T3000 TRACKED TROMMEL

Operations Manual

SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

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CONTENTS

EU DECLARATION OF CONFORMITY

The manufacturer, Metberg Ltd., declares under our sole responsibility that the assembled equipment:

TROMMEL T3000 SCREENING PLANT *S/N* 007-01-2020

Complies with the provision of Council Directive: Machinery 98/37/EC as amended, and with the regulations transposing it into national law.

Complies with the provisions of the following harmonised standards: EN 294:1992; EN 349:1993; EN 1050:1996; EN ISO 12100-1:2003; EN ISO 12100-22003.

The hereby declaration is valid provided that the described instructions and guidelines in the manuals are respected, particularly those related to safe operation.

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Dated: 6th January 2020

Name of Signatory: Liam O'Hanlon
Managing Director

METBERG

SECTION 1.0 GENERAL INFORMATION

1.1 COPYRIGHT

No copies or reproductions may be made from this manual without prior consent of Metberg Ltd. This manual, complete or in part, must not be loaned to a third party.
Additional copies of this manual are readily available; however, a charge may be made to cover printing and administrative costs.

1.2 FOREWORD / RESERVATION OF RIGHTS

This manual has been produced to assist you to promote safe, correct and efficient operation and maintenance of the plant, during its operating life time. By following these instructions, you will help to reduce the risk of accidents, keep repair costs to a minimum and increase plant reliability.
We strongly recommend that the customer, their Health and Safety Staff, plant operators and maintenance staff should read and understand all aspects of this manual. Particular attention should be paid to the safety and maintenance sections.
Keep a copy of this manual at the operational site at all times.
All information, illustrations and specifications in this manual are based on the latest information available at the time of publication.
While all attempts have been made to ensure that the information contained in this manual are correct, some variations exist between different plant designs, due to customer specifications. Therefore, some of the information contained within this manual may not be specific to every customer's plant.

1.3 TERMS AND DESCRIPTIONS USED IN THIS MANUAL:

This manual refers only to the machine supplied by Metberg. Feed and discharge systems connected by the customer and / or not supplied by Metberg, are not covered by this manual.
Where Metberg Ltd have supplied but not installed the machine or any of the components specified in this manual, it will take no responsibility for any incident, accident, injury, loss or damage howsoever caused during installation or due to improper or incorrect installation or set-up.
The following terms have been used throughout:

(i) Trommel

This refers to the group of components which go together to make up the machine supplied by Metberg Ltd.

(ii) Customer

This refers to the individual, group or company who have purchased the machine from Metberg Ltd.

(iii) Customer Connection Points

This refers to the points where the customer connects the feed and discharge systems. For example, the point at which the material is fed onto the machine is a customer connection point.

(iv) Machine Operator

This refers to the person/s who are authorised to operate and /or maintain the machine whether it be the owner of the plant, their employees or their representatives. Metberg Ltd. will take no responsibility for accidents, injuries, damage or loss to or by unauthorised persons operating, maintaining and /or tampering with the machine.

1.4 WARRANTY

All parts and components supplied by Metberg Ltd, related to any products or services, are supplied in accordance with the terms set out in the standard terms and conditions of sale. The company shall endeavour to ensure that all products are manufactured to the highest standards of the industry and carry a 12-month warranty from the date of delivery, or 2000 hours from the plant commissioning date, whichever is sooner.

The company shall in no circumstances be liable for damages of any kind whether direct or consequential (including but not limited to the loss of profit, expenditure incurred, or delay in the execution of any work being carried out by or for the customer) arising out of, or in connection with the manufacture, or servicing, or failure to perform the servicing or failure to return the equipment or any act done in connection therewith, except:-
Nothing in this clause shall limit the company's liability for death or personal injury arising out of negligence.

1.5 SPECIFICATION ALTERATIONS

At the time of initial design Metberg engineers will have determined the correct specification of the plant to provide the required product and throughput. This specification will have been determined through consultation with a representative of the customer where process variables such as throughput, material type, working environment etc, will have been determined. At the time of commissioning, the plant will be set and verified as providing the required throughput etc. If, however, at any time in the future the customer wishes to change any settings on the plant or the parameters in which the plant is operating i.e. the material being processed, they must first consult Metberg Ltd. Written authorisation must be received from Metberg before any changes take place.

Where any unauthorised alterations to the settings of the plant or the parameters in which the plant is working, by the customer, their representative or any other person/s takes place, warranty will automatically be invalidated. Metberg Ltd, will not be held responsible for any direct or indirect damage, accident, injury or loss etc. arising from such unauthorised alterations. Nor will it be held responsible for any loss in throughput, quality of output material or decrease in plant reliability.

1.6 MACHINE SPECIFICATION.

General Dimensions
Transport Length: 10.8m (35'4")
Operational Length: 12.4m (40'9")
Width: 2.2m
Height: 3.2m
Weight: 9500kg

Capacities
Hopper: 2.5m3 (3.2yd3)
Fuel tank: 70 litres
Hydraulic tank: 265 litres

Engine
Type: Caterpillar C2.2 T
Power: 45.5kW
RPM: 2800-3000
Fuel: Diesel
Fuel consumption: 4 litres per hour

Feed Conveyor
Gearbox: Berma RT160
Torque ratio: 2000Nm / 1:8
Hydraulic motor: OMP315
Belt width: 1000mm
Belt length (drum centres): 3.4m
Belt: EP400 4-ply 5mm top
Adjustable speed: 0-13 RPM

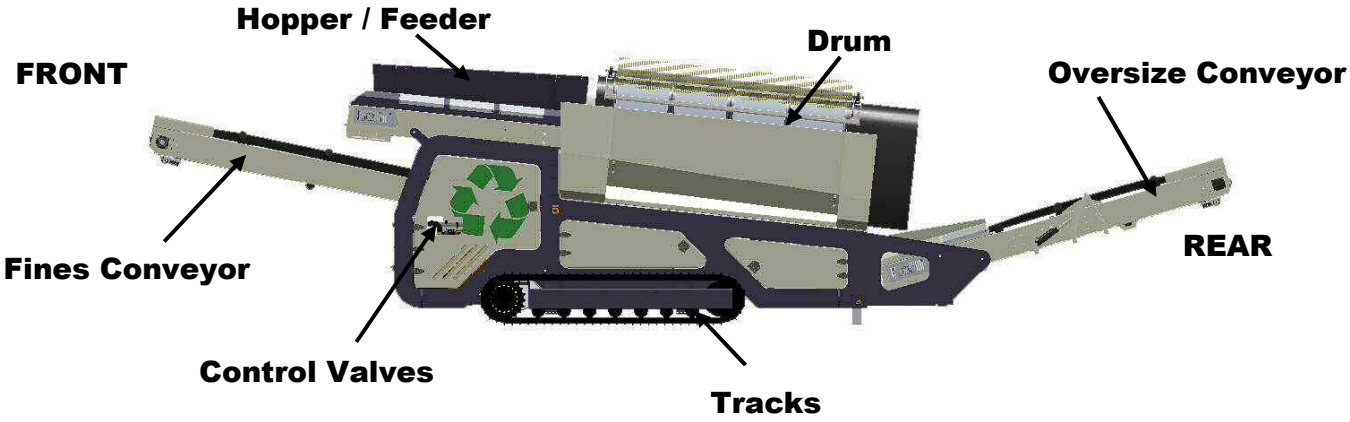
Fines Conveyor
Hydraulic motor: OMT400
Belt width: 900mm
Belt length (drum centres): 14.5m
Belt: EP400 3-ply 5mm top

Oversize Conveyor
Hydraulic motor: OMT400
Belt width: 750mm
Belt length (drum centres): 8.5m
Belt: EP400 3-ply 5mm top

Drum
Diameter: 1.5m
Length: 3.7m
Hydraulic motor OMT500

1.7 FAMILIARISATION

The following names and descriptions have been used throughout this operation manual to describe components and their locations.



1.8 OPTIONAL EQUIPMENT

Machines can include optional equipment and/or special features additional to the standard specification. These may affect the information given in this manual. Look in the appendix of this operations manual for any addendum which may relate to additional equipment or variations to the standard specification. Take note of any variations to the standard procedures and/or component specifications.

1.9 CORRECT USE OF THE MACHINE

(i). This machine should be used for loading, conveying, screening and stockpiling of recyclable and aggregate type materials, e.g. Sand, gravel, chalk, ore, topsoil, green waste, demolition, etc.
This does not include hot materials that could damage the belt etc.

(ii). The machine should be run in a well-ventilated area.

(iii). Appropriate space should be allowed for the loading of the machine and for the stockpiles of materials that are created.

(iv). The machine should only be loaded via the hopper.

(v). Before operating the machine ensure that it has been properly setup, see section 3.0

(vi). The machine must be levelled across the undercarriage and along the chassis during installation.

(vii). The machine must be properly maintained as per the maintenance procedures given in section 5.0.

(viii). The machine must always be properly lubricated as per the lubrication schedule given in section 5

(ix). Before shutting down the machine, other than in emergency situations, always run all the material out of the machine. Re-starting the machine with a full load may damage the drive system.

SECTION 2.0 SAFETY

DANGER

Failure to thoroughly read, understand and carry out these safety instructions could result in death or serious injury

2.1 SAFETY INTRODUCTION

These safety instructions should be read, understood and implemented by the machine owner, supervisor, operators and/or any other person/s who carries out work on the plant.

All personnel who operate, maintain, repair or carry out any work near or on Metberg equipment, must be properly trained in the correct and safe procedures for operation, safety, maintenance and repair etc.

It remains the responsibility of the owner of the machine to ensure the Health and Safety of all persons who are viewing, operating or carrying out any work on or close to the machine. This safety section in no way replaces any laws or other binding accident prevention and environmental protection regulations.

2.2 GENERAL SAFETY RULES

Before operating, maintaining, repairing or carrying out any work on this machine, all personnel must:
(i). Have read and understood all aspects of this manual and be familiar with all safety instructions.
(ii). Be aware of all the hazards associated with this machine.
(iii). Know the location of safety features such as remote stop buttons and safety guards etc.
(iv). Know the location of the respective control panel for the machine and operating features
(v). Have received specific and adequate training for any task to be carried out.
(vi). Be completely familiar with all parts and operation of the machine.
(vii). Be aware of all moving parts on the machine.
(viii). Have read and understood any “on-site” safety manual produced by the site owner.
(ix). Be aware of the performance limits of the plant
(x). Use the machine only as it was intended to use.
(xi). Carry out all safety instructions regardless of how unimportant they may seem.
(xii). Ensure that all “Personal Protective Equipment” is worn.

2.3 HAZARD WARNING SIGNS

The following hazard signs may be used on your machine please ensure that you make yourself familiar with these and the corresponding level of hazard

LOCK OUT EQUIPMENT BEFORE SERVICING.

FALLING HAZARD - **DO NOT** CLIMB ON TO WORKING MACHINERY.

BEWARE OF HYDRAULIC OIL LEAKS. HIGH PRESSURE HYDRAULIC OIL CAN PENETRATE THE SKIN CAUSING SERIOUS INJURIES. USE REPORT ALL LEAKS TO THE APPROPRIATE PERSONNEL RESPONSIBLE. ONLY TRAINED AND PROFESSIONAL PERSONNEL ARE PERMITTED TO INSPECT LEAKS.

OPERATOR MANUALS MUST BE READ AND FULLY UNDERSTOOD, BEFORE PERFORMING ANY OPERATION OR MAINTENANCE TASKS.

EYE PROTECTION MUST BE WORN IN THIS AREA

HEAD PROTECTION MUST BE WORN IN THIS AREA

EAR PROTECTION MUST BE WORN IN THIS AREA

NIP POINT - KEEP HANDS CLEAR OF MOVING MACHINERY

NIP & ENTANGLEMENT POINT. ONLY TRAINED PERSONNEL ARE PERMITTED TO OPERATE MACHINERY WITH THIS HAZARD SIGN. ALL LOOSE CLOTHING AND HAIR MUST BE TIED UP. ALL PROTECTIVE GUARDS MUST BE IN PLACE WITH ALL BOLTS PROVIDED AND ONLY REMOVED ONCE THE MACHINERY HAS BEEN STOPPED AND LOCKED OUT. MAINTENANCE TASKS MUST ONLY BE PERFORMED ONCE THIS HAS BEEN DONE AND ONLY BY TRAINED PERSONNEL.

CRUSHING HAZARD – JACKS. ONLY TRAINED OPERATORS OR PERSONNEL ARE PERMITTED TO STAND NEAR MACHINERY WITH THIS HAZARD SYMBOL. DO NOT USE BODY PARTS (EG HANDS, FEET), TO CHECK ALIGNMENT OR SUPPORT MACHINERY. ALWAYS USE PINS AND/OR MECHANICAL SUPPORTS PROVIDED.

HEARING HAZARD. EAR PROTECTION MUST BE WORN IN THIS AREA BY ALL PERSONNEL.

FALLING MATERIAL HAZARD. NO ONE IS PERMITTED TO STAND AROUND MACHINERY WHILST MATERIAL IS BEING LOADED. RISK OF SERIOUS INJURY OR DEATH.

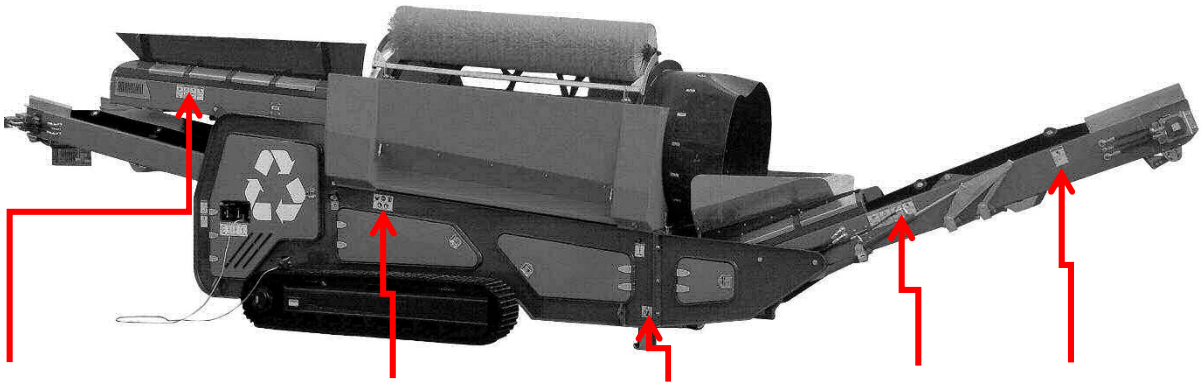
1. ELECTRICAL HAZARD. RISK OF SERIOUS INJURY OR DEATH.

2. WORK ON THE ELECTRICAL SYSTEM MUST ONLY BE CARRIED OUT BY A QUALIFIED ELECTRICIAN.

2.4 HAZARD WARNING SIGNS ON THE MACHINE

Hazard warning signs are important features of any equipment. Please take time to familiarise yourself with their locations on the machine.

ALL SAFETY SIGNS MUST BE CLEARLY VISIBLE, FREE FROM DIRT OR OBSTACLES BLOCKING THEIR VIEW. ANY MISPLACED OR DAMAGED SAFETY SIGNS MUST BE REPLACED IMMEDIATELY BEFORE CONTINUING TO OPERATE THE MACHINERY.



SAFETY SIGNS ARE LOCATED ON BOTH SIDES OF THE MACHINE. MAKE YOURSELF FAMILIAR WITH THEIR LOCATION AND THEIR CORRESPONDING LEVEL OF HAZARD

2.5 SAFETY WARNINGS IN THIS MANUAL

The following safety warnings are used throughout this manual to highlight areas of potential hazards. Ensure that you make yourself familiar with each sign and their corresponding level of hazard warning.

The **CAUTION** sign below indicates a minor or moderate hazard potential. In this situation care should be taken to avoid the risk otherwise injury to personnel may occur.

▲ CAUTION	

The **WARNING** sign below indicates a minor or moderate hazard potential. In this situation care should be taken to avoid the risk otherwise severe injury or death to personnel could occur.

▲ WARNING	

The **DANGER** sign below indicates the highest level of hazard potential. In this situation, extreme care should be taken to avoid the risk otherwise severe injury or death will occur.

▲ DANGER	

2.6 HAZARD ZONE

It is strongly recommended that a hazard or restriction zone should be placed at least 10 metres around the machine. Access to this restricted zone should only be permitted to those people who meet all the criteria listed below. This procedure, if enforced even when the machine is shut down, will significantly reduce the potential for all accidents and injuries. Those permitted to enter the hazard zone should comply with all the following:

(i). Must have authorisation from the plant supervisor to enter the restricted zone.
(ii). Must have read and understood the safety section of this manual
(iii). Must carry out all safety procedures required.
(iv). Must be fully trained and qualified in the work they are carrying out.
(v). Must have experience in working with this type of equipment
(vi). Must be wearing the required “Personal Protective Equipment”.
(vii). Must be accompanied by another person who also meets the criteria.

2.7 PERSONAL PROTECTIVE EQUIPMENT

It is recommended that the minimum personal protection, worn by all persons entering the hazard zone, should be as follows:
Safety Goggles, Safety Boots, Overalls, Safety Helmet, High Visibility Vest, Gloves, Safety Harness (when working at heights above 2 Metres) Ear Protection, plus any other on-site requirements. Note: all protective clothing should be EN/ANSI approved.

2.8 PLANT HAZARDS – WORKING AT HEIGHTS

Where access is required to all areas of the machine which cannot be easily reached from the ground, an approved lifting platform must be used. If any work or adjustments of any kind are to be carried out the machine must be shut down and “Locked Out”. Even when using an approved platform an EN/ANSI Safety Harness must be worn by all personnel working above heights of 2 metres.

2.9 PLANT HAZARDS – ELECTRICS

The equipment detailed in this manual contains voltages from 12 Volts DC to 415 VAC, and local safety procedures must be strictly adhered to.
Serious injury can result from the misuse or the incorrect installation of electrical equipment and it is imperative that local electrical regulations are followed when drawing up the site safe working practices for the machine. As general safe working practice, the following procedures are given as guidance and should be observed at all times when using or carrying out electrical work on the machine. Again, these are minimum standards only.

Electrical work must only be carried out by a qualified electrician. What constitutes qualification is normally controlled by local regulations
In addition, work on the electrical system must only be carried out by individuals with a full understanding of the electrical system.
Special care should be taken when disconnecting, replacing or charging batteries. Ensure batteries are disconnected and reconnected correctly. Note: Inadvertent short circuiting across the battery terminals can cause the battery to explode.
Always disconnect battery leads before carrying out any maintenance to the electrical system. To avoid damage to electrical components, always isolate the batteries and electrical system when welding on the machine frame.
Batteries contain sulphuric acid, which can cause severe burns. Avoid contact with the skin, eyes or clothing. The normal charging produces explosive gases, keep the battery area well ventilated at all times and do not allow sparks or naked flames nearby.
Regular inspections of all the electrical equipment must be carried out. Any damaged cables, components or loose connections must be repaired before continuing to operate the machine. Use only the manufacturer's genuine replacement parts when performing maintenance work.
Use only original fuses with the specified current rating
Modification to any part of the electrical system on this machine can cause the machine to operate in an unsafe manner. No such modifications should be carried out without prior written permission from Metberg Ltd.
Unauthorised modifications will invalidate the warranty conditions of the electrical system.

2.10 PLANT HAZARDS – HYDRAULICS

The hydraulic supply to the machine will cause death or serious injury or death if proper procedures are not followed.
(i) Never disconnect any hydraulic circuit without consulting with the manufacturer or your local dealer.
(ii). Work on the hydraulic system must only be carried out by a qualified technician in accordance with hydraulic engineering rules.
(iii). Never work on the hydraulic system of any equipment unless you are thoroughly familiar with system details.
(iv). Do not handle or repair hydraulic equipment with bare hands.
(v). Wear safety goggles for eye protection. If fluid enters skin or eyes, get immediate medical attention.
(vi). Return controls to neutral position and relieve all pressure in the hydraulic system, before attempting to disconnect any hydraulic circuit or component.
(vii). Beware of hydraulic oil leaks. Hydraulic fluid under pressure can penetrate the skin or damage eyes. Fluid leaks under pressure may not be visible. Use a piece of cardboard to find leaks but do not use bare hand.
(viii). The hydraulic equipment on the machine must be inspected at regular intervals. Loose connections or damaged, frayed or worn hoses must be repaired immediately.
(ix). Do not exceed safe limits. Never set a pressure relief valve to a pressure higher than that set at the factory **140 bar 200PSI**.

2.11 PLANT HAZARDS –MANOEUVRING ON SITE

Make sure that personnel are kept clear when moving the machine on site.
The machine must only be transported with the machine fully lowered.
Avoid manoeuvring the machine over extremely uneven ground as damage may occur.
Make sure that the machine is not manoeuvred on a gradient greater than 3 degrees.
Caution must be exercised when moving machinery on soft or uneven surfaces. It is recommended that machines are not driven nor turned along a slope. To minimise the risk of overbalancing, the machines should be only moved vertically up or down shallow slopes.
Before moving the machine, ensure the siren and beacon are working correctly and that there is no-one on or around the machine or likely to be injured when the machine commences moving.
Always adjust your speed to an appropriate level when travelling in uneven terrain
When working with or moving the machine, always maintain a safe distance from overhead electric lines. If work is to be carried out close to overhead lines, the working equipment must be kept at least the minimum recommended distance away from them. Know and practice the prescribed safety distances from high voltage cables as governed by local regulations. If your machine does come into contact with a live cable, the cable must be isolated before continuing to operate the machine. Warn others against approaching and touching the machine before the area is made safe. Investigate and report all incidents to the site manager.

2.12 PLANT HAZARDS –NIP POINTS

Travelling belts and rotating drums and rollers on the machine create potentially serious nip points. No One should reach into a machine, for whatever reason, while it is running. Always stop the plant and “Lock Out” when maintenance, repairs or adjustments are required.
Loose clothing, jewellery and long hair should be tied back or removed to avoid entanglement with the components. Guards are provided at certain high-risk nip points on the machine. These guards must be kept in place **at all times**. **The machine must NEVER be operated while any guard is missing or damaged.**

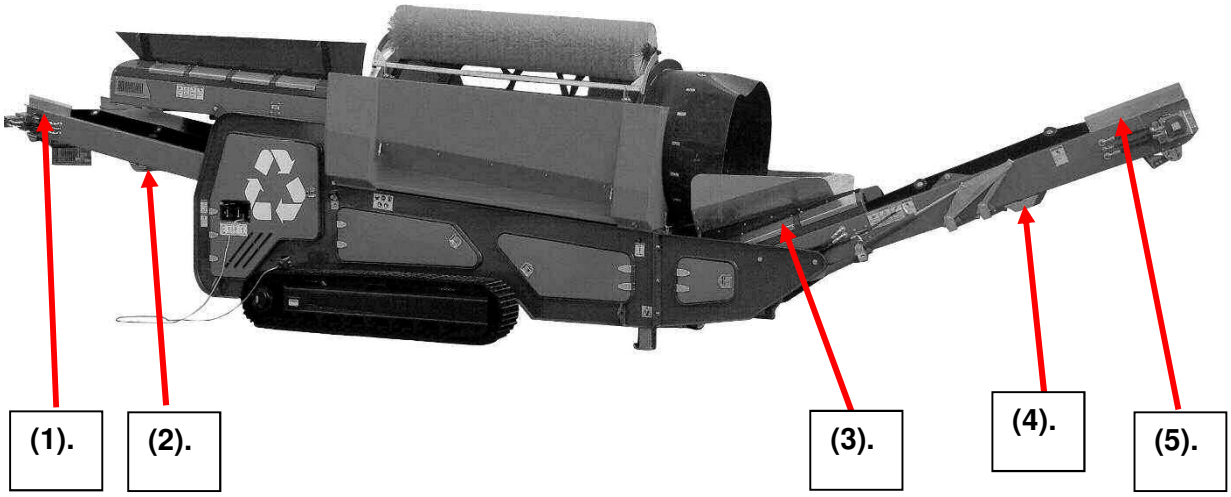
2.13 PLANT HAZARDS – MATERIAL FALLING FROM HEIGHTS

Material is discharged off the end of the machine at great heights. Therefore, it is imperative that no one is permitted to stand or walk within 10 metres of the machine when it is operating. In some situations, material can roll back down the belt and fall off the side of the machine. Even when the machine is not operating, personal protective equipment should always be worn. Loose material can easily fall off the machine even when the belt has stopped.

▲ DANGER	Before removing any guard follow the "Shut Down" and "Lock Out" procedures. Replace all missing guards immediately

2.14 SAFETY GUARDS ON THE MACHINE.

Safety guards are important features of the machine. Take time to familiarise yourself with their locations as shown below.



No.	Description	Qty.
(1).	Fines conveyor head drum guard	2 off
(2).	Fines conveyor return roller guard	2 off
(3).	Oversize conveyor feedboot guard	1 off
(4).	Oversize conveyor return roller guard	2 off
(5).	Oversize conveyor head drum guard	2 off

NEVER OPERATE THE MACHINE WITH ANY GUARD NOT SECURELY IN PLACE AS THIS CAN CAUSE SERIOUS INJURY OR DEATH

2.15 EMERGENCY STOPS ON THE MACHINE.

Emergency stops are located at both the left side and right side of the machine.

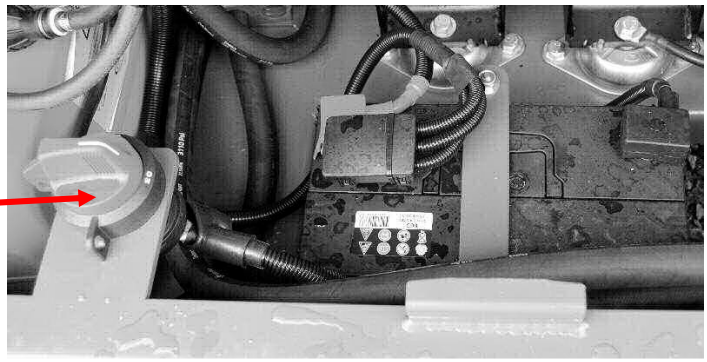
▲ WARNING	**Ensure that the following "Lock Out" procedure is carried out before carrying out any work on the machine**

2.16 "LOCK OUT" PROCEDURE

Each and every time access is required onto or near the machine to carry out work of any type, regardless of how insignificant it may seem, ensure that a "Lock Out " procedure is performed. This procedure is designed to prevent injuries caused by the unexpected start-up or movement of the machine. These procedures are to be followed every time the machine is to be cleaned, maintained, adjusted or repaired. When used as intended, Lockout also protects personnel from energy stored in devices such as springs, accumulators, batteries, hydraulic systems, etc.

2.16.1 BEFORE CARRYING OUT ANY WORK ON THE MACHINE

(i). Turn off the engine at the starter panel, remove key and put the key in a safe place.
(ii). After 20 seconds, rotate the isolator switch from the "ON" position to the "OFF" position



(iii). Fit a lock out hasp and unique padlock on the main power isolator and keep the key to make sure no one can remove your lock and turn the power back on.
(iv). Place a tag on the lock that identifies you (by your name, picture or number) as well as the date and time you locked it out.
(v). Release stored energy from the system, such as hydraulic fluid under pressure, so that the machine is in a zero energy state.
(vi). Try to start or activate the machine to make sure that the power is off. (Don't forget to turn the key off again.)

2.16.2 AFTER CARRYING OUT ANY WORK ON THE MACHINE

(i). Secure the work area by replacing guards and shields, removing blocks, picking up tools and inspecting the work area.
(ii). Take your lock and tag off the main power isolator.
(iii). If there are no other locks on, turn the main power isolator switch to the ON position
(iv). Warn others before starting the machine.
(v). Start the machine and proceed with your work.

▲ WARNING	**In the case of an accident or failure of any part of the machine the following procedure must be carried out immediately**.

2.17 EMERGENCY SHUT DOWN PROCEDURE

In an emergency, only stop the machine by pressing an emergency stop button on the machine. When an emergency stop has been initiated, the ignition switch stays on. Do not attempt to restart the engine until it is safe to do so.
(i). Press any emergency stop to stop the engine and machine.
(ii). Turn the ignition key to the off (O) position as soon as possible, if safe to do so.
(iii). Remove the ignition key.
(iv). Set the isolator switch to the off position.
(v). When safe, release the emergency stop button(s) by pulling or twisting.

2.18 RESTART PROCEDURE AFTER EMERGENCY SHUT DOWN

Ensure that the problem has been solved and all personnel are clear of the machine. Before restarting, ensure that all guards are correctly fitted and fully functional. Do not restart until it is safe to do so.
(i). Release the emergency stop button(s) by pulling or twisting.
(ii). Restart the machine.

2.19 TESTING THE EMERGENCY STOPS

(i). Start the engine.
(ii). Push in an emergency stop button.
(iii). Acknowledge the alarm.
(iv). Re-set the emergency stop by pulling or twisting, depending on the type fitted.
(v). Turn the ignition key to the 'O' position.
(vi). Start the engine again.
(vii). Repeat the procedure for all other emergency stops.

▲ CAUTION	**Installation of this equipment must be carried out by qualified and trained personnel only. Never install this equipment on your own.**

2.20 SAFETY BEFORE AND DURING SETUP.

(I). Only authorised, trained and qualified personnel should be permitted to install this equipment.
(ii). Check the area where the machine will be installed for ground stability, height clearance and access.
(iii). Ensure that the ground is level. Machines installed on uneven ground may not operate efficiently or may be prone to structural defects due to adverse stresses.
(iv). Ensure that at least two people are present when installation is being carried out.
(v). Ensure that all Personal Protective Equipment is worn. Loose clothing, jewellery and long hair must be tied back or removed to avoid entanglement in the machinery.
(vi). Never climb onto the machine, especially the belt, to reach areas not accessible from the ground. Never use unauthorised or unsafe platforms to reach high areas. If ever necessary, when using an approved access platform an EN/ANSI Safety Harness must be worn.
(vii). Never walk, stand or work under unsupported equipment during installation.
(viii). During installation ensure that all bolts, fittings and connections are fitted correctly and tightened appropriately.
(ix). After installation is complete ensure that the machine is fully tested before allowing full operation.
(x). Before testing the machine ensure that all tools, parts and components have been removed especially from the belt. Ensure that no one is on or near the machine before testing.

(xi). Test the machine to ensure that it is functioning properly. If problems occur during testing shut down and adopt the “Lock Out” procedure before attempting to rectify the problem.
(xii). After testing, shut down the machine and check for loose or missing bolts, washers or nuts etc.
(xiii). During initial operation, the belt may need to be tracked.
(xiv). After operating the machine for a few hours shut down and check for any further problems.

▲ CAUTION	**Only trained, experienced, and qualified personnel should attempt to operate this equipment.**

2.21 SAFETY BEFORE AND AFTER SETUP

(I). Read and understand all safety hazards and operating procedures before starting the machine.
(ii). Study all safety and hazard warning signs on the machine.
(iii). Ensure that all Personal Protective Equipment is worn. Loose clothing, jewellery and long hair must be tied back or removed to avoid entanglement in the machinery.
(iv). Ensure that onlookers and untrained or inexperienced persons are beyond the 10-metre hazard zone.
(v). Prior to operation check the condition of the machine for worn, broken, missing or damaged parts or obstructions etc. Ensure that all safety guards and emergency stops are correctly fitted and in good working order. Carry out daily maintenance required,for maintenance schedule.
(vi). Before starting walk completely around the machine. Ensure that no one is under it, on it, or close to it.
(vii) Let other workers and bystanders know you are starting up and do not start until everyone is outside the 10-metre hazard zone.
(viii). While the machine is running never attempt to reach into or climb onto it for any reason. Where it is necessary to inspect the machine always shut down and “Lock Out”.
(ix). Never attempt to carry out repairs, maintenance or adjustments of any type, other than belt alignment, while the machine is running.
(x). Never stand or work beneath the machine while it is being loaded with material.
(xi). Never stand or work beneath the machine while it is discharging material.
(xii). Only use emergency stops in emergency situations or during safety drills.
(xiii). Before shutting down the machine, other than in emergency situations, ensure that all material has been discharged off the belt. Never leave material on the machine overnight or for long periods.

▲ CAUTION	**Maintenance should only be carried out by Authorised and Qualified personnel. Never carry out maintenance or repair work alone.**

2.22 SAFETY BEFORE AND DURING MAINTENANCE

(i). Isolate all electrical supplies to the machine and perform the “Lock Out” procedure before carrying out any maintenance work.
(ii). Ensure that all moving parts on the machine have stopped before attempting any repairs or maintenance.
(iii). Ensure that at least two people are present when maintenance or service work is being carried out.
(iv). Ensure that all Personal Protective Equipment is worn. Loose clothing, jewellery and long hair must be tied back or removed to avoid entanglement in the machinery.

(v). Repairs, maintenance or adjustments to the plant must never be performed while it is running. An exception to the rule is the belt adjustment.
(vi). Guards or access doors should be replaced or closed before leaving the machine unattended, even for short periods of time. Onlookers or bystanders should be kept outside the 10-metre hazard zone during maintenance of equipment.
(vii). When performing maintenance or repairs to areas of the machine which cannot be reached safely from the ground, an approved lifting platform must be used. Never climb onto the machine, especially the belt, to reach areas not accessible from the ground. Never use unauthorised or unsafe platforms to reach high areas. Even when using an approved access platform an EN/ANSI Safety Harness must be worn.
(viii). Never work under unsupported equipment.
(ix). All damaged, missing or dirty safety signs that cannot be read should be cleaned or replaced.
(x). Even though the plant has been designed to operate at low temperatures, some motors or parts may reach high temperatures in hot places or on warm days. Always wait until the equipment has cooled down before working on the equipment.
(xi). During repair or maintenance take time to inspect all other parts on the machine for damage or wear.
(xii). When maintenance or repair has been completed ensure that all bolts, fittings and connections have been replaced and tightened. Re-fit all parts, guards and covers before testing or operating the machine.
(xiii). Before testing the machine ensure that all tool, parts and components have been removed especially from the belt. Ensure that no one is on or near the machine before testing.
(xiv). Test the machine to ensure that it is functioning properly. If problems occur during the testing shut down and carry out all safety procedures listed above before trying to rectify the problem.
(xv). After testing shut down the machine and check for loose or missing bolts, washers or nuts etc.
(xvi). After operating the machine for a few hours shut down and check for any further problems.
(xvii). Only authorised, trained and competent personnel should be permitted to open the control panel if required.
(xviii). Only use lifting equipment, including slings and chains, that are in good working order, has been adequately tested and has the required lifting capacity for the job at hand.

▲ CAUTION	**Only trained, experienced, and qualified personnel should attempt to transport this equipment.**

2.23 SAFETY BEFORE AND DURING TRANSPORT

(i). Ensure that at least two people are present when preparing machine for transport.
(ii). Before transportation on public roads ensure that the vehicle and trailer being used are suitable for the purpose.
(iii). Before transportation ensure that the machine has been properly secured and that no loose material has been left in the frame or on the belt.
(iv). Extreme caution is required when transporting machinery on site. Soft or uneven ground may cause accidents.
(v). When transporting a machine be aware of the overall to avoid contact with overhead obstructions such as bridges or power lines etc. Always fold and lower the machine to the transport position before moving it.

SECTION 3.0 INITIAL SETUP

▲ CAUTION	**Setup of this equipment must be carried out by qualified and trained personnel only. Never setup this equipment on your own.**
▲ WARNING	**Before setting up the machine ensure that you have read and understand the safety instructions in section 2 of this manual.**
▲ DANGER	**HAZARDOUS NIP OR CRUSH POINTS IN THIS AREA**

3.1 SAFETY BEFORE AND DURING SETUP

(i). Only authorised, trained and qualified personnel should be permitted to assemble and setup this equipment. The manufacturer/supplier will not be liable for damage caused by improper assembly or setup.
(ii). The environment in which the machine will operate contains inherent health and safety risks, which the operator must take steps to avoid. Dangers from overhead machine discharges, overspill material, vehicle movements, etc., as well as other site related hazards must be anticipated. Avoid these by carrying out risk assessments before the machine is put into operation to ensure appropriate exclusion zone measures are put in place and site personnel safety awareness training has been undertaken.
(iii). Ensure that the ground is level. Machine installed on uneven ground may not operate efficiently or may be prone to structural defects due to adverse stresses.
(iv). Ensure that at least two people are present when setup is being carried out.
(v). Ensure that all Personal Protective Equipment is worn. Loose clothing, jewellery and long hair must be tied back or removed to avoid entanglement in the machinery.
(vi). Never climb onto the machine to reach areas not accessible from the ground. Never use unauthorised or unsafe platforms to reach high areas. Even when using an approved access platform an EN/ANSI Safety Harness must be worn.
(vii). Never walk or work under unsupported equipment during setup.
(viii). During setup ensure that all bolts, fittings and connections are fitted correctly and tightened appropriately.
(ix). After setup is complete ensure that the machine is fully tested before allowing full operation.
(x). Test the machine to ensure that it is functioning properly. If problems occur during testing shut down and adopt the “Lock Out” procedure before attempting to rectify the problem.
(xi). After testing shut down the machine and check for loose or missing bolts, washers or nuts etc.
(xii). During initial operation, the belt may need to be tracked.
(xiv). After operating the machine for a few hours shut down and check for any further problems.

3.2 INITIAL INSPECTION

When the machine is delivered, thoroughly check for any damage that might have occurred during transport. Do not set up the unit until the inspection is complete. Complete any delivery and start-up forms that were supplied with the equipment. Take note of any damage found, and take photos if possible, and have the driver initial your description of any problem(s).

Check all loose parts, small-parts boxes, and tools against the packing list to ensure all items shipped are present. Check in and around the machine for any loose items that may have been shipped inside the machine.

3.3 MACHINE LOCATION CONSIDERATIONS

Prior to setting up the machine, consideration should be given to a suitable layout to prevent oversize material or metal from entering the machine. In order to prevent damage of the screen unit, no material above the size recommended should be fed into the machine. Position the machine in a safe and level operating position, making sure both tracks are in full contact with the ground to minimise movement of the machine. Regularly check the machine is level and stable. Pay attention to access from the loading area and to where material is to be deposited. Ensure the area under the tail drum of the product machine is free of large stones etc. which may cause damage to the belt. For dusty conditions, some consideration should be given to the prevailing wind direction to minimize the possibility of dust entering the air intake. When setting up the machine, ensure that enough space is available around the machine to enable easy setup, servicing and repair work.
Other machines arranged before and after this machine will have to be placed on the site accordingly.

3.4 MEASURES BEFORE SETUP

(i). Ensure all guards are fully secured in correct/closed position.
(ii). Remove all loose items from the belt by untying the securing ropes.
(iii). Put control valve levers in neutral (non-operational) position.
(iv). The machine must be placed on solid ground capable of carrying the machine's weight.
(v). Before detaching the machine from the prime mover, it is important that the chosen site is level. Level the work site foundation with the loading shovel, if required
(vii). Level the machine with a precision spirit level.
(viii). Do not position the machine above ground level, e.g. on blocks etc.

▲ **CAUTION**	**Setup of this equipment must be carried out by qualified and trained personnel only. Never setup this equipment on your own.**

3.5 INITIAL SETUP

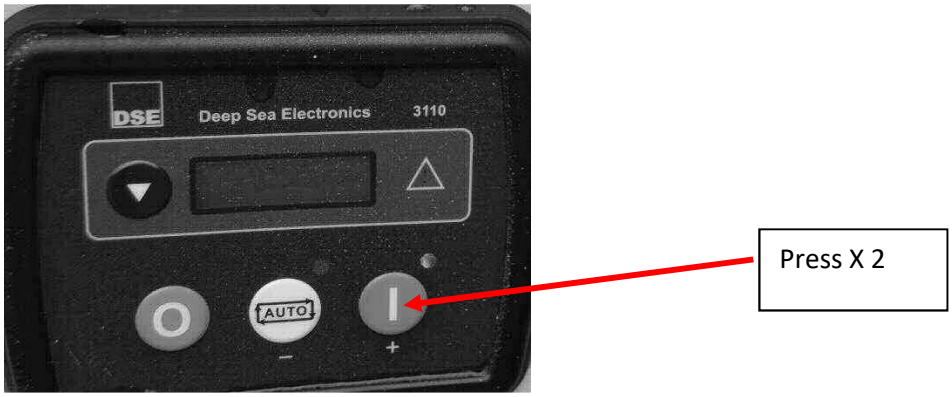
Before starting setup ensure that all control levers are in the neutral (non-operational) position.

▲ **WARNING**	**Before installing the machine ensure that you have read and understand the safety instructions in section 2 of this manual.**
▲ **DANGER**	**HAZARDOUS NIP OR CRUSH POINTS IN THIS AREA**

3.5.1 STARTING THE MACHINE

(i). Make sure hydraulic control lever is in the NEUTRAL position
(ii). Start the engine by turning the ignition key to position I.

(iii). Press the green button twice

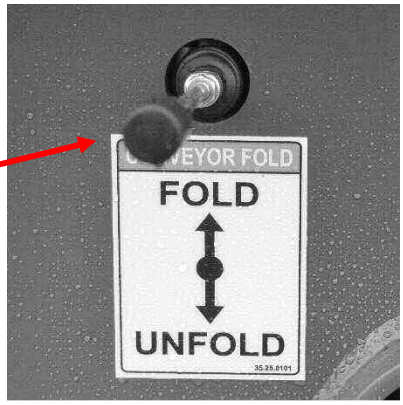


(iv). Wait for 10 seconds delay siren
(v) The engine starts automatically

3.5.2 FOLD OUT OVERSIZE CONVEYOR

▲ WARNING	**Ensure all personnel are clear from the machine. Wear personal protective equipment.**

(i). Make sure hydraulic control lever is in the NEUTRAL position
(ii). Observe all safety warnings
(iii). Move down the conveyor lever to unfold the conveyor from the transport position



SECTION 4.0 STANDARD OPERATION PROCEDURES

▲ CAUTION	**Only trained, experienced, and qualified personnel should attempt to operate this equipment.**

4.1 SAFETY BEFORE AND DURING OPERATION

(I). Read and understand all safety hazards and operating procedures before starting the machine.
(ii). Study all safety and hazard warning signs on the machine.
(iii). Ensure that all Personal Protective Equipment is worn. Loose clothing, jewellery and long hair must be removed or tied back to avoid entanglement in the machinery.
(iv). Ensure that onlookers and untrained or inexperienced persons are beyond the 10 metre hazard zone.
(v). Prior to operation check the condition of the machine for worn, broken, missing or damaged parts or obstructions etc. Ensure that all safety guards and emergency stops are correctly and in good working order. Carry out daily maintenance required for maintenance schedule.
(vi). Before starting walk completely around the machine. Ensure no one is under it, on it, or close to it.
(vii). Let other workers and bystanders know you are starting up and do not start until everyone is outside the 10 metre hazard zone.
(viii). While the machine is running never attempt to reach or climb onto it for any reason. Where it is necessary to inspect the machine always shut down and “Lock Out”.
(ix). Never attempt to carry out repairs, maintenance or adjustments of any type, other than belt alignment, while the machine is running.
(x). Never stand or work beneath the machine while it is being loaded with material.
(xi). Never stand or work beneath the machine while it is discharging material.
(xiii). Before shutting down the machine, other than in emergency situations, ensure that all material has been discharged off the belt. Never leave material on the machine overnight or for long periods of time.

▲ CAUTION	**Before operating the machine ensure that you have read and understand the safety instructions in section 2 of this manual.**

4.2 PRE-OPERATION CHECKS

AVOID frequent starting and stopping of the machine unnecessarily as it WILL cause damage to the machine.

(i). Ensure the machine is placed on solid level ground capable of carrying its weight. Regularly check the stability of the plant. The chassis should not bounce during operation.
(ii). Ensure there is adequate space around the machine for operation, material stockpiles, maintenance and vehicular movement.
(iii). Ensure all guards are fully secured in correct/closed position.
(iv). Check that all safety equipment, alarms and interlocks are operative.
(v). Ensure that any loose items are removed from the belt
(vi). Ensure all control valve levers are in the neutral (non-operational) position.
(vii). Check the engine oil level and the fuel level and replenish if necessary.

(viii). Check the hydraulic oil level and replenish if necessary.
(ix). Ensure the material being feed into the feedboot is below the size limitations recommended by the manufacturer. Do not allow build up of material at feed points.
(x). DO NOT allow the engine RPM to run at more than 2100RPM.
(xi). Observe all safety instructions and ensure the correct protective clothing and equipment are used by operators.
(xii). Check the oil cooler fan and radiator for any build up of dust/dirt. Check regularly that the oil cooler fan is running correctly and that dust/dirt has not built up in the fan and radiator unit (overheating can occur if dust/dirt is allowed to build up). Blow out dust/dirt if necessary.

4.3 INITIAL STARTUP

Checks on the machine are crucial during the first week of operation. These checks must be carried out before operating the machine.
This section should be read and understood prior to starting the machine. If there are any doubts, consult your local dealer or Metberg service department.

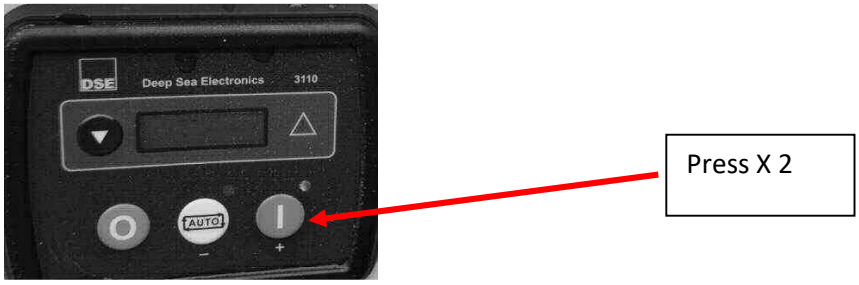
(i). Refer to the engine manufacturer's manual for initial start up of the engine.
(ii). Run the machine empty for a short period of time and check for abnormal noises or vibration.
(iii). Each day during the initial days of operation check the tension of the machine belts.
(iv). Frequently check the overall stability of the machine, re-position if necessary.
(v). Check the machine is level, re-position if necessary.
(vi). Frequently check the hydraulic oil level in the tank.
(vii). Frequently check engine oil level.

4.4 STARTING THE MACHINE

Before feeding material onto the machine it must be running.

(i). Make sure hydraulic control levers are in the NEUTRAL position
(ii). Start the engine by turning the ignition key to position I.

(iii). Press the green button twice



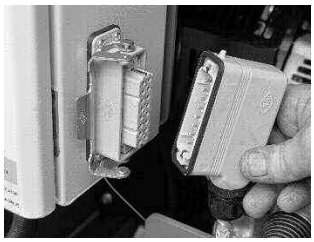
(iv). Wait for 10 seconds delay siren

(v). The engine starts automatically

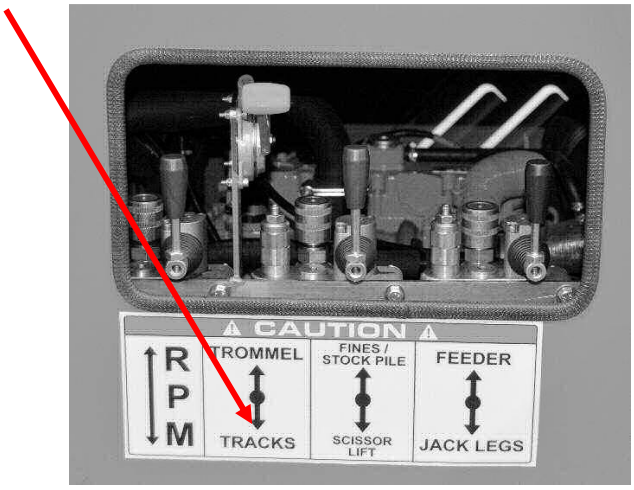
(vi). Using the throttle control increase throttle speed to 2100RPM

4.5 MANUAL TRACKING WITH UMBILICAL HANDSET

(i). Attached umbilical lead connector to plug in at side of control panel



(ii). Pull control lever to “track” position



(iii). On the handheld tracks controller turn dial to “On”

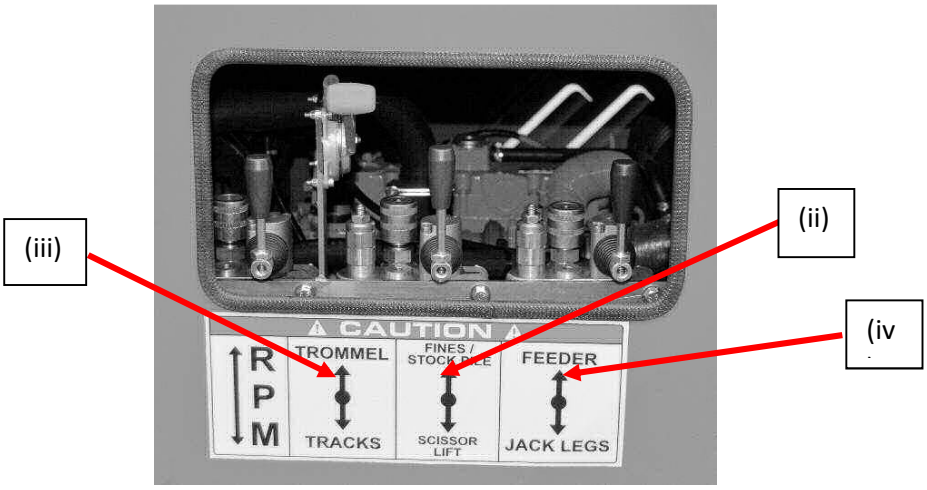
(iv). Using the respective L/R control levers on handheld controller manoeuvre the machine into position.

(v). Turn the dial to “Off”.

(vi). Remove umbilical cord connector from control panel and secure in a safe place.

4.6 NORMAL OPERATION

(i). Ensure all control levers are in the NEUTRAL (non-operational) position



(ii) Push Fines/ Stockpile control valve to start the fines conveyor.

(iii) Push Trommel control valve to start the trommel drum.

(iv) Push Feeder control valve to start the feeder belt.

The machine is now ready to receive material. Adjust variable speed dials for feeder, drum and fines conveyor accordingly to suit material characteristics.

4.7 SHUTTING DOWN THE MACHINE

(i). Ensure that the machine has run empty of all material. Restarting the machine with a full load may damage the drive system.

(ii). To shut down the machine go to the hydraulic control valves.

(iii) Pull Feeder control valve to neutral position to stop the feeder belt.

(iv) Pull Trommel control valve to neutral position to stop the trommel drum.

(v) Pull Fines / Stockpile control valve to neutral position to stop the fines conveyor.

(vi). Switch off the engine by turning the ignition key to position O.

NOTE
Before shutting down the machine, other than in emergency situations, always run the material off the machine belt. When shutting down the machine at night or for long periods etc. It is recommended that the “Lock Out” procedure should be adopted. This will help prevent unauthorised persons from operating the machine.

SECTION 5.0 MAINTENANCE

▲ **CAUTION**	**Maintenance should only be carried out by authorised and qualified personnel. Never carry out maintenance or repair work alone.**
▲ **WARNING**	**Before undertaking any maintenance, repairs or retooling work on the machine, switch off the machine and implement the lockout and tagout procedure.**

5.1 SAFETY BEFORE AND DURING MAINTENANCE.

(i). Isolate all energy supplies to the machine and perform the “Lock Out” procedure, before carrying out any maintenance work.
(ii). Ensure that all moving parts of the machine have stopped before attempting any repairs or maintenance.
(iii). Ensure that at least two people are present when maintenance or serviced work is being carried out.
(iv). Ensure that all Personal Protective Equipment is worn. Loose clothing, jewellery and long hair must be removed or tied back to avoid entanglement in the machinery.
(v). Repairs, maintenance or adjustments to the machine must never be performed while it is running. An exception to this rule is the belt adjustment.
(vi). Guards or access doors should be replaced or closed before leaving the machine unattended, even for short periods of time. Onlookers or bystanders should be kept outside the 10 metre hazard zone.
(vii). When performing maintenance or repairs to areas of the machine which cannot be reached safely from the ground, an approved lifting platform must be used. Never climb onto the machine, especially the belt, to reach areas not accessible from the ground. Never use, unauthorised or unsafe platforms to reach high areas. Even when using an approved access platform an EN/ANSI Safety Harness must be worn.
(viii). Never work under unsupported equipment.
(ix). All damaged, missing or dirty safety signs that cannot be read must be cleaned or replaced.
(x). Even though the machine has been designed to operate at low temperatures, some motors or parts may reach high temperatures in hot places or on warm days. Always wait until the equipment has cooled down before working on the equipment.
(xi). During repair or maintenance take time to inspect all other parts on the machine for damage or wear.
(xii). When maintenance or repair has been completed ensure that all bolts, fittings and connections have been replaced and tightened. Re-fit all parts, guards and covers before testing or operating the machine.
(xiii). Before testing the machine ensure that all tools, parts and components have been removed especially from the belt. Ensure that no one is on or near the belt before testing.
(xiv). Test the machine to ensure that it is functioning properly. If problems occur during testing shut down and carry out all safety procedures listed above before trying to rectify the problem.
(xi). After testing shut down the machine and check for loose or missing bolts, washers or nuts etc.
(xvii). After operating the machine for a few hours shut down and check for any further problems.
(xvii). Only authorised, trained and competent personnel should be permitted to open the control panel doors if required.

(xix). If required, only use lifting equipment, including slings and chains, that are in good working order, has been tested adequately and has the required lifting capacity for the job at hand.

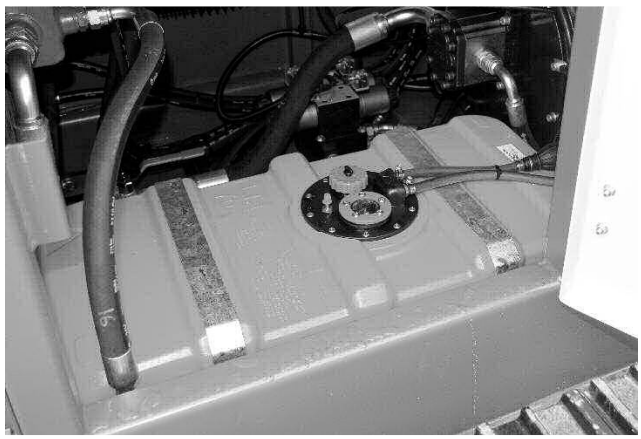
5.2 REGULAR MAINTENANCE

It is important that a strict routine of regular servicing is undertaken from the start of operation of the machine. Regular checks on fluids and the lubrication of the machine, in accordance with the schedule, is essential.
In addition to the lubrication points, the lubrication schedule lists the regular attention required to the machine hydraulic system. The engine oil and coolant also require checking regularly.

5.3 CHECK FUEL LEVEL AND TOPUP

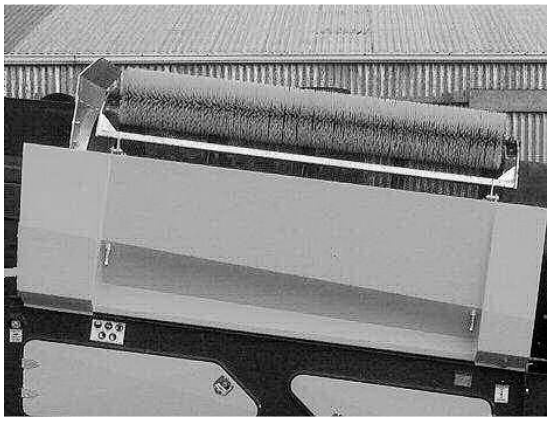
▲ DANGER	**Diesel fuel is highly flammable and is an explosion/burns hazard. NEVER remove the filler cap or refuel, with the engine running. NEVER add gasoline, petrol or any other fuel mixes to diesel because of increased fire or explosion risks.** **DO NOT smoke while refilling or carrying out maintenance on the fuel system.** **DO NOT carry out maintenance on the fuel system near naked lights or sources of sparks, such as welding equipment.**

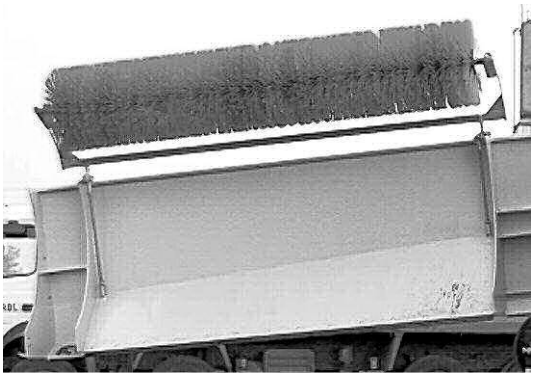
(i). Observe all safety warnings.
(ii). Check the fuel level gauge / indicator.
(iii). Clean the area around the filler cap.
(iv). Remove the filler cap and top up fuel level as required with specified diesel fuel, being careful not to fill the tank to overflow or full capacity. Allow room for expansion and wipe up spilt fuel immediately.



(v). Refer to the engine manufacturer's operation manual.
(vi). Preferably re-fuel at the end of each day, where possible, to reduce overnight water condensation within the tank.
(vii). Replace the filler cap and close the door if applicable.
(viii). If required, switch on the ignition briefly to check the fuel gauge.

5.4 ADJUSTING TROMMEL BRUSH





The brush is designed for cleaning and unclogging the screen mesh during charge material screening. If these operations are not necessary, the brush should be raised. When in use the trommel drum cleaning brushes should be checked for proper adjustment every day. The adjuster rods are located inside and outside the door on the brush side. For most applications adjust the brush height until approximately 12-16mm of the brush bristles project through the screen and into the drum.

(i). Ensure that the machine has run empty of all material and has been turned off and the key removed.

ii) Open the door on brush side

(iii). To RAISE the brush out of the trommel screen adjust (equally) the adjuster nuts clockwise on both sides on the inside and the outside

(vi). To LOWER the brush into the trommel screen adjust (equally) the adjuster nuts anti-clockwise on both sides on the inside and the outside

(v). Close the door

(vi). Start machine

5.5 TRACKS

To maximise the life of the track, keep it movable and avoid damage, the machine should be moved at least every week, by a distance exceeding four times the track length. It should also be parked on level ground overnight and during periods to of non-usage. This is particularly important when working in adverse conditions.
Prior to attempting any manoeuvring of the machine, the tracks must be free of obstructions, including crushed material and fines. Do not push or tow the machine. Failure to observe this warning could result in injury to persons and damage to the machine which may invalidate warranty.

Keeping the tracks correctly adjusted will increase the service life of the tracks and drive components. Frequently check for loose bolts, oil leaks, master pins are correctly located and tight, general wear and damage, correct track tension, etc. to ensure safe working and long life. Always check the tracks prior to manoeuvring the machine.

5.5.1 TRACK TENSION

It is essential that the tracks are correctly tensioned. Check track tension regularly. Moving the machine with incorrectly tensioned tracks can cause severe damage to the undercarriage components and may invalidate the warranty.

It is important that the track is not tensioned too tightly as this puts excessive loads on the gearbox grease cylinder and idler bearings. It will also lead to accelerated wear and premature failure of components.

(i). Observe all Safety Warnings.
(ii). Position the machine on solid and level ground and drive 2 metres (2 yards) minimum in a forward direction, track idler roller leading.
(iii). Shut down the machine.
(iv). Implement the lockout and tagout procedure.
(v). One track at a time, measure the sag on the top part of the track on the longest section of unsupported track by placing a 'straight edge' long enough to reach from the drive sprocket to the nearest skid plate.
(vi). Measure the maximum amount of track sag from the high point of the track to the bottom of the 'straight edge'.
(vii). Correctly adjusted, the sag should be between 5-15mm.
(viii). Depending upon the need to either slacken or tension the track, proceed as follows.

▲ WARNING	**Before undertaking any maintenance, repairs or retooling work on the conveyor, switch off the conveyor and implement the lockout and tagout procedure.**

▲ DANGER	**Grease coming out of the relief valve under pressure can penetrate the body causing injury or death; DO NOT watch the relief valve to see if grease is escaping but instead watch the track adjustment cylinder to verify that the track is being loosened.**

(i). Observe all Safety Warnings.
(ii). Shut down the conveyor
(iii). Implement the lockout and tagout procedure
(iv). Locate the access aperture on the side of the track frame and remove the cover, where fitted, to reveal the relief valve inside.

To Release Track Tension [After measurement]:-

(v). Loosen the relief valve by turning counter clockwise using gradual increments until the grease begins to be expelled. Care must be taken not to loosen the relief valve too quickly because the grease inside is under high pressure.
(vi). When the correct track tension has been measured, turn the relief valve clockwise to tighten and then clean away all trace of expelled grease.
(vii). If the track fails to slacken after the grease fitting has been loosened, do not attempt to remove the tracks or disassemble the track tensioner, or remove the grease fitting. It is possible that running the tracks with the grease fitting loosened may help to expel the grease.

To Increase Track Tension [After measurement]:-

(viii). Connect the grease gun to the grease fitting and add grease until the track tension is within the specified dimension.

Re-check Tension

(ix). Operate the machine in track mode and drive the machine 50 metres (50 yards) forwards and 50 metres (50 yards) backwards, check track tension and repeat the above steps if it is not within the specified dimension (5-15mm).
(x). If room for manoeuvring the machine is restricted, drive the machine forwards and backwards several times over a shorter distance.

5.5.2 TRACK GEARBOX OIL LEVEL

Cleanliness is essential when checking, filling or replacing oil in the track gearbox. Gearbox operating life will be dramatically shortened if the oil becomes contaminated. Only use new clean oil in clean containers and fillers. The recommended gear oil is Renogear SG320 (or DIN51 517-3 equivalent)
The gearbox should hold approximately 5 litres of oil, which should be filtered through a 10 micron filter before entering the gearbox.

CHECKING AND FILLING GEARBOX OIL

(i). Move the machine to a level surface and bring the oil drain holes to the 12 o'clock and 12.15 positions respectively.
(ii). Ensure machine is switched off, locked out and tagged out. Remove ignition key, carry it with you.
(iii). Thoroughly clean around both plugs removing all potential contaminants.
(iv). Remove both plugs.
(v). Fill the oil through the 12 o'clock hole until it runs out through the lower hole.
(vi). Wait a few moments until any trapped air has escaped and then re-check the level.
(vii). Add more oil if necessary.

DRAINING GEARBOX OIL

(i). Move the machine to a level surface and bring the oil fill hole to 12.15 position and the oil drain holes to the 12.30 position.
(ii). Ensure machine is switched off, locked out and tagged out. Remove ignition key, carry it with you.
(iii). Thoroughly clean around both plugs removing all potential contaminants.
(iv). Remove both plugs and allow the oil to drain. The oil will drain quickly if it is hot, however care should be taken to avoid burns to the operator.
(v). Move the machine to bring the plugs to the gearbox fill position.
(vi). Re-fill the oil as per the procedure outlined above

5.5.3 CLEANING THE TRACKS

(i). Observe all safety warnings.
(ii). It is recommended that the tracks should be hosed down on a daily basis to dislodge any build up of material on the tracks.

5.6 CONTROL SYSTEM

Ensure that only qualified and trained personnel operate and maintain this equipment.
Regularly check the control system and connections for any damage.
Never adjust any components or settings without authorisation from Metberg Ltd.

5.7 DAILY MAINTENANCE

The purpose of daily maintenance is to discover minor irregularities on the machine before they develop into major problems.

Object	Job	Remarks
GENERAL		
Guards	Check / replace	

Pipelines/Hoses/Leaks	Check / replace	Check hoses and wear areas for leaks
Bolts & Pins	Check / fasten / replace	
HYDRAULIC SYSTEM		
Hydraulic oil level	Check / top up	
Hydraulic return line filter indicator	Check	Replace filters when indicated
MOVING PARTS		
Material build up	Remove	
Drums & rollers moving free	Check / ensure	

5.8 WEEKLY / 50 HOUR MAINTENANCE (Machine Stopped)

Object	Job	Remarks
FIRST		
Carry out all jobs as per 10 hour / daily maintenance schedule		
CONVEYORS		
Skirting rubbers	Check / adjust / replace	
Impact bars	Check / replace	
TROMMEL	Check / replace	
Trommel brush	Check / adjust / replace	
Mesh	Check / replace	

5.9 2 WEEKLY / 100 HOUR MAINTENANCE (Machine Stopped)

Object	Job	Remarks
FIRST		
Carry out all jobs as per 10 hour / daily maintenance schedule		
Carry out all jobs as per 50 hour / weekly maintenance schedule		
BEARINGS		
Conveyor bearings	Grease	25g or 1 pump from grease gun with general use EP2 lithium-based grease

5.10 MONTHLY / 500 HOUR MAINTENANCE (Machine Stopped)

Object	Job	Remarks
FIRST		
Carry out all jobs as per 10 hour / daily maintenance schedule		
Carry out all jobs as per 50 hour / weekly maintenance schedule		
Carry out all jobs as per 100 hour / weekly maintenance schedule		

5.11 1000 HOUR MAINTENANCE (Machine Stopped)

Object	Job	Remarks
FIRST		
Carry out all jobs as per 10 hour / daily maintenance schedule		
Carry out all jobs as per 50 hour / weekly maintenance schedule		
Carry out all jobs as per 100 hour / weekly maintenance schedule		
Carry out all jobs as per 500 hour / weekly maintenance schedule		

5.12 2000 HOUR MAINTENANCE (Machine Stopped)

Object	Job	Remarks
FIRST		
Carry out all jobs as per 10 hour / daily maintenance schedule		
Carry out all jobs as per 50 hour / weekly maintenance schedule		
Carry out all jobs as per 100 hour / weekly maintenance schedule		
Carry out all jobs as per 500 hour / weekly maintenance schedule		
Carry out all jobs as per 1000 hour / weekly maintenance schedule		
HYDRAULIC OIL	Should be replaced every 2000 hrs or annually whichever comes first	
Hydraulic oil	Replace	

5.13 CAT 2.2 ENGINE MAINTENANCE

5.13.1 WHEN REQUIRED

Object	Job	Remarks
Battery	Replace	
Battery or battery cable	Disconnect	
Engine	Clean	
Engine air cleaner element	Replace	
Fuel system	Prime	
Severe service application	Check /	
Hydraulic return line filter indicator	Check	Replace filters when indicated

5.13.2 DAILY

Object	Job	Remarks
Coolant system coolant level	Check	
Air cleaner service indicator	Inspect	
Oil level	Check	
Walk around inspection	Replace	

5.13.3 WEEKLY

Object	Job	Remarks
Hoses & clamps	Inspect / Replace	
Fuel tank water & sediment	Drain	

5.13.4 EVERY 250 SERVICE HOURS

Object	Job	Remarks
Coolant system coolant sample	Obtain	
Engine oil & filter change	Change*	

*Due to the severe environment that the machine may operate in the engine oil and filter change should be every 250 hours of service.

5.13.5 EVERY 500 SERVICE HOURS

Object	Job	Remarks
Belt	Inspect	
Engine Oil & Filter	Change	
Fan Clearance	Check	
Battery electrolyte level	Replace	
Cooling system supplemental coolant additive (SCA)	Disconnect	
Engine air cleaner element	Replace	
Fuel system secondary filter	Prime	
Radiator	Clean	

5.13.6 EVERY 1000 SERVICE HOURS

Object	Job	Remarks
Water pump	Inspect	

5.13.7 EVERY 1500 SERVICE HOURS

Object	Job	Remarks
Engine crankcase breather element	Replace	

5.13.8 EVERY 2000 SERVICE HOURS

Object	Job	Remarks
Aftercooler core	Inspect	
Engine mounts	Inspect	
Starting motor	Inspect	

5.13.9 EVERY 3000 SERVICE HOURS

Object	Job	Remarks
Alternator	Inspect	
Alternator & fan belts	Replace	
Belt tensioner	Inspect	
Radiator pressure cap	Clean / Replace	

Coolant system coolant	Change	

5.13.10 EVERY 4000 SERVICE HOURS

Object	Job	Remarks
Aftercooler core	Clean / Test	

5.13.11 EVERY 6000 SERVICE HOURS OR 3 YEARS

Object	Job	Remarks
Coolant system cooler extender	Add	

5.13.12 EVERY 12000 SERVICE HOURS OR 6 YEARS

Object	Job	Remarks
Coolant system coolant	Change	

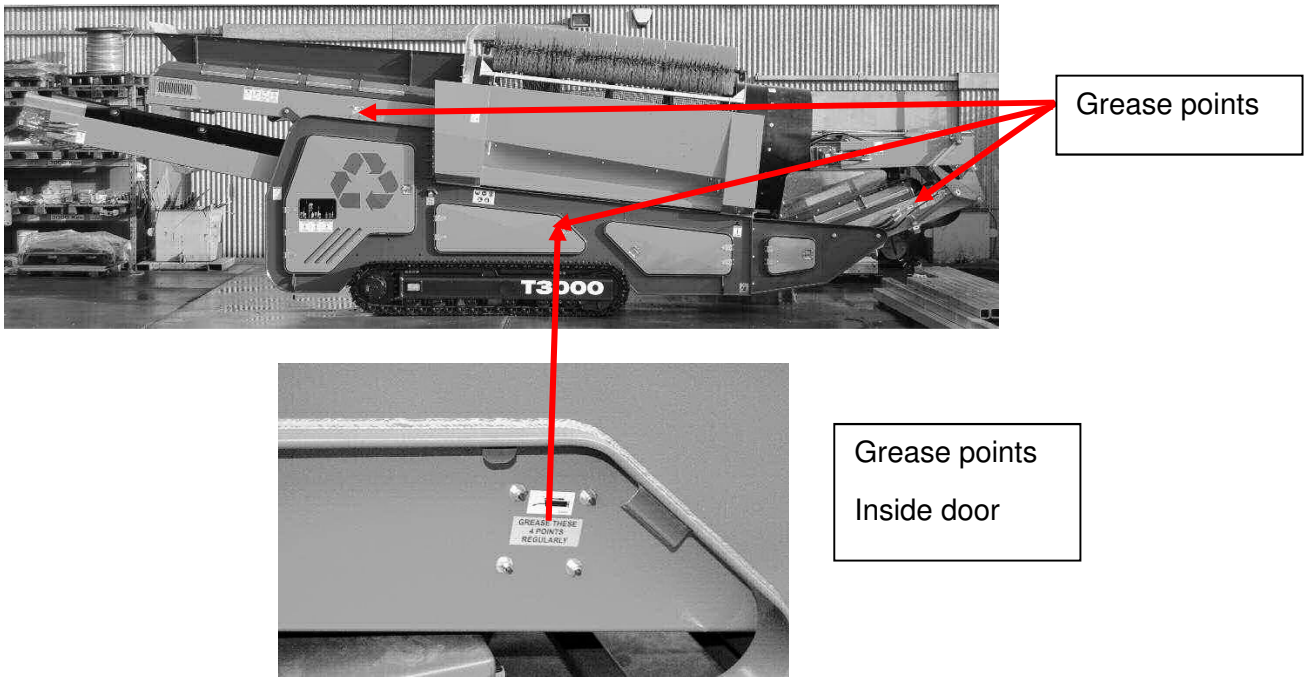
IMPORTANT	**Warranty will not apply if bearings are not lubricated as per maintenance schedules.**
▲ WARNING	**Wear personal protective equipment. Switch off the machine and implement the lockout and tagout procedure before carrying out maintenance on the machine**

5.14 LUBRICATION SCHEDULE

The following points on the machine should be greased as per the schedule given.

5.14.1 TAIL AND DRIVE DRUM BEARINGS.

The grease points for the tail and drive drum bearings on the machine are centrally located at ground level, as shown below.



Using a standard hand operated grease gun, they should be greased with **25g or 2 Pumps every 100 running hours**. Do not mix greases. The blend can have a lower specification than an individual grease and can lead to premature bearing failure.
Note. Over greasing can cause seals to burst and bearings to fail.

5.15 HYDRAULIC SYSTEM

The recommended hydraulic oil for standard ambient temperature range of 4 to 30 degrees is Maxol Hydramax 46 (or ISO 46 equivalent). For temperatures above 30 degrees celsius use Renolin CL100 (or ISO 100 equivalent).
The filling level indicator of the hydraulic tank is attached to the side of the tank.

▲ WARNING	**Injection hazard from high pressure fluid.**

5.15.1 ADDING HYDRAULIC OIL

When filling or topping up the hydraulic tank always make sure the engine is switched off and fill halfway between the minimum and maximum indicator. Do not overfill the hydraulic tank as this will cause leakage from the filler cap and cause the system to overheat.
(i). Observe all safety warnings.
(ii). Machine must be on level ground.
(iii). Always have all cylinders retracted (where possible).
(iv). Shutdown the machine and implement lock-out procedure.
(v). Clean the area around the filler cap.
(vi). Open the filler cap.
(vii). Fill the tank to halfway between minimum and maximum as marked on the level indicator.

▲ WARNING	**Injection hazard from high pressure fluid.**

5.15.2 CHANGING HYDRAULIC OIL

(i). Ensure oil is at normal operating temperature and all hydraulic cylinders are retracted, where possible.
(ii). Before removing the drain plug, slowly unscrew the filler cap to release any pressure in the hydraulic tank.
(iii). Ensure you have a suitable container to catch all the oil. Immediately clean up any spillage.
(iv). Remove the drain plug.
(v). Remove the cover plate which is under the filler cap. Dispense the gasket.
(vi). Remove the suction filters by unscrewing them from the suction pipes.

(vii). Using clean oil, flush the tank out to remove any dirt. Clean and reuse the suction filters and replace on the suction pipes.
(viii). Replace cover plate using a new gasket.
(ix). Replace drain plug and tighten.
(x). Refill the tank with clean hydraulic oil to a level halfway between minimum and maximum as marked on the level indicator.
(xi). Start the engine and operate the hydraulic controls to remove any air from the system.
(xii). Stop the engine and check oil level on the indicator and top up if required.

5.16 BELT ADJUSTMENT – SAFETY PRECAUTIONS

Belt tracking and tensioning are performed at the tail drums of the conveyors. Both sides of the tail drum are adjustable. Belt tracking is the only adjustment that is permitted to be made to the plant while it is running. Therefore, extra precautions must be taken to avoid entanglement in the running components.
(i). Ensure that all personal protective equipment is worn.
(ii). Ensure that loose clothing, long hair and jewellery has been removed or tied back.
(iii). Never reach into the belt or any of the components.
(iv). Never work alone.
(v). Ensure that the feedboot is empty and cannot be loaded while adjustment is being carried out.

5.16.1 BELT TRACKING

(I). With the belts running at normal speed determine which side requires adjusting.
(ii). To adjust the belt rotate the nuts on the tail adjusters. To move the drum forwards rotate the nuts clockwise. To move the drum backwards rotate the nuts anticlockwise.
Note : A small movement in the adjuster i.e. less than 10mm should be sufficient. A greater movement will effect the tension of the belt.

5.16.2 BELT TENSIONING

Belt tensioning is performed at the tail drum of the machine. Both sides of the idler are adjustable.
(i). To tension the belt rotate the nuts on the tail drum adjusters by an equal amount. To move the drum forward rotate the nuts clockwise. To move the drum backwards rotate the nuts anticlockwise.
(ii). Once the adjustments have been made run the belt for a few minutes and then visually check the tension.
(iii). The belt should be sufficiently tight to prevent slippage at the drive drum. Care should be taken not to over tighten the belt as this may decrease the operating life of the belt and bearings.

5.16.3 BELT ALIGNMENT

Oblique travel may cause fast deterioration of the belt. Some causes of oblique travel are shown below with suggested solutions.

Reasons for oblique travel	Remedies
1.Insufficient aligning of drums and Idlers,	(i). Align all drums, carrying idlers and return idlers at right angles to the travelling direction of the belt. (ii). Check that all drums and idlers are level to each other. Adjustments are made by turning drums and carrying idlers in direction of arrow until the belt is running straight and centred on the machine. Also return idlers may cause oblique belt travel and therefore they must be aligned at the right angles to the travelling direction of the belt and after adjustment can be made.
2.Material build up on drum and idlers	Clean idlers and drums. Check belt cleaners and replace if necessary. Possibly change to more efficient type

SECTION 6.0 TRANSPORTATION

▲ CAUTION	**This machine should only be transported using an appropriate road worthy vehicle and trailer.**

6.1 SAFETY BEFORE AND DURING TRANSPORT

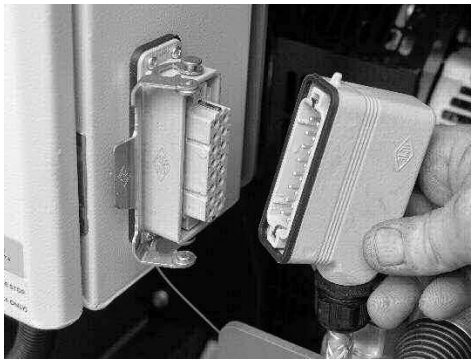
(i). The preparations to move the machine by an articulated lorry should be supervised by a minimum of two persons. Ensure persons transporting the machine adhere to all safety signs and procedures.
(ii). Before transportation on public roads ensure that the vehicle and trailer being used are suitable for the purpose.
(iii). Check that the travelling dimensions and weight of the machine will be within the regulation limits.
(iii). Before transportation always check the machine for loose or damaged components. Ensure all loose items are carefully stowed and secured if these are to be transported on the machine.
(iv). Extreme caution is required when transporting machinery on site. Soft or uneven ground may cause accidents. On sloping terrain, always adapt travelling speed to the relevant ground conditions. Never change to a lower gear on a slope. Always change gear before reaching a slope.
(v). Before transporting the machine, observe the prescribed transport position, admissible speed and itinerary. Only use appropriate means of transport and lifting gear of adequate capacity. Know the overall height to avoid contacting overhead obstructions such as bridges, power lines etc.
(vi). For manoeuvring the machine, observe the prescribed transport position, admissible speed and itinerary. Use only appropriate means of transport and lifting equipment and where applicable of adequate capacity. The re-commissioning procedure must be strictly in accordance with the operating instructions.
(vii). Before travelling with the machine, check that the braking and any signalling and lighting systems on the lorry and trailer are fully functional.

▲ CAUTION	**Only trained, experienced, and qualified personnel should attempt to transport this machine.**
▲ DANGER	**HAZARDOUS NIP OR CRUSH POINTS IN THIS AREA**

6.2 REMOVING MACHINE FROM A LOW LOADING TRAILER

Removing the fastenings securing the machine and any loose items from a trailer is the responsibility of the haulage contractor.

(i). All control levers must be in the neutral (non-operational) position.
(ii). Insert the umbilical control unit plug into it‘s socket on the side of the control panel.



(iii). Move the control valve lever to “track” position, to activate the tracks.

(iv). Turn the dial to “On” on the handheld control unit in readiness to move the machine off the low loading trailer.

(v). Press the forward or backward buttons to move the machine in the desired direction.
(vi). Unload the machine slowly off the trailer into a safe position or machine operating position,
(vii). Move the machine into the required position on the work site.
(viii). Switch off the machine.

6.3 PUTTING THE MACHINE INTO TRANSPORT POSITION

▲ WARNING	**Entanglement hazard. Ensure all personnel are clear of the conveyor**

Prior to transportation the machine must be put into the transport position.

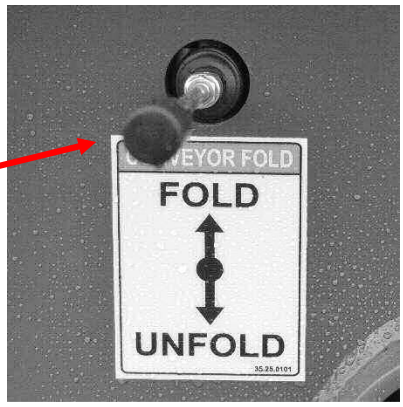
Observe all safety warnings

Start the machine as Section 3.5.1

6.3.1 FOLDING THE OVERSIZE CONVEYOR TO TRANSPORT POSITION

▲ WARNING	**Ensure all personnel are clear from the machine. Wear personal protective equipment.**

(i). Make sure hydraulic control lever is in the NEUTRAL position
(ii). Observe all safety warnings
(iii). Move up the conveyor lever to fold the conveyor into the transport position



SECTION 7.0 FAULT FINDING

▲ WARNING	**Before carry out maintenance or repairs on the machine ensure that you have read and understand the safety instructions in section 2 of this manual**

Sympton	Possible Fault	Remedy
1.No response from electrical system	Overload tripped or fuse blown. Damaged cables. Loose connections.	Replace fuses. Re-new all damaged cables. Tighten all loose connections.
2.Screeching noise when the machine is running.	Lack of bearing lubrication. Belt wedged or rubbing against fixed parts. Drive drum scraper too tight. Roller seized. Rubbers too tight. Idler drum jammed.	Grease all bearings. Clear obstructions, adjust & track belt. Erase pressure at scraper. Replace relevant roller. Readjust rubbers. Free idler drum.
3.Belt not running	Belt drive coupling broke or loose. Bearing collapsed or seized. Debris obstructing end drum. Skirting rubber too tight. Material build up around rollers. Belt stopped with too much load	Replace or tighten coupling. Replace bearing Remove obstruction Adjust skirting rubber. Clear away build up of material. Clear material off belt and re-start.
4.Belt stops under load	Skirting rubber too tight. Tail drum plough scraper too tight. Idler drum jammed Bearing collapsed or seized. Drive coupling has failed. Material build up under belt.	Adjust skirting rubber, Adjust plough scraper. Free idler drum. Replace bearing. Replace coupling. Clear away all obstructions around the belt.
5.Belt is running out of line.	Belt running off tail drum. Belt running off the drive drum. Belt wanders under load.	Adjust tail drum Adjust drive drum If the belt wanders to the right, push the right-hand side of the centre rollers forward or the left hand side back.

SECTION 8.0 SPARE PARTS

8.1 SPARE PART ORDERING INFORMATION.

To ensure that the correct parts are delivered without delay, Metberg will require the following information at the time of order.

Your company name and delivery address.
Your contact name and number.
The machine model and serial number.
The description of the part required, see part descriptions on the following pages.
The quantity required.
Ensure that you give as much information as possible including any specific information about the machine

Note : Ensure that all parts required, such as bolts and washers, l & u-bolts etc are ordered. Do not assume that such items will automatically be sent with the main components. Where quantities are shown as “Var” this indicates that the quantity of that particular part can vary between different models of plant. In these situations it is advisable to count the number of parts required on your particular plant.

To order spares please email spareparts@metbergenviro.com