

# JOHN DEERE 105 HI-LO COMBINE



## OPERATORS MANUAL JOHN DEERE 105 HI-LO COMBINE

OMH90564 C1 English

JOHN DEERE HARVESTER WORKS  
OMH90564 C1

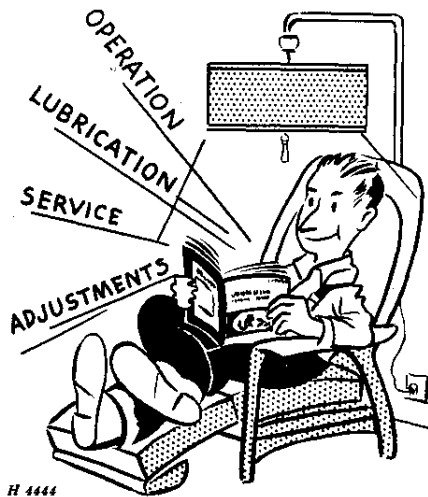
LITHO IN THE U.S.A.  
ENGLISH



# To the purchaser

The self-propelled combine you have just purchased was designed and manufactured to the traditionally high quality standards of all John Deere Farm Equipment. Your combine has been thoroughly inspected and tested, not only at the factory, but at your dealer's by a trained John Deere Serviceman. We are confident that you will receive years of dependable, economical service from your John Deere Self-Propelled Combine.

If you should find that you require information not covered in this manual, consult your John Deere dealer. He will be glad to answer any questions that may arise regarding the operation and handling of the combine. He has specialized mechanics who are kept informed on the best methods of John Deere Combine servicing, and can give you prompt know-how service in the field or in his shop.



*Study this manual carefully, keep it handy, in a safe place, for future reference.*

## Location reference

"Right-hand" and "left-hand" sides are determined by facing in the direction the combine will travel when in use.

"Clockwise" refers to parts turning to the right like the hands of a clock. "Counter-clockwise" refers to parts turning to the left.

Timing gear end of the engine is referred to as the "front;" flywheel end as the "rear."

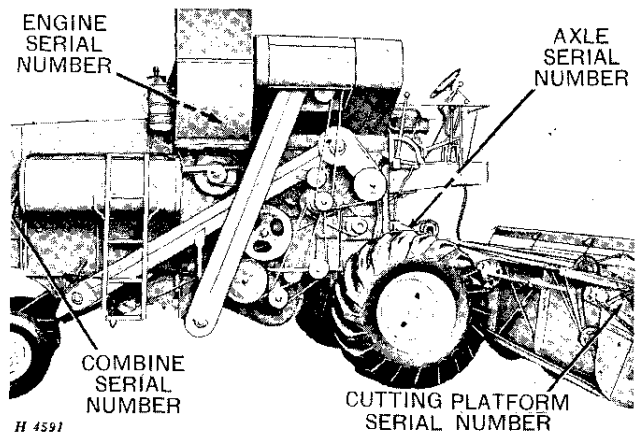
## Keep your combine a John Deere Combine

Genuine John Deere Parts fit properly and insure satisfactory service because they are made from the original patterns and from the same materials as used in new machines. Should your combine require replacement parts, go to your John Deere dealer where you can obtain Genuine John Deere Parts—accept no substitutes.

## Serial numbers

Your combine, cutting platform, axle, and engine have serial numbers.

When ordering parts, always bring with you the model and serial numbers as given on the serial number plates. By doing so, you will assist your John Deere dealer in giving you prompt, efficient service.



The combine serial number is on a plate located on the support bracket at the rear end of the fuel tank.

The engine serial number is on a plate located on top of the flywheel housing.

The axle serial number is on the top, left-hand end of the axle tube.

The cutting platform serial number is on a plate located on the outside of the right-hand platform divider.

Combine serial no. \_\_\_\_\_  
Engine serial no. \_\_\_\_\_  
Axle serial no. \_\_\_\_\_  
Cutting platform serial no. \_\_\_\_\_  
Date purchased \_\_\_\_\_



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# specifications

## CUTTER BAR

Width of cut . . . 14-ft., or 16-ft. (rice) 14-ft., 16-ft., 18-ft., 20-ft., or 22-ft. (grain)

Length of cutter bar . . . . 13-ft. 6-in. or 15-ft. 6-in. (rice) 13-ft.-6-in., 15-ft. 6-in., 17-ft. 6-in., 19-ft. 6-in., or 21-ft. 6-in. (grain)

Type of knife sections . . . . Heavy-duty overserrated

## REEL

Drive . . . . . Variable-belt and chain

Number of slats . . . . . 4 regular; 3, 6, or 8 special

Diameter of reel . . . . . 32-in. or 40-in.

Speed of range . . . . . 16.5 rpm to 58 rpm

Height control . . . . . Hydraulic

## CUTTING PLATFORM

Type of feed . . . . . Auger

Cutting height  
Range . . . . . (18.4-26 tires) 2-1/2-in. below wheel level to 35-in. above

Cutting height  
Range . . . . . (23.1-26 tires) 2-1/2-in. below wheel level to 38-in. above

Height Control . . . . . Hydraulic (2 cylinders)

## CUTTING PLATFORM AUGER

Diameter . . . . . 18-in.

Diameter of auger tube . . . . . 10-in.

Type of auger fingers . . . . . Round retracting

## CYLINDER

Type . . . . . Rasp-bar or spike-tooth

Width . . . . . 49-1/2-in.

Diameter . . . . . 22-in.

Number of bars . . . . . 8 rasp-bars or 10 spike tooth bars (5 bars with 19 teeth and 5 bars with 20 teeth)

Drive . . . . . Roller chain

Speed range . . . . . 276 rpm to 1190 rpm

## CONCAVE

Type . . . . . 12-bar open type or spike-tooth type

Width . . . . . 49-1/2-in.

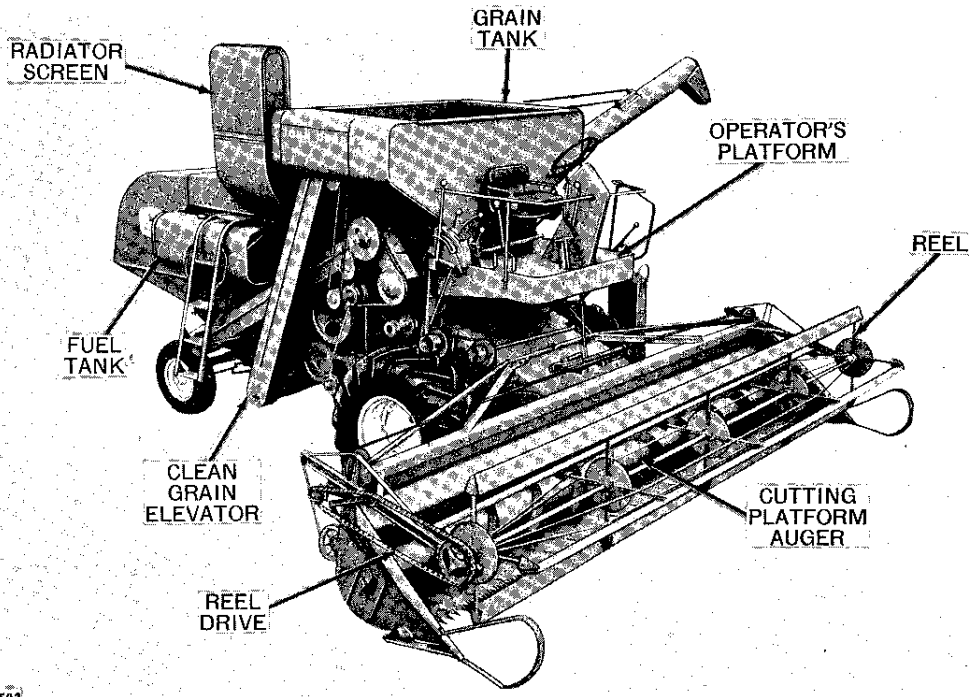
## BEATER (Behind the cylinder)

Type . . . . . Drum

Width . . . . . 49-1/2-in.

Diameter . . . . . 12-in.

Speed . . . . . 680 rpm



**SEPARATOR**

Type . . . . . Grain conveyor, straw walker  
 Width . . . . . 49-1/2-in.  
 Length of separating surface . . 140-in. (Straw walker  
 pans extended)  
 Total separating area . . . . . 6,930 sq. in.

**GRAIN CONVEYOR**

Type . . . . . Slat  
 Drive . . . . . Chain

**CLEANING FAN**

Type . . . . . 5-bladed undershot  
 Drive . . . . . V-belt  
 Speed range . . . . . 550 rpm to 1050 rpm

**CHAFFER**

Type . . . . . Adjustable  
 Width . . . . . 48-in.  
 Length . . . . . 48-1/2-in.  
 Area . . . . . 2,330 sq. in.

**SIEVE**

Type . . . . . Adjustable  
 Width . . . . . 48-in.  
 Length . . . . . 45-in.  
 Area . . . . . 2,160 sq. in.

**CHAFFER EXTENSION**

Type . . . . . Adjustable  
 Width . . . . . 48-in.  
 Length . . . . . 12-5/16-in.  
 Area . . . . . 591 sq. in.

**TOTAL CLEANING AREA OF CHAFFER, SIEVE, AND CHAFFER EXTENSION . . . . . 5,066 sq. in.**

**STRAW WALKERS**

Number . . . . . Five  
 Width . . . . . 9-1/2-in.  
 Length . . . . . 115-in.  
 Area . . . . . 5,462-1/2 sq. in.  
 Number of steps . . . . . Five  
 Drive . . . . . V-belt  
 Bearings . . . . . Oil-soaked maple  
 Extension pans . . . . . One on each walker

**GRAIN TANK**

Capacity . . . . . 75 Bushel, approx. (Type  
 and condition of crop will  
 determine actual volume)  
 Type of unloading . . . . . Hinged auger

**BRAKES**

Type . . . . . Individual, mechanical disk-type

**TRANSMISSION**

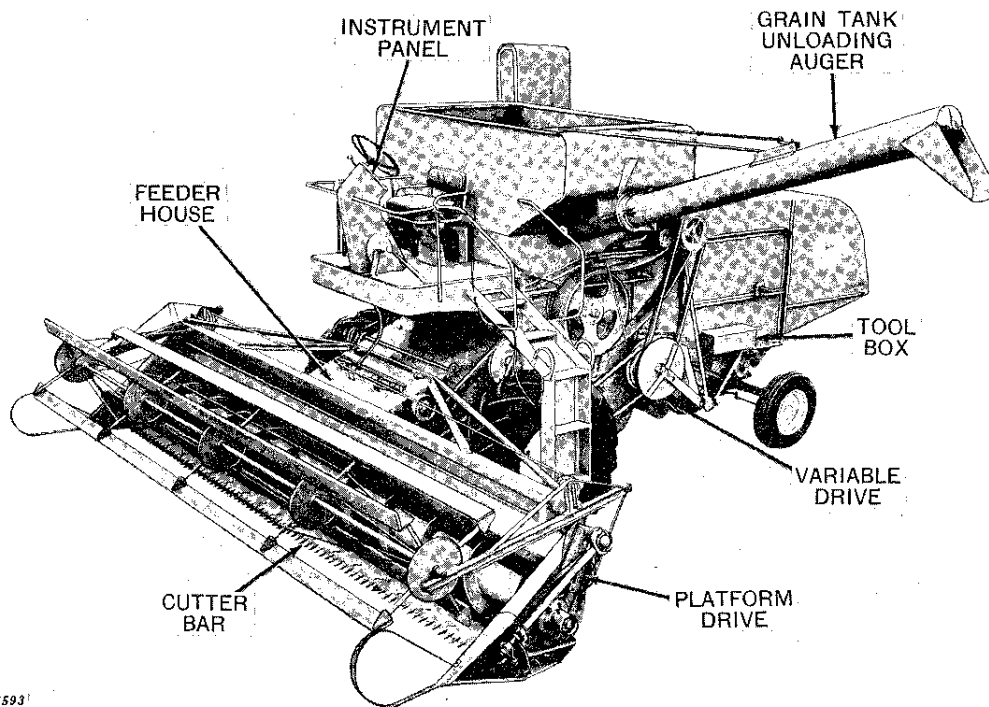
Type . . . . . Automotive type—4 speeds  
 forward, 1 reverse

**WEIGHT**

Combine with 16-ft. cutting  
 platform . . . . . 12,600 lbs. (Approx.)

**DIMENSIONS**

. . . . . See pages 6-7



4 specifications

**Tires sizes**

**MAIN WHEELS**

Grain and corn 18.4-26 (15-26) (10-ply) cleat  
 23.1-26 (18-26) (8-ply) low-profile  
 Grain . . . . . 23.1-26 (18-26) (8-ply) cleat  
 Rice . . . . . 23.1-26 (18-26) (8-ply) rice

**GUIDE WHEELS**

Grain and corn 7.50-16 (4-ply) rib implement  
 Rice . . . . . 7.50-20 (4-ply) rib implement  
 7.50-20 (6-ply) skid ring  
 Grain . . . . . 9-16 (4-ply) low profile

**Capacities (approx.)**

Fuel tank . . . . . 60 U.S. gallons  
 Cooling system (radiator) . . . . 6 U.S. gallons  
 Engine crankcase . . . . . 4 U.S. quarts  
 Oil filter . . . . . 1 U.S. quart  
 Air cleaner . . . . . 3 U.S. pints  
 Reduction gear . . . . . 2 U.S. quarts  
 Transmission . . . . . 14 U.S. pints  
 Final drives (2) . . . 4-1/2 U.S. pints (in each)  
 Cutting platform lift, reel lift, and  
 variable speed hydraulic unit (In-  
 cluding hydraulic oil lines and  
 cylinders) . . . . . 12 U.S. quarts  
 Power steering hydraulic unit (In-  
 cluding hydraulic oil lines and  
 cylinders) . . . . . 2 U.S. quarts

**Wheel tread dimensions**

Combine	Tires sizes	Center-to-center wheel tread
Grain	18.4-26 (15-26) with spacers	97 inches
	23.1-26 (18-26)	104 inches
	7.50-16	48 inches
	7.50-20	45-5/8 inches
	9.00-16	50 inches
Rice	23.1-26 (18-26)	108 inches
	7.50-20	45-1/2 inches

**Tire inflation chart**

Tire size	Description	Ply rating	Operating pressure
18.4-26	Cleat	10	26 lbs.
23.1-26	Cleat	8	16 lbs.
23.1-26	Rice	8	16 lbs.
23.1-26	Low profile	8	16 lbs.
7.50-16	Rib implement	4	24 lbs.
7.50-20	Rib implement	4	20 lbs.
7.50-20	Skid ring	6	24 lbs.
9.00-16	Low profile	4	18 lbs.

**Selective ground speed control range**

18.4-26 (15-26) Tires—grain drive		23.1-26 (18-26) Tires—grain drive		23.1-26 (18-26) Tires—rice drive	
(Min.)	(Max.)	(Min.)	(Max.)	(Min.)	(Max.)
1st Gear . . . . .	.60 to 1.36 mph	1st Gear . . . . .	.64 to 1.43 mph	1st Gear . . . . .	.69 to 1.54 mph
2nd Gear . . . . .	1.21 to 2.71 mph	2nd Gear . . . . .	1.28 to 2.86 mph	2nd Gear . . . . .	1.37 to 3.08 mph
3rd Gear . . . . .	2.46 to 5.52 mph	3rd Gear . . . . .	2.60 to 5.82 mph	3rd Gear . . . . .	2.80 to 6.28 mph
4th Gear . . . . .	4.93 to 11.06 mph	4th Gear . . . . .	5.20 to 11.66 mph	4th Gear . . . . .	5.60 to 12.56 mph
Reverse . . . . .	1.55 to 3.47 mph	Reverse . . . . .	1.63 to 3.66 mph	Reverse . . . . .	1.76 to 3.94 mph

### Engine

Make of engine . . . . .	John Deere HA-248-G	Valve arrangement . .	Valve - in - Head (Rotators on exhaust valves)
Bore . . . . .	3-7/8-in.	Valve clearance	
Stroke . . . . .	3-1/2-in.	Intake . . . . .	.012-in. (When cold)
Brake horsepower . . . . .	105*	Exhaust . . . . .	.018-in. (When cold)
Number of cylinders . . . . .	6	Make of governor . . . . .	Pierce
Piston displacement . . . . .	247.67 cu. in.	Make of carburetor . .	Zenith (Dual down draft type)
Maximum load speed . . . . .	3000 rpm	Spark plug . . . . .	Champion H8 or Equivalent. Gap .015-in. heat range 1200° F. to 1500° F.
Firing order . . . . .	1-5-3-6-2-4	Electrical system . .	12-volt (Two 6-volt batteries)
Crankcase . . . . .	Cast integral with block	Cooling system . . . . .	Water pressure type
Type of lubrication . .	Force feed by gear pump to all connecting rods, main bearings, governor, and oil pump drive. Oil strainer in bottom of pan.	Type of fuel . . . . .	Gasoline (Regular grade)

\*Calculated at 60° F. and 29.92 inches Hg. at Sea Level.

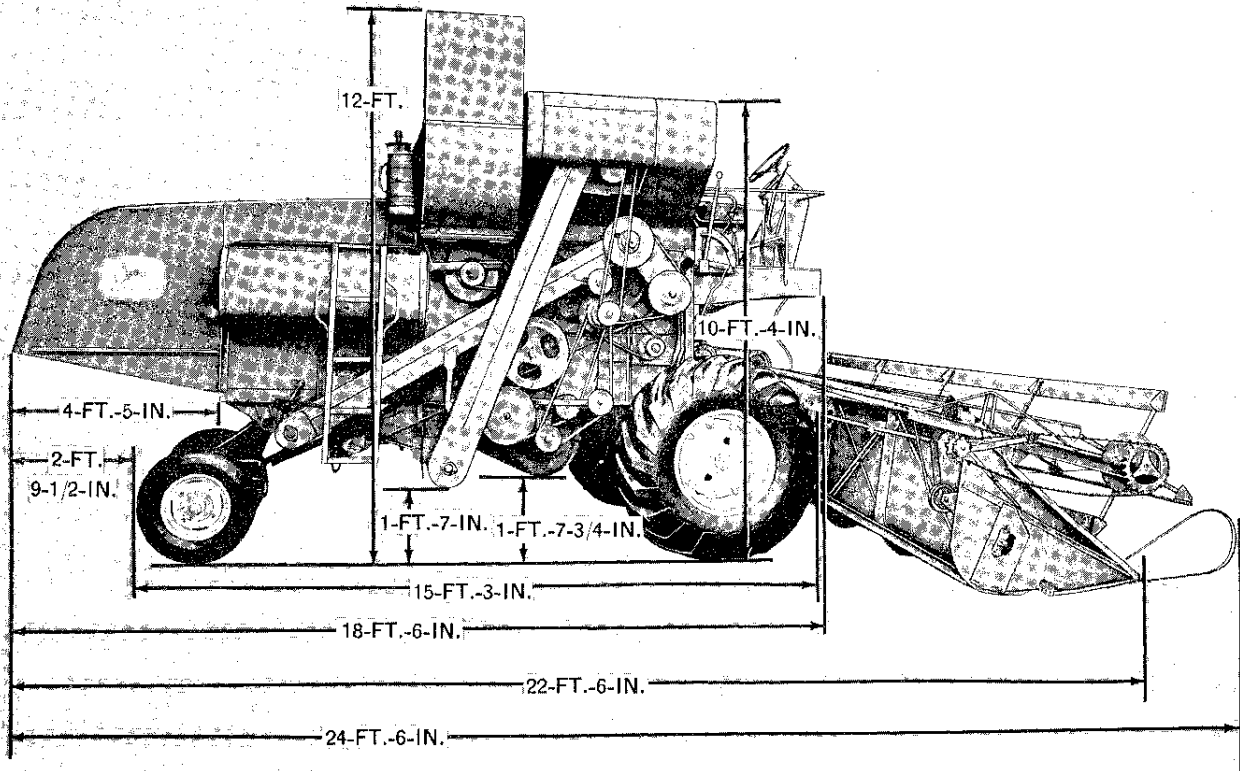
### Special equipment available

	Page		Page
Air precleaner . . . . .	121	Highway safety lighting attachment . . . . .	21
Axle spacers . . . . .	98	Hydraulic cylinder support chains . . . . .	56
Belt pickup attachment . . . . .	57	Lifting guards . . . . .	50
Belt wipers for reel slats . . . . .	45	Lighting attachment . . . . .	21
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Chromed knife sections . . . . .	49	Seat arm cushions . . . . .	10
Cleaning fan housing protective shield . . . . .	72	Side hill attachment . . . . .	74
Concave cover plates . . . . .	64	Sieves (Special types) . . . . .	75
Corn attachment . . . . .	57	Spike-tooth straightener . . . . .	61
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Double slat reel . . . . .	41	Stubble shield . . . . .	89
Fan sheave with shims . . . . .	72	Tailings finger bar with adjustable tailboard . . . . .	74
Feed rolls attachment . . . . .	65	Transmission sheave mudguard . . . . .	89
Grain conveyor dirt chute . . . . .	67	Trusses for reel support arms . . . . .	46
Grain conveyor perforated inserts and doors . . . . .	67	Wheel wrench . . . . .	98
Guard and knife repair block . . . . .	50		

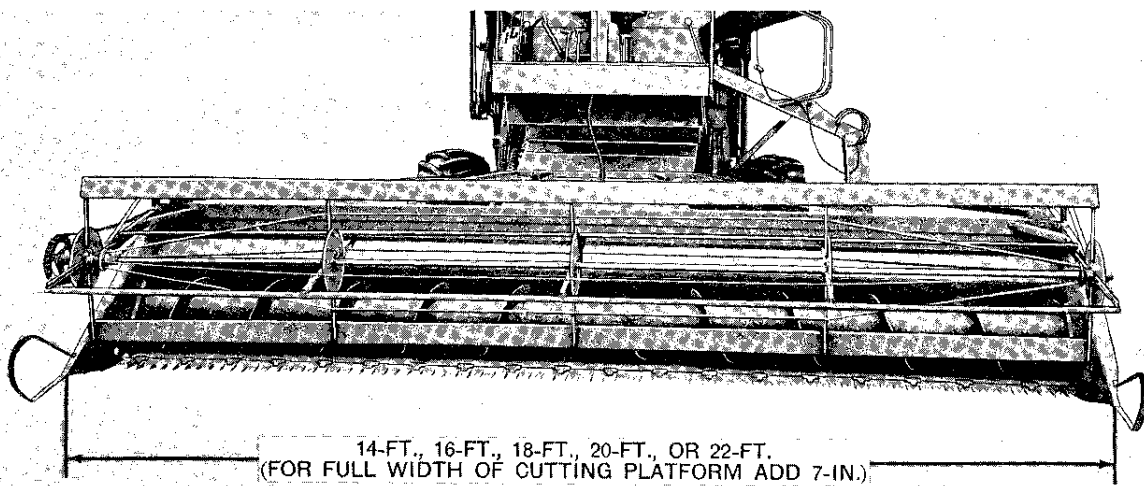
6 specifications

Combine dimensions—overall

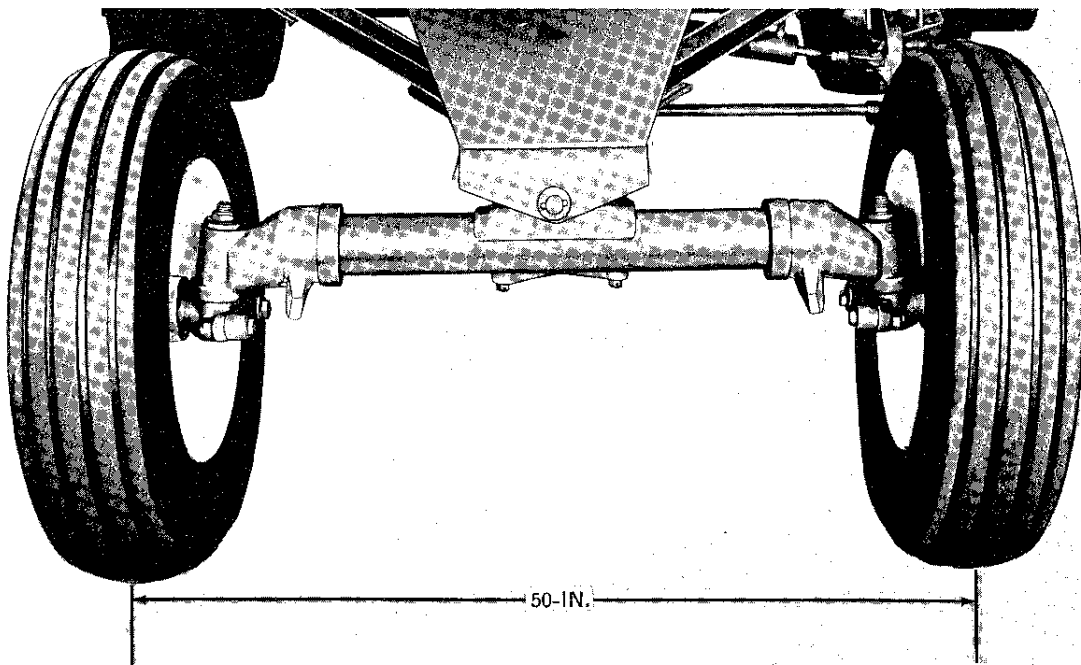
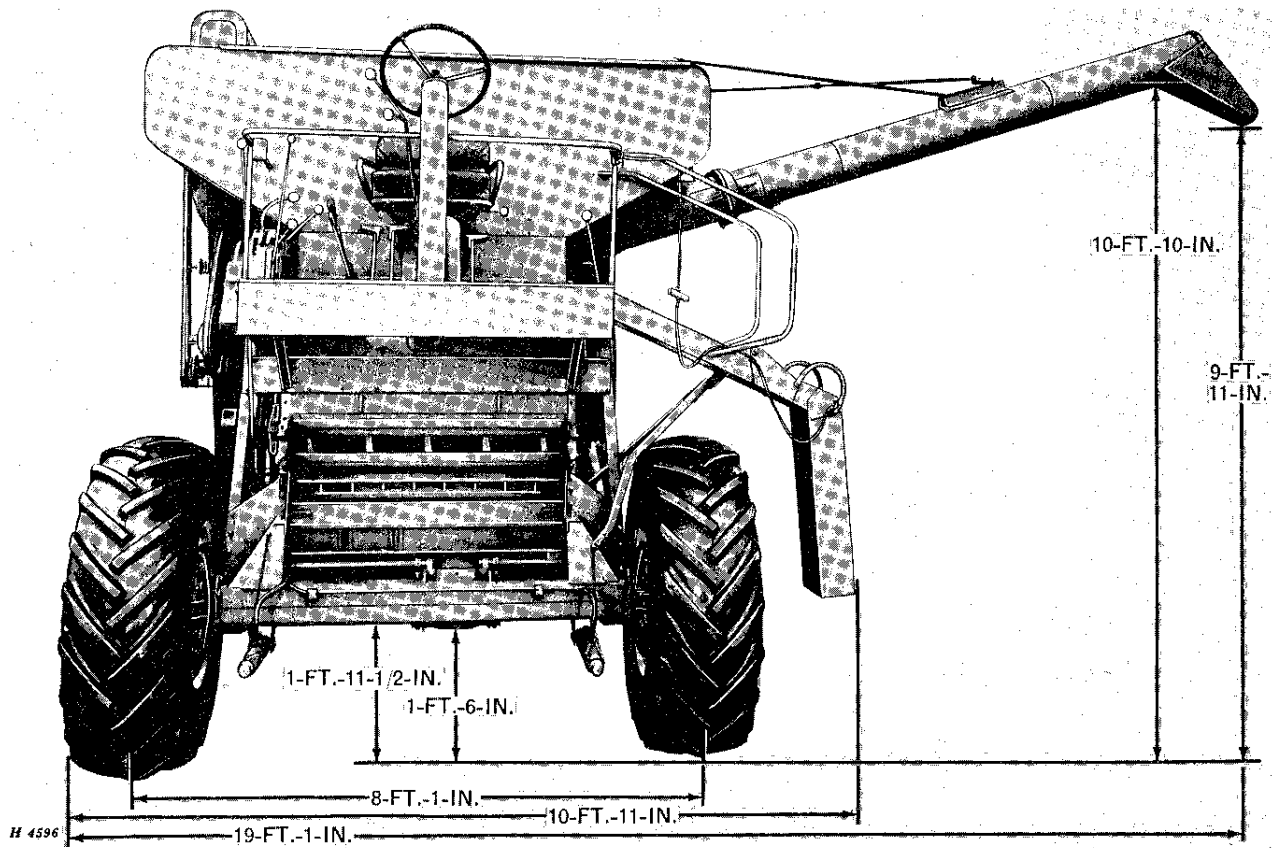
NOTE: Combine equipped with 18.4-26 (15-26) main wheel tires and 7.50-16 guide wheel tires for dimensions.



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H 4597



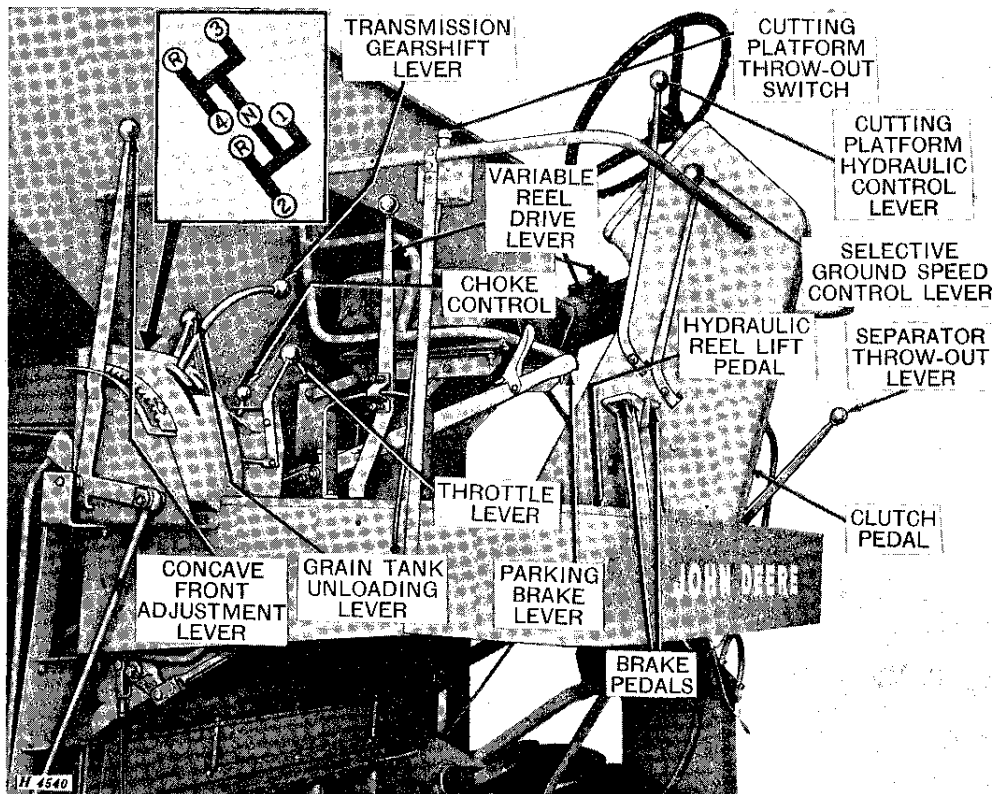
*(Specifications and design subject to change without notice)*



# controls and instruments

Before attempting to operate your new combine, become familiar with the location and purpose of its controls and instruments. Study these pages carefully, regardless of your previous combine experience.

## Controls



The combine controls are located on the operator's platform within easy reach of the operator. Those controls whose purpose and function are obvious, will not be explained.

### Transmission gearshift lever

There are four speed ranges forward and one reverse range (with two positions). Positions of the gearshift lever for different transmission speed ranges are shown by diagram.

**CAUTION:** Be certain the gearshift lever is in neutral position before starting engine.

### Grain tank unloading lever

This lever engages auger when pulled rearward. To disengage, move lever forward. Grain

tank unloading drive and separator drive are independent. If engine is running, separator can be stopped without affecting unloading of grain tank.

### Separator throw-out lever

This lever is disengaged when in forward position. To engage, pull lever rearward.

### Concave front adjustment lever

This lever controls the opening and closing of the front of the concave from the operator's platform. Move lever forward to open concave; move lever rearward to close concave.

**NOTE:** Make certain lever is locked in ratchet so concave will not move when combining.

### Cutting platform throw-out switch

This switch operates the electromagnetic throw-out clutch which permits the instant stopping of the cutting platform and feeder house while the separator continues to run.

Push switch down to disengage drive. When trouble has been taken care of, push switch down again to engage drive.

### Selective ground speed control lever

To increase ground travel speed within a selected transmission range, move lever forward. It will automatically return to neutral position when released and speed will remain as selected. Ground travel speeds of from .80 to 14.58 mph (18.4-26 tires) are available at governed engine speed. Separator speed remains constant.

### Cutting platform height control lever

This lever controls the height of the platform through a hydraulic mechanism. Platform height range is from 2-1/2 inches below wheel level to 35 inches above wheel level on grain combines, and from 2-1/2 inches below wheel level to 38 inches above wheel level on rice combines. Move lever forward to lower platform; pull lever rearward to raise platform. When released, lever automatically returns to neutral position and cutting platform remains at selected position. As a safety measure, cutting platform height cannot be changed unless engine is running.

### Hydraulic reel lift pedal

This pedal, used in conjunction with the cutting platform height control lever, permits the lowering and raising of the reel hydraulically from the operator's platform.

To raise the reel, depress the pedal with the right foot and pull the cutting platform height control lever rearward. To lower the reel, depress the pedal and move the control lever forward.

**CAUTION:** When raising or lowering the reel, always depress the pedal before moving the lever to prevent the raising or lowering of the cutting platform.

### Variable reel speed lever

This lever controls the speed of the reel from the operator's platform. To decrease the speed of the reel, move lever rearward; to increase speed, move lever forward.

**NOTE:** Make certain lever is locked in ratchet so reel speed cannot change when reel is operating.

### Throttle lever

Pull lever one-quarter forward from rear to start engine. Pull lever all the way forward for normal operation.

### Choke control

Pull choke control all the way forward to start engine. After engine runs a few revolutions, push choke control all the way rearward.

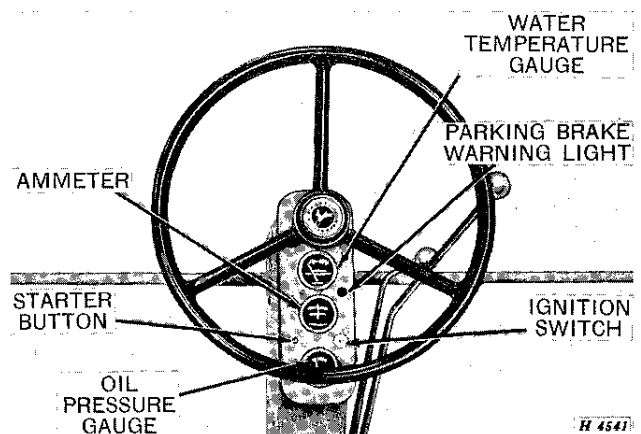
### Parking brake lever

The parking brake lever is used to lock the wheel brakes so the combine cannot move if left unattended. To engage, pull lever rearward. To disengage, move lever forward.

Never attempt to move combine with parking brake lever engaged.

## Instruments

All instruments are conveniently grouped on the instrument panel where they may be observed easily by the operator.



### Water temperature gauge

This gauge indicates the water temperature in the cooling system—not the quantity. Normal operating temperature is 160° to 200° F. (indicated by green band on dial). If 200° F. or above, (indicated by red band on dial) stop engine and determine cause.

### Ammeter

This gauge indicates the rate of charge or discharge of the batteries. If ammeter shows discharge for an extended period during normal operation, check for a ground, short circuit, or faulty regulator. If ammeter shows high charge continually, inspect for low batteries, faulty connections, low battery water, or bad regulator.

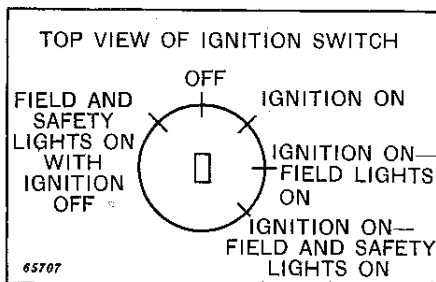
## 10 controls and instruments

### Oil pressure gauge

This gauge indicates the pressure of engine lubricating oil. Oil pressure will vary slightly; but with recommended oil, it should read NORMAL at full governed speed. If oil pressure drops, stop immediately and determine cause.

### Parking brake warning light

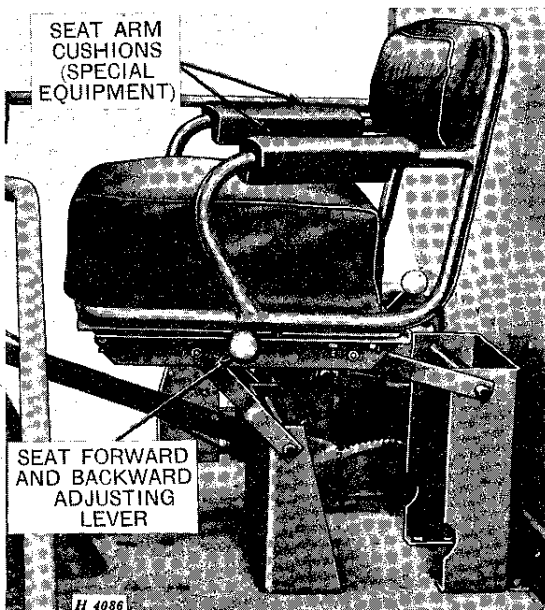
When the parking brake is engaged, the warning light will flash on and off the instant the ignition switch is turned on. This is a warning not to move the combine with parking brake engaged.



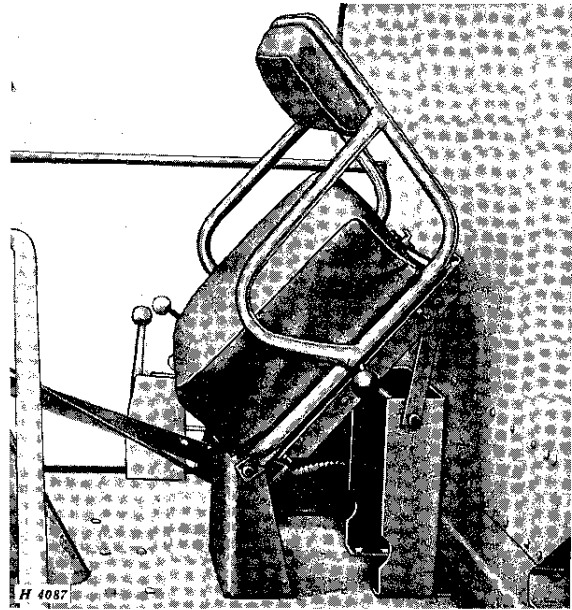
Top view of ignition switch

### Seat

The John Deere 105 Combine is equipped with a fold-up type seat. The fold-up type seat can be moved forward and rearward, and also can be folded back into a vertical position against the grain tank should the operator desire to work in a standing position.



Operator's seat-down position  
(with seat arm cushions installed)



Operator's seat-up position

Move lever on left-hand side of seat forward, and slide seat forward or rearward to the desired position.

Grasp the seat back and pull upward to move seat to the up position.

### Seat arm cushions (special equipment)

Foam rubber seat arm cushions are available as special equipment designed to add to the riding comfort of your combine.

The seat arm cushions are held in place by U-shaped steel spring clips. Installation is accomplished by hand-pressing the clips over the seat arms—no holes to drill—no hardware necessary.

Order shipping package AA6022R, one pair of seat arm cushions from your John Deere dealer.



# operation

## Know your combine

Before operating the combine, be sure to read this manual carefully. The operation section will make you thoroughly acquainted with the function of all working units of the John Deere 105 Combine.

The adjustments and service section of this manual will help you to become familiar with the adjustments and service procedures necessary to obtain the best results.

Make this operator's manual your guide. Follow its recommendations, regardless of what may have been your practice with other combines.

Special attachments are described and illustrated throughout the manual. When an attachment requires operating and servicing instructions, these instructions will be furnished with the attachment.

Genuine John Deere parts for this combine can be obtained from your John Deere dealer. Always give him your combine serial number when ordering parts.

## How the combine works

The reel divides the grain and holds it to the cutter bar until cut. The platform auger carries the grain from both ends of the platform to the center of the auger. Retracting fingers in the auger beater take material and feed it to the feeder beater. The feeder beater moves grain to the feeder conveyor chain. The chain delivers grain to the rasp-bar or spike-tooth cylinder.

As the grain travels between the cylinder and the concave, over grate fingers, and back against the separating beater, the greater part of separating takes place. The separating beater strips straw from the cylinder, deflects grain through the finger grates, and passes straw onto the straw walkers.

Most of the grain falls through the concave grate and fingers onto the grain conveyor. Straw and remaining loose grain are passed along to

the straw walkers. The curtain above the straw walkers keeps grain from being thrown over the walkers. On its outward movement, the straw is agitated by the straw walkers, and the remaining grain falls through openings in walkers and flows back through the straw walker grain return pans onto the auxiliary chaffer. The straw is dropped off end of the straw walkers and out of separator. The straw can be spread by a straw spreader (special equipment) or broken up by a straw chopper (special equipment).

After grain and chaff leave the conveyor, a blast of air from the cleaning fan, through the adjustable windboards, is directed against the auxiliary chaffer, chaffer, chaffer extension, and sieve. The air blast, with the aid of sieve agitation, blows chaff away and moves tailings to tailings auger. The tailings auger carries tailings through a cross-auger, to the cylinder, for rethreshing.

The clean grain, after dropping through the auxiliary chaffer, chaffer, chaffer extension, and sieve, is carried by the clean grain auger, to the clean grain elevator. The elevator delivers clean grain to grain tank loading auger. The loading auger distributes the grain evenly in the grain tank. The grain is moved from the grain tank to a truck or wagon by the grain tank unloading auger.

## Fundamentals of combine harvesting

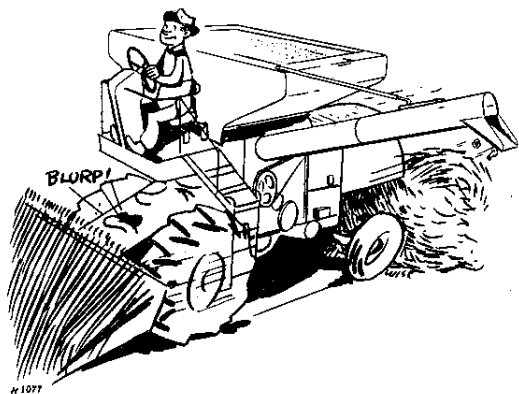
Combining has proved to be the most economical, easiest, and fastest method of harvesting. This combine can be quickly adjusted to harvest almost any crop under any condition. On the following pages, you will find information about speeds, settings, and special equipment that will enable you to do a first-class job of harvesting your crop.

The one most important factor in harvesting, is for the operator to have a thorough understanding of the fundamentals of combine operation.

## Fundamentals of combine harvesting—continued

These fundamentals in brief are:

Be sure crop is in condition to thresh—moisture content not too high—straw not to green, etc.



Don't overload the combine

In making the first round of the field, keep the combine forward speed as slow as possible to reduce the volume of material entering the combine. Always run the engine at full throttle to keep the combine mechanism up to full speed, thus guarding against slugging and clogging. Use the selective ground speed drive to obtain slower speed or shift to a lower gear if necessary—but do not throttle down the engine.

Select a ground speed that will not overload the combine.

See that cylinder is operating at the correct speed. Engine should be in good condition—governor should be properly set and responsive enough to accelerate quickly if an overload occurs.

Keep the cylinder speed as low as possible and concave clearance as high as possible to remove the maximum amount of grain from head without breaking up the straw excessively. Edible beans are easily mutilated and require use of special slow speed cylinder drive. Maintain correct beater speed to guard against wrapping of straw on beater.

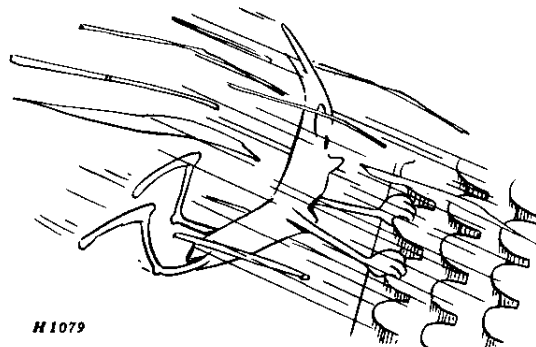
Cut the crop as high as possible without excessive loss of low grain heads. If the straw is down and tangled, it may be desirable to use lifting guards. Slow travel speed is imperative.

Adjust the reel position and speed for even feeding.

Regulate adjustable chaffer openings to pass the grain or seed to the lower sieve before it has passed over two-thirds the length of chaffer without admitting too much coarse material.

Close adjustable sieve as far as possible without carrying clean grain into the tailings auger.

If material loads up on front of chaffer, adjust upper windboard to throw blast to front of shoe.



H 1079

Use proper amount of blast

Use as much air as possible without blowing over clean seed. If the grain or seed is unusually light, it may be necessary to reduce the volume of air. In heavy seeds, increase the volume of air.

*NOTE: The volume of air is regulated by the cleaning fan speed and fan shutters at sides of fan housing.*

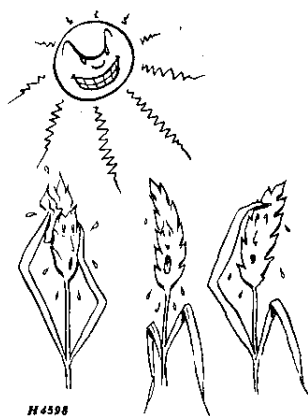
Keep amount of tailings as low as possible.

### Operating suggestions

The degree of satisfaction given by this or any other combine depends upon the carefulness of the operator. Once the combine has been adjusted to meet the crop condition, the rest is up to the operator.

Don't start combining until the crop is ripe. The natural tendency of the owner of a new combine is to try out his new combine as soon as possible. This results in many new combines being started in the field before the crop is ready for combining.

Unless crop drying equipment is available, a crop should not be combined until it is dead ripe. If the threshed grain feels damp or is easily dented with the fingernail, the moisture content is usually too high for safe storage.



H 4598

Wait until the crop is dry

Grain crops containing 14% moisture or less are usually considered dry enough for safe storage. A John Deere Moisture Meter for checking moisture content of grain and a portable Grain Dryer can be purchased from your John Deere dealer, or arrangements can usually be made at the local grain elevator for necessary moisture tests and drying if necessary.

### Preparing the field

Proper preparation of field for combining will mean less trouble and more profitable operation.

In fields where small grain follows corn in the rotation of crops, take special care before seeding to clean up or cover cornstalks and large corn roots. They can be very troublesome if the crop goes down.

When a cornstalk or root hooks onto the point of a guard, a great deal of grain is pushed ahead and run down. It is then usually necessary to stop, back up, and clean off the cutter bar before going ahead. If the cutter bar is raised to avoid stalks and roots, loss of some grain results.

A little extra work done when preparing the field for the small grain crop will pay big dividends when harvest time rolls around.

### Operation in weedy conditions

Combining in fields where weeds are numerous is particularly troublesome as they tend to gum up the sieves. Also, the moisture in the seeds is imparted to the grain.

Weeds should be disposed of quickly and not be broken up any more than necessary.



H 7081

Prepare the field

The following suggestions will help while operating in weedy conditions.

Cut the grain as high as possible to avoid weeds and undergrowth.

Check to see that the cylinder is operating at proper speed.

Use as much air blast on the shoe as possible without blowing over grain.

Lower rear end of chaffer.

### Height of cut

The cutting platform has a cutting height range from 2-1/2 inches below wheel level to 35 inches above wheel level on grain combines, and from 2-1/2 inches below wheel level to 38 inches above wheel level on rice combines. Cut just low enough to get all grain heads. Watch the height and condition of grain and continually raise and lower the cutting platform to meet conditions. If the crop is extremely heavy and badly down, it may be necessary to cut less than a full swath or reduce travel speed.

### Be alert!

Listen for the warning of the clutches slipping. Also, listen to the engine for any evidence of slowing down caused by cylinder starting to slug. Immediately stop the forward travel of the combine and, with electromagnetic throw-out clutch, disengage the platform drive. This will permit the separator to clear.

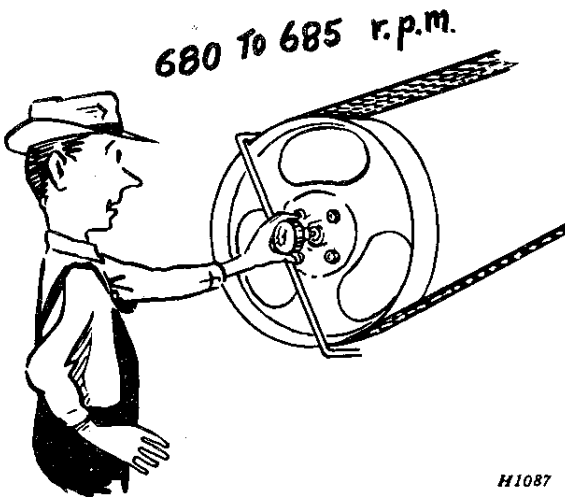
## 14 operation

### Hold down the ground speed

The old saying, "Haste makes waste," certainly applies to combining. Excessive travel speed is one of the greatest causes of trouble in combining. It is also one of the most common errors committed by operators. Traveling at too high a ground speed causes overloading, resulting in a loss of grain due to the fact that more straw is taken in than the separator can handle efficiently. Too heavy a layer of material passing over the straw walkers and sieves can carry over grain.

Traveling at an excessively high speed over rough ground also causes extra wear and damage to parts, not incurred when the combine is operated at a more reasonable speed.

### Keep a steady, smooth engine speed



Maintain proper beater speed

Steady, smooth power is of vital importance.

Any fluctuation in engine speed is reflected in the speed of the separator. Uneven speed results in loss of grain, inferior threshing and, in extreme cases, complete plugging of the combine. Take every precaution to maintain the correct uniform speed. The beater should operate at 680 to 685 rpm.

By rounding the corners in the field, you can maintain more uniform speed when turning.

When stopping, wait until material in the combine is cleaned out before disengaging separator throw-out lever.

### Before-operation checks and adjustments

Careful inspection and service of the combine before starting work each day will prevent needless delays and breakdown in the field. Make the following checks and adjustments:

Lubricate combine according to the lubrication charts.

Fill gasoline tank with a good regular grade of gasoline (capacity of tank is 60 U.S. gallons).

*CAUTION: Do not fill tank while engine is running, or when near an open flame.*

Check water level in radiator. Fill with rain water, if available. Do not use water containing alkali.

*CAUTION: If combine is being operated at temperatures below 32° F., refer to "Cold weather operation," page 22.*

Check tire inflation. See chart, page 4.

Service the air cleaner, see page 31.

Check oil level of hydraulic units, see page 34.

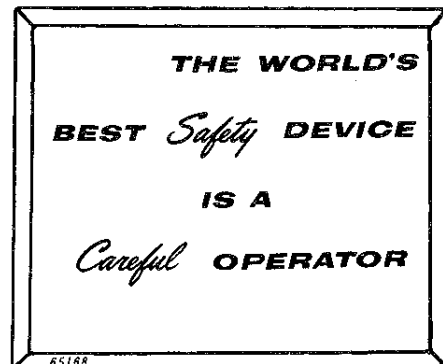
Check oil level of gear reduction unit, see page 39.

Check oil level of crankcase, see page 32.

Check tension drag adjustment for choke and throttle controls. See page 111.

Open the doors at bottom of elevators and leave them open until combine is started.

Inspect belts and chains for proper tension and alignment. See that there are no loose bolts or missing cotter pins.



## Combine and engine break-in

### Combine

Check all V-belt drives carefully for proper alignment and tension. Keep belts tight enough to prevent slippage. Belts can be ruined very quickly if allowed to slip in the grooves of a sheave for any length of time. Excessive heating of a sheave is a sign of belt slippage. New belts will stretch slightly after the first run-off. Check tension frequently.

Open the clean-out doors in the bottom of the clean grain and tailings elevators and check tension of elevator chains—see page 77 for adjustments. It is a good plan to check the chain tension every day of operation.

Be certain all shafts turn freely.

After 50 hours of operation, drain the oil from the transmission and final drives. Fill with oil as specified in the lubrication section of this manual.

Follow the lubrication instructions and charts closely.

Your new engine was shipped from the factory with a special "breaking-in" oil in the crankcase.

Do not allow the engine to operate at slow idle for any prolonged period as part of a break-in procedure, as doing so does not permit good piston ring seating which may promote oil consumption in the future.

After the 20-hour break-in period, drain the special "breaking-in" oil from the crankcase and replace the oil filter. (See page 33.) Fill the crankcase (including oil filter) with 5 U.S. quarts of oil. See the Temperature Oil Viscosity Chart on page 32 for the correct oil to use. Thereafter, drain and replace oil every 200 hours of operation or every season (whichever comes first).

## Starting the engine

1. Make certain the separator, cutting platform, and grain tank unloading auger throw-out levers are disengaged and transmission is in neutral.

2. If engine has not been operated for a period of time, or the gasoline tank has run dry, prime fuel pump lever up and down to force gasoline into carburetor.

*NOTE: After priming fuel pump, be sure the priming lever is in the "down" position. If the priming lever is left in the "up" position, the fuel pump is inoperative.*

3. Turn ignition switch on. Move throttle lever one-quarter forward from rear. Move choke lever all the way forward; then press starter button. After engine operates a few revolutions, push choke control rearward. Set engine at slow idle speed by moving throttle lever all the way rearward.

4. Check oil pressure gauge to see if it is registering pressure.

5. Do not place engine under load until it is properly warmed up.

## Stopping the engine

Set engine at slow idle speed and allow engine to operate at this speed for a few minutes before stopping. Turn off ignition.

## Starting the combine

1. Look around and make sure no one is standing near enough to the combine to touch any moving parts. Warn everyone to stand clear.

2. When engine is properly warmed up, pull separator throw-out lever rearward to engage the separator. Pull throttle lever all the way forward.

3. Check the speed of beater behind the cylinder with a speed indicator. Beater should operate at 680 to 685 rpm with separator empty and not under load. If beater speed is not correct, adjust governor setting (see page 110).



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**Starting the combine—continued**

4. Test operation of hydraulic control for adjusting cutting platform height.
5. Test operation of hydraulic reellift.
6. Test operation of variable reel speed.
7. Test operation of grain tank unloading auger.
8. Test operation of hydraulic selective ground speed control.
9. Check brakes to see if they are in proper working order.
10. Inspect entire combine again, making certain all units are working properly.
11. Disengage separator, then close doors at bottom of elevators.

**Selecting proper ground speed**

Selecting the proper ground speed is one of the most important factors in combining. Too fast a ground speed causes overloading, resulting in loss of grain. Too slow a ground speed means the full capacity of the combine is not being used. Also, traveling over rough ground at high speed causes extra wear and possible damage to the combine.

The ground speed of the combine can be very closely controlled by using the selective ground speed drive in conjunction with different transmission speeds. The chart on page 4 shows the range of speeds that can be obtained in each transmission range by means of selective ground speed control. Select the best transmission speed range; then, with the selective ground speed control lever, adjust the ground speed to meet field conditions exactly.

**Variable drive speed indicator**

The variable drive speed indicator, located on the left-hand side of the operator's platform floorboard, indicates the selective ground speed variable drive sheave setting.

If it is necessary to stop or change speed for turning corners, the operator can easily return to the previous ground speed provided he also uses the previous transmission gear.

*NOTE: This indicator is NOT a speedometer and does not indicate ground travel speed in miles per hour.*

**Speed of various units**

(Fast idle—no load)

Auger, platform . . . . .	202 rpm
Beater behind cylinder . . . . .	680 to 685 rpm
Beater, front of feeder house . . . . .	134 rpm
Cylinder:	
Regular . . . . .	1,057 rpm
Rice (rasp-bar) . . . . .	952 rpm
Rice (spike-tooth) . . . . .	680 rpm
Soybean . . . . .	604 rpm
Cylinder (extreme low) . . . . .	196 rpm
Cylinder (extreme high) . . . . .	1,190 rpm
Elevators . . . . .	313 rpm
Engine . . . . .	2,500 rpm
Fan (normal operating speed) . . . . .	750 rpm
Fan (extreme low) . . . . .	550 rpm
Fan (extreme high) . . . . .	1,050 rpm
Feeder house conveyor drive shaft . . . . .	258 rpm
Grain conveyor under cylinder:	
(With regular 15-tooth sprocket) . . . . .	170 rpm
(With special 10-tooth sprocket) . . . . .	255 rpm
Ground travel speeds . . . . .	(See page 4)
Reel . . . . .	16.4 to 58 rpm
Shoe crank . . . . .	286 rpm
Straw walker . . . . .	213 rpm

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