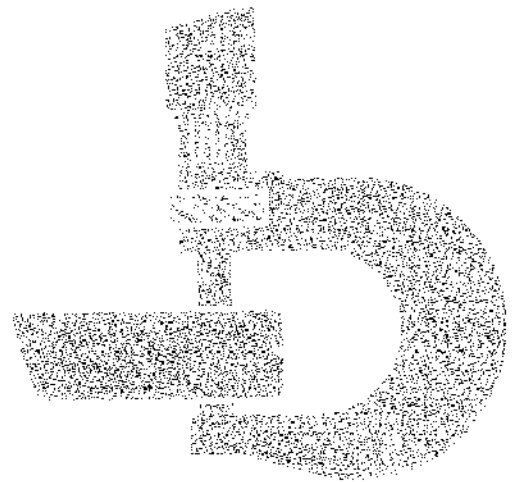


# **646B Compactor**



## **TECHNICAL MANUAL**

**John Deere Dubuque Works**

**TM-1116**

LITHO IN U.S.A.



## JD646-B COMPACTOR

Technical Manual  
TM-1116 (Nov-74)

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*The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice. Wherever applicable, specifications and design information are in accordance with SAE and IEMC standards.*

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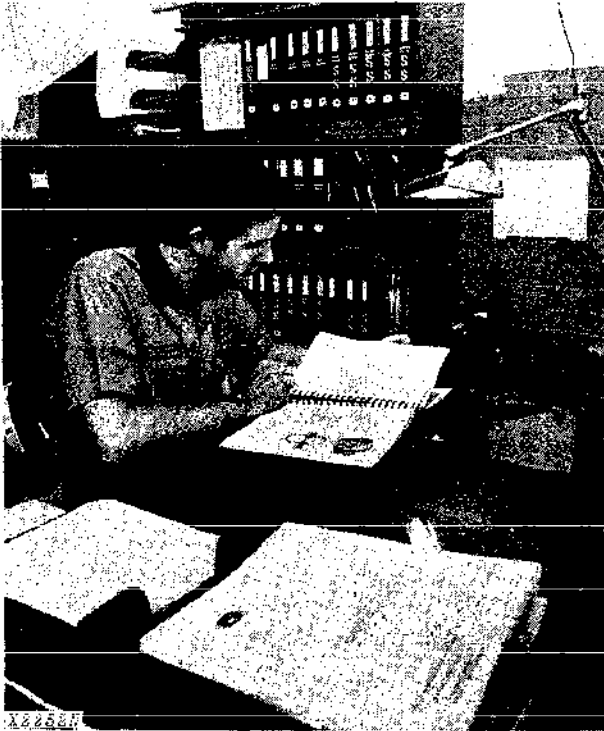
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31-3160-5,6	(Nov-74)	90-9015-51,52	(Dec-78)	90-9035-7,8	(Dec-78)
31-3160-7,8	(Dec-78)	90-9020-1,2	(Nov-74)	90-9035-9,10	(Dec-78)
31-3160-9,10	(Dec-78)	90-9020-3,4	(Nov-74)	90-9035-11,12	(Jun-80)
31-3160-11,12	(Jun-80)	90-9020-5,6	(Nov-74)	90-9035-13,14	(Dec-78)
31-3160-13,14	(Jun-80)	90-9020-7,8	(Nov-74)	90-9035-15,16	(Dec-78)
31-3160-15,16	(Jun-80)	90-9020-9,10	(Jun-80)	90-9035-17,18	(Jun-80)
31-3160-17,18	(Jun-80)	90-9020-11,12	(Oct-75)		
31-3160-19,20	(Jun-80)			Index 1,2	(Jun-80)
31-3160-21,22	(Jun-80)			Index 3,4	(Jun-80)
31-3160-23,24	(Jun-80)			Index 5,6*	(Dec-78)
31-3160-25,26	(Jun-80)			Index 7,8*	(Dec-78)
31-3160-27,28	(Jun-80)				
31-3199-1,2	(Jun-80)				
31-3199-3,4	(Nov-74)				
31-3199-5,6	(Nov-74)				
31-3199-7,8	(Jun-80)				

Vertical lines indicate pages included in this revision.  
\*Remove these pages from manual.



## Group II INTRODUCTION AND SAFETY INFORMATION INTRODUCTION



Use FOS Manuals for Reference

This technical manual is part of a twin concept of service:

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

### •FOS Manuals—for reference

*Fundamentals of Service (FOS) Manuals* cover basic theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new men and for reference by experienced men.



When a serviceman should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the TM to identify the reference.

### •Technical Manuals—for actual service

*Technical Manuals* are concise service guides for a *specific* machine. Technical manuals are on-the-job guides containing only the vital information needed by a journeyman mechanic.

Litho in U.S.A.



Use Technical Manuals for Actual Service

This technical manual was planned and written for you—a journeyman mechanic. Keep it in a permanent binder in the shop where it is handy. Refer to it whenever in doubt about correct service procedures or specifications.


Some features of this manual:

- Inside front cover - "Table of Contents".
- Section I - Contents, safety information, general specifications and general services.
- Sections 1 through 42 - Removal, repair, testing (components removed), installation, and adjustment.
- Section 90 - Detailed explanation of system operation, diagnosis, visual inspection, testing, and adjustments.
- Specifications grouped and illustrated at the end of each section.

## MAINTENANCE WITHOUT ACCIDENT WORK SAFELY



T27999

 This safety alert symbol identifies important safety messages in this manual and on the compactor. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

**EVERY EMPLOYER HAS A  
SAFETY PROGRAM. KNOW  
WHAT IT IS!**



T27501N

Consult your shop foreman for specific instructions on a job, and the safety equipment required.

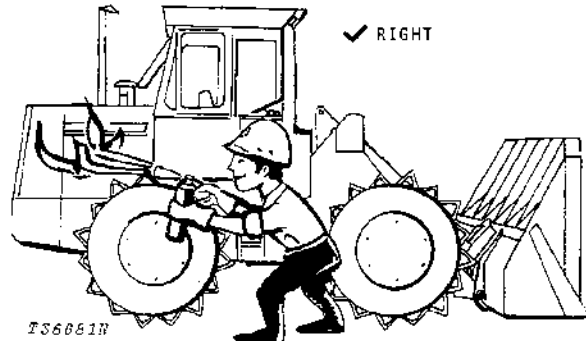
For instance, you may need: Hard hat, safety shoes, safety goggles, heavy gloves, reflector vests, ear protectors, respirators.



WRONG

T27502N

**ALWAYS AVOID** loose clothing or any accessory—flopping cuffs, dangling neckties and scarves, or rings and wrist watches—that can catch in moving parts and put you out of work.

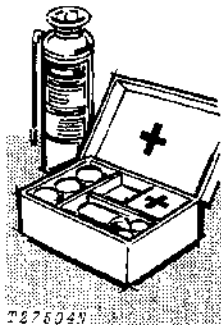


✓ RIGHT

T36651N

### BE ALERT!

Plan ahead — work safely — avoid accidental damage and injury. If a careless moment does cause an accident or fire, react quickly with the tools and skills at hand — know how to use a first aid kit and a fire extinguisher — and where to get aid and assistance. In an emergency, split-second action is the key to safety.



T27504N

## MAINTENANCE WITHOUT ACCIDENT

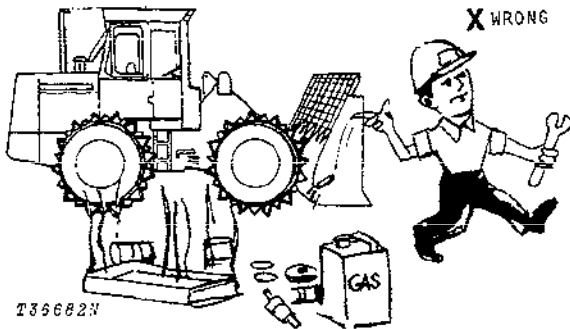
Specific safety procedures should always be observed, whether servicing the equipment or making the repairs. Remembering these—in time!—can prevent an injury... or save your life....

### AVOID FIRE HAZARDS—

#### Fuel Is Dangerous!

Don't smoke while refueling.  
Don't smoke while handling highly flammable material.

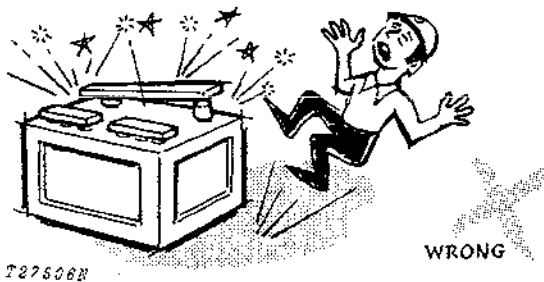
Engine should be shut off when refueling.  
Use care in refueling if the engine is hot.



Don't use open pans of gasoline or diesel fuel for cleaning parts. Good commercial, nonflammable solvents are preferred.

#### Battery Gas Is Highly Flammable!

Provide adequate ventilation when charging batteries.



Don't check battery charge by placing metal objects across the posts.

Don't allow sparks or open flame near batteries.  
Don't smoke near battery.

#### Know Where Fire Extinguishers Are Kept!

#### Flame Is Not a Flashlight!

Never check fuel, battery electrolyte or coolant levels with an open flame.

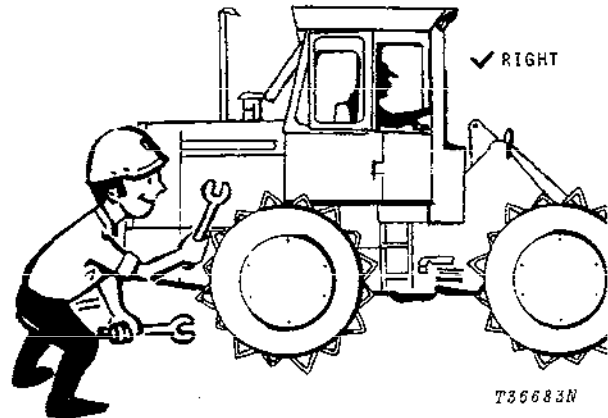
Never use an open flame to look for leaks anywhere on the equipment.

Never use an open flame as a light anywhere on or around the equipment.

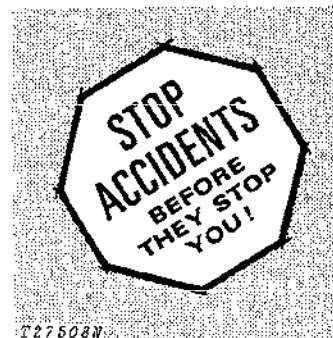
### UNDER ALL MAINTENANCE CONDITIONS—

Do not perform any work on the equipment unless authorized to do so. Then be sure you know what you're doing. Follow recommended procedures.

Never service the equipment while it is being operated.



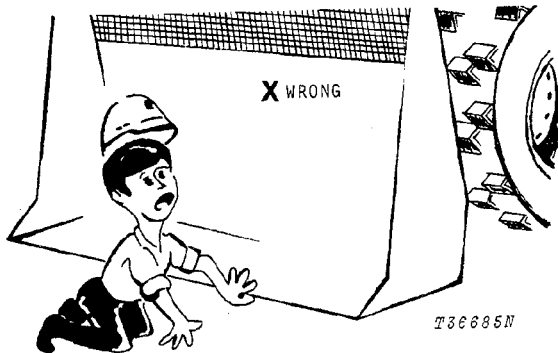
Avoid working on equipment with the engine running. If it is necessary to make checks with the engine running, **ALWAYS USE TWO SERVICE TECHNICIANS**—one, the operator, at the controls, the other checking within sight of the operator. Also, put the transmission in neutral, set the parking brake, and apply any safety locks provided. **KEEP HANDS AWAY FROM MOVING PARTS.**



## MAINTENANCE WITHOUT ACCIDENT

Before servicing, adjusting, or repairing compactors—**LOWER** attachments to the ground—or, if necessary to raise them for access to certain parts, **SECURELY SUPPORT** by external means. **DO NOT** rely on controls to support or position attachments for maintenance.

Never allow **ANYONE** to walk under equipment that is raised and not properly blocked.

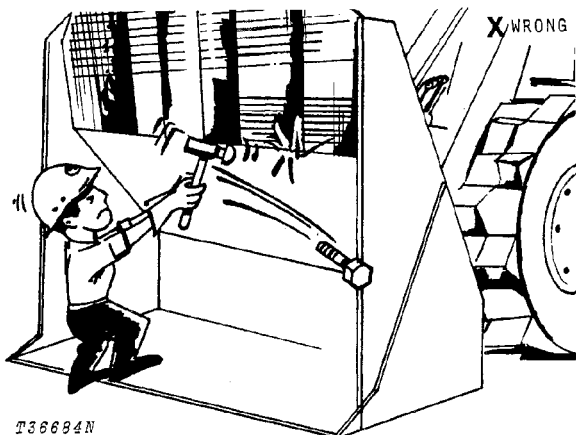


Avoid working directly under raised and blocked equipment unless absolutely necessary.

If the machine is on an incline, block it securely.

Use hoisting equipment for lifting heavy parts. **TAKE CARE! WATCH OUT FOR OTHER PEOPLE IN THE VICINITY.**

Use extreme caution in removing radiator caps, drain plugs, grease fittings, or hydraulic pressure caps.



Wear safety glasses when drilling, grinding, or hammering metal.

Make sure the maintenance area is adequately vented.

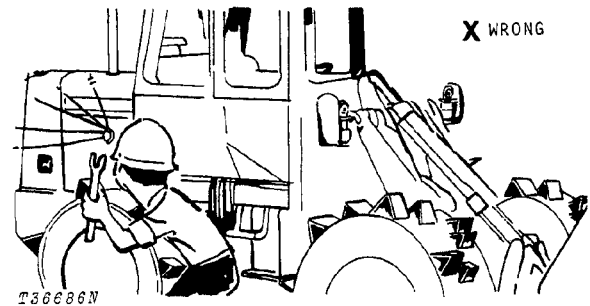
Keep maintenance area **CLEAN AND DRY**. Oily and wet floors are slippery; greasy rags are a fire hazard; wet spots are dangerous when working with electrical equipment.

Store starting aids in a cool and well-ventilated place, out of the reach of unauthorized personnel.

### SERVICING PRECAUTIONS

Stop the engine before cleaning or lubricating the equipment.

Lower mounted equipment and tools to the ground **carefully**.



Engine coolant gets hot! Don't remove the radiator cap until coolant temperature is below the boiling point. Then turn cap slightly to relieve pressure before removing.

Exhaust gases are dangerous! Periodically check exhaust system for excessive leakage.

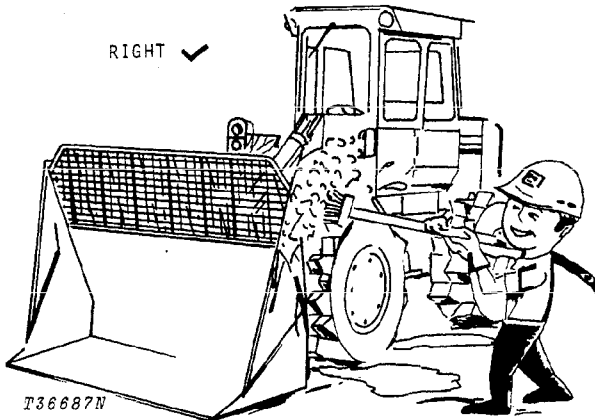
Don't forget a hydraulic system may be pressurized! To relieve pressure, stop engine and lower boom. Operate steering wheel, brake pedals and control levers until system fails to respond.

The compactor is equipped with hydraulic accumulators—recharge by using only dry nitrogen. See page 0960-46 or 1060-10.

When checking hydraulic pressure, be sure to use the correct test gauge for the pressure in the particular system.

## MAINTENANCE WITHOUT ACCIDENT

RIGHT ✓



Keep ALL equipment free of dirt and oil. This attention will minimize fire hazards and facilitate spotting of loose or defective parts.

When preparing engine for storage, remember that inhibitor is volatile and therefore dangerous. Seal and tape openings after adding the inhibitor. Keep container tightly closed when not in use.

### ADJUSTING PRECAUTIONS

#### ... for Operating Adjustments

Keep clutch and brake control units properly adjusted at all times. Before making adjustments, stop engine.

✗ WRONG



T32708N

Before removing any housing covers, stop engine. Take all objects from your pockets which could fall into the opened housings. Don't let adjusting wrenches fall into opened housings.

#### ... for Maintenance Adjustments

Don't adjust the fuel system while the machine is in motion.

✗ WRONG



T32709N

Don't attempt to check belt tension while the engine is running.

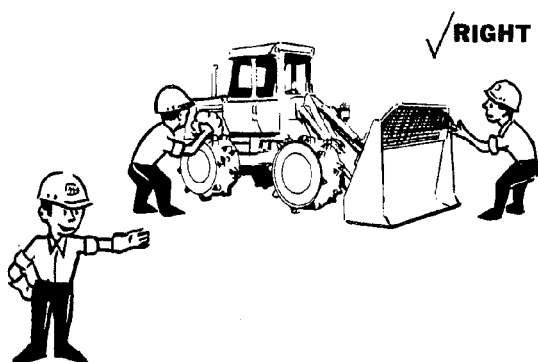


## MAINTENANCE WITHOUT ACCIDENT

### PRECAUTIONS DURING REPAIR

Before working on hydraulic systems—make sure engine is not running and the system pressure is relieved by working the control levers, steering wheel and brakes in all directions with the engine shut off.

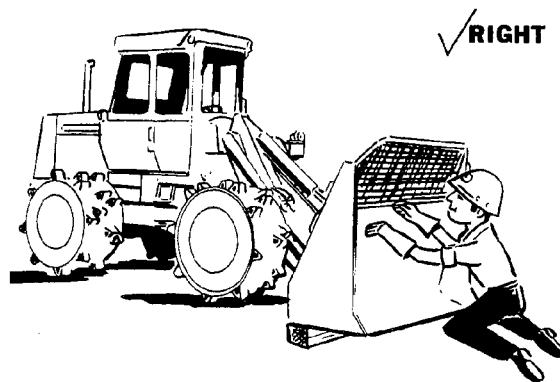
Before repairing the electrical system, or performing a major overhaul, make sure the batteries are disconnected.



T36688N

Keep all equipment free of dirt and oil. This attention will minimize fire hazards and facilitate spotting of loose or defective parts.

When changing cutting edges on bucket—  
Stop the engine and securely block the bucket.



T36689N

Never let your bare hands come in contact with the sharp edges. WEAR GLOVES.

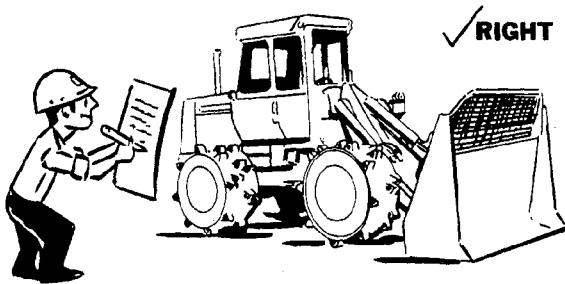
## MAINTENANCE WITHOUT ACCIDENT

### KNOW EQUIPMENT IS READY!

Check guards, canopies, safety bars—all protective devices installed on the compactor. Every one should be in place and secure.

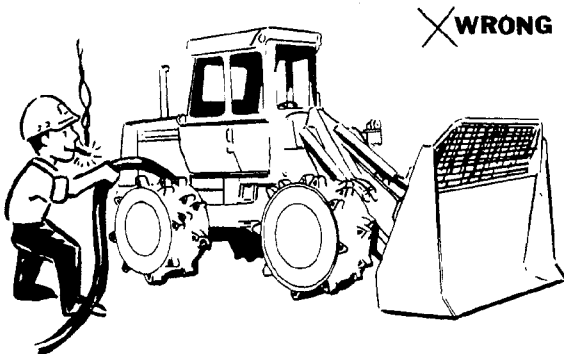
### CHECK IT OUT!

- GUARDS
- CANOPIES
- SHIELDS
- PROTECTIVE DEVICES
- ROLL-OVER PROTECTIVE STRUCTURES
- SEAT BELTS, ETC.



T36690N

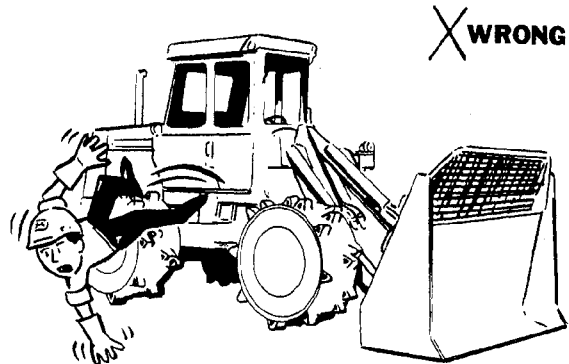
Carefully inspect equipment for visual defects—leaks in fuel, lubrication, and hydraulic systems. Do not search for pressurized fluid leaks with your hands. Use cardboard or wood to search for leaks.



T36691N

Check levels of fuel, coolant, hydraulic fluid, and lubricating oil. If fuel must be added—**FIRST, PUT OUT THAT CIGARET.**

Check and secure all caps and filler plugs for fuel, oils, radiator, etc.



T36692N

Be sure to clean any oil, grease or mud accumulation from floor of operator's compartment, stepping points, and grab rails to minimize the danger of slipping.

In freezing weather beware of snow or ice deposits on stepping points, grab rails, and floor.

Remove loose bolts, tools, or other objects from floor of operator's compartment.

Although it is impractical to try to cover every possible maintenance situation, the safety precautions recommended here should serve to develop and promote safe maintenance procedures.

The information contained in this manual is not intended to replace safety codes, insurance requirements, federal, state, and local laws, rules and regulations. In particular, your service area or jobsite activities may be subject to state safety rules and/or federal regulation under the Occupational Safety and Health Act (OSHA). Familiarize yourself with all regulations applicable to your situation in order to avoid possible safety violations.

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## Group III

# GENERAL SPECIFICATIONS

Power (at 2,200 engine rpm):	SAE	DIN
Gross	160 hp (119.3 kW <sup>**</sup> )	
Net	145 hp (108.1 kW <sup>**</sup> )	147.5 PS

*\*Net engine flywheel power is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator, and muffler. The gross engine power is without fan. Flywheel power ratings are under SAE standard conditions of 500-ft (152 m) altitude and 85°F (29.4°C) temperature and DIN 70 020 (non-corrected). No derating is required up to 10,000 ft. (3000 m) altitude.*

*\*\*In the international system of units, power is expressed in Kilowatts (kW).*

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

Bore and stroke	4.75 x 5 in. (120.5 mm x 127 mm)
Piston displacement	531 cu. in. (8702 cm <sup>3</sup> )
Compression ratio	15.8 to 1
Maximum torque @ 1500 rpm	432 lb-ft (59.7 kg-m)
NACC or AMA (U.S. Tax) horsepower	54.0
Lubrication	Pressure system with full-flow filter
Cooling	Pressurized with thermostat and controlled bypass
Fan	Suction
Air cleaner w/restriction indicator	Dry
Electrical system	12 volt (12-V) w/alternator
Batteries (2)	Reserve capacity: 310 minutes each battery

#### Torque Converter:

Type	Twin-turbine
Torque multiplication	3.34 to 1
Transmission	Power Shift planetary

#### Recommended Travel Speeds

Forward and reverse	4.5 mph (7.2 km/h) maximum
---------------------	----------------------------

#### Differentials:

Front	No-Spin
Rear	Standard

**Drive Axles** ... Inboard-mounted planetary gears to each wheel. Front axle fixed. Rear axle oscillates 22-degree total. 15.8 inches (401 mm) vertical travel at center of tire.

#### Brakes:

Service	Power actuated, 4-wheel, inboard-mounted wet disk. Foot-operated by either right or left pedal.
Parking	10 x 1.5 inch (254 mm x 38 mm) expanding shoe on transmission output shaft. Adjustable, hand operated with warning light on dash.

**Steering** ... Full power steering. Frame articulated 80 degrees by two hydraulic cylinders. Turning radius of 15 feet 6.7 inches (4.74 m). Turning clearance is 36 ft 10.8 inches (11.25 m).

#### Hydraulic Systems:

Loader functions	independent engine driven, vane pump delivers 44.5 gpm (168.4 L/min) at 600 psi (42.2 kg/cm <sup>2</sup> ) and 2,200 engine rpm.
	2,250 psi (158.2 kg/cm <sup>2</sup> ) relief valve pressure setting.
Control	Two lever triple hydraulic valve for use with refuse bucket or special multipurpose bucket.
Steering and brakes	Engine-driven, eight-piston, variable-displacement pump delivers 26 gpm (98.4 L/min) at 2,200 engine rpm and 2,000 psi (140.6 kg/cm <sup>2</sup> ). Maximum system pressure is 2,400 psi (168.7 kg/cm <sup>2</sup> )

#### Compactor Wheels (Cepeco):

Width	23 in. (584 mm)
Diameter	56.75 in. (1 442 mm)
60° cleats, 32/wheel	5 in. (127 mm)
Encased General tires	13-24, 12 ply L-G
Compaction	Up to 3,223 psi (226.6 kg/cm <sup>2</sup> )

#### Compactor Wheels (Caron):

Width	23 in. (584 mm)
Diameter	60 in. (1 524 mm)
20 tractor cleats	5.5 in. (140 mm) long @ tip
10 contour cleats	3 in. (76 mm) long @ tip
Compaction	Up to 3640 psi (25 097 kPa)