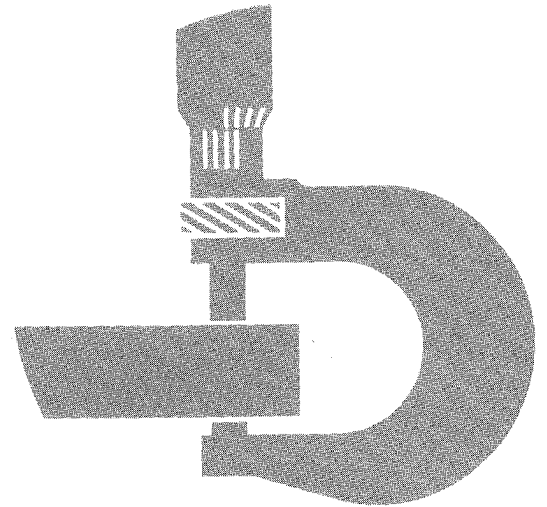


**John Deere 410B,
410C, 510B, 510C
Backhoe Loaders
Repair**

**TECHNICAL
MANUAL**



TM-1469 (Dec-88)

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.

410B AND 510B BACKHOE LOADER 410C AND 510C BACKHOE LOADER TECHNICAL MANUAL TM-1469 (DEC-88)

SECTION AND GROUP CONTENTS

NOTE: This manual covers machine repair. For Operation and Test information, see TM-1468.

SECTION I—GENERAL INFORMATION

- Group I—Introduction and Safety Information
- Group II—General Specifications
- Group III—Torque Values
- Group IV—Lubrication
- Group V—Inspection Procedures

SECTION 01—WHEELS

- Group 0110—Powered Wheels and Fastenings
- Group 0120—Non-Powered Wheels and Fastenings

SECTION 02—AXLES AND SUSPENSION SYSTEMS

- Group 0230—Non-Powered Wheel Axles
- Group 0250—Axle Shafts, Bearings and Reduction Gears

SECTION 03—TRANSMISSION

- Group 0300—Removal and Installation
- Group 0315—Controls
- Group 0325—Input Drive Shafts and U-Joints
- Group 0350—Gears, Shafts, Housings, Bearings, Differential Lock, Brake and Park Brake
- Group 0360—Hydraulic System, Control Valve, Suction Screen, Oil Pump, and Lubrication System

SECTION 04—ENGINE

- Group 0400—Removal and Installation
- Group 0413—Fuel Injection System
- Group 0414—Intake Manifold
- Group 0416—Turbocharger
- Group 0417—Water Pump
- Group 0418—Thermostats, Housing and Water Piping
- Group 0419—Oil Cooler
- Group 0420—Fuel Filter
- Group 0421—Fuel Transfer Pump
- Group 0422—Starting Motor and Fastenings

SECTION 05—ENGINE AUXILIARY SYSTEMS

- Group 0505—Cold Weather Starting Aids
- Group 0510—Cooling Systems
- Group 0515—Speed Controls
- Group 0520—Intake System
- Group 0560—External Fuel Supply Systems

SECTION 09—STEERING SYSTEM

- Group 0960—Hydraulic System Steering Valve and Cylinder

SECTION 10—SERVICE BRAKES

- Group 1011—Active Elements, Brake Disks and Control Linkage
- Group 1060—Hydraulic System Brake Valve

Continued on next page

SECTION 11—PARK BRAKES

- Group 1111—Active Elements
- Group 1115—Controls Linkage

SECTION 16—ELECTRICAL SYSTEMS

- Group 1671—Batteries, Support and Cables
- Group 1672—Alternator, Regulator and Charging System Wiring
- Group 1673—Lighting System
- Group 1674—Wiring Harness and Switches
- Group 1675—System Controls
- Group 1676—Instruments, Indicators and Senders
- Group 1677—Motors and Actuators

SECTION 17—FRAME, CHASSIS, OR SUPPORTING STRUCTURE

- Group 1740—Frame Installation
- Group 1749—Chassis Weights

SECTION 18—OPERATOR'S STATION

- Group 1800—Removal and Installation
- Group 1810—Operator Enclosure
Wiper Motor and Windshield Washer
- Group 1821—Seat and Seat Belt
- Group 1830—Heating and Air Conditioning

SECTION 20—SAFETY, CONVENIENCE AND MISCELLANEOUS

- Group 2004—Horn and Warning Devices

SECTION 21—MAIN HYDRAULIC SYSTEM

- Group 2160—Hydraulic System
Main Hydraulic Pump, Pump Drive,
Main Hydraulic Filter, Oil Cooler, Oil
Cooler Bypass Valve, and System
Relief Valve

SECTION 31—LOADER

- Group 3100—Removal and Installation
- Group 3102—Buckets
- Group 3115—Controls Linkage
- Group 3140—Frames
- Group 3160—Hydraulic System
Control Valve and Cylinders

SECTION 33—BACKHOE

- Group 3302—Buckets
- Group 3315—Controls Linkage
- Group 3340—Frames
- Group 3360—Hydraulic System
Control Valve and Cylinders

General Specifications

410C BACKHOE LOADER

Wheel Treads:

Front (without MFWD) 69 in. (1757 mm)
 (with MFWD) 68 in. (1727 mm)
 Rear (without MFWD) 64 in. (1625 mm)
 (with MFWD) 69 in. (1757 mm)

Wheelbase:

(Without MFWD) 82.7 in. (2100 mm)
 (With MFWD) 83.3 in. (2116 mm)

Axle Ratings: (SAE J43)

Front 11 700 lb (5300 kg)
 Rear 15 400 lb (7000 kg)

Buckets:

Loader:	Width		Struck Capacity		Heaped Capacity	
	In.	(mm)	Cu. Yd.	(m ³)	Cu. Yd.	(m ³)
(Long Lip)	89.4	(2270)	1.05	(0.80)	1.25	(0.96)
	92	(2337)	0.88	(0.67)	1.0	(0.76)
	92	(2337)	1.07	(0.82)	1.3	(1.00)

Backhoe:	In.	(mm)	Cu. Ft. (m ³)		Cu. Ft. (m ³)	
Standard	12	(305)	2.6	(0.07)	3.0	(0.08)
	16	(406)	3.7	(0.10)	4.5	(0.13)
	18	(457)	4.2	(0.12)	5.1	(0.14)
	24	(610)	5.9	(0.17)	7.5	(0.21)
	30	(762)	7.5	(0.21)	10.0	(0.28)
Heavy duty	36	(914)	7.5	(0.21)	10.0	(0.28)
	18	(457)	4.2	(0.12)	5.1	(0.14)
	24	(610)	5.9	(0.17)	7.5	(0.21)
High Capacity	30	(762)	7.5	(0.21)	10.0	(0.28)
	24	(610)	7.2	(0.20)	8.8	(0.25)
Capacity	36	(914)	11.2	(0.32)	14.5	(0.41)

Transporting:

SAE operating weight with ROPS 6550 kg
 (14,400 lb)

General Specifications

410C BACKHOE LOADER

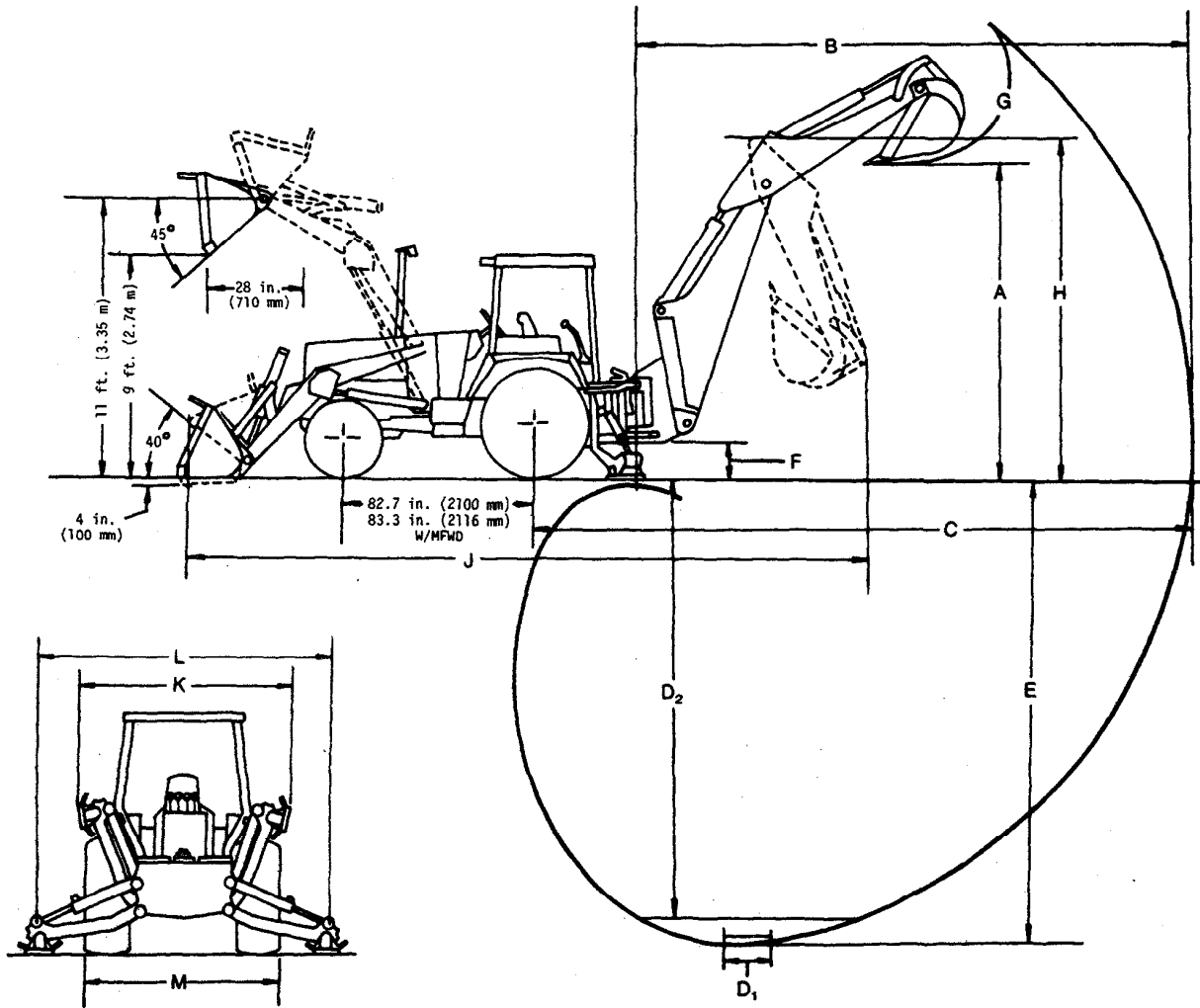
Drain and Refill Capacities:

	U.S.	Metric
Engine coolant (no heater)	14 qt	13 L
Engine coolant (with heater)	16 qt	15 L
Engine oil (including filter)	9 qt	8.5 L
Torque converter and reverser (including filter)	12 qt	11 L
Transaxle-hydraulic system (without MFWD)	10 gal	38 L
(with MFWD)	11.5 gal	44 L
Fuel tank	23 gal	87 L
Auxiliary fuel tank (if equipped)	15 gal	57 L
Front axle (MFWD)	7 qt	6.5 L
Front wheel planetary (MFWD)	1.1 qt	1.0 L

05T;115 K8 060289

General Specifications

410C BACKHOE LOADER



002;T6245AE T82;115 C8 060289

General Specifications

410C BACKHOE LOADER

Key:	Backhoe* with Long	Extendible Dipperstick	
	Dipperstick	Retracted	Extended
A. Loading height, truck loading position	11 ft. 10 in. (3.62 m)	11 ft. 6 in. (3.51 m)	13 ft. 11 in. (4.24 m)
B. Reach from center of swing mast	18 ft. 5 in. (5.62 m)	17 ft. 9 in. (5.42 m)	21 ft. 5 in. (6.52 m)
C. Reach from center of rear axle	22 ft. 2 in. (6.76 m)	21 ft. 6 in. (6.56 m)	25 ft. 2 in. (7.66 m)
D. Digging depth (SAE):			
(1) 2 ft. (610 mm) flat bottom	15 ft. 3 in. (4.64 m)	14 ft. 6 in. (4.42 m)	18 ft. 4 in. (5.59 m)
(2) 8 ft. (2440 mm) flat bottom	14 ft. 2 in. (4.32 m)	13 ft. 5 in. (4.09 m)	17 ft. 6 in. (5.34 m)
E. Maximum digging depth	15 ft. 4 in. (4.68 m)	14 ft. 8 in. (4.46 m)	18 ft. 5 in. (5.62 m)
F. Ground clearance, minimum	12 in. (305 mm)	12 in. (305 mm)	12 in. (305 mm)
G. Bucket rotation	160° and 180°	160° and 180°	160° and 180°
H. Transport height	11 ft. 5 in. (3.49 m)	11 ft. 8 in. (3.57 m)	11 ft. 8 in. (3.57 m)
J. Overall length, transport	23 ft. 5 in. (7.14 m)	23 ft. (7.01 m)	23 ft. (7.01 m)
K. Stabilizer width—transport	7 ft. 8 in. (2.34 m)	7 ft. 8 in. (2.34 m)	7 ft. 8 in. (2.34 m)
L. Stabilizer spread—operating	9 ft. 10 in. (3.0 m)	9 ft. 10 in. (3.0 m)	9 ft. 10 in. (3.0 m)
M. Overall width (less loader bucket)	82 in. (2070 mm)	82 in. (2070 mm)	82 in. (2070 mm)
Digging force, bucket cylinder (power dig position)	11700 lb (5310 kg)	11700 lb (5310 kg)	11700 lb (5310 kg)
Digging force, crowd cylinder	6300 lb (2860 kg)	6800 lb (3080 kg)	4600 lb (2090 kg)
Swing arc	180°	180°	180°
Operator control	Two levers	Right foot treadle	Right foot treadle
Bucket positions	9° and 18° rollback	8° and 17° rollback	12° and 22° rollback
Stabilizer angle rearward	14.5°	14.5°	14.5°
Lifting capacity, maximum boom @ 65°	4100 lb (1860 kg)	4100 lb (1860 kg)	2700 lb (1220 kg)

NOTE: Backhoe specifications are with 24 in. (610 mm) 7.5 cu ft (0.21 m³) standard bucket.

T82;115 C9 060289

410C BACKHOE LOADER LIFTING CAPACITIES

Backhoe With Long Dipperstick

NOTE: Lifting capacity ratings are made from bucket hinge pin, loader bucket and stabilizers on firm, level ground. Lifting capacities are 87 percent of the maximum lift over any point on the swing arc and do not exceed 75 percent of the tipping load. Angle between boom and ground is 65 degrees. Machine is equipped with 24 in. (610 mm) standard bucket, long, short or extendible dipperstick (as indicated), and standard equipment. Lifting capacity ratings are based on SAE J31 (except with loader bucket on ground.)

Loader bucket on ground significantly improves side stability, therefore improving lift capacity to the side. Lift capacity over the rear is not affected.

Reach (Bucket Hinge Pin to Center of Swing Frame)	Height Above (A) or Below (B) Ground Line	Boom	Dipperstick
10.5 ft. (3.20 m)	12 ft. (3.66 m) (A)		3570 lb. (1630 kg)
10.8 ft. (3.29 m)	12 ft. (3.66 m) (A)	2060 lb. (935 kg)	
11.1 ft. (3.38 m)	10 ft. (3.05 m) (A)		3300 lb. (1495 kg)
12.6 ft. (3.84 m)	10 ft. (3.05 m) (A)	2090 lb. (950 kg)	
11.0 ft. (3.35 m)	8 ft. (2.44 m) (A)		3320 lb. (1505 kg)
13.9 ft. (4.24 m)	8 ft. (2.44 m) (A)	2050 lb. (930 kg)	
10.2 ft. (3.11 m)	6 ft. (1.83 m) (A)		3630 lb. (1695 kg)
14.7 ft. (4.48 m)	6 ft. (1.83 m) (A)	2010 lb. (910 kg)	
8.3 ft. (2.59 m)	4 ft. (1.22 m) (A)		4760 lb. (2160 kg)
15.2 ft. (4.64 m)	4 ft. (1.22 m) (A)	1950 lb. (885 kg)	
15.4 ft. (4.69 m)	2 ft. (0.61 m) (A)	1890 lb. (855 kg)	
15.3 ft. (4.67 m)	0 ft. (Ground Line)	1840 lb. (835 kg)	
14.9 ft. (4.54 m)	-2 ft. (-0.61 m) (B)	1790 lb. (810 kg)	
14.2 ft. (4.33 m)	-4 ft. (1.22 m) (B)	1750 lb. (795 kg)	
13.1 ft. (3.99 m)	-6 ft. (-1.83 m) (B)	1720 lb. (780 kg)	
11.6 ft. (3.54 m)	-8 ft. (-2.44 m) (B)	1710 lb. (775 kg)	
9.2 ft. (2.81 m)	-10 ft. (-3.05 m) (B)	1770 lb. (805 kg)	
4.7 ft. (1.43 m)	-12 ft. (-3.66 m) (B)	2310 lb. (1050 kg)	

T82;115 C12 090186