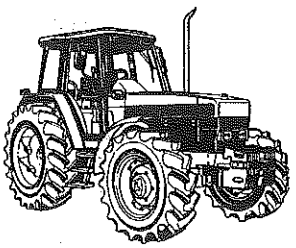
Tractors

5640
6640
7740
7840
8240
8340

SL and SLE Range

Serial #017221B and above

OPERATOR'S MANUAL



NEW HOLLAND

42564061 4/96
Print No. 604.53.081.10

New Holland Warranty Detail

ıeriod will begin on date of original retail sale or date of original use, whichever is earlier.

on of Company to the purchaser under this warranty is limited to the repair or replacement of defective authorized New Holland dealer and will be done free of charge for both parts and labor using genuine d replacement parts. Repair or replacement in accordance with this warranty shall constitute fulfillment es of Company and the Selling Dealer in respect to such Products.

eplacements will be performed by the Selling Dealer, following delivery of the Product by the purchaser er's place of business. When the purchaser has moved a long distance from the Selling Dealer, or Dealer is no longer in business, any New Holland dealer authorized to sell and service the described ıy perform the repair at its dealership.

Dealer shall review these warranty provisions with the purchaser prior to retail sale, secure his ement of delivery of this warranty and record the date of original retail sale or date of original use.

arranty service, the purchaser must (1) report the product defect to an authorized New Holland dealer repair within the applicable warranty term and (2) present evidence of the warranty start date.

COVERED BY THE WARRANTY?

ty shall NOT apply under the following conditions:

espect to vendor warranty items such as Allison transmissions and Deutz, Cummins and Caterpillar ıs, or tires, tubes, and attachments which shall be warranted by their manufacturer, or local representative f.

unit has been subject to misapplication, abuse, misuse, negligence of proper maintenance or other ence, fire or other accident.

s or attachments other than those made or marketed by New Holland North America, Inc. or New d Canada, Ltd., have been used in connection with the unit, and in the sole judgment of Company se affects its performance, stability or reliability.

unit has been altered or repaired outside of a New Holland dealership in a manner which, in the dgment of Company, affects its performance, stability or reliability.

es are covered by a separate pro rata adjustment warranty. The pro-rata plan covers the battery fully basic product warranty period as indicated, with any remaining warranty pro-rated according to the s of service.

ırchaser shall be responsible for payment of dealer travel time to the machine or to deliver the machine dealer's service shop for repair. New Holland warranty does not cover delivery charges or travel time.

ɔmpany shall have no liability for used equipment sold beyond the specified coverage period.

rranty shall apply to damage resulting from accident or damage caused by environment (such as ıre to corrosive material). The Company shall not be responsible for rental equipment used to replace ıipment being repaired.

arranty shall NOT apply to normal maintenance services (such as tune-ups, fuel injection system cleaning el, brake and clutch adjustments), to normal replacement of service items (such as filters and brake ch linings), or to normal deterioration due to use or exposure (such as belts and exterior finish). lolland shall not be responsible for normal replacement parts such as cutting knives, chains, belts, es, filters, oil, or other parts which are worn out, unless they are determined to be defective in material kmanship.

arranty shall NOT apply to any New Holland Product which is retailed or distributed by anyone other lew Holland North America, Inc. or New Holland Canada, Ltd., through its authorized dealers. This ıty shall NOT apply to any Product which is normally operated outside of the United States, and/ ıada.

arranty shall NOT apply if the purchaser, insurance company, or any other entity or individual acting ıalf of the purchaser seeks reimbursement for the dollar value of the repair(s) or replacement(s) covered this warranty.

njection pump has been set for fuel delivery above New Holland specifications.

KE DESIGN CHANGES

rves the right to make changes in the design and other changes in its products at any time and from ithout notice and without incurring any obligation with respect to any product previously ordered shipped by it.

TABLE OF CONTENTS

OWNER ASSISTANCE

We at New Holland and your New Holland dealer want you to be completely satisfied with your investment. Normally any problems with your equipment will be handled by your dealer's Service Department. Sometimes, however, misunderstanding can occur. If your problem has not been handled to your satisfaction, we suggest the following.

1. Contact the owner or General Manager of the dealership, explain the problem, and request assistance. When additional assistance is needed, your dealer has direct access to our branch office.

2. If you cannot obtain satisfaction by doing this, contact the branch office in your area and provide them with:

    - Your name, address, and telephone number
    - Machine model and serial number
    - Dealership name and address
    - Machine purchase date and amount of use
    - Nature of problem

Atlanta
4727 N Royal Atlanta Dr Suite P
Caller Service 105018
Tucker, GA 30085-5018
Telephone: (770) 723-3605
States: AL, FL, GA, KY, MS,
NC, SC, TN, VA

Dallas
1340 Walnut Hill Lane Bldg 2
P.O. Box 167528
Irving, TX 75016-7528
Telephone: (214) 756-4919
States: AR, AZ, CA, CO, HI, KS,
LA, MO, NM, NV, OK, TX, UT

Minneapolis
6301 W Old Shakopee Rd
P.O. Box 1342
Minneapolis, MN 55440-1342
Telephone: (612) 887-4231
States: AK, IA, ID, IL, MN, MT,
ND, NE, OR, SD, WA, WI, WY

New Holland
200 Commerce St.
P.O. Box 527
Mountville, PA 17554-0527
Telephone: (717) 285-8302
States: CT, DE, IN, MA, MD, ME,
MI, NH, NJ, NY, OH, PA ,RI, VT,
WV

Calgary
Suite 220
3030 Third Ave. NE
Box 1616, Stn M
Calgary, AB
CANADA T2P 2M7
Telephone: (403) 569-3208

3. If you need further assistance contact:

    Service Department
    Mail Station 500
    New Holland North America, Inc.
    New Holland, PA 17557

When contacting your branch office or Service Department, be aware that your problem will likely be resolved in the dealership using the dealer's facilities, equipment, and personnel. So it is important that your initial contact be with the dealer.

A Service Publications Catalog & Order Form is available which lists the operator's and service manuals for many prior model and most current model Ford - New Holland - Versatile tractors, equipment, and consumer products. To obtain a copy of this catalog, please call 1-800-635-4913.

TO THE OWNER

GENERAL

This Manual has been prepared to assist you in the correct procedure for running-in, driving and operating and for the maintenance your new tractor. Your tractor, which was designed to power and propel itself, is intended for use in normal and customary agricultural applications.

Read this Manual carefully and keep it in a convenient place for future reference. If at any time you require advice concerning your tractor, do not hesitate to contact your authorised dealer. He has factory trained personnel, genuine manufacturers' parts and the necessary equipment to carry out all your service requirements.

Your tractor has been designed and built to give maximum performance, economy and ease of operation under a wide variety of operating conditions. Prior to delivery, the tractor was carefully inspected, both at the factory and by your dealer to ensure that it reaches you in optimum condition. To maintain this condition and ensure trouble-free operation, it is important that the routine services, as specified in section 3 of this Manual, are carried out at the recommended intervals.

CLEANING YOUR TRACTOR

Your tractor is a state-of-the-art machine with sophisticated, electronic controls. This should be borne in mind when cleaning the tractor, particularly if using a high pressure washer. Even though every precaution has been taken to safeguard electronic components and connections, the pressure generated by some of these machines is such that complete protection against water ingress cannot be guaranteed.

- When using a high pressure washer, do not stand too close to the tractor and avoid directing the jet at electronic components, electrical connections, breathers, seals, filler caps, etc.

- Never direct a cold water jet at a hot engine or exhaust.

SAFETY

The following pages list the precautions to be observed to ensure your safety and the safety of others. Read the safety precautions and follow the advice offered **before** operating the tractor.

FIRST 50 HOUR SERVICE

At the back of this Manual (just before the index) you will find the 50–hour service reports.

After you have operated the tractor for 50 hours, take your tractor, together with this Manual, to your dealer. He will then perform the factory recommended 50 hour service and complete the service report sheets. The first sheet is the dealer's copy and should be removed by the dealer after the service has been carried out. The second sheet is your copy of the service performed. **Ensure that you and the dealer sign both copies.**

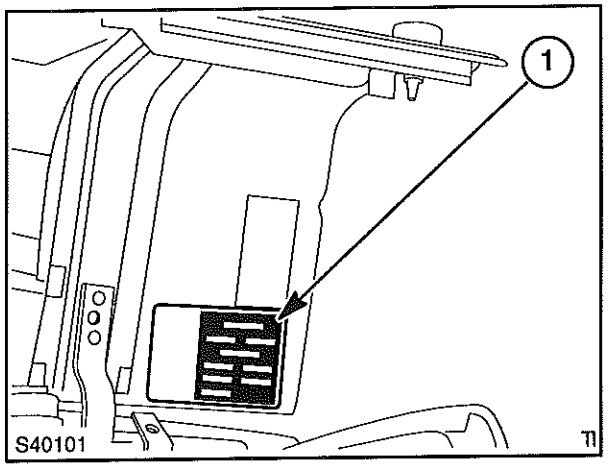
SERVICE PARTS

It should be pointed out that genuine parts have been examined and approved by the Company. The installation and/or use of 'non-genuine' products could have negative effects upon the design characteristics of your tractor and thereby affect it's safety. The Company is not liable for any damage caused by the use of 'non-genuine' parts and accessories.

It is prohibited to carry out any modifications to the tractor unless specifically authorised, in writing, by the After Sales Service department of the Company.

WARRANTY

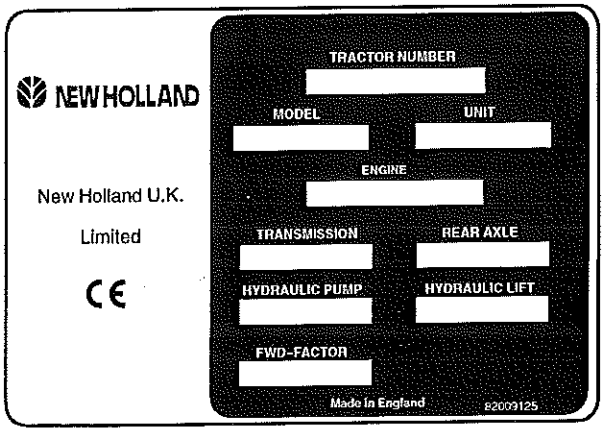
Your tractor is warranted according to legal rights in your country and the contractual agreement with the selling dealer. No warranty shall, however, apply if the tractor has not been used, adjusted and maintained according to the instructions given in the Operator's Manual.



0-1

The tractor and major components are identified using serial numbers and/or manufacturing codes. Tractor identification data must be supplied to the dealer when requesting parts or service and will also be needed to aid in identifying the tractor if it is ever stolen.

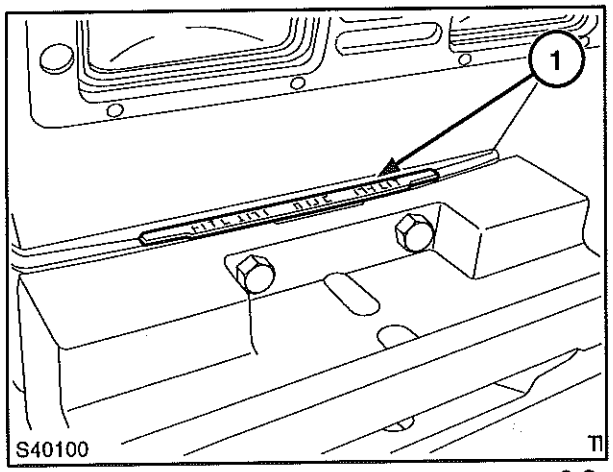
The following provides the locations of the identification data.



0-2

Vehicle Identification Plate – Figures 0-1 and 0-2

The vehicle identification plate is located on the underside of the hood, as shown in (1) Figure 0-1. Record the information on the sample identification plate, Figure 0-2.



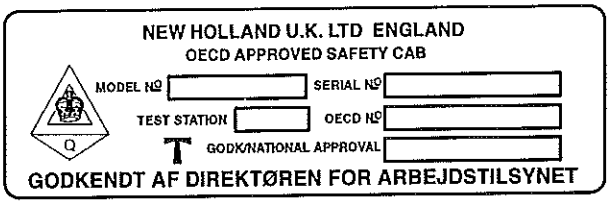
0-3

Tractor Identification – Figure 0-3

The serial number and model identification information is stamped on the top of the front support (1). These numbers are also repeated on the vehicle identification plate reproduced above.

Cab/Frame Identification – Figure 0-4

The cab/frame serial number and other information is on the OECD certification plate (1) on the inner surface of the left-hand crossrail, beneath the windscreen. If your tractor does not have a cab a similar plate is fixed to the ROPS frame. Record the serial number below for quick reference.



0-4

Cab Serial No. _____

IMPORTANT ECOLOGICAL CONSIDERATIONS

Soil, air and water are vital factors of agriculture and life in general. Where legislation does not yet rule the treatment of some of the substances which are required by advanced technology, common sense should govern the use and disposal of products of a chemical and petrochemical nature.

The following are recommendations which may be of assistance:

- Become acquainted with and ensure that you understand the relative legislation applicable to your country.

- Where no leglislation exists, obtain information from suppliers of oils, filters, batteries, fuels, antifreeze, cleaning agents, etc., with regard to their effect on man and nature and how to safely store, use and dispose of these substances. Agricultural consultants will, in many cases, be able to help you as well.

HELPFUL HINTS

1. Avoid filling tanks using jerrycans or inappropriate pressurised fuel delivery systems which may cause considerable spillage.

1. In general, avoid skin contact with all fuels, oils, acids, solvents, etc. Most of them contain substances which can be harmful to your health.

3. Modern oils contain additives. Do not burn contaminated fuels and/or waste oils in ordinary heating systems.

4. Avoid spillage when draining off used engine coolant mixtures, engine, gearbox and hydraulic oils, brake fluids, etc. Do not mix drained brake fluids or fuels with lubricants. Store them safely until they can be disposed of in a proper way to comply with local legislation and available resources.

5. Modern coolant mixtures, i.e. antifreeze and other additives, should be replaced every two years. They should not be allowed to get into the soil but should be collected and disposed of safely.

6. Do not open the air-conditioning system yourself. It contains gases which should not be released into the atmosphere. Your dealer or air conditioning specialist has a special extractor for this purpose and will have to recharge the system anyway.

7. Repair any leaks or defects in the engine cooling or hydraulic system immediately.

8. Do not increase the pressure in a pressurised circuit as this may lead to the components exploding.

9. Protect hoses during welding as penetrating weld splatter may burn a hole or weaken them, causing the loss of oils, coolant, etc.

A careful operator is the best operator. Most accidents can be avoided by observing certain precautions. To help prevent accidents, read and take the following precautions **before** driving, operating or servicing the tractor. Equipment should be operated only by those who are responsible and instructed to do so.

SAFETY PRECAUTIONS

PRECAUTIONARY STATEMENTS

Throughout this Manual you will see text in *italics*, preceded by the words **NOTE, ATTENTION, IMPORTANT CAUTION, WARNING** or **DANGER**. Such text has the following significance:

Machine Safety

NOTE: *This text stresses a correct operating technique or procedure.*

ATTENTION: *This text warns the operator of potential machine damage if a certain procedure is not followed.*

IMPORTANT: *This text informs the reader of something that he needs to know to prevent minor machine damage if a certain procedure is not followed.*

Personal Safety

CAUTION: *The word CAUTION is used where a safe behavioural practice, according to operating and maintenance instructions and common safety practices will protect the operator and others from accident involvement.*

WARNING: *The word WARNING denotes a potential or hidden hazard which could possibly cause serious injury. It is used to warn operators and others to exercise due care and attention to avoid a surprise accident with machinery.*

DANGER: *The word DANGER denotes a forbidden practice in connection with a serious hazard.*

Failure to follow the CAUTION, WARNING and DANGER instructions may result in serious bodily inury or even death.

THE TRACTOR

1. Read the Operator's Manual carefully before using the tractor. Lack of operating knowledge can lead to accidents.

2. Only allow properly trained and qualified persons to operate the tractor.

2. To prevent falls, use the handrails and step plates when getting on and off the tractor. Keep steps and platform clear of mud and debris.

4. Replace all missing, illegible or damaged safety decals.

5. Keep safety decals free of dirt or grime.

6. Do not permit anyone but the operator to ride on the tractor unless a passenger seat is fitted. There is no safe place for extra passengers otherwise.

7. Keep children away from the tractor and farm machinery at all times.

8. Do not modify or alter or permit anyone else to modify or alter the tractor or any of its components or any tractor function without first consulting your dealer.

9. Install all guards before starting the engine or operating the tractor.

DRIVING THE TRACTOR

1. Always sit in the driver's seat while starting or driving the tractor.

2. When driving on public roads, have consideration for other road users. Pull in to the side of the road occasionally to allow any following traffic to pass. Do not exceed the legal speed limit set in your country for agricultural tractors.

3. Use a rotating beacon when driving on public roads to indicate that the vehicle is slow moving and is a possible hazard.

4. Dip the tractor lights when meeting a vehicle at night. Make sure the lights are adjusted to prevent blinding the driver of an oncoming vehicle.

5. Reduce speed before turning or applying the brakes. Ensure that both brake pedals are locked together when travelling at road speeds or when on public roads. Brake both wheels simultaneously when making an emergency stop.

6. On four wheel drive tractors, the drive to the front axle is automatically engaged, to provide four wheel braking, when both footbrakes are applied. Owners should be aware of the effectiveness of four wheel braking which greatly enhances braking performance. Appropriate care should be exercised during fierce braking.

7. Use extreme caution and avoid hard application of the tractor brakes when towing heavy loads at road speeds.

8. Keep the tractor in the same gear when going downhill as would be used when going uphill. Do not coast or freewheel down hills.

9. Any towed vehicle whose total weight exceeds that of the towing tractor must be equipped with brakes for safe operation.

10. Never apply the differential lock when turning. When engaged, the differential lock will prevent the tractor from turning.

11. Always check overhead clearance, especially when transporting the tractor. Watch where you are going, especially at row ends, on roads and around trees and low overhanging obstacles.

12. To avoid overturns, drive the tractor with care and at speeds compatible with safety, especially when operating over rough ground, when crossing ditches or slopes and when turning corners.

13. Use extreme caution when operating on steep slopes.

14. If the tractor becomes stuck or the tires are frozen to the ground, reverse the tractor out to prevent overturning.

OPERATING THE TRACTOR

1. Apply the parking brake, place the P.T.O. control in the 'OFF' position, the lift control lever in the down position, the remote control valve levers in the neutral position and the transmission levers in neutral before starting the tractor.

2. Do not start the engine or operate controls (other than the external hydraulic lift switches) while standing beside the tractor. Always sit in the tractor seat when starting the engine or operating the controls.

3. Do not bypass the transmission and P.T.O. neutral start switches. Consult your authorised dealer if your neutral start controls malfunction. Use jump leads only in the recommended manner. Improper use can result in a tractor runaway.

4. Avoid accidental contact with the gear shift levers while the engine is running. Unexpected tractor movement can result from such contact.

5. Do not get off the tractor while it is in motion.

6. If the power steering or engine ceases operating, stop the tractor immediately as the tractor will be more difficult to control.

7. Before leaving the tractor, park the tractor on level ground, apply the parking brake, lower attached implements to the ground, disengage the P.T.O.and stop the engine,.

8. Do not park the tractor on a steep incline.

9. The cab is designed to provide the minimum noise level at the operator's ears and meets or exceeds applicable standards in this respect. However, noise (sound pressure level) in the workplace can exceed 85 dB(A) when working between buildings or in confined spaces, with cab windows open. Therefore, it is recommended that operators wear suitable ear protectors when operating in high noise level conditions.

10. Do not run the tractor engine in an enclosed building without adequate ventilation. Exhaust fumes are toxic and can cause death.

11. Pull only from the pick-up hitch, swinging drawbar or the lower link drawbar in the lowered position. Use only a drawbar pin that locks in place. Pulling from the tractor rear axle or any point above the axle may cause the tractor to overturn.

12. Always select Position Control when attaching equipment and when transporting equipment. Be sure hydraulic couplers are properly mounted and will disconnect safely in case of accidental detachment of the implement.

13. If the front end of the tractor tends to rise when heavy implements are attached to the three–point hitch, install front end or front wheel weights. Do not operate the tractor with a light front end.

14. Ensure any attached equipment or accessories are correctly installed, are approved for use with the tractor, do not overload the tractor and are operated and maintained in accordance with the instructions issued by the equipment or accessory manufacturer.

15. Remember that your tractor, if abused or incorrectly used, can be dangerous and become a hazard both to the operator and to bystanders. Do not overload or operate with attached equipment which is unsafe, not designed for the particular task or is poorly maintained.

16. Do not leave equipment in the raised position when the vehicle is stopped or unattended.

17. Do not drive equipment near open fires.

18. Always wear a protective mask when working with toxic spray chemicals. Follow the directions on the chemical container.

OPERATING THE P.T.O.

1. When operating P.T.O.- driven equipment, shut off the engine, switch off the P.T.O. and wait until the P.T.O. stops before getting off the tractor and disconnecting the equipment.

2. Do not wear loose clothing when operating the power take-off or especially when near rotating equipment.

3. When operating stationary P.T.O.-driven equipment, always apply the tractor parking brake and block the rear wheels front and back.

4. To avoid injury, do not clean, adjust, unclog or service P.T.O. driven equipment when the tractor engine is running. Ensure that the P.T.O. is switched off.

5. Make sure the P.T.O. guard is in position at all times and always replace the P.T.O. cap when the P.T.O. is not in use.

SERVICING THE TRACTOR

1. The cooling system operates under pressure which is controlled by the expansion tank cap. It is dangerous to remove the cap while the system is hot. Always turn the cap slowly to the first stop and allow the pressure to escape before removing the cap entirely. Never remove the cap from the top of the radiator unless the expansion tank pressure cap has first been removed.

2. Do not smoke while refuelling the tractor. Keep any type of open flame away.

3. Keep the tractor and equipment, particularly brakes and steering, maintained in a reliable and satisfactory condition to ensure your safety and comply with legal requirements.

4. To prevent fire or explosion, keep open flames away from battery or cold weather starting aids. To prevent sparks which could cause explosion, use jumper cables according to instructions.

5. Do not attempt to service the air conditioning system. It is possible to be severely frost bitten or injured by escaping refrigerant. Special equipment and instruments are required to service the air conditioning system. See your authorised dealer for service.

6. Stop the engine before performing any service on the tractor.

7. Hydraulic fluid and fuel oil in the injection system operate under high pressure. Escaping hydraulic fluid or fuel oil under pressure can penetrate the skin causing serious injury. Unqualified persons should not remove or attempt to adjust a pump, injector, nozzle or any other part of the fuel injection or hydraulic systems. Failure to follow these instructions can result in serious injury.

- **Do not** use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.

- Stop the engine and relieve pressure before connecting or disconnecting lines.

- Tighten all connections before starting the engine or pressurising lines.

- If fluid is injected into the skin obtain medical attention immediately or gangrene may result.

8. Do not modify or alter or permit anyone else to modify or alter the tractor or any of its components or any tractor function without first consulting an authorised dealer.

9. Continuous long term contact with used engine oil may cause skin cancer. Avoid prolonged contact with used engine oil. Wash skin promptly with soap and water.

10. Keep equipment clean and properly maintained.

11. Dispose of all drained fluids and removed filters properly.

12. Tractor wheels are very heavy. Handle with care and ensure, when stored, that they cannot topple and cause injury.

DIESEL FUEL

1. Under no circumstances should gasoline, alcohol or blended fuels be added to diesel fuel. These combinations can create an increased fire or explosive hazard. In a closed container such as a fuel tank these blends are more explosive than pure gasoline. Do not use these blends.

2. Never remove the fuel cap or refuel with the engine running or hot.

3. Do not smoke while refuelling the tractor or when standing near fuel. Keep any type of open flame away.

4. Maintain control of the fuel filler pipe nozzle when filling the tank.

5. Do not fill the fuel tank to capacity. Fill only to the bottom of the filler neck to allow room for expansion.

6. Wipe up spilled fuel immediately.

7. Always tighten the fuel tank cap securely.

8. If the original fuel tank cap is lost, replace it with an approved cap. A non–approved cap may not be safe.

9. Never use fuel for cleaning purposes.

10. Arrange fuel purchases so that summer grade fuels are not held over and used in the winter.

SAFETY CAB OR FRAME (where fitted)

Your tractor is equipped with a safety cab or ROPS-frame (Roll Over Protection System) which must be maintained in a serviceable condition. Be careful when driving through doorways or working in confined spaces with low headroom.

1. Do not modify, drill, weld or alter the safety cab or frame in any way. Doing so could render you liable to legal prosecution in some countries.

2. Never attempt to straighten or weld any part of the main frame or retaining brackets which have suffered damage. By doing so you may weaken the structure and endanger your safety.

3. Do not secure any parts on the main frame or attach your safety cab or frame with other than the special high tensile bolts and nuts specified.

4. Never attach chains or ropes to the cab or main frame for pulling purposes.

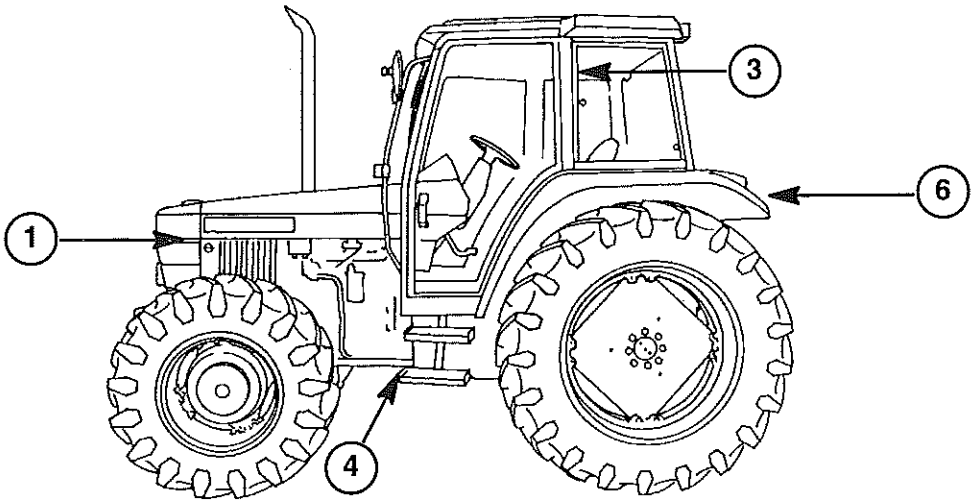
5. Never take unnecessary risks even though your safety cab or frame affords you the maximum protection possible.

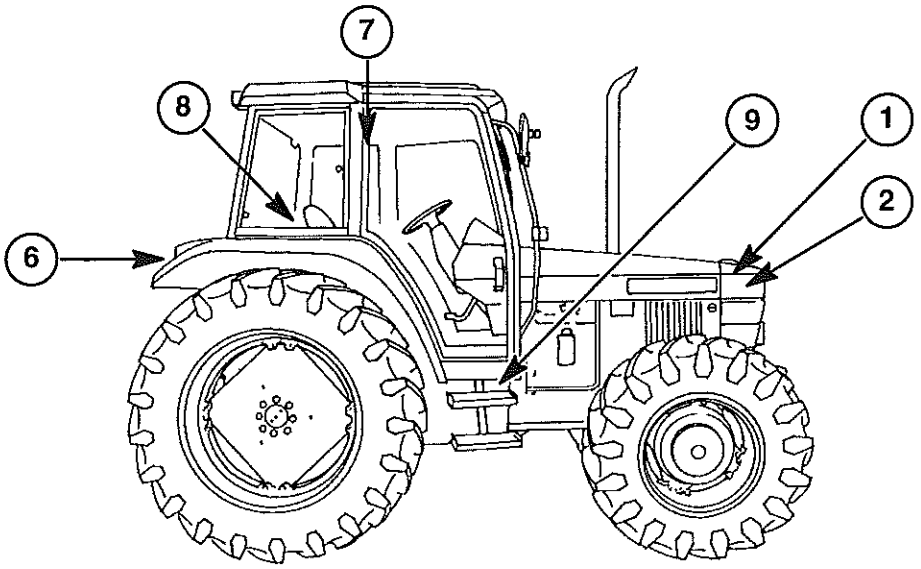
Whenever you see this symbol  **it means: ATTENTION!**

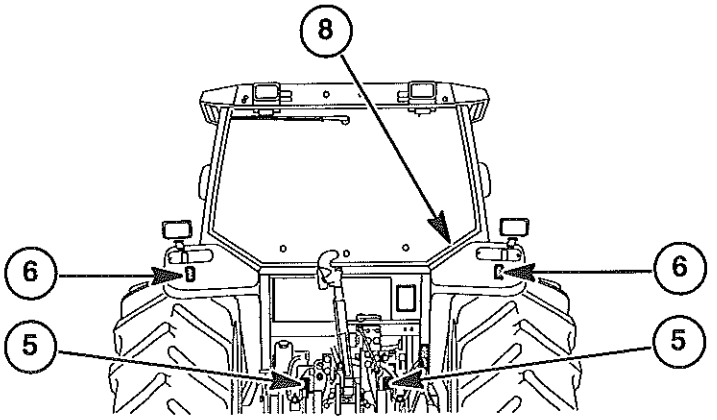
BECOME ALERT! YOUR SAFETY IS INVOLVED!

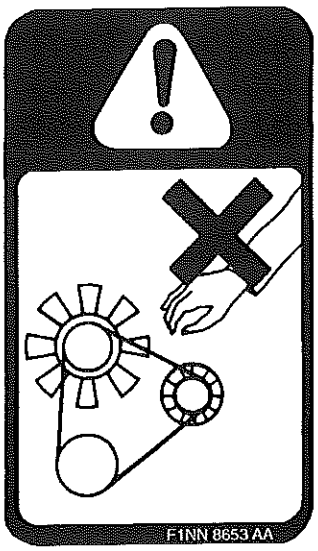
SAFETY DECALS

The decals reproduced on the following pages were installed on your tractor in the positions indicated in the drawings below. They are intended for your safety and for those working with you. Please take this Manual and walk around your tractor, noting the location of the decals and their significance. Review the decals and operating instructions detailed in this Manual with the machine operators. Keep the decals clean and legible. If they become damaged or illegible, obtain replacements from your authorised dealer.



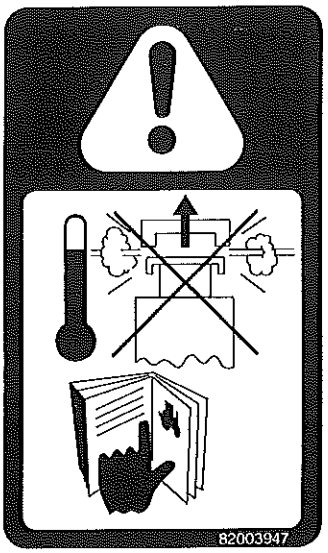






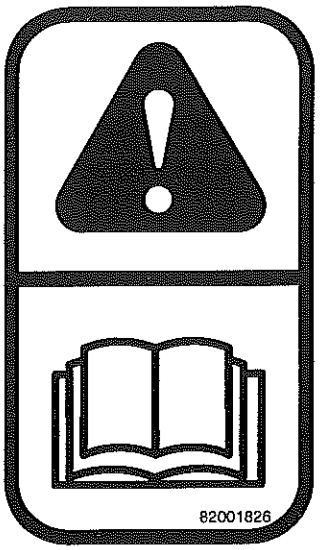
1. Location: Left- and right-hand side of radiator

To prevent serious injury, keep hands and clothing away from rotating fan and drive belt.



2. Location: Underside of hood

Warning! Pressurised cooling system. Allow to cool then remove cap carefully. Using a cloth, turn cap to the first stop and allow pressure to subside before removing cap completely.

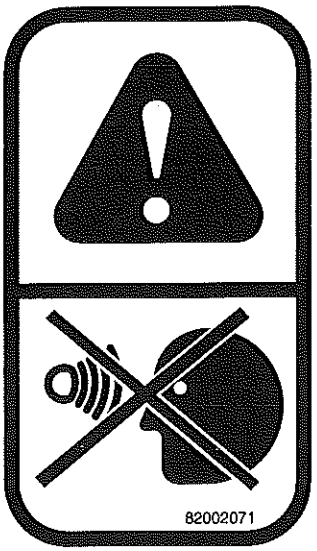


3. Location: Right-hand 'B' pillar, inside cab

General warning. Read and understand all the warning notes printed in this Operator's Manual. In particular, see pages v to xi inclusive.

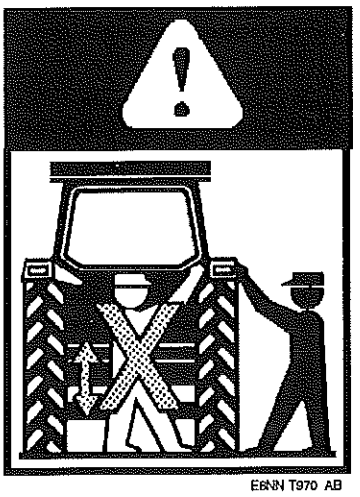
4. Location: Radar sensor mounting bracket (U.K. only)

To avoid possible eye damage from micro-wave signals emitted by the radar sensor, do not look directly into the sensor face.



4. Location: Radar sensor mounting bracket (all countries except the U.K.)

To avoid possible eye damage from micro-wave signals emitted by the radar sensor, do not look directly into the sensor face.

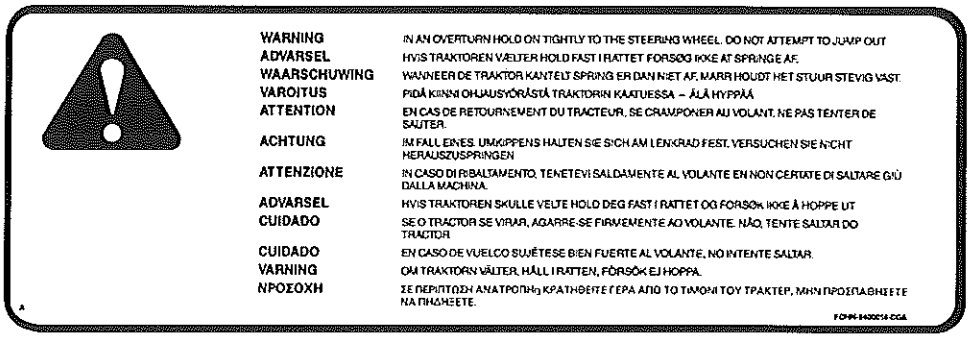


6. Location: Rear of both fenders (with external power lift controls only)

To avoid injury, do not stand on the implement or between the implement and tractor while operating the external lift controls.

7. Location: Left–hand 'B' pillar inside the cab

In an overturn, hold on tightly to the steering wheel. Do not attempt to jump out.



8. Location: Right–hand fender (less cab tractors only)

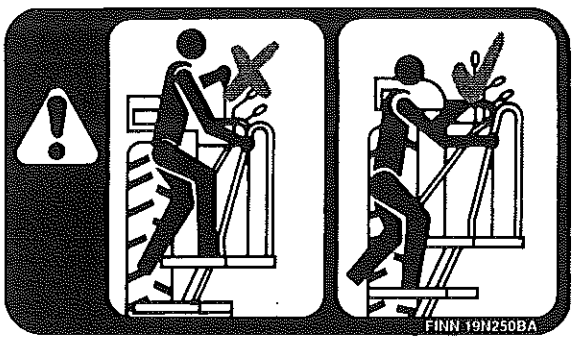
In an overturn, hold on tightly to the steering wheel. Do not attempt to jump out.

9. Location: Top of battery

Danger! Corrosive acid. Explosive gas. Wear eye protection. Avoid producing sparks. See Operator's Manual.

5. Location: Rear Axle Housing (both sides)

General warning.



10. Location: Front face of transmission console (less cab tractors only)

Do not grasp the transmission levers when mounting the tractor. Use only the hand holds provided.

10. Location: Front face of transmission console (tractors with cab only)

Do not grasp the transmission levers when mounting the tractor. Use only the hand holds provided.

UNIVERSAL SYMBOLS

As a guide to the operation of your tractor, various universal symbols have been utilised on the instruments, controls, switches, and fuse box. The symbols are shown below with an indication of their meaning.


Thermostart starting aid


Alternator charge


Fuel level


Automatic Fuel shut-off


Engine speed (rev/min x 100)


Hours recorded


Engine oil pressure


Engine coolant temperature


Coolant level


Tractor lights


Headlamp main beam


Headlamp dipped beam


Work lamps

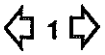

Stop lamps

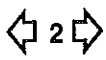

Horn


Radio

KAM Keep alive memory


Turn signals


Turn signals –one trailer


Turn signals –two trailers


Front wind-screen wash/wipe


Rear wind-screen wash/wipe


Heater temp-erature control


Heater fan


Air conditioner


Air filter blocked


Parking brake


Brake fluid level


Trailer brake


Roof beacon


Warning! Corrosive substance


P.T.O.

N Transmission in neutral


Creeper gears


Slow or low setting


Fast or high setting


Ground speed


Differential lock


Rear axle oil tem-perature


Transmission oil pressure


FWD engaged


FWD dis-engaged


Warning!


Hazard warning lights


Variable control


Pressurised! Open carefully


Position Control


Draft Control


Accessory socket


Implement socket


%age slip


Hitch raise (rear)


Hitch lower (rear)


Hitch height limit (rear)


Hitch height limit (front)


Hitch dis-abled


Hydraulic and transmission filters


Remote valve extend


Remote valve retract


Remote valve float


Malfunction! See Operator's Manual


Malfunction! (alter-native symbol)

SECTION 1
GENERAL INFORMATION

INTRODUCTION

This manual has been prepared to assist you in the correct procedure for running-in, driving, operating and maintaining your tractor.

The manual is divided into five sections as detailed in the 'Contents' page. A comprehensive index is provided at the back of the manual.

Read this manual carefully and keep it, for future reference, in the pouch attached to the rear of the seat. If at any time you require advice concerning your tractor, do not hesitate to contact your authorised dealer. He has factory-trained personnel, genuine replacement parts, and the necessary equipment to carry out your service requirements.

Your tractor has been designed and built to give maximum performance, economy and ease of operation under a wide variety of operating conditions. Prior to delivery, the tractor was carefully inspected, both at the factory and by your dealer, to ensure that it reaches you in optimum condition. To maintain this condition and ensure trouble-free operation, it is important that the routine services, as specified in section 3 of this manual, are carried out at the recommended intervals.

All data given in this book is subject to production variations. Dimensions and weights are approximate only, and the illustrations do not necessarily show tractors in standard condition. For exact information about any particular tractor, please consult your authorised dealer.

Unless otherwise stated, reference to the right and left sides of the tractor are determined by sitting in the operator's seat facing the direction of forward travel.

The 'Safety Precautions' pages in the introductory section list the precautions to be observed to ensure your safety and the safety of others. Read the safety precautions carefully and follow the advice offered **before** operating the tractor.

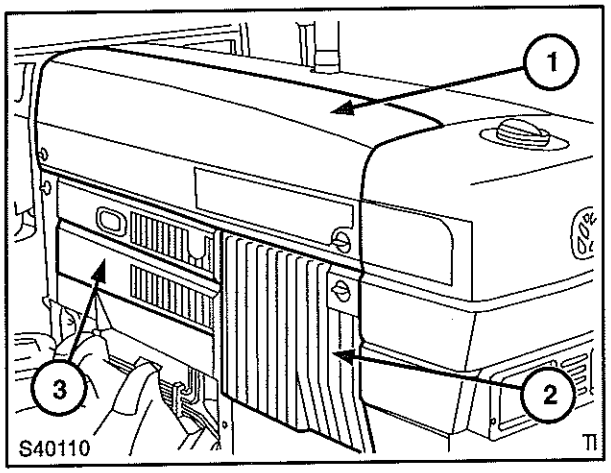
This section of the Manual covers the following subjects:

CAUTION: *Do not operate the tractor until you are thoroughly accustomed to the location and operation of all controls.*

PROTECTIVE GUARDS

Protective guards have been installed on your tractor. The guards are intended for your safety and for those working with you.

CAUTION: *Install all protective guards before starting or operating the tractor.*

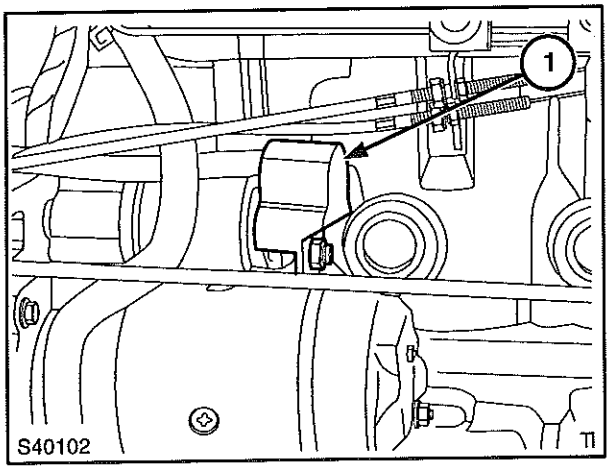


1-1

ENGINE HOOD – Figure1-1

The hood (1) and side panels (2) and (3), where fitted, cover the moving parts of the engine. The hood must be closed and correctly latched before operating the tractor.

Additional guards are provided to prevent the fingers being trapped by the fan/air conditioner drive belt when the hood is lowered to the operating position.



1-2

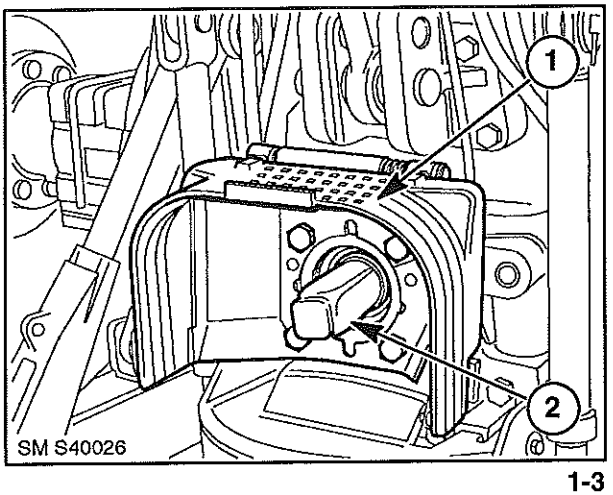
STARTER SOLENOID GUARD – Figure1-2

The guard (1) covers the starter solenoid electrical connections to prevent accidental contact. The guard must be installed whenever the batteries are connected to the electrical system.

P.T.O. CAP AND GUARD – Figure1-3

Install the cap (2), over the tractor PTO shaft when the shaft is not attached to an implement. The cap is a screw-on fit onto it's mount. Store the cap in the tractor toolbox when the P.T.O. is in use.

A flip-up P.T.O. guard is fitted as standard. The guard (1) has a special spring-loaded hinge that will retain it in any one of several points between the horizontal and fully raised positions. The guard can be pivoted upwards to improve access to the P.T.O. shaft when attaching equipment.



1-3

CAUTION: *Do not remove the guard when the P.T.O. is in use. Do not modify the guard.*

CONTROLS AND INSTRUMENTS – LOCATION AND FUNCTION

The information on the following pages identifies, locates and briefly describes the function of the controls and instruments located in the cab.

The controls have been divided into the following areas:

Cab/platform controls – Figure1-4.

Instrument console controls – Figure1-6.

Instrument panels – Figures1-7 to1-9.

Floor-mounted controls – Figures1-10 to1-11.

Overhead controls – Figure1-12 to1-14.

Transmission controls – Figures1-15 to1-18.

'B' pillar switches – Figure1-19.

Right-hand console (differential lock, four wheel drive controls) – Figures1-20 to 1-22.

Hydraulic controls (top link sensing) – Figure1-23.

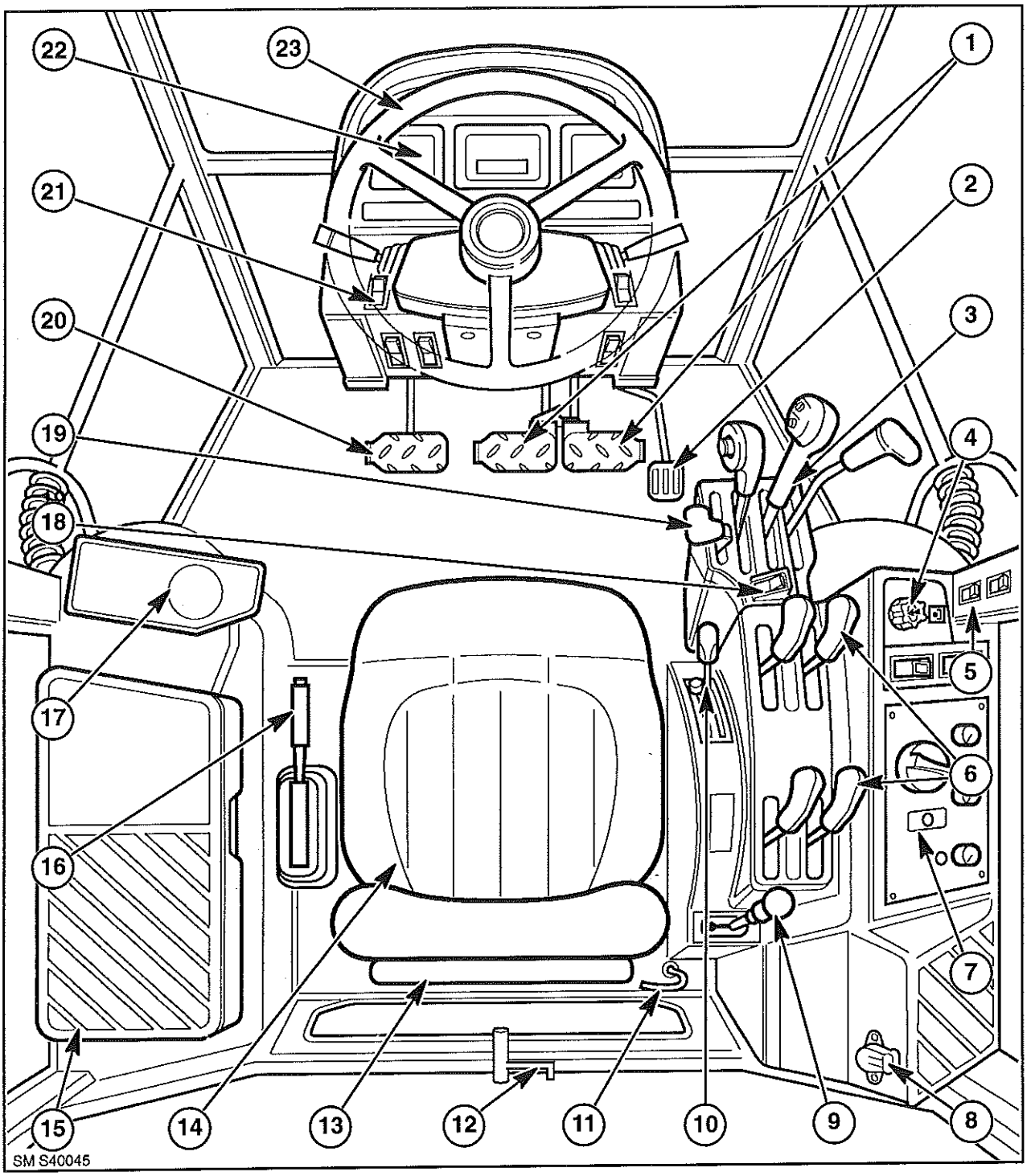
Electronic Draft Control – Figures1-24 to1-27.

Remote control valves – Figures1-28 to1-30.

IMPORTANT: *The following information in this section is provided as a quick reference guide and is not intended as a replacement of the detailed operational information that appears in Section 2 –* 'OPERATION'. *For details on how to use the controls and check the instruments and warning lights read the whole of Section 2 before operating the tractor.*

CAUTION: *Do not operate the tractor until you are thoroughly accustomed with the location and operation of all controls.*

GENERAL VIEW OF TRACTOR CONTROLS – with cab



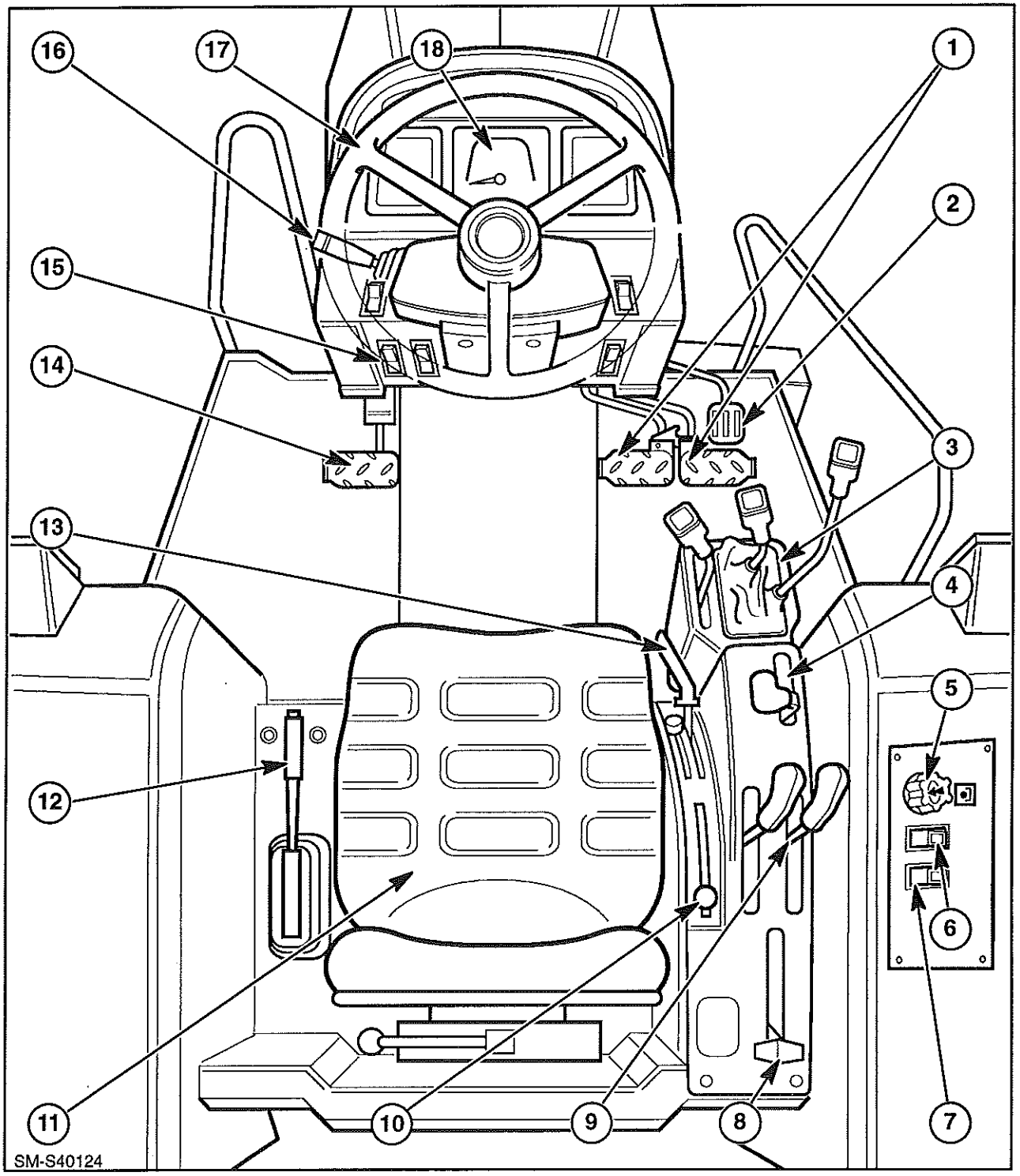
1-4 General View of Tractor Controls (tractors with cab)

1. Foot brakes
2. Foot throttle
3. Transmission controls
4. P.T.O. controls
5. 'B' pillar switches
6. Remote control valve levers
7. Electronic Draft Control panel (where fitted)
8. Electrical accessory socket
9. P.T.O. range selector *
10. Hydraulics lift controls
11. Hitch release handle
12. Rear window locking handle
13. Document pouch
14. Operator's seat
15. Storage box
16. Parking brake
17. Passenger seat (where fitted)
18. Raise/lower switch
19. Hand throttle
20. Clutch/inching pedal
21. Instrument console & switches
22. Instrument panel
23. Steering wheel

* Europe only

Further details will be found in Section 2 of this Manual.

GENERAL VIEW OF TRACTOR CONTROLS – less cab

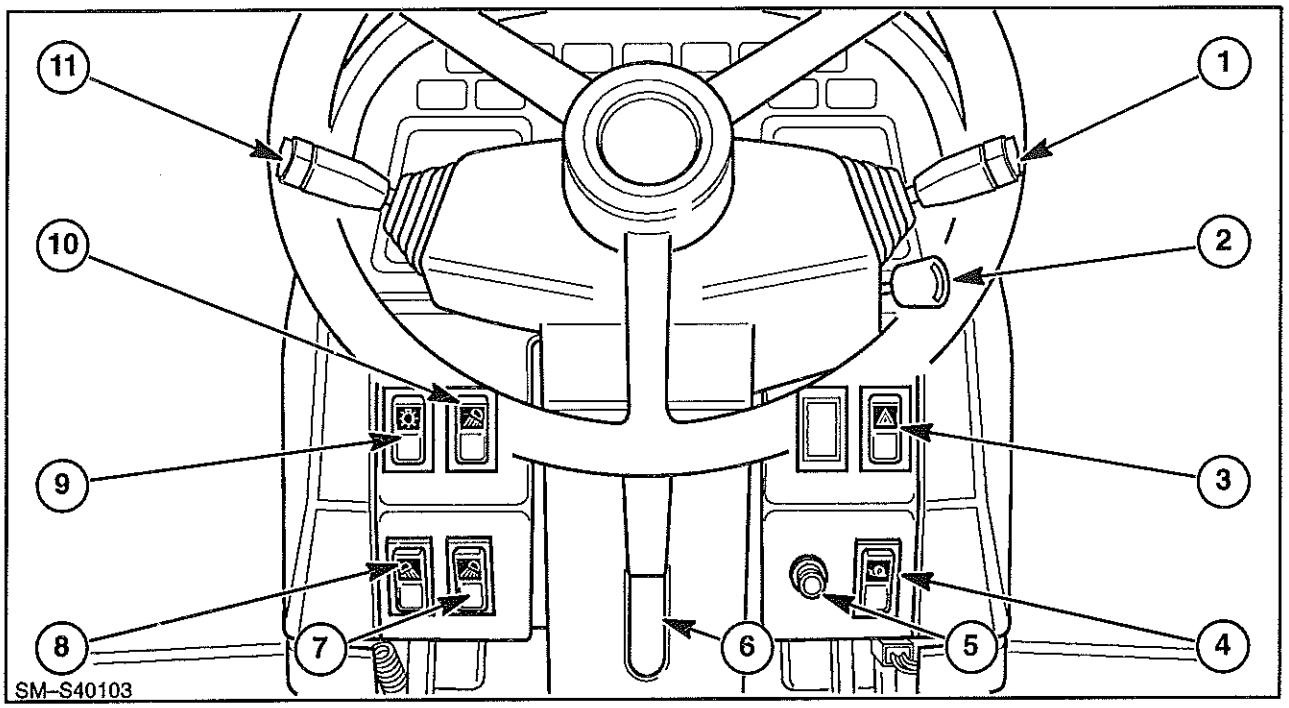


1-5 General View of Tractor Controls (tractors without cab)

1. Foot brakes
2. Foot throttle
3. Transmission controls
4. Hand throttle
5. P.T.O. selector knob
6. Differential lock switch
7. Four wheel drive switch
8. P.T.O. range selector
9. Remote control valve levers
10. Position/Draft selector
11. Operator's seat
12. Parking brake
13. Hydraulic lift control lever
14. Clutch/inching pedal
15. Lighting switches
16. Multi-function switch
17. Steering wheel
18. Instrument panel

Further details will be found in Section 2 of this Manual.

INSTRUMENT CONSOLE CONTROLS

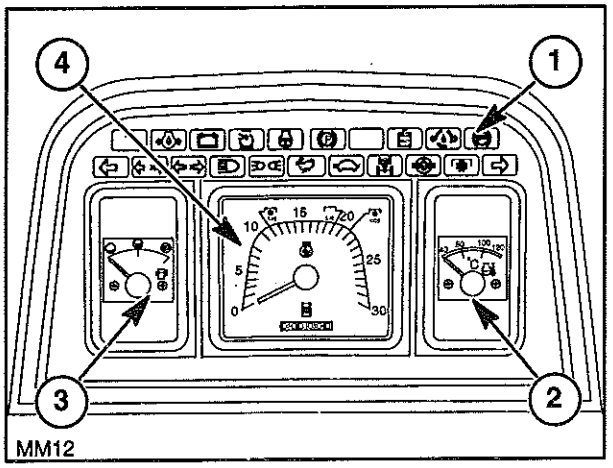


1-6 Instrument Console Controls

1. Front windscreen wipe/wash control (with cab only)
2. Key-start/stop switch
3. Hazard warning lightsswitch
4. Creeper gears switch (where fitted)
5. Cigarette lighter (where fitted)
6. Steering column tilt/telescopic clamp (where fitted)
7. Lower, front work lamps switch
8. Rear work lamps switch
9. Tractor lights switch
10. Upper, front work lamps switch (with cab only)
11. Multi-function switch (lights, turn signals, horn)

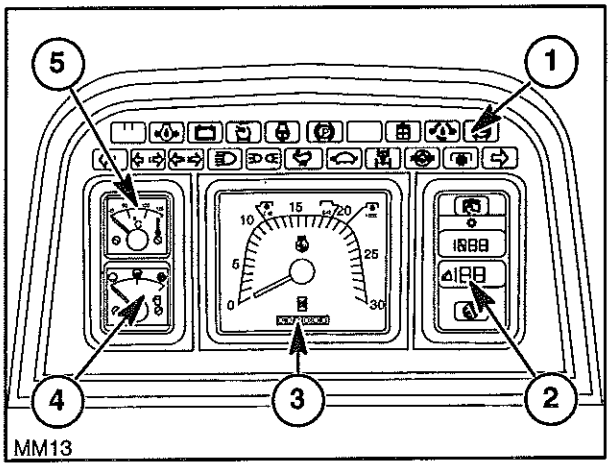
For complete operating instructions, see Section 2.

INSTRUMENT PANELS



1-7 Analogue Instrument Panel

1. Warning and indicator lights
2. Engine coolant temperature gauge
3. Fuel gauge
4. Proofmeter

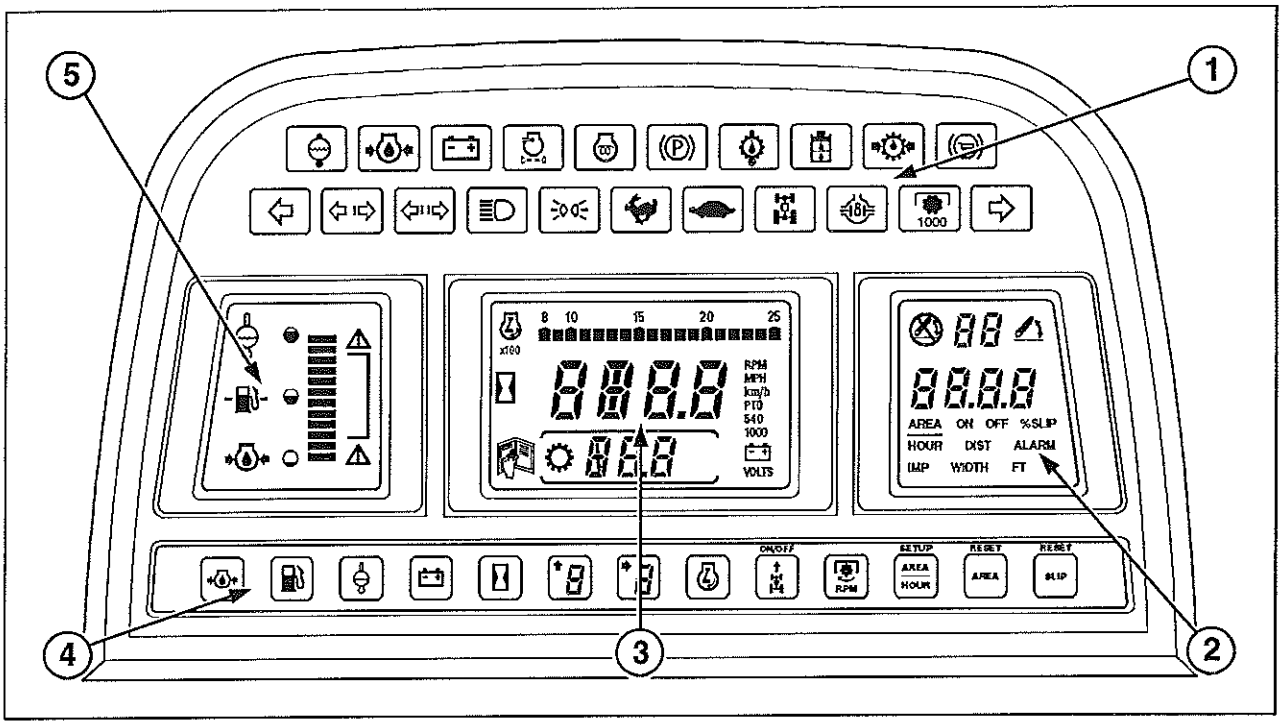


1-8 Analogue/Digital Instrument Panel

1. Warning and indicator lights
2. Liquid crystal display panel
3. Proofmeter
4. Fuel gauge
5. Engine coolant temperature gauge

For complete operating instructions, see Section 2.

INSTRUMENT PANELS

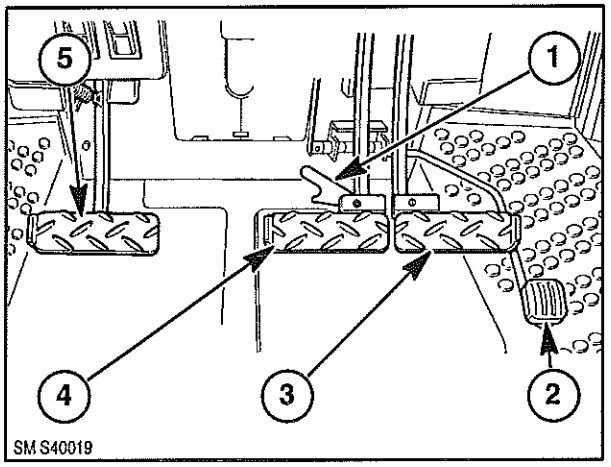


1-9 Electronic Instrument Panel

1. Warning and indicator lights
2. Tractor Performance Monitor (LCD)
3. Central display panel (LCD)
4. Function buttons
5. Bargraph display (LCD)

For complete operating instructions, see Section 2.

FLOOR–MOUNTED CONTROLS

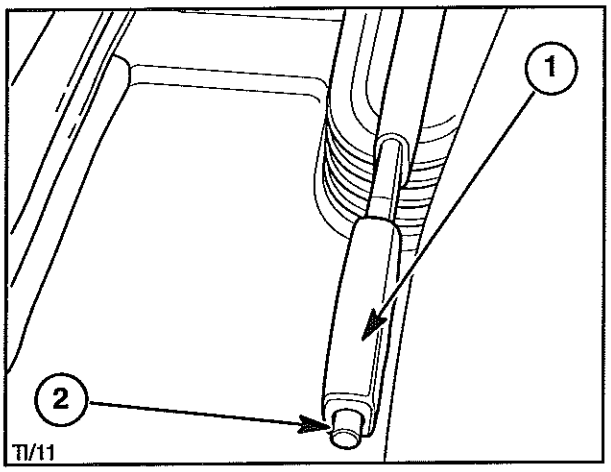


1-10 Foot-operated Controls

1. Brake locking latch
2. Foot throttle
3. Right brake pedal
4. Left brake pedal
5. Clutch pedal

For complete operating instructions, see Section 2.

FLOOR–MOUNTED CONTROLS

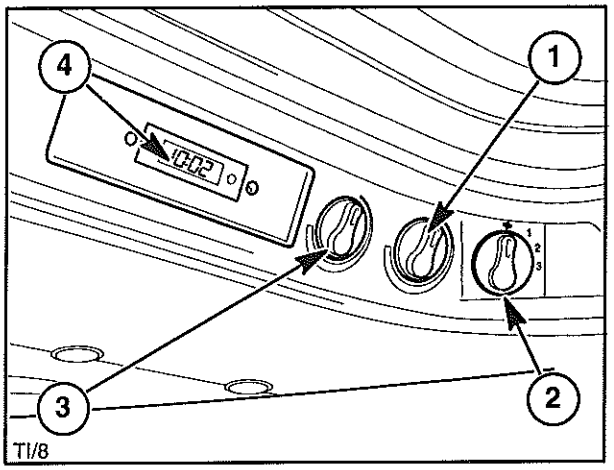


1-11 Floor-mounted Controls (left-hand side)

1. Handbrake
2. Push button – to apply handbrake, press button and lift lever. Release button.

For complete operating instructions, see Section 2.

CAB ROOF-MOUNTED CONTROLS

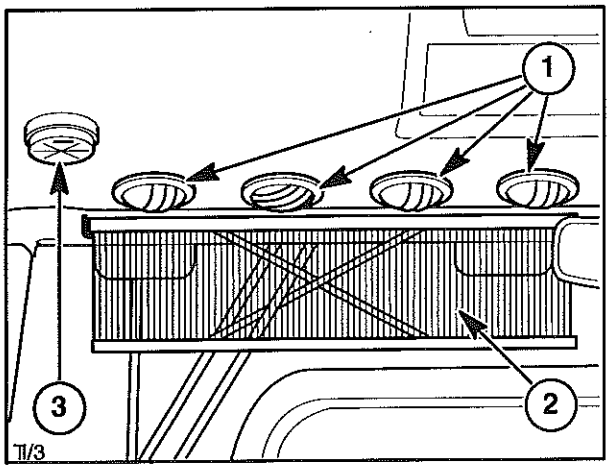


1-12 Roof-mounted Controls

1. Air conditioner temperature control (where fitted)
2. 3-speed blower control
3. Heater temperature control
4. Digital clock (optional radio/cassette player may be installed in this position)

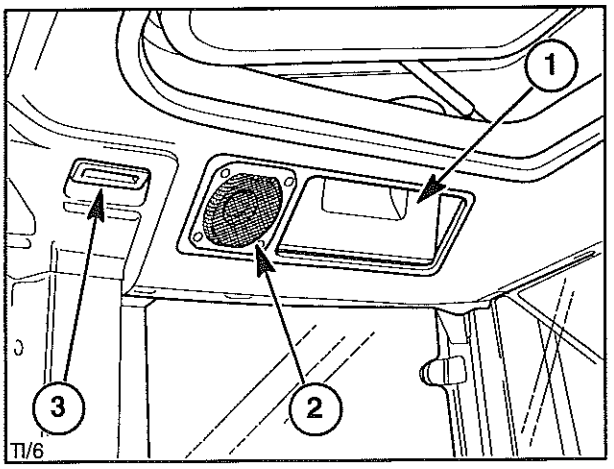
For complete operating instructions, see Section 2.

CAB ROOF-MOUNTED CONTROLS



1-13 Roof-mounted Controls

1. Swivelling air vents – press in to open – rotate to direct the air flow.
2. Sun blind
3. Interior light

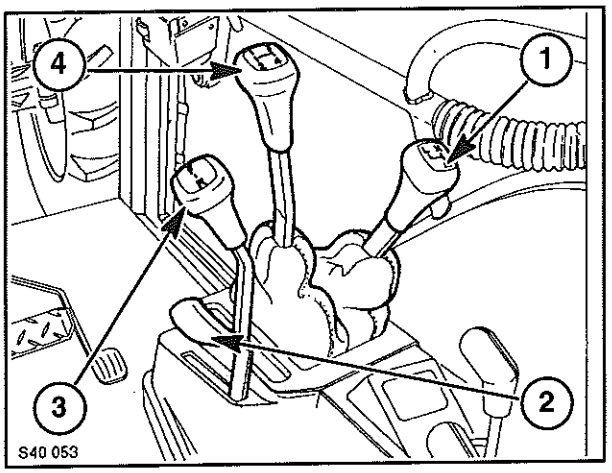


1-14 Roof-mounted Controls

1. Air recirculation vent – push to open.
2. Radio speaker
3. Console light – illuminates when key-start switch turned on.

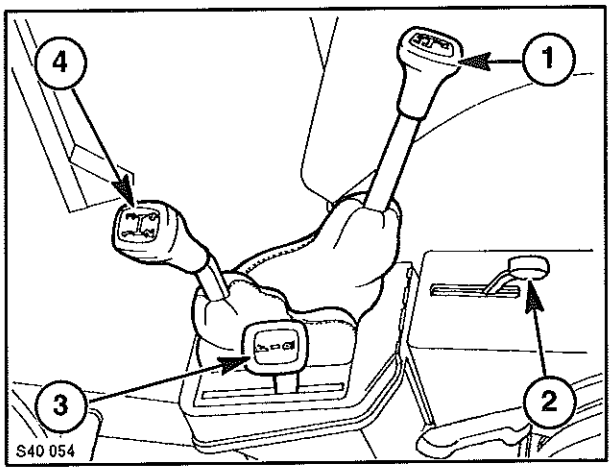
For complete operating instructions, see Section 2.

TRANSMISSION CONTROLS



1-15 12 x 12 Transmission Controls (tractors with cab)

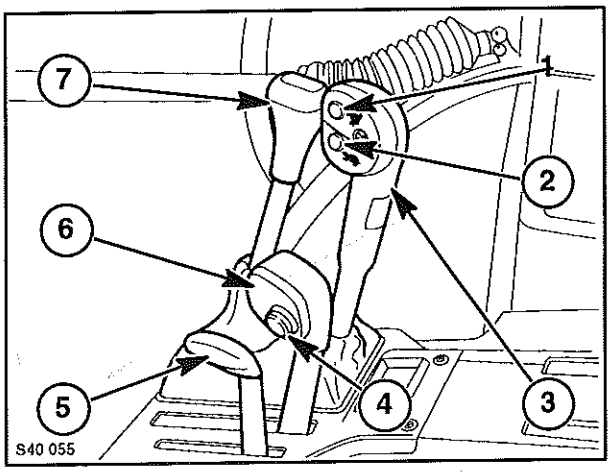
1. Range lever (3 ranges)
2. Hand throttle lever
3. Shuttle lever
4. Main shift lever (4 ratios)



1-16 12 x 12 Transmission Controls tractors without cab)

1. Range lever (3 ranges)
2. Hand throttle lever
3. Shuttle lever
4. Main shift lever (4 ratios)

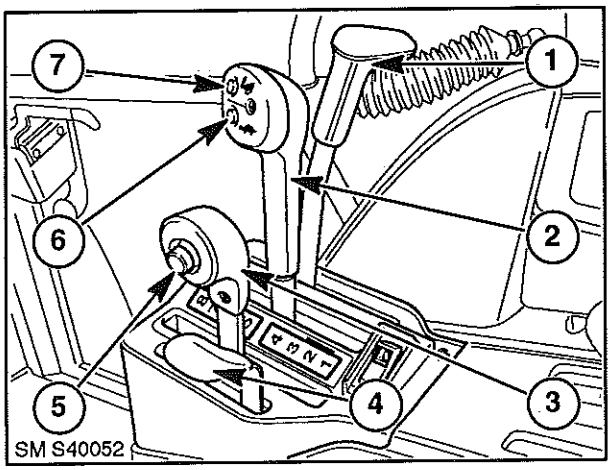
For complete operating instructions, see Section 2.



1-17 24 x 24 Transmission Controls (with Dual Power option)

1. Direct drive button
2. Underdrive button
3. Main shift lever (4 ratios)
4. 'Dump' switch
5. Hand throttle lever
6. Shuttle lever
7. Range lever (3 ranges)

For complete operating instructions, see Section 2.

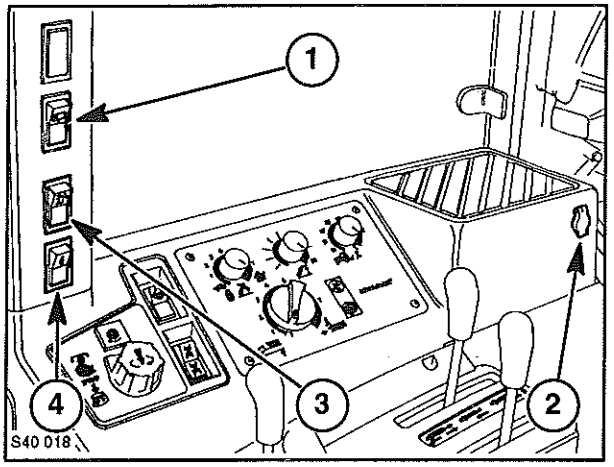


1-18 16 x 16 Electro-Shift transmission Controls

1. Range lever (4 ranges)
2. Main shift lever (4 ratios)
3. Shuttle lever
4. Hand throttle lever
5. 'Dump' switch
6. Powershift down button
7. Powershift up button

For complete operating instructions, see Section 2.

RIGHT-HAND 'B' PILLAR

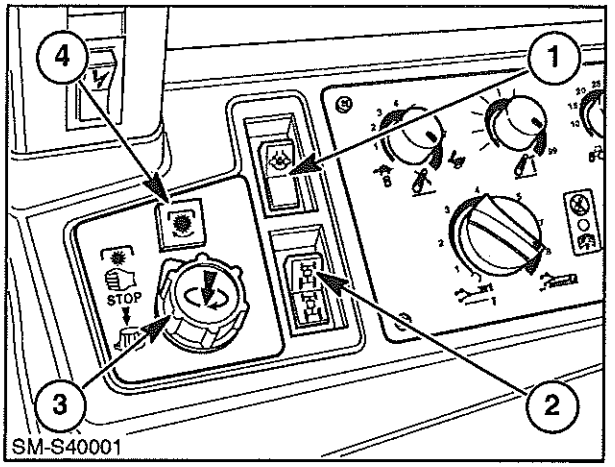


1-19 'B' Pillar Switches (tractors with cab)

1. Rear windscreen wipe/wash switch (where fitted)
2. Accessory socket
3. Roof beacon switch (where fitted)
4. Accessory socket switch

For complete operating instructions, see Section 2.

RIGHT-HAND CONSOLE – FRONT



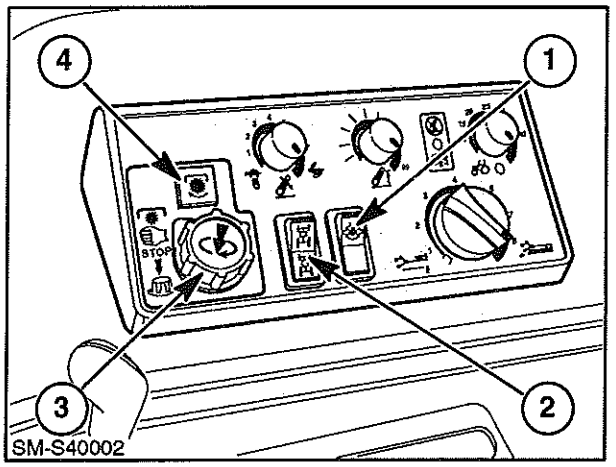
1-20 Console Switches (tractors with cab)

1. Differential lock switch
2. Front wheel drive switch
3. P.T.O. selector knob
4. P.T.O. indicator lamp

Press the knob and rotate to engage the P.T.O. Strike the knob to disengage.

For complete operating instructions, see Section 2.

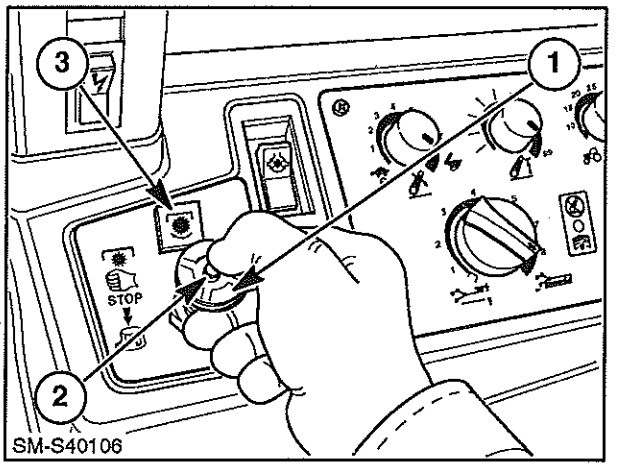
RIGHT-HAND CONSOLE – FRONT



1-21 Console Switches (tractors without cab)

1. Differential lock switch
2. Front wheel drive switch
3. P.T.O. selector knob
4. P.T.O. indicator lamp

Press the knob and rotate to engage the P.T.O. Strike the knob to disengage.



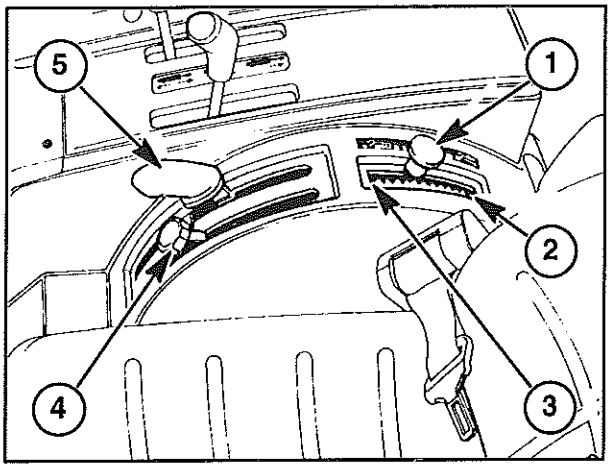
1-22 Alternative P.T.O. Switch (all models)

1. P.T.O. selector knob
2. Push button
4. P.T.O. indicator lamp

Press the central button and lift knob to engage the P.T.O. Strike the knob to disengage.

For complete operating instructions, see Section 2.

HYDRAULICS CONTROLS

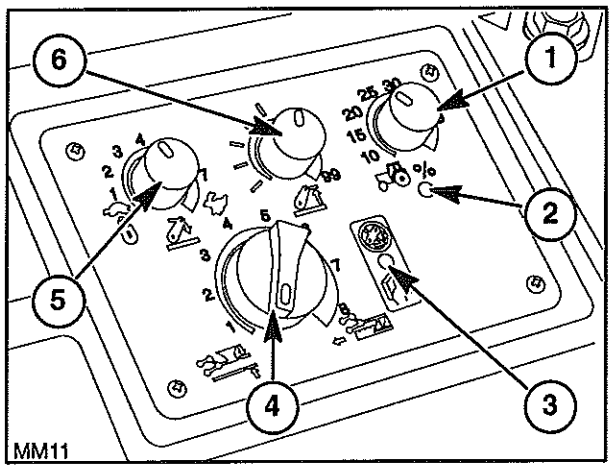


1-23 Hydraulic Controls – Top Link Sensing

1. System selector – ease to the right, then move forward or backward.
2. Position Control setting
3. Draft Control setting
4. Adjustable stop
5. Lift control lever

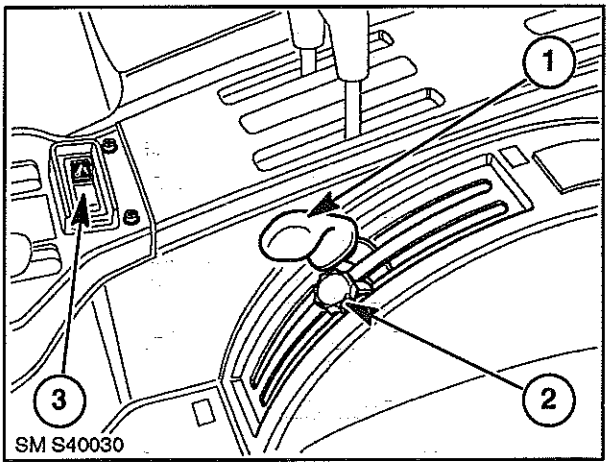
For complete operating instructions, see Section 2.

HYDRAULICS CONTROLS – ELECTRONIC DRAFT CONTROL



1-24 Hydraulic Control Panel

1. Slip limit control knob
2. Slip limit on indicator light
3. Malfunction warning light
4. Position/Draft sensitivity knob
5. Drop rate control knob
6. Height limit control knob

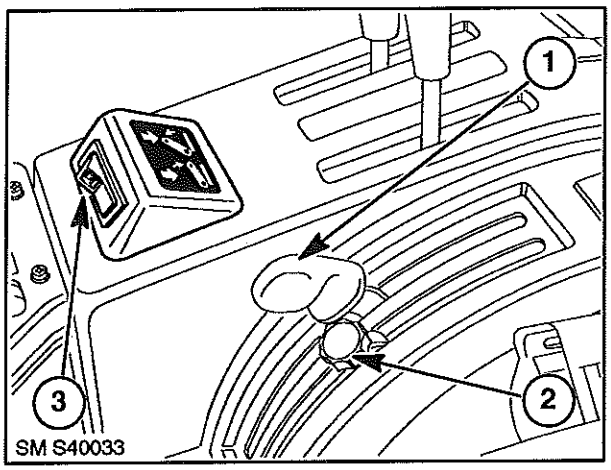


1-25 Hydraulic Controls (tractors with cab)

1. Lift control lever
2. Adjustable stop
3. Fast raise switch – press end with symbol to raise 3-point linkage, press other end to lower. Centre position transfers control to the external, fender-mounted switches.

For complete operating instructions, see Section 2.

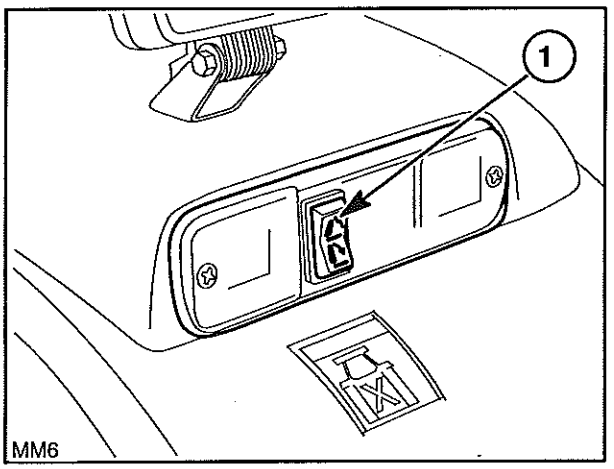
HYDRAULICS CONTROLS – ELECTRONIC DRAFT CONTROL



1-26 Hydraulic Controls (tractors without cab)

1. Lift control lever
2. Adjustable stop
3. Fast raise switch – press end with symbol to raise 3-point linkage, press other end to lower. Centre position transfers control to the external, fender-mounted switches.

For complete operating instructions, see Section 2.

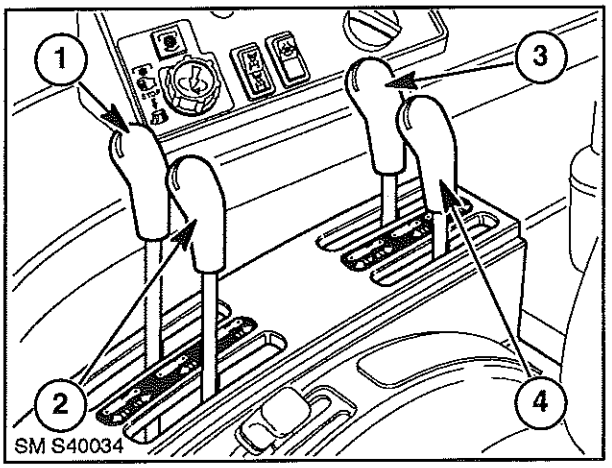


1-27 External Power Lift Control

1. Fender-mounted raise/lower switch – press top to raise 3-point linkage, press bottom to lower.

For complete operating instructions, see Section 2.

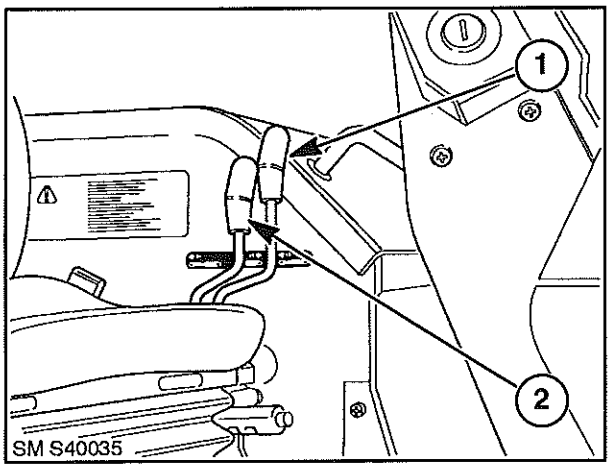
REMOTE CONTROL VALVES



1-28 Remote Control Valve Levers – tractors with cab

1. Lever for valve No. I
2. Lever for valve No. II
3. Lever for valve No. III
4. Lever for valve No. IIII

Lever movement: Central position is neutral (off), move forward to lower implement, further forward to select 'float'. Fully rearward is the raise position.



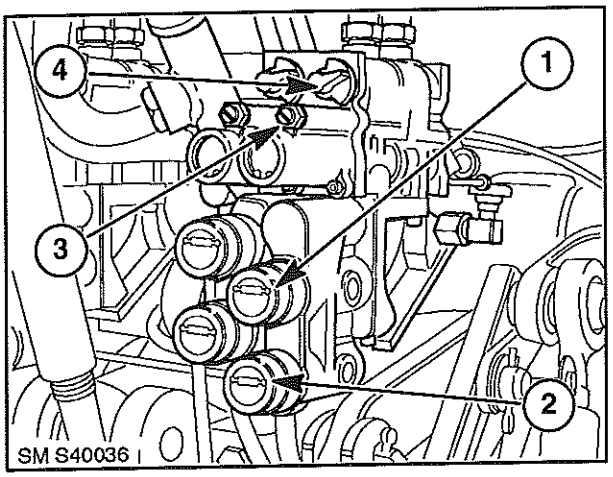
1-29 Remote Control Valve Levers – tractors without cab

1. Lever for valve No. III
2. Lever for valve No. IIII

On 4-cylinder tractors without cab, the control levers for valves I and II are as shown in Figure 1-28. If a 3rd. and 4th. valve are installed, the levers are located to the left of the driver's seat.

For complete operating instructions, see Section 2.

REMOTE CONTROL VALVES



1-30 Remote Control Valves

1. Upper (lift) coupler
2. Lower (drop) coupler
3. Detent screw
4. Flow control

For complete operating instructions, see Section 2.

PROTECTING THE ELECTRONIC/ELECTRICAL SYSTEMS DURING CHARGING OR WELDING

PRECAUTIONS

To avoid damage to the electronic/electrical systems, always observe the following:

1. Never make or break any of the charging circuit connections, including the battery connections, when the engine is running.

2. Never short any of the charging components to earth.

3. Do not use a slave battery of higher than 12 volts nominal voltage.

4. Always observe correct polarity when installing the batteries or using a slave battery to jump start the engine. Follow the instructions in the operator's manual when jump starting the tractor. Connect positive to positive and negative to negative.

5. Always disconnect the earth cable from the batteries before carrying out arc welding on the tractor or on any implement attached to the tractor.

- Position the welder earth cable clamp as close to the welding area as possible.

- If welding is to be carried out in close proximity to a computer module, then the module should be removed from the tractor. It is recommended that this procedure be carried out by an authorised dealer.

- Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.

6. Always disconnect the negative cable from the batteries when charging the batteries in the tractor with a battery charger.

WARNING: *Batteries contain sulphuric acid. In case of contact with skin, flush the affected area with water for five minutes. Seek medical attention immediately. Avoid contact with the skin, eyes or clothing. Wear eye protection when working near batteries.*

IMPORTANT: *Failure to disconnect the two earth cable connections at the battery prior to charging the batteries or welding on the tractor or attached implement will result in damage to the electronic and electrical systems.*

TOWING THE TRACTOR

IMPORTANT: *The tractor should only be towed a short distance, such as out of a building. Do not tow on roadways or as a method of transport.*

IMPORTANT: *For transport purposes, haul the tractor with all four wheels on a flat bed trailer or truck.*

Use a strong chain when towing the tractor. Tow the tractor from the rear using only the drawbar, rear tow hitch or the three-point hitch. Tow the tractor from the front using the tow pin in the front weights or front support. Have an operator steer and brake the tractor.

To avoid damaging the transmission or other components that turn but are not lubricated during towing, observe the following:

- Only tow a short distance

- Keep speed below 5 MPH (8 km/h)

- If possible, run the engine to provide lubrication and power steering.

CAUTION: *Do not tow the tractor faster than 5 MPH (8 km/h). Steering is much slower and steering wheel effort is much greater without the engine running.*

WARNING: *Do not use cables or rope to tow the tractor. If the cable or rope breaks or slips, it may whip with sufficient force to cause serious injury.*

When using a chain, attach the chain with the hook open side facing up. If the hook slips, it will drop down instead of flying up.

NOTE: *Four wheel drive will be engaged if the engine is not running, regardless of the position of the FWD activation switch.*

TRANSPORTING THE TRACTOR

TRACTOR TRANSPORT

Transport the tractor with all four wheels on a flat bed trailer or truck.

Securely chain the tractor to the transporter.

IMPORTANT: *Do not chain around the four wheel drive shaft, steering cylinders, front wheel drive axle or other components that could be damaged by contacting the chain or by heavy loading.*

Use the drawbar or drawbar hanger for a rear tie down point.

IMPORTANT: *Cover the muffler outlet so that the wind does not spin the turbocharger and damage the bearings.*

Turbocharger turbine freewheeling (turning without engine running) must be avoided since lubrication will not be provided to the turbocharger bearings.

PRE-OPERATION CHECKS

Before operating the tractor, ensure that you are thoroughly familiar with the location and operation of the controls.

Perform all daily lubrication and maintenance operations in accordance with Section 3.

After completing the daily maintenance operations, perform a walk around visual inspection of the tractor. Pay particular attention to the following items:

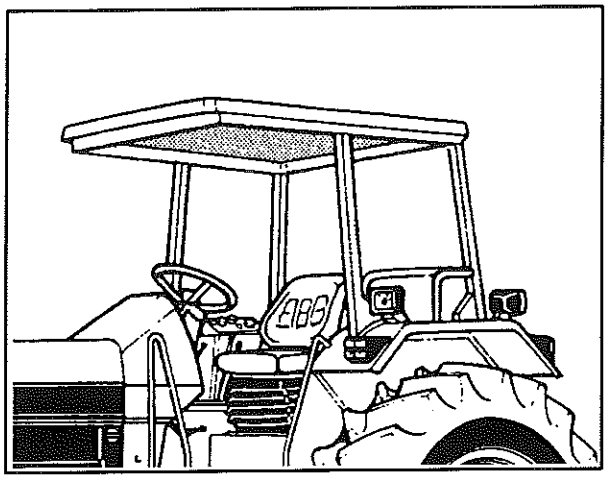
- Fan belt for cracks
- Engine area for accumulation of debris
- Hoses, lines and fittings for leaks or damage.
- Tires for damage
- Hardware for looseness
- Driveline and hydraulic pump areas for leaks or debris accumulation

Make any necessary repairs before using the tractor.

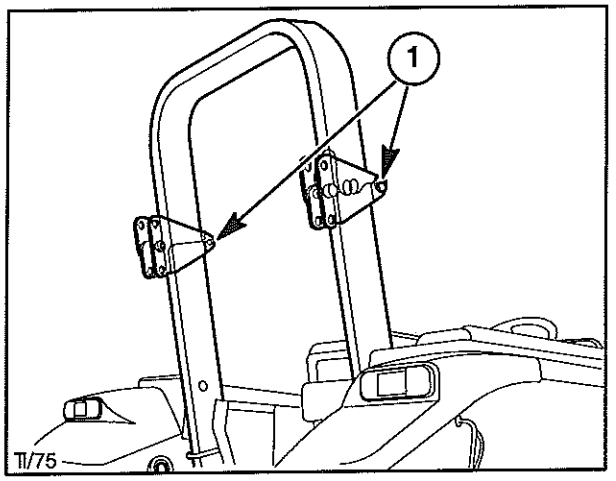
SECTION 2
OPERATION

Section 2 details the location of all the instruments, switches and controls on your tractor and describes the correct method of operation. Read through this section of the Manual and ensure that you are thoroughly familiar with the location and function of all the features of your new tractor. Do not start the engine or attempt to drive or operate the tractor until you are fully accustomed to all the controls. It is too late to learn once the tractor is moving. If in doubt about any aspect of operation, consult your New Holland dealer.

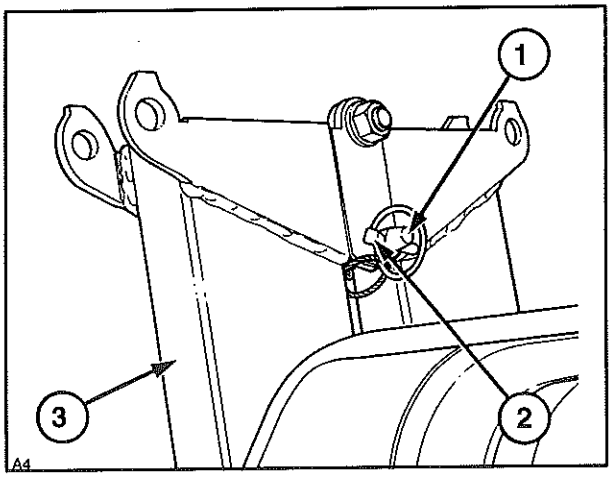
This section is split into 18 parts, as listed below. The running heading at the top of each page indicates the subjects covered. A full index is provided at the back of this book.



2-1



2-2



2-3

ROLL OVER PROTECTIVE STRUCTURE (ROPS) (where fitted)

– Figures 2-1 to 2-3

Two types of ROPS are available, a fixed, 4-post ROPS, as shown in Figure 2-1 or a 2-post, folding design, as shown in Figures 2-2 and 2-3.

NOTE: *Do not attempt to fold the ROPS if a canopy is fitted.*

The folding ROPS is designed to be lowered for use in low clearance operations. In Figure 2-2, the folding ROPS is shown in the normal, upright, operating position. The ROPS is shown folded in the low clearance position in Figure 2-3. The ROPS must always be maintained in a serviceable condition.

WARNING: *When improperly operated, a tractor can roll over. For low clearance use only, the roll bar may be lowered. No protection is provided when the tractor is operated with the roll bar in the lowered position.* ***Always*** *raise the roll bar immediately after low clearance use. When the tractor is being driven from a low clearance job, the roll bar should be in the raised position.* ***Always*** *use the seat belt when the roll bar is raised. Seat belts save lives when they are used. Do* ***not*** *use the seat belt when the roll bar is lowered.*

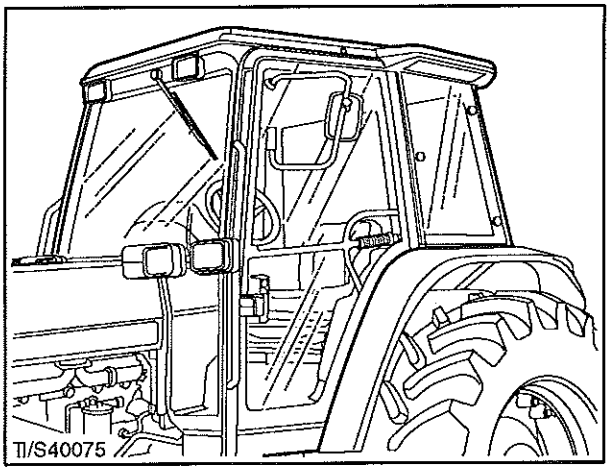
The ROPS is hinged to allow it to be folded rearwards. When in the upright position it is secured by two locking pins (1) Figure 2-2.

To fold the roll bar to the low clearance position, unclip the linch pin (2) Figure 2-3 and remove the locking pin (1) from both sides of the roll bar. Lower the upper section of the roll bar (3) rearwards and insert the locking pin in the lower hole, as shown in Figure 2-3. Secure both locking pins with the linch pins.

If your tractor is fitted with a front end loader, it is recommended that a FOPS canopy (falling object protection system) be fitted to protect the operator from falling objects.

WARNING: *Do not attach chains or ropes to the ROPS for pulling purposes since the tractor may tip backwards. Always pull from the tractor drawbar. Be careful when driving through door openings or under low overhead objects. Make sure that there is sufficient overhead clearance for the ROPS. Lower the ROPS, if necessary, but be aware that no protection is provided when the tractor is operated with the roll bar in the lowered position.*

NOTE: *The controls on tractors without a cab, from the instrument console down, are very similar to those with a cab. Even if your tractor does not have a cab, you should still read the text relating to the cab to gain an understanding of the function and use of the controls.*



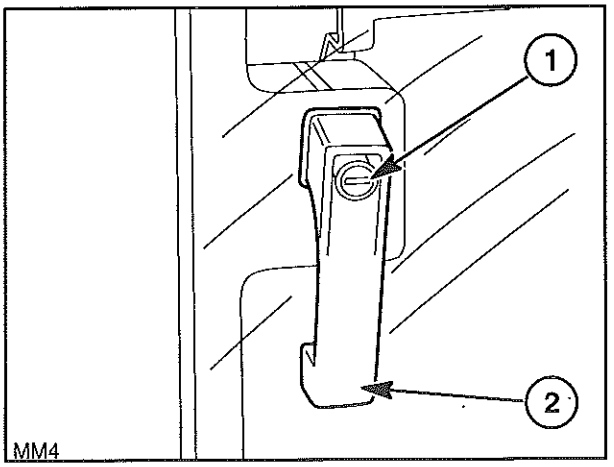
2-4

CAB (where fitted) – Figure 2-4

Introduction

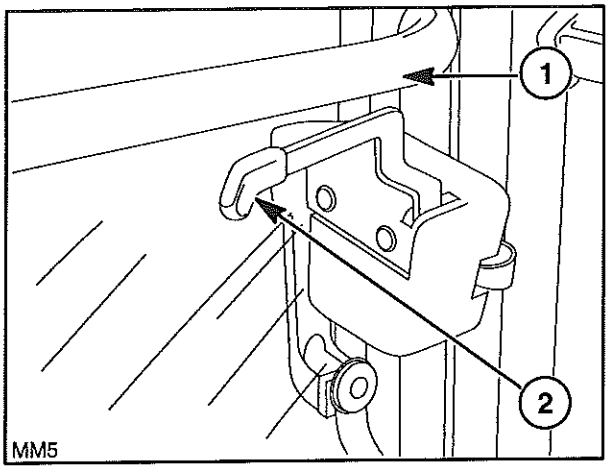
The cab has been designed for operator comfort and convenience. Inside, the walls, roof, and floor are insulated to reduce noise to a minimum.

Two wide opening doors permit entry to the cab from either side, aided by convenient grab handles and footsteps with anti-slip treads. The doors and rear window are fitted with gas struts to hold them in the fully open position. Additionally, the windows may be retained in the partially open position for increased ventilation during operation.



2-5

Standard cab features include a fresh air heater/de-froster, sun visor, tinted glass, opening side windows, roof hatch, interior light, cigar lighter, ashtray, storage boxes, interior/exterior rear view mirrors and a choice of comfortable seats. Options include air-conditioning, radio, rear windscreen washer/wiper, opening front windscreen and extending exterior rear view mirrors.



2-6

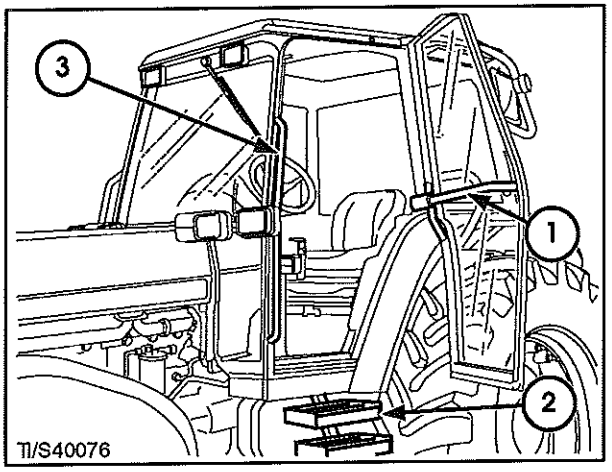
External Door Handle – Figure 2-5

Each door has an external handle (2) with a push button (1). The door may be locked from the outside using the key provided. Insert the key in the slot in the push button. Rotate the key to lock or unlock the door.

To open a door from the outside, push the button in and pull on the handle.

Interior Door Handle – Figure 2-6

To open a door from the inside, lift the door handle (2) and use the grab handle (1) to push the door open. The doors are rear-hinged and are retained in the fully open position by gas struts.



2-7

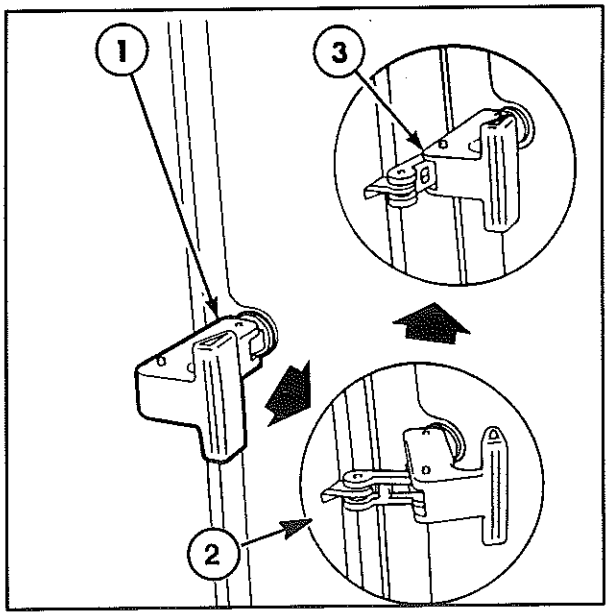
Entering and Exiting the Cab – Figure 2-7

The cab may be entered from the right or left side.

WARNING: *When entering the cab from the right-hand side, use only the grab handles to assist in climbing the steps. If the gear levers are grasped inadvertently, a tractor runaway may result.*

To enter the cab, face the door, then open it. Place one foot on the lowest step plate (2) and, using the grab handles (1) and (3) on the 'A' post and inside the door, climb the steps and enter the cab. Close the door, sit in the seat and fasten the seat belt, if fitted.

To exit the cab, release the seat belt, open the door, grasp the grab handles, back out of the cab and descend the steps using the grab handles.



2-8

Side Windows – Figure 2-8

The windows are hinged at the rear and can be locked in the closed position or retained in the partially open or fully open positions by an over-centre mechanism.

To lock the window in the closed position, pull the handle (1) in and forward in an arc until the mechanism locks. To open the window, push the handle out in an arc to position (2) or further out until it locks in position (3).

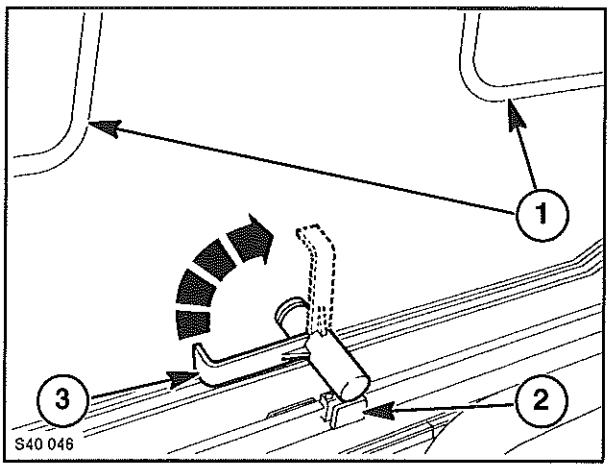
Rear Window – Figure 2-9

The rear window may be locked in the closed position or retained in the partially open or fully open positions.

To open the window, lift the central locking handle (3) up to the vertical position. Allow the window to open a little then push the handle down so that the locking tongue engages the slot (2) in the framework, as shown in Figure 2-9. Alternatively, the window may be allowed to swing fully open by the action of two gas-filled struts.

IMPORTANT: *Retain control of the window when opening it fully. Do not allow it to swing open freely.*

To close the window, use the grab handles (1). Push the locking handle down to lock the window.



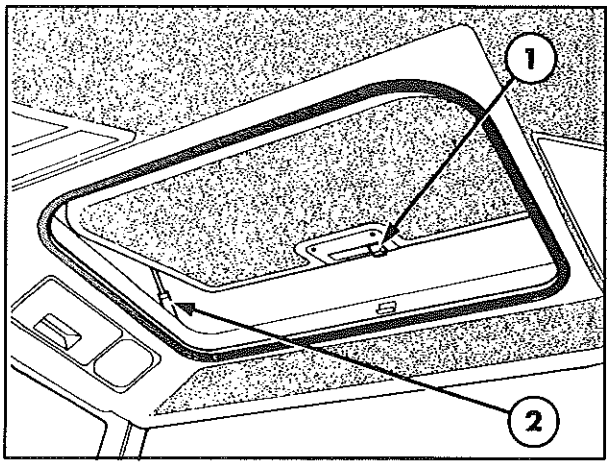
2-9

Roof Hatch – Figure 2-10

As well as providing increased ventilation in warm weather, the hatch provides an alternative means of leaving the cab in an emergency and is a legal requirement in some countries.

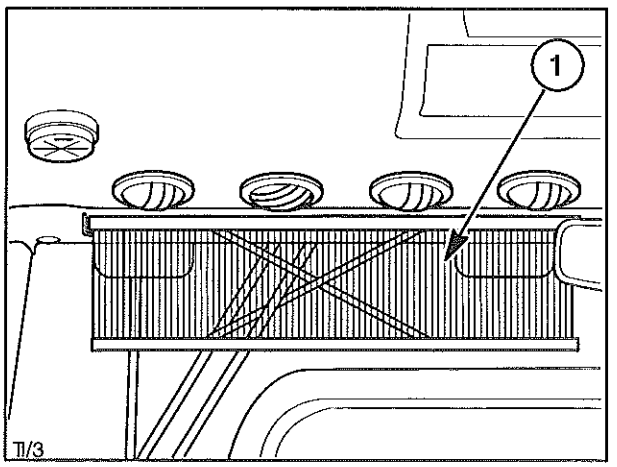
To open the hatch, push the release button (1), forward. Two gas struts (2) will retain the roof in the partially open position, as shown, to provide increased ventilation.

The strut has a quick-disconnect feature. To fully open the hatch, push firmly upwards. The struts will readily disconnect from the upper pins and permit the hatch to be fully opened.



2-10

WARNING: *Practise opening the hatch so that you are familiar with the quick-disconnect feature. The escape hatch must be kept open when travelling over frozen water.*

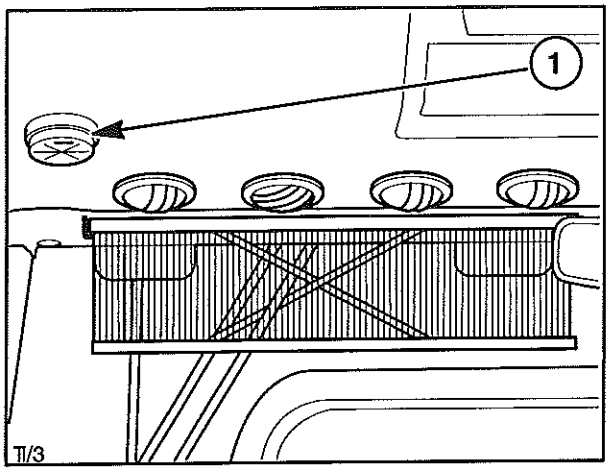


2-11

CAB ROOF-MOUNTED CONTROLS

Sun Visor – Figure 2-11

Pull down the sun visor (1) to protect the driver's eyes from the glare of the sun. The visor will remain in the chosen position. Push the visor up to retract.



2-12

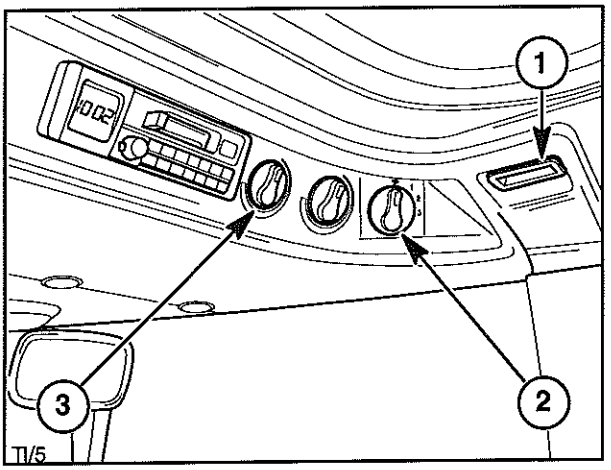
Interior Light – Figure 2-12

The interior light (1) has a built-in, 3-position switch. Move the switch to the left to switch on the lamp. When the switch is moved to the right the lamp will illuminate automatically when either of the doors are opened.

When the switch is in the central position, the light is off, irrespective of the position of the doors.

Console Light – Figure 2-13

The light (1) provides a soft, red glow to the gear levers and hydraulic console. A switch is not provided. The light is illuminated when the key-start switch turned on.



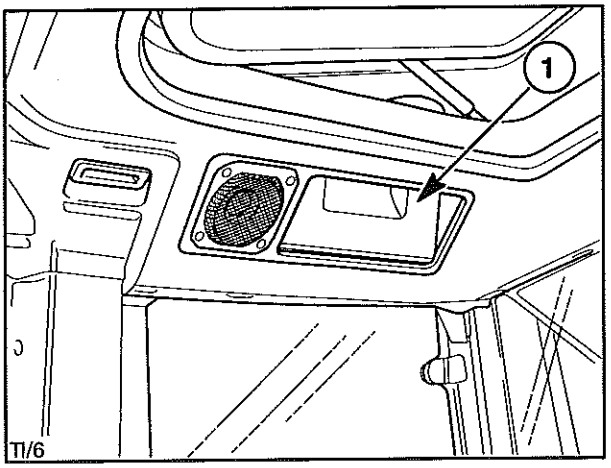
2-13

Blower Control – Figure 2-13

A 3-speed blower is installed for the heater (and air conditioner, where fitted). Turn the switch (2) clockwise to the first position for low speed. Further rotation of the switch in a clockwise direction selects the medium and fast speeds.

With the windows closed, the blower may be used to pressurise the cab to exclude dust etc. Provided that the cab air filters are serviced correctly, maximum pressurisation and optimum dust exclusion may be achieved by operating the blower with the recirculation vents closed. See Figure 2-14.

WARNING: *The cab air filter is designed to remove dust from the air but may not exclude chemical vapour. Follow the chemical manufacturer's directions regarding protection from dangerous chemicals.*



2-14

Heater Temperature Control – Figure 2-13

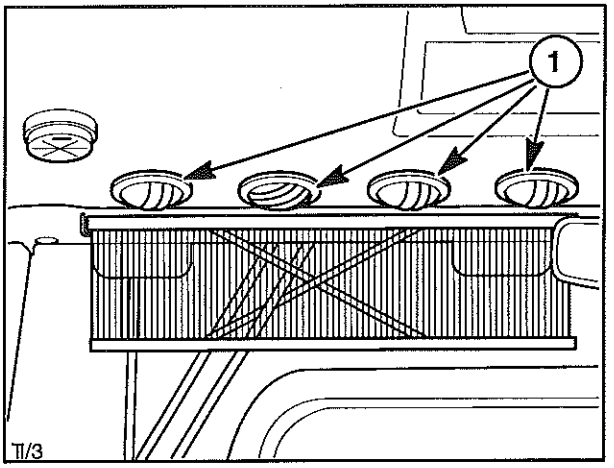
Turn the knob (3) clockwise to increase the temperature of the air from the heater. Turn fully anti-clockwise to obtain unheated air from the heater vents.

Air Recirculation Vents – Figure 2-14

The heater is of the fresh air type. Two recirculation vents are provided, one on either side of the cab roof panelling, next to the radio speakers.

The recirculation vents (1), when open, as shown in Figure 2-14, allow the heater blower to draw in air from the cab interior to recirculate through the heating system and provide faster warm-up. To open the vents, push inwards.

With the vents closed, the heater blower will draw in filtered air from outside the cab.



2-15

Swivelling Air Vents – Figure 2-15

Four swivelling vents (1) are installed in the roof. The vents may be independently adjusted to direct warm or cold air (with the blower control actuated) onto the windscreen and side windows or to the cab interior.

To open a vent, press one side of the disc and turn it, as required, to direct the air flow. Move the disc to the horizontal position to close the vent and cut off the air flow.

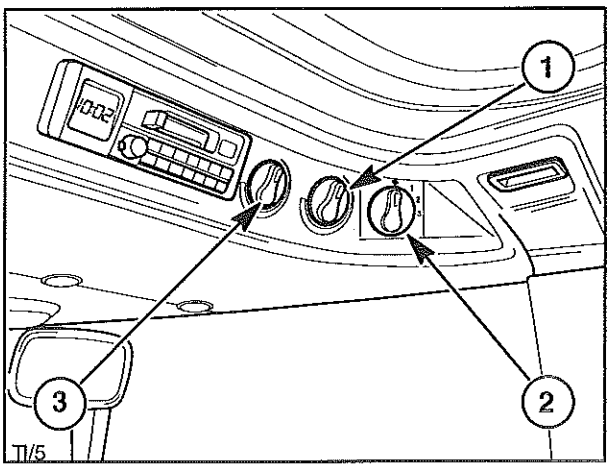
Air Conditioner Temperature Control (where fitted) – Figures 2-16, 2-17 and 2-18

Rotate the knob (1) Figure 2-16, clockwise to activate the air conditioner compressor and lower the temperature of the air within the cab. The air conditioner will only operate with the blower (2) switched on. Windows, doors and escape hatch should be closed.

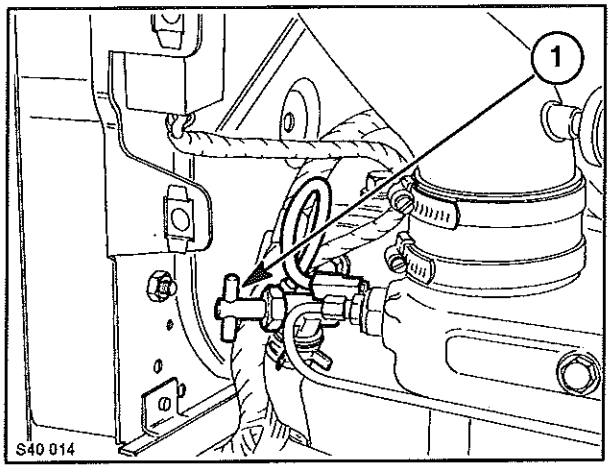
IMPORTANT: *The air conditioning system uses R134A refrigerant. Do* ***not*** *mix with other refrigerants.*

If the tractor has been parked in the sun, the interior of the cab may be cooled more quickly if the air conditioner is operated for two or three minutes with the roof hatch partially open. This will force most of the warm air from the cab. Operate the air conditioner at the lowest temperature setting (knob fully clockwise) and at maximum blower speed. When the air has cooled sufficiently, close the hatch and adjust the air conditioner and blower controls to maintain the desired temperature.

Under certain conditions, it may be desirable to operate both the air conditioner and heater together, e.g. to demist the windscreen and side windows on a cold morning. (The air conditioner, as well as cooling, also removes moisture from the air). Run the engine to normal operating temperature, turn the heater temperature control (3) and blower control (2) to the maximum settings (fully clockwise). Adjust the swivelling air vents to direct the air flow, as required.



2-16



2-17

When the windows are clear, turn the air conditioner temperature control to the off position and adjust the heater controls to maintain the desired cab air temperature.

NOTE: *At the start of the warm season, when the heater is no longer required, it is recommended that you close the heater shut-off valve (1) Figure 2-17, on the rear of the inlet manifold, on the right-hand side of the engine.*

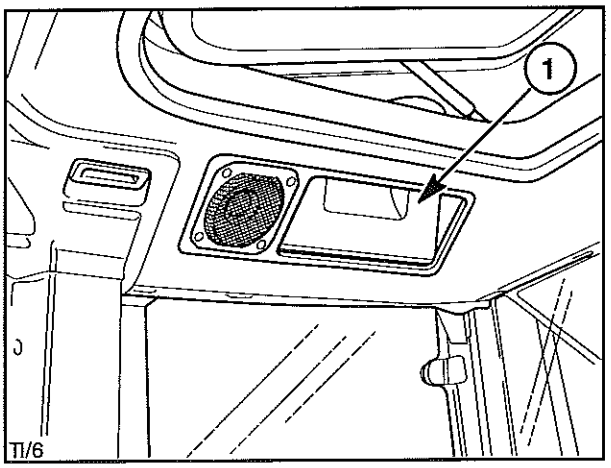
The air conditioner will operate more efficiently with both recirculation vents (1) open as shown in Figure 2-18, so as to allow previously cooled air to recirculate.

IMPORTANT: *Run the engine at idle speed for at least 3 minutes after switching on the air conditioner, if the air conditioner has been out of use for more than 30 days.*

IMPORTANT: *Always turn the air conditioner off when cooled or de-humified air is not required. For proper operation of the air conditioner, ensure that the cab air filters are serviced regularly. See section 3.*

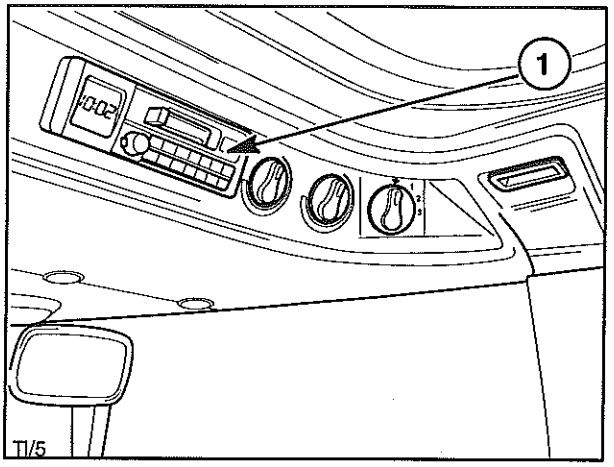
WARNING: *The refrigerant used in the air conditioner system has a boiling point of –12° C (10° F).*

- *Never expose any part of the air conditioner system to a direct flame or excessive heat because of the risk of fire or explosion.*
- *Never disconnect or disassemble any part of the air conditioner system. Escaping refrigerant will cause frostbite. Allowing refrigerant to escape into the atmosphere is illegal in many countries.*
- *If refrigerant should contact the skin, use the same treatment as for frostbite. Warm the area with your hand or lukewarm water at 32 – 38° C (90 –100° F). Cover the area loosely with a bandage to protect the affected area and to prevent infection. Consult a doctor immediately.*
- *If refrigerant should contact the eyes, wash the eyes immediately with **cold** water for at least 5 minutes. Consult a doctor immediately.*



2-18

NOTE: *It is the normal function of the air conditioner to extract water from the air. Drain hoses lead from the air conditioner unit to a point beneath the cab. Do not be concerned if a pool of water collects beneath the drain hose outlets when the engine is stopped.*



2-19

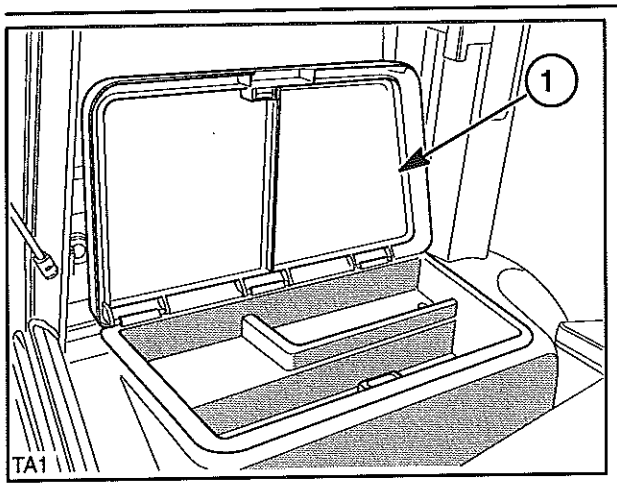
Radio/Cassette Player (where fitted) – Figure 2-19

The cab is pre-wired and has two speakers installed in the roof.

A choice of self-seeking AM/FM stereo radio/cassette players (1) is available as a dealer installed accessory. Separate operating instructions will be supplied with the set.

WARNING: *Ensure the aerial is positioned so it cannot touch overhead power lines.*

NOTE: *The radio will only operate with the key-start switch in the* ***on*** *or* ***accessories*** *position.*



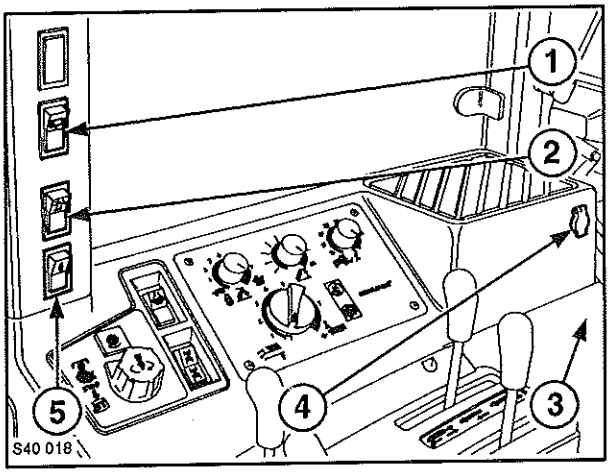
2-20

In Cab Storage Box – Figure 2-20

A storage box with a the hinged lid (1) is located in the rear, left-hand corner of the cab. Lift the lid to access the storage area. The lid is retained in the closed position by a magnetic catch.

'B' Pillar Rocker Switches – Figures 2-21 to 2-25

When the key-start switch is turned on, the rocker switches mounted on the right-hand 'B' pillar will be internally illuminated. The light intensity will increase as each switch is activated. The switches control the following functions:



2-21

Rear Windscreen Wipe/Wash Switch (where fitted) – Figure 2-21

Press the upper part of the rocker switch (1) partially in to operate the rear wiper.

Press fully in to operate the windscreen washer. The switch is spring-loaded and will return to the 'wiper on' position when released.

Roof Beacon Switch (where fitted) – Figure 2-21

Press the upper part of the switch (2) to provide power to the roof beacon socket outlet.

Accessory Socket Switch (where fitted) – Figure 2-21

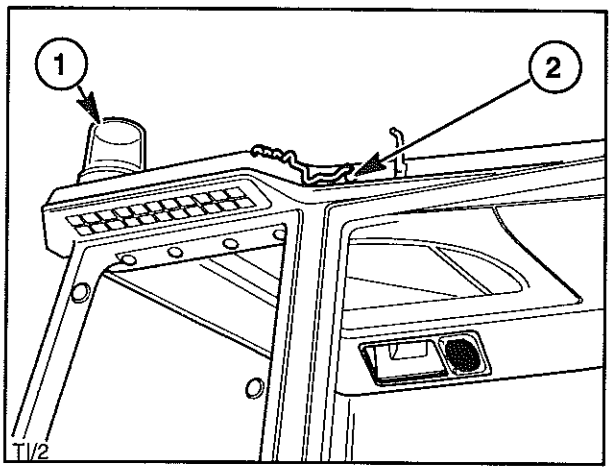
Press the upper part of the switch (5) to provide power to the 4-pin implement socket located on the back of the cab. (See item (2) Figure 2-25).

In-cab Accessory Socket – Figure 2-21

A live, 8 amp power socket (4) Figure 2-21, is installed on the right-hand quarter panel for the operation of an electronic implement monitor.

Roof Beacon (accessory) – Figure 2-22

The roof beacon kit consists of a rotating beacon with a magnetic base, a steel plate, a switch and an electrical outlet socket. The cab roof is made from fibreglass. Four depressions are provided in the roof panel to accomodate the steel plate which should be fixed into one of the depressions with the screws provided. The beacon may then be attached magnetically to the steel plate.

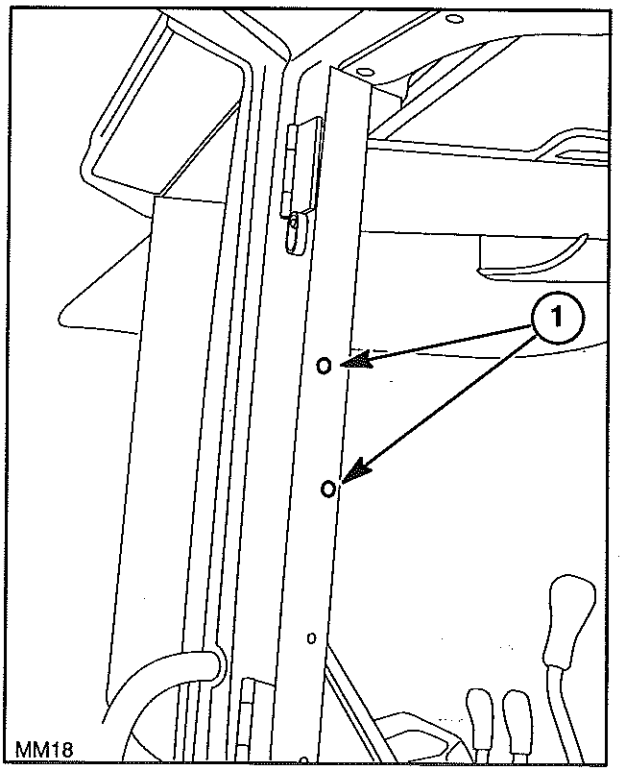


2-22

A hole (with blanking plug) is provided either side of the roof panel. The socket should be mounted in one of these holes, as shown in Figure 2-22. The switch must be mounted in the aperture provided in the right-hand 'B' pillar, as shown in Figure 2-21. Electrical connections for the switch and socket are provided in the cab wiring loom.

Implement Monitor Installation – Figures 2-23 and 2-25

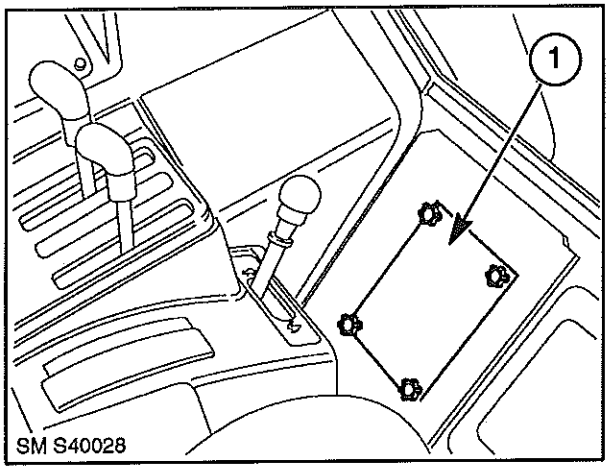
To facilitate installation of an implement monitor, two mounting points are provided:



2-23

To meet SAE standards, the right-hand rear quarter panel is pre-drilled at point (3) in Figure 2-21, and two captive nuts provided. The area is covered by the interior vinyl trim. The nuts are accessible from beneath the cab and are directly in line with the right-hand rear cab mount, approximately 430 mm and 550 mm (17.0 and 21.6 in) respectively, above the mount. Insert a sharp, pointed implement through the nuts to pierce the vinyl trim.

An alternative monitor mounting position is provided on the front face of the right-hand 'B' pillar, see Figure 2-23. Remove the plastic trim from the pillar in order to locate the two captive 10 mm nuts (1). Drill holes in the trim in line with the nuts. The nuts are approximately 320 mm and 440 mm (12.6 and 17.3 in.) respectively, from the top of the door frame.

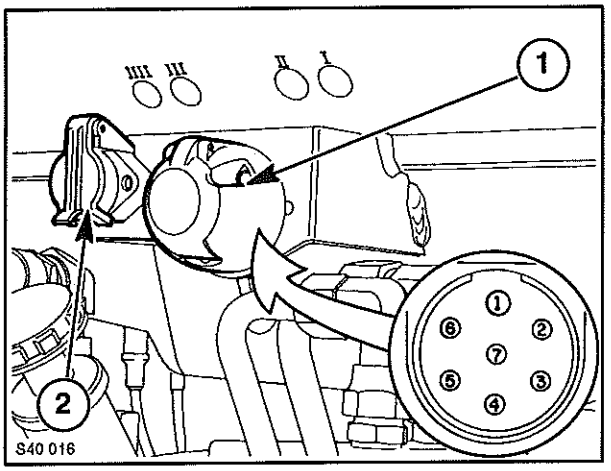


2-24

It is recommended that a suitable hinged bracket be screwed to the 'B' pillar to mount the monitor. This will allow the monitor to be swung to one side so as not to impede access to or from the cab.

So the operating cable from the monitor may be conveniently routed to the equipment, a small removable panel (1) Figure 2-24, is provided beneath the rear window.

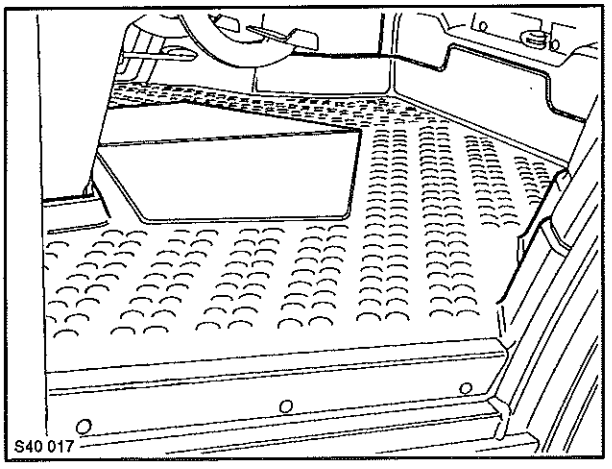
A standard 7-pin trailer lighting socket (1) Figure 2-25, is provided and is mounted on the outside of the cab frame, beneath the rear window. The position of the 7-pin trailer socket may vary from that shown in Figure 2-25, dependent upon the number of remote control valves installed, etc. The socket connections are as follows:



2-25

Pin No./Wire Colour (see inset – Figure 2-25)		Circuit
1	Green/red	L.H. Turn Signal
2	–	Not used
3	Black	Earth
4	Green/white	R.H. Turn Signal
5	Red	R.H. Parking Light
6	Green/purple	Stop Lights
7	Red/black	L.H. Parking Light

A 4-pin, 30 amp socket (2) Figure 2-25, is available as an accessory. To provide power to the socket, press the upper part of the switch (5) Figure 2-21.



2-26

CLEANING THE CAB INTERIOR

When the soft trim material inside the cab becomes dirty, it should be wiped clean. Dip a cloth in a warm water/detergent solution and wring out as much of the water as possible.

The rubber floor covering, Figure 2-26, is designed to allow water to flow out through the open doors. Wash the covering carefully and allow to dry naturally. Avoid getting water under the mat.

SEATS – Figures 2-27 to 2-33

The choice of seat available for your tractor will depend upon model and specification level. Whichever seat is installed in your tractor, you will find that it has a comprehensive range of adjustments. To ease identification, seat adjusters are colour coded grey.

NOTE: *Tractors without cab have vinyl covered seats. Tractors with cab have cloth covered seats.*

NOTE: *Do not use solvents to clean the seat. Use only warm water with a little detergent added. Tractors with cab have cloth upholstered seats. Avoid wetting the seat more than is absolutely necessary.*

Before operating the tractor, it is important to adjust the seat to the most comfortable position. All adjustments should be made while seated. See the following text and appropriate illustration (Figures 2-27 to 2-33) to identify the seat installed in your tractor.

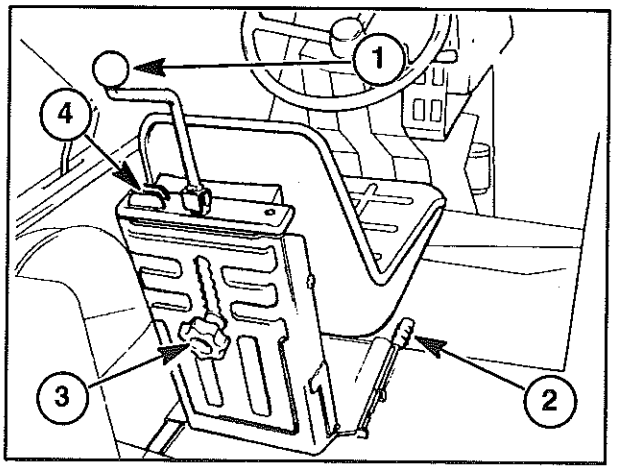
Figure 2-27 – Basic Seat

The suspension is adjusted by means of a hinged crank handle (1) on the back of the seat frame. Lift the handle up to the vertical position, as shown. Turn the handle clockwise to increase suspension stiffness and provide a firmer ride. Turn the handle anti-clockwise and the seat suspension will become softer.

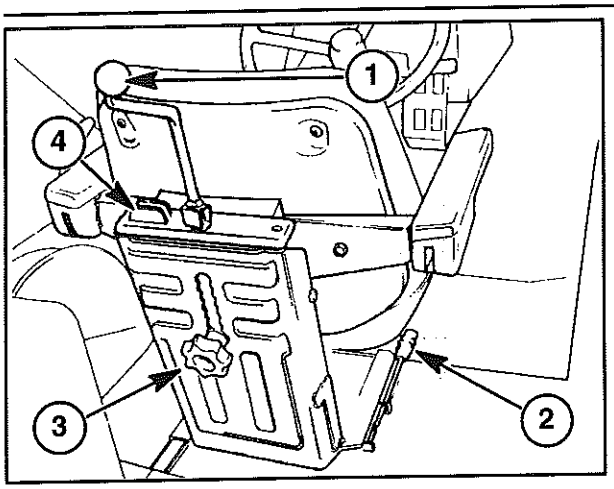
The optimum suspension setting is achieved when, with the operator seated, the white arrows on the seat back and frame are aligned. After adjustment, fold the handle down to the 'park' position (4).

The lever (2) controls seat travel. Move the lever to the right and slide the seat forward or backward, as required. When the lever is released, the seat will lock in the position selected.

To adjust seat height, loosen the knob (3) and lift or lower the seat, as required. Tighten the knob.



2-27



2-28

Figure 2-28 – Economy Seat

The suspension is adjusted by means of a hinged crank handle (1) on the back of the seat frame. Lift the handle up to the vertical position, as shown. Turn the handle clockwise to increase suspension stiffness and provide a firmer ride. Turn the handle anti-clockwise and the seat suspension will become softer.

The optimum suspension setting is achieved when, with the operator seated, the white arrows on the seat back and frame are aligned. After adjustment, fold the handle down to the 'park' position (4).

The lever (2) controls seat travel. Move the lever to the right and slide the seat forward or backward, as required. When the lever is released, the seat will lock in the position selected.

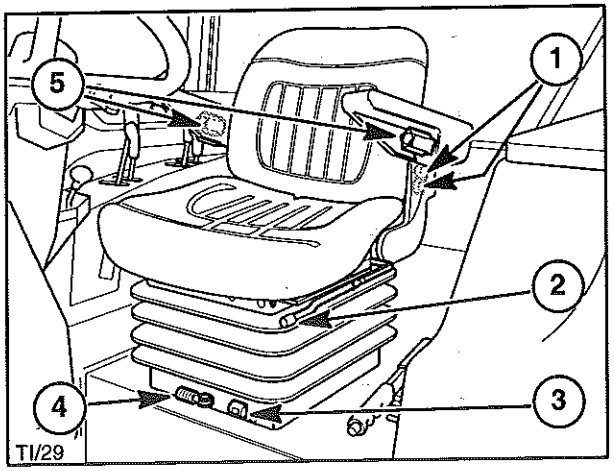
To adjust seat height, loosen the knob (3) and lift or lower the seat, as required. Tighten the knob.

If not required, the armrests may be lifted to the vertical position.

Deluxe and Comfort Deluxe Seats

Deluxe and comfort deluxe seats display the operator's weight in kilos. A conversion chart from kg. to lb. follows:

50 kg = 110 lb	90 kg = 198 lb
60 kg = 132 lb	100 kg = 220 lb
70 kg = 154 lb	110 kg = 245 lb
80 kg = 176 lb	120 kg = 265 lb



2-29

Deluxe Seat – Figure 2-29

Sit in the seat and turn the suspension adjustment crank handle (4) to adjust the suspension until your approximate weight, in kilos, is indicated in the window (3).

Turn the handle clockwise to increase suspension stiffness and provide a firmer ride. Turn the handle anti-clockwise and the seat suspension will become softer.

The seat height is adjustable in three positions. With the seat in the lowest position, grasp either side of the seat cushion and lift the seat bodily until it locks in the intermediate position. Lift the seat further and it will lock in the maximum height position. To lower the seat, lift the seat bodily to the fullest extent, to trip the mechanism, then allow the seat to lower fully.

The lever (2) controls seat travel. Move the lever to the left and slide the seat forward or backward, as required. When the lever is released, the seat will lock in the position selected.

There is a knurled wheel (5) on the underside of each armrest. Turn the wheel to alter the angle of the armrest.

Each armrest is secured to the seat frame by two bolts (1) in elongated holes. Remove the snap-on plastic cover and loosen the two bolts to adjust the height of the armrest. Replace the cover after adjustment. If not required, the armrests may be lifted to the vertical position.

A storage pouch is provided on the back of the seat.

Comfort Deluxe Seat – Figures 2-30 and 2-31

Lift the travel adjustment lever (3) and move the seat forward or backward, as required. The seat will lock in position when the lever is released.

Having selected the required fore/aft position, the seat is permitted a limited, spring controlled fore/aft movement (float) if the travel isolator (4) is pulled out and moved rearward. This, in conjunction with the suspension, will provide the optimum in ride comfort.

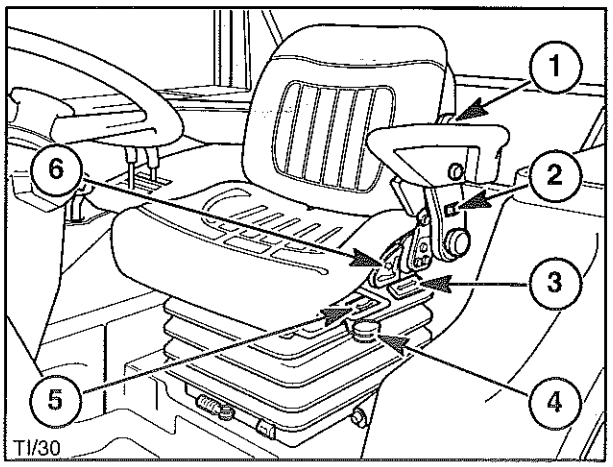
Rotation of the knurled wheel (2) on the left-hand armrest support will alter the angle of the armrest. If not required, both armrests may be lifted to the vertical position.

The left-hand armrest has a fold flat feature. While in the fully raised position, push the rear of the armrest forward and the armrest will fold down and forward, flush with the seat cushion.

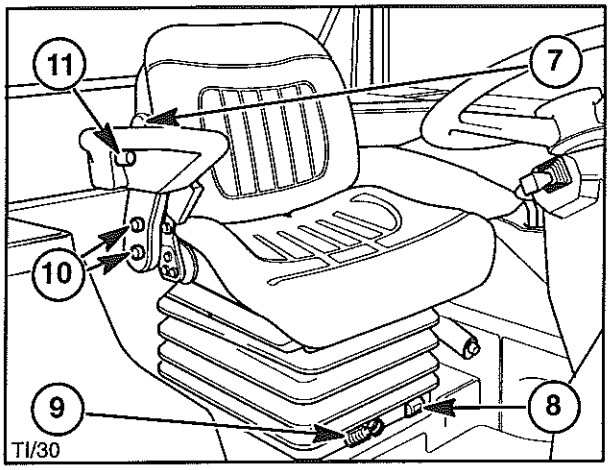
The backrest may be tilted to suit the operator. Lift the lever (6) on the left-hand side of the seat frame and adjust the inclination of the backrest.

To facilitate observation of an implement attached to the rear of the tractor, lift the lever (5) and rotate the seat to the right. The seat may be turned through an angle of 10° to the left or 20° to the right.

The seat has a built-in lumbar support actuated by handwheels and on either side of the backrest. Turn the handwheel (1) on the left-hand side to increase or decrease the curvature of the lumbar support.



2-30



2-31

Turn the handwheel (7) on the right-hand side to raise or lower the lumbar support until the most comfortable position is achieved.

Sit in the seat and turn the suspension adjustment crank handle (9) to adjust the suspension until your approximate weight, in kilos, is indicated in the window (8). Turn the handle clockwise to increase suspension stiffness and provide a firmer ride. Turn the handle anti-clockwise and the seat suspension will become softer.

The seat height is adjustable in three positions. With the seat in the lowest position, grasp either side of the seat cushion and lift the seat bodily until it locks in the intermediate position. Lift the seat further and it will lock in the maximum height position. To lower the seat, lift the seat bodily to the fullest extent, to trip the mechanism, then allow the seat to lower fully.

The right-hand armrest is secured to the seat frame by two bolts (10) in elongated holes. Remove the snap-on plastic cover and loosen the two bolts to adjust the height of the armrest. Replace the cover after adjustment. The knurled wheel (11) on the underside of the right-hand armrest may be turned to alter the angle of the armrest.

A storage pouch is provided on the back of the seat.

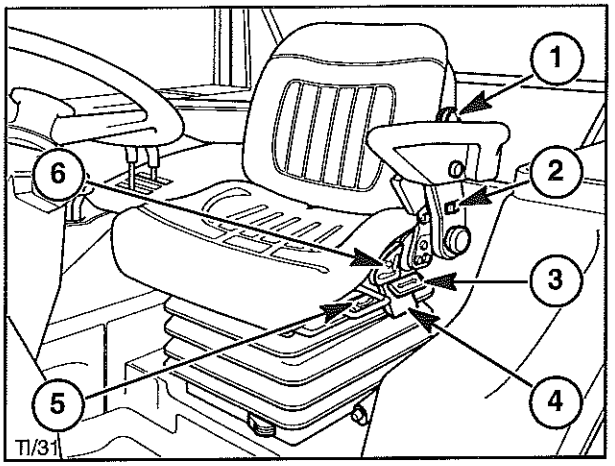
Air Suspension Seat – Figures 2-32 and 2-33

The air suspension seat has electrically controlled pneumatic suspension. In order to adjust the seat suspension or ride height, it is necessary to turn the key-start switch on.

Sit in the seat and lift the suspension adjustment lever (4) up and release. The suspension will automatically adjust to your weight. Hold the suspension lever up and move it forward or backward. A servo will raise or lower the seat to a choice of three height settings. When the lever is released the seat will stop at the height selected and will automatically adjust to your weight to provide optimum ride comfort.

This setting will be maintained every time the key-start switch is activated or until such time as the setting is re-adjusted.

Lift the travel adjustment lever (3) and move the seat forward or backward, as required. The seat will lock in position when the lever is released. Having selected the required position, the seat is permitted a limited, spring controlled fore/aft movement (float) if the travel isolator (8) is pulled out and moved to the operator's left. This, in conjunction with the air suspension, will provide the optimum in ride comfort.



2-32

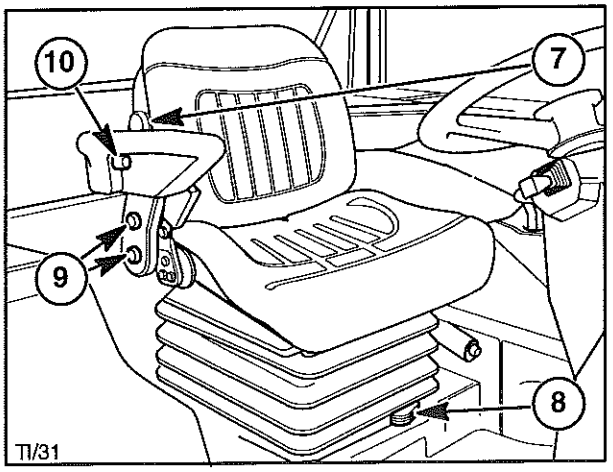
The backrest may be tilted to suit the operator. Lift the lever (6) on the left-hand side of the seat frame and adjust the inclination of the backrest.

The seat has a built-in lumbar support actuated by handwheels and on either side of the backrest. Turn the handwheel (1) on the left-hand side to increase or decrease the curvature of the lumbar support.

Turn the handwheel (7) on the right-hand side to raise or lower the lumbar support until the most comfortable position is achieved.

To facilitate observation of an implement attached to the rear of the tractor, lift the lever (5) and rotate the seat to the right. The seat may be turned through an angle of 10° to the left or 20° to the right.

The right-hand armrest is secured to the seat frame by two bolts (9) in elongated holes. Remove the snap-on plastic cover and loosen the two bolts to adjust the height of the armrest. Replace the cover after adjustment. The knurled wheel (10) on the underside of the right-hand armrest may be turned to alter the angle of the armrest.

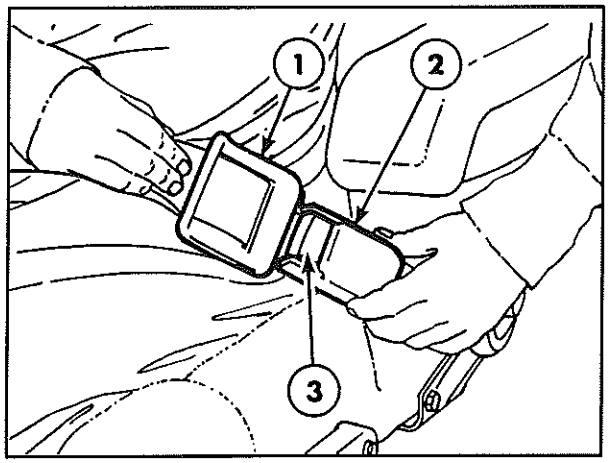


2-33

Rotation of the knurled wheel (2) on the left-hand armrest support will alter the angle of the armrest.

If not required, both armrests may be lifted to the vertical position. The left-hand armrest has a fold flat feature. While in the fully raised position, push the rear of the armrest forward and the armrest will fold down and forward, flush with the seat cushion.

A storage pouch is provided on the back of the seat.



2-34

Seat Belt – Figure 2-34

WARNING: *In some countries, tractors equipped with a safety cab are also fitted with a retractable seat belt. Always use the seat belt with a safety cab installed. Do not use a seat belt if the tractor is not equipped with a safety cab or ROPS.*

To fasten the belt, pull the belt from the reel and push the tongue (1) into the buckle end (2) until a 'click' indicates it is properly engaged. Press the red release button (3) on the buckle and remove the tongue from the buckle.

NOTE: *The belt may be sponged with clean, soapy water. Do not use solvents, bleach or dye on the belt as these chemicals will weaken the webbing. Replace the belt when it shows signs of fraying, damage or general wear.*

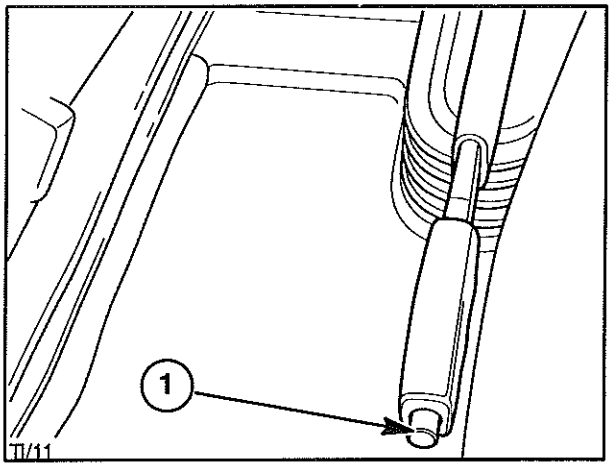
HAND BRAKE AND FOOT PEDALS

Handbrake – Figure 2-35

A conventional handbrake lever is installed to the left of the driver's seat.

To apply the handbrake, pull the lever up. To release, ease the lever up further, depress the button (1) on the end and lower the lever fully.

IMPORTANT: *Ensure that the handbrake is fully released before driving off.*

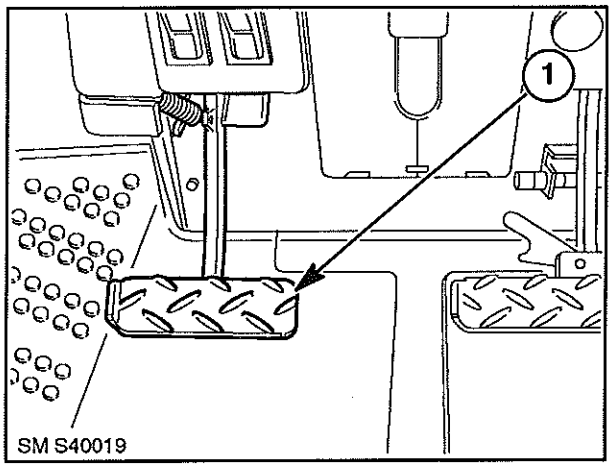


2-35

Clutch/Inching Pedal – Figure 2-36

When the clutch pedal (1) is depressed the drive between the engine and transmission will be dis-engaged. Use the pedal to transfer engine power smoothly to the driving wheels when moving off from a standstill. See 'TRANSMISSION' later in this section for further details.

NOTE: *To avoid premature wear, do not use the clutch pedal as a footrest.*

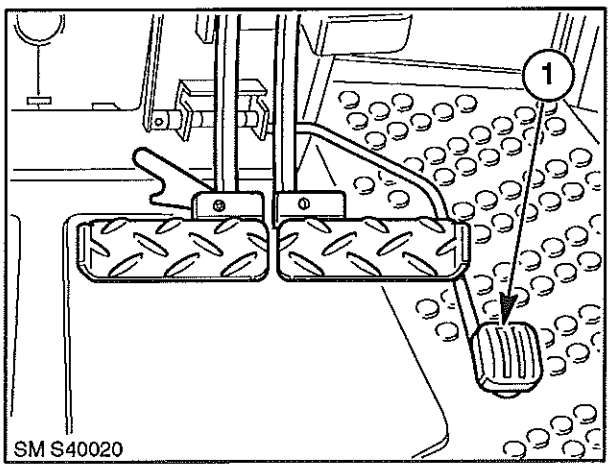


2-36

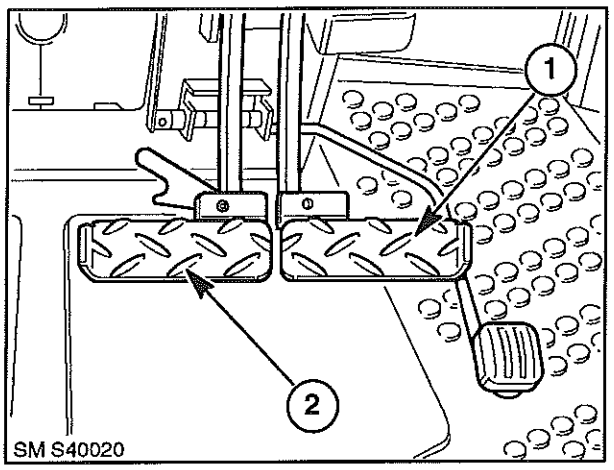
Foot Throttle – Figure 2-37

The foot throttle (1) may be used independently of the hand throttle to control the speed of the tractor. It is recommended that you use the foot throttle when driving on the highway.

NOTE: *When the foot throttle is released, engine speed will reduce to the level set by the hand throttle. When using the foot throttle, set the hand throttle to the minimum speed position (lever fully rearward).*



2-37

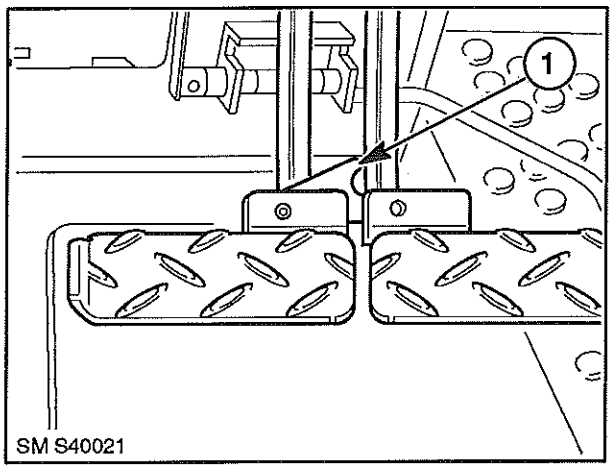


2-38

Footbrakes – Figures 2-38 and 2-39

WARNING: *On four wheel drive tractors, the drive to the front axle is automatically engaged when the brakes are applied to provide four wheel braking. Owners should be aware of the effectiveness of four wheel braking which greatly enhances braking performance. Appropriate care should be exercised during heavy braking.*

The brakes are actuated by two footpedals (1) and (2), Figure 2-38. They may be operated independently, to aid turning in confined spaces or locked together for normal stopping. When operating in the field, the brake pedals may be unlocked, as shown in Figure 2-38. However, due to the close proximity of the pedals to one another, it is still possible to apply both brakes together, when required.



2-39

WARNING: *For your safety, always lock the brake pedals together when travelling at transport speeds or if a hydraulically braked trailer is attached to the tractor. To lock the pedals together, swivel the latch (1) over to the right to engage the slot in the underside of the right-hand pedal, as shown in Figure 2-39.*

INSTRUMENT CONSOLE

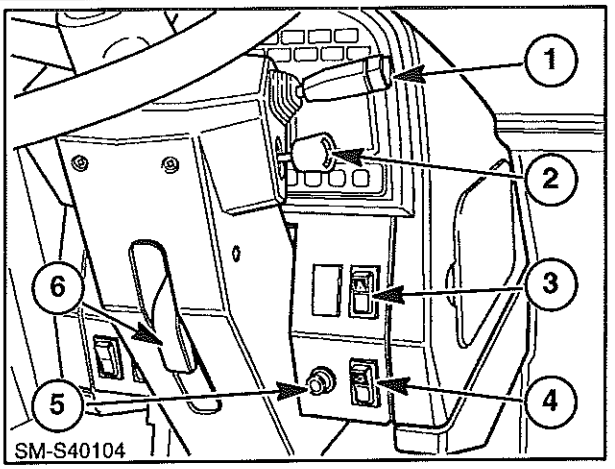
The following text describes the use of the various switches and controls, etc., mounted on the instrument console and steering column.

Windscreen Wipe/Wash Control (tractors with cab only) – Figure 2-40

The stalk-type control (1) on the right-hand side of the steering column controls the front screen wiper and washer.

With the key-start switch on, move the stalk rearward, against spring pressure and the wiper will make a single sweep of the screen and return to the 'park' position. Move the stalk further rearward to operate the slower of the two wiper speeds. Move the stalk fully rearward and the higher wiper speed will be selected. Lift the stalk to operate the electric screen washer.

NOTE: *The windscreen washer jet is mounted in the centre of the cab frame, immediately beneath the front of the roof. Insert a pin into the jet nozzle to adjust the angle of the jet.*



2-40

Key-start Switch – Figure 2-40

The key-start switch (2) activates the Thermostart cold start device and the starting motor. See 'Starting the Engine' later in this section.

Rocker Switches

When the key-start switch is turned on, the rocker switches will be internally illuminated. The light intensity will increase as each switch is activated.

Hazard Warning Lights Switch – Figure 2-40

Press the left-hand side of the switch (3) to operate all the turn signals simultaneously. The switch will flash in unison with the turn signals.

Creeper Gear Selector Switch (where fitted) – Figure 2-40

Press the upper part of the switch (4) to select the creeper gears. See 'Creeper Gears' later in this section.

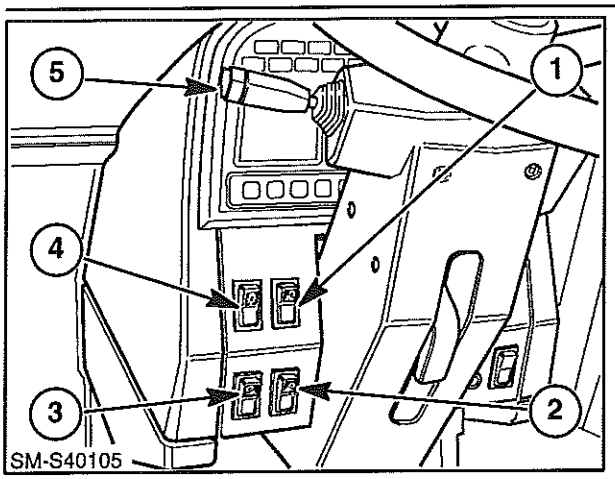
Cigarette Lighter (accessory – selected models) – Figure 2-40

To activate the cigarette lighter (5) push the knob fully in. The lighter will pop out when the electrical element has reached the correct temperature.

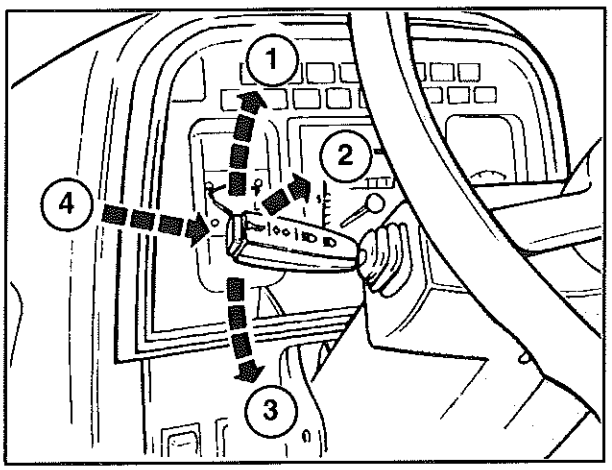
Steering Column Clamp Lever (where fitted) – Figure 2-40

The steering column may be tilted and telescoped if the clamp lever (6) is released. Pull the lower end of the clamp lever up (toward you). The steering column will become free and move forward by spring action. Move the steering column/wheel to the most convenient position and push the clamp lever forward (into the recess in the steering column cover) to lock the steering column assembly.

IMPORTANT: *Your tractor is equipped with hydrostatic power steering. Never hold the steering wheel at full left or right lock (wheels against the steering stops) for more than 10 seconds or for more than a total of 10 seconds in any one minute. Failure to observe this precaution may result in damage to steering system components.*



2-41



2-42

Work Lamp Switches – Figure 2-41

NOTE: *The work lamps are only operative with the tractor lights switched on.*

Press the upper part of the switch (1) to operate the front, roof-mounted work lamps (tractors with cab only).

Press the upper part of the switch (2) to operate the front, low mounted work lamps (where fitted).

Press the upper part of the switch (3) to operate the rear work lamps.

NOTE: *Do not adjust a lower, rear work lamp to point fully downwards. The heat generated by the work lamp may distort the plastic housing of the rear lamp cluster.*

Tractor Lights Switch – Figure 2-41

Press the upper part of the switch (4) in to the halfway position to turn on the front and rear position lights and illuminate the instrument panel. Press the switch fully in to turn on the headlights. Headlight main and dipped beam are selected by means of the multi-function switch (5). See also Figure 2-42 and the following text.

Multi-function Switch – Figures 2-41 and 2-42

The stalk-type switch shown at (5) Figure 2-41 and detailed in Figure 2-42, is mounted on the left-hand side of the steering column. The switch operates the horn and turn signals and is used to flash the headlights and to select main or dipped beam.

NOTE: *The turn signals will only operate with the key-start switch turned on.*

With reference to Figure 2-42, press in the end of the stalk (4) to sound the horn. Move the stalk forward (1) to operate the right turn signals. The left turn signals will operate if the stalk is moved rearward (3). The turn signal indicator lights on the instrument panel will also flash when the turn signals are actuated.

With the headlights off, pull the stalk up against spring pressure (2) to flash the headlight main beam. The stalk will automatically return to the central position when released.

With the headlights switched on, pull the stalk up (2) to change from dipped to main beam. The stalk will automatically return to the central position when released. Pull the stalk up a second time to change back to dipped beam. When main beam is selected, the blue indicator light on the instrument panel will be illuminated.

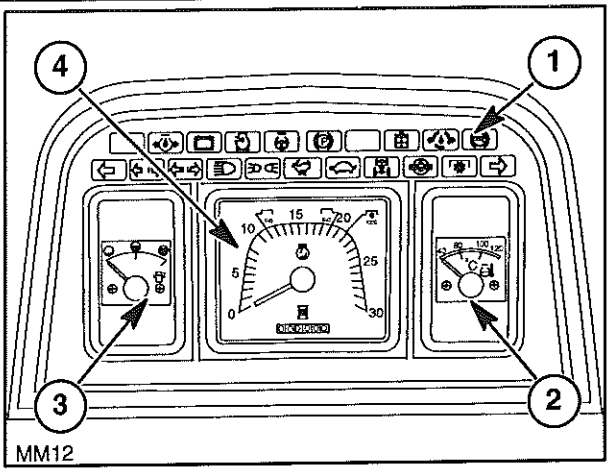
INSTRUMENTATION

Two types of analogue instrument panel are available, dependent upon model and specification level. Figure 2-43 shows the analogue instrument panel, Figure 2-44 shows the analogue/digital version.

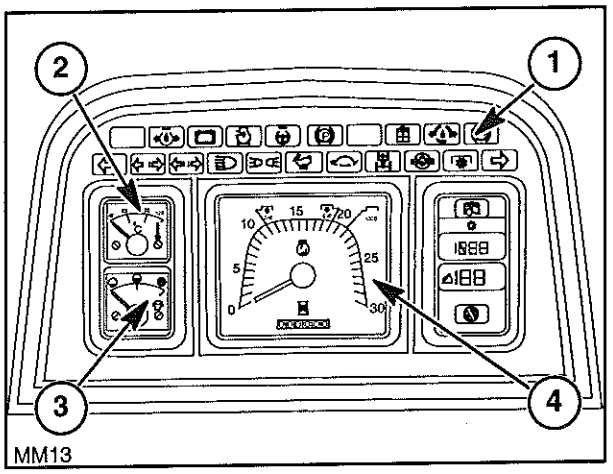
The upper section of both instrument panels consists of 21 coloured lights (1) which provide operating information or give warning of system malfunction.

Both instrument panels have three analogue gauges (2), (3) and (4). The panel shown in Figure 2-44 has, in addition, a liquid crystal display (LCD) on the right-hand side with two additional warning lights.

The instruments and liquid crystal display area are illuminated when the tractor lights are turned on.



2-43



2-44

GAUGES

Please refer to Figure 2-43 or 2-44, as appropriate, and the following text.

Engine Coolant Temperature Gauge – Figures 2-43 and 2-44

The temperature gauge (2) indicates the temperature of the engine coolant. If the needle enters the right-hand (red) section of the gauge while the engine is running, stop the engine and investigate the cause.

Fuel Gauge – Figures 2-43 and 2-44

The gauge (3) indicates the level of fuel in the tank(s) and is only operative with the key-start switch turned on.

Proofmeter – Figures 2-43 and 2-44

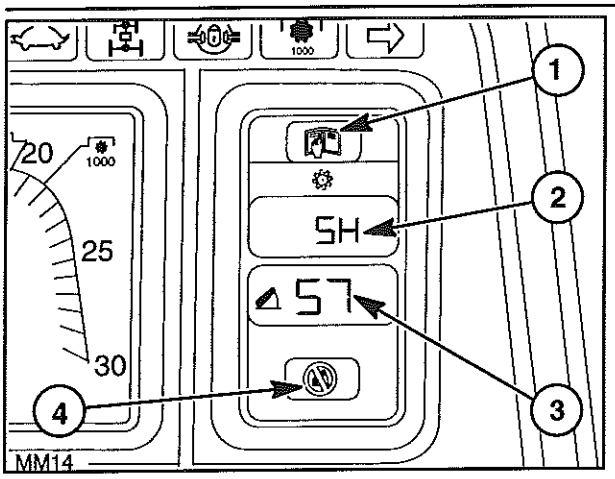
The proofmeter (4) consists of a tachometer and hourmeter. The tachometer indicates engine revolutions per minute. Each division on the scale represents 100 rev/min., therefore with the needle indicating '20' the engine is running at 2000 rev/min.

There are three P.T.O. symbols on the tachometer scale. The white '540' P.T.O symbol indicates the engine speed at which a P.T.O. speed of 540 rev/min is obtained (non-shiftable P.T.O. with 6-spline shaft installed).

The yellow '540' symbol indicates the engine speed at which a P.T.O. speed of 540 rev/min is obtained in the economy range (shiftable P.T.O. only).

The white '1000' symbol indicates the engine speed at which the 1000 rev/min P.T.O. speed is obtained.

The hourmeter records the total number of hours that the tractor has operated. The hours recorded should be used as a guide to determine hourly servicing intervals. (See section 3 of this Manual).



2-45

Hitch Disabled Warning Light – Figure 2-45

The warning light (1) will be illuminated when the 3-point linkage is out of phase with the hydraulic lift control lever. See 'Electronic Draft Control' later in this section.

Malfunction Warning Warning Light – Figure 2-45

In the unlikely event that a fault occurs in the electrical circuits, the warning light (4) will illuminate and an error code will appear in one of the LCD's.

Transmission error codes, consisting of a 2-digit number preceded by the letter 'E', will appear in the upper display (2). Hydraulics system error codes (a 1- or 2-digit number) will flash in the lower display (3).

The code indicates the circuit or sensor in which the fault lies and the type of fault, e.g. short circuit, open circuit, sensor failure, etc. In this event, the tractor will require the attention of your New Holland dealer.

Liquid Crystal Display (LCD) (Analogue/Digital Instrument Panel Only) – Figure 2-45

The right-hand panel is split into two separate displays, each having a warning light and an LCD. In Figure 2-45 all the displays are shown activated, for reference purposes. See the following text.

Upper Digital Display – Figure 2-45

When the key-start switch is on, the upper display (2) provides a permanent display of the gear ratio selected.

Lower Digital Display – Figure 2-45

If your tractor is equipped with Electronic Draft Control (EDC) then the lower display will advise the operator of the position of the 3-point linkage (and implement) by means of numbers ranging from '0' (fully lowered position) to '99' (maximum lift height). See 'Electronic Draft Control' later in this section.

Indicator and Warning Lights – Figure 2-46

The 21 coloured lights, shown in Figure 2-46, provide operating information or give warning of system malfunction. The lights are common to both the analogue and the analogue/digital instrument panels. The lights function as follows:

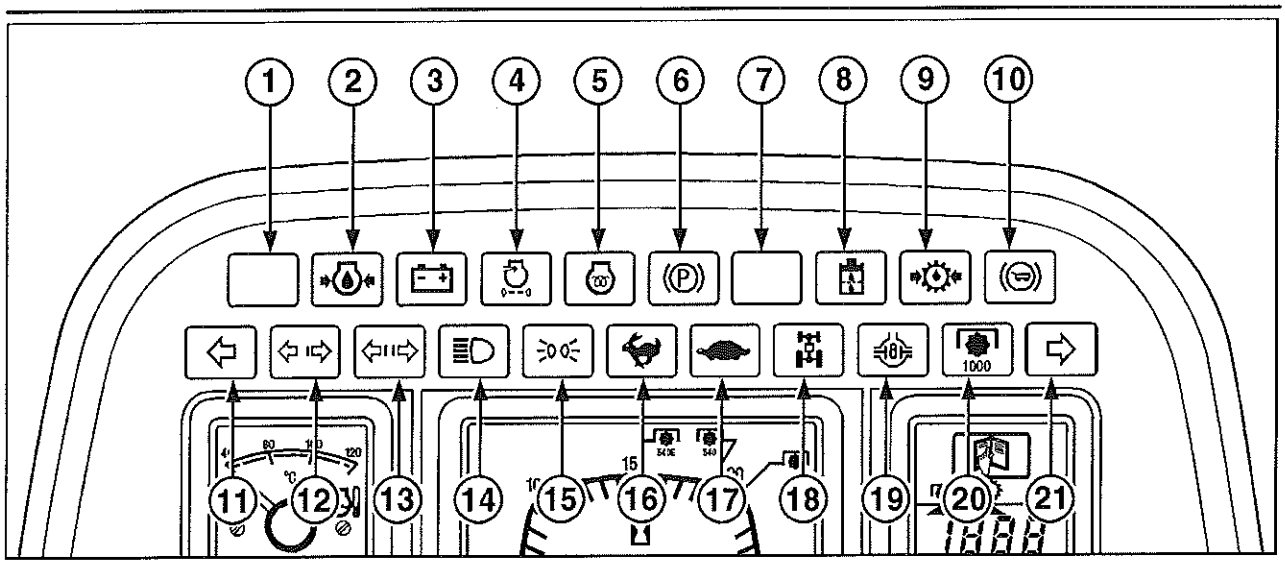
Upper Row – left to right – Figure 2-46

1. Not used.

2. Engine oil pressure – Steady light indicates low engine oil pressure. Stop the engine and investigate the cause.

3. Alternator – Steady light indicates that the alternator is not charging.

4. Air cleaner – Steady light indicates that the air cleaner is blocked or partially blocked. Stop the tractor and service the air cleaner to prevent damage to the engine.



2-46

5. Thermostart – Light will illuminate when the Thermostart is activated by the key-start switch. See 'Starting the Engine' later in this section.

6. Parking brake – Light will flash with key-start switch on and parking brake applied or if the fluid in the brake/clutch reservoir falls below the required minimum level. If the key-start switch is turned off and the parking brake is not applied, a warning buzzer will sound continuously for approximately two minutes or until the handbrake is applied.

WARNING: *To avoid personal injury, always apply the parking brake before leaving the tractor seat.*

7. Not used.

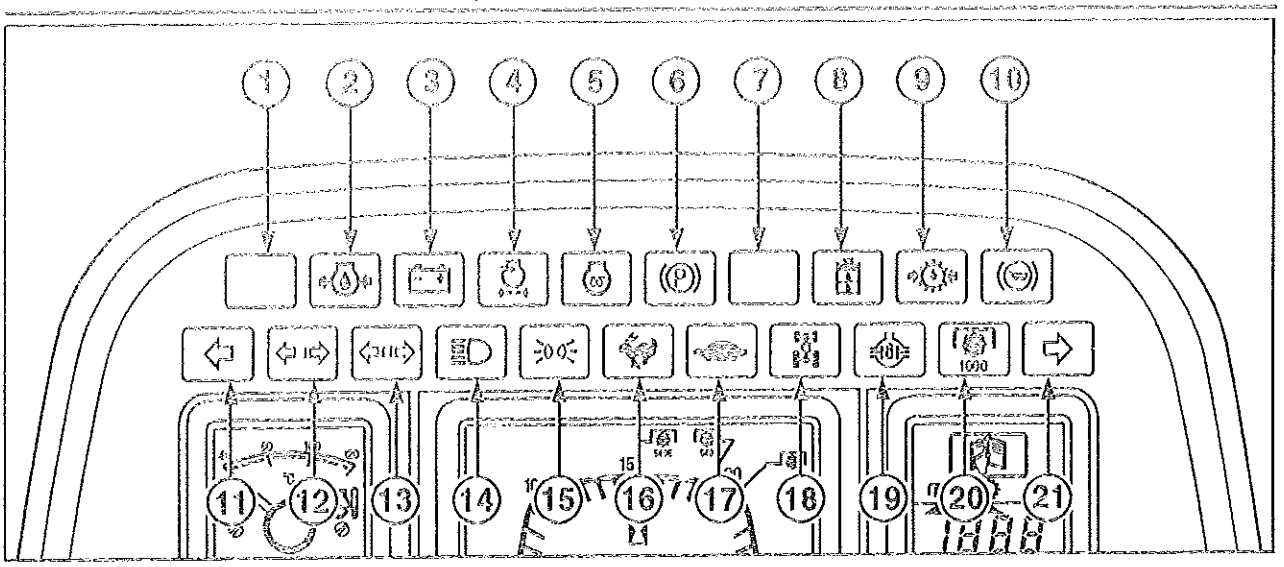
NOTE: *The warning light (8) may serve differing functions, dependent upon the type of hydraulic pump fitted. Your tractor may have a variable displacement pump (identified by* ***three*** *hydraulic filters installed under the right-hand side of the floor) or a tandem gear pump (identified by the* ***single*** *hydraulic filter installed under the right-hand side of the floor).*

8. Tractors with **variable displacement pump:** Steering intake filter – Steady light indicates that the steering and charge pump intake and pressure filters are blocked or partially blocked. Change the filters as soon as practicable and certainly within 1 hour of operation.

8. Tractors with **tandem gear pump:** Steering/hydraulic intake filter – Steady light indicates that the steering/hydraulic power lift intake filter is blocked or partially blocked. Change the filter as soon as practicable and certainly within 1 hour of operation.

9. Steering pump/transmission lubrication circuit – Steady light indicates that the steering pump/transmission lubrication circuit oil pressure is low. Stop the engine and investigate the cause.

10. Trailer brake pressure (Italy only) – Light will flash accompanied by a warning buzzer to indicate that hydraulic oil pressure to the trailer brake circuit is low. Stop the engine and investigate the cause.



2-47

Lower Row – left to right – Figure 2-47

11. Left turn indicator – Light will flash in unison with tractor left-hand turn signal.

12. Trailer turn signal – Light will flash in unison with tractor/trailer turn signals if trailer attached.

13. Trailer turn signal – Light will flash in unison with tractor/trailer turn signals if second trailer attached.

14. Headlight main beam – Light will be illuminated when the tractor lights are switched to main beam.

15. Parking lights – Light will be illuminated when the tractor lights are switched on.

16. Dual Power indicator (Dual Power transmission only) – Light will illuminate to indicate that the transmission is in direct drive.

17. Dual Power indicator (Dual Power transmission only) – Light will illuminate to indicate that the transmission is in underdrive.

18. Four wheel drive – Light will illuminate when the drive to the front wheels is engaged.

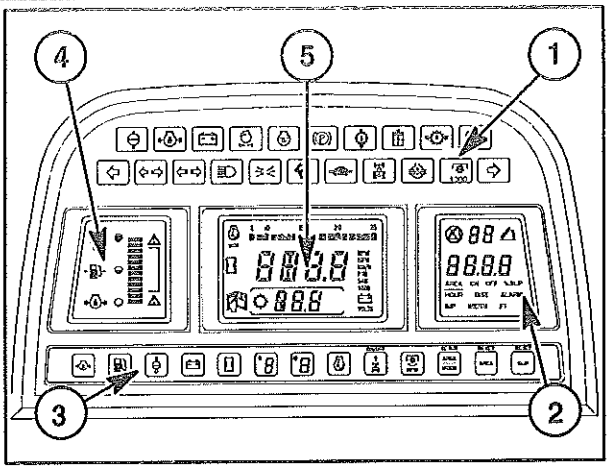
19. Differential lock – Light will illuminate when the differential lock is engaged.

20. 1000 rev/min P.T.O. (shiftable P.T.O. only) – A steady light indicates that 1000 rev/min P.T.O. speed is selected. If the P.T.O. is allowed to overspeed when operating in the economy range, the light will flash for 5 seconds then remain steady.

21. Right turn indicator – Light will flash in unison with tractor right-hand turn signal.

INSTRUMENTATION

The electronic instrument panel is shown in Figure 2-48 with all the displays activated.



2-48

The upper section consists of 21 coloured lights (1) which provide operating information or give warning of system malfunction.

Thirteen touch-sensitive function selector buttons (3) are arranged in a line across the bottom of the instrument panel. Touching these buttons enables information on various tractor functions to be displayed in the three liquid crystal display (LCD) areas.

The left-hand display (4) is in the form of a bargraph. Touching the appropriate function button will cause corresponding information on engine coolant temperature, fuel level and engine oil pressure to be displayed in the bargraph.

The main, central panel (5) consists of a multi-function LCD activated by the function selector buttons. A numerical read out of the following functions may be displayed:

- Engine speed (rev/min)
- Engine hours operated (actual time)
- Tractor ground speed (MPH or Km/h)
- P.T.O. speed (rev/min)
- Battery condition (volts)
- Gear ratio selected (continuous display)
- Diagnostic error codes (tractor circuits and transmission – will display automatically if a malfunction occurs)

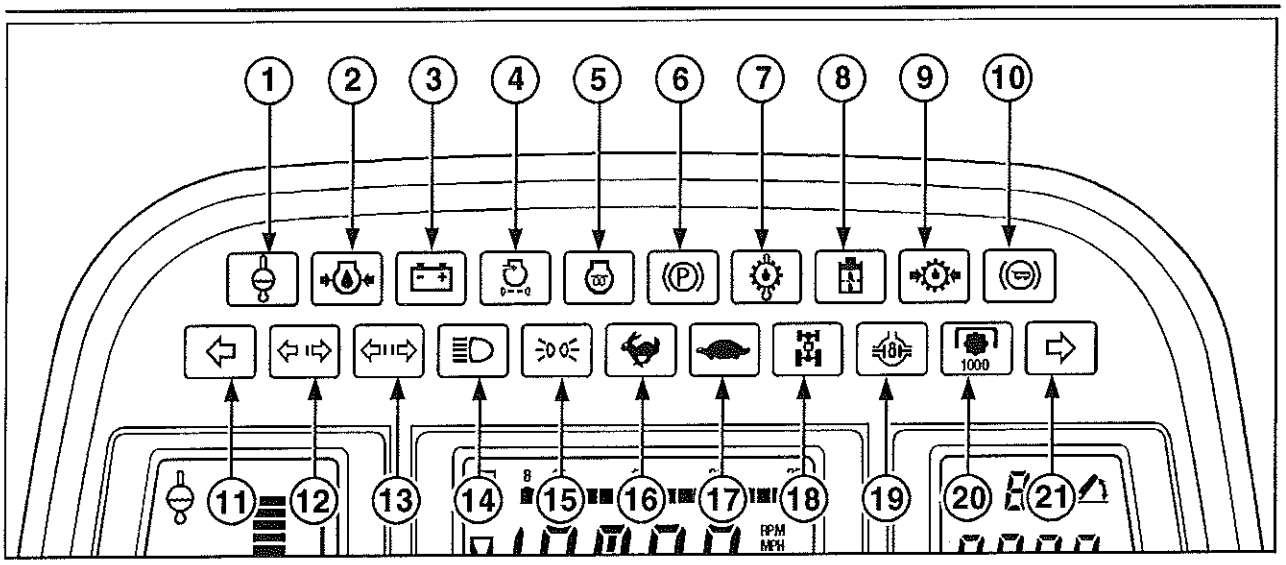
In addition to the numerical display, engine speed is continuously displayed in the form of a bargraph across the top of the main display. A warning indication may be programmed into the display as a reminder to the operator that the next scheduled service is due.

Information provided by the Tractor Performance Monitor is displayed in the right-hand panel (2). The display includes:

- Hitch enabled (with Electronic Draft Control only)
- Hitch position (with Electronic Draft Control only)
- Hitch disabled (with Electronic Draft Control only)
- Area per hour forecaster (acres or hectares)
- Area accumulated (acres or hectares)
- Wheel slip (%) – optional feature
- Hydraulic system diagnostic error codes (with Electronic Draft Control only)

Some tractor malfunctions are accompanied by an audible warning in addition to a warning light and a flashing error code in the relevant LCD.

When the key-start switch is turned on, a self-test of all the LCD segments is activated, the audible alarm will sound for approximately one second and the lamps that warn of a malfunction will be illuminated briefly, to confirm that the bulbs are functioning. The LCD areas are illuminated when the tractor lights are turned on.



2-49

Indicator And Warning Lights With Audible Alarm – Figure 2-49

The 21 coloured lights shown in Figure 2-49 provide operating information or give warning of system malfunction. The malfunction warning lights are accompanied by an audible alarm. Dependent upon the severity of the problem, the alarm will sound as follows:

Non–critical alarm: Continuous alarm for 5 seconds only.

Critical alarm: Intermittent alarm will sound until fault is corrected or engine is switched off. The lights/audio alarm function as follows:

Upper Row – left to right – Figure 2-49

1. Engine coolant temperature high – Light will illuminate accompanied by flashing LCD and **critical alarm.** Stop engine and investigate the cause. See also **Bargraph Display** and **Automatic Engine Shut Down** later in this section.

2. Engine oil pressure low – Light will illuminate accompanied by flashing LCD and **critical alarm.** Stop engine and investigate the cause. See also **Bargraph Display** and **Automatic Engine Shut Down** later in this section.

3. Alternator not charging – Light will illuminate if alternator is not charging the battery.

4. Air cleaner – Light will illuminate accompanied by **non-critical alarm.** Stop the tractor and service the air cleaner to prevent engine damage.

5. Thermostart – Light will illuminate when the Thermostart is activated by the key-start switch. See 'Starting the Engine' later in this section.

6. Parking brake and brake/clutch fluid level – With the key-start switch on, a steady light indicates that the parking brake is applied or the fluid level in the brake/clutch reservoir is low. If any attempt is made to drive the tractor with the parking brake applied or partially applied, the alarm will sound. Conversely, if the key-start switch is turned off and the parking brake is not applied, the **critical alarm** will sound continuously for approximately two minutes or until the handbrake is applied.

WARNING: *To avoid personal injury, always apply the parking brake before leaving the tractor seat.*

7. Transmission/rear axle/hydraulic oil temperature – Steady light accompanied by the **critical alarm** indicates high oil temperature. Stop the engine and investigate the cause.

8. Steering/charge pump filters – Steady light indicates that the steering intake filter is blocked or partially blocked.
   – Flashing light accompanied by **non-critical** alarm indicates that the charge pump intake and pressure filters are blocked or partially blocked. Service the tractor as soon as practicable and certainly within 1 hour of operation.

9. Steering pump/transmission lubrication circuit – Steady light accompanied by **critical alarm** indicates that the steering pump/transmission lubrication circuit oil pressure is low. Stop the engine and investigate the cause.

10. Trailer brake pressure (Italy only) – Light will flash accompanied by **critical alarm** to indicate that hydraulic oil pressure to the trailer brake circuit is low. Stop the engine and investigate the cause.

Lower Row – left to right – Figure 2-49

11. Left turn indicator – Light will flash in unison with tractor left-hand turn signal.

12. Trailer turn signal – Light will flash in unison with tractor/trailer turn signals if trailer attached.

13. Trailer turn signal – Light will flash in unison with tractor/trailer turn signals if second trailer attached.

14. Headlight main beam – Light will be illuminated when the tractor lights are switched to main beam.

15. Parking lights – Light will be illuminated when the tractor lights are switched on.

16. Dual Power indicator (Dual Power transmission only) – Light will illuminate to indicate that the transmission is in direct drive.

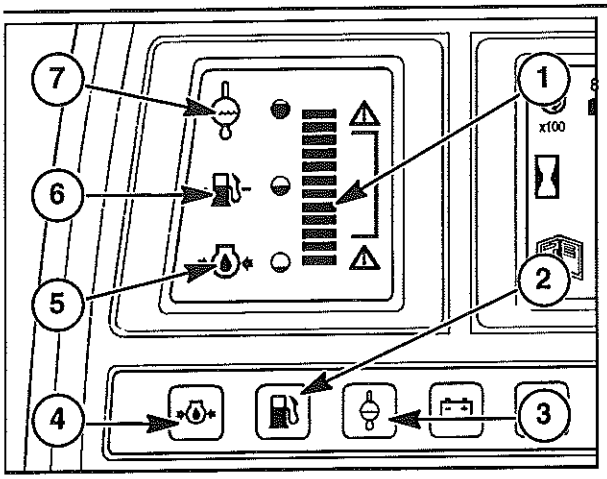
17. Dual Power indicator (Dual Power transmission only) – Light will illuminate to indicate that the transmission is in underdrive.

18. Four wheel drive – Light will illuminate when the drive to the front wheels is engaged.

19. Differential lock – Light will illuminate when the differential lock is engaged.

20. 1000 rev/min P.T.O. (shiftable P.T.O. only) – Steady light indicates that 1000 rev/min P.T.O. speed is selected. If the P.T.O. is allowed to overspeed when operating in the economy range, the light will flash for 5 seconds then remain steady. See **Shiftable P.T.O.** later in this section.

21. Right turn indicator – Light will flash in unison with tractor right-hand turn signal.



2-50

Bargraph Display (LCD) – Figure 2-50

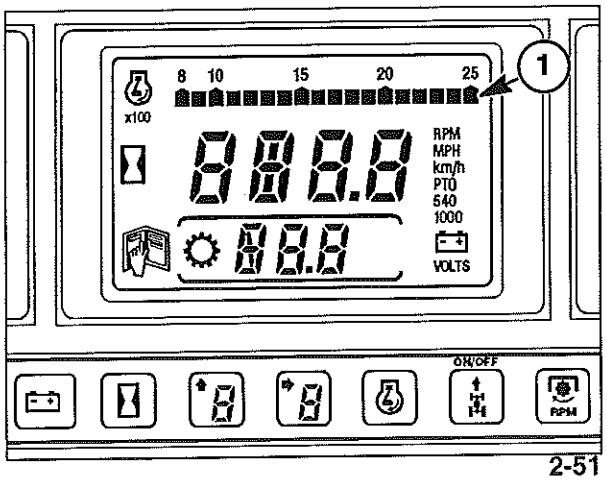
The bargraph (1) consists of twelve LCD segments. By touching the appropriate function selector button, one of three different tractor functions may be displayed. In Figure 2-50, all three displays are shown, for reference only.

When the key-start switch is turned on, the bargraph will automatically display fuel level, unless one of the other two function buttons is touched. When the engine is started, the bargraph will automatically change to display engine oil pressure. After 10 minutes of operation, it will change again to display engine coolant temperature.

The bargraph may, of course, be made to show any of the other functions by touching the appropriate selector button (2), (3) or (4), as follows:

Engine Oil Pressure – Figure 2-50

Touch the button (4) to display engine oil pressure. The symbol (5) will display to signify that the bargraph relates to engine oil pressure. With normal engine oil pressure, up to ten segments of the bargraph will be displayed.



2-51

Should engine oil pressure fall below a designated level, the bargraph, the symbol (5) and the 'low' warning symbol will flash. The **critical alarm** will sound, the word STOP will flash in the central display and the Tractor Performance Monitor display will become blank. Stop the engine immediately and investigate the cause. See also 'Automatic Engine Shut Down' on the next page.

NOTE: *The bargraph indicates engine oil pressure only. It is not an indication of oil level. The engine oil level must still be checked daily by means of the dipstick.*

Engine Coolant Temperature – Figure 2-50

Touch the button (3) to display engine coolant temperature. The symbol (7) will display to signify that the bargraph relates to coolant temperature. One segment of the bargraph will be displayed if the engine is cold. The number of segments displayed will increase as the engine warms up. With the engine at normal operating temperature, up to ten segments will be displayed.

Should the coolant temperature exceed a pre-determined level, the coolant symbol, the bargraph and the 'high' warning symbol will flash. The **critical alarm** will sound, the word STOP will flash in the central display and the Tractor Performance Monitor display will become blank. Stop the engine immediately and investigate the cause. See also 'Automatic Engine Shut Down' on this page.

NOTE: *The bargraph indicates engine coolant temperature only. It is not an indication of coolant level. The engine coolant level must still be checked daily.*

Fuel Level – Figure 2-50

Touch the button (2) to display fuel level. The symbol (6) will display, to signify that the bargraph display relates to fuel level. Each segment of the bargraph display represents one-twelfth of the total fuel content of the tanks.

When the fuel level falls such that only two segments of the bargraph are displayed, the bargraph and the 'low' warning symbol will flash and the **non-critical alarm** will sound for 5 seconds.

NOTE: *Even if the bargraph is not displaying fuel level, when the content of the fuel tanks falls below the designated level, the bargraph will automatically change to display fuel level, the displays will flash and the alarm will be activated, as described above.*

Automatic Engine Shut Down (accessory)

An automatic engine shut down feature may be added to the computer module. This feature will automatically shut down the engine within 30 seconds if engine oil pressure falls below or engine coolant temperature rises above predetermined levels. This feature is useful to protect the engine of an unattended tractor carrying out stationary P.T.O. work. See your dealer if this feature is required.

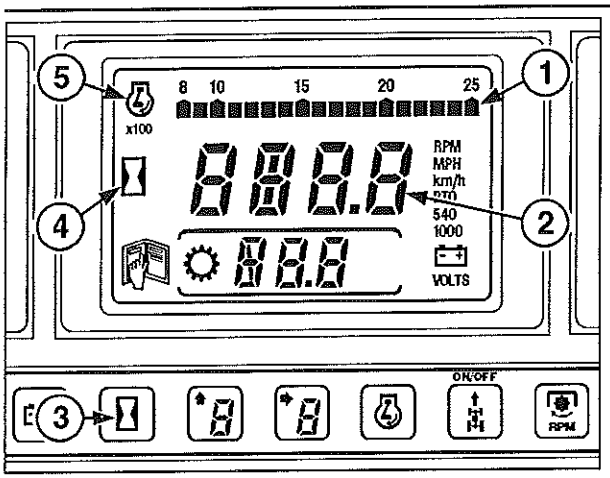
WARNING: *The engine shut down feature is fully automatic and **cannot** be overridden by the operator. Consequently, this feature should only be used for stationary P.T.O. work where the tractor may be left unattended for a period.*

Central Display (LCD) – Figure 2-51

The central display area contains several digital displays with a bargraph above. The bargraph (1) provides a constant read-out of engine rev/min.

The digital displays that may be selected are:

- Engine speed (rev/min)
- Engine hours operated (actual time)
- Tractor ground speed (MPH or Km/h)
- P.T.O. speed (rev/min)
- Battery condition (volts)
- Gear ratio selected (continuous display)
- Diagnostic error codes (tractor circuits and transmission – will display automatically if a malfunction occurs)

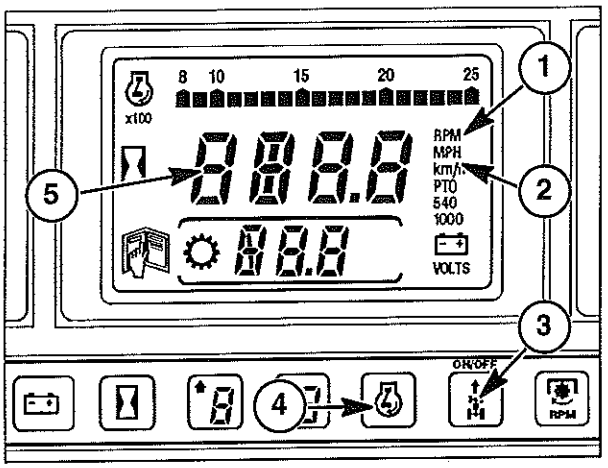


2-52

With the engine running, the hourmeter will accumulate hours in increments of 0.1 hours until 1000 hours is reached. After that time, the hourmeter will accumulate complete hours only, e.g. 1001, 1002 hours, etc.

NOTE: *Accumulated hours are stored in the computer permanent memory which is not affected by disconnection of the tractor battery.*

The hourmeter may be programmed to remind the operator when the next scheduled service is due. See 'PROGRAMMING THE MAIN DISPLAY' later in this section.



2-53

Engine Speed – Bargraph – Figure 2-52
With the engine running, the engine speed symbol (5) and bargraph (1) will display. Each segment of the 18 segment bargraph represents 100 rev/min and will provide a constant read out of engine speed between 800 and 2500 rev/min.

Engine Speed – Digital Display – Figure 2-53
With the engine running, touch button (4) and the 'RPM' legend (1) will display together with a digital display of engine rev/min in the main LCD (5).

Engine Hourmeter – Figure 2-52
When the key-start switch is turned on, the hourmeter symbol (4) will display and the hours the engine has operated will appear in the main LCD (2). Manual selection of another function or starting up the engine will cause the display to change. The hourmeter display may be recalled at any time by touching the button (3).

Ground Speed Display (Speedometer) – Figure 2-53
NOTE: *The electronic instrument panel is set in the factory to display either MPH or km/h. If required, the display may be reprogrammed to show the alternate units. See* 'PROGRAMMING THE TRACTOR PERFORMANCE MONITOR, *later in this section.*

Touch button (3) to show the ground speed in MPH or km/h in the main display (5). The 'MPH' or 'km/h' legend (2), as appropriate, will also be displayed.

NOTE: *The speedometer senses rotation of the rear axle and may be subject to errors caused by the effects of wheel slip, tire pressures/condition, etc. If the optional slip control feature is installed, a radar unit beneath the tractor senses true ground speed.*

NOTE: *The central display will automatically show ground speed if the tractor is travelling at more than 12.4 MPH (20 km/h). If it is required to display any other function, the appropriate selector button must be depressed.*

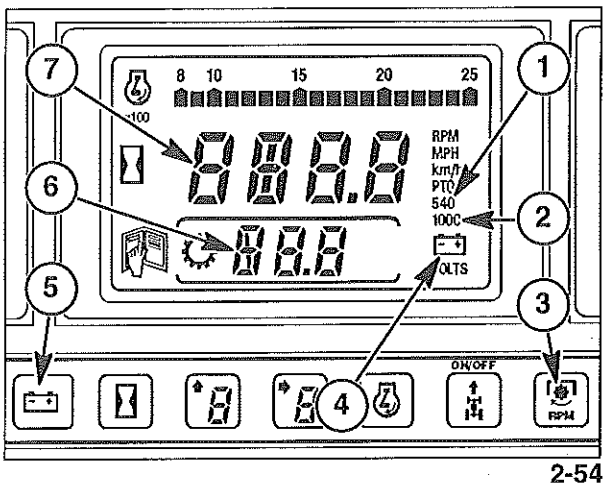
Battery Voltage – Figure 2-54

With the engine running, touch selector button (5) to display the battery symbol (4) together with a digital display of battery voltage in the main LCD (7). Should the battery voltage fall below 10.0 volts or rise above 16.0 volts, the 5 second audio alarm will sound. During this period, the battery symbol will flash after which it will remain steady.

If another function is displayed and the battery voltage goes outside the pre-set limits, the display will automatically change to show the voltage and the alarm will sound, as previously described. If the display is manually changed to show another function while the battery voltage is outside the set limits, the battery symbol will continue to flash until the malfunction is corrected.

Power Take Off Display – non-shiftable P.T.O. – Figure 2-54

Touch button (3) and the 'PTO 540' legend (1) will display, together with the P.T.O. speed in the main LCD (7). If the 1000 rev/min P.T.O. shaft is in use, touch the selector button again and the 'PTO 1000' legend (2) will display together with a digital display of P.T.O. speed.



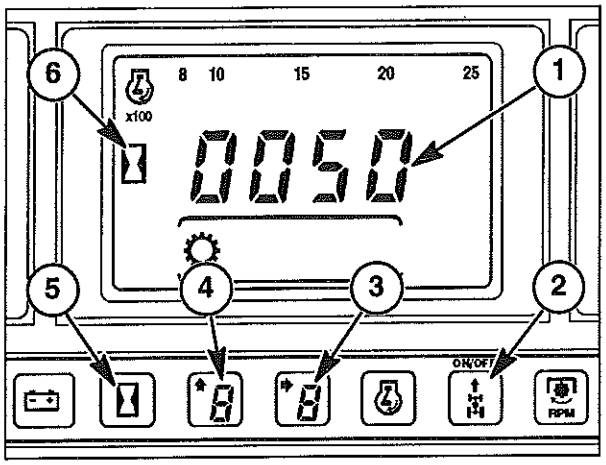
2-54

Power Take Off Display – shiftable P.T.O. – Figure 2-54

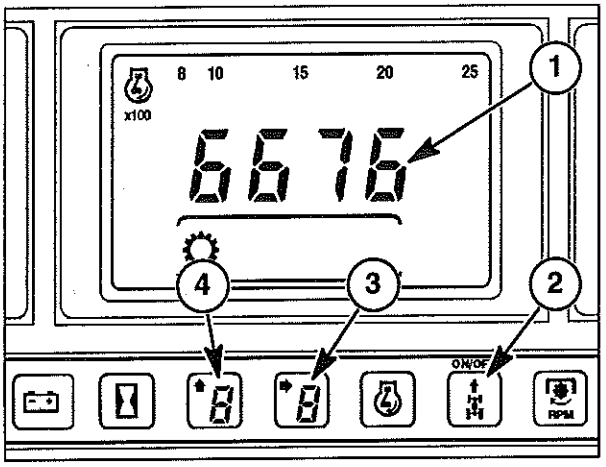
With shiftable P.T.O., the P.T.O. display, when selected, will automatically show the P.T.O. speed set by the position of the P.T.O. speed change lever, even if the P.T.O. knob is in the disengaged position. If 1000 rev/min P.T.O. is selected, the 'PTO 1000' indicator light (Figure 2-49) will also illuminate.

Transmission Gear Ratio Display – Figure 2-54

The lower LCD (6) provides a permanent display of the gear ratio selected, provided the key-start switch is on.



2-55



2-56

PROGRAMMING THE MAIN DISPLAY

There are two functions that may be programmed into the computer module by the operator:

1. **Next service due warning**

2. **Ground speed calibration**

1. Programming the 'Next Service Due' Warning – Figure 2-55

The 'next service due' warning causes the hourmeter symbol (6) to flash every time the hourmeter is displayed, when service becomes due. The symbol will flash for up to 10 hours as a reminder that the tractor is due for it's next scheduled service.

Example: Next service due warning required at, say, every 300 hours.

With the key-start switch on but with the engine stationary, the hourmeter (1) will be displayed. Press and hold down button (5) for approximately three seconds until a 'beep' from the audio alarm indicates that the computer is in the programming mode.

A number in the display (1) corresponds to the 'next service due' interval previously entered into the memory. A '0000' programmed into the display will cancel the 'next service due' warning.

The left-hand digit of the display (1) will be flashing. If the digit is already reading '0' there is no need to change it. Touch the DIGIT SELECT button (3) to select the next digit to the right, which will then flash.

Each touch of the DIGIT SET button (4) will increase the value of the flashing digit by one. When the digit reaches '3', touch the DIGIT SELECT button (3) which will cause the next digit in the display to flash.

Change the value of this digit, if necessary, using the DIGIT SET button (4), as previously described until it reaches '0'. Again, touch the DIGIT SELECT button (3) which will cause the next digit in the display to flash and change the value of this digit using the DIGIT SET button (4).

With '0300' displayed, enter the display into the memory by turning the key-start switch off. Every 300 hours of tractor operation (300, 600, 900 hours, etc.), the hourmeter symbol (6) will flash whenever the hourmeter is displayed. The display will continue to flash for 10 operating hours or until it is cancelled by touching buttons (2) and (5) simultaneously.

2. Ground Speed Calibration – Figure 2-56

The ground speed in the display is calibrated in the factory to suit the static loaded radius of the rear tires. However, should tires of a different size be fitted or weights or equipment permanently installed on the tractor that would alter the radius of the tires by more than 13 mm (0.5 in), then the computer module may be recalibrated to display a more accurate ground speed using the following method:

IMPORTANT: *If your tractor is equipped with the optional slip control feature, then the ground speed displayed is a true speed, as sensed by a radar unit. Calibration is* ***not*** *required, the calibration number being a constant '4018'.*

WARNING: *The radar ground speed sensor emits a low intensity microwave signal which will not cause any ill effects in normal use. Although the signal intensity is low, do* ***not*** *look directly into the face of the sensor while in operation so as to avoid eye damage. The radar sensor is beneath the front of the footsteps on the right-hand side.*

IMPORTANT: *Before carrying out arc welding on the tractor or equipment attached to the tractor, disconnect all power and earth leads to the instrument panel/Performance Monitor in order to avoid possible damage to electronic components.*

- Ensure that the tire pressures are correct for the load being carried. (See Tire Load/Inflation Tables at the end of this section of the Manual).

- Park the tractor on a firm level surface and carefully measure the distance from the centre of the rear hub to the ground. This is the static loaded radius.

- Using the following table, note the calibration number that corresponds to the tire radius, as measured.

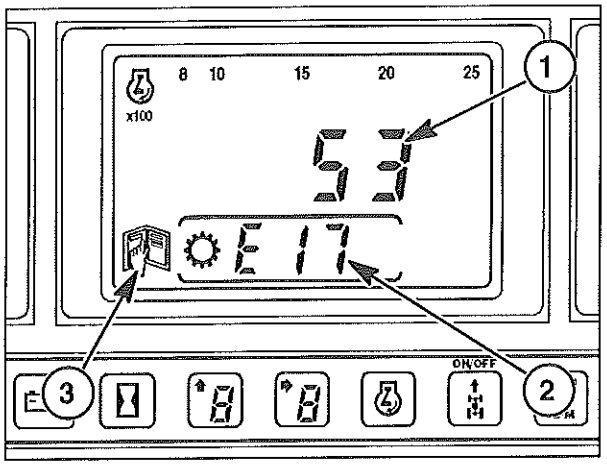
- Turn the key-start switch on and hold down button (2) for 3 seconds. A 'beep' from the audio alarm indicates that the computer is in the programming mode and the previously entered calibration number (1) will be displayed with the left-hand digit flashing.

Static Loaded Radius mm	Static Loaded Radius in.	Calibration Number 12 x 12 Transmission	Calibration Number 16 x 16 Transmission
584	23.0	10650	8127
597	23.5	10423	7954
610	24.0	10206	7789
622	24.5	9997	7630
635	25.0	9798	7477
648	25.5	9605	7330
660	26.0	9421	7190
673	26.5	9243	7054
686	27.0	9072	6923
699	27.5	8907	6797
711	28.0	8748	6676
724	28.5	8594	6559
737	29.0	8446	6446
749	29.5	8303	6337
762	30.0	8165	6231
775	30.5	8031	6129
787	31.0	7902	6030
800	31.5	7776	5934
813	32.0	7654	5841
826	32.5	7537	5752
838	33.0	7423	5664
851	33.5	7312	5580
864	34.0	7204	5498
876	34.5	7100	5418
889	35.0	6998	5341
902	35.5	6900	5266
914	36.0	6804	5192

- If required, change the value of the flashing digit using the DIGIT SET button (4) as described previously in Programming the 'Next Service Due' Warning.

- To select the next digit to the right, use the DIGIT SELECT button (3) and when that digit is flashing use the DIGIT SET button (4) to change the value. Repeat for the remaining digits.

When the required calibration number is displayed, enter it into the memory by turning the key-start switch off.



2-57

Malfunction Warning Symbol – Figure 2-57

In the unlikely event that a fault occurs in the instrument panel or electronic transmission electrical circuits, the malfunction warning symbol (3) Figure 2-57, will flash and an error code will appear in the display.

The error code will be a simple one- or two-digit number. Instrument panel error codes will appear in the main display (1) Figure 2-57, transmission error codes in the lower LCD (2). The transmission error code will be preceded by the letter 'E', as shown in Figure 2-57.

The code indicates the tractor circuit or sensor in which the fault lies and the type of fault, e.g. short circuit, open circuit, sensor failure, etc. In this event, the tractor will require the attention of your dealer.

If the battery is disconnected for any reason, upon reconnection, the error code '32' will appear in the implement position display of the Tractor Performance Monitor when the key-start switch is turned on. The error code will display for 5 seconds only and the micro-computer will then automatically recalibrate itself. Accordingly, no action need be taken unless this code re-appears. The tractor may then require the attention of your authorised dealer.

TRACTOR PERFORMANCE MONITOR – Figures 2-58 to 2-63

The Tractor Performance Monitor (TPM) is displayed in the right-hand side of the instrument panel. Figure 2-58 shows the TPM with all the displays activated, for demonstration purposes. The display includes:

- Area per hour forecaster (acres or hectares)
- Area accumulated (acres or hectares)
- Hitch enabled (with Electronic Draft Control only)
- Wheel slip (%) – with radar option
- Hitch position (with Electronic Draft Control only)
- Hitch disabled (with Electronic Draft Control only)
- Hydraulic system diagnostic error codes (with Electronic Draft Control only – will display automatically if a malfunction occurs)

Area per Hour Forecaster – Figure 2-59

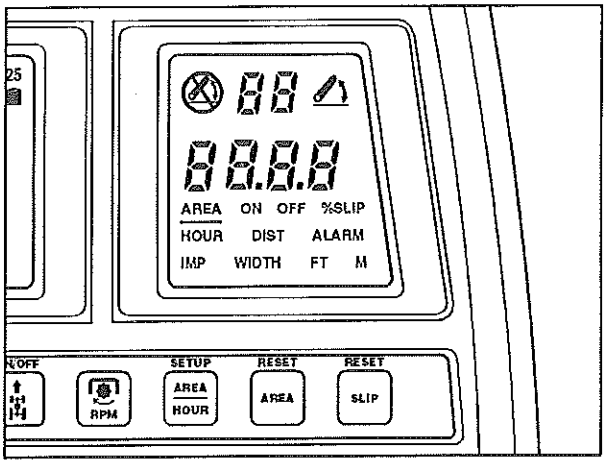
Touch the AREA/HOUR button (4). The 'AREA/HOUR' legend (5) will display, together with a forecast (1) of the area that will be worked in one hour if the current rate of work is continued. '0' will be displayed whenever the implement is raised.

When in the metric mode, denoted by 'M' (2),The forecast will be in hectares. In the Imperial mode, denoted by 'FT' (3) the forecast will be in acres. See 'PROGRAMMING THE TRACTOR PERFORMANCE MONITOR' later in this section.

NOTE: *If the radar option is not installed, area per hour calculations are based on axle speed and are subject to inaccuracies caused by the wheel slip that may be present.*

Area Accumulator – Figure 2-60

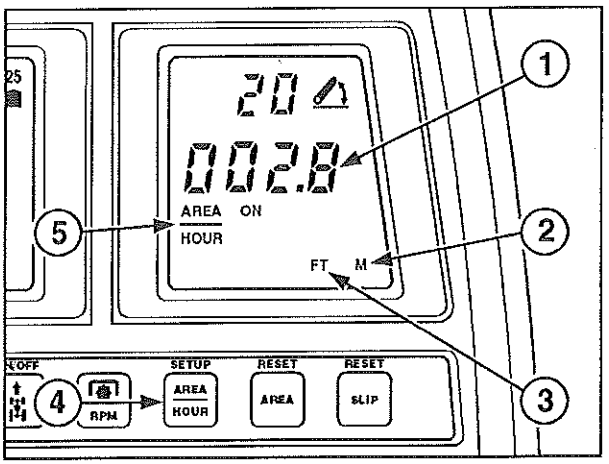
Accumulated area (1) (total area worked) can be displayed by depressing the AREA button (4). The 'AREA' and 'ON' legends (5) will display.



2-58

When in the metric mode, denoted by 'M' (2), the accumulated area will be displayed in hectares. In the Imperial mode, denoted by 'FT' (3) the area will be in acres. See 'PROGRAMMING THE TRACTOR PERFORMANCE MONITOR' later in this section.

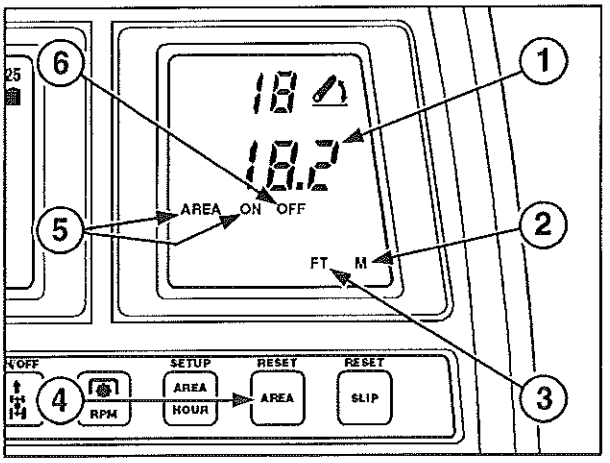
Touch the 'AREA' button again and the word 'OFF' (6) will display and 'ON' will disappear.



2-59

In the metric mode, the display (1) starts to accumulate in increments of .01 hectares. When 100.0 hectares is reached, area accumulation continues in increments of 0.1 hectares until 1000 is reached. The display will then accumulate whole hectares. When 9999 hectares is reached, the display will reset to zero.

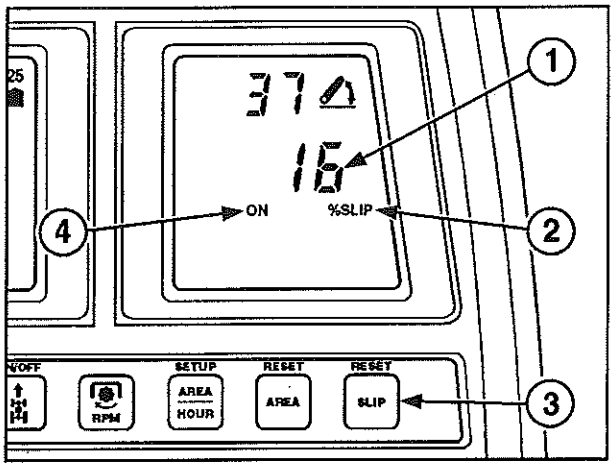
Imperial display starts to accumulate in increments of 0.1 acres. When 1000 acres is reached, area accumulation continues in whole acres. When 9999 acres is reached, the display will reset to zero.



2-60

Area accumulation can be reset to zero at any time by holding down the AREA button (4) until a 'beep' is heard from the audio alarm (approximately 3 seconds).

NOTE: *If the radar option is not installed, area calculations are based on axle speed and are subject to inaccuracies caused by the wheel slip that may be present.*



2-61

Wheel Slip (with radar option) – Figure 2-61

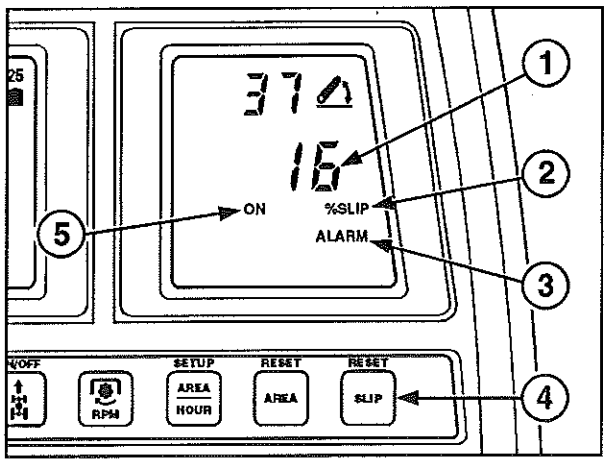
Touch the SLIP selector button (3) Figure 2-61. The '% SLIP' legend (2) and 'ON' (4) will display together with a two-digit value (1) in the main TPM display. This slip value is detected by the comparison of theoretical ground speed (axle rotation sensor) with true ground speed (radar sensor).

Slip calibration occurs automatically. However, when widely differing soil conditions are encountered it may be necessary to manually recalibrate the wheel slip ratio, as follows:

Drive the tractor in the soil conditions to be worked, with implement raised, at a constant speed of less than 10 MPH (16 km/h). This will determine the minimum wheel slip, under light operating conditions, that is to be used as a reference point. Hold down the SLIP button (3) for at least 3 seconds. A 'beep' from the alarm and '0' in the display (1) indicates that the computer has been calibrated to a minimum slip condition.

Slip Alarm (with radar option) – Figure 2-62

A slip alarm point may be entered to advise the operator when wheel slip exceeds the desired amount. See 'PROGRAMMING THE TRACTOR PERFORMANCE MONITOR'. When wheel slip exceeds the value entered, the alarm will sound for 5 seconds. If wheel slip is selected, the '% SLIP' legend (2) will be displayed as normal. In addition, the 'ALARM' legend (3) will flash and continue to flash until wheel slip is reduced to below the preset level.



2-62

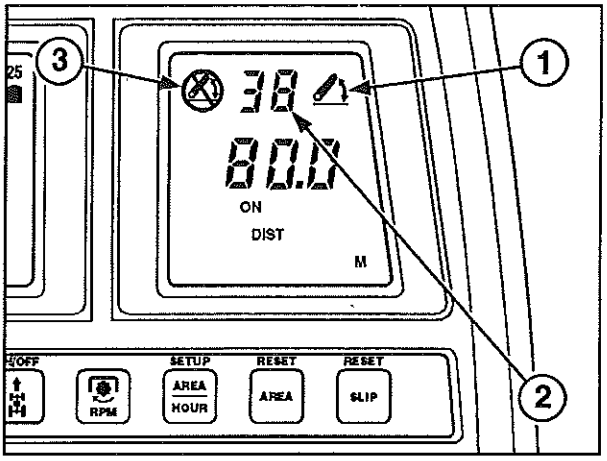
If wheel slip is not being displayed, both the '% SLIP' legend (2) and 'ALARM' legend (3) will flash until the slip condition is restored to below the preset level.

Hitch Enabled Symbol (with Electronic Draft Control only) – Figure 2-63

The hitch enabled symbol (1) is displayed to advise the operator when the 3-point linkage is in phase with the hydraulic lift control lever. See 'ELECTRONIC DRAFT CONTROL' later in this section.

Hitch Position Display (with Electronic Draft Control only) – Figure 2-63

The display (2) advises the operator of the position of the lower links (and implement) by means of numbers ranging from '0' (fully lowered position) to '99' (maximum lift height). See 'ELECTRONIC DRAFT CONTROL' later in this section.



2-63

Hitch Disabled Symbol (with Electronic Draft Control only) – Figure 2-63

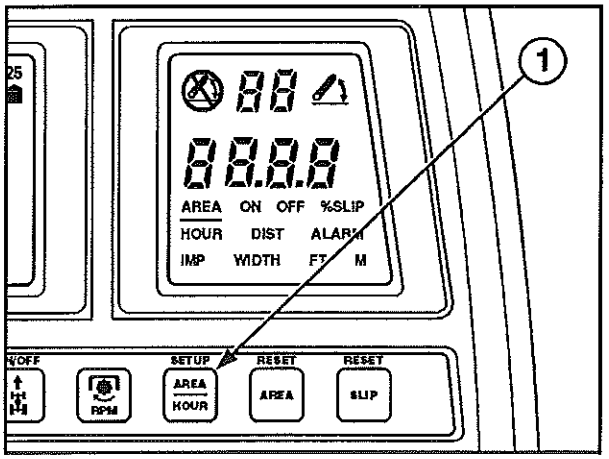
The hitch disabled symbol (3) is displayed when the 3-point linkage is out of phase with the hydraulic lift control lever. See 'ELECTRONIC DRAFT CONTROL' later in this section.

PROGRAMMING THE TRACTOR PERFORMANCE MONITOR – Figures 2-64 to 2-71

In order that the computer may correctly calculate work done (area per hour, area accumulated, etc.) various factors must be entered into the computer in order that work done may be correctly displayed. To enter the TPM set up mode, turn the key-start switch on and hold down the SET UP button (1) Figure 2-64, until a 'beep' is heard from the alarm (approximately 3 seconds).

When in the set up mode, repeatedly touching the SET UP button (1) will cause the computer to run through the five set up functions in the order shown below. As each set up function is selected, the appropriate legend will be displayed in the lower part of the LCD.

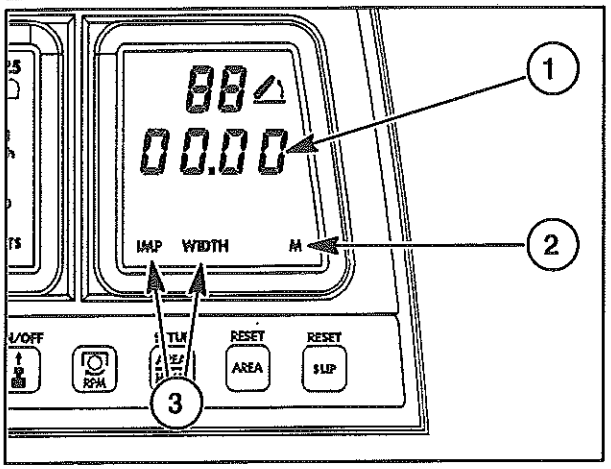
Function	Legend displayed
1. Implement width	IMP WIDTH
2. Slip alarm point (option)	% SLIP ALARM
3. Area preset	AREA
4. Distance measurement	ON DIST
5. Imperial/metric units selection	FT or M



2-64

Touching the SET UP button again will repeat the above sequence. Alternatively, to exit the set up mode, turn the key-start switch off.

Set the functions in the following order:

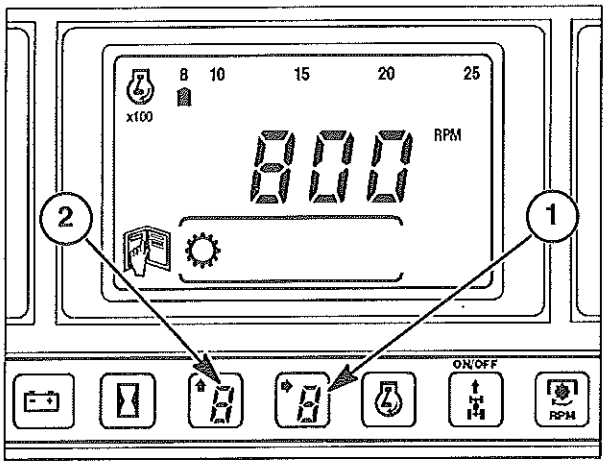


2-65

Setting Implement Width – Figures 2-65 and 2-66

In order that the computer may calculate the work done, the working width of the implement in use must be entered into the memory.

Implement width is a four-digit display and will appear as '00.00' metres (1) Figure 2-65 or '000.0' feet with the left-hand digit flashing. 'IMP WIDTH' (3). Either 'M' (2) or 'FT' will also be displayed to indicate metric or Imperial measure.

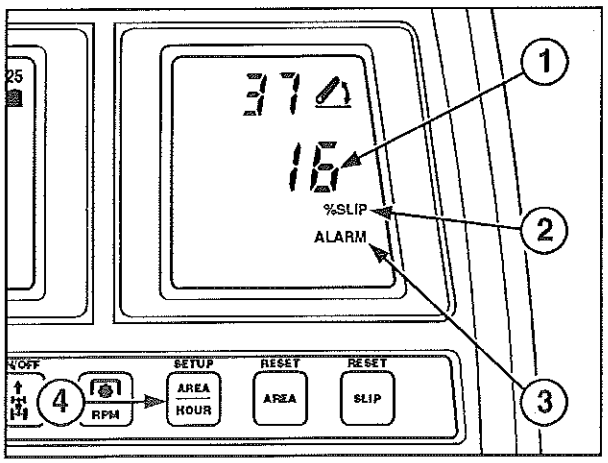


2-66

To set an implement working width of, say, 12.5 feet, a display of '012.5' is required. Touch the DIGIT SELECT button (1) Figure 2-66, to cause the second digit from the left to flash. Touch the DIGIT SET button (2) to change the flashing digit from '0' to '1'. Use the DIGIT SELECT and DIGIT SET buttons to change the remaining digits until '012.5' is displayed.

NOTE: *The area measured will only be accurate if there is no implement overlap when the tractor turns around at the end of a run to make another pass. Alternatively, the implement width entered into the computer memory may be reduced by the estimated amount of overlap.*

With the required implement width displayed, touch the SET UP button to enter the memory and change the display to the slip alarm point.



2-67

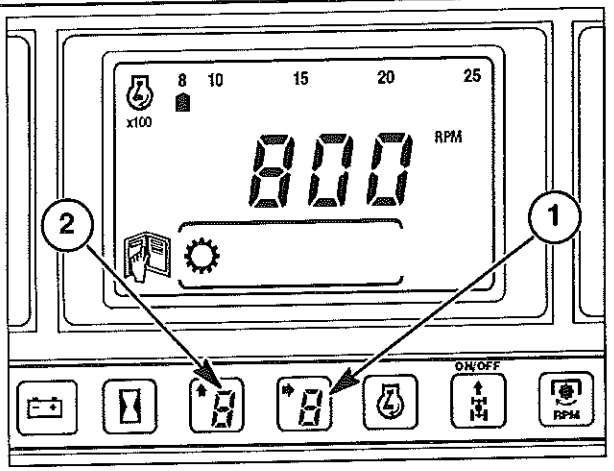
Setting the Slip Alarm Point (option) – Figures 2-67 and 2-68

NOTE: *If the optional radar unit is not installed, the slip alarm function will be omitted from the sequence.*

The slip alarm point will appear as a two-digit display (1) Figure 2-67, with the left-hand digit flashing. '% SLIP' (2) and 'ALARM' (3) will also be displayed.

Use the DIGIT SELECT and DIGIT SET buttons (1) and (2) Figure 2-68 to change the value to the required setting. If the slip alarm is not required, set the display to '00'.

With the required slip alarm point displayed, touch the SET UP button (4) Figure 2-67, to enter the alarm point into the memory and change the display to show area preset.



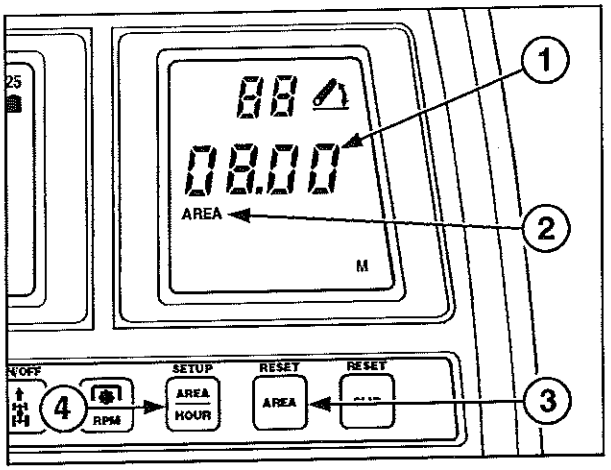
2-68

Area Preset – Figure 2-69

Normally, area would be reset to zero by holding the AREA button (3) Figure 2-69, down until a 'beep' is heard from the alarm (approximately 3 seconds). However, it is possible to enter a value other than zero and so measure additional area worked. Area measured during a previous operation can be entered or an estimate of implement overlap can be entered at the start of a job.

The area preset will appear as a four-digit display (1) with the left-hand digit flashing. 'AREA' (2) will also be displayed in the LCD. Use the DIGIT SET and DIGIT SELECT buttons, as previously described, to change the value to the required setting or to zero.

Touch the SET UP button (4) to enter the memory and change the display to show distance accumulation.



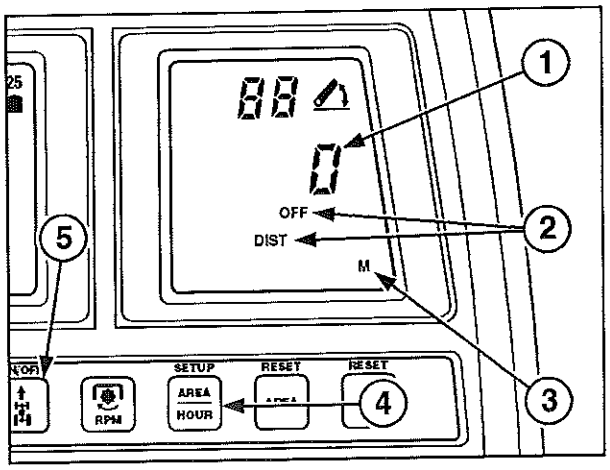
2-69

Distance Measuring Mode – Figure 2-70

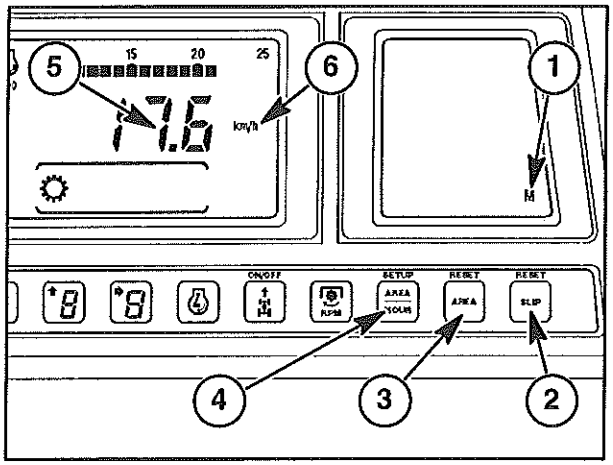
When entering this mode, the display will show 'DIST OFF' (2) and either 'FT' or 'M' (3), depending upon whether Imperial or metric measure had previously been selected. '0' will also appear in the display (1).

To start distance measurement, touch the ON/OFF button (5). The display will show a constantly changing distance travelled while the tractor is moving. To stop distance measurement, touch the ON/OFF button again.

Touch the SET UP button (4) to enter the memory and change the display to show Imperial/metric units selection.



2-70



2-71

Setting Metric/Imperial Units – Figure 2-71

The TPM digital display will be blank with either FT or M (1) flashing and the corresponding ground speed units (5) and 'km/h' (6) or MPH flashing in the central display.

If the metric measure legends 'M' (metres) and 'km/h' are flashing but Imperial measure 'FT' (feet) and 'MPH' are required, touch either of the RESET buttons (2) or (3) to change the display. Touch either of the RESET buttons again to revert to Imperial measure.

With the required measure displayed (Imperial or metric), touch the SET UP button (4) to enter the memory and change the display to implement width set up.

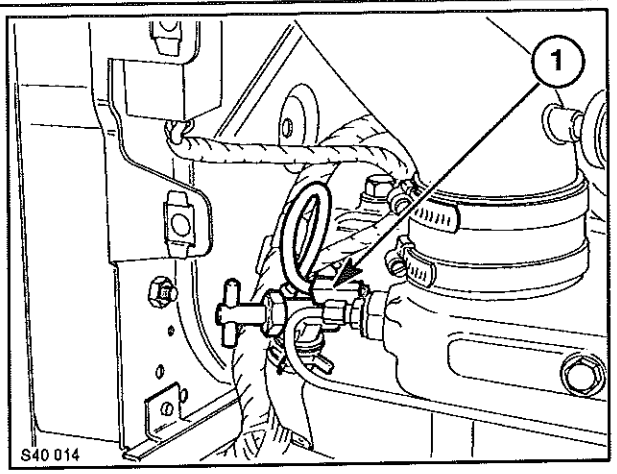
Exiting the Set Up Mode – Figure 2-71

To exit the set up mode, press and hold the SET UP button (4) for 3 seconds when a 'beep' from the audio alarm will be heard and the display will go to the AREA/Hour mode. Alternatively, to exit the set up mode, turn the key-start switch off.

The Tractor Performance Monitor is now programmed for use.

STARTING THE ENGINE

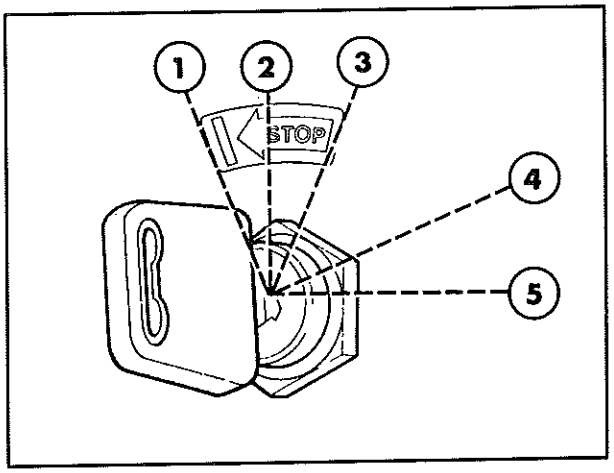
WARNING: *Your tractor is equipped with the Thermostart cold weather starting aid. Do* ***not*** *use ether with Thermostart installed. It will explode in the intake manifold. If, in an emergency, it is necessary to use ether, disconnect the Thermostart wire (1) Figure 2-72, from the heater terminal on the intake manifold.*



2-72

The Thermostart, which is effective in ambient temperatures down to –18° C (0° F), consists of a heating element installed in the intake manifold. When operated by the key-start switch, the Thermostart will ignite fuel in the manifold, heating indrawn air prior to it being drawn into the combustion chamber.

If temperatures below –18° C (0° F) are encountered, a coolant immersion heater is available as an accessory. The coolant immersion heater is effective in ambient temperatures down to –29° C (–20° F) when used in conjunction with the Thermostart.



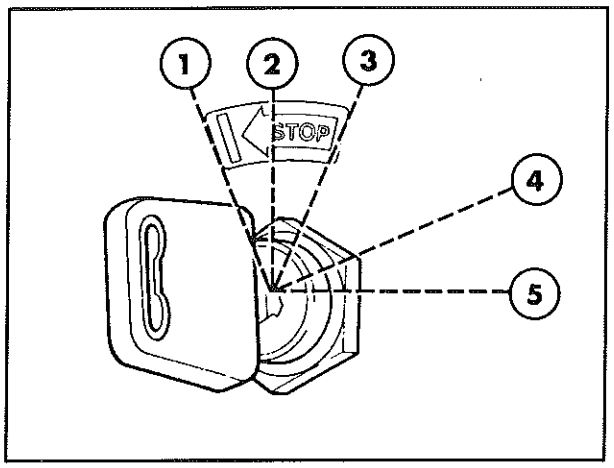
2-73

A five-position key-start switch is installed. See Figure 2-73. The key-start switch positions are as follows:

Position 1	Thermostart activated
Position 2	Off
Position 3	Accessories on
Position 4	Warning lights and instruments on
Position 5	Starter motor engaged

IMPORTANT: *Never push or tow the tractor to start the engine. Doing so may overstress the drive train.*

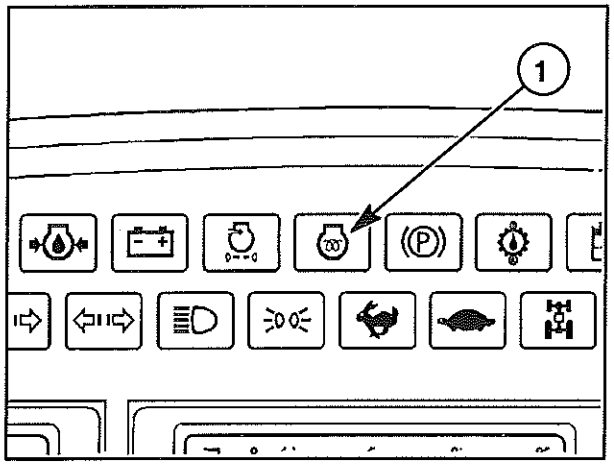
NOTE: *Neutral start switches prevent operation of the starting motor unless the forward/reverse (shuttle) lever is in the neutral (N) position (powershift transmissions only) and the clutch pedal depressed (all transmissions).*



2-74

Before starting the engine, always carry out the following procedure:

- Sit in the driver's seat.
- Ensure that the parking brake is firmly applied.
- Ensure that **all** gearshift levers are in neutral.
- Ensure that the P.T.O. knob is in the 'off' position.
- Place the remote control valve levers in the neutral position.
- Ensure that the A.S.C. valve is set to direct oil to the 3-point linkage.
- Move the hydraulic lift control lever fully forward.



2-75

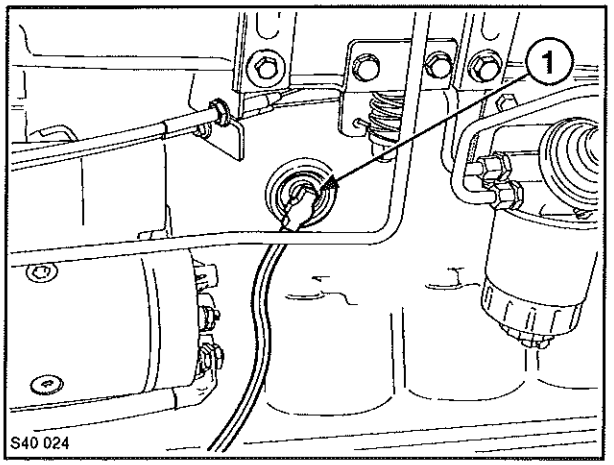
WARNING: *Check the area beneath the equipment to ensure that no injury or damage will be caused when equipment is lowered.*

- Depress the clutch pedal.

IMPORTANT: *Turbo-charged engines only: The high operating speed of the turbo-charger makes it essential that adequate lubrication is assured when the engine is started. Therefore, idle the engine at 1000 rev/min for approximately one minute before driving the tractor.*

Starting in warm weather or when the engine is hot

- Open the hand throttle halfway, depress the clutch and turn the key-start switch fully clockwise to position (5) Figure 2-74, to operate the starting motor. Crank the engine until it starts but do not operate the starting motor for more than 60 seconds.



2-76

NOTE: *Once the starter motor has been operated, it is necessary to return the key-start switch back to the 'off' position before the starting motor can be re-activated.*

- Return the throttle to the idle position and check that all warning lights extinguish and gauge readings are normal.

Starting in cold weather – below 4° C (40° F) with a cold engine

- Open the hand throttle halfway and turn the key-start switch anti-clockwise to position (1) Figure 2-74. An indicator light (1) Figure 2-75, on the instrument panel will illuminate to show that the Thermostart heater is active. Allow the key to spring-return to position (2) Figure 2-74. When the light goes out, depress the clutch and turn the key fully clockwise to position (5) Figure 2-74. Crank the engine until it starts but do not operate the starting motor for more than 60 seconds.

NOTE: *Provided that the key is turned to the crank position (5) Figure 2-74, within 3 seconds of the indicator light going out, the Thermostart will be re-activated during cranking.*

- If the engine fails to start, repeat the foregoing procedure. If the engine still fails to start, allow the battery to recover for 4 – 5 minutes then repeat the procedure.

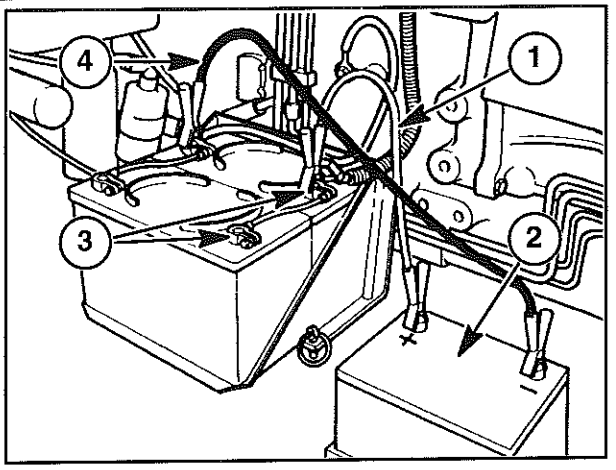
- When the engine starts, return the throttle to the idle position and check that all warning lights extinguish and gauge readings are normal.

COOLANT IMMERSION HEATER (where fitted) – Figure 2-76

This dealer installed accessory consists of a heating element (1) fitted into one of the core plug apertures on the right-hand side of the block. Dependent upon regulations pertaining to your country, the heater may be available in 115 volts A.C. or 230 volts A.C. form. This accessory provides easier starting down to –29° C (–20° F).

WARNING: *To avoid shocks or other injuries, never use an unearthed or inadequate extension lead. Always use an earthed, three core extension lead, which is rated for at least a 15 amp load, in conjunction with a residual current circuit breaker or earth leakage trip device.*

To operate the heater, connect the heater plug (2) to a suitable 115 or 230 volt outlet, as appropriate, for up to four hours before carrying out the cold weather starting procedure.



2-77

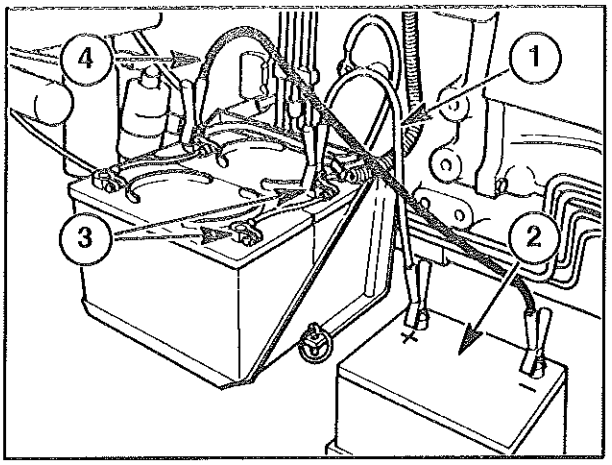
NOTE: *The heater may be left plugged in for more than four hours without harm. However, no noticeable increase in the heater's effectiveness will be achieved after this period.*

STARTING THE TRACTOR WITH JUMP LEADS – Figures 2-77 and 2-78

WARNING: *Operate the starter motor only from the driver's seat. If the key-start switch is by-passed, the engine may start inadvertently in gear and cause sudden and unexpected movement of the tractor or a tractor runaway which may cause serious injury. Wear eye protection when starting the tractor with jump leads or when charging the battery.*

If it is necessary to use jump leads (booster cables) to start the tractor, use only heavy duty leads. Refer to Figures 2-77 and 2-78 or proceed as follows:

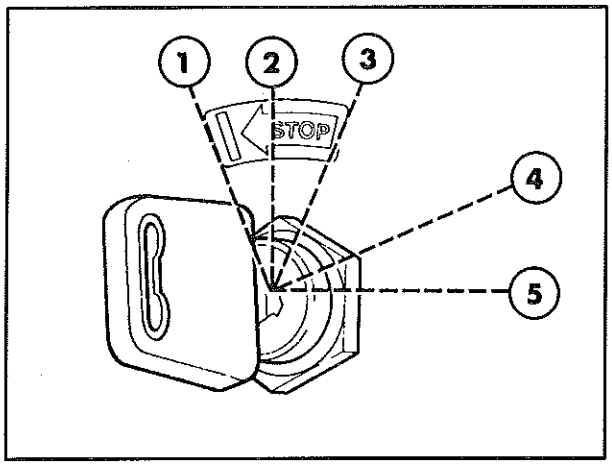
- Connect one end of the red jump lead (1) Figure 2-77, to the tractor battery positive (+) terminal (3) and the other end to the positive (+) terminal of the auxiliary battery (2). If dual batteries are installed, connect the lead to the inner battery (nearest the tractor).



2-78

IMPORTANT: *When using an auxiliary battery to start the engine, ensure that the polarity of the jump leads is correct – **positive to positive, negative to negative**, otherwise the alternator may be damaged. Only use an auxiliary battery if the tractor batteries are discharged. Excessive amperage (above 1600 cca) may damage the starting motor.*

In the event of the batteries being severely discharged, such that terminal voltage is below 7 volts, recovery will require a special charging procedure. See your authorised dealer.



2-79

- Connect one end of the black jump lead (4) to the tractor battery negative (–) terminal and the other end to the negative (–) terminal of the auxiliary battery (2) Figure 2-78. Follow the starting procedure previously described.

- When the engine starts allow it to run at idle speed, turn on all electrical equipment (lights, etc.) then disconnect the jump leads in the reverse order to the connecting procedure. This will help protect the alternator from possible damage due to extreme load changes.

STOPPING THE ENGINE – Figure 2-79

IMPORTANT: *Turbo-charged engines only – Before stopping, idle the engine at 1000 rev/min for approximately one minute. This will allow the turbo-charger and manifold to cool and prevent possible distortion of components.*

To stop the engine, carry out the following procedure:

- Sit in the driver's seat.
- Close the throttle.
- Ensure that the parking brake is firmly applied.
- Ensure that **all** gearshift levers are in neutral.
- Ensure that the P.T.O. knob is in the 'off' position.
- Place the remote control valve levers in the neutral position.
- Move the hydraulic lift control lever fully forward to lower all hydraulic equipment to the ground.
- Turn the key-start switch off – position (3) Figure 2-79.

RUNNING-IN PROCEDURE

Your new tractor will provide long and dependable service if given proper care during the 50 hour running-in period and if serviced at the recommended intervals.

Avoid overloading the engine. Operating in too high a gear under heavy load may cause excessive engine overloading. Overloading occurs when the engine will not respond to a throttle increase.

Do not operate without a load on the engine. This can be as harmful to the engine as overloading. Vary the type of operation undertaken so that the engine is subjected to heavy as well as light loads during the running-in period.

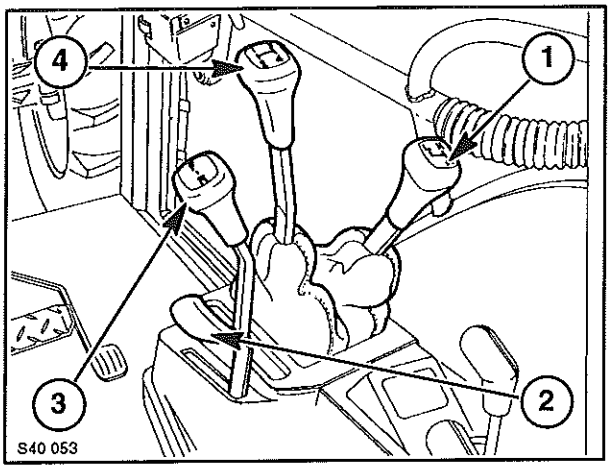
Use the lower gear ratios when pulling heavy loads and avoid continuous operation at constant engine speeds. Operating the tractor in too low a gear with a light load and high engine speed will waste fuel. You will save fuel and minimise engine wear by selecting the correct gear ratio for each particular operation.

Check the instruments and warning lights frequently and keep the radiator and various oil reservoirs filled to the recommended levels.

DRIVING THE TRACTOR

WARNING: *Observe the following precautions when driving the tractor:*

- *Watch where you are going – especially at row ends, on roads and around trees.*
- *Use extreme caution when operating on steep slopes.*
- *Keep the tractor in gear when going down hill. Use a low gear to maintain control with minimum braking.*
- *If the tractor is stuck, reverse out to prevent overturning the unit.*
- *Always use the drawbar, pick-up hitch or lower links in the lowered position for tow type work. Do not pull from any other part of the tractor since it may tip backward.*
- *When driving on public roads, have consideration for other road users. Pull in to the side of the road so that any following traffic may pass.*
- *Dip the tractor headlights when meeting a vehicle on the highway at night. Keep the lights adjusted so they do not blind the operator of an oncoming vehicle.*
- *Engage the clutch slowly when driving out of a ditch, gully or up a steep hillside. Disengage the clutch promptly if the front wheels rise off the ground.*
- *Reduce speed before turning or applying the brakes. Brake both wheels simultaneously when making an emergency stop.*
- *It is essential that the brake pedals are locked together when travelling at high speed or on the highway to ensure correct operation of trailer brakes, balanced operation of the tractor brakes and four wheel braking (four wheel drive tractors only).*
- *Never apply the differential lock when turning.*
- *Use extreme caution and avoid hard application of the tractor brakes when pulling heavy, towed loads at road speeds.*
- *Towed loads that weigh more than the weight of the tractor should have brakes for safe operation. Ensure compliance with local regulations.*
- *Always sit in the driver's seat while starting or driving the tractor.*



2-80

12 x 12 SYNCHROSHIFT TRANSMISSION – Figures 2-80 to 2-82

Synchro-Shift transmission offers 12 gear ratios in forward and reverse. With this transmission, Dual Power and clutchless shuttle shift are available as an option. Dual Power will double the number of gear ratios to provide 24 ratios, both in forward and reverse. See Dual Power Transmission later in this section.

Because of speed restrictions operating in certain countries lower overall ratios are provided to reduce maximum speed and meet legal requirements.

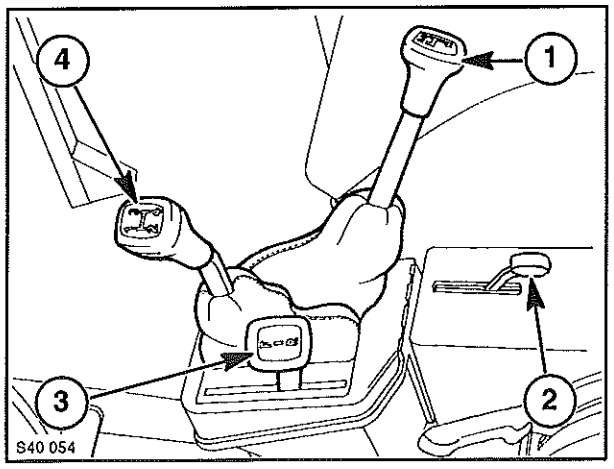
See Figures 2-80 or 2-81 to determine the function of the transmission levers. Figure 2-80 shows the levers on a tractor with cab. The levers on a tractor without a cab are similar.

NOTE: *On tractors without cab, the hand throttle is located to the rear of the gearshift levers, as shown at (2) in Figure 2-81. The hand throttle lever on tractors with cab is to the left of the gear levers, as shown at (2) Figure 2-80.*

Operation is by means of the main shift lever (4) Figure 2-80 or 2-81, the range lever (1) and the shuttle lever (3), in conjunction with the throttle and clutch pedal.

All gear levers, as well as the throttle controls, are colour-coded orange.

See Figure 2-82 for gear shift pattern.



2-81

Main Shift Lever – Figures 2-80 and 2-81

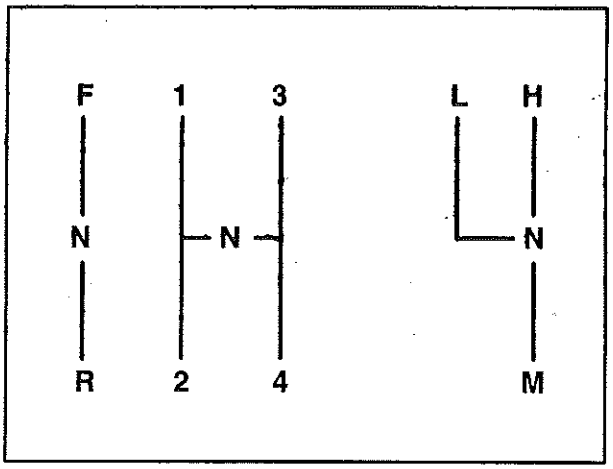
The main shift lever (4) operates in a conventional H-pattern and, in conjunction with the clutch pedal, is used to select any of four gear ratios, whether the tractor is stationary or moving.

IMPORTANT: *To avoid premature wear, do not use the clutch pedal as a footrest.*

Range Lever – Figures 2-80 and 2-81

The right-hand lever (1) is the range lever which, in conjunction with the clutch pedal, is used to select any one of three ranges (L – the lowest speed range, M and H – the highest speed range). This has the effect of tripling the number of gear ratios, both in forward and reverse. The design of the transmission permits

easy changes between the medium and high ranges while the tractor is moving. Stop the tractor to change to the low range.



2-82

Shuttle Lever – Figures 2-80 and 2-81

The shuttle lever (3) is used to select forward or reverse travel when any one of the twelve gear ratios is engaged, provided that the clutch pedal is depressed. To reverse the direction of travel, reduce engine and tractor speed to the minimum, depress the clutch and move the shuttle lever rearwards.

NOTE: *An interlock mechanism prevents movement of the shuttle lever unless the clutch pedal is depressed.*

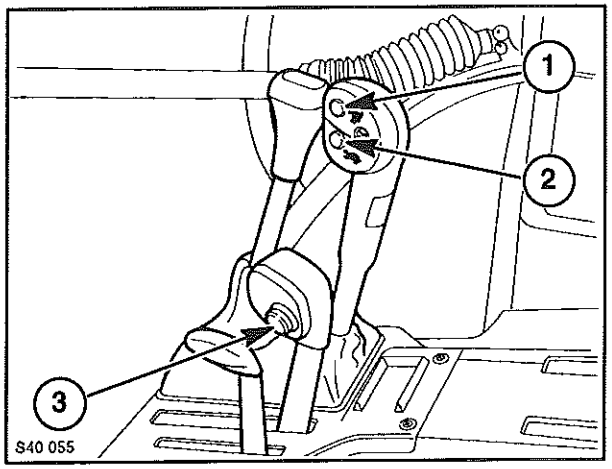
WARNING: *To prevent inadvertent tractor movement, take care to avoid accidental contact with the gearshift levers. Always stop the engine, firmly apply the parking brake and place all gear shift levers in neutral before leaving the tractor.*

NOTE: *When operating in temperatures below –18° C (0° F) with cold transmission oil, avoid shuttle operations, as far as practicable, until the oil has warmed up.*

NOTE: *A neutral start switch prevents operation of the starting motor unless the shuttle lever is in neutral.*

IMPORTANT: *Fully depress the clutch pedal when changing gear. Partially depressing the clutch pedal when changing gear may result in damage to transmission components. Also, when changing down on the move, select the next consecutive gear in order to avoid damage to the clutch and/or overspeeding of the engine.*

IMPORTANT: *If it is necessary to tow the tractor, the* ***range lever must*** *be in the* ***neutral position*** *otherwise damage to transmission components may occur.*



2-83

Dual Power Transmission (where fitted) – Figure 2-83

Dual Power and clutchless shuttle shift are available as an option with 12 x 12 transmission.

Dual Power transmission is an hydraulically operated gear set within the transmission housing which allows the operator to select Powerdrive (underdrive) in any forward or reverse gear while on the move. This, effectively, increase torque by 22%, reduces tractor speed by approximately 18% and doubles the number of forward and reverse gear ratios from 12 to 24.

Powerdrive is hydraulically engaged, the valve being actuated by a solenoid controlled by push buttons (1) and (2) on the main gear shift lever.

NOTE: *The transmission levers on tractors with Dual Power differ in appearance from those shown in Figures 2-80 and 2-81. However, the position and function of the levers is the same.*

Press the lower switch (2) to engage Powerdrive (tortoise symbol). Press the upper switch (1) (hare symbol) to disengage Dual Power and return to direct drive.

When direct drive is engaged, the green indicator light on the instrument panel, which has a 'hare' symbol, illuminates to indicate that Dual Power is in direct drive.

The amber light, which has a 'tortoise' symbol, will illuminate when Dual Power (underdrive) is engaged.

IMPORTANT: *A tractor with Dual Power transmission must **not** be tow-started.* See **'Starting the Tractor with Jump Leads'** *earlier in this section.*

WARNING: *Always engage the parking brake before dismounting from the tractor. Dual Power will not prevent the tractor from rolling when the engine is shut off.*

Road speed charts for 30 and 40 km/h transmissions will be found later in this section.

Clutchless Shuttle Shifting – Figure 2-83

A transmission 'dump switch' (3) is provided on the shuttle lever. The switch enables gear engagement and drive off, without using the clutch pedal and is particularly useful for shuttle operations.

When the dump switch is depressed, drive is instantly disengaged. When the button is released, transmission output speed and clutch pack engagement are automatically monitored to take up the drive smoothly.

NOTE: *To prevent inadvertent shuttle lever engagement, an electronic interlock is provided. If the tractor is stationary with the shuttle lever in neutral the following procedure must be used to drive away from a standstill:*

Depress and release the dump switch then, within one second, depress and hold in the switch. Move the shuttle lever into gear. The drive will engage when the button is released. If this sequence is not followed, a warning 'bleeper' will sound and the fault code 'CP' will appear in the digital display.

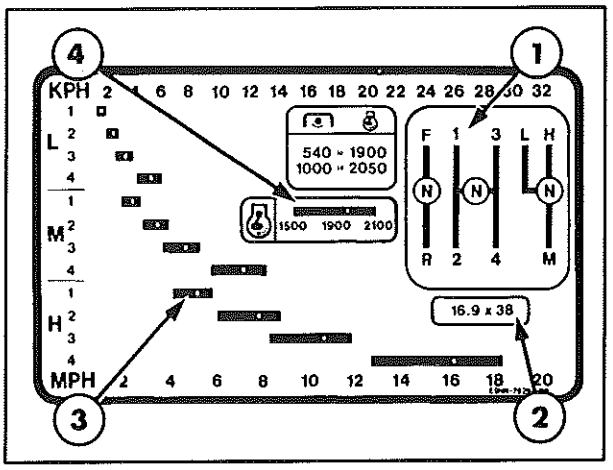
To change from forward to reverse motion, press the dump button, apply the brakes to slow the tractor, move the shuttle lever fully rearward, release the button and control tractor speed by means of the throttle.

IMPORTANT: *To reduce clutch damage caused by shuttle shifting in too high a gear or at too high a speed, a warning bleeper will be heard and the symbol 'H' will appear in the instrument cluster when tractor speed is greater than 5 MPH (9 km/h).*

The shuttle shift will continue to operate under these conditions.

Ground Speed Decal – Figure 2-84

A decal similar to that shown in Figure 2-84 is affixed to the lower, front corner of the right-hand window or to the right-hand fender on tractors without cab. The decal illustrates the approximate ground speed in all ratios at three alternative engine speeds. Reverse ratios are the same as the forward ratios.



2-84

The particular example shown in Figure 2-84 is for a tractor having a rated engine speed of 2100 rev/min., 30 km/h transmission and fitted with 16.9 – 38 rear tires. (Transmissions are available offering approximate maximum speeds of 30 km/h and 40 km/h, respectively).

The left-hand side of the decal represents the range and main shift lever positions. To the right will be seen a number of black blocks, representing the ground speeds available in each of the 12 gear ratios.

The left-hand edge of each rectangle represents an engine speed of 1500 rev/min., the right-hand edge 2100 rev/min. Each rectangle has a white dot representing 1900 engine rev/min (the engine speed at which the standard P.T.O. speed of 540 rev/min. is obtained).

Example 1: To find the ground speed at 1900 engine rev/min. in 4th. gear medium range, follow the dot on the 4th. gear medium rectangle, down to the MPH line or up to the KPH line. In the example shown, the ground speed indicated is 7.5 MPH or 12.1 km/h.

Example 2: To find the ground speed at 2100 engine rev/min. in 3rd. gear high range, follow the right-hand edge of the 3rd. gear high rectangle, down to the MPH line or up to the KPH line. In the example shown, the ground speed indicated is 11.9 MPH or 19.1 km/h.

Ground Speed Charts

Because of speed restrictions operating in certain countries lower ratios are provided to reduce maximum speed and meet legal requirements.

The charts on the following pages show the ground speeds in MPH and km/h for 30 km/h and 40 km/h transmissions. If your tractor does not have Dual Power, then you should ignore the lines in the tables preceeded by the word 'Power', indicating the speeds with Dual Power engaged.

The charts are for tractors fitted with 16.9 – 38 rear tires. If the rear tires of your tractor are of a different size, **multiply** the ground speeds shown in the printed charts by the following conversion factors:

Tire size	Factor	Tire size	Factor
13.6 – 36	0.899	18.4 – 26	0.843
13.6 – 38	0.931	18.4 – 30	0.906
16.9 – 30	0.874	18.4 – 34	0.969
16.9 – 34	0.937	18.4 – 38	1.031
18.4 – 16.1	0.686	23.1 – 34	1.057

NOTE: *For your convenience, the right-hand side of each chart has been left blank so that, should your tractor have rear tires of a different size, you may insert your own calculated ground speeds.*

Ground Speed in Miles per Hour – Dual Power with 30 km/h Transmission (16.9–38 rear tires – 795 mm static loaded radius)

Main Shift Lever	Range Lever	Dual Power	Miles per hour Engine Speed (rev/min) 1500	1900	2100	2200	Miles per hour Engine Speed (rev/min) 1500	1900	2100	2200
3	L	Power	0.70	0.89	0.99	1.04				
		Direct	0.86	1.09	1.20	1.26				
2	L	Power	1.03	1.30	1.44	1.51				
		Direct	1.25	1.59	1.76	1.84				
3	L	Power	1.39	1.76	1.95	2.04				
		Direct	1.70	2.15	2.38	2.49				
4	L	Power	2.14	2.71	3.00	3.14				
		Direct	2.62	3.32	3.67	3.85				
1	M	Power	1.59	2.02	2.23	2.34				
		Direct	1.95	2.47	2.73	2.86				
2	M	Power	2.32	2.94	3.25	3.41				
		Direct	2.84	3.60	3.97	4.16				
3	M	Power	3.15	3.99	4.41	4.62				
		Direct	3.85	4.88	5.39	5.65				
4	M	Power	4.85	6.15	6.79	7.11				
		Direct	5.94	7.52	8.32	8.71				
1	H	Power	3.51	4.45	4.92	5.15				
		Direct	4.30	5.45	6.02	6.30				
2	H	Power	5.12	6.48	7.16	7.50				
		Direct	6.25	7.92	8.76	9.17				
3	H	Power	6.94	8.79	9.72	10.18				
		Direct	8.49	10.76	11.89	12.45				
4	H	Power	10.70	13.55	14.98	15.69				
		Direct	13.08	16.57	18.32	19.19				

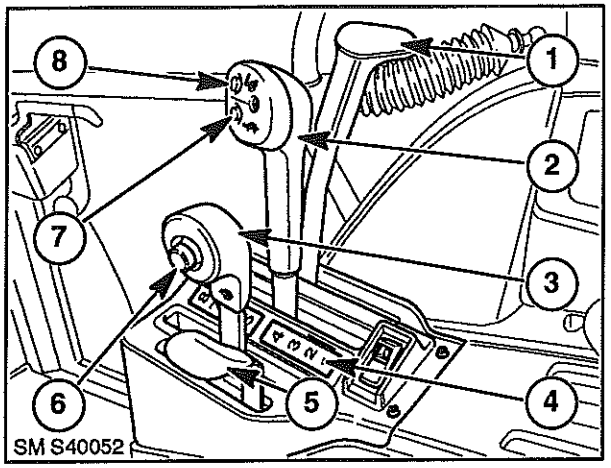
L = Low ratio M = Medium ratio H = High ratio

Ground Speed in Kilometres per Hour – Dual Power with 30 km/h Transmission (16.9–38 rear tires – 795 mm static loaded radius)

Main Shift Lever	Range Lever	Dual Power	Kilometres per hour Engine Speed (rev/min) 1500	1900	2100	2200	Kilometres per hour Engine Speed (rev/min) 1500	1900	2100	2200
1	L	Power	1.13	1.44	1.59	1.67				
		Direct	1.38	1.75	1.94	2.03				
2	L	Power	1.65	2.09	2.31	2.42				
		Direct	2.02	2.56	2.83	2.96				
3	L	Power	2.24	2.84	3.14	3.29				
		Direct	2.74	3.47	3.83	4.01				
4	L	Power	3.45	4.37	4.83	5.06				
		Direct	4.22	5.34	5.90	6.19				
1	M	Power	2.56	3.25	3.59	3.76				
		Direct	3.14	3.97	4.39	4.60				
2	M	Power	3.73	4.73	5.23	5.48				
		Direct	4.57	5.79	6.40	6.70				
3	M	Power	5.07	6.42	7.10	7.44				
		Direct	6.20	7.85	8.68	9.09				
4	M	Power	7.81	9.89	10.94	11.46				
		Direct	9.56	12.11	13.38	14.02				
1	H	Power	5.65	7.16	7.92	8.30				
		Direct	6.92	8.76	9.69	10.14				
2	H	Power	8.23	10.43	11.53	12.08				
		Direct	10.06	12.75	14.09	14.76				
3	H	Power	11.17	14.15	15.64	16.38				
		Direct	13.67	17.31	19.13	20.04				
4	H	Power	17.21	21.81	24.11	25.26				
		Direct	21.05	26.67	29.48	30.88				

MM

L = Low ratio M = Medium ratio H = High ratio



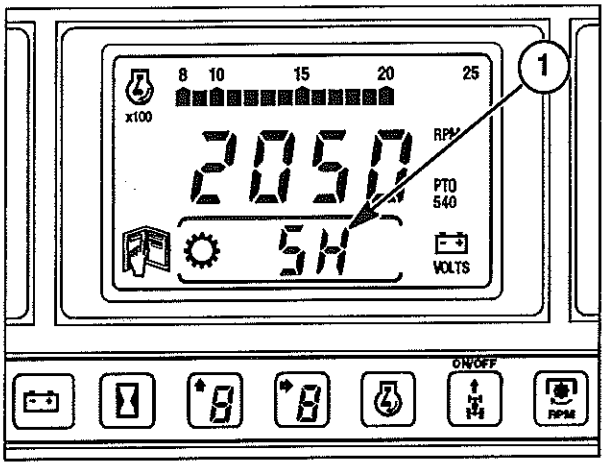
2-85

16 x 16 ELECTRO–SHIFT TRANSMISSION – Figures 2-85 to 2-87

Electro-Shift electronic transmission is of an advanced design, controlled electronically by a microcomputer module. The transmission offers 16 forward and reverse ratios. An optional reduction gear set (creeper gears) offers a further 8 ratios, forward and reverse. See **Creeper Gears** later in this section.

The transmission is operated by means of the main shift lever (2) Figure 2-85, the range lever (1) and the shuttle lever (3). The main shift and shuttle levers, as well as the throttle controls, are colour-coded orange. The hand throttle is shown at (5).

The transmission permits upward and downward gear changes on the move. In addition, the advanced design permits a change from one range to another while on the move, provided the clutch pedal is depressed.

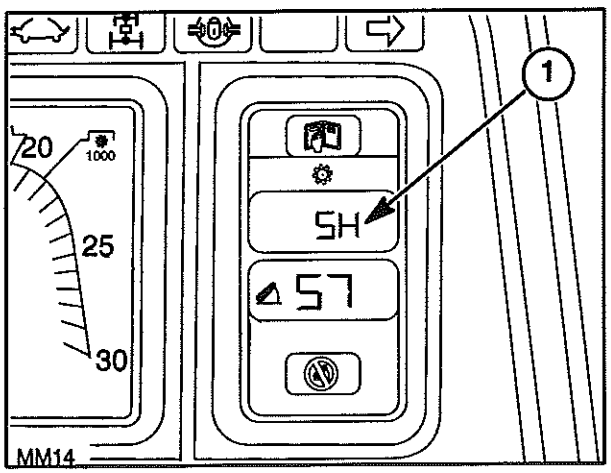


2-86

Main Shift Lever – Figure 2-85

The main shift lever (2), in conjunction with the clutch pedal, is used to select either of two sets of gear ratios. With the lever pulled rearward, ratios 1 – 4 may be sequentially selected using the powershift feature. With the lever forward, ratios 5 – 8 may be selected using the powershift up/down buttons.

The main shift lever incorporates two electrical push buttons that are used to make instantaneous upward or downward speed changes (powershifts). Button (8) is pressed to make upward changes, button (7) for downward changes. It is not necessary to use the clutch pedal to make a powershift.



2-87

When the main shift lever is moved forward from neutral or from any ratio within the 1 – 4 range to the 5 – 8 range, 5th. gear will always be selected.

Conversely, if the lever is moved rearward from neutral or from the 5 – 8 range to the 1 – 4 range, 4th. gear will always be selected. This is to minimize the difference in the ratios to avoid stalling or overspeeding of the engine.

A 'change of mind' logic is built into the computer module. If, for example, the main shift lever is moved from the 1 – 4 range in 2nd. gear, 5th. gear would automatically be selected, as described in the previous paragraph. However, provided that the clutch pedal is kept depressed, if you change your mind and return the lever to the 1 – 4 range, 2nd. gear will be reselected.

Gear Displays – Figures 2-85 to 2-87

An illuminated display (4) Figure 2-85, to the left of the main shift lever indicates the ratio selected (1 – 8). In addition, a liquid crystal display (LCD) on the instrument panel displays the range and ratio selected. See (1) Figure 2-86 or 2-87, as appropriate. 'N' is displayed when the shuttle lever is in the neutral (central) position.

NOTE: *If the main gear shift lever is moved from the neutral position while the tractor is stationary, without first depressing the clutch pedal, drive will not be engaged and the code 'CP' will appear in the transmission display. Depress the clutch pedal to clear the display and re-engage the drive.*

Range Lever – Figure 2-85

The range lever (1) in conjunction with the clutch pedal, is used to select the road range ('hare' symbol) or field range ('tortoise' symbol), which has the effect of doubling the number of ratios to sixteen, both in forward and reverse.

IMPORTANT: *When changing from one range to another,* ***eight*** *intermediate gears are bypassed. For example, if 6th. gear in the low range is selected and the range lever is moved forward to the high range, then 6th. gear high will be selected. When changing from one range to another while on the move, adjust the engine speed to compensate and/or select an alternative gear ratio to minimize the number of ratios bypassed.*

Shuttle Lever – Figure 2-85

The shuttle lever (3) is used to select forward or reverse travel when any one of the sixteen gear ratios is engaged. It is not necessary to use the clutch pedal when shuttle shifting.

A transmission 'dump' switch (6) is provided on the shuttle lever. The switch enables gear engagement and drive off, without using the clutch pedal and is particularly useful for shuttle operations.

When the dump switch button is depressed, drive is instantly disengaged. When the button is released, transmission output speed and clutch pack engagement are automatically monitored to take up the drive smoothly.

NOTE: *To prevent inadvertent shuttle lever engagement, an electronic interlock is provided. If the tractor is stationary with the shuttle lever in neutral the following procedure must be used to drive away from a standstill:*

Depress and release the dump switch then, within one second, depress and hold in the switch. Move the shuttle lever into gear. The drive will engage when the button is released. If this sequence is not followed, a warning 'bleeper' will sound and the fault code 'CP' will appear in the digital display.

To change from forward to reverse motion, press the dump button, apply the brakes to slow the tractor, move the shuttle lever fully rearward, release the button and control tractor speed by means of the throttle.

IMPORTANT: *To reduce clutch damage caused by shuttle shifting in too high a gear or at too high a speed, a warning bleeper will be heard and the symbol 'H' will appear in the instrument cluster under the following conditions:*

- *In high range: ratios 5–8. Shuttle shifting while the tractor is still rolling.*

- *30 km/h transmission only: In high range: ratios 3–4. Shuttle shifting while the tractor is still rolling at more than 5 MPH (9 km/h).*

Despite the warning bleeper and symbol, the shuttle shift will continue to operate under these conditions.

WARNING: *To prevent inadvertent tractor movement, avoid accidental contact with the gearshift levers. Always stop the engine, firmly apply the parking brake and place all gear shift levers in neutral before leaving the tractor. The transmission will not prevent the tractor from rolling when the engine is shut off.*

Clutch Pedal

It is not necessary to use the clutch pedal to make a powershift or when shuttle shifting (changing direction from forward to reverse and vice-versa). However, the clutch may be effectively used for positioning the tractor when attaching equipment or operating in confined spaces when the low ratios are not slow enough, at moderate/low engine speeds, to give precise control.

IMPORTANT: *To avoid premature wear, do not use the clutch pedal as a footrest.*

Driving the Tractor

Start the engine with all transmission levers in neutral. The LCD on the instrument panel will display 'N'.

NOTE: *A neutral start switch prevents operation of the starting motor unless the shuttle lever is in neutral. Additionally, the clutch pedal must be depressed and released once to reset the transmission safety valve.*

For forward travel, with the engine idling, depress the clutch pedal and move the range lever forward to the road range (H) or rearward to the field range (L), as required. Select the required ratio with the main shift lever. Move the lever rearward to select gears 1 to 4 or forward for gears 5 to 8.

When the tractor is initially started and placed in gear, the electronic control will automatically select the appropriate powershift ratio for a smooth pull away, as follows:

Gear Lever Positions	Ratio Selected
Field range (L), 1 to 4	4th. gear (L)
Field range (L), 5 to 8	5th. gear (L)
Road range (H), 1 to 4	1st. gear (H)
Road range (H), 5 to 8	5th. gear (H)

Move the shuttle lever forward and engage the clutch to obtain forward travel. The LCD on the instrument panel will display the ratio selected. For example, '5H' displayed – range lever forward, main shift lever forward, 5th. gear selected. Press the change up button three times and ratios 6, 7 and 8 will be selected in sequence. Alternatively, hold the button in and the transmission will make sequential ratio changes at 1.75 second intervals until the button is released or 8th. gear is reached.

Always use the clutch pedal when changing from the 1 – 4 range to the 5 – 8 range and vice-versa.

NOTE: *When operating in temperatures below –18° C (0° F) with cold transmission oil, avoid excessive shuttle operations until the oil has warmed up.*

To reverse the direction of travel, reduce engine speed, depress the clutch and move the shuttle lever rearwards.

NOTE: *If, for example, 3L is selected in forward travel, then the same ratio will be selected when the shuttle lever is moved to the reverse travel position. The ground speed in reverse gear is the same as the speed in the equivalent forward gear.*

IMPORTANT: *A tractor fitted with electronic transmission cannot be tow-started and must* ***not*** *be towed other than to remove it from a field or onto a trailer or truck. See* **Starting The Tractor With Jump Leads** *earlier in this section.*

In the unlikely event of a fault occurring in the electronic transmission circuitry, the malfunction symbol or warning light and a two-digit error code, preceded by the letter 'E' will flash in place of the transmission ratio display on the instrument panel.

The code indicates the faulty circuit or sensor and the type of fault, e.g., open circuit, short circuit, etc. In this event, the tractor will require the attention of your New Holland dealer.

The transmission has a 'limp home' feature. In the event of a major electrical failure, 2nd. gear in the selected range will be automatically engaged to permit the tractor to be moved to a more convenient location. Should such a failure occur, the 'limp home' feature must **not** be used to continue operating or working with the tractor.

Speed Matching

When travelling on the road in high range, ratios 5 to 8, the transmission will automatically select a ratio to match engine speed to road speed if the following method is adopted:

To upshift: Depress the inching pedal (or press the dump switch) then increase engine speed with the foot throttle. When the inching pedal or dump switch is released, the transmission will automatically select a higher gear ratio (provided 8th. speed is not already selected) to approximately match engine speed to road speed.

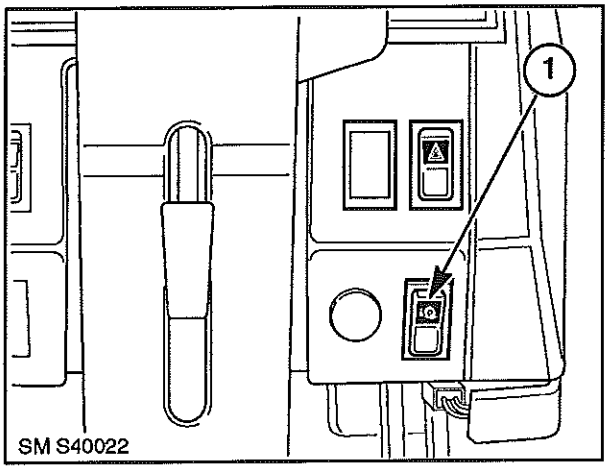
To downshift: Decrease engine speed, depress the inching pedal (or press the dump switch) simultaneously increasing engine speed by pressing the foot throttle further down. When the inching pedal or dump switch is released, the transmission will automatically select a lower gear ratio (provided 5th. speed is not already selected) to approximately match engine speed to road speed.

Speed matching allows shifting from low to high range to be more easily accomplished. For example, if it is necessary to hillstart with a heavy trailer in low range then, when 8th. speed is reached, change to the high range, the transmission will automatically speed match to the lowest ratio (5th.) in the high range.

When starting off in the highest range, the speed matching feature will always try to set off in 5th. gear. If required, this feature may be overridden and a higher gear selected by partially releasing the clutch then Powershifting up to the required ratio before the clutch 'bite' point is reached.

Stationary Operations

NOTE: *To avoid power losses due to internal friction, place all three gearshift levers in neutral when performing stationary operations.*



2-88

Creeper Gears (where fitted)

For operations requiring extra low ground speeds, reduction gear sets (creeper gears) are available. The reduction gear set is installed within the main transmission housing and is available with a reduction ratio of 5.08:1.

As the name implies, the reduction gear set has the effect of reducing all the ratios within the main transmission to provide an additional eight gear ratios in forward and reverse.

When the key-start switch is turned on, the creeper gears switch (1) Figure 2-88, on the instrument console, is internally illuminated. The light intensity will increase when the creeper range is selected.

To select the creeper gears, with the engine running, depress the clutch and use the main shift lever to engage the required ratio. With the field (L) range selected (lever rearward), press the creeper gears selector switch. Press the switch again to exit the creeper gear mode. Creeper gear selection is denoted by a letter 'C' preceding the transmission ratio display on the instrument panel.

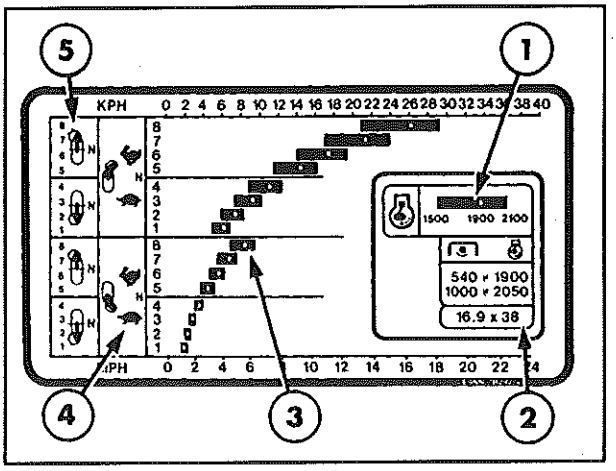
NOTE: *The creeper gears cannot be shifted unless the field range is selected (lever rearward), the clutch pedal depressed and the tractor stationary. With the creeper gears selected, an interlock mechanism prevents the range lever being moved forward to the road range.*

IMPORTANT: *The creeper gears offer very low ground speeds. Do not use the low gearing advantage to apply excessive draft loads to the tractor.*

NOTE: *If an electrical failure is sensed which would cause creeper selection to drop out, the micro-computer will automatically drop transmission oil pressure to stop the tractor (rather than allowing it to revert back into direct drive). If this occurs, the audible alarm will sound for 5 seconds, 'EC' will flash in the gear ratio display on the instrument panel and the light in the creeper gears switch will flash. Recovery may be possible by turning the key-start switch off and on again and depressing the creeper switch, while in the field range, to re-engage the creeper gears.*

Ground Speed Decal

A decal similar to that shown in Figure 2-89 is affixed to the lower, front corner of the right-hand window of tractors with cab or to the right-hand fender if the tractor does not have a cab.. The decal illustrates the approximate ground speed in all ratios at three alternative engine speeds. Reverse ratios are the same as the forward ratios.



2-89

The particular example shown is for a tractor having a rated speed of 2100 rev/min. and fitted with 16.9 – 38 rear tires.

The left-hand side of the decal has two columns.

Column (5) represents the main shift lever positions.

Column (4) represents the range lever positions.

To the right will be seen a number of black blocks, representing the ground speeds available in each of the 16 gear ratios.

The left-hand edge of the engine speed block represents an engine speed of 1500 rev/min., the right-hand edge 2100 rev/min. A white dot in the centre of each block depicts the engine speed at which the standard P.T.O. speed of 540 rev/min. is obtained (1900 engine rev/min.).

Example 1: To find the ground speed at 1900 engine rev/min. in 7th. gear high range, follow the dot on the 7th. gear high block, down to the MPH line or up to the KPH line. In the example shown, the ground speed indicated is 13.5 MPH or 21.7 km/h.

Example 2: To find the ground speed at 2100 engine rev/min. in 5th. gear low range, follow the right-hand edge on the 5th. gear low block, down to the MPH line or up to the KPH line. In the example shown, the ground speed indicated is 3.2 MPH or 5.2 km/h.

Ground Speed Charts

The charts on the following pages accurately show the ground speeds in MPH and km/h. The charts are for tractors fitted with 16.9 – 38 rear tires. If the rear tires of your tractor are of a different size, **multiply** the ground speeds shown in the printed charts by the following conversion factors:

Tire size	Factor	Tire size	Factor
13.6 – 36	0.899	18.4 – 26	0.843
13.6 – 38	0.931	18.4 – 30	0.906
		18.4 – 34	0.969
16.9 – 30	0.874	18.4 – 38	1.031
16.9 – 34	0.937		
18.4 – 16.1	0.686	23.1 – 34	1.057

NOTE: *For your convenience, the right-hand side of each chart has been left blank. Should your tractor have rear tires of a different size, you may insert your own calculated ground speeds. The speed in reverse gear is the same as in the equivalent forward gear.*

Transmissions are available offering approximate maximum speeds of 30 km/h and 40 km/h, respectively. See the following tables:

GROUND SPEED CHARTS (continued)

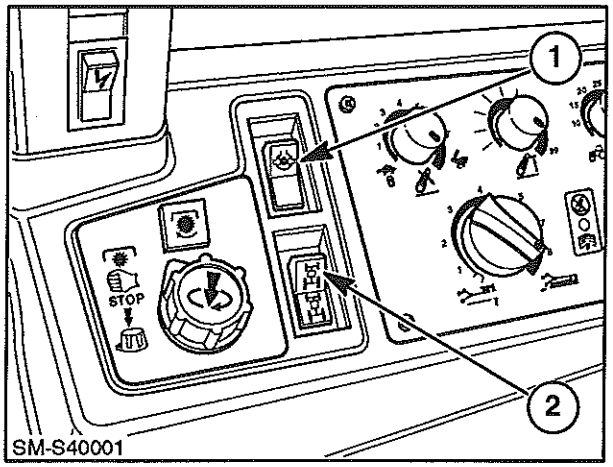
Ground Speeds in Miles per Hour – 30 km/h Transmission (16.9 – 38 Rear Tires)

Main Shift Lever	Range Lever	Miles per hour Engine Speed (rev/min) 1500	1900	2100	2200	Miles per hour Engine Speed (rev/min) 1500	1900	2100	2200
8	High	13.00	16.47	18.20	19.07				
7	High	10.64	13.48	14.90	15.61				
6	High	8.70	11.02	12.18	12.76				
5	High	7.12	9.02	9.97	10.45				
4	High	5.51	6.98	7.71	8.08				
3	High	4.51	5.71	6.32	6.61				
2	High	3.68	4.67	5.16	5.40				
1	High	3.02	3.82	4.22	4.42				
8	Low	4.19	5.31	5.87	6.15				
7	Low	3.43	4.35	4.81	5.03				
6	Low	2.81	3.55	3.93	4.11				
5	Low	2.30	2.91	3.22	3.37				
4	Low	1.78	2.25	2.49	2.60				
3	Low	1.45	1.84	2.03	2.13				
2	Low	1.19	1.50	1.66	1.74				
1	Low	0.97	1.23	1.36	1.42				
Creeper Range (where fitted)									
8	Low	0.82	1.05	1.16	1.21				
7	Low	0.67	0.85	0.94	0.99				
6	Low	0.55	0.70	0.77	0.81				
5	Low	0.45	0.57	0.63	0.66				
4	Low	0.35	0.44	0.49	0.51				
3	Low	0.29	0.36	0.40	0.42				
2	Low	0.23	0.30	0.33	0.34				
1	Low	0.19	0.24	0.27	0.28				

GROUND SPEED CHARTS (continued)

Ground Speeds in Kilometers per Hour – 30 km/h Transmission (16.9 – 38 Rear Tires)

Main Shift Lever	Range Lever	Kilometers per hour Engine Speed (rev/min) 1500	1900	2100	2200	Kilometers per hour Engine Speed (rev/min) 1500	1900	2100	2200
8	High	20.93	26.51	29.30	30.69				
7	High	17.13	21.70	23.98	25.12				
6	High	14.00	17.74	19.60	20.54				
5	High	11.45	14.52	16.05	16.81				
4	High	8.86	11.23	12.41	13.00				
3	High	7.26	9.19	10.16	10.64				
2	High	5.92	7.51	8.30	8.70				
1	High	4.85	6.15	6.80	7.12				
8	Low	6.76	8.55	9.45	9.90				
7	Low	5.53	7.00	7.73	8.10				
6	Low	4.51	5.72	6.32	6.62				
5	Low	3.69	4.68	5.17	5.42				
4	Low	2.86	3.62	4.00	4.19				
3	Low	2.35	2.96	3.28	3.43				
2	Low	1.92	2.43	2.68	2.80				
1	Low	1.56	1.99	2.19	2.30				
Creeper Range (where fitted)									
8	Low	1.33	1.68	1.86	1.95				
7	Low	1.08	1.37	1.51	1.59				
6	Low	0.89	1.13	1.24	1.30				
5	Low	0.72	0.92	1.01	1.06				
4	Low	0.56	0.71	0.79	0.82				
3	Low	0.46	0.58	0.64	0.67				
2	Low	0.38	0.48	0.53	0.55				
1	Low	0.31	0.39	0.43	0.45				



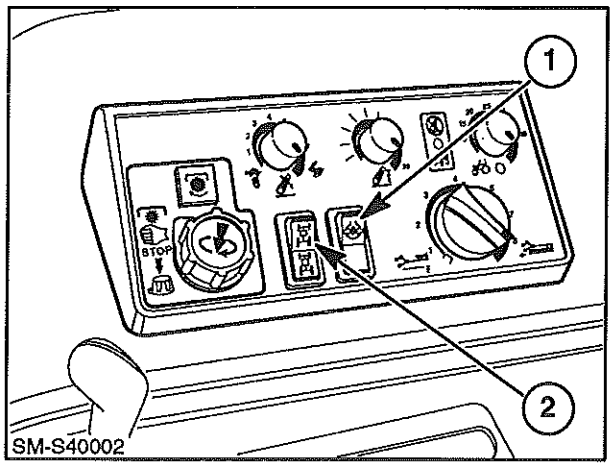
2-90

DIFFERENTIAL LOCK – Figures 2-90 and 2-91

NOTE: *The rear axle differential lock and four wheel drive front axle engagement are controlled by two rocker switches to the right of the operator's seat. On tractors with cab, the switches are at the front of the right-hand console, Figure 2-90. On tractors without cab, the switches are incorporated in the hydraulics control panel, see Figure 2-91.*

An electro-hydraulic, self-holding differential lock is installed in the rear axle. In conditions creating wheel slip, press the upper (yellow) part of the switch (1) Figure 2-90 or 2-91, fully in to lock the rear wheels together. The switch will return to the central position when released but the differential lock will be engaged, as indicated by the amber warning light on the instrument panel. See **ANALOGUE INSTRUMENTS** or **ELECTRONIC INSTRUMENT PANEL**, earlier in this section.

WARNING: *Never use the differential lock at speeds above 5 MPH (8km/h) or when turning the tractor. When engaged, the differential lock will prevent the tractor from turning.*



2-91

IMPORTANT: *If a rear wheel spins at speed, reduce engine speed before engaging the differential lock, to avoid shock loads to the transmission.*

To disengage the differential lock, press the lower part of the switch. The lock will remain engaged until traction at the rear wheels equalises or until either of the foot brakes are applied. The warning light on the instrument panel will go out when the differential lock has disengaged.

FOUR WHEEL DRIVE (where fitted)

Four wheel drive greatly improves traction in difficult conditions. The drive to the front wheels is designed to be engaged or disengaged with the tractor stationary or moving.

The drive to the front wheels is actuated by a solenoid controlled by a rocker switch on the hydraulics console to the right of the seat.

Press the upper (green) section of the switch (2) Figure 2-90 or 2-91, to engage the drive to the front wheels. The switch is illuminated when the key-start switch is turned on, becoming brighter when the drive to the front wheels is engaged.

Press the lower section of the switch to revert to rear wheel drive only.

The front axle assembly incorporates a limited slip differential for improved traction and stability. The limited slip differential engages and disengages automatically and requires no action on the part of the operator.

NOTE: *To avoid excessive tire wear when travelling on the public highway or any hard surface, it is recommended that four wheel drive be disengaged.*

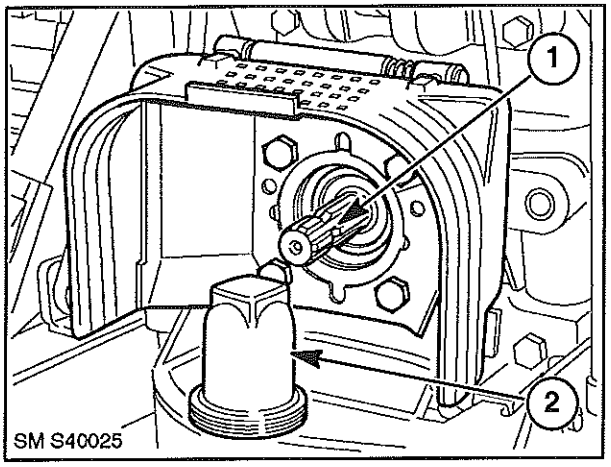
WARNING: *Tractors with four wheel drive engaged or disengaged should not be allowed to exceed 25 mph (40 kph). Overspeeding by towing or coasting downhill with clutch depressed or transmission in neutral may cause loss of control, personal injury to the operator or bystanders or failure of the drive shaft.*

Keep the tractor in the same gear going downhill as would be used when going uphill.

WARNING: *Your tractor is equipped with very efficient, hydraulically actuated rear wheel brakes. On four wheel drive tractors, the drive to the front axle is automatically engaged when the brakes are applied to provide four wheel braking. Owners should be aware of the effectiveness of four wheel braking which greatly enhances braking performance. Appropriate care should be exercised during fierce braking, particularly if the rear of the tractor is unballasted.*

Front tires should never be inflated above the recommended pressure. Ideally, rear tire pressures should be maintained at least 6 lbf/in^2 (0.4 bar) above front tire pressures, provided the manufacturers' recommendations are not exceeded.

IMPORTANT: ***Never*** *attempt to drive the tractor with the drive shaft removed, even if you have no intention of using four wheel drive. With the drive shaft removed, application of the brakes will result in severe damage to transmission components.*

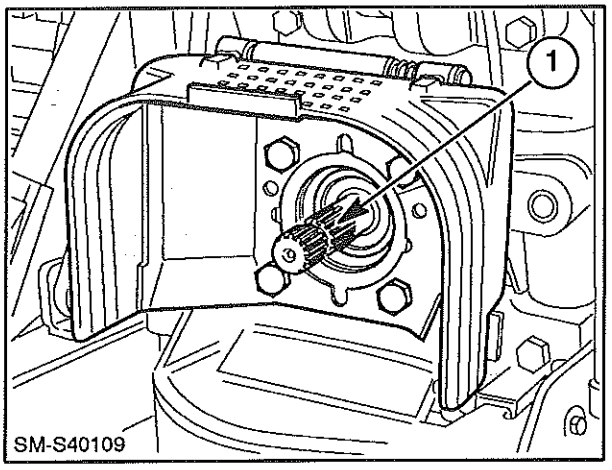


2-92

INDEPENDENT POWER TAKE-OFF

The power take-off (P.T.O.) transfers engine power directly to mounted, semi-mounted or trailed equipment via a splined shaft (1) Figure 2-92, at the rear of the tractor. When the P.T.O. is not in use, install the cap (2) to protect the shaft.

Two types of P.T.O. system are available, dependent upon model. Both are independent, that is, the P.T.O. may be engaged or disengaged whether the tractor is moving or stationary. Rotation of the shaft is independent of the transmission clutch or tractor ground speed and is related directly to the speed of the engine.



2-93

1. Two-speed P.T.O. with interchangeable shafts. Two P.T.O. output shafts of 1.375 in. (34.9 mm) diameter are supplied. The 6-spline shaft (1) Figure 2-92, is designed to operate at 540 rev/min, the 21-spline shaft (1) Figure 2-93, is designed to operate at 1000 rev/min.

2. Two-speed shiftable P.T.O. This system utilises the standard 6-spline shaft. A lever adjacent to the Operator's seat permits selection of an alternative engine speed relative to P.T.O. speed for economy operation or operation at full power.

The shaft is also interchangeable and an alternative 21-spline shaft is available, as an accessory, from your New Holland dealer. The 21-spline shaft is for use with 1000 rev/min P.T.O. equipment.

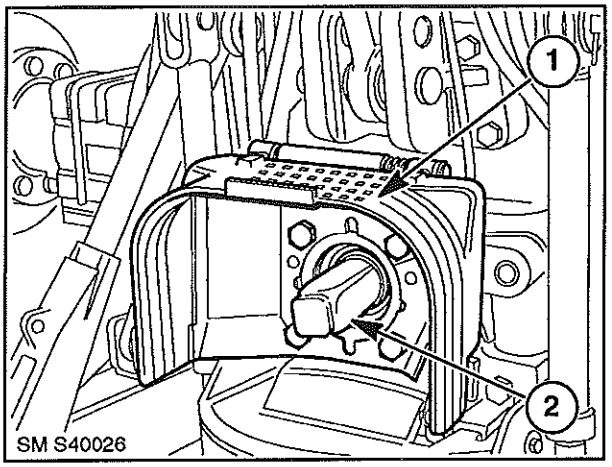
Attaching P.T.O. Driven Equipment

WARNING: *Before attaching or detaching equipment or changing the P.T.O. shaft:*

- *Firmly apply the parking brake.*

- *Ensure that **all** gearshift levers are in neutral.*
- *Stop the engine (the P.T.O. will automatically disengage).*
- *Ensure that the P.T.O. shaft has stopped turning.*

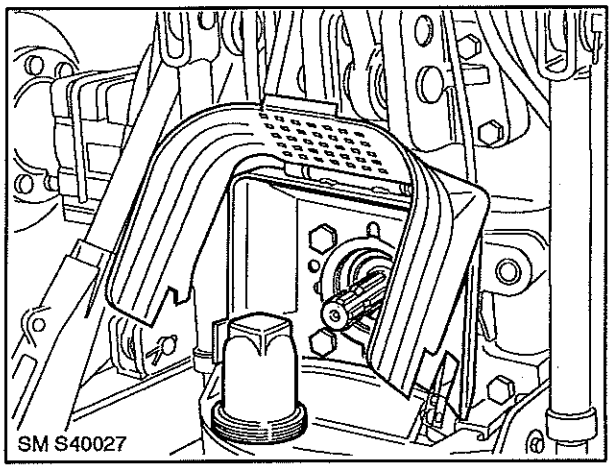
Mount or hitch the equipment to the tractor as outlined later in this section – THREE-POINT LINKAGE.



2-94

To connect P.T.O. driven equipment to the P.T.O. shaft, unscrew and remove the P.T.O. cap (2) Figure 2-94. Store the cap in the tool box for installation when the P.T.O. facility is no longer required. It is not necessary to remove the guard (1) when attaching equipment.

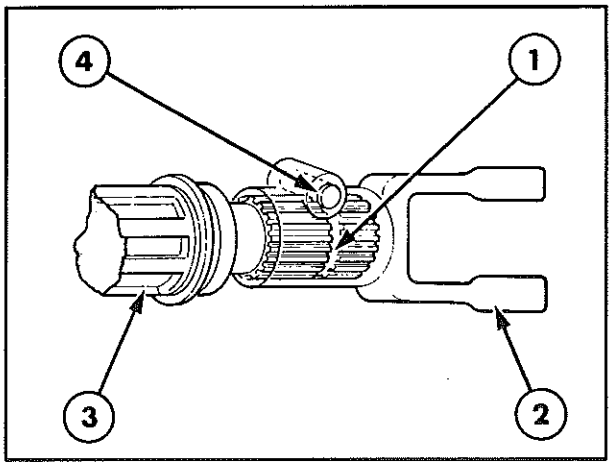
Tilt the guard upward, as shown in Figure 2-95, to gain access. Attach the implement to the P.T.O. shaft and lower the guard, as shown in Figure 2-94.



2-95

The P.T.O. guard has a special spring-loaded hinge that will retain the guard in any one of several points between the horizontal and fully raised positions. The guard also serves as a supporting member for drive line shields used with pull type P.T.O.-driven equipment and provides for your safety.

With reference to Figure 2-96, ensure that the equipment driveshaft coupler lock pin or detent balls engage the groove in the P.T.O. shaft. If the coupler does not have a locking arrangement, pin the coupler to the shaft.



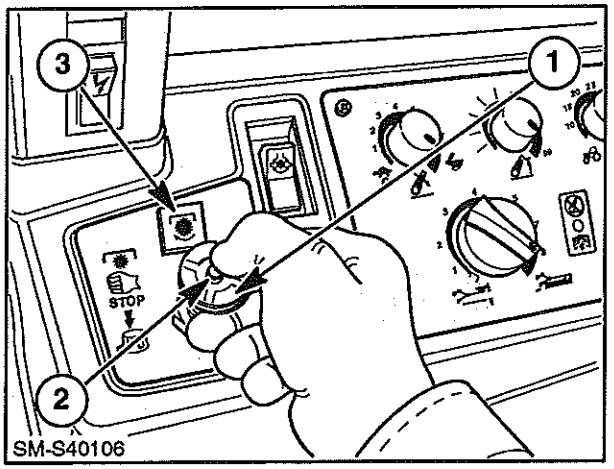
2-96

IMPORTANT: *After attaching mounted equipment, carefully raise and lower using Position Control and check clearances and P.T.O. shaft slide range/articulation. When attaching trailed equipment, ensure the drawbar is correctly set. See* SWINGING DRAWBAR *later in this section.*

P.T.O. Operation

WARNING: *Whenever operating P.T.O. equipment, observe the following precautions:*

- *Follow the equipment operator's manual instructions.*
- *Ensure that the P.T.O. guard is installed when using P.T.O. driven equipment.*
- *Do not wear loose clothing when operating P.T.O. driven equipment.*
- *Do not approach, clean or adjust P.T.O. driven equipment while the tractor engine is still running. Shut off the tractor engine and wait until the P.T.O. and equipment stops before getting off the tractor or working on the P.T.O. or equipment*
- *Firmly apply the parking brake, place **all** gearshift levers in neutral and block all four wheels before operating any stationary P.T.O. equipment.*

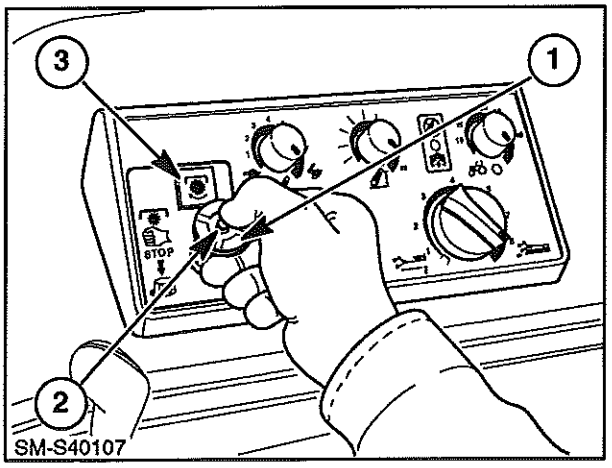


2-97

OPERATING 2-SPEED P.T.O. (with interchangeable shaft)

The P.T.O. is independent, so may be engaged or disengaged whether the tractor is moving or stationary.

One of two types of P.T.O. control knob will be fitted. The control knobs are different both in appearance and method of operation. The type installed on your tractor may be readily identified by reference to Figures 2-97, 2-98, 2-99, and 2-100.



2-98

Mushroom Head P.T.O. Knob – Figures 2-97 and 2-98

Figure 2-97 shows the P.T.O. controls on a tractor with cab. The P.T.O. controls for a tractor without cab are shown in Figure 2-98.

To engage the P.T.O., start the engine, press down the central button (2) Figure 2-97 or 2-98 and lift the knob (1). The knob will remain in the raised position when the P.T.O. is engaged and the adjacent warning light (3) will be illuminated.

Tap the P.T.O. selector knob sharply downwards to the disengage the P.T.O.

Cap Head P.T.O. Knob – Figures 2-99 and 2-100
Figure 2-99 shows the P.T.O. controls on a tractor with cab. The P.T.O. controls for a tractor without cab are shown in Figure 2-100.

To engage the P.T.O., start the engine, press down the selector (2) Figure 2-99 or 2-100 and turn fully clockwise.

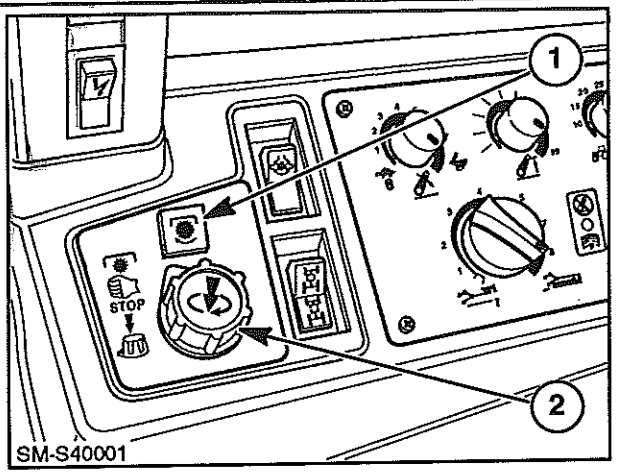
When the P.T.O. is engaged, the adjacent warning light (1) will be illuminated. Tap the P.T.O. selector sharply downwards and it will spring back to the disengaged position (anti-clockwise).

NOTE: *When the engine is stopped or if it is stalled, the P.T.O. will automatically disengage. However, the selector knob must still be returned manually to the 'off' position (fully anti-clockwise) otherwise the P.T.O. cannot be engaged when the engine is restarted.*

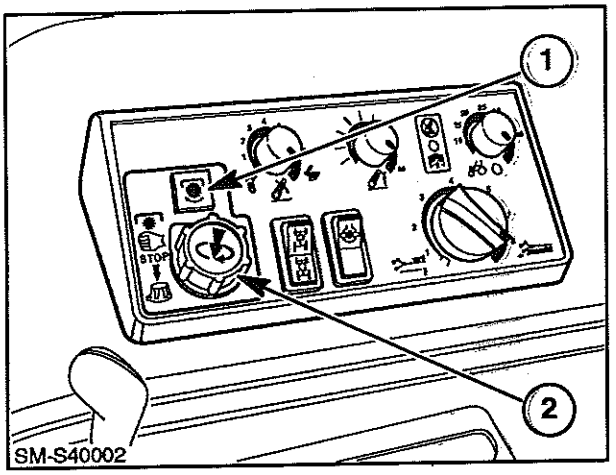
IMPORTANT: *To avoid shock loads to the P.T.O., reduce engine speed to approximately 1000 rev/min when engaging the P.T.O., then increase engine speed by means of the throttle to that shown in the following text. Similarly, to avoid overstressing the tractor P.T.O. clutch brake, slow down the implement by reducing engine speed* ***before*** *disengaging the P.T.O. This is particularly important with implements having a high inertia. Such implements should always be fitted with an overrun clutch.*

Two P.T.O. output shafts are supplied: When operating with the 6-spline shaft, run the engine at 1900 rev/min to obtain 540 rev/min at the P.T.O. output shaft.

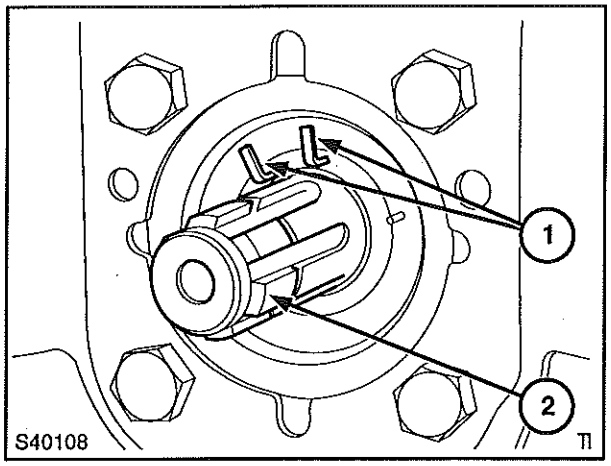
When the 6-spline shaft is removed and the 21-spline shaft installed, the shaft engages with different gears within the rear axle housing. Run the engine at 2050 rev/min to provide a P.T.O. speed of 1000 rev/min.



2-99



2-100



2-101

For most P.T.O. operations the speed of the tractor is controlled by selection of the appropriate gear ratio whilst maintaining the correct P.T.O. speed by means of the throttle.

Generally speaking, P.T.O. driven equipment having a high power requirement is designed to operate at 1000 rev/min. and will be provided with a 21-spline female coupling for attachment to the tractor P.T.O. shaft. See the following text entitled **Changing The P.T.O. Output Shaft**.

IMPORTANT: *Implements with a high power requirement should be operated with the 1000 rev/min. P.T.O. (21-spline shaft). If it is necessary to use the 6-spline shaft to operate implements having a power requirement of more than 75 horsepower, then it is strongly recommended that the implement is fitted with a slip clutch to avoid damage to the P.T.O. output shaft and other tractor components.*

WARNING: *To avoid inadvertent movement of the implement, disengage the P.T.O. after each use.*

Changing The P.T.O. Output Shaft

Remove the circlip (1) Figure 2-101 and pull the shaft (2) from the housing. Clean the replacement shaft thoroughly, ensuring that the lubrication hole in the side of the shaft is free of dirt. Carefully insert the shaft and replace the circlip.

Protect the removed shaft by wrapping in a clean cloth and place in the tool box.

IMPORTANT: *Never operate the tractor with the P.T.O. shaft removed. The shaft, when inserted, acts as a support for internal gears and bearings. Operation with the shaft removed will result in severe damage.*

To select a P.T.O. ratio, proceed as follows:

6-spline shaft installed:

- With the tractor **stationary** and the P.T.O. selector in the **disengaged** position, select the required P.T.O. speed range by means of the shift lever. Move the lever to the right (away from the seat) to engage the power range (540 P.T.O. rev/min at 1900 engine rev/min). Move the lever to the left (toward the seat) to select the economy range (540 P.T.O. rev/min at 1100 engine rev/min).

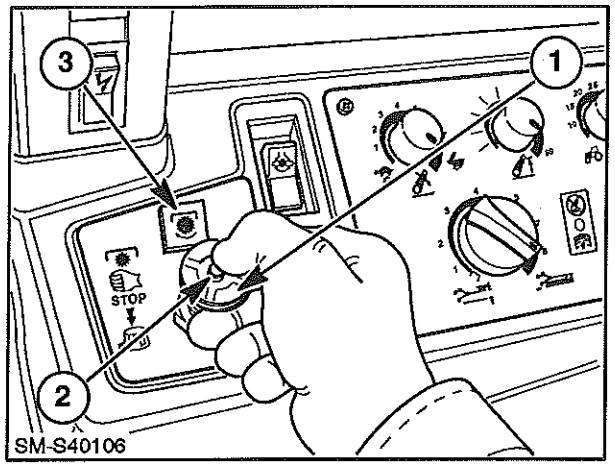
21-spline shaft installed:

- With the tractor **stationary** and the P.T.O. selector in the **disengaged** position, move the lever to the left (toward the seat) to select the economy range. This will provide a P.T.O. speed of 1000 rev/min at 2100 engine rev/min.).

IMPORTANT: *The P.T.O. range lever cannot be moved until the spring-loaded collar beneath the knob is lifted. This feature is incorporated to prevent inadvertent selection of the economy range which could result in overspeeding of a P.T.O. driven implement.*

IMPORTANT: *To avoid shock loads to the P.T.O., reduce engine speed to approximately 1000 rev/min when engaging the P.T.O., then increase engine speed by means of the throttle to obtain the required P.T.O. speed, as shown in the following table. Similarly, to avoid overstressing the tractor P.T.O. clutch brake, slow down the implement by reducing engine speed* ***before*** *disengaging the P.T.O. This is particularly important with implements having a high inertia. Such implements should always be fitted with an overrun clutch.*

WARNING: *To avoid inadvertent movement of the implement, disengage the P.T.O. after each use.*

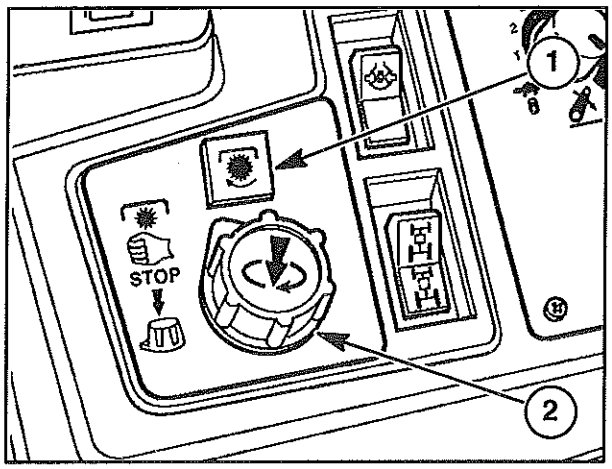


2-102

- With the engine turning at less than 1000 rev/min, engage the P.T.O. as previously described. Press down the central button (2) Figure 2-102 and lift the knob (1). When the P.T.O. is engaged and the adjacent warning light (3) will be illuminated.

- Alternatively, if your tractor is equipped with the cap type P.T.O. selector, press down and turn the selector (2) Figure 2-103. When the P.T.O. is engaged and the adjacent warning light (1) will be illuminated.

- Open the throttle to obtain engine/P.T.O. speeds as shown in the following table:



2-103

Range Lever Position	Engine Speed (rev/min)	P.T.O. Speed (rev/min)
Power (away from the seat)	1900 with 6-spline shaft	540
Economy (toward the seat)	1100 with 6-spline shaft	540
Economy (toward the seat)	2100 with 21-spline shaft	1000

NOTE: *If your tractor has an analogue instrument panel, the engine speeds corresponding to the P.T.O. speeds in the power and economy ranges are shown on the tachometer scale.*

NOTE: *A light on the instrument panel will be illuminated when the economy range is selected with the P.T.O. engaged. If overspeeding of the P.T.O. occurs (P.T.O. speed exceeds 630 rev/min in the economy range only), the light will flash for 5 seconds, then remain steady.*

- Tap the P.T.O. selector sharply downwards and it will spring back to the disengaged position.

NOTE: *When the engine is stopped or if it is stalled, the P.T.O. will automatically disengage. However, if the cap type selector knob is installed (Figure 2-103) it must still be returned manually to the 'off' position (fully anti-clockwise) otherwise the P.T.O. cannot be engaged when the engine is restarted.*

TOP LINK SENSING HYDRAULICS SYSTEM

Your tractor is equipped with an hydraulic system providing accurate and sensitive control over a wide range of operating conditions. Two distinct systems are employed, dependent upon the specification level of your tractor.

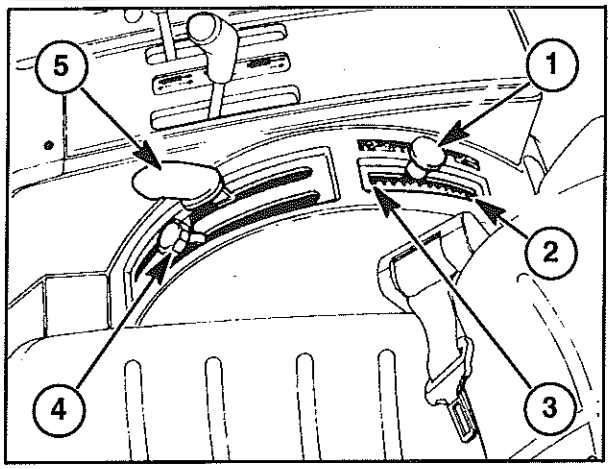
The basic hydraulic system is discussed in this section of the Manual, is a mechanically controlled system that senses changes in the draft loading via the top link of the 3-point linkage. This system is known as Top Link Sensing Draft Control.

The system benefits from an additional control feature known as Position Control. The type of control selected by the operator will depend on the type of implement in use and the operating conditions.

Position Control provides accurate and sensitive control of implements, such as sprayers, rakes, mowers, etc., that operate above the ground. Position Control may also be used with ground- engaging equipment. However, unless the field is truly flat, it cannot be recommended. When in Position Control, the tractor and implement become, in effect, a rigid unit and unevenness in the surface of the land will cause the tractor/implement combination to rise and fall.

Draft Control is most suitable for mounted or semi-mounted implements operating in the ground. Changes in the working depth or changes in soil resistance cause the draft loading on the implement to increase or decrease.

This change in draft loading is sensed through the top link of the 3-point linkage and the hydraulic system responds by raising or lowering the implement to restore the original draft loading. In this way a uniform draft load is maintained on the implement. The system responds to both upper link compression and tension loads and is described as double-acting.



2-104

The system selector (1) Figure 2-104, is used to select Draft Control, Position Control or a combination of the two in order to make the system more or less sensitive to changes in the draft loading.

IMPORTANT: *Always set the system selector to the Position Control setting (rearmost notch – 2) at any time when not actually operating in Draft Control, such as when attaching equipment, transporting equipment or when no equipment is attached.*

The system selector operates in a slot that has a number of notches formed in the left-hand side to prevent accidental movement of the selector. To move the selector to an alternative setting, ease it to the right in order to clear the notches.

When the selector is at the front of the slot (3) the system is in Draft Control. Moving the selector progressively away from this setting will decrease Draft Control sensitivity while increasing Position Control sensivity. When the selector is in the rearmost notch, the system is in Position Control.

The Draft and Position Control settings are clearly identified by a decal adjacent to the system selector.

The lift control lever (5) is used to raise or lower the 3-point linkage (and implement) to the required height or working depth.

An adjustable stop (4) is provided to enable the lift control lever to be returned to the selected setting during use.

Position Control Operation

With reference to Figure 2-104, ease the system selector to the right and move it rearwards to the Position Control setting (rearmost notch).

When a fully mounted implement is attached to the 3-point linkage, raise the implement in stages, ensuring that there is at least 4 in. (100 mm) clearance between the implement and any part of the tractor. If necessary, slacken the knob on the adjustable stop, locate it against the rear edge of the lift control lever and tighten the knob. This will prevent the linkage being raised further and so avoid the possibility of the implement damaging the tractor when fully raised.

Set the required implement height/depth using the lift control lever. Pull the lever back to raise the implement, push forward to lower. Implement height/depth is relative to the position of the lever in the quadrant.

When the required implement working height/depth has been established, set the adjustable stop against the front edge of the lift control lever. This will locate the position for repeated use. The lever may be eased sideways (to the right) when it is required to by-pass the adjustable stop.

WARNING: *When transporting equipment on the 3-point linkage, select Position Control, raise the implement and set the adjustable stop against the front edge of the lift control lever to prevent accidental forward movement of the lever which could result in attached equipment lowering and becoming damaged, damaging the road surface or causing personal injury.*

Draft Control Operation

Ensure that the A.S.C. valve handle (where fitted), is turned fully clockwise to direct the hydraulic oil supply to the 3-point linkage power lift cylinder.

To operate in Draft Control, ease the system selector to the right and move it to the foremost notch. This is the most sensitive Draft Control setting and variations in soil density will cause the hydraulic system to respond with relatively large corrections, i.e. movement of the hydraulic linkage and attached equipment.

Drive into the field and lower the implement into work using the lift control lever. Push the lever forward to increase the draft loading. Pull rearwards to reduce the draft loading. In most circumstances forward movement of the lift control lever will increase implement depth and rearward movement will reduce the depth.

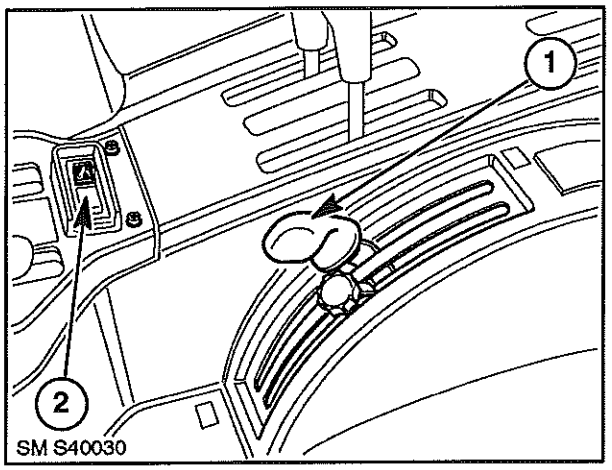
An automatic flow control valve is incorporated within the hydraulic system to provide a rate of lift in proportion to movement of the lift control lever or to draft signals from the 3-point linkage.

Once set, the tractor hydraulic system will automatically adjust the implement depth to maintain an even pull on the tractor and so reduce wheel slip to a minimum.

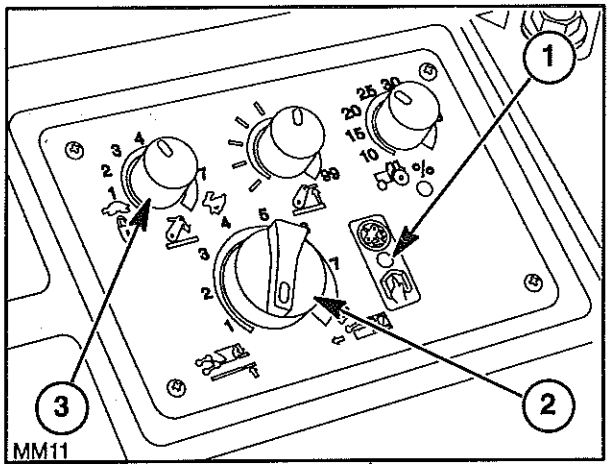
When the required implement working depth has been established, set the adjustable stop adjacent to the front edge of the lift control lever to locate the position for repeated use. The lift control lever may be eased sideways to bypass the adjustable stop, if required.

Observe the implement as it pulls through the soil. If the hydraulic system reaction (vertical movement of the implement) is too great or too frequent, move the system selector rearwards to the next notch. If implement movement is still too great, move the selector progressively rearwards, towards the Position Control setting, to further reduce sensitivity to a level suited to the soil conditions.

NOTE: *The Position Control setting is not recommended for soil-engaging implements. The Draft Control settings provide fine adjustment of hydraulic system sensitivity. However, quite large changes of sensitivity may be obtained by locating the top link and/or pivot pin in a different hole in the lift rocker. See* **'THREE-POINT LINKAGE'** later in this section.



2-105



2-106

ELECTRO-LINK™ ELECTRONIC DRAFT CONTROL

Your tractor is equipped with an hydraulic system providing accurate and sensitive control over a wide range of operating conditions. Two distinct systems are employed, dependent upon the specification level of your tractor.

This system discussed in this section of the Manual is known as Electro-Link Electronic Draft Control. This electronically controlled hydraulic system senses changes in the draft loading via sensors in the lower link pins.

The system benefits from an additional control feature known as Position Control. The type of control selected by the operator will depend on the type of implement in use and the operating conditions.

Position Control provides accurate and sensitive control of implements, such as sprayers, rakes, mowers, etc., that operate above the ground.

Position Control may also be used with ground-engaging equipment. However, unless the field is truly flat, it cannot be recommended. When in Position Control, the tractor and implement become, in effect, a rigid unit and unevenness in the surface of the land will cause the tractor/implement combination to rise and fall.

Draft Control is most suitable for mounted or semi-mounted implements operating in the ground. Changes in the working depth or changes in soil resistance cause the draft loading on the implement to increase or decrease.

With Electronic Draft Control, the change in draft loading is sensed by the special pins connecting the lower links to the rear axle housing. These pins send an electrical signal to the micro-computer which, in turn, signals the hydraulic system to respond by raising or lowering the implement to restore the original draft loading.

The Electro-Link system senses draft variations through the lower links and, using an electronic micro-computer, translates these variations to the hydraulic system which raises and lowers the links to maintain a constant draft loading. The smoothness and accuracy provided during operation gives the system a clear advantage over conventional mechanical systems.

The electro-hydraulic Draft and Position Control system is operated from a console to the right of the operator's seat, housing the lift control lever (Figure 2-105) and rotary control knobs (Figure 2-106).

NOTE: *Dependent upon tractor specification, some of the knobs shown in Figure 2-106 may not be installed. Also, the panel on tractors without cab differs in appearance to the one shown.*

A liquid crystal display (LCD) on the instrument panel shows precise linkage position. Two symbolic warning displays (LCD's) and/or warning lights are also provided.

The lift control lever (1) Figure 2-105, is of a low effort type, having no direct coupling to the hydraulic system. The lever controls implement height or working depth.

The raise/lower switch (2) Figure 2-105, enables the operator to rapidly raise the implement to the position set by the height limit control and to lower the implement back down to the position set by the lift control lever, without disturbing the settings. When this switch is in the central position, the lift control lever is disabled and external, electrical switches become active. These switches, one on each rear light assembly, allow the hydraulic linkage to be raised and lowered by the operator while standing beside the tractor, to aid attachment and detachment of implements.

The Position/Draft sensitivity knob (2) Figure 2-106, is used to select Draft Control, Position Control or a combination of the two in order to make the system more or less sensitive to changes in the draft loading. A decal encircling the knob has eight numbered positions, to indicate the degree of sensitivity selected.

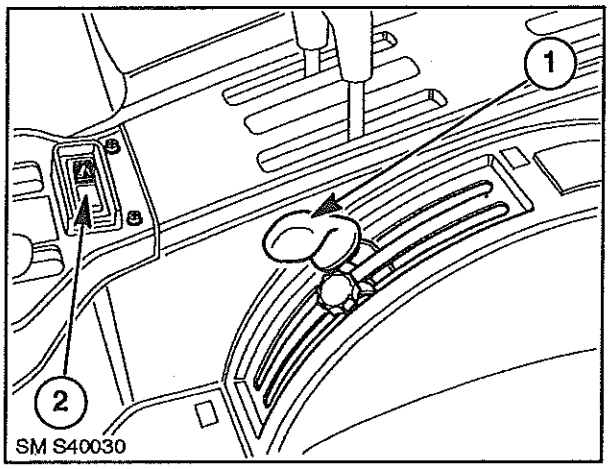
Turn the Position/Draft sensitivity knob towards the full Position Control setting (position 1) to decrease the system's response to a change in draft loading. The knob is detented at the Position Control setting (position 1 – knob fully anti-clockwise).

IMPORTANT: *Always set the Position/Draft sensitivity knob to the full Position Control setting (position 1) at any time when not actually operating in Draft Control, such as when attaching equipment, transporting equipment or when no equipment is attached.*

The drop rate control knob (3) Figure 2-106, controls the speed at which the lower links and implement drop during a lowering cycle. This knob has a decal encircling it with seven numbered positions. Position 1 is the slowest rate and is denoted by a 'tortoise' symbol. Position 7 is the fastest setting, denoted by a 'hare' symbol.

The malfunction warning light (1) Figure 2-106, serves two purposes:

ELECTRO-LINK™ ELECTRONIC DRAFT CONTROL

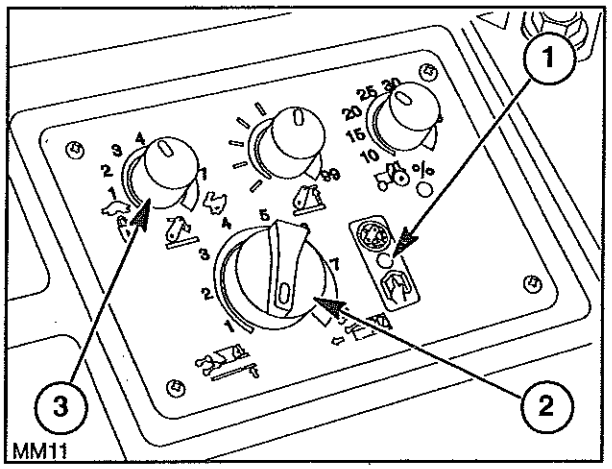


2-105

Your tractor is equipped with an hydraulic system providing accurate and sensitive control over a wide range of operating conditions. Two distinct systems are employed, dependent upon the specification level of your tractor.

This system discussed in this section of the Manual is known as Electro-Link Electronic Draft Control. This electronically controlled hydraulic system senses changes in the draft loading via sensors in the lower link pins.

The system benefits from an additional control feature known as Position Control. The type of control selected by the operator will depend on the type of implement in use and the operating conditions.



2-106

Position Control provides accurate and sensitive control of implements, such as sprayers, rakes, mowers, etc., that operate above the ground.

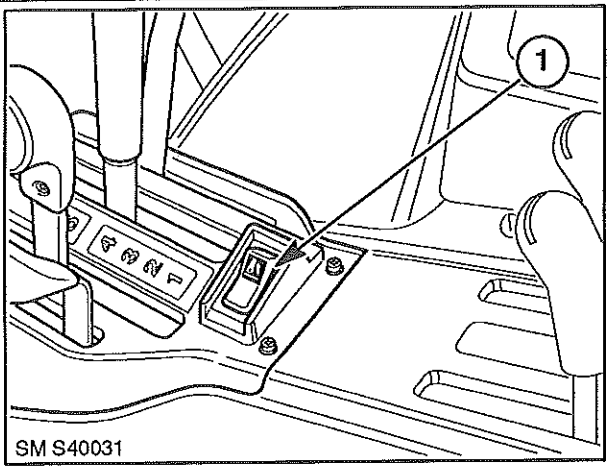
Position Control may also be used with ground-engaging equipment. However, unless the field is truly flat, it cannot be recommended. When in Position Control, the tractor and implement become, in effect, a rigid unit and unevenness in the surface of the land will cause the tractor/implement combination to rise and fall.

Draft Control is most suitable for mounted or semi-mounted implements operating in the ground. Changes in the working depth or changes in soil resistance cause the draft loading on the implement to increase or decrease.

With Electronic Draft Control, the change in draft loading is sensed by the special pins connecting the lower links to the rear axle housing. These pins send an electrical signal to the micro-computer which, in turn, signals the hydraulic system to respond by raising or lowering the implement to restore the original draft loading.

repair code will be displayed. See preceding paragraphs.

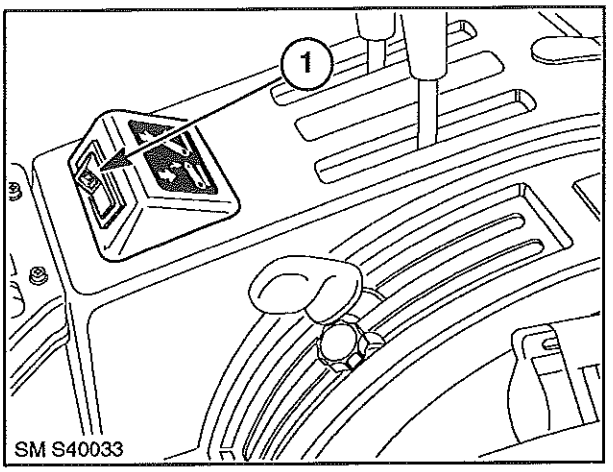
The height limit control knob (1) Figure 2-109, limits the height to which the linkage may be raised. Adjust this knob to avoid the possibility of a large implement damaging the tractor when fully raised.



2-110

A raise/lower switch is provided that enables the operator to rapidly raise the implement to the position set by the height limit control and to lower the implement back down to the position set by the lift control lever, without disturbing the settings. Thus, the operator is able to raise the implement at the headland and return the implement to the same operating conditions.

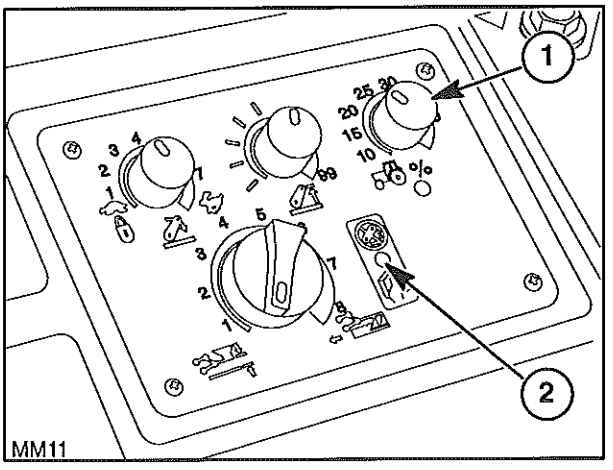
Dependent upon tractor model, the switch will be as shown at (1) Figure 2-110 or 2-111. To raise the implement, press the end of the switch with the 'lift arm raise' symbol on it. Press the other end of the switch to lower the implement to the operating position.



2-111

NOTE: *The implement will not lower if ground speed exceeds 15 MPH (24 km/h).*

The slip limit control knob (1) Figure 2-112, available only with the optional radar sensor unit, enables the operator to select a wheel slip threshold, above which the implement will raise until wheel slip returns to an accceptable level. The knob is detented at the 'off' position (knob fully clockwise). A digital display of wheel slip, combined with a slip alarm may be programmed into the electronic instrument panel module. See **ELECTRONIC INSTRUMENT PANEL** earlier in this section.



2-112

NOTE: *The slip limit 'on' indicator (2) Figure 2-112, will illuminate when slip control is activated and the implement is raising to restore the selected slip rate.*

Position Control Operation

With reference to Figure 2-104, ease the system selector to the right and move it rearwards to the Position Control setting (rearmost notch).

When a fully mounted implement is attached to the 3-point linkage, raise the implement in stages, ensuring that there is at least 4 in. (100 mm) clearance between the implement and any part of the tractor. If necessary, slacken the knob on the adjustable stop, locate it against the rear edge of the lift control lever and tighten the knob. This will prevent the linkage being raised further and so avoid the possibility of the implement damaging the tractor when fully raised.

Set the required implement height/depth using the lift control lever. Pull the lever back to raise the implement, push forward to lower. Implement height/depth is relative to the position of the lever in the quadrant.

When the required implement working height/depth has been established, set the adjustable stop against the front edge of the lift control lever. This will locate the position for repeated use. The lever may be eased sideways (to the right) when it is required to by-pass the adjustable stop.

WARNING: *When transporting equipment on the 3-point linkage, select Position Control, raise the implement and set the adjustable stop against the front edge of the lift control lever to prevent accidental forward movement of the lever which could result in attached equipment lowering and becoming damaged, damaging the road surface or causing personal injury.*

Draft Control Operation

Ensure that the A.S.C. valve handle (where fitted), is turned fully clockwise to direct the hydraulic oil supply to the 3-point linkage power lift cylinder.

To operate in Draft Control, ease the system selector to the right and move it to the foremost notch. This is the most sensitive Draft Control setting and variations in soil density will cause the hydraulic system to respond with relatively large corrections, i.e. movement of the hydraulic linkage and attached equipment.

Drive into the field and lower the implement into work using the lift control lever. Push the lever forward to increase the draft loading. Pull rearwards to reduce the draft loading. In most circumstances forward movement of the lift control lever will increase implement depth and rearward movement will reduce the depth.

An automatic flow control valve is incorporated within the hydraulic system to provide a rate of lift in proportion to movement of the lift control lever or to draft signals from the 3-point linkage.

Once set, the tractor hydraulic system will automatically adjust the implement depth to maintain an even pull on the tractor and so reduce wheel slip to a minimum.

When the required implement working depth has been established, set the adjustable stop adjacent to the front edge of the lift control lever to locate the position for repeated use. The lift control lever may be eased sideways to bypass the adjustable stop, if required.

Observe the implement as it pulls through the soil. If the hydraulic system reaction (vertical movement of the implement) is too great or too frequent, move the system selector rearwards to the next notch. If implement movement is still too great, move the selector progressively rearwards, towards the Position Control setting, to further reduce sensitivity to a level suited to the soil conditions.

NOTE: *The Position Control setting is not recommended for soil-engaging implements. The Draft Control settings provide fine adjustment of hydraulic system sensitivity. However, quite large changes of sensitivity may be obtained by locating the top link and/or pivot pin in a different hole in the lift rocker. See* **'THREE-POINT LINKAGE'** later in this section.

Dependent upon the position of the lift control lever relative to the lower links, the speed of lift will automatically adjust, being faster if there is a great differential and slowing as the lower links come closer to the position set by the lift control lever. This means that if a large movement of the lift control lever is made then the lower links will respond by moving rapidly. As the links approach the position set by the lift control lever, movement will slow.

Set the lower link/implement drop rate by rotating the drop rate control knob (3) Figure 2-113. Turn the knob clockwise (towards the 'hare' symbol) to increase the speed of drop. Turn the knob anti-clockwise (towards the 'tortoise' symbol) to slow down the drop rate.

IMPORTANT: *When first setting the implement up for work, keep the drop rate control knob in the slow drop position ('tortoise' symbol).*

Once set, the tractor hydraulic system will automatically adjust implement depth to maintain an even pull (draft load) on the tractor and so reduce wheel slip to a minimum.

Observe the implement as it pulls through the ground. If hydraulic system reaction is too great, reduce system sensitivity by turning the Position/Draft sensitivity knob (2) Figure 2-113, anti-clockwise by a few degrees. If implement movement is still too great, progressively rotate the knob anti-clockwise (toward the Position Control setting) to further reduce sensitivity to a level suited to the soil conditions.

NOTE: *The full Position Control setting is not recommended for soil-engaging implements.*

Once the required implement working depth has been established there is no need to move the lift control lever again until the work in hand is completed. Upon reaching the headland, press the symbol end of the raise/lower switch (3) Figure 2-114, to fully lift the implement to the position set by the height limit control knob. When re-entering the working area, press the lower part of the switch and the implement will lower to the depth originally set by the lift control lever.

Alternatively, the adjustable stop (2) Figure 2-114, may be used to set the implement depth. When the required implement depth has been established, loosen the knob on the stop and move it so that it is against the front edge of the lift control lever (1). Re-tighten the knob. Whenever the lift control lever is pulled rearwards to raise the implement, the implement will always return to the same working depth when the lever is pushed forward to contact the stop.

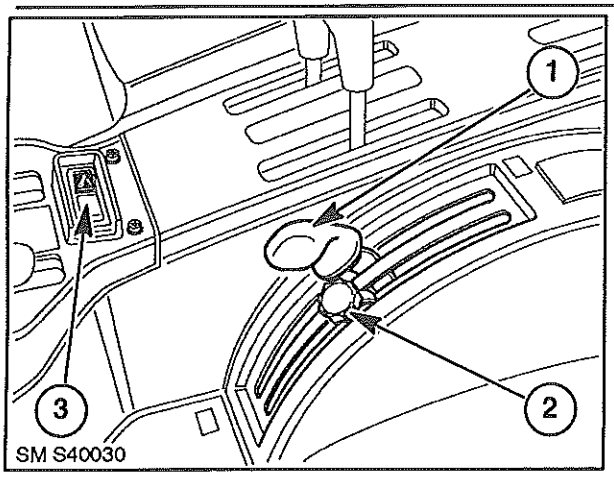
NOTE: *If required, the lift control lever may be eased sideways (to the right) in order to bypass the adjustable stop.*

Position Control Operation

Before operating the hydraulic 3-point linkage, ensure that the A.S.C. valve handle (where fitted) is turned fully clockwise to position (2) to direct the hydraulic oil supply to the 3-point linkage.

To operate in Position Control, turn the Position/Draft sensitivity knob (2) Figure 2-113, fully anti-clockwise to position 1 (decal depicts an implement above the ground). The knob is detented at this setting.

Raise the implement in stages, ensuring that there is at least 100 mm (4 in.) clearance between the implement and any part of the tractor. Note the digital display reading on the instrument panel. If the reading is less than '99' it means that the implement is not fully raised. Adjust the height limit control knob (1) Figure 2-113, to prevent the linkage being raised further and so avoid the possibility of the implement damaging the tractor when fully raised.

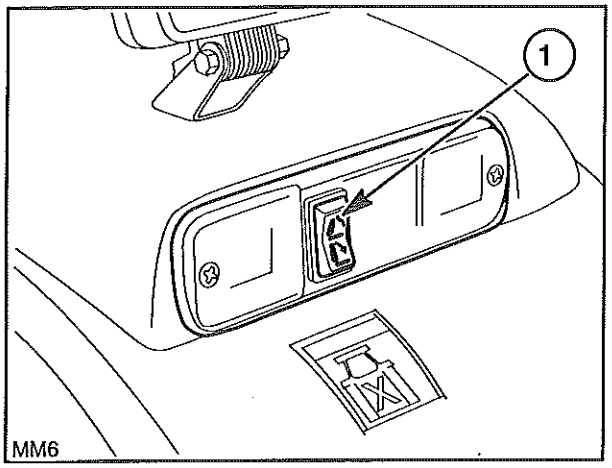


2-115

Set the required implement height using the lift control lever (1) Figure 2-115. Pull the lever back to raise the implement. Push forward to lower.

Adjust the rate of implement drop by rotating the drop rate control knob. Turn the knob clockwise to speed up the drop rate or anti-clockwise to slow down the drop rate.

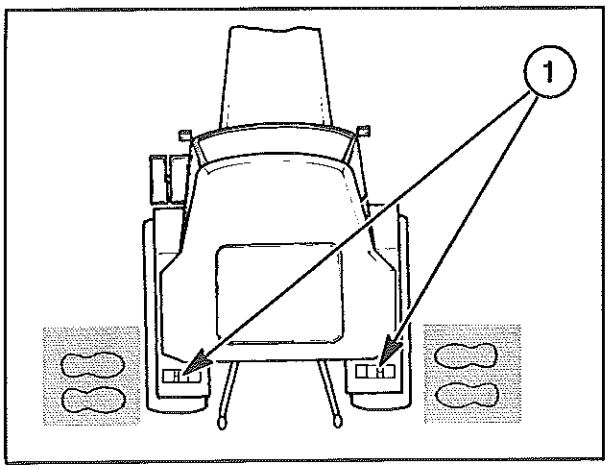
Once the required implement working height has been established there is no need to move the lift control lever again until the work in hand is completed. Upon reaching the headland, press the raise/lower switch (3) Figure 2-115, to fully lift the implement to the position set by the height limit control knob. When re-entering the working area, press the switch again and the implement will lower and return to the height originally set.



2-116

Alternatively, use the adjustable stop (2) Figure 2-115, to maintain the required implement height, as described in the previous text – **Draft Control Operation.**

WARNING: *When transporting equipment on the three-point linkage, select Position Control, raise the implement and set the adjustable stop against the front edge of the lift control lever to prevent accidental forward movement of the lever which could result in attached equipment lowering and becoming damaged, damaging the road surface or causing personal injury.*



2-117

External Hydraulic Power Lift Controls

WARNING: *Do not stand on or near the implement or between the implement and tractor when operating the external hydraulic power lift controls.*

An external, rocker type switch is provided on each rear light assembly, Figure 2-116. The switches are of a three-position design, spring-loaded to return to the central, off position.

Before leaving the tractor to operate the external switches:

- Move the gearshift levers to neutral.

- Disengage the P.T.O.
- Apply the parking brake.

Move the hand throttle lever to the low idle position (fully rearwards) and push the hydraulic lift control lever fully forward. Move the raise/lower switch (3) Figure 2-115, to the central position. This will transfer control of the hydraulic power lift to the switches located on the rear lights.

WARNING: *Before using the external hydraulic power lift switches, ensure that no person or object is in the area of the implement or 3-point linkage.*

Never operate the external switches while standing:

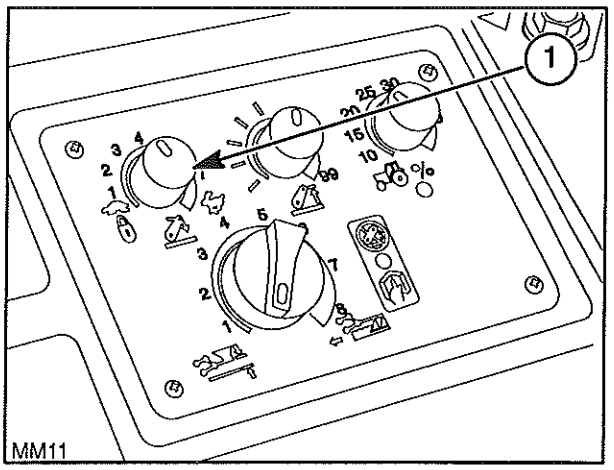
- *Directly behind the tractor or tires.*
- *Between the lower links.*
- *On or near the implement.*

WARNING: *Never extend arms, legs, any part of the body or any object into the area near the 3-point linkage or implement while operating the external switch.*

Never have an assistant working the opposite set of controls. When moving to the opposite set of controls, move around the tractor or implement. Do ***not*** *cross between the implement and tractor.*

The operator must only activate the external switches while standing to the side of the tractor (outboard of the rear tires) – see Figure 2-117.

Pressing the upper part of the rocker switch (1) Figure 2-116 will cause the lift linkage to raise slowly. Pressing the lower part (2) will cause the linkage to lower. When the lower links align with the implement, release the switch and attach the implement to the 3-point linkage in the normal way.



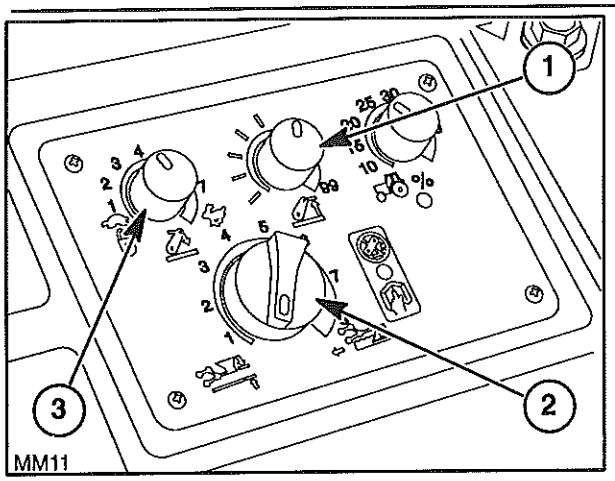
2-118

To transfer control of the hydraulic power lift back to the lift control lever, depress the end of the raise/lower switch with no symbol on it. Pull the lift control lever fully rearwards and push forward again, more slowly. The hitch enabled symbol will display in the instrument panel, indicating that the 3-point linkage is in phase with the lift control lever.

IMPORTANT: *When control of the 3-point linkage is transferred back to the lift control lever, an attached implement may raise fully and damage the rear of the cab. Operator's should be aware of this and take appropriate action to stop raising before full lift height is reached.*

Transport Lock and Dynamic Ride Control

When transporting equipment on the 3-point linkage, turn the drop rate control knob (1) Figure 2-118, fully anti-clockwise to the transport lock position (padlock symbol). This will prevent the implement from accidentally lowering and damaging the road surface.



2-119

When transporting equipment on the 3-point linkage, implement bounce can lead to lack of steering control at transport speeds. With Ride Control selected, when the front wheels hit a bump, causing the front of the tractor to rise, the hydraulic system will immediately react to counter the movement and minimise implement bounce to provide a smoother ride.

To engage Ride Control, select Position Control by turning the knob (2) Figure 2-119 fully anti-clockwise. Fully depress the symbol end of the raise/lower switch to raise the implement to the height set by the height limit control (1). Turn the drop rate control knob (3) fully anti-clockwise to the transport lock position (padlock symbol).

Ride Control will only operate at speeds above 8 kph (5 MPH). When tractor speed exceeds 8 kph (5 MPH), the implement will drop by 4 – 5 points (as displayed on the instrument panel) as the hydraulic system makes corrections to counteract implement bounce. When tractor speed falls below 8 kph (5 MPH) the implement will raise again to the height set by the height limit control and Ride Control will become inoperative.

Arc Welding On Tractors Equipped With On-board Computer

- *Disconnect both battery cables and isolate the cable ends to avoid contact with each other and the tractor.*

NOTE: *After disconnection and subsequent reconnection of the battery, the error code '32' will appear in the instrument panel main display for 5 seconds when the key-start switch is turned on. No action need be taken unless this code re-appears. Check the fuses. If satisfactory, then the tractor may need the attention of your New Holland dealer.*

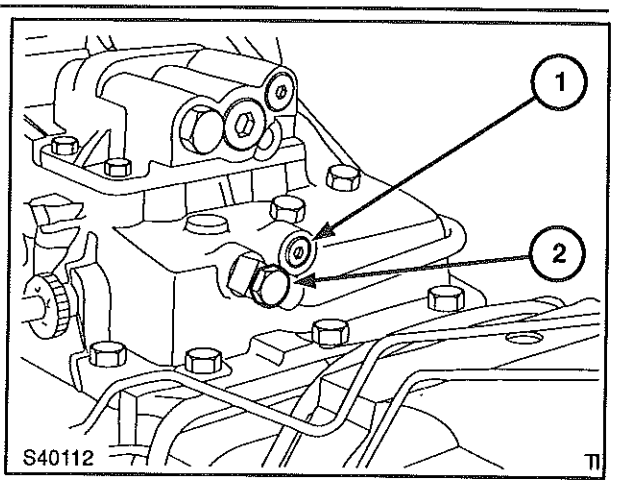
- *Position the welder earth clamp as close to the welding area as possible.*

- *If welding is to be carried out in close proximity to a computer module, then the module should be removed from the tractor. It is recommended that this procedure be carried out by a New Holland dealer.*

- *Never allow welding cables to lay on, near or across any electrical wiring or electronic component while welding is in progress.*

REMOTE CYLINDERS

Remote cylinders may be operated in conjunction with the 3-point linkage by connecting the hose to the live tapping (1) Figure 2-120. The live tapping is in the same circuit as the 3-point linkage.



2-120

To extend the remote cylinder pull the lift control (1) Figure 2-121, lever to the rear of the neutral point. When fully extended, return the lift control lever to the neutral position to avoid blowing the hydraulic system relief valve.

Push the lift control lever forward of the neutral position to retract the remote cylinder.

Ensure that oil contained within the remote cylinders is clean, has not broken down due to long storage and is of the correct grade. Contaminated oil within the cylinders will be drawn into the tractor hydraulic system when the cylinders are in use and may cause early failure of transmission, rear axle or hydraulic components.

DE LUXE REMOTE CONTROL VALVES (where fitted)

WARNING: *Hydraulic fluid or diesel oil escaping under pressure can penetrate the skin causing serious injury.*

- *Do **not** use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks.*
- *Stop the engine and relieve pressure before connecting or disconnecting lines.*
- *Tighten all connections before starting the engine or pressurising lines.*

If any fluid is injected into the skin, obtain medical attention immediately or gangrene may result.

De luxe remote control valves are available to operate external hydraulic cylinders, motors etc. Up to four remote control valves may be installed and are located at the rear of the tractor. Valves one and two are installed to the right of the hydraulic top link, valves three and four to the left.

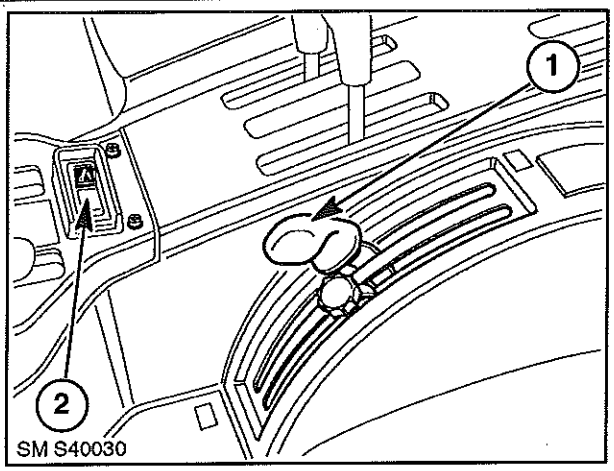
The valves are operated by levers which are located in the console to the right of the operator's seat. See Figure 2-122.

NOTE: *On tractors without cab, the levers for valves* I *and* II *are located in a panel to the right of the operator's seat, similar to that shown in Figure 2-122. However, the levers for valves* III *and* IIII *are located to the left of the seat, as shown in Figure 2-123.*

The levers and their respective valves are colour coded for identification and the valves are also numbered as shown in the following chart:

Lever Position	Lever Colour	Valve Position/No.
Right-hand front	Green	Right-hand outer – I
Left-hand front	Blue	Right-hand inner – II
Right-hand rear	Ginger	Left-hand inner – III
Left-hand rear	Black	Left-hand outer – IIII

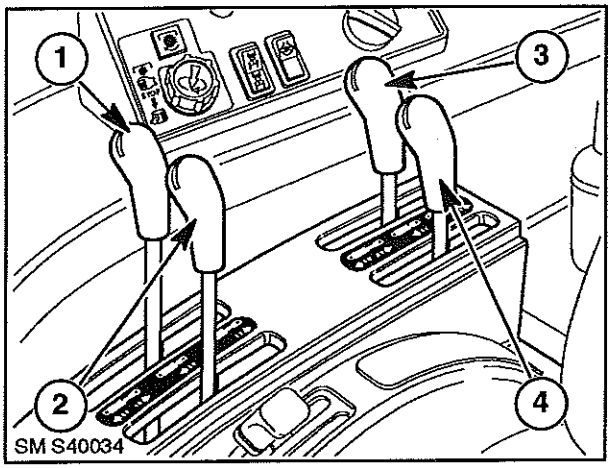
Each remote control valve lever has four operating positions, as follows:



2-121

Pull a lever back from the neutral position to extend the cylinder to which it is connected. Push the lever forward, past neutral, to retract the cylinder. Pushing the lever fully forward, beyond the 'retract' position, will select 'float' which will permit the cylinder to extend or retract freely, thereby allowing equipment such as scraper blades to 'float or follow the ground contour.

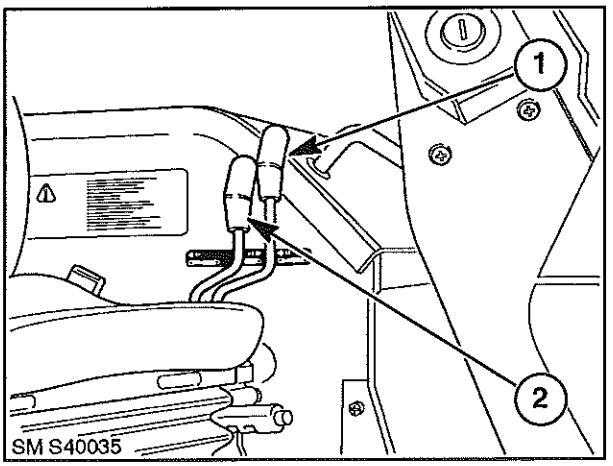
The float position is also used for retracting a single-acting ram cylinder, such as when lowering a tipping trailer, etc. (see **Operating Single-Acting Cylinders** later in this section).



2-122

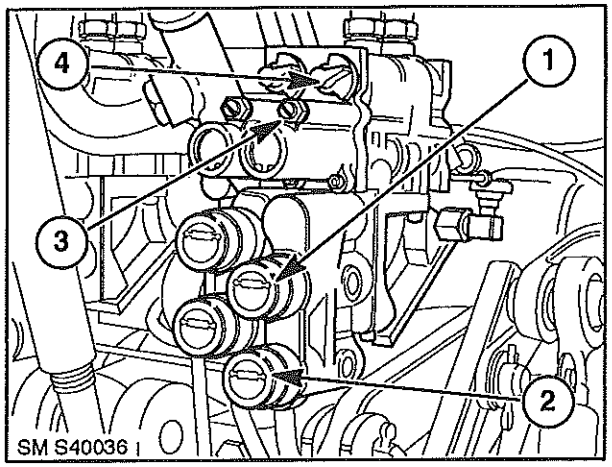
The extend, neutral, retract and float positions are identified by symbols on a decal adjacent to the control levers.

A detent will hold the lever in the selected extend or retract position until the remote cylinder reaches the end of the stroke when the control lever will automatically return to neutral. Alternatively, the lever may be returned to neutral manually. The lever will not return automatically from the float position. A detent screw is provided on each remote control valve and may be adjusted to vary the system pressure required to return the lever automatically to the neutral position.



2-123

NOTE: *Do not hold the lever in the extend or retract position once the remote cylinder has reached the end of the stroke as this will cause the relief valve to 'blow'. Forcing oil through the relief valve for extended periods will overheat the oil and may lead to failure of hydraulic and driveline components.*



2-124

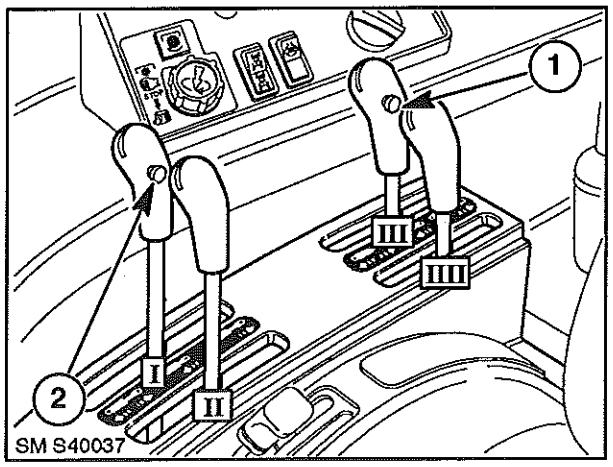
To adjust that system pressure at which the remote control valve lever automatically returns to neutral, turn the screw (3) Figure 2-124. Turning the screw clockwise (in) will increase the pressure at which the valve kicks out. Turning the screw anti-clockwise (out) will decrease pressure. and the valve will kick out more readily.

Each remote control valve has its own flow control valve (4) Figure 2-124 and a pair of couplers. The couplers are of a self-sealing/locking design but will allow remote cylinder hoses to pull free if the implement should become disconnected from the tractor. The upper (lift) coupler (1) Figure 2-124, is identified by an 'extended cylinder' symbol moulded into the rubber dust cap. The lower (drop) coupler (2) Figure 2-124, has a 'retracted cylinder' symbol.

Lock-out Valves (where fitted) – Figure 2-125

A lock-out feature is available on remote valves I and III to prevent inadvertent lowering of implements connected to these valves.

The control valve levers may be recognised by the buttons (1) and (2) on the side. These remote control valves are operated in exactly the same way as conventional valves except that during the lowering cycle it is necessary to override the lock-out feature.



2-125

To lower an implement connected to one of these valves, press and hold in the button while moving the lever forward to the 'lower' position.

NOTE: *With a remote cylinder connected into a lock-out valve it is not possible to operate in the float position. If it is required to use the float feature, connect the cylinder to remote control valves* II *or* III.

Connecting Remote Cylinders – Figures 2-126 to 2-128

WARNING: *Before connecting or disconnecting hydraulic hoses at the remote cylinders, stop the engine and relieve the pressure in the circuit by moving the remote control valve lever(s) fully forward to the 'float' position then back to neutral. Never work under or allow anyone near raised equipment as it will drop when relieving pressure in the system.*

WARNING: *Before disconnecting cylinders or equipment ensure the equipment or implement is supported securely.*

IMPORTANT: *Before connecting remote cylinder hoses, stop the engine and thoroughly clean the connections to prevent oil contamination. Remote cylinders are operated by oil drawn from the tractor hydraulic system, therefore, always check and replenish the hydraulic system oil after remote cylinder equipment has been connected and cycled a few times. Operating the tractor with a low oil level may result in damage to the rear axle and transmission components.*

NOTE: *When topping up the rear axle to accommodate the requirement of remote cylinders, no more than 45 litres (10.0 Imp. Gallons) should be added to bring the oil level up to the full mark on the dipstick. Alternatively, remote cylinders with a total oil capacity of up to 18 litres (4.0 Imp. Gallons) may be connected to the tractor hydraulic system without adding oil, provided that the tractor is being operated on level ground.*

To connect a remote cylinder, insert the feed and/or return hose through the slit in the appropriate dust cap, ensuring it is correctly seated in the coupler. Ensure that there is sufficient slack in the hose(s) to allow the tractor/implement to turn in either direction.

To equalise the pressure in the hose and tractor couplers, start the engine and move the valve control lever to the 'float' position, then return it to neutral. To disconnect, grip the hose a short distance from the coupler, push the hose forward, into the coupler, then quickly pull on the hose to 'pop' the coupler free.

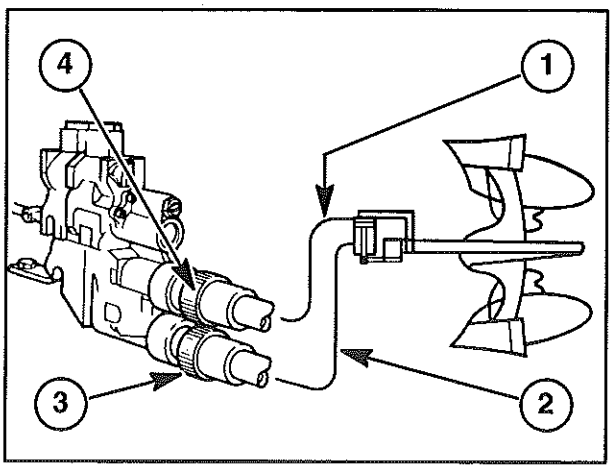
WARNING: *Never work under equipment supported by a hydraulic device because it may drop if the control is actuated (even with the engine stopped) or in the event of hose failure, etc. Always use a secure support for equipment which must be serviced while in the raised position.*

The flow control valve (4) Figure 2-124, meters the flow of oil to the remote cylinder and thus controls the rate of response of the cylinder.

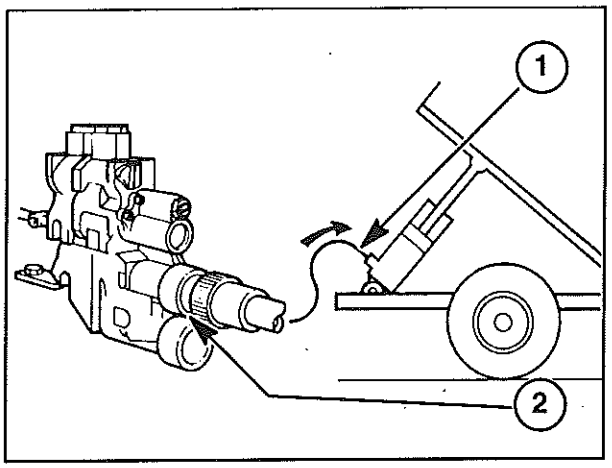
Turn the flow control knob anti-clockwise (hare symbol uppermost) to increase the rate of oil flow. Turn the knob clockwise (tortoise symbol uppermost) to decrease the rate of flow. For flow rates, see Section 4 – Specifications.

Operating Double-Acting Cylinders – Figure 2-126

Connect the **feed** hose (1) between the **piston end** of a double-acting cylinder and the **upper** coupler (4) on the remote control valve. Connect the **return** hose (2) between the **lower** coupler (3) on the same valve and the **rod end** of the cylinder. To extend a double-acting cylinder, pull the control lever towards you, to the 'raise' position.



2-126



2-127

To retract a double-acting cylinder, push the control lever away from you, past neutral to the 'lower' position.

Further movement of the lever away from you will select 'float' which will allow the cylinder to extend or retract freely. This feature is of material assistance when carrying out work with equipment such as scraper blades and loaders.

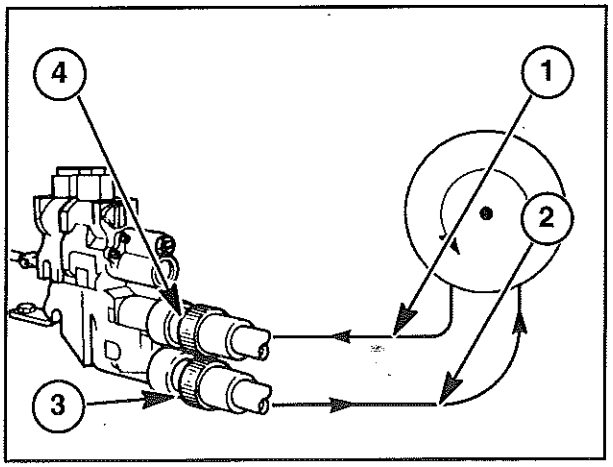
Operating Single-Acting Cylinders – Figure 2-127
Connect the hose (1) from a single-acting cylinder to the **upper** coupler (2) on the remote control valve, as previously described.

To extend a single-acting cylinder, pull the control lever toward you, to the 'raise' position.

Manually return the lever to the neutral position to stop the cylinder before it is fully extended or allow the valve to return to the neutral automatically when the cylinder reaches the end of it's stroke.

To retract a single-acting cylinder, move the lever fully away from you, to the 'float' position.

IMPORTANT: *Always use the 'float' position to lower a single-acting cylinder. The 'lower' position is for double-acting cylinders only.*



2-128

Operating Continuous Flow Hydraulic Equipment – Figure 2-128
Continuous flow hydraulic equipment (e.g. hydraulic motors) should be connected to remote control valve coupler with the **feed** hose (2) connected to the **lower** coupler (3) and the **return** hose (1) connected to the **upper** coupler (4) of the same valve.

With the remote control valve lever fully away from you, in the 'float' position the motor will be stationary. The hydraulic motor will operate if the lever is pulled towards you, to the 'raise' position.

IMPORTANT: *To stop the motor, move the lever fully away from you, beyond the 'lower' position to the 'float' position. The motor will then slow to a halt and not stop abruptly causing internal line pressures which, unless relieved by special valving, could damage the motor seals.*

Observe the following to further protect the tractor and equipment:

- Do not open any by-pass valve in the equipment or motor. Use the flow control valve to control the rate of flow or speed of the motor.

- Do not hold the remote control valve lever to operate the equipment. If the detent will not hold the lever, adjust the detent screw (3) Figure 2-124, as previously described, check the equipment for proper adjustment or contact your dealer for assistance in adapting the equipment to suit the tractor.

- To assure optimum hydraulic oil cooling and prevent overheating, operate continuous flow equipment at the highest flow setting (by use of the flow control valve) and lowest engine speed that will give the required machine performance and speed.

- It is recommended that a temperature gauge, where available, is installed in the remote circuit when using hydraulic motors for continuous operation. If over-heating occurs, stop the hydraulic motor until the oil cools. Ensure the flow control setting is at maximum and the engine speed at a minimum, appropriate to machine performance.

  If operating conditions are normal and high temperatures persist, install an oil cooler in the motor return circuit. The maximum recommended operating temperature of the oil is 110°C (230°F).

Your dealer can supply a suitable oil cooler and the necessary fittings or make the installation for you.

Operating Several Remote Valves Simultaneously or Remote Valves and Hydraulic Lift Simultaneously

NOTE: *The variable displacement pump fitted to tractors with the closed centre load-sensing system adjusts the oil flow according to the individual flow control settings up to the maximum output possible, dependent upon engine speed. The oil flow will be relatively constant in the remote control valve circuits if the flow control valves are used to regulate the flow, thus providing constant operating speed for hydraulic motors, etc., even if engine speed varies. Maintain the engine speed above the minimum required for simultaneous operation of all the required circuits and vary ground speed by selection of the appropriate gear ratio.*

If operating two or more remote control valves simultaneously or remote valves and the hydraulic lift, all the flow control valves should be adjusted to provide a partial flow. If not so adjusted, all the available flow may be directed to the full flow circuit when the pressure in that circuit is less than that of the other circuits in use.

Bleeding Remote Cylinders

When connecting a cylinder with trapped air, i.e., a new cylinder, one that has been out of service or one that has had the hoses disconnected, it will be necessary to bleed the cylinder to remove the air.

With the hoses connected to the remote control valve couplers at the rear of the tractor, position the cylinder with the hose end uppermost and extend and retract the cylinder seven or eight times using the remote control valve operating lever.

Check the rear axle oil level before and after operating a remote cylinder.

THREE-POINT LINKAGE

NOTE: *Before attaching equipment read this section carefully.*

ATTACHING 3-POINT EQUIPMENT

NOTE: *Before attaching equipment, adjust lift rods and select the correct top link hole for the implement and work to be carried out.*

Ensure that the telescopic stabilisers are installed and correctly adjusted. Remove the swinging drawbar if close-mounted equipment is being attached.

IMPORTANT: *Always select Position Control when attaching equipment, transporting equipment, when no equipment is attached or at any time when not operating in Draft Control.*

Most equipment can be attached to your tractor as follows:

1. Position the tractor so that the lower link hitch points are level with and slightly ahead of the implement hitch pins. Carefully inch the tractor rearwards to align the tractor and implement hitch points.

2. Attach the implement to the lower links, as described in 'FLEXIBLE LINK ENDS' or 'WALTERSCHEID HITCH' later in this section.

WARNING: *Engage the parking brake before leaving the tractor to make the connections. It is essential to have the engine running to operate the external fender-mounted switches when making lower link connections. If your tractor does not have these switches or when making other connections, stop the engine.*

IMPORTANT: *Before transporting or operating equipment, ensure that the flexible link ends (where fitted) are locked in the operating position.*

3. With the engine stopped and parking brake engaged, adjust the top link until the implement mast pin can be inserted through the mast and top link. Adjust the top link to the initial 724 mm (28.5 in.) setting.

4. Connect remote equipment, where applicable.

5. After attaching implement and before actual operation check that:

- No interference occurs with tractor components.

- The top link does not contact the PTO guard with the implement at its lowest position.

IMPORTANT: *Before operating PTO driven equipment, check to make sure that the PTO driveline will not over-extend so as to become disengaged, bottom out or be at an excessive angle. Ensure that the driveline shield does not contact the PTO guard or drawbar. See* **'Attaching P.T.O. Driven Equipment'** *earlier in this section.*

IMPORTANT: *When attaching mounted or semi-mounted equipment to the 3-point linkage or when attaching trailed equipment to the drawbar or hitch, ensure that there is adequate clearance between the implement and the tractor. Semi-mounted or trailed equipment may interfere with the tractor rear tires. If necessary, adjust steering stops (four wheel drive only) or stabilisers.*

Implement to Cab/Platform Clearance

WARNING: *Some mounted and semi-mounted equipment may interfere with and damage the cab or platform. You may be injured by broken glass or the cab ROPS may be damaged if equipment interferes with the cab or platform.*

To prevent tractor damage, proceed as follows:

- Attach the equipment as outlined previously.
- Check for adequate clearance by slowly raising the equipment with the lift control lever in Position Control. If any part of the equipment comes closer than 100 mm (4 in.) to the cab, adopt one of the following options:

A Position Control Operation

If your tractor has top link sensing hydraulics, install the adjustable stop to the rear of the lift control lever to prevent excessive lift. If your tractor is equipped with Electronic Draft Control, adjust the height limit control knob to limit upward movement.

B Draft or Position Control Operation

If Draft Control is needed or if insufficient ground clearance is obtained with adequate cab clearance, you can adjust the lift linkage, remove the cab rear window, or modify the equipment to clear the cab. Linkage adjustments, while increasing cab clearance, may have an adverse effect on the implement operating characteristics

a. Set the lift rods in the front hole in the lower links. This will reduce the lift height (dependent upon the lift rod length).

b. Lengthen the lift rods.

c. Connect the top link to the upper hole in the hydraulic lift rocker or top link attachment bracket and use the lowest possible equipment mast hole.

d. Make only the minimum adjustments required to clear the cab. If equipment performance is unsatisfactory, proceed as follows.

C. Rear Window Removal

Open or remove the rear window.

D. Equipment Modification

You dealer has the information and material to best modify equipment for use with your tractor.

Removing Equipment

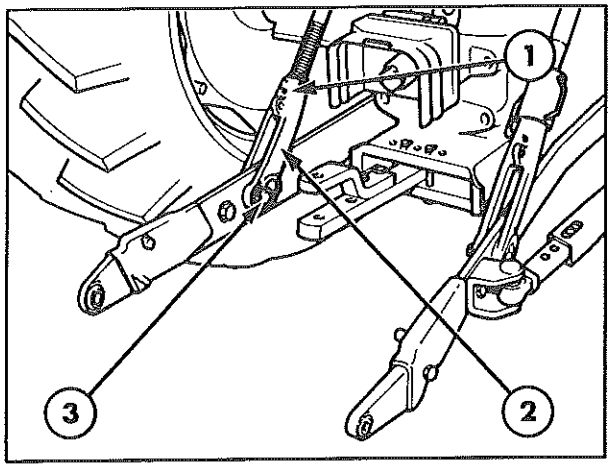
When removing equipment, the procedure is the reverse of attaching. The following information will make disconnection easier and safer.

- Always park the equipment on a firm, level surface.
- Support equipment so that it will not tip or fall when detached from the tractor.
- Always relieve all hydraulic pressure in remote cylinders by selecting the float position before disconnecting.

When attaching mounted equipment to the three-point linkage, the following adjustments may be made to ensure satisfactory operation:

LIFT RODS, LOWER LINKS AND TOP LINK – Figure 2-129

WARNING: *Before disconnecting a lift rod from the lower link, stop the engine and lower attached equipment to the ground. Before removing the securing pin, ensure that attached equipment is correctly supported and that no residual pressure remains in the hydraulic system. Move the hydraulic lift control lever backwards and forwards several times, in order to remove residual pressure, then move the lever fully forward. When adjusting lift rods, ensure that at least 40 mm (1.6 in.) of thread remains engaged in the lower end of the lift rod assembly.*

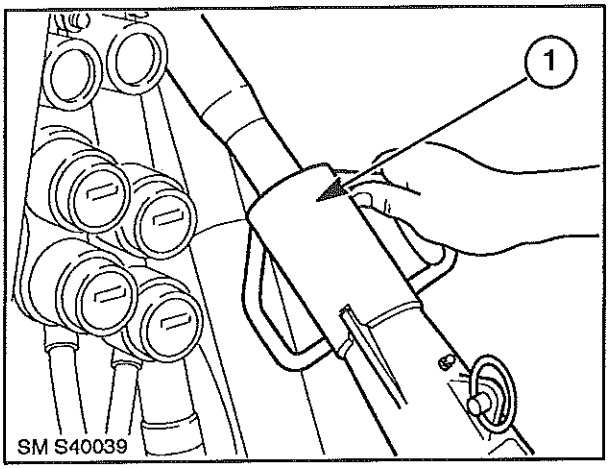


2-129

Lower Links and Left-hand Lift Rod – Figure 2-129

Each lower link has three holes for attachment of the lift rods. When the tractor leaves the factory, the lift rods are connected to the rear hole in each lower link to give maximum lift capacity. If required, attach the lift rods to the front hole (nearest the tractor) for maximum lift height. The centre hole offers a compromise between the optimum lift height and lift capacity.

NOTE: *Both left and right-hand lift rods have a slot as well as a round hole at the lower end. If the pin (3) Figure 2-129, is inserted through the slotted hole this will allow an implement limited vertical movement independent of the tractor which is a useful feature for the operation of wide implements.*

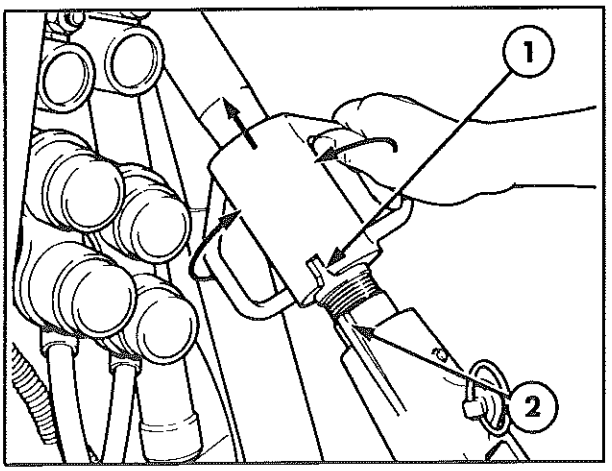


2-130

To adjust the left-hand lift rod, remove the pin (3), turn the lower end of the lift rod (2) to lengthen or shorten the lift rod assembly, as required. Replace the pin and secure with the linch pin. After adjustment, ensure that the grease fitting (1) is facing rearwards.

Right-hand Lift Rod – Figure 2-130

Dependent upon model and specification level, the right-hand lift rod is adjusted either by means of a turnbuckle on the lift rod or a crank handle conveniently mounted on the cab rear frame or on the right-hand fender (tractors without cab). See Figures 2-130 and 2-131, as appropriate.



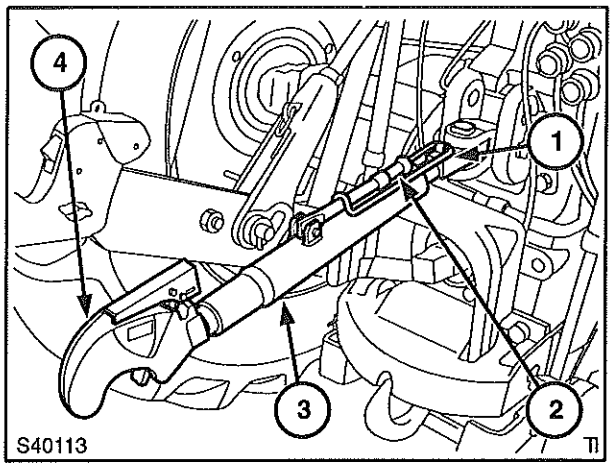
2-131

The lift rod shown in Figure 2-130, is adjusted by rotating the upper part of the lift rod by means of the handles on the turnbuckle (1).

Before the turnbuckle can be rotated, it is necessary to lift the turnbuckle to disengage the slot (1) Figure 2-131, from the lug (2) on the lower section of the lift rod. Rotate the turnbuckle to lengthen or shorten the lift rod assembly.

When adjustment is satisfactory, allow the turnbuckle to lower into position. Ensure that the turnbuckle is fully down and that the slot engages with the lug to prevent unintentional rotation.

IMPORTANT: *When attaching mounted or semi-mounted equipment to the 3-point linkage or when coupling trailed equipment to the drawbar, ensure that there is adequate clearance between the implement and the cab or rear window in any open position.*



2-132

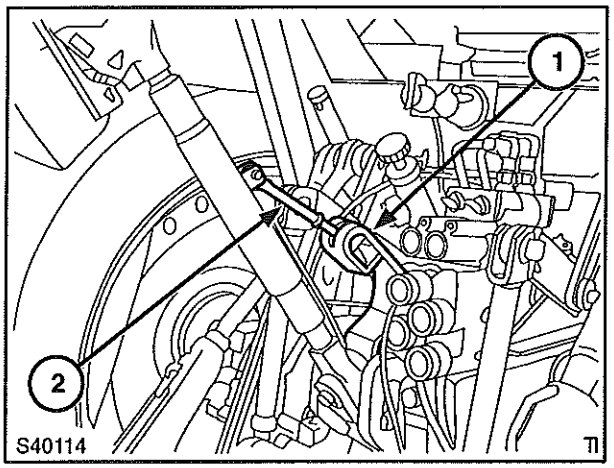
Top Link – Figures 2-132 and 2-133

The top link has a threaded centre section (3) Figure 2-132, which, when rotated, will shorten or lengthen the top link, as required. Lift up the spring retainer (1) to allow the centre section (3) to rotate. To ease adjustment, lift the handle (2) and use it as a tommy bar. Alternatively, rotating the link end (4) will permit limited adjustment of top link length.

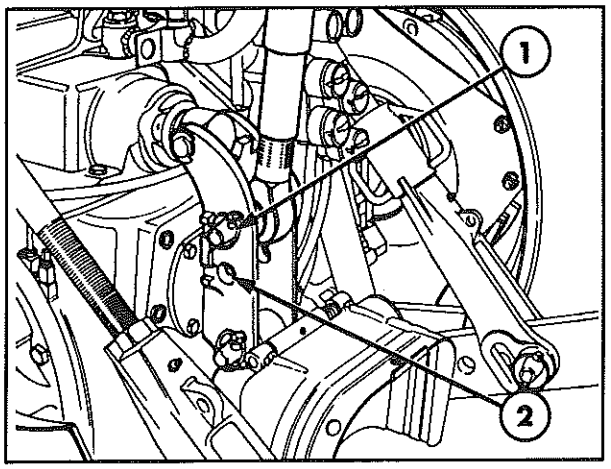
To prevent further rotation of the sleeve after adjustment, push the spring retainer down so that it holds the handle flush against the sleeve, as shown in Figure 2-132.

When not in use, the top link can be removed and stored or left in an upright position and retained by hooking the ball end of the locking latch (2) Figure 2-133, into the bracket (1) on the rear axle housing, as shown.

Most equipment will operate at the proper height when the top link is adjusted to 685 mm (27 in.) measured between the centres of the attaching points. Re-adjust to level the equipment, as required.



2-133



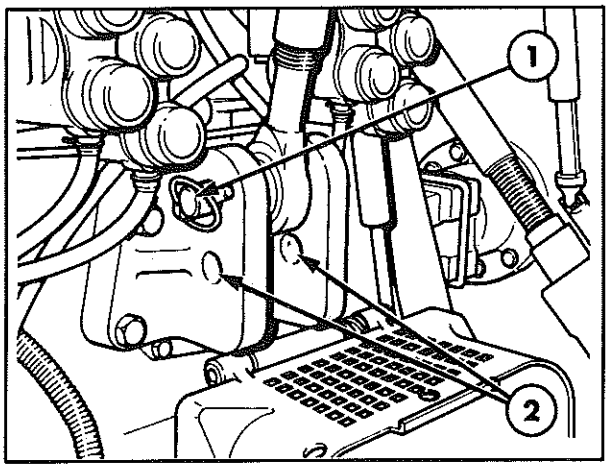
2-134

HYDRAULIC LIFT ROCKER (Top Link Sensing hydraulics only) – Figure 2-134

When operating in Draft Control, draft signals are transmitted via the top link and hydraulic lift rocker to the control valve within the hydraulic system. The draft signal transmitted may be varied by adjustment of the lift rocker connections.

The hydraulic lift rocker, which pivots about the lower fixing pin, has two holes for attachment of the top link.

With the top link attaching pin in the upper hole, as shown, the hydraulic system is more sensitive to changes in draft loading and is the recommended setting for light draft loads and equipment. Use the lower hole for heavier draft loads and equipment.

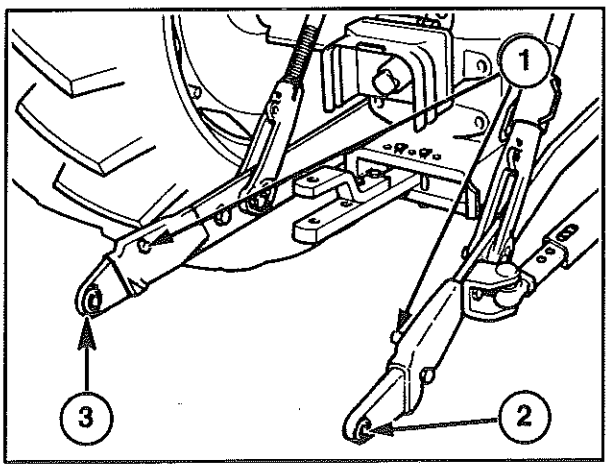


2-135

TOP LINK CONNECTION BRACKET (Electronic Draft Control only) – Figure 2-135

Draft loads are sensed by the lower links, therefore the top link is attached to a bracket rigidly fixed to the rear axle housing.

Two holes are provided in the bracket for attachment of the top link. Insert the pin (1) through the upper hole, as shown, for maximum lift capacity and the greatest implement to cab clearance. Use the lower hole (2) for the best ground penetration and greatest implement to ground clearance (when the implement is raised).



2-136

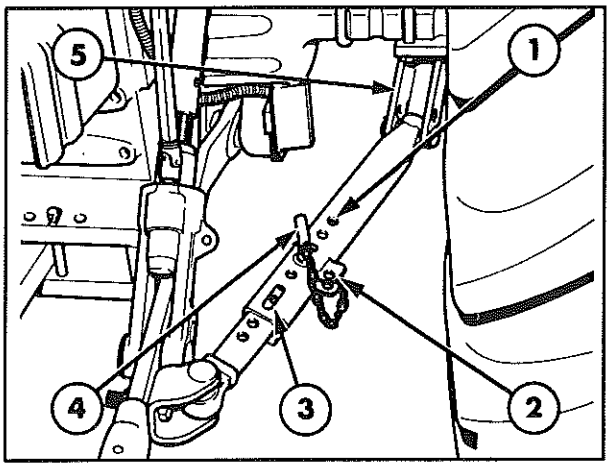
FLEXIBLE LINK ENDS (where fitted) – Figure 2-136

A release lever (1) is provided on the inner surface of each lower link. Pull the levers (1) up to release the link ends. With the link ends released, connection to the implement will be easier. The link end (2) is shown in the extended position. The link end (3) is shown in the closed (operating) position.

With both link ends extended, connect the link ends to the equipment and secure with linch pins. Start the engine and carefully inch the tractor rearwards until both flexible link ends lock in the operating (closed) position (3). Stop the engine and engage the parking brake.

Attach the top link.

IMPORTANT: *Before transporting or operating the equipment, make sure the flexible link ends are locked in the operating position. Remove the drawbar if it interferes with close-mounted equipment.*



2-137

TELESCOPIC STABILISERS – Figure 2-137
Telescopic stabilisers are fitted as standard, in place of conventional check chains.

WARNING: *Never operate steerable equipment unless the telescopic stabilisers are installed and correctly adjusted to prevent excessive lateral movement.*

The telescopic stabilisers will control the sway of the lower links and attached equipment when in work or when being transported. This is especially important when operating on slopes or near fences, walls or ditches and with certain implements. Check your Implement Operator's Manual.

Each stabiliser consists of a fabricated, square-section tube attached to a mounting bracket bolted to the outer ends of the rear axle housing. A smaller, square-section tube, attached to the lower links, is a loose, sliding fit within the tube and the overall length of the assembly is determined by the position of a pin that may be passed through a slot or drillings in the tube and rod.

The holes in the inner and outer sections are drilled at different centres so a wide range of stabiliser settings may be achieved by selection of the most suitable pair of holes.

In practice, the implement should be attached to the 3-point linkage with the locating pin removed from both stabilisers. When the implement is satisfactorily aligned, the locating pins should be passed through any one of the five holes in the outer sections that align with one of the holes in the sliding inner section. With the pins inserted in this manner, both stabilisers will be locked as a rigid unit and the implement will be prevented from swaying both in work or in the transport position.

The front of each stabiliser is attached by a pin passing through holes in the mounting brackets. The stabilisers are normally attached to the **lower** hole in each bracket to provide parallel lift.

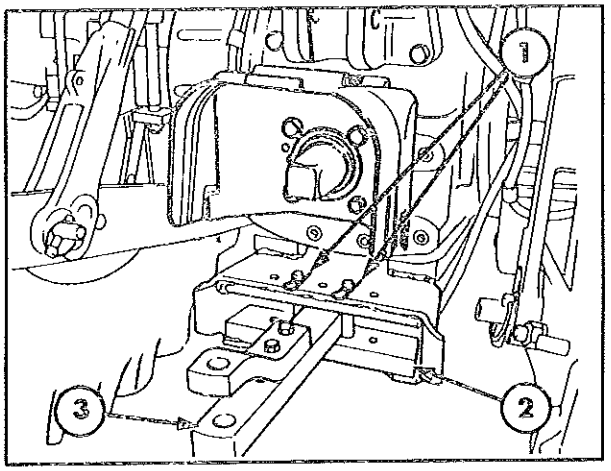
IMPORTANT: *The **lower** hole is the **only** hole to which the stabilisers may be connected when locked as a **rigid** unit, as described above, otherwise damage to the lower links may occur when the linkage is raised.*

Under certain conditions or when using equipment such as ploughs etc., it may be desirable to allow the 3-point linkage (and implement) to sway from side to side. If the pin is inserted through the slot in the outer section to engage one of the holes in the inner section, a limited degree of sway will be permitted.

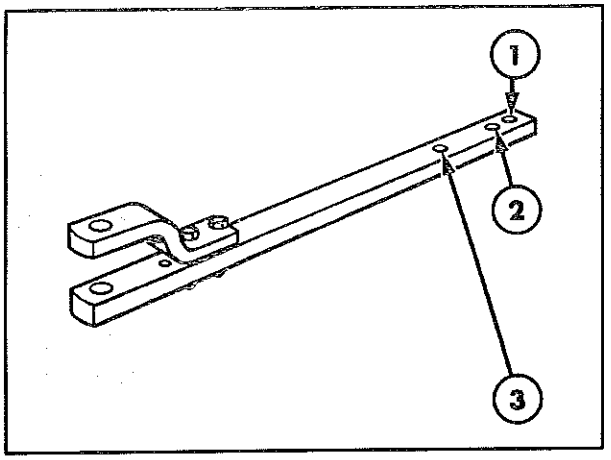
When the stabiliser is attached to the **upper** hole in the front mounting bracket the stabilisers will allow the implement to sway in work with reduced sway when the implement is raised. This feature is useful as it provides greater implement control when turning on the headlands of a field.

A hole in the bracket (2), welded to each outer section, provides a storage position for the pins when the stabilisers are not in use.

IMPORTANT: *When setting the stabiliser length, particularly if using the sway facility, ensure that there is no possibility of the rear tires fouling the stabilisers or lower links.*



2-138



2-139

DRAWBARS AND TOWING ATTACHMENTS

ATTACHING/DETACHING TRAILED EQUIPMENT

IMPORTANT: *Regulations in some areas require brakes on towed equipment when operating on the public highway. Before travelling on public roads, make sure you comply with legal requirements. In the U.K. you are required to comply with the Road Vehicles (Construction and Use) Regulations – latest edition.*

To attach the tractor to trailed equipment and implements:

1. Ensure that the implement is at draw bar height.

2. Slowly inch rearwards to allow the drawbar and implement hitch to align.

3. Apply the parking brake and stop the engine.

4. Insert the hitch pin and ensure that the retainer is in the latched position.

IMPORTANT: *When attaching mounted or semi-mounted equipment to the 3-point linkage or when attaching trailed equipment to the drawbar or hitch, ensure that there is adequate clearance between the implement and the tractor. Semi-mounted or trailed equipment may interfere with the tractor rear tires. If necessary, adjust steering stops (four wheel drive only) or stabilisers.*

NOTE: *For implements that require hitch extensions or interfere with the tractor clevis, remove and store the clevis and hitch pin.*

Always use a safety chain installed between the tractor and implement hitch when transporting equipment on the highway.

Observe the following precautions for towing equipment not equipped with brakes:

- Do not tow equipment weighing more than twice the tractor weight.
- Do not exceed 10 MPH (16 km/h) if towed equipment weighs more than the tractor.
- Do not exceed 20 MPH (32 km/h) while towing equipment that weighs less than the tractor.

SWINGING DRAWBARS – Figures 2-138 to 2-141

Two types of swinging drawbar are available. The sliding type is illustrated in Figure 2-138. The roller type, shown in Figure 2-140, is recommended when heavy draft, trailed equipment is used for extended periods. This drawbar is mounted on rollers and offers additional turning ease when compared with the sliding type.

Sliding Type Swinging Drawbar – Figures 2-138 and 2-139

The drawbar (3) Figure 2-138, pivots about a single pin at the front end so as to allow the rear of the drawbar to swing the full width of the hanger (2). By inserting the swing limiter pins (1) in the appropriate holes, restricted movement of the drawbar is permitted. Alternatively, the drawbar can be pinned in any one of five positions by insertion of the pins in the appropriate holes. In Figure 2-138, the drawbar is shown pinned in the central position to prevent swinging.

Pin the drawbar to prevent swinging when pulling equipment which requires accurate positioning and when transporting equipment.

Allow the drawbar to swing when pulling ground engaging equipment which does not require accurate positioning. This will make steering and turning easier.

WARNING: *Always secure the drawbar to prevent swinging when transporting equipment or when operating any but ground engaging equipment.*

The drawbar is adjustable for height and projection relative to the end of the P.T.O. shaft. To vary the height of the drawbar/implement hitch point, remove the drawbar and invert it.

The front securing pin may be inserted in one of three holes in the drawbar to vary the P.T.O. shaft to hitch point distance. See Figure 2-139 and the following table:

Hole (see Fig. 2-139)	P.T.O. Shaft to Drawbar Hitch Point	Maximum Static Downward Load
Drawbar clevis uppermost		
1	406 mm (16 in.)	910 kg (2000 lb.)
2	356 mm (14 in.)	1065 kg (2350 lb.)
3	243 mm (9.6 in.)	1630 kg (3600 lb.)
Drawbar clevis underneath		
1	406 mm (16 in.)	910 kg (2000 lb.)
2	356 mm (14 in.)	1065 kg (2350 lb.)
3	243 mm (9.6 in.)	1135 kg (2500 lb.)

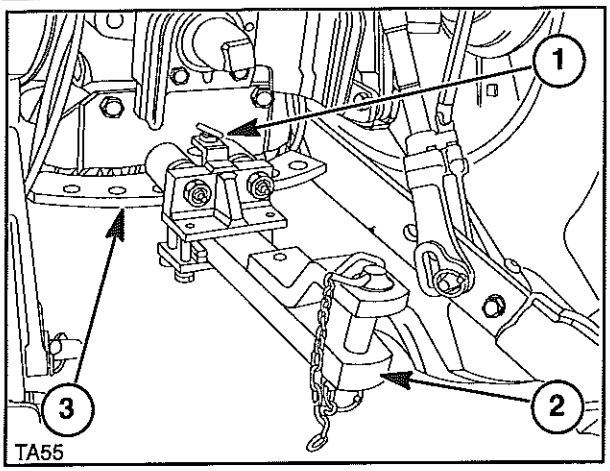
Use of hole 1 is required for 1000 rev/min P.T.O. operations and hole (2) for 540 rev/min P.T.O. operations.

When towing equipment exerting high static downward forces, such as two wheeled trailers, etc., use the close-coupled position – hole 3.

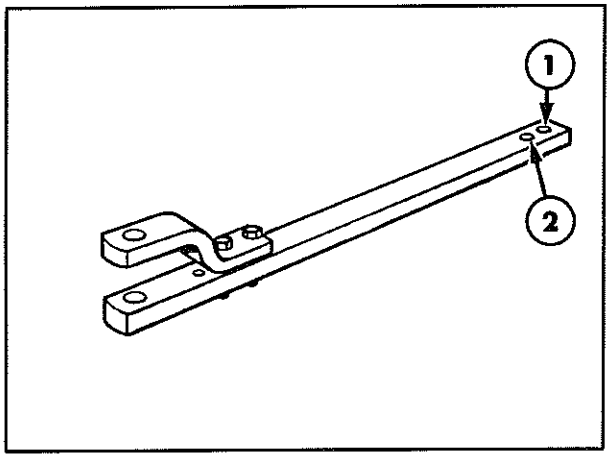
WARNING: *Do not pull from the lower links with the links above the horizontal position. Always use the drawbar, pick-up hitch or lower links in the lowered position for pull-type work, otherwise the tractor may overturn rearwards.*

NOTE: *When supporting equipment on the drawbar ensure that the total weight on the rear axle does not exceed the maximum static downward load or the rear tire load capacity, whichever is the lower (see* Tire Pressures and Permissible Loads *later in this section.*

IMPORTANT: *When transporting equipment on the highway it is recommended that a safety chain having a tensile strength equal to the gross weight of the implement be installed between the tractor and implement hitch. See* Safety Chain *later in this section.*



2-140



2-141

Roller Type Swinging Drawbar – Figures 2-140 and 2-141

The drawbar (2) Figure 2-140, pivots about a single pin at the front end so as to allow the rear of the drawbar to swing. By inserting the swing limiter pin (1) in the appropriate hole and through the drawbar, the drawbar can be pinned in any one of seven positions Alternatively, the drawbar may be allowed to swing the full width of the hanger (3).

Pin the drawbar to prevent swinging when pulling equipment which requires accurate positioning and when transporting equipment. Allow the drawbar to swing when pulling ground engaging equipment which does not require accurate positioning. This will make steering and turning easier.

WARNING: *Always secure the drawbar to prevent swinging when transporting equipment or when operating any but ground engaging equipment.*

The drawbar is adjustable for height and projection relative to the end of the P.T.O. shaft. To vary the height of the drawbar/implement hitch point, remove the drawbar and invert it.

The front securing pin may be inserted in one of two holes in the drawbar to vary the P.T.O. shaft to hitch point distance. See Figure 2-141 and the following table:

Hole (see Fig. 2-141)	P.T.O. Shaft to Drawbar Hitch Point	Maximum Static Downward Load
Drawbar clevis uppermost		
1	406 mm (16 in.)	1360 kg (3000 lb.)
2	356 mm (14 in.)	1630 kg (3600 lb.)
Drawbar clevis underneath		
1	406 mm (16 in.)	1135 kg (2500 lb.)
2	356 mm (14 in.)	1135 kg (2500 lb.)

Use of hole 1 is required for 1000 rev/min P.T.O. operations and hole 2 for 540 rev/min P.T.O. operations. When towing equipment exerting high static downward forces, such as two wheeled trailers, etc., use hole 2.

WARNING: *Do not pull from the lower links with the links above the horizontal position. Always use the drawbar, pick-up hitch or lower links in the lowered position for pull-type work, otherwise the tractor may overturn rearwards.*

NOTE: *When supporting equipment on the drawbar ensure that the total weight on the rear axle does not exceed the maximum static downward load or the rear tire load capacity, whichever is the lower (see* Tire Pressures and Permissible Loads *at the end of this section).*

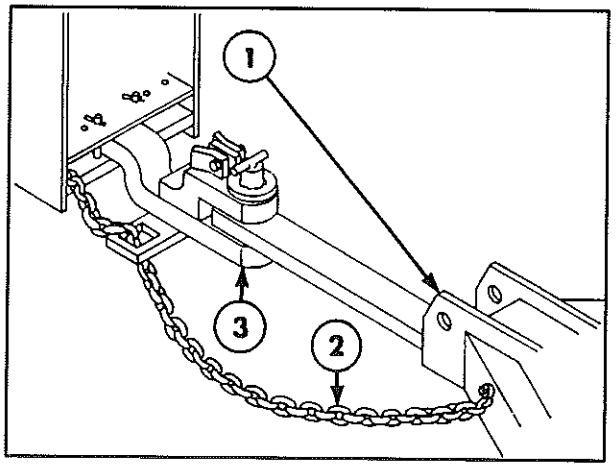
IMPORTANT: *When transporting equipment on the highway it is recommended that a safety chain having a tensile strength equal to the gross weight of the implement be installed between the tractor and implement hitch. See following text and Figure 2-142.*

SAFETY CHAIN – Figure 2-142

When towing implements (1) on public roads, use a safety chain (2) with a tensile strength equal to or greater than the gross weight of the implement to be towed. This will control the implement in the event the drawbar (3) and implement become disconnected.

After attaching the safety chain, make a trial run by driving the tractor to the right and to the left for a short distance to check the safety chain adjustment. If necessary, re-adjust to eliminate a tight or loose chain.

Check the implement operator's manual for implement weight and attaching hardware specifications.



2-142

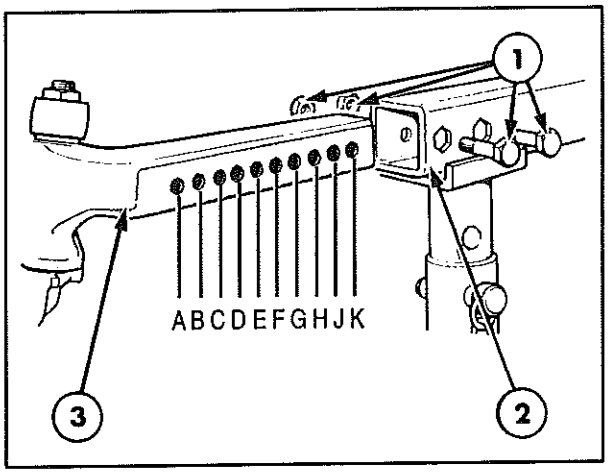
Safety chains, attaching hardware and chain guide are available from your authorised dealer.

FRONT WHEEL TRACK ADJUSTMENT (two wheel drive)

WARNING: *Your tractor is produced with lights that meet lighting regulations when operating or travelling on the public highway. If the wheel track setting is adjusted beyond the initial factory position then you may be required to reposition the lights or fit auxiliary lighting to comply with legal requirements.*

Additionally, before travelling on the highway, ensure that the overall tractor width does not exceed the maximum permitted in your country.

The front axle consists of a hollow centre beam with a telescopic section at each end – see Figure 2-143 (models up to 100 PS) or 2-144 (110 and 125 PS models).

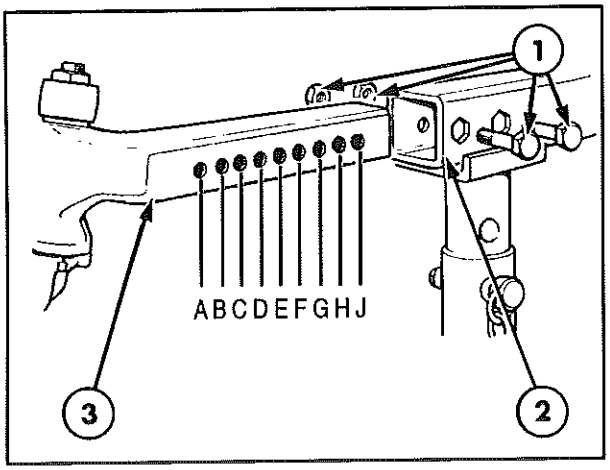


2-143

A number of holes at 50 mm (2 in.) intervals are provided in the telescopic sections for track adjustment purposes. Adjustment of the front wheel track width is effected by extending **both** ends of the axle **equally.**

NOTE: *The track width is the distance between the centre of each tire, measured at ground level.*

To extend the axle, apply the handbrake and place blocks at the front and rear of the rear wheels. Jack up the front axle and place on axle stands. Remove the securing bolts (1) Figure 2-143 or 2-144, securing the right-hand telescopic section to the centre beam.



2-144

Repeat on the left-hand side of the axle.

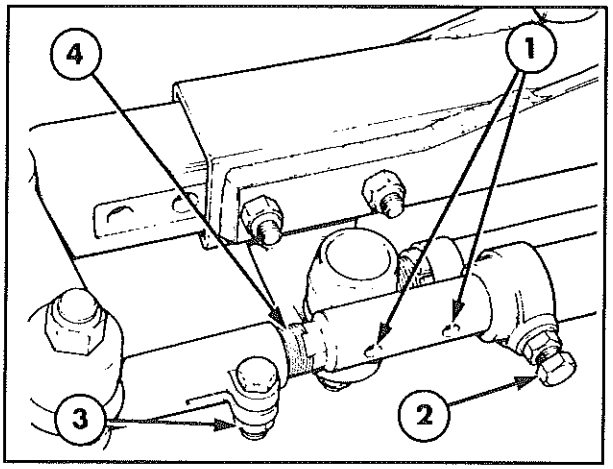
The track control rod located behind the axle must be disengaged to permit adjustment of the axle. The track control rod is telescopic and consists of a central hollow tube with a solid extendible section at each end.

The left-hand end of the track control rod is shown in Figure 2-145. Figure 2-146 shows the right-hand end. The extendible sections are drilled at 50 mm (2 in.) intervals and two locating bolts pass through the tube and into the solid sections to lock the track rod assembly at the desired length. Additionally, the

left-hand end of the solid section is threaded to provide fine adjustment.

Loosen the locknuts and remove the locating bolts (2) Figures 2-145 and 2-146, from both ends of the track rod.

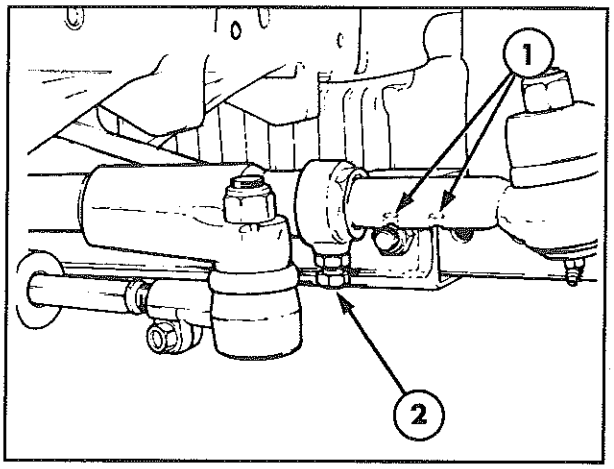
Reset the left and right-hand axle telescopic sections, passing the securing bolts through the centre beam and telescopic sections, as indicated in Figure 2-147 or 2-148 (according to model) and the following tables:



2-145

Models up to 100 PS

Track Setting mm	(in.)	Securing Bolt Locations Refer to Figure 2-147	
1422	(56)	A	C
1524	(60)	B	D
1626	(64)	C	E
1727	(68)	D	F
1829	(72)	E	G
1930	(76)	F	H
2032	(80)	G	J
2134	(84)	H	K

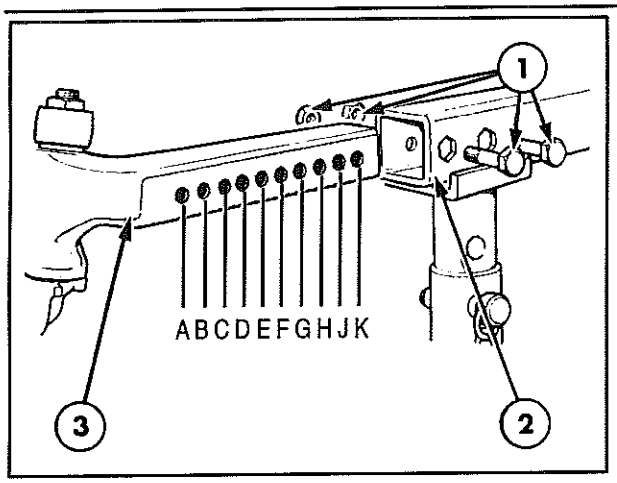


2-146

110 and 125 PS Models

Track Setting mm	(in.)	Securing Bolt Locations Refer to Figure 2-148	
1524	(60)	A	C
1626	(64)	B	D
1727	(68)	C	E
1829	(72)	D	F
1930	(76)	E	G
2032	(80)	F	H
2134	(84)	G	J

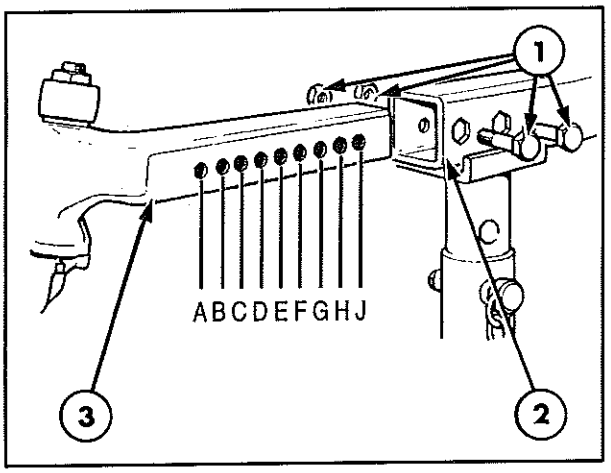
NOTE: *All models – The track settings shown are approximate. The front wheel discs are off-set relative to the centre line of the rim. The track settings in the tables above are with the dished side of the wheel nearest the axle hub. If the front wheels are reversed on the hubs the track settings shown in the tables will be increased by approximately 100 mm (4 in.).*



2-147

Position both front wheels straight ahead and install the locating bolts (2) Figures 2-145 and 2-146, in the appropriate drilling (1) at each end of the track control rod.

Tighten the nuts on the axle extension securing bolts to 400 Nm (300 lbf.ft.). Tighten the locating bolts (2) Figures 2-145 and 2-146, to 150 Nm (110 lbf. ft.) and their locknuts to 75 Nm (55 lbf. ft.). Re-check all torque settings after 50 hours of operation.



2-148

Front Wheel Toe-out – Figure 2-145

After resetting the track width, the front wheel toe-out may require adjustment. For correct operation, the front wheels should be parallel or toe **out** slightly.

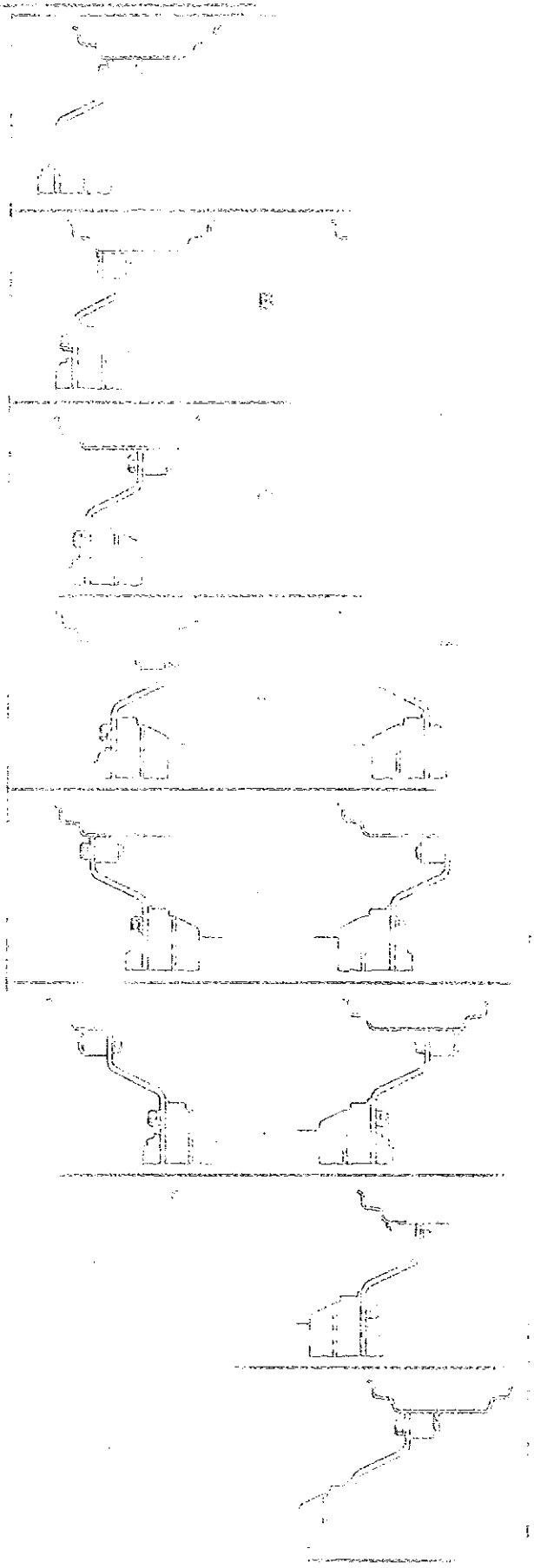
Measure the distance between the wheel rims at hub height at the **front** of the wheels. Rotate both front wheels 180° and check the measurements again, this time at the **rear** of the wheels. This will eliminate wheel rim run-out errors. The correct toe-out setting is 0 – 13 mm (0 – 0.5 in.), i.e. the measurement taken at the front of the rims should be the same as the rear or be greater by up to 13 mm (0.5 in.).

Should it be necessary to adjust the front wheel toe-out, proceed as follows: Remove the locating bolt (2), from the left-hand end of the track rod, slacken the clamp bolt (3) and turn the threaded section of the track rod (4) in or out until the toe-out is correct when the locating bolt is re-inserted. Tighten the clamp bolt to 100 Nm (75 lbf.ft.), the locating bolts to 150 Nm (110 lbf. ft.) and their locknuts to 75 Nm (55 lbf. ft.).

WARNING: *Owners should ensure that all steering components are maintained in a reliable and satisfactory condition to ensure safe operation and comply with legal requirements.*

FRONT WHEEL TRACK ADJUSTMENT (four wheel drive)

Front wheel drive tractors have fixed axle tracks. However the track width is fully adjustable by changing the wheel rim relative to the centre disc, the rim and/or disc relative to the axle hub or by inter-changing both front wheels. (The track width is the distance between the centre of each tire at ground level).



WARNING: *With a front wheel supported on a stand, never attempt to rotate the wheels or start the engine. This may cause the rear wheels to move resulting in the tractor falling from the stand. Wheels should always be supported such that the tires are only just clear of the ground.*

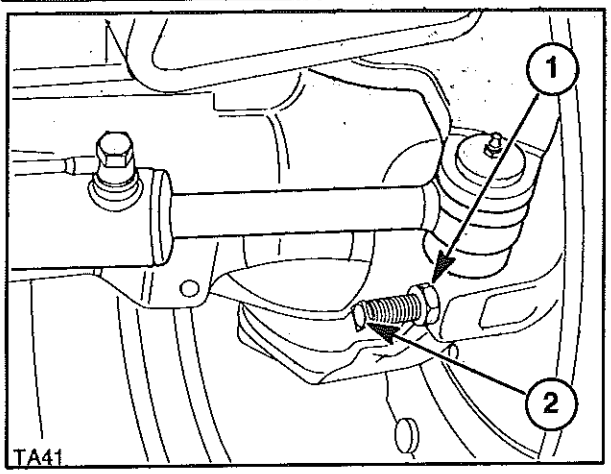
NOTE: When interchanging left and right hand wheels, always ensure the "V" on the tire is rotating in the direction of forward travel.

The sectioned drawings shown in Figure 1 illustrate the wheel rim and disc positions on the hub at various track settings. The settings available are as follows.

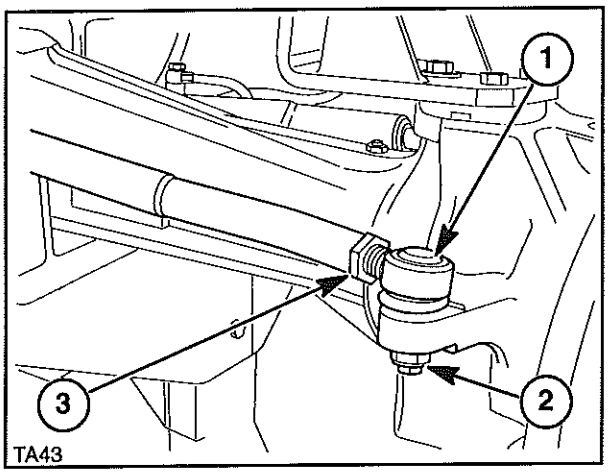
Track Setting	Tractors up to 100 PTO	110 and 125 PTO Tractors
A	1407 mm (55.4 in.)	1557 mm (61.3 in.)
B	1507 mm (59.3 in.)	1657 mm (65.2 in.)
C	1607 mm (63.3 in.)	1757 mm (69.2 in.)
D	1707 mm (67.2 in.)	1857 mm (73.1 in.)
E	1807 mm (71.1 in.)	1957 mm (77.0 in.)
F	1907 mm (75.1 in.)	2057 mm (81.0 in.)
G	2018 mm (79.5 in.)	2162 mm (85.1 in.)
H	2108 mm (83.0 in.)	2262 mm (89.0 in.)

NOTE: The track widths in the table are nominal and may vary by up to 25 mm dependent upon tire size.

WARNING: *Never operate the tractor with a loose wheel rim or disc. Always torque to the specified torque and at the specified intervals. Owners should ensure that all components are maintained in a satisfactory condition to ensure safe operation and comply with legal requirements.*



2-150



2-151

When refitting or adjusting a wheel, tighten the bolts to the following torques then re-check after driving the tractor for 200 yards (200 m), after 1 hour and 8 hours operation and, thereafter, at the 50 hour service intervals:

Disc to hub nuts	211 Nm (156 lbf.ft.)
Disc to rim nuts	240 Nm (177 lbf.ft.)

NOTE: *If your tractor is equipped with front fenders, ensure there is adequate clearance under all operating conditions. Adjust the steering stops and or fender position, as necessary.*

IMPORTANT: *At the smaller track settings a foul condition may occur between the tire or fender and the tractor when the wheels are turned to the full lock position particularly when the axle is fully articulated. To avoid this condition, adjust the fenders and/or steering stops.*

Steering Stops – Figure 2-150

Two steering stops are incorporated in the axle, one at each end. The stops are adjustable and should be set to provide a minimum clearance of 20 mm (0.75 in.) between the tires and any part of the tractor on full left and right lock with the axle fully articulated.

To adjust, slacken the locknut and turn the stop bolt anti-clockwise to reduce the steering angle of the wheels or clockwise to increase the steering angle. Tighten the locknut to 150 Nm (110 lbf. ft.).

Front Wheel Toe-out – Figure 2-151

After resetting the track width, the front wheel toe-out may require adjustment. For correct operation, the front wheels should be parallel or toe **out** slightly.

Measure the distance between the wheel rims at hub height at the **front** of the wheels. Rotate both front wheels 180° and check the measurements again, this time at the **rear** of the wheels. This will eliminate wheel rim run-out errors. The correct toe-out setting is 0 – 6 mm (0 – 0.25 in.), i.e. the measurement taken at the rear of the rims should be the same as the front or be smaller by up to 0.25 in. (6 mm).

Should it be necessary to adjust the front wheel toe-out, proceed as follows:

Remove and discard the self-locking nut, on the left-hand end of the track control rod and extract the track rod end. Loosen the lock nut (3) and screw the track rod end into or out of the track rod to shorten or lengthen the assembly, as required. Re-insert the track rod end and, when the toe-out setting is correct, secure with a new self-locking nut. Tighten the self-locking nut to 100 Nm (74 lbf. ft.) and the lock nut to 180 Nm (133 lbf. ft.).

REAR WHEEL TRACK ADJUSTMENT

MANUAL ADJUST REAR WHEELS – Figure 2-152

WARNING: *Your tractor is produced with lights that meet lighting regulations when operating or travelling on the public highway. If the wheel track setting is adjusted beyond the initial factory position then you may be required to reposition the lights or fit auxiliary lighting to comply with legal requirements.*

Additionally, before travelling on the highway, ensure that the overall tractor width does not exceed the maximum permitted in your country.

Rear wheel track adjustment is effected by changing the wheel rim relative to the centre disc, the rim and/or the disc relative to the axle hub or by inter-changing the rear wheels.

WARNING: *Tractor wheels are very heavy. Handle with care and ensure, when stored, that they cannot topple and cause injury.*

The sectioned drawings shown in the table (Figure 2-152) illustrate the wheel rim and disc positions relative to the hub at various track settings.

Each drawing represents either a left-hand wheel viewed from the rear or a right-hand wheel viewed from the front.

IMPORTANT: *When interchanging left and right-hand wheel assemblies, ensure the "V" of the tire tread remains pointing in the direction of forward travel.*

NOTE: *With certain options and/or tire sizes, the smaller track settings may not be attainable due to minimal clearance between tires and fenders or equipment. The dimensions shown in the chart (Figure 2-152) are nominal. Track settings may vary by as much as 13 mm (0.5 in.).*

Some tire sizes or track width settings are highlighted by means of asterisks. Where so identified, the meanings are as follows:

* 18.4 – 38 tires installed on models up to 110 PS.

** 18.4 – 38 tires installed on 125 PS models only (the 125 PS model has unique wheels).

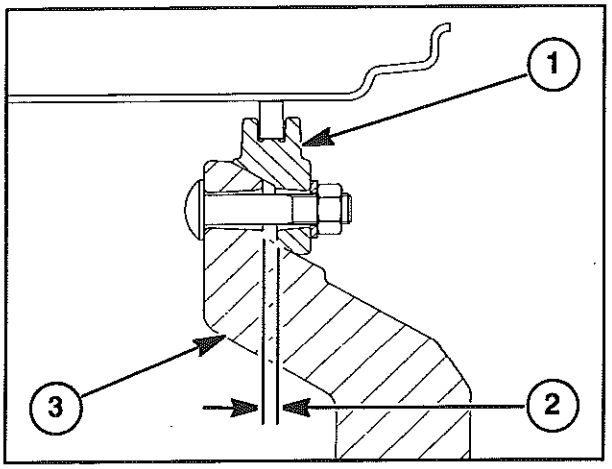
*** Track setting available with 13.6 – 36 and 13.6 – 38 tires only.

WARNING: *Never operate the tractor with a loose wheel rim or disc. Always tighten nuts to the specified torque and at the recommended intervals.*

When refitting or adjusting a wheel, tighten the bolts to the following torques then recheck after driving the tractor for 200 m (200 yards), after 1 hour and 8 hours operation and thereafter at the 50 hour service intervals:

Rear disc to hub nuts	390 Nm (288 lbf. ft.)
Rear disc to rim nuts	240 Nm (177 lbf. ft.)

28.4 – 36*	28.4 – 36**	33.4 – 39	33.4 – 39
1525 mm (60 in.)	Setting not available	1550 mm (61.0 in.)	Setting not available
1425 mm (56 in.)***	1525 mm (60 in.)	1640 mm (64.5 in.)	Setting not available
1625 mm (64 in.)	1625 mm (64 in.)	1500 mm (59 in.)	1725 mm (68 in.)
1725 mm (68 in.)	1725 mm (68 in.)	1600 mm (63 in.)	1625 mm (64 in.)
1925 mm (76 in.)		1715 mm (67.5 in.)	
		1805 mm (71.0 in.)	



2-154

Conversely, relocate the **lower left-hand** stop (and the **upper right-hand** stop, where fitted). Select a low **reverse** gear, apply the **right-hand** footbrake, release the handbrake and engage the clutch to move the **left-hand** rim **inwards**.

Re-locate the remaining stop(s) against the other side of the clamp(s). Tighten all the clamp nuts uniformly, 68 Nm (50 lbf.ft) at a time, until a torque of 250 Nm (185 lbf.ft) is achieved:

IMPORTANT: *Check the gap between each clamp and the wheel disc. See sectioned view, Figure 2-154. The gap should not vary more than 3 mm (0.125 in.) between any of the six clamps otherwise the rim and tire will not run true and excessive side loads will be imposed on one or more of the rails.*

Tighten the stop screws to 45 Nm (33 lbf.ft).

Power Adjust Procedure – Right-hand Wheel

Position the right-hand wheel with a pair of stops at the bottom, as shown in Figure 2-153. If the wheel has 8 rails, there will be a second pair of stops at the top of the wheel. Loosen the nuts on all the clamp attaching bolts.

If an **increase** in track width is required, remove the stop to the **right** of the **lower** clamp (and to the **left** of the **upper** clamp, where fitted). Relocate both clamps in the appropriate holes in the rail.

With the engine running, select a low **reverse** gear, apply the **left-hand** footbrake, release the handbrake and engage the clutch. Rearward rotation of the centre disc will cause the **right-hand** rim to move **outwards**.

Conversely, relocate the **lower left-hand** stop (and the **upper right-hand** stop, where fitted). Select a low **forward** gear, apply the **left-hand** footbrake, release the handbrake and engage the clutch to move the **right-hand** rim **inwards**.

Re-locate the remaining stop(s) against the other side of the clamp(s). Tighten all the clamp nuts uniformly and re-check at the appropriate intervals, as previously described.

Drive the tractor for approximately 200 m (200 yards) and check the clamp nut torques. Re-check the torque settings after 1 hour and 8 hours operation and thereafter at the 50 hour service interval.

NOTE: *Use a forward gear to move the left-hand rim outwards or the right-hand rim inwards. Conversely, a reverse gear is used to move the left-hand rim inwards or the right-hand rim outwards.*

Changing Track Width Range

To change from one track width range to another, it is necessary to remove the clamps and reposition them on the other side of the wheel discs, as follows:

NOTE: *If the wheels are at the minimum track setting with the clamps on the outside of the discs, or, if the wheels are at the maximum setting with the clamps on the inside of the discs, it will be necessary to move the stops one position from the extreme and power adjust the wheels as previously described before the clamps can be removed.*

Position the wheel with a pair of stops at the bottom. Loosen the nuts on all the clamp screws.

Working from the top of the wheel, remove one clamp at a time and reposition on the other side of the wheel disc to fit against the rail and disc. To obtain this fit it will be necessary to install the clamp one hole either side of the original positions.

Tighten the clamp nuts just sufficiently to retain the clamps.

When the clamps on the upper half of the wheel have been repositioned in this way, move the tractor to rotate the wheel 180°. Reposition the remaining clamps on the other side of the wheel disc.

Before repositioning the upper clamp the stops must be removed. Re-install the stops when the clamp is correctly positioned.

Tighten all clamp nuts uniformly, 68 Nm (50 lbf.ft) at a time, until a torque of 250 Nm (185 lbf.ft) is obtained. 'Seat' the clamps using a hammer and hardwood block then re-torque the nuts to 250 Nm (185 lbf.ft).

IMPORTANT: *Check the gap between each clamp and the wheel disc. See sectioned view, Figure 2-154. The gap should not vary more than 3 mm (0.125 in.) between any of the six clamps otherwise the rim and tire will not run true and excessive side loads will be imposed on one or more of the rails.*

Tighten the stop screws to 45 Nm (33 lbf.ft).

Repeat the procedure on the other wheel.

Drive the tractor for 200 m (200 yards) and check the clamp nut torques. Re-check the torque settings after 1 hour and 8 hours operation and thereafter at the 50 hour service interval.

WARNING: *Never operate the tractor with a loose wheel rim or disc. Always tighten nuts to the specified torque and at the recommended intervals. Disc to hub nuts should be tightened to 715 Nm (525 lbf. ft.).*

USE OF DUAL WHEELS, ROWCROP WHEELS, TERRA TIRES AND OTHER SPECIALISED WHEEL EQUIPMENT

Dual rear wheels are available as a dealer installed accessory in conjunction with certain **power adjust** wheels. The dual wheel kit consists of power adjust rims and rim to disc attaching hardware.

Both wheels are supported by the same disc. Before the outer wheels can be installed, the inner wheels must be power adjusted to the minimum **attainable** track width. Although the dual wheels are on power adjust rims, once installed they cannot be adjusted. If the outer wheels are removed, the inner wheels may be power adjusted as described in the previous text.

IMPORTANT: *The installation of dual wheels to **manual adjust** wheels is not approved by New Holland. Use of dual wheels in conjunction with **manual or power adjust** wheels under **heavy traction conditions** could cause severe transmission overload and is also not approved by New Holland.*

During normal farming and contracting operations, it is possible that a variety of specialised tires and wheel equipment may be required. There are numerous makes and types on the market. Such equipment has not been tested by New Holland Engineering and Field Test Operations.

Please contact your New Holland dealer who will be pleased to advise and assist you in procurement and use of suitable equipment.

Too little ballast will result in:

- Rough ride
- Excessive wheel slip
- Power loss
- Tire wear
- Excessive fuel consumption
- Lower productivity

Too much ballast will result in:

- Higher maintenance costs
- Increased driveline wear
- Power loss
- Increased soil compaction
- Excessive fuel consumption
- Lower productivity

For maximum performance in heavy draft conditions weight should be added to the tractor in the form of liquid ballast, cast iron weights or a combination of both.

Front end ballast may be required for stability and steering control when weight is transferred from the front to the rear wheels as rear mounted implement is raised by the tractor 3-point linkage.

When a rear mounted implement is raised to the transport position, the weight on the front wheels should be at least 20% of total tractor weight.

CAUTION: *Additional front ballast may be needed when transporting large 3-point mounted equipment. Always drive slowly over rough terrain, no matter how much front ballast is used.*

For optimum performance and efficiency, two wheel drive tractors should be ballasted so that approximately one third of the total tractor weight (less implement) is on the front wheels. Four wheel drive tractors should be ballasted so the weight on the front wheels is approximately 40 – 45% of the total tractor weight.

Add additional front end ballast, as required, for stability during operation and transport. Ballasting of the front end may not always provide adequate stability if the tractor is operated at high speed on rough terrain. Reduce tractor speed and exercise caution under these conditions.

When using front mounted implements, add weight to the rear wheels to maintain traction and stability.

IMPORTANT: *Only sufficient weight should be added to provide traction and stability. Adding more weight than necessary results in unnecessary loads being imposed on the tractor and a higher fuel consumption. When adding weight, adhere to the maximum tire capacity loading stated in the tables later in this section. If further information or assistance is required on tractor weighting consult your dealer. Do not add weight to the outer wheels of a dual wheel installation.*

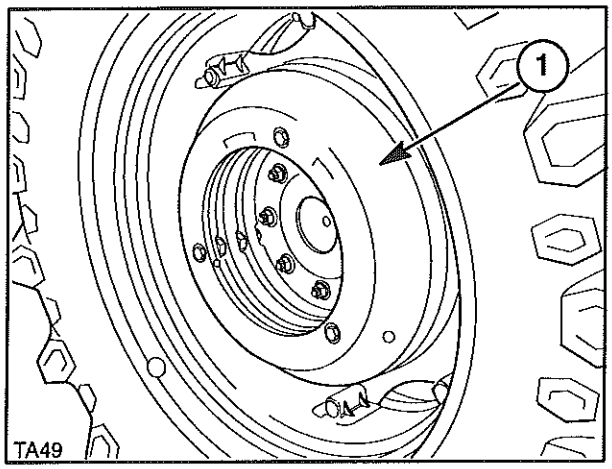
Ballast Limitations

Ballast should be limited by the tire capacity or tractor capacity. Each tire has a recommended carrying capacity which should not be exceeded, (later in this section).

If a greater amount of weight is needed for traction, larger tires should be used.

Ballast can be added by bolting on cast iron weights or by adding liquid calcium chloride in the tires. Bolt-on cast iron weights are recommended because they can easily be removed when not needed.

IMPORTANT: *Do not exceed the tractor gross vehicle weight shown below. This can cause an overload condition that may invalidate the warranty and may exceed the load rating of the tires.*



2-155

For optimum driveline reliability and tractive efficiency, maximum ballasted tractor weight (tractor plus ballast) must not exceed the following:

Models	Maximum Ballasted Weight 2WD kg	2WD lb.	4WD kg	4WD lb.
75, 85 & 95 PS	5715	12599	5851	12899
100 PS	5715	12599	6123	13499
110 & 125 PS	6858	15119	7348	16200

Individual axles (front and rear) are also subject to weight limitations, as follows:

Models	Maximum Front Axle Loading# 2WD kg	2WD lb.	4WD kg	4WD lb.
75 & 85 PS	2450	5400	2860*	6305*
95 & 100 PS	2450	5400	3064*	6755*
110 & 125 PS	2995	6600	3677*	8106*

 # Includes a front end loader in the raised position but with no load in the bucket.

** For four wheel drive vehicles, the figures shown in the foregoing table are for continuous operation. For intermittent operation, the front axle loading (including loaded loader bucket) may be increased to the following:*

75 & 85 PS	*5618 kg*	*12375 lb.*
95 to 125 PS	*6129 kg*	*13500 lb.*

Models	Maximum Rear Axle Loading kg	lb.
Up to 100 PS	6260	13800
110 & 125 PS	7620	16800

NOTE: *Total rear axle weight is measured with only the rear wheels on the scales inclusive of liquid and cast iron ballast and with mounted equipment in the raised position.*

IMPORTANT: *Do not exceed the maximum gross vehicle weight (tractor plus ballast plus any mounted equipment such as sprayers, tanks etc. in the raised position). See the following table:*

Models	Maximum Gross Vehicle Weight kg	lb.
Up to 100 PS	7500	16535
110 & 125 PS	8500	18739

IMPORTANT: *Braking regulations in some countries may impose lower gross vehicle weight limits for road transport than the figures quoted in the above table.*

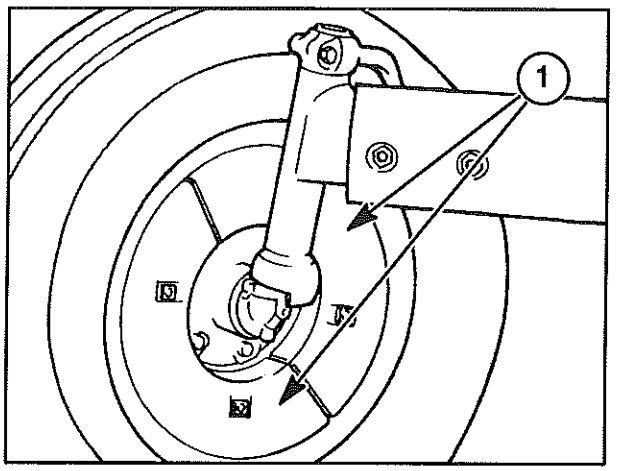
CAST IRON WEIGHTS (where fitted)

Up to three cast iron weights (1) Figure 2-155, may be added to each rear wheel. The weights available for 24 and 26 in. manual adjust wheels weigh 32 kg (70 lb.) each, giving a maximum rear axle ballast weight of 194 kg (420 lb.).

For 28 to 38 in. manual adjust wheels and 30, 34 and 38 in. power adjust wheels 45 kg (100 lb.) weights are available permitting a maximum of 272 kg (600 lb.) to be carried.

For two wheel drive front wheels, segmented, cast iron wheel weights (1) Figure 2-156, are available as a set of four (two per wheel) to give a total front wheel ballast weight of 78 kg (172 lb.).

Wafer type front end weights are available and are mounted on a substantial cast iron carrier secured by a central locking pin (1) Figure 2-157 and clamp bolts (2).

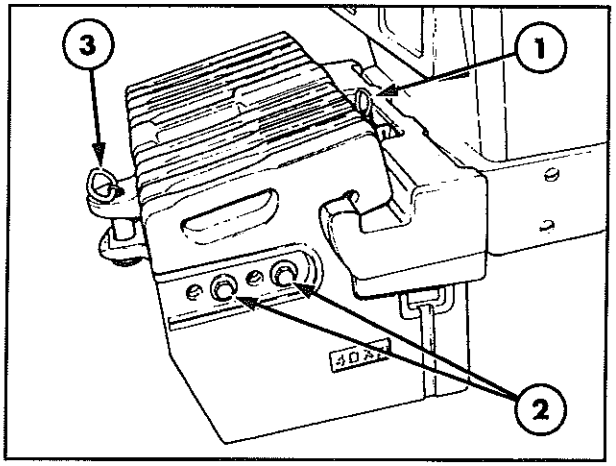


2-156

After removing the central locking pin, the weights may be removed as a complete set with the aid of suitable lifting gear. A spring-loaded retaining plate beneath the handle of the locking pin prevents removal of the pin. Lift the retaining plate, against spring pressure, and turn through 90° to clear the rear of the weights. Extract the locking pin.

Alternatively, the weights can be removed individually after removing the clamp bolts.

WARNING: *The tractor must not be operated unless both the central locking pin and the clamp bolts are in position with the bolts tightened to 125 lbf.ft. (169 Nm). Recheck the bolt torques after 50 hours of operation if the bolts have been disturbed for any reason.*



2-157

The front end wafer weights weigh 40 kg (88 lb.) each and are available as a set of 4, 8 or 12. Together with the weight carrier, the weight sets total 278 kg (612 lb.), 438 kg (965 lb.) or 598 kg (1317 lb.) respectively.

A towing facility is built into the weight carrier. However, if the weights are installed and a tow pin is required then a special weight with in-built tow pin (3) Figure 2-157, is available.

The special weight with tow pin is twice the thickness of a standard weight and replaces the two centre weights of the set. However, due to the shape of the casting, the special weight weighs no more than a single standard weight. This has the effect of reducing the total weight of the set by 40 kg (88 lb.).

LIQUID BALLAST

Filling the front and rear tires with liquid ballast is a convenient method of adding weight. A solution of calcium chloride and water is recommended. This gives a low freezing point and provides a higher density than plain water.

NOTE: *When filling a tire with calcium chloride/water solution the valve should be at the highest point on the wheel. The valve should be at the lowest point when checking or adjusting air pressure if the tire contains liquid ballast. Special equipment is required to water ballast tires. See your authorised dealer or tire supplier for details.*

NOTE: *Liquid ballasting of front tires on a two wheel drive installation is not recommended.*

The table on the right shows the quantity of calcium chloride and water required for each tire size option and is based on 0.6 kg of calcium chloride per litre of water. The figures in the table will give a 75% fill of the tire. This calcium chloride/water solution will give protection from freezing down to an ambient temperature of –50°C (–58°F). An equivalent table in Imperial measure is provided on the next page.

WARNING: *When mixing the ballast solution it is imperative the calcium chloride flakes are added to the water and the solution stirred until the calcium chloride is dissolved.*

Never add water to calcium chloride as considerable heat is generated. If the flakes should contact the eyes, wash the eyes immediately with clean, ***cold*** *water for at least 5 minutes. Consult a doctor as soon as possible.*

Tire Size	Water	Calcium Chloride	Total weight of solution per tire
	Litres	kg	kg
11.2 – 24	67	40	107
12.4 – 24	87	51	138
13.6 – 24	114	64	170
14.9 – 24	134	80	214
16.9 – 24	185	111	296
380/70R – 24	113	68	181
420/70R – 24	146	88	234
18.4 – 26	226	136	362
13.6 – 28	119	71	190
14.9 – 28	148	89	237
16.9 – 28	205	123	328
18.4 – 28	257	154	411
380/70R – 28	129	77	206
420/70R – 28	167	100	267
480/65R – 28	180	108	288
480/70R – 28	224	134	358
540/65R – 28	253	152	405
16.9 – 30	209	123	332
18.4 – 30	255	152	407
16.9 – 34	234	309	374
18.4 – 34	293	176	469
23.1 – 34	454	271	725
480/70R – 34	258	155	413
520/70R – 34	307	184	491
13.6 – 36	149	89	238
13.6 – 38	163	97	260
16.9 – 38	257	154	411
18.4 – 38	317	190	507
20.8 – 38	413	248	661
480/70R – 38	273	164	437
520/70R – 38	336	201	537

Tire Size	Water Imperial Gallons	Calcium Chloride lb	Total weight of solution per tire lb
11.2 – 24	15	88	238
12.4 – 24	19.5	117	312
13.6 – 24	23.4	140	374
14.9 – 24	29.5	176	471
16.9 – 24	41	245	655
380/70R – 24	24.9	150	399
420/70R – 24	32.2	194	516
18.4 – 26	49.6	299	795
13.6 – 28	26	157	417
14.9 – 28	32.5	196	521
16.9 – 28	45	271	721
18.4 – 28	57	340	910
380/70R – 28	28.5	170	455
420/70R – 28	37	220	590
480/65R – 28	39.5	238	633
480/70R – 28	49.5	295	790
540/65R – 28	55.5	335	890
16.9 – 30	45.8	273	731
18.4 – 30	56	337	897
16.9 – 34	51.4	309	823
18.4 – 34	64.5	388	1033
23.1 – 34	100	598	1598
480/70R – 34	56.8	342	910
520/70R – 34	67.6	406	1082
13.6 – 36	32.7	196	523
13.6 – 38	35.5	215	570
16.9 – 38	56.5	340	905
18.4 – 38	69.5	419	1114
20.8 – 38	91	547	1457
480/70R – 38	60	362	962
520/70R – 38	74	443	1183

TIRE CARE

Upon receiving your tractor, check the air pressure in the tires and recheck every 50 hours or weekly.

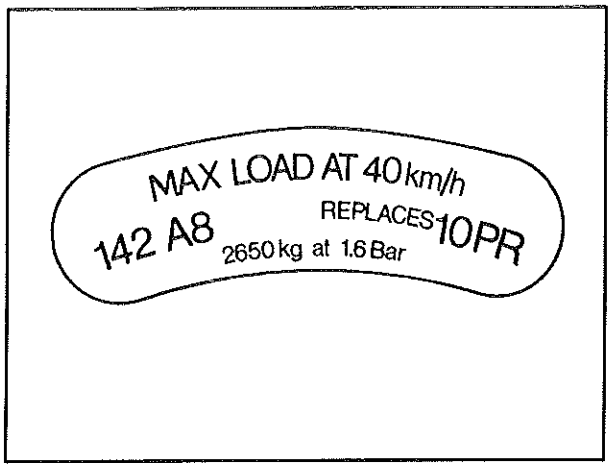
When checking tire pressures, inspect the tires for damaged tread and side walls. Neglected damage will lead to early tire failure.

Inflation pressure affects the amount of weight that a tire may carry.

Locate the tire size for your tractor in the Tire Pressure and Load tables later in this section. Do not exceed the load for the pressures listed. Do not over or under inflate the tires.

WARNING: *Inflating or servicing tires can be dangerous. Whenever possible, trained personnel should be called in to service or install tires. In any event, to avoid the possibility of serious or fatal injury, follow the safety precautions below:*

- *Never attempt tire repairs on a public road or highway.*
- *Do not inflate a steering tire (front tire on a two wheel drive tractor) above the manufacturer's maximum pressure shown on the tire or beyond the maximum shown in the Tire Pressure and Load tables if the tire is not marked with the maximum pressure.*
- *Never inflate a traction tire (front tire on a four wheel drive tractor or any rear tire) over 2.4 bar (35 lbf/in^2). If the bead does not seat on the rim by the time this pressure is reached, deflate the tire, relubricate the bead with a soap/water solution and re-inflate. Do not use oil or grease. Inflation* ***beyond*** *2.4 bar with unseated beads may break the bead or rim with explosive force sufficient to cause a serious injury.*
- *After seating the beads, adjust inflation pressure to the recommended operating pressure.*



2-158

- *Ensure the jack has adequate capacity to lift your tractor.*
- *Use jack stands or other suitable blocking to support the tractor while repairing tires.*
- *Do not put any part of your body under the tractor or start the engine while the tractor is on the jack.*
- *Never hit a tire or rim with a hammer.*
- *Ensure the rim is clean and free of rust or damage. Do not weld, braze, otherwise repair or use a damaged rim.*
- *Do not inflate a tire unless the rim is mounted on the tractor or is secured so that it will not move if the tire or rim should suddenly fail.*
- *When fitting a new or repaired tire, use a clip-on valve adaptor with a remote gauge that allows the operator to stand clear of the tire while inflating it. Use a safety cage, if available.*

- *Do not re-inflate a tire that has been run flat or seriously under-inflated until it has been inspected for damage by a qualified person.*
- *Torque wheel to axle nuts to specification after re-installing the wheel. Check nut tightness daily until torque stabilises.*
- *Refer to tractor weighting section before adding ballast to the tires.*
- *Ensure the jack is placed on a firm, level surface.*

TIRE PRESSURES AND PERMISSIBLE LOADS (Radial tires)

Radial tire performance is denoted by a Load Index and Speed Symbol replacing the Ply Rating commonly found on cross ply tires. Figure 2-158 shows typical markings to be found on the side wall of radial ply tires.

NOTE: *All radial tires have a Speed symbol 'A8' and are therefore suitable for speeds up to 40km/h (25 MPH).*

The maximum load that may be carried by the tire is dependent upon the Load Index shown on the side wall. In the following charts the loads given are for individual tires operated at speeds up to 30 km/h (19 MPH). The right-hand (shaded) column indicates the maximum load at speeds up to 40 km/h (25 MPH).

TIRE PRESSURES AND PERMISSIBLE LOADS (Radial Ply Tires)

The following charts give the carrying capacity of the **TIRE** at the pressures indicated.

Load Index	Inflation Pressure – bar									
	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.6
	Load Capacity per TIRE – kg									
107	680	725	770	815	860	910	955	1000	1050	975
109	720	765	815	860	910	960	1005	1055	1100	1030
114	830	885	940	990	1050	1100	1155	1210	1260	1180
116	885	940	995	1055	1115	1170	1225	1280	1340	1250
119	965	1020	1090	1145	1210	1270	1335	1390	1455	1360
121	1020	1080	1150	1220	1285	1355	1420	1485	1555	1450
122	1045	1120	1185	1265	1330	1400	1465	1535	1605	1500
123	1070	1145	1220	1295	1365	1430	1515	1585	1660	1550
124	1105	1180	1260	1335	1410	1490	1565	1640	1715	1600
126	1170	1250	1335	1415	1495	1580	1660	1740	1820	1700
127	1200	1285	1370	1450	1535	1620	1710	1780	1875	1750
128	1230	1320	1410	1495	1580	1670	1755	1840	1926	1800
134	1445	1550	1655	1760	1855	1965	2065	2165	2270	2120
135	1510	1615	1720	1825	1920	2030	2130	2230	2335	2180
136	1550	1660	1765	1875	1875	2080	2185	2290	2395	2240
137	1605	1710	1820	1925	2035	2140	2245	2350	2460	2300
139	1715	1825	1935	2050	2155	2270	2380	2495	2600	2430
141	1820	1935	2055	2170	2290	2410	2520	2640	2760	2575
142	1875	1990	2115	2230	2355	2480	2595	2710	2836	2650
144	1980	2110	2240	2360	2490	2615	2745	2975	3000	2800
146	2085	2225	2370	2510	2650	2790	2930	3070	3210	3000
153	2525	2700	2875	3045	3215	3390	3565	3755	3905	3650
155	2675	2865	3045	3225	3415	3595	3780	3960	4150	3875
157	2835	3035	3235	3430	3630	3825	4020	4260	4415	4125
159	3000	3210	3420	3635	3845	4060	4260	4475	4685	4375
166	3695	3945	4190	4435	4685	4935	5180	5425	5675	5300

Load Index	Inflation Pressure – lbf/ft^2									
	12	13	15	16	17	18	20	22	23	23
	Load Capacity per TIRE – lb									
107	1500	1600	1695	1795	1895	2005	2105	2205	2315	2150
109	1585	1685	1795	1895	2005	2115	2215	2325	2430	2270
114	1830	1950	2070	2180	2315	2425	2545	2665	2780	2600
116	1950	2070	2195	2325	2460	2580	2700	2820	2955	2755
119	2125	2250	2405	2525	2665	2800	2945	3065	3205	3000
121	2250	2380	2535	2690	2830	2985	3130	3275	3430	3195
122	2305	2470	2610	2790	2930	3085	3230	3385	3540	3305
123	2360	2525	2690	2855	3010	3150	3340	3495	4135	3860
124	2435	2600	2775	2945	3110	3285	3450	3615	3780	3525
126	2580	2755	2945	3120	3295	3485	3660	3835	4010	3745
127	2645	2830	3020	3195	3385	3570	3770	3925	4135	3860
128	2710	2910	3110	3295	3485	3680	3870	4055	4245	3970
134	3185	3415	3650	3880	4090	4330	4550	4770	5005	4675
135	3330	3560	3790	4025	4230	4475	4695	4915	5145	4805
136	3415	3660	3890	4135	4355	4585	4815	5050	5280	4940
137	3538	3770	4010	4245	4485	4715	4950	5180	5425	5070
139	3780	4025	4265	4520	4750	5005	5245	5500	5730	5355
141	4010	4265	4530	4785	5050	5315	5555	5820	6085	5675
142	4133	4385	4660	4915	5190	5465	5720	5975	6250	5840
144	4365	4650	4940	5200	5490	5765	6050	6560	6615	6170
146	4595	4905	5225	5535	5840	6150	6460	6770	7075	6615
153	5565	5950	6340	6715	7085	7475	7860	8280	8610	8045
155	5895	6315	6715	7110	7530	7925	8335	8730	9150	8540
157	6250	6690	7130	7560	8000	8430	8860	9390	9735	9095
159	6615	7075	7535	8015	8475	8950	9390	9865	10330	9645
166	8145	8695	9235	9775	10330	10880	11420	11960	12510	11685

The above tables are for guidance only. For exact information regarding inflation pressures and loads for your particular tires, consult your authorised dealer.

FRONT TIRE PRESSURES AND PERMISSIBLE LOADS (Cross Ply Tires)

The following charts give the carrying capacity of the **TIRE** at the pressures indicated.

Tire Size	Ply Rating	Inflation Pressures – bar											
		1.5	1.8	2.0	2.3	2.5	2.8	3.0	3.1	3.3	3.6	3.7	3.9
		Load Capacity per TIRE – kg											
7.50 – 16	6	495	565	605	660	695	745	–	–	–	–	–	
	8	495	565	605	660	695	745	775	790	820	845	870	
7.50 – 18	6	540	615	655	715	750	810	–	–	–	–	–	
	8	540	615	655	715	750	810	835	850	885	930	945	
9.00 – 10	10	540	580	620	665	700	755	785	800	835	880	895	910
10.00 – 16	6	780	900	965	–	–	–	–	–	–	–	–	
	8	780	900	965	1055	1110	1190	–	–	–	–	–	
11.00 – 16	8	910	1060	1140	1250	1320	–	–	–	–	–	–	

Tire Size	Ply Rating	Inflation Pressures – lbf/in^2											
		22	28	29	33	36	41	44	45	48	52	54	56
		Load Capacity per TIRE – lb											
7.50 – 16	6	1095	1245	1335	1455	1535	1645	–	–	–	–	–	
	8	1095	1245	1335	1455	1535	1645	1705	1745	1805	1865	1920	
7.50 – 18	6	1190	1355	1455	1575	1650	1785	–	–	–	–	–	
	8	1190	1355	1455	1575	1650	1785	1840	1875	1950	2050	2085	
9.00 – 10	10	1190	1285	1365	1470	1550	1670	1735	1760	1840	1940	1970	2005
10.00 – 16	6	1720	1985	2130	–	–	–	–	–	–	–	–	
	8	1720	1985	2130	2325	2450	2625	–	–	–	–	–	
11.00 – 16	8	2005	2340	2515	2755	2910	–	–	–	–	–	–	

The above charts are for tractors operated at speeds up to 30 km/h (19 MPH). The tractor may be driven at speeds of up to 40 km/h (25 MPH) if the loading on the front axle is reduced by 20% with no reduction in tire pressure. The above tables are for guidance only. For exact information regarding inflation pressures and loads for your particular tires, consult your authorised New Holland dealer.

IMPORTANT: *The tires fitted to tractors with optional four wheel drive have been carefully selected to match the gearing of the transmission and axles. When renewing worn or damaged tires, always install tires of the same make, model and size as those removed. The installation of other tire combinations may result in excessive tire wear, loss of useable power or severe damage to drive line components. If in doubt, consult your New Holland dealer. For front tires fitted to four wheel drive tractors, see* **REAR TIRE PRESSURES AND PERMISSIBLE LOADS** *on the following pages.*

REAR TIRE PRESSURES AND PERMISSIBLE LOADS (Cross Ply Tires – including front tires on four wheel drive tractors)

The following chart gives the carrying capacity of the **TIRE** at the tire pressures indicated.

Tire Size	Ply Rating	Inflation Pressures – bar												
		0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
		Load Capacity per TIRE – kg												
11.2 – 24	6	635	680	725	765	805	845	885	920	960	1005	1045	–	–
12.4 – 24	6	775	830	880	945	995	1035	1075	1115	1160	–	–	–	–
13.6 – 24	6	905	970	1030	1080	1135	1200	1250	1300	1340	–	–	–	–
	8	905	970	1030	1080	1135	1200	1250	1300	1340	1390	1445	1500	1545
13.6 – 28	6	965	1035	1100	1155	1210	1300	1320	1400	1430	–	–	–	–
	8	965	1035	1100	1155	1210	1300	1320	1400	1430	1485	1540	1600	1645
13.6 – 36	6	1090	1165	1240	1305	1365	1440	1490	1560	1615.	–	–	–	–
13.6 – 38	6	1120	1200	1275	1340	1405	1470	1530	1600	1660	–	–	–	–
	8	1120	1200	1275	1340	1405	1470	1530	1600	1660	1725	1785	1850	1910
14.9 – 24	6	1120	1185	1250	1315	1380	1440	1510	–	–	–	–	–	–
	8	1120	1185	1250	1315	1380	1440	1510	1565	1635	1700	1760	–	–
14.9 – 28	8	1195	1265	1335	1400	1470	1540	1610	1675	1745	–	–	–	–
16.9 – 24	6	1300	1390	1480	1565	1640	1725	–	–	–	–	–	–	–
16.9 – 28	8	1385	1480	1580	1670	1755	1840	1925	2010	2090	–	–	–	–
16.9 – 30	6	1460	1545	1635	1725	1815	1900	–	–	–	–	–	–	–
	8	1460	1545	1635	1725	1815	1900	1985	2075	2160	–	–	–	–
16.9 – 34	6	1515	1620	1730	1835	1925	2015	–	–	–	–	–	–	–
	8	1515	1620	1730	1835	1925	2015	2105	2200	2290	2390	–	–	–
16.9 – 38	6	1605	1705	1825	1930	2035	2130	–	–	–	–	–	–	–
18.4 – 26	6	1650	1765	1885	1990	–	–	–	–	–	–	–	–	–
18.4 – 26	10	1640	1775	1980	2055	2125	2270	2340	2475	2540	2665	2730	–	–
18.4 – 30	6	1760	1880	2005	2120	–	–	–	–	–	–	–	–	
	8	1760	1880	2005	2120	2215	2315	2415	–	–	–	–	–	–
18.4 – 34	6	1870	2000	2130	2150	–	–	–	–	–	–	–	–	–
18.4 – 38	8	1975	2110	2250	2380	2490	2605	2715	–	–	–	–	–	–
23.1 – 34	8	2700	2890	3075	3225	–	–	–	–	–	–	–	–	–

To avoid the possibility of tire creep (movement of the tire on the rim), tire pressures below 1.0 bar should not be used with cross ply tires for operations having a high torque requirement, e.g. sub-soiling, ploughing, etc. When mounted implements are used, rear tire loads may be increased by up to 20% with no increase in inflation pressures when operated at speeds below 20 km/h (12 MPH).

The above table is for guidance only. For exact information regarding inflation pressures and loads for your particular tires, consult your authorised New Holland dealer.

REAR TIRE PRESSURES AND PERMISSIBLE LOADS (Cross Ply Tires – including front tires on four wheel drive tractors) (continued)

The following chart gives the carrying capacity of the **TIRE** at the tire pressures indicated.

Tire Size	Ply Rating	Inflation Pressures – lbf/in²												
		12	14	15	16	17	19	20	22	23	25	26	28	29
		Load Capacity per TIRE – lb												
11.2 – 24	6	1400	1500	1595	1685	1775	1865	1950	2025	2115	2215	2305	–	–
12.4 – 24	6	1705	1830	1940	2085	2195	2285	2370	2455	2555	–	–	–	–
13.6 – 24	6	1990	2135	2270	2380	2505	2645	2755	2865	2955	–	–	–	–
	8	1990	2135	2270	2380	2505	2645	2755	2865	2955	3065	3185	3305	3405
13.6 – 28	6	2125	2285	2425	2545	2665	2865	2910	3085	3155	–	–	–	–
	8	2125	2285	2425	2545	2665	2865	2910	3085	3155	3265	3395	3525	3625
13.6 – 36	6	2405	2565	2735	2875	3010	3175	3285	3440	3560	–	–	–	–
13.6 – 38	6	2470	2645	2810	2955	3095	3240	3375	3525	3660	–	–	–	–
	8	2470	2645	2810	2955	3095	3240	3375	3525	3660	3805	3930	4075	4210
14.9 – 24	6	2470	2615	2755	2900	3045	3175	3325	–	–	–	–	–	–
	8	2470	2615	2755	2900	3045	3175	3325	3450	3605	3745	3880	–	–
14.9 – 28	8	2635	2785	2945	3085	3240	3395	3550	3695	3845	–	–	–	–
16.9 – 24	6	2865	3065	3260	3450	3625	3800	–	–	–	–	–	–	–
16.9 – 28	8	3055	3265	3485	3685	3870	4055	4245	4430	4605	–	–	–	–
16.9 – 30	6	3215	3405	3605	3805	4000	4185	–	–	–	–	–	–	–
	8	3215	3405	3605	3805	4000	4185	4375	4575	4765	–	–	–	–
16.9 – 34	6	3340	3570	3815	4045	4245	4445	–	–	–	–	–	–	–
	8	3340	3570	3815	4045	4245	4445	4640	4850	5045	5265	–	–	–
16.9 – 38	6	3535	3755	4025	4255	4485	4695	–	–	–	–	–	–	–
18.4 – 26	6	3635	3890	4155	4385	–	–	–	–	–	–	–	–	–
18.4 – 28	10	3630	3910	4360	4530	4690	5005	5160	5460	5600	5880	6020	–	–
18.4 – 30	6	3880	4145	4420	4675	–	–	–	–	–	–	–	–	–
	8	3880	4145	4420	4675	4885	5105	5325	–	–	–	–	–	–
18.4 – 34	6	4125	4410	4695	4740	–	–	–	–	–	–	–	–	–
18.4 – 38	8	4355	4655	4960	5245	5490	5745	5985	–	–	–	–	–	–
23.1 – 34	8	5950	6375	6780	7110	–	–	–	–	–	–	–	–	–

To avoid the possibility of tire creep (movement of the tire on the rim), tire pressures below 14 lbf/in² should not be used with cross ply tires for operations having a high torque requirement, e.g. sub-soiling, ploughing, etc. When mounted implements are used, rear tire loads may be increased by up to 20% with no increase in inflation pressures when operated at speeds below 20 km/h (12 MPH).

The above table is for guidance only. For exact information regarding inflation pressures and loads for your particular tires, consult your authorised New Holland dealer.

SECTION 3
LUBRICATION AND MAINTENANCE

GENERAL

Section 3 provides the step by step requirements necessary to maintain your new tractor in peak condition. A lubrication and maintenance chart provides a ready reference to these requirements. If in doubt about any aspect of lubrication and maintenance, consult your New Holland dealer.

This section is split into 10 parts, each part referring to a specific service interval. The running heading at the top of each page indicates the subject covered, as listed below. A full index is provided at the back of this book.

SAFETY PRECAUTIONS

Read and observe all safety precautions listed in 'Servicing the Tractor' in the Introduction section at the front of this Manual.

NOTE: *Dispose of used filters and fluids properly.*

CAUTION: *Do not check, lubricate, service or make adjustments to the tractor with the engine running.*

DURING THE FIRST 50 HOURS OPERATION

In addition to the regular maintenance operations listed, check the following items every 10 hours or daily during the first 50 hours of operation of your new tractor:

- Check transmission/rear axle/hydraulics oil level
- Wheel nuts for tightness
- Front axle hub oil levels (four wheel drive)

IMPORTANT: *Park the tractor on level ground and, where applicable, extend all cylinders before checking oil levels.*

THE FIRST 50-HOUR SERVICE

At the first 50-hour service, ensure that the following **additional** service operations are carried out. The items are listed in the 'First 50-Hour Service' checklist at the rear of this manual.

- Change fuel filter*

* The replacement fuel filter is larger than the original factory fitment.

- Change hydraulic oil filters
- Check transmission/rear axle/hydraulics oil level
- Check FWD differential oil level
- Check FWD axle hub oil level
- Check and adjust brakes
- Check all air intake connections
- Inspect Poly V-belt

- Tighten all cooling system hose connections.
- Check torque of front end weight clamp bolts (where fitted)
- Check torque of safety cab or frame mounting bolts
- Check torque of exhaust manifold bolts

NOTE: *Items listed in the first 50-hour check are important. If not performed, early component failure and reduced tractor life may result.*

PREVENTING SYSTEM CONTAMINATION

To prevent contamination when changing oils, filters, etc., always clean the area around filler caps, level and drain plugs, dipsticks and filters prior to removal. Before connecting remote cylinders, ensure that oil contained within them is clean, has not degenerated due to long storage and is of the correct grade.

To prevent dirt entry during greasing, wipe dirt from the grease fittings before greasing. Wipe excess grease from the fitting after greasing.

FLEXIBILITY OF MAINTENANCE INTERVALS

The intervals listed in the lubrication and maintenance chart are guidelines to be used when operating in normal working conditions.

Adjust the intervals for environmental and working conditions. Intervals should be shortened under adverse (wet, muddy, sandy, extremely dusty) working conditions.

FUELLING THE TRACTOR

CAUTION: *When handling diesel fuel, observe the following:*

Do not smoke around diesel fuel. Under no circumstances should gasoline, alcohol, gasohol or dieselhol (a mixture of diesel fuel and alcohol) be added to diesel fuel because of increased fire or explosion risks. In a closed container such as a fuel tank they are more explosive than pure gasoline. Do not use these blends. Additionally, dieselhol is not approved due to possible inadequate lubrication of the fuel injection system.

Clean the filler cap area and keep it free of debris.

Fill the tank at the end of each day to reduce overnight condensation.

Never take the cap off or refuel with the engine running.

Keep control of the fuel nozzle while filling the fuel tank.

Don't fill the tank to capacity. Allow room for expansion. If the original fuel tank cap is lost, replace it with a genuine original equipment cap and tighten securely.

Wipe up spilled fuel immediately.

FUEL REQUIREMENTS

The quality of fuel used is an important factor for dependable performance and satisfactory engine life. Fuels must be clean, well-refined, and non-corrosive to fuel system parts. Be sure to use fuel of a known quality from a reputable supplier.

Use Number 2-D in temperatures above –7° C (20° F).

Use Number 1-D in temperatures below –7° C (20° F).

To obtain optimum combustion and minimum engine wear, the fuel selected for use should conform to the application and property requirements outlined in the following chart.

DIESEL FUEL SELECTION CHART

General Fuel Classification	Final Boiling Point (max)	Cetane Rating (min)	Sulphur Content (max)
No. 1-D	288° C (550° F)	40*	0.3%
No. 2-D	357° C (675° F)	40	0.5%

NOTE: *When long periods of idling or cold weather conditions below 0°C (32°F) are encountered or when continuously operating at an altitude above 5,000* ft. *(1500 m) use Number 1-D fuel.*

*When continually operating at low temperatures or high altitude, a minimum cetane rating of 45 is required.

Using diesel fuel with sulphur content above 0.5% requires more frequent oil changes as noted in the maintenance schedule. The use of diesel fuel with a sulphur content above 1.3% is not recommended.

For the best fuel economy, use Number 2-D fuel whenever temperatures allow.

Do not use Number 2-D fuel at temperatures below –7° C (20° F). The cold temperatures will cause the fuel to thicken, which may prevent the engine from running. (If this happens, contact your dealer.)

To be sure that a fuel meets the required properties, enlist the aid of a reputable fuel oil supplier. The responsibility for clean fuel lies with the fuel supplier as well as the fuel user.

FUEL STORAGE

Take the following precautions to ensure that stored fuel is kept free of dirt, water and other contaminants.

- Store fuel in black iron tanks, not galvanized tanks, as the zinc coating will react with the fuel and form compounds that will contaminate the injection pump and injectors.
- Install bulk storage tanks away from direct sunlight and angle them slightly so sediment in the tanks will settle away from the outlet pipe.
- To facilitate moisture and sediment removal, provide a drain plug at the lowest point at the end opposite the outlet pipe.
- If fuel is not filtered from the storage tank, put a funnel with a fine mesh screen in the fuel tank filler neck when refuelling.
- Arrange fuel purchases so summer grade fuels are not held over and used in winter.

FILLING THE FUEL TANK – Figure3-1

1. Clean the area around the fuel cap (1) to prevent dirt from entering tank and contaminating the fuel .

2. Remove the cap and place in a clean area during refuelling.

3. After filling the tank, replace and tighten the fuel cap.

NOTE: *The left-hand mounted auxiliary tank, where fitted, is filled via the filler on the main, front-mounted tank.*

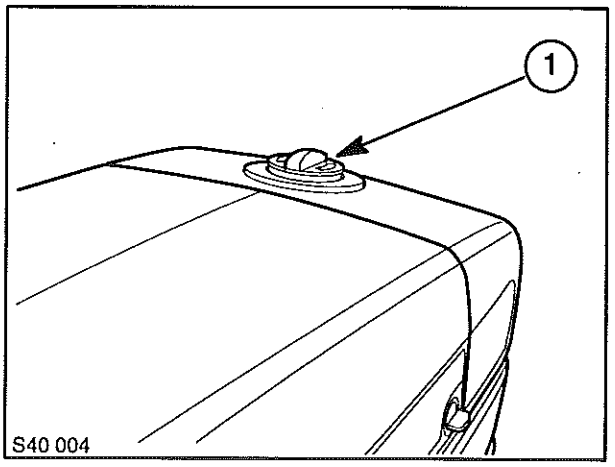
IMPORTANT: *Always replace a lost or damaged cap with a genuine, original equipment replacement cap.*

Total fuel capacity:

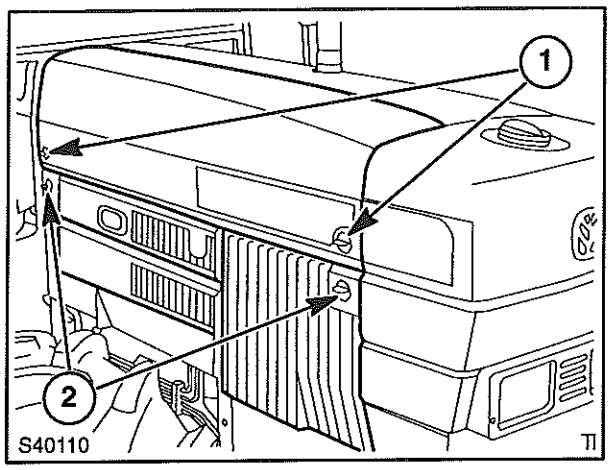
75, 85 & 95 PS models with single tank
94.6 litres (48.4 Imp. gallons)

75, 85 & 95 PS models with optional auxiliary tank
with cab 199.4 litres (43.8 Imp. gallons)
without cab 177.5 litres (39.0 Imp. gallons)

100, 110 & 125 PS models with twin tanks
217.7 litres (47.9 Imp. gallons)



3-1



3-2

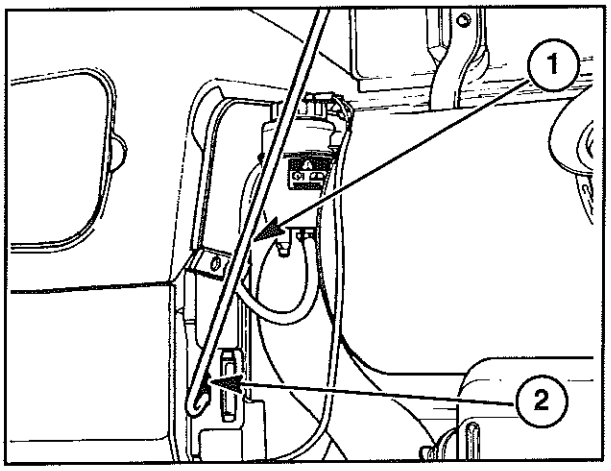
REMOVING GUARDS TO GAIN ACCESS TO COMPONENTS FOR INSPECTION AND MAINTENANCE

INTRODUCTION

To gain access to perform inspection, lubrication and maintenance operations, the hood and certain access panels may need to be opened or removed.

IMPORTANT: *After performing work on the tractor, install all guards before operating the tractor.*

IMPORTANT: *Follow the guidelines listed under the heading* Servicing the Tractor *in the* Safety Precautions *section at the front of this book.*



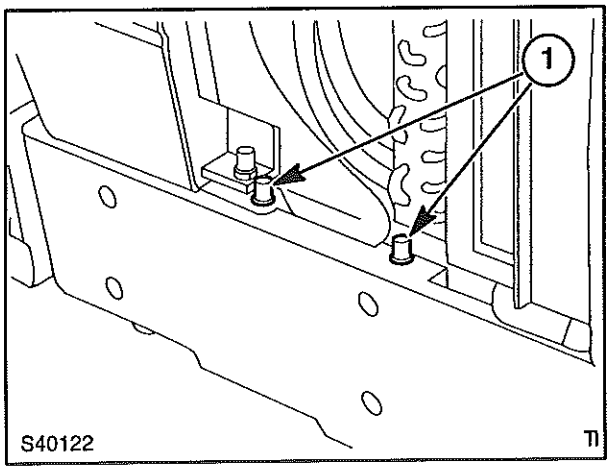
3-3

HOOD AND SIDE PANELS – Figures 3-2 to 3-4

The hood may be raised from the right-hand side of the tractor. In addition, there are two side panels on each side of the engine which may be easily removed. See Figure 3-2.

The hood and side panels are secured by quick-release catches. Turn the catches (1) Figure 3-2, anti-clockwise to release the hood. Turn the catches (2) anti-clockwise to release the side panels.

There is a built-in prop clipped to the underside of the hood. Remove the prop (1) Figure 3-3, from the securing clip on the underside of the hood. Locate the prop in the slot (2) in the hood rear support to retain the hood in the raised position.

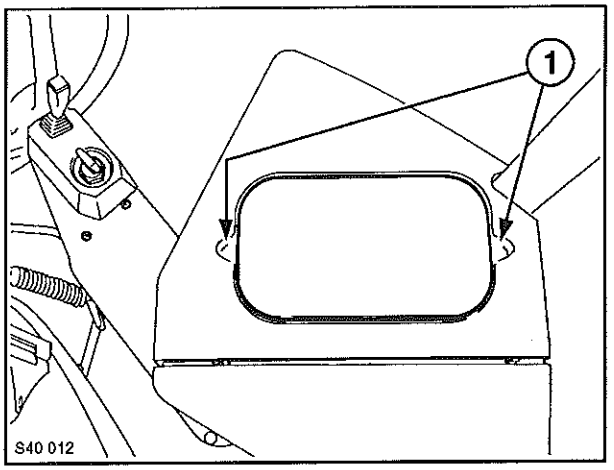


3-4

To close the hood, put the prop back into the securing clip and lower the hood. With the male part of the catches (on the hood) aligned with the female catches (on the framework), press each catch inward. An audible click will signal engagement of the catch.

Two holes in the lower edge of each side panel locate in a pair of pegs (1) Figure 3-4, while the upper edge is secured by the quick-release catches (2) Figure 3-2. After releasing the catches, the panel may be lifted off the securing pegs and removed completely.

When replacing a side panel, engage the holes in the lower edge of the panel with the pegs (1) Figure 3-4, on the framework. With the male part of the catches (on the panel) aligned with the female catches (on the framework), press each catch inward. An audible click will signal engagement of the catch.



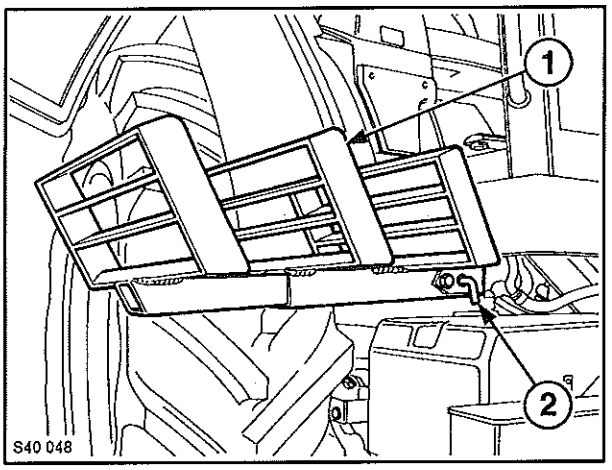
3-5

FUSE BOX – Figure 3-5

A box containing the fuses and relays is installed behind a panel on the right-hand side of the instrument console. Using the finger holds provided (1) Figure 3-5, pull off the panel to reveal the fuse box.

For details of fuse rating and circuits covered, see Operation 40.

NOTE: *A second removeable panel is installed on the right-hand side of the instrument console, below the fuse panel, with a similar access panel on the left-hand side. There are no owner/operator service items behind these panels.*



3-6

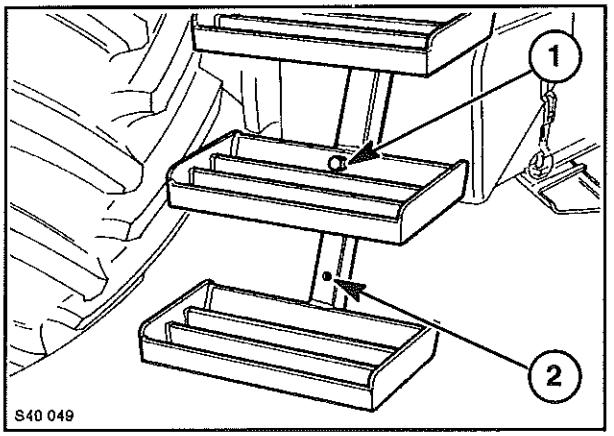
RIGHT-HAND FOOTSTEPS (where fitted) – Figures 3-6 and 3-7

100, 110 and 125 PS tractors may have the optional, hinged footsteps with adjustable lower tread, installed on the right-hand side.

For improved access to the right-hand footbrake adjuster, hydraulic oil filter(s), battery, etc., the footsteps may be lifted and secured in the raised position.

To raise the steps, pull out the 'R' clip and extract the securing pin (2) Figure 3-6. Raise the step (1) and replace the securing pin in the hole provided to retain the step in the horizontal position. Insert the 'R' clip.

To provide improved crop clearance, the lower tread is telescopic. To adjust, remove the bolt (1) Figure 3-7 and push the lower tread upwards so that the hole (2) aligns with the bolt hole. Re-insert the bolt. Alternatively, remove the lower tread and store in a safe place for future use.



3-7

LUBRICATION AND MAINTENANCE CHART

Service Interval	Operation No.	Maintenance Requirement	Check	Clean	Lube	Change	Adjust	Drain	Wash
When warning lamp lights See pages 3-7 to 3-9	1	Air cleaner		X					
Every 10 hours or daily See pages 3-10 to 3-12	2	Engine oil level	X				X		
	3	Radiator, oil cooler and condenser (where fitted)	X	X					
	4	Radiator coolant level	X				X		
	5	Windscreen washer reservoir (where fitted)	X						
Every 50 hours See pages 3-13 to 3-20	6	Cab air filters (where fitted)		X					
	7	Brake and clutch reservoir oil level	X				X		
	8	Wheels and tyres	X				X		
	9	Fuel filter/sediment separator						X	
	10	Transmission/rear axle oil level	X				X		
	11	All grease fittings			X				
Every 150 hours See page 3-21	* 12	Battery electrolyte level (tractors operating in tropical climates only)	X				X		
Every 300 hours See pages 3-22 to 3-29	# 13	Engine oil and filter				X			
	14	Front axle swivel bearings			X				
	15	Front axle differential oil level (four wheel drive only)	X				X		
	16	Front axle hub oil levels (four wheel drive only)	X				X		
	17	Safety frame or cab bolts	X				X		
	18	Transmission filter (Dual Power transmission only)				X			
	19	Footbrakes	X				X		
	20	Handbrake	X				X		
	21	Cab air filters (where fitted)							X
	22	Air conditioner and drain tubes (where fitted)		X					
	23	Air cleaner							X
Every 600 hours See pages 3-30 to 3-33	24	Hydraulic oil filter(s)				X			
	25	Air cleaner				X			
	26	Front wheel bearings (two wheel drive)	X	X	X		X		
	27	Valve tappet clearance	X				X		
	28	Valve rocker cover ventilation filter				X			
	29	Fuel filter/sediment separator		X		X			
Every 1200 hours or annually See pages 3-34 to 3-40	30	Fuel injectors	X	X			X		
	31	Transmission/rear axle oil				X			
	32	Four wheel drive axle/hub oil				X			
	33	Air cleaner inner element				X			
	34	Cab air filters (where fitted)				X			
	35	Battery electrolyte level (tractors operating in temperate climates only)	X				X		
	+ 36	Clutch calibration (16 x 16 transmission)					X		
	37	Clutch fill time calibration (16 x 16 transmission)					X		
Every 1200 hours or two years See pages 3-41 to 3-43	38	Cooling system						X	
General Maintenance See pages 3-44 to 3-50	39	Lighting equipment	X			X	X		
	40	Fuses and relays	X			X			
	41	Alternator	X						
	42	Clutch interlock cable	X				X		
	43	Engine idle speed	X				X		
	44	Tractor storage and preparation	X						

* Tractors operating in tropical climates only. Batteries on tractors operating in temperate climates need only be checked every 1200 hours – see Operation 35.

Oil change interval will be reduced if the diesel fuel has a high sulphur content or if the tractor is operated in extremely cold temperatures.

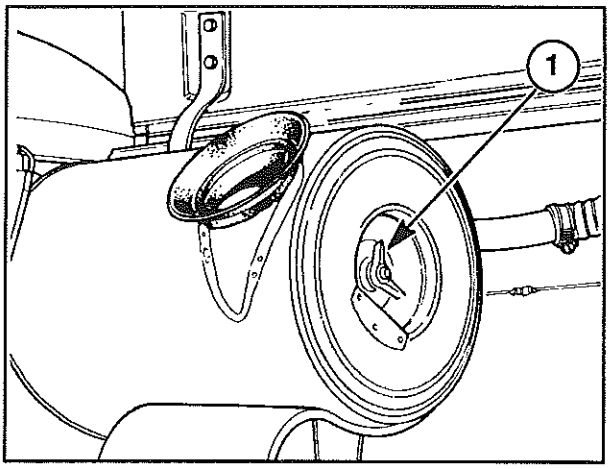
+ Perform clutch calibration more frequently if a deterioration in the quality of speed changing is noted.

WHEN THE WARNING LAMP LIGHTS

OPERATION 1

SERVICE THE ENGINE AIR CLEANER – Figures 3-8 to 3-15

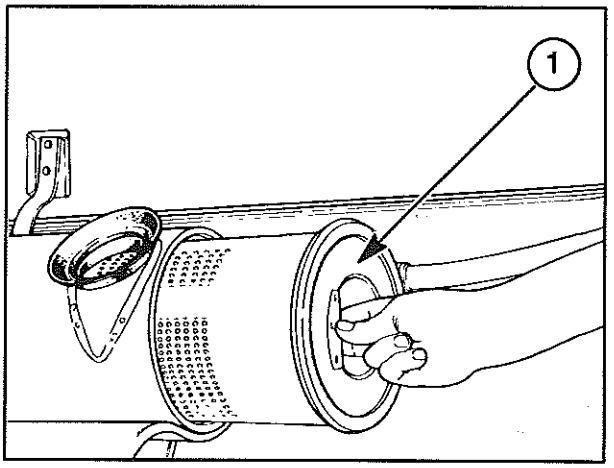
Clean the outer element when the restriction indicator light on the instrument console illuminates or every 600 hours, whichever comes first. Perform the service within one hour of operation after the indicator lights up.



3-8

IMPORTANT: *Clean the outer element only when the restriction light illuminates. Cleaning the filter too frequently will decrease the service life of the filter.*

The dry air cleaner, which is located under the rear, right-hand side of the hood, consists of an inner and outer paper element within a metal casing. See Figure 3-8.



3-9

1. Unscrew the retaining wing nut (1) Figure 3-8, from the central stud. Ease the outer element forward, as shown in Figure 3-9 and remove the outer element (1) from the air cleaner assembly.

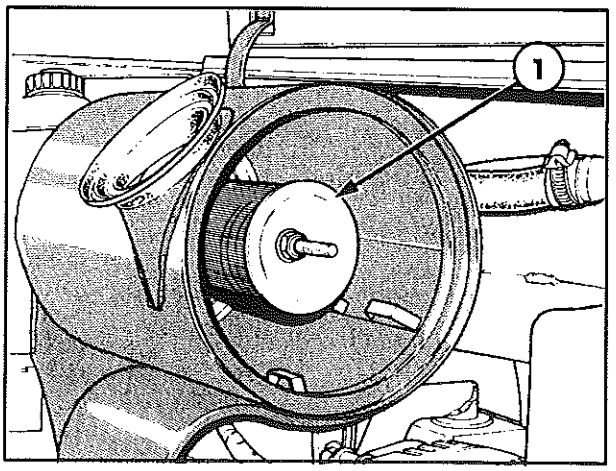
IMPORTANT: *Do not remove or disturb the inner element (1) Figure 3-10.*

2. Examine the inside of the outer element. If dust is present, the outer element is defective and must be replaced.

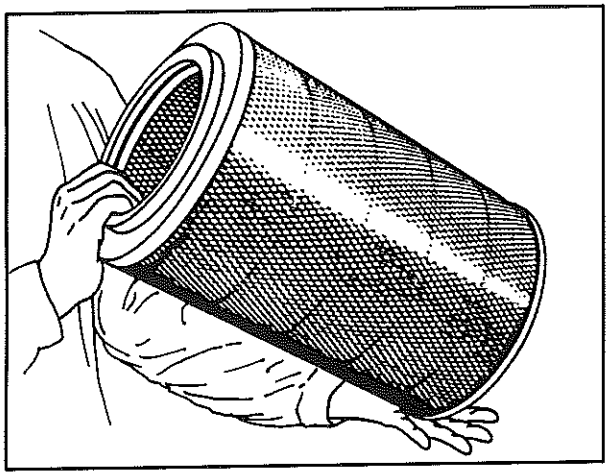
3. Clean the outer element using either method A, B, or C, depending on the element's condition

Methods A or B should be used for dry dust.

Method C should be used if the element is sooty, oily or heavily contaminated or after cleaning the element five times using methods A or B.



3-10



3-11

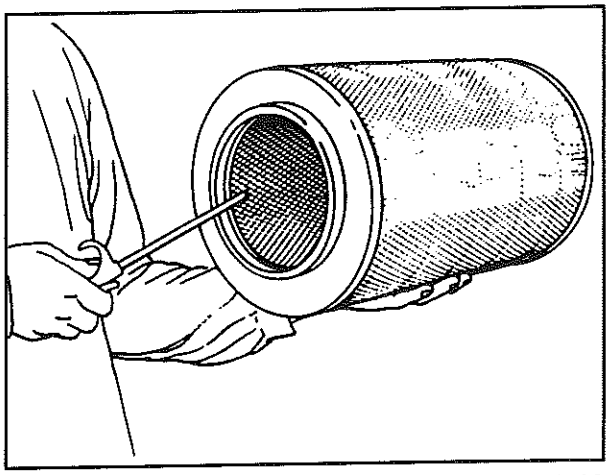
Method A

Lightly tap the ends of the element against the palm of the hand. See Figure 3-11.

IMPORTANT: *Do not tap the element against a hard surface as this will damage the element.*

Method B

Use compressed air, not exceeding 2 bar (30 lbf/in^2). Insert the air line nozzle inside the element. Hold the nozzle 150 mm (6 in.) from the element and blow the dust from the inside through the element to the outside. See Figure 3-12.



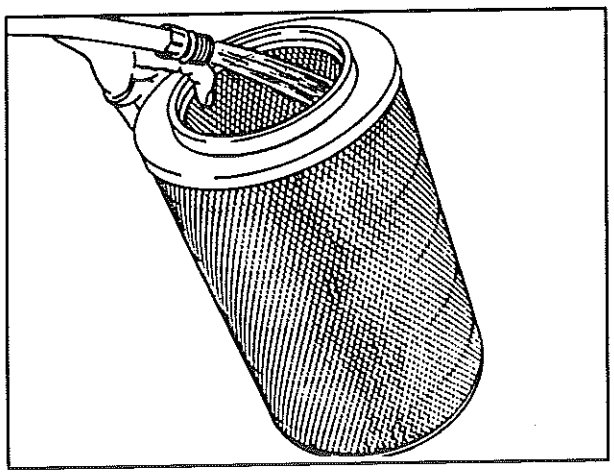
3-12

WARNING: *Wear eye protection and a face mask when carrying out this operation.*

Method C

Immerse the element in warm water containing a small amount of non-sudsing detergent. Allow to soak for at least 15 minutes. Keep the open end of the element above the water line.

IMPORTANT: *Never use fuel oil, gasoline, solvent or water hotter than the hand can stand, otherwise the filter element may be damaged.*



3-13

After soaking, agitate the element in the water, taking care not to allow dirty water outside the element to splash over to the inside.

Rinse the element with clean, running water. Rinse from the inside of the element through to the outside until the water is free of dirt. If a hose is used, do not exceed 2 bar (30 lbf/in^2). A gentle trickle of water is sufficient and will ensure that the element is not ruptured. See Figure 3-13.

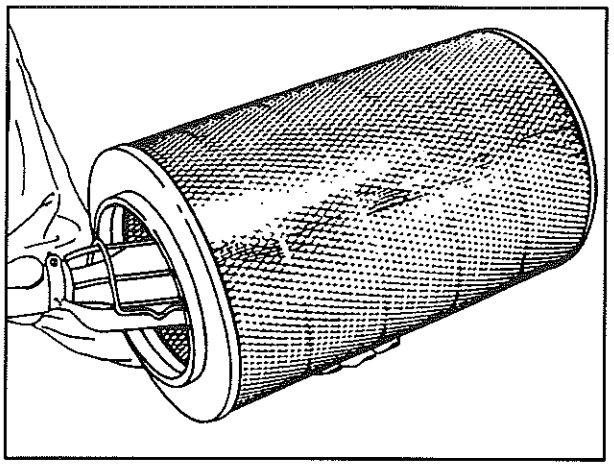
Shake out excess water from the element and allow to air dry naturally. Do **not** use compressed air, a light bulb or heat to dry the element.

NOTE: *It usually takes one to three days for a filter element to dry.*

IMPORTANT: *Do not attempt to dry the element with heat or compressed air and do not install until thoroughly dry as it may rupture. It is recommended that a new or previously cleaned element be installed at this service and the washed element put aside for installation at the next service. The spare element should be stored in a dry place and wrapped to prevent dust contamination or damage.*

NOTE: *An outer filter element may be washed once only.*

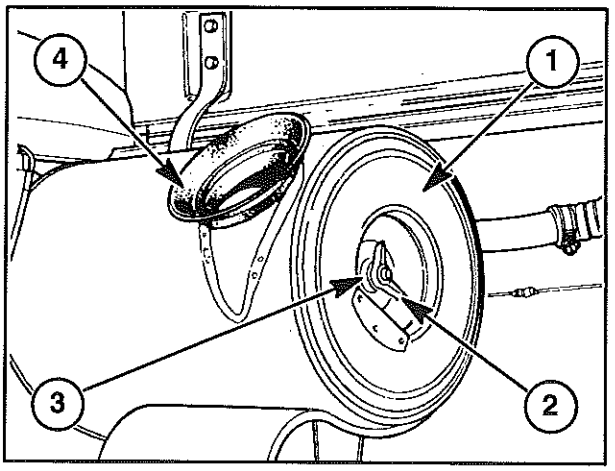
4. Examine the element for damage by placing a light inside the element. See Figure 3-14. Discard the element if pin pricks of light can be seen or if there are areas where the paper appears thin.



3-14

5. Check the element material for bunching; the metal casing for distortion and the rubber gasket for damage. Discard the filter element if it is damaged.

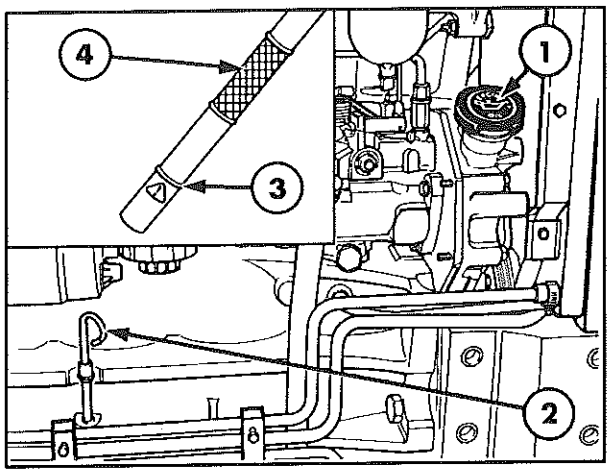
6. Clean the inside of the air cleaner housing using a damp, lint-free cloth on a probe. Do not damage the inner filter element. Ensure that the inner end of the housing is clean and smooth, to ensure a good seating for the rubber seal on the element.



3-15

7. Install the cleaned outer element or a new outer element (1) Figure 3-15. Tighten the wing nut (2). Check the wing nut seal (3) and the air inlet seal (4). Replace the seal(s) if not in perfect condition.

If the restriction indicator light continues to illuminate after cleaning the element, the outer or inner element may need replacing. See operations 25 and 33.



3-16

OPERATION 2

CHECK ENGINE OIL LEVEL – Figure 3-16

Check the oil level when the tractor is parked on a level surface and after the engine has been stopped for a minimum of five minutes.

1. Remove the dipstick (2), wipe clean and re-insert fully.

2. Pull the dipstick out again and check the oil level. The oil level should be in the cross-hatched area (4).

3. Remove the filler cap (1) and add fresh oil as required until the oil level falls within the cross-hatched area of the dipstick. The quantity of oil represented by the upper and lower lines of the hatched area is approximately 1.8 litres (3 Imp. pints).

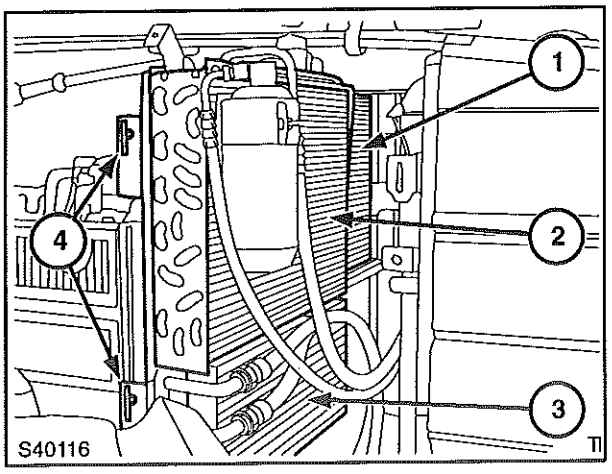
NOTE: *Do not operate the engine with the oil level below the low mark (3) on the dipstick. Do not fill above the cross-hatched area. The excessive oil will burn off and give a false impression of oil consumption.*

See Section 4 for the correct oil specification and viscosity.

OPERATION 3

CLEAN THE RADIATOR, OIL COOLER AND AIR CONDITIONER CONDENSER – Figure 3-17

Check the cores for chaff accumulation or blockage. If any is noted, clean as follows:



3-17

CAUTION: *Wear eye protection and protective clothing during the cleaning process. Clear the area of bystanders so they are not struck by flying particles.*

1. For cleaning, use compressed air or a pressure washer not exceeding 7 bar (100 lbf/in^2).

2. The air conditioner condensor (2) and the engine oil cooler (3), located in front of the engine radiator, have a slide out facility for ease of service. Unscrew the two thumb screws (4) anti-clockwise to release.

3. Slide the oil cooler and the air conditioner condensor (where fitted) out (to the right) to gain access to the engine coolant radiator (1).

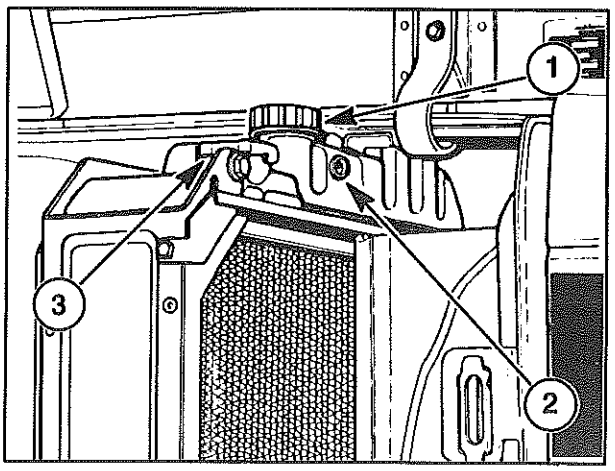
4. Direct the air or water through each core from the back to the front. Clean the radiator first, then the air conditioner condenser and, finally, the engine oil cooler. Carefully straighten any bent fins.

NOTE: *If the cores are blocked with any oily substances, apply a detergent solution and remove it with a pressure washer.*

OPERATION 4

CHECK ENGINE COOLANT LEVEL – Figure 3-18

Peak power operation, followed by a rapid reduction in power requirement and engine speed, may cause the coolant to boil and be expelled from the radiator overflow tube. Normally, this loss of coolant is small and of little consequence, but repeated occurrence can significantly lower the coolant level and necessitate topping up.



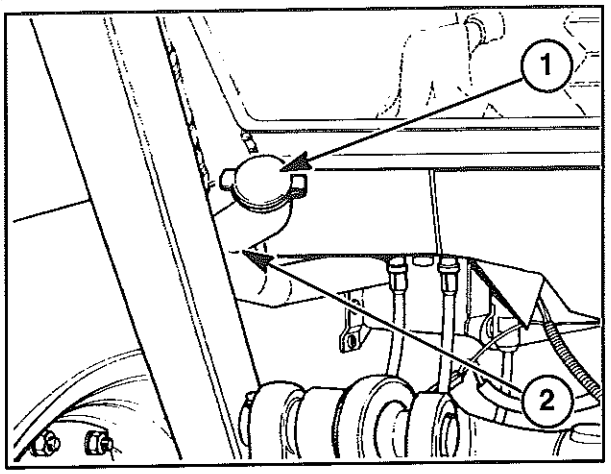
3-18

Your tractor is equipped with a coolant recovery system in the form of an expansion chamber within the radiator header tank and an overflow bottle. Any coolant expelled into the expansion chamber and overflow bottle is drawn back into the radiator as the engine cools and the coolant contracts. If, however, the radiator is overfilled, the excess coolant will be discharged via the overflow tube and lost.

With the engine **cold**, check that the coolant level is visible in the sight glass (2) in the front of the radiator header tank. If necessary, remove the filler cap (1) and top up with coolant solution.

WARNING: *The cooling system operates under pressure which is controlled by the radiator pressure cap (3). The radiator pressure cap should not be used for top up purposes. It is dangerous to remove the radiator filler or pressure caps while the system is hot. When cool, use a thick cloth and turn the filler cap (1) slowly to the first stop and allow the pressure to escape before fully removing the cap. Coolant should be kept off the skin. Adhere to the precautions outlined on the antifreeze and inhibitor containers.*

See Operation 38 for details of the coolant solution to be used.



3-19

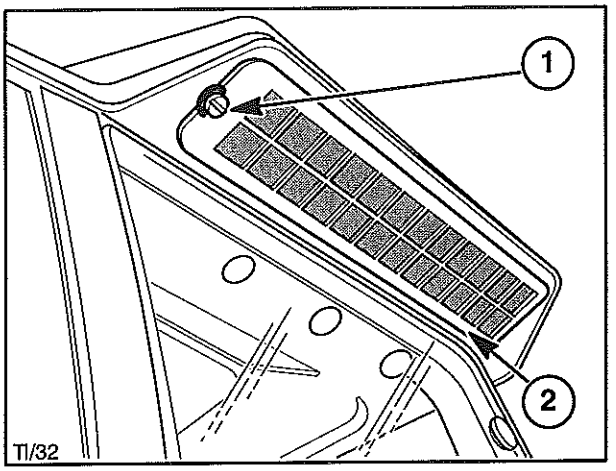
OPERATION 5

CHECK WINDSCREEN WASHER RESERVOIR (where fitted) – Figure 3-19

The reservoir for the windscreen washers is located beneath the rear of the cab on the left-hand side. The same reservoir is utilised for both front and rear windscreen washers.

Lift off the cap (1) and fill with washer solvent solution up to the bend (2) in the filler neck. In cold weather, use a solvent with anti-freeze properties.

EVERY 50 HOURS carry out the preceding checks plus the following:



3-20

OPERATION 6

CLEAN THE CAB AIR FILTERS – Figures 3-20 and 3-21

Air drawn into the cab by the blower fan passes through two filters, one each side of the cab roof.

Before servicing the filters, switch off the blower and close the roof hatch, all windows and one door. Forcibly close the other door. The resulting back pressure will dislodge most of the loose dirt from the underside of the filters.

NOTE: *In humid conditions, such as occur on most early mornings, do* ***not*** *switch on the blower prior to servicing the filter. Damp particles drawn into the filter may be difficult to remove without washing. (See Operation 21).*

To remove a filter, unscrew the securing screw (1) Figure 3-20, from the front end of the filter cover (2). With reference to Figure 3-21, remove the cover (2) and the filter element (1).

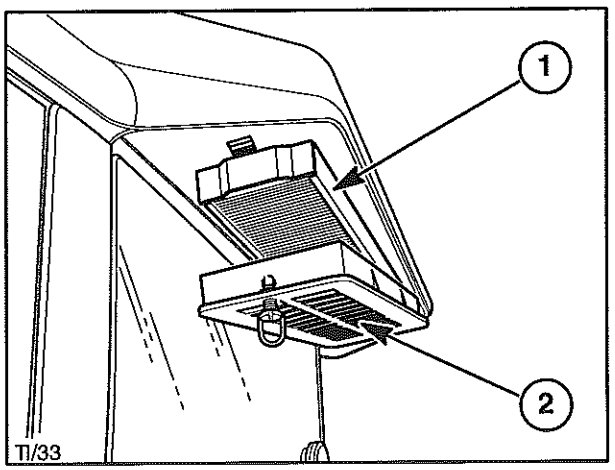
NOTE: *The filters are made of specially treated paper with a rubber sealing strip bonded to the upper surface. Take care not to damage the element during removal.*

Clean the elements by blowing with compressed air not exceeding 30 lbf. in^2 (2 bar). Blow the dust from the **upper** surface through the element to the underside. Hold the nozzle at least 12 in. (300 mm) from the element to prevent damage to the paper pleats.

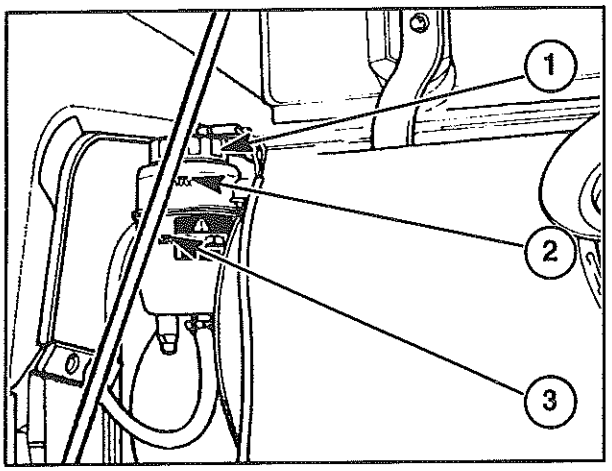
Clean both filter chambers with a damp, lint-free cloth.

Replace the filter elements (with the rubber seal uppermost) and re-install the covers.

NOTE: *The filters should be cleaned more frequently when operating in extremely dusty conditions.*



3-21



3-22

OPERATION 7

BRAKE AND CLUTCH RESERVOIR

– See Figure 3-22

The combined brake/clutch reservoir is located under the rear of the hood on the right-hand side.

Visually check the level of the fluid in the reservoir. It should **never** be allowed to fall below the low level line (3). If necessary, unscrew the cap (1) and top up with the correct brake fluid to the upper line (2). Do not overfill.

WARNING: *Use only the correct type of brake fluid. Mixing different types of brake fluid may cause damage to internal hydraulic braking components and result in brake failure.*

WARNING: *Brake fluid should be kept off the skin. Adhere to the instructions on the brake fluid container.*

IMPORTANT: *Take care not to spill brake fluid on the tractor as it may damage the paint.*

See Section 4 for brake/clutch fluid specification.

OPERATION 8

WHEELS AND TIRES

Tire Pressures and Condition

Check and adjust the front and rear tire pressures and inspect the tread and side walls for damage. Adjust the tire pressures to suit the load being carried.

See 'TIRE PRESSURES AND LOADS' in Section 2.

NOTE: *If the tires are ballasted with a calcium chloride/water solution, a special tire gauge should be used as the solution will corrode a proprietary type gauge.*

Wheel Nuts

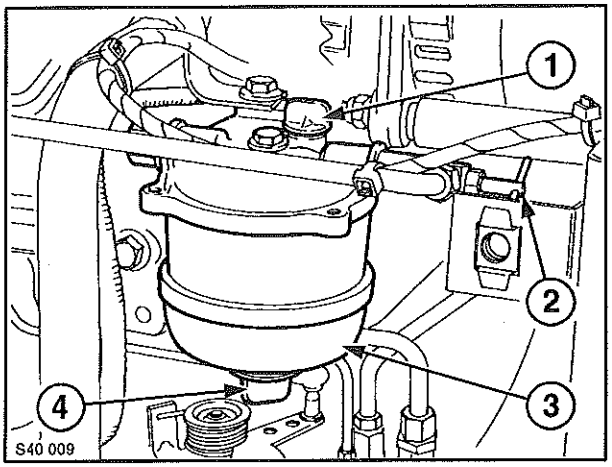
Check the front and rear wheel nuts for tightness using a torque wrench and torque multiplier, where necessary. The specified torque figures are shown in the table below:

Front disc to hub nuts (two wheel drive)	133 Nm (98 lbf. ft.)
Front disc to hub nuts (four wheel drive)	475 Nm (350 lbf. ft.)
Front disc to rim nuts (four wheel drive)	240 Nm (177 lbf. ft.)
Rear disc to hub nuts (manual adjust wheels)	390 Nm (288 lbf. ft.)
Rear disc to rim nuts (manual adjust wheels)	240 Nm (177 lbf. ft.)
Rear wheel clamp nuts (power adjust wheels)	250 Nm (185 lbf. ft.)
Rear disc to hub nuts (power adjust wheels)	712 Nm (525 lbf. ft.)

OPERATION 9

DRAIN FUEL FILTER AND SEDIMENT SEPARATOR – Figures 3-23 and 3-24

IMPORTANT: *Before loosening or disconnecting any part of the fuel injection system, thoroughly clean the area to be worked on.*



3-23

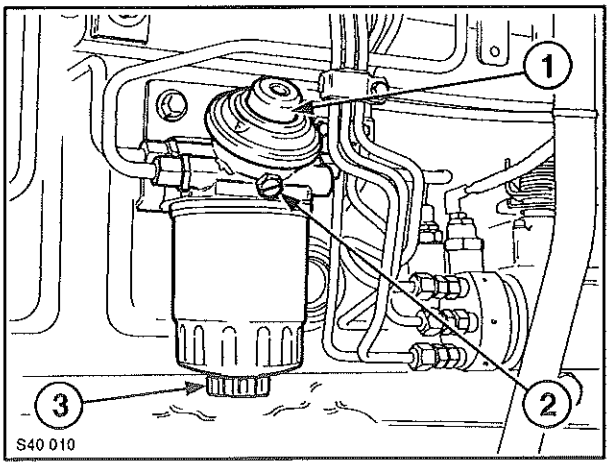
With reference to Figure 3-23, if water or sediment can be seen in the glass bowl (3) of the sediment separator, close the fuel supply tap (2), loosen the bleed screw (1) and the drain plug (4) on the sediment separator and allow contaminated fuel to drain out.

With reference to Figure 3-24, loosen the drain plug (3) on the fuel filter and allow contaminated fuel to drain out.

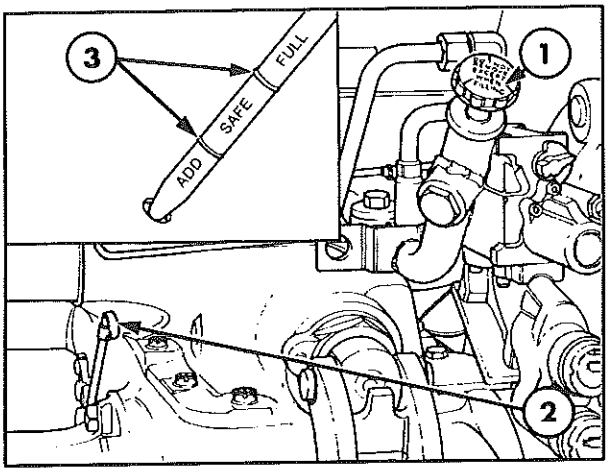
After draining the fuel filter and sediment separator, tighten the bleed screw on the sediment separator and both drain plugs, turn on the fuel supply and bleed the injection system, as follows:

Loosen the filter bleed screw (2) Figure 3-24 and press the primer plunger (1) several times until fuel free of air bubbles is discharged from the bleed screw hole. Tighten the bleed screw. Press the plunger several more times until resistance is felt, indicating that the system is free of air.

The injection pump and injectors are self-bleeding. Crank the engine with the throttle open until the engine fires.



3-24



3-25

OPERATION 10

TRANSMISSION/HYDRAULICS/REAR AXLE OIL LEVEL – Figure 3-25

With all rams extended, check the oil level by means of the dipstick. The oil level should be between the high and low marks on the dipstick.

NOTE: *See Operation 31 regarding the amount of oil that may be added to accommodate remote cylinders.*

If necessary, unscrew and remove the filler plug and top up with fresh oil to the upper mark on the dipstick. Do not overfill.

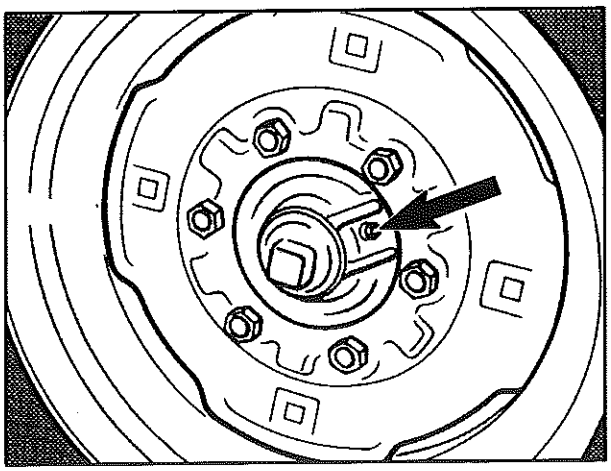
NOTE: *The G3/4 in. (3/4 in. B.S.P.) tapping on the filler tube may be used for the connection of a return hose from remote hydraulic cylinders, etc.*

See Section 4 for correct oil specification.

OPERATION 11

GREASE FITTINGS – See Figures 3-26 to 3-36

Oil all pivots and apply a grease gun to the lubrication fittings, as shown in Figures 3-26 to 3-36 inclusive.



3-26

See Section 4 for correct grease specification.

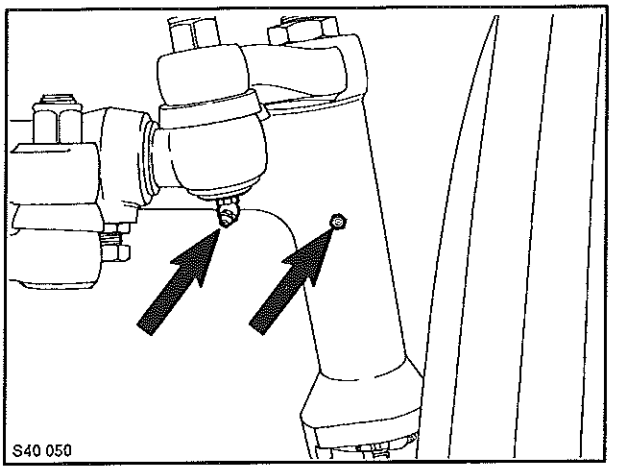
Front Wheel Hubs (2WD) – Figure 3-26

Apply a grease gun to the lubrication fitting, as shown.

NOTE: *Grease the hubs of both front wheels daily when operating in advese conditions.*

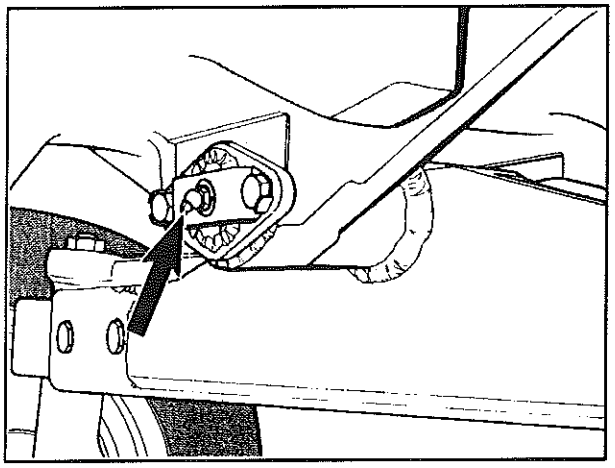
Front Wheel Spindles and Right-hand Steering arm (2WD) – Figure 3-27
Apply a grease gun to the lubrication fittings, as shown.

NOTE: *There is a grease fitting on both front wheel spindles and the right-hand steering arm. However, there is no grease fitting on the left-hand steering arm. This joint is sealed and lubricated for life.*



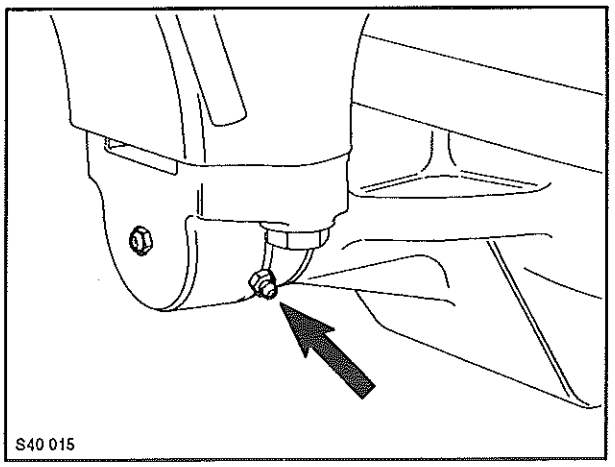
3-27

Trunnion Pin (2WD) – Figure 3-28
Apply a grease gun to the lubrication fitting, as shown.

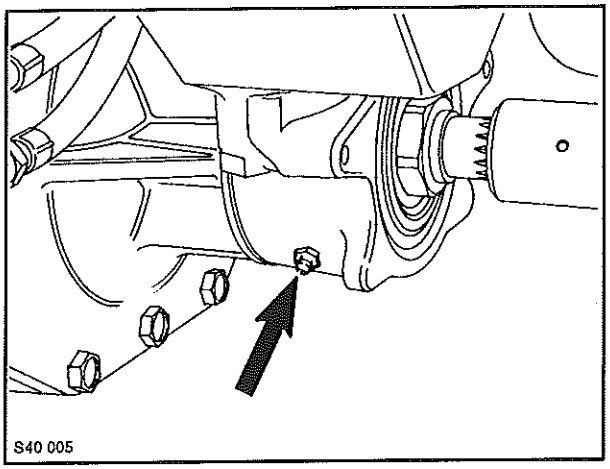


3-28

Front Trunnion Pin (4WD) – Figure 3-29
Apply a grease gun to the lubrication fitting, as shown.

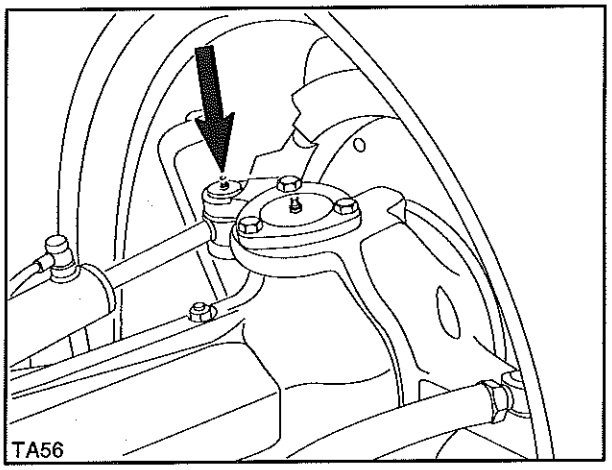


3-29



3-30

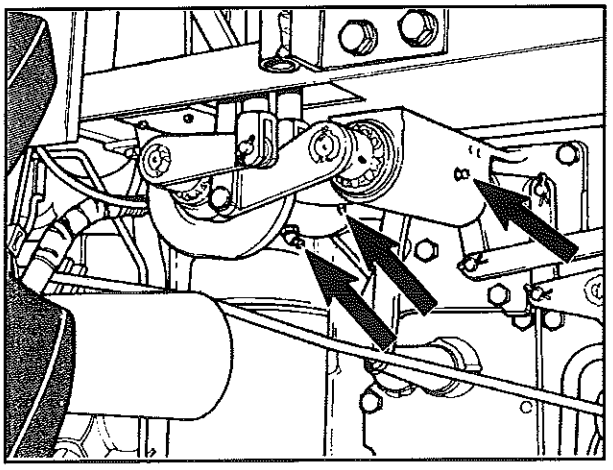
Rear Trunnion Pin (4WD) – Figure 3-30
Apply a grease gun to the lubrication fitting, as shown.



3-31

Steering Cylinder Pivot (4WD) – Figure 3-31
Apply a grease gun to the lubrication fitting, as shown.

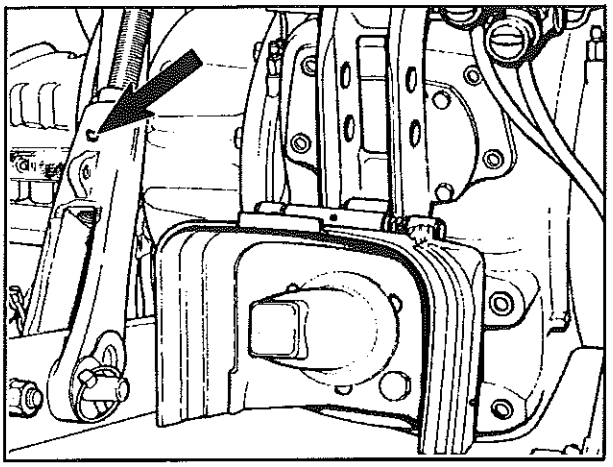
NOTE: *Left-hand steering cylinder pivot illustrated. There is a grease fitting on the right-hand steering cylinder pivot also. The grease fitting on the swivel bearing that appears in this picture need not be greased at this service interval. See operation 14 in the 300 hour service.*



3-32

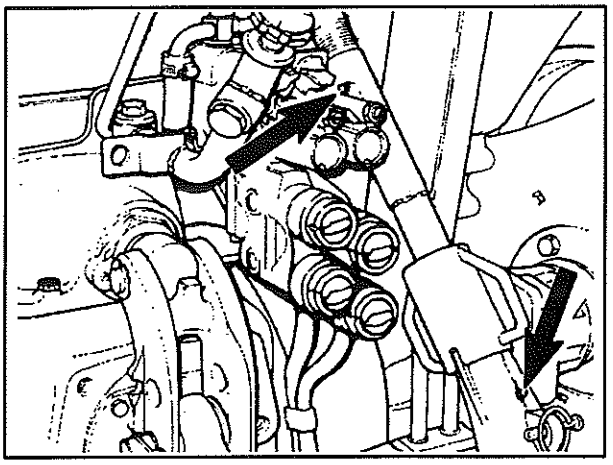
Gear Linkage (12 x 12 transmission) – Figure 3-32
Apply a grease gun to the lubrication fittings, as shown.

Left-hand Lift Rod – Figure 3-33
Apply a grease gun to the lubrication fitting, as shown.



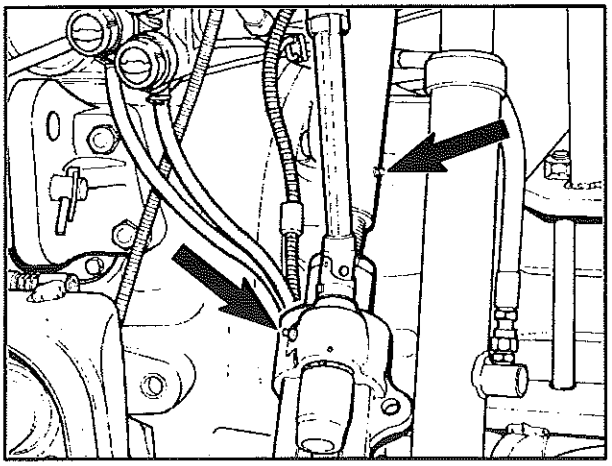
3-33

Right-hand Lift Rod (with turnbuckle adjustment) – Figure 3-34
Apply a grease gun to the lubrication fitting, as shown.

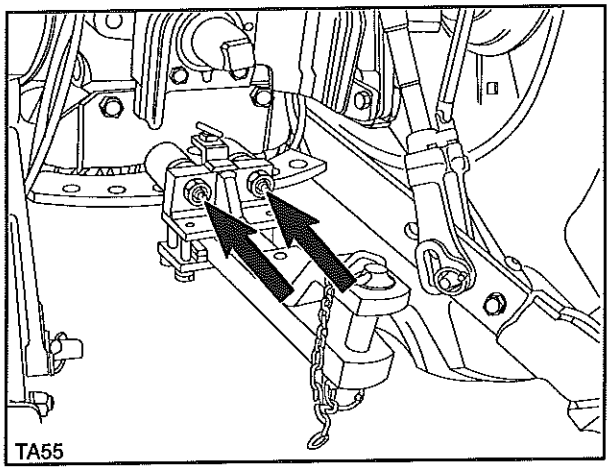


3-34

Right-hand Lift Rod (with levelling box adjustment) – Figure 3-35
Apply a grease gun to the lubrication fittings, as shown.



3-35



3-36

Heavy Duty Roller Drawbar (where fitted) – Figure 3-36

Apply a grease gun to the lubrication fittings, as shown.

EVERY 150 HOURS carry out the preceding checks plus the following:

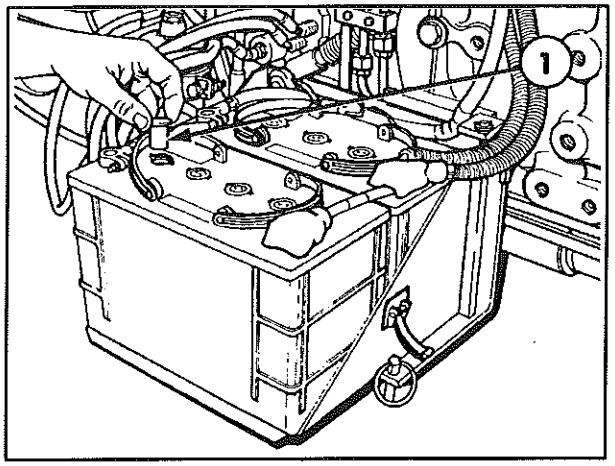
OPERATION 12

CHECK BATTERY ELECTROLYTE LEVEL – See Figure 3-37

IMPORTANT: *This operation applies only to batteries on tractors operating in* ***tropical*** *climates. Tractors operating in temperate climates should have the battery electrolyte level checked every 1200 hours. See Operation 35.*

Use a small screwdriver to pry the vent plugs from the top of the battery. Look through the vent plug holes and check that the electrolyte level is 2 – 3 mm (0.08 – 0.12 in.) above the top of the separator plates in each cell. If necessary, top up with distilled or de-mineralised water until the level is correct.

Do not overfill. Never use tap water or water from a rain barrel or other source.



3-37

EVERY 300 HOURS carry out the preceding checks plus the following:

IMPORTANT: *Operation 13 depicts the normal 300 hour engine oil and filter change period. However, the oil change period may be affected by other factors:*

Cold Temperature Operation

Engines operating in temperatures below – 12 ° C (10 ° F) or in arduous conditions should have the oil changed every 150 hours of operation. (The oil filter need only be changed at the normal 300 hour service interval).

Diesel Fuel Sulphur Content

In some countries, locally available diesel may have a high sulphur content, in which case the oil change period should be adjusted, as follows:

- *Sulphur content between 0.5 and 1.0% – change engine oil every 150 hours.*
- *Sulphur content between 1.0 and 1.3% – change engine oil every 75 hours.*

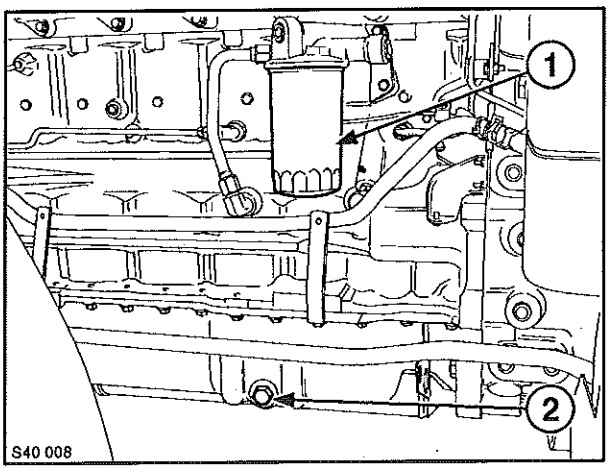
If in doubt, follow the engine oil change recommendations on the decal affixed to the underside of the hood.

See Section 4 for correct oil specification and viscosity.

OPERATION 13

ENGINE OIL AND FILTER – Figures 3-38 and 3-39

Warm the engine to operating temperature. Stop the engine, remove the drain plug (2) Figure 3-38 and catch the oil in a suitable container. Unscrew and discard the oil filter (1).



3-38

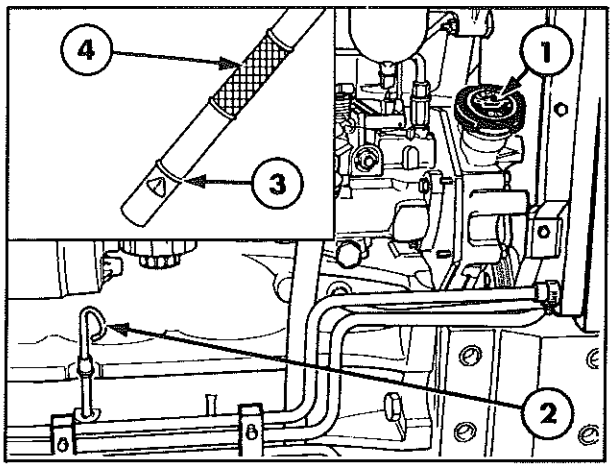
Clean the area around the filter. Smear clean engine oil around the rubber seal of a new filter and install on the tractor. Screw up until the faces just meet, then tighten a further $^3/_4$ of a turn. Do not overtighten.

Replace the drain plug and refill the engine with clean oil through the filler (1) Figure 3-39. tube. Run the engine for a minute or so, to circulate the oil, then stop the engine.

Wait for a short period to allow the oil to drain back to sump, then check the oil level by means of the dipstick (2).

Add clean oil, as necessary, until the oil level is within the hatched area (4) on the dipstick. The quantity of oil represented by the upper and lower lines of the hatched area is approximately 3.0 Imp. pints (1.8 litres).

Do not fill above the upper line of the hatched area. Excessive oil will be burned off within a short time and give a false impression of oil consumption.



3-39

NOTE: *The line (3) represents the low or danger level. Never allow the oil level to fall below this line.*

Oil Capacity (including filter):

4-cylinder engines	11.4 litres 20.1 Imp. pints
6-cylinder engines	20.9 litres 36.8 Imp. pints

OPERATION 14

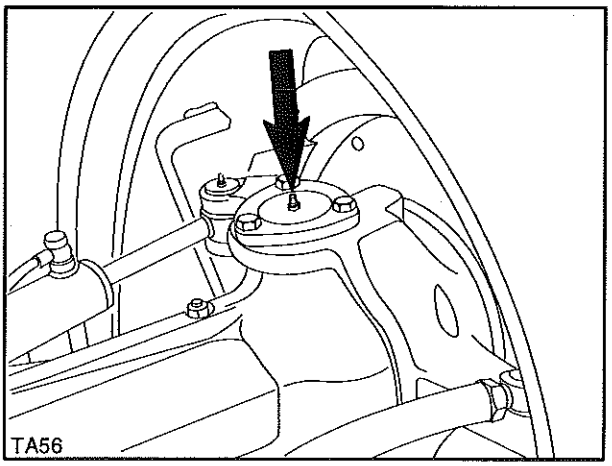
GREASE THE FRONT AXLE SWIVEL BEARINGS (4WD) – Figures 3-40 and 3-41

Apply a grease gun to the lubrication fittings, as shown in Figures 3-40 and 3-41.

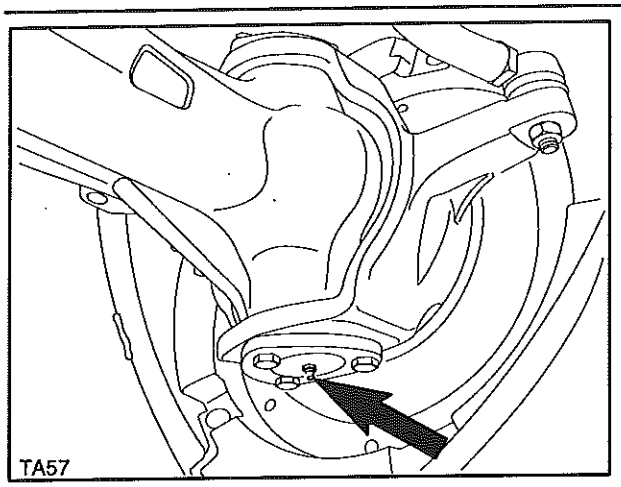
See Section 4 for correct grease specification.

Upper Swivel Bearings (4WD) – Figure 3-40
Apply a grease gun to the lubrication fitting, as shown, and to the lubrication fitting on the right-hand swivel bearing.

NOTE: *A left-hand swivel bearing is illustrated. If front fenders are installed, provision is made in the mounting bracket to facilitate greasing of the upper swivel bearing.*



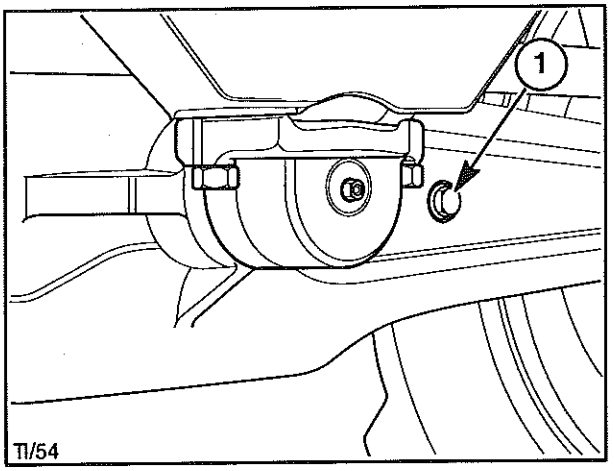
3-40



3-41

Lower Swivel Bearings (4WD) – Figure 3-41
Apply a grease gun to the lubrication fitting, as shown, and to the lubrication fitting on the right-hand swivel bearing.

NOTE: *A left-hand swivel bearing is illustrated.*

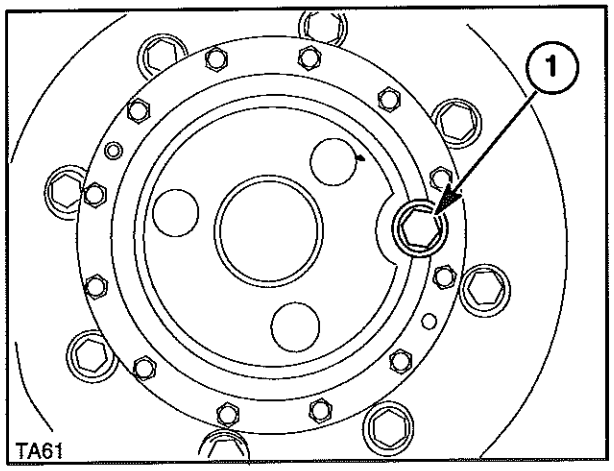


3-42

OPERATION 15

FOUR WHEEL DRIVE DIFFERENTIAL CASING – Figure 3-42
Remove the combined level/filler plug and ensure that the oil reaches the bottom of the opening. If necessary, top up through the opening with clean oil and replace the plug.

See Section 4 for correct oil specification.



3-43

OPERATION 16

FOUR WHEEL DRIVE HUBS – See Figure 3-43
Position a front wheel with the oil level plug at the 3 o'clock position, as shown.

Remove the combined level/filler plug and ensure that the oil reaches the bottom of the opening. If necessary, top up through the opening with clean oil and replace the plug.

Repeat on the other front wheel.

See Section 4 for correct oil specification.

OPERATION 17

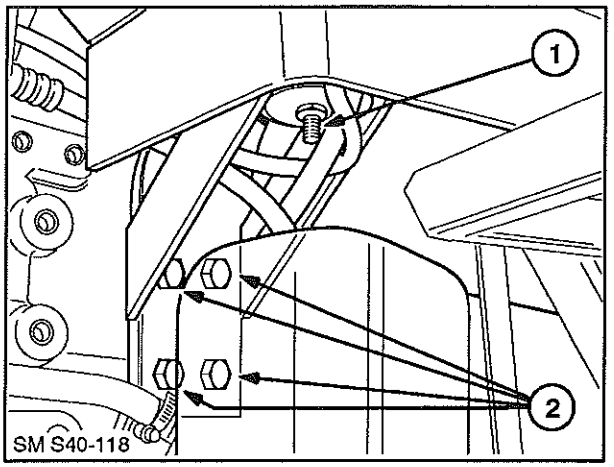
CHECK SAFETY CAB AND FRAME MOUNTING BOLTS AND NUTS – Figures 3-44 to 3-48

Check the torque of the safety cab or safety frame mounting bolts:

Cab Front Mounts – Figure 3-44

The front mounts are accessible from beneath the cab/platform and are located on both sides, at the front. Torque the nuts as follows:

Mounting bracket nut (1):	340 – 420 Nm (250 – 310 lbf. ft.)
Mounting bracket to transmission bolts (2):	114 – 146 Nm (84 – 107 lbf. ft.)

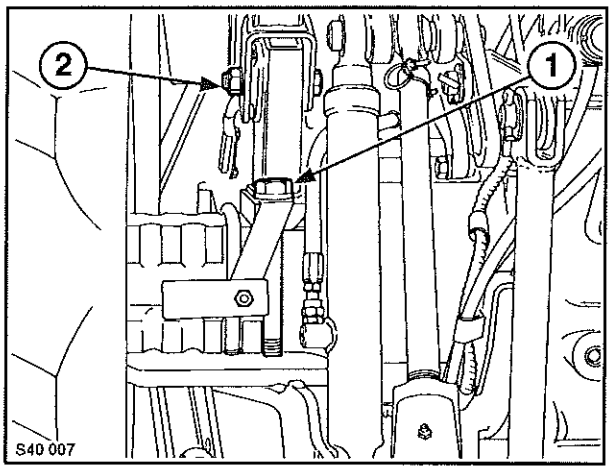


3-44

Cab Rear Mounts – Figure 3-45

The rear mounts are accessible from beneath the cab and are located on both sides, at the rear. Torque the nuts/bolts as follows:

Cab frame to mounting bracket nut (1):	271 Nm (200 lbf.ft.)
Mounting bracket to rear axle nuts and bolts (2):	320 – 400 Nm (236 – 295 lbf. ft.)

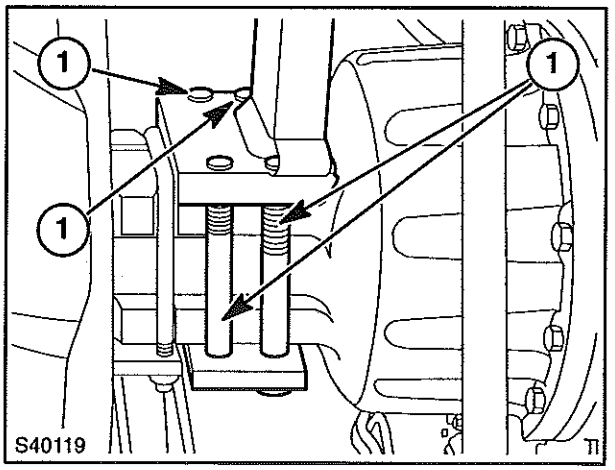


3-45

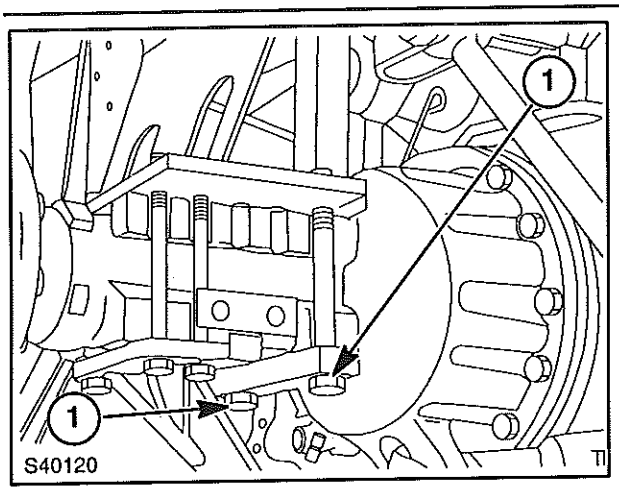
Rear Mounts (2-post ROPS) – Figure 3-46

The rear mounts are accessible from beneath the platform and are located on both sides, at the rear. Torque the bolts as follows:

2-post ROPS frame to axle : housing bolts (1)	271 Nm (200 lbf.ft.)



3-46

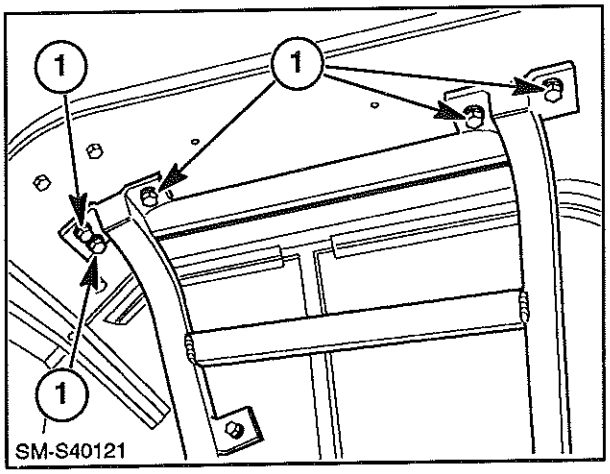


3-47

Lower Rear Mounts (4-post ROPS) – Figure 3-47
The lower rear mounts are accessible from beneath the platform and are located on both sides, at the rear. Torque the bolts as follows:

4-post safety frame to axle housing (1):	210 Nm (155 lbf.ft.)

Upper Mounts (4-post ROPS) – Figure 3-48
The upper mounts are bolted through the fenders, to an extension of the frame mounts. There are two bolts each side on the rear frame posts and three each side on the front posts. All the bolts are accessible from beneath the fenders, except the inner front bolt that is provided with a nut, accessible from above.



3-48

Torque the bolts as follows:

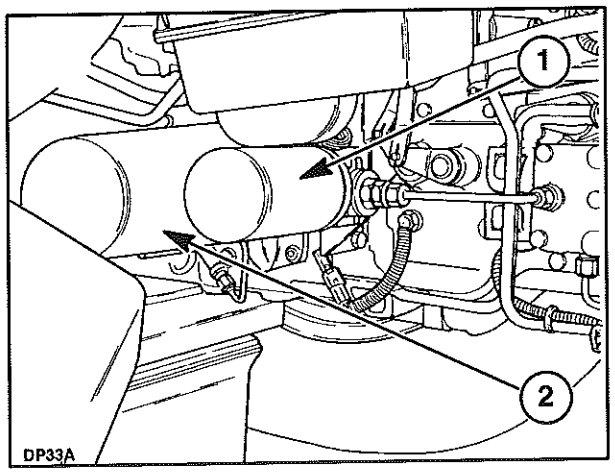
4-post safety frame to fender bolts and nut (1):	130 Nm (96 lbf.ft.)

OPERATION 18

CHANGE TRANSMISSION OIL FILTER (Dual Power transmission – where fitted) – Figure 3-49

When 12 x 12 Dual Power transmission is specified, a transmission oil filter is installed. The transmission oil filter (1) is mounted directly in front of the hydraulic oil filter (2), under the right-hand side of the cab or platform.

NOTE: *The hydraulic oil filter (2) need only be changed at the 600 hour service, unless the warning light on the instrument panel indicates otherwise. See operation 24.*



3-49

Clean the area around the transmission oil filter, then unscrew and discard the filter.

Clean the inlet channel and the face of the filter mounting. Smear clean oil around the rubber seal of the new filter and install on the tractor. Screw up until the faces just meet, then tighten a further $^{3}/_{4}$ of a turn. Do not overtighten.

OPERATION 19

FOOTBRAKE ADJUSTMENT – Figure 3-50

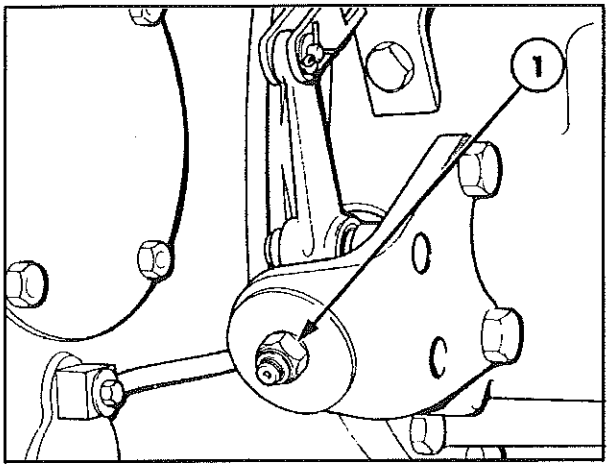
NOTE: *Adjustment of the footbrakes could affect handbrake adjustment.*

Block the front wheels, jack up the rear of the tractor and support the rear wheels just clear of the ground. Unlatch the brake pedals and release the handbrake, ensuring that the handbrake cables have some slack.

Loosen the adjuster nuts on both pull rods until a clearance is visible between the nut and washer, as shown at (1) in Figure 3-50. Tighten the adjuster nut on one brake pull rod until the wheel start to lock. Back off the adjuster nut one and one-third turns (8 flats) and ensure that the wheel is free to rotate. Repeat on the other brake pull rod.

Check the handbrake clearance. Lock the brake pedals together and road test to ensure that the brakes are balanced and will stop the tractor in a straight line.

WARNING: *Owners should be aware of local regulations concerning the braking system. Regularly maintain the brakes to ensure compliance with the law and ensure your safety. If in doubt, contact your dealer.*



3-50

OPERATION 20

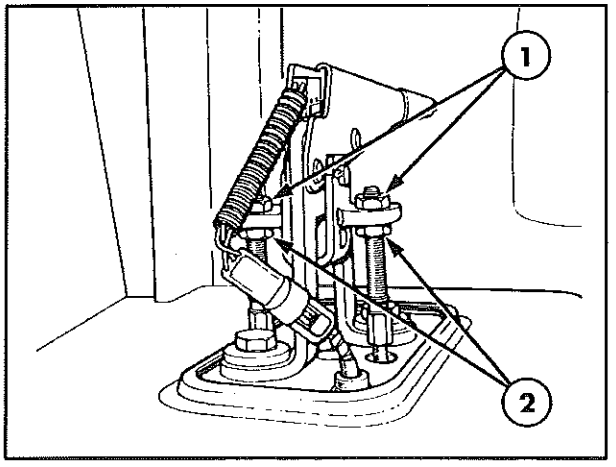
HANDBRAKE ADJUSTMENT – Figure 3-51

Adjustment of the handbrake should be carried out after the footbrakes have been adjusted.

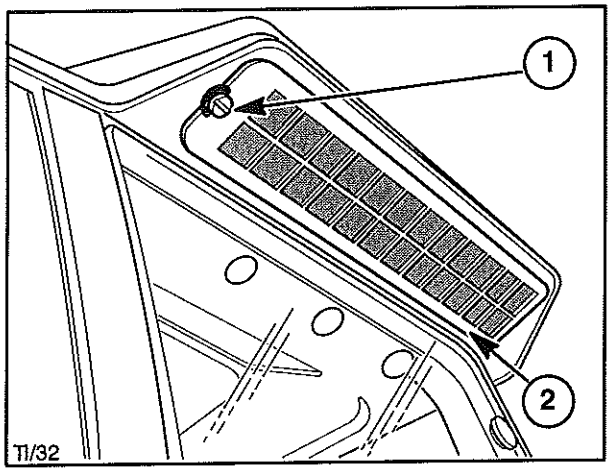
Block the front wheels, jack up the rear of the tractor and support the rear wheels just clear of the ground. Unlatch the brake pedals.

Apply the handbrake so that the 4th. notch of the sector is engaged. Remove or ease back the rubber boot, loosen the locknuts and turn the adjuster nuts on the operating cables until both wheels start to lock. Release the handbrake and ensure that both wheels are free to rotate. Apply the handbrake to ensure that the system operates freely. Tighten the locknuts.

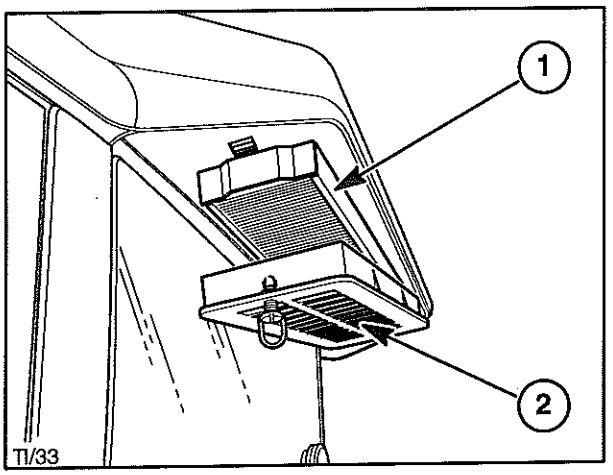
Road test, using the handbrake to stop the tractor. The tractor should stop in a straight line if the cables have been correctly adjusted.



3-51



3-52



3-53

OPERATION 21

WASH THE CAB AIR FILTERS (where fitted) – Figures 3-52 and 3-53

Before servicing the filters, ensure that the blower is switched off and close all windows, the roof hatch and one door. Slam the other door shut. The resulting back pressure will dislodge loose dirt from the filters.

NOTE: *In humid conditions, such as may be encountered on most early mornings, do not switch on the blower prior to servicing the filters.*

To remove a filter, unscrew the securing screw (1) Figure 3-52, from the front end of the filter cover (2). With reference to Figure 3-53, remove the cover (2) and the filter element (1).

Wash the elements every 300 hours or more frequently if heavily contaminated. To wash the elements, soak them in warm water containing a little mild detergent for 10 – 15 minutes. The outlet (clean) side of the elements should remain above the surface of the water.

Rinse each element under gently running water allowing the water to run through the elements from the clean side through to the inlet (stained) side. Shake off the excess water and allow to dry naturally with the outlet (clean) side uppermost.

IMPORTANT: *Do not attempt to dry the elements with heat or compressed air and do not install until* ***thoroughly*** *dry as they may rupture. It is recommended that new elements are installed at this service and the washed elements put aside for installation at a subsequent service. The spare elements should be stored in a dry place and wrapped to prevent dust contamination or damage.*

Clean the inside of each filter chamber with a damp, lint-free cloth and re-install the washed or new elements (with the rubber seal uppermost) and re-install the covers.

OPERATION 19

FOOTBRAKE ADJUSTMENT – Figure 3-50

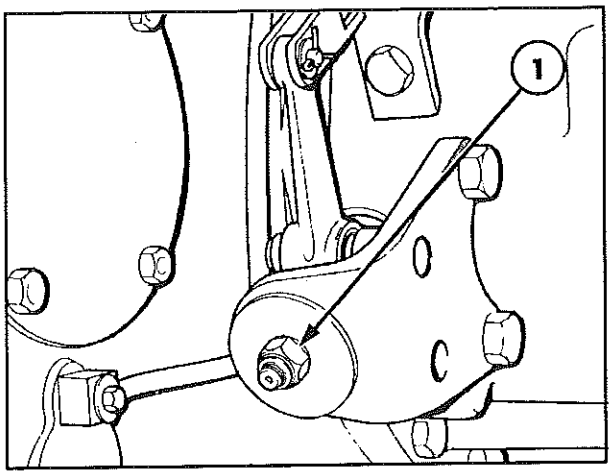
NOTE: *Adjustment of the footbrakes could affect handbrake adjustment.*

Block the front wheels, jack up the rear of the tractor and support the rear wheels just clear of the ground. Unlatch the brake pedals and release the handbrake, ensuring that the handbrake cables have some slack.

Loosen the adjuster nuts on both pull rods until a clearance is visible between the nut and washer, as shown at (1) in Figure 3-50. Tighten the adjuster nut on one brake pull rod until the wheel start to lock. Back off the adjuster nut one and one-third turns (8 flats) and ensure that the wheel is free to rotate. Repeat on the other brake pull rod.

Check the handbrake clearance. Lock the brake pedals together and road test to ensure that the brakes are balanced and will stop the tractor in a straight line.

WARNING: *Owners should be aware of local regulations concerning the braking system. Regularly maintain the brakes to ensure compliance with the law and ensure your safety. If in doubt, contact your dealer.*



3-50

OPERATION 20

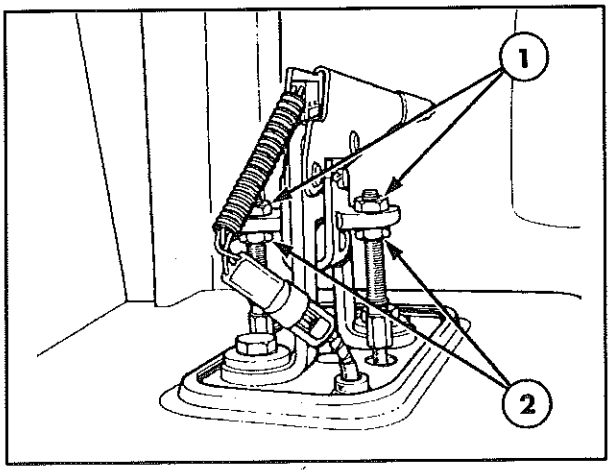
HANDBRAKE ADJUSTMENT – Figure 3-51

Adjustment of the handbrake should be carried out after the footbrakes have been adjusted.

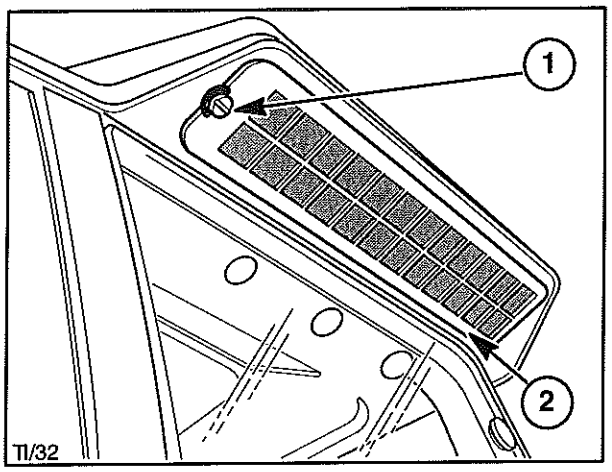
Block the front wheels, jack up the rear of the tractor and support the rear wheels just clear of the ground. Unlatch the brake pedals.

Apply the handbrake so that the 4th. notch of the sector is engaged. Remove or ease back the rubber boot, loosen the locknuts and turn the adjuster nuts on the operating cables until both wheels start to lock. Release the handbrake and ensure that both wheels are free to rotate. Apply the handbrake to ensure that the system operates freely. Tighten the locknuts.

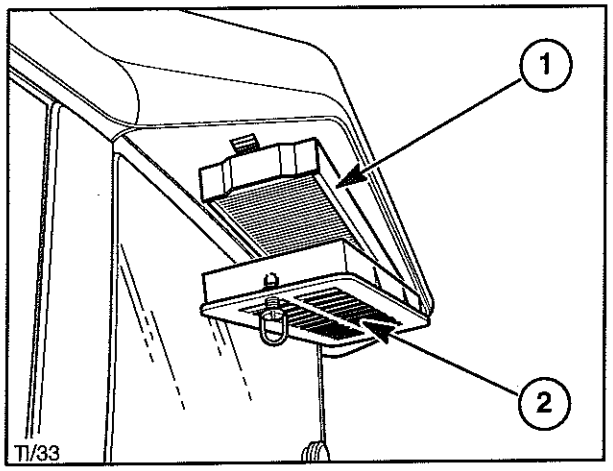
Road test, using the handbrake to stop the tractor. The tractor should stop in a straight line if the cables have been correctly adjusted.



3-51



3-52



3-53

OPERATION 21

WASH THE CAB AIR FILTERS (where fitted) – Figures 3-52 and 3-53

Before servicing the filters, ensure that the blower is switched off and close all windows, the roof hatch and one door. Slam the other door shut. The resulting back pressure will dislodge loose dirt from the filters.

NOTE: *In humid conditions, such as may be encountered on most early mornings, do not switch on the blower prior to servicing the filters.*

To remove a filter, unscrew the securing screw (1) Figure 3-52, from the front end of the filter cover (2). With reference to Figure 3-53, remove the cover (2) and the filter element (1).

Wash the elements every 300 hours or more frequently if heavily contaminated. To wash the elements, soak them in warm water containing a little mild detergent for 10 – 15 minutes. The outlet (clean) side of the elements should remain above the surface of the water.

Rinse each element under gently running water allowing the water to run through the elements from the clean side through to the inlet (stained) side. Shake off the excess water and allow to dry naturally with the outlet (clean) side uppermost.

IMPORTANT: *Do not attempt to dry the elements with heat or compressed air and do not install until* ***thoroughly*** *dry as they may rupture. It is recommended that new elements are installed at this service and the washed elements put aside for installation at a subsequent service. The spare elements should be stored in a dry place and wrapped to prevent dust contamination or damage.*

Clean the inside of each filter chamber with a damp, lint-free cloth and re-install the washed or new elements (with the rubber seal uppermost) and re-install the covers.

OPERATION 22

WASH THE AIR CONDITIONER TROUGH (where fitted)

Remove the four bolts securing the front section of the outer roof panel and lift off.

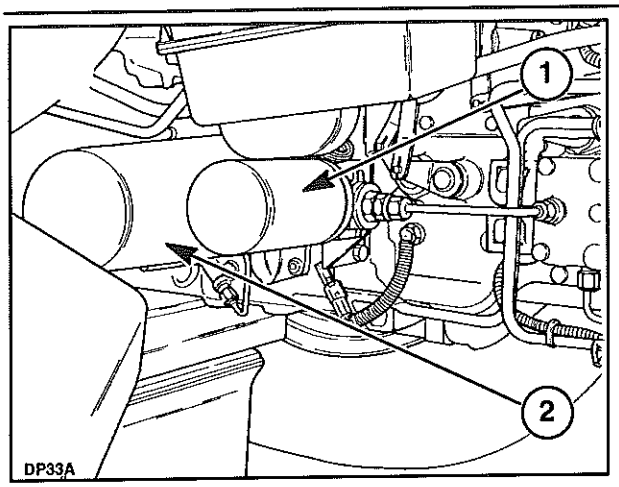
Dirty water from the air conditioner evaporator drains into a trough beneath the evaporator and escapes via two tubes located either side of the trough. Wash out the trough and ensure that the drain tubes are not blocked.

NOTE: *The two drain tubes protrude from beneath the front pillars at either side of the cab.*

OPERATION 23

ENGINE AIR CLEANER OUTER ELEMENT

Clean the engine air cleaner outer element, as detailed in Operation No. 1.



3-54

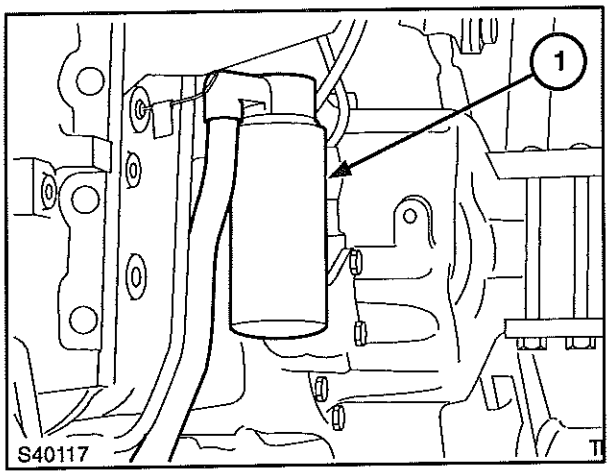
EVERY 600 HOURS carry out the preceding checks plus the following:

OPERATION 24

CHANGE THE HYDRAULIC OIL FILTERS – Figures 3-54 to 3-56

NOTE: *This operation should be carried out every 600 hours, unless the indicator light on the instrument panel signals an earlier service requirement. See* Analogue and Analogue/Digital Instruments *and* Electronic Instrument Panel *in section 2.*

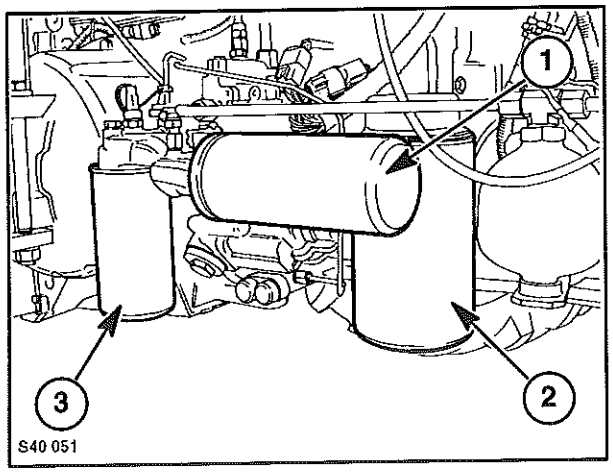
Clean the area around the hydraulic oil filters, then unscrew and discard the filters shown in Figures 3-54, 3-55 and 3-56, dependent upon the type of hydraulic pump installed in your tractor.



3-55

If your tractor has a tandem gear pump, then it will have a single filter (2) Figure 3-54, mounted horizontally beneath the right-hand side of the cab or platform. If it also has Dual Power transmission then a second, smaller filter (1), for the transmission oil, will also be installed. The transmission oil filter (1) requires changing every 300 hours. See operation 18.

If your tractor is additionally fitted with an auxiliary, engine-mounted, gear pump, the filter is remote from the pump and will be found beneath the left-hand side of the cab or platform, as shown at (1) Figure 3-55.



3-56

Tractors with a CCLS pump have three filters installed under the right-hand side of the cab or platform, as shown in Figure 3-56. The charge pressure filter (1) is mounted horizontally. The charge pump inlet filter (2) and the steering pump inlet filter (3) are mounted vertically.

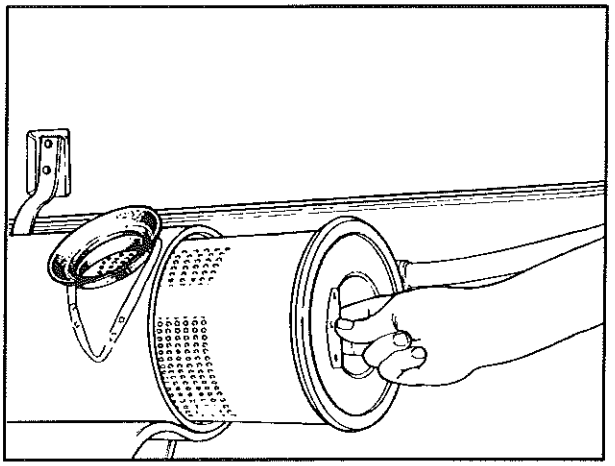
Clean the inlet channel and the face of each filter mounting. Smear clean oil around the rubber seal of each new filter and install on the tractor. Screw up until the faces just meet, then tighten a further $^{3}/_{4}$ of a turn. Do not overtighten.

OPERATION 25

CHANGE THE AIR CLEANER OUTER ELEMENT – Figure 3-57

Remove the outer element, as described in operation 1, and discard.

Clean the inside of the air cleaner casing using a damp, lint-free cloth on a probe, taking care not to damage the inner element. Install a new outer element.



3-57

OPERATION 26

CLEAN AND GREASE FRONT WHEEL BEARINGS (two wheel drive tractors) – Figure 3-58

With the parking brake applied, jack up and support one front wheel and block the other three wheels. Remove the cap (7), split pin (6), nut (5), thrust washer (4) and the outer bearing (3).

Remove the complete wheel and hub assembly and extract the grease retainer (1) and inner bearing (2).

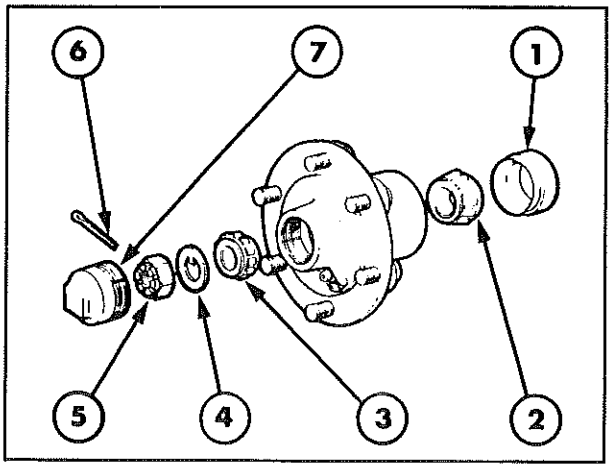
Thoroughly clean all parts in a suitable solvent and allow to dry.

WARNING: *Do not use solvents in a confined space. Work in a well ventilated area.*

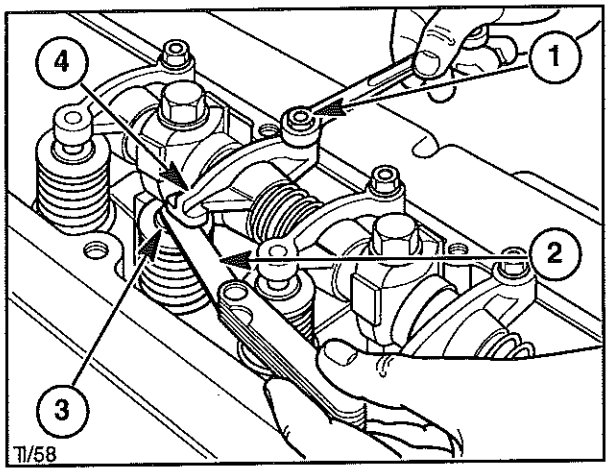
Inspect the bearings and both bearing cups in the wheel hub for discolouration or wear. Repack the bearings and the space between the two bearing cups with grease. Grease the wheel spindle.

Re-assemble using a new grease retainer seal and tighten the castellated nut to 34 Nm (25 lbf. ft.).

Rotate the wheel hub three to six revolutions in a clockwise direction. Further tighten the castellated nut to 68 Nm (50 lbf. ft.).



3-58



3-59

To check the clearance, turn the engine crankshaft so that when any pair of valves shown in the left-hand column of the following tables are fully open, the corresponding pair of valves in the right-hand column may be checked and adjusted:

4-cylinder engines

Valves open	Valves to adjust
1 inlet/3 exhaust	2 exhaust/4 inlet
3 inlet/4 exhaust	1 exhaust/2 inlet
2 exhaust/4 inlet	1 inlet/3 exhaust
1 exhaust/2 inlet	3 inlet/4 exhaust

6-cylinder engines

Valves open	Valves to adjust
1 inlet/3 exhaust	4 exhaust/6 inlet
5 inlet/6 exhaust	1 exhaust/2 inlet
2 exhaust/3 inlet	4 inlet/5 exhaust
4 exhaust/6 inlet	1 inlet/3 exhaust
1 exhaust/2 inlet	5 inlet/6 exhaust
4 inlet/5 exhaust	2 exhaust/3 inlet

Use a feeler gauge (2) to check the clearance between the valve stem (3) and the rocker arm (4). Turn the rocker arm screw (1) to adjust the clearance.

The correct valve clearance for all models is:

Inlet	0.014 – 0.018 in. (0.36 – 0.46 mm)
Exhaust	0.017 – 0.021 in. (0.43 – 0.53 mm)

Before installing the valve rocker cover, perform Operation No. 28.

OPERATION 27

CHECK VALVE TAPPET CLEARANCE – Figure 3-59

With the engine cold, ease the ventilation tube from the valve rocker cover after removing the retaining bolt. Remove the valve cover and check the valve clearance.

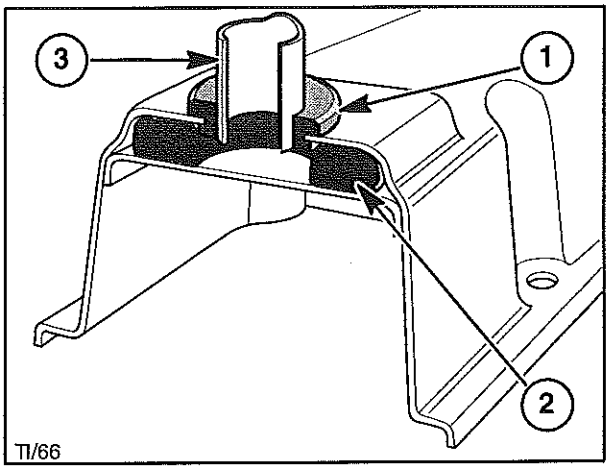
OPERATION 28

CHANGE ROCKER COVER VENTILATION FILTER – Figure 3-60

Before installing the valve rocker cover, remove the ventilation tube rubber grommet (1) and pull out the gauze filter pad (2). Discard this pad and install a new one.

To aid installation, fold the new pad (2) in half and ease it through the aperture, then open out the pad within the valve cover. Re-install the rubber grommet (1), taking care not to crush the filter pad. Install the valve cover using a new gasket. Install the ventilation tube (3).

IMPORTANT: *When installing the ventilation tube, do* ***not*** *push it fully down. The tube is correctly positioned when the lower edge is level with the bottom of the grommet, as shown in Figure 3-60.*



3-60

OPERATION 29

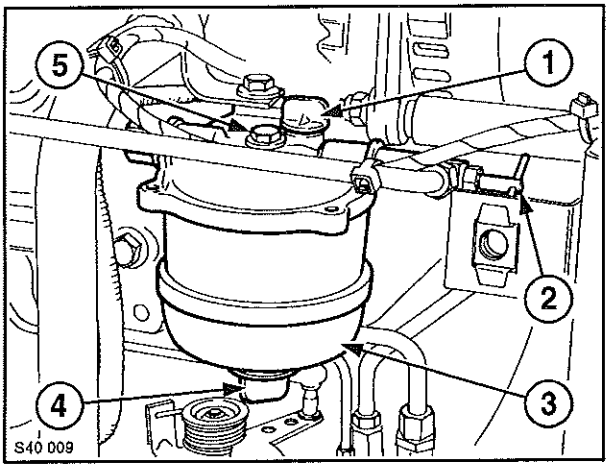
CHANGE THE FUEL FILTER AND CLEAN THE SEDIMENT SEPARATOR

– Figures 3-61 and 3-62

IMPORTANT: *Before loosening or disconnecting any part of the fuel injection system, thoroughly clean the area to be worked on.*

Close the fuel supply tap (2) Figure 3-61, loosen the bleed screw (1) on top of the separator and turn the drain plug (3) anti-clockwise to allow contaminated fuel to drain out. Tighten the bleed screw.

Extract the central securing bolt (5) and remove the glass separator bowl (4). Using clean fuel, wash out the glass bowl, then re-install it. Tighten the drain plug.

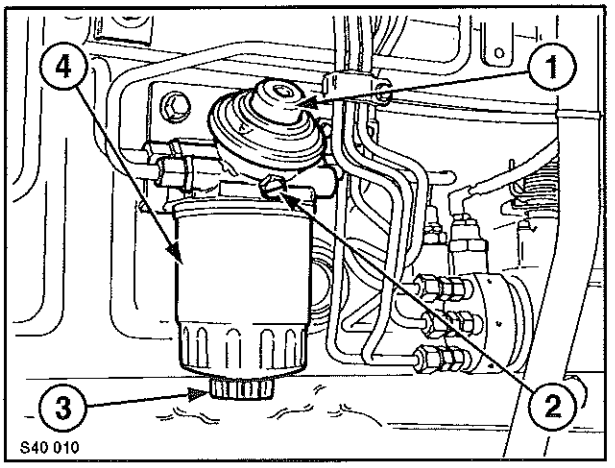


3-61

Turn the drain plug (3) Figure 3-62, anti-clockwise to allow contaminated fuel to drain out. Unscrew and discard the filter element (4). Install a new filter element and gasket.

Ensure that the drain plug is closed, then turn on the fuel supply, loosen the filter bleed screw (2) and press the primer plunger (1) several times until fuel free of air bubbles is discharged from the bleed screw hole. Tighten the bleed screw. Press the plunger several more times until resistance is felt, indicating that the system is free of air.

The injection pump and injectors are self-bleeding. Crank the engine with the throttle open until the engine fires.



3-62

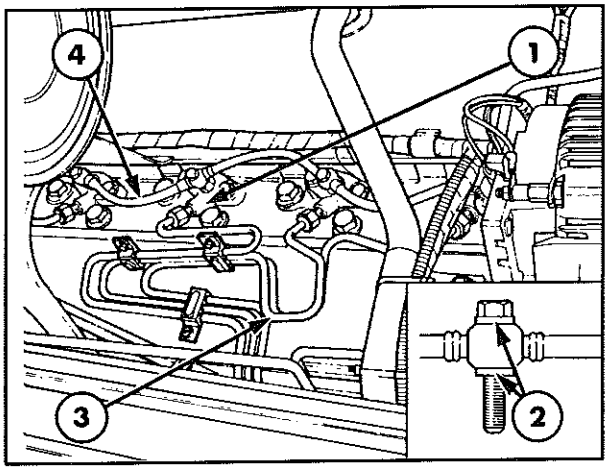
EVERY 1200 HOURS or 12 months (whichever occurs first) carry out the preceding checks plus the following:

OPERATION 30

CLEAN AND ADJUST THE FUEL INJECTORS – Figures 3-63 and 3-64

WARNING: *Diesel fuel or hydraulic oil escaping under pressure can penetrate the skin causing serious injury.*

- *Do not use your hand to check for leaks. Use a piece of cardboard or paper to search for leaks. Wear eye protection.*



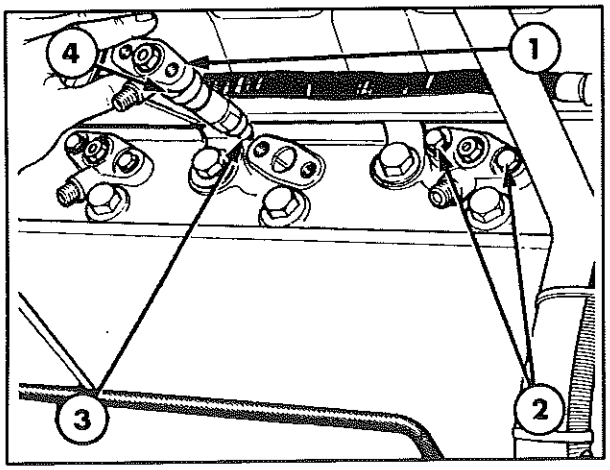
3-63

- *Stop the engine and relieve pressure before connecting or disconnecting lines.*

- *Tighten all connections before starting the engine or pressurising lines.*

If any fluid is injected into the skin, obtain medical attention immediately or gangrene may result.

The injectors should be cleaned and adjusted by an authorised dealer or an injector specialist. The following text assumes that you have a spare set of injectors which may be serviced at your convenience and installed at this 1200 hour service.



3-64

IMPORTANT: *Before loosening or disconnecting any part of the fuel injection system, thoroughly clean the area to be worked on and close the fuel supply tap.*

Loosen the injector pipe connections at the injection pump end.

Disconnect the injector pipes, Figure 3-63 and the leak-off line at the injectors, discarding the copper washers either side of the leak-off port banjo fittings. Withdraw the injectors after removing the retaining bolts, Figure 3-64. If necessary, rotate each fuel injector to loosen it and aid withdrawal.

If a spare set of injectors is not immediately available, cover the ends of the pipes, the injector inlet and leak-off ports and the aperture in the cylinder head to prevent the entry of dirt.

Extract the copper sealing washer from each injector bore in the cylinder head together with the cork dust washer on each injector. Discard the copper and cork washers.

Using new sealing and dust washers, install the replacement injectors and tighten the retaining bolts evenly to 22 Nm (17 lbf. ft.).

Reconnect the leak-off line using new washers either side of the banjo fittings and tighten the retaining bolts to 6 lbf. ft. (8 Nm). Reconnect the pump to injector pipes and tighten the connections to 24 Nm (18 lbf. ft.).

After replacing the injectors and pipes, bleed the system, as follows:

Turn on the fuel supply, loosen the filter bleed screw and press the primer plunger several times until fuel free of air bubbles is discharged from the bleed screw hole. Tighten the bleed screw. Press the plunger several more times until resistance is felt, indicating that the system is free of air.

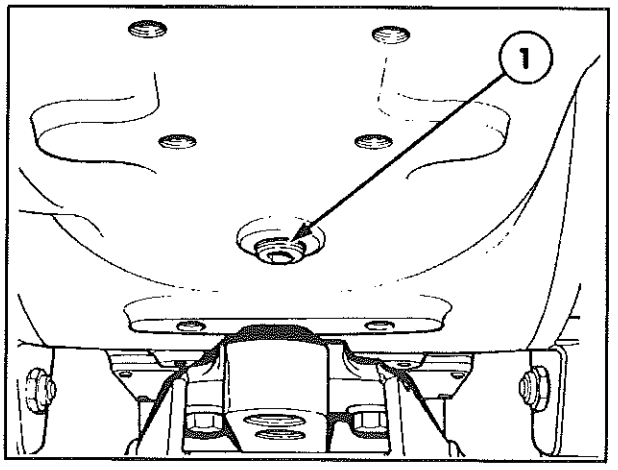
The injection pump and injectors are self-bleeding. Crank the engine with the throttle open until the engine fires.

NOTE: *Modification or adjustment of fuel injection equipment outside specification may invalidate the warranty.*

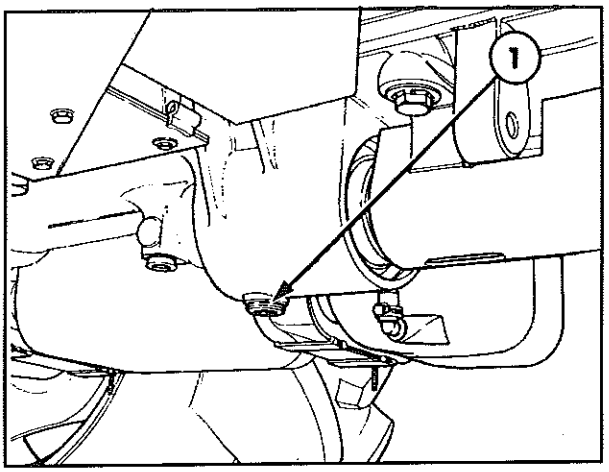
OPERATION 31

DRAIN AND REFILL TRANSMISSION/HYDRAULICS/REAR AXLE OIL – Figures 3-65 to 3-67

With the oil warm, remove the drain plug (1) Figure 3-65, which is accessible via a hole in the drawbar hanger or pick-up hitch frame. Allow the oil to drain into a suitable container. Replace the plug after the oil has drained.



3-65

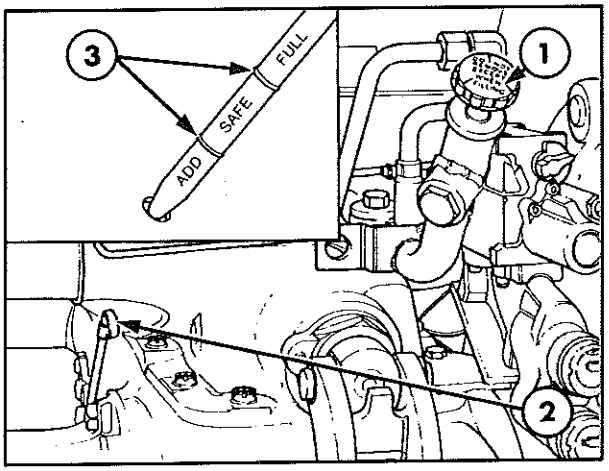


3-66

With four wheel drive, the rear axle oil is drained via the transfer box. Remove the drain plug, Figure 3-66 and allow the oil to drain into a suitable container. Replace the plug after the oil has drained.

Unscrew and remove the filler plug, Figure 3-67 and refill the rear axle, checking the oil level by means of the dipstick. The oil level should be between the high and low marks on the dipstick.

Start the engine to circulate the oil, extend all rams, then stop the engine. Recheck the oil level by means of the dipstick and top up, as necessary, with fresh oil. Do not overfill.



3-67

See Section 4 for correct oil specification.

Oil Capacity:

With 12 x 12 transmission:	56.8 litres 12.5 Imp. gallons
With 16 x 16 transmission:	60.6 litres 13.3 Imp. gallons

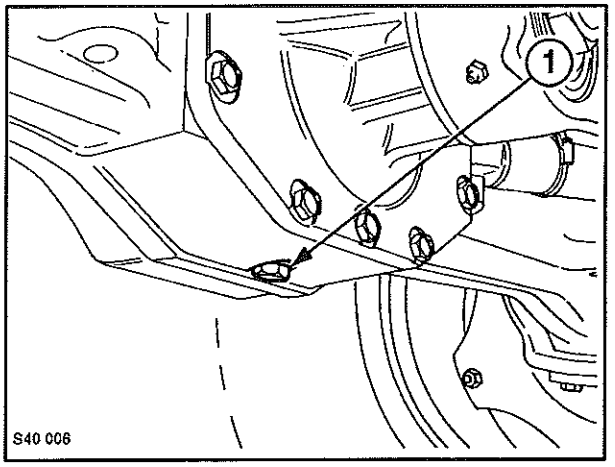
NOTE: *When operating remote cylinders, the rear axle oil level will be affected. When topping up the rear axle to accommodate the oil requirement of remote cylinders, no more than 45 litres (10 Imp. gallons) should be added to bring the oil level up to within the hatched area on the dipstick when all rams are fully extended.*

Alternatively, remote cylinders with a total oil capacity of up to 18 litres (4 Imp. gallons) may be connected to the tractor hydraulic system without adding oil, provided that the tractor is being operated on level ground.

OPERATION 32

FOUR WHEEL DRIVE (where fitted) – Figures 3-68 to 3-70

Remove the drain plug (1) Figure 3-68, from beneath the front axle differential housing. Allow the oil to drain.

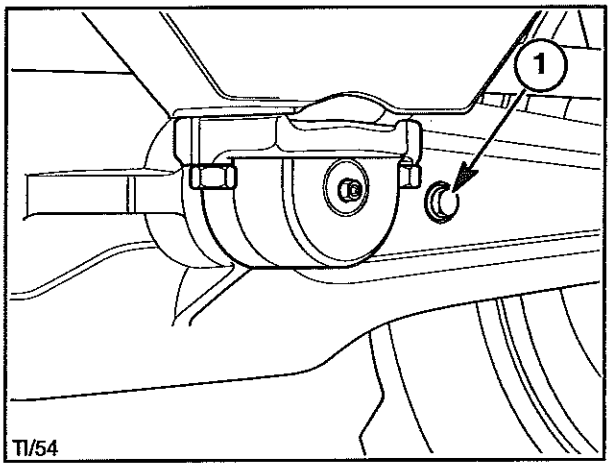


3-68

Remove the level/filler plug (1) Figure 3-69, from the front, left-hand side of the axle.

When the oil has completely drained, replace the drain plug and refill the axle through the level/filler plug opening until the oil reaches the bottom of the opening.

To change the axle hub oil, position the left-hand front wheel with the oil level/filler plug (1) Figure 3-70, at the lowest point. Remove the plug and allow the oil to drain.



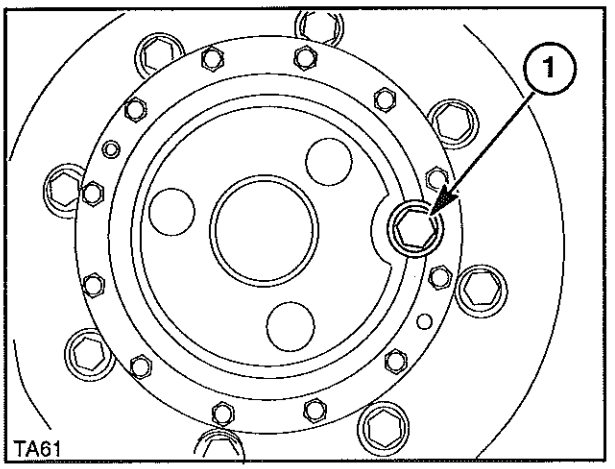
3-69

Reposition the wheel with the oil level/filler plug (1) at the 3 o'clock position, as shown in Figure 3-70. Top up through the opening with clean oil until the oil reaches the bottom of the opening. Replace the plug. Repeat on the right-hand wheel.

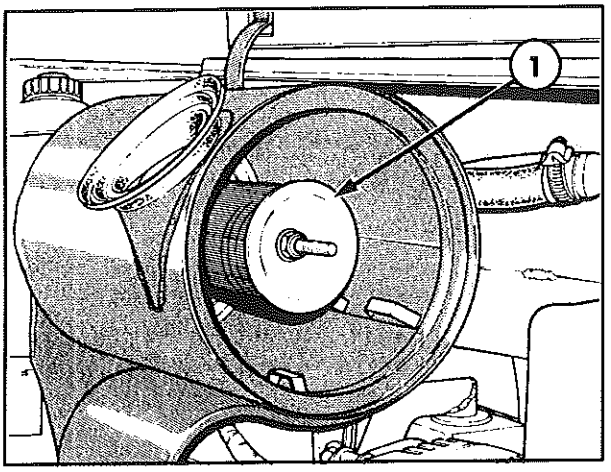
See Section 4 for correct oil specification.

Oil Capacity:

Front hubs (each):	
Tractors up to 100 PS	3.0 litres 5.3 Imp. pints
Front hubs (each) 110 & 125 PS tractors	2.6 litres 4.6 Imp. pints
Front axle: Tractors up to 100 PS	6.2 litres 10.9 Imp. pints
Front axle: 110 & 125 PS tractors	8.0 litres 14.1 Imp. pints



3-70



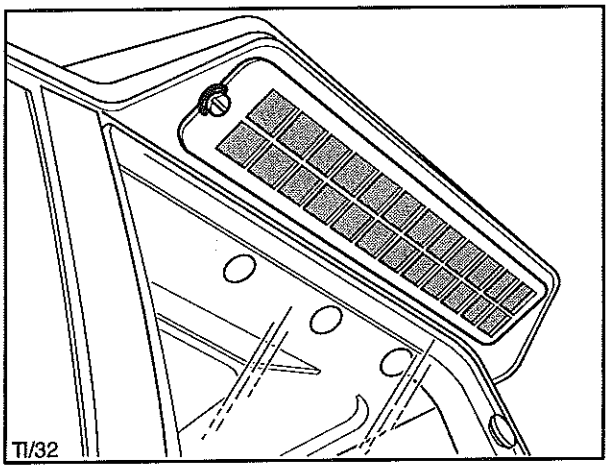
3-71

OPERATION 33

AIR CLEANER INNER ELEMENT – Figure 3-71

Change the outer element as described in operation 1. The inner element (1) must also be changed every 1200 hours or annually, whichever occurs first.

This service should be performed by an authorised dealer.



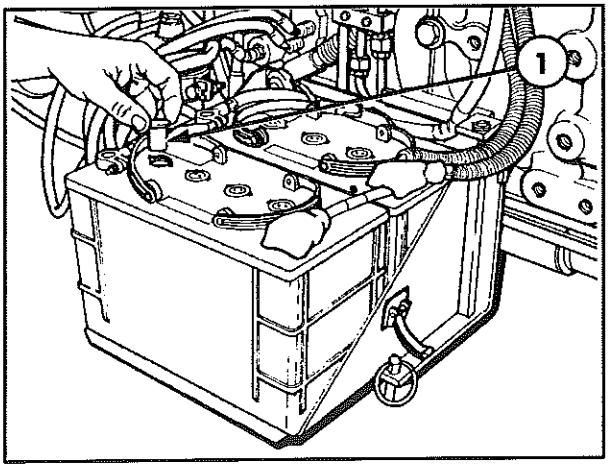
3-72

OPERATION 34

CHANGE THE CAB AIR FILTERS (where fitted) – Figure 3-72

Remove the filter elements as described in Operations 6 and 21 and discard them.

Clean the inside of each filter chamber with a damp, lint-free cloth and install new filter elements.



3-73

OPERATION 35

CHECK BATTERY ELECTROLYTE LEVEL (batteries on tractors operating in temperate climates) – Figure 3-73

Check and adjust the electrolyte level, as described in Operation 12. Do not overfill.

To prevent the formation of verdigris (corrosion) the terminals should be cleaned and greased with petroleum jelly (Vaseline or similar).

OPERATION 36

CLUTCH CALIBRATION (16 x 16 transmission only) – Figure 3-74

NOTE: *The 16 x 16 transmission has four electronically controlled, wet, multi-plate clutch packs. To compensate for wear, the clutch packs must be calibrated manually. This service should be performed every 1200 hours or more frequently if a deterioration in the quality of speed changing is noted. It is recommended that this operation be carried out by an authorised dealer.*

IMPORTANT: *During calibration, the electronic management system detects precisely the point at which the clutches start to engage. This is detected by a very small reduction in engine speed. During calibration, it is essential that no action is taken that may cause engine speed to vary. Ensure that the air conditioner, where fitted, and all electrical equipment is turned off. Do not operate the P.T.O. or any hydraulic lever or move the hand or foot throttle.*

WARNING: *The calibration procedure is controlled by the electronic management system. However, before carrying out the calibration procedure, it would be prudent to take precautions to prevent inadvertent movement of the tractor. Park the tractor away from any obstacles, firmly apply the parking brake and block the wheels, front and rear.*

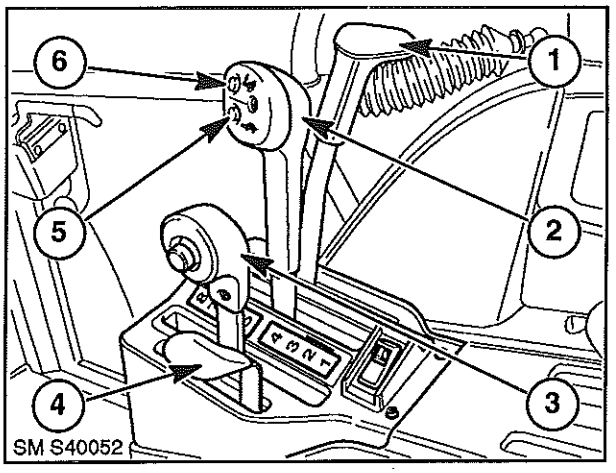
Prior to calibrating the clutches, start the engine and operate the tractor to warm the transmission oil to at least 60° C (140° F).

Clutch Spring Pressure Calibration

1. Stop the engine, depress the clutch pedal and press and hold in **both** Powershift buttons (5 & 6) on the main shift lever (2). With the buttons (and the clutch pedal) still depressed, start the engine. The gearshift display in the instrument panel will display the letters 'CAL'. Release the buttons.

2. Place **all three** gearshift levers (1, 2 & 3) in the **fully forward** position. Release the clutch pedal. The tractor should not move.

3. Set the engine speed, by means of the hand throttle (4) to 1200 rev/min ± 100 rev/min.



3-74

To Calibrate Clutch Packs C3 and C4

4. Depress and hold in the Powershift **up** button (6). 'C3' will appear in the digital display indicating that calibration of clutch pack C3 has commenced. The 'C3' display will will be replaced by a 3-digit number. The number displayed will increase by one digit every second until the engine speed drops by approximately 50 rev/min., at which point the reading will become steady. A steady reading indicates that clutch pack C3 is calibrated. Release the Powershift **up** button.

5. Repeat step 4 using the Powershift **down** button (5). This will calibrate clutch pack C4. Release the Powershift **down** button.

NOTE: *If an error code (a two-digit number preceded by the letter 'U') appears in the display then the set up procedure has not been carried out correctly. Depress and release the clutch pedal then repeat steps 4 and 5.*

To Calibrate Clutch Packs C1 and C2

6. Depress the clutch pedal and move the range lever (1) to **neutral** leaving the shuttle and main shift levers (2 & 3) in the forward position. Release the clutch pedal.

7. Repeat step 4 using the Powershift **up** button (6). This will calibrate the spring pressure of clutch pack C1.

8. Repeat step 4 using the Powershift **down** button (5). This will calibrate the spring pressure of clutch pack C2.

OPERATION 37

CLUTCH FILL TIME CALIBRATION

If you have entrusted your dealer to calibrate the clutches, he will have carried out the clutch fill time calibration as part of that procedure. Clutch fill time calibration requires special equipment so cannot be performed by an owner/operator. The following signs indicate that the clutches require fill time calibration:

a) A delay in drive engagement when using the clutch pedal for inching operations.

b) Jerky clutch engagement when using the clutch pedal for inching operations.

c) A delay in drive engagement when making Power-shifts.

d) If a 'clunk' is heard when disengaging the clutch during inching operations.

EVERY 1200 HOURS or 2 YEARS (whichever occurs first) carry out the preceding checks plus the following:

OPERATION 38

COOLING SYSTEM – Figures 3-75 to 3-77

The ever increasing output of modern, high speed diesel engines, particularly those used in heavy duty agricultural applications, has created the need for an inhibitor in the cooling system.

During manufacture, the engine cooling system is filled with a high quality antifreeze and water solution. The antifreeze contains a chemical inhibitor. This inhibitor increases and extends the protection offered by the additives already present in the antifreeze.

The inhibitor will:

- Increase rust prevention.
- Reduce scale formation.
- Minimise cylinder wall erosion (pitting).
- Reduce foaming of the coolant.

As the chemical inhibitor works and protects the system it gradually loses it's strength and must, therefore, be replenished at intervals with a measured dosage to maintain the optimum protection level. This protection is provided by draining and flushing the system and refilling with a 50% solution of antifreeze meeting the specification shown at the end of this service operation.

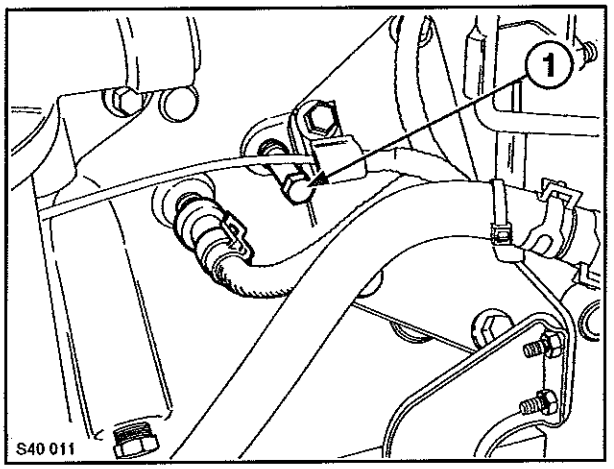
Draining and Refilling the Cooling System

WARNING: *The cooling system operates under pressure which is controlled by the radiator pressure cap. It is dangerous to remove the pressure cap while the system is hot. When cool, use a thick cloth and turn the cap slowly to the first stop and allow the pressure to escape before fully removing the cap. Coolant should be kept off the skin. Adhere to the precautions outlined on the antifreeze and inhibitor containers, where used.*

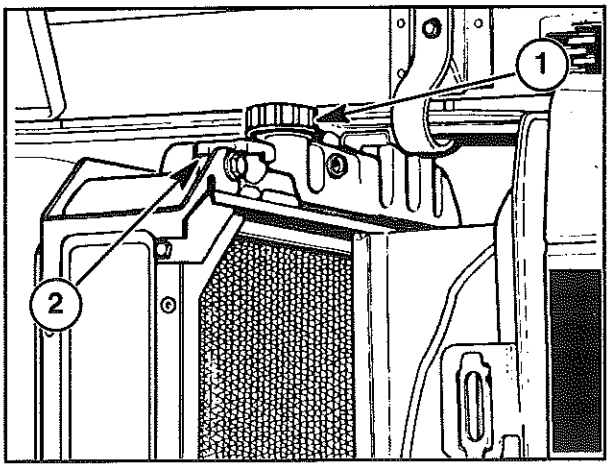
IMPORTANT: *It is essential that an approved pressure cap is used. If the cap is mislaid or damaged, obtain a replacement from your dealer.*

Remove the lower hose from the radiator and allow the coolant to drain. Unscrew and remove the drain plug, Figure 3-75, from the left-hand side of the engine block and drain the coolant.

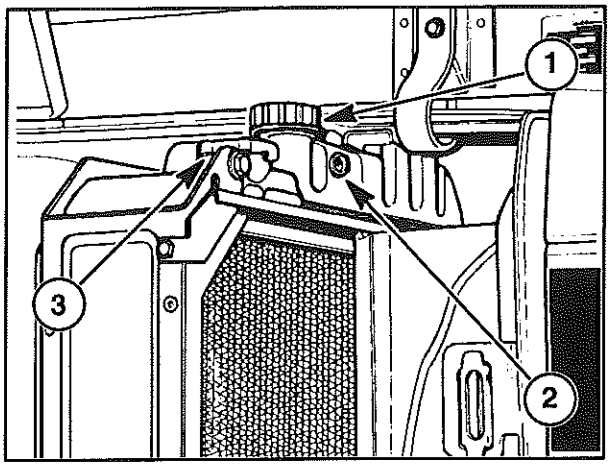
Remove the radiator pressure cap (2) Figure 3-76. To increase the drainage rate, remove the filler cap (1).



3-75



3-76



3-77

After draining, flush the cooling system with clean water, via the radiator pressure cap (3) Figure 3-77.

When the flushing process is complete, install the lower hose and replace the engine coolant drain plug. Refill the cooling system via the radiator pressure cap (3) until it is full.

Re-install the pressure cap and continue filling via the filler cap (1) until the coolant level is within the area of the sight glass (2) in the radiator header tank. Re-install the filler cap.

NOTE: *To avoid trapping air in the system, fill the radiator as slowly as practicable thereby allowing any air pockets to disperse.*

The coolant to be used is dependent upon local availability. See the following text:

Using Ambra Agriflu Antifreeze (NH900A)

Use a solution of 50% clean water and 50% antifreeze. The inhibitor contained in this antifreeze is sufficient to protect your engine for a further 1200 hours or two years, whichever occurs first.

Using a Proprietary Antifreeze

Where antifreeze meeting the above-mentioned specification is not available, use a proprietary, heavy duty antifreeze premixed with 5% chemical inhibitor. The inhibitor is available from your dealer under the Part No. FW–15 and is supplied in 16 fl. oz. (473 ml) bottles, the side of the bottle being marked in 1 fl. oz. increments.

WARNING: *Inhibitor solution is irritating to eyes and skin. It contains buffered potassium hydroxide.*

- *Avoid contact with eyes or prolonged and repeated skin contact.*
- *Wear protective eyewear when using.*
- *In case of contact with eyes, flush with water for 15 minutes and obtain medical attention.*
- *Wash skin with soap and water after use.*
- *Keep out of reach of children.*

4-cylinder engines: Mix **two** complete bottles of FW–15 inhibitor with 9.5 litres (2.0 Imp. gallons) of clean water and 9.5 litres (2.0 Imp. gallons) of antifreeze. This will provide more coolant mixture than is actually required for tractors with 4-cylinder engines. The excess coolant should be kept in a specially marked container and used for top up purposes.

6-cylinder engines: Mix **three** complete bottles of FW–15 inhibitor with 14.0 litres (3.0 Imp. gallons) of clean water and 14.0 litres (3.0 Imp. gallons) of antifreeze. Again, the excess coolant should be kept in a specially marked container and used for top up purposes.

Using Plain Water

If you reside in a country where antifreeze is not available, use clean water premixed with 5% chemical inhibitor. The inhibitor is available from your dealer under the part No. FW–15 and is supplied in 16 fl. oz. (473 ml) bottles, the side of the bottle being marked in 1 fl. oz. increments.

4-cylinder engines: Mix **two** complete bottles of FW–15 inhibitor with 19 litres (4.0 Imp. gallons) of clean water. This will provide more coolant mixture than is actually required for tractors with 4-cylinder engines. The excess coolant should be kept in a specially marked container and used for top up purposes.

6-cylinder engines: Mix **three** complete bottles of FW–15 inhibitor with 28 litres (6.0 Imp. gallons) of clean water. Again, the excess coolant should be kept in a specially marked container and used for top up purposes.

After Refilling the System – All Coolant Solutions

Check that the coolant level is within the area of the sight glass in the radiator header tank.

Start and run the engine to circulate the coolant. Stop the engine and top up the radiator, via the filler cap, with the same coolant solution, as previously described.

NOTE: *The coolant level may drop as it is pumped around the cooling system.*

If the engine is not going to be operated immediately following this coolant change, run the engine for one hour to ensure that the antifreeze and/or chemical inhibitor is dispersed throughout the cooling system. Allow the engine to cool and make a final check to ensure that the coolant level is satisfactory.

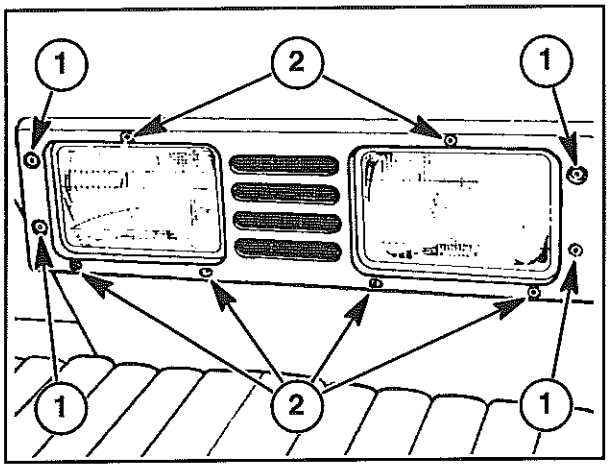
Antifreeze:	Ambra Agriflu (NH900A)

Clean Water Specification:

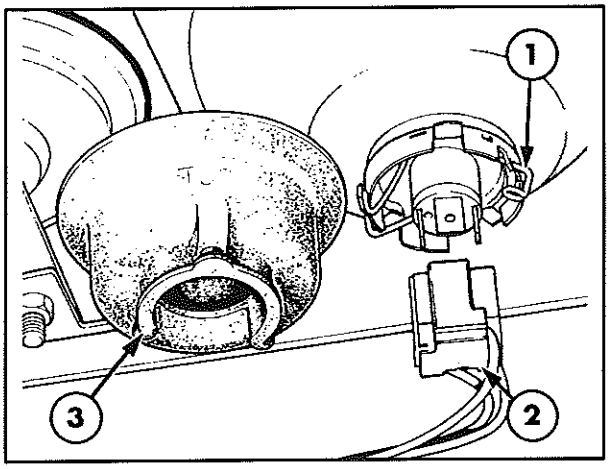
Total Hardness	300 parts per million
Chlorides	100 parts per million
Sulphates	100 parts per million

Coolant Capacity:

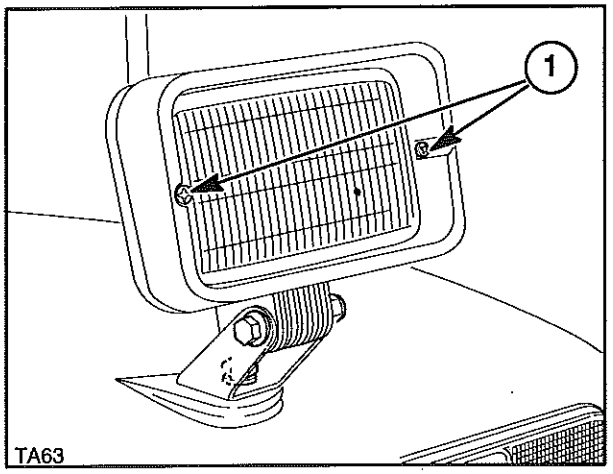
4-cylinder engines:	16.0 litres 3.5 Imp. gallons
6-cylinder engines:	21.5 litres 4.7 Imp. gallons



3-78



3-79



3-80

GENERAL MAINTENANCE (to be performed as and when required)

The following pictures and text detail service or adjustment procedures that are not required to be carried out on a routine basis.

OPERATION 39

HEADLIGHT ADJUSTMENT AND BULB REPLACEMENT

Headlights – See Figures 3-78 and 3-79

The headlights are mounted in a moulded bezel attached to the radiator grille by four quick-release fasteners (1) Figure 3-78. Turn the fasteners anti-clockwise and remove the bezel/lamp assembly from the grille.

IMPORTANT: *All headlights have halogen bulbs. Never touch a halogen bulb with the fingers. Natural moisture in the skin may cause the bulb to fail prematurely when switched on. Always use a clean cloth or tissue when handling halogen bulbs.*

Pull the connector (2) Figure 3-79 and the rubber cap (3) from the rear of the lamp assembly. Detach the retaining spring (1) and remove the bulb. Re-assemble in reverse order.

To avoid blinding oncoming drivers, adjust the angle of the headlight beam.

Each headlight is secured to the bezel by three spring-loaded screws (2) Figure 3-78. The beam may be adjusted vertically or laterally by turning one or more of the screws in or out, as required.

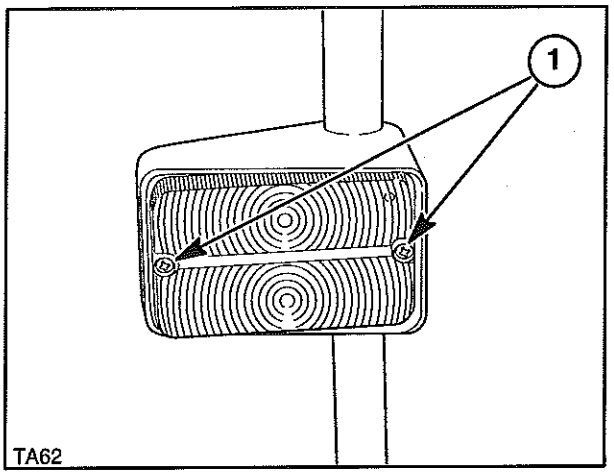
Worklamps – See Figure 3-80

To gain access to a worklamp bulb, extract the two securing screws (1) and remove the lens/reflector assembly. Release the spring clip and extract the bulb from the back of the reflector assembly.

IMPORTANT: *All worklamps have halogen bulbs. Never touch a halogen bulb with the fingers. Natural moisture in the skin may cause the bulb to fail prematurely when switched on. Always use a clean cloth or tissue when handling halogen bulbs.*

Stop/Turn/Position Lamps – See Figure 3-81

Although there are differing styles of lamp, front and rear and also for different markets, etc., access to the bulbs is as described in the following text.



3-81

All stop/turn/position lamp bulbs are accessible after removal of the plastic lens assembly. Dependent upon the type of lamp fitted, the lens may be secured to the lamp body by two screws (1) or held in place by a moulded rubber surround. If the latter type is fitted, ease back the rubber moulding and to free the lens assembly.

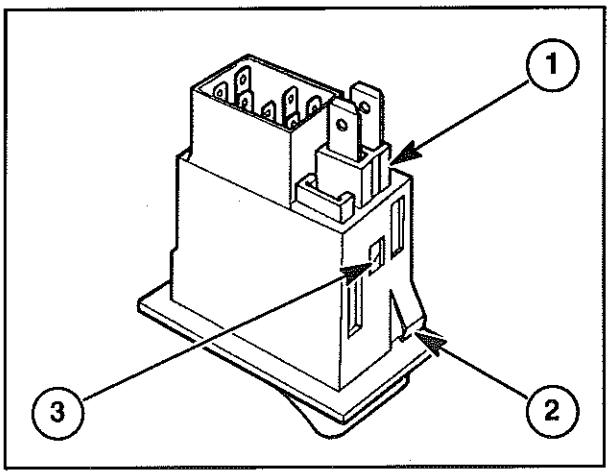
The bulbs have a bayonet cap and may be removed by pressing in and turning approximately 20° anti-clockwise.

IMPORTANT: *When replacing the lens, take care not to overtighten the retaining screws.*

Rocker Switch Bulbs – Figure 3-82

Certain of the rocker switches are internally illuminated, the bulb being removeable from the rear of the switch assembly.

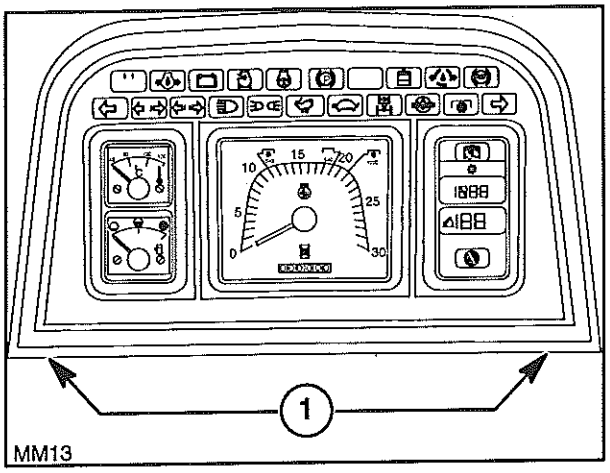
The switch assembly is retained by a sprung tag (2) at either end. Use a small screwdriver to pry one end of the rocker switch from the sheet metal and withdraw the switch assembly.



3-82

To change a bulb, press in the tag (3) using a small screwdriver and pull the bulb retainer (1) from the back of the assembly. The bulbs are of the capless type, rated at 1.2w and are a push fit in the retainer.

After changing the bulb, push the retainer into the back of the switch assembly until the tag locates in the aperture. Re-install the switch assembly.



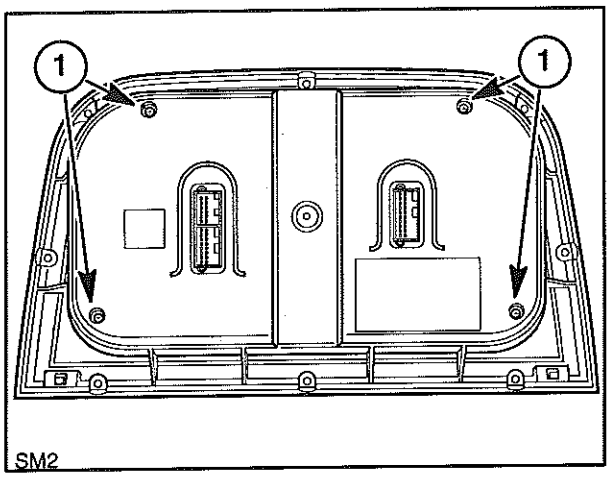
3-83

Instrument Panel Bulbs – Figures 3-83 to 3-85

The warning and panel light bulbs are removeable from the rear of the instrument panel. To gain access, remove the two retaining screws (1) Figure 3-83 from the lower edge of the instrument panel surround and withdraw the instrument panel assembly. Disconnect the electrical connectors from the rear of the panel, as necessary.

NOTE: *There are three types of instrument panel available and the rear views shown in Figures 3-84 and 3-85 may differ from the panel fitted to your tractor. However the method of removing the rear cover and bulbs is similar on all models.*

Remove the four screws (1) Figure 3-84, holding the cover to the rear of the panel.



3-84

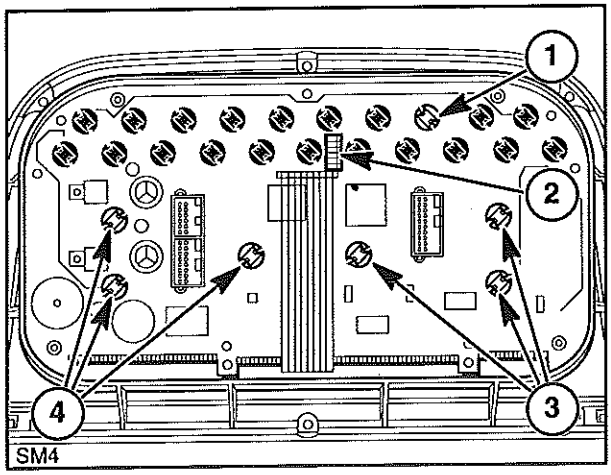
With reference to Figure 3-85, turn the failed bulb $^1/_4$ turn anti-clockwise and remove. Re-assemble in reverse order.

IMPORTANT: *The two rows of warning light bulbs at the top of the panel are coloured black, except for the alternator warning light bulb (1) Figure 3-85, which is red. The red bulb is of a different wattage to the others and it is important that the correct bulb is used in this position otherwise the alternator may not function. The instrument backlight bulbs (3) and (4) are coloured yellow.*

OPERATION 40

FUSES AND RELAYS – Figures 3-86 to 3-87

The fuse box is located behind a panel on the right-hand side of the instrument console. Pull the panel to remove. Pull off the lid of the fuse box to gain access to the fuses and relays, Figure 3-86. A quick reference guide to the fuses and relays is provided on a decal stuck to the inside of the lid.



3-85

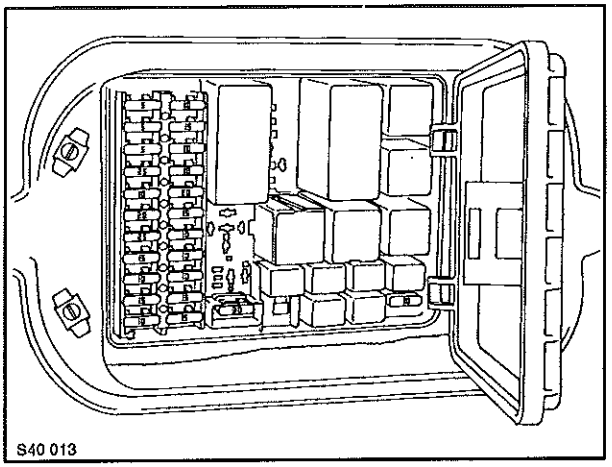
There is provision for 24 fuses although they may not all be fitted to your tractor. In addition, certain items of equipment may not be installed on your tractor. However, the fuses for these features are still fitted and may be used as spares.

IMPORTANT: *Do not replace a blown fuse with another of a different rating.*

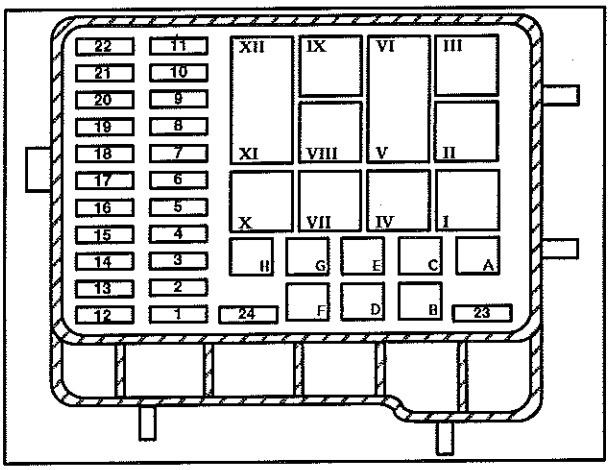
The fuses are numbered and colour-coded. See Figure 3-87 and the upper chart below.

NOTE: *Fuse No. 17 is uprated to 25 amps when optional lock-out valves are installed.*

NOTE: *Items I to XII and A to H, as shown in Figure 3-87 and listed in the chart (bottom right), are relays. Not all the relays shown may be fitted. See your New Holland dealer if you have a problem with any of the circuits listed that is not caused by fuse failure.*



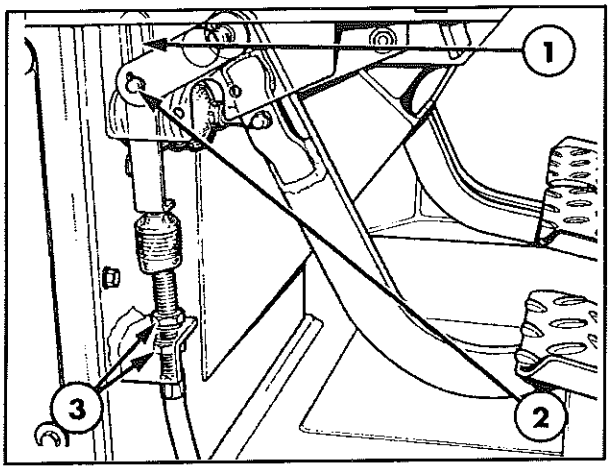
3-86



3-87

Fuse No.	Rating	Colour	Circuit
1	15A	Lt. Blue	Main beam
2	15A	Lt. Blue	Dip beam
3	10A	Red	R.H. side light
4	10A	Red	L.H. side light
5	10A	Red	Front work lamps
6	15A	Lt. Blue	Rear work lamps
7	20A	Yellow	Lower work lamps
8	10A	Red	Fuel shut off
9	10A	Red	Gauges/external switches
10	15A	Lt. Blue	Hazard lights
11	10A	Red	Horn/headlamp flash cigar lighter/roof beacon
12	10A	Red	E.D.C.
13	15A	Lt. blue	Transmission dump solenoid/creeper gears
14	10A	Red	E.D.C.
15	15A	Lt. Blue	Diff. lock/4wd/stop lamps
16	25A	Natural	Blower motor/air conditioner
17	20A	Yellow	Wash-wipe/console lamp
18	10A	Red	Turn indicators
19	25A	Natural	Thermostart
20	5A	Tan	'Keep alive' memory
21	5A	Tan	P.T.O.
22	5A	Tan	Radio/implement socket switch & relay
23	10A	Red	Accessories/interior light
24	30A	Green	Implement socket

Relay	Circuit Identification
I	Ignition relay
II	Accessory socket
III	Implement socket
IV	Flasher unit
V & VI	Power take-off
VII	Thermostart
VIII	Not used
IX	Delay relay
X	Not used
XI & XII	Flasher mode
A	Differential lock
B	Front work lamps
C	Rear work lamps
D	Lower front work lamp
E	Lower rear work lamps
F	Automatic fuel shut-off
G	Differential lock
H	Four wheel drive



3-8

OPERATION 41

ALTERNATOR PROTECTION

To avoid damage to the alternator charging system, service precautions should be observed, as follows:

- **Never** make or break any of the charging circuit connections, including the battery, when the engine is running.

- **Never** short any of the charging components to earth.

- **Do not** use a slave battery of higher than 12 volts nominal voltage.

- **Always** observe correct polarity when installing a battery or using a slave battery to jump start the engine. Follow the instructions in the Operator's Manual when jump starting the tractor.

- **Always** disconnect the battery earth cable before carrying out arc welding on the tractor or on any implement attached to the tractor. Locate the arc welder earth clamp close to the part being repaired.

- **Always** disconnect the battery earth cable when charging the battery in the tractor using a battery charger.

WARNING: *Wear eye protection when charging the battery or starting the tractor with a slave battery.*

Connect **positive** to **positive** and **negative** to **negative.**

OPERATION 42

CLUTCH INTERLOCK CABLE ADJUSTMENT (12 x 12 transmission only) – Figure 3-88

An hydraulically actuated clutch is installed, requiring no adjustment. However, a cable-operated clutch interlock mechanism is provided that only permits engagement of the transmission shuttle lever if the clutch pedal is fully depressed.

Should movement of the shuttle lever become difficult with the clutch depressed, the cable may require adjustment.

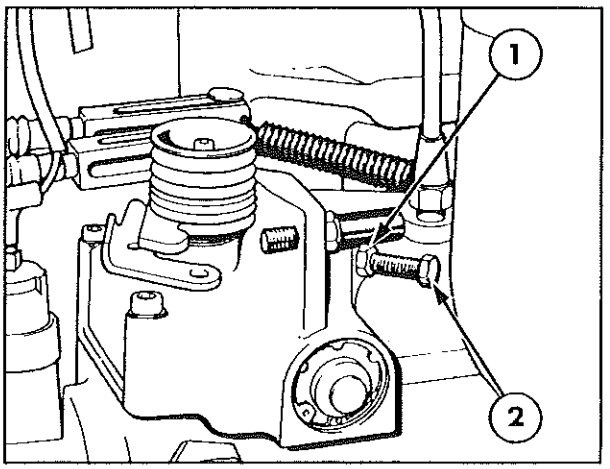
To adjust the cable, turn the adjusting nuts (3) so that the clutch pedal pin (2) contacts the upper end of the slot (1) in the cable clevis to cause a cable movement of 0.24 – 0.31 in. (6 – 8 mm) when the clutch pedal is fully depressed.

OPERATION 43

ENGINE IDLE SPEED ADJUSTMENT – Figure 3-89

Loosen the locknut (1) and turn the stop screw (2) to adjust the engine idle speed.

The maximum no-load speed is set in the factory and must only be adjusted, if required, by an authorised dealer.



3-89

OPERATION 44

TRACTOR STORAGE AND PREPARATION

Preparing the Tractor for Storage

Before storing the tractor for an extended period, the following precautions should be taken:

- Clean the tractor.
- Drain the engine and transmission/rear axle and refill with clean oil.
- Drain the fuel tank(s) and pour approximately 9 litres (2 gallons) of special calibrating fuel into the tank. Run the engine for at least 10 minutes to ensure complete distribution of the calibrating fuel throughout the injection system. See the next item before running the engine.
- Check the radiator coolant level. If the coolant is within 200 hours of the next change, drain, flush and refill the system. See Operation 38. Run the engine for one hour to disperse the coolant throughout the system.
- Lubricate all grease fittings.
- Using the tractor hydraulic system in Position Control, raise the lift linkage and support the lift arms in the raised position.
- Lightly coat all exposed hydraulic piston rods with petroleum jelly, e.g., power steering cylinder rams, lift assist rams, spool valves, etc.
- Remove the battery (or batteries) and store in a warm, dry atmosphere. Recharge periodically.
- Raise the tractor and place supports under the axles to take the weight off the tires.
- Block the clutch pedal in the fully depressed position (12 x 12 transmission only).
- Cover the exhaust pipe opening.

Preparing the Tractor for Use after Storage

- Inflate the tires to the correct pressure and lower the tractor to the ground.
- Refill the fuel tank(s).
- Check the radiator coolant level.
- Check all oil levels.
- Install a fully charged battery (or batteries).
- Remove the exhaust pipe covering.
- Start the engine and check that all instruments and controls are functioning correctly. Using the tractor hydraulic system in Position Control, fully raise the lift linkage and remove the supports.
- Drive the tractor without a load to ensure that it is operating satisfactorily.

SECTION 4
SPECIFICATIONS

The specification figures in this section are provided for your information and guidance. For further information concerning your tractor and equipment, consult your New Holland dealer.

New Holland policy is one of continuous improvement and the right to change prices, specification or equipment at any time without notice is reserved.

All data given in this manual is subject to production variations. Dimensions and weight are approximate only and the illustrations do not necessarily show tractors in standard condition. For exact information about any particular tractor, please consult your New Holland dealer.

GENERAL DIMENSIONS (two wheel drive)		**75 PS**	**85 PS**	**95 PS**	**100 PS**	**110 PS**	**125 PS**
Height to top of cab (where fitted)	in	107.2	107.2	107.2	110.1	110.1	110.1
	mm	2722	2722	2722	2797	2797	2797
Height to top of roll bar (where fitted)	in	100.9	100.9	100.9	113.0	113.0	113.0
	mm	2565	2565	2565	2869	2869	2869
Height to top of 4–post safety frame (where fitted)	in	105.7	105.7	105.7	109.7	109.7	109.7
	mm	2685	2685	2685	2786	2786	2786
Height to top of exhaust	in	111.9	111.9	111.9	115.3	117.2	117.2
	mm	2841	2841	2841	2928	2977	2977
Height to top of hood	in	67.3	67.3	67.3	70.3	70.3	70.3
	mm	1711	1711	1711	1786	1786	1786
Crop clearance under front axle	in	21.5	21.5	21.5	24.5	26.4	26.4
	mm	546	546	546	620	670	670
Crop clearance under rear axle	in	15.5	15.5	15.5	18.4	18.4	18.4
	mm	393	393	393	468	468	468
Minimum ground clearance (under drawbar)	in	15.0	15.0	15.0	18.0	18.0	18.0
	mm	381	381	381	456	456	456
Minimum width (with cab)	in	80.2	80.2	80.2	83.7	83.7	83.7
	mm	2036	2036	2036	2126	2126	2126
Minimum width (less cab)	in	77.7	77.7	77.7	83.2	83.2	83.2
	mm	1973	1973	1973	2112	2112	2112
Maximum width	in	100.6	100.6	100.6	103.5	103.5	103.5
	mm	2556	2556	2556	2630	2630	2630
Overall length (to end of lower links)	in	158.3	158.3	158.3	169.2	169.2	169.2
	mm	4022	4022	4022	4297	4297	4297
Wheelbase	in	92.1	92.1	92.1	106.3	106.3	106.3
	mm	2340	2340	2340	2700	2700	2700
Minimum turning radius with brakes	in	129	129	129	153	153	153
	mm	3277	3277	3277	3886	3886	3886
without brakes	in	144	144	144	170	170	170
	mm	3658	3658	3658	4318	4318	4318
The above dimensions are based on standard tractors with tires as shown:	Front	7.50 – 16			11.00 – 16		
	Rear	16.9 – 34			18.4 – 38		

NOTE: *If your tractor has tires of a different size then the above dimensions will vary due to the difference in the rolling radius and section width of the tires fitted.*

GENERAL DIMENSIONS (four wheel drive)		**75 PS**	**85 PS**	**95 PS**	**100 PS**	**110 PS**	**125 PS**
Height to top of cab (where fitted)	in	107.2	107.2	107.2	110.1	110.1	110.1
	mm	2722	2722	2722	2797	2797	2797
Height to top of roll bar (where fitted))	in	100.9	100.9	100.9	113.0	113.0	113.0
	mm	2565	2565	2565	2869	2869	2869
Height to top of 4–post safety frame (where fitted)	in	105.7	105.7	105.7	109.7	109.7	109.7
	mm	2685	2685	2685	2786	2786	2786
Height to top of exhaust	in	111.5	111.5	111.5	115.1	115.1	115.1
	mm	2833	2833	2833	2925	2925	2925
Height to top of hood	in	67.3	67.3	67.3	70.3	70.3	70.3
	mm	1711	1711	1711	1786	1786	1786
Crop clearance under front axle	in	20.2	20.2	20.2	22.8	22.3	22.3
	mm	512	512	512	580	566	566
Crop clearance under rear axle	in	15.5	15.5	15.5	18.4	18.4	18.4
	mm	393	393	393	468	468	468
Minimum ground clearance (under drawbar)	in	15.0	15.0	15.0	18.0	18.0	18.0
	mm	381	381	381	456	456	456
Minimum width (with cab)	in	80.2	80.2	80.2	83.7	83.7	83.7
	mm	2036	2036	2036	2126	2126	2126
Minimum width (less cab)	in	80.0	80.0	80.0	83.2	83.2	83.2
	mm	2032	2032	2032	2112	2112	2112
Maximum width	in	99.4	99.4	99.4	101.6	105.6	105.6
	mm	2524	2524	2524	2581	2681	2681
Overall length (to end of lower links)	in	158.7	158.7	158.7	171.7	171.7	171.7
	mm	4030	4030	4030	4361	4361	4361
Wheelbase	in	93.0	93.0	93.0	103.3	103.3	103.3
	mm	2362	2362	2362	2623	2623	2623
Minimum turning radius							
with brakes (fwd disengaged)	in	136	136	136	149	149	149
	mm	3454	3454	3454	3785	3785	3785
without brakes (fwd disengaged)	in	159	159	159	174	174	174
	mm	4040	4040	4040	4420	4420	4420
The above dimensions are based on standard tractors with tires as shown:	Front	13.6 – 24			14.9 – 28		
	Rear	16.9 – 34			18.4 – 38		

NOTE: *If your tractor has tires of a different size then the above dimensions will vary due to the difference in the rolling radius and section width of the tires fitted.*

WEIGHT		**75 PS**	**85 PS**	**95 PS**	**100 PS**	**110 PS**	**125 PS**
(two wheel drive – with cab)							
On front axle	lb	2789	2789	2800	3241	3307	3307
	kg	1265	1265	1270	1470	1500	1500
On rear axle	lb	5340	5340	5379	5974	6517	6517
	kg	2422	2422	2440	2710	2956	2956
Total (with fuel, oil	lb	8129	8129	8179	9215	9824	9824
and coolant)	kg	3687	3687	3710	4180	4456	4456
(four wheel drive – with cab)							
On front axle	lb	3605	3605	3638	4123	4189	4189
	kg	1635	1635	1650	1870	1900	1900
On rear axle	lb	5516	5516	5556	6151	6693	6693
	kg	2502	2502	2520	2790	3036	3036
Total (with fuel, oil	lb	9121	9121	9194	10274	10882	10882
and coolant)	kg	4137	4137	4170	4660	4936	4936
(two wheel drive – less cab)							
On front axle	lb	2481	2481	2492	2972	3038	3038
	kg	1125	1125	1130	1348	1378	1378
On rear axle	lb	4619	4619	4642	5105	5647	5647
	kg	2095	2095	2105	2315	2561	2561
Total (with fuel, oil	lb	7100	7100	7134	8077	8685	8685
and coolant)	kg	3220	3220	3235	3663	3939	3939
(four wheel drive – less cab)							
On front axle	lb	3360	3360	3374	3854	3920	3920
	kg	1524	1524	1530	1748	1778	1778
On rear axle	lb	4732	4732	4774	5281	5823	5823
	kg	2146	2146	2165	2395	2641	2641
Total (with fuel, oil	lb	8092	8092	8148	9135	9743	9743
and coolant)	kg	3670	3670	3695	4143	4419	4419

The above weights are based on standard production tractors with full fuel tank, but without driver or additional equipment. Add the following weights if your tractor has any of the following features:

WEIGHT (continued)		**75 PS**	**85 PS**	**95 PS**	**100 PS**	**110 PS**	**125 PS**
Safety frame (4–post ROPS)	lb	545	545	545	545	545	545
	kg	247	247	247	247	247	247
Roll bar (2–post ROPS)	lb	175	175	175	175	n/a	n/a
	kg	80	80	80	80	n/a	n/a
Air conditioning	lb	80	80	80	80	80	80
	kg	36	36	36	36	36	36
Radio	lb	15	15	15	15	15	15
	kg	7	7	7	7	7	7
Auxiliary fuel tank (with cab – including fuel)	lb	236	236	236	std.	std.	std.
	kg	107	107	107	std.	std.	std.
Auxiliary fuel tank (less cab – including fuel)	lb	192	192	192	std.	std.	std.
	kg	87	87	87	std.	std.	std.
16 x 16 transmission	lb	37	37	37	37	std.	std.
	kg	17	17	17	17	std.	std.
Two–speed P.T.O.	lb	22	22	std.	std.	std.	std.
	kg	10	10	std.	std.	std.	std.
Two hydraulic pumps	lb	24	24	24	24	n/a	n/a
	kg	11	11	11	11	n/a	n/a
CCLS pump	lb	55	55	55	55	std.	std.
	kg	25	25	25	25	std.	std.
Transmission handbrake	lb	43	43	43	43	43	43
	kg	20	20	20	20	20	20
Power adjust rear wheels	lb	310	310	310	310	310	310
	kg	141	141	141	141	141	141
Dual rear wheels	lb	830	830	830	830	830	830
	kg	376	376	376	376	376	376
One remote control valve	lb	32	32	32	32	32	32
	kg	15	15	15	15	15	15
Two remote control valves	lb	48	48	48	48	48	48
	kg	22	22	22	22	22	22
Four remote control valves	lb	96	96	96	96	96	96
	kg	44	44	44	44	44	44
Automatic pick–up hitch	lb	441	441	441	441	441	441
	kg	200	200	200	200	200	200
Rear tow hook	lb	176	176	176	176	176	176
	kg	80	80	80	80	80	80

ENGINE		**75 PS**	**85 PS**	**95 PS**	**100 PS**	**110 PS**	**125 PS**
Number of cylinders		4	4	4TC	6	6	6TC
Bore	in	4.4					
	mm	111.8					
Stroke	in	4.4	5.0	5.0	4.4	5.0	5.0
	mm	111.8	127	127	111.8	127	127
Displacement	in^3	268	304	304	401	456	456
	cm^3	4390	4987	4987	6585	7480	7480
Compression ratio		17.5:1					
Firing order		1–3–4–2			1–5–3–6–2–4		
Idle speed (rpm)		725 – 775					
Maximum no–load speed	rev/min	2295 – 2375		2195 – 2275			
Rated speed	rev/min	2200	2200	2100	2100	2100	2100
Tappet clearance (cold)							
Intake	in	0.014 – 0.018					
	mm	0.36 – 0.46					
Exhaust	in	0.017 – 0.021					
	mm	0.43 – 0.53					

COOLING SYSTEM							
Pump type		Impeller					
Fan diameter	in		18.9			20.1	
	mm		480			510	
Number of blades		4	4	5	5	5	5
Thermostat							
Starts to open at	°C	79 – 83					
	°F	174 – 181					
Fully open at	°C	93 – 96					
	°F	199 – 205					
Pressure cap	$lbf.in^2$	13					
	bar	0.9					

TRANSMISSION	**75 PS**	**85 PS**	**95 PS**	**100 PS**	**110 PS**	**125 PS**
SL range						
12 x 12 (30 km/h)	Standard				n/a	n/a
12 x 12 (40 km/h)	Option				n/a	n/a
24 x 24 (30 km/h) with Dual Power	Option				n/a	n/a
24 x 24 (40 km/h) with Dual Power	Option				n/a	n/a
SLE range						
16 x 16 (30 km/h)	Standard					
16 x 16 (40 km/h)	Option					
Creeper gears (with 5.08:1 reduction ratio)	Option					

POWER TAKE OFF (P.T.O.)

Type						
Standard	Two speed, non–shiftable, independent					
Option	Two speed, shiftable, independent					
Engine speed for 540 rpm PTO speed	1900					
Engine speed for 1000 rpm PTO speed						
Non–shiftable	2050					
Shiftable	2100					

HYDRAULIC SYSTEM

(Top Link Sensing with Draft and Position Control – SL range)		Standard				n/a	n/a
Hydraulic pump type							
Centre housing gear type		Standard				n/a	n/a
Auxiliary engine–mounted gear type		Optional				n/a	n/a
Flow at rated engine speed							
Centre housing gear pump	Imp. galls/min.	8.1	8.1	7.74	7.74	n/a	n/a
	Litres/min.	36.8	36.8	35.2	35.2	n/a	n/a
Flow at rated engine speed							
Auxiliary engine–mounted gear pump	Imp. galls/min.	7.1	7.1	6.75	6.75	n/a	n/a
	Litres/min.	32.2	32.2	30.7	30.7	n/a	n/a
Flow at rated engine speed							
Combined standard and auxiliary pumps	Imp. galls/min.	15.2	15.2	14.5	14.5	n/a	n/a
	Litres/min.	69.0	69.0	65.9	65.9	n/a	n/a
Relief valve pressure	$lbf.in^2$	2550 – 2650				n/a	n/a
	bar	176 – 182				n/a	n/a

HYDRAULIC SYSTEM (Closed Centre Load Sensing with Electronic Draft Control and Position Control – SLE range)		**75 PS**	**85 PS**	**95 PS**	**100 PS**	**110 PS**	**125 PS**
		Optional				Standard	
Hydraulic pump type (also available with Top Link Sensing hydraulics on SLE range)		Main pump – variable displacement piston pump with gear–driven charge pump					
Minimum delivery Main pump	Imp. galls/min.	17.4	17.4	16.7	16.7	16.7	16.7
	Litres/min.	79.3	79.3	75.7	75.7	75.7	75.7
Minimum delivery Charge pump	Imp. galls/min.	20.9	20.9	20.0	20.0	20.0	20.0
	Litres/min.	95.1	95.1	90.8	90.8	90.8	90.8
Maximum system pressure	$lbf.in^2$	2700 – 2800					
	bar	186 – 193					

THREE–POINT LINKAGE

Maximum lift capacity – Manufacturers' figures to OECD criteria – links horizontal, maximum hydraulic pressure:

SL models – without assist rams at link ends	lb	6350	6350	n/a	n/a	n/a	n/a
	kg	2880	2880	n/a	n/a	n/a	n/a
24 in. to rear of link ends	lb	4910	4910	n/a	n/a	n/a	n/a
	kg	2227	2227	n/a	n/a	n/a	n/a
SL models – with one assist ram at link ends	lb	9370	9370	9370	9370	n/a	n/a
	kg	4250	4250	4250	4250	n/a	n/a
24 in. to rear of link ends	lb	7080	7080	7080	7080	n/a	n/a
	kg	3211	3211	3211	3211	n/a	n/a
SL models – with two assist rams at link ends	lb	n/a	n/a	12300	12300	n/a	n/a
	kg	n/a	n/a	5579	5579	n/a	n/a
24 in. to rear of link ends	lb	n/a	n/a	9420	9420	n/a	n/a
	kg	n/a	n/a	4273	4273	n/a	n/a
SLE models – without assist rams at link ends	lb	6713	6713	n/a	n/a	n/a	n/a
	kg	3045	3045	n/a	n/a	n/a	n/a
24 in. to rear of link ends	lb	5190	5190	n/a	n/a	n/a	n/a
	kg	2354	2354	n/a	n/a	n/a	n/a

THREE–POINT LINKAGE		75 PS	85 PS	95 PS	100 PS	110 PS	125 PS
SLE models – with one assist ram							
at link ends	lb	9903	9903	9903	9903	n/a	n/a
	kg	4492	4492	4492	4492	n/a	n/a
24 in. to rear of link ends	lb	7485	7485	7485	7485	n/a	n/a
	kg	3395	3395	3395	3395	n/a	n/a
SLE models – with two assist rams							
at link ends	lb	n/a	n/a	13000	13000	14455	14455
	kg	n/a	n/a	5897	5897	6557	6557
24 in. to rear of link ends	lb	n/a	n/a	9915	9915	12317	12317
	kg	n/a	n/a	4516	4516	5587	5587

A.S.C. and REMOTE CONTROL VALVES

Auxiliary Services Control valve	Standard
Remote Control Valves	Up to four optional

Output at minimum flow at rated speed (single pump)		
A.S.C. valve	Imp. galls/min.	7.5
	Litres/min.	34.0
Output at minimum flow at rated speed		
De–luxe remote control valve	Imp. galls/min.	0.8 – 2.9
	Litres/min.	3.6 – 13.2
Output at maximum flow at rated speed (two pumps)		
De–luxe remote control valve	Imp. galls/min.	13.3
	Litres/min.	60.6
Output at maximum flow at rated speed (CCLS pump)		
De–luxe remote control valve	Imp. galls/min.	16.7
	Litres/min.	75.7

BRAKES

Type		Wet disc, hydraulically actuated					
Disc diameter (overall)	in	8.81					
	mm	223.8					
No. of discs per side		3	3	3	3	4	4
Parking brake							
standard		Operates on footbrake mechanism					
optional		Transmission type					

HYDROSTATIC STEERING		75 PS	85 PS	95 PS	100 PS	110 PS	125 PS
Pump type		Fixed displacement gear type					
Flow at rated speed	Imp. galls/min	8.0	8.0	7.66	7.66	7.66	7.66
	Litres/min	36.5	36.5	34.8	34.8	34.8	34.8
Maximum pressure							
Two wheel drive	$lbf.in^2$	2100	2100	2100	2100	2500	2500
	bar	145	145	145	145	172	172
Four wheel drive	$lbf.in^2$	2500					
	bar	172					
Front wheel toe–out (two wheel drive)	in	0 – 0.5					
	mm	0 – 13					
Front wheel toe–out (four wheel drive)	in	0 – 0.25					
	mm	0 – 6					

ELECTRICAL EQUIPMENT

Alternator		12v. 100 amp – with cab 12v. 55 amp – less cab
Regulator		Integral with alternator (using battery temperature sensor)
Battery		Minimum maintenance type – 12v. 107 a/h at 20 hours Additional battery optional
Starting motor		Positive engagement, solenoid operated
Cold starting aid		Thermostart (with electric timer) Block heater optional
Bulb rating and type:	Headlights	60/55W – H4
	Position lights	5W – R5W
	Work lights	55W – H3
	Turn signals	21W – P21W
	Stop/tail lights	21/5W – P21/5W
	License plate lights	10W – R19/10

CAPACITIES		75 PS	85 PS	95 PS	100 PS	110 PS	125 PS
Standard fuel tank(s)	Imp. gallons		20.8			47.9	
	Litres		94.6			217.7	
Optional auxiliary fuel tank (with cab)	Imp. gallons		23.0		Standard – included in above figures		
	Litres		104.8				
Optional auxiliary fuel tank (less cab)	Imp. gallons		18.2		Standard – included in above figures		
	Litres		82.9				
Cooling system (with cab)	Imp. gallons		3.5			4.7	
	Litres		16.0			21.5	
Cooling system (less cab)	Imp. gallons		3.2			4.4	
	Litres		14.5			20.0	
Engine (including filter)	Imp. pints	20.1	20.1	20.1	36.8	36.8	36.8
	Litres	11.4	11.4	11.4	20.9	20.9	20.9
Transmission/rear axle (12 x 12 transmission)	Imp. gallons	12.5	12.5	12.5	12.5	n/a	n/a
	Litres	56.8	56.8	56.8	56.8	n/a	n/a
Transmission/rear axle (16 x 16 transmission)	Imp. gallons			13.3			
	Litres			60.6			
Front hubs (FWD) (quantity shown is for one hub only)	Imp. pints	5.3	5.3	5.3	5.3	4.6	4.6
	Litres	3.0	3.0	3.0	3.0	2.6	2.6
Front axle (FWD)	Imp. Pints	10.9	10.9	10.9	10.9	14.1	14.1
	Litres	6.2	6.2	6.2	6.2	8.0	8.0

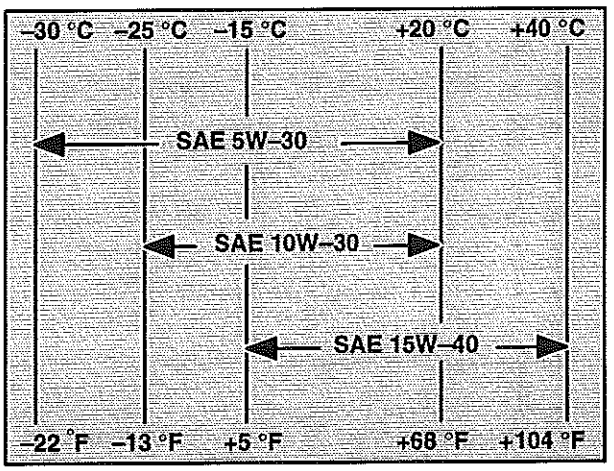
NOTE: *When operating remote cylinders, the rear axle oil level will be affected. When topping up the rear axle to accommodate the oil requirement of remote cylinders, no more than 45 litres (10 Imp. gallons) should be added to bring the oil level up to the upper mark on the dipstick when all rams are fully extended.*

Alternatively, remote cylinders with an oil capacity of up to 18 litres (4 Imp. gallons) may be connected to the tractor hydraulic system without adding oil, provided the tractor is being operated on level ground.

LUBRICANT AND FLUID SPECIFICATIONS (all models)

Application	New Holland Brand Name	New Holland Specification	International Specification
Transmission/rear axle/hydraulics, hydrostatic steering, front axle casing and hubs (4wd):			
	Ambra Multi G	NH 410 B	API GL4, ISO 32/46 (SAE 10W30)
Brake/clutch reservoir:			
	Ambra Brake LHM	NH 610 A	–
All lubrication fittings:			
	Ambra GR75MD	NH 720 A	NLGI 2
Engine:	Ambra Super Gold (15W40)	NH 330 G	API CF-4/SG, CCMC D4, MIL-L-2104E
	Ambra Super Gold (10W30)	NH 324 G	API CF-4/SG, CCMC D4, MIL-L-2104E

The correct engine oil viscosity grade is dependent upon ambient temperature. Refer to the chart on the right when selecting oil for your tractor engine.



NOTE: *In areas where prolonged periods of extreme temperatures are encountered, local lubricant practices are acceptable; such as the use of SAE 5W30 in extreme low temperatures or SAE 50 in extreme high temperatures.*

Sulphur in Fuel

The engine oil change period is shown in section 3. However, locally available fuel may have a high sulphur content, in which case the engine oil change period should be adjusted as follows:–

Sulphur Content %	*Oil Change Period*
Below 0.5	*Normal*
0.5 – 1.0	*Half the normal*
above 1.0	*One quarter normal.*

The use of fuel with a sulphur content above 1.3% is not recommended.

Cooling system – use antifreeze (50%) plus clean, soft water (50%)

Ambra Agriflu	NH 900 A	–

IMPORTANT: *See Section 3 regarding use of FW–15 coolant inhibitor where above-mentioned antifreeze is not available.*

In those hot countries where antifreeze is not available, use **clean** water only.

NOTE: *In order to reduce deposits and corrosion, water used in the cooling system should not exceed the following limits:*

Total hardness:	**Chlorides**	**Sulphates**
300 parts per million	*100 parts per million*	*100 parts per million*

CHECK AND ADJUST, AS REQUIRED

INOPERATIVE SERVICE CHECKS:

1. Check tyre pressures and condition ..... ☐
2. Clean radiator, oil cooler and A/C condenser cores (where fitted) ..... ☐
3. Check radiator coolant level and specific gravity (1.071 – 1.083 at 16 ° C (60 ° F) ..... ☐
4. Change fuel filter, drain water separator and bleed system ..... ☐
5. Inspect Poly V-belt ..... ☐
6. Check engine oil level ..... ☐
7. Change hydraulics/transmission filters ..... ☐
8. Check transmission/rear axle oil level ..... ☐
9. Check front axle differential oil level (4wd) ... ☐
10. Check front axle hub oil level (4wd) ..... ☐
11. Check brake/clutch master cylinder fluid level ☐
12. Check clutch pedal free play ..... ☐
13. Check brake adjustment and pedal equalisation ..... ☐
14. Handbrake cable adjustment ..... ☐
15. Check exhaust manifold bolt torque ..... ☐
16. Wheel-to-rim clamp bolts and lock nuts for tightness ..... ☐
17. Wheel disc-to-hub nuts for tightness ..... ☐
18. Front end weight clamp bolts for tightness .. ☐
19. Grease front wheel bearings (2WD) ..... ☐
20. Lubricate all grease fittings ..... ☐
21. Clean cab air filter (where fitted) ..... ☐
22. Clean air cleaner element and check hose connections ..... ☐

SAFETY ITEMS CHECKS:

1. Cab or safety frame bolt torque (where applicable) ..... ☐
2. Neutral start switches operative ..... ☐

OPERATIVE SERVICE CHECKS:

All operative checks are to be performed with the tractor at normal operating temperature.

1. Lights/instruments for proper operation ..... ☐
2. Windscreen wipe/wash operation
3. Fluid and oil leaks ..... ☐
4. Maximum no-load speed and idle speed adjustments and fuel shut-off ..... ☐
5. P.T.O. operation ..... ☐
6. Hydraulic System:
   Draft and Position Control operation ..... ☐
   Flow control operation ..... ☐
   A.S.C. or remote control valve operation .... ☐

PERFORMANCE SERVICE CHECKS:

1. Engine operation including throttle and governor operation ..... ☐
2. Transmission, including clutch ..... ☐
3. Steering control ..... ☐
4. Differential lock engagement and disengagement ..... ☐
5. Brake action ..... ☐
6. All optional equipment and accessories ..... ☐

SERVICE PERFORMED

TRACTOR MODEL NO. ..... **TRACTOR SERIAL NO.** .....

OWNER'S SIGNATURE **DATE** **DEALER'S SIGNATURE** **DATE**

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5. Inspect Poly V-belt ..... ☐
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