

**490
Excavator
Repair
Operation and Tests**



**TECHNICAL
MANUAL**

TM1302 (20MAR90)



LITHO IN U.S.A.

Introduction

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.

JOHN DEERE DEALERS

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

This is a complete revision for TM1302, 490
Excavator Repair, and Operation and Tests.

Listed below is a brief explanation of "WHAT" was
changed and "WHY" it was changed.

This manual was revised:

1. To include additional information on disassembly
and assembly of track recoil spring using ST4920
Track Recoil Spring Disassembly and Assembly Tool
and DFT1087 Track Recoil Spring Disassembly and
Assembly Guard Tool.



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Want to get more information,
Please click here, Then get the complete
manual**

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**Have any questions please write to me:
admin@servicemanualperfect.com**

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HANDLE FLUIDS SAFELY—AVOID FIRES

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.



O53_FLAME -19-26JAN90

-JUN-23AUG88
TS227

PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

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

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



O53_SPARKS -19-26JAN90

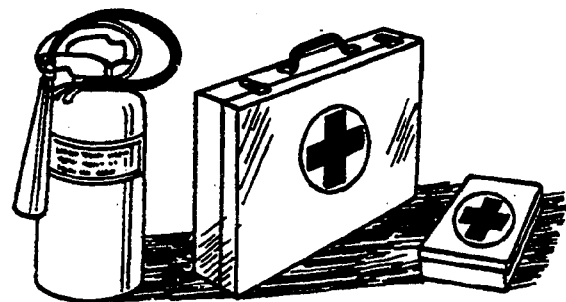
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TS204

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.



O53_FIRE2 -19-26JAN90

-JUN-23AUG88
TS291

PREVENT 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:

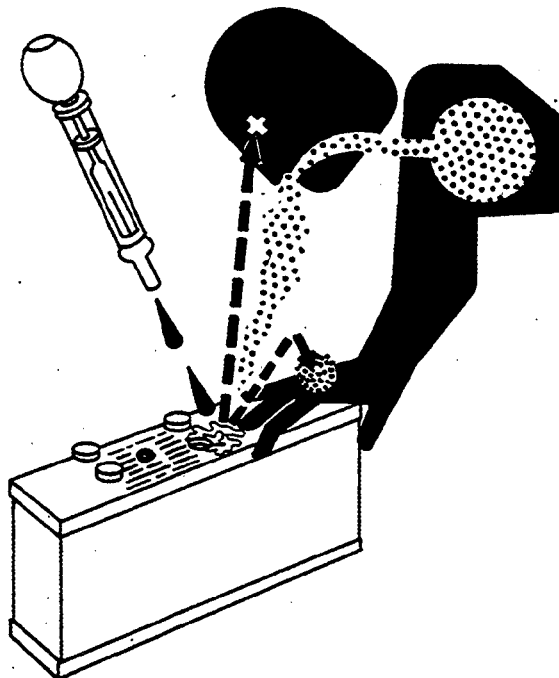
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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.



T5203 -JUN-23AUG88

053,POISON -19-26JAN90

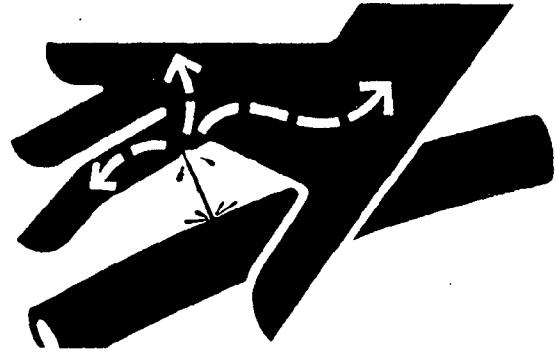
AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result. Doctors unfamiliar with this type of injury may call the Deere & Company Medical Department in Moline, Illinois, or other knowledgeable medical source.



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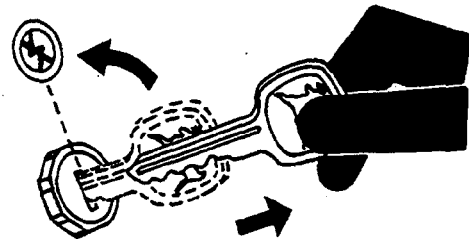
X9811

O53,FLUID -19-26JAN90

PARK MACHINE SAFELY

Before working on the machine:

- Lower all equipment to the ground.
- Stop the engine and remove the key.
- Disconnect the battery ground strap.
- Hang a "DO NOT OPERATE" tag in operator station.



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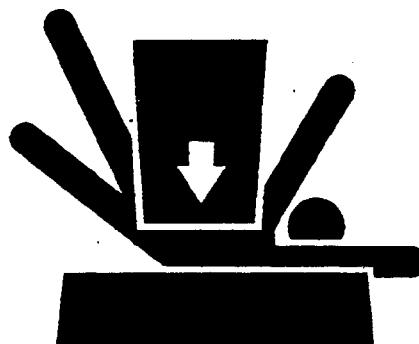
TS230

O53,PARK -19-26JAN90

SUPPORT MACHINE PROPERLY

Always lower the attachment or implement to the ground before you work on the machine. If you must work on a lifted machine or attachment, securely support the machine or attachment.

Do not support the machine on cinder blocks, hollow tiles, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack. Follow recommended procedures in this manual.



-JUN-23AUG88

TS229

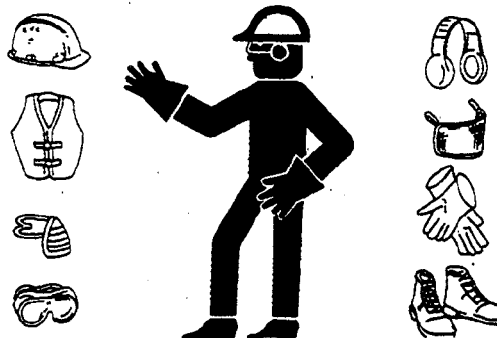
O53.LOWER -19-26JAN90

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.



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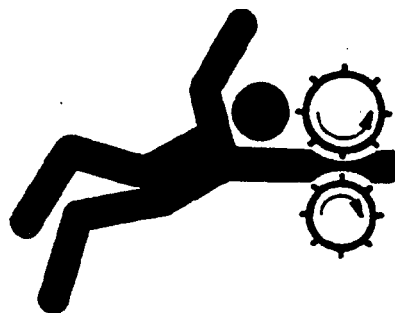
TS206

O53.WEAR -19-26JAN90

SERVICE MACHINES SAFELY

Tie long hair behind your head. Do not wear a necktie, scarf, loose clothing, or necklace when you work near machine tools or moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jewelry to prevent electrical shorts and entanglement in moving parts.



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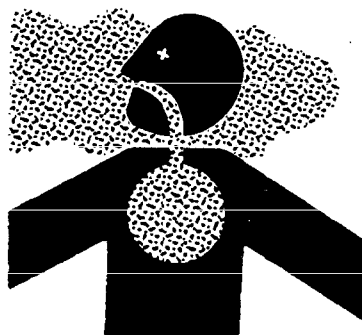
TS228

O53.LOOSE -19-26JAN90

WORK IN VENTILATED AREA

Engine exhaust fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area, remove the exhaust fumes from the area with an exhaust pipe extension.

If you do not have an exhaust pipe extension, open the doors and get outside air into the area.



O53.AIR -19-26JAN90

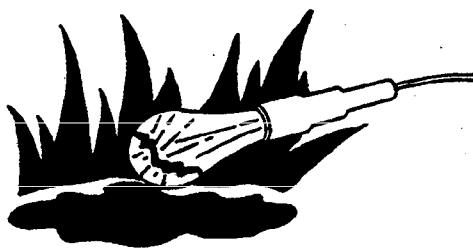
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TS220

UNDERSTAND CORRECT SERVICE

Illuminate your work area adequately but safely. Use a portable safety light for working inside or under the machine. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.

Catch draining fuel, oil, or other fluids in suitable containers. Do not use food or beverage containers that may mislead someone into drinking from them. Wipe up spills at once.



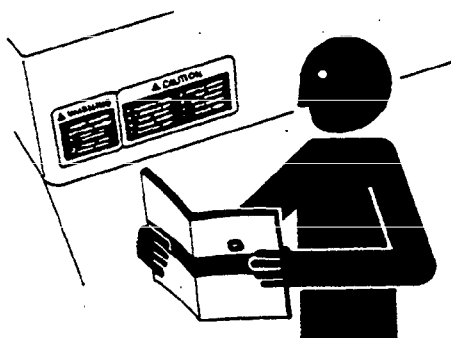
O53.LIGHT -19-26JAN90

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TS223

REPLACE SAFETY SIGNS

Replace missing or damaged safety signs. See the machine operator's manual for correct safety sign placement.



O53.SIGNS1 -19-26JAN90

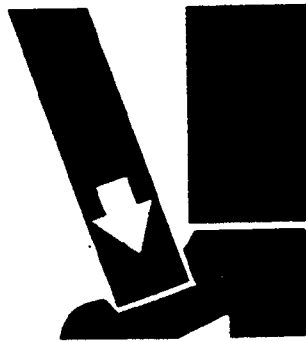
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TS201

USE PROPER LIFTING EQUIPMENT

Lifting heavy components incorrectly can cause severe injury or machine damage.

Follow recommended procedure for removal and installation of components in the manual.



O53.LIFT -19-26JAN90

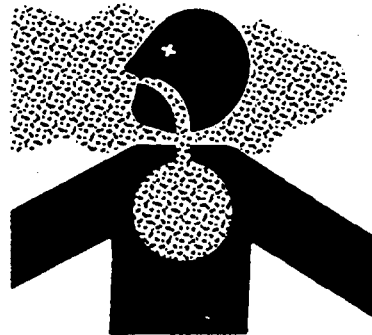
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TS226

AVOID HARMFUL ASBESTOS DUST

Avoid breathing dust that may be generated when handling components containing asbestos fibers. Inhaled asbestos fibers may cause lung cancer.

Components in John Deere products that may contain asbestos fibers are brake pads, brake band and lining assemblies, clutch plates, and some gaskets. The asbestos used in these components is usually found in a resin or sealed in some way. Normal handling is not hazardous as long as airborne dust containing asbestos is not generated.



Avoid creating dust. Never use compressed air for cleaning. Avoid brushing or grinding of asbestos containing materials. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, wet the asbestos containing materials with a mist of oil or water.

Keep bystanders away from the area.

O53.DUST -19-26JAN90

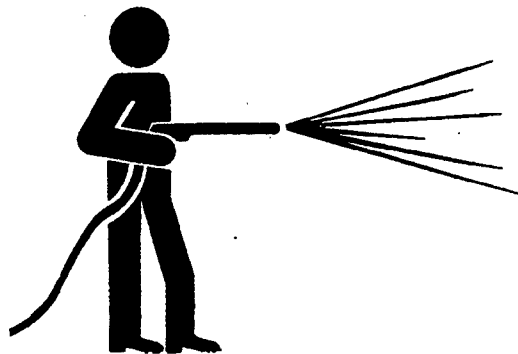
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TS220

WORK IN CLEAN AREA

Before starting a job:

- Clean work area and machine.
- Make sure you have all necessary tools to do your job.
- Have the right parts on hand.
- Read all instructions thoroughly; do not attempt shortcuts.



O53.CLEAN -19-26JAN90

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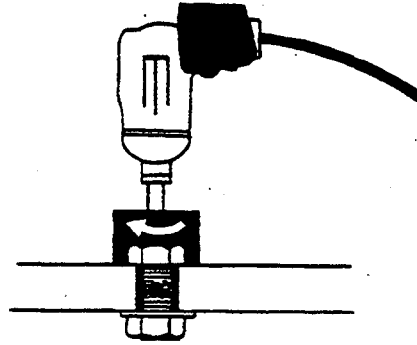
Safety

USE TOOLS PROPERLY

Use tools appropriate to the work. Makeshift tools, parts, and procedures will not make good repairs.

Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use such tools to tighten fasteners, especially on light alloy parts.

Use only replacement parts meeting John Deere specifications.



O53.REPAIR -19-26JAN90

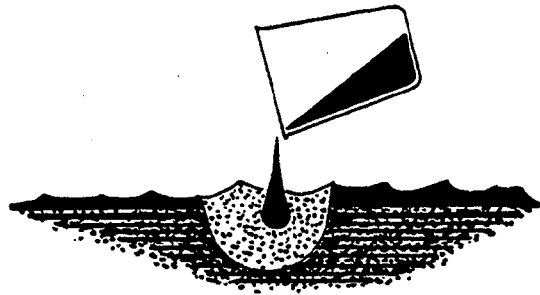
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TS221

DISPOSE OF FLUIDS PROPERLY

Improperly disposing of fluids can harm the environment and ecology. Before draining any fluids, find out the proper way to dispose of waste from your local environmental agency.

Avoid pouring oil into the ground, down a drain, or into a stream, pond, or lake. Observe relevant environmental protection regulations when disposing of oil, fuel, coolant, brake fluid, filters, batteries, and other harmful waste.



O53.DRAIN -19-26JAN90

-UN-23AUG88

TS222

LIVE WITH SAFETY

Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.



O53.LIVE -19-26JAN90

-19-07OCT88

TS231

Safety

John Deere 490 Excavator
General Specifications

Group II
GENERAL SPECIFICATIONS

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with PCSA and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with 40-in. (1016 mm) bucket, full fuel tank, 175 lb. (79 kg) operator and standard equipment.)

	SAE	DIN
Power (@ 2200 engine rpm):		
Gross79 hp (59 kW)	
Net75 hp (56 kW)	56 kW

Net engine power is with standard equipment including air cleaner, exhaust system, alternator and cooling fan. Gross power is without cooling fan. Power ratings are at standard conditions per SAE J1349 and DIN 6270. No derating is required up to 10,000 feet (3050 m) altitude.

Engine: John Deere turbocharged diesel, 4-cylinder, 4-stroke cycle
Bore and stroke 4.19x4.33 in. (106.5x110 mm)
Piston displacement 239 cu. in. (3.92 L)
Compression ratio 16.8 to 1
Maximum torque @ 1400 rpm 212 lb-ft (287 Nm) (29.3 kg-m)
NACC or AMA (U.S. Tax) horsepower 28
Lubrication Pressure system w/full-flow filter
Cooling Pressurized w/thermostat and fixed bypass
Air cleaner w/restriction indicator Dry w/safety element
Electrical system 24-volt
Batteries (2) 12-volt Reserve capacity: 100 minutes

Hydraulic System: Open Center

Two variable-displacement axial-piston pumps and two control valves (5- and 4-spool) provide independent and combined operation of all functions. The 5-spool control valve has one spool for an auxiliary attachment function.

Main pumps 2 variable-displacement axial-piston
Pressure setting 3560 psi (24 546 kPa) (250 kg/cm²)
Max. oil flow 2x31.7 gpm (2x120 L/min)
Pilot pump Gear
Pressure setting 435 psi (3000 kPa) (30.6 kg/cm²)
Max. oil flow 6.20 gpm (23.5 L/min)
System operating pressure 3560 psi (24 546 kPa) (250 kg/cm²)
Relief valves:
 Boom 3770 psi (25 994 kPa) (265 kg/cm²)
 Arm 3770 psi (25 994 kPa) (265 kg/cm²)
 Bucket 3770 psi (25 994 kPa) (265 kg/cm²)
 Travel 3560 psi (24 546 kPa) (250 kg/cm²)
Oil filtration:
 One suction filter
 One 10-micron full-flow return filter w/bypass

	Bore	Rod Diameter	Stroke
Cylinders:			
Boom (2)	4.3 in. (110 mm)	3 in. (75 mm)	41.5 in. (1055 mm)
Arm (1)	4.7 in. (120 mm)	3.1 in. (80 mm)	46.9 in. (1190 mm)
Bucket (1)	3.9 in. (100 mm)	2.6 in. (65 mm)	38.0 in. (965 mm)

Arm cylinder has a built-in hydraulic cushion at each end of the stroke. All cylinder rods are ground, heat treated, chrome plated and polished.

Swing Mechanism:

Swing speed 0-12.7 rpm (0-12.7 m.n.)
Swing lock Manual for transporting
Turntable bearing Single-row, shear-type ball bearing with induction-hardened, lubricated internal gear and pinion, 500-hour lube interval.

Undercarriage:

Propel motors (one for each track) Axial-piston hydraulic motors with planetary drives. Multiple-disk brakes automatically release while propelling and apply when stationary. Independent drive to each track permits counterrotation. Excavator track-type undercarriage with heavy-duty frame and all-welded, stress-relieved structure. Side frames welded to track frame. Permanently lubricated track rollers, idlers and sprockets with floating seals.

Tracks:

Track chain Sealed
Track adjustment Hydraulic with shock absorbing recoil springs

Track Rollers and Shoes (each side):

One upper roller, seven lower rollers. Forty-three track shoes. Track shoes induction-hardened rolled alloy. Heat-treated connecting pins.

Track Shoes:		Average Ground Contact	Average Ground Pressure
Width			
20 in. (500 mm) (standard)	Triple grousers	4670 sq. in. (30 130 cm ²)	5.61 psi (38.7 kPa) (0.39 kg/cm ²)
28 in. (710 mm) (optional)	Triple grousers	6544 sq. in. (42 220 cm ²)	4.21 psi (29.0 kPa) (0.30 kg/cm ²)

Cab:

Steel, independent, shock mounted and soundproofed. Safety glass windows. Front window can be stored overhead. Rear window slides open for ventilation. Front window wiper. Left control lever can be locked in a position for easier entering and exiting of operator. Centralized monitoring with alarm system.

Seat:

Fully adjustable deluxe reclining seat with armrests.

Controls:

All hydraulic functions are controlled by low-effort mechanical linkage. Two short levers control swing, boom, arm and bucket functions. Right and left pedals control forward, reverse and counterrotation movements.

Boom and Arm:

Welded, low-stress, full box-section design. Centralized lubrication system.

Servicing and Vandal Protection:

Non-slip steps and handrails make for easier servicing and maintenance. Easily accessible engine and hydraulic system covers. Machine covers, fuel cap and cab door are lockable.

Additional Standard Equipment:

Cab:
 Heater
 Horn
 Windshield wiper
 Interior light
 Positive position hand throttle
 Monitor package with alarm system:
 Alternator charge indicator light
 Quartz hourmeter
 Fuel gauge
 Engine coolant temperature gauge
 Engine oil pressure warning light w/alarm buzzer
 Work light indicator
 Air cleaner restriction warning light
 Engine coolant temperature warning light w/alarm buzzer

Engine:

Electric cold weather (ether) starting aid
 Single heavy-duty fuel filter
 Oil cooler
 Bypass oil filter
 Dual dry-type air filters

Frame:

4190 lb. (1900 kg) counterweight
 Vandal protection—lockable service doors and fuel filter cap
 Fully enclosed swing gears
 One work light

Front Attachment:

Centralized lubrication system
 Bucket clearance adjusting mechanism
 w/7 cu. yd. (0.5 m³) bucket
 Dirt seals on all bucket pins
 One work light

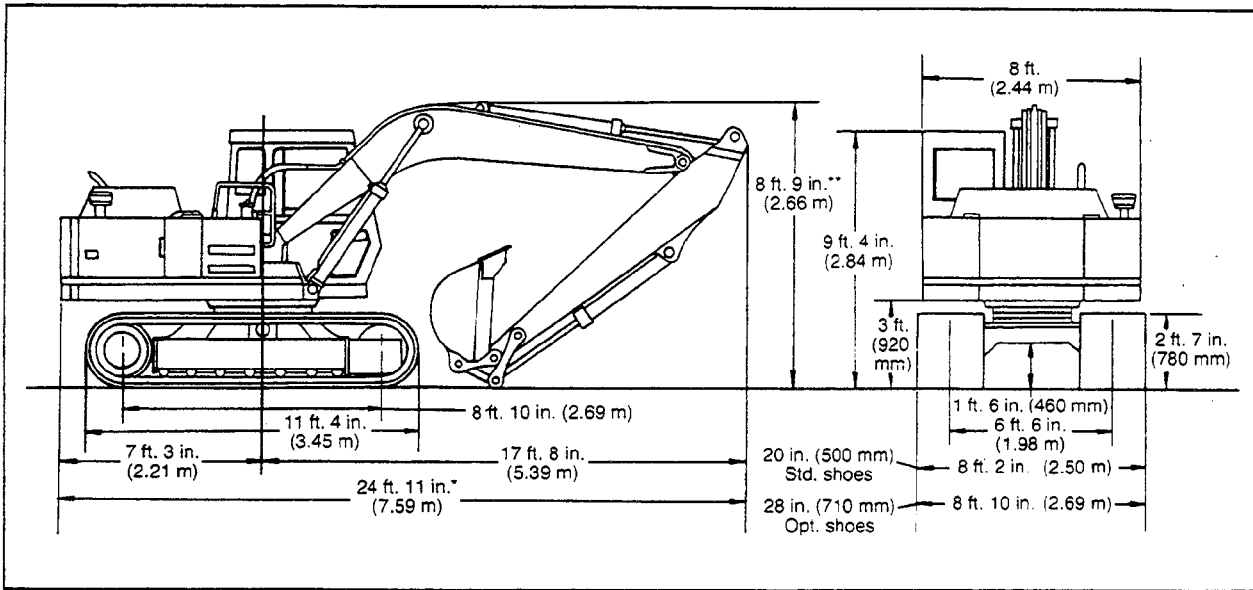
Undercarriage:

Propel motor and hydraulic line shields
 Single flange lower track rollers
 20-in. (500 mm) triple-grouser shoes

Optional or Special Equipment:

Cab:
 Window covers
Front Attachment:
 118-in. (3.0 m) arm
Undercarriage:
 28-in. (710 mm) triple-grouser shoes

John Deere 490 Excavator General Specifications



*With 118-in. (3.0 m) arm, 24 ft. 7 in. (7.50 m)
 **With 118-in. (3.0 m) arm, 8 ft. 3 in. (2.50 m) in shipping pinning position; 10 ft. 1 in. (3.07 m) in operation pinning position. Consult Operator's Manual for proper shipping of machine with 118-in. (3.0 m) arm.

Operating Information:

Gradability70% (35°)
 Swing speed12.7 rpm
 Tail swing87 in. (2.21 m)
 Infinitely variable travel speed, forward and reverse:
 0-2.2 mph (3.6 km/h)

Bucket Digging Force: (Tangential Penetrating Force) SAE Heaped

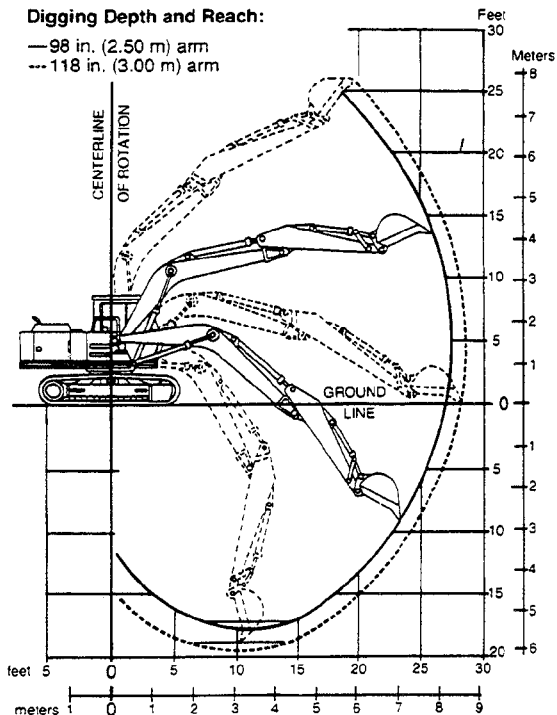
Regular Duty
 1/2 cu. yd. (0.4 m³)15,200 lb. (68 kN)
 5/8 cu. yd. (0.5 m³)15,200 lb. (68 kN)

Weights:	lb.	kg
Operating weight (w/full fuel tank, operator, less bucket)	25,450	11 544
Upper structure with (2) boom cylinders, undercarriage with 20 in. (500 mm) triple-grouser shoes, full fuel tank and counterweight	22,050	10 002
Undercarriage with 28-in. (710 mm) triple-grouser shoes (add)	1210	549
One-piece boom with arm cylinder	2026	919
Std. 98-in. (2.5 m) arm with bucket cylinder and linkage	1199	544
Optional 118-in. (3.0 m) arm with bucket cylinder and linkage	1355	615
Counterweight	4190	1900

Capacities:	U.S.	Liters
Fuel tank	66 gal.	250
Cooling system	32 qt.	30.3
Engine lubrication w/filter	15 qt.	18.9
Engine lubrication w/o filter	14 qt.	14.2
Hydraulic system	42.2 gal.	160
Hydraulic reservoir	21 gal.	80
Planetary propel drive (each side)	6.9 qt.	6.5
Swing drive	3.2 qt.	3.0

	Arm	
	98 in. (2.50 m)	118 in. (3.00 m)
Arm force	11,200 lb. (50 kN) (5080 kg)	10,400 lb. (46 kN) (4717 kg)
Lifting capacity over front or rear @ ground level		
20 ft. (6.1 m) reach	4610 lb. (2090 kg)	4680 lb. (2120 kg)
Digging depth	18 ft. 0 in. (5.49 m)	19 ft. 7 in. (5.97 m)
Digging depth @ 8 ft. (2.44 m) flat bottom	17 ft. 1 in. (5.21 m)	18 ft. 8 in. (5.69 m)
Reach @ ground level	26 ft. 9 in. (8.15 m)	28 ft. 1 in. (8.55 m)
Dumping height	17 ft. 11 in. (5.46 m)	18 ft. 0 in. (5.49 m)

Digging Depth and Reach:



John Deere 490 Excavator
General Specifications

BUCKETS	Bite Width		SAE (Heaped)	CECE (Heaped)	Weight	Recommendation	
	Without Side Cutters	With Side Cutters				98-in. (2.5 m) Arm	118-in. (3.0 m) Arm
28 in. (720 mm)		33 in. (840 mm)	½ cu. yd. (0.4 m ³)	(.35 m ³)	790 lb. (358 kg)	○	○
35 in. (890 mm)		40 in. (1010 mm)	⅝ cu. yd. (0.5 m ³)	(.45 m ³)	900 lb. (408 kg)	○	□

○: Suitable for materials with density of 3370 lb/cu. yd. (2000 kg/m³) or less
□: Suitable for materials with density of 2700 lb/cu. yd. (1600 kg/m³) or less

490 EXCAVATOR LIFT CAPACITIES

98-in. (2.50 m) STANDARD ARM

Ratings at bucket lift hook, machine equipped with 20-in. (500 mm) shoes, ⅝ cu. yd. (0.5 m³) PCSA heaped bucket and standard counterweight, situated on firm, level, uniform supporting surface. Boldface type indicates hydraulic-limited capacities, lightface type indicates stability-limited capacities, in lb. (kg). Figures do not exceed 87 percent of hydraulic capacities or 75 percent of weight needed to tip machine.

LIFTING OVER FRONT OR REAR

Horizontal distance from centerline of rotation:	5 ft. (1.52 m)	10 ft. (3.05 m)	15 ft. (4.57 m)	20 ft. (6.10 m)	25 ft. (7.62 m)
15 ft. (4.57 m)				4950 (2250)	
10 ft. (3.05 m)			6230 (2830)	5110 (2320)	
5 ft. (1.52 m)			7760 (3520)	4840 (2200)	2860 (1300)
Ground level			7280 (3300)	4610 (2090)	
-5 ft. (-1.52 m)	5420 (2460)	5980 (2710)	7110 (3230)	4490 (2040)	
-10 ft. (-3.05 m)		9340 (4240)	7160 (3250)	4570 (2070)	

LIFTING OVER SIDE OR 360 DEGREES

Horizontal distance from centerline of rotation:	5 ft. (1.52 m)	10 ft. (3.05 m)	15 ft. (4.57 m)	20 ft. (6.10 m)	25 ft. (7.62 m)
15 ft. (4.57 m)				4090 (1860)	
10 ft. (3.05 m)			6230 (2830)	3920 (1780)	
5 ft. (1.52 m)			5850 (2650)	3670 (1660)	2420 (1100)
Ground level			5410 (2450)	3450 (1560)	
-5 ft. (-1.52 m)	5420 (2460)	5980 (2710)	5240 (2380)	3340 (1510)	
-10 ft. (-3.05 m)		9340 (4240)	5300 (2400)	3420 (1550)	

490 EXCAVATOR LIFT CAPACITIES

118-in. (3.00 m) OPTIONAL ARM

Ratings at bucket lift hook, machine equipped with 20-in. (500 mm) shoes, ½ cu. yd. (0.4 m³) PCSA heaped bucket and standard counterweight, situated on firm, level, uniform supporting surface. Boldface type indicates hydraulic-limited capacities, lightface type indicates stability-limited capacities, in lb. (kg). Figures do not exceed 87 percent of hydraulic capacities or 75 percent of weight needed to tip machine.

LIFTING OVER FRONT OR REAR

Horizontal distance from centerline of rotation:	5 ft. (1.52 m)	10 ft. (3.05 m)	15 ft. (4.57 m)	20 ft. (6.10 m)	25 ft. (7.62 m)
15 ft. (4.57 m)				4330 (1960)	
10 ft. (3.05 m)				5040 (2290)	3460 (1570)
5 ft. (1.52 m)			7850 (3560)	4950 (2250)	3350 (1520)
Ground level		7560 (3430)	7390 (3350)	4680 (2120)	3230 (1470)
-5 ft. (-1.52 m)	5950 (2700)	7590 (3440)	7130 (3230)	4530 (2050)	
-10 ft. (-3.05 m)	6730 (3050)	10,100 (4580)	7130 (3230)	4540 (2060)	
-15 ft. (-4.57 m)		12,650 (5740)	7390 (3350)		

LIFTING OVER SIDE OR 360 DEGREES

Horizontal distance from centerline of rotation:	5 ft. (1.52 m)	10 ft. (3.05 m)	15 ft. (4.57 m)	20 ft. (6.10 m)	25 ft. (7.62 m)
15 ft. (4.57 m)				4240 (1920)	
10 ft. (3.05 m)				4050 (1840)	2630 (1190)
5 ft. (1.52 m)			6040 (2740)	3780 (1710)	2520 (1140)
Ground level		7560 (3430)	5520 (2500)	3530 (1600)	2410 (1090)
-5 ft. (-1.52 m)	5950 (2700)	7590 (3440)	5280 (2390)	3360 (1530)	
-10 ft. (-3.05 m)	6730 (3050)	10,100 (4580)	5280 (2390)	3390 (1540)	
-15 ft. (-4.57 m)		10,640 (4830)	5520 (2500)		

John Deere 490 Excavator
General Specifications




Group III CAP SCREW TORQUE VALUES

HARDWARE TORQUE SPECIFICATIONS

Check all cap screws and nuts, which can be easily reached, to be sure they are tight. If hardware is loose, tighten it to torque shown on chart below unless a special torque is specified.

NOTE: Torques shown are for dry (no lubrication on threads) hardware.

NOTE: Torque wrench tolerance is ± 10 percent of specified torque.

Cap Screw Size-Inches	Customary Hardware					
						
	Grade B		Grade D		Grade F	
	lb-ft. (N-m)		lb-ft. (N-m)		lb-ft. (N-m)	
1/4	----	----	10	(14)	14	(19)
5/16	----	----	20	(27)	30	(41)
3/8	----	----	35	(47)	50	(68)
7/16	35	(47)	55	(75)	80	(108)
1/2	55	(75)	85	(115)	120	(163)
9/16	75	(102)	130	(176)	175	(237)
5/8	105	(142)	170	(230)	240	(325)
3/4	185	(251)	300	(407)	425	(576)
7/8	160	(217)	445	(603)	685	(929)
1	250	(339)	670	(908)	1030	(1396)
1-1/8	330	(447)	910	(1234)	1460	(1979)
1-1/4	480	(651)	1250	(1695)	2060	(2793)