



# **BROUWER SOD HARVESTER**

**ROLLMAX 2400  
Model 5990280/1**

## **OPERATOR'S MANUAL**



**Kesmac Inc.**

23324 Woodbine Avenue, Keswick Ontario Canada L4P 3E9

Tel (905) 476-6222 Fax (905) 476-6744

Web Site [www.brouwerturf.com](http://www.brouwerturf.com) Email [info@kesmac.com](mailto:info@kesmac.com)

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# **RollMax 2400**

## **Turf Harvester**

### **Operator's Manual**

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# RollMax 2400

## Turf Harvester

### Safety Precautions

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#### IMPORTANT

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The Owner and Operator, must assume responsibility for the safe operation of the machine, their own safety, and the safety of others, by reading, understanding, and following, all of the safety instructions and operating procedures as outlined in the machines Operator's Manual.

Failure of the Owner or Operator to adhere to the recommended safety instructions and operating procedures, indemnifies Brouwer Turf Equipment Inc. against any claims that may arise, due to accidents resulting in personal injury or property damage.

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It is not possible to list all situations that may affect the safety of the machine or the operator, and therefore Brouwer cannot list all precautions, and identify all potential hazards, that may prevent accidents.

#### IF YOU DO NOT UNDERSTAND....ASK

#### BE A QUALIFIED OPERATOR BY ;

- Reading and obeying the instructions in this manual, the tractor manufacturers operator's manual, and the safety decals on the machine.
- Receiving operational training on the sod harvester.
- Asking your supervisor or equipment dealer to explain anything you do not understand.
- Explaining the written instructions in the operator's manual and safety decals to user/operators who cannot read or understand them.



#### WARNING

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The Brouwer **Rollmax Turf Harvesters** are designed for safe efficient operation and must not be used for any purpose other than that for which they are designed.

Prior to being shipped from the manufacturer the machines are inspected to insure that all safety guards, shields and warning/safety/operating decals are correctly positioned and secure

Before operating the machine the operator must check that all of the above items are correctly located.

The machine must not be used if any guards, shields or warning/operating decals are damaged or missing..

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Your new Rollmax Turf Harvester has been designed and built to give many years of outstanding performance. The service and reliability you receive from this product will be affected by the proper maintenance and operation of the machine.

Use only genuine Brouwer replacement parts. Parts not supplied by Brouwer may not meet Brouwer specifications or standards of manufacture and may void warranty. The use of non-approved parts may result in component failure and possibly cause in an accident to the operator or others.

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#### IMPORTANT

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##### MODEL NUMBER

The Model Number appears on sales literature Technical manuals and price lists.

##### SERIAL NUMBER

The serial number applies only to the machine to which it is allocated.

The serial number **MUST** be quoted when ordering parts or calling for service or warranty

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<b>BROUWER</b> EQUIPMENT BUILT FROM EXPERIENCE	BROUWER TURF LTD. KESWICK, ONT. CANADA PHONE: (905) 476-6222 FAX: (905) 476-6744	
[Blank line]		
<b>SERIAL NO.</b>		[Blank line]
<b>WEIGHT</b>		[Blank line] kg.
[Blank line]	[Blank line]	lbs.



## **SECTION 1**

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**WARNING**

Unauthorized modifications may result in **extreme safety hazards** to operators and bystanders, and could result in damage to the machine.

Brouwer Turf Ltd. Warns against and strongly rejects and disclaims against any modifications, add-on accessories or product modifications that are not designed, developed, tested and approved by Brouwer Engineering Department.

Any Brouwer product that is altered or modified in anyway that is not authorized, after original manufacture, including after market accessories or component parts that are not approved by Brouwer Turf Ltd. will result in the machines warranty being voided.

All liability for personal injury and/or property damage caused by any unauthorized modifications, add-on accessories or products not approved by Brouwer Ltd. will be considered the responsibility of the individual(s) or Company designing and/or making such changes.

Brouwer Turf Ltd. will vigorously pursue full indemnification and costs, from any party responsible for unauthorized post manufacture modifications and/or accessories, should personal injury and/or property damage result from any of the above.

**DANGER**

**TO PREVENT POSSIBLE SERIOUS INJURY OR DEATH :**

**Under no circumstances is any service or maintenance work to be performed on the machine until :**

- **THE ENGINE IS SWITCHED OFF.**
- **THE IGNITION KEY IS REMOVED.**



**This Symbol means :**

- **ATTENTION !**
- **BECOME ALERT !**

Your safety and that of others is involved.

**Signal word definitions.**

The signal words below are used to identify levels of 'hazard' seriousness. These words appear in this manual and on the safety decals that are placed on the machine.

For your safety and that of others, read and follow the information and instructions given with these signal words and/or the symbol shown above.

**DANGER:**

Indicates an imminently hazardous situation which if not avoided **WILL** result in death or serious injury.

**WARNING:**

Indicates a potentially hazardous situation which if not avoided **COULD** result in death or serious injury.

**CAUTION:**

Indicates a potentially hazardous situation which if not avoided **MAY** result in minor or moderate injury. It may also be used to alert against unsafe practices or property damage.

**CAUTION:**

Used without the safety alert symbol indicates a potentially hazardous situation which if not avoided **MAY** result in property damage.

## Safe Operation

### Operator preparation and Training.

Read the **RollMax** Operation and Safety Manual, and also the tractor operating manual. They must be kept on the machine at all times.

- If an operator or mechanic cannot read and understand English, it is the owners responsibility to explain the material contents to them.
- If any of the information or instructions in this manual are not clear, contact your dealer or the factory representative for clarification.
- Become familiar with the safe operation of the machine, the operating controls and the safety decals. If there are any questions concerning safety, do not operate the machine until they are clarified.  
All safety guards and shields must be kept in place and in good condition. All interlock switches must be correctly adjusted.
- It is the owners responsibility to ensure that all operators and service personnel are trained in the proper operation and service procedures of the machine.
- Wear appropriate work clothing, safety equipment and work boots. Do not operate the machine with loose clothing, long hair, or any jewelry, that may get tangled in moving parts.



#### **CAUTION**

Wear suitable hearing protection such as earmuffs or earplugs, to protect against hearing impairment or hearing loss.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating the machine.

- Never allow children or untrained persons to operate this equipment. Local regulations may restrict the age of the operator.
- Only the operator must be on the machine, never allow riders on the machine. Riders can be injured by foreign objects or can be thrown off the machine. Also they may obstruct the ability of the operator or the operators view resulting in unsafe operation of the machine.

- The warning/safety decals must be kept clean, legible, and undamaged. Do not operate the machine if any decals are missing or damaged. Obtain new decals from the factory.
- Do not operate the machine if drugs, alcohol or medication are being used that can affect the alertness or co-ordination of the operator. Seek professional advice, before operating the machine, if there is any doubt about the side affects of any medication being taken that may put your safety and that of others at risk.
- Keep animals and bystanders clear of the machine, at a safe distance, when operating the machine.
- The owner/operator is responsible for accidents and/or injuries that may occur to themselves, bystanders, or property that may occur as a result of the operation of this machine.

### Machine preparation

- Check the 'operator presence' interlock is operating. Check tractor brake operation. Repair or adjust any problem before operating the machine.
- Do not tamper with or defeat safety devices. Keep guards, shields and interlock safety devices in place and in proper working condition. They are for your protection.
- Check regularly that all fasteners, that is, nuts/ bolts, and retainer pins are secure.
- Check daily that the machine is in good working condition. Check all tires for damage or excessive wear.
- Use only accessories, attachments and replacement parts that are approved by the manufacturer.

IF YOU DO NOT UNDERSTAND....**ASK**

## General Operating Safety

- Ensure all persons are clear of the machine before starting the tractor engine. Keep hands and feet clear of the cutting unit and all moving parts.
- Do not make sharp turns. Exercise care when reversing and maneuvering. Look behind the machine and downward when reversing.
- Keep all persons clear of the Roll-up operating area and pallet cavity, it may move suddenly and result in serious injury.
- Use counterweights or wheel weights only as recommended in this manual.
- Exercise caution when approaching or crossing roadways.
- Put the transmission in **NEUTRAL** and **apply the Parking Brake** before dismounting. Leaving the transmission in gear with the engine stopped will not prevent the tractor from moving.



### CAUTION

NEVER attempt to get on or off the machine when it is moving.  
Before leaving the operating position, place the transmission in NEUTRAL, set the 'park brake', lower the cutting heads and forks to the ground, stop the engine and remove the ignition key.

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## Starting the Tractor



### WARNING

To avoid possible injury or death from a runaway machine, **DO NOT** start the engine by shorting across the battery terminals. The machine can start when in gear if the normal safety circuitry is bypassed.

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- Start only in accordance with the instructions in this manual and also the tractor operators manual.
- **DO NOT** use starting-aid fluid.
- Never start the engine from the ground. Start only from the operator's seat, with the transmission in NEUTRAL and park brake 'ON'.

## Transporting

- Exercise caution when loading or unloading the machine on or off a truck or trailer.
- Ensure that the machine is properly 'blocked and secured during transport.

## Operating

- Do not change the engine governor setting, or over-speed the engine.



### WARNING

Work in a ventilated area, never operate the engine without adequate exhaust ventilation.  
Never run the engine in an enclosed area. Exhaust fumes contain carbon monoxide and can be fatal if inhaled.

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- Inspect the area to be harvested and remove any objects that may be hazardous or may cause an injury.
- Operate with adequate light and avoid any holes and other hazards.

## Highway Operation

- To prevent collisions with other vehicles, slow moving tractors with attachments, towed equipment or self-propelled machines, frequently check for traffic from the rear, particularly when making turns, use turn signal lights.
- Slow down and exercise caution when making turns and crossing roads and railway tracks.
- Use headlights, flashing warning lights and turn signals day and night. Follow local regulations for equipment lighting and marking. Ensure that all lighting, signals and markings are visible, clean and in good working order. Repair or replace any lights, signals or marking that is damaged or is missing.
- Couple brake pedals together for road travel.

## To prevent Tipping

- Avoid holes, ditches, slopes, and obstacles that may cause instability and the machine to tip.

## SAFETY

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### WARNING

Never drive close to the edge of a gully or steep embankment that may collapse and cave-in, causing the machine to tip.

- Shift to a LOW gear before descending a steep hill, to assist in braking and improving your control of the machine. Use engine braking to reduce speed before applying the tractor brakes.
- Never coast down a hill, run-away machines are liable to tip.
- Slow down and exercise caution when making turns and changing direction on a slope.

### Stopping Operation

- Before stopping the engine: Reduce the engine speed to **'SLOW'** and let it operate at 'no load' for several minutes, to allow the engine to cool down.

### To safely park the machine:

- Stop it on level ground, move all controls to the **'OFF'** position. Lower the Cutter Head and Forks to the ground. Put the transmission in **NEUTRAL**, apply the brakes and stop the engine. Before leaving the operator's seat, wait for the engine and moving/rotating parts to stop. Remove the ignition key.

### To free a 'mired' machine.

- Check that all towing devices are of adequate size/strength to handle the load.
- Always attach to the Draw Bar of the towing unit. Do not use the front attachment point. Apply power smoothly to take up slack, a sudden pull could 'snap' the towing device causing it to 'whip' or 'recoil' dangerously.

Caution should be exercised when attempting to free a machine that is stuck in mud. Hazards that can occur when towing, and are to be avoided are:

- The towing tractor overturning.
- The tow chain failing and recoiling. (Use of a cable is not recommended).
- Tow-bar failing.
- The harvester becoming unstable and tipping.

### The following procedures are recommended;

- If possible reverse the machine out, if it is 'mired' in mud.
- Dig mud out from behind the wheels. Place boards behind/under the wheels and reverse out **'slowly'**. **Keep bystanders clear of the rear of the machine**
- Dig mud out from in front of the wheels and drive ahead **'slowly'**.

### Maintenance Safety



### WARNING

Do not service or repair this machine with the attachments in the raised position, unless they are securely blocked, or the safety devices are engaged.

Failure to do so could result in serious injury or death

- To attain maximum safety and the optimum harvesting results, maintain your RollMax Harvester according to the recommended schedules and instructions in this manual.
- When servicing or operating the machine do not wear loose clothing or jewelry that can entangle in machinery and cause personal injury.
- Never allow untrained persons to operate or service the machine.
- Allow the engine and rotating/moving parts to come to a complete stop before attempting any service or repair work.
- Disconnect the battery cables before making any repairs, and before doing any welding on the machine. Disconnect 'negative' first, then 'positive'. Reconnect in the reverse order.
- Carefully release pressure from components with 'stored' energy.
- Park the machine on smooth, firm, level ground.
- Replace worn, damaged, or faulty parts with parts supplied by the manufacturer.
- Before working on the machine, lower the Cutter Head and Forks to the ground. If the machine needs to be raised, use jack stands. If left in a raised position hydraulic supports can settle or 'leak' down.

## Maintenance Safety



### WARNING

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load.

Do not work under a machine that is supported solely by a jack.

- To reduce fire hazards: Keep the engine, muffler, battery compartment and fuel storage area free of grass, leaves, debris or grease build-up.
- Clean -up any fuel or oil spillage.

## Handling Fuel



### WARNING

- Exercise caution when refueling  
Do not over-Fill. Fuels are flammable and vapors are explosive. Avoid spillage. If using fuel cans use only approved containers and a funnel. Clean-up spills immediately.
- Do not smoke or allow naked flame or cause sparks near the fuel.  
Never drain or fill the fuel tank indoors.
- Never remove the Fuel Tank Cap or add fuel when the engine is running or if it is hot.
- Never handle or store fuel containers near an open flame or any device that may create sparks and ignite the fuel or vapors.
- Ensure that the Closure Caps on the Fuel Tank, and the containers, are replaced tight and secure.



### WARNING

To prevent sparks from static discharge:

- Do not fill containers in a vehicle, on a truck, or a trailer bed that has a plastic liner. Fill the containers on the ground, away from the vehicle.

- Always keep the fuel dispenser nozzle in contact with the rim of the fuel tank, or container opening, until fueling is completed.
- Do not use a nozzle lock-open device.
- Always be prepared in case of fire. Keep a first-aid kit and fire extinguisher close to hand.
- Keep emergency numbers for fire, hospital, ambulance services, and doctors close to your telephone.

## Hydraulic System



### WARNING

The RollMax Hydraulic System operates under high pressure.

To prevent serious injury from hot, high pressure oil:

- Never check for leaks with bare hands.  
Use cardboard, paper or wood.
- High pressure oil can penetrate the skin. If it is injected into the skin it must be surgically removed within a few hours, by a doctor familiar with this type of injury. Failure to do so may result in gangrene.

- Relieve high pressure before disconnecting hydraulic lines or fittings.
- Fully tighten fittings and connections before pressurizing the system.
- Lower Cutter Head and Forks to the ground, disengage all drives, apply the park brake, stop the engine and remove the ignition key, before inspecting or disconnecting hydraulic lines or fittings.
- Visually check daily all hydraulic hoses, tubes and fittings for leaks. Replace any worn or damaged hoses, tubes or fittings before operating the machine.
- Replacement hoses or tubes must be routed in the same location and path. Do not move clamps, brackets or ties to new locations.
- Thoroughly inspect all hoses, tubes and fittings every 300 hours.

### IMPORTANT

To prevent serious damage to the hydraulic system components, do not allow any contaminants to enter the hydraulic system. Clean thoroughly around all fittings and areas to be worked on. Cap and plug any connections that are disconnected.

- Before disconnecting, tag or mark the location of the connection.
- Check that 'O-Rings' are clean and hose fittings are properly seated before tightening.
- Align the hoses without twisting. Twisted hoses can cause couplings to loosen as the hose flexes during operation, resulting in oil leaks.
- Kinked or twisted hoses can restrict the oil flow causing the system to malfunction, the oil to overheat and possible hose failure.

# SAFETY

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## Cooling System



### WARNING

To prevent serious injury from hot coolant and steam, **DO NOT** remove the radiator cap when the engine is running and/or hot. Allow the engine and system to cool, and use caution when removing the radiator cap.

- Do not operate the engine without the recommended coolant mixture.
- Add top-up coolant into the recovery tank **NOT** directly to the radiator
- Ensure that the radiator cap is tight and secure.
- If the radiator cap must be removed, stop the engine and allow the cooling system to cool, until the cap is cool to the touch. Loosen it slowly to relieve pressure, before removing completely.

## Battery Service



### WARNING

The sulfuric acid in the battery electrolyte is poisonous. It can cause serious skin burns and blindness if splashed in the eyes.



### CAUTION

Always wear protective glasses/goggles, and protective clothing and use insulated tools when working with batteries. Read, understand, and obey all battery manufacturers instructions and warnings. Battery posts, terminals and related accessories contain lead, lead compounds and chemicals, wash your hands after handling them.

## Avoid Hazards By:

- Fill/top-up batteries in a well ventilated area.
- Wearing eye protection and rubber gloves.
- Avoid breathing fumes.
- Avoid spilling, splashing or dripping electrolyte.
- Follow proper 'jump-start' procedure.

## If acid is splashed on your person:

- Flush the affected skin with water.
- Apply baking soda, or lime, to help neutralize the acid.
- Flush your eyes with water for 15 to 30 minutes. Get medical help immediately.

## If acid is swallowed:

- Do not induce vomiting
- Drink large quantities of water or milk, but do not exceed 2 liters (2 Quarts).
- Get medical help immediately.

## Battery Charging

- Charge batteries in an open well ventilated area, away from sparks or open flame.
- Unplug the charger before connecting or disconnecting the battery.

## Jump Starting

- Check that the Jumper cables are in good condition.
- Turn the ignition and all electrical accessories 'OFF', on both machines.
- Position the machine with the 'charged' battery close to, but not touching, the machine with the dead battery, to ensure that the cables will easily reach.

## Connecting the Cables

- Do not allow the cable clamps to touch any metal parts except those intended.
- Never connect the **positive '+'** (red) terminal to the **negative '-'** (black) terminal.
- Ensure that the cables cannot get caught in moving engine parts when starting.
- Connect one end of the **positive '+'** (red) cable to the **positive '+'** terminal on one battery. Connect the other end to the **positive '+'** terminal on the other battery
- Connect one end of the negative **'-'** (black) cable to the negative **'-'** terminal on the 'charged' battery. Connect the other end of the cable **to the engine block** on the machine with the 'dead' battery.
- Start the machine that has the 'charged' battery, then start the machine that has the 'dead' battery.
- Remove the jumper cables in the exact reverse order of connecting. Do not allow the cable clamps to touch any metal parts while the other end is connected to a battery terminal.

### IMPORTANT

Keep the battery terminals clean. Smear them with white grease to prevent corrosion. The positive terminal (red) protective cover must be kept in place.

## Transporting and Storage

- If the machine should become disabled, and cannot be moved under its own power, it should not be towed, as it would be extremely difficult to steer and stop it.
- It is recommended that it be transported on a flat-bed carrier or a truck/trailer. Use chains to secure the machine on the carrier.

## Storage

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**IMPORTANT**

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If the Harvester is to be stored 'inside' keep the doors open to ensure good ventilation until the procedure below is complete.

- Stop the engine and allow it to fully cool down.
- Drain the fuel tank into an approved container and shut off the fuel. Store the fuel in a cool dry location.
- Disconnect the battery cables.
- Keep the Harvester and fuel containers in a locked, secure storage place, to prevent tampering, and children from playing in the area.
- Do not store the Harvester or fuel containers close to heating appliances with an open flame, such as a water heater with a pilot light.

## Safe Service Procedures

- Do not service the harvester when it is moving or the engine is running.
- When servicing a four wheel drive machine, when necessary raise **front and rear wheels** off the ground. This is to prevent the machine being pulled off the jack stands if power is applied to the wheels.
- Tighten the wheel lug nuts to the correct torque as specified in the maintenance section.
- Refit all safety guards and shields that may have been removed during service.

## Tire Service



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**WARNING**

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Do not operate the harvester if any of the tires are badly worn or damaged.

The **left rear wheel/tire** assembly is loaded with a Calcium Chloride solution and is **extremely heavy (934 lb)**. **Exercise caution when removing or replacing it.** Use suitable tools and equipment and hoist equipment with adequate lift capacity. It is recommended that only experienced and qualified personnel dismantle wheel assemblies.

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**CAUTION**

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Operating the machine with loose wheel lug nuts will result in damage to, and require the replacement of, wheel assembly components.

- Always maintain the correct tire pressures. Do **not** inflate tires above the recommended operating pressure shown on the side wall.



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**WARNING**

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Never weld or heat a wheel/tire assembly. The heat can cause increased air pressure and result in the tire exploding. Explosive separation of tire and rim components can result in serious injury or death

- When inflating tires use a clip-on chuck, and an air hose that is long enough to allow you to stand to one side of the wheel, not in front or over it. Use a safety cage if one is available.

## Handling Chemical Products



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**CAUTION**

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To prevent serious personal injury avoid direct exposure to hazardous chemicals. Potential hazardous chemicals include : fuels, lubricants, coolants, paints and adhesives.

## Material Safety Data Sheets (MSDS)

Material Safety Data Sheets provide specific details on chemical products that affect:

- Physical and personal health hazards.
- Safety procedures.
- Emergency response techniques.

It is recommended that the MSDS data is checked before a job is started that involves a hazardous chemical. This informs of the possible risks and the safest way to proceed. Follow carefully the recommendations.

## Proper Waste Disposal

- Improper disposal of waste material is harmful to the environment. Some potentially harmful products used on machines are: oil, fuel, filters, coolant, brake fluid, and batteries.
- Use leak proof containers when draining fluids. Do not use food or beverage containers that someone may mistakenly drink from.
- Do not pour waste fluids onto the ground, down a drain or into any natural water source.
- Air conditioning refrigerants are harmful to the atmosphere. Government regulations may require a certified technician to service and properly recover and recycle refrigerants.

## SAFETY

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- Before disposing of waste material, enquire at your local environmental or recycling facility for instructions on proper waste disposal.

### Welding on Painted Areas



#### CAUTION

Hazardous fumes are generated when paint is heated when welding, soldering, or using a torch. The use of an approved respirator is recommended when welding, sanding or grinding on painted areas, to avoid the inhalation of fumes or dust.

- It is recommended that paint be removed a minimum of 4 inches (100mm) from around the area to be affected by heating.
- If solvent or stripper is used, wash them off with soapy water before doing any welding. Remove any stripper or solvent containers and other flammable material from the area. Allow a minimum of 15 minutes for fumes to disperse before welding.
- Do not use chlorinated solvent in areas where welding will be done. Do all work in an area that is well ventilated to allow fumes and/or dust to disperse.



#### CAUTION

Do not weld, solder or use a torch close to pressurized fluid lines, that may cause them to burst. Flammable spray can be generated by burst fluid lines resulting in severe burn injury to yourself and bystanders.

### CAUTION

To protect both of the Electronic Controllers from potential damage :

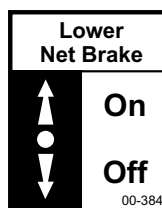
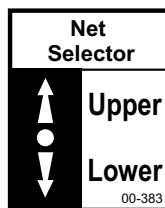
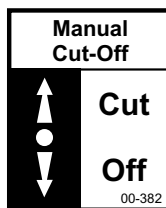
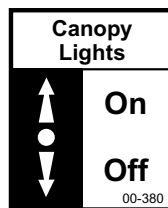
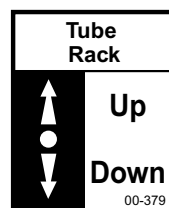
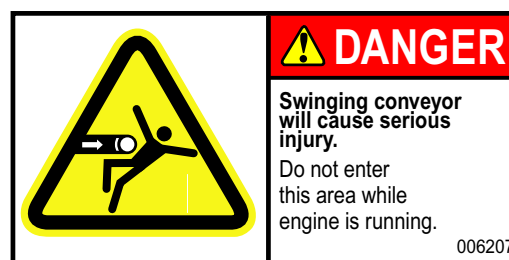
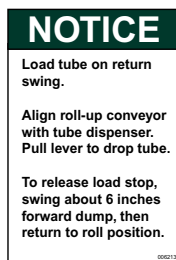
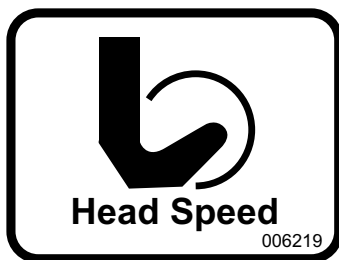
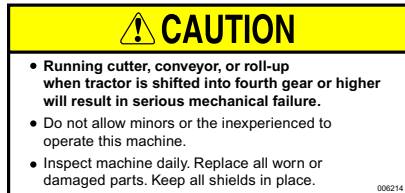
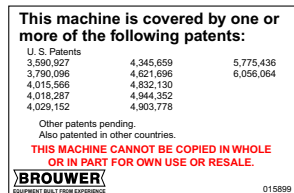
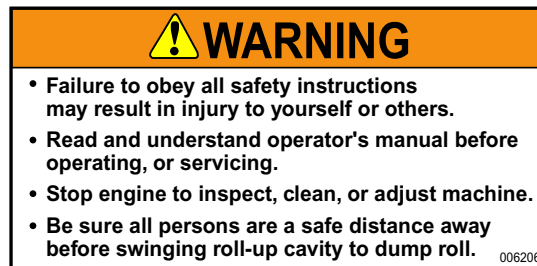
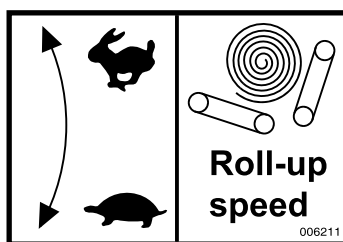
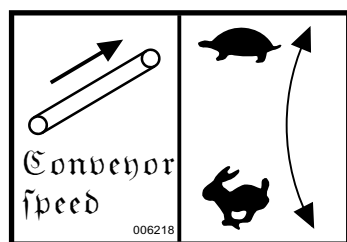
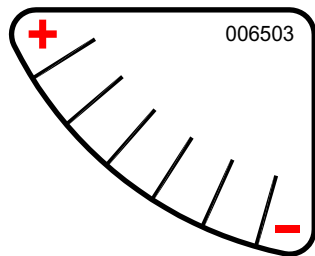
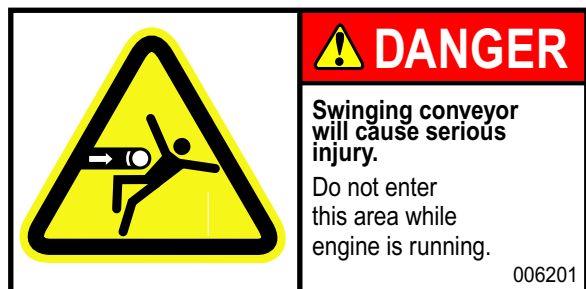
**Do not do any welding on the machine until :**

- Both battery cables are disconnected.
- The Plus 1 Micro-controllers are disconnected.

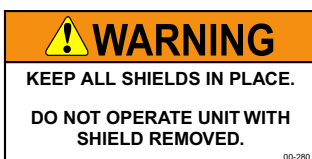
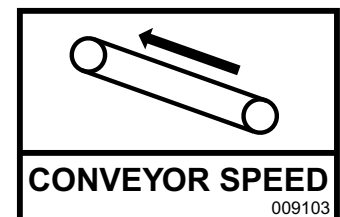
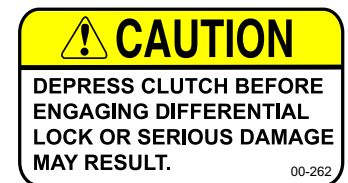
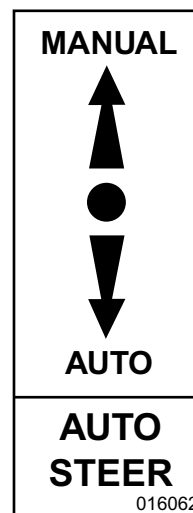
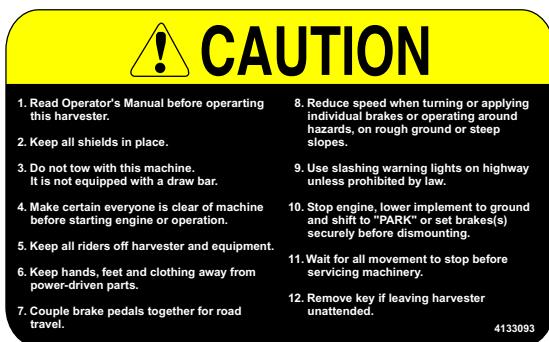
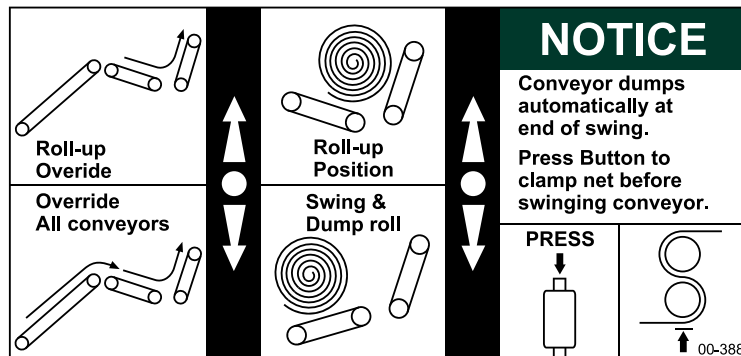
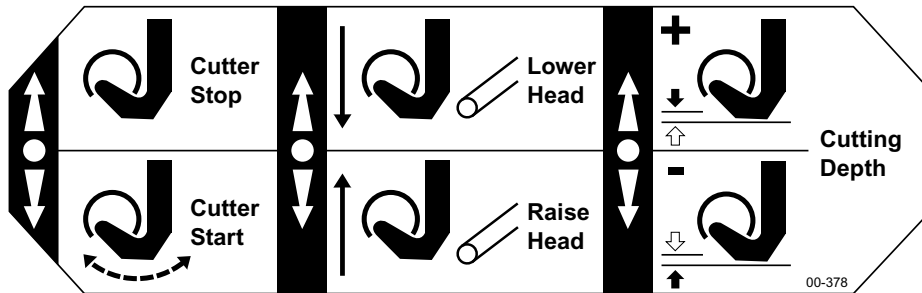
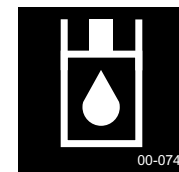
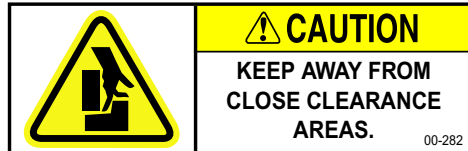
D001-183



## Warning Decals



## Warning Decals



**Warning Decals**

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## RollMax 2400.

---

### Specifications.

---

Performance.....	Up to 1500 sq.yd. (1260 m/sq.) per hour.
Width of Cut.....	24 in. (610 mm).
Length of Cut.....	Adjustable – Up to 125 ft. (38m).
Thickness of Cut.....	Power Adjustable – Up to 2 in. (51mm).
Conveyor Drive.....	Hydraulic – Ground Speed Controlled.
Conveyor Mat.....	Rubber or Mintex Metal Mat.
Cutter Drive.....	Hydraulic.
Cutter Blades.....	One Piece – Standard.
Construction.....	High Strength Steel.
Overall Width.....	132 in. (3353 mm).
Overall Length.....	256 in. (6502mm).
Shipping Weight.(c/w RollMax Unit).....	11000 lbs. (4990kg). Approximately.

#### Options.

Auto-Steer.  
Auto Slab Kit.  
Canopy and Operating Lights.  
Rotary Brush Attachment.  
Net Wrap.  
Outer Net Wrap.

#### Accessories.

Transport Canister.  
Sod-Wrap Netting.  
Poly Tubes.

---

### Tractor Specifications.

Model.....	John Deere 5225.	
Engine.....	Turbo Diesel. 53 hp. (45 PTO).	
Transmission.....	9 x 3 SyncShuttle.	
Steering.....	Hydrostatic Power.	
Rear Axle.....	Heavy Duty.	
Tires – 2WD.....	Rear. 19.5-24.	Front. 11L-15.
4WD.....	Rear. 19.5-24.	Front. 12.5/80-18.

---

### IMPORTANT

---

Wheel Lug Nuts should be checked for tightness after the first 20 hours of operation, and then every 100 hours.

**Rear Lug Nuts**.....250 to 275 ft.lbs.

**Front Lug Nuts –2WD**.....130 ft.lbs.

**4WD**.....220 ft.lbs.

---

Specifications subject to change without notice or obligation.

## SECTION 2.

### SET-UP INSTRUCTIONS.

Remove Conveyor from Tractor.	2-01
Install Conveyor to Tractor.	2-01
Install Track Rod.	2-01
Connect Hydraulic Hoses.	2-02
Connect Electrical Harness.	2-02
Install F-Frame.	2-02
Install Caster Wheel.	2-03
Remove RollMax Unit from Shipping Stand.	2-03
Install Rollmax Unit to F-Frame.	2-03
Adjust Dump Conveyor Stop Bolt.	2-03
Connect RollMax Unit Hydraulic Hoses.	2-04
Install Unload Ramp.	2-04
Attach Ramp Spring and Transport Chain.	2-04

### Canopy Installation.

Canopy Installation Contents.	2-05
Fitting Canopy to Installed Canopy Frame.	2-06
Canopy Assembly Parts List.	2-07
Assembling Perimeter Frame.	2-08
Assembling Cross Brace Tubes.	2-08
Fitting Front Support Tubes.	2-08
Fitting Rear Support Tubes.	2-09
Installing Canopy Frame Assembly onto Tractor.	2-09/2-10
Connecting Wiring Harness.	2-10



### SET-UP INSTRUCTIONS.



#### WARNING

Use a overhead hoist/crane, or forklift, and Lift Straps with adequate capacity to lift the Conveyor Assembly.

Fit a C-Clamp at the tip of the forks, to prevent the possibility of the Lift Straps sliding off the end of the forks.

Work on a firm level area, preferably concrete, that is free of obstructions.

To remove the Conveyor from the tractor shipping mounts:

- Attach Lift Straps around the Main Beam Extension 'A', and the Depth Control Bracket.
- Remove the fasteners securing the Conveyor to the shipping brackets on the tractor, and carefully lift the Conveyor clear, and position it alongside the tractor.

To attach the conveyor to the tractor:

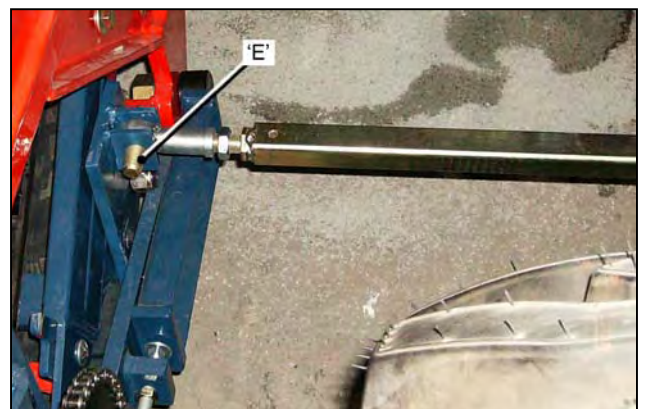
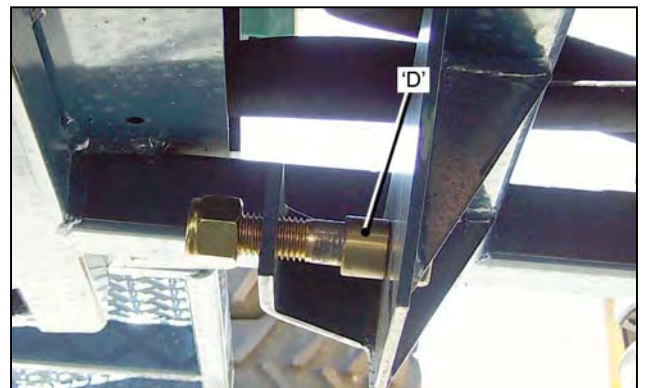
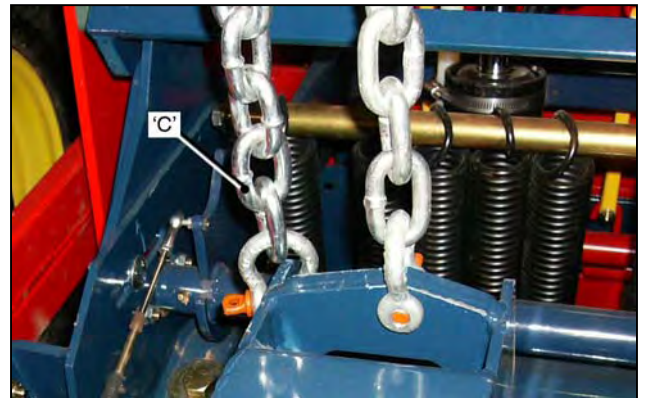
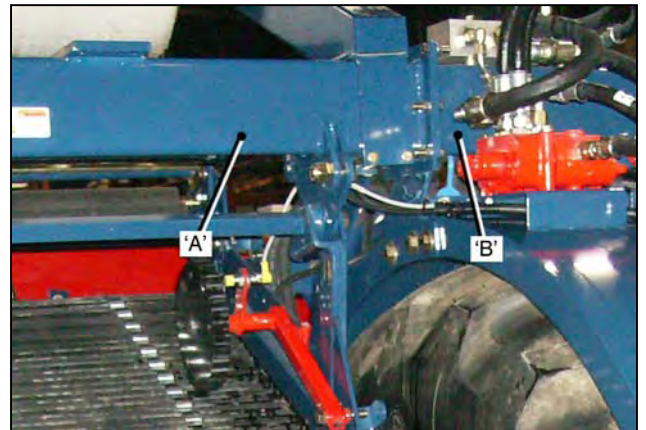
- Raise the Conveyor Assembly until the Conveyor Beam Extension 'A', is aligned with the Tractor Main Beam 'B', and bolt them together.
- Attach the Lift Arm Chains 'C',. Secure the Shackle Pins with wire.

Install the Track-Rod:

- Attach the Track-Rod to the Mounting Brackets 'D', on the Tractor.
- Attach the Track-Rod to the Bracket 'E', on the Conveyor Frame.

#### NOTE

The Track-Rod length is set at the factory, do not adjust.





# ASSEMBLY TO TRACTOR

## SET-UP INSTRUCTIONS. Cont.

Connect the Hydraulic Hoses 'A' from the :

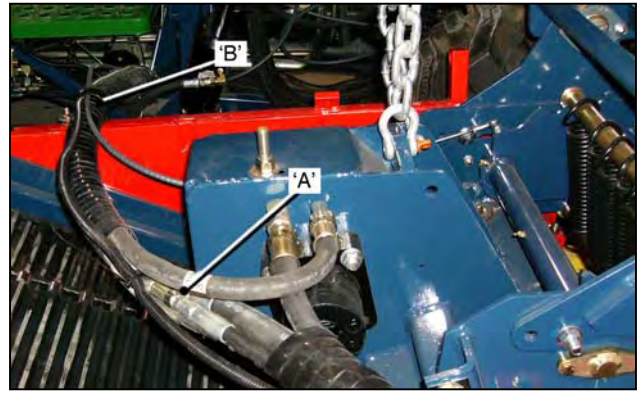
- Conveyor Motor.
- Cutter Motor
- Rotary Brush Attachment.(If fitted).

to the hoses from the Control Valves.

### NOTE

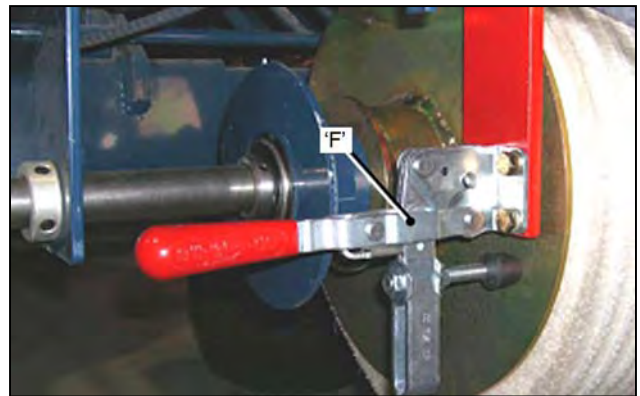
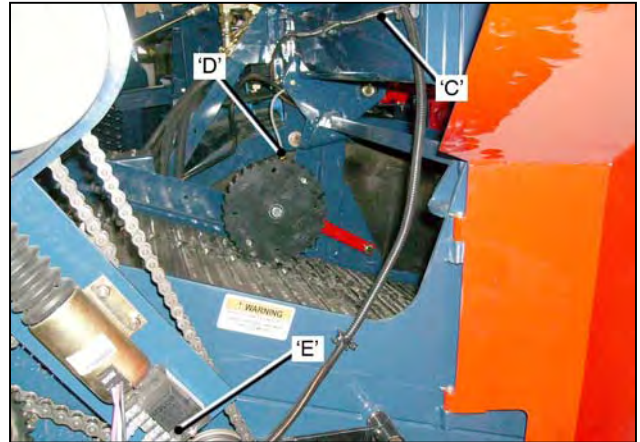
To ensure that the Hydraulic Hoses are connected correctly, the hose end fittings are color coded with nylon ties.

Ensure that the hoses are attached to the frame with Clamp 'B'.



Attach the Wiring Harness,(from the tractor), to the mounting clips on the Main Beam 'C'. Use Nylon Ties to attach the harness.

- Connect the Proximity Sensor Cable 'D', at the Cut-Off Sensor Wheel.
- Fit the harness 'Connectors' to the Top Netting Solenoid Terminal Block 'E'.( If installed).
- Check that the Lower Net Drum 'BRAKE' 'F' , is 'ON' when transporting, and 'OFF' when dispensing netting.
- Connect the Wiring Harness Plug to the Cut-Off Solenoid Plug 'G'.  
Tape wrap the plug connection.



### IMPORTANT

To prevent possible malfunctions, check that all electrical connections are tight.



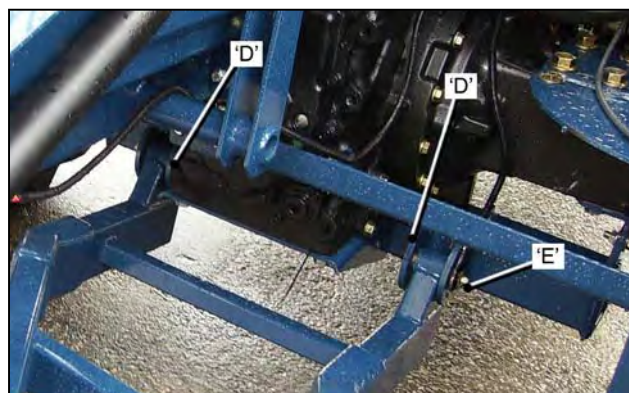
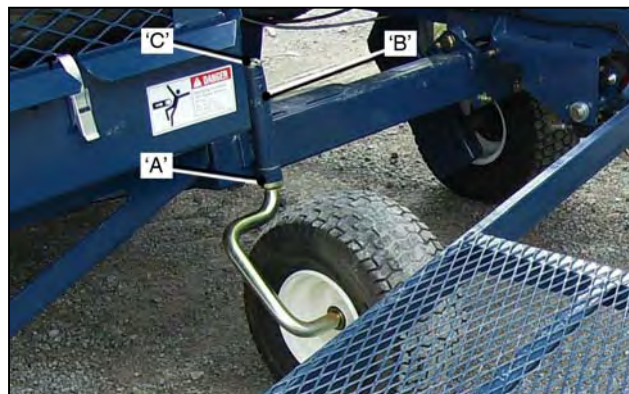
### SET-UP INSTRUCTIONS cont..

#### Install the Caster Wheel onto the F-Frame :

- Fit three Spacer Washers 'A', onto the Caster Wheel Spindle.
- Fit the Caster Wheel Spindle into the Spindle Housing 'B'.
- Fit the Top Spacer and Hitch Pin 'C'.

#### IMPORTANT

When the RollMax Unit has been installed onto the F-Frame, check that the Caster Wheel is 'lightly' touching the ground. Adjust the quantity of Spacer Washers 'A', to attain the correct contact.



#### Fit the F-Frame to the Main Frame :

- Locate the F-Frame in the Main Frame Mount Brackets 'D'.
- Insert the Pins 'E', fit Shim Washers to take-up excess side play.
- Fit the Retainer Bolts.

#### Installing the RollMax Unit :

- Use a Crane or Forklift to lift the RollMax Unit off the Shipping Supports 'F'.



#### WARNING

Exercise care when lifting the RollMax Unit. Attach the lift straps as shown to prevent the unit from tipping. Place a C-Clamp at the fork end, to prevent the lift strap from slipping off the fork.

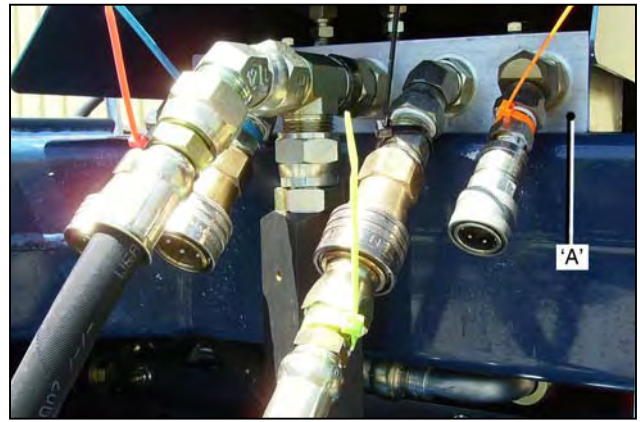


- Carefully maneuver the RollMax Unit to fit the Mounting Brackets 'G', into the F-Frame Brackets.
- Install the Pivot Pins 'H', and Retainer Bolts.

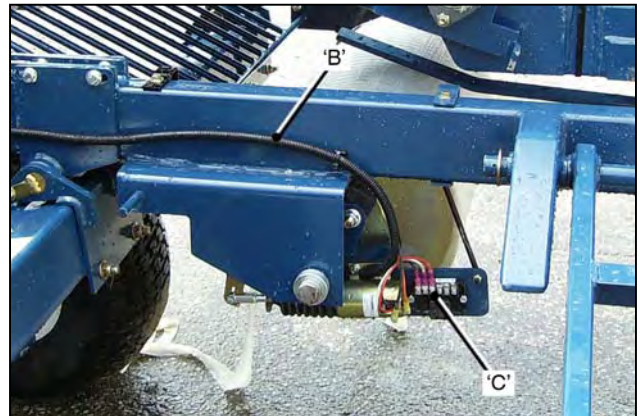


## ASSEMBLY TO TRACTOR

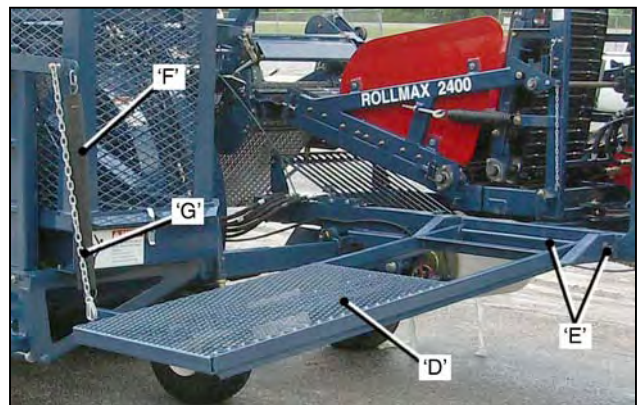
- Connect the Hydraulic Hose 'Quick Couplers' from the RollMax Unit, to Couplers on the Main Frame Manifold 'A'.  
The Couplers are identified with colored 'tie wraps' to prevent incorrect connections.



- Attach the Harness 'B' from the tractor, to cable clips on the frame.
- Connect the harness wires to the Net Wrap Dispenser Brake Solenoid Module 'C'.



- Attach the Unload Ramp 'D', to the RollMax Frame, with the Pivot Tube 'E' and Hitch Clips.
- Attach the Ramp Spring 'F', (inside rubber sleeve), to the Ramp, with the Spring Snap Hook.
- When in transport, attach the Transport Chain 'G', to the Ramp, with the Spring Snap Hook.



- Adjust the Stop Bolt 'H', to ensure that the Dump Conveyor is parallel to the Main Conveyor.



### NOTE

The initial Dump Conveyor to Main Conveyor alignment may have to be adjusted during operation, to ensure that the Sod rolls are not 'conical'.

---

### NOTE

When the harvester is shipped on a truck, flat-bed, or trailer, the Canopy Frame is installed onto the tractor at the factory. The Canopy has to be fitted to the frame by the customer.

When the harvester is shipped in a container, off shore, the Canopy Frame is 'broken down' and has to be assembled by the customer, installed onto the tractor and then the Canopy fitted.

---

Fitting Canopy to Installed Canopy Frame.	2-6
Canopy Assembly Parts List.	2-7
Assembling Perimeter Frame.	2-8
Assembling Cross Brace Tubes.	2-8
Fitting Front Support Tubes.	2-8
Fitting Rear Support Tubes.	2-9
Installing Canopy Frame Assembly onto the tractor.	2-9/2-10
Connecting Wiring Harness.	2-10



# CANOPY INSTALLATION

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**For machines shipped with the Canopy Frame installed on the Tractor.**

For safety reasons and to prevent damage to the Canopy, the Harvester cannot be shipped/transported on a truck or trailer with the Canopy in place, it has to be installed by the end user.

It is recommended that two persons carry out the assembly and installation of the Frame and Canopy.

---

## NOTE

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All fasteners required to assemble and install the Canopy Frame, and the Canopy, are shipped with the Canopy.

---

### Canopy Installation.

- Remove the Canopy from the shipping container.
- Identify the 'FRONT' of the Canopy.
- Start with the Canopy positioned at the front of the Frame, and unfold it completely over the frame.
- Fold the front edge of the Canopy over the front Tube 'A', and secure in place with the Zip 'B'.
- Pull the Canopy to the rear, fold it over the rear tube, and secure it with Zip-ties 'C'.
- Fold the Canopy Sides over the side tubes and secure in place with Zip-ties 'C'.
- Fit Pockets 'D', over the tubes and close the Zips.



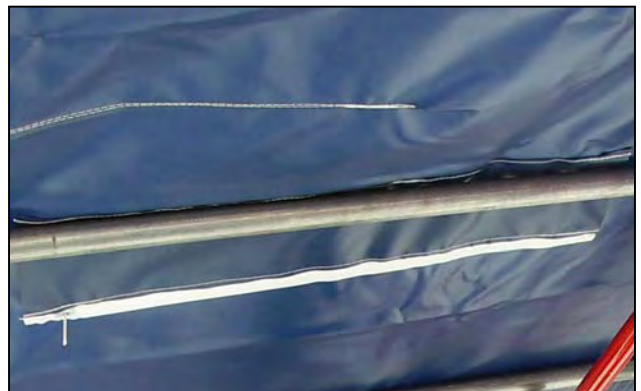
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## NOTE

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Refer to the following pages for the assembly and installation procedure, for machines shipped with the **Canopy Frame not assembled**.

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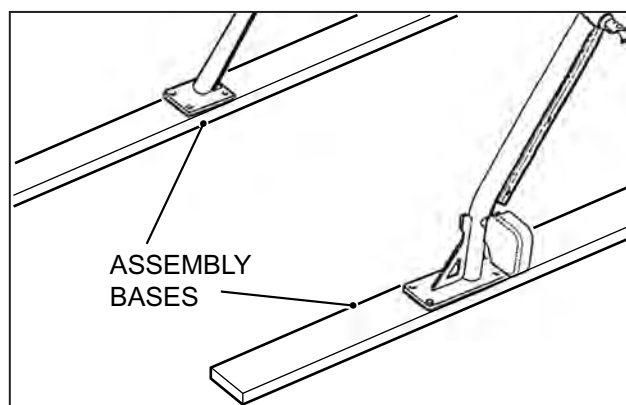
# CANOPY FRAME ASSEMBLY

## IMPORTANT

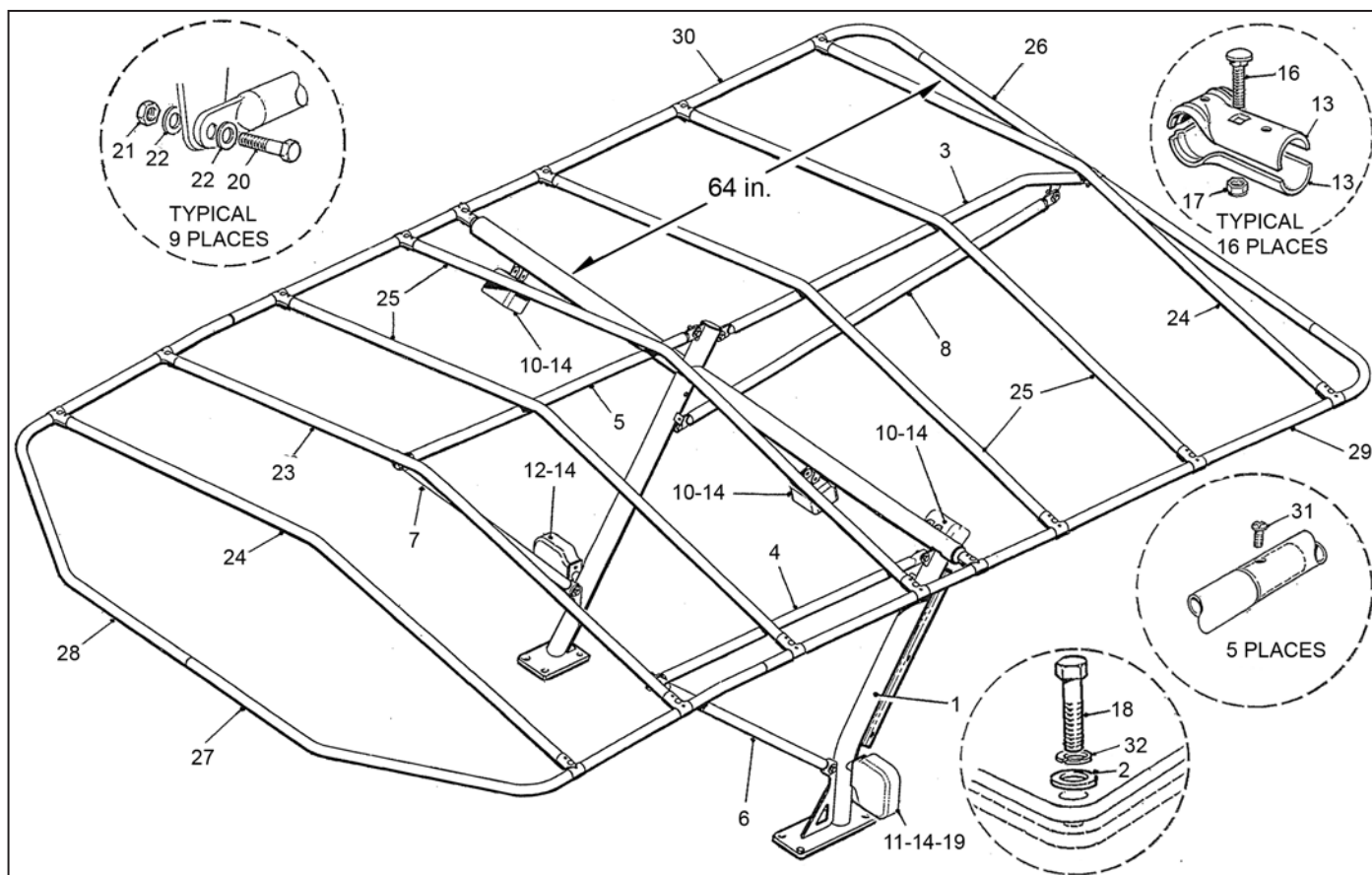
It is recommended that the assembly of the Canopy Frame is done by two persons.

A clean, firm, level surface should be selected.

To make assembly easier, the Canopy Support should be anchored to two suitable bases.



Before starting to assemble the Canopy Frame, check against the Parts List below that all items required have been shipped.



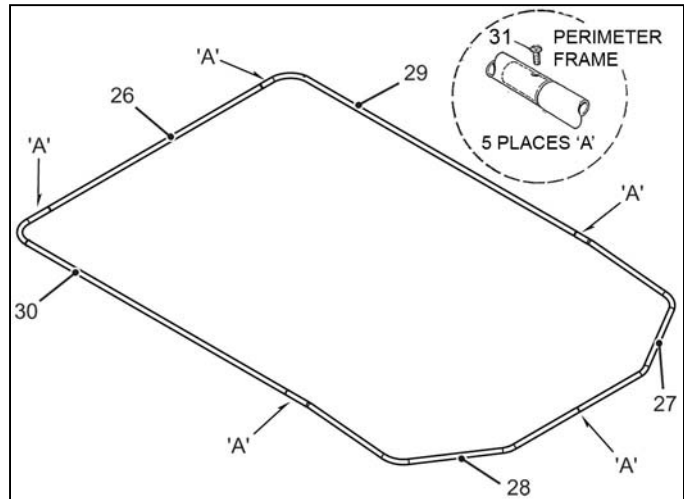
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
70-1	4160526	CANOPY SUPPORT (R)	1	70-17	F210500	LOCKNUT 5/16 UNC	16
70-2	F320800	WASHER 1/2	16	70-18	F040820	BOLT 1/2 UNC X 2 GR.8	8
70-3	H310166	REAR SPREADER	1	70-19	G0108065	BOLT M8 X 1.25 X 65	2
70-4	H110768	TOP FRONT SPREADER LH	1	70-20	F040714	BOLT 7/16 UNC X 1.5 GR.8	9
70-5	H110769	TOP FRONT SPREADER RH	1	70-21	F220700	JAM NUT 7/16 UNC	9
70-6	H110770	FRONT ANGLED MBR. LH	1	70-22	F320700	USS WASHER 7/16	18
70-7	H110771	FRONT ANGLED MBR. RH	1	70-23	H310162	CROSS BRACE	1
70-8	H110772	REAR ANGLED MBR.	1	70-24	H110761	CROSS BRACE FRT & REAR	2
70-9	4160250	CANOPY COVER	1	70-25	H110762	CROSS BRACE	4
70-10	KE90010	WORK LIGHT	3	70-26	H110219	FRAME. REAR STRAIGHT	1
	KE90014	BULB. WORK LIGHT	3	70-27	H110220	FRAME. FRONT CORNER LH	1
	KE90017	LENS	A/R	70-28	H110221	FRAME. FRONT CORNER RH	1
70-11	KN02007	SIGNAL LENS LH	1	70-29	H110723	FRAME. REAR CORNER LH	1
70-12	KN02008	SIGNAL LENS RH	1	70-30	H110724	FRAME. REAR CORNER RH	1
70-13	H110935	90° BRACE CLAMP (HALF)	30	70-31	F700204	SCREW #10 PAN HD, PHIL	5
70-14	H510009	WIRING HARNESS	1	70-32	F310800	LOCKWASHER 1/2	8
70-15	KX99107	TIE WRAPS	35				
70-16	F020516	CARR. BOLT 5/16 X 1 3/4	16				

# CANOPY FRAME ASSEMBLY

## Perimeter Frame Assembly.

### To assemble the Perimeter Frame:

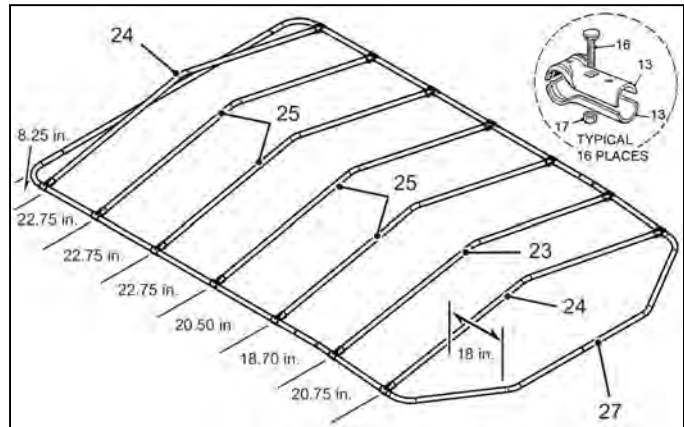
- Identify the parts from the parts list. Lay them out on a flat surface, and join the tubes together.
- Drill 1/16in pilot holes at the five joins 'A', in the tubes, and secure them with self tapping #10 Pan Hd. Screws (31).



### Assembling the Cross Brace Tubes.

There are seven Cross Brace Tubes

- The Front and Rear Cross Braces (24), are 'angled' at 20 deg. (All other Cross Braces are 'angled' at 25deg.).  
Brace Clamps (13), attach the Cross Braces to the Perimeter Frame. (Carriage Bolts facing down).
- Position the front one 18 inches from the Front Tube (27), of the Perimeter Frame. Position the rear one 7 inches from the Rear Tube (26), of the Perimeter Frame.
- Second Cross Brace (23), is painted 'Red'. It has one half of a Brace Clamp welded at each end. Use one half of a Brace Clamp, to attach it to the Perimeter Frame.
- Use Brace Clamps to fasten the remaining four Cross Braces (25), to the Perimeter Frame, they must be **spaced as illustrated**.
- Lift the assembled Canopy Frame onto the Canopy Support (1), with the Perimeter Frame placed in the halves of the Brace Clamps, (that are welded to the Canopy Frame), secure in place with half Brace Clamps.

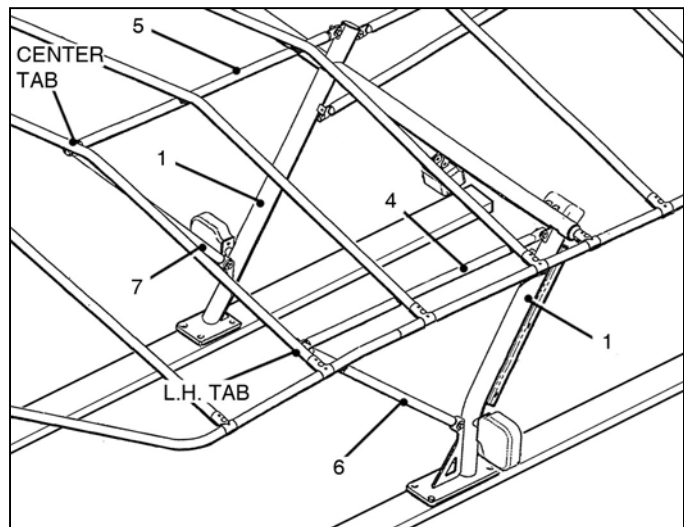


### IMPORTANT

Before tightening the Clamps, position the Canopy Frame Assembly so that the measurement from the inside of the Canopy Support Cross Tube to the inside of the Perimeter Frame rear tube is **64 inches**.

With one person supporting the Canopy Frame:

- With 7/16 x 1 1/2 in. Bolts, Washers and Locknuts attach the Front Support Tube (7), one end is marked white, and the Front Spreader (5), (marked green), to the center tab (marked white/green), on the Cross Brace Tube (23). Attach the other ends to the Canopy Support (1).
- With 7/6 x 1 1/2 in. Bolts, Washers and Lock-nuts attach the LH.Top Front Spreader (4), one end is marked blue, and the Front Support Tube (6), marked red, to the LH.Tab on the Cross Brace (23). Attach the other ends to the Canopy Support.



See following page for the fitting of the rear support tubes.

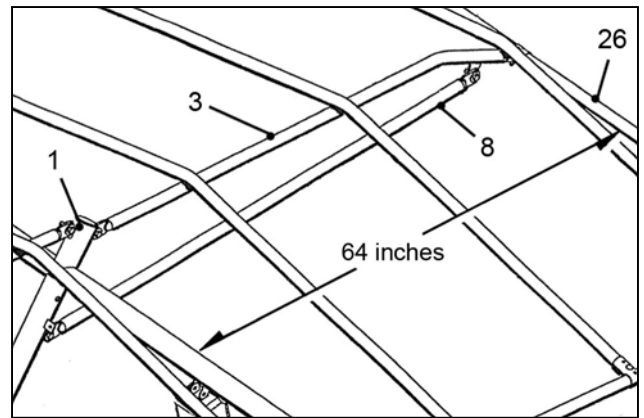


### Fitting Rear Spreader and Support Tube.

- With 7/16 x 1 ½ in. Bolts, Washers and Locknuts, attach the end of the Rear Spreader (3), marked Black, to the Canopy Support (1). The other end has a half Brace Clamp welded to it. Use a half Brace Clamp to attach it to the Rear Tube (26), of the Perimeter Frame.
- With 7/16 x 1 ½ in. Bolts, Washers and Locknuts, attach the end of the Rear Support Tube (8), marked Black, to the tab on the Canopy Support, marked Black. The other end, attach to the tab on the Rear Support Tube (3).

#### IMPORTANT

Double check that all clamp fasteners are tight.



### Fitting Canopy to Frame.

Refer to page 4-1 for the recommended procedure when fitting the Canopy onto the Frame.

### Installing the assembled Frame and Canopy onto the tractor.



#### CAUTION

Two persons must install the Canopy Assembly. One to person to operate the Forklift, the other to guide the assembly into position and bolt the Canopy Support to the frame.

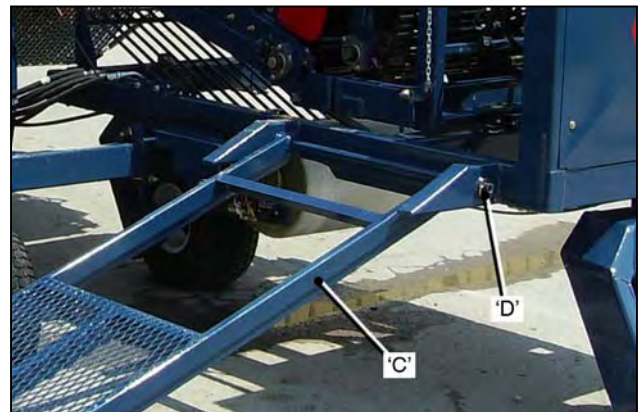
- Insert the Forklift Forks (with extended forks), under the cross tube of the Canopy Support 'A'.



#### CAUTION

To prevent the Canopy Assembly from tipping, while being lifted into position, resulting in possible personal injury, the rear tube of the Perimeter Frame must be firmly secured to the forks 'B'.

- To allow the Forklift access, with the Canopy on the forks, the Unload Ramp 'C', must be removed.
- Remove the Transport Chain and Ramp Spring. Remove the Hitch Clips, slide the Pivot Tube 'D' out and lift the Ramp clear.



## CANOPY FRAME INSTALLATION

- Carefully raise the forks, sufficient for the Canopy Support Pads 'A', to clear the Tube Container 'B',.
- Slowly drive the forklift forward to position the Support Pads 'A', above the Mounting Pads 'C'.
- Lower the Canopy Support until the pads are 'just' touching the mounting pads.

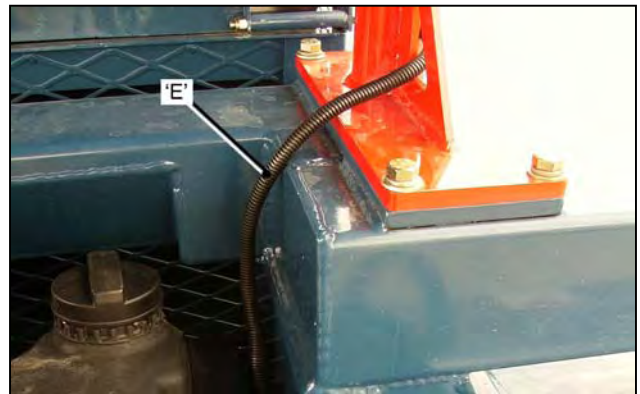


- Bolt the Canopy Support in place with eight ½ inch x 1 1/4 Bolts, Washers and Lock-washers 'D'.



### Connecting Wiring Harness.

- Feed the left hand side Canopy Harness 'E' down between the frame and fuel tank, and make the connections to the corresponding Tractor Harness.
- On the right hand side, make the connections with the 'gray' cable 'F', and its corresponding plugs.
- Feed the Canopy Harness 'G', down to make connections to the corresponding Tractor Harness.



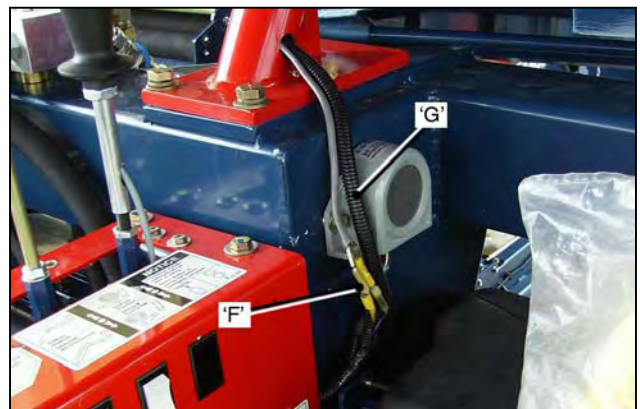
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#### NOTE

When the electrical connections have been completed, and the working lights tested, it is recommended that for protection the connections are shrink wrapped or taped.

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- **Re-install the Unload Ramp.**





## SECTION 3

Pre-Operation Warm Up.	3-01
Travel Speeds.	3-02
Hydraulic System.	3-02/3-03
Controls.	3-03/3-06
Automatic Cut-Off.	3-07
Manual Cut-Off.	3-07
Tube Lift Rack and Dispenser.	3-08
Netting Selection.	3-09
Cut-Off Blade and Springs.	3-10
Pitch Angle Adjustment.	3-11





### DANGER

When carrying out the following procedures all bystanders **MUST** be kept clear of the machine. Failure to observe this precaution could result in serious injury or death.

---

### IMPORTANT

Before operating the machine for harvesting it is important that the hydraulic oil is brought up to operating temperature. If the ambient temperature is **below 75 deg. F.** – proceed as follows.

---

- Start the tractor engine.
- Allow the Hydraulic Pumps to operate and circulate oil through the system, until normal operating temperature is indicated on the Oil Level/Temperature Gauge located on the oil tank.

Operate the following :

- Main and Dump Conveyors. Operate for several minutes.
- Cutting Head – Raise and lower.
- Depth of Cut Cylinder – Extend and Retract.
- RollMax Unit – Operate through several cycles.
- Auto-Steer – Switch 'ON and OFF' to operate the Shoe Lift Cylinder

### IMPORTANT

To prevent damage to the Cut-Off mechanism, the Cut-Off must only be operated when the machine is harvesting.

---

**The above precautions will:**

- Ensure that the machine will function efficiently, with the hydraulic oil at the correct temperature.
- Prevent possible damage to components due to cold hydraulic oil.
- Help to check that the machine is properly set-up, there are no oil leaks, and it is ready for harvesting.

## OPERATION

### TRAVEL SPEEDS.

The Roll Max 2400 Harvester is fitted to a John Deere 5225 Tractor, built to Brouwer specifications, which are optimized for sod harvesting. It is recommended that a gear range is selected that will allow travel at the desired ground speed, with engine speeds as low as 1700 RPM. This reduces wear and noise resulting in a better work environment and a longer work life to the harvester and tractor.

GEAR	MPH (Km/H) 2400 RPM.
A-1	1.28 (2.05)
A-2	1.84 (2.96)
A-3	2.71 (4.36)
B-1	3.21 (5.17)
B-2	4.66 (7.49)
B-3	6.85 (11.02)
C-1	8.19 (13.19)
C-2	11.85 (19.07)
C-3	17.44 (28.07)

### HYDRAULIC SYSTEM.

#### Hydraulic Oil.

The Hydraulic System is filled at the factory with Petro-Can HYDREX AW46 (Standard Range).

When topping-up or changing the oil, a compatible oil conforming to International Standard ISO.344 HV Grade, **MUST** be used. These oils have improved viscosity and temperature characteristics.

**It is imperative** that the oil used meets these specifications. It is recommended that the Hydraulic Oil is changed every 750 hours of operation, or annually.

- Always drain the oil into an approved container.
- Clean the Magnetic Drain Plug before refitting.
- Fill to the correct level as indicated in the oil level Sight Glass on the oil tank. **DO NOT overfill.**

#### Oil Filter.

Replace the High Efficiency Oil Filter 'A', after the first 25 hours of operation, then every 250 hours of operation, or any time the filter Indicator Gauge 'B', remains in the 'RED' zone.

**Replace the filter with only a Brouwer High Efficiency Filter Cartridge.**

#### IMPORTANT

**To prevent serious damage to the Hydraulic System :**

- Do not allow water, dirt, debris or contaminants to enter the system.
- When working on or repairing hydraulic components thoroughly clean around the area to be worked on. Cap/Plug all broken connections.

TEMPERATURE	-10 deg. to 35 deg. C	0 deg. to 45 deg. C
	+14 deg. to 95 deg. F	32 deg. to 113 deg. F

Castrol : Hyspin	AWH 46	AWH 68
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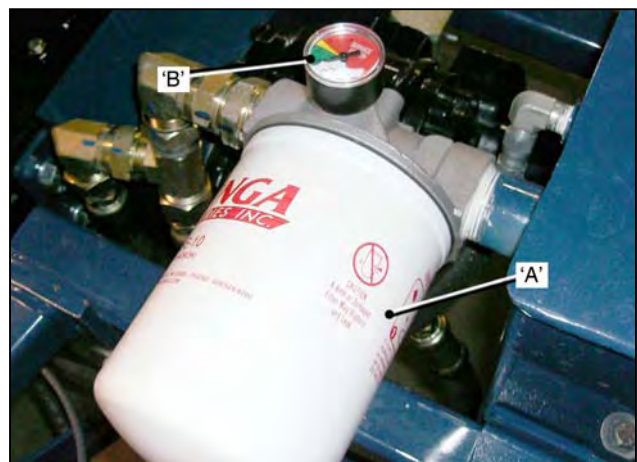
B. P. Bartran	HV 46	HV 68
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Esso : Univis	N 46	N 68
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Mobil	15 M	16 M
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Shell : Tellus Oil	T 46	T 68
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Texaco	HDZ 46	HDZ 60
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# OPERATION

## HYDRAULIC SYSTEM.

### IMPORTANT

To maintain maximum cooling of the hydraulic oil, sod pieces must not be piled on the front tractor weights. If more weight is required on the front of the machine, loaded front tires can be used, or a weight kit can be ordered from your dealer.

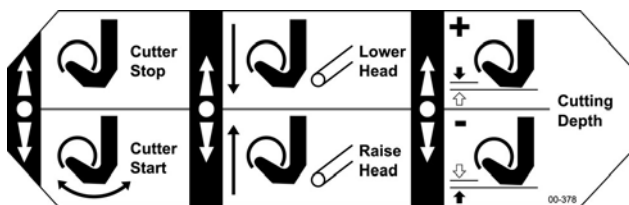
The RollMax Hydraulic System Pump 'A', is driven from the front of the engine. It provides independent oil supply to the Conveyor Drive, Cutter Drive and the Roll Max Unit.

This allows for optimum speed from each motor.



## CONTROLS.

### Control Decals.



Cutter Engage, Lift Arm and Depth Control Levers.

### CUTTER 'ENGAGE' CONTROL.

The Cutter Control Lever 'B'.

- **PULL** – to start Cutter. (Detent).
- **PUSH** – to disengage Cutter.

### CAUTION

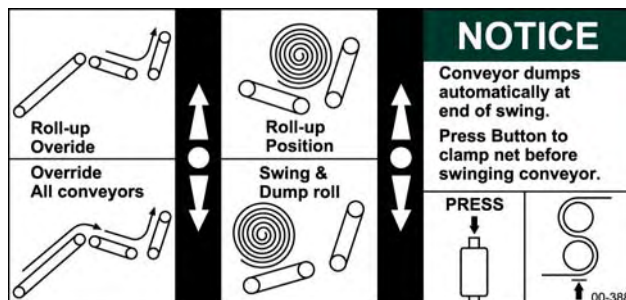
**To prevent damage to the Drive Line :**

Do not engage the Cutter when traveling at over 2 mph. Damage to the Shear Pin on the Metering Valve Input Shaft will occur. This will result in loss of oil flow, indicating excessive ground speed or malfunction of the front Flow Control Valve.

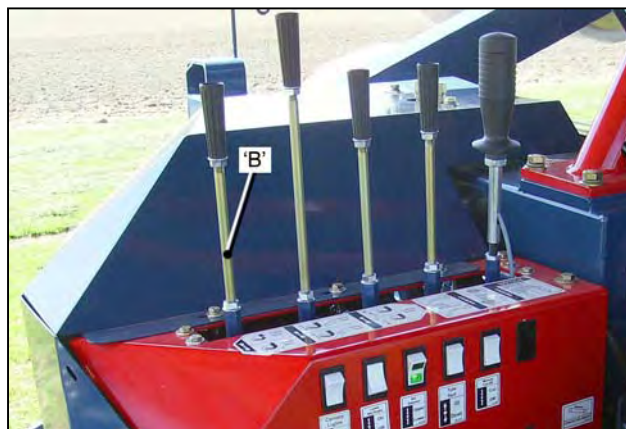
When the Cutter is engaged, the ground speed control of the conveyor also engages.

The Conveyors will start automatically when the machine moves 'forward', and will adjust speed to match the ground speed.

If you have cut to the end of the field, and have a partial roll, and wish to complete the roll on the next pass, disengage the Cutter, this will stop the Cutter, until cutting is re-started.



Conveyor Override, Roll-up Conveyor and Swing Control Levers.



Also if it is necessary to 'skip over' a section of damaged or diseased turf, raise the Cutter Head to stop the Cutter until resuming cutting by lowering the Cutter Head.

### NOTE

If the 'Manual Cut-Off' is engaged, the length of Roll will automatically be re-set to 'Start of Roll'.

# OPERATION

## CONTROLS

### LIFT ARM CONTROL.

The Lift Arm Control Lever 'A'.

- **PUSH** - to Lower the Cutter Head.
- **PULL** - to Raise the Cutter Head.

### IMPORTANT

When starting to cut:

- To reduce shock loads on the Cutter Motor and components, the Cutter Head Motor should be started **before** the Cutter Head is lowered to the ground.
- Lower the Cutter Head slowly, do not let it drop to the ground.
- The Lift Chain must be 'slack' while the harvester is in operation.

### DEPTH CONTROL.

The Depth Control Lever 'B'.

- **Pull** – to decrease the Depth of Cut.
- **PUSH** – to increase the Depth of Cut.

The Depth of Cut can be adjusted to the desired thickness of sod while harvesting.

The scale marks on the Depth Indicator 'C', show the change in depth.



### MANUAL CONVEYOR OVERRIDE.

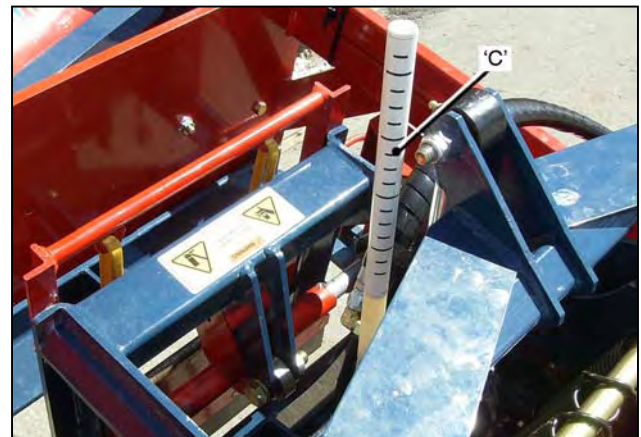
The Manual Conveyor Override Lever 'D'.

- **PUSH** – to manually advance the **Roll-up Conveyor only**.
- **PULL** – to advance the Main Conveyor **and** the Roll-up Conveyor simultaneously.

When a roll of sod is complete, the Roll-Up Conveyor 'Override' can be used to:

- Rotate the Roll several times, to apply several wraps of netting to the outside of the Roll.
- It can also be used to position the cut end of the Roll in a position that will enable easy handling of the Roll without the netting.

The 'all Conveyors' override can be used when it is desirable to finish rolling all of the sod on the Conveyors, without moving the machine. For example if the last roll of sod has been cut, and you want to finish rolling and drop the roll at the end of the field.





## ROLL-UP CONVEYOR - SWING AND DUMP, AND NETTING SWITCH.

The Roll-Up Conveyor Swing and Dump Control Lever and Netting Switch 'A'.

- **PULL** – to swing the Conveyor and Dump the finished Roll of Sod.
- **PUSH** – to return the Conveyor to the Roll-Up position.

With Netting Selector Switch 'B', set on 'LOWER'.

- Depress the switch button 'C', on the end of the lever, to clamp the netting at the start of 'swing', so that the netting is cut as the conveyor swings.

With Netting Selector Switch 'B', set on 'UPPER'.

- Depress the Switch Button 'C', on the end of the lever, to 'start' the upper netting.



### DANGER

The Roll-Up Conveyor 'dumps' automatically at the end of the swing. Ensure that any bystanders are a safe distance from the rear left side of the harvester before swinging the Roll-Up Conveyor to 'dump' the sod roll.

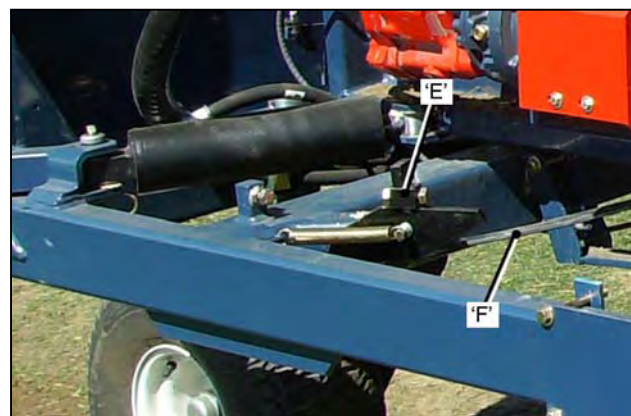
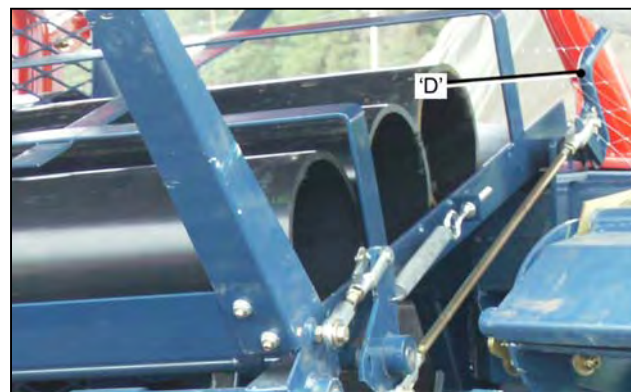
When the Sod Roll is ready to 'dump':

- **Depress the Switch Button 'C'.** With the Netting Selector Switch 'B', on 'LOWER', Hold the Switch Button down, while the Conveyor swings, and the netting is cut-off.
- **Swing the Roll-Up Conveyor to the 'DUMP' position.** The Roll is automatically dumped, and the Dump Conveyor Return Spring re-sets the dump latches.
- **Return the Roll-Up Conveyor toward the roll-up position.** A stop latch will stop the Roll-Up cavity in position to receive a Core Tube from the tube dispenser.
- **Pull Lever 'D', to dispense a tube.** Only when the Roll-Up Conveyor is properly positioned on the return swing. The dispenser holds five tubes and is manually loaded from the tube rack.
- Swing the Roll-Up Conveyor 'UP', approximately six inches, toward the dump position, to release the Stop Latch. The Roll-Up Conveyor can then be returned all the way to the roll-up position.

### NOTE

If Core Tubes are not being used, the Stop Latch 'E', can be disabled by removing the rubber strap 'F'.

If netting is not being used, it will not be necessary to depress the net clamp button 'C'.



## OPERATION

### CUTTER HEAD SPEED CONTROL.

The Cutter Head Speed Control 'A'.

- **Rotate 'Counterclockwise'**, to decrease the Cutter Blade speed.
- **Rotate 'Clockwise'**, to increase the Cutter Blade speed.

Start at the maximum speed and reduce to the slowest setting that will give the best result. This will result in the minimum vibration. Set to the lowest speed that will give a good quality cut.

To avoid damage, the tractor travel speed may have to be reduced when cutting in rough or stoney ground.

The Cutting and the Cut-Off Blades **must be kept sharp**. In soft soils, the Cutting blade may need to be 'honed', to obtain a good cut.

### MAIN CONVEYOR SPEED CONTROL.

The Main Conveyor Speed Control 'B'.

- **Rotate 'clockwise'**, to reduce conveyor speed.
- **Rotate 'counterclockwise'**, to increase Conveyor speed.

This Control Valve regulates oil flow to both conveyor drive motors. When in the ground speed control mode, it allows fine tuning the conveyor speed to match the ground speed.

Before cutting for the first time, run the conveyors empty, in ground speed mode, to approximately match the ground speed and conveyor speed.

When cutting, if the turf 'stretches and tears' as it travels up the conveyor it indicates that the conveyor speed is too fast. If the turf 'bunches or folds,' the conveyor speed is too slow.

### ROLL-UP CONVEYOR SPEED.

The Roll-Up Conveyor Speed Control 'C'.

- **Rotate 'clockwise'**, to reduce the conveyor speed.
- **Rotate 'counterclockwise'**, to increase the conveyor speed.

Because the main conveyor flow control affects the speed of the Roll-Up Conveyors, adjust the Roll-Up speed **after the main conveyor speed has been set**.

Run the conveyors empty, in ground speed mode, to approximately match the conveyor speeds.

If the turf tears as it leaves the main conveyor, the Roll-Up Conveyor speed is too fast.

If the turf bunches as it travels onto the Roll-Up Conveyors, the speed is too slow.

### NOTE

If sod conditions allow, the Roll-Up Conveyors can be run slightly faster than the Main Conveyor to form a tighter roll.

**The Roll-Up action starts and forms automatically without intervention by the operator.**





## AUTOMATIC CUT-OFF.

### CUT-OFF DIGITAL COUNTER.

The Digital Cut-Off Counter 'A'.

- Allows the length of the roll to be selected, with the buttons on the front of the counter.
- The roll length can be adjusted from 0 feet to 120 feet. The Counter indicates the length that is pre-set and shows the count 'down' to zero.



### CAUTION

The 120 feet length is the maximum that must be selected. Longer lengths of turf will jam the Roll-Up Unit.

- When the length of turf is cut, the warning 'buzzer' sounds and the Counter resets to the pre-selected length.
- If the Manual Cut-Off, (see below), is activated in mid-count, to produce a 'short roll', the Counter will reset to the pre-selected length. There is also a reset button on the Counter.

### CUT-OFF LENGTH SENSOR.

The Cut-Off length Sensor 'B'.

- The Counter Sensor targets two bolts in the Sensor Wheel 'C', as it rotates with the conveyor, each revolution equals one foot.
- The Sensor signals the Counter until the pre-selected length is reached, starting the Cut-Off sequence.

### CUT-OFF SOLENOID

The Cut-Off Solenoid 'D'.

- The Counter signal activates the Cut-Off Solenoid, when the selected length of turf is reached, this engages the Cam Shaft Clutch 'E', operating the cut-off.

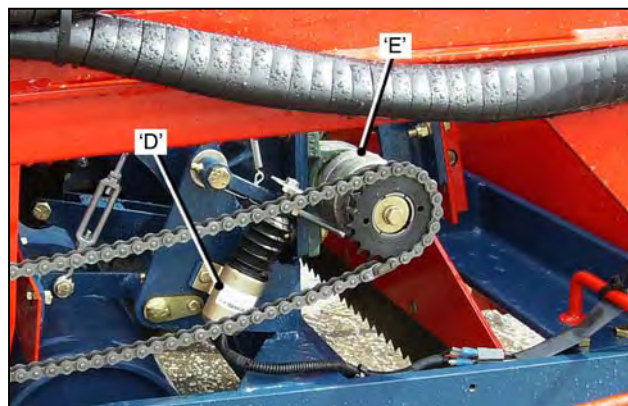
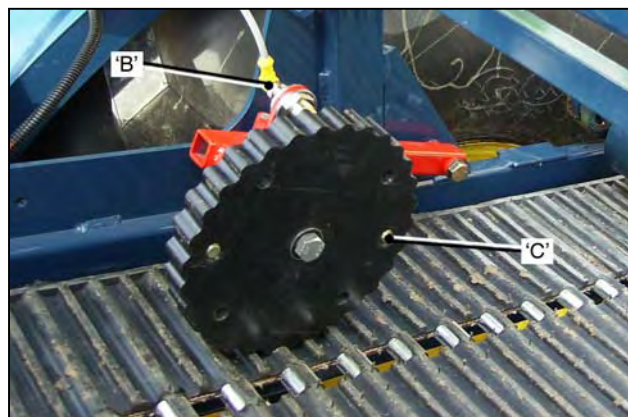
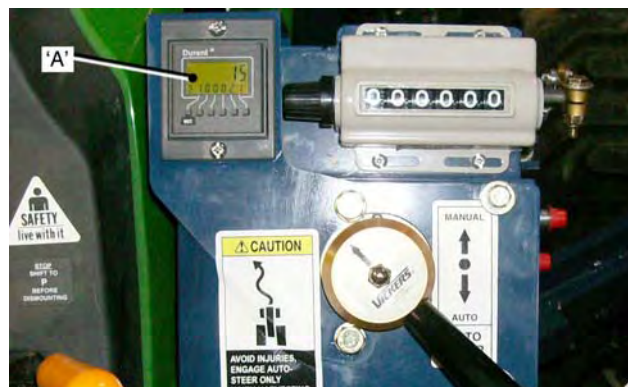
### NOTE

Chain Guard, (with Tensioner), removed for clarity.  
**Do not operate the machine with the guard removed.**

### MANUAL CUT-OFF.

The Manual Cut-Off Selector Switch 'F'.

- To cut the roll **before** the selected length has been cut, activate the Cut-Off Switch, (up or down). This is done if some smaller rolls are required.
- After the 'short' rolls have been cut the cut-off length will reset to the pre-selected length.



# OPERATION

## TUBE LIFT- RACK CONTROL SWITCH.

The Tube Lift-Rack Control Switch 'A'.

- To raise the Tube Rack, press the top of the switch - '**UP**'.
- To lower the Tube Rack, press the bottom of the switch - '**LOWER**'.



### WARNING

Before removing tubes from the Tube Rack, to load the Tube Dispenser, or when loading the Tube Rack:

- The operator must stop the harvester and switch the tractor engine '**OFF**'.
- Failure to observe this precaution could result in serious injury.



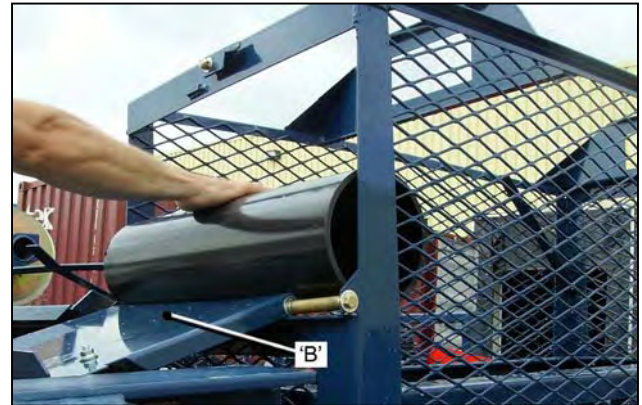
## TUBE LIFT RACK.

Loading the Tube Lift Rack.

- Open the Access Door 'B', to Load the Tubes,

### IMPORTANT

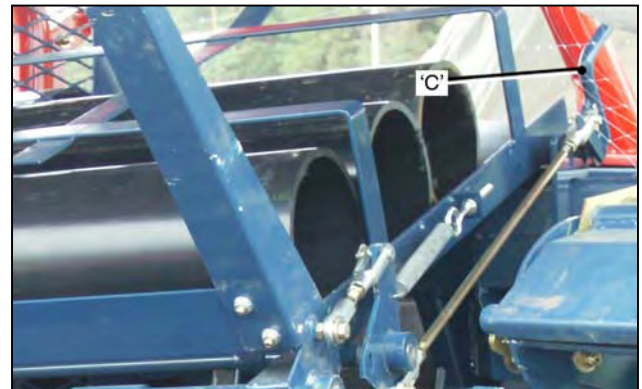
Do not overload and jam the tubes against the Lift Rack top lifting brackets.



## TUBE DISPENSER.

The Tube Dispenser Lever.

- To dispense a Tube into the Roll-Up Conveyor pull the Dispenser Lever 'C', '**FORWARD**', only when Roll-Up Conveyor is correctly positioned on the return swing.
- The Tube Dispenser can hold five tubes. It is loaded manually From the Tube Rack.





## UPPER/LOWER NETTING SELECTION.

The Netting Selector Switch 'A'.

### IMPORTANT

When using the Netting Selector Switch, the Button Switch 'B' in the Swing/Dump Control Lever must be pressed.

- Press to '**UPPER**' to select 'upper netting'.
- Press to '**LOWER**', to select 'lower netting'.

## LOWER NETTING CLAMP AND BRAKE.

The Lower Netting Clamp/Brake Switch 'C'.

- Switch to '**ON**' to restrain netting from passing through the feed rollers.
- Switch to '**OFF**', to allow the netting to pass through the feed rollers.

When the netting has been applied to the completed roll of sod, leave the switch in the '**OFF**' position and use the 'net clamp' button switch, on the Swing/Dump control lever, to clamp the netting during 'cut-off'.

When netting is applied only to the outer layers of the roll:

- leave the switch in the '**ON**' position while rolling, and 'toggle' the switch to '**OFF**' for the last ten feet of the roll and for the over-wrap.
- Toggle the switch to '**ON**' to cut the netting when the roll is 'dumped'.

When there is no netting being used, and there is none threaded through the rollers, leave the switch in the '**ON**' position.

## CANOPY/WORKING LIGHTS.

Canopy/Working Lights Switch 'D'.

- Switch to '**ON**' to activate the lights.
- Switch to '**OFF**' to de-activate the lights.

### NOTE

Refer to Section 4, for Canopy Frame Assembly Canopy installation.



### WARNING

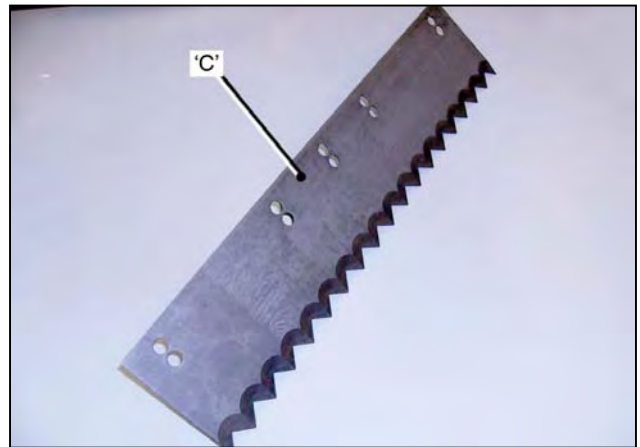
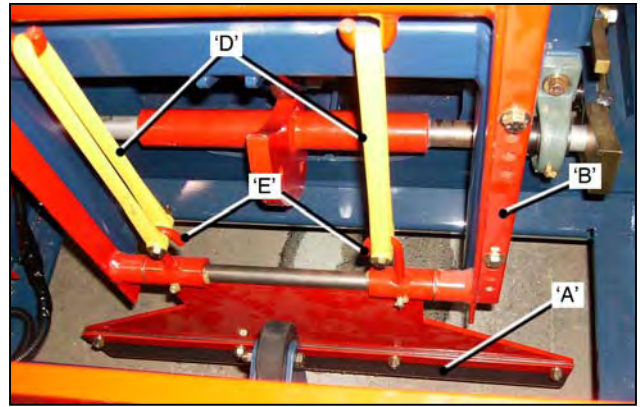
To prevent serious injury or death, the Safety Service Stand must be down and secured before carrying out any adjustments or service procedures, when the Cutter Head is raised.



# ADJUSTMENTS

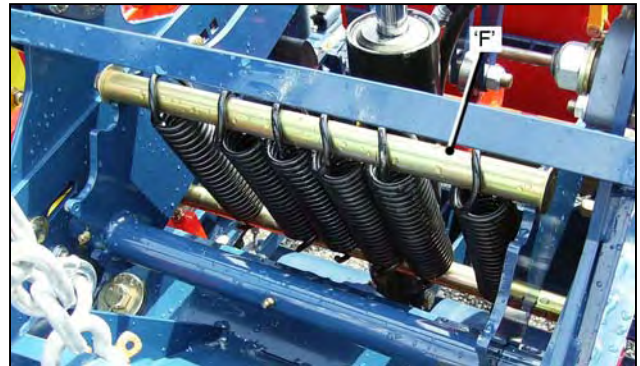
## CUT-OFF BLADE.

- The Cut-Off Blade 'A', must be kept sharp to ensure a clean cut.
- If the blade does not cut 'completely' through the sod when the Spring Shaft is in the desired location, position the Cut-Off Blade Frame 'B', one hole lower on the Cut-Off Frame.
- Blade depth is reduced over time by wear and sharpening. If the Blade is less than 2 ½ inches in depth it must be replaced.
- The edge of the Cut-Off Blade Mount must not hit the sod on the down stroke, as this will damage the sod and cause problems when the sod is 'laid'.
- A Serrated Blade 'C', is available for use in soft soil or excessive thatch. This will give a cleaner cut in these conditions.
- The urethane Tension Straps 'D', allow the Blade to 'swing' with the forward travel as it cuts.
- When stationary the Blade should hang 'vertically'. Any change in the position or shape of the attachment hooks 'E', will change the angle of the blade.



## CUT-OFF SPRINGS.

- The Cut-Off Springs tension is set at the factory with the Shaft 'F', in the center 'cut-out' in the frame. This gives the correct tension for most conditions.
- Moving the shaft up to the 'upper' cut-out increases the pressure.
- Moving the shaft to the 'lower' cut-out reduces the pressure.



### CAUTION

Exercise care when adjusting the Spring Shaft. It is under heavy spring tension. Use a long lever, under the Spring Shaft, and resting on the frame, to lift the shaft and move it to the desired location.

### IMPORTANT

There should only be light contact between the Cutter Frame and the Bump Stops 'G'. Excessive spring pressure can cause the cutter head to 'lift', resulting in scalping and excessive lengths of sod.





## PITCH ANGLE SETTING.

Pitch Angle is the angle that the Cutter Blade makes relative to the ground. The Pitch Angle is set at the factory for average conditions. It can be adjusted to improve cutting performance in hard or soft soils. In soft conditions the Pitch Angle should be set so that the cutting blade is almost 'parallel' to the Ground. In harder conditions the angle should be increased, this maintains the cutting angle and also prevents the Cutting Head from coming out of the ground.

### IMPORTANT

When the Pitch Angle is changed, the relationship of the Cutting Blade to the Conveyor Mat and also the Ground Roller, **must be maintained**.

The front Idler Shaft of the Conveyor can be adjusted to ensure that there is no interference between the mat and the blade.

Refer to the Ground Roller adjustment instructions for correct Roller to Blade set-up.

### NOTE

The factory setting for the pitch angle locates the Adjuster Bracket 'A', in the **second hole from the rear**, in the Cutter Head Frame 'B'.

To adjust the Pitch Angle:

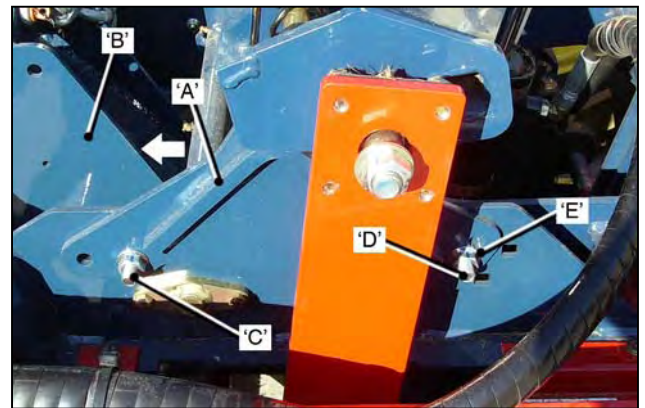
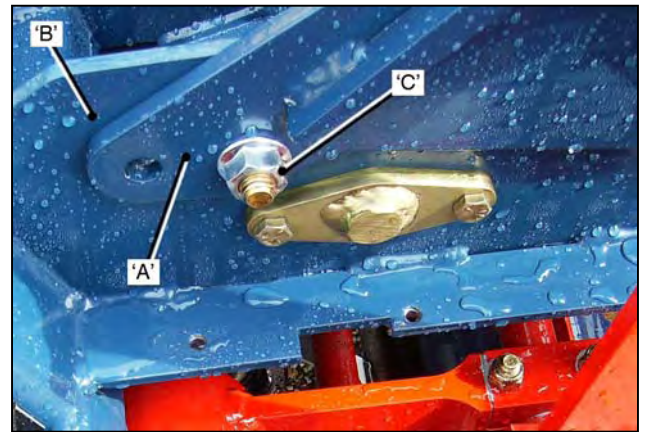
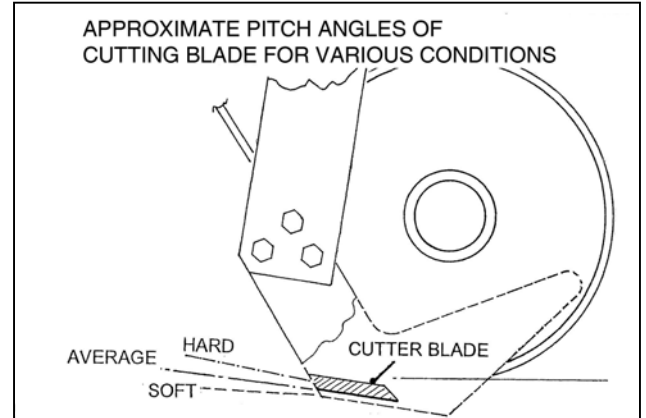
- Loosen the Nuts 'C', sufficient to allow the Adjuster Bracket to slide in the Cutter Head Frame.
- Remove Locator Bolts 'D'. (See Note below).
- For soft soil or peat, pull the Adjuster Bracket 'BACK', in the direction of arrow, and refit the Locator Bolts **in the first hole to the rear in the Cutter Frame**.
- For harder soils, locate the Adjuster Frame in the third or fourth holes, to the front of the Cutter Head Frame.
- Fully tighten all fasteners.

### NOTE

The Locator Bolts are fitted in the '**center holes**' in the Adjuster Bracket 'C'. The 'upper' and 'lower' holes 'E', are for depth of cut adjustment. See following pages for depth adjustment.

### IMPORTANT

Check the fasteners regularly for tightness to ensure that they do not loosen during operation.



## ADJUSTMENTS

### GROUND ROLLER.

The Ground Roller supports the front end of the harvester, it also applies pressure to the sod ahead of the Cutter Blade. The roller can be adjusted 'forward' or 'back' on the Cutter Head Frame.

Correctly adjusted the vertical centerline of the Roller should be 1½ inches ahead of the Cutter Blade.

To adjust the Roller :

- Loosen the Nuts 'A', on each side.
- Slots in the Frame allow the Bearings 'B', to be adjusted 'forward' or 'back' to obtain the correct setting.
- Check that the Roller is square in the frame, parallel to the Cutter Blade 'C'.
- Check that the Roller is centered between the Cutter Side Arms, to ensure that the Bolts 'D', on the Cutter Arms, do not touch the Roller.

#### NOTE

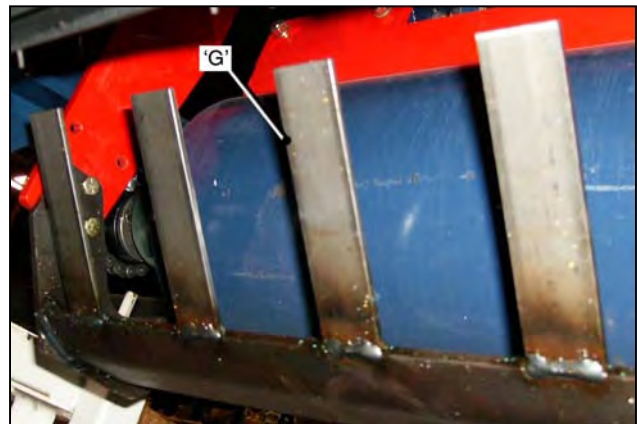
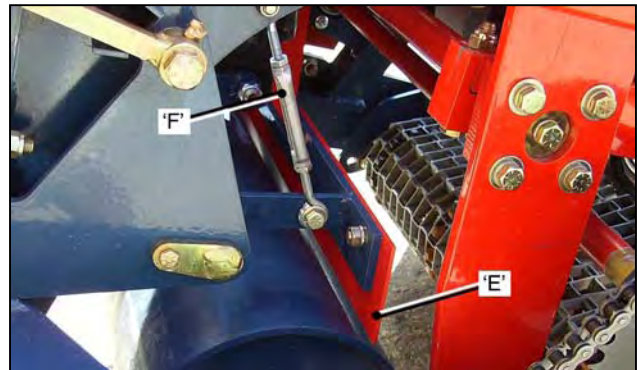
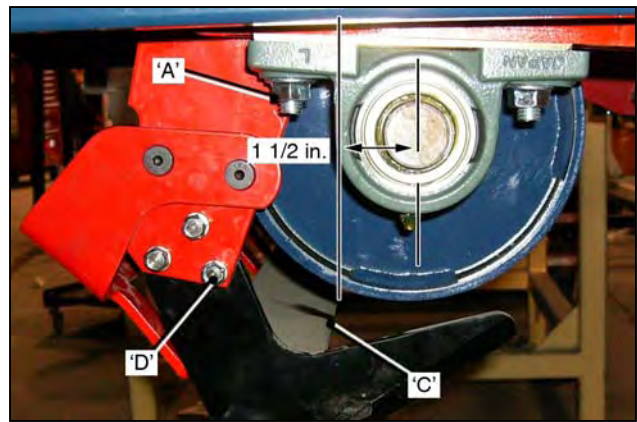
To get a proper cutting action in 'Peat' or 'Muck' soils, a dimension less than the 1 ½ inches specified may be required.

If the clearance is too small, between the Roller and the Blade, will result in a 'pinching' action, resulting in longer pieces of sod.

In 'soft soil' or 'excessive thatch' , rolling the turf before harvesting will help in easier cutting and better quality (tighter) rolls.

In 'stoney ground', it may be advisable to move the Roller 'forward', to provide more clearance between the Roller and the Blade, to allow small stones to pass through.

Clearance may be increased up to 2 to 2 ¼ inches.



### ROLLER SCRAPER.

The Roller Scraper 'E', prevents the accumulation of mud, grass and debris on the Roller.

Adjustment is provided by a Turnbuckle 'F', at each end of the Scraper Bracket.

Adjust each Turnbuckle until the Scraper is parallel to and just clear of the face of the Roller. (Approximately 1/32 inch).

### SOD GUIDE.

The standard Sod Guide 'G', directs the sod from the Cutting Blade onto the Conveyor Mat. The guide fingers must be in line with and just clear of the Blade. Any bent guide fingers must be straightened.

### COMBINATION BLADE

The Combination Blade has the guide fingers welded to the blade. The guide fingers must line up with, and be clear of, the conveyor mat.

Bent guide fingers must be straightened.



COMBINATION BLADE



## CUTTER DRIVE BELT ADJUSTMENT.

The Cutter Drive is via a single 3V Belt.

The belt tension should be set to allow  $\frac{1}{4}$  to  $\frac{3}{8}$  inch deflection at a point midway between the Drive Motor and Crankshaft Sheaves.

### To adjust the tension:

- Loosen Drive Motor Mounting Bolt Locknuts 'A'.
- Turn the Adjusting Nut 'B', 'clockwise' to **increase** the belt tension.
- Turn the Adjusting Nut 'B', 'counterclockwise' to **decrease** the belt tension.
- Tighten the Motor Mounting Bolt Locknuts.

## CUTTER DRIVE BELT - REPLACEMENT.

- Remove the Cover Plate, on the opposite side to the Drive Motor.
- Slacken the Drive Belt, (see above), and remove the belt from the motor and crankshaft sheaves.
- Remove the R.H. Connecting Rod Cap 'C'.
- To prevent the L.H. Connecting Rod from 'bending' when the Crankshaft Pillow Block Bearing is pried 'down', loosen the Connecting Rod Cap.
- Remove the Bolts 'D', from the Crankshaft Pillow Block Bearing.
- Pry the Bearing 'down', away from the frame, sufficient to allow the belt to be removed.
- Re-assemble in the reverse order. Check that the Crankshaft is 'square' to the frame when tightening the bearing bolts.

### IMPORTANT

If there are Shims between the Crankshaft Bearing and the Frame, ensure that they are in place when re-assembling.

## CONVEYOR MATS.

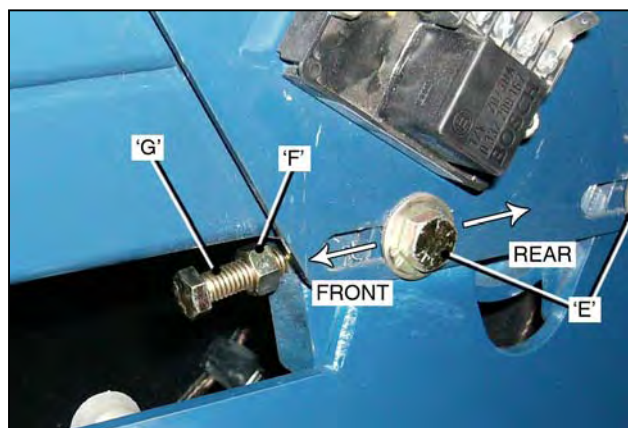
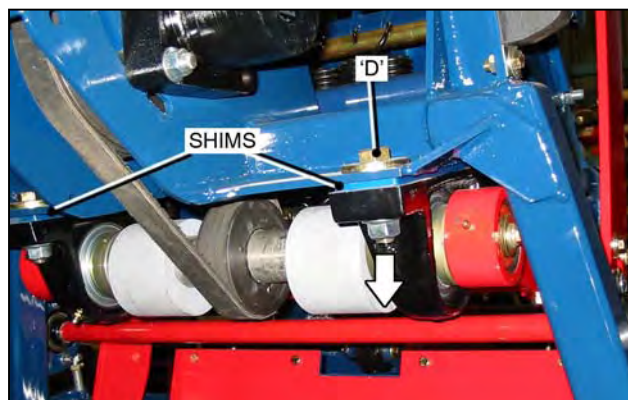
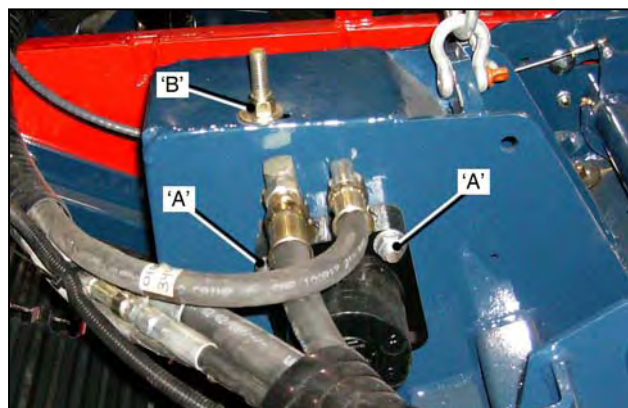
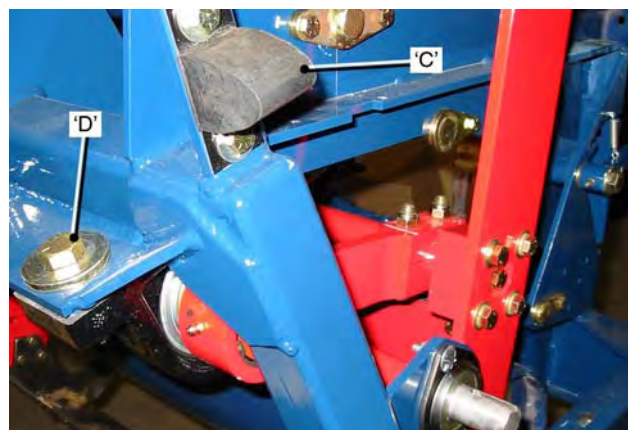
Rubber Mats are suitable for most conditions, and are the preferred type. The Mintex Metal Mat is used in loose 'stoney' soil conditions.

The Rubber Mat is kept in alignment in the frame with the Drive Sprockets at the top of the conveyor, and a Crown Roller at the bottom of the conveyor. The Mintex Mat runs on Sprockets, top and bottom. The Alignment procedure is the same for both mats.

## DRIVE SPROCKET SHAFT.

The L.H. Side Sprocket Shaft Bearing is adjustable to ensure that the Shaft is at 90 deg. to the Frame, and the mat is correctly aligned at the top of the conveyor.

- Loosen the Bearing Bolts 'E', until they are 'snug'.
- Back-off the Locknut 'F', and turn the Adjusting Bolt 'G', 'IN' to push the Bearing to the rear, or tap the Bearing 'forward', as required to correctly align the Sprocket Shaft.



## ADJUSTMENTS



### CAUTION

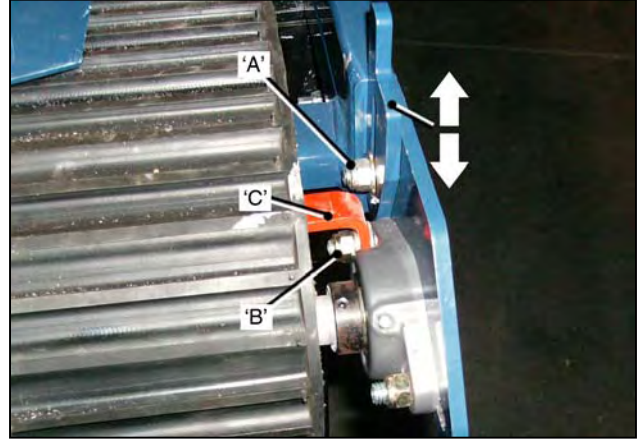
Adjustment procedure must be done by two people. One person to operate the Conveyor Controls, the other to make the adjustments.

#### CROWN ROLLER. Rubber mat.

The Crown Roller keeps the Conveyor Mat tracking parallel to the Conveyor Frame.

##### To adjust the Crown Roller:

- Loosen the Adjustment Wedges Bolts 'A'.
- Loosen the Flanged Bearing Bolts 'B', sufficient to allow the bearings to slide.
- Run the Conveyor at **LOW** speed.
- If the Mat tracks to the 'Left', (inner side of the conveyor), tap down the Right Hand Side Adjustment Wedge. If it tracks to the 'Right', tap down on the Left Hand Side Adjustment Wedge.
- Adjust the Crown Roller Scraper 'C', to 1/32 in. from the roller face.
- Tighten the Bearing Bolts and the Adjustment Wedges Lock Bolts.

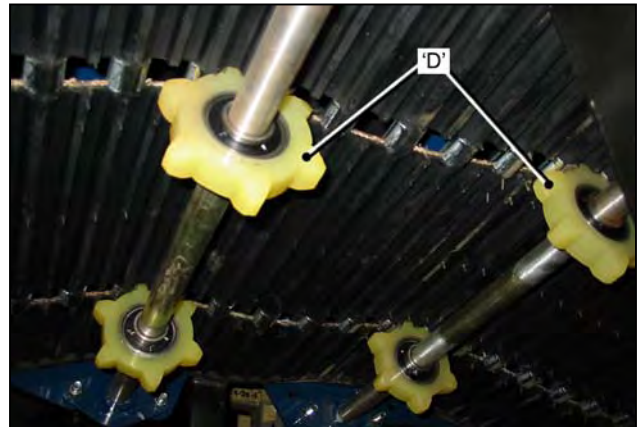


### NOTE

If the Mat persists in tracking to one side, check the Sprocket Drive Shaft alignment. See page 3-13.

#### FRONT IDLERS. Rubber Mat shown.

Additional Idlers Sprockets 'D', at the front prevent the Mat from running against the Cutter Head Frame.



### IMPORTANT

When replacing worn Sprockets, the new Sprockets must be positioned on the Shafts so that the sprocket teeth are 'centered' in the mat slots.

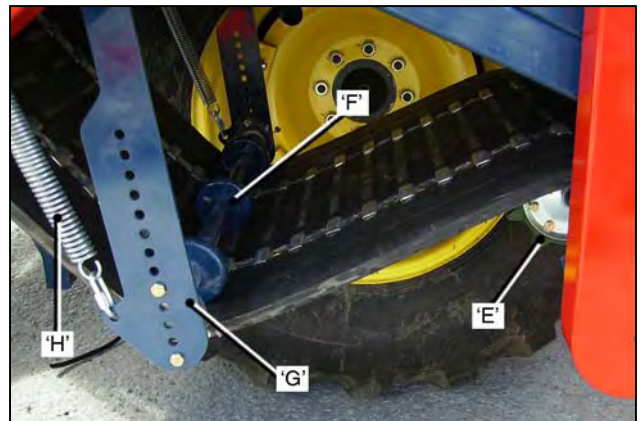
#### MID IDLER SHAFT.

The Mid-Idler Sprocket Shaft 'E', supports the Mat under the frame.

It also drives the 4 inch Roller.

#### TENSIONING IDLER.

The Tensioning Idler 'F', maintains correct tension on the Conveyor Mat. The spring loaded Idler Arm 'G', has a series of holes to allow adjustment of the Idler Shaft, to accommodate 'stretch' or 'shrinkage' of the mat. The Idler Arm must not go past 90 deg. to the frame, as it will be pulled 'over-center' by the Tension Spring 'H'.





## RUBBER CONVEYOR MAT.

On average, depending on soil conditions, the Mat will last two or three seasons. Under certain soil conditions the Metal Inserts will wear out and have to be replaced. Below are shown the recommended methods for removing/replacing the Mat Splices and Metal Inserts.

The Mat sections are joined with Mat Splices. There are special tools available for easy removal and replacement of the Splices.

Type 'A' is for use with Air Power. (Part No. KD89999).

Type 'B' is for use with a hand tool. (Part No. KD90000).

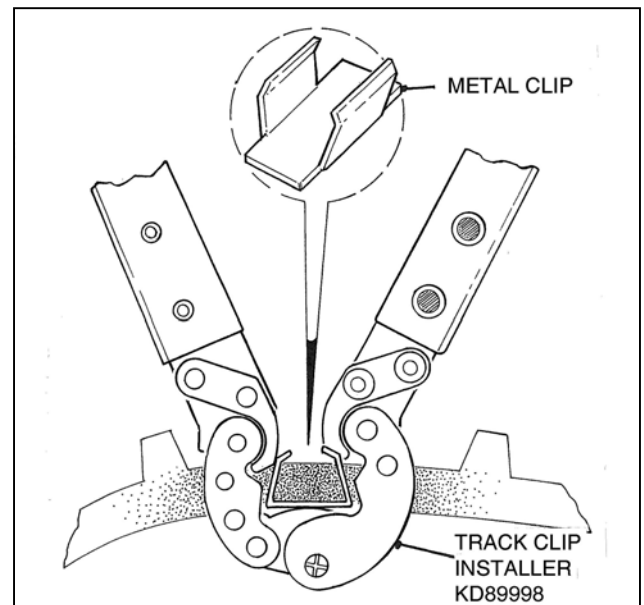
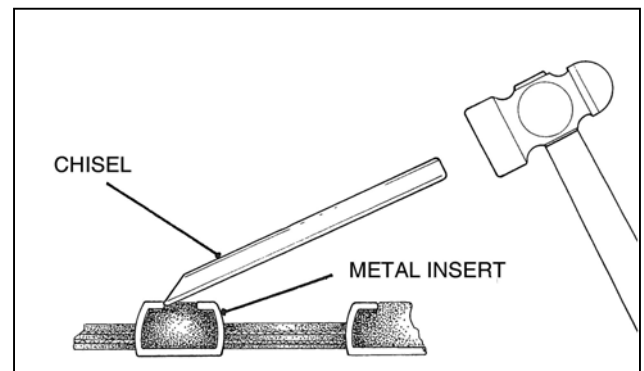
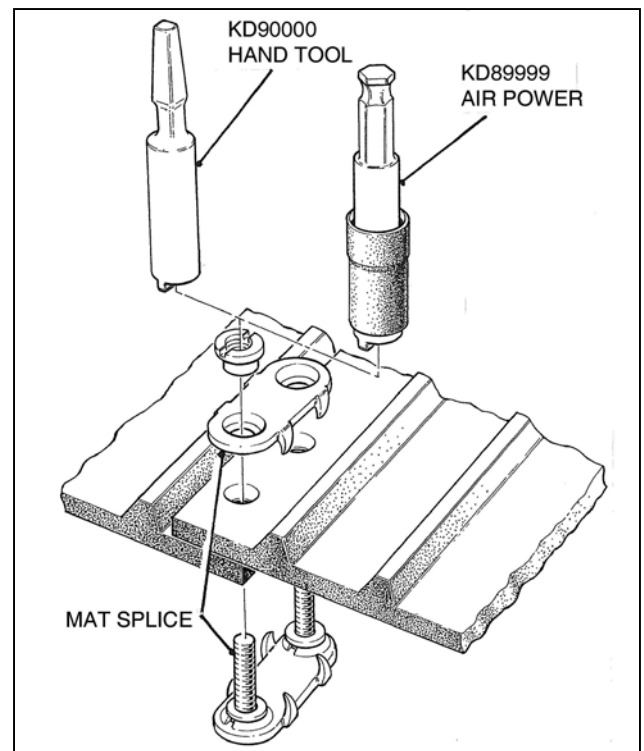
These special tools speed-up the removal and replacement of the Mat Splices.

The Sprocket Slots in the mat have Metal Inserts in them. If they need to be removed, use a chisel or similar tool to open them up for removal.

For a fast safe method of installing Metal Mat Clips, the Track Clip Installer Tool is available. (Part No. KD89998). This tool can be used only on 16 and 18 inch Mats.

### NOTE

On 24 inch Mats the mat slots are smaller, and a smaller Clip is used.  
To install the clips, fit them into the mat and 'hammer' them closed.



## ADJUSTMENTS

### MINTEX METAL MAT.

There are no replacement parts in the Metal Mat.  
Replace as a complete assembly.

#### IMPORTANT

To improve the service life of the Metal Mat, and the Sprockets, correct alignment is essential. Care must be taken to ensure that the Drive Shaft and Idler Assemblies are correctly aligned, parallel to each other, and square to the Conveyor Frame.

To remove the Metal Mat:

- Release the Idler Tension Springs. ( Same as Rubber Mat, see page 3-14).
- Locate and remove the Mat Connector 'A'.
- Lift the Mat off the Sprockets and remove it from the frame.

Reverse the procedure to install a new Mat.

The Mat **must be installed so that:**

- The formed links point opposite to the direction of mat travel.
- The Drive Sprockets 'B', 'push' against the Mat Cross Rods 'C'.
- The Idler Sprockets, are 'pushed' by the Cross Rods.

**When installing new Drive Sprockets:**

- Slide the Sprockets onto the Shafts and Keys, with the Set Screws 'loose'.
- Fit the Mat with the Sprockets spaced evenly, and positioned so that the teeth are 'centered' in the mat mesh, then tighten the Set Screws.

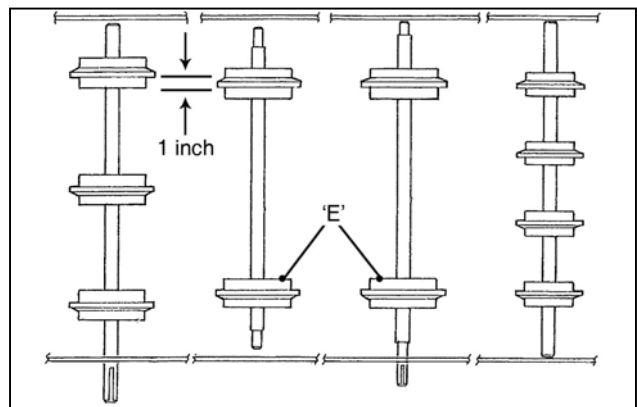
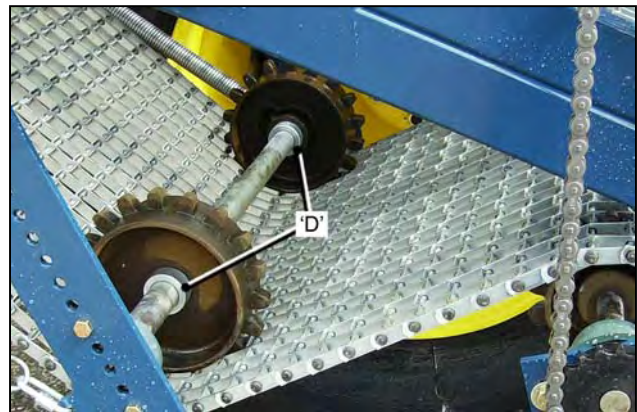
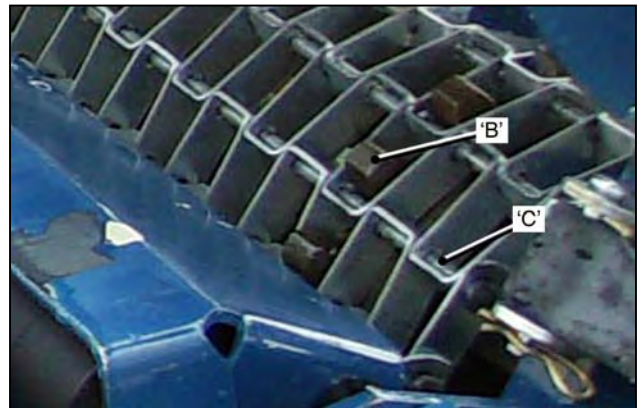
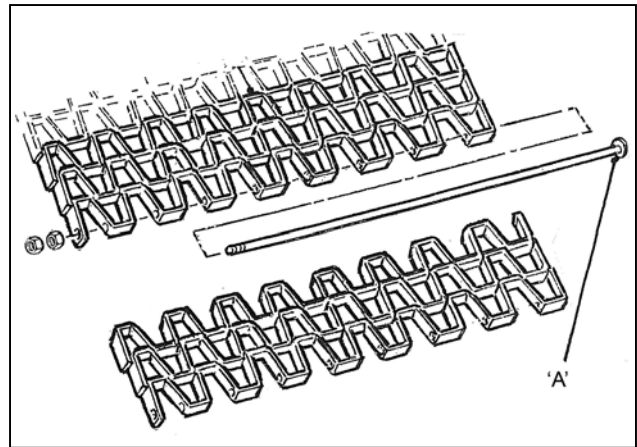
**If installing new Mat Tension/Idler Sprockets:**

- Bolt the Idler Shaft and new Sprockets into place, with the Sprocket Lock Collars 'D', 'Loose'.
- Position the Sprockets evenly and 'centered' in the mat mesh.
- To ensure that the Idler Sprockets 'E', are 'driven' by the Cross Rods, in particular the 4 inch Roller Drive Sprockets, they must be positioned 1 inch inboard of the Driving Sprockets.

#### NOTE

It is possible that the Metal Mat may 'stretch', sufficient to require it to be shortened. It may be damaged by stones, or sticks, and need damaged links removing or replacing.

- Remove the Mat Connector.
- To remove Mat Links, grind one end off the Cross Rods, from the number of links being removed.
- Reconnect the Mat with the Mat Connector.



## CONVEYOR MAT SLIDERS.

The Mat Sliders are made from UHMW Polyethylene, and do not require lubrication or maintenance.

They have excellent service life, but should be checked periodically for wear, particularly at the top and bottom ends of the conveyor. Badly worn Sliders will result in damage to the mat.

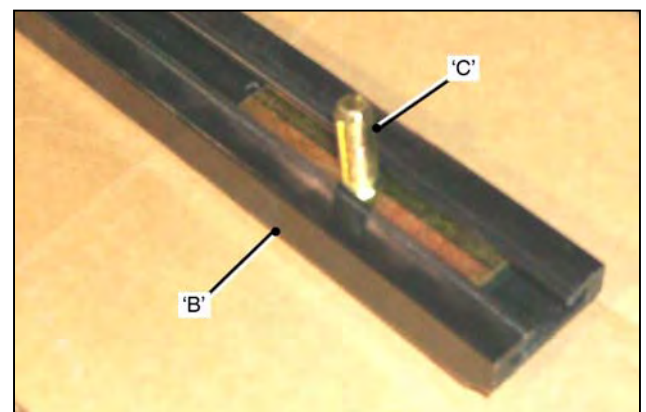
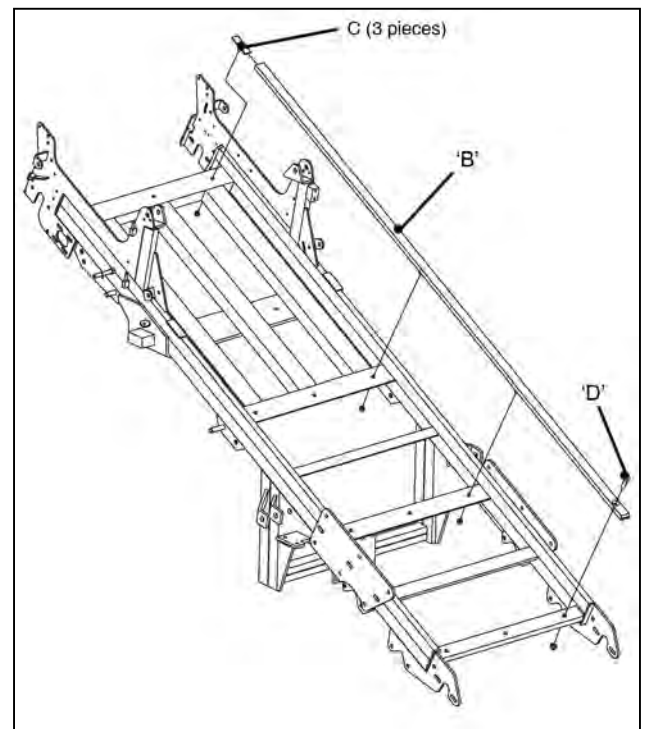
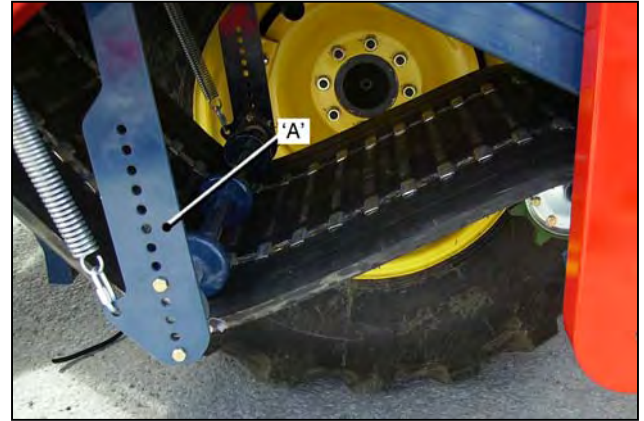
The over-all thickness of the Sliders is not the wear thickness. The 'T' Bolt slot reduces the thickness to 3/8 inch.

### To replace the Sliders:

- Release the Mat Tension Idler 'A'.
- Raise and support the Mat, as high as possible, clear of the Sliders 'B'.
- Remove the Locknuts from the 'T' Bolts 'C', and Socket Cap Screws 'D', that fasten the Sliders to the Conveyor Frame, and lift the Sliders out of the Frame.
- Fit three 'T' Bolts into each new Slider, and install them onto the Conveyor Frame. Fit the Socket Cap Screws.
- Fit the Locknuts. Tighten them until they are just 'snug'. This will allow the Sliders to shrink or expand with changes in temperature or humidity. If they are too tight the Sliders may 'buckle'.

### NOTE

The 24 inch Conveyor has three Sliders. To prevent the possibility of 'tapered' rolls it is recommended that they are replaced as a set.



## ADJUSTMENTS. Control Levers. Adjustable Stops.

### Conveyor Lift Arm Lever.

**To increase the Cutter Head 'lift' speed:**

- Turn the Adjusting Nut 'A', toward the Spool Valve.

**To decrease the Cutter Head 'lift' speed:**

- Turn the Adjusting Nut 'A', away from the Spool Valve.

**To increase the Cutter Head 'lower' speed:**

- Turn the Adjusting Nut 'B', away from the Spool Valve.

**To decrease the Cutter Head 'lift' speed:**

- Turn the Adjusting Nut 'B', toward the Spool Valve.

### Depth Control Lever.

**To increase the Roller 'lower' speed:** (Less control when setting thinner sod).

- Turn the Adjusting Nut 'C', toward the Spool Valve.

**To decrease the Roller 'lower' speed:** (More control when setting thinner sod).

- Turn the Adjusting Nut 'C', away from the Spool Valve.

**To decrease the Roller 'lift' speed:** (more control when setting thicker sod).

- Turn the Adjusting Nut 'D', toward the spool valve.

**To increase the Roller 'lift' speed:** (Less control when setting thicker sod).

- Turn the Adjusting Nut 'D', away from the Spool Valve.

### Manual Conveyor 'Over-ride' Lever.

**To run all Conveyors 'faster', during over-ride:**

- Turn Adjusting Nut 'E', toward the Spool Valve.

**To run all Conveyors 'slower', during over-ride:**

- Turn Adjusting Nut 'E', away from the Spool Valve.

**To run Roll-Up Conveyor 'slower' during over-ride:**

- Turn Adjusting Nut 'F', toward the Spool Valve

**To run Roll-Up Conveyor 'faster', during over-ride:**

- Turn Adjusting Nut 'F', away from the Spool Valve.

### Roll-Up Conveyor – Swing and Dump.

**To increase the Swing Out and Dump speed:**

- Turn Adjusting Nut 'G', toward the Spool Valve.

**To decrease the Swing Out and Dump speed:**

- Turn Adjusting Nut 'G' away from the Spool Valve.

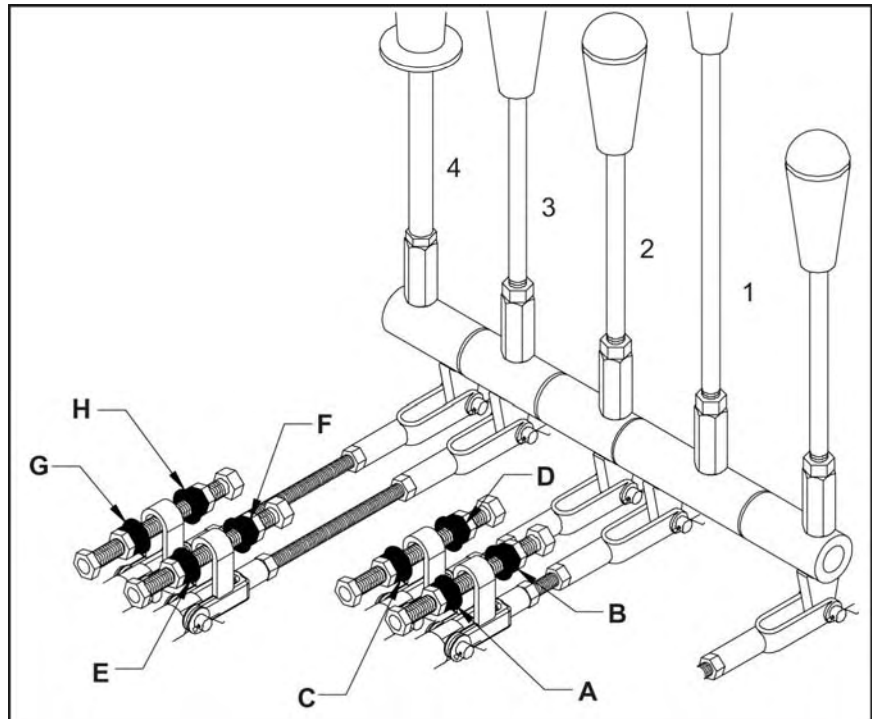
**To slow the Roll-Up Conveyor 'return and position' :**

- Adjust Nut 'H', toward the Spool valve.

**To speed-up the Roll-Up Conveyor 'return and position':**

- Adjust Nut 'H', away from the Spool Valve.

1. Conveyor Lift.
2. Depth Control.
3. Conveyor Manual Over-Ride.
4. Roll-Up Conveyor



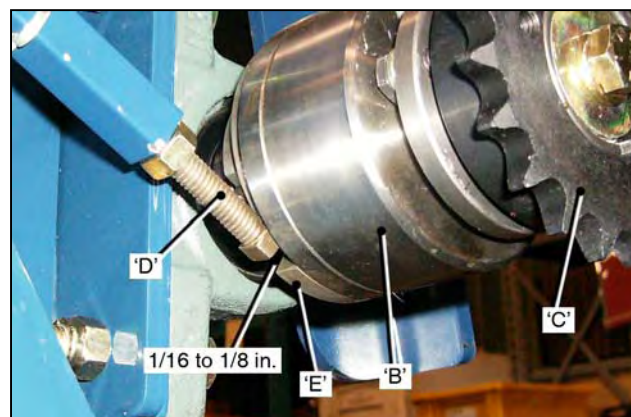
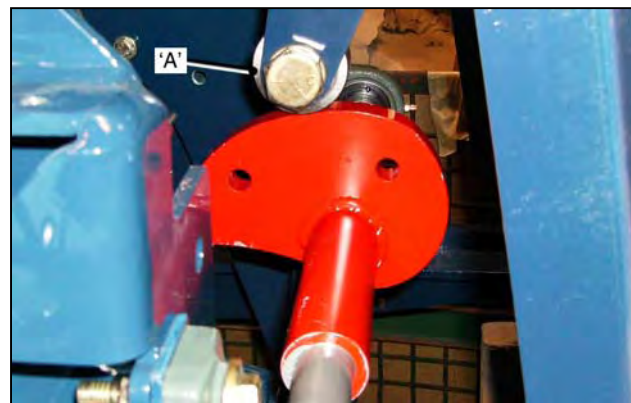


## Cut-Off Clutch and Cut-Off Solenoid.

### Cut-Off Clutch

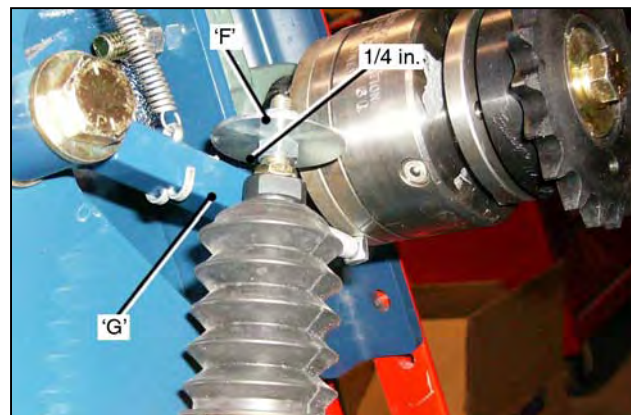
- Rotate the Cut-Off Cam to position the Roller Bearing 'A', in the 'indent' on the back of the Cam. The Blade will be off the ground, in the 'home' position, ready for the next cut-off stroke.
- Remove the Cut-Off Drive Chain. The Clutch 'B', will now be disengaged, and the Sprocket 'C', should turn 'freely' in both directions.
- Adjustment is made with the Stop Lever Adjusting Screw 'D', that engages the Clutch Cam Ring 'E'.
- If the Clutch does not let the Cam Ring rotate sufficient to allow the Roller Bearing to locate in the Cam 'indent', the Adjusting Screw 'D', must be 'shortened'.
- If there is 'drag' on the Clutch, or it engages and disengages while cutting the next roll, the Adjusting Screw 'D', must be 'lengthened'.

When correctly adjusted, the Cam Ring 'E', should be able to be rotated 1/16 to 1/8 in. away from the head of the Stop Lever Screw 'D'.



### Cut-Off Solenoid.0

When the Solenoid is activated the Large Washer 'F', pulls down the Stop Lever 'G', this engages the Clutch, rotating the Cut-Off Camshaft. There should be 1/4 in. clearance between the Washer and the Stop Lever.0

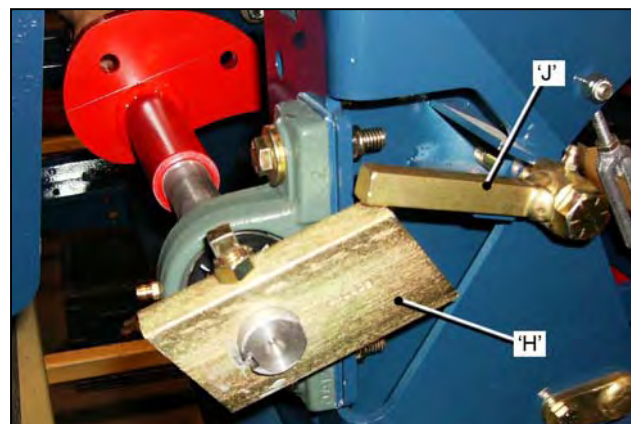


### Stop Return Cam and Return Cam Stop.

The Stop Return Cam 'H', and Return Cam Stop 'J', provide a uniform cut length of the first piece of sod. When the Stop Return Cam reaches the correct position, it is engaged by the Return Cam Stop. This indicates the end of the cut, and prevents spring pressure on the Cut-Off Frame from rotating the Camshaft backwards.

#### NOTE

The Stop Return Cam part number is: 001802.



## ADJUSTMENTS

### Cut-Off Clutch – Service.

The Cut-Off Clutch should be cleaned checked and lubricated, every 50 to 100 hours, depending on the operating conditions.

#### With the Chain Guard and Drive Chain removed:

- Remove the 3/8 x 1 in.Gr.8 Bolt 'A', and Washer.
- Rotate the Cam Ring 'B', to release the Clutch, and slide the Sprocket and Drum Assembly 'C', off the Cam Shaft.
- Thoroughly clean the assembly with penetrating oil. **Do not use water or solvents.**
- Inspect the inside of the Drum for scoring, and the Clutch Rollers 'D', for wear or damage.

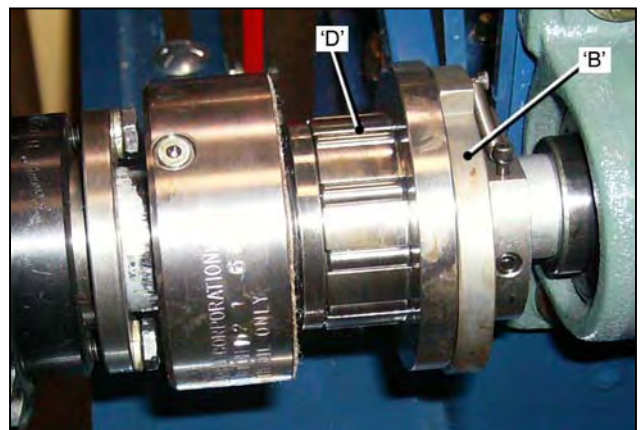
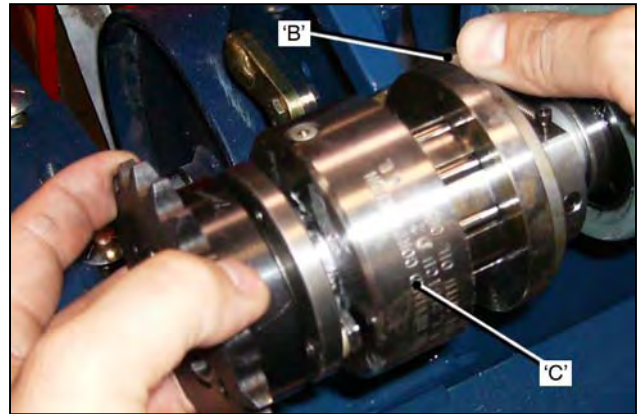
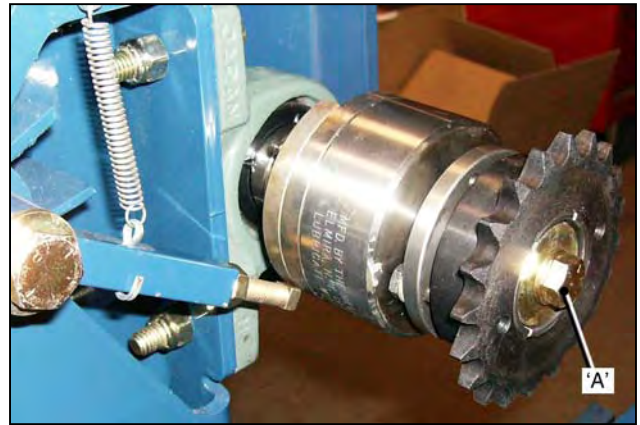
#### NOTE

If a new Clutch Assembly is fitted, remove the Sprocket and Taper Lock, from the worn Clutch, for re-use.

- Lubricate the assembly liberally with penetrating oil. **Do not use heavy oil or grease**, these will cause the clutch to slip.

#### Re-assemble in the reverse order.

- Ensure that the Clutch Cam Ring 'B', is 'free' and it returns completely to the engaged position. Spray liberally with penetrating oil.
- Fit the Drive Chain, set the chain tension allow 1/4 to 3/8 in. deflection, midway between the Sprockets. Refit Chain Guard.





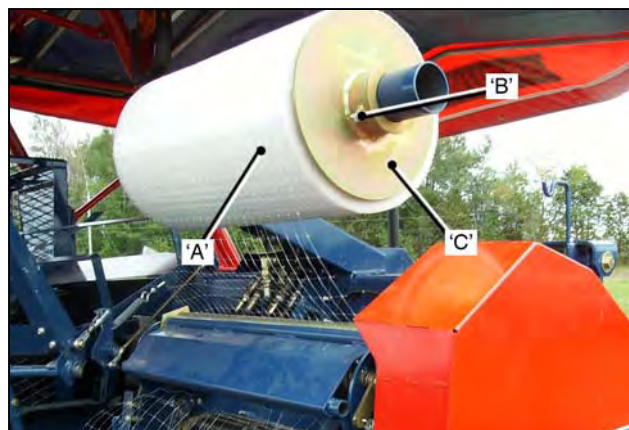
## Top Netting.

### Top Netting Reel.

The Top Netting Reel 'A', must rotate freely on its spindle, if not, the netting will tear as the sod roll tries to pull it off the reel.

To install a new netting reel :

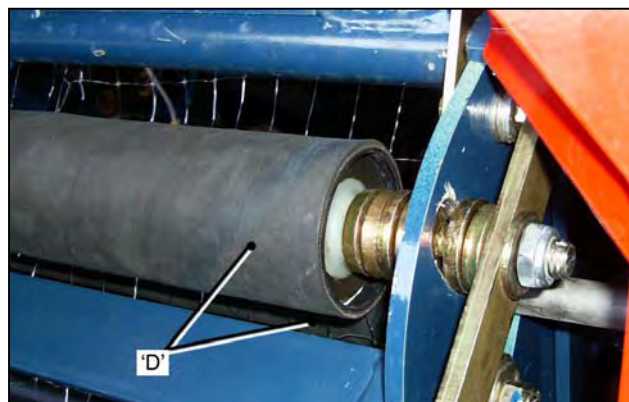
- Loosen the Lock-bolt 'B', remove the outer Netting Retainer 'C', slide the new netting reel onto the spindle, fit the Netting Retainer and tighten the Lock-bolt.



### Top Netting Rollers.

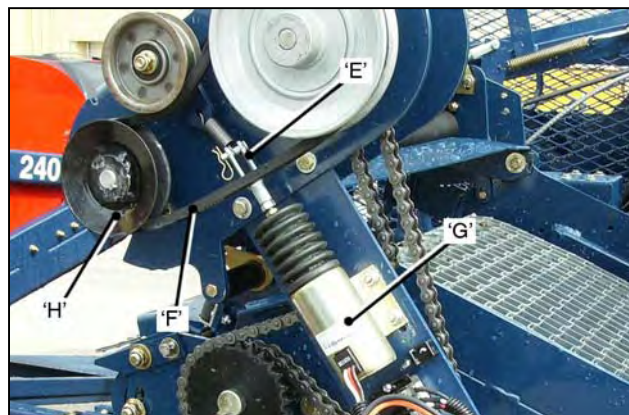
The Top Netting Rollers 'D', must rotate easily 'by hand' to allow the netting to feed onto the turf roll, when the Solenoid is **not activated**.

Initially the netting must be manually inserted into the rollers.



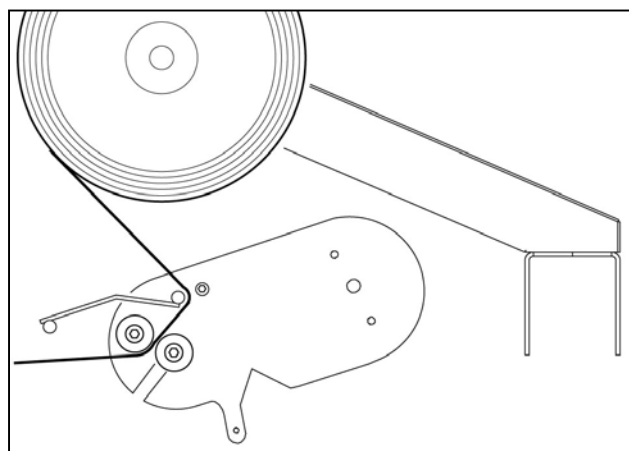
### Top Netting Roller Drive Solenoid.

- Adjust the Yoke 'E', so that the Drive Belt 'F', is tightened when the Solenoid 'G' is activated. This drives the Roller Shaft Pulley 'H'.
- To allow the Rollers to turn freely, and the netting to feed easily onto the roll of turf, the Belt **must be slack** when the Solenoid is de-activated.



### Top Netting Feed Path.

Before operating, the netting must be manually fed through the Rollers as illustrated.

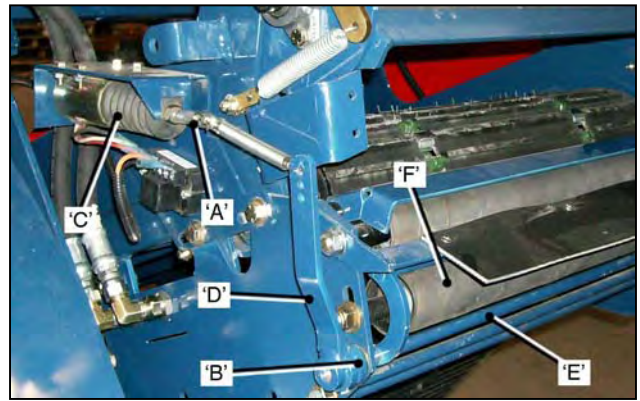


## ADJUSTMENTS

### Lower Netting.

#### Lower Netting Clamp Solenoid.

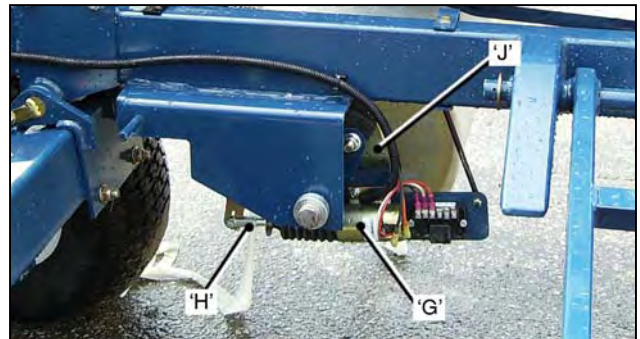
- The Solenoid Yoke 'A', is adjusted to allow free play in the clamp mechanism 'B'.
- When the Solenoid 'C', is activated the Lever 'D', is pulled forward, and the Clamp Bar 'E', clamps the netting against the Roller 'F'.



#### Lower Netting Brake.

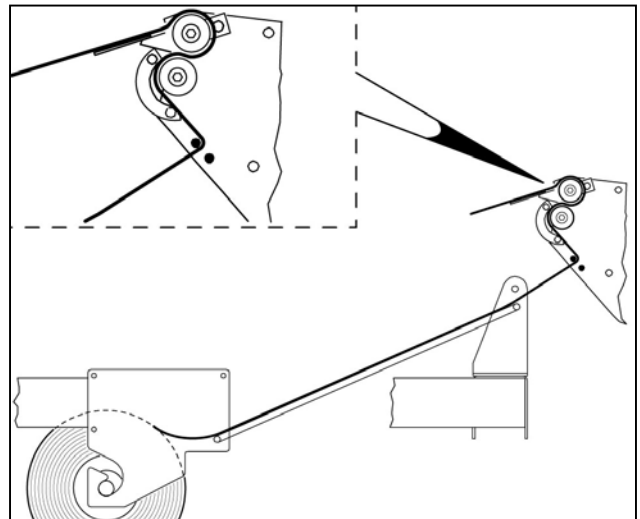
- The Lower Netting Brake Solenoid 'G', activates at the same time as the above Clamp Solenoid.
- The Solenoid Yoke 'H', is adjusted so that there is minimum free-play in the linkage, and no 'drag' on the Brake 'J', when the solenoid is **de-activated**.

When both Solenoids are activated, the Netting Clamp and the Brake are 'On', the Roll-Up Unit will swing around and cut the netting.



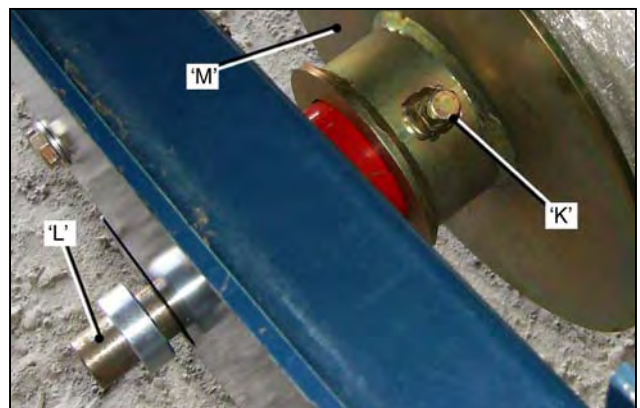
#### Lower Netting Feed Path.

Before operating, the netting must be manually fed through the Rollers as illustrated.



#### Installing new Lower Reel of Netting.

- Loosen the Lock-bolt 'K'.
- Lift the Reel Shaft 'L', out of the frame and carefully lower it, sufficient to allow the Netting Retainer 'M', to be removed.
- Install the new reel of netting onto the Shaft, refit the Netting Retainer, tighten the Lock-bolt. Lift the Shaft back into the frame.





SECTION 4

General Information.	4-01
Lubrication Charts.	4-02/4-03



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### IMPORTANT

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It is important that the recommended lubrication schedule is followed. To do so ensures a longer working life of the machine, improved reliability and reduced operating cost.

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**Sleeve Type Bearings, Bushings and Wear Points**, such as those listed below, should be greased daily to flush out dirt and contaminants, to ensure sufficient clean lubrication.

- Idler Arms.
- Pivot Points.
- Cut-Off Blade Frame Shaft.
- Cut-Off Blade Support Shaft.
- RollMax Conveyor Pivot Points.
- RollMax Frame Pivot Points.

**Sealed Type Bearings**, should be greased sparingly every 150 hours of operation, this period should be reduced when operating in sandy, abrasive, environments.

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### IMPORTANT

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To avoid damage to the bearing seals, do not grease excessively.

---

#### Locations of Sealed Type Bearings :

- Crankshaft.
- 8 inch Roller.
- Conveyor Drive Shaft.
- Conveyor Idler Shaft.
- RollMax Conveyor Shafts.
- Cut-Off Cam Shaft.
- Cutter Drive Shaft.

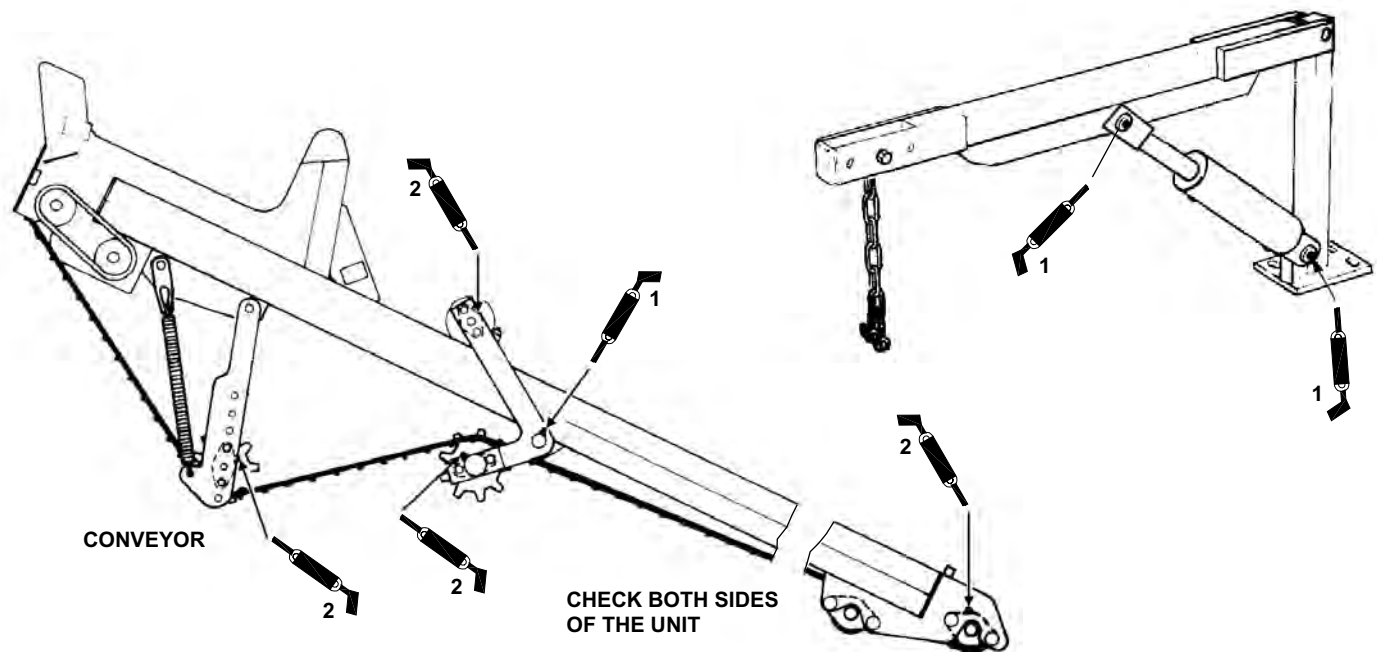
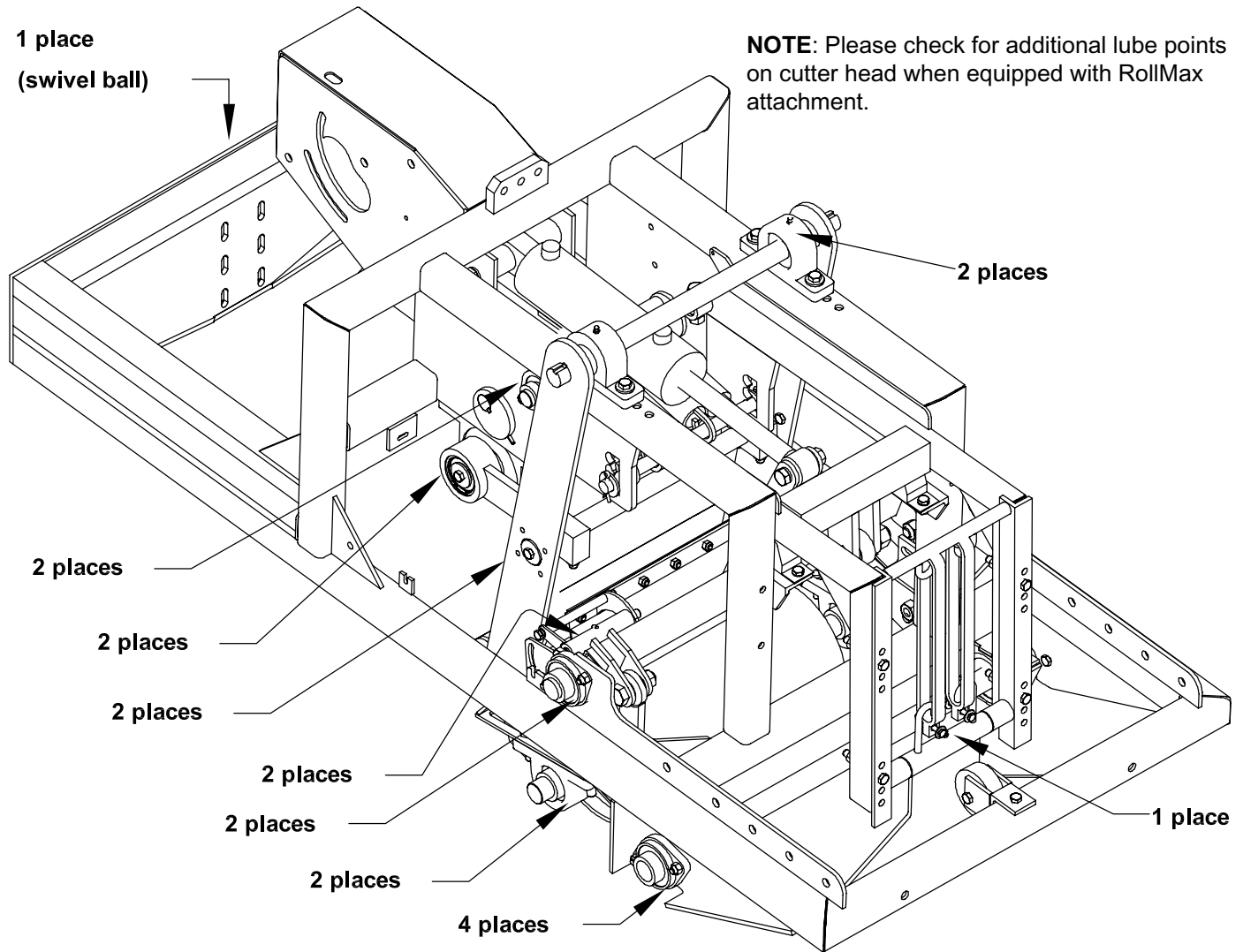
#### Roller Chains.

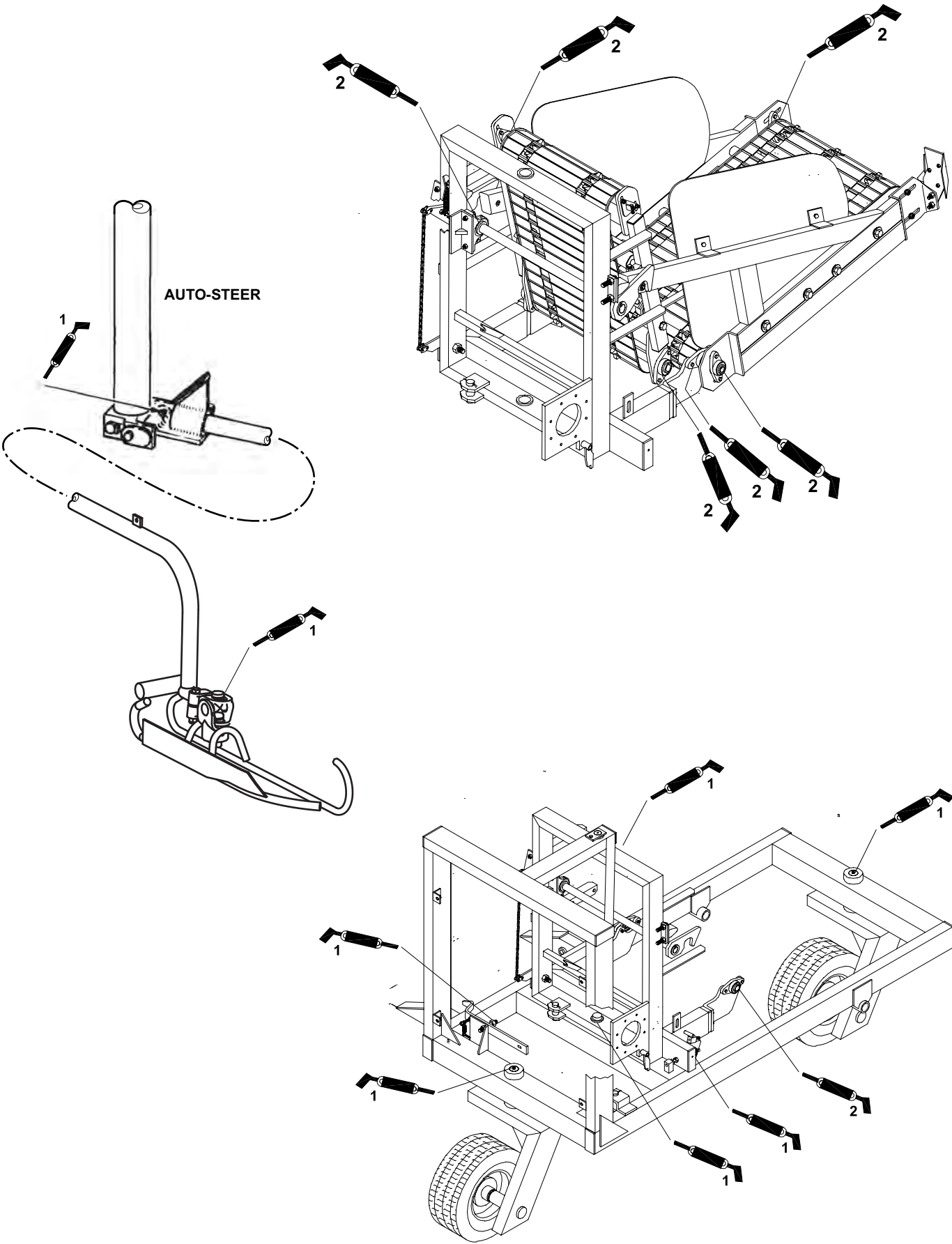
- Oil Roller Chains Daily. **Do not use grease.**

See following pages for lubrication charts.

# LUBRICATION

## CUTTER HEAD LUBE POINTS









## **SECTION 5**

Cutting Starting Strip.	5-01
Cam and Roller Arm Set-Up.	5-02
Sensor Valve Stop Pin and Roller Arm setting.	5-02
Actuator Spring Column, Spring Tension setting.	5-03
Shoe Arm Adjustment.	5-03
Fine Adjust Control adjustment.	5-03
Fine Adjust Cable Arm setting.	5-04
Guide Shoe Adjustment.	5-04
Tracking Adjustment.	5-04
Sensitivity Adjustment.	5-05



## Auto-Steer Operation.

When the Auto-Steer System has been initially set-up, ready to start harvesting, it is important that the **final set-up** is done, and a 'Starting Strip of turf is cut, as follows.

The Auto-Steer Guide Shoe 'A', must be set relative to the ground by loosening the Bolt 'B', and turning the Shoe on the Shoe Arm until the inner edge of the Shoe is  $\frac{1}{4}$  inch from the ground.

A 'Starting Strip' of turf must be cut with '**manual steering**', this creates the turf 'edge' that the Guide Shoe must follow.

- Start the tractor and set the engine RPM at 1400. Engage 1<sup>st</sup> Gear, the tractor will move forward.
- Push the Cutter Head Lever 'B', 'forward', to lower the Cutter Head.
- Using manual steering and proceed to cut the starting strip.

### IMPORTANT

The starting strip **must be cut straight** to ensure the correct operation of the Auto-Steer.

When the Starting Strip has been cut :

- Position the Harvester parallel to the Starting Strip, with the Side Blade aligned to the cut edge of the turf.
- Engage the Auto-Steer with Control Lever 'C'.



### CAUTION

To avoid accidents or injuries, the Auto-Steer must be **engaged only when harvesting**.

### NOTE

If the Guide Shoe lowers onto the 'uncut' turf, when the Auto-Steer is engaged, disengage the Auto-Steer, the Re-set Cylinder will lift the Guide Shoe off the uncut turf. Engage the Auto-Steer again, to correctly position the Guide Shoe.

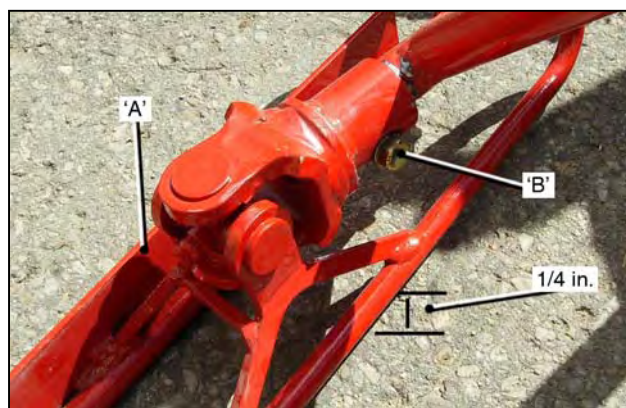
To continue cutting :

- Select 1<sup>st</sup> Gear, set the engine RPM to 1400.
- Lower the Cutter Head, Control Lever 'B'.
- Continue cutting the second strip, using the Fine Adjust Control 'D', to trim the waste strip. Each revolution of the Control Knob gives approximately  $\frac{1}{4}$  inch of Guide Shoe lateral movement.

If the Auto-Steer works satisfactorily but the Fine Adjust Control Cable has run out of adjustment, the cable should be re-set.

### NOTE

If a problem with the Auto-Steer should arise during harvesting, it must be re-set as shown on the following pages.

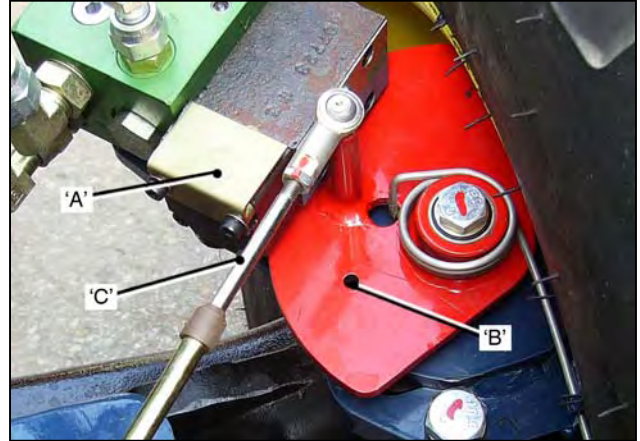


# AUTO-STEER

The following is the recommended procedure for setting up the Auto-Steer :

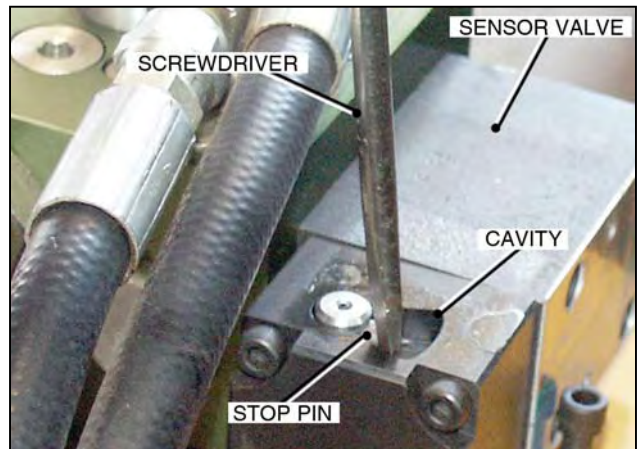
## Cam and Roller Arm Set-up.

- Position the harvester 'ready to cut'. With the Auto-Steer '**OFF**'.
- Cut a strip of turf for a minimum distance of 20 feet. **It must be cut straight.**
- Stop the harvester.
- It will be parallel to the 'cut edge', with the steering wheels 'straight ahead', and the Cutter Head 'down'.
- Remove two 5x40 mm Socket Head Screws from the Sensor Valve End Plate, and remove the End Plate Cover '**A**', complete with rubber seal.
- Swing the Guide Shoe 'left' to 'right' until the ¼ inch holes in the Cam '**B**', and the Support Plate, line-up.
- Insert a ¼ inch bolt through the holes to lock the Cam in position.
- Adjust the Cable '**C**', to the 'mid-point' of its stroke travel, and lock it in this position



## Sensor Valve Stop Pin and Roller Arm setting.

- Back-off the clamp Set Screw in the Roller Arm. (Bottom Illustration).
- Use a 'flat blade' screwdriver to turn the Stop Pin to **its 'mid point' of travel in the cavity**, and hold it in this position.
- The Sensor Valve Internal Spool will now be in the '**NEUTRAL**' position.
- Adjust the Roller Arm 'up' or 'down', until there is maximum surface contact between the Roller and the Cam.
- Push the Roller Arm until the Roller is 'hard' against the Cam. Check that the Roller Arm is fully engaged on the knurled portion of the shaft.
- Tighten the Set Screw.

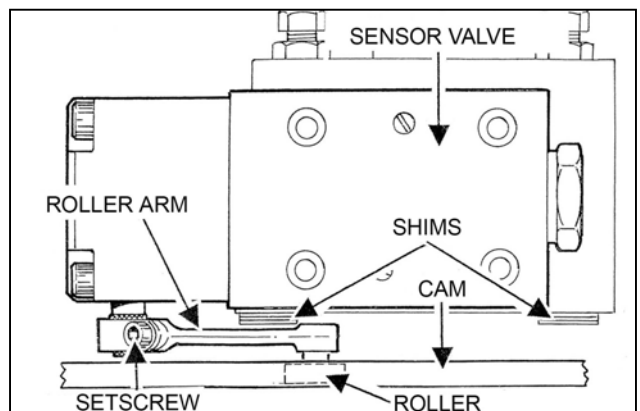


### IMPORTANT

The ¼ inch bolt must be removed from the Cam before operating. Failure to do so will result in damage to the Auto-Steer System.

### Also

Before replacing the End Plate Cover, complete with the rubber seal, fill the cavity around the Stop Pin with 'white grease', this prevents corrosion forming on the Shaft, causing it to 'stick', affecting the Auto-Steer operation.





## Actuator Spring Column. Spring Tension Adjustment.



### CAUTION

The Top Lever is under heavy spring tension. Exercise care when releasing the spring tension, or when removing the Cable Clevis End from the Top Lever Arm.

- Position the Guide Shoe against the cut edge of the turf:
- Remove Clevis End 'A', from Top Lever Arm 'B'.
- Loosen the Shoe Arm Clamp Bolt 'C'.

As the tension releases, the Top Lever Arm should rotate 'clockwise' 90 to 95 degrees.(parallel to the Spring Column Support Arm), If it releases less than specified, re-set it by :

- Loosening the Clamp Bolt 'D', and turning the Lever Arm to the required position.
- Re-tighten the Clamp Bolt.
- Fit a suitable wrench on the Lever Arm 'B' and rotate the Lever Arm back, against spring pressure, sufficient to re-attach the Clevis End.

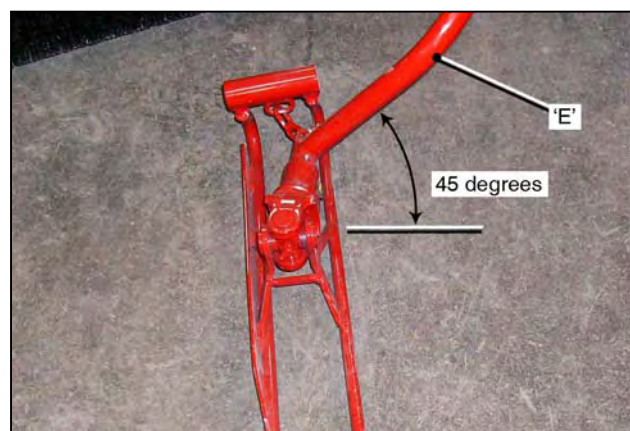


## Shoe Arm Adjustment.

The Guide Shoe Arm 'E', should be approximately at a 45 degree angle to the ground.

### To set the correct angle ;

- Loosen two Clamp Bolts 'F', in the Mounting Pivot.
- Rotate the Shoe Arm 'E', to the correct angle.
- Re-tighten the Clamp Bolts.



### IMPORTANT

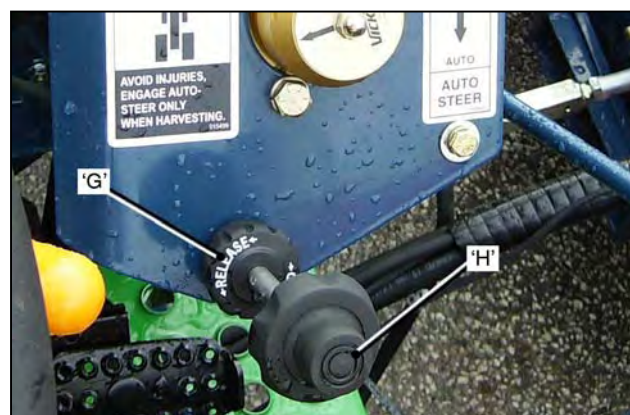
The Guide Shoe Lift Chain should be adjusted to allow the Guide Shoe approximately 2 inches of travel on each side of the cut edge of the turf.

## Fine Adjust Control.

As noted on page 5-1, the Fine Adjust Control allows the operator to trim the waste strip. The Fine Adjust cable must be set-up as follows :

### Set the Fine Adjust Control to its 'Mid-Point' by ;

- Release the Control Lock 'G'.
- Press the End Button 'H', and slide the Control Knob 'IN' or 'OUT', to find the Mid-Point of travel.
- Tighten the Control Lock.



Continued on page 5-04

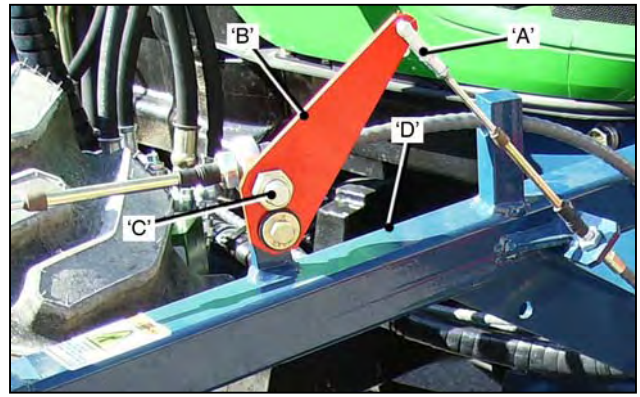
# AUTO-STEER

## Fine Adjust Control.

### Cable Arm Adjustment.

When the Fine Adjust Control has been set at its mid-point of travel, the Cable Arm must be correctly set-up:

- Remove the Clevis End 'A', from the Cable Pivot Arm 'B'.
- Rotate the Pivot Arm so that the Pivots 'C', are perpendicular to the Support Frame 'D'.
- Adjust the Clevis End 'A', to align with the hole in the Pivot Arm. Fit the Clevis Pin and Cotter Pin, and tighten the Clevis End Lock-nut.



### Guide Shoe Adjustment.

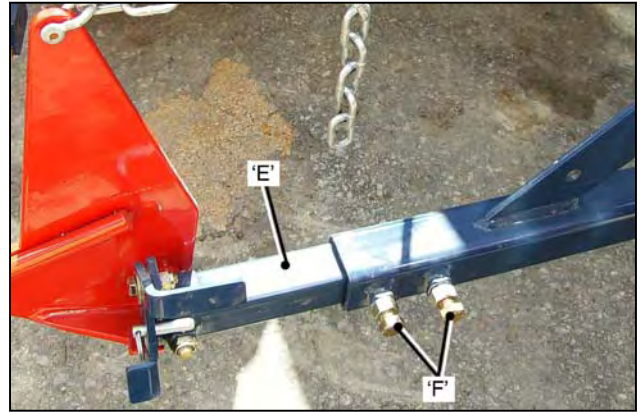
The Guide Shoe Adjuster 'E', determines where the Guide Shoe will 'drop' on the ground, when the Auto-Steer is activated.

For most harvesting conditions it is set to position the Shoe 1 to 2 inches away from the 'cut edge'.

If adjustment is required :

- To move the Guide Shoe '**away**' from the cut edge, loosen the Locknut and Bolt 'F', and slide the Adjuster Tube 'IN'.
- To move the Guide Shoe '**closer**' to the 'cut edge', Slide the Adjuster Tube '**OUT**'.

After adjustment, **tighten the Bolt and Locknut.**



### Tracking Adjustment.

The recommended method of setting the Tracking is :

- Position the harvester 'ready to cut'.
- With the Auto-Steer '**OFF**', cut a strip of turf, for a minimum distance of 20 feet. **It must be cut straight.**

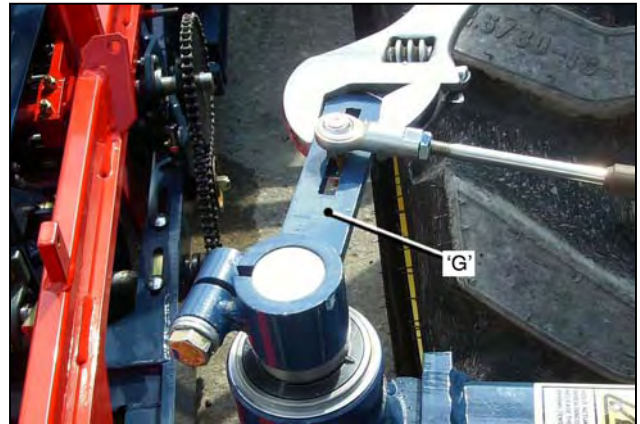
The harvester will be parallel to the cut edge, the steering wheels 'straight ahead', and the Cutter Head '**down**'.

- Engage the Auto-Steer, the Guide Shoe will 'drop'.
- Set the Fine Adjust Control to its Mid-Point as shown on page 5-3.
- Position the Guide Shoe against the 'cut-edge' of the turf.
- Fit a wrench on the Lever Arm 'G'.
- With the wrench, turn the Lever Arm to rotate the Cam until the ¼ inch hole in the Cam 'H', lines up with the hole in the support plate.
- Insert a ¼ inch bolt in the holes to lock the Cam in place.

The Sensor Valve will now be in the '**NEUTRAL**' position.

To prevent the Lever Arm from rotating, use the wrench to hold firmly it against spring pressure and proceed to :

- Loosen the Shoe Arm Clamp Bolt (see 'C', page 5-3), and move the Guide Shoe until it is firmly against the 'cut edge'.
- Tighten the Clamp Bolt.



### IMPORTANT

Before operating the Auto-Steer the ¼ inch bolt must be removed from the Cam. Failure to do so will result in damage to the Auto-Steer mechanism



### Sensitivity Adjustment.

On initial Set-up the Sensitivity Cable Rod End 'A', is positioned 'midway' in the slot in the Lever Arm 'B'.

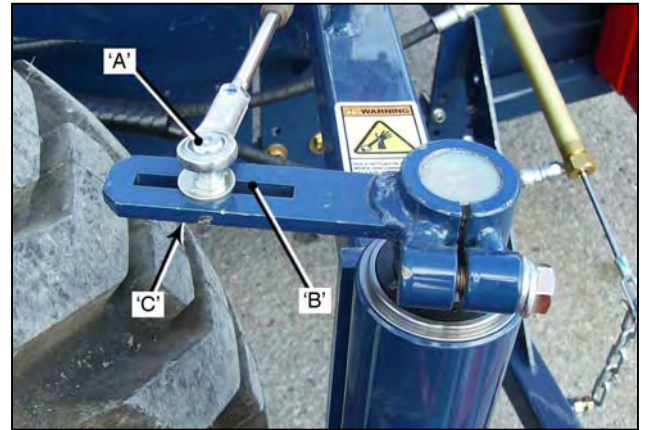
To **increase** the sensitivity, (faster response):

- Loosen the Rod End Locknut 'C'. and move the Rod End toward the end of the Lever Arm.

To **decrease** the sensitivity, (slower response):

- Move the Rod End toward the Spring Column.

After adjustment, tighten the Rod End Locknut.





**SECTION 6**

Electrical Control Box  
Electrical Schematic

6-01  
6-02/6-06



**Main Electrical Control Box**

Fig.6-01

Main Electrical Control Box. Internal Wiring Connections and Components.

**Relays**

1. Net Start
2. Net Clamp
3. Cut-Off
4. Clutch
5. Tube Up
6. Tube Down
7. Flasher
8. Canopy
9. Seat Switch
10. Start
11. Fuel

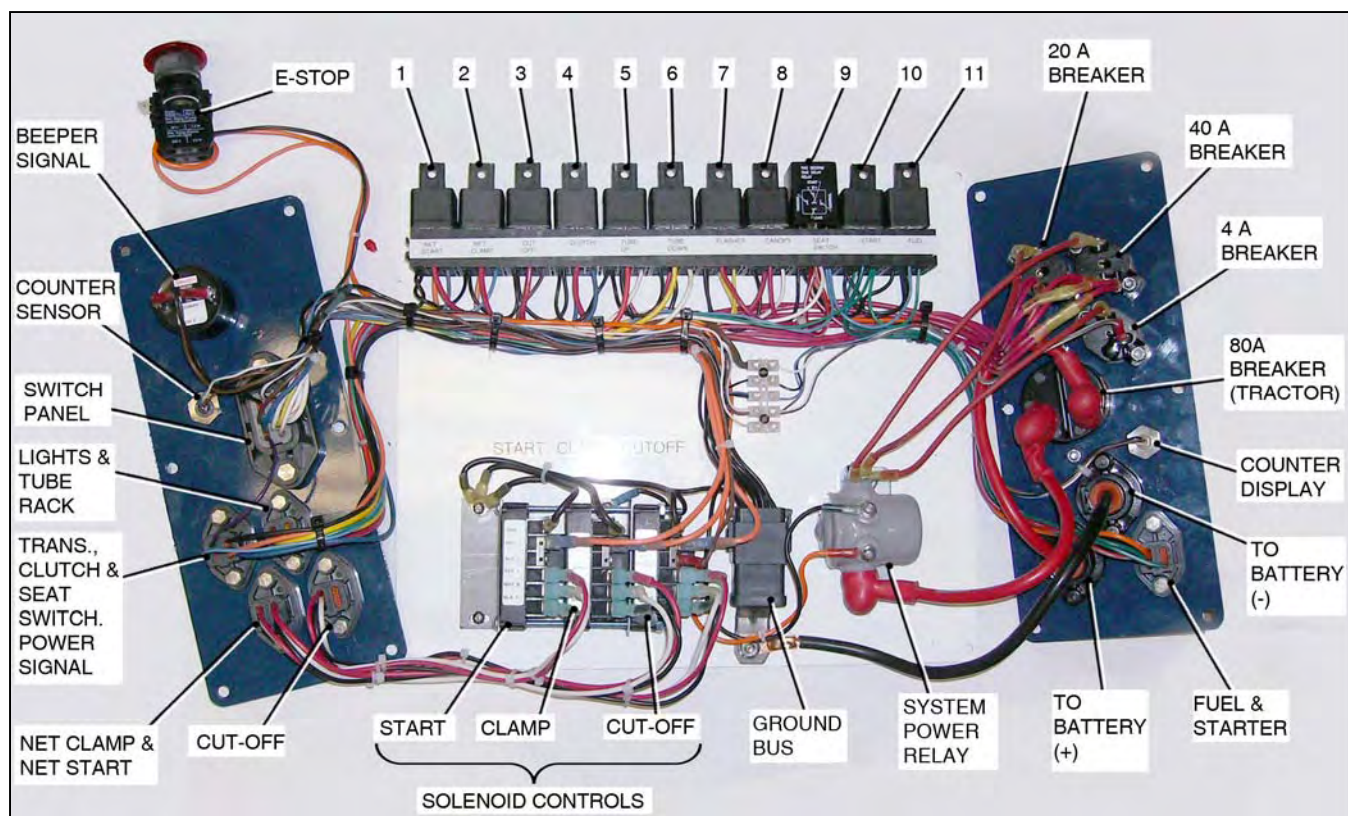
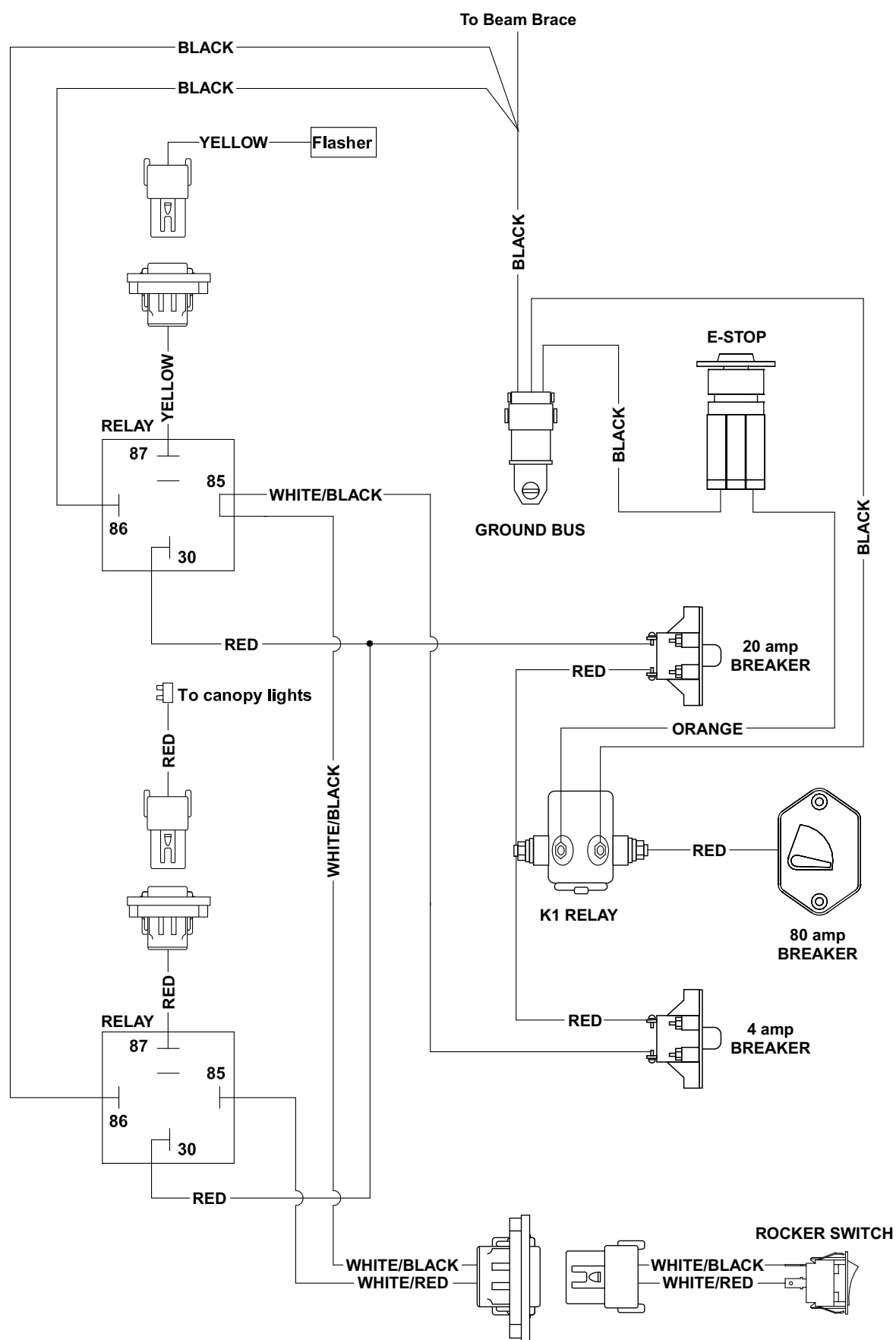


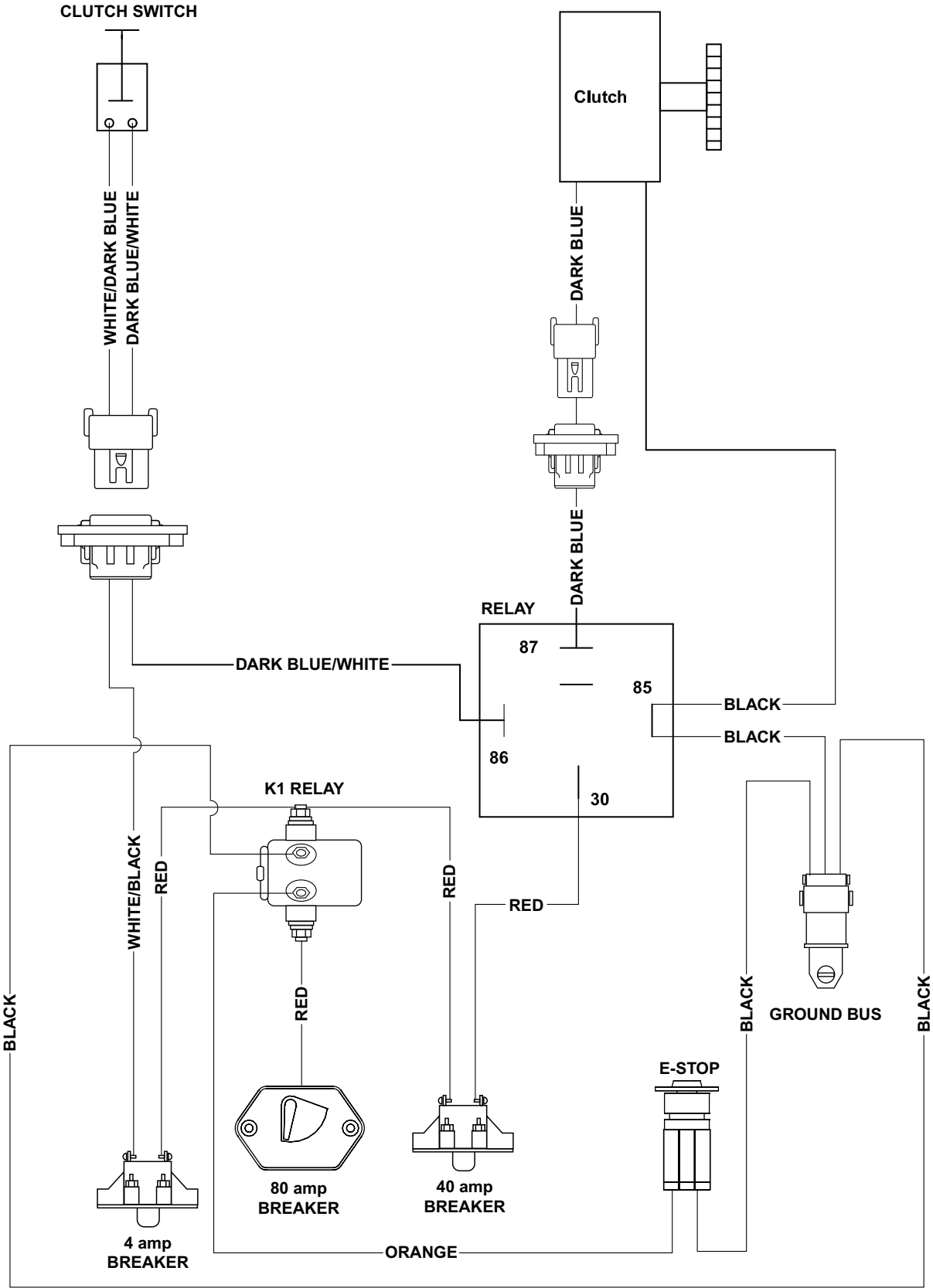
Fig. 6-01

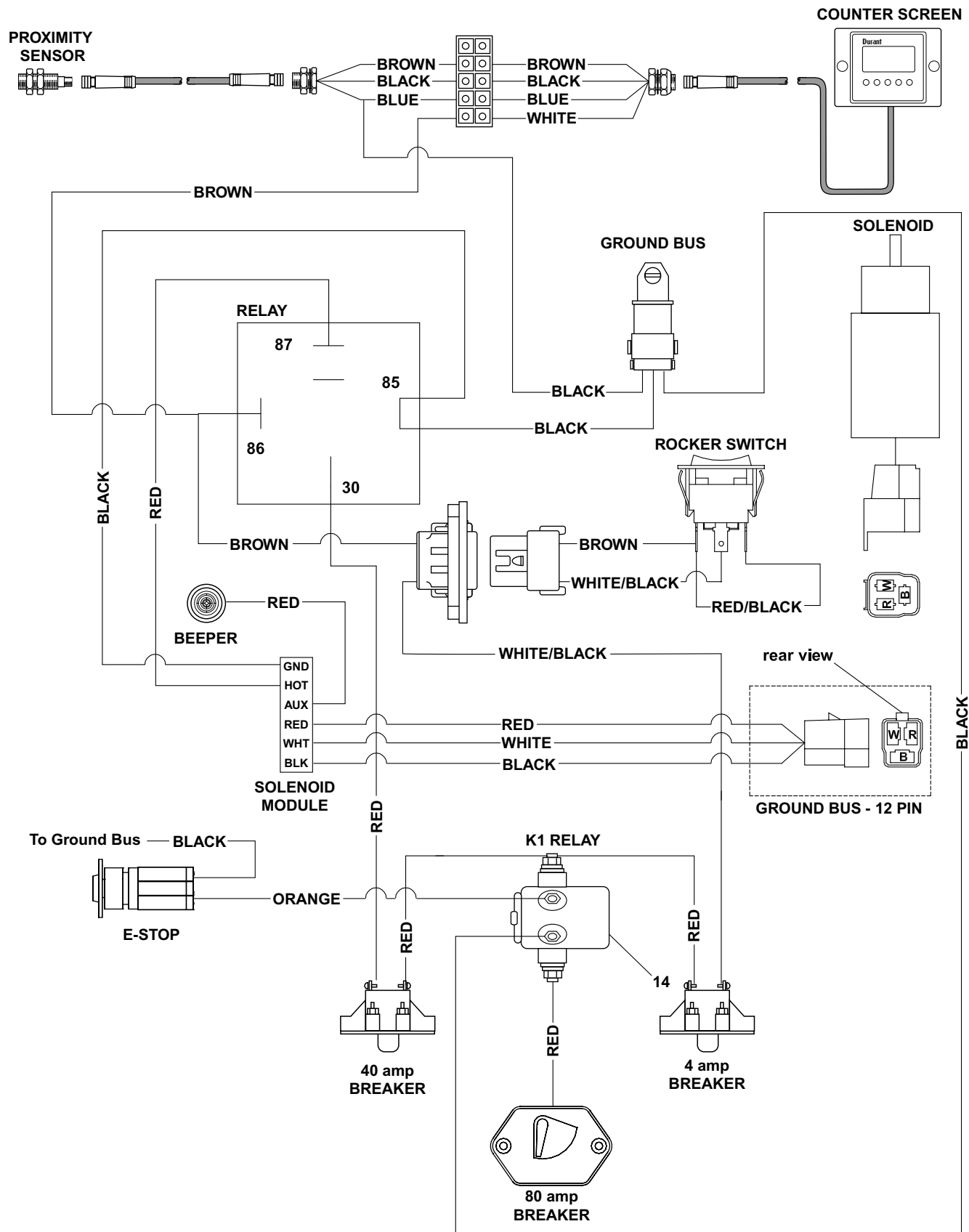
# ELECTRICAL SCHEMATIC - MAIN



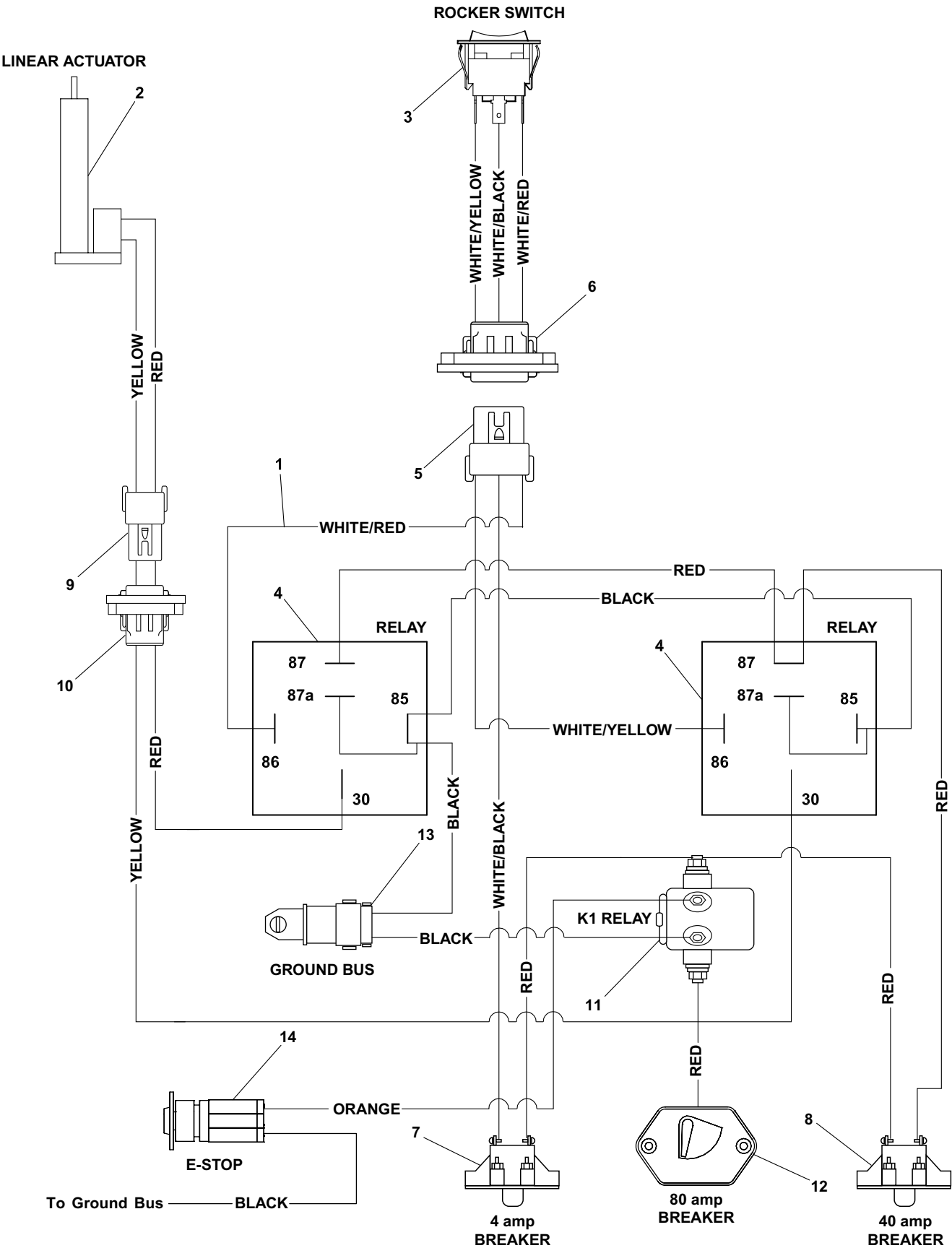


ELECTRICAL SCHEMATIC - CLUTCH

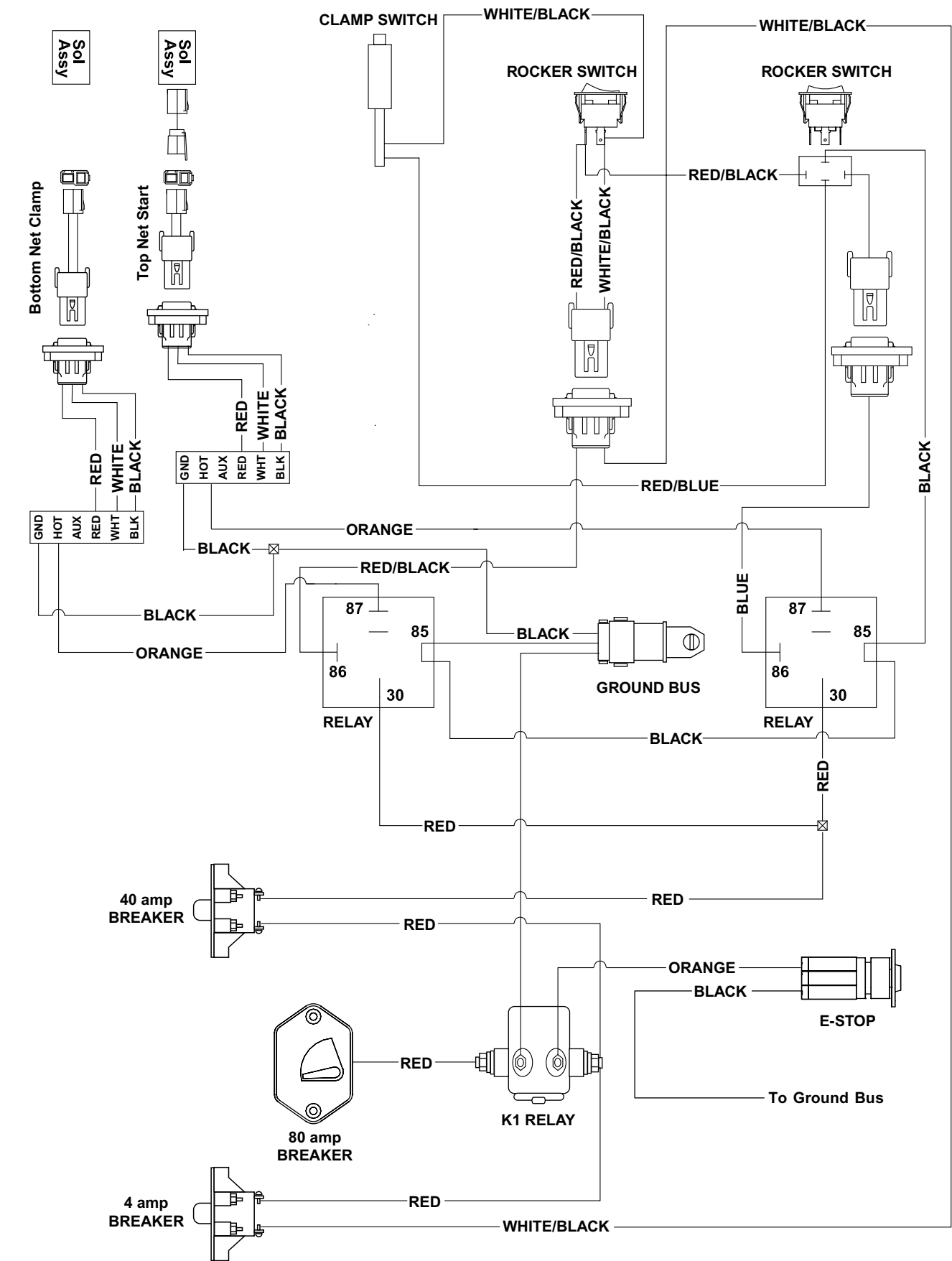




ELECTRICAL SCHEMATIC - TUBE RACK



# ELECTRICAL SCHEMATIC - NETTING









**Kesmac Inc.**

23324 Woodbine Avenue, Keswick Ontario Canada L4P 3E9

Tel (905) 476-6222 Fax (905) 476-6744

Web Site [www.brouwerturf.com](http://www.brouwerturf.com) Email [info@kesmac.com](mailto:info@kesmac.com)