Overturning the machine could result in the tractor and/or machine turning over resulting in serious injury or death. Never fold machine wings on un-level surfaces.

Make sure that the safety tow chain is secured between the tractor and the machine before entering a public road; see Figure 4.45.

On Proline machines fitted with Spearhead's Minipilot control system, switch off the power to the control box by pressing the main red centre button to ensure the machine does not unintentionally move through accidental movement of the joystick and buttons; see Figure 4.46.

When the machine is folded, ensure the 7-pin plug is fitted into the rear of the tractor to ensure that all lights and turning signals work correctly on the machine.

Figure 4.44 – Follow Safe Driving Practices

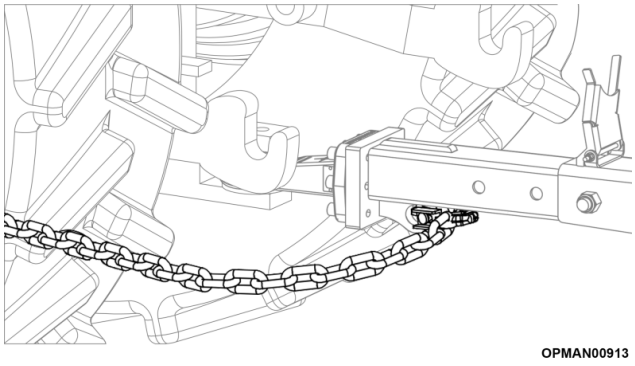


Figure 4.45
Rollicut Safety Tow Chain

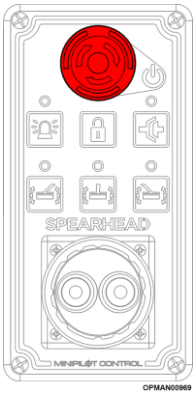


Figure 4.46
Rollicut Proline Minipilot Control Box Power Button

WARNING! Only tow the machine behind a properly sized and equipped tractor which exceeds the weight of the machine by at least 20%; see machine weights in Section 1.5.1.

Never tow the machine behind a truck or other type of vehicle. **Never** tow two machines behind each other in tandem. **Never** tow the machine at speeds over 20 mph (32 kmh).

DANGER! Never allow children or other persons to ride on the tractor or machine. Falling off can result in serious injury or death.

4.12 Transporting The Machine On A Trailer

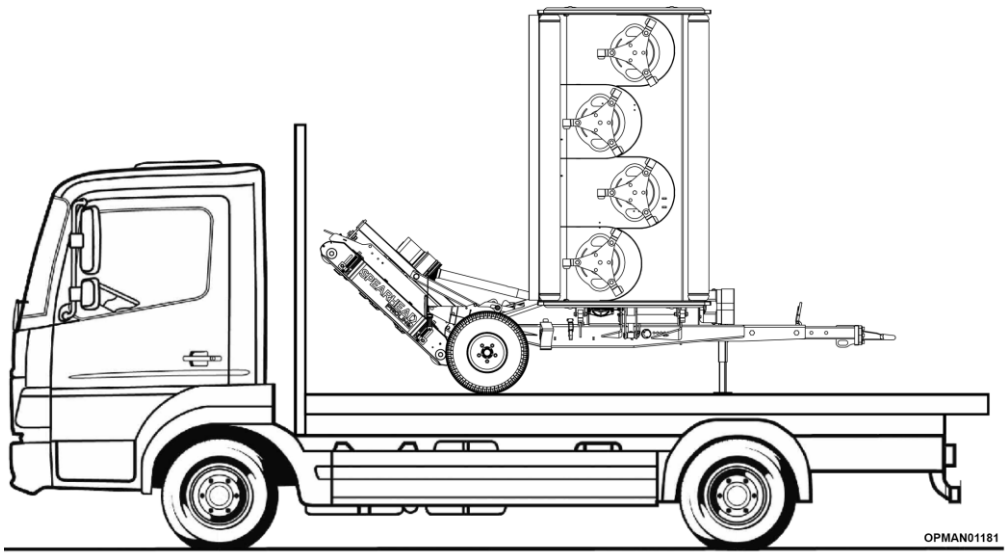


Figure 4.47 – Transporting Machine On A Trailer

Before transporting a machine (potentially plus tractor), measure the height and width dimensions and gross weight of the complete loaded unit. Ensure that the load will be in compliance with the legal limits set for the areas that will be travelled through during transit.

Use adequately sized and rated trailers and equipment to transport the tractor and machine. Consult an authorized dealer to determine the proper equipment required. Using adequately sized chains, heavy duty straps, cables and/or binders, securely tie down both the front and rear of the machine.

Arrange the straps so that when tightened, the straps are pulling downward and against themselves. Carefully tighten the securing strap or other fasteners to apply maximum tension and to ensure that no machine components get damaged. Use extreme care when attaching and removing the securing devices as the extreme tension involved when released has the potential to inflict serious injury.

While hauling the tractor and implement, make occasional stops to check that the machine has not moved or shifted and that the securing devices have maintained tension. If during transport a hard braking, sharp turning or swerving action was performed, stop at the next safe location to inspect the security of the load.

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5 Maintenance

WARNING! Before proceeding to carry out any maintenance on the Rollicut machine, ensure that you have **thoroughly** read and understand Section 2.4 “Safe Maintenance” with regards to the correct and safe maintenance procedures of looking after the machine. This section gives safe guidance to ensure the wellbeing on the maintenance personnel as well as the machine itself.

5.1 Periodic Maintenance

Perform service, repairs, lubrication and maintenance procedures outlined throughout Section 5 to ensure the longevity and reliability of the Rollicut machine.

In general:

5.1.1.1 Inspect for loose or missing fasteners, worn or broken parts, leaky or loose fittings, worn bushes and any other moving parts which are worn or missing.
5.1.1.2 Replace any worn or broken parts with genuine Spearhead parts under the guidance of the specific section stated in Section 5.
5.1.1.3 Lubricate the machines specified by the lubrication schedule as stated in Section 5.2.
5.1.1.4 **Never** lubricate, adjust or remove material while it is running or in motion.
5.1.1.5 Torque all bolts and nuts to the settings specified in Section 5.10.

5.2 Lubrication & Greasing

CAUTION! When working with/checking the hydraulic system on the machine always wear safety glasses and impenetrable gloves. This also applies when working with gearboxes and gearbox oil. Use paper or cardboard to search for leaks and not hands or any other body parts.

CAUTION! Keep hands and body away from pin holes and nozzles ejecting hydraulic fluid. Ingested or penetrated hydraulic fluid in the body can become gangrenous. Removal must be carried out professionally by a suitable Doctor.

The mechanical components of the machine in use must be lubricated to avoid wear and heat build-up. Lubrication may be through the use of grease or oil. Oil allows higher relative speeds of items such as gearboxes, whereas grease is generally used to lubricate items such as bearings or bushes. In both cases it is important to ensure lubrication is given to these various items to ensure their longevity and reliability in use.

5.2.1 Gearboxes

Equipment Required
- SAE EP80-90W or GL-4/GL-5 oil
- Spanner sizes TBC

The gearboxes have been filled to the correct quantities prior to shipment. However, the oil level should be **checked using the level plug before operating the machine for the first time and regularly thereafter**. It is important to fill and maintain the gearboxes with the correct quantities of oil. Overfilling the gearbox with oil does not improve lubrication and may cause overheating. Using an under filled gearbox can cause overheating and premature wear to components such as seals.

The quantity of oil to use in each of the respective gearboxes is worked out by filling the gearbox up to the level plug on the gearbox. Guidance to the quantity of oil required for the particular gearbox is given approximately in Table 5.1.

Spearhead and the gearbox manufacturer, Bondioli & Pavesi, recommend **SAE EP80-90W or GL-4/GL-5 oil** to fill its gearboxes. **Any different or higher SAE grade of oil is not recommended**.

	Rollicut 500/600
Centre Splitter Gearbox (A)	TBC
Rotor Gearbox (B)	1.3 litres (2.28 pints)

Table 5.1 – Rollicut Gearbox Oil Capacities

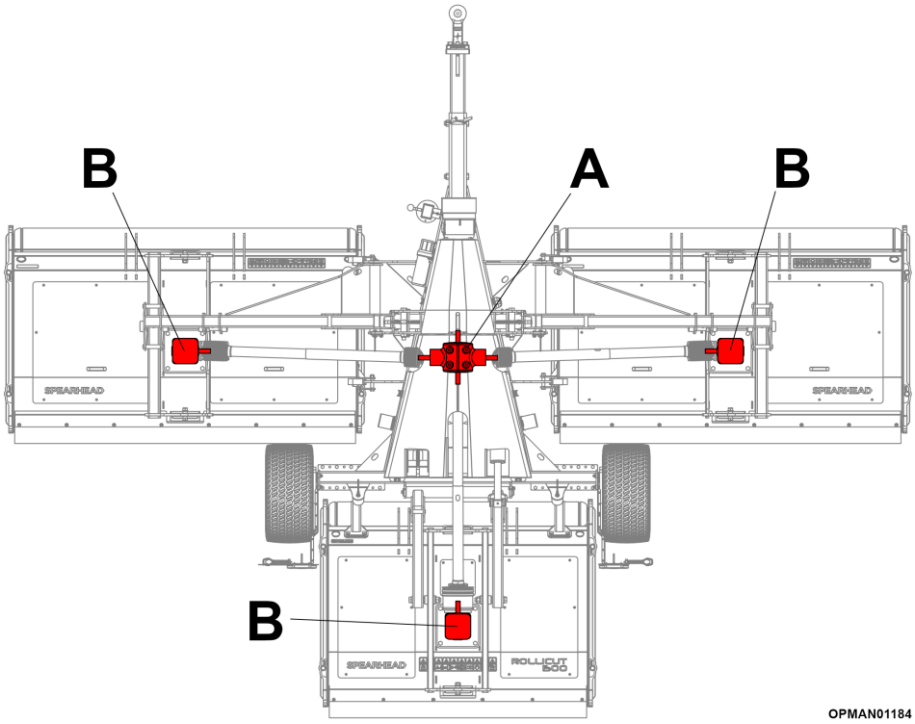


Figure 5.1 - Rollicut Gearbox Oil Capacity Locations

Changing the oil regularly prevents problems associated with deterioration, moisture build up in the oil and the potential presence of metallic particles which form early in the rotary mowers life. Oil changes are recommended on Rollicut machines **after the first 50 hours**, and **then every 500 hours thereafter**.

To drain the oil, each of the gearboxes is fitted with a **drain plug**. The location of the drain plug is given in Figures 5.2 (D) and 5.3 (D). If there are facilities to vacuum draw the oil out of the respective gearbox, the oil can be changed through the fill hole/dipstick location instead; see Figures 5.2 (F) and 5.3 (F).

The gearbox should not require additional lubricant unless the box is cracked, or a seal is leaking. It is recommended that the oil level is **checked every day before operation.** Additional or filling with new oil should be added through the **fill hole with the level plug removed**; see Figures 5.2 (L) and 5.3 (L). Keep filling until oil escapes out of the level hole, **before proceeding to use the machine**. Replace and tighten all plugs before using the machine.

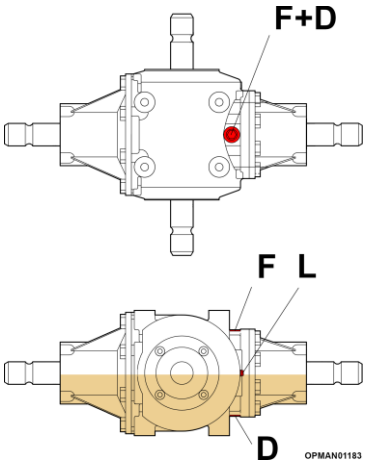


Figure 5.2 – Rollicut Centre Splitter Gearbox

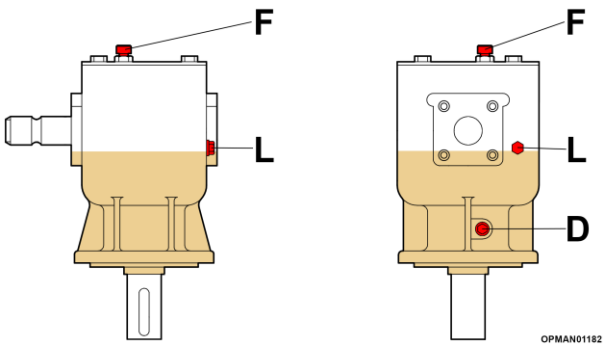


Figure 5.3 – Rollicut Rotor Gearbox

5.2.2 PTO Driveshafts

Equipment Required

- Manually operated grease gun supplying NLGI #2 Molybdenum Disulphide Grease to M6/M8 grease nipples

IMPORTANT: Proper and correct frequency of lubrication of all the rotating and sliding parts of the various PTO driveshafts fitted to the machine is essential for the correct function, longevity and reliability of the driveshaft. Insufficient lubrication or contamination is one of the most frequent causes of PTO driveshaft failure.

The joints, telescopic member and shields must be lubricated at intervals related to the environment and working conditions for the machine.

Bondioli & Pavesi and Comer recommend **NLGI #2 Molybdenum Disulphide Grease** on all crosses, telescoping members and shields. This grease contains additives which offer corrosion resistance, strength and adhesion at extreme pressures (EP) along with other benefitting properties.

When lubricating cross kits, pump grease until the grease purges from all four bearing caps. **Pump the grease gradually**. Avoid high pressures, especially those possible from pneumatic equipment.

The U-joint and CV joint assemblies on each of the different shafts are accessible by rotating the plastic safety shield until the cut-out hole allows the grease point to be exposed. When maintaining the shafts inspect the U-joint for movement by holding the driveshaft on either side of the U-joint and if there is noticeable play in the driveshaft, replace the U-joint before it causes severe damage to the driveshaft.

Figure 5.4 shows each of the respective shafts for the various Rollicut machines.

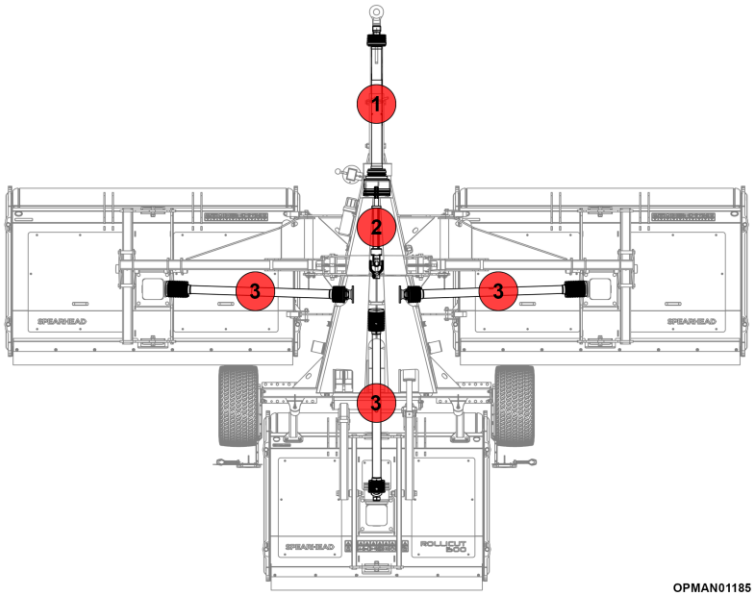


Figure 5.4 – Rollicut PTO Driveshaft Type Locations

Item No.	Driveshaft Type.
1	Input Driveshaft
2	Transfer Driveshaft
3	Wing/Rear Driveshaft

Table 5.2 – Rollicut PTO Driveshaft Type Locations

NOTE: All values throughout this section are given on the assumption that a **manually operated grease gun** is used to carry out the greasing procedures giving a **predicted quantity of 0.8-1.0g of grease per pump**.

For reference to the required grease maintenance points on each of the respective shafts see below.

WARNING! It is mandatory to switch the combustion engine off and disengage PTO and ensure that the tractor and machine is stopped, the ignition key is removed from the dashboard and the parking brake is engaged before leaving the driver's seat and proceeding to carry out maintenance on any of the PTO driveshafts.

Input Driveshaft (1)

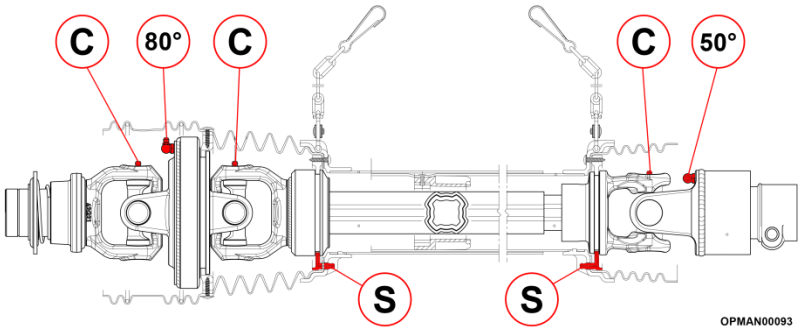


Figure 5.5 – Rollicut Input Driveshaft Grease Locations

		Quantity of Pumps				
Model	**PTO Input Speed (Driveshaft Size)**	**(C) - Cross**	**(S) – Shield Bearings**	**(80°) - 80° CV Joint**	**(50°) – (50°) CV Joint**	**Frequency**
Rollicut	540 (S6)	13	6	60	6	Every 8 hours

Table 5.3 – Rollicut Input Driveshaft Grease Quantities

Transfer Driveshaft (2)

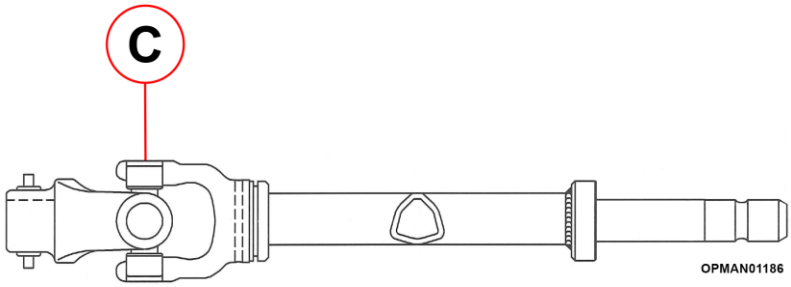


Figure 5.6 – Rollicut Transfer Driveshaft Grease Locations

		Quantity of Pumps	
Model	**PTO Input Speed (Driveshaft Size)**	**(C) - Cross**	**Frequency**
Rollicut	540 (S6)	13	Every 8 hours

Table 5.4 – Rollicut Input Driveshaft Grease Quantities

Wing/Rear Driveshaft (3)

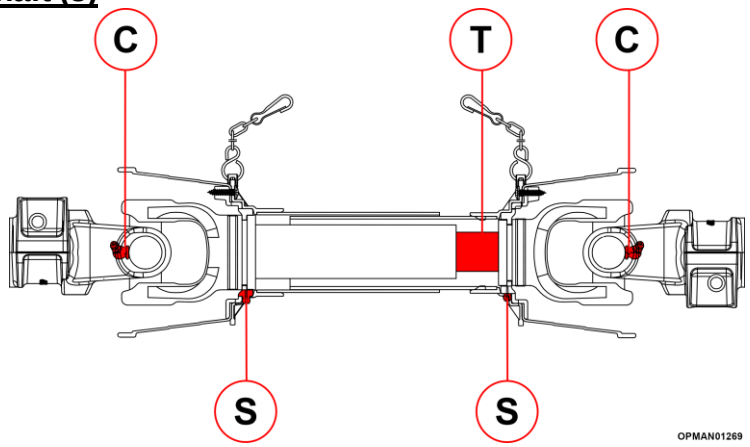


Figure 5.7 – Rollicut Wing Driveshaft Grease Locations

		Quantity of Pumps			
Model	**PTO Input Speed (Driveshaft Size)**	**(C) - Cross**	**(S) – Shield Bearings**	**(T) – Telescopic Members**	**Frequency**
Rollicut	540 (G4)	10	6	20	Every 8 hours

Table 5.5 – Rollicut Wing Driveshaft Grease Locations

5.2.3 General Machine Greasing Point Locations

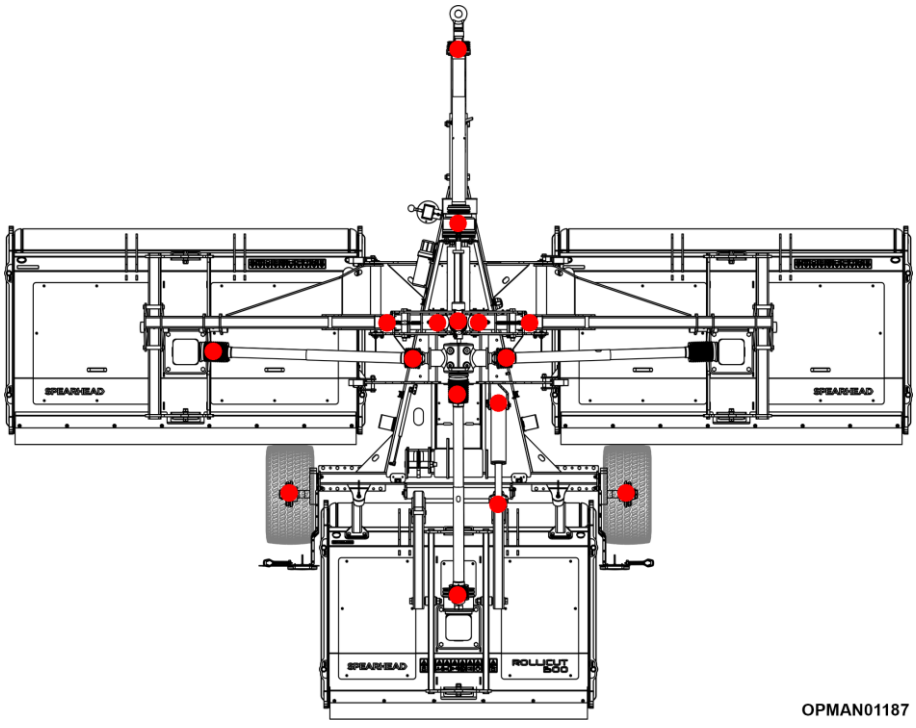


Figure 5.8 – Rollicut Grease Point Locations
(500 model illustrated)

5.2.4 Greasing Schedule

Equipment Required

- Manually operated grease gun supplying NLGI #2 Molybdenum Disulphide Grease to M6/M8 grease nipples

With reference to the position of grease points in Figure 5.5, Figure 5.6, Figure 5.7 and Figure 5.8, the following greasing schedule should be adhered to, to ensure reliability and longevity in components.

IMPORTANT: With extended and harder working conditions, these greasing times may need to be shortened to compensate for the machine more intensive work requirements.

NOTE: All values throughout this section are given on the assumption that a **manually operated grease gun** is used to carry out the greasing procedures giving a **predicted quantity of 0.8-1.0g of grease per pump**.

WARNING! It is mandatory to switch the combustion engine off and disengage PTO and ensure that the tractor and machine is stopped, the ignition key is removed from the dashboard and the parking brake is engaged before leaving the driver's seat and proceeding to carry out maintenance on any of the PTO driveshafts.

Grease Point	Qty (pumps)	Frequency
Input PTO Driveshaft	See Section 5.2.2 - Input Driveshaft (1)	
Transfer Driveshaft	See Section 5.2.2 - Transfer Driveshaft (2)	
Wing/Rear Driveshaft	See Section 5.2.2 – Wing/Rear Driveshaft (3)	
Hydraulic Rams	2	Every 8 hours
Wheel Hubs (trailed version only)	2	Every 8 hours

Table 5.6
Greasing Schedule For Various Components

5.3 PTO Driveshafts

Spearhead Rollicut machines feature Bondioli & Pavesi gearboxes and PTO driveshafts. PTO driveshafts require routine maintenance and sometimes more demanding maintenance requirements to ensure their longevity and reliability of service.

5.3.1 Size Adjustment & Fitting To The Tractor

The input PTO driveshaft supplied with the Rollicut machine will be of standard supply as it came from the original manufacturer.

The input PTO driveshaft will be required to be modified/adjusted in order to fit the desired operating tractor. For guidance in how to carry this out; see Section 3.3.4.

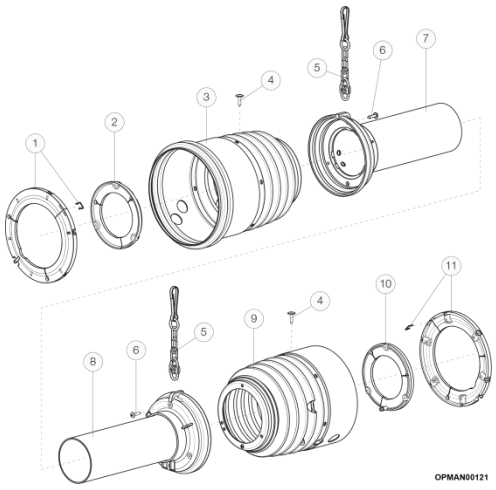
For fitting the input PTO driveshaft between the machine and the tractor; see Section 4.5.

5.3.2 Greasing

For the greasing requirements on all Rollicut input, transfer shafts and cross-shafts refer to Section 5.2.2.

5.3.3 Input PTO Driveshaft - Bearing Ring Replacement

Plastic wear bearing rings are found inside the PTO assembly to give a replaceable wearing surface between the metal PTO driveshaft and the outer plastic safety shield/cone. Due to the parts design aim, the wear rings inside the driveshaft assembly **will be required to be replaced over the working life of the PTO driveshaft** to ensure that the outer plastic safety shield/cone doesn't wear through and expose the rotating PTO driveshaft found inside.



Item.	Description.
1	Support bearing for 80° CV joints with retaining spring
2	Outer pipe support bearing
3	Shield for 80° joint
4	Flanged screw
5	Chain
6	Self-tapping screw
7	Taper + outer pipe
8	Taper + inner pipe
9	Shield for 50° joint
10	Inner pipe support bearing
11	Support bearing for 50° CV joints with retaining spring

Figure 5.9/Table 5.7 - Input Driveshaft Safety & Wearing Components

Following this section will allow the successful removal and replacement of the bearing spacer wear rings.

Disassembly

Equipment Required
- Phillips head screwdriver
- Flat head screwdriver

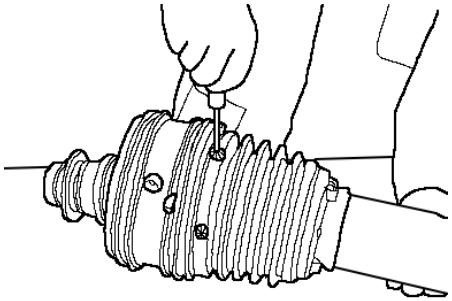


Figure 5.10

5.3.3.1 Remove the screws arranged radially around the circumference of the CV cone

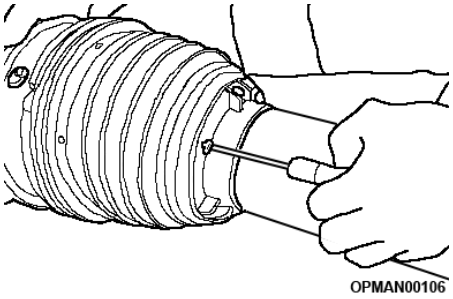


Figure 5.11

5.3.3.2 Remove the screws from the base of the cone

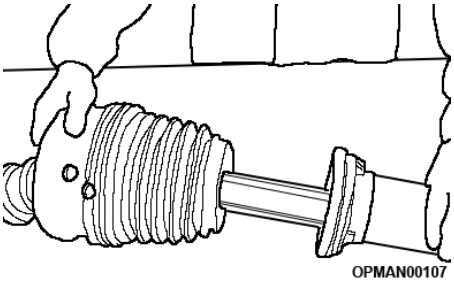


Figure 5.12

5.3.3.3 Remove the base cone and the shield tube

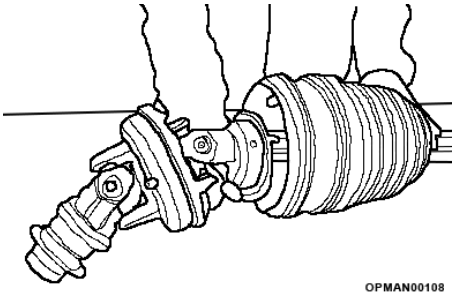


Figure 5.13

5.3.3.4 Remove the CV cone

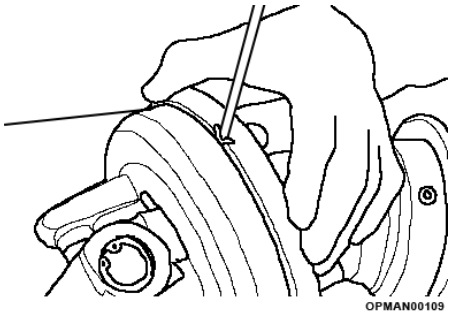


Figure 5.14

5.3.3.5 Disengage the retaining spring, leaving it inserted in one of the two holes of the bearing ring to avoid losing it

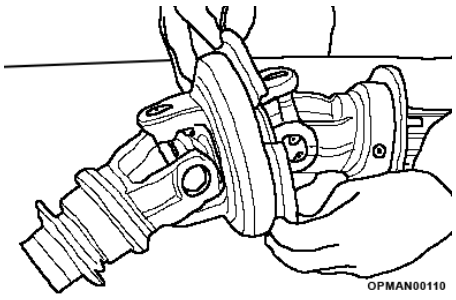


Figure 5.15

5.3.3.6 Spread the bearing rings and remove from their groove

Reassembly

	Equipment Required • Phillips head screwdriver • Flat head screwdriver • NLGI #2 Molybdenum Disulphide grease with paint brush/distributor

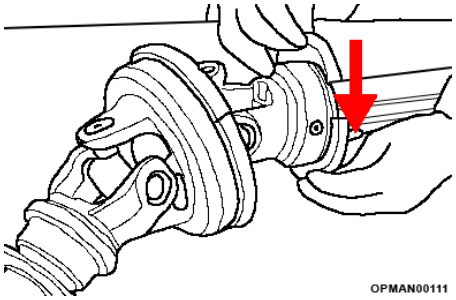


Figure 5.16

5.3.3.7 Grease the bearing grooves. Fit the bearing ring into the yoke groove with the grease fitting facing the drive tube

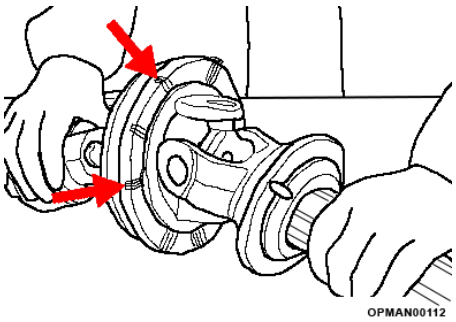


Figure 5.17

5.3.3.8 Install the bearing ring on the CV body with the reference pins facing the inner yoke

50° CV joints feature a bearing ring equipped with a grease fitting

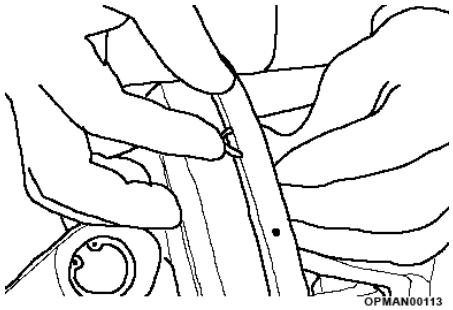


Figure 5.18

5.3.3.9 Connect the retaining springs to the two edges of the bearing ring

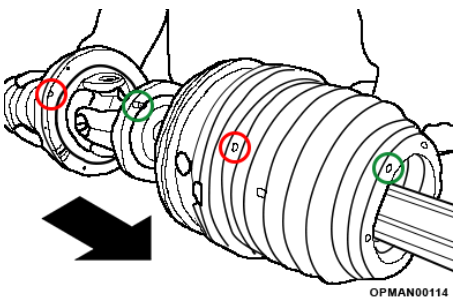


Figure 5.19

5.3.3.10 Slide the CV cone onto the CV body and align the radial holes with the bearing ring reference pins. Align the hole at the base of the CV cone with the grease fitting on the smaller bearing ring

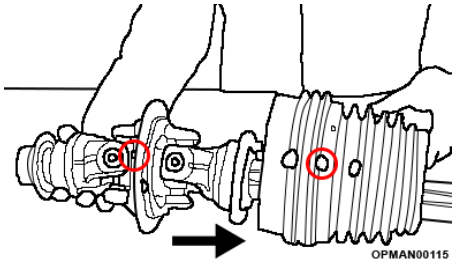


Figure 5.20

5.3.3.11 In the case of 50° CV joints only: insert the shield strip, aligning the reference pins and also the additional hole of the shield strip with the grease fitting of the large ring

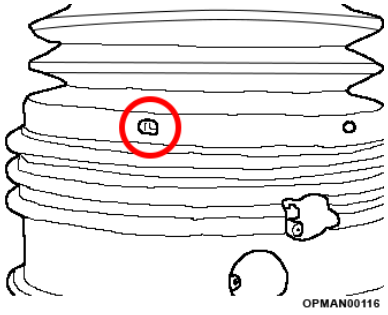


Figure 5.21

5.3.3.12 Ensure that the radial holes of the CV cone are aligned with the holes on the reference pins of the bearing ring

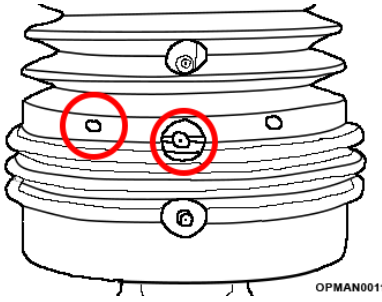


Figure 5.22

5.3.3.13 For 50° CV joints only, ensure that the radial holes of the shield strip are aligned with the holes on the reference pins of the bearing ring and that the access hole on the CV cone is aligned with the grease fitting of the bearing ring

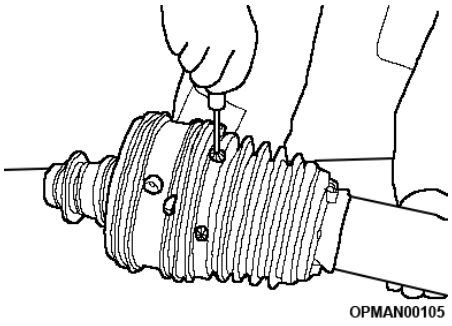


Figure 5.23

5.3.3.14 Tighten the 6 flange head screws of the protection strip. The use of an electric screwdriver is not recommended

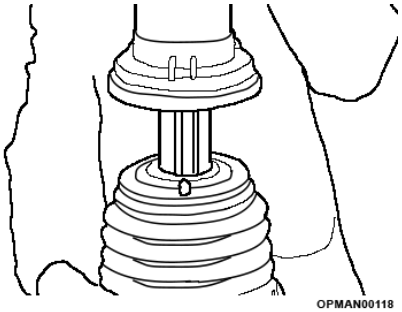
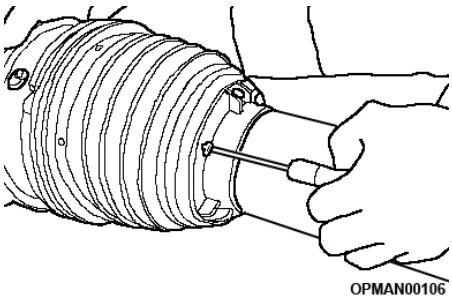


Figure 5.24

5.3.3.15 Fit the base cone and tube, inserting the grease fitting in the hole on the base cone

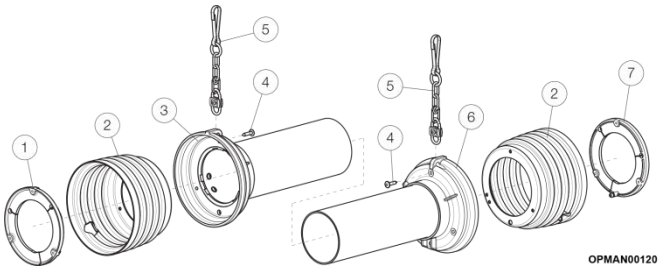


5.3.3.16 Tighten the 3 screws. The use of an electric screwdriver is not recommended

Figure 5.25

5.3.4 Wing & Rear Body PTO Driveshaft - Bearing Ring Replacement

Plastic wear bearing rings are found inside the PTO assembly to give a replaceable wearing surface between the metal PTO driveshaft and the outer plastic safety shield/cone. Due to the parts design aim, the wear rings inside the PTO assembly **will be required to be replaced over the working life of the PTO driveshaft** to ensure that the outer plastic safety shield/cone doesn't wear through and expose the rotating PTO driveshaft found inside.



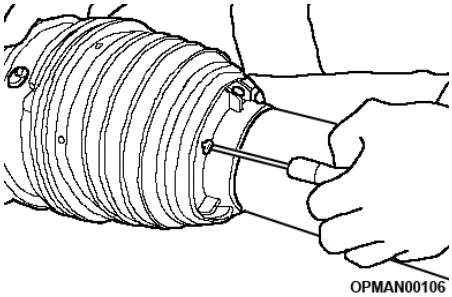
Item.	Description.
1	Outer pipe support bearing
2	End shield
3	Taper + outer pipe
4	Self-tapping screw
5	Chain
6	Taper + inner pipe
7	Inner pipe support bearing

Figure 5.26/Table 5.8 – Wing & Rear Body Driveshaft Safety & Wearing Components

Following this section will allow the successful removal and replacement of the bearing spacer wear rings.

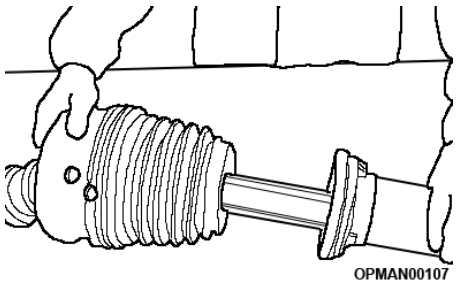
Disassembly

Equipment Required
- Phillips head screwdriver
- Flat head screwdriver



5.3.4.1 Remove the Philips head screws

Figure 5.27



5.3.4.2 Remove the base cone and shield tube

Figure 5.28

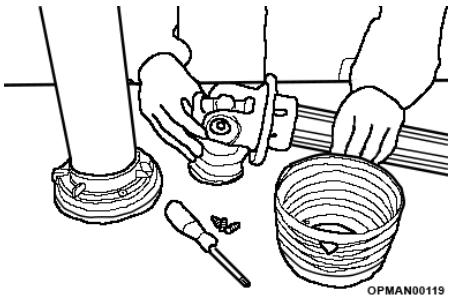


Figure 5.29

5.3.4.3 Remove the outer cone and the bearing ring

Reassembly

	Equipment Required • Phillips head screwdriver • Flat head screwdriver • NLGI #2 Molybdenum Disulphide grease with paint brush/distributor

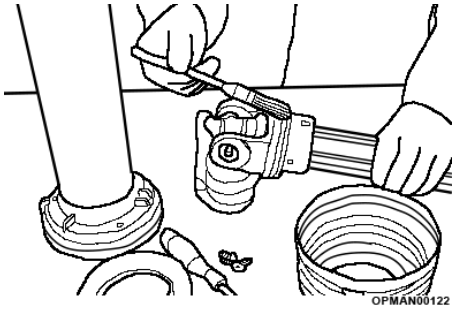


Figure 5.30

5.3.4.4 Grease the bearing groove on inner yokes

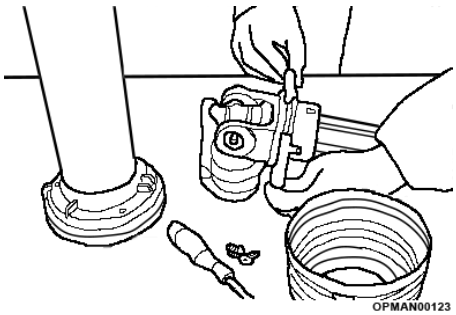


Figure 5.31

5.3.4.5 Fit the bearing ring into the yoke groove with the grease fitting facing the drive tube

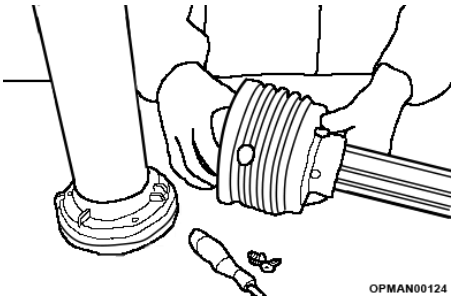


Figure 5.32

5.3.4.6 Install the outer cone, inserting the grease fitting through the proper hole

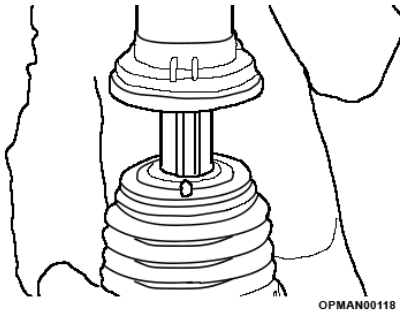
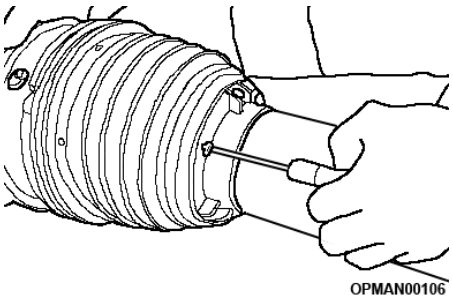


Figure 5.33

5.3.4.7 Install the base cone and shield tube



5.3.4.8 Tighten the Philips head screws. The use of an electric screwdriver is not recommended

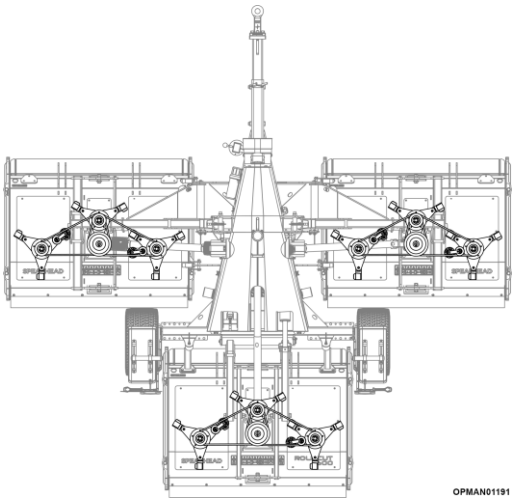
Figure 5.34

5.4 Belts

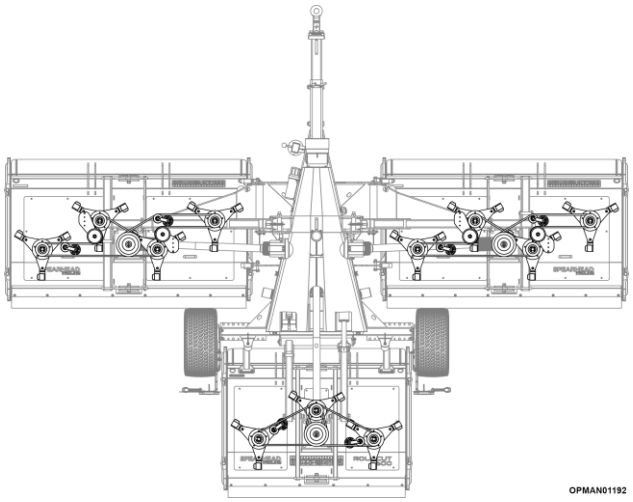
Rollicut machines transfer power from the input PTO driveshaft to each of the three rotor shafts through a combination of a transfer driveshaft, splitter gearbox and driveshafts to each of the body gearboxes and then belts running on pulleys to each of the respective rotors.

It is important for both optimal machine performance and long-lasting belt life that belts are correctly tensioned at all times.

Rollicut machines feature either three or four cutting rotors per body which are powered by two separate drive belt circuits. Each of these circuits should be treated individually and tensioned separately. However, whether the machine has three or four rotors they can be tensioned using an exactly the same technique.



Rollicut 500
Three rotor wing bodies
Three rotor rear body



Rollicut 600
Four rotor wing bodies
Three rotor rear body

Figure 5.35

5.4.1 Belt Replacement

Equipment Required
- 8mm allen key
- 13mm hex spanner/socket

Two cogged belts are found on each of the machine bodies which need to be tensioned correctly at first fitment to transfer drive between the body gearbox and each of the rotors. The tensioner device requires adjusting to an angle of 15 degrees in order to set the belts to the correct tension. This process requires each of the body cover guards to be removed.

This tensioning device allows the best possible transfer of power by automatically re-tensioning the belt and compensating for belt elongation. It is quiet and offers smooth running and features built-in vibration damping.

Check the condition of the belts, if there is any sign of melting, wear or cracking; replace with new. Do not attempt to use the machine with damaged belts.

The following section is illustrated using a three-rotor belt drive system. A four-rotor belt drive can use the exact the same technique to replace and tension drivebelts.

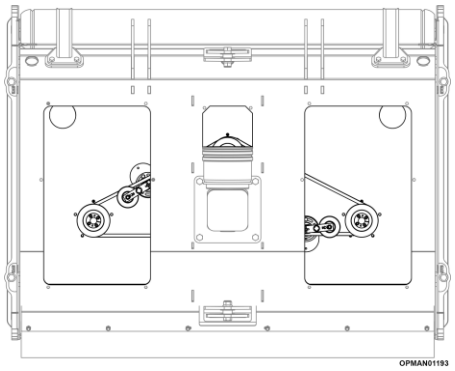


Figure 5.36

5.4.1.1 Remove each of the inspection covers from the specific body of the machine.

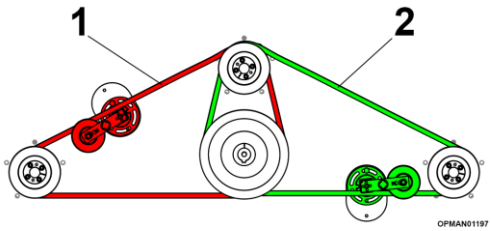


Figure 5.37

5.4.1.2 Each machine body features two belt circuits; see Figure 5.37.

To effectively tension the complete body, treat the belt as two separate circuits and work on them independently.

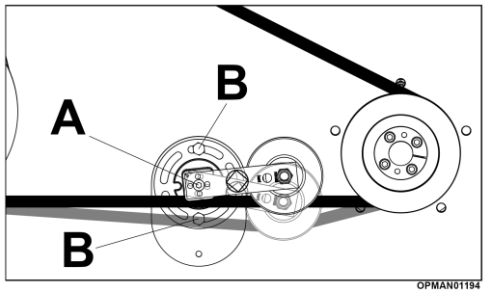


Figure 5.38

5.4.1.3 Loosen the centre bolt on the belt tensioner on the belt circuit in which the belt needs to be replaced, see Figure 5.38 (A) and the two bolts securing the tension keeper, see Figure 5.38 (B) to release tension from the belt circuit.

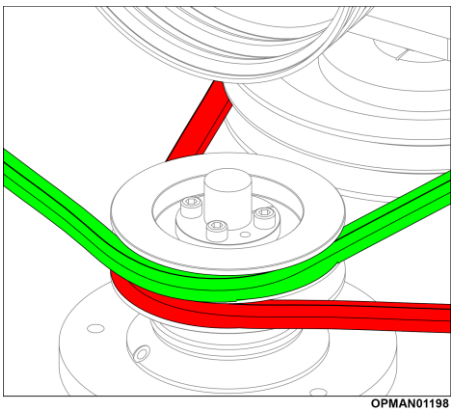


Figure 5.39

5.4.1.4 There is no requirement to replace both belts if the upper belt pulley is the one defective and the lower belt is serviceable.

If the belt requiring to be replaced is the lower belt on the pulley, see Figure 5.39, then the other belt tension will be required to be released and the belt removed also.

5.4.1.5 Slip off the belt(s) from the pulley(s) and replace with new belt(s) where required.

5.4.1.6 Proceed to Section 5.4.2 to tension the belt(s) correctly.

5.4.2 Belt Tensioning

The process of setting tension on the system should be carried out in two halves. Checking tension on one belt and then repeating the process again for the other.

The following settings should be checked and applied to these belts, using a tool or equivalent technique as in Section 5.4.1.

To check and adjust the belt tension on a body:

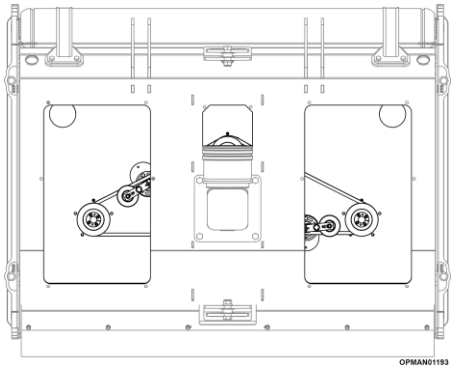


Figure 5.40

5.4.2.1 Remove each of the inspection covers from the specific body of the machine.

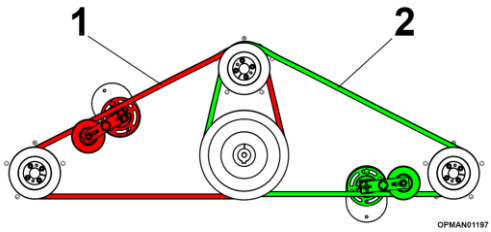


Figure 5.41

5.4.2.2 Each machine body features two belt circuits; see Figure 5.41.

To effectively tension the complete body, treat the belt as two separate circuits and work on them independently.

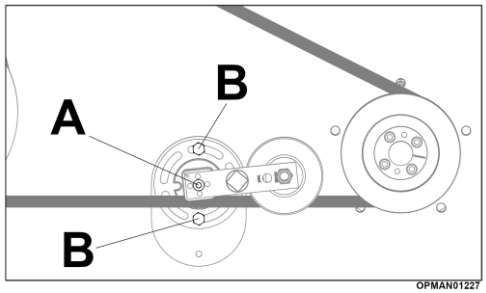


Figure 5.42

5.4.2.3 Working on the one circuit at a time, loosen the centre bolt on the belt tensioner, see Figure 5.42 (A) and the two bolts securing the tension keeper, see Figure 5.42 (B).

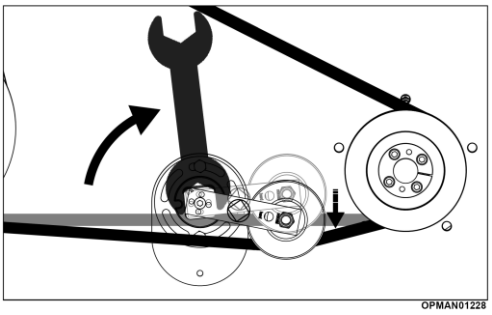


Figure 5.43

5.4.2.4 Using a 36mm spanner against the flat square sides of the belt tensioner, rotate the belt tensioner against the belt to deflect and add tension to the belt.

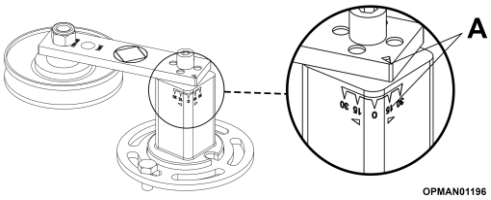


Figure 5.44

5.4.2.5 Inspect the marks on the side of the belt tensioner.

5.4.2.6 Turn the belt tensioner against the belt until a reading of 15 degrees is displayed; see Figure 5.44 (A).

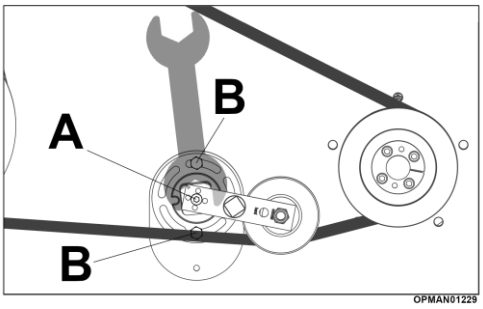


Figure 5.45

5.4.2.7 Continuing to turn against the belt tensioner to maintain 15 degrees, re-tighten the centre bolt on the belt tensioner, see Figure 5.45 (A) and the two bolts securing the tension keeper; see Figure 5.45 (B).

5.4.2.8 Repeat the belt tensioning process on the other belt circuit.

5.4.2.9 Refit the inspection covers to the machine.

5.4.2.10 Inspect and repeat the process on the other machine bodies, if required.

5.5 Blades & Rotor

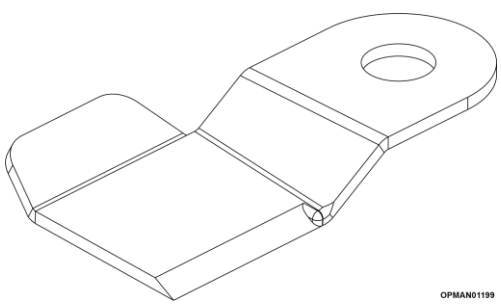
Rollicut machines features three or four high lift free swinging cutting blade rotors per machine body, with a smooth intake and contained cutting area to allow for a smooth input of material into the machine and a strong mulched finish of the ejected material.

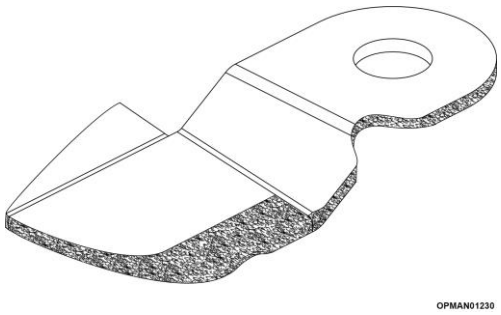
5.5.1 Blade Inspection

Equipment Required
- Torque wrench (see required settings in Torque Settings section)
- 19mm hex spanner/socket

Inspect the machine blades before each use to determine that they are properly installed, secure and in good condition. Replace any blade sets that are bent, excessively nicked, worn or have any other damage. If any blade is damaged it is important to replace **all three** blades on that rotor to retain the balance of the particular rotor. Failure to replace such abnormally damaged blades may lead to catastrophic failure of the blade and ejection of the broken part with tremendous force which may cause bodily injury or death.

See the below table for some visual indications of worn blades.





New **Worn**

Figure 5.46 – Replace All Blades On A Rotor

DANGER! When carrying out maintenance work on or near the blades be careful of free-swinging blades over-centering and falling. Ensure Personal Protection Equipment (PPE) is worn.

WARNING! Avoid personal injury. **Never work** under the machine without fixed support stands to ensure that the body does not fall.

When servicing or inspecting blades of any type when the machine wings are folded, **it is important to ensure that the blade carrier and blade assembly is moved into its "dropped" position** to ensure nothing suddenly falls due to the force of gravity. When the Rollicut machine is folded this should automatically happen, but any it hasn't, hold the blades towards the outside and gradually rotate and pre-place them into their dropped position; as shown in Figure 5.47. This will ensure that personnel do not get hit by falling blades or pinched/trapped between the blade and the carrier.

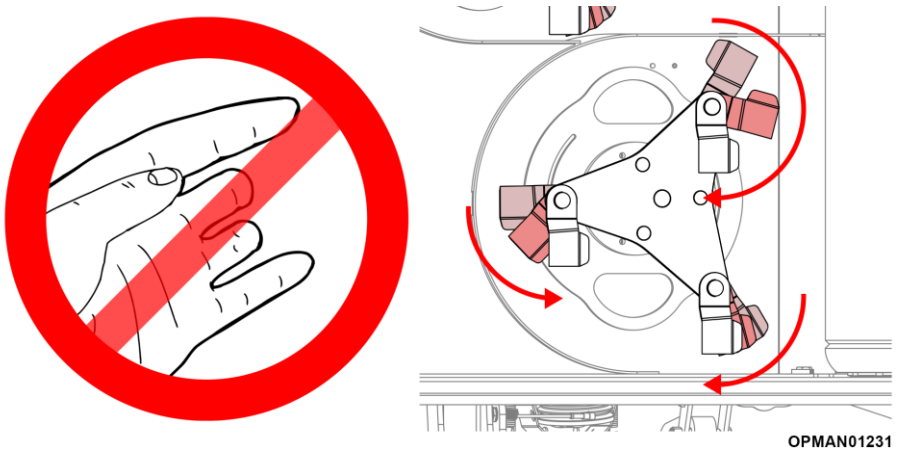


Figure 5.47 – Beware Of Falling Blades

Carefully wiggle the blade carrier assemblies and check each of the rotors for looseness of fasteners. Retighten any loose parts to the correct torque figure. See Section 5.10 for torque settings. **Blade carrier fasteners should be checked after the first hour and then every 8 hours thereafter**.

	Equipment Required • Torque wrench (see required settings in Torque Settings section) • 19mm hex spanner/socket (for blade) • 2x 17mm hex spanners/sockets (for blade carrier)

IMPORTANT: Operating with loose blade components will damage the blade carrier and blades. Whenever the blades have been removed or replaced, the tightness of components should be checked after the first hour and then every 8 hours thereafter.

When proceeding to inspect the blades, if any 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 and dangerous. **Do not take risks with cutting blades – if in doubt replace**.

WARNING! Inspect the area before mowing. Foreign objects should be removed from the site prior to beginning work to prevent machine damage and/or operator, bystander or the environment. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator.

WARNING! Pay special attention when working with the machine and do not allow the machine to touch fixed objects such as road drains, walls, shafts, curbs, guard rails, tracks etc. as these could break the blades or blade carrier which could cause debris to be thrown at very high speed from the machine. As a precaution raise the cutting height of the machine to 150mm (6 inches) to ensure they do not collide when the machine is in work.

As a preventative measure and to **reduce blade wear and potential detrimental damage, inspect the destined working area of the machine to determine where foreign object hazards are**. Remove these hazards and if they aren't easily removable, place visual markers where items are to ensure that the tractor and machine does not come into contact with these hazards.

IMPORTANT: Always use genuine Spearhead parts when carrying out repairs and maintenance with thoughts to longevity and reliability of the machine and personnel safety. Spearhead blades are made of special heat-treated alloy steel. Substitute blades may not meet specifications and may fail in a hazardous manner that could cause injury.

Spearhead declines all responsibility for damage and/or injury caused by use of **anything** other than the blade carriers/blades which are supplied with the machine as new or sold as a spare part replacement sold by a genuine Spearhead parts dealer on Rollicut rotary machines.

See Section 7 for guidance on spare parts. The machine serial number will be required to be quoted. Serial plate location guidance can be found in Figure 1.4.

5.5.2 Blade Sharpening & Straightening

Spearhead **does not** recommend sharpening worn blades. **It is important that all the blades on a rotor, are of the same weight and length and are all present** to ensure the rotor remains balanced. By sharpening blades there is a chance of them overheating, which will affect the hardness of the blades; compromising safety to the operator, machine and bystanders.

DANGER! **Never** attempt to straighten or weld on blades. This is likely to cause potential cracks and other damage to the blade. Subsequent failure and possible serious injury will occur from thrown blades.

NOTE: Spearhead declines all responsibility for damage and/or injury caused by sharpening/straightening and/or modifying any blades on Rollicut machines. **If you are unsure of the condition** of your blades, and feel you need additional assistance, please **contact your local Spearhead dealer, qualified service centre or Spearhead**.

5.5.3 Blade Removal & Replacement

Equipment Required

- Torque wrench (see required settings in Torque Settings section)
- 19mm hex spanner/socket (for blade)
- 2x 17mm hex spanners/sockets (for blade carrier)

WARNING! It is mandatory to switch the combustion engine off and disengage PTO and ensure that the tractor and machine is stopped, the ignition key is removed from the dashboard and the parking brake is engaged before leaving the driver's seat and proceeding to replace the blades of the machine.

Before proceeding to remove and replace the blades of the machine, correctly assess the condition of the blades by reading the guidance given in Section 5.5.1.

When replacing rotor assemblies with new blades, due to their free-swinging ability, **it is important to fit new blade fasteners at the same time**. This can ensure the rotor is remained balanced. **Blade bolts and nuts should be replaced whenever blades** are removed; whether the blades are requiring replacement or not.

Rollicut blades are handed and feature a cutting edge on one side and a fin on the other side. It is important to ensure that the blade fitted to the rotor is **correctly orientated**.

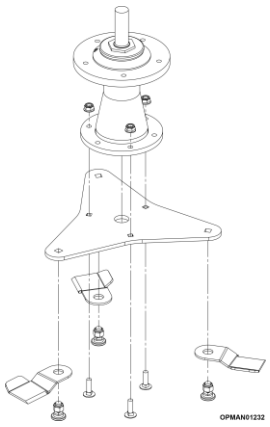


Figure 5.48
Rollicut Blade Carrier Assembly

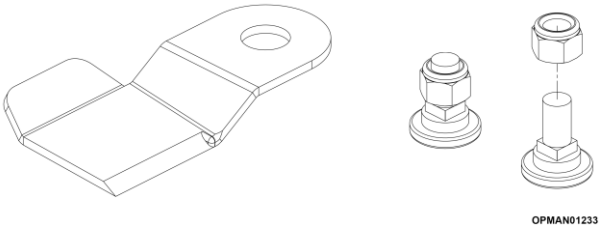


Figure 5.49
Rollicut Blade Components

Machine Model	Body	Width	Quantity	Total Quantity For Machine
Rollicut 500	Wing	1.7m	2 x 9	27
	Rear	1.7m	9	
Rollicut 600	Wing	2.3m	2 x 12	33
	Rear	1.7m	9	

Table 5.9

5.5.4 Blade Bolt Inspection

Blade bolts are prone to getting damaged when coming in contact with foreign or solid objects which can seriously compromise the wellbeing of machine, the operator and bystanders. Neglecting damaged blade bolts can cause serious injury or death.

Inspect the heads of blade bolts daily for:

- Visible cracks
- Wear on the recessed area of the head of the bolt
- Gouges and chipped areas

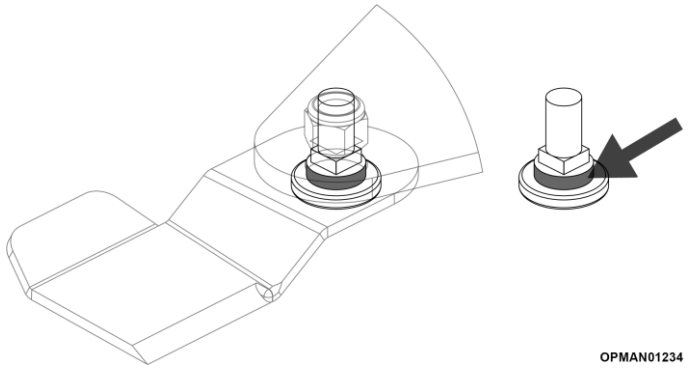


Figure 5.50
Rollicut Blade Bolt Wearing Surface

Rollicut blade bolts feature a hardened wearing surface, similar to that of a bush to allow the blade to freely spin in use. Inspect to see there isn't excess movement in each of the blades indicating an elongated blade fixing hole or excessively worn wearing surface on the blade bolt. **Do not take risks with cutting blades – if in doubt replace**.

DANGER! Failure to inspect daily and replace worn or damaged blade bolts may lead to catastrophic failure of the blades and ejection of the broken part which may cause serious bodily injury or death.

If any of these visual damages are found, replace **all blade bolts and nuts** on that rotor **immediately**.

IMPORTANT: Always replace blade bolts and nut with new components whenever the machine blades are removed and/or replaced.

WARNING! Inspect the area before mowing. Foreign objects should be removed from the site prior to beginning work to prevent machine damage and/or operator, bystander or the environment. Any objects that cannot be removed must be clearly marked and carefully avoided by the operator.

WARNING! Pay special attention when working with the machine and do not allow the machine to touch fixed objects such as road drains, walls, shafts, curbs, guard rails, tracks etc. as these could break the blades which could cause debris to be thrown at very high speed from the machine.

As a preventative measure inspect the destined working area of the machine to determine where foreign object hazards are. Remove these hazards and if they aren't easily removable, place visual markers where items are to ensure that the tractor and machine does not come into contact with these hazards.

5.6 Hydraulic Components

Equipment Required

- 2x 17mm hex spanners
- 2x 19mm hex spanners

Before proceeding to carry out any maintenance requirements on the hydraulic system, ensure that you have thoroughly read and understood Section 2.4 on how to safely go about carrying out maintenance requirements

to the machine, including how to approach the hydraulic system and its components. Section 2.3 should also be read to understand how to safely operate and use the machine in general.

CAUTION! Relieve hydraulic pressure before disconnecting the hydraulic hoses or working on the system.

On machines fitted with the standard hydraulic system, this can be done by pushing and pulling/pushing the selected tractor lever/button.

On Proline machines fitted with Spearhead's Minipilot control system the best process is to place each of the cutting bodies into float utilising the Minipilot control box and then switching off the control box; see Sections 4.11.3 and 4.11.5.

Only these processes have been completed and suitable safety glasses and impenetrable gloves have been put on, the hydraulic hoses can be removed from the tractor.

CAUTION! When working with/checking the hydraulic system on the machine always wear safety glasses and impenetrable gloves. This also applies when working with gearboxes and gearbox oil. Use paper or cardboard to search for leaks and not hands or any other body parts.

CAUTION! Keep hands and body away from pin holes and nozzles ejecting hydraulic fluid. Ingested or penetrated hydraulic fluid in the body can become gangrenous. Removal must be carried out professionally by a suitable Doctor.

CAUTION! Ensure all hydraulic hoses, lines and connections are in good condition and tight before applying pressure.

CAUTION! Do not change any factory-set hydraulic settings to avoid component or equipment failures.

CAUTION! Ensure maintenance personnel wear suitable PPE clothing when maintaining the machine to ensure risk of impact or skin injuries. Suitable footwear and gloves are an example. For example frequent or prolonged contact with hydraulic oil may cause dermatitis and other skin disorders including (more rarely) skin cancer when not wear impenetrable gloves. Worn parts may have sharp edges.

CAUTION! Follow the guidance of the lubricant manufacturer with regards to handling oils, solvents, cleansers and other chemical agents.

5.6.1 Ram Inspection

Hydraulic rams should be inspected on a daily basis before commencing work. Ensure all hydraulic hoses, lines and connections are in good condition and tight before applying pressure.

Inspect the ram and the accompanying fitted items to it:

- Check for play and wear in either end of the ram pear pin bushes and replace if necessary.
- Replace the ram immediately if there is any apparent distortion or corrosion on the plated ram rod.

If there is a leak apparent, determine where the cause of this leak is from. Causes could be due to the hydraulic ram, hose adaptors or the hydraulic hoses. **Replace the component at fault if in any doubt before proceeding to use the machine**. Hydraulic ram seal spares kits are available.

Where parts are broken, damaged and deemed not fit for use; replace with genuine Spearhead parts using the online Interactive Parts facility at:
https://my.spearheadmachinery.com/parts/public-interactive-parts-database/

You will require the machine serial number. Assistance to its location can be found in Section 1.3.

5.6.2 Wing Ram Replacement

Equipment Required
- See Section 5.6

Before proceeding to replace the hydraulic wing ram, read Section 2.4 and 5.6.

To change a hydraulic wing ram:

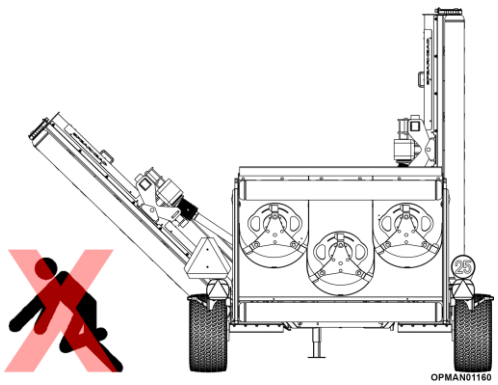


Figure 5.51

5.6.2.1 Clear the area of all personnel before lowering the wings; see Figure 5.51.

5.6.2.2 From the tractor seat with your belt fastened, lower the machine wings to the ground.

WARNING! When operating a fully assembled machine, do not release the wing body locks until the hoses are attached to the tractor and each of the wing lift ram cylinders are filled with oil. Always ensure that bystanders are kept well away from the falling area of the wings.

5.6.2.3 Shut off the tractor and engage the parking brake before dismounting the tractor.

5.6.2.4 If the machine is being worked on disconnected from the tractor, ensure it is fully supported by using the machine jack and use the machine wheel chocks around both sides of one wheel; see Figure 5.52.

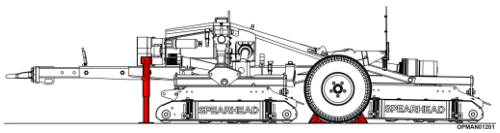


Figure 5.52

5.6.2.5 If the machine is being worked on connected to the tractor, release all oil pressure from the circuit by:

On Standard machines using the tractors hydraulic control levers/buttons in a back/forth in/out motion.

On Proline machines fitted with Spearhead's Minipilot control system, place each of the cutting bodies into float utilising the Minipilot control box and then switching off the control box; see Section 4.10.5.

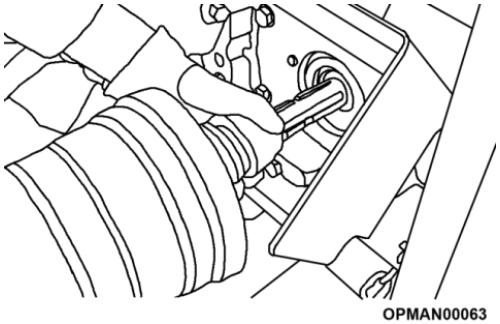


Figure 5.53

5.6.2.6 If connected to the tractor, remove the input PTO driveshaft between the machine and tractor. Guidance to using the PTO driveshaft is given in Section 4.5.1.

5.6.2.7 Put on suitable safety glasses and impenetrable gloves and proceed to remove the hydraulic hoses from the tractors quick connect points following the guidance given in Section 4.3.

5.6.2.8 Proceed to open the front and rear covers on the machine by releasing the spring latches found on both sides of the front and rear covers, see Figure 5.54.

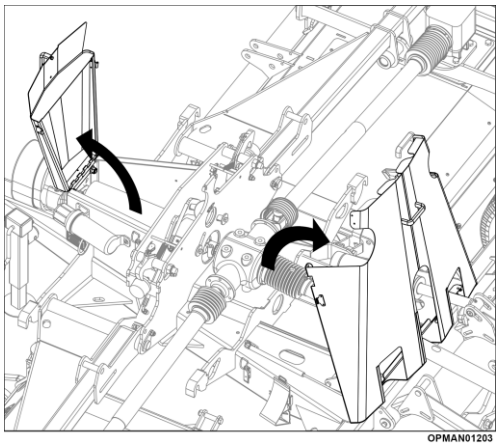


Figure 5.54

5.6.2.9 Check to see that the hydraulic cylinder destined to be removed is not under pressure.

There should be some slight movement in the ram by moving the ram by hand; see Figure 5.55. If no movement can be made; the system may still be under pressure.

DANGER! Do not allow anyone or any part of your body to be underneath the body.

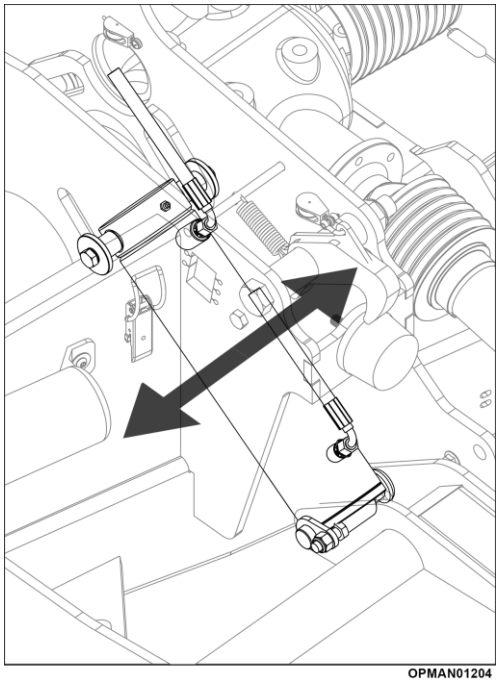


Figure 5.55

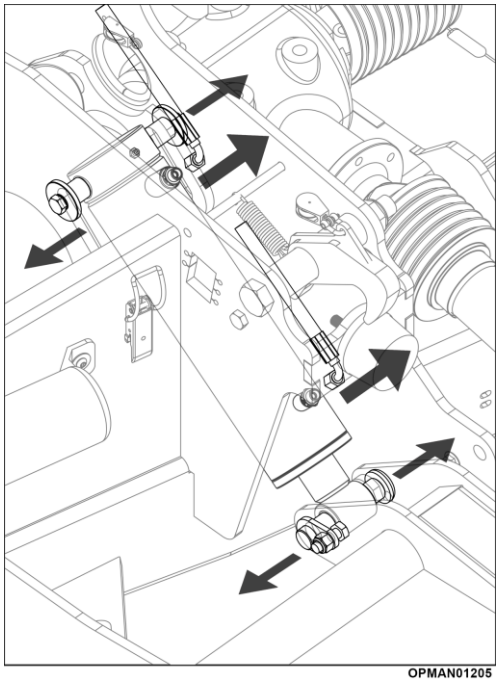


Figure 5.56

5.6.2.10 Ensuring pressure in the ram is gone, slowly loosen the hose connections to the ram.

CAUTION! Do not loosen the hydraulic connections to the cylinder until all pressure has been relieved from the system.

5.6.2.11 Ensuring that the hydraulic ram is movable and that the machine wing is supported substantially so it will not in reaction move, remove the cylinder pear pins from each of end of the ram. The cylinder may be heavy, use proper lifting techniques to lift and handle the cylinder and if needed get assistance from another person.

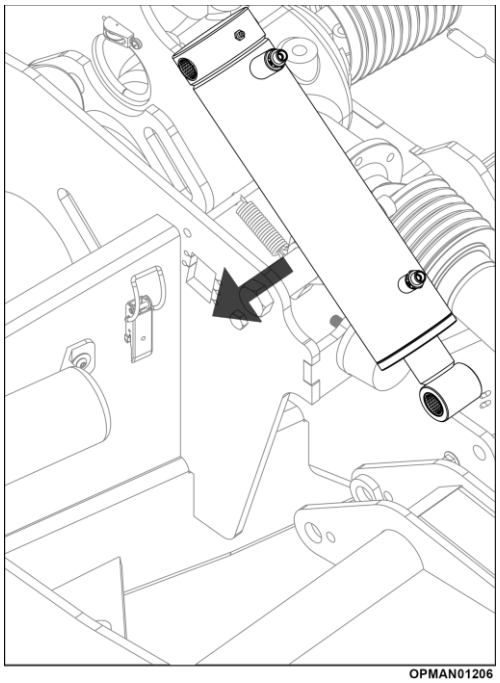


Figure 5.57

5.6.2.12 Inspect the hydraulic ram's condition; see Section 5.6.1. Inspect the hydraulic ram port adaptors and seals to see they are serviceable and able to be used on the replacement ram.

5.6.2.13 Measure the distance between the cylinder pin holes on the old ram and extend the new cylinder to that length before installing.

5.6.2.14 Install the new cylinder in place and install both cylinder pins and retaining bolts in place.

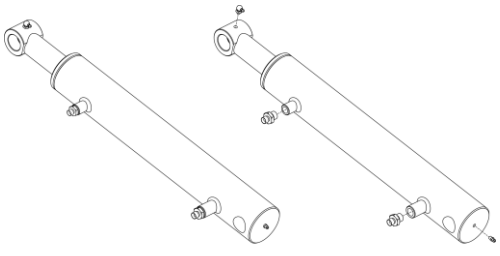


Figure 5.58

5.6.2.15 Even though the ram requires replacement, there is still the ability to retain the adaptors and grease nipples and fit them to the new replacement ram, if it is deemed they are not the cause of the damage.

5.6.2.16 Ensuring that you're still wearing suitable safety glasses and impenetrable gloves, reconnect the hydraulic hose(s) to the cylinder and tighten the fittings.

5.6.2.17 Reconnect the implement hoses to the tractor.

5.6.2.18 Get into the tractor seat and fasten your seat belt. Clear the area of all persons before attempting to raise the wing. From the tractor seat, start the tractor and using the tractor controls or the Minipilot control system operate the control valve for the hydraulic ram and go through all functions to fill the hydraulic ram cylinder with oil.

5.6.2.19 Look for signs of oil leaks. If an oil leak exists, shut the tractor down and remove all oil pressure in the lines by moving the valve control handles back and forward.

Retighten any loose fittings and connections and if a hose is leaking, replace with a new hose.

5.6.2.20 If there are no leaks, raise and lower the wing completely at least three full cycles to remove any air trapped in the circuit.

5.6.2.21 Check the hydraulic reservoir of the tractor to ensure there is sufficient oil.

5.6.2.22 If the wing is to remain in the raised position, ensure the body locks are correctly engaged.

5.6.3 Rear Body Lift Ram Replacement

Equipment Required
- See Section 5.6

Before proceeding to replace the rear body lift ram, read Section 2.4 and 5.6.

NOTE: This section is written showing the correct procedure on how to exchange a rear body lift ram on a Rollicut Proline machine. Rollicut Proline machines feature a double-acting hydraulic ram and circuit, which requires the removal of two hydraulic hoses. Rollicut Standard machines feature a single-acting hydraulic ram and circuit, which requires the removal of only one hydraulic hose. However, the process of exchange can be carried out in exactly the same way.

To change a hydraulic rear body lift ram:

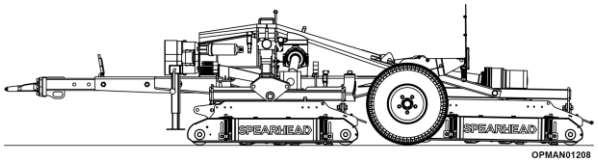


Figure 5.59

5.6.3.1 Clear the area of all personnel before lowering the rear body.

5.6.3.2 From the tractor seat with your belt fastened, lower the machine rear body to the ground.

With the hydraulic systems of the wing and rear body being independent, there is no need to unfold the wings of the machine. Ensure the body locks are engaged if the wings are wanted to be left folded.

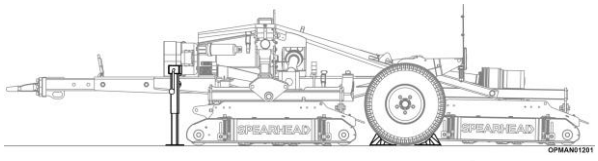


Figure 5.60

5.6.3.3 Shut off the tractor and engage the parking brake before dismounting the tractor.

5.6.3.4 If the machine is being worked on disconnected from the tractor, ensure it is fully supported by using the machine jack and use the machine wheel chocks around both sides of one wheel; see Figure 5.60.

5.6.3.5 If the machine is being worked on connected to the tractor, release all oil pressure from the circuit by:

On Standard machines using the tractors hydraulic control levers/buttons in a back/forth in/out motion.

On Proline machines fitted with Spearhead's Minipilot control system, place each of the cutting bodies into float utilising the Minipilot control box and then switching off the control box; see Section 4.10.5.

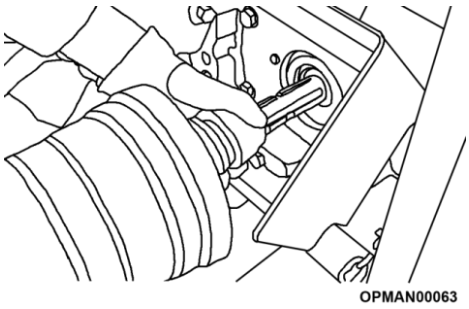


Figure 5.61

5.6.3.6 If connected to the tractor, remove the input PTO driveshaft between the machine and tractor. Guidance to using the PTO driveshaft is given in Section 4.5.1.

5.6.3.7 Put on suitable safety glasses and impenetrable gloves and proceed to remove the hydraulic hoses from the tractors quick connect points following the guidance given in Section 4.3.

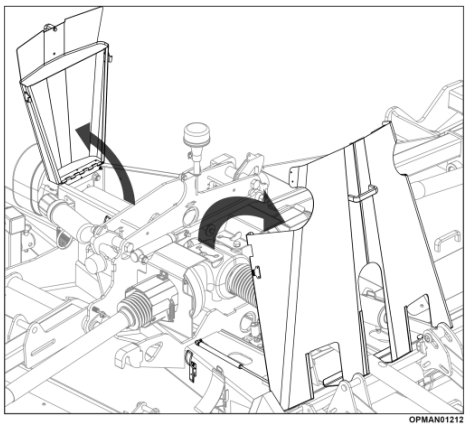


Figure 5.62

5.6.3.8 Proceed to open the front and rear covers on the machine by releasing the spring latches found on both sides of the front and rear covers, see Figure 5.62.

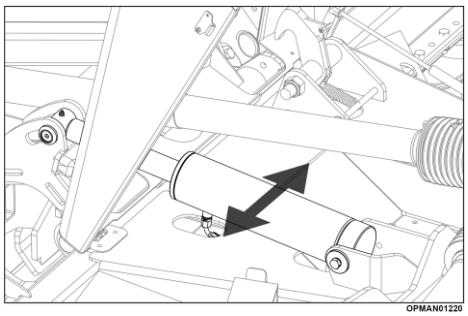
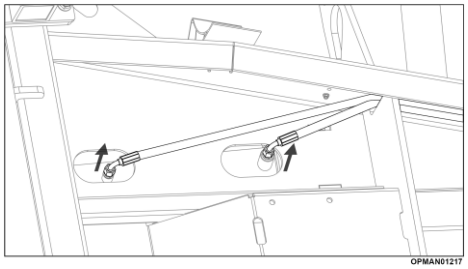


Figure 5.63
(Double-acting Rollicut Proline model illustrated)

5.6.3.9 Check to see that the hydraulic cylinder is not under pressure.

There should be some slight movement in the ram by moving the ram by hand; see Figure 5.63. If no movement can be made; the system may still be under pressure.

DANGER! Do not allow anyone or any part of your body to be underneath the body.



5.6.3.10 Ensuring pressure in the ram is gone, slowly loosen the hose connections to the ram.

CAUTION! Do not loosen the hydraulic connections to the cylinder until all pressure has been relieved from the system.

5.6.3.11 Ensuring that the hydraulic ram is movable and that the machine body is lowered onto the rollers, remove the cylinder pins from each of end of the ram. The cylinder may be

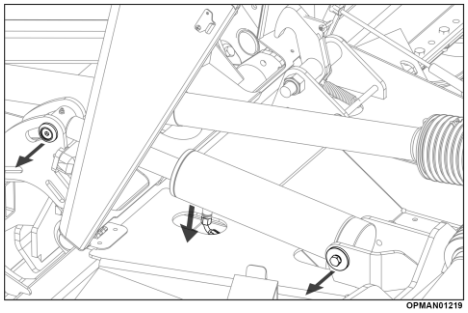


Figure 5.64
(Double-acting Rollicut Proline model illustrated)

heavy, use proper lifting techniques to lift and handle the cylinder and if needed get assistance from another person.

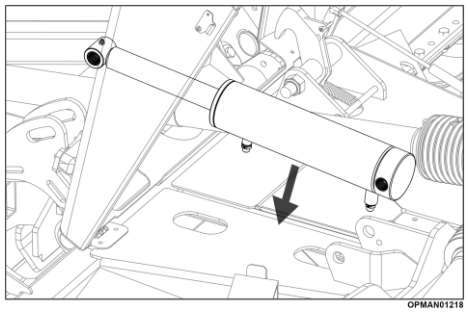


Figure 5.65
(Double-acting Rollicut Proline model illustrated)

5.6.3.12 Inspect the hydraulic rams condition; see Section 5.6.1. Inspect the hydraulic ram port adaptors and seals to see they are serviceable and able to be used on the replacement ram.

5.6.3.13 Measure the distance between the cylinder pin holes on the old ram and extend the new cylinder to that length before installing.

5.6.3.14 Install the new cylinder in place and install both cylinder pins and retaining bolts in place.

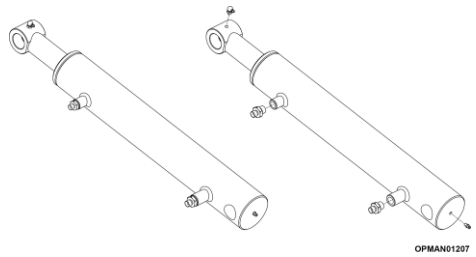


Figure 5.66
(Double-acting Rollicut Proline model illustrated)

5.6.3.15 Even though the ram requires replacement, there is still the ability to retain the bonded seals, adaptors and grease nipples and fit them to the new replacement ram, if it is deemed they are not the cause of the damage.

NOTE - When a new genuine hydraulic ram is purchased, new bushes are supplied and already fitted.

5.6.3.16 Ensuring that you're still wearing suitable safety glasses and impenetrable gloves, reconnect the hydraulic hoses to the cylinder and tighten the fittings.

5.6.3.17 Reconnect the implement hoses to the tractor.

5.6.3.18 Get into the tractor seat and fasten your seat belt. Clear the area of all persons before attempting to raise the body. From the tractor seat, start the tractor and using the tractor controls or the Minipilot control system operate the control valve for the hydraulic ram and go through all functions to fill the hydraulic ram cylinder with oil.

5.6.3.19 Look for signs of oil leaks. If an oil leak exists, shut the tractor down and remove all oil pressure in the lines by moving the valve control handles back and forward.

Retighten any loose fittings and connections and if a hose is leaking, replace with a new hose.

5.6.3.20 If there are no leaks, raise and lower the rear body completely at least three full cycles to remove any air trapped in the circuit.

5.6.3.21 Check the hydraulic reservoir of the tractor to ensure there is sufficient oil.

5.6.4 Hydraulic Wing Body Lock Ram Replacement – Proline Specification

Rollicut Proline specification machines come fitted with hydraulic wing body locks which allow for each of the wing bodies to be secured and released hydraulically using the Minipilot control system.

Equipment Required
- 10mm allen socket
- 2x 19mm hex spanners

Before proceeding to replace the wing body lock ram, read Section 2.4 and 5.6.

To change a hydraulic wing body lock ram:

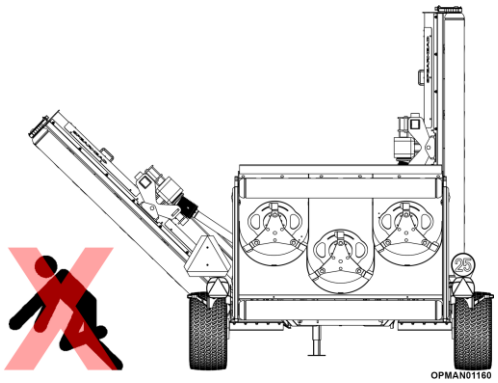


Figure 5.67

5.6.4.1 Clear the area of all personnel before lowering the machine bodies; see Figure 5.67.

5.6.4.2 From the tractor seat with your belt fastened, lower the machine bodies to the ground.

WARNING! When operating a fully assembled machine, do not release the body locks until the hoses are attached to the tractor and each of the wing lift ram cylinders are filled with oil. Always ensure that bystanders are kept well away from the falling area of the bodies.

5.6.4.3 Shut off the tractor and engage the parking brake before dismounting the tractor.

5.6.4.4 If the machine is being worked on disconnected from the tractor, ensure it is fully supported by using the machine jack and use the machine wheel chocks around both sides of one wheel; see Figure 5.68.

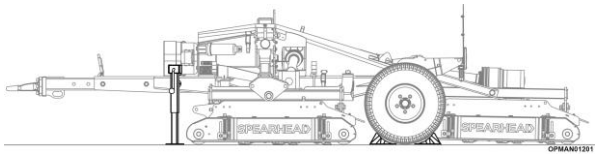


Figure 5.68

5.6.4.5 If the machine is being worked on connected to the tractor, release all oil pressure from the circuit by placing each of the cutting bodies into float utilising the Minipilot control box and then switch off the control box; see Section 4.10.5.

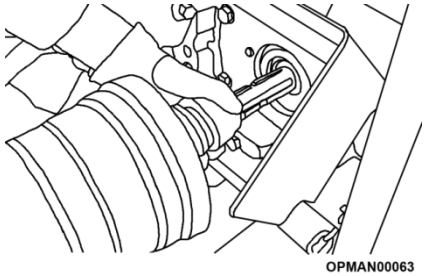


Figure 5.69

5.6.4.6 If connected to the tractor, remove the input PTO driveshaft between the machine and tractor. Guidance to using the PTO driveshaft is given in Section 4.5.1.

5.6.4.7 Put on suitable safety glasses and impenetrable gloves and proceed to remove the hydraulic hoses from the tractors quick connect points following the guidance given in Section 4.3.

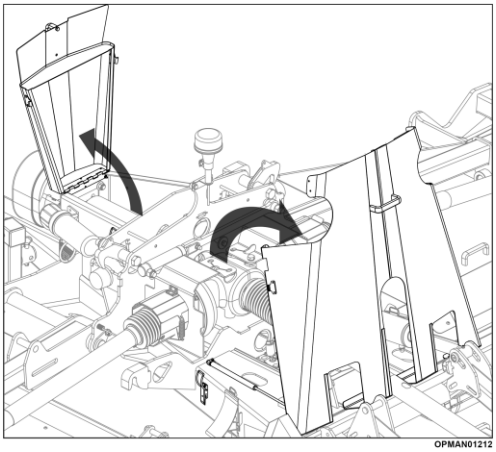


Figure 5.70

5.6.4.8 Proceed to open the front and rear covers on the machine by releasing the spring latches found on both sides of the front and rear covers, see Figure 5.70.

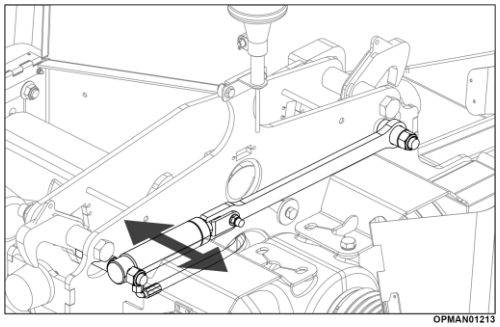


Figure 5.71

5.6.4.9 Check to see that the hydraulic cylinder destined to be removed is not under pressure.

There should be some slight movement in the ram by moving the ram by hand; see Figure 5.71. If no movement can be made; the system may still be under pressure.

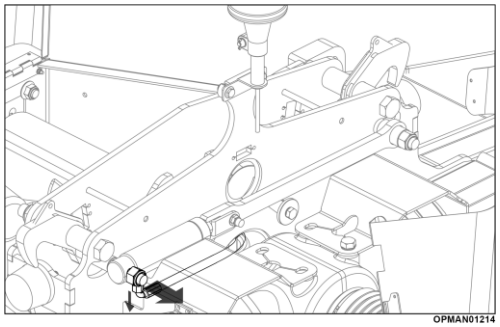


Figure 5.72

5.6.4.10 Ensuring pressure in the ram is gone, slowly loosen the hose connections to the ram.

CAUTION! Do not loosen the hydraulic connections to the cylinder until all pressure has been relieved from the system.

5.6.4.11 Loosen and remove the base end hydraulic ram fixing bolt and nut.

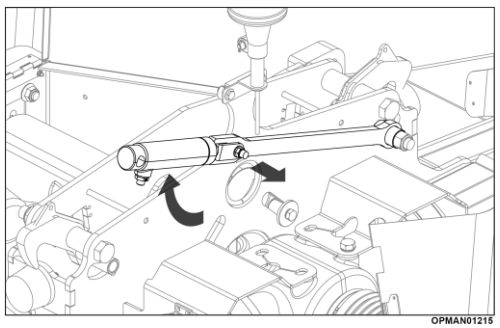


Figure 5.73

5.6.4.12 Rotate the hydraulic ram and latch rod arm in order to allow the ram clevis bolt and nut to be removed. The complete assembly maybe heavy, so gain assistance from another person if required.

5.6.4.13 Loosen and remove the ram clevis to latch rod arm nut and bolt and remove the ram. If needed get assistance from another person.

5.6.4.14 Place the latch rod arm gently on the machine.

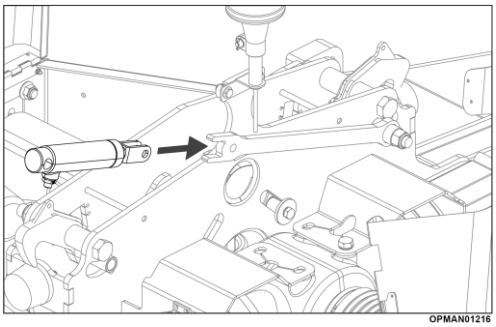


Figure 5.74

5.6.4.15 Inspect the hydraulic rams condition; see Section 5.6.1. Inspect the hydraulic ram port adaptor and seal to see they are serviceable and able to be used on the replacement ram.

5.6.4.16 Measure the distance between the cylinder pin holes on the old ram and extend the new cylinder to that length before installing.

5.6.4.17 Install the new cylinder in place and install cylinder base fasteners and ram body to latch rod arm fasteners in place.

5.6.4.18 Refit the hydraulic hoses to the rear spools of the tractor following the guidance given in Section 4.3.

5.6.4.19 Return to the tractor and start the engine. Switch on the Minipilot control box.

5.6.4.20 Press and hold the body lock button on the Minipilot control box to fill the hydraulic ram cylinder until the ram actuates to ready it for work again; see Figure 5.75.

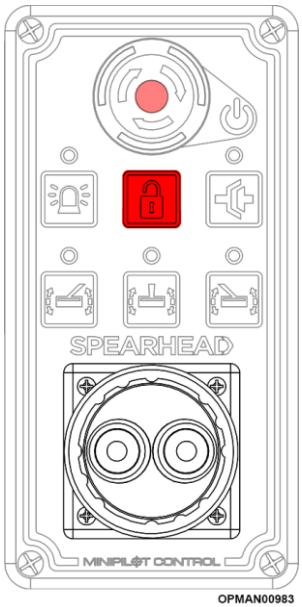


Figure 5.75
Proline Body Lock Button

5.6.5 Hydraulic Rear Body Lock Ram Replacement – Proline Specification

Rollicut Proline specification machines come fitted with a hydraulic rear body lock which allows for the rear body to be secured and released hydraulically using the Minipilot control system.

Equipment Required

- 2 x 30mm hex spanners
- 2 x 22mm hex spanners
- 18mm hex spanner

Before proceeding to replace the rear body lock ram, read Section 2.4 and 5.6.

To change a hydraulic rear body lock ram:

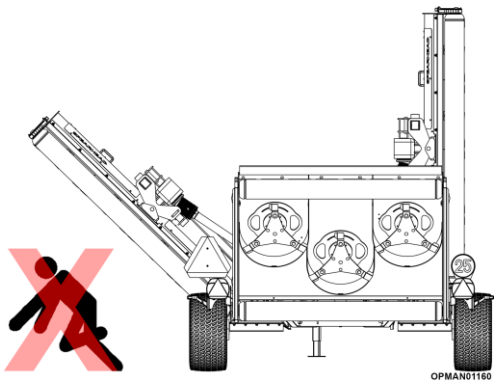


Figure 5.76

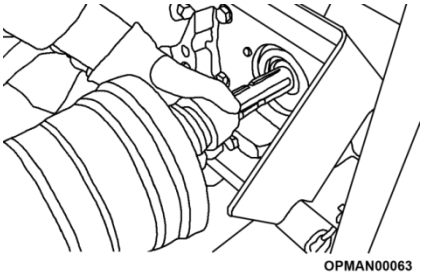


Figure 5.77

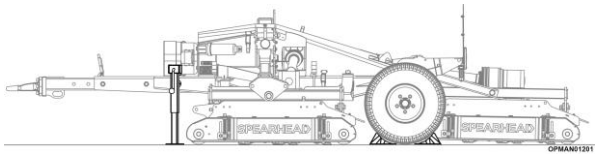


Figure 5.78

5.6.5.1 Clear the area of all personnel before lowering the machine bodies; see Figure 5.76.

5.6.5.2 From the tractor seat with your belt fastened, lower the machine bodies to the ground.

WARNING! When operating a fully assembled machine, do not release the body locks until the hoses are attached to the tractor and each of the wing lift ram cylinders are filled with oil. Always ensure that bystanders are kept well away from the falling area of the bodies.

5.6.5.3 Shut off the tractor and engage the parking brake before dismounting the tractor.

5.6.5.4 Remove the input PTO driveshaft between the machine and tractor. Guidance to using the PTO driveshaft is given in Section 4.5.1.

5.6.5.5 Put on suitable safety glasses and impenetrable gloves and proceed to remove the hydraulic hoses from the tractors quick connect points following the guidance given in Section 4.3.

5.6.5.6 Disconnect the machine fully from the tractor.

Release all oil pressure from the circuit by placing each of the cutting bodies into float utilising the Minipilot control box and then switch off the control box; see Section 4.11.5.

Ensure it is fully supported by using the machine jack and use the machine wheel chocks around both sides of one wheel; see Figure 5.78.

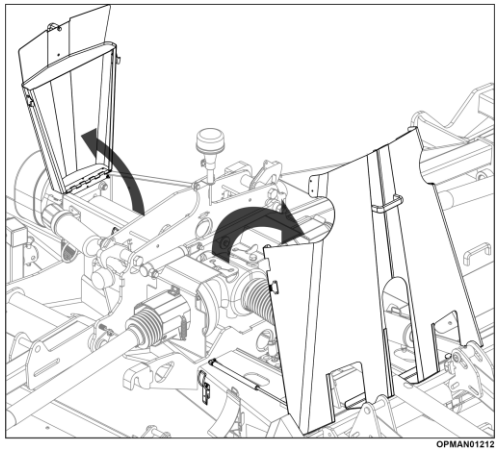


Figure 5.79

5.6.5.7 Proceed to open the front and rear covers on the machine by releasing the spring latches found on both sides of the front and rear covers, see Figure 5.79.

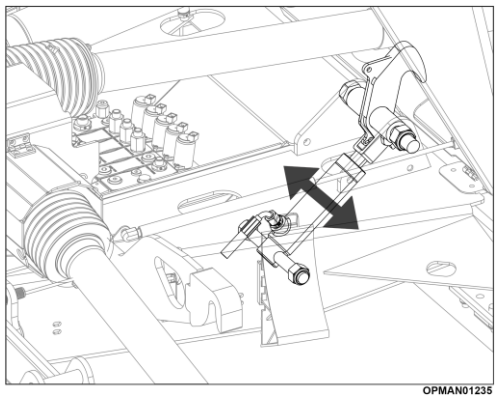


Figure 5.80

5.6.5.8 Check to see that the hydraulic cylinder is not under pressure.

There should be some slight movement in the ram by moving the ram by hand; see Figure 5.80. If no movement can be made; the system may still be under pressure.

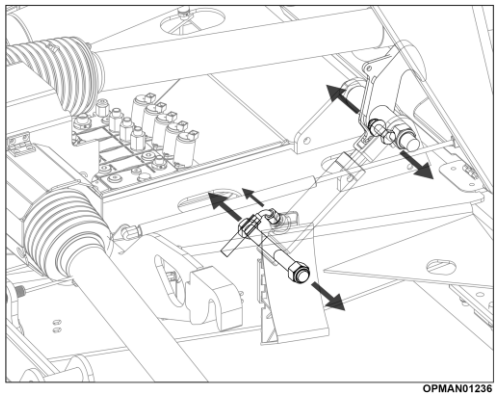


Figure 5.81

5.6.5.9 Ensuring pressure in the ram is gone, gain access from underneath the machine and slowly loosen the hose connection to the ram.

CAUTION! Do not loosen the hydraulic connections to the cylinder until all pressure has been relieved from the system.

5.6.5.10 Loosen and remove the ram fixing fasteners and the ram.

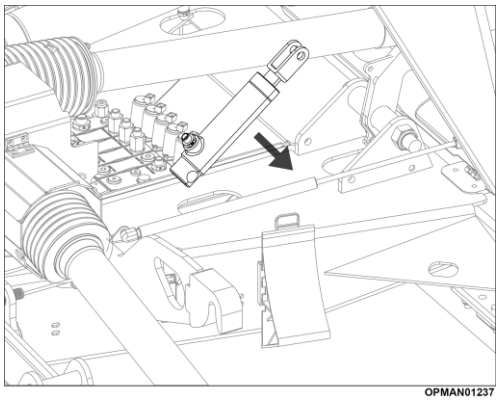


Figure 5.82

5.6.5.11 Inspect the hydraulic rams condition; see Section 5.6.1. Inspect the hydraulic ram port adaptor and seal to see they are serviceable and able to be used on the replacement ram.

5.6.5.12 Measure the distance between the cylinder pin holes on the old ram and extend the new cylinder to that length before installing.

5.6.5.13 Install the new cylinder in place and install the ram fixing fasteners in place.

5.6.5.14 Reinstall the hydraulic hose to the ram.

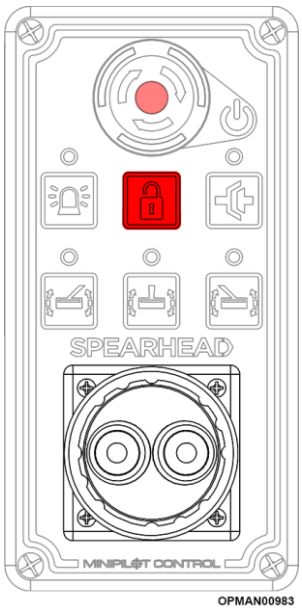


Figure 5.83
Proline Body Lock Button

5.6.5.15 Refit the hydraulic hoses to the rear spools of the tractor following the guidance given in Section 4.3.

5.6.5.16 Return to the tractor and start the engine. Switch on the Minipilot control box.

5.6.5.17 Press and hold the body lock button on the Minipilot control box to fill the hydraulic ram cylinder until the ram actuates to ready it for work again; see Figure 5.83.

5.6.6 Hoses

Equipment Required
- See Section 5.6

Replace pinched and broken hydraulic hoses at once. Tighten any hydraulic fitting with fluid leaking from it. If fluid still leaks, loosen the fitting, apply a pipe thread compound to the threads and tighten. Care must be exercised when tightening hydraulic fittings. Too much tightening can cause the fittings to crack and require replacement fittings.

Hydraulic hose fitting torque setting are found in Section 5.10.2.

Although a small amount of oil will present from bleeding at all hydraulic fittings, significant amount of oil leaking from around the breather plug on the cylinder indicates that the seal in the cylinder is worn out. Replace the seals in the cylinder immediately before the cylinder is damaged or too much hydraulic fluid is lost.

CAUTION! Do not use the machine if the tractor hydraulic oil temperature exceeds 93°c (200°F).

5.6.7 Machine Hose Diagrams

Standard Hydraulic Set-up

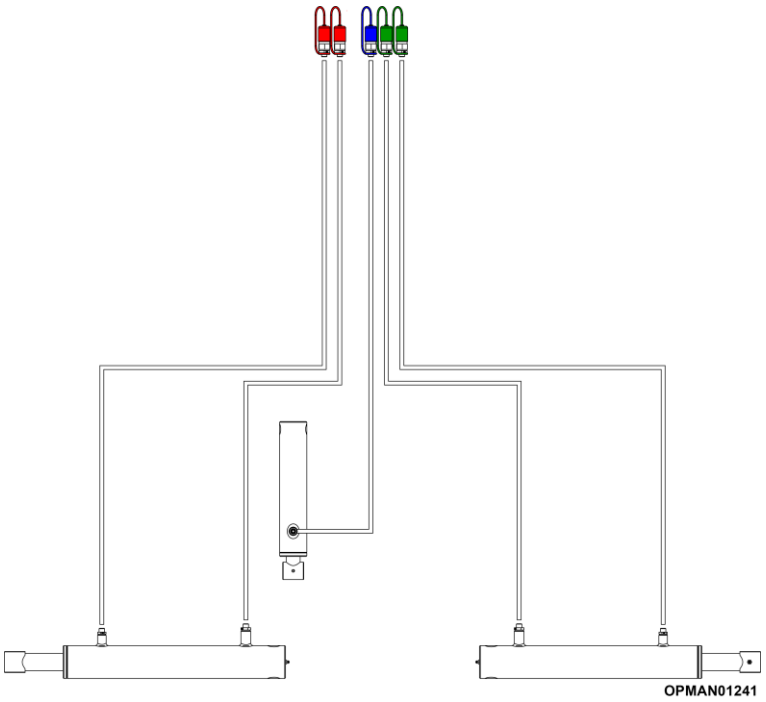
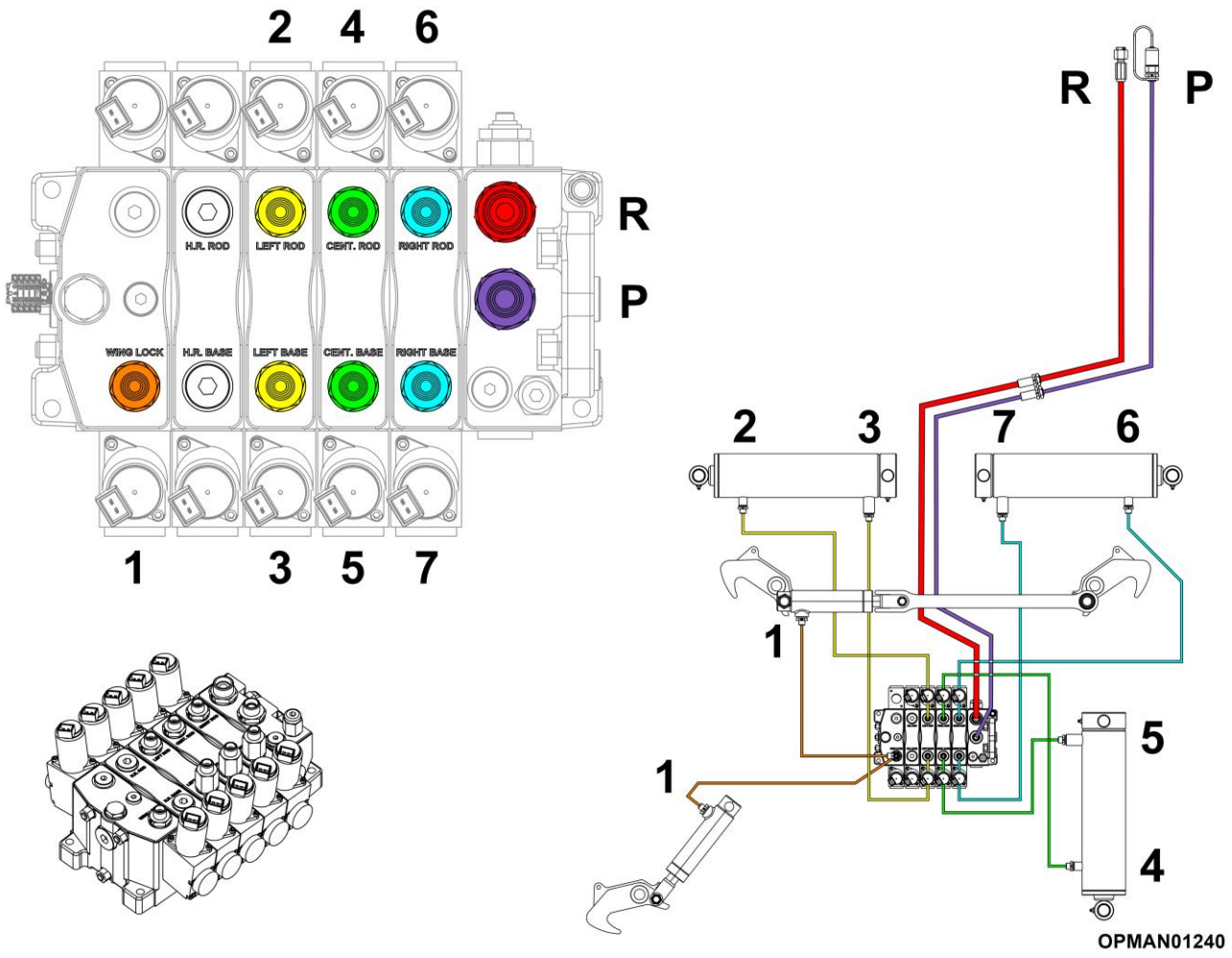


Figure 5.84 – Rollicut Standard Hydraulic System Diagram

Proline Specification Hydraulic Body Locks Set-up



No.	Use
1	Body Lock
2	Left Hand Wing Ram – Rod End
3	Left Hand Wing Ram – Base End
4	Centre Lift Ram – Rod End
5	Centre Lift Ram – Base End
6	Right Hand Wing Ram – Rod End
7	Right Hand Wing Ram – Base End
P	Pressure Feed (From Tractor)
R	Return Feed (To Tractor)

Figure 5.85 – Rollicut Proline Hydraulic System Diagram

5.7 Electrical Components & Wiring Diagrams

5.7.1 Lights

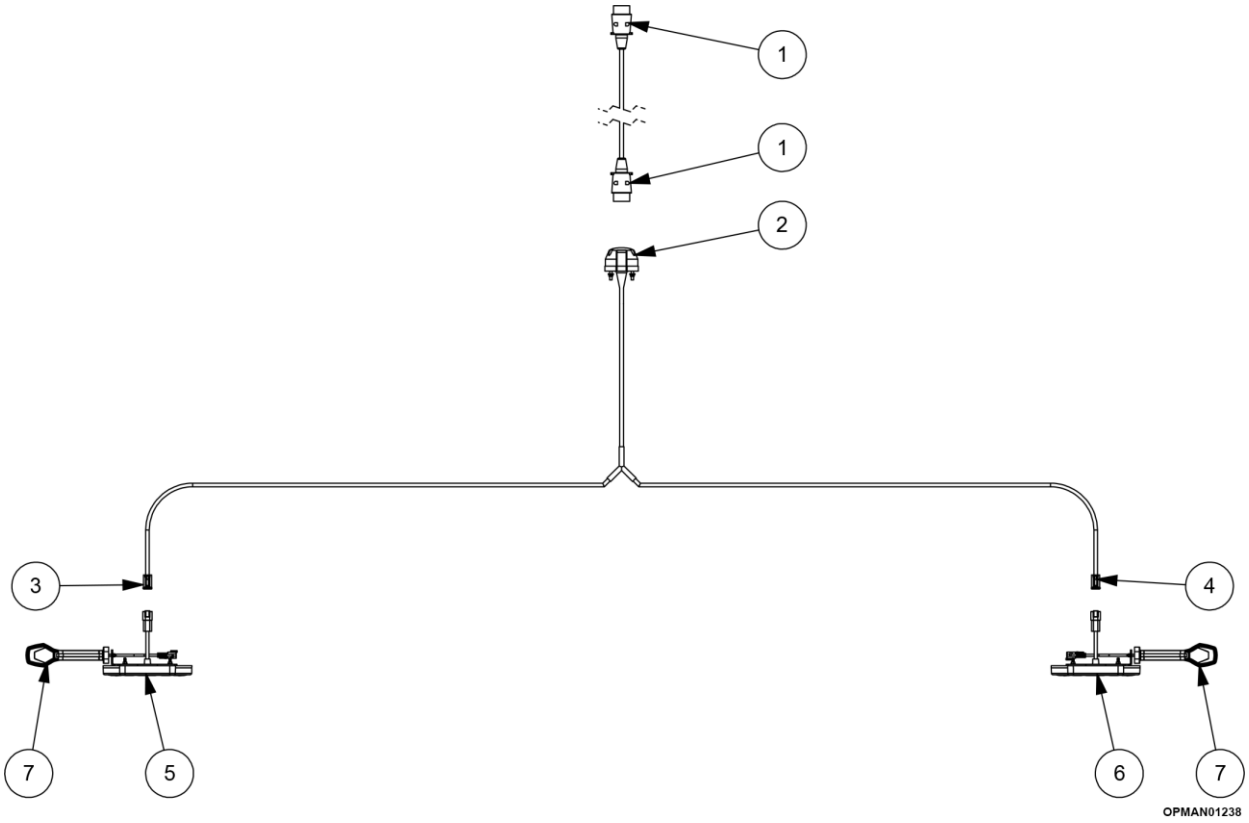


Figure 5.86 – Rollicut Lighting Loom

7-pin Durite Plug x2 see Figure 5.86 (1)		
No.	**Colour**	**Use**
1	Yellow	Left-hand Direction Light
2	Blue	Fog Light
3	White	Earth
4	Green	Right-hand Direction Light
5	Brown	Right-Hand Side Light
6	Red	Stop Light
7	Black	Left-Hand Side Light

7-pin Durite Socket x1 see Figure 5.86 (2)		
No.	**Colour**	**Use**
1	Yellow	Left-hand Direction Light
2	Blue	Fog Light
3	White	Earth
4	Green	Right-hand Direction Light
5	Brown	Right-Hand Side Light
6	Red	Stop Light
7	Black	Left-Hand Side Light

Left-hand Light see Figure 5.86 (3) & Figure 5.86 (5)		
No.	**Colour**	**Use**
1	White	Earth
2	Black	Left-Hand Side Light
3	Red	Stop Light
4	Yellow	Left-hand Direction Light
5	Blue	Fog Light
6	X	Reverse (not used)

Right-hand Light see Figure 5.86 (4) & Figure 5.86 (6)		
No.	**Colour**	**Use**
1	White	Earth
2	Brown	Right-Hand Side Light
3	Red	Stop Light
4	Green	Right-hand Direction Light
5	Blue	Fog Light
6	X	Reverse (not used)

Marker Light x2 see Figure 5.86 (7)		
No.	**Colour**	**Use**
1	White	Earth
2	Black	Side Light

Table 5.10 – Rollicut Lighting Loom Wiring Definitions

5.7.2 Proline

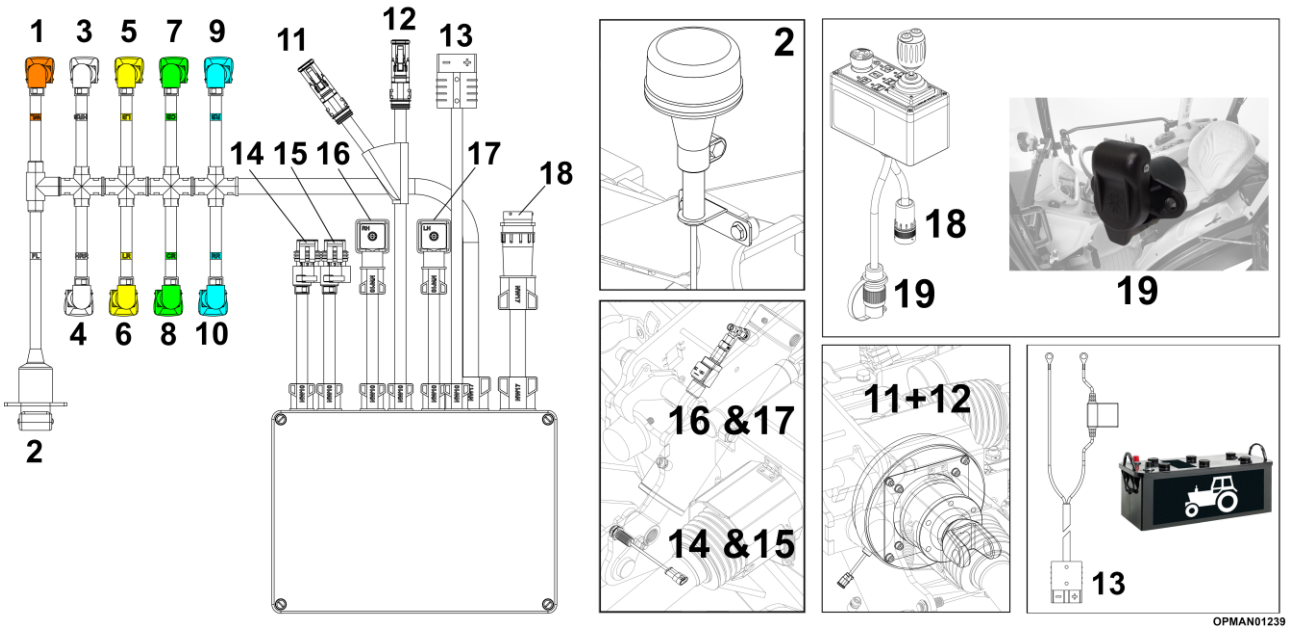


Figure 5.87 – Rollicut Control Box Diagram

No.	Use
1	Body Lock
2	Flashing Beacon
3	Not Used
4	Not Used
5	Left-hand Wing Ram – Base End
6	Left-hand Wing Ram – Rod End
7	Centre Lift Ram – Base End
8	Centre Lift Ram – Rod End
9	Right-hand Wing Ram – Base End
10	Right-hand Wing Ram – Rod End

No.	Use
11	Right-hand Clutch
12	Left-hand Clutch
13	Clutch Power Supply (To Tractor Battery)
14	Right-hand Wing Angle Position Sensor
15	Left-hand Wing Angle Position Sensor
16	Right-hand Pressure Sensor
17	Left-hand Pressure Sensor
18	Joystick
19	Joystick Power

Table 5.11 - Rollicut Control Box Diagram Definitions

5.8 Wheels, Hubs & Tyres

Equipment Required
- Torque wrench (see required settings in Section 5.10.1)
- 24mm hex sockets/spanner

Rollicut machines can be optioned with either road or turf tyres.

Before installing/removing any wheels and tyres make certain that the machine is jacked up high enough for them to be easily fitted and to ensure that the machine is securely supported with fixed supports so it cannot move.

Turf Tyres

The Rollicut turf tyre has flat surfaces on both sides of the wheel face, so **do not have a fitting direction**. Hub bolt fixing torques should be adhered to. For torque settings; see Section 5.10.1.

When installing the wheel ensure that the **domed side of the lug nut is against the wheel**; see Figure 5.88 (A).

Road Tyres

The Rollicut road tyre has a flat surface on only one face, so needs to be fitted with the **flat of the wheel face against the hub face**. Hub bolt fixing torques should be adhered to. For torque settings; see Section 5.10.1.

When installing the Rollicut road tyre option ensure that the **flat of the wheel face is against the hub** face; see Figure 5.88 (B).

When installing the wheel ensure that the **domed side of the lug nut is against the wheel**; see Figure 5.88 (A).

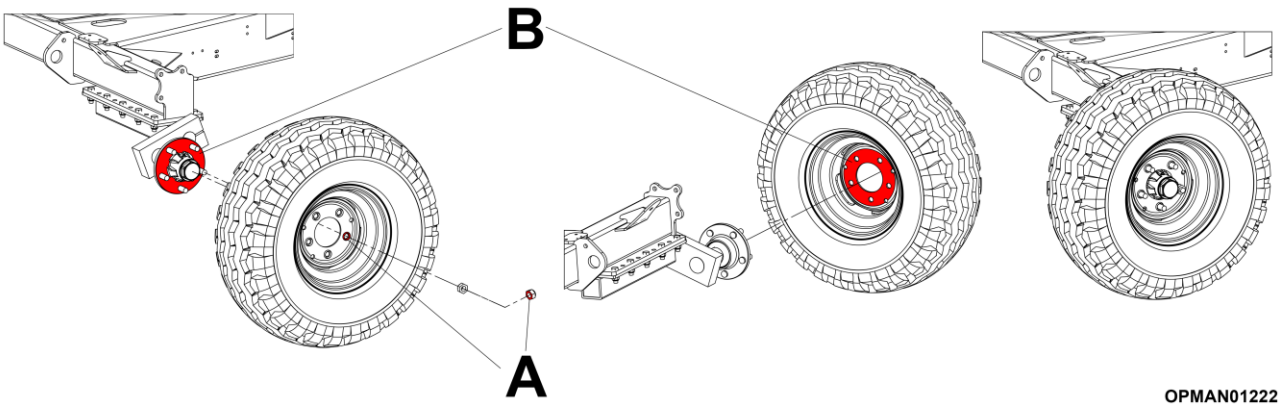


Figure 5.88 – Rollicut Road Tyre & Wheel Nut Orientation

IMPORTANT: Do not use any other wheel/tyre than those recommended/supplied by Spearhead. Spearhead declines all responsibility for damage and/or injury caused by use of **anything** other than the wheels/tyres which are supplied with the machine as new or sold as a spare part replacement sold by a Spearhead dealer on Rollicut machines. **If you are unsure of the correct wheel/tyre for the machine**, or need additional assistance, please **contact your local Spearhead dealer, qualified service centre or Spearhead**.

5.8.1 Tyre Pressures

Equipment Required
- Air supply with Schrader valve

Tyre pressures should be **checked weekly** and when they are cold to ensure their longevity and wellbeing as well as the safety and stability of the machine in use and to ensure level cutting when the machine is in work.

Machine Model.	Tyre Type.	Tyre Pressure.
Rollicut	Road	23 psi/1.60 bar
	Turf	26 psi/1.80 bar

Table 5.12 – Rollicut Tyre Pressures

5.8.2 Hub Greasing

Equipment Required
- Manually operated grease gun supplying NLGI #2 Molybdenum Disulphide Grease to M6/M8 grease nipples

Spearhead Rollicut wheel hubs feature grease nipples which **need to be greased at least once a week** (dependant on amount of machine use). They are found on all hubs shown in the position on Figure 5.89.

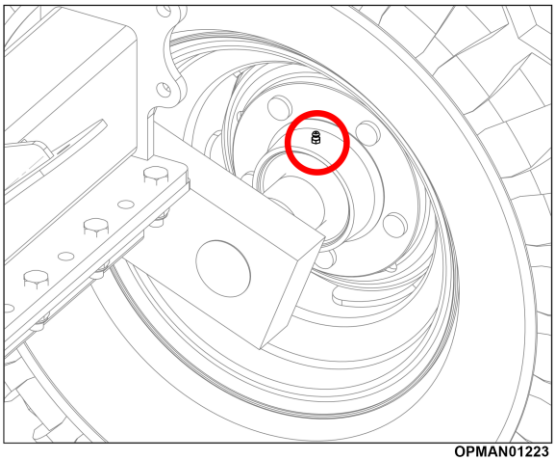


Figure 5.89 – Rollicut Wheel Hub Greasing Location

5.8.3 Maximum Road Operating Speed

The various tyre options available on Rollicut machines are designed to operate at a **maximum of 20 mph (32 kmh)**. Ensure before proceeding to take the machine onto the public highway, ensure that the wheel/tyre fitted to the machine is suitable for road use. **Do not exceed 20 mph (32 kmh) on any tyre option** and drive with compliance to the Highway Code (or other local driving authority/body) and road conditions.

5.9 Other Key Components

IMPORTANT: Before starting, safety checks on tractor and machine must be carried out with regard to: functionality, road safety and accident prevention rules.

5.9.1 Pins & Bushes

Pins

Pins should be inspected regularly to ensure they are not worn, damaged or loose.

Ensure all pins and accompanying fasteners are tight and routinely checked following the guidance given on the Maintenance Sheet; see Section 5.11.

Ensure that the pins have not been worn in such a way to create a step. Make sure the pin is not bent and the head is not damaged. If in any doubt, replace.

Bushes

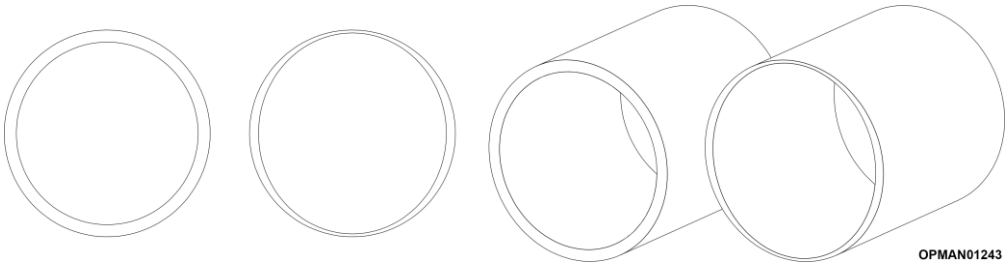


Figure 5.90 – New & Worn Bush Comparison

The machine should be inspected regularly to ensure the bushes are not worn. Worn bushes should be replaced when there is excess movement. Bushes will wear oversize or oval with indication on the interior showing the oil galleries being worn away. To prevent premature wear grease the bushes (where applicable) following the greasing schedule; see Section 5.2.4.

5.9.2 Skids

	Equipment Required • 13mm hex spanner/socket • 24mm hex spanner/socket • 30mm hex spanner/socket

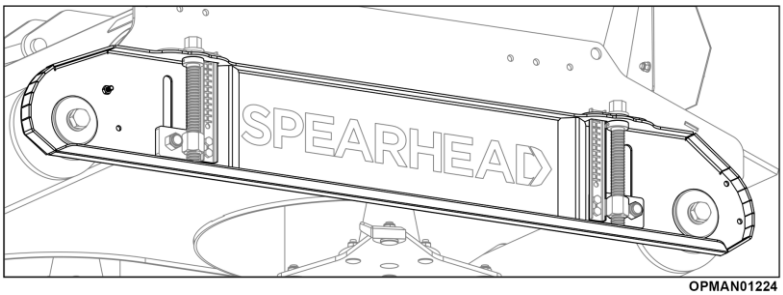


Figure 5.91 – Rollicut Wing Skid

Spearhead machine skids are fitted to protect the machine body fabrications from permanent damage. Premature wear can be caused to the skids through allowing the skids to drag along the ground causing an earlier requirement for replacement. Dragging the skids on the ground or running the skids into solid objects can contribute to early frame failure of the machine. Replace worn skids as required. **Failure to replace skids and using the machine without will cause permanent damage to the body fabrications**.

5.10 Torque Settings

5.10.1 Nuts & Bolts

Specific Fastener Requirements

On Rollicut machines, there are some special fasteners/components which require specific torque settings to ensure they operate safely.

Use	Size	Grade	Torque Setting	
			Nm	Ft-lb
Driveshaft Taper Pins	M12	8.8	230	170
Wheel Nuts	M16	8.8	270	199
Drive Pulley Taper Lock	M6	TBC	47	35
Idler Pulley Clamping Element	M6	8.8	17	13
Belt Tensioner	M6	8.8	17	13
Belt Tensioner Pulley	M10	8.8	57	42
Belt Tensioner Adjuster Plate Bolt	M8	8.8	29	22
Towing Eye	M16	12.9	413	305
Drawbar Bolts	M24	8.8	865	638
Gearbox Bolts	M16	8.8	255	188
Blade Bolts	M10	8.8	57	42
Roller Bolts	M20	8.8	500	369

Table 5.13 – Rollicut Specific Fastener Torque Settings

Non-specific Fastener Requirements

The below tables give reference to the **maximum** recommended tightening torques for standard, zinc plated finished bolts on Spearhead machines. **These settings can be applied to hex, socket countersunk and socket button screws.**

Size	Grade					
	8.8		10.9		12.9	
	Nm	Ft-lb	Nm	Ft-lb	Nm	Ft-lb
M5	5	3	7	5	8	6
M6	14	10	12	9	14	10
M8	34	25	29	21	34	25
M10	68	50	57	42	68	50
M12	119	88	99	73	119	88
M14	189	139	158	116	189	139
M16	295	218	246	181	295	218
M18	406	299	338	249	406	299
M20	576	424	480	354	576	424
M22	783	577	652	481	783	577
M24	995	734	829	612	995	734
M30	1977	1458	1647	1215	1977	1458

Table 5.14 – Standard Fastener Torque Settings

5.10.2 Hydraulic Fittings

Throughout all Rollicut machines, BSP adaptors and hoses are used. See the relevant headings for adaptors and hoses.

Port Adaptors With Bonded Seals

The below tables give reference to the **maximum** recommended tightening torques for standard, BSP port adaptors found on Rollicut machines.

Size	Thread	Torque Setting		Spanner Size
		Nm	Ft-lb	
¼"	BSP	34	25	19mm
3/8"	BSP	47	35	22mm
½"	BSP	102	75	27mm
M14	Metric	TBC	TBC	19mm

Table 5.15 – Rollicut Adaptor Torque Settings

Hydraulic Hoses

The below tables give reference to the **maximum** recommended tightening torques for standard, hydraulic hoses on Rollicut machines.

Size	Thread	Torque Setting		Spanner Size
		Nm	Ft-lb	
¼"	M14 Metric	TBC	TBC	17mm
3/8"	M18 Metric (Minipilot – Rollicut Proline)	TBC	TBC	27mm
½"	M22 Metric (Minipilot – Rollicut Proline)	TBC	TBC	22mm

Table 5.16 – Rollicut Hydraulic Hose Torque Settings

5.11 Machine Inspection Record

SPEARHEAD	MACHINE INSPECTION RECORD (For Rollicut 500/600)	Pre-delivery inspection:	Select
		Installation inspection:	Select
		Daily pre-work inspection:	Select
Model:		Serial No:	
Inspector name (print):		Inspection date:	
Company/Position:			
Inspector signature:			

Visual Checks	Comments	OK
Check that an operator's instruction manual in the correct language for the working territory is in the machine document holder.		
Check that the operator's instruction manual is filled in and serial number is present and matches the serial number of the machine.		
Warning decals are present, clean and in good order		
Inspect main fabrications and damage – bodies, axles, drawbar e.t.c.		
Inspect all hosing for damage – kinks, twists, chafing or weeping		
Ensure hydraulic hoses are routed to tractor through the hose guide		
Inspect all hydraulic rams for damage, corrosion and oil leaks		
Inspect all hydraulic ram breathers are present		
Inspect all lighting on the machine to ensure it is operating correctly		
Check all electrical connections to make sure they're in good condition and not broken or corroded		
On Rollicut Proline machines fitted with Minipilot, inspect the valve block to make sure it and all its hydraulic and electrical connections are in good condition		
Inspect that the storage stand is fitted and lifted up for transport		
Inspect PTO driveshaft and cone guards for integrity and condition		
Inspect to see all rubber flaps are present and in good condition		
Inspect to see all fixed guarding protection is present		
Inspect the drive belts for condition against the operator's manual		
Ensure that hydraulic hoses pass through the hose guide		
Ensure when fitting the machine to the tractor that the safety chain is fitted between the tractor and drawbar		
Inspect blade and blade nut condition against the operator's manual		
Inspect that the blades are fitted for the given rotor direction against the operator's manual		
Inspect that each rotor shaft is not damaged		
Inspect that each of the rollers are in position, secure and are not bent		
Inspect that the roller height adjustment bolts on each of the skids are tightened		
Inspect that all the rollers are in the same position to ensure a level, even cut		

Mechanical Checks	Comments	OK
Check all hydraulic hoses and adaptors for tightness and tighten to the correct torque setting given in the operator's instruction manual		
Check all electrical connections to make sure they're correctly seated and not broken or corroded		
Ensure the oil gearbox quantity is to the level plug on each gearbox. Consult the maintenance schedule to see if an oil change is needed		
Ensure the gearbox breathers are present and free from dirt		
Check the gearbox mounting fasteners are tight to the correct		

torque setting given in the operator's instruction manual		
Check the wing driveshaft flange bolts are tight to the correct torque setting given in the operator's instruction manual		
Check each of the driveshaft taper bolts bolts are tight to the correct torque setting given in the operator's instruction manual		
Check each of the drive belts on each machine body to ensure that they are correctly tensioned		
Randomly test for loose nuts and bolts. Tighten to the correct operator's instruction manual torque settings.		
Grease all driveshaft grease points in accordance with the operator's manual		
Inspect the skids for condition and tightness of its fasteners		
Inspect the scraper wires (if fitted) to ensure they are secure		
Check that the input PTO driveshaft is correctly seated at both the tractor and machine end		
Ensure the PTO retaining chain is fitted stopping guard rotation		
Inspect each of the PTO bearing wear rings for wear		
Check machine tyre pressures against the operator's manual		
Check tractor tyre condition and pressures against the tractor operator's manual		
Check wheel nut tightness against operator's instruction manual		
Check wheel bearings for play and movement		
Check that the fasteners between the mount frame and the arms on each of the wings and the rear body lift frame are tight		
Ensure that the input PTO driveshaft is correctly shortened between the tractor and machine following the operators manual		
Ensure body locks are engaged for transport		
Tractor spec meets spec requirement of the machine (PTO rpm/HP)		
Inspect blade bolts for condition and tightness against operator's manual torque values		
Ensure that the blades are free-swinging		

Running Checks	Comments	OK
Once all visual and mechanical checks have been made, follow the running checks below		
Pressurise hydraulic rams and inspect for leaks		
Check wings lower and raise		
On Rollicut Proline machines fitted with Minipilot, ensure all control box functions and lights work as intended on the machine		
Fully raise and lower the machine, checking for pinch points		
Run the machine to operating speed to check for vibration and noise. If vibration is present check the "Troubleshooting" section in the operator's manual		
Check for excess noise and heat build-up in components		

Other comments:

Disclaimer: All guidance and maintenance advise to be carried out on the machine as written in this inspection record is deemed on the provision that the operator/maintenance operative has fully read and understood the specific operators manual for the given model of machine and follows the guidance and safety precautions described within it.

Spearhead claims no responsibility to any machine and/or physical harm caused by anything other than the practice guidelines stated in its specific machine model operators manual.

5.12 Machine Storage

Follow the following sections for guidance to correctly storing Rollicut machines out of working use and preparing back into correct working condition.

5.12.1 Preparing The Machine For Storage

Following seasonal use it is important to prepare the machine for storage, thinking of the preservation of parts condition and ease of reintroduction when bringing the machine back into work after periods of no use.

Follow the following points:

5.12.1.1 Thoroughly wash the machine removing all traces of grass and dirt.

Great care should be taken when using pressure washers. **Do not** hold the pressure washer lance close to the paintwork and items containing seals as this can cause damage and discolouration.

Spearhead does not recommend using steam cleaners.

5.12.1.2 Remove and store the input PTO driveshaft.

5.12.1.3 Inflate tyres (if fitted) to the correct pressure as stated in Section 5.8.1.

5.12.1.4 Grease all grease points following the guidance given in Section 5.2.3 and 5.2.4.

5.12.1.5 Liberally smear grease along the length of exposed plated hydraulic ram shafts and any other exposed threaded item.

5.12.1.6 Cover all electrical components to protect them from weather which cannot be separated from the machine.

5.12.1.7 On Proline machines fitted with Spearhead's Minipilot control system, store the control box inside to protect it from the weather.

5.12.1.8 Tighten all fasteners, pins and hoses to the recommended torque.

5.12.1.9 Replace all gearbox oil.

5.12.1.10 Use touch up paint available from Spearhead where necessary to preserve the appearance of the machine.

5.12.1.11 Ideally store the machine in the dry indoors, on a firm surface or stands, away from the elements. This will greatly preserve the machines physical appearance and condition.

Figure 5.92 – Prepare For Storage

It is also best practice to inspect the machine for worn/damaged items which will be required to be replaced before entering work again in the new season. Consult the maintenance schedule for the machine (Section 5.11) as well as other specific maintenance task sections to see what could be required to be done to the machine.

Ordering replacement parts at the beginning of this period with plenty of time will potentially reduce the delays of reintroduction into work with out of stock items. Many other local operators will be carrying out the same procedure at the same time.

Where parts are broken, damaged and deemed not fit for use; replace with genuine Spearhead parts using the online Interactive Parts facility at
https://my.spearheadmachinery.com/parts/public-interactive-parts-database/

You will require the machine serial number. Assistance to its location can be found in Section 1.3.

Spearhead Rollicut machines are 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 problem, use only genuine Spearhead parts and make sure the machine is not driven at a speed in excess of 540rpm on the PTO.

5.12.2 Returning The Machine Back To Work

Returning the machine back to work, in most cases, is similar to preparing the machine for storage shown in Section 5.12.1. If the procedure shown in that section is adhered to, a lot of the preparation work will have already been done to quickly reintroduce the machine back into work condition.

Follow the following points:

5.12.2.1 Depending on the period of the machine being unused and whether the machine has been stored outside, the machine may require cleaning.

Great care should be taken when using pressure washers. **Do not** hold the pressure washer lance close to the paintwork and items containing seals as this can cause damage and discolouration.

Spearhead does not recommend using steam cleaners.

5.12.2.2 Remove the belt guards and inspect the belts for their condition. Check the belt tension on each driveline following the guidance shown in Section 5.4.2.

Check the condition of the belts, if there is any sign of melting, wear or cracking; replace with new. Do not attempt to use the machine with damaged belts.

5.12.2.3 On Proline machines fitted with Spearhead's Minipilot control system, remove the centre chassis and belt guards and inspect the valve block and all other electrical connections for their condition.

5.12.2.4 Fit the various PTO driveshafts following the guidance given in Section 4.5.1 and torque the taper pin to 230Nm (170 ft/lbs).

5.12.2.5 Inflate tyres (if fitted) to the correct pressure as stated in Section 5.8.1.

5.12.2.6 If not carried out before storage, grease all grease points following the guidance given in Section 5.2.

5.12.2.7 If not carried out before storage, tighten all fasteners, pins and hoses to the recommended torque.

5.12.2.8 Remove the smeared grease found along the length of exposed plated hydraulic ram shafts and any other exposed threaded item which were put on during the storage period.

5.12.2.9 Carry out a full machine inspection, using the Machine Inspection Record guide sheet found in Section 5.11.

Where parts are broken, damaged and deemed not fit for use; replace with genuine Spearhead parts using the online Interactive Parts facility at:
https://my.spearheadmachinery.com/parts/public-interactive-parts-database/

You will require the machine serial number. Assistance to its location can be found in Section 1.3

Spearhead Rollicut machines are 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 problem, use only genuine Spearhead parts and make sure the machine is not driven at a speed in excess of 540rpm on the PTO.

6 Troubleshooting

	Symptom	Possible Cause	Remedy
6.1	**Irregular cut**	a) Worn, bent or broken blades	Replace blades immediately. • Raise cutting height to avoid striking objects • Remove/avoid obstacles such as rocks • Check rotor speed • Ensure steady initial starting of the machine
		b) Rotor speed/direction	Check PTO input speed and increase to maximum indicated; see Section 2.5.1
		c) Clogged material due to excessive ground speed	Reduce tractor speed over ground and check correct PTO input speed
		d) Crop condition	Look for suitable conditions
6.2	**Machine noise**	a) Loose bolts	Check and tighten to the correct torque. See Section 5.10
		b) Damage to a fabrication or cracks	Repair fabrication in specialised, approved workshop or replace component with genuine part
		c) Vibration	See “Vibration” symptom heading below
6.3	**Gearbox noise**	a) Lack of oil	Fill to level mark on gearbox
		b) Worn gears	Replace gears with genuine Spearhead part
		c) Worn bearings	Replace bearings with genuine Spearhead part
6.4	**Vibration!**	a) Lost/broken blades (see 6.5)	Replace all blades on that rotor
		b) Rotor damaged/bent	Replace the rotor
		c) Worn gearbox bearings	Replace bearings and seals
		d) PTO speed too high	Reduce PTO speed to the correct operating speed
		e) Build-up of debris	Stop the machine and remove debris
6.5	**Broken/ damaged Blades**	a) Blades striked object	Raise the machine to avoid striking objects again Remove/avoid obstacles such as rocks
		b) PTO going too fast	Reduce PTO speed to the correct operating speed
6.6	**Rotor bearing failure**	a) Rotor out of balance	Rebalance/replace the rotor
		b) Wire/string in bearing	Remove wire/string
		c) Lack of maintenance	Grease bearings to schedule
		d) Water in bearing	Expel water with grease
		a) Input PTO driveshaft telescopic guard bottoming out	Shorten the telescopic guard following the guidance in Section 3.3.4
		b) Engaged PTO drive with too much speed	Ensure a steady engagement into driving the PTO with a low tractor engine speed
		c) Lack of grease on sliding tubes of drive driveshaft	Remove and split the input PTO driveshaft following guidance in Section 5.3 and grease the two halves
6.8	**Gearbox overheating**	a) Incorrect oil level	Fill to level mark on gearbox
		b) Incorrect grade of oil	Drain existing oil and refill using EP80/90W or GL-4/GL-5
		c) Incorrect operating speed	Operate the PTO speed at the correct speed as stated on the decal on the splitter gearbox
		d) Machine overloaded	Reduce tractor/machine forward speed
6.9	**Excessive Belt Wear**	a) Belt and pulley condition	Replace components if necessary
		b) Incorrect belt tension	Tension belts to the correct setting following guidance in Section 5.4.2.
		c) Machine overloaded	Reduce tractor/machine forward speed

	Symptom	Possible Cause	Remedy
6.10	**Damage to input PTO driveshaft, universal joint and wide-angle PTO joint**	a) Input PTO driveshaft telescopic guard bottoming out	Shorten the telescopic guard following the guidance in Section 3.3.4
		b) Engaged PTO drive with too much speed	Ensure a steady engagement into driving the PTO with a low tractor engine speed
		c) Turning the machine too sharply or working angle too great	Avoid turning the machine too tightly. See Section 4.9 on the guidance to correctly driving the machine
		d) Not enough overlap	Purchase another input PTO driveshaft and cut to the correct length (to give enough overlap) following the guidance given in Section 3.3.4
		e) Lack of grease	Grease various locations on the driveshaft following the guidance given in Section 5.2.2
6.11	**Gearbox oil leak**	a) Damaged output shaft oil seal	Inspect the gearbox seal protector for foreign material (e.g. wire). Remove and replace oil seal
		b) Faulty breather	Remove the breather and clean or replace
		c) Damaged gasket	Remove the covering plate/housing and replace gasket
		d) Incorrect oil level	Fill to level mark on gearbox
6.12	**Valve block oil leak**	a) Loose hydraulic connections	Tighten hydraulic hose connections to the valve block
6.13	**Minipilot control box malfunctioning – Rollicut Proline Only**	a) No power to control box	Ensure that the power lead is plugged into the tractor
		b) Broken wire in loom	Check wires and connections on the specific function wiring
		c) Loose connection on valve block	Inspect and tighten connections on the valve block
		d) Corroded connection on valve block	Replace electrical connection
		e) Hoses not plugged into tractor	Ensure hydraulic hoses and properly seated into the tractor
6.15	**Automatic wing rotor disengage not working**	a) Wing position sensor not set correctly	Inspect the particular wing sensor and adjust the sensor position
6.16	**Metal fatigue on fabrication**	a) Too fast working/transportation speed	Slow down! See Section 4.9 on the guidance to correctly driving the machine correctly in work and during transportation
		b) Used in a poor manner/condition	See Section 4.9 on the guidance to correctly driving the machine correctly in work and during transportation. See Section 5 on the guidance to correctly maintaining the machine
6.18	**Bodies dropping**	a) Ram seal leaking	Replace ram seals
6.19	**Tractor external oil supply overheating/ not staying in detent**	a) High back pressure in returns line	Connect machine return hose to a free flow returns on the tractor
		b) Too much oil flow	Reduce flow to 45 litres/min or less.

7 Spare Parts

7.1 How To Obtain The Correct Spare Part Numbers

For correct part numbers; use the Spearhead interactive online parts books. These are available at https://my.spearheadmachinery.com/parts/public-interactive-parts-database/
You will need to enter the machine serial number; see Figure 1.4.

7.1.1.1 Enter the serial number.

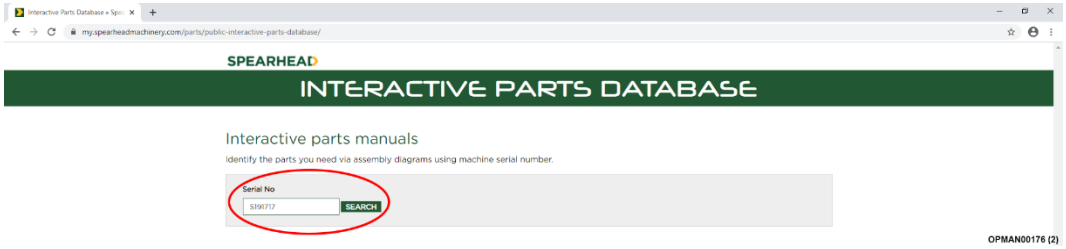


Figure 7.1 – Type In Serial Number

7.1.1.2 After entering the serial number a specification for the machine will appear. Click on the serial number; see Figure 7.2.

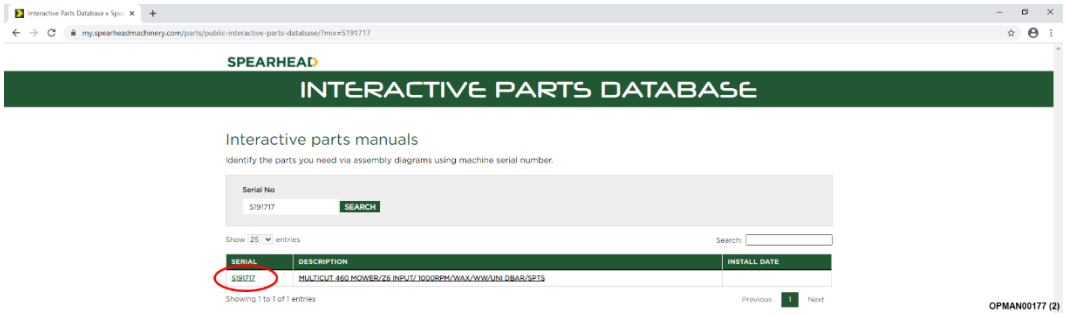


Figure 7.2 – Click On Serial Number

7.1.1.3 After clicking on the serial number a full parts breakdown, specific to the machine serial number will appear showing the various parts and assemblies of the machine. Click on the specific assembly picture required; see Figure 7.3.

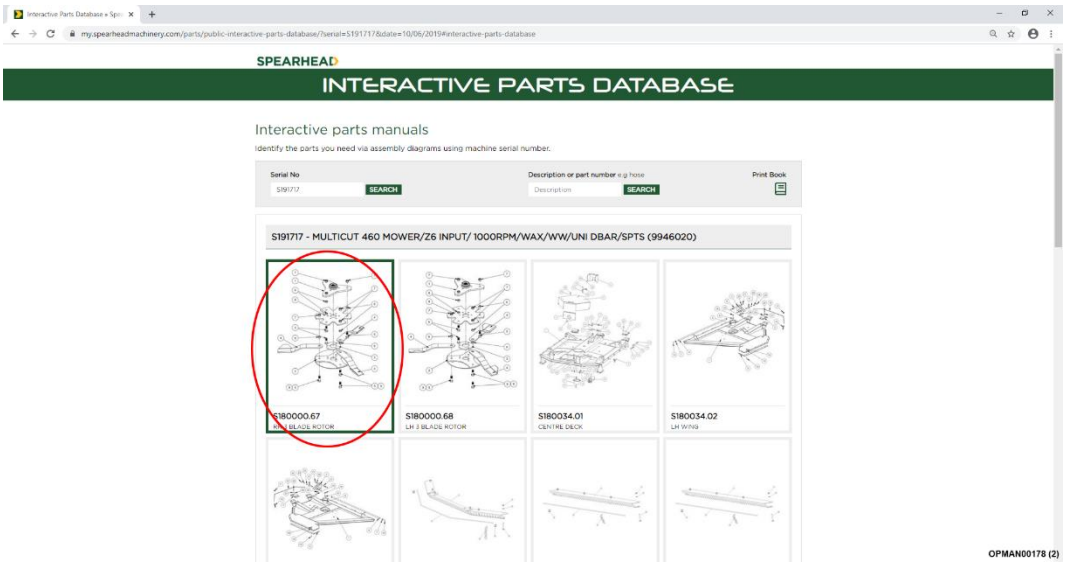


Figure 7.3 – Click On Assembly

7.1.1.4 You will finally be presented with a full exploded parts breakdown for that particular assembly, giving part numbers and the quantities required; see Figure 7.4.

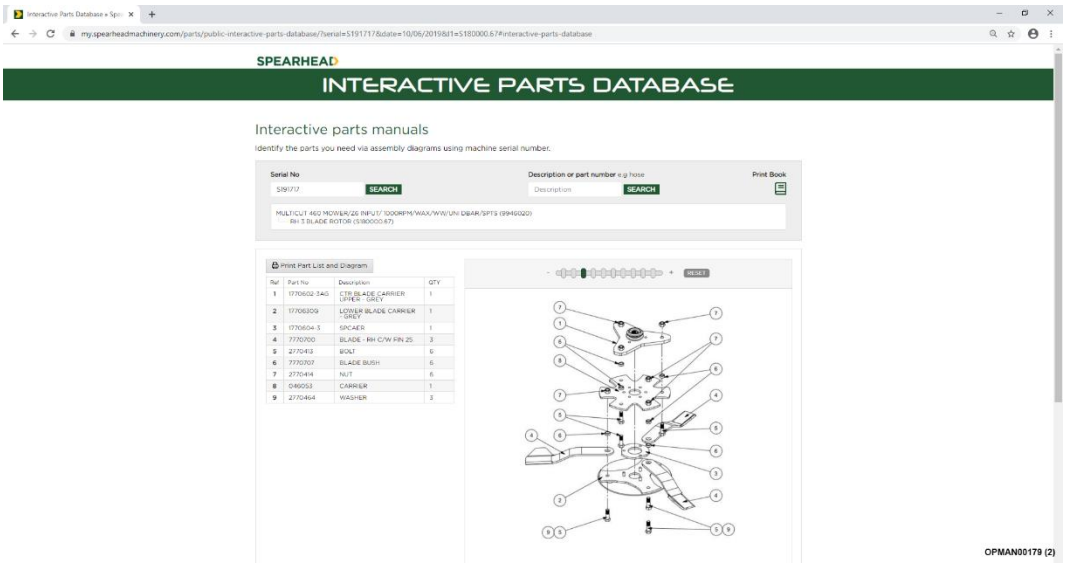


Figure 7.4 – Exploded Parts Breakdown With Bill Of Materials

7.2 Spare Parts Ordering

It is important to note that when it comes to ordering replacement parts, that this can **only** be carried out through a Spearhead dealer. **Spearhead does not accept direct customer parts orders over email, fax or telephone**.

For guidance on finding your local Spearhead dealer; see Section 7.3.

7.3 Dealer Network

Spearhead has an extensive dealer network which can offer genuine replacement parts.

In order to make it easier to find your local Spearhead dealer, the Spearhead website has a Dealer Locator facility.

http://www.spearheadmachinery.com/dealer-locator/

To find your local Spearhead dealer enter your location or postcode into the “Your location” box and then press “Search”; see Figure 7.5.

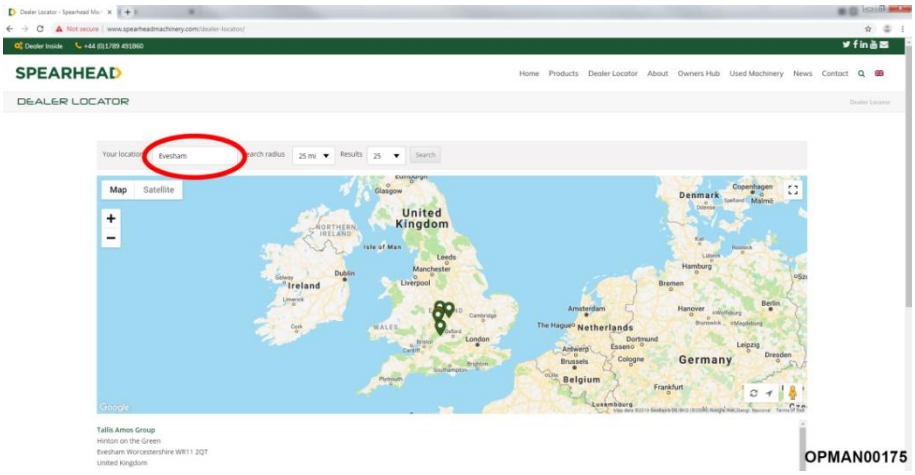


Figure 7.5 – Dealer Locator

Notes

Notes