4650 and 4850 Tractors Repair

JOHN DEERE

TECHNICAL MANUAL

4650 and 4850 Tractors
Repair

TM1354 (01SEP87) English

John Deere Tractor Works
TM1354 (01SEP87)

LITHO IN U.S.A.
ENGLISH

4650 AND 4850 TRACTORS TECHNICAL MANUAL TM-1354 (SEP-87)

CONTENTS—REPAIR SECTIONS

PUBLICATION NUMBER CHANGE

This technical manual was formerly TM-1258. The number was changed to TM-1354 when engine information was removed. Some pages still carry the old publication number. For engine information, refer to engine component technical manual CTM-1, 6466 Engines. This machine technical manual covers removal and installation of the engine components. The component manual covers basic repair of engine. For main hydraulic pump repair information, refer to component technical manual, CTM-7, Radial Piston Pumps.

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All information, illustrations and specifications contained in this technical manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

U10;010GEN AX4 151087

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U10;010GEN CX4 090583

INTRODUCTION

This manual is part of a total service support program.

FOS Manuals—reference

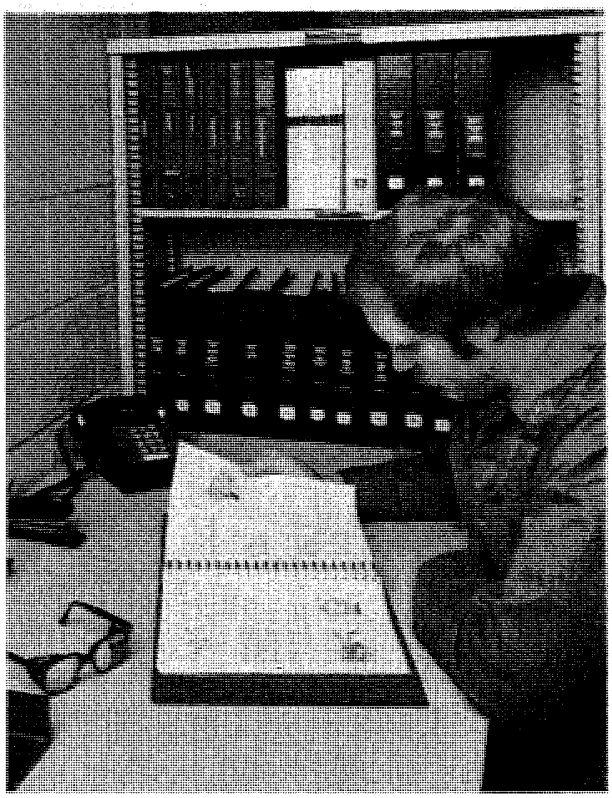
Technical Manuals—machine service

Component Manuals—component service

Fundamentals of Service (FOS) Manuals cover basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise service guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed by an experienced service technician.

Component Technical Manuals are concise service guides for specific components. Component technical manuals are written as stand alone manuals covering multiple machine applications.



AB6;RW5559 053;INTR02 030785

FEATURES OF THIS TECHNICAL MANUAL

John Deere ILLUSTRUCTION format emphasizing illustrations and concise instructions in easy-to-use modules.

Emphasis on diagnosis, analysis, and testing so you can understand the problem and correct it.

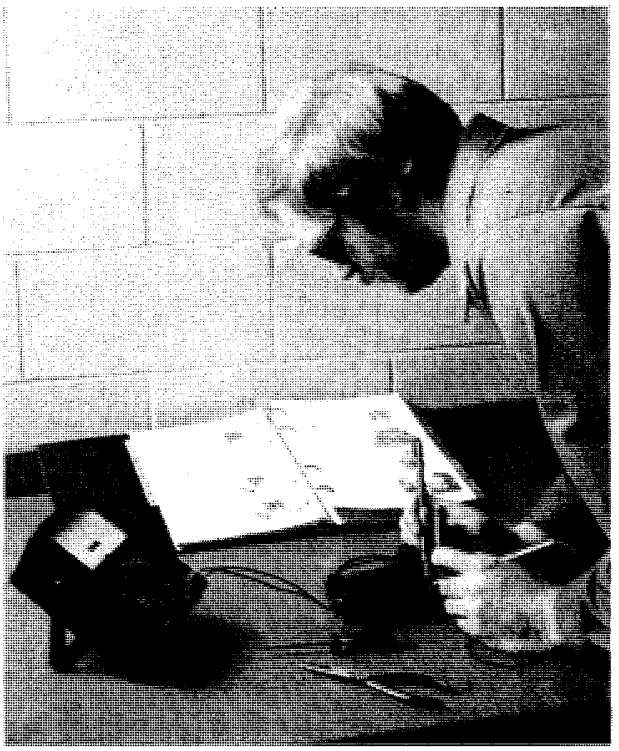
Diagnostic information presented with the most logical and easiest to isolate problems first to help you identify the majority of routine failures quickly.

Step-by-step instructions for teardown and assembly.

Summary listing at the beginning of each group of all applicable specifications, wear tolerances, torque values, essential tools, and materials needed to do the job.

An emphasis throughout on safety—so you do the job right without getting hurt.

This technical manual was planned and written for you—an experienced service technician. Keep it in a permanent binder in the shop where it is handy. Refer to it when you need to know correct service procedures or specifications.



AB6;RW5560 053;INTR03 071085

RECOGNIZE SAFETY INFORMATION

This is the safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

AB6;T81389 053;ALERT 160687

IMPORTANT

The **IMPORTANT** message identifies potential problems which may cause consequential damage to tractor. Following recommended procedure will instruct technician how to avoid problem.

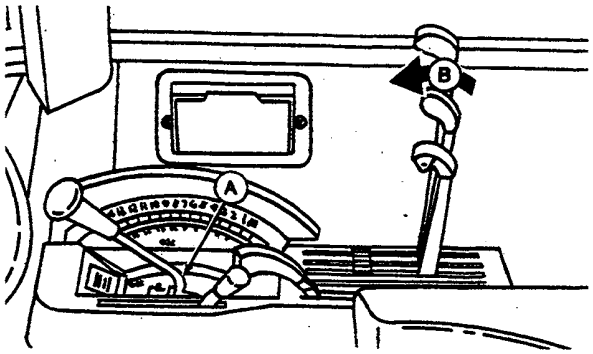
U10;D10INT D 101281

NOTES

The word *NOTE* is followed by a statement that identifies a qualification or exception to a previous statement. A "NOTE" may also identify nice-to-know information pertinent to, but not directly related to previous statement.

U10;D10INT E 101281

STAY CLEAR OF MOVING TRACTOR



Always place transmission in PARK (A) before dismounting. Leaving transmission in gear with engine stopped will NOT prevent the tractor from moving.

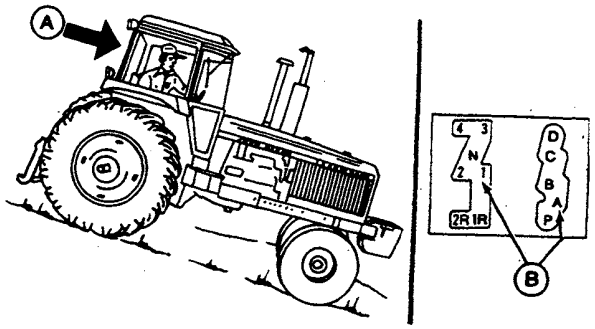
Be sure everyone is clear of tractor and attached equipment before starting engine. Some movement may occur as engine starts.

Never try to get on or off a moving tractor.

When tractor is left unattended, lower implements to the ground (B), stop the engine, and remove the key.

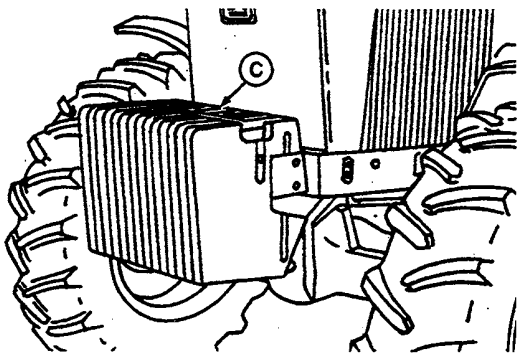
AJ7;RW5696L U01;STAY CLEAR2 200585

SHIFT TO LOW GEAR ON HILLS



Shift to a low gear (B) before descending a steep hill (A), to improve your control of the tractor with little or no braking. Make sure brake pedals are locked together. Never coast downhill.

When driving on icy or graveled surfaces, reduce speed and be sure tractor is properly ballasted to avoid skidding and loss of steering control.



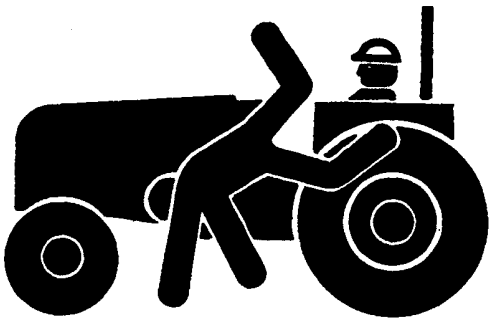
Additional ballast (C) may be needed for transporting heavy integral implements. When implement is raised, drive slowly over rough ground, regardless of how much ballast is used.

AJ7;RW5692 L,RW5693 L U01;DRIVE SAFE1 281085

KEEP RIDERS OFF MACHINE

Only allow the operator on the machine. Keep riders off.

Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.

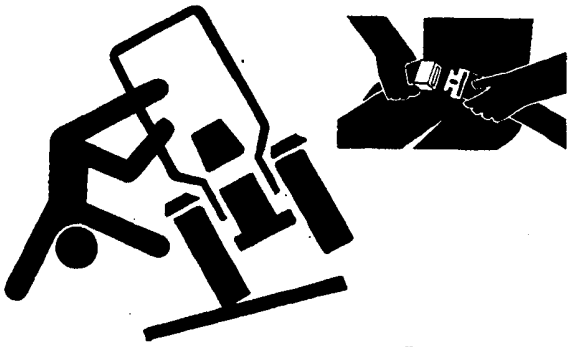


AB6;TS213 053;RIDER 160687

USE SEAT BELT PROPERLY

Use a seat belt when you operate with a roll-over protective structure (ROPS) to minimize chance of injury from an accident such as an overturn.

Do not use a seat belt if operating without a ROPS.

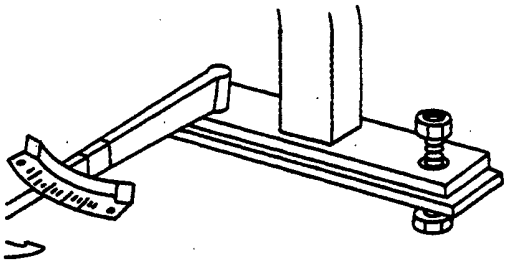


AB6;TS205 053;ROPS1 230487

KEEP ROPS INSTALLED PROPERLY

Make certain all parts are reinstalled correctly if the roll-over protective structure (ROPS) is loosened or removed for any reason. Tighten mounting bolts to proper torque.

The protection offered by ROPS will be impaired if ROPS is subjected to structural damage, is involved in an overturn incident, or is in any way altered by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.



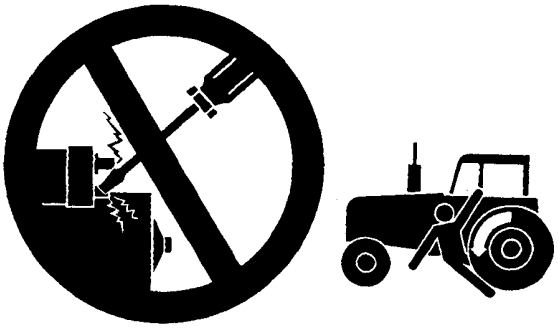
AB6;TS212 053;ROPS3 230487

PREVENT MACHINE RUNAWAY

Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.



AB6;TS177 053;BYPAS1 210585

TOW EQUIPMENT PROPERLY

Use caution when towing loads at transport speeds. Reduce speed if towed load weighs more than the tractor and is not equipped with brakes. Avoid hard braking applications. (Consult implement operator's manual for recommended transport speeds.)

Use additional caution when transporting towed loads under adverse surface conditions, when turning, or on inclines.

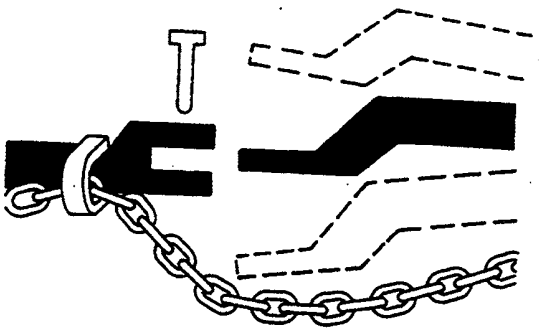
U01;TOW 061284

USE A SAFETY CHAIN

A safety chain will help control drawn equipment should it accidentally separate from the drawbar.

Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning.

See your John Deere dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine. Do not use safety chain for towing.



AB6;TS208 053;CHAIN 180987

PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work.

Never lubricate or service machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

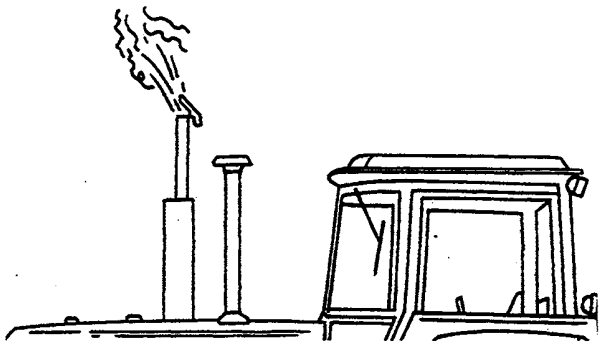
Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

Disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

AB6;TS209 053;SERV 160687

AVOID EXHAUST FUMES

Never run engine in a closed building. Make sure service area is adequately ventilated.



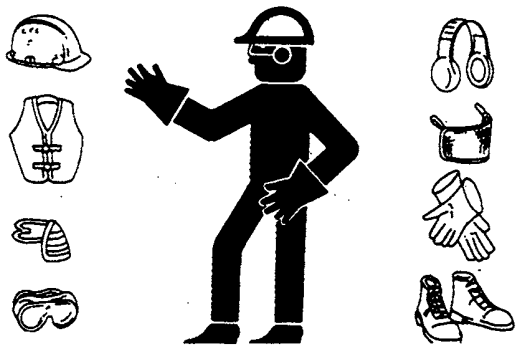
AJ7;RW5703 L U01;AVOID FUMES 090585

WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate to the job.

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.



AB6;TS206 053;WEAR 230487

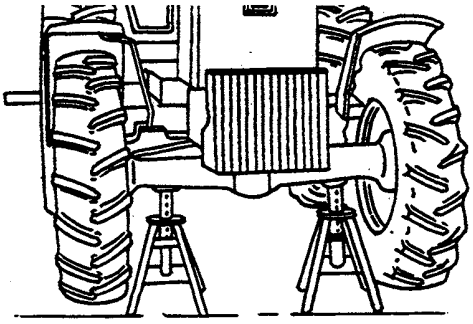
SERVICE TRACTOR SAFELY

Do not service the tractor while it is in motion or while the engine is running.

If servicing front-wheel drive equipped tractor with rear wheels supported off ground and rotating wheels by engine power, always support front wheels in a similar manner. If front wheels are not raised, loss of electrical power or transmission-hydraulic system pressure will engage front driving wheels and pull rear wheels off support. Under these conditions, the front-drive wheels can engage even with switch in disengaged position.

Reinstall all shields removed during service.

The air conditioning system is pressurized. Improper servicing may cause refrigerant to penetrate eyes and skin or cause burns. Special equipment and procedures are required to service air conditioning system. (See your John Deere dealer.)



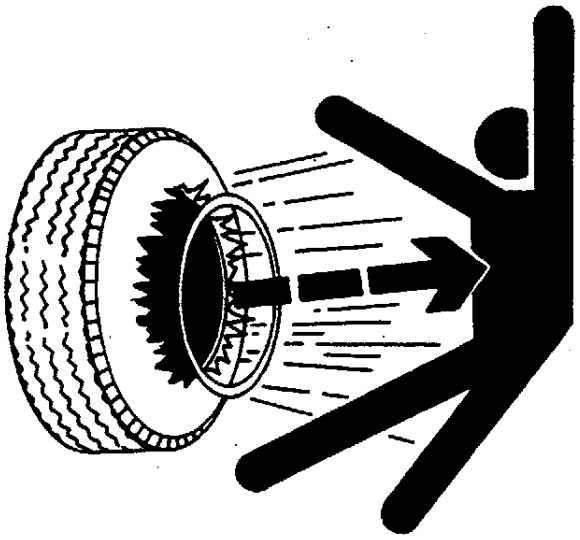
AJ7;RW5700 L U01;WORK SAFE1 090585

SERVICE TIRES SAFELY

Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death. Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Have it done by your John Deere dealer or a qualified tire repair service.

When sealing tire beads on rims, never exceed 35 psi (241 kPa) (2.4 bar) or maximum inflation pressures specified by tire manufacturers for mounting tires. Inflation beyond this maximum pressure may break the bead, or even the rim, with dangerous explosive force. If both beads are not seated when the maximum recommended pressure is reached, deflate, reposition tire, relubricate bead and reinflate.

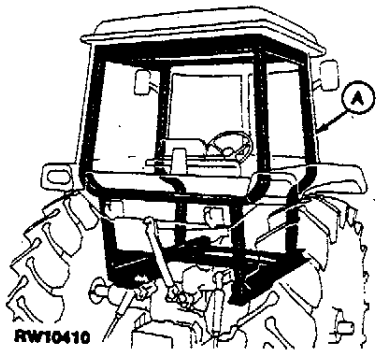
Detailed tire mounting instructions, including necessary safety precautions, are contained in John Deere Fundamentals of Service (FOS) Manual 55, Tires and Tracks, available through your John Deere dealer. Such information is also available from the Rubber Manufacturers Association and from tire manufacturers.



AB6;TS211 U01;TIRE 051087

DO NOT MODIFY TRACTOR

Never modify structural members of the roll-over protective structure (ROPS) (A) of the SOUND-GARD body or ROLL-GARD protective frame by welding, bending, drilling or cutting as this might weaken the structure. If any structural member is damaged, replace the entire structure. Do not attempt repairs.

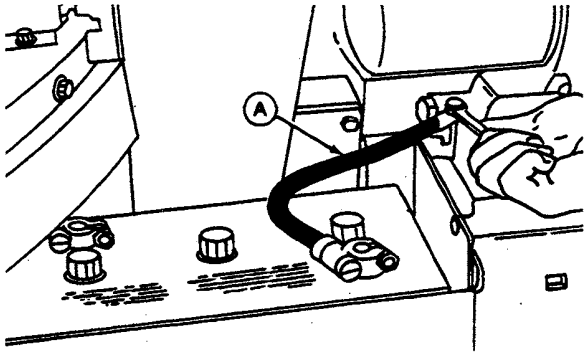


AJ7;RW1041 0 U01;MODIFY RC 131285

OBSERVE ELECTRICAL SERVICE PRECAUTIONS

Keep all sparks and flames away from batteries, as gas given off by electrolyte is explosive. To avoid sparks, connect ground cable (A) last and disconnect it first. When using a booster battery, follow instructions in operator's manual.

To avoid shocks and burns, disconnect battery ground cable before servicing any part of electrical system.

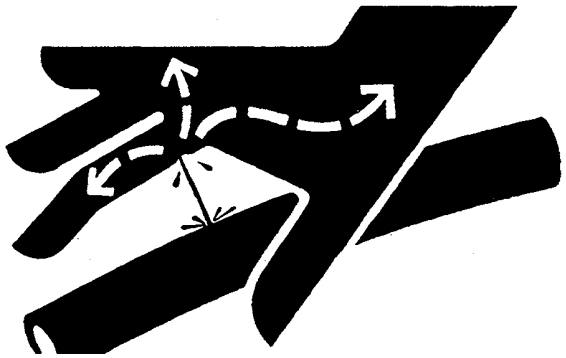


AJ7;RW5701L U10;010INT EX1 210682

AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard to search for leaks.

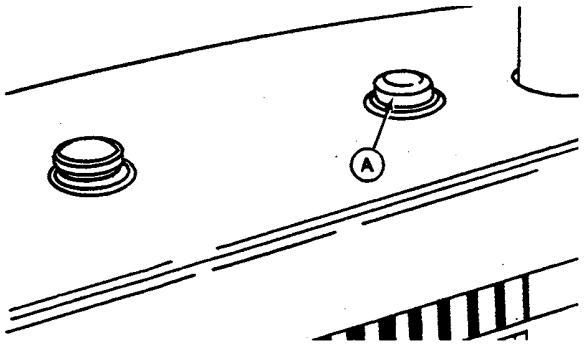
If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.



AB6;X9811 053;FLUID 180987

SERVICE COOLING SYSTEM SAFELY

Do not remove radiator cap (A) when engine is hot. Shut the engine off and wait until it cools. Then turn the cap slowly to the first stop to relieve pressure before removing it completely.

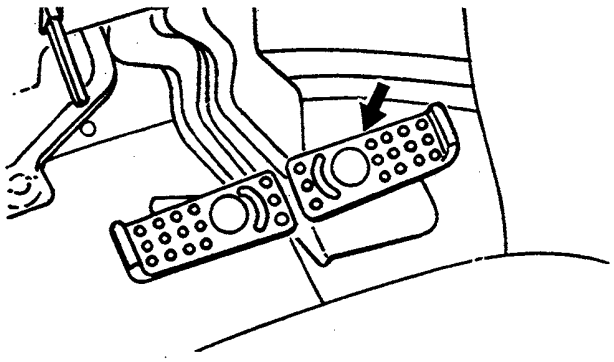


AJ7;RW5702 L U01;COOL IT 090585

SERVICE BRAKE ACCUMULATOR SAFELY

Accumulator contains gas and oil under pressure. To avoid injury from escaping fluid, relieve all pressure from accumulator before disconnecting brake accumulator or brake valve. To do so open bleed screws and pump brake pedal with engine stopped, until pedal easily goes all the way down.

The accumulator is charged with dry nitrogen to a pressure of 500 psi (3450 kPa) (35 bar). If it needs recharging, have job done only by a qualified service person and only with dry nitrogen.



AJ7;RW8630 L U01;FIX BRAKE 311085

AVOID EXPLOSIONS OR FIRE

Batteries produce explosive gas. Before using booster batteries, read instructions in operator's manual.

Before connecting or disconnecting battery charger, turn the charger off to avoid sparks. See instructions in operator's manual.

Be careful with starting fluid or any type of fuel.

Never smoke while handling fuel.

AC3;RW5895 U01;FIRE 091184

PROTECT AGAINST NOISE

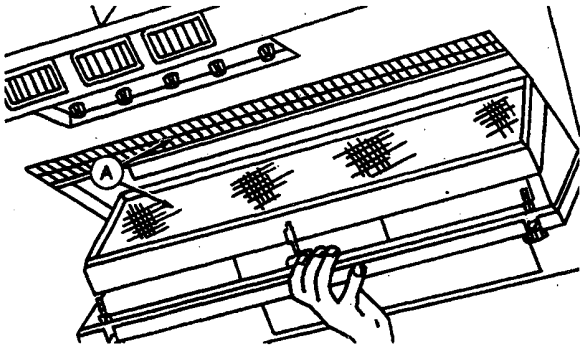
Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortable loud noises.

AB6;TS207 053;NOISE 230487

HANDLE CHEMICALS PROPERLY

SOUND-GARD body air filters (A) are not designed to filter out harmful chemicals. Follow instructions given in the implement operator's manual and those given by the chemical manufacturer when using agricultural chemicals.



AJ7;RW5704 L U01;HANDLE CHEM 090585

PREVENT BATTERY EXPLOSIONS

Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

AB6;TS204 U01;EXPLO 021087

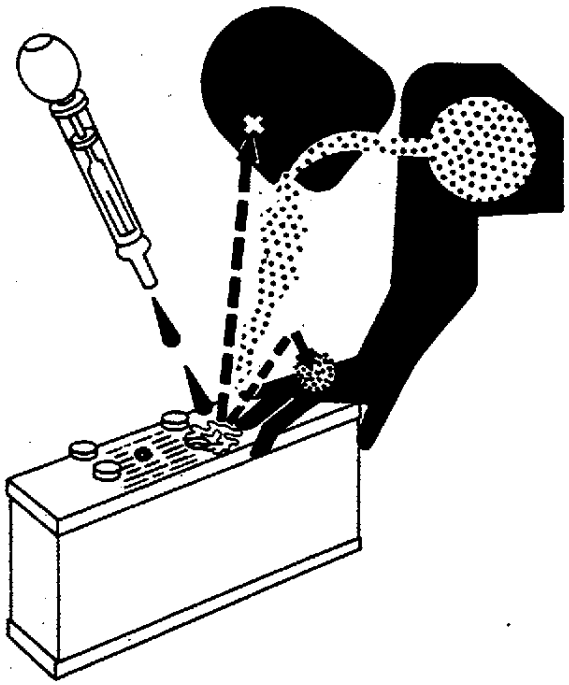
AVOID ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Avoid the hazard by:
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoid breathing fumes when electrolyte is added.
4. Avoid spilling or dripping electrolyte.

If you spill acid on yourself:
1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. Flush your eyes with water for 10-15 minutes. Get medical attention immediately.

If acid is swallowed:
1. Drink large amounts of water or milk.
2. Then drink milk of magnesia, beaten eggs, or vegetable oil.
3. Get medical attention immediately.



AB6;TS203 U01;ACID 021087

HANDLE FUEL SAFELY—AVOID FIRES

Handle fuel with care: it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine. Fill fuel tank outdoors.

Prevent fires by keeping machine clean of accumulated trash, grease, and debris. Always clean up spilled fuel.

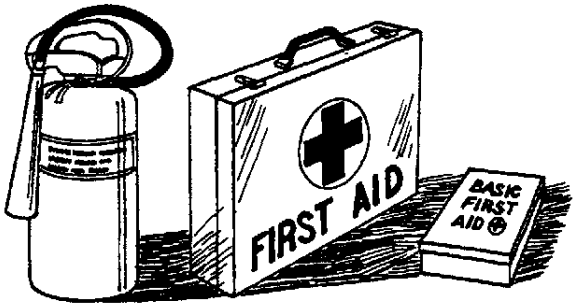
AB6;TS202 053;FIRE1 230487

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



AB6;TS186 053;FIRE2 080785

HANDLE STARTING FLUID SAFELY

Starting fluid is highly flammable.

Keep all sparks and flame away when using it. Keep starting fluid away from batteries and cables.

To prevent accidental discharge when storing the pressurized can, keep the cap on the container, and store in a cool, protected location.

Do not incinerate or puncture a starting fluid container.

AB6;T6098A U 053;FIRE3 160687

Section 10
GENERAL

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GROUP 10 - TUNE-UP

GROUP 15 - LUBRICATION

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GENERAL TRACTOR SPECIFICATIONS

	4650 TRACTOR	4850 TRACTOR
POWER:		
PTO (Factory observed at 2200 rpm)	123 kW (165 hp)	142 kW (190 hp)
ENGINE:		
Type	Diesel	Diesel
Aspiration	Turbocharged and Intercooled	Turbocharged and Intercooled
Cylinders	In-line 6	In-line 6
Slow idle speed	850 rpm	850 rpm
Governed speed range	850 to 2400 rpm	850 to 2400 rpm
Operating speed range	1500 to 2200 rpm	1500 to 2200 rpm
Bore and stroke	116 x 120.6 mm (4.57 x 4.75 in.)	116 x 120.6 mm (4.57 x 4.75 in.)
Compression ratio	15.8:1	15.0:1
Displacement	7.6 L (466 cu. in.)	7.6 L (466 cu. in.)
Firing order	1-5-3-6-2-4	1-5-3-6-2-4
Valve clearance:		
Intake	0.46 mm (0.018 in.)	0.46 mm (0.018 in.)
Exhaust	0.71 mm (0.028 in.)	0.71 mm (0.028 in.)
Lubrication system	Force-feed, pressurized with full-flow oil filter	Force-feed, pressurized with full-flow oil filter
FUEL SYSTEM:		
Type	Direct injection	Direct injection
Injection pump type	In-line	In-line
Injection pump timing	TDC	TDC
Air cleaner	Dry type with safety element	Dry type with safety element
COOLING SYSTEM:		
Type	Dual-pressure with centrifugal pump	Dual-pressure with centrifugal pump
Thermostats	Three heavy-duty	Three heavy-duty
CAPACITIES:		
Fuel tank	386 L (102 gal.)	386 L (102 gal.)
Cooling system	30.3 L (32 qt.)	30.3 L (32 qt.)
Crankcase with filter	19.9 L (21 qt.)	19.9 L (21 qt.)
Transmission-hydraulic system:		
Power-Shift without MFWD (drain and fill)	70.5 L (18.6 gal.)	70.5 L (18.6 gal.)
Power-Shift with MFWD (drain and fill)	75.7 L (20 gal.)	75.7 L (20 gal.)
QUAD-RANGE™ (drain fill)	102 L (26.9 gal.)	

Continued on next page

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GENERAL TRACTOR SPECIFICATIONS - Continued

	4650 TRACTOR	4850 TRACTOR
ELECTRICAL SYSTEM:		
Type	12-volt, negative ground	12-volt, negative ground
Batteries:	Two	Two
Group	5D	5D
Amps	800	800
Capacity (min)	376	376
Alternator:		
SOUND-GARD® Body	90 amp	90 amp
Less SOUND-GARD® Body	72 amp	72 amp
POWER-SHIFT TRANSMISSION:		
Type	2-speed, hydraulically-shifted planetary in front of compound planetary with multiple wet disk clutches and brakes	2-speed, hydraulically-shifted planetary in front of compound planetary with multiple wet disk clutches and brakes
Gear selections	15 forward, 4 reverse	15 forward, 4 reverse
Shifting	Hydraulic, on-the-go and under load	Hydraulic, on-the-go and under load
QUAD-RANGE™ TRANSMISSION:		
Type	2-speed, power-shifted planetary and 8-speed synchronized with constant mesh gears	
Gear selections	16 forward, 6 reverse	
Perma-clutch	Hydraulically-operated, multiple-disk wet clutch	
POWER TAKE-OFF:		
Type	Fully independent	Fully independent
Speed (2200 engine rpm)	1000 rpm	1000 rpm
Size	45 mm (1-¾ in.)	45 mm (1-¾ in.)
Clutch	Hydraulically-operated wet clutch	Hydraulically-operated wet clutch
BRAKES:		
Type	Hydraulically-operated wet disk	Hydraulically-operated wet disk
HYDRAULIC SYSTEM:		
Type	Closed-center, constant-pressure	Closed-center, constant-pressure
Standby pressure	16000 kPa (155 bar) (2320 psi)	16000 kPa (155 bar) (2320 psi)
Steering system	Hydrostatic power	Hydrostatic power

Continued on next page

GENERAL TRACTOR SPECIFICATIONS - Continued

	4650 TRACTOR	4850 TRACTOR
TWO-WHEEL DRIVE DIMENSIONS (with standard tires):		
Wheelbase	3010 mm (118.5 in.)	3010 mm (118.5 in.)
Length (less hitch and drawbar)	4531 mm (178.4 in.)	4531 mm (178.4 in.)
Rear axle diameter	100 mm (3-5/16 in.)	100 mm (3-5/16 in.)
Overall width (axle length):		
Regular axle	2438 mm (96 in.)	2438 mm (96 in.)
Long axle	2758 mm (108.6 in.)	2758 mm (108.6 in.)
Extra long axle	3012 mm (118.6 in.)	3012 mm (118.6 in.)
Overall height:		
Top of SOUND-GARD® Body	2982 mm (117.4 in.)	2982 mm (117.4 in.)
Top of steering wheel	2418 mm (95.2 in.)	2418 mm (95.2 in.)
Turning radius:		
With brakes	4.2 m (13.8 ft.)	4.2 m (13.8 ft.)
Without brakes	4.6 m (15.1 ft.)	4.6 m (15.1 ft.)
Crop clearance:		
(Drawbar with offset down)	379 mm (14.9 in.)	379 mm (14.9 in.)
Average shipping weight (with SOUND-GARD® Body, standard transmission, and most popular wheel equipment):		
QUAD-RANGE™ transmission	7576 kg (16,685 lb.)	
Power-Shift transmission		7917 kg (17,457 lb.)
Tires (standard):		
Front	11.00-16, 8 ply (F-2)	11.00-16, 8 ply (F-2)
Rear	20.8-38, 10 ply (R-1)	20.8-38, 10 ply (R-1)
MFWD DIMENSIONS (with standard tires):		
Wheelbase	2974 mm (117.1 in.)	2974 mm (117.1 in.)
Length (less hitch and drawbar)	4559 mm (179.5 in.)	4559 mm (179.5 in.)
Overall height:		
Top of SOUND-GARD® Body	3015 mm (118.8 in.)	3015 mm (118.8 in.)
Top of steering wheel	2417 mm (95.2 in.)	2417 mm (95.2 in.)
Turning radius:		
MFWD engaged with brakes	4.98 m (16.3 ft.)	4.98 m (16.3 ft.)
without brakes	5.87 m (19.3 ft.)	5.87 m (19.3 ft.)
MFWD disengaged with brakes	4.99 m (16.3 ft.)	4.99 m (16.3 ft.)
without brakes	5.47 m (17.9 ft.)	5.47 m (17.9 ft.)
Crop clearance:		
(Front axle)	494 mm (19.5 in.)	494 mm (19.5 in.)
Average shipping weight (with SOUND-GARD®Body, Power-Shift transmission, and most popular wheel equipment)	8482 kg (18,702 lb.)	8607 kg (18,978 lb.)
Tires (standard):		
Front	18.4-26, 10-ply (R-1)	18.4-26, 10-ply (R-1)
Rear	20.8-38, 10-ply (R-1)	20.8-38, 10-ply (R-1)

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4650 TRACTOR, QUAD-RANGE™ GROUND SPEEDS

(Engine speed 2200 rpm, with 20.8-38, R-1 rear tires)

Tire Size	Tread	Changes in Speeds
24.5-32	R-1	4% Slower
30.5-32	R-1	1% Slower
16.9-38	R-1	7.6% Slower
18.4-38	R-1	4% Slower
20.8R-38	R-1	1.5% Slower
18.4-42	R-1	2% Faster
18.4R-42	R-1	.5% Faster
24.5-32	R-2-0	.3 Faster
18.4-38	R-2-0	2.8% Slower
20.8-38	R-2-0	1.5% Faster

Range	Gear	mph	(km/h)
A	1	2.0	(3.2)
	2	2.6	(4.1)
	3	3.7	(5.9)
	4	4.6	(7.5)
	R1	3.8	(6.1)
	R2	4.8	(7.8)
B	1	4.5	(7.3)
	2	5.7	(9.2)
	3	8.2	(13.1)
	4	10.4	(16.7)
	R1	8.5	(13.7)
	R2	10.8	(17.4)
C	1	5.3	(8.5)
	2	6.7	(10.8)
	3	9.6	(15.4)
	4	12.2	(19.6)
	R1	10.0	(16.1)
	R2	12.7	(20.4)
D	1	8.6	(13.8)
	2	10.9	(17.6)
	3	15.5	(25.0)
	4	19.7	(31.7)

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4650 AND 4850 TRACTORS, POWER SHIFT GROUND SPEEDS

(Engine speed 2200 rpm, with 20.8-38 R-1 rear tires)

Tire Size	Tread	Changes in Speeds
16.9-38	R-1	7.6 % Slower
18.4-38	R-1	4.0% Slower
18.4-38	R-2-0	2.8% Slower
18.4R38	R-1	2.3% Slower
18.4-42	R-1	2.0% Faster
18.4R42	R-1	4.0% Faster
20.8-38	R-1	Base tire
20.8-38	R-2-0	1.5% Faster
20.8R38	R-1	2.6% Faster
23.1-34	R-1	2.4% Slower
24.5-32	R-1	4.0% Slower
24.5-32	R-2-0	0.3% Faster
24.5R32	R-1	0.5% Slower
30.5L-32	R-1	1.0% Slower
30.5LR32	R-1	1.0% Faster

Gear	mph	(km/h)
1	1.3	(2.11)
2	1.9	(3.1)
3	2.3	(3.7)
4	2.9	(4.86)
5	3.3	(5.3)
6	3.8	(6.1)
7	4.3	(7.0)
8	5.0	(8.0)
9	5.7	(9.2)
10	6.5	(10.5)
11	7.5	(12.0)
12	8.4	(13.5)
13	10.4	(16.7)
14	14.5	(23.4)
15	18.0	(29.0)
R1	1.8	(3.0)
R2	2.6	(4.2)
R3	4.0	(6.4)
R4	6.0	(9.7)

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PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICE SPECIFICATIONS

	4650 TRACTOR	4850 TRACTOR
Engine Speeds:		
Slow Idle	850 rpm	850 rpm
Fast Idle	2400 rpm	2400 rpm
Fast Idle at Full Load	2200 rpm	2200 rpm
Clutch Pedal Height	140 mm (5-½ in.)	140 mm (5-½ in.)
Brake Pedal Free Travel	8 mm (3 in.)	8 mm (3 in.)
Torque Specifications:		
Air Intake Clamps	8.5 N·m (6 ft-lb)	8.5 N·m (6 ft-lb)
Front Axle (Regular/Wide)	603 N·m (445 ft-lb)	603 N·m (445 ft-lb)
Front Wheel to Hub:		
Standard	135 N·m (100 ft-lb)	135 N·m (100 ft-lb)
MFWD	410 N·m (300 ft-lb)	410 N·m (300 ft-lb)
Wheel Pinion Sleeve-to-Wheel	410 N·m (300 ft-lb)	410 N·m (300 ft-lb)
Rear Rim Clamp-to-Wheel	230 N·m (170 ft-lb)	230 N·m (170 ft-lb)
Outside Dual-to-Hub	407 N·m (300 ft-lb)	407 N·m (300 ft-lb)
Side Frame Bolts	578 N·m (426 ft-lb)	578 N·m (426 ft-lb)
Front Support to Side Frame:		
Standard	140 N·m (103 ft-lb)	140 N·m (103 ft-lb)
MFWD	475 N·m (350 ft-lb)	475 N·m (350 ft-lb)
SOUND-GARD® Body or ROLL-GARD® Mounting Bolts	200 N·m (150 ft-lb)	200 N·m (150 ft-lb)
Rockshaft Lift Arm Retaining Bolts	230 N·m (170 ft-lb)	230 N·m (170 ft-lb)

TUNE-UP SPECIFICATIONS

PTO Horsepower at 2200 rpm	123 kW (165 hp)	142 kW (190 hp)
Compression	2690-3100 kPa (26.9-31 bar) (390-450 psi)	2450-2860 kPa (24.5-28.6 bar) (355-415 psi)
Thermostat Opening Temperature	82°C (180°F)	82°C (180°F)
Radiator Cap Pressure Release	100-120 kPa (1.0-1.2 bar) (14-17 psi)	100-120 kPa (1.0-1.2 bar) (14-17 psi)
Compressor/Alternator Belt Tension	380-425 N (85-95 lb)	380-425 N (85-95 lb)
Engine Speeds:		
Slow Idle	850 rpm	850 rpm
Fast Idle	2400 rpm	2400 rpm
Fast Idle at Full Load	2200 rpm	2200 rpm

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LUBRICATION SPECIFICATIONS

Engine Crankcase	19.9 L (21 qt)
Transmission-Hydraulic System:	
Power Shift without MFWD	70.5 L (18.6 gal)
Power Shift with MFWD	81.8 L (21.6 gal)
QUAD-RANGE®	102 L (26.9 gal)
Service Intervals:	
Engine:	
Check Oil Level	10 Hours
Check Coolant	10 Hours
Change Oil and Filter*	200 Hours
Clean Vent Tube	600 Hours
Check Fuel Injection Nozzles	1200 Hours
Replace Air Filter Elements	Annually
Change Coolant	Biennially
Replace Thermostats	Biennially
Replace Fuel Filter	As required
Inspect or Replace Crankshaft Damper	As required
Check Side Frame Bolts	First 100 Hours or Before Installation of Loader
Transmission-Hydraulic System:	
Check Oil Level	10 Hours
Check Oil Level of MFWD Axle Housing and Wheel Hub	200 Hours
Change Transmission and Hydraulic Filters*	600 Hours
Clean Filter Screens	1200 Hours
Change Oil	1200 Hours
Change Transmission and Hydraulic Filters	Annually or as required
Check Accumulators: Brake, Shift, Seat	As required
Lubrication of Grease Fittings:	
Rear Axle Bearings (wet conditions)	10 Hours
Rear Axle Bearings (normal conditions)	600 Hours
Front Wheel Bearings (wet conditions)	10 Hours
Front Wheel Bearings (normal conditions)	1200 Hours
Front Axle Pivots, Steering Spindles, and Tie Rods (wet conditions)	10 Hours
Front Axle Pivots, Steering Spindles, and Tie Rods (normal conditions)	200 Hours
MFWD U-Joints and Steering Knuckles (wet conditions)	10 Hours
MFWD King-Pins, Steering Knuckles and U-Joints (normal conditions)	200 Hours
Wide Swing Drawbar	10 Hours
Load Control Shaft Outer Bearings	200 Hours
3-Point Hitch	200 Hours
MFWD Hub and Axle Housings	1200 Hours
Secondary Brake Linkage Pivot	200 Hours

*Change at 100 Hours during "break-in" period.

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ENGLISH TORQUE SPECIFICATIONS

NOTE: Wrench torque tolerance is ± 20%.

Bolt Diameter	Plain Head*		Three Radial Dashes*		Six Radial Dashes*	
	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m
1/4 in.	6	8	9	12	12	16
5/16 in.	10	14	18	24	25	34
3/8 in.	20	27	30	41	45	61
7/16 in.	30	41	50	68	70	95
1/2 in.	45	61	75	101	110	149
9/16 in.	70	95	110	150	155	210
5/8 in.	95	128	155	210	215	290
3/4 in.	165	225	270	365	385	520
7/8 in.	170	230	435	590	620	840
1 in.	255	345	660	895	930	1260

Torque figures indicated above and in the Specification Sections of this manual are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

* Torque value for bolts and cap screws are identified by their head markings.

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METRIC TORQUE SPECIFICATIONS

NOTE: Wrench torque tolerance is ±20%.

Bolt Diameter	Property Class 8.8*		Property Class 10.9*	
	lb-ft	N·m	lb-ft	N·m
M5	5	6	7	9
M6	8	10	11	15
M8	18	25	26	35
M10	37	50	52	70
M12	66	90	92	125
M16	166	225	229	310
M20	321	435	450	610
M24	554	750	775	1050

Torque figures indicated above and in the Specification Sections of this manual are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or cap screws unless otherwise specified in this manual.

* Torque value for bolts and cap screws are identified by their property class head markings.

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