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MODEL:

4310 & 4310A

Beet Harvesters

**SERVICE
MANUAL**



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**4310 and 4310A
Beet Harvesters**

MANUAL PREVIEW

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Des Moines Works

TM-1166

Litho in U.S.A.

4310 AND 4310A BEET HARVESTERS

TECHNICAL MANUAL
TM-1166 (Jul-82)

CONTENTS

INTRODUCTION

SAFETY

SECTION 10 - GENERAL

- Group 5 - Description
- Group 10 - Specifications
- Group 15 - Lubrication
- Group 20 - Diagnosing Malfunctions

SECTION 20 - DRIVE TRAIN

- Group 5 - General Information and Diagram
- Group 10 - Powershaft
- Group 15 - Main Gear Case
- Group 20 - L.H. Drive Components
- Group 25 - R.H. Drive Components
- Group 30 - Specifications and Torque Values

SECTION 30 - HYDRAULIC SYSTEM

- Group 5 - General Information and Flow Diagrams
- Group 10 - Hydraulic Motor and Drive System
- Group 15 - Hydraulic Row Finder
- Group 20 - Specifications and Torque Values

SECTION 40 - MISCELLANEOUS

- Group 5 - Cleaning Beds
- Group 10 - Grab Rolls
- Group 15 - Electromagnetic Clutch
- Group 20 - Pedestal and Lifter Wheels
- Group 25 - Rear Wheels
- Group 30 - Rotary Conveyor
- Group 35 - Truck and Tank Conveyor
- Group 40 - R. H. Diversion Roll
- Group 45 - Specification and Torque Values

SECTION 50 - ALPHABETICAL INDEX

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.

Section 10
GENERAL

CONTENTS OF THIS SECTION

	Page		Page
GROUP 5 - DESCRIPTION		GROUP 15 - LUBRICATION	
Description.....	5-1	General Lubrication.....	15-1
Beet Flow.....	5-2	Row Finder.....	15-2
GROUP 10 - GENERAL SPECIFICATIONS		Greases.....	15-2
General Specifications.....	10-1	Storing Lubricants.....	15-2
Dimension View and Torque Value Chart..	10-3	GROUP 20 - DIAGNOSING MALFUNCTIONS	
Serial Number.....	10-4	Diagnosing and Testing Procedures.....	20-1
		Possible Problems and Remedies.....	20-2

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

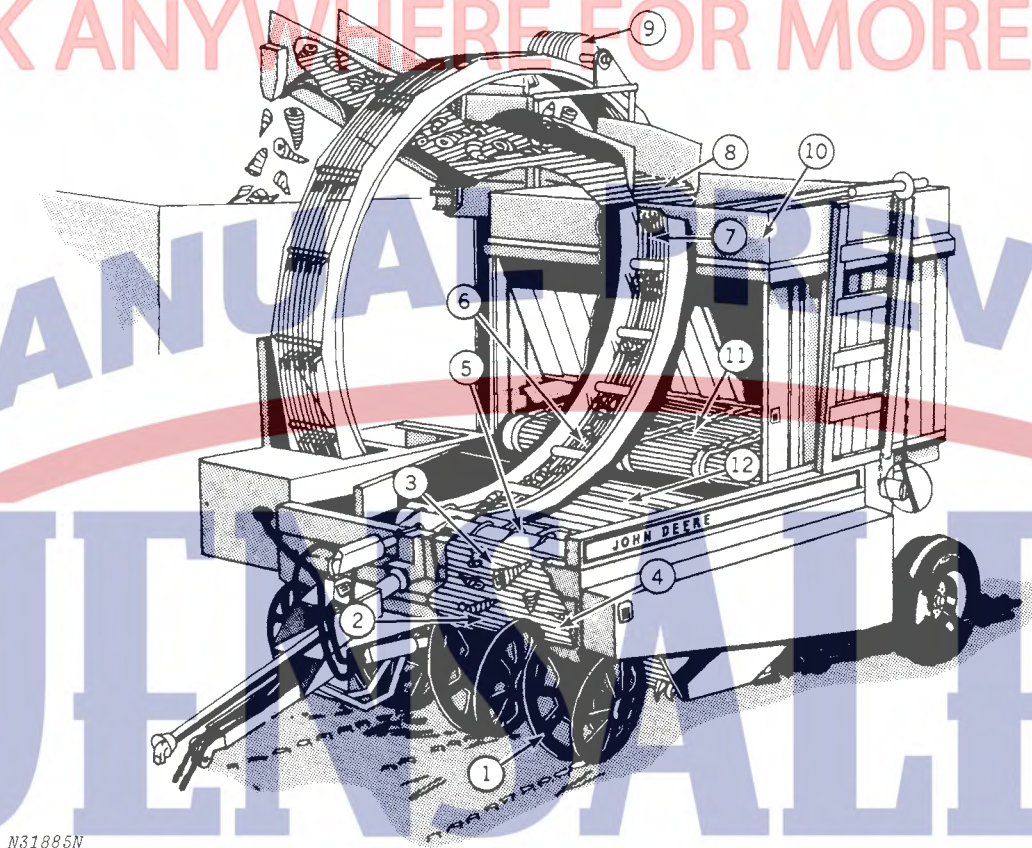


Fig. 1 - Beet Flow—Lifter-Loader

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.

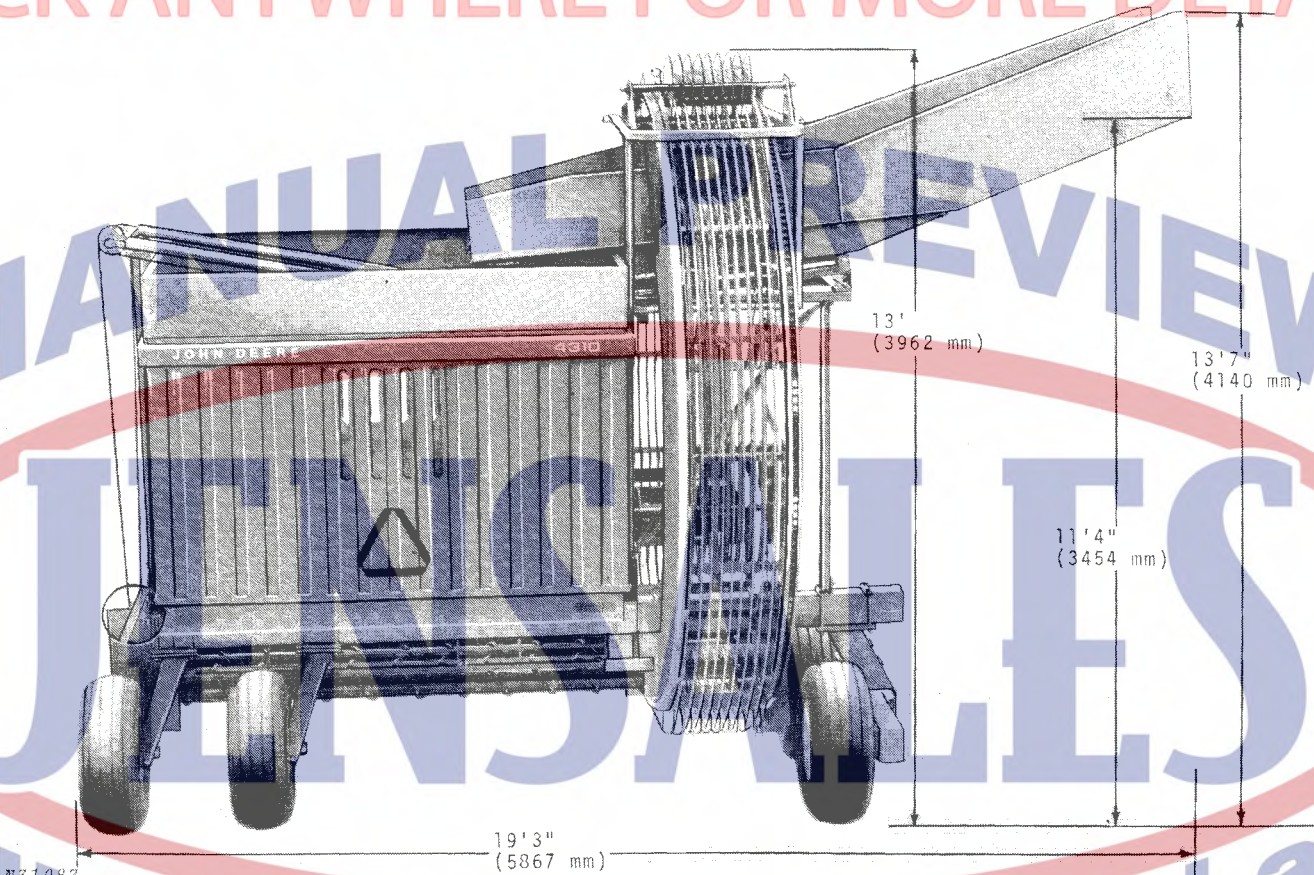
Cross Conveyor:

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)

DIMENSIONS

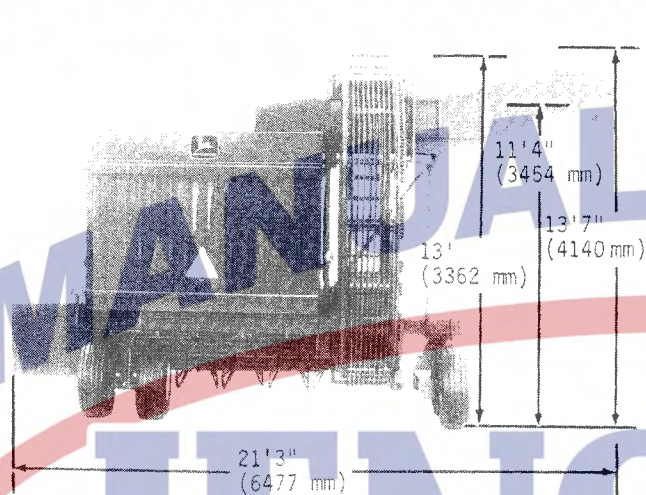


4310 Beet Harvester with Truck Conveyor Height Extension Installed

STANDARD TORQUE VALUE CHART

TORQUE VALUES		
Recommended Torque Value In lb-ft (N·m) Coarse and Fine Threads		
Bolt Diameter	Three Radial Dashes	Six Radial Dashes
1/4	10 (14)	14 (19)
5/16	20 (27)	30 (41)
3/8	35 (47)	50 (68)
7/16	55 (75)	80 (108)
1/2	85 (115)	120 (163)
9/16	130 (176)	175 (237)
5/8	170 (230)	240 (325)
3/4	300 (407)	425 (576)
7/8	445 (603)	685 (929)
1	670 (908)	1030 (1396)
1-1/8	910 (1234)	1460 (1979)
1-1/4	1250 (1695)	2060 (2793)

DIMENSIONS



6-Row — Field Position With Truck Conveyor Height Extension
*12'8" (3 861 mm) Without Height Extension

N80324J1



6-Row Transport Position

N80324K1

SERIAL NUMBER



N80324A1

For All Models

The serial number plate is located on the front of
the upper main frame tube (bold arrow).

Group 15 LUBRICATION

GENERAL LUBRICATION

Illustrated lubrication instructions are included in the operator's manual.

Component	Capacity	Type of Lubricant
Roller chains	-----	Flush the chains with SAE 30 engine oil sufficient to wash away accumulated dust. Wipe away excess oil. IMPORTANT: Lubricate the grab roll drive chain with SAE 30 engine oil at least once daily and more frequently in extremely adverse conditions.
Internal telescoping surface of rotating power shaft shield	-----	Brush with John Deere Multi-Purpose lubricant or an equivalent SAE multi-purpose type grease
Front and rear universal joints and telescoping shaft (near center of rotating shield) grease fittings	IMPORTANT: Only 1 or 2 strokes from grease gun.	John Deere Multi-Purpose lubricant or an equivalent SAE multi-purpose type grease
Hitch pivot points (3 above and 3 underneath)	1 stroke or less	John Deere Multi-Purpose lubricant or an equivalent SAE multi-purpose type grease
Slip clutch (right-hand drives)	1 stroke or less	John Deere Multi-Purpose lubricant or an equivalent SAE multi-purpose type grease
Slip clutch (left-hand drives)	1 stroke or less	John Deere Multi-Purpose lubricant or an equivalent SAE multi-purpose type grease
Countershaft drive sprocket	1 stroke or less	John Deere Multi-Purpose lubricant or an equivalent SAE multi-purpose type grease
Electromagnetic clutch shaft	1 stroke or less	John Deere Multi-Purpose lubricant or an equivalent SAE multi-purpose type grease

NOTE: Examine clutch jaws closely after greasing to be sure lubricant does not seep into clutch jaws and facings - causing them to slip excessively

NOTE: Examine clutch facings closely after greasing to be sure lubricant does not seep into facings - causing them to slip excessively