

AGROWFLOW

FLEXIROLLER

OPERATOR'S MANUAL

**AF2000 through to AF6250
Trailing FLEXIROLLER**

2015



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Local Agrowplow Dealer:

‘Prosperity Through Soil Care’

Disclaimer

Every effort has been made to ensure that the information in this manual was accurate and up to date at the time of printing. Agrowplow Pty Ltd reserves the right to make subsequent changes to the machine or this manual, where necessary, without notification.

Agrowplow Pty Ltd will not be responsible for any damage or consequential loss arising out of misinterpretation or failure to follow recommended procedures. Nor will it be liable for any damage caused by or arising out of modification or misuse of its product.

The owner has a responsibility to protect himself and others by observing all safety information and by ensuring all operators are well acquainted with the safety information, trained in the correct use of the machine and applying safe work practices.

The Owner's Manual

Your new machine will give long and efficient service if given normal care and operated properly.

This owner's manual is provided so that you can become thoroughly familiar with the design of the machine and to obtain information on correct operation, adjustment and maintenance. Only people well acquainted with these guidelines should be allowed to use this machine.

Right and left hand references in this manual are determined by standing behind the machine and facing in the direction of travel.

The manual is considered as part of your machine and must remain with the machine when it is sold.

Delivery Inspection

On delivery of your new Agrowplow machinery please check that the machine is not damaged. In cases of shipping damage, please ask your dealer to arrange for the appropriate claim to be lodged immediately.

Assemble any parts supplied loose and inspect your machine with the aid of this manual to familiarise yourself with its features. If you have any queries ask your dealer straight away.

The machine is covered by our 12 month warranty on faulty parts, subject to normal use. Record below the serial number of your machine and keep it in a secure place to help trace the machine and assist us when you order parts.

Model: _____

Serial Number: _____

Authorised Agrowplow Dealer: _____

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Agrowplow – Company Profile

Agrowplow Pty Ltd is an innovative, soil conscious company committed to developing "Soil Care" products for improved, sustainable agriculture.

The founders of Agrowplow had the foresight to see that farmers needed to improve their practices - to improve soil structure, increase humus and allow more water to infiltrate and store in the soil - if farming was to be sustainable.

The first Agrowplow was designed and built in 1977 to improve soil structure, increase humus levels and increase water infiltration and storage deep into the soil.

Today the company's range of Agrowplows and Agrowdrills are widely accepted by farmers and agricultural researchers for their unique capabilities. The term "Agrowplow" has become a "farming concept" rather than just another implement.

The company's range of specialised Agrowplows, Agrowdrills and other products are designed and manufactured under strict code of sustainable agricultural mechanisation, and promoted under the slogan:

"Prosperity Through Soil Care"

The company's research and development division develops world leading technology for Agrowplow which has resulted in a well-earned reputation of turning market "Ideas" into reality.

Development is undertaken with the professional guidance of fully qualified design engineers with the use of 3D CAD/CAM that supports the complete design to manufacture process. All designs are manufactured to the highest standards of quality control.

Agrowplow has a large factory area (3500 square metres) with extensive fabrication equipment. Experienced and qualified personnel form an extensive resource in all areas.

Agrowplow - building soil care products for improved, sustainable agriculture.

Warranty Policy

Agrowplow warrants to its Dealer, who in turn warrants to the purchaser, that each new Product, part or accessory will be free from defects in material and workmanship for 12 months after delivery and installation by an Agrowplow Dealer, according to the conditions outlined.

This warranty is in lieu of all other warranties (except those of title), expressed or implied, and there are no warranties of fitness for the particular purpose. In no event shall Agrowplow be liable for downtime expenses, loss of machine use, loss of crops, loss of profits, injury or damage arising from accident, direct or indirect loss, or other incidental, consequential or special damages.

The Safe Use Inspection (SUI) and Pre Delivery Inspection (PDI) Forms must be filled in and returned to Agrowplow by the Dealer or Agrowplow representative within seven days of delivery and installation of the unit. By signing the SUI & PDI Forms, the owner acknowledges that he is responsible for the safe operation of the product, and that he undertakes to fully train any person that might operate the product. Only when the Warranty Registration is completed and returned can Agrowplow fulfil all warranty obligations.

Conditions of Warranty

In the event of a defect which may result in a warranty claim:

- The Owner must provide the Authorised Dealer with written notice of the defect within 14 days of its occurrence, and allow reasonable time for replacement or repair.
- At Agrowplow's request the Dealer will ensure any failed parts are freighted to the Agrowplow factory. Freight costs will not be covered by Agrowplow. Transportation of the Agrowplow product to the Authorised Servicing Dealer for warranty work is the responsibility of the Owner.
- The Warranty is not transferable to any third party or subsequent purchaser.
- Components and conditions not covered by warranty include:

Abuse

Failure resulting from neglect, improper operation, lack of required maintenance or continued use of machine after the discovery of a defect which results in greater damage to the unit.

Environmental Conditions and Application

Deteriorated or failed components such as hydraulic hoses, seals, valves or connections damaged by corrosive materials, dirt, sand, excessive heat or moisture. Warranty determination for these types of failures will be made by Agrowplow only after inspection of failed components.

Normal Wear

Normal wear and consumable items such as oils and lubricants, nuts, bolts, washers, grease caps, spanners, jacks, bearing housings, axles, poppet valves or seal kits for hydraulic cylinders, seals, points, discs, axles, tyres, machine adjustment and periodic service. These are considered to be normal wear items and are not warranted.

Maintenance

Component failure caused by non-performance of scheduled maintenance such as correct lubrication and maintenance, tightening or replacement of bolts, nuts, fittings, shields and covers.

Damage

Damage or machine failure caused by carelessness, accidents, improper operation, inappropriate transportation or storage of the machine, parts or attachments.

Alterations

Any unauthorised alteration, modification, attachments or unauthorised repairs to the Agrowplow product, parts or attachments. Written approval must be obtained from Agrowplow for any such items to maintain warranty.

Replacement Parts & Service Work

The Labour or expenses involved in any of the following replacements or service tasks is the responsibility of the owner:

- Replacement of faulty tyres
- Soil opener replacement
- Metering roller adjustment or replacement
- Any bearing replacement
- Adjustments (refer to manual)
- Drive shaft adjustment or replacement
- Periodic service work.

Agrowplow and its Dealers are not responsible or liable for any such expenses.

Clean-up Time

Agrowplow does not pay for cleaning the products, parts, accessories or work area before or after the warranty repair. Clean-up time is affected primarily by the application or conditions in which the unit is operated and maintained. Since clean-up time can be so variable, cleaning time should be considered a customer expense.

Transportation & Insurance Costs

Warranty does not cover transportation or insurance costs for its products or other equipment needing repair or replacement of warranted components. Nor does it cover any freight or insurance costs in obtaining new parts or returning old parts to Agrowplow for inspection purposes.

Travel Time

Travel time required for warranty repairs is the responsibility of the Owner.

Diagnostic Time

Warranty does not cover time required to diagnose a warranty problem. Diagnostic time is affected greatly by the training and expertise of the technician employed to do the job. With proper training of service personnel, diagnostic time should be at a minimum. Agrowplow expects that Dealers will assign a well trained and proficient technician to handle warranty repairs.

Non – Genuine Parts

Use of parts other than Agrowplow parts for repair of warranted parts will automatically negate any warranty. Warranted components must be replaced with genuine Agrowplow repair parts.

Unauthorised Repairs

Repairs by an unauthorised agent will automatically forfeit any warranty. Warranty repairs must be carried out by an Authorised Agrowplow Dealer only, and only after Agrowplow's authorisation has been obtained.

Special Warranty Considerations apply in respect to the following:

Tyres, Hydraulics and Castings:

These items are covered by their respective manufacturer's warranty. For example many tyre manufactures will only warrant tyres pro rata. Claims for faults relating to these components must follow Agrowplow's normal claim procedures.

Completing Safe Use Instruction (SUI) & Pre Delivery Inspection (PDI) Reports

The use of the SUI and PDI Reports is mandatory. Each Report must be completed as part of the sales process of every machine and returned to Agrowplow for warranty registration. Each completed Report must detail:

1. The intended purpose of the machine;
2. The safety controls that have been used to reduce or eliminate identified hazards;
3. A warning of the existence of hazards remaining in the machine and an explanation as to why the hazard remains.
4. Limitations to the use and application of the machine or plant resulting from any remaining hazards as recorded on the SUI Report.
5. Further operator training that may be required.

Special Note:

Dealers are responsible by law to determine that machines are suitable and properly equipped for the application they know or should reasonably have known the machine will be used for. This implies that a supplier must enquire what the machine is to be used for, and a further review of safety controls must be carried out, in view of the specific application the machine to this intended purpose.

At the time and point of delivery the salesperson must present the SUI & PDI Report to the purchaser as a record of the installation process. This should be the result of a face to face installation.

Once the intended purpose is confirmed, use each item of the SUI as the record of instruction given to the purchaser including:

- Safety controls that minimise the hazards present in the machine;
- Safe operating procedures for the proper use of the machine;
- Limitations to the use of the machine according to an intended application that prevents a safety hazard arising;
- Any additional training the operator may require to use the machine safely

The purchaser must sign the completed SUI as evidence that information and training has been provided and that the purchaser now has the responsibility to train all other operators. It is the responsibility of the purchaser to ensure all other operators are trained.

The original SUI and PDI forms must be completed, signed and returned to Agrowplow for Warranty to be valid

1.0 Safety

1.1 Safety is the Operators Responsibility

The Flexi Roller is a robust and versatile machine capable of operating under a wide variety of conditions. It can be used for direct drilling applications as well as traditional cultivation and seeding to maximise seed germination and plant establishment for pastures, summer crops, cereals, oil seeds and legumes.

The Flexi Roller presents an operator with hazards associated with setting up, on and off road transport, tillage and seeding applications, as well as machine service and maintenance. The operator must be aware of these hazards.

The dealer will explain the capabilities, safe application, service requirements and restrictions of the Flexi Roller and demonstrate the safe operation of the Flexi Roller according to Agrowplow's instructions. The dealer can also identify unsafe modifications or use of unapproved attachments.

The following publications provide information on the safe use and maintenance of the Flexi Roller and attachments:

- The operator's manual delivered with the Flexi Roller gives operating information as well as routine maintenance and service procedures. It is a part of the Flexi Roller and must stay with the machine if it is sold. Replacement operator's manuals can be ordered from your Agrowplow Dealer.
- The Flexi Roller has machine decals that instruct on safe operation and care.

1.2 Safe Operation Needs a Qualified Operator

1.2.1 *Understand the Instructions, Rules and Regulations*

- The written instructions for the operation of the Flexi Roller are included in the Flexi Roller operator's manual and on the machine decals.
- Check the rules and regulations for your location. These rules may include any Federal and State safety requirements.

1.2.2 *Have Training with Actual Operation*

- Operator training must consist of a demonstration and verbal instruction. This training is given by your dealer or Agrowplow representative when the Flexi Roller is delivered.
- New operators must start in an area without bystanders and use all the controls until they can operate the Flexi Roller safely under all conditions of the work area.

1.2.3 *Know the Work Conditions*

- Operators must know any prohibited uses or work areas. They need to know about excessive slopes and rough terrain.
- Operators must know the local road transport regulations, and understand the dangers and requirements of transporting wide and heavy equipment.
- Always wear protective clothing when maintaining or servicing the Flexi Roller.
- For operators to be qualified, they must not use drugs or alcoholic drinks that impair their alertness or coordination while working. Operators who are taking prescription drugs must get medical advice to determine if they can safely operate a machine.

1.3 Safety Instructions

READ THESE SAFETY INSTRUCTIONS CAREFULLY BEFORE ALLOWING ANY PERSON TO OPERATE THE AGROWDRILL

1. Review this manual before each season of use.
2. Never allow anyone unfamiliar or untrained to operate the implement.
3. Operators must know and abide by any road transport regulations pertinent to the transit of your Flexi Roller.
4. Never leave the Flexi Roller in a raised position. Accidental release of control levers or hydraulic hose failure will result in the machine dropping. This can cause serious injury to someone near or under the implement.
5. Do not transport the Flexi Roller without the tractor or vehicle drawbar being in a locked position. Transporting without the drawbar locked will result in loss of implement control and serious damage or injury.
6. Do not transport a Flexi Roller in excess of 20 kph. Transporting at greater speeds will result in loss of implement control and cause serious damage or injury.
7. Do not transport a Flexi Roller with a vehicle of less gross mass than that of the Flexi Roller being towed (see table 2.1). Transporting with a smaller lead vehicle will result in loss of implement control and cause serious damage or injury.
8. Do not pull trailed Flexi Rollers from any point other than from the tractor or towing vehicle drawbar. Pulling from a point other than the designated tractor or towing vehicle drawbar can result in tractor instability and cause serious damage or injury.
9. Do not ride on the Flexi Roller at any time.
10. Use due care when adjusting or maintaining any aspect of the Flexi Roller. Failure to do so may result in serious injury.
11. When undertaking maintenance on the Flexi Roller the operator must ensure that the tractor is turned off and the hydraulics are fully lowered. Accidental release of control levers or hydraulic hose failure will cause the implement to drop down. This can cause serious injury to someone near or under the machine.
12. If the Flexi Roller must be in a raised position for service or maintenance, ensure the unit is securely supported with proper support stands. After the implement is secured release the hydraulics on to the supports and stop the tractor engine before starting work. If supports are not used accidental release of control levers or hydraulic hose failure will cause the implement to drop down. This can cause serious injury to someone near or under the machine.
13. Do not remove any safety instruction decals.
14. Ensure that any safety decals are clear and visible. Clean and replace as necessary.



1.4 Risk assessment

The table on the next page is a guide to assess the severity of hazards associated with the machines use. The columns listed include:

- Hazard Type – lists hazards for assessment and notes whether they are relevant to the machine
- Cause of Hazard – lists the area or application of the machine which applies to the hazard
- Risk Control – lists appropriate safety measures to protect personnel and equipment from damage or harm

The risk assessment rating is calculated from the following table by taking the value for 'Risk Severity' and adding it to the value for 'Likelihood of Occurrence'.

RISK ASSESSMENT	Rate the severity & likelihood of any hazards present within the machine			
RISK SEVERITY	4 = Possible fatality	3 = Major injury	2 = Minor injury	1 = Negligible injury
LIKELIHOOD OF OCCURRENCE	4 = Very likely	3 = Likely	2 = Unlikely	1 = Very unlikely
FREQUENCY	If the exposure to a hazard is very frequent eg continuous, compared to weekly, monthly etc, this should be reflected in increased likelihood of occurrence.			
Add the Risk Severity to the likelihood of Occurrence to calculate the Risk Assessment Rating				

The Risk Control measures listed should be in accordance with the following risk assessment ratings:

- Less than 3 – Low Risk, Acceptable Hazards

Issues to be reviewed with regularity but no specific action is required. Machine usage with awareness.

- 3 to 4 – Medium Risk, Hazards to be managed

Decals or warning signage should be fixed in reasonable locations. All personnel who interact with the machine should be warned of the hazard. Operators to be trained to never operate machine when safety measures are not being adhered to.

- 5 and higher – High Risk, Unacceptable Hazards

Operators must be trained to check that no risk of this hazard is present before or while using machine and must never use the machine when any risk of this hazard is present.

HAZARD TYPE		CAUSE OF HAZARD		RISK CONTROL
Is there a potential for injury or illness due to ...	YES or NO	What is the cause or source of the hazard ...	RISK ASSESS RATING	Determine and apply appropriate risk controls after considering Hierarchy of Risk Control
CRUSHING Crushing of operator or personnel during operation	YES	Attachment of machinery to tractor with 3pt link or hitch Machine weight pressing on ground during operation or becoming unstable during maintenance.	4 + 1 = 5	Do not operate with personnel on machine Clearly view crush area when reversing tractor toward machinery Apply safety stands before performing maintenance Do not operate machine with personnel in the machine path
ENTANGLEMENT Entanglement, drawing in, pinching or trapping	YES	Entanglement in rings	4 + 2 = 6	Do not operate with personnel on machine Do not operate with personnel in machine path
STRIKING OR IMPACT An object striking the operator or another person	YES	Material discharge from rings	1 + 2 = 3	Do not operate with personnel in close proximity to plough
CUTTING A cutting, stabbing or shearing	No	There should be no sharp or cutting edges on the machine		
SLIPPING - MACHINERY uncontrolled machine movement	YES	Travelling over slopes, slippery or sodden ground	2 + 1 = 3	Use tractor of equal or greater weight than towed weight See Tractor hazard control
EXPOSURE Exposure to vibration, heat, radiation, friction or abrasion	NO	Heat from tractor, see tractor hazard control		
NOISE Excessive noise	YES	Operation noise	1 + 2 = 3	Apply hearing protection if noise becomes noticeable or operator is not in an enclosed cabin
HIGH PRESSURE FLUID PENITRATION Hydraulic fluid leak	YES	Hydraulic tube or fitting leaking high pressure oil (machines with hydraulic system only)	3 + 1 = 4	Inspect hydraulic system for leaks using appropriate caution Use correct fittings & correct pressure rating for hoses in maintenance
HAZARDOUS SUBSTANCES Hazardous or dangerous substances or suffocation	NO	Exhaust from Tractor, see tractor hazard control		
MANUAL HANDLING Manual handling or ergonomic conditions	YES	Maintenance operations removing trash, changing rings, changing from active/passive direction	2 + 2 = 4	Practice safe lifting of heavy objects Perform maintenance tasks in workshop with lift assistance
EXPLOSION Sudden release of pressure, chemical combustion	YES	Bursting tyre (units with transport wheels only)	3 + 1 = 4	Do not pressurise tyres beyond recommended pressure
ELECTROCUTION Electrocution, electrical burn	No	The machine has no electrical system and should at no time be charged		

2.0 FlexiRoller Specifications

Model	Transport Width	Working Width	Weight	Number of Rings
AF2000	2.4m	2.0m		
AF2500	2.9m	2.5m	748kg	41
AF3000	3.4m	3.0m	874kg	49
AF3250	3.7m	3.25m	937kg	53
AF3500	3.9m	3.5m	1001kg	57
AF4000	4.4m	4.0m	1127kg	65
AF4500	4.9m	4.5m	1254kg	73
AF5000	5.4m	5.0m	1380kg	81
AF5500	5.9m	5.5m	1507kg	89
AF5750	6.2m	5.75m	1570kg	94
AF6000	6.4m	6.0m	1633kg	99
AF6250	6.7m	6.25m	1700kg	104

Flexiroller Specifications

Ring Specifications

Outside Diameter:	400mm
Inside Diameter:	300mm
Width:	60mm
Weight:	10kg

Optional Equipment

- Manual Transport Kit
- Hydraulic Transport Kit



Agrowplow AF4000 Flexi Roller

3.0 Operating Instructions

3.1 Hitching

The Flexi Roller should be matched to the tractor size to maximise performance and efficiency. A mismatched tractor and implement will be inefficient and cost money, as well as being unsafe.

The hitching procedure is as follows:

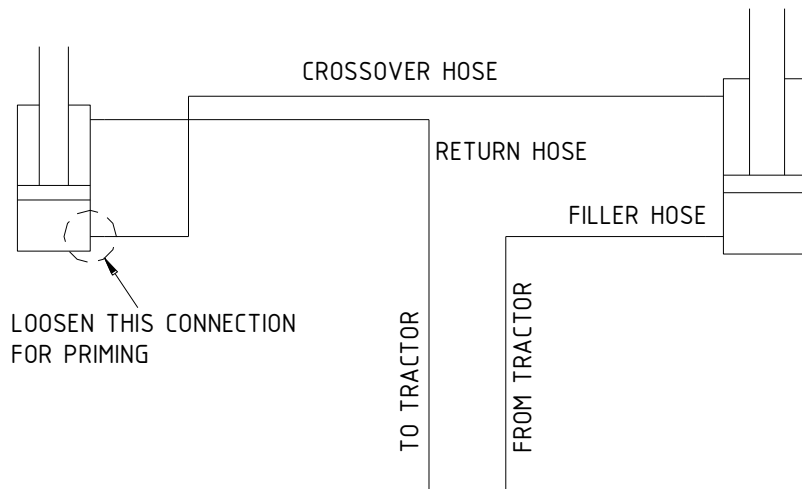
1. Pin the tractor drawbar into the central position.
2. Attach the Flexi Roller to the drawbar.

Warning: Ensure the drawbar pin is locked into position so that it cannot work itself out when the machine is in operation or transit. Failure to do this may result in serious injury or death.

3. Attach the hydraulic coupling (if fitted) to your tractor remote outlet, taking care to clean away any dirt.
The working height of a trailing Flexi Roller is controlled by the hydraulic rams attached to the wheel assemblies. These are operated by the remote hydraulic system.
On some tractors it is necessary to set the hydraulic system to operate in the “single acting” or “bypass”. Consult the tractor operator’s manual for details.
4. Disengage the jack stand.

3.2 Hydraulic Lift Circuit

The hydraulic lift circuit (if fitted) is as follows:



Hydraulic Circuit Diagram

Fully raise and lower the machine several times to expel any residual air trapped in the circuit.



Optional Hydraulic Transport Kit

3.3 Tyre Pressures

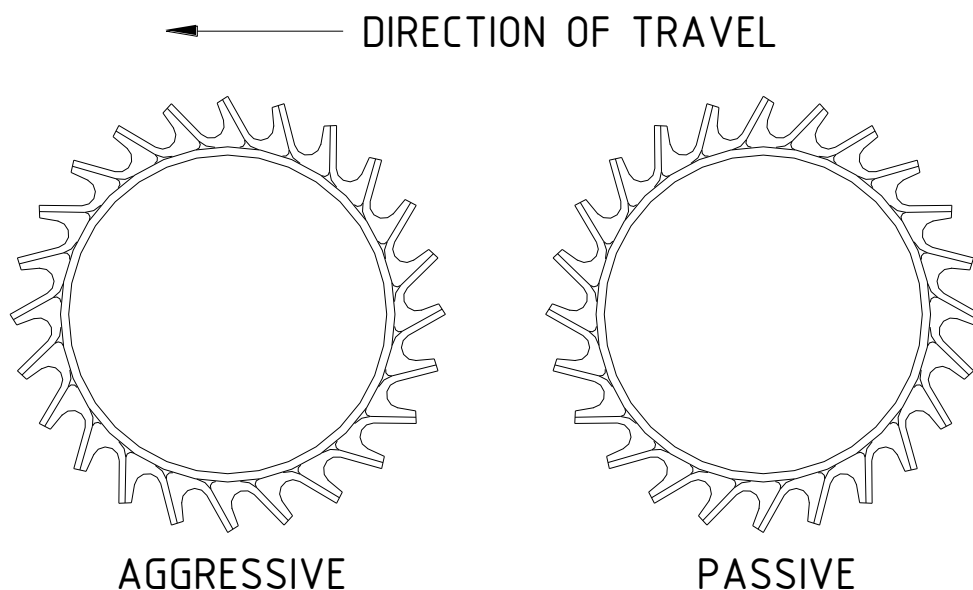
On trailing models ensure that both tyres are inflated to a pressure between 350 – 490 kPa (50 – 70 psi).

3.4 Operating Direction

The Flexi Roller is a multi purpose unit and can be utilised in either direction. In aggressive mode the Flexi Roller will shatter clods and mulch topsoil. It can also be used to break the crust on newly sown soil after rain. In passive mode the Flexi Roller provides a firming, pressing action.

The procedure to change modes is as follows:

1. Place the Flexi Roller on a flat surface.
2. Remove the three locking pins along the carrier bar
3. Swing tow bar over 180°
4. Replace the three locking pins.



Flexi Roller Modes of Operation

The transport kit wheel assemblies do not need to be moved when changing between operating modes.

3.5 Operating Speed

The optimum operating speed of the Flexi Roller will vary depending on the task. Generally lower speeds will be required in the passive mode, as this will provide less soil disturbance for firming actions. Conversely, operating at higher speeds in the aggressive mode will increase soil surface disturbance and hence clod shattering. High speeds will also increase wear on the roller rings.

3.6 Operating Height

The Flexi Roller rings are allowed to work up and down in a vertical plane enabling individual contour following. Best results will occur if the entire weight of the machine is rested on the roller rings. Therefore if hydraulic or manual transport kits are fitted the wheels should be raised clear and as high as possible.



The Contour Following Ability is Ideal for Raised Beds.

4.0 Lubrication and Maintenance

The Flexi Roller is an extremely robust and durable machine and will give many years of service with simple routine maintenance.

4.1 Pre-Operation Check

Check the following points before operation:

- Check all nuts and bolts are tight.
- Check all grub screws are tight.
- Add roller rings as necessary.
- Perform a quick visual check of entire machine.

4.2 Lubrication

The lubrication schedule for the Flexi Roller is as follows:

Item	Action	Interval
Rotor Bearings	Grease	20 Operating Hours
Wheel Axle Bearings	Grease	100 Operating Hours
Manual Levelling Tube	Grease	100 Operating Hours

Flexi Roller Lubrication Schedule

4.3 Adding Roller Rings

You should add new roller rings when there is enough space (60mm) between the end roller ring and the stopper plate to fit a new ring in.

The procedure for adding roller rings is as follows:

1. Place the Flexi Roller on a hard surface.
2. Remove the retaining bolts holding the roller rotor to the carrier plate.
3. Carefully raise the carrier frame clear of the rotor far enough to enable the addition of new roller rings.
4. Loosen lock nuts and bolts on stopper ring.
5. Remove stopper ring.
6. Add new roller rings as required making sure they face the same direction as the existing roller rings.
7. Replace stopper ring and tighten bolts and lock nuts.
8. Lower frame and fasten retaining bolts.
9. Check position of stopper plate after a short period of use. Reposition as necessary according to the settling of the roller rings. It is important to keep the rings 'tight' to prevent any horizontal movement as this will lead to premature breaking of the rings.

4.4 End of Season Storage

To ensure a long and trouble free working life please take the following steps when storing the Flexi Roller for long periods.

- Shed the Flexi Roller for protection against the weather.
- Ensure all grease nipples are thoroughly greased before storage. By excluding air and moisture from inside the bearings the chance of corrosion will be minimised. For best results grease the bearings while they are still warm from the last working.
- All weight of the Flexi Roller should be placed on the roller rings during storage. This will prevent flat spots occurring in the tyres.