

5730 and 5830 Self Propelled Forage Harvesters



JOHN DEERE

TECHNICAL MANUAL 5730 and 5830 Self Propelled Forage Harvesters

TM1352 (03DEC93) English

John Deere Ottumwa Works
TM1352 (03DEC93)

LITHO IN U.S.A.
ENGLISH



Introductory Information

FOREWORD

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



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

Technical manuals are divided in two parts: repair and diagnostics. Repair sections tell how to repair the components. Diagnostic sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Binders, binder labels, and tab sets can be ordered by John Deere dealers direct from the John Deere Distribution Service Center.

This manual is part of a total product 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 type of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technical Manuals are concise guides for specific machines. Technical manuals are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

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

Dealer Presentation Sheet

JOHN DEERE DEALERS

IMPORTANT: Please remove this page and route through your service department.

This is a partial revision of TM1352, 5730 / 5830 Self Propelled Forage Harvester.

Listed below is a brief explanation of what was changed.

Section 80 Machine Functions

Group 60 Main Gear Case Repair

Corrected the assembly procedure and specifications on the main gear case assembly.

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All information, illustrations and specifications in this 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.

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SAFETY AND YOU

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



AB6;T81389 053;TMSAFE 071085

IMPORTANT

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

E03;;1005 V 190686

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;010INT E 101281

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;TS173 053;RIDER 261184

OBSERVE SAFETY RULES



This safety alert symbol identifies important safety messages in this manual and on the machine. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

Avoid loose clothing that can catch in moving parts and put you out of work.

Wear your safety glasses while on the job.

Avoid working on equipment with the engine running. If it is necessary to make checks with the engine running, ALWAYS USE TWO PEOPLE—with the operator, at the controls, able to see the person doing the checking. Also, place the transmission in neutral and set the brake. KEEP HANDS AWAY FROM MOVING PARTS.

Keep transmission and brake control units properly adjusted at all times. Before making adjustments, stop engine.

Before removing any housing covers, stop engine. Take all objects from your pockets which could fall into the opened housings. Don't let adjusting wrenches fall into opened housings.

Don't attempt to check belt tension while the engine is running.

Don't adjust the fuel system while the machine is in motion.

Before repairing the electrical system, or performing a major overhaul, make sure the batteries are disconnected.



T27999H

0A9;T27999 E03;0000 J 210383

WEAR PROTECTIVE CLOTHING

Wear fairly tight clothing and safety equipment.



AB6;TS184 053;WEAR2 080785

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:

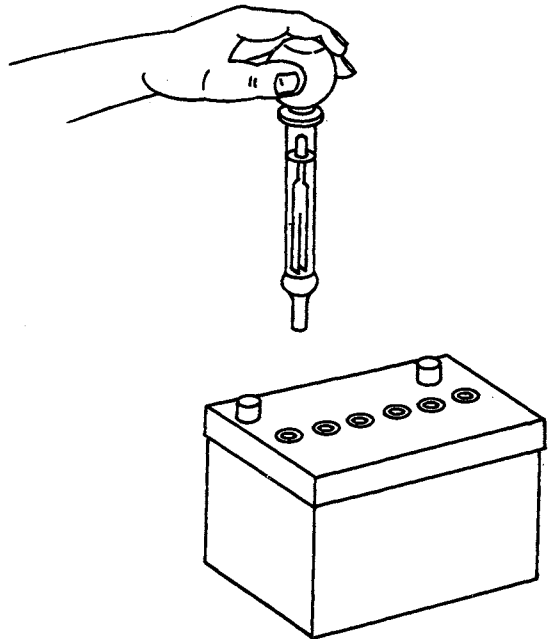
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.

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;TS182 053;ACID 180485

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;TS181 053;EXPLO 180485

PREPARE FOR EMERGENCIES

Be prepared if a fire starts.

Keep a first aid kit and fire extinguishers handy.

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



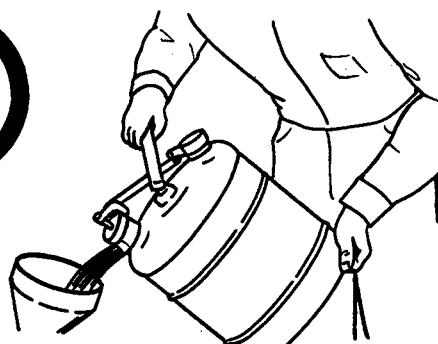
AB6;TS186 053;FIRE2 080785

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;TS185 053;FIRE1 240785

AVOID FIRE HAZARDS

Be prepared if an accident or fire should occur. Know where the first aid kit and the fire extinguishers are located—know how to use them.

Do not smoke while refueling or handling highly flammable material.

Shut off the engine when refueling.

Use care in refueling if the engine is hot.

Do not use open pans of gasoline or diesel fuel for cleaning parts. Use good commercial, nonflammable solvents.

Provide adequate ventilation when charging batteries.

Do not check battery charge by placing metal objects across the posts.

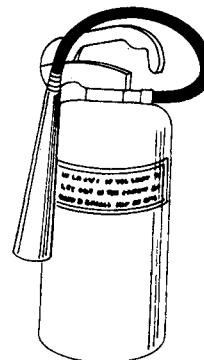
Do not allow sparks or open flame near batteries.

Do not smoke near battery.

Never check fuel or coolant level with an open flame.

Never use an open flame to look for leaks anywhere on the equipment.

When preparing engine for storage, remember that inhibitor is volatile and therefore dangerous. Seal and tape opening after adding the inhibitor. Keep container tightly closed when not in use.



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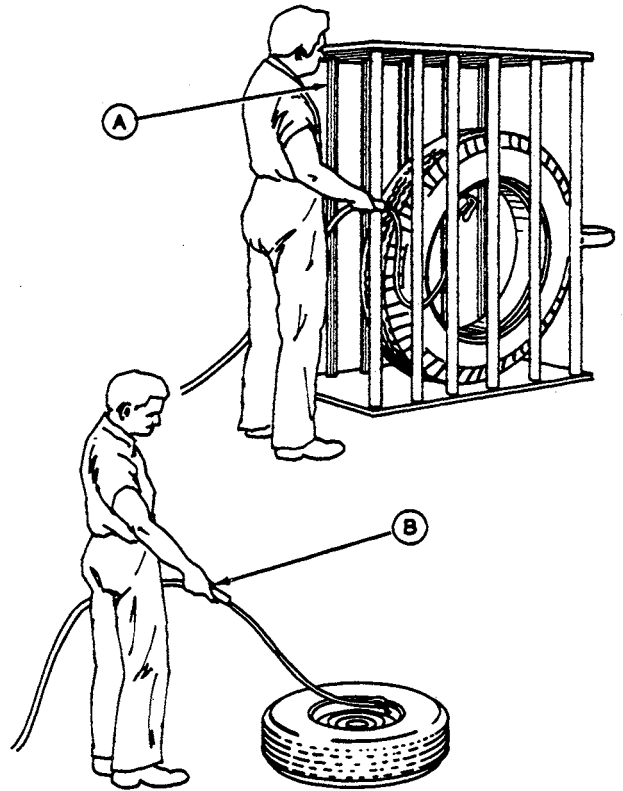
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SERVICE TIRES SAFELY

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.

When sealing tire beads on rims, never exceed 240 kPa (2.4 bar) (35 psi) 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 agricultural tire mounting instructions, including necessary safety precautions, are contained in John Deere Fundamentals of Service (FOS) Manual 55. Such information is also available from the Rubber Manufacturers Association and from tire manufacturers.

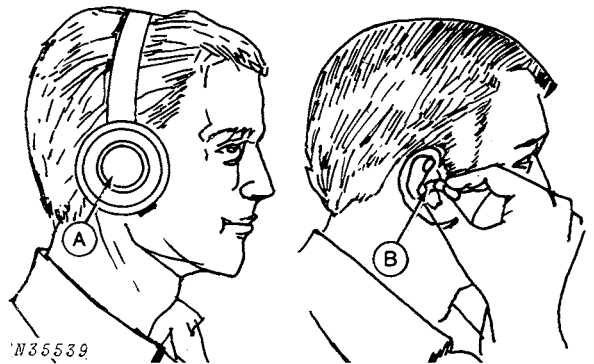


AC3;TS0123 U10;010INT L 030484

PROTECT AGAINST NOISE

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

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



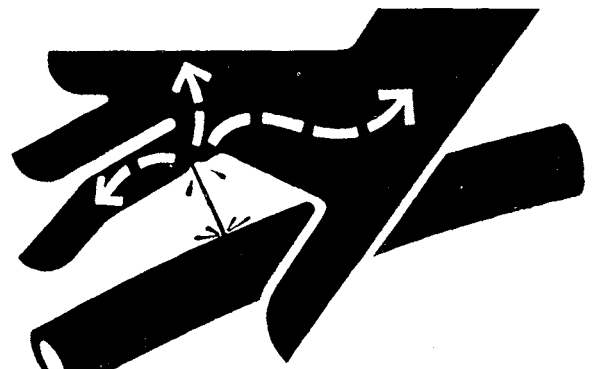
N35539

0A9;N35539 E03;;1005 W 190686

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 010586

USE BLOCKS WHEN NEEDED

Block the wheels to keep the machine from moving while it is being serviced.

Whenever the engine is to be removed for service, block the machine securely, so it will not move.

Whenever working under the harvesting units, lower jack-stands (if equipped) and block the units so they will not fall.

A68; E03;0000 XXX 210383

USE ADEQUATE SERVICE FACILITIES

Keep the service area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment.

Make sure the service area is adequately vented.

Periodically check the shop exhaust system for leakage. Engine exhaust gas is dangerous.

Be sure electrical outlets and tools are properly grounded.

Service the machine on a level, hard-surfaced area.

Use lifting equipment and safety stands which have adequate strength for the job being performed.

E03;;1005 X 190686

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.

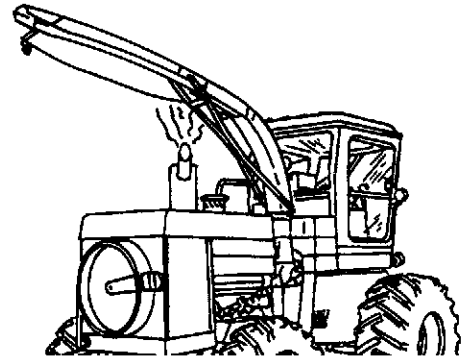
Never smoke while handling fuel.



AC3;RW5895 U01;FIRE 091184

AVOID EXHAUST FUMES

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



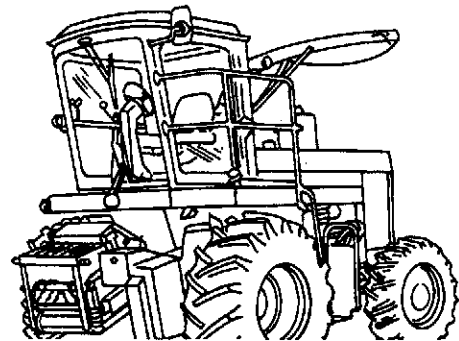
0A9;E28005 E03;;1005 Y 190686

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.

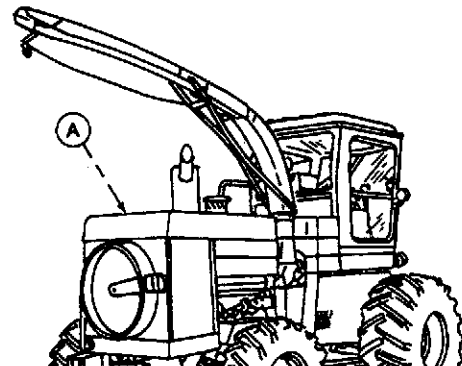
NEVER start engine while standing on ground. Start engine only from operator's seat, with transmission in neutral or park.



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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.



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Group 10

Specifications, Torques, and Special Tools

ENGINE

Horsepower:

5730.	168 kW (225)*
5830.	216 kW (290)*

Type 6-cylinder, in-line valve-in-head, diesel,
turbo-charged and intercooled

Bore and Stroke:

5730.	116 x 120 mm (4.56 x 4.75-in.)
5830.	130 x 127 mm (5.12 x 5-in.)

Displacement:

5730.	7636 cm ³ (466 cu in)
5830.	10144 cm ³ (619 cu in)

Compression Ratio:

5730.	15.5 to 1
5830.	15.2 to 1

Firing Order 1-5-3-6-2-4

Valve Clearance:

5730.	Intake - 0.46 mm (0.018-in.)
	Exhaust - 0.71 mm (0.028-in.)
5830.	Intake - 0.38 mm (0.015-in.)
	Exhaust - 0.64 mm (0.025-in.)

Injection Pump Timing TDC

Engine Speeds:

Working speed.	2100 rpm
Slow Idle	800 rpm
Fast Idle (Full Load)	2100 rpm
Fast Idle (No Load)	2300 rpm

* Factory observed net horsepower at flywheel less fan measured at 30°C (85°F), 29.3 in. Hg. operating at 2100 rpm.

See Sections 220 and 225 for dynamometer tests and kW (hp) ratings.

HYDROSTATIC SYSTEM (Ground Drive):

Pump:

Type Variable displacement, Sunstrand 23 Series
Speed 2100 rpm
Displacement 0 - 90.0 cm³ (0 - 5.43 cu in) per revolution

Charge Pump:

Type Gear
Speed 2100 rpm
Displacement 18.0 cm³ (1.1 cu in) per revolution
Flow Rate 37.9 L/min (10 gpm) at 2100 rpm

Motor:

Type Fixed displacement, Sunstrand 23 Series
Speed 0 - 2100 rpm
Displacement 90 cm³ (5.43 cu in) per revolution

Relief Pressure 41369 kPa (414 bar) (6000 psi)

Flow Rate 185 L/min (49 gpm) at 2100 rpm

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LUBRICATION SYSTEM

Type Full pressurized with full-flow micronic oil filter, water-cooled oil cooler, and bypass valves for filter and cooler (bypass engine oil filter 5830 only)

FUEL SYSTEM:

Type Direct injection
Filter Two-stage with replaceable impregnated paper element
Injection pump type Inlet metering, distributing type with excess fuel mechanism for starting.
Air cleaner Dry element with self-cleaning precleaner and safety element

COOLING SYSTEM:

Type Pressurized with centrifugal pump
Temperature Control Heavy-duty thermostats
Conditioner Additive (5730), Precharged filter element (5830)

ELECTRICAL SYSTEM:

Type 12-volt, negative grounded, circuit breaker protected
Batteries Two, 12-volt, low maintenance 570 amp each at -18°C (0°F) connected in parallel
Alternator 12-volt, 90-amp capacity

E03;;1010 BF 240986

MAIN CLUTCH (Blower Fan and Cutterhead Drive):

Type Over-center, dry, metallic button, adjustable
Number of disks 2
Diameter 305 mm (12-in.)
Actuated Hand lever

TRANSMISSION:

Type Automotive spur gear with four speeds.
Transmission is equipped with neutral start switch

FINAL DRIVE:

Type Pinion and ring gear

WEIGHT (Less Harvesting Unit):

5730 with cab and standard axle 6390 kg (14,100 lb)
5830 with cab and standard axle 6620 kg (14,600 lb)

E03;1010 BG 190686

CUTTERHEAD

Type Cylinder
 Diameter 610 mm (24 in.)
 Width 559 mm (22 in.)
 Number of Knives 40
 Knife Type Small straight knife in helical pattern
 Knife Size 148 x 85 mm (5.84 x 3.34 in.)
 Speed 850 rpm
 Drive Three matched C-section, premium belts
 Recutter Screen Slot Width 13, 16, 19, 25, 38, 51, and 70 mm
 (1/2, 5/8, 3/4, 1, 1-1/2, 2, and 2-3/4 in.) with
 13, 16, 19 and 25 mm (1/2, 5/8, 3/4 and 1-in.) screens being chrome plated

CUTTERHEAD REVERSE GRINDER:

Drive Hydraulic motor
 Hydraulic Motor Speed 2400 rpm

BLOWER:

Type Lagged Radial Paddle
 Diameter 813 mm (32 in.)
 Number of Paddles 4
 Speed 1020 rpm

AUGERS (All Countries Except Europe):

Number 2
 Drive Chain from cutterhead
 Diameter 254 mm (10 in.)
 Speed 558 rpm
 Discharge Side flow to blower fan

AUGERS (Europe):

Number 1
 Drive Chain from cutterhead
 Front Diameter 305 mm (12 in.)
 Rear Diameter 254 mm (10 in.)
 Speed 991 rpm
 Discharge Side flow to blower fan

POWER REAR WHEEL DRIVE (Optional):

Type Hydrostatic motor driven with planetary gear reduction
 in wheel hub, uses pressure oil from hydrostatic system
 Controls Solenoid operated control valves, by electric
 switch on floor of operator's platform
 Planetary Disconnect Hydraulic wet brake on ring gear releases when drive is engaged.

HYDRAULIC SYSTEM (Machine Functions):

Type Open-center, with load-sensing power steering.
 Includes electrohydraulic valves control, harvesting
 unit lift, spout rotation; cutterhead reverse grind
 drive and remote couplers (optional)

Pump Fixed displacement, gear-type

Relief Pressure 15500 kPa (155 bar) (2250 psi)

Flow Rate 60 L/min (16 gpm)

Speed 800 - 2300 rpm

BRAKES:

Type 305 mm (12-in.) hydraulic actuated shoe-type.
 Individual brakes controlled by separate pedals.

OPERATOR'S CAB:

Cab Glass 4.6 m² (49 sq ft)

Pressure Fans (Blower)

Capacity 17.0 m³ (600 cu ft) per minute

Filter Removable, reuseable, dry-type, paper element;
 940 x 156 x 56 mm (36 x 6-1/8 x 2-3/16 in.)

Electric Power Requirement 20-amp maximum

Heater Capacity 6.44 kW/hr (22,000 BTU) 8.50 m³ (300 cu ft) per minute

Air Conditioner Capacity 6.44 kW/hr (22,000 BTU) 8.50 m³ (300 cu ft) per minute

Refrigerant Refrigerant 12

Filters Removable, reuseable, urethane foam; one each
 in normal and maximum air recirculators.

Lamps:

Head 15-amp

Tail 15-amp

Warning 15-amp

Spout 15-amp

TIRE OPTIONS:

Front Wheels:

5730 and 5830 18.4 - 30 minimum, 10-ply rating (R-1)
 23.1 - 26 minimum, 10-ply rating (R-1)

5830 28.L - 26, 10-ply rating (R-1)

Rear Wheels:

5730 and 5830:

Nonpowered 14L - 16.1 minimum, 6-ply rating (F-2)

Nonpowered 16.5L - 16.1 minimum, 8-ply rating (F-2)

Powered 14.9L - 24 minimum, 6-ply rating (R-1)

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