

BWA Disk Harrow



JOHN DEERE

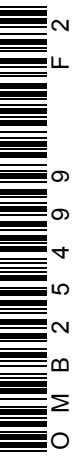
OPERATORS MANUAL

**BWA
Disk Harrow**

OMB25499 F2 English

**John Deere Plow & Planter Works
OMB25499 F2**

LITHO IN U.S.A.
ENGLISH





To the Purchaser

This new disk harrow was carefully designed and manufactured to give years of dependable service. To keep it running efficiently, read the instructions in this operator's manual. Each section is clearly identified so you can easily find the information you need—whether it is operation, lubrication, or service. Read the Table of Contents to learn where each section is located.

In addition to the equipment furnished with your disk harrow, attachments are available to help you do a better job in special crop conditions. These are described in the special equipment section of this manual and can be purchased from your John Deere dealer.

“Right-hand” and “left-hand” sides are determined by facing in the direction the disk harrow will travel when in use.

Record your disk harrow serial numbers in the space provided on page 34. Your dealer needs this information to give you prompt, efficient service when you order parts or attachments. If your disk harrow requires replacement parts, go to your John Deere dealer where you can obtain genuine John Deere parts—accept no substitutes.

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

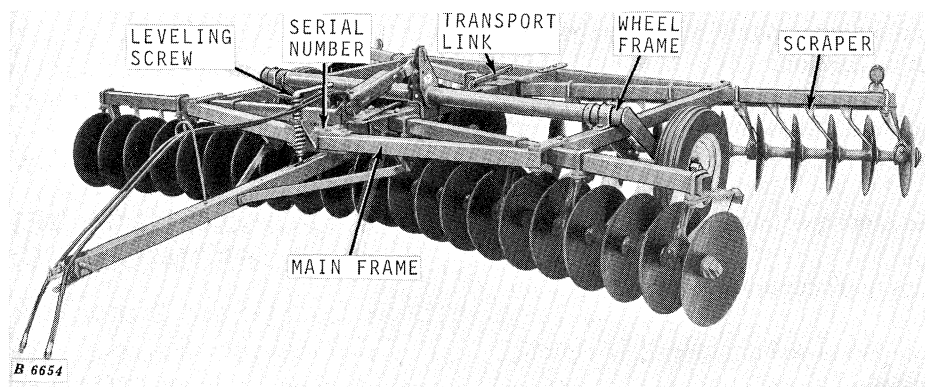


This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.



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John Deere 15-Foot 2-Inch BWA Disk Harrow



Operation

PREPARING DISK HARROW

Attaching Remote Hydraulic Cylinder

The BWA Disk Harrow can be used with any tractor equipped with an 8-inch stroke remote hydraulic cylinder that conforms to ASAE-SAE standards.

Install the remote hydraulic cylinder on the disk harrow and disconnect the transport link, see page 6.

Lubrication

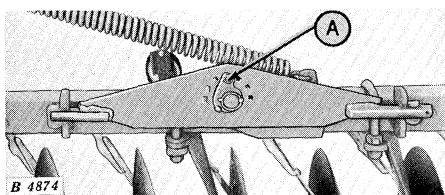
Lubricate the disk harrow as instructed on page 8.

Extension Gangs

CAUTION: Extension gangs in lowered position are under spring tension.

1. Before working on extension gangs in lowered position, always secure them with a locking bar.
2. Stand clear when raising or lowering gangs.
3. Always lock gangs in transport or field position.

Fold the extension gangs down and lock in working position.



The extension gangs may be adjusted up or down. To adjust each gang, remove the locking bar and bolt "A." Rotate the leveling cam clockwise to lower left-hand extension gangs or counterclockwise to raise the left-hand extension gangs. Rotate the leveling cam clockwise to raise the right-hand extension gangs or counterclockwise to lower the right-hand extension gangs. Replace bolt "A," and the locking bar.

Check the gang bolt nuts occasionally, to be sure they are tight.

Tire Inflation

Check the air pressure of the disk harrow tires and, if necessary inflate to 30 psi of air pressure.

Wheel Tread

The wheel tread is 80 inches when wheels are mounted on inside of wheel frame and 120 inches when wheels are mounted on outside of wheel frame. See page 24.

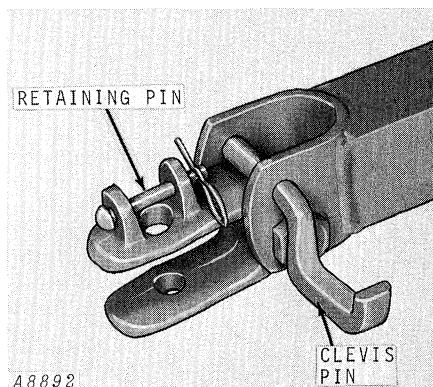
PREPARING TRACTOR

Refer to your tractor operator's manual for wheel weighting instructions and tire inflation pressures.

It is recommended that a minimum of eight front weights be used with the power weight-transfer hitch. On tractors equipped with rear rockshaft, set the rockshaft selector lever in the "D" position.

ATTACHING TO OR DETACHING FROM TRACTOR

Hitch for 11-Foot 2-Inch, 12-Foot 6-Inch, 13-Foot 4-Inch Narrow, 13-Foot 10-Inch and 15-Foot 2-Inch BWA Disk Harrows



Remove the clevis pin from the clevis and place it in the hitch holes, as illustrated, to hold the clevis straight out.

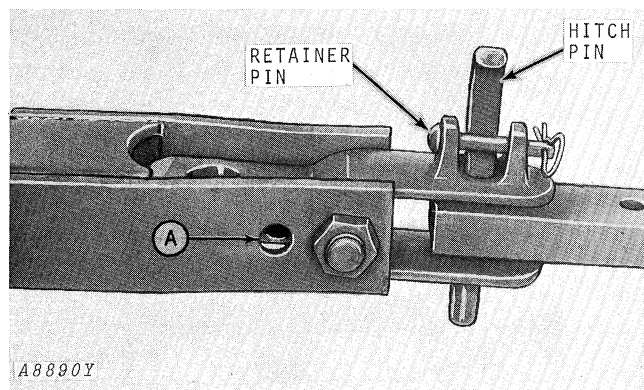
Retract the hydraulic cylinder until the disk harrow hitch is the same height as the tractor drawbar. Attach the clevis to the tractor drawbar with the clevis pin and secure in place with the retaining pin.

When detaching the disk harrow from the tractor, raise the disk harrow, connect the transport link, and disconnect the remote hydraulic cylinder hoses before pulling hitch pin and driving tractor away from the disk harrow.

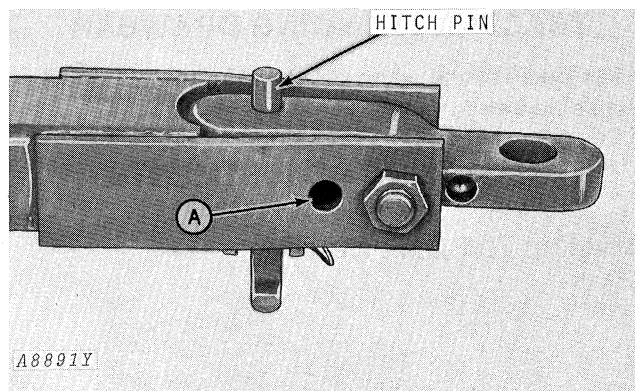
CAUTION: Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure the relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

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

Hitch for 16-Foot 6-Inch, 17-Foot 10-Inch, 19-Foot 2-Inch, And 20-Foot 6-Inch BWA Disk Harrows



Position of Disk Harrow Hitch When Tractor is Equipped with A Straight Drawbar



Position of Disk Harrow Hitch When Tractor Drawbar is Equipped With Hammerstrap

The BWA Disk Harrow hitch can be positioned for tractor with straight drawbar or for tractor drawbar equipped with a hammerstrap. Remove the hitch pin from the hitch clevis and place it in hole at "A" to hold the hitch straight out.

The disk harrow must be in the raised position before attaching to, or detaching from, the tractor drawbar.

Back the tractor up to the disk harrow, install the remote hydraulic cylinder on the disk harrow, detach transport link and place the hoses in the hose holder. If the disk harrow is not in the transport position, raise it with the cylinder and attach the disk harrow hitch to the tractor drawbar.

When detaching the disk harrow from the tractor, raise the disk harrow, connect the transport link, and disconnect the remote hydraulic cylinder hoses before pulling hitch pin and driving tractor away from the disk harrow.

CAUTION: Always place the drawbar pin retainer over the drawbar pin to prevent accidental disconnecting during operation.

Power-Weight-Transfer Hitch Attachment

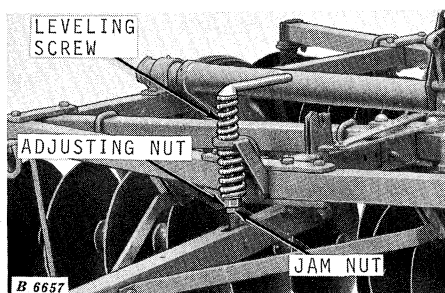
For information on this attachment see "Special Equipment", page 14.

TRACTOR SWINGING DRAWBAR

For best results when disking, the tractor drawbar should be free to swing.

OPERATING ADJUSTMENTS

Leveling The Disk Harrow



Adjust the leveling screw on the drawbar as follows to level the disk harrow and to obtain uniform penetration of the front and rear gangs.

Shortening the leveling screw (turning clockwise) will raise the rear section. Lengthening the leveling screw (turning counterclockwise) will lower the rear section.

NOTE: Be sure nut and jam nut on leveling screw are both snug against the bottom of the spring to prevent play in the spring.

Adjusting Disking Depth

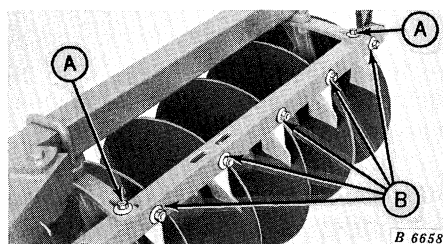
The depth of disking is controlled by the remote hydraulic cylinder control lever of the tractor and the angle of the disking gangs. The carrying wheels will act as gauge wheels to regulate the working depth of the disk harrow. After determining the correct disking depth as regulated by the carrying wheels, position stop on remote hydraulic cylinder so carrying wheels raise to same position each time. See tractor operator's manual.

For maximum penetration, set the gangs at a full cutting angle and raise carrying wheels completely off the ground.

For less than maximum penetration, lower the carrying wheels to raise the gangs, or reduce the cutting angle of the gangs.

Adjusting Scrapers

One-piece scrapers are regular equipment. Regular and heavy-duty two-piece spring-loaded scrapers are optional.

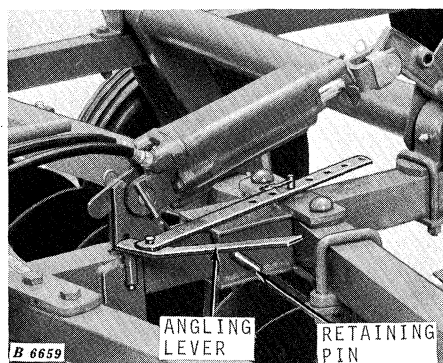


The holes in the top of each scraper bar at "A" are slotted so that by adjusting the scraper bar all scrapers on the bar can be moved in or out at one time. Also, the hole for each scraper at "B" is slotted so each scraper blade can be adjusted individually.

When scrapers are required, adjust blades so the scraping edge of each scraper blade is flush against the disk blade but not tight enough to prevent the gang from revolving freely.

Angling Gangs

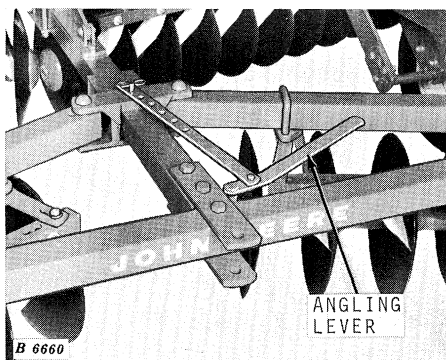
The disk harrow must be in the raised position to angle the gangs.



Angling Front Gangs

To change the angle of the front gangs, remove the retaining pin and pull the angling lever forward to decrease the angle. Push the angling lever to the rear to increase the angle.

When the desired angle has been obtained, replace the retaining pin.



Angling Rear Gangs

To angle the rear gangs, remove the angling device from the front gangs and attach it to the rear gangs.

Remove the retaining pin and pull the angling lever to the rear to decrease the angle. Push the angling lever forward to increase the angle.

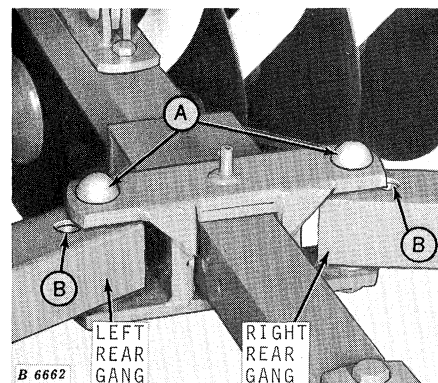
When the desired angle has been obtained, replace the retaining pin.

Adjusting Rear Gangs Laterally

The variation in soil from one field to another, and sometimes in the same field, can have an effect on the way the rear gangs level the soil.

The rear gangs can be set in a wide or narrow lateral position.

Certain field conditions, blade size, or tractor speed may make it necessary to change this lateral position to eliminate a ridge or furrow between the rear gangs.

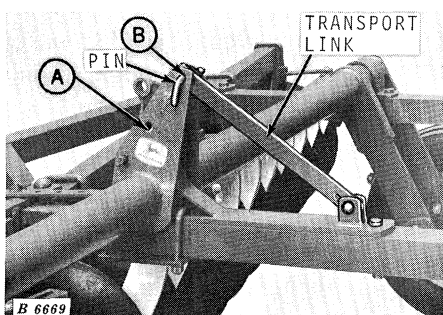
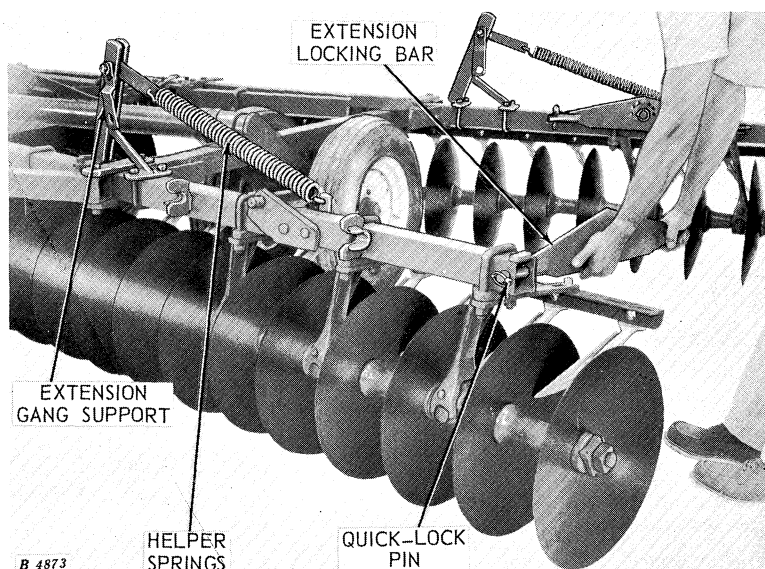


Rear Gangs in Wide Lateral Position

For 18- or 20-inch blades, holes "B" will usually be most satisfactory. For 22-inch blades, it may be necessary to use holes "A" if the disk harrow is run in full angle.

To place the rear gangs in the narrow position, pull pins "A," move the gangs inward to hole "B." Replace the pins.

TRANSPORTING



Use the transport link to hold disk harrow in a raised position for transporting or storage.

To connect the transport link: (1) Fully extend the remote hydraulic cylinder. (2) Remove the pin from hole "A." Line up the hole in the end of the transport link with hole "B" and install the pin.

NOTE: If desired, the remote hydraulic cylinder can now be removed and the disk harrow will stay in the raised position.

Lock the tractor swinging drawbar in a fixed position.



CAUTION: Extension gangs in lowered position are under spring tension.

1. Before working on extension gangs in lowered position, always secure them with locking bar.
2. Stand clear when raising or lowering gangs.
3. Always lock gangs in transport or field position.

Install the extension gang locking bar in the hole in the end of the extension gang, and secure it with the Quik-Lock pin. Raise the extension gang and fold it over against the extension gang support.



CAUTION: When transporting the disk harrow on a smooth surface road, do not exceed 12 mph. Reduce speed considerably when traveling over rough ground.

When transporting the disk harrow 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 lights and devices are available from your John Deere dealer.



Safety Suggestions



The safety of the operator was one of the prime considerations in the minds of John Deere engineers when this disk harrow was designed. Simple adjustments and other safety features were built into the disk harrow wherever possible.

However, investigation of thousands of farm accidents show that careless use of farm machinery causes nearly 1/3 of all farm accidents. You can make your farm a safer place to live and work if you observe the safety suggestions given. Study these suggestions carefully and insist that they be followed by those working with you and for you.

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

When transporting disk harrow 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. Lights and devices may be obtained from your John Deere Dealer.

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

Be careful when operating the disk harrow to avoid injury.

Only one person - the operator - should be permitted on the tractor platform while tractor and disk harrow are in operation.

Never clean, lubricate, or adjust a machine that is in motion.

Park or block the disk harrow so it will not roll when disconnected from tractor drawbar.

When leaving the tractor and disk harrow, connect transport link or lower the disk harrow to the ground.

Connect transport link when transporting disk harrow long distances.

Extension gangs in lowered position are under spring tension.

1. Before working on extension gangs in lowered position always secure them with locking bar.

2. Stand clear when raising or lowering gangs.

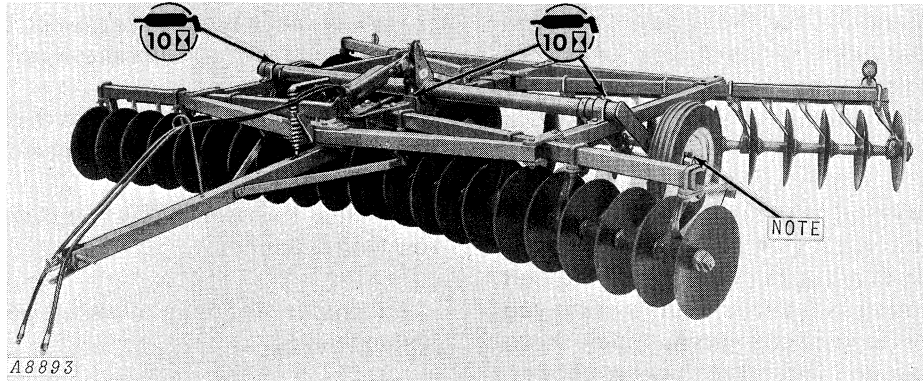
3. Always lock gangs in transport or field position.

Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

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



Lubrication

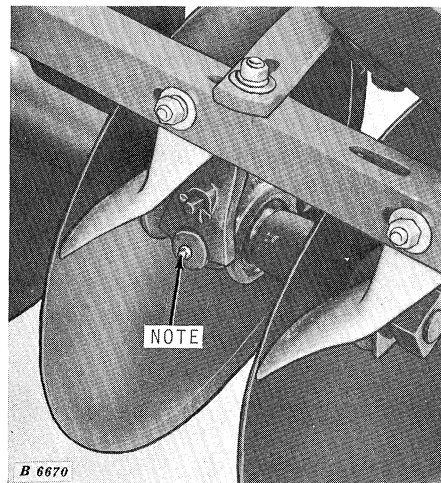


CAUTION: Do not oil or grease a machine while it is in motion.

The initial lubrication is of the utmost importance to assure long life and satisfactory performance of the disk harrow.

Wipe dirt from fittings before greasing. If a grease fitting is lost, replace it immediately. Lubricate all parts thoroughly, but avoid excessive lubrication. Excessive lubricant gathers dust.

ANTIFRICTION BEARINGS



SYMBOL	
	Lubricate with John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease at hourly intervals indicated on the symbol.

NOTE: Repack wheel bearings once each year with wheel bearing grease.

Oil all pivot points of remote hydraulic cylinder control parts and drawbars.

NOTE: The antifriction gang bearings are packed and sealed at the factory. Grease these bearings only once or twice a season depending on the amount the disk harrow is used.

Fill bearing with hand gun until grease emerges from seal lips.

IMPORTANT: Excessive pressure will blow out the seals.



Service

Inspect your disk harrow after the disking season and note excessively worn or broken parts, so that repairs and replacements can be made during the off season. Replace worn or broken parts promptly so that your disk harrow will be ready for use when needed.

To insure maximum penetration and satisfactory performance, keep the cutting edge of the disks sharp. Dull disks will not cut properly, making it impossible to secure sufficient penetration, and they will not do a good job of mixing the trash in the soil. Be sure disks are free from rust before operating the disk harrow in the field.

Repaint all parts necessary and protect all unpainted surfaces with a good rust-preventive grease or oil.

Remember—practically all trouble with new machines is due to improper setting-up and lack of lubrication.

NOTE: After any replacement of disk or bearing parts, be sure to draw up nut on end of gang bolt very tight. Failure to do this will result in breakage or loss of parts. When attaching the gang frame standards to the bearings, be sure to draw up bolts as tightly as possible.

Keep all bolts tightened securely. Refer to bolt torque chart on page 23.

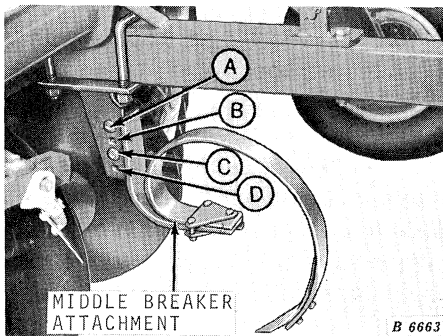
SAFETY FIRST

THE COMPLETE OBSERVANCE of one simple rule would prevent many thousand serious injuries each year. THAT RULE IS: "NEVER ATTEMPT TO CLEAN, OIL, OR ADJUST A MACHINE WHILE IT IS IN MOTION."



Special Equipment

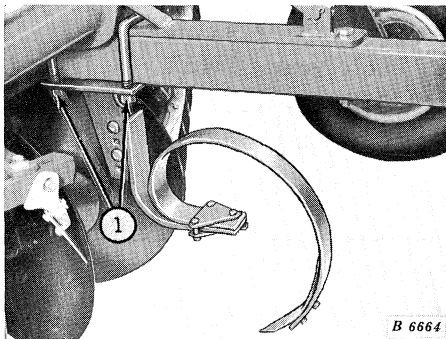
MIDDLEBREAKER ATTACHMENT



The middlebreaker attachment is available as special equipment. It removes the center strip left by the front gangs.

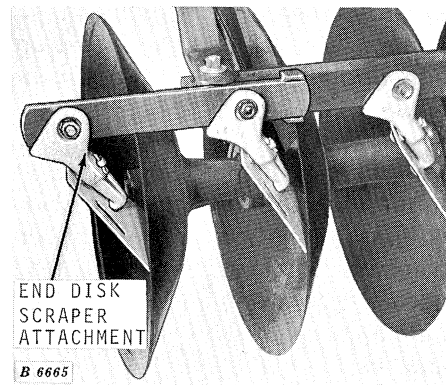
If the disk harrow is equipped with 18- or 20-inch disk blades, use holes "A" and "C". If the disk harrow is equipped with 22-inch disk blades, use holes "B" and "D," as illustrated.

Assembly



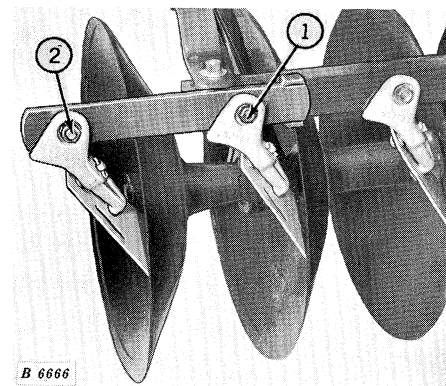
1. Install middlebreaker attachment on disk harrow as shown above.

END DISK SCRAPER ATTACHMENT



The end disk scraper attachment is available as special equipment. It cleans the two outside front disk blades and the two inside rear disk blades.

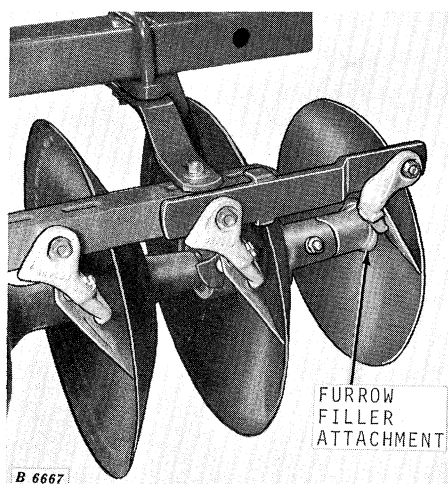
Assembly



1. Install end scraper brace to scraper bars with longer bolt.

2. Install end scraper on end scraper brace and adjust the scraper so the scraping edge is flush against the disk blade but not tight enough to prevent the disk gangs from revolving freely.

FURROW FILLER ATTACHMENT

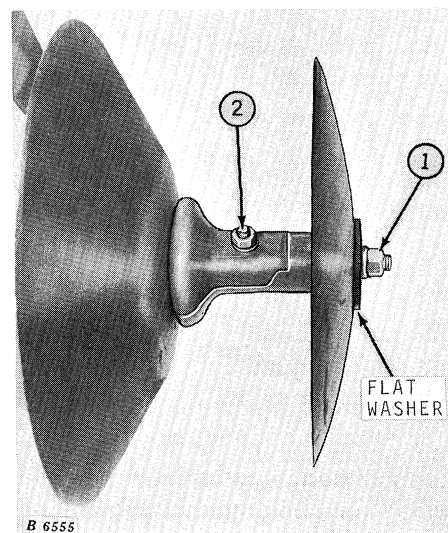


The furrow filler attachment, when mounted at the outer end of each rear gang, will fill and level the furrow left by the rear gang outer disk blades.

Disk blades are not furnished with this attachment, but the following sizes are recommended:

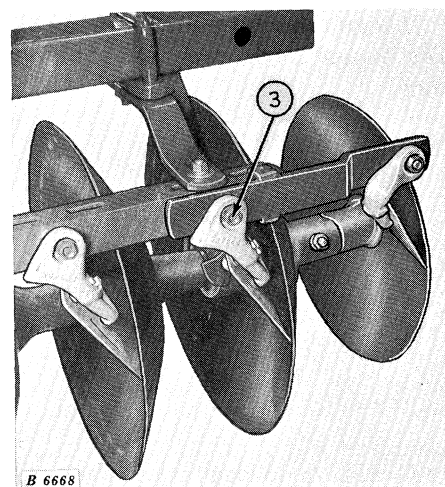
When Disk Harrow is Equipped with This Size Disk Blade	Use This Size Disk Blade on Furrow Filler
22-inch	18-inch
20-inch	16-inch
18-inch	14-inch

Assembly



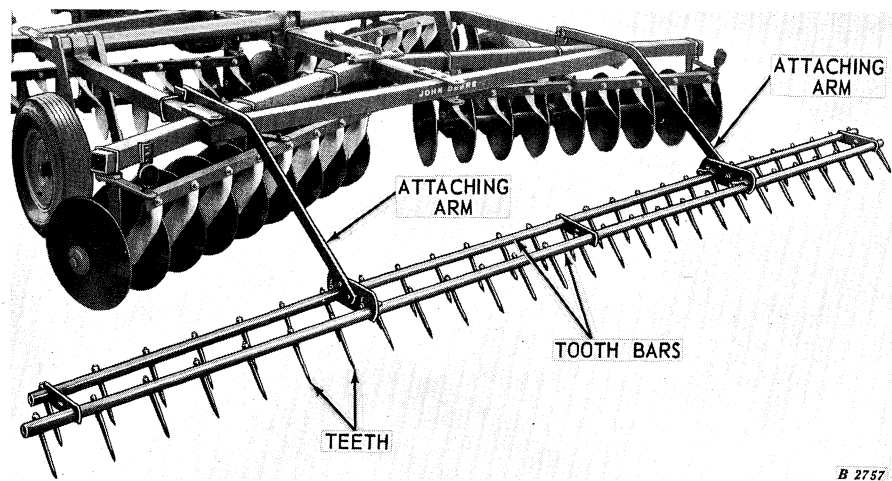
1. Assemble a disk blade on each disk attaching spool.

2. Assemble a disk attaching spool and clamp to the head washer on each rear gang.



3. Mount a scraper attaching bar and scraper on each rear gang. (See page 17 for adjusting scrapers.)

SPIKE-TOOTH HARROW ATTACHMENT

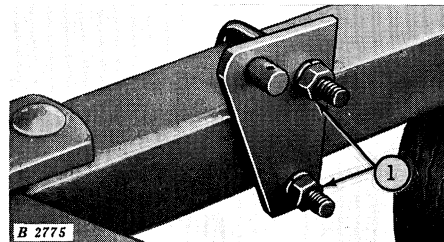


The spike-tooth harrow attachment permits disking and harrowing in one operation and eliminates spike-tooth harrow transporting problems.

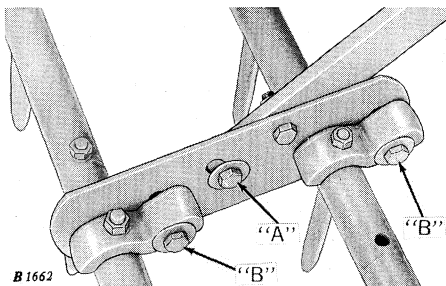
This attachment is connected to the disk harrow main frame with two Quik-Lock pins so it can be easily attached or detached. It consists of two rows of spike teeth properly spaced.

NOTE: This attachment is available for all sizes of disk harrows except those equipped with folding extension gangs.

Assembly

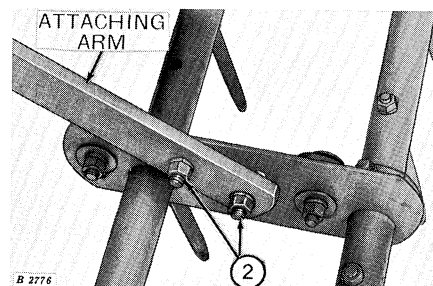


1. Install an attaching plate on each side of the harrow main frame.

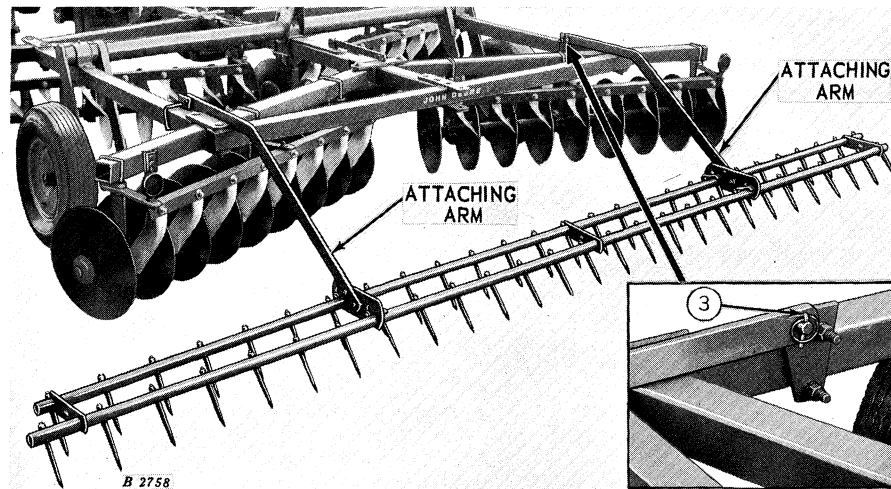


Adjust tooth bars as follows: Loosen bolt "A," set the bars to the desired height and tighten bolt "A."

To change the angle of the teeth, loosen bolts "B," set the teeth to the desired angle and tighten the bolts.



2. Bolt the attaching arms to the spike-tooth harrow.



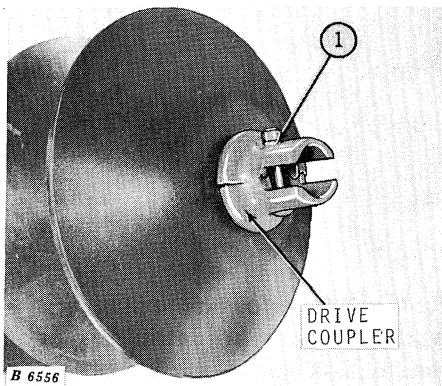
3. Connect the spike-tooth harrow attaching arms to the attaching plate.

2. Remove gang bolt nut and nut lock from gang bolt and install new nut lock as shown.

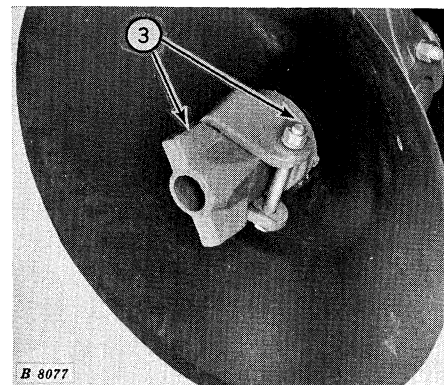
DRIVE COUPLER FOR SPLIT OR EXTENSION GANGS

The drive coupler is available as special equipment and connects split or extension gangs to main gangs for positive gang drive.

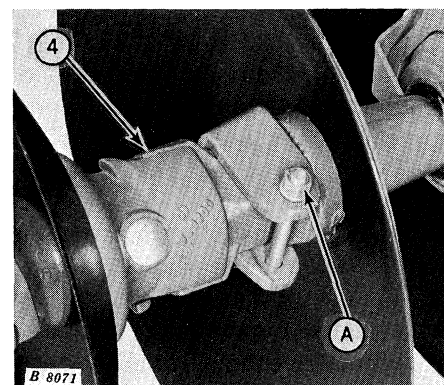
Assembly



1. Bolt drive coupler halves to head washer of split or extension gang as shown above.

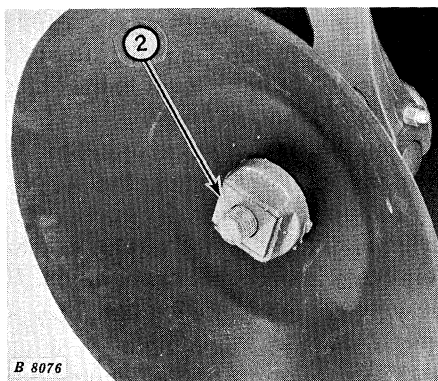


3. Install drive coupler nut and nut clamp as shown.

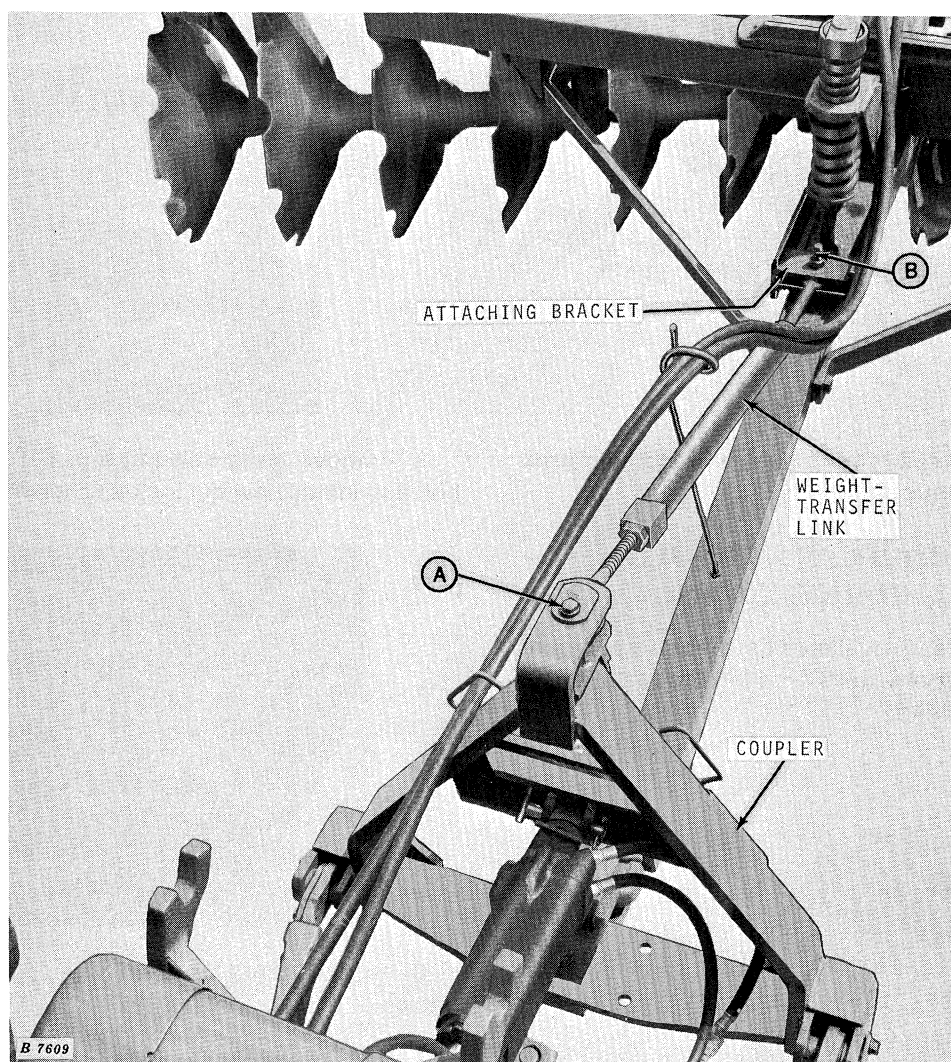


4. Swing extension gang down into working position. Align drive coupler and drive coupler nut so they are in position shown above. Tighten nut clamp at "A."

NOTE: The extension gangs can be placed into transport position without removing the drive coupler from the head washer.



POWER WEIGHT-TRANSFER HITCH



For most draft conditions, no rear wheel ballast is required. Since front weight is transferred to the rear wheels, eight single front weights, or more if a double front weight is installed, should be added to the tractor front end.

The power weight-transfer hitch transfers weight from the disk harrow and the tractor front end to the tractor rear wheels as it is needed to provide traction. When operation varies between light and heavy loads, the power weight-transfer hitch eliminates using heavily weighted rear wheels for light-load operations.

Place rockshaft selector lever in "D" position.

Turn the power weight-transfer hitch control valve to the rockshaft position (lever to left side of tractor).

Raise the coupler with the rockshaft control lever until the coupler drawbar is as high as the regular tractor drawbar (draft links should be nearly level).

Connect the disk harrow to the coupler.

Connect the upper adjustable eyebolt of the weight-transfer link to the top pin of the coupler at point "A" and the lower sliding eyebolt to the disk harrow at point "B." Tighten the coupler draft link and weight-transfer link attaching pin retaining screws securely.

Move the control valve operating lever to the weight-transfer position (to right side of tractor). Move the rockshaft selector lever to the "L" position.

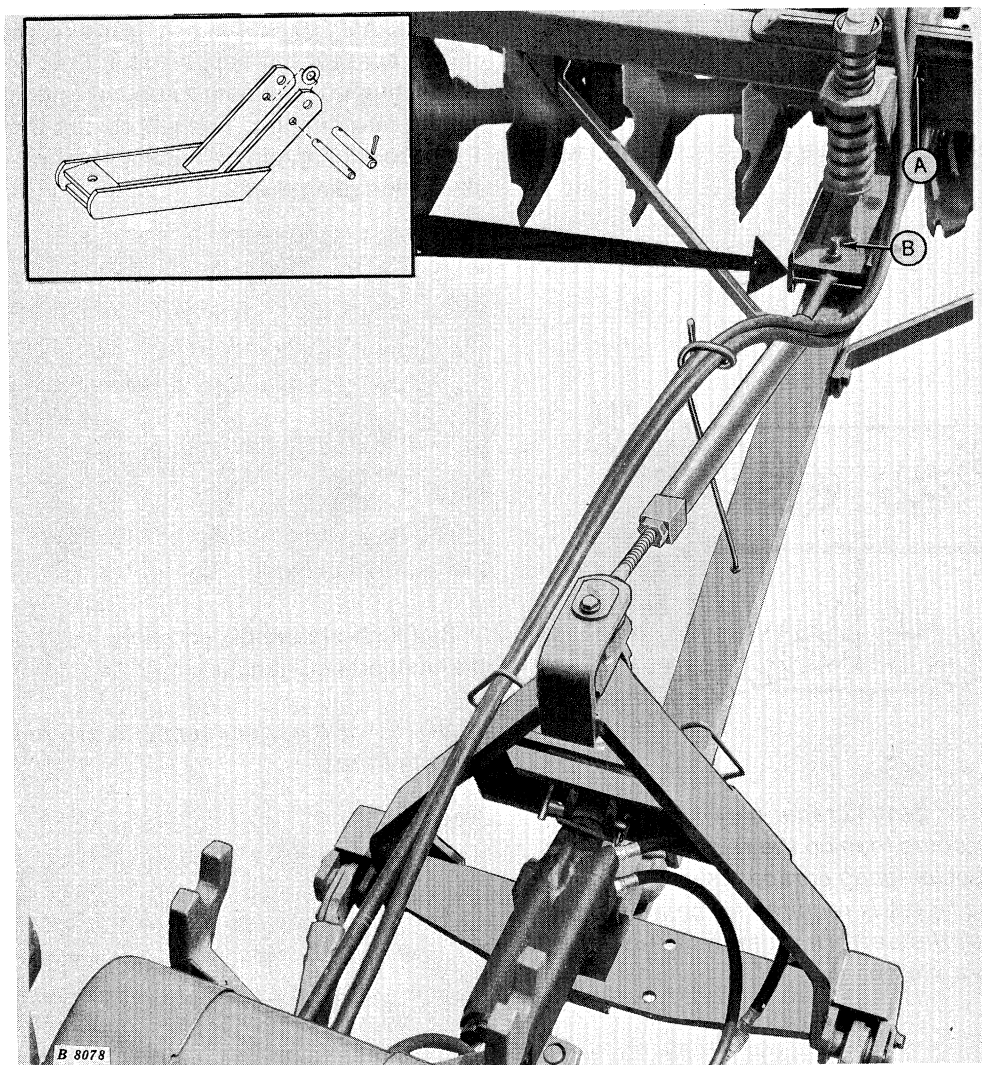
To detach, disconnect at "A."

With the disk harrow at working depth, loosen the upper eyebolt lock nut and adjust the weight-transfer link until the coupler frame is nearly vertical. The remote cylinder will be at mid-stroke to allow movement when passing over hills and swales. The link is adjustable between 47 and 62 inches. Do not adjust link beyond 62 inches.



CAUTION: Shut off tractor engine when making adjustments on the weight-transfer hitch.

Assembly



Install bracket on hitch at point "A."

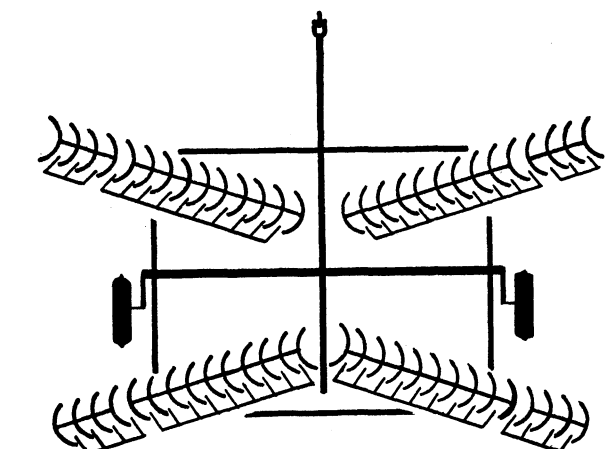
Install weight-transfer link at point "B."

SPRING-LOADED SCRAPERS

Keep scrapers adjusted tightly against disk blades. Reduce tightness only if there is not enough ground thrust to keep the gangs rotating.

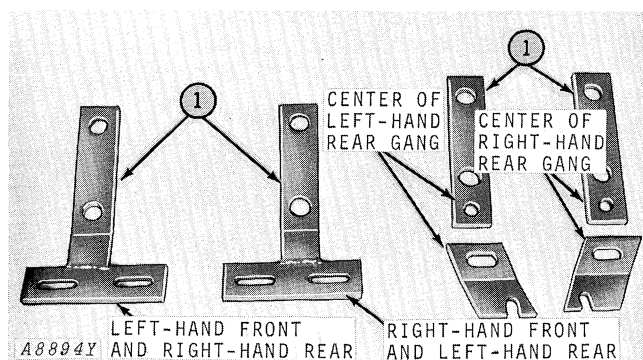
It is recommended that drive couplers be used with extension gangs.

Assembly



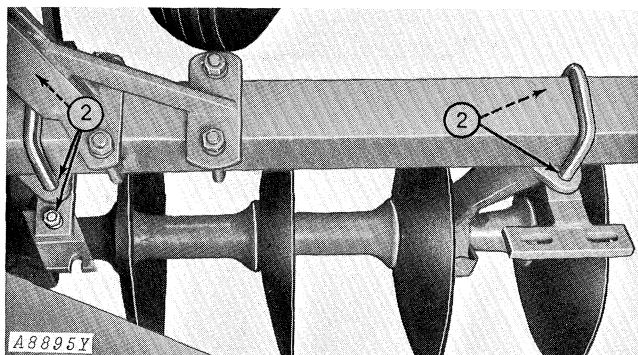
A8879

NOTE: The front gang scraper bars have a different number of scrapers than do the rear. The same is true with the extension gang scraper bars. The same total number of scrapers is required for both the front and the back, but the pattern must be followed as shown in the above sketch.



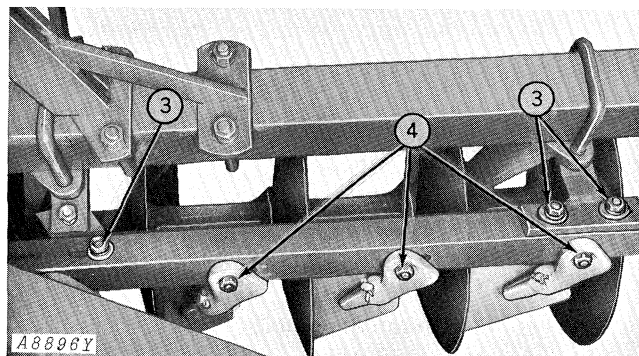
1. (High-clearance scrapers only) Lay the scraper bar supports on the floor and determine right and left-hand application as shown.

CAUTION: Do not remove more than one scraper bar support at a time. Replace the existing support with a new support and tighten the bolts on the new support. This will assure that the weight of the extension gangs will always be present to hold the extension gang down.



2. (High-clearance scrapers only) Install scraper bar supports on gangs.

NOTE: Be certain supports are mounted parallel to gang frame.



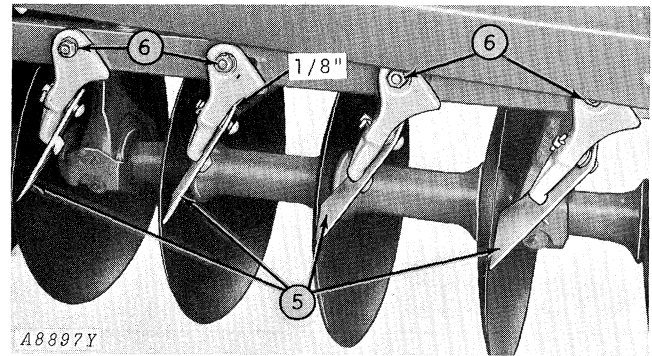
3. Install scraper bar loosely.

4. Install scrapers loosely on scraper bar. Move scrapers to end of slot away from disk blade to provide maximum adjustment. Adjust scraper bar until scrapers fit tightly against disk blades; then tighten scraper bar brackets.

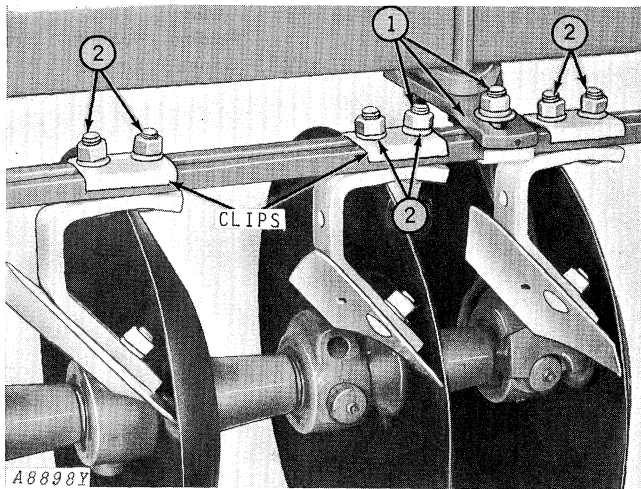
5. Tighten scraper blade to compress spring until 1/8-inch gap remains at the top of the scraper.

6. Adjust bracket in slot until disk blade holds scraper blade in position indicated at right, then tighten bolt.

NOTE: Be certain bottom of scraper bracket fits flush against scraper bar.



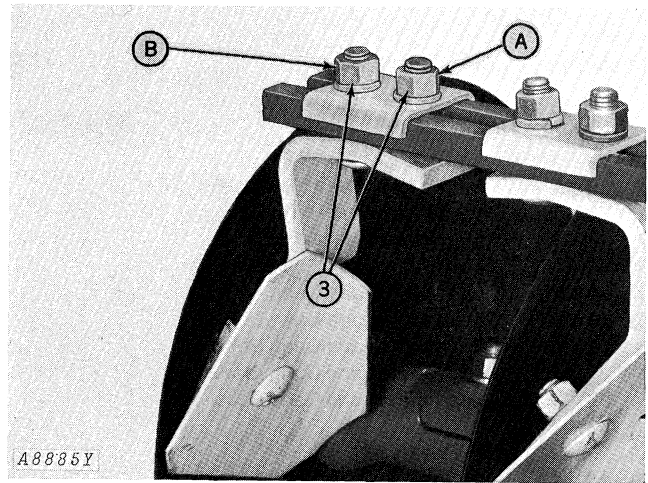
MOLDBOARD SCRAPERS



1. Install scraper bar supports and scraper bars. Attach scraper bars with clips.

NOTE: If disk harrow has extension, be certain to provide clearance between main gang scraper bars and extension gang scraper bars when in operating position.

2. Install scraper assemblies. Adjust each scraper so scraping edge is flush against the disk but not tight enough to prevent the disk gangs from revolving free-



Furrow Filler Scraper

ly. Tighten scraper by loosening bolt "A" and tightening bolt "B." Loosen the scrapers by loosening bolt "B" and tightening bolt "A."

3. Install furrow filler scraper. Adjust the scraper so scraping edge is flush against the disk. Tighten scraper by loosening bolt "A" and tightening bolt "B." Loosen scraper by loosening bolt "B" and tightening bolt "A."



Assembly

SHIPPING BUNDLES

Bundle Number	Description	11'2"	12'6"	13'4" Narrow	13'10"	15'2"	16'6" with Folding Gangs	16'6" less Folding Gangs
BASIC MACHINE								
BA 20044	Carton of Parts and Hardware	1	1	1	1	1	1	1
BA 20045	Sack of Parts and Hardware	..	..	..	..	..	1	..
BA 20106	Gang Frames and Gang Bolts	1	..	..	..	..	..	..
BA 20107	Gang Frames and Gang Bolts	..	1	..	..	..	..	..
BA 20120	Gang Frames and Gang Bolts	..	..	1	..	..	..	..
BA 20108	Gang Frames and Gang Bolts	..	..	..	1	..	..	..
BA 20099	Gang Frames and Gang Bolts	..	..	..	..	1	..	..
BA 20109	Gang Frames and Gang Bolts	..	..	..	..	..	1	1
BA 20111	Gang Frames and Gang Bolts	..	..	..	..	..	..	..
BB 12696	Main Frame	1	1	1	1	1	1	1
BB 13363	Soil Shears	1	..	..	..	1	1	..
BB 13364	Soil Shears	..	1	1	1	..	1	1
BB 13610	5-Bolt Wheel Hub and Spindle	1	1	1	1	1	1	1
BB 13614	Wheel Frame	1	1	1	1	1	..	..
BB 13615	Wheel Frame	..	..	..	..	..	1	1
BB 33134	Center Section of Main Frame & Drawbar	1	1	1	1	1	..	..
BB 33135	Center Section of Main Frame & Drawbar	..	..	..	..	..	1	1
JD 463	Disk Wheel Rim, 14" x 5"	2	2	2	2	2	2	2
BA 20110	Extension Gang Frames and Gang Bolts	..	..	..	..	..	1	..
BA 20112	Extension Gang Frames and Gang Bolts	..	..	..	..	..	..	..
BB 12169	Extension Gang Locking Bars	..	..	..	..	..	1	..
BB 12170	Extension Gang Locking Bars	..	..	..	..	..	..	..
BB 12171	Extension Gang Rest and Spring Brackets	..	..	..	..	..	1	..
BB 12172	Extension Gang Rest and Spring Brackets	..	..	..	..	..	..	..

STANDARD CLEARANCE SCRAPERS

BB 11401	One Piece Scrapers (Spherical)	7	8	10	9	10	11	7
BB 11400	Spring-Loaded Scrapers (Spherical)	7	8	10	9	10	11	7
BB 13393	Heavy-Duty Spring-Loaded Scrapers (Spherical)	7	8	10	9	10	11	7
BB 13394	Heavy-Duty Spring-Loaded Scrapers (Cone)	7	8	10	9	10	11	7
BB 11402	Scraper Hardware (12)	1	..	..	..	..	1	1
BB 11403	Scraper Hardware (16)	1	2	..	1	..	2	1
BB 11404	Scraper Hardware (20)	..	..	2	1	2	..	..
BB 13445	Scraper Bars	1	..	..	..	..	..	..
BB 13446	Scraper Bars	..	1	..	..	..	..	..

SHIPPING BUNDLES

Bundle Number	Description	17'10"	17'10"	19'2"	19'2"	20'6"	20'6"
		with Folding Gangs	less Folding Gangs	with Folding Gangs	less Folding Gangs	with Folding Gangs	less Folding Gangs

BASIC MACHINE

BA 20044	Carton of Parts and Hardware	1	1	1	1	1	1
BA 20045	Sack of Parts and Hardware	1	-	1	-	1	-
BA 20106	Gang Frames and Gang Bolts	-	-	-	-	-	-
BA 20107	Gang Frames and Gang Bolts	-	-	-	-	-	-
BA 20120	Gang Frames and Gang Bolts	-	-	-	-	-	-
BA 20108	Gang Frames and Gang Bolts	-	-	-	-	-	-
BA 20099	Gang Frames and Gang Bolts	-	-	-	-	-	-
BA 20109	Gang Frames and Gang Bolts	1	1	-	-	-	-
BA 20111	Gang Frames and Gang Bolts	-	-	1	1	1	1
BB 12696	Main Frame	1	1	1	1	1	1
BB 13363	Soil Shears	1	-	1	-	1	-
BB 13364	Soil Shears	1	1	1	1	1	1
BB 13610	5-Bolt Wheel Hub and Spindle	2	1	2	1	2	1
BB 13614	Wheel Frame	-	-	-	-	-	-
BB 13615	Wheel Frame	1	1	1	1	1	1
BB 33134	Center Section of Main Frame & Drawbar	-	-	-	-	-	-
BB 33135	Center Section of Main Frame & Drawbar	1	1	1	1	1	1
JD 463	Disk Wheel Rim, 14" x 5"	4	2	4	2	4	2
BA 20110	Extension Gang Frames and Gang Bolts	-	-	1	-	-	-
BA 20112	Extension Gang Frames and Gang Bolts	1	-	-	-	1	-
BB 12169	Extension Gang Locking Bars	1	-	-	-	-	-
BB 12170	Extension Gang Locking Bars	-	-	1	-	1	-
BB 12171	Extension Gang Rest and Spring Brackets	1	-	-	-	-	-
BB 12172	Extension Gang Rest and Spring Brackets	-	-	1	-	1	-

STANDARD CLEARANCE SCRAPERS

BB 11401	One Piece Scrapers (Spherical)	12	7	13	9	14	9
BB 11400	Spring-Loaded Scrapers (Spherical)	12	7	13	9	14	9
BB 13393	Heavy-Duty Spring-Loaded Scrapers (Spherical)	12	7	13	9	14	9
BB 13394	Heavy-Duty Spring-Loaded Scrapers (Cone)	12	7	13	9	14	9
BB 11402	Scraper Hardware (12)	-	1	-	-	-	-
BB 11403	Scraper Hardware (16)	3	1	2	1	1	1
BB 11404	Scraper Hardware (20)	-	-	1	1	2	1
BB 13445	Scraper Bars	-	-	-	-	-	-
BB 13446	Scraper Bars	-	-	-	-	-	-

Bundle Number	Description	11'2"	12'6"	13'4" Narrow	13'10"	15'2"	16'6"	16'6"
							Folding Gangs	less Folding Gangs
STANDARD CLEARANCE SCRAPERS—Continued								
BB 13447	Scraper Bars	-	-	-	1	-	-	-
BB 13448	Scraper Bars	-	-	-	-	1	-	-
BB 13449	Scraper Bars	-	-	-	-	-	1	1
BB 13450	Scraper Bars	-	-	-	-	-	-	-
BB 13451	Scraper Bars	-	-	-	-	-	1	-
BB 13452	Scraper Bars	-	-	-	-	-	-	-
BB 13533	Scraper Bars	-	-	1	-	-	-	-
BB 13488	Scraper Bar Supports	2	3	3	3	4	5	3
BB 13495	Scraper Bar Hardware (8)	1	-	-	-	2	-	-
BB 13496	Scraper Bar Hardware (12)	-	1	1	1	-	-	1
BB 13497	Scraper Bar Hardware (20)	-	-	-	-	-	1	-

HIGH CLEARANCE SCRAPERS

BB 13393	Heavy-Duty Spring-Loaded Scrapers (Spherical)	7	8	10	9	10	11	7
BB 13394	Heavy-Duty Spring-Loaded Scrapers (Cone)	7	8	10	9	10	11	7
BB 13395	Scraper Hardware (12)	2	-	2	-	1	2	1
BB 13396	Scraper Hardware (16)	-	1	-	-	-	-	-
BB 13397	Scraper Hardware (20)	1	2	2	3	3	3	2
BB 13445	Scraper Bars	1	-	-	-	-	-	-
BB 13446	Scraper Bars	-	1	-	-	-	-	-
BB 13447	Scraper Bars	-	-	-	1	-	-	-
BB 13448	Scraper Bars	-	-	-	-	1	-	-
BB 13449	Scraper Bars	-	-	-	-	-	1	1
BB 13450	Scraper Bars	-	-	-	-	-	-	-
BB 13451	Scraper Bars	-	-	-	-	-	1	-
BB 13452	Scraper Bars	-	-	-	-	-	-	-
BB 13533	Scraper Bars	-	-	1	-	-	-	-
BB 13453	Scraper Bar Supports	1	1	1	1	1	2	1
BB 13457	Scraper Bar Supports	-	1	1	1	3	1	1

MOLDBOARD SCRAPERS

BB 13251	Moldboard Scrapers	8	9	-	10	11	12	8
BB 13252	Scraper Hardware (6)	2	1	-	-	4	3	2
BB 13253	Scraper Hardware (10)	2	3	-	4	2	3	2
BB 13263	Scraper Bars	1	-	-	-	-	-	-
BB 13254	Scraper Bars	-	-	-	-	-	1	-
BB 13255	Scraper Bars	-	-	-	-	-	-	-
BB 13256	Scraper Bars	-	-	-	-	-	1	1
BB 13257	Scraper Bars	-	1	-	-	-	-	-
BB 13258	Scraper Bars	-	-	-	1	-	-	-
BB 13259	Scraper Bars	-	-	-	-	1	-	-
BB 13260	Scraper Bar Supports	2	3	-	3	4	5	3

Bundle Number	Description	17'10"	17'10"	19'2"	19'2"	20'6"	20'6"
		with Folding Gangs	less Folding Gangs	with Folding Gangs	less Folding Gangs	with Folding Gangs	less Folding Gangs

STANDARD CLEARANCE SCRAPERS—Continued

BB 13447	Scraper Bars	-	-	-	-	-	-
BB 13448	Scraper Bars	-	-	-	-	-	-
BB 13449	Scraper Bars	1	1	-	-	-	-
BB 13450	Scraper Bars	-	-	1	1	1	1
BB 13451	Scraper Bars	-	-	1	-	-	-
BB 13452	Scraper Bars	1	-	-	-	1	-
BB 13533	Scraper Bars	-	-	-	-	-	-
BB 13488	Scraper Bar Supports	5	3	5	3	5	3
BB 13495	Scraper Bar Hardware (8)	-	-	-	-	-	-
BB 13496	Scraper Bar Hardware (12)	-	1	-	1	-	1
BB 13497	Scraper Bar Hardware (20)	1	-	1	-	1	-

HIGH CLEARANCE SCRAPERS

BB 13393	Heavy-Duty Spring-Loaded Scrapers (Spherical)	12	7	13	9	14	9
BB 13394	Heavy-Duty Spring-Loaded Scrapers (Cone)	12	7	13	9	14	9
BB 13395	Scraper Hardware (12)	1	1	1	-	-	-
BB 13396	Scraper Hardware (16)	1	-	-	-	1	-
BB 13397	Scraper Hardware (20)	3	2	4	3	4	3
BB 13445	Scraper Bars	-	-	-	-	-	-
BB 13446	Scraper Bars	-	-	-	-	-	-
BB 13447	Scraper Bars	-	-	-	-	-	-
BB 13448	Scraper Bars	-	-	-	-	-	-
BB 13449	Scraper Bars	1	1	-	-	-	-
BB 13450	Scraper Bars	-	-	1	1	1	1
BB 13451	Scraper Bars	-	-	1	-	-	-
BB 13452	Scraper Bars	1	-	-	-	1	-
BB 13533	Scraper Bars	-	-	-	-	-	-
BB 13453	Scraper Bar Supports	2	1	2	1	2	1
BB 13457	Scraper Bar Supports	1	1	1	1	1	1

MOLDBOARD SCRAPERS

BB 13251	Moldboard Scrapers	13	8	14	10	15	10
BB 13252	Scraper Hardware (6)	2	2	1	-	-	-
BB 13253	Scraper Hardware (10)	4	2	5	4	6	4
BB 13263	Scraper Bars	-	-	-	-	-	-
BB 13254	Scraper Bars	-	-	1	-	-	-
BB 13255	Scraper Bars	1	-	-	-	1	-
BB 13256	Scraper Bars	1	1	-	-	-	-
BB 13257	Scraper Bars	-	-	-	-	-	-
BB 13258	Scraper Bars	-	-	1	1	1	1
BB 13259	Scraper Bars	-	-	-	-	-	-
BB 13260	Scraper Bar Supports	5	3	5	3	5	3

Bundle Number	Description	11'2"	12'6"	13'4" Narrow	13'10"	15'2"	16'6" with Folding Gangs	16'6" less Folding Gangs
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FURROW FILLER ATTACHMENT

BB 12168	Two 14" Solid Disk Blades	1	1	1	1	1	1	1
BB 12655	Furrow Filler Attachment	1	1	1	1	1	1	1
BB 13516	Furrow Filler Attachment (for Moldboard Scrapers)	1	1	-	1	1	1	1
BB 13517	Furrow Filler Attachment (for Heavy-Duty Spring-Loaded Scrapers)	1	1	1	1	1	1	1

END DISK SCRAPER ATTACHMENT

BB 11400	Straight-Shank Spring-Loaded Scrapers (Spherical)	1	1	1	1	1	1	1
BB 12653	End Disk Scraper Attaching Brackets	1	1	1	1	1	1	1
BB 13393	Heavy-Duty Straight-Shank Spring-Loaded Scrapers (Spherical)	1	1	1	1	1	1	1
BB 13394	Heavy-Duty Straight-Shank Spring-Loaded Scrapers (Cone)	1	1	1	1	1	1	1

OPTIONAL EQUIPMENT

BB 11321	Spike-Tooth Harrow Attachment	1	1	1	1	1	1	1
BB 12654	Middlebreaker Attachment	1	1	1	1	1	1	1
BB 13172	Power Weight-Transfer Hitch Attachment	1	1	1	1	1	1	1
BB 13214	Drive Coupler	-	-	-	-	2	2	-
BB 13215	Drive Coupler Clamp	-	-	-	-	2	2	-
BB 13245	Tire and Wheel	2	2	2	2	2	2	2
JD 674	Disk Wheel Rim, 5"-15"	2	2	2	2	2	2	2
M 10333	Hitch Loop	1	1	1	1	1	1	1

Bundle Number	Description	17'10" with Folding Gangs	17'10" less Folding Gangs	19'2" with Folding Gangs	19'2" less Folding Gangs	20'6" with Folding Gangs	20'6" less Folding Gangs
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FURROW FILLER ATTACHMENT

BB 12168	Two 14" Solid Disk Blades	1	1	1	1	1	1
BB 12655	Furrow Filler Attachment	1	1	1	1	1	1
BB 13516	Furrow Filler Attachment (for Moldboard Scrapers)	1	1	1	1	1	1
BB 13517	Furrow Filler Attachment (for Heavy-Duty Spring-Loaded Scrapers)	1	1	1	1	1	1

END DISK SCRAPER ATTACHMENT

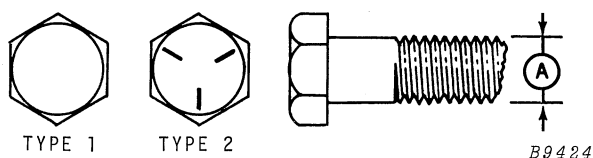
BB 11400	Straight-Shank Spring-Loaded Scrapers (Spherical)	1	1	1	1	1	1
BB 12653	End Disk Scraper Attaching Brackets	1	1	1	1	1	1
BB 13393	Heavy-Duty Straight-Shank Spring-Loaded Scrapers (Spherical)	1	1	1	1	1	1
BB 13394	Heavy-Duty Straight-Shank Spring-Loaded Scrapers (Cone)	1	1	1	1	1	1

OPTIONAL EQUIPMENT

BB 11321	Spike-Tooth Harrow Attachment	1	1	1	1	1	1
BB 12654	Middlebreaker Attachment	1	1	1	1	1	1
BB 13172	Power Weight-Transfer Hitch Attachment	1	1	1	1	1	1
BB 13214	Drive Coupler	2	-	2	-	2	-
BB 13215	Drive Coupler Clamp	2	-	2	-	2	-
BB 13245	Tire and Wheel	4	2	4	2	4	2
JD 674	Disk Wheel Rim, 5" - 15"	4	2	4	2	4	2
M 10333	Hitch Loop	1	1	1	1	1	1

GENERAL

Bolts furnished with the disk harrow are identified by radial lines on the head.



Type 1 is standard strength hardware. Type 2 is high strength hardware.

Bolts must be used in the holes in which they are found or in the parts to which they are attached un-

less otherwise shown.

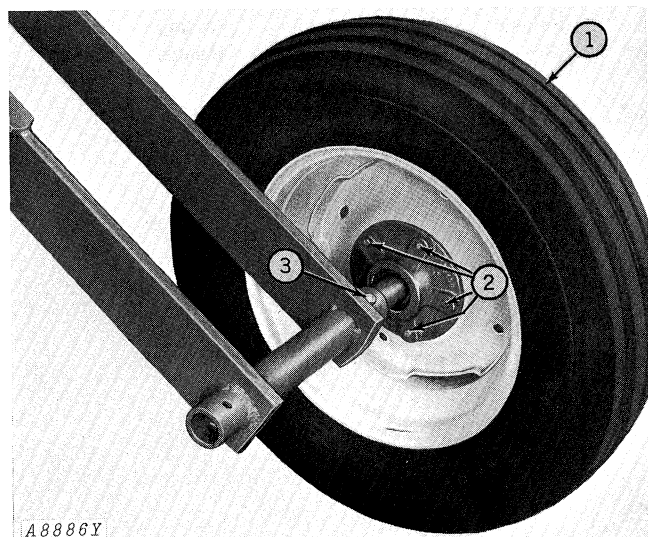
All bolts should be left loose until machine is completely assembled. Then tighten all bolts securely.

Tighten all bolts according to the following table:

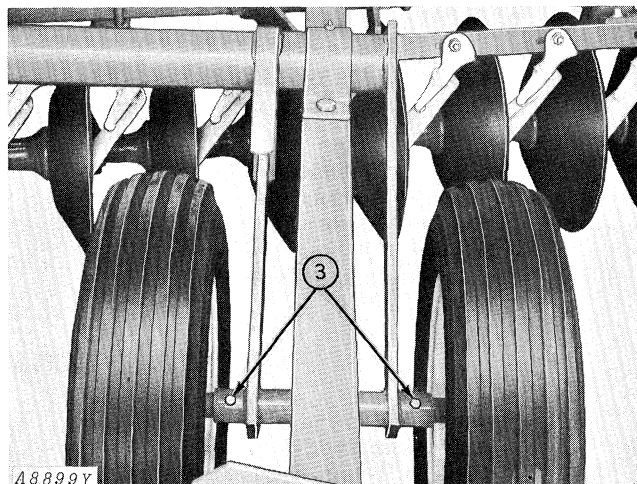
BOLT TORQUE IN FOOT-POUNDS

Bolt Type	Bolt Size (dimension "A")				
	1/2"	5/8"	3/4"	7/8"	1"
Type 1	55	105	185	275	365
Type 2	85	170	305	450	600

DRAWBAR AND WHEEL CARRIER

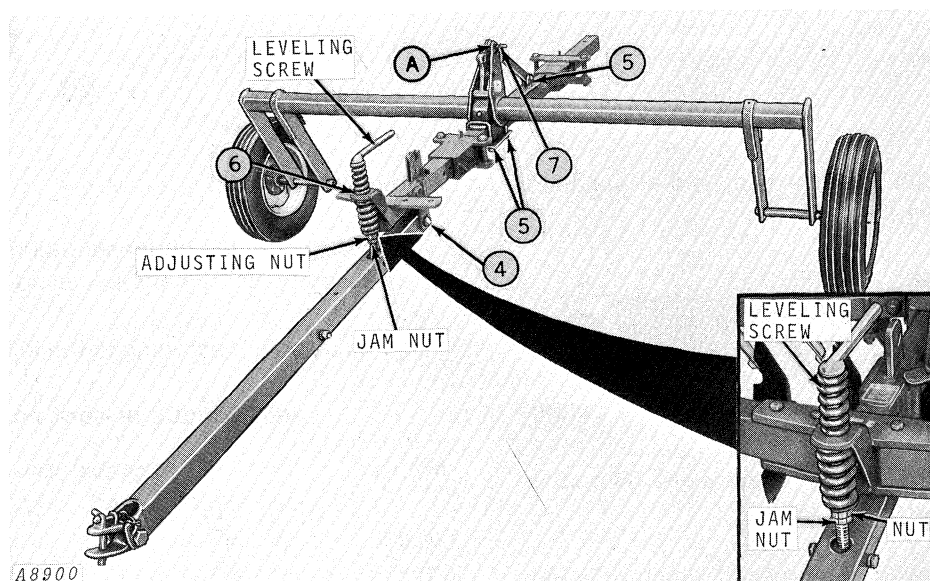


1. Mount the tires on the wheels and inflate to 30 psi of air pressure.
2. Attach the wheels and tires to the wheel hubs.
3. Attach each wheel and axle assembly to the wheel frame.



Dual Wheel Attachment

NOTE: When the wheels are mounted on the inside of the wheel frame, the wheel tread is 80 inches. When the wheels are mounted on the outside of the wheel frame, the wheel tread is 120 inches.



4. Unfold drawbar into position shown.
5. Attach the wheel frame to the center section of the main frame with U-bolts and 5/8 x 5-1/2-inch cap screws.

NOTE: Install wheel frame EXACTLY as illustrated.

6. Install leveling screw on center section and drawbar as shown.

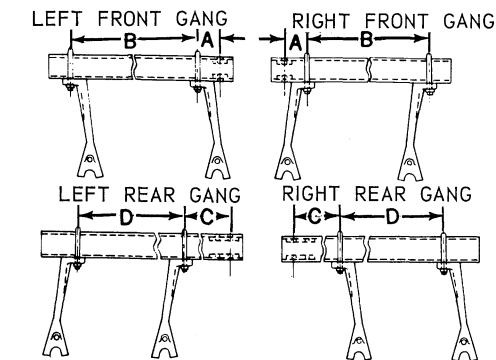
NOTE: Be certain that springs, adjusting nut, and lock nut are assembled on leveling screw as shown.

7. Raise disk harrow frame until transport pin can be installed at "A."

BEARING STANDARDS AND SCRAPER BAR BRACKETS

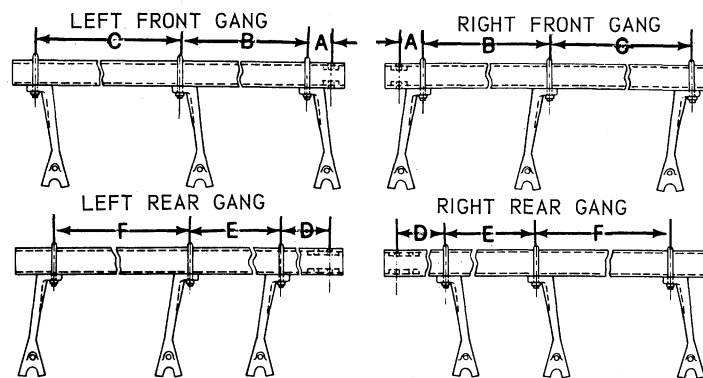
The bearing standards and scraper bar brackets are attached to the gang frames at the factory. If for any reason they should be incorrectly located, the fol-

lowing illustrations and charts show their correct location. The scraper bar brackets point outward on the front gangs and inward on the rear gangs.



B 8072

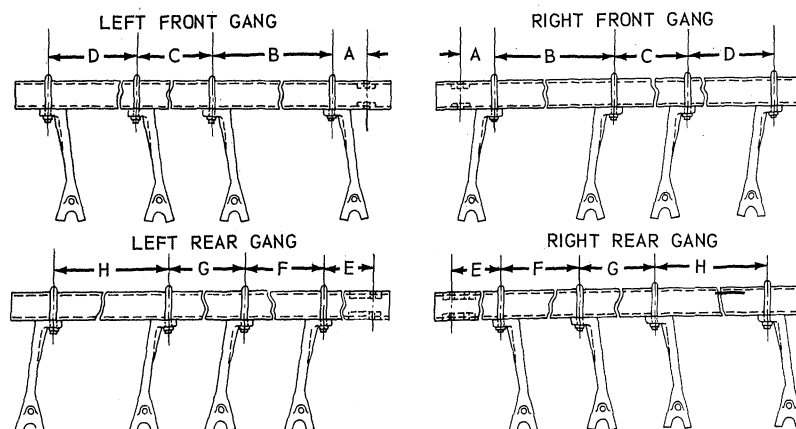
MODEL	DIMENSIONS IN INCHES			
	FRONT		REAR	
	A	B	C	D
11'2" BWA	4-3/4	51	11-1/4	51



A 8901

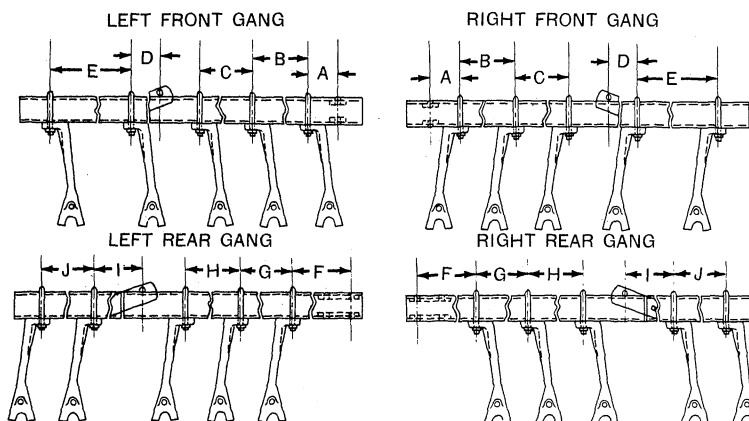
MODEL	DIMENSIONS IN INCHES					
	FRONT			REAR		
	A	B	C	D	E	F
12'6" BWA	4-3/4	34	25-1/2	11-1/4	25-1/2	34
13'10" BWA	4-3/4	34	34	11-1/4	25-1/2	42-1/2
12'2" BWA SPECIAL	4-3/4	25-1/2	25-1/2	10	28-1/2	28-1/2
13'4" BWA SPECIAL	4-3/4	34	25-1/2	10	28-1/2	35-1/2
13'4" BWA NARROW	4-3/4	28-1/2	35-1/2	10	28-1/2	35-1/2

BEARING STANDARDS AND SCRAPER BAR BRACKETS—Continued



B 6769

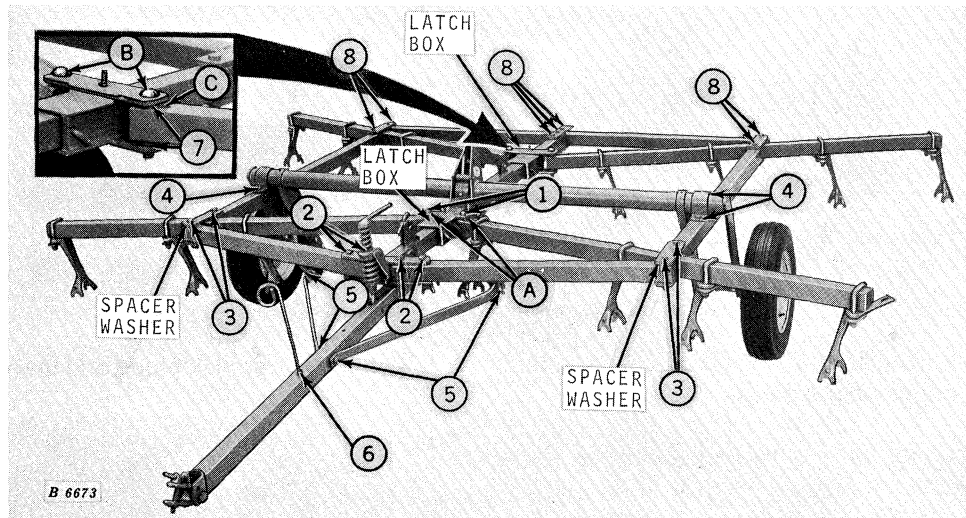
MODEL	DIMENSIONS IN INCHES							
	FRONT				REAR			
	A	B	C	D	E	F	G	H
15'2" BWA	4-3/4	34	17	25-1/2	11-1/4	25-1/2	25-1/2	25-1/2



A 8902

MODEL	DIMENSIONS IN INCHES									
	FRONT					REAR				
	A	B	C	D	E	F	G	H	I	J
16'6" BWA	4-3/4	25-1/2	25	13-1/8	17	11-1/4	25-1/2	25-1/2	11-3/4	17
17'10" BWA	4-3/4	25-1/2	25	13-1/8	17	11-1/4	25-1/2	25	11-3/4	17
19'2" BWA	4-3/4	25-1/2	42-1/2	13-1/8	17	11-1/4	25-1/2	42-1/2	11-3/4	17
20'6" BWA	4-3/4	25-1/2	42-1/2	13-1/8	17	11-1/4	25-1/2	42-1/2	11-3/4	17

GANG FRAMES, MAIN FRAME, AND WHEEL FRAME



1. Insert enough 1-1/16-inch flat washers on top of the gang frame to take up the space between the gang frame and latch box at "A." Attach the front gang frames to the latch box with the pins.

2. Bolt the front main frame sections to the center section.

3. Slide the side main frame sections through the wheel frame and bolt them to the front main frame. (If the main frame draws too tightly against the gang frame when the bolts are tightened, use the large flat spacer washers to provide additional clearance so the gangs can be angled.)

4. Place the wheel frame bearings over the wheel frame and bolt them to the side main frame sections.

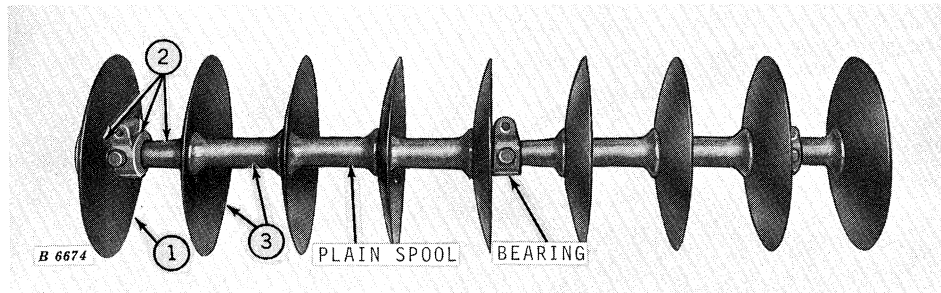
5. Attach side links as shown.

6. Install the hose holder.

7. Place the rear gang frames over the side main frame sections. Insert enough 1-1/16-inch flat washers between rear gang frame and top and bottom of latch box to take up the space between the rear gang frame and latch box at "B" and "C." Pin the gang frames to the rear latch box. (See adjustment on page 5.) Holes "C" are normally used for 18- and 20-inch blades. It may be necessary to use holes "B" for 22-inch blades to prevent ridging when the harrow is at full angle.

8. Bolt the rear section of the main frame to the side and center main frame sections. As in step 3, it may be necessary to use the spacer washers on the corners to secure clearance for the gang frames.

GANGS



Left Rear Gang - 12-Foot 6-Inch BWA Disk Harrow

Always use the gang frame standards as a guide for placing the bearings on the gangs.

The extension gangs on the 16-foot 6-inch or 19-foot 2-inch BWA Disk Harrows are four disk, two-bearing gangs. The extension gangs on the 20-foot 6-inch BWA Disk Harrow are five disk, two-bearing gangs. They should be assembled in the same manner as the main gangs.

Remember, disks on front gangs must be assembled to throw the soil out, and rear gangs must be assembled to throw the soil in.

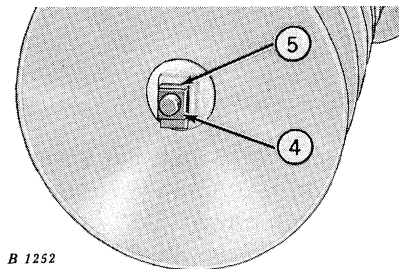
Remove the bearings and plain spools from the gang bolts.

1. Install a disk blade next to the bumper on the gang bolt.

2. Install a spool end, a bearing, and another spool end.

NOTE: Install bearing with grease fitting positioned to the rear of the disk harrow.

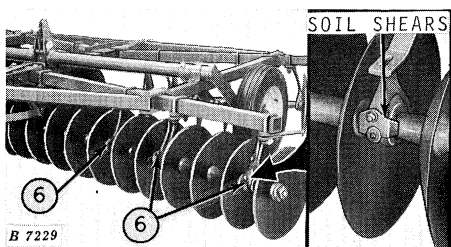
3. Install another disk blade and then a plain spool.



Proceed in this manner, making sure that a bearing is installed in the proper place to line up with the bearing standard on the gang frame.

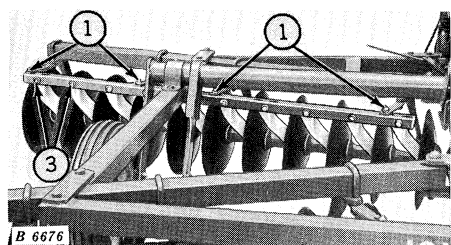
4. Install a nut lock and nut on the gang bolt, with the flat side of the nut to the outside. Tighten the gang bolt nut very tightly. After the nut is tightened, tap the bumper end of the gang bolt with a hammer, and then retighten the gang bolt nut to 800 ft-lbs torque. This is equivalent to a 175 pound force applied to a 4-1/2-foot wrench.

5. Bend the nut lock down over the gang bolt nut.

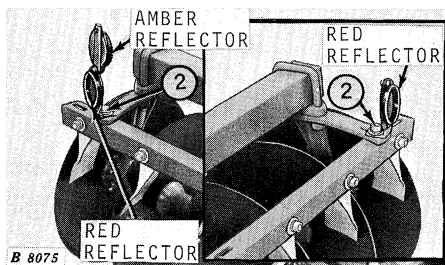


6. Position the gang frames and standards on the gangs, and attach gang frames and soil shears to bearings with the pins.

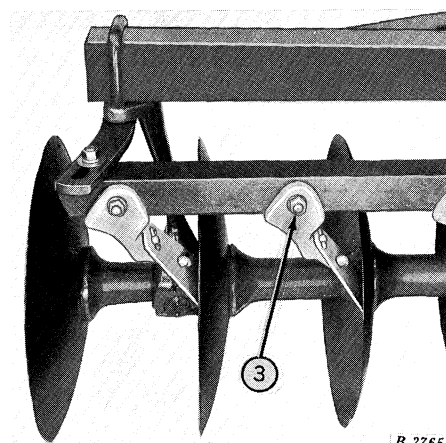
SCRAPER BARS AND SCRAPERS



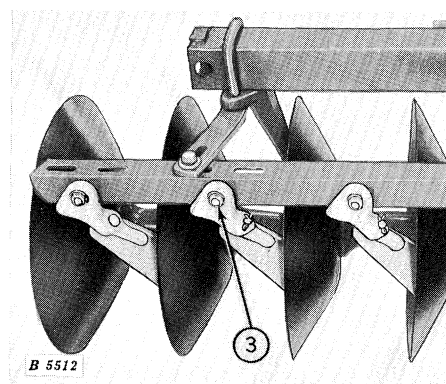
1. Bolt each scraper bar to the scraper bar brackets. Center the bolts in the slotted holes so there will be room for adjustment.



2. Install the reflector brackets to the rear main frame with the two outer bolts. Red reflectors at both sides of the harrow must face the rear. The amber reflector must face the front and must be mounted on the left-hand side.



Two-Piece Spring Loaded Scrapers Used with Regular Disk Blades

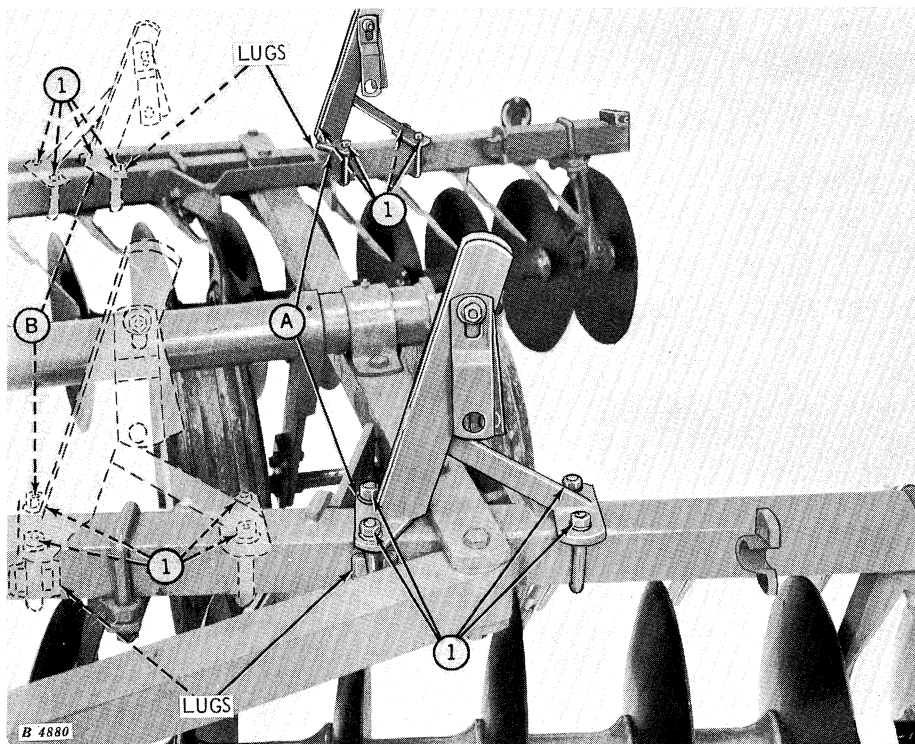


Two-Piece Spring Loaded Heavy-Duty Scrapers with Cone Disk Blades

3. Attach the scrapers to the scraper bar. Adjust each scraper so the scraping edge is flush against the disk but not tight enough to prevent the disk gangs from moving freely.

NOTE: One-piece scrapers are regular equipment; regular or heavy-duty two-piece, spring-loaded scrapers are optional. Either style scraper attaches to the scraper bar in the same holes, but one-piece scrapers attach on inside of scraper bar and two-piece scrapers attach on outside of scraper bar.

EXTENSION GANGS (16-Foot 6-Inch BWA, 17-Foot 10-Inch BWA, 19-Foot 2-Inch BWA, and 20-Foot 6-Inch BWA)

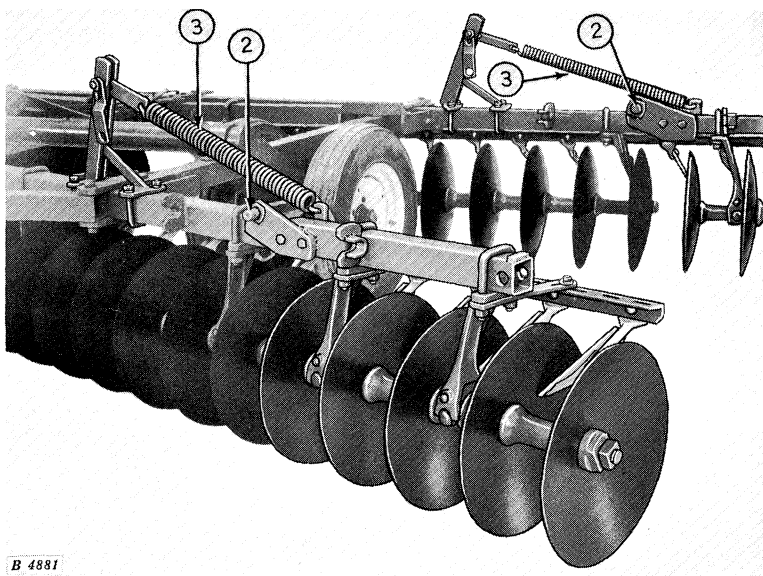


Installing the Extension Gang Support

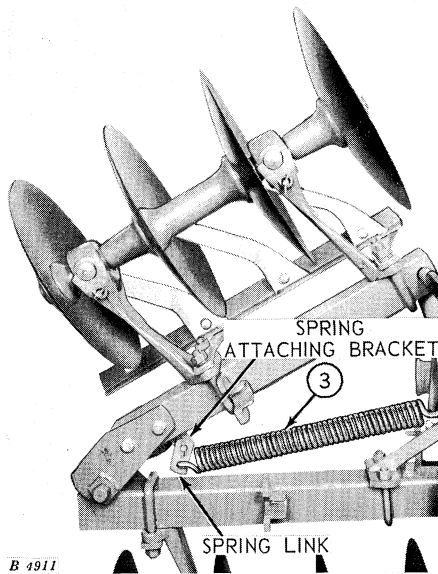
1. Install the extension gang support on the front and rear gangs frames. The extension gang support on the 19-foot 2-inch BWA and 20-foot 6-inch BWA is positioned at "A." The extension gang support on the

16-foot 6-inch and 17-foot 10-inch BWA is positioned at "B."

NOTE: The U-bolts must be positioned between the lugs as shown above.



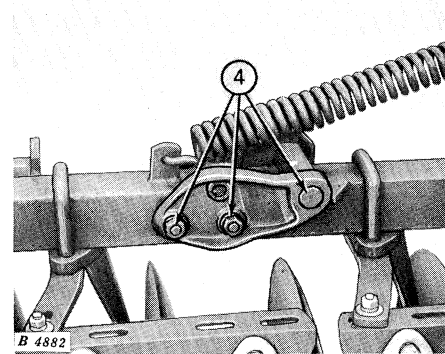
2. Install the extension gangs on the pivot pins which are welded to the end of the gang frames.



Four-Disk Extension Gangs Only

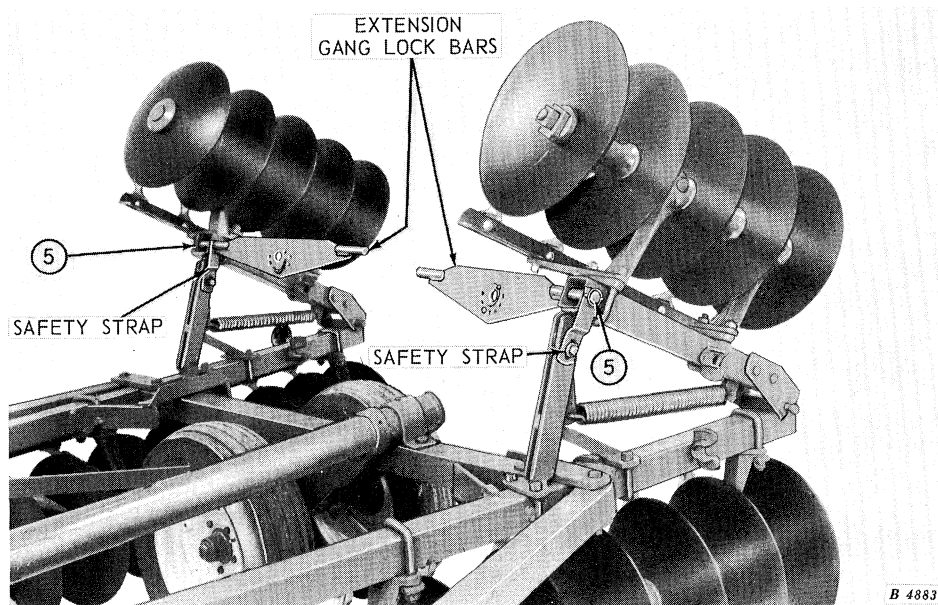
CAUTION: Extension gangs are under spring tension. To avoid accidental folding of the gangs, never install springs until standards and blades are attached.

3. Attach the springs.



CAUTION: On four-disk extension gangs only, spring tension must be reduced by using spring links. Place two spring links on end of each spring. Then position one spring link on each side of spring attaching bracket on extension gang and attach with pin and cotter pin as shown.

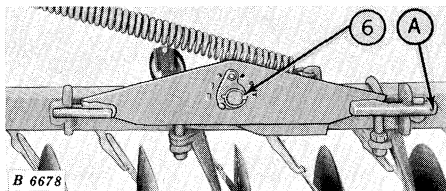
4. Slip the plates over the pivot pins and bolt them in place.



5. Swing the extension gangs up and over against the extension gang supports. Position the safety strap as shown above. Install an extension gang lock bar in

the end of each gang, and insert a spring locking pin in the extension gang lock bar.

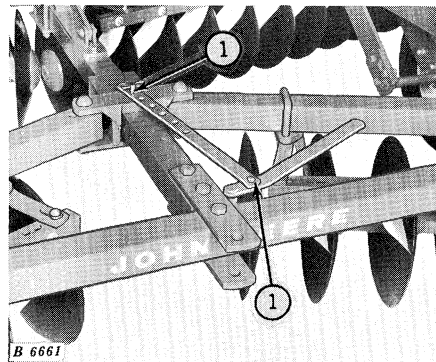
EXTENSION GANGS (16-Foot 6-Inch BWA, 17-Foot 10-Inch BWA, 19-Foot 2-Inch BWA, and 20-Foot 6-Inch BWA)— Continued



6. Swing the extension gangs back down and install the extension gang locking bar. Insert spring locking pin as shown.

NOTE: Be sure that hole "A" on the end of the extension locking bar is to the outside of the disk harrow gang.

ANGLING DEVICE



1. Install the angling device. (See page 4 to set the angle of the gangs.)

HYDRAULIC HOSE EXTENSIONS

The following lengths of hydraulic hose, couplings, and O-rings are needed in addition to the regular hoses on 3-inch diameter 8-inch stroke hydraulic cylinders used with 4000, 4010, or 4020 Series Tractors and 16-foot 6-inch, 17-foot 10-inch, and 19-foot 2-inch BWA Disk Harrows:

- 2 - 24-inch lengths of hose
- 4 - O-rings
- 2 - couplings

The additional lengths of hose, couplings, and O-rings must be obtained from your John Deere dealer and added to the regular hydraulic hoses on the disk harrow remote hydraulic cylinder.



Specifications

The John Deere BWA Series Disk Harrows are double action, heavy-duty, rigid, wheel-carried disk harrows. They can be used with John Deere tractors equipped with an 8-inch stroke remote hydraulic cylinder, or any other tractor using an 8-inch stroke remote hydraulic cylinder that conforms to ASAE- SAE standards.

On BWA Disk Harrows the disk spacing is 8-1/2 inches. On the BWA 13-foot 4-inch Narrow Disk Harrow, the disk spacing is 7-1/8 inches. All disk gangs have 1-1/4-inch square gang bolts and double tapered roller bearings.

The angle of the gangs can be changed quickly and easily, and the front and rear gangs can be angled independently of each other.

Upper and lower cushion springs on the hitch absorb shocks encountered when disking and transporting. The lower spring also acts as a leveling spring, which compresses when working, and extends when the harrow is raised, keeping harrow gangs level and giving parallel lift for more transport clearance.

A hitch is provided on the rear of the harrow for pulling such equipment as a spike-tooth harrow.

OPERATING SPEED - Never exceed field speed of 5 mph. Reduce speed where rocks or stumps are a factor.

DISKING DEPTH - Controlled by raising or lowering the carrying wheels with the hydraulic cylinder, and the angle of the disk gangs.

LEVELING - Adjusting hand screw levels the disk harrow for various tractor drawbar heights.

CARRYING WHEELS - 14-inch wheels with automotive type, adjustable, tapered roller bearings. 15-inch wheels are optional.

WHEEL TREAD - 80 inches when wheels are mounted on the inside of wheel frame. 120 inches when wheels are mounted on outside of wheel frame.

DUAL WHEELS - Regular on the 17-foot 10-inch, 19-foot 2-inch and 20-foot 6-inch BWA Disk Harrows. They are available as special equipment for all other sizes.

DISK BLADES - Regular - 18, 20 or 22-inch solid or cut-out disk blades are available. Cone - 20 or 22-inch solid or cut-out disk blades are available.

FURROW FILLER ATTACHMENT - Will fill and level the furrow left by rear gang outer disk blades. 14, 16 or 18-inch disk blades are recommended for this attachment, depending on size of disk blades on disk harrow. (See page 11.)

END SCRAPER ATTACHMENT - Cleans outside front disks and inside rear disks.

DRIVE COUPLER FOR SPLIT OR EXTENSION GANGS - Will connect the extension gangs to the main gangs for positive gang drive.

EXTENSION GANGS - The 16-foot 6-inch, 17-foot 10-inch and the 20-foot 6-inch BWA Disk Harrow is equipped with extension gangs. The following chart gives the transport width and the width of cut when harrow is used with extension gangs folded:

SPIKE-TOOTH HARROW ATTACHMENT - Attaches to rear of disk harrow for disking and harrowing in one operation. Available for all sizes except when equipped with folding extension gangs.

MIDDLEBREAKER ATTACHMENT - A spring-tooth middlebreaker cuts out the center strip left by the front disk gangs.

SCRAPERS - One-piece scrapers are regular equipment. Regular and heavy-duty two-piece spring-loaded scrapers are optional.

Size of BWA Disk Harrow	Transport Width with Extension Gangs Folded	Width of Cut with Extension Gangs Folded	Number of Blades	
			Each Main Gang	Each Extension Gang
16-Ft., 6-In.	11-Ft., 6-In.	11-Ft., 2-In.	8	4
17-Ft., 10-In.	11-Ft., 6-In.	11-Ft., 2-In.	8	5
19-Ft., 2-In.	14-Ft., 2-In.	13-Ft., 10-In.	10	4
20-Ft., 6-In.	14-Ft., 2-In.	13-Ft., 10-In.	10	5

SERIAL NUMBER

Your BWA Disk Harrow has a serial number located on the front gang frame.

When ordering parts, always furnish the model and serial number from the serial number plate. By doing so, you will assist your John Deere dealer in giving you prompt, efficient service.

Record the serial number of the disk harrow and the date purchased in the space below:

Serial Number

Date Purchased 19..



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MEMORANDA

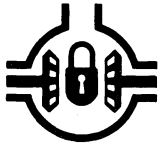
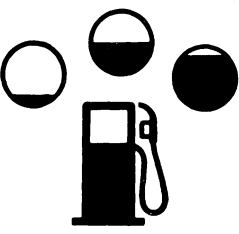
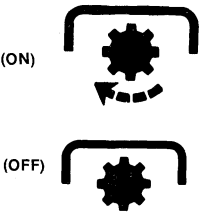
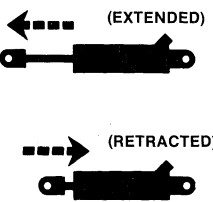
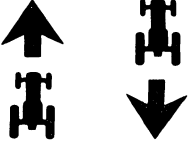
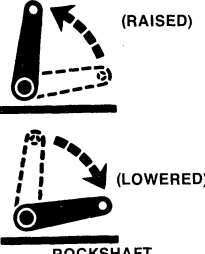
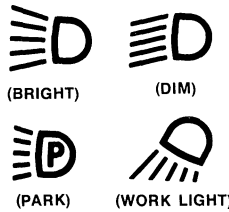
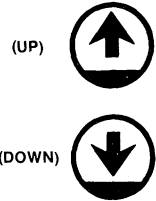
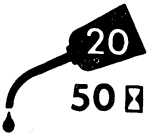
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WORLDWIDE SYMBOLS FOR OPERATOR CONTROLS

Symbols instead of words; that's what John Deere is using to promote worldwide identification of operator controls. Once standardized, they give a quick, positive message anywhere in the world — without translation. Study the symbols below and learn to recognize them at a glance.

				
TRANSMISSION OIL PRESSURE	TRANSMISSION OIL TEMPERATURE	TRANSMISSION OIL FILTER	ENGINE OIL PRESSURE	ENGINE R P M
				
DIFFERENTIAL LOCK	WATER TEMPERATURE	PRESSURIZED—OPEN SLOWLY	AIR FILTER	CHOKE
				
AMMETER OR GENERATOR LIGHT	FUEL	FUEL SHUTOFF	POWER TAKE-OFF	REMOTE CYLINDER
				
SPEED RANGE	VEHICLE FORWARD VEHICLE REVERSE	NEUTRAL	PARK	ROCKSHAFT
				
LIGHTS	WINDSHIELD WIPER	WINDSHIELD DEFROSTER	IMPLEMENT MOVEMENT	CIGAR LIGHTER
				
HORN	ROCKSHAFT LOAD AND DEPTH CONTROL		GREASE FREQUENCY	OIL TYPE AND FREQUENCY

