

MAINTENANCE AND WORKING INSTRUCTIONS FOR THE SK250-4 SKIMMER LOADER

Serial No.
Engine No.



MANUFACTURED BY :

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INTRODUCTION

The purpose of this publication is to enable the owner/operator to handle and maintain the Skimmer Loader efficiently and safely.

Please ensure that the instructions are understood, observe recommendations carefully, and make daily maintenance a routine.

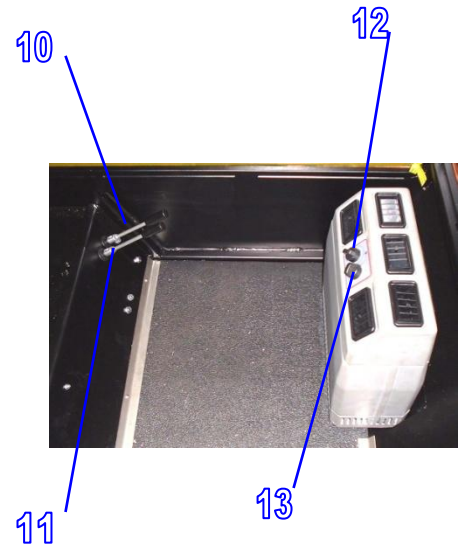
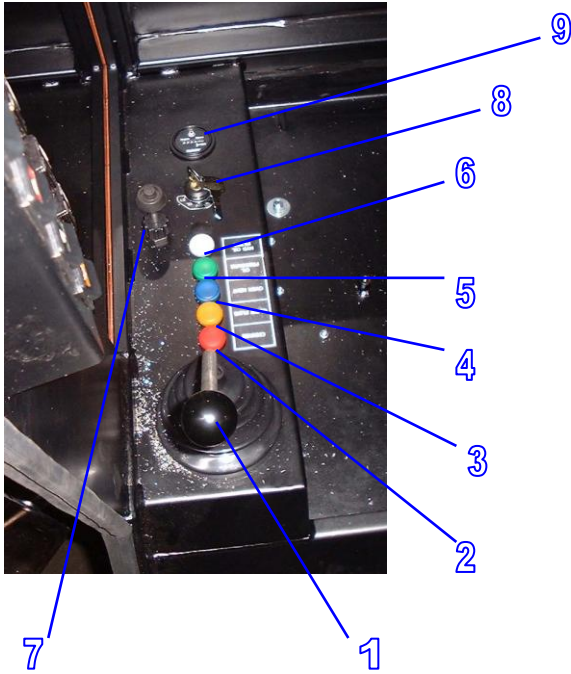
SAFETY NOTES

WARNING : Before operating the Skimmer Loader, familiarise yourself with the function and means of operation of all controls, particularly transmission, hydraulic pipe fittings and couplings – tighten where necessary.

Never start the engine or operate the controls unless you are in the driving seat.

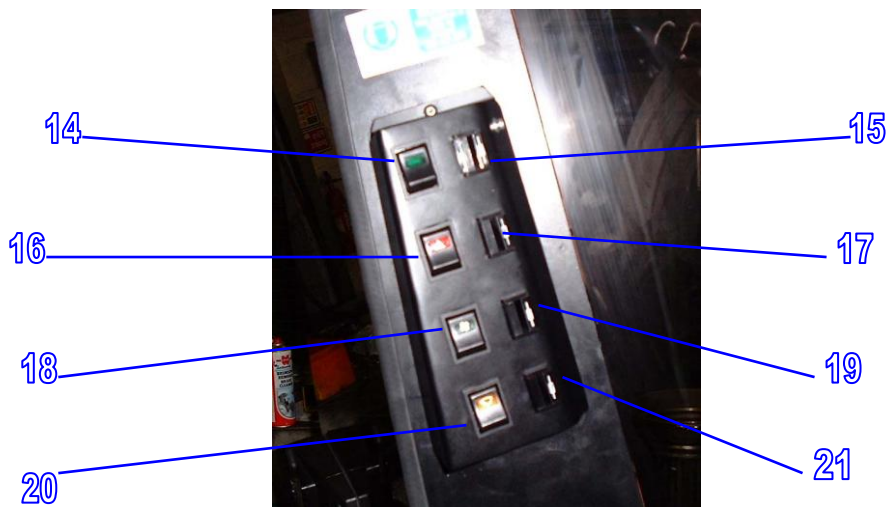
When stopping to make in-work adjustments, bring the skimmer to a secure halt. Before leaving seat ensure transmission control is in neutral, return skimmer head transmission lever to neutral and lower head to the ground. Stop the engine and if parking the skimmer, remove the key.

INSTRUMENTS AND CONTROLS



- 1 Transmission Control Lever
- 2 Warning Lights Alternator
- 3 Engine Glow Plug Indicator
- 4 Overheat Engine
- 5 Oil Pressure
- 6 Filter Hydraulic
- 7 Hand Throttle

- 8 Ignition / Starter Switch
- 9 Engine Hour Meter
- 10 Skimmer Drive Control
- 11 Skimmer Head Position Control
- 12 Air Conditioning Temperature Control
- 13 Air Conditioning Fan Speed



- 14 Switch WORK LIGHTS
- 15 Fuse (10A)
- 16 Switch BEACON
- 17 Fuse (10A)

- 18 Switch FRONT WIPER
- 19 Fuse (10A)
- 20 Switch REAR WIPER
- 21 Fuse (10A)

SPECIFICATIONS

ENGINE - See Kubota Operator's Manual for V2203-E diesel engine.

Electrical System

Voltage	12 volt negative earth
Battery	70 AH maintenance free
Starter Motor	12V 1.4 KW
Alternator	12V 300 W

Light Bulb Sizes

Warning Lights	2.0W 12V x 2W BA9
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Fuses

See wiring diagrams pages 19/20/21.

Hydraulic Oil

Fuchs – Plantosyn 46 HVI

Transmission – Pumps

Type – Twin Variable displacement radial piston pumps.

Displacement	0.25 cc/rev
Max Pressure	210 bar
Max Flow	70 litres/min
Max Drain Pressure	1.0 bar
Max Suction Line Pressure	0.8 bar abs

Hydraulic System – Auxiliary Pump

Type	Gear Pump
Displacement	16 cc/rev
Max Pressure	135 bar
Max Flow	44 litres/min

Track Motor

Type – Fixed displacement gear motor

Displacement	310 cc/rev
Max Pressure	205 bar
Max Flow	100 litres/min
Max Drain Pressure	40 bar

Elevator Motor

Displacement	46 cc/rev
Max Flow	45 litres/min

Auger Motor

Displacement	157 cc/rev
Max Pressure	135 bar

Track

Type – Steel reinforced rubber track 250 x 52 x 72	
Width	250 mm

Capacities

Fuel Tank	30 litres
Engine Sump	6.7 litres
Cooling System	4.7 litres
Transmissions & Auxiliary Hydraulics	75 litres

General Dimensions

Overall Height	2200mm
Overall Width	2560mm
Overall Length (including skimmer head and conveyor)	4180mm
Ground Clearance	200mm
Weight inc. Skimmer Head	1600kg

Wiring Diagram

See Kubota Operator's Manual – Page 28.

TRANSMISSION CONTROL STICK (1)

The transmission control stick controls both the forward and reverse speeds of the machine by moving the control stick forward or rearward. Steering is effected by moving the control stick to the left, to turn left, and to the right, to turn right. As the control stick is progressively moved to its central neutral position the machine will come to a halt.

NOTE : The control stick must be in the neutral position in order to start the engine.

HAND THROTTLE (7)

Depress button and pull knob for course adjustment of engine speed and rotate knob for fine adjustment. Pulling or rotating the knob anti-clockwise increases engine speed.

IGNITION AND STARTER SWITCH (8)

The Starter Switch has four positions:-

1. Off.
2. On – Turning the key clockwise supplies power to the Auxiliary Circuits and Warning Lights.
3. Heat – Turning the key anti-clockwise energises the heater coils for cold starting.
4. Start – Turning the key fully clockwise supplies power to the starter motor.

For detailed starting instructions see – Page 8.

ENGINE STOP

To stop the engine, turn the ignition switch to the off position.

SKIMMER HEAD DRIVE CONTROL LEVER (10)

This lever has three positions:-

1. Neutral – Skimmer head and conveyor are stationary.
2. Operational – Lifting the lever engages the skimmer head and conveyor transmission in the operating direction.
3. Reverse – Pushing the lever downwards reverses the skimmer head and conveyor. On releasing the lever will return to neutral.

SKIMMER HEAD POSITION CONTROL LEVER (11)

This lever has three positions:-

1. Neutral – The skimmer head is locked in position.
2. Raise – Lifting the lever raises the skimmer head. On release the lever will return to neutral.
3. Lower – Pushing the lever downwards, lowers the skimmer head, and when released the lever will return to neutral.

SWITCHES AND WARNING LAMPS

OIL PRESSURE LAMP (5)

The lamp illuminates when the starter switch is “ON”. The lamp should extinguish when the engine starts and should remain extinguished. If the lamp comes on with the engine running, stop the engine immediately and check the following :-

1. Engine Oil Level
2. Lubrication System

ENGINE GLOW PLUG INDICATOR (3)

This glows when ignition switch is in position three, when extinguishes engine is ready to start.

ALTERNATOR WARNING LAMP (2)

The lamp illuminates when the starter switch is “ON”. The lamp should extinguish when the engine starts.

If the lamp comes on with the engine running, stop the engine and investigate the fault immediately.

HOUR METER (9)

The meter gives total engine running time in hours, which can be used in conjunction with the maintenance schedule.

HYDRAULIC FILTER WARNING LAMP (6)

The lamp illuminates when the transmission pump boost filter is blocked.

WATER TEMPERATURE WARNING (4)

IF THE WATER TEMPERATURE OF THE ENGINE EXCEEDS 115°C, A WARNING LIGHT WILL SHOW AND THE ENGINE WILL STOP. SHOULD THIS OCCUR, SWITCH OFF IMMEDIATELY AND REFER TO THE ENGINE USER’S HANDBOOK.

STARTING

RUNNING IN

Please refer to Kubota Operator's Manual – Page 3.

BEFORE STARTING:-

1. Carry out the daily maintenance as described – Page 11.
2. Ensure that there is sufficient diesel fuel in the tank.

STARTING

See Kubota Operator's Manual – Page 4/5.

COLD START

During cold weather warm up engine at medium speed without load until the hydraulic oil has had time to warm up. This usually takes about 15 to 20 minutes depending upon the air temperature.

In very cold weather it is advisable to park the machine under cover as this enables easier starting and faster warming up.

OPERATION OF AIR CONDITIONER/HEATER

Air Conditioning

1. Turn on fan switch (13) to desired speed.
2. Turn thermostat (12) clockwise to required temperature.

Heater

1. Turn air conditioning thermostat (12) fully anti-clockwise to zero.
2. Turn on heater switch (18).
3. Turn on fan switch (13) to desired speed.

ADJUST SKIMMER HEAD LIFT/DROP SPEED

To control speed of lift and drop of skimmer head, screw in valve to reduce speed of lift and screw out to increase speed.



OPERATING THE SKIMMER LOADER

IMPORTANT

Before operating the machine or its attachments, familiarise yourself with the function and means of operation of all controls, particularly transmission, hydraulic controls and engine stop control.

HAVING STARTED THE ENGINE

1. Fully raise the skimmer head ensuring that there are no obstructions or personnel beneath the conveyor, before moving.
2. Increase throttle to desired engine speed. Usual working engine speed is 1800 – 2000 rpm, approximately 2/3rd throttle.
3. To move off, progressively move the Transmission Control Stick in the direction you wish to travel. Forward and reverse travel is controlled by fore and aft movement of control stick, the further from the neutral position the faster the speed of travel. The forward and reverse speeds, once set, are maintained by friction damping so that on release of the control stick the present speed will be maintained.

To reduce speed, move the control stick progressively towards the neutral position, which due to the nature of the hydrostatic transmission also provides braking if travelling downhill or if sudden deceleration is required.

Progressively moving the control stick to the right will turn the machine in a clockwise direction so that when moving forward the machine will turn to the right, but if moving backwards the machine will turn to the left.

Progressively moving the control stick to the left will turn the machine in an anti-clockwise direction so that when moving forward the machine will turn to the left, but if moving backwards the machine will turn to the right.

Turning speed is controlled by the amount of movement of the control stick from the straight-ahead position, on release of the control stick the machine will continue straight ahead in its new direction.

TRAVELLING OVER ROUGH TERRAIN OR OBSTRUCTIONS

Due to the nature of the rigid track gear the machine will balance about a point roughly between the two central track rollers, therefore when crossing a sharp ridge or later obstruction, i.e. edge of a ramp, approach carefully at low speed and advance until the point of balance is just reached so that the machine gently rocks over and then continue.

Avoid turning when stationary on rough or stony conditions as this greatly increases track wear, and also stones etc. may be picked up on the track.

ADJUSTMENT OF DEPTH OF SKIM

Lower skimmer head onto a hard level surface, ensure skimmer head drive is disengaged and stop engine.

Slacken the two M12 setscrews on each side of the front skid, reposition the skid to the depth required and retighten the two setscrews.

ENSURE THE DEPTH IS EQUAL ON EACH END OF THE SKID

OPERATION OF SKIMMER LOADER IN SAND FILTER BEDS

Due to the varying nature and design of sand filter beds, precise operating details cannot be given and so must be left to the discretion of the operator. However, a general guide is given below :-

The outside round of the filter bed should, if possible, be skimmed in an anti-clockwise direction, as this enables the skimmer head to work as close as possible to the wall and also gives the operator better visibility. However, the remainder of the filter bed should be skimmed in a clockwise direction as this ensures that the chain guard is not running in the dirty sand.

SAND SKIMMING

Once the machine is in the filter bed :-

1. Lower the skimmer head by pushing the skimmer head position control fully downwards into the lower/float position.
2. Ensure a dump-truck is positioned to receive the dirty sand discharge from the conveyor.
3. Progressively lift the skimmer head drive lever fully.
4. Increase engine speed to 2000-2400 rpm by operating the hand throttle.
5. Slowly move off down the filter bed increasing speed until the conveyor is fully charged with sand but not spilling, and the engine is not being overloaded. Maintain this speed until the dump-truck is nearly full, then gradually bring the machine to a halt allowing the dump-truck to also come to a gradual halt. Run the skimmer head and conveyor until the sand contained in the head and on the conveyor is fully discharged.
6. Reduce engine speed to idle.
7. If continuing down the bed allow the dump-truck to withdraw, and an empty dump-truck to be positioned before engaging skimmer head drive control, increasing engine speed and moving off down the filter as above.
8. When coming to the end of a row, come to a gradual halt, run the skimmer head until all sand is discharged from the head and conveyor. Ensure dump-truck withdraws before lifting the skimmer head. When turning on the sand do so in as great an arc as possible, thereby minimising disturbance to the filter bed. Once repositioned on a new row continue as above.

Access To Engine

1. Lower skimmer head to ground
2. Remove silencer by lifting up
3. Undo rubber clips, one either side
4. Lift off bonnet

MAINTENANCE

Please read Kubota Operator's Manual.

From New Replace Return Filter and Boost Filter at 50 hours

Daily or 8 Hours

Check engine oil level	Kubota Page 13/14
Check transmission oil level	Manual Page 13
Check radiator water level	Kubota Page 15/16
Grease pivots and ram	Manual Page 15
Wash down conveyor and harvester head	Manual Page 12
Check for dust in air filter bowl	Kubota Page 19/20
Check hydraulic filter blockage indicator	Manual Page 13
Check conveyor belt for alignment and tension	Manual Page 14/15
CHECK TRACK NUTS & BOLTS	

50 Hours

Check fuel pipes and clamp bands	Kubota Page 12
Check track tension	Manual Page 16

100 Hours

Change engine oil	Kubota Page 14
Clean air filter element	Kubota Page 19/20
Clean fuel filter element	Kubota Page 12
Check battery electrolyte level	Kubota Page 20/21
Check fan belt tension	Kubota Page 22
Grease conveyor and skimmer head bearings	Manual Page 15
Check skimmer head drive chain tension and lubricate	Manual Page 15

200 Hours

Check radiator hoses and clamp bends	Kubota Page 17/18
Replace oil filter cartridge (engine)	Kubota Page 15

400 Hours

Replace fuel filter element	Kubota Page 13
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500 Hours

Remove sediment in fuel tank	
Clean, flush and refill cooling system	Kubota Page 17/18
Change hydraulic oil, and replace hydraulic oil filters if not replaced in last 500 hours	Manual Page 13
Replace air breather filter	Manual Page 13

Every One or Two Months

Recharge battery	Kubota Page 20/21
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Every Three Months

Change of radiator cleaner and coolant	Kubota Page 17/18
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Every Year or Every Six Cleanings Of Air Cleaner Element

Replace air cleaner element	Kubota Page 19/20
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Every Two Years

Replace battery	Kubota Page 20/21
Replace radiator hoses and clamp bends	Kubota Page 17/18
Replace fuel pipes and clamp bends	Kubota Page 12

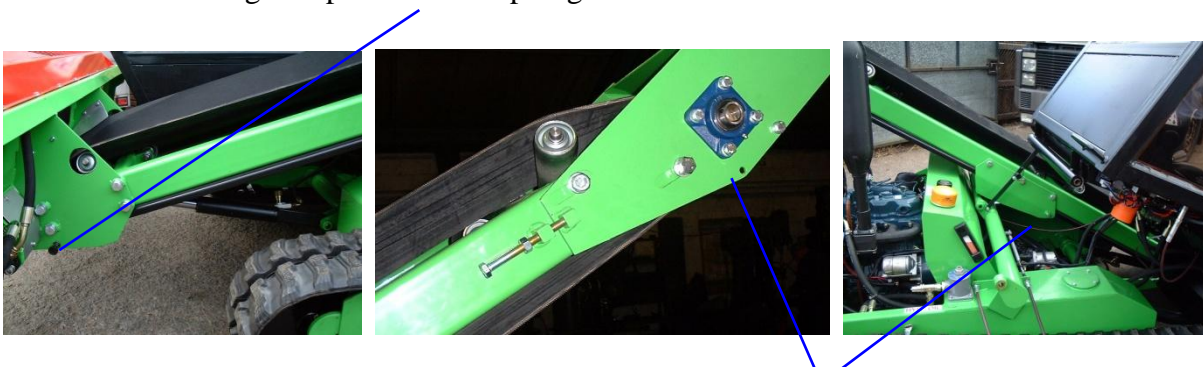
IMPORTANT

Washing down the Conveyor And Skimmer Head

The conveyor and skimmer head should be washed down at the end of each working day. This ensures that there is no harmful build-up of sand or gravel in the conveyor frame. Particular attention should also be paid to the drive and idler pulleys and to the return roller to ensure that they are free of sand. This is best accomplished by washing whilst the conveyor is running slowly.

REMOVING GUARDS

To remove bottom guard pull out black plungers on either side



To remove main guard, push up back of the guard, slid out the pin and pull guard rearwards. When replacing guard ensure belt is inside guard.

MAINTENANCE

Engine, Fuel System, Cooling System and Electrical System.

Please refer to Kubota Operator's Manual supplied with the machine.

Transmission – Use only type H-LP (DIN 51524) or HM (ISO 6743/4) Hydraulic Oil.

Check the hydraulic oil level every 10 hours.

The oil level should be maintained between the red and the black lines in the gauge located on the rear of the hydraulic oil tanks. To top up is necessary.

Air Breather Filter



Access Cover

HYDRAULIC FILTER BLOCKAGE INDICATORS

Check blockage indicator every 10 hours.

The oil return filter has a blockage indicator located in the top cap. The pointer will move into the red under the following conditions :-

1. During cold starts at low to medium engine speed indicating a substantially blocked filter.
2. At full engine speed whilst oil is warm indicating a blocked filter.

Replace the filter when the indicator shows red during the above conditions, or every 500 hours.

Change the hydraulic oil every 500 hours/six months.

1. Remove the two drain plugs located at the rear of the hydraulic oil tanks.
2. Replace the hydraulic oil filter if they have not been replaced in 500 hours or six months.
3. Remove and clean the oil strainers by removing the access covers located on the top of the tanks, and then unscrew the strainers located inside the oil tanks.
4. Refit drain plugs and refill the hydraulic oil tanks by pumping the approved oil through the return filter using an electric or hand pump. This ensures that the replacement oil is filtered before entering the tanks.
5. Replace hydraulic oil tank breather filter located on top of the fuel tank.

WARNING : Do not replace hydraulic oil through access holes, as this may enable contaminated oil to enter the hydraulic system and cause irreparable damage.

REPLACING HYDRAULIC OIL FILTER

1. Unscrew large access cap ensuring 'O' ring is retained on the cap.
2. Pull out the filter and discard.
3. Fit new filter and replace cap.
4. Reset blockage indicator by pushing down.

REPLACING HYDRAULIC PUMP BOOST FILTER WHEN BLOCKED

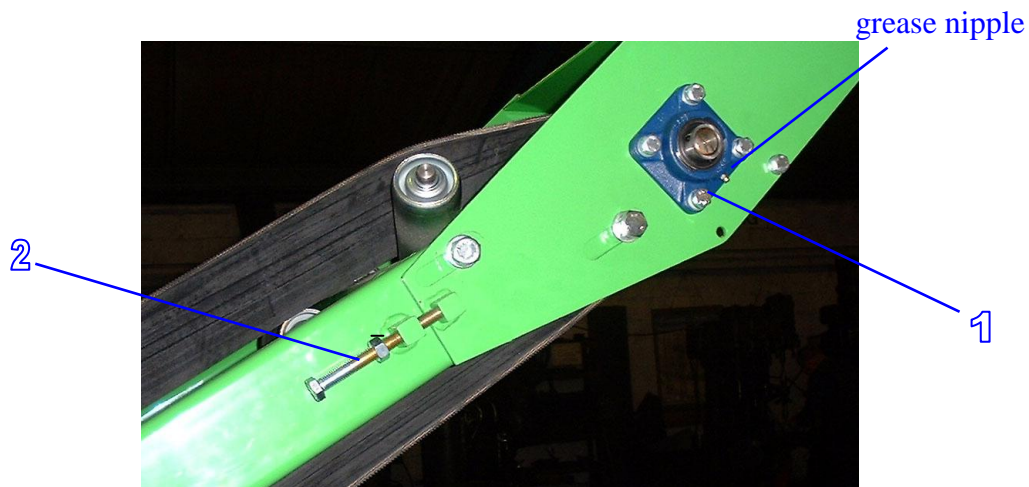
When the indicator light (6) shows on panel :

1. Remove the filter on the pump by unscrewing canister.
2. Replace with new filter and replace canister.

SKIMMER HEAD AND CONVEYOR

Check conveyor belt every 10 hours for alignment and tension.

The conveyor belt should be tensioned so that there is no perceptible sag of the belt between the rollers in the centre of the belt.



Tensioning the Conveyor Belt

1. Slacken off the four M16 retaining bolts on the bearing mounting plates at the top of the conveyor
2. Slacken the two locknuts on the tension adjuster screws.
3. To increase the belt tension, wind out each adjuster an equal number of turns until the correct belt tension is obtained.
4. To decrease the belt tension, wind in each adjuster an equal number of turns until correct belt tension is obtained.
5. Tighten up the two locknuts and the four retaining bolts.

Re-tracking the Conveyor Belt

When running, the belt should run in the centre of the conveyor frame. If it is allowed to run offset, then wear may occur on the side of the belt or to the conveyor frame and guards.

If belt running off at discharge chute end :

1. Slacken off the four M16 retaining bolts on the bearing mounting plates at the top of the conveyor
2. Slacken the two locknuts on the tension adjuster screws.
3. Screw in the tension screw on the side that the belt is offset and unscrew the opposite adjuster whilst the conveyor is running, until the belt is tracked correctly.
4. Tighten locknuts and the four M10 retaining bolts.

If belt running off at skimmer head end :

1. Slacken the four bearing retaining bolts on offside of the machine.
2. Slacken the locknut on the track adjustment screw.
3. Adjust for tracking as at chute end.
4. Tighten locknuts, bearing retainer bolts.

Conveyor And Skimmer Head Chain Drive

Check chain tension every 100 hours and lubricate.

The chains should be adjusted so that there is no more than 5mm of movement of the chain with light hand pressure. Lubricate with a dry Teflon type chain lubricant.

Adjusting Skimmer Head Drive Chain

1. Remove the chain guard.
2. Slacken motor/mounting plate bolts.
3. Rotate the motor/mounting plate until the correct tension is achieved.
4. Tighten the two motor mounting bolts.
5. Replace chain guard.

Skimmer Head And Conveyor Lift Ram And Pivot Assembly

The lift ram and pivot assembly should be greased every 10 hours.

The lift ram has two grease nipples located on the ball joints.

The pivot assembly has two grease nipples, located on each end of the longitudinal pivot tube.

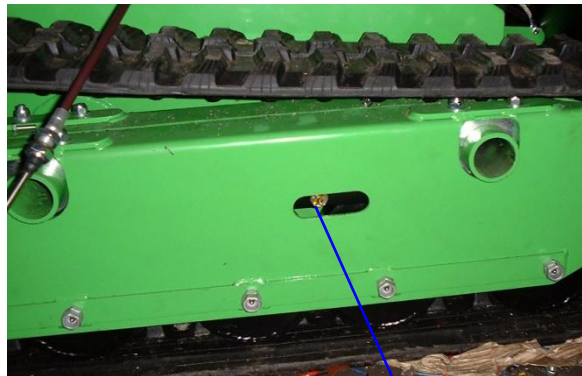
Removal Of Skimmer Head And Conveyor

1. Place the machine beneath an overhead hoist or gantry so that the discharge end of the conveyor may be supported.
2. Lower the skimmer head and disconnect the hydraulic pipes on the front of the cab.
3. Remove the ram pin retaining 'R' clip on the skimmer head and remove the ram pin.
4. Using an overhead hoist, take the weight of the discharge end of the conveyor.
5. Remove the pivot pin retaining clip and pivot pin.
6. Raise the discharge end of the conveyor so that the pivot clears the chassis.
7. Carefully reverse the skimmer loader clear of the skimmer head and conveyor.
8. Ensure that the skimmer head lift ram is retained so that it does not drag the ground.

To replace the skimmer head and conveyor, reverse the above sequence.

TRACK AND UNDERCARRIAGE

Check track tension every 50 hours.



Adjusting track tension.

Track tension is achieved by using a grease gun to pump out the front track idler. Correct tension is 15 to 30 mm of slack on the top run of the track.

Removal of Rubber Tracks

To remove a track, remove the grease nipple and push the idler back.

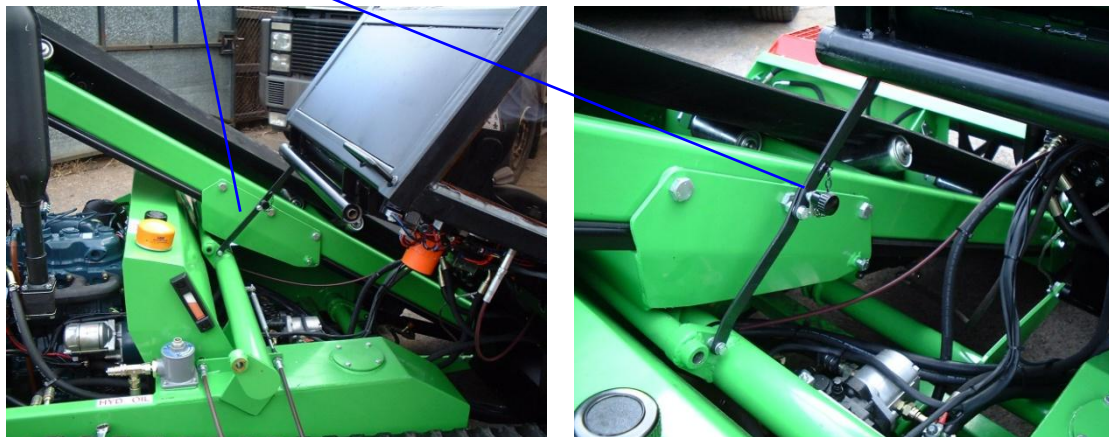
Care of the Rubber Tracks

1. Avoid sharp projections when turning.
2. Avoid turning too fast on concrete roads.
3. Avoid driving with the track rubbing against a concrete wall, etc.
4. Ensure no oil, etc. adheres to the rubber track. If it does, wipe off immediately.
5. When storing for long periods, keep indoors away from direct sunshine and rain.

TILTING THE CAB

In order to gain access to the transmission pumps, control valves and to the hydraulic oil tank access plate, it is necessary to tilt the cab forward as follows.

1. Remove the side access cover on the cab.
2. Slacken the rear most locknut on each of the control cables for the transmission control. Disconnect each control cable from the transmission control by sliding the locking collar, on the ball joint coupling, rearwards, and then pull the coupling off the ball. Lift the control cables out of their mounting slots.
3. Remove the 'R' clip from the cab retaining pin. Pull out pin.
4. Lift the cab, until the cab is restrained by the strap.
5. Screw in safety lock to prevent accidental lowering of cab.

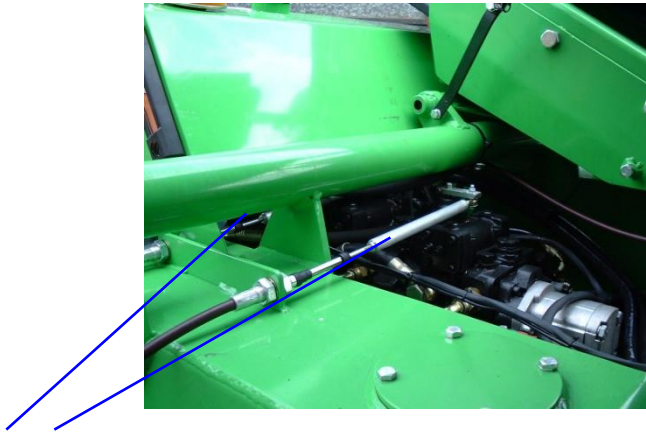


To Remount The Cab

1. Lower the cab down into its mounted position.
2. To replace the cab retaining pin it will be necessary to lift the cab slightly to align the mounting bush with the pin. Replace the 'R' clip fastener.
3. Place each control cable into its respective mounting slot, i.e. the rear most control cable is mounted in the inside slot. Reconnect the ball joint couplings by sliding back the locking collar and pushing the coupling onto the ball end, ensure that the locking collar slides fully forward so that the slot in the collar is located over the ball mounting. Tighten the rear most locknuts on the control cable sleeves.
4. Replace the side access cover.

ADJUSTING THE CONTROL RODS

If the machine pulls slightly to one side when the Transmission Control stick is in the straight ahead position, then it will be necessary to adjust the control rods as follows :-



The control rods are located under the cab.

If The Machine Pulls To The Right

1. Slacken off the locking nuts on the front rod and adjust by turning rod.
2. Tighten the locking nuts.
3. Check the straight-ahead travel and if necessary repeat the above until correct.

If The Machine Pulls To The Left

Use the same procedure as above but on the back control rod.

IMPORTANT - PLEASE NOTE THAT FAILURE TO CARRY OUT ADEQUATE SERVICING AND MAINTENANCE MAY RENDER YOUR WARRANTY INVALID.

