



4310 and 4310A Beet Harvesters



JOHN DEERE

TECHNICAL MANUAL 4310 and 4310A Beet Harvesters

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4310 AND 4310A BEET HARVESTERS

TECHNICAL MANUAL
TM-1166 (Jul-82)

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The specifications and design information contained in this manual were correct at the time this machine was manufactured. 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.

Because John Deere sells its products worldwide, U.S. units of measure are shown with their respective Metric equivalents throughout this technical manual. These equivalents are the SI (International System) Units of Measure.


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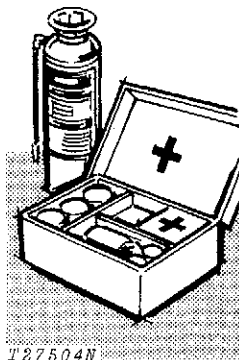
SAFETY AND YOU



T27999

INTRODUCTION

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



T27504N

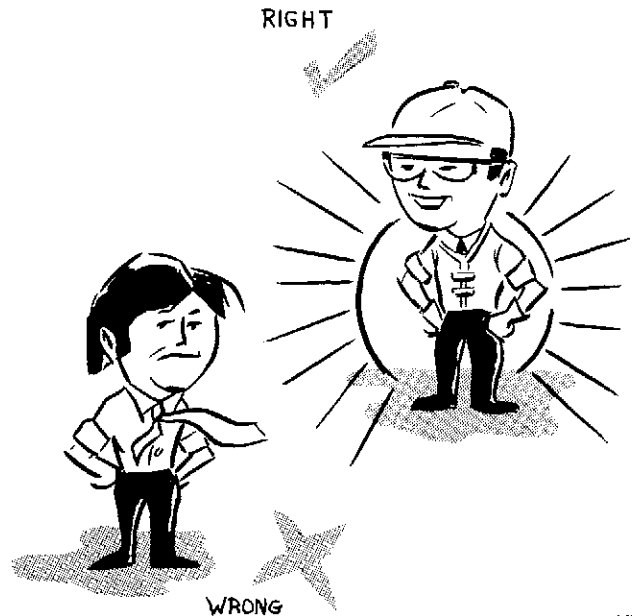
Be prepared if an accident or fire should occur. Know where the first aid kit and the fire extinguishers are located—know how to use them.

PERSONAL SAFETY

Shut off tractor engine and remove switch key before working on the beet harvester.

If it is necessary to make checks with the engine running. **ALWAYS USE TWO PEOPLE**—with the operator at the controls able to see the person checking the machine. **KEEP HANDS AWAY FROM MOVING PARTS.**

Don't attempt to check roller chain tension while the tractor engine is running.



H23440N

Always avoid loose clothing or any accessory—flopping cuffs, dangling neckties and scarves—that might catch in moving parts and cause an injury.

Always wear your safety glasses while on the job.

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.

FLUIDS UNDER PRESSURE

Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged.

Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

Section 10 GENERAL

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Group 5 DESCRIPTION

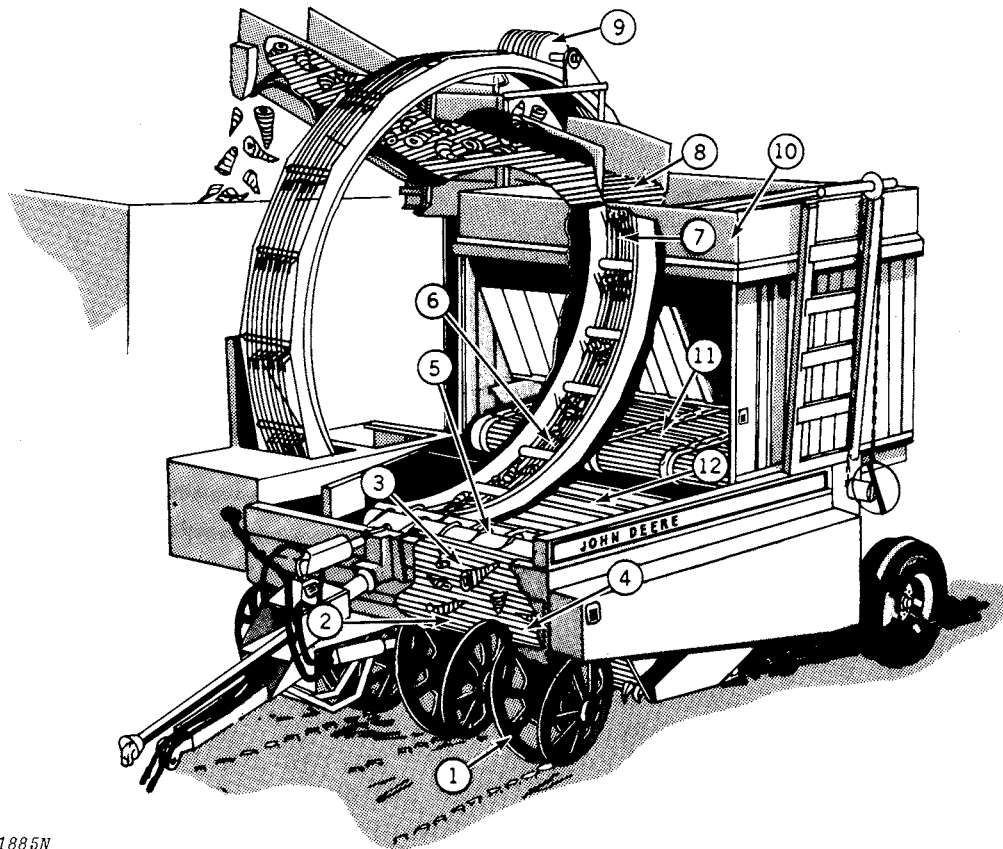
The basic components of the harvester include the frame and wheels, lifter wheels, lifter wheel paddles, potato chain primary conveyor or optional star wheel cleaning bed, grab rolls, rotary conveyor, loading conveyor and tank with bottom unloading conveyor.

The tank has an 8,000 pound (3 629 kg) storage capacity, providing maximum storage time between unloading functions in high-yield beet crop conditions.

The 3- or 4-row harvester can be used with tractors having 100-180 HP (75-134 kW); the 6-row harvester can be used with 130-180 HP (97-134 kW). All tractors must be equipped with 1000 rpm power take-off. Three remote cylinder outlets and controls are required, with power beyond outlets required for hydraulic override when row finder is installed. A 12-volt electrical system is required to operate the electromagnetic clutch.

Attachments include an auxiliary hydraulic system for the truck conveyor. The hydraulic system should be used when ambient temperatures during digging are 85°F. (29°C.) or more, or if tractor Power Front Wheel Drive is used, or if the tractor is not capable of supplying 14 gallons (53 L) per minute of hydraulic oil flow continuously. The need for a third selective control valve and outlet is eliminated when the auxiliary hydraulic system is used.

BEET FLOW



N31885N

Fig. 1 - Beet Flow—Lifter-Loader

N31885N

The following is a step-by-step description of the beet flow through the beet harvester:

The lifter wheels (1, Fig.1) penetrate the soil and lift the beets out of the ground.

The revolving steel paddles (2) at the rear of the lifter wheels knock off dirt as they flip the beets against the rubber curtains (3), which deflect them onto the cleaning bed (4).

The cleaning bed consists of a potato chain or optional star wheels (3- or 4-row only). The separation between the chain links (or star wheels) sifts out dirt and rocks as the beets are carried back to the grab rolls (5).

Four spiral grab rolls strip dirt, mud, and trash from the beets as they are moved into the rotary conveyor (6).

The rotary conveyor revolves at approximately 12 rpm in the direction of travel, (at 1000 PTO rpm) carrying the beets up to the truck-or-tank conveyor. A retainer (7) holds the beets in the wheel until they reach the top and fall into the truck-or-tank conveyor (8). A stripper (9) clears the wheel of any rocks or beets that wedge between the rods.

The truck-or-tank conveyor delivers the beets to a truck or the holding tank.

The tank (10) bottom unloading conveyor (11) is actuated by an electromagnetic clutch — moving the beets down across a baffle plate (12) (optional) onto the rear of the grab rolls, into the rotary conveyor and truck-or-tank conveyor.

Group 10 SPECIFICATIONS

TRACTOR REQUIREMENTS

Recommended Horsepower Rating:

3, 4-Row.....	100-180 PTO HP (75-134 kW)
6-Row.....	130-180 PTO HP (97-134 kW)

NOTE: Recommended for two-wheel drive tractors only.

Hydraulic Requirements:

Tractor must be equipped with three remote hydraulic outlets (one of which may be the "Power Beyond") when the harvester is equipped with the auxiliary hydraulic system. If the tractor hydraulic system is used to drive the truck conveyor, four remote hydraulic outlets are needed (one of which is the "Power Beyond") and the tractor must be capable of supplying 14 gallons per minute continuously. In both cases the "Power Beyond" is used to operate the row finder.

PTO Shaft:

Tractors must have 1.38-inch (35 mm) diameter 1000 rpm PTO shaft. (For 4640 and 4840 John Deere Tractors, order AR72476 PTO Shaft Adapter Kit).

Front Ballast:

Maximum tractor front ballast is required.

Drawbar Support (Standard):

Used with 1-3/8 x 2-1/2-inch (35 x 64 mm), 1-1/2 x 2-1/2-inch (38 x 64 mm) and 1-3/4 x 3-inch (44 x 76 mm) drawbars.

Electrical system:

12-Volt

HARVESTER

Description..... 3, 4, or 6-row tank-type harvester

Row Spacing:

3 rows.....	22 to 30 inches (0.54 to 76 m)
4 rows.....	22 to 30 inches (0.54 to 76 m)
6 rows.....	22-inches (0.54 m)

Operating Speed..... 3 to 7 mph (5 to 11 km/h)

Lift and depth control*.....Hydraulic

Lateral hitch control**.....Hydraulic

Lifter wheels:

(2 per row).....29-inch (737 mm)
diameter solid rim

Paddles:

Type.....Steel
Number.....4 per row
Shaft speed.....157 rpm (fast)
or 132 rpm (slow)

Primary Conveyor and Cleaning Bed:

Size...3, 4-row-46 x 102-inches (1168 x 2591 mm)
6-row-46 x 125.2-inches (1168 x 3180 mm)

Type: 3, 4-Row — Three 32-inch (813 mm) wide potato chains OR optional bed containing four shafts with 36 star wheels each and one shaft with 36 hexagon plates, all spaced with rubber to expel rocks.

6-Row — Two 32-inch (813 mm) potato chains. Two 27-inch (686 mm) potato chains.

Cross Conveyor:

Size.....30 x 110-inches (762 x 2794 mm)
Type: Four 5-1/2-inch (140 mm) grab rolls with 3/4-inch (19 mm) spiral rods, adjustable spring loading and spacing.

**Requires 3-1/2 x 8-inch (89 x 203 mm) Remote Hydraulic Cylinder (not furnished)*

***Requires 3 x 8-inch (76 x 203 mm) Remote Hydraulic Cylinder (not furnished)*

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