

**THE 9970 AND 9976 PRO-SERIES™  
COTTON PICKERS**  
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**Abstract**

The new John Deere 9970 and 9976 PRO-SERIES Cotton Pickers combine proven performance with new features to provide increased levels of productivity to the cotton harvesting industry.

**Introduction**

The 9970 PRO-SERIES Picker starts with the proven reliability of the previous model 9965 Cotton Picker. To this dependable design several new features were added, including the PRO-12™ picking unit. Together they provide increased productivity and operator convenience in a 4 or 5 row machine configuration.

The 9976 PRO-SERIES Picker is a completely redesigned cotton harvester. Based on an innovative new design, the 9976 sets new standards for picking speed, productivity in high-yielding cotton, unloading speed and control, and service convenience. In addition, the 9976 is the industry's first production 6-row machine. New PRO-16™ units are capable of handling high-yielding cotton at picking speeds up to 4.0 mph in first gear, while offering many new convenience features that can reduce service time.

**PRO-12 and PRO-16 Picking Units**

The PRO-16 unit features a 16-bar front drum and 12-bar rear drum, each with 20-spindle-high bars (see Figure #1). For increased productivity, the PRO-16 unit is designed to offer a first-gear picking speed of 4.0 mph, and a second-gear scrapping speed of 4.5 mph. For moderate-yielding cotton, the PRO-12 units are offered. The PRO-12 unit differs from the PRO-16 by featuring 12-bar front and rear drums with 18-spindle-high bars. PRO-16 units are available only on the 9976, while the PRO-12 is available on the 9970 and also on the 9976 in a 6-row configuration. Picking speeds of the 9976 equipped with six PRO-12 units are 3.6 mph in first gear and 4.0 mph in second gear. 9970 picking speeds are 3.6 mph in first gear and 4.3 mph in second gear.

The PRO-SERIES units (PRO-12 & PRO-16) share many common performance and service features. Both units feature easy access moistener columns and nozzles (see Figure #1). The moistener column swings open to the side

of the unit to allow fast servicing of the units. This reduces overall service time and increases productivity. The clear nozzle distributor covers allow quick visual inspection of nozzle performance. Because the distributor is mounted outside the unit, access is easier when service is needed.

The cam tracks of both PRO-SERIES units have been redesigned to operate under lower loads. This feature improves picking efficiency and allows the picker bars to turn more smoothly as they follow the cam profile, resulting in less wear. The new cam track design also provides a convenient service point that allows the cam rollers to be easily removed for inspection.

The picker bars of the PRO-SERIES units feature journals that slip over sleeves on the top of the bar. Rotation occurs between the journal and the sleeve as the picker bar drum rotates, instead of the old design which allowed wear of the drum head itself. When wear occurs on the new design, simply replacing the journal and sleeve will return the bar to original specifications.

The drum drive, sun, and doffer drive gears also features improvements on the PRO-SERIES units. These gears feature a thinner, high-strength center section welded to an outer ring gear. This new construction reduces weight in the unit gear train without sacrificing strength or durability. These same gears also have been designed with high-contact-ratio gear teeth. Having a higher contact ratio means more teeth are in contact with each other at any given time, which increases the load capability of the gear as well as reducing the noise levels of the operating gear train.

Weight reduction of the PRO-SERIES units was a major goal of the design program, especially when considering the new 6-row capability. The use of aluminum for several components, including the unit-drive gearcase, picker bar drum, and several bearing housings, resulted in overall unit weight reduction. Side-mount moistener columns allowed the overall length of the unit cabinet to be shortened, which also reduced unit weight. As a result of these design changes, the PRO-16 unit with more bars has an equivalent weight of the 9965 Inline unit (see Figure #2).

**PRO-LIFT™ Basket**

The 9976 features the all new PRO-LIFT basket design. The basket pivot point has been located on the right hand side of the machine. As the basket rotates upward about the pivot point, the basket door opens on the left-hand side of the basket (see Figure #3). Variable unloading heights of 68" to 165.50" can be achieved by lowering the basket to match the height of the module builder or boll buggy being used. With this unique basket lift design, the center of gravity of the basket remains very near the mid-point of the machine throughout the unloading process. This provides good stability during unloading and eliminates the need for

adding fluid in the right drive tire that previous designs have required.

There are two separate cotton conveyors, one on the door and one on the basket floor. They may be operated together or the basket door conveyor can be operated separately. This independent operation provides excellent topping off capabilities at the module. An 18" door extension is standard on 6-row machines (optional on 4 and 5-row machines) to provide additional clearance between the machine and module builder.

### **9976 Chassis**

#### **Engine**

The 9976 features a 300-horsepower 8.1-liter engine as standard equipment. In addition, the *PowerTech*<sup>™</sup> engine features an electronic governor with a timed 7% power boost that is activated when operating the basket compactor augers. The electronically controlled engine is more responsive, more fuel efficient, meets the latest emission standards, and provides on-board diagnostic assistance. Mounting of the engine in the chassis was revised from the traditional inline direction to a transversely mounted position (see Figure #4). This orientation provides excellent access to both sides of the engine for easier serviceability.

#### **Rotary Screen**

The rotary screen package enhances machine productivity by reducing maintenance requirements. Located on the right side of the 9976 Picker, the screen features a trash expeller that is fed with an air supply from the cotton fan (see Figure #4). Air flow through the expeller creates a venturi effect that vacuums trash and debris from the rotating screen and expels it behind the picker. The rotary screen provides clean air flow for the oil cooler, A/C condenser, aftercooler, and radiator. When necessary, the oil cooler and A/C condenser swing out for easy access to all four coolers for easy service from ground level.

#### **Hydro Module**

Several components are housed within the hydro module which is located on the left side of the picker. Hinged doors on the hydro module provide easy access to the tandem hydrostatic pumps, hydraulic pump, solution pump, batteries, hydraulic reservoir, and onboard lube remote-fill outlets.

#### **Fluid Tanks**

Located conveniently on the rear of the 9976 are the lube, moistener system, and fuel tanks (see Figure #4). All three tanks feature ground level fill for improved serviceability and sight gauges for quick level checks. Tank volumes include 80 gallons of lube, 275 gallons of solution, and 150 gallons of fuel, which provide capacities needed for longer days in the field. Traditionally, the solution and lube tanks have been located directly behind the cab. By moving the

solution and lube tanks to the rear of the machine, a large amount of weight was removed from the front axle and drive tires. This resulted in a better overall machine weight distribution.

#### **Air System**

The air system features a newly designed rotor and composite fan housing. Both are designed to efficiently provide the air flow needed to handle six row units. The outlet of the fan housing feeds directly into a composite air-distribution manifold. Air flow, whether it be to 4, 5, or 6 row units, is equally divided by the manifold. From the manifold, air is directed to the cotton conveying ducts. The ducts are made of a composite material, providing improved quality, durability, reduced weight, and quieter operation.

#### **6-Row Capability**

The 9976 offers the industry's first production 6-row cotton harvester. To handle the load of six row units, the chassis mainframe and lift frames are designed with large tubing sections and welded construction. Six row units are offered in unit spacing configurations starting with 30-inch rows all the way through to 40-inch rows in 2-inch increments. The six row configuration is available with either the PRO-16 or PRO-12 units. For more stability, better flotation, and less soil compaction, all 6-row machines are equipped with dual drive tires.

Six-row capability is one of the major contributors to the increased productivity of the 9976 Cotton Picker. Harvesting speeds of up to 4.0 mph along with 6-row widths combine for a harvest of up to 73 acres per day. Similar proportional increases in acres harvested per day are seen with other row-width configurations (see Figure #5).

**9976 Cotton Picker - Specifications**

(Specifications and design subject to change without notice)

<b>Engine</b>
6081H (8.1 liter) Turbo-Charged and Air-To-Air Cooled
3-Speed Electronic Engine Throttle Control
300 Horsepower with Electronically Controlled Power Boost
120 Amp Alternator
150 Gallon Fuel Tank
Batteries (650 CCA)
<b>Drive Train</b>
PRO-16, 3-Speed Hydrostatic Transmission
4.0 mph 1 <sup>st</sup> -Gear Picking Speed
4.5 mph 2 <sup>nd</sup> -Gear Scrapping Speed
17.0 mph 3 <sup>rd</sup> -Gear Transport Speed
Optional PRO-12, 3-Speed Hydrostatic Transmission
3.6 mph 1 <sup>st</sup> -Gear Picking Speed
4.0 mph 2 <sup>nd</sup> -Gear Scrapping Speed
15.3 mph 3 <sup>rd</sup> -Gear Transport Speed
Hydraulic Brakes/Mechanical Park Brake
Tandem Hydrostatic Drive
<b>Tires</b>
Guide Wheels, Standard, 11.25x24 In. 10 PR II
Drive Wheels, Standard, 20.8x42 In. 14 PR R1
<b>Operator Station</b>
Air Conditioning
Electro/Hydraulic Control Valves for Unit Lift and Basket
Electrically Activated Cotton Conveying Fan and Units
Sound-Gard Operator's Cab
Cab Pressurizer w/Air Filter, Heater and A/C
Windshield Wiper
Dual-Readout Electronic Tachometer and Hourmeter
Corner Post Monitor
AM/FM Radio w/Cassette and Weather Band
<b>Hydraulics</b>
Closed-Center Hydraulic System
Power Steering
Auto Unit-Height Sensing
Hi-Efficiency Spin-On Filter
<b>Picking Units</b>
Pro-16 or Optional Pro-12 High-Capacity Units
Non-Contaminating Doffers
Easy Access Moistener Columns
Precision Moistener Control w/Flush System
Complete Picking-Unit Lubrication System
Electronic Picking-Unit and Cotton-Conveying Monitor
Picking Unit Inner-Height Sensing for 6 Row Only
<b>Basket</b>
3-Position Telescoping Basket
3-Auger Compactor
Dual-Conveying Unloading System
PRO-LIFT Basket
<b>Miscellaneous</b>
275-Gallon Water Tank with Remote Fill
80-Gallon Unit Lube Tank
Operator Presence System
Field Lamps
Self-Cleaning Rotary Screen for Cooling Air
High-Efficiency Conveying Fan
High-Efficiency Air Distribution System

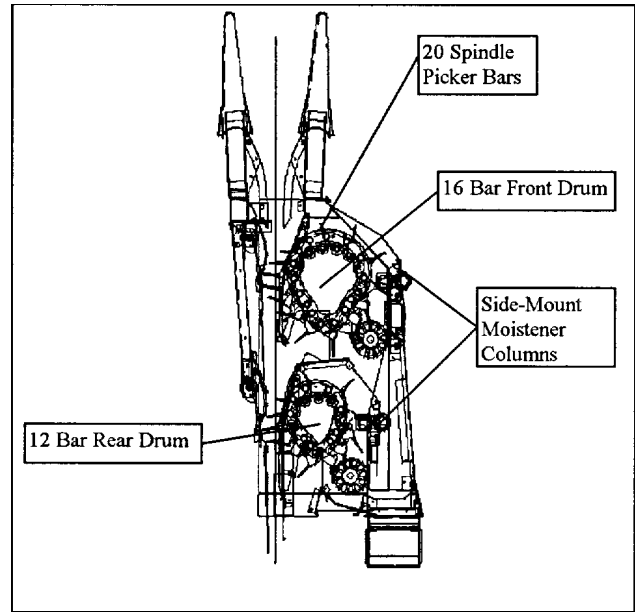


Figure 1. PRO-16 Picking Unit

Figure 2. Unit Weight Comparison

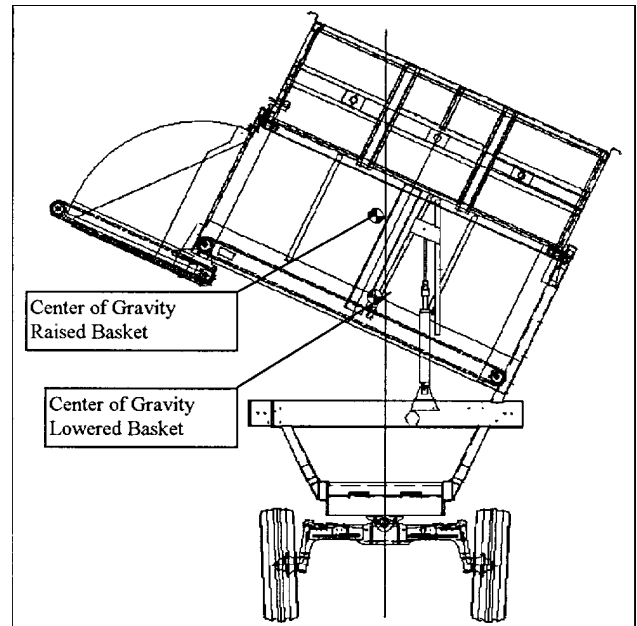
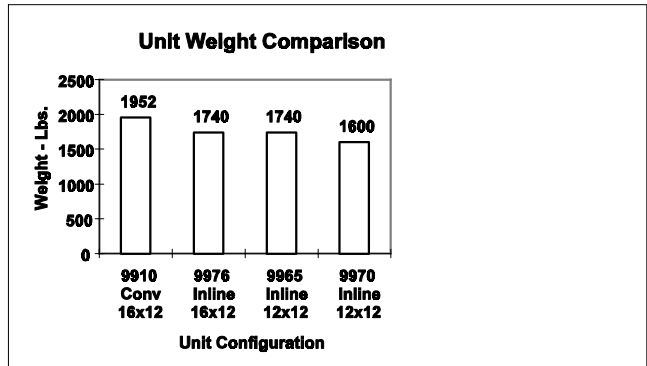


Figure 3. 9976 Pro-Lift Basket

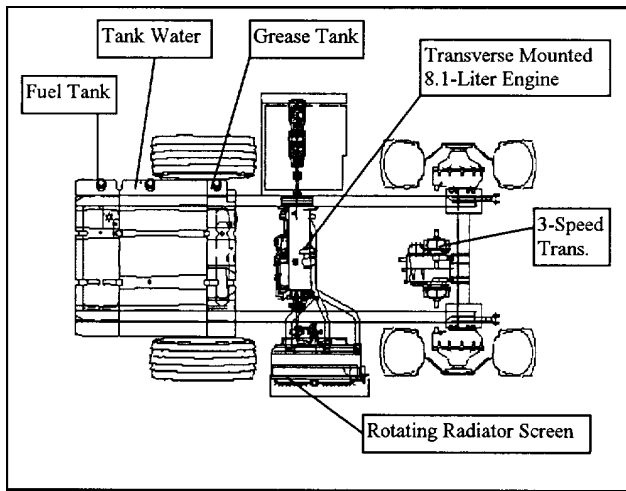


Figure 4. 9976 Chassis Top View

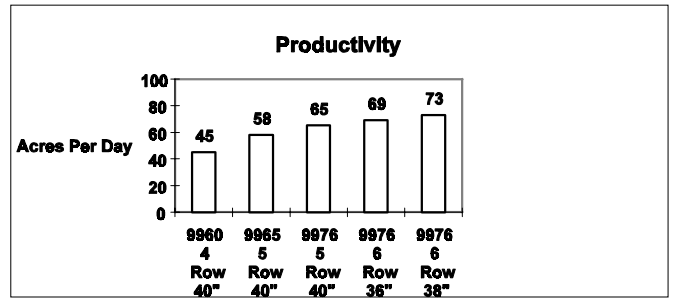


Figure 5. Machine Productivity