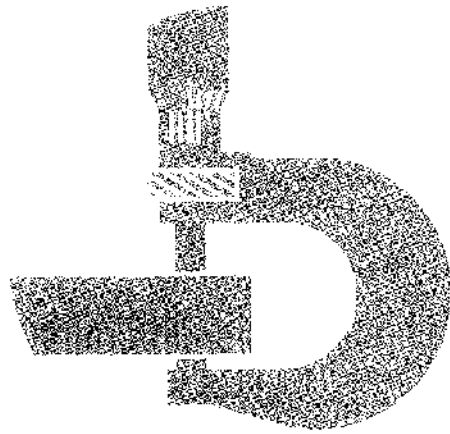


**30 AND 50  
EXCAVATORS**



**TECHNICAL MANUAL**

TM-1360 (DEC-86)



# 30 AND 50 EXCAVATORS TECHNICAL MANUAL TM-1380 (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.*

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M2?;1380F -A1 030387

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M22;1380F -A2 260187

**Thanks very much for your reading,  
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manual**

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**Have any questions please write to me:  
[admin@servicemanualperfect.com](mailto: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.

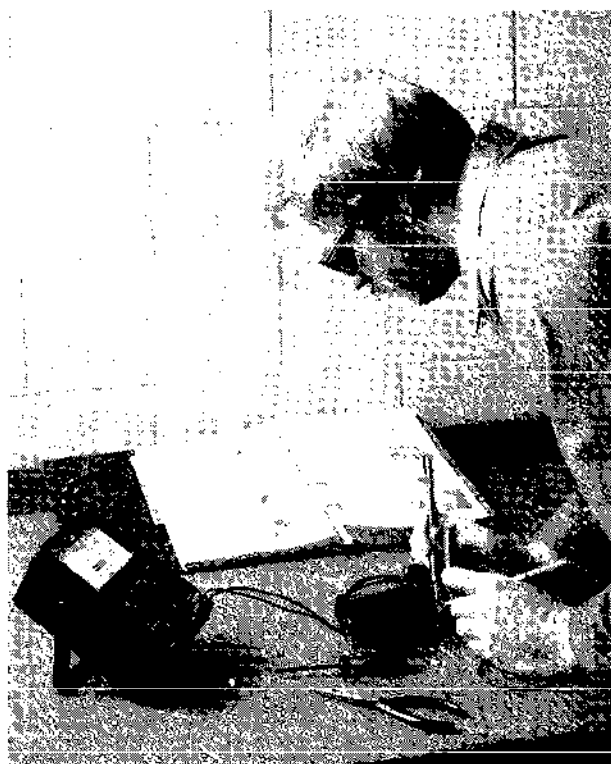
Diagnostic information presented with the most logical and easiest to isolate problems first to help you identify the majority of routine failures quickly.

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

## RECOGNIZE SAFETY INFORMATION

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



AB6/T81389 053;ALERT 071085

## UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.



AB6/TS187 053;SIGNAL 071085

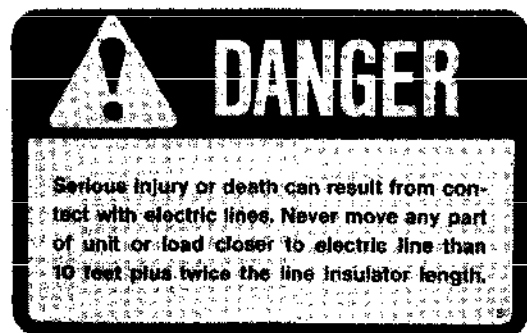
## FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Follow recommended precautions and safe operating practices.

Keep safety signs in good condition. Replace missing or damaged safety signs.




AB6/TS188 053;SIGNS 071085



*On outside of left console (50 Only)*

2TA;T5992AG 02T;05 C59 250485




## CAUTION

1. Use caution to avoid contact between boom and overhead obstacles whenever operating, moving or hauling excavator.
2. Never park excavator with tracks pointed downhill.
3. Always lower bucket and blade to ground before leaving operator's station.
4. Before moving excavator, determine which way to move travel levers for intended direction of travel (when blade is not visible from cab, forward movement on travel levers will move excavator rearward).
5. Be sure bystanders are clear of excavator before moving boom.
6. Use caution to avoid sideways tipping when swinging heavy loads to side of tracks.

*On outside of left console*

018;T6210AK 02T;05 K8 030386



## WARNING

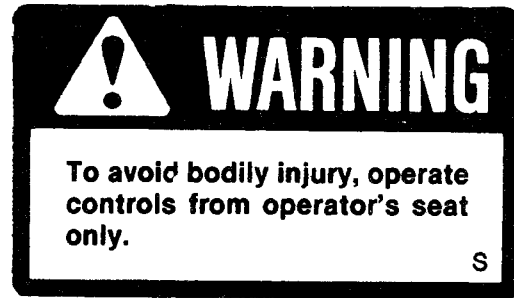
1. To prevent serious injury in the event of excavator tipover:
  - Wear seat belt
  - Keep this tipover protective structure including roof on the machine.
  - Replace damaged protective structure, do not repair.
2. Any alterations to this tipover protective structure must be approved by the manufacturer.

*Canopy (TOPS) units—On right rear vertical member  
Cab (TOPS) units—On left rear door post*

018;T6307AM 02T;05 K9 250686



*Canopy (TOPS) units—On outside of right and left control pedestals  
Cab (TOPS) units—On rear of left control pedestal*



018;T6284AZ 02T;05 K10 030386

### USE HANDHOLDS AND STEPS

When you get on and off the machine, use handholds and steps.



018;T6192AH T82;BHSA CM 010686

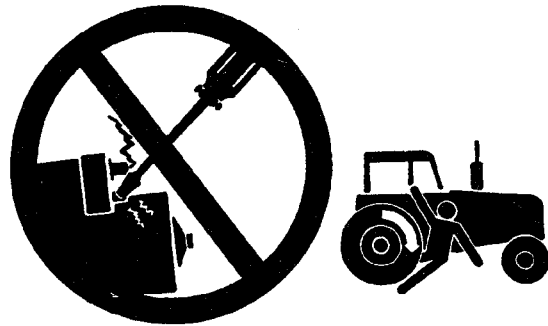
### PREVENT MACHINE RUNAWAY

Avoid possible injury or death from machine runaway.

Do not start engine by shorting across starter terminals.

Do not leave operator's station while engine is running.

**NEVER** start engine while standing on ground. Start engine only from operator's seat.



AB6;TS177 T82;BHSA CQ 140286

### AVOID POWER LINES

Keep away from power lines. Serious injury or death may result. Never move any part of the machine or load closer to power line than 3 m (10 ft) plus twice the line insulator length.

02T;05 K16 080386

### 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

### DRIVE EXCAVATOR SAFELY

Before you move the excavator, find out which way to move travel levers for the direction you want to go. If propel motors are in front of the cab, pull the travel levers back to move forward.

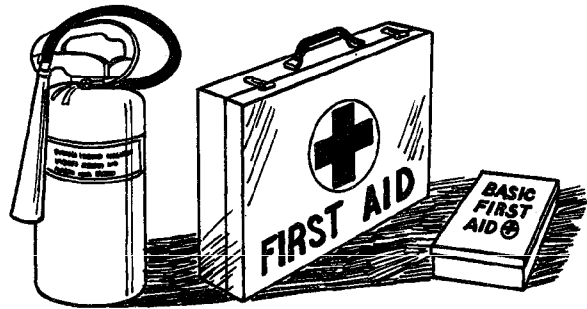
02T;05 K14 070386

### 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.



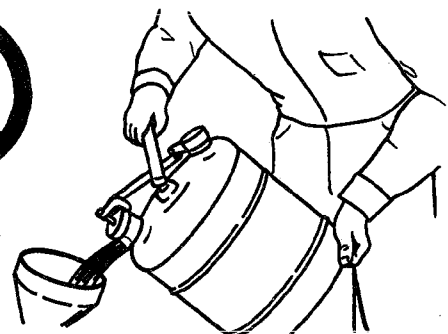
AB6;TS186 053;FIRE2 080785

### 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

## 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.



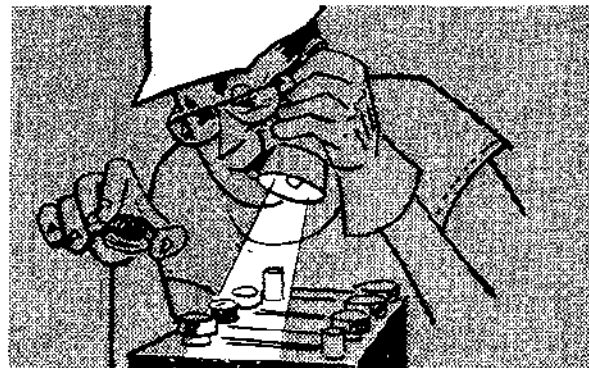
AB6;T6089A U 053;FIRE3 080785

## 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.



A36;TS181 053;EXP: 0 180485

## 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:

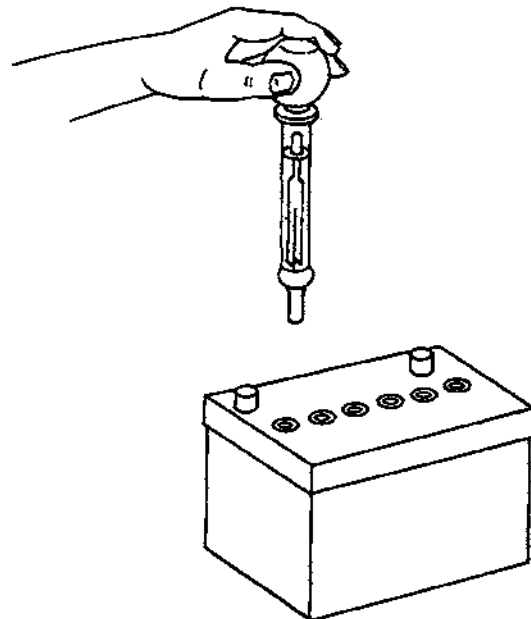
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.

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.

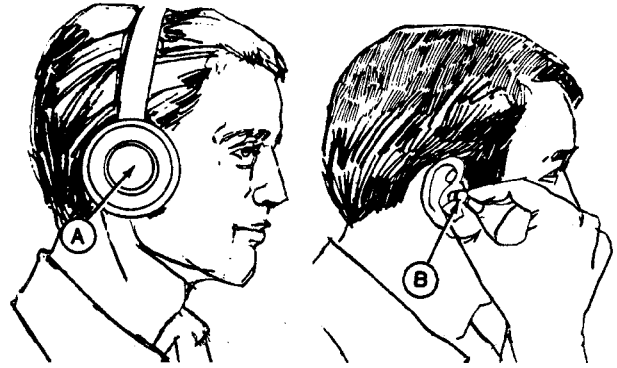


AB6;TS182 053;ACID 180485

### PROTECT AGAINST NOISE

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

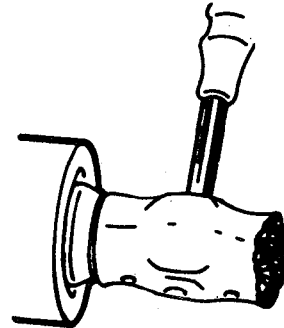
Wear a suitable hearing protective device such as earmuffs (A) or earplugs (B) to protect against objectionable uncomfortable loud noises.



AB6;X7662 053;NOISE 150584

### 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.



018;T6073AP T82;FLSA AB 130685

### WEAR PROTECTIVE CLOTHING

Wear fairly tight clothing. . . . . and safety equipment.

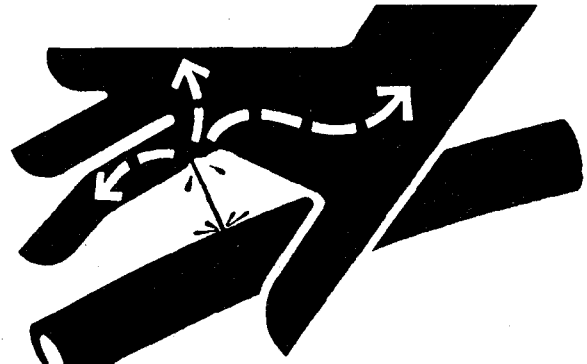


AB6;T85056 053;WEAR1 080785

### 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

## **SERVICE EXCAVATOR SAFELY**

Never operate the machine if an unsafe condition exists. Attach a "DO NOT OPERATE" tag to the machine.

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

Never lubricate or work on the machine while it is moving.

Always use two people when making checks with the engine running—the operator at the controls, able to see the person doing the checking.

Keep hands away from moving parts.

Never work under a machine raised by the boom. If the machine must be raised, keep a 90—110° angle between boom and arm.

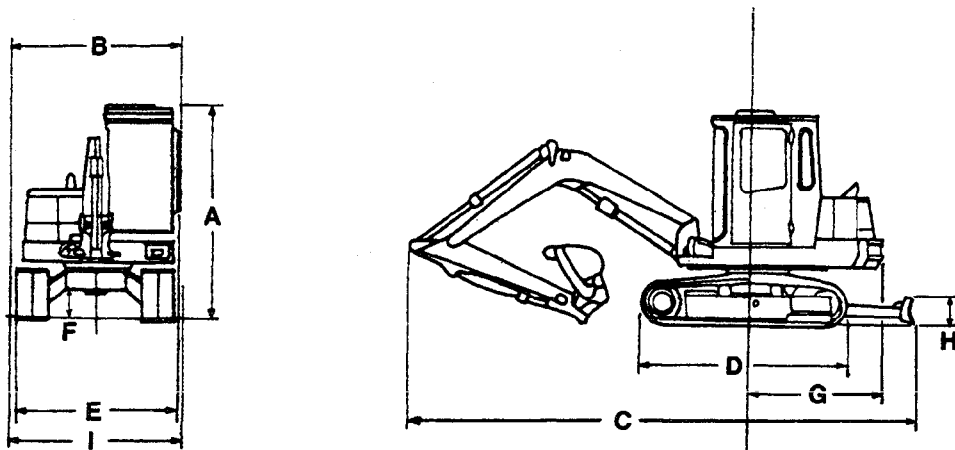
Disconnect battery ground cable (—) before welding on the machine or making adjustments on the engine or electrical system.



**DO NOT  
OPERATE**

018;T6283BH 02T;05 C45 140286

**30 EXCAVATOR**



	Metric	U.S.		Metric	U.S.
A—Overall height			E—Width over tracks	1.52 m	5 ft 0 in.
Canopy	2.40 m	7 ft 10 in.	F—Ground clearance	300 mm	1 ft 0 in.
Cab	2.39 m	7 ft 10 in.	G—Rear swing radius	1.36 m	4 ft 6 in.
B—Overall width			H—Blade height	350 mm	1 ft 2 in.
Canopy	1.52 m	5 ft 0 in.	I—Blade width	1.52 m	5 ft 0 in.
Cab	1.54 m	5 ft 1 in.			
C—Overall length	4.65 m	15 ft 3 in.			
D—Overall track length	1.94 m	6 ft 4 in.			

028;T6312AC 05T;115 C29 080486

**OPERATING WEIGHTS**

Canopy .....	2860 kg (6292 lb)
Cab .....	3000 kg (6600 lb)

*NOTE: Operating weights include 80 kg (176 lb) operator.*

05T;115 C37 080486

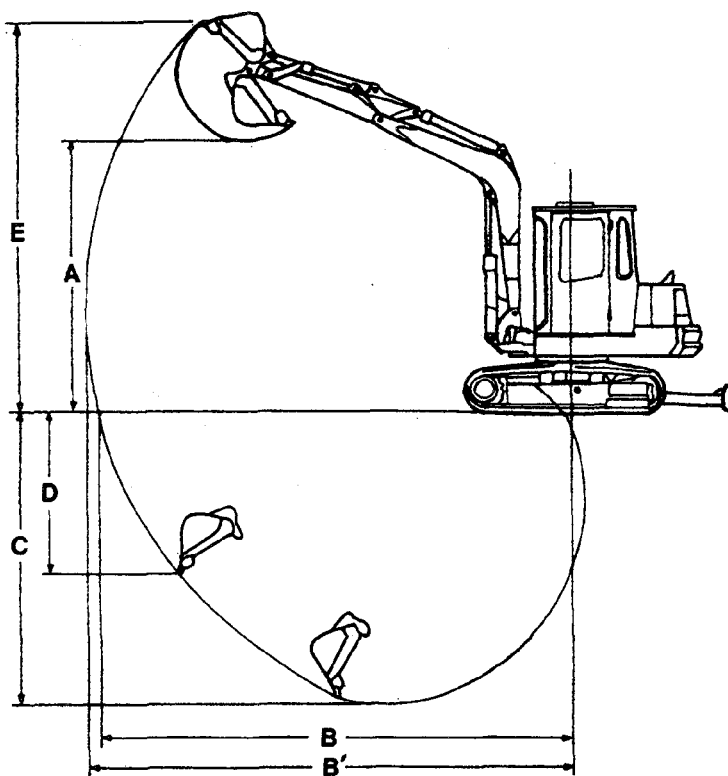
Specifications

**DRAIN AND REFILL CAPACITIES**

	Metric	U.S.
Fuel tank	43 L	11.4 gal
Cooling system	5.5 L	1.5 gal
Engine oil and filter	4.0 L	4.2 qt
Hydraulic reservoir	65 L	17.2 gal
Swing gearbox	2.3 L	2.4 qt
Propel drive (each)	0.5 L	0.5 qt

05T,115 C30 190386

**WORKING RANGES**



	Metric	U.S.
A—Max. dumping height, bucket with teeth	2.83 m	9 ft 3 in.
B—Max. reach at ground level	4.54 m	14 ft 11 in.
B'—Max. digging radius	4.66 m	15 ft 3 in.

	Metric	U.S.
C—Max. digging depth		
Using dozer blade	2.65 m	8 ft 8 in.
Not using dozer blade	2.85 m	9 ft 4 in.
D—Max. vertical wall digging depth	1.61 m	5 ft 3 in.
E—Max. clearance height at end of dumping	4.10 m	13 ft 5 in.

028;T6312AD 05T,115 C31 030486

## Specifications

### Engine: Yanmar 3TN82-RJB

Type .....	4-stroke cycle, naturally aspirated diesel
Power @ 2350 engine rpm .....	SAE Net 18 kw (24 hp)
Bore and stroke .....	82 x 86 mm (3.23 x 3.39 in.)
Number of cylinders .....	3
Displacement .....	1.362 L (83 cu in.)
Compression ratio .....	18.06:1
Maximum net torque @ 1600 rpm .....	88 N·m (9.08 kg-m) (65 lb-ft)
Lubrication .....	Pressure system with full-flow filter
Cooling fan .....	Blower
Air cleaner .....	Dry
Electrical system .....	12 volt with alternator
Battery .....	Reserve capacity: 120 minutes

### Hydraulic System:

Open center. Three section gear pump and two control valves (6-and 2-spool) provide independent and combined operation of all functions.

Main pumps .....	3-section gear pump
Maximum oil flow .....	95 L/min (25.1 gpm)

System operating pressure .....	14 700 kPa (147 bar) (2130 psi)
---------------------------------	---------------------------------

### Relief valves:

Boom .....	18 615 kPa (186 bar) (2700 psi)
Arm .....	18 615 kPa (186 bar) (2700 psi)
Bucket .....	18 615 kPa (186 bar) (2700 psi)
Dozer blade .....	15 170 kPa (152 bar) (2200 psi)
Boom swing .....	14 700 kPa (147 bar) (2130 psi)
Travel .....	14 700 kPa (147 bar) (2130 psi)
Swing .....	12 270 kPa (123 bar) (1780 psi)

### Oil filtration:

- One suction filter
- One 10-micron full-flow return filter with bypass

### Auxiliary valve (if equipped):

Maximum flow .....	34 L/min (9 gpm)
Operating pressure .....	14 700 kPa (147 bar) (2130 psi)

**NOTE:** 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 canopy (TOPS), 0.08 m<sup>3</sup> (0.10 yd<sup>3</sup>) bucket, dozer blade, full fuel tank, 80 kg (175 lb) operator, and standard equipment.

05T;115 C32 250386



*Specifications*

**LIFT CAPACITIES—CAB (TOPS)**

Ratings at bucket lift hook, machine equipped with 320 mm (13 in.) shoes, 0.08 m<sup>3</sup> (0.10 yd<sup>3</sup>) PCSA heaped bucket situated on firm, uniform supporting surface. Boldface type indicates hydraulic-limited capacities, light-face type indicates stability-limited capacities, in kg (lb). Figures do not exceed 87 percent of hydraulic capacities or 75 percent of weight needed to tip machine.

**BLADE ON GROUND**

*NOTE: Upper Figure—Lifting Over Front (Blade End).  
Lower Figure—Lifting Over Side or 360 Degrees.*

	2.0 m (6 ft. 7 in.)	3.0 m (9 ft. 10 in.)	@ Max. Reach
3.0 m (9 ft. 10 in.)		<b>420 (925)</b>	<b>440 (970)</b>
		<b>420 (925)</b>	<b>440 (970)</b>
2.0 m (6 ft. 7 in.)		<b>500 (1102)</b>	<b>470 (1036)</b>
		<b>500 (1102)</b>	410 (904)
1.0 m (3 ft. 3 in.)		<b>680 (1500)</b>	<b>520 (1146)</b>
		<b>680 (1500)</b>	380 (838)
Ground	<b>1440 (3175)</b>	<b>760 (1675)</b>	<b>540 (1190)</b>
	930 (2050)	540 (1190)	360 (794)
–1.0 m (–3 ft. 3 in.)	<b>1250 (2755)</b>	<b>720 (1587)</b>	<b>580 (1278)</b>
	1000 (2205)	530 (1168)	440 (970)
–1.5 m (–4 ft. 11 in.)	<b>1200 (2645)</b>		<b>630 (1389)</b>
	950 (2094)		<b>640 (1410)</b>

**BLADE ABOVE GROUND**

*NOTE: Upper Figure—Lifting Over Front or Rear  
Lower Figure—Lifting Over Side or 360 Degrees*

	2.0 m (6 ft. 7 in.)	3.0 m (9 ft. 10 in.)	@ Max. Reach
3.0 m (9 ft. 10 in.)		<b>420 (925)</b>	<b>440 (970)</b>
		<b>420 (925)</b>	<b>440 (970)</b>
2.0 m (6 ft. 7 in.)		<b>500 (1102)</b>	400 (882)
		<b>500 (1102)</b>	400 (882)
1.0 m (3 ft. 3 in.)		<b>680 (1500)</b>	370 (816)
		570 (1257)	360 (794)
Ground	980 (2160)	510 (1124)	350 (772)
	940 (2072)	510 (1124)	350 (772)
–1.0 m (–3 ft. 3 in.)	1020 (2249)	510 (1124)	440 (970)
	990 (2183)	510 (1124)	430 (948)
–1.5 m (–4 ft. 11 in.)	<b>1200 (2645)</b>		<b>630 (1388)</b>
	960 (2116)		<b>640 (1410)</b>

05T;115 C47 110486

*Specifications*

### LIFT CAPACITIES—CANOPY (TOPS)

Ratings at bucket lift hook, machine equipped with 320 mm (13 in.) shoes, 0.08 m<sup>3</sup> (0.10 yd<sup>3</sup>) PCSA heaped bucket situated on firm, uniform supporting surface. Boldface type indicates hydraulic-limited capacities, light-face type indicates stability-limited capacities, in kg (lb). Figures do not exceed 87 percent of hydraulic capacities or 75 percent of weight needed to tip machine.

#### BLADE ON GROUND

*NOTE: Upper Figure—Lifting Over Front (Blade End).  
Lower Figure—Lifting Over Side or 360 Degrees.*

	2.0 m (6 ft. 7 in.)	3.0 m (9 ft. 10 in.)	@ Max. Reach
3.0 m (9 ft. 10 in.)		<b>420 (926)</b>	<b>440 (970)</b>
		<b>420 (926)</b>	<b>440 (970)</b>
2.0 m (6 ft. 7 in.)		<b>500 (1102)</b>	<b>470 (1036)</b>
		<b>500 (1102)</b>	360 (794)
1.0 m (3 ft. 3 in.)		<b>680 (1500)</b>	<b>520 (1146)</b>
		550 (1213)	340 (750)
Ground	<b>1440 (3175)</b>	<b>760 (1676)</b>	<b>540 (1190)</b>
	900 (1984)	510 (1124)	330 (728)
-1.0 m (-3 ft. 3 in.)	<b>1250 (2756)</b>	<b>720 (1587)</b>	<b>580 (1279)</b>
	950 (2094)	480 (1058)	410 (904)
-1.5 m (-4 ft. 11 in.)	<b>1200 (2646)</b>		<b>630 (1389)</b>
	980 (2160)		510 (1124)

#### BLADE ABOVE GROUND

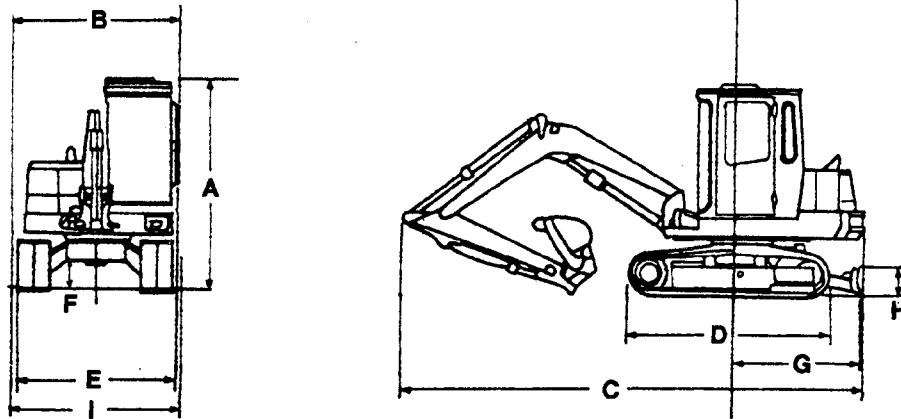
*NOTE: Upper Figure—Lifting Over Front or Rear  
Lower Figure—Lifting Over Side or 360 Degrees*

	2.0 m (6 ft. 7 in.)	3.0 m (9 ft. 10 in.)	@ Max. Reach
3.0 m (9 ft. 10 in.)		<b>420 (926)</b>	<b>440 (970)</b>
		<b>420 (926)</b>	<b>440 (970)</b>
2.0 m (6 ft. 7 in.)		<b>500 (1102)</b>	370 (816)
		<b>500 (1102)</b>	360 (794)
1.0 m (3 ft. 3 in.)		530 (1168)	330 (728)
		520 (1146)	330 (728)
Ground	910 (2006)	510 (1124)	330 (728)
	850 (1874)	480 (1058)	310 (683)
-1.0 m (-3 ft. 3 in.)	900 (1984)	460 (1014)	380 (838)
	900 (1984)	470 (1036)	390 (860)
-1.5 m (-4 ft. 11 in.)	<b>1200 (2646)</b>		<b>630 (1389)</b>
	980 (2160)		510 (1124)

05T;115 C48 110486

Specifications

50 EXCAVATOR



	Metric	U.S.		Metric	U.S.
A—Overall height			E—Width over tracks	1.82 m	6 ft 0 in.
Canopy	2.49 m	8 ft 2 in.	F—Ground clearance	330 mm	1 ft 1 in.
Cab	2.46 m	8 ft 1 in.	G—Rear swing radius	1.52 m	5 ft 0 in.
B—Overall width			H—Blade height	350 mm	1 ft 2 in.
Canopy	1.84 m	6 ft 1 in.	I—Blade width	1.84 m	6 ft 1 in.
Cab	1.86 m	6 ft 1 in.			
C—Overall length	5.43 m	17 ft 10 in.			
D—Overall track length	2.38 m	7 ft 10 in.			

028;T6313AC 05T;115 C33 080486

OPERATING WEIGHTS

Canopy .....	4205 kg (9251 lb)
Cab .....	4355 kg (9581 lb)

NOTE: Operating weights include 80 kg (176 lb) operator.

05T;115 C38 080486

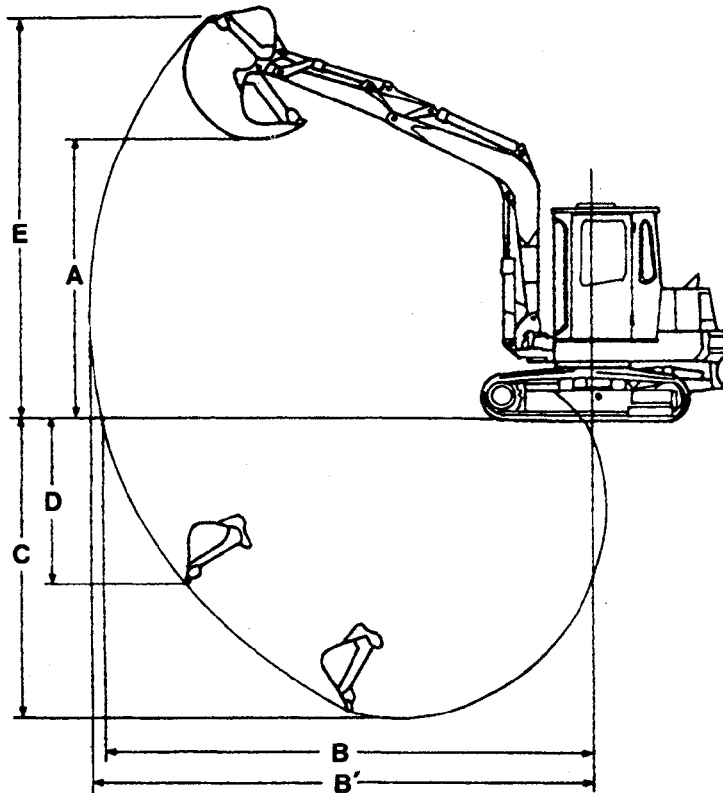
## Specifications

### DRAIN AND REFILL CAPACITIES

	Metric	U.S.
Fuel tank	54 L	14.3 gal
Cooling system	7.4 L	2 gal
Engine oil and filter	7.5 L	8 qt
Hydraulic reservoir	80 L	21.1 gal
Swing gearbox	2.3 L	2.4 qt
Propel drive (each)	0.8 L	0.8 qt

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### WORKING RANGES



	Metric	U.S.		Metric	U.S.
A—Max. dumping height, bucket with teeth	3.25 m	10 ft 8 in.	C—Max. digging depth Using dozer blade	3.50 m	11 ft 6 in.
B—Max. reach at ground level	5.56 m	18 ft 3 in.	Not using dozer blade	3.70 m	12 ft 2 in.
B'—Max. digging radius	5.70 m	18 ft 8 in.	D—Max. vertical wall digging depth	1.70 m	5 ft 7 in.
			E—Max. clearance height at end of dumping	4.64 m	15 ft 3 in.

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