

CX75 - CX85 - CX95 - CX105

Operator's Manual

McCormick's Commitment To Quality

McCormick tractors remain true to the values and principles that made McCormick a world-beater for so many years. That means no compromises in quality. This McCormick tractor is a product of the highest quality and reliability.

Your authorized dealer guarantees that this McCormick tractor is delivered in top condition by carrying out a Pre-Delivery Inspection before it reaches you. They will also give you a comprehensive introduction into a newly acquired tractor which ensures maximum benefits from the machine.

The purchase of this McCormick tractor gives the certainty of possessing a state-of-the-art tractor of the highest quality. Its continued value, operation and reliability depend to a large extent on the regular maintenance and care of this McCormick tractor.



McCORMICK

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A R G O

Gruppo Industriale ARGO

Argo Tractors S.p.A.

42042 Fabbrico [RE] Italia - via G. Matteotti, 7
t. +39.0522.656111 - f. +39.0522.656476

webmaster@argotracors.com

www.argospa.com



WARNING

IMPROPER OPERATION OF THIS TRACTOR CAN CAUSE INJURY OR DEATH. BEFORE USING THIS TRACTOR, MAKE CERTAIN THAT EVERY OPERATOR:

- Is instructed in safe and proper use of the tractor.
- Reads and understands the Manual(s) pertaining to the tractor.
- Reads and understands ALL Safety Decals on the tractor.
- Clear the area of other persons.
- Learns and practices safe use of tractor controls in a safe, clear area before operating on a job site.

It is your responsibility to observe pertinent laws and regulations and follow McCormick Tractors International Limited instructions on tractor operation and maintenance as quoted in this Operators Manual.

CALIFORNIA Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds.

Wash hands after handling.

Tractor, Customer and Dealer Data

Type:
Serial No.:
Engine No.:
Transmission No.:
Registration No.:
Delivery Date:
Operators Manual:

1st. Owner

Name:
Address:
.....
.....
.....
Tel No.:

2nd. Owner

Name:
Address:
.....
.....
.....
Tel No.:

Dealer

Name:
Address:
.....
.....
.....
Tel No.:

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INTRODUCTION

TO THE OWNER

About This Manual

Read this manual before you start the engine or operate your McCormick tractor. If you need any more information, see your dealer. Your dealer has technicians with specialized training that know the best methods of repair and maintenance for your tractor.

Refer to the Alphabetical Index at the end of this manual for locating specific items about your tractor.

The right and left of the tractor in this manual are the same as your right and left when sitting in the tractor seat looking forward.

Some of the illustrations/photographs in this manual may look slightly different to that of your tractor as they may have been produced from photographs taken on prototype tractors.

DO NOT operate or permit anyone to operate or service this tractor until you or the other persons have read this manual. Use only trained operators who have demonstrated the ability to operate and service this tractor correctly and safely.

This tractor, with standard equipment and authorized attachments, is intended to be used for farming, and related operations. DO NOT use this tractor for any application or purpose other than those described in this manual. Consult an authorized dealer or Landini on changes, additions or modifications that can be required for this tractor to comply with various country regulations and safety requirements. Unauthorized modifications may cause serious injury or death. Anyone making such unauthorized modifications is responsible for the consequences.

McCormick Technical Documentation

McCormick tractors are being constantly improved. Technical changes introduced since this Operator's Manual went into print are therefore not taken into consideration.

There is a large selection of McCormick tractor models available for vastly differing applications. This is a worldwide Operator's Manual and therefore may include some information, illustrations and photographs which may differ to the standard equipment and accessories on your tractor.

Additional manuals are available from your Dealer for the operation, service and repair of your tractor. For prompt convenient service, contact your Dealer for assistance in obtaining the manuals for your tractor.

Your Dealer can expedite your order for Operator's Manuals, Parts Catalogues, Service Manuals etc.

Always give the tractor Name, Model and P.I.N. (product identification number) or S.N. (serial number) of your tractor so your Dealer can provide the correct manuals for your tractor.

INTRODUCTION

Manual Storage

Keep the Operators Manual stored in the manual storage compartment equipped on this tractor.



DP96E064

Make sure this manual is complete and in good condition.

IMPORTANT: *This operators manual is part of your tractor. If the tractor is sold, loaned or rented, the operators manual MUST go with it.*

Units of Measurement

All units of measurement used in this manual are metric unless otherwise stated. Use the following table to convert from metric to imperial units.

mm x 0.03937 = inches
kg x 2.2 = pounds (lb)
Bar x 14.5038 = PSI
Litres x 0.22 = Imperial Gallons
Litres x 0.264 = U.S Gallons
N (Newtons) x 0.225 = lbf
Nm x 0.738 = lb. ft
Nm x 8.85 = lb. in
° C x 1.8 (=32) = ° F
km/h x 0.62 = MPH

Important Information for EEC Member States

This tractor complies with the provisions of the following directive:

74/150/EEC - Type Approval.

Included in this directive is 89/336/EEC-Electromagnetic Compatibility. As an operator it is important to know the following:

EMC - Supplementary Information

Safety information for the supplementary installation of electrical and electronic appliances and/or components.

This tractor is equipped with electronic constituents and component parts whose function can be influenced by electromagnetic radiations of other appliances. Such influences can cause hazards for persons if the following safety information is not taken into account.

1. For supplementary installation of electrical and electronic appliances and/or constituents on the tractor with a connection to the onboard system, the user HAS to verify whether the installation causes disturbances to the electronics on the tractor or other constituents. This particularly applies to the Hitch, PTO, Powershift Control and the Instrument Cluster.

Also it has to be taken into account that the supplementary installed electrical and electronic components comply with the EMC Directive 89/336/EEC in the respective current version and that they are CE marked.

2. For the supplementary installation of mobile communication systems (i.e. radio communication, mobile telephone) the following additional requirements have to be fulfilled:
 - A. Only devices with an approval complying with the valid national regulations must be installed.
 - B. The devices must be firmly installed.
 - C. The operation of portable or mobile devices within the cab of the tractor is ONLY permitted if the device has a fixed outside antenna.
 - D. The transmitting part shall be installed separately to the tractor electronics.
 - E. Installation of the antenna must be carried out by a professional and the antenna must have a good ground connection between the antenna and the tractor ground.

For the correct size cabling, installation and the maximum permissible current supply, see your dealer.

INTRODUCTION

PRODUCT IDENTIFICATION AND SERIAL NUMBERS

Write your tractor Model number, Product Identification Number (P.I.N.), and Serial numbers on the lines provided opposite. If needed, give these numbers to your dealer when you need parts or information for your tractor.

Keep the record and your Manufacturers Statement of Origin in a safe place. If the tractor is stolen, report the numbers to your local police.

1. TRACTOR MODEL NUMBER

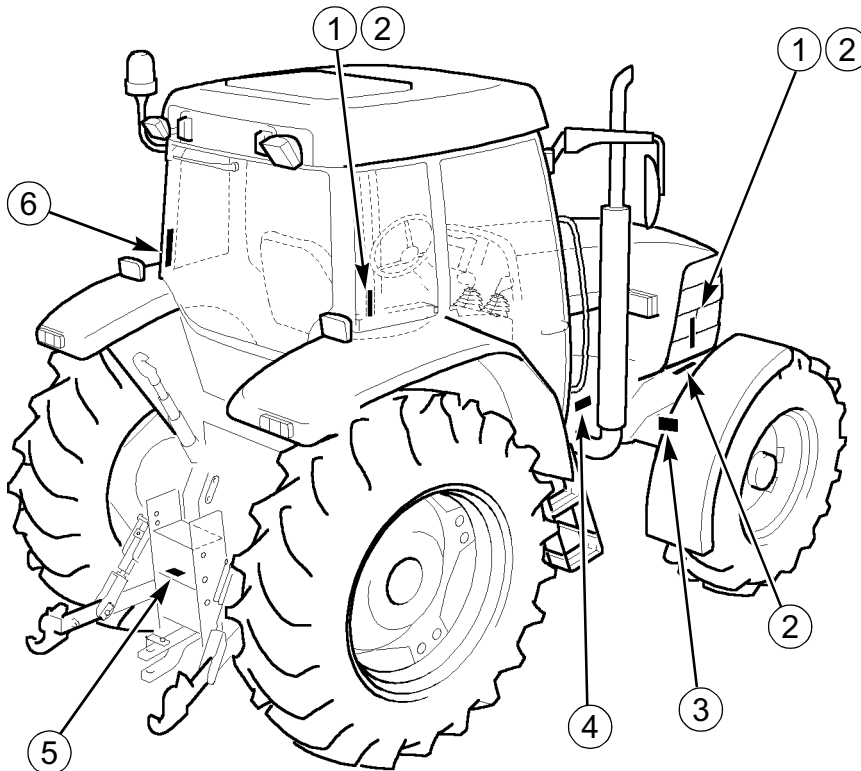
2. PRODUCT IDENTIFICATION NUMBER

3. MFD AXLE SERIAL NUMBER

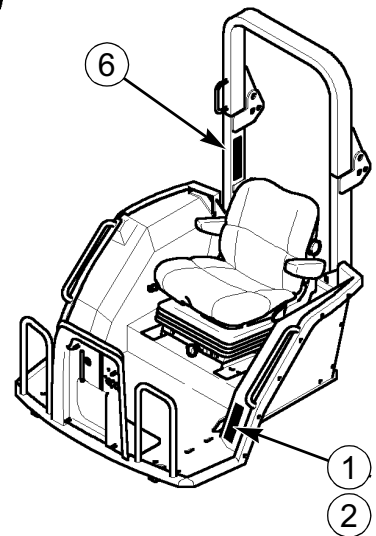
4. ENGINE SERIAL NUMBER

5. TRANSMISSION SERIAL NUMBER

6. CAB/PLATFORM ROPS SERIAL NUMBER



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DS98E265

ROPS (Platform) ONLY

INTRODUCTION

WARRANTY

Base Warranty Cover

All McCormick tractors carry a minimum 12 month or 1200 hour warranty covering both parts and labour costs arising from faulty material or workmanship with no restrictions on operating hours during the warranty period.

See your authorized dealer for the warranty period pertaining to your market area and for full terms and conditions.

This warranty does not restrict or affect your statutory rights and all that is required of you is to make sure that the inspections, preventative maintenance and service requirements, (set out in this Operator's Manual), are undertaken and that the tractor is made available in a timely manner to your authorized dealer in the event of a repair becoming necessary under warranty.

Warranty will not apply if the tractor has been misused or modified, unless such modification has been carried out with written approval from McCormick.

Due to the variety of equipment used and operating conditions, this warranty cannot include cost of:

Equipment removal,

Productivity loss/consequential damage,

Transportation,

Service items (e.g. oils, filters and wearing parts etc.).

SAFETY PRECAUTIONS

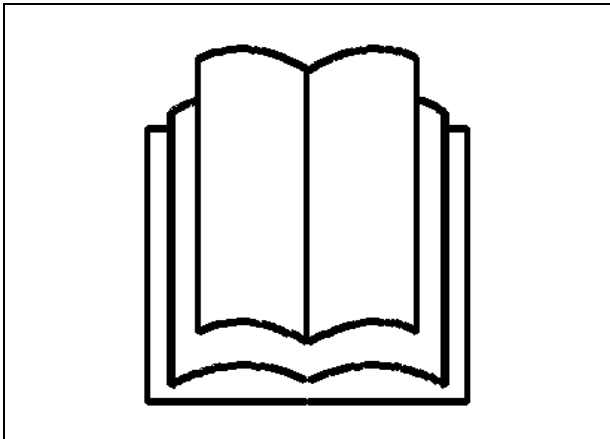


Before operating, read and comply with all safety instructions quoted in this Operators Manual.

Understand that your safety and the safety of other persons is measured by how you service, and operate this tractor. Know the positions and operations of all controls before you try to operate. **MAKE SURE YOU CHECK ALL CONTROLS IN A SAFE AREA BEFORE STARTING YOUR WORK.**

READ THIS MANUAL COMPLETELY and make sure you understand the controls. All equipment has a limit. Make sure you understand the speed, brakes, steering, stability, and load characteristics of this tractor before you start to operate.

The "Operators Manual Symbol", is intended to direct the operator to the Operators Manual for correct information with regard to operation, maintenance/adjustments etc. When you see this symbol on any particular part of the tractor refer to your Operators Manual.



DI96K246

The safety information given in this manual does not replace safety codes, insurance needs, federal, state and local laws. Make sure your tractor has the correct equipment needed by the local laws and regulations.

McCormick Tractors International Limited are continuing to work for your safety: by making tractors with better protection and by giving these rules for safe operation.



THIS SAFETY ALERT SYMBOL INDICATES IMPORTANT SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL CAREFULLY READ THE MESSAGE THAT FOLLOWS AND BE ALERT TO THE POSSIBILITY OF DEATH OR SERIOUS INJURY.

Intended Use

This McCormick tractor is designed solely for use in customary agricultural or similar operation (intended use).

Use in any other way is considered as contrary to the intended use. The manufacturer accepts no liability for any damage or injury resulting from this misuse and these risks must be born solely by the user.

Compliance with and strict adherence to the conditions of operation, service and repair as specified by the manufacturer also constitutes essential elements for the intended use.

This McCormick tractor should be operated, serviced and repaired only by persons familiar with all its particular characteristics and acquainted with the relevant safety rules (accident prevention).

The accident prevention regulations, all other generally recognized regulations on safety and occupational medicine and the road traffic regulations must be observed at all times.

Any arbitrary modifications carried out on the tractor will relieve the manufacturer of all liability for any resulting damage or injury.

SAFETY PRECAUTIONS



General Safety And Accident Prevention Regulations

- In addition to the instructions contained in this Operators Manual, also observe the general safety and accident prevention regulations.
- Always comply with local traffic regulations when driving on public roads.
- Before starting work, familiarize yourself with all the controls and instruments and their functions. During work is too late.
- Securely fasten your seat belt, if equipped. Your tractor is equipped with a ROPS cab or frame for your protection. The seat belt can help insure your safety if it is used and maintained. Never wear a seat belt loosely or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat structural members.
- Start the engine only from the operator's seat.
- Never attempt to start engine by shorting across the starting motor terminals as the tractor may immediately start to move.
- Before moving away, always check the immediate vicinity of the tractor (e.g. for children). Ensure adequate visibility.
- Never run the engine in a closed building. Proper ventilation is required.
- Clothing worn by the operator must be close-fitting. Avoid wearing loose jackets, shirts or ties.
- Handle fuel with care as it is highly flammable. Never refuel the tractor in the vicinity of naked flames or sparks. Do not smoke during refuelling.
- Never refuel the machine when the engine is hot or running. Never smoke while refuelling.
- Always stop the engine and remove the main switch key before refuelling. Fill fuel tank outdoors. Clean up any spilled fuel immediately.
- Prevent fires by keeping the tractor clean.
- Exposure to high noise levels may cause hearing loss. Always wear suitable ear protection when working in a noisy environment.



Personal Safety

Throughout this manual and on the Safety Decals on this tractor you will find precautionary statements which use the words **Danger, Warning or Caution**. These precautionary statements are intended for your personal safety.

Failure to follow the **Danger, Warning or Caution** instructions may result in serious bodily injury or death.

Danger, Warning or Caution are defined as follows:

- **DANGER:** Indicates an immediate hazardous situation that if not avoided, will result in death or serious injury. The colour associated with Danger is RED.
- **WARNING:** Indicates a potentially hazardous situation that if not avoided, could result in death or serious injury. The colour associated with Warning is ORANGE.
- **CAUTION:** Indicates a potentially hazardous situation that if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The colour associated with Caution is YELLOW.

Safety Decals on this tractor which are ISO-two panel Pictorial type decals, are defined as follows:

- The first panel indicates the nature of the hazard.
- The second panel indicates the appropriate avoidance of the hazard.
- Background colour is YELLOW.
- Prohibition symbols such as

  and  if used, are RED.

SAFETY PRECAUTIONS



Transporting Passengers

- Passengers may only be carried if a proper passenger seat is fitted.
- The carrying of passengers is otherwise not permitted.

Passenger Seat Safety (If Equipped)



DD00A117

- The passenger seat allows a colleague to ride in safety and comfort. **Children are NOT permitted to use the passenger seat.**
- When the passenger Seat is occupied, the following precautions must be taken:
 - A. Tractor should be driven at a slower speed and on level ground.
 - B. Avoid driving on highways or public roads.
 - C. Avoid quick starts or stops.
 - D. Avoid sharp turns.
 - E. The left hand door **MUST** be closed at all times, while the tractor is in motion.



WARNING: A frequent cause of personal injury or death is persons falling off and being run over. **DO NOT** permit others to ride, except on the designated Passenger Seat.



Neutral Start System

(XtraShift Tractors Only)

- For your safety a Neutral Start Switch is fitted in the FORWARD/NEUTRAL/REVERSE circuits which prevents unintentional tractor movement when starting the tractor engine. The engine should only start when the F-N-R lever is in NEUTRAL.
- Make sure the Neutral Start System is operating properly by doing the following checks, in a clear open area, with no other persons or objects near the tractor:

While sitting in the operators seat, with the engine not running, place the F-N-R lever into FORWARD. Attempt to start the engine. The engine **should not start**.

Repeat procedure for REVERSE lever position. The engine **should not start**. If the engine starts, see your Dealer for repair.



Operator Presence System

(XtraShift Tractors Only)

- For your safety an Operator Presence Safety Switch is fitted in the FORWARD/NEUTRAL/REVERSE circuits. This is activated by the operator sitting on the seat as follows:
 1. With the operator sitting on the seat (switch closed) and the TRACTOR MOVING; if the operator gets off the seat, the tractor will continue moving, but the tractor will stop if the F/N/R lever is moved to a new position.
 2. If the operator IS NOT sitting on the seat (switch open); the F/N/R circuits will not function and the tractor will not drive when the F/N/R lever is moved from neutral to either forward or reverse direction.



WARNING: *ONLY operate the tractor when sitting on the seat. DO NOT try to bypass the OPERATOR PRESENCE SAFETY SWITCH, for example, by putting heavy objects on the seat. This can result in serious injury or death.*

If you try to bypass the safety switch wiring, after a set period of time, the tractor will shut down and not operate.

SAFETY PRECAUTIONS



Operation

- DO NOT operate the tractor while under the influence of alcohol and/or drugs.
- Always adapt your ground speed to the ground conditions. Avoid making sharp turns when driving up or down slopes or when driving across the slope. Do not attempt to turn the tractor with the differential lock engaged. When driving down slopes, never depress the clutch and change gear. DO NOT operate up and down slopes of more than 30 degrees and DO NOT operate across slopes of more than 15 degrees.
- Attach trailers and/or implements correctly. The operating, steering and braking behavior will be affected by attaching implements, trailers and ballast weights. Therefore ensure adequate steering and braking power.
- Before starting the engine, be sure all operating controls are in neutral. This will eliminate accidental movement of the machine or start up of power driven equipment.
- Operate controls only when seated in the Operators seat.
- Never attempt to start engine by shorting across the starting motor terminals as the machine may immediately start to move.
- Collision of high speed road traffic and tractors or implements can cause personal injury or death. On roads, use flasher/lights according to local laws. Keep SMV emblem visible. Pull over to let faster traffic pass. Slow down and signal before turning off.
- Brake pedals must be locked together for road travel. This will insure uniform brake application and maximum stopping ability.
- Make sure that the weight of a trailed vehicle that is not equipped with brakes, NEVER EXCEEDS the weight of the machine that is towing the vehicle. Stopping distance increases with increasing speed as the weight of the towed load increases, especially on hills and slopes.
- Extra weight and bad traction conditions such as mud or ice increase your stopping distance. Remember that liquid in the tires, weights on the machine or wheels, tanks filled with fertilizer, herbicides or insecticides; all these add weight and increase the distance you need to stop.
- Do not drive on roads, or at high speed anywhere, with the differential lock engaged. Difficult steering will occur, and can result in an accident. In field operation, use the differential lock for traction improvement, but release for turning at row ends.
- Travel speed should be such that complete control and machine stability is maintained at all times. Where possible, avoid operating near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
- Stay off slopes too steep for safe operation. Shift down before you start up or down a hill with a heavy load. Avoid "free wheeling".
- Never allow the tractor to coast down hill with the transmission in neutral or with the clutch pedal depressed. To do so could result in the operator not having full control of the tractor and may result in personal injury.

SAFETY PRECAUTIONS

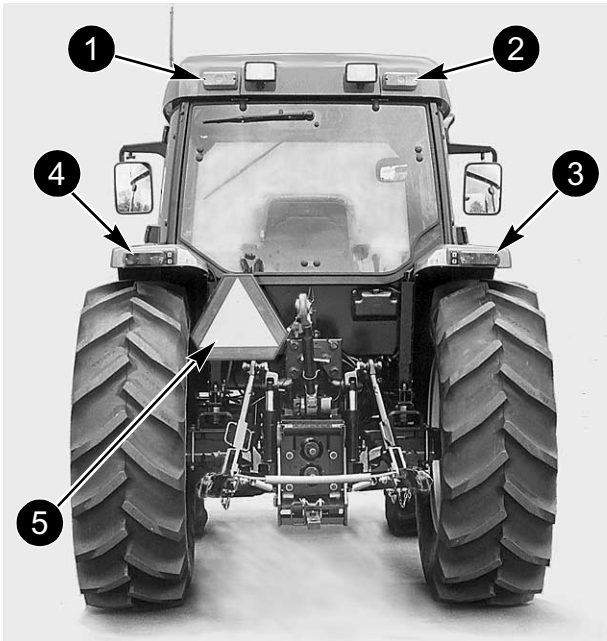
Highway/Public Road Operation

- Comply with road traffic laws, including any speed restrictions and the correct use of Hazard Warning Lamps and SMV Symbol.
- Connect the brake pedals together with the brake pedal interlock. This will ensure uniform braking and maximum stopping ability.
- Check clearance before going under electric power lines, bridges etc.

Tractor Warning Lamp Usage North American Tractors

- The flashing amber warning lamps must be used according to road traffic laws.

The flashing amber warning lamps must be used when operating the tractor on the road during the day or night. A vehicle operator that comes near the tractor must see an SMV symbol and the tail lamps from the rear and the flashing amber warning lamps from the front and rear.

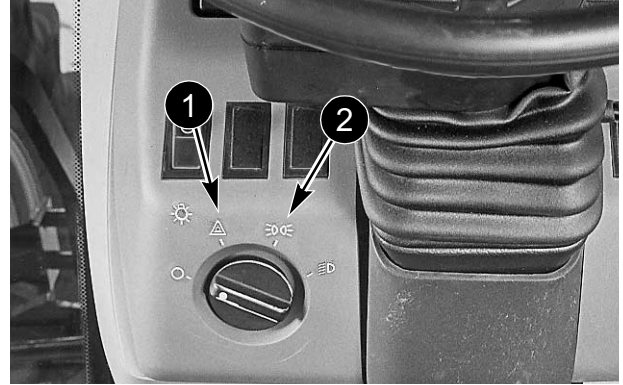


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1. AMBER WARNING LAMP AND TURN SIGNAL LAMP (LEFT SIDE)
2. AMBER WARNING LAMP AND TURN SIGNAL LAMP (RIGHT SIDE)
3. TAIL LAMP (RIGHT SIDE)
4. TAIL LAMP (LEFT SIDE)
5. SLOW MOVING VEHICLE (SMV) SYMBOL

Amber Warning Lamps Operation

The amber warning lamps operate as follows, when the main lamp switch is turned to the first and second positions clockwise.

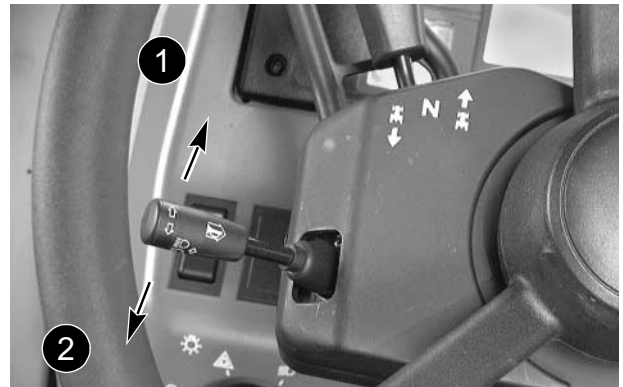


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FIRST POSITION (1) - ALL the amber warning lamps will flash ON and OFF.

SECOND POSITION (2) - ALL the amber warning lamps will flash ON and OFF. Tail lamps and headlamps will be illuminated.

When the direction turn signal switch is used, the amber warning lamps will operate as follows:



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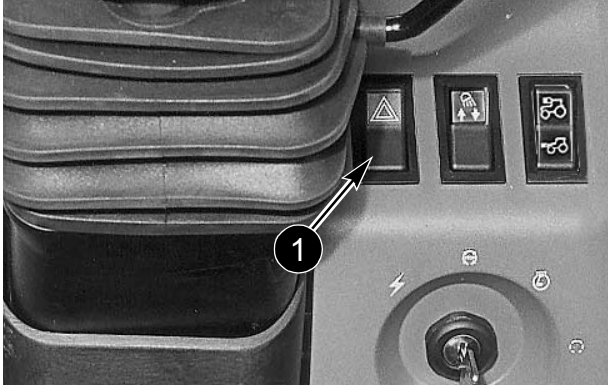
1. When indicating to turn right, the Right amber warning lamp will flash ON and OFF and the Left amber warning lamp will illuminate but will not flash.
2. When indicating to turn left, the Left amber warning lamp will flash ON and OFF and the Right amber warning lamp will illuminate but will not flash.

IMPORTANT: When towing an implement or wagon with the tractor, the complete rear area warning system (amber warning lamps, red tail lamps and SMV symbol) must be easily seen by any vehicle operator coming near the tractor.

SAFETY PRECAUTIONS

Tractor Warning Lamp Usage Rest Of World Tractors

- The flashing amber warning lamps must be used according to local road traffic laws.



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The amber warning lamps are used to indicate a hazard to other road users. To operate, press the switch (1) as shown above. This operates all four direction turn indicator lamps at once.

IMPORTANT: When operating the tractor, towing an implement or trailer, the complete rear area warning system (amber warning lamps, when applicable, and red tail lamps) must be easily seen by any vehicle operator coming near the tractor.

Implement Warning Lamps (If Equipped)

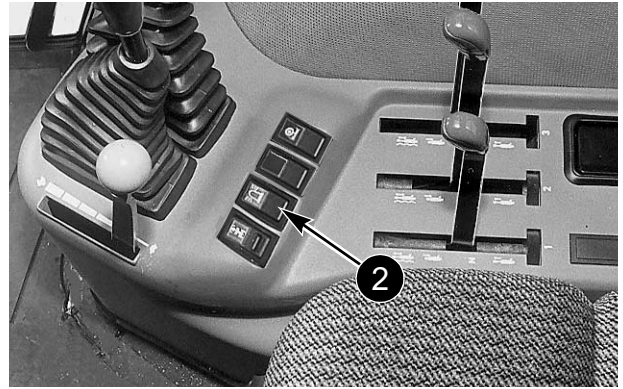
It is recommended that implement warning lamps are used:

- If the flashing warning lamps and red tail lamps on the tractor cannot be seen because they are obstructed by the implement.
- If the towed implement is 1219 mm (4 ft) or more behind the hitch point of the tractor.
- If the towed implement is 1219 mm (4 ft) or more to the left or right of the center of the tractor.
- If the towed implement is 3000 mm (10 ft) or more wide.

Install the warning lamps to indicate the side of the implement nearest the centre of the road.

Rotating Amber Beacon (If Equipped)

- The rotating amber beacon must be used according to local road traffic laws.

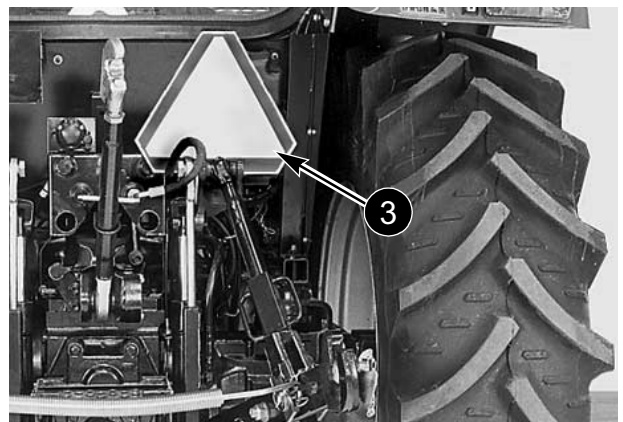


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The rotating amber beacon is operated by pressing the switch (2) with the flashing beacon symbol.

Slow Moving Vehicle Symbol (If Equipped)

- For correct use of the SMV symbol (3), observe local road traffic laws.



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If a Slow Moving Vehicle (SMV) symbol is equipped it must be installed on the rear part of the tractor.

To install the SMV symbol on an implement or trailer a special bracket must be obtained from your dealer.



WARNING: Collision of high speed road traffic and slow moving machines can cause personal injury or death. On roads, use amber warning lamps according to local laws. Keep SMV emblem visible. Pull over to let faster traffic pass. Slow down and signal before turning off.

SAFETY PRECAUTIONS



Leaving The Tractor

- When leaving the tractor, ensure that it will not roll away (apply park brake, wheel wedges) stop the engine.
- Remove the main switch key and lock the operator's cab.
- Never leave the tractor unattended as long as the engine is still running.
- Never leave the operator's cab when driving.
- Lower implement or equipment to the ground before leaving the tractor.



Implements

- Attach implements and trailers to the tractor only using the prescribed drawbars or hitches. Rear upset can result if pulling from wrong location on tractor. The three point hitch must only be used with the implements designed for its use, not as a drawbar.
- Take particular care when attaching trailers or implements. The operating, steering and braking behavior will be affected by attaching implements, trailers and ballast weights. Therefore ensure adequate steering and braking power.
- Prevent trailer and implement from rolling away.
- Operate tractor only when all guards are fitted and in their correct position.



PTO Operation

- Always shut off engine before connecting or disconnecting drive shaft.
- Clothing worn by the operator must be close-fitting. Avoid wearing loose jackets, shirts or ties.
- When operating the PTO, no-one must be allowed to remain in the vicinity of the rotating PTO stub shaft or drive shaft.
- PTO driven machinery can cause serious injury. Before working on or near the PTO shaft, or servicing or clearing the driven machine, put the PTO lever in the DISENGAGE position and STOP the engine.
- Whenever a PTO driven machine is in operation, the PTO guard must be in place for most operations to prevent injury to the operator or bystanders. Where attachments, such as pumps, are installed on the PTO shaft (especially if the tractor PTO guard is moved upward or removed) extended shielding equivalent to the PTO guard must be installed with the attachment. Install the PTO guard to its original position immediately when the attachment is removed.
- When doing stationary PTO work and dismounting from the tractor with the PTO running, keep clear of all moving parts as they are a potential safety hazard
- High-inertia implements do not become stationary immediately when PTO is disengaged. Allow sufficient time for implement to "coast down" to a halt before cleaning or adjusting.
- Guards for drive shaft and PTO stub shaft must be fitted. As soon as drive shaft has been removed, install guard over PTO stub shaft.

SAFETY PRECAUTIONS



Service

- Do not service the tractor with the engine running. Follow the instructions in this manual or see your dealer.
- This tractor is equipped with a spring applied mechanical front wheel drive (MFD) clutch and a front axle limited slip differential. Even with the MFD engaging switch in the OFF position, the front axle clutch can propel both front wheels if any of the following conditions occur:
 1. The engine is turned off.
 2. The engine is stopped when the rear wheels are still coasting.
 3. Any interruption in the clutch operating hydraulic system flow or pressure or in the electrical controls for clutch operation.

For these reasons, the following service procedures must be followed.

Before rotating the rear wheels of a MFD tractor (if you are using engine power with the rear wheels supported off the ground), one of the following procedures must be done to prevent an accidental tractor movement.

1. Jack up and support BOTH front wheels completely off the ground.

OR

2. Disconnect the front wheel drive shaft.

- Escaping fluid (fuel or hydraulic oil) under high pressure can penetrate the skin and cause serious injury.

To Prevent Personal Injury:

Relieve all pressure, before disconnecting fluid lines. Before applying pressure, make sure all connections are tight and components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If any fluid is injected into the skin, consult a doctor immediately as otherwise serious infections may result.

- It is recommended that you know the location of a First Aid Kit and Fire Extinguisher and have access before servicing the tractor.
- Dispose of oil, fuel and filters in accordance with local regulations. Do not drain the oil on the ground or into a drain. Be responsible for the environment.

- Do not attempt to mount a tyre unless you have the proper equipment and experience to perform the job safely. See page 141.
- Retighten wheel nuts after the specified hours in this manual. See page 172.
- Always disconnect the battery ground strap(s) before carrying out any electrical repairs on the tractor. See page 211.
- Use original manufacturers parts. Spare parts/Service parts must comply with the manufacturers technical specifications.



Battery Safety

- DO NOT make sparks or use an open flame near the battery.
- BATTERY ACID CAUSES SEVERE BURNS. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote:
EXTERNAL - Flush with water.
INTERNAL - Drink large quantities of water or milk. DO NOT induce vomiting. Seek medical attention immediately.
EYES - Flush with water for 15 minutes and get medical attention immediately.
- Battery explosion and/or damage to electrical components can result from improper connection of booster batteries or charger. Connect positive to positive and negative to negative. Externally, battery acid can cause burns and blindness, and taken internally is poison.
- BATTERIES PRODUCE EXPLOSIVE GASES. Keep sparks, flame, cigars and cigarettes away. Ventilate when charging or using in enclosed area. Always wear eye protection when working near batteries. Wash hands after handling. KEEP OUT OF REACH OF CHILDREN.
- When working around storage batteries, remember that all of the exposed metal parts are "live". Never lay a metal object across the terminals because a spark, short circuit, explosion or personal injury may result.

SAFETY PRECAUTIONS



Hazardous Chemicals

- If you are exposed to or come in contact with hazardous chemicals, you can be seriously injured. The fluids, lubricants, paints, adhesives, coolants, etc., used with your tractor can be hazardous, ALWAYS follow the chemical manufacturers instructions thoroughly.
- North America Only:
Material Safety Data Sheets (MSDS) provide information about the chemical substances within a product, safe handling procedures, first aid measures and procedures to be taken when the product is accidentally spilled or released. In North American, Material Safety Data Sheets (MSDS) are available from your dealer.

Before you service your machine, check the MSDS for each fluid, lubricant, etc., used in this machine. This information indicates what the risks are and how to service the machine safely. Follow this information when servicing the machine.
- Before you service the tractor and dispose of the old fluids and lubricants, always remember the environment. DO NOT put oil or fluids into the ground or into containers that can leak.
- Check with your local environmental or recycling center or your dealer for correct disposal information.



Fire Or Explosion Prevention

- Fire risks can be minimized by frequent removal of accumulated crop material, trash or debris from the tractor. Remove all crop material, trash or debris at the start of each working day. Take extra care to make sure the engine area and exhaust system are clean.
- Engine fuel is flammable and can cause a fire or an explosion. DO NOT fill the fuel tank or service the fuel system near an naked flame, welding, burning cigars, cigarettes etc.
- Use nonflammable cleaning solvents to clean parts.
- A fire can cause serious injury or death. ALWAYS have a fire extinguisher near or on the tractor. Make sure the fire extinguisher is serviced according to the manufacturers instructions.
- If a fire extinguisher has been used, always recharge or replace after use.
- Refer to Fire Prevention in the storage section of this manual for more information.



Basic Rule

- Always check the operating and road safety of the tractor before starting.
- ALWAYS make sure the working area is clear of other persons, pets, tools etc. before you start operating this tractor. Never allow anybody in the work area during tractor operation.

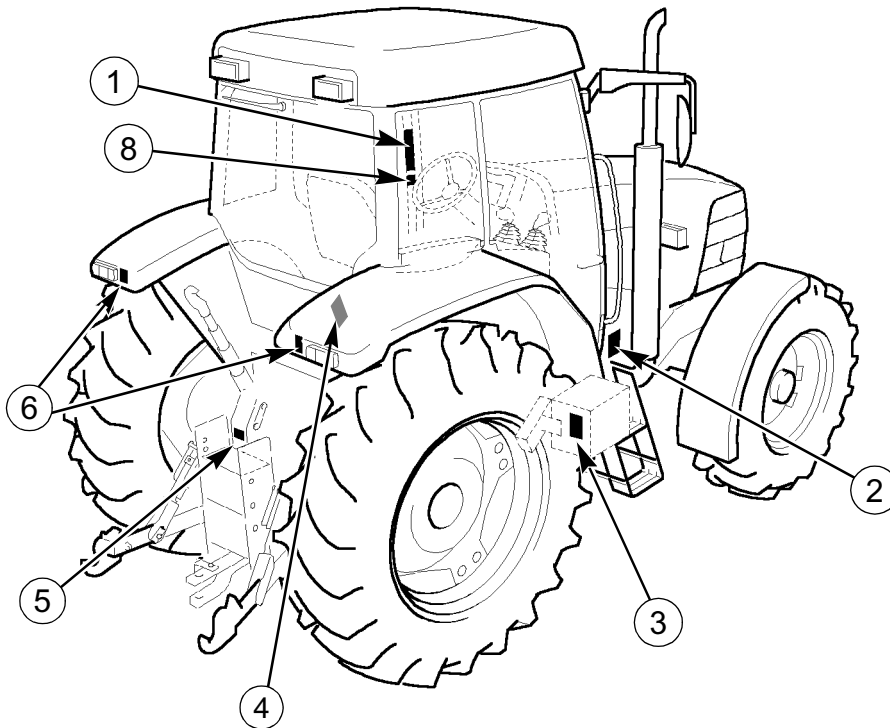
SAFETY PRECAUTIONS

SAFETY DECALS

IMPORTANT: Install new decals if the old decals are destroyed, lost, painted over or cannot be read. When parts are replaced that have decals, make sure you install a new decal with each new part. New decals are available from your dealer. When you clean the decals, use only a cloth, water and soap. Do not use solvent, gasoline, etc.

North American Tractors

NOTE: Due to North American market requirements, the following safety decals are fitted.

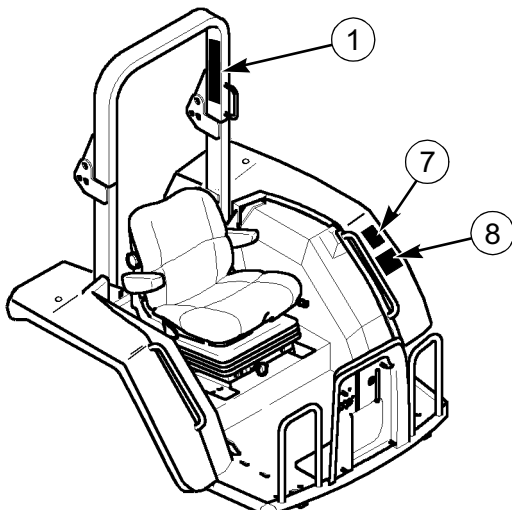


DECAL 1
Part No. 305584A1

WARNING

AVOID INJURY OR DEATH BEFORE STARTING ENGINE:
Read operators manual for safety information and operating instructions.
Read all tractor safety signs.
Be sure other people are clear of tractor and equipment.
Be sure gear shift is in neutral or park and PTO control is off.
Start engine only from seat.
Shields are for your protection. Keep them in place.

OPERATION:
With ROPS, always buckle and adjust seat belt.
No riders on tractor or equipment.
Keep hands, feet, and clothing away from power driven parts.
For road travel, couple brake pedals, use flashing warning lamps unless prohibited by law and keep SMV emblem visible.
TRACTORS CAN BE UPSET:
Reduce speed on turns and rough ground.
Avoid steep slopes.
Avoid rear upset. Pull only from draw bar, never higher.
WHEN TRACTOR HAS STOPPED:
Engage park lock or brake.
Lower implement to ground.
Disengage PTO, stop engine, and wait for all movement to stop before servicing or clearing equipment.



DECAL 2
Part No. 321-7040
(Located on the Starter Motor)



321-7040

DS98E115

SAFETY PRECAUTIONS

DECAL 3

Part No. 249807A1

(If Equipped with True Ground Speed Sensor)



DS96M125

DECAL 6

Part No. 400853A1 or 400852A1

(If Equipped with External Hitch Controls)



TYPE A



TYPE B

SAFETY PRECAUTIONS

DECAL 4

Part No. 400848A1

(If Equipped - Located on the Inside of Right Hand Rear Fender)



DS00M091

DECAL 7

Part No. 250937A1

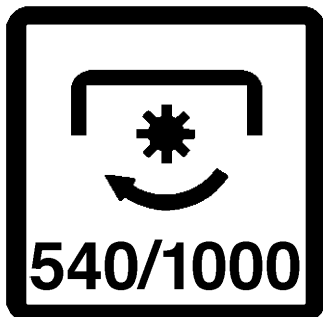
(If Equipped with a ROPS Frame)



DE98E118

DECAL 5

Part No. 1902074R2

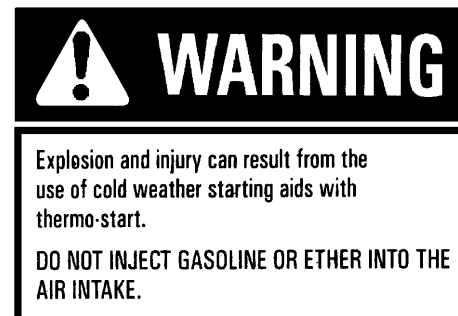


DS96M078

DECAL 8

Part No. 1985614C1

(If Equipped with Thermostart)

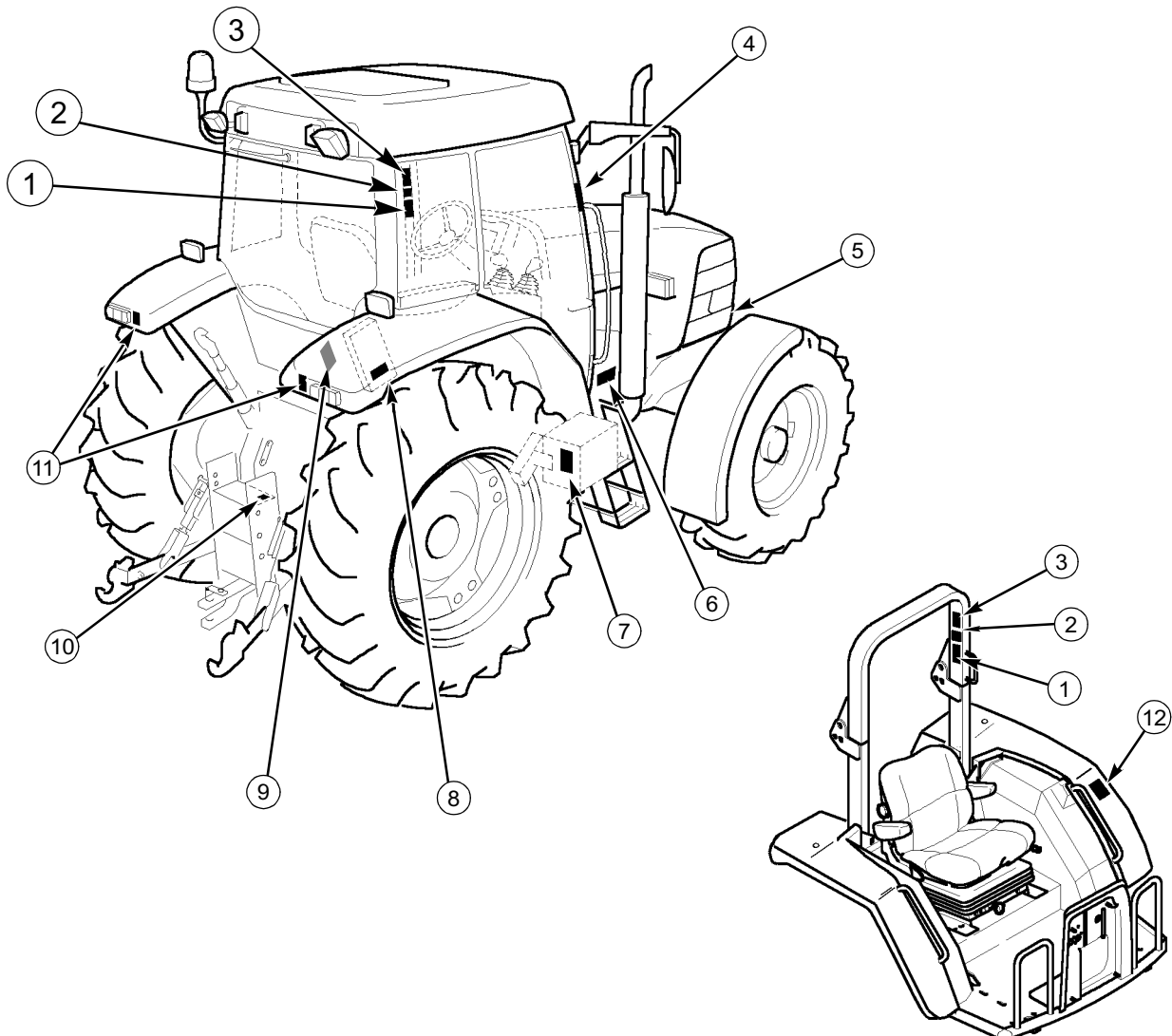


1985614C1

SAFETY PRECAUTIONS

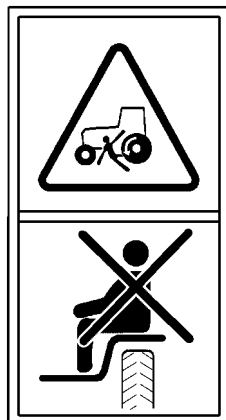
Rest Of World Tractors

NOTE: Due to differing market requirements, the following decals are fitted for ALL markets other than North America.



DECAL 1 Part No. 249809A1

WARNING: Risk of being crushed. DO NOT allow any passenger to sit on the fenders or on any other part of the tractor or towed implement.



DI96K245

DECAL 2 Part No. 243007A1



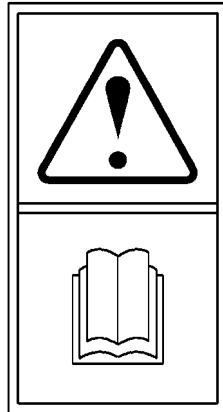
DI96K245

WARNING: Always read the safety and operating instructions in your Operators Manual.

SAFETY PRECAUTIONS

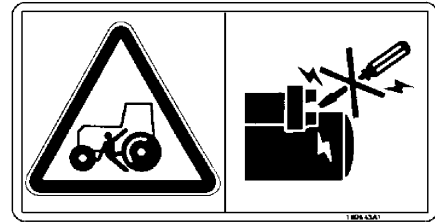
DECAL 3 Part No. 249806A1

CAUTION: Before operation, always read the safety and operating instructions in your Operators Manual.



DI96K246

DECAL 6 Part No. 180543A1 (Located on Starter Motor)

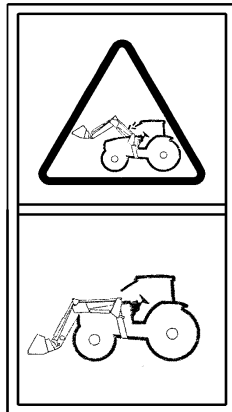


180543A1

WARNING: Risk of being crushed. DO NOT short across starter terminals to start the engine. Only start the engine from the operators seat.

DECAL 4 Part No. 281726A1 (If Equipped with Opening Windshield)

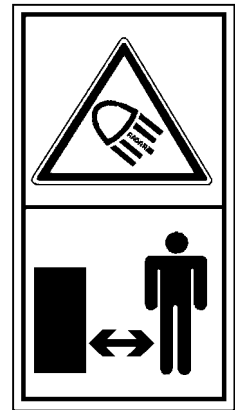
CAUTION: DO NOT open the windshield when a front loader is fitted.



DS97K032

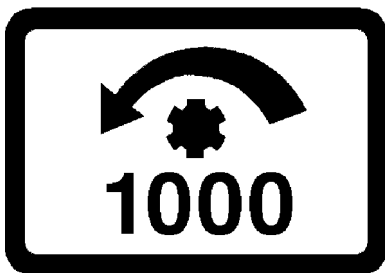
DECAL 7 Part No. 249807A1 (If Equipped with True Ground Speed Sensor)

WARNING: DO NOT look directly into the face of the ground speed sensor keep clear of sensor unit



DS96M125

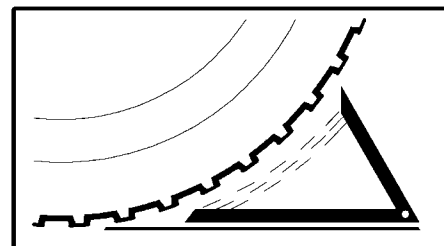
DECAL 5 Part No. 1534713C1 (If Equipped with Front PTO)



DS97F031

WARNING: Keep clear. Front PTO shaft rotates at 1000 rpm.

DECAL 8 Part No. 249807A1 (If Equipped with Wheel Wedge)



25

CAUTION: ALWAYS use a wheel wedge in front of or behind a wheel when parked on a slope.

SAFETY PRECAUTIONS

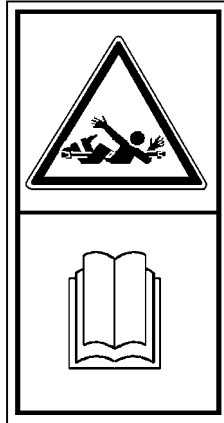
DECAL 9

Part No. 400855A1

(Located on the Inside of Right Hand Rear Fender)

WARNING: Risk of entanglement.

Keep all guards in place both on the tractor and implement(s).
Read your Operators Manual for correct PTO operational procedure.



DS96M125

DECAL 11

Part No. 400853A1

(If Equipped with External Hitch Controls)

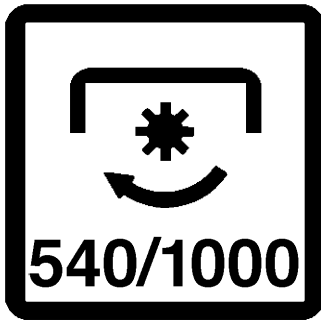


DI00H113

WARNING: Stand well clear of the rear linkage and implements when using the hitch remote switches or injury can result from moving parts.

DECAL 10

Part No. 1902074R2



DS96M078

WARNING: Keep clear. Rear PTO shaft(s) rotates at 540 or 1000 rpm.

PTO SPEEDS EXAMPLE ABOVE SHOWS 540/1000
SHIFTABLE REAR PTO.

OTHER DECALS WHICH MAY BE FITTED DEPENDING
UPON PTO OPTION ARE:

540 RPM ONLY - SINGLE SHAFT PTO
PART NO. 1091659R1

540 & 1000 RPM - DUAL SHAFT PTO
PART NO. 278372A1

540/750 RPM - SHIFTABLE PTO
PART NO. 1964195C2

DECAL 12

Part No. 250937A1

(If Equipped with a ROPS Frame)



DE98E118

WARNING: ROPS frame clearance.

(Refer to page 135. for correct operation and related safety issues).

SAFETY PRECAUTIONS

ROLL OVER PROTECTIVE STRUCTURE (ROPS)



WARNING: Securely fasten your seat belt (if equipped). Your tractor is equipped with a ROPS cab for your protection. The seat belt can help ensure your safety if it is used and maintained. Never wear a seat belt loose or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat structural members.

Your tractor is equipped with a Roll Over Protective Structure (ROPS) cab. Seat belts (if equipped and permitted by local regulations) are a part of your protective system and must be worn at all times. Carefully follow all instructions to get all the safety advantages of the equipment provided.

Tractor Roll Over

ROPS is a special safety unit. The ROPS must be replaced with a new ROPS if damaged, to ensure you will get the same protection.

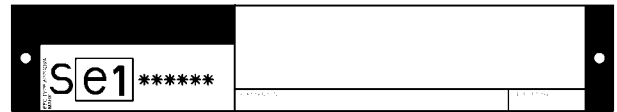
The ROPS, the operators seat, the seat belt (if equipped) and all the mounting accessories and wiring inside the operators protective system must be carefully checked if a ROPS cab is damaged, and all damaged parts must be replaced with new parts immediately.

DO NOT TRY TO MAKE REPAIRS OR WELD A ROPS.

ROPS Safety Rules

Do not make modifications to the ROPS. Example; welding an accessory to the ROPS, or drilling a hole in the ROPS. Special fasteners are used to install the operator protective parts. Replacement parts must be the same as given in the Parts Catalog for your tractor.

ROPS Plate



DI96M016

Each ROPS is equipped with a ROPS Plate. The plate shows the ROPS serial number and applicable standards. See page 3. for location.

This image shows a full page of handwriting practice paper. It features approximately 20 horizontal dashed lines spaced evenly down the page, providing a guide for letter height and placement. The background is plain white, and there are no margins or additional markings.

TRACTOR ACCESS



WARNING: *Jumping on or off the tractor can cause an injury. Always face the tractor, use the hand rails and steps, and get on or off slowly. Maintain a three point contact to avoid falling, (both hands on rails and one foot on the step, or one hand on the hand rail and both feet on the steps).*

Cab Door Lock

Use the key for the key switch to lock or unlock the cab door from the outside.

When mounting or dismounting from the tractor use the left hand door when possible. If you use the right hand door, avoid interference with the control levers.



DP96J383



MD02E072

INSTRUMENTS/CONTROLS

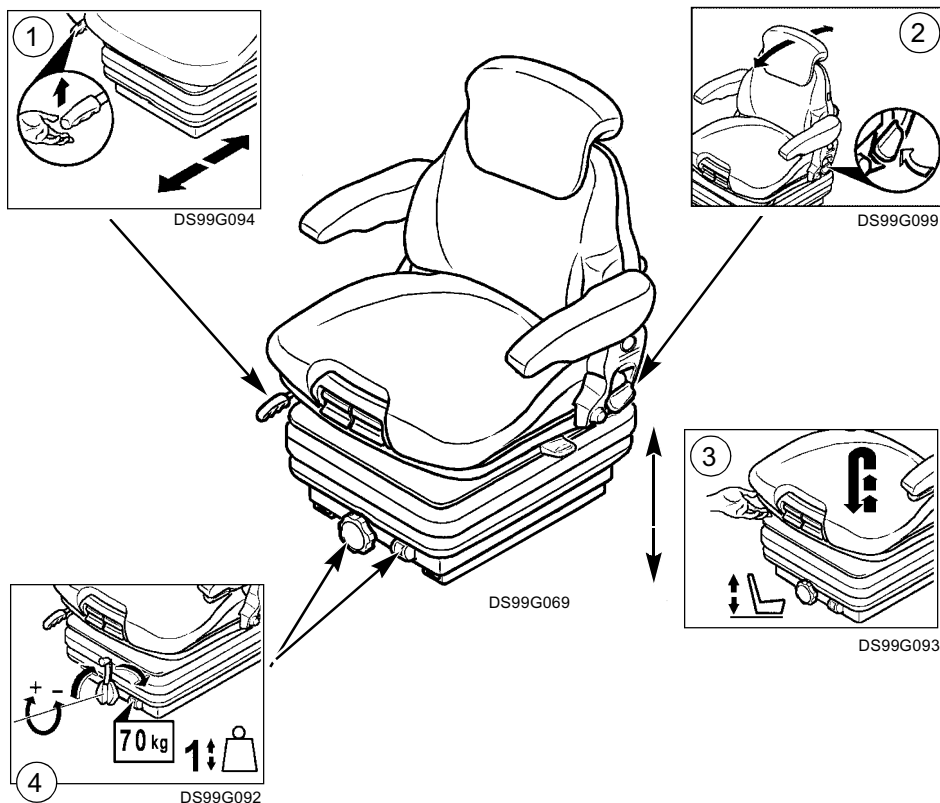
OPERATORS SEAT



WARNING: Do not adjust the seat while driving. Loss of control and injury can result.

Mechanical Suspension Seats - Cab Tractors

NOTE: The standard mechanical seat is also optional for ROPS (platform) tractors with a waterproof covering.



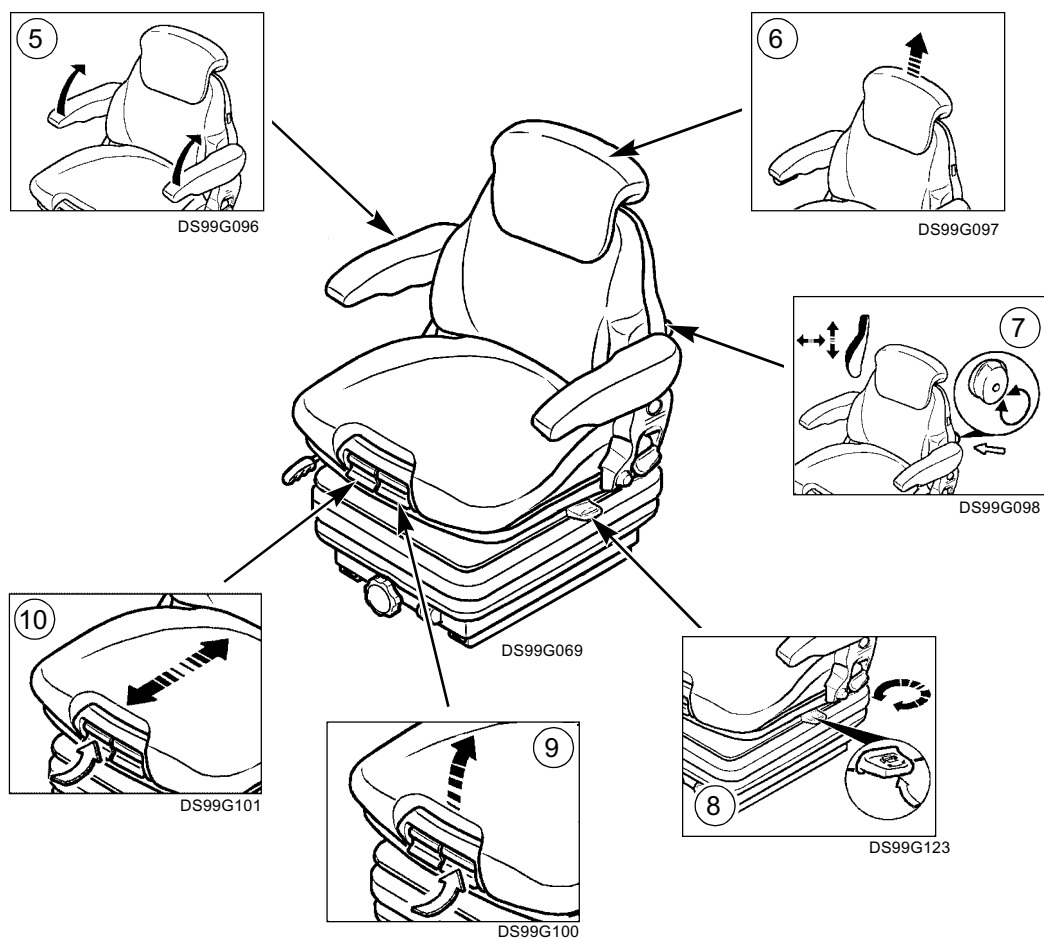
1. FORE/AFT ADJUSTMENT CONTROL - Lift lever and adjust as required, release lever to lock in position.
2. BACK REST ADJUSTMENT CONTROL - Lift control to tilt as required, release lever to lock in position.
3. HEIGHT ADJUSTMENT CONTROL - Grip seat and raise to required height. To lower, raise seat fully passed the upper end stop then lower to lowest position.

4. WEIGHT ADJUSTMENT CONTROL AND WEIGHT INDICATOR - With the seat empty turn knob as required until operators weight is shown on the weight indicator.



WARNING: To prevent injury the operators weight setting must be checked and adjusted to suit the operator before the tractor is driven.

INSTRUMENTS/CONTROLS



5. ARM RESTS - Lift up or down.

6. BACK REST HEIGHT ADJUSTMENT/ REMOVAL (If Equipped) - Pull up or push down to required height. Pull up past end stop to remove.

7. LUMBAR ADJUSTMENT CONTROL - Turn knob as required.

8. SWIVEL ADJUSTMENT CONTROL (Deluxe Seat Only) - Lift lever and adjust as required.

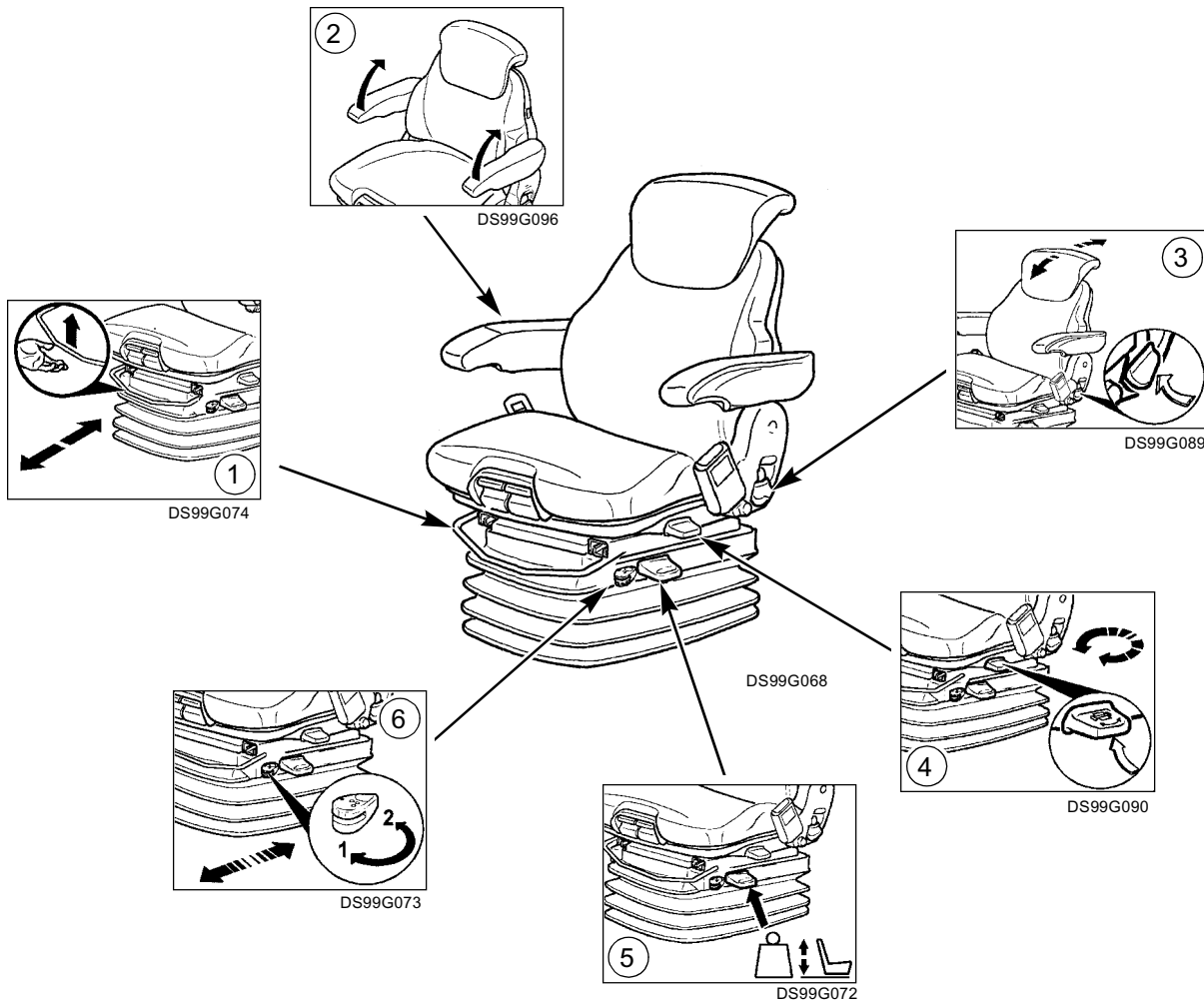
9. CUSHION TILT ADJUSTMENT (Deluxe Seat Only) - Lift lever to adjust seat cushion tilt angle.

10. CUSHION DEPTH ADJUSTMENT (Deluxe Seat Only) - Lift lever to adjust seat cushion depth.

NOTE: There is no fore/aft adjustment in the offset positions.

INSTRUMENTS/CONTROLS

Air Suspension Seats - Cab Tractors



1. FORE/AFT ADJUSTMENT CONTROL - Lift lever and adjust as required, release lever to lock in position.

2. ARM RESTS - Lift up or down.

3. BACK REST ADJUSTMENT CONTROL - Lift control to tilt. Release lever and lock in position.

4. SWIVEL ADJUSTMENT CONTROL (Deluxe Cab Only) - Lift lever and adjust as required.

NOTE: There is no fore/aft adjustment in the offset positions.

5. HEIGHT AND WEIGHT ADJUSTMENT CONTROL - Lift and release for Automatic Weight Adjustment. Lift and hold to raise or push and hold to lower.

NOTE: Seat must be lowered before the automatic weight adjustment can be made.

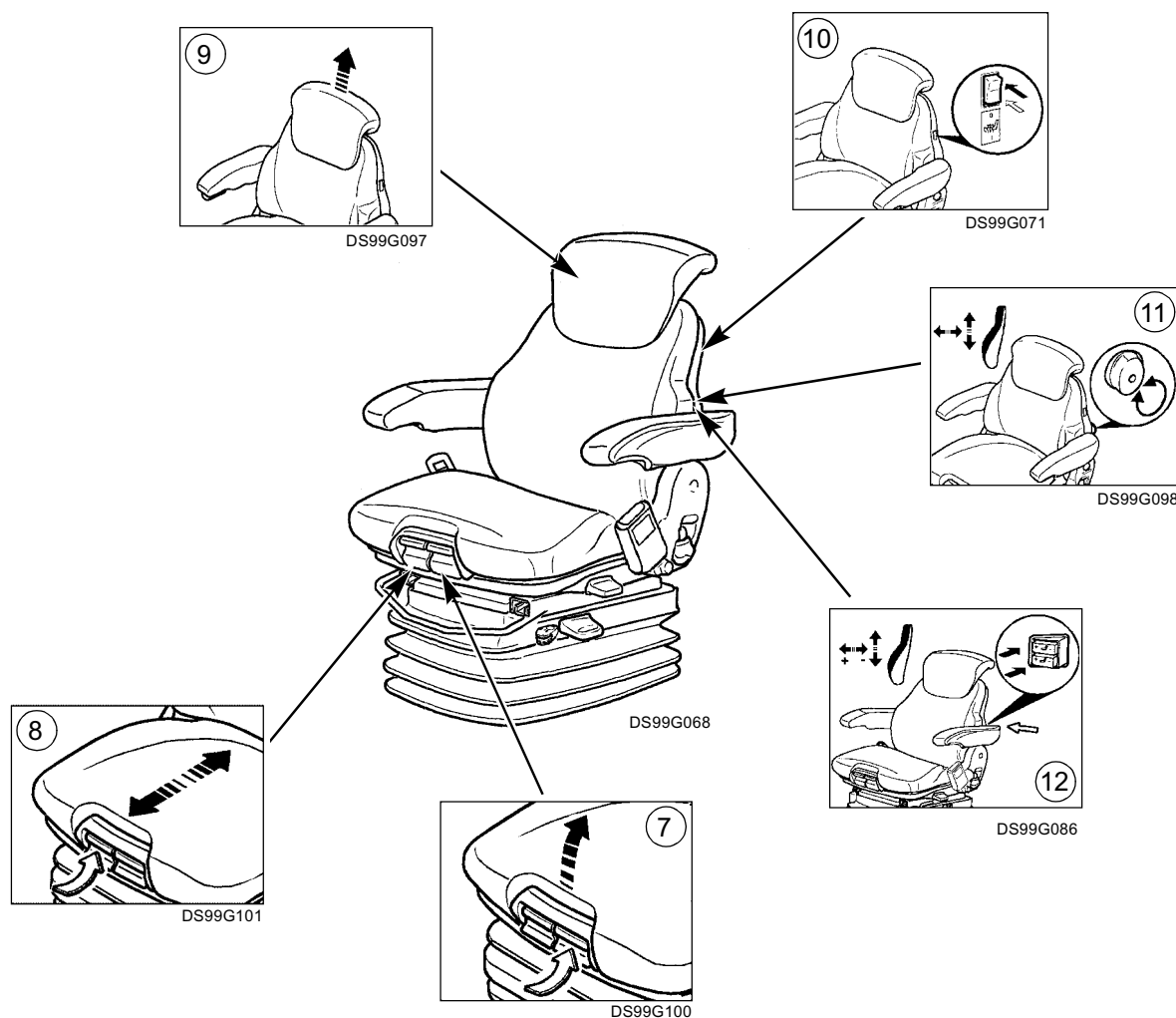
IMPORTANT: Never operate the compressor for more than 1 minute.



WARNING: To prevent injury the operators weight setting must be checked and adjusted to suit the operator before the tractor is driven.

6. ISOLATOR CONTROL - Move control from rear to front (position 1) for float. Move control from front to rear (position 2) to lock.

INSTRUMENTS/CONTROLS



7. CUSHION TILT ADJUSTMENT (Deluxe Seats Only) - Lift lever to adjust seat cushion tilt angle.

8. CUSHION DEPTH ADJUSTMENT (Deluxe Seats Only) - Lift lever to adjust seat cushion depth.

9. BACK REST HEIGHT ADJUSTMENT/ REMOVAL (If Equipped) - Pull up or push down to required height. Pull up past end stop to remove.

10. HEATED SEAT CUSHIONS (Super Deluxe Seat Only) (If Equipped) - Press switch down to turn heater ON. Press switch up to turn heater OFF.

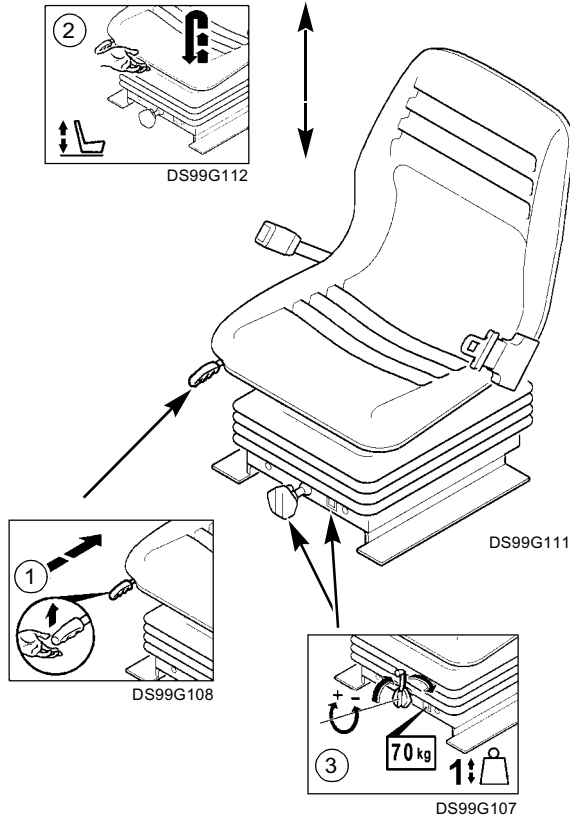
11. MANUAL LUMBAR ADJUSTMENT CONTROL - Turn knob as required.

12. AIR LUMBAR ADJUSTMENT CONTROL (Deluxe Seats Only) - Press upper and lower switches as required.

IMPORTANT: Never operate the compressor for more than 1 minute.

INSTRUMENTS/CONTROLS

Mechanical Suspension Seat - Tractor with ROPS (Platform)



1. FORE/AFT ADJUSTMENT CONTROL - Lift lever and adjust as required, release lever to lock in position.
2. HEIGHT ADJUSTMENT CONTROL - Grip seat and raise to required height. To lower, raise seat fully past the upper end stop then lower to lowest position.
3. WEIGHT ADJUSTMENT CONTROL - With the seat empty turn knob as required until operators weight is shown on the weight indicator.



WARNING: To prevent injury the operators weight setting must be checked and adjusted to suit the operator before the tractor is driven.

Seat Belt (If Equipped)



WARNING: Securely fasten your seat belt. Your tractor is equipped with a ROPS cab or frame for your protection. The seat belt can help ensure your safety if it is used and maintained. Never wear the belt in a twisted condition or pinched between the seat structural members.

STEP 1



DP97C132

Adjust the seat to your requirements.

Keep your back straight in the seat. Pull the seat belt completely across your body and push the metal eye into the latch assembly until it locks.

Adjust the position of the seat belt as low on your body as possible.

STEP 2



DP97C133

To release the seat belt, push the red button on top of the latch assembly.

IMPORTANT: From time to time, carefully inspect the seat belt and replace belt if worn or damaged.

INSTRUMENTS/CONTROLS

Passenger Seat (If Equipped)

The passenger seat allows a colleague to ride in safety and comfort.

IMPORTANT:

1. *Children are NOT permitted to use the passenger seat.*
2. *The left hand door MUST be closed at all times whenever the passenger seat is occupied and the tractor is in motion.*
3. *See page 7 for additional safety information.*

STEP 1



DD00A115

Raise the seat base.

STEP 2



DD00A116

Insert the seat base support between the seat base stops as shown above.

STEP 3

Store the seat in the reverse sequence.



DD00A118

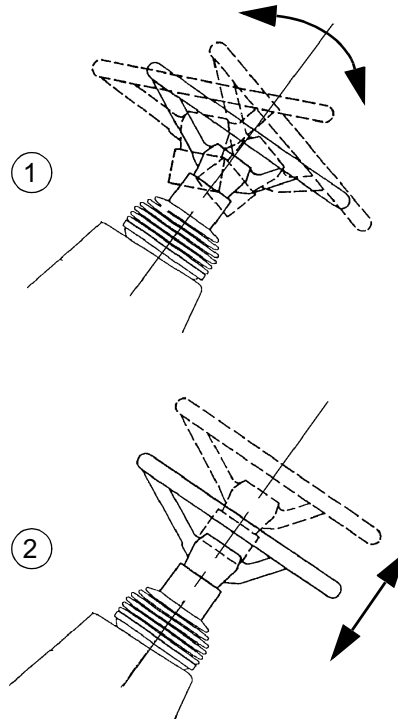
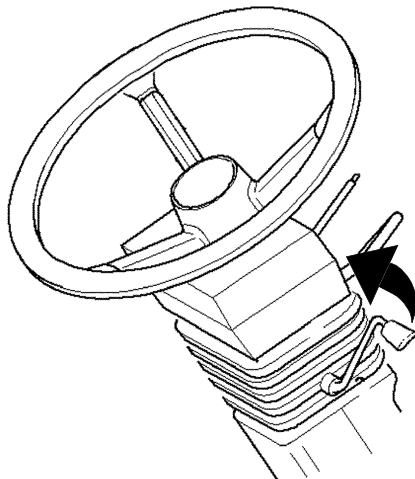
For the Operators convenience a net storage pouch is provided on the rear of the passenger seat.

INSTRUMENTS/CONTROLS

STEERING COLUMN ADJUSTMENT



WARNING: *Never adjust the steering column while driving. Adjusting the steering column while driving can cause loss of control resulting in injury or death.*



DS98B210

1. Column Tilt Adjustment (If Equipped)

The steering column can be adjusted up or down into ten different positions.

To adjust:

Lift and hold the locking lever (1) up. Move the column up or down to the required position and then release the lever to lock the column in position.

2. Telescopic Column Adjustment (If Equipped)

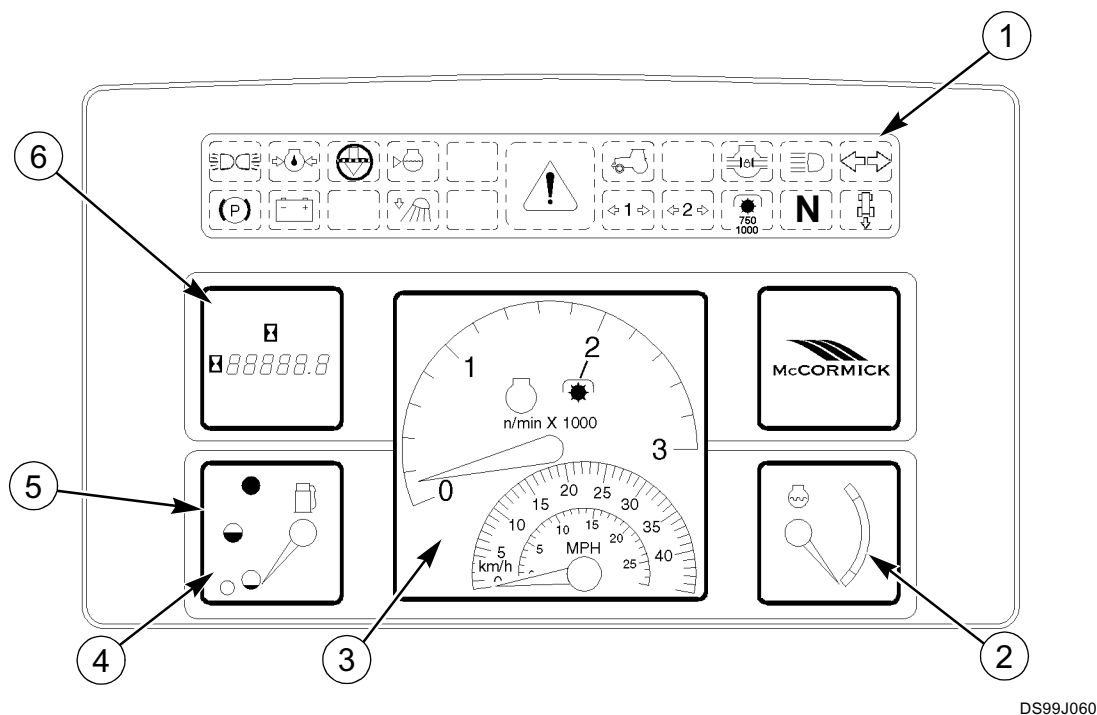
The steering column can be moved in or out at any of the tilt positions.

To adjust:

Lift and hold the locking lever (1) up. Pull or push the column in or out to the required position and then release the lever to lock the column in position.

INSTRUMENT CLUSTERS

Standard (Analog) Instrument Cluster (If Equipped)



DS99J060

1. INDICATOR LAMPS - see page 31 for details.

4. LOW FUEL WARNING LAMP

2. ENGINE COOLANT TEMPERATURE GAUGE -

5. FUEL LEVEL GAUGE

Yellow area: low temperature.

6. ENGINE HOURMETER

Green area: normal working temperature.

Red area: overheating.

IMPORTANT: If the pointer is in the red area, the master warning lamp will flash. STOP THE ENGINE AND CHECK THE CAUSE OF OVERHEATING. Make sure the engine is cool before starting any inspection.

3. TACHOMETER/SPEEDMETER -

Upper dial: engine revolutions per minute (rpm).

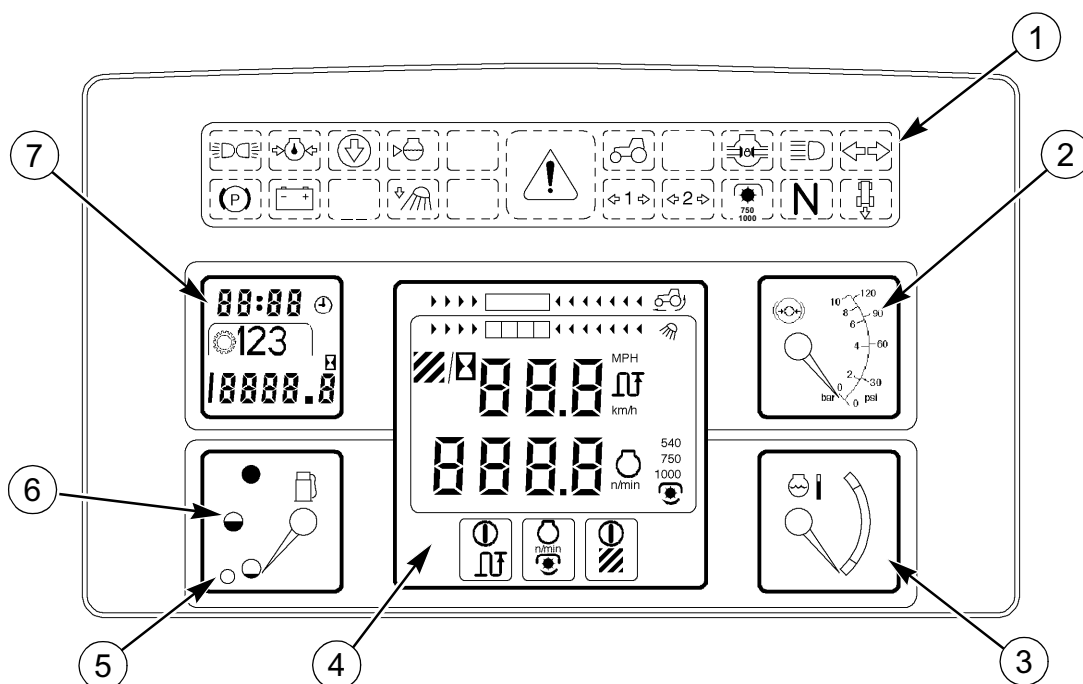
PTO symbols: correct engine rpm for the PTO speed.

Lower dial: tractor speed in kilometers per hour (km/h) outside, and miles per hour (mph) inside.

NOTE: If the rear tyre size is changed the instrument cluster must be reprogrammed with the new tyre size, see page 142 for correct procedure.

INSTRUMENTS/CONTROLS

Deluxe (Digital) Instrument Cluster (If Equipped)



DS999G182

1. INDICATOR LAMPS - see page 31 for details.

2. McCORMICK LOGO or AIR PRESSURE GAUGE (If Equipped) - indicates system pressure for pneumatic trailer brakes.

3. ENGINE COOLANT TEMPERATURE GAUGE -

Yellow area: low temperature.

Green area: normal working temperature.

Red area: overheating.

4. MAIN DIGITAL DISPLAY - see page 31 for more details.

5. LOW FUEL WARNING LAMP

6. FUEL LEVEL GAUGE

7. CLOCK, POWERSHIFT INDICATOR AND ENGINE HOURMETER

IMPORTANT: If the pointer is in the red area, the master warning lamp will flash. STOP THE ENGINE AND CHECK THE CAUSE OF OVERHEATING. Make sure the engine is cool before starting any inspection.

INSTRUMENTS/CONTROLS

Indicator Lamps



1. POSITION LAMPS ILLUMINATED - Green.



2. LOW ENGINE OIL PRESSURE WARNING - Red.



3. ENGINE AIR FILTER RESTRICTION - Amber.



4. LOW COOLANT LEVEL WARNING - Red.



5. MASTER WARNING - Amber.



6. MFD ENGAGED - Green.



7. DIFFERENTIAL LOCK ENGAGED - Green.



8. HEADLAMP HIGH BEAM - Blue.



9. LEFT/RIGHT TURN SIGNAL - Green.



10. PARK BRAKE ENGAGED - Red.



11. ALTERNATOR CHARGE - Red.



12. LOWER WORKLAMPS - Amber.



13. FIRST TRAILER TURN SIGNAL - Green.



14. SECOND TRAILER TURN SIGNAL - Green.



15. 750 or 1000 RPM PTO ENGAGED - Amber.

NOTE: PTO speed 750 or 1000 rpm depending upon PTO option fitted.



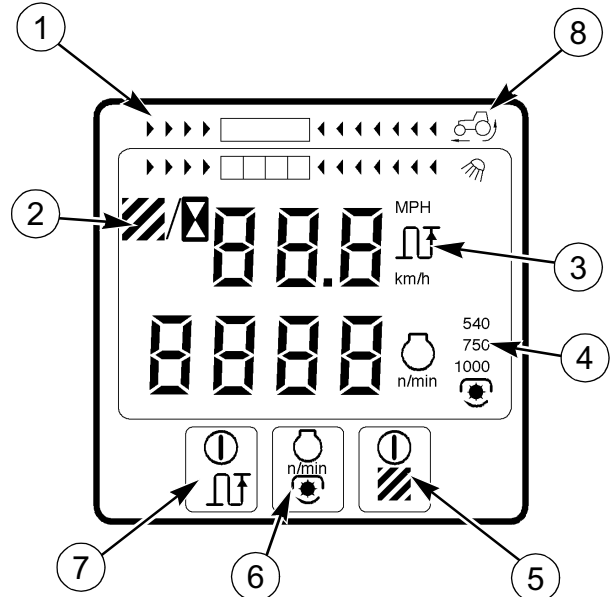
16. SHIFT F/N/R LEVER TO NEUTRAL - Amber - XtraShift Tractors ONLY.



17. REVERSE GEAR SELECTED - Green - XtraShift Tractors ONLY.

Main Digital Display

NOTE: A complete description of the digital display programming procedures can be found on page 34.



DI98K042

1. WHEEL SLIP INDICATOR

NOTE: If equipped with a true ground speed sensor, see "Wheel Slip Display" on page 100.

2. AREA or AREA/HOUR INDICATOR

3. DISTANCE TRAVELLED INDICATOR

4. PTO RPM or ENGINE RPM INDICATOR

5. AREA FUNCTION ON/OFF BUTTON

6. ENGINE/PTO RPM BUTTON

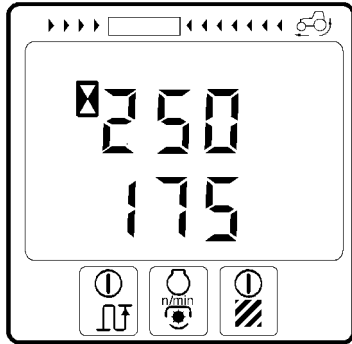
7. DISTANCE TRAVELLED ON/OFF FUNCTION BUTTON

8. TRUE GROUND SPEED SENSOR INDICATOR

INSTRUMENTS/CONTROLS

Digital Displays in Keyswitch Positions

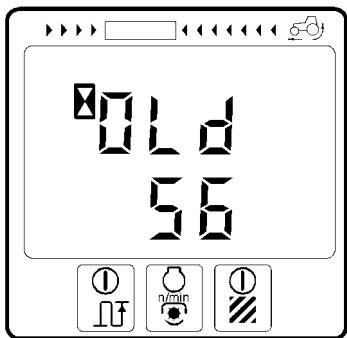
ACCESSORY MODE- One position counterclockwise from OFF.



DI96J444A

When the keyswitch is turned from OFF to the ACCESSORY position the service hours will be displayed; service interval time on the upper display with the service hour symbol, elapsed time on the lower display.

NOTE: The timer is set to the engine oil change interval of 250 hours. When 250 hours has elapsed, the service timer symbol will flash. Flashing and counting will continue until the timer is read once, and then it will return to 0 and start again. The service timer can be set to any value between 0 and 999. See page 38 for more information.



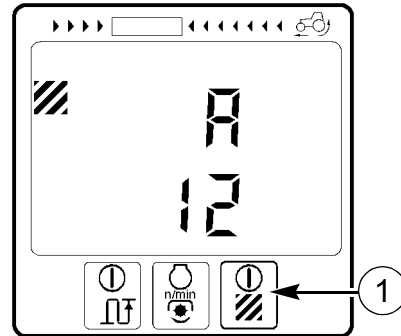
DI96J445

When the keyswitch is in the ACCESSORY position, if the ENGINE rpm button is pressed while the service hours are displayed, the old instrument cluster hours will be displayed with 'OLD' and the service timer symbol on the upper display and hours on the lower display. If the ENGINE rpm button is pressed again, the display will show service hours.

When a '0' is programmed for old instrument cluster hours, this function is not displayed.

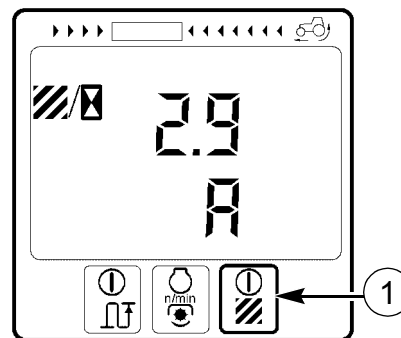
New tractors are programmed with '0' old instrument cluster hours, so this function will not display on a new tractor.

NOTE: If you have to replace the hour meter, the old ('OLD') hours recorded can be programmed into the cluster, see page 40 for more information.



DI96J448

With the keyswitch in the ACCESSORY position, if the AREA FUNCTION button (1) is pressed, the upper digital display will show the units (A for acres or h for hectares), and the lower digital display will show the total area worked. The Area symbol will also be displayed.

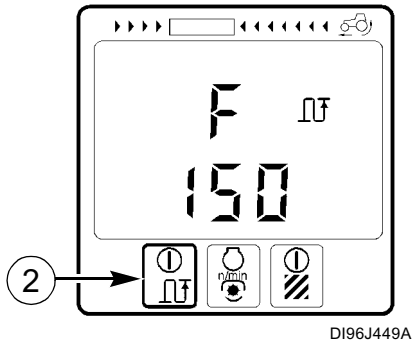


DI96J450

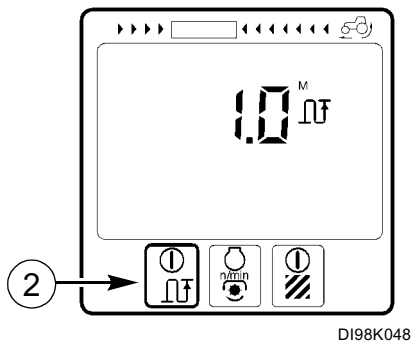
If the AREA FUNCTION button is pressed again, the lower digital display will show the units and the upper digital display will show the area worked per hour. The Area per Hour symbol will also be displayed.

If the AREA FUNCTION button is pressed again, the display will return to total area worked. To reset to zero, press the AREA FUNCTION button and ENGINE/PTO RPM button together for 1 second.

INSTRUMENTS/CONTROLS



If the DISTANCE FUNCTION button (2) is pressed the lower digital display will show the distance travelled in feet (F) or metres (m). The Distance symbol will also be displayed.



If the DISTANCE FUNCTION button is pressed again, the upper display will show the distance travelled in miles 'M' or kilometres 'km'. The distance symbol will also be displayed.

To reset to zero, press the DISTANCE FUNCTION button and ENGINE/PTO RPM button together for 1 second.

NOTE: If the distance travelled is greater than 9999 feet or metres, the display will only show the distance travelled in miles or kilometres.

IGNITION ON/RUN MODE - One position clockwise from OFF.

Initial Self Test

When the keyswitch is turned from the OFF position to the ON/RUN position, the instrument cluster will go through an INITIAL SELF TEST.

All digital displays and some warning and indicator lights will be illuminated for approximately 3.5 seconds.

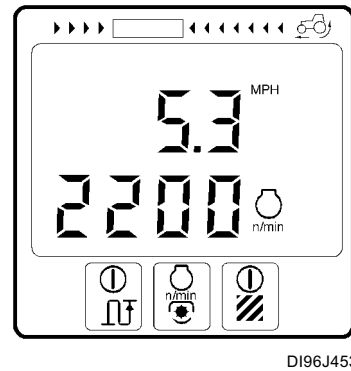
If equipped with true ground speed sensor AND AN OPEN CIRCUIT IS DETECTED in the true ground speed sensor signal input, the true ground speed sensor symbol will flash for 6 seconds.

If an open circuit is detected, contact your dealer.

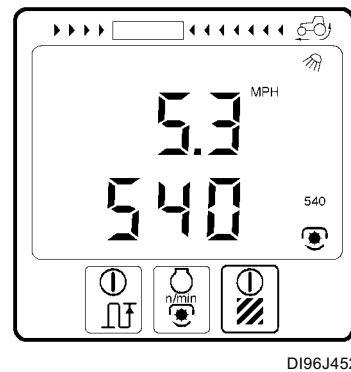
If the true ground speed sensor is not operating, the instrument cluster will use the wheel speed sensor for ground speed automatically.

IMPORTANT: If the FORWARD/ NEUTRAL/ REVERSE lever is moved into forward or reverse before the initial test is completed the tractor will not move. To reset, move the lever into neutral and then select the direction required.

Normal Operation



After the self test, the tractor speed in either 'mph' or 'km/h' will be displayed in the upper display and the engine rpm in the lower display.



If the ENGINE rpm / PTO rpm button is pressed, the lower display will show the PTO shaft rpm with the PTO speed and symbol on the right.

If the tractor is equipped with a true ground speed sensor, the sensor symbol is also displayed at the top RH corner.

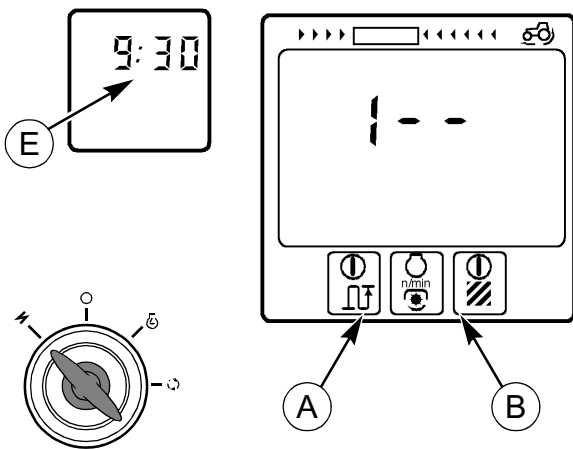
PROGRAMMING THE DIGITAL INSTRUMENT CLUSTER

General Information

There are three different programming modes for the digital instrument cluster:

1. ACCESSORY MODE - see below.
2. IMPLEMENT WIDTH MODE - see page 41.
3. DYNAMIC MODE - see page 41.

1. Programming in the Accessory Mode



DI98K051

STEP 1

Press and hold the Engine/PTO RPM switch (A) and turn the key counterclockwise to the accessory position.

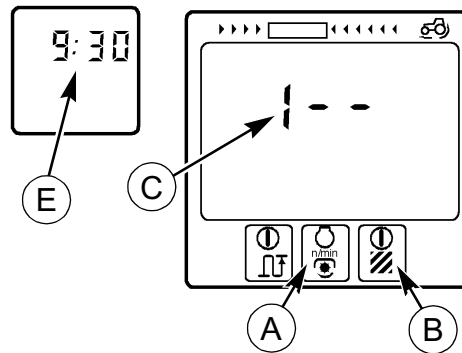
The top digital display should display the menu code 1-- as shown. Release the switch, the clock display (E) will begin to flash on and off.

NOTE: To change the menu code number press switch (A) to decrease the number and switch (B) to increase the number.

Programming the Clock (Menu Code 1)

NOTE: The digital clock can be programmed to display a 12 or a 24 hour time display.

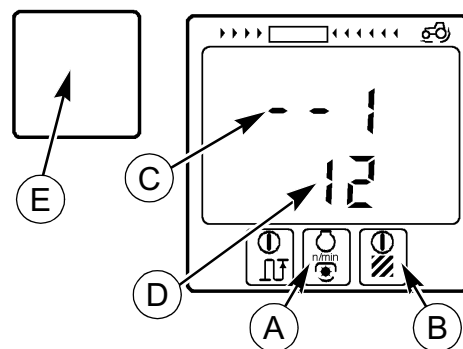
STEP 2



DI98K051

If the menu code display (C) is not as shown press switches (A) or (B) until the menu code 1-- is displayed. The clock display (E) will begin to flash on and off.

STEP 3



DI98K052

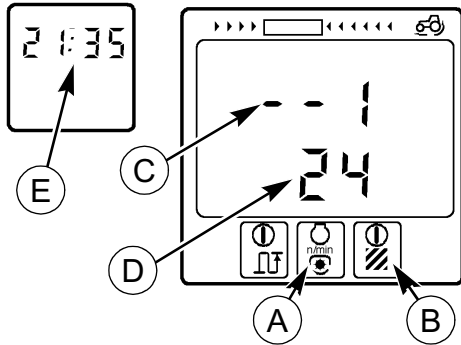
Press and hold switches (A) and (B) at the same time. The menu code will change to --1 and 12 or 24 will appear on the lower digital display (D), release the switches.

The clock display (E) will become blank. To change the display press the switch (A) to select 12 or press switch (B) to select 24.

INSTRUMENTS/CONTROLS

NOTE: Selecting 12 will programme the clock for a 12 hour time display and selecting 24 will programme the clock for a 24 hour time display.

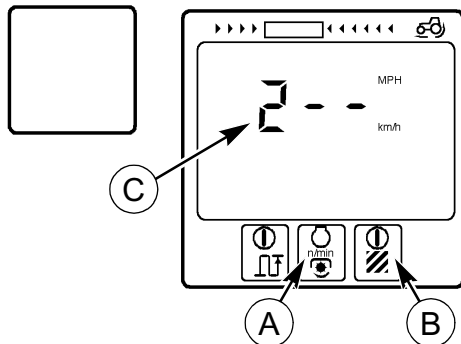
STEP 4



DI97M122

Press and hold switches (A) and (B) at the same time for 1 second to save the selection. The clock display (E) will appear. To change the hours, press switch (A) and to change the minutes press switch (B).

STEP 5

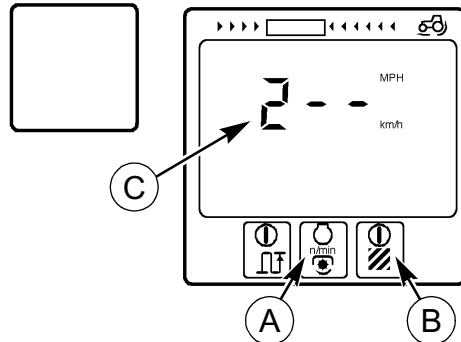


DI98K054

Press and hold switches (A) and (B) at the same time for 1 second to save the selection. The code menu display (C) will display 2-- and the MPH and km/h symbols will flash on and off alternately.

Programming MPH or km/h (Menu Code 2)

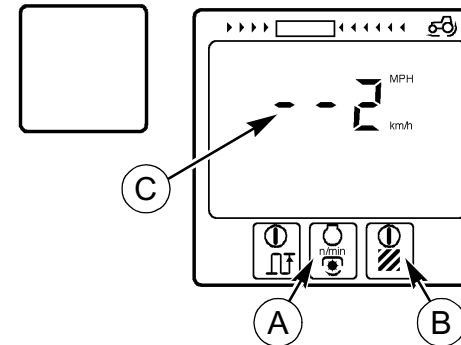
STEP 6



DI98K054

If the menu code display (C) is not as shown, press switches (A) or (B) until the menu code 2-- is displayed. The MPH and km/h symbols will flash on and off alternately.

STEP 7



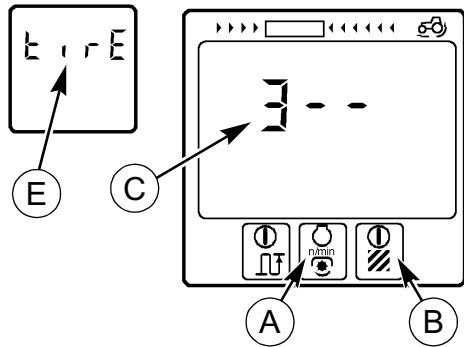
DI98K055

Press and hold switches (A) and (B) at the same time. When the top digital display changes to --2 as shown, release the switches. The MPH or km/h symbol will be displayed (not flashing). Press switch (A) to select the km/h option or switch (B) to select the MPH option.

Continued

INSTRUMENTS/CONTROLS

STEP 8

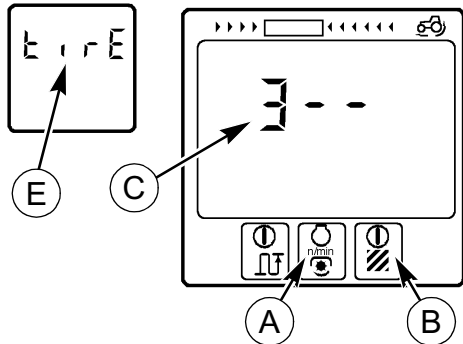


DI98K056

When the correct speed display option has been selected, press and hold switches (A) and (B) at the same time for 1 second to save the selection. The code menu display (C) will display 3-- and 'tirE' will appear and flash on and off on the clock display (E).

Programming Tyre Radius (Menu Code 3)

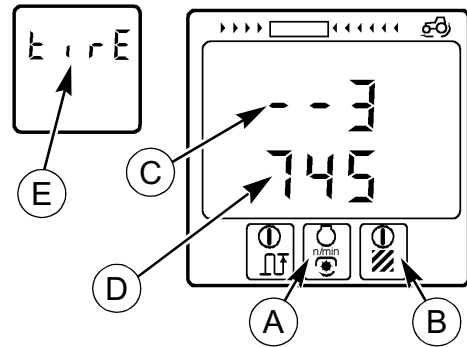
STEP 9



DI98K056

If the menu code display (C) is not as shown, press switches (A) or (B) until the menu code 3-- is displayed, tirE will appear and flash on and off on the clock display (E).

STEP 10



DI98K057

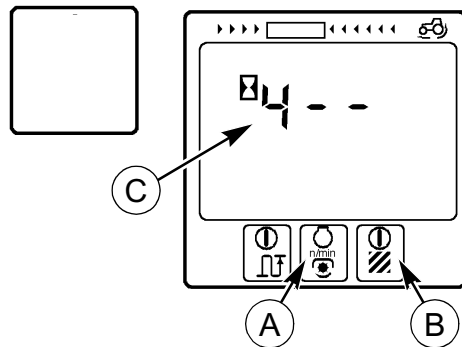
Press and hold switches (A) and (B) at the same time. When the top digital display changes to --3 as shown, release the switches. The previous programmed tyre radius will appear on the lower digital display (D), the clock display (E) will stop flashing.

Press switch (A) to decrease the constant and switch (B) to increase the constant.

NOTE: Use the table on the next page to the determine the correct tyre radius constant to be programmed into the cluster.

NOTE: If switch (A) or switch (B) is held down, the numbers will increase or decrease rapidly. To increase or decrease the number by one, press and release the switch.

STEP 11

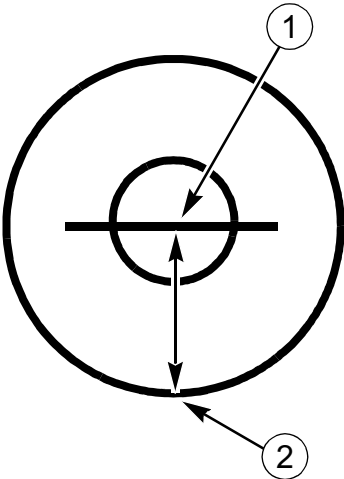


DI98K058

When the correct tyre size constant has been selected, press and hold switches (A) and (B) at the same time for 1 second to save the selection. The code menu display (C) will display 4-- and the hour glass symbol will flash on and off.

INSTRUMENTS/CONTROLS

Rear Tyre Rolling Radius

REAR TIRE SIZE	ETRTO * ROLLING RADIUS (mm)	MEASURING RADIUS
13.6R28/13.6-28	610	 MEASURE FROM CENTER OF AXLE(1) TO BOTTOM OF THE TIRE (2)
14.9R28/14.9-28	640	
16.9-28 or 16.9R28	670	
14.9R30/14.9-30	665	
16.9R30/16.9-30	695	
18.4R30/18.4-30	720	
480/70R30	695	
12.4R32/12.4-32	640	
16.9R34/16.9-34	745	
18.4R34/18.4-34	770	
480/70R34	745	
520/70R34	770	
540/70R34	770	
540/65R34	745	
12.4R36/12.4-36	690	
13.6R36/13.6-36	715	
12.4-38	720	
13.6R38/13.6-38	740	
15.5-38 or 15.5R38	745	
12.4-42	750	
18.4-16.1	480	
21.5-16.1	485	

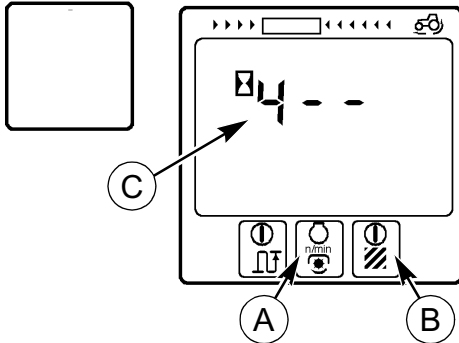
* ETRTO = EUROPEAN TIRE & RIM TECHNICAL ORGANISATION

IMPORTANT: The rolling radius can differ depending on tyre Manufacturer, tyre wear, tyre pressures and load. For a more accurate rolling radius dimension, use the Dynamic Mode procedure on page 41.

INSTRUMENTS/CONTROLS

Programming the Service Timer Interval (Menu Code 4)

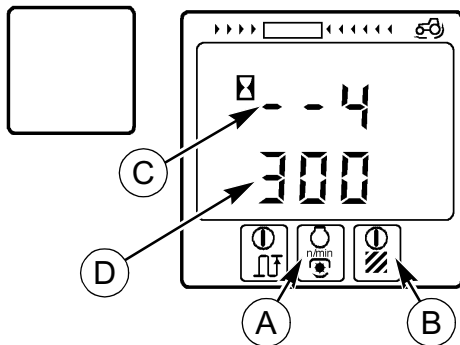
STEP 12



DI98K058

If the menu code display (C) is not as shown press switches (A) or (B) until the menu code 4-- is displayed. The hour glass symbol will flash on and off.

STEP 13

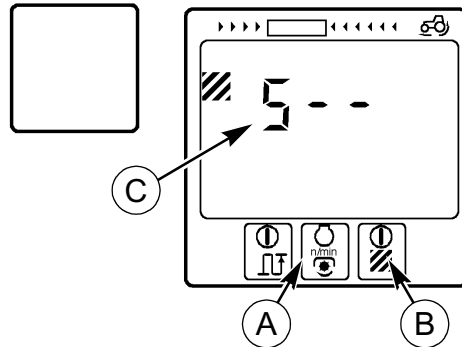


DI98K059

Press and hold switches (A) and (B) at the same time. The top digital display (C) will change to --4 as shown, release the switches. The previous programmed service interval will appear on the lower digital display (D) and hour glass symbol will stop flashing.

Press switch (A) to decrease the service interval constant or switch (B) to increase the service interval constant.

STEP 14



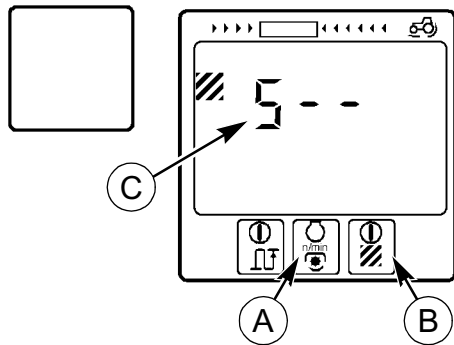
DI98K060

When the correct service interval has been selected, press and hold switches (A) and (B) at the same time for 1 second to save the selection. The code menu display (C) will display 5-- and the area function symbol will flash on and off.

Programming The Area Function Mode (Menu Code 5)

NOTE: The cluster can be programmed for manual area or automatic area display. In the manual area mode the cluster will continually calculate the area worked when the area function is turned on. In the auto area mode the cluster will only calculate the area worked when the implement is in the lowered position (working) and the area function is turned on.

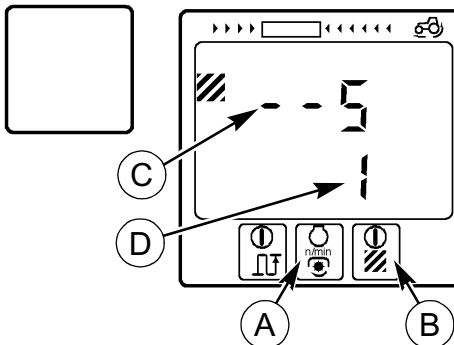
STEP 15



DI98K060

If the menu code (C) displayed is not as shown press switches (A) or (B) until the menu code 5-- is displayed. The area function symbol will flash on and off.

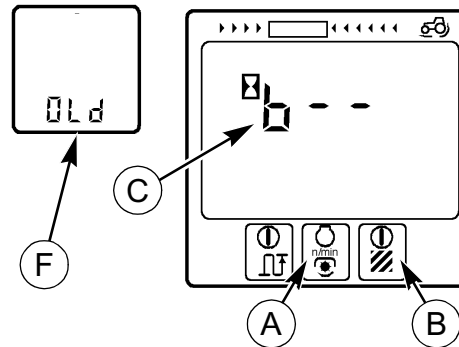
STEP 16



DI98K061

Press and hold switches (A) and (B) at the same time. When the digital display (C) changes to --5 as shown, release the switches. The previous area function constant will appear on the lower digital display (D). The area function symbol will stop flashing. Press switch (A) to display the AUTO area function mode constant '1' or switch (B) to display the MANUAL area function mode constant '2'.

STEP 17



DI98K062

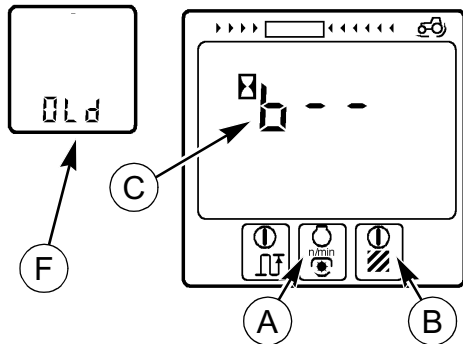
When the correct area function mode has been selected, press and hold switches (A) and (B) at the same time for 1 second to save the selection. The code menu display (C) will display 6--. OLd will appear and flash on and off in the hourmeter display (F) and the hour glass symbol will also flash on and off.

INSTRUMENTS/CONTROLS

Programming the “OLd” Instrument Cluster Hours (As Required) (Menu Code 6)

NOTE: The cluster hourmeter display reading can not be changed. A new cluster or hourmeter will always start recording at ‘0’. If a new cluster or hourmeter is to be installed, the recorded hours from the old cluster can be programmed into a separate ‘OLd hour display in the new cluster. This function provides the option to store and display the hours recorded by a replaced cluster or hourmeter, so an accurate recording of the tractors total hours can be kept electronically.

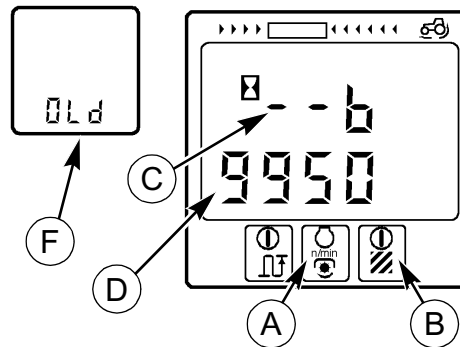
STEP 18



DI98K062

If the menu code display (C) is not as shown press switches (A) or (B) until the menu code 6-- is displayed. OLd will appear and flash on and off in the hourmeter display (F) and the hour glass symbol will also flash on and off.

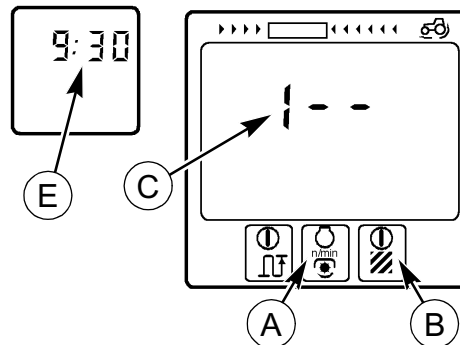
STEP 19



DI98K063

Press and hold switches (A) and (B) at the same time. When the digital display (C) changes to --6 as shown, release the switches. The old hours will appear on the lower digital display (D) and hourmeter (F) and hour glass symbol will stop flashing. Press switch (A) to decrease the old hour number or switch (B) to increase the number.

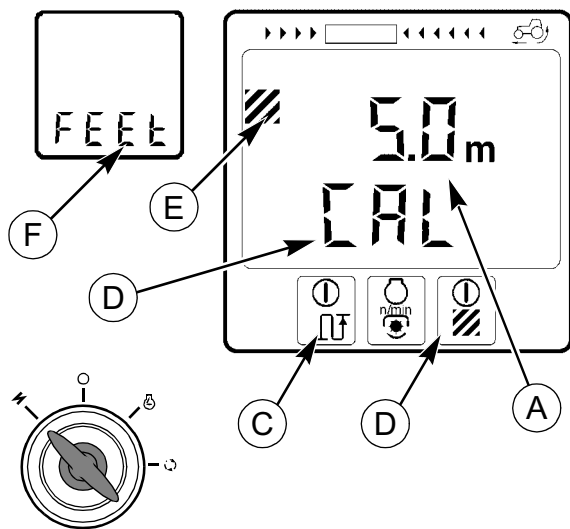
STEP 20



DI98K051

When the correct old hours have been selected, press and hold switches (A) and (B) at the same time for 1 second to save the selection. The code menu display (C) will display 1-- (Menu Code 1) and the clock display (E) will flash on and off. To exit, turn key to off.

2. Programming in the Implement Width Mode



DS98K064

STEP 1

To access the implement width programming mode, press the AREA FUNCTION switch (B) while turning the keyswitch from OFF to the ACCESSORY position.

The upper display (A) will show the previous width setting and the lower display (D) will show "CAL". The area symbol (E) will also illuminate.

STEP 2

Press the AREA FUNCTION switch (B) to increase the implement width. Press the ENGINE RPM/PTO RPM switch (C) to decrease the implement width. Make sure the decimal point setting is accurate.

The implement width is programmable between 0 and 99.9 . The factory setting is 5.0 metres for Europe and 16.4 feet for North America.

STEP 3

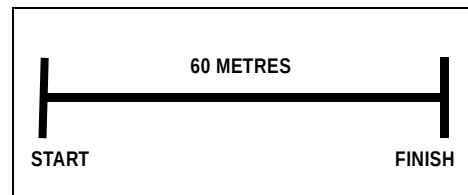
Turn the keyswitch to the OFF position to save the implement width setting and exit the implement width programming mode.

If MPH is selected for the ground speed, implement width is shown in FEET (F) on the clock display. If km/h is selected, implement width will be displayed in metres (m).

3. Programming in the Dynamic Mode

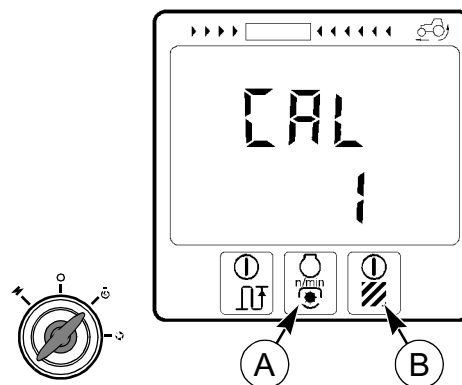
NOTE: The factory settings for tyre radius and true ground speed sensor will provide correct tractor performance, however the following calibration can be performed if more accurate settings are desired.

STEP 1



Mark off a straight line distance of 60 metres. Use an acceptable method to mark the start line and finish line.

STEP 2



DS98K065

While pressing the ENGINE RPM/PTO RPM switch (A), turn the keyswitch from OFF to the ON/RUN position and start the engine. The upper display will show "CAL" and the lower display will show "1".

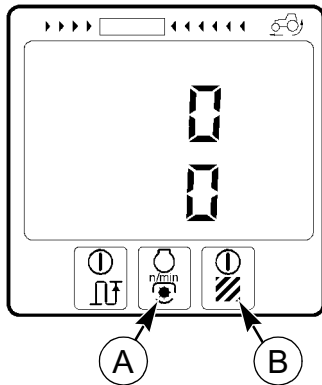
The lower display is the number of calibration runs which will be averaged automatically by the cluster for the final calibration. The number of calibration runs is programmable between 1 and 4.

Use the AREA FUNCTION switch (B) to increase the number of runs. Use the ENGINE RPM/PTO RPM switch (A) to decrease the number of runs. The most accurate calibration will be obtained using 4 calibration runs.

Continued

INSTRUMENTS/CONTROLS

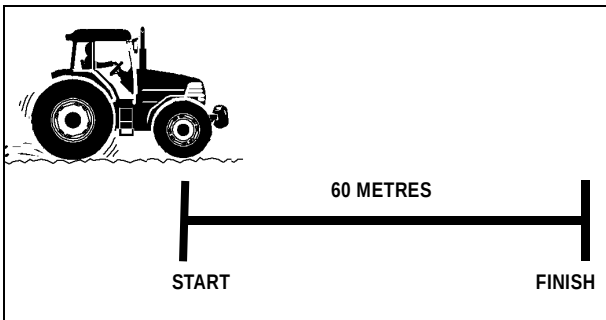
STEP 3



DS98K066

When the desired number of calibrations is set, press the ENGINE RPM/PTO RPM (A) and AREA FUNCTION (B) switches at the same time for one second to save the setting. The lower display will show "0". If equipped with a true ground speed sensor, two "0" zeros will be displayed. The "0" represents the number of pulses received from the sensor. This number will increase during each calibration run.

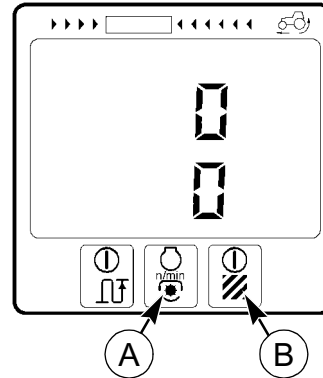
STEP 4



D196J517

Start the tractor and drive SLOWLY, but at more than 2 km/h (1.25 mph), toward the start line.

STEP 5



DS98K066

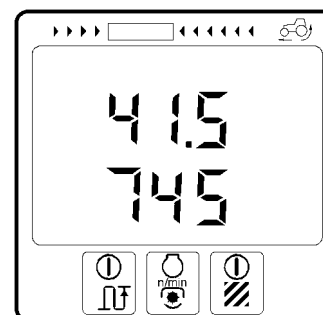
When the tractor reaches the start line, momentarily press either the ENGINE/PTO rpm switch (A) or the AREA FUNCTION switch (B). The number of pulses displayed will start to increase.

STEP 6

When the tractor reaches the finish line, momentarily press either the ENGINE RPM/PTO RPM switch or the AREA FUNCTION switch. The number of pulses displayed will return to "0". Repeat steps 4 and 5 until all calibration runs are complete.

IMPORTANT: The programmed number of calibration runs must be completed. If the programmed number of calibration runs are not completed, the instrument cluster will remain in the dynamic programming mode until the keyswitch is turned to the OFF position, and the calibration will not be programmed.

STEP 7



DS98K067

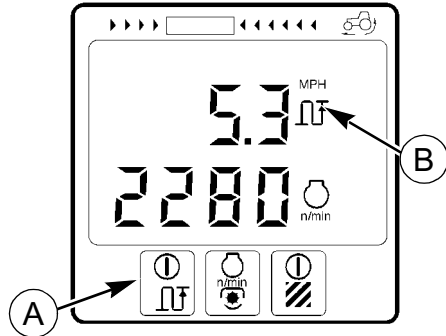
When all calibration runs are complete, the upper display will show the true ground speed sensor calibration number (if equipped) and the lower display will show the loaded tyre radius in millimeters. The instrument cluster and the display will then return to the normal operating mode.

Distance Function Operation

The distance function records and displays the distance travelled.

During normal operation:

STEP 1



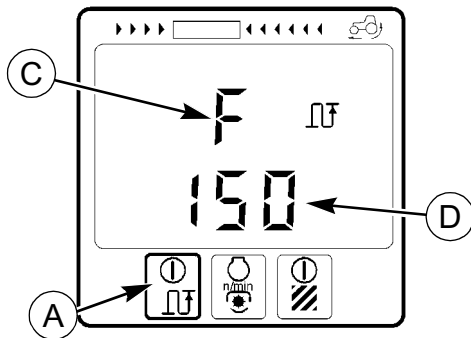
DS98K068

Press the DISTANCE FUNCTION switch (A) to start measuring the distance travelled. The distance symbol (B) is displayed.

Press the switch again to stop measuring. The distance symbol (B) is turned off. The distance travelled is stored in the memory.

STEP 2

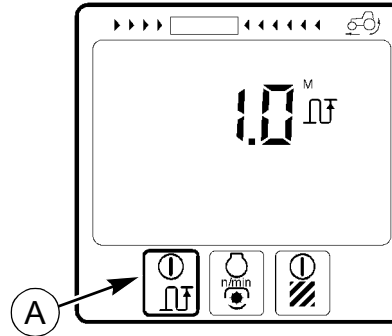
(To display distanced travelled; in the run mode while driving).



DS98K046

Press and hold the switch (A) for 2 seconds. The upper display (C) will show the unit of measurement (F for feet or m for metres) and the lower display (D) will show the total distance travelled. The distance symbol will also illuminate.

STEP 3



DS98K069

Press and hold the switch (A) for 2 seconds again. The upper display will now show the distance travelled in miles ("M") or kilometers ("km").

NOTE: If the distance travelled in feet or metres is greater than 9999, the distance travelled will only be displayed in miles or kilometres. The units for distance travelled is automatically selected based upon the ground speed units.

eg. If your cluster is programmed for mph, then feet and miles will be displayed. If your cluster is programmed for km/h, then meters and kilometers will be displayed.

STEP 4

To reset the distance travelled, press and hold the DISTANCE FUNCTION and ENGINE RPM/PTO RPM switches together for 1 second. The lower display will change to zero and the distance travelled information will be reset.

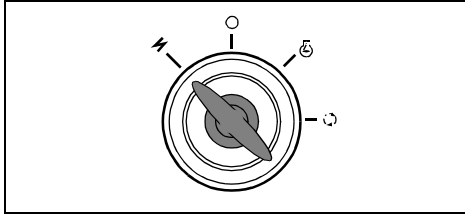
STEP 5

To return to normal rpm display, press and release the RPM switch once.

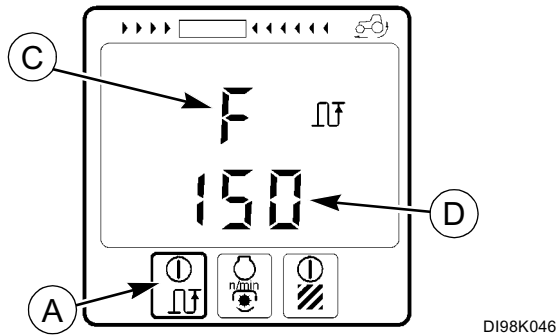
Continued

INSTRUMENTS/CONTROLS

The distance travelled can also be read with the keyswitch in the **ACCESSORY** position:

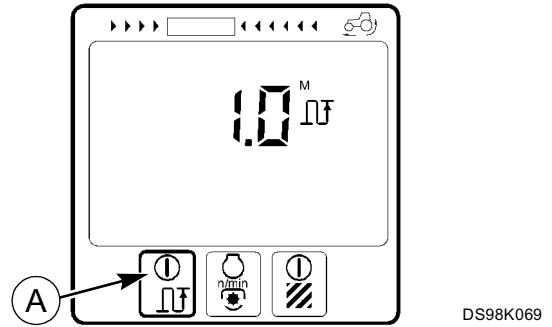


STEP 1



Press and release the DISTANCE FUNCTION switch (A). The upper display (C) will show the unit of measurement (F for feet or m for metres) and the lower display (D) will show the total distance travelled. The distance symbol will also illuminate.

STEP 2



Press the switch (A) again. The upper display will show the distance travelled in miles ("M") or kilometers ("km").

STEP 3

To reset the distance travelled, press and hold the DISTANCE FUNCTION and ENGINE RPM/PTO RPM switches together for 1 second. The lower display will change to zero and the distance travelled information will be reset.

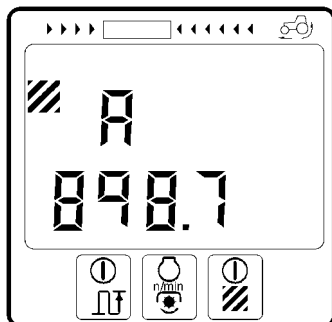
INSTRUMENTS/CONTROLS

Area Function Operation

The area function can display the total area worked or the area worked per hour.

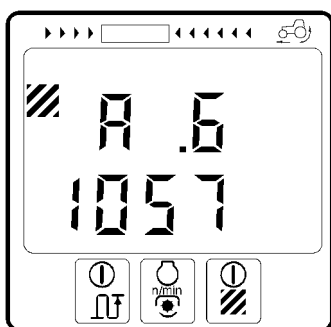
IMPORTANT: Make sure the area function mode and the implement width are programmed before using the area function. The factory setting is in the AUTO mode with an implement width of 5 meters. To change this setting, See Programming The Area Function Mode (Menu Code 5) on Page 39 of this manual

NOTE: For trailed implements, a connector is provided on the harness behind the 7 pin auxiliary electrical socket, to connect an implement position switch. This will turn the area function off when not required.



DH98K072

If the area worked is **less** than 1000 acres or hectares, it is displayed with a decimal point on the lower display.

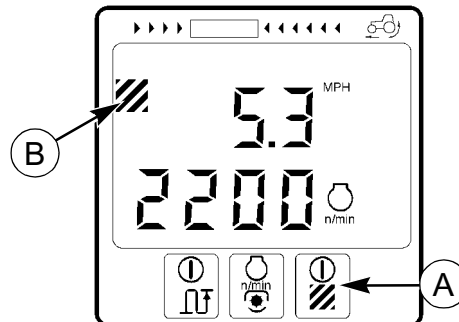


DH98K071

If the area worked is **more** than 1000 acres or hectares, the whole number is shown on the lower display and the point and tenths on the upper display.

During normal operation:

STEP 1



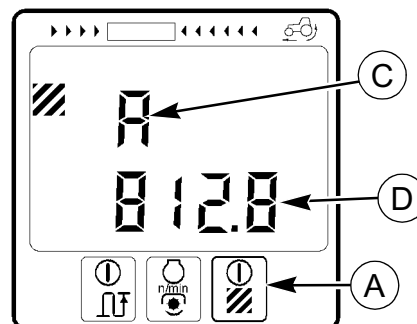
DS98K070

Press the AREA FUNCTION switch (A) to turn the area measuring function on. The area symbol (B) will be displayed.

Press the switch again to stop measuring. The area symbol will be turned off. The area worked is stored in the memory.

STEP 2

(To display area worked; in the run mode while driving).



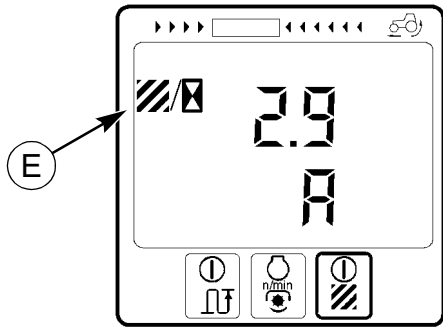
DH98K073

Press and hold the switch (A) for 2 seconds. The upper display (C) will show the unit of area ('A' for acres or 'h' for hectares) and the lower display (D) will show the total area worked. The area symbol will also display.

Continued

INSTRUMENTS/CONTROLS

STEP 3



DI98K074

Press and hold the switch (A) again for 2 seconds. The lower display will show the area units and the upper display the area worked per hour. The area per hour symbol (E) will illuminate.

STEP 4

Press and release the RPM switch to return to normal display.

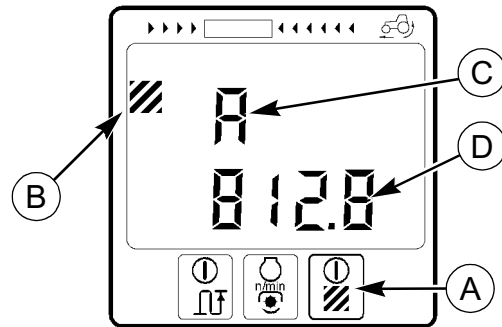
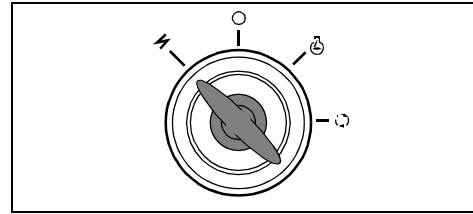
If the switch is held, the display will alternate between total area worked and area worked per hour.

NOTE: The units for area worked is automatically selected based upon the ground speed units. eg. If your cluster is programmed for **mph**, then **acres** will be displayed. If your cluster is programmed for **km/h**, then **hectares** will be displayed.

STEP 5

To reset the area worked, press and hold the AREA FUNCTION and ENGINE RPM/PTO RPM switches together for 1 second. The lower display will change to zero and the area worked information will be reset.

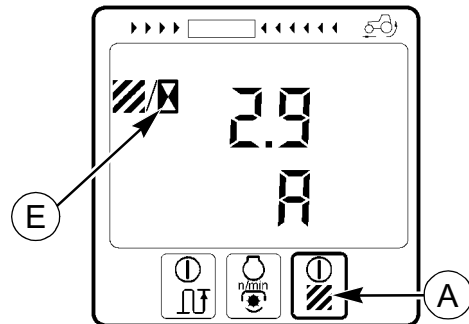
The area worked can also be read with the keyswitch in the **ACCESSORY** position:



DH98K073

Press and release the AREA FUNCTION switch (A). The upper display (C) will show the unit of area, either 'A' for acres or 'h' for hectares. The lower display (D) will show the total area worked. The area symbol (B) will also illuminate.

STEP 6



DI98K074

Press and release the switch (A) again. The lower display will show the units, either 'A' for acres or 'h' for hectares and the upper display will show area worked per hour. The area per hour symbol (E) will illuminate.

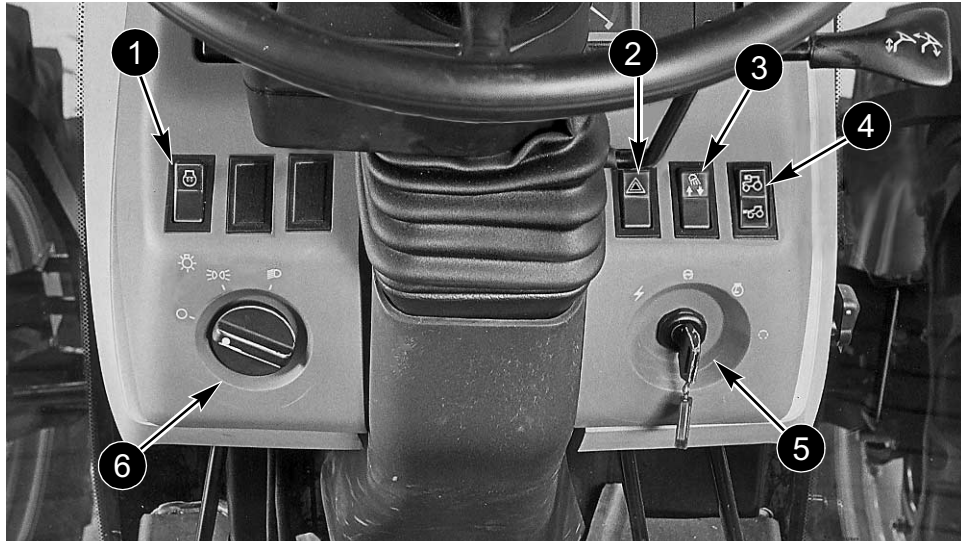
STEP 7

To reset the area worked, press and hold the AREA FUNCTION and ENGINE RPM/PTO RPM switches together for 1 second. The lower display will change to zero and the area worked information will be reset.

INSTRUMENTS/CONTROLS

OPERATING CONTROLS

Instrument Panel



MD02E053

1. THERMOSTART/COLD START SWITCH
(If Equipped) -See page 65 for instructions.

2. HAZARD WARNING SIGNAL SWITCH

3. WORK LIGHTS - Three position rocker switch. The lights will operate as follows:

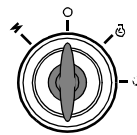
First Position - OFF.

Second Position - The rear work lights are ON. The lamp in the rocker switch will also be illuminated.

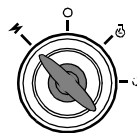
Third Position - The front and rear work lights are ON. The lamp in the rocker switch for the rear work lights and the indicator lamp on the cluster for the front work lights will also be illuminated.

4. UPPER HEAD LAMPS SWITCH (If Equipped with Front Hitch) - With head lamp switch in third position press the front of the switch down, upper head lamps will illuminate and main head lamps will go off.

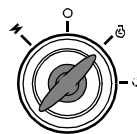
5. KEY SWITCH - The key switch has four positions as follows:



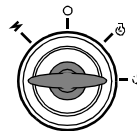
Off Position - Turn from On/Run position counter clockwise to stop the tractor. The key can only be removed from this position.



Accessory Position - The radio can be operated in this position and some of the cluster displays, also used for programming the digital instrument cluster.



On/Run Position - All bar graphs, digital displays, warning and indicator lamps will be turned on for approximately 3.5 seconds. This position is also used for dynamic calibration of rear tyre size and true ground speed sensor, if equipped.

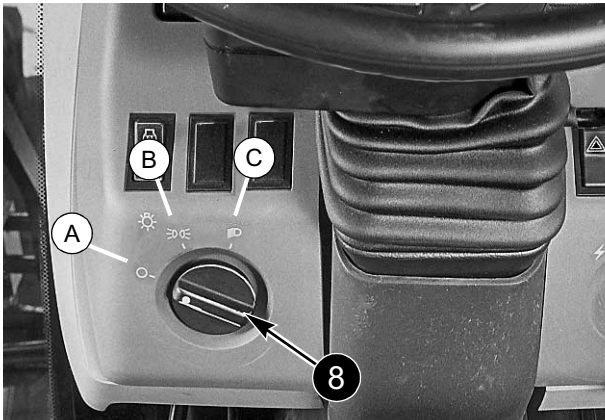


Start Position - Turn the key fully clockwise against spring pressure will energise the starter motor in addition to the circuits already mentioned above.

INSTRUMENTS/CONTROLS

6. HEAD LAMP SWITCH -

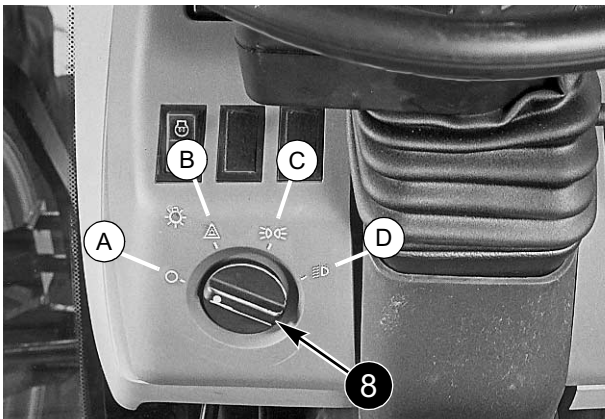
Three Position Switch



MD02E053

- A. First Position - All lamps OFF.
- B. Second Position - Front position lamps, tail lamps, license plate lamps and the side console illumination lamp will illuminate. Also analog cluster illumination lamps will be ON.
- C. Third Position - Front side lamps, tail lamps, license plate lamps, the side console illumination lamp and main head lamps will illuminate.

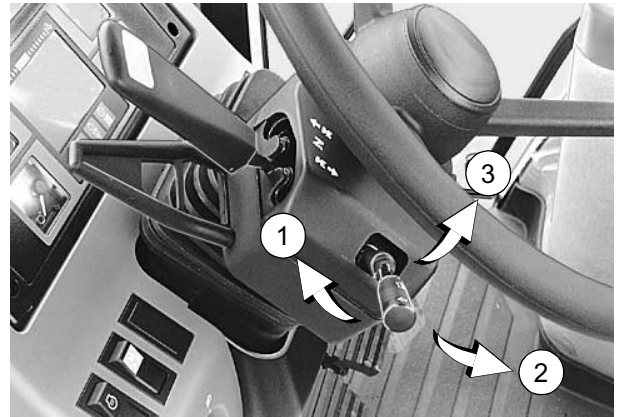
Four Position Switch



MD02E054

- A. First Position - All lamps OFF.
- B. Second Position - ALL the amber warning lamps will flash ON and OFF. (Road - Daytime).
- C. Third Position - ALL the amber warning lamps will flash ON and OFF. Tail lamps and headlamps will be illuminated. (Road - Night).
- D. Fourth Position - The side console illumination lamp and main head lamps will illuminate. Work lamp switch is enabled (Field).

Direction Turn Signal, Hi/Low Beam Switch and Horn



DD98J149

TURN SIGNAL:

Position 1. = Right turn signal on.

Position 2.= Left turn signal on.

NOTE: Self cancelling switch only: The turn signal lamps will continue to flash until the steering wheel is turned in the opposite direction. You can override this function to cancel the indicator by moving the switch in the opposite direction chosen.

HEADLAMP HI/LOW BEAM:

Position 3.= With headlamp switch in **Third or Fourth** position, lifting the switch towards the steering wheel, then releasing, will select high beam, (Blue indicator lamp on instrument cluster will illuminate). Lifting the switch again will select low beam, (Blue indicator lamp will go off).

With headlamp switch in **First or Second** position, lifting the switch towards the steering wheel and releasing will flash the headlamps.

HORN:

Press the end of the switch to operate.

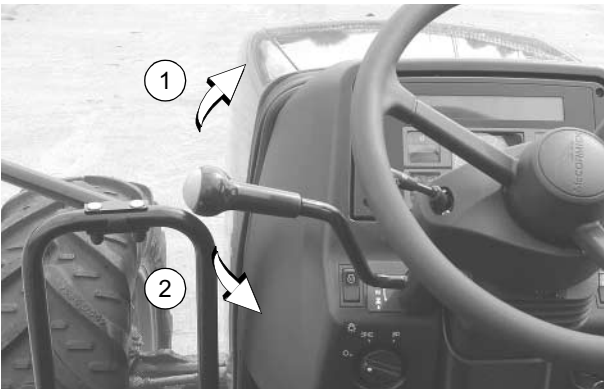
INSTRUMENTS/CONTROLS

Forward/Neutral/Reverse Lever



DP98J026

POWER SHUTTLE (XTRASHIFT TRACTORS)



MD02G054

SYNCHRO SHUTTLE

Use the Forward/Neutral/Reverse (F/N/R) lever to change direction of travel.

Position 1. = Forward

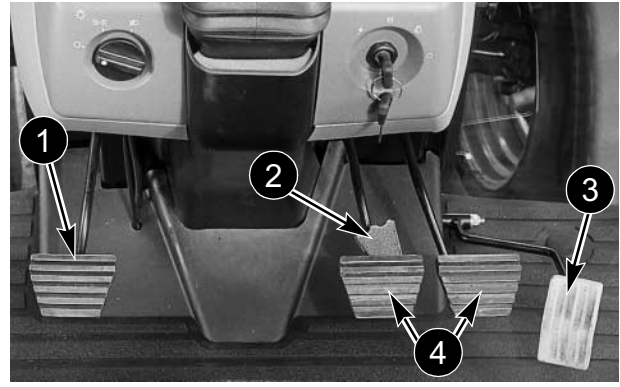


Position 2. = Reverse



NOTE: On tractors equipped with a synchro shuttle selection must **ONLY** be made with the tractor stationary and after fully depressing the clutch pedal.

Pedal Controls



DP98E011

1. CLUTCH PEDAL - See page 75 for correct clutch pedal operation.
2. BRAKE PEDALS INTERLOCK - The brake pedals interlock is used to lock the brake pedals together.



WARNING: Brake pedals must be locked together for road travel. This will ensure uniform brake operation and maximum stopping ability.

3. THROTTLE PEDAL

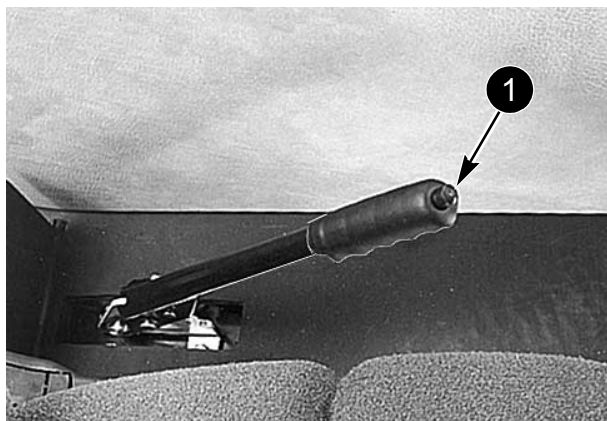
4. BRAKE PEDALS - The left brake pedal stops the left rear wheel and the right brake pedal stops the right rear wheel. For off road operation the pedals can be used individually to assist turning. For road operation the pedals **MUST** be locked together.



WARNING: Extra weight and bad traction conditions such as mud or ice increase your stopping distance. Remember that liquid in the tyres, weights on the tractor or wheels, tanks filled with fertilizer, herbicides or insecticides - all these add weight and increase the distance you need in which to stop. Do not exceed the maximum permissible tractor or axle operating weights, as found on the tractor P.I.N. plate.

INSTRUMENTS/CONTROLS

Park Brake



RP95N098

1. PARK BRAKE BUTTON

The park brake is located at the LH side of the operators seat. Pull the lever fully up to engage the park brake. If you set the tractor in motion release the park brake after putting the tractor in gear, see note. Press the button on the end of the lever IN and lower the lever to release the brake.

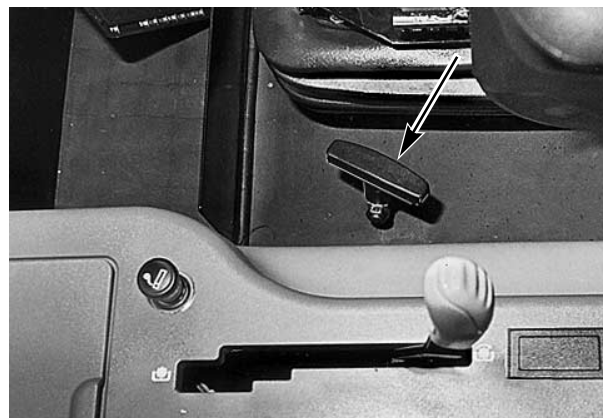
When the park brake is engaged the warning lamp on the instrument cluster will illuminate when the keyswitch is turned to ON. The master warning lamp will flash when the engine is started.

The lamps will go off when the brake is disengaged.

NOTE: *An audible alarm will sound, when the engine is running, if a speed gear (1, 2, 3 or 4) is selected when the park brake is engaged.*

IMPORTANT: *Driving the tractor with the park brake partially engaged will cause damage to internal transmission components. Make sure brake is fully off.*

Auto Hitch Locking Latches Release Control (If Equipped)



DP98C317

This release control is located behind the seat on the RH side.

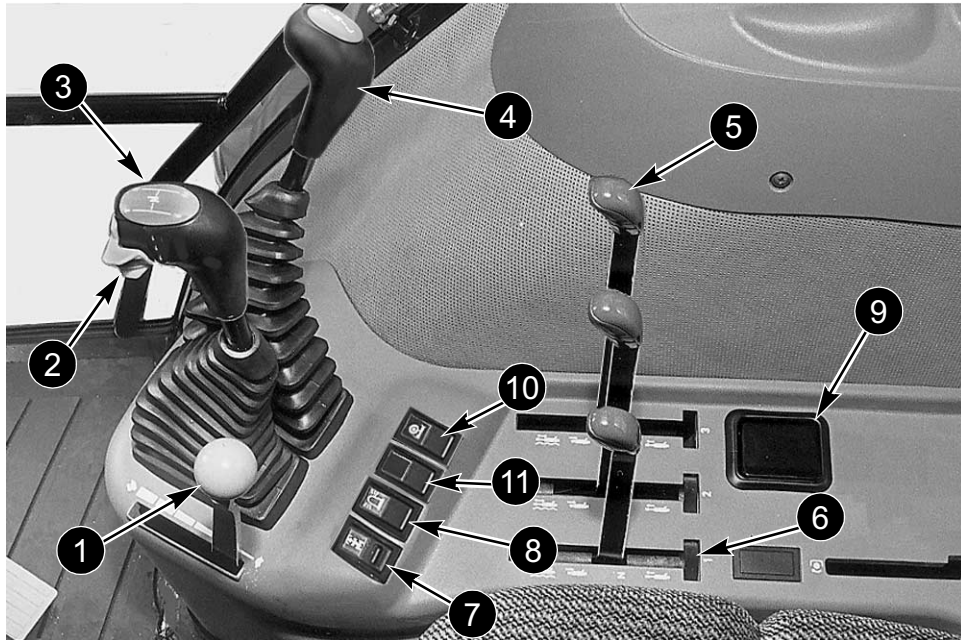
Pull the release control to unlock the locking latches.

NOTE: *If equipped with Ride Control the unlatching of the Auto Hitch can be made easier by holding the Ride Control Switch down while pulling the auto hitch release control.*

See Connecting an Implement on Page 88 of this manual for complete instructions.

INSTRUMENTS/CONTROLS

RIGHT HAND UPPER AND LOWER CONSOLE CONTROLS



MD02E055

1. THROTTLE LEVER - To increase or decrease the engine speed.

2. XTRASHIFT CONTROL
Three position rotary switch. See page 70 for more details.

OR

TWO SPEED POWERSHIFT CONTROL
Two position rotary switch.



= "DIRECT DRIVE", NORMAL OPERATION.



= SPEED REDUCTION, INCREASE TORQUE.

See page 72 for more details.

NOTE: DO NOT select speed reduction to improve engine braking.

3. TRANSMISSION SPEED LEVER -
See page 70.

4. TRANSMISSION RANGE LEVER (and CREEPER LEVER, if equipped) - See page 69 for normal transmission operation and page 99 for Creeper operation.

5. REMOTE HYDRAULIC VALVE LEVERS -
See page 132.

6. REMOTE LEVERS LOCKING DEVICE -
See page 132.

7. FRONT PTO SWITCH (If Equipped) -
See page 106.

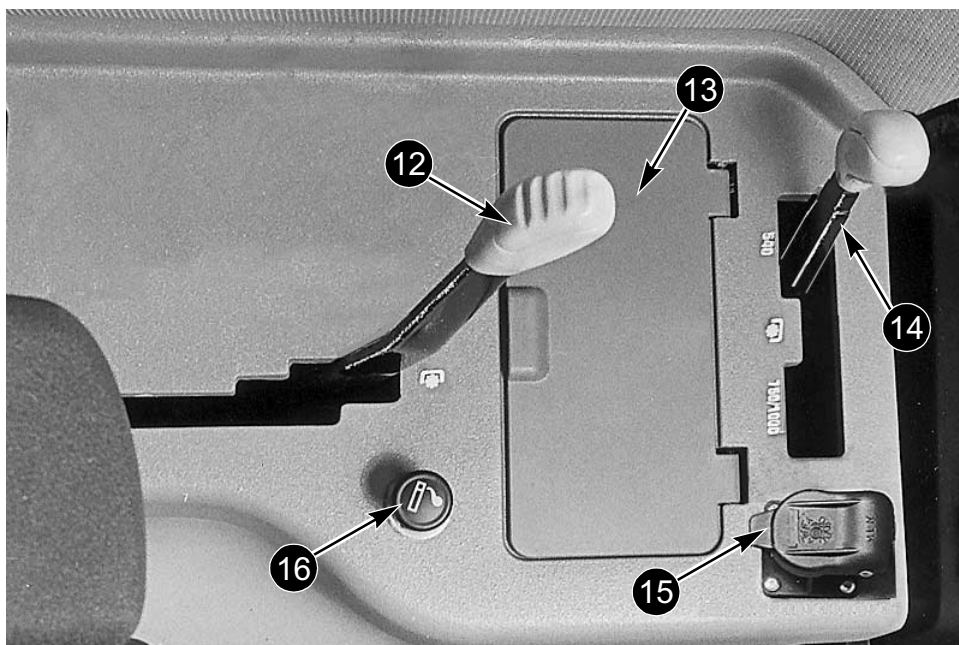
8. ROTATING BEACON SWITCH (If Equipped) -
See page 10.

9. ASHTRAY

10. RIDE CONTROL SWITCH (If Equipped) -
See page 122.

11. REAR FOG LAMP SWITCH (If Equipped)

INSTRUMENTS/CONTROLS



MH02H034

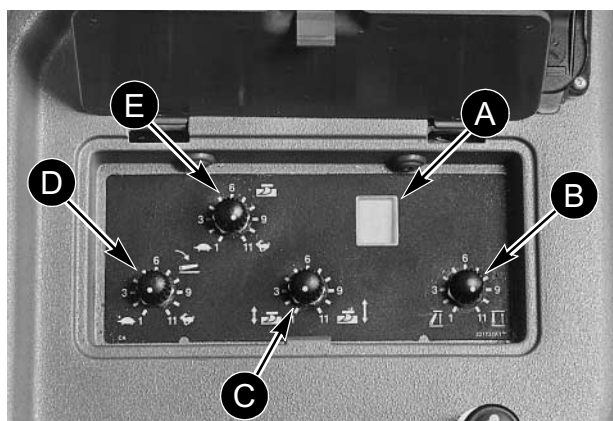
12. REAR PTO CLUTCH LEVER -
See page 102.

14. REAR PTO SHIFTABLE SPEED LEVER -
See page 103.

13. HITCH CONTROL BOX -

15. THREE TERMINAL SOCKET - See page 96.

16. CIGARETTE LIGHTER



DP97C155

A. DIAGNOSTIC DISPLAY - The display indicates hitch operation error codes.

B. HITCH UPPER LIMIT CONTROL KNOB

C. HITCH TRAVEL CONTROL KNOB

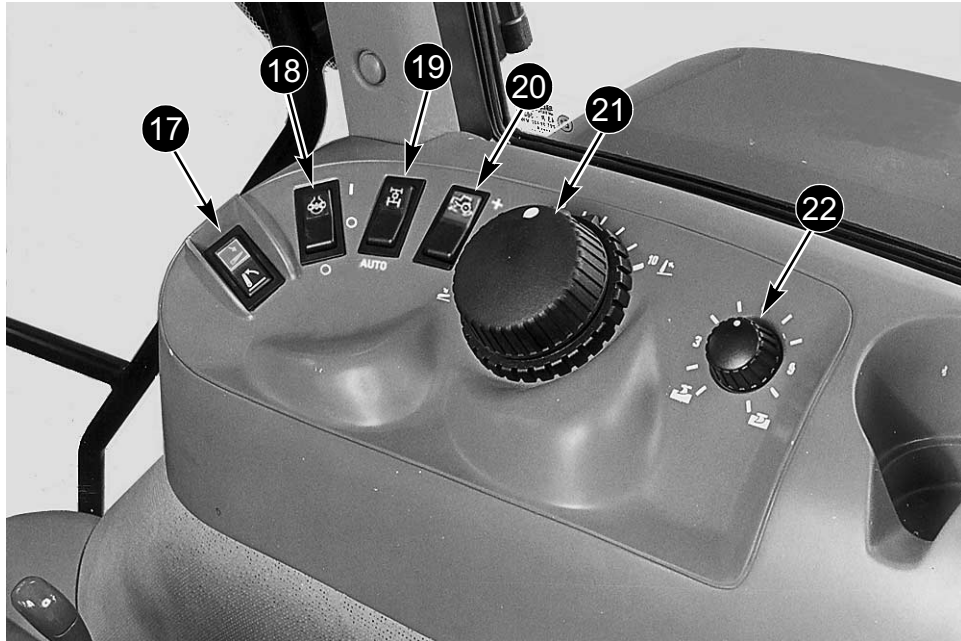
D. HITCH DROP SPEED CONTROL KNOB

E. HITCH RESPONSE CONTROL KNOB
(If Equipped)

NOTE: Too slow a setting may limit the ability of the hitch to follow the contours of the soil.

See page 121 for more information.

INSTRUMENTS/CONTROLS



DR99J013

17. HITCH UP/DOWN SWITCH - See page 114.

18. DIFFERENTIAL LOCK SWITCH -
See page 123.

19. MECHANICAL FRONT DRIVE (MFD)
(If Equipped) - See page 124.

NOTE: DO NOT use the MFD for light duty work or when travelling on the highway. DO NOT drive the tractor in high range third or fourth gear with MFD engaged.

20. SLIP LIMIT CONTROL SWITCH -
See page 120.

21. HITCH POSITION CONTROL -
See page 118.

22. HITCH DRAFT (LOAD) CONTROL KNOB -
See page 120.

23. FRONT LOADER CONTROL LEVER
(If Equipped).



WARNING: Tractors equipped with Mechanical Front Drive (MFD) have increased traction and can climb steeper slopes. Stay off slopes too steep for safe operation. To prevent rear overturns, reverse up steeper slopes.



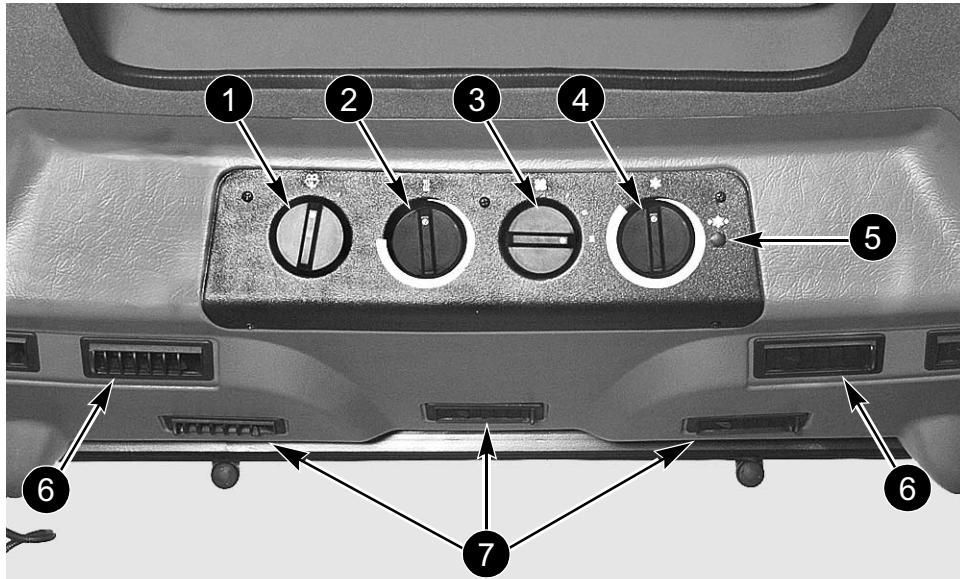
DP97E451

Refer to loader manufacturers handbook and/or your dealer for correct loader operation.

INSTRUMENTS/CONTROLS

OPERATOR CAB ENVIRONMENT CONTROLS

Deluxe Cab



DD95M222

1. WINDSHIELD WIPER/WASHER CONTROL -
Three Positions:



Intermittent, clockwise to increase or counterclockwise to decrease wipes per minute.

I Slow.

II Fast.

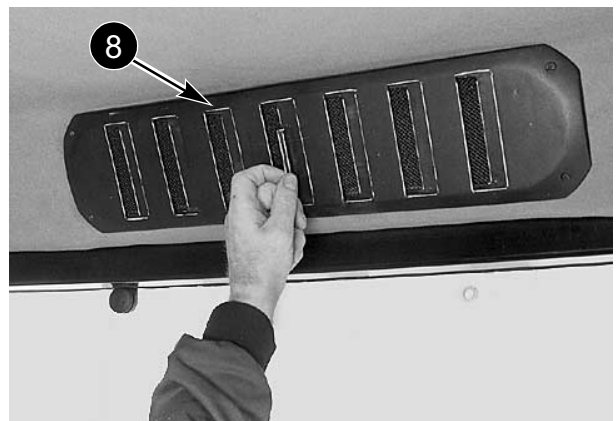
NOTE: On tractors equipped with an opening windshield there is only one speed.

Push the control knob to activate windshield washer (If Equipped).

5. AIR CONDITIONER PRESSURE INDICATOR
LAMP

6. AIR OUTLET VENTS

7. DEFROSTER CONTROL



DP96J356

2. TEMPERATURE CONTROL

NOTE: Under certain conditions the heater fan can run at maximum speed when the control is in the 2nd, 1st or OFF position. This is a safety feature designed to prevent overheating of resistors in the circuit.

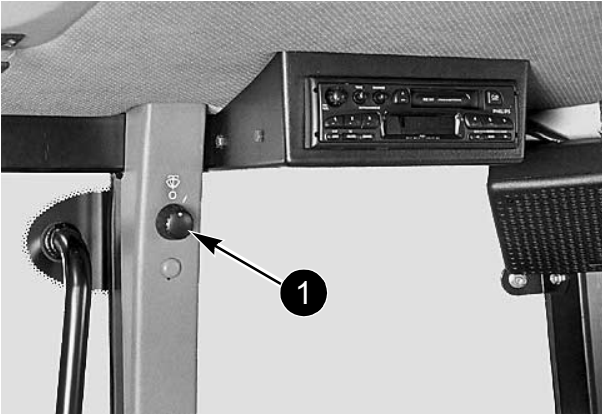
3. BLOWER CONTROL

4. AIR CONDITIONER CONTROL - Blower must
be operating.

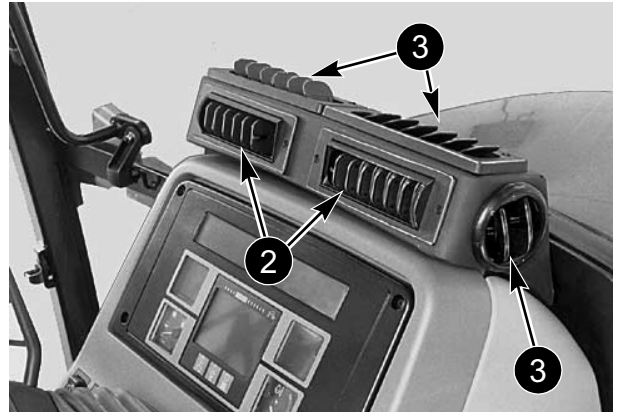
8. RECIRCULATION VENT

INSTRUMENTS/CONTROLS

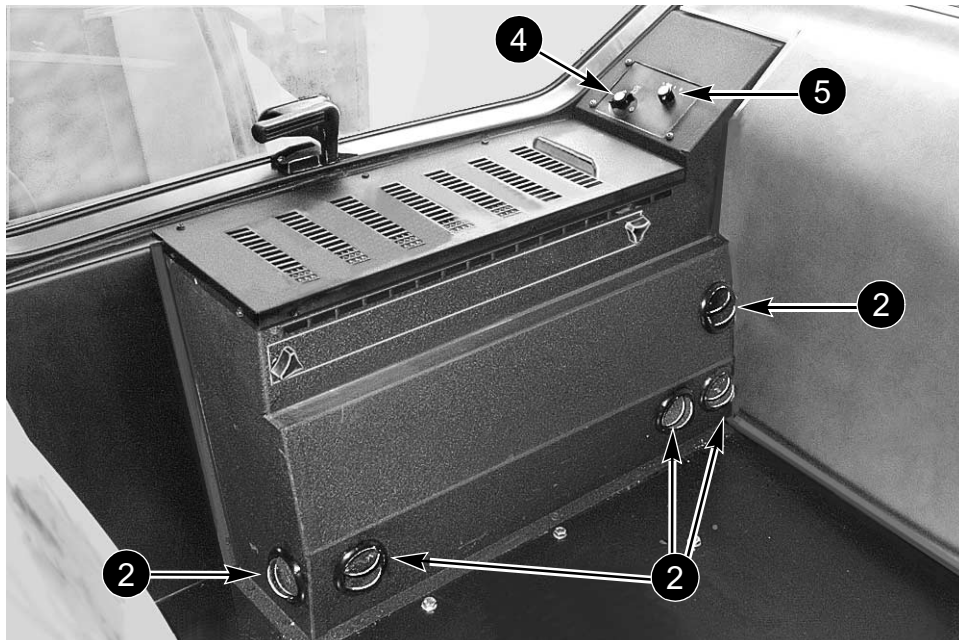
Low Profile Cab (without Air Conditioning)



DP97K027



DP99G059



DP97E257

1. WINDSHIELD WIPER/WASHER CONTROL- Two Positions:



Intermittent, clockwise to increase or counterclockwise to decrease wipes per minute.



On.

Push the control knob to activate windshield washer (If Equipped).

2. AIR DISCHARGE VENTS

3. DEFROSTER VENTS

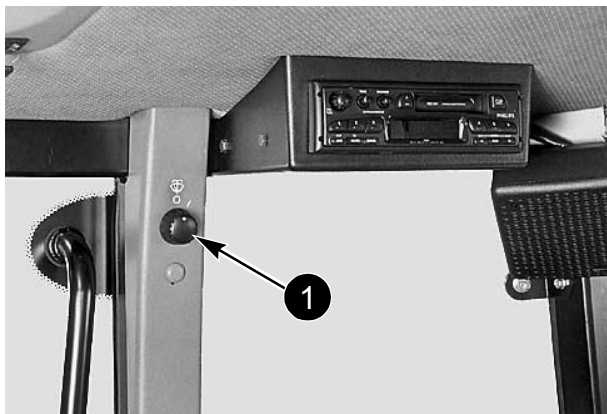
4. TEMPERATURE CONTROL

NOTE: Under certain conditions the heater fan can run at maximum speed when the control is in the 2nd, 1st or OFF position. This is a safety feature designed to prevent overheating of resistors in the circuit.

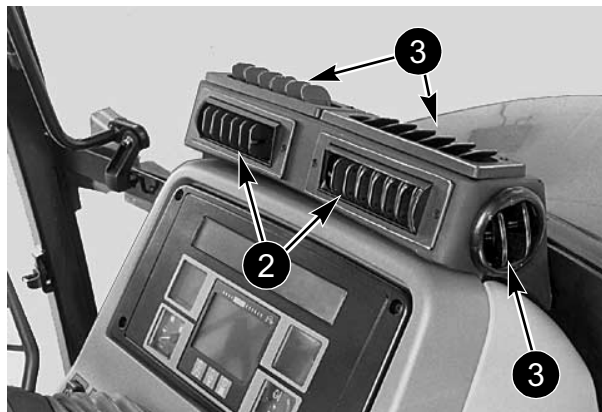
5. BLOWER CONTROL

INSTRUMENTS/CONTROLS

Low Profile Cab (with Air Conditioning)



DP97K027



DP99G059



DR00N032

1. WINDSHIELD WIPER/WASHER CONTROL- Two Positions:



Intermittent, clockwise to increase or counterclockwise to decrease wipes per minute.



On.

Push the control knob to activate windshield washer (If Equipped).

2. AIR DISCHARGE VENTS

3. DEFROSTER VENTS

4. TEMPERATURE CONTROL

NOTE: Under certain conditions the heater fan can run at maximum speed when the control is in the 2nd, 1st or OFF position. This is a safety feature designed to prevent overheating of resistors in the circuit.

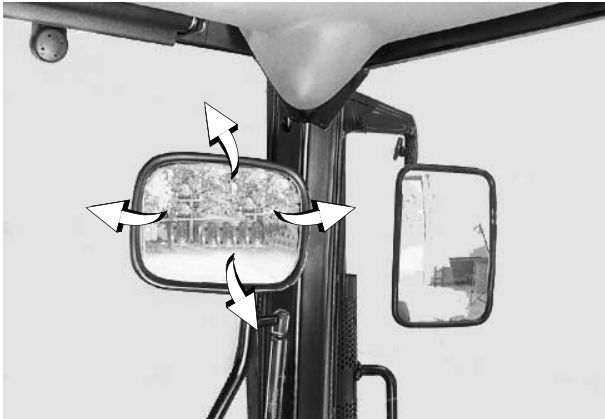
5. BLOWER CONTROL

6. AIR CONDITIONER CONTROL (If Equipped) - Blower must be operating.

REAR VIEW MIRRORS

The mirrors give the operator a clear rear view for distance and an immediate rear view to check implements when working.

Internal Mirror



DP96J364

To adjust the mirror: hold firmly, tilt horizontally and vertically as required.

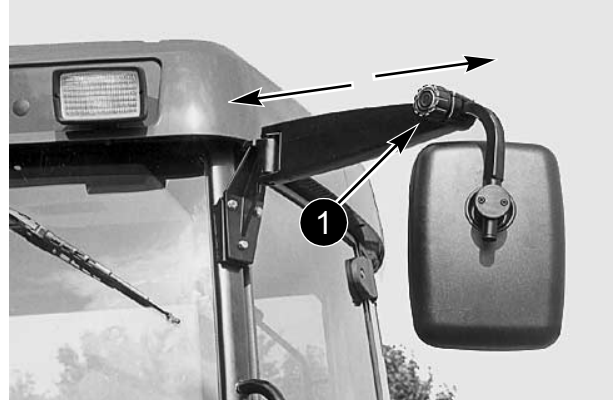
Basic Mirrors



DS97K180

To adjust the mirror head: hold firmly, tilt horizontally and vertically as required.

Extendable Mirrors (If Equipped)



DP99J053

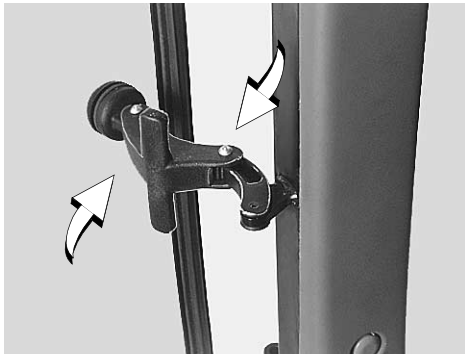
To alter the length: loosen the locking knob (1) and move the mirror to the required position, then tighten the locking knob.

To adjust mirror head: hold firmly, tilt horizontally and vertically as required.

INSTRUMENTS/CONTROLS

ADDITIONAL CAB FEATURES

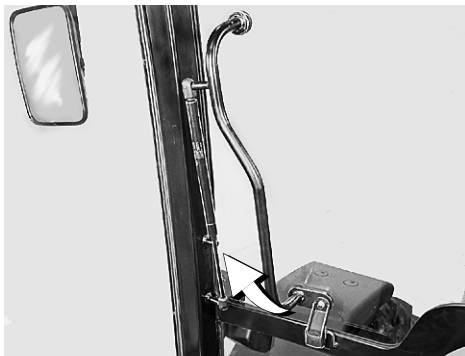
Cab Side Windows



DD95M220

Push the window arm rearward and then push the arm out until the window stops.

Opening Windshield (If Equipped)



DP96H290

Release catches, (one each side) and push the bottom outward.

IMPORTANT: DO NOT open the windshield when using a front loader.

Cab Rear Window



DD95M217

Ventilation - The lever in the slot (as shown).
Emergency Exit - window fully open.

Sun Visor Deluxe Cab Visor (If Equipped)



DP96J366

Pull down or push up as required.

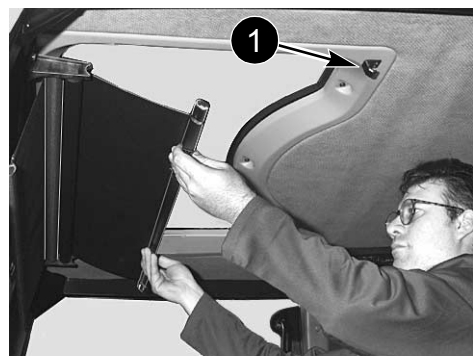
Sun Visor Low Profile Cab Visors (If Equipped)

Two sun visors are available, roof and windshield:



DD97G208

Windshield Visor (If Equipped) - Pull down or push up as required.

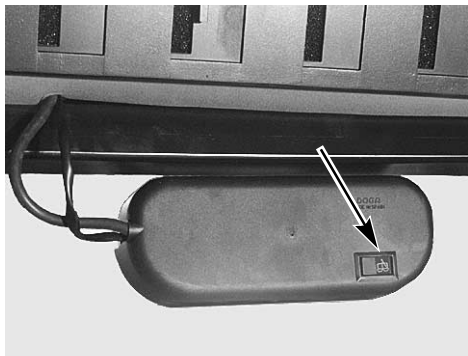


DD97G207

Roof Visor (If Equipped) - Pull visor and attach into retaining clips (1).

INSTRUMENTS/CONTROLS

Rear Wiper/Washer (If Equipped)



DD95M219

When looking at the switch:
Right side of switch = On/wash.
Left side of switch = Off.

Roof Hatch (If Equipped)



DP96H288

Ventilation - Push the latch towards the front of the tractor and then push the hatch up.

Emergency Exit - Push firmly upward to release the support struts from the lower retainer clips.

Radio (If Equipped)



DP96J357

DELUXE CAB LOCATION



DP97K027

LOW PROFILE CAB LOCATION

For operation refer to the radio manufacturers instructions.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

GENERAL OPERATION

GENERAL OPERATION

Before Starting The Engine



WARNING: Before starting the engine, be sure all operating controls are in neutral and the park brake is engaged. This will eliminate accidental movement of the machine or start up of power driven equipment.



WARNING: Never start the engine in a closed building. Proper ventilation is required under all circumstances.

Do the following checks before starting the tractor for the first time.

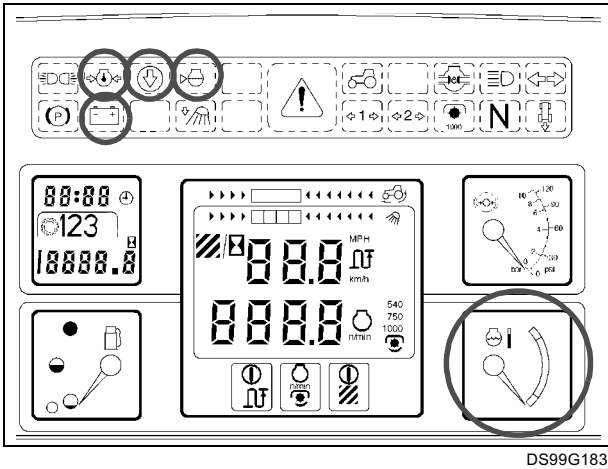
1. Make sure all persons that operate or do maintenance on the tractor understand that clean fuel is important.
2. Check all lubrication fittings.
3. Check the oil levels in the engine crankcase and transmission.
4. Check the water level in the batteries (if battery is not maintenance - free).
5. Check that the fuel tank is filled with clean fuel of the specifications given in this manual. Clean around the fuel tank cap before you remove the cap.
6. Check the fuel system, cooling system and engine oil pan for leaks.
7. Check that the alternator and compressor belts are adjusted correctly.
8. Remove any water or sediment from the fuel primary filter.
9. Check the air pressure of the tyres.
10. If your tractor has a power takeoff, make sure the safety guard is installed and in good condition.
11. Check the coolant level in the coolant recovery bottle and radiator. Add water and ethylene glycol coolant as needed.

Run In Procedure

- A gradual run-in of a new engine is not necessary.
- Continuous operation at light loads during the early life of the engine can cause lubricating oil to enter the exhaust system.
- Maximum load can be applied to a new engine as soon as the engine is put into service and the coolant temperature has reached a minimum of 60°C (140°F).
- The engine will benefit if the load is applied as soon as possible after the engine is put into service.
- **DO NOT** run the engine for long periods at maximum load.
- **DO NOT** run the engine for long periods at high speed without a load. When not operating the engine with a load, keep the engine at the correct operating temperature.

GENERAL OPERATION

Service Indicator Lamps And Gauges



The condition of a monitored system is indicated by the service indicator lamps and gauges, (as highlighted above). If the lamps illuminate when the engine is running, a service or repair is required.

The operation of the indicator lamps and gauges is described in the Instruments/Controls section of this manual.

When the keyswitch is turned to the ON position, the instrument cluster will do a self check of all monitored systems. Some of the indicator lamps, gauges and the digital displays will energize for 3.5 seconds.

Before starting the tractor, make sure all systems are operating.

Service intervals can be programmed into the Digital Instrument Cluster to remind you when service is required, see page 38 for more information.

First Service Required Before Regular Intervals

Services must be carried out at varying Engine Hour intervals, depending on which comes first, see below for example.

- Every 10 Hours, or daily
- Every 50 Hours, or weekly
- Every 100 Hours, or every two weeks
- Every 250 Hours, or monthly
- Every 500 Hours, or six monthly
- Every 1000 Hours, or annually
- Every 2000 Hours, or bi-ennial

Some tasks must be carried out which are **outside** the regular intervals. These tasks are listed below.

After any wheel/axle adjustments, the first 30 minutes of operation (then every 10 Hours of operation thereafter, until the torque has stabilized):

- Check the torque of all wheel bolts/nuts.
- Check the torque of all front axle bolts/nuts.

After the first 20 Hours of front PTO operation (then at 250 Hours and every 250 Hour of front PTO operation thereafter):

- Front PTO oil change.

After the first 20 Engine Hours (then at 500 Hours and every 500 Hours thereafter):

- Change the transmission/hydraulic oil filter.

After the first 50 Hours of operation (then at 250 Hours and every 250 Hours of operation thereafter):

- Check tension of Drive belts.

After the first 250 Hours of operation (then at 1000 Hours and every 1000 Hours of operation thereafter):

- Change MFD Axle Differential Oil.
- Change MFD Axle Planetary Oil.

GENERAL OPERATION

STARTING PROCEDURE

Normal Starting Procedure



WARNING: On electrically operated MFD tractors, the MFD clutch is spring loaded into engagement and relies on hydraulic pressure for disengagement. A failure in the MFD hydraulic system will therefore automatically engage the MFD even though the MFD switch is in the disengaged position. This is a built in safety feature. **DO NOT** operate MFD tractor transmissions with the rear wheels off the ground or removed, **UNLESS THE FRONT WHEELS ARE ALSO JACKED UP CLEAR OF THE GROUND OR THE FRONT AXLE DRIVE SHAFT IS DISCONNECTED.** Failure to do this can result in the tractor being pulled off the rear supports by the front axle.



WARNING: Operate controls only when seated in the Operators seat.

IMPORTANT: Operate the engine at idle speed for a few minutes to make sure that enough lubricant reaches the turbocharger bearings and engine parts before operating the engine at rated speed.

STEP 1

Turn on the master disconnect switch, (if equipped).

STEP 2



Push the clutch pedal fully down. Put the range and speed levers in the NEUTRAL position.

NOTE: The Speed Lever **MUST** be in the NEUTRAL position or the starter motor will not operate.

STEP 3



XTRASHIFT TRACTOR SHOWN

Put the Forward/Neutral/Reverse lever in the NEUTRAL position.

NOTE: On tractors equipped with a Synchro Shuttle transmission you **MUST** depress the clutch pedal before trying to move the Forward/Neutral/Reverse lever.

NOTE: XtraShift Tractors are equipped with a Neutral Start Switch on the F/N/R circuit. If the Forward/Neutral/Reverse lever is not in the neutral position the engine **WILL NOT** start.

NOTE:

STEP 4



Check to make sure the Rear PTO clutch lever is in the disengaged position.

NOTE: The Rear PTO clutch lever **MUST** be in the disengaged position or the starter motor will not operate.

Continued

GENERAL OPERATION

STEP 5



DP97F035

Move the throttle lever to 1/4 open position.

STEP 6



DP96J332

Turn the keyswitch to the START position until the engine starts, but no more than 30 seconds, then release the key. Run the engine for 2 minutes.

IMPORTANT: If the engine does not start and an audible alarm sounds, make sure the speed lever is in the NEUTRAL position.

IMPORTANT: If the engine starts and then stops wait for the starter motor to stop turning before you turn the key switch to the start position again.

IMPORTANT: DO NOT use the starting motor for more than 30 seconds without stopping. Wait three minutes between starts to allow the starter motor to cool.

STEP 7

Check that all indicator lamps are giving normal indications and, when warm, that the coolant temperature gauge is in the green area.

IMPORTANT: If the indicator lamps or gauge does not give the correct indications, STOP THE ENGINE IMMEDIATELY AND CHECK FOR THE CAUSE.

Cold Temperature Operation

Before you start the engine and operate your tractor during cold ambient temperatures, check the following items:

following items:

- BATTERIES - Must have a full charge.
- FUEL - Must be clean and contain no water.
- ENGINE OIL - Must have the correct viscosity for the ambient temperature range.
- TRANSMISSION HYDRAULIC FLUID - Must have correct oil. Use McCormick HTX transmission fluid.
- COOLING SYSTEM - Must have a minimum of 33 percent and a maximum of 50 percent low silicate ethylene glycol solution for protection. This ratio will vary with different market requirements.
- TYRES - If there is liquid in the tyres, the tyres must have protection against freezing temperatures below 0°C. See your dealer.
- STOPPING THE ENGINE - Permit the engine temperature to decrease before stopping.
- CONDENSATION IN FUEL TANK - To prevent condensation in the fuel tank and water entering the fuel system, fill the fuel tank after each operating day.
- FUEL FILTER - During cold ambient temperatures, make sure you remove water from the fuel filter each day or damage will occur. Loosen the drain plug each day before starting the engine. Tighten the drain plug after the water has drained.

IMPORTANT: During cold ambient temperatures never run the engine at low idle speed for long periods of time. Never run the engine for long periods of time when the coolant temperature is below normal.

GENERAL OPERATION

During cold ambient temperatures, the engine will not heat to or keep the rated operating temperature at slow engine speeds. Slow engine speeds in cold temperatures can cause damage to the engine. Use the following procedures to warm the engine oil and transmission oil and to keep the correct operating temperatures.

1. WARMING THE ENGINE AND TRANSMISSION.

- A. Start the engine using the correct Cold Temperature Starting procedure given in this manual.
- B. To heat the transmission oil, run the engine at 1500 rpm for approximately five minutes.

2. KEEP ENGINE AT CORRECT OPERATING TEMPERATURE.

- A. When the engine is operating in cold ambient temperatures without a load, keep the engine warm as described below.
- B. Run the engine at approximately 1500 rpm.
- C. Put a cover in front of the grille to control the amount of air going through the radiator.

3. STOPPING THE ENGINE.

- A. Run the engine at slow speed for a short period of time. This will permit the engine temperature to decrease gradually before stopping the engine.

Starting the Engine Using the Thermostart (If Equipped)



WARNING: *DO NOT spray ether or gasoline into the air induction manifold of the tractor fitted with a thermostart system. To do so could cause an explosion and injury.*

To start the diesel engine at cold ambient temperatures of -7°C (20°F) or lower, use the Thermostart cold start system according to the following procedure:

STEP 1

Turn on the master disconnect switch, (If equipped).

STEP 2

Push the clutch pedal fully down. Put the range and speed levers in the NEUTRAL position.

STEP 3



DR98J150

XTRASHIFT TRACTOR SHOWN

Put the Forward/Neutral/Reverse lever in the NEUTRAL position.

NOTE: *On tractors equipped with a Synchro Shuttle transmission you MUST depress the clutch pedal before trying to move the Forward/Neutral/Reverse lever.*

NOTE: *XtraShift Tractors are equipped with a Neutral Start Switch on the F/N/R circuit. If the Forward/Neutral/Reverse lever is not in the neutral position the engine WILL NOT start.*

Continued

GENERAL OPERATION

STEP 4

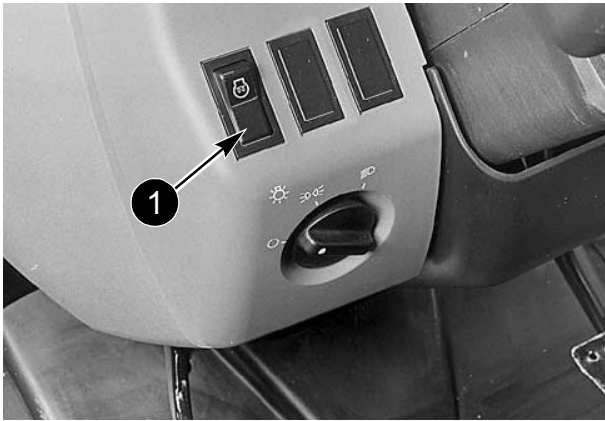
Check to make sure the Rear PTO clutch lever is in the disengaged position.

IMPORTANT: *The Rear PTO clutch lever MUST be in the disengaged position or the starter motor will not operate.*

STEP 5

Move the throttle lever to the FULL open position.

STEP 6



Push the top of the thermostart switch (1) down for 10 to 15 seconds, then turn the keyswitch to the start position. While cranking the engine hold the thermostart switch down for a maximum of 30 seconds. Once started, move the throttle to 1/3 open and run the engine for 2 minutes.

NOTE: *If the engine does not start and an audible alarm sounds, make sure ALL controls are in the NEUTRAL position.*

If the engine runs erratically, press the thermostart switch again while the engine is running.

If the engine does not start in the first 15 seconds then repeat the procedure, but push the thermostart button for only 10 seconds. If the engine still does not start, DO NOT try to start the engine again for 3 minutes.

STEP 7

When the engine starts check that all indicator lamps and gauges are giving normal indications and when the engine is warm the coolant temperature indicator is in the correct area.

IMPORTANT: *If the indicator lamps or gauges do not give the correct indications, STOP THE ENGINE IMMEDIATELY AND CHECK FOR THE CAUSE.*

Engine Coolant Heat Maintainer (If Equipped)

The heater element is installed in the engine block and will keep the engine coolant at a warm temperature for improved cold temperature starting.

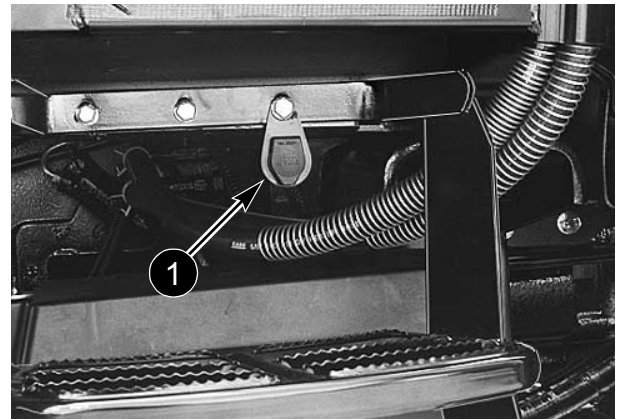
North American Tractors



Connect a mains supply to the connector plug (1), located directly on the engine block.

NOTE: *Use a heavy duty three wire extension cord if required.*

Rest Of World Tractors



Connect a mains supply to the connector plug (1), located next to the RH step.

NOTE: *Use a heavy duty three wire extension cord if required.*

GENERAL OPERATION

PARKING THE TRACTOR

Stationary Tractor Operation (Engine Running)

Before doing any PTO and/or HYDRAULIC operation do the following:

STEP 1



DR98J150

XTRASHIFT TRACTOR SHOWN

Stop the tractor and put the Forward/Neutral/Reverse lever in NEUTRAL position.

NOTE: On tractors equipped with a Synchro Shuttle transmission you **MUST** depress the clutch pedal before trying to move the Forward/Neutral/Reverse lever.

STEP 2



MD02H057

Press the clutch pedal and put the Range and Speed levers in the NEUTRAL position.

Stopping The Engine

- Carry out steps 1 and 2 in opposite column.

STEP 3



DD97C123

Disengage the PTO if in operation.

STEP 4



dp97f035

Move the throttle lever fully rearward to the low idle position.

STEP 5

Turn the keyswitch to the OFF position and remove the key.

IMPORTANT: When stopping the engine after operating under heavy load, run the engine at idle speed for a three to five minutes. This will allow the temperature of the engine and turbocharger (if equipped) to decrease gradually.

STEP 6

Turn off master disconnect switch (if equipped) and remove the master switch key.

GENERAL OPERATION

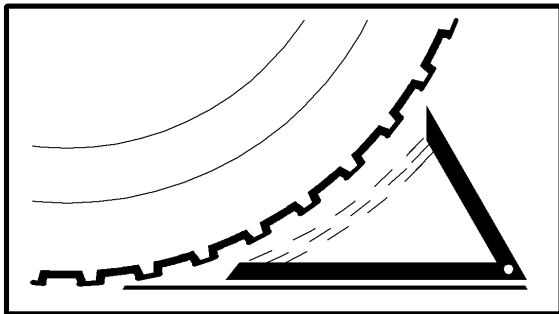
Folding Wheel Wedge (If Equipped)



DP97B033

LOCATED ON REAR FENDERS

Use the wheel wedge, as shown below, in front of or behind a rear wheel, depending on the direction of the tractor, when parking the tractor on a slope.



OM1401

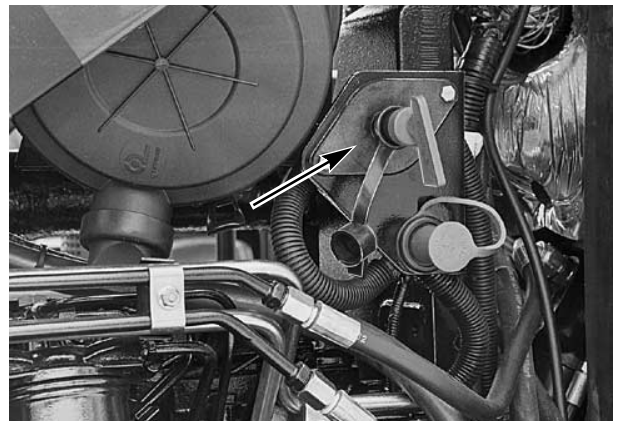
IMPORTANT: To prevent accidents do not park the tractor with equipment raised.

Master Disconnect Switch (If Equipped)

Use the master disconnect switch to disconnect the battery power from the electrical systems on the machine, when leaving the tractor or during servicing to prevent accidental start up.

The key can be removed to prevent unauthorized use or accidents.

IMPORTANT: *DO NOT, unless in an emergency, use the master disconnect switch to stop the engine.*



DP99G157

GENERAL OPERATION

OPERATING THE TRANSMISSION

NOTE: In ambient temperatures of -10°C (14°F) or below, the transmission and controls could be difficult to operate for the first few minutes after starting, until the transmission oil is warm.

IMPORTANT: While the tractor is moving the transmission must always be in drive, (except when changing range, speed or direction). Failure to do so will result in the operator not having full control of the tractor and may result in personal injury.

Your tractor is equipped with either:

1. XtraShift Transmission

- Forward/Reverse directions CAN be selected without using the clutch pedal.
- 3 SPEED POWERSHIFT. Powershift speeds **CAN** be selected without using the clutch pedal when the tractor is moving or stationary.
- Range and Speed gear selection **CAN NOT** be made without using the clutch pedal.

NOTE: On XtraShift 30 km/h transmission tractors the transmission is electronically governed and will not allow travel speeds to exceed 30 km/h.

2. Two Speed Powershift Transmission

- Forward/Reverse directions CAN NOT be selected without using the clutch pedal.
- Range and Speed gear selection **CAN NOT** be made without using the clutch pedal.
- 2 SPEED POWERSHIFT (Speed Reduction) **CAN** be selected without using the clutch pedal when the tractor is moving or stationary.

3. Synchromesh (Mechanical) Transmission

- Forward/Reverse directions CAN NOT be selected without using the clutch pedal.
- Range and Speed gear selection **CAN NOT** be made without using the clutch pedal.

4. Creeper is also optional on ALL transmission variants.

- CREEPER speeds **CANNOT** be selected without using the clutch pedal, see page 99 for more information.

GENERAL OPERATION

XtraShift Transmission Operation

If your transmission is also equipped with creeper speeds, see page 99 for operation.

Selecting Speeds with Tractor Stationary

STEP 1



MD02H055

Move the powershift switch to position 1.

STEP 2



MD02H056



MD02H057

Push the clutch pedal fully down and select the desired speed and range gears.

NOTE: On XtraShift 30 km/h transmission tractors the transmission is electronically governed and will not allow travel speeds to exceed 30 km/h.

STEP 3



DR98J150

Select FORWARD or REVERSE.

IMPORTANT: The FORWARD/NEUTRAL/REVERSE lever must only be moved with the operator sitting on the seat. If the lever is moved without the operator sitting on the seat the tractor will not move. The operator must sit on the seat and move the lever back into NEUTRAL and then into FORWARD to start the tractor moving.

STEP 4

Disengage the park brake and release the clutch pedal slowly. The tractor will start moving.

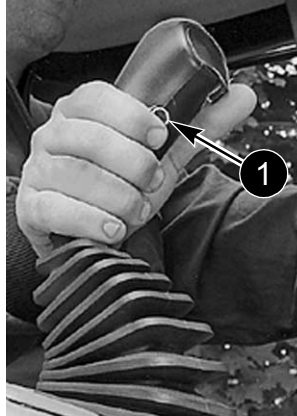
GENERAL OPERATION

Selecting Speeds with Tractor Moving

To change to another Range press the clutch pedal down and move the lever to the new position (High or Low).

When a Speed change is required either press down the clutch pedal or press and hold the de-clutch button (1) (if equipped) and move the lever to the new position.

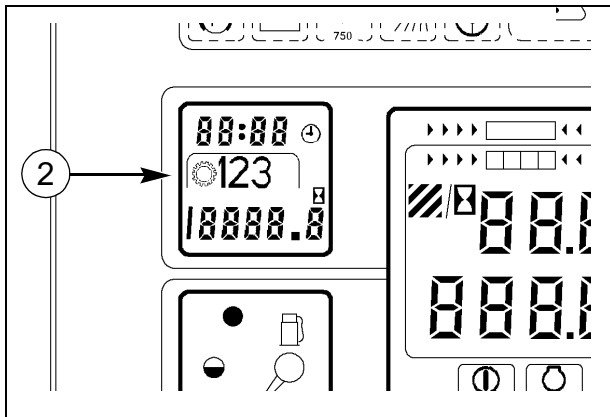
For smooth changes, move the speed lever through the speeds one at a time in the correct sequence 1, 2, 3, 4.



MD02H062

The powershift switch can be shifted to any position when the tractor is moving without having to press the clutch pedal or de-clutch button. For smooth speed changes, move the switch one speed at a time in sequence 1, 2, 3.

If equipped with a digital instrument cluster the powershift display (2) on the instrument cluster will indicate which powershift speed has been selected.



DP96J384

IMPORTANT: To prevent excessive deceleration of the tractor **ALWAYS** downshift one Speed at a time in sequence 4, 3, 2, 1.

NOTE: On XtraShift 30 km/h transmission tractors the transmission is electronically governed and will not allow travel speeds to exceed 30 km/h.

Changing Direction of Travel



DR98J150

Changing the direction of travel can be done with or without using the clutch pedal.

Always slow the tractor speed to a minimum before moving the FORWARD/NEUTRAL/REVERSE lever to the desired direction of travel.

Transmission Diagnostics

If the transmission fails to function correctly the transmission controller will detect an error and the operator will be alerted by either of the following:

1. FLASHING "SHIFT-TO-NEUTRAL" LAMP

Operational Error;

Example: An attempt has been made to reverse the tractor with the speed and/or range lever(s) in the neutral position.



Shift the F/N/R lever to the Neutral position and then repeat the operation correctly.

2. FLASHING "SHIFT-TO-NEUTRAL" LAMP AND AN ALARM



Transmission malfunction.
Contact your dealer immediately.

GENERAL OPERATION

2 Speed Powershift Transmission Operation

If your transmission is also equipped with creeper speeds, see page 99 for operation.

Selecting Speeds with Tractor Stationary

STEP 1



DP97F002

Select direct drive (hare) or speed reduction (tortoise).

Use "direct drive" for normal operation (Hare Symbol). If load increases or a slightly lower speed is required, move the Powershift switch on the speed lever down to the lower position identified by the Tortoise symbol "speed reduction".

Speed will decrease and torque will increase. DO NOT select speed reduction to improve engine braking.

REMEMBER:



= "DIRECT DRIVE", NORMAL OPERATION.



= SPEED REDUCTION, INCREASE TORQUE.

STEP 2



MD02G051



MD02G052

Push the clutch pedal fully down and select the desired speed and range gears.

STEP 3



MD02G055

Keep the clutch pedal down and select FORWARD or REVERSE.

STEP 4

Disengage the park brake and release the clutch pedal slowly. The tractor will start moving.

GENERAL OPERATION

Selecting Speeds with Tractor Moving

To change to another range or speed, press the clutch pedal down and move the levers to the new position.

For smooth speed changes, move the speed lever through the speeds one at a time in the correct sequence 1, 2, 3, 4.

IMPORTANT: To prevent excessive deceleration of the tractor **ALWAYS** downshift one speed at a time in sequence, 4, 3, 2, 1.

Changing Direction of Travel



MD02G055

When changing the direction of travel always depress the clutch pedal and **STOP the tractor** before moving the FORWARD/NEUTRAL/REVERSE lever.

GENERAL OPERATION

Synchromesh Transmission Operation

If your transmission is also equipped with creeper speeds, see page 99 for operation.

Selecting Speeds with Tractor Stationary

STEP 1



MD02K081



MD02K082

Push the clutch pedal fully down and select the desired speed and range gears.

STEP 2



MD02G055

Keep the clutch pedal down and select FORWARD or REVERSE.

STEP 3

Disengage the park brake and release the clutch pedal slowly. The tractor will start moving.

Selecting Speeds with Tractor Moving

To change to another range or speed, press the clutch pedal down and move the levers to the new position.

For smooth speed changes, move the speed lever through the speeds one at a time in the correct sequence 1, 2, 3, 4.

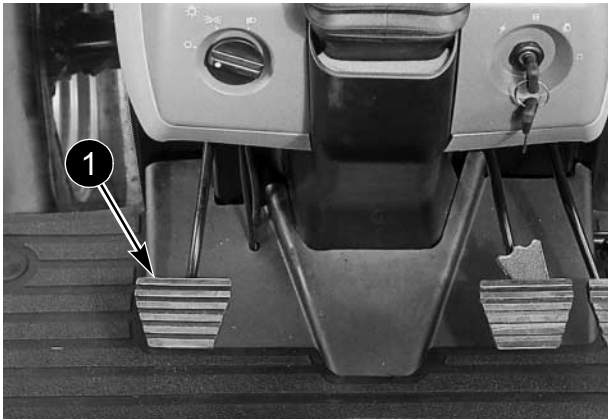
IMPORTANT: To prevent excessive deceleration of the tractor ALWAYS downshift one speed at a time in sequence, 4, 3, 2, 1.

Changing Direction of Travel

When changing the direction of travel always depress the clutch pedal and **STOP the tractor** before moving the FORWARD/NEUTRAL/REVERSE lever.

GENERAL OPERATION

Clutch Pedal Operation



DP98E011

The clutch pedal is used to temporarily disengage drive.

Use the clutch pedal when moving the tractor short distances or when operating in confined areas, connecting implements to the tractor, and stopping the tractor.

The operator should use the clutch pedal to start the tractor moving from stationary. Gradually and completely release the clutch pedal for a controlled smooth start.

ALWAYS operate the clutch pedal when doing the following:

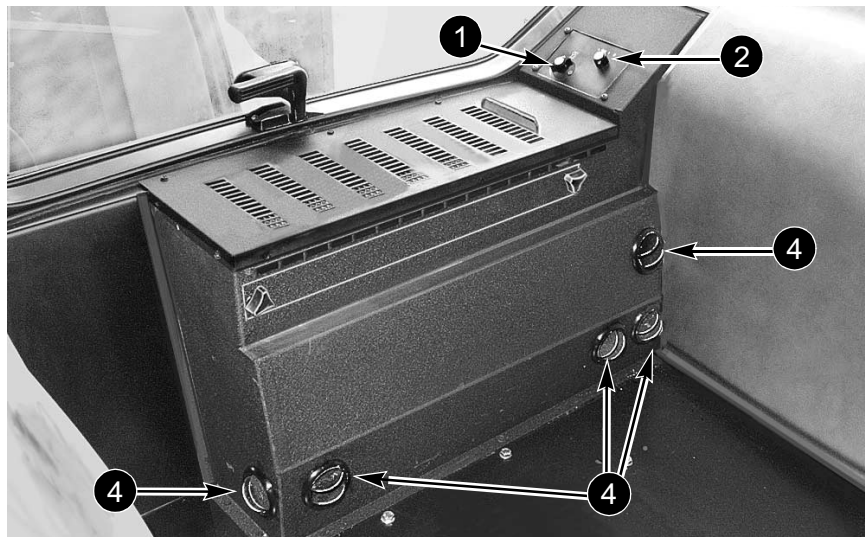
- When selecting or changing RANGE and SPEED, but not POWERSHIFT.
- When engaging and disengaging creeper (if equipped).
- When stopping the tractor.
- When changing direction of travel, if equipped with a Synchro Shuttle Transmission.

DO NOT ride the clutch pedal when the transmission is under load. Release the clutch pedal completely within 5 seconds for improved clutch service life.

GENERAL OPERATION

CAB ENVIRONMENT

Low Profile Cab

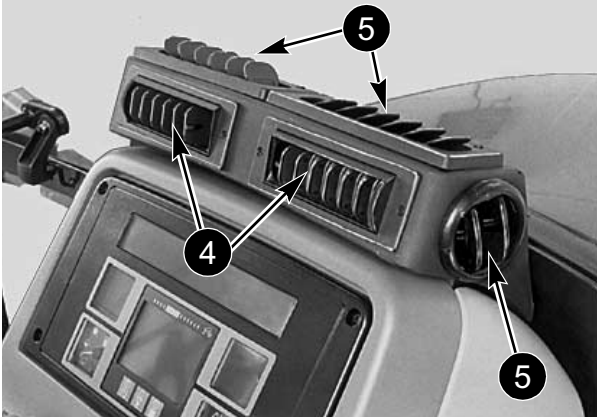


LOW PROFILE CAB WITHOUT AIR CONDITIONING



LOW PROFILE CAB WITH AIR CONDITIONING

GENERAL OPERATION



DP99G059

1. TEMPERATURE CONTROL
2. BLOWER CONTROL
3. AIR CONDITIONING CONTROL (IF EQUIPPED)
4. DISCHARGE VENTS
5. DEFROST VENTS

Quick Reference

CAB ENVIRONMENT CONTROL SETTINGS						
Type Condition Required	Blower Speed Control	Discharge Vents	Defroster Vents	Temperature Control	Recirculation Vent	Air Conditioning
Cool (With Air Conditioning)	Adjust as Required	Open	Adjust as Required	OFF	Open	ON/MAX
Cool (Without Air Conditioning)	Adjust as Required	Open	Adjust as Required	OFF	Closed	Not Applicable
Heat	HIGH (II) or LOW (I)	Adjust as Required	Open	Adjust as Required	Open	OFF
Pressurize	MAX (III)	Open	Open	ON or OFF	Closed	ON or OFF
Inside Window Moisture Removal	MAX (III)	Open *	Open	ON/MAX	Open **	ON/MED

* Open or Close if Moisture is on Windshield.

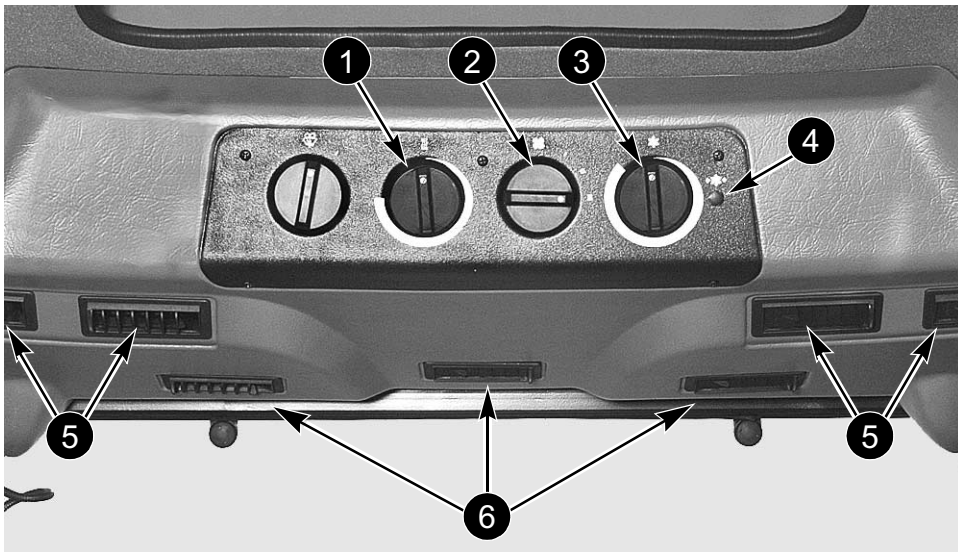
** Open or Close if not Humid Outside.

NOTE: Use the maximum (III) settings for fast cooling, fast heat or for fast defrost. Use the high (II) or minimum (I) settings for optimum operator comfort.

NOTE: Under certain conditions the heater fan can run at maximum speed when the control is in the 2nd, 1st or OFF position. This is because of heat build up in a temperature controlled override switch, after a long period of operation, and is a safety feature designed to prevent overheating of resistors in the circuit.

GENERAL OPERATION

Deluxe Cab



RD96N065

- | | |
|---|------------------------|
| 1. TEMPERATURE CONTROL | 5. DISCHARGE VENTS |
| 2. BLOWER CONTROL | 6. DEFROST VENTS |
| 3. AIR CONDITIONING CONTROL (IF EQUIPPED) | 7. RECIRCULATION VENTS |
| 4. AIR CONDITIONER PRESSURE INDICATOR | |

Quick Reference

CAB ENVIRONMENT CONTROL SETTINGS						
Type Condition Required	Blower Speed Control	Discharge Vents	Defroster Vents	Temperature Control	Recirculation Vent	Air Conditioning
Cool (With Air Conditioning)	Adjust as Required	Open	Adjust as Required	OFF	Open	ON/MAX
Cool (Without Air Conditioning)	Adjust as Required	Open	Adjust as Required	OFF	Closed	Not Applicable
Heat	HIGH (II) or LOW (I)	Adjust as Required	Open	Adjust as Required	Open	OFF
Pressurize	MAX (III)	Open	Open	ON or OFF	Closed	ON or OFF
Inside Window Moisture Removal	MAX (III)	Open *	Open	ON/MAX	Open **	ON/MED

* Open or Close if Moisture is on Windshield.

** Open or Close if not Humid Outside.

NOTE: Use the maximum (III) settings for fast cooling, fast heat or for fast defrost. Use the high (II) or minimum (I) settings for optimum operator comfort.

NOTE: Under certain conditions the heater fan can run at maximum speed when the control is in the 2nd, 1st or OFF position. This is because of heat build up in a temperature controlled override switch, after a long period of operation, and is a safety feature designed to prevent overheating of resistors in the circuit.

GENERAL OPERATION

CAB ENVIRONMENT ADJUSTMENTS

Cab Cooling

- Set Blower control as required, (I) for minimum cooling or (III) for maximum cooling.
- Open all air discharge vents.
- Open defroster vents and adjust as required.
- Set temperature control to OFF.
- Close the recirculation vent, (if equipped). Closing the recirculation vent minimizes inside air recirculation and maximizes outside air intake.

NOTE: With the recirculation vent set in any position outside air will still be pulled into the cab.

- If equipped with air conditioning, turn control to ON and adjust as required, page 80.

Cab Heating

For maximum cab heat operation, run the tractor engine until operating temperature is reached then do the following:

- Set Blower control as required, (I) for minimum heated air flow or (III) for maximum heated air flow. With the blower control set at (I), air flow and air speed is decreased. This causes the heated air temperature to be higher than the blower speed set at (III).
- Adjust air discharge vents as required.
- Open defroster vents and adjust as required.
- Set temperature control as required, fully clockwise for maximum heat and fully counterclockwise for OFF.
- Open the recirculation vent, (if equipped). Closing the recirculation vent minimizes inside air recirculation and maximizes outside air intake.
- If equipped with air conditioning, set control to OFF, page 80.

Pressurized Cab (high wind or dust conditions)



WARNING: Cab air filters remove dust in the air, but are not capable of removing chemicals used in spraying crops or in weed control. Many chemicals used for these purposes are toxic when improperly used, and can be hazardous to operators and others in the area. Follow the instructions of manufacturers of both the equipment and the chemicals regarding prohibitions against inhalation of dust or spray, personal hygiene practices, and other precautions noted by the manufacturers.

- Set Blower control to maximum (III).
- Open all air discharge vents.
- Open defroster vents and adjust as required.
- Set temperature control as required.
- Close recirculation vent, (if equipped). Closing the recirculation vent minimizes inside air recirculation and maximizes outside air intake.

NOTE: With the recirculation vent set in any position outside air will still be pulled into the cab.

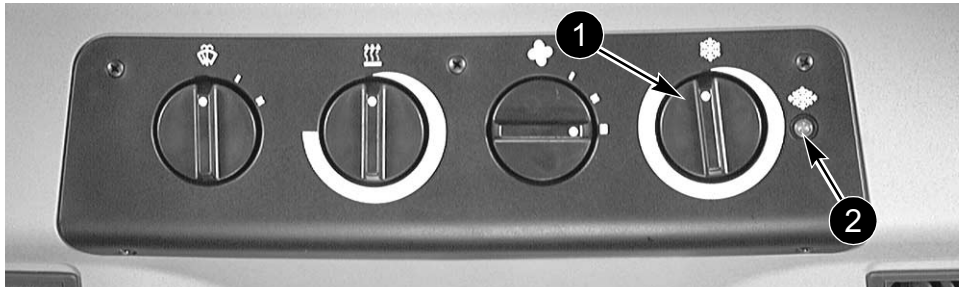
- If equipped with air conditioning, adjust as required, page 80.

Window Demisting/Defrosting

- Set Blower control to maximum (III).
- Open all air discharge vents.
- Open defroster vents and adjust towards windshield/windows.
- Turn temperature control to maximum (III).
- Close the recirculation vent, (if equipped).
- If equipped with air conditioning, turn control to ON and adjust as required, page 80.

GENERAL OPERATION

Air Conditioner Operation (If Equipped)



RD96N065

DELUXE CAB

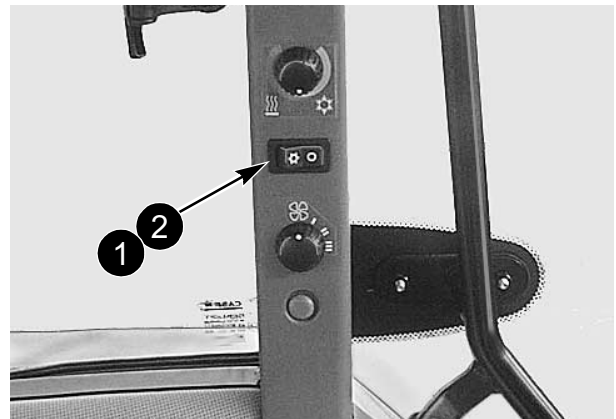
1. AIR CONDITIONING CONTROL
2. AIR CONDITIONER PRESSURE INDICATOR
(Lamp in Switch on LP Cab)

To operate the air conditioner, the blower must be on. The blower speed, temperature control and all vents must be adjusted to obtain the best cooling for the ambient temperature and dust conditions. Under normal operating conditions, and with the windows and doors closed, temperatures in the cab of 6°C to 15°C (10°F to 25°F) less than the ambient temperature will occur. When operating the air conditioner system, the moisture level is decreased.

NOTE: During cold weather, with ambient temperature above 0°C (-32°F), operate the air conditioner at least once per month, for a period of 10 to 15 minutes. This will lubricate the seals to prevent them becoming brittle and help prevent the loss of refrigerant from the system.

When the pressure indicator lamp on a Deluxe Cab illuminates or the lamp in the Air Conditioning Switch on a LP Cab flashes, the air conditioning system has turned off due to refrigerant pressures that are too high or too low. This can indicate that the system needs service or that the ambient temperature is too cool for air conditioning operation. To start the air conditioner again, turn the control to the OFF position and then back to the ON position.

NOTE: The air conditioner system has two safety switches for protection of the system for low refrigerant level and high restrictions. If, during tractor operation, the air conditioner stops working, See System Check on Page 208 of this manual.



DD99J036

LOW PROFILE CAB

NOTE: The Air Conditioning system is equipped with an environmentally safe refrigerant, HFC-R134a. Never recharge the air conditioning system with refrigerant other than HFC-R134a as this will result in loss of cooling and permanent damage to all air conditioning components.

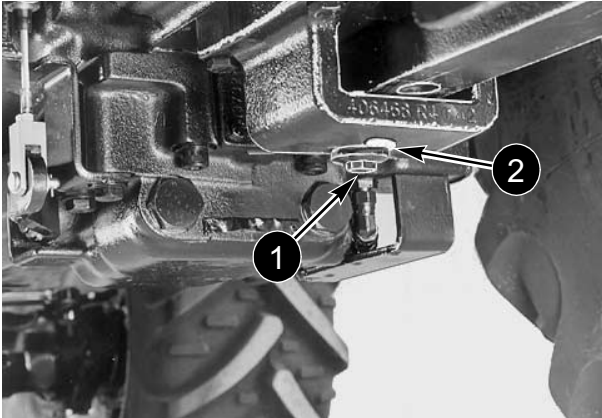
GENERAL OPERATION

DRAWBAR

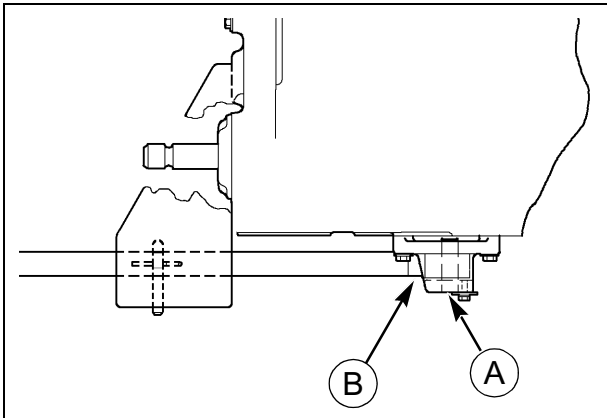
The drawbar can be set in various positions, fore/aft and offset.

Fore/Aft Position

NOTE: For *non PTO work* the drawbar can be set in either of the two front holes depending on maximum vertical load required.



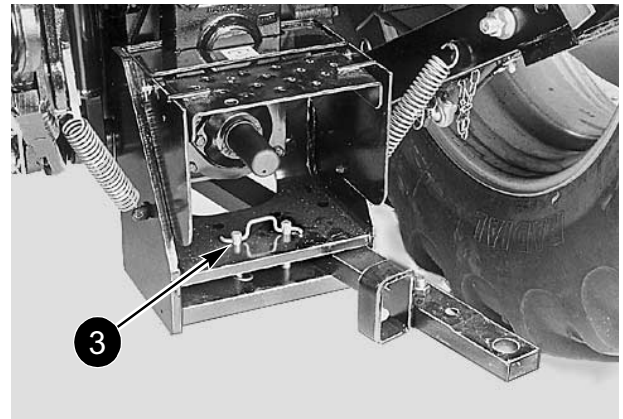
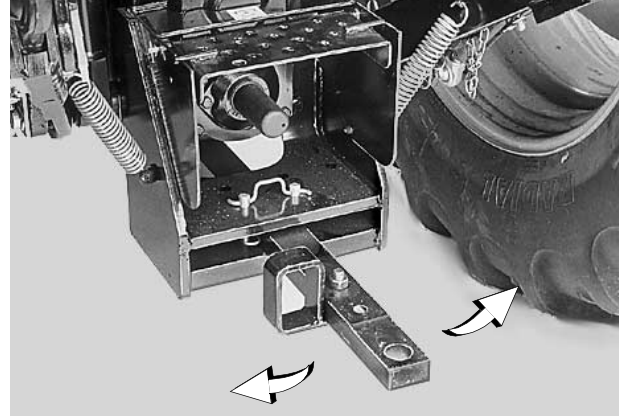
Remove the pivot pin retainer bolt (1) and the pivot pin (2) at the front of the drawbar.



Slide the drawbar backward or forward to the required drawbar position A or B as indicated on the implement or in the implement operators manual.

When the correct position of the drawbar has been set, install the pivot pin (2) and the retainer bolt (1).

Left/Right Offset Position



Remove the retaining pin (3).

Slide the drawbar left or right as required and install the retaining pin.

When using the offset positions raise the lower links to full height. With the lower links in this position the hitch will not interfere with the side movement of the swinging drawbar.

IMPORTANT: The drawbar must be locked in the centre lateral position when doing any of the following operations:

- Towing implements at transport speed (15 km/h (10 mph) or more) in the field.
- Towing an implement or trailer on the highway at all speeds.
- Operating a drawbar pulled, PTO driven implement.
- Moving the tractor in reverse with an implement attached.

GENERAL OPERATION

IMPORTANT: Make sure local regulations are followed when towing implements/trailers.



WARNING: Rear upset can result if pulling from wrong location on tractor. Hitch only to the drawbar. Use 3 point hitch only with the implements designed for its use, not as a drawbar.



WARNING: Try to balance the load primarily on the implement wheels as in loading a machine with harvest crops. Avoid overloading the drawbar. Add front end weights for improved stability. Engage the clutch smoothly, avoid jerking and use the brakes cautiously to avoid jack-knifing.

In certain markets pulling trailers on public roads is not permitted unless a special approval note has been supplied with the machine documents. Always make sure you have the relevant approval before pulling trailers on public roads.

Drawbar Positions for PTO Operation

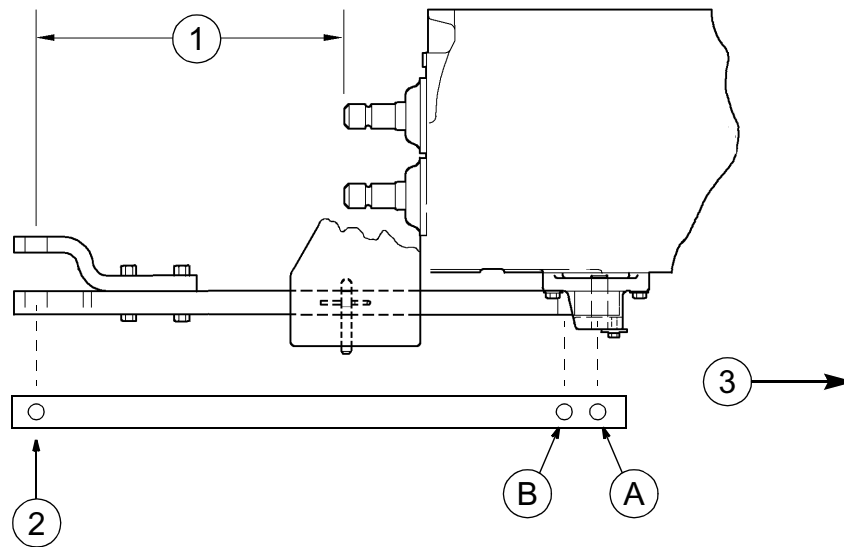
When using power takeoff driven equipment (which would normally require an equal angle hitch drawbar extension) the drawbar can be installed in two different fore/aft positions ('A' for 1000rpm or 'B' for 540rpm). This position will depend upon which PTO option is fitted to your tractor.

See the illustration and charts opposite for the drawbar positions and the vertical loads permitted in those positions. Also refer to the implement operators manual before making any adjustments.

NOTE: For *non PTO work* the drawbar can be set in either of the two front holes depending on maximum vertical load required.

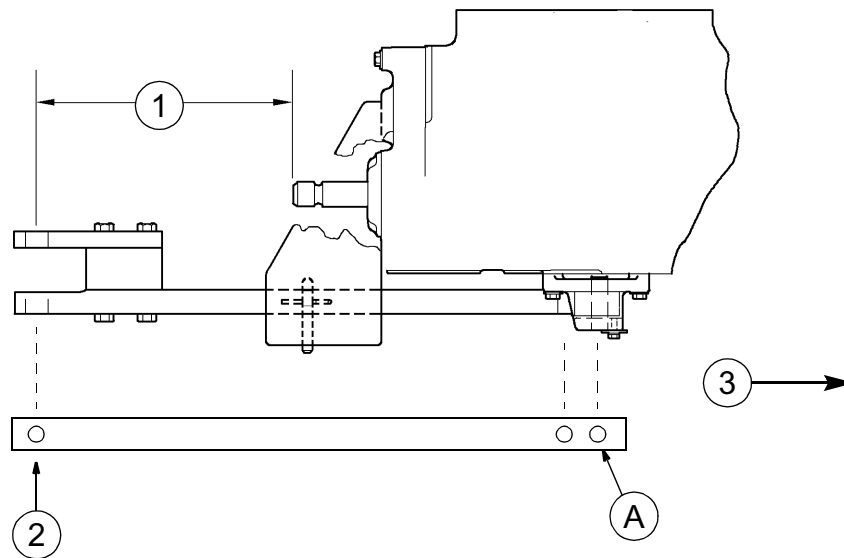
GENERAL OPERATION

Drawbar Position for Single or Dual Shaft PTO Operation



DH97B037

Drawbar Position for Shiftable PTO Operation



DH97B036

1. **SINGLE SHAFT OR DUAL SHAFT PTO:**
DISTANCE OF 394 mm (15.5 inch)
FROM END OF SHAFT TO CENTER OF
IMPLEMENT ATTACHMENT PIN HOLE

1. **SHIFTABLE PTO:**
DISTANCE OF 410 mm (16 inch) FROM
END OF PTO SHAFT TO CENTER OF
IMPLEMENT ATTACHMENT PIN HOLE

2. IMPLEMENT ATTACHMENT PIN HOLE
3. FRONT OF TRACTOR

DRAWBAR POSITIONS AND PTO SPEED	SINGLE/DUAL SHAFT PTO		SHIFTABLE PTO
	"A" 1000 RPM	"B" 540 RPM	"A" 540/1000 RPM 540/750 RPM
MAXIMUM VERTICAL LOAD STANDARD DRAWBAR	794 kg (1750 lb)	880 kg (1940 lb)	794 kg (1750 lb)
MAXIMUM VERTICAL LOAD HEAVY DUTY DRAWBAR	1070 kg (2359 lb)	1240 kg (2734 lb)	1070 kg (2359 lb)

GENERAL OPERATION

Connecting Implement to Drawbar

When connecting an implement, always:

1. Connect pull behind implements to the drawbar only.
2. Use the hardened steel hitch pin supplied to connect the implement to the drawbar. Make sure the pin is held securely in place with a lock pin.
3. If both the tractor and the implement are equipped with a drawbar clevis, remove the clevis from the tractor OR implement. **DO NOT PUT A LONG HITCH PIN THROUGH BOTH THE IMPLEMENT CLEVIS AND THE DRAWBAR CLEVIS.**
See examples A and B below for correct methods of using a clevis type hitch.

5. When working with the drawbar, raise the lower links as high as possible to prevent interference between the lower links and the implement.

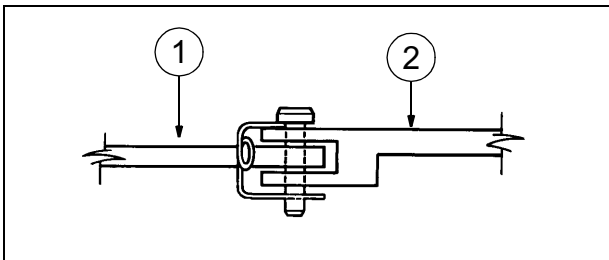
6. When working with PTO equipment, Lock the drawbar in the center position on the drawbar support with the drawbar retaining pin.

Also see page 83 for correct fore/aft drawbar position.

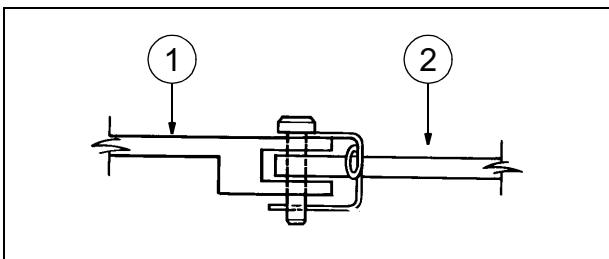
7. The clevis (if equipped) must be removed from the drawbar or mounted under the drawbar (See example B), to prevent possible interference between the clevis and the implement driveline.

IMPORTANT: Only use a 50 mm inner diameter towing eye, See **IMPLEMENT/TRAILER DRAWBAR DIMENSIONS** on Page 92 of this manual.

EXAMPLE A



EXAMPLE B



PM023

1. TRACTOR DRAWBAR
2. IMPLEMENT DRAWBAR

NOTE: For non-PTO work, the drawbar can be set in any of the three fore/aft positions, depending on maximum vertical load required.

4. Adjust the drawbar so that the centre line of the pulling force of the tractor will be aligned with the centre line of the implement.

GENERAL OPERATION

HEIGHT ADJUSTABLE TRAILER HITCHES (If Equipped)

These hitches can be adjusted up or down to match the implement hitch height and to give clearance for the top link or for PTO operation.

IMPORTANT: Make sure local regulations are followed when towing implements/trailers.

NOTE: For ALL trailer hitches the trailer clevis hole diameter and the hitch pin diameter must not have excessive clearance (page 92).

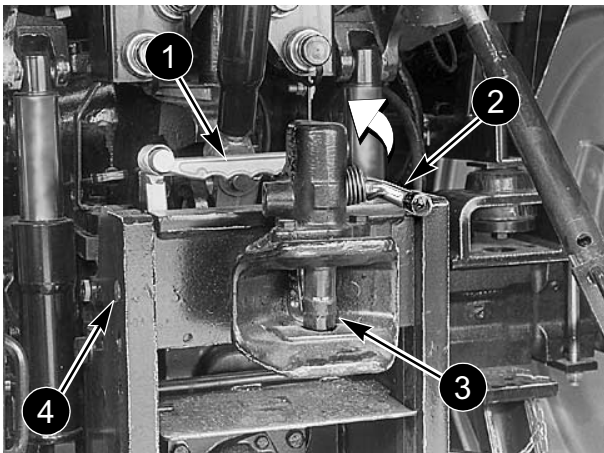
IMPORTANT: Maximum vertical load capacity is 1500 kg (3307 lb) depending upon the capacity of the rear tyres fitted. Where applicable refer to your approval documentation.

Automatic Type (according to 89/173/EEC, DIN 11029)



WARNING: DO NOT touch the inside of the hitch coupling assembly when the release mechanism is under tension, (operating lever (1) in the vertical position). Serious injury can result.

This hitch connects automatically when the implement towing eye contacts the release mechanism (3) inside the hitch coupling. Before connecting an implement make sure the operating lever (2) is in the vertical position.



DP97K020

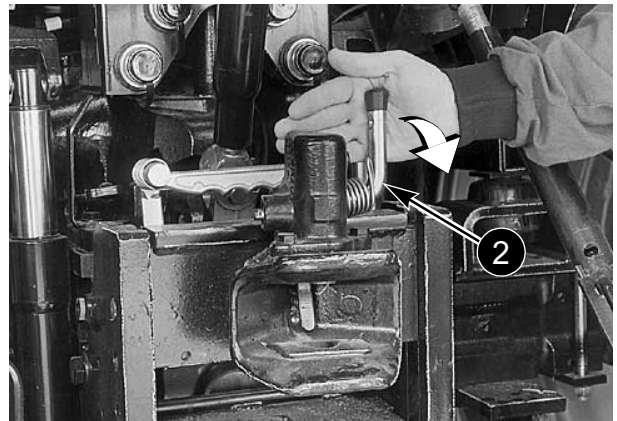
To adjust the height, support the weight of the hitch coupling assembly with one hand and with the other hand pull the quick release lever (1) to the right.

Move the hitch coupling assembly to the required position. Push the quick release lever (1) to the left to lock the coupling assembly in position.

IMPORTANT: Check that the locking pins (4) have fully engaged in the holes in the side support (locking pins level with the outer surface).

IMPORTANT: Use only implement towing eyes with 40 or 50 mm inner diameter, see page 92.

IMPORTANT: The connecting pin (No.3 in lower left hand photograph) engages automatically as the implement towing eye contacts the release mechanism inside the hitch coupling or it can be engaged manually by striking the operating lever (2) downwards (away from the tractor) to the horizontal position.



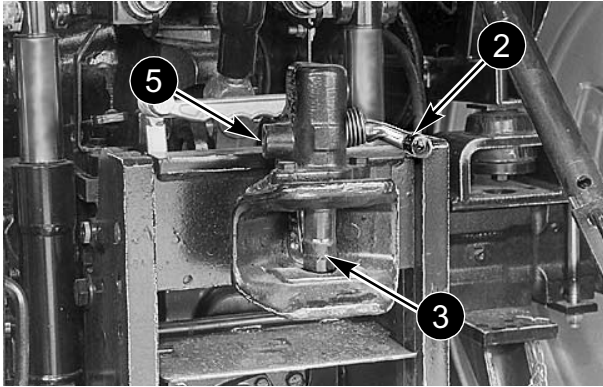
DP97K019

Continued

GENERAL OPERATION

IMPORTANT: Before moving the tractor make sure:

- A. The indicator pin (5) is fully in.
- B. The operating lever (2) is in the horizontal position.
- C. The connecting pin (3) is fully in the hole of the pin guidance bushing (fully engaged). Do not tow or move if the pin is not fully engaged.



DP97K020

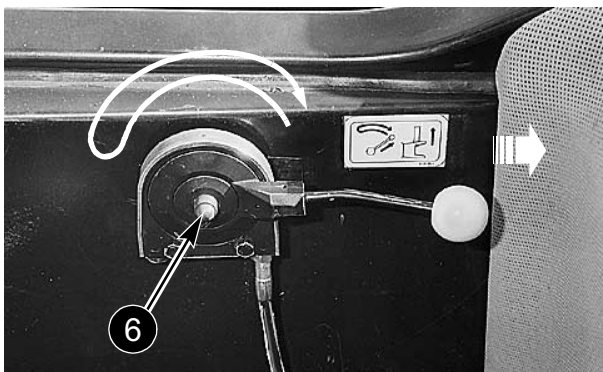
IMPORTANT: When the automatic hitch is not being used, make sure the hitch connecting pin (3) is down and the operating lever (2) is horizontal.

IMPORTANT: Keep the hitch clean and protect all moving parts of the hitch from corrosion, (including the inner slide rails), by cleaning and greasing at regular intervals.

All moving parts should be checked for free movement and correct operation.

Refer to Lubrication/Maintenance Section, page 186 for further information.

Internal Hitch Release (If Equipped)



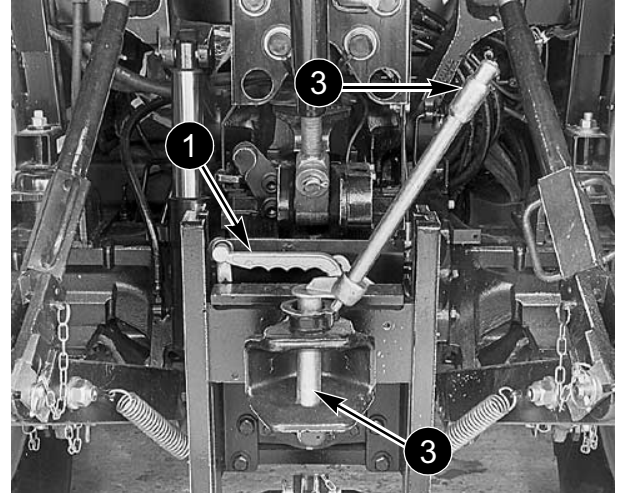
DP98J218

This control enables the operator to disconnect the implement towing eye without leaving the tractor.

To operate, pull the lever to unlock and then rotate the lever 180 degrees. The implement connecting pin (3) will disengage and the coupling operating lever (2) will be vertical. The hitch release lever must return automatically to the locked position.

IMPORTANT: If the release lever does not return automatically and lock, adjust the nut (6) until it does.

Manual Type "Option A" (according to 89/173/EEC, DIN 11029)



DP97K023

This type of coupling has to be connected manually by hand.

To adjust the height, support the weight of the hitch coupling assembly with one hand and with the other hand pull the release lever (1) to the right.

Move the hitch coupling assembly to the required position. Push the release lever to the left and down to lock in position.

IMPORTANT: Check that the locking pins have fully engaged in the holes in the side support (locking pins level with the outer surface).

To remove the hitch pin (2), pull the release latch sleeve (3) up. Make sure the latch sleeve is fully engaged after installing the hitch pin.

IMPORTANT: Keep the hitch clean and protect all moving parts of the hitch from corrosion, (including the inner slide rails), by cleaning and greasing at regular intervals.

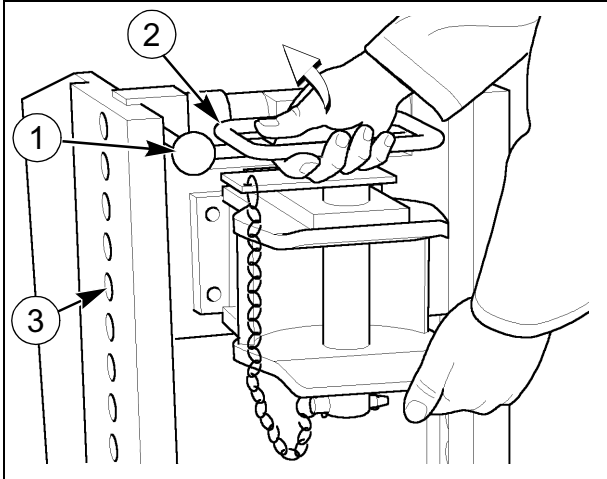
All moving parts should be checked for free movement and correct operation.

Refer to Lubrication/Maintenance Section, page 186 for further information.

GENERAL OPERATION

Manual Type "Option B" (according to 89/173/EEC, DIN 11029)

This type of coupling has to be connected manually by hand.

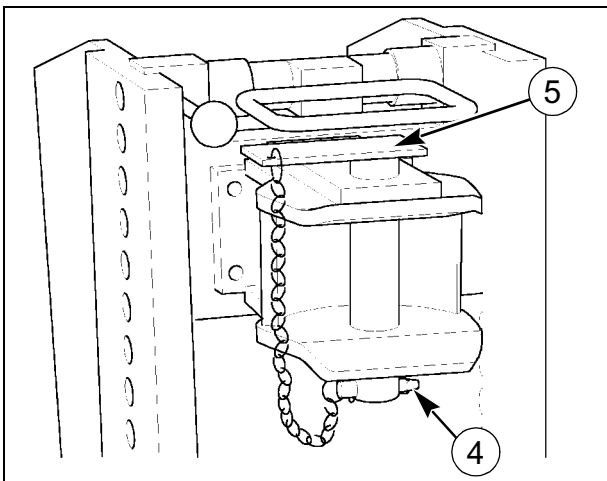


MI01F067

To adjust the height, pull the release knob (1) out. Raise the handle (2) and while supporting the weight of the coupling assembly with the other hand, raise or lower the assembly to the required position.

Lower the handle (2), the release knob (1) will spring back to lock hitch coupler assembly into position.

IMPORTANT: Check that the locking pins (3) have fully engaged in the holes in the side support.



MI01F066

To connect an implement/trailer, Remove the spring clip (4) and hitch pin (5).

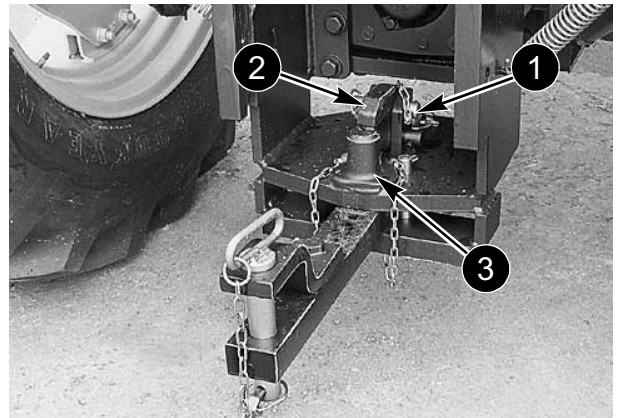
Enter the implement/trailer towing eye into the clevis, install the hitch pin (5) to secure the implement/trailer. Install the spring clip (4).

IMPORTANT: Keep the hitch clean and protect all moving parts of the hitch from corrosion, (including the inner slide rails), by cleaning and greasing at regular intervals.

All moving parts should be checked for free movement and correct operation.

Refer to Lubrication/Maintenance Section, page 186 for further information.

Piton- Fixe (If Equipped) (according to NFU-026)



DP97G082

To connect an implement/trailer, Remove the spring clip and pin (1) and lift the retaining hook (2).

Install the implement towing eye over the towing pin (3) and lower the retaining hook (2).

Install the pin and spring clip (1).

IMPORTANT: The implement towing eye must have an internal diameter of 50 mm, see page 92.

GENERAL OPERATION

AUTO HITCH (If Equipped) (according to 89/173/EEC, ISO 6489)

Connecting an Implement

WARNING: The maximum load capacity of the auto hitch is 2250 kg (4960 lb) for the hook and 1500 kg (3307 lb) for the drawbar.

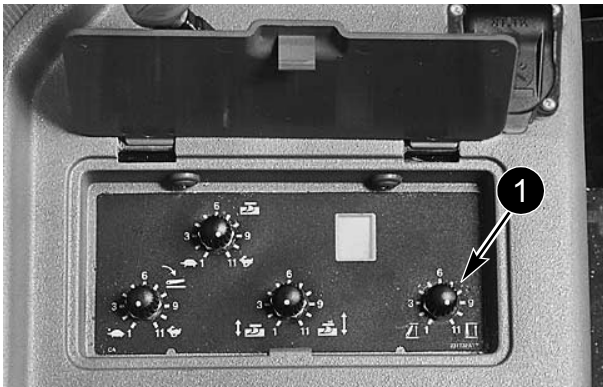
EEC Approved [Council directive 89/173/EEC Annex IV, appendix 2 (dynamic test method)]



These figures depend upon restrictions due to the capacity of the rear tires fitted. Operating with loads above the given maximum will result in damage to the auto hitch and the linkage. This will also decrease front end stability.

Local legal requirements may require an official Auto Hitch Approval Note for use on public roads.

STEP 1



DP96N112

Turn the Upper Limit Control Knob (1) to the maximum setting (Setting 11).

STEP 2

Raise the auto hitch to maximum height (by either turning the three point linkage Position Control Knob fully clockwise to position 10 or setting the UP/DOWN switch into the UP position).

IMPORTANT: Turn the LOAD CONTROL knob fully clockwise to the (0) off position, this will prevent unwanted hitch movement when the tractor is moving at more than 0.8 km/h (0.5 mph).

STEP 3

(For Tractors Equipped With Ride Control ONLY)



DR99E106

Press and hold the top of the Ride Control switch fully down until the hitch stops upward movement.

STEP 4



DP98D178

While holding the Ride Control switch down, if applicable, pull the auto hitch release control to unlock the locking latches.

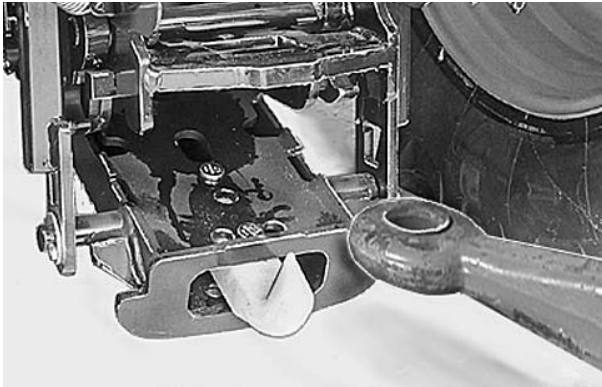
Release the Ride Control switch, if applicable, to allow the hitch to lower to the upper limit setting.

STEP 5

Lower the auto hitch (by either turning the three point linkage Position Control Knob counterclockwise or setting the UP/DOWN switch into the DOWN position).

GENERAL OPERATION

STEP 6



DP97E207

Reverse the tractor until the hook is aligned under the implement/trailer towing eye.

Optional Hitch Mirror Only:



DP98D179

Open the rear window and use the hitch mirror (If Equipped) to assist you when connecting the implement/trailer.

STEP 7

Raise the auto hitch until the hook is engaged in the implement towing eye.

STEP 9

Raise the auto hitch to maximum height.

STEP 10

(For Tractors Equipped With Ride Control ONLY)

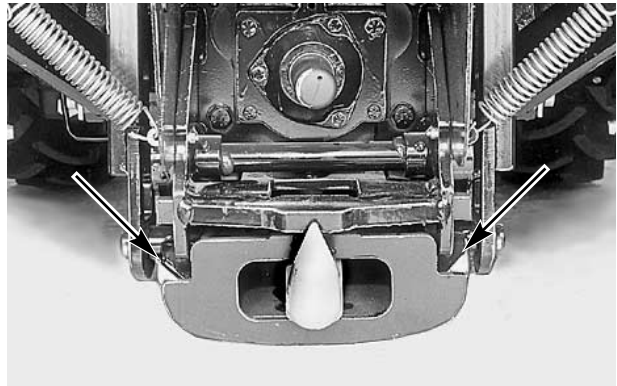


DR99E106

Press and hold the Ride Control switch fully forward to the hitch override position until the hitch stops upward movement and the locking latches are latched.

Release the Ride Control switch. The hitch will lower to the upper limit setting.

STEP 11



DP97D104

Lower the hitch onto the locking latches to take the weight off the hydraulic system.

IMPORTANT: The hitch must always be supported on the locking latches and NOT by the hydraulic system. If the locking latches do not lock, adjust the lift rods. If after adjustment the locking latches still do not lock see your dealer.

NOTE: Implement/Trailer removed for photographic purposes.

GENERAL OPERATION

Hook/Clevis Change Over

IMPORTANT: DO NOT use the extended drawbar position for any weight carrying applications, (eg. single or twin axle weight transfer trailers, spreaders, tankers etc.)

STEP 1

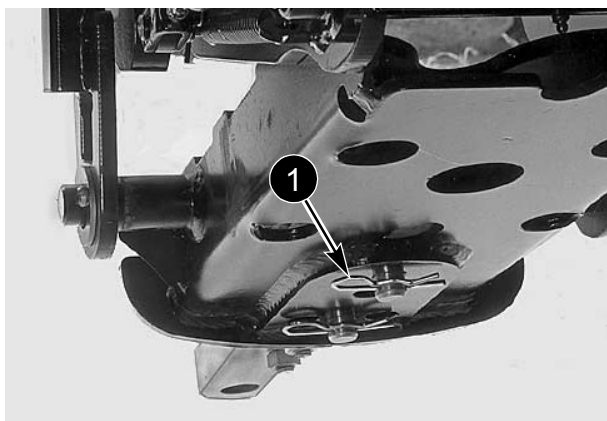


DP96F136

Lower the auto hitch half way.

IMPORTANT: After lowering and extending the auto hitch, stop the engine, put all transmission levers in neutral and engage the parking brake before leaving the tractor.

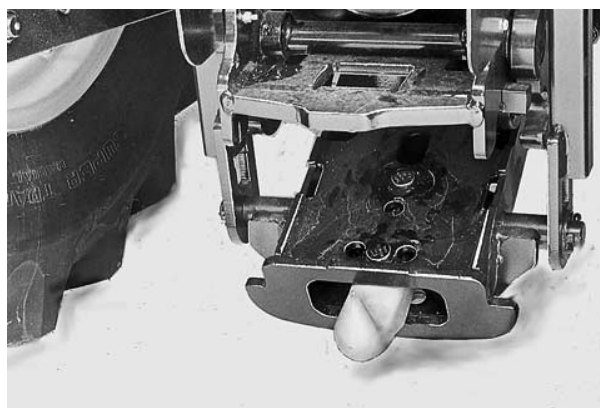
STEP 2



DP96F139

Remove the two "R" clips (1) and the 2 lock pins.

STEP 3



DP96F137

Remove the clevis drawbar and install the hook. Insert the 2 lock pins and "R" clips.

STEP 4



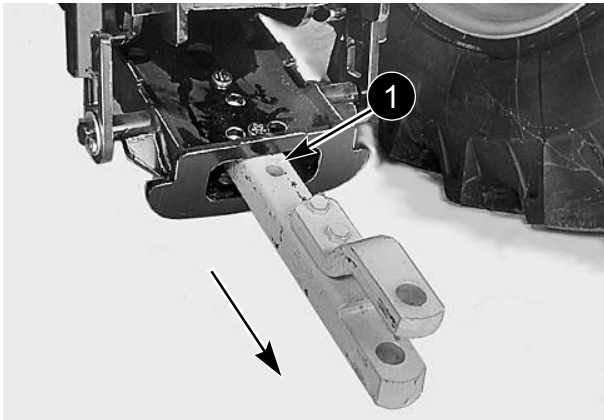
MD01K054

Insert clevis drawbar in the storage position.

GENERAL OPERATION

Auto Hitch Clevis Positions

Position for Power Takeoff Operations



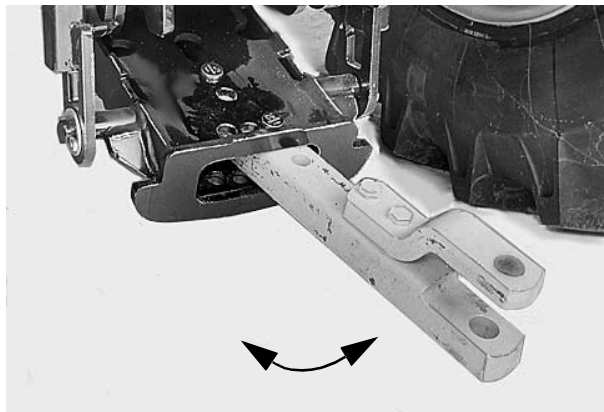
DP96J406

Install the drawbar in the fully extended rearward with one hole (1) in the drawbar showing.

The MAXIMUM drawbar load in this position is **1500 kg (3307 lb)**. Also observe tyre capacity and local legal requirements.

IMPORTANT: *DO NOT use the extended drawbar position for any weight carrying applications, (eg. single or twin axle weight transfer, trailers, spreaders, tankers etc.)*

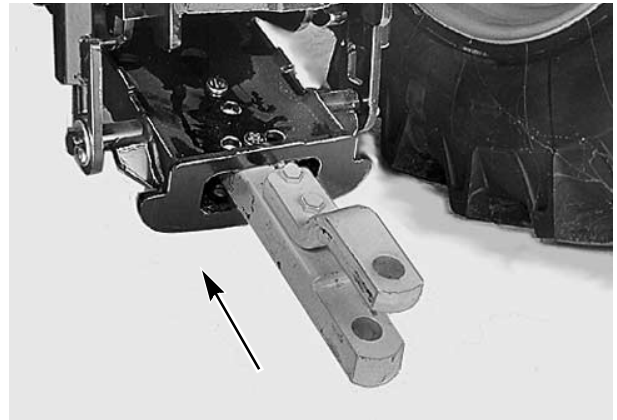
Position for Power Takeoff Operations - Offset Positions



DP97E186

The drawbar can also be installed at an angle in the PTO position.

Position for Pulling Operations



DP97E210

For pulling operations, install the drawbar in the fully forward position.

The MAXIMUM **drawbar** load in this position is **1500 kg (3307 lb)**.

The MAXIMUM **hook** load in this position is **2250 kg (4960 lb)**.

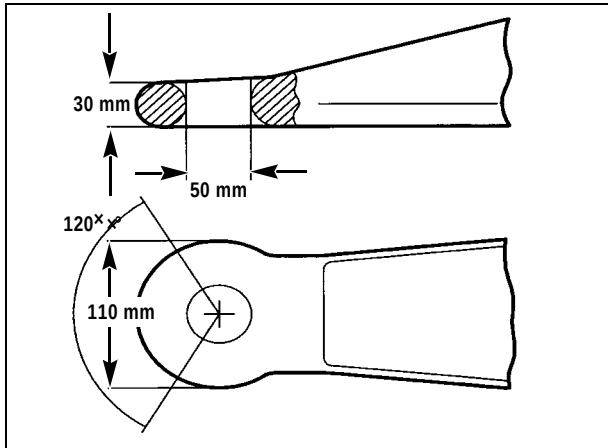
Also observe tyre capacity and local legal requirements

NOTE: *Pulling trailers on public roads may not be permitted unless a special approval note has been supplied with the machine documents.*

GENERAL OPERATION

IMPLEMENT/TRAILER DRAWBAR DIMENSIONS

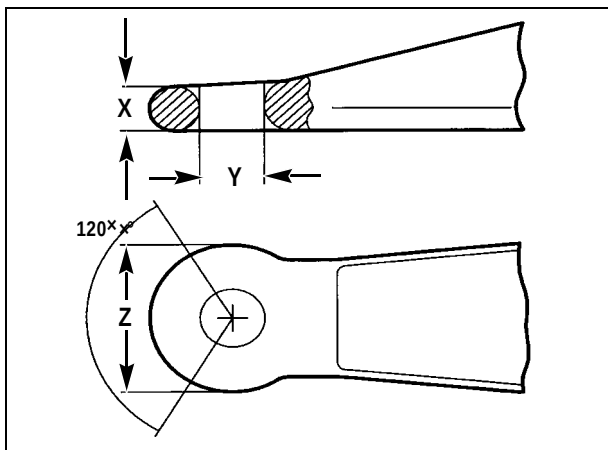
A) For Piton-Fixe, Auto Hitch (B.S.2) and Swinging Drawbar



OM0881

When using a Piton-Fixe, Auto Hitch or swinging Drawbar, the trailer/implement drawbar must be to ISO 5692 standard dimensions. If any other drawbar is used, damage to your tractor can/will occur.

B) Manual and Automatic Clevis Type Trailer Hitches - (EURO Clevis)

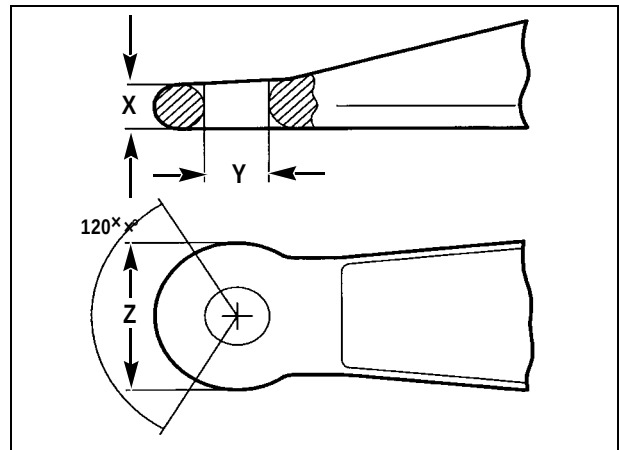


OM0881

When using a manual or automatic clevis type trailer hitch, the trailer/implement drawbar must be to DIN 74054, DIN 74053, DIN 11043, DIN 11026 or ISO 5692 standard dimensions. If any other drawbar is used, damage to your tractor can/will occur.

	X (mm)	Y (mm)	Z (mm)
DIN 74053	45	50	115
DIN 74054	30	40	100
DIN 11026	42	40	100
DIN 11043	32	40	100
ISO 5692	30	50	110

C) Automatic Clevis Type Trailer Hitch (with Special Coupling) - (GERMAN CLEVIS)



OM0881

When using this type of trailer hitch, ONLY use a trailer/implement drawbar to DIN 74054, DIN 11043 and DIN 11026 standard dimensions. This will improve connection between hitch and trailer/implement drawbar. If any other drawbar is used, damage to your tractor can/will occur.

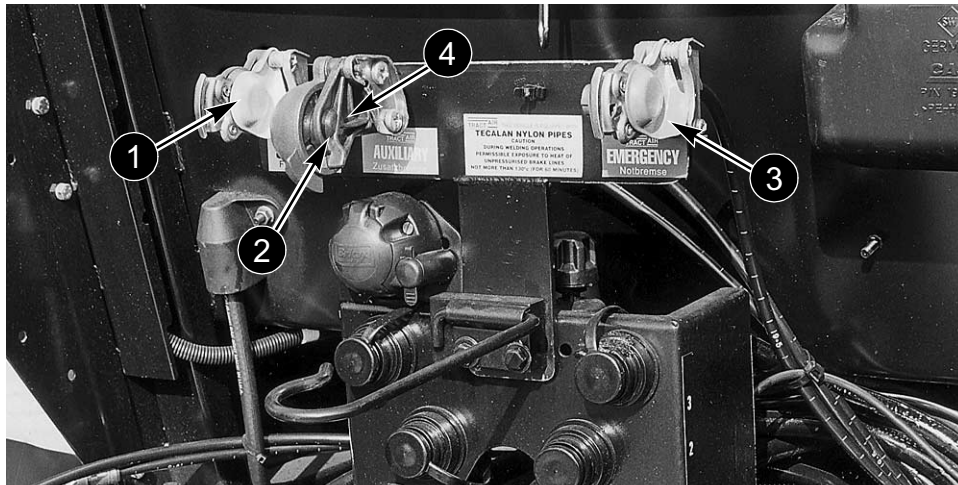
	X (mm)	Y (mm)	Z (mm)
DIN 74054	30	40	100
DIN 11026	42	40	100
DIN 11043	32	40	100

If this type of trailer hitch is fitted a decal will be positioned near the hitch clevis.

GENERAL OPERATION

TRAILER BRAKE COUPLINGS (If Equipped)

Pneumatic Trailer Brakes - Combined Single and Dual Line System



DP98C310

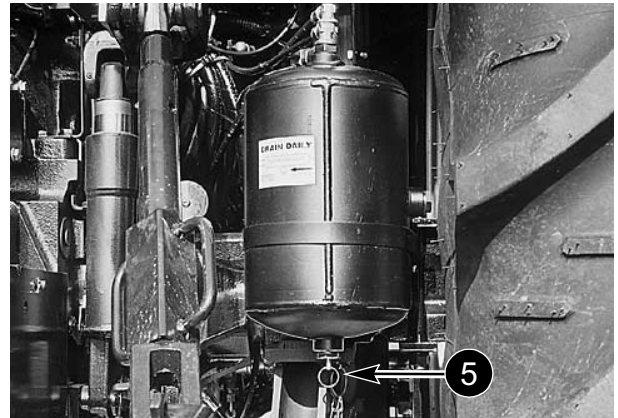
1. YELLOW COUPLING - BRAKE SERVICE LINE (DUAL LINE SYSTEM)
2. BLACK COUPLING - BRAKE FEED AND RETURN (SINGLE LINE SYSTEM)
3. RED COUPLING - BRAKE EMERGENCY LINE (DUAL LINE SYSTEM)
4. DUST COVER



WARNING: Make sure the system is at working pressure before operating the brakes with a trailer(s) fitted. Failure to do this can result in injury or death.



WARNING: DO NOT park an unattended tractor/trailer(s) combination using air pressure to apply the brakes (Dual Line Pneumatic Braking System). The mechanical park brake on both the tractor and trailer(s) MUST be applied.



DP98C306

5. WATER DRAIN PLUNGER (PUSH UP)

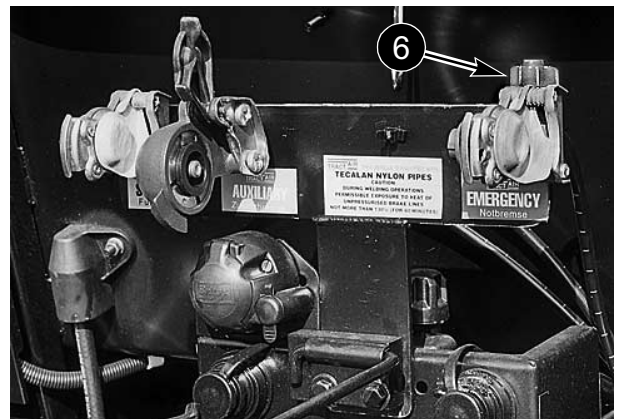
The air reservoirs store air under pressure to operate the trailer brakes.

Maximum Pressure 12.5 bar
(181 lb in²)

Maximum Operating Pressure 8 bar
(116 lb in²)

Capacity 10 (x2) litres
(908 (x2) in³)

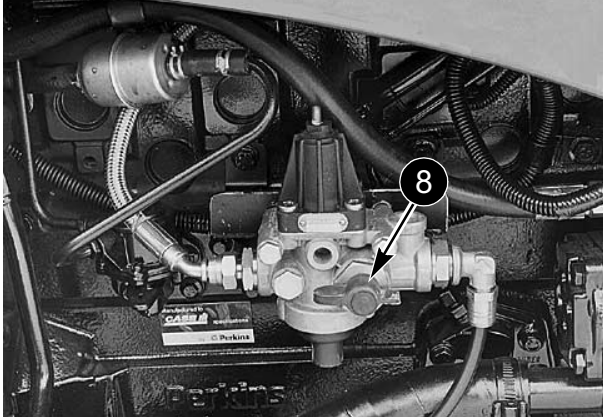
Drain Reservoirs Every 10 hours or Daily



DH98C308

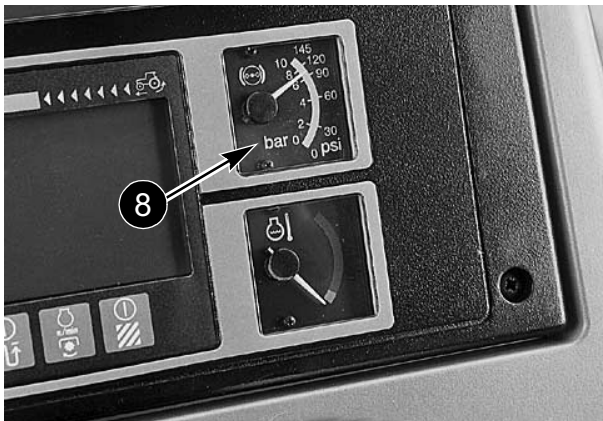
6. REAR (CONTROLLED) AIR LINE CONNECTOR TO INFLATE TIRES (IF EQUIPPED)

GENERAL OPERATION



DP98D004

IMPORTANT: An uncontrolled air supply is available from a port (7) on the unloader valve. If this port is used a regulator and air pressure gauge **MUST** be fitted.



DP98J099

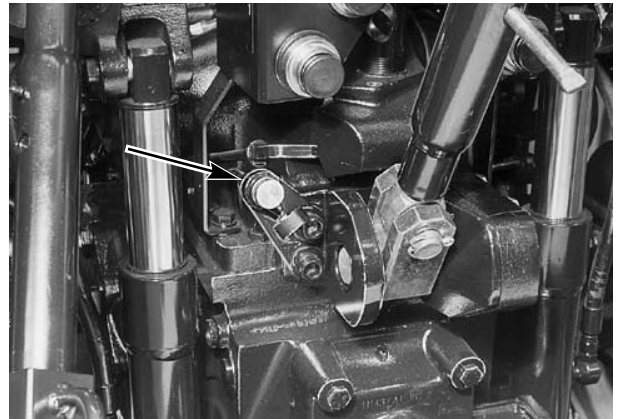
8. AIR PRESSURE GAUGE

Hydraulic Trailer Brakes (If Equipped)

The hydraulic trailer brake coupling is mounted to the left of the remote hydraulic couplings.

To connect or disconnect:

Slide the sleeve back on the trailer brake coupler and push on or pull off, then release the sleeve.



DP97D117

GENERAL OPERATION

AUXILIARY ELECTRICAL POWER SOCKETS

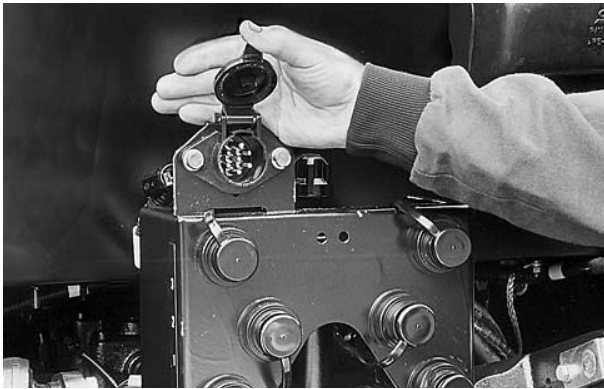
Seven Terminal Electrical Socket

The seven terminal electrical outlet socket is fitted to all tractors to supply power to operate the electrical systems of implements, trailer lighting, warning lamps, and field lights. The correct plug to fit the socket can be obtained from your dealer.

Observe local legal requirements.

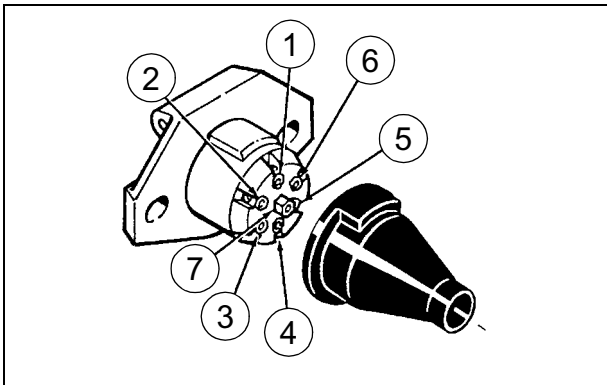
NOTE: If the warning lamp, implement or trailer connector plug is not a seven terminal type, the plug must be changed.

North American Tractors



DP97F102

Terminal Positions and Circuits

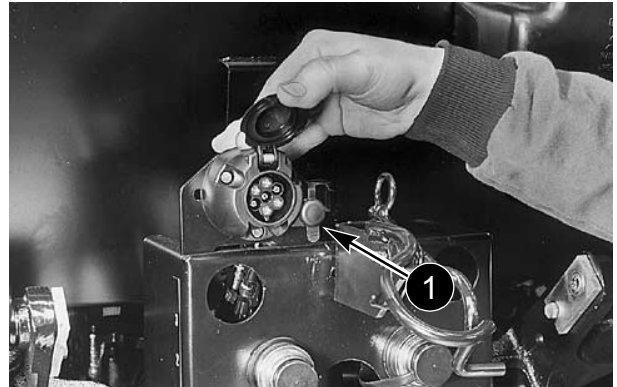


102B

TERMINAL No.	CIRCUIT (CABLE COLOR)
1	GROUND (WHITE)
2	FIELD LIGHTS (BLACK)
3	LEFT TURN SIGNAL (YELLOW)
4	AUXILIARY POWER (RED)
5	RIGHT TURN SIGNAL (GREEN)
6	TAIL LAMPS (BROWN)
7	AUXILIARY POWER (BLUE)

Pin number 4 and 7 are controlled through the key switch. These circuits are protected with a 30 ampere fuse. See Electrical System Circuit Protection in this manual.

Rest Of World Tractors

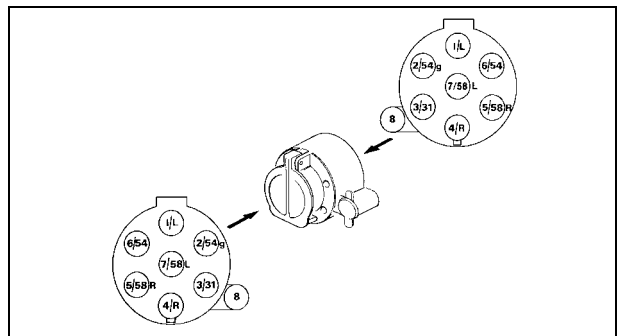


DP97F007

The small socket (1) to the right of the seven terminal electrical outlet is used for connecting accessories on to an implement or trailer, e.g. rotating beacon. Power to the socket will only be available at the socket when the Rotating Beacon Switch (If Equipped) is in the ON position.

NOTE: The correct plug to fit the small socket can be obtained from your dealer.

Terminal Positions and Circuits

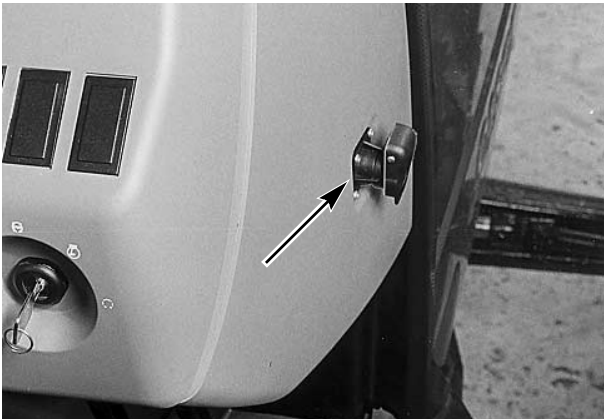


510125

TERMINAL No.	TERMINAL USE
1/L	LH INDICATORS
2/54g	REAR FOG LAMPS
3/31	EARTH (GROUND)
4/R	RH INDICATORS
5/58R	RH REAR/SIDE LAMPS
6/54	STOP LAMPS
7/58L	LH REAR/SIDE LAMPS

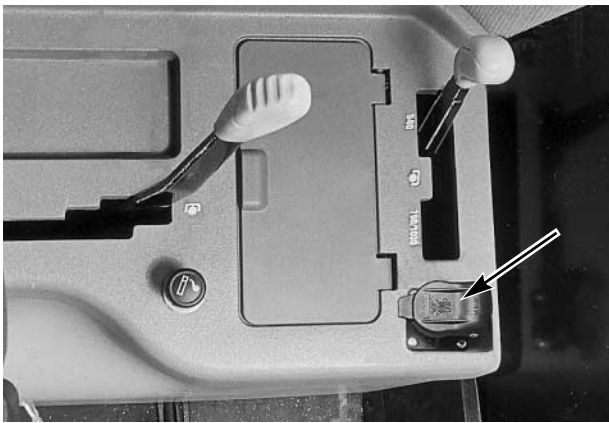
GENERAL OPERATION

Three Terminal Electrical Sockets



DP97A096A

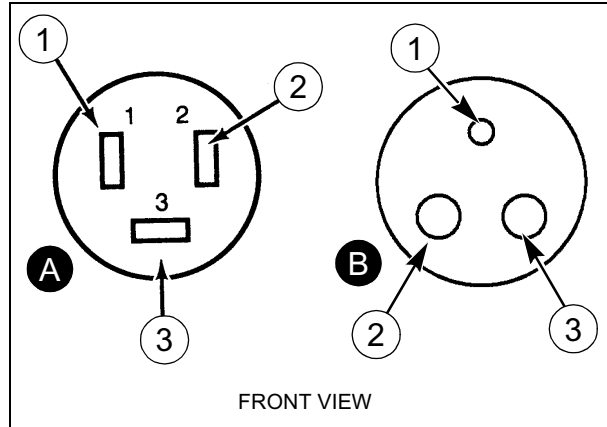
LOCATED ON RIGHT SIDE
OF INSTRUMENT PANEL



DP97C143

LOCATED ON RIGHT SIDE CONSOLE
TO REAR OF SEAT

NOTE: The correct 3 pin plug to fit the sockets can be obtained from your dealer.



A. NORTH AMERICA

B. REST OF WORLD

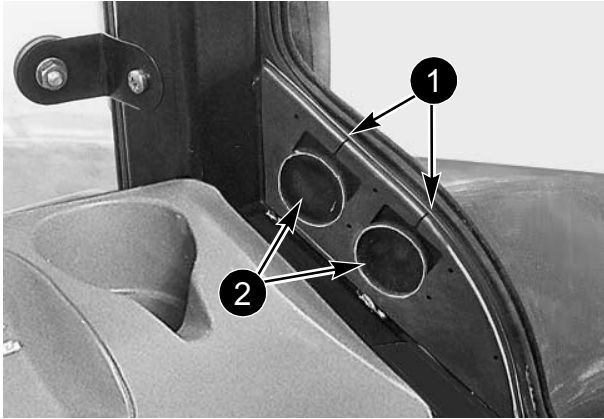
- 1. POWER - THROUGH KEY SWITCH (134 RED CABLE)
- 2. POWER - DIRECT (164 RED CABLE)
- 3. GROUND (BROWN CABLE)

Two auxiliary electrical power sockets are provided inside the operators compartment for connecting monitors, implement controllers, C.B. radios, and other 12 volt equipment.

GENERAL OPERATION

IMPLEMENT CABLE ACCESS

Access is provided for implement cables in the right hand corner of the rear window.



DP97E391

To fit cables:

STEP 1

Open the rear window and remove the rubber grommet by pulling upward.

STEP 2

Cut the grommet down (1) into the centre of the circle area and then cut out the centre (2) to fit the cable(s).

STEP 3

Fit the grommet over the cable(s) and install the grommet and cable(s) into the slots in the cab.

STEP 4

Close the rear window.

There are also tapped holes provided in the cab A, B and C posts, behind the plastic trim, for mounting an implement monitor.

For full installation instructions and replacement grommets see you dealer.

GENERAL OPERATION

HOW TO TRANSPORT THE TRACTOR

Towing The Tractor



WARNING: Make sure that the weight of a trailed vehicle that is not equipped with brakes **NEVER EXCEEDS** the weight of the tractor that is towing the vehicle or any national weight limitations which may apply. Stopping distance increases with increasing speed as the weight of the towed load increases, especially on hills and slopes.

M114B

STEP 1

Make sure all controls are in the neutral position and the park brake is disengaged.

STEP 2

Use a rigid tow bar and safety chains to pull the tractor. Attach the tow bar and safety chains to the tractor side channels or the front support.

IMPORTANT: Because of pressure lubrication requirements, special rules apply when the tractor engine is running or not running. Use the following procedures as applicable.

A. Engine Running

- Do not pull the tractor faster than 20 km/h (12 mph).
- Disengage the mechanical front drive (MFD) (if equipped).
- Disengage the differential lock.
- Make sure the range and speed levers are in the neutral position.

NOTE: The engine must be running at 1200 rpm or more. Check brake operation.

B. Engine not Running

- On MFD tractors, remove the drive shaft to the front axle.
- Add 15 litres (4 US gallons) of McCormick HTX Transmission/Hydraulic oil to the transmission. After towing the tractor, drain excess fluid to bring the level in the transmission to the FULL mark on the dipstick.

IMPORTANT: When the engine is not running, there is no power assistance to the steering. Use extreme caution when towing with the engine stopped.

The tractor can be towed a maximum of 20 km (12 miles) at a maximum speed of 10 km/h (6 mph) if the tractor has been operating within the past 48 hours.

IMPORTANT: To prevent damage to the tractor, follow the above procedures carefully when towing the tractor.

Transport by Truck or Rail

When you transport the tractor by truck or rail, do the following:

- Put all the transmission control levers in the NEUTRAL position.
- Engage the PARK brake.
- Tie the tractor down around the front and rear axles with safety chains having a rating greater than the gross load of the tractor (refer to tractor P.I.N. plate).

IMPORTANT: DO NOT TIE CHAINS AROUND THE FRONT BALLAST WEIGHT SUPPORT BRACKET TO HOLD THE TRACTOR DOWN.

- Install blocks/wedges to prevent the wheels rolling.

FIELD OPERATION

TRANSMISSION CREEPER OPERATION (If Equipped)

Transmission creeper speeds can be used for PTO type harvesting operations or other applications where slower ground speeds are desired.

IMPORTANT: Do not use creeper for operations which require high drawbar pull.

IMPORTANT: DO NOT engage creeper while in 4th range, damage will occur to the transmission.

To operate in creeper use the following procedure.

STEP 1

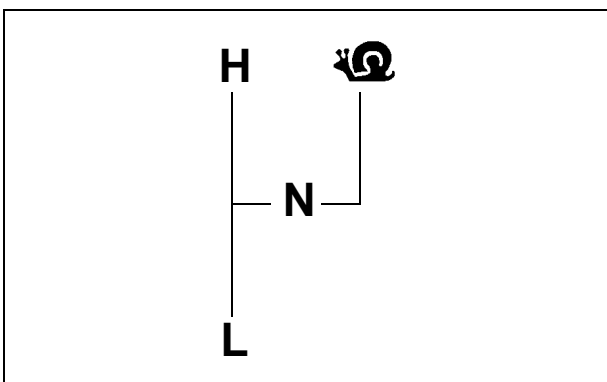
Using the correct starting procedure on page 63 start the engine.

Press and hold the clutch pedal down and then carry out Steps 2, 3.

STEP 2



MD02H057



Engage creeper (snail symbol) using the RANGE lever.

STEP 3

Move the speed lever and powershift switch, if applicable, to correct position to obtain required speed,

Select FORWARD or REVERSE.

STEP 4

Disengage the park brake and slowly release the clutch pedal. The tractor will start moving.

Adjust engine speed to obtain the required travel speed.

STEP 5

Change transmission gear/speed as required.

IMPORTANT: DO NOT engage creeper while in 4th range, damage will occur to the transmission.

To disengage creeper:

STEP 6

Reduce the engine speed to low idle.

Press the clutch pedal fully down and move the RANGE and Speed levers to the neutral position.

STEP 7

Move the Forward/Neutral/Reverse lever to the neutral position.

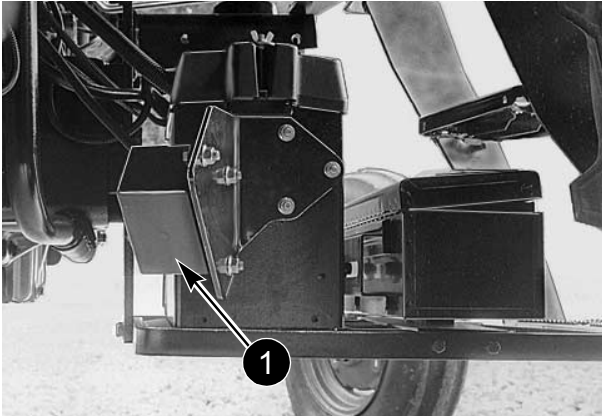
Engage the park brake.

FIELD OPERATION

WHEEL SLIP INDICATOR

To read wheel slip the tractor must be equipped with a digital instrument cluster and a True Ground Speed Sensor.

True Ground Speed Sensor (If Equipped)



DP99J069

NOTE: Sensor manufacturer/type may vary to that shown in photograph above.

The sensor (1) will accurately determine the true ground speed of the tractor.

Precise application of chemicals and planting inputs can be achieved with the Ground Speed Sensor. This will reduce your input costs for planting, fertilizing and chemical application for weed and pest control.

You can also use the Ground Speed Sensor to determine the actual percentage of rear wheel slip under all operating conditions. This will allow you to maintain the recommended amount of wheel slip for maximum productivity and operating efficiency.

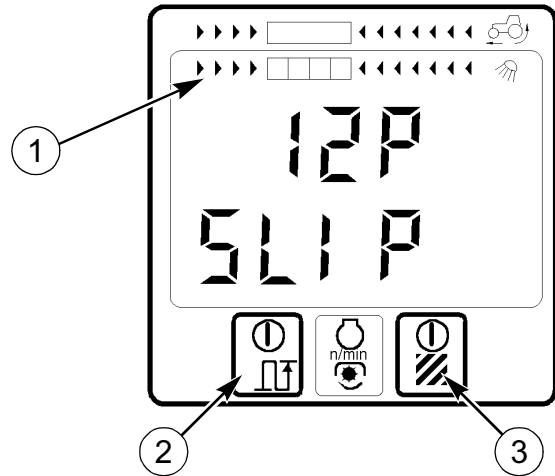


WARNING: Do not look directly into the face of the sensor. Micro-wave signals emitted by the sensor can cause eye damage.

NOTE: To provide accurate ground speed and wheel slip, the correct tyre size radius must be programmed into the instrument cluster.

IMPORTANT: Keep the face of the sensor clean. Scrape mud off with a plastic scraper. DO NOT use a metal scraper. Wash the face of the sensor with soap and water or steam clean. DO NOT disconnect the harness while cleaning.

Wheel Slip Display



DS98K096

There are two methods of reading the wheel slip.

METHOD 1:

The wheel slip bar graph (1) will indicate wheel slip anytime the tractor is in motion. The wheel slip bar graph contains 15 segments. Each segment represents 2 percent slip.

The range of the bar graph is from zero percent (all segments OFF) to 30 percent (all segments ON).

METHOD 2:

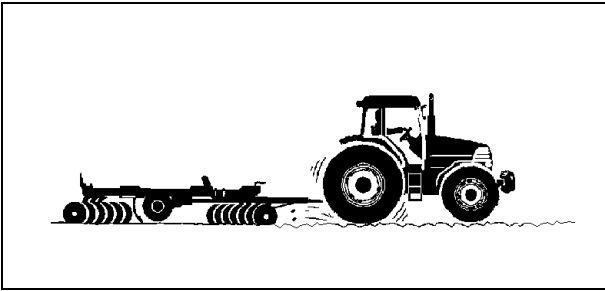
To read wheel slip on the main digital display, press both the DISTANCE FUNCTION SWITCH (2) and the AREA FUNCTION SWITCH (3) at the same time, for 2 seconds.

The upper display will show the percentage of wheel slip and the letter "P" for percent. The lower display will show the word "SLIP".

To return to the normal RPM display, press and release the RPM switch.

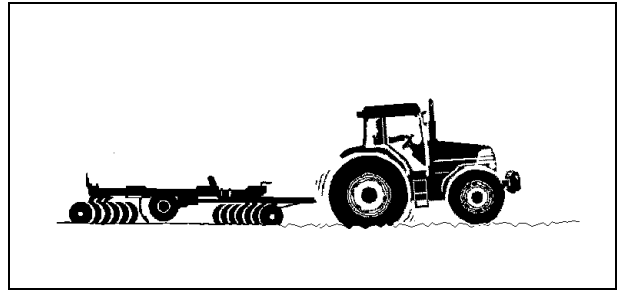
FIELD OPERATION

Operating with Wheel Slip



DS99J086

The ideal wheel slip is between **nine and sixteen percent**. Inadequate traction and excessive wheel slip can waste up to thirty percent of the tractors horsepower.



DS99J087

Do not try to reduce wheel slippage to zero. Stay within the nine to sixteen percent wheel slip.

If you add weight to the tractor to reduce wheel slip to less than nine percent, the added weight will consume more engine power due to the increased rolling resistance caused by the tyres sinking into the soil.

Add ballast weight only as necessary to maintain the correct tractor weight distribution and the recommended amount of wheel slip.

Wasted energy, increased fuel consumption, decreased tyre life and loss of productivity are all principle ingredients that can increase operating cost.

See page 159 for more information on wheel slip and correct ballasting etc.

FIELD OPERATION

REAR POWER TAKEOFF

See the Specifications Section in this manual for general specifications for the power takeoff on your tractor.

When using power takeoff operated equipment the following rules MUST be followed:

1. On a tractor with a three point hitch, both lift links must be set as specified in the EQUIPMENT OPERATORS MANUAL.
2. The check chains or stabilizers (as equipped) must be in the RIGID position to limit the lateral movement of the equipment.
3. The Upper Limit for the hitch maximum lift must be set correctly, see page 116 for instruction on how to adjust the lift height.
4. Always stop the engine before connecting an implement to the PTO shaft. This releases the tractor PTO brake and allows the PTO shaft to be turned by hand so that the splines of the tractor and implement PTO shafts can be aligned.
5. This tractor is equipped with a PTO brake which may be damaged by the continued rotation of high inertia implements. To prevent damage to the PTO brake, only use implements with an Over-Run mechanism to make sure that no implement rotation continues against the PTO brake when the PTO has been switched OFF.



WARNING: This tractor is equipped with a 540, 750 or 1000 rpm PTO. Be sure the implements are matched to the tractor PTO SPEEDS. Lock the swinging drawbar in the centre position when using the PTO.



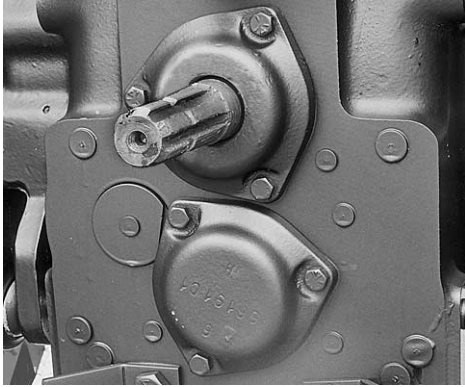
WARNING: PTO driven implements may fail if operated over the rated speeds. Avoid injury. Limit rpm to 600 or less for 540 rpm PTO speed, 800 or less for 750 rpm PTO speed and 1100 or less for 1000 rpm PTO speed.

FIELD OPERATION

PTO Options

A choice of PTO outputs are available to suit market requirements. The options are:

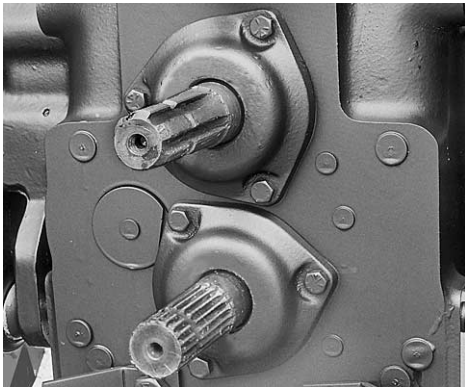
1. Single Shaft PTO



DP97C041

This PTO option has a 6 spline upper shaft only, which rotates at 540 rpm.

2. Dual Shaft PTO



DP97C040

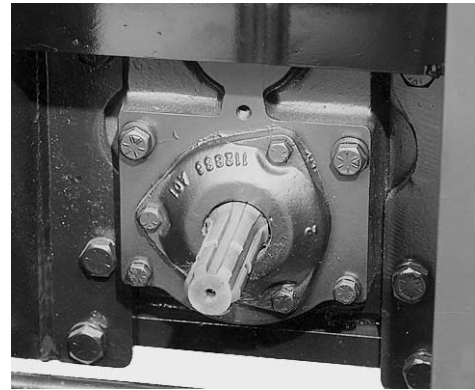
There are 2 options for Dual Shaft PTO:

A 6 spline upper shaft which rotates at 540 rpm and a 21 spline lowershaft which rotates at 1000 rpm.

OR

Two 6 spline shafts. The upper shaft rotates at 540 rpm and the lowershaft rotates at 1000 rpm.

3. Shiftable PTO



DP97C039

There are 2 options for shiftable PTO:

A 6 spline lower shaft which rotates at either 540 rpm or 750 rpm.

OR

A 6 spline lower shaft which rotates at either 540 rpm or 1000 rpm.

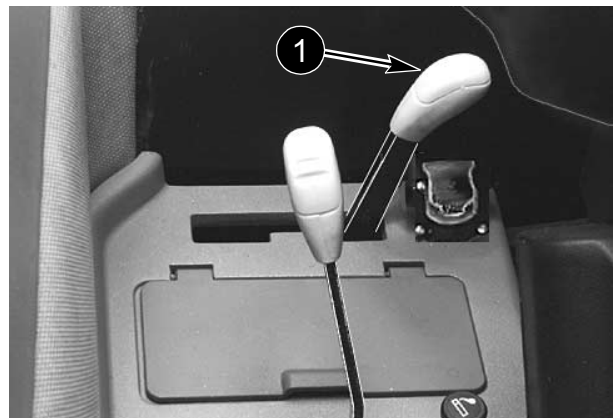
NOTE: PTO Safety Guard has been removed from the previous photographs for photographic purposes only.

DO NOT operate tractor PTO with PTO Safety Guard removed.

Changing the PTO Speed on a Shiftable Type PTO

NOTE: Make sure the drawbar is set in the correct position if operating a drawbar pulled, PTO driven implement; see page 83 for more information.

The shiftable PTO option has a lever (1) for changing the speed on the right hand side console. Move the lever to the right for 540 rpm or to the left for 750/1000 rpm as equipped.



DD97C127

1. SHIFTABLE PTO LEVER

FIELD OPERATION

Operating the Electronic PTO System

The PTO is engaged by the clutch lever, located on the right side console. The PTO is independent of the transmission and can be operated anytime the engine is operating. The tractor motion can be started or stopped in any of the forward or reverse speeds without affecting the speed of the power takeoff shaft. Also, the power takeoff shaft can be started or stopped without affecting the speed of the tractor. To increase the service life of the PTO clutch and brake, drive lines and PTO driven implements, use the following procedure to operate the PTO. The PTO clutch lever lets the operator regulate the speed of clutch engagement so that a smooth engagement can be obtained under all conditions.

NOTE: The upper limit control should always be used, see page 116 (item 8), when using the PTO.

Engage the PTO as follows:

STEP 1



DD97C124

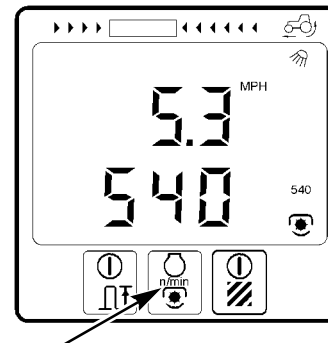
Reduce the engine rpm.

Move the PTO clutch lever forward to the offset in the slot for 3 seconds then fully forward to engage.

IMPORTANT: DO NOT hold the PTO clutch lever in the intermediate position, the PTO clutch will slip, overheat and will be damaged.

IMPORTANT: With the PTO engaged, if the engine is stopped the PTO will disengage, but the lever will remain in the ENGAGE position. The engine will NOT start until the lever is put in the DISENGAGE position which will activate the safety start switch.

STEP 2



DI98K050

If equipped with a digital display cluster do the following. Push the ENGINE/PTO rpm button once to display the 540 rpm PTO speed. Push the button again to display 1000 rpm speed.

STEP 3

Adjust the engine rpm to obtain the desired PTO speed. To display engine rpm, press the ENGINE/PTO rpm button.

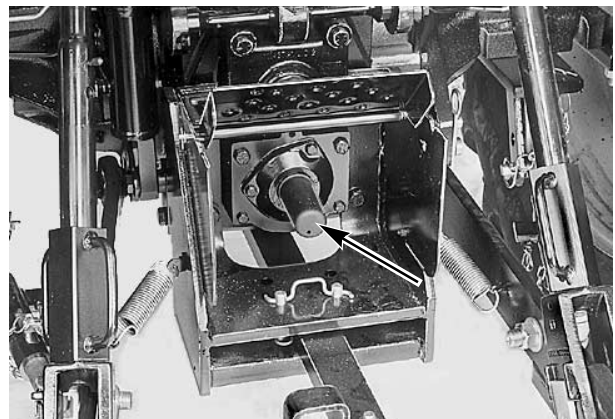
Disengage PTO as follows:

STEP 1

Reduce the engine rpm. Move the PTO clutch lever fully rearward past the slot to the disengaged position.

IMPORTANT: High-inertia implements do not become stationary immediately when PTO is disengaged. Allow sufficient time for implement to "run down" to a halt before cleaning or adjusting.

STEP 2



DP97D178

When the PTO is not in use install the tubular shaft guard.

IMPORTANT: Do not operate without drive line shields fitted. Make sure the tachometer is working. Read the Operators Manual supplied with PTO driven equipment.

FIELD OPERATION

PTO Operating Safety



WARNING: PTO driven machinery can cause serious injury. Before working on or near the PTO shaft, or servicing or clearing the driven machine, put the PTO lever in the DISENGAGE position and STOP the engine.



WARNING: When doing stationary PTO work and dismounting from the tractor with the PTO running, keep clear of all moving parts as they are a potential safety hazard.

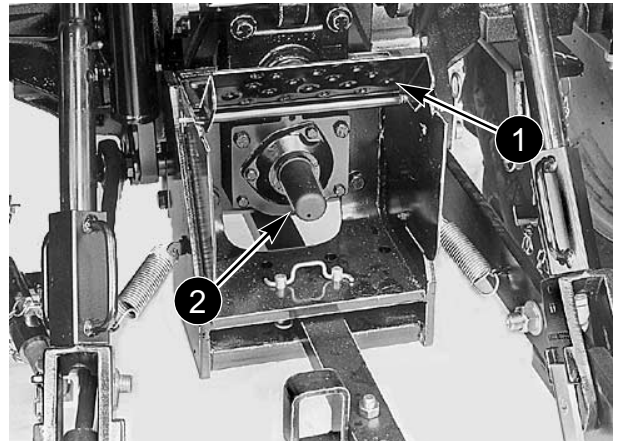
For the safe operation of the PTO, follow these safe operating practices.

- Hold the drawbar in the centre location on the rear support with the retaining pins.
- The drawbar clevis (if equipped) must be removed or mounted under the drawbar, to prevent possible interference between the clevis and the implement driveline.
- Connect the implement hitch to the drawbar with a hardened steel pin. Make sure the pin is securely held in place with a cotter pin or lock pin and does not make contact with the implement driveline.
- Connect the implement hitch to the tractor drawbar before connecting the implement driveline to the power takeoff.
- Connect the implement driveline to the tractor. Check the driveline for correct length and for free telescopic movement. The correct length is important to prevent the driveline from hitting bottom or from separating in any tractor or implement operating position.
- When working with the drawbar raise the 3 Point Hitch as high as possible to prevent possible interference between the lower links and the implement.

IMPORTANT: Follow the implement manufacturers recommendations in adjusting and aligning the implement and the implement driveline with the tractor.

PTO Safety Guard

All tractors with a power take off have a large safety guard (1) and a small tube type guard (2) for the splined output shaft. To prevent injury to the operator, the tractor power take off safety guard and the shields for the telescopic shaft assembly must be used. When possible raise the guard when connecting an implement and lower the guard to horizontal when using the 3 point hitch and a non driven PTO implement.



DR98K082

TRACTOR EQUIPPED WITH DRAWBAR USED FOR ILLUSTRATION PURPOSES ONLY



WARNING: Do not exceed the recommended speeds of the driven machine. Do not operate the PTO unless the shaft and drive line shields are in position and the tachometer is working correctly. Read and learn to understand the Operators Manuals supplied with any PTO driven equipment which may be attached to the machine.



WARNING: Whenever a PTO driven machine is in operation, the PTO guards must be in place for most operations to prevent injury to the operator or bystanders. Where attachments, such as pumps, are installed on the PTO shaft (especially if the tractor PTO guard is moved upward or removed), extended shielding equivalent to the PTO guard must be installed with the attachment. Install the PTO guard to its original position immediately when the attachment is removed.

FIELD OPERATION

FRONT POWER TAKEOFF OPERATION (If Equipped)

The front power takeoff has a 6 spline output shaft which rotates at 1000 rpm. Engagement is actuated by a three position rocker switch (OFF, ON and ENGAGED) situated on the RH side console. The PTO shaft rotates counterclockwise, from front of tractor.

IMPORTANT: DO NOT attach implements to the front PTO which need more than 90 kW (120 hp) to operate.

IMPORTANT: When using implements which cause shock loads, ALWAYS have a slip clutch fitted between the implement and the tractor PTO drive shaft. Before using the implement check the slip clutch is working correctly and the implement is free to run.

IMPORTANT: When using implements which have fast moving parts eg. mowers, corn choppers or snow blowers, ALWAYS install an Over-Run mechanism to the implement drive shaft to prevent PTO failure.

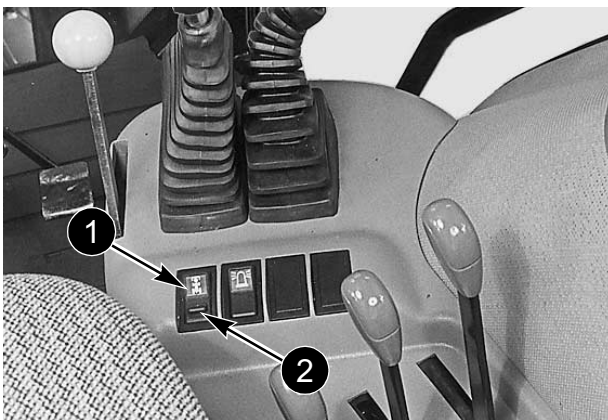
IMPORTANT: Make sure the PTO shaft on the implement is not too long or the PTO will be damaged if the front hitch is raised to full height.

Engage The Front PTO As Follows:

STEP 1

Reduce the engine rpm.

STEP 2



DP97C138

Press the front of the switch (1) down, push the switch lock (2) (on the rear of the switch) forward and at the same time press the switch down again and release.

STEP 3

An indicator lamp in the switch will illuminate when the front power takeoff is engaged.

IMPORTANT: PTO will not engage if engine is started with the switch in the engage position. Move switch to disengage and then engage.

IMPORTANT: Never try to release dead locked implements by repeated clutch engagement and disengagement. The front power takeoff clutch will slip and become damaged.

Disengage The Front PTO As Follows:

STEP 1

Reduce the engine rpm.

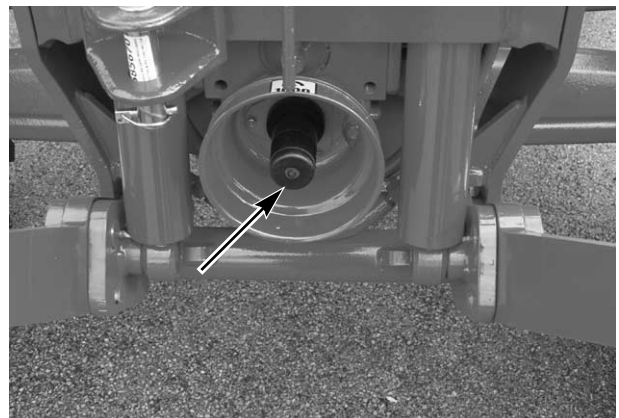
STEP 2

Push the bottom of the switch (1) down to the off position, the indicator lamp in the switch will go out when the front power takeoff is disengaged.

STEP 3

When the engine is switched off the front power takeoff is automatically disengaged. The indicator lamp in the switch will go out to indicate the front PTO is disengaged.

STEP 4



MD01K006

HYDRAC PTO SHOWN

Always install the PTO shaft guard when the PTO is not being used.

IMPORTANT: High-inertia implements do not become stationary immediately when PTO is disengaged. Allow sufficient time for implement to "run down" to a halt before cleaning or adjusting.

FIELD OPERATION

REAR THREE POINT HITCH PREPARATION

The three point hitch system gives position and draft control of soil engaging implements.

This tractor is fitted with Category II links. The hitch can be converted to Category I with 3 reducer bushings, one for each lower link and one for the top link, which are available from your dealer.

All tractors are equipped with either outside stabilizers or check chains and fixed or telescopic lower links, depending upon market region.

IMPORTANT: *Your tractor is equipped with a hitch that will accept all mounted Cat II implements conforming to the following SAE-ASAE standard dimensions:*

IMPLEMENT IDENTIFICATION DIMENSIONS		
Diameter of hitch pins	Category I Implement 22.3 mm (7/8 in) (OPTIONAL BUSHINGS)	Category II Implement 28.6 mm (1 1/8 in) (FACTORY FIT)
Distance between shoulders of hitch pin	682.6 mm (26 7/8 in)	819 mm (26 7/8 in)
Gap in top of implement mast	44.5 mm (1 3/4 in)	52.4 mm (2 1/16 in)
Diameter of holes in top of implement mast	19 mm (3/4 in)	25.4 mm (1 in)



WARNING: *Extreme care must be exercised when adjusting and checking the hitch and control linkage when the engine is running and when linkage is under hydraulic or mechanical load. Study the linkage and hitch travel, keep hands, arms, legs and feet out of the travel arc of the hitch and linkage. Make sure that no persons are in the danger area.*

NOTE: *When using the three point hitch ensure there is sufficient clearance between the rear tyres and the lower links by adjusting the stabilizers and/or tread positions, see page 108, 155 and 157 for more information.*

FIELD OPERATION

Top and Lower Links Adjustment

The top and lower links must be adjusted correctly so that the implement can work at the required depth and that the lower links are free to move up and down with the shape of the ground.

NOTE: Make sure tyre pressures, wheel equipment and blasting are correct before making hitch adjustments. See **TYRE PRESSURES AND LOAD CAPACITIES** on Page 139 of this manual. and See **TRACTOR BALLAST** on Page 159 of this manual.

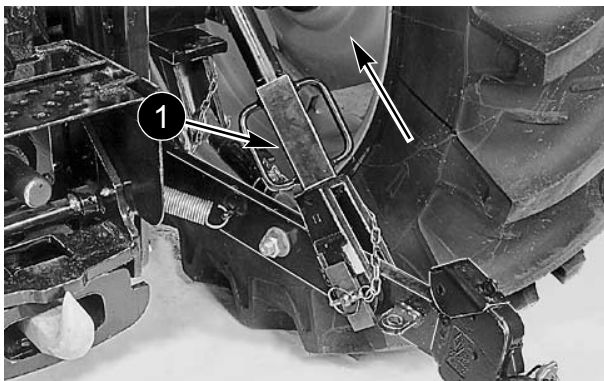
IMPORTANT: After making any adjustments, carefully raise the implement to make sure there is clearance between the tractor and implement.

Lower Link Adjustment

STEP 1

Put the tractor on a hard level surface and lower the hitch to the lowest position.

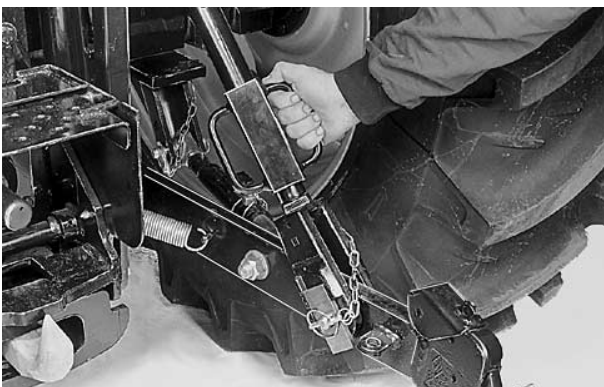
STEP 2



DP97E197

Lift the turnbuckle lock (1) , approximately 30 mm (or 1 in) to release.

STEP 3



DP97E198

Turn the turnbuckle lock clockwise to lower and counterclockwise to raise.

NOTE: Be sure to place the turnbuckle locks in their locked position after adjusting the lower links.

Top Link Adjustment

Make sure that the length of the top link is adjusted correctly. See the implement Operators Manual for the correct length.

IMPORTANT: Top link sensing will not operate correctly if the top link is connected to the slotted hole on an implement.



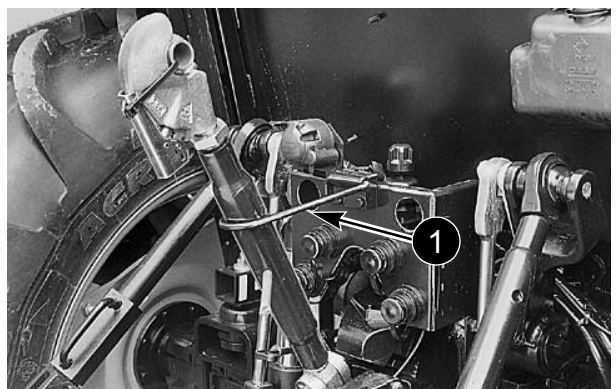
DP98D180

To adjust the length of the top link, Use the adjusting handle to adjust the length of the top link.

Turn the handle counterclockwise to shorten the link or clockwise to lengthen the link. As seen from behind the tractor looking forward.

NOTE: To obtain maximum length adjustment and strength, the thread length on the ends of the turnbuckle must be equal.

IMPORTANT: After making final adjustments, carefully raise the implement to make sure there is clearance between the tractor and implement.



DP98D181

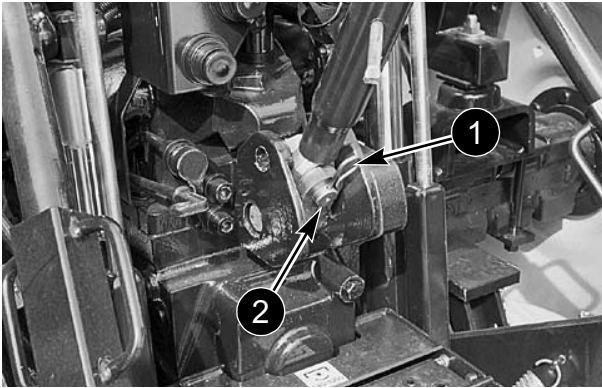
When the top link is not being used, store the link in the retaining clip (1) provided.

FIELD OPERATION

Top Link Installation

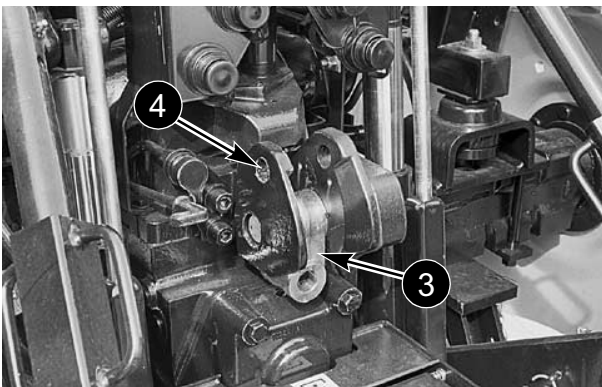
Top Mounting Hole

The top mounting hole is designed for dedicated Cat II top links which are provided on equipment such as hedge cutters and post hole borers.



DP99J055

To install the dedicated top link remove the 'R' clip (1) from the top link pin (2). Remove the link pin (2) and the existing top link from the tractor.



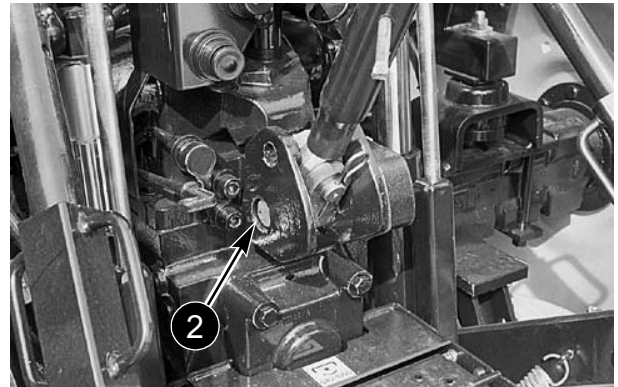
DP99J054

The yoke (3) will remain installed onto the lower pin.

Install the dedicated top link into the top mounting hole (4).

IMPORTANT: *Top link sensing will not operate when the dedicated top link is installed in the top mounting hole*

Bottom Mounting Hole



DP99J055

The bottom mounting hole (5) is designed for the special swivel type top link supplied with the tractor. Top link sensing is active through the bottom mounting hole.

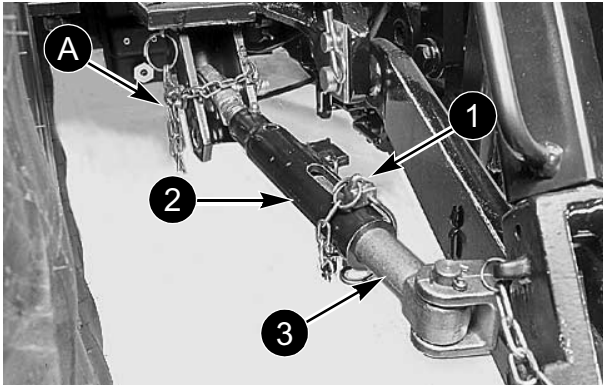
IMPORTANT: *Top link sensing will not operate correctly if the top link is connected to the slotted hole on an implement.*

FIELD OPERATION

Stabilizer Operation (If Equipped)

Stabilizers are all steel telescoping channels which are provided to prevent the lower links from contacting the tires. The stabilizers are set to a nominal length during manufacture but may require adjustment to accommodate certain types of equipment and tread position.

Rigid Operation



STEP 1

Position the stabilizers in the upper hole (A) of the mounting bracket. Remove the sway limiter pin (1) and attach the implement to the hitch.

STEP 2

Adjust the stabilizer turnbuckle (2) so that the sway limiter pin hole in the stabilizer rod (3) aligns with the rear end of the slot in the turnbuckle (2). This hole will be vertical.

IMPORTANT: The stabilizer is fitted with a stop pin to prevent the turnbuckle being adjusted too far. If the turnbuckle becomes tight to adjust and is forced past the stop pin, the threads will be damaged. Keep the threads clean and make sure that the turnbuckle turns easily.

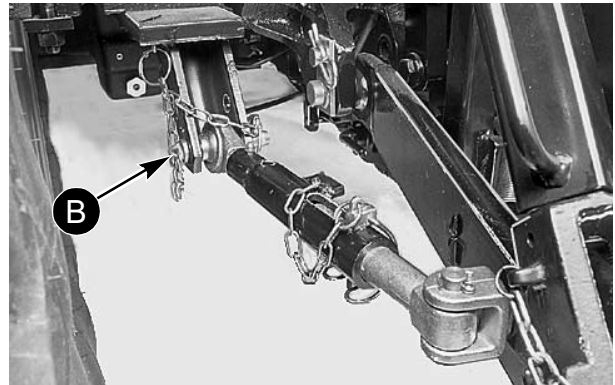
STEP 3

Install the sway limiter pin (1) through the turnbuckle and stabilizer rod.

IMPORTANT: DO NOT operate the tractor with the sway limiter pin removed. If the tractor is operated with the sway limiter pin removed damage to the tractor could result.

After adjustment, operate the three point hitch, ensuring that maximum lift is not restricted by the stabilizers.

Sway Operation



Position the stabilizers in the lower hole (B) of the mounting bracket. This will provide 127 mm (5 inches) of sway with the hitch lowered and rigid when the hitch is raised.

After adjustment, operate the three point hitch, ensuring that maximum lift is not restricted by the stabilizers.



WARNING: When adjusting the stabilizers with an implement attached, keep all body parts out of the area between the three point linkage and rear tires. Failure to do so may result in serious injury.

FIELD OPERATION

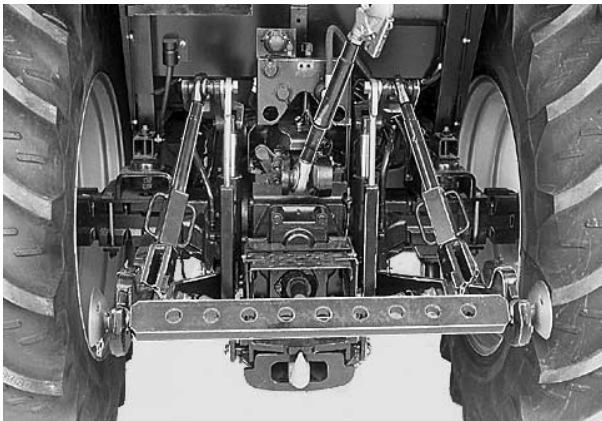
Check Chains (If Equipped)

Check Chains are provided to prevent the lower links from contacting the tires.

The check chains are set to a nominal length during manufacture but may require adjustment to accommodate certain types of equipment and tread position.

If chain lengths have been temporarily changed, adjust them as follows:

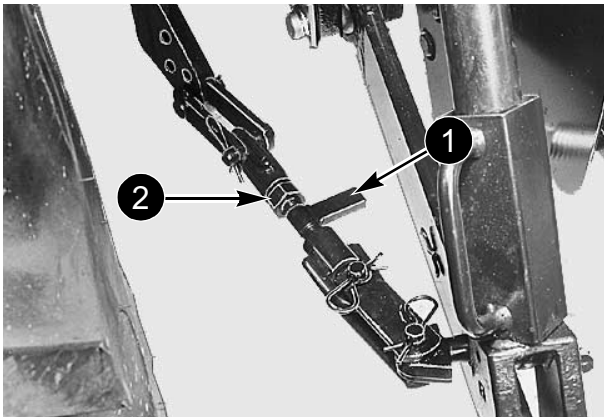
STEP 1



DP97E415

Install a plow cross-shaft or three point linkage drawbar between the lower links.

STEP 2



DP97C108

Looking forward from the rear of the tractor, turn the adjusting handle (1) counterclockwise to lengthen the chain. Turn the adjusting handle clockwise to shorten.

STEP 3

After adjustment tighten the locknut (2) to prevent any change in the setting.

STEP 4

Operate the three point hitch, ensuring that maximum lift is not restricted by the check chains.

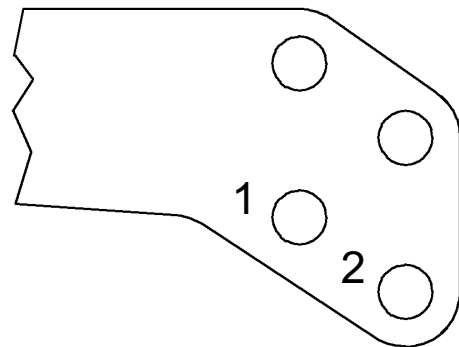
Rigid and Sway Operation

The check chain front mounting brackets are bolted to the axle cases and have 4 holes.

The check chain front bracket **MUST ONLY** be fastened to the lower 2 holes.

Which holes are used depends if rigid or lateral sway is needed for work. If RIGID operation is required through the whole lift range attach the check chain front bracket into hole 1. If SWAY operation is required with the lift arms lowered attach the check chain front bracket into hole 2.

After adjustment, operate the three point hitch, ensuring that maximum lift is not restricted by the check chains.



OM1418A

1. LOWER HITCH POINT - RIGID
2. LOWER HITCH POINT - SWAY

IMPORTANT: When using position 2 adjust the check chains to eliminate sway when the implement is fully raised. Incorrect adjustment can result in breakage of the check chains or brackets when the lift arms are raised.

FIELD OPERATION

Claw End Lower Links (If Equipped)



DP97D106

Connecting an Implement

Reverse the tractor until the claw ends of the lower links are aligned under the connecting points of the implement.

Raise the lower links until the claws engage and the latches (1) lock.

The spring spacer between the lower links will give the Cat III width setting.

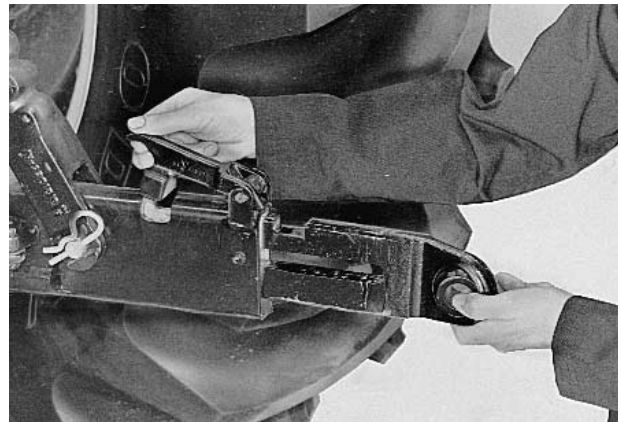
Disconnecting an Implement

Lower the implement to the ground. Pull the remote release rope (if equipped) to release the claw end latches and lower the lower links until clear of the implement.

Lift the top link off the implement upper connecting point and store in the bracket provided.

Move the tractor forward away from the implement.

Telescoping Lower Links (If Equipped)



D12803

Pull the latch handle up and pull the end of the lower link out.

Connect the extended lower links to the implement.

The lower links will retract and lock in place when the tractor is moved rearward.

IMPORTANT: *Make sure that the lower links are fully retracted and locked in place before operating the tractor.*

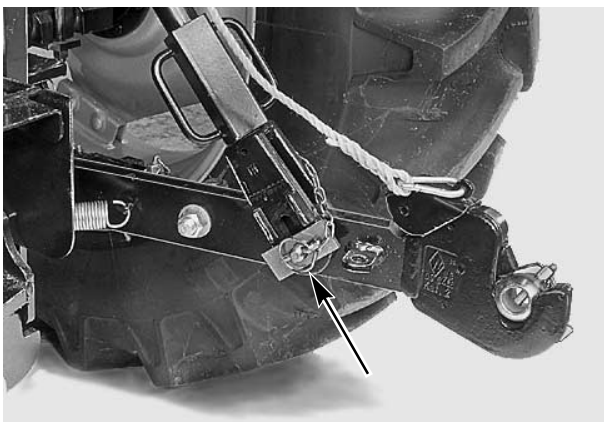
FIELD OPERATION

Lower Link Flotation

IMPORTANT: Check the implement Operators Manual to see if mechanical flotation can be used.

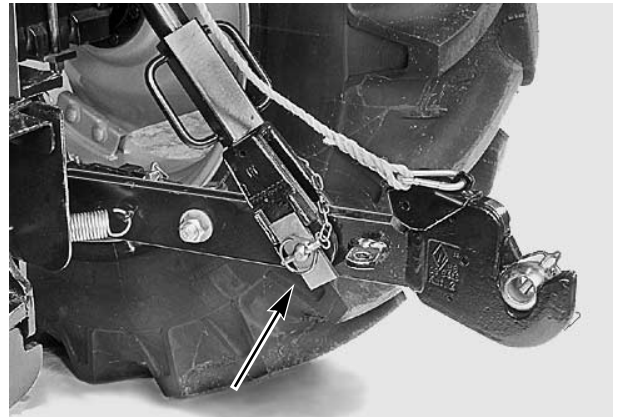
One or both lower links can be set to float approximately 38 mm (1.5 in). Float is used when operating in variable field surface conditions allowing the implement to follow the surface conditions.

Float is also used when the mounted implement width is more than the wheel track of the tractor.



DP97D105

For RIDGID operation with no up or down movement, the heads of the pins and the washers must be across the lift rods as shown.



DP97D106

For FLOAT operation, the heads of the pins and the washers must be aligned with the lift rods as shown.

FIELD OPERATION

REAR THREE POINT HITCH OPERATION

Electronic Hitch System

The electronic hitch system consists of the operators control panel, the control module, two load pin sensors, the hitch hydraulic control valve, the hitch position feedback sensor and wiring harnesses.

The Electronic Hitch System can be operated in one of two modes: 1) POSITION CONTROL and 2) LOAD CONTROL. In position control the hitch moves with the rotation of the position control knob. In load control the Electronic Hitch System moves the hitch to maintain a constant implement load on the tractor in changing soil conditions and terrain.

The operator controls for the Electronic Hitch Control system consists of an amber indicator lamp, rocker switch, diagnostic display and 6 control knobs.

1. INDICATOR LAMP



MD02E057

This lamp is used to indicate the condition of the ELECTRONIC HITCH SYSTEM. It will stay ON for 2 seconds after the engine has started for a bulb check. The indicator has 2 functions:

- A. FLASHING - The hitch needs to be enabled. The actual position of the hitch is not the same as the setting of the UP/DOWN SWITCH or the POSITION CONTROL knob.

To enable the hitch system: Set the UP/DOWN switch to DOWN. Rotate the POSITION CONTROL knob until the control and the actual position of the hitch are the same. When the indicator lamp stops flashing the hitch system is enabled. The hitch will follow the movement of the POSITION CONTROL knob, when the hitch UP/DOWN switch is in the DOWN position.

- B. CONTINUOUSLY ON - Look for the diagnostic code showing in the Diagnostic Display, under the cover on the right console. See Electronic Hitch Diagnostic Codes page 121 in this manual for how to proceed.

2. UP/DOWN SWITCH



MD02E056

This switch is used to fully raise or lower the hitch. It has 3 working positions: UP, DOWN, and MOMENTARY.

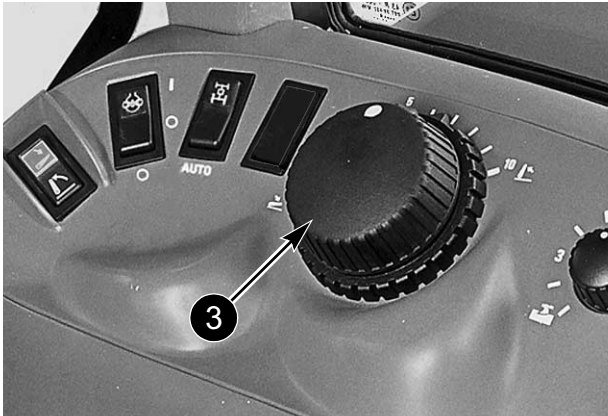
UP - The back or left of the switch pushed down. This fully raises the hitch from the working position to the transport position (controlled by the UPPER LIMIT STOP). The speed is not adjustable.

DOWN - The switch is in the centre position. This lowers the hitch from the transport position to full down (working position) or the position set with the Position Control Knob. The speed is controlled by the DROP SPEED CONTROL.

MOMENTARY - Double click and hold the switch by pushing the front or right of the switch into the MOMENTARY position. This will by-pass the DROP SPEED CONTROL setting allowing the hitch to drop at maximum speed. As long as the momentary switch is held, the hitch will continue to drop and will by-pass the "Bottom" setting. When the momentary switch is released, the hitch will automatically return to the "Bottom" setting. This function is only active when the position control is set in the bottom half of its range.

FIELD OPERATION

3. POSITION CONTROL



MD02E056

The control consists of an inner knob and an outer ring. This control is used to;

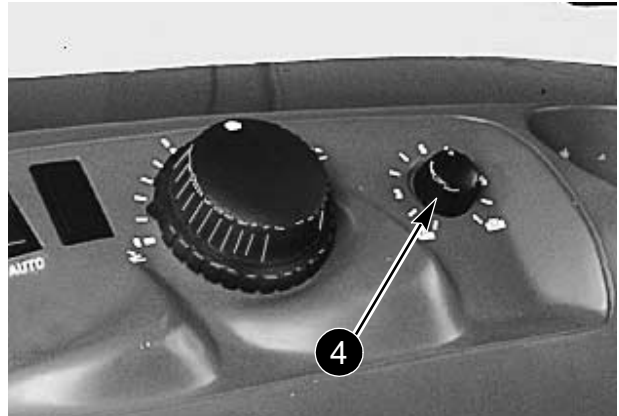
- A. Enable the Hitch System,
- B. Set a "Bottom" limit,
- C. Give precise control of the position of the hitch,
- D. Provide Hitch transport lock

OUTER RING - This is an adjustable mechanical stop for the inner knob. The setting can be bypassed with the push-button on the inner knob.

INNER KNOB - Used to precisely control the position of the hitch. Turning the knob clockwise will raise the hitch or counterclockwise will lower the hitch.

Press the PUSH-BUTTON in on the side of the knob, to bypass the "Bottom" limit without changing the setting on the Outer Ring. The PUSH -BUTTON is also used when the knob is turned fully clockwise to lock the knob in the TRANSPORT position.

4. LOAD CONTROL



DD97C118

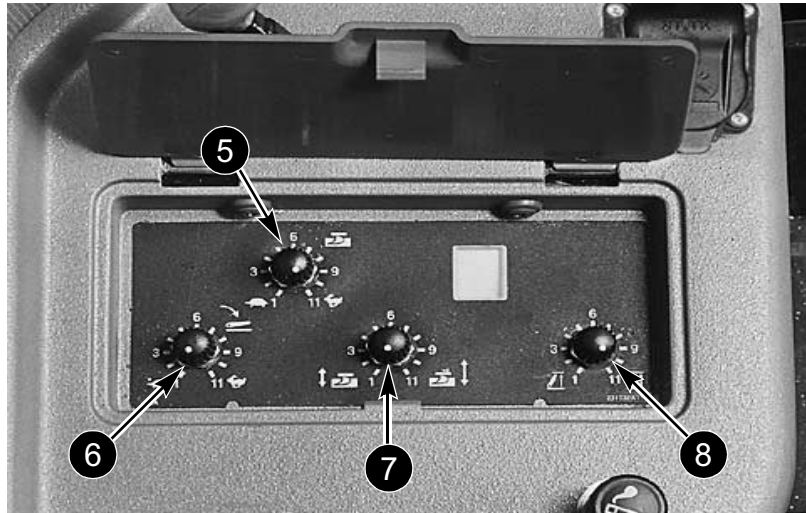
This knob is used to set the load on the tractor or implement depth. Turn the knob clockwise to increase the load and implement depth. Turn the knob counter-clockwise to reduce the load and implement depth.

IMPORTANT: The knob *MUST* be turned fully clockwise to the (O) off position to set the Electronic Hitch System in the POSITION CONTROL MODE.

The (O) position is used to prevent unwanted hitch movement at light load or no hitch load, when the tractor is moving at more than 0.8 km/h (0.5 mph).

IMPORTANT: The tractor must be moving in order for the LOAD CONTROL to be functional. Adjusting the LOAD CONTROL knob to the lighter load settings of 1 to 5 while the tractor is stationary, may result in significant hitch movement when the tractor moves again.

FIELD OPERATION



MP01C050

5. HITCH RESPONSE CONTROL KNOB (If Equipped) - This knob is used to set the speed at which the hitch is allowed to raise and lower while in LOAD control. Turn the knob clockwise to increase the speed at which the hitch will move in response to a change in load. Turn the knob counterclockwise to reduce the speed at which the hitch will move in response to a change in load.

NOTE: *Too slow a setting may limit the ability of the hitch to follow the contours of the soil.*

6. DROP SPEED CONTROL

This knob is used to adjust the lowering speed of the hitch when using either the UP/DOWN SWITCH or the POSITION CONTROL knob. Set the DROP SPEED to fast (fully clockwise) for light weight implements, and slow (fully counterclockwise) for heavy implements such as ploughs. This control can be over-ridden by double clicking and holding the UP/DOWN SWITCH in the MOMENTARY position.

7. TRAVEL CONTROL

This knob is used to adjust the amount of hitch movement (depth variation) allowed in the LOAD CONTROL MODE. Turning the knob clockwise will increase the hitch movement. This allows closer control of the load on the tractor and enables the hitch to follow soil contours better. Turning the knob counterclockwise will decrease the amount of hitch movement. Set the control in the lower range when using semi-mounted implements or on flat terrain where the amount of hitch movement can be restricted without affecting performance.

8. UPPER LIMIT CONTROL

This knob is used to adjust the maximum transport height of the hitch. It limits the transport height when using either the UP/DOWN SWITCH or POSITION CONTROL knob. A setting of "1" allows the hitch to raise only half the way, while a setting of "11" allows full transport height to be reached. This control can be used to limit hitch height with fully-mounted PTO driven implements where the angle of the Implement Input Driveline (IID) joints need to be limited to prevent noise, chatter and damage due to excessive angles. Turning the knob clockwise increases the transport height. Turning the knob counterclockwise decreases the transport height.

IMPORTANT: *When using the Automatic Hitch the UPPER LIMIT STOP **MUST ALWAYS** be rotated fully clockwise to the stop position (position "11").*

FIELD OPERATION

Operation of External Hitch Switches (If Equipped)

The external switches for the 3 point hitch can be used to raise or lower the hitch from outside the tractor.

This can be useful for making small adjustments when connecting implements to the 3 point hitch.

Always operate the remote switches according to the following procedure:

STEP 1

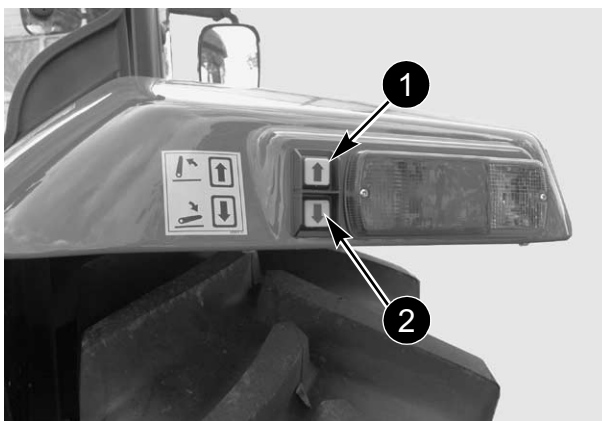


DR98J150

XTRASHIFT TRACTOR SHOWN

Keeping the engine running, Move the FORWARD/NEUTRAL/REVERSE lever to the NEUTRAL position. Engage the park brake.

STEP 2



MD01K002

Press the top switch (1) to raise the hitch. Press the bottom switch (2) to lower the hitch.

When the switches are released, the hitch will stop at the selected position until the hitch controls on the right hand side console are used. The hitch will have to be enabled with the position control knob after each use of the remote switches. To enable the hitch, see Operator controls on page 114.

If both switches are pressed together the hitch will stop. When the switches are released, the system will reset in approximately one (1) second. The hitch switches can be used in the normal manner.



WARNING: Watch for possible pinch points between the implement and tractor when the hitch is moved.



WARNING: Stand well clear of the linkage or implement when operating the external controls or injury can result from contact with moving parts.

FIELD OPERATION

Operating in Position Control

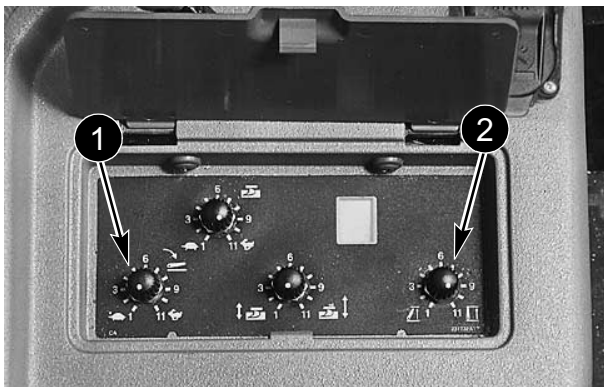
The tractor and implement must be operated in the field to select the correct position of the hitch. Do the following steps:

STEP 1



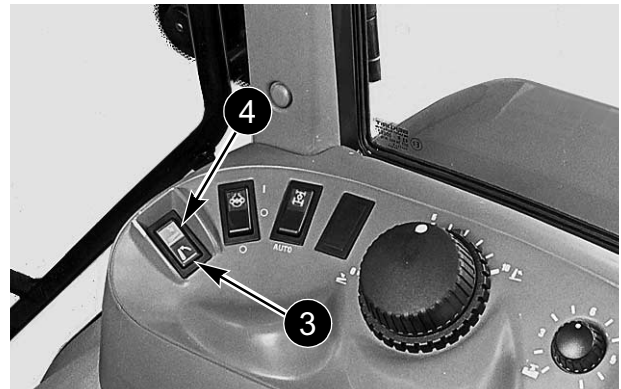
Before moving the tractor, set the POSITION CONTROL KNOB to the transport lock position, fully clockwise and turn the load control knob fully clockwise to the (O) off position.

STEP 2



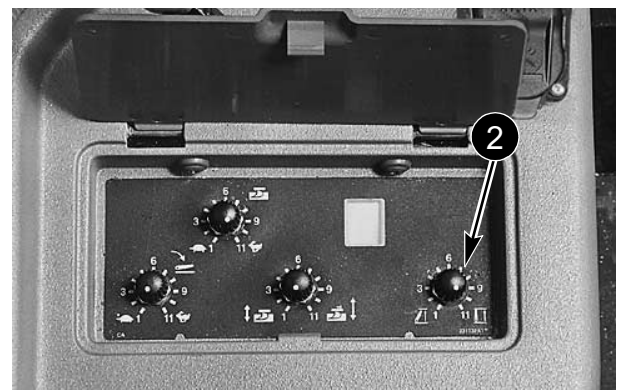
Set the DROP SPEED CONTROL (1) to setting 6.
Set the UPPER LIMIT CONTROL (2) to setting 1.

STEP 3



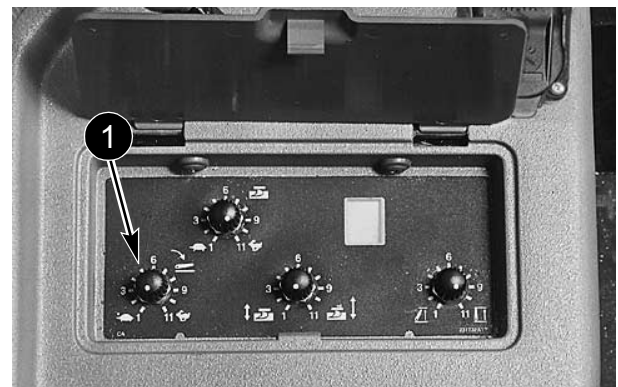
Set the UP/DOWN switch (3) in the DOWN position. If the enable or reset lamp (4) on the switch flashes, move the hitch POSITION CONTROL KNOB to match the actual hitch position.

STEP 4



Adjust the UPPER LIMIT CONTROL (2) to set the desired hitch raised position. A setting of "11" corresponds to the hitch being fully up.

STEP 5



Adjust the DROP SPEED CONTROL (1) until the implement lowers at the speed desired.

FIELD OPERATION

STEP 6



DD97C119

Operate the tractor and implement in the field. Set the implement depth with the POSITION CONTROL KNOB. The rate of hitch movement is determined by the amount the knob is moved. If the knob is moved slowly a precision control mode is provided to move the hitch slowly to match the knob.

IMPORTANT: Turn the **LOAD CONTROL** knob fully clockwise to the (0) OFF position, this will prevent unwanted hitch movement when the tractor is moving at more than 0.8 km/h (0.5 mph).

If the position control knob is moved quickly the hitch will lower at the set drop rate. Move the outer ring to set "Bottom" or lowest hitch position desired. This will provide a reference point for returning the knob to the original implement height position each time the knob is moved and also to maintain the same height.

STEP 7



DP97C141

Use the UP position to temporarily raise the implement without changing any of the hitch position adjustments.

Use the DOWN position to return the implement to its original position.

IMPORTANT: Always use the Hitch position control knob to raise the hitch for road transport with three point linkage mounted equipment. Put the control knob in the transport lock position and the up/down switch in the up position.

FIELD OPERATION

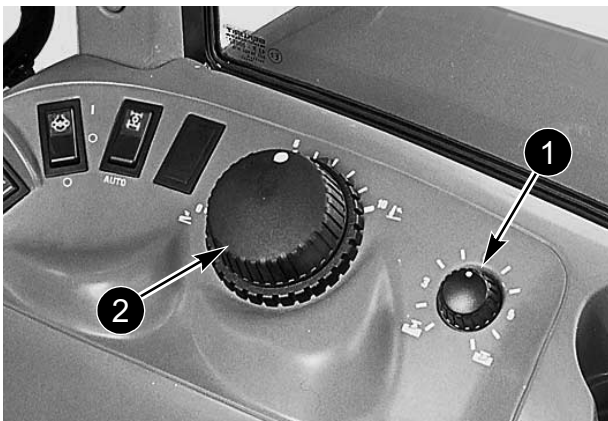
Operating in Load Control

The electronic hitch system will automatically adjust the hitch position to maintain a constant implement load on the tractor as the implement travels through varying soil conditions and terrain. If an implement travels through heavy soil the increased load is sensed at the lower link and the hitch will raise the implement in small increments to maintain a constant load on the tractor. As the implement travels through lighter soil conditions the lower link will sense the load decrease and lower the implement in small increments while maintaining a constant load on the tractor.

IMPORTANT: The tractor must be moving at a speed of more than 0.8 km/h (0.5 mph) for the load controls to function. Adjusting the LOAD CONTROL knob to the lighter load settings of 1 to 5 while the tractor is stationary, may result in significant hitch movement when the tractor moves again.

NOTE: If the implement has gauge wheels, move the Hitch Position Control Knob fully counterclockwise before carrying out the following procedure.

STEP 1



DP97C141

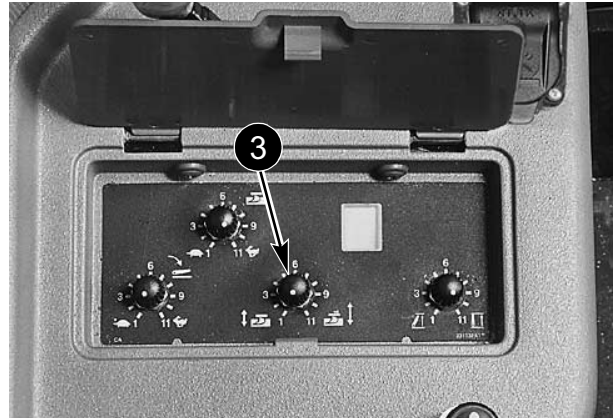
Turn the LOAD CONTROL Knob (1) counterclockwise to decrease the load setting until the hitch begins to raise.

NOTE: The load control is OFF at the (0) position and the hitch will operate in the position control mode.

Move the hitch POSITON CONTROL knob (2) fully counterclockwise.

NOTE: In fields with intermittent hard and soft soil conditions, a "Bottom" depth may be set by moving the Hitch Position Control knob to the desired maximum implement operating depth.

STEP 2

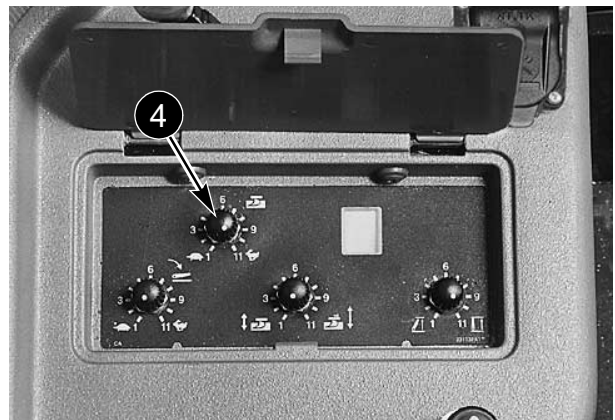


DP97C145

Turn the TRAVEL CONTROL knob (3) counterclockwise to reduce and clockwise to increase the changes in working depth with changing loads.

NOTE: A typical operation for a fully mounted implement is a setting of "7" to "10" and a setting of "3" to "5" for a semi-mounted implement.

STEP 3



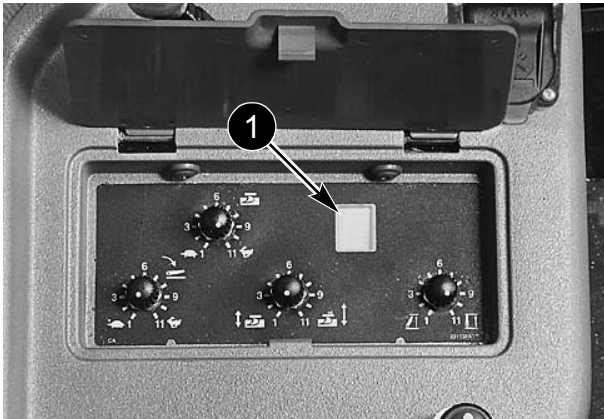
DP97C145

Use the HITCH RESPONSE SPEED CONTROL (If Equipped) to adjust the speed at which the hitch will move in response to changing soil and load conditions. Turn the control knob (4) counterclockwise to slow the hitch speed. Turn the control knob clockwise to speed up the hitch speed.

NOTE: If the hitch response speed control setting is adjusted too fast, it will cause rapid changes in implement operating depth and rapidly changing loads on the tractor. If the setting is too slow, the implement may not follow the terrain properly.

FIELD OPERATION

Rear Three Point Hitch Diagnostic Display



DP97C145

The Hitch Diagnostic display (1) tells the operator the condition of the electronic load control system by a diagnostic code.

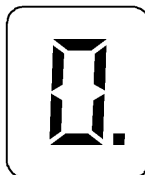


When power is applied to the electronic load control system, the figure "8" is displayed for 1 to 2 seconds for a display check. If any segment of the display is not illuminated, see your dealer.

Hitch Diagnostic Codes

The "0" code indicates SYSTEMS NORMAL

SYSTEMS NORMAL means that the electrical and electronic parts of the hitch system are functioning normally.



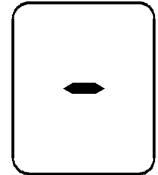
This display does not tell the operator if the controls are not adjusted correctly or if there is an hydraulic problem. If the display code is "0" and the hitch performance is reduced from what it had been, contact your dealer.

NOTE: The DOT after the zero indicates that the tractor is not moving. When the tractor moves a minimum of 0.8 km/h (0.5 mph) the DOT should disappear. If the Dot does not disappear, contact your dealer.

If the hitch fails to function properly check the diagnostic code and then report the error code and your hitch malfunction to your dealer.

In all cases, before attempting to repair an error, restart the tractor and observe if the error code is repeated. The error code may have been caused by the way the tractor was operated and the error code will be cleared upon start-up.

The above UPPER LIMIT error code, (as shown opposite) occurs when starting the tractor and the actual hitch position is above the UPPER LIMIT setting. This error code can be cleared by the operator by doing one of the following:



- Press and hold MOMENTARY position on the hitch UP/DOWN switch until the UPPER LIMIT setting is reached.
- Adjust the UPPER LIMIT control knob clockwise until the hitch position is matched.
- Press and hold the LOWER position on the Hitch Remote switch until the UPPER LIMIT setting is reached.

Make sure the UPPER LIMIT is set to the desired position after the error code is cleared.

Hitch Control Bypass

If the hitch should fail to operate properly and there is a need to raise or lower the hitch in order to travel home, the hitch controls can be overridden by the UP/DOWN SWITCH.

To lower the hitch, move the UP/DOWN SWITCH to the "Momentary" position and hold. Hitch will drop for 1.5 seconds. Repeat the sequence until the hitch is in the required position.

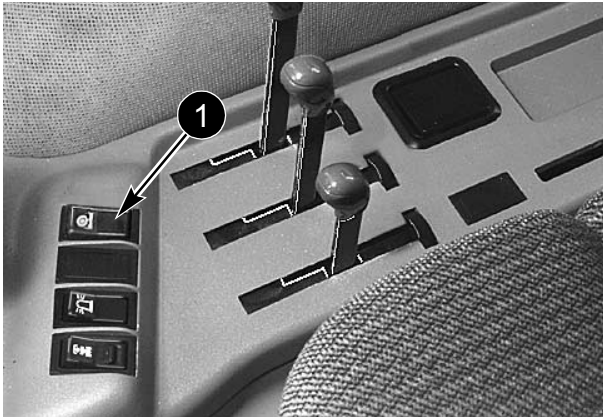
To raise the hitch, start with the UP/DOWN SWITCH in the "Down" position, then move the switch to the "Up" and then to the "Down" position. The hitch will move up for 1.5 seconds. Repeat the sequence until the hitch is in the required position.

NOTE: If your tractor is equipped with rear fender mounted remote hitch switches. They can also be used to raise and lower the hitch.

FIELD OPERATION

RIDE CONTROL (If Equipped)

Ride control improves the tractor ride quality when carrying fully mounted hitch implements. It reduces the fore/aft pitch motion introduced to the tractor by the free hanging mounted implement at high travel speeds and reduces front tyre bounce introduced to the tractor by bumps or pot holes in the field as well as on the road.

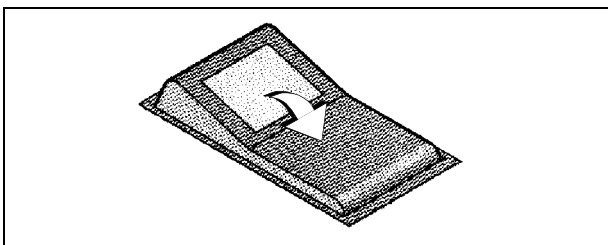


DR99D002

IMPORTANT: After attaching an implement to the three point hitch and before using the Ride Control feature there **MUST** be a minimum clearance of 380 mm (15 in) between the lowest point of the implement and the ground. The measurement has to be taken with the tractor stationary and the implement at the maximum height. If the ground clearance is less than 380 mm (15 in) Ride Control **MUST** be **DISABLED** by pushing the Ride Control Switch (1) into the OFF position.

NOTE: If the Ride Control feature is not wanted, it can be disabled by your dealer.

Ride Control OFF



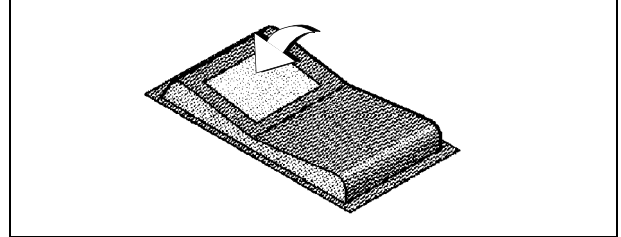
DS98K261

Ride Control will be disabled if:

- The switch is in the OFF position.
- The hitch UP/DOWN switch is in the down position.
- The travel speed is below 0.8 km/h (0.5 mph).

Ride Control ON

STEP 1



DS98K260

Push the Ride Control switch to the ON position.

STEP 2

Push the hitch UP/DOWN switch (2) into the UP position. As soon as the tractor travel speed exceeds 0.8 km/h (0.5 mph) the implement automatically will be lowered slightly (to a 'neutral' position) and Ride Control is enabled.

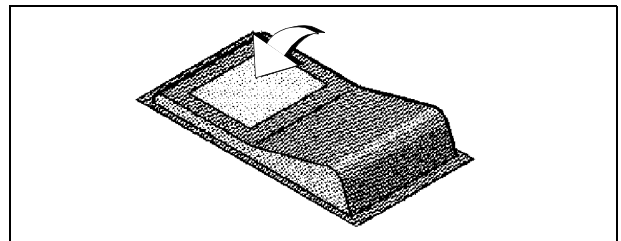
The hitch will automatically raise or lower in response to a bump and then return to its 'neutral' position, to maintain optimum ride control performance at all times.

Upper Limit Setting Override

This position can be used to raise the hitch above the upper limit setting until the hitch stops upward movement.

Tractors equipped with Auto Hitch:

The Ride Control switch in this position will take the load off the hitch locking latches thus improving the latching/unlatching of the auto hitch.



DS98K259

Press and hold the Ride Control Switch in the fully forward position until the hitch stops upward movement. See page 88 for full Auto Hitch operating instructions.

FIELD OPERATION

DIFFERENTIAL LOCK CONTROL

Your tractor is equipped with a differential lock that will make both rear wheels turn at the same speed.

The differential lock prevents loss of motion when the traction to the rear wheels is not equal. It also provides a straight line steering aid when opening up the field and to control implement overlap. The differential lock can ONLY be engaged manually.

It also provides a straight line steering aid when opening up the field and to control implement overlap.

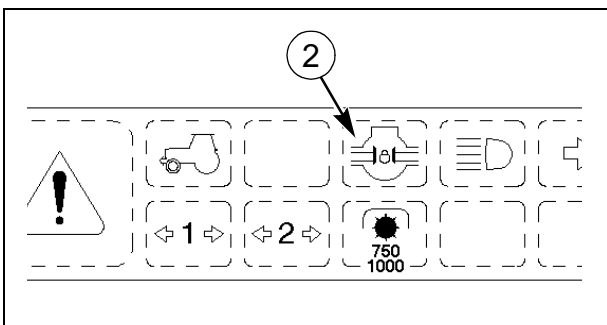
When the traction of one rear wheel decreases, or any time you need more traction, engage the differential lock. Before engaging the differential lock always make sure the tractor is stationary.

To Engage The Differential Lock:



MD02E056

Push the top of the switch (1) fully down.



DI96F063

The differential lock indicator light (2) on the instrument cluster will illuminate any time the differential lock is engaged.



WARNING: Do not drive on roads, or at high speed anywhere, with the differential lock engaged. Difficult steering will occur, and can result in an accident. In field operation, use the differential lock for traction improvement, but release for turning at row ends.

To Disengage The Differential Lock:

Push the bottom of the switch fully down.

The differential lock will disengage if one or both brake pedals are pushed.

IMPORTANT: When you engage or disengage the differential lock, the front wheels must be in the straight forward position. Disengage the differential lock before turning the tractor.

FIELD OPERATION

MECHANICAL FRONT DRIVE (MFD) OPERATION

The MFD can be engaged while the tractor is moving or stopped. The MFD provides additional traction and pulling power when engaged.

IMPORTANT: DO NOT leave the MFD engaged when travelling faster than 16 km/h (10 mph) (except when in the field) as this can cause damage to the MFD and other transmission components as well as premature tyre wear.



WARNING: On electrically operated MFD tractors, the MFD clutch is spring loaded into engagement and relies on hydraulic pressure for disengagement. A failure in the MFD hydraulic system will therefore automatically engage the MFD even though the MFD switch is in the disengaged position. This is a built in safety feature. DO NOT operate MFD tractor transmissions with the rear wheels off the ground or removed, UNLESS THE FRONT WHEELS ARE ALSO JACKED UP CLEAR OF THE GROUND OR THE FRONT AXLE DRIVE SHAFT IS DISCONNECTED. Failure to do this can result in the tractor being pulled off the rear supports by the front axle.



MD02E056

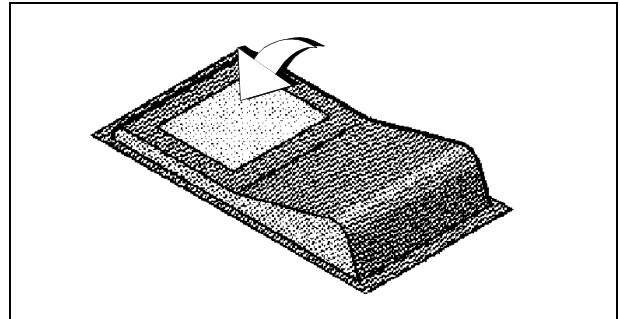
The MFD switch (1) has three positions:

I = ON, MANUAL

O = OFF

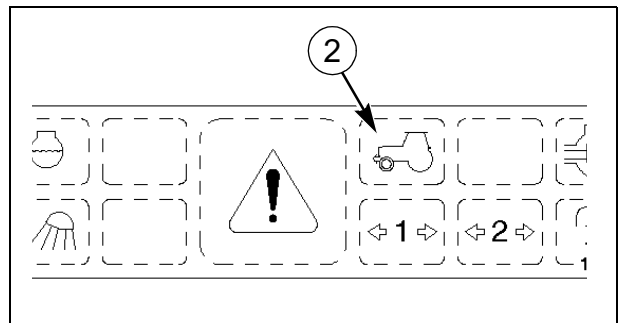
AUTO = AUTOMATIC MODE

Manual Mode



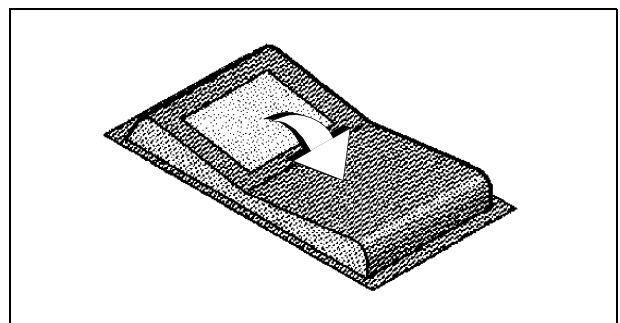
DS98K259

To engage MFD, push the top of the MFD switch to the ON (I) position.



DI96F063

The MFD indicator light (2) on the instrument cluster will illuminate.



DS98K260

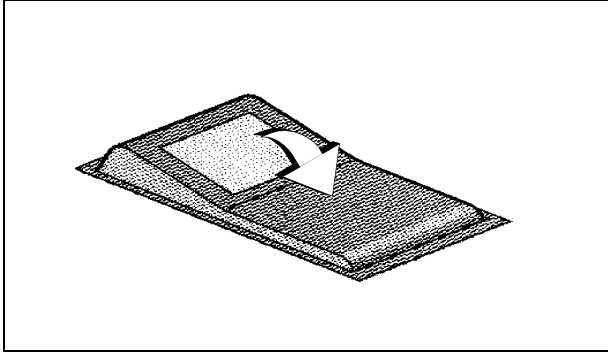
To disengage MFD push the MFD switch to the center position OFF (O), (as shown).

The indicator light in on the instrument cluster will go off.

FIELD OPERATION

Automatic Mode

The Automatic MFD engagement or disengagement is determined by the brake application.



DS98K261

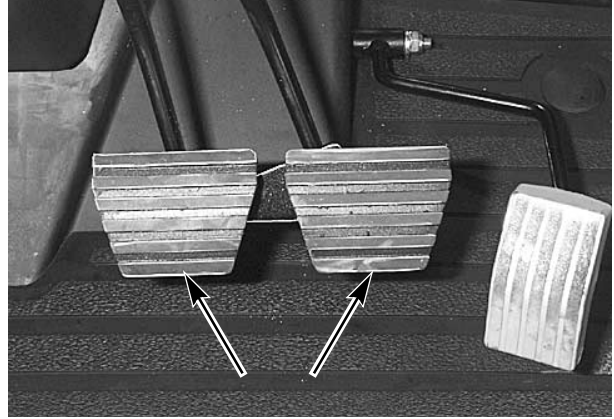
When the MFD switch is in the Automatic (AUTO) position (press the bottom of the MFD switch down) and the automatic function is active the indicator light on the instrument cluster will illuminate.

Operation in automatic mode

The MFD will disengage when the brake pedals are unlocked and one of the brake pedals is applied and held down. The MFD will reengage when the brake pedal is released.

MFD Assisted Stops

MFD will engage whenever both brake pedals are applied together, no matter what position the MFD switch is in giving 4 wheel braking. This feature allows a safer and controlled stop.



DD98D211

When both brake pedals are applied together the MFD indicator lamp on the instrument cluster will illuminate.

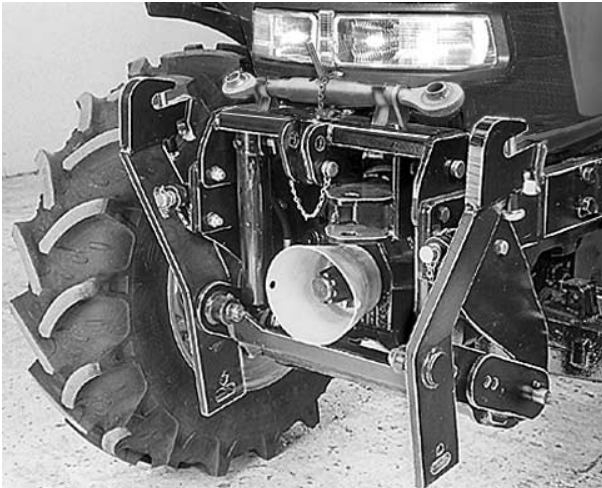
FIELD OPERATION

FRONT HITCH (If Equipped)

Two alternative Front Hitch may be fitted on the CX Series Tractors - Kitchen or Hydrac. Each option is fitted depending upon market. The following pages explain the correct operation of both hitches. Refer to the left-hand photograph directly below the "Hitch System" heading to establish which hitch is fitted to your tractor.

Hitch Preparation (Option A - Kitchen Hitch)

Hitch System



DH97N053

The front hitch system is operated through a (single acting) first remote hydraulic valve circuit.

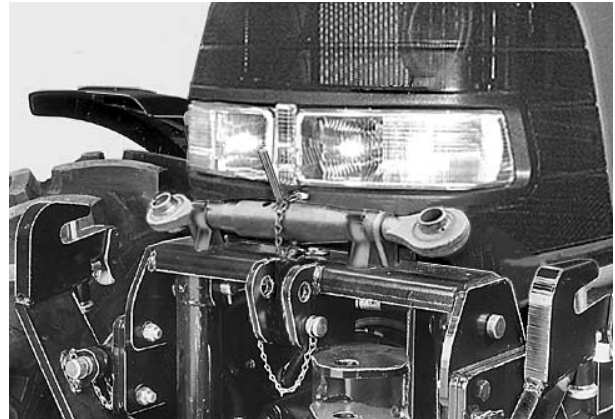
NOTE: *The linkage is power lifted and weight lowered. The linkage is free to float upward on partial stroke.*

The hitch is designed for Category II implements only. Lower links are rigidly mounted with no lateral movement.

The lower links have claw ends and the top link a ball end. The top link can be adjusted for length and has a rigid or float position.

Lift Capacity2359 kg (5200 lb)

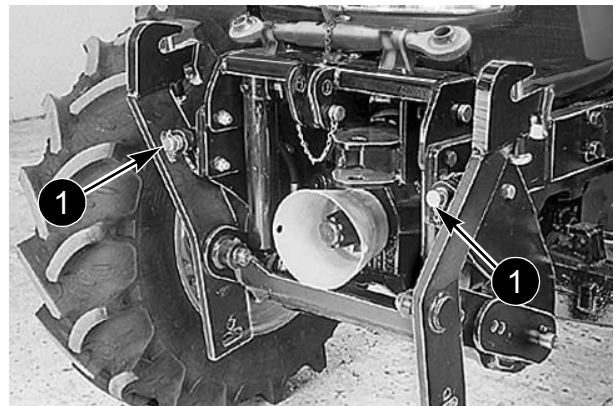
Top Link Stored Position



DH97N004

When not being used store the top link as shown in the photograph.

Lower Links Stored Position

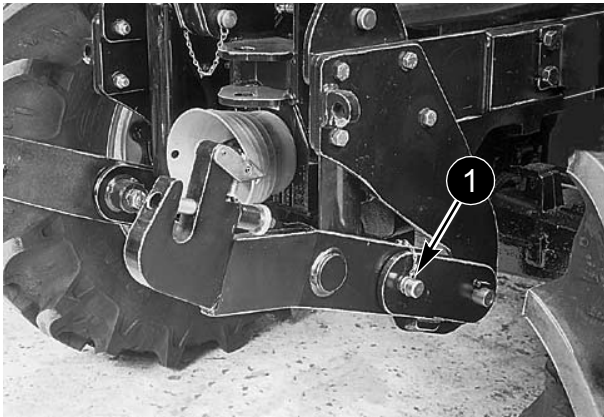


DH97N053

When the front hitch is not being used, store the lower links as shown in the photograph. Insert the storage retaining pins (1) and linch pins accordingly.

FIELD OPERATION

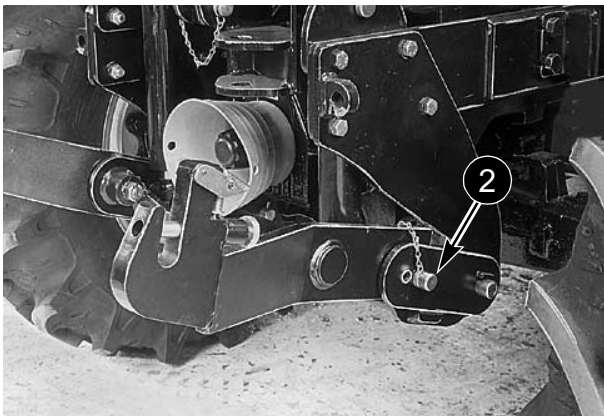
Lower Link Adjustments



DH97N054

RIGID POSITION

For operation with no vertical movement (Float), install the storage retaining pins in the front hole (1).

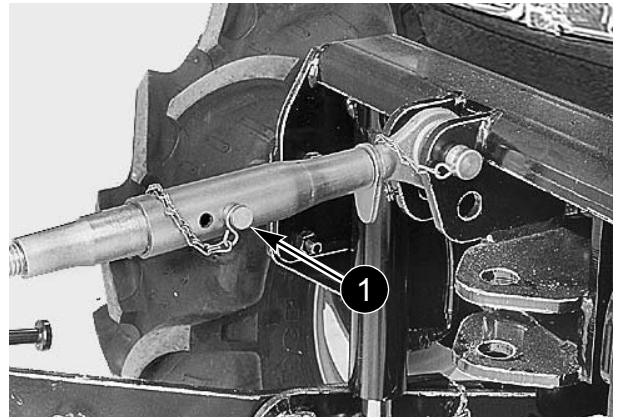


DH97N055

FLOAT POSITION

For operation with vertical float, install the storage retaining pins in the rear hole (2).

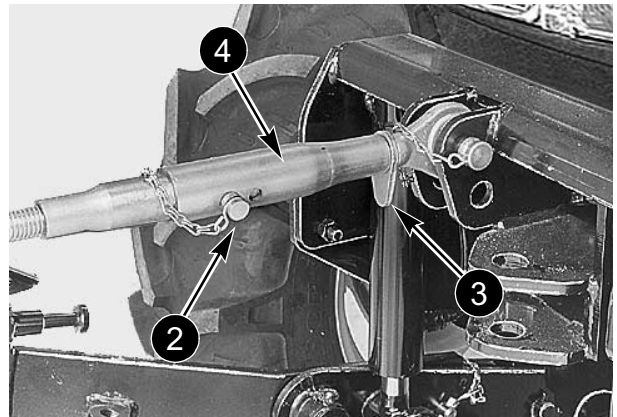
Top Link Adjustments



DH97N058

RIGID POSITION

Put the locking pin in the rear hole (1).



DH97N059

FLOAT POSITION

Put the locking pin in the front hole (2).

For fine adjustment of length, turn the locking plate (3) counterclockwise to release, then turn link body (4) to lengthen or shorten the link. Turn the locking plate clockwise to lock.

FIELD OPERATION

Hitch Preparation (Option B - Hydrac Hitch)

Hitch System



MD01K012

The front hitch system is operated through a (double acting) first remote hydraulic valve circuit.

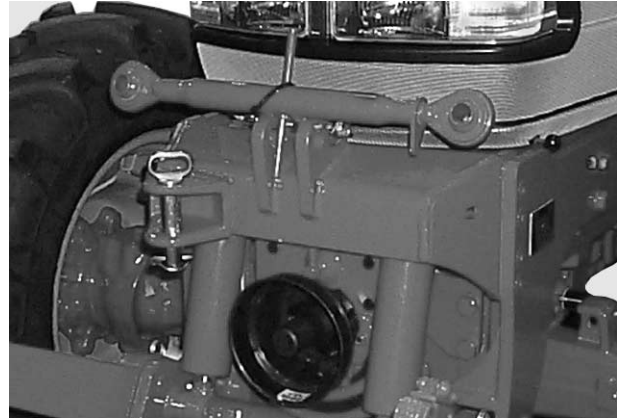
NOTE: *The linkage is power lifted and power lowered. The linkage is free to float upward on partial stroke.*

The hitch is designed for Category II implements only. Lower links are rigidly mounted with no lateral movement.

The lower links have claw ends and the top link a ball end. The top link can be adjusted for length and has a rigid or float position.

Lift Capacity3000 kg (6614 lb)

Top Link Stored Position

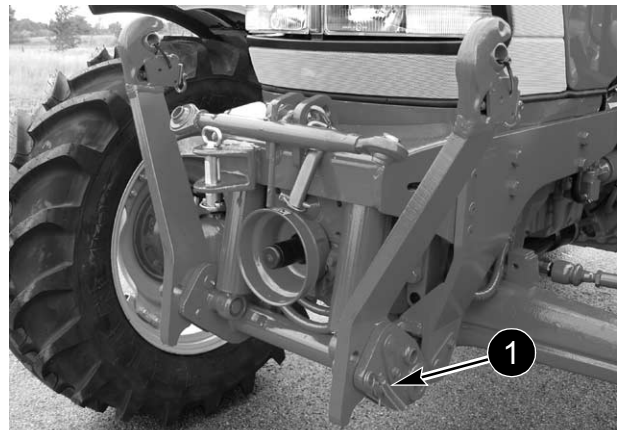


MD01J033

When not being used store the top link as shown in the photograph.

Lower Links Stored Position

When the front hitch is not being used, store the lower links.

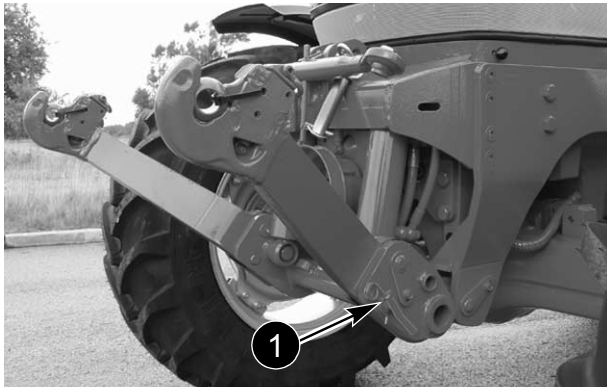


MD01K053

Insert the storage retaining pins (1) and 'R' clips as shown.

FIELD OPERATION

Lower Link Adjustments



MD01K010

RIGID POSITION

For operation with no vertical movement (float), install the storage retaining pins in the front hole (1).

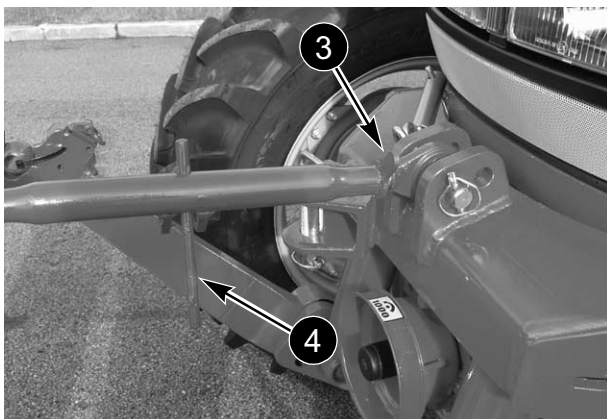


MD01K009

FLOAT POSITION

For operation with vertical float, install the storage retaining pins in the rear hole (2).

Top Link Adjustments



MD01K008

For fine adjustment of length, turn the locking plate (3) counterclockwise to release, then turn link body using adjustment handle (4) to lengthen or shorten the top link as required. Turn the locking plate clockwise to lock.

Hitch Operation (Both Hitch Options)

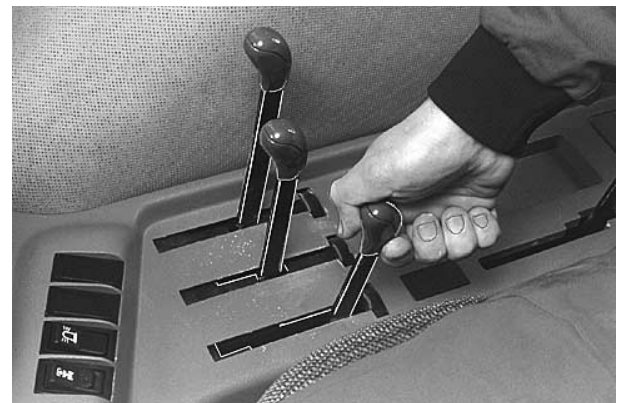
STEP 1



MD01K010

Lower the lower links and set for Rigid or Float application, as required.

STEP 2



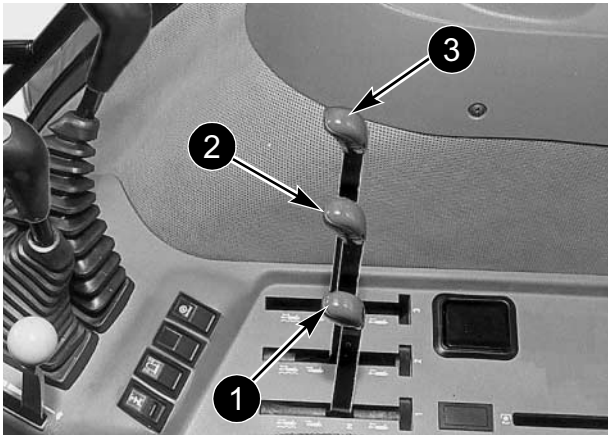
DD97C117

Move the number 1 remote lever rearward to raise the linkage or forward to lower.

FIELD OPERATION

REMOTE HYDRAULIC VALVES

The remote hydraulic control levers operate the corresponding remote, e.g.; lever 1 controls remote valve 1, lever 2 controls remote valve 2 etc.

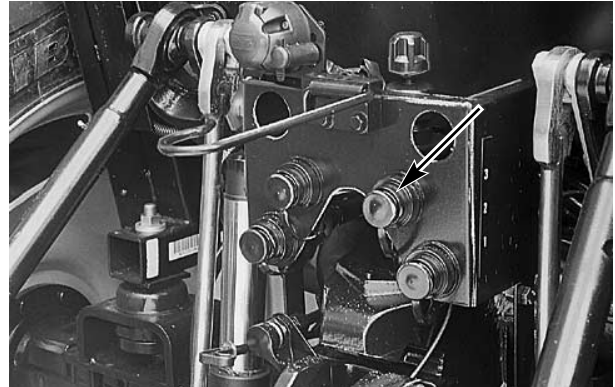


MD02E055

IMPORTANT: If your tractor is operated with a loader, tipping trailer or other equipment using a hydraulic supply from the tractor, it MAY be necessary to add up to a further 20 litres of McCormick HTX to the transmission to maintain an effective oil flow in the hydraulic system. Always check the transmission fluid level after charging cylinders of implements and attachments. Top up as required to ensure correct transmission oil level. Never operate the tractor under load if the fluid level is low.

The addition of extra oil may cause the transmission to run at a higher temperature, especially if the tractor is involved in road work at maximum speed.

Connecting Remote Hoses

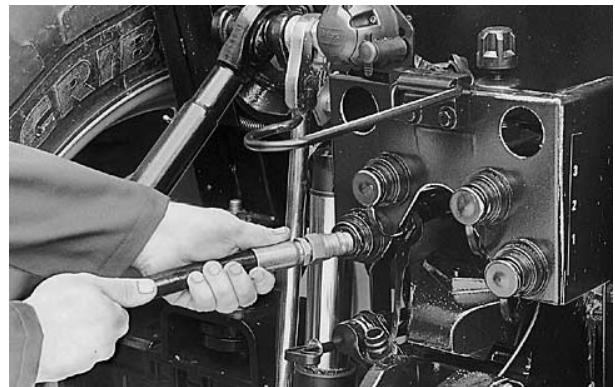


DP98D182

The tractor remote valve couplers are Numbered 1, 2 and 3 (as equipped) from the bottom upward, and are operated by the corresponding remote control levers/switch on the right hand console.

To connect do the following:

STEP 1



DP98D183

Remove the dust cap. Clean the implement male coupler before connecting. Connect the implement to the remote couplers so that the implement lowers when the control lever is pushed forward and raises when the control lever is pulled rearward.

The couplers on the left are to raise the implement, the couplers on the right are to lower the implement, as seen looking at the rear of the tractor. Change the hoses over if the implement works in the opposite way.

The implement couplers can be connected or disconnected with the tractor or implement hydraulic system under pressure.

FIELD OPERATION

STEP 2

To connect the hose to the remote coupler, Push the male coupler into the female coupler.

IMPORTANT: All implements must be fitted with shrouded couplers, which are available from your dealer. If an implement is not fitted with shrouded couplers there will be restricted oil flow through the couplers resulting in inefficient machine operation, especially where high flow rates are required.

STEP 3

To equalize the pressure in the hydraulic lines move the control lever on the side console forward and rearward.

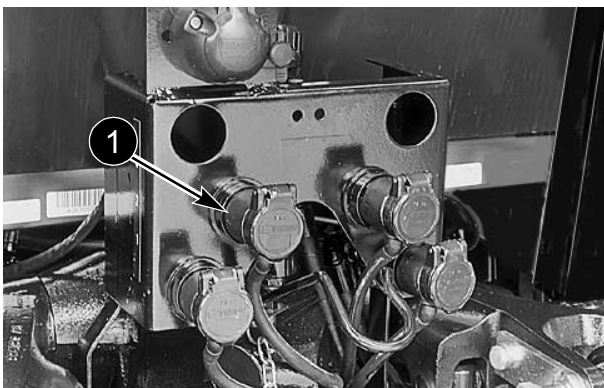
IMPORTANT: When connecting the implement hose to the tractor, make sure there is enough hydraulic hose to permit the tractor to turn in both directions.

Disconnecting Hoses and Implements

To reduce the possibility of oil leakage when disconnecting the couplers run the engine and move the remote lever fully forward to the float position. Leaving the lever in the float position stop the engine and disconnect the hoses from the couplers.

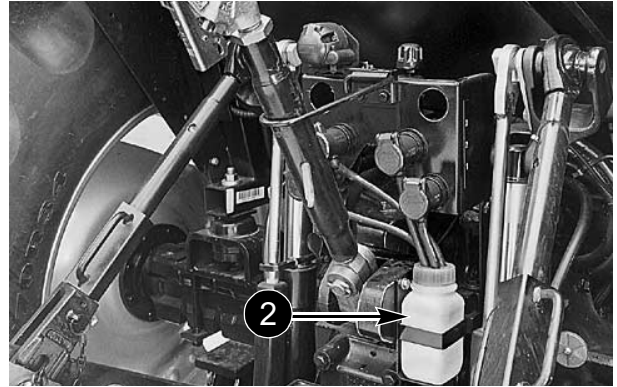
To disconnect the coupler, just pull. Clean the coupler dust cap and install.

Remote Couplers Spillage Collector (If Equipped)



DP97D111

The spillage collectors (1) allow the couplers to be connected or disconnected and any spillage and deposits are collected into the spillage reservoir (2).



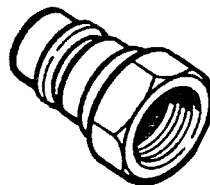
DP98D184

Drain the reservoir (2) at regular intervals.

IMPORTANT: DO NOT pour the reservoir contents back into the hydraulic system. Dispose of contents in accordance with local regulations. DO NOT drain the contents on the ground or into a drain. Be responsible for the environment.

Hose Couplers

The tractor is equipped with ISO 5675 Standard Female couplings. These couplings will fit standard male hose couplers made to ASAE S366, SAE J1036 or ISO Standard 5675. Your dealer can supply the correct male coupler or hose fittings or adapters to connect different combinations of implements to the standard male coupler.



PART NUMBER 1272399C2
(7/8-14 INCH UNF THREADS)
OR
PART NUMBER 1272770C2
(1/2-14 INCH NPTF THREADS)
OR
PART NUMBER 1285718C2
(3/4-16 INCH UNF THREADS)



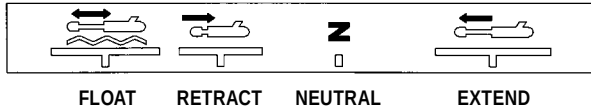
WARNING: Hydraulic fluid escaping under pressure can have enough force to penetrate the skin. Hydraulic fluid may also infect a minor cut or opening in the skin. If injured by escaping fluid, see a doctor at once.

Serious infection or reaction can result if medical treatment is not given immediately. Make sure all connections are tight and that hoses and lines are in good condition before applying pressure to the system. Release all pressure before disconnecting the lines or performing other work on the hydraulic system. To find a leak under pressure use a small piece of cardboard or wood. Never use hands.

FIELD OPERATION

REMOTE HYDRAULICS OPERATION

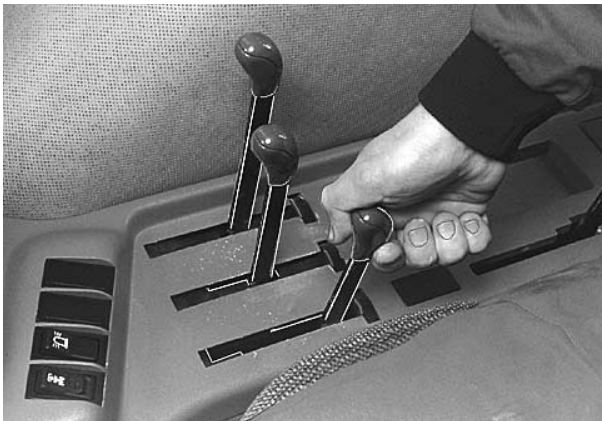
There can be up to three remote control levers, each having four positions:



OM1075

Operation

The speed of movement of auxiliary equipment is determined by the distance the lever is moved from neutral.



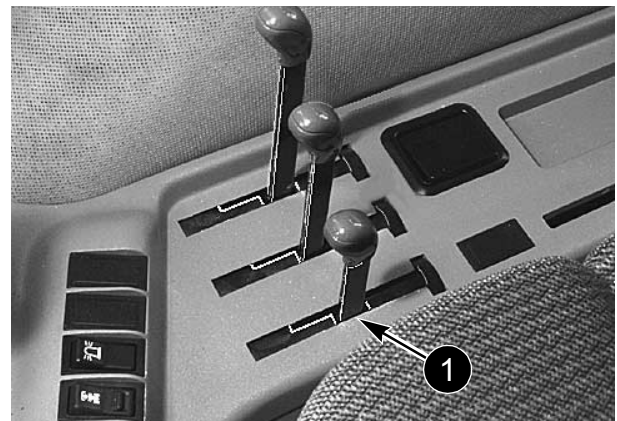
DD97C117

If the lever is moved fully rearward from neutral, the equipment hydraulic cylinder(s) will extend quickly. If the lever is moved rearward a short distance from neutral, the equipment hydraulic cylinder(s) will extend slowly.

If the lever is moved fully forward from neutral (when float is locked out) the equipment hydraulic cylinder(s) will retract quickly. If the lever is moved a short distance forward from neutral the equipment hydraulic cylinder(s) will retract slowly.

NOTE: If there is too much restriction in the implement cylinders or other attachments, the restriction can cause a back pressure in the remote valve which will cause the remote lever on the console to return to neutral before the cylinder has reached full stroke. If the condition occurs, it will be necessary to manually hold the lever in position until the cylinder has reached full stroke. **Continual use of the remote valve in this condition will cause the hydraulic oil to over heat and possible damage to the hydraulic system.** If the condition occurs at regular intervals the implement restriction should be corrected. It is normal for the control lever to return to neutral when the cylinders reach full stroke.

Neutral Lock



DR99G120

The remote hydraulic control levers can be locked in the neutral position (1) to prevent accidental operation of the remote valves. This can be done by moving the valve control levers to the neutral position and turning the lock control fully clockwise.



DI96N023

When used with equipment in the raised position, the neutral lock provides a positive means of preventing the accidental movement of the valve control levers.

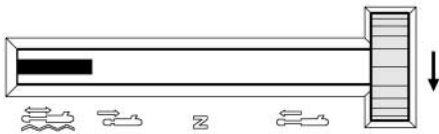
FIELD OPERATION

Float



DD97C115

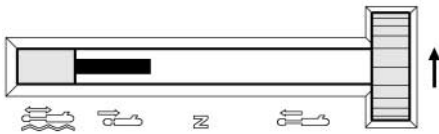
To operate the remote hydraulics in a float condition, turn the lock control (2) fully counterclockwise.



DI96N025

This will allow the control lever to go completely forward into the float position.

The remote hydraulic control levers can be locked out of the float position. When using equipment for work where the float position is not wanted, turn the lock control one position clockwise so that the control lever cannot be moved into the float position.



DI96N024

NOTE: Single action cylinders can be operated in a float or no float position at the same time that the hitch is operated.

Operation Using Single Acting Remote Hydraulic Cylinders

When using single acting hydraulic cylinders move the control lever to the float position to retract the cylinder.

IMPORTANT: Single acting remote circuits cannot be used for continuous oil supply applications.

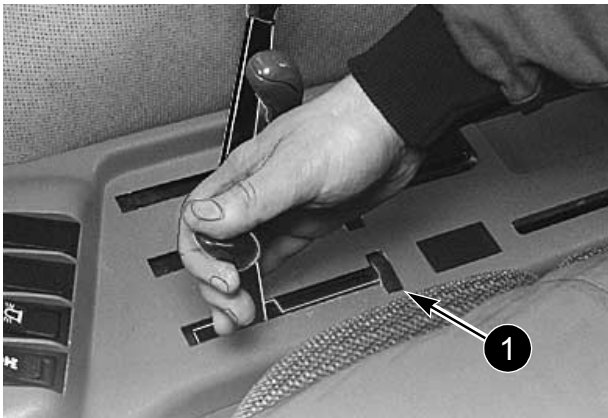


WARNING: When remote cylinders are connected to the hydraulic system, cycle the control lever about three times to remove air from the cylinder and hoses. With air in the system raised equipment can drop accidentally and cause personal injury or machine damage.

NOTE: If the equipment attached has single acting cylinders, always use the float position when lowering. Continual use of the "retract" position will cause over-heating and possible damage to the hydraulic system.

FIELD OPERATION

Operating Hydraulic Motors



DD97C116

Stop the engine. Move remote control lever forward to the float position.

Turn the lock control (1) fully counterclockwise (three positions from neutral) to restrict the control lever movement to the retract and float positions.



DI96N026

This will provide two operating positions for the control lever for the hydraulic motor application only.

To engage the hydraulic motor, start the engine and move the control lever rearward from the float position until against the lever lock. The hydraulic motor will now operate.

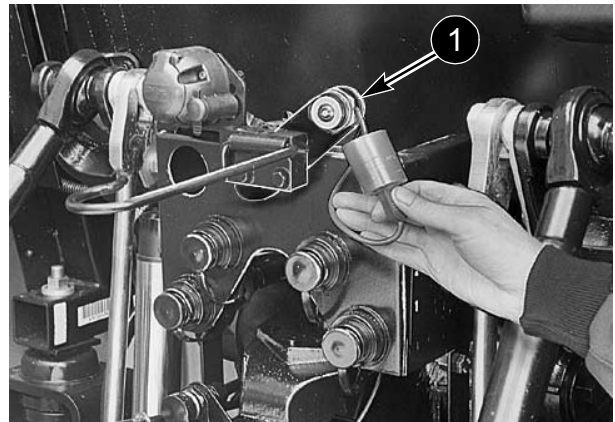
To disengage the hydraulic motor, move the control lever forward to the float position. This will allow the hydraulic motor to slowly come to a stop.

DO NOT DISENGAGE THE LEVER LOCK. Allowing the control lever to return to the neutral position during motor application will cause the motor to stop immediately. This will cause damage to the hydraulic motor, hoses and equipment.

To change the direction of rotation of the hydraulic motor, change the hoses over on number 1 remote coupler.

IMPORTANT: To prevent damage to the tractors hydraulic pumps the return hydraulic oil from all implements must be returned through the hydraulic motor return circuit.

Hydraulic Motor Return Circuit (If Equipped)



DR99J088

The hydraulic motor return circuit can be used to reduce restriction in the remote hydraulic motor return line. This will result in more efficient hydraulic motor operation.

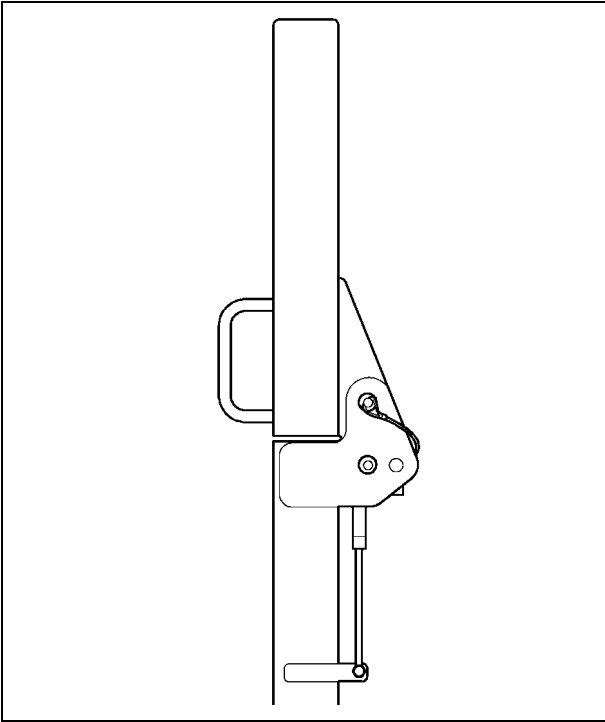
To use the hydraulic motor return circuit, connect the return line from the hydraulic motor or implement to the connector (1).

FIELD OPERATION

FOLDABLE ROPS FRAME (If Equipped)

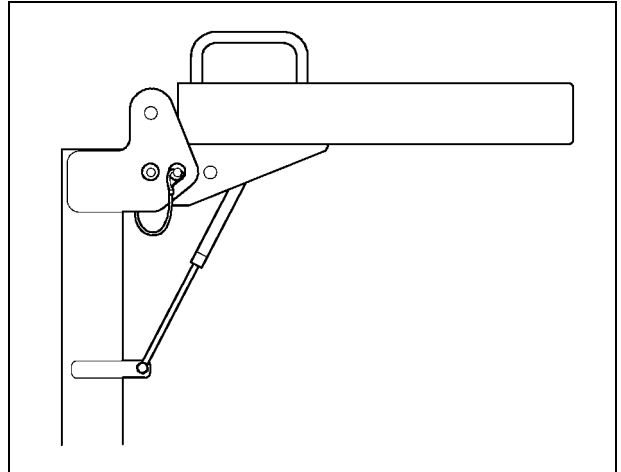


WARNING: DO NOT modify the ROPS in any manner. Unauthorized modifications such as welding, drilling, cutting or adding attachments can weaken the structure and reduce your protection. Replace the ROPS if subjected to roll-over or damage. Do not attempt to repair.



DI97A080

For NORMAL OPERATION, including transportation, always use the foldable Roll Over Protective Structure (ROPS) in the secured upright position with the seat belt (if equipped) fastened for full ROPS protection.



DI97A081

For LOW CLEARANCE OPERATION, such as operating in buildings, orchards or vineyards, the ROPS can be lowered and secured in the down position. NO ROPS PROTECTION IS PROVIDED IN THE LOWERED POSITION.



WARNING: When improperly operated, this tractor can roll over or upset. For low clearance use only, the ROPS can be lowered. No protection is provided in this position. For all other uses and transport, secure ROPS in upright position and fasten seat belt. Use of ROPS and seat belt minimize the possibility of injury or death if roll over or upset occurs.

IMPORTANT: When the ROPS frame is in the lowered position, make sure there is clearance between the frame and hitch mounted equipment. Slowly raise the hitch to maximum height to check the necessary clearance. For drawbar attached and/or PTO driven equipment, check for clearance including turning corners.

IMPORTANT: Loads must not be carried on the rops frame when lowered or upright.

FIELD OPERATION

Changing the ROPS Position

STEP 1

Remove the retaining clips from the locking pins (1) on each side of the frame.

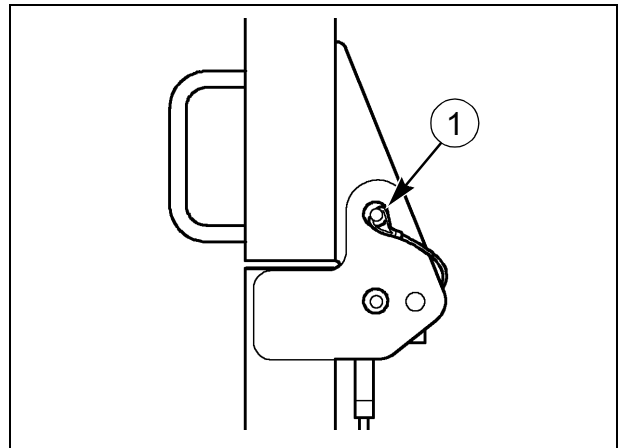
Remove the locking pins. DO NOT REMOVE THE PIVOT PINS (2).

STEP 2

Lower or raise the upper part of the ROPS frame.

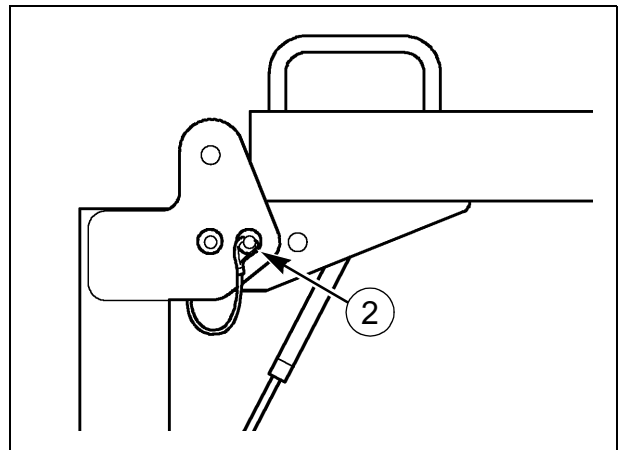
STEP 3

Install the locking pins (1) and pin retaining clips to secure the upper part of the ROPS frame in the desired position, up or down.



DP98J136

LOCKING PIN POSITION WITH FRAME RAISED

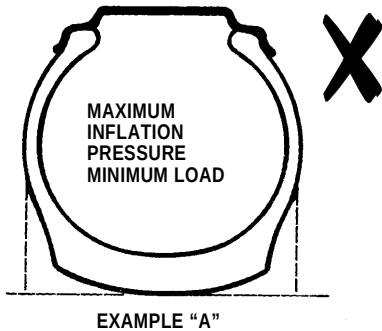


DP98J137

LOCKING PIN POSITION WITH FRAME LOWERED

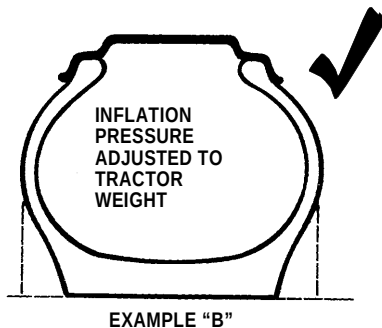
TYRE INFLATION SPECIFICATIONS

For maximum tractor performance, always adjust the tyre pressure within the minimum/maximum range, to conform with the actual load on the tyres. Under normal conditions use the minimum pressure rating for general drawbar work. Use the higher pressure rating, up to the maximum, for heavy three point hitch mounted equipment.



479

Example 'A' shows the cross section of a tyre inflated for maximum load but with a minimum load on the tyre. The tyre tread is not making full contact with the ground which will give poor performance.



479

Example 'B' shows the cross section of a tyre with the inflated pressure correctly adjusted to the load on the tyre. The tyre tread is making full contact with the ground which will give maximum performance.

Tyre pressure can also be adjusted as required to satisfy the following requirements.

A. Severe Service. Tyre pressure can be increased 28 kPa, 0.27 bar, (4 psi) more than the maximum pressure for tyres used in severe service. Severe service includes the furrow tyre in normal ploughing operations, and in hillside operations.

B. Tyres With Liquid Ballast. Inflate the tyres 14 kPa, 0.14 bar, (2 psi) more than the normal operating pressure required for your operation. This will compensate for aeration that occurs when the tyres are in motion.

WARNING: A tyre can explode during inflation and cause serious injury or death. Never increase air pressure beyond 241 kPa, 2.4 bar to seat the bead on the rim. Replace a tyre if it has a defect. Replace a wheel rim which has cracks, wear or severe rust. Make sure that all the air is removed from a tyre before removing the tyre from the rim. Never use force on an inflated or partially inflated tyre, make sure the tyre is correctly seated before inflating.

See Tyre and Wheel Service on page 141 for instructions on safe tyre inflation procedure, recommended tyre maintenance and tyre/rim repair.

IMPORTANT: During transportation, by rail or road, tractor tyres are inflated to higher than normal operating pressures. Before using your tractor check the air pressure in the tyres to make sure that the air pressures are correct.

TYRES/WHEELS/BALLAST

Air Pressure Check

Check the tyre inflation pressure every 50 hours of operation or once per week.

NOTE: For best tyre life check tyre pressures as regular intervals. Too low a pressure causes early tyre wall failure. Too high a pressure causes higher tread wear or damage.

Check the condition of the tyres and wheels for wear or damage. Keep the tyres inflated to the recommended pressures.

NOTE: Cross ply tyres can have the pressure reduced to increase traction in field work. For speeds below 16 km/h (10 mph), loads can be increased by 20%.

NOTE: Never use radial ply tyres below 1.2 bar (17 psi). It is not necessary to reduce the pressure in radial tyres to get better traction in the field.

IMPORTANT: Before leaving the factory the tyre pressures are increased. Check and adjust the pressures before operating the tractor.

For tyres equipped with liquid ballast, check the air pressure as follows:

STEP 1

Use an air-water gauge. The valve must be at the bottom of the tyre to get an accurate reading.

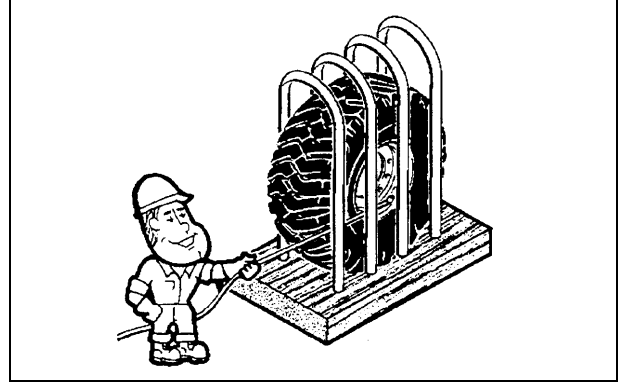
STEP 2

Use a standard air gauge as follows:

- A. The valve must be at the top of the tyre.
- B. Measure the wheel diameter.
- C. Add 3.5 kPa, 0.04 bar (0.5 psi) for each 305 mm (12 inch) of rim diameter to the standard gauge reading.

Tyre Inflation Procedure

DO NOT inflate a tyre that has had a complete loss of air. If the tyre has lost all air pressure, have a qualified tyre mechanic service the tyre.



DS97D088

IMPORTANT: If the tyre wheel assembly has been removed from the tractor always use a restraining device (tyre inflation cage) when inflating a tyre.

To ADD air to a partly inflated tyre, use the following procedure:

STEP 1

Use a SAFETY TYPE air hose with a remote shutoff valve and a self-locking air chuck.

STEP 2

Stand behind the tread of the tyre and make sure all persons are away from the side of the tyre before you start to add air.

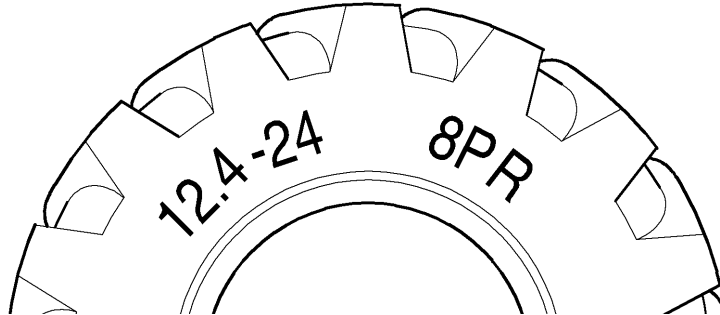
STEP 3

Inflate the tyre to the recommended air pressure. DO NOT INFLATE THE TYRE MORE THAN THE RECOMMENDED PRESSURE.

TYRE PRESSURES AND LOAD CAPACITIES

Tyres can be marked in two ways, as shown in the examples below:

CROSSPLY - Example



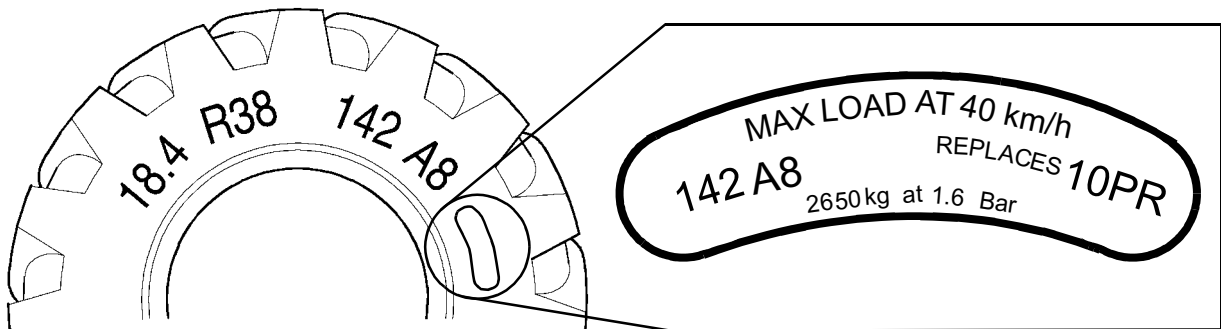
DI96J476

12.4-24 8PR

12.4 =	Nominal tyre width in inches
- =	Crossply structure
24 =	Internal diameter
8PR =	8 ply rating

For correct tyre pressures/load capacities for CROSSPLY tyres see your dealer or tyre manufacturer.

RADIAL - Example



DI96J475

18.4R38 142 A8

18.4 =	Nominal tyre width in inches
R =	Radial structure
38 =	Internal diameter
142 =	Load index number, see chart 1
A8 =	Speed code for 40 km/h at 1,6 bar pressure, see chart 2

The performance of a Radial tyre is determined by the Load Index and Speed Code which have replaced the Ply rating found on Crossply tyres.

The maximum load which can be carried by a tyre is dependant upon the Load Index quoted on the tyre wall. Charts 1 and 2, on the following page, give a guide to the maximum load a tyre can carry and a percentage (%) variation depending upon the speed code or travel speed.

TYRES/WHEELS/BALLAST

IMPORTANT: The charts below are only a guide. Loads may vary slightly with makes of tyre. For correct loads see your dealer or tyre manufacturer.

Chart 1 - Load Index Codes and Loads per Tyre

INDEX	kg	INDEX	kg	INDEX	kg	INDEX	kg	INDEX	kg	INDEX	kg
95	690	109	1030	123	1550	137	2300	151	3450	165	5150
96	710	110	1060	124	1600	138	2360	152	3550	166	5300
97	730	111	1090	125	1650	139	2430	153	3650	167	5450
98	750	112	1120	126	1700	140	2500	154	3750	168	5600
99	775	113	1150	127	1750	141	2575	155	3875	169	5800
100	800	114	1180	128	1800	142	2650	156	4000	170	6000
101	825	115	1215	129	1850	143	2725	157	4125	171	6150
102	850	116	1250	130	1900	144	2800	158	4250	172	6300
103	875	117	1285	131	1950	145	2900	159	4375	173	6500
104	900	118	1320	132	2000	146	3000	160	4500	174	6700
105	925	119	1360	133	2060	147	3075	161	4625	175	6900
106	950	120	1400	134	2120	148	3150	162	4750	176	7100
107	975	121	1450	135	2180	149	3250	163	4875	177	7300
108	1000	122	1500	136	2240	150	3350	164	5000	178	7500

Chart 2 - Speed Codes

SPEED CODE	km/h	mph	% VARIATION FACTOR (*) FOR DIFFERENT SPEEDS
A2	10	6	+ 67%
A3	15	9	+ 50%
A4	20	12	+ 39%
A5	25	15	+ 28%
A6	30	19	+ 11%
A7	35	22	+ 4%
A8	40	25	0

(*) The % variation factors are based on recommendations by the European Tyre And Rim Technical Organization (ETRTO).

Tyre And Wheel Service



WARNING: Do not remove, install or make repairs to tyres or rims. Take the tyre and rim to a tyre specialist where persons with special training and special safety tools are available. If the tyre is not correctly positioned on the rim, or if over inflated, the tyre bead can loosen on one side and cause air to leak at high force and can thrust the tyre in any direction. Explosive separation of the tyre can cause serious injury.



WARNING: DO NOT weld to wheel or rim when a tyre is installed. Welding will cause an explosive air/gas mixture that will be ignited with high temperatures. This can happen to tyres inflated or deflated. Removing air or breaking bead is not adequate. The tyre **MUST** be completely removed from the rim prior to welding.



WARNING: Explosive separation of the tyre and/or rim parts can cause injury or death. When tyre service is necessary, have a qualified tyre mechanic service the tyre.

Always have a qualified tyre mechanic service the tyres and wheels on this machine. If the tyre has lost all air pressure, take the tyre and wheel to a tyre specialist for service. The use of correct equipment and correct service/repair procedures will prevent accidents.

Tyre Installation

To get the correct traction and cleaning action of the lugs, the tyres must be installed on the wheels so the tread pattern is turning as shown. DO NOT try to remove, repair or install a tractor tyre on a wheel.



t11800

INSTRUMENT CLUSTER PROGRAMMING FOR DIFFERENT TYRE SIZES

Both the Standard (Analog) and the Digital instrument clusters **MUST** be programmed according to the rear tyre size your tractor is equipped with. Program the clusters as follows:

Digital Cluster

See PROGRAMMING THE DIGITAL INSTRUMENT CLUSTER on Page 34 of this manual for the correct procedure.

Standard (Analog) Instrument Cluster

STEP 1



DR99G125

Remove the instrument cluster, but **DO NOT** DISCONNECT THE HARNESS.

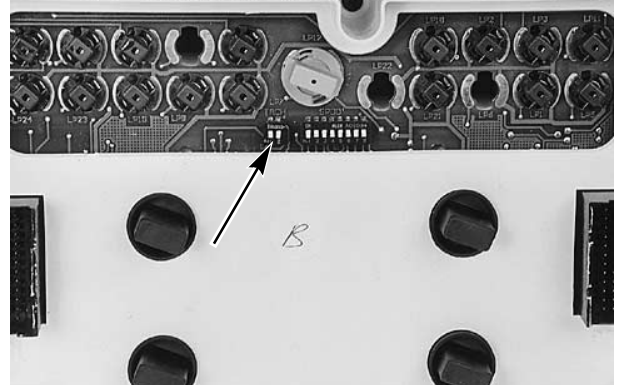
STEP 2



DR98J154

Remove the cover (1) on the back to gain access to the switches.

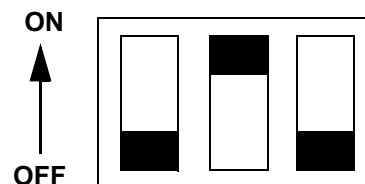
STEP 3



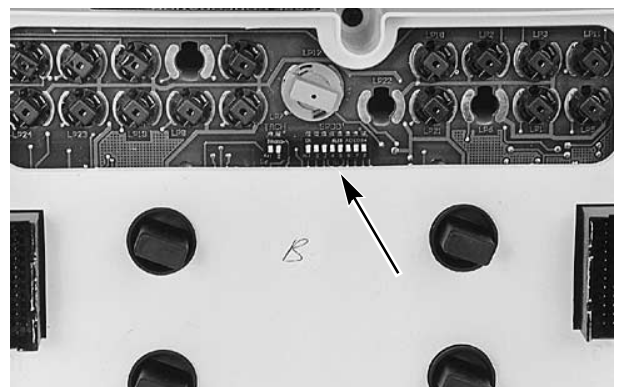
DP98C393

TACHOMETER CALIBRATION - While using the chart below, set the switches accordingly.

CALIBRATION SWITCH POSITIONS		
1	2	3
	ON	



STEP 4



DP98C393

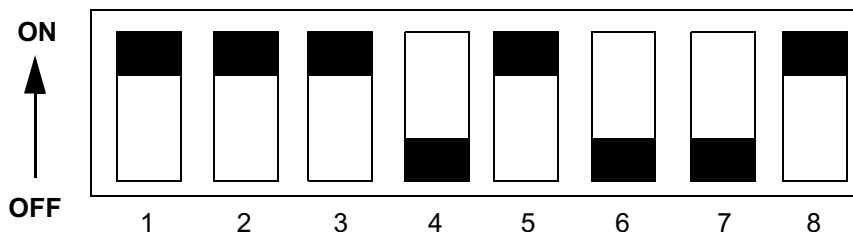
SPEEDOMETER CALIBRATION - Set the switches in the positions as shown in calibration chart opposite.

TYRES/WHEELS/BALLAST

STEP 5

When the calibration has been completed install the indicator lamp cover, the cluster and the four retaining screws.

Speedometer Calibration Chart



EXAMPLE OF SWITCH POSITIONS FOR CALIBRATION OF SPEEDOMETER FOR A 13.6 R 36 TYRE

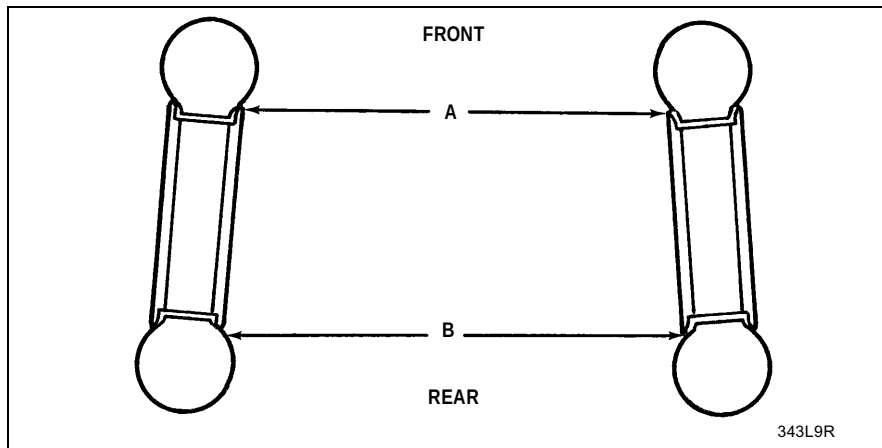
Set the switches as shown in the chart below to the rear tyre size.

REAR TYRE SIZE	CALIBRATION SWITCH POSITIONS							
	1	2	3	4	5	6	7	8
13.6R28/13.6-28	ON	ON	ON	ON		ON		ON
14.9R28/14.9-28				ON		ON		ON
16.9-28 or 16.9 R28	ON					ON		ON
16.9-28 (IND)			ON			ON		ON
14.9R30/14.9-30		ON				ON		ON
16.9R30/16.9-30	ON	ON		ON	ON			ON
18.4R30/18.4-30		ON	ON		ON			ON
18.4-30 (IND)	ON	ON	ON		ON			ON
480/70R30	ON	ON		ON	ON			ON
12.4R32/12.4-32				ON		ON		ON
16.9R34/16.9-34					ON			ON
18.4R34/18.4-34		ON		ON				ON
480/70R34					ON			ON
520/70R34		ON		ON				ON
540/70R34		ON		ON				ON
540/65R34								
12.4R36/12.4-36	ON		ON	ON	ON			ON
13.6R36/13.6-36	ON	ON	ON		ON			ON
13.6R38/13.6-38	ON				ON			ON
15.5-38					ON			ON

NOTE: Only the most common tyre options are listed in the table above. If other tyre sizes are fitted which are not shown in the table above see your dealer for the correct calibration.

TYRES/WHEELS/BALLAST

SETTING THE FRONT WHEEL TOE-IN



STEP 1

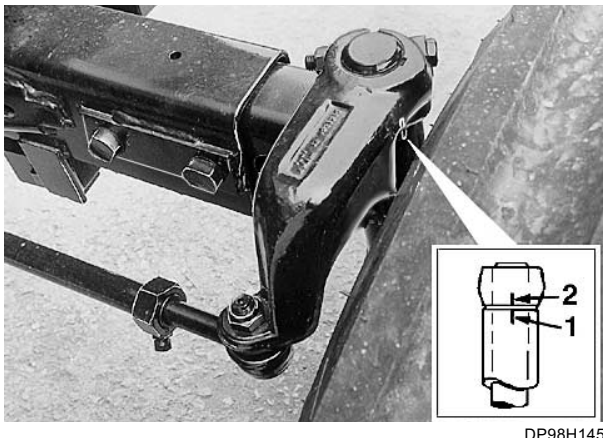
Park the tractor on hard level ground, engage the park brake and stop the engine.

STEP 2

Raise the front of the tractor so that both front wheels are off the ground and the steering is free to turn through the full range LEFT AND RIGHT.

STEP 3

2 Wheel Drive ONLY



Turn the steering to line up the chisel marks (1) and (2) one on steering knuckle and one on sleeve.

If the marks on the other steering knuckle are in line the toe-in is correct.

Adjustments

STEP 4

Measure the distance between the rim edges at the front (dimension A in the diagram).

STEP 5

Rotate each wheel 180 degrees so that the marks are at the rear, at the same height as the centre of the hub.

STEP 6

Measure the distance between the marks at the rear (dimension B in the diagram).

STEP 7

Subtract the front dimension (A) from the rear dimension (B), this is the toe-in measurement.

2WD - The toe-in must be 0 to 5 mm.

MFD - The toe-in must be 0 to 2 mm.

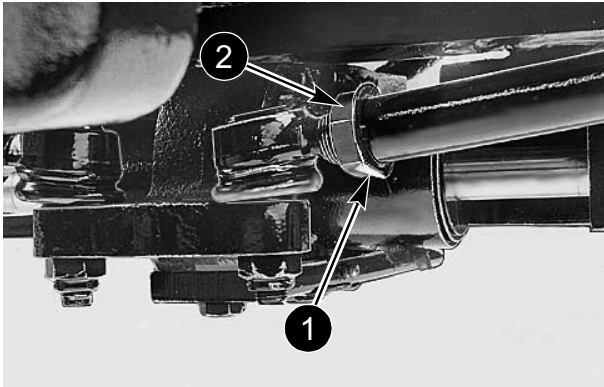
If the toe-in is less, increase the length of the tie rods. If the toe-in is more, decrease the length of the tie rods.

TYRES/WHEELS/BALLAST

To change the length of the tie rods do the following:

Two Wheel Drive

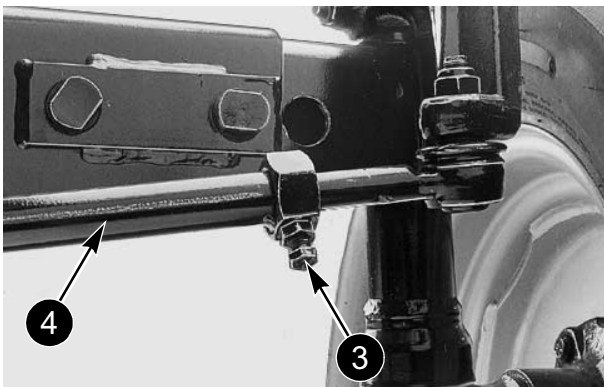
STEP 1



DP98H144

Bend back the locking tabs (1) and loosen the lock nuts (2).

STEP 2



DP98H141

Loosen locking nuts and locking bolts (3) to free the tie rod tubes (4).

STEP 3

Turn each tube an equal amount to increase or decrease the length. Make sure the steering cylinder arm remains central.

STEP 4

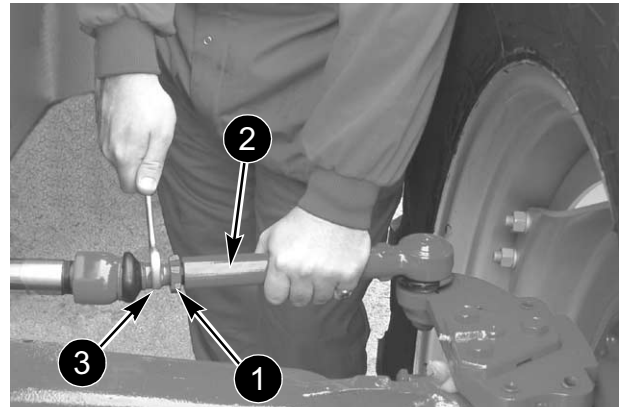
Tighten the locking bolts, make sure they locate in the tie rod dimples, and check the toe-in. Repeat the adjustment if necessary.

STEP 5

Once the correct toe-in has been achieved, tighten the locking bolts to 81 Nm. Tighten the lock nuts and bend over the locking tabs.

IMPORTANT: Make sure the tyres do not contact the steering cylinder when on full lock.

Mechanical Front Drive



MD02J005

STEP 1

Loosen the lock nuts (1), one each side to free the tie rod tubes (2).

STEP 2

Turn the adjusting rods (3), at each side, an equal amount to increase or decrease the length.

STEP 3

Tighten the lock nuts and check the toe-in.

NOTE: Make sure the tie rod ball joints are central.

Repeat steps 1 and 2 until the correct toe-in has been achieved.

IMPORTANT: Make sure the tyres do not contact the steering cylinder when on full lock.

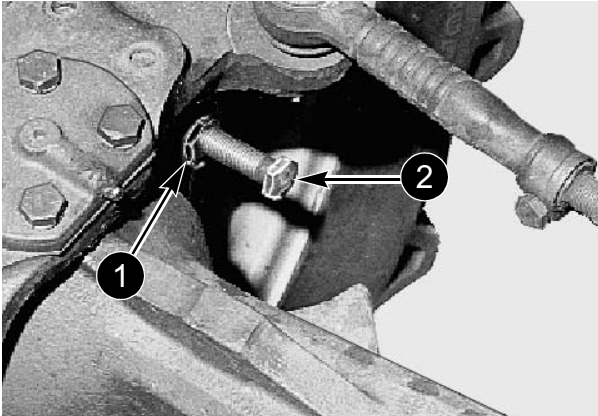
TYRES/WHEELS/BALLAST

AXLE - STEERING AND OSCILLATION STOPS

Steering Stops

The steering stops are used to give the required steering clearance between the front tyres and tractor frame.

The stops are located on the rear of each swivel housing.



D24904

STEP 1

Loosen the lock nuts (1).

STEP 2

Adjust the steering stop bolts (2) to achieve correct steering angle. Tighten the lock nuts.

The angles you can set the stops to depends upon:

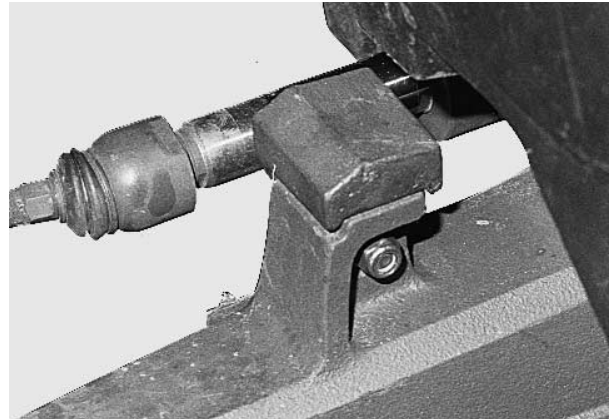
1. The size of front tyres fitted.
2. The tread width setting.
3. If front fenders are fitted.
4. If Oscillation Stops are fitted.
5. If a downswept exhaust is fitted.

IMPORTANT: After adjustment,

1. Raise the front of the tractor so the axle can be moved into maximum oscillation.
2. Start the engine and turn the steering wheel to full lock in both directions.
3. Check to make sure the tyres or fenders (If Equipped) DO NOT touch the tractor frame.

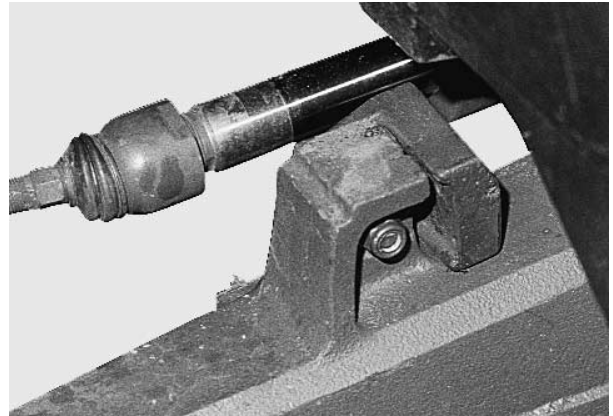
IMPORTANT: When installing a front loader check the manufacturers recommendations for axle steering and oscillation stops.

Oscillation Stops (If Equipped)



D24912

STOP IN USE (7° OF TILT)



D24914

STOP STORED (12° OF TILT)

With the Oscillation stops installed in the storage position, or not fitted, the maximum tilt of axle is 12°. When the stops are fitted, the maximum tilt is reduced to 7°.

IMPORTANT: When repositioning the Oscillation stops be aware that this result in readjustment of the steering stops.

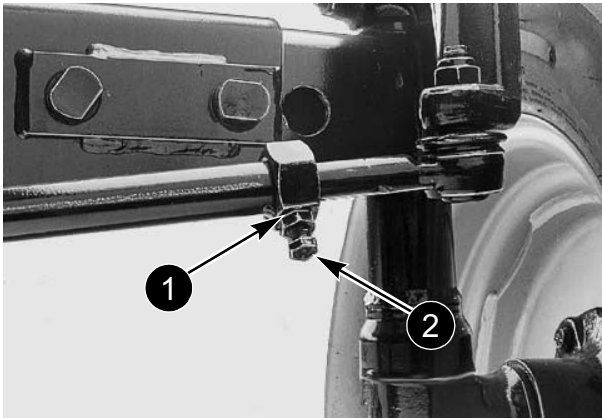
TWO WHEEL DRIVE FRONT AXLE TREAD ADJUSTMENT

This axle is adjustable in 50 mm stages each side. The extra width settings are available by turning the wheel concaves out.

STEP 1

Put blocks in front of and behind the rear wheels. Lift the front of the tractor and install axle supports.

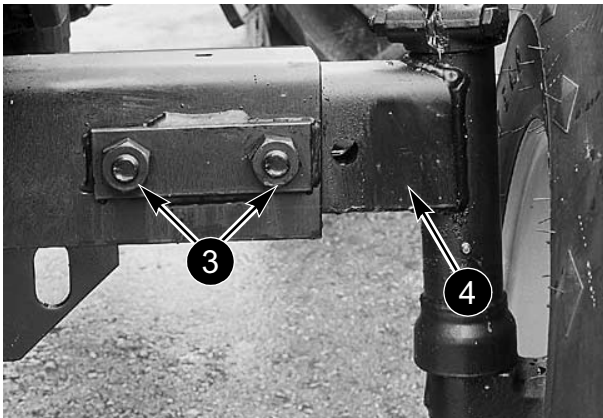
STEP 2



DP98H141

Loosen the lock nuts (1) and screws (2).

STEP 3



DP98D238

Remove the locating bolts and nuts (3) from the axle extensions (4).

NOTE: Utility Axle shown.

STEP 4

Slide the axle extensions (4) to the required tread position setting and install the locating bolts and nuts (3), tighten to a torque of 508 to 576 Nm (375 to 425 lb ft).

STEP 5

To keep the correct toe-in as the axle extensions are moved in or out, there are detents in the tie rods spaced at 50 mm (2 inch) to correspond with the holes in the axle extensions.

EXAMPLE: If the axle outer locating bolt is in the fourth hole from the outer end of the axle extension then the tie rod retaining bolt must be in the fourth hole from the outer end of the tie rod.

STEP 6

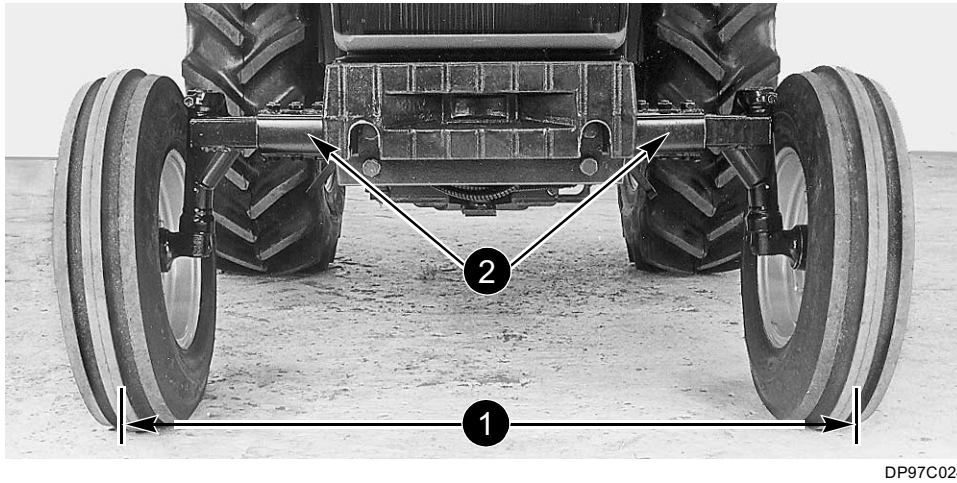
Tighten the screws (2) and lock nuts (1) on the tie rod.

NOTE: If these procedures are not followed, the turning angle will be changed.

IMPORTANT: After adjustment tighten the axle and wheel nuts to the correct torque. Check wheel nut torque after the first 30 minutes of operation and then every 10 hours of operation until torques stabilize.

TYRES/WHEELS/BALLAST

Two Wheel Drive (2WD) Front Wheel Tread Widths



1. TREAD WIDTH

2. 6 SETTINGS

Due to market requirements numerous 2WD axle variants are available for the CX Series tractors:

Utility with Straight Axle	1321 to 1956 mm (52 to 77 in)
Row Crop with Straight Axle	1321 to 2083 mm (52 to 82 in)
Row Crop with Tobacco Axle.....	2235 to 2438 mm (88 to 96 in)
Low Profile.....	1321(*) to 1956 mm (52 to 77 in)

NOTE: All tread figures are at ground level. The maximum and minimum tread width varies slightly with different tyre sizes.

(*) **NOTE:** The narrowest Low Profile setting of 1321 mm (52 in) cannot be used with 7.50-18 tyres fitted. The extra width settings are available by turning the wheel concaves out.

NOTE: After adjustment tighten the axle and wheel nuts to the correct torque. Check wheel nut torque after the first 30 minutes of operation and then every 10 hours of operation until torques stabilize.

TYRES/WHEELS/BALLAST

MFD FRONT WHEEL TREAD WIDTHS

The MFD front wheel tread widths (measured between tyre centres at ground level) can be adjusted to eight different positions as needed for your operation.

IMPORTANT: *The steering stops on the axle must be installed in the correct position for the tread width and tyre size being used.*

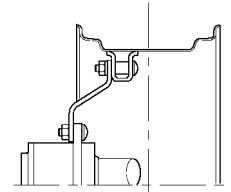
The tread width can be adjusted by turning the wheel discs and/or the wheel rims in or out. The wheel disc can also be installed on either side of the mounting lugs on the rim. Install the wheel discs and rims in the positions shown for the wheel tread needed.

Two Piece Wheels

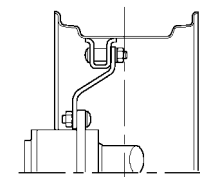
TREAD WIDTHS W7 x 24			
A	RIM IN DISC IN LUG IN	E	RIM IN DISC OUT LUG IN
	1383 mm (54.4 in)		1683 mm (66.2 in)
B	RIM IN DISC IN LUG OUT	F	RIM IN DISC OUT LUG OUT
	1415 mm (55.7 in)		1715 mm (67.5 in)
C	RIM OUT DISC IN LUG IN	G	RIM OUT DISC OUT LUG IN
	1478 mm (58.2 in)		1778 mm (70.0 in)
D	RIM OUT DISC IN LUG OUT	H	RIM OUT DISC OUT LUG OUT
	1510 mm (59.4 in)		1810 mm (71.2 in)

TREAD WIDTHS W10/W12 x 24			
A	RIM IN DISC IN LUG IN	E	RIM IN DISC OUT LUG IN
	1299 mm (51.1 in)		1599 mm (62.9 in)
B	RIM IN DISC IN LUG OUT	F	RIM IN DISC OUT LUG OUT
	1394 mm (54.9 in)		1694 mm (66.7 in)
C	RIM OUT DISC IN LUG IN	G	RIM OUT DISC OUT LUG IN
	1499 mm (59.0 in)		1799 mm (70.8 in)
D	RIM OUT DISC IN LUG OUT	H	RIM OUT DISC OUT LUG OUT
	1594 mm (62.7 in)		1894 mm (74.6 in)

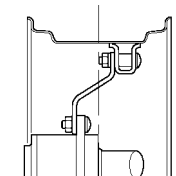
CENTRE OF TRACTOR →



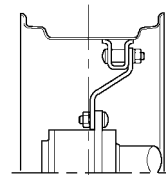
A



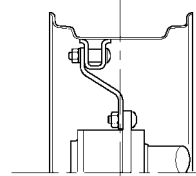
B



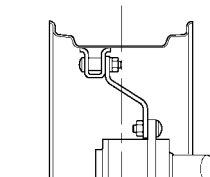
C



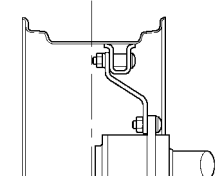
D



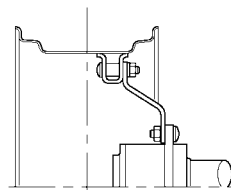
E



F



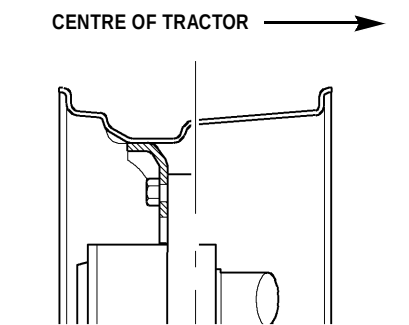
G



H

TYRES/WHEELS/BALLAST

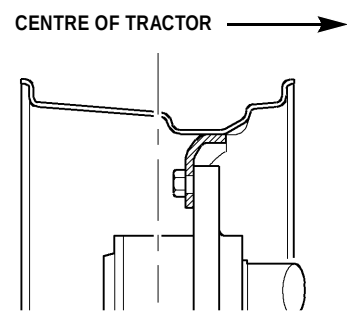
One Piece Wheels



OM1066A

RIM OFFSET IN

W9.00 x 18 - 1512 mm (59.5 in)
W11 x18 - 1544 mm (60.8 in)
W9 x 20 - 1512 mm (59.5 in)
W11 x 20 - 1544 mm (60.8 in)



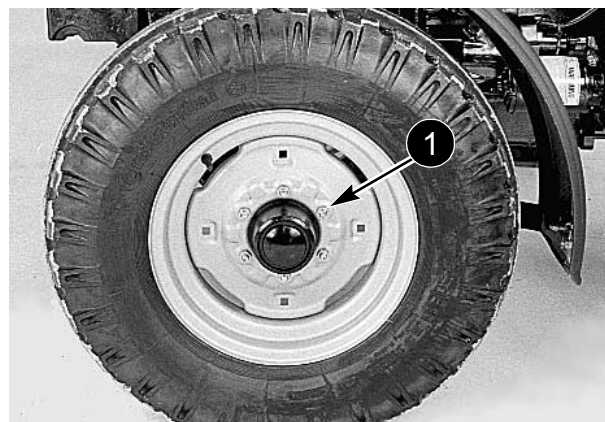
OM1066

RIM OFFSET OUT

W9.00 x 18 - 1716 mm (67.5 in)
W11 x18 - 1684 mm (66.3 in)
W9 x 20 - 1716 mm (67.5 in)
W11 x 20 - 1684 mm (66.3 in)

FRONT WHEEL BOLT TORQUES

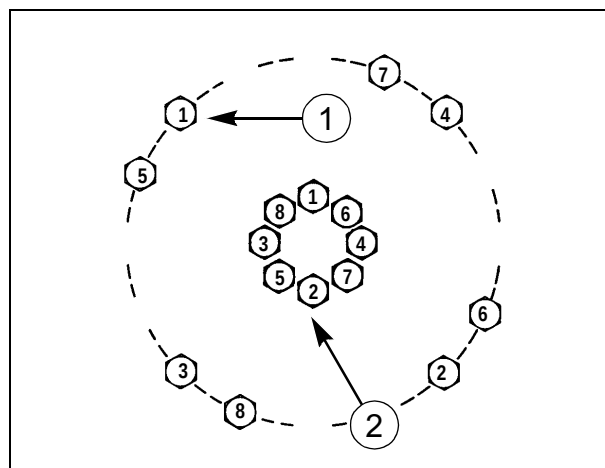
Two Wheel Drive (2WD)



342L9

Tighten the wheel to hub mounting bolts (1) to a torque of 108 to 136 Nm (80 to 100 lb ft).

Mechanical Front Drive (MFD)



5100166

1. Tighten the disc to rim bolts to a torque of 280 to 340 Nm (205 to 250 lb ft) according to the torque sequence shown.
2. Tighten the disc to the front axle hub nuts to a torque of 300 to 350 Nm (221 to 258 lb ft) according to the torque sequence shown.

The disc must sit flush to the rim lugs/clamps when assembled.

TYRES/WHEELS/BALLAST

FRONT TO REAR TYRE SIZE COMBINATIONS

Tractors equipped with Mechanical Front Drive must use front and rear tyre combinations that are correctly matched. The use of recommended tyre combinations will give maximum tractor performance, extended tyre life and reduced wear on drive train components.

The LEAD/LAG (How fast the front tyre rotates compared to the rear tyre) should be between 0 and 5 percent lead, with +1 to +3 percent being ideal. To calculate the LEAD/LAG, use the following formula:

$$\frac{(RC_F \times IR) - RC_R}{RC_R} \times 100 = \text{lead}$$

RC_F = Rolling Circumference of Front Tyre (Refer to the Tyre Manufacturers Hand book).

RC_R = Rolling Circumference of Rear Tyre (Refer to the Tyre Manufacturers Hand book).

IR = Inter Axle Ratio.

IMPORTANT: To minimize tyre wear, MFD tractors must have MFD disengaged if the tractor is going to be run at high speeds and low loads (roading). This procedure will also reduce power loss, increase fuel economy and ride stability.

IMPORTANT: NEVER exceed the load capacity or the inflation pressure for a particular tyre. Refer to the TYRE LOAD AND INFLATION CHART in this manual.

IMPORTANT: The tyre size combinations are specified to provide matched ground speeds of the front and rear tyres. Mixing worn and new tyres or tyres of different diameters, manufacturers, or loaded radii can give incorrect ground speed match. When replacing tyres refer to the tables on the following pages. If the tyres required are not listed or you are in any doubt consult your dealer.

TYRES/WHEELS/BALLAST

North American Tractors

REAR TYRES		FRONT TYRES							
Blas TYRES Size	DT710 Radial Size	14-17.5 8PR,R4	8.3-24 6PR,R1	8.3-24 4PR,R3	9.5-24 6PR,R1	320/75R24 1*,R1 (DT710)	11.2-24 6PR,R1	12.4-24 6PR,R1	13.6-24 8PR,R1
14.9-24,6PR,R1	14.9R24,1*,R1	●							
16.9-24,6PR,R1				●					
18.4-26,6PR,R1			●		●				
13.6-28,6PR,R1	13.6R28,1*,R1			●					
13.6-28,6PR,R3		●		●					
14.9-28,6PR,R1	14.9R28,1*,R1		●	●					
16.9-28,6PR,R1	16.9R28,1*,R1		●		●				
16.9-30,6PR,R1	16.9R30,1*,R1				●	●			
18.4-30,6PR,R1						●	●		
	18.4R30,1*,R1				●	●	●		
16.9-34,6PR,R1							●	●	
18.4-34,6PR,R1									●
	18.4R34,1*,R1							●	●
13.6-38,6PR,R1							●	●	●
15.5-38,6PR,R1	15.5R38,1*,R1						●	●	
12.4-42,6PR,R1								●	●

● = Correct tyre size combination.

* **NOTE:** Some of these acceptable combinations MAY not be released for every model of the CX Series Tractors.
For tyre combinations not listed or any other information, see your dealer.

TYRES/WHEELS/BALLAST

Rest Of World Tractors

Combinations for Standard 1:407 Ratio MFD Axle

FRONT TYRES	CROSS PLY (BIAS) REAR TYRES									
	14.9-28	16.9-30	18.4-30 R1	18.4-30 R2	12.4-32	13.6-36	16.9-34	13.6-38	18.4-26 R3	18.4-34
11.2R20	●			●						
8.3-24	●				●					
9.5-24		●				●				
11.2-24		●	●			●	●	●		
12.4-24			●	●			●	●		
14.5/80-18									●	
13.6R24										●
10.5-18	●	AVAILABLE FOR OPTIONAL 1:564 RATIO MFD AXLE ONLY								

FRONT TYRES	RADIAL REAR TYRES										
	13.6R28	14.9R28	14.9R30	16.9R30	16.9R30 'G'	18.4R30	480/70R30	12.4R32	16.9R34 'G'	12.4R36	13.6R36
11.2R20	●	●						●			
12.4R20			●	●	●					●	
14.9R20				●		●	●			●	●
335/80R20				●							
375/75R20				●		●	●			●	●
405/70R20				●					●		
8.3R24		●	●					●			
9.5R24			●	●	●		●			●	●
10.5-18		●	AVAILABLE FOR OPTIONAL 1:564 RATIO MFD AXLE ONLY								

FRONT TYRES	RADIAL REAR TYRES									
	16.4R30	16.4R30 'G'	18.4R30	480/70R30	16.9R34	16.9R34 'G'	18.4R34	18.4R34 'G'	480/70R34	540/65R34
11.2R24	●	●	●	●	●					
12.4R24			●		●	●	●		●	●
13.6R24					●		●	●	●	●
13.6R24 'G'							●		●	●
360/70R24					●	●	●		●	●
380/70R24							●			
400/70R24								●		

FRONT TYRES	RADIAL REAR TYRES									
	500/70R34	520/70R34	12.4R36	13.6R36	13.6R38					
11.2R24			●	●	●					
12.4R24		●		●	●					
13.6R24		●								
13.6R24 'G'		●								
360/70R24		●			●					
380/70R24		●								
400/70R24	●									
420/70R24		●								

● = Correct tyre size combination.

NOTE: Some of these acceptable combinations MAY not be released for every model of the CX Series Tractors.
For tyre combinations not listed or any other information, see your dealer.

TYRES/WHEELS/BALLAST

FRONT WHEEL FENDERS (If Equipped)

Front wheel fenders are available for all tractor variants. On MFD models the fenders are fully adjustable to ensure the tyre is covered at all tread widths.

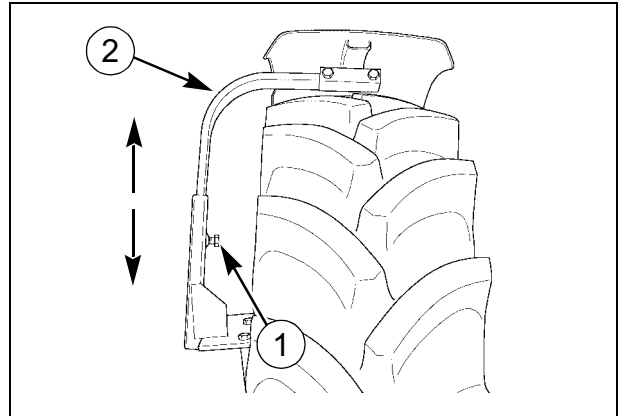
NOTE: To provide the necessary clearance between the fender and other tractor components, the fender mounting position must be adjusted for the tread width and tyre size being used.

The front fenders provide greater safety and keep the tractor cleaner, therefore improving operation and durability.

Vertical Adjustment

Loosen the support brace mounting bolts (1) and slide the support brace (2) up or down to the correct position. Tighten the mounting bolts to a torque of 50 Nm.

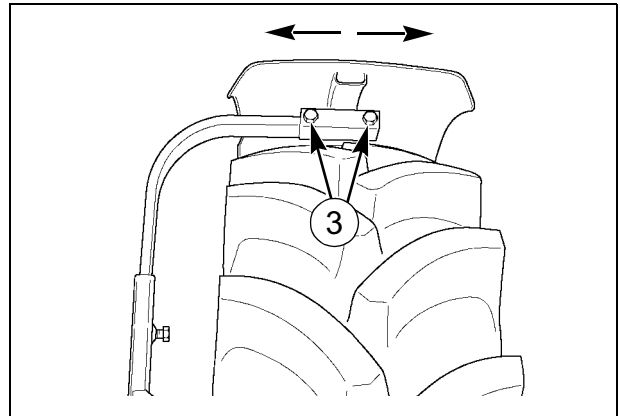
NOTE: The distance between tyre and support brace must be 50-100 mm (2 - 4 inch).



DS99G185

Horizontal Adjustment

Loosen the fender bracket mounting bolts (3) and slide the fender bracket left or right until the fender is central over the tyre. Tighten the mounting bolts.

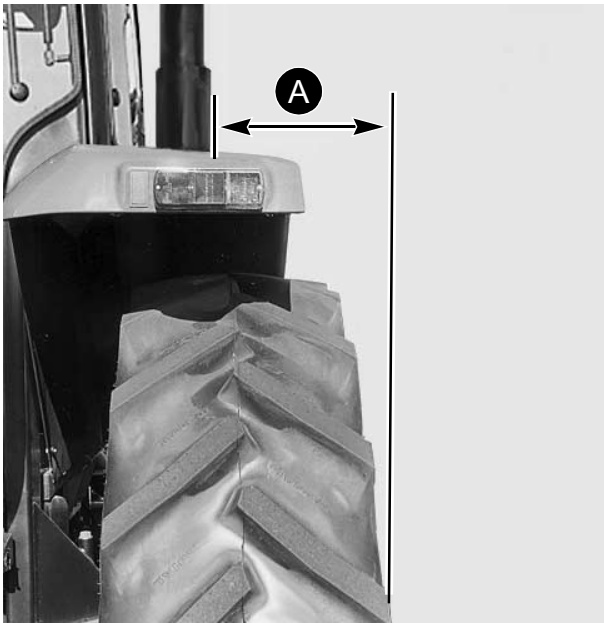


DS99G185

REAR WHEEL TREAD ADJUSTMENT

Important information for EEC Member States:

- Overall widths above 3000 mm (10 ft) **WILL** require local authorization for use on the highway. An overall width of 2550 mm to 3000 mm (8 to 10 ft) **MAY** require local authorization for use on the highway, check before operation.
- It is a legal requirement, when travelling on the highway, to make sure the distance from the tyre outer edge and the rear stop lamp lens does not exceed 400 mm (16 in), dimension 'A'.



DR00N001

Flanged Type Axle Tread Widths

The rear wheels are disc wheels with removable rims. The illustrations on the following pages show the rim and disc positions for the various tread widths. When the rims are reversed to change the tread width, install the right hand tyre and rim on the left disc and the left tyre and rim on the right disc to make sure that the tread pattern is in the correct direction for maximum traction as shown by the arrow on the tyre.

When adjusting to the minimum tread position, make sure that there is a clearance of at least 50 mm (2 in) between the tyres and components of the fenders.

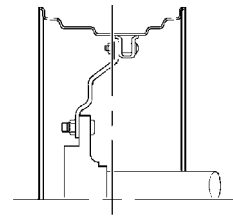
IMPORTANT: Before making any adjustment make sure that the tractor is correctly supported. Apply the park brake and put blocks in front of and behind both front wheels and the other rear wheel. Check torques after the first 30 minutes of operation and then every 10 hours of operation until torques stabilize. This tightening and checking procedure is necessary after any wheel repositioning operation, see "REAR WHEEL BOLT TORQUES" on page 158 for correct torques and tightening sequence.

TYRES/WHEELS/BALLAST

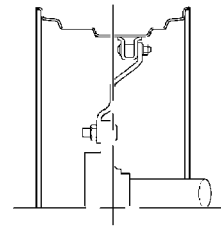
NOTE: Dimensions given are for a 13.6-36 tyre.

TREAD WIDTHS			
A	RIM OUT DISC IN LUG IN	D	RIM IN DISC OUT LUG OUT
	1424 mm (56 in)		1725 mm (68 in)
B	RIM OUT DISC IN LUG OUT	E	RIM OUT DISC OUT LUG IN
	1524 mm (60 in)		1824 mm (72 in)
C	RIM IN DISC OUT LUG IN	F	RIM OUT DISC OUT LUG OUT
	1625 mm (64 in)		1924 mm (76 in)

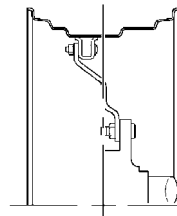
CENTRE OF TRACTOR →



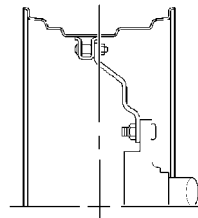
A



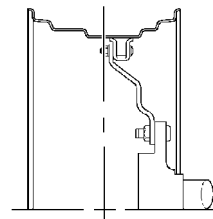
B



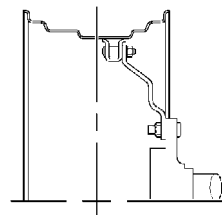
C



D



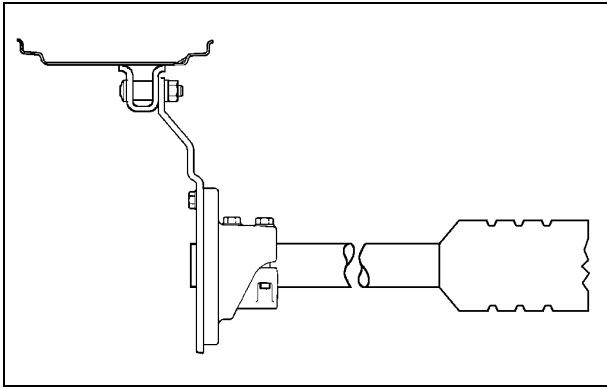
E



F

TYRES/WHEELS/BALLAST

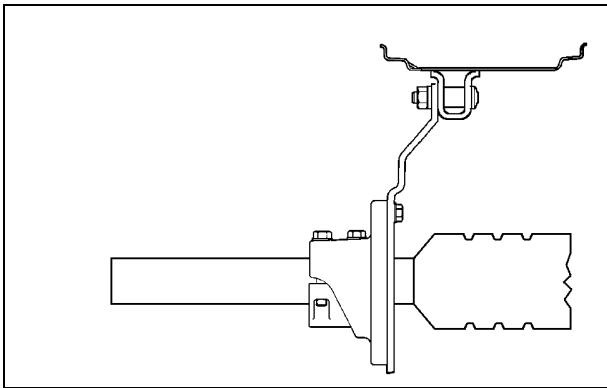
Bar Axle Adjustment



DH97D165A

MAXIMUM TREAD - HUB FLANGE OUT

The **maximum** tread position of 2430 mm (96 in) is obtained with the hubs at the end of the axle shafts and the hub flanges, wheel rims and discs turned out.



DH97D166A

MINIMUM TREAD - HUB FLANGE IN

The **minimum** tread position of 1370 mm (54 in) is obtained with the hub flanges, wheel rims and discs turned in. Position the hubs on the axle shafts so that there is a clearance of at least 50 mm (2 in) between the tyres and components of the fenders. See next page for correct wheel offset change.

IMPORTANT: Before making any adjustment make sure that the tractor is correctly supported. Apply the park brake and put blocks in front of and behind both front wheels and the other rear wheel. Check torques after the first 30 minutes of operation and then every 10 hours of operation until torques stabilize. This tightening and checking procedure is necessary after any wheel repositioning operation, see "REAR WHEEL BOLT TORQUES" on page 158 for correct torques and tightening sequence.

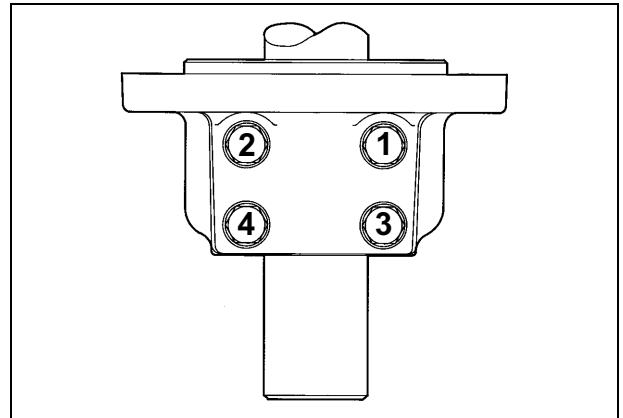
Use the following procedure to change the tread setting:

STEP 1

Clean the area on the axle shafts where the hubs are to be located. Loosen the four clamping bolts and adjust the wheels to the new tread setting.

Apply anti-seize compound Loctite 8150 to the hub bolt heads and washers.

STEP 2



TSM0063A

Tighten the clamping bolts to a torque of 135 Nm in sequence 1 to 4.

Make sure the gap at both sides of the hub is equal.

Apply anti-seize compound Loctite 8150 to the axle shafts.

STEP 3

Tighten the clamping bolts again in the sequence 1 to 4, to a torque of 529Nm (390 lb ft).

After 30 minutes of operation torque all bolts again and then every 10 hours of operation until torques stabilize.

NOTE: This tightening and checking procedure is necessary after any wheel repositioning operation.

Wheel Offset Direction Change

If you need to change the direction of the wheel offset (in or out), remove the tyre and wheel from one side of the tractor and mount on the other side of tractor. The tyre pattern must face the same direction.

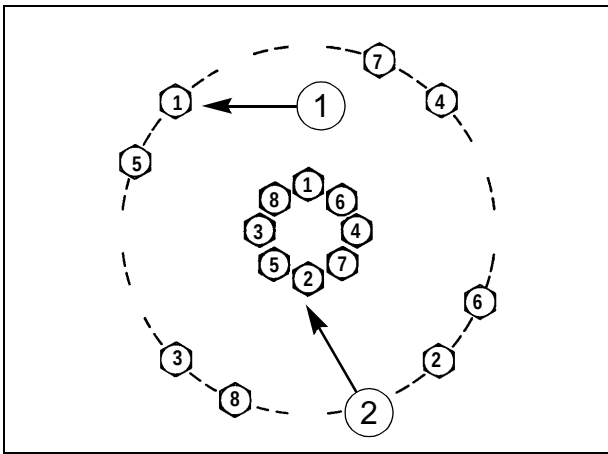
TYRES/WHEELS/BALLAST

REAR WHEEL BOLT TORQUES

IMPORTANT: Check torques after the first 30 minutes of operation and then every 10 hours of operation until torques stabilize. This tightening and checking procedure is necessary after any wheel repositioning operation.

IMPORTANT: DO NOT lubricate the threads.

Flanged Axle



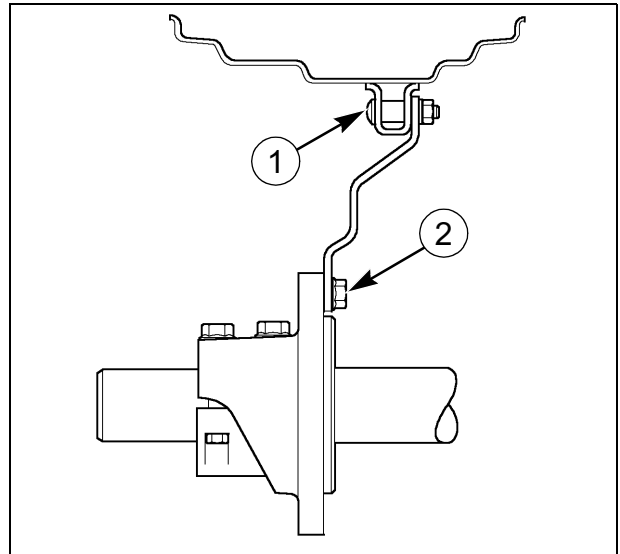
340L9D

TIGHTENING SEQUENCES

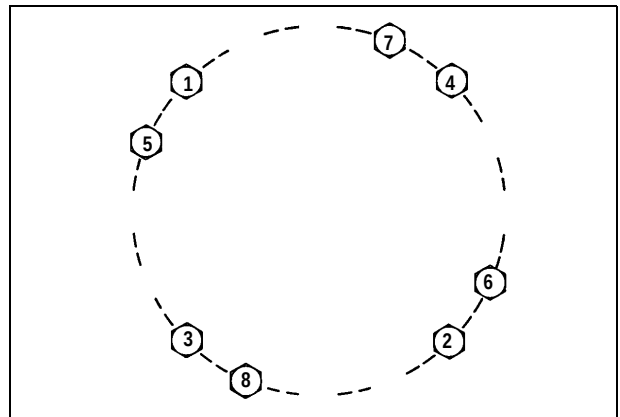
1. After assembly, tighten the WHEEL DISC TO WHEEL RIM NUTS to 280 to 340 Nm (205 to 250 lb ft) in the sequence shown above.
2. Install the wheel on the axle and tighten the WHEEL TO AXLE FLANGE NUTS (2) to a torque of 278 to 298 Nm (205 to 220 lb ft) in the sequence shown above.

DO NOT LUBRICATE AXLE STUD THREADS.

Bar Axle

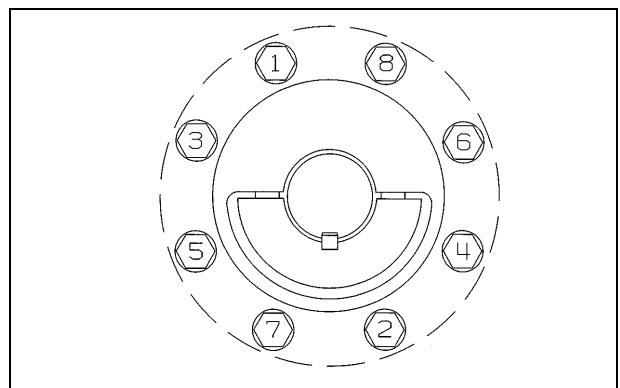


DI97G009



340L9D

1. Tighten the WHEEL DISC TO WHEEL RIM NUTS to 280 to 340 Nm (205 to 250 lb ft) in the sequence shown above.



OM795

2. Tighten the WHEEL TO HUB BOLTS to a torque of 278 to 298 Nm (205 to 220 lb ft) in the sequence shown above.

TRACTOR BALLAST

Loads Matched to Tractor

The life of the tractor will be increased by operating in the highest possible gear without labouring the engine. Match the implement to the tractor to get the best forward speed. Operating at 8 km/h (5 mph) or above is best for long life of main components. Too much ballast and excessive loads decrease tyre life, wastes fuel and often reduces output.

- The best traction occurs when wheel slip is between nine and sixteen percent.
- Remove the ballast when not needed for lighter loads.
- Pull lighter loads at a little faster speed to do more work and increase efficiency. Do not over weight the tractor to pull very heavy loads.

Operating a tractor with too much weight can cause:

- A. A decrease in horsepower available at the implement and then, a decrease in amount of field worked.
- B. An increase in amount of fuel used.
- C. A decrease in tyre life.
- D. The soil to be compacted.
- E. Too much force on the power train which will decrease the life of the power train and cause high operating cost.

The most important item in field operations is the amount of horsepower available at the hitch or drawbar. Power needed to move a tractor that has too much weight will decrease the power that is available to pull the implement.

IMPORTANT: *The total tractor weight with all equipment and ballast weight must never be more than the maximum recommended operating weight. See Maximum Permitted Operating Weights on Page 249 of this manual Observe tyre capacities and any possible legal limitations.*

Tractor Weight Distribution

The optimum static weight distribution for mechanical front drive (MFD) tractors is shown below. The correct static weight distribution and the correct amount of wheel slip will give maximum tractive efficiency, maximum productivity and extended service life for the tractor components.

The amount and type of front and rear mounted equipment being used will affect the weight distribution to the front and rear tyres. Add or remove ballast as necessary, to your fully equipped tractor, to achieve the recommended static weight distribution. When the weight distribution is correct, add ballast as necessary to achieve the recommended amount of wheel slip.

IMPORTANT: *Whatever the state of loading of the tractor, the weight transmitted to the road by the wheels of the front axle must not be less than 20 percent of the unladen weight of the tractor.*

IMPORTANT: *The total tractor weight with all equipment and ballast weight must never be more than the maximum recommended operating weight. See Maximum Permitted Operating Weights on Page 249 of this manual Observe tyre capacities and any possible legal limitations.*

See the following examples for the recommended static weight distribution for your tractor.

Two Wheel Drive (2WD) Tractors

IMPLEMENT TYPE	% FRONT	% REAR
Towed - Drawbar	25%	75%
Semi - Mounted	30%	70%
Fully - Mounted	35%	65%

The weight distribution ratios are based upon the total weight of a fully equipped tractor (including ballast).

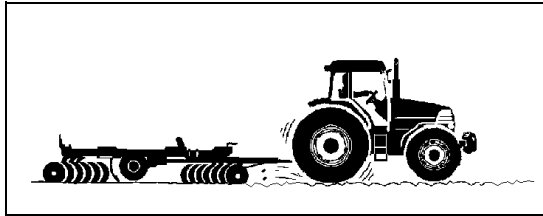
Mechanical Front Drive (MFD) Tractors

% FRONT	% REAR
40%	60%

The weight distribution ratios are based upon the total weight of a fully equipped tractor (including ballast).

TYRES/WHEELS/BALLAST

Front end weights, rear wheel weights and liquid ballast in the tyres can be used to ballast your tractor. Local operating conditions will determine the amount of ballast needed for maximum operating efficiency and tractor field performance. Inadequate traction and excessive wheel slip can waste up to thirty percent of tractor horsepower.

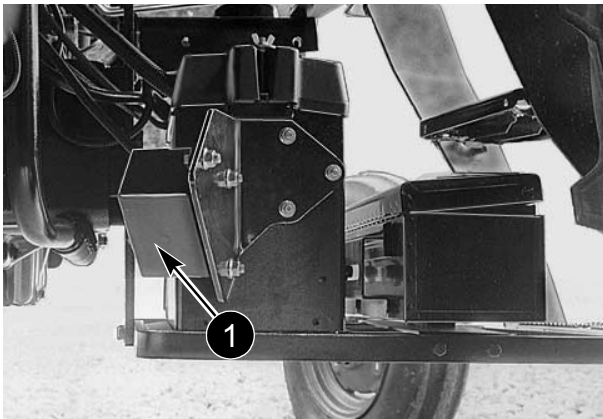


DS99J086

IDEAL WHEEL SLIP 9 -16%

A good ballast weight for your tractor is the weight needed to maintain 9 to 16 percent wheel slip.

Determine the amount of wheel slip as follows:



DP98J225

NOTE: Sensor manufacturer/type may vary to that shown in photograph above.

- A. With True Ground Speed Sensor (1) - See Wheel Slip Indicator on page 100 for more information.
- B. Without True Ground Speed Sensor - See Measuring Wheel Slip on next page for more information.

Do not add more weight than is necessary to achieve the correct tractor static weight distribution and the correct amount of wheel slip.

IMPORTANT: The total tractor weight with all equipment and ballast weight must never be more than the maximum recommended operating weight, see page 249. Observe tyre load capacities and any possible legal limitations.

Measuring Wheel Slip

For tractors equipped with True Ground Speed Sensor, see Wheel Slip Indicator on page 100 for instructions. If your tractor is not equipped with a True Ground Speed Sensor, measure the amount of wheel slip as follows with the assistance of a second person:

STEP 1

Put a reference mark on the side of the tractor rear tyre.

STEP 2

Operate the tractor with the implement IN THE GROUND.

STEP 3

While the tractor is moving put a marker on the ground, outside the implement width, where the reference mark on the tyre comes down to the ground.

STEP 4

Continue to walk along with the tractor and count ten wheel revolutions. Put a second marker on the ground outside the implement width, where the reference mark on the tyre comes down to the ground for the TENTH time.

STEP 5

Lift the implement out of the ground. Put the tractor in position with the rear tyre next to the first ground marker and put a new reference mark on the rear tyre aligned with the first ground marker.

STEP 6

Operate the tractor, with the implement RAISED, from the first ground marker to the second ground marker. Count the number of wheel revolutions between the two ground markers.

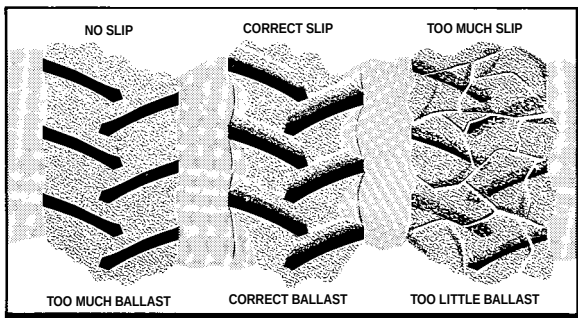
TYRES/WHEELS/BALLAST

STEP 7

Find the percent of slip as follows:

Revolutions of wheel with implement raised.	Slip (%)
9-1/2.....	5
9.....	10
8-1/2.....	15
8.....	20
7-1/2.....	25
7.....	30

NOTE: When you have too much ballast installed on the tractor, you will see the clear shape of the tyre tread in the ground which is an indication of no slippage. With too little ballast, the tyre tread marks will not show because of the tyre slippage.



479A

Front End Weights (If Equipped)

Front end weights can be mounted on the front of the tractor with a weight frame. The weights and weight frame are available from your Dealer.

The weight frame is equipped with up to 9 weights or 6 weights and a clevis weight. Each weight weighs 45 kg (100 lb), the clevis weight weighs 100 kg (220 lb).

Use front end weights as needed to provide effective steering control and front end stability and to achieve maximum operating efficiency and tractor field performance. See Tractor Weight Distribution on Page 159 of this manual, for recommendations on ballasting procedures.

IMPORTANT: The total tractor weight with all equipment and ballast weight must never be more than the maximum recommended operating weight. See Maximum Permitted Operating Weights on Page 249 of this manual. Observe tyre capacities and any possible legal limitations.

Continued

TYRES/WHEELS/BALLAST

Installing Front End Weights

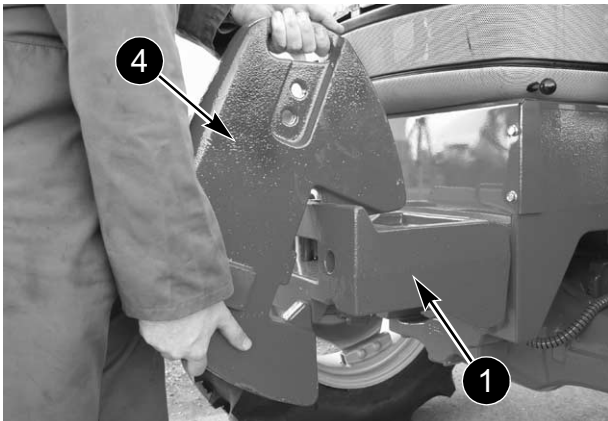
STEP 1

Park the tractor on hard level ground. STOP the engine and apply the park brake. Remove the key.

STEP 2

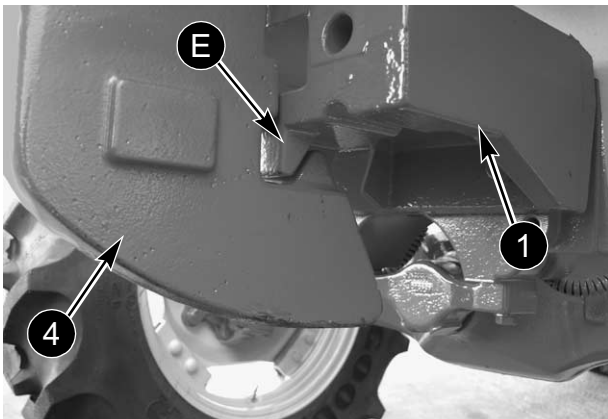
If a clevis weight (2) is to be installed, install the clevis weight and clevis pin (3). Make sure the clevis pin retainer (A) locates correctly into the top hole (B) of the clevis pin (3).

STEP 3



Hook one weight (4) over the top lip of the weight frame (1) towards its outer edge, (as shown in photo above).

STEP 4



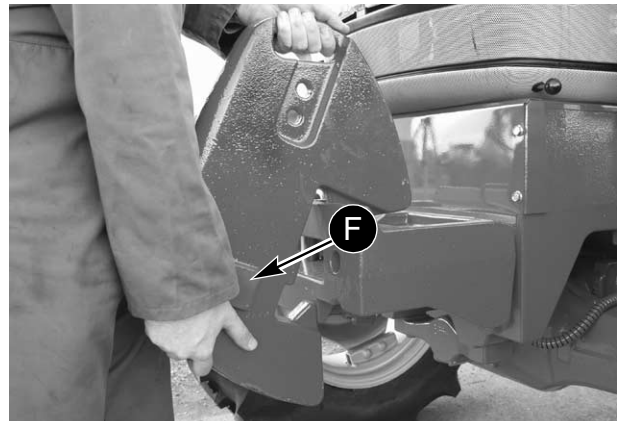
Slide the weight (4) towards the centre of the frame (1), next to the clevis weight (2), (if equipped), or until it is against tab (D) on the weight frame (1). The bottom of the weight (4) will interlock behind tab (E) at the centre of the weight frame (1).

STEP 5

Repeat STEP 4 and install second weight onto the other side of the clevis weight (2) or tab (D) on the weight frame.

IMPORTANT: If a clevis weight (2) is NOT to be installed, the minimum number of weights (4) that can be installed is TWO, one either side of tab (D) on the weight frame (1). The tab on one weight (4) must locate into the recess (C) in the weight previously installed in STEP 4.

STEP 6



Continue to install weights (4) equally to each side until the required weight pack is installed. The tab (F) on each weight will interlock into the previous installed weight.

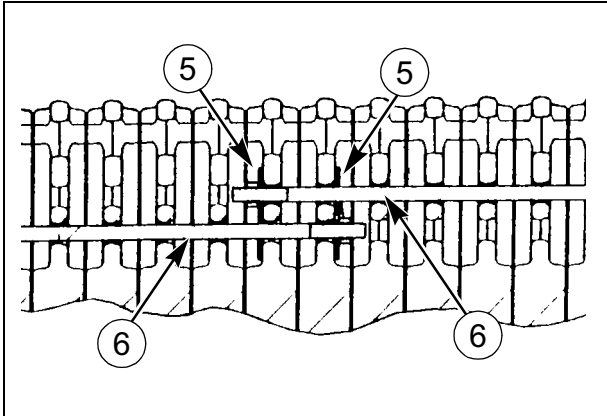
STEP 7

Install the retaining stud (5) through the holes in the weight pack and install the threaded plate (6).

Make sure the threads are fully installed into the plate and the plate is correctly located into the recess in the outer weight (4). Install the washer (7) and nut (8) to the opposite end of the stud (5). Tighten the nut.

TYRES/WHEELS/BALLAST

STEP 8

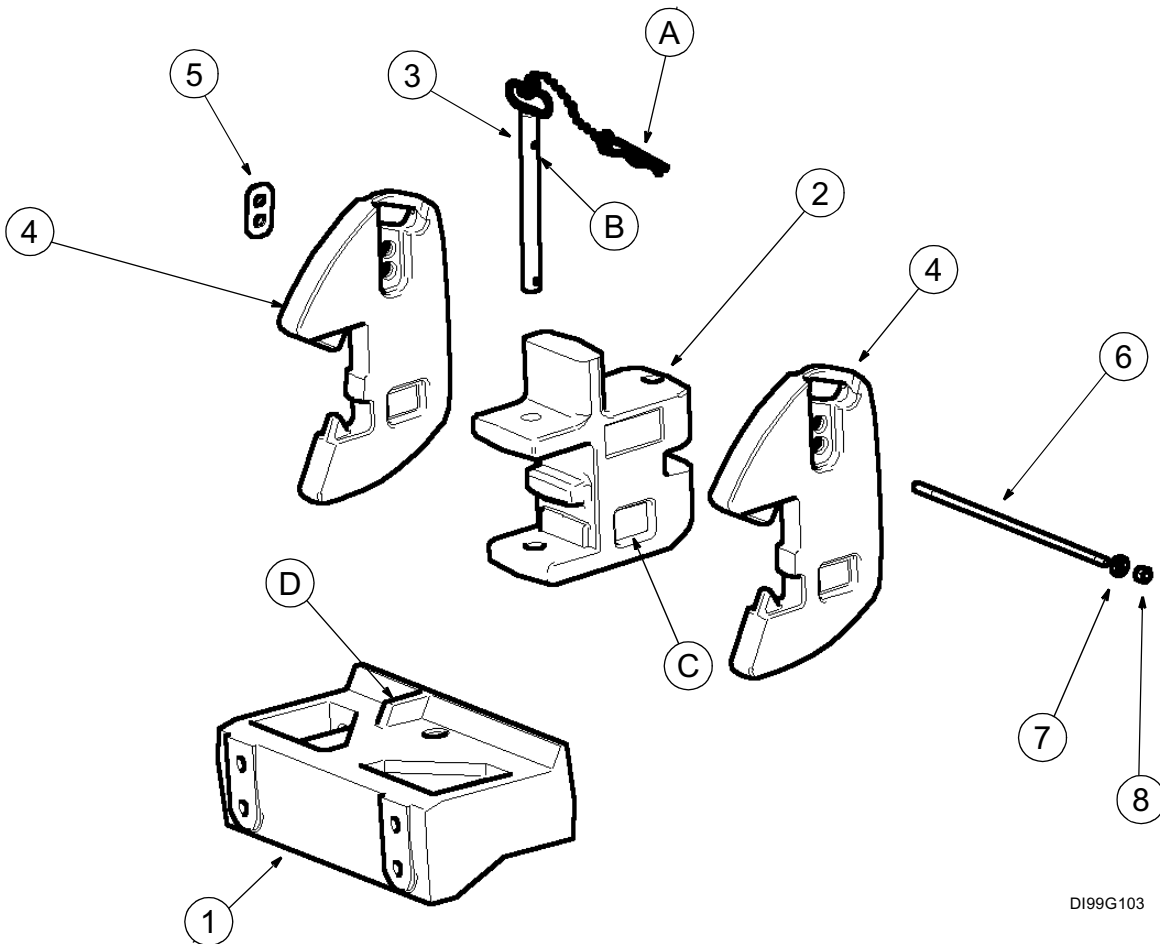


RH96H005

If using shorter studs (6), install a stud from each side and use 2 plates (5) as shown.

STEP 9

If a small number of weights are to be installed, install and tighten a suitable bolt through the weights into the threaded plate, make sure the threaded plate locates into the recess in the weight.



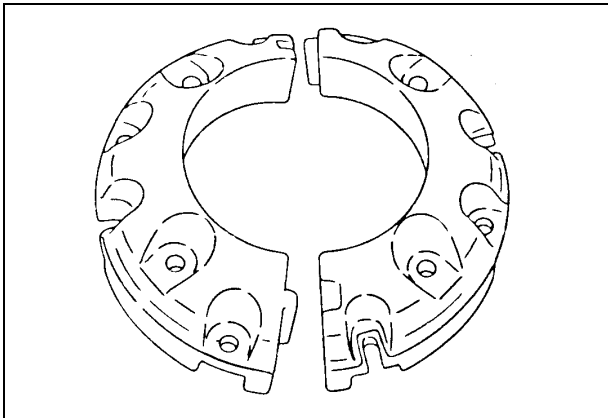
DI99G103

- | | |
|------------------------------------|-------------------|
| 1. WEIGHT FRAME - 107 kg (236 lb) | 5. THREADED PLATE |
| 2. CLEVIS WEIGHT - 100 kg (220 lb) | 6. BOLT |
| 3. CLEVIS PIN | 7. WASHER |
| 4. WEIGHT 45 kg (100 lb) | 8. NUT |

TYRES/WHEELS/BALLAST

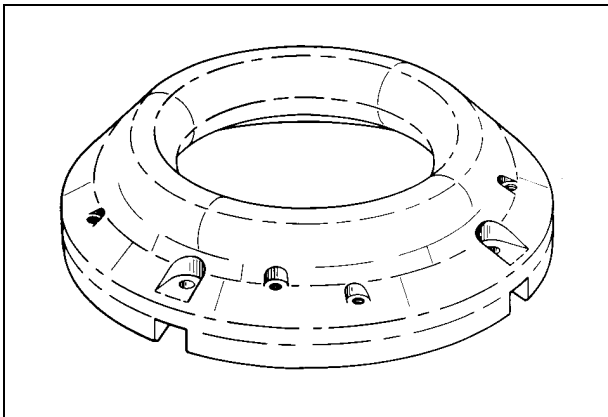
Rear Wheel Weights

Rear wheel weights, depending upon market are available from your dealer. Two weight types can be fitted to the CX Series. These are the HALF TYPE 34 kg (75 lb) per pair or the SOLID TYPE 54.5 kg (120 lb) and can be fitted to wheels up to 42 inch.



PM019

HALF TYPE WEIGHT



PM020

SOLID TYPE WEIGHT

Use the wheel weights as required to provide safe and efficient tractor operation. Do not add more weight to the rear wheels of your tractor than is required to achieve the correct tractor static weight distribution and the correct amount of wheel slip.

See Tractor Weight Distribution on Page 159 of this manual for recommendations on ballasting procedures.

IMPORTANT: Lift the rear wheel above the ground and turn the wheel 180 degrees for each weight installed, changing the position of each weight to get correct balance alignment. A maximum of 3 weights per wheel can be used. The 3 weights can be installed on the inside or outside of the wheels.

IMPORTANT: Weights can only be mounted on inside or outside, not both. Inside weights must not extend over axle housing casting.

IMPORTANT: Wheel weights CAN NOT be used when dual wheels are installed. Liquid weight can only be added to the inner wheel and front end weights can also be installed.

IMPORTANT: The total tractor weight with all equipment and ballast weight must never be more than the maximum recommended operating weight. See Maximum Permitted Operating Weights on Page 249 of this manual. Observe tyre capacities and any possible legal limitations.

TYRES/WHEELS/BALLAST

Tyre Liquid Ballast

Use tyre liquid ballast as needed to provide safe and efficient tractor operation. See Tractor Weight Distribution on Page 159 of this manual for recommendations. The chart shows the liquid weight each tyre will hold when 75 percent filled (filled to Valve Level), with water or calcium chloride and water solution.

Calcium chloride (CaCl_2) keeps the water from freezing. Water will start to freeze at 0°C (32°F).

When liquid ballast is used, inflate the tyres 0.14 bar (2 psi) more than the recommended pressure. This will compensate for aeration that occurs when the tyre is in motion.

When dual wheels are installed, use liquid ballast in the inside tyres only.

IMPORTANT: *The total tractor weight with all equipment and ballast weight must never be more than the maximum recommended operating weight. See Maximum Permitted Operating Weights on Page 249 of this manual. Observe tyre capacities and any possible legal limitations.*

LIQUID BALLAST PER TYRE - LITRES AND KILOGRAMS								
TYRE SIZE	WATER ONLY		1 kg CaCl_2 per 4.5 Litres of water		1.6 kg CaCl_2 per 4.5 Litres of water		2.3 kg CaCl_2 per 4.5 Litres of water	
	LITRES WATER	TOTAL WT kg	LITRES WATER	TOTAL WT kg	LITRES WATER	TOTAL WT kg	LITRES WATER	TOTAL WT kg
11.2-24	91	91	83	103	76	107	72	115
12.4-24	113	113	106	132	98	140	95	151
13.6-24	144	144	129	160	121	172	113	181
18.4-26	299	299	276	342	257	365	242	387
14.9R28/14.9-28	182	182	163	205	154	216	145	232
14.9R30/14.9-30	189	189	163	205	154	216	145	232
16.9R30/16.9-30	277	277	254	315	236	339	227	357
18.4R30/18.4-30	336	336	309	384	290	414	272	436
12.4R32/12.4-32	131	131	122	154	118	165	113	181
16.9R34/16.9-34	309	309	281	352	263	376	250	402
18.4R34/18.4-34	378	378	344	427	322	456	306	490
12.4-36	140	140	122	154	118	165	113	181
13.6R36/13.6-36	182	182	163	205	154	216	145	232
13.6R38/13.6-38	213	213	195	244	186	264	172	280

1. Water will freeze at 0°C (32°F).
2. A solution of 0.91 kg (2 lb) calcium chloride solution per 4.5 litres (1.2 US gal) of water will give protection to -8°C ($+13^\circ\text{F}$) and will freeze at -31°C (-23°F).
3. A solution of 1.59 kg (3.5 lb) calcium chloride solution per 4.5 litres (1.2 US gal) of water will give protection to -26°C (-12°F) and will freeze at -47°C (-52°F).
4. A solution of 2.27 kg (5 lb) calcium chloride solution per 4.5 litres (1.2 US gal) of water will give protection to -47°C (-52°F) and will freeze at -54°C (-62°F).
5. 4.5 litres (1.2 US gal) of water weighs 4.5 kg (10 lb).

NOTE: DO NOT use radiator type Anti-freeze in tyres.

TYRES/WHEELS/BALLAST

Filling Procedure

STEP 1 (Mixing The Solution)

Add the correct amount of calcium chloride (CaCl_2) into the correct amount of water, see previous charts for the required degree of protection from freezing.



WARNING: SLOWLY add calcium chloride to water, stirring continuously. NEVER ADD WATER TO CALCIUM CHLORIDE. To do so will cause a violent reaction. When correctly mixed, the solution will increase in temperature. Allow the solution to cool before adding to the tyre. See your authorized dealer for details.

STEP 2

Raise one side of the tractor and turn the wheel so that the valve is at the top, see illustration opposite.

STEP 3

Remove the valve core and connect the hand pump.

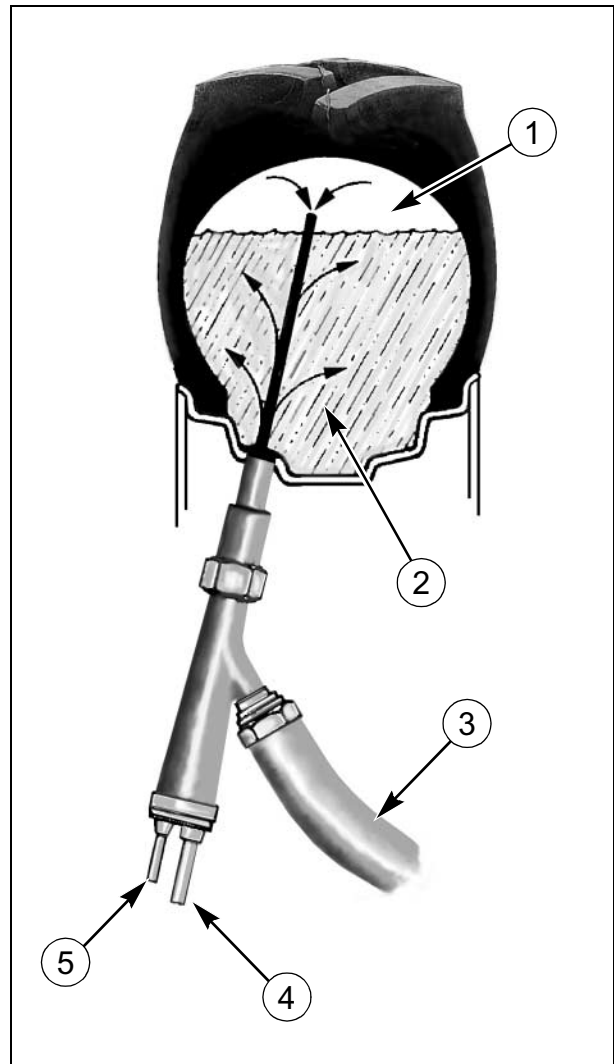
STEP 4

Measure the amount of solution added to the tyre and use the figures in the previous charts to calculate the weight added.

STEP 5

When sufficient weight has been added, remove the pump. Install the valve core. Inflate the tyre to the correct pressure.

NOTE: When liquid ballast is used, inflate the tyres 0.14 bar (2 psi) more than the recommended pressure. This will compensate for aeration that occurs when the tyre is in motion.



DH97M216

1. AIR
2. WATER ENTERING TYRE
3. WATER SUPPLY
4. AIR SUPPLY
5. AIR VENT

ROUTINE SERVICING

RECOMMENDATIONS BEFORE YOU SERVICE

WARNING: Before servicing, carefully read the instructions in this section. There is a risk of injury or death if servicing is not carried out or if the following instructions are not followed correctly. If you do not understand a service or adjustment procedure see your dealer.



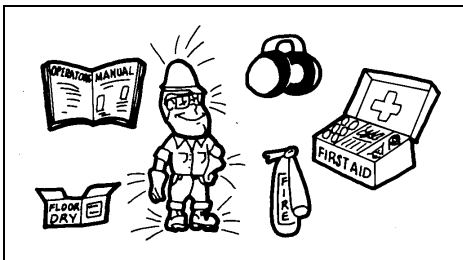
Before any adjustments are made carry out the following:

1. Park the tractor on hard level ground and apply the parking brake.
2. Stop the engine and remove the key.
3. Put blocks in front of and behind the front and rear wheels.

WARNING: When handling lubricants (oil, grease etc.) and other chemical products, always follow instructions for their proper use. Use proper containers to collect fluid. Dispose of fluids and filters responsibly and in accordance with the law. DO NOT smoke or use an open flame during the service procedure. Use eye protection.



Read the safety decals and information decals on this tractor. Read the operators manual. Understand the operation of the tractor before you start servicing.

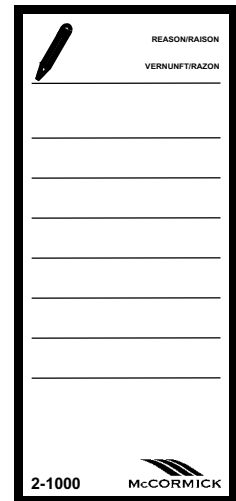


B770996R

Use the correct safety clothing and safety equipment. If you wear clothing that is too loose or do not use the correct safety equipment for your job, you can be injured. Always wear clothing that will not catch on objects. Extra safety equipment that can be required includes hard hat, safety shoes, ear protection, eye or face protection, heavy gloves and reflector clothing.

Establish where your nearest first aid kit and fire extinguisher are located. Undertake suitable training to make sure you know how the fire extinguisher works.

Put a warning tag, as shown below, on or near the key switch before carrying out servicing or repairs to the tractor. Warning tags (publication number 2-1000) are available from your dealer.



Environment

Before you service this machine and before you dispose of the old fluids, lubricants and filters always consider the environment.

DO NOT pour oil or fluids in the ground, down drains or into containers that can leak.

Dispose of all old fluids, lubricants and filters in accordance with local regulations.

Check with your local environmental recycling center or your dealer for correct information.

Plastic And Resin Parts

Avoid using petrol, paraffin, paint thinner, etc., when cleaning plastic, e.g.; console, instrument cluster, monitors and gauges etc.

Use ONLY water, mild soap and a soft cloth when you clean these parts.

Using petrol, paraffin, paint thinner etc., will cause cracking or deformation of the part being cleaned.

ROUTINE SERVICING

SERVICE/HOURLMETER



MP01H051

All tractors continued value, operation and reliability depend to a large extent on regular servicing. McCormick tractors have been designed to provide easy daily and routine access.

When servicing your tractor use ONLY original McCormick service parts, oils, lubricants, coolants, filters etc. which are released by McCormick or are McCormick Approved, to avoid affecting the working life of this tractor.

Services must be carried out at varying Engine Hour intervals, depending on which comes first, see below for example.

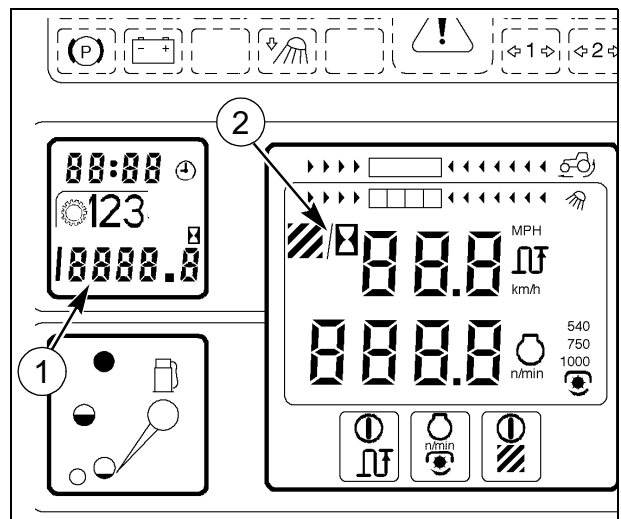
- Every 10 Hours, or daily
- Every 50 Hours, or weekly
- Every 100 Hours, or every two weeks
- Every 250 Hours, or monthly
- Every 500 Hours, or six monthly
- Every 1000 Hours, or annually
- Every 2000 Hours, or bi-ennial

Engine Hourmeter

Use the engine hourmeter, along with the Service Charts on the following pages, to service your machine at the correct intervals.

With the key switch in the ON position, the engine hourmeter (1) shows the actual hours the engine has run the number after the decimal point is tenths of an hour.

When the key switch is turned to the ACCESSORY position, counterclockwise from off, the main digital display (2) shows the next service interval at the top and the time in hours elapsed at the bottom, the engine hourmeter (1) will also show the actual hours the engine has run.



DS99G182

NOTE: Prior to commencing any servicing procedures on the tractor, make sure the engine is not running and the keyswitch is in the OFF position.

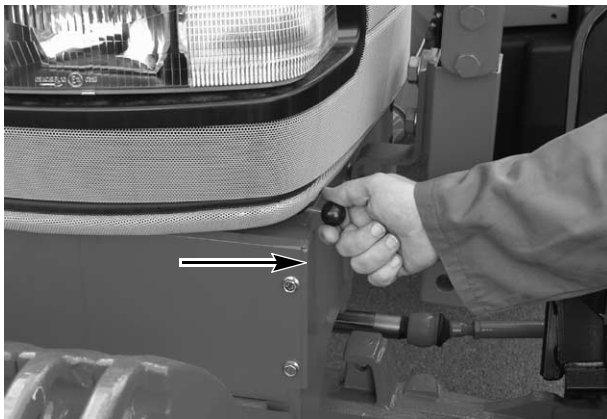
ROUTINE SERVICING

SERVICE ACCESS

STEP 1

Park the tractor on hard, level ground and apply the park brake.

STEP 2



Pull the hood release lever.

STEP 3



Push the front of the hood upward. The gas strut will hold the hood in the upright position.

IMPORTANT: When opening the hood in windy conditions, put the front of the tractor towards the wind.



WARNING: Replace all covers or guards removed after servicing or cleaning the machine. NEVER operate the machine with the covers or guards removed.

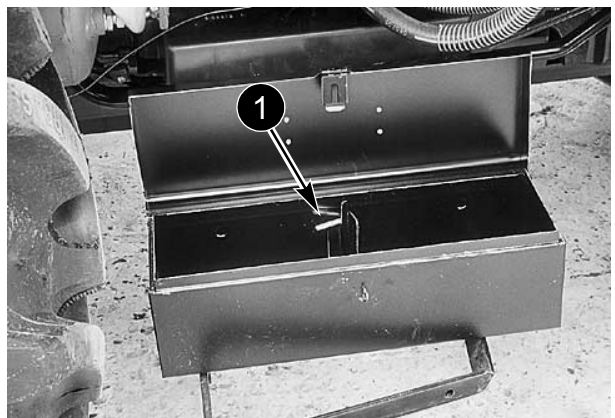
Tool Box (If Equipped)

The tool box is located behind the cab steps on the right hand side.



NOTE: Steps have been removed for photographic purposes only.

To remove the tool box, do the following:



Open the lid. Remove the retaining pin (1), located in the center, back of the tool box.

Lift the tool box from the bottom outwards and upwards.

ROUTINE SERVICING

LUBRICANTS AND CAPACITIES

Engine

Oil Type.....McCormick Engine Oil, SAE 15W-40

Oil Capacity..... 7.3 Litres (2.0 US gallons)

Engine Oil Selection

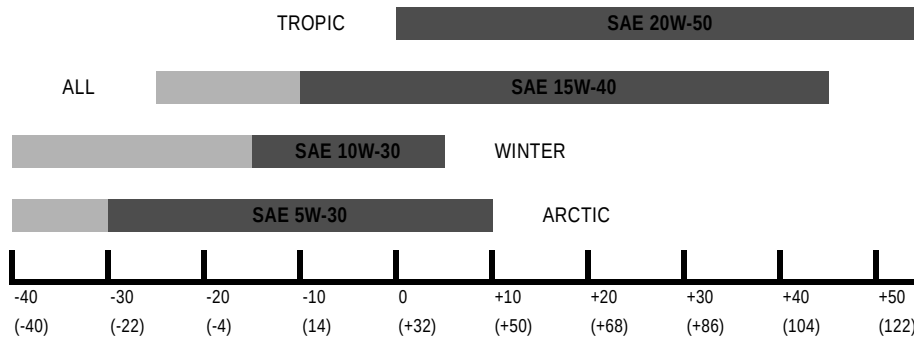
Engine oils must meet the following minimum API performance grades; CH-4 .

NOTE: Do not put Performance Additives or other oil additive products in the engine oil. The oil change intervals given in this manual are according to tests with McCormick authorized lubricants.



RB97F100

Oil Viscosities and Ambient Temperature Ranges



TEMPERATURE RANGES IN DEGREES °C (°F)



NOTE: This lighter area indicates that the use of an engine oil pan heater or an engine coolant heater is required when operating in

Cooling System

Coolant Mix..... McCormick Universal Anti-Freeze, 33% to 50% Ethylene Glycol, (depending on the market requirement)

Capacity 17.5 Litres (4.6 US gallons)

ROUTINE SERVICING

Fuel Tank

Fuel Type No.2 Diesel Fuel
Fuel Tank Capacity..... 155 Litres (41.0 US gallons)

Transmission/Hydraulic System

Oil Type McCormick HTX

Refill Capacity -

XtraShift Transmissions

2WD 49.5 Litres (13.0 US gallons)

MFD 52.0 Litres (13.7 US gallons)

Refill Capacity -

2 Speed Powershift and Synchronesh (Mechanical) Transmissions

2WD 34.5 Litres (9.1 US gallons)

MFD 37.0 Litres (9.7 US gallons)

MFD Axle (If Equipped)

Oil Type McCormick Multi-Purpose Gear Oil,
SAE 85W - 140 EP Gear Oil to API GL-5
or MIL-L-2105D Specification

Axle Differential Capacity5.0 Litres (5.3 US quarts)

Axle Planetary Capacity (EACH).....0.6 Litres (0.62 US quarts)

Front PTO (If Equipped)

Kitchin Front PTO

Oil Type..... McCormick HTX

Capacity0.65 Litres (0.69 US quarts)

Hydrac Front PTO

Oil Type..... McCormick Super Universal, SAE 10W-30

Capacity0.75 Litres (0.8 US quarts)

ROUTINE SERVICING

SERVICE INTERVALS

S E R V I C E H O U R S	SERVICE POINTS	S E E P A G E	SERVICE REQUIRED				
			G R E A S E	D R A I N	C H E C K	C L E A N	C H A N G E
10	Front Wheel Nuts	150			X		
	Rear Wheel Nuts	158			X		
	Fuel Level	209			X		
	Engine Oil Level	175			X		
	Transmission/Hydraulic Oil Level	174			X		
	Pneumatic Trailer Brake Reservoir	176		X			
	Coolant Recovery Reservoir Level	175			X		
	Front PTO Oil Level - (See Note 6)	176			X		
	General Tractor Inspection - (See Note 1)	-			X		
50	Air Pressure in Tyres	139			X		
	Fuel Water Trap - Fuel Filter	179		X			
	2WD Front Axle Grease Points - (See Notes 6 and 8)	177	X				
	MFD Front Axle Grease Points(See Notes 6 and 8)	177	X				
	Engine Air Filter Dust Valve - (See Notes 4 and 6) (Must be changed every 1000 hours)	179			X		
	Radiator and Coolers	178				X	
	Cab Air Recirculation Filter	179				X	
100	Rear Three Point Linkage - (See Note 8)	180	X				
	Front Three Point Linkage - (See Note 8)	180	X				
	Cab Air Intake Filter	181				X	
250	Front PTO Oil - (See Notes 5, 6 and 7)	185					X
	Auto Hitch Locking Latches - (See Notes 2 and 6)	185	X				
	MFD Axle Diff. and Planetary Oil - (See Note 6) (Change at FIRST 250 Hours)	186			X		
	Compressor Belt (Check Tension at FIRST 50 Hours)	188			X		
	Fan and Alternator Belt - (See Note 6) (Check Tension at FIRST 50 Hours)	188			X		
	Battery(s)	187			X		
	Trailer Hitch, Bolt Torques - (See Notes 6)	187			X		
	Trailer Hitch, Moving parts - (See Notes 2, 6 and 8)	186	X				
	Drawbar Bolt Torques - (See Note 6)	186			X		
	Engine Oil and Oil Filter, Early Production Tractors - (See Note 10)	189					X

ROUTINE SERVICING

S E R V I C E H O U R S	S E R V I C E P O I N T S	S E E P A G E	S E R V I C E R E Q U I R E D				
			G R E A S E	D R A I N	C H E C K	C L E A N	C H A N G E
500	Engine Oil and Oil Filter, Later Production Tractors - (See Note 10)	189					X
	Engine Fuel Filter	191					X
	Transmission/Hydraulic Oil Filter (Change at FIRST 20 Hours)	190					X
	Operators Presence Switch (3 Speed Powershift Tractors ONLY)	193			X		
	Auto Hitch Lift Rod Adjustment - (See Notes 2 and 6)	194			X		
1000	2WD Front Wheel Bearing - (See Note 6)	195	X				
	MFD Drive Coupling - (See Note 6)	196	X				
	Engine Air Intake System	197			X		
	Engine Primary Air Filter - (See Notes 2 and 4)	197					X
	Engine Secondary Air Filter	197					X
	Engine Air Filter Dust Valve	199					X
	Transmission/Hydraulic Oil	200					X
	In-Line Fuel Filter	201					X
	MFD Axle Planetaries and Differential Oil - (See Note 6) (Change at FIRST 250 Hours)	202					X
	Fuel Injectors	205				X	
	Cab Intake Air Filter - (See Note 3)	203					X
	Cooling System Anti-Freeze (yearly before winter)	207			X		
	Door Locks and Hinges	-	X				
	Engine Valve Clearances	196			X		
2000	Coolant	206					X

NOTE 1: Check the tractor for leaks, rubbing hoses, loose bolts and trash build up. Repair all leaks, hoses and tighten loose bolts before operation.

NOTE 2: Check for wear and function.

NOTE 3: In dusty conditions the cab filter will require more frequent cleaning.

NOTE 4: Also clean the filter element whenever the service monitor illuminates.

NOTE 5: Change at first 20 PTO operating hours.

NOTE 6: If equipped.

NOTE 7: After 250 PTO operating hours.

NOTE 8: In severe operating conditions, grease daily.

NOTE 9: After any wheel adjustment, check after 30 minutes, then every 10 hours until torques stabilize.

NOTE 10: On early production tractors (with engine serial numbers starting AQ or AS) the engine oil and filter change interval is 250 hours. HOWEVER on later production tractors (with engine serial numbers starting RE or RG) the service interval increases to 500 hours.

ROUTINE SERVICING

10 HOURS OR DAILY SERVICE

Check Fuel Level



DK98A017

Fill the fuel tank at the end of each day after work has been completed to prevent condensation in the fuel tank.

Diesel Fuel

Use a high grade diesel fuel. The use of a low grade fuel will result in loss of engine power and high fuel consumption.

Fuel storage

If you keep fuel in storage for a period of time, you can get foreign material or water in the fuel storage tank. Many engine problems are caused by water in the fuel.

Keep the fuel storage tank outside and keep the fuel as cool as possible. Remove water from the fuel storage tank at regular intervals.

IMPORTANT: Different grades of diesel fuel are required for summer and winter operations. See your fuel supplier for winter fuel requirements in your area.



WARNING: Never refuel the machine when the engine is hot or running. Never smoke while refueling.



WARNING: Engine fuel is flammable and can cause a fire or an explosion. DO NOT fill the fuel tank or service the fuel system near a naked flame, welding, burning cigars, cigarettes etc.



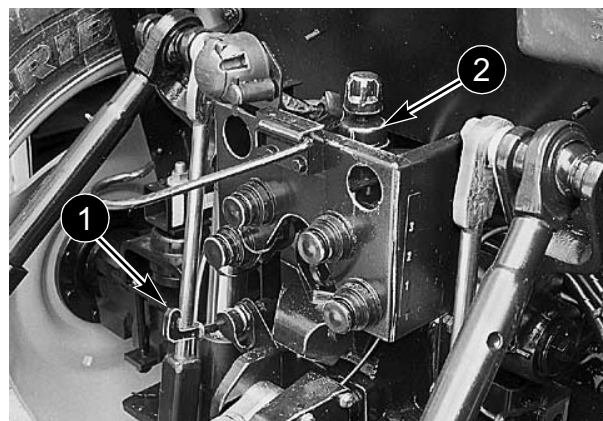
WARNING: Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury. To prevent injury: release all pressure, before disconnecting fluid lines. Before applying pressure, make sure all connections are tight and components are in good condition. Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose. If injured by leaking fluid, see your doctor immediately.

Check Transmission/Hydraulic Oil Level

To check the transmission oil level, put the tractor on level ground.

IMPORTANT: It is recommended to check the oil level prior to starting the engine, (transmission oil cold, prior to first daily use). If the tractor has been running the transmission oil **MUST** be allowed to settle (the time will vary depending upon how long the tractor has been running).

Make sure the dipstick (1) is pushed completely in before checking the level.



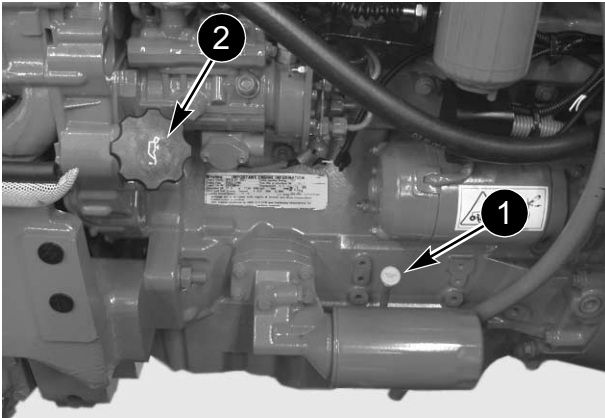
DP98D185

If the oil level is below the FULL mark on the dipstick, add the recommended oil in through the fill tube (2) located at the rear of the transmission.

ROUTINE SERVICING

10 HOURS OR DAILY SERVICE

Check Engine Oil Level



MD03K002

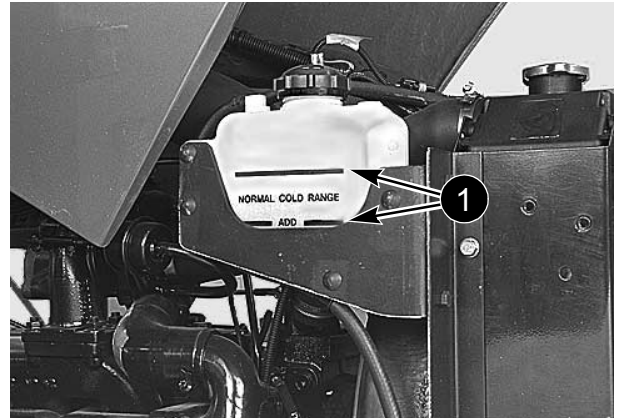
To check the engine oil level, put the tractor on level ground and stop the engine.

Wait for 15 minutes for the oil to settle before checking the oil level.

Make sure the dipstick (1) is pushed completely down before checking the oil level.

If the oil level is below the ADD mark, add oil, through the filler tube (2), to raise the oil level to the FULL mark. DO NOT raise the oil level above the FULL mark.

Check Coolant Level



DP98A010

Check the coolant level when the coolant is cold and with the engine stopped. DO NOT REMOVE THE RADIATOR CAP.

The coolant level must be within the normal cold range marks (1) on the reservoir. If the level is below the ADD mark, fill the reservoir to the top mark with correct coolant mixture (this will depend upon market requirements).



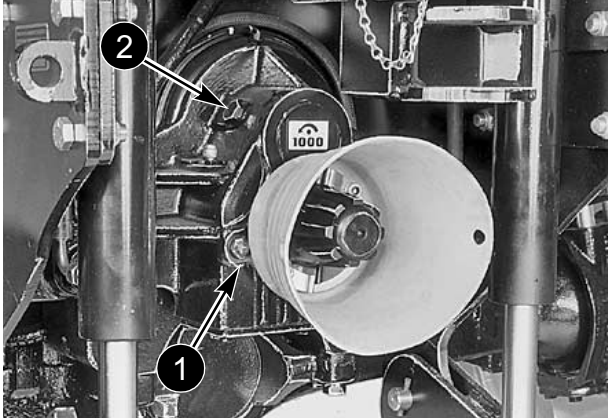
WARNING: Hot coolant can spray out if the coolant recovery reservoir cap or radiator cap is removed while system is still hot. DO NOT REMOVE RADIATOR CAP. To remove the coolant recovery reservoir cap or radiator cap, let system cool, turn cap to first notch, then wait until pressure is released. Scalding can result from fast removal of radiator cap.

ROUTINE SERVICING

10 HOURS OR DAILY SERVICE

Front PTO (If Equipped)

Kitchin Front PTO



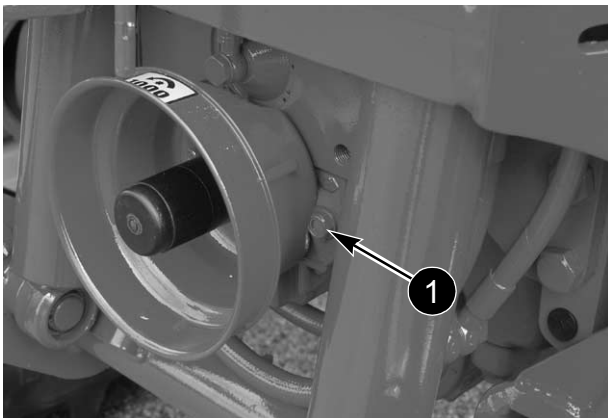
DP97E389

Put the tractor on level ground.

Check the level glass (1) located on the front left hand side of the housing.

If the oil level is low, remove the fill plug (2) and add the recommended oil type until the oil is level with the bottom edge of the level glass. Install the fill plug and tighten.

Hydrac Front PTO

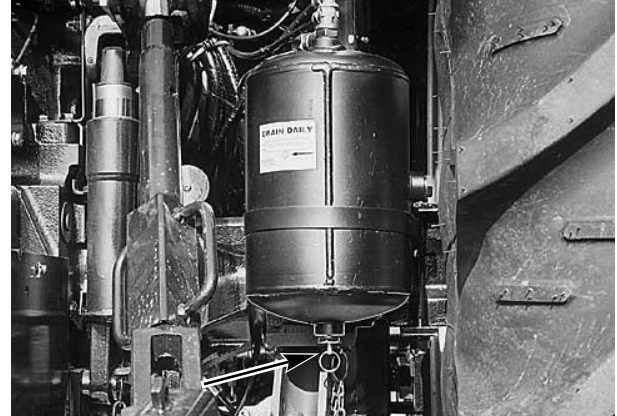


MD01K007

Put the tractor on level ground.

Remove the fill/level plug (1) and check the oil level, which must be to the bottom edge of the plug hole. Add the recommended oil type as required. Install the plug.

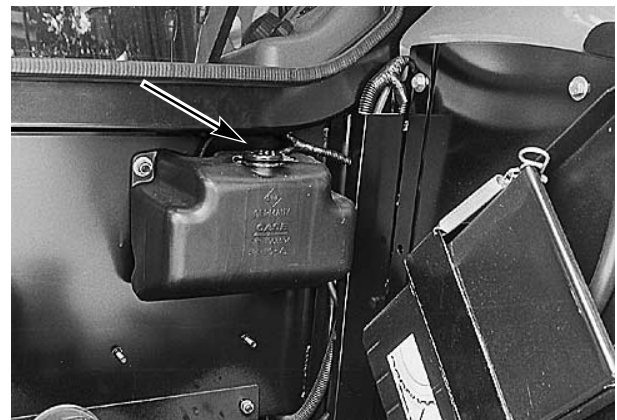
Drain Pneumatic Trailer Brake Reservoirs (If Equipped)



DP97G085

Operate the drain valve plunger under each reservoir to drain any water which has collected.

Check Windshield Washer Reservoir Level



DP98J220

If the fluid level is low fill the reservoir.

ROUTINE SERVICING

50 HOUR SERVICE

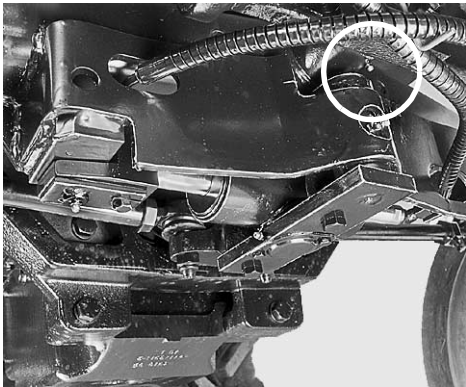
NOTE: Complete the 10 hour, (or daily), service plus the following.

Grease Points

NOTE: Use McCormick Multi-Purpose Lithium Grease.

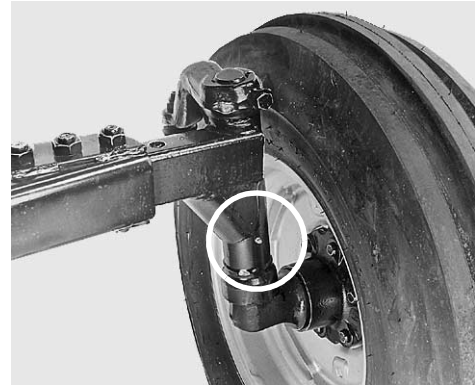
NOTE: In severe conditions lubricate these points more frequently.

Two Wheel Drive (2WD) Front Axle (If Equipped)



DP97C042

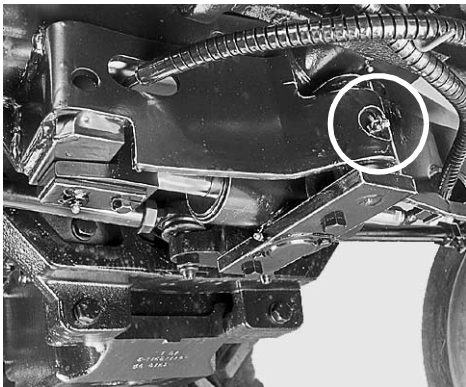
Axle Pivot Pin



DP97C021

Front Axle Swivel - (1 point each side)

Mechanical Front Drive (MFD) Axle



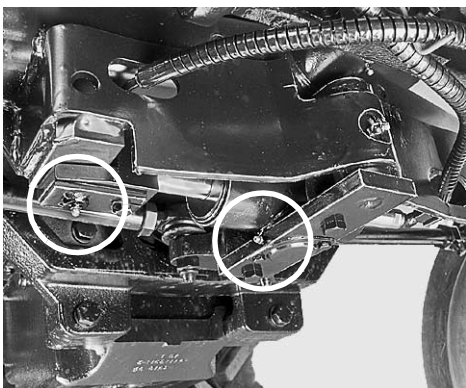
DP97C042

Steering Cylinder Trunnion



DP97E355

Axle Pivot Pins - (Front and Rear)



DP97C042

Steering Cylinder and Rod Pivots



DP97E277

Steering Knuckle Swivel Pins -
(2 points each side)

ROUTINE SERVICING

50 HOUR SERVICE

Clean Grille Screens and Radiator Area

Clean the grille screens, air conditioning condenser, oil cooler (if equipped) and radiator area every 50 hours of operation, or more frequently if required when operating in dirty conditions.

IMPORTANT: Be careful not to bend or damage the fins during cleaning.

IMPORTANT: If you clean using compressed air use an air hose with a safety ON/OFF control nozzle and ALWAYS WEAR FACE PROTECTION.



WARNING: DO NOT steam clean any air conditioning system parts while the system is charged. The heat will cause the refrigerant to rise to a pressure that could cause the system to explode.

To gain access:

STEP 1

Remove both side covers (if equipped).

STEP 2

Raise the hood, if equipped with a tilt hood. Remove the hood if equipped with a fixed hood.

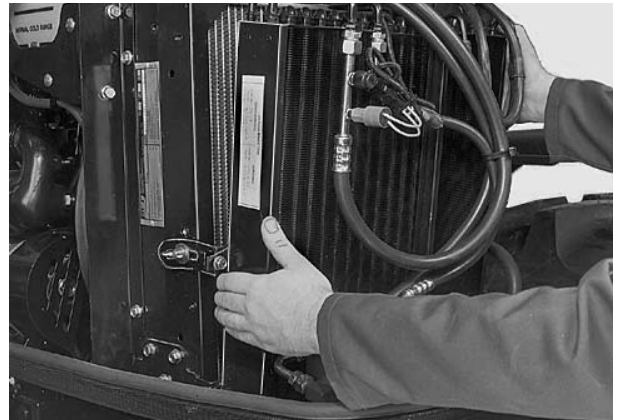
STEP 3



DP98A098

Loosen the condenser retaining bolts, at both sides of the oil cooler or air conditioning condenser (if equipped).

STEP 4



DP98A099

Pull the top of the oil cooler or air conditioning condenser (if equipped) forward.

Clean as necessary.

Check Clutch Reservoir Level



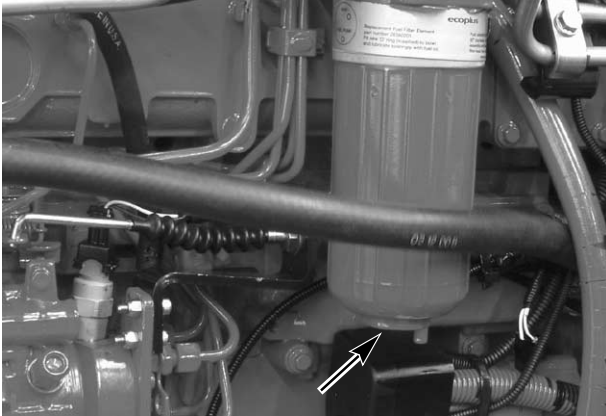
MD01L001

To check the level, put the tractor on level ground. If the level is below minimum, fill the reservoir to the maximum mark with McCormick LHM plus Clutch/Brake Fluid.

ROUTINE SERVICING

50 HOUR SERVICE

Drain Fuel Filter



MD03K006

The drain plug is located on the bottom of the fuel filter. Loosen the plug to let any water or sediment drain from the filter. Tighten the plug after the water has drained.

IMPORTANT: *Dispose of fuel in accordance with local regulations. DO NOT drain on the ground, into a drain or into a container that can leak. Be responsible for the environment.*

Check Engine Air Filter Dust Valve (If Equipped)

+

Squeeze the rubber dust valve (1) under the filter body cover to remove any dust. Install a new dust valve if damaged, or not operating correctly.

NOTE: *A new rubber dust valve **MUST** be installed every 1000 hours.*

Clean Cab Air Recirculation Filter (Deluxe Cab Only)

STEP 1



DP96J436

Remove the four screws from the recirculation grille. Remove the recirculation grille and the filter.

STEP 2

Clean the filter using mild soap and water. Rinse with clear water and squeeze out the excess.

STEP 3

Install the filter in the recirculation grille.

STEP 4

Install the grille and filter. Install and tighten the screws.

ROUTINE SERVICING

100 HOUR SERVICE

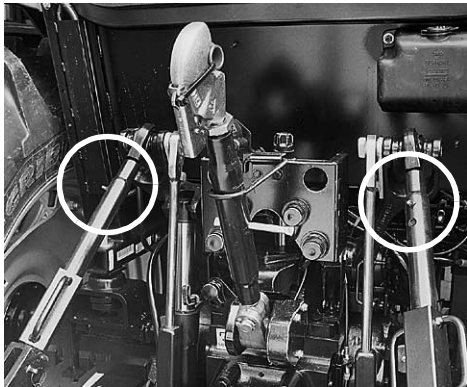
NOTE: Complete the items in the 10 hour, (or daily) and 50 hour service plus the following.

Grease Points

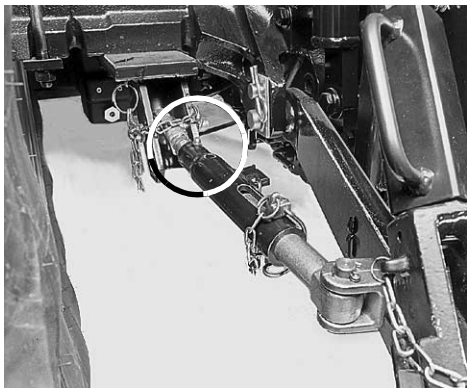
NOTE: Use McCormick Multi-Purpose Lithium Grease.

NOTE: In severe conditions lubricate these points more frequently.

Rear 3 Point Hitch



Turnbuckles,
2 points, 1 each side

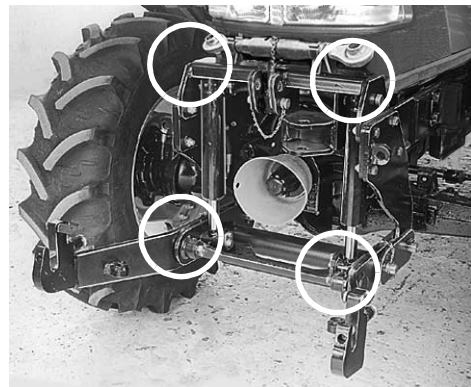


Stabilizers, if equipped.

Front 3 Point Hitch (If equipped)

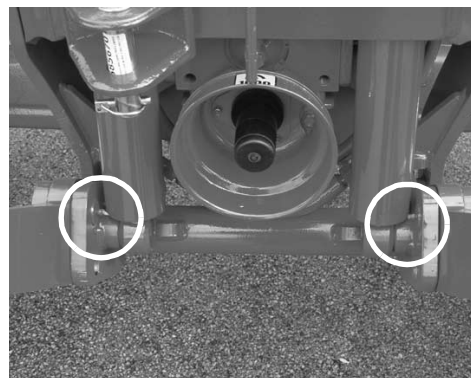
NOTE: Lubricate if not used frequently and also after washing with water pressure hose.

Kitchen Hitch



Lower links, 4 points*.

Hydrac Hitch



Lower links, Front



Lower links, Rear - One each side

ROUTINE SERVICING

100 HOUR SERVICE

Check and Clean Cab Air Intake Filter

Check and clean the intake air filter every 100 hours or more often if needed. Keep the air filter clean for efficient operation of the heating and cooling system. Replace with genuine McCormick parts if damaged or when the filter can not be cleaned.



WARNING: Cab air filters remove dust in the air, but are not capable of removing chemicals used in spraying crops or in weed control. Many chemicals used for these purposes are toxic when improperly used, and can be hazardous to operators and others in the area. Follow the instructions of manufacturers of both the equipment and the chemicals regarding prohibitions against inhalation of dust or spray, personal hygiene practices, and other precautions noted by the manufacturers.

IMPORTANT: Always wear protective clothing, e.g.: overalls, goggles, gloves and face mask when preparing equipment for chemical spraying operations and ALWAYS follow the chemical manufacturers instructions.

DELUXE CAB - Remove all protective items and store outside the operators cab in the locker on the spraying equipment before entering the tractor operators cab.

LOW PROFILE CAB - This tractor **CANNOT** be used for chemical spraying operations without wearing full protective clothing while in the operators cab.

The air intake filters should be checked weekly or daily if used in extreme conditions. The standard paper element has the following efficiency with a maximum differential pressure increase of 2 mbar: - SAE coarse 99.5%.

NOTE: This element gives no protection against chemical spray.



WARNING: Do not stand on the tractor to service the filter, use the correct equipment for a safe standing platform or injury can result.

For optimum performance we recommend that the filter is serviced sooner if used in extreme conditions. Replaced with genuine McCormick parts if damaged or when the filter can not be cleaned.

IMPORTANT: Respiratory protection equipment and protective clothing appropriate to the environment that the filter has been in contact with **MUST** be used during the cleaning of the filter.

Deluxe Cab

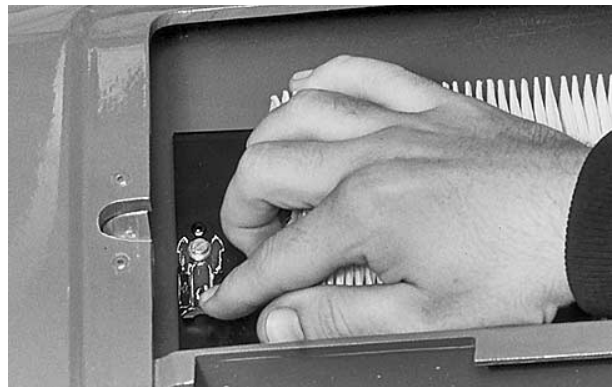
STEP 1



DP97A075

Open the filter cover by pulling the front lower edge out.

STEP 2



DP96J439

Push the catch down.

Continued

ROUTINE SERVICING

100 HOUR SERVICE

STEP 3



DP97A090

Remove the filter element and clean the filter housing.

STEP 5

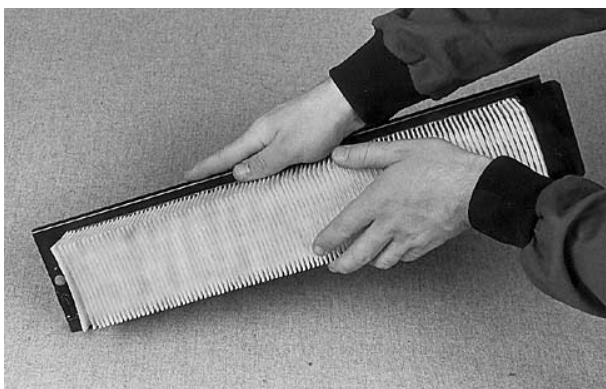
The filter element can be cleaned by following two methods:

A. By tapping against a flat surface.

or

B. By blowing with compressed air.

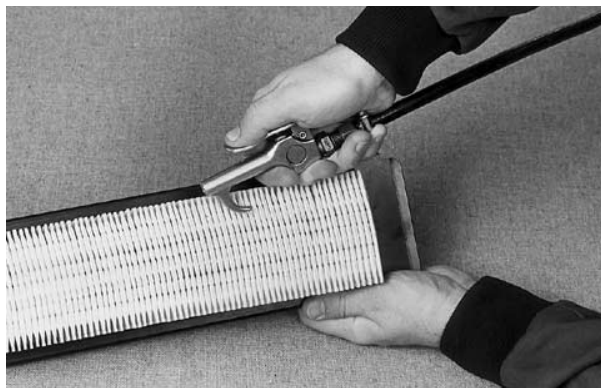
METHOD A



DP96J447

When most of the dirt is dust, this method can be used to clean the filter. Tap the dirty side of the filter against a flat surface. Do not use excessive force that can cause damage to the filter.

METHOD B

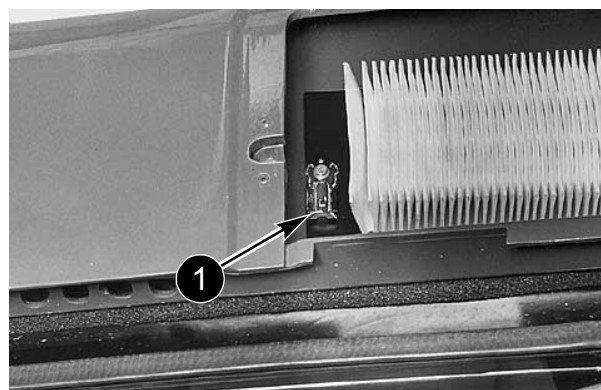


DP96J446

Use the compressed air method to remove the dust. Move the flow of air up and down the clean side of the filter. Maximum air pressure must not be more than 2 bar (30 psi). Too much pressure will damage the filter.

IMPORTANT: Always use an air hose with a safety ON/OFF control nozzle and ALWAYS WEAR FACE PROTECTION.

STEP 6



DP96J438

Install the filter element into the filter cover. Push the catch (1) up. Close the filter cover.

ROUTINE SERVICING

100 HOUR SERVICE

Low Profile Cab

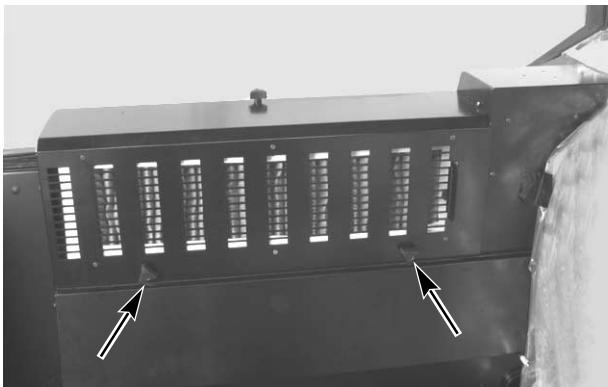
IMPORTANT: Respiratory protection equipment and protective clothing appropriate to the environment that the filter has been in contact with **MUST** be used during the cleaning of the filter.

STEP 1



DD97E258

LP CAB WITHOUT AIR CONDITIONING



MD02L140

LP CAB WITH AIR CONDITIONING

Loosen the retaining screws from the filter access cover and remove.

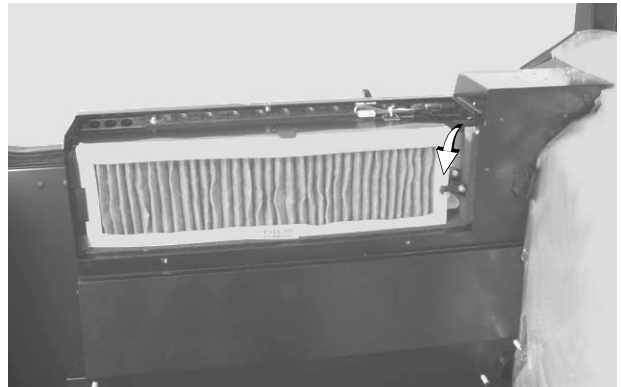
STEP 2



DD97E261

LP CAB WITHOUT AIR CONDITIONING

Slide the filter element out.



MD02L141

LP CAB WITH AIR CONDITIONING

Release the retaining catch and remove the filter element.

IMPORTANT: If at any time the tractor has been used for chemical spraying operations, remove the filter and access cover immediately from the cab. Take care not to deposit any dirt from the filter and access cover on the cab interior.

STEP 3

Clean the filter housing.

STEP 4

The filter element can be cleaned by following two methods:

A. By tapping against a flat surface.

or

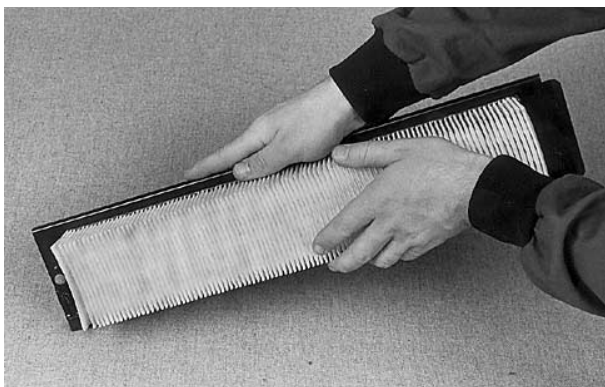
B. By blowing with compressed air.

Continued

ROUTINE SERVICING

100 HOUR SERVICE

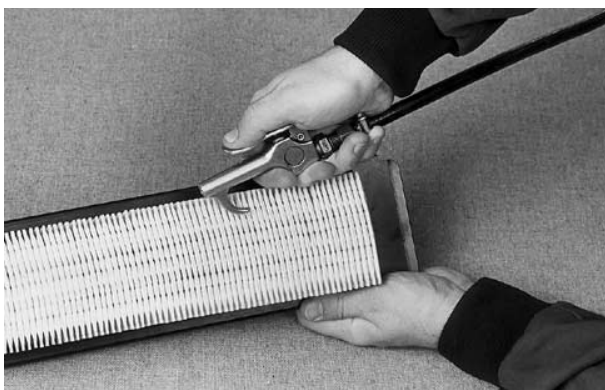
METHOD A



DP96J447

When most of the dirt is dust, this method can be used to clean the filter. Tap the dirty side of the filter against a flat surface. Do not use excessive force that can cause damage to the filter.

METHOD B



DP96J446

Use the compressed air method to remove the dust. Move the flow of air up and down the clean side of the filter. Maximum air pressure must not be more than 2 bar (30 psi). Too much pressure will damage the filter.

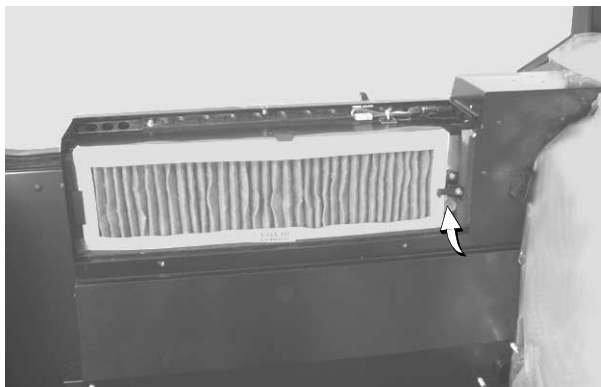
IMPORTANT: Always use an air hose with a safety ON/OFF control nozzle and ALWAYS WEAR FACE PROTECTION.

STEP 5



DD97E261

LP CAB WITHOUT AIR CONDITIONING



MD02L141

LP CAB WITH AIR CONDITIONING

Install the clean filter element and secure. Replace the access cover and tighten the retaining screws.

ROUTINE SERVICING

250 HOUR SERVICE

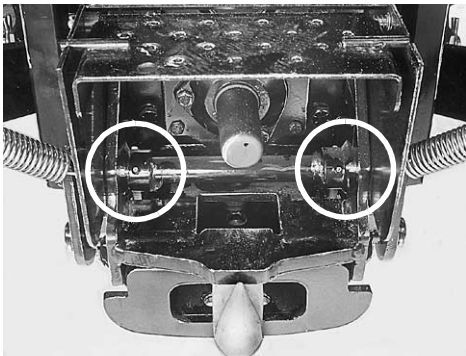
NOTE: Complete the items in the 10 hour, (or daily) and 50 services plus the following.

Grease Points

NOTE: Use McCormick Multi-Purpose Lithium Grease.

NOTE: In severe conditions lubricate these points more frequently.

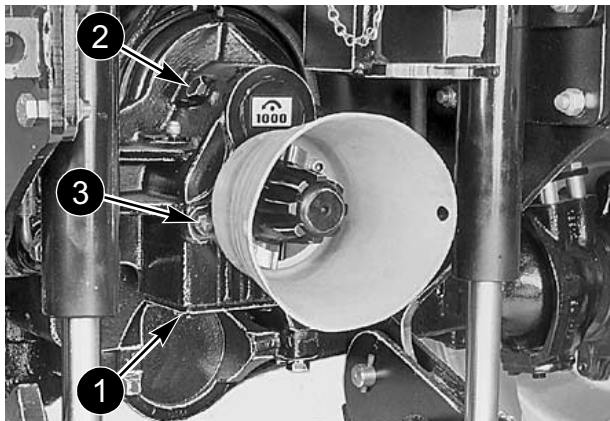
Auto Hitch Locking Latches



Locking Latches and Rear Pivot Points.

Change Front PTO Oil (If Equipped)

Kitchen Front PTO

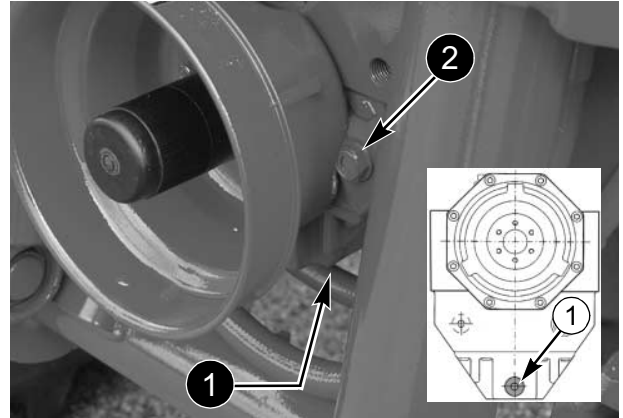


To change the power takeoff oil, put the tractor on level ground. Put a suitable container under the drain plug and remove plug (1) located under the housing.

For best results drain the oil when the oil is warm. Install the drain plug.

Add the recommended oil type through the fill plug hole (2) until the oil is level with the bottom edge of the level glass (3). Wait approximately 5 minutes. Check the oil level again and add oil as necessary. Install the fill plug.

Hydrac Front PTO



To change the power takeoff oil, put the tractor on level ground. Put a suitable container under the drain plug (1) and remove. (Drain plug located at the rear, underside of PTO Housing. See insert).

For best results drain the oil after operation when the oil is warm.

Install the drain plug.

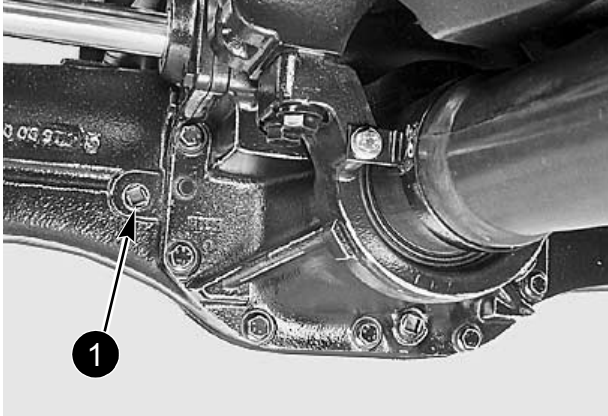
Remove fill/level plug (2) and add the recommended oil type through hole until the oil is level with the bottom edge of the hole. Wait approximately 5 minutes. Check the oil level again and add oil as necessary. Install the fill/level plug.

IMPORTANT: Dispose of oil in accordance with local regulations. DO NOT DRAIN THE OIL ON THE GROUND OR INTO A DRAIN. Be responsible for the environment.

ROUTINE SERVICING

250 HOUR SERVICE

Check Differential Oil Level



DP97N050

To check the differential oil level, put the tractor on level ground. Remove the fill/level plug (1).

The oil must be level with the bottom edge of the hole. Add the recommended oil type to raise the oil to the correct level if required. Install the plug and tighten.

Check Planetary Oil Level



DP97E394

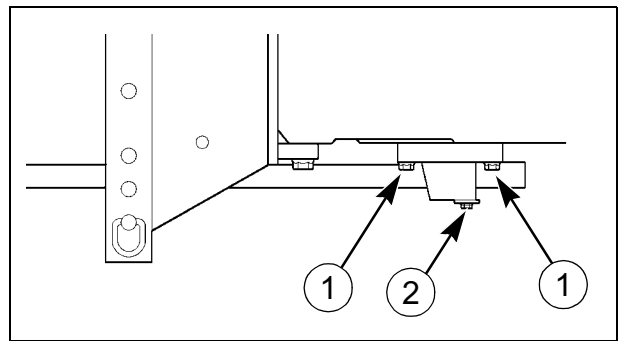
To check the planetary oil level, park the tractor on level ground.

Turn the wheel hub until the plug (2) is in the 3 or 9 o'clock position. Remove the plug and check the oil level. The oil must be level with the bottom of the plug hole, add the recommended oil type to the correct level if required. Install the plug and tighten.

Check Drawbar Support Bracket Bolts Torque

Check the drawbar support bracket bolt torque after every 250 hours of operation.

1. Tighten bolts (1) to a torque of 135 to 152 Nm (100 to 112 lb ft).
2. Tighten bolt (2) to a torque of 45 to 50 Nm (33 to 37 lb ft).



DI97F225

Grease Trailer Hitch Slide Rails and Hitch Coupling Operating Parts.

1. Every 250 hours of operation, the hitch should be thoroughly cleaned and all moving parts, including the inner slide rails, should be greased to protect from corrosion.
2. Make sure that all moving parts move freely and operate correctly.

NOTE: In extreme operating conditions it may be necessary to clean and grease the hitch more frequently to ensure correct operation.

IMPORTANT: The hitch clevis and the pivot pin are sufficiently greased by the factory to ensure correct operation for a long period of time. However, under severe operating conditions, it may be necessary to grease these points more often. **If necessary, this should ONLY be carried out by your Dealer.**

ROUTINE SERVICING

250 HOUR SERVICE

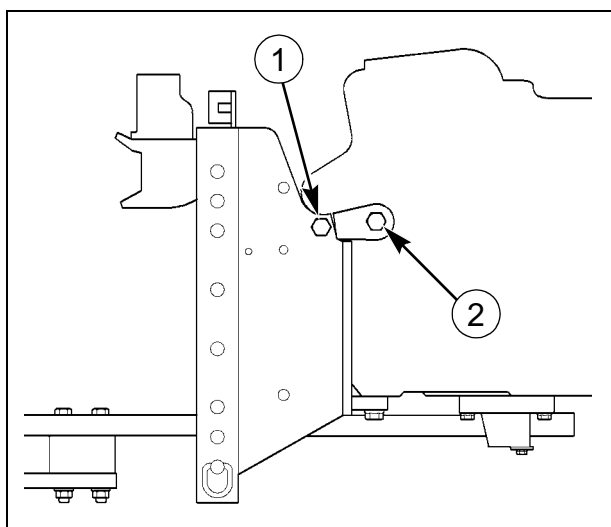
Check the Torque of the Trailer Hitch Bolts (If Equipped)

Check the torque of all the retaining bolts for ALL types of hitches at pre-delivery and every 250 hours of operation.

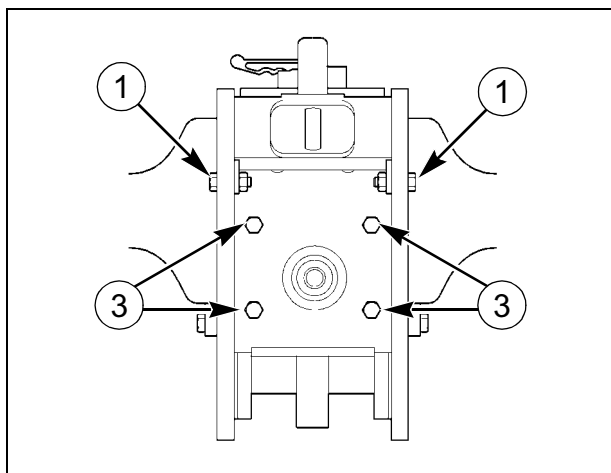
Tighten bolts (1) to a torque of 405 to 460 Nm (300 to 340 lb ft).

Tighten bolts (2) to a torque of 360 to 405 Nm (266 to 300 lb ft).

Tighten bolts (3) to a torque of 230 to 260 Nm (169 to 191 ft).



DI97F224



DI97F225

Batteries

Check the electrolyte level in each cell if your tractor is equipped with a Low Maintenance battery.



WARNING: BATTERY ACID CAUSES SEVERE BURNS. Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing. Antidote: **EXTERNAL** - Flush with water. **INTERNAL** - Drink large quantities of water or milk. **DO NOT** induce vomiting. Seek medical attention immediately. **EYES** - Flush with water for 15 minutes and get medical attention immediately. **BATTERIES PRODUCE EXPLOSIVE GASES.** Keep sparks, flame and cigarettes away. Ventilate when charging or using in enclosed space. Always shield eyes when working near batteries. **KEEP OUT OF REACH OF CHILDREN.**

Check Electrolyte Level

STEP 1



DR98D199

Remove the battery box lid screws, front and rear, then lift the lid clear.

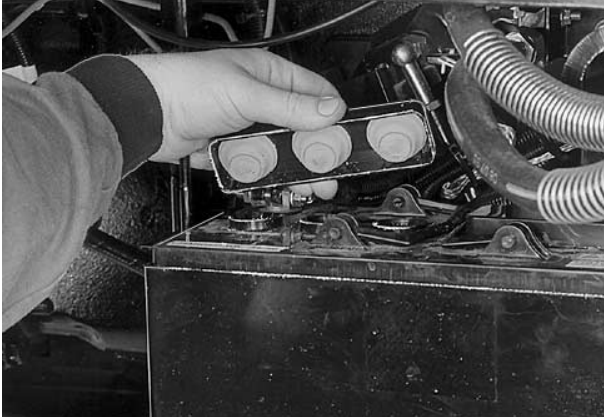
NOTE: The steps and tool box (If Equipped) have been removed for photographic purposes only.

Continued

ROUTINE SERVICING

250 HOUR SERVICE

STEP 2



DP97E445

Remove cell cover plates carefully.

Add distilled water to just cover the top of the separators. **DO NOT OVER FILL.** Do not use water which contains minerals. The level should be 3 to 6 mm (0.12 to 0.24 inch) below vent well.

When distilled water is added at ambient temperatures below 0°C (32°F) the batteries must be charged immediately to mix the water and electrolyte or the water will freeze, because the water will stay on top of the electrolyte.

Battery Cables and Terminals

The battery terminals must be kept clean and tight. Remove all corrosion with a wire brush, then wash with a weak solution of baking soda or ammonia. Put some petroleum jelly or light grease on terminals to prevent more corrosion.

Check Drive Belts Tension

Check the tension of ALL drive belts, on the longest run of the belt (1), every 50 hours during the first 100 hours of operation until constant, then every 250 hours of operation.

The tension is correct when the belt deflects 10 mm (0.5 inch) on the longest run of the belt with a thumb pressure of 4.5 kgf (10 lbf) applied.

Check the belt for cuts and wear. Replace as necessary.

ROUTINE SERVICING

250/500* HOUR SERVICE

Change Engine Oil and Filter

***NOTE:** On early production tractors (with engine serial numbers starting AQ or AS) the engine oil and filter change interval is 250 hours. **HOWEVER** on later production tractors (with engine serial numbers starting RE or RG) the service interval increases to 500 hours.

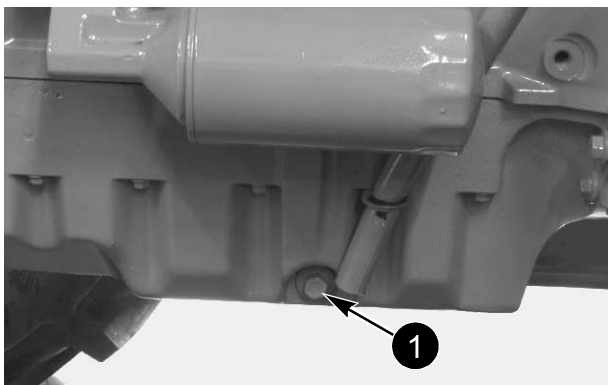
To change the engine oil, put the tractor on level ground and stop the engine.

NOTE: For best results change the oil when the engine is warm.



WARNING; Avoid contact with hot oil. Do not change a hot filter due to risk of burning skin on hands, wait until temperature is below 50°C (122°F).

STEP 1



MD03K003

Put a suitable size container (see page 170 for engine capacity) under the drain plug (1).

Remove the drain plug and drain the oil. Take care of hot oil when draining.

IMPORTANT: Dispose of oil and filters in accordance with local regulations. **DO NOT** drain the oil on the ground, into a drain, or put into a container that can leak. Be responsible for the environment.

STEP 2



MD03K004

Using a strap wrench, turn the oil filter counterclockwise to remove.

STEP 3



MD03K005

Apply clean oil to the gasket on the new filters.

Install the filters. Turn the filters clockwise until the gasket comes in contact with the filter head. Tighten the filters an additional one half turn by hand.

IMPORTANT: Only use a McCormick approved oil filter, these filters have been specifically designed to provide superior engine protection.

IMPORTANT: DO NOT use a filter wrench to install the oil filter or you can cause damage to the gasket and filter.

STEP 4

Install a new seal on the drain plug (1).

Install the drain plug in the crankcase and tighten.

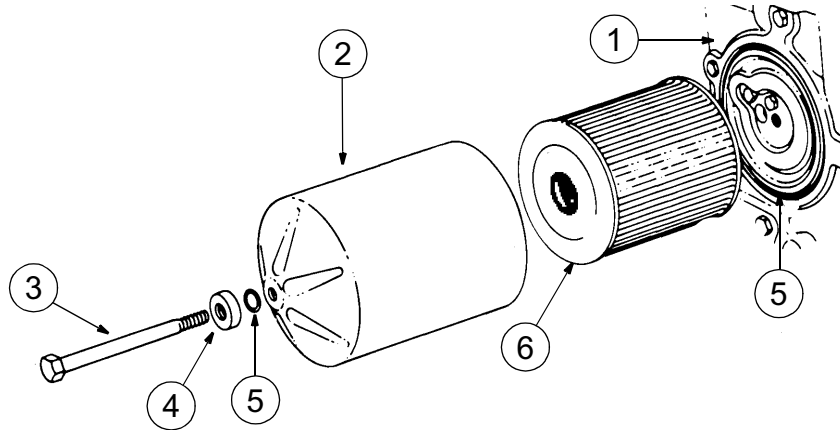
Fill with the correct grade of engine oil, to the correct level, see engine oil selection.

ROUTINE SERVICING

500 HOUR SERVICE

NOTE: Complete the items in the 10 hour (or daily), 50, 100 and 250 hour services plus the following. On later production tractors, with engine serial numbers starting RE or RG the engine oil and filter change interval is 250 hours, as described on page 190.

Change Transmission/Hydraulic Oil Filter



MS02E059

- | | |
|--------------------------|-------------------|
| 1. MULTI CONTROL VALVE | 4. WASHER |
| 2. FILTER HOUSING | 5. "O" RING SEAL |
| 3. FILTER RETAINING BOLT | 6. FILTER ELEMENT |

See page 200 if the transmission oil is to be changed.

STEP 1

Park the machine on hard level ground, apply the park brake and stop the engine.

STEP 2

Place a container under the Multi- Control Valve (1).

STEP 3

Remove the retaining bolt (4) and filter housing (3).

STEP 4

Remove and discard the old filter element (7) and "o" rings (6).

IMPORTANT: Dispose of used oil and filters in accordance with local regulations. Be responsible for the environment.

STEP 5

Install a new filter element.

IMPORTANT: Only use a McCormick approved hydraulic oil filter, these filters have been specifically designed to provide superior transmission/hydraulic system protection.

STEP 6

Install the assembly with new "o" rings onto the Hydraulic System Filter Manifold. Tighten the retaining bolt to 16 to 21 Nm (12 to 16 lb ft). DO NOT over tighten.

STEP 7

Operate the hydraulic system and steering system several times.

STEP 8

Check the transmission oil level.

STEP 9

Start the engine. Check for oil leaks around the drain plugs and oil filter and the correct operation of all systems.

ROUTINE SERVICING

500 HOUR SERVICE

Change Fuel Filter

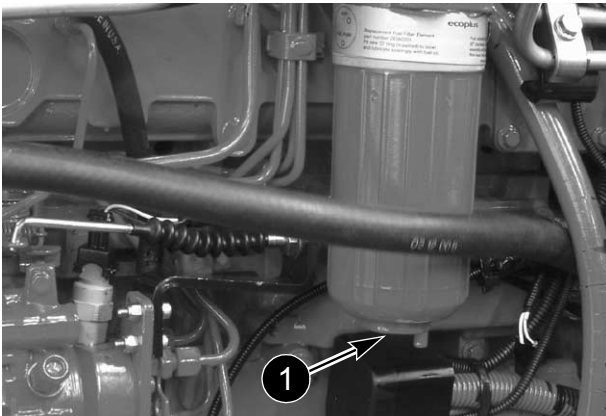


WARNING: Engine fuel is flammable and can cause a fire or an explosion. DO NOT fill the fuel tank or service the fuel system near an naked flame, welding, burning cigars, cigarettes etc.

STEP 1

Clean the filter head, filter and engine area next to the filter before removing the filter.

STEP 2



MD03K006

Loosen the drain plug (1) on the bottom of the filter to drain any water.

STEP 3



MD03K007

Use a filter wrench to remove the filter.

IMPORTANT: Dispose of filter in accordance with local regulations. DO NOT drain fuel onto the ground, into a drain or into a container that can leak. Be responsible for the environment.

STEP 4



MD03K008

Put clean oil or grease on the filter gasket of the new filter before installing.

Install the filter by hand. Turn the filter until the gasket contacts the filter head then turn a further 1/2 turn.

IMPORTANT: DO NOT fill the new filter with fuel before installing.

IMPORTANT: Only use a McCormick approved fuel filter, these filters have been specifically designed to provide superior engine protection.

STEP 5

Fill the fuel tank and remove air from the fuel system. See Fuel System Air Removal on page 192.

IMPORTANT: DO NOT crank the engine before removing all the air from the fuel system or the fuel injection pump can be damaged.

ROUTINE SERVICING

500 HOUR SERVICE

Remove Air From Fuel System

Air can enter the fuel system in the following situations:

- A. If the fuel tank becomes empty or is low on fuel.
- B. After fuel system parts have been removed for service or repairs.
- C. If the tractor has been in storage for a long period of time.

IMPORTANT: *DO NOT* crank the engine before removing all the air from the fuel system or the fuel injection pump can be damaged.

On **later production tractors (engine serial numbers starting RE or RG)** no fuel system priming should be necessary as there is an electric transfer pump which automatically operates and is controlled by the electronic control module.

Turn the keyswitch to the ON position, but do NOT start the engine. The electric transfer pump will run and purge air from the system. Keep the key in this position for approximately 60 seconds. After 60 seconds start the engine and check for leaks.

On **early production tractors (engine serial numbers starting AQ or AS)** use the following procedure to remove air from the fuel system.

STEP 1

Make sure there is fuel in the tank, check the gauge.

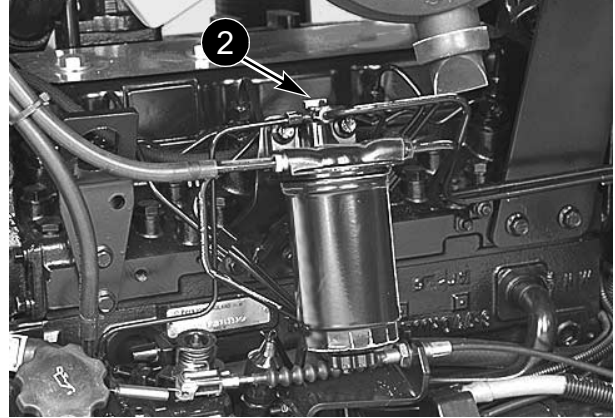
STEP 2



DP96J332

Turn the key switch to ON to energize the cut off solenoid.

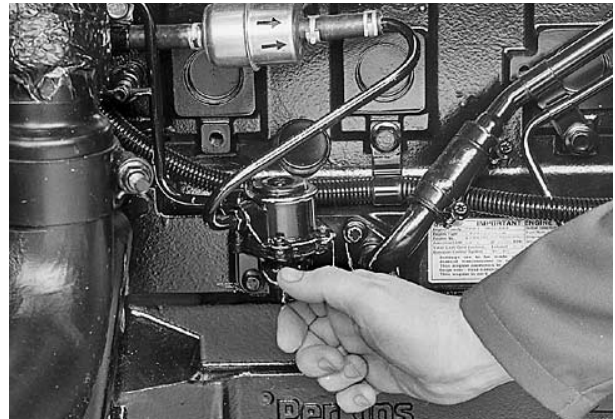
STEP 3



DK98A054

Loosen the banjo connection bolt (2) on top of the fuel filter.

STEP 4



MD01H054

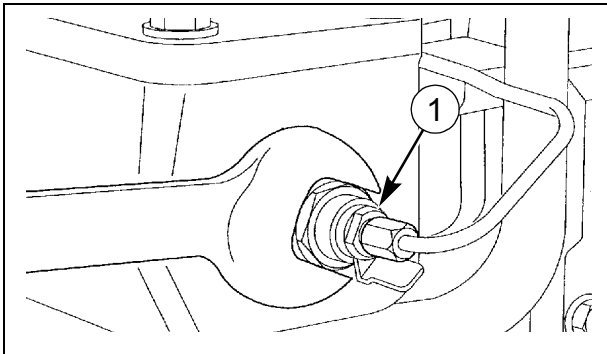
Operate the hand primer pump to fill the fuel filter. Tighten the air screw when fuel with no air bubbles flows from the screw.

NOTE: *If the primer pump cannot be activated, turn the engine crankshaft a small amount.*

ROUTINE SERVICING

500 HOUR SERVICE

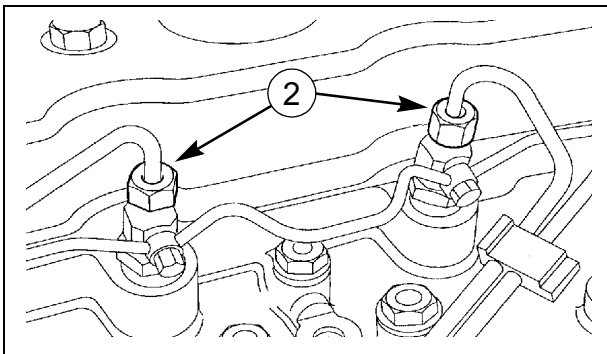
STEP 5



DS97E427

If equipped with thermostart, loosen the pipe union (1) at the cold starting aid connection on the intake manifold. Operate the hand primer pump until air free fuel (no bubbles) flows from the union. Tighten the union.

STEP 6



DS97E428

Loosen two of the injector pipes (2) at the injectors. Operate the starter motor until air free fuel flows. Tighten the injector pipes (do not over tighten).

IMPORTANT: *DO NOT* operate the starter motor for long periods or you could cause damage to starter motor, battery and fuel injection pump.

STEP 7

Start the engine and check for fuel leaks around the filter, the fuel lines and fittings.

If the engine does not run correctly, repeat the air removal procedure.

IMPORTANT: *Run the engine at low idle for a minimum of two minutes after removing air, to prevent any damage to the fuel injection system.*



WARNING: *Never start the engine in a closed building. Proper ventilation is required under all circumstances.*

Check Function of the Operator Presence Switch (XtraShift Tractors ONLY)

Check the switch for correct function every 500 hours of operation or at least once annually. When doing the following checks, do so in a clear open area with no other persons or objects near the tractor:

STEP 1

While sitting on the operator's seat, with the engine running at low idle speed, and the F-N-R lever in NEUTRAL, put the transmission into 1st range and release the clutch pedal. Stand up out of the operator's seat while holding onto the steering wheel and move the F-N-R lever from NEUTRAL to either FORWARD or REVERSE. The Neutral indicator "N" light will illuminate. The tractor **should not move**. If the tractor moves under power, see your dealer for repair.

STEP 2

While sitting on the operator's seat, with the engine running at low idle speed, put the F-N-R lever in FORWARD, the transmission in 1st range and release the clutch pedal to start the tractor moving. Stand up out of the operator's seat while holding onto the steering wheel, and move the F-N-R lever out of the FORWARD position into the REVERSE position. The Neutral indicator "N" light should illuminate. The tractor **should stop** (default to Neutral). If the tractor does not default to Neutral, see your dealer immediately for repair.

IMPORTANT: *If the operator presence switch circuit is bypassed, the electronic system will sense the change and the master warning lamp will illuminate.*

ROUTINE SERVICING

500 HOUR SERVICE

Check/Adjust Auto Hitch (If Equipped)

As necessary or at least every 500 hours check the operation of the auto hitch and make sure the locking latches engage and the hitch is operating correctly.

STEP 1

Connect a loaded trailer to the auto hitch.

STEP 2

Raise the three point linkage to maximum height.

The locking latches should spring into the locked position when the hitch reaches maximum height.



WARNING: When checking the operation of the auto hitch, stay well clear of moving parts or injury can result.



WARNING: Never operate the engine in a closed building. Proper ventilation is required under all circumstances.

If the latches do not lock, adjust both lift rods equally, as follows:

STEP 3

Disconnect the loaded trailer.

STEP 4

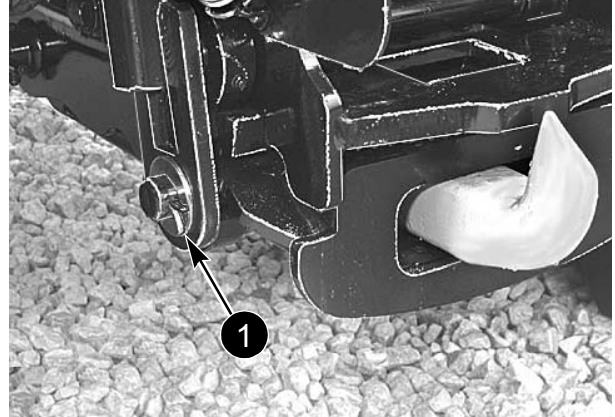
Raise the three point linkage to maximum height.

IMPORTANT: Make sure the lift arms are at maximum height before adjusting the lift rods.

STEP 5

Put all controls in the NEUTRAL position. Turn off the engine and remove the key.

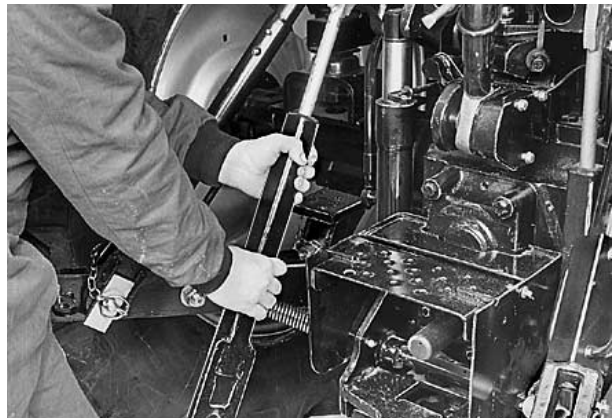
STEP 6



DD96H235

Remove the cotter pin (1) and disconnect the lift rod at the lower end.

STEP 7



DP97E199

Turn clockwise to shorten the lift rod and counterclockwise to lengthen the lift rod.

STEP 8

Connect the lift rod and apply the cotter pin.

STEP 9

Do steps 1 to 3 to check the lift rods have been adjusted correctly and the locking latches lock.

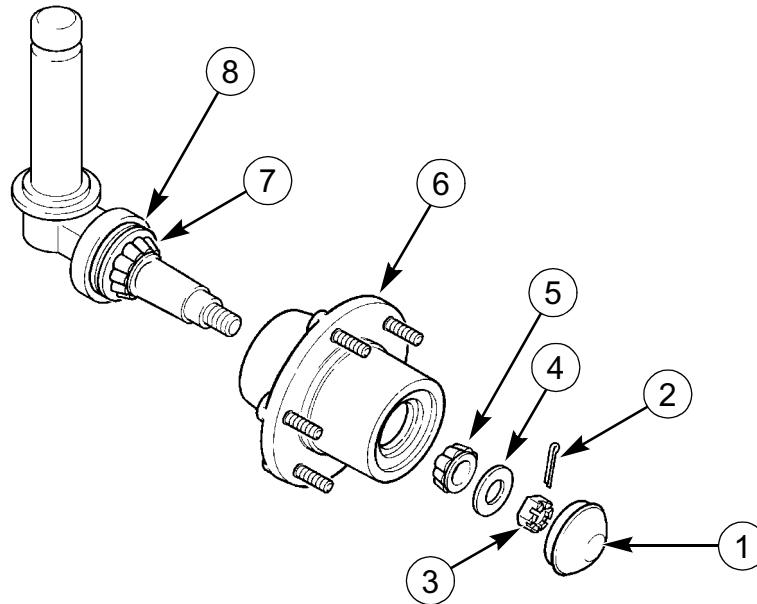
IMPORTANT: If the lift rods are over adjusted the tractor hydraulics will be under constant pressure causing damage to the hydraulic system.

ROUTINE SERVICING

1000 HOUR SERVICE

NOTE: Have your authorized McCormick dealer complete the 1000 Hour Service. The dealer engineer should complete the items in the 10 hour (or daily), 50, 100, 250 and 500 hour services plus the following.

Grease Two Wheel Drive Front Wheel Bearing



DS76C128

STEP 1

Park the machine on hard level ground, apply the park brake and stop the engine. Put blocks in front of and behind the rear wheels.

STEP 2



DP97C129

Loosen the wheel nuts. Use a hydraulic jack under the front axle, raise the tractor and remove the wheel. Support the tractor on a suitable axle stand.

STEP 3

Remove the hub cap (1), cotter pin (2) and nut (3).

STEP 4

Remove the washer (4), outer bearing (5) and front wheel hub assembly (6).

STEP 5

Clean and examine bearings (5 & 7) and dust seal (8) for damage, replace if necessary.

STEP 6

Fill the inner bearing (7) and dirt seal (8) with grease.

STEP 7

Part fill the hub (6) with grease and install.

Continued

ROUTINE SERVICING

1000 HOUR SERVICE

STEP 8

Fill the outer bearing (5) with grease and install the washer (4) and nut (3).

NOTE: A good quality Lithium based grease to NL.G.I. No.2 consistency is recommended for temperatures 0°C and above. Temperatures below 0°C use a good quality Lithium based grease to NL.G.I. No.1 consistency.

STEP 9

Tighten the nut (3) to a torque of 95 Nm while rotating the hub to seat the bearings.

STEP 10

Loosen the nut then tighten to a torque of 68 Nm (50 lb ft) for Adjustable Swept Back Axles or 34 Nm (25 lb ft) for Adjustable Straight Axles.

STEP 11

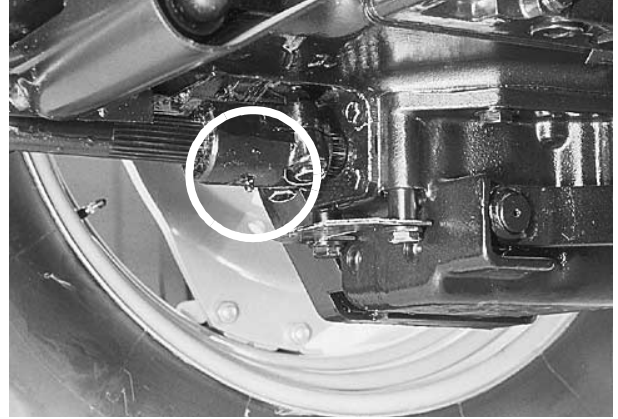
Install the cotter pin. The nut can be loosened 1/4 of a turn or more if necessary to fit the pin.

STEP 12

Install the hub cap. DO NOT fill the hub cap with grease unless operating in rice fields or other severe wet conditions.

Grease MFD Drive Coupling

NOTE: Use McCormick Multi-Purpose Lithium Grease.



The MFD Drive shaft shield must be removed to gain access to the grease point.

Engine Valves

Have your dealer check the engine valve clearances.

ROUTINE SERVICING

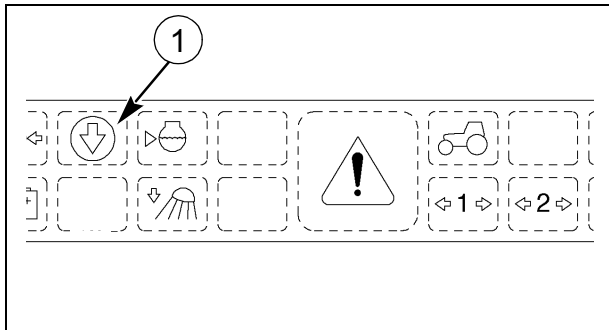
1000 HOUR SERVICE

Check Engine Air Induction System

Check all hoses for damage and that hose clamps are tight, correct torque
= 3.4 Nm (2.5 lb ft).

Filter Restriction Indicator Lamp

When the air filter restriction indicator lamp (1) on the instrument cluster illuminates, the primary (outer) filter element needs cleaning. Service the element after the days work is completed.



DS99G183

NOTE: If the air filter restriction indicator lamp illuminates after the primary filter has been serviced, check the following possible causes:

- A. Secondary (inner) element is dirty.
- B. Grille screen is dirty.

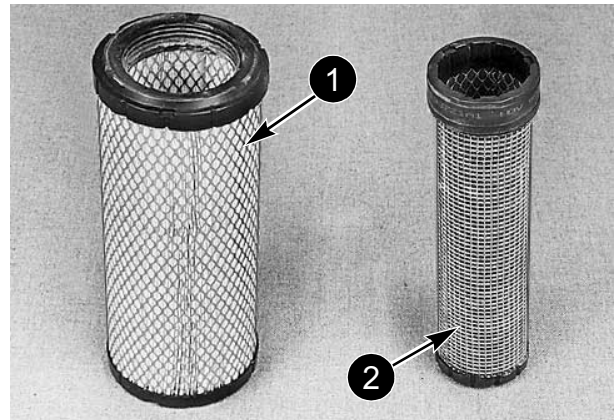
NOTE: If the air filter restriction indicator lamp still illuminates and the air induction system is clean, see your dealer to check the restriction indicator sending unit.

The primary (outer) filter is a high capacity filter designed to provide optimum protection to the engine.

The primary filter can be cleaned as required between filter changes. See the following pages for service procedure.

The secondary (inner) filter gives extra protection to the engine if there is damage to the primary filter.

IMPORTANT: THE SECONDARY (INNER) FILTER MUST NOT BE CLEANED. REPLACE THE FILTER IF DAMAGED OR DIRTY, OR AT THE THIRD CLEANING OF THE PRIMARY FILTER.



DP97C090

- 1. PRIMARY (OUTER) FILTER ELEMENT
- 2. SECONDARY (INNER) FILTER ELEMENT

IMPORTANT: Only use McCormick approved air filters, these filters have been specifically designed to provide superior engine protection.

ROUTINE SERVICING

1000 HOUR SERVICE

Service Engine Air Filter

STEP 1

Pull the yellow locking tab (1) out, turn the cover (2) counterclockwise and remove.

STEP 2

Pull out the primary (outer) filter element (3).

STEP 3

Pull out the secondary (inner) filter element (4), if it is to be changed.

IMPORTANT: *DO NOT remove the secondary (inner) element unless it is to be changed.*

STEP 4

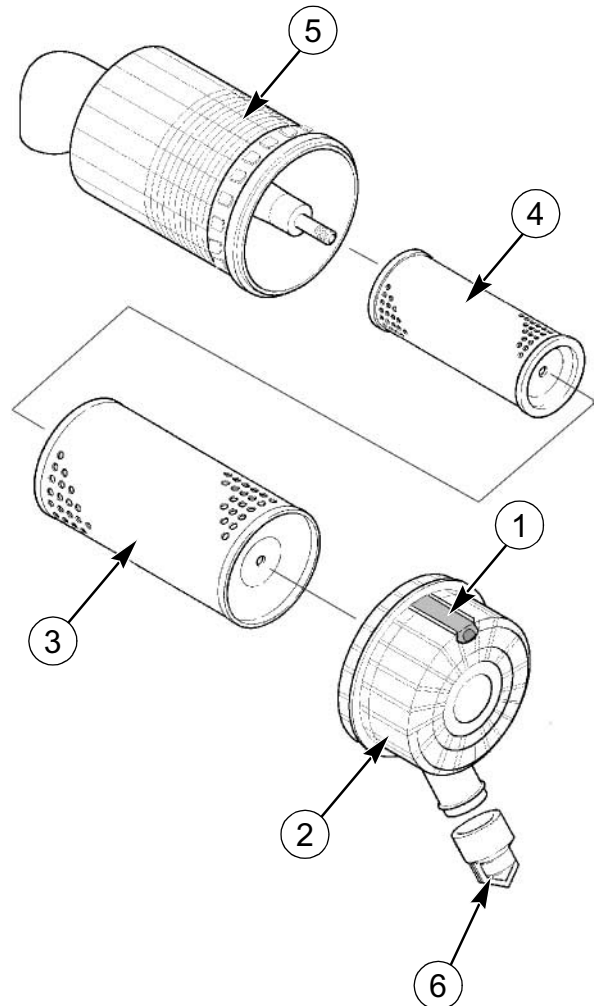
Clean the inside of the filter body (5).

IMPORTANT: *Dispose of filters correctly in accordance with local regulations. Be responsible for the environment.*

STEP 5

Install a new secondary (inner) element (4), if necessary or after the third cleaning of the primary filter (3). Apply talcum powder or similar to the inner seal face before installing the filter. Install with closed end outwards.

NOTE: *NEVER use a petroleum base lubricant on the seal area. Petroleum lubricant could "glue" the cover to the element seal and damage the element.*



MR01E009

ROUTINE SERVICING

1000 HOUR SERVICE

STEP 6



DP96J426

If most of the dirt is dry, clean the primary element with compressed air from the inside of the element to the outside.

Keep the air nozzle approximately 130 mm (5 inches) away from the element and move the nozzle up and down while turning the element.

IMPORTANT: The air pressure must not be more than 207 kPa, 2 bar (30 psi). Use an air hose with a safety ON/OFF control nozzle and always wear face protection.

STEP 7



DP96J427

To check the clean element for damage or holes, put a lamp inside the element and turn the element. Visually check the rubber gasket for damage. Check the metal cover and filter material for damage. Replace an element that is damaged.

IMPORTANT: Do not run the engine with the filters removed.

STEP 8

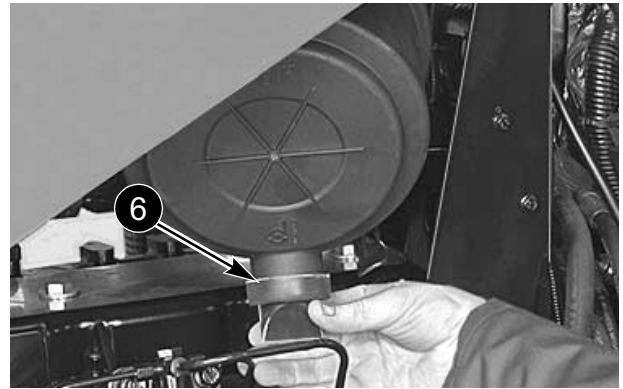
Before installing the primary (outer) element, apply talcum powder or similar to the inner seal face before installing the filter. Install with closed end outwards. Install the primary (outer) element, closed end outwards.

NOTE: NEVER use a petroleum base lubricant on the seal area. Petroleum lubricant could "glue" the cover to the element seal and damage the element.

STEP 9

Install the air cleaner cover, rotate clockwise and push the locking tab back into position to lock the cover in place.

STEP 7



DK98A049

Change the rubber dust valve (6), if equipped.

ROUTINE SERVICING

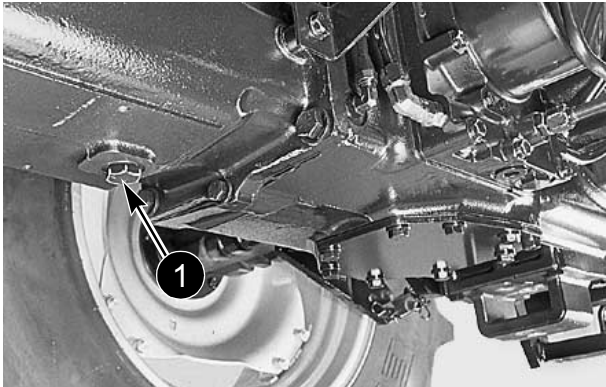
1000 HOUR SERVICE

Change Transmission/Hydraulic Oil

STEP 1

Put the tractor on hard level ground, apply the park brake and stop the engine.

STEP 2



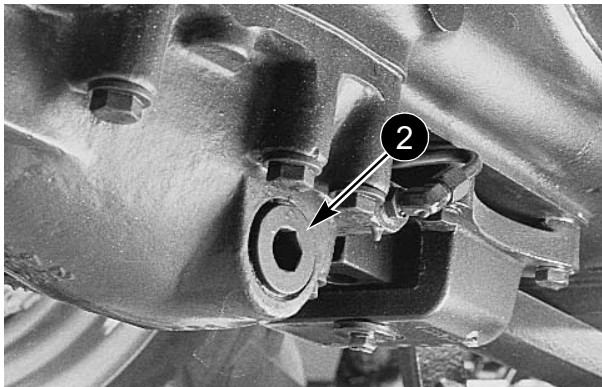
DP97C002

Remove the front drain plug.

The photograph above shows the front drain plug on a 2WD tractor.

On tractors equipped with MFD, the drive shaft shield must be removed to gain access to the front drain plug.

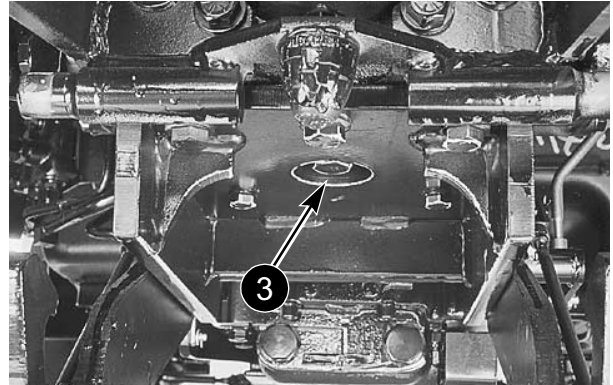
STEP 3



D11233

Remove the drain plug (2) from the MFD transfer gearbox (if equipped).

STEP 4



J02816

Remove the drain plug from the PTO housing.

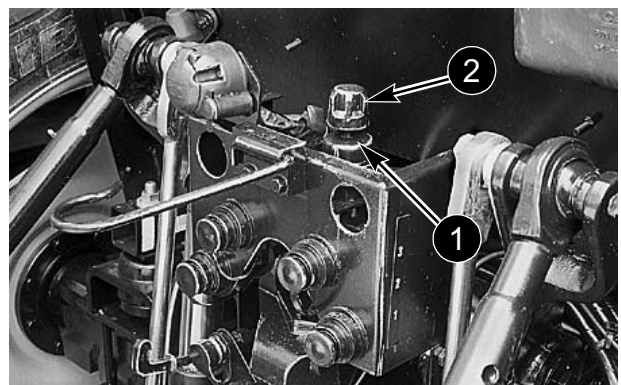
NOTE: The PTO housing drain plug (3) is covered by the auto hitch (which has to be lowered) or the drawbar, if equipped, (which has to be removed).

STEP 5

Install and tighten the drain plugs after the oil has drained.

IMPORTANT: Dispose of oil and filters in accordance with local regulations. DO NOT drain the oil on the ground, into a drain or into a container that can leak. Be responsible for the environment.

STEP 6



DP98D185

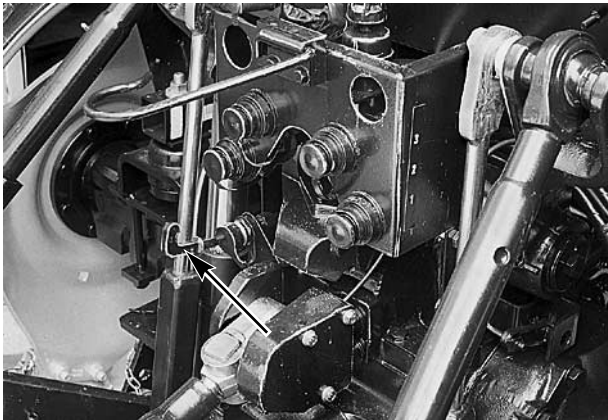
Remove the fill plug (1) and fill the transmission with the recommended oil to the correct level.

Install a new transmission housing breather (2).

ROUTINE SERVICING

1000 HOUR SERVICE

STEP 7



DP98D185

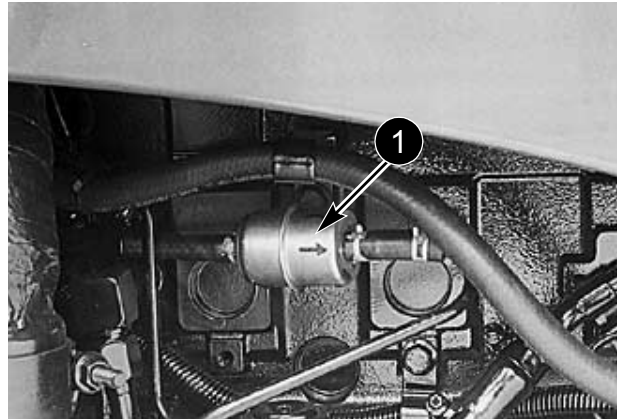
Check the oil Level.

IMPORTANT: *It is recommended to check the oil level prior to starting the engine. If the tractor has been running the transmission oil **MUST** be allowed to settle (the time will vary depending upon how long the tractor has been running, hot or cold oil etc.).*

Make sure the dipstick is completely in before checking the level.

If the oil level is below the FULL mark on the dipstick, add the necessary oil.

Change In-line Fuel Filter



DP97D187

Make a note of the direction of the arrow on the filter (1).

Loosen the filter hose clips and remove the filter.

Install the new filter, making sure the arrow on the filter is pointing in the correct direction.

ROUTINE SERVICING

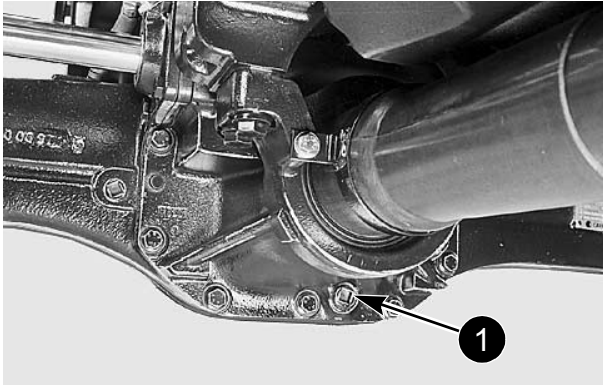
1000 HOUR SERVICE

Change Differential Oil

STEP 1

Put the tractor on level ground and put a suitable size container under the drain plug.

STEP 2



DP97N050

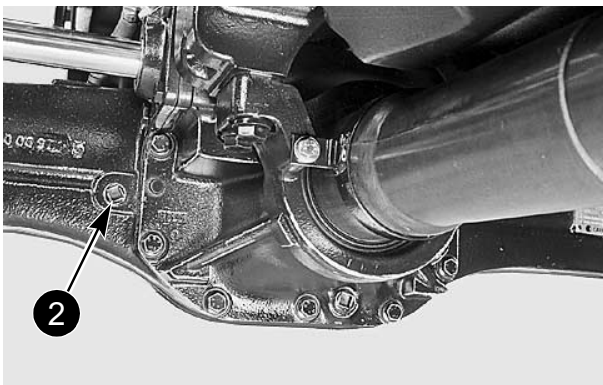
Remove the drain plug (1), located on the bottom of the axle housing at the rear, and drain the oil. For best results drain the oil when the oil is warm after operation.

IMPORTANT: Dispose of oil and filters in accordance with local regulations. DO NOT drain the oil on the ground, into a drain or put in a container that can leak. Be responsible for the environment.

STEP 3

Install the drain plug and tighten.

STEP 4



DP97N050

Remove the fill/level plug (2). Add the recommended oil type until the oil is level with the bottom edge of the hole. Wait approximately 5 minutes. Check the oil level again and add oil as necessary.

Install the fill/level plug and tighten.

Change MFD Planetaries Oil

STEP 1



DP97E395

Park the tractor on level ground and turn each hub until the plug (1) is at the bottom.

STEP 2

Put a suitable size container under the plug. Remove the plug. For best results drain the oil when the oil is warm (after operation).

STEP 3

After the oil has drained, turn each wheel hub until the plug is at the 3 or 9 o'clock position. Add the recommended oil type until the oil is level with the bottom edge of the plug hole. Wait approximately 5 minutes for the oil to settle, then check the oil level again and add oil if necessary.

STEP 4

Install the plug and tighten.

IMPORTANT: Dispose of oil and filters in accordance with local regulations. DO NOT drain the oil on the ground, into a drain or put in a container that can leak. Be responsible for the environment.

ROUTINE SERVICING

1000 HOUR SERVICE

Change Cab Air Intake Filter

IMPORTANT: Respiratory protection equipment and protective clothing appropriate to the environment that the filter has been in contact with **MUST** be used during the cleaning of the filter.

Deluxe Cab

STEP 1



DP97A075

Open the filter cover by pulling the front lower edge out.

STEP 2

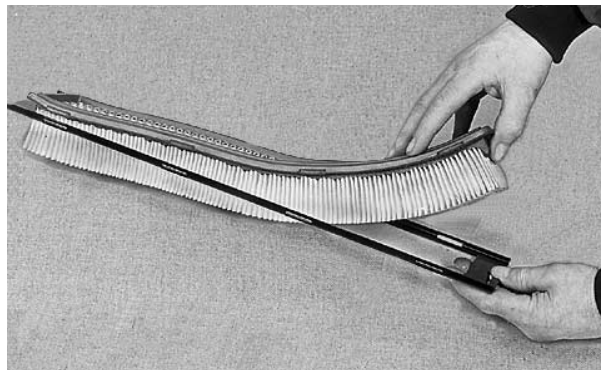


DP97A090

Push the catch down, see insert.

Remove the filter element assembly and clean the filter housing.

STEP 4



DP97A070

Remove the old element from the metal retainer.

IMPORTANT: The old element **MUST** be put into a sealed container and disposed of in accordance with local regulations. Be responsible for the environment.

STEP 5

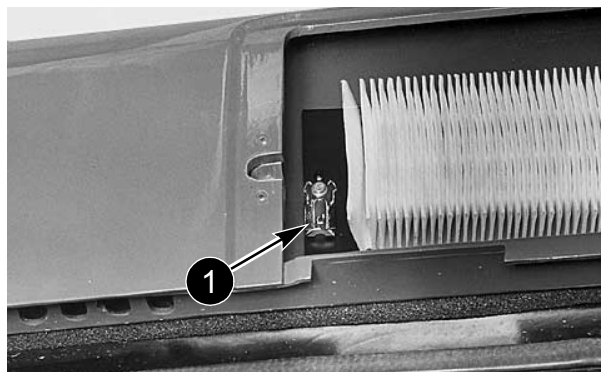


DP97A071

Install the new element into the retainer making sure the rubber surround is pressed firmly inside the retainer rim and the retaining lugs are located in the slots in the retainer.

NOTE: Replace the element with a genuine McCormick part.

STEP 6



DP96J438

Install the new filter assembly and push the catch (1) up. Close the cover.

ROUTINE SERVICING

1000 HOUR SERVICE

Change Cab Air Intake Filter (Cont'd)

IMPORTANT: Respiratory protection equipment and protective clothing appropriate to the environment that the filter has been in contact with **MUST** be used during the cleaning of the filter.

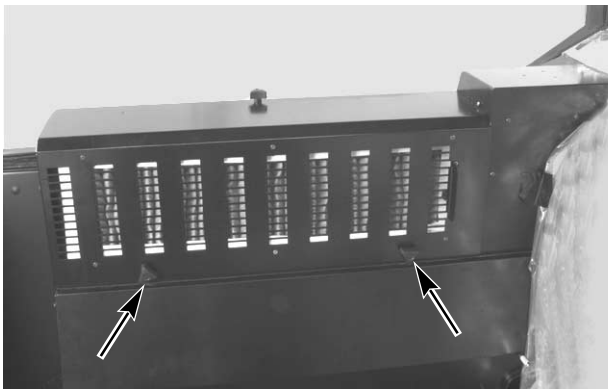
Low Profile Cab

STEP 1



DD97E258

LP CAB WITHOUT AIR CONDITIONING



MD02L140

LP CAB WITH AIR CONDITIONING

Loosen the retaining screws from the filter access cover and remove.

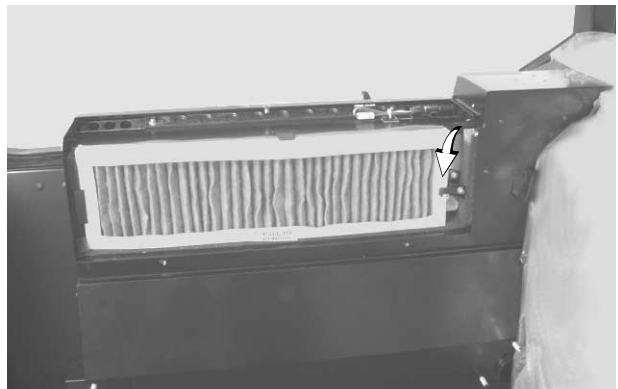
STEP 2



DD97E261

LP CAB WITHOUT AIR CONDITIONING

Slide the filter element out.



MD02L141

LP CAB WITH AIR CONDITIONING

Release the retaining catch and remove the filter element.

IMPORTANT: If at any time the tractor has been used for chemical spraying operations, remove the filter and access cover immediately from the cab. Take care not to deposit any dirt from the filter and access cover on the cab interior.

STEP 3

Clean the filter housing.

STEP 4

Install new filter element.

NOTE: Replace the element with a genuine McCormick part.

IMPORTANT: The old element **MUST** be put into a sealed container and disposed of in accordance with local regulations. Be responsible for the environment.

ROUTINE SERVICING

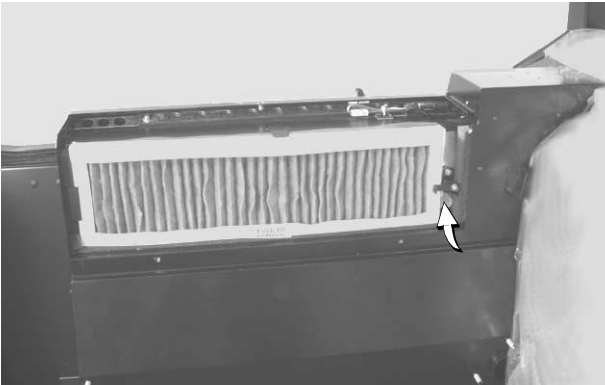
1000 HOUR SERVICE

STEP 5



DD97E261

LP CAB WITHOUT AIR CONDITIONING



MD02L141

LP CAB WITH AIR CONDITIONING

Install the clean filter element and secure. Replace the access cover and tighten the retaining screws.

Check Condition of Fuel Injectors

The fuel injectors must not be cleaned. New injectors must be fitted by your dealer if there is damage or a fault occurs as listed below:

- Engine will not start or is difficult to start.
- Not enough power.
- Engine misfires or runs erratically.
- High fuel consumption.
- Black exhaust smoke.
- Engine knocks or vibration.
- Excessive engine temperature.

ROUTINE SERVICING

2000 HOUR SERVICE

NOTE: Have your authorized **McCormick** dealer complete the 2000 Hour Service. The dealer engineer should complete the items in the 10 hour (or daily), 50, 100, 250 and 500 hour services and the items in the 1000 hour service plus the following.

Change Engine Coolant

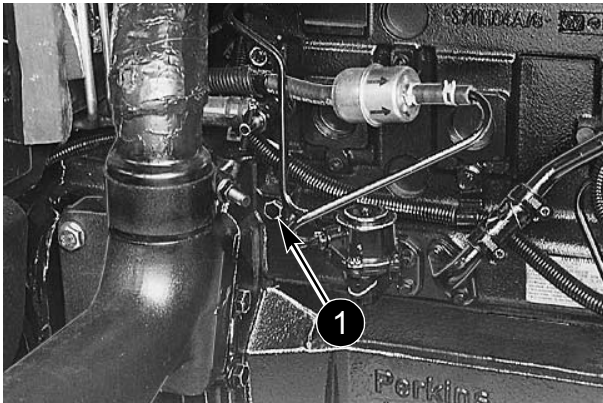
STEP 1

Remove the radiator cap slowly.



WARNING: Hot coolant can spray out if the coolant recovery reservoir cap or radiator cap is removed while system is hot. **DO NOT REMOVE RADIATOR CAP.** To remove the coolant recovery reservoir cap or radiator cap, let system cool, turn cap to first notch, then wait until all pressure is released. Scalding can result from fast removal of radiator cap.

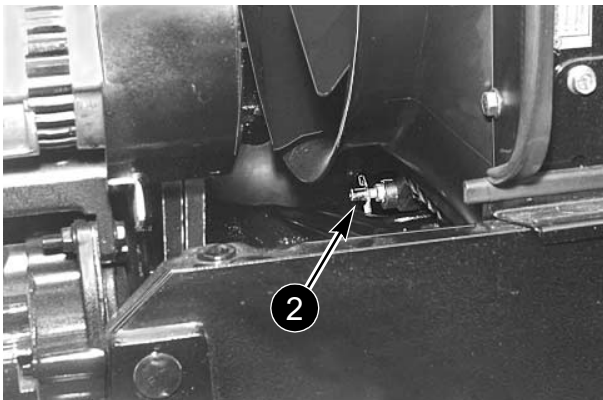
STEP 2



DP98J227

Put a suitable container under the engine block drain plug (1) and remove plug.

STEP 3



DP97A098

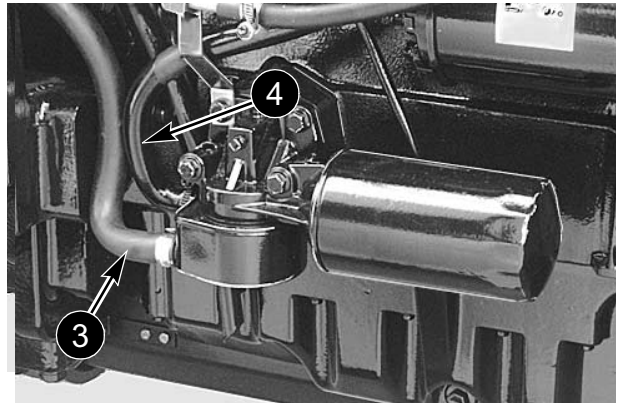
Put a hose on the radiator drain valve (2) and open valve. Drain coolant into a suitable container.

IMPORTANT: Dispose of drained coolant responsibly. **DO NOT** pour on the ground or into a drain. Be responsible for the environment.

STEP 4

Close the radiator drain valve (2) and install the drain plug (1) when the system is empty.

STEP 5 (Early Production Tractors ONLY)



DD98H125

Disconnect hoses (3) and (4) from the oil cooler and flush the oil cooler through the outlet connection (3) until clean water runs from the inlet (4).

Allow the water to pour into a suitable container.

IMPORTANT: Dispose of the containers contents responsibly. **DO NOT** pour on the ground or into a drain. Be responsible for the environment.

Connect hoses (3) and (4) and tighten fittings.

STEP 6

Use a good quality radiator cleaner and fill the system. Follow the instructions given with the radiator cleaner to clean the system.

ROUTINE SERVICING

2000 HOUR SERVICE

STEP 7

Remove the engine block drain plug and open the radiator drain valve. Flush the system with clean water to remove the radiator cleaner solution.

IMPORTANT: Allow cleaning solution to drain into suitable containers. *Dispose of the cleaning solution responsibly. DO NOT pour on the ground or into a drain. Be responsible for the environment.*

STEP 8

Inspect the hoses and fittings for damage and leaks.

STEP 9

Install the engine block drain plug, close radiator drain valve and remove drain hose.

STEP 10

Fill the cooling system with the coolant solution as specified below.

Start the engine and run at low idle for approximately 10 minutes.

Stop the engine and check the coolant level. Replenish as required.

Coolant Solution (Anti Freeze)

To prevent the coolant freezing in cold temperatures the cooling system is filled with an ethylene glycol/water coolant solution that has a low freezing point and a high boiling point.

IMPORTANT: *The heat generated by the diesel engine causes a natural change in the inhibitors in the coolant which results in loss of corrosion protection. The loss of the inhibitors may cause water pump cavitation and cylinder block erosion.*

Use only low silicate ethylene glycol coolant solution in the cooling system. Use a good quality, high boiling point, ethylene glycol that does not have any additives to stop leaks. The silicate content must not exceed 0.1 percent.

Do not use rust inhibitors that are not approved. It is possible that the rust inhibitors and ethylene glycol will not mix, and work against each other to decrease corrosion protection, form deposits in the cooling system and cause damage to the cooling system and the radiator.

Do not use a low boiling point, alcohol type coolant solution. Because the boiling point of alcohol is below the tractor minimum operating temperature, loss of coolant from evaporation will result.

IMPORTANT: *Always have a minimum of 33 percent ethylene glycol in the cooling system at all times and at all ambient temperature ranges. Never use a solution of more than 50 percent, unless the ambient temperature is below -37 degrees C (-34 degrees F). More than 50% ethylene glycol decreases heat transfer and will increase the engine surface temperature to more than normal.*

Prepare the coolant solution as follows:

- A. Use clean water (distilled or deionized preferred).
- B. Mix the correct ratio of ethylene glycol and water to suit the market requirements.
- C. Fill the radiator and coolant recovery reservoir using the following procedure.

Fuel System General Inspection

Every 2000 hours of operation see your Dealer for an inspection of the fuel system and fuel injection nozzles. Also check the engine for needed general service or tune-up.

To prevent dirt or water from reaching the injection parts and causing damage and decreased performance, use clean fuel, keep the fuel tank full, drain any water from the fuel primary filter at regular intervals and service the filters.

ROUTINE SERVICING

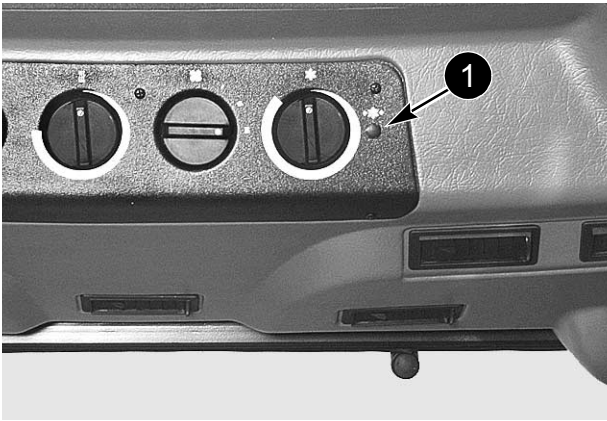
GENERAL MAINTENANCE

Air Conditioning System (If Equipped)



WARNING: *Never attempt to open the air conditioning system. Liquid refrigerant can cause severe and painful frostbite. Contact your dealer, who is experienced in servicing and handling of refrigerants.*

System Check



The cab air conditioner is equipped with a system to protect the compressor from high or low refrigerant pressures.

On Deluxe Cab tractors an indicator lamp is fitted to warn the operator. If the air conditioner indicator lamp (1) is illuminated, check the following possible causes.

- A. Cold ambient temperature (turn thermostat switch or blower switch off then back on to desired setting).
- B. Restricted condenser.
- C. Restricted evaporator.
- D. Low air flow (dirty filter or restriction).

See your dealer if problem continues.

Compressor

During cold weather if the air conditioner has not been used for at least 30 days, operate the air conditioner for a period of 10 to 15 minutes, at an engine speed of 1500 rpm. This will lubricate the seals to prevent them becoming brittle and help prevent the loss of refrigerant from the system.

IMPORTANT: *This tractor is equipped with HFC-134a refrigerant, which will not destroy the ozone layer. Never recharge the air conditioning system with refrigerant other than HFC-134a as this will result in loss of cooling and permanent damage to all air conditioning components.*

Hoses and Wiring

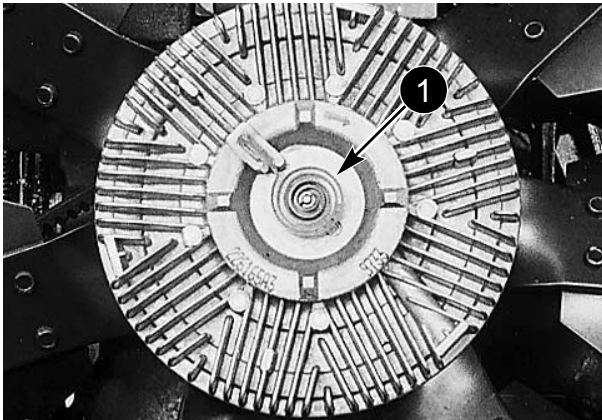
Check all hoses for damage and leakage. Check the hose clamps are tight,
correct torque = 3.4 Nm (2.5 lb ft).

Check all wiring for damage. If damage is found see your Dealer for replacement of parts or refrigerant.

ROUTINE SERVICING

GENERAL MAINTENANCE

Viscous Fan Drive



DP98E262

During cleaning and maintenance of the engine and radiator, be careful not to cause damage to the viscous fan drive.

DO NOT use steam or high pressure jets to clean the drive.

DO NOT restrict the fan blade rotation during engine operation.

DO NOT remove the bi-metal coil (1) on the front of the drive.

Check the fan and drive for external damage or erratic operation. See your dealer if service is required.

Clean the Operators Seat

Before removing stains, use a vacuum cleaner to remove loose dirt.

Find what type and how old the stains are. Some stains can be removed with water or soap solution.

CLEANER FLUID - This type of cleaner can be used for grease or oil stains, follow manufactures instructions.

FOAM CLEANER: This type of cleaner is good for all stains, follow manufactures instructions.



WARNING: Never use petroleum spirit, naphtha or any other volatile material for any cleaning purposes. These materials may be toxic and/or flammable.

NOTE: Do not make the material wet or clean with a hard brush. Clean with a damp cloth only. Immediately after the material is clean, dry the material with dry cloth.

Seat Belt Inspection and Maintenance (If Equipped)



WARNING: Securely fasten your seat belt. Your tractor is equipped with a ROPS cab or frame for your protection. The seat belt can help insure your safety if it is used and maintained. Never wear a seat belt loosely or with slack in the belt system. Never wear the belt in a twisted condition or pinched between the seat structural members.

- Keep sharp edges and items that can cause damage, away from the belt.
- From time to time, check belt, buckles and mounting bolts for damage.
- Replace all parts that are worn or damaged.
- Replace a belt that has cuts that can weaken the belt.
- Check that the bolts are tight on the seat bracket.
- Keep seat belt clean and dry.
- Clean belt only with a soap solution and warm water.
- Do not use bleach or dye on the belt because this can make the belt weak.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

ELECTRICS

BATTERIES



WARNING: Battery explosion and/or damage to electrical components can result from improper connection of booster batteries or charger. Connect positive to positive and negative to negative. Externally, battery acid can cause burns and blindness, and taken internally is poison.

Keep the batteries in good operating condition as follows:

- Keep the batteries clean and dry, and the vents clear.
- Make sure the batteries are fastened securely in position. Do not over tighten the clamps.
- **LOW MAINTENANCE BATTERIES** - Add distilled water as needed to keep separators under water. Before you add water, check each cell with a hydrometer. The specific gravity in each cell must indicate a full charge of 1.270 SG.

NOTE: Cold temperatures of approximately -18°C (0°F) will cause freezing of a battery with specific gravity of 1.175 SG.

Keep the batteries fully charged. Charge at the lowest rate possible to reduce gas formation. If a battery will not keep a charge, install a new battery that has the specifications given in 'Specifications' section.



WARNING: Do not charge a frozen battery, it can explode, causing serious injury.

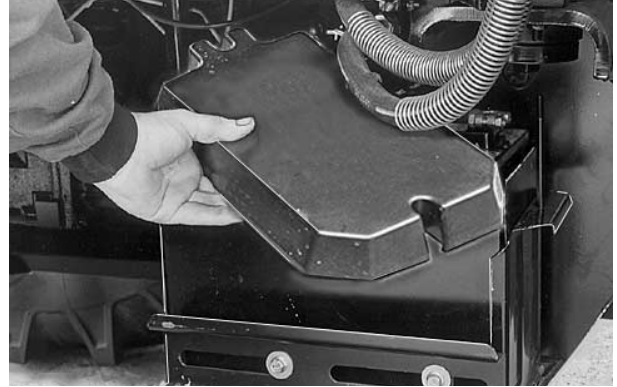
When Batteries Are Not In Use

When the tractor is not in use, the batteries will need a charge every six weeks to keep the specific gravity at or above 1.270 SG. Storage batteries not in use will slowly discharge. A battery that has discharged can freeze at low ambient temperatures and cause damage to the battery and tractor.

NOTE: Discarding old batteries can cause an environmental liability. Check with your local environmental or recycling center or your dealer for the correct disposal information.

Removal and Installation of Batteries

STEP 1

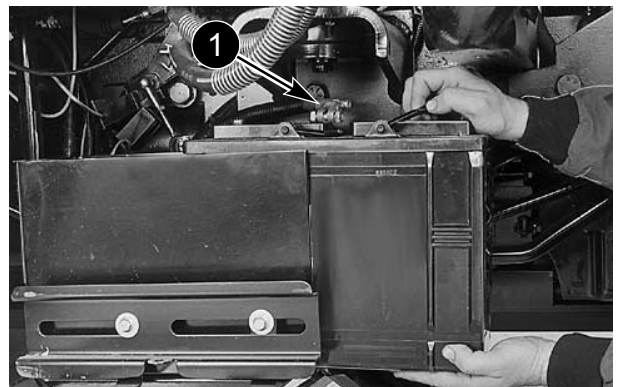


DP98D199

Remove the battery box lid screws, front and rear, then remove the lid.

NOTE: The steps and tool box (If Equipped) have been removed for photographic purposes only.

STEP 2



DP97E447

Lower the front panel to gain better access.

To remove battery, disconnect the battery cables (1) and slide the battery out. When the battery is installed, make sure the cables are connected to the correct terminals. The electrical system is 12 volt, **negative ground**.

IMPORTANT: Always disconnect the ground cable first and connect the ground cable last to prevent sparks. Do not start or operate the engine with the electrical system not completely connected.

NOTE: The batteries can be disconnected without affecting any programmed or stored information in the digital instrument cluster. When the batteries are connected again the instrument cluster will remember and use all stored information such as Tire Size Code Number, etc.

ELECTRICS

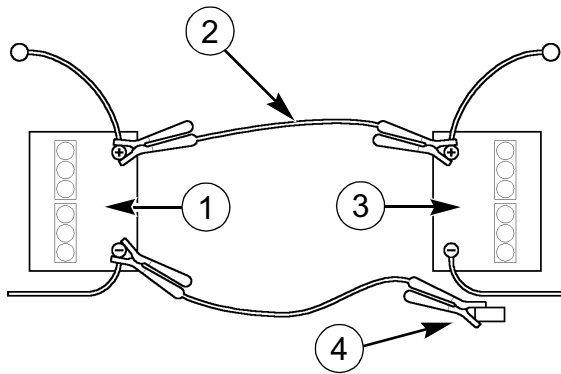
Connecting a Booster Battery

IMPORTANT: When connecting a booster battery to the tractor battery(s), make sure the batteries are the same voltage (i.e. 12 Volt) and the electrolyte is at the correct level. DO NOT connect auxiliary battery cables across the terminals of the starter. Always start the engine from the operator's seat.



WARNING: Always connect the ground cable last and disconnect the ground cable first so you do not cause a spark at the battery. A spark can cause a battery explosion and cause injury.

Procedure



DI98J017

- | | |
|--------------------|--------------------|
| 1. BOOSTER BATTERY | 3. TRACTOR BATTERY |
| 2. POSITIVE CABLE | 4. NEGATIVE CABLE |

STEP 1

Position the machine with the booster battery next to the tractor so that the booster cables can be connected easily. MAKE SURE THE MACHINES ARE NOT TOUCHING.

STEP 2

Turn off all electrical components on both machines.

STEP 3

Connect the booster battery positive (+) to the tractor battery positive (+) and the negative (-) to a good ground on the tractor frame, not to the tractor battery terminal.

STEP 4

Start the engine of the machine with the booster battery and run the engine for approximately 2 minutes.

STEP 5

Start the tractor engine. See correct procedure in this manual.

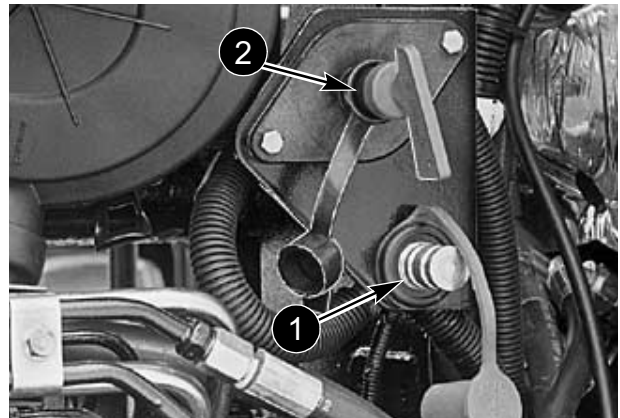
STEP 6

When the tractor engine has started, disconnect the negative booster cable from the tractor frame and the booster battery negative first, then the positive cable from the tractor battery and the booster battery.

Auxiliary Battery Terminal (If Equipped)

Remove the red protection cap (1), from the positive terminal (2); and connect the positive (red) cable clamp from the auxiliary battery to the terminal.

Connect the negative (black) cable clamp from the auxiliary battery to a good ground on the tractor frame.



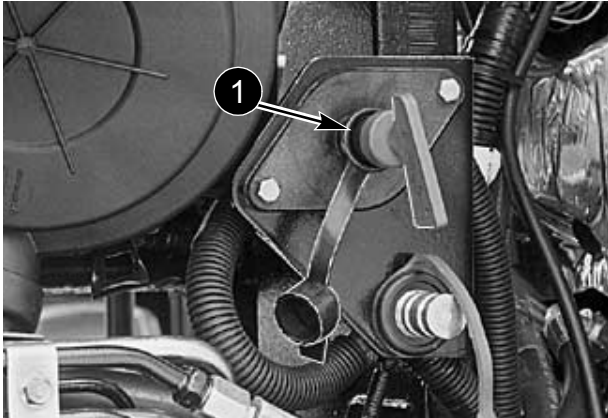
DP99G158

Install the red protection cap on the positive terminal after the starting operation has been completed.

ELECTRICS

Battery System Servicing

Follow these general rules to prevent damage to the electrical system.



DP99G158

- Before working on the electrical system, disconnect the battery cables, ground cable first, or turn off the master switch (1) (if equipped) and remove the key.
 - Do not make a reverse battery connection.
 - When you use an auxiliary battery for starting, connect negative (-) to negative (-) and positive (+) to positive (+). Use the auxiliary battery connections provided on the tractor (if equipped). See Auxiliary Battery Connections in this manual.
 - When charging the tractor batteries, use the auxiliary battery connections on the tractor (if equipped). Do not attach directly to the battery terminals. Do not use a battery charging machine for starting the tractor.
 - Never operate the tractor when the battery cables are disconnected.
 - When you carry out maintenance on the engine, cover the alternator to prevent foreign material from entering.
- If electric welding is necessary, do the following to protect the electrical components:
 - A. disconnect the battery(s) or turn off the master switch (if equipped).
 - B. disconnect the instrument cluster harness.
 - C. disconnect the powershift controller (if equipped).
 - D. disconnect the alternator.

Put the welding equipment ground cable as close as you can to the weld area.

Do not put the ground cable where the current can flow through bearings or along channels with wiring harnesses.

ELECTRICS

BULB AND LAMP REPLACEMENT

	Type/Voltage/Watts	Part No.
Head Lamps Bulb	H4, 12 V-60/55 W	91967C1
Work Lamps.....	12V-55W	1312210C2
Side Lamps.....	12V-5W	1094368R1
Direction Turn Lamps.....	12V-21W	3131227R1
Stop and Tail Lamps	12V-21/5W	1094366R1
Number Plate Lamp	12V-10W	E35556
Cab Interior Lamp Bulb	12V-10W	3050958R1
Side Console Lamp Bulb	168 (12V-3W).....	D71346
Warning and Function Indicator Lamps:		
Hazard Warning, Work Lamps, Beacon Light, Front PTO, Rocker Switches		
	12V-1.2W	3141107R1
Engine Oil Pressure, Alternator Charge, Air Cleaner Restriction, Park Brake, Head lamp High Beam, Left/Right Turn Indicators, Rear Work Lamp, Forward/Reverse Neutral, PTO rpm, Differential Lock, MFD Engaged,, First/Second Trailer Indicator Lamps		
	168 (14V)	191999A1
Master Warning Lamp.....	168 (14V)	26617R1
Gauge Illumination:		
Fuel Level, Coolant Temperature, Hour Meter, Trailer Brake Air Pressure (If equipped)		
	161	Anolog Cluster: 188057A1
	Digital Cluster	Not Serviced Serarately

ELECTRICS

Cluster Lamp Replacement Procedure

STEP 1

Remove the four retaining screws from the front of the instrument cluster.

STEP 2



Remove the instrument cluster, but **DO NOT DISCONNECT THE HARNESS**. Remove the relavent cover over the bulb holders (A or B, as equipped).

STEP 3



Turn the bulb holder counterclockwise and pull out to remove.

Pull the bulb out of the holder.

STEP 4

Push the new bulb into the holder.

Install the holder into the cluster, turn holder clockwise to lock in position.

3. Install the cover, the cluster and the four retaining screws.

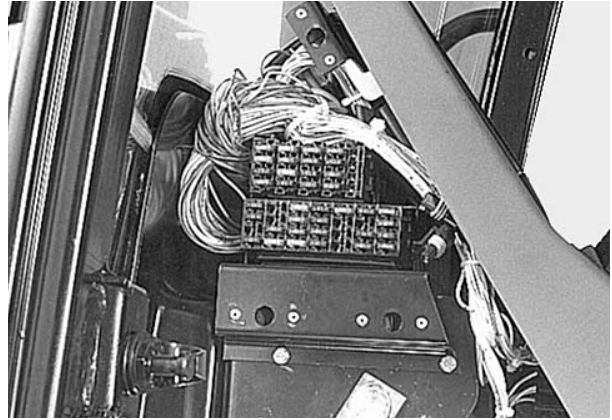
ELECTRICS

FUSE LOCATION AND IDENTIFICATION (North American Tractors)

The fuses give protection to the electrical circuits of the tractor and cab.

To service the fuses remove the left hand side panel from the front console. To replace a fuse, pull the fuse out of the clips and push a new fuse in.

IMPORTANT: Make sure the new fuse has the same ampere rating as the fuse being replaced.



RP95F100

41	42	43	44
37	38	39	40
33	34	35	36
29	30	31	32

22	23	24	25	26	27	28
15	16	17	18	19	20	21
8	9	10	11	12	13	14
1	2	3	4	5	6	7

NOTE: Locations 9, 10, and 32 are mini circuit breakers, which will reset automatically.

Fuse No	Circuit	Amps
1	HORN	15
2	REAR WORK LAMPS	25
3	FRONT WORKLAMPS	25
4	IMPLEMENT INTERFACE CONNECTOR UNSWITCHED B+	10
5	IMPLEMENT INTERFACE CONNECTOR SWITCHED B+	10
6	NOT USED	-----
7	NOT USED	-----
8	LOADER CONTROL	15
9	LEFT HAND GRILLE HEADLIGHT (LOW BEAM) (CIRCUIT BREAKER)	10
10	RIGHT HAND GRILLE HEADLIGHT (LOW BEAM) (CIRCUIT BREAKER)	10

ELECTRICS

Fuse No	Circuit	Amps
11	NOT USED	-----
12	LEFT HAND GRILLE HEADLIGHT (HIGH BEAM)	10
13	RIGHT HAND GRILLE HEADLIGHT (HIGH BEAM)	10
14	NOT USED	-----
15	NOT USED	-----
16	NOT USED	-----
17	INSTRUMENT CLUSTER UNSWITCHED B+	5
18	TURN SIGNAL LIGHTS	15
19	WARNING LIGHTS	5
20	FLASHER	15
21	NOT USED	-----
22	NOT USED	-----
23	TAIL LIGHTS	5
24	NOT USED	-----
25	INSTRUMENT CLUSTER SWITCHED POWER B+	7.5
26	MFD, DIFF LOCK	30
27	SEAT	15
28	XTRASHIFT TRANSMISSION CONTROLLER	15
29	7 POLE CONNECTOR SWITCHED B+	30
30	INTERIOR LIGHT, RADIO CLOCK POWER, INSTRUMENT CLUSTER CLOCK POWER,	7.5
31	REAR WINDSCREEN WIPER/WASHER	15
32	FRONT WINDSCREEN WIPER/WASHER (CIRCUIT BREAKER)	15
33	ELECTRONIC HITCH	7.5
34	POWERSHIFT	20
35	PARK BRAKE ALARM	5
36	FRONT PTO	10
37	COLD START	20
38	FUEL SHUT-OFF	10
39	CIGAR LIGHTER	10
40	ACCESSORY, INSTRUMENT CLUSTER, RADIO	7.5
41	RIGHT HAND CONSOLE AUXILIARY CONNECTOR (BATTERY B+)	30
42	FRONT CONSOLE AUXILIARY CONNECTOR (BATTERY B+)	30
43	RIGHT HAND CONSOLE AUXILIARY CONNECTOR (SWITCHED B+)	30
44	FRONT CONSOLE AUXILIARY CONNECTOR (SWITCHED B+)	30

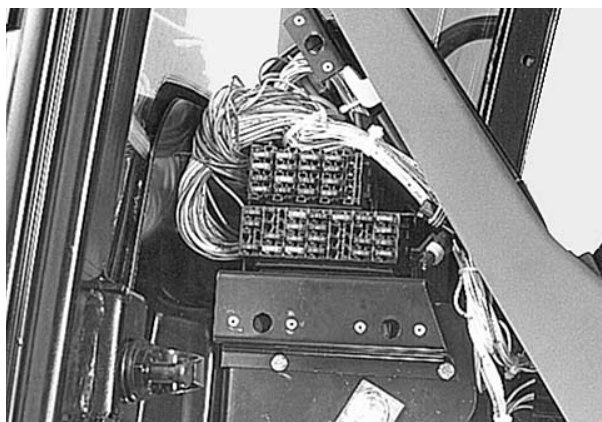
ELECTRICS

FUSE LOCATION AND IDENTIFICATION (Rest Of World Tractors)

The fuses give protection to the electrical circuits of the tractor and cab.

To service the fuses remove the left hand side panel from the front console. To replace a fuse, pull the fuse out of the clips and push a new fuse in.

IMPORTANT: Make sure the new fuse has the same ampere rating as the fuse being replaced.



RP95F100

41	42	43	44
37	38	39	40
33	34	35	36
29	30	31	32

22	23	24	25	26	27	28
15	16	17	18	19	20	21
8	9	10	11	12	13	14
1	2	3	4	5	6	7

NOTE: Locations 9, 10, and 32 are mini circuit breakers, which will reset automatically.

Fuse No	Circuit	Amps
1	HORN	15
2	FRONT WORK LIGHTS	25
3	REAR WORK LIGHTS	25
4	IMPLEMENT INTERFACE CONNECTOR UNSWITCHED B+	10
5	IMPLEMENT INTERFACE CONNECTOR SWITCHED B+	10
6	LEFT HAND POSITION LIGHT	10
7	RIGHT HAND POSITION LIGHT	10
8	LOADER CONTROL	15
9	NOT USED	-----
10	NOT USED	-----

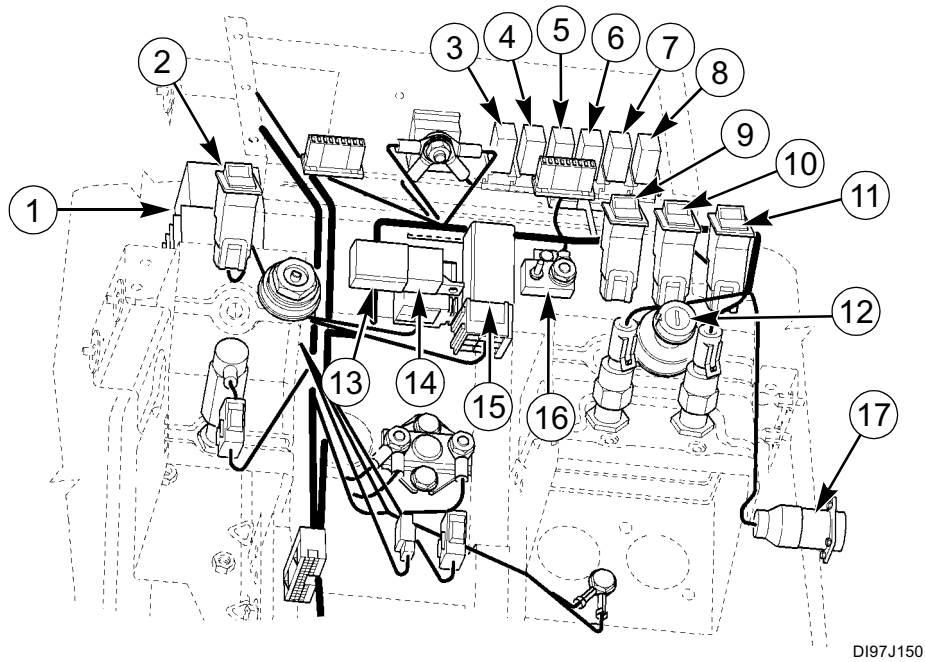
ELECTRICS

Fuse No	Circuit	Amps
11	REAR FOG LAMP	10
12	LEFT HAND GRILLE HEADLIGHT (HIGH BEAM)	10
13	RIGHT HAND GRILLE HEADLIGHT (HIGH BEAM)	10
14	NOT USED	-----
15	CAB ROOF HEADLIGHT (LOW BEAM)	15
16	NOT USED	-----
17	INSTRUMENT CLUSTER UNSWITCHED B+	5
18	WARNING LIGHTS	15
19	LEFT HAND GRILLE HEADLIGHT (LOW BEAM) (CIRCUIT BREAKER)	10
20	RIGHT HAND GRILLE HEADLIGHT (LOW BEAM) (CIRCUIT BREAKER)	10
21	TURN SIGNAL LIGHTS	15
22	ROTARY BEACON LIGHT	15
23	NOT USED	-----
24	BRAKE LIGHTS	20
25	INSTRUMENT CLUSTER SWITCHED POWER	7.5
26	MFD, DIFF LOCK	30
27	SEAT	15
28	XTRASHIFT TRANSMISSION CONTROLLER	15
29	7 POLE CONNECTOR SWITCHED B+	30
30	INTERIOR LIGHT, RADIO CLOCK POWER, INSTRUMENT CLUSTER CLOCK POWER,	7.5
31	REAR WINDSCREEN WIPER/WASHER	15
32	FRONT WINDSCREEN WIPER/WASHER (CIRCUIT BREAKER)	15
33	ELECTRONIC HITCH	7.5
34	POWERSHIFT	20
35	PARK BRAKE ALARM	5
36	FRONT PTO, RIDE CONTROL	10
37	THERMOSTART	20
38	FUEL SHUT-OFF	10
39	CIGAR LIGHTER	10
40	ACCESSORY, INSTRUMENT CLUSTER, RADIO	7.5
41	RIGHT HAND CONSOLE AUXILIARY CONNECTOR (BATTERY B+)	30
42	FRONT CONSOLE AUXILIARY CONNECTOR (BATTERY B+)	30
43	RIGHT HAND CONSOLE AUXILIARY CONNECTOR (SWITCHED B+)	30
44	FRONT CONSOLE AUXILIARY CONNECTOR (SWITCHED B+)	30

ELECTRICS

RELAYS

Relays under Instrument Panel

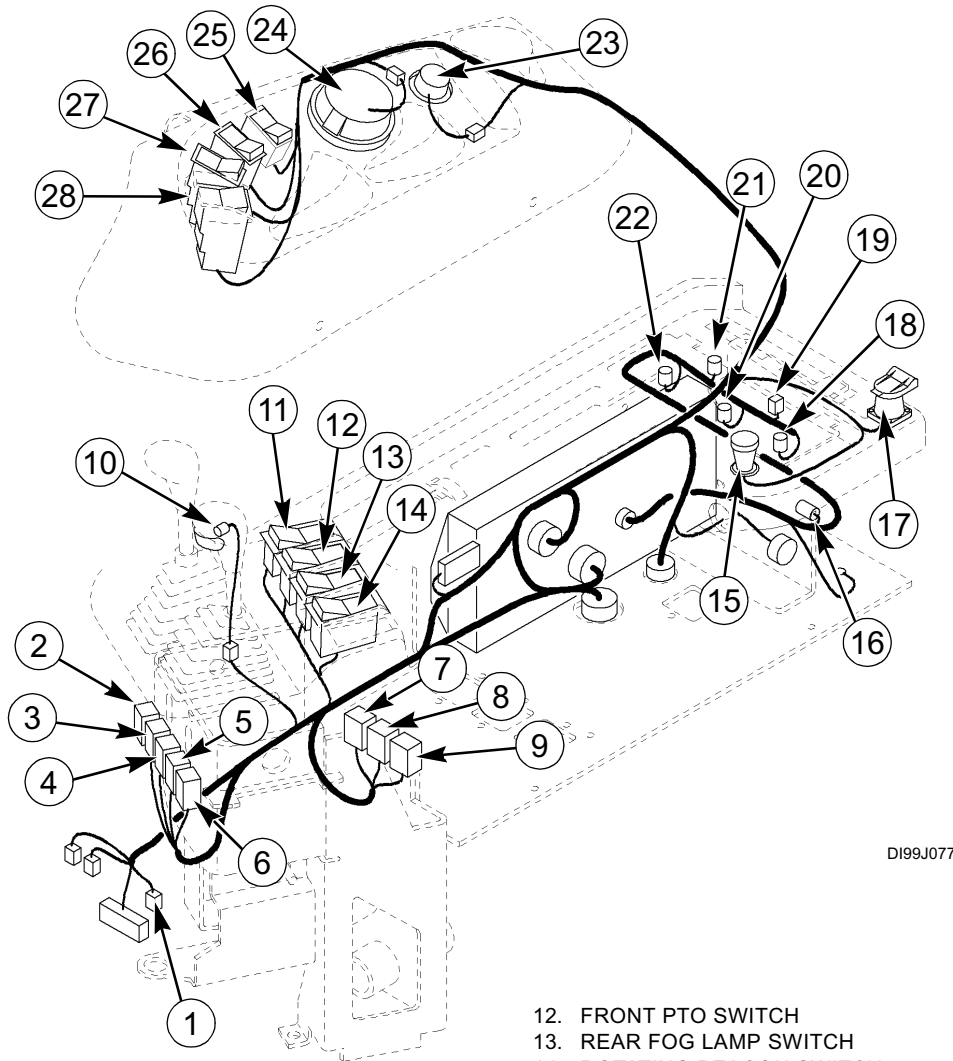


DI97J150

- | | |
|---------------------------|---------------------------------|
| 1. FUSE BLOCK | 10. WORK LIGHT SWITCH |
| 2. COLD START SWITCH | 11. HEADLAMP CHANGE OVER SWITCH |
| 3. REAR WORK LIGHT RELAY | 12. KEY SWITCH |
| 4. FRONT WORK LIGHT RELAY | 13. CAB POWER RELAY |
| 5. ACCESSORY POWER RELAY | 14. HEADLAMP DIPPER RELAY |
| 6. BRAKE POWER RELAY | 15. FLASHER RELAY |
| 7. EITHER BRAKE RELAY | 16. BLOWER MOTOR CIRCUIT RELAY |
| 8. BOTH BRAKES RELAY | 17. 3 PIN ACCESSORY POWER |
| 9. HAZARD WARNING SWITCH | |

ELECTRICS

Relays under R/H Side Console

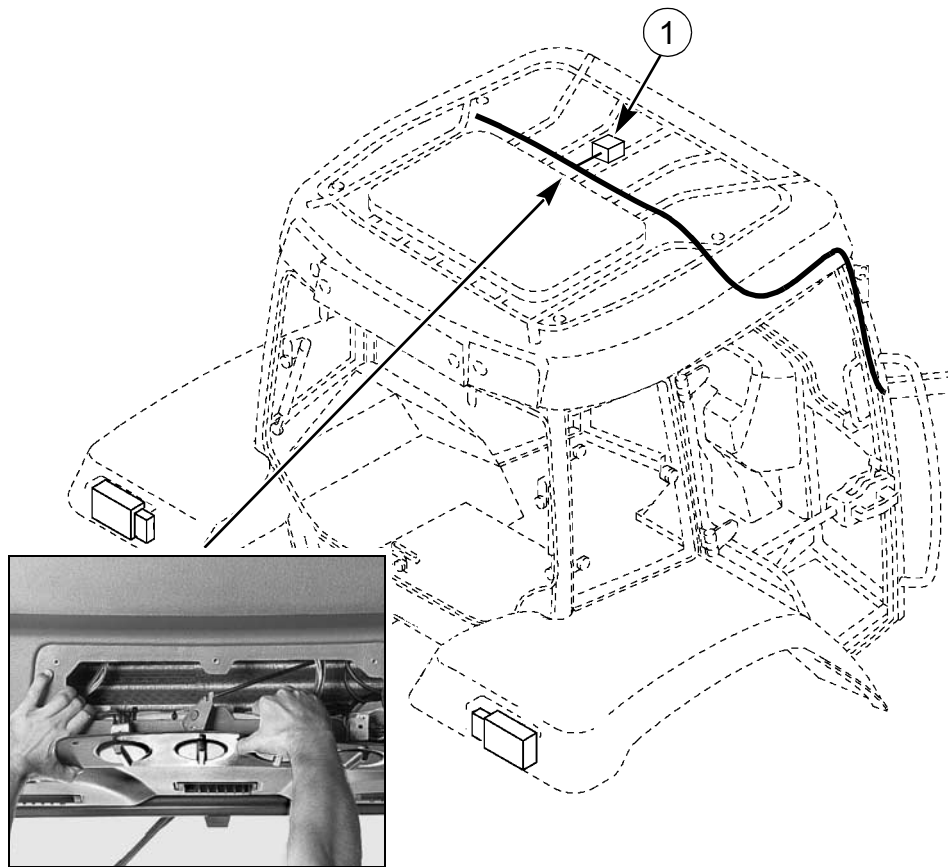


DI99J077

- | | |
|--------------------------------|-------------------------------|
| 1. AFS CONNECTOR | 12. FRONT PTO SWITCH |
| 2. AIR TRAILER BRAKE CONNECTOR | 13. REAR FOG LAMP SWITCH |
| 3. HITCH ENABLE RELAY | 14. ROTATING BEACON SWITCH |
| 4. DIFF LOCK RELAY | 15. CIGARETTE LIGHTER |
| 5. PARK BRAKE ALARM RELAY | 16. SHIFTABLE PTO SWITCH |
| 6. MFD RELAY | 17. AUXILIARY POWER CONNECTOR |
| 7. FRONT PRO RELAY | 18. HITCH UPPER LIMIT CONTROL |
| 8. POWERSHIFT RELAY #5 | 19. DIAGNOSTIC DISPLAY |
| 9. POWERSHIFT RELAY #6 | 20. HITCH TRAVEL CONTROL |
| 10. 2 SPEED POWERSHIFT SWITCH | 21. HITCH RESPONSE CONTROL |
| 11. RIDE CONTROL SWITCH | 22. HITCH DROP SPEED CONTROL |
| | 23. HITCH LOAD CONTROL |
| | 24. HITCH POSITION CONTROL |
| | 25. MFD SWITCH |
| | 26. SLIP LIMIT CONTROL SWITCH |
| | 27. DIFF LOCK SWITCH |
| | 28. HITCH UP/DOWN SWITCH |

ELECTRICS

Relays In Front Headliner



DI97K102 & RP96H331

1. AIR CONDITIONING RELAY

MACHINE STORAGE

PUTTING THE TRACTOR INTO STORAGE

Preparing the Tractor for Storage

When your tractor is not going to be used for some time, store the tractor in a dry protected place. Leaving your tractor outside, open to the weather, will shorten its life.

Follow the procedure below when your tractor is placed in storage for periods up to six months. See your dealer for the procedure on longer periods of storage.

STEP 1

Wash or clean and completely lubricate the tractor. See the Lubrication Section in this manual.

STEP 2

Clean the inside of the operators cab and instrument console.

STEP 3

Rodents can damage a tractor in storage. Rodents will eat plastic, insulation or rubber material. Clean the areas where rodents may nest. Leave access panels and doors open to remove convenient nesting pockets. In some conditions leaving moth balls will help discourage rats and mice.

STEP 4

Run the engine long enough to completely warm the oil in the crankcase before draining the oil. Remove and replace the oil filter as instructed. Fill the crankcase with fresh oil and run the engine for two to five minutes.

STEP 5

Open the drain on the fuel filter and drain the water and sediment before closing. Fill the fuel tank with a premium grade diesel fuel. If this fuel grade has not been used regularly, drain the fuel tank and fill with premium diesel fuel. Run the engine for five minutes to circulate the fuel through the fuel injection system.

STEP 6

Clean the engine air filter and body.

STEP 7

Drain, flush and fill the cooling system with the correct antifreeze mixture to protect the tractor to the lowest anticipated temperature.

STEP 8

The batteries do not need to be removed from the tractor, except for extended storage (more than 30 days) below freezing temperatures. The batteries must be fully charged to prevent freezing. Disconnect the negative (-) ground cable at the batteries to prevent possible discharge. Check the battery charge every 30 days.

STEP 9

Store the tractor where there is protection from sunlight. Clean the tires before storage. Support the tractor so that the load is off the tires. If the tractor is not supported, inflate the tires at regular intervals.

STEP 10

Coat all exposed cylinder rods with light grease to prevent rust.

Removing the Tractor from Storage

It is recommended that caution be used when starting an engine that has been in storage.

STEP 1

Open the fuel filter drain plug and remove contaminated fuel. Close the drain plug.

STEP 2

Check that the grade of oil in the engine crankcase is as specified in this Manual.

STEP 3

Check the coolant level in the reservoir and radiator.

STEP 4

Check that the batteries are fully charged.

STEP 5

Connect the ground cable(s) (-) and tighten all terminals.

STEP 6

Check the transmission/hydraulic fluid level and linkages.

MACHINE STORAGE

STEP 7

Check and adjust the tension on all drive belts.

STEP 8

Do not accelerate the engine rapidly, or operate at high RPM immediately after starting.

STEP 9

Inflate the tires to the correct operating pressures.

STEP 10

Make sure that all shields and guards are in the correct position.



WARNING: Before starting the engine, be sure all operating controls are in neutral and the park brake applied. This will eliminate accidental movement of the machine on start-up or power driven equipment.



WARNING: Do not operate the engine in a closed building. Proper ventilation is required under all circumstances.

Fire Prevention

Fire risks can be minimized by frequent removal of accumulated crop material, trash or debris from the machine.

Remove all crop material, trash or debris at the start of each working day. Take extra care to make sure the engine area and exhaust system are clean.

It is your responsibility to remove and/or clean your machine on a regular basis.

Fire risk can also be minimized by prompt repairing of leaks and cleaning up fuel and oil spills.

Engine fuel is flammable and can cause a fire or an explosion. DO NOT fill the fuel tank or service the fuel system near an naked flame, welding, burning cigars, cigarettes etc.

Sparks or flames can cause the hydrogen gas in a battery to explode. To prevent an explosion, do the following:

- When disconnecting the battery cables, disconnect the negative (-) cable first. When connecting the battery cables, connect the negative (-) cable last.
- When connecting jumper cables to start the engine, ONLY use the procedure shown on page 212 of this manual.
- DO NOT short circuit the battery posts with metal items.
- DO NOT weld, grind or smoke near a battery.

Check the electrical system for loose connections or frayed insulation. Repair or replace the loose or damaged parts.

SPECIFICATIONS

DIESEL ENGINE

General

CX75 Tractor Engine

Type Naturally Aspirated, Direct Injection, Four Cylinder, Four Stroke
Power Output..... 54 kW
Max. Torque..... 284 Nm
Governed Engine Speed Without Load..... 2325 +/- 25rpm
Rated Engine Speed..... 2200 rpm
Engine Low Idle Speed..... 775 +/- 25rpm

CX85 Tractor Engine

Type Turbocharged, Direct Injection, Four Cylinder, Four Stroke
Power Output..... 62 kW
Max. Torque..... 338 Nm
Governed Engine Speed Without Load..... 2325 +/- 25rpm
Rated Engine Speed..... 2200 rpm
Engine Low Idle Speed..... 775 +/- 25rpm

CX95 Tractor Engine

Type Turbocharged (Wastegate), Direct Injection,
Four Cylinder, Four Stroke
Power Output..... 66 kW
Max. Torque..... 355 Nm
Governed Engine Speed Without Load..... 2325 +/- 25rpm
Rated Engine Speed..... 2200 rpm
Engine Low Idle Speed..... 775 +/- 25rpm

CX105 Tractor Engine

Type Turbocharged (Wastegate), Direct Injection,
Four Cylinder, Four Stroke
Power Output..... 75 kW
Max. Torque..... 405 Nm
Governed Engine Speed Without Load..... 2325 +/- 25rpm
Rated Engine Speed..... 2200 rpm
Engine Low Idle Speed..... 775 +/- 25rpm

SPECIFICATIONS

Air Intake System

Type Dry Type Air Induction System, Two Stage
Filter System with Service Indicator on instrument cluster

Engine Cooling System

System Type Pressure System, Thermostat Controlled Bypass,
and Impeller Type Pump

Radiator Heavy Duty, Fin and Tube Type

Thermostat Operation Starts to Open at Approx. 77-85°C (170-185°F)
Fully Open at 92-98°C (198-208°F)

Radiator Cap Pressure 1.03 bar (15 psi)

Fan Drive Viscous

Engine Lubrication System

Minimum Oil Pressure

CX75 2.07 bar (30 psi)
with Engine Warm and Operating at Maximum Speed

CX85, CX95, CX105 2.67 bar (40 psi)
with Engine Warm and Operating at Maximum Speed

Oil Pump Gear Type

Oil Filter Full Flow

Engine Fuel System

Fuel Primer Pump Type Diaphragm

Fuel Filter Type Full Flow

Water Trap and Drain Location Bottom of Fuel Filter

Fuel Tank Capacity 155 Litres (41 US gallons)

Cold Starting Aid Ether or Thermostart System

SPECIFICATIONS

ELECTRICAL SYSTEM

General Specifications

Type of System..... 12 Volt, Negative Ground

Batteries..... One x 12 Volt, Low Maintenance Hybrid Batteries
Taper Post Terminals

TYPE	SAE (COLD CRANKING CAPACITY)	IEC	DIN	AMPERE HOURS	RESERVE CAPACITY
644	660 Amps	440 Amps	400 Amps	95	180 mins
664	770 Amps	515 Amps	465 Amps	105	210 mins

Alternator 12 Volt, 65 Amp.

Starter Motor, with Solenoid Switch..... 12 Volt, 2.8 kW

Circuit Breakers

See Electrics section.

Fuses and Lamps

See Electrics section.

Accessory Connectors

7 Terminal Electrical Outlet Equipped for Directional Turn Lamps,
Stop lamps, Tail Lamps

Single Auxillary Socket (NOT North American Tractors)
(next to 7 Terminal Socket)..... 12 Volt Power
for Implements with Circuit Protection,

3 Pin Cab Connector..... Unswitched 12 Volt
Switch 12 volt Power (Through Key Switch)
and also Direct with Ground for
Implement Controllers and Monitors

SPECIFICATIONS

GENERAL MACHINE

Brakes

Brake Type Hydraulic, Self-Adjusting,
Single Wet Plate Type Differential Brakes
Trailer Brake Hydraulic, or Air System

Differential Lock

Lock Type Multi Disc
Control Electro-hydraulic by a Switch on Side Console

Drawbar and Auto Hitch

Standard Drawbar or Yoke Type Adjustable Slide and Swing Type
Maximum Load with Pivot Pin thru Rear Hole (Single or Dual Shaft PTO)
 Standard 880 kg (1940 lb)
 Heavy Duty 1240 kg (2735 lb)
Maximum Load with Pivot Pin thru Front Hole (Shiftable PTO)
 Standard 790 kg (1740 lb)
 Heavy Duty 1070 kg (2360 lb)
Auto Hitch Maximum Static Loads:
 Hook 2250 kg (4960 lb)
 Drawbar 1500 kg (3307 lb)

Lift capacity of Auto Hitch -

EEC Approved [Council directive 89/173/EEC Annex IV, appendix 2 (dynamic test method)].

Height Adjustable Hitches

Maximum Vertical Load 1500 kg (3307 lb)

IMPORTANT: *The maximum loads stated for **all the above hitch types** may vary depending upon restrictions due to capacity of rear tyres fitted and/or legal requirements.*

Hydrostatic Power Steering

Pump Gear Pump, Engine Driven
Capacity Approx. 30 Litre/min (6.6 US gal/min)
Steering Pump Hydrostatic Type,
Steering Cylinder Double Action Cylinder

SPECIFICATIONS

Front Axle Differential and Planetaries

Axle Type	Carraro 707S4
Inter Axle Ratio	1:407
Optional (10.5-18 MFD Tyre ONLY)	1:564

Transmission

Transmission Types	XtraShift: 24 Forward, 24 Reverse 2 Speed Powershift: 16 Forward, 8 Reverse Synchromesh: 8 Forward, 8 Reverse optional Creeper for all transmission types
Oil Cooler	Transmission/Hydraulic Fluid
Engine Clutch	
Clutch Plate Diameter	305 mm (12 inch)

Front Hitch System (If Equipped)

Valve Type	Four Position
Kitchin Hitch	Single Acting
Hydrac Hitch	Double Acting
Type of Lower Links	Claw Ends, Fixed
Type of Hitch	Three Point, Category II
Maximum Lift Capacity,	
Kitchin Hitch	2359 kg (5200 lb)
Hydrac Hitch	3000 kg (6614 lb)

Rear Hitch System

Type of Sensing (*)	Electronic, Top Link
Note (*): Optional build is position only (no draft sensing). Tractors built without draft sensing may be upgraded to include this feature by installing a filed package available from your dealer.	
Type of Lower Links	Eye or Claw Ends, Fixed or Telescoping
Type of Hitch	Three Point, Category II
Lift Capacity at Hitch Points and Lower Links Horizontal	
With No Assistor Ram	1972 kg (4347 lb)
With Single Assistor Ram	2914 kg (6424 lb)
With Twin Assistor Rams	3816 kg (8413 lb)

SPECIFICATIONS

Remote Hydraulic System

Pump Type	Gear
Maximum System Pressure	17 237 kPa (2500 psi)
Remote Valves	Open Center, Lever Control
Remote Couplings	ISO Standard, Breakaway Type
Flow Capacities From Remote Valve	59 Litre/min (15.5 US gal/min)

Front Power Takeoff (If equipped)

PTO Type	Independent of Transmission
Clutch Type	
Kitchin	Electro-Magnetic Actuated
Hydrac.....	Hydraulic Actuated
Rotation	Counterclockwise from Front of Tractor
Output Shaft Size.....	6 Splines, 34.925 mm (1.375 inch) Diameter
PTO Speed.....	1000 rpm
Engine Speed for 1000 PTO Speed.....	2200 rpm

Rear Power Takeoff

PTO Type	Independent of Transmission
Versions	Single Shaft, Twin Shaft or Shiftable
Type of Clutch	Hydraulically Actuated
Rotation	Clockwise from Rear of Tractor
PTO Speeds.....	540 rpm, 540/750 rpm or 540/1000 rpm
Output Shaft Size.....	6 or 21 spline, 34.925 mm (1.375 inch) Diameter
Engine Speed at 540/1000 rpm PTO Speed (Twin Shaft)	
540 rpm.....	1954 rpm
1000 rpm.....	2000 rpm
Engine Speed at 540/750 rpm PTO Speed (Shiftable)	
540 rpm.....	2007 rpm
750 rpm.....	2011 rpm
Engine Speed at 540/1000 rpm PTO Speed (Shiftable)	
540 rpm.....	1994 rpm
1000rpm.....	2000 rpm

SPECIFICATIONS

APPROXIMATE TRAVEL SPEEDS

How To Use These Speed Charts

1. Select the chart corresponding to your transmission type, eg:

XtraShift Transmission

2 Speed Powershift Transmission

Synchromesh (Mechanical) Transmission

2. Using the speeds in the speed charts and the correction factor, (see page 236) calculate the correct speed for the tyre size (RR = Rolling Radius*) fitted to your tractor.

* The rolling radius given in these speed charts has been taken from the European Tyre & Rim Technical Organisation (ETRTO) Standards Manual. Due to tyre manufacturer, tyre pressure and load capacities the rolling radius will vary. For a more accurate dimension carry out the dynamic procedure found in this manual.

IMPORTANT: The speeds given in the following charts are only approximate and will vary according to make of tyre, tyre pressure and tyre wear. No allowance has been made for wheel slip.

Synchromesh (Mechanical) Transmission

Speeds below are calculated at an engine speed of 2200 rpm.

REGULAR SPEEDS			
REAR TYRES		18.4-30 (RR 720)	
FORWARD			
RANGE/GEAR		km/h	mph
LO	1	2.57	1.60
LO	2	4.18	2.60
LO	3	5.65	3.51
LO	4	8.11	5.04
HI	1	9.64	5.99
HI	2	15.67	9.74
HI	3	21.18	13.16
HI	4	30.41	18.90

REVERSE			
RANGE/GEAR		km/h	mph
LO	1	2.50	1.55
	2	4.07	2.53
	3	5.50	3.42
	4	7.90	4.91
HI	1	9.39	5.83
	2	15.26	9.48
	3	20.63	12.82
	4	29.62	18.41

LO = Low range, HI = High range, RR = Rolling Radius

SPECIFICATIONS

2 Speed Powershift, 30 km/h Transmission

Speeds below are calculated at an engine speed of 2200 rpm.

REGULAR SPEEDS				
REAR TYRES			16.9-34 480/70R34 540/65R34 15.5-38 (RR 745)	
FORWARD				
RANGE	SPEED	P/SHIFT	km/h	mph
LO	1		1.88	1.17
			2.27	1.41
LO	2		3.31	2.06
			3.99	2.48
LO	3		5.35	3.32
			6.45	4.01
LO	4		6.88	4.27
			8.30	5.16
HI	1		7.04	4.37
			8.50	5.28
HI	2		12.41	7.71
			14.96	9.29
HI	3		20.07	12.47
			24.21	15.04
HI	4		25.81	16.04
			31.14	19.35

REVERSE				
RANGE	SPEED	P/SHIFT	km/h	mph
LO	1		2.07	2.07
LO	2		3.64	3.64
LO	3		5.89	5.89
LO	4		7.58	7.58
HI	1		7.76	7.76
HI	2		13.66	8.49
HI	3		22.10	13.73
HI	4		28.43	17.66

CREEPER SPEEDS				
REAR TYRES			16.9-34 480/70R34 540/65R34 15.5-38 (RR 745)	
FORWARD				
RANGE	SPEED	P/SHIFT	km/h	mph
	1		0.30	0.19
			0.36	0.22
	2		0.53	0.33
			0.64	0.40
	3		0.85	0.53
			1.03	0.64
	4		1.10	0.68
			1.33	0.83

REVERSE				
RANGE	SPEED		km/h	mph
	1		0.33	0.21
	2		0.58	0.36
	3		0.94	0.58
	4		1.21	0.75

LO = Low range, HI = High range, RR = Rolling Radius

-  = SPEED REDUCTION
-  = DIRECT DRIVE
-  = CREEPER

SPECIFICATIONS

2 Speed Powershift, 40 km/h Transmission

Speeds below are calculated at an engine speed of 2200 rpm.

REGULAR SPEEDS				
REAR TYRES			18.4-34 500/70R34 520/70R34 (RR 770)	
FORWARD				
RANGE	SPEED	P/SHIFT	km/h	mph
LO	1		2.12	1.32
			2.56	1.59
LO	2		3.73	2.32
			4.50	2.80
LO	3		5.53	3.44
			6.67	4.14
LO	4		8.67	5.39
			10.46	6.50
HI	1		7.95	4.94
			9.59	5.96
HI	2		14.00	8.70
			16.88	10.49
HI	3		20.75	12.89
			25.02	15.55
HI	4		32.52	20.21
			39.22	24.37

REVERSE				
RANGE	SPEED	P/SHIFT	km/h	mph
LO	1		2.31	1.44
LO	2		4.07	2.53
LO	3		6.04	3.75
LO	4		9.46	5.88
HI	1		8.67	5.39
HI	2		15.28	9.49
HI	3		22.63	14.06
HI	4		35.48	22.05

CREEPER SPEEDS				
REAR TYRES			18.4-34 500/70R34 520/70R34 (RR 770)	
FORWARD				
RANGE	SPEED	P/SHIFT	km/h	mph
	1		0.34	0.21
			0.41	0.26
	2		0.60	0.37
			0.72	0.45
	3		0.88	0.55
			1.07	0.66
	4		1.38	0.86
			1.67	1.04

REVERSE				
RANGE	SPEED		km/h	mph
	1		0.37	0.23
	2		0.65	0.40
	3		0.96	0.60
	4		1.51	0.94

LO = Low range, HI = High range, RR = Rolling Radius

-  = SPEED REDUCTION
-  = DIRECT DRIVE
-  = CREEPER

SPECIFICATIONS

XtraShift, 30 and 40 km/h Transmission (Regular Speeds)

Speeds below are calculated at an engine speed of 2200 rpm.

REGULAR FORWARD SPEEDS				
REAR TYRES			18.4-34 500/70R34 520/70R34 (RR 770)	
RANGE	SPEED	P/SHIFT	km/h	mph
LO	1	1	2.12	1.32
		2	2.61	1.62
		3	3.08	1.91
LO	2	1	3.30	2.05
		2	4.06	2.52
		3	4.79	2.98
LO	3	1	4.94	3.07
		2	6.08	3.79
		3	7.17	4.46
LO	4	1	7.28	4.52
		2	8.97	5.57
		3	10.58	6.57
HI	1	1	7.95	4.94
		2	9.79	6.08
		3	11.55	7.18
HI	2	1	12.36	7.68
		2	15.22	9.46
		3	17.95	11.15
HI	3	1	18.52	11.51
		2	22.81	14.17
		3	26.90	16.71
HI	3	1	27.31	16.97
		2*	33.63	20.90
		3*	39.66	24.64

REGULAR REVERSE SPEEDS				
REAR TYRES			18.4-34 500/70R34 520/70R34 (RR 770)	
RANGE	SPEED	P/SHIFT	km/h	mph
LO	1	1	2.11	1.31
		2	2.60	1.62
		3	3.07	1.91
LO	2	1	3.28	2.04
		2	4.04	2.51
		3	4.77	2.96
LO	3	1	4.92	3.06
		2	6.06	3.77
		3	7.14	4.44
LO	4	1	7.25	4.51
		2	8.93	5.55
		3	10.53	6.54
HI	1	1	7.92	4.92
		2	9.75	6.06
		3	11.50	7.15
HI	2	1	12.31	7.65
		2	15.16	9.42
		3	17.88	11.11
HI	3	1	18.45	11.46
		2	22.81	14.17
		3	26.79	16.65
HI	3	1	27.20	16.90
		2*	33.49	20.81
		3*	39.50	24.54

LO = Low range, HI = High range, RR = Rolling Radius

(*)NOTE: On XtraShift 30 km/h transmission tractors the transmission is electronically governed and will not allow travel speeds to exceed 30 km/h.

SPECIFICATIONS

XtraShift, 30 and 40 km/h Transmission (Creeper Speeds)

Speeds below are calculated at an engine speed of 2200 rpm.

CREEPER <u>FORWARD</u> SPEEDS				
REAR TYRES			18.4-34 500/70R34 520/70R34 (RR 770)	
RANGE	SPEED	P/SHIFT	km/h	mph
	1	1	0.33	0.21
		2	0.41	0.25
		3	0.48	0.30
	2	1	0.51	0.32
		2	0.63	0.39
		3	0.74	0.46
	3	1	0.77	0.48
		2	0.95	0.59
		3	1.12	0.70
	4	1	1.13	0.70
		2	1.39	0.86
		3	1.64	1.02

CREEPER <u>REVERSE</u> SPEEDS				
REAR TYRES			18.4-34 500/70R34 520/70R34 (RR 770)	
RANGE	SPEED	P/SHIFT	km/h	mph
	1	1	0.33	0.21
		2	0.40	0.25
		3	0.48	0.30
	2	1	0.51	0.32
		2	0.63	0.39
		3	0.74	0.46
	3	1	0.77	0.47
		2	0.94	0.59
		3	1.11	0.69
	4	1	1.13	0.70
		2	1.39	0.86
		3	1.64	1.02

LO = Low range, HI = High range, RR = Rolling Radius

SPECIFICATIONS

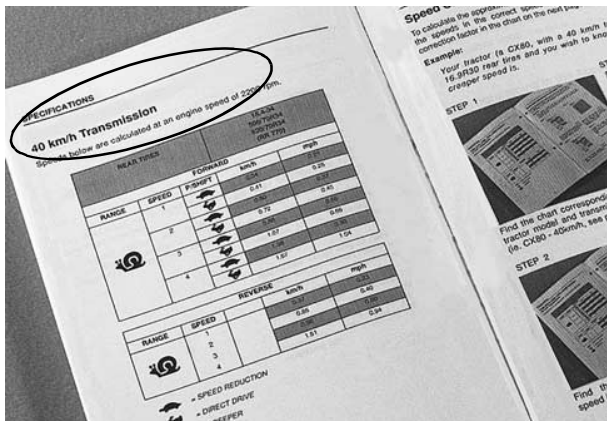
Speed Chart Adjustment For Alternative Tyres

To calculate the approximate tractor speeds for alternative rear tyre sizes, multiply the speeds in the correct speed chart for your transmission option by the correction factor in the chart on the next page for tyres fitted on your tractor.

Example:

Your tractor (a XtraShift CX85, with a 40 km/h transmission) is fitted with 16.9R30 rear tyres and you wish to know what the lowest possible creeper speed is.

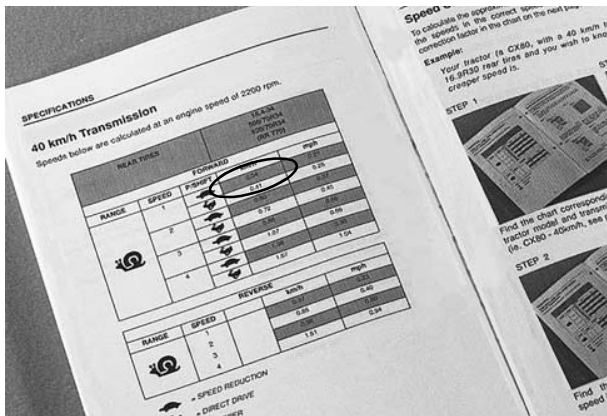
STEP 1



DD98J113

Find the chart corresponding to your tractor model and transmission type, (ie. XtraShift - 40km/h, see page 235).

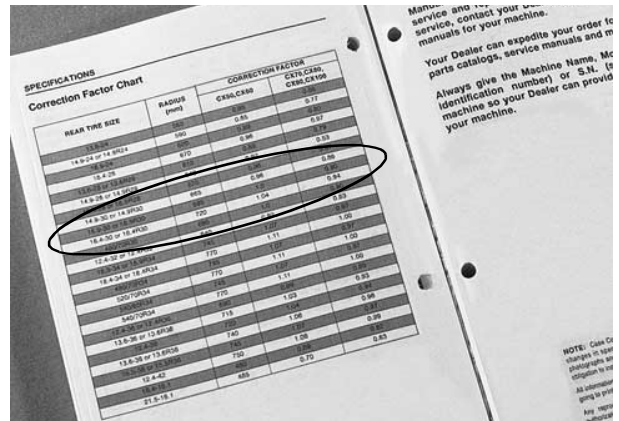
STEP 2



DD98J113

Find the lowest possible creeper speed in this chart, (0.33 km/h).

STEP 3



DD98J114

Using the correction factor chart on the next page find the correction factor for a 16.9R30 rear tyre (0.90).

STEP 4

Multiply the creeper speed from page 235 by the correction factor from page 237 to obtain the correct speed for your tyre fitted.

ie,

$$0.33 \text{ km/h} \times 0.90 = 0.30 \text{ km/h} \\ (0.18 \text{ mph})$$

SPECIFICATIONS

Correction Factor Chart

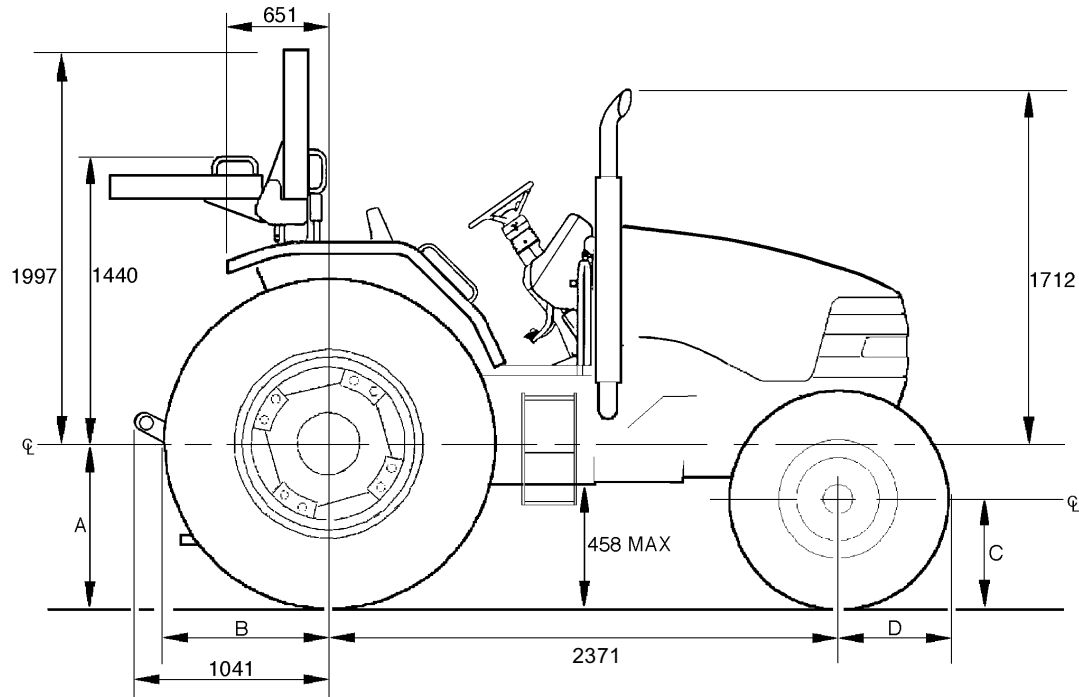
REAR TYRE SIZE	RADIUS (mm)	CORRECTION FACTOR
13.6-24	560	0.86
14.9-24 or 14.9R24	590	0.77
16.9-24	620	0.80
18.4-26	670	0.87
13.6-28 or 13.6R28	610	0.79
14.9-28 or 14.9R28	640	0.83
16.9-28 or 16.9R28	670	0.87
14.9-30 or 14.9R30	665	0.86
16.9-30 or 16.9R30	695	0.90
18.4-30 or 18.4R30	720	0.94
480/70R30	695	0.90
12.4-32 or 12.4R32	640	0.83
16.9-34 or 16.9R34	745	0.97
18.4-34 or 18.4R34	770	1.00
480/70R34	745	0.97
520/70R34	770	1.00
540/65R34	745	0.97
540/70R34	770	1.00
12.4-36 or 12.4R36	690	0.89
13.6-36 or 13.6R36	715	0.93
12.4-38	720	0.94
13.6-38 or 13.6R38	740	0.96
15.5-38 or 15.5R38	745	0.97
12.4-42	750	0.99
18.4-16.1	480	0.62
21.5-16.1	485	0.63

SPECIFICATIONS

APPROXIMATE TRACTOR DIMENSIONS

IMPORTANT: The dimensions shown on the following pages are only approximate. Many varying factors affect these dimensions, for example; tyre sizes, ballast, amount of fuel and tyre pressures, etc. etc.

Two Wheel Drive (2WD) Tractor with Foldable 2 Post ROPS



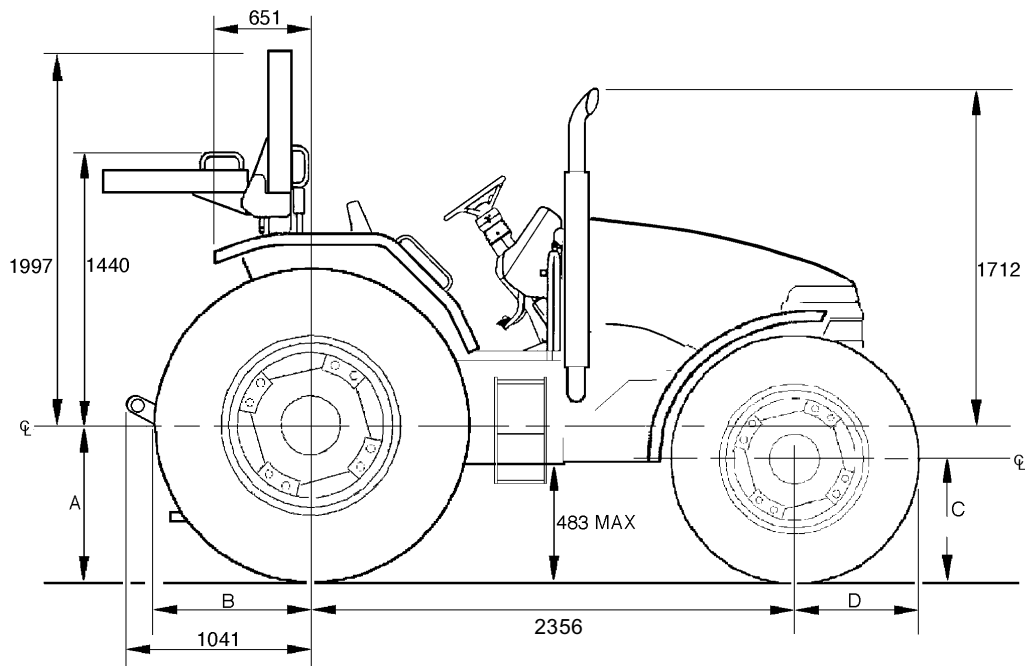
DS00M101

REAR RADIUS		
TYRE SIZE	A	B
	STATIC LOADED	MAX. IN SERVICE
MIN 13.6R28	583	660
MAX 16.9R34	710	803

FRONT RADIUS		
TYRE SIZE	C	D
	STATIC LOADED	MAX. IN SERVICE
MIN 7.50-16	392	413
MAX 11.00-16	465	500

SPECIFICATIONS

Mechanical Front Drive (MFD) Tractor with Foldable 2 Post ROPS



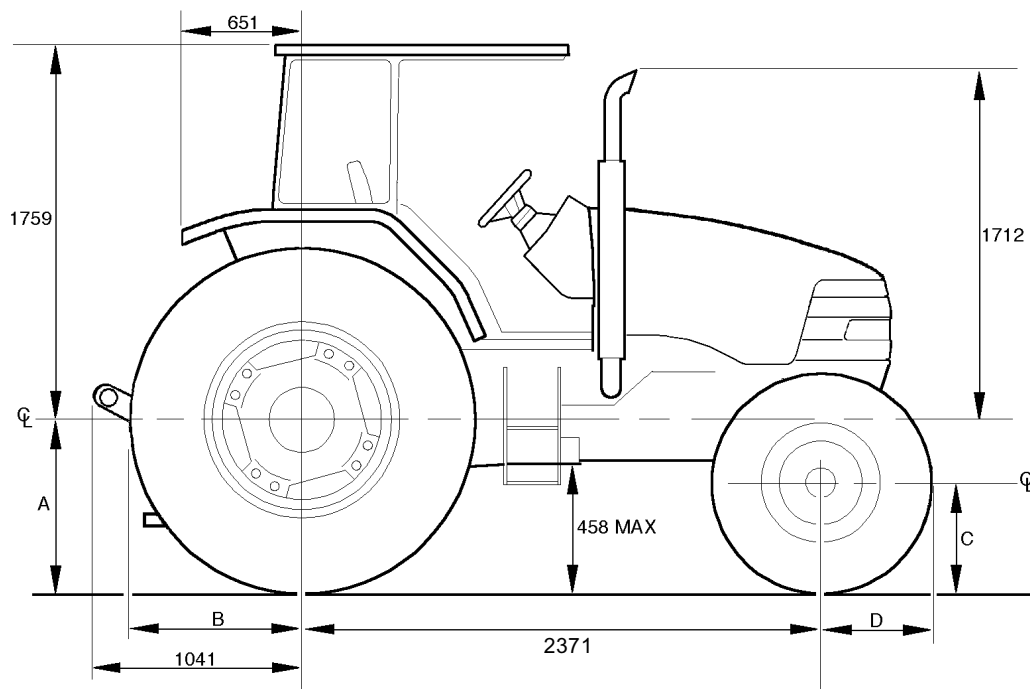
DS00M102

REAR RADIUS		
TYRE SIZE	A	B
	STATIC LOADED	MAX. IN SERVICE
MIN 13.6R28	583	660
MAX 18.4R34	726	840

FRONT RADIUS		
TYRE SIZE	C	D
	STATIC LOADED	MAX. IN SERVICE
MIN 11.2R20	444	508
MAX 13.6R24	543	608

SPECIFICATIONS

Two Wheel Drive (2WD) Tractor with 4 Post ROPS



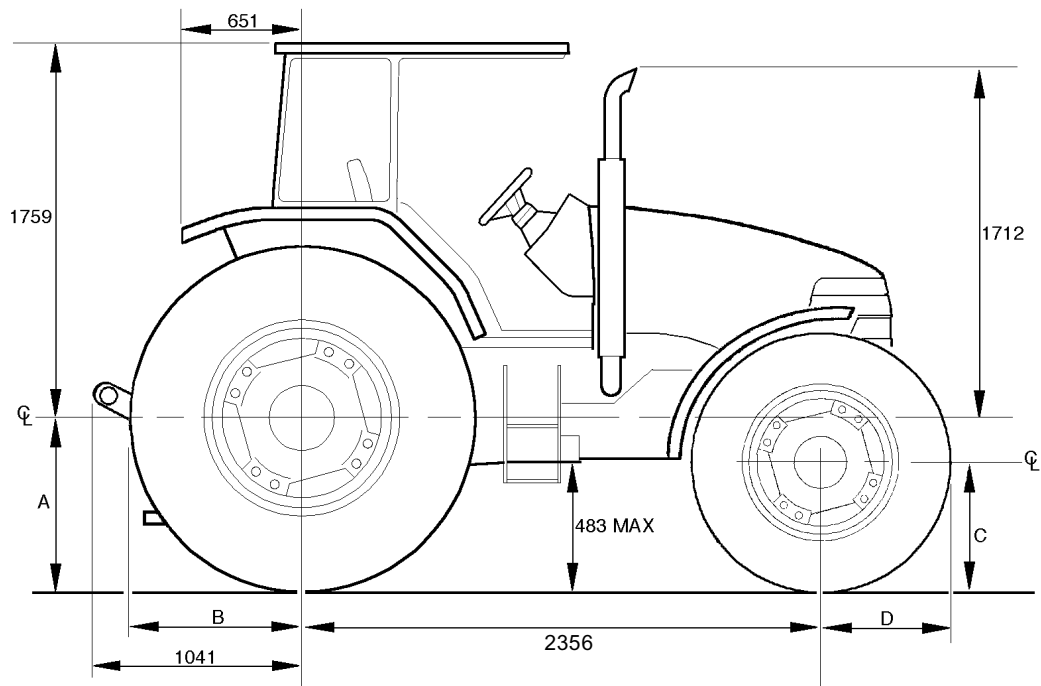
DS00M105

REAR RADIUS		
TYRE SIZE	A	B
	STATIC LOADED	MAX. IN SERVICE
MIN 13.6R28	583	660
MAX 16.9R34	710	803

FRONT RADIUS		
TYRE SIZE	C	D
	STATIC LOADED	MAX. IN SERVICE
MIN 7.50-16	392	413
MAX 11.00-16	465	500

SPECIFICATIONS

Mechanical Front Drive (MFD) Tractor with 4 Post ROPS



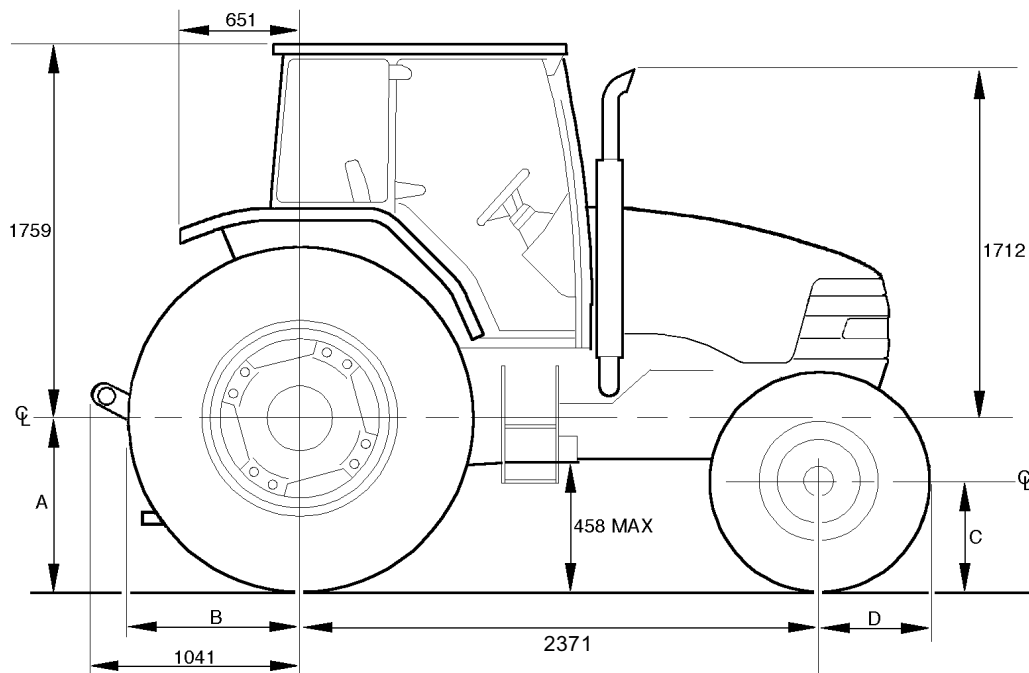
DS00M106

REAR RADIUS		
TYRE SIZE	A	B
	STATIC LOADED	MAX. IN SERVICE
MIN 13.6R28	583	660
MAX 18.4R34	726	840

FRONT RADIUS		
TYRE SIZE	C	D
	STATIC LOADED	MAX. IN SERVICE
MIN 11.2R20	444	508
MAX 13.6R24	543	608

SPECIFICATIONS

Two Wheel Drive (2WD) Tractor with Low Profile Cab



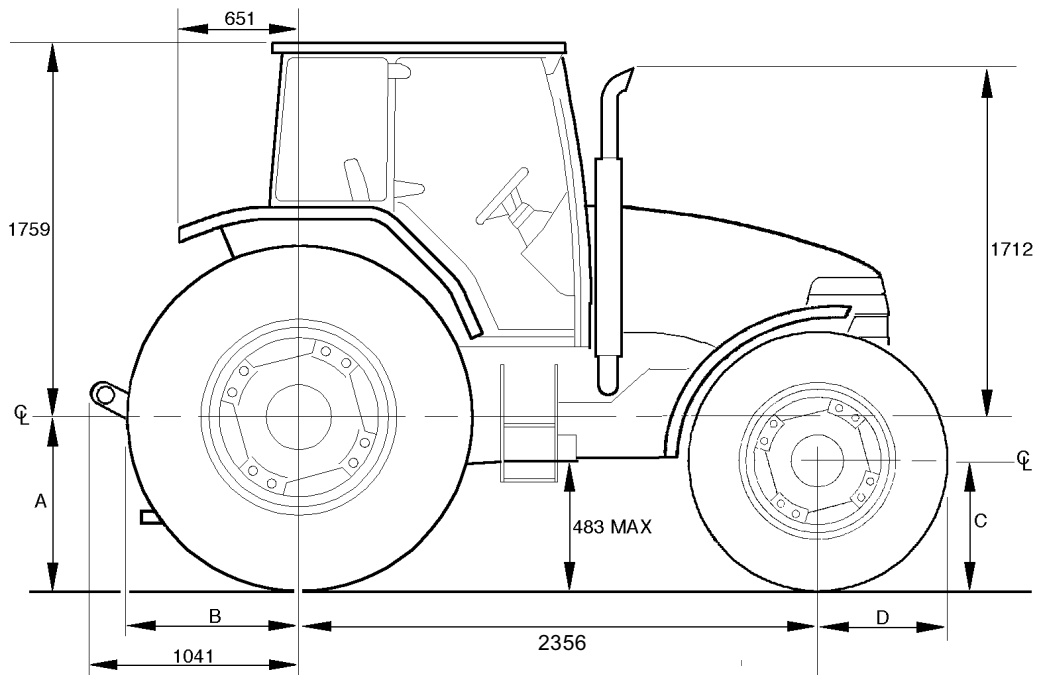
DS00M103

REAR RADIUS		
TYRE SIZE	A	B
	STATIC LOADED	MAX. IN SERVICE
MIN 13.6R28	583	660
MAX 16.9R34	710	803

FRONT RADIUS		
TYRE SIZE	C	D
	STATIC LOADED	MAX. IN SERVICE
MIN 7.50-16	392	413
MAX 11.00-16	465	500

SPECIFICATIONS

Mechanical Front Drive (MFD) Tractor with Low Profile Cab



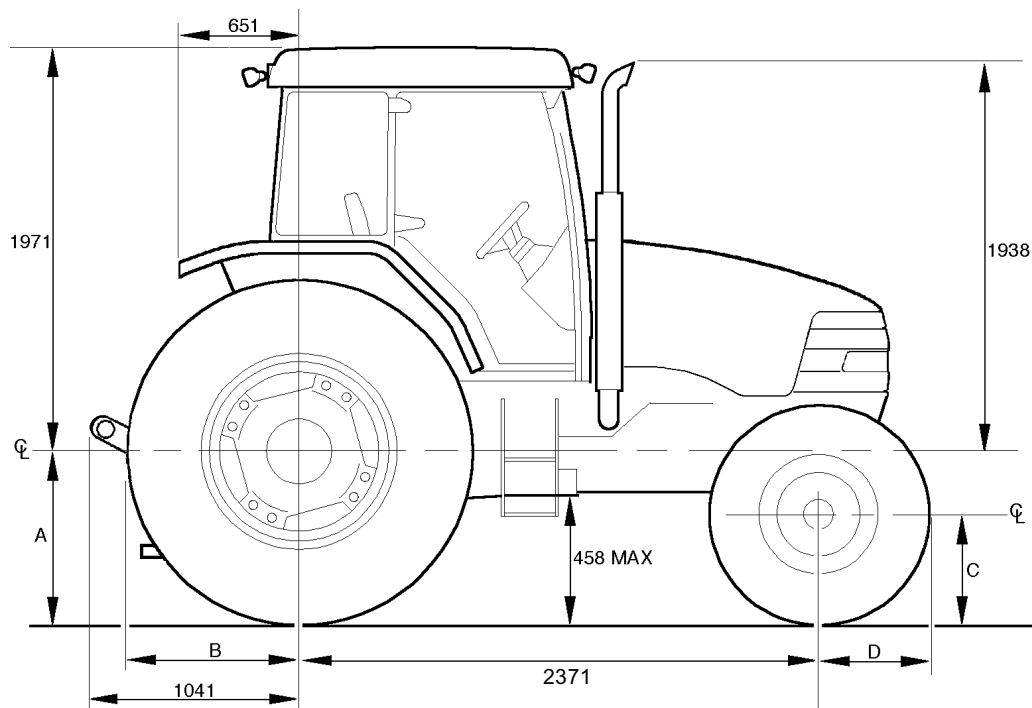
DS00M104

REAR RADIUS		
TYRE SIZE	A	B
	STATIC LOADED	MAX. IN SERVICE
MIN 13.6R28	583	660
MAX 18.4R34	726	840

FRONT RADIUS		
TYRE SIZE	C	D
	STATIC LOADED	MAX. IN SERVICE
MIN 11.2R20	444	508
MAX 13.6R24	543	608

SPECIFICATIONS

Two Wheel Drive (2WD) Tractor with Deluxe Cab



DS00M107

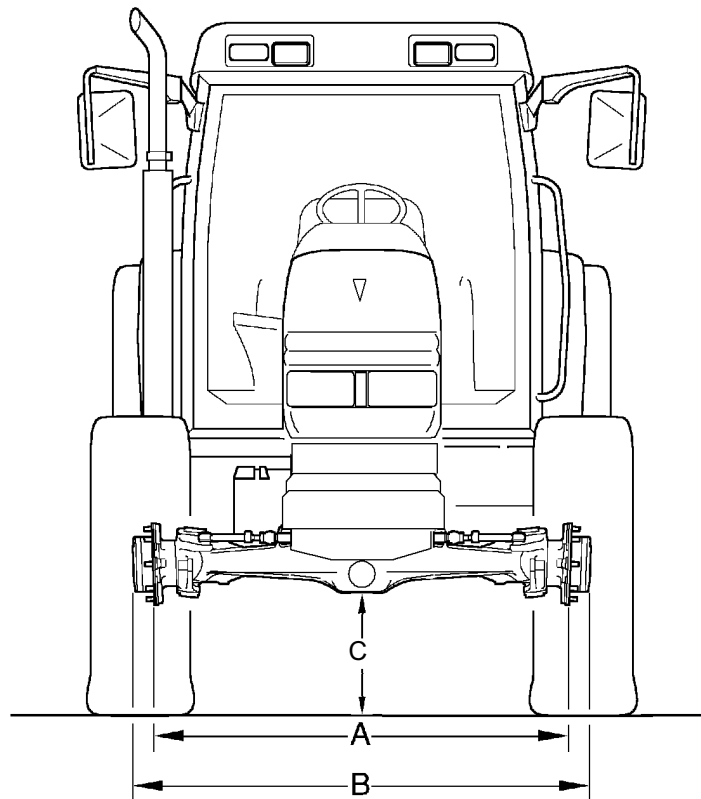
REAR RADIUS		
TYRE SIZE	A	B
	STATIC LOADED	MAX. IN SERVICE
MIN 13.6R28	583	660
MAX 16.9R34	710	803

FRONT RADIUS		
TYRE SIZE	C	D
	STATIC LOADED	MAX. IN SERVICE
MIN 7.50-16	392	413
MAX 11.00-16	465	500

SPECIFICATIONS

Approximate Tractor Width

Front Dimensions



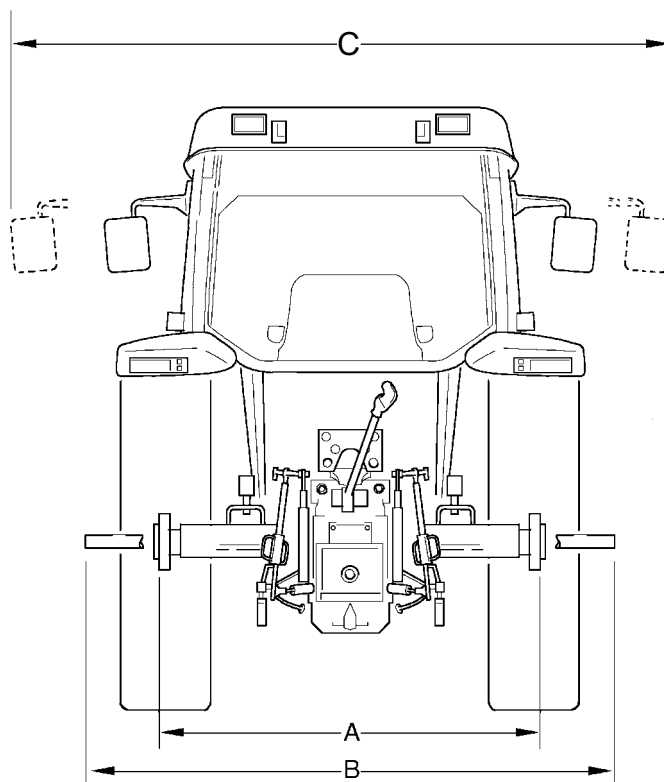
DI97G171

A (FLANGE TO FLANGE)	B (MAXIMUM OVERALL AXLE WIDTH)	C (GROUND CLEARANCE)	
		2WD	MFD
1640 mm	1800 mm	394 mm	531 mm

NOTE: The overall front tractor width will vary depending upon which axle is fitted (eg. 2WD or MFD) and the front tread width setting,

SPECIFICATIONS

Rear Dimensions



DI97E388A

A (FLANGE TO FLANGE)	B (BAR AXLE)	C BASIC MIRRORS	EXTENDABLE MIRRORS	
			MIN	MAX
1565.1 mm	2235 mm	2185 mm	2736 mm	3238 mm

NOTE: The overall rear tractor width will vary depending upon which axle is fitted (eg. Flanged or Bar Axle) and the rear tread width setting.

NOTE: (EEC Member States Only): An overall width of 2500 mm to 3000 mm MAY require local authorization for use on the highway, overall widths above 3000 mm **WILL** require local authorization.

SPECIFICATIONS

APPROXIMATE TRACTOR WEIGHTS

The following weights are only approximate. Many varying factors affect the overall tractor weight; for example:

tyre sizes, ballast, amount of fuel, operator weight and what rear hitch option has been chosen.

NOTE: See *Maximum recommended Operating Weights on page 249 in this manual for complete weight recommendations.*

Tractors with ROPS

MODEL		FRONT	REAR	TOTAL
CX75	2WD	1175 kg (2590 lb)	2050 kg (4519 lb)	3225 kg (7109 lb)
	MFD	1475 kg (3252 lb)	2160 kg (4762 lb)	3635 kg (8014 lb)
CX85 CX95 CX105	2WD	1180 kg (2601 lb)	2050 kg (4519 lb)	3230 kg (7120 lb)
	MFD	1480 kg (3263 lb)	2160 kg (4762 lb)	3640 kg (8025 lb)

Tractors with Low Profile Cab

MODEL		FRONT	REAR	TOTAL
CX75	2WD	1205 kg (2657 lb)	2075 kg (4575 lb)	3280 kg (7232 lb)
	MFD	1505 kg (3318 lb)	2185 kg (4817 lb)	3690 kg (8135 lb)
CX85 CX95 CX105	2WD	1210 kg (2668 lb)	2025 kg (4464 lb)	3235 kg (7132 lb)
	MFD	1460 kg (3219 lb)	2085 kg (4597 lb)	3545 kg (7816 lb)

Tractors with Deluxe Cab

MODEL		FRONT	REAR	TOTAL
CX75	2WD	1240 kg (2734 lb)	2110 kg (4652 lb)	3350 kg (7386 lb)
	MFD	1540 kg (3395 lb)	2220 kg (4894 lb)	3760 kg (8289 lb)
CX85 CX95 CX105	2WD	1245 kg (2745 lb)	2110 kg (4652 lb)	3355 kg (7397 lb)
	MFD	1545 kg (3406 lb)	2200 kg (4894 lb)	3765 kg (8300 lb)

SPECIFICATIONS

Maximum Permitted Operating Weights

IMPORTANT:

1. *DO NOT* exceed the maximum load capacity of the tyres on your tractor. See *Loads and Inflation Pressures* in this manual for more information.
2. *DO NOT* exceed the local legal limitations of the axle loads and the total weight on the road.
3. *ALWAYS* refer to tractor P.I.N. plate for front and rear permissible axle loads.

Maximum Permitted TRACTOR Operating Weight

The maximum permitted tractor operating weight includes the tractor,
additional tractor equipment/implements and ballast..... 6000 kg (13 226 lb)

Maximum Permitted AXLE Operating Weight

The maximum permitted axle operating weight includes the tractor, tractor equipment, ballast and three-point hitch mounted equipment.

FRONT AXLE

For Road Operation up to 30 km/h (19 mph)

2WD Front Axle at 1530 mm (60 in) tread	2400 kg (5209 lb)
MFD Front Axle at 1530 mm (60 in) tread	2900 kg (6393 lb)

For Road Operation 30 km/h - 40 km/h (25 mph)

2WD Front Axle at 1530 mm (60 in) tread	2112 kg (4655 lb)
MFD Front Axle at 1530 mm (60 in) tread	2900 kg (6393 lb)

REAR AXLE

For Road Operation

Rear Axle at 1530 mm (60 in) tread	4800 kg (10 582 lb)
--	---------------------

For Off Road Operation upto 8 km/h (5 mph)

2WD Front Axle at 1530 mm (60 in) tread	2800 kg (6173 lb)
2WD Front Axle at maximum tread	1600 kg (3527 lb)
MFD Front Axle at 1530 mm (60 in) tread	3653 kg (8053 lb)
MFD Front Axle at maximum tread	2404 kg (5300 lb)
Rear Axle at 1530 mm (60 in) tread	5000 kg (11 031 lb)
Rear Axle at maximum tread	3300 kg (7275 lb)

SPECIFICATIONS

NOISE LEVELS

This Tractor is designed such that:

1. Noise level inside the cab at operator's ear
(measured in accordance with
EEC Directive 77/311/EEC) is 73 to 77* dB (A) Annex II,
Doors and windows closed

2. Bystander noise level 7500 mm (295 in)
away from the cab at bystander ear
(measured in accordance with
EEC Directive 74/151/EEC) is 80 to 85* dB (A) Annex VI

* These figures will vary depending upon tractor model and specification.

NOTE: *If a radio is operated at the work position, for the radio to be heard, the volume level required is approximately 3 dB(A) above that of the machine/work station noise level.*

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