MAXEMERGE® 2 VACUUM METERING UNITS

JOHN DEERE

OPERATORS MANUAL

MAXEMERGE® 2 VACUUM METERING UNITS

OMH136461 B7 English

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Introduction

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

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

The machine is of metric design.

For your convenience, most specifications are given in metric measurement with the customary U.S. measurement following.

Some specifications cannot be converted. These appear in metric only.

The machine hardware is metric. Specified metric hardware must be used for replacement.

CAUTION: Use only metric tools on metric hardware and standard tools on standard hardware. Otherwise tools may not fit properly. They may slip and cause injury.

Record your machine serial number in the space provided in Specification section. Your dealer needs this information to give you prompt, efficient service.

The warranty on this machine appears on your copy of the purchase order which you should have received from your dealer when you purchased the planter.

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B58;I 100287

Safety

OPERATE THE PLANTER SAFELY

Be careful when operating planter to avoid injury.

If the planter must be in raised position while working on or near it, be certain service locks are installed.

Never ride or permit others to ride on the drawbar of the tractor or on the planter.

Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electric lines to avoid contact.

Be careful when operating on hillsides; tractor can tip sideways if it strikes a hole, ditch or other irregularity.

Permit only one person, the operator, on tractor platform while tractor and planter are in operation.

Lower planter completely to the ground before unhitching from the tractor. Be sure planter is on a level and firm surface.

B21;;1SA A 231086

LUBRICATE THE PLANTER SAFELY

Do not grease, oil or adjust the planter while it is in motion.

AP0; B05;;13SA C 090384

TRANSPORT SAFELY

Engage and secure transport locks before transporting.

Install marker lockup straps.

The maximum transport speed for this planter is 10 mph (16 km/h). DO NOT EXCEED. Never travel at any speed which does not permit adequate control of steering and stopping.

While transporting planter on public roads, follow safety instructions outlined under "Transporting".

Use care when transporting across rough ground.

Serious injury or death can result from contact with electric lines. Use care when moving or operating this machine near electric lines to avoid contact.

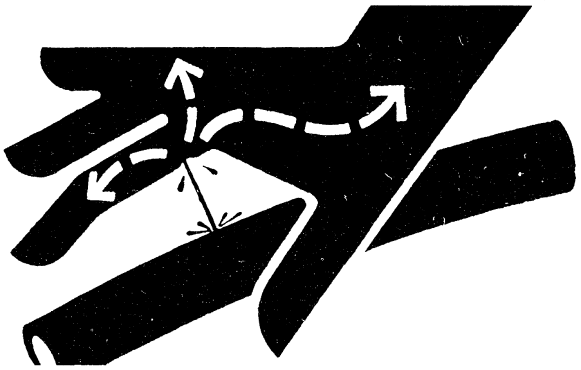
B21;;1SA B 231086

B58;P001 100287

AVOID HIGH-PRESSURE FLUIDS

Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard to search for leaks.

If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.



AB6;X9811 053;FLUID 010586

HANDLE CHEMICALS PROPERLY

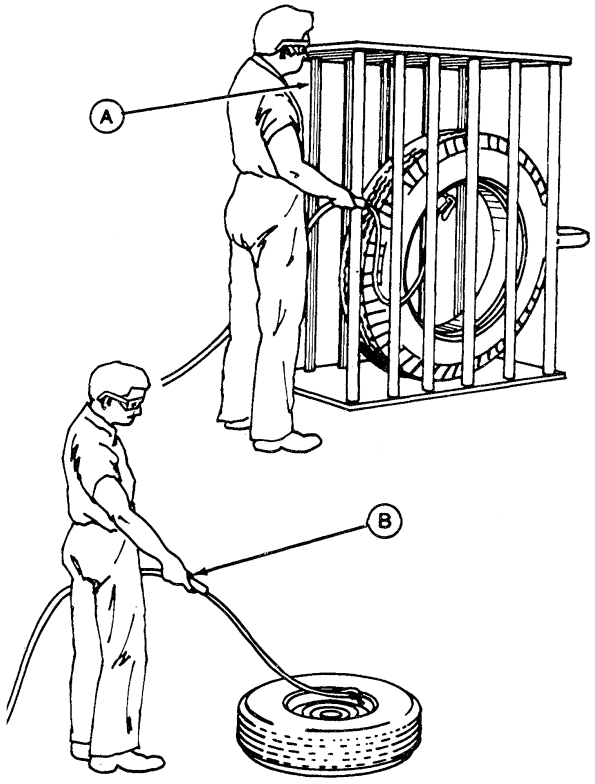
Agricultural chemicals can be dangerous. Improper selection or use can injure persons, animals, plants, soils or other property. BE SAFE: handle and apply with care. Follow instructions of the chemical manufacturer.

AP0; B05;;13SA D 090384

SERVICE TIRES SAFELY

Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death. Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Have it done by your John Deere dealer or a qualified tire repair service.

When sealing tire beads on rims, never exceed 35 psi (241 kPa) (2.4 bar) or maximum inflation pressures specified by tire manufacturers for mounting tires. Inflation beyond this maximum pressure may break the bead, or even the rim, with dangerous explosive force. If both beads are not seated when the maximum recommended pressure is reached, deflate, reposition tire, relubricate bead and reinflate.



A—Use a Safety Cage if Available.
B—Do Not Stand Over Tire. Use a Clip-on Chuck and Extension Hose.

AB6;TS123 053;TIRE 160486

B58;P002 100287

PROTECT AGAINST NOISE

Prolonged exposure to loud noise can cause impairment or loss of hearing.

Wear a suitable hearing protective device such as earmuffs (A) or earplugs (B) to protect against objectionable or uncomfortable loud noises.

AB6;X7662 053;NOISE 270886

DO NOT MODIFY THE PLANTER

Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.

AP0; B05;;13SA F 090384

USE IMPLEMENT WARNING LIGHTS

When transporting the equipment on a road or highway at night or during the day, use accessory lights and devices for adequate warning to operators of other vehicles. In this regard, check local governmental regulations. Various safety devices are available from your John Deere dealer.

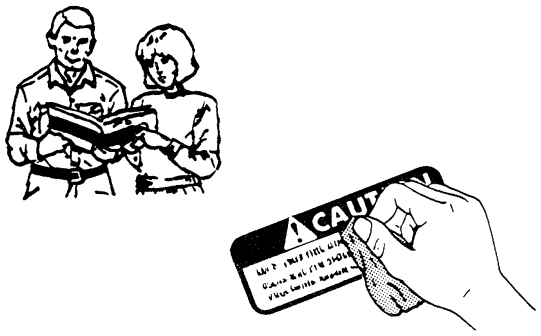
AT6; B06;;14SA F 030284

Safety Signs

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety messages in this manual and on your machine safety signs. Follow recommended precautions and safe operating practices.

Keep safety signs in good condition. Replace missing or damaged safety signs.



AB6;TS188 053;SIGNS 071085

UNDERSTAND SIGNAL WORDS

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

Safety signs with signal word DANGER or WARNING are typically near specific hazards.

General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

AB6;TS187 053;SIGNAL 071085

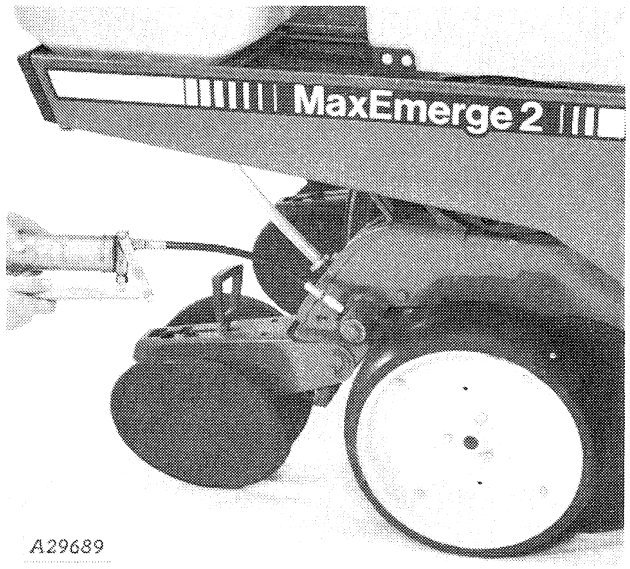
TIRE INFLATION

Inflate tires to 359 kPa (3.6 bar) (52 psi) of air pressure.

B22;;7PU A 181185

LUBRICATION

Be sure your planting units have been properly lubricated. (See Lubrication section.)



026;A29689 B22;;7PU B 191185

READ YOUR PLANTER OPERATOR'S MANUAL

Read the Preparing for Use section in your planter operator's manual for related information on seed meter.

B22;;7PU G 191185

B58;P005 100287

CHOOSING SEED AND SELECTING SEED DISKS

The vacuum seed meter will accurately plant most sizes of corn, acid-delinted cotton, sorghum/milo, soybean seed, sugar beets, sunflower seed, and popcorn.

You can improve your planter's planting accuracy by choosing the size seed which is most favorably suited to the vacuum metering system. If possible, select the following size seeds:

CORN—Medium small to medium large rounds, flats and plateless mixes. (Small corn seed can be accurately planted with Small Corn Seed Disk. See SELECTING SEED DISKS in this section.)

ACID-DELINTED COTTON—All sizes.

SORGHUM-MILO—22 000 to 35 300 seeds/kg (10,000 to 16,000 seeds per lb.).

SOYBEANS—All sizes.

SUGAR BEET—Mono-germ beet seeds, ranging in sizes from 6-1/2/64 to 10/64 in..

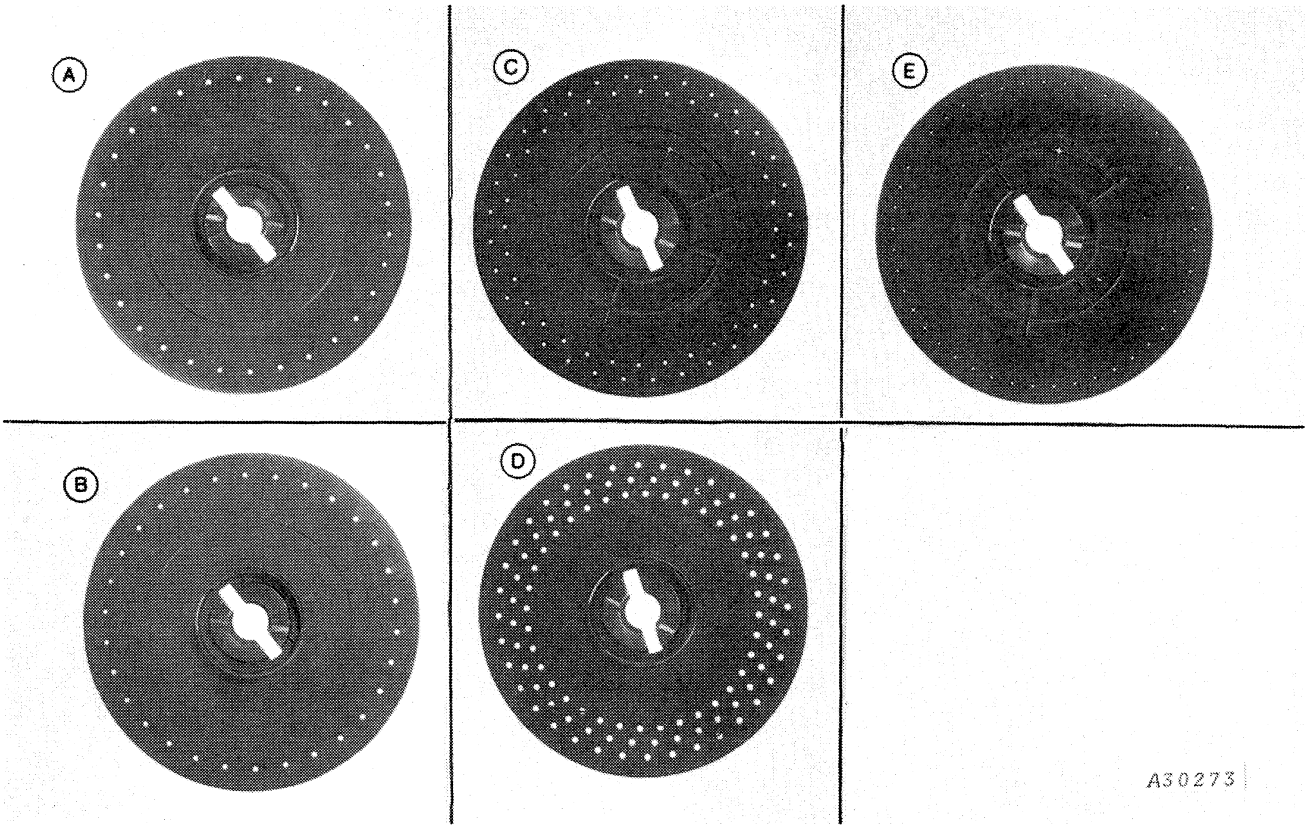
SUNFLOWER SEED—Size 4 (small), 3 (medium) and 2 (large) oil sunflower seeds. Size 1 (extra large) and size 5 (extra small) and confectionary sunflower seeds are not recommended for use with this seed disk.

POPCORN—Sizes up to 11 467 seeds/kg (5200 seeds/lb.).

NOTE: If hopper box treatments are used, dry powder or fast drying liquid treatments are recommended. Be sure to follow manufacturer's recommendations.

IMPORTANT: Hopper-applied, oil-based seed treatments may reduce vacuum meter performance and are not recommended.

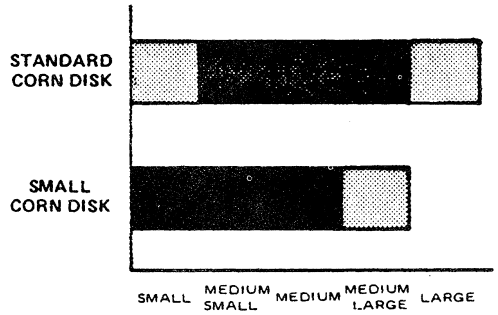
SELECTING SEED DISKS



007;A30273 B22;;9PU Q 210187

Standard and Small Corn Disks

The illustration and chart will help select the correct seed disk to match the seed being planted. The dark shaded areas in the chart show the seed sizes the disks are best suited for maximum performance. The seed disks can be used for the sizes corresponding to the light portion of the chart; however, slight deterioration in population control may result.



A32806

Results of using seed metering disks for these seed sizes are as follows:

A—STANDARD CORN SEED DISK—Part No. A50617

Some over-population could result when planting small rounds and small flats. Some under-population could result when planting large seed sizes.

B—SMALL CORN SEED DISK—Part No. A43215

Some under-population could result when planting medium-large seed sizes.

COTTON, SORGHUM/MILO, SOYBEAN, SUNFLOWER, SUGAR BEET AND POPCORN DISKS

A—SUNFLOWER AND POPCORN SEED DISK—Part No. H136478

C—ACID DELINTED COTTON—Part No. A44026

D—SOYBEAN SEED DISK—Part No. A42586

E—SORGHUM/MILO SEED DISK—Part No. A43066

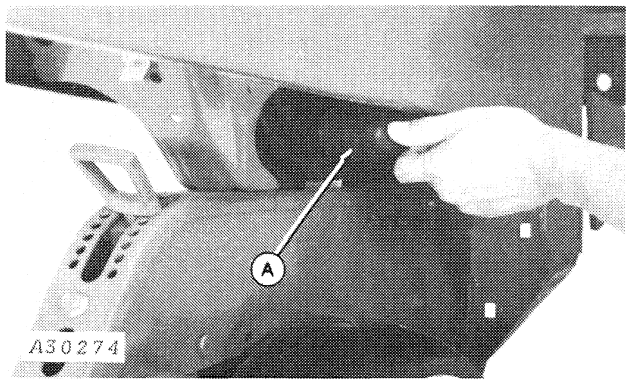
Smaller seed may result in some over-population.

E—SUGAR BEET SEED DISK—Part No. H136445

INSTALLING SEED DISK

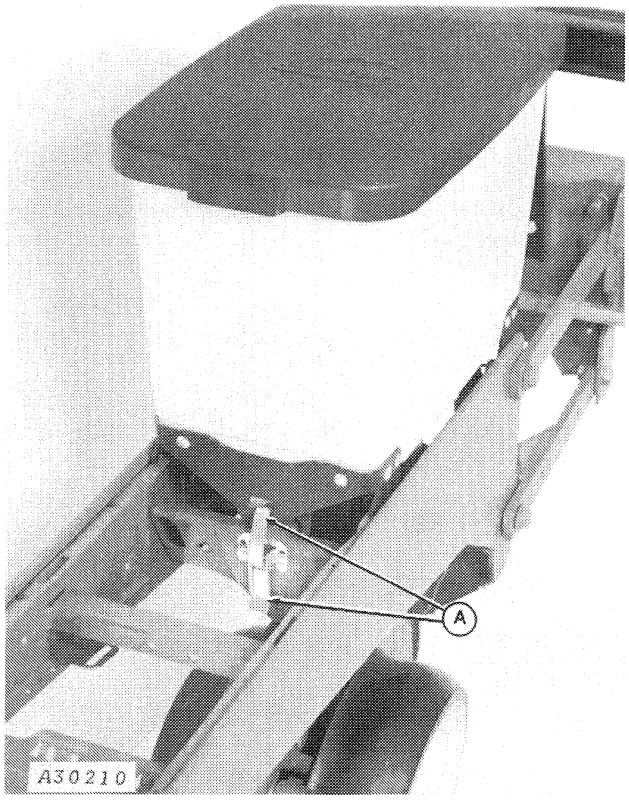
To install seed disk in vacuum metering unit:

1. Remove vacuum hose (A) from metering unit.



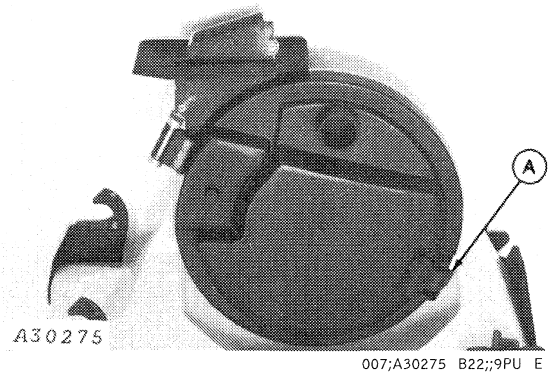
007;A30274 B22;;9PU C 170186

2. Remove seed hopper from planting unit by disengaging hopper latch (A) and lifting hopper upward and rearward.



007;A30210 B22;;9PU D 170186

3. Disengage handle (A) and swing vacuum chamber open.



007;A30275 B22;;9PU E 170186

4. Fit seed disk (A) into housing and secure with hub handle (B) by holding seed disk stationary and rotating hub handle.

5. Inspect gap between seed disk and seed seal, then spin disk in housing.

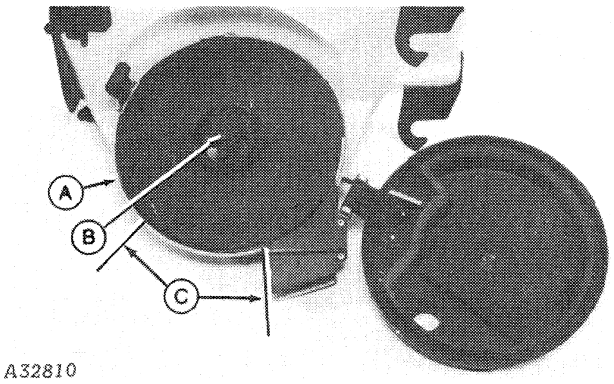
NOTE: Seed disk should turn smoothly with light contact or a small gap between seed disk (A) and seed seal. Turn seed disk by hand and check gap between seed disk and seed seal in section (C). Seed should not leak around circumference of meter. When planting small seed, such as sorghum or sugar beets, seed disk must lightly contact seed seal to prevent seed leakage.

If disk turns too hard, or if seed leaks through gap, readjust hub position. (See ADJUSTING METER HUB in Preparing for Use section.)

6. Close vacuum chamber and secure with handle (see step 3.)

7. Replace hopper on unit and secure with latch (see step 2).

8. Reposition vacuum hose on vacuum meter (see step 1).



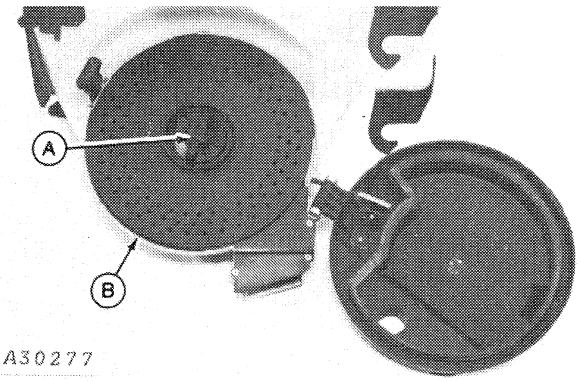
A32810

050;A32810 B22;;9PU F 040287

ADJUSTING METER HUB

If gap too large or disk turns too hard, adjust meter hub as follows:

1. Unlock hub handle (A) by turning counterclockwise. Remove seed disk (B) from housing.



A30277

007;A30277 B22;;9PU G 040287

2. Remove spring locking pin (A).

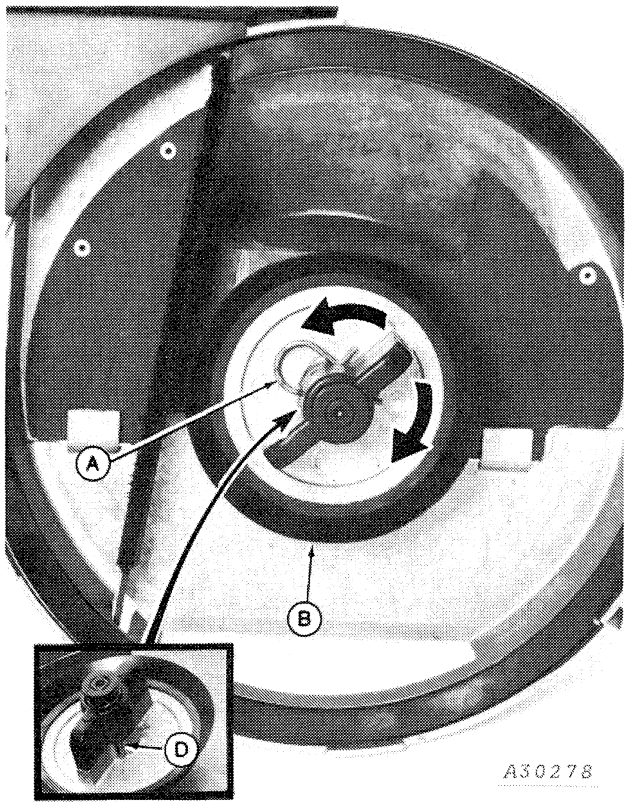
3. Adjust hub (B) as follows:

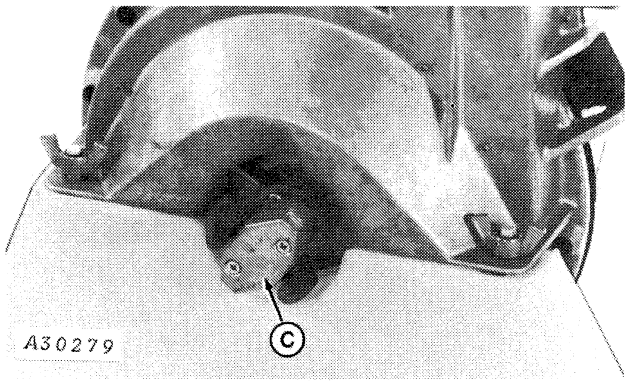
   a. Hold meter flex-drive (C).

   b. Turn hub clockwise to move seed disk closer to seed seal.

   c. Turn hub counterclockwise to move seed disk further from seed seal.

4. Turn hub until slot (D) aligns with hole in shaft. Replace spring locking pin.





007;A30278 A30279 B22;;9PU H 210187

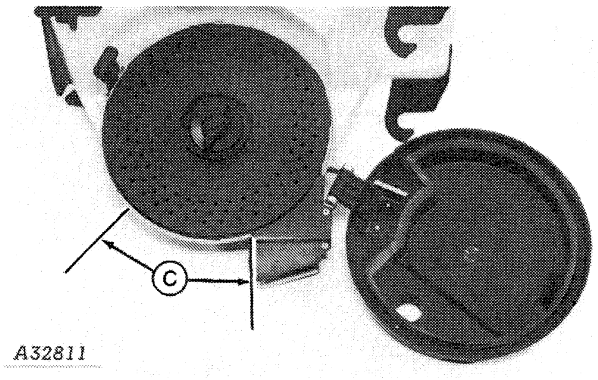
5. Replace seed disk and secure with hub handle.

6. Inspect gap between seed disk and seed seal at (C); then spin disk in housing.

NOTE: The seed disk should turn smoothly with light contact or a small gap between the seed disk and the seed seal. Turn seed disk by hand and check gap between seed disk and seed seal. Seed should not leak around circumference of meter.

When planting small seed such as sorghum or sugar beets, the seed disk must lightly contact seed seal to prevent seed leakage.

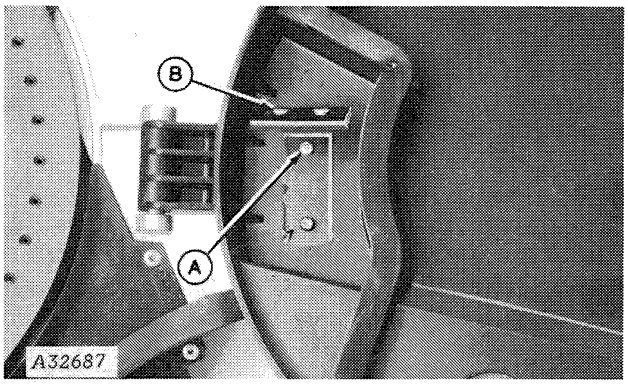
7. Readjust hub, if necessary.



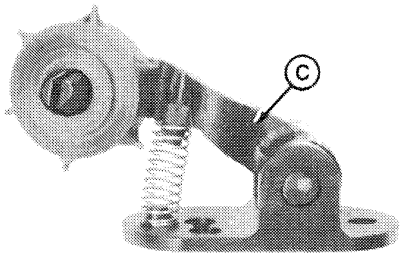
050;A32811 B22;;9PU I 040287

INSTALLING KNOCKOUT ASSEMBLY (Sugar Beets and Sorghum [Optional])

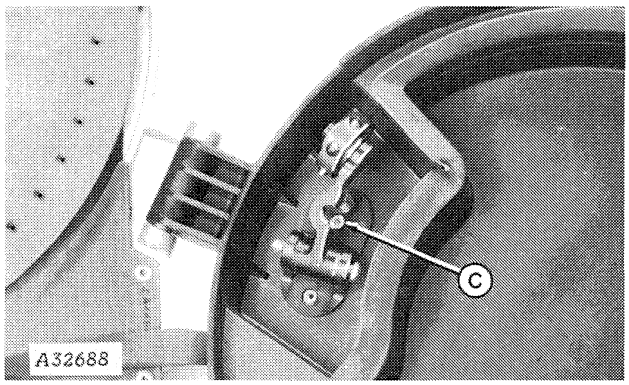
1. Remove screw (A) and wiper assembly (B).



2. Install knockout assembly (C) with hardware (A) used in Step 1, as shown.



A32686



050;A32687 A32686 A32688 B22;;9PU R 210187

CHECK TRACTOR HYDRAULIC SYSTEM

The vacuum meter blower hydraulic system is designed to be operated with closed center tractor hydraulic systems (tractors with load sensing or pressure on demand hydraulics are classified as closed center systems.) Open center tractor hydraulics are NOT compatible with system.

Minimum tractor standby pressure required to operate the vacuum meter blower hydraulic system is approximately 12 411 kPa (142 bar) (1800 psi) depending on frame configuration, planting speed and number of rows on planter.

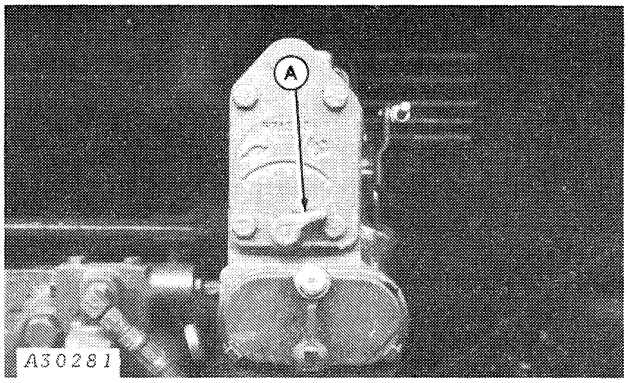
IMPORTANT: Do not use open center tractor hydraulic system to operate vacuum blower. Permanent damage to tractor pump may result.

B22;;9PU S 060287

SET TRACTOR SELECTIVE CONTROL VALVE LEVER

Position tractor SCV control lever (A) which is to be used to operate blower motor (recommend using right-hand SCV Lever [II or III]), in the fast (RABBIT) setting.

NOTE: For tractors with pressure-on-demand hydraulic systems, the tractor variable flow control valve should be used to control flow to the blower motor. The flow control valve on the planter should be fully open.



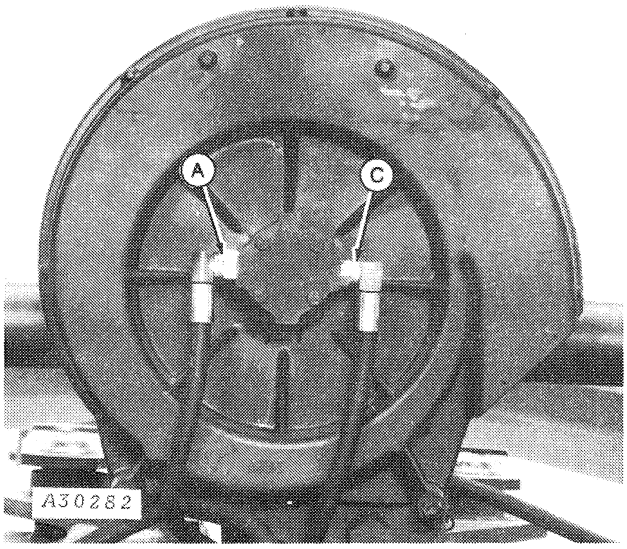
007;A30281 B22;;9PU J 040287

CHECK HYDRAULIC CONNECTIONS

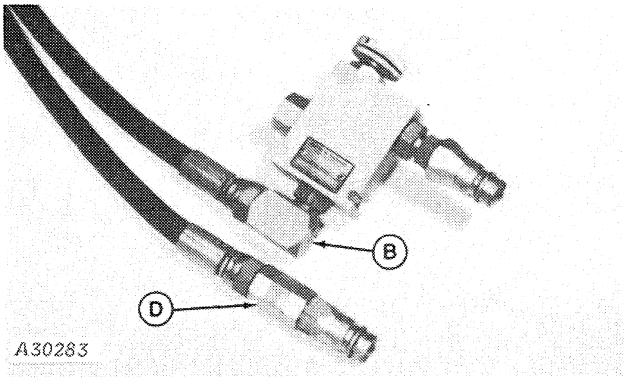
IMPORTANT: Damage to the blower motor may occur if hydraulic hoses are assembled incorrectly. Check the following hydraulic connections before operating the vacuum motor.

1. Be sure hose (A) connected to left-hand (inlet) side of motor is connected to elbow fitting (B) in control valve.

2. Be sure hose (C) connected to right-hand outlet side of motor is connected to check valve (D).



A—Hose
B—Elbow Fitting
C—Hose
D—Check Valve



007;A30282 A30283 B22;;9PU K 040287

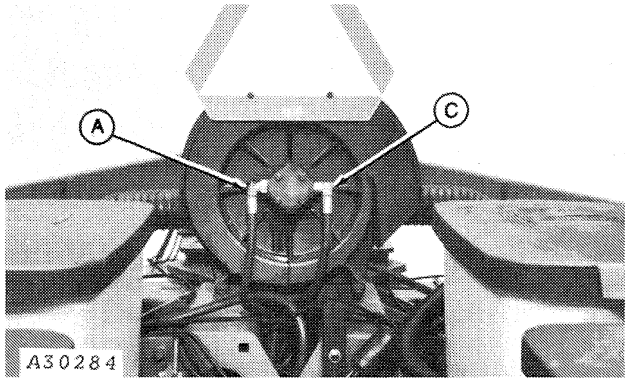
B58;P015 100287

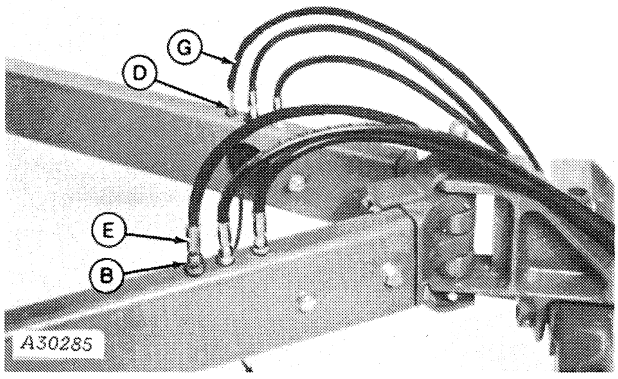
3. (Flex-Fold and Wing-Fold Planters Only) Hose (A) connected to left-hand side of motor must be connected to bulkhead fitting (B) in hitch tube.

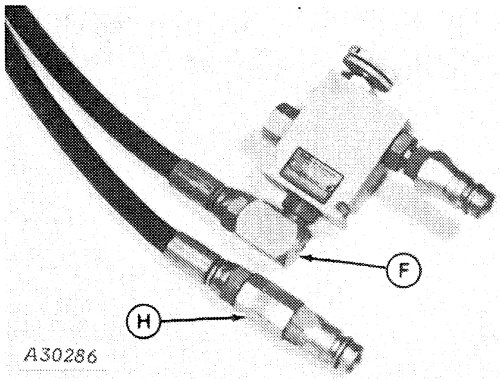
4. (Flex-Fold and Wing-Fold Planters Only) Hose (C) connected to right-hand side of motor must be connected to bulkhead fitting (D) in hitch tube.

5. (Flex-Fold and Wing-Fold Planters Only) Hose (E) connected to bulkhead fitting in hitch tube must be connected to elbow fitting (F) in control valve.

6. (Flex-Fold and Wing-Fold Planters Only) Hose (G) connected to bulkhead fitting in hitch tube must be connected to check valve (H).





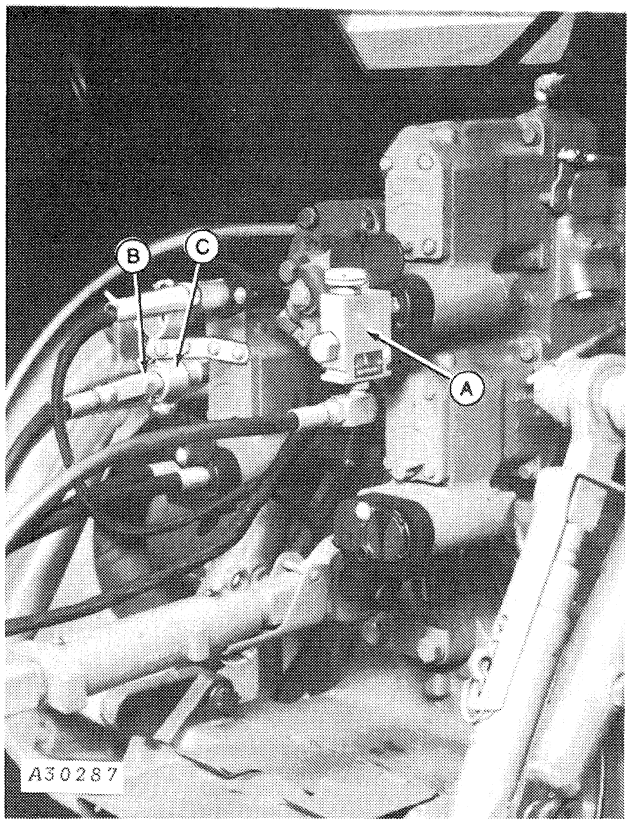


007;A30284 A30285 A30286 B22;;9PU L 210187

7. Install coupler in control valve (A) in the right-hand breakaway coupler of SCV to be used to operate blower motor.

8. (50 Series Tractors Only) Install hose (B) in return line coupler (C).

NOTE: (Not Illustrated) If operating planter with tractor not equipped with return line coupler (C), install hose (B) in left-hand side of SCV III.



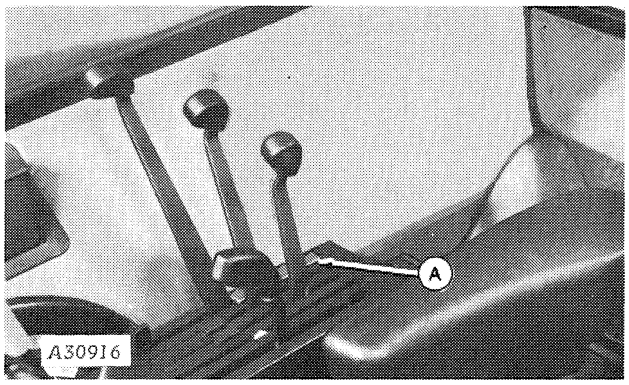
007;A30287 B22;;9PU M 040287

SELECTIVE CONTROL VALVE LEVER STOP

Operation of the vacuum meter hydraulic system requires continuous hydraulic oil flow. A selective control valve lever stop must be used to avoid damaging the blower motor seals when shutting off hydraulic oil flow. The stop will prevent the selective control valve lever from returning to the neutral position.

IMPORTANT: Damage to the vacuum blower motor may occur if operated before installation of tractor SCV lever stop (A). Install SCV lever stop in tractor SCV console before operating vacuum meter system.

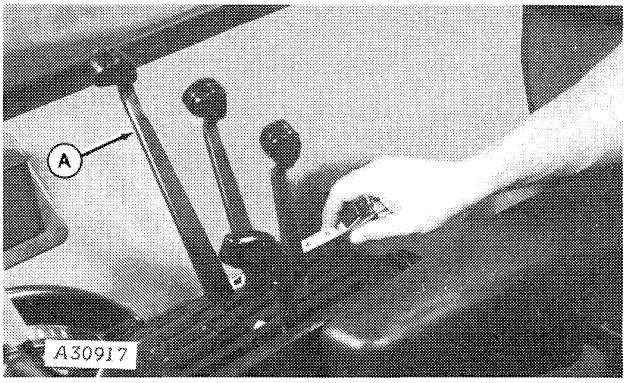
The blower motor will operate when SCV lever is in forward detent position (shown in photo). To shut off blower motor, move lever forward into FLOAT position.

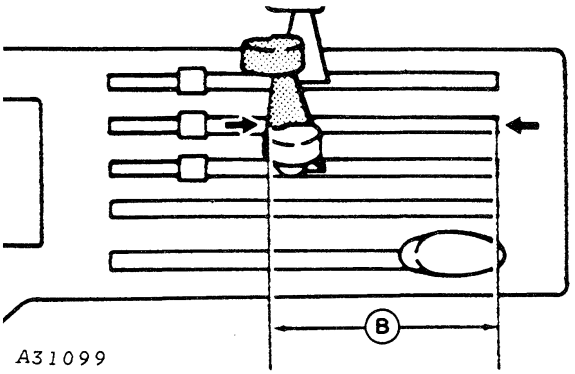


006;A30916 B22;;9PU T 040287

To install the selective control valve lever stop, proceed as follows:

1. With the selective control valve lever (A) in the neutral position, lightly hold the lever forward to remove any play in the linkage. Then, measure the distance (B) from front edge of the control lever to rear end of the lever guide slot.

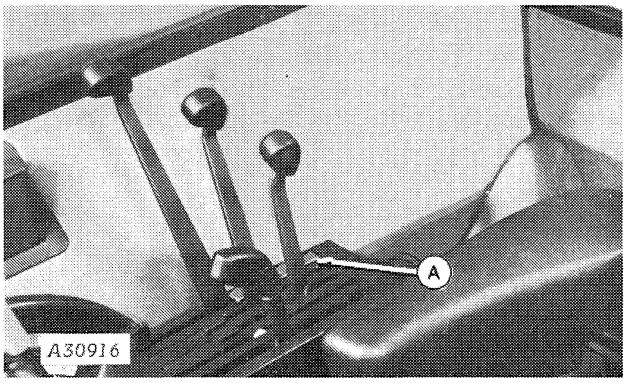




006;A30917 A31099 B22;;1PT E 040287

2. Cut the 150 mm (6 in.) length of rubber stop material to the measured length (B) (illustrated in Step 1), PLUS 6 mm (1/4 in.).

3. Insert rubber stop (A) in slot with "V" groove side down behind the selective control lever.



006;A30916 B22;;1PT F 040287

Operating Vacuum Meter

VACUUM METER OPERATING CHARACTERISTICS

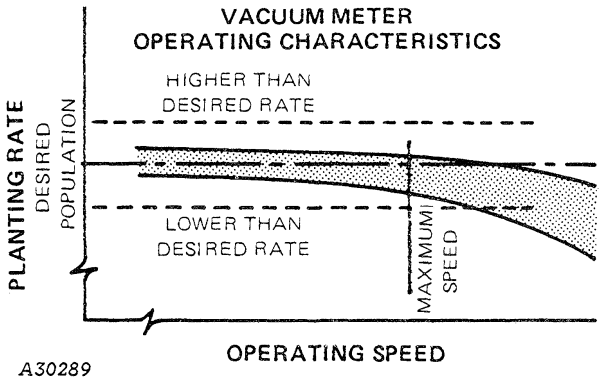
The operating band (gray area) illustrates how the vacuum meter performs in relation to the desired population (indicated by horizontal line).

The width of the band is due to:

a. Various sizes and shapes of seeds.

b. Planting rate variations.

In most cases, the planting accuracy of the vacuum meter does not decline unless you exceed maximum planting speed.



007;A30289 B22;;90M A 170186

SET VACUUM LEVEL

The vacuum level is indicated on vacuum gauge (A) and controlled by knob (B) on the control valve.

VACUUM LEVEL

Crop	Vacuum Level
Sugar Beets	2 in.
All Other	8 in.

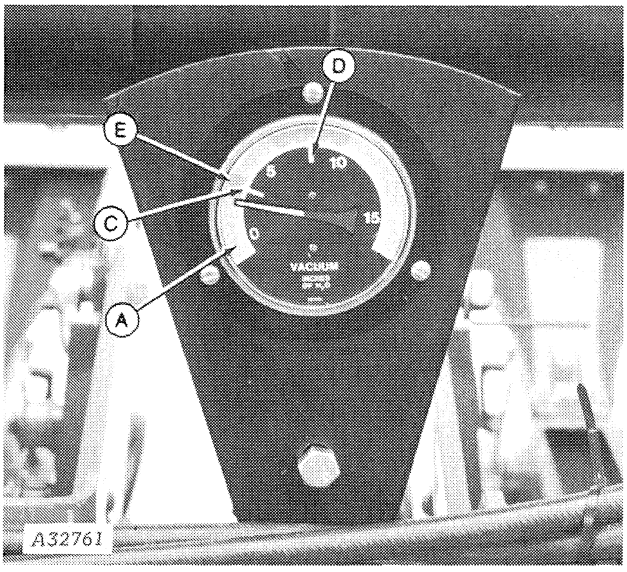
Indicator should point to vacuum level listed above AT PLANTING SPEED.

Set vacuum level as follows:

1. Fill hoppers with seed.

2. Position SCV lever stop in tractor console and start tractor. (See INSTALL SCV LEVER STOP in Preparing for Use section.)

3. Pull lever to forward detent and let oil warm up for 15 minutes.



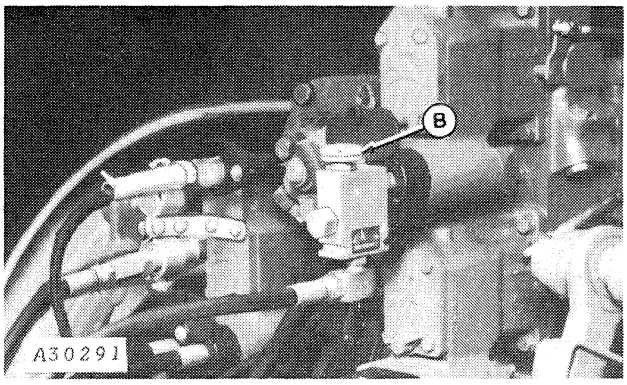
045;A32761 B22;;90M V 100287

4. As a starting point before planting, adjust control knob (B) until vacuum gauge (A) indicator reads as follows:

Sugar beets - 2 in.

Cotton or soybeans
- lower white mark (C).

Corn, sorghum/milo or sunflower seed
- upper white mark (D).



5. Drive tractor forward approximately 10 m (35 ft.) to fill seed cells.

6. Adjust control knob until vacuum gauge indicator points to vacuum level listed below AT PLANTING SPEED.

VACUUM LEVEL

Crop	Vacuum Level
Sugar Beets	2 in.
All Other	8 in.

7. Begin to plant. Readjust control knob as needed to reach proper vacuum level.

NOTE: It is not necessary to reset vacuum level daily. Vacuum level will be slightly lower during tractor and blower start-up.

Run blower approximately 15 minutes before planting to warm hydraulic oil. Vacuum level will return to proper range after warmup.

007;A30291 B22;;90M B 100287

HOW TO USE PLANTING RATE CHARTS

1. Select the desired spacing, seed spacing or seed population under the proper column.

2. Choose the proper input sprocket:

A higher population will require you to use the high range input sprocket and "HIGH RANGE" chart for that particular seed.

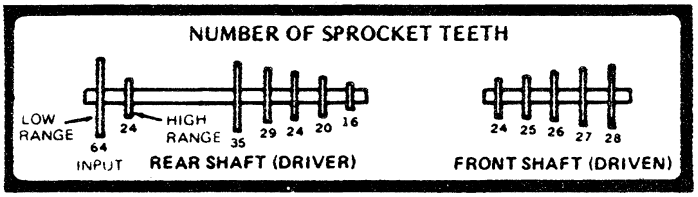
A lower population will require you to use the low range input sprocket and "LOW RANGE" chart for that particular seed.

3. Determine the correct seed drive transmission sprocket combination.

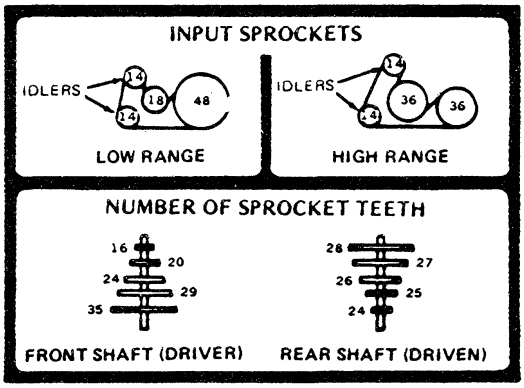
4. Determine the recommended planting speed range. The faster speed in the speed range is for optimum field conditions. Reduce speed if planting in rough conditions.

NOTE: All rates in the following charts are based on typical drive wheel slippage. Drive wheel slippage is affected by crop residue, unit down force, tire pressure and/or soil conditions.

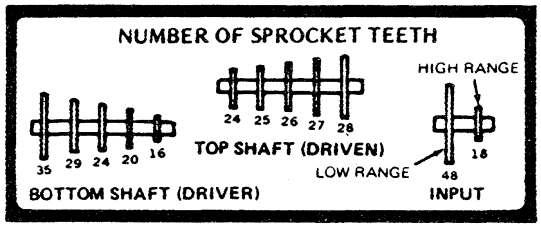
IMPORTANT: You must check the actual planting rate in the field. See CHECKING SEED POPULATION in this section.



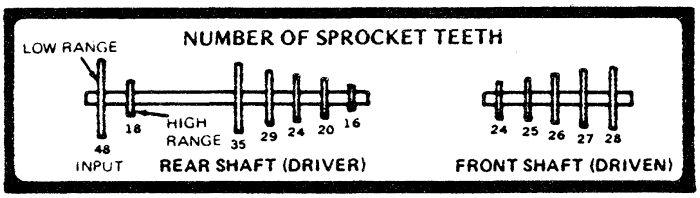
7200 Standard Planter



7240 Planter



7340 Planter



7200 and 7300 Planters

A32683

U.S. UNITS OF MEASURE

SUGAR BEETS

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER FT., AND/OR APPROXIMATE SEED POPULATION PER ACRE OF SUGAR BEETS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

(3) Sprocket Combinations (Number of Teeth)		(1) Average Seed Spacing	Approximate Seed Population Per Acre			(4) Recommended
Driver	Driven	in In.	22 In. Rows	30 In. Rows	38 In. Rows	Speed Range in mph
24	28	2- 1/2	114, 557	83, 971	66, 293	2 to 5
20	24	2- 1/2	111, 375	81, 675	64, 480	2 to 5
20	25	2- 9/ 16	106, 920	78, 310	61, 824	2 to 5- 1/2
20	26	2- 3/ 4	102, 808	75, 483	59, 592	2 to 5- 1/2
20	27	2- 7/8	99, 000	72, 600	57, 316	2 to 6
20	28	3	95, 464	69, 929	55, 207	2 to 6
16	24	3- 3/ 16	89, 100	65, 340	51, 584	3 to 6- 1/2
16	25	3- 5/ 16	85, 536	62, 789	49, 570	3 to 6- 1/2
16	26	3- 1/2	82, 246	60, 256	47, 570	3 to 7
16	27	3- 5/8	79, 200	58, 080	45, 853	3 to 7- 1/2
16	28	3- 3/ 4	76, 272	56, 056	44, 255	3 to 7- 1/2

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32689

050;A32689 B22;;90M AP 060287

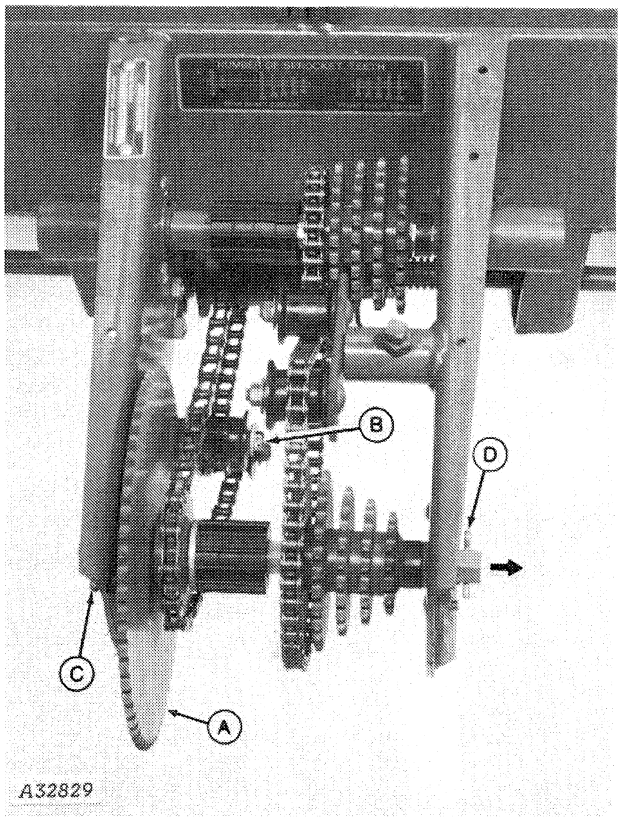
CHANGING INPUT SPROCKET COMBINATION (7200 Standard Planter)

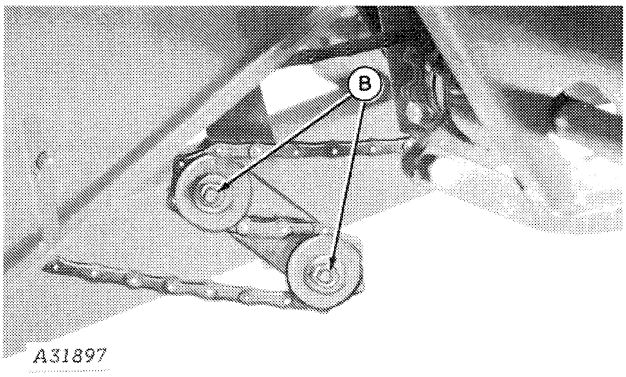
Consult appropriate planting rate chart to determine desired input sprocket combinations.

1. If input combination sprocket (A) is to be reversed, loosen tightener (B), remove cotter pin (C) and slide rear driver shaft (D) to the right until sprocket can be removed from shaft.

2. Reverse combination sprocket (A) and install on driver shaft (D).

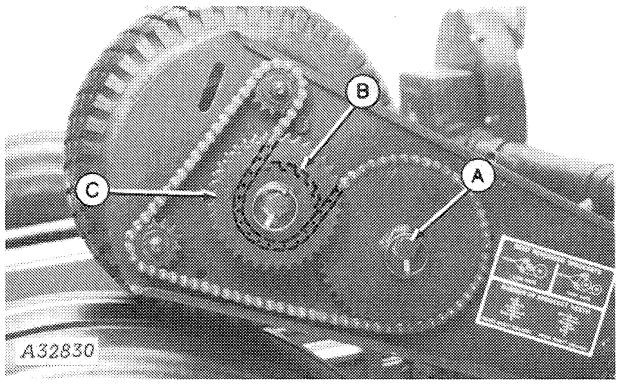
3. Slide shaft through left-hand side of seed transmission and secure with cotter pin (C).





050;A32829 A31897 B22;;90M AF 040287

(7240 PLANTER LOW-RANGE SPROCKET COMBINATION)



Consult appropriate planting rate chart to determine desired input sprocket combinations.

1. Install 48-tooth sprocket at (A) and secure with quick-lock pin.

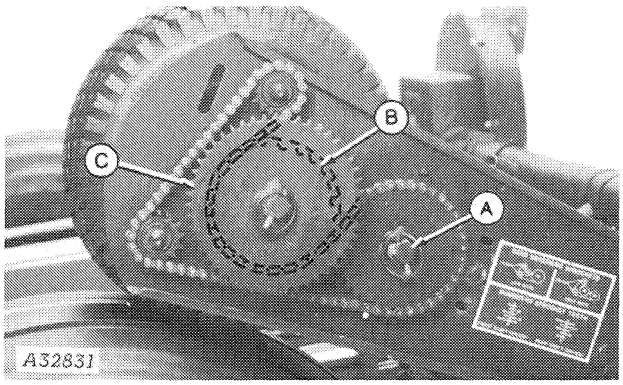
2. Install 18-tooth sprocket at (B) and secure with cotter pin.

3. Install chain around sprockets as shown and tighten idlers.

4. Store 36-tooth sprocket (C) in front of 18-tooth sprocket and secure with quick-lock pin.

050;A32830 B22;;90M AG 060287

(7240 PLANTER HIGH-RANGE SPROCKET COMBINATION)



Consult appropriate planting rate chart to determine desired input sprocket combinations.

1. Install 36-tooth sprocket at (A) and secure with quick-lock pin.

2. Install 36-tooth sprocket at (B) and secure with cotter pin.

3. Install chain around sprockets as shown and tighten idlers.

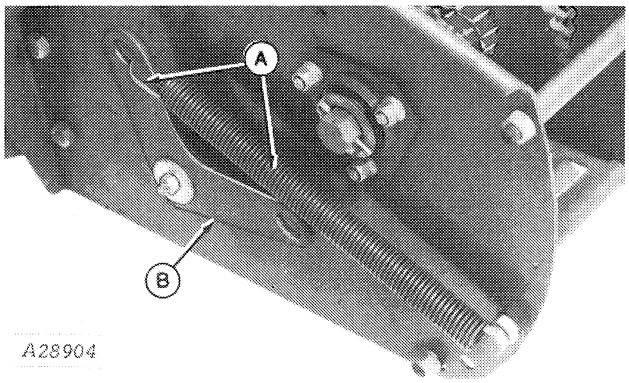
4. Store 48-tooth sprocket at (C) in front of 36-tooth sprocket and secure with quick-lock pin.

050;A32831 B22;;90M AH 060287

(7200, 7300 and 7340 PLANTER)

Consult appropriate planting rate chart to determine desired sprocket combinations.

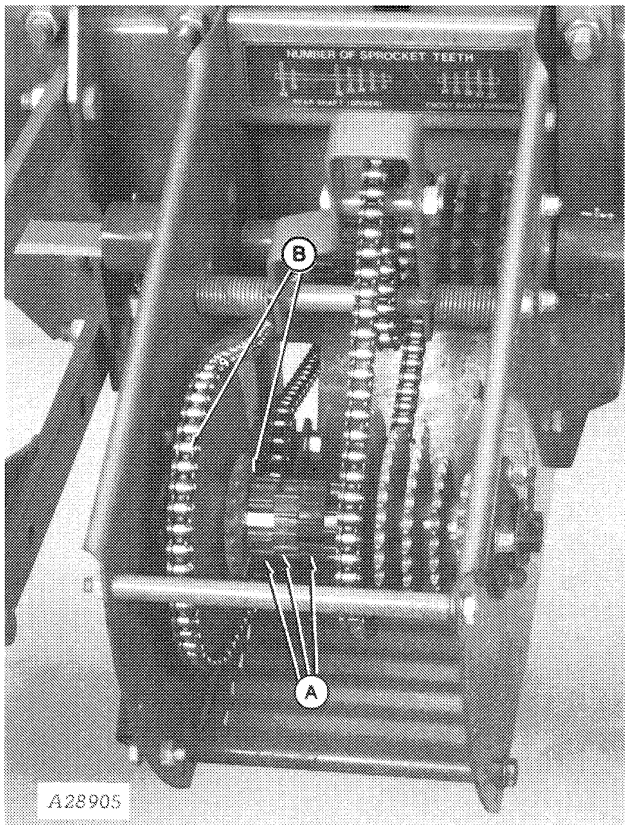
1. Remove spring (A) from chain tightener (B).



007;A28904 B22;;90M AI 040287

2. Remove required number of rubber sprocket spacers (A).

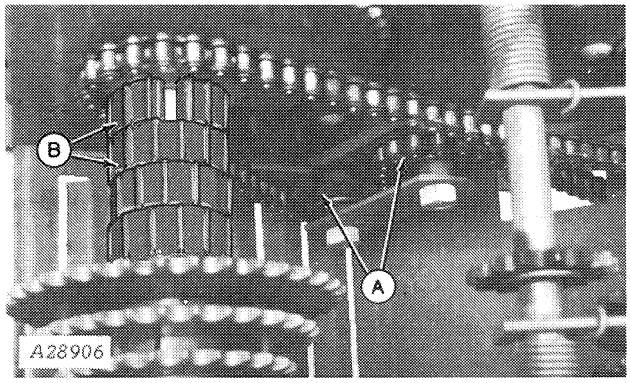
3. Remove chain from input sprocket (B).



007;A28905 B22;;90M AJ 060287

4. Locate input sprocket until desired sprocket is aligned with chain tightener sprockets (A).

5. Replace chain on sprocket. Replace rubber sprocket spacers (B).

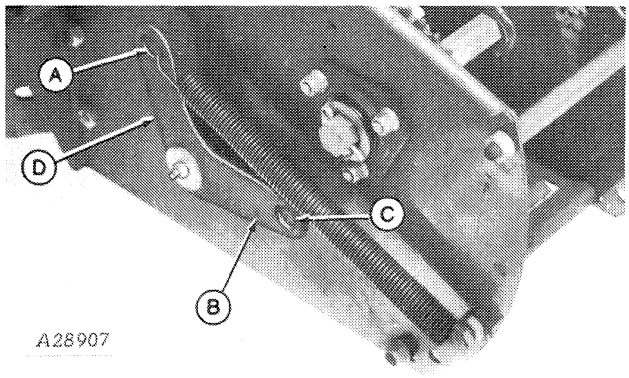


007;A28906 B22;;90M AK 040287

B58;P026 100287

6. If chain is aligned on high-range input sprocket, locate spring in hole (A) of chain tightener. Arm (B) must point rearward as shown.

7. If chain is installed on low-range input sprocket, locate spring in hole (C) of chain tightener. Arm (D) must point forward.



007;A28907 B22;;90M AL 060287

CHANGING PLANTING RATE SPROCKET COMBINATIONS (7200 STANDARD PLANTER)

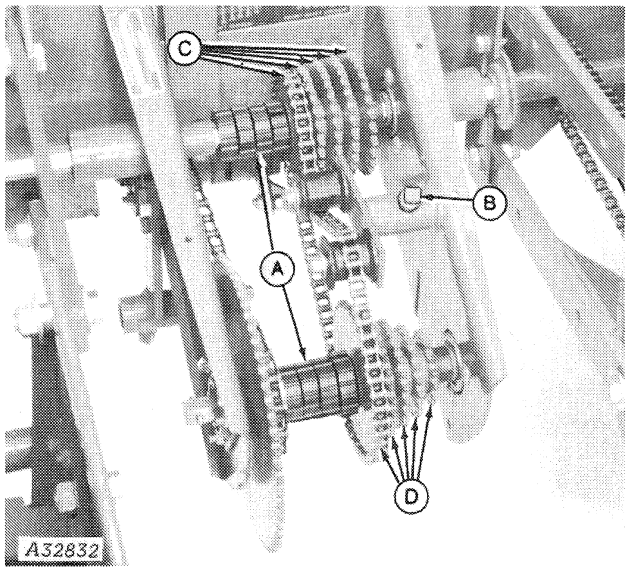
Consult appropriate planting rate chart to determine desired sprocket combinations.

1. Remove required number of rubber sprocket spacers (A).

2. Loosen bolt (B) and remove chain from sprockets. Slide desired driver and driven sprockets (C) and (D) into alignment with chain tightener and replace chain.

3. Replace rubber sprocket spacers on upper and lower shafts.

4. Tighten chain and secure in place with bolt (B).



050;A32832 B22;;90M AM 040287

(7240 PLANTER)

Consult appropriate planting rate chart to determine desired sprocket combinations.

1. Remove retaining hook (A) from storage position.

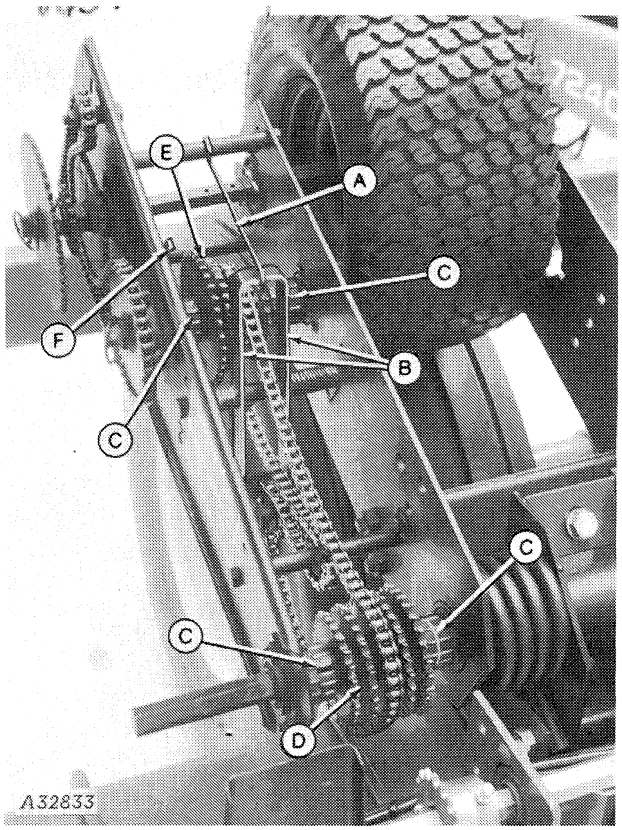
2. Pull chain tightener (B) downward and secure hook (A) on tightener.

3. Remove required number of rubber sprocket spacers (C).

4. Remove chain from sprockets. Slide desired driver and driven sprockets (D) and (E) into alignment with chain tightener and replace chain.

5. Remove hook from chain tightener. Reposition hook in storage position by pressing into clip (F).

6. Replace rubber sprocket spacers on upper and lower shafts.

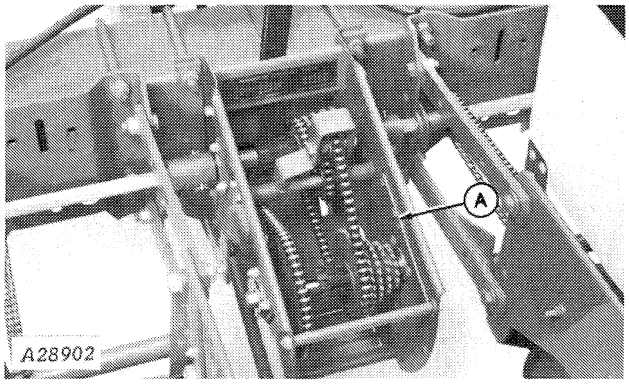


050;A32833 B22;;90M AN 040287

(7200, 7300 AND 7340 PLANTERS)

Consult appropriate planting rate chart to determine desired sprocket combinations.

1. Remove retaining hook (A) from storage position.



007;A28902 B22;;90M AO 040287

2. Pull chain tightener (A) downward and secure hook (B) on tightener.

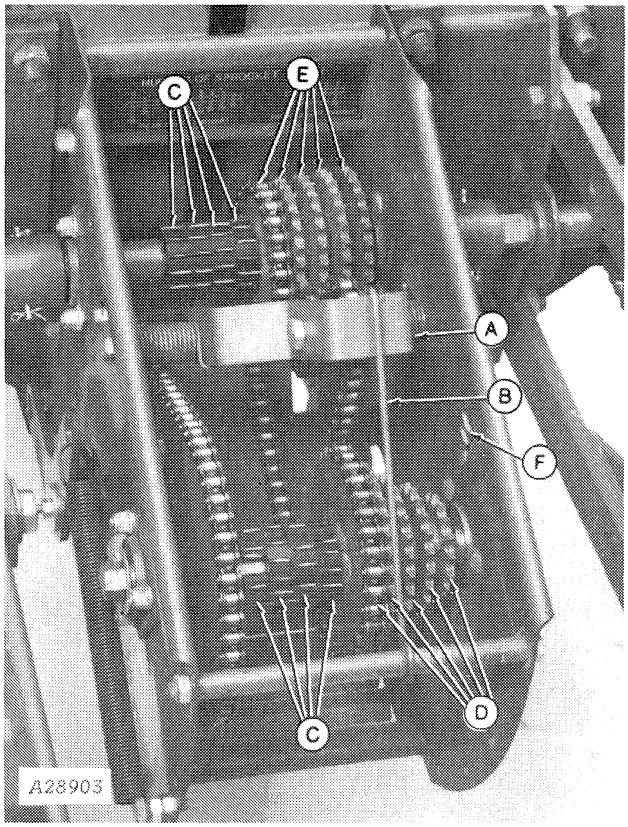
3. Remove required number of rubber sprocket spacers (C).

4. Remove chain from sprockets. Slide desired driver and driven sprockets (D) and (E) into alignment with chain tightener and replace chain.

5. Remove hook from chain tightener. Reposition hook in storage position by pressing it into clip (F).

6. Replace rubber sprocket spacers on upper and lower shafts.

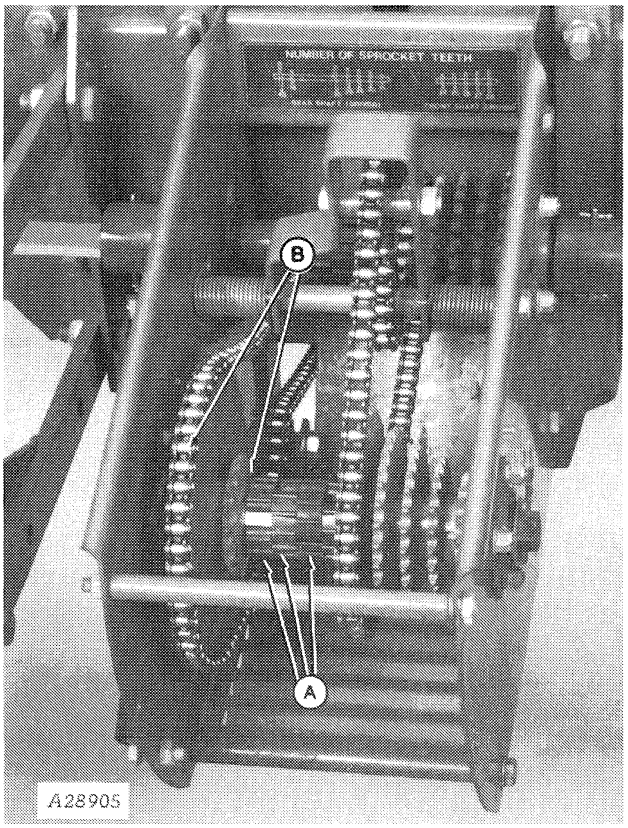
A—Chain Tightener
B—Retaining Hook
C—Rubber Sprocket Spacers
D—Driver Sprockets
E—Driven Sprockets
F—Clip



007;A28903 B22;;7OM D 191185

Remove required number of rubber sprocket spacers (A).

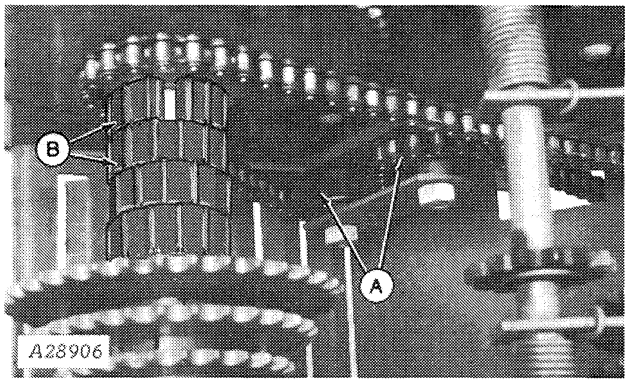
Remove chain from input sprocket (B).



007;A28905 B22;;7OM F 060287

Locate input sprocket until desired sprocket is aligned with chain tightener sprockets (A).

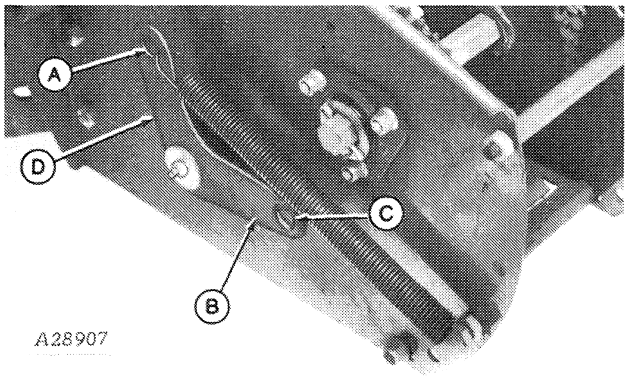
Replace chain on sprocket. Replace rubber sprocket spacers (B).



007;A28906 B22;;70M G 060287

If chain is installed on high-range input sprocket, locate spring in hole (A) of chain tightener. Arm (B) must point rearward as shown.

If chain is installed on low-range input sprocket, locate spring in hole (C) of chain tightener. Arm (D) must point forward.



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SI METRIC

CORN AND SUNFLOWER
HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF CORN OR SUNFLOWER SEED PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seed Spacing in MM	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	56	235 461	196 217	185 890	176 595	3.2 to 4.8
35	25	58	226 042	188 368	178 454	169 532	3.2 to 4.8
35	26	60	217 348	181 123	171 591	163 011	3.2 to 4.8
35	27	63	209 298	174 415	165 235	156 974	3.2 to 5.6
35	28	65	201 823	168 186	159 334	151 367	3.2 to 5.6
29	24	67	195 096	162 580	154 023	146 322	3.2 to 5.6
29	25	70	187 292	156 077	147 862	140 469	3.2 to 5.6
29	26	73	180 089	150 074	142 175	135 066	3.2 to 6.4
29	27	76	173 419	144 515	136 909	130 064	3.2 to 6.4
29	28	78	167 225	139 354	132 020	125 419	3.2 to 6.4
24	24	81	161 459	134 549	127 467	121 094	3.2 to 7.2
24	25	85	155 000	129 167	122 369	116 250	3.2 to 7.2
24	26	88	149 039	124 199	117 662	111 779	3.2 to 7.2
24	27	91	143 519	119 599	113 304	107 639	3.2 to 8.0
24	28	95	138 393	115 328	109 258	103 795	3.2 to 8.0
20	24	98	134 549	112 124	106 223	100 912	3.2 to 8.8
20	25	102	129 167	107 639	101 974	96 875	3.2 to 8.8
20	26	106	124 199	103 499	98 052	93 149	3.2 to 9.6
20	27	110	119 599	99 666	94 420	89 699	3.2 to 10.4
20	28	114	115 328	96 106	91 048	86 496	3.2 to 10.4
16	24	122	107 639	89 699	84 978	80 729	3.2 to 10.4
16	25	127	103 334	86 111	81 579	77 500	3.2 to 11.2
16	26	132	99 359	82 799	78 441	74 519	3.2 to 11.2
16	27	137	95 679	79 733	75 536	71 759	3.2 to 12.0
16	28	142	92 262	76 885	72 838	69 197	3.2 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32783

SI METRIC

CORN AND SUNFLOWER

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF CORN OR SUNFLOWER SEED PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seed Spacing in MM	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	149	88 298	73 591	69 709	66 223	4.8 to 12.8
35	25	155	84 766	70 638	66 920	63 574	4.8 to 12.8
35	26	161	81 506	67 921	64 347	61 129	4.8 to 12.8
35	27	167	78 487	65 406	61 963	58 865	4.8 to 12.8
35	28	173	75 684	63 070	59 750	56 763	4.8 to 12.8
29	24	179	73 161	60 967	57 759	54 871	5.6 to 12.8
29	25	187	70 235	58 529	55 448	52 676	5.6 to 12.8
29	26	194	67 533	56 278	53 316	50 650	5.6 to 12.8
29	27	202	65 032	54 193	51 341	48 774	5.6 to 12.8
29	28	209	62 709	52 258	49 507	47 032	5.6 to 12.8
24	24	217	60 547	50 456	47 800	45 410	6.4 to 12.8
24	25	226	58 125	48 438	45 888	43 594	6.4 to 12.8
24	26	235	55 890	46 575	44 123	41 917	6.4 to 12.8
24	27	244	53 820	44 850	42 489	40 365	6.4 to 12.8
24	28	253	51 897	43 248	40 972	38 923	8.0 to 12.8
20	24	260	50 456	42 047	39 834	37 842	8.0 to 12.8
20	25	271	48 438	40 365	38 240	36 328	8.0 to 12.8
20	26	282	46 575	38 812	36 769	34 931	8.0 to 12.8
20	27	293	44 850	37 375	35 408	33 637	8.0 to 12.8
20	28	304	43 248	36 040	34 143	32 436	8.0 to 12.8
16	24	325	40 365	33 637	31 867	30 273	9.6 to 12.8
16	25	339	38 750	32 292	30 592	29 063	9.6 to 12.8
16	26	352	37 260	31 050	29 416	27 945	9.6 to 12.8
16	27	366	35 880	29 900	28 326	26 910	9.6 to 12.8
16	28	379	34 598	28 832	27 314	25 949	11.2 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32784

U.S. UNITS OF MEASURE

CORN AND SUNFLOWER

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER ACRE OF CORN OR SUNFLOWER SEED PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Acre				
Driver	Driven	Seed Spacing in In.	30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	Recommended Speed Range in mph
35	24	2-3/16	95,288	79,406	75,227	71,466	2 to 3
35	25	2-5/16	91,476	76,230	72,218	68,607	2 to 3
35	26	2-3/8	87,958	73,298	69,440	65,968	2 to 3
35	27	2-1/2	84,700	70,583	66,868	63,525	2 to 3-1/2
35	28	2-9/16	81,675	68,063	64,480	61,256	2 to 3-1/2
29	24	2-5/8	78,593	65,794	62,331	59,214	2 to 3-1/2
29	25	2-3/4	75,794	63,162	59,838	56,846	2 to 3-1/2
29	26	2-7/8	72,879	60,733	57,536	54,659	2 to 4
29	27	3-1/16	70,180	58,483	55,405	52,635	2 to 4
29	28	3-1/8	67,674	56,395	53,427	50,755	2 to 4
24	24	3-1/4	65,340	54,450	51,584	49,005	2 to 4-1/2
24	25	3-5/16	62,726	52,272	49,521	47,045	2 to 4-1/2
24	26	3-1/2	60,314	50,262	47,616	45,235	2 to 4-1/2
24	27	3-5/8	58,080	48,400	45,853	43,560	2 to 5
24	28	3-3/4	56,006	46,671	44,215	42,004	2 to 5
20	24	3-13/16	54,450	45,375	42,987	40,838	2 to 5-1/2
20	25	4	52,272	43,560	41,267	39,204	2 to 5-1/2
20	26	4-3/16	50,262	41,885	39,680	37,696	2 to 6
20	27	4-5/16	48,400	40,333	38,211	36,300	2 to 6
20	28	4-1/2	46,671	38,893	36,846	35,004	2 to 6-1/2
16	24	4-7/8	43,560	36,300	34,389	32,670	2 to 6-1/2
16	25	5	41,818	34,848	33,014	31,363	2 to 7
16	26	5-3/16	40,209	33,508	31,744	30,157	2 to 7
16	27	5-3/8	38,720	32,267	30,568	29,040	2 to 7-1/2
16	28	5-5/8	37,337	31,114	29,477	28,003	2 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32807

U.S. UNITS OF MEASURE

CORN AND SUNFLOWER

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER ACRE
OF CORN OR SUNFLOWER SEED PLANTED WITH VACUUM METER
WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seed Spacing in In.	Approximate Seed Population Per Acre				Recommended Speed Range in mph
Driver	Driven		30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	
35	24	5- 13/16	35, 733	29, 777	28, 210	26, 800	3 to 8
35	25	6- 1/8	34, 304	28, 586	27, 082	25, 728	3 to 8
35	26	6- 3/8	32, 984	27, 487	26, 040	24, 738	3 to 8
35	27	6- 9/16	31, 763	26, 469	25, 076	23, 822	3 to 8
35	28	6- 13/16	30, 628	25, 523	24, 180	22, 971	3 to 8
29	24	7- 1/16	29, 607	24, 673	23, 374	22, 205	4 to 8
29	25	7- 3/8	28, 423	23, 686	22, 439	21, 317	4 to 8
29	26	7- 5/8	27, 330	22, 775	21, 576	20, 497	4 to 8
29	27	7- 15/16	26, 318	21, 931	20, 777	19, 738	4 to 8
29	28	8- 1/4	25, 378	21, 148	20, 035	19, 033	4 to 8
24	24	8- 9/16	24, 503	20, 419	19, 344	18, 377	4 to 8
24	25	8- 7/8	23, 522	19, 602	18, 570	17, 642	4 to 8
24	26	9- 1/4	22, 618	18, 848	17, 856	16, 963	4 to 8
24	27	9- 5/8	21, 780	18, 150	17, 195	16, 335	4 to 8
24	28	9- 15/16	21, 002	17, 502	16, 581	15, 752	4 to 8
20	24	10- 1/4	20, 419	17, 016	16, 120	15, 314	4 to 8
20	25	10- 11/16	19, 602	16, 335	15, 475	14, 702	4 to 8
20	26	11- 1/16	18, 848	15, 707	14, 880	14, 136	4 to 8
20	27	11- 1/2	18, 150	15, 125	14, 329	13, 613	4 to 8
20	28	11- 15/16	17, 502	14, 585	13, 817	13, 126	4 to 8
16	24	12- 13/16	16, 335	13, 613	12, 896	12, 251	4 to 8
16	25	13- 5/16	15, 682	13, 068	12, 380	11, 761	4 to 8
16	26	13- 7/8	15, 078	12, 565	11, 904	11, 309	4 to 8
16	27	14- 3/8	14, 520	12, 100	11, 463	10, 890	4 to 8
16	28	14- 15/16	14, 001	11, 668	11, 054	10, 501	4 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32808

SI METRIC

COTTON

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF COTTON PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seed Spacing in MM	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	26	502 316	418 597	396 565	376 737	3.2 to 8.8
35	25	27	482 223	401 853	380 703	361 667	3.2 to 8.8
35	26	28	463 676	386 397	366 060	347 757	3.2 to 9.6
35	27	30	446 503	372 086	352 502	334 877	3.2 to 9.6
35	28	31	430 556	358 797	339 913	322 917	3.2 to 10.4
29	24	32	416 205	346 837	328 583	312 153	3.2 to 10.4
29	25	33	399 556	332 964	315 439	299 667	3.2 to 11.2
29	26	34	384 189	320 157	303 307	288 142	3.2 to 11.2
29	27	36	369 960	308 300	292 073	277 470	3.2 to 12.1
29	28	37	356 747	297 289	281 642	267 560	3.2 to 12.1
24	24	38	344 445	287 038	271 930	258 334	3.2 to 12.8
24	25	40	330 667	275 556	261 053	248 000	3.2 to 12.8
24	26	41	317 949	264 958	251 013	238 462	3.2 to 12.8
24	27	43	306 173	255 145	241 716	229 630	3.2 to 12.8
24	28	45	295 239	246 032	233 083	221 429	3.2 to 12.8
20	24	46	287 038	239 198	226 609	215 278	3.2 to 12.8
20	25	48	275 556	229 630	217 544	206 667	3.2 to 12.8
20	26	50	264 958	220 798	209 177	198 718	3.2 to 12.8
20	27	52	255 145	212 620	201 430	191 358	3.2 to 12.8
20	28	53	246 032	205 027	194 236	184 524	3.2 to 12.8
16	24	57	229 630	191 358	181 287	172 223	4.8 to 12.8
16	25	59	220 445	183 704	174 035	165 334	4.8 to 12.8
16	26	62	211 966	176 639	167 342	158 795	4.8 to 12.8
16	27	64	204 116	170 096	161 144	153 087	4.8 to 12.8
16	28	67	196 826	164 021	155 389	147 619	4.8 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32786

SI METRIC

COTTON

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF COTTON PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seed Spacing in MM	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	70	188 368	156 974	148 712	141 276	4.8 to 12.8
35	25	73	180 834	150 695	142 763	135 625	4.8 to 12.8
35	26	75	173 879	144 899	137 273	130 409	4.8 to 12.8
35	27	79	167 439	139 532	132 188	125 579	4.8 to 12.8
35	28	81	161 459	134 549	127 467	121 094	4.8 to 12.8
29	24	84	156 077	130 064	123 218	117 058	4.8 to 12.8
29	25	88	149 834	124 861	118 290	112 375	4.8 to 12.8
29	26	91	144 071	120 059	113 740	108 053	6.4 to 12.8
29	27	95	138 735	115 612	109 528	104 051	6.4 to 12.8
29	28	98	133 780	111 483	105 616	100 335	6.4 to 12.8
24	24	102	129 167	107 639	101 974	96 875	6.4 to 12.8
24	25	106	124 000	103 334	97 895	93 000	6.4 to 12.8
24	26	110	119 231	99 359	94 130	89 423	6.4 to 12.8
24	27	114	114 815	95 679	90 643	86 111	6.4 to 12.8
24	28	119	110 715	92 262	87 406	83 036	8.0 to 12.8
20	24	122	107 639	89 699	84 978	80 729	8.0 to 12.8
20	25	127	103 334	86 111	81 579	77 500	8.0 to 12.8
20	26	132	99 359	82 799	78 441	74 519	8.0 to 12.8
20	27	137	95 679	79 733	75 536	71 759	8.0 to 12.8
20	28	142	92 262	76 885	72 838	69 197	8.0 to 12.8
16	24	152	86 111	71 759	67 983	64 583	9.6 to 12.8
16	25	159	82 667	68 889	65 263	62 000	9.6 to 12.8
16	26	165	79 487	66 239	62 753	59 616	9.6 to 12.8
16	27	172	76 543	63 786	60 429	57 408	9.6 to 12.8
16	28	178	73 810	61 508	58 271	55 357	9.6 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32785

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B58;P037 100287

U.S. UNITS OF MEASURE

COTTON

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER ACRE OF COTTON PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seed Spacing Per In.	Approximate Seed Population Per Acre				Recommended Speed Range in mph
Driver	Driven		30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	
35	24	1	203, 280	169, 400	160, 484	152, 460	2 to 5-1/2
35	25	1-1/16	195, 149	162, 624	154, 065	146, 362	2 to 5-1/2
35	26	1-1/8	187, 643	156, 369	148, 139	140, 732	2 to 6
35	27	1-1/8	180, 693	150, 578	142, 653	135, 520	2 to 6
35	28	1-3/16	174, 240	145, 200	137, 558	130, 680	2 to 6-1/2
29	24	1-1/4	168, 432	140, 360	132, 973	126, 324	2 to 6-1/2
29	25	1-5/16	161, 695	134, 746	127, 654	121, 271	2 to 7
29	26	1-3/8	155, 476	129, 563	122, 744	116, 607	2 to 7
29	27	1-7/16	149, 717	124, 764	118, 198	112, 288	2 to 7-1/2
29	28	1-7/16	144, 370	120, 309	113, 977	108, 278	2 to 7-1/2
24	24	1-1/2	139, 392	116, 160	110, 046	104, 544	2 to 8
24	25	1-9/16	133, 816	111, 514	105, 644	100, 362	2 to 8
24	26	1-5/8	128, 670	107, 225	101, 581	96, 502	2 to 8
24	27	1-11/16	123, 904	103, 253	97, 819	92, 928	2 to 8
24	28	1-3/4	119, 479	99, 566	94, 325	89, 609	2 to 8
20	24	1-13/16	116, 160	96, 800	91, 705	87, 120	2 to 8
20	25	1-7/8	111, 514	92, 928	88, 037	83, 635	2 to 8
20	26	1-15/16	107, 225	89, 354	84, 651	80, 418	2 to 8
20	27	2	103, 253	86, 044	81, 516	77, 440	2 to 8
20	28	2-1/8	99, 566	82, 971	78, 605	74, 674	2 to 8
16	24	2-1/4	92, 928	77, 440	73, 364	69, 696	3 to 8
16	25	2-5/16	89, 211	74, 342	70, 430	66, 908	3 to 8
16	26	2-7/16	85, 780	71, 483	67, 721	64, 335	3 to 8
16	27	2-1/2	82, 603	68, 836	65, 213	61, 952	3 to 8
16	28	2-5/8	79, 653	66, 377	62, 884	59, 739	3 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32787

U.S. UNITS OF MEASURE

COTTON

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING AND/OR APPROXIMATE SEED POPULATION PER ACRE
OF COTTON PLANTED WITH VACUUM METER
WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Acre				
Driver	Driven	Seed Spacing Per In.	30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	Recommended Speed Range in mph
35	24	2- 3/ 4	76, 230	63, 525	60, 182	57, 173	3 to 8
35	25	2- 7/ 8	73, 181	60, 984	57, 774	54, 886	3 to 8
35	26	2- 15/ 16	70, 366	58, 638	55, 552	52, 775	3 to 8
35	27	3- 1/ 16	67, 760	56, 467	53, 495	50, 820	3 to 8
35	28	3- 3/ 16	65, 340	54, 450	51, 584	49, 005	3 to 8
29	24	3- 5/ 16	63, 162	52, 635	49, 865	47, 372	3 to 8
29	25	3- 7/ 16	60, 636	50, 530	47, 870	45, 477	4 to 8
29	26	3- 9/ 16	58, 303	48, 586	46, 029	43, 728	4 to 8
29	27	3- 3/ 4	56, 144	46, 787	44, 324	42, 108	4 to 8
29	28	3- 7/ 8	54, 139	45, 116	42, 741	40, 604	4 to 8
24	24	4	52, 272	43, 560	41, 267	39, 204	4 to 8
24	25	4- 3/ 16	50, 181	41, 818	39, 617	37, 636	4 to 8
24	26	4- 5/ 16	48, 251	40, 209	38, 093	36, 188	4 to 8
24	27	4- 1/ 2	46, 464	38, 720	36, 682	34, 848	4 to 8
24	28	4- 11/ 16	44, 805	37, 337	35, 372	33, 603	4 to 8
20	24	4- 13/ 16	43, 560	36, 300	34, 389	32, 670	4 to 8
20	25	5	41, 818	34, 848	33, 014	31, 363	4 to 8
20	26	5- 3/ 16	40, 209	33, 508	31, 744	30, 157	4 to 8
20	27	5- 7/ 16	38, 720	32, 267	30, 568	29, 040	4 to 8
20	28	5- 5/ 8	37, 337	31, 114	29, 477	28, 003	4 to 8
16	24	6	34, 848	29, 040	27, 512	26, 136	4 to 8
16	25	6- 1/ 4	33, 454	27, 878	26, 411	25, 091	4 to 8
16	26	6- 1/ 2	32, 167	26, 806	25, 395	24, 126	4 to 8
16	27	6- 3/ 4	30, 976	25, 813	24, 455	23, 232	4 to 8
16	28	7	29, 870	24, 891	23, 581	22, 402	4 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32788

SI METRIC

SORGHUM/MILO

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER M, AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF SORGHUM/MILO PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seed Spacing in MM	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	37	353 191	294 326	278 835	264 893	3.2 to 8.8
35	25	39	339 063	282 553	267 681	254 297	3.2 to 8.8
35	26	40	326 022	271 685	257 386	244 517	3.2 to 9.6
35	27	42	313 947	261 623	247 853	235 461	3.2 to 9.6
35	28	43	302 735	252 279	239 001	227 051	3.2 to 10.4
29	24	45	292 644	243 870	231 035	219 483	3.2 to 10.4
29	25	47	280 938	234 115	221 793	210 704	3.2 to 11.3
29	26	49	270 133	225 111	213 263	202 600	3.2 to 11.3
29	27	51	260 128	216 773	205 364	195 096	3.2 to 12.1
29	28	52	250 838	209 031	198 030	188 128	3.2 to 12.1
24	24	54	242 188	201 823	191 201	181 641	3.2 to 12.8
24	25	56	232 500	193 750	183 553	174 375	3.2 to 12.8
24	26	59	223 558	186 298	176 493	167 669	3.2 to 12.8
24	27	61	215 278	179 399	169 956	161 459	3.2 to 12.8
24	28	63	207 590	172 991	163 887	155 692	3.2 to 12.8
20	24	65	201 823	168 186	159 334	151 367	3.2 to 12.8
20	25	68	193 750	161 459	152 961	145 313	3.2 to 12.8
20	26	70	186 298	155 249	147 078	139 724	3.2 to 12.8
20	27	73	179 399	179 499	141 630	134 549	3.2 to 12.8
20	28	76	172 991	144 160	136 572	129 744	3.2 to 12.8
16	24	81	161 459	134 549	127 467	121 094	4.8 to 12.8
16	25	86	155 000	129 167	122 369	116 250	4.8 to 12.8
16	26	88	149 039	124 199	117 662	111 779	4.8 to 12.8
16	27	91	143 519	119 599	113 304	107 639	4.8 to 12.8
16	28	95	138 393	115 328	109 258	103 795	4.8 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32789

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SI METRIC

SORGHUM/MILO

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER M, AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF SORGHUM/MILO PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seed Spacing in MM	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	99	132 447	110 372	104 563	99 335	4.8 to 12.8
35	25	103	127 149	105 957	100 381	95 362	4.8 to 12.8
35	26	107	122 258	101 882	96 520	91 694	4.8 to 12.8
35	27	112	117 730	98 109	92 945	88 298	4.8 to 12.8
35	28	116	113 526	94 605	89 625	85 144	4.8 to 12.8
29	24	120	109 741	91 451	86 638	82 306	6.4 to 12.8
29	25	125	105 352	87 793	83 172	79 014	6.4 to 12.8
29	26	130	101 300	84 416	79 974	75 975	6.4 to 12.8
29	27	135	97 548	81 290	77 012	73 161	6.4 to 12.8
29	28	140	94 064	78 387	74 261	70 548	6.4 to 12.8
24	24	145	90 820	75 684	71 700	68 115	6.4 to 12.8
24	25	151	87 188	72 656	68 832	65 391	6.4 to 12.8
24	26	157	83 834	69 862	66 185	62 876	6.4 to 12.8
24	27	163	80 729	67 274	63 734	60 547	6.4 to 12.8
24	28	169	77 846	64 872	61 457	58 385	6.4 to 12.8
20	24	174	75 684	63 070	59 750	56 763	6.4 to 12.8
20	25	181	72 656	60 547	57 360	54 492	6.4 to 12.8
20	26	188	69 862	58 218	55 154	52 396	6.4 to 12.8
20	27	195	67 274	56 062	53 111	50 456	6.4 to 12.8
20	28	202	64 872	54 060	51 215	48 654	6.4 to 12.8
16	24	217	60 547	50 456	47 800	45 410	6.4 to 12.8
16	25	226	58 125	48 438	45 888	43 594	6.4 to 12.8
16	26	235	55 890	46 575	44 123	41 917	6.4 to 12.8
16	27	244	53 820	44 850	42 489	40 365	6.4 to 12.8
16	28	253	51 897	43 248	40 972	38 923	6.4 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32791

U.S. UNITS OF MEASURE

SORGHUM/MILO

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER FT. AND/OR APPROXIMATE SEED POPULATION PER ACRE OF SORGHUM/MILO PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seed Spacing	Average Seeds	Approximate Seed Population Per Acre				
Driver	Driven	in In.	Per Ft.	30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	Recommended Speed Range in mpl
35	24	1-1/2	8.2	142,931	119,109	112,840	107,198	2 to 5-1/2
35	25	1-1/2	7.9	137,214	114,345	108,327	102,911	2 to 5-1/2
35	26	1-9/16	7.6	131,937	109,947	104,160	98,952	2 to 6
35	27	1-11/16	7.2	127,050	105,875	100,303	95,288	2 to 6
35	28	1-3/4	7.0	122,512	102,094	96,720	91,884	2 to 6-1/2
29	24	1-3/4	6.8	118,429	98,691	93,496	88,822	2 to 6-1/2
29	25	1-13/16	6.5	113,692	94,743	89,757	85,269	2 to 7
29	26	1-7/8	6.3	109,319	91,099	86,304	81,989	2 to 7
29	27	2	6.0	105,270	87,725	83,108	78,953	2 to 7-1/2
29	28	2	5.8	101,510	84,592	80,140	76,133	2 to 7-1/2
24	24	2-1/8	5.6	98,010	81,675	77,376	73,508	2 to 8
24	25	2-1/4	5.4	94,090	78,408	74,281	70,567	2 to 8
24	26	2-3/8	5.2	90,471	75,392	71,424	67,853	2 to 8
24	27	2-7/16	5.0	87,120	72,600	68,779	65,340	2 to 8
24	28	2-1/2	4.8	84,009	70,007	66,323	63,006	2 to 8
20	24	2-1/2	4.7	81,675	68,063	64,480	61,256	2 to 8
20	25	2-9/16	4.5	78,408	65,340	61,901	58,806	2 to 8
20	26	2-3/4	4.3	75,392	62,827	59,520	56,544	2 to 8
20	27	2-7/8	4.2	72,600	60,500	57,316	54,450	2 to 8
20	28	3	4.0	70,007	58,339	55,269	52,505	2 to 8
16	24	3-3/16	3.8	65,340	54,450	51,584	49,005	3 to 8
16	25	3-5/16	3.6	62,726	52,272	49,521	47,045	3 to 8
16	26	3-1/2	3.5	60,314	50,262	47,616	45,235	3 to 8
16	27	3-5/8	3.3	58,080	48,400	45,853	43,560	3 to 8
16	28	3-3/4	3.2	56,006	46,671	44,215	42,004	3 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32790

050;A32790 B22;;90M M 210187

B58;P042 100287

U.S. UNITS OF MEASURE

SORGHUM/MILO

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER FT. AND/OR
APPROXIMATE SEED POPULATION PER ACRE OF SORGHUM/MILO
PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seed Spacing	Average Seeds	Approximate Seed Population Per Acre				
Driver	Driven	in In.	Per Ft.	30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	Recommended Speed Range in mpl
35	24	3-15/16	3.1	53,599	44,666	42,315	40,199	3 to 8
35	25	4-1/16	3.0	51,455	42,879	40,623	38,591	3 to 8
35	26	4-1/4	2.8	49,476	41,230	39,060	37,107	3 to 8
35	27	4-3/8	2.7	47,644	39,703	37,613	35,733	3 to 8
35	28	4-9/16	2.6	45,942	38,285	36,270	34,457	3 to 8
29	24	4-3/4	2.5	44,411	37,009	35.061	33,308	4 to 8
29	25	4-15/16	2.4	42,634	35,529	33,659	31,976	4 to 8
29	26	5-1/8	2.3	40,995	34,162	32,364	30,746	4 to 8
29	27	5-5/16	2.3	39,476	32,897	31,165	29,607	4 to 8
29	28	5-1/2	2.2	38,066	31,722	30,052	28,550	4 to 8
24	24	5-11/16	2.1	36,754	30,628	29,016	27,565	4 to 8
24	25	5-15/16	2.0	35,284	29,403	27,855	26,463	4 to 8
24	26	6-3/16	1.9	33,927	28,272	26,784	25,445	4 to 8
24	27	6-3/8	1.9	32,670	27,225	25,792	24,503	4 to 8
24	28	6-5/8	1.8	31,503	26,253	24,871	23,627	4 to 8
20	24	6-13/16	1.8	30,628	25,523	24,180	22,971	4 to 8
20	25	7-1/8	1.7	29,403	24,503	23,213	22,052	4 to 8
20	26	7-3/8	1.6	28,272	23,560	22,320	21,204	4 to 8
20	27	7-11/16	1.6	27,225	22,688	21,493	20,419	4 to 8
20	28	8-15/16	1.5	26,253	21,877	20,726	19,690	4 to 8
16	24	8-9/16	1.4	24,503	20,419	19,344	18,377	4 to 8
16	25	8-7/8	1.3	23,522	19,602	18,570	17,642	4 to 8
16	26	9-1/4	1.3	22,618	18,848	17,856	16,963	4 to 8
16	27	9-5/8	1.2	21,780	18,150	17,195	16,335	4 to 8
16	28	10	1.2	21,002	17,502	16,581	15,752	4 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32792

050;A32792 B22;;90M 0 210187

B58;P043 100287

SI METRIC

SOYBEANS

HIGH RANGE INPUT SPROCKET

AVERAGE SEEDS PER M AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF SOYBEANS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seeds	Approximate Seed Population Per Hectare				
Driver	Driven	Per M	38 cm Rows	46 cm Rows	48 cm Rows	51 cm Rows	Recommended Speed Range in Km/h
35	24	66.6	1 695 316	1 412 763	1 338 407	1 271 487	3.2 to 11.3
35	25	62.5	1 627 503	1 356 253	1 284 871	1 220 627	3.2 to 12.1
35	26	59.7	1 564 907	1 304 089	1 235 453	1 173 680	3.2 to 12.8
35	27	57.0	1 506 947	1 255 790	1 189 695	1 130 211	3.2 to 12.8
35	28	55.5	1 453 128	1 210 940	1 147 206	1 089 846	3.2 to 12.8
29	24	53.2	1 404 690	1 170 575	1 108 966	1 053 518	3.2 to 12.8
29	25	51.1	1 348 503	1 123 752	1 064 607	1 011 377	3.2 to 12.8
29	26	49.2	1 296 637	1 080 531	1 023 661	972 478	3.2 to 12.8
29	27	47.4	1 248 614	1 040 511	985 748	936 460	3.2 to 12.8
29	28	45.8	1 204 020	1 003 350	950 542	903 015	3.2 to 12.8
24	24	44.2	1 162 502	968 752	917 765	871 877	3.2 to 12.8
24	25	42.3	1 116 002	930 002	881 054	837 002	3.2 to 12.8
24	26	41.0	1 073 079	894 233	847 168	804 809	3.2 to 12.8
24	27	39.4	1 033 335	861 113	815 791	775 002	3.2 to 12.8
24	28	37.9	996 431	830 359	786 656	747 323	3.2 to 12.8
20	24	36.8	968 752	807 293	764 804	726 564	3.2 to 12.8
20	25	35.5	930 002	775 002	734 212	697 501	3.2 to 12.8
20	26	33.9	894 233	745 194	705 973	670 674	3.2 to 12.8
20	27	32.8	861 113	717 594	679 826	645 835	3.2 to 12.8
20	28	31.8	830 359	691 966	655 546	622 769	3.2 to 12.8
16	24	29.6	775 002	645 835	611 843	581 251	4.8 to 12.8
16	25	28.3	744 001	620 001	587 370	558 001	4.8 to 12.8
16	26	27.3	715 386	596 155	564 778	536 540	4.8 to 12.8
16	27	26.3	688 890	574 075	543 861	516 668	4.8 to 12.8
16	28	25.2	664 287	553 573	524 437	498 215	4.8 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32798

050;A32798 B22;;90M W 040287

B58;P044 100287

SI METRIC

SOYBEANS

LOW RANGE INPUT SPROCKET

AVERAGE SEEDS PER M AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF SOYBEANS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seeds per M	Approximate Seed Population Per Hectare				Recommended Speed Range in Km/h
Driver	Driven		38 cm Rows	46 cm Rows	48 cm Rows	51 cm Rows	
35	24	24.4	635 743	529 786	501 903	476 808	4.8 to 11.3
35	25	23.3	610 314	508 595	481 827	457 735	4.8 to 12.1
35	26	22.2	586 840	489 033	463 295	440 130	4.8 to 12.8
35	27	21.3	565 105	470 921	446 136	423 829	4.8 to 12.8
35	28	20.8	544 923	454 102	430 202	408 692	6.4 to 12.8
29	24	20.0	526 759	438 966	415 862	395 069	6.4 to 12.8
29	25	19.2	505 689	421 407	399 228	379 266	6.4 to 12.8
29	26	18.5	486 239	405 199	383 873	364 679	6.4 to 12.8
29	27	17.9	468 230	390 192	369 655	351 173	6.4 to 12.8
29	28	17.2	451 508	376 256	356 453	338 631	6.4 to 12.8
24	24	16.7	435 938	363 282	344 162	326 954	6.4 to 12.8
24	25	15.9	418 501	348 751	330 395	313 876	6.4 to 12.8
24	26	15.4	402 405	335 337	317 688	301 803	6.4 to 12.8
24	27	14.7	387 501	322 917	305 922	290 626	6.4 to 12.8
24	28	14.3	373 661	311 385	294 996	280 246	6.4 to 12.8
20	24	13.9	363 282	302 735	286 802	272 461	6.4 to 12.8
20	25	13.3	348 751	290 626	275 329	261 563	6.4 to 12.8
20	26	12.8	335 337	279 448	264 740	251 503	6.4 to 12.8
20	27	12.4	322 917	269 098	254 935	242 188	6.4 to 12.8
20	28	11.9	311 385	259 487	245 830	233 538	6.4 to 12.8
16	24	11.1	290 626	242 188	229 441	217 969	6.4 to 12.8
16	25	10.6	279 001	232 500	220 264	209 250	6.4 to 12.8
16	26	10.2	268 270	223 558	211 792	201 202	6.4 to 12.8
16	27	9.8	258 334	215 278	203 948	193 750	6.4 to 12.8
16	28	9.5	249 108	207 590	196 664	186 831	6.4 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32797

SI METRIC

SOYBEANS

HIGH RANGE INPUT SPROCKET

AVERAGE SEEDS PER M AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF SOYBEANS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seeds per M	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	66.6	847 658	706 382	669 204	635 743	3.2 to 11.3
35	25	62.5	813 752	678 126	642 435	610 314	3.2 to 12.1
35	26	59.7	782 453	652 045	617 726	586 840	3.2 to 12.8
35	27	57.0	753 474	627 895	594 848	565 105	3.2 to 12.8
35	28	55.5	726 564	605 470	573 603	544 923	3.2 to 12.8
29	24	53.2	702 345	585 288	554 483	526 759	3.2 to 12.8
29	25	51.1	674 251	561 876	532 304	505 689	3.2 to 12.8
29	26	49.2	648 319	540 266	511 830	486 239	3.2 to 12.8
29	27	47.4	624 307	520 256	492 874	468 230	3.2 to 12.8
29	28	45.8	602 010	501 675	475 271	451 508	3.2 to 12.8
24	24	44.2	581 251	484 376	458 882	435 938	3.2 to 12.8
24	25	42.3	558 001	465 001	440 527	418 501	3.2 to 12.8
24	26	41.0	536 540	447 116	423 584	402 405	3.2 to 12.8
24	27	39.4	516 668	430 556	407 896	387 501	3.2 to 12.8
24	28	37.9	498 215	415 179	393 328	373 661	3.2 to 12.8
20	24	36.8	484 376	403 647	382 402	363 282	3.2 to 12.8
20	25	35.5	465 001	387 501	367 106	348 751	3.2 to 12.8
20	26	33.9	447 116	372 597	352 987	335 337	3.2 to 12.8
20	27	32.8	430 556	358 797	339 913	322 917	3.2 to 12.8
20	28	31.8	415 179	345 983	327 773	311 385	3.2 to 12.8
16	24	29.6	387 501	322 917	305 922	290 626	4.8 to 12.8
16	25	28.3	372 001	310 001	293 685	279 001	4.8 to 12.8
16	26	27.3	357 693	298 078	282 389	268 270	4.8 to 12.8
16	27	26.3	344 445	287 038	271 930	258 334	4.8 to 12.8
16	28	25.2	332 144	276 786	262 219	249 108	4.8 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32793

SI METRIC

SOYBEANS

LOW RANGE INPUT SPROCKET

AVERAGE SEEDS PER M AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF SOYBEANS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare				
Driver	Driven	Seeds per M	76 cm Rows	91 cm Rows	97 cm Rows	102 cm Rows	Recommended Speed Range in Km/h
35	24	24.4	317 872	264 893	250 951	238 404	4.8 to 11.3
35	25	23.3	305 157	254 297	240 913	228 868	4.8 to 12.1
35	26	22.2	294 420	244 517	231 647	220 065	4.8 to 12.8
35	27	21.3	282 553	235 461	223 068	211 914	6.4 to 12.8
35	28	20.8	272 461	227 051	215 101	204 346	6.4 to 12.8
29	24	20.0	263 379	219 483	207 931	197 535	6.4 to 12.8
29	25	19.2	252 844	210 704	199 614	189 633	6.4 to 12.8
29	26	18.5	243 119	202 600	191 936	182 340	6.4 to 12.8
29	27	17.9	234 115	195 096	184 828	175 586	6.4 to 12.8
29	28	17.2	225 754	188 128	178 227	169 315	6.4 to 12.8
24	24	16.7	217 969	181 641	172 081	163 477	6.4 to 12.8
24	25	15.9	209 250	174 375	165 198	156 938	6.4 to 12.8
24	26	15.4	201 202	167 669	158 844	150 902	6.4 to 12.8
24	27	14.7	193 750	161 459	152 961	145 313	6.4 to 12.8
24	28	14.3	186 831	155 692	147 498	140 123	6.4 to 12.8
20	24	13.9	181 641	151 367	143 401	136 231	6.4 to 12.8
20	25	13.3	174 375	145 313	137 665	130 782	6.4 to 12.8
20	26	12.8	167 669	139 724	132 370	125 751	6.4 to 12.8
20	27	12.4	161 459	134 549	127 467	121 094	6.4 to 12.8
20	28	11.9	155 692	129 744	122 915	116 769	6.4 to 12.8
16	24	11.1	145 313	121 094	114 721	108 985	6.4 to 12.8
16	25	10.6	139 500	116 250	110 132	104 625	6.4 to 12.8
16	26	10.2	134 135	111 779	105 896	100 601	6.4 to 12.8
16	27	9.8	129 167	107 639	101 974	96 875	6.4 to 12.8
16	28	9.5	124 554	103 795	98 332	93 415	6.4 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32795

U.S. UNITS OF MEASURE

SOYBEANS

HIGH RANGE INPUT SPROCKET

AVERAGE SEEDS PER FT. AND/OR APPROXIMATE SEED POPULATION PER ACRE
OF SOYBEANS PLANTED WITH VACUUM METER
WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Acre				
Driver	Driven	Seeds Per Ft.	15 In. Rows	18 In. Rows	19 In. Rows	20 In. Rows	Recommended Speed Range in mph
35	24	19.6	686,070	571,725	541,634	514,552	2 to 8
35	25	19.0	658,627	548,856	519,969	493,970	2 to 8
35	26	18.2	633,295	527,746	499,970	474,972	2 to 8
35	27	17.4	609,840	508,200	481,453	457,380	2 to 8
35	28	16.9	588,060	490,050	464,258	441,045	2 to 8
29	24	16.2	568,458	473,715	448,783	426,344	2 to 8
29	25	15.6	545,720	454,766	430,831	409,290	2 to 8
29	26	15.0	524,730	437,275	414,261	393,548	2 to 8
29	27	14.5	505,296	421,080	398,918	378,972	2 to 8
29	28	14.0	487,250	406,041	384,671	365,437	2 to 8
24	24	13.5	470,448	392,040	371,406	352,836	2 to 8
24	25	12.9	451,630	376,358	356,550	338,723	2 to 8
24	26	12.5	434,260	361,883	342,837	325,695	2 to 8
24	27	12.0	418,176	348,480	330,139	313,632	2 to 8
24	28	11.5	403,241	336,034	318,348	302,431	2 to 8
20	24	11.2	392,040	326,700	309,505	294,030	2 to 8
20	25	10.8	376,358	313,632	297,125	282,269	2 to 8
20	26	10.4	361,883	301,569	285,697	271,412	2 to 8
20	27	10.0	348,480	290,400	275,116	261,360	2 to 8
20	28	9.7	336,034	280,029	265,290	252,026	2 to 8
16	24	9.0	313,632	261,360	247,604	235,224	3 to 8
16	25	8.6	301,087	250,906	237,700	225,815	3 to 8
16	26	8.3	289,506	241,255	228,558	217,130	3 to 8
16	27	8.0	278,784	232,320	220,093	209,088	3 to 8
16	28	7.7	268,827	224,023	212,232	201,621	3 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32799

U.S. UNITS OF MEASURE

SOYBEANS

LOW RANGE INPUT SPROCKET

AVERAGE SEEDS PER FT. AND/OR APPROXIMATE SEED POPULATION PER ACRE
OF SOYBEANS PLANTED WITH VACUUM METER
WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Acre				
Driver	Driven	Seeds Per Ft.	15 In. Rows	18 In. Rows	19 In. Rows	20 In. Rows	Recommended Speed Range in mph
35	24	7.4	257,276	214,397	203,113	192,957	3 to 8
35	25	7.1	246,985	205,821	194,988	185,239	3 to 8
35	26	6.8	237,486	197,905	187,489	178,114	3 to 8
35	27	6.6	228,690	190,575	180,545	171,518	3 to 8
35	28	6.3	220,523	183,769	174,097	165,392	4 to 8
29	24	6.1	213,172	177,643	168,293	159,879	4 to 8
29	25	5.9	204.645	170,537	161,562	153,484	4 to 8
29	26	5.6	196,774	163,978	155,348	147,580	4 to 8
29	27	5.4	189,486	157,905	149,594	142,115	4 to 8
29	28	5.2	182,719	152,266	144,252	137,039	4 to 8
24	24	5.1	176,418	147,015	139,277	132,314	4 to 8
24	25	4.9	169,361	141,134	133,706	127,021	4 to 8
24	26	4.7	162,847	135,706	128,564	122,136	4 to 8
24	27	4.5	156,816	130,680	123,802	117,612	4 to 8
24	28	4.3	151,215	126,013	119,381	113,412	4 to 8
20	24	4.2	147,015	122,513	116,064	110,261	4 to 8
20	25	4.1	141,134	117,612	111,422	105,851	4 to 8
20	26	3.9	135,706	113,088	107,136	101,780	4 to 8
20	27	3.8	130,680	108,900	103,168	98,010	4 to 8
20	28	3.6	126,013	105,011	99,484	94,510	4 to 8
16	24	3.4	117,612	98,010	92,852	88,209	4 to 8
16	25	3.2	112,908	94,090	89,138	84,681	4 to 8
16	26	3.1	108,565	90,471	85,709	81,424	4 to 8
16	27	3.0	104,544	87,120	82,535	78,408	4 to 8
16	28	2.9	100,810	84,009	79,587	75,608	4 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32796

U.S. UNITS OF MEASURE

SOYBEANS

HIGH RANGE INPUT SPROCKET

AVERAGE SEEDS PER FT. AND/OR APPROXIMATE SEED POPULATION PER ACRE
OF SOYBEANS PLANTED WITH VACUUM METER
WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Acre				
Driver	Driven	Seeds per Ft.	30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	Recommended Speed Range in mph
35	24	19.6	343,035	285,863	270,817	257,276	2 to 8
35	25	19.0	329,314	274,428	259,984	246,985	2 to 8
35	26	18.2	316,648	263,873	249,985	237,486	2 to 8
35	27	17.4	304,920	254,100	240,726	228,690	2 to 8
35	28	16.9	294,030	245,025	232,129	220,523	2 to 8
29	24	16.2	284,229	236,858	224,391	213,172	2 to 8
29	25	15.6	272,860	227,383	215,416	204,645	2 to 8
29	26	15.0	262,365	218,638	207,130	196,774	2 to 8
29	27	14.5	252,648	210,540	199,459	189,486	2 to 8
29	28	14.0	243,625	203,021	192,335	182,719	2 to 8
24	24	13.5	235,224	196,020	185,703	176,418	2 to 8
24	25	12.9	225,815	188,179	178,275	169,361	2 to 8
24	26	12.5	217,130	180,942	171,418	162,847	2 to 8
24	27	12.0	209,088	174,240	165,069	156,816	2 to 8
24	28	11.5	201,621	168,017	159,174	151,215	2 to 8
20	24	11.2	196,020	163,350	154,753	147,015	2 to 8
20	25	10.8	188,179	156,816	148,563	141,134	2 to 8
20	26	10.4	180,942	150,785	142,849	135,706	2 to 8
20	27	10.0	174,240	145,200	137,558	130,680	2 to 8
20	28	9.7	168,017	140,014	132,645	126,013	2 to 8
16	24	9.0	156,816	130,680	123,802	117,612	3 to 8
16	25	8.6	150,543	125,453	118,850	112,908	3 to 8
16	26	8.3	144,753	120,628	114,279	108,565	3 to 8
16	27	8.0	139,392	116,160	110,046	104,544	3 to 8
16	28	7.7	134,414	112,011	106,116	100,810	3 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32794

U.S. UNITS OF MEASURE

SOYBEANS

LOW RANGE INPUT SPROCKET

AVERAGE SEEDS PER FT. AND/OR APPROXIMATE SEED POPULATION PER ACRE
OF SOYBEANS PLANTED WITH VACUUM METER
WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Acre				
Driver	Driven	Seeds per Ft.	30 In. Rows	36 In. Rows	38 In. Rows	40 In. Rows	Recommended Speed Range in mph
35	24	7.4	128,638	107,198	101,556	96,479	3 to 8
35	25	7.1	123,493	102,911	97,494	92,619	3 to 8
35	26	6.8	118,743	98,952	93,744	89,057	3 to 8
35	27	6.6	114,345	95,288	90,272	85,759	3 to 8
35	28	6.3	110,261	91,884	87,048	82,696	4 to 8
29	24	6.1	106,586	88,822	84,147	79,939	4 to 8
29	25	5.9	102,322	85,269	80,781	76,742	4 to 8
29	26	5.6	98,387	81,989	77,674	73,790	4 to 8
29	27	5.4	94,743	78,953	74,797	71,057	4 to 8
29	28	5.2	91,359	76,133	72,126	68,519	4 to 8
24	24	5.1	88,209	73,508	69,639	66,157	4 to 8
24	25	4.9	84,681	70,567	66,853	63,510	4 to 8
24	26	4.7	81,424	67,853	64,282	61,068	4 to 8
24	27	4.5	78,408	65,340	61,901	58,806	4 to 8
24	28	4.3	75,608	63,006	59,690	56,706	4 to 8
20	24	4.2	73,508	61,256	58,032	55,131	4 to 8
20	25	4.1	70,567	58,806	55,711	52,925	4 to 8
20	26	3.9	67,853	56,544	53,568	50,890	4 to 8
20	27	3.8	65,340	54,450	51,584	49,005	4 to 8
20	28	3.6	63,006	52,505	49,742	47,255	4 to 8
16	24	3.4	58,806	49,005	46,426	44,105	4 to 8
16	25	3.2	56,454	47,045	44,569	42,340	4 to 8
16	26	3.1	54,282	45,235	42,855	40,712	4 to 8
16	27	3.0	52,272	43,560	41,267	39,204	4 to 8
16	28	2.9	50,405	42,004	39,794	37,804	4 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32809

SI METRIC

SUGAR BEETS

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER M, AND/OR
APPROXIMATE SEED POPULATION PER HECTARE OF SUGAR BEETS PLANTED
WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare			
Driver	Driven	Seed Spacing in mm	56 cm Rows	76 cm Rows	97 cm Rows	Recommended Speed Range in km/h
24	28	63	283 077	207 590	163 887	3.2 to 8.0
20	24	65	275 214	201 823	159 334	3.2 to 8.0
20	25	68	264 205	193 750	152 961	3.2 to 8.8
20	26	70	254 043	186 298	147 078	3.2 to 8.8
20	27	73	244 634	179 399	141 630	3.2 to 9.6
20	28	76	235 897	172 991	136 572	3.2 to 9.6
16	24	81	220 171	161 459	127 467	4.8 to 10.4
16	25	85	211 364	155 000	122 369	4.8 to 10.4
16	26	88	203 235	149 039	117 662	4.8 to 12.1
16	27	91	195 707	143 519	113 304	4.8 to 12.1
16	28	95	188 718	138 393	109 258	4.8 to 12.1

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32801

SI METRIC

SUGAR BEETS

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER M, AND/OR APPROXIMATE SEED POPULATION PER HECTARE OF SUGAR BEETS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average	Approximate Seed Population Per Hectare			
Driver	Driven	Seed Spacing in mm	56 cm Rows	76 cm Rows	97 cm Rows	Recommended Speed Range in km/h
35	24	99	180 609	132 447	104 563	4.8 to 12.8
35	25	103	173 385	127 149	100 381	4.8 to 12.8
35	26	107	166 716	122 258	96 520	4.8 to 12.8
35	27	111	160 541	117 730	92 945	4.8 to 12.8
35	28	116	154 808	113 526	89 625	4.8 to 12.8
29	24	120	149 647	109 741	86 638	5.6 to 12.8
29	25	125	143 662	105 352	83 172	5.6 to 12.8
29	26	130	138 136	101 300	79 974	5.6 to 12.8
29	27	135	133 020	97 548	77 012	5.6 to 12.8
29	28	140	128 269	94 064	74 261	5.6 to 12.8
24	24	144	123 846	90 820	71 700	5.6 to 12.8
24	25	151	118 892	87 188	68 832	5.6 to 12.8
24	26	157	114 320	83 834	66 185	5.6 to 12.8
24	27	163	110 085	80 729	63 734	5.6 to 12.8
24	28	169	106 154	77 846	61 457	5.6 to 12.8
20	24	173	103 205	75 684	59 750	7.2 to 12.8
20	25	181	99 077	72 656	57 360	7.2 to 12.8
20	26	188	95 266	69 862	55 154	7.2 to 12.8
20	27	195	91 738	67 274	53 111	8.0 to 12.8
20	28	202	88 462	64 872	51 215	8.0 to 12.8
16	24	217	82 564	60 547	47 800	8.8 to 12.8
16	25	226	79 262	58 125	45 888	8.8 to 12.8
16	26	235	76 213	55 890	44 123	9.6 to 12.8
16	27	244	73 390	53 820	42 489	9.6 to 12.8
16	28	253	70 769	51 897	40 972	9.6 to 12.8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32802

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B58;P053 100287

U.S. UNITS OF MEASURE

SUGAR BEETS

HIGH RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER FT., AND/OR APPROXIMATE SEED POPULATION PER ACRE OF SUGAR BEETS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH HIGH RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seed Spacing	Approximate Seed Population Per Acre			
Driver	Driven	in In.	22 In. Rows	30 In. Rows	38 In. Rows	Recommended Speed Range in mph
24	28	2- 1/2	114,557	83,971	66,293	2 to 5
20	24	2- 1/2	111,375	81,675	64,480	2 to 5
20	25	2- 9/16	106,920	78,310	61,824	2 to 5- 1/2
20	26	2- 3/4	102,808	75,483	59,592	2 to 5- 1/2
20	27	2- 7/8	99,000	72,600	57,316	2 to 6
20	28	3	95,464	69,929	55,207	2 to 6
16	24	3- 3/16	89,100	65,340	51,584	3 to 6- 1/2
16	25	3- 5/16	85,536	62,789	49,570	3 to 6- 1/2
16	26	3- 1/2	82,246	60,256	47,570	3 to 7
16	27	3- 5/8	79,200	58,080	45,853	3 to 7- 1/2
16	28	3- 3/4	76,272	56,056	44,255	3 to 7- 1/2

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

A32678

U.S. UNITS OF MEASURE

SUGAR BEETS

LOW RANGE INPUT SPROCKET

AVERAGE SEED SPACING, AVERAGE SEEDS PER FT., AND/OR APPROXIMATE SEED POPULATION PER ACRE OF SUGAR BEETS PLANTED WITH VACUUM METER WHEN OPERATING PLANTER WITH LOW RANGE INPUT SPROCKET

NOTE: For information on using planting rate charts, see "HOW TO USE PLANTING RATE CHARTS" at the beginning of this section.

Sprocket Combinations (Number of Teeth)		Average Seed Spacing	Approximate Seed Population Per Acre			
Driver	Driven	in In.	22 In. Rows	30 In. Rows	38 In. Rows	Recommended Speed Range in mph
35	24	3- 15/ 16	73, 090	53, 612	42, 326	3 to 8
35	25	4- 1/ 16	70, 166	51, 500	40, 658	3 to 8
35	26	4- 1/ 4	67, 468	49, 430	39, 024	3 to 8
35	27	4- 3/ 8	64, 969	47, 628	37, 601	3 to 8
35	28	4- 9/ 16	62, 649	45, 953	36, 279	3 to 8
29	24	4- 3/ 4	60, 560	44, 392	35, 047	3- 1/2 to 8
29	25	4- 15/ 16	58, 138	42, 671	33, 688	3- 1/2 to 8
29	26	5- 1/ 8	55, 902	40, 998	32, 367	3- 1/2 to 8
29	27	5- 5/ 16	53, 831	39, 451	31, 145	3- 1/2 to 8
29	28	5- 1/ 2	51, 909	38, 085	30, 067	3- 1/2 to 8
24	24	5- 11/ 16	50, 119	36, 747	29, 010	3- 1/2 to 8
24	25	5- 15/ 16	48, 114	35, 259	27, 836	3- 1/2 to 8
24	26	6- 3/ 16	46, 264	33, 943	26, 797	4 to 8
24	27	6- 3/ 8	44, 550	32, 670	25, 792	4 to 8
24	28	6- 5/ 8	42, 959	31, 489	24, 860	4 to 8
20	24	6- 13/ 16	41, 766	30, 613	24, 168	4- 1/2 to 8
20	25	7- 1/ 8	40, 095	29, 408	23, 217	4- 1/2 to 8
20	26	7- 3/ 8	38, 553	28, 255	22, 307	4- 1/2 to 8
20	27	7- 11/ 16	37, 125	27, 225	21, 493	5 to 8
20	28	7- 15/ 16	35, 799	26, 267	20, 737	5 to 8
16	24	8- 9/ 16	33, 413	24, 512	19, 352	5- 1/2 to 8
16	25	8- 7/ 8	32, 076	23, 519	18, 568	5- 1/2 to 8
16	26	9- 1/ 4	30, 842	22, 629	17, 865	6 to 8
16	27	9- 5/ 8	29, 700	21, 780	17, 195	6 to 8
16	28	10	28, 639	20. 993	16, 573	6 to 8

IMPORTANT: To prevent planting miscalculations, make field checks to be sure you are planting at the desired rate.

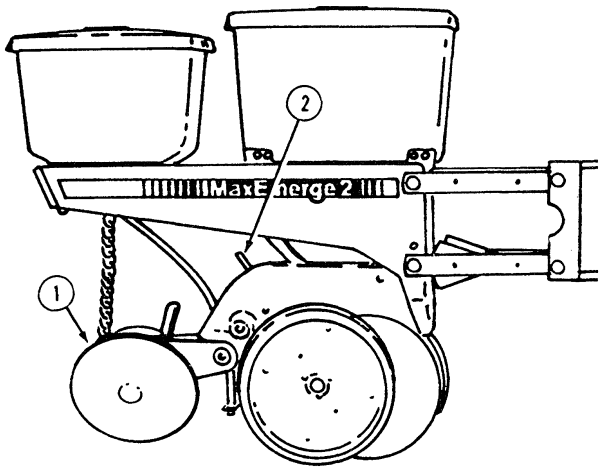
A32679

050;A32679 B22;;90M AD 210187

CHECKING SEED POPULATION

1. Chain up one or more sets of closing wheels so they will allow the seed trench to remain open.

2. Set the depth adjusting handle two settings from the minimum setting as shown.



A29685

007;A29685 B22;;70M AL 201185

3. Plant a short distance and check to see if seeds are visible in the trench. Readjust depth adjusting handle if necessary.

4. Plant approximately 90 m (100 yd).

B22;;70M AM 201185

LENGTH OF ROW IN FT.									
Fraction of Acre	Row Width								
	15"	18"	19"	20"	22"	30"	36"	38"	40"
1/100	348	240	276	261	238	174	145	138	131
1/200	174	145	138	131	119	87	72-1/2	69	66

A32803

LENGTH OF ROW IN M									
Fraction of Hectare	Row Width								
	38 cm	46 cm	48 cm	51 cm	56 cm	76 cm	91 cm	97 cm	102 cm
1/1000	26.24	21.88	20.72	19.68	17.90	13.12	10.94	10.36	9.84

A32804

5. Consult charts and determine what distance equals 1/1000 of a hectare, 1/100 of an acre, or 1/200 of an acre as it relates to the row width you are planting.

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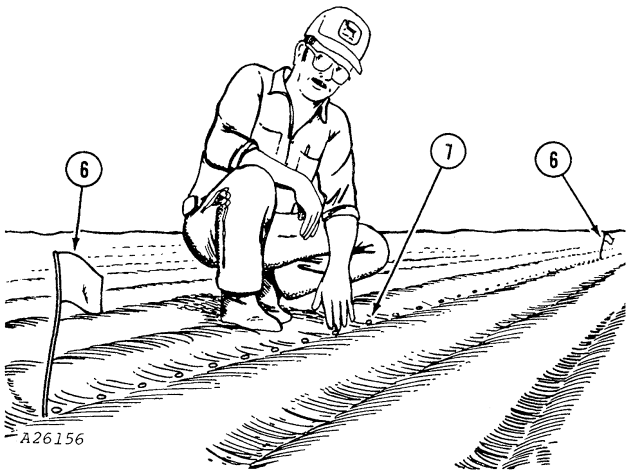
6. Mark distance selected with flags.

7. Count the seeds between flags.



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8. If you marked off 1/1000 of a hectare, multiply the number of seeds counted by 1000.

If you marked off 1/100 of an acre, multiply the number of seeds counted by 100.

If you marked off 1/200 of an acre, multiply the number of seeds counted by 200.

NOTE: When planting at a shallow depth with the closing wheels raised, seeds may tend to roll or bounce. This will affect seed spacing accuracy.

B22;;70M AP 201185

FILLING SEED HOPPERS

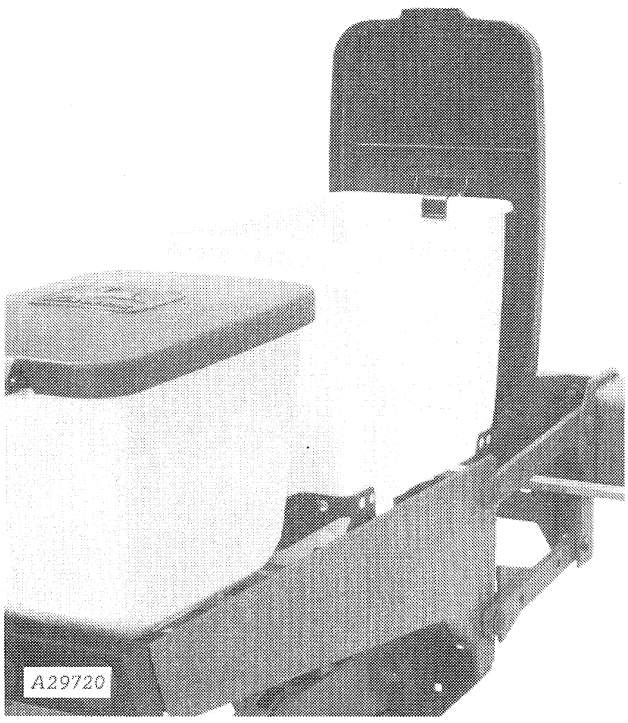
If using 58L (1.6 bu.) hoppers, remove lid and snap on front of hopper with latch.

If using 106L (3 bu.) hoppers, remove lid and snap on side of hopper with latch.

If using seed treatment, remove any build-up that may occur on the bottom of the hopper or meter before filling seed hoppers.

Talc lubricant (A51237) is recommended when seed treatments and high humidity cause excessive build-up on seed meter components, which results in low population.

Talc lubricant will minimize buildup of gummy deposits on seed disks caused by seed treatment or high humidity, aid in smooth seed flow through seed meter, helps prevent bridging in hopper and reduces wear on vacuum meter components.

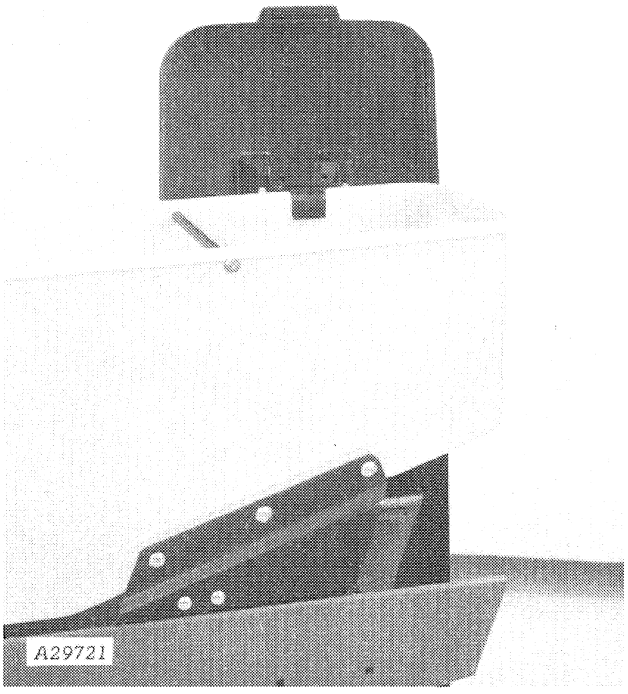


58L (1.6 bu.) Seed Hopper

Spread 1/3 cup of talc over the top of seeds each time the hopper is filled. Adjust the amount to meet seed and humidity conditions.

NOTE: Using talc with liquid hopper applied seed treatments which leave a wet coating on the seed is not recommended.

IMPORTANT: Replace hopper lids after hoppers have been filled. If lids are left off, dust and dirt can accumulate in the seed metering mechanism, causing excessive wear.



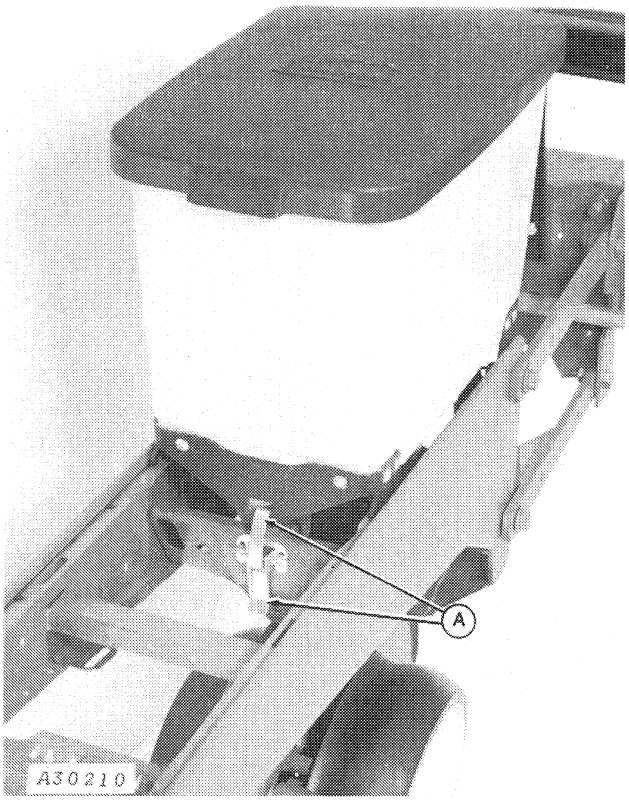
106L (3 Bu.) Seed Hopper

007;A29720 A29721 B22;;90M T 040287

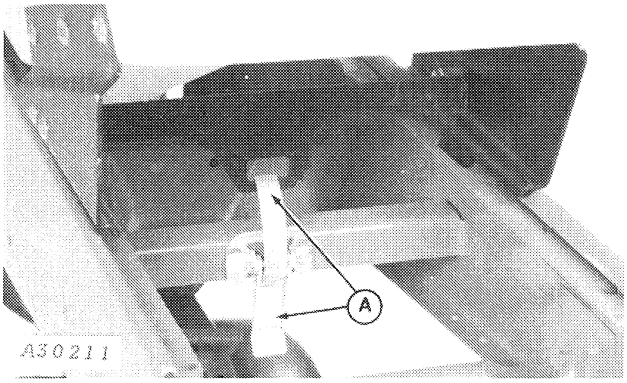
INSPECTION AND CLEANOUT OF SEED HOPPERS AND METERING UNITS

For best operation, empty hoppers thoroughly after each day's use to remove chaff, dust and other foreign material.

To remove seed hopper from planting unit, disengage hopper latch (A) and lift hopper upward and rearward.



58L (1.6 Bu.) Seed Hopper



106L (3 Bu.) Seed Hopper

007;A30210 A30211 B22;;90M U 040287

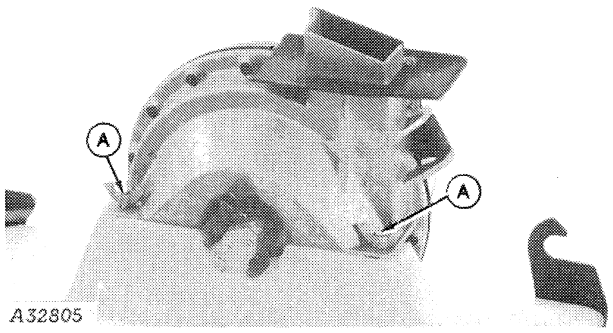
Empty hopper and vacuum seed meter by inverting hopper.

NOTE: If using seed treatments, remove any buildup that may occur in the bottom of the hopper.

To inspect the meter, remove the two wing nuts (A) and meter from hopper. Pull meter straight up to disengage it from the two mounting studs and the retainer ring.

Turn the metering assembly by hand to see that mechanism is free of dirt, chaff or other foreign material.

If further disassembly of seed meter is required, see Service section.



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READ YOUR PLANTER OPERATOR'S MANUAL

Read the Operating the Planter section in your planter operator's manual for related information on seed meters.

B22;;70M AQ 201185

TROUBLESHOOTING

Symptom	Problem	Solution	Page
No seed being planted.	Hoppers empty.	Fill hoppers.	59
	No vacuum.	See "Low Vacuum" in Troubleshooting chart.	66
	Seed tubes plugged or damaged.	Inspect seed tubes.	*
Poor seed spacing.	Seed disk vacuum holes plugged.	Clean seed disks.	77
	Worn meter brushes.	Replace brushes.	74
	Low vacuum.	See "Low Vacuum" in Troubleshooting chart.	66
	Rusty planting unit chains.	Lubricate chains.	69
	Dirt build–up on herbicide/insecticide drive.	Clean drive.	*
	Worn meter seals.	Replace seals.	76
	Seed disk hubs misadjusted.	Readjust hubs.	11-13
	High vacuum.	Adjust knob on control valve.	21
	Faulty vacuum gauge.	Check air line to gauge. Clean if plugged. Replace if cut.	—
	Worn seed disks.	Replace disks.	75
	Seed tubes improperly installed or worn.	Reinstall or replace seed tubes.	*

*NOTE: * See your planter operator's manual.*

TROUBLESHOOTING

Symptom	Problem	Solution	Page
Low seed population.	Seed disk vacuum holes plugged.	Clean seed disks. (Sorghum/Beet only) Install knockout or replace worn knockout.	14
	"Dirty" seed plugging vacuum holes.	Use clean seed. (Sorghum/Beet only) Install knockout or replace worn knockout.	14
	Seed disk wiper missing.	Replace wiper.	76
	"Treated" seed sticking in cells.	Add Talc A51327 to seed hoppers.	70
	Hopper applied treatment causes buildup, seeds stick.	Follow recommended usage.	—
	Rusty planting unit chains.	Lubricate chains.	69
	Low vacuum.	See "Low Vacuum" in Troubleshooting chart.	66
	Dirt build-up on herbicide/insecticide drives.	Clean drives.	*
	Worn meter seals.	Replace seals.	76
	Worn seed disks.	Replace seed disks.	75
	Seed "bridging" in hopper.	Use smaller seed.	—
		Add Talc A51327 to seed hoppers.	—
		Clean vacuum meter and hopper.	60,77
	Seed size not compatible with seed disks.	Use correct seed disks.	8

*NOTE: * See your planter operator's manual.*

B22;;9TS B 100287

TROUBLESHOOTING

Symptom	Problem	Solution	Page
Low seed population. (Continued)	Planting too fast for rough field conditions.	Slow down.	—
	Meter brush improperly installed.	Install brush properly.	74
	Using incorrect transmission sprocket combination.	Use sprocket combination recommended in planting rate chart.	22-30
High Seed Population.	High vacuum.	Adjust knob on control valve.	21
	Faulty vacuum gauge.	Check air line to gauge. Clean if plugged. Replace if cut.	—
	Worn seed disks.	Replace seed disks.	75
	Seed size not compatible with seed disks.	Use correct seed disks.	8
	Planting too slow.	Plant at speed recommended in planting rate charts.	32-55
	Meter brush improperly installed.	Install brush properly.	74
	Seed disk hubs loose.	Tighten hubs.	11-13
	Using incorrect transmission sprocket combination.	Use sprocket combination recommended in planting rate charts.	22-30

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B58;P064 100287

TROUBLESHOOTING

Symptom	Problem	Solution	Page
Excessive slippage.	Down force too high.	Use correct down force setting.	—
	Seed disks have not been sprayed with Slip Plate.	Spray seed disks with Slip Plate TY6431.	69
	Planting too fast.	Plant at speed recommended in planting rate chart.	32-55
Seed tubes plugging.	Planter rolling backward when lowering.	Lower planter while moving forward.	—
	Turning tractor steering wheel when planter is down and stationary. (Four Wheel Drive tractors only.)	Avoid turning tractor when planter is down and stationary.	—
Inconsistent seed depth.	Planting in rough seed bed.	Use down pressure spring attachment on planting units.	*
	Seed tubes partially plugged or improperly installed.	Inspect seed tubes.	*
Premature blower motor seal failure.	Incorrect hydraulic connections.	Reconnect hydraulic hoses.	15-17
	SCV lever not installed.	Install SCV lever stop in tractor console.	17-18

*NOTE: * See your planter operator's manual.*

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TROUBLESHOOTING

Symptom	Problem	Solution	Page
Low vacuum.	Incorrect hydraulic connections.	Reconnect hoses.	15-17
	Planting unit vacuum hoses not connected to meter.	Connect vacuum hoses to meter.	10
	SCV lever stop not installed.	Install lever stop in tractor console.	17-18
	Control valve misadjusted.	Adjust control valve knob.	21
	Air manifold system clogged with dust.	Clean air manifold system.	72-73
	Manifold hoses kinked or pinched.	Reposition hoses.	—
	Blower guard clogged with dust or seed treatments.	Clean blower guard.	71
	Meter housing handle not engaged.	Secure housing handle to chamber.	13
	Meter seals worn or flipped.	Inspect seals. Reposition or replace.	76
	Air manifold system assembled without O-rings.	Add O-rings.	—
	SCV lever stop cut to wrong length.	Recut lever stop.	17-18

B22;;9TS F 100287

B58;P066 100287

TROUBLESHOOTING

Symptom	Problem	Solution	Page
Erratic vacuum.	SCV lever stop not installed.	Install lever stop.	17-18
	SCV lever stop cut to wrong length.	Recut SCV lever stop.	17-18
	Tractor SCV linkage is mistimed.	Tractor SCV linkage must be readjusted.	**
	Air manifold system clogged with dust.	Clean air manifold system.	72-73
	"Flow checking" at SCV prevents return oil flow.	Install Auxiliary Return Line Coupler Kit (BA25379). in SCV.	*
	Control valve failed.	Replace control valve.	—
	Tractor oil level low.	Add oil.	—

*NOTE: * See your planter operator's manual.*
***See your John Deere dealer.*

B22;;9TS G 100287

READ YOUR PLANTER OPERATOR'S MANUAL

Read the Troubleshooting section in your planter operator's manual for information on related problems.

B22;;9TS E 210187

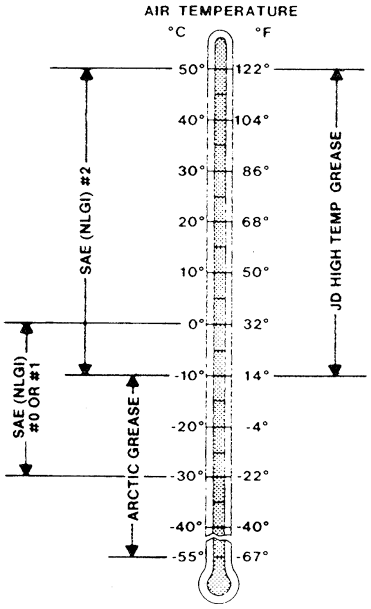
HIGH TEMPERATURE/EXTREME PRESSURE GREASE

Use grease based on expected air temperature range during the service interval.

John Deere High Temperature/Extreme Pressure Grease is recommended.

If other greases are used, they must be greases meeting SAE Multipurpose High Temperature Grease with Extreme Pressure (EP) Performance and capable of operating at compartment temperatures above 150°C (302°F).

At temperatures below -30°C (-22°F), use arctic greases such as those meeting Military Specification MIL-G-10924C.



AB6;X9328 053;GREA1. 151286

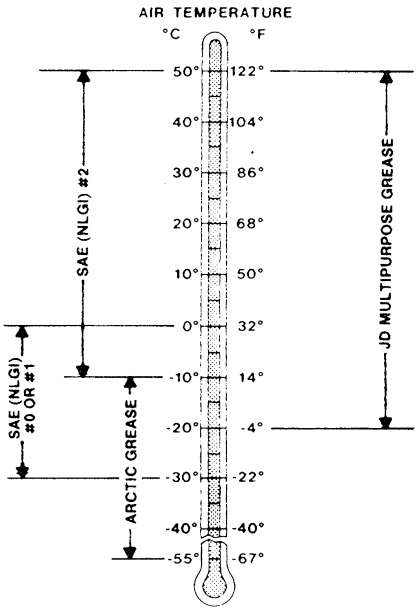
GENERAL PURPOSE GREASE

Use grease based on expected air temperature range during the service interval.

John Deere Multipurpose Grease is recommended. If other greases are used, use:

—SAE Multipurpose Grease
—SAE Multipurpose Grease containing 3 to 5 per cent molybdenum disulfide.

At temperatures below -30°C (-22°F), use arctic greases such as those meeting Military Specification MIL-G-10924C.



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ROLLER CHAIN AND PESTICIDE GEAR LUBRICATION

The most effective roller chain lubrication routine varies, depending on the environmental conditions and/or condition of the chain. The goal is to maintain complete freedom at every chain link joint.

Lubricate all planter roller chains with John Deere Multipurpose Spray Lube, TY6350 (or equivalent) at intervals sufficient to maintain free chain movement.

When roller chains remain unused for several days, moisture in the air will accumulate on the chain, causing the chain to rust. This can and will become serious enough in time to cause the chain joints to become stiff, restricting their normal free movement. While very difficult to detect, this stiffness can disturb the smooth rotation of seed meter components and cause a deterioration in performance.

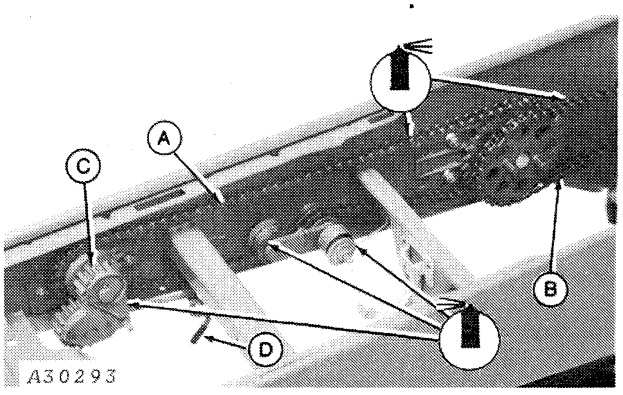
If the planter is not to be used for several days, thoroughly lubricate the chains with John Deere Multipurpose Spray Lube, TY6350, at the beginning of the idle period. If the roller chains have become rusty or stiff during the idle period, lubricate prior to continued usage and operate or "work" the chains sufficiently to ensure all chain joints move freely before normal planter operation is resumed.

Lubricate pesticide drive chain (A) and seed meter drive chain (B) with John Deere Multipurpose Spray Lube, TY6350.

Lubrication of the chains will loosen any stiff or tight links which might cause poor engagement of the chain on the sprockets and poor seed meter performance.

Lubricate the pesticide drive gears (C) with John Deere Multipurpose Spray Lube, TY6350. Move the drive disconnect handle (D) back and forth while spraying. This will loosen any paint or dirt buildup and help allow the gears to turn freely. In adverse conditions it may be necessary to lubricate these gears daily.

IMPORTANT: Do not use chain lube or any other heavy petroleum base lubricant that may cause a buildup of dust or dirt in the sprocket or gear teeth.



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SPECIAL LUBRICANTS FOR SEED METERS

Talc lubricant (A51237) is recommended when seed treatments and high humidity cause excessive build-up on seed meter components, which results in low population.

Talc lubricant will minimize buildup of gummy deposits on seed disks caused by seed treatment or high humidity, aid in smooth seed flow through seed meter, helps prevent bridging in hopper and reduces wear on vacuum meter components.

Spread 1/3 cup of talc over the top of seeds each time the hopper is filled. Adjust the amount to meet seed and humidity conditions.

NOTE: Using talc with liquid hopper applied seed treatments which leave a wet coating on the seed is not recommended.

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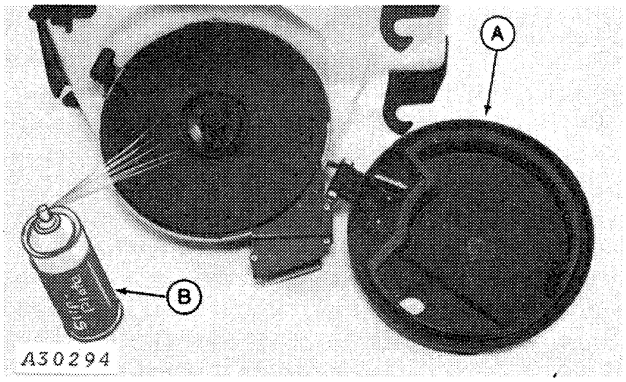
If vacuum seal (A) is replaced, spray seed disk with Slip Plate (B). Order TY6431 from your John Deere dealer.



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BOLT TORQUE (METRIC)

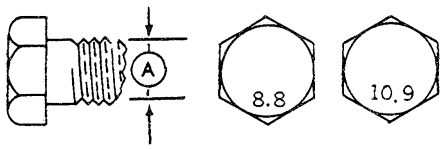
Tighten all bolts to the torques specified in the chart. Keep bolts tight at all times. Loose bolts can cause breakage of parts.

Check the tightness of bolts periodically and keep them tightened to specified torques. When bolts are replaced, be sure they are replaced with bolts of equal strength.

Metric bolts furnished with the planter are identified by 8.8 or 10.9 on the head. Metric nuts may be identified by 8 or 10 stamped on the top or bottom of the nut.

NOTE: Bolts having lock nuts with plated and wax finish should be tightened to approximately 50 per cent of amounts shown in chart.

CAUTION: Use only metric tools on metric hardware. Other tools may not fit properly. They may slip and cause injury.



Bolt Diameter "A"	Wrench Size Metric	8.8 N·m	8.8 (Lb-Ft)	10.9 N·m	10.9 (Lb-Ft)
5 mm	8 mm	6.5	(5)	9.2	(7)
6 mm	10 mm	11.1	(8)	15.6	(12)
8 mm	13 mm	27	(20)	38	(30)
10 mm	16 mm	53	(39)	75	(55)
12 mm	18 mm	93	(70)	130	(96)
16 mm	24 mm	230	(170)	325	(238)
20 mm	30 mm	450	(332)	635	(468)
24 mm	36 mm	780	(575)	1100	(811)
30 mm	46 mm	1550	(1143)	2180	(1608)
36 mm	55 mm	2710	(1999)	3810	(2810)

A28608

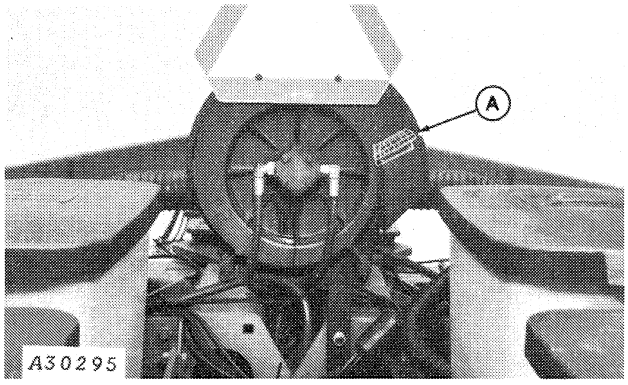
AP0;A28608 B05;;13SE C 011184

CLEAN BLOWER MOTOR GUARD

The vacuum blower guard (A) may become clogged with dust or seed inoculant/treatment. A clogged blower guard could cause loss of vacuum.

CAUTION: Agricultural chemicals can be dangerous. Improper selection or use can injure persons, animals, plants, soils or other property. BE SAFE: Handle and apply with care. Follow instructions of the chemical manufacturer.

Clean blower guard with a rag or a small brush when necessary.



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CLEAN VACUUM MANIFOLD SYSTEM

Dirt or seed inoculant/treatment may build up in vacuum manifold system and cause low vacuum at planting units. This could result in loss of seed metering accuracy.

Clean air manifold system at least once a week during operation in severe dusty conditions.

Clean as follows:

1. Insert SCV lever stop in tractor SCV console and start tractor. (See INSTALL SCV LEVER STOP in Preparing for Use section.)

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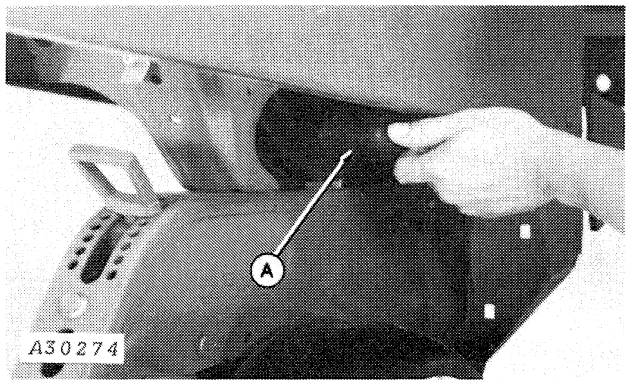
2. One at a time, remove vacuum hoses (A) from meters. Shake the hose for a few seconds and replace it on the meter.



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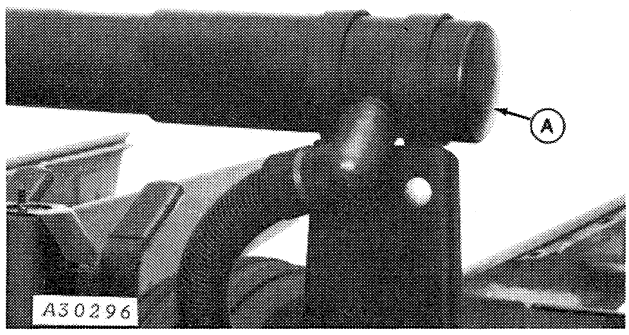
3. Remove end cap (A) from both ends of manifold tube.



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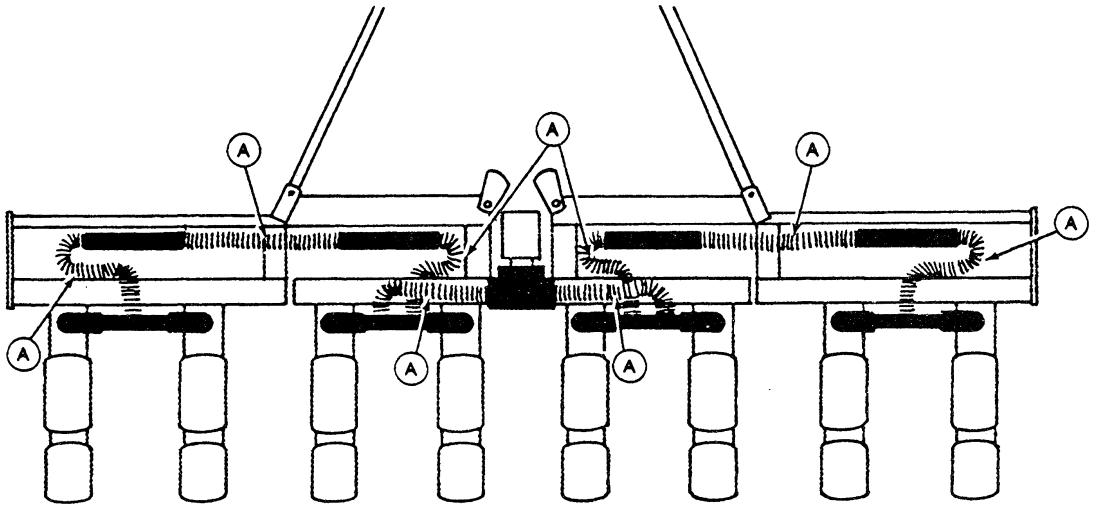
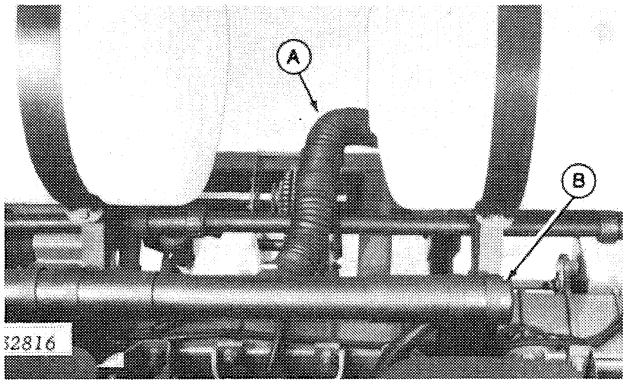


4. (Flex-Fold and Wing-Fold Planters Only) Shake flexible hoses (A) for several seconds. Replace manifold caps (B).

IMPORTANT: Regularly inspect flexible hoses to be sure they are not pinched.



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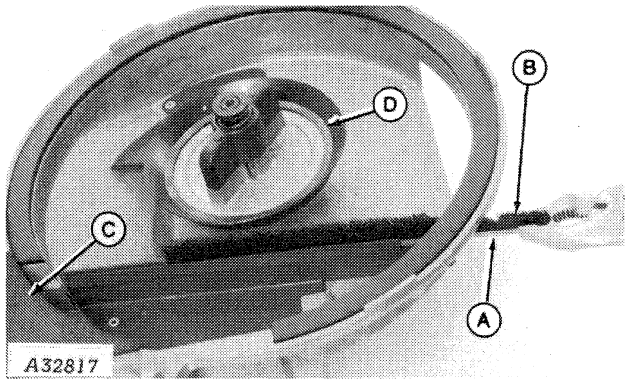
VACUUM METER INSPECTION AND SERVICE



Annually inspect seed meter for wear and chemical/seed treatment build-up.

1. Check brush (A) for gaps. If gaps are big enough to allow seed to pass through, replace brush.

NOTE: When replacing brush:

a. Insert narrow end (B) into slot last.

b. Push brush into slot until it contacts side of meter housing (C).

2. Replace hub seal (D) if cracked or weathered.

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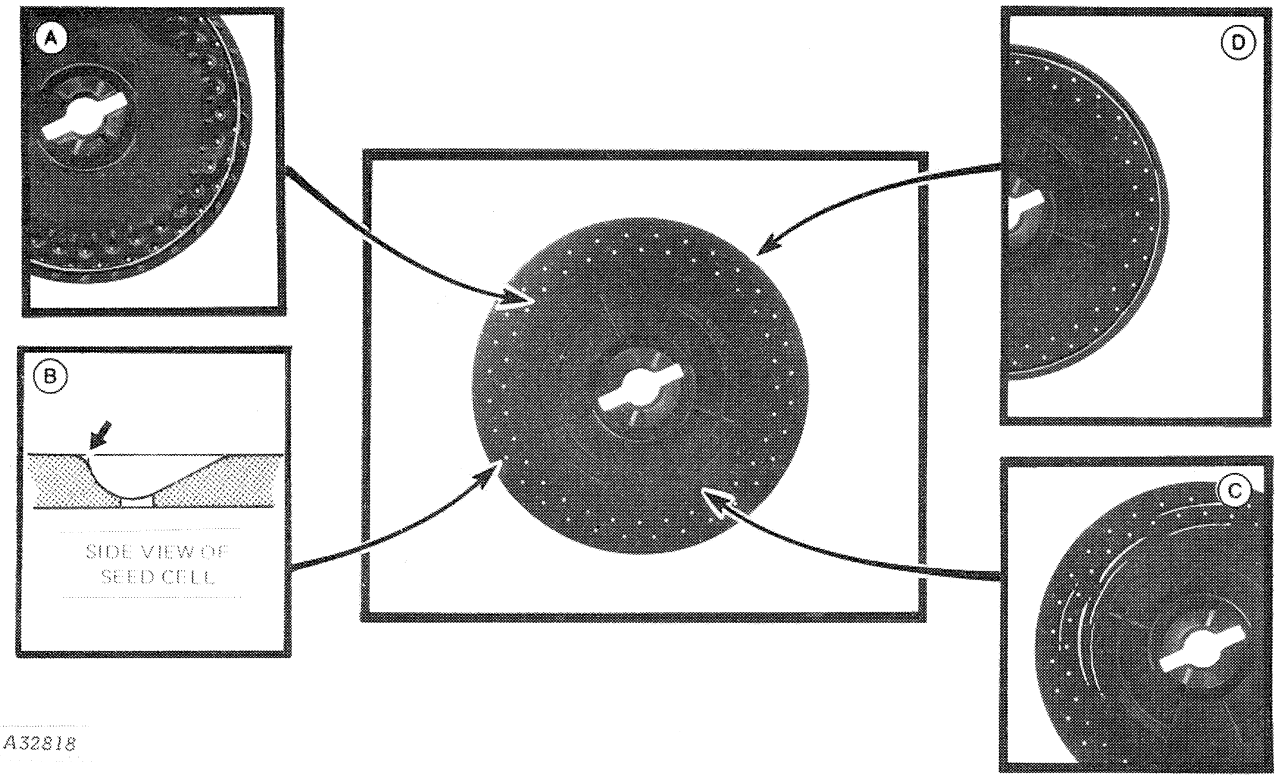

A32818

2. Check seed disks for wear in the following areas. Replace as needed.

a. A small amount of wear around the perimeter of the disk, caused by the seed seal, is acceptable. If wear occurs, check to see if seed can leak through the gap between the disk and seed seal.

Seed leakage may be eliminated by adjusting meter hub. See ADJUSTING METER HUB in Preparing for Use Section.

b. Inspect the individual seed cells. The abrasion of the seed may cause wear of the sharp corners, which increases cell size. (This could result in over-population when planting small seed or under-population when planting large seed). Replace the seed disk if the size of cell is significantly increased and field checks determine a reduction in accuracy.

c. Small grooves or scratches are acceptable on the vacuum side of seed disk.

d. Wear around the perimeter of the disk caused by the vacuum seal is acceptable up to an approximate depth of 1.0 m (3/64 in.).

NOTE: Before replacing seed disks, perform a field check to determine if the disk is metering seeds accurately. (See CHECKING SEED POPULATION in the Operating the Seed Meter section.)

It is not necessary to replace the seed disk if its metering performance is satisfactory.

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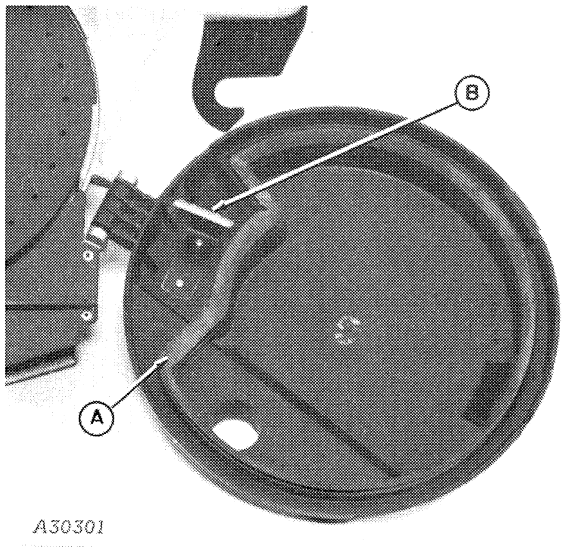
3. Replace vacuum seals (A) if seed disks are replaced or when large cracks/wear areas are visible.

NOTE: If vacuum seals are replaced, spray Slip Plate on used seed disks. (See Lubrication section.) New seed disks are factory lubricated.

4. Replace seed disk wiper (B) if edge of wiper is grooved or excessively worn.



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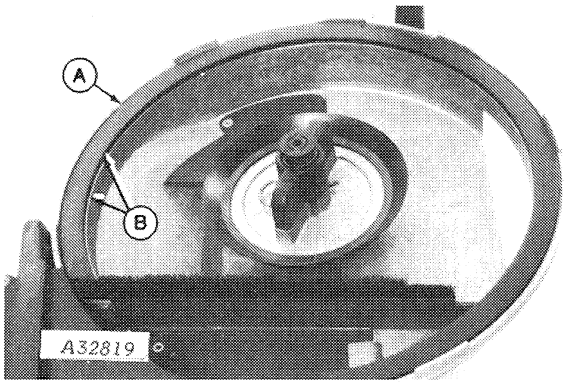
5. Replace seed seal (A) if wear occurs at the inside edge (B) and if hub cannot be adjusted to maintain the proper gap at (C). (See INSTALLING SEED DISK, step 5, in Preparing for Use section.) Excessive wear and a large gap may cause seed leakage or grinding with small seeds such as sorghum or sugar beets.



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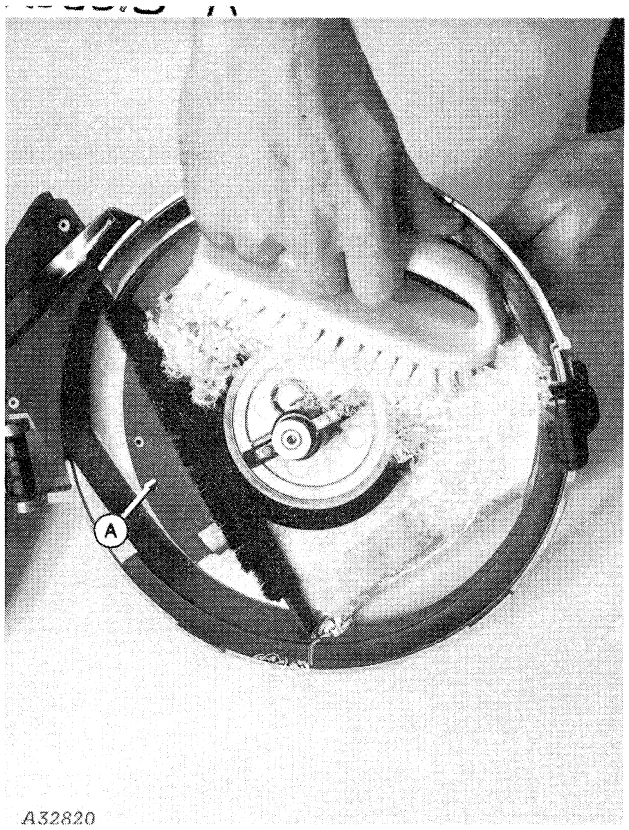
6. Annual cleaning of vacuum meter and seed disks is recommended. Use mild detergent and a soft brush.

NOTE: Thoroughly clean the seed disk cell area and remove any excessive treatment buildup behind the plastic insert (A) in the vacuum meter housing.

IMPORTANT: Use precautions as recommended by chemical manufacturers when handling parts coated with seed treatments. Use proper skin, eye and respiratory protection.



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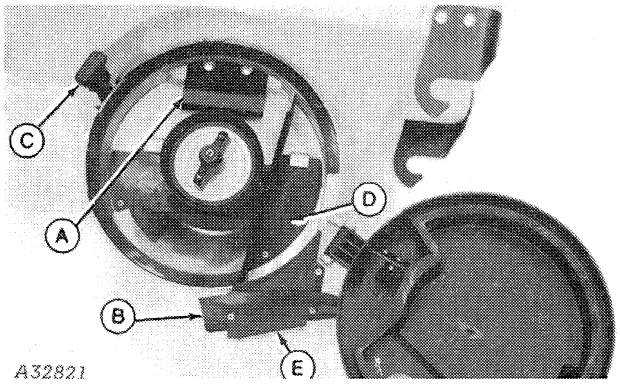
7. Replace the vacuum meter dust cover (B) if it does not fit securely, or is cracked or weathered.

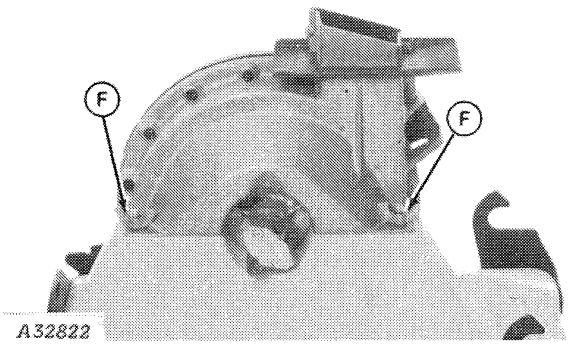
8. Inspect the rubber handle (C) and replace if cracked or broken.

9. Inspect plastic insert (D) and chute cover (E) and replace if worn.

10. Inspect flex-drive assembly to make sure drive coupler turns freely. Lubricate with molybednum disulfide grease if flex drive does not rotate freely.

11. Assemble vacuum meter assembly onto hopper and secure meter with wing nuts (F). Be sure meter housing is assembled under spring clip (A).





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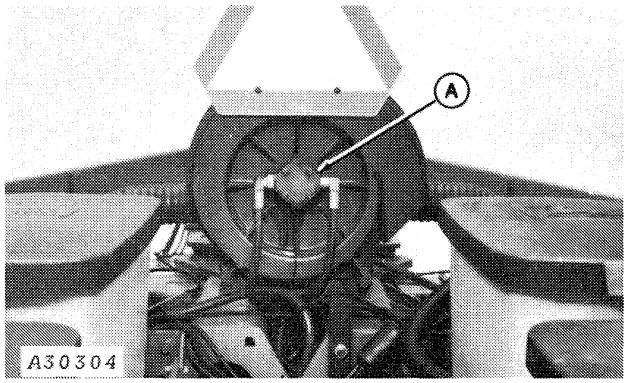
VACUUM MOTOR INSPECTION

Check vacuum motor (A) for oil leaks.

A small amount of oil leakage is acceptable but if oil leakage is excessive, or if you are unable to attain necessary vacuum, order Vacuum Motor Repair Kit AA36389 from your John Deere dealer. Installation instructions are provided with the kit. If leakage occurs on the motor housing at (A), check for loose hardware on the motor or loose fittings.



NOTE: Excessive oil leakage may cause the vacuum blower guard to become clogged. This may cause loss of vacuum.

If necessary, clean blower guard. (See CLEANING VACUUM BLOWER GUARD in this section.)

This leakage will occur inside blower housing and can be seen on the blower guard (B).

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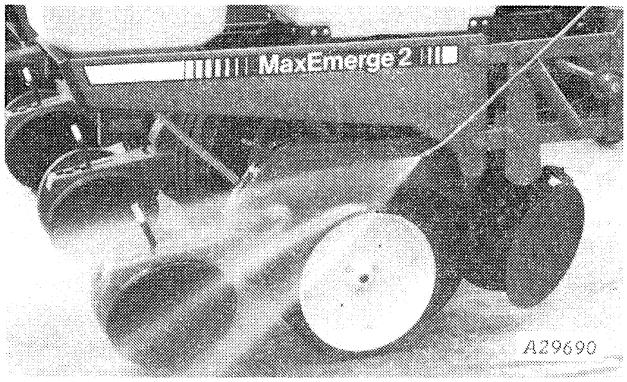
BEGINNING OF SEASON SERVICE



Before using the planter after it has been stored, inspect the seed hoppers for cleanliness to be certain the seed will flow from hoppers freely.

Thoroughly inspect the planter unit for loose parts and adjust as necessary.

Clean any dirt or grease that may have accumulated on moving parts, gears and chains before operating the planter. This will prevent abrasive action that could cause excessive wear.

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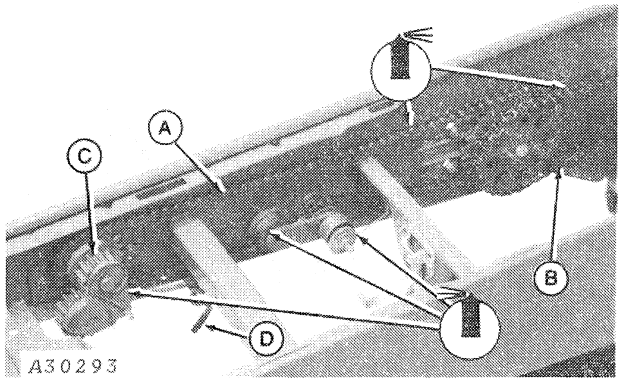
When roller chains remain unused for several days, moisture in the air will accumulate on the chain causing the chain to rust. This can, and will, become serious enough in time to cause the chain joints to become stiff, restricting their normal free movement. While very difficult to detect, this stiffness can encourage the chains to operate abnormally and disturb the smooth rotation of important meter components, causing deterioration in performance.



If the planter is not used for several days, or if oil has been removed from chains, etc. while cleaning the planter, thoroughly lubricate chains with John Deere Multipurpose Spray Lube, TY6350.

Pay particular attention to pesticide drive chain (A), seed meter chain (B), and pesticide drive gears (C). Be certain these chains and gears have adequate lubrication.

When lubricating pesticide drive gears, move drive disconnect handle (D) back and forth while spraying to help loosen any paint or dirt buildup and allow gears to turn freely.

IMPORTANT: Do not use chain lube or any other heavy petroleum base lubricant that may cause a buildup of dust or dirt in sprocket or gear teeth.

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SERVICE AT THE END OF THE SEASON

When planting is completed for one season, store the planter under cover with all parts in operating condition.

Paint all parts which are chipped or worn and require repainting.

Lubricate the planter as outlined in the Lubrication section.

If the planter is not to be used for several days, thoroughly lubricate chains with John Deere PT508 chain lube at the beginning of the idle period. If roller chains have become rusty or stiff during the idle period, lubricate prior to continued usage and operate or "work" chains sufficiently to insure all chain joints move freely before normal planter operation is resumed.

Clean the planter thoroughly to remove dirt and trash which would hold moisture and cause rusting.

Empty and clean seed hoppers.

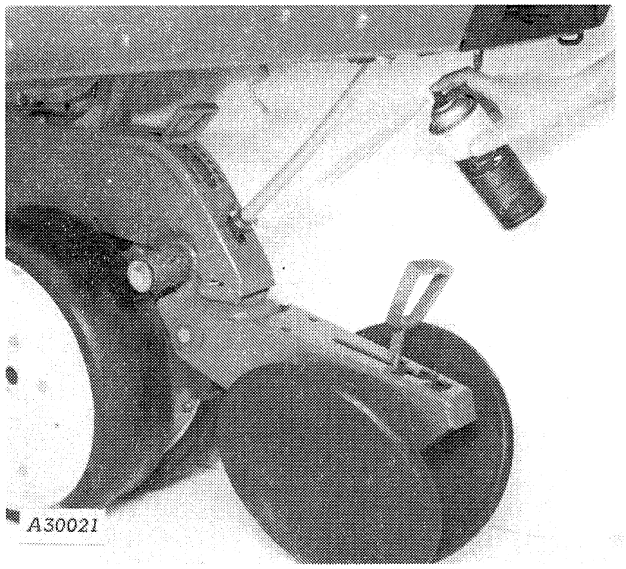
Clean insecticide and/or herbicide hopper thoroughly as various chemicals may deteriorate the system components.

Inspect the planter for worn or broken parts. See your John Deere dealer during the off season so that parts or service can be acquired when the planter is not needed in the field.

Store the planter in a clean, dry place with the planting unit gauge wheels and firming wheels out of the sun and off the floor.

Place handle for closing wheel down force in long slot to relieve tension on closing wheels.

Thoroughly flush liquid herbicide system with clean water. Disconnect from tractor and completely drain all lines and components to prevent damage from freezing.



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Remove seed disks from meter. (See VACUUM METER INSPECTION AND SERVICE in Service section.)

a. Clean meter housing, meter chamber and seed disk with mild detergent and soft brush.

b. Store disks in shipping box or hang on wall (A).

IMPORTANT: Be sure to store seed disks away from extreme heat or direct sunlight. Do not leave disks in the meters during the off season. Do not store under heavy parts.

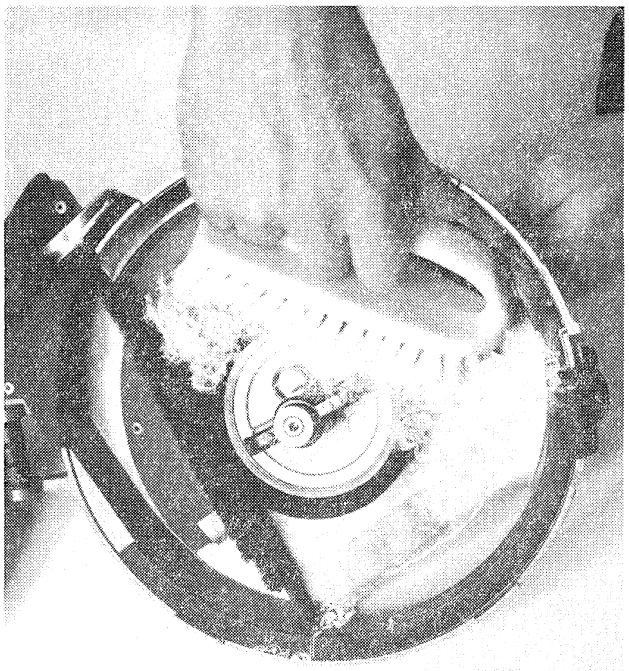
Clean air manifold system. (See CLEAN AIR MANIFOLD SYSTEM in Service section.)

Check for hydraulic leaks.

Check and clean out manifolds.

Check and clean vacuum meters.

Check and replace necessary vacuum meter seals.



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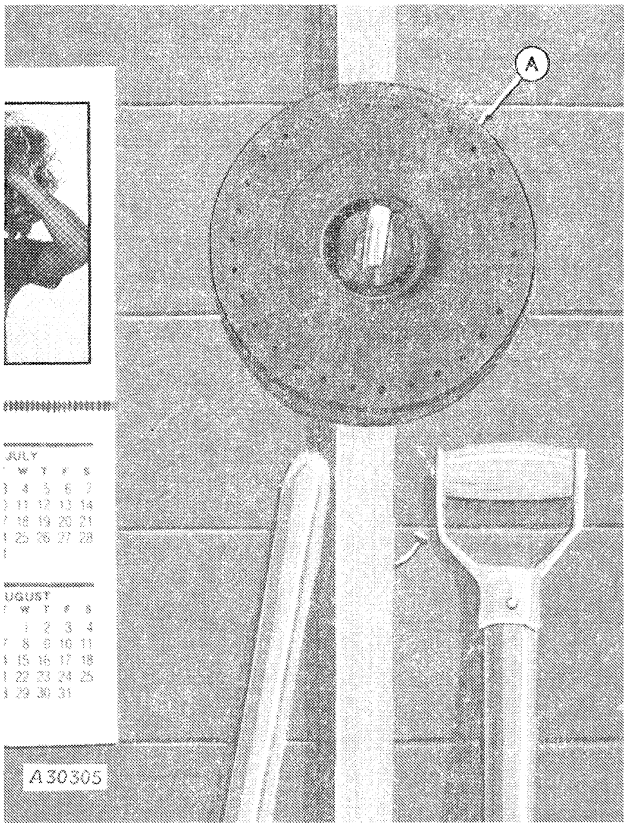

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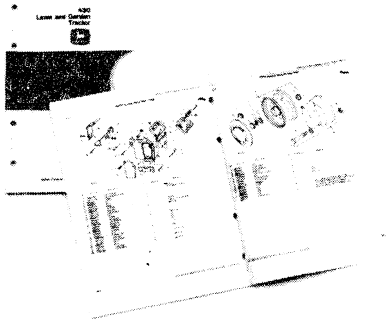
Service Literature Available

PARTS CATALOG

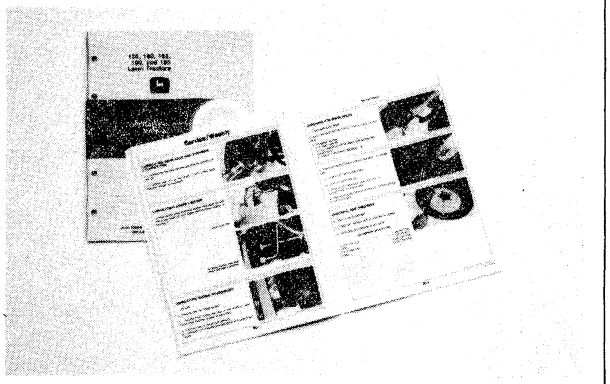
The parts catalog lists service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.



OPERATOR'S MANUAL

The operator's manual provides safety, operating, maintenance, and service information about John Deere machines.

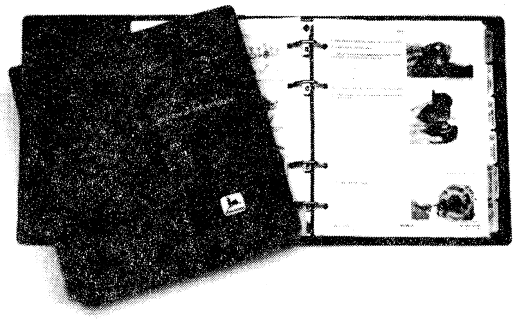
An extra copy of the operator's manual is important if the copy furnished with your machine is misplaced.



TECHNICAL AND SERVICE MANUALS

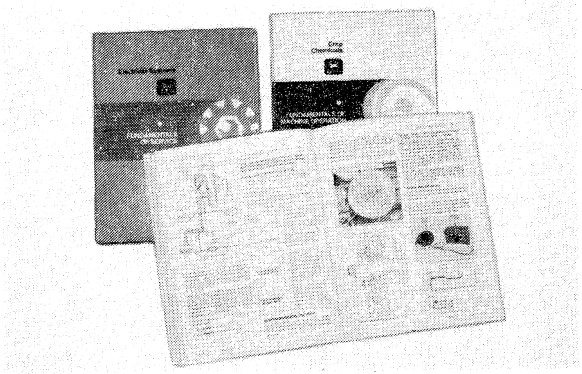
Technical and service manuals are service guides for your machine. Included in the manual are specifications, diagnosis, and adjustments. Also illustrations of assembly and disassembly procedures, hydraulic oil flows, and wiring diagrams.

Component technical manuals are required for some products. These supplemental manuals cover specific components.



FMO AND FOS MANUALS

These are basic manuals covering most types and makes of agricultural machinery. FMO manuals tell you how to *operate* machines; FOS manuals tell you how to *service* machines. Each manual starts with basic theory and is fully illustrated with colorful diagrams and photographs. Both the "whys" and "hows" of adjustments and repairs are covered in this reference library.



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