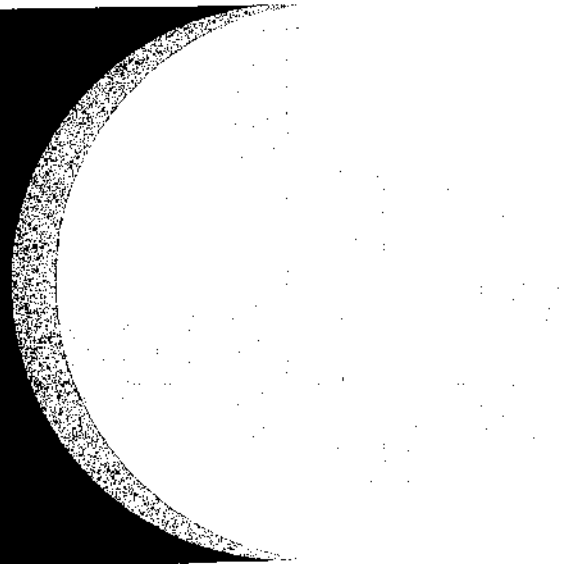


**John Deere
710B
Backhoe Loader**



TECHNICAL MANUAL

TM-1286 (Dec-86)

LITHO IN U.S.A.

710B BACKHOE LOADER TECHNICAL MANUAL TM-1286 (DEC-86)

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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. Wherever applicable, specifications and design information are in accordance with SAE and ICED standards.

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admin@servicemanualperfect.com**

INTRODUCTION

This manual is part of a total service support program.

FOS Manuals—reference

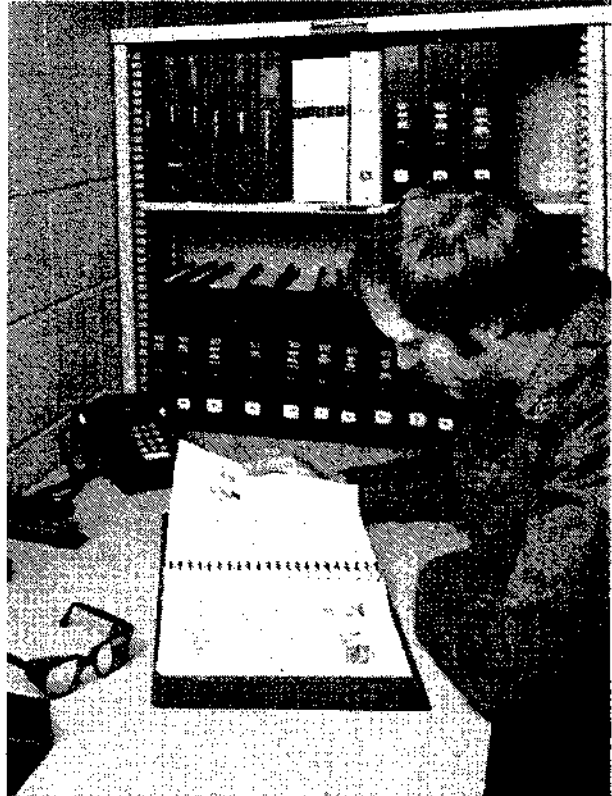
Technical Manuals—machine service

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 ILLUSTRATION 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

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

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.



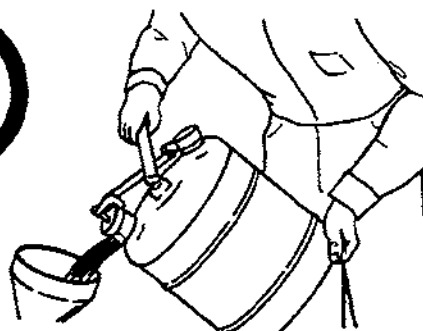
AB6;TS181 053;EXPLO 180485

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.



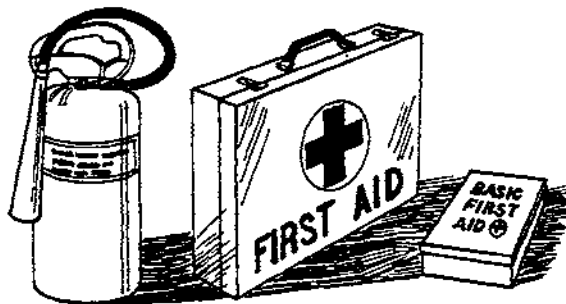
AB6;TS185 053;FIRE1 240785

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 STARTING FLUID SAFELY

Starting fluid is highly flammable.

Keep all sparks and flame away when using it. 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;T6089A U 053;FIRE3 080785

UNDERSTAND CORRECT MACHINE OPERATION AND SERVICE

Only qualified people should operate and service the machine.

Learn the location and purpose of all controls, instruments, indicators, and labels.

Be sure you understand a service procedure before you work on the machine.

Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

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.

Be sure transmission shift lever is in neutral. Apply and lock park brake.

KEEP HANDS AWAY FROM MOVING PARTS.



8NA;T6073A0 T82;BHSA C 030485

WEAR PROTECTIVE CLOTHING

Wear fairly tight clothing . . . and safety equipment.

44A;T85056 T82;EXSA B 060684

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 uncomfortable loud noises.



AB6;X7662 053;NOISE 150584

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 or paper 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 100584

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 by passed.

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

INSPECT MACHINE

Inspect your machine carefully each day before you start it.
(See Pre-Start Inspection chapter.)

Use handholds and steps when you get on and off the machine. DO NOT use the steering wheel as a handrail.

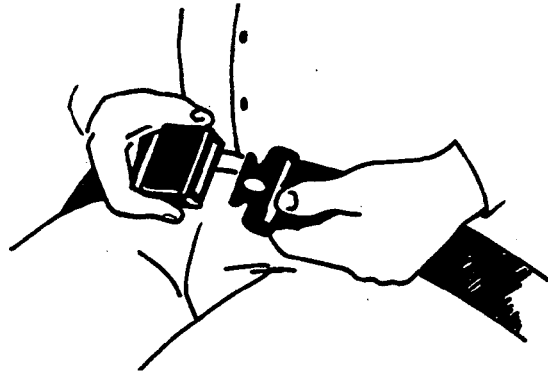


018;T5813AN T82;FLSA P 010485

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;TS175 053;ROPS1 261184

KEEP RIDERS OFF MACHINE

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

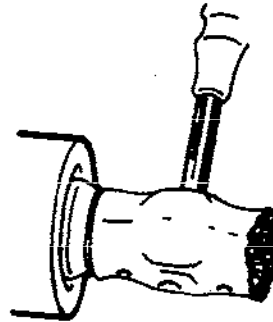
Riders on machine are subject to injury such as being struck by foreign objects and being thrown off of the machine. Riders also obstruct the operator's view resulting in the machine being operated in an unsafe manner.



AB6;TS173 053;RIDER 261184

PROTECT AGAINST FLYING DEBRIS

When you drive connecting pins in or out, guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.

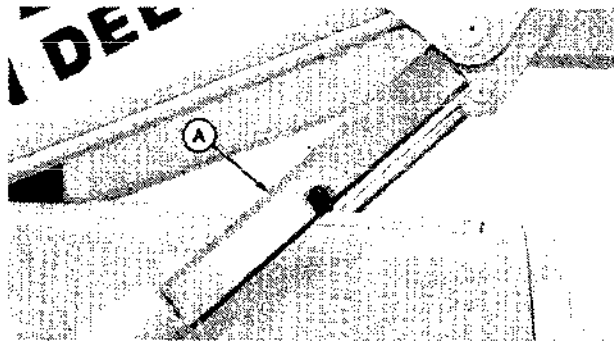


8NA;T5073AP T82;BPSA R 070585 JW

SUPPORT RAISED EQUIPMENT

Put a support (A) under all raised equipment.

Do not work under a raised bucket. Lower the bucket to ground or onto blocks.

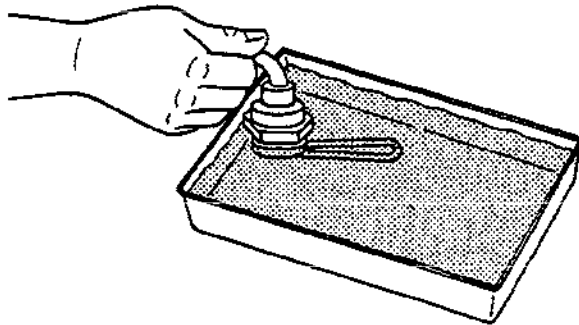


8NA;T86911 T82;B4SA S 256882

TEST COOLANT HEATER IN LIQUID ONLY

Do not plug coolant heater into electrical power unless heating element is immersed in coolant. Sheath could burst and result in personal injury.

Use a heavy-duty grounded cord to connect coolant heater to electrical power.

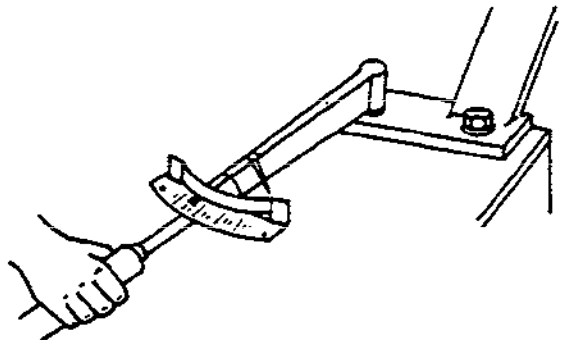


AB6;TS174 053;HEAT 110584

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. A damaged ROPS should be replaced, not reused.



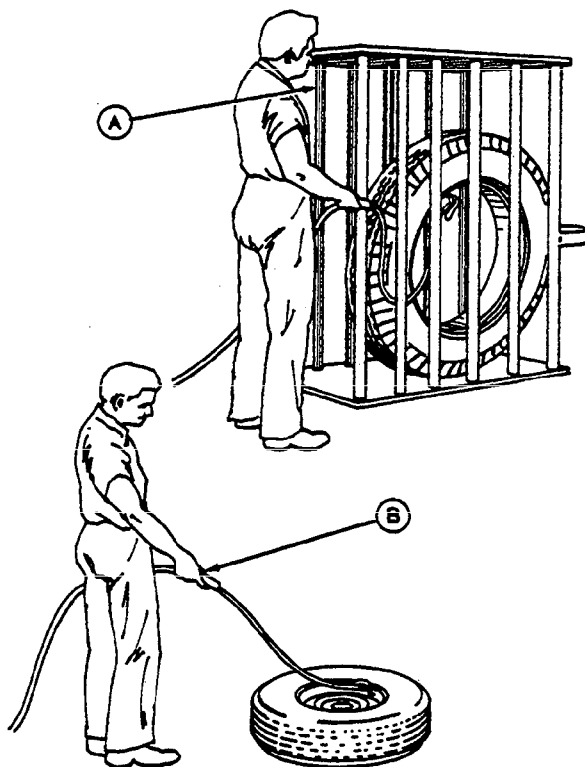
AB6;TS176 053;ROPS3 261184

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 repair service.

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.

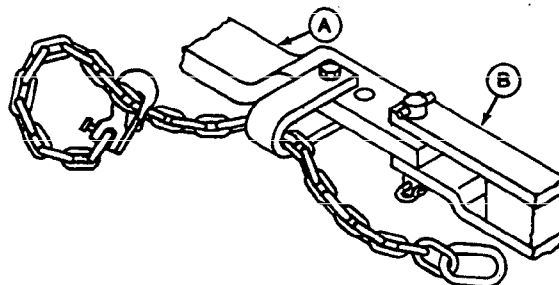
- A—Use a Safety Cage if Available
- B—Do Not Stand Over Tire—Use a Clip-on Chuck and Extension Hose



AB6;TS0123 053;TIRE2 110584

USE A SAFETY CHAIN

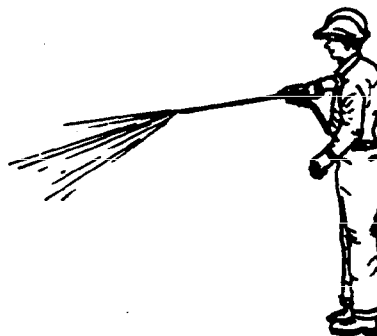
A safety chain will help control drawn equipment (B) should it accidentally separate from the drawbar (A) while transporting. Using the appropriate adapter parts, attach the chain to the tractor drawbar support or other specified anchor location. Provide only enough slack in the chain to permit turning. See your John Deere dealer for a chain with a strength rating equal to or greater than the gross weight of the towed machine.



AB6;TS163 053;CHAIN 310884

CLEAN MACHINE REGULARLY

Remove any grease, oil or debris build-up to avoid possible injury or machine damage.

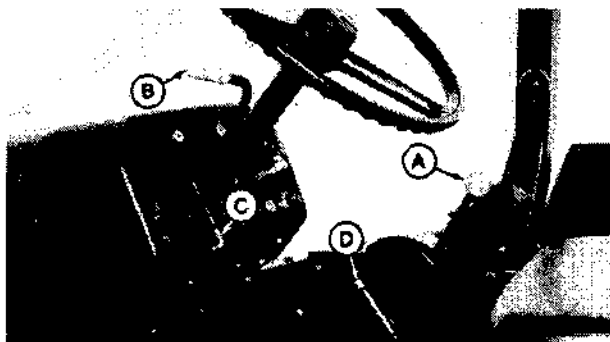


002;T5813AM T82;BHSA BM 170485

PREPARE MACHINE FOR REPAIR

Before you leave the operator's station:

1. Park the machine on a level surface.
2. Lower all equipment to ground.
3. Move speed control lever to slow idle position.
4. Move park brake lever (D) up to engage park brake.
5. Move gear shift lever (A) to neutral "N".
6. Move direction selector lever (B) to neutral.
7. Turn lever (C) to lock direction selector lever in neutral.
8. Turn key switch off.
9. Release hydraulic pressure by moving hydraulic control levers until no hydraulic function moves.
10. Remove all keys from switches and locks.
11. Disconnect negative (—) ground strap.

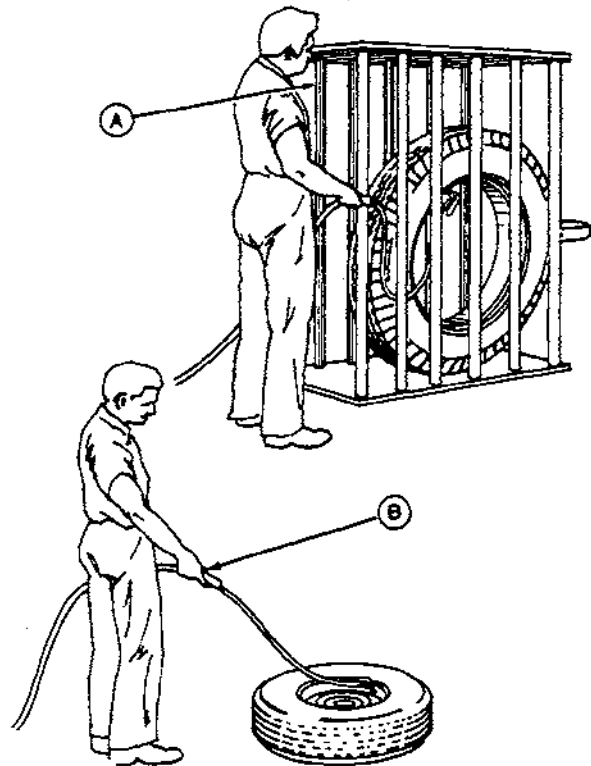


8NA;T88922 T82;8HSA 8Z 210585

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 repair service.

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.



- A—Use a Safety Cage if available.
B—DO NOT Stand Over Tire. Use a Clip-On Chuck and Extension Hose.

63A:T50123 T82;TLSA M 191282

PREPARE MACHINE FOR REPAIR

1. Lower all equipment to the ground.
2. Put transmission in PARK or engage parking brake.
3. Stop the engine.
4. Operate all hydraulic control levers to release hydraulic pressure in the system.
5. Disconnect negative (-) battery cable.



63A:T88895 T82;BHS A G 270483

Introduction and Safety Information

Group II SPECIFICATIONS

(Specifications and design subject of change without notice. Wherever applicable, specifications are in accordance with ICED and SAE Standards. Except where otherwise noted, these specifications are based on a standard machine with 21L-24, 16PR, R4 rear tires; 14.5/75-16.1, 12PR, F3 front tires with 75 percent CaCl₂ fill; 1.5-cu.-yd. (1.15 m³) loader bucket; 24-in. (610 mm) backhoe bucket; ROPS/FOPS; full fuel tank and 175-lb. (79 kg) operator).

Power

(@ 2200 engine rpm):	SAE	DIN
Gross	105 hp (78 kW)	
Net	100 hp (75 kW)	101 hp (74 kW)

Net engine flywheel power is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator, and muffler. Gross engine power is without fan. Flywheel power ratings are under SAE standard conditions of 500-ft. (150 m) altitude and 85°F (29.5°C) temperature and DIN 70 020 standard conditions of 760 mm Hg barometer (sea level) and 20°C temperature.

Engine: John Deere 6-cylinder turbocharged diesel, valve in head 4-stroke cycle

Bore and stroke	4.02 x 4.33 in. (102 x 110 mm)
Displacement	329 cu. in. (5.392 L)
Compression ratio	16.2 to 1
Maximum torque @ 1300 rpm	290 lb-ft (393 N·m)
NACC or AMA (U.,S. Tax) horsepower	38.8
Main bearings	7
Lubrication	Pressure system w/full-flow filter and cooler
Cooling	Pressurized w/thermostat and fixed bypass
Fan	Suction
Air cleaner	Dry
Electrical system	12-volt
Alternator	51 amps w/cab, 35 amps regular

Transmission:

Full power shift, 8 speeds forward, 4 reverse. Modulated, full power shift between forward and reverse in first thru fourth speeds. Direction selector lever left of steering wheel. Single speed-change lever in right console.

Travel Speeds:	Forward		Reverse	
	mph	km/h	mph	km/h
Gear 1	1.8	2.9	2.2	3.5
2	2.6	4.2	3.2	5.1
3	4.0	6.4	4.9	7.9
4	5.2	8.4	6.4	10.3
5	6.8	11.0		
6	8.8	14.2		
7	11.5	18.5		
8	19.5	31.4		

Final Drives Planetary, inboard

Brakes Hydraulic, power actuated, fully enclosed wet disk. Foot-operated individually or simultaneously, self-equalizing.

Steering: Hydrostatic power

Turning radius (brake applied)	14 ft. 2 in. (4.32 m)
Clearance circle	37 ft. 4 in. (11.40 m)
Steering wheel turns, left to right	3.0
right to left	3.8

Hydraulic System: Closed center (variable flow, constant pressure)

Pressure	2500 psi (17 238 kPa)
Pump	16 radial pistons, variable flow
Flow @ 2200 psi (15 170 kPa)	53 gpm (3.34 L/s)
Filter, return oil	10 micron steel enclosed, replaceable paper element
Screen, pressure oil	50/in. (20/cm) mesh

Hydraulic Cylinders:	Bore	Stroke	Rod
Loader boom (2)	3.75 in. (95 mm)	33.0 in. (840 mm)	2.0 in. (51 mm)
Loader bucket (1)	4/5 in. (114 mm)	26.5 in. (673 mm)	2.0 in. (51 mm)
Backhoe boom (1)	6.0 in. (152 mm)	44.4 in. (1128 mm)	2.75 in. (70 mm)
Backhoe crowd (1)	5.5 in. (140 mm)	35.4 in. (900 mm)	2.75 in. (70 mm)
Backhoe bucket (1)	4.0 in. (102 mm)	37.5 in. (953 mm)	2.5 in. (64 mm)
Backhoe swing (2)	4.5 in. (114 mm)	9.9 in. (251 mm)	2.25 in. (57 mm)
Backhoe extendible dipper (1)	3.0 in. (76 mm)	60 in. (1525 mm)	1.5 in. (38 mm)
Backhoe stabilizers (2)	4.5 in. (114 mm)	21.5 in. (546 mm)	2.5 in. (64 mm)
Steering (1) regular axle	2.75 in. (70 mm)	9.0 in. (229 mm)	1.25 in. (32 mm)

Tires:

Front	(Use with MFWD) 14 x 17.5 10 PR (with calcium chloride) (DO NOT use with MFWD) 14.5/75-16.1 10 PR F3
Rear	(DO NOT use with MFWD) 20.5 x 25 12 PR L2 or L3 (Use with MFWD) 21 x 24 16 PR R4

Wheel Treads:

Front	72 in. (1830 mm)
Rear	68 in. (1730 mm)

Wheelbase 94 in. (2400 mm)

Axle Ratings: (SAE J43)

Front	12,500 lb. (5670 kg)
Rear	19,400 lb. (8800 kg)

T82;BHSP A 040485

Specifications

OPERATING INFORMATION

BACKHOE:

Operator control	Two levers
Digging depth (ICED):	
Maximum	17 ft. 11 in. (5.46 m)
2-ft. (610 mm) flat bottom	17 ft. 10 in. (5.45 m)
8-ft. (2440 mm) flat bottom	17 ft. 0 in. (5.20 m)
Swing arc	180 deg.
Lifting capacity:	
Boom lifting, dipper extended	2800 lb. (1270 kg)
Dipper lifting, boom @ 65°	6000 lb. (2720 kg)
Digging force:	
Bucket cylinder in power-dig position	13,500 lb. (60 kN)
Crowd cylinder	9600 lb. (42.7 kN)
Reach:	
From center of swing mast	22 ft. 8 in. (6.90 m)
From center of rear axle	26 ft. 9 in. (8.15 m)
Loading height, truck loading position	13 ft. 2 in. (4.01 m)
Transport height	13 ft. 9 in. (4.20 m)
Bucket rotation	Adjustable for 149 or 159 degrees
Bucket positions	0 to 13 degrees rollback

EXTENDIBLE DIPPER

Operator control	Right foot treadle
Digging depth, 2-ft. (610 mm) flat bottom	
Extended	22 ft. 8 in. (6.90 m)
Retracted	17 ft. 9 in. (5.40 m)
Reach from center of swing mast	
Extended	27 ft. 1 in. (8.25 m)
Retracted	22 ft. 4 in. (6.80 m)
Loading height, truck loading position	
Extended	15 ft. (4.60 m)
Retracted	12 ft. 11 in. (3.95 m)
Digging force, crowd cylinder	
Extended	6700 lb. (29.8 kN)
Retracted	9600 lb. (42.7 kN)

STABILIZERS:

Operator control	Two levers
Transport width	8 ft. (2.44 m)
Spread in operating position	11 ft. 5 in. (3.48 m)
Angle rearward	13 degrees

LOADER:

Operator control	Single lever
Rollback @ ground level	40 deg.
Breakout force	10,600 lb. (47.1 kN)
Digging depth below ground, bucket level	4 in. (100 mm)
Lifting capacity, full height	6900 lb. (3130 kg)
Height to bucket hinge pin, max.	11 ft. 3 in. (3.45 m)
Bucket dump angle, max.	47 degrees
Dump clearance, bucket @ 45 degrees	8 ft. 11 in. (2.72 m)
Reach at full height, bucket @ 45 degrees	36 in. (915 mm)

BUCKETS

Loader:	Width		Struck Capacity		Heaped Capacity	
	In.	(mm)	Cu. Ft.	(m ³)	Cu. Yd.	(m ³)
	92	(2340)			1.5	(1.15)
					Cu. Ft.	(m ³)
Backhoe:	18	(457)	6.7	(0.19)	7.7	(0.22)
	24	(610)	9.4	(0.27)	11.1	(0.31)
	30	(762)	12.2	(0.35)	15.0	(0.42)
	36	(914)	15.0	(0.42)	18.8	(0.53)

CAPACITIES:

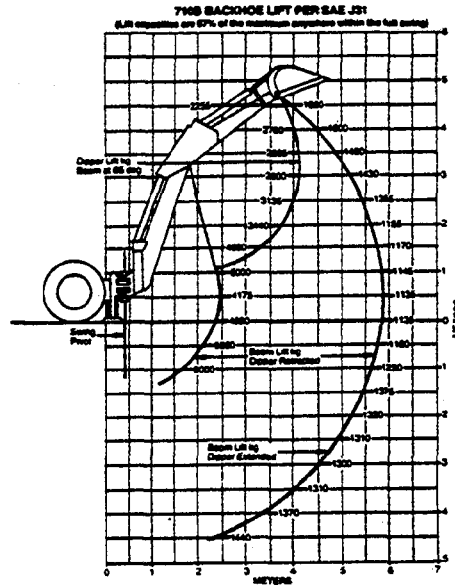
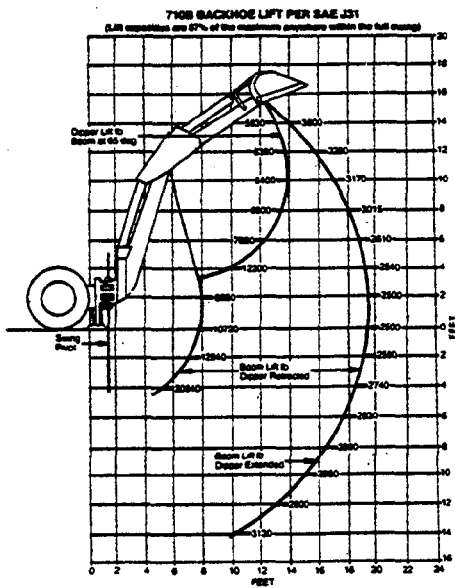
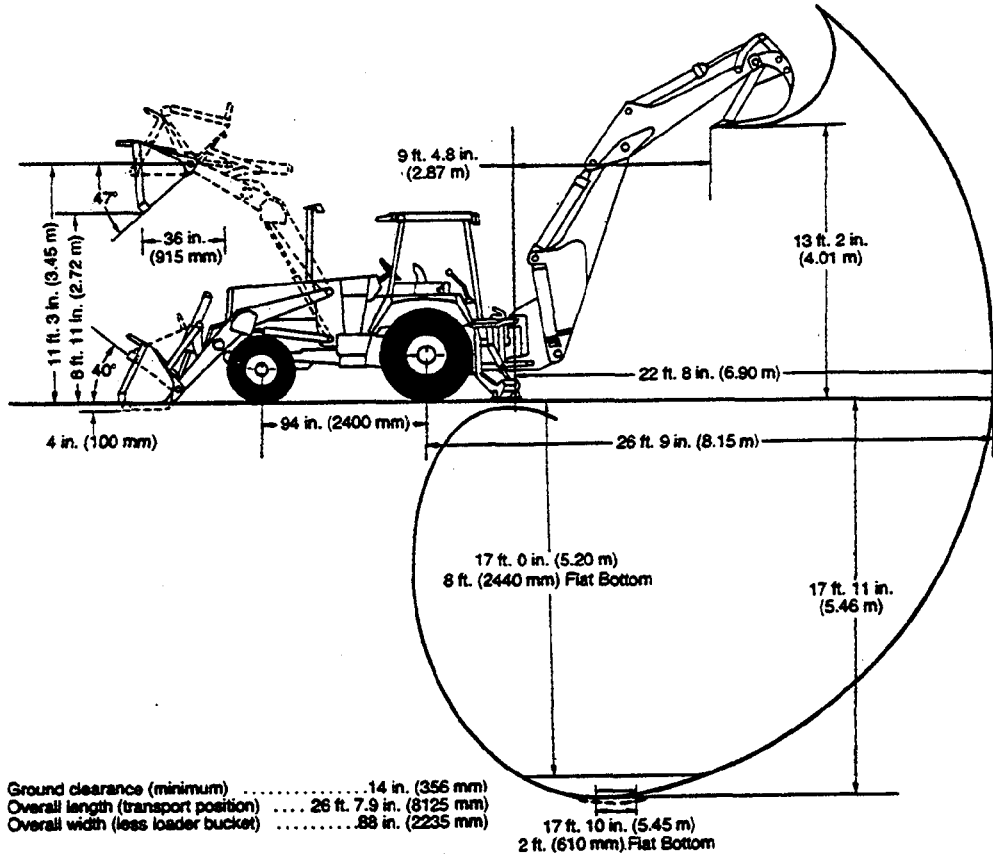
	U.S.	Metric
Engine coolant	28 qt.	26L
Engine oil including filter	20 qt.	19L
Transmission and hydraulic system	20 gal.	76L
Rear axle	18 qt.	17L
Fuel tank	33 gal.	125L
Transfer case (MFWD)	11.25 gal	42.6L
Front axle housing (MFWD)	11 qt	10.4L
Front wheel planetary (MFWD)	1 qt	1L

TRANSPORTING:

SAE operating weight with ROPS	9890 kg. (21800 lb.)
Minimum ground clearance	354 mm (14.0 in.)
Overall length	8.13 m (26 ft. 8 in.)
Overall width	2.33 m (7 ft. 7.7 in.)

T82;BHSP B 040485

Specifications



63A;T90622 T82;BHSP H 080383

General Specifications

Group III TORQUE VALUES




HARDWARE TORQUE SPECIFICATIONS

Check cap screws and nuts to be sure they are tight. If hardware is loose, tighten it to torque shown on the following charts unless a special torque is specified.

T82/CRMA EC 260785

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

NOTE: Torque wrench tolerance is ± 10 per cent 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)

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