trimax
MOWING SYSTEMS

Snake

Operator's Manual
Basic Parts List

Serial No.

TRIMAX MOWING SYSTEMS

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1-800-523 1167

www.trimaxmowers.com

insist on Trimax
Genuine Parts

Welcome to Trimax Mowing Systems!

Firstly, thank you for selecting a Trimax mower. All of us here at Trimax Mowing Systems congratulate you on becoming one of the most important people in our business, a Trimax customer.

Trimax is a progressive company that continually strives to satisfy your needs, so we welcome any feedback you can provide to help us improve our products and services to meet your expectations. Any constructive comments about this operator's manual are also welcome.

Your Trimax mower has been designed to perform its task efficiently and with a minimum of maintenance. This handbook provides safety guidelines, fitting instructions, maintenance requirements, parts listings and warranty forms. We recommend you carefully read the entire handbook before operating the mower as this will enable you to take full advantage of your new machine's considerable potential.

If you will be in charge of this machine but will not be operating it, please ensure all operators have access to a copy of this manual and are familiar with the machine and its operation before using it. A sign-off form is included so you can keep a record of those employees who have been trained to operate the machine. Extra copies of this manual can be obtained from your dealer or direct from Trimax Mowing Systems if required. The part number is printed at the bottom of each page.

Please ensure that whoever delivers your mower familiarises you with the mower and that you read and sign the Commissioning and Warranty Registration Certificate. This form ensures that both you and the installer were satisfied with the product at the time of delivery and that you know how to set up, maintain and operate it correctly. It also signifies the beginning of the warranty period and, we hope, a long and fruitful relationship between us.

Note that if you register on-line the warranty period will extend to three years. Details of how to register are on the Commissioning and Warranty Registration Certificate.

Once again, thank you for selecting a Trimax product.

Best regards

The Management and Staff
Trimax Mowing Systems

www.trimaxmowers.com

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1. COMMISSIONING & WARRANTY REGISTRATION CERTIFICATE.

Where to find the Commissioning and Warranty Registration Certificate.
This is a triplicate form, which should be found inserted into the cover to this operator's manual.
The warranty on this **Trimax** product is spelt out in the Warranty Policy document.

The purpose of the form.
The document must be completed by the owner of the machine and the agent from whom it was purchased. It is designed to protect all parties involved by ensuring that:
1. the machine has been properly assembled and is in a safe condition before being operated
2. all relevant parts have been properly lubricated before use
3. the owner and/or operator is familiar with this operator's manual and understands how to use it
4. the owner and/or operator has been instructed how to operate the machine correctly under actual working conditions
5. the owner and/or operator is aware of safety issues regarding the use of the machine
6. the owner and/or operator has been instructed in the care and maintenance of the machine
7. the owner is satisfied with the machine's performance.

What to do if the document has not been supplied with the machine.
If the document was missing when the machine was delivered and commissioned, immediately contact the agent from whom the machine was purchased and request a new certificate.

Where the papers go.
The Warranty Registration document is a triplicate form. The various pages are for different purposes:
1. the top layer is yellow and is to be returned to **Trimax Mowing Systems** at the address shown.
2. the middle layer is blue and is retained by the agent who sold the machine to the purchaser.
3. the bottom layer is printed on white card and is to be retained by the purchaser of the machine.

How to fill in the form.
Do not separate the pages before completing the form. Place it on a flat, hard surface and complete the top (yellow) copy using a ball point pen. Press firmly and print clearly. The pages are self inking, so the other layers will be filled in at the same time. When the form has been completed, the top two pages should be distributed as indicated and the bottom copy kept by the owner of the machine in a safe place.

IMPORTANT! Note that Trimax Mowing Systems may not be obligated to honour any warranty claim(s) on this product unless the Commissioning and Warranty Registration Certificate has been completed in full and the appropriate copy returned to Trimax Mowing Systems at the address shown on the form.

1a. My Trimax

On the **Trimax Mowing Systems** website there is a section called "**My Trimax**". This is available only to owners and users of **Trimax** mowers and to **Trimax** dealers. Included in this section are **instructional videos**, **spare parts listings** including full parts drawings, **operator's manuals**, **service bulletins**, **spares instructions** detailing how to fit parts and options, and **reference material** including the full warranty statement.

To log on to My Trimax:
1. Go to the **Trimax** website at **www.trimaxmowers.com**.
2. Click on "**My Trimax**"
3. Click on "**Register**" and fill in the form.

2. NOTES ABOUT THIS MANUAL.

Language:

- This manual was originally written in New Zealand English, which is very similar to British English. Translations into other languages are derived from the New Zealand version.
- Names for parts and machine components have been kept as international as possible but some terms may be foreign to users in some markets. We apologise for any confusion which may result.

Pictures:

- The pictures used in this manual show machines that are typical examples of the mower concerned. Some components may appear significantly different from those on the mower being used but the pictures should still assist the operator to carry out the necessary operations.
- In some cases guarding has been removed for clarity. Guarding or other parts shown may be optional in some markets and some items not shown may be standard fitments in other countries.
- Where a tractor is shown it is used only to enhance the clarity of the instructions. As with mowers, tractors differ significantly and operators should be familiar with the tractor controls and their operation before attempting to attach or use the mower.

Instructions:

- The instructions given are applicable in most instances. Wherever possible, alternative instructions are given if differences between models or options significantly affect the procedures.

Conventions:

- The directions left, right, front and rear, if mentioned in this manual, are as seen from the driver's seat of the tractor facing in the normal direction of travel.
- On multi-spindled rotary mowers (including the **Striker**, **ProCut**, **Stealth**, **Merlin**, **Snake**, **Pegasus, X-WAM**, and **Topper** ranges), **Trimax** convention is to identify the blade spindles as A, B, C, etc., starting from the left hand side. On machines with separate mowing decks, the left spindle on each deck starts with A.
- On **Trimax** flail mowers (including the **Warlord**, **Ezeemow** and **FlailDek** ranges), the cutting head is driven from one end of the mower. The end where the pulleys are enclosed within the drive belt guard is called the "drive end", while the other end is known as the "non-drive end".

Tractor Brand Impartiality:

- **Trimax Mowing Systems** is a privately owned group of companies and has always been so. **Trimax** operates completely independently from all tractor manufacturers and does not favour any brand or model over any other. Front mounted mower decks in particular may be tractor specific, but this is because those tractors are especially suited to a given application or because there has been customer demand for mowers to fit them.
- Where tractor brands or models are listed in this manual, no favouritism should be assumed on the basis of the order in which they appear. In many cases the manual pages were written as and when tractors became available and suitable fitting kits were developed. Similarly, where particular tractor brands or models do not appear, this may simply mean the mower is not suitable for some engineering reason or that a mounting kit has yet to be developed.

Accuracy:

- Every effort has been made to ensure the information given in this manual is as accurate as possible at the time of publication. **Trimax Mowing Systems** will not be held liable for the consequences arising from any errors.

3. SAFETY.

This SAFETY ALERT SYMBOL appears throughout this operator's manual wherever the operation being described requires special care or safety awareness. Read and obey all safety messages and follow instructions carefully.

YOU are responsible for the SAFE operations and maintenance of your Trimax machine. YOU must ensure that you and anyone else who is going to operate, maintain or work around the machine is familiar with the operating and maintenance procedures and related SAFETY information contained in this operator's manual. This manual will take you step by step through your working day and alert you to all good safety practices that should be adhered to when operating the machine.

Remember, YOU are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety programme. Be certain that EVERYONE operating this equipment is familiar with the operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Owners of mowing machinery must give operating instructions to operators or employees before allowing them to operate Trimax machinery and at least annually thereafter or as required by local occupational safety and health regulations.

- The most important safety device on Trimax equipment is a **SAFE OPERATOR**. It is the operator's responsibility to read and understand **ALL** safety and operating instructions in the manual and to follow these. All accidents can be avoided.

- In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment. Train all new personnel and review instructions frequently with existing workers. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes him/herself and bystanders to possible serious injury or death.

- Do not modify the equipment in any way. Unauthorised modification may impair the function and/or safety and could affect the life of the equipment.

- Use only genuine replacement parts when repairing or reconfiguring the equipment. The genuine parts have been tested and approved on the machine in the type of conditions it will be used in. Non standard parts may render the machine unsafe.

Think SAFETY!

Work SAFELY!

3a. Hazard identification.

HAZARD	DESCRIPTION	REMEDY
Rotating blade hazard	The blades rotate at high speed. Hands & feet are well protected when the machine is on the ground but must be kept clear when the mower decks are off the ground.	Do not approach or attempt to work on the machine while it is running.
Thrown object hazard	Blades on rotary & flail mowers must move at high speed to generate their cutting action. Foreign objects that enter the cutting chamber may turn into high speed projectiles. Such objects are contained within the cutting chamber when the mower is on the ground but may escape when it is lifted.	Do not operate the mower if bystanders are within 30 metres (100ft).
		Be aware that lifting the mower while operating may allow projectiles to escape.
	Flails or fling-tip blades attach to blade carriers with special bolts that allow the blades to rotate freely. Loose or improperly fitted bolts may allow blades to break free.	Ensure flail & blade bolts are fitted correctly & tightened to the specified torque.
Cut hazard	Mowers are fitted with sharp blades which can cut hands when being fitted or handled.	Wear heavy gloves when working on the machine.
	Sheetmetal covers are made from thin metal that could cut hands.	
Wrap hazard	Any exposed rotating machine component is a potential wrap point. Unguarded PTO or drive shafts are examples. Long hair or loose clothing can be caught & wrapped around these parts, dragging the wearer into the machinery.	Ensure all guarding is in place.
		Do not wear loose clothing or clothes with draw strings, etc.
		Contain long hair.
Crush hazard	Tractor operated mowers are heavy. Many can be raised or lower on the tractor linkage. Others have sections that can move independently from each other. Raised structures can drop and crush anything underneath.	Always place suitable stands under mower bodies, ensure transport locks have engaged correctly & safety devices have been fitted before inspecting or working under a raised mower or raised sections of a mower.
		Wear steel capped safety boots.
Bystander hazard	People, particularly children, are unpredictable & may run into the operating area unexpectedly.	Be aware of bystanders in the area, particularly children. Stop the mower if people approach within 30 metres (100ft).
Fire hazard	Grass clippings blow about & can be trapped in machinery. Hot tractor engines & exhausts can ignite the clippings & extensively damage the tractor & other property nearby.	Inspect inside tractor engine covers & remove clippings frequently, especially when operating in dry conditions.
		Carry a fire extinguisher on the tractor.
	Clippings trapped under the transmission covers can ignite in hot dry conditions.	Lift mower covers & clean out clippings regularly.

HAZARD	DESCRIPTION	REMEDY
Noise hazard	Mowers are designed to operate outdoors. The operating position is seated in the driving seat of the tractor. Noise generated by the tractor & mower will vary considerably depending upon	Always use ear protection when operating the mower.
Dust hazard	Blades rotating at high speed stir up dust, particularly in hot dry weather.	Wear a dust mask when operating the machine in dry conditions.
		Wear eye protection
		Show consideration to others. Shut doors & windows in buildings nearby
Transport hazard	A tractor towing a mower is considerably heavier than the tractor on its own & is harder to stop.	Be aware. Drive defensively.
	Mowers attached to light tractors may cause the tractor wheels to lift off the ground when braking or traversing bumps	Use a suitable tractor.
		Fit approved ballast weights if necessary.
	Tractors often travel slower than other traffic.	Fit all signs, flags or beacons as required by local laws. Turn on headlights, tail lights & hazard flashers. Comply with local driving regulations. Pull over where safely possible to allow faster traffic to pass.
Pinch hazard	Pinch points occur where one object is moving in a circle & another moves close to it. Belt drives create pinch points where the belt is moving onto the pulley.	Ensure all guards are fitted correctly before operating the machine.
Shear hazard	Shear hazards occur when the edges of two surfaces move against each. Tractor linkages & mounted mowers move in relation to each other. Mowers with multiple decks have many sections that move independently from each other as the decks are lifted & lowered & when the machine is following ground contours. Fingers or limbs could be severed or seriously	Keep clear of machinery when it is moving.
		Ensure all guards are fitted.
Hydraulic hazard	Hydraulic systems such as hydraulic drives or lift rams & the tractor's auxiliary hydraulic system are operated by fluid under enormous pressure. Leaks can result in fine high pressure jets that can penetrate soft tissue with ease. Hydraulic oil is also toxic to the body & must be surgically removed to prevent gangrene.	Never use hands or fingers to inspect hydraulic hoses. Hold a piece of paper, cardboard or wood as a target when inspecting for hydraulic leaks.

HAZARD	DESCRIPTION	REMEDY
Free-wheeling parts hazard	Heavy revolving parts continue to rotate after the power is shut off. Flail & rotary mower blades, pulleys & driveshafts may keep turning for several seconds after the drive is disconnected. Injury can occur when operators attempt to work on the machine before all moving parts have stopped.	Wait for all moving parts to stop before approaching the machine.
Slips, trips & falls hazard	Slips & falls can result from slippery surfaces or cluttered work areas. Mowers parked after operating can leak large puddles of water onto the ground. Care is required when moving around them.	Take care when moving around the mower.
		Practice good housekeeping. Keep floors clean & dry.
		Put away anything not required for the job.
		Wear shoes with slip-resistant soles.

3b. Safety labels.

1. Keep safety labels and signs clean and legible at all times.
2. Replace safety labels and signs that are missing or have become illegible.
3. Parts fitted to replace others which displayed safety signs should also display the current sign.
4. Safety labels are available from your dealer parts department or from **Trimax Mowing Systems**.
5. **How to install Safety Labels:**
   - Be sure the installation area is clean and dry.
   - Decide on the exact location before removing backing paper.
   - Peel back the backing paper on one side and fold it back to expose a small area of the sticky backing.
   - Position the label as required and press the area with the exposed sticky backing onto the required surface.
   - Slowly peel the backing paper from the rear while evenly pressing the label onto the surface.

3c. To the new owner or operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment. It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. Follow all safety instructions exactly. Safety is everyone's business. By following recommended procedures, a safe working environment is provided for the operator, bystanders and the area around the work site. *Untrained operators are not qualified to operate any Trimax machine.*

3d. Safety sign-off.

1. Anyone who will be operating and/or maintaining **Trimax** mowing, shredding and mulching equipment must read and clearly understand **ALL** safety, operating and maintenance Information presented in this manual.
2. Do not operate or allow anyone else to operate this equipment until such information has been reviewed. Annually review this information before the season start-up.
3. Make these periodic reviews of **SAFETY** and **OPERATION** a standard practice for all of your equipment.

4. The sign-off form below is provided for your record keeping to show that all personnel who will be working with the equipment have read and understood the information in the operators manual and have been instructed in the operation of the equipment. **Ensure the sign-off sheet is kept up to date**.

3e. Safety sign-off form.

The following personnel have read and understood the information in this operator's manual and have been instructed in the operation of this Trimax equipment.

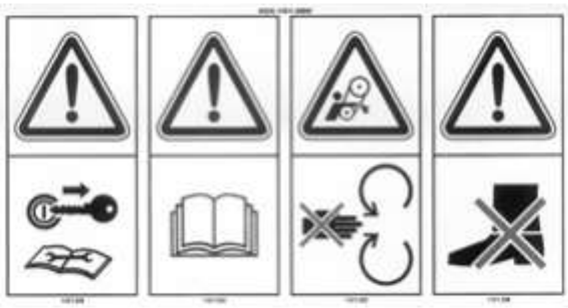
DATE	EMPLOYEE'S SIGNATURE	EMPLOYER'S SIGNATURE

4. LABEL IDENTIFICATION.

Types of labels and locations on the equipment are shown in the following illustrations. Good safety requires that you familiarise yourself with the various pictorial safety signs, the type of warning and the area, or particular function related to that area, that requires your SAFETY AWARENESS.

Think SAFETY! Work SAFELY!

REMEMBER: If safety labels have been damaged, removed, become illegible, or if replacement parts have been fitted without labels, new ones must be applied. New labels are available from your authorised dealer or direct from **Trimax Mowing Systems**.



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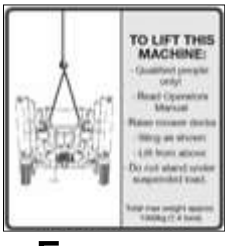
B 424-100-950

C 424-101-370

D 424-000-031



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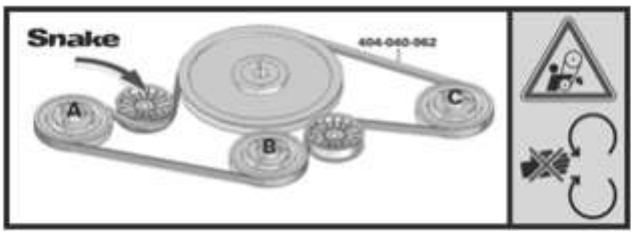

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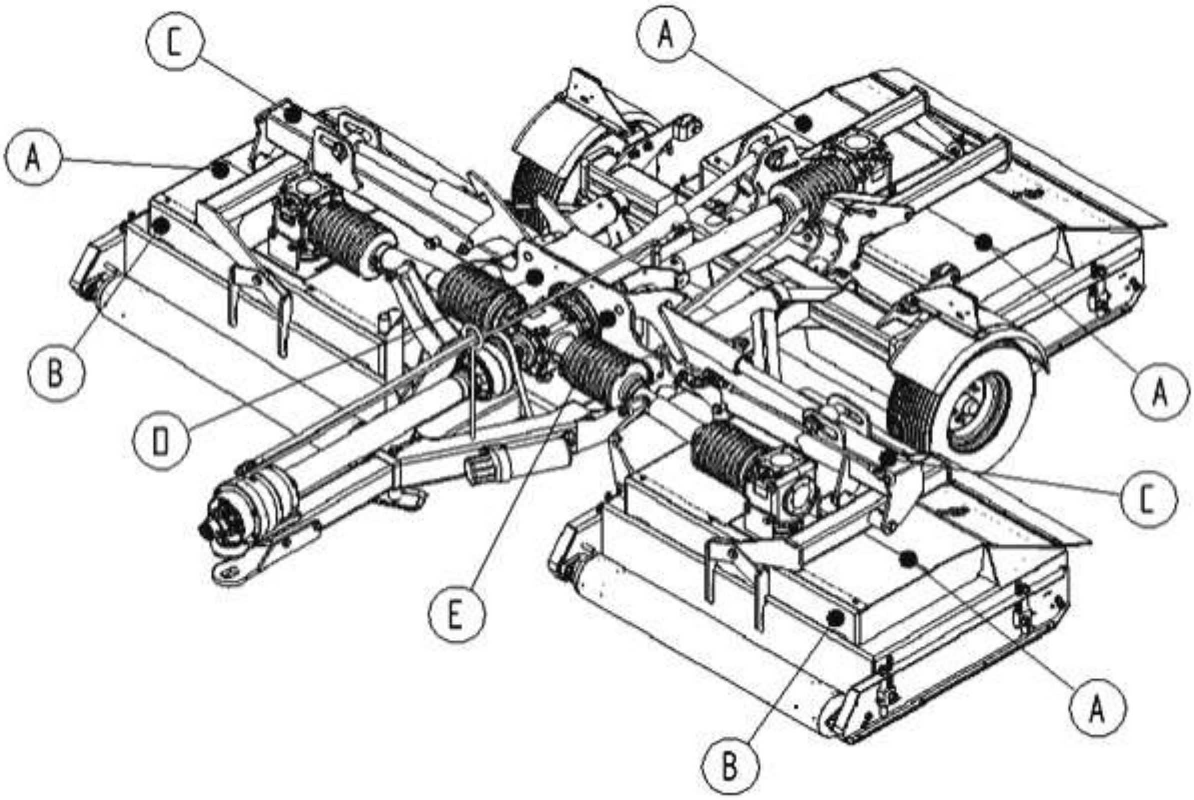
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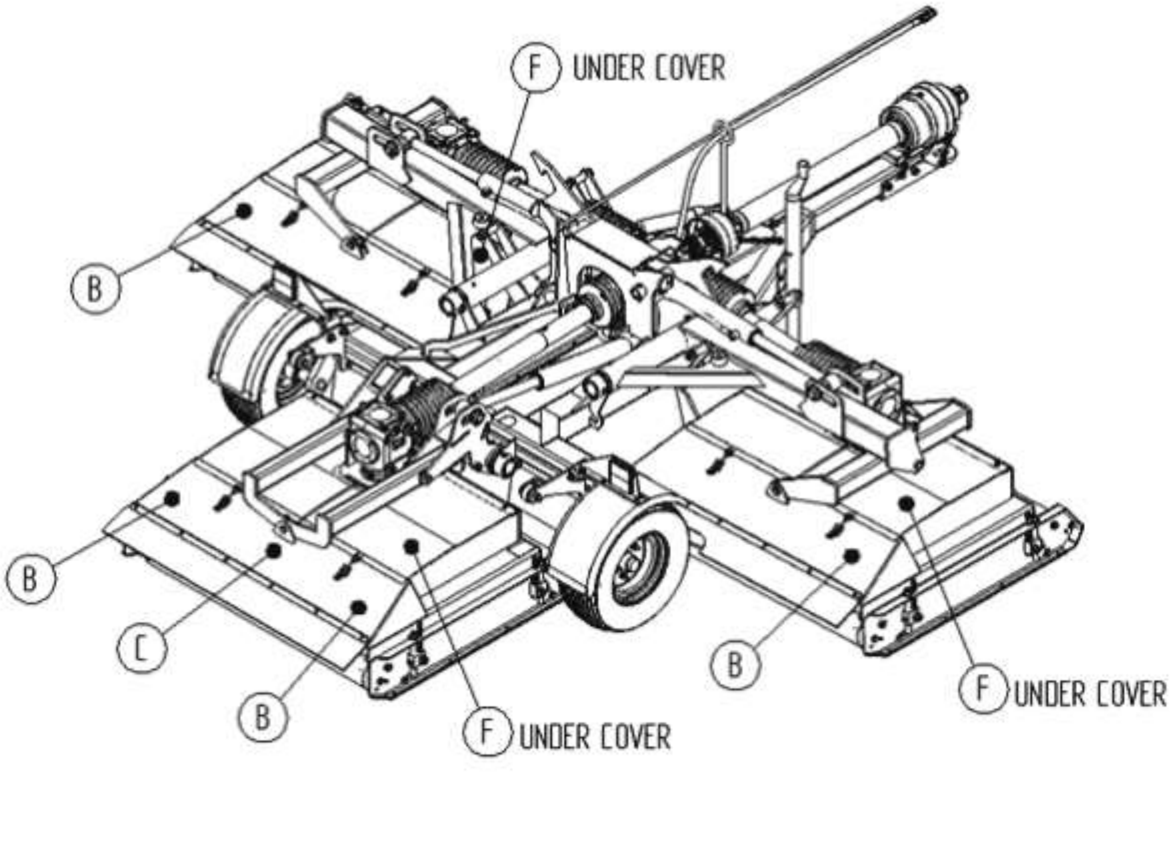
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6. PRODUCT DESCRIPTION.

Trimax Snake mowers are specifically designed to suit modern compact tractors in the 26-56kW (35-75hp) range and are ideal machines for undulating terrain such as golf roughs. Innovative engineering delivers outstanding finish coupled with impressive versatility, high productivity, low running costs and longevity.

The mower has a cutting width of 3.23 metres (127"). It consists of three separate rollermower decks attached to a central chassis and towed by a tractor. **Trimax Snake** mowers combine efficient wide-area mowing with excellent contour following and outstanding manoeuvrability.

The chassis connects to the tractor drawbar and has its own transport wheels. Each mower deck attaches to the chassis via an outrigger and is free to articulate in six directions. Outriggers are equipped with hydraulic rams to lift the mower decks which automatically lock into the transport position for safe operation on public roads.

Each mowing deck is a multi-spindled rotary mower with full-width rollers front and rear. The rollers enable accurate contour following and allow the mower decks to cross concrete pathways or mow along the edges of banks or bunkers. They also contain debris within the cutting chamber for unmatched safety. Fitted with **Trimax**'s exclusive **LazerBladez™** these technically advanced decks can mow at high ground speeds whilst producing a cut and finish to equal cylinder mowers and offering the ability to cut rampant spring growth.

Drive for the mower decks is provided by the tractor power take-off which is connected via a driveshaft to a 4-way gearbox on the chassis. Secondary driveshafts connect to individual deck gearboxes where shock-absorbing belts distribute power to the blade spindles.

Please read this operator's manual before operating the machine or carrying out adjustments or maintenance. It explains how to operate the machine safely and how to configure it for maximum performance in the field.

If you follow the operating instructions and maintenance programme your **Trimax Snake** mower will provide many years of productive, trouble-free service.

7. SPECIFICATIONS.

GENERAL	
MODEL	**Snake 320**
Cutting width	3234mm (127")
Overall width	3372mm (133")
Overall length (drawbar retracted)	3500mm (138")
Transport width	2050mm (81")
Transport height	1860mm (73")
Transport length (drawbar retracted)	3140mm (124")
Approximate weight ①	1240kg (2730 lb)
Minimum recommended PTO power ②	26kW (35hp)
Maximum tractor size	56kW (75hp)
Uncut circle diameter ③	Zero turn possible with some tractors

CHASSIS	
MODEL	**All Models**
Towing hitch	Forged high tensile steel, adjustable
Primary driveshaft	1-3/8" x 6-spline couplings both ends, 80 degree constant velocity joint at tractor end
PTO speed	540rpm
Gearbox type	R140
Gearbox ratio	1:1
Gearbox oil	EP90, 1.5 litres
Lift rams	63.5 x 31.75mm (2-1/2 x 1-1/4")
Hydraulic system	Hydraulic lift rams operated by tractor auxiliary hydraulic control
Hydraulic connection	1/2" BSP quick-release male probe
Outrigger hinge bearings	High strength reinforced nylon, 63.6mm (2.5") inside diameter
Outrigger hinge length	495mm (19.5")
Transport locks	Automatic mechanical hooks
Transport lock release	Manual by pull rope (see options)
Wheels & tyres	Rims: steel, 114.3mm (4.5") PCD x 5 stud pattern
Tyres	20x10.00-10 6-ply turf tyres
Tyre pressure (recommended / maximum)	210 / 230kPa (30 / 32psi)
Grease points	Outrigger hinges (6), side deck pitch pivots (4), mower deck roll pivots (6), lift rams (3), parking jack (1) Primary driveshaft - see instructions

① Weight figures are approximate and depend upon options fitted. ② Minimum required for trim mowing on level ground - 30-37kW (40-50hp) ideal for most conditions. ③ May depend upon tractor and drawbar extension. ④ Options may not be available in some markets.

MOWER DECKS	
MODEL	**Snake 320**
Cutting width	1160/1160/1160mm (46/46/46")
Cutting height range	10 – 90mm (3/8" - 3.5")
Driveshaft type	T40, 1-3/8" x 6-spline couplings
Gearbox type	R240
Gearbox ratio	1:3.1
Gearbox pulley diameter, all decks	322mm (12.6")
No. of blade spindles (left/centre/right)	3 / 3 / 3
Blade spindle construction	Maintenance-free, welded steel housing, large diameter high-tensile shaft, heavy duty ball bearings, anti-wrap protection
Belt drive	Single belt serpentine drive
Drive belt tensioning	Cam action flat pulley back idler
Spindle pulley diameter	156mm (6.1")
Idler pulley diameter	105mm (4.2")
Transmission covers	Stainless steel
Blade tip diameter - all decks	400mm (15.75")
Blade types (per spindle) - standard	**Trimax LazerBladez™** up-turned fling-tip blades
Transport system	Full width front & rear rollers
Rollers	140mm (5.5") diameter, ends shaped for scuff protection
Roller bearings	35mm (1-3/8") heavy duty self-aligning ball bearings, direct greasing
Attachment to outrigger **- roll axis** **- pitch axis, side decks** **- pitch axis, rear deck**	 16mm (0.63") high tensile bolts, greasable composite bushes, nyloil thrust washers 20mm (0.79") high tensile pins, greasable composite bushes, nyloil thrust washers 16mm (0.63") high tensile bolts, reinforced nylon bushes, nyloil thrust washers
Grease points (per deck)	Roller bearings (4), height adjusters (4) Driveshafts - see instructions
Gearbox oil	EP90, 1.5 litres per gearbox
OPTIONS ④	Wire roller scrapers **Trimax LazerBladez™** "flat" fling-tip blades Road kit (mudguards, tail lights, etc.) Drawbar safety chains Drawbar clevis Remote transport lock release Independent lift system

8. SERIAL NUMBER.

A serial number plate is fitted to the front "A" frame of the chassis adjacent to the parking jack (Fig. 1).

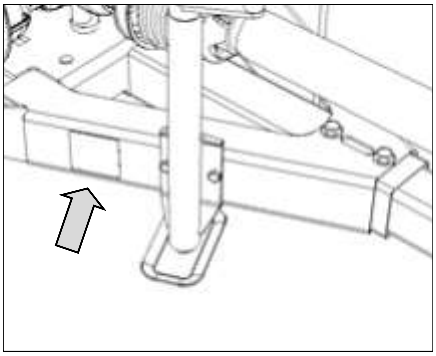

Fig. 1

To avoid confusion and frustration, **always quote the serial number when ordering parts.** A record is kept with complete details of every machine as it was configured when it left the factory. If the serial number is known this record can be referred to when there are doubts about the parts required.

9. EQUIPMENT MATCHING.

To ensure the safe and reliable operation of the **Trimax Snake** mower it is necessary to use a tractor with the correct specifications.

1. **Tractor power:**
The recommended minimum power shown in the table in Fig. 2 is intended as a guide in selecting the appropriate tractor. The exact minimum power requirement will vary considerably depending upon the type of work being carried out and the steepness of the terrain. **Maximum tractor power should not exceed 56kW (75hp).**

Model	Cutting Width	Minimum Power Required	Maximum Tractor Power
Snake 320	3.2m (10'7")	26kW (35hp)	56kW (75hp)

Fig. 2

2. **Tractor drawbar:**
Tractor drawbars vary and the same tractor model may be configured differently in different markets. **Trimax Snake** mowers are equipped with a tow hitch that can be configured to fit most tractor drawbars and powered pick-up hooks. There are local tractor drawbar variants such as the "French piton" fitted to some tractors sold in France. Consult your tractor dealer if your tractor drawbar type is not covered by the following instructions.
3. **PTO (Power Take-Off) configuration:**
The tractor must have a 1 3/8", 6-spline, 540rpm PTO outlet to fit the driveshaft supplied with the machine. The PTO must rotate clockwise when viewed from behind the tractor. Do not use shaft adapters or operate at any other speed. Operating speeds faster than 540rpm will overload the cutting components and lead to early failures.
4. **Hydraulic hose connections:**
Standard **Trimax Snake** mowers have only one hydraulic hose and require only a single-acting connection to the tractor. The standard male quick release coupling supplied should suit most tractors.
5. **Auxiliary hydraulic valves:**
It is preferable that the tractor's auxiliary hydraulic control valve is able to be set in a "float" position to allow the mower decks to follow contours accurately. If purchasing a new tractor, specify that at least one auxiliary circuit is equipped with float.

10. INSTRUCTIONAL VIDEOS & OTHER SUPPORT.

Instruction videos and other support material that cover many of the following operations are available on the **My Trimax** section of the **Trimax Mowing Systems** website. See section 1a for details of how to access this.

11. SETTING UP.

SAFETY! **Before attempting to make any adjustments or carry out maintenance on the mower, review the hazard identification list (section 3a) and take all necessary precautions.**

11a. Checking the tractor drawbar position.

The **Trimax Snake** is towed behind the tractor and connects to the tractor drawbar.

1. The tractor must be fitted with a drawbar or other standard tow hitch. If the drawbar is positioned to one side of the PTO output shaft the mower may contact the tractor tyre on that side when turning sharply (Fig. 3).

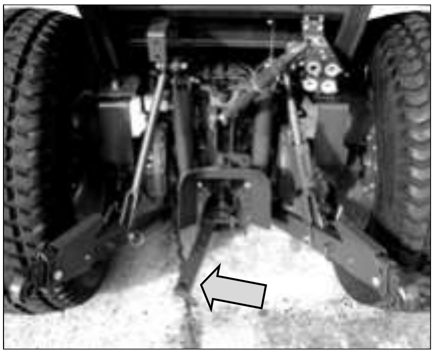

Fig. 3

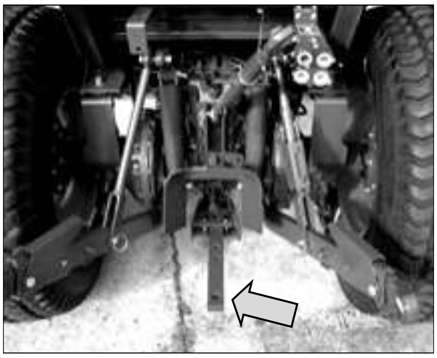

Fig. 4

The drawbar should be fitted to the centre position as shown (Fig. 4). See your tractor operator's manual for details.

2. The main driveshaft for the mower has a constant velocity joint at one end. **This end must be fitted to the tractor**.

   Before going any further, attach the driveshaft to the tractor's power take-off (PTO) shaft (see section 11f for details) and check the shielding on the driveshaft constant velocity joint will clear the tractor drawbar and the implement mounting pin (Fig. 5). On many tractors the height of the drawbar can be altered by attaching it upside down. If necessary fit the drawbar up the other way or find some other method of keeping it clear of the driveshaft shielding. See your tractor operator's manual for details.

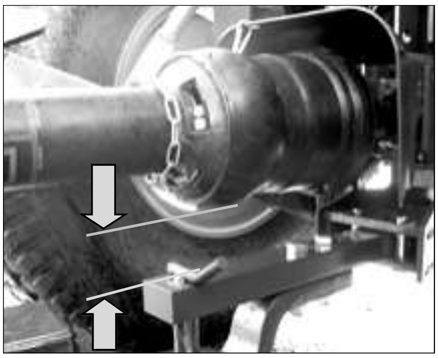

Fig. 5

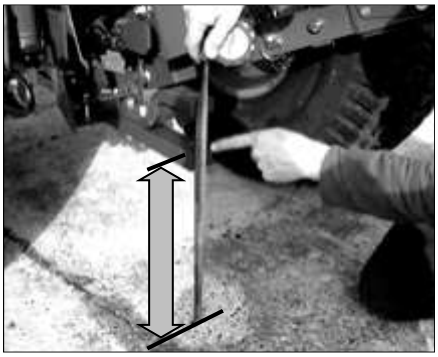

Fig. 6

3. Measure the height of the tractor drawbar from the ground to the top of the bottom tongue (Fig. 6). **Regardless of PTO shielding clearance** this measurement should be between **220 and 495mm (8.5-19.5")**. On tractors fitted with smaller-than-standard tyres this measurement may not be achievable. If so, fit standard diameter tyres or use another tractor with the correct drawbar height. If the driveshaft shielding fouls the drawbar, develop another way to shield the rotating driveshaft parts that will comply with local Health and Safety laws.

WARNING! For the correct operation of the mower on undulating ground the mower drawbar must be the correct height from the ground. If the front of the mower is too low or too high the mower decks may not follow ground contours correctly.

11b. Tractor drawbar types.

Different tractors can be fitted with different types of tow hitch. Even the same model of tractor may have different types depending upon the country in which it was sold. This makes it necessary to provide the mower with different tow hitch couplings.

Trimax Snake mowers are intended for use primarily with compact tractors in the 22-56Kw (30-75hp) range. These may have a drawbar of the single tongue style (Fig. 7).

Fig. 7

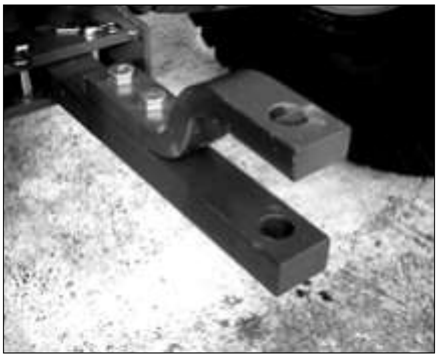

Fig. 8

The same drawbar may be used with a bolt-on fitting to convert it into the clevis type (Fig. 8).

Tractors sold in Europe may have a powered hitch (Fig. 9). The standard tow hitch types fitted to **Snake** mowers are compatible with these.

Tractors sold in France may also have a "French piton" system. The mower tow hitch should also suit this configuration provided the correct height can be achieved.

Fig. 9

Trimax Snake mowers have a tow hitch which can be configured to suit these different requirements.

All are based around a forged towing eye fitting that suits the powered hitch types (Fig. 10). Powered hooks fitted to tractors are of a larger diameter than the drawbar pins used with other types and this dictates the size of the towing eye.

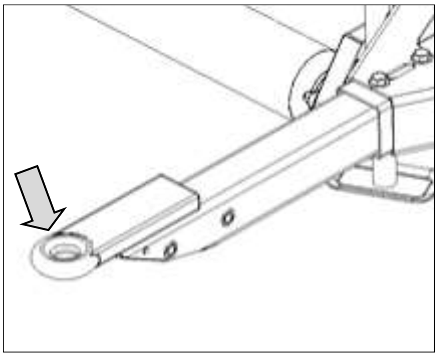

Fig. 10

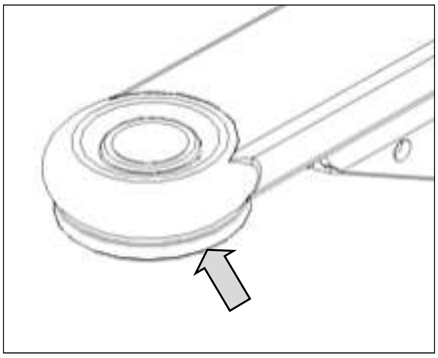

Fig. 11

The same basic towing eye can be used with standard clevis-type tractor drawbars but an adapter must be fitted to the towing eye to suit the smaller diameter hitch pin (Fig. 11). The adapter is a large "top hat" shaped plastic bush which is inserted from underneath.

For tractors with a single-tongue type drawbar the mower towing eye is fitted with a clevis that prevents the tow hitch from lifting off the tractor drawbar (Fig. 12). **The clevis MUST BE FITTED when the mower is used with a tractor that has a single-tongue drawbar.**

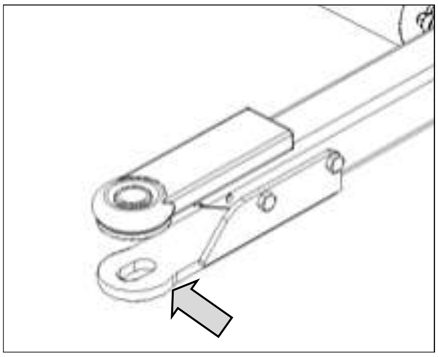

Fig 12

WARNING! The correct towing eye setup MUST be used to suit the tractor drawbar type or the machine may break loose causing serious damage to the mower or tractor and/or serious injury to anyone nearby.

11c. Mower tow hitch height adjustment.

Check the position of the mower tow hitch. This can be fitted to the mower either way up.

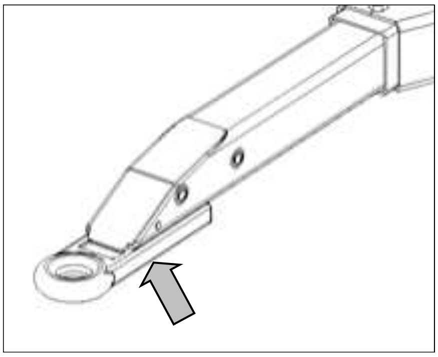

Fig. 13

If the tractor drawbar height is **less** than 350mm (14"), the tow hitch should be fitted with the forged towing eye on the underside of the tow hitch (Fig. 13).

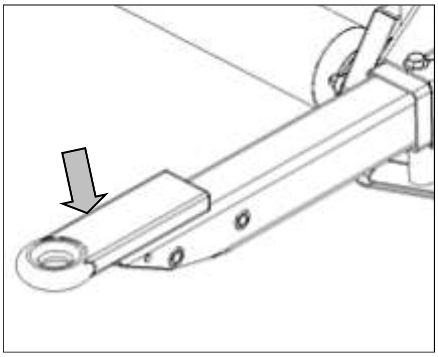

Fig. 14

If the tractor drawbar height is **greater** than 350mm (14"), the tow hitch should be fitted with the forged towing eye on the upper side of the tow hitch (Fig. 14).

The mower tow hitch is a square section that slides inside a hollow section on the front of the chassis. The drawbar can be extended or retracted to suit the tractor being used. Holes in the tow hitch are aligned with holes in the chassis and the two are secured with two bolts.

To turn the tow hitch over:
1. Remove the self-locking nuts from the tow hitch mounting bolts.
2. Remove the mounting bolts.
3. Withdraw the tow hitch from the mower and turn it over to change the tow hitch height (Fig. 15).
4. Replace the bolts, fit the nuts and tighten securely.

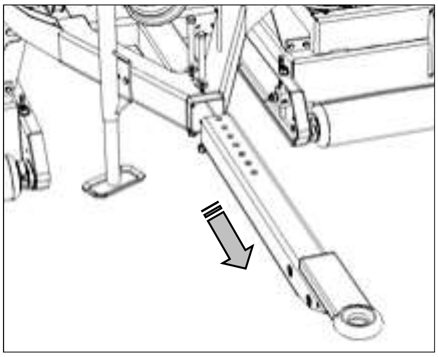

Fig. 15

NOTE: The length of the mower tow hitch may need to be altered after the driveshaft is fitted. The length depends upon the tractor being used. **Start with the tow hitch in the fully extended position.**

Fitting the plastic tow eye bush:
A plastic "top hat" bush is fitted to the tow eye to allow some movement and prevent wear as the mower follows ground contours.

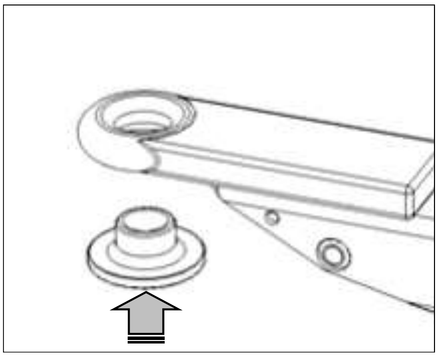

Fig. 16

5. The bush is fitted from underneath so the large flange slides on the tractor drawbar and prevents metal-to-metal contact. It could be a tight fit and may need to be tapped in with a mallet or hammer (Fig. 16).

Fitting the clevis:

DANGER! Where the mower is attached to a tractor with a single-tongue type drawbar the clevis plate MUST be used or the mower may disconnect itself from the tractor.

WARNING! The clevis plate must always be fitted UNDERNEATH the fixed towing eye. If the tow hitch is turned over to suit a different tractor the clevis plate MUST be unbolted and fitted in the correct position. The clevis plate is not designed to carry the weight of the front of the mower.

WARNING! The clevis must be removed if the tractor has a clevis-type drawbar. Components will become damaged if clevises are fitted to both the tractor and the mower.

When the tow hitch is fitted with the towing eye on top the clevis bolts directly to the tow hitch.

6. Position the clevis as shown (Fig. 17).
7. Secure the clevis with two of the M16x130 bolts supplied. Fit flat washers under the heads of the bolts.
8. Fit flat washers and self-locking nuts to the bolts and tighten securely.

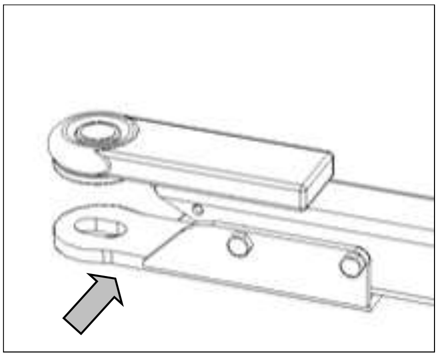

Fig. 17

When the tow hitch is up the other way with the forged towing eye underneath, adapter plates must be used to fit the clevis (Fig. 18). Fit the adapter plates to the clevis first.

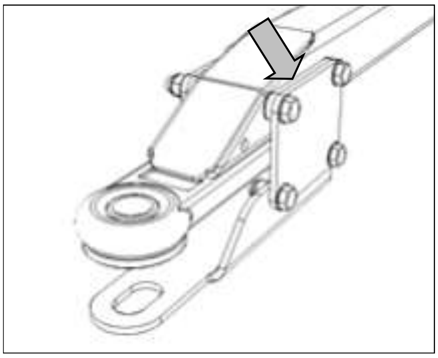

Fig. 18

9. Each adapter plate has a spacer welded to it. The spacers must face inwards (arrow).
10. Attach the adapter plates to the clevis folding using two M16x40 bolts and self-locking nuts on both sides. Insert the bolts from the outside and fit flat washers beneath the bolt heads and nuts. Tighten the four bolts.
11. Fit the clevis assembly to the tow hitch as shown.
12. Use the two M16x150 bolts supplied. Fit flat washers under the bolt heads. Pass two bolts through the holes in the clevis adapter plate, through the holes in the tow hitch and through the other adapter plate.
13. Fit flat washers and self-locking nuts to the bolts and tighten them securely.

11d. Attaching drawbar safety chains.

In some countries it is compulsory to fit drawbar safety chains to a towed vehicle. They ensure the trailer does not separate from the tractor in the event of a drawbar coupling failure.

Fig. 19

Safety chains may or may not be fitted to the **Snake** mowers depending upon the market and application. The following instructions assume the chains are already attached to the tow hitch of the mower (Fig. 19). The instructions explain how to establish the length of the chains to suit a particular tractor. There is no need to repeat this procedure if the mower is always fitted to the same tractor. In that case the chains should simply be attached whenever the mower and tractor are coupled together.

To establish the length of the safety chains to suit the tractor:

1. It is easiest to remove the tow hitch from the mower to set the chains up correctly. Remove the tow hitch drawbar from the chassis. See section 11c for details.
2. Attach the tow hitch to the tractor drawbar.
3. Cross the chains over and attach them to the appropriate mounting points on the tractor using the D-shackles provided (Fig. 20).

Fig. 20

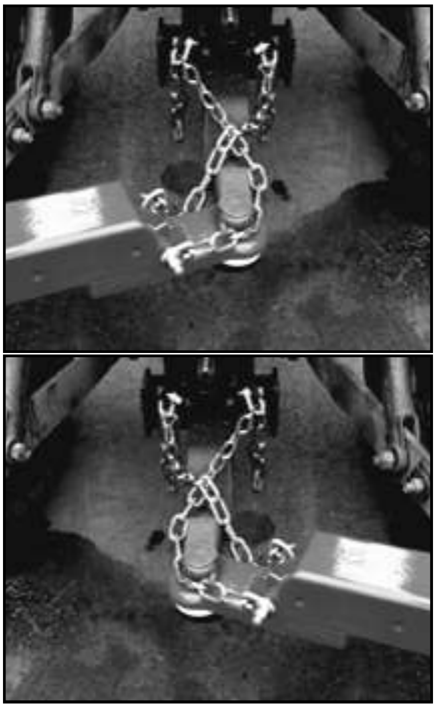

Fig. 21

4. It is important that the tow hitch is able to articulate freely without the chains fouling any parts on the tractor drawbar or tow hitch. Pivot the tow hitch from its extreme left and right positions to ensure free movement (Fig. 21).
5. If the mower will always be coupled to the same tractor any excess chain links can be removed if desired.
6. Remove the tow hitch and chains from the tractor.
7. Refit the tow hitch to the mower chassis as described in section 11c. Ensure the tow hitch is the right way up.
8. When connecting the mower to the tractor, always fit the safety chains and ensure the D-shackles are tightened securely.

11e. Connecting the mower to the tractor.

Trimax Snake mowers are towed behind the tractor and connect to the tractor drawbar.

NOTE: Some tractors are fitted with hydraulically operated tow hitching mechanisms. See your tractor operator's manual for instructions for connecting implements with this system.

To attach the mower to the tractor:

1. The three point linkage arms are not needed and should be lifted to their maximum height. If necessary, tie the arms together to prevent them from contacting the tyres.
2. Use the parking jack on the mower to raise or lower the tow hitch to match the height of the tractor drawbar (Fig. 22).
3. Ensure any bystanders are well clear.
4. Start the tractor engine and reverse the tractor up to the mower until the drawbar is aligned with the mower tow hitch.
5. Ensure all tractor controls are in neutral, apply the parking brake and stop the tractor engine before dismounting.

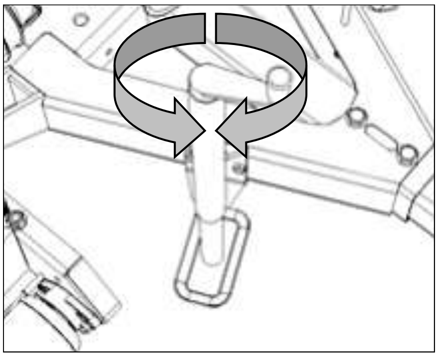

Fig. 22

Fig. 23

6. Fit the drawbar pin through the holes in the drawbar and the mower tow hitch (Fig. 23).
7. Fit the retaining lynch pin or locking device to retain the drawbar pin in position.
8. Wind the jack up as far as it will go (Fig. 24). This will prevent it from lowering itself and damaging the turf as the mower operates.

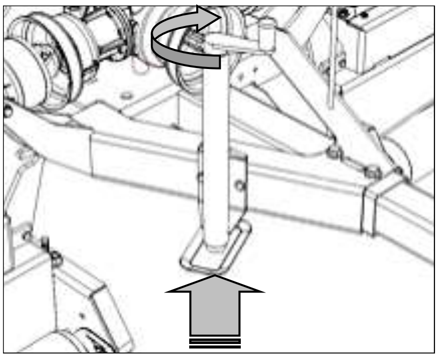

Fig.24

IMPORTANT! Before operating check the front of the mower chassis is at the same height as the rear. If the chassis is not level mower deck movement may be restricted.

11f. Fitting the primary driveshaft.

The **primary driveshaft** transmits power from the tractor's power take-off to the mower. It is fitted with a constant velocity joint at one end. When the tractor turns with the mower operating the driveshaft joint at the tractor end may need to operate at extreme angles that would damage a standard universal joint. **The constant velocity joint MUST be fitted to the tractor**.

The primary driveshaft has a safety shield assembly that consists of plastic tubes which slide one inside the other. Light chains attached to the shields are clipped to suitable points on both the tractor and the mower and prevent the shield assembly from turning as the driveshaft spins inside.

To connect the primary driveshaft to the chassis gearbox:

1. Rest the small end of the driveshaft on the chassis.

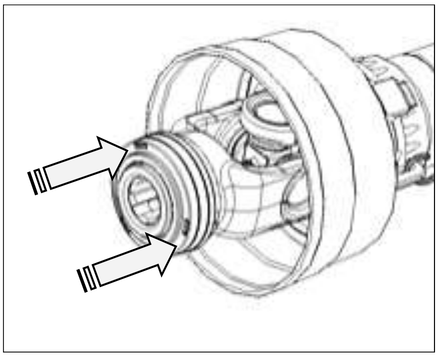

Fig. 25

2. The driveshaft universal joint couplings have spring loaded external collars that operate locking components inside the yoke. When the collar is retracted the locking elements are able to move clear and allow the coupling to fit onto the splined gearbox or tractor PTO shaft (Fig. 25).
3. Connect the large constant velocity joint of the driveshaft to the tractor's PTO shaft. Hold the collar back towards the universal joint and offer the driveshaft yoke to the tractor output shaft. Turn it if necessary to align the splines. Slide the yoke onto the gearbox spline.
4. Release the collar and slide the coupling fully onto the gearbox input shaft until the collar clicks forward to engage the locks into the groove on the shaft.
5. Check the driveshaft is properly retained by trying to move it in and out on the gearbox shaft. It should remain fixed in position.

DANGER! Never operate the machine unless the driveshaft is secured to the gearbox input shaft as severe injury or damage could result.

6. Connect the small end of the driveshaft to the mower gearbox.
7. Attach the driveshaft safety shield chain at the tractor end to a suitable point on the tractor to prevent the covers rotating. Leave plenty of slack in the chain so it will not be broken by movement between the mower and tractor.
8. At the mower end the safety chain attaches to one of the holes and slots in either side of the large gearbox PTO shield (Fig 26).

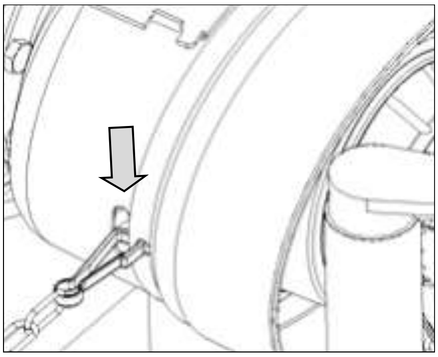

Fig. 26

WARNING! NEVER ALLOW THE CONSTANT VELOCITY JOINT OF THE PRIMARY DRIVESHAFT TO OPERATE AT ANGLES GREATER THAN 80 DEGREES! All driveshaft manufacturers place this limitation on their products and most types physically cannot achieve angles greater than this without their internal parts contacting each other. If this occurs while the shaft is turning THE JOINT WILL SELF-DESTRUCT. The cause of the damage is easy to detect and WILL NOT BE COVERED BY WARRANTY.

Before operating the machine, experiment with some sharp turns to understand situations where the driveshaft may have to operate at extreme angles. BE PARTICULARLY AWARE WHEN REVERSING that the mower may "jack-knife" to a much greater angle than would be possible when driving forwards.

To help determine the safe limits for driveshaft angles, a **driveshaft maximum angle gauge** can be found at the rear of this manual.

11g. Setting the mower tow hitch length.

Different tractors have a variety of relationships between the hitch point, the PTO and the tyres. These can radically affect how the driveshaft behaves as the mower operates.

IMPORTANT! The driveshaft supplied with the Snake mower should NEVER be shortened. Instead, the MOWER TOW HITCH must be adjusted until the driveshaft length is correct.

WARNING! It is imperative the mower tow hitch is correctly set up. Incorrect set-up will result in early driveshaft failure or serious damage to the machine.

CAUTION! If the Snake mower is used on different tractors the following set-up procedure must be carried out for every tractor.

There is a short **instructional video** that shows the following procedure. Go to the **My Trimax** section of the **Trimax Mowing Systems** website. See section 1a for details of how to do this.

There is also a **driveshaft maximum angle gauge** on the last page of this operator's manual. This can be used to measure driveshaft angles when carrying out the following procedure. It is transparent and can be used either way up depending whether the mower is to the left or right of the tractor.

To set the mower tow hitch length:

1. Ensure the mower tow hitch is **fully extended**. Adjust it if necessary as detailed previously.
2. Work on a flat area. Position the mower so it is directly in line behind the tractor.
3. There is a long green, red and yellow label on the inner tube of the driveshaft safety shield (Fig. 27). Turn the cover tubes until this is on top. It has centimetre marks on it. Note the measurement on the driveshaft label where the outer cover overlaps the label.

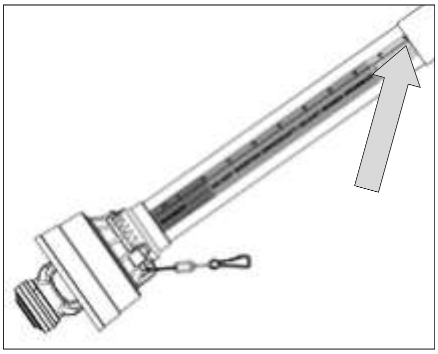

Fig. 27

4. **Have the angle gauge handy.** It is used by leaning over the back of the tractor seat and looking through the transparent page directly down onto the driveshaft. Slowly reverse the tractor to position the mower on full lock. Watch carefully to see what limits the mower turning:
   - The mower tow hitch may contact the tractor tyre.
   - The driveshaft may contact the tyre.
   - **If nothing on the mower contacts the tractor tyre, stop when the driveshaft reaches an angle of 75 degrees.** The driveshaft must **NEVER** be allowed to exceed an angle of 80 degrees**.**
5. At maximum turn, note the measurement on the driveshaft label where the outer cover overlaps it.
   - If this is **less** than before (ie. the driveshaft is shorter) leave the mower in the full turn position.
   - If the measurement is **more** than before (ie. the driveshaft is longer), re-position the mower directly in line with the tractor.
6. The aim is to shorten the mower tow hitch as much as possible **without covering any of the RED section of the label**. As long as green is visible the mower tow hitch is not too short. Disconnect the mower from the tractor and adjust the mower tow hitch length as shown in

section 11c. Reconnect the mower to the tractor and start again from step 2 above.

7. **If only red is visible the mower tow hitch must be extended.** (This is unlikely if it is already fully extended.)
8. Now manoeuver the mower into the other position (maximum turn if it was in-line, in-line if it was at maximum turn).
9. Check that only green is visible. **If yellow is visible** (beyond the 43cm mark) **there is insufficient driveshaft overlap and the driveshaft will wear rapidly. The machine should not be used.** Contact **Trimax Mowing Systems** for technical advice.
10. Once the correct mower tow hitch position has been established, make a permanent mark on the tow hitch so it can easily be reset if necessary.
11. If the mower is to be used with different tractors make marks on the tow hitch for each tractor. Clearly identify which tractor each mark applies to.

Things to watch out for:

12. As a general rule, always keep the driveshaft as short as possible. However, if some other part of the mower contacts the tractor tyre on full turns (such as a roller) it may be advisable to lengthen the mower tow hitch. However **this should only be done if the yellow part of the label is never exposed**.
13. On some tractors the PTO is higher above the drawbar than on others. This causes the driveshaft to telescope more as the mower crosses ridges and depressions and may result in the driveshaft being fully compressed. This will cause serious damage to the driveshaft and mower and **must be avoided at all costs**. If the driveshaft ever moves well into the red zone the mower tow hitch should be extended, but **only if the yellow section of the label is never exposed more than momentarily**.
14. If the mower tow hitch cannot be set up without moving into the red zone or exposing the yellow zone it may be necessary to alter the towing position on the tractor. On some tractors the drawbar is adjustable. If so, adjust it to make it shorter. If not, it may be necessary to modify it. Contact **Trimax Mowing Systems** for advice.

11h. Connecting the hydraulics.

Hydraulic configuration:
Trimax Snake mowers have only one hydraulic connection. The mower decks are lifted by hydraulic rams operated from the tractor's auxiliary hydraulic system. All three lift rams are fed by a single circuit. The lift rams are of the single-acting type so there is only one hydraulic hose to connect to the tractor. The tractor auxiliary valve must be able to be set in the "float" position to enable the mower decks to follow ground contours correctly.

A standard 1/2" BSP male quick-release coupling is fitted. This should suit most tractors though some may have unique fittings. Consult your tractor dealer or hydraulic specialist if the fittings are not compatible.

To connect the hydraulic hose:

1. If the tractor engine is running, stop it and wait for all moving parts to stop.
2. Operate the tractor's auxiliary hydraulic valve control(s) in both directions to remove any residual hydraulic pressure from the system.
3. The hydraulic hose is attached under the chassis. From there it should pass through the loop at the front of the chassis. This keeps it clear of the driveshaft and drawbar coupling.
4. Carefully wipe any dirt from the hydraulic quick-release couplings to avoid contamination and possible damage to the system.
5. Connect the hose to the appropriate coupling on the tractor.
6. Check the area is clear of all bystanders, especially children, and start the tractor.
7. Operate the hydraulic valve control to check that the mower decks move in the right direction in relation to the lever.

   If the mower decks are in the raised position the transport locks will be engaged and will prevent the mower decks from lowering. The transport safety rope may also be connected between the outriggers. If so, release it as detailed in section 13b.
   The transport locks cannot be released until the hydraulic rams are activated. This takes the

pressure off the locking hooks and allows the locks to be released.

CAUTION! Before attempting to lower the mower decks make sure there is sufficient clear area to either side and behind the machine for the decks when they are lowered. Move the machine to somewhere more suitable if necessary.

DANGER! Keep any bystanders, especially children and animals, well clear of the mower decks and the area they will lower onto. If there is air in the hydraulic system there is a possibility the decks could drop unexpectedly.

To check the operation of the lift rams with the mower decks in the raised position, pull on the transport lock release rope while operating the appropriate auxiliary hydraulic control.

8. Slowly lower the mower decks fully to the ground and repeat steps 1 - 6. If the control operates in the wrong direction the hose coupling must be swapped to the other outlet of the same hydraulic circuit.
9. Pull on the transport lock release rope while operating the hydraulic valve to lift and lower the mower decks several times to clear any air out of the system. To avoid damage to the mower decks **always lower them slowly**.

11i. Connecting the optional road lighting.

A "road kit" option includes mudguards and tail lights. If this is fitted there is a single electrical cable for the lights. It is fitted with a round 7-pin plug to suit the 7-pin round socket usually fitted to tractors.

To connect the lighting cable:
1. Route the cable from the chassis up through the loop at the front of the chassis alongside the hydraulic hose.
2. Connect the plug to the lighting socket on the tractor.

11j. Securing the hydraulic hoses & cables.

The hydraulic hose and electrical cable must be secured so they are kept well clear of the tractor tyres, the driveshaft and other moving parts. They must also have sufficient slack to allow for the movement of the mower when executing tight turns or when cresting a rise in the ground. Arrange the hose and cable (if fitted) then tie them together and to some suitable point on the tractor using plastic cable ties, bungy cords or spiral binding as required. **Do not use wire as this may cut into the cables or hoses causing hydraulic fluid leaks or short circuits.**

11k. Attaching the transport lock release rope.

To connect the transport lock release rope:
1. The transport lock release rope is a length of red rope normally supplied coiled up and secured to the lock release mechanism adjacent to the left outrigger. Uncoil the rope.
2. Pass the free end of the rope through the loop at the front of the chassis above the hydraulic hose (and lighting cable if fitted). Attach it to some suitable point on the tractor where it can be easily reached while operating the auxiliary hydraulic controls. Ensure the rope stays clear of the primary driveshaft or any other moving parts, but leave sufficient slack to allow for the mower to travel over undulations in the terrain without ever becoming tight. If the tractor has a cab, ensure the rope does not become trapped when the rear window is closed.

11l. Uncoupling the mower from the tractor.

To uncouple the machine from the tractor:

1. Manoeuvre the mower into the parking area.
2. Either lower the mower decks to the ground or raise them into the transport position. If raising them, ensure the transport locks on all three mower decks engage correctly, then release the hydraulic pressure. The mower decks should settle slightly as their weight is taken by the transport locks.
3. Stop the tractor engine, engage the parking brake and ensure all controls are in neutral.
4. Operate the auxiliary hydraulic controls to remove any residual pressure in the system.
5. If the mower decks are raised, unhook the transport safety cable from its storage position on one of the outriggers and connect it to the lug on the end of the other outrigger to prevent any chance of the mower decks lowering accidentally.

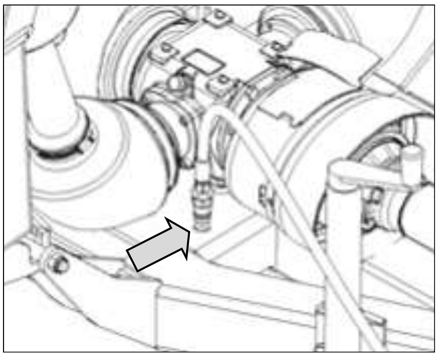

Fig. 28

6. Disconnect the hydraulic hose. Store the coupling on the end of the hose in the hole in the gearbox plate (Fig. 28).
7. Disconnect the electrical cable and the transport lock release rope from the tractor.
8. Lower the parking jack and wind the handle to lift the mower tow hitch slightly clear of the tractor drawbar.
9. Disconnect the primary driveshaft from the tractor.
10. Disconnect the breakaway safety chains if fitted.
11. Remove the drawbar pin.
12. Check that nothing is connecting the mower to the tractor before moving the tractor away.

12. BEFORE OPERATION.

SAFETY! Before attempting to make any adjustments or carry out maintenance review the hazard identification list (section 3a) and take all necessary precautions.

12a. Daily checks.

Carry out the following checks before using the machine. It is important both for personal safety and for maintaining the good mechanical condition of the mower that these items are always checked before operating. Details of how to go about checking many of these components are given in "Service and Maintenance", section 14.

1. Check all bolts and fastenings for tightness.
2. Check the blades to ensure none are missing, they are not bent or broken, they can move on their mounting bolts and are not jammed in the retracted position. Repair or replace as required.
3. Check the blade mounting bolts are tightened to their specified torque.
4. Ensure all rotating parts turn freely.
5. Ensure the driveshafts are lubricated and can telescope freely.
6. Grease all components as shown in the maintenance schedule.
7. Check all gearboxes for leaks. Check oil levels if leaks are detected.
8. Check the drive belt tension and adjust if necessary.

9. Check all rotating parts for any entangled material and remove if necessary.
10. Check hydraulic hoses and electrical cables for cuts or other damage and replace if necessary.
11. Check the transport lock release mechanism is operating properly and engaging fully.
12. Check the transport tyre pressures and inflate if necessary.
13. Ensure all tail lights are operating (if fitted)
14. Ensure the parking jack is locked in the raised position before moving the mower.

12b. Running in.

Although there are no operational restrictions on **Trimax Snake** mowers when used for the first time the following mechanical items should be checked.

After operating for 30 minutes or after mowing 2 hectares (5 acres):

1. Visually check the entire machine for loose fasteners, particularly blade mounting bolts. Check that all guards are in place and that everything is operating as it should. Correct as required.
2. **Check drive belt tensions and adjust if necessary** (see 14d).
3. Visually check all gearboxes for oil leaks. Repair leaks. Check oil levels and replenish if necessary.
4. Check that blades are not jammed in the retracted position (see note in section 14e for more information).

After operating for 8 hours:

5. Check drive belt tensions and adjust if necessary.
6. Commence regular servicing as defined in the Service Schedule, section 15.

13. OPERATION & ADJUSTMENTS.

SAFETY! Before attempting to operate or make any adjustments to the mower, review the hazard identification list (section 3a) and take all necessary precautions.

Trimax Snake mowers are designed to operate well in many kinds of grass or terrain conditions. However the operator has the responsibility of being familiar with and following all operating and safety procedures.

13a. Lifting & lowering the mower decks - general.

When operating, the mower decks are lowered to the ground where they ride on their rollers and are free to move up and down and tilt as required to follow the contours in the ground. Each mower deck is attached to an "outrigger" which is hinged to the central chassis. For transport the mower decks are lifted by hydraulic rams attached to the outriggers. As the decks rise, guides attached to the chassis push the lower part of the left and right mower deck outwards to keep the maximum transport width to the minimum for road use. When the decks are fully lifted a locking system on each outrigger automatically engages so the decks cannot lower again until the locks are purposely disengaged.

The lift rams are of the single acting type so hydraulic pressure can only be applied to one side of the ram piston to lift the mower decks. Operating the hydraulic controls to lower the decks simply opens the valve and allows the weight of the mower decks to force the hydraulic fluid back to the reservoir. There are two primary advantages of this system. Simplicity is one – there is only one hose to connect. The other is that the rams cannot apply downward force to the outriggers, which could damage the transport locks.

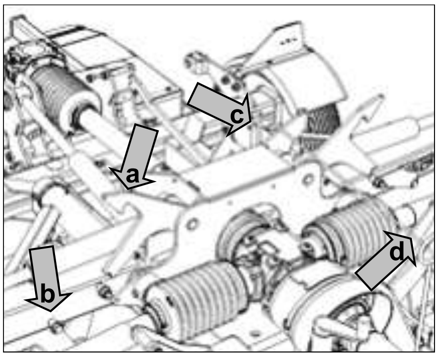

Fig. 29

Each transport lock consists of a steel latch (Fig. 29, a) which hooks over a lock pin or bolt on the chassis (b). As each outrigger approaches the raised position a ramp on the hook rides up the lock pin before gravity causes the hook to engage. All three hooks are connected by a linkage (c) which allows them to be disengaged by pulling on a single rope (d).

The locks incorporate stops that allow the mower to lift just clear of the ground while operating (Fig. 30). This "kerb jump" or "lift-and-turn" function is extremely useful when operating in tight areas.

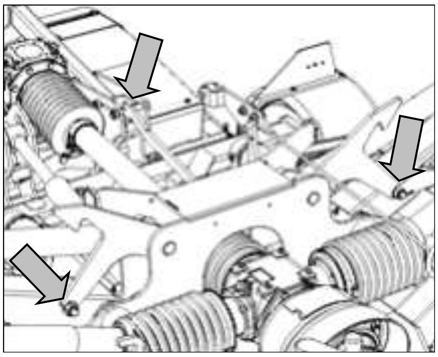

Fig. 30

WARNING! Never attempt to engage drive to the mower while the decks are raised into the transport position. Doing so will severely damage the driveshafts and other drive components. Always stop the PTO before raising the mower decks.

13b. The transport safety cable.

A safety cable is fitted to the mower to prevent any chance of the mower decks lowering accidentally. This provides backup should the transport locks not engage properly or fail altogether. It should be used every time the mower is to be transported between jobs and whenever the mower is being worked on, parked up or stored with the mower decks in the raised position.

WARNING! Always fit the transport safety cable when transporting, working on, parking or storing the mower with the mower decks in the raised position.

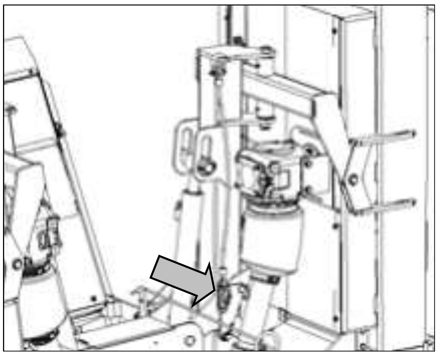

Fig. 31

The cable is a short length of wire rope with an eye in one end and a hook on the other. The eye is secured to the outer end of the left outrigger. When not in use the hook is attached to a lug near the transport lock at the inboard end of the same outrigger (Fig. 31).

When the mower decks are raised for transport or when the mower is parked up the cable should be released from the storage position and fitted to the hole provided in the endplate of the other outrigger (Fig. 32). This connects the left and right outriggers and prevents either from lowering accidentally.

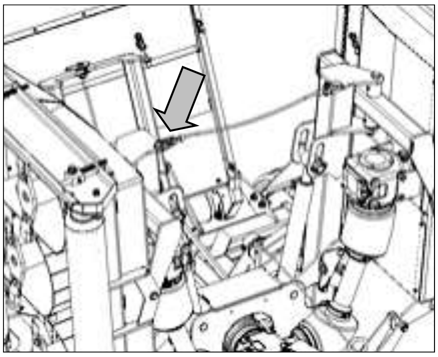

Fig. 32

13c. Mower decks - lifting & lowering.

Fully raising the **Snake** mower decks involves overriding the kerb jump and operating the tractor's auxiliary hydraulic valve.

WARNING! Drive to the mower MUST be disconnected before the mower decks are fully raised. Disengage the tractor's PTO before operating the hydraulic lift control. Failure to do so will result in severe damage to the mower deck driveshafts and other drive components.

To lift the mower decks:
1. Bring the tractor to a stop on level ground.
2. Disengage the tractor's PTO drive and wait for all rotating parts to stop.
3. Ensure the area is clear of all bystanders, especially children.
4. Pull on the transport lock release rope.
5. Operate the tractor's auxiliary hydraulic control to lift the mower decks.
6. When the decks are all partially raised, release the transport lock release rope.
7. When all the decks are raised and the locks have engaged, operated the tractor hydraulics to lower the decks. They will settle slightly against the transport locks.

DANGER! The mower deck gearboxes are fitted with overrun clutches. The blades may continue to rotate for several seconds after the PTO is disengaged.

CAUTION! Because the lift rams all share the same hydraulic circuit any deck may be the first to lift. A deck that has started to lift may partially drop again before resuming its lift cycle. Keep well clear until all decks have fully lifted and the transport locks have engaged.

WARNING! Make sure there is no tension on the transport lock release rope as the last mower deck reaches the fully raised position. If the rope is tight it will prevent the transport locks from engaging properly.

To lower the mower decks:
8. Locate the machine in a clear, level area large enough to accommodate the mower decks in the lowered position.
9. Stop the tractor, apply the parking brake and ensure all controls are in neutral.
10. If the transport safety cable is fitted between the two outriggers release the hook and fit it to the storage position.
11. Check the area is clear of all bystanders, especially children.

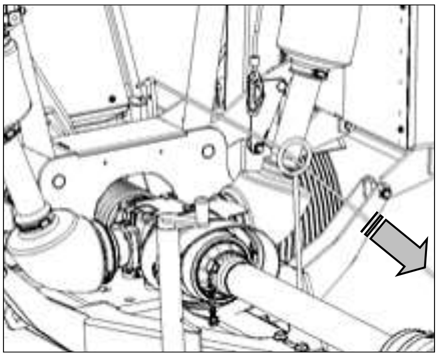

Fig. 33

12. Pull on the transport lock release rope while operating the auxiliary hydraulic lever to **raise** the mower decks. This will allow the release mechanism to operate (Fig. 33).

13. Continue to pull on the release rope while operating the hydraulic lever to **lower** the mower decks. To avoid damage to the mower **always lower the mower decks gently to the ground**.
14. Do not release the tension on the rope until the last deck has begun to descend.
15. Place the auxiliary hydraulic control in the "float" position if possible, particularly if the mower will be operating on severely undulating ground. See your tractor operator's manual for more information. Also see "Troubleshooting" in section 16 for more information on hydraulic controls.

The kerb jump function:
This allows the mower decks to be raised just clear of the ground without the need for stopping drive to the mower decks. It is very useful when crossing gravel driveways or when doing tight turns on headlands or in confined spaces.

To operate the kerb jump function:
16. Do not pull the transport lock release cable.
17. Operate the tractor's auxiliary hydraulic control to raise the mower decks. Each deck will lift until stopped by the lock mechanism.
18. To return to normal mowing, operate the hydraulic control to lower the decks and place the control in the float position.

DANGER! Kerb jump is intended for momentary use only. The blades continue to turn when the mower decks are clear of the ground. Ensure all bystanders, especially children, are well clear before using this function.

SAFETY! Do not use kerb jump while moving between jobs. Disengage drive to the mower decks and raise them into the transport position if moving more than a few metres (yards).

13d. Cutting height.

Snake mower decks are fitted with front and rear rollers. These offer several important advantages:

- they allow the individual decks to follow ground contours without scalping,
- the rollers and their side mounting channels fully enclose the cutting chamber, making the mower very safe,
- they effectively stripe the turf to leave an attractive finish,
- they roll out the divots in fairways,
- due to the large surface area they minimise ground pressure, and,
- they can mow along the edges of pathways and kerbs or be hung partly over the edges of bunkers without scalping.

The rollers are attached to folded plates or "side channels" that attach to the mower endplate on either side (Fig. 34, a). The attachment or "clamp" bolts (b) pass through slots in the side channels. Two threaded adjuster screws project though holes in the top flanges of each side channel (c). Adjustment is achieved by loosening the clamp bolt nuts and turning the adjuster screws.

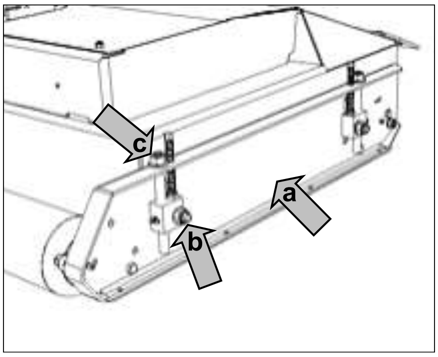

Fig. 34

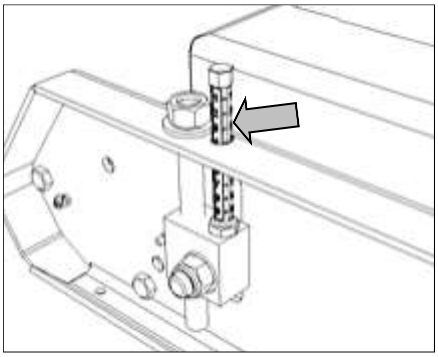

Fig. 35

Cutting height indicators project through holes in the top flanges of the side channels at each corner (Fig. 35). The cutting height is read from the top face of the flange. Graduations are in centimetres. The cutting height indicators are set at the factory to accurately reflect the distance from the bottom of the rollers to the bottom of the cutting blades.

If the cutting height indicators ever need to be unbolted from their mounting plates their position should be marked first. They must be replaced in exactly the same position or they will not be accurate.

To raise the cutting height:

1. If the mower decks are raised in the transport position, lower them to the ground and stop the tractor engine.
2. Work on one mower deck at a time.
3. Loosen the clamp bolts about one full turn.
4. Turn the adjuster screws clockwise to raise the cut height to the desired mark on the indicator. The best way is to turn each adjuster by exactly the same number of turns. One full turn will move the cutting height by 2mm. The table in Fig. 36 shows the number of turns to achieve the required change in cutting height.

CUTTING HEIGHT ADJUSTMENT				
To Adjust By:	**No. of Turns**		**To Adjust By:**	**No. of Turns**
5mm	2.5 turns		**1/4"**	3 turns
10mm	5 turns		**1/2"**	6-1/2 turns
20mm	10 turns		**1"**	12-1/2 turns

Fig. 36

It is easiest to use a 24mm (15/16") socket with a long extension and a power bar. The long extension lifts the handle up above all the structure of the mower and chassis and allows an unobstructed arc to turn the handle. Unlike a ratchet, the power bar will not click around and cause the operator to lose track of the exact number of turns.

5. Ensure all cut heights are set to the same mark.
6. Securely tighten the clamp bolts.
7. Repeat for the other mower decks.

To lower the cutting height:

8. Work on one deck at a time.
9. Screw all the adjusters anti-clockwise by exactly the same number of turns.
10. Loosen all four clamp bolts. The mower deck should drop down to the desired height. Ensure

the top flanges of both side channels are hard up underneath the heads of all the adjuster screws.
11. Securely tighten all four clamp bolts.
12. Repeat for the other mowing decks.

Resetting the height adjustment:
If the height indicators are damaged or there is doubt about the cut height it can be reset to the factory settings. There are dot-punch marks in the side channels. When these are level with the top face of the height adjuster blocks the cutting height should be 40mm. The indicators can be adjusted to reflect this by loosening their lock nuts, winding the indicators in or out as required and securing them by re-tightening their lock nuts.

NOTE: Comparing cutting height with other mowers.
Rollermowers may cut significantly lower than other types of mower at the same cut height settings. Cut heights on **Snake** are measured from the bottom of the rollers to the blades. On numerous side-by-side comparisons with cylinder mowers, turf specialists have agreed the two machines were producing the same results when the rollermower was set at 10-15mm (3/8" - 9/16") higher than the cylinder. Any mower cutting lower than another will be dealing with far more plant matter, using more power and fuel, and increasing the likelihood of scalping and clumping. The only way to decide on the correct cutting height is to measure the results.

13e. Travelling between mowing jobs.

SAFETY! Before travelling any distance with the mower fitted to the tractor, review the hazard identification list (section 3a) and take all necessary precautions.

1. Ensure the area is clear of bystanders, especially children.
2. Disengage the PTO.
3. Raise the mower decks, ensuring that the transport locks engage properly.
4. Connect the transport safety cable between the left and right outriggers.
5. Turn on headlights, warning lights and/or hazard flashers as required by local regulations.

13f. Starting & finishing a mowing job.

SAFETY! Before starting to mow, review the hazard identification list (section 3a) and take all necessary precautions.

To start a mowing job:
1. Make sure the area is free of stones or objects that could be thrown by the mower blades.
2. Ensure the area is clear of bystanders, especially children.
3. Align the tractor with the working area.
4. Check the area is large enough to lower the mower decks to the ground. Move to somewhere suitable if necessary.
5. Disconnect and stow the transport safety cable.
6. Run the engine at a low idle.
7. Lower the mower decks to the ground
8. Engage the PTO drive.
9. Slowly increase engine speed to give 540rpm at the PTO.
10. Engage the tractor gears and proceed down the working area.

To finish a mowing job:
11. Decrease the engine speed to a low idle.
12. Disengage the PTO clutch.
13. Raise the mower decks into the transport position.
14. If moving to another job follow the instructions in section 13e above.

15. If parking the mower and tractor, stop the tractor engine ensure all controls are in neutral, engage the parking brake, remove the ignition key and wait for all moving parts to stop before dismounting.
16. Connect the transport safety cable to ensure the decks cannot lower unexpectedly.

13g. Operating hints.

1. **PTO speed: NEVER EXCEED A PTO SPEED of 540rpm** but try to maintain the PTO revs as close to 540rpm as possible. The cutting action of the blades is generated by the speed of the blade tip. When the PTO speed is allowed to drop too far the blades may not cut cleanly, resulting in a ragged finish. Vary the speed of travel using the tractor transmission rather than changing the throttle setting.

DANGER! Running the PTO at speeds higher than 540rpm causes the blades to run too fast. This may excessively stress blade mounting bolts and other parts, causing them to break and fly off. Such projectiles can maim or kill and cause property damage.

2. **Missing blades: Never run the mower with blades missing.** The resulting imbalance will cause rapid structural failure of the mower deck. It may also result in damage to gearboxes and driveshafts. If vibration is detected, stop, inspect the machine and fit replacement blades before re-commencing operation.
3. **Conditions:** Although it is best to mow when conditions are dry **Trimax Snake** mowers also work well in wet conditions. The type of terrain, the grass length, its moisture content, the dampness of the ground and the power available from the tractor all affect the final job. See **Troubleshooting**, section 16, for other useful performance information. The solutions to different problems have been developed from wide experience over many years. Even proficient operators have found they can improve the quality of their work by using some of the methods recommended.
4. **Ground speed:** Travel speed can vary from very slow up to 15kph (9mph) or even higher depending upon the material being cut and terrain conditions. It is the responsibility of the operator to note the condition of the job being done, to set the ground speed to obtain a quality cutting job and to maintain control of the machine. If desired the ground speed can be increased if a good job is being done. Conversely if a ragged job is being done reducing speed may improve it. Always reduce ground speed when cutting over rough terrain, around obstructions or in close quarters.
5. **Hidden Obstacles:** Always inspect the area for hidden obstacles before mowing. If an obstacle is struck during the course of mowing stop and inspect the mower for damage. Repair as necessary before continuing.
6. **Cutting Height:** Never cut grass or cover crop shorter than recommended for your weather conditions. Vegetation cut short is less able to withstand hot and dry conditions. It is better to cut more often at a greater cutting height than to cut too short.
7. **Blade Sharpness:** The blades may need replacing or sharpening if you see the mower has not cut cleanly.
8. **Tight turns:** Never turn so sharply that the driveshaft constant velocity joint operates at an angle of more than 80 degrees. With most tractors this is unlikely when driving forwards, but **take particular care when reversing not to "jack-knife" the mower in relation to the tractor**. See the warnings in section 11f.
9. **Safety Awareness: Trimax Snake** mowers have blades that rotate at high speed. While every effort has been made to design safety into the machine any stones or objects which are hit by the blades can be expelled from under the mower pan or out the grass discharge areas at high speed. **It is extremely important that the operator be aware that objects can be expelled in this way and never point the discharge areas towards people, animals or property.** These expelled objects may be moving fast enough to cause injury to people and animals and damage to property. It is better to stop cutting when there are bystanders, especially children, than to risk inflicting injury.

DANGER! STOP THE MACHINE IMMEDIATELY IF ANYONE APPROACHES WITHIN 30 METRES (100 FEET) OF THE MACHINE WHEN OPERATING. Do not restart until the working area is cleared.

IMPORTANT! Your Snake mower is designed to operate well in a wide variety of grass or terrain conditions. However the operator has the responsibility of being familiar with and following all operating and safety procedures.

14. SERVICE & MAINTENANCE.

SAFETY! Before attempting to make any adjustments or carry out maintenance, review the hazard identification list (section 3a) and take all necessary precautions.

The operations described in this section should be carried out **as necessary** or at the intervals stated in the **Service Schedule**, section 15.

14a. Genuine spare parts.

There are many cases where genuine **Trimax** parts are different from parts that look the same and have similar manufacturers' numbers.

Vee belts are a good example. They look simple but there is a huge range of types. Failures of belts from after-market suppliers are also common. Fitting the wrong type can easily reduce the capacity of the drive by 50%. There are different ways of measuring vee belt lengths and two belts with the same size on the label can be a whole size apart, even with belts of the same brand but from different factories. This can result in them either running out of tensioning adjustment or being too small to fit. Purchasing genuine **Trimax** spare parts eliminates such issues and ensures your **Trimax** mower will perform as intended.

14b. Workshop facilities & skill levels.

Feedback from end users shows that some people experience difficulties when undertaking repairs to their **Trimax** mowers. Investigations into complaints about repeated failures often reveal that the issues were not correctly diagnosed from the start and that repairs were not carried out properly.

Trimax mowers are designed with servicing in mind. Every effort is made to ensure that parts can be removed and replaced as easily and quickly as possible. However, as with every engineering repair, something that starts out as a simple job can escalate into a much more difficult operation if other parts have been damaged.

The replacement of roller bearings, for instance, may involve the use of heating equipment or even oxy cutting equipment. If the bearing has turned on the roller shaft the job may also require welding gear and a large lathe. Other jobs need a press with a capacity of several tonnes (tons) or other specialised tools commonly found in well-equipped service facilities.

While service work described in the operator's manual is detailed enough to cover the basics, **Trimax** cannot specify exactly what will be required for any repair job.

All but the simplest jobs require someone with the skills to do the job and the correct tools. Check the table below and if you have any doubts about your ability or the facilities available, leave the job to an experienced mechanic.

RESOURCE REQUIREMENTS			
	SKILLS	**TOOLS**	**PARTS**
MAINTAIN	Low	Basic	None
REPLACE	Medium	Comprehensive	Replacement parts only
REPAIR	High	Specialised	As required

Fig. 37

14c. Stainless steel covers.

The mower decks on the **Snake** are fitted with stainless steel transmission covers. Each deck has a pair of covers that overlap in the centre to protect the operator from the moving parts and also to keep grass and damaging debris away from the transmission.

The leading edge of each cover fits to studs and is secured with self-locking nuts. The rear edge is retained with two adjustable toggle latches.

The covers must be opened to check drive belt tensions or removed altogether to replace the drive belts. **Never operate the mower with covers removed.**

WARNING: DO NOT STAND OR WALK ON THE STAINLESS STEEL COVERS! They are designed for protection only and will bend under load.

CAUTION! Every effort is made during manufacture to remove sharp edges from the covers. However, because they are made of sheet metal, there is always the danger of receiving cuts to the hands. Wear heavy gloves and take care when handling the covers.

The overlap where the covers meet helps to keep debris and water out of the transmission area. It may be necessary to lift both covers if the area to be inspected is on the side with the cover underneath.

To lift the stainless steel covers for drive belt inspection:

1. Lower the mower decks to the ground, engage the parking brake, stop the tractor engine, ensure all controls are in neutral, remove the ignition key and wait for all moving parts to stop.

2. Release the toggle latches that secure the cover to the rear of the mower (Fig. 38). Lift the loops clear of the strikes on the cover.

   NOTE: If required, the toggle latches can be fitted with a clip or small padlock to prevent them from being undone by unauthorised persons.

3. Lift the rear of the cover with one hand, leaving the other hand free to check belt tensions etc.

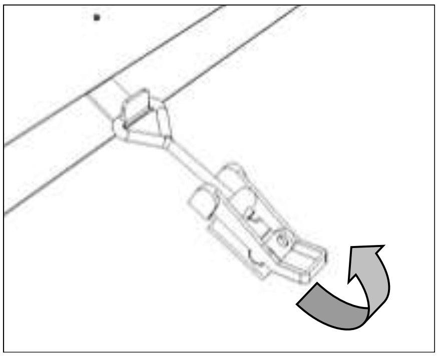

Fig. 38

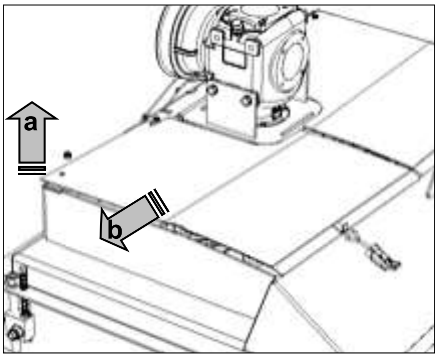

Fig. 39

To remove the covers completely:

4. Carry out steps 1 and 2 above.
5. The front of each cover attaches to two studs fitted with self -locking nuts and flat washers. Remove the outer nut (the one nearest the outside of the mower deck). The inner hole in each cover (nearest the mower deck gearbox) is key-holed so this nut does not need to be loosened or removed.
6. Lift the outside of the cover off the stud (Fig. 39, a).
7. Slide the cover outwards away from the gearbox to remove it from the machine (b).

To replace the covers:

8. Fit the covers to the same position they were removed from.
9. Slide the slot in the front edge of the cover under the inner stud nut.
10. Move the cover forwards, then towards the gearbox to engage it with the mounting stud.
11. Fit the hole in the outer end over the stud.
12. Hook the toggle latch loop to the strike on the cover and secure the latch.
13. Fit the flat washer and self-locking nut and tighten.
14. Repeat steps 8-13 for the other cover.

To adjust the tension of the toggle latches:

The toggle latches can be adjusted to increase or decrease the tension on the cover. A firm push should be required to secure them but they should not be so tight that they are difficult to undo by hand.

15. Undo the toggle latch.
16. Turn the loop clockwise to tighten the latch, anti-clockwise to loosen it.
17. Attach the loop and operate the latch to check the results. Adjust again if necessary.

14d. Drive belts.

Snake mower decks are equipped with single serpentine belt drives and special drive belts. As with all belt drives, **tension should be checked after the first hour of operation and weekly thereafter**.

Operators familiar with vee belt drives can quickly judge belt tension by pushing the belt with their finger and feeling the pressure. As a general rule, if a drive belt slips during normal use, the conditions are not extremely heavy, the tractor horsepower is not excessive and the spindles turn freely, belt tension can be increased until the slipping stops.

WARNING! There are many different types of vee belts which may look similar to the untrained eye. Fitting the wrong type can radically affect the performance of a vee belt drive. Standard vee belts do not tolerate back idlers and will fail very quickly. To maintain the performance of the machine ALWAYS USE GENUINE TRIMAX SPARE PARTS.

To check drive belt tension:

1. Lower the mower decks to the ground, stop the tractor engine, ensure all controls are in neutral, remove the ignition key and wait for all moving parts to stop.
2. Lift the stainless steel covers (see section 14c).

3. Check the belt tension as shown in Fig. 40. If you are unsure whether the tension is correct or not, tools for checking the tension can be purchased from reputable engineering suppliers. If adjustment is required, proceed as follows.

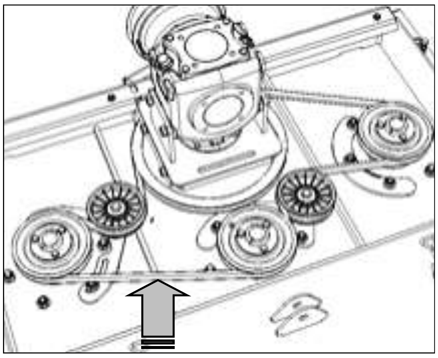

Fig. 40

To adjust drive belt tension:

4. Remove the stainless steel covers (section 14c).
5. There are two belt idler pulleys. Both are secured by the studs and nuts that secure the blade spindles to the mower body. The idler fixed to the centre spindle is fixed and cannot be adjusted. Belt tension is regulated by the idler fixed to the left spindle. Loosen the two nuts that secure the left idler base.

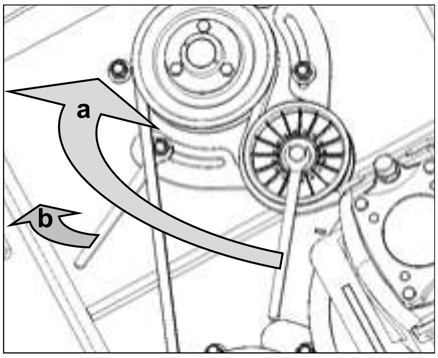

Fig. 41

6. Fit a spanner to the idler pulley bolt and pull on it to rotate the idler and tension the belt (Fig. 41, a).
7. Maintain pressure on the spanner while tightening one of the mounting bolt nuts (b).
8. Turn the pulleys a few turns in an anti-clockwise direction to equalise the tension over its full length.
9. Check the belt tension again and readjust if necessary.
10. Securely tighten the two mounting bolt nuts.
11. Re-fit the stainless steel cover.

WARNING! The two idler base mounting nuts also retain the blade spindle. They must be tightened securely before operating the mower. If left loose the spindle may move, resulting in serious structural damage to the mower body.

To replace the drive belts:

12. Loosen the idler mounting bolt nuts and move the idler clear.
13. Remove the drive belt.
14. Fit the new belt around the pulleys according to the label on the mower deck (Fig 42).

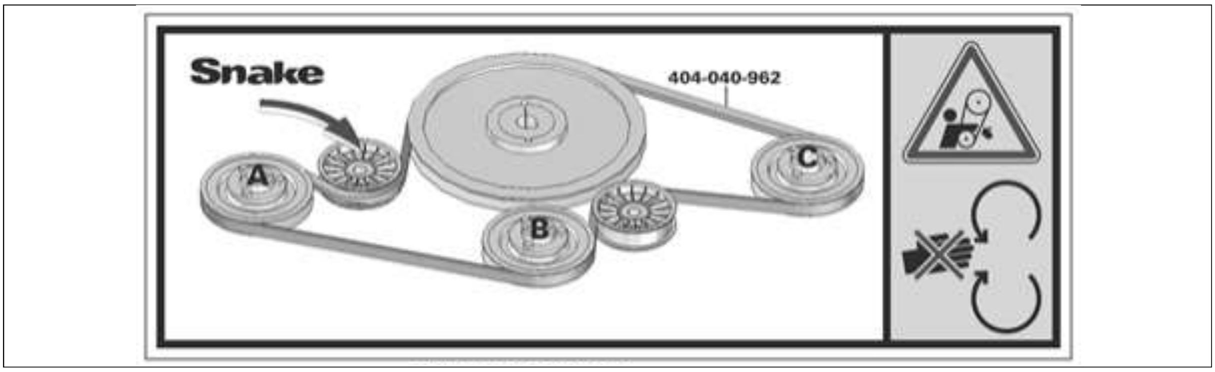

Fig. 42

15. Tension the belt as described above.
16. Turn the spindles several times to even out the belt tension.

17. Re-check the belt tension and re-adjust if necessary.
18. Replace the stainless steel cover as described in section 14c.
19. **Check and adjust belt tension if necessary during the first hour when next using the mower.**

14e. Blades.

Trimax Snake mower decks are fitted with **Trimax’s** exclusive **LazerBladez™**. The blade part of the **LazerBladez™** system is known as a “fling-tip”, which is a small blade mounted to a blade carrier by a special bolt. As the blade carrier spins, the blade pivots about the mounting bolt and is held in position by centrifugal force. The advantages of fling-tip blades are:

- They are generally thinner than equivalent one-piece solid blades and keep cutting even when blunt.
- Fling tips are relatively inexpensive and quick to replace.
- They pivot backwards if they hit an “immovable” object, preventing damage to the blade spindles and other parts.

LazerBladez™ fling-tips are unique.

- The offset mounting hole shifts the centre-of-gravity of the blade and makes the cutting edge “tilt forwards” while cutting.
- They are wider than other similarly-sized blades, resulting in more mass for higher impact in heavy going.
- The upturn on the trailing edge is optimised to give better grass lift and discharge characteristics.
- **LazerBladez™** are made from a special steel alloy. They are significantly harder than standard spring steels, giving much longer life while retaining the toughness essential for commercial mowing applications.
- The **LazerBladez™** bolt is specially designed to suit the blades.

Trimax LazerBladez™ are specifically developed for **Trimax** mowers. When ordering new blades for **Snake** mowers, make sure the **LazerBladez™** name is on the packaging and the **Trimax** stamp on all the parts. Accept nothing but genuine **Trimax LazerBladez™** as anything else will affect the performance of the machine.

DANGER! In order for the blades to cut correctly they must rotate at high speed. ANY PARTS THAT BREAK LOOSE MAY TRAVEL A CONSIDERABLE DISTANCE AND CAUSE SEVERE INJURY OR DEATH.

NEVER RUN THE MOWER WITH BLADES MISSING as the resulting imbalance may create a vibration sufficient to loosen other blades. Vibration may also lead to early structural failure of the mower and damage to the driveshafts and the tractor’s transmission.

Pay particular attention to the security and condition of blades, blade carriers and blade mounting bolts and nuts.

To change the blades:

1. Ensure the area is clear of bystanders, especially children.
2. Start the tractor engine and raise the mower decks. Ensure the transport locks engage.
3. Stop the tractor engine, ensure all controls are in neutral, remove the ignition key and wait for all moving parts to stop.
4. Connect the transport safety cable to prevent accidental lowering of the mower decks.

5. To protect it from impact damage, the self-locking nut that secures the blade bolt fits inside a recess in the top of the blade mounting flange of the spindle. Clean any dirt out of the recess.
6. Use a 19mm (3/4") socket to undo the self-locking nut that secures the blade bolt (Fig. 43).
7. Discard used blade bolts and nuts. New bolts and nuts should be fitted in conjunction with new blades.
8. Fit the new blade and bolt to the spindle flange. Ensure the bolt is orientated correctly to fit the hole in the flange.
9. Fit the nut and tighten to a torque of 80Nm (60 lb-ft).
10. Ensure the blade is free to turn about the bolt.

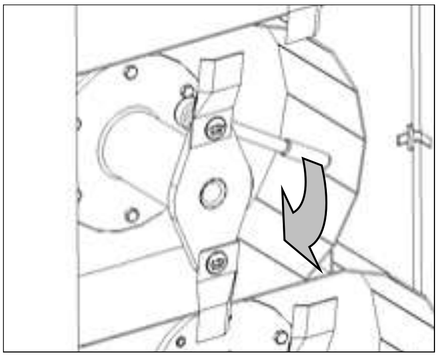

Fig. 43

NOTE: After use, fling-tip blades usually have grass clippings jammed between the blade and the spindle flange. This holds the blades in the operating position and it can be very difficult to turn them by hand. While operating, however, the force applied to a blade if it impacts a solid object is enormous and the blade will definitely move backwards to protect itself and the mower against damage. Centrifugal loads on the blade are almost as strong as impact loads and the blade will normally return to its operating position as soon as the mower passes the solid object. Occasionally a blade may jam in the retracted position, usually if it has been bent. ALWAYS CHECK FOR THIS. Return the blade to the operating position. Replace bent blades as necessary.

14f. Roller scrapers.

Trimax Snake mowers can be fitted with optional roller scrapers to wipe off clippings picked up as the roller travels over the ground.

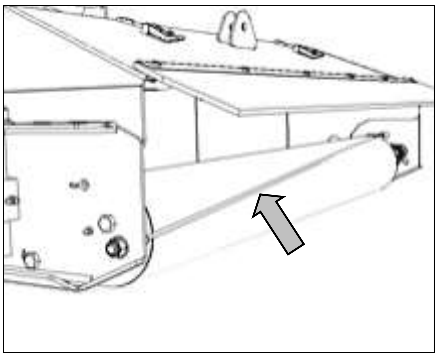

Fig. 44

Each scraper consists of a length of wire cable wrapped in a quarter turn around the roller and and attached to the roller side channels at either end (Fig. 44). It is probable that scrapers will only be required at certain times of the year and in some areas they may not be necessary at all. Because of this, if roller scrapers are supplied with the machine they may not be fitted.

WARNING: ROLLER SCRAPER USE, TENSIONING AND WARRANTY.
Scrapers are not recommended for use on front rollers. Should breakage occur they are likely to wrap into the blades. In the case of a roller scraper breakage TRIMAX WILL NOT BE LIABLE FOR WARRANTY ON BLADE OR SPINDLE COMPONENTS.

It is the responsibility of the operator to fit or remove roller scrapers depending upon the ground conditions prevailing at any given time.

Do not tighten the roller scraper cables more than is necessary to clean the roller. Over-tightening will place extreme loads onto the roller bearings and cause premature failure. It may also make it difficult to adjust the cutting height.

To fit roller scrapers:
1. Two self-locking nuts are supplied with each scraper. They are normally fitted to the threaded section at either end of the wire cable. Remove the nut from one end.

2. There are two holes in the side channels adjacent to each roller bearing. One hole is behind the roller, the other above it. While the scraper will fit either way it is best **behind the roller at the left end** to prevent interference with the grass discharge. Pass the end with no nut through the hole behind the roller bearing at the left end of the deck and pull it through until the remaining nut seats against the roller mounting plate.
3. Pass the free end through the hole **above the bearing at the right end** of the roller and fit the self-locking nut to the threaded section.
4. Use an adjustable wrench or self-locking pliers to hold the shank of the threaded section at one end to prevent it turning.
5. Turn the self-locking nut until the threaded end of the scraper projects a couple of threads beyond the nut.
6. Now fit the wrench or self-locking pliers to the shank of the threaded section at the other end. Turn the nut until the scraper wire contacts the full length of the roller.

CAUTION! Do not tighten the roller scraper cables more than is necessary to clean the roller. Over-tightening them will stop the roller turning, cause premature roller bearing failure and make height adjustment difficult. If the roller does not rotate freely the scraper wire may be too tight.

7. The roller scraper wires may stretch slightly after the mower has been operated for a time. This is normal. It may also be necessary to tighten them a little so they can properly remove debris from the rollers, particularly in some conditions. If necessary, tighten the roller scrapers only a little at a time and check the results rather than risk over-tightening them.

14g. Greasing.

IMPORTANT! Use only lithium based grease manufactured by a reputable company. Most "multi-purpose" greases supplied by well known companies are lithium or lithium complex based and should be compatible with those used in Trimax products.

Greases formulated from bases other than lithium may react or completely break down when mixed, even in very small quantities. In particular, DO NOT USE GREASES CONTAINING GRAPHITE. The cause of the resulting mechanical failure can often be detected and may result in the rejection of any subsequent warranty claim.

If there are any doubts concerning the composition of any grease being considered for use in this Trimax product consult your lubricant supplier or manufacturer or purchase a suitable product from a multi-national company.

Cleanliness is essential when working with grease and oil. Clean the grease gun nozzle and each grease fitting before applying grease.

It is best to grease your Trimax mower AFTER use while the moving parts are still warm. When components are warm fresh grease flows around them and expels used grease and dirt more readily.

NOTE: The quantity of grease is described by the number of "pumps" or "shots". One pump is defined as the quantity of grease delivered by one pump of a lever-action grease gun, while one shot is that delivered in one cycle of an air-operated power grease system. One shot is typically equivalent to four pumps.

1. **Roller bearings:** Grease these **every 8 hours or daily**. Greasers are fitted to each roller side channel on the centreline of each roller (Fig. 45). Apply **2 pumps** of multi-purpose grease to each grease fitting.

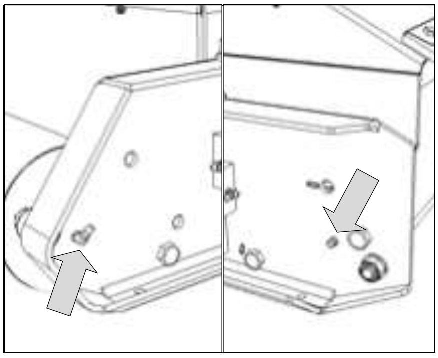

Fig. 45

WARNING! DO NOT OVERGREASE! Excessive grease will dislodge seals from the bearings and allow water and dirt to enter, leading to early bearing failure.

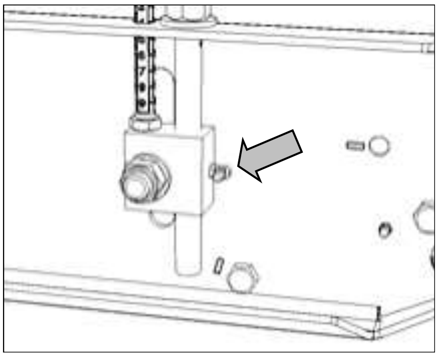

Fig. 46

2. **Height adjusters:** Grease **as required**. If the cutting height is never changed, greasing should not be necessary. Use multi-purpose grease (Fig. 46).

3. **Roll pivots:** Lubricate **every 40 hours or weekly**. Each mower deck pivots from side to side on bushes located in the centre of the mower body at the front and rear (Fig. 47). Each pivot bush has a greaser fitted and should be given **2 pumps** of multi-purpose grease.

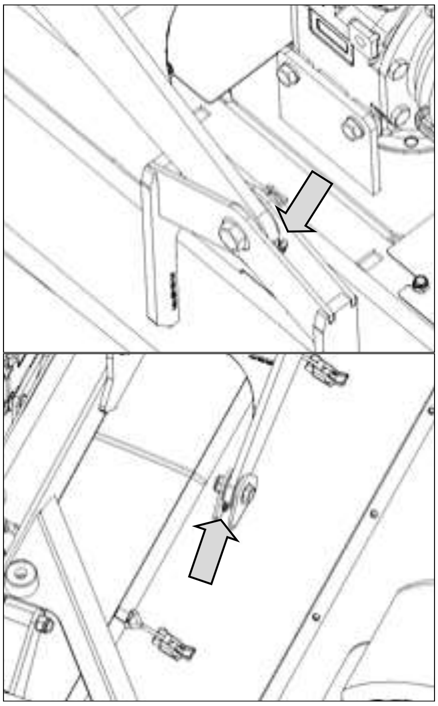

Fig. 47

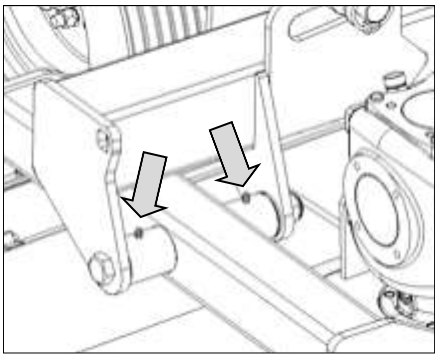

Fig. 48

4. **Side deck pitch pivots:** Lubricate **every 40 hours or weekly**. All three mower decks can pitch fore-and-aft in relation to their outriggers. The left and right deck pivots have greasers fitted. There are two of these on each side of the tube that passes through the outrigger where the deck connects to it (Fig. 48). Each greaser should be given **2 pumps** of multi-purpose grease.

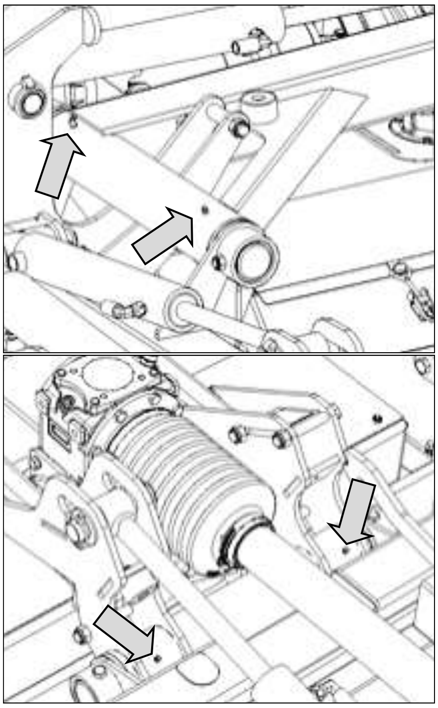

Fig. 49

5. **Outrigger hinge bushes:** Lubricate **every 40 hours or weekly**. Each outrigger (left, rear and right) pivots about a large tubular hinge pin. There is a large bush at either end of the hinge. Each bush is fitted with a greaser (Fig. 49). Each greaser should be given **4 pumps** of multi-purpose grease.

14h. Driveshaft maintenance.

Driveshafts, particularly the primary driveshaft that connects the tractor PTO output to the mower gearbox, are complex pieces of equipment in their own right. **Regular maintenance is essential** if they are to continue to perform reliably.

IMPORTANT! The driveshaft tubes must be able to telescope freely at all times or serious damage to the tractor, mower and the driveshaft itself will result.

Maintenance for Snake driveshafts has been extended to intervals of **40 operating hours**. Some greasing can be carried out with the shafts in place but the telescoping tubes can only be greased if at least one half of each driveshaft is removed from the mower. It is just as easy to remove each driveshaft from the mower for maintenance.

Inspect all components as you carry out the following operations and replace any that are worn or damaged.

To grease the primary driveshaft:

1. Remove the primary driveshaft from the mower.
2. Separate the two half shafts and work on end with the large constant velocity joint first.
3. There are three grease points on the constant velocity joint. Start with the one in the centre of the front universal joint cross (Fig. 50). Apply multi-purpose grease **until grease can be seen exiting through the cross seals**.

Fig. 50

4. There is a hole in the large rubber cover that encloses the CV joint. Turn the shaft inside the safety covers until the grease fitting in the CV housing becomes visible. The horizontal fitting shown (Fig. 51) greases the sliding disc assembly inside the CV housing. Apply **4 - 8 pumps** of multi-purpose grease.

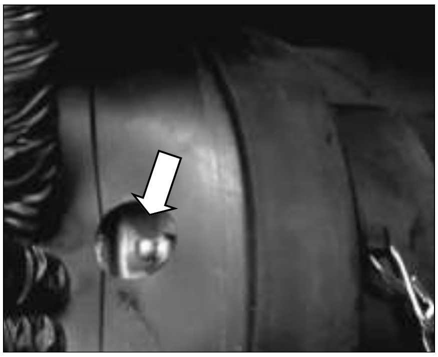

Fig. 51

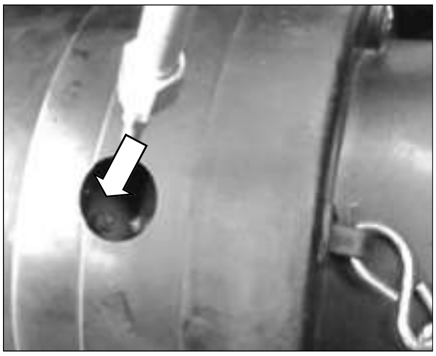

Fig. 52

5. Also visible through the same hole in the cover is a second fitting on the end of the inner universal joint cross (Fig. 52). Apply **4 - 8 pumps** of multi-purpose grease.

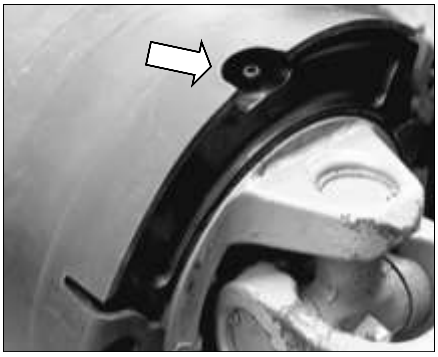

Fig. 53

6. There is a plastic grease fitting in the rim of the cover (Fig. 53). This greases a large slipper bearing which allows the driveshaft to rotate inside the covers. Apply **2 - 4 pumps** of multi-purpose grease.

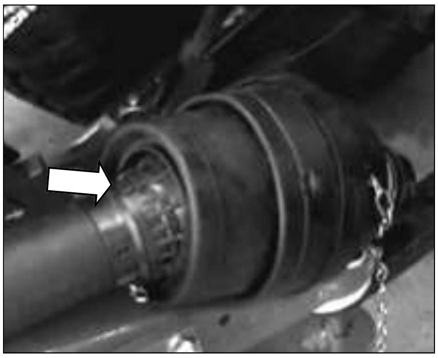

Fig. 54

7. A smaller slipper bearing supports the safety tube. This is greased through a hole in one of three tags visible in the moulded plastic cone section (Fig 54). It requires the use of a needle-nosed grease gun fitting. Apply **2 pumps** of multi-purpose grease.

8. Now work on the other half shaft. Grease the universal joint through the fitting in the centre of the cross. Apply multi-purpose grease **until grease can be seen emerging from the cross seals**.
9. The slipper bearing is similar to the one in the other half shaft. Grease it through the hole in one of the tags in the small end of the safety cone. Apply **2 pumps** of multi-purpose grease.
10. Apply a **liberal amount** of multi-purpose grease inside the end of the profile tube.
11. Fit the two half shafts together. Note they will only fit two ways. Two of the spines opposite each other on both inner and outer tubes are slightly wider than the others. These must fit together. Fully compress the telescoping sections.
12. **Lightly oil** the quick-release coupling collars on both ends of the driveshaft.
13. The shaft is now ready to be refitted to the mower.

Secondary driveshafts:
There are driveshafts from the chassis gearbox to each mower deck. All use identical components

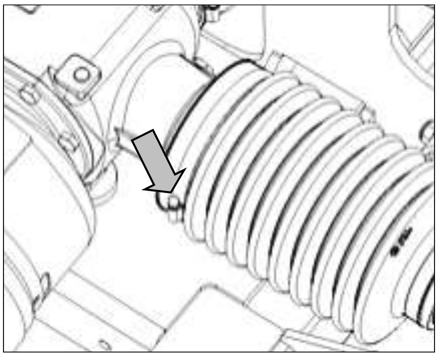

Fig. 55

but the driveshaft for the rear deck is longer than the others.

Work on one driveshaft at a time so the same parts are always assembled together.

To grease the secondary driveshafts:

14. Undo the large jubilee clip on the mower deck gearbox and slide the rubber concertina off the gearbox (Fig. 58).
15. Do the same at the chassis gearbox end.
16. Uncouple the shaft from the mower deck and chassis gearboxes and lift the shaft clear.
17. There is a grease fitting in the centre of each universal joint cross. Apply multi-purpose grease **until grease can be seen exiting from the cross bearings**.
18. Slipper bearings are greased through holes similar to those in the primary driveshaft. Apply **2 pumps** of multi-purpose grease to each.
19. Separate the two half shafts.
20. Apply a **liberal amount** of multi-purpose grease to the inside of the larger profile tube.
21. Fit the two half shafts together. The two profile tubes will only fit together when the spines with flats on are aligned. Fully compress the shaft.
22. **Lightly oil** the quick-release coupling pins at both ends of the driveshaft.
23. When refitting the driveshaft to the mower, attach the end with the smaller cover tube to the chassis gearbox. This helps prevent water and dirt running between the tubes when the decks are raised.
24. Fit both concertinas over their gearbox flanges and loosely fit the large jubilee clips.
25. Ensure the slipper bearing grease holes are facing upwards before tightening the jubilee clips.
26. Repeat steps 14 - 25 for both the other secondary driveshafts.

14i. Gearbox Oil.

Check the gearbox oil levels **every 40 hours or weekly**.

To check the gearbox oil levels:

1. Park the tractor on level ground.
2. Lower the mower decks to the ground, stop the tractor engine, engage the parking brake, ensure all controls are in neutral, remove the ignition key and wait for all moving parts to stop.

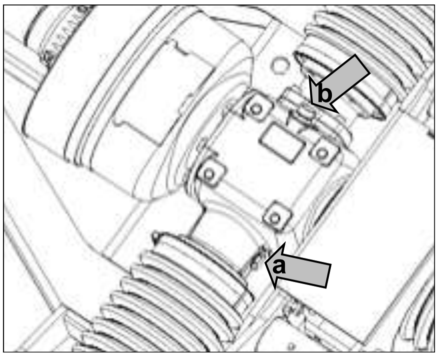

Fig. 56

Chassis gearbox only:

3. Remove the oil level plug on the rear of the gearbox on the left side (Fig. 56, a).
4. The correct level must be within 20mm (3/4") of the bottom of the oil level plug hole. It may be necessary to use a mirror to see properly. If oil seeps out there is sufficient oil in the gearbox.
5. If necessary add new, high quality EP90 oil through the breather hole (b) to bring the oil up to the required level.

Mower deck gearboxes:

6. Breather and blank plugs are fitted to the top of each gearbox (Fig 57). Remove one.
7. The oil may be visible part way up the input shaft. If not, use a suitable dipstick to check the level. With the dipstick **vertical** the oil level should be between **80** and **100mm (3 -1/4** to **4")** below the lower edge of the plug or breather hole.
8. If necessary add new, high quality EP90 oil through the breather hole to bring the oil up to the required level.
9. Replace the breather plug and tighten securely.

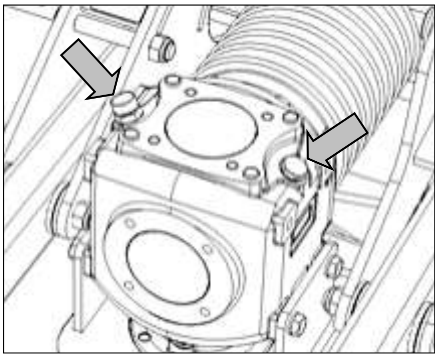

Fig. 57

If any of the gearboxes need topping up frequently, check all plugs for tightness and inspect the seals on the input and output shafts for leaks. Consult your dealer if necessary.

Changing the gearbox oil:

10. The gearbox oil should be drained and replaced **every 1,000 hours**. Draining is best carried out when the oil is still warm after use.

To change the oil in the gearboxes:

11. Although there are drain plugs in each gearbox they can be difficult to get to. The best option is to use an oil suction gun to remove all the oil through the breather plugs. Suitable suction guns are available from larger automotive supply companies. Dispose of oil according to local laws and regulations.
12. After draining, replace the oil with high-quality "name brand" EP80-90 grade gear oil. **Do not overfill the gearboxes as this will cause overheating and premature failure of gearbox components, or oil may pump out of the gearbox breathers and damage the drive belts.**
13. Refit the breathers and tighten securely.

14j. Wheels & tyres.

DANGER! Tyre and rim parts can explode if tyres are over-inflated causing serious injury or death. Always maintain the correct tyre pressure. Do not inflate the tyres above the recommended pressure.

Never weld or heat a wheel and tyre assembly. The heat can cause an increase in air pressure resulting in a tyre explosion. Welding can structurally weaken or deform the wheel.

When inflating tyres use a clip-on fitting and extension hose long enough to allow you to stand to one side and NOT in front of or over the tyre assembly.

Check the transport tyre pressures **daily**. Tyres should be inflated to the pressures shown in the table (Fig. 58). **NEVER EXCEED THE MAXIMUM INFLATION PRESSURE!**

Inflation Pressure	**kPa**		**psi**	
	Recommended	**Maximum**	**Recommended**	**Maximum**
Turf tyres 20x10.00-10	210	230	30	32

Fig. 58

When checking tyre pressures inspect the tyres for wear, cuts, cracking, loose or missing stud nuts or other damage. Repair or replace if necessary.

To remove the transport wheels:

1. Park the mower on level ground. This operation can be carried out with the mower decks raised or lowered, with the mower attached to the tractor or on its own. If the mower is to remain connected to the tractor **engage the parking brake, place all controls in neutral, stop the engine and remove the ignition key before proceeding further**.
2. Chock the wheel not being removed to prevent movement when jacking the other wheel up.

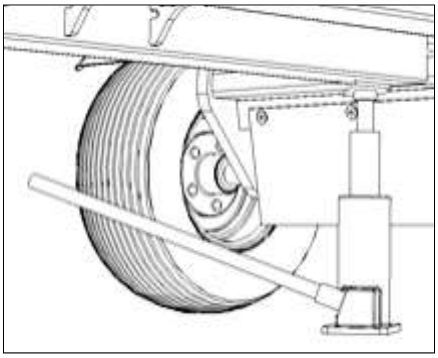

Fig. 59

3. Use a suitable jack with a capacity of **at least 1,000kg (1 ton)**.
4. Place the jack beneath the rear of the chassis rail where it intersects the cross member on the side nearest the wheel to be raised (Fig. 59). Jack the chassis up to take part of the weight. Do not lift the wheel clear of the ground at this stage.

DANGER! Ensure the jack is on solid ground and is placed so it cannot slip as the chassis is lifted. Do not place hands, feet or limbs under any part of the mower that could crush if it should fall.

5. Use a 21mm (13/16") wheel brace or socket. Turn the nuts anti-clockwise to loosen. Do not remove the nuts completely.
6. Jack the wheel clear of the ground.
7. Remove the wheel nuts and the wheel.

DANGER! If the mower must be left jacked up and unattended while the tyre is being repaired, place blocks or a suitable stand beneath the chassis.

To replace the transport wheels:

8. Clean the wheel studs and nut threads.
9. Fit the wheel to the studs.
10. Fit the stud nuts with the tapered side to the wheel. Lightly tighten each nut following a cross-ways pattern.
11. Lower the jack till some of the weight of the mower is on the wheel.
12. Fully tighten the wheel nuts to **75Nm** (**55 lb-ft**) in a cross-ways pattern then check each nut for tightness again.
13. Lower the jack to clear the machine and remove it.

14k. Checking the wheel bearings.

Wheel bearings should be checked **every month**.

To check the transport wheel bearings:

1. Carry out steps 1-4 from section 14j above.
2. Jack the chassis up until the tyre is just off the ground.
3. Rotate the wheel slowly to check for any tightness or roughness. If the wheel does not turn easily the bearings may be adjusted too tightly. If any roughness is detected the bearings must be dismantled, cleaned, inspected and replaced if necessary. Consult your service manager or automotive repair centre.
4. Grasp the wheel at either side and move it firmly to check for any looseness in the bearings. If there is more than about 1mm (1/16") of movement at the rim the wheel bearings may need to be adjusted. Consult your service manager or automotive repair centre.

14l. Cleaning the mower.

CAUTION: Do not direct water jets from high pressure hoses or water blasters directly at any bearing seals or electrical connections.

Always grease the mower before washing (see section 14g) and **avoid directing hoses at bearing housings** especially if they are still warm after use. A hot housing will draw water into the bearings as it cools causing **corrosion** and **rapid bearing wear**.

Wash the mower with the decks in the transport position. This allows unobstructed access to the cutting chambers and also enables the transmission chambers to drain more easily.

Cleaning should be carried out in a designated area where dirt and grass washed from the mower is trapped to prevent it being washed into drains or streams. Collected dirt and grass clippings should be disposed of according to local bylaws.

15. SERVICE SCHEDULE.

The following service schedule is organised so that a record can be kept as maintenance is carried out. Copy this page to continue your record.

DATE																			
HOURS																			
SERVICED BY (Initials)																			
Every 8 Operating Hours or Daily																			
Grease roller bearings (12)																			
Check drive belt tension, adjust if reqd. (3)																			
Check blade condition																			
Check operation of transport locks (3)																			
Check fling-tip blade bolt torque (18)																			
Check all bolts for tightness																			
Check transport wheel tyres and pressures (2)																			
Every 40 Operating Hours																			
Grease primary driveshaft																			
Grease mower deck driveshafts (3)																			
Check drive belt condition (3)																			
Grease mower deck roll pivots (6)																			
Grease mower deck pitch pivots (4)																			
Check for gearbox oil leaks. Repair & top up if necessary (4)																			
Check transport wheel stud nuts for tightness (10)																			
Monthly																			
Check transport wheel bearings (2)																			
Every Season or As Required																			
Grease height adjuster blocks (12)																			
Remove driveshafts (4), clean & inspect, replace worn parts, grease & reassemble																			
Grease parking jack																			

NOTE: If using your **Trimax Snake** in arduous conditions (e.g. excessively dusty or wet etc.) some items such as the driveshaft may require greasing more frequently.

16. TROUBLESHOOTING.

FAULT	CAUSE	REMEDY
Mower vibrates excessively	Excessive PTO speed	Run PTO at 540rpm
	Blade stuck in the retracted position	Ensure blades turn freely on blade bolts. Replace bent or damaged blades.
	Blades missing or badly damaged	Replace blades
	Primary driveshaft fitted wrong way round	Fit the constant velocity joint to the tractor
	Driveshafts worn	Repair or replace
	Primary driveshaft constant velocity joint damaged	Replace driveshaft. Limit turns so driveshaft angle never exceeds 80°, especially when reversing
Drive belt slipping	Drive belt loose	Tension drive belt correctly
	Mower scalping excessively	Raise cutting height
	Excessive ground speed	Run PTO at 540rpm, vary transmission to travel more slowly
	Incorrect drive belt fitted	Use only genuine Trimax parts
	Rotating parts not turning freely	Check for and remove any debris fouling blades
		Check blade spindle bearings, replace if necessary
	Oil or grease on drive belt	See below
	Tractor too powerful	Use a less powerful tractor or travel more slowly
Oil or grease on drive belts	Too much oil in gearbox	Check gearbox oil level, drain to correct level, replace belts
	Gearbox seals leaking	Inspect gearbox for leaks, repair if necessary, replace belts
Excessive power required to drive mower	Rotating parts not turning freely	Check for and remove debris fouling blades
		Check blade spindle bearings, replace if necessary
	PTO speed too fast	Run PTO at 540rpm
	Excessive ground speed	Run PTO at 540rpm, vary transmission to travel more slowly
	Cutting height too low	Raise cutting height
	Cutting too much at once	Cut more frequently
		Run PTO at 540rpm, vary transmission to travel more slowly
		Raise cutting height for first cut, lower cutting height and cut again in opposite direction
Excessive wheel marks or poor cutting finish	PTO speed too slow	Run PTO at 540rpm
	PTO speed too fast	Run PTO at 540rpm
	Cutting height too high	Lower cutting height
	Excessive ground speed	Run PTO at 540rpm, use transmission to travel more slowly
	Blades missing, damaged or worn out	Replace blades
	Ground too wet	Wait for ground to dry out
	Cutting too much at once	Raise cutting height for first cut, lower cutting height and cut again in opposite direction
	Lush grass sticking to underside of mower. (This issue may only occur in periods of rapid growth.)	Try running PTO at **450rpm**, use transmission to maintain ground speed

FAULT	CAUSE	REMEDY
Some long grass left un-cut	Cutting too high	Set cutting height lower if possible
	Blades missing, damaged or worn out	Replace blades
	Debris trapped under mower	Clear debris
	Mower dirty	Wash grass from cutting chambers after use
Mower deck clogs or clippings build up over rear roller	Steel anti-droop strip under rubber flap bent, blocking exit path	Straighten steel anti-droop strip
Mower scalps excessively	Cutting too low	Raise cutting height
Mower decks do not follow contours	Auxiliary hydraulic valve not in float position	Use correct auxiliary hydraulic circuit. Set valve to float position
	No float position available	Hold hydraulic lever in down position while mower decks traverse dips
Mower deck skids mark turf	Ground contours too extreme for mower	Change mowing pattern to approach contours from different angle
Blades leave scalloped pattern on turf	Travel speed too fast	Select a lower gear, travel more slowly
	Mower decks bouncing	Fit optional anti-bounce skids
Roller bearings fail	Water in bearings	Grease bearings before washing mower
		Do not direct hoses or pressure washers at bearings
	Seals displaced	Do not over-grease - two pumps only per greasing
	Bearings loose on roller axle	Replace roller or machine roller axle(s) and fit roller stub end sleeves (part no. 414-000-047). Use shaft locking compound to secure bearings to axle.
Primary driveshaft CV joint breaks	Driveshaft angle exceeds 80°	Limit turns, especially when reversing
Side mower deck blades will not turn	Drive turning wrong way	Chassis gearbox fitted incorrectly. Un-bolt gearbox & rotate 180 degrees.

17. TRANSPORTING THE MOWER.

Trimax Snake mowers may sometimes (but not always) be shipped on a special frame. The frame has sockets for fork hoist forks to fit into to prevent the mower from toppling off. **This is the only permissible way of lifting the mower from underneath.** If the machine is to be transported frequently a transport frame may be available for purchase. Contact your dealer or **Trimax Mowing Systems**.

If the frame is not available and it is necessary to lift your **Snake** mower (to load it onto a truck or trailer for transport, for instance) it is imperative to do so correctly. The machine could weigh up to 1300kg (1.3 tons) and has many sections that can move independently. With the mower decks raised it also has a high centre-of-gravity and may topple if not secured correctly. A label fixed to the mower shows the recommended lifting method, which is also shown on **instructional video** on the **My Trimax** page of the **Trimax Mowing Systems** website. See section 1a for details.

DANGER! Never attempt to lift the mower from underneath using a fork hoist! Not only is this EXTREMELY DANGEROUS, but the forks will also damage parts of the mower. Follow the procedure below to prevent accidents or damage.

SAFETY! Only people qualified to operate lifting equipment should carry out this procedure.

To lift the mower:
1. Raise the mower decks into the transport position, ensuring the transport locks engage fully.
2. Fit the transport safety cable to ensure the mower decks cannot lower unexpectedly.
3. Lower the parking jack and adjust it to carry the weight of the drawbar.
4. Disconnect the transport lock release rope, electrical cables and hydraulic hoses from the tractor.
5. Disconnect the primary driveshaft from the tractor and secure it to the mower.
6. Disconnect the tractor from the mower and move it safely out of the way.

7. The mower **MUST be suspended from above** using slings, ropes or chains (Fig. 60). Two slings or chains of equal length will be required. The total weight could be up to 1,300kg (2,860 lbs). **Ensure all lifting equipment has the appropriate rating**.
8. Use D-shackles to attach each sling or chain to the top end of the lift ram slot in the **rear** plate of each side outrigger arm as shown.

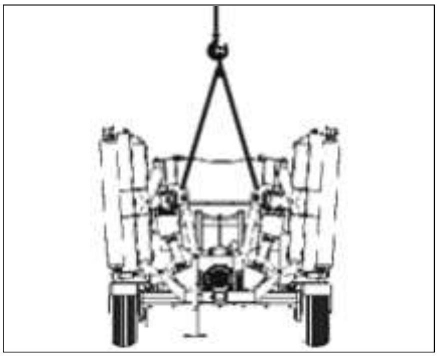

Fig. 60

9. Ensure the ends of the two slings or chains meet at a point directly above the fore-and-aft centreline of the mower chassis.
10. Securely connect both slings or chains to the hook of the crane or lifting device.
11. The front of the mower will lift first, which allows it to be manoeuvred around on its wheels when lowering it onto the deck of a truck or trailer.

DANGER! Keep well clear of the mower while it is suspended.

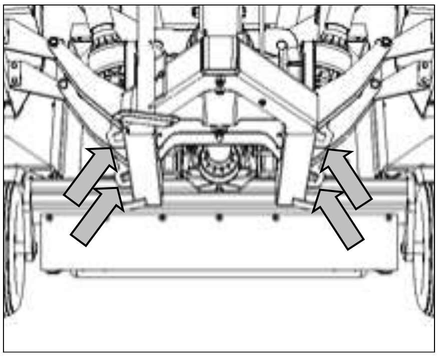

Fig. 61

To secure the mower onto a truck or trailer:

12. Tie-down points are provided on the mower chassis, two on each side (Fig 61). Use these to connect approved chains or webbing. Ensure the machine is properly secured according to local transport regulations before moving the vehicle.

18. STORAGE.

SAFETY! Before preparing the mower for storage, review the hazard identification list (section 3a) and take all necessary precautions.

After a season's use, the machine should be thoroughly inspected and prepared for storage.

Preparing the mower for storage:

1. Clear the area of bystanders, especially children.
2. Lubricate all grease fittings.
3. Thoroughly wash the machine to remove all dirt, mud, debris and residue.
4. Inspect the blades and spindles for damage or entangled material. Repair or replace damaged parts. Remove all entangled material.
5. Inspect the drive belts for wear or damage and replace if necessary.
6. Check the gearbox oil level and top up if required.
7. Touch up all paint damage to prevent rusting.
8. Move to the storage area. Select an area that is dry, level, free of debris and away from human activity.
9. **Trimax Snake** mowers can be stored with the mower decks raised or lowered. If the latter, lower the mower decks onto suitable planks or wooden blocks to keep them clear of ground moisture.
10. Uncouple from the tractor.
11. Remove the primary driveshaft and store inside.
12. If the machine will be outside, cover with a weatherproof cover.
13. Do not allow children to play on or around the stored machine.

19. RECOMMENDED TOOLS.

Standard engineering workshop tools are required to carry out all repairs and adjustments on **Trimax** mowers.

20. BOLTS & NUTS.

All bolts used on **Trimax** machines have metric threads and are generally of grade 8.8 unless in non-critical locations or otherwise specified. Bolt heads should have the maker's symbol and "88" embossed on their heads. Grade 8.8 is equivalent to SAE grade 5. Always replace hardware with the same strength bolt.

The thread pitch is shown on the torque chart. An entry shown as "M12x1.75" represents a 12mm diameter bolt with a thread pitch of 1.75mm. In everyday language the thread pitch would normally be omitted so that an M12 bolt that is 65mm long would be known as an "M12 x 65 bolt".

The torque figures indicated on the table below (Fig. 62) are valid for dry (non-oiled) threads and heads. Do not grease or oil bolts or cap screws unless otherwise specified in this manual. Tighten all bolts to the torques specified in the chart unless otherwise noted. Check tightness of bolts periodically using the bolt torque chart as a guide.

BOLT SIZE (mm)	Newton Metres (Nm)	Pounds-Feet (lb-ft)
M6 x 1.00	10	7
M8 x 1.25	25	18
M10 x 1.50	50	37
M12 x 1.75	90	66
M16 x 2.00	220	160
M20 x 2.50	425	315
LazerBlades™ Retaining Bolts	80	60
Road Wheel Stud Nuts	120	90

Fig 62

21. Spare Parts.

21a. Parts to keep in stock.

To avoid downtime it is a good idea to stock commonly used parts. These include:
1. A complete set of blades.
2. A complete set of blade mounting bolts and nuts.
3. A complete set of drive belts.
4. 1 litre (or pint) of EP90 gearbox oil.

21b. Ordering spare parts.

Trimax Mowing Systems constantly works to refine and develop its product range. As such it reserves the right to change the specifications of its products without incurring any obligations to owners of units previously sold. Every effort is made to keep new parts compatible with those which they replace. Where this is not possible it is company policy to provide parts for any machine for a considerable period from the date of manufacture. In many cases parts are still available for very early **Trimax** machines.

Parts should be ordered from the dealer that supplied your **Trimax** mower. The parts listing below covers the parts most likely to be required in normal use.

To order spare parts:
1. Identify the parts you want from the list below (Fig. 63).
2. **Always quote the machine's serial number when ordering parts**. See section 8 to locate the serial number.

Full parts drawings and listings are available on the "**My Trimax**" section of the **Trimax Mowing Systems** website. See section 1a for more details.

DESRIPTION	PART NUMBER	QUANTITY PER MOWER
LazerBladez™ fling-tip blade standard	411-160-842	18
LazerBladez™ blade bolt & nut	411-322-050	18
Drive belt - mower deck	404-040-962	3
Roller bearing kit	401-020-801	12
Primary driveshaft	406-000-020	1
Plastic tow eye bush	402-840-130	1
Idler pulley assembly - drive belts	403-000-082	6
Toggle latch - cover	423-080-220	12
Height adjuster screw	412-850-251	12
Height adjuster block	412-000-255	12
Wheel bearing kit	401-860-470	2
Thrust washer - mower deck pivot	403-840-520	12
Spindle bearing kit	407-000-028	9
Roller stub sleeve repair kit	414-000-047	12
Height indicator rod	412-000-256	12
Height adjuster locking washer	308-160-083	12
Options		
Roller scraper	404-000-057	3 or 6
LazerBladez™ fling-tip blade flat	411-160-840	18
Tow hitch clevis kit	808-000-017	1

Fig. 63