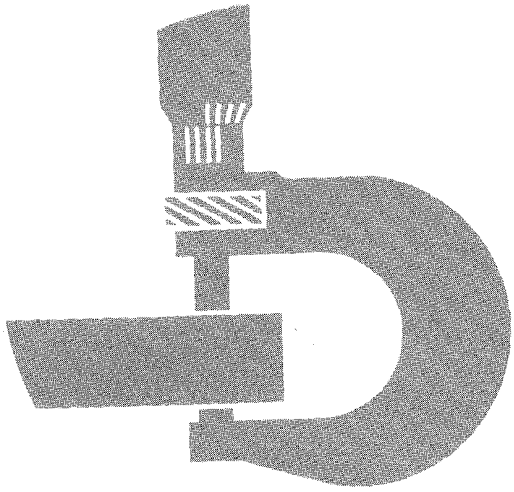
John Deere 495D Excavator Repair



TECHNICAL MANUAL

TM-1457 (Feb-89)
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 types of failures and their causes. FOS Manuals are for training new personnel and for reference by experienced technicians.

Technicals 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 technicals manuals are written as stand-alone manuals covering multiple machine applications.

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495D EXCAVATOR TECHNICAL MANUAL TM-1457 (FEB-89)

SECTION AND GROUP CONTENTS

NOTE: This manual covers machine repair. For operation and tests information, see TM-1456.

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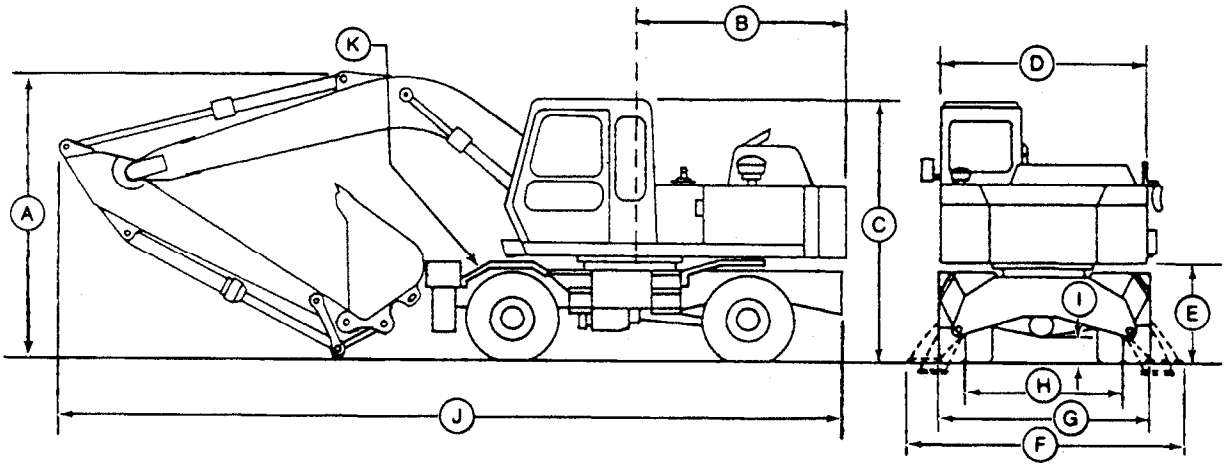
495D EXCAVATOR



A—Overall Height of Boom	3 510 mm (11'6") with 1.95 m (6'5") arm 3 700 mm (12'2") with 2.25 m (7'5") arm
B—Rear-end swing radius	2 100 mm (6'11")
Rear-end length	2 090 mm (6'10")
C—Cab Height.....	2 980 mm (9'9")
D—Superstructure Width	2 380 mm (7'10")
E—Superstructure clearance	1 210 mm (4'0")
F—Overall Width of outrigger extended	3 190 mm (10'6")
G—Center to center width of outrigger	2 890 mm (9'6")
H—Overall width (undercarriage width)	2 470 mm (8'1")
I—Minimum ground clearance	315 mm (1'0")
J—Overall length	6 910 mm (22'8") with 1.95 m (6'5") arm 7 080 mm (23'3") with 2.25 m (7'5") arm

K—REAR END OF UNDERCARRIAGE

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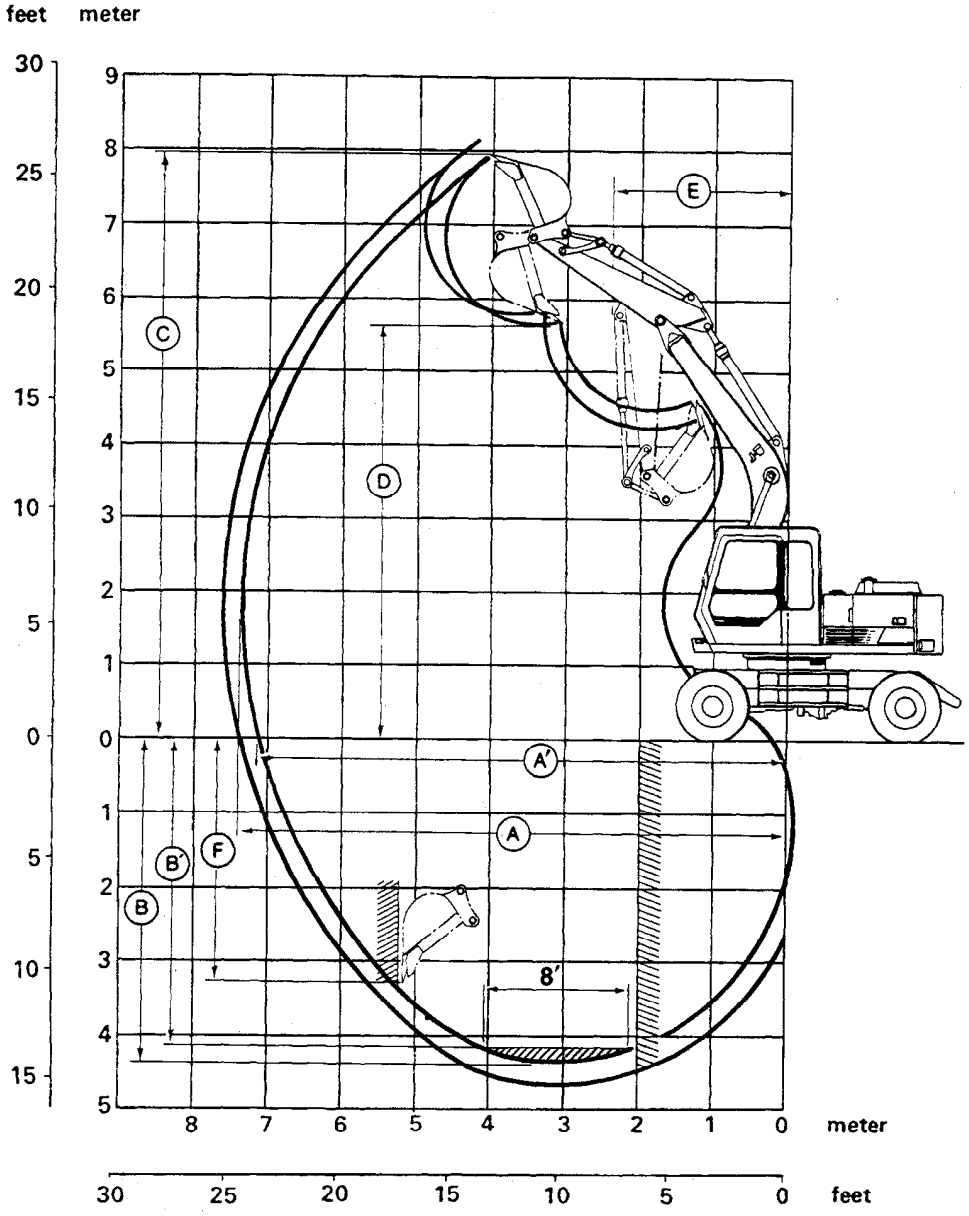
WORKING RANGES



	1.95 m (6'5") arm	2.25 m (7'5") arm
A—Max. digging reach	7 410 mm (24'4")	7 680 mm (25'2")
A'—Max. digging reach (on ground)	7 180 mm (23'7")	7 450 mm (24'5")
B—Max. digging depth	4 410 mm (14'6")	4 710 mm (15'5")
B'—Max. digging depth (8' level)	4 150 mm (13'7")	4 470 mm (14'8")
C—Max. cutting height	7 950 mm (26'1")	8 100 mm (26'7")
D—Max. dumping height	5 600 mm (18'4")	5 740 mm (18'10")
E—Min. swing radius	2 460 mm (8'1")	2 640 mm (8'8")
F—Max. vertical wall	3 320 mm (10'11")	3 800 mm (12'6")

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495D EXCAVATOR 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 with full fuel tank, 175 lb (80 kg) operator and standard equipment.

Engine: John Deere 4-276T
Type ..... 4-stroke cycle, turbocharged diesel
Bore and stroke .. 4.19 x 5.00 in. (106.5 x 127 mm)
No. of cylinders 4
Displacement ..... 276 cu. in. (4.524 L)
Compression ratio ..... 17.2 to 1
Maximum net torque @ 1300 rpm ..... 284 lb-ft (385 N·m) (39.3 kg·m)
Lubrication .... Pressure system with full flow filter
Coolant fan ..... Suction type
Electrical system ... 24-volt with 42-amp alternator
Batteries (two 12-volt) ..... Reserve capacity: 180 minutes

Rated Power	**SAE**	**DIN 70 020**
@ 2100 rpm (Dig Mode):		
Net	95 hp (71 kW)	71 kW
Gross	100 hp (75 kW)	
@ 2300 rpm (Travel Mode):		
Net	100 hp (75 kW)	75 kW
Gross	105 hp (78 kW)	

Net engine power is with standard equipment including air cleaner, exhaust system, alternator, and cooling fan, at standard conditions per SAE J1349 and DIN 70 020, using NO. 2-D fuel @ 35 API gravity. No derating is required up to 10,000 ft (3050 m) altitude. Gross power is without cooling fan.

Hydraulic System: Open center
Variable flow, constant horsepower hydraulic system provides independent and combined operation of all functions. Load-sensing adjusts hydraulic flow and pressure to individual function demands. Pump displacement is automatically reduced when controls are returned to neutral.

Main pumps: 2 variable-displacement, axial-piston
Pressure setting ..... 4620 psi (31 854 kPa) (319 kg/cm²)
Maximum oil flow ..... 2 x 30.4 gpm (2 x 115 L/min)
Pilot pump: Gear
Pressure setting ..... 570 psi (3930 kPa) (40 kg/cm²)
Maximum oil flow ..... 6.6 gpm (25 L/min)
Steering pump: Gear
Pressure setting ..... 1778 psi (12 258 kPa) (125 kg/cm²)
Maximum oil flow ..... 4.8 gpm (18.0 L/min)
Control valves: nine spool valves
System relief valve operating pressure:
Travel .... 4620 psi (31 860 kPa) (325 kg/cm²)
Front end . 4050 psi (27 950 kPa) (285 kg/cm²)
Circuit relief valves:
Boom ..... 4275 psi (29 420 kPa) (300 kg/cm²)
Arm ..... 4275 psi (29 420 kPa) (300 kg/cm²)
Bucket .... 4770 psi (32 888 kPa) (329 kg/cm²)
Stabilizers . 4050 psi (27 950 kPa) (285 kg/cm²)
Auxiliary ... 4275 psi (29 475 kPa) (295 kg/cm²)
Crossover relief valves:
Travel .... 4900 psi (33 830 kPa) (345 kg/cm²)
Swing ..... 3340 psi (23 050 kPa) (235 kg/cm²)

Cylinders:	Bore		Rod Diameter		Stroke	
	In.	(mm)	In.	(mm)	In.	(mm)
Boom (2)	3.7	95	2.8	70	42.7	1085
Arm	4.1	105	3.0	75	46.3	1175
Bucket	3.7	95	2.6	65	36.8	935
Stabilizer	4.3	110	2.8	70	14.2	360
Steering	2.2	55	1.0	25	8.5	217
Blade	3.9	100	2.4	60	6.7	170
Axle lock	3.5	90	3.5	90	4.5	115

Arm cylinder has a built-in hydraulic cushion at each end of the stroke. Boom and bucket cylinders have a cushion on the rod end.

Swing Mechanism
Swing speed ..... 0 to 12.5 rpm
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

Wheeled Undercarriage:
The undercarriage is available with a blade or (2) stabilizers. The frame is an all-welded, stress-relieved structure.

Drive system ..... two speed-four wheel drive
Travel motor ... variable displacement, axial piston motor with hydraulic retarding valve for preventing overspeeding when traveling downhill.
Transmission ... Constant mesh with and high and low speed range
Travel speeds:
Low speed range ..... 0 to 6.8 mph (0 to 11.0 km/h)
(forward and reverse)
High speed range ..... 0 to 21.4 mph
(forward) (0 to 34.5 km/h)
Maximum traction force—
high ..... 3770 lb (17 kN)(1710 kg)
low ..... 13.095 lb (58 kN) (5940 kg)
Gradability ..... 50 percent (30 degrees)

Steering System:
Full hydraulic power steering using two steering cylinders. Provides manual steering without engine power.
Bore ..... 2.2 in. (55 mm)
Rod diameter ..... 1 in. (25 mm)
Stroke ..... 8.5 in. (217 mm)

Brakes:
Service ... Air over hydraulic brakes acting at each
(foot pedal or switch) wheel—internal-expanding shoe type
Parking (switch) ..... Spring actuated, air-released, internal-expanding shoe type, acting on horizontal drive shaft

NOTE: Applying brakes with switch also locks oscillating axle.

Axles:
Front ..... Oscillating axle with locking hydraulic cylinders; 14.0 total oscillation
Rear ..... Fixed to frame

Tires: (Traction type tread pattern)
9.00—20.0 x 12 PR, duals
18.00—19.5 x 18 PR, singles

Stabilizers:
Each stabilizer cylinder is fitted with a pilot-operated check valve for positive locking. Left and right stabilizers can be operated independently.

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DRAIN AND REFILL CAPACITIES

Item	Metric	U.S.
Fuel tank	250 L	66 gal
Cooling system	21 L	22 qts
Engine crankcase (including filter)	13 L	14 qt
Hydraulic system	133 L	35 gal
Hydraulic reservoir	72 L	19 gal
Swing bearing gear	9 kg	20 lb
Swing gear reduction	3.2 L	3.4 qt
Transmission	5.0 L	5.3 qt
Front axle case	6.0 L	6.4 qt
Wheel gear reduction—each	1.5 L	1.6 qt
Rear axle case	8.5 L	9.0 qt
Brake reservoir	.8 L	.85 qt

05T;115 M65. 241088

BUCKET SELECTION CHART

MAXIMUM RECOMMENDED BUCKET SIZE
(2.25 M) (7 FT 5 IN.) ARM

kg/m³	lb/yd³	Material	Digging With Stabilizers Regular Duty	Heavy Duty	Digging Without Stabilizers Regular Duty
420	700	Wood chips	2.2 m³ (2-7/8 yd³)		1.7 m³ (2-1/4 yd³)
470	800	Peat, dry	1.9 m³ (2-1/2 yd³)		1.5 m³ (2 yd³)
740	1250	Peat, wet	1.2 m³ (1-5/8 yd³)		1.0 m³ (1-1/4 yd³)
860	1450	Cinders	1.1 m³ (1-3/8 yd³)		0.9 m³ (1-1/8 yd³)
1360	2300	Top soil	0.7 m³ (7/8 yd³)		0.6 m³ (3/4 yd³)
1360	2300	Coal, natural bed	0.7 m³ (7/8 yd³)		0.6 m³ (3/4 yd³)
1540	2600	Earth, dry loam	0.6 m³ (3/4 yd³)	0.5 m³ (5/8 yd³)	0.5 m³ (5/8 yd³)
1600	2700	Sand, dry	0.6 m³ (3/4 yd³)	0.4 m³ (1/2 yd³)	0.4 m³ (1/2 yd³)
1900	3200	Earth, moist loam	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	0.4 m³ (1/2 yd³)
1930	3250	Sand, gravel, dry	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	0.4 m³ (1/2 yd³)
1960	3300	Sand, moist	0.4 m³ (1/2 yd³)	0.3 m³ (3/8 yd³)	0.3 m³ (3/8 yd³)
2080	3500	Sand, wet	0.4 m³ (1/2 yd³)	0.3 m³ (3/8 yd³)	0.3 m³ (3/8 yd³)
2080	3500	Shale	0.4 m³ (1/2 yd³)	0.3 m³ (3/8 yd³)	
2140	3600	Clay, wet	0.4 m³ (1/2 yd³)	0.3 m³ (3/8 yd³)	
2490	4200	Limestone, broken		0.3 m³ (3/8 yd³)	
2730	4600	Rock, granite, blasted		.3 m³ (3/8 yd³)	

Bite Width W/O Sidecutters	Bite Width W/Sidecutters	SAE Heaped	CECE Heaped	Weight
680 mm (27 in.)	800 mm (32 in.)	0.4 m³ (1/2 cu yd)	0.33 m³	318 kg (700 lb)
850 mm (34 in.)	970 mm (38 in.)	0.46 m³ (5/8 cu yd)	0.40 m³	367 kg (810 lb)

05T;115 M66. 280788

BUCKET SELECTION CHART

MAXIMUM RECOMMENDED BUCKET SIZE
(1.95 M) (6 FT 5 IN.) ARM

kg/m³	lb/yd³	Material	Digging With Stabilizers Regular Duty	Digging With Stabilizers Heavy Duty	Digging Without Stabilizers Regular Duty
420	700	Wood chips	2.3 m³ (3 yd³)		1.9 m³ (2-1/2 yd³)
470	800	Peat, dry	2.1 m³ (2-3/4 yd³)		1.7 m³ (2-1/4 yd³)
740	1250	Peat, wet	1.3 m³ (1-3/4 yd³)		1.1 m³ (1-3/8 yd³)
860	1450	Cinders	1.1 m³ (1-1/2 yd³)		1.0 m³ (1-1/4 yd³)
1360	2300	Top soil	0.8 m³ (1 yd³)		0.6 m³ (3/4 yd³)
1360	2300	Coal, natural bed	0.8 m³ (1 yd³)		0.6 m³ (3/4 yd³)
1540	2600	Earth, dry loam	0.7 m³ (7/8 yd³)	0.6 m³ (3/4 yd³)	0.6 m³ (3/4 yd³)
1600	2700	Sand, dry	0.6 m³ (3/4 yd³)	0.5 m³ (5/8 yd³)	0.5 m³ (5/8 yd³)
1900	3200	Earth, moist loam	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	0.4 m³ (1/2 yd³)
1930	3250	Sand, gravel, dry	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	0.4 m³ (1/2 yd³)
1960	3300	Sand, moist	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	0.4 m³ (1/2 yd³)
2080	3500	Sand, wet	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	0.4 m³ (1/2 yd³)
2080	3500	Shale	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	
2140	3600	Clay, wet	0.5 m³ (5/8 yd³)	0.4 m³ (1/2 yd³)	
2490	4200	Limestone, broken		0.3 m³ (3/8 yd³)	
2730	4600	Rock, granite, blasted		0.3 m³ (3/8 yd³)	

Nominal Width	Bite Width W/O Sidecutters	Bite Width W/Sidecutters	SAE Heaped	CECE Heaped	Weight
785 mm (31 in.)	680 mm (27 in.)	800 mm (32 in.)	0.4 m³ (1/2 cu yd)	0.33 m³	318 kg (700 lb)
915 mm (36 in.)	850 mm (34 in.)	970 mm (38 in.)	0.46 m³ (5/8 cu yd)	0.40 m³	367 kg (810 lb)

05T;115 M67. 191088