

# 450G, 455G, 550G, 555G, 650G Crawler Repair

## TECHNICAL MANUAL 450G, 455G, 550G, 555G, 650G Crawler Repair

TM1404 14JUN11 (ENGLISH)



For complete service information also see:

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*Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication.  
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## Section 00 General Information

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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.



TS227 —UN—23AUG88

DX,FLAME -19-29SEP98-1/1

**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).



TS204 —UN—23AUG88

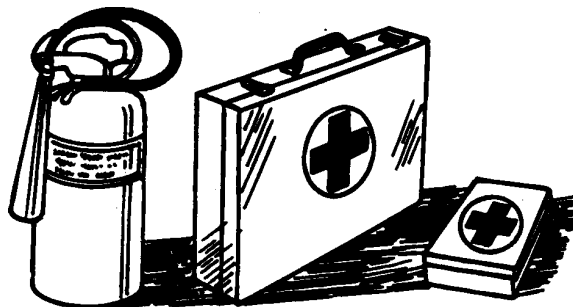
DX,SPARKS -19-03MAR93-1/1

**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.



TS291 —UN—23AUG88

DX,FIRE2 -19-03MAR93-1/1



## 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:

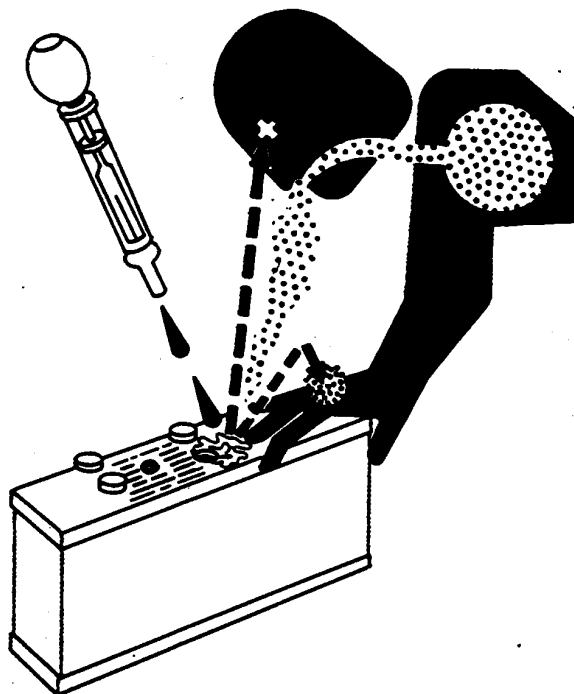
1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Use proper jump start procedure.

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 15—30 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 quarts).
3. Get medical attention immediately.



TS203 —UN—23AUG88

DX, POISON -19-21APR93-1/1

## Handle Chemical Products Safely

Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with John Deere equipment include such items as lubricants, coolants, paints, and adhesives.

A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.

Check the MSDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and recommended equipment.

(See your John Deere dealer for MSDS's on chemical products used with John Deere equipment.)



TS1132 —UN—26NOV90

DX, MSDS, NA -19-03MAR93-1/1

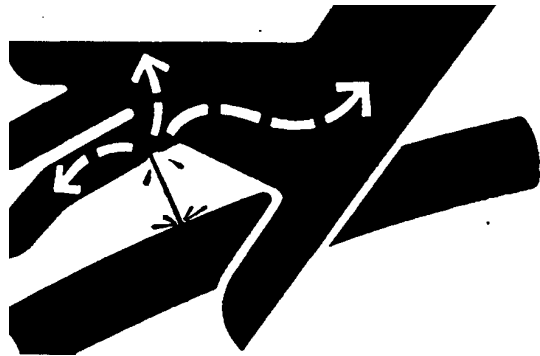
### Avoid High-Pressure Fluids

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 should reference a knowledgeable medical source. Such information is available in English from Deere & Company Medical Department in



Moline, Illinois, U.S.A., by calling 1-800-822-8262 or +1 309-748-5636.

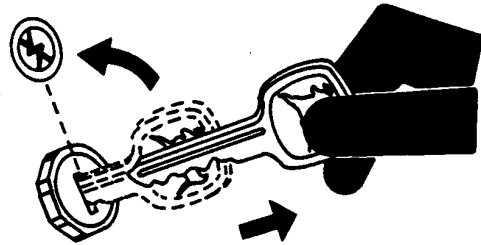
X9811 —UN—23AUG88

DX,FLUID -19-20AUG09-1/1

### 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.



TS230 —UN—24MAY89

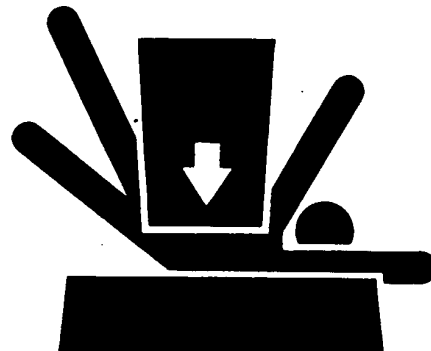
DX,PARK -19-04JUN90-1/1

### Support Machine Properly

Always lower the attachment or implement to the ground before you work on the machine. If the work requires that the machine or attachment be lifted, provide secure support for them. If left in a raised position, hydraulically supported devices can settle or leak down.

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.

When implements or attachments are used with a machine, always follow safety precautions listed in the implement or attachment operator's manual.



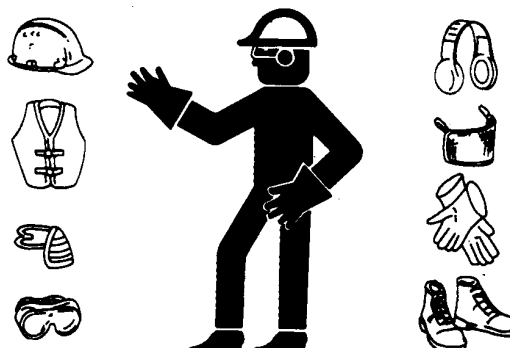
TS229 —UN—23AUG88

DX,LOWER -19-24FEB00-1/1

## Wear Protective Clothing

Wear close fitting clothing and safety equipment appropriate to the job.

Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating machine.



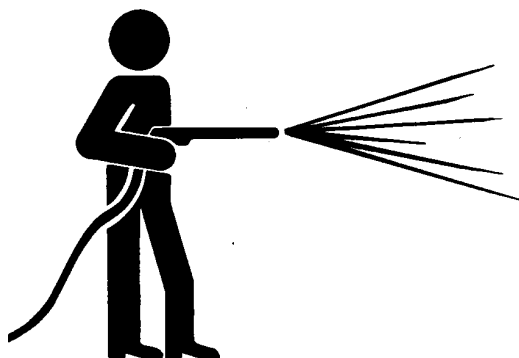
TS206 —UN—23AUG88

DX,WEAR2 -19-03MAR93-1/1

## 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.



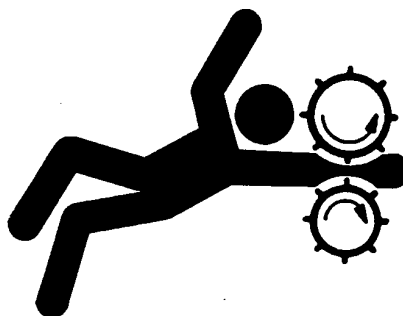
T6642EJ —UN—18OCT88

DX,CLEAN -19-04JUN90-1/1

## 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.



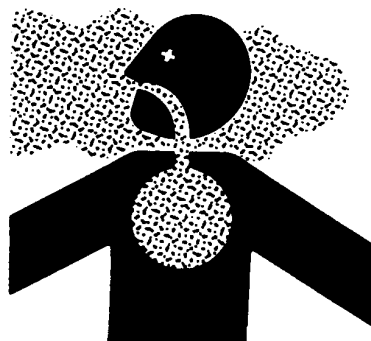
TS228 —UN—23AUG88

DX,LOOSE -19-04JUN90-1/1

### 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.



TS220 —UN—23AUG88

DX,AIR -19-17FEB99-1/1

### Illuminate Work Area Safely

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.



TS223 —UN—23AUG88

DX,LIGHT -19-04JUN90-1/1

### Replace Safety Signs

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



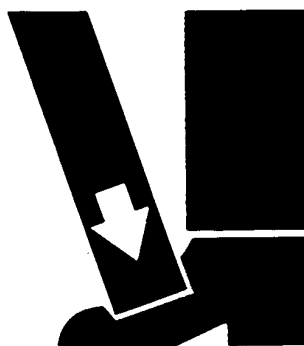
TS201 —UN—23AUG88

DX,SIGNS1 -19-04JUN90-1/1

## 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.



TS226 —UN—23AUG88

DX,LIFT -19-04JUN90-1/1

## Remove Paint Before Welding or Heating

Avoid potentially toxic fumes and dust.

Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.

Remove paint before heating:

- Remove paint a minimum of 100 mm (4 in.) from area to be affected by heating. If paint cannot be removed, wear an approved respirator before heating or welding.
- If you sand or grind paint, avoid breathing the dust. Wear an approved respirator.
- If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

Do not use a chlorinated solvent in areas where welding will take place.

Do all work in an area that is well ventilated to carry toxic fumes and dust away.

Dispose of paint and solvent properly.



TS220 —UN—23AUG88

DX,PAINT -19-24JUL02-1/1

## Avoid Heating Near Pressurized Fluid Lines

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can accidentally burst when heat goes beyond the immediate flame area.



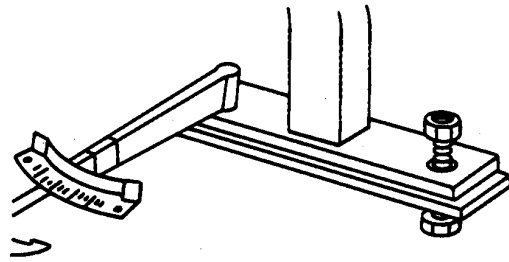
TS953 —UN—15MAY90

DX,TORCH -19-10DEC04-1/1

## 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 by welding, bending, drilling, or cutting. A damaged ROPS should be replaced, not reused.



TS212 —UN—23AUG88

DX,ROPS3 -19-03MAR93-1/1

## Service Tires Safely

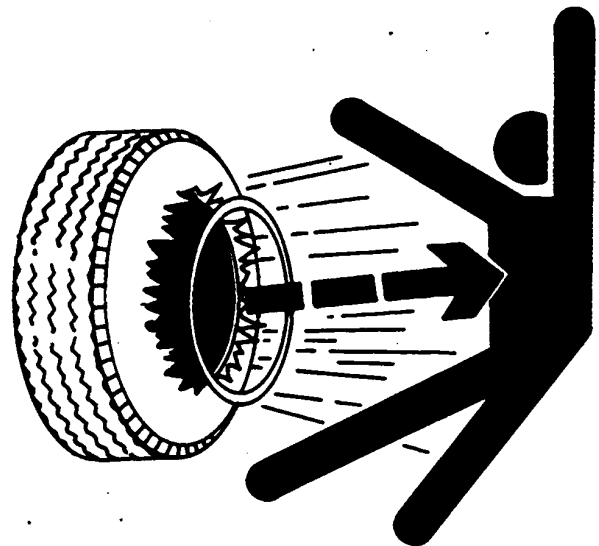
Explosive separation of a tire and rim parts can cause serious injury or death.

Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Never weld or heat a wheel and tire assembly. The heat can cause an increase in air pressure resulting in a tire explosion. Welding can structurally weaken or deform the wheel.

When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly. Use a safety cage if available.

Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



TS211 —UN—23AUG88

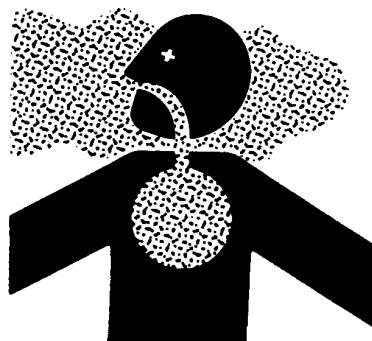
DX,RIM -19-24AUG90-1/1

## 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 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 material containing asbestos. When servicing, wear an approved respirator. A special vacuum cleaner is recommended to clean asbestos. If not available, apply a mist of oil or water on the material containing asbestos.



Keep bystanders away from the area.

DX,DUST -19-15MAR91-1/1

TS220 —UN—23AUG88

## Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet, and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.



DX,SERV -19-17FEB99-1/1

TS218 —UN—23AUG88

### Use Proper Tools

Use tools appropriate to the work. Makeshift tools and procedures can create safety hazards.

Use power tools only to loosen threaded parts and fasteners.

For loosening and tightening hardware, use the correct size tools. DO NOT use U.S. measurement tools on metric fasteners. Avoid bodily injury caused by slipping wrenches.

Use only service parts meeting John Deere specifications.



TS779 —UN—08NOV89

DX,REPAIR -19-17FEB99-1/1

### Dispose of Waste Properly

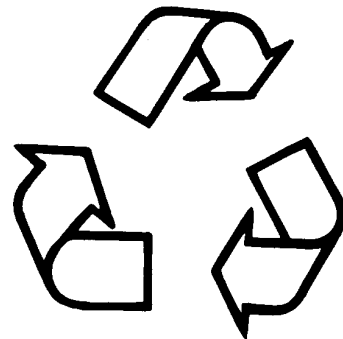
Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with John Deere equipment include such items as oil, fuel, coolant, brake fluid, filters, and batteries.

Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.

Do not pour waste onto the ground, down a drain, or into any water source.

Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations may require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.

Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your John Deere dealer.



TS1133 —UN—26NOV90

DX,DRAIN -19-03MAR93-1/1

### Live With Safety

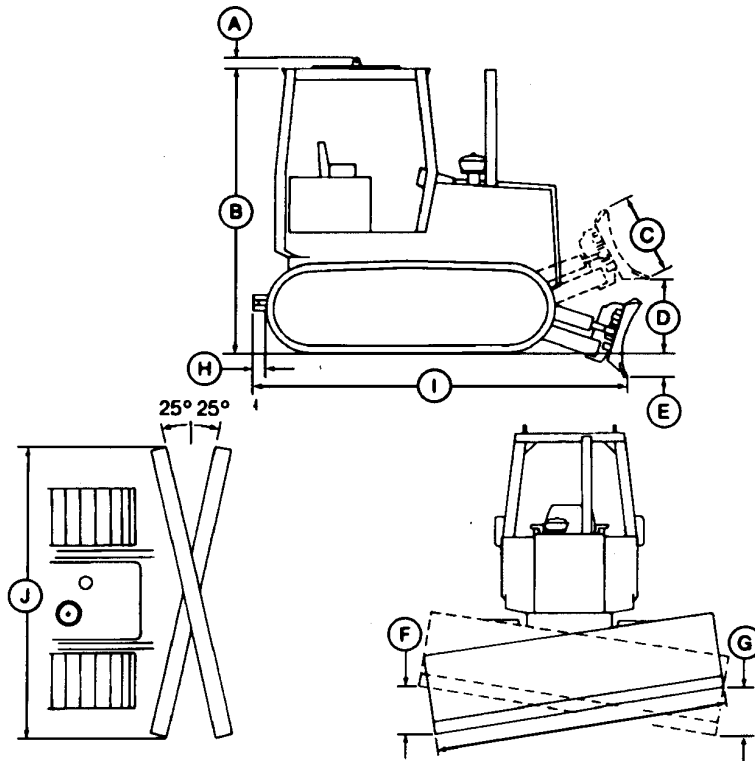
Before returning machine to customer, make sure machine is functioning properly, especially the safety systems. Install all guards and shields.



TS231 —19—07OCT88

DX,LIVE -19-25SEP92-1/1

### 450G Crawler Dozer Specifications



T7347AC —UN—23JUL90

**NOTE:** Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective

structure, full fuel tank, 80 kg (175 lb) operator, and standard equipment.

Blade capacity shown is for a 2230 mm (7 ft 3.8 in.) blade. All blades are interchangeable between the 450G, 550G, and the 650G.

| Item     | Measurement  | Specification          |
|----------|--------------|------------------------|
| Operator | Weight       | 80 kg (175 lb)         |
| Blade    | Angled Width | 2230 mm (7 ft 3.8 in.) |

|                               |                          |
|-------------------------------|--------------------------|
| A—Canopy extension            | 60 mm (2.4 in.)          |
| B—Canopy height               | 2.70 m (8 ft 10 in.)     |
| C—Blade height                | 827 mm (2 ft 8.6 in.)    |
| D—Blade lift height           | 815 mm (2 ft 8.1 in.)    |
| E—Digging depth               | 504 mm (1 ft 7.9 in.)    |
| F—Blade tilt (right side):    |                          |
| Standard blade                | 330 mm (1 ft 1 in.)      |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| G—Blade tilt (left side):     |                          |
| Standard blade                | 330 mm (1 ft 1 in.)      |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| H—Drawbar extension           | 280 mm (11 in.)          |
| I—Overall length              | 3917 mm (12 ft 10.2 in.) |
| J—Blade width:                |                          |
| Standard blade (angled width) | 2230 mm (7 ft 3.8 in.)   |
| Wide blade (angled width)     | 2686 mm (8 ft 9.7 in.)   |
| Standard                      | 2464 mm (8 ft 1 in.)     |
| Wide                          | 2921 mm (9 ft 7 in.)     |

Continued on next page

TX,115,FF1816 -19-12JAN93-1/2

## General Specifications

|                 |                                            |
|-----------------|--------------------------------------------|
| Track gauge:    | 1450 mm (57 in.)                           |
| Blade capacity: |                                            |
| Standard blade  | 1.3 m <sup>3</sup> (1.63 yd <sup>3</sup> ) |
| Wide blade      | 1.6 m <sup>3</sup> (2.1 yd <sup>3</sup> )  |

Engine: John Deere 4045D (Direct Drive only) or 4045T (S.N. —840460) or John Deere PowerTech 4.5L engine type 4045TT061 (S.N. 840461— )

|                                                          |                                                                       |
|----------------------------------------------------------|-----------------------------------------------------------------------|
| Type                                                     | Naturally aspirated (4045D) altitude compensating turbocharge (4045T) |
| Bore and stroke                                          | 106.5 x 127 mm (4.19 x 5.00 in.)                                      |
| No. of cylinders                                         | 4                                                                     |
| Fuel consumption, typical (S.N. —840460)                 | 4.9 to 8.7 L/h (5 to 2.3 gal/hr)                                      |
| Fuel consumption, typical (S.N. 840461— )                | 6.3 to 9.5 L/h (1.7 to 2.5 gal/hr)                                    |
| Compression ratio (S.N. —840460)                         | 17.8 to 1                                                             |
| Compression ratio (S.N. 840461— )                        | 17 to 1                                                               |
| Electrical system                                        | 12 volt (with battery disconnect switch, if equipped)                 |
| Battery                                                  | 12 volt                                                               |
| Alternator                                               | 65 amp                                                                |
| SAE net power at 2100 rpm<br>SAE gross power at 2100 rpm | 52 kW (70 hp)<br>54.5 kW (73 hp)                                      |
| Maximum net torque at 1300 rpm                           | 309 N·m (228 lb·ft)                                                   |
| Drawbar                                                  | 38 kW (51 hp)                                                         |
| Displacement (S.N. —840460)                              | 4.524 L (276 cu in.)                                                  |
| Displacement (S.N. 840461— )                             | 4.5 L                                                                 |

Transmission: Powershift (4F-4R) with torque converter or direct drive. Full power shift, Dura-Shift with torque converter or direct drive, designed and built by John Deere. You can power shift easily from one gear to another as conditions change without stopping the machine or using a clutch. Power control inching pedal adds versatility. Four speeds forward and reverse allow the operator to match speeds to the working conditions.

|                  |                       |
|------------------|-----------------------|
| Hydraulic pump:  | Gear                  |
| Pressure         | 18 961 kPa (2750 psi) |
| Flow at 2100 rpm | 64 L/min (17 gpm)     |

|           |                   |
|-----------|-------------------|
| Steering: |                   |
| Clutches  | Wet multiple disk |
| Brakes    | Wet band          |

|                                    |                                                 |
|------------------------------------|-------------------------------------------------|
| Undercarriage:                     |                                                 |
| Grouser, closed-center             | 406 mm (16 in.)                                 |
| Track shoes, each side             | 37                                              |
| Ground contact area                | 15 690 cm <sup>2</sup> (2432 in. <sup>2</sup> ) |
| Ground pressure (direct drive)     | 44.6 kPa (6.47 psi)                             |
| Ground pressure (torque converter) | 45.2 kPa (6.55 psi)                             |

Operating Weight (with ROPS):

|                                            |                     |
|--------------------------------------------|---------------------|
| Direct Drive                               | 7152 kg (15 732 lb) |
| Torque Converter                           | 7243 kg (15 932 lb) |
| 450G—TC with Wide Shoes (Direct Drive)     | 7586 kg (16 688 lb) |
| 450G—TC with Wide Shoes (Torque Converter) | 7677 kg (16 888 lb) |

TX,115,FF1816 -19-12JAN93-2/2

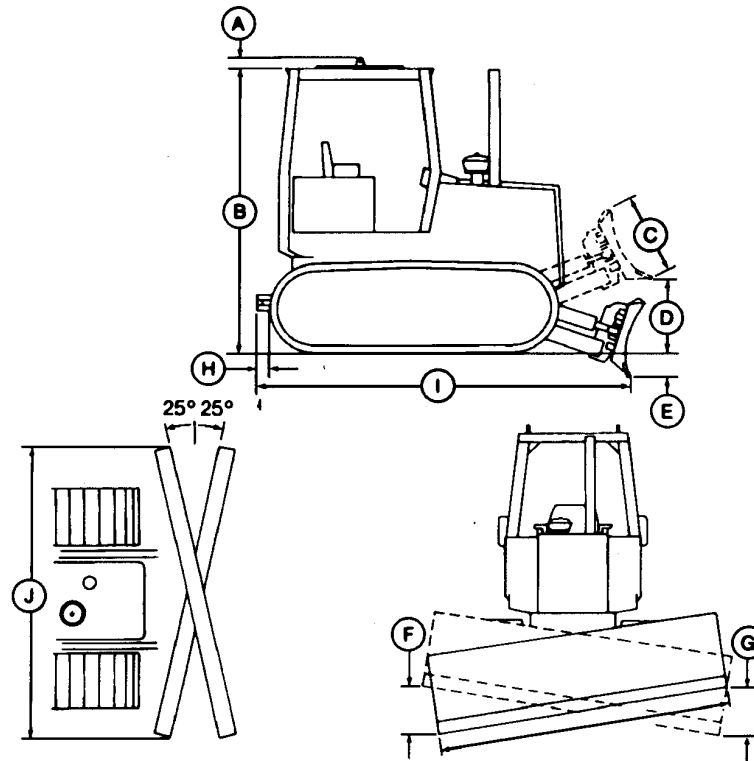
## General Specifications

### 450G Drain and Refill Capacities

|                                                     | Metric  | English                                       |
|-----------------------------------------------------|---------|-----------------------------------------------|
| Fuel tank                                           | 155 L   | 41 gal                                        |
| Engine coolant                                      | 17 L    | 18 qt                                         |
| Engine oil, including filter change (S.N. —840460)  | 8.5 L   | 9 qt                                          |
| Engine oil, including filter change (S.N. 840461— ) | 14 L    | 14.8 qt                                       |
| Transmission:                                       |         |                                               |
| Transmission, direct drive (S.N. —790984)           | 80.25 L | 21.2 gal add 34 L (9 gal) w/winch if equipped |
| Transmission, direct drive (S.N. 790985— )          | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
| Transmission, torque converter                      | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
| Hydraulic reservoir                                 | 38 L    | 10 gal                                        |
| Hydraulic system                                    | 55.3 L  | 14.6 gal                                      |
| Final drive (each side)                             | 6.6 L   | 7 qt                                          |

TX,115,FF1917 -19-08OCT93-1/1

## 450G—LT Crawler Dozer Specifications



**NOTE:** Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective

structure, full fuel tank, 80 kg (175 lb) operator, and standard equipment.

Blade capacity shown is for a 2230 mm (7 ft 3.8 in.) blade. All blades are interchangeable between the 450G, 550G, and the 650G.

| Item     | Measurement  | Specification          |
|----------|--------------|------------------------|
| Operator | Weight       | 80 kg (175 lb)         |
| Blade    | Angled Width | 2230 mm (7 ft 3.8 in.) |

|                               |                          |
|-------------------------------|--------------------------|
| A—Canopy extension            | 60 mm (2.4 in.)          |
| B—Canopy height               | 2.70 m (8 ft 10 in.)     |
| C—Blade height                | 827 mm (2 ft 8.6 in.)    |
| D—Blade lift height           | 815 mm (2 ft 8.1 in.)    |
| E—Digging depth               | 504 mm (1 ft 7.9 in.)    |
| F—Blade tilt (right side):    |                          |
| Standard blade                | 330 mm (1 ft 1 in.)      |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| G—Blade tilt (left side):     |                          |
| Standard blade                | 330 mm (1 ft 1 in.)      |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| H—Drawbar extension           | 280 mm (11 in.)          |
| I—Overall length              | 3917 mm (12 ft 10.2 in.) |
| J—Blade width:                |                          |
| Standard blade (angled width) | 2230 mm (7 ft 3.8 in.)   |
| Wide blade (angled width)     | 2686 mm (8 ft 9.7 in.)   |
| Standard                      | 2464 mm (8 ft 1 in.)     |
| Wide                          | 2921 mm (9 ft 7 in.)     |

Continued on next page

TX,115,FF1816 -19-12JAN93-1/2

T7947AC—UN—23JUL90

## General Specifications

|                 |                                            |
|-----------------|--------------------------------------------|
| Track gauge:    | 1450 mm (57 in.)                           |
| Blade capacity: |                                            |
| Standard blade  | 1.3 m <sup>3</sup> (1.63 yd <sup>3</sup> ) |
| Wide blade      | 1.6 m <sup>3</sup> (2.1 yd <sup>3</sup> )  |

Engine: John Deere 4045D (Direct Drive only) or 4045T (S.N. —840460) or John Deere PowerTech 4.5L engine type 4045TT061 (S.N. 840461— )

|                                           |                                                                          |
|-------------------------------------------|--------------------------------------------------------------------------|
| Type                                      | Naturally aspirated (4045D) or altitude compensating turbocharge (4045T) |
| Bore and stroke                           | 106.5 x 127 mm (4.19 x 5.00 in.)                                         |
| No. of cylinders                          | 4                                                                        |
| Fuel consumption, typical (S.N. —840460)  | 4.9 to 8.7 L/h (5 to 2.3 gal/hr)                                         |
| Fuel consumption, typical (S.N. 840461— ) | 6.3 to 9.5 L/h (1.7 to 2.5 gal/hr)                                       |
| Compression ratio (S.N. —840460)          | 17.8 to 1                                                                |
| Compression ratio (S.N. 840461— )         | 17 to 1                                                                  |
| Electrical system                         | 12 volt (with battery disconnect switch, if equipped)                    |
| Battery                                   | 12 volt                                                                  |
| Alternator (S.N. —840460)                 | 65 amp                                                                   |
| Alternator (S.N. 840461— )                | 95 amp                                                                   |
| SAE net power at 2100 rpm                 | 52 kW (70 hp)                                                            |
| SAE gross power at 2100 rpm               | 54.5 kW (73 hp)                                                          |
| Maximum net torque at 1300 rpm            | 309 N·m (228 lb-ft)                                                      |
| Drawbar                                   | 38 kW (51 hp)                                                            |
| Displacement (S.N. —840460)               | 4.524 L (276 cu in.)                                                     |
| Displacement (S.N. 840461— )              | 4.5 L                                                                    |

Transmission: Powershift (4F-4R) with torque converter or direct drive. Full power shift, Dura-Shift with torque converter or direct drive, designed and built by John Deere. You can power shift easily from one gear to another as conditions change without stopping the machine or using a clutch. Power control inching pedal adds versatility. Four speeds forward and reverse allow the operator to match speeds to the working conditions.

|                  |                       |
|------------------|-----------------------|
| Hydraulic pump:  | Gear                  |
| Pressure         | 18 961 kPa (2750 psi) |
| Flow at 2100 rpm | 64 L/min (17 gpm)     |

|           |                   |
|-----------|-------------------|
| Steering: |                   |
| Clutches  | Wet multiple disk |
| Brakes    | Wet band          |

|                                    |                                                 |
|------------------------------------|-------------------------------------------------|
| Undercarriage:                     |                                                 |
| Grouser, closed-center             | 406 mm (16 in.)                                 |
| Track shoes, each side             | 40                                              |
| Ground contact area                | 17 632 cm <sup>2</sup> (2733 in. <sup>2</sup> ) |
| Ground pressure (direct drive)     | 41.1 kPa (5.97 psi)                             |
| Ground pressure (torque converter) | 41.7 kPa (6.04 psi)                             |

|                               |                     |
|-------------------------------|---------------------|
| Operating Weight (with ROPS): |                     |
| Direct Drive                  | 7415 kg (16 310 lb) |
| Torque Converter              | 7505 kg (16 510 lb) |

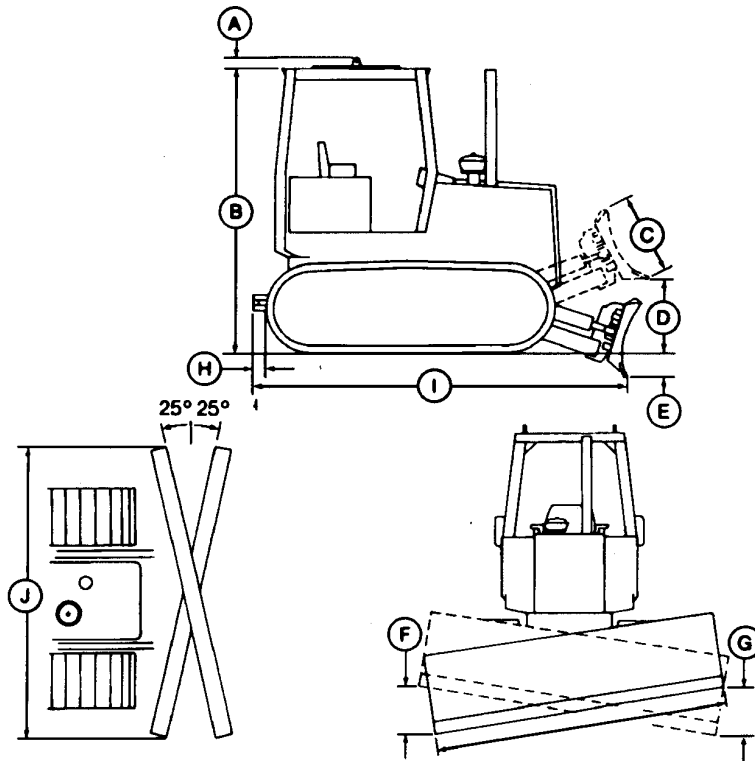
TX,115,FF1816 -19-12JAN93-2/2

## General Specifications

### 450G—LT Drain and Refill Capacities

|                                                     | Metric  | English                                       |
|-----------------------------------------------------|---------|-----------------------------------------------|
| Fuel tank                                           | 155 L   | 41 gal                                        |
| Engine coolant                                      | 17 L    | 18 qt                                         |
| Engine oil, including filter change (S.N. —840460)  | 8.5 L   | 9 qt                                          |
| Engine oil, including filter change (S.N. 840461— ) | 14 L    | 14.8 qt                                       |
| Transmission:                                       |         |                                               |
| Transmission, direct drive (S.N. —790984)           | 80.25 L | 21.2 gal add 34 L (9 gal) w/winch if equipped |
| Transmission, direct drive (S.N. 790985— )          | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
| Transmission, torque converter                      | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
| Hydraulic reservoir                                 | 38 L    | 10 gal                                        |
| Hydraulic system                                    | 55.3 L  | 14.6 gal                                      |
| Final drive (each side)                             | 8.5 L   | 9 qt                                          |

TX,115,FF1917 -19-08OCT93-1/1

**450G—LGP Crawler Dozer Specifications**

**NOTE:** Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective

structure, full fuel tank, 80 kg (175 lb) operator, and standard equipment.

Blade capacity shown is for a 2230 mm (7 ft 3.8 in.) blade. All blades are interchangeable between the 450G, 550G, and the 650G.

| Item     | Measurement  | Specification          |
|----------|--------------|------------------------|
| Operator | Weight       | 80 kg (175 lb)         |
| Blade    | Angled Width | 2230 mm (7 ft 3.8 in.) |

|                               |                          |
|-------------------------------|--------------------------|
| A—Canopy extension            | 60 mm (2.4 in.)          |
| B—Canopy height               | 2.70 m (8 ft 10 in.)     |
| C—Blade height                | 827 mm (2 ft 8.6 in.)    |
| D—Blade lift height           | 815 mm (2 ft 8.1 in.)    |
| E—Digging depth               | 504 mm (1 ft 7.9 in.)    |
| F—Blade tilt (right side):    |                          |
| Standard blade                | 330 mm (1 ft 1 in.)      |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| G—Blade tilt (left side):     |                          |
| Standard blade                | 330 mm (1 ft 1 in.)      |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| H—Drawbar extension           | 280 mm (11 in.)          |
| I—Overall length              | 3917 mm (12 ft 10.2 in.) |
| J—Blade width:                |                          |
| Standard blade (angled width) | 2230 mm (7 ft 3.8 in.)   |
| Wide blade (angled width)     | 2686 mm (8 ft 9.7 in.)   |
| Standard                      | 2464 mm (8 ft 1 in.)     |
| Wide                          | 2921 mm (9 ft 7 in.)     |

Continued on next page

TX,115,FF1816 -19-12JAN93-1/2

T7347AC —UN—23JUL90

## General Specifications

|                 |                                            |
|-----------------|--------------------------------------------|
| Track gauge:    | 1450 mm (57 in.)                           |
| Blade capacity: |                                            |
| Standard blade  | 1.3 m <sup>3</sup> (1.63 yd <sup>3</sup> ) |
| Wide blade      | 1.6 m <sup>3</sup> (2.1 yd <sup>3</sup> )  |

Engine: John Deere 4045D (Direct Drive only) or 4045T (S.N. —840460) or John Deere PowerTech 4.5L engine type 4045TT061 (S.N. 840461— )

|                                           |                                                          |
|-------------------------------------------|----------------------------------------------------------|
| Type                                      | Naturally aspirated or altitude compensating turbocharge |
| Bore and stroke                           | 106.5 x 127 mm (4.19 x 5.00 in.)                         |
| No. of cylinders                          | 4                                                        |
| Fuel consumption, typical (S.N. —840460)  | 4.9 to 8.7 L/h (5 to 2.3 gal/hr)                         |
| Fuel consumption, typical (S.N. 840461— ) | 6.3 to 9.5 L/h (1.7 to 2.5 gal/hr)                       |
| Compression ratio (S.N. —840460)          | 17.8 to 1                                                |
| Compression ratio (S.N. 840461— )         | 17 to 1                                                  |
| Electrical system                         | 12 volt (with battery disconnect switch, if equipped)    |
| Battery                                   | 12 volt                                                  |
| Alternator                                | 65 amp                                                   |
| SAE net power at 2100 rpm                 | 52 kW (70 hp)                                            |
| SAE gross power at 2100 rpm               | 54.5 kW (73 hp)                                          |
| Maximum net torque at 1300 rpm            | 309 N·m (228 lb-ft)                                      |
| Drawbar                                   | 38 kW (51 hp)                                            |
| Displacement (S.N. —840460)               | 4.524 L (276 cu in.)                                     |
| Displacement (S.N. 840461— )              | 4.5 L                                                    |

Transmission: Powershift (4F-4R) with torque converter or direct drive. Full power shift, Dura-Shift with torque converter or direct drive, designed and built by John Deere. You can power shift easily from one gear to another as conditions change without stopping the machine or using a clutch. Power control inching pedal adds versatility. Four speeds forward and reverse allow the operator to match speeds to the working conditions.

|                  |                       |
|------------------|-----------------------|
| Hydraulic pump:  | Gear                  |
| Pressure         | 18 961 kPa (2750 psi) |
| Flow at 2100 rpm | 64 L/min (17 gpm)     |

### Steering:

|          |                   |
|----------|-------------------|
| Clutches | Wet multiple disk |
| Brakes   | Wet band          |

### Undercarriage:

|                                    |                                                 |
|------------------------------------|-------------------------------------------------|
| Grouser, closed-center             | 610 mm (24 in.)                                 |
| Track shoes, each side             | 40                                              |
| Ground contact area                | 26 445 cm <sup>2</sup> (4099 in. <sup>2</sup> ) |
| Ground pressure (direct drive)     | 29.0 kPa (4.2 psi)                              |
| Ground pressure (torque converter) | 29.3 kPa (4.25 psi)                             |

### Operating Weight (with ROPS):

|                           |                     |
|---------------------------|---------------------|
| 450G—LGP Direct Drive     | 7833 kg (17 232 lb) |
| 450G—LGP Torque Converter | 7924 kg (17 432 lb) |

TX,115,FF1816 -19-12JAN93-22

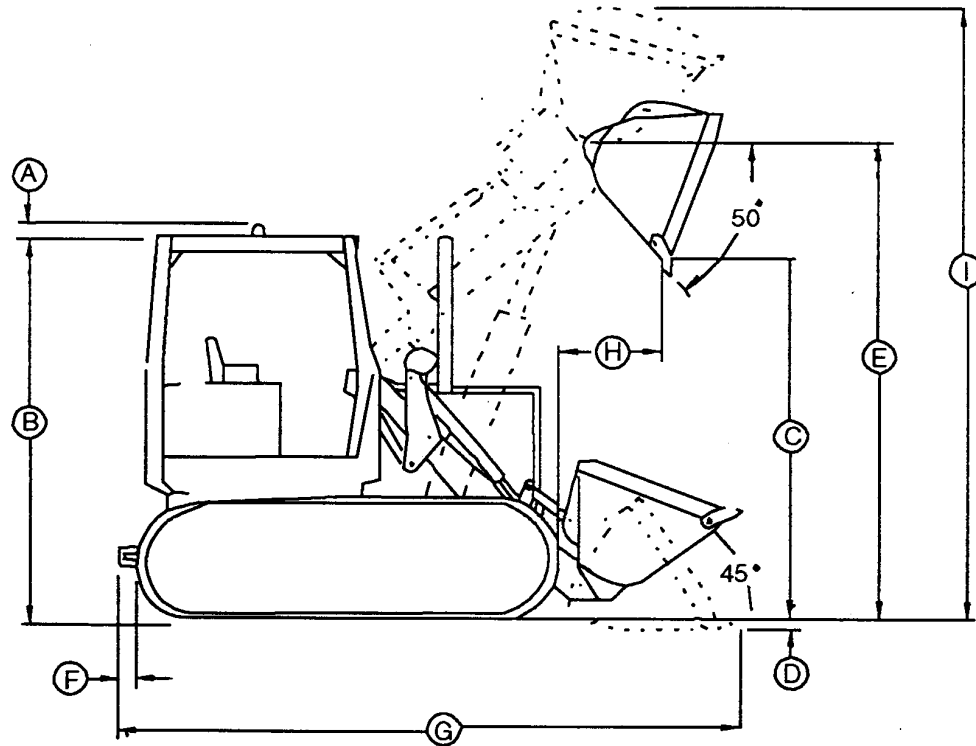
## General Specifications

### 450G—LGP Drain and Refill Capacities

|                                                     |                                            | Metric  | English                                       |
|-----------------------------------------------------|--------------------------------------------|---------|-----------------------------------------------|
| Fuel tank                                           |                                            | 155 L   | 41 gal                                        |
| Engine coolant                                      |                                            | 17 L    | 18 qt                                         |
| Engine oil, including filter change (S.N. —840460)  |                                            | 8.5 L   | 9 qt                                          |
| Engine oil, including filter change (S.N. 840461— ) |                                            | 14 L    | 14.8 qt                                       |
| Transmission:                                       |                                            |         |                                               |
|                                                     | Transmission, direct drive (S.N. —790984)  | 80.25 L | 21.2 gal add 34 L (9 gal) w/winch if equipped |
|                                                     | Transmission, direct drive (S.N. 790985— ) | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
|                                                     | Transmission, torque converter             | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
| Hydraulic reservoir                                 |                                            | 38 L    | 10 gal                                        |
| Hydraulic system                                    |                                            | 55.3 L  | 14.6 gal                                      |
| Final drive (each side)                             |                                            | 8.5 L   | 9 qt                                          |

TX,115,FF1917 -19-08OCT93-1/1

## 455G Crawler Loader Specifications



**NOTE:** Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE Standards. Except where otherwise noted, these specifications

are based on a machine with roll-over protective structure, full fuel tank, 80 kg (175 lb) operator, and standard equipment.

| Item                                             | Measurement          | Specification         |                     |                     |
|--------------------------------------------------|----------------------|-----------------------|---------------------|---------------------|
| Operator                                         | Weight               | 80 kg (175 lb)        |                     |                     |
|                                                  |                      | <b>Standard Track</b> | <b>Wide-Track</b>   | <b>Multipurpose</b> |
| A—Canopy top                                     |                      | 60 mm (2.4 in.)       | 60 mm (2.4 in.)     | 60 mm (2.4 in.)     |
| B—Overall height:                                |                      |                       |                     |                     |
|                                                  | Standard height ROPS | 2708 mm (106.6 in.)   | 2708 mm (106.6 in.) | 2708 mm (106.6 in.) |
|                                                  | Low-profile ROPS     | 2588 mm (101.9 in.)   | 2588 mm (101.9 in.) | 2588 mm (101.9 in.) |
|                                                  | Cab                  | 2769 mm (109 in.)     | 2769 mm (109 in.)   | 2769 mm (109 in.)   |
| C—Dump clearance, maximum height (45° discharge) |                      | 2620 mm (103.1 in.)   | 2635 mm (103.7 in.) | 2485 mm (97.8 in.)  |
| D—Digging depth                                  |                      | 135 mm (5.3 in.)      | 135 mm (5.3 in.)    | 135 mm (5.3 in.)    |
| E—Height to hinge pin                            |                      | 3251 mm (128 in.)     | 3251 mm (128 in.)   | 3251 mm (128 in.)   |
| F—Tow bar                                        |                      | 533 mm (1 ft 9 in.)   | 533 mm (1 ft 9 in.) | 533 mm (1 ft 9 in.) |
| G <sup>a</sup> —Overall length                   |                      | 4564 mm (179.7 in.)   | 4448 mm (175.1 in.) | 4638 mm (182.6 in.) |
| H—Reach at max height (45° discharge)            |                      | 871 mm (34.3 in.)     | 773 mm (30.4 in.)   | 880 mm (34.6 in.)   |
| I—Maximum operating height                       |                      | 4285 mm (168.7 in.)   | 4169 mm (164.1 in.) | 4304 mm (169.4 in.) |
| Track gauge:                                     |                      |                       |                     |                     |
|                                                  | Standard Track       | 1450 mm (57 in.)      |                     |                     |
|                                                  | Wide Track           | 1727 mm (68 in.)      |                     |                     |

<sup>a</sup>Includes 2 counterweights. Each counterweight is 50.5 mm (2 in.) thick.

|         |                     |                                        |
|---------|---------------------|----------------------------------------|
| Engine: |                     |                                        |
|         | Type (S.N. —840460) | John Deere 4045T and 4045D             |
|         | Type (S.N. 840461—) | John Deere 4.5 L engine type 4045TT067 |

Continued on next page

TX,9000,RB178 -19-14JUN11-1/2

T8198BD —UN—14APR94

## General Specifications

|                                   |                                                      |
|-----------------------------------|------------------------------------------------------|
| Rated power at 2100 rpm           | SAE net 52.2 kW (70 hp)<br>SAE gross 54.5 kW (73 hp) |
| Bore and stroke                   | 106.5 x 127 mm (4.19 x 5.00 in.)                     |
| No. of cylinders                  | 4                                                    |
| Displacement (S.N. —840460)       | 4.524 L (276 cu in.)                                 |
| Displacement (S.N. 840461— )      | 4.5 L                                                |
| Compression ratio (S.N. —840460)  | 16.2 to 1                                            |
| Compression ratio (S.N. 840461— ) | 17 to 1                                              |
| Electrical system                 | 12 volt (with battery disconnect switch if equipped) |
| Alternator                        | 65 amp                                               |
| Maximum net torque at 1300 rpm    | 309 N·m (250 lb-ft)                                  |
| Cooling system pressure           | 69 kPa (10 psi)                                      |

Transmission: Full power shift, Dura-Shift direct drive transmission is designed and built by John Deere. You can power shift easily from one gear to another as conditions change without stopping the machine or using a clutch. Power control inching pedal adds versatility. Four speeds forward and reverse allow the operator to match speeds to the working conditions.

### Hydraulics:

|                  |                       |
|------------------|-----------------------|
| Pump             | Gear                  |
| Pressure         | 17 927 kPa (2600 psi) |
| Flow at 2100 rpm | 118 L/min (31 gpm)    |

### Cylinders:

|                        |                                        |
|------------------------|----------------------------------------|
| Boom (bore x stroke)   | 100 mm (3.93 in.) x 827 mm (32.55 in.) |
| Bucket (bore x stroke) | 90 mm (3.5 in.) x 744 mm (29.30 in.)   |
| Cylinder rod dia.      | 50 mm (1.96 in.)                       |

### Steering:

|          |                    |
|----------|--------------------|
| Clutches | Wet multiple disks |
| Brakes   | Wet band           |

### Undercarriage:

#### Standard Track:

|                                   |                                                 |
|-----------------------------------|-------------------------------------------------|
| Two-bar grouser, closed-center    | 356 mm (14 in.)                                 |
| Track shoes, each side            | 37                                              |
| Ground clearance                  | 330 mm (13 in.)                                 |
| No. of track rollers              | 5                                               |
| Ground contact area               | 13 729 cm <sup>2</sup> (2128 in. <sup>2</sup> ) |
| Ground pressure, Direct Drive     | 60.1 kPa (8.71 psi)                             |
| Ground pressure, Torque Converter | 60.7 kPa (8.8 psi)                              |
| Carrier roller                    | 1                                               |

#### Wide Track:

|                                   |                                                 |
|-----------------------------------|-------------------------------------------------|
| Two-bar grouser, closed center    | 533 mm (21 in.)                                 |
| Track shoes, each side            | 37                                              |
| Ground clearance                  | 330 mm (13 in.)                                 |
| No. of track rollers              | 5                                               |
| Ground contact area               | 20 595 cm <sup>2</sup> (3192 in. <sup>2</sup> ) |
| Ground pressure, Direct Drive     | 41.8 kPa (6.06 psi)                             |
| Ground pressure, Torque Converter | 42.2 kPa (6.12 psi)                             |
| Carrier roller                    | 1                                               |

TX,9000,RB178 -19-14JUN11-2/2

## General Specifications

### 455G Crawler Loader Specifications—cont.

| Bucket Type            | General Purpose                  |                                  |                                  |
|------------------------|----------------------------------|----------------------------------|----------------------------------|
|                        | Wide Track <sup>a</sup>          | Standard                         | Multipurpose <sup>b</sup>        |
| Capacity, heaped, SAE  | 1.0 m <sup>3</sup> (1.3 cu yd)   | 1.0 m <sup>3</sup> (1.3 cu yd)   | 1.0 m <sup>3</sup> (1.3 cu yd)   |
| Capacity, struck, SAE  | 0.79 m <sup>3</sup> (1.03 cu yd) | 0.80 m <sup>3</sup> (1.05 cu yd) | 0.80 m <sup>3</sup> (1.05 cu yd) |
| Bucket width           | 2.4 m (92.1 in.)                 | 1.91 m (75.4 in.)                | 1.90 m (74.8 in.)                |
| Bucket weight, w/teeth | 546 kg (1204 lb)                 | 477 kg (1053 lb)                 | 989 kg (2180 lb)                 |
| Breakout force, SAE    | 78.3 kN (17 600 lb)              | 70 kN (15 735 lb)                | 59.6 kN (13 400 lb)              |
| Bucket raise time      | 6.5 sec                          | 6.5 sec                          | 6.6 sec                          |
| Bucket dump time       | 1.5 sec                          | 1.5 sec                          | 1.5 sec                          |
| Bucket lower time      | 2.7 sec                          | 2.7 sec                          | 2.3 sec                          |

<sup>a</sup>With three counterweights, zero sprocket weight

<sup>b</sup>With four counterweights and two sprocket weights

| Maximum Travel Speeds       |             |            |
|-----------------------------|-------------|------------|
| <b>455G Loader:</b>         |             |            |
| <b>Forward Gear Speeds:</b> | <b>km/h</b> | <b>mph</b> |
| 1                           | 3.7         | 2.3        |
| 2                           | 5.3         | 3.3        |
| 3                           | 6.6         | 4.1        |
| 4                           | 9.5         | 5.9        |
| <b>Reverse Gear Speeds:</b> | <b>km/h</b> | <b>mph</b> |
| 1                           | 4.0         | 2.5        |
| 2                           | 5.8         | 3.6        |
| 3                           | 7.2         | 4.5        |
| 4                           | 10.3        | 6.4        |

#### Operating Weight:

|                                  |                                                         |                      |
|----------------------------------|---------------------------------------------------------|----------------------|
|                                  | Standard Track w/ROPS                                   | 8503 kg (18 745 lb)  |
|                                  | Wide Track w/ROPS                                       | 8866 kg (19 545 lb)  |
| Adjustment to operating weights: |                                                         |                      |
|                                  | Cab                                                     | add 306 kg (676 lb)  |
|                                  | Bucket teeth, bolt-on                                   | minus 63 kg (139 lb) |
|                                  | Radial ripper w/3-shanks, w/o drawbar and counterweight | add 32 kg (70 lb)    |
|                                  | Counterweight                                           | add 136 kg (300 lb)  |

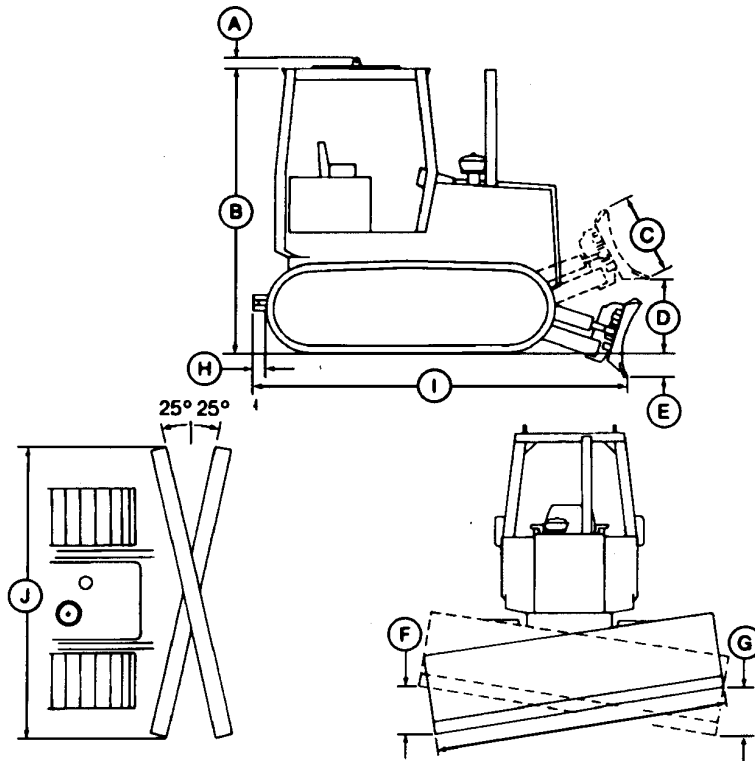
TX,115,RR3026 -19-14APR94-1/1

### 455G Drain and Refill Capacities

|                                                      | Metric | English |
|------------------------------------------------------|--------|---------|
| Fuel tank                                            | 155 L  | 41 gal  |
| Engine coolant                                       | 17 L   | 18 qt   |
| Engine oil, including filter change (S.N. —840460)   | 8.5 L  | 9 qt    |
| Engine oil, including filter change (S.N. 840461— )  | 14 L   | 15 qt   |
| Transmission<br>add 34 L (9 gal) w/winch if equipped | 102 L  | 27 gal  |
| Hydraulic reservoir                                  | 37.8 L | 10 gal  |
| Final drive (each side)                              | 6.6 L  | 7 qt    |

TX,115,RR3044 -19-14APR94-1/1

## 550G—LT Crawler Dozer Specifications



**NOTE:** Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, these specifications are based on a unit with roll-over protective

structure, full fuel tank, 80 kg (175 lb) operator, and standard equipment.

Blade capacity shown is for a 2230 mm (7 ft 3.8 in.) blade. All blades are interchangeable between the 450G, 550G, and the 650G.

| Item     | Measurement  | Specification          |
|----------|--------------|------------------------|
| Operator | Weight       | 80 kg (175 lb)         |
| Blade    | Angled Width | 2230 mm (7 ft 3.8 in.) |

|                               |                          |
|-------------------------------|--------------------------|
| A—Canopy extension            | 60 mm (2.4 in.)          |
| B—Canopy height               | 2.72 m (8 ft 11 in.)     |
| C—Blade height                | 847 mm (2 ft 9.3 in.)    |
| D—Blade lift height           | 866 mm (2 ft 10.1 in.)   |
| E—Digging depth               | 460 mm (1 ft 6.1 in.)    |
| F—Blade tilt (right side):    |                          |
| Standard blade                | 357 mm (2 ft 1 in.)      |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| G—Blade tilt (left side):     |                          |
| Standard blade                | 357 mm (1 ft 2.1 in.)    |
| Wide blade                    | 391 mm (1 ft 3.4 in.)    |
| H—Drawbar extension           | 280 mm (11 in.)          |
| I—Overall length              | 3917 mm (12 ft 10.2 in.) |
| J—Blade width:                |                          |
| Standard blade (angled width) | 2415 mm (7 ft 11.1 in.)  |
| Wide blade (angled width)     | 2686 mm (8 ft 9.7 in.)   |
| Standard                      | 2667 mm (8 ft 9 in.)     |
| Wide                          | 2921 mm (9 ft 7 in.)     |

Continued on next page

TX,115,FF1816 -19-12JAN93-1/2

T7347AC —UN—23JUL90

## General Specifications

|                 |                                           |
|-----------------|-------------------------------------------|
| Track gauge:    | 1550 mm (61 in.)                          |
| Blade capacity: |                                           |
| Standard blade  | 1.7 m <sup>3</sup> (2.3 yd <sup>3</sup> ) |
| Wide blade      | 1.8 m <sup>3</sup> (2.3 yd <sup>3</sup> ) |

Engine: John Deere 4045T (S.N. —840460) or John Deere PowerTech 4.5L engine type 4045TT062 (S.N. 840461— )

|                                           |                                                       |
|-------------------------------------------|-------------------------------------------------------|
| Type                                      | Turbocharged                                          |
| Bore and stroke                           | 106.5 x 127 mm (4.19 x 5.00 in.)                      |
| No. of cylinders                          | 4                                                     |
| Fuel consumption, typical (S.N. —840460)  | 7.0 to 10.5 L/h (1.8 to 2.8 gal/h)                    |
| Fuel consumption, typical (S.N. 840461— ) | 4.9 to 8.7 L/h (5 to 2.3 gal/hr)                      |
| Compression ratio (S.N. —840460)          | 17.2 to 1                                             |
| Compression ratio (S.N. 840461— )         | 17 to 1                                               |
| Electrical system                         | 12 volt (with battery disconnect switch, if equipped) |
| Battery                                   | 12 volt                                               |
| Alternator (S.N. —840460)                 | 65 amp                                                |
| Alternator (S.N. 840461— )                | 95 amp                                                |
| SAE net power at 2100 rpm                 | 59.5 kW (80 hp)                                       |
| SAE gross power at 2100 rpm               | 62 kW (83 hp)                                         |
| Maximum net torque at 1300 rpm            | 353 N·m (260 lb-ft)                                   |
| Drawbar                                   | 43 kW (58 hp)                                         |
| Displacement (S.N. —840460)               | 4.524 L (276 cu in.)                                  |
| Displacement (S.N. 840461— )              | 4.5 L                                                 |

Transmission: Powershift (4F-4R) with torque converter or direct drive. Full power shift, Dura-Shift with torque converter or direct drive, designed and built by John Deere. You can power shift easily from one gear to another as conditions change without stopping the machine or using a clutch. Power control inching pedal adds versatility. Four speeds forward and reverse allow the operator to match speeds to the working conditions.

|                  |                       |
|------------------|-----------------------|
| Hydraulic pump:  | Gear                  |
| Pressure         | 18 961 kPa (2750 psi) |
| Flow at 2100 rpm | 64 L/min (17 gpm)     |

Steering:

|          |                   |
|----------|-------------------|
| Clutches | Wet multiple disk |
| Brakes   | Wet band          |

Undercarriage:

|                                    |                                                 |
|------------------------------------|-------------------------------------------------|
| Grouser, closed-center             | 457 mm (18 in.)                                 |
| Track shoes, each side             | 40                                              |
| Ground contact area                | 17 626 cm <sup>2</sup> (2732 in. <sup>2</sup> ) |
| Ground pressure (direct drive)     | 44.1 kPa (6.4 psi)                              |
| Ground pressure (torque converter) | 44.7 kPa (6.47 psi)                             |

Operating Weight (with ROPS):

|                  |                     |
|------------------|---------------------|
| Direct Drive     | 7947 kg (17 483 lb) |
| Torque Converter | 8038 kg (17 683 lb) |

TX,115,FF1816 -19-12JAN93-2/2

## General Specifications

### 550G—LT Drain and Refill Capacities

|                                                     | Metric  | English                                       |
|-----------------------------------------------------|---------|-----------------------------------------------|
| Fuel tank                                           | 155 L   | 41 gal                                        |
| Engine coolant                                      | 17 L    | 18 qt                                         |
| Engine oil, including filter change (S.N. —840460)  | 12.3 L  | 13 qt                                         |
| Engine oil, including filter change (S.N. 840461— ) | 14 L    | 14.8 qt                                       |
| Transmission:                                       |         |                                               |
| Transmission, direct drive (S.N. —790984)           | 80.25 L | 21.2 gal add 34 L (9 gal) w/winch if equipped |
| Transmission, direct drive (S.N. 790985— )          | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
| Transmission, torque converter                      | 102 L   | 27 gal add 34 L (9 gal) w/winch if equipped   |
| Hydraulic reservoir                                 | 38 L    | 10 gal                                        |
| Hydraulic system                                    | 55.3 L  | 14.6 gal                                      |
| Final drive (each side)                             | 9.5 L   | 10 qt                                         |

TX,115,FF1917 -19-08OCT93-1/1