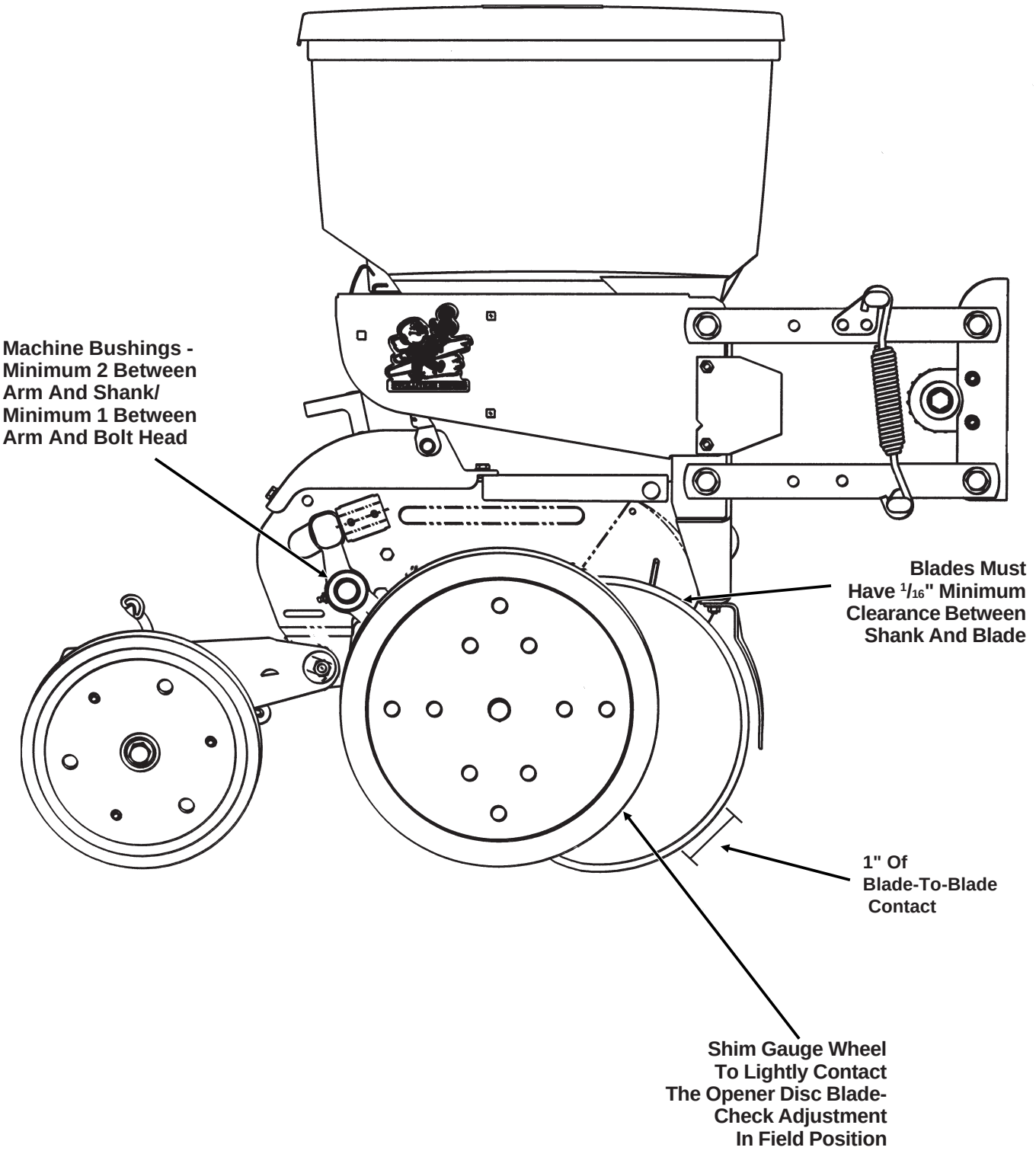
SERVICE SCHOOL

(RU113d)



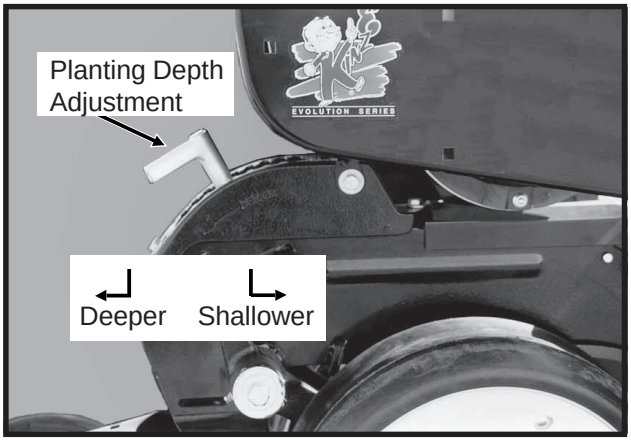
ROW UNIT OPERATION

PLANTING DEPTH

Planting depth is maintained by the row unit gauge wheels. To increase or decrease the planting depth, first raise the planter to remove weight from the wheels. Then push down on the depth adjustment handle and reposition it forward to decrease depth or rearward to increase planting depth. Adjust all units to the same setting initially. Then lower the planter and check operation and planting depth of all row units. It may be necessary to readjust some rows to obtain uniform operation. Available depth adjustment range is approximately 1/2" to 3 1/2".

WARNING: Never work under the planter while in raised position without using safety lockups.

04059914a



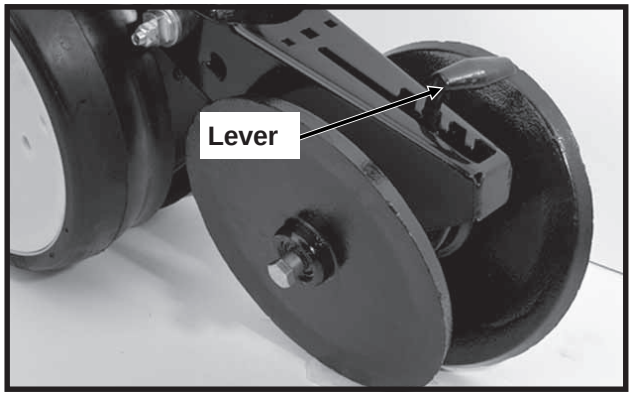
"V" CLOSING WHEEL ADJUSTMENT (Rubber And Cast Iron)

WARNING: Raise planter and install safety lockups before making closing wheel adjustments.

After adjusting planting depth, check the operation of the "V" closing wheels. The "V" closing wheels should have enough down pressure to close the seed trench and ensure good soil to seed contact. To increase spring pressure on the closing wheels, move the 5-position quick adjustable down force lever located on the top of the closing wheel arm to the rear. Moving the lever forward decreases spring tension.

Adjust all row units to a similar setting.

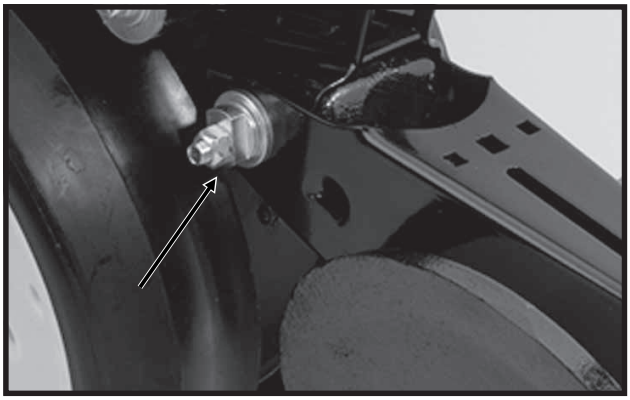
LF212299-15



Light soil usually requires less down force at average depth (approximately 2") while heavy soil requires increased down force.

Eccentric bushings in the wheel arm stop allow for lateral adjustment of the "V" closing wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the closing wheel arm to the wheel arm stop. Using another 3/4" wrench turn the eccentric bushings until the **closing wheels are aligned with the seed trench**. Tighten hardware.

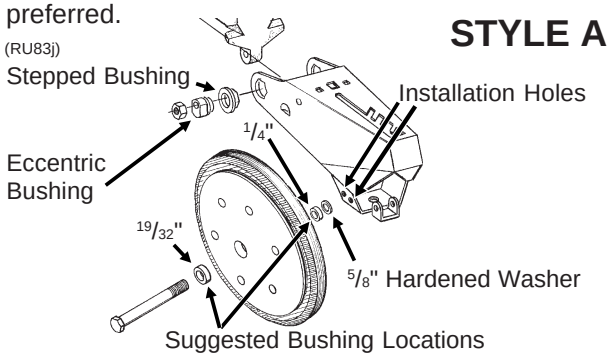
LF2122299-15



Bushings used for installation of the closing wheels can be moved from side to side for closing wheel spacing adjustment and the closing wheels can be installed in two locations either "offset" (to improve residue flow) or "directly" opposite. If set "directly" opposite, the forward installation holes should be used. Under normal conditions the narrow position is preferred.

STYLE A

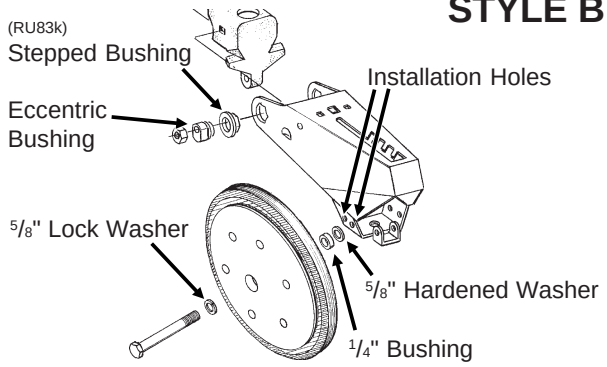
(RU83j)



The closing wheels can be installed in two locations either “offset” (to improve residue flow) or “directly” opposite. If set “directly” opposite, the forward installation holes should be used.

STYLE B

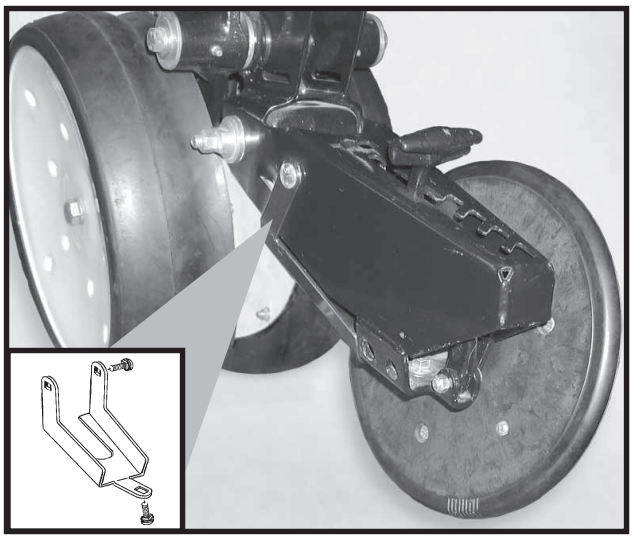
(RU83k)



CLOSING WHEEL SHIELD

(Rubber And Cast Iron “V” Closing Wheels)

D11090208a



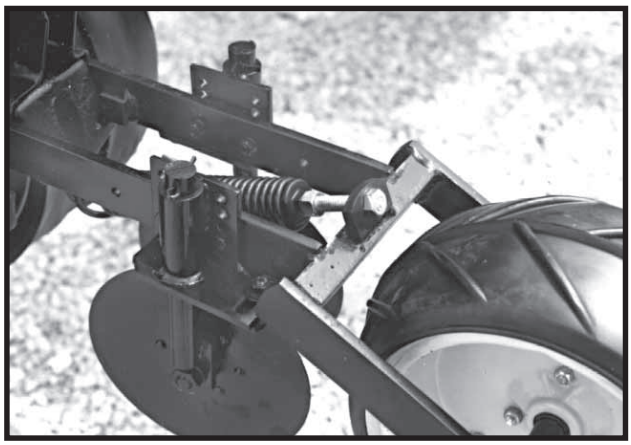
Shown With Closing Wheel Removed For Visual Clarity

The optional closing wheel shield is designed to be installed onto the underside of the closing wheel arm to help prevent root balls and stalks from plugging the closing wheels.

COVERING DISCS/SINGLE PRESS WHEEL ADJUSTMENT

WARNING: Raise planter and install safety lockups before making covering discs/ single press wheel adjustments.

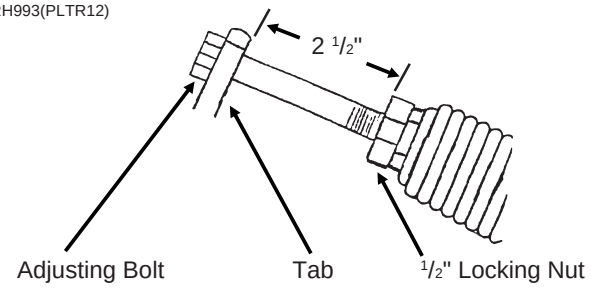
72359-31



After adjusting planting depth, check the operation of the covering discs/single press wheels.

Initial press wheel down force setting should be with 2 1/2" between mounting arm tab and locking nut. To adjust down force spring, loosen 1/2" locking nut and turn adjusting bolt in to increase down force or out to decrease down force. Tighten locking nut against spring plug. Adjust all row units to a similar setting.

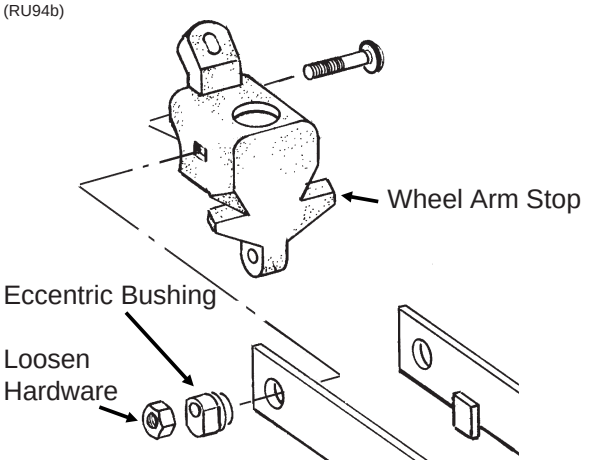
RH993(PLTR12)



ROW UNIT OPERATION

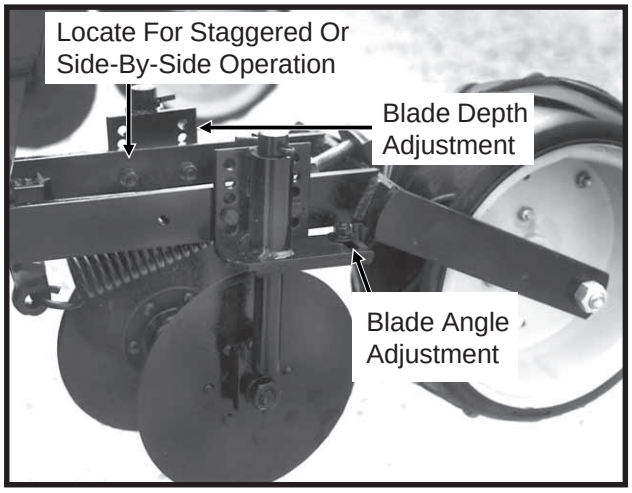
Eccentric bushings in the wheel arm stop allow for lateral adjustment of the covering discs/single press wheel assembly. Using a 3/4" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another 3/4" wrench, turn the eccentric bushings until the press wheel is aligned with the seed trench.

(RU94b)



Two sets of holes in the mounting arm allow the covering discs to be located for staggered or side-by-side operation as desired.

72359-35



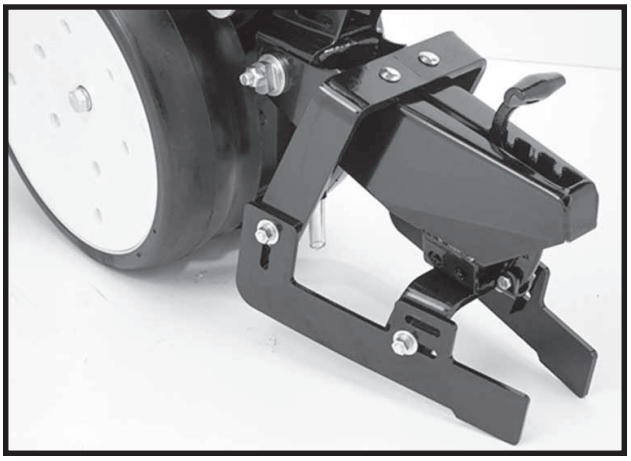
Five sets of holes in each disc bracket allow for 1/2" incremental blade depth adjustment.

Slotted holes in the disc mount and bracket allow for 0° - 15° blade angle adjustment.

Adjust covering discs on all row units to similar settings.

DRAG CLOSING ATTACHMENT

LF212299-18



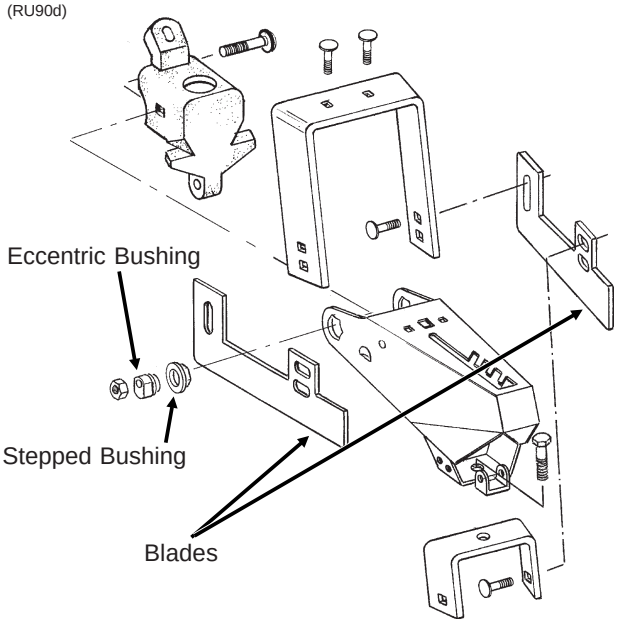
The drag closing attachment is designed to pull loose soil over the seed trench.

Front and rear adjustment is made using the slotted holes in the blades. Adjust all rows the same.

NOTE: Use of a seed firming wheel or other seed firming device is recommended with the drag closing attachment.

WARNING: Raise planter and install safety lockups before making drag closing attachment adjustments.

(RU90d)



Eccentric bushings allow for lateral adjustment of the drag closing attachment. Using a 3/4" wrench, loosen the hardware which attaches the assembly to the wheel arm stop. Using another 3/4" wrench, turn the eccentric bushings until the drag closing attachment is aligned with the seed trench.

ROW UNIT OPERATION

SEED HOPPER

LF212199-7a

The seed hopper has a capacity of 1.9 bushels.

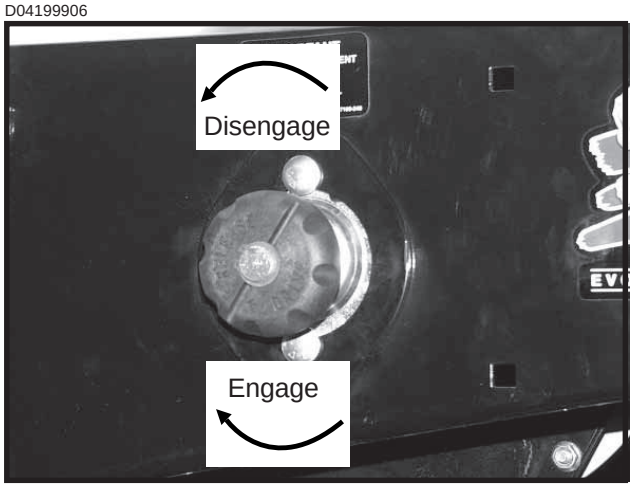
When filling the seed hopper use clean seed and make certain there are no foreign objects in the hopper. **Replace hopper lids after hoppers are filled to prevent the accumulation of dust or dirt in the seed meter which will cause premature wear.** See "Finger Pickup Seed Meter Lubrication" and/or "Brush-Type Seed Meter Lubrication".

Periodically empty the hoppers completely to remove any foreign objects and to ensure proper seed meter operation. To empty hopper, disengage meter drive and hopper latch and lift hopper off the hopper support. See "Seed Meter Drive Release".

SEED METER DRIVE RELEASE

The seed meter drive is equipped with a clutch release mechanism that allows the drive to be disengaged from the seed metering unit for removal of the seed hopper. Disconnecting the drive allows the operator to check granular chemical application rates without dropping seed. It also allows one or more of the rows to be disconnected when finishing fields.

D04199906



To disengage the drive, turn the knob 1/4 turn counter-clockwise. To engage the drive, turn the knob 1/4 turn clockwise.

SEED METER DRIVE ADJUSTMENT

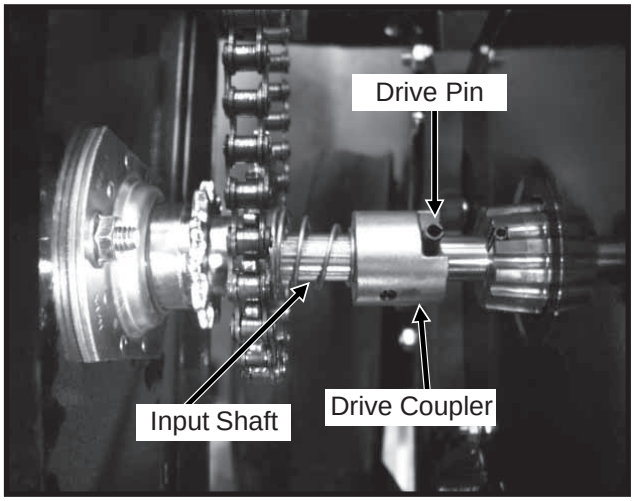
NOTE: The seed meter drive coupler must be properly aligned with the meter input shaft.

Improper alignment between the drive coupler and input shaft of the meter can cause the meter housing to flex as the meter rotates. This continual flexing of the meter housing can cause damage to the housing. Any time the hopper support panel is removed or replaced, vertical and horizontal alignment should be checked.

Erratic seed spacing may result from misalignment between the drive coupler and seed meter input shaft. Misalignment may cause momentary stoppage of brush-type meter seed disc. Check alignment after initial installation.

Although the meter drive has a self-aligning feature, the slotted mounting hole in the hopper support panel and clutch plate allow for alignment adjustment between the drive coupler and meter shaft. If the drive clutch is centered in the hole in the hopper support panel the drive should be in alignment.

D04209903

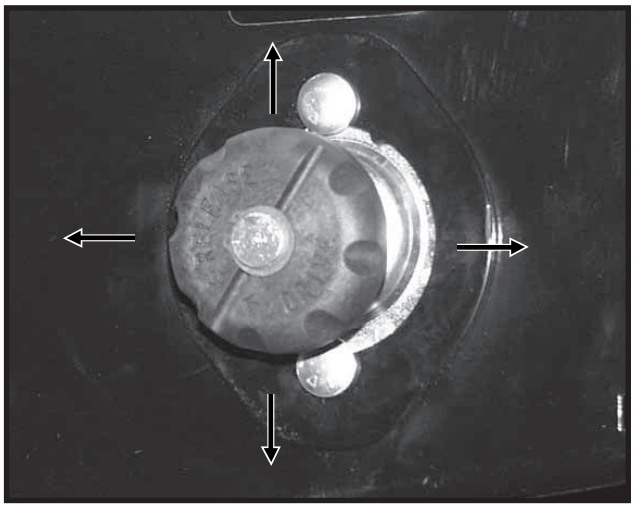


To check alignment:
- Engage drive coupler over pin on meter shaft.
- Drive shaft on clutch should be centered in sprocket bore.
- If adjustment is needed, proceed as follows.

To adjust drive clutch:
- Slightly loosen both $^{5}/_{16}$" carriage bolts.
- Move clutch assembly to correct any misalignment.
- Tighten both $^{5}/_{16}$" carriage bolts.

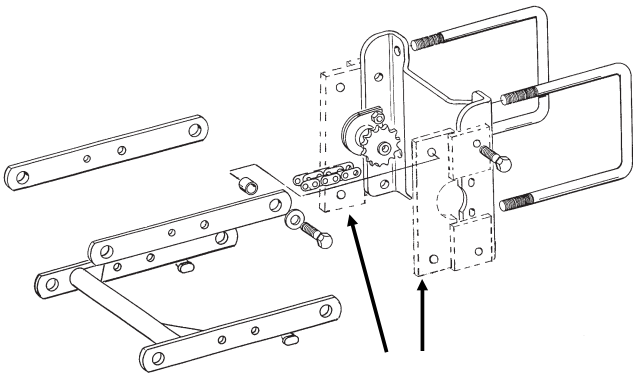
NOTE: Removing chain idler tension will allow easier clutch alignment adjustments.

D04199906



ROW UNIT EXTENSION BRACKETS

RUB005/RUB007/RUB015(INS33a)



Row unit extension brackets are required on all rear row units if the Model 3000 planter is equipped with coulter mounted residue wheels and HD single disc fertilizer openers. The brackets extend the row units rearward 4" to provide required clearance.

ROW UNIT OPERATION

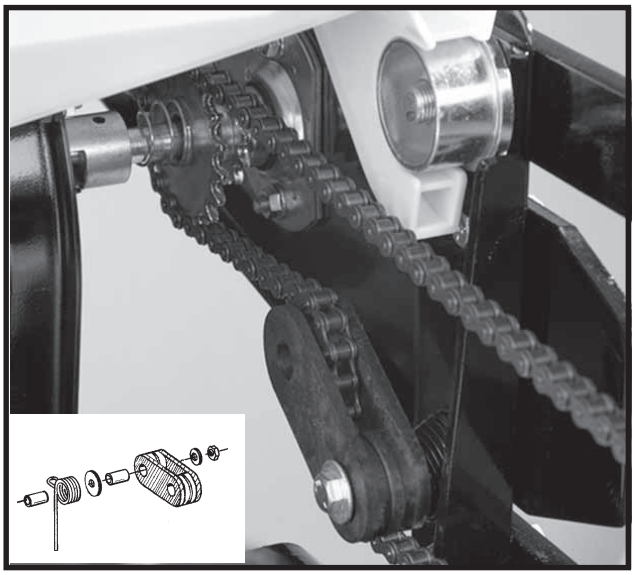
ROW UNIT CHAIN ROUTING

For proper operation and to minimize wear, the row unit drive chains must be properly tensioned and aligned.

Inspect and replace weak, worn or broken springs and/or idlers and idler bushings.

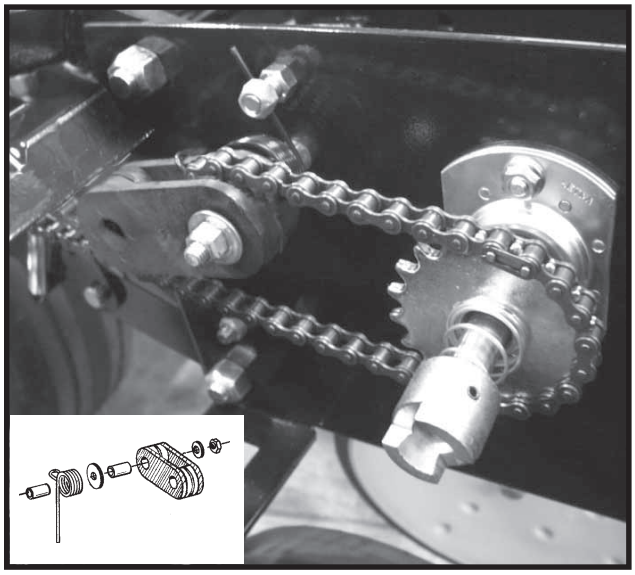
NOTE: When idler shows signs of wear, it can be reversed for prolonged use.

LF212199-5a(RU80g)



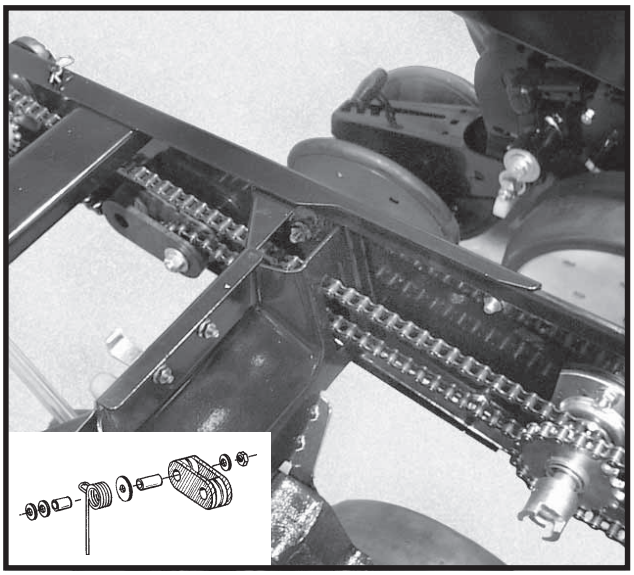
Pull Row Unit Meter Drive

D04209901a(RU80g)



Push Row Unit Meter Drive

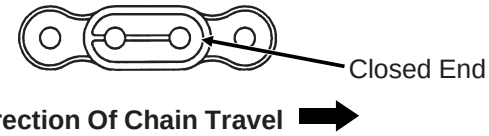
D05139901b(RU92l)



Row Unit Granular Chemical Drive

NOTE: Make sure connector link is installed with closed end oriented properly as shown below.

(PLTR24)



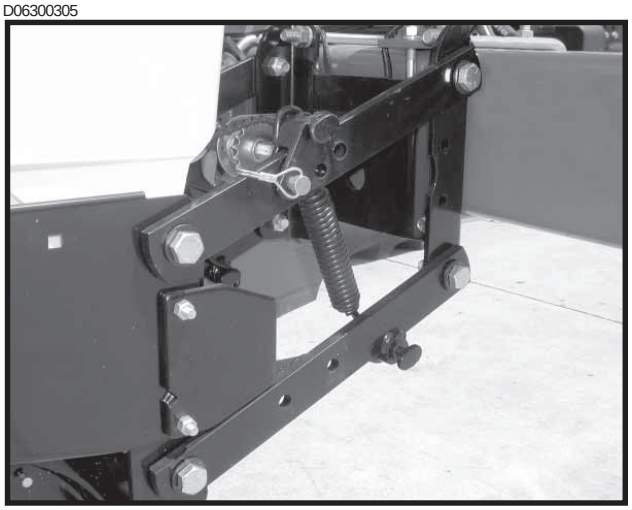
Direction Of Chain Travel

QUICK ADJUSTABLE DOWN FORCE SPRINGS

Quick adjustable down force springs are designed to increase penetration in hard soil and keep the row unit from bouncing in rough field conditions.

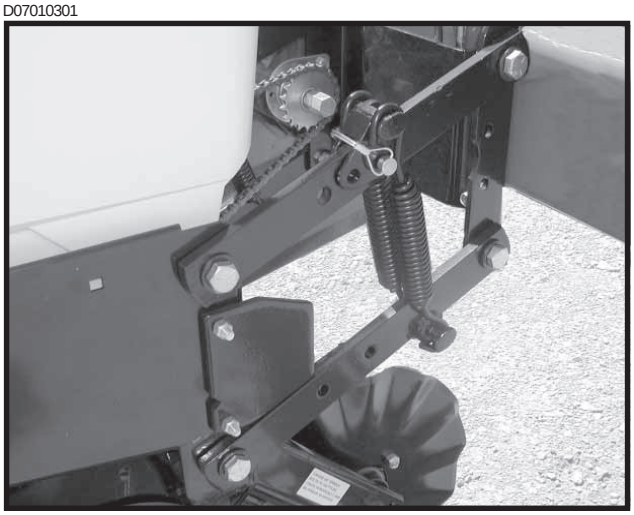
Two springs per row, one on the L.H. parallel arms and one on the R.H. parallel arms, are used unless equipped with row unit mounted no till coulters. Four springs per row are used with row unit mounted no till coulters.

D06300305



Two Springs Per Row (Dual)

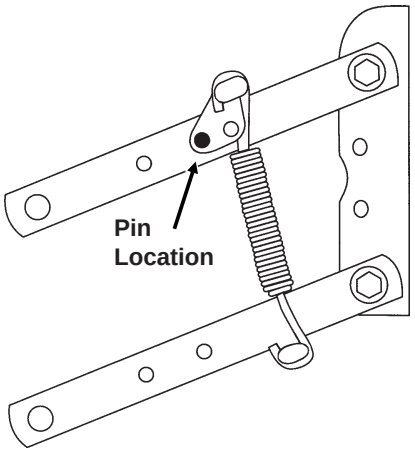
D07010301



Four Springs Per Row (Quad)
(Used Only In Conjunction With Row Unit Mounted No Till Coulters)

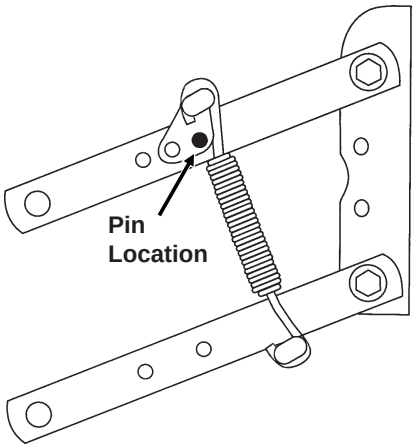
There are four positions for spring tension adjustment. Position 1 allows for minimum down pressure and position 4 for maximum down pressure.

L0096(PLTR27e)



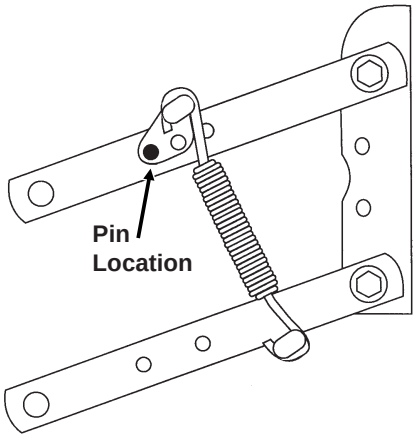
Position 1 (Minimum)

(PLTR28e)



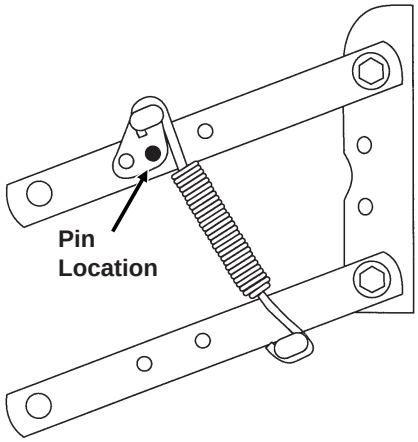
Position 2

(PLTR29e)



Position 3

(PLTR30e)



Position 4 (Maximum)

To adjust spring tension, raise planter and remove spring mount pin at top of spring. Slide mount to desired position and install pin.

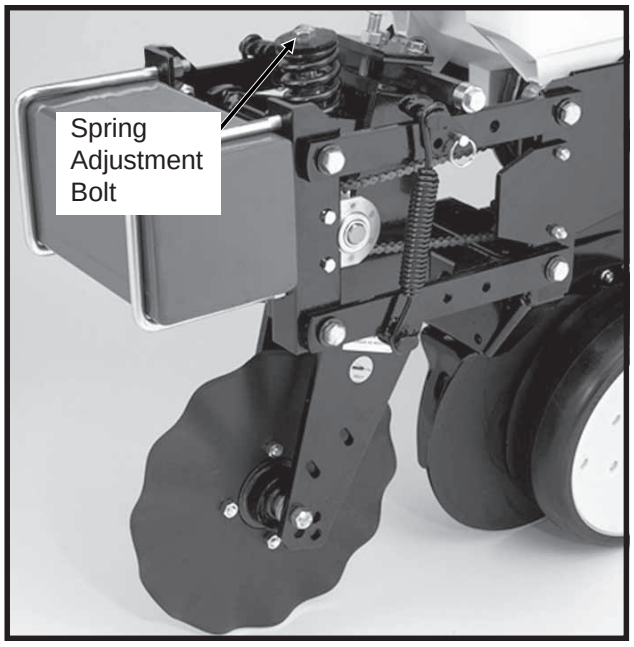
NOTE: It is necessary for the operator to adjust springs according to field conditions. If springs are adjusted for too much down pressure for field conditions, it is possible for the row units to lift the planter to the extent that the drive wheels do not make sufficient contact. Too much down pressure in soft field conditions can cause the row unit to run too deep.

WARNING: Always install safety lockups or lower machine to the ground before working under or around the machine.

NOTE: Springs must always be installed with open side of spring hooks toward seed hopper to prevent binding on spring mount adjustment pin.

FRAME MOUNTED COULTER - STYLE A

LF212299-20



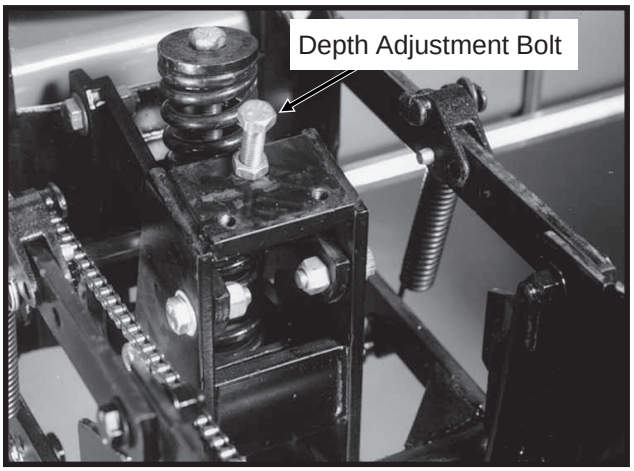
Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units only. (Not compatible with push row units.)

The frame mounted coulter is designed to allow required spring down pressure on the coulter for maximum penetration while exerting less shock load on the row unit.

The frame mounted coulter can be used with or without the depth control bar installed. In most applications, especially in rocky planting conditions, the depth control bar **should not be used**. Use of the depth control bar transfers down force from the coulter to the row unit making less down force available to the coulter blade.

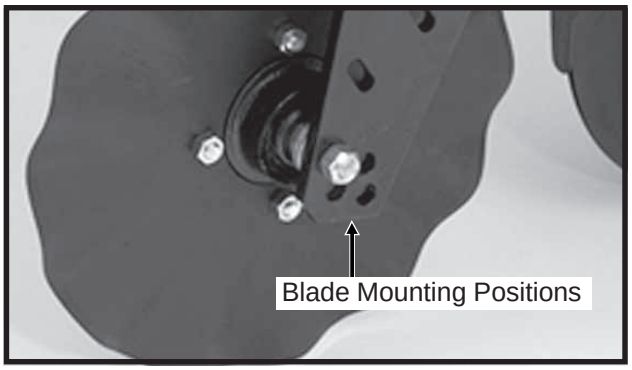
DEPTH ADJUSTMENT
(Without Depth Control Bar Installed)

56314-14a



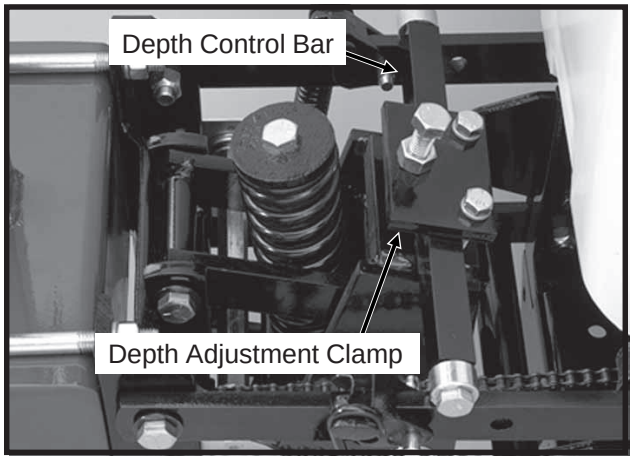
When the depth control bar is not used, operating depth of the coulter blade is determined by adjusting the depth adjustment bolt and positioning of the blade assembly in the fork mount. The depth adjustment bolt will stop downward travel of the coulter arm assembly. One turn of the adjusting bolt will change depth setting approximately 1/4". Initial setting of the depth adjustment bolt should be with approximately 1 3/8" of thread showing. With this setting and the toolbar height at 20", the coulter depth will be approximately 2" with coulter mounting spindle in top hole. Turn the adjustment bolt clockwise to decrease operating depth. Turn the depth adjustment bolt counterclockwise to increase operating depth.

LF212299-20



DEPTH ADJUSTMENT
(With Depth Control Bar Installed)

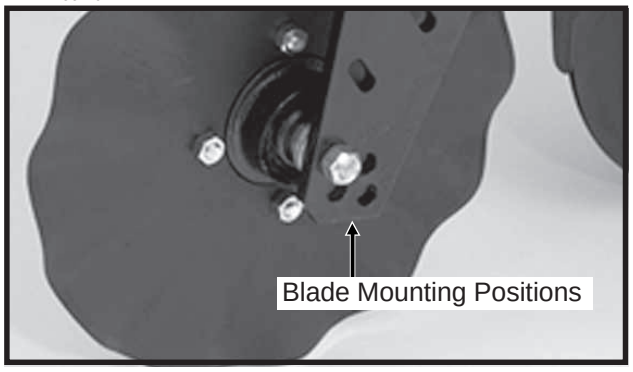
LF212199-4



In certain applications it is desirable to use the depth control bar. In uneven terrain, use of the depth control bar allows greater depth control. The up and down movement of the row unit allows the coulter to move up and down at a rate of approximately 1/2 that of the row unit, maintaining a more uniform operating depth. When using the disc furrower attachment, the depth control bar should always be used, as operating depth of the coulter is critical for the disc furrowers to operate with minimal gouging.

When using the depth control bar, down force springs must be located in the forward position and the depth adjustment bolt used only to attach the depth adjustment clamp to the coulter assembly. Operating depth of the coulter blade is adjusted by positioning the blade assembly in the fork mount. Four blade mounting adjustment positions are available at 1/2" increments. Initial position of the blade assembly should be in the top hole. This position will locate the coulter blade approximately 1/4" deeper than the row unit opener blade. In heavy residue it may be desirable to position the blade assembly in the second position to insure that the residue is cut and not forced down into the seed zone. Additional holes are used to compensate for coulter blade wear.

LF212299-20

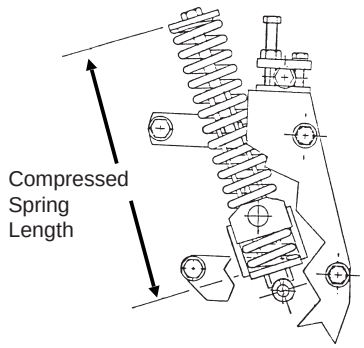


SPRING ADJUSTMENT

Down force adjustment is made by tightening or loosening the spring adjustment bolt. With the planter in the raised position, turn the bolt clockwise to increase down force or counterclockwise to decrease down force. Set all rows equally.

Compressed Spring Length (Including Washer)	Pounds Down Pressure With Blade 1/2" Above Maximum Down Position	Pounds Down Pressure With Blade 4" Above Maximum Down Position
13 5/16"	90	230
12 5/16"	190	330
Suggested initial setting.		
11 5/16"	300	430

A5649rev.(PLTR44)

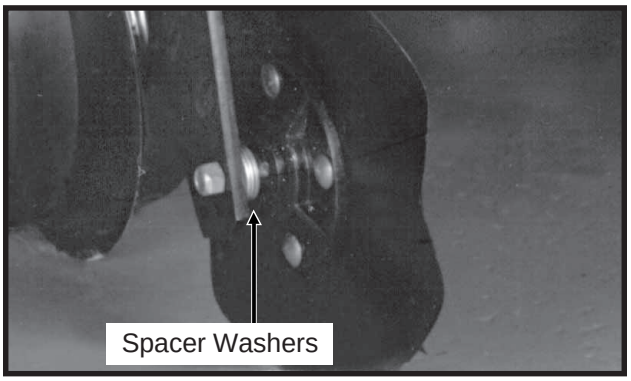


IMPORTANT: Excessive down force may cause increased wear on components.

COULTER BLADE ADJUSTMENT

The coulter blade can be aligned with the row unit disc opener by moving the spacer washers from one side of the coulter blade hub to the other.

56314-12

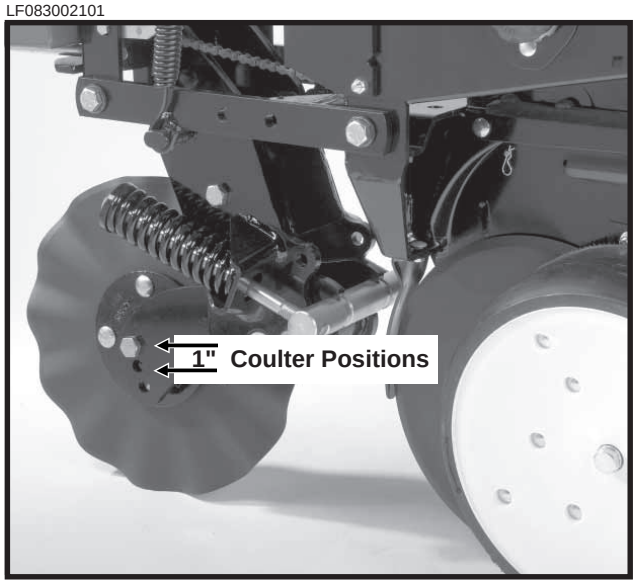


Field adjustment should be made as needed. Operating height of the planter frame will affect operating depth of the frame mounted coulter.

NOTE: Torque 5/8" spindle bolts to 120 ft. lbs.

FRAME MOUNTED COULTER - STYLE B

LF083002101

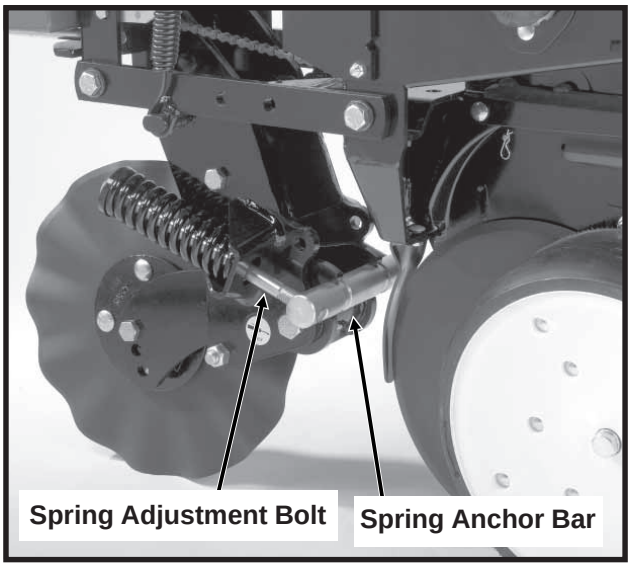


Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units only. (Not compatible with push row units.)

The frame mounted coulter is designed to apply necessary spring down pressure on the coulter for maximum penetration while exerting less shock load on the row unit.

The initial location of the coulter blade is in the top hole. The blade can be relocated to one of the lower two holes (1" increments) as wear occurs or if deeper operation of the blade is desired.

LF083002101



DOWN PRESSURE ADJUSTMENT

Down force adjustment is made by tightening or loosening the two spring adjustment bolts. With the planter in raised position, turn the bolts clockwise to increase down pressure or counterclockwise to decrease down force. Set both springs the same.

Down force on the blade is shown below in lbs.

End Of Spring Adjustment Bolt Flush With Spring Anchor Bar (Shown Above)	End Of Spring Adjustment Bolt Extended 1/2" Through Spring Anchor Bar	All Threads Used (Maximum)
275 lbs.	400 lbs.	500 lbs.

NOTE: Avoid setting down pressure higher than is required for consistent soil penetration. Excessive pressure will increase the chances of damage to coulter components when the coulter strikes an obstacle.

DISC FURROWER
(For Use With Style A Frame Mounted Coulter)

The disc furrower for use with the frame mounted coulter may be equipped with either 12" solid blades or 12" notched blades.

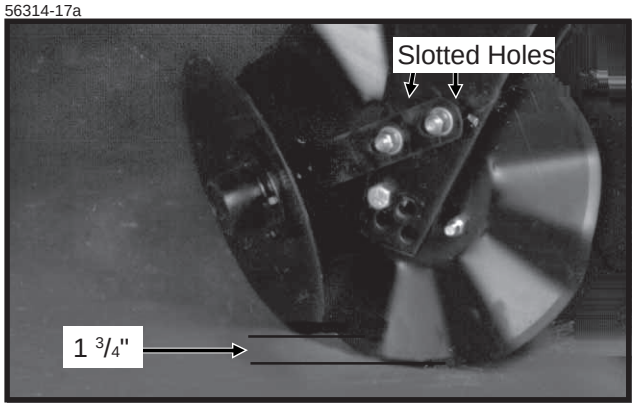
Disc furrowers are used to clear crop residue, dirt clods and dry soil from in front of the row units for a clean and smooth seed bed. Notched blades are used for heavier residue conditions. The notched blades cut crop residue and move it aside to prevent plugging or pushing.

56314-19

Blades can be adjusted so front edges meet by adding spacer washers between the disc furrower arm and frame mounted coulter fork mount.

Slotted holes in the frame mounted coulter fork mount and in the disc furrower arm allow for vertical and horizontal adjustment. Blades can be adjusted so the front edges meet or one blade can be moved to the rear and the other to the front of the slot so the cutting edge of one blade overlaps the edge of the other blade.

56314-17a



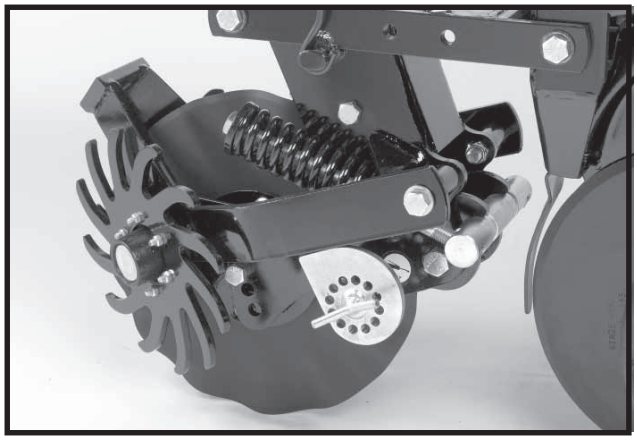
Initial setting for each disc furrower blade is 1 3/4" shallower than the coulter blade. Further adjustment may be desired for various applications.

NOTE: The depth control bar should always be used when the frame mounted coulter is equipped with disc furrowers.

RESIDUE WHEELS
(For Use With Style B Frame Mounted Coulter)

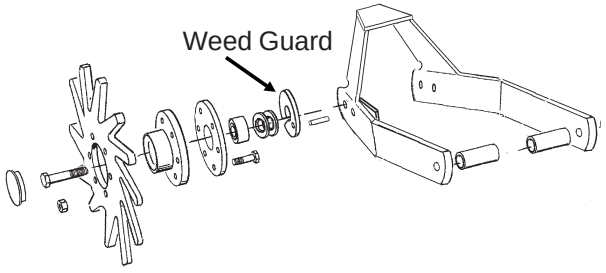
The residue wheels for use with the frame mounted coulter may be used on pull row units only.

LF083002102



The residue wheels are attached to the frame mounted coulter with two cap screws and sleeves allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in 1/4" increments. A high point on the cam allows the wheels to be locked up so they do not contact the ground. A weed guard, located on the inboard side of each wheel, aids in the prevention of weed wrap which can cause premature bearing failure.

(RU135d)



NOTE: Opening in weed guard must point down.

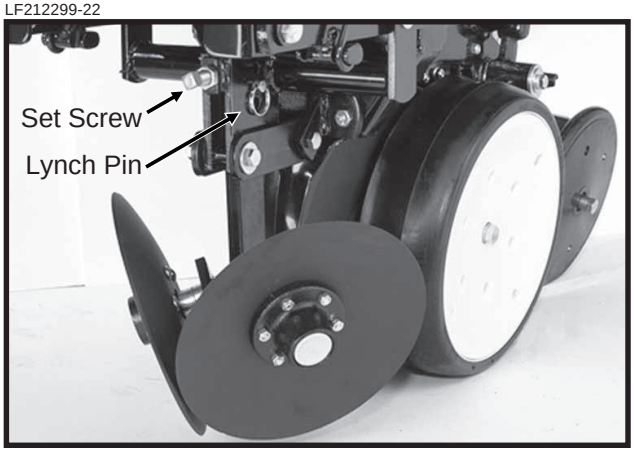
ROW UNIT OPERATION

ROW UNIT MOUNTED DISC FURROWER

The row unit mounted disc furrower is for use on pull row units only (not compatible with Interplant® push row units). The disc furrower may be equipped with either 12" solid blades or 12" notched blades.

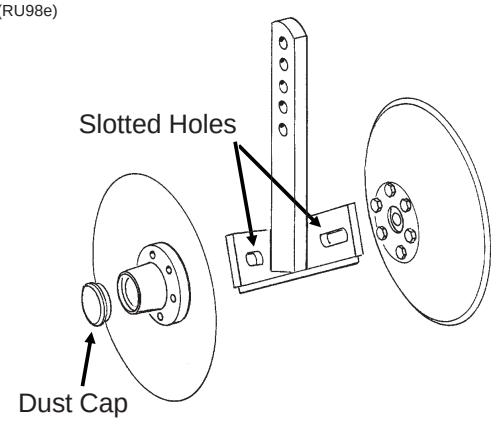
Disc furrowers are used to clear crop residue, dirt clods and dry soil from in front of the row units for a clean and smooth seed bed. Notched blades are used for heavier residue conditions. The notched blades cut crop residue and move it aside to prevent plugging or pushing.

LF212299-22



Vertical adjustment in 1/3" increments is possible by removing the lynch pin which secures the vertical support arm and moving the support arm up or down as required. Re-install lynch pin. Finer adjustment can be attained by removing the lynch pin and using the 5/8" x 2 1/4" set screw to clamp the support arm in the required position.

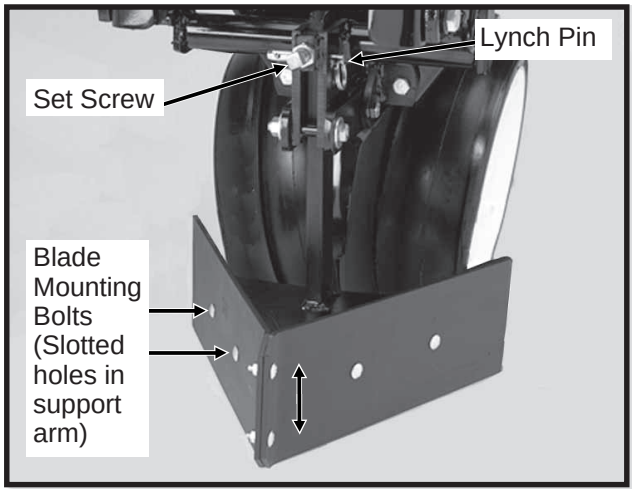
(RU98e)



Slotted holes in the support arm where the blades are mounted allow fore and aft adjustment of the disc blades. Blades can be adjusted so the front edges meet or one blade can be moved to the rear and the other to the front of the slot so the cutting edge of one blade overlaps the edge of the other blade. The dust cap must be removed to make these adjustments.

ROW UNIT MOUNTED BED LEVELER

LF212299-25a



Row unit mounted bed levelers may be used on pull row units only. They are not compatible with push row units.

Vertical adjustment in 1/3" increments is possible by removing the lynch pin which secures the vertical support arm and moving the support arm up or down as required. Re-install lynch pin. Finer adjustment can be attained by removing the lynch pin and using the 5/8" x 2 1/4" set screw to clamp the support arm in the required position.

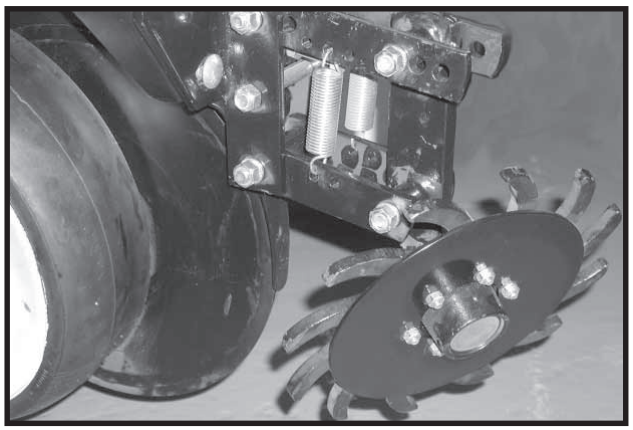
Slotted holes in the support arm where the blades are mounted allow tilting of the blades. The blades can be tilted up or down at the front for desired adjustment.

NOTE: The row unit mounted bed leveler is not compatible with row spacings less than 36".

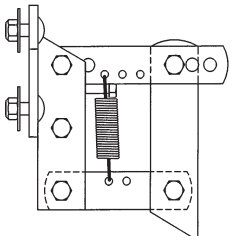
ROW UNIT MOUNTED RESIDUE WHEEL

The row unit mounted residue wheel may be used on pull row units and push row units.

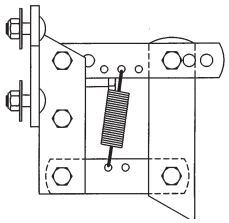
D101701113



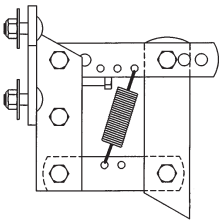
Two adjustable springs on the parallel links on each residue wheel allow for down force adjustment. Position 1 as shown below provides minimum down pressure and position 3 maximum down pressure.



Position 1 *(Minimum)*(PLTR31a)



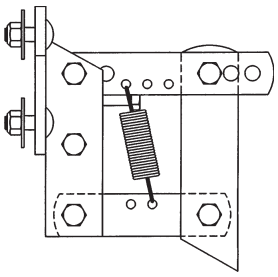
Position 2 (PLTR32a)



Position 3 *(Maximum)*(PLTR33a)

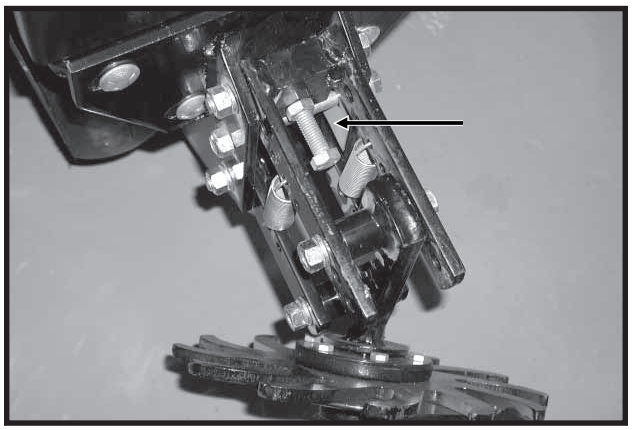
For additional uplift or float, position springs as shown below.

(PLTR34a)



To adjust down force springs, raise the row unit out of the ground and reposition springs as shown for the desired down pressure.

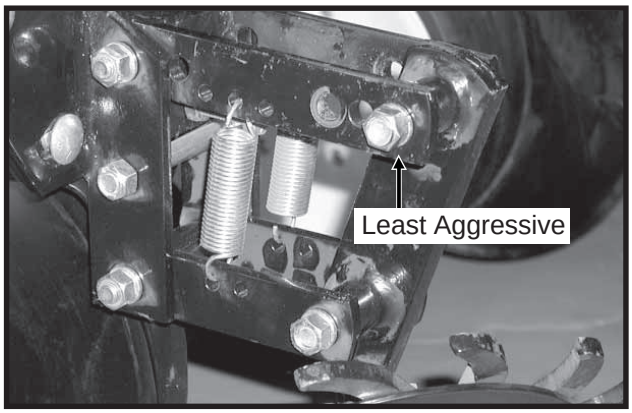
D101701112



A full threaded bolt and jam nut located on the upper link allows maximum depth to be set for loose soil conditions. Initial setting should be 1 3/4" above the depth of the row unit double disc opener.

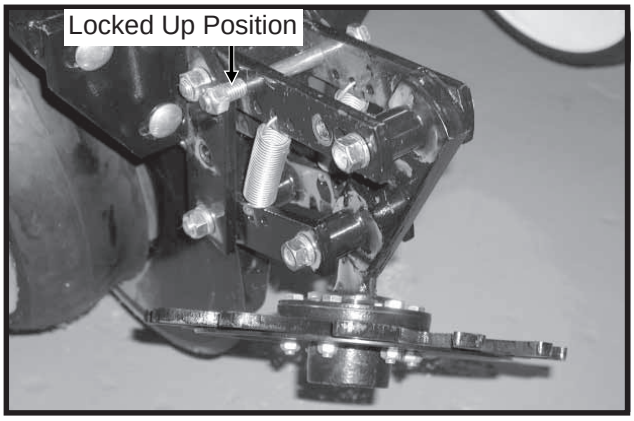
Three holes in the upper link allow for wheel angle adjustment. With the wheel mount in the most vertical position, using the rear hole in the upper link, the residue wheel is most aggressive. Moving the wheel mount to one of the forward holes reduces the aggressiveness of the wheel for use in mulch till applications where the soil is loose.

D101701202



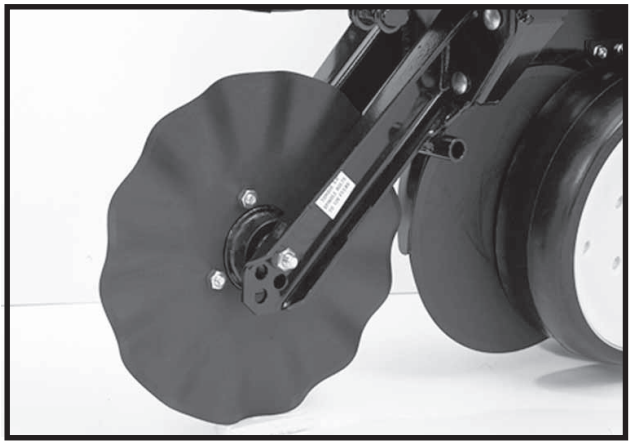
To lock the residue wheel up out of the ground, remove the 1/2" x 5" lockup bolt, raise the residue wheel and install bolt.

D011701203



ROW UNIT MOUNTED NO TILL COULTER

LF212299-19a



Row unit mounted no till coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units and push row units. (3/4" fluted shown)

Four quick adjustable down force springs are required per row when using row unit mounted no till coulters. See “Quick Adjustable Down Force Springs”.

For proper operation, the coulter blade should be aligned in relation to the row unit double disc openers. The coulter assembly can be adjusted by loosening the four attaching bolts, moving coulter arm to align and tightening the four attaching bolts.

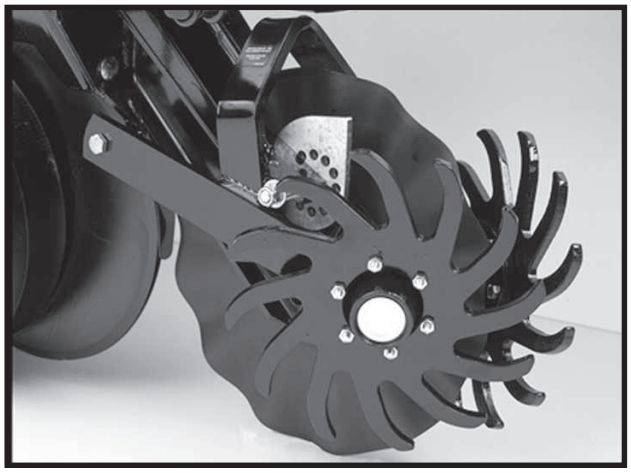
The coulter blade can be adjusted to one of four 1/2" incremental settings in the forked arm. Initial location of the coulter is in the top hole. As the coulter blade wears, the blade should be adjusted downward to one of the three lower settings to maintain the coulter blade at or slightly below the opener discs. In very hard soil conditions such as compacted wheel tracks, opener penetration and cutting of surface residue may be improved by adjusting the coulter to operate below the depth of the double disc opener blades.

Operating depth can be checked by setting the planter down on a level concrete floor and checking the relationship between the coulter blade and row unit opener blade. Make sure the planter is level and coulter is square with the planter frame and aligned with the row unit disc opener.

NOTE: Torque 5/8" spindle bolts to 120 ft. lbs.

COULTER MOUNTED RESIDUE WHEELS

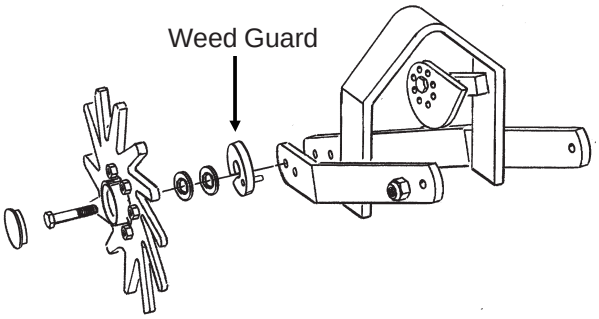
LF212299-23



Coulter mounted residue wheels are designed for use on pull row units and push row units. Row unit extension brackets are required on all the pull row units if the planter is equipped with coulter mounted residue wheels and HD single disc fertilizer openers.

The coulter mounted residue wheels are attached to the row unit mounted no till coulter with one cap screw and sleeve allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in 1/4" increments. A high point on the cam allows the wheels to be locked up so they do not contact the ground. A weed guard, located on the inboard side of each wheel, aids in the prevention of weed wrap which can cause premature bearing failure.

(RU104n)



NOTE: Opening in weed guard must point down.

GRANULAR CHEMICAL HOPPER AND DRIVE

LF212299-6

The granular chemical hopper has a 1.4 cubic feet capacity.

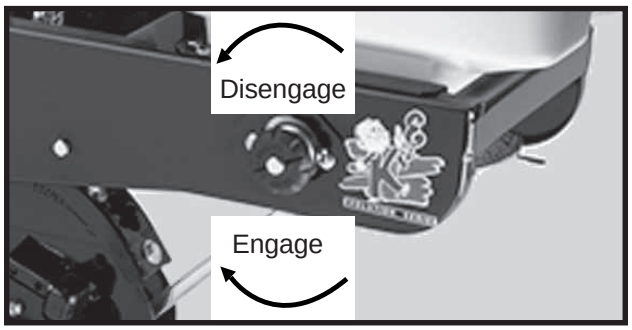
Be sure no foreign objects get into the hopper when it is being filled. Replace the hopper lids after filling the hoppers to prevent the accumulation of dirt and moisture.

The metering gate located on the bottom of the hopper regulates the application rate. See “Dry Insecticide And Dry Herbicide Application Rate Charts” in this manual. Calibrate using the chemical manufacturers' instructions.

WARNING: Agricultural chemicals can be dangerous. Improper selection or use can seriously injure persons, animals, plants, soil or other property. BE SAFE: Select the right chemical for the job. Handle it with care. Follow the instructions on the container label.

The granular chemical clutch drive coupler and meter shaft can be disengaged and engaged by turning the throwout knob located at the rear of the hopper support panel. To engage the drive, turn the knob 1/4 turn clockwise. To disengage the drive, turn the knob 1/4 turn counterclockwise. Slotted holes in the hopper support panel and clutch housing allow for alignment adjustment between the clutch drive coupler and meter shaft.

LF212299-4



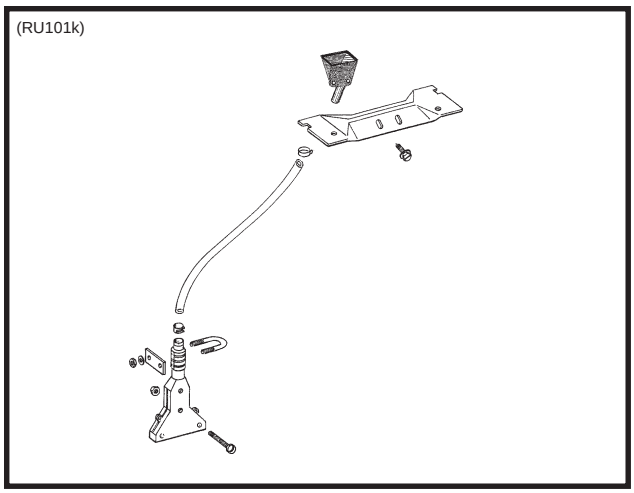
ROW UNIT OPERATION

GRANULAR CHEMICAL BANDING OPTIONS

Granular chemical banding options allow 4 1/2" slope-compensating banding, straight drop in-furrow placement or 14" rear banding.

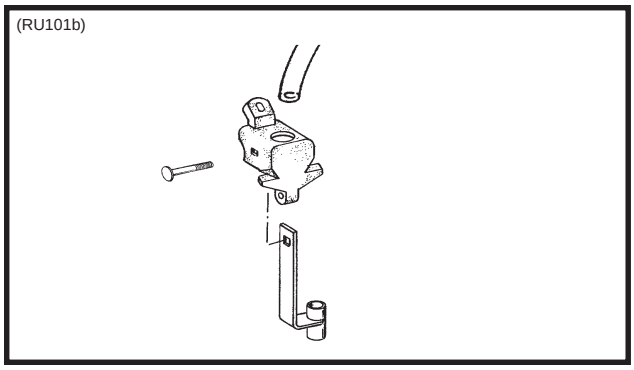
NOTE: The granular chemical rear bander is not compatible with the covering discs/single press wheel option.

(RU101k)



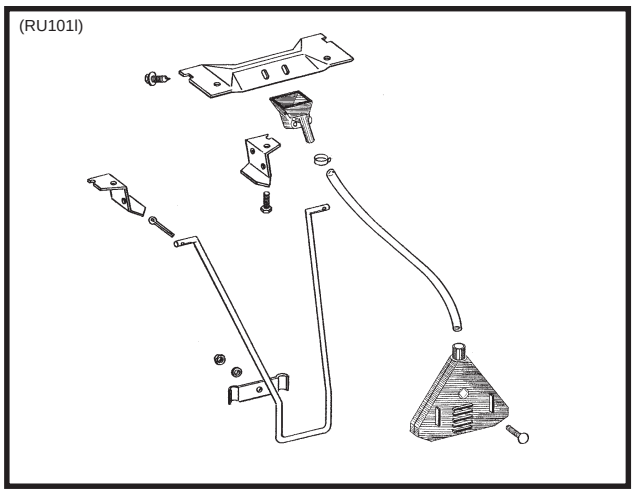
4 1/2" Slope-Compensating Bander

(RU101b)



Straight Drop In-Furrow Placement

(RU101l)



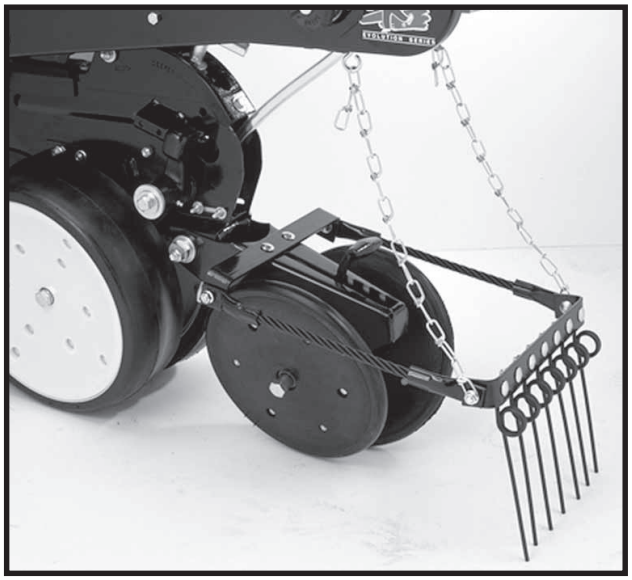
14" Rear Banding

SPRING TOOTH INCORPORATOR

The spring tooth incorporator smoothes the soil behind the row unit and incorporates granular chemicals. The two mounting chains on each spring tooth incorporator should be adjusted so there is approximately 1/8" slack in the chain when the unit is lowered to planting position.

NOTE: The spring tooth incorporator is not compatible with the covering discs/single press wheel option.

LF212299-26

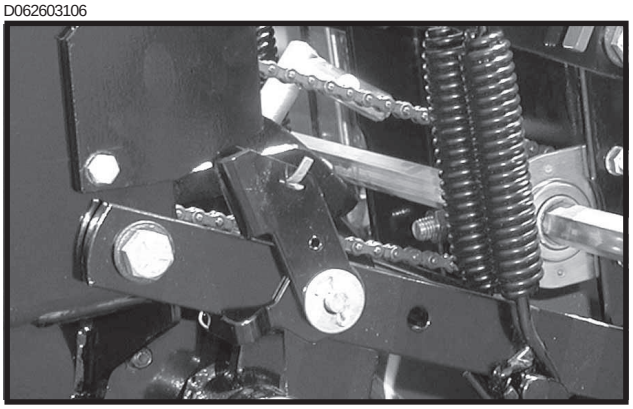


INTERPLANT® PUSH ROW UNIT LOCK-UPS

Push row unit lockups are designed to allow the push row units to be locked in the raised position.

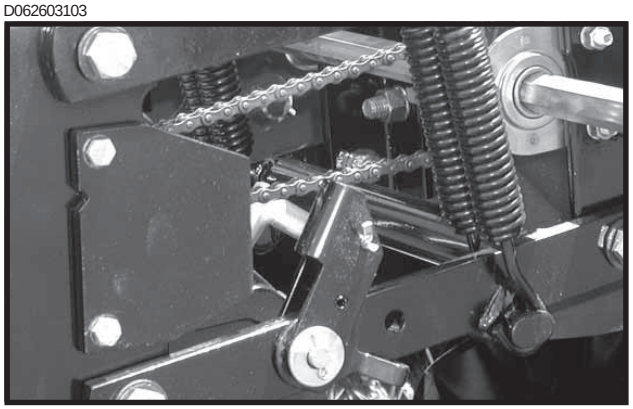
WARNING: Always install all safety lock-ups or lower planter to the ground before working under or around the machine.

D062603106



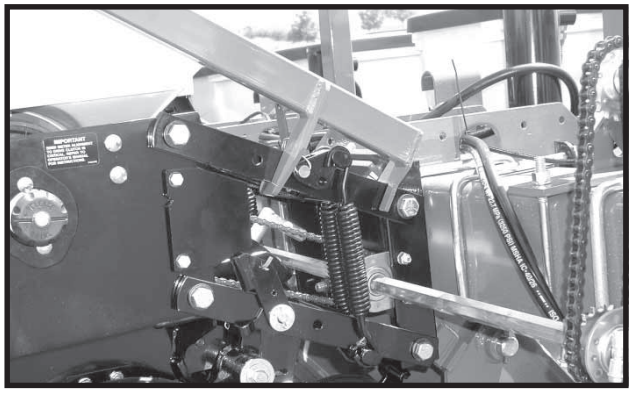
Push Row Unit Locked In Raised Position

D062603103



Lockup Released For Field Operation

D062603106

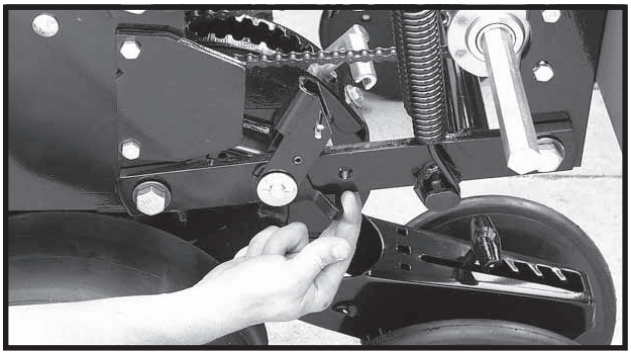


Lift Lever Positioned To Lift Push Row Unit

To lock in raised position:

1. Set row unit down pressure springs to minimum setting.
2. Lower the planter to the planting position.
3. Empty seed hoppers.
4. On each push row unit lockup, flip the spring tab forward.

D060499108

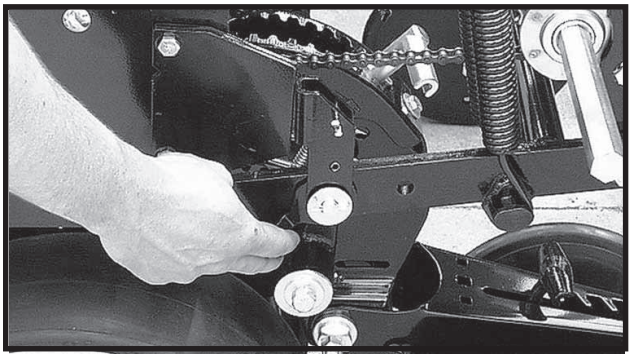


5. Using the lift lever, raise the push row unit to allow the spring loaded lockups to snap into locked position under the row unit stops.
6. Repeat Steps 4 and 5 on remaining push row units.

To release lockups:

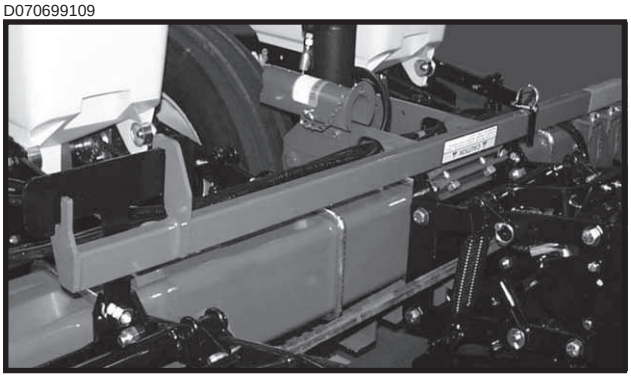
1. Lower the planter to the planting position.
2. On each push row unit lockup, flip the spring tab rearward.

D060499107



3. Using the lift lever, raise the push row unit to allow the spring loaded lockups to snap out of locked position. Lower row unit to the ground.
4. Repeat Step 3 on remaining push row units.

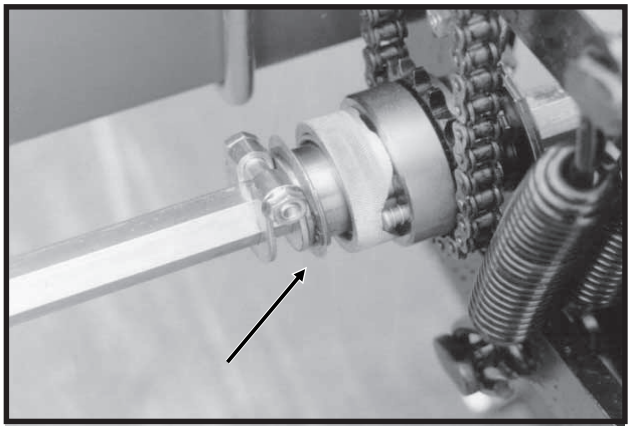
D070699109



Lift Lever In Storage Location

INTERPLANT® PUSH ROW UNIT CLUTCH SPROCKET

06309716



The push row unit clutch sprocket is designed to allow the push row unit drill shaft to be disengaged when only the pull row units are being used.

To disengage the push row unit drill shaft using the clutch sprocket, rotate the knurled collar on the clutch sprocket 1/4 turn. Then using a 7/8" wrench on the drill shaft, rock the drill shaft slightly to take pressure off of the spring loaded pins in the clutch to allow the pins to “pop” out, disengaging the drive. To engage the drive, rotate the knurled collar 1/4 turn and turn the drill shaft with a 7/8" wrench until the drive pins engage the drive sprocket.

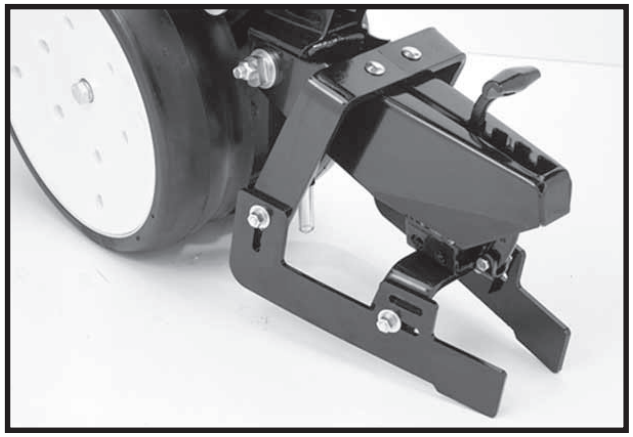
WARNING: Always install all safety lock-ups or lower planter to the ground before working under or around the machine.

CLOSING WHEEL TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Closing wheel(s) leave severe imprint in soil.	Too much closing wheel down pressure.	Adjust closing wheel pressure.
Closing wheel(s) not firming soil around seed.	Insufficient closing wheel down pressure.	Adjust closing wheel pressure. Severe no till conditions may require use of cast iron closing wheels.
"V" closing wheel running on top of seed furrow.	Improper centering.	Align. See "V Closing Wheel Adjustment".
Single closing wheel not directly over seed.	Improper centering.	Align. See "Covering Discs/Single Press Wheel Adjustment".

DRAG CLOSING ATTACHMENT

LF212299-18



Prior to storage of the planter, inspect each drag closing attachment and replace any worn or broken parts. Check for loose hardware and tighten as needed.

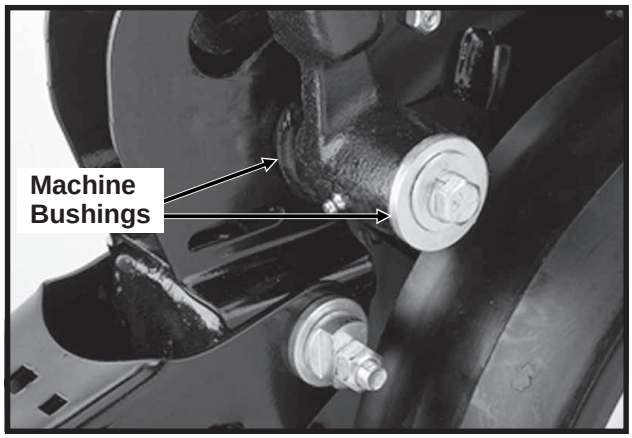
GAUGE WHEEL ADJUSTMENT

To prevent an accumulation of dirt or trash, gauge wheels should lightly contact the opener blades. Gauge wheels and opener blades should turn with only slight resistance.

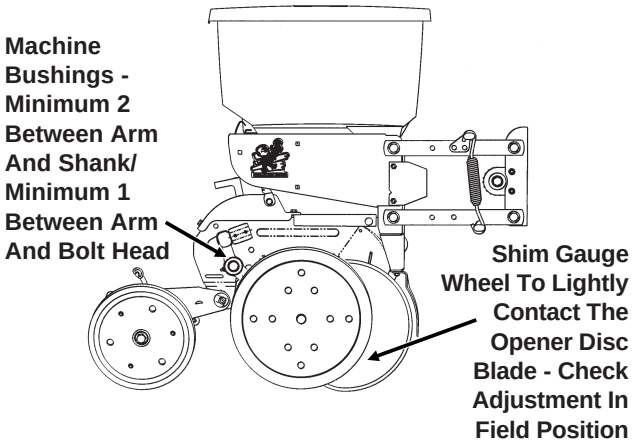
To adjust clearance between gauge wheels and opener blades, add or remove machine bushings between the shank and gauge wheel arm. Store remaining machine bushings between gauge wheel arm and flat washer on outer side of gauge wheel arm.

NOTE: It may be desirable to space gauge wheel further from blade when operating in sticky soils.

LF212199-2

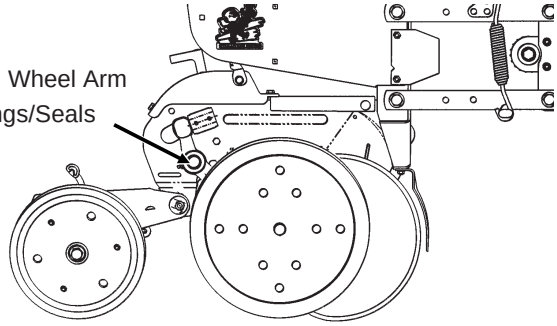


(RU113)



GAUGE WHEEL ARM BUSHING AND/OR SEAL REPLACEMENT

(RU113)

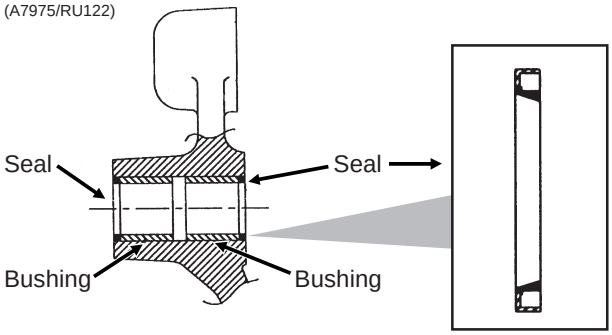


NOTE: A Gauge Wheel Arm Bushing And Seal Driver Kit (G1K296), for use in bushing and seal replacement, is available through your KINZE® Dealer.

To replace gauge wheel arm assembly bushing(s) and/or seal(s):

1. Remove gauge wheel from arm.
2. Remove the gauge wheel arm assembly from the shank assembly.
3. Remove seal and bushing and discard. Clean and dry inner bore.

(A7975/RU122)



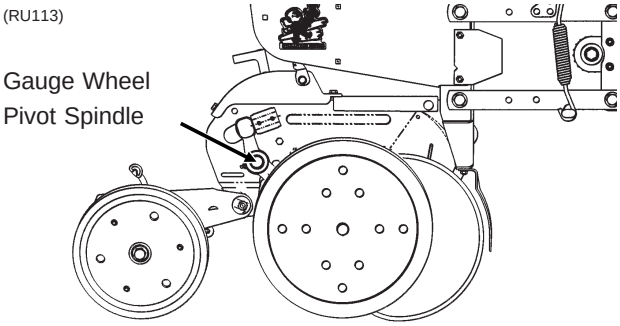
4. Drive/press replacement bushing inside bore of arm to a depth of .125" below flush.
5. Coat wiping edge of seal with grease.
6. Drive/press seal into place with lip to the outside as shown above.

   NOTE: Use extra care to protect the sealing lip during installation. Apply uniform pressure to assemble the seal into the bore of the arm. Never apply a direct hammer blow to the seal surface.

7. Inspect gauge wheel pivot spindle.
8. Reinstall gauge wheel arm assembly and gauge wheel.
   NOTE: Special machine bushing between gauge wheel arm and gauge wheel.
9. Shim for proper gauge wheel tire/disc blade clearance.
10. Lubricate with an SAE multipurpose type grease.

GAUGE WHEEL ARM PIVOT SPINDLE REPLACEMENT

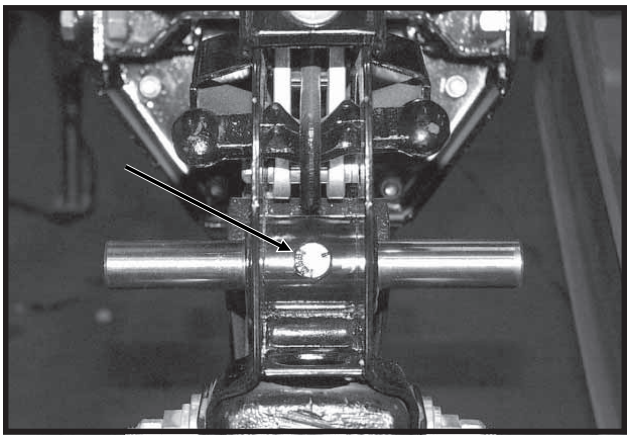
(RU113)



To replace gauge wheel pivot spindle:

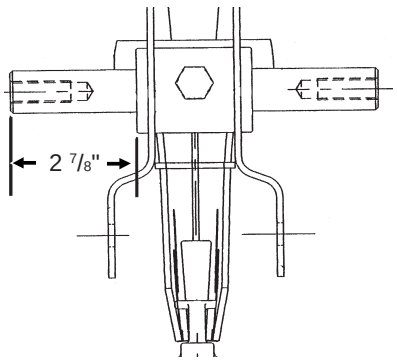
1. Remove the gauge wheel and arm assemblies from the shank assembly.
2. Remove 1/2" x 3/4" cap screw that locks the pivot spindle in place and remove the spindle.

D06189902



3. Install the replacement spindle and position as shown below. Exact centering is critical.

(A7966)



4. Install 1/2" x 3/4" cap screw and torque to lock pivot spindle in place.
5. Install gauge wheel and arm assemblies. Shim for proper gauge wheel tire/disc blade clearance.

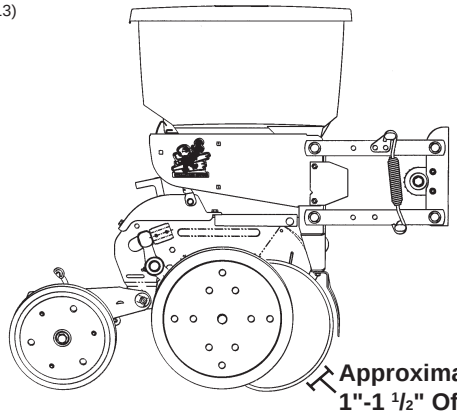
15" SEED OPENER DISC BLADE/ BEARING ASSEMBLY

Approximately 1"-1 1/2" of blade-to-blade contact should be maintained to properly open and form the seed trench. As the blade diameter decreases, due to wear, it will be necessary to relocate machine bushings from inside to outside to maintain approximately 1"-1 1/2" of contact.

NOTE: If proper blade-to-blade contact cannot be maintained after relocating machine bushings or if blade diameter wears below 14 1/2", the blade should be replaced.

IMPORTANT: Excessive blade contact may result in premature disc opener bearing/hub failures and excessive wear on seed tube guard/inner scraper. When properly adjusted, if one blade is held in fixed position, the opposite blade should be able to be rotated with minimal force (Less than 5 pounds force at outer edge of blade).

(RU113)



To replace disc blade/bearing assembly:

1. Remove gauge wheel.
2. Remove scraper.
3. Remove bearing dust cap.
4. Remove cap screw, washer and disc blade/bearing assembly. The machine bushings between the shank and disc blade are used to maintain the approximate 1"-1 1/2" of blade-to-blade contact.

IMPORTANT: Left hand side of opener uses a left hand threaded cap screw. DO NOT OVER TIGHTEN. Damage to shank threads will require replacement of row unit shank assembly.

5. Install machine bushing(s), new disc blade/bearing assembly, washer and cap screw. Torque 5/8"-11 Grade 5 cap screw to value shown in "Torque Values Chart".

   NOTE: Replace disc blade only with disc blade of equal thickness.

6. Replace bearing dust cap.
7. Install scraper.
8. Install gauge wheel.

It may be necessary to replace only the bearing if there is excessive endplay or if the bearing sounds or feels rough when the disc blade is rotated.

To replace bearing:

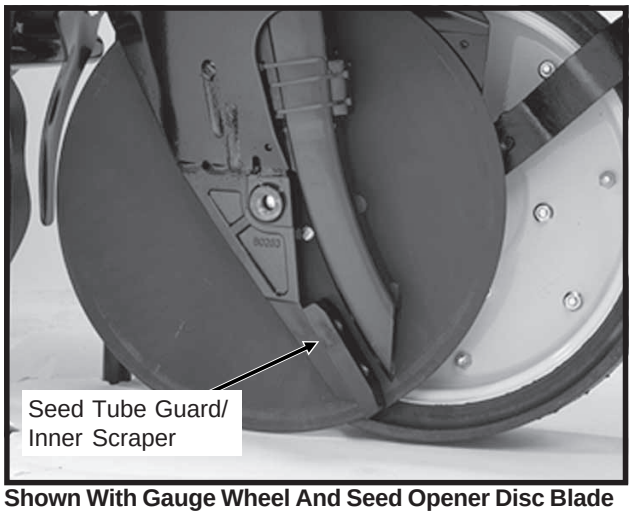
1. Remove gauge wheel, scraper, bearing cap, cap screw, washer and disc blade/bearing assembly.
2. Remove 1/4" rivets from bearing housing to expose bearing.
3. After installing new bearing, install three evenly spaced 1/4" cap screws into three of the six holes in the bearing housing to hold the bearing and bearing housing in place. Install rivets in the other three holes. Remove 1/4" cap screws and install rivets in those three holes.
4. Reinstall disc blade/bearing assembly, washer and cap screw. Torque 5/8"-11 cap screw to value shown in "Torque Values Chart" at the beginning of this section.
5. Replace bearing dust cap.
6. Install scraper and gauge wheel.

SEED TUBE GUARD/INNER SCRAPER

The seed tube guard protects the seed tube and acts as the inner scraper for the seed opener disc blades.

Remove the seed tube and check for wear. Excessive wear on the seed tube indicates a worn seed tube guard. Replace the seed tube guard if it measures 5/8" or less at the lower end. A new seed tube guard measures approximately 7/8".

LF212199-12



Shown With Gauge Wheel And Seed Opener Disc Blade Removed For Visual Clarity

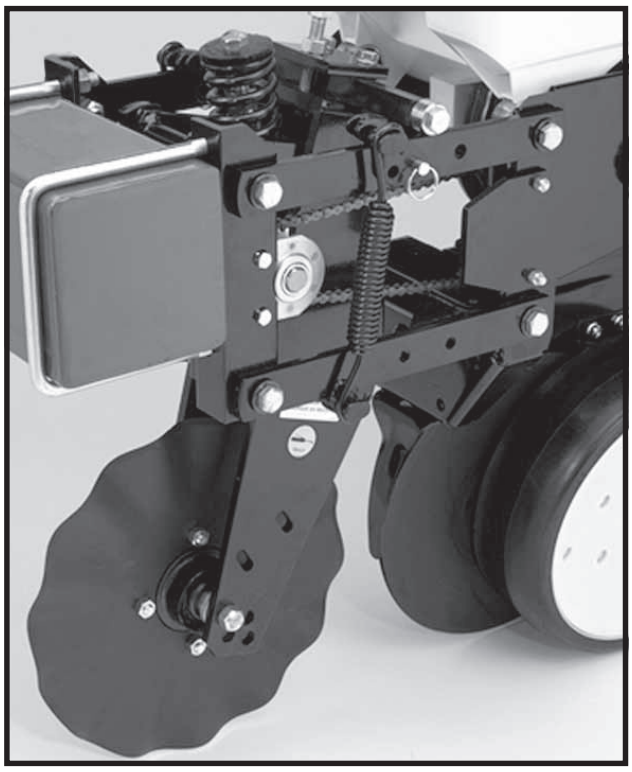
IMPORTANT: No till planting or planting in hard ground conditions, especially when the planter is not equipped with no till coulters, and/or excessive blade-to-blade contact will increase seed tube guard wear and necessitate more frequent inspection and/or replacement.

To replace the seed tube guard, remove the seed tube and the two hex socket head cap screws which attach the seed tube guard. Hold the replacement seed tube guard centered between the seed opener disc blades. Install, but DO NOT tighten, the hex socket head cap screws. Using a clamp or vise-grip, squeeze the opener blades together in front of the seed tube guard. Tighten the seed tube guard retaining screws. Remove the clamps. The distance between the seed tube guard and opener blades should be equal on both sides. Reinstall seed tube.

IMPORTANT: Over tightening the hex socket head cap screws may damage the threads in the shank and require replacement of the shank. A seed tube guard that is worn excessively may allow the blades to wear into the row unit shank, also requiring replacement of the shank.

FRAME MOUNTED COULTER - STYLE A

LF212299-20



If properly maintained and lubricated (If Applicable) the bearings in the frame mounted coulter hub may never need to be replaced. Lubricate (If Applicable) at frequency indicated in the Lubrication Section of this manual. Check periodically to be sure nuts and hardware are tightened to proper torque specification. Be sure the coulter is positioned square with the planter frame and aligned in front of row unit disc opener.

NOTE: Torque 5/8" spindle bolts to 120 ft. lbs.

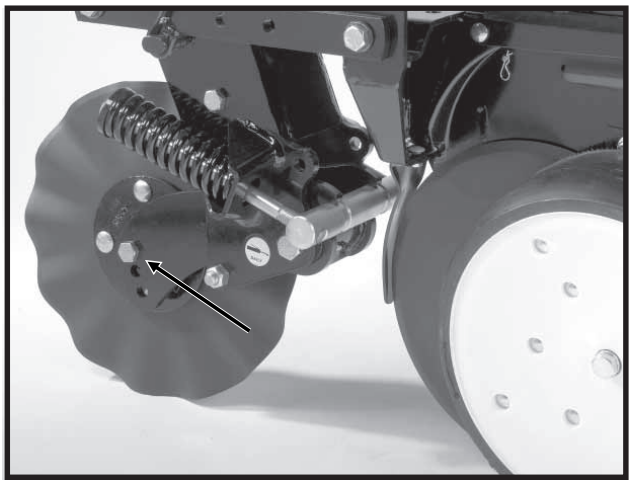
See “Frame Mounted Coulter” in Row Unit Operation Section of this manual for depth and spring adjustment.

When the 16" diameter coulter blade (1" fluted, 1" bubbled or 3/4" fluted) is worn to 14 1/2" (maximum allowable wear), it should be replaced.

(If Applicable) Timely lubrication at the frequency indicated in the Lubrication Section of this manual is necessary to purge moisture and dirt from bearing and seal. This will also lubricate the seal. Add grease until it comes out around the seal.

FRAME MOUNTED COULTER - STYLE B

LF083002101



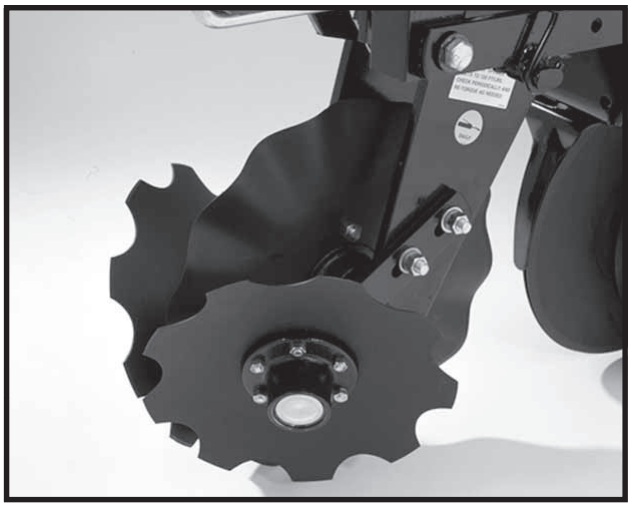
NOTE: Torque 5/8" spindle bolts to 120 ft. lbs.

See “Frame Mounted Coulter - Style B” in Row Unit Operation Section of this manual for depth and spring adjustment.

When the 16" diameter coulter blade (1" fluted, 1" bubbled or 3/4" fluted) is worn to 14 1/2" (maximum allowable wear), it should be replaced.

DISC FURROWER (For Use With Style A Frame Mounted Coulter)

LF212299-21

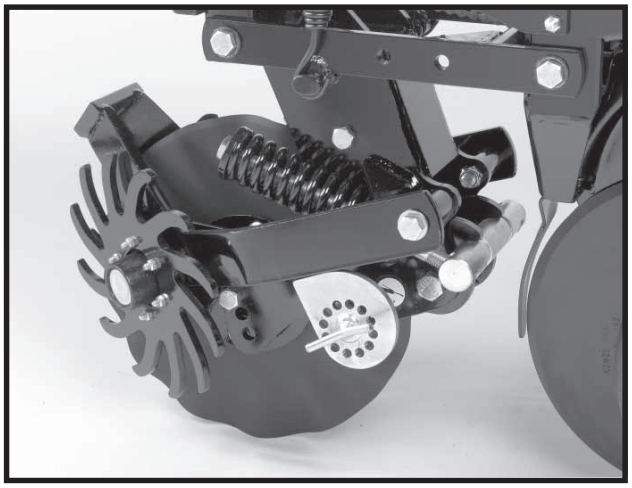


The blade hubs are equipped with sealed bearings. If a bearing sounds or feels rough when the blade is rotated, replace the bearing.

When the 12" diameter blades (solid or notched) are worn to 11", they should be replaced.

RESIDUE WHEELS (For Use With Style B Frame Mounted Coulter)

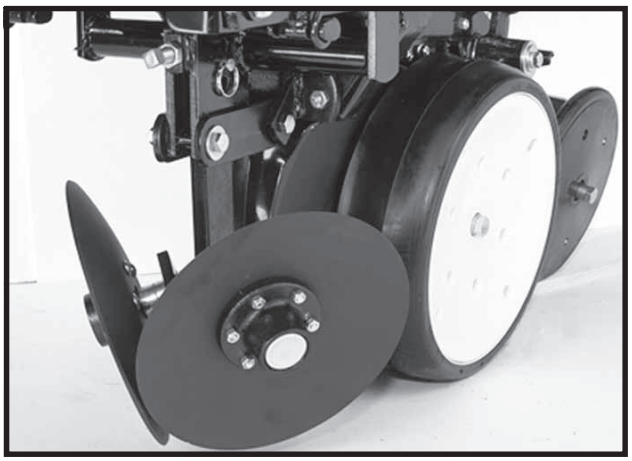
LF083002102



The wheel hub is equipped with sealed bearings. If a bearing sounds or feels rough when the blade is rotated, replace the bearing.

ROW UNIT MOUNTED DISC FURROWER

LF212299-22



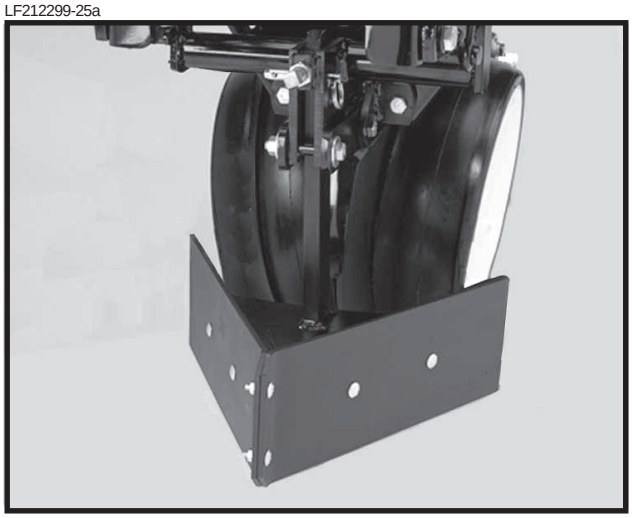
Lubricate the bushings in the support arm and mounting bracket at the frequency indicated in the Lubrication Section of this manual. Using a torque wrench, check each bolt for proper torque. If the bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushings as necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque bolts to 130 ft. lbs.**

The blade hubs are equipped with sealed bearings. If a bearing sounds or feels rough when the blade is rotated, replace the bearings.

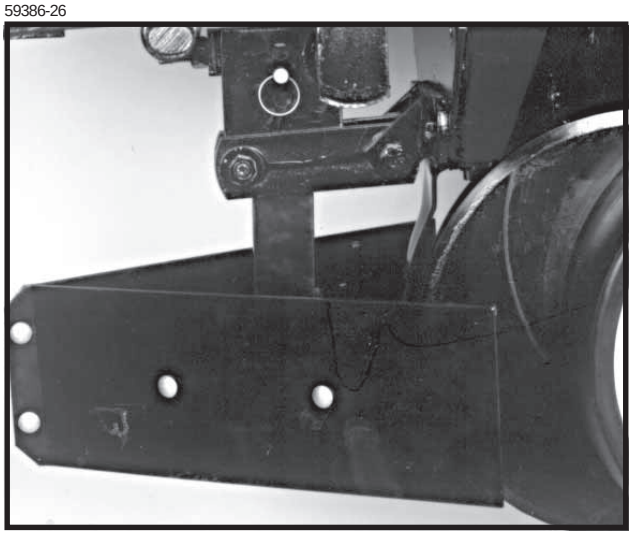
When the 12" diameter blades (solid or notched) are worn to 11", they should be replaced.

ROW UNIT MOUNTED BED LEVELER

LF212299-25a



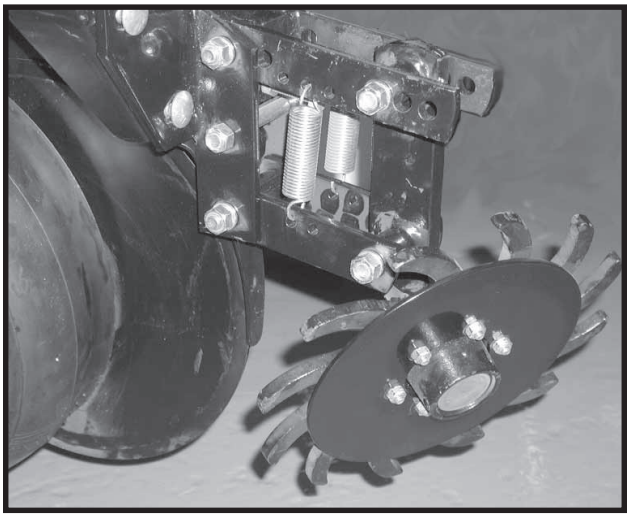
59386-26



Lubricate the bushings in the mounting bracket and links at the frequency indicated in the Lubrication Section of this manual. Using a torque wrench, check each bolt for proper torque. If the bolt is loose, it should be removed and the bushing inspected for cracks and wear. Replace bushing if necessary. **Only hardened flat washers should be used. Replace damaged flat washers with proper part. Torque bolts to 130 ft. lbs.**

ROW UNIT MOUNTED RESIDUE WHEEL

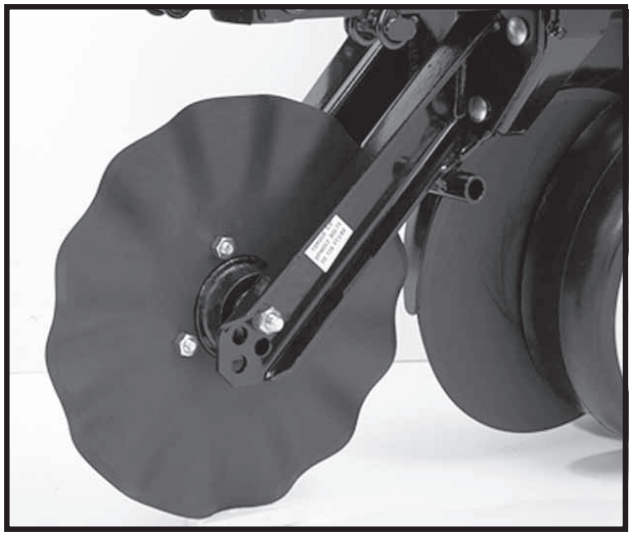
D101701113



The wheel hub is equipped with sealed bearings. If a bearing sounds or feels rough when the wheel is rotated, replace the bearing.

ROW UNIT MOUNTED NO TILL COULTER

LF212299-19a



Lubricate (If Applicable) at frequency indicated in the Lubrication Section of this manual. Check periodically to be sure nuts and hardware are tightened to proper torque specification.

NOTE: Torque 5/8" spindle bolts to 120 ft. lbs.

Be sure the coulter is positioned square with the row unit and aligned in front of row unit disc opener.

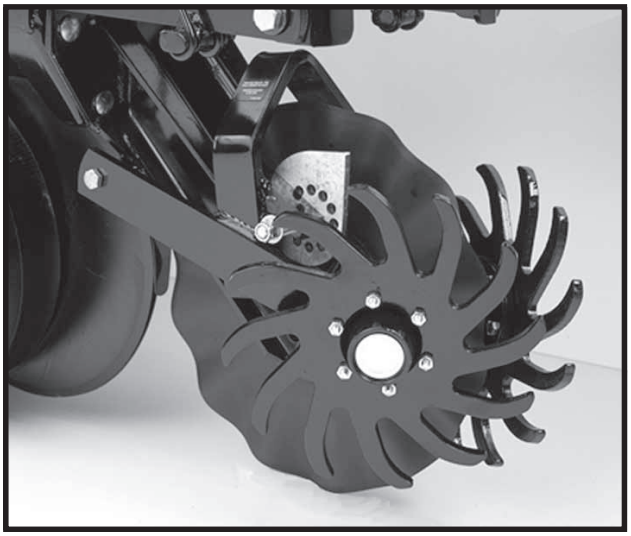
The coulter blade can be adjusted to one of four settings. Initially the blade is set in the highest position. As the blade wears it can be adjusted to one of the three lower settings. See "Row Unit Mounted No Till Coulter" in Row Unit Operation Section of this manual.

When the 16" diameter coulter blade is worn to 14 1/2" (maximum allowable wear), it should be replaced.

(If Applicable) Timely lubrication at the frequency indicated in the Lubrication Section of this manual is necessary to purge moisture and dirt from bearings and seals. This will also lubricate the seals. Add grease until it comes out around the seals. Spin hub while filling with grease.

COULTER MOUNTED RESIDUE WHEELS

LF212299-23



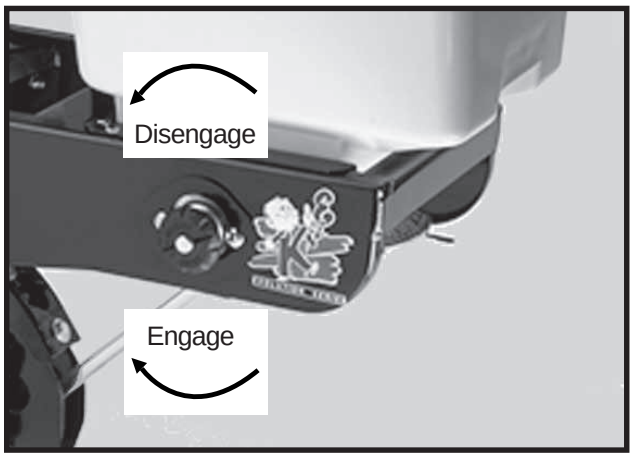
The wheel hubs are equipped with sealed bearings. If bearings sound or feel rough when the wheel is rotated, replace the bearings.

GRANULAR CHEMICAL ATTACHMENT

Prior to storage of the planter, disengage the granular chemical drive by rotating the throwout knob 1/4 turn counterclockwise. Remove the drive chain and empty and clean all granular chemical hoppers. Clean the drive chains and coat them with a rust preventive spray or submerge chains in oil. Inspect and replace any worn or broken parts.

Install hoppers and chains. Check chain alignment.

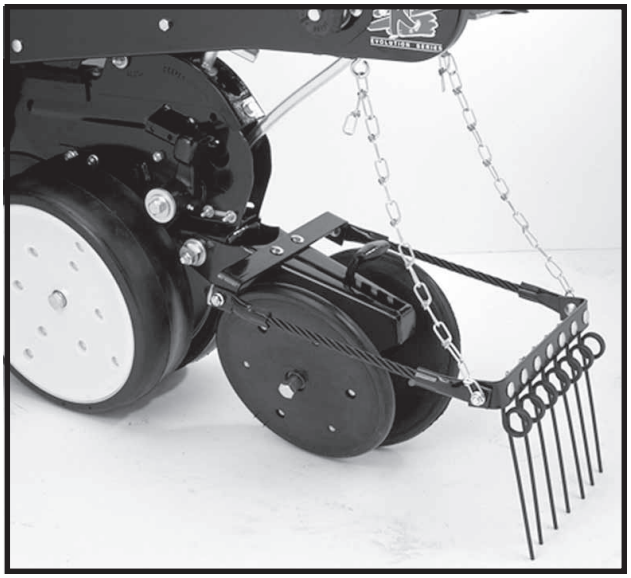
LF212299-4



SPRING TOOTH INCORPORATOR

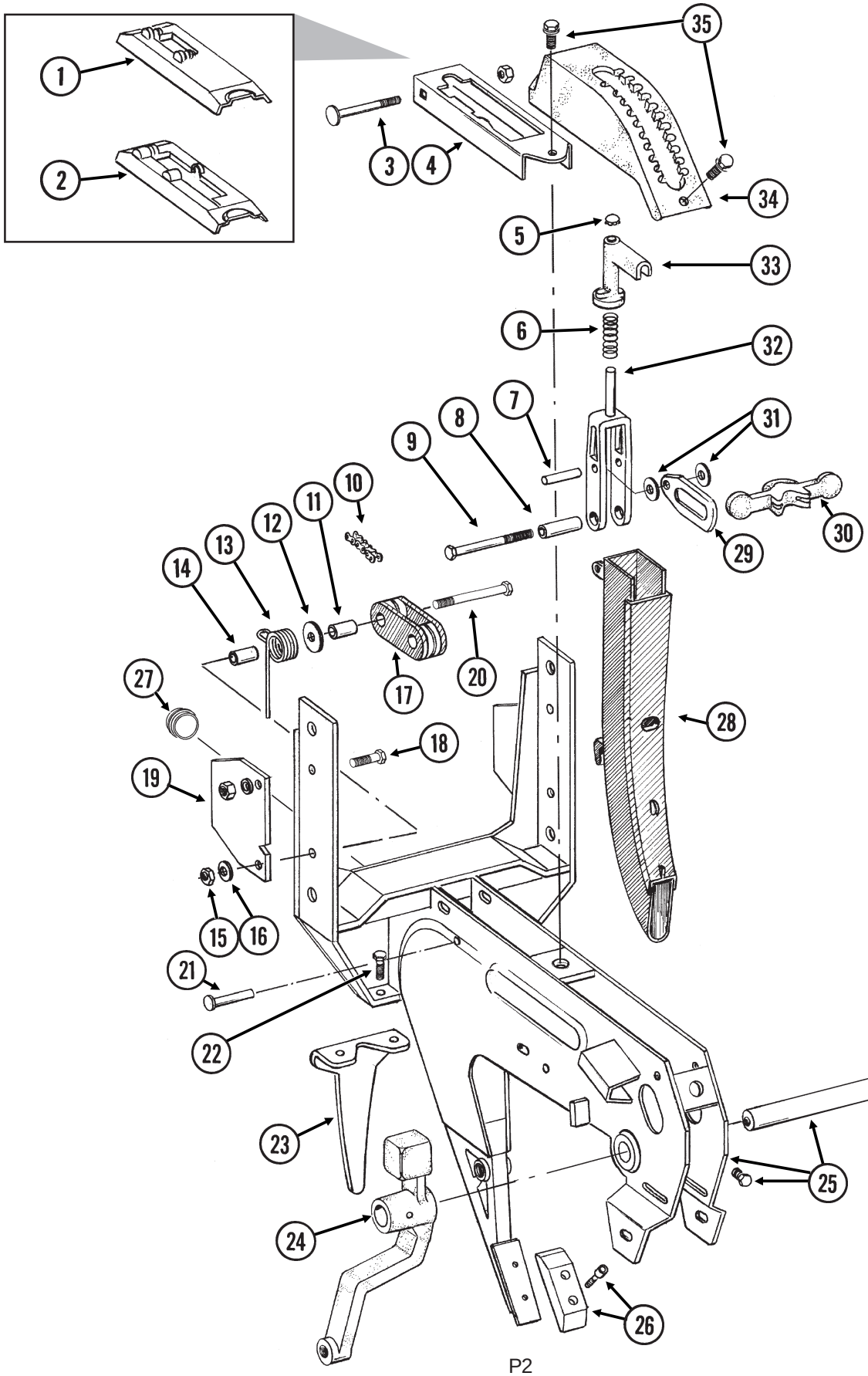
Prior to storage of the planter, inspect each spring tooth incorporator and replace any worn or broken parts. Check for loose hardware and tighten as needed.

LF212299-26



SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

RUB023/RUB024RUB022(RU80i)

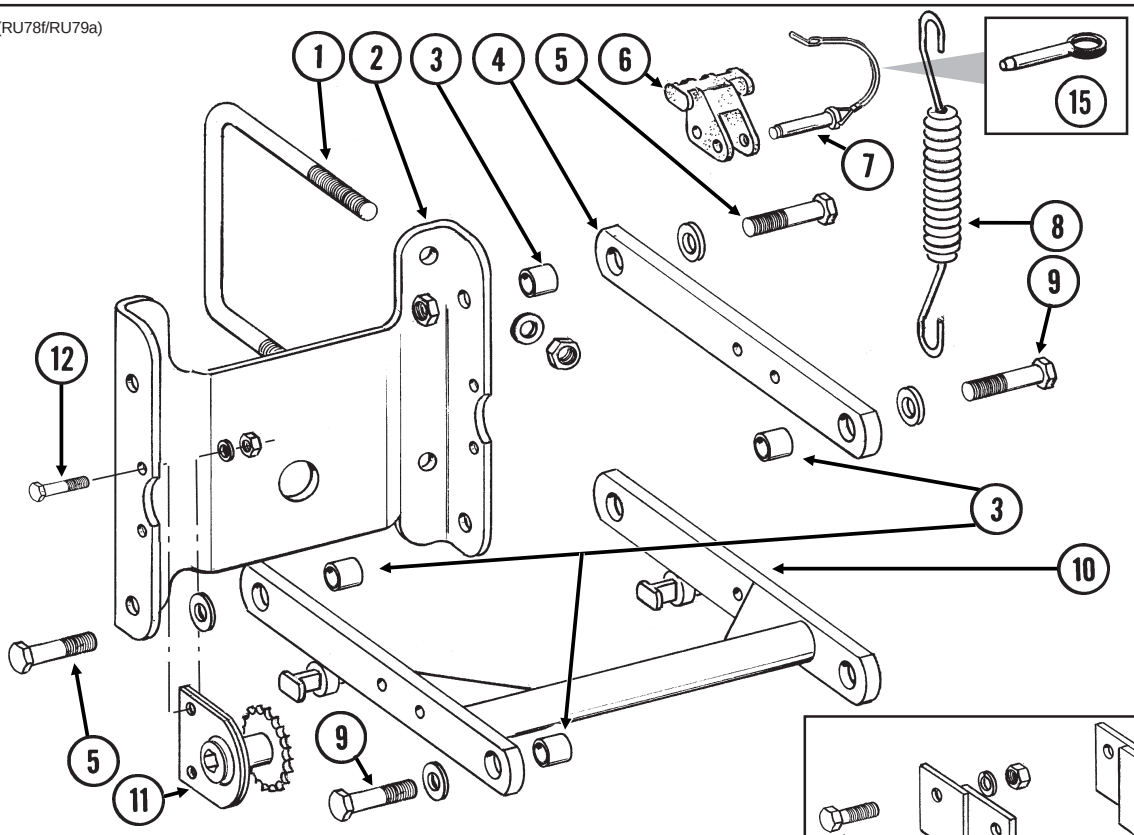


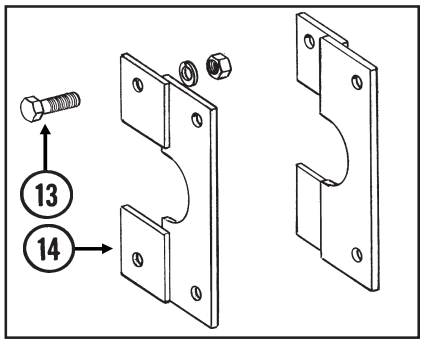
SHANK ASSEMBLY, SEED TUBE AND DEPTH ADJUSTMENT

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.		-	Shank Cover, See “Brush-Type Seed Meter”, Page P15
2.		-	Shank Cover, See “Finger Pickup Seed Meter”, Page P14
3.	G10304	1	Carriage Bolt, 3/8"-16 x 3"
	G10108	1	Lock Nut, 3/8"-16
4.	GD10986	1	Cover
5.	GD3612	1	Cap Plug
6.	GD10993	1	Spring
7.	GD13361	1	Pin, 3/8" x 1 2/3"
8.	GD11259	1	Sleeve, 3/8" I.D. x 5/8" O.D. x 1 25/32" Long
9.	G11008	1	Hex Head Cap Screw, 3/8"-24 x 2 1/2", Grade 8
	G11007	1	Lock Nut, 3/8"-24, Grade C
10.	G3303-98	1	Chain, No. 41, 98 Pitch Including Connector Link
	G3303-16	-	Chain, No. 41, 16 Pitch Including Connector Link (Used W/Row Unit Extension Brackets)
	GR0196	1	Connector Link, No. 41
11.	GD1026	1	Sleeve, 1 3/16" Long
12.	G10201	1	Special Washer, 3/8" x 1 1/2" O.D.
13.	GD1065	1	Idler Spring
14.	GD7318	1	Sleeve, 1" Long
15.	G10108	1	Lock Nut, 3/8"-16
16.	G10210	1	Washer, 3/8" USS
17.	GD11962	1	Idler
18.	G10003	3	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10108	3	Lock Nut, 3/8"-16
19.	GD10867	2	Stop
20.	G10326	1	Hex Head Cap Screw, 3/8"-16 x 3 3/4"
21.	G10551	1	Clevis Pin, 1/4" x 2 1/2"
	G10669	1	Hair Pin Clip, No. 22
22.	G10312	2	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	2	Flange Nut, 5/16"-18
23.	GD1033	1	Shield
24.		-	See “Gauge Wheels”, Pages P6 And P7
25.	GA7965	1	Shank W/Gauge Wheel Pivot Spindle And Set Screw
	GD11001	-	Spindle
	G10438	-	Hex Head Cap Screw, 1/2"-13 x 3/4"
26.		-	See “15" Seed Opener Disc Blade/Bearing Assembly And Scrapers”, Page P5
27.	GD11845	1	Dust Cap
28.	GD1130	-	Seed Tube (No Monitor) See “KPM I/KPM II Electronic Seed Monitor” For Seed Tube With Sensor, Pages P70 And P71 Or “KPM II Stack-Mode Electronic Seed Monitor” For Seed Tube With Sensor, Pages P72 And P73
29.	GB0285	1	Collar, Depth Adjustment
30.	GB0265	1	Pivot Link, Depth Adjustment
31.	G10207	2	Washer, 7/8" O.D. x 13/32" I.D. x .134" (If Applicable)
32.	GB0267	1	Lever, Depth Adjustment
33.	GB0266	1	Handle, Depth Adjustment
34.	GB0274	1	Cover, Depth Adjustment
35.	G11015	-	Hex Washer Head Cap Screw, 3/8"-16 x 1 1/4"

PARALLEL ARMS, MOUNTING SUPPORT PLATE AND QUICK ADJUSTABLE DOWN FORCE SPRINGS

RUB021/RUB022(RU78f/RU79a)

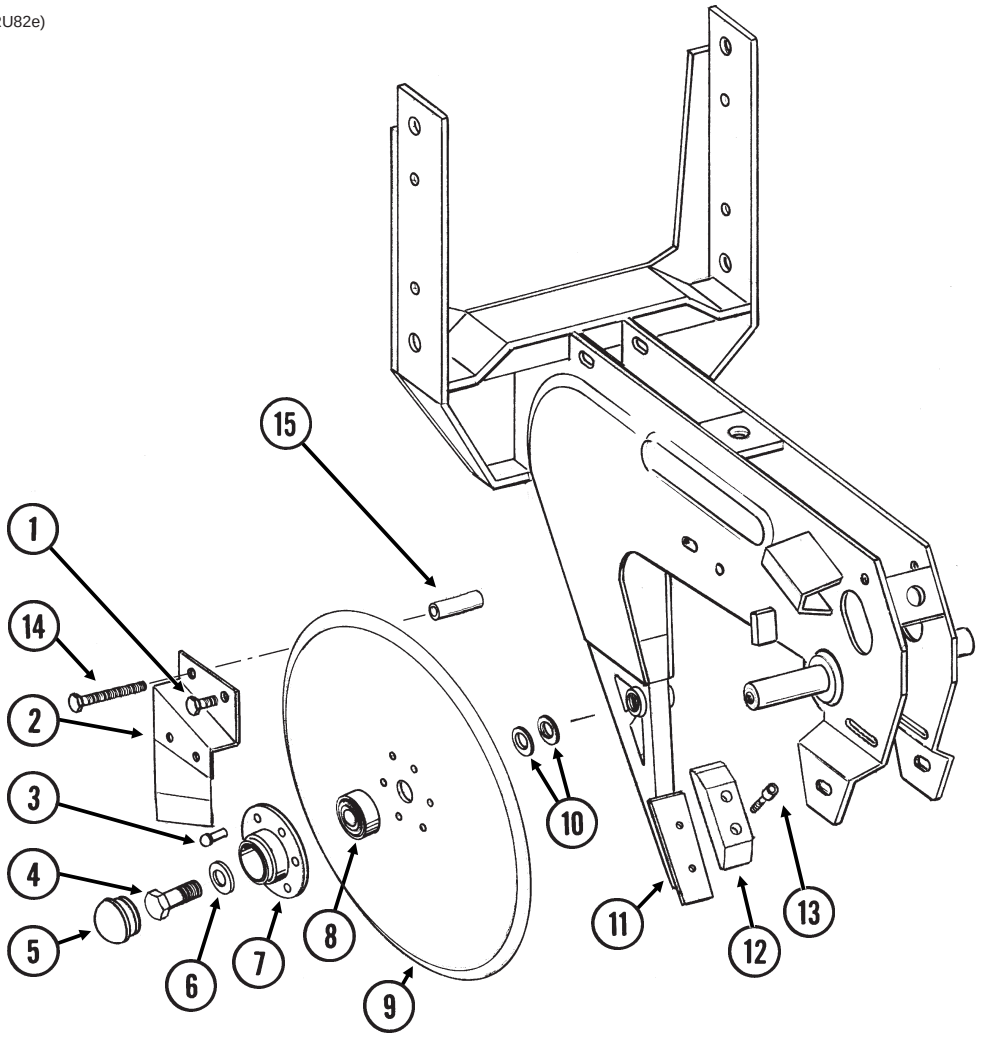




ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
2.	GD10036	1	Mounting Support Plate
3.	GB0218	4	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
4.	GD11422	2	Upper Parallel Arm
5.	G10732	4	Hex Head Cap Screw, 5/8"-18 x 2"
	GD7805	4	Special Washer, 5/8", Hardened
	G10412	4	Lock Nut, 5/8"-18
6.	GB0186	2	Spring Anchor
7.	GD14217	2	Tab Lock Pin, 7/16" x 1 1/2"
8.	GD8249	2-4	Spring
9.		-	See “Hopper Support And Meter Drive”, Page P12
10.	GA5651	1	Lower Parallel Arm
11.	GA1720	1	Bearing/Sprocket, 7/8" Hex Bore
12.	G10001	2	Hex Head Cap Screw, 3/8"-16 x 1"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
13.	G10007	4	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
14.	GA7410	2	Extension Bracket
15.	G10545	2	Detent Pin, 1/2" x 1 1/3" Grip
A.	G6326X	-	U-Bolt Package For 7" x 7" Toolbar, Includes: (2) GD1114, (4) G10230, (4) G10104

15" SEED OPENER DISC BLADE/BEARING ASSEMBLY AND SCRAPERS

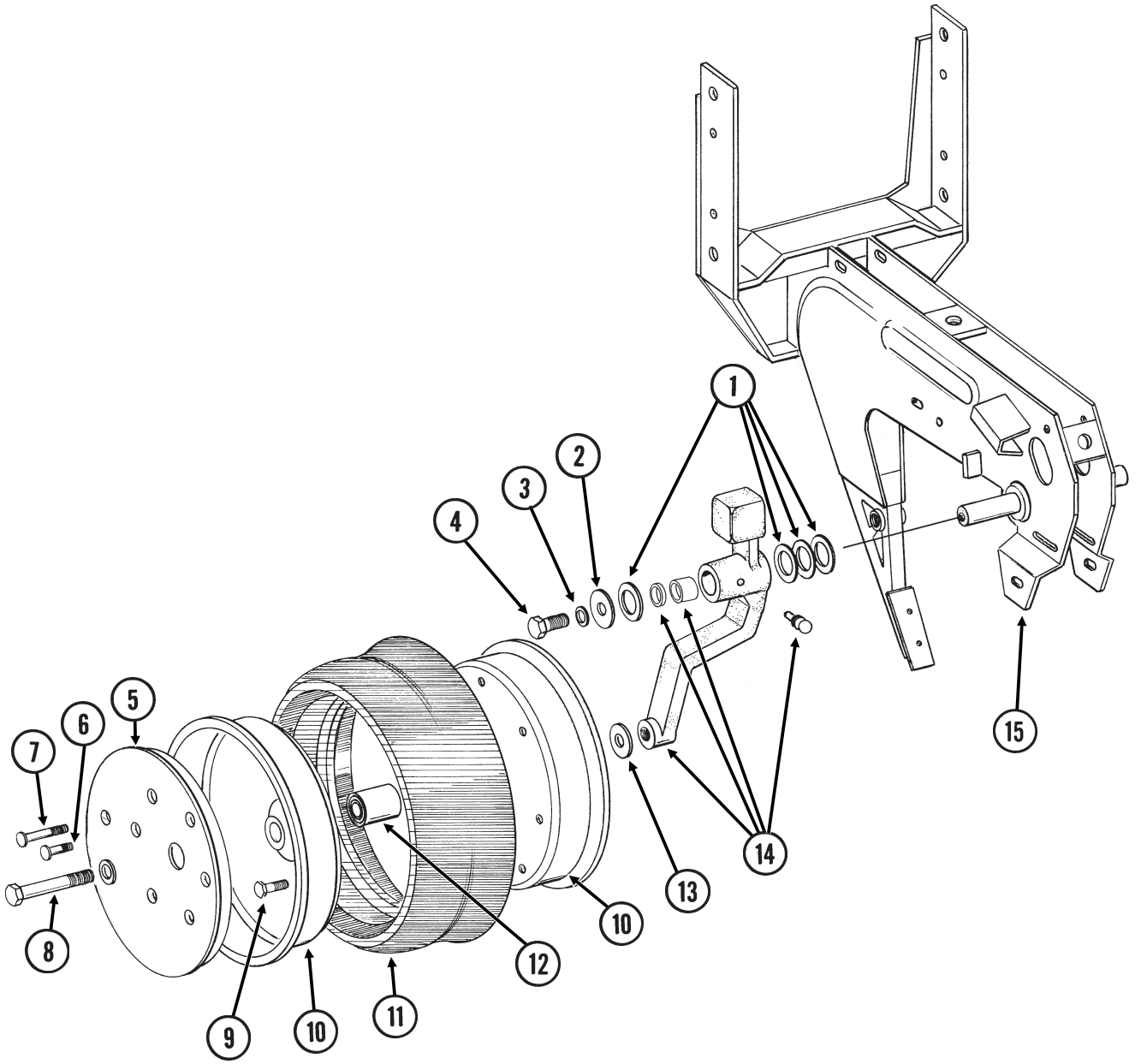
RUB023/RUB025(RU82e)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10328	2	Hex Head Cap Screw, 3/8"-16 x 5/8"
	G10622	2	Flange Nut, 3/8"-16
2.	GA2012R	1	Disc Scraper, R.H.
	GA2012L	-	Disc Scraper, L.H. (Shown)
3.	G10427	12	Rivet, 1/4" x 1/2"
4.	GD11017	1	Special Hex Head Cap Screw, 5/8"-11 x 1 1/2", L.H. Thread
	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
5.	GD11845	2	Dust Cap
6.	G10204	2	Special Machine Bushing, 5/8" x 1" O.D.
7.	GD10473	2	Bearing Housing
8.	GA2014	2	Bearing
9.	GD11306	2	Disc Blade, 3.5mm x 15"
10.	G10213	-	Machine Bushing, 5/8" (.030" Thick)(As Required)
11.		-	See “Shank Assembly”, Pages P2 And P3
12.	GB0301	1	Seed Tube Guard/Inner Scraper
13.	G10912	2	Hex Socket Head Cap Screw, 5/16"-18 x 1", Grade 8
14.	G10325	1	Hex Head Cap Screw, 3/8"-16 x 2 3/4"
	G10622	1	Flange Nut, 3/8"-16
15.	GD11259	1	Sleeve, 3/8" I.D. x 5/8" O.D. x 1 25/32" Long
A.	GA8324	-	Disc Blade/Bearing Assembly, Less Bearing Cap (Items 3 And 7-9)

GAUGE WHEELS

RUB027/RUB023(RU84a/RU84b)

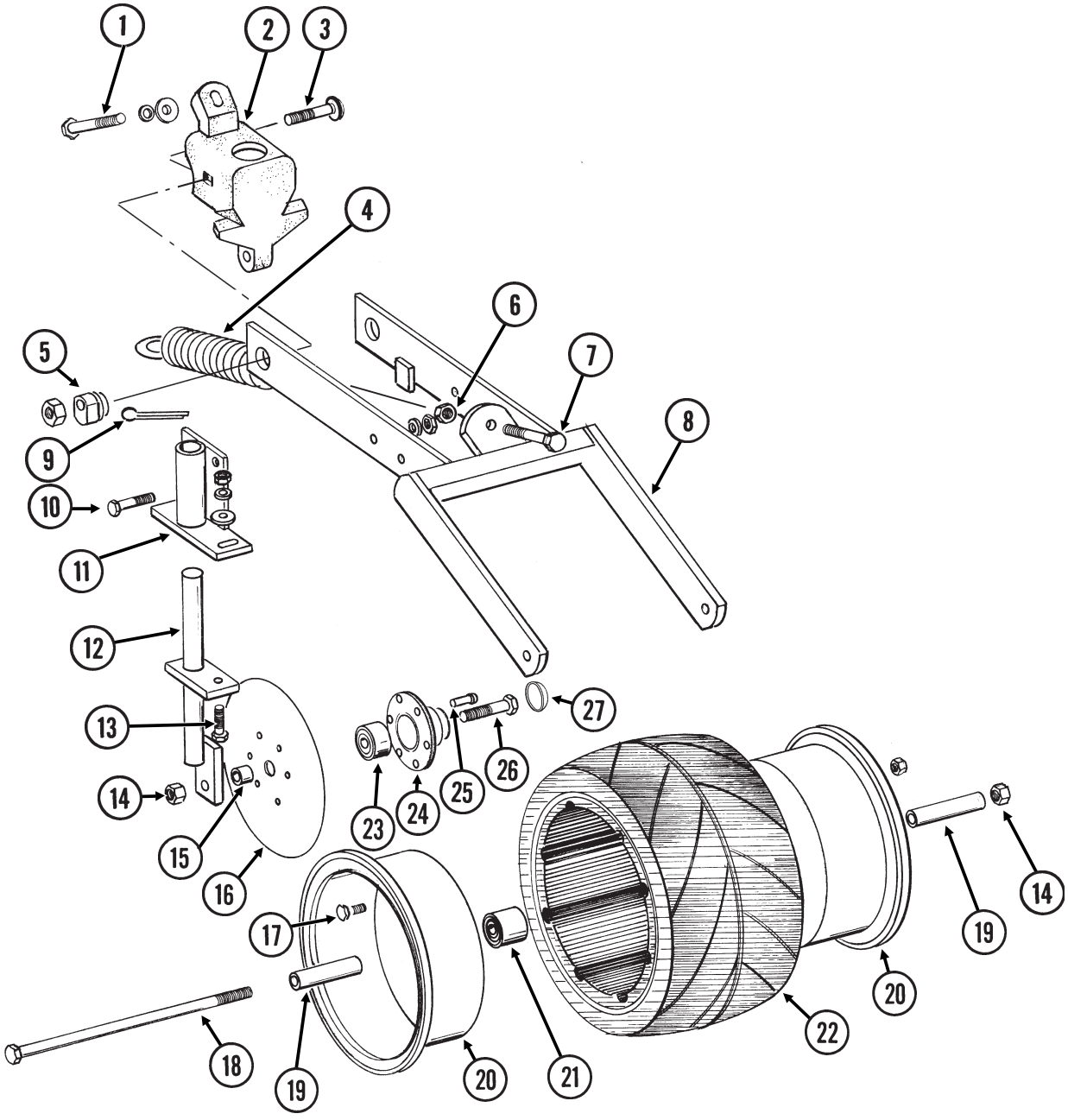


GAUGE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10940	-	Machine Bushing, 1" (.048" Thick)
2.	G10216	2	Washer, 1/2" USS
3.	G10228	2	Lock Washer, 1/2"
4.	G10014	1	Hex Head Cap Screw, 1/2"-13 x 1"
5.	GD11453	2	Cover
6.	G10338	12	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10620	12	Flange Nut, 5/16"-18
7.	G10924	8	Carriage Bolt, 5/16"-18 x 1 3/4"
	G10620	8	Flange Nut, 5/16"-18
8.	G10010	2	Hex Head Cap Screw, 5/8"-11 x 3"
	G10230	2	Lock Washer, 5/8"
9.	G10018	14	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	14	Lock Nut, 5/16"-18
10.	GD11423	4	Half Wheel
11.	GD1086	2	Tire
12.	GA6171	2	Bearing
13.	G10204	2	Special Machine Bushing, 5/8" x 1" O.D.
14.	GA7975	1	Wheel Arm W/Grease Fitting, Bushings And Seals, L.H. (Shown)
	GA7976	1	Wheel Arm W/Grease Fitting, Bushings And Seals, R.H.
	G10640	1	Grease Fitting, 1/4"-28 (Per Arm)
	GB0276	2	Bushing, 1" I.D. x 1 1/4" O.D. x 1" Long (Per Arm)
	GD10991	2	Seal (Per Arm)
15.		-	See “Shank Assembly”, Pages P2 And P3
A.	GA7949	-	Gauge Wheel Complete (Items 5-7 And 9-12)

COVERING DISCS/SINGLE PRESS WHEEL

RUA054/RUB026(RU94c)

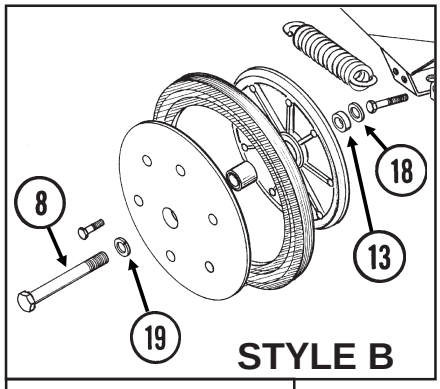


COVERING DISCS/SINGLE PRESS WHEEL

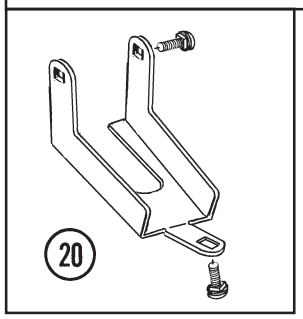
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	1	Lock Washer, 3/8"
	G10210	2	Washer, 3/8" USS
2.	GB0268	1	Wheel Arm Stop
3.	G10801	2	Carriage Bolt, 1/2"-13 x 2 1/4"
	G10315	-	Carriage Bolt, 1/2"-13 x 2 1/2" (Used W/Straight Drop In-Furrow Granular Chemical Bracket)
	G10102	2	Hex Nut, 1/2"-13
4.	GA2054	1	Spring
5.	GB0239	2	Eccentric Bushing
6.	G10102	1	Hex Nut, 1/2"-13
7.	G10015	1	Adjusting Bolt, 1/2"-13 x 5"
8.	GA6619	1	Mounting Arm
9.	G10463	2	Cotter Pin, 1/4" x 1 1/2"
10.	G10171	4	Hex Head Cap Screw, 5/16"-18 x 1 1/4"
	G10232	4	Lock Washer, 5/16"
	G10106	4	Hex Nut, 5/16"-18
11.	GA6620	2	Bracket
12.	GA6618	2	Mount
13.	G10303	2	Carriage Bolt, 5/16"-18 x 1"
	G10219	2	Washer, 5/16" USS
	G10232	2	Lock Washer, 5/16"
	G10106	2	Hex Nut, 5/16"-18
14.	G10107	3	Lock Nut, 5/8"-11
15.	GD1109	2	Bushing, 41/64" I.D. x 7/8" O.D. x 1/4" Long
16.	GD9290	2	Disc Blade, 8"
17.	G10018	7	Hex Head Cap Screw, 5/16"-18 x 5/8"
	G10109	7	Lock Nut, 5/16"-18
18.	G10152	1	Hex Head Cap Screw, 5/8"-11 x 9"
19.	GD3180-12	2	Sleeve, 5/8" I.D. x 7/8" O.D. x 2 7/8" Long
20.	GD9562	2	Half Wheel
21.	GA6171	1	Bearing
22.	GD9305	1	Tire
23.	GA2014	2	Bearing
24.	GD10473	2	Bearing Housing
25.	G10427	12	Rivet, 1/4" x 1/2"
26.	G10006	2	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
27.	GD11845	2	Dust Cap
A.	GA6733	-	Single Press Wheel Complete W/Bearing (Items 17 And 20-22)
B.	GA6801	-	Covering Disc Blade Complete W/Bearing (Items 16 And 23-25)

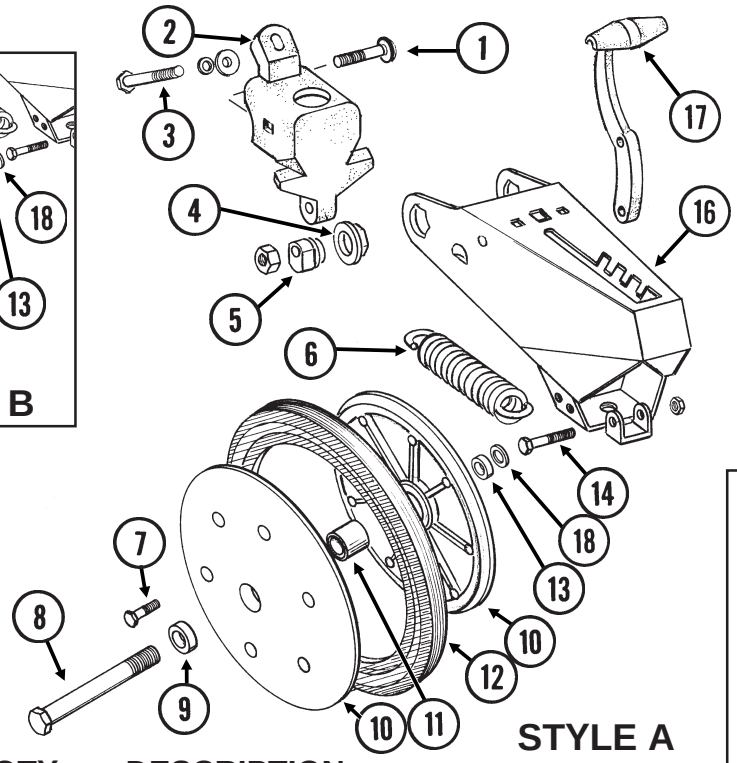
“V” CLOSING WHEELS

RUB026(RU83g/RU83i/RU83h)

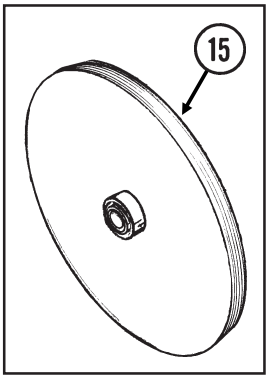


STYLE B





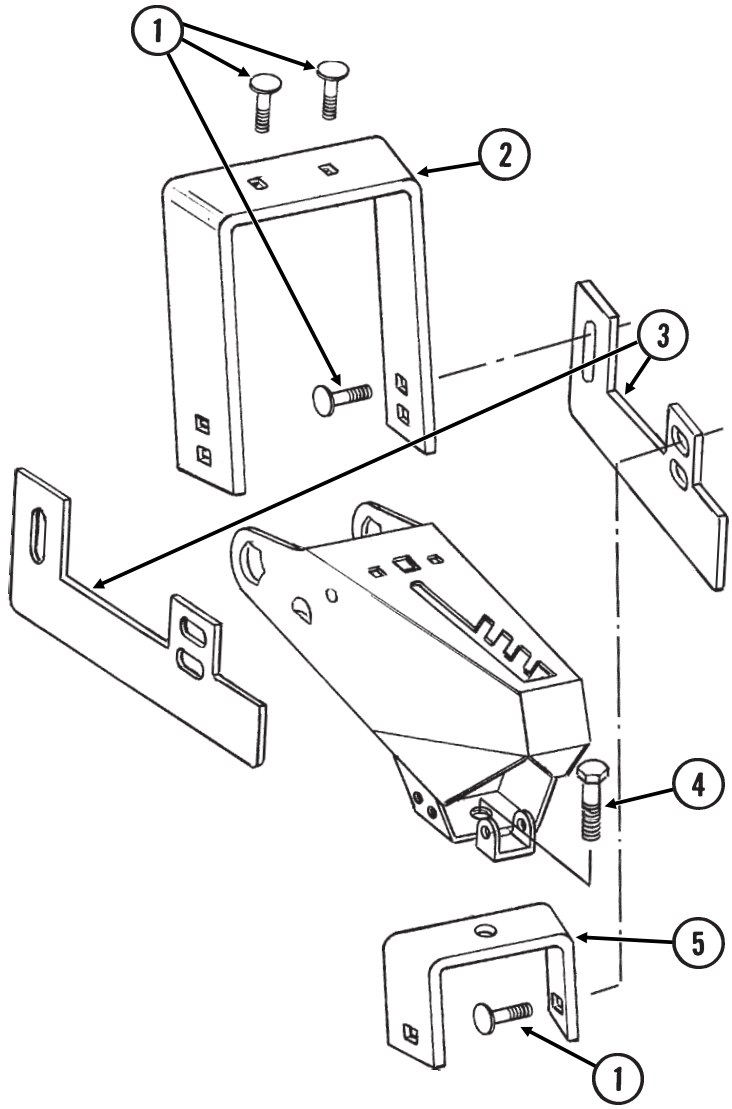
STYLE A



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10801	2	Carriage Bolt, 1/2"-13 x 2 1/4"
	G10315	-	Carriage Bolt, 1/2"-13 x 2 1/2" (Used W/Straight Drop In-Furrow Granular Chemical Bracket)
	G10111	2	Lock Nut, 1/2"-13
2.	GB0268	1	Wheel Arm Stop
3.	G10003	1	Hex Head Cap Screw, 3/8"-16 x 1 1/2"
	G10229	1	Lock Washer, 3/8"
	G10210	2	Washer, 3/8" USS
4.	GB0282	2	Stepped Bushing
5.	GB0239	2	Eccentric Bushing
6.	GD8460	1	Spring
7.	G10064	6	Hex Head Cap Screw, 1/4"-20 x 1"
8.	G10013	2	Hex Head Cap Screw, 5/8"-11 x 3 1/2"
	G10107	2	Lock Nut, 5/8"-11
9.	GB0218	2	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
10.	GD9120	4	Nylon Half Wheel
11.	GA6171	2	Bearing
12.	GD1085	2	Rubber Tire, 1" x 12"
13.	GD1109	2	Bushing, 41/64" I.D. x 7/8" O.D. x 1/4" Long
14.	G10133	1	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	1	Lock Nut, 5/16"-18
15.	GA6597	-	Cast Iron Closing Wheel W/Bearing
	GA6171	-	Bearing
16.	GA8322	1	Arm
17.	GB0254	1	Lever
18.	GD7805	2	Special Washer, 5/8", Hardened
19.	G10230	2	Lock Washer, 5/8"
20.	G1K345	-	Closing Wheel Shield Kit W/Hardware And Instruction
	G10308	3	Carriage Bolt, 3/8"-16 x 3/4"
	G10210	1	Washer, 3/8" USS
	G10229	3	Lock Washer, 3/8"
	G10101	3	Hex Nut, 3/8"-16
A.	GA6434	-	Rubber Closing Wheel Complete W/Bearing (Items 7 And 10-12)

DRAG CLOSING ATTACHMENT

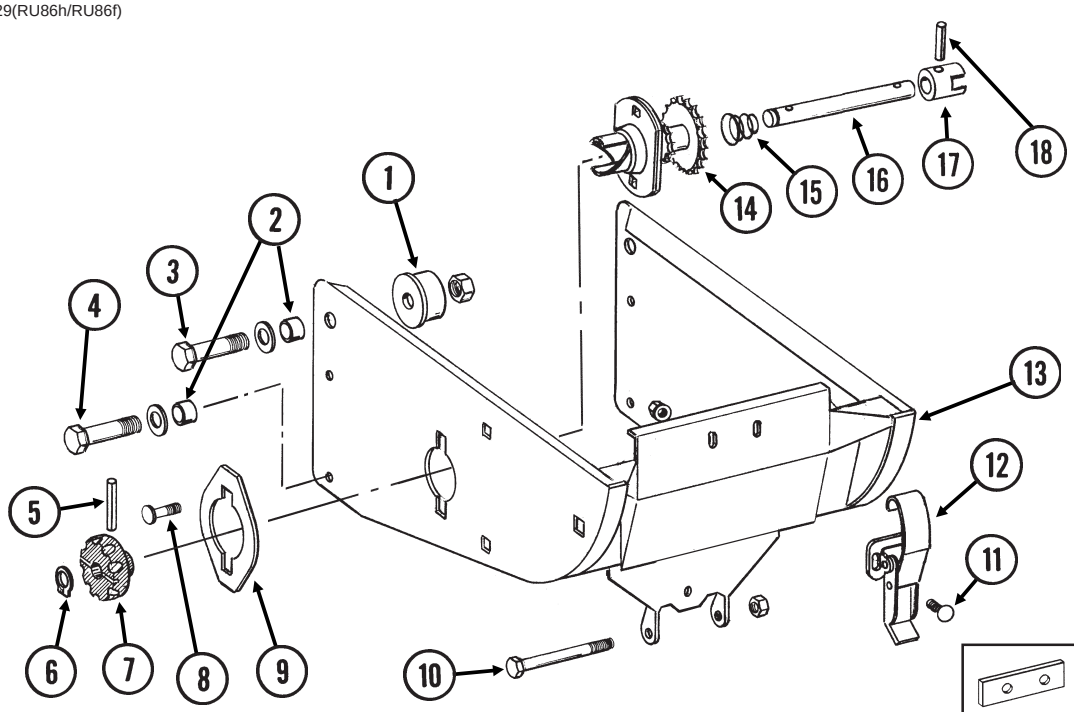
RUB050(RU90c)

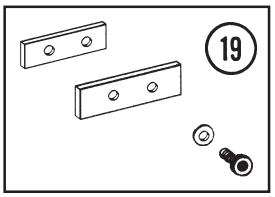


ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10599	6	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10210	6	Washer, 3/8" USS
	G10229	6	Lock Washer, 3/8"
	G10101	6	Hex Nut, 3/8"-16
2.	GD11508	1	Front Bracket
3.	GD11313	2	Blade
4.	G10007	1	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10230	1	Lock Washer, 5/8"
	G10104	1	Hex Nut, 5/8"-11
5.	GD11509	1	Rear Bracket
A.	G7566X	-	Drag Closing Attachment Complete (Items 1-5)

HOPPER SUPPORT AND METER DRIVE

RUB028/RUB029(RU86h/RU86f)

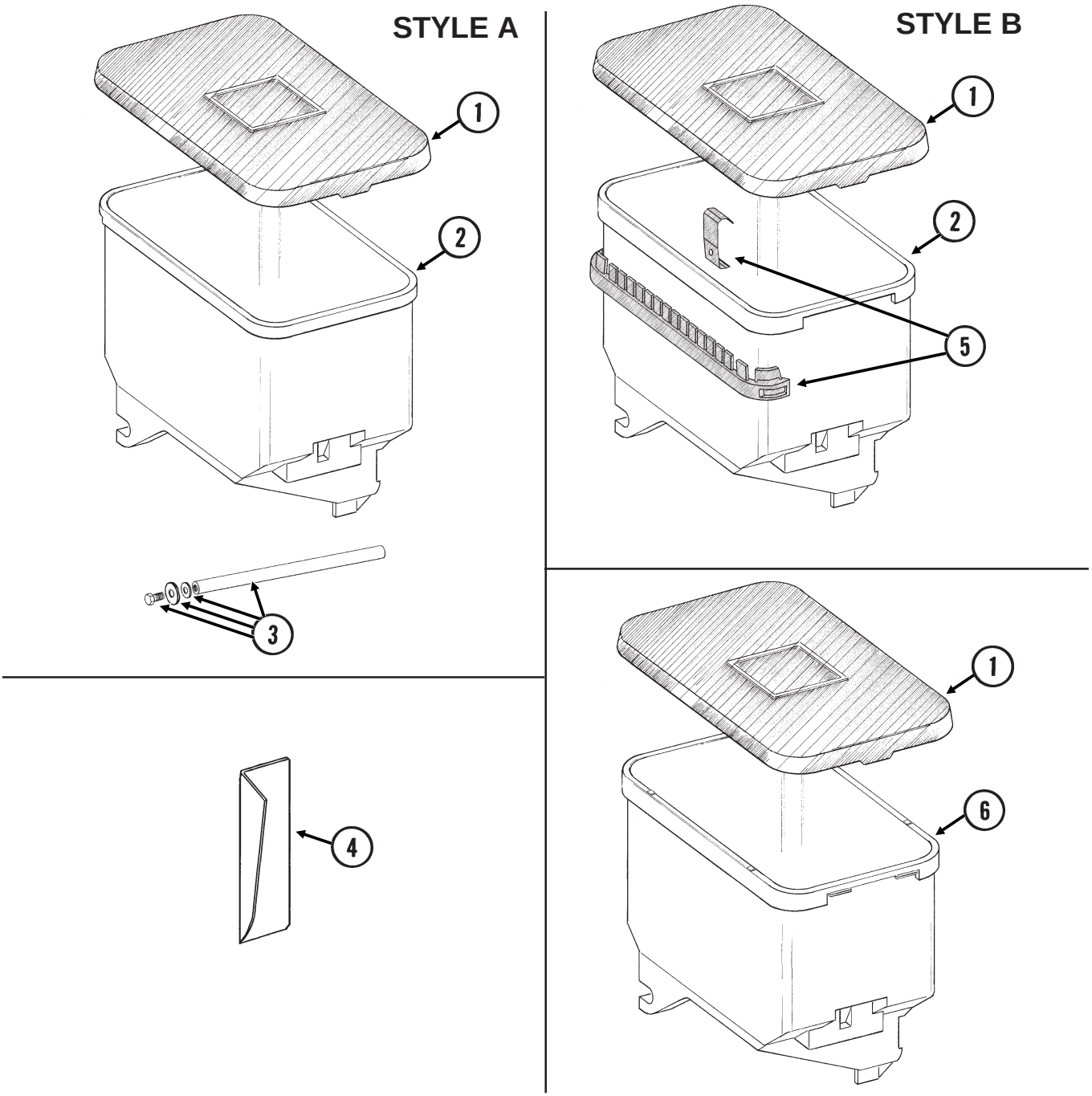




ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GB0314	2	Hopper Mount
2.	GB0218	4	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
3.	G10752	2	Hex Head Cap Screw, 5/8"-18 x 2 1/4"
	GD7805	2	Special Washer, 5/8", Hardened
	G10412	2	Lock Nut, 5/8"-18
4.	G10751	2	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	GD7805	2	Special Washer, 5/8", Hardened
	G10412	2	Lock Nut, 5/8"-18
5.	G10602	1	Spring Pin, 1/4" x 1 1/2"
6.	G10567	1	External Retaining Ring, 5/8"
7.	GD11239	1	Knob
8.	G10338	2	Carriage Bolt, 5/16"-18 x 1 1/4"
	G10302	-	Carriage Bolt, 5/16"-18 x 7/8"
	G10620	2	Flange Nut, 5/16"-18
9.	GD11305	1	Plate
10.	G10061	1	Hex Head Cap Screw, 3/8"-16 x 3 1/2"
	G10210	2	Washer, 3/8" USS
	G10108	1	Lock Nut, 3/8"-16
11.	G10309	2	Carriage Bolt, 1/4"-20 x 5/8", Grade 2
	G10621	2	Flange Nut, 1/4"-20
12.	GA2007	1	Hopper Hold Down Latch
13.	GA8304	1	Hopper Support
14.	GA9538	1	Double Sprocket And Bearing, Drive Clutch, 11/19 Tooth
15.	GD11413	1	Spring
16.	GD10958	1	Shaft
17.	GB0278	1	Coupler
18.	G10546	1	Spring Pin, 3/16" x 1 1/4"
19.	G1K312	-	Seed Hopper Support Panel Kit W/Hardware And Instruction (2 Rows)
	G10211	-	Washer, 1/4" SAE
	G10252	-	Socket Head Screw, 1/4"-20 x 7/8", Grade 8
A.	GA9539	-	Meter Drive Assembly Complete (Items 5-7 And 14-18)

SEED HOPPER AND LID

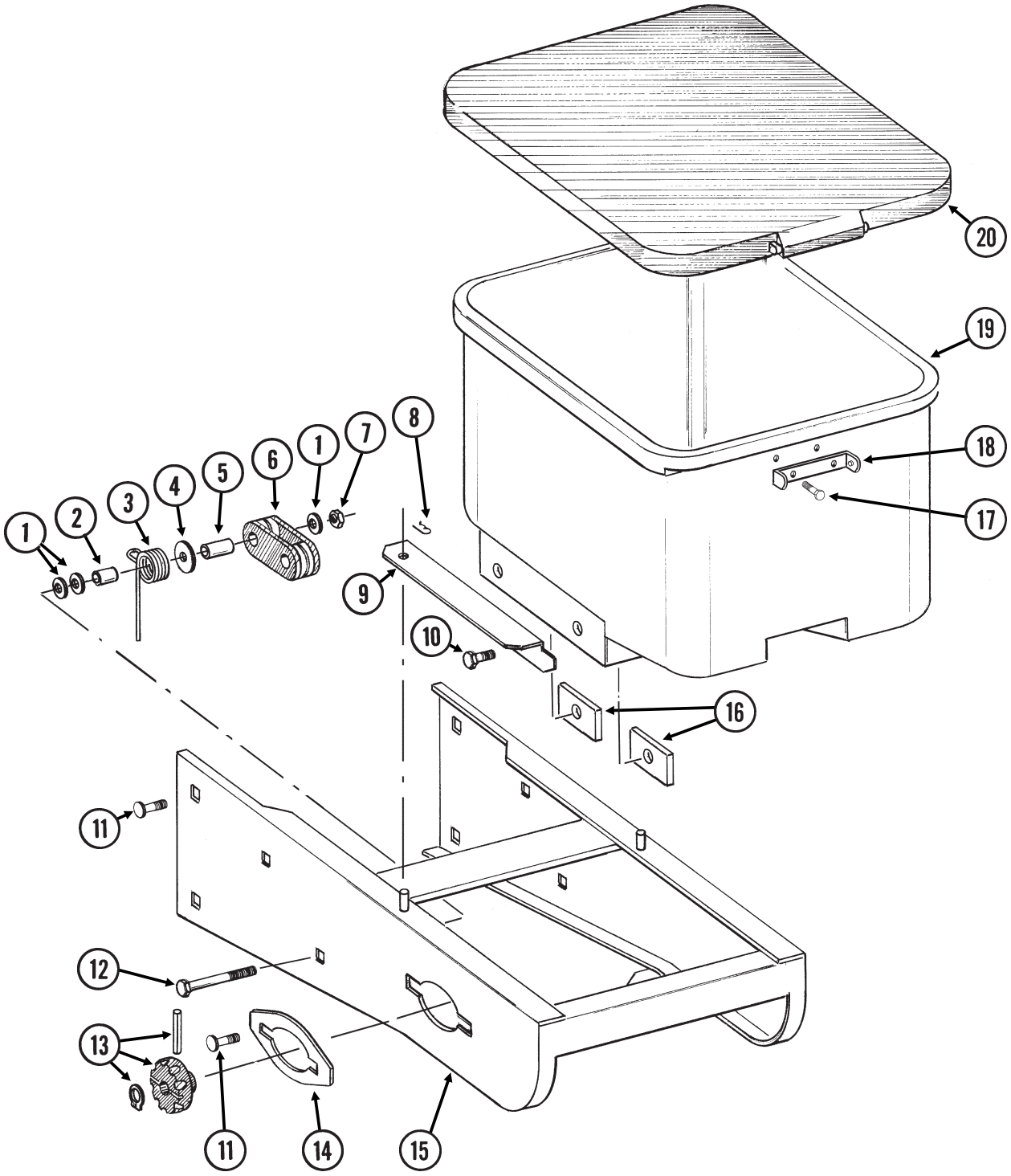
RUA030(RU87d/RU87c/RU128/RU87a/RU87e)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD11279	1	Lid
2.	GA8370	1	Seed Hopper **(Sub GA9714)**
3.	G1K313	1	Seed Hopper Cross Brace Kit (STYLE A Seed Hopper)
	G10989	2	Hex Washer Head Cap Screw, 3/8"-16 x 3/4"
	G10201	2	Special Washer, 3/8" x 1 1/2" O.D.
	G10210	2	Washer, 3/8" USS
4.	GD11747	1	Seed Reserve Baffle
5.	G1K335	1	Seed Hopper Reinforcement Kit (STYLE B Seed Hopper)
6.	GA9714	1	Seed Hopper, Reinforced

GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

RUA052/RUA053/RUB028(RU92k)

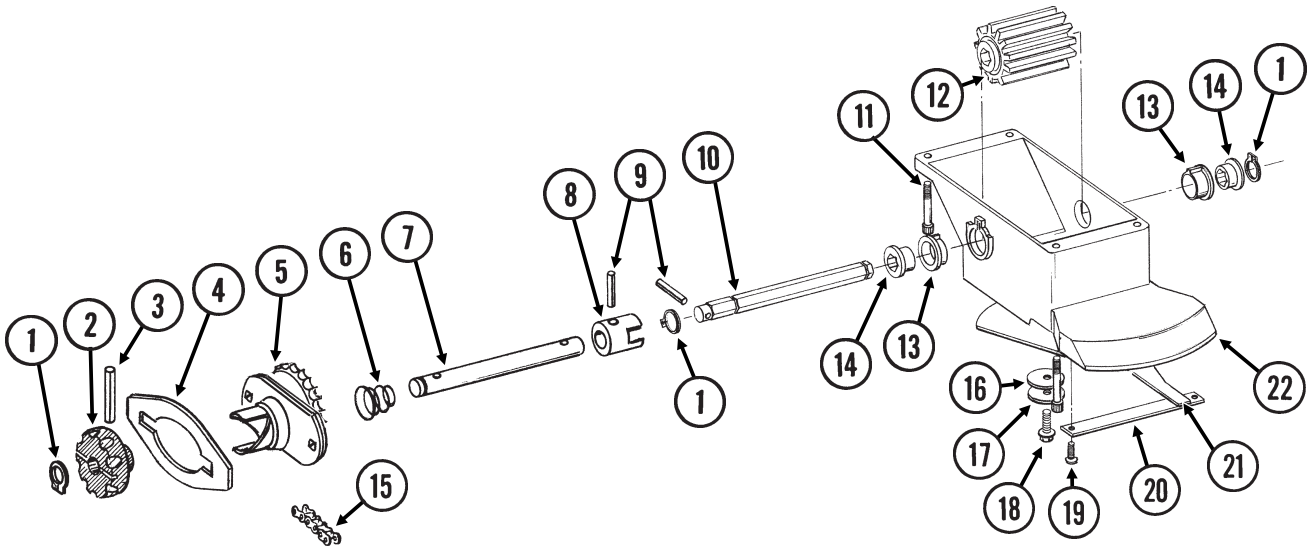


GRANULAR CHEMICAL HOPPER AND HOPPER PANEL EXTENSION

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10210	3	Washer, 3/8" USS
2.	GD2971-10	1	Sleeve, 9/16" Long
3.	GD11219	1	Spring
4.	G10201	1	Special Washer, 3/8" x 1 1/2" O.D.
5.	GD1026	1	Sleeve, 1 3/16" Long
6.	GD11962	1	Idler
7.	G10108	1	Lock Nut, 3/8"-16
8.	G10670	2	Hair Pin Clip, No. 3
9.	GD1059L	1	Support, L.H. (Shown)
	GD1059R	1	Support, R.H.
10.	G10002	4	Hex Head Cap Screw, 3/8"-16 x 3/4"
	G10229	4	Lock Washer, 3/8"
11.	G10312	8	Carriage Bolt, 5/16"-18 x 3/4"
	G10620	8	Flange Nut, 5/16"-18
12.	G10325	1	Hex Head Cap Screw, 3/8"-16 x 2 3/4"
13.		-	See “Granular Chemical Meter And Meter Drive”, Page P18
14.	GD11305	1	Plate
15.	A8422	1	Hopper Panel Extension **(Non-Stock Item)** **(Sub Wholegoods Order Code 700-01080)**
16.	GD11424	4	Block
17.	G10023	2	Hex Head Cap Screw, 1/4"-20 x 3/4"
	G10621	2	Flange Nut, 1/4"-20
18.	GD1060	1	Hinge
19.	GA8371	1	Hopper
20.	GA4444	1	Lid

GRANULAR CHEMICAL METER AND METER DRIVE

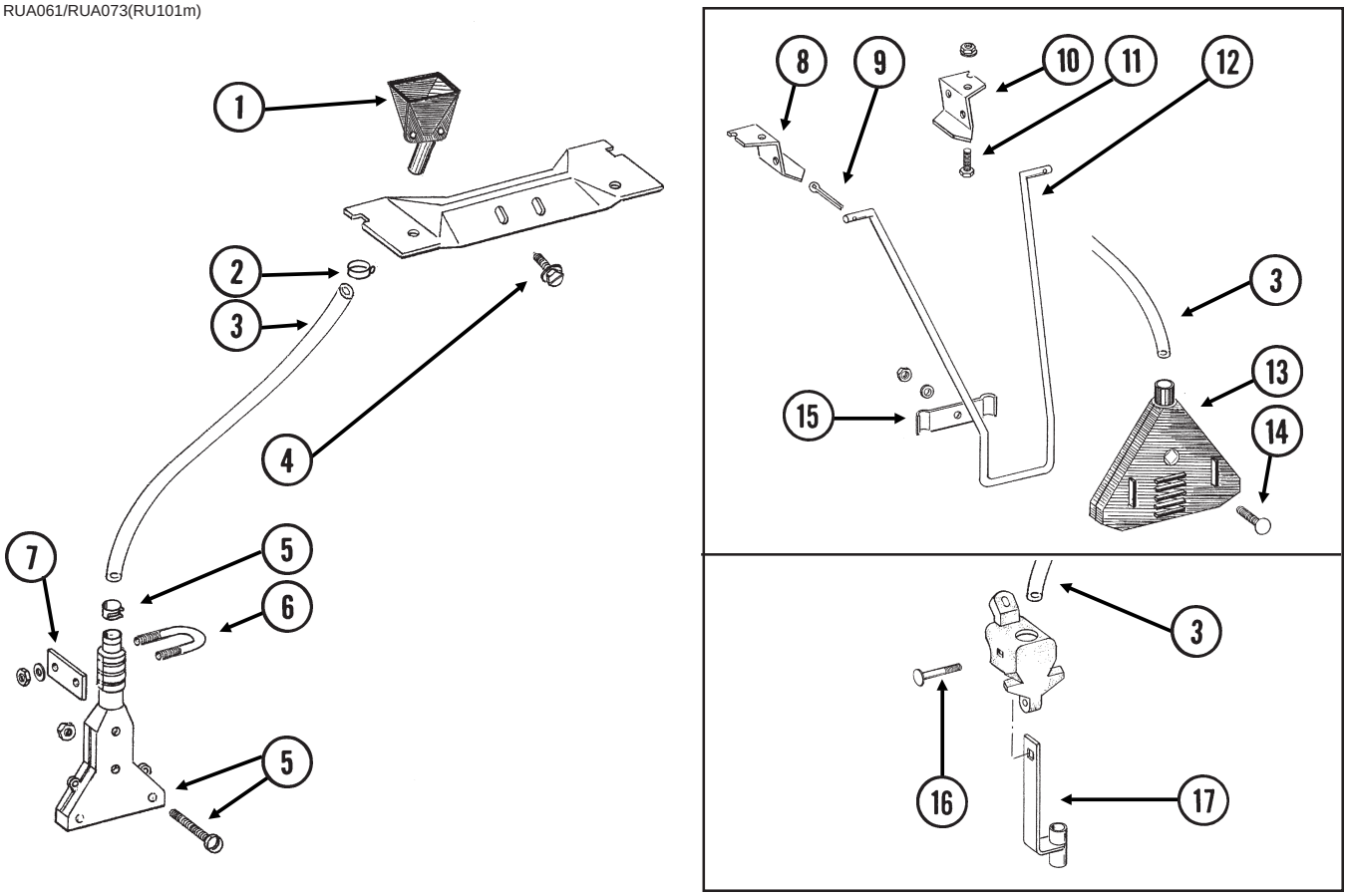
RUA051/RUB028(RU91a)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10567	3	External Retaining Ring, 5/8"
2.	GD11239	1	Knob
3.	G10602	1	Spring Pin, 1/4" x 1 1/2"
4.		-	See “Granular Chemical Hopper And Hopper Panel Extension”, Pages P16 And P17
5.	GA8364	1	Sprocket And Bearing, Drive Clutch, 24 Tooth
6.	GD11413	1	Spring
7.	GD11240	1	Shaft
8.	GB0278	1	Coupler
9.	G10546	2	Spring Pin, 3/16" x 1 1/4"
10.	GD11297	1	Shaft
11.	G10921	4	Hex Socket Head Cap Screw, No. 10-24 x 7/8"
	G10257	4	Lock Washer, No. 10
12.	GD7148	1	Feed Roller, Hex Bore
13.	GB0115	2	Bearing
14.	GD7258	2	Hex Bushing
15.	G3303-114	1	Chain, No. 41, 114 Pitch Including Connector Link
	GR0196	1	Connector Link, No. 41
16.	G10660	1	Wave Washer, 1/2"
17.	G10209	1	Washer, 1/4" USS
18.	G10570	1	Slotted Hex Self-Tapping Screw, 1/4"-20 x 3/4"
19.	G11073	2	Slotted Hex Self-Tapping Screw, No. 10 x 3/8"
20.	GD1061	1	Support Strap
21.	GD1063	1	Metering Gate
22.	GB0116	1	Granular Housing
A.	GA8326	-	Granular Chemical Meter Complete (Items 1, 9, 10, 12-14 And 16-22)

GRANULAR CHEMICAL BANDING OPTIONS

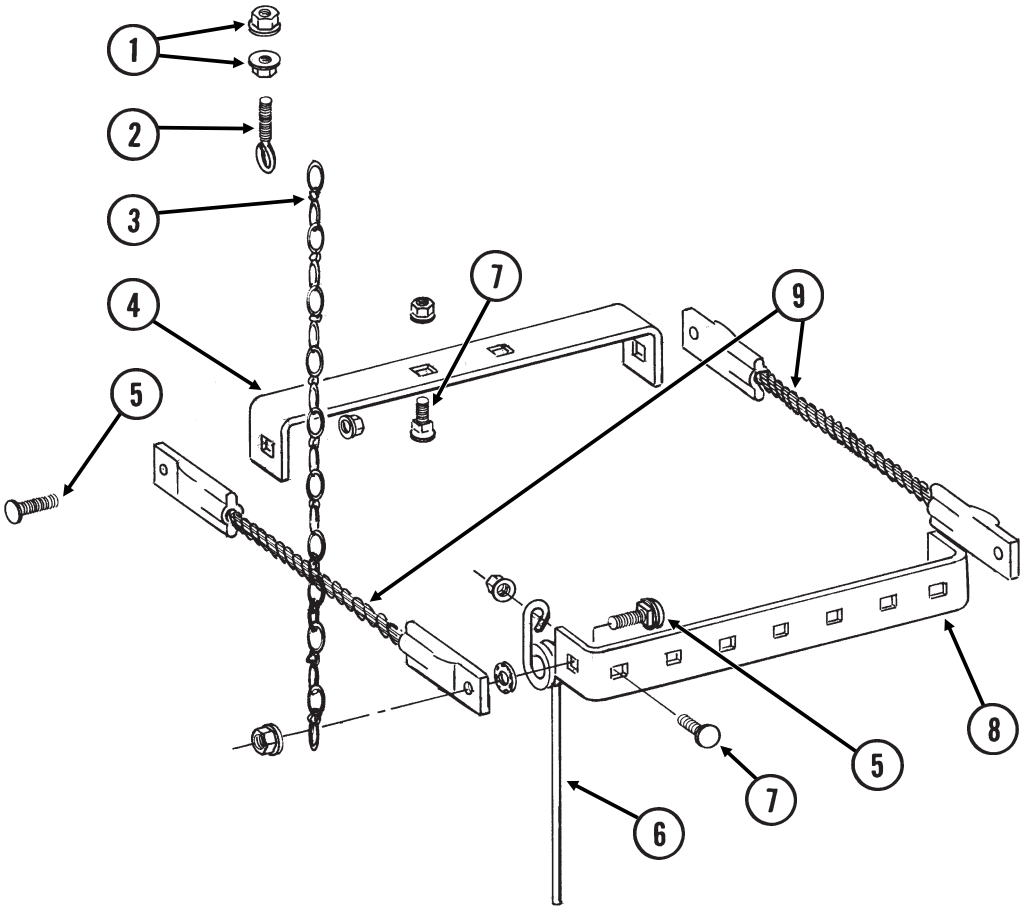
RUA061/RUA073(RU101m)



ITEM	PART NO.	QTY.	DESCRIPTION
1.	GD2423	1	Funnel
2.	G10673	1	Hose Clamp, No. 8
3.	GD2947	1	Hose, 7/16" x 28"
4.	G10523	2	Slotted Pan Head Self-Tapping Screw, No. 10 x 1/2"
5.	GA6907	1	Slope-Compensating Bander W/Hardware (4 1/2" Band Width)
	G10864	1	Uni-Clamp
	G10757	2	Pan Head Screw, No. 10-32 x 1 1/4"
	G10758	2	Hex Nut, No. 10-32
6.	GD10963	1	U-Bolt, 1 1/2" x 1 5/16" x 1/4"-20
	G10209	2	Washer, 1/4" USS
	G10110	2	Lock Nut, 1/4"-20
7.	GD10984	1	Spacer
8.	GD1115L	-	Hanger Bracket, L.H.
9.	G10452	-	Cotter Pin, 1/8" x 1/2"
10.	GD1115R	-	Hanger Bracket, R.H.
11.	G10310	-	Carriage Bolt, 1/4"-20 x 3/4", Grade 2
	G10227	-	Lock Washer, 1/4"
	G10103	-	Hex Nut, 1/4"-20
12.	GD1116	-	Hanger
13.	GA2075	-	Diffuser, 14" Band
14.	G10306	-	Carriage Bolt, 3/8"-16 x 2"
	G10229	-	Lock Washer, 3/8"
	G10101	-	Hex Nut, 3/8"-16
15.	GD1118	-	Clamp
16.	G10315	1	Carriage Bolt, 1/2"-13 x 2 1/2" (Replaces Existing 1/2" x 2 1/4" Hardware)
17.	GA6741	1	Bracket (Straight Drop In-Furrow)

SPRING TOOTH INCORPORATOR

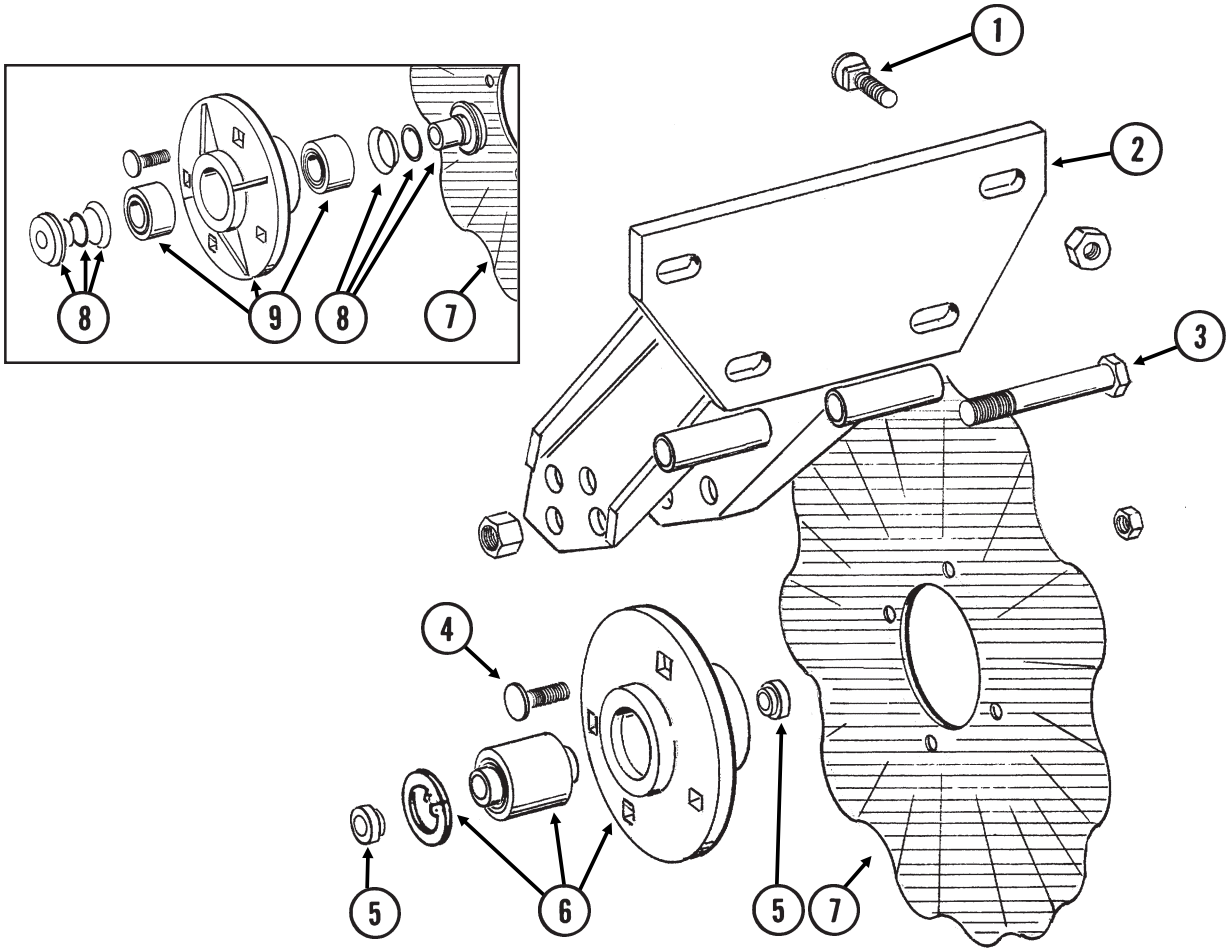
RUA055(RU95)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10621	4	Flange Nut, 1/4"-20
2.	GD2460	2	Eyebolt, 1/4"-20
3.	G3305-01	4	Twin Loop Chain, 9 Links
4.	GD1143	1	Front Bracket
5.	G10305	4	Carriage Bolt, 3/8"-16 x 1"
	G10529	4	External Tooth Lock Washer, 3/8"
	G10622	4	Flange Nut, 3/8"-16
6.	GD1145	7	Spring Tooth
7.	G10308	9	Carriage Bolt, 3/8"-16 x 3/4"
	G10622	9	Flange Nut, 3/8"-16
8.	GD1144	1	Rear Bracket
9.	GA2094	2	Cable Assembly

ROW UNIT MOUNTED NO TILL COULTER

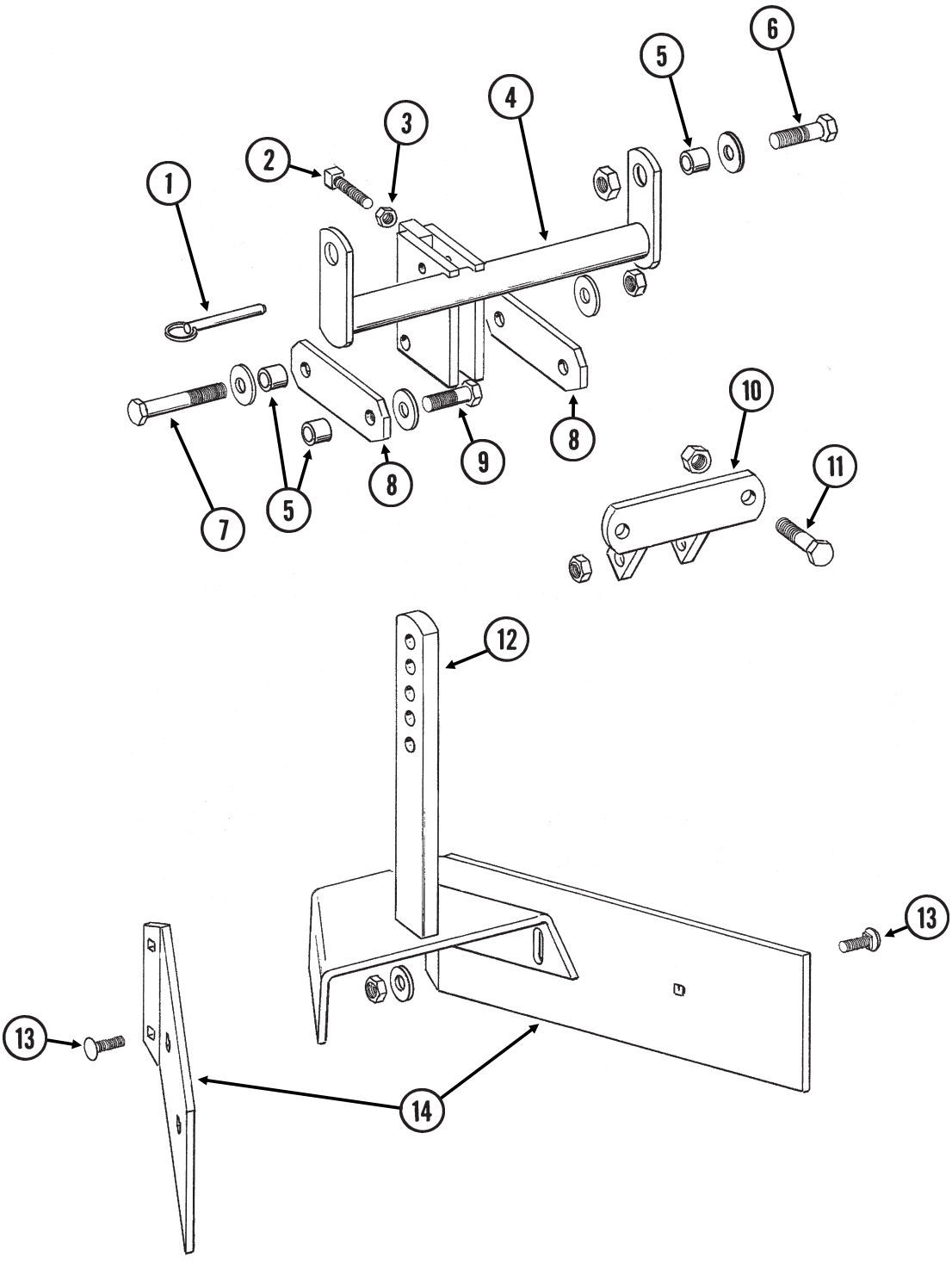
RUA061(RU102/RU102c)



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
2.	GA5625	1	Arm
3.	G10036	1	Hex Head Cap Screw, 5/8"-11 x 4"
	G10107	1	Lock Nut, 5/8"-11
4.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
5.	GD11677	2	Adapter
6.	GA8641	1	Hub W/Bearing And Retaining Ring
	GA8603	-	Double Row Bearing
	GD11652	-	Retaining Ring, 2 7/16"
7.	GD7803	-	Disc Blade, Fluted, 1", 8 Flutes (Shown)
	GD7804	-	Disc Blade, Bubbled, 1"
	GD9254	-	Disc Blade, Fluted, 3/4", 13 Flutes
8.	G1K330	2	Adapter Kit W/O-Ring And Spring Washer
	GD8844	2	O-Ring
	GD8843	2	Spring Washer
9.	GA5640	1	Hub W/Bearings And Grease Fitting **(Sub G1K289)**
	GA5622	-	Bearing (2 Used Per Hub)
	G10640	-	Grease Fitting, 1/4"-28

ROW UNIT MOUNTED BED LEVELER

RUA059/RUA060(RU99/RU100)

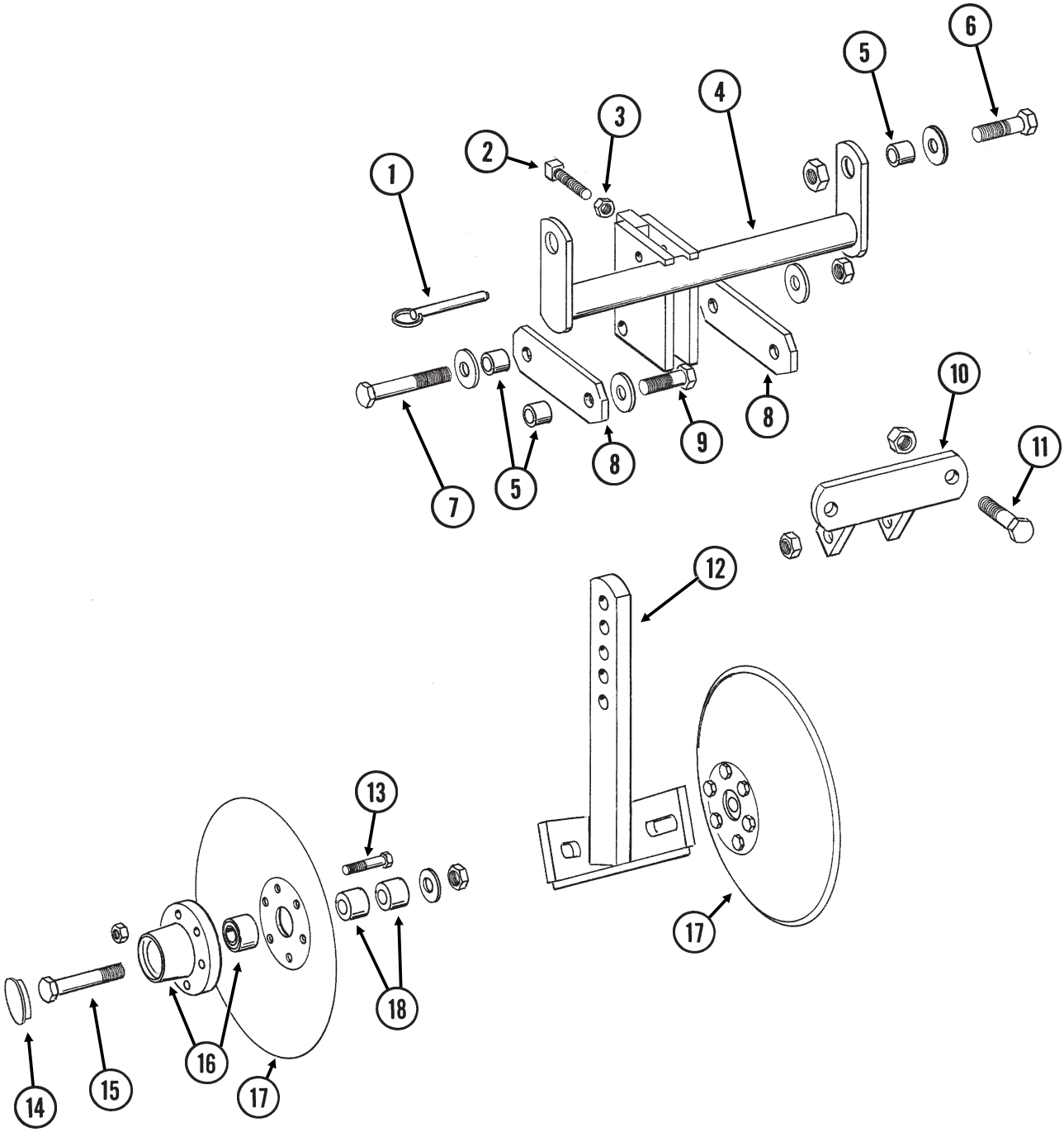


ROW UNIT MOUNTED BED LEVELER

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10536	1	Detent Pin, 1/2" x 2 1/2" Grip
2.	G10597	1	Square Head Set Screw, 5/8"-11 x 2 1/4"
3.	G10503	1	Hex Jam Nut, 5/8"-11, Grade 2
4.	GA5719	1	Mounting Bracket
5.	GD7889	6	Bushing
6.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10216	2	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
7.	G10585	1	Hex Head Cap Screw, 1/2"-13 x 3 1/4"
	G10216	2	Washer, 1/2" USS
	G10111	1	Lock Nut, 1/2"-13
8.	GD7890	2	Link
9.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10216	2	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
10.	GA5715	1	Anchor
11.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	2	Lock Nut, 1/2"-13
12.	GA5892	1	Leveler
13.	G10303	6	Carriage Bolt, 5/16"-18 x 1"
	G10219	4	Washer, 5/16" USS
	G10109	6	Lock Nut, 5/16"-18
14.	GD8266	2	Blade

ROW UNIT MOUNTED DISC FURROWER

RUA059/RUA058(RU99/RU98g)

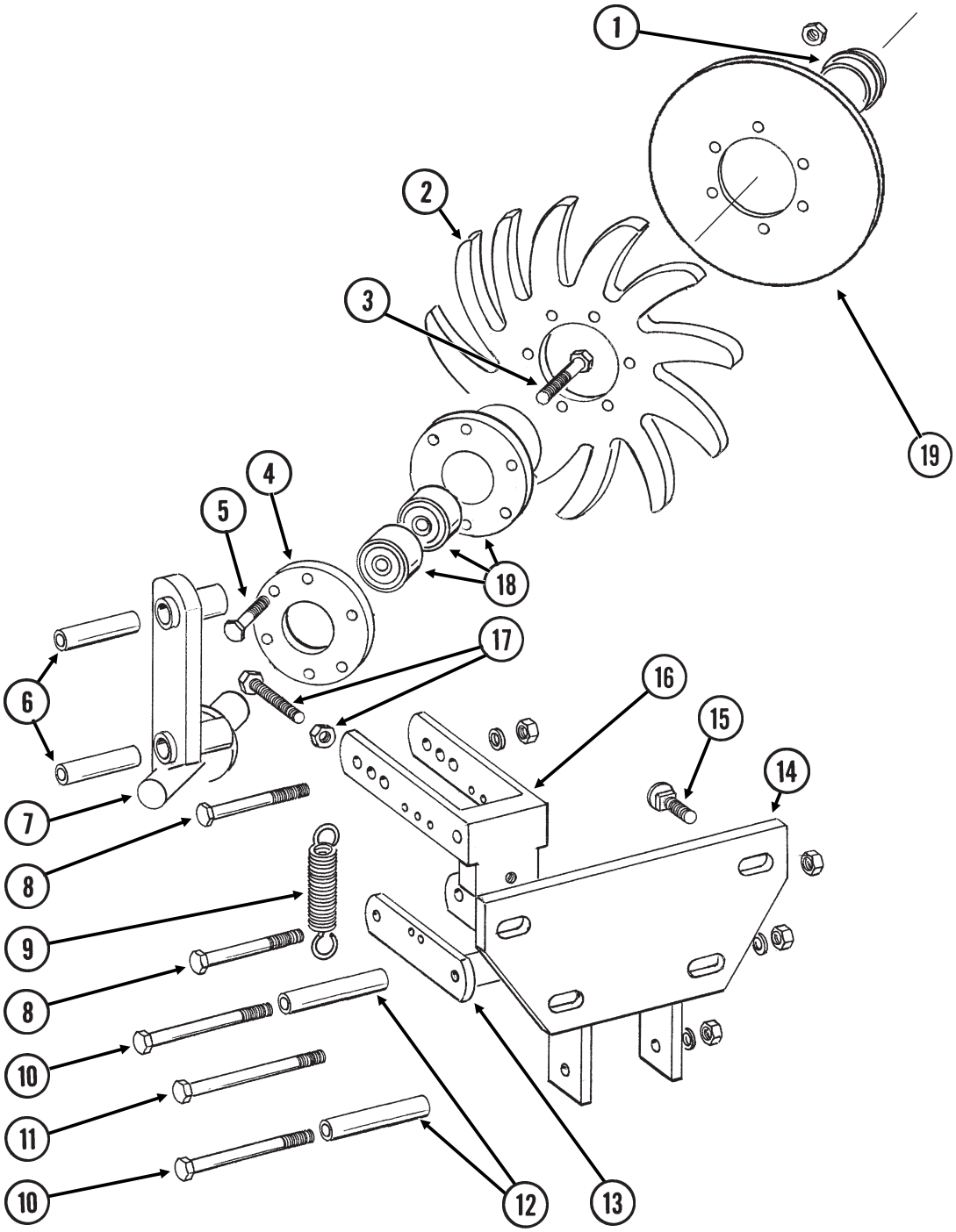


ROW UNIT MOUNTED DISC FURROWER

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10536	1	Detent Pin, 1/2" x 2 1/2" Grip
2.	G10597	1	Square Head Set Screw, 5/8"-11 x 2 1/4"
3.	G10503	1	Hex Jam Nut, 5/8"-11, Grade 2
4.	GA5719	1	Mounting Bracket
5.	GD7889	6	Bushing
6.	G10039	2	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
	G10216	2	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
7.	G10585	1	Hex Head Cap Screw, 1/2"-13 x 3 1/4"
	G10216	2	Washer, 1/2" USS
	G10111	1	Lock Nut, 1/2"-13
8.	GD7890	2	Link
9.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10216	2	Washer, 1/2" USS
	G10111	2	Lock Nut, 1/2"-13
10.	GA5715	1	Anchor
11.	G10017	2	Hex Head Cap Screw, 1/2"-13 x 1 1/2"
	G10111	2	Lock Nut, 1/2"-13
12.	GA5718	1	Support Arm
13.	G10572	6	Truss Head Slotted Machine Screw, 5/16"-18 x 7/8"
	G10106	6	Hex Nut, 5/16"-18
14.	GD1132	2	Dust Cap
15.	G10318	2	Hex Head Cap Screw, 5/8"-11 x 4 1/2"
	GD7805	2	Special Washer, 5/8", Hardened
	G10107	2	Lock Nut, 5/8"-11
16.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
17.	GD7823	-	Disc Blade, Solid, 12" (Shown)
	GD8307	-	Disc Blade, Notched, 12"
18.	GD7817-01	2	Spacer, 11/16" I.D. x 3/4" Long
	GD7817-04	2	Spacer, 11/16" I.D. x 1/2" Long

ROW UNIT MOUNTED RESIDUE WHEEL

(RU103d)

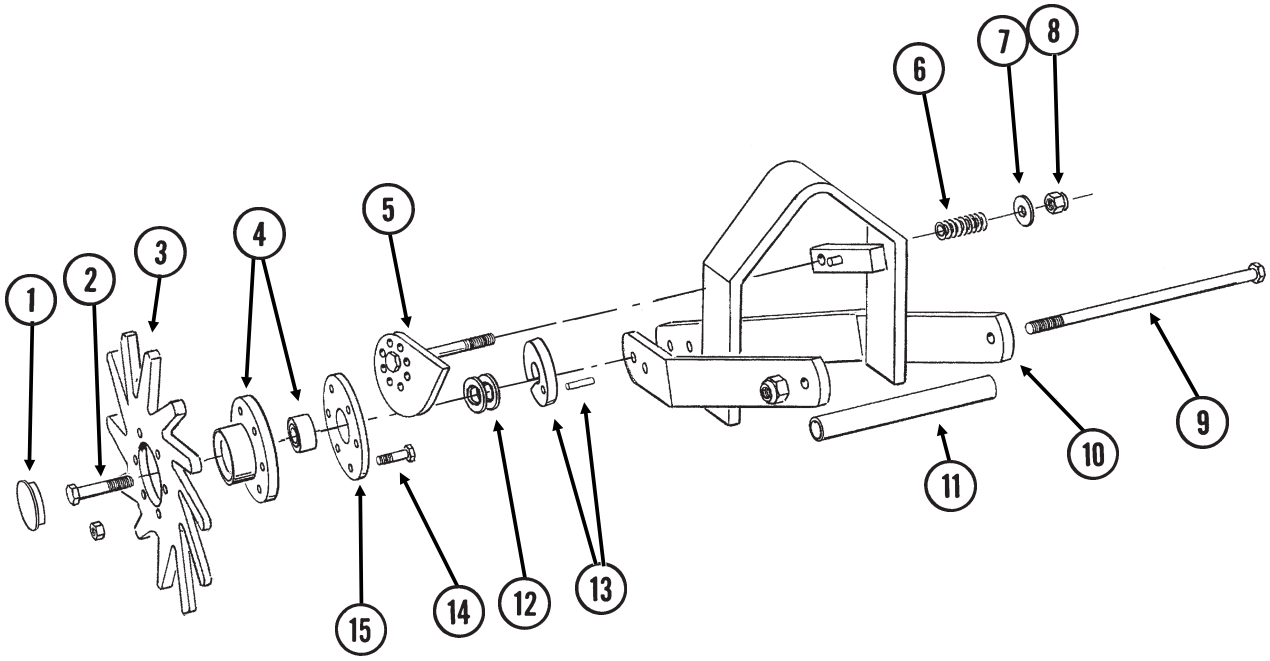


ROW UNIT MOUNTED RESIDUE WHEEL

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1132	1	Dust Cap
2.	GD10552	1	Wheel, 12 Tine, 3/8" x 12"
3.	G10006	1	Hex Head Cap Screw, 5/8"-11 x 2 1/4"
4.	GD9724	1	Backing Plate
5.	G10133	6	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	6	Lock Nut, 5/16"-18
6.	GD9720	2	Spacer, 1/2" x 2 3/16" Long
7.	GA6838	1	Wheel Mount
8.	G10033	2	Hex Head Cap Screw, 1/2"-13 x 3 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
9.	GD5857	2	Spring
10.	G10045	2	Hex Head Cap Screw, 1/2"-13 x 4 1/2"
	G10228	2	Lock Washer, 1/2"
	G10102	2	Hex Nut, 1/2"-13
11.	G10348	1	Hex Head Cap Screw, 1/2"-13 x 5" (Lockup Bolt)
	G10111	1	Lock Nut, 1/2"-13
12.	GD9715	2	Spacer, 1/2" x 3" Long
13.	GA6834	1	Lower Link
14.	GA6832	1	Mount
15.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
16.	GA6833	1	Upper Link
17.	G10371	1	Hex Head Cap Screw, 1/2"-13 x 3", Full Thread
	G10501	1	Hex Jam Nut, 1/2"-13, Grade 2
18.	GA5654	1	Hub W/Bearings
	GA2014	-	Bearing
19.	GD12534	-	Cover
A.	GA7446	-	Wheel Assembly, 12 Tine (Items 2, 4, 5 And 18)

COULTER MOUNTED RESIDUE WHEELS

RUA063(RU104p)



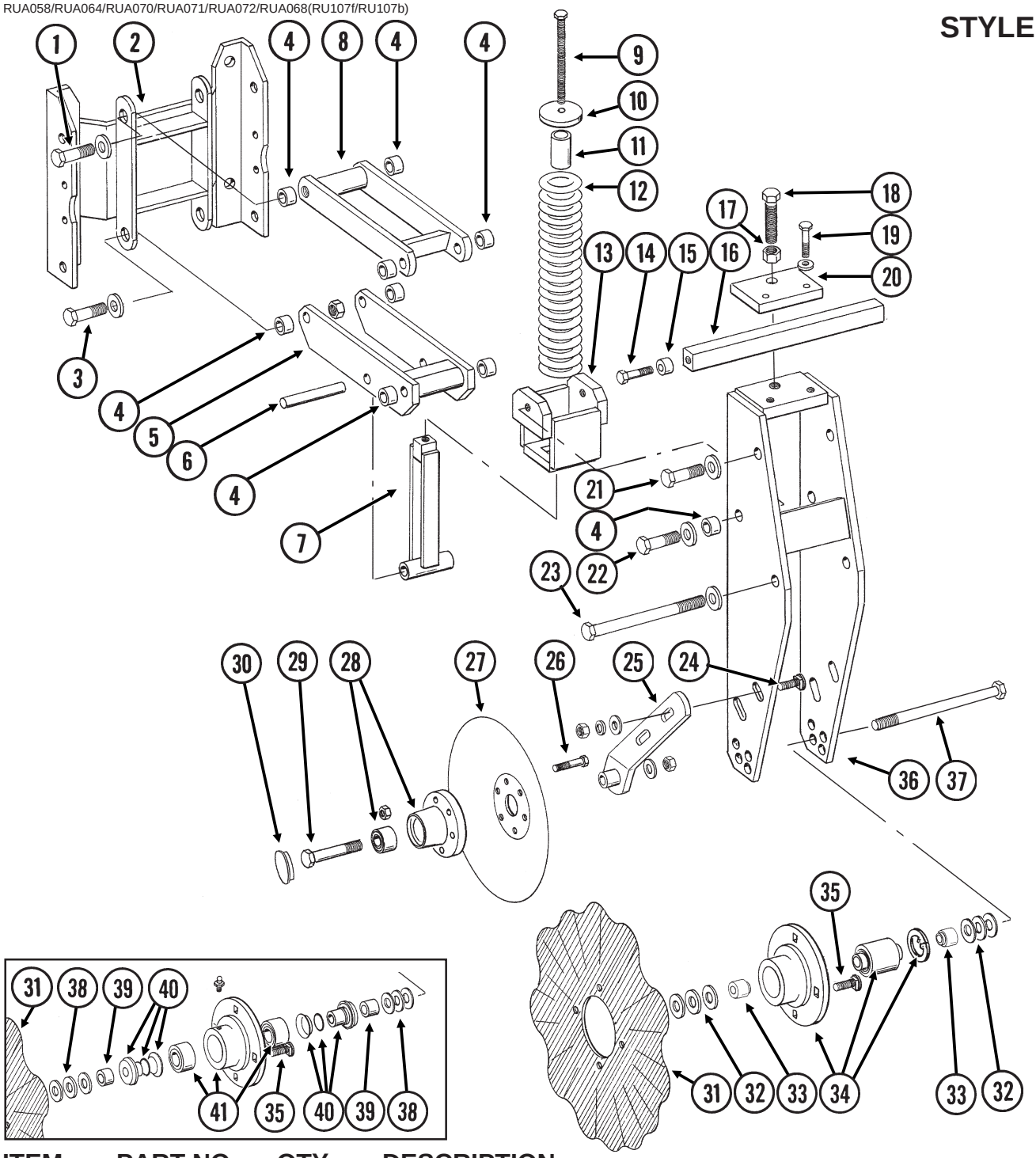
COULTER MOUNTED RESIDUE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1132	2	Dust Cap
2.	G10009	2	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
3.	GD10552	2	Wheel, 12 Tine, 3/8" x 12"
4.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
5.	GA7412	1	Cam
6.	GD10519	1	Spring
7.	G10206	1	Washer, 1/2" SAE
8.	G10974	1	Lock Nut W/Nylon Insert, 1/2"-13
9.	G10148	1	Hex Head Cap Screw, 1/2"-13 x 9 1/2"
	G10974	1	Lock Nut W/Nylon Insert, 1/2"-13
10.	GA7271	1	Mount
11.	GD10526	1	Sleeve, 7 1/2"
12.	G10213	4	Machine Bushing, 5/8" (.030" Thick)
13.	GA8760	2	Weed Guard W/Spring Pin
	G10765	-	Spring Pin, 1/4" x 1"
14.	G10133	12	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	12	Lock Nut, 5/16"-18
15.	GD9724	2	Backing Plate
A.	GA7446	-	Wheel Assembly, 12 Tine, R.H. (Items 3, 4, 14 And 15) (Shown)
	GA7445	-	Wheel Assembly, 12 Tine, L.H. (Items 3, 4, 14 And 15)

FRAME MOUNTED COULTER W/DISC FURROWER

RUA058/RUA064/RUA070/RUA071/RUA072/RUA068(RU107f/RU107b)

STYLE A



ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G10008	2	Hex Head Cap Screw, 5/8"-11 x 2"
	GD7805	2	Special Washer, 5/8", Hardened
2.	GA5798	1	Support Plate
3.	G10008	2	Hex Head Cap Screw, 5/8"-11 x 2"
	GD7805	2	Special Washer, 5/8", Hardened
	G10107	2	Lock Nut, 5/8"-11
4.	GB0218	10	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
5.	GA5631	1	Lower Parallel Link
6.	GD7815	1	Pin, 5/8" x 4 1/4"
7.	GA5635	1	Spring Guide

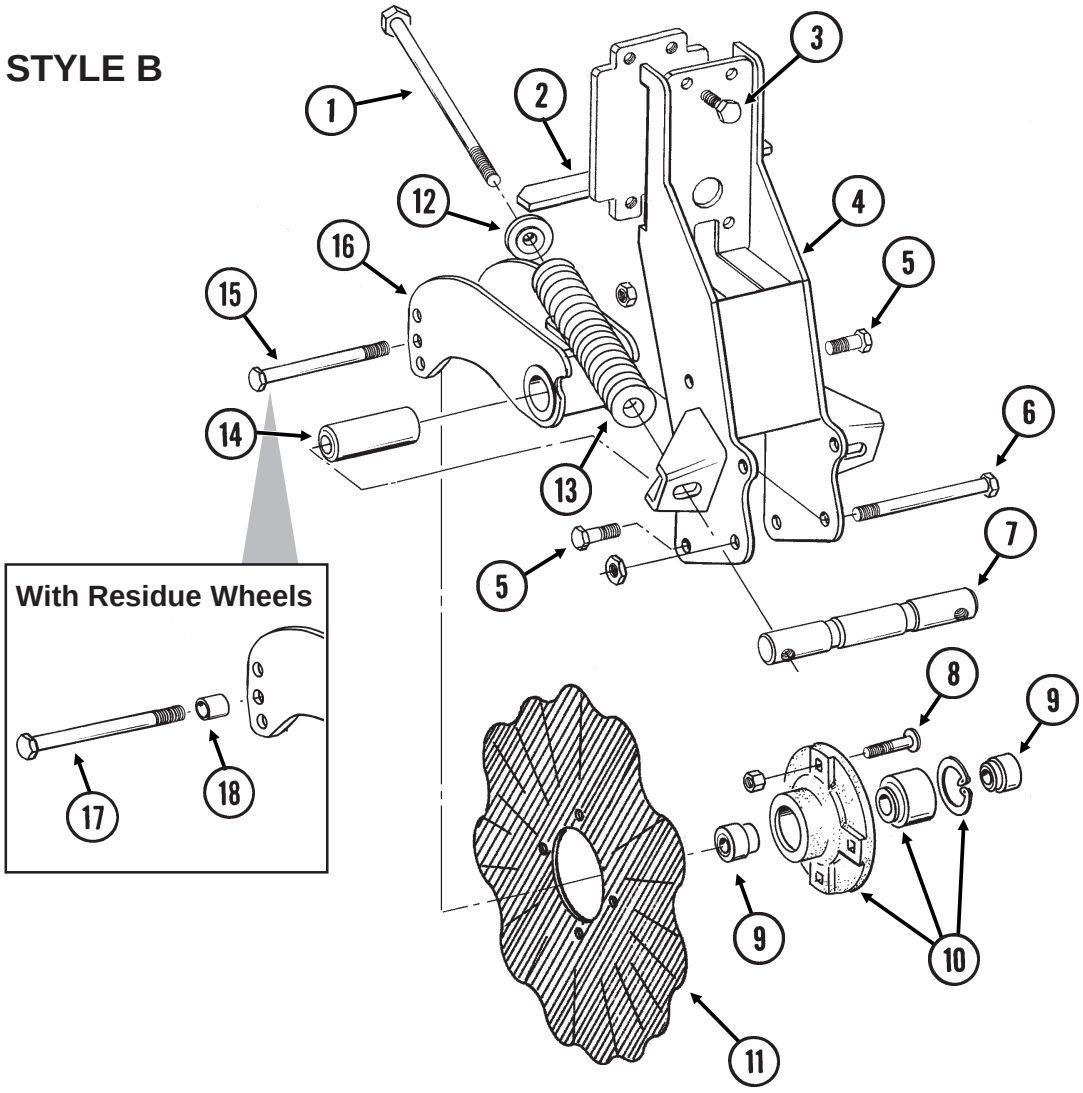
FRAME MOUNTED COULTER W/DISC FURROWER

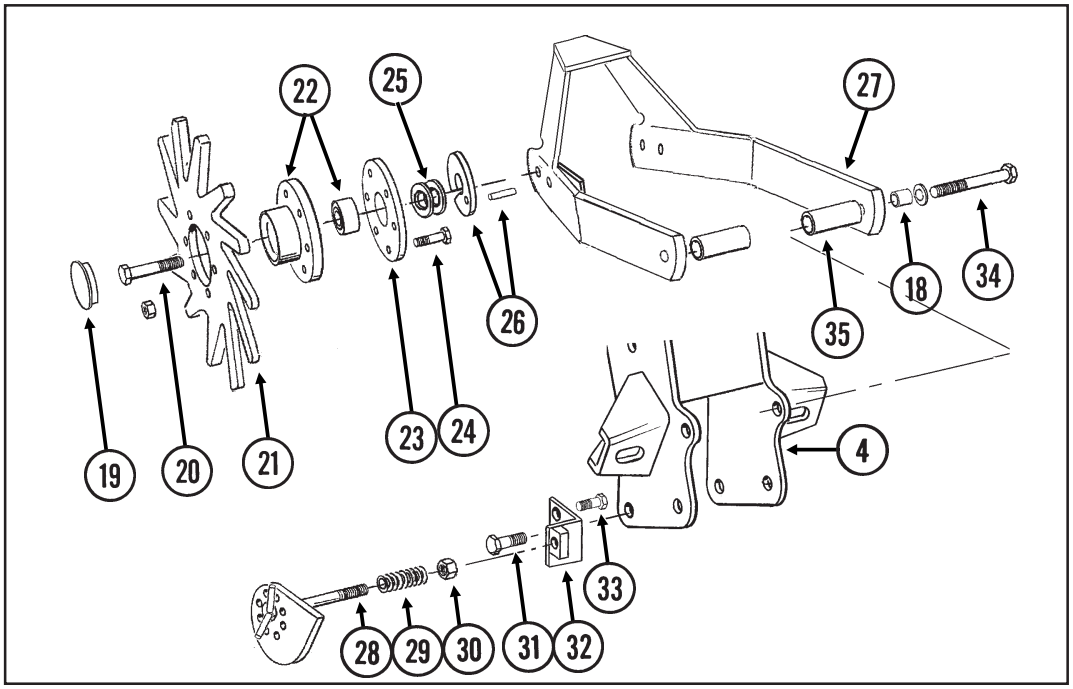
ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
8.	GA5630	1	Upper Parallel Link
9.	G10573	1	Hex Head Cap Screw, 5/8"-11 x 5 1/2", Full Thread
10.	GB0196	1	Washer
11.	GD7817-09	1	Spacer, 11/16" I.D. x 1 3/4" Long
12.	GD7831	1	Compression Spring
13.	GA5637	1	Spring Socket
14.	GD7818	2	Special Bolt
15.	GD7817-01	2	Spacer, 11/16" I.D. x 3/4" Long
16.	GD7816	1	Depth Control Bar
17.	G10104	1	Hex Nut, 5/8"-11
18.	G10582	1	Hex Head Cap Screw, 5/8"-11 x 4", Full Thread
19.	G10581	2	Hex Head Cap Screw, 1/2"-13 x 2 1/4"
	G10228	2	Lock Washer, 1/2"
20.	GD7811	1	Depth Adjustment Clamp
21.	G10008	2	Hex Head Cap Screw, 5/8"-11 x 2"
	GD7805	2	Special Washer, 5/8", Hardened
	GD1109	-	Bushing, 41/64" I.D. x 7/8" O.D. x 1/4" Long (As Required)
	G10107	1	Lock Nut, 5/8"-11
22.	G10055	2	Hex Head Cap Screw, 5/8"-11 x 1 1/4"
	GD7805	2	Special Washer, 5/8", Hardened
23.	G10012	1	Hex Head Cap Screw, 5/8"-11 x 6 1/2"
	GD7805	2	Special Washer, 5/8", Hardened
	GD1109	-	Bushing, 41/64" I.D. x 7/8" O.D. x 1/4" Long (As Required)
	G10107	1	Lock Nut, 5/8"-11
24.	G10747	4	Carriage Bolt, 1/2"-13 x 2"
	G10206	-	Washer, 1/2" SAE (As Required)
	G10228	4	Lock Washer, 1/2"
	G10102	4	Hex Nut, 1/2"-13
25.	GA5636	2	Arm
26.	G10572	12	Truss Head Slotted Machine Screw, 5/16"-18 x 7/8"
	G10106	12	Hex Nut, 5/16"-18
27.	GD7823	2	Disc Blade, Solid, 12" (Shown)
	GD8307	-	Disc Blade, Notched, 12"
28.	GA5654	2	Hub W/Bearings
	GA2014	4	Bearing
29.	G10036	2	Hex Head Cap Screw, 5/8"-11 x 4"
	G10107	2	Lock Nut, 5/8"-11
30.	GD1132	2	Dust Cap
31.	GD7803	1	Disc Blade, Fluted, 1", 8 Flutes (Shown)
	GD7804	-	Disc Blade, Bubbled, 1"
	GD9254	-	Disc Blade, Fluted, 3/4", 13 Flutes
32.	G10213	-	Machine Bushing, 5/8" (.030" Thick) (As Required)
	G10918	-	Machine Bushing, 5/8", 14 Gauge (As Required)
33.	GD11698	2	Adapter
34.	GA8641	1	Hub W/Bearing And Retaining Ring
	GA8603	-	Double Row Bearing
	GD11652	-	Retaining Ring, 2 7/16"
35.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
36.	GA5643	1	Fork Mount
37.	G10068	1	Hex Head Cap Screw, 5/8"-11 x 6"
	G10107	1	Lock Nut, 5/8"-11
38.	G10217	-	Washer, 5/8" USS (As Required)
39.	GD7817-04	2	Spacer, 11/16" I.D. x 1/2" Long
40.	G1K330	2	Adapter Kit W/O-Ring And Spring Washer
	GD8844	-	O-Ring
	GD8843	-	Spring Washer
41.	GA5640	1	Hub W/Bearings And Grease Fitting **(Sub G1K290)**
	GA5622	-	Bearing (2 Used Per Hub)
	G10640	-	Grease Fitting, 1/4"-28

FRAME MOUNTED COULTER W/RESIDUE WHEELS

(RU135c/RU135g/RU135h)

STYLE B





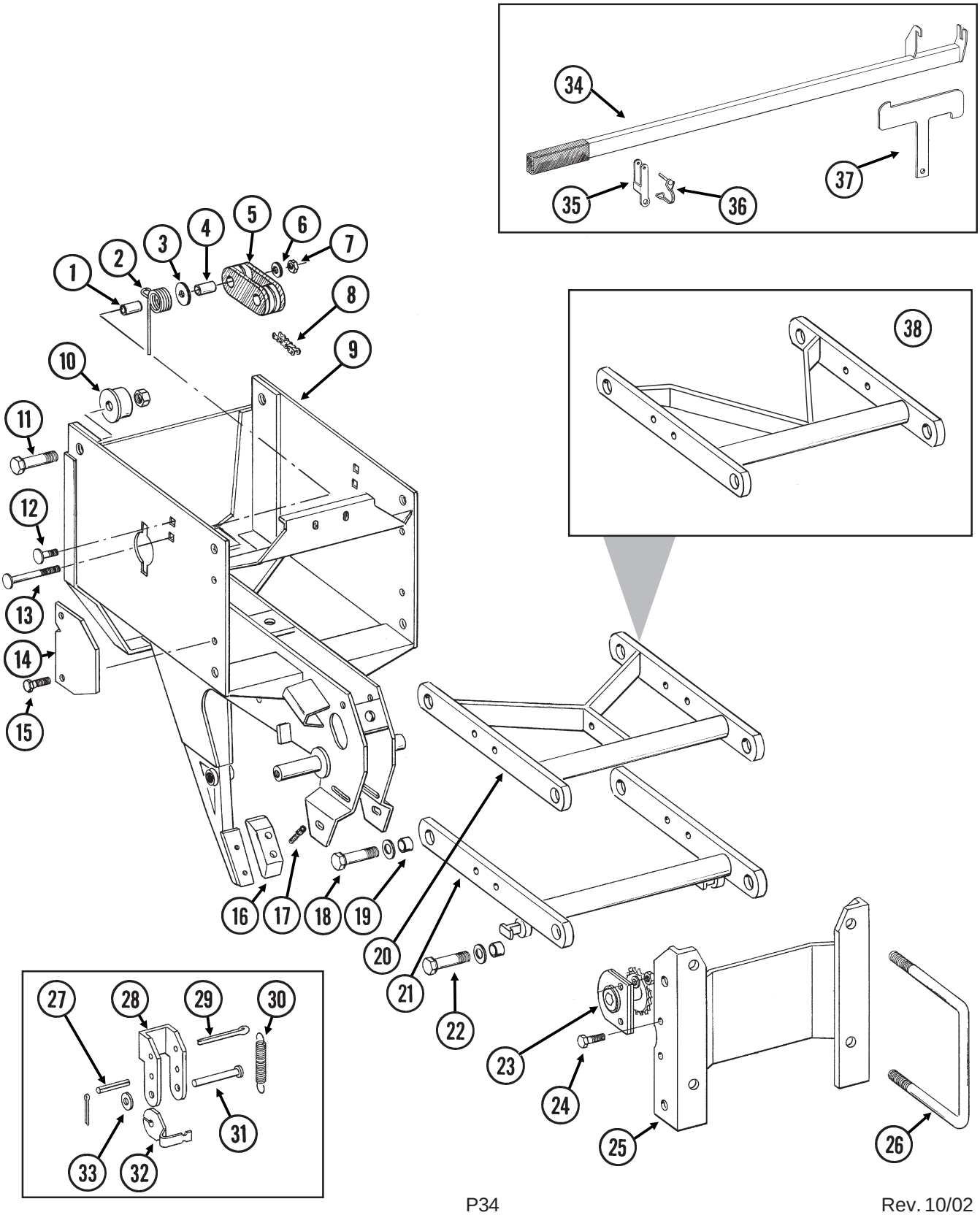
FRAME MOUNTED COULTER W/RESIDUE WHEELS

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	G11010	2	Hex Head Cap Screw, 3/4"-10 x 12"
2.	GA9844	1	Plate W/Angle
3.	G10039	4	Hex Head Cap Screw, 1/2"-13 x 1 3/4"
4.	GA9131	1	Coulter Frame
5.	G10007	4	Hex Head Cap Screw, 5/8"-11 x 1 1/2"
	G10107	4	Lock Nut, 5/8"-11
6.	G10400	1	Hex Head Cap Screw, 3/4"-10 x 6 1/2"
	G10112	1	Lock Nut, 3/4"-10
7.	GD12826	1	Spring Anchor Bar
8.	G10574	4	Carriage Bolt, 1/2"-13 x 1 1/4"
	G10111	4	Lock Nut, 1/2"-13
9.	GD12827	2	Adapter
10.	GA8641	1	Hub W/Bearing And Retaining Ring
	GA8603	1	Double Row Bearing
	GD11652	1	Retaining Ring, 2 7/16"
11.	GD7803	1	Disc Blade, Fluted, 1", 8 Flutes (Shown)
	GD7804	-	Disc Blade, Bubbled, 1"
	GD9254	-	Disc Blade, Fluted, 3/4", 13 Flutes
12.	GB0213	2	Spring Seat
13.	GD12817	2	Compression Spring
14.	GD12829	1	Sleeve
15.	G10046	1	Hex Head Cap Screw, 5/8"-11 x 5"
	G10107	1	Lock Nut, 5/8"-11
16.	GA9845	1	Coulter Arm W/Grease Fitting
	G10643	-	Grease Fitting, 45°, 1/4"-28
17.	G10011	1	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10107	1	Lock Nut, 5/8"-11
18.	GB0218	3	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
19.	GD1132	2	Dust Cap
20.	G10009	2	Hex Head Cap Screw, 5/8"-11 x 2 1/2"
21.	GD10552	2	Wheel, 12 Tine, 3/8" x 12"
22.	GA5654	2	Hub W/Bearings
	GA2014	-	Bearing
23.	GD9724	2	Backing Plate
24.	G10133	12	Hex Head Cap Screw, 5/16"-18 x 1 1/2"
	G10109	12	Lock Nut, 5/16"-18
25.	G10213	4	Machine Bushing, 5/8" (.030" Thick)
26.	GA9862	2	Weed Guard W/Spring Pin
	G10765	-	Spring Pin, 1/4" x 1"
27.	GA9865	1	Mount
28.	GA9861	1	Cam
29.	GD10519	1	Spring
30.	G10974	1	Lock Nut W/Nylon Insert, 1/2"-13
31.	G10005	1	Hex Head Cap Screw, 5/8"-11 x 1 3/4"
	G10107	4	Lock Nut, 5/8"-11
32.	GA9864	1	Support
33.	G10014	1	Hex Head Cap Screw, 1/2"-13 x 1"
	G10102	1	Hex Nut, 1/2"-13
34.	G10011	2	Hex Head Cap Screw, 5/8"-11 x 5 1/2"
	G10205	2	Washer, 5/8" SAE
	G10730	2	Lock Nut W/Nylon Insert, 5/8"-11
35.	GD14170	2	Sleeve, 3"
A.	GA7446	-	Wheel Assembly, 12 Tine, R.H. (Items 21-24) (Shown)
	GA7445	-	Wheel Assembly, 12 Tine, L.H. (Items 21-24)

INTERPLANT® PUSH ROW UNIT

RPU011/RPU012/RPU013(RU89p/RU121/RU89i)

NOTE: Push row units use the same seed tube, row unit depth adjustment components, quick adjustable down force springs, 15" opener disc blades, gauge wheels, closing wheels, meter drive and seed hopper as the pull row unit. See those pages for common parts.



INTERPLANT® PUSH ROW UNIT

ITEM	PART NO.	QTY. (Per Row)	DESCRIPTION
1.	GD1026	1	Sleeve, 1 3/16" Long
2.	GD11218	1	Spring
3.	G10201	1	Special Washer, 3/8" x 1 1/2" O.D.
4.	GD8893-01	1	Sleeve, 1 3/8" Long
5.	GD11962	1	Idler
6.	G10210	1	Washer, 3/8" USS
7.	G10108	1	Lock Nut, 3/8"-16
8.	G3303-96	1	Chain, No. 41, 96 Pitch Including Connector Link
	GR0196	1	Connector Link, No. 41
9.	GA8037	-	Push Row Unit Shank
10.	GB0314	2	Hopper Mount
11.	G10751	2	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	G10412	2	Lock Nut, 5/8"-18
12.	G10599	1	Carriage Bolt, 3/8"-16 x 1 1/4"
	G10101	1	Hex Nut, 3/8"-16
	G10108	1	Lock Nut, 3/8"-16
13.	G10307	1	Carriage Bolt, 3/8"-16 x 3 1/2"
14.	GD10867	2	Stop
15.	G10004	4	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10108	4	Lock Nut, 3/8"-16
16.	GB0301	1	Seed Tube Guard/Inner Scraper
17.	G10912	2	Hex Socket Head Cap Screw, 5/16"-18 x 1", Grade 8
18.	G10751	4	Hex Head Cap Screw, 5/8"-18 x 1 3/4"
	GD7805	4	Special Washer, 5/8", Hardened
	G10412	4	Lock Nut, 5/8"-18
19.	GB0218	8	Bushing, 21/32" I.D. x 7/8" O.D. x 19/32" Long
20.	GA5788	1	Upper Arm
21.	GA5787	1	Lower Arm
22.	G10732	4	Hex Head Cap Screw, 5/8"-18 x 2"
	GD7805	4	Special Washer, 5/8", Hardened
	G10412	4	Lock Nut, 5/8"-18
23.	GA1720	1	Bearing/Sprocket, 7/8" Hex Bore
24.	G10004	2	Hex Head Cap Screw, 3/8"-16 x 1 1/4"
	G10229	2	Lock Washer, 3/8"
	G10101	2	Hex Nut, 3/8"-16
25.	GA5786	1	Mounting Plate
26.	GD1113	2	U-Bolt, 5" x 7" x 5/8"-11
	GD1114	2	U-Bolt, 7" x 7" x 5/8"-11
	G10230	4	Lock Washer, 5/8"
	G10104	4	Hex Nut, 5/8"-11
27.	G10718	2	Spring Pin, 5/16" x 1 1/8"
28.	GD11264	2	Lockup
29.	G10463	2	Cotter Pin, 1/4" x 1 1/2"
30.	GD11447	2	Spring
31.	G10284	2	Clevis Pin, 1/2" x 1 1/2"
	G10456	2	Cotter Pin, 1/8" x 3/4"
32.	GD11263	2	Spring Tab
33.	G10216	2	Washer, 1/2" USS
34.	GA8651	1	Lift Lever W/Boot
	GD11649	-	Boot
35.	GD11659	1	Bracket
36.	GD9695	1	Wire Lock Pin, 1/4" x 1 3/4"
37.	GD11752	1	Mount
38.	GA8930	-	Upper Arm

ROW UNIT
ASSEMBLY & INSTALLATION
INSTRUCTIONS

IS396 **Rev. 3/05**

Throughout these instructions the symbol  and/or the words **NOTE, IMPORTANT, CAUTION, WARNING** or **DANGER** are used to call your attention to important information. The definition of each of these terms follows:

NOTE: Indicates a special point of information or addresses a machine adjustment.

IMPORTANT: Indicates information which, if not heeded, could result in damage to the machine.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate personal injury.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious personal injury.

DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious personal injury.

SAFETY PRECAUTIONS ⚠

⚠ Make sure there are no persons near the planter when row markers are in operation.

⚠ Always install all cylinder lockup devices or lower planter to the ground before working under the machine.

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

⚠ Before applying pressure to the hydraulic system, make sure all connections are tight and that hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin, causing injury or infection.

⚠ The row unit is designed to be DRIVEN BY GROUND TIRES ONLY. The use of hydraulic, electric or PTO drives may create serious safety hazards to you and the people near by. If you install such drives you must follow all appropriate safety standards and practices to protect you and others near the planter from injury.

⚠ The row unit has been designed and built with your safety in mind. Do not make any alterations or changes to this equipment. Any alteration to the design or construction may create safety hazards.

WORK AREA

⚠ Keep the work area clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment.

⚠ Make sure the service area is adequately vented.

⚠ Be sure all electrical outlets and tools are properly grounded.

⚠ Use adequate light for the job.

⚠ Be prepared if an accident or fire should occur. Know where first aid kits and fire extinguishers are located and know how to use them.

SAFETY WARNING SIGNS ⚠

The “WARNING” sign illustrated on this page is placed on the machine to warn of hazards. The warnings found on this sign is for your personal safety and the safety of those around you. OBSERVE THIS WARNING!

- **Keep these signs clean so they can be readily observed. Wash with soap and water or cleaning solution as required.**
- **Replace “WARNING” signs should they become damaged, painted over or if they are missing.**
- **When replacing decals, clean the machine surface thoroughly using soap and water or cleaning solution to remove all dirt and grease.**

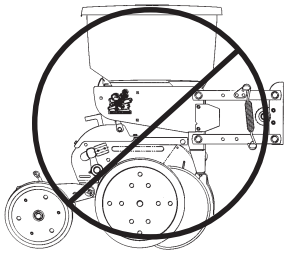
Part No. G7100-115
(Located on the under side of each granular chemical hopper lid.)

The KINZE® Pull Row Unit and Interplant® Push Row Unit have been assembled as completely as possible before shipment. Read completely through all instructions before beginning assembly.

NOTE: If the Model 3000 planter is being equipped with a dry fertilizer attachment or HD single disc fertilizer openers, for either liquid or dry fertilizer, it will be necessary to install any fertilizer attachment or opener U-bolts that must be positioned directly ahead of the row unit before installing the row unit. The row unit support plate will interfere with installation of the U-bolt(s). For example, the HD single disc fertilizer opener requires that two U-bolts be installed directly ahead of each row unit. Either install the fertilizer attachment before row unit installation or check fertilizer attachment installation instructions and position fertilizer attachment U-bolt(s) onto planter frame prior to installation of row units.

NOTE: If the Model 3200 planter is being equipped with fertilizer attachments, the fertilizer opener mounts and the flow divider support must be installed during row unit installation. In many locations fertilizer opener mounts are straddled by the row unit support plate and/or using the same mounting hardware. See Liquid Fertilizer Installation Instruction (IS428).

(RU113)



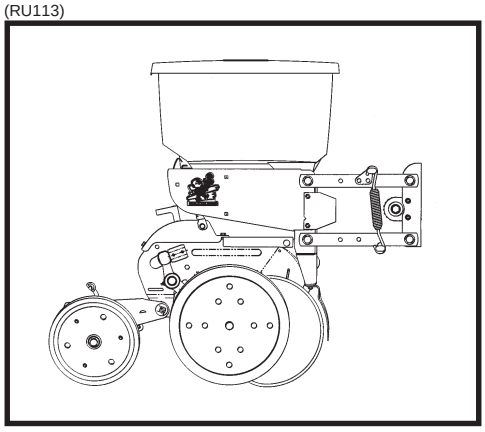
Before beginning set-up, using the shipping order and the contents listings at the end of each instruction, check to be sure you have all the packages needed to complete assembly.

GENERAL INFORMATION

The information used in these instructions was current at the time of printing. However, due to KINZE's continual attempts to improve its product, production changes may cause your machine to appear slightly different in detail. KINZE Manufacturing, Inc. reserves the right to change specifications or design without notice and without incurring obligation to install the same on machines previously manufactured.

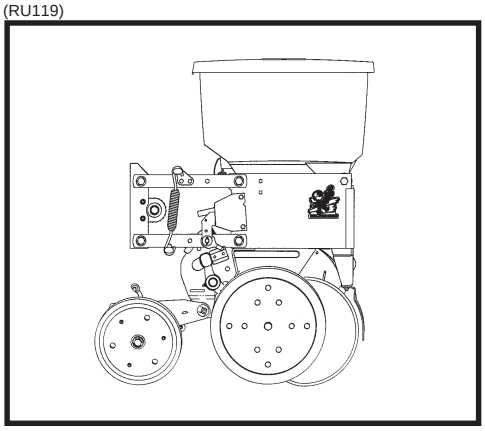
Right hand (R.H.) and left hand (L.H.), as used throughout these instructions, are determined by facing in the direction the machine will travel when in use, unless otherwise stated.

(RU113)



Pull Row Unit

(RU119)



Push Row Unit

MOUNTING BOLTS AND HARDWARE IS396

All hardware furnished with the row unit unless otherwise noted is SAE Grade 5. Cap screws are marked with three radial lines on the head. If hardware must be replaced, be sure to replace it with hardware of equal size, strength and thread type.

It is suggested that hardware be left somewhat loose until all parts have been assembled. This especially applies to bearing flanges and idler sprockets. Then as a final step, tighten all hardware to the torque value specified in the chart.

NOTE: Over tightening hardware can cause as much damage as under tightening. Tightening hardware beyond the recommended torque range can reduce its shock load capacity.

TORQUE VALUES CHART - PLATED HARDWARE

Bolt Diameter	Grade 2		Grade 5		Grade 8	
	Coarse	Fine	Coarse	Fine	Coarse	Fine
1/4"	50 In. Lbs.	56 In. Lbs.	76 In. Lbs.	87 In. Lbs.	9 Ft. Lbs.	10 Ft. Lbs.
5/16"	8 Ft. Lbs.	9 Ft. Lbs.	13 Ft. Lbs.	14 Ft. Lbs.	18 Ft. Lbs.	20 Ft. Lbs.
3/8"	15 Ft. Lbs.	17 Ft. Lbs.	23 Ft. Lbs.	26 Ft. Lbs.	33 Ft. Lbs.	37 Ft. Lbs.
7/16"	25 Ft. Lbs.	27 Ft. Lbs.	37 Ft. Lbs.	41 Ft. Lbs.	52 Ft. Lbs.	58 Ft. Lbs.
1/2"	35 Ft. Lbs.	40 Ft. Lbs.	57 Ft. Lbs.	64 Ft. Lbs.	80 Ft. Lbs.	90 Ft. Lbs.
9/16"	50 Ft. Lbs.	60 Ft. Lbs.	80 Ft. Lbs.	90 Ft. Lbs.	115 Ft. Lbs.	130 Ft. Lbs.
5/8"	70 Ft. Lbs.	80 Ft. Lbs.	110 Ft. Lbs.	125 Ft. Lbs.	160 Ft. Lbs.	180 Ft. Lbs.
3/4"	130 Ft. Lbs.	145 Ft. Lbs.	200 Ft. Lbs.	220 Ft. Lbs.	280 Ft. Lbs.	315 Ft. Lbs.
7/8"	125 Ft. Lbs.	140 Ft. Lbs.	320 Ft. Lbs.	350 Ft. Lbs.	450 Ft. Lbs.	500 Ft. Lbs.
1"	190 Ft. Lbs.	205 Ft. Lbs.	480 Ft. Lbs.	530 Ft. Lbs.	675 Ft. Lbs.	750 Ft. Lbs.
1 1/8"	265 Ft. Lbs.	300 Ft. Lbs.	600 Ft. Lbs.	670 Ft. Lbs.	960 Ft. Lbs.	1075 Ft. Lbs.
1 1/4"	375 Ft. Lbs.	415 Ft. Lbs.	840 Ft. Lbs.	930 Ft. Lbs.	1360 Ft. Lbs.	1500 Ft. Lbs.
1 3/8"	490 Ft. Lbs.	560 Ft. Lbs.	1100 Ft. Lbs.	1250 Ft. Lbs.	1780 Ft. Lbs.	2030 Ft. Lbs.
1 1/2"	650 Ft. Lbs.	730 Ft. Lbs.	1450 Ft. Lbs.	1650 Ft. Lbs.	2307 Ft. Lbs.	2670 Ft. Lbs.

NOTE: Unplated hardware and bolts with lock nuts should be torqued approximately 1/3 higher than the above values. Bolts lubricated prior to installation should be torqued to 70% of value shown on chart.

GRADE 2
No Marks

GRADE 5
3 Marks

GRADE 8
6 Marks

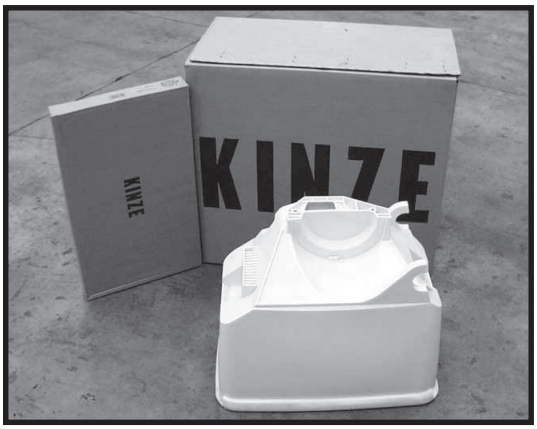
TABLE OF CONTENTS IS396

* Not compatible with covering discs/single press wheel closing wheel option.

PULL ROW UNIT (Less Closing Wheels)

IS396

D070799101a



Pull Row Unit - 700-01075

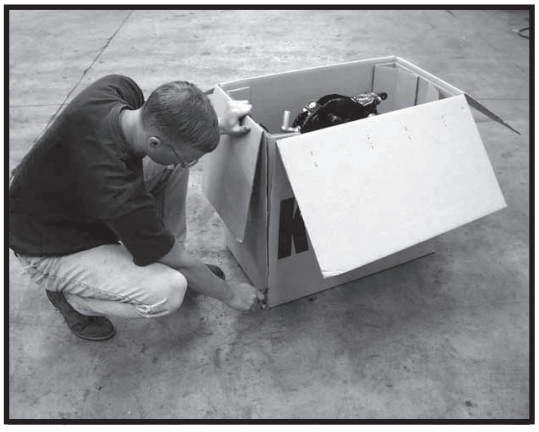
(1)7525X Lid W/Logo (D11279)
(1)7777X Row Unit
- (1)A9700 Hardware Box (Down Force Springs, Chain, Hanger Bearing Sprocket, Closing Wheel Hardware And Meter Drive)
  - (2)10013 Cap Screw, 5/8"-11 x 3 1/2"
  - (2)10107 Lock Nut, 5/8"-11
  - (1)3303-98 Chain, No. 41, 98 Pitch Including Connector Link
  - (2)D14217 Tab Lock Pin, 7/16" x 1 1/2"
  - (2)10302 Carriage Bolt, 5/16"-18 x 7/8"
  - (2)10620 Flange Nut, 5/16"-18
  - (2)10229 Lock Washer, 3/8"
  - (2)10001 Cap Screw, 3/8"-16 x 1"
  - (2)10101 Hex Nut, 3/8"-16
  - (2)D1109 Bushing, 41/64" I.D. x 7/8" O.D. x 1/4" Long
  - (2)D8249 Spring
  - (1)D11305 Plate
  - (1)A1720 Bearing Sprocket, 7/8" Hex Bore
  - (1)A9539 Meter Drive Assembly Complete
  - (2)10230 Lock Washer, 5/8"
  - (2)B0186 Spring Anchor
  - (2)D7805 Special Washer, 5/8", Hardened
- (1)A5833 Lower Parallel Arm/Support Plate Assembly
- (1)A7964 Row Unit (Shank/Hopper Support Assembly)

(1)A9714 Seed Hopper

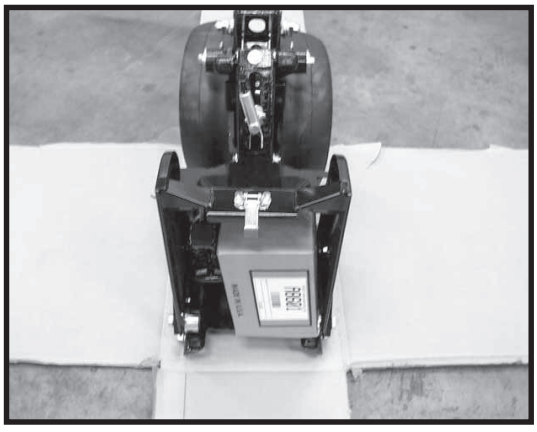
NOTE: Seed metering unit and seed tube are not supplied with row unit.

STEP 1 Open the row unit shipping carton. Cut away the carton from the row unit and remove the Hardware Box.

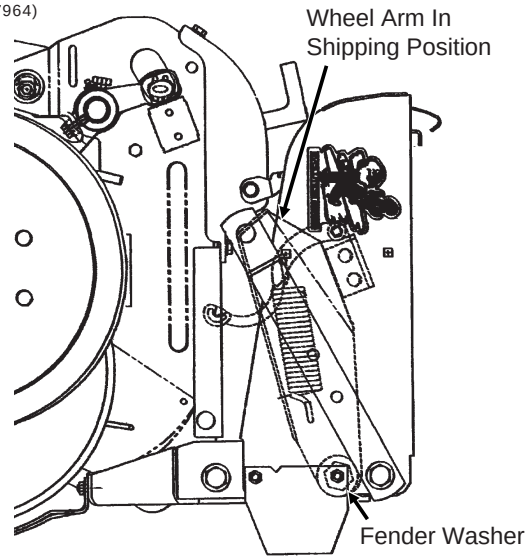
D070799104



D070799105



(A7964)

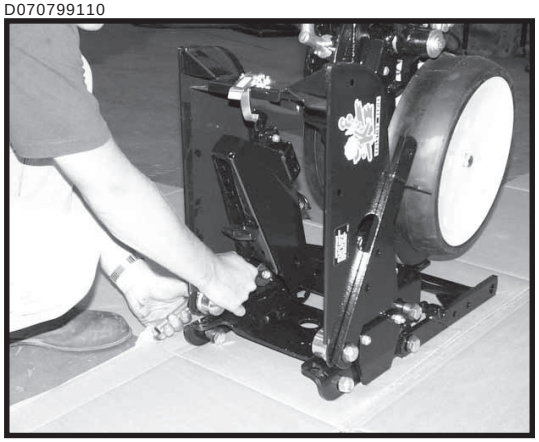


STEP 2 Remove closing wheel arm from its shipping position.

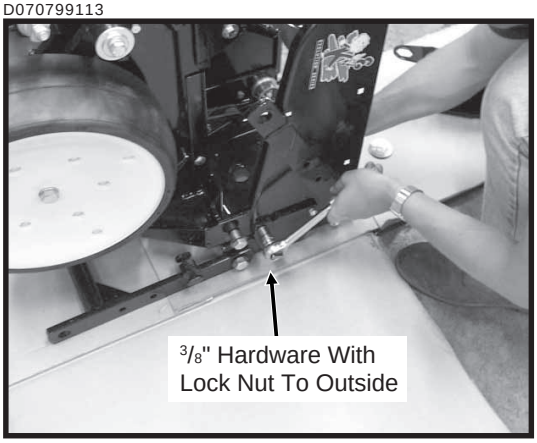
Discard fender washer used in securing wheel arm in shipment.

Reassemble 3/8" hardware with lock nut to outside of row unit.

D070799110



D070799113



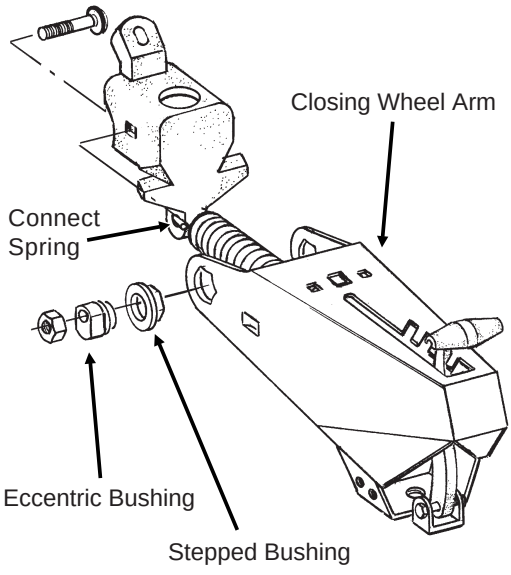
STEP 3 Connect spring and install closing wheel arm as shown at right and in photos on the following page. If covering discs/single press wheel is being used, DO NOT INSTALL closing wheel arm. Proceed to "Assembly - Closing Wheel Options, Covering Discs/Single Press Wheel" without installing closing wheel arm.

Align closing wheel arm with double disc openers by rotating eccentric bushings. Tighten mounting hardware.

NOTE: See "Assembly - Closing Wheel Options" section of this instruction for information on the assembly of rubber "V" closing wheels, cast iron "V" closing wheels or covering discs/single press wheel.

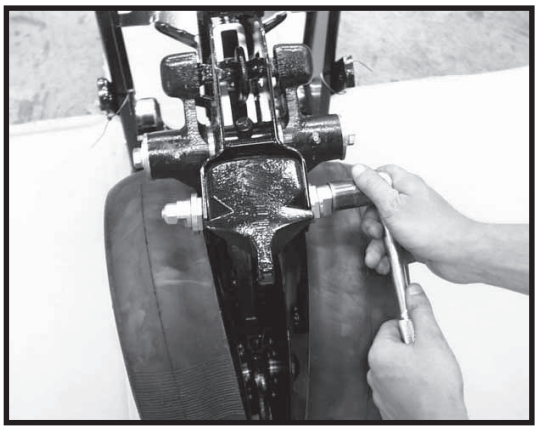
A Drag Closing Attachment (G7566X) is sold through KINZE® Repair Parts. Refer to IS454 supplied with G7566X for installation of that attachment.

(RU83f)



STEP 3 (Continued)

D070799114



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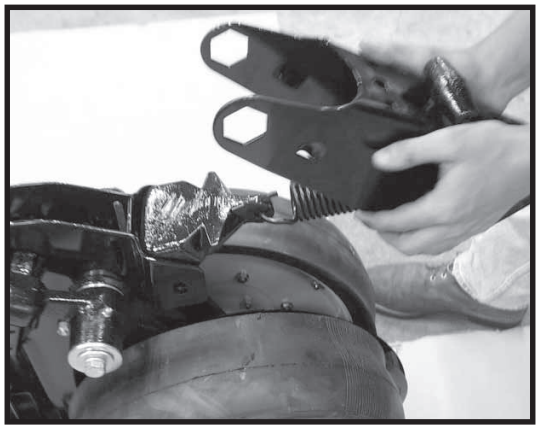
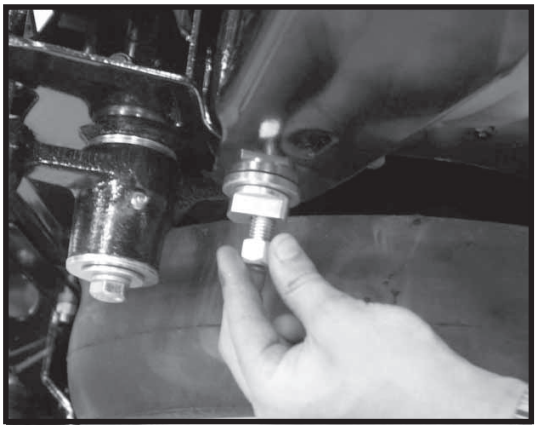


D070799120



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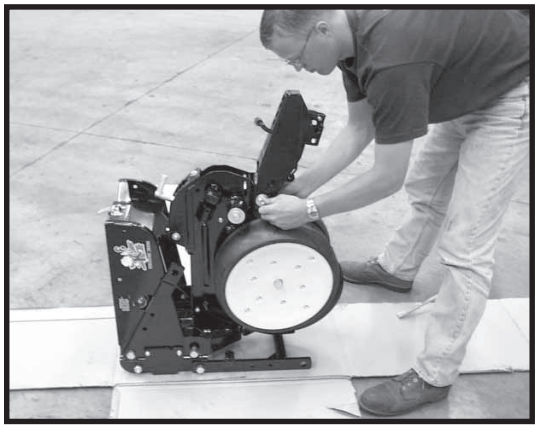
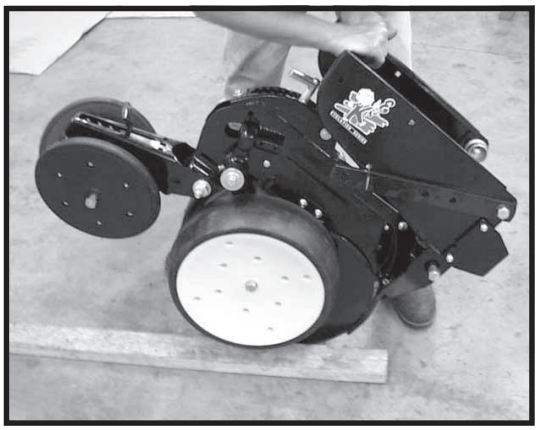


STEP 4 Tip row unit to the upright position for installation/repositioning of the parallel arms. (The lower parallel arm and support plate are shipped in the bottom of the shipping carton under the row unit.)

D070799126



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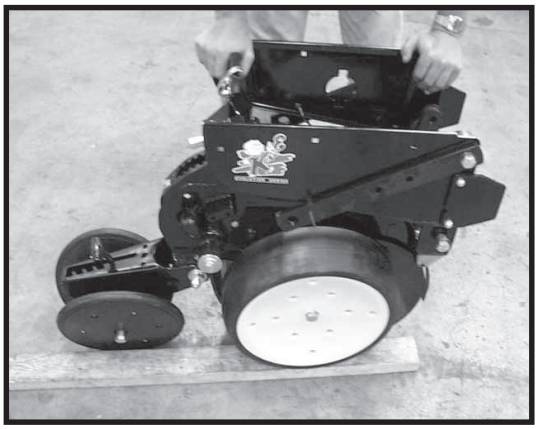
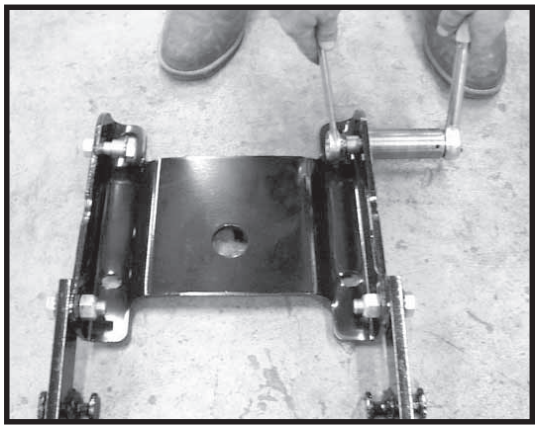


NOTE: Shown with optional closing wheels installed. See page 25.

STEP 4 (Continued)

Remove cap screws, hardened washers, bushings and lock nuts from their shipping locations on the row unit and the lower parallel arms.

D070799128



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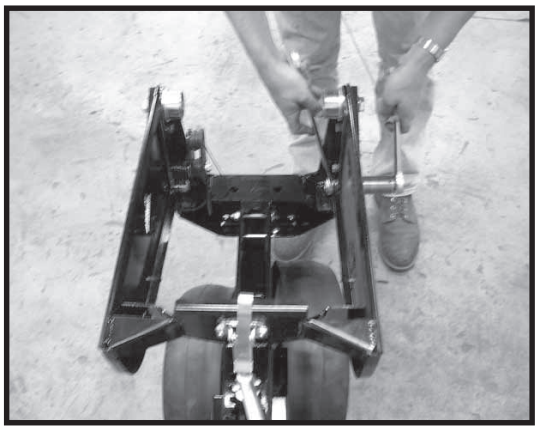
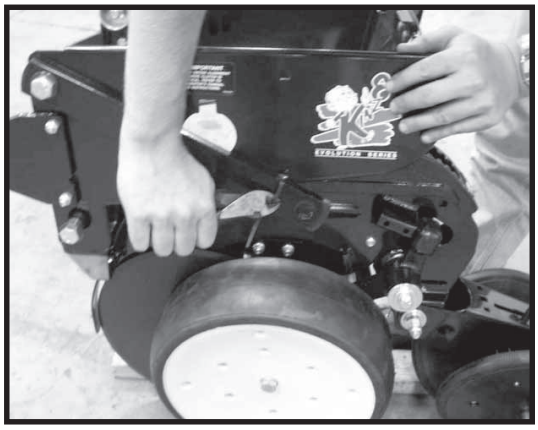
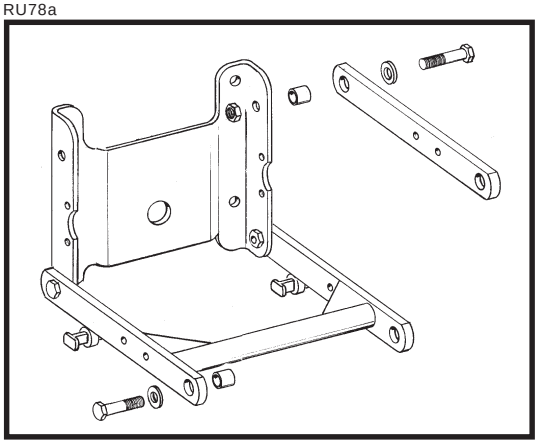


Remove tie straps holding the upper parallel arms in shipping position and swing the arms forward. Attach lower parallel arm/support plate assembly positioned as shown.

D070799130



RU78a

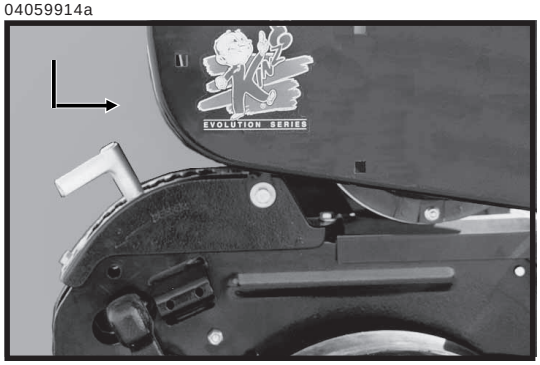


Torque mounting bolts to 130 ft. lbs. Move row unit gauge wheel depth adjustment lever to the front position to provide stability for the remainder of the assembly procedure.

NOTE: If the row unit is to be equipped with row unit mounted no till coulters, disc furrowers or bed levelers, installation of those attachments may be done at this time. See "Optional Attachments" section of this instruction for additional information on the assembly of those attachments.

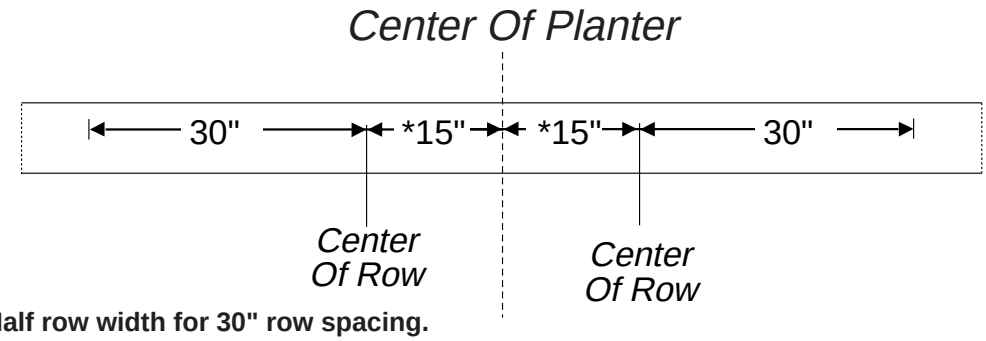
Repeat STEPS 1 through 4 on all pull row units.

04059914a



STEP 5 Measure the full length of the planter toolbar. Locate and mark the center. Mark the center of each row by measuring to each side of toolbar center. The two center units will be located half the row width from the center.

RH006(RU52)

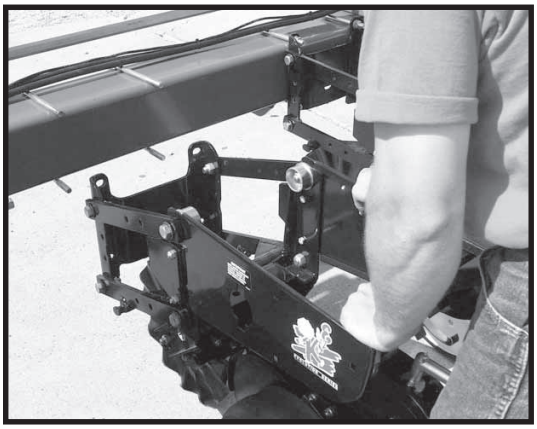


*** Half row width for 30" row spacing.**

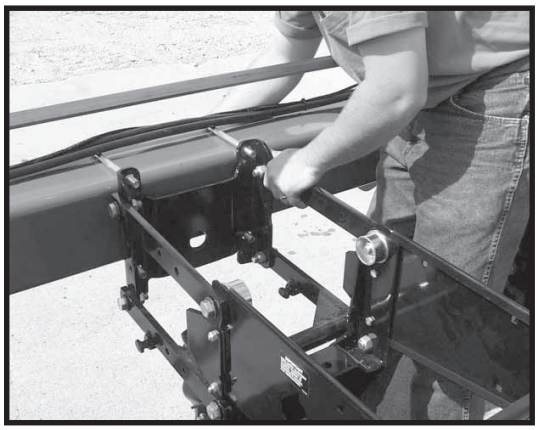
For example, when units are being installed for 30" rows, measure 15" to each side from the center of the toolbar and every 30" thereafter to the ends of the toolbar.

STEP 6 Position and attach the two center row units on the planter toolbar using 5/8" U-bolts, lock washers and nuts.

D07099911



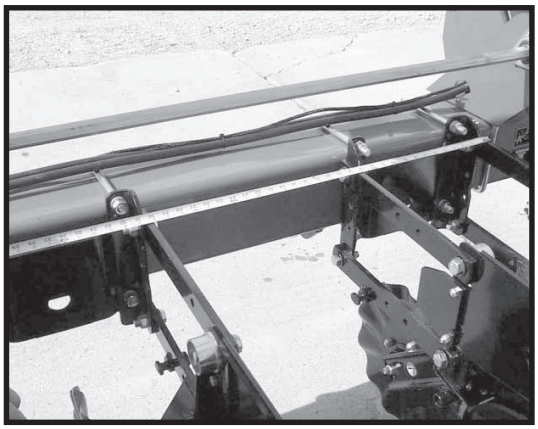
D07099915



NOTE: Refer to Machine Assembly Instruction for the model planter being assembled for additional information.

To check the spacing between the row units, measure between units from a common point on each unit. A good location to measure from is the parallel arms as close to the front as possible. **Verify spacing at row unit double disc openers.**

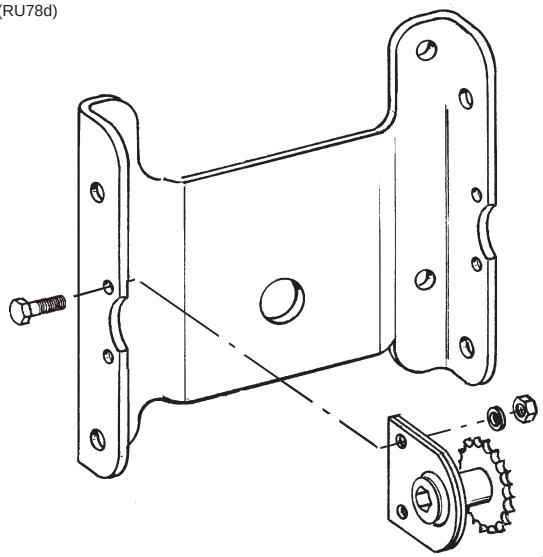
D07099917



STEP 7 Install each of the remaining row units. Position row unit in the approximate location, tighten U-bolts slightly, measure between units as previously instructed, make final adjustments and tighten U-bolts to 110 ft. lbs.

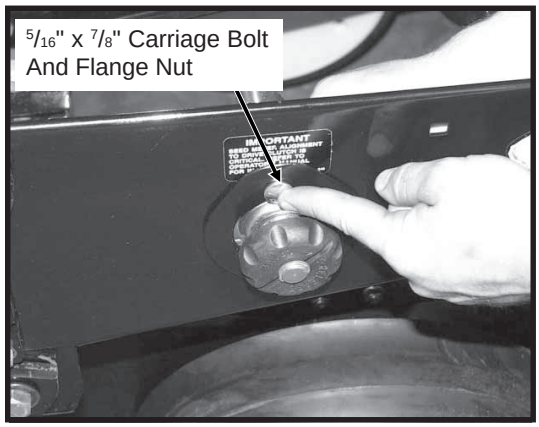
STEP 8 Install bearing sprocket from hardware box to the support plate of each row unit. DO NOT TIGHTEN 3/8" mounting hardware at this time.

(RU78d)

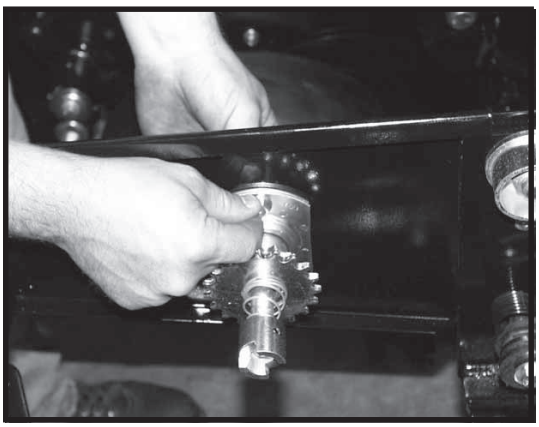


STEP 9 Install meter drive on each row unit. DO NOT TIGHTEN hardware at this time.

D070799156



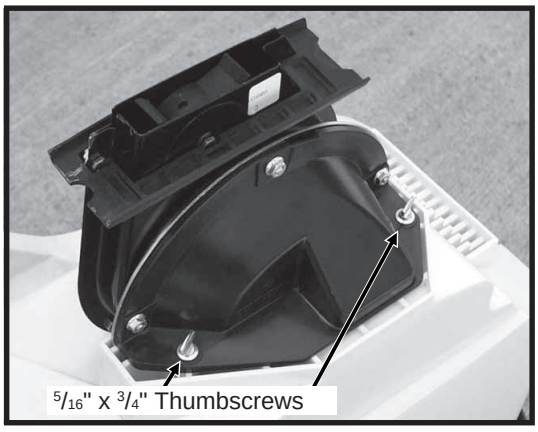
D070799158



STEP 10 Install seed metering unit with shank cover onto bottom of hopper.

DO NOT OVER TIGHTEN.

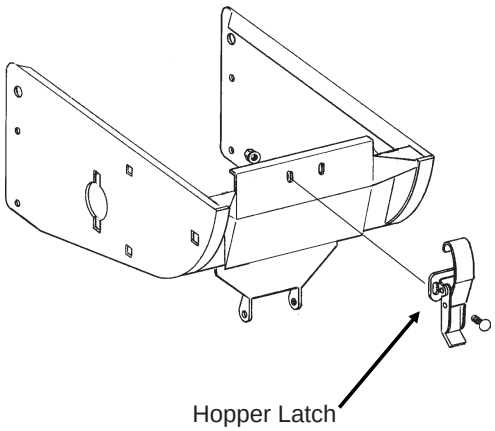
D071399122



STEP 11 Install seed hopper and latch in position. Adjust latch up or down as necessary for a secure fit. Install hopper lid.

Repeat STEPS 10 and 11 on all hoppers

(RU86b)



STEP 12 The slotted mounting hole in the hopper support panel and clutch plate allow for alignment adjustment between the drive coupler and meter shaft. If the drive clutch is centered in the hole in the hopper support panel, the drive should be in alignment.

To check alignment engage drive coupler over pin on meter shaft.

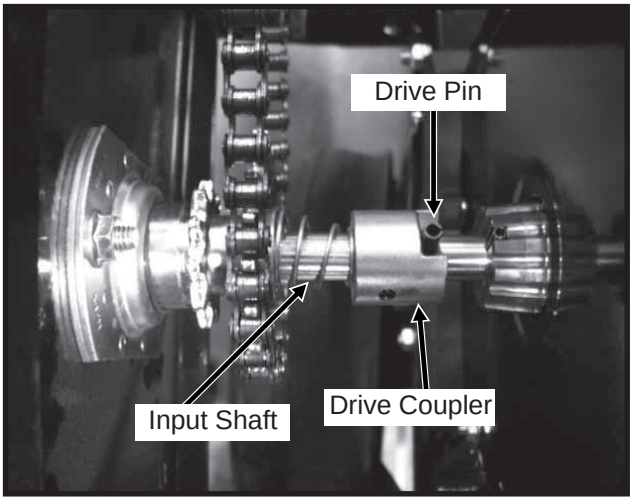
NOTE: Drive shaft on clutch should be centered in sprocket bore.

To adjust drive clutch: (a) Slightly loosen both $^{5}/_{16}$" carriage bolts. (b) Move clutch assembly to correct any misalignment. (c) Tighten both $^{5}/_{16}$" carriage bolts.

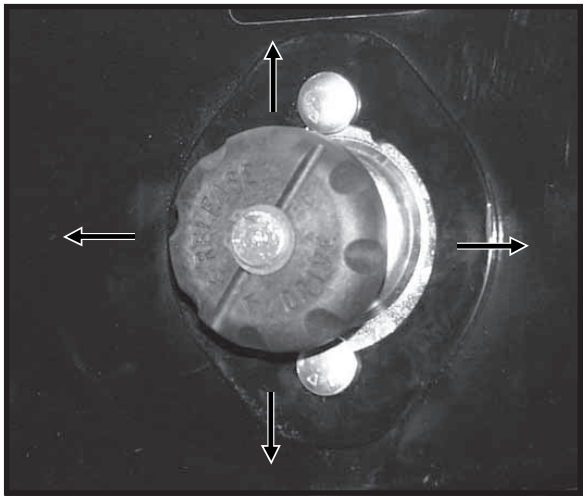
Repeat procedure on all row units.

IMPORTANT: The seed meter drive coupler must be properly aligned with the meter input shaft so the clutch coupler can engage meter shaft freely. Proper clutch alignment will also ensure consistent meter rotation speed resulting in more accurate seed spacing.

D04209903



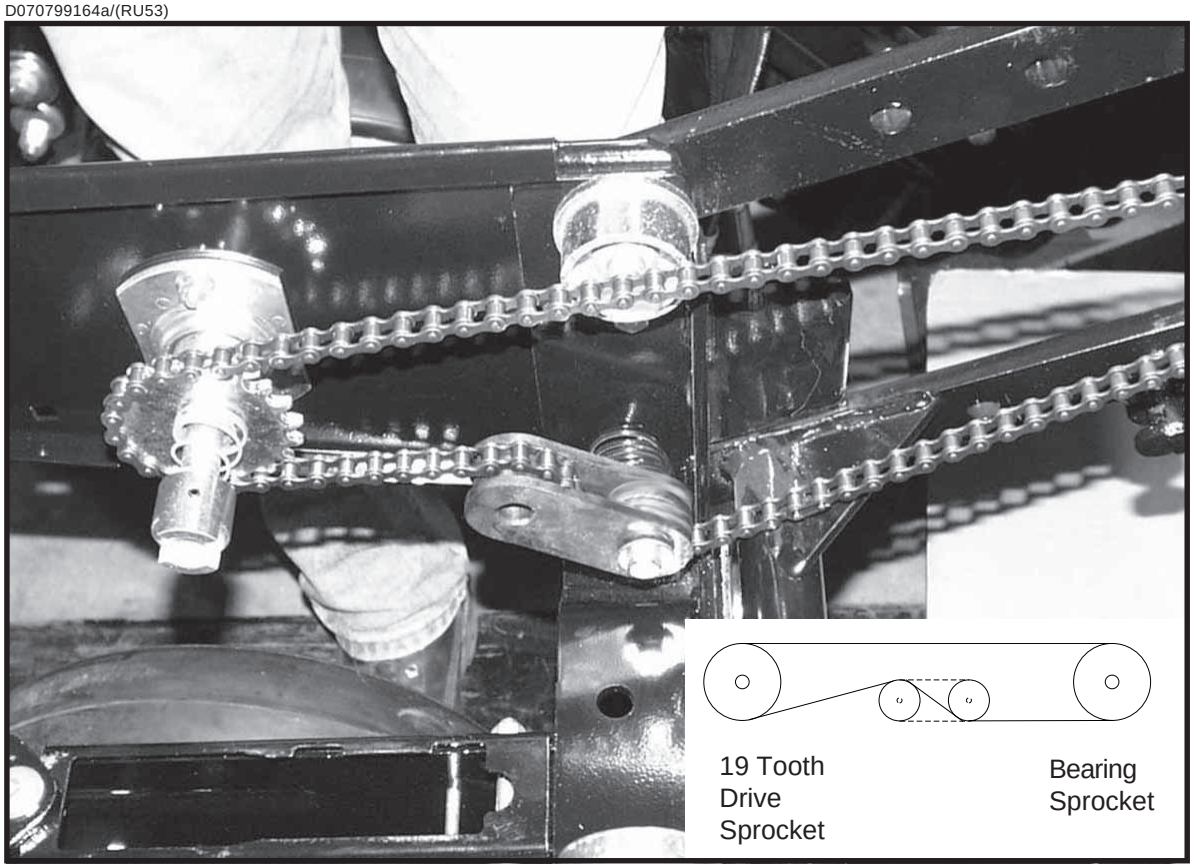
D04199906



Shown With Chain Installed

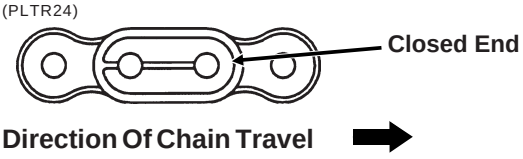
STEP 13 Remove seed hopper. Remove tie strap holding chain idler in shipping position. Install row unit drive chain. Route chain through chain idler and around the 19 tooth drive sprocket and bearing sprocket. Join ends of the chain with the connecting link. Repeat procedure on all row units.

D070799164a/(RU53)



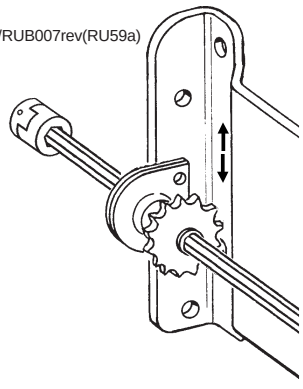
NOTE: Make sure connector link is installed with closed end oriented properly as shown.

(PLTR24)



STEP 14 After all drive chains have been positioned onto the bearing sprockets, install the planter drill shaft(s), align and couple to transmission. Refer to machine assembly instructions for the model planter being assembled for additional information.

PTD056rev/RUB007rev(RU59a)

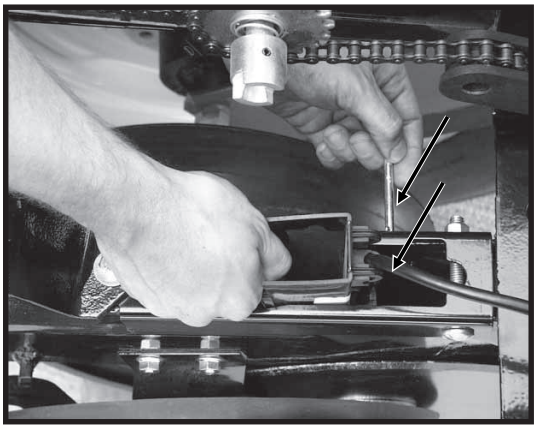


STEP 15 Check vertical alignment of bearing sprockets to ensure proper alignment between transmission drill shaft coupler and drill shaft. Tighten bearing sprocket mounting hardware.

STEP 16 Install seed tube (not supplied as part of row unit) in shank as shown. Position hook on the front of the seed tube over lower cross pin in shank. Pivot top of seed tube forward and secure with retaining pin and locking clip. Repeat on all row units.

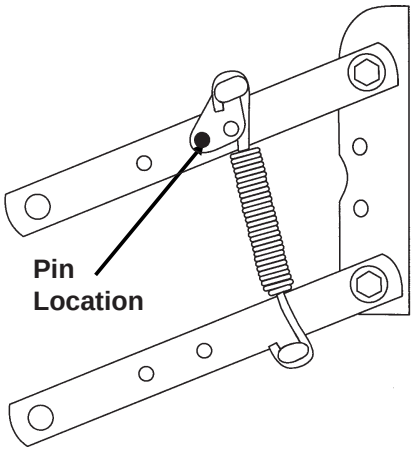
If electronic seed monitoring tubes are being installed, refer to the instructions supplied with that package.

D071399130



STEP 17 **Raise the planter until the bottom of the toolbar is approximately 30" above the floor. Install support stands to safely hold the planter until assembly is complete.** Install one down force spring to the L.H. parallel arms and one down force spring to the R.H. parallel arms. (a)Install spring onto outside of lower parallel arm at spring tab with open end of spring facing rearward toward seed hopper. (b)Position spring mount onto upper parallel arm, rotate mount forward and position spring onto spring mount tab. (c)Rotate spring down until mount aligns with hole in parallel arm as shown below and install pin. Repeat on all row units.

(PLTR27e)



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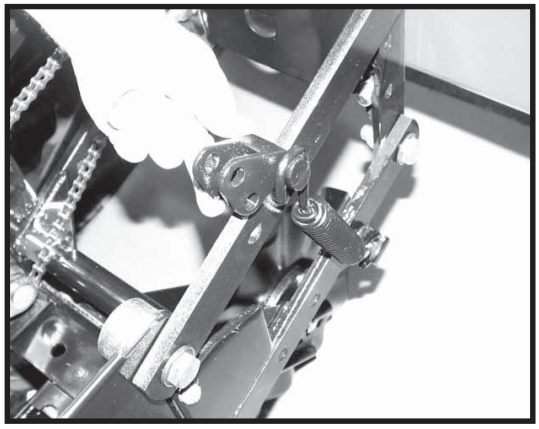
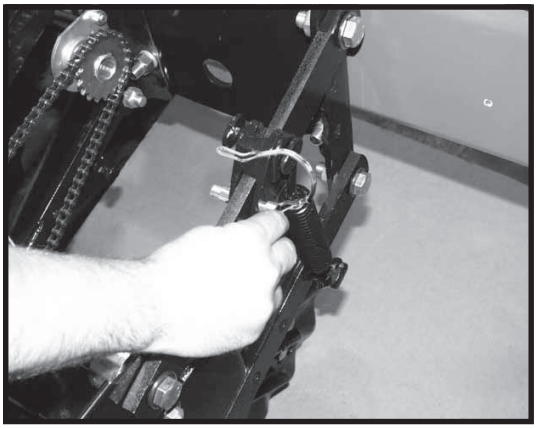


D070799169a



STEP 18 Remove support stands and lower planter to the ground. Install hoppers and latch in position.

STEP 19 If additional optional equipment is being installed on the row unit, see “Optional Attachment” assembly section.

PUSH ROW UNIT (Less Closing Wheels)

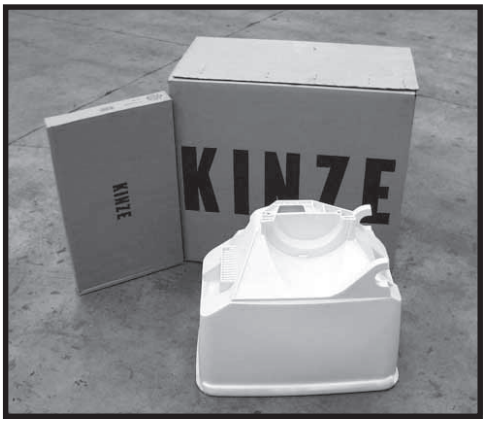
IS396

Push Row Unit - 700-01076

(1)7525X Lid W/Logo (D11279)
(1)7778X Push Row Unit
- (1)A9701 Hardware Box (Down Force Springs, Chain, Hanger Bearing Sprocket, Closing Wheel Hardware And Meter Drive)
  - (2)10013 Cap Screw, $^{5}/_{8}$"-11 x 3 $^{1}/_{2}$"
  - (2)10107 Lock Nut, $^{5}/_{8}$"-11
  - (1)3303-96 Chain, No. 41, 96 Pitch Including Connector Link
  - (2)D14217 Tab Lock Pin, $^{7}/_{16}$" x 1 $^{1}/_{2}$"
  - (2)10302 Carriage Bolt, $^{5}/_{16}$"-18 x $^{7}/_{8}$"
  - (2)10620 Flange Nut, $^{5}/_{16}$"-18
  - (2)10229 Lock Washer, $^{3}/_{8}$"
  - (2)10004 Cap Screw, $^{3}/_{8}$"-16 x 1 $^{1}/_{4}$"
  - (2)10101 Hex Nut, $^{3}/_{8}$"-16
  - (2)D1109 Bushing, $^{41}/_{64}$" I.D. x $^{7}/_{8}$" O.D. x $^{1}/_{4}$" Long
  - (2)D8249 Spring
  - (1)D11305 Plate
  - (1)A1720 Bearing Sprocket, $^{7}/_{8}$" Hex Bore
  - (1)A9539 Meter Drive Assembly Complete
  - (2)10230 Lock Washer, $^{5}/_{8}$"
  - (2)B0186 Spring Anchor
  - (2)D7805 Special Washer, $^{5}/_{8}$", Hardened
- (1)A8039 Push Row Unit (Shank/Hopper Support Assembly, Parallel Arms And Lockups)

(1)A9714 Seed Hopper

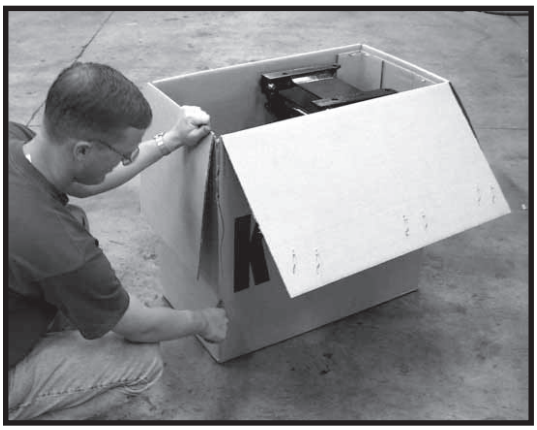
D070799101a



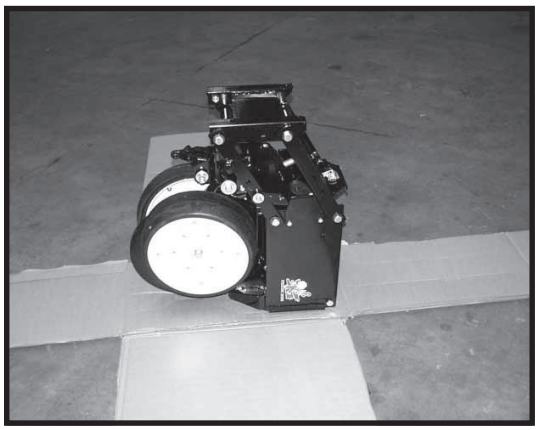
NOTE: Seed metering unit and seed tube are not supplied with row unit.

STEP 1 Open the push row unit shipping carton. Remove the Hardware Box. Cut away the carton from the push row unit.

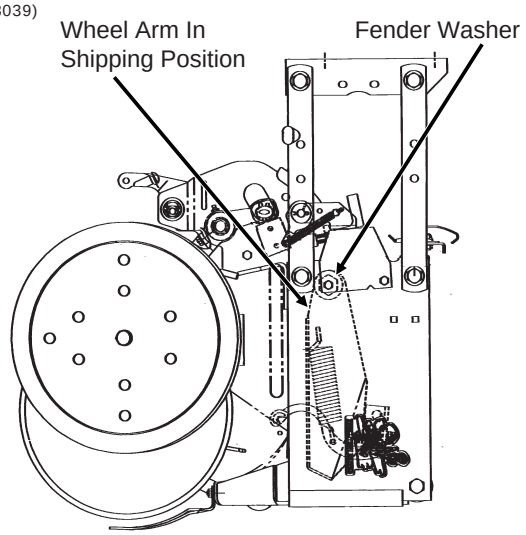
D07029907



D07029910



(A8039)

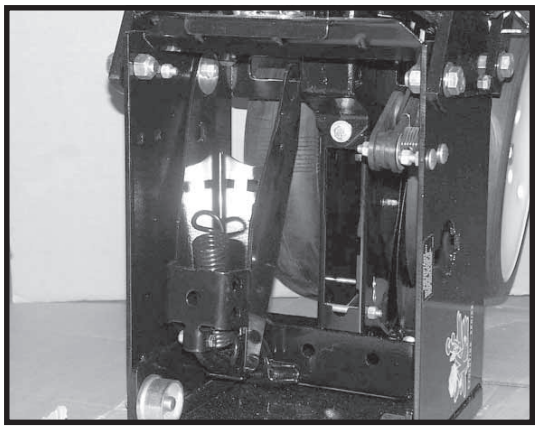


STEP 2 Remove closing wheel arm from its shipping position.

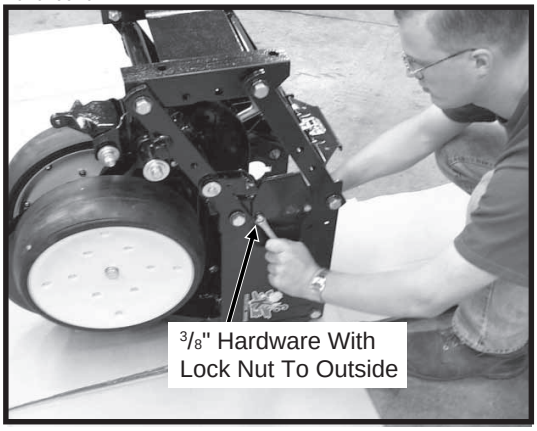
Discard fender washer used in securing wheel arm in shipment.

Reassemble 3/8" hardware with lock nut to outside.

D07029911



D07029916



STEP 3 Connect spring and install closing wheel arm as shown at right and in photos below.

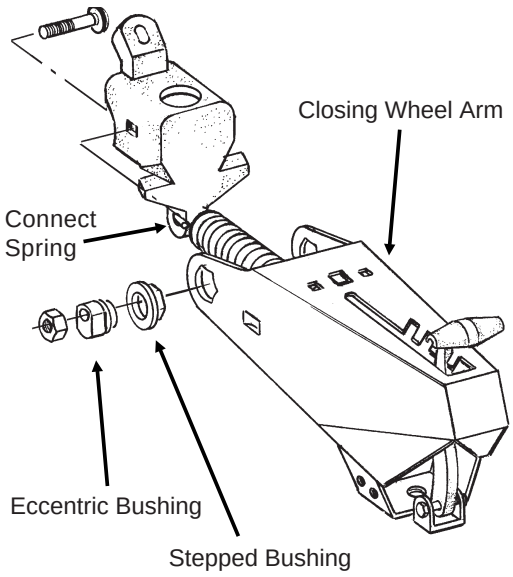
Align closing wheel arm with double disc openers by rotating eccentric bushings. Tighten mounting hardware.

NOTE: See "Assembly - Closing Wheel Options" section of this instruction for information on the assembly of rubber "V" closing wheels or cast iron "V" closing wheels.

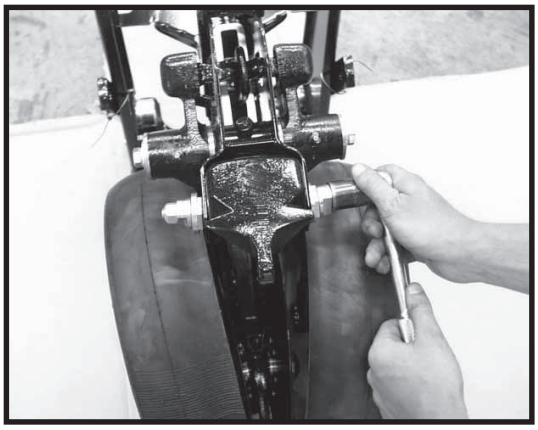
A Drag Closing Attachment (G7566X) is sold through KINZE® Repair Parts. Refer to IS454 supplied with G7566X for installation of that attachment.

Repeat STEPS 1 through 3 on all push row units.

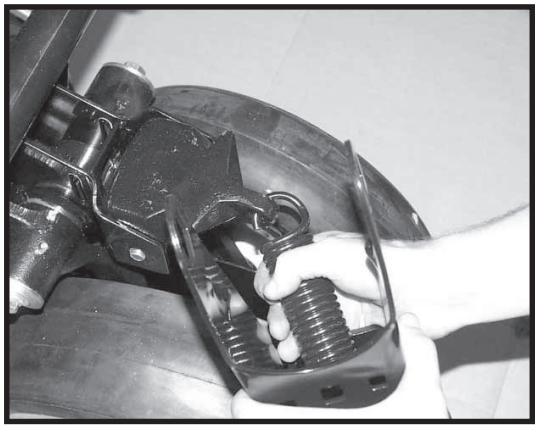
(RU83f)



D070799114



D07029920

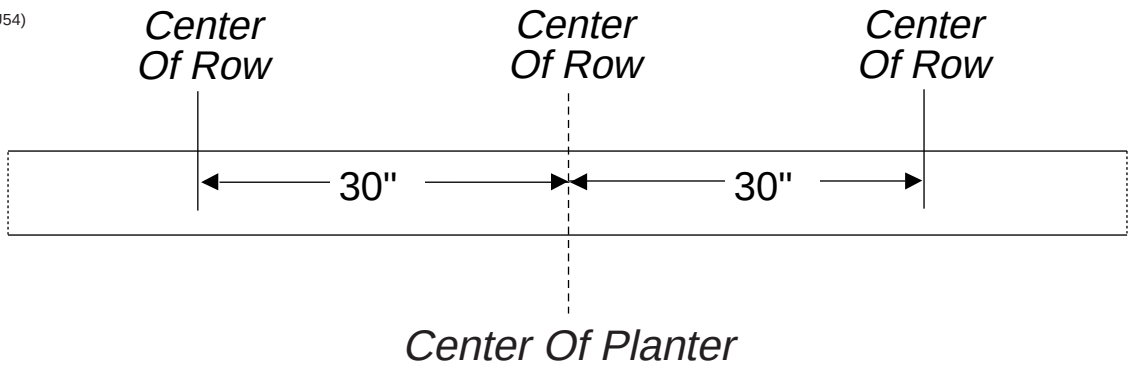


D07029928

STEP 4 Push row units are installed forward of the toolbar in the same manner as the pull row units are installed to the rear. In most applications, the units will be positioned on the toolbar so the push row unit is centered between the rear units. Locate and mark the center of the planter. Mark the center of each row by measuring to each side of toolbar center.

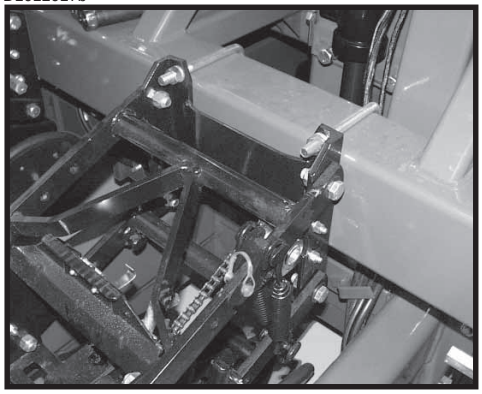
For example, when units are being installed for 15" rows, measure every 30" to the ends of the toolbar.

(RU54)



STEP 5 Position and attach the center push row unit on the planter toolbar using $^{5}/_{8}$" U-bolts, lock washers and hex nuts.

D1012017b



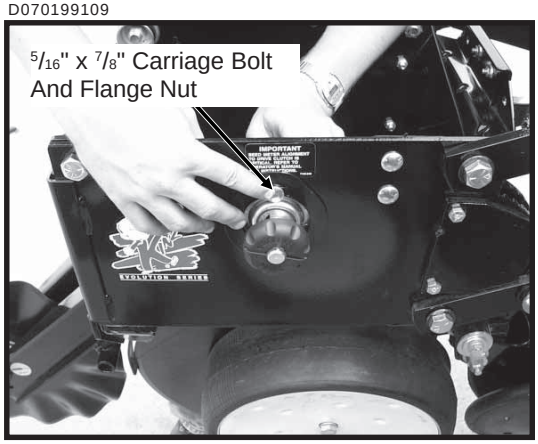
To check the spacing between the push row units, measure between units from a common point on each unit. A good location to measure is at the parallel arms as close to the toolbar as possible. **Verify spacing at push row unit double disc openers.**

STEP 6 Install each of the remaining push row units. Position each unit in the approximate location, tighten U-bolts slightly, measure between units as previously instructed, make final adjustments and tighten U-bolts to 110 ft. lbs.

STEP 7 Install meter drive on each row unit. DO NOT TIGHTEN hardware at this time.

D070199108

D070199109



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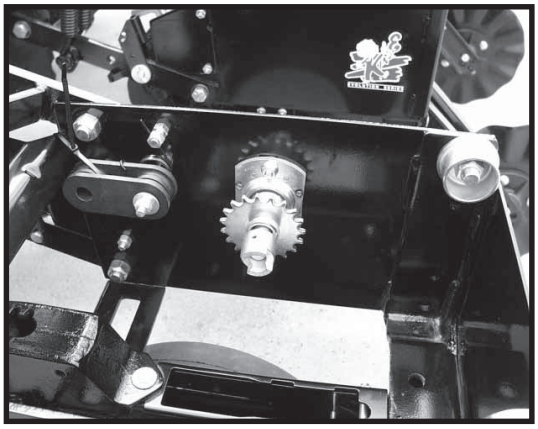
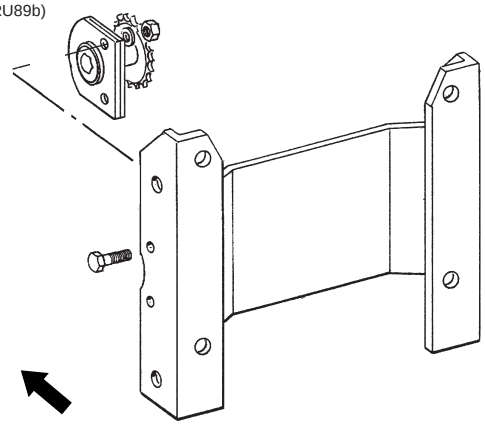


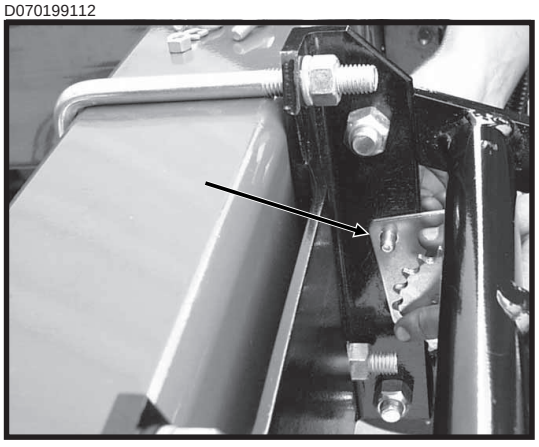
STEP 8 Attach bearing sprocket assembly to the support plate of each push row unit using 3/8" cap screws, lock washers and hex nuts. Do not tighten mounting hardware at this time.

(RU89b)

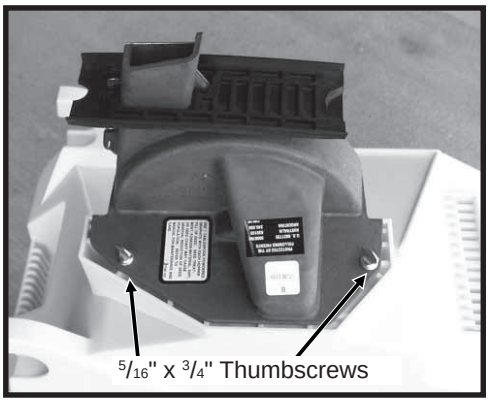


DIRECTION OF TRAVEL

D070199112

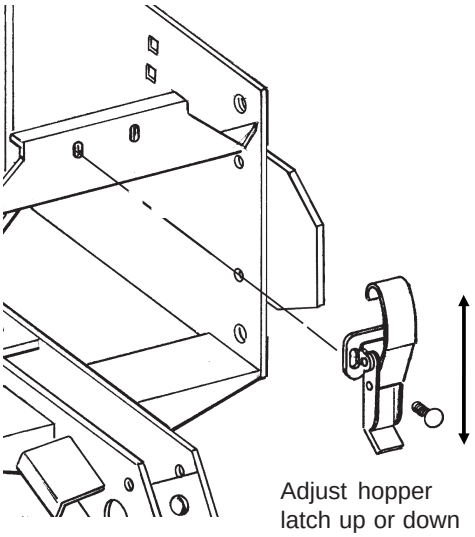


D071399136



STEP 9 Install seed metering unit and shank cover onto bottom of seed hopper.
DO NOT OVER TIGHTEN.

(RU89d)



STEP 10 Install hopper and latch in position. Adjust latch up or down as necessary for a secure fit.

Adjust hopper latch up or down in slotted holes for a secure fit.

Repeat STEPS 9 and 10 on all hoppers

STEP 11 The slotted mounting hole in the hopper support panel and clutch plate allow for alignment adjustment between the drive coupler and meter shaft. If the drive clutch is centered in the hole in the hopper support panel, the drive should be in alignment.

To check alignment engage drive coupler over pin on meter shaft.

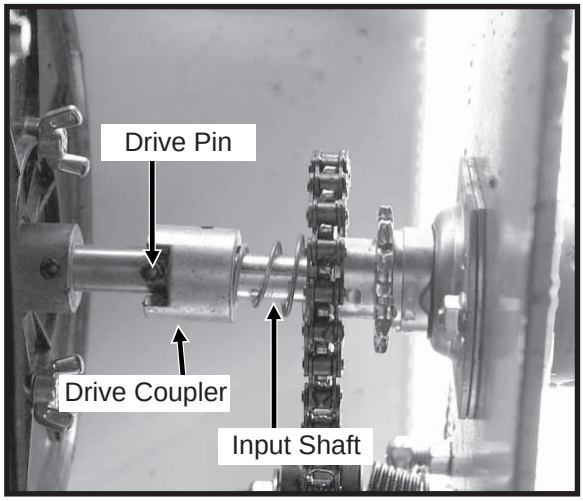
NOTE: Drive shaft on clutch should be centered in sprocket bore.

To adjust drive clutch: (a) Slightly loosen both $^{5}/_{16}$" carriage bolts. (b) Move clutch assembly to correct any misalignment. (c) Tighten both $^{5}/_{16}$" carriage bolts.

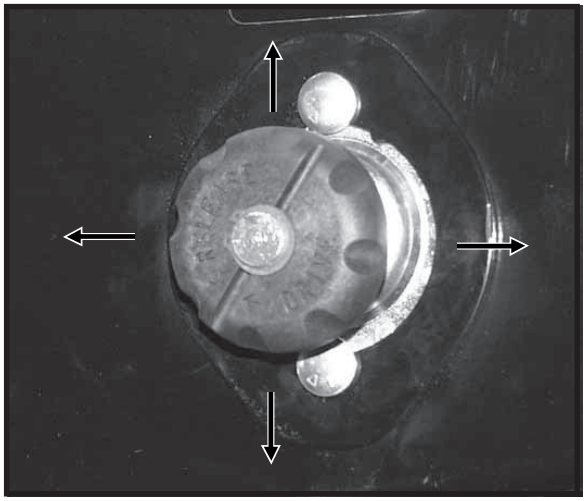
Repeat procedure on all push row units.

IMPORTANT: The seed meter drive coupler must be properly aligned with the meter input shaft so the clutch coupler can engage meter shaft freely. Proper clutch alignment will also ensure consistent meter rotation speed resulting in more accurate seed spacing.

D071999102



D04199906

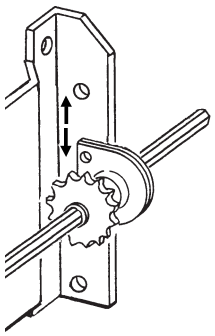


Shown With Chain Installed

STEP 12 Remove seed hoppers. Install the push row unit drill shaft(s). Refer to the machine assembly instructions for the model planter being assembled for additional information.

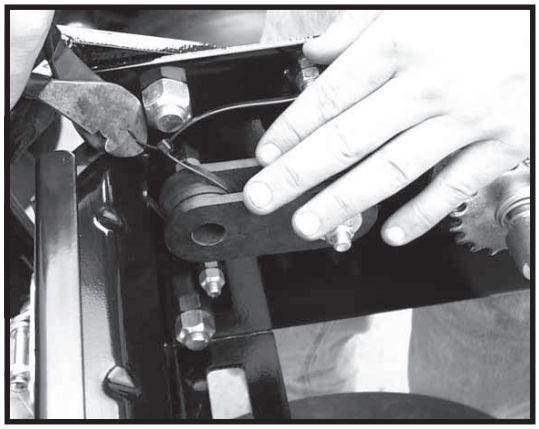
STEP 13 Check vertical alignment of bearing sprockets to insure proper alignment between all row units. Tighten bearing sprocket mounting hardware.

(RU60)



STEP 14 Remove tie strap holding chain idler in shipping position. Hook looped end of torsion spring over idler and straight end of spring behind bolt on push row unit side panel, so that idler will apply proper spring tension. Install row unit drive chain. Route chain through chain idler and around the 19 tooth drive sprocket and bearing sprocket. Join ends of the chain with the connecting link. Repeat on all push row units.

D070199114a



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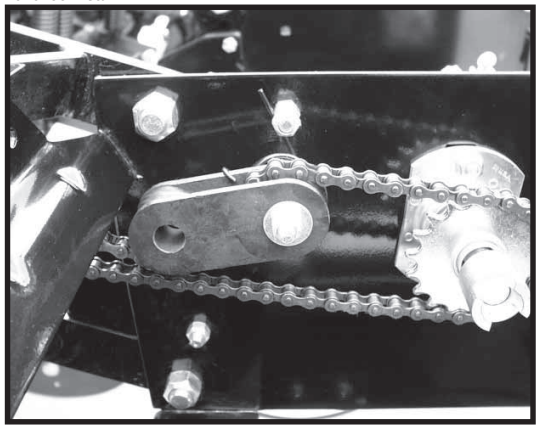
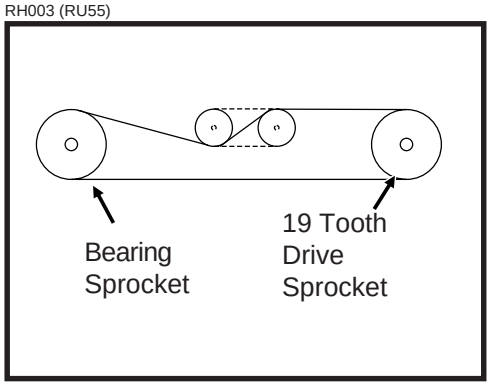
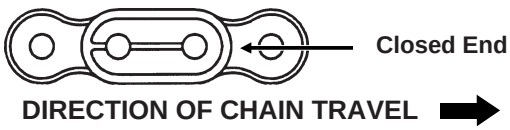


RH003 (RU55)



(PLTR24)

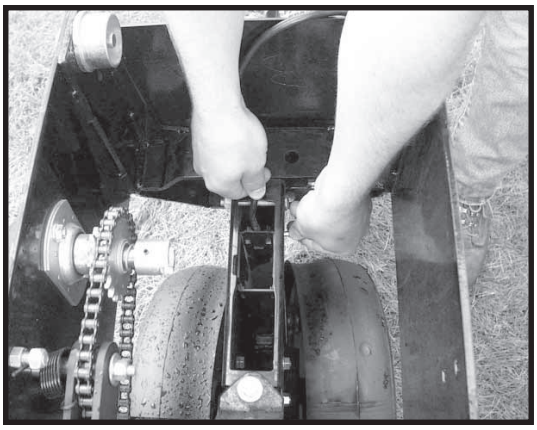
NOTE: Make sure connector link is installed with closed end properly oriented as shown.



STEP 15 Install seed tube (not supplied as part of push row unit) in shank as shown. Position hook on the front of the seed tube over lower cross pin in shank. Then pivot top of seed tube forward and secure with retaining pin and locking clip. Repeat on all push row units.

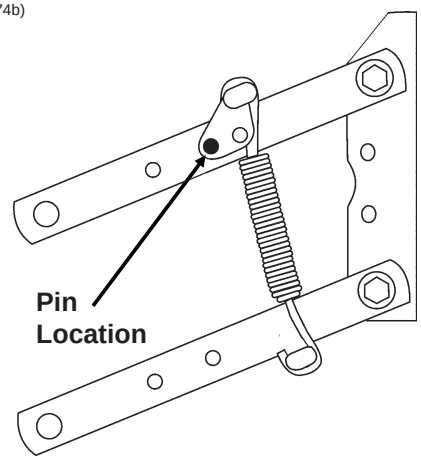
If electronic seed monitoring tubes are being installed, refer to the instructions supplied with that package.

D071999101

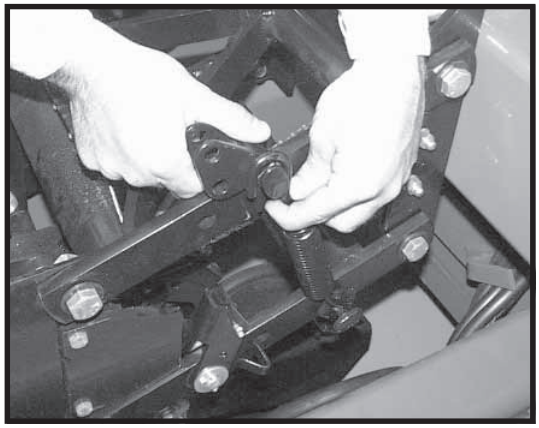


STEP 16 **Raise the planter until the bottom of the toolbar is approximately 30" above the floor. Install support stands to safely hold the planter until assembly is complete.** Install one down force spring to the L.H. parallel arms and one down force spring to the R.H. parallel arms. (a) Install spring onto outside of lower parallel arm at spring tab with open end of spring facing toward seed hopper. (b) Position spring mount onto upper parallel arm, rotate mount forward and position spring onto spring mount tab. (c) Rotate spring down until mount aligns with hole in parallel arm as shown below and install pin. Repeat on all row units.

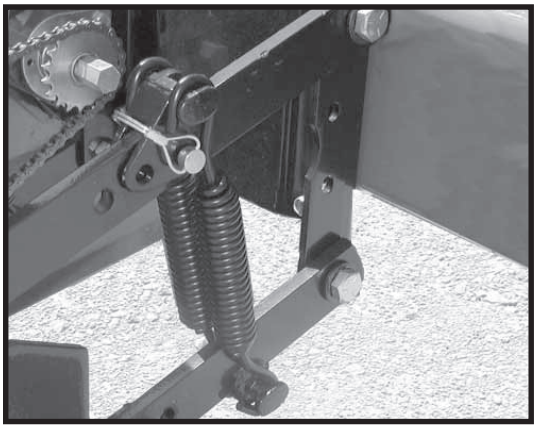
(RU74b)



D10120105a



D07010301



STEP 17 Remove support stands and lower planter to the ground.

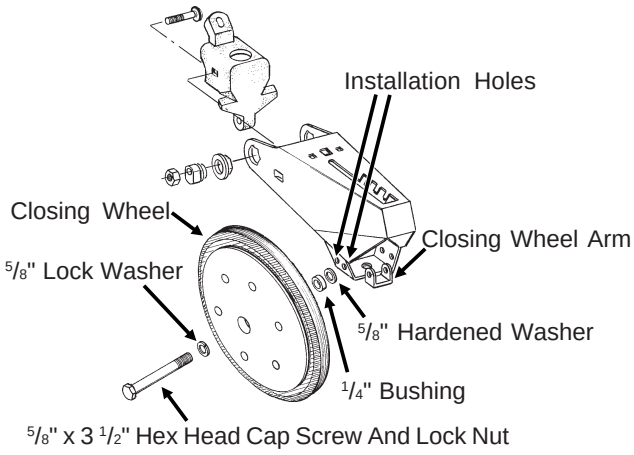
STEP 18 Install hoppers and latch in position.

STEP 19 If additional optional equipment is being installed on the push row unit, see “Optional Attachments” assembly section.

CLOSING WHEEL OPTIONS IS396
Rubber "V" And Cast Iron "V" (Pull Row Unit And Push Row Unit)

Rubber "V" Closing Wheel - 700-01070 (7279X)
(2)A6434 Rubber Wheel

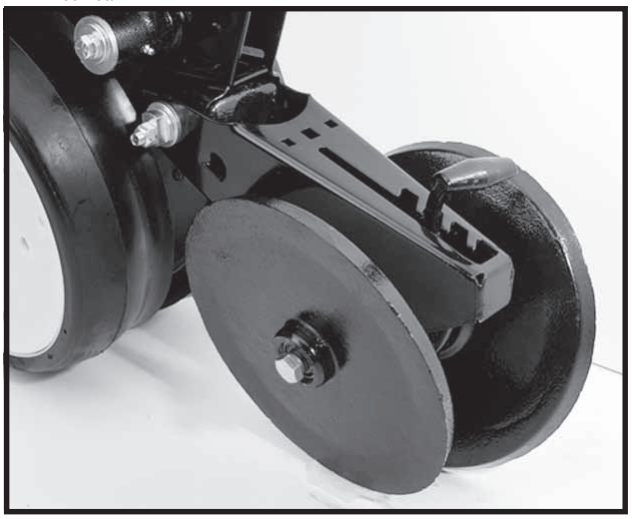
(RU83d)



Shown With Rubber Closing Wheel

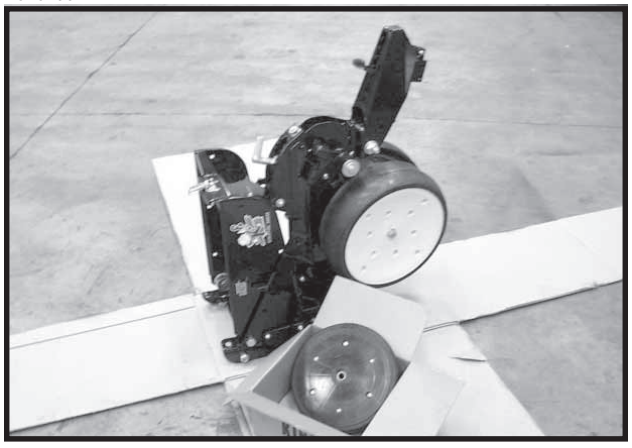
Cast Iron "V" Closing Wheel - 700-01061
(2)A6597 Cast Iron Wheel

LF212299-15a



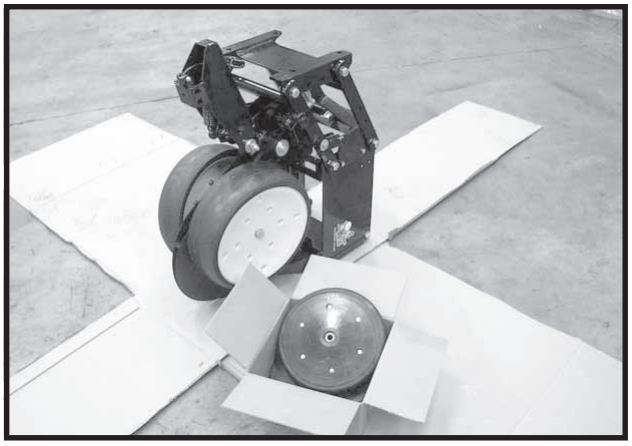
Shown With Cast Iron Closing Wheels Installed

D070799122



Pull Row Unit Shown

D07029929

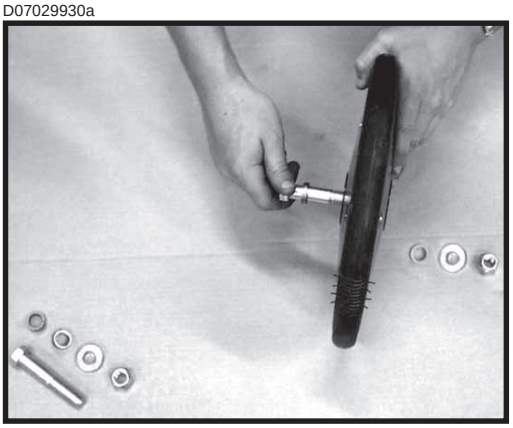


Push Row Unit Shown

STEP 1 Raise the planter to the fully raised position. Install support stands to safely hold the planter until assembly is complete. Install closing wheel on each side of arm using installation holes at the rear of the arm as shown. Install 5/8" x 3 1/2" cap screw through 5/8" lock washer, through closing wheel, through 1/4" bushing, through 5/8" hardened washer and arm. Secure with 5/8" lock nut.

NOTE: The closing wheels can be installed in two locations either "offset" or "directly" opposite. If installed "directly" opposite, use forward set of holes. During initial assembly, install all closing wheels on all row units using the front set of holes to stabilize the row unit for the remainder of the installation.

D07029930a



STEP 2 Tighten hardware.

D070799123

Pull Row Unit Shown

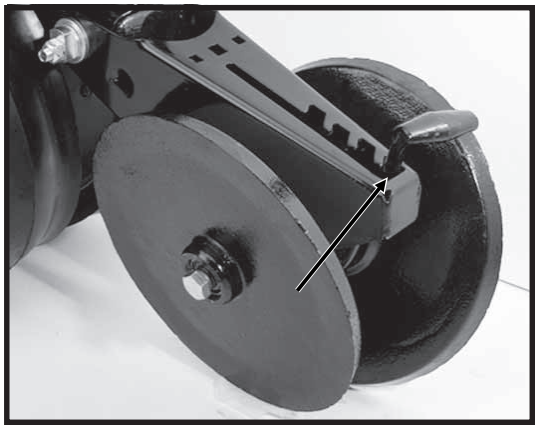
D07029932

Push Row Unit Shown

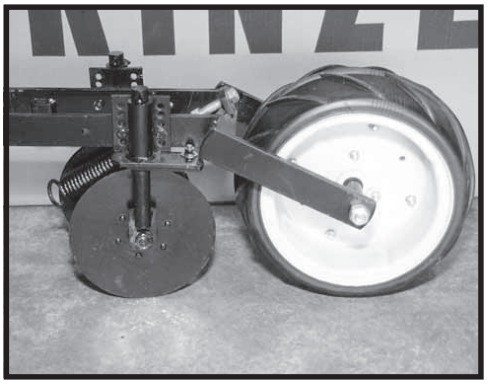
NOTE: Install cast iron closing wheel with beveled edge to inside.

STEP 3 Position quick-adjust lever to rear position to provide row unit stability for the remainder of the assembly procedure.

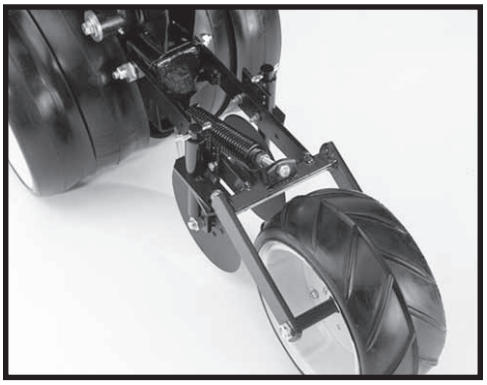
LF212299-15b



72369-29



LF21229917



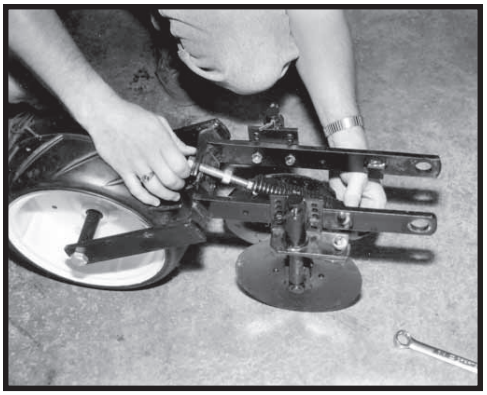
Covering Discs/Single Press Wheel - 700-01047 (A6802)

STEP 1 With the pull row unit tipped forward, remove the carriage bolts, eccentric bushings, stepped bushings and lock nuts from the wheel arm stop on rear of row unit.

NOTE: The carriage bolts, eccentric bushings, stepped bushings and lock nuts supplied with the row unit will not be used.

72369-48

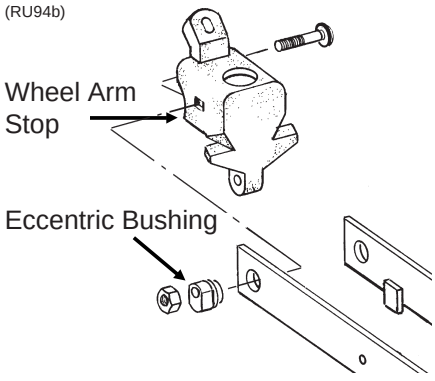
72369-6



STEP 2 Remove spring and adjusting bolt from mounting arm and set aside. Remove carriage bolts, eccentric bushings, flat washers and hex nuts from the shipping locations on the press wheel arms. Discard the flat washers.

STEP 3 Position covering discs/single press wheel assembly over wheel arm stop as shown at right.

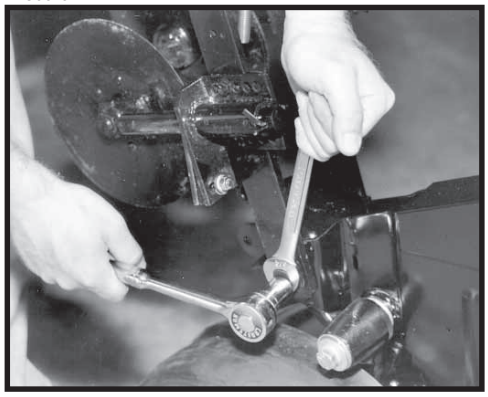
(RU94b)



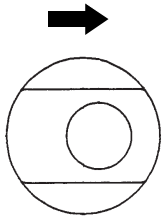
STEP 4 Install hardware as shown in STEP 3 with the carriage bolts from the inside through wheel arm stop and wheel arm. Install eccentric bushings and hex nuts. Position eccentric bushings as shown. To install hold eccentric bushing in position using a 3/4" wrench and tighten nut using a second 3/4" wrench.

NOTE: All eccentric bushings should be positioned the same as shown below during initial installation.

72369-9

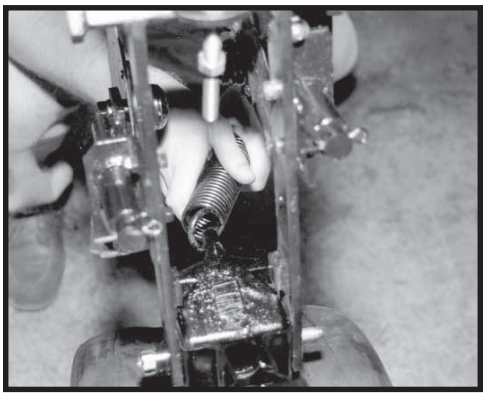


(RU123)



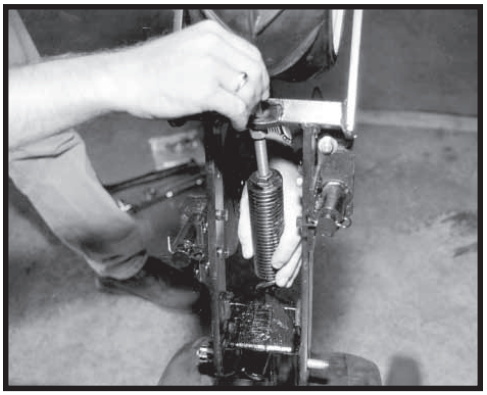
Hole In Eccentric Bushing To Front

72369-10



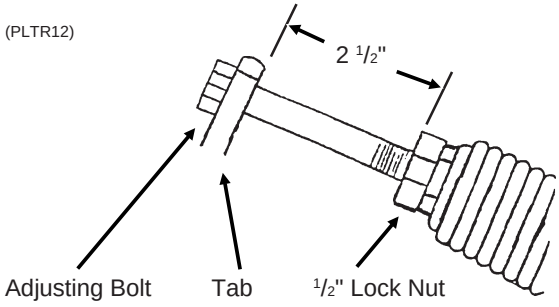
STEP 5 Connect hook of closing wheel spring to wheel arm stop.

72369-11



STEP 6 Install adjusting bolt through spring tab, install nut and thread bolt into spring. Initial setting of adjusting bolt should be with 2 1/2" between tab and locking nut.

(PLTR12)



Dual Gauge Wheel Package (Pull Row Unit Only)

Dual Gauge Wheel Package - 700-01081 (7595X)

(8)10620	Flange Nut, 5/16"-18
(8)10944	Carriage Bolt, 5/16"-18 x 6"
(8)D8811	Sleeve, 4 1/8"
(2)A8655	Gauge Wheel Assembly
(2)D11936	Plug, 1 1/8"

The dual gauge wheel is designed to provide added width for additional row unit flotation in light sandy soil. In some applications such as narrow row widths (less than 36" row spacing) or where clearance is a problem, the added width of the dual gauge wheel may prevent its use.

STEP 1 Remove gauge wheel and arm assemblies from the row unit.

STEP 2 Remove six 5/16" x 1 1/4" carriage bolts and four 5/16" x 1 3/4" carriage bolts. Remove cover from the existing gauge wheel.

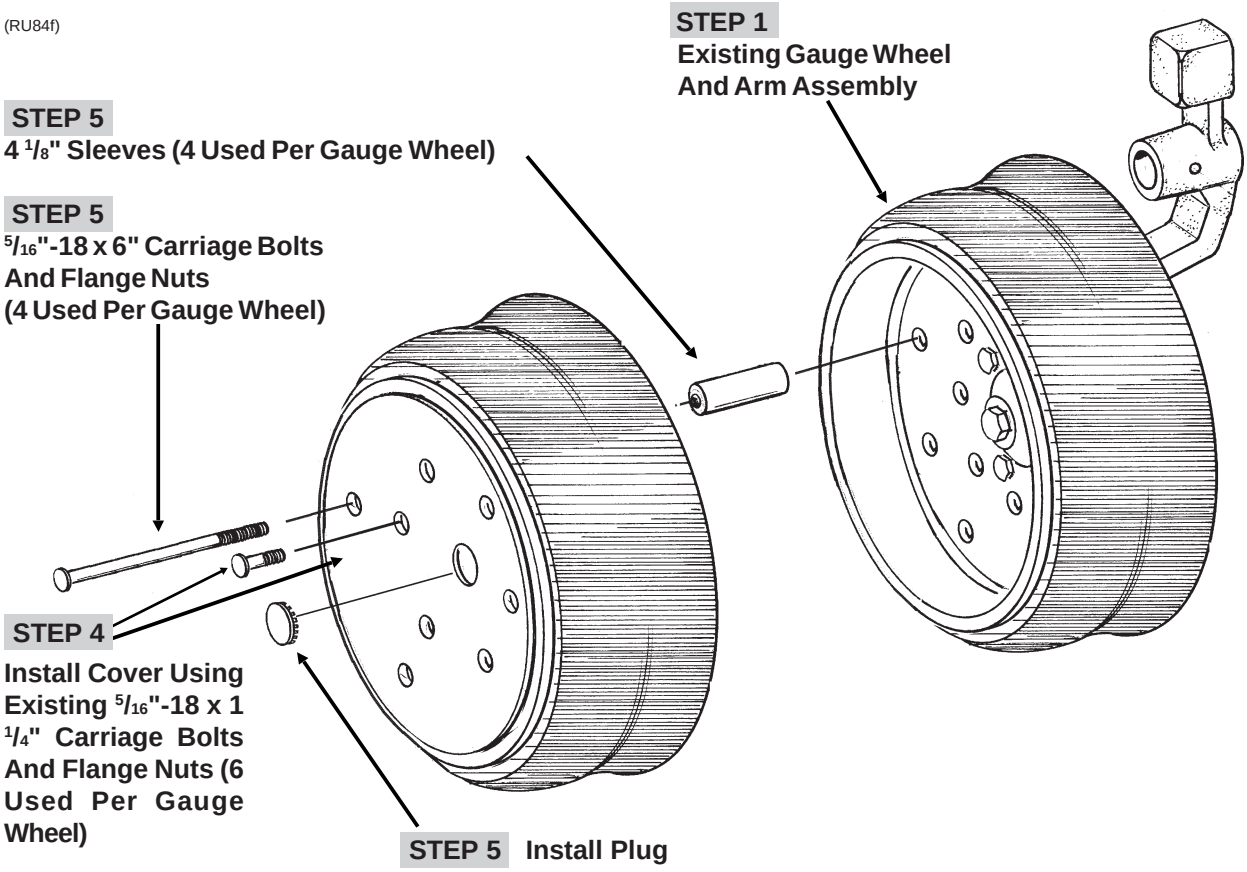
STEP 3 Discard the four 1 3/4" carriage bolts. The six 1 1/4" bolts will be reused to install the cover on the new gauge wheel.

STEP 4 Install cover onto the new gauge wheel (without bearing) using the six 1 1/4" bolts removed from the existing gauge wheel.

STEP 5 Install the new gauge wheel onto the existing gauge wheel as shown below using four 4 1/8" sleeves, 5/16" x 6" carriage bolts and flange nuts supplied in the package. Install plug.

STEP 6 Tighten hardware and install dual gauge wheel and arm assembly onto the row unit shank.

(RU84f)



Granular Chemical Hopper With Meter, Hopper Panel Extension And Bander (Pull Row Unit Only)

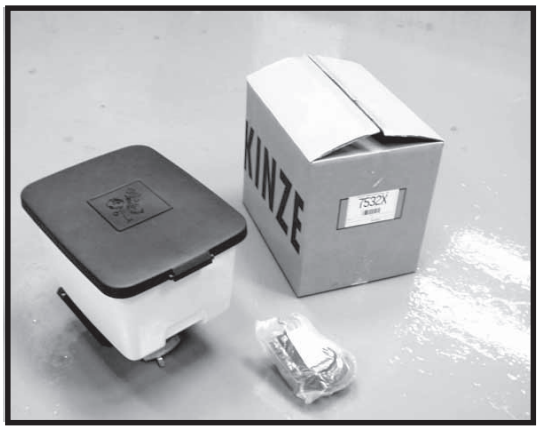
Granular Chemical Hopper With Meter, Hopper Panel Extension And Bander - 700-01077

(1)7532X Chemical Hopper W/Meter And Bander
- (1)A8368 Hardware Bag (Chain, Chain Idler, Meter Drive, Funnel, Hose, 4 1/2" Slope-Compensating Bander And Straight Drop In-Furrow Placement Components)
- (1)A8367 Hopper And Meter

(1)7533X Chemical Hopper Support Package
- (6)10312 Carriage Bolt, 5/16"-18 x 3/4"
- (6)10620 Flange Nut, 5/16"-18
- (1)A8422 Hopper Panel Extension

(1)7719X Reflective Decals Package (1 Package Per 2 Rows) (IS490)

D061099206



D061099202

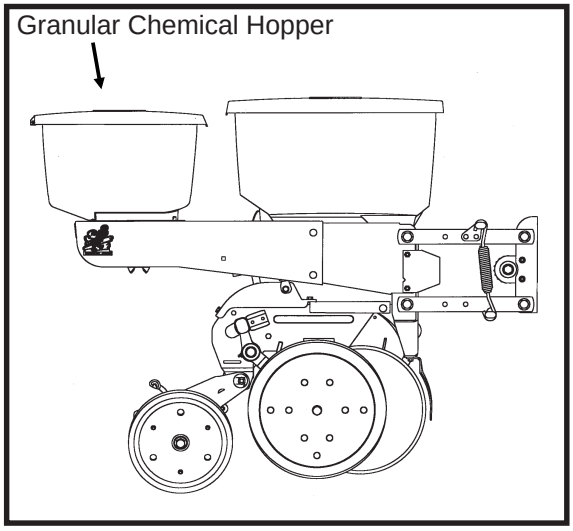
The Granular Chemical Hopper With Meter, Hopper Panel Extension And Bander is designed for use on the KINZE® Pull Row Unit. This package includes parts for 4 1/2" slope-compensating banding or straight drop in-furrow placement of granular chemical.

DANGER: Agricultural chemicals can be dangerous. Improper selection or use can seriously injure persons, animals, plants, soil or other property. BE SAFE: Select the right chemical for the job. Handle it with care. Follow the instructions on the container label and of the chemical manufacturer.

D06039901

Be sure the G7100-115 warning decal is in place on the underside of each granular chemical hopper lid.

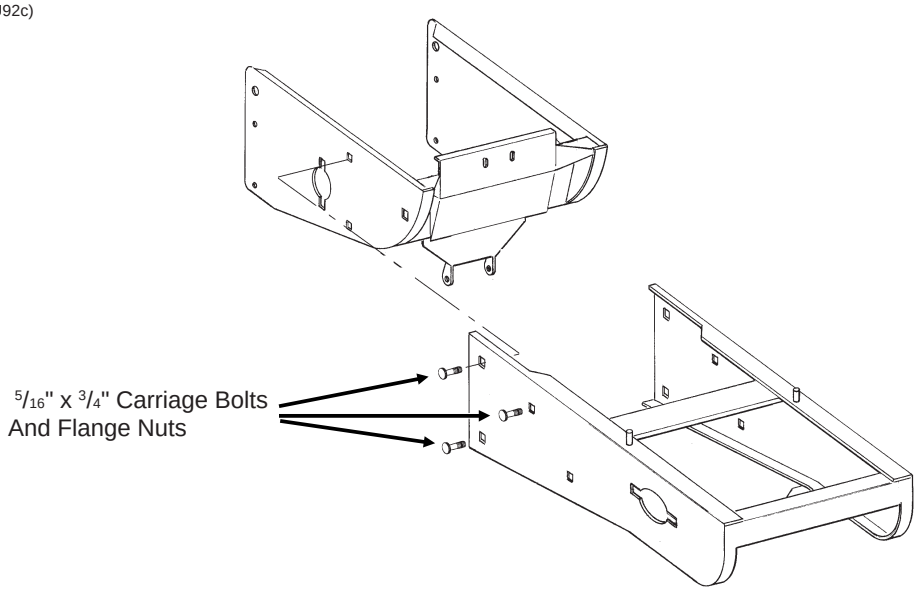
(RU120)



Granular Chemical Hopper With Meter, Hopper Panel Extension And Bander

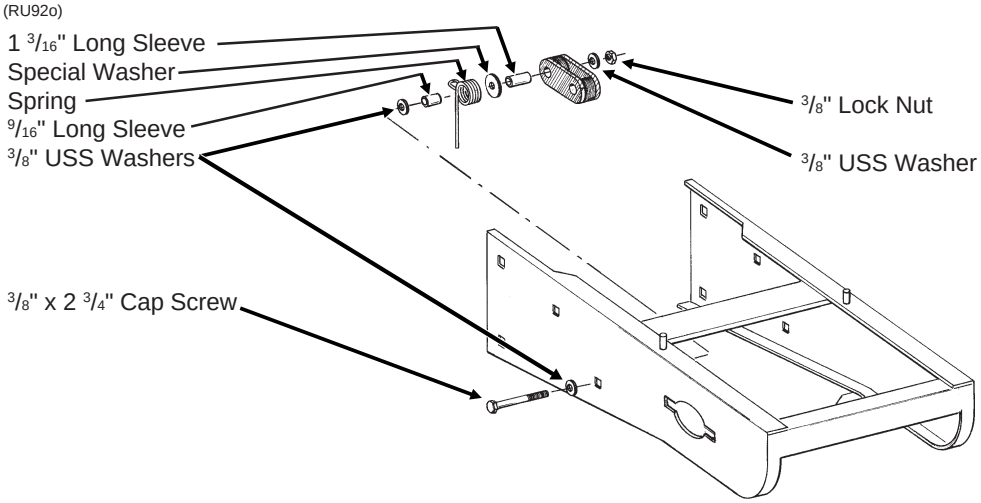
STEP 1 Install hopper panel extension onto hopper support as shown below.

(RU92c)



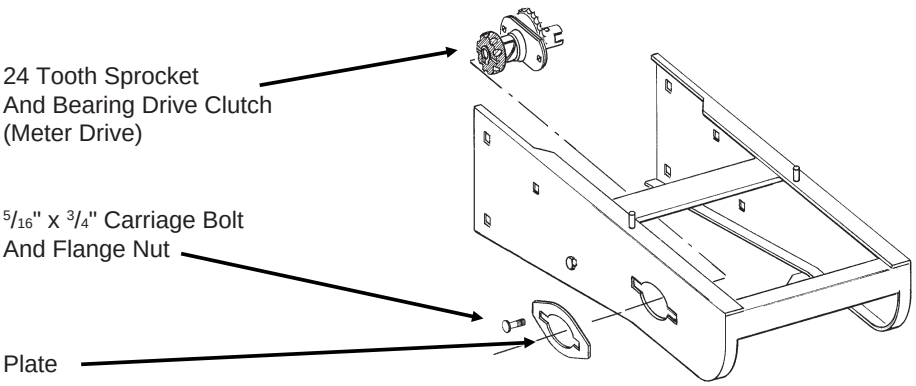
STEP 2 Install idler supplied in hardware bag as shown below.

(RU92o)



STEP 3 Install meter drive clutch supplied in hardware bag as shown below.

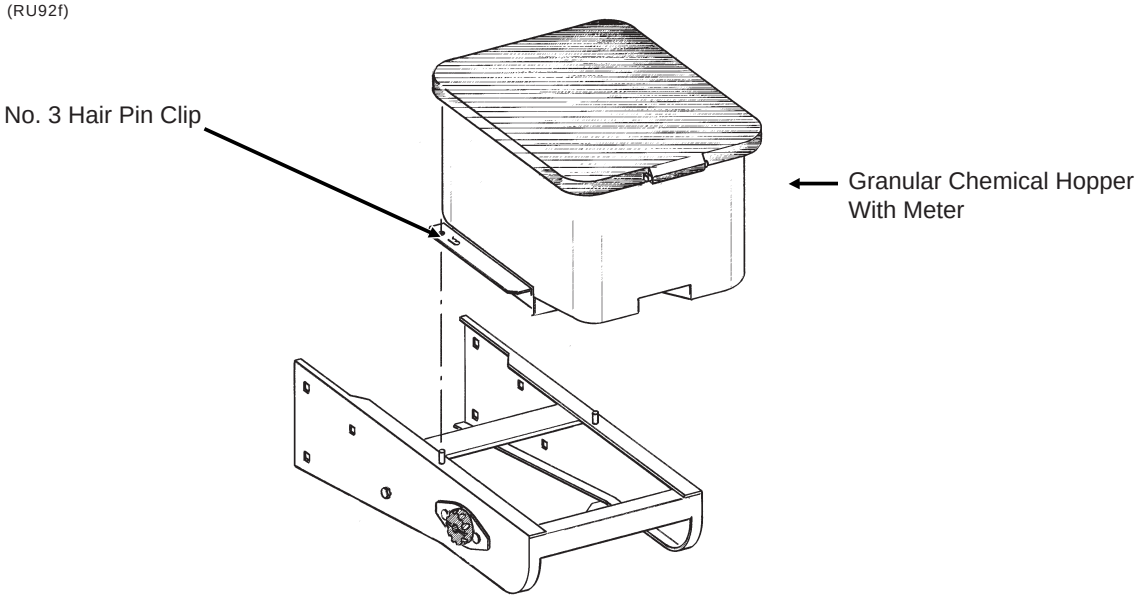
(RU92e)



Granular Chemical Hopper With Meter, Hopper Panel Extension And Bander

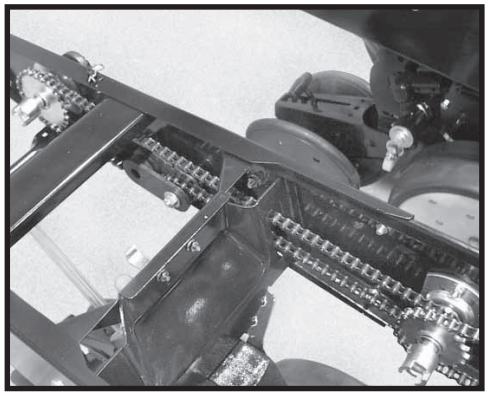
STEP 4 Install granular chemical hopper as shown below. **Engage drive by rotating knob clockwise. To disengage drive turn knob counterclockwise.** Align clutch drive coupler with meter shaft. Tighten hardware.

(RU92f)

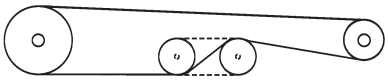


STEP 5 Remove hopper. Install granular chemical drive chain through idler and around 11 tooth sprocket of double sprocket in row unit plateless drive clutch. Route chain through slot in hopper support and around granular chemical clutch sprocket. Use connecting link provided to couple chain.

D05139901a

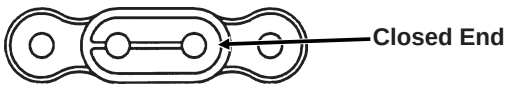


RH004 (RU57b)



(PLTR24)

NOTE: Make sure connector link is installed with closed end properly oriented as shown.



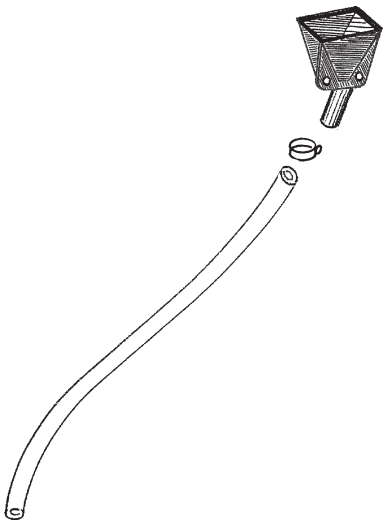
STEP 6 Reposition granular chemical hopper on hopper support panel and secure using two No. 3 hair pin clips.

Granular Chemical Hopper With Meter, Hopper Panel Extension And Bander

STEP 7 The granular chemical funnel is designed to attach to the hopper support panel directly under the granular chemical meter using two No. 10 x 1/2" self-tapping screws. The funnel can be installed facing forward or rearward, depending on application. The funnel is shown in the forward configuration for installation of 4 1/2" slope-compensating banding or straight drop in-furrow placement.

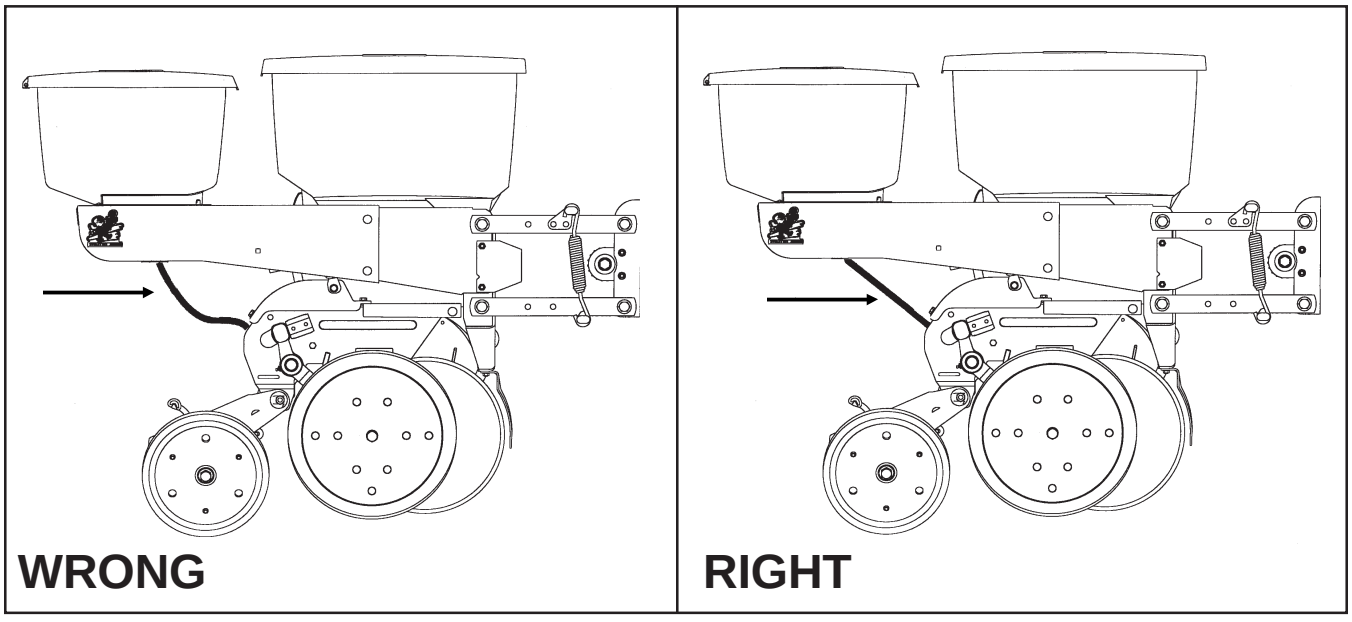
Slide the hose clamp onto the end of the hose. Install hose over funnel outlet and slide hose clamp into place over funnel outlet and hose to secure hose in place.

(RU101o)



IMPORTANT: The hose should be shortened as required to eliminate bends, insuring even distribution of chemical.

(RU120a/RU120b)

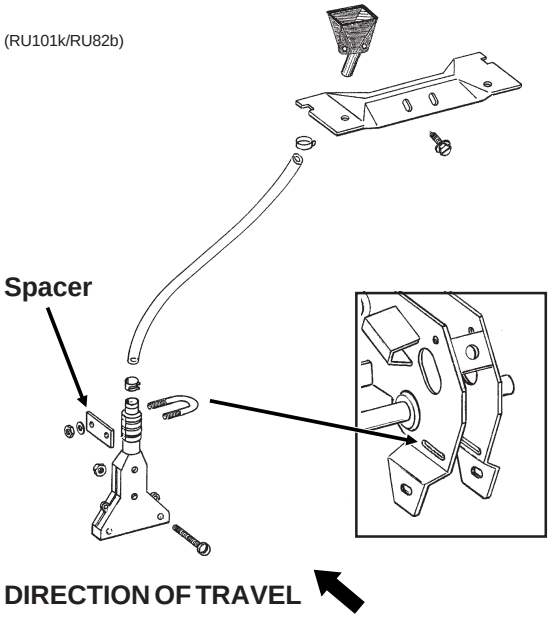


Install 4 1/2" slope-compensating bander or straight drop in-furrow bracket as shown on next page.

Granular Chemical Hopper With Meter, Hopper Panel Extension And Bander

4 1/2" SLOPE-COMPENSATING BANDING

(RU101k/RU82b)



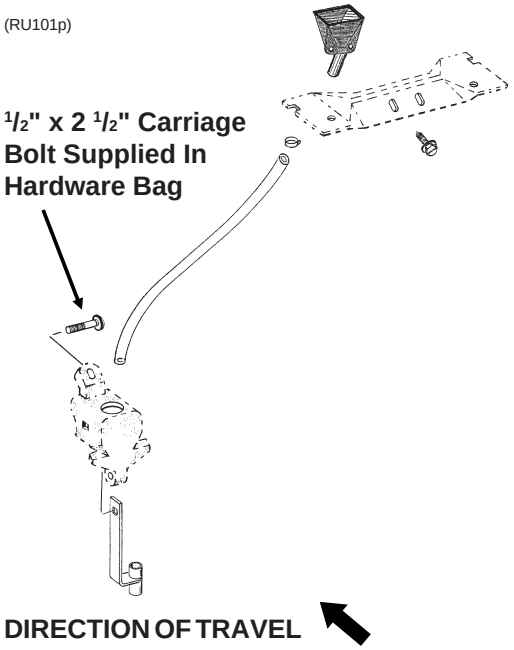
A. Install bottom of hose through shank cover, wheel arm stop and into slope-compensating bander.

B. Install U-bolt through holes in shank as shown at left. Secure using 1/4" USS washers, lock nuts and spacer. Place spacer between bander and shank side to center the bander. DO NOT over tighten lock nuts. Over tightening will crush the bander.

NOTE: Hose should be shortened as required.

STRAIGHT DROP IN-FURROW PLACEMENT

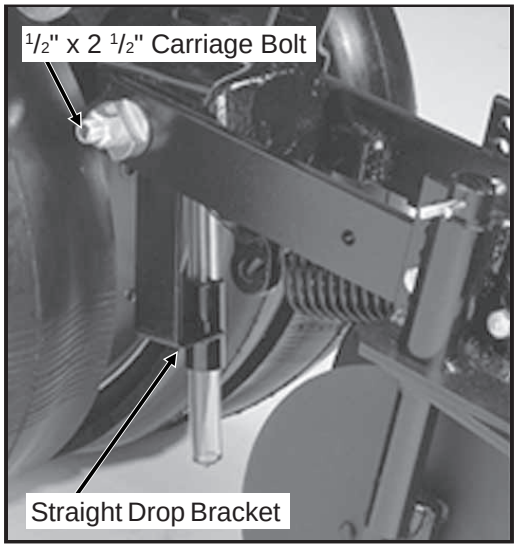
(RU101p)



A. Attach straight drop bracket to wheel arm stop as shown below and at left.

B. Insert bottom of hose through shank cover, wheel arm stop and into straight drop in-furrow bracket as shown.

LF212199-1a



NOTE: Replace 1/2" x 2 1/4" carriage bolt with 1/2" x 2 1/2" carriage bolt to install straight drop bracket.

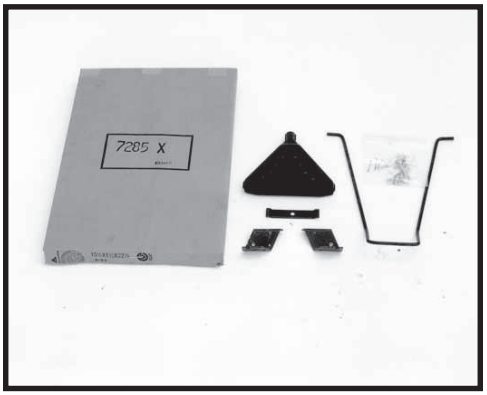
STEP 8 Install reflective decals on hopper panel extensions following instructions supplied with that package.

Granular Chemical Rear Bander (Pull Row Unit Only)

Granular Chemical Rear Bander - 700-01059 (7285X)

(1)D1116 Hanger
(1)D1115L Hanger Bracket, L.H.
(1)D1115R Hanger Bracket, R.H.
(1)D1118 Clamp
(1)A2075 Diffuser (14" Band)
(1)A6672 Hardware Bag
(4)10103 Hex Nut, 1/4"-20
(4)10227 Lock Washer, 1/4"
(4)10310 Carriage Bolt, 1/4"-20 x 3/4"
(1)10101 Hex Nut, 3/8"-16
(1)10229 Lock Washer, 3/8"
(1)10306 Carriage Bolt, 3/8"-16 x 2"
(2)10452 Cotter Pin, 1/8" x 1/2"

72794-7



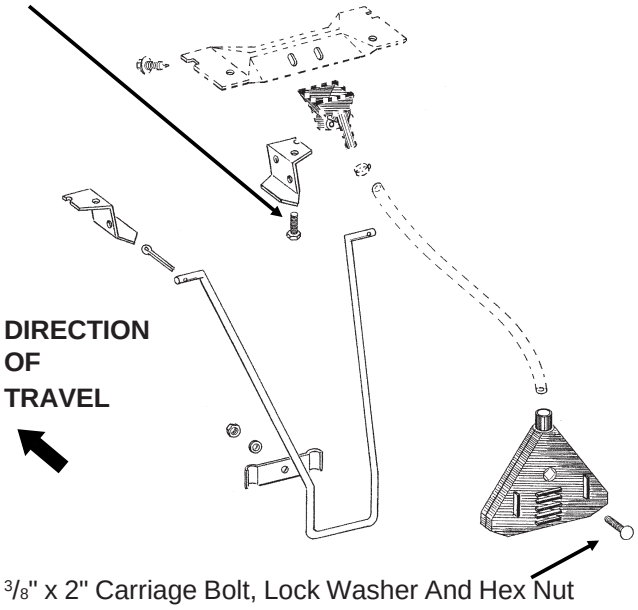
NOTE: Not compatible with Covering Discs/Single Press Wheel closing wheel option.

14" REAR BANDING

A. Attach R.H. and L.H. brackets using two 1/4" x 3/4" carriage bolts, lock washers and hex nuts.
B. Install hanger into hanger brackets and secure with 1/8" x 1/2" cotter pins.
C. Install diffuser onto hanger using clamp and 3/8" x 2" carriage bolt, lock washer and hex nut.
D. Install funnel facing rearward. See Step 7 on page 33.
E. Insert bottom of hose into diffuser.
F. Hose clamp (not supplied) may be installed at top of diffuser if desired.

NOTE: Hose should be shortened as required.

(RU101q)



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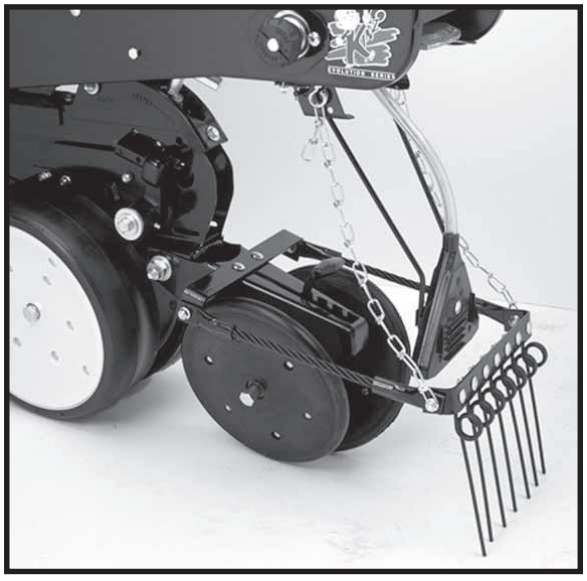
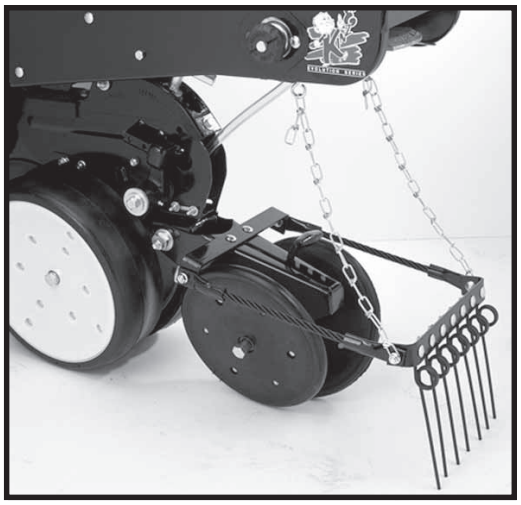


Spring Tooth Incorporator (Pull Row Unit Only)

LF212299-26



Spring Tooth Incorporator - 700-01010 (6197X)

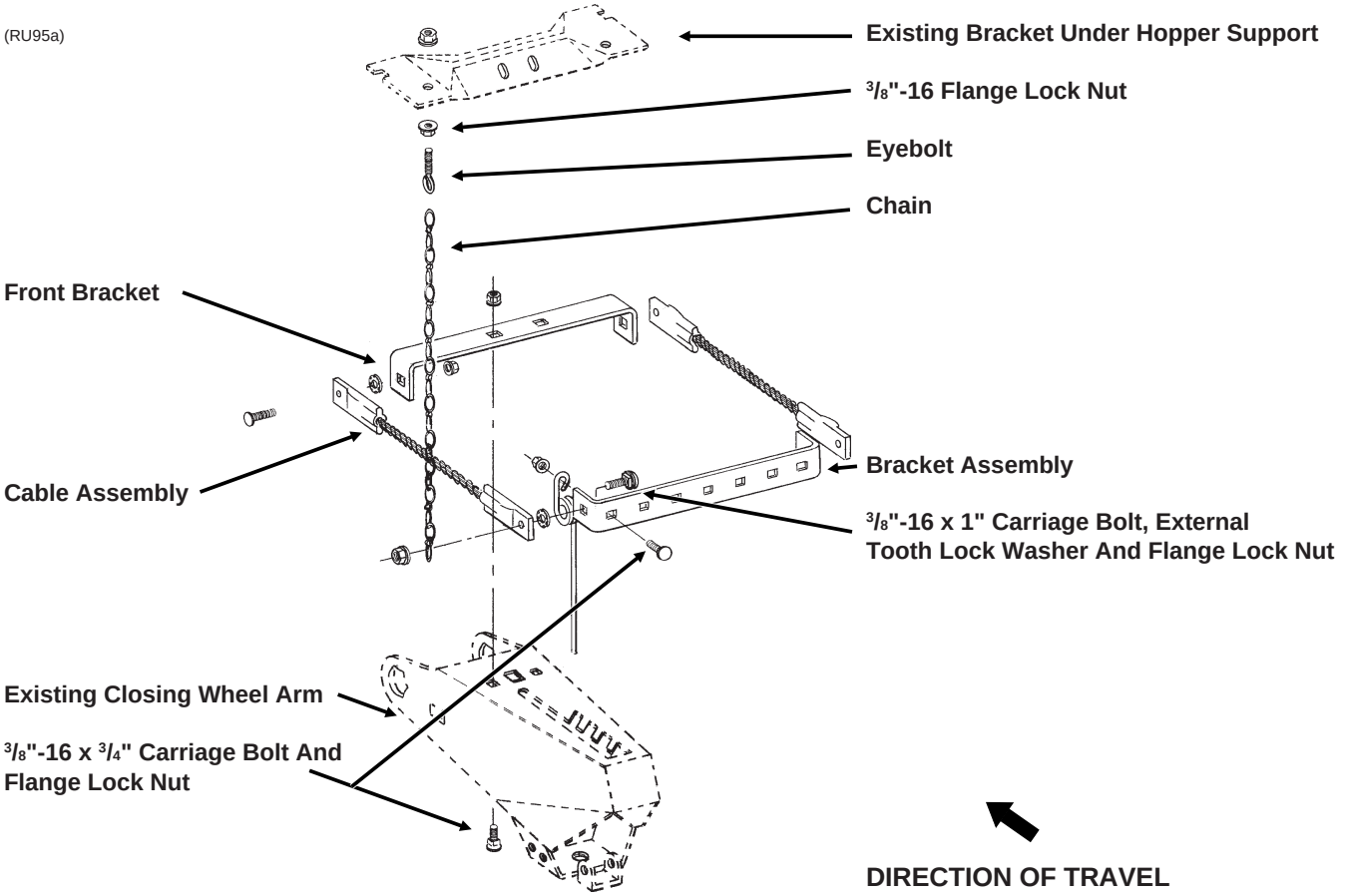
(2)10308	Carriage Bolt, 3/8"-16 x 3/4"
(4)10529	External Tooth Lock Washer, 3/8"
(6)10622	Flange Lock Nut, 3/8"-16
(2)3305-01	Chain
(1)A1615	Bracket Assembly
(2)A2094	Cable Assembly
(1)D1143	Front Bracket
(2)D2460	Eyebolt, 1/4"-20
(4)10621	Flange Lock Nut, 1/4"-20
(4)10305	Carriage Bolt, 3/8"-16 x 1"

DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

NOTE: Not compatible with Covering Discs/Single Press Wheel closing wheel option.

STEP 1 Assemble spring tooth incorporator as shown below.

(RU95a)



STEP 2 Install the spring tooth incorporator onto the rear of the row unit as shown above. The two mounting chains on each spring tooth incorporator should be adjusted so there is approximately 1/8" slack in the chain when the unit is lowered to planting position.

Row Unit Mounted No Till Coulter (Pull Row Unit And Push Row Unit)

Row Unit Mounted No Till Coulter
With 1" Bubbled Blade - 700-01026
(1)7160X Spring Package
(2)D8249 Spring
(1)A5641 Coulter Arm Assembly
(1)D7804 1" Bubbled Blade

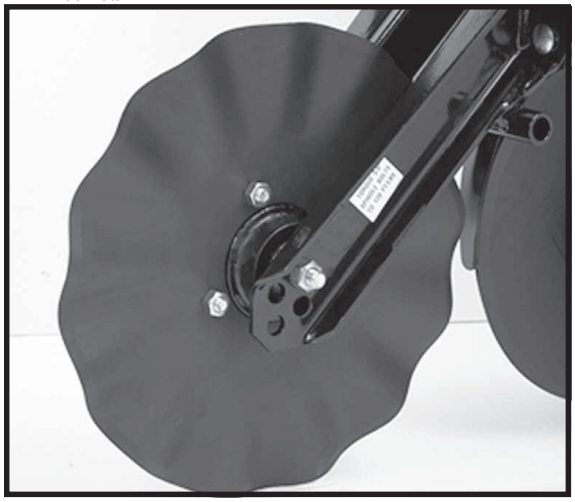
Row Unit Mounted No Till Coulter
With 1" Fluted Blade - 700-01022
(1)7160X Spring Package
(2)D8249 Spring
(1)A5641 Coulter Arm Assembly
(1)D7803 1" Fluted Blade (8 Flutes)

Row Unit Mounted No Till Coulter
With 3/4" Fluted Blade - 700-01062
(1)7160X Spring Package
(2)D8249 Spring
(1)A5641 Coulter Arm Assembly
(1)D9254 3/4" Fluted Blade (13 Flutes)

Row unit mounted no till coulters with 1" bubbled,1" fluted or 3/4" fluted blades may be used on pull row units and/or push row units. One package is required per row.

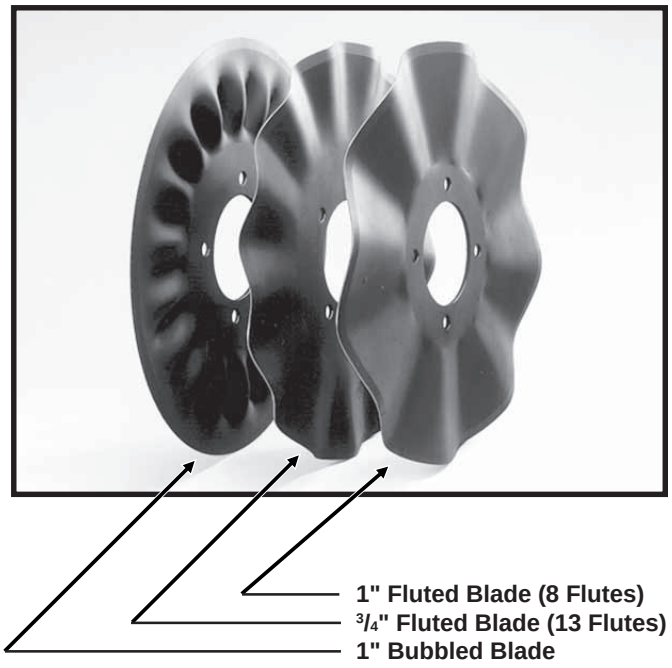
DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

LF212299-19a



Shown With 3/4" Fluted Blade (13 Flutes)

LF02159609



Row Unit Mounted No Till Coulter

STEP 1 **Raise the planter until the bottom of the toolbar is approximately 30" above the floor. Install support stands to safely support the planter until assembly is complete.** Attach coulter arm assembly to row unit face plate using carriage bolts and lock nuts as shown. Do not tighten completely at this time.

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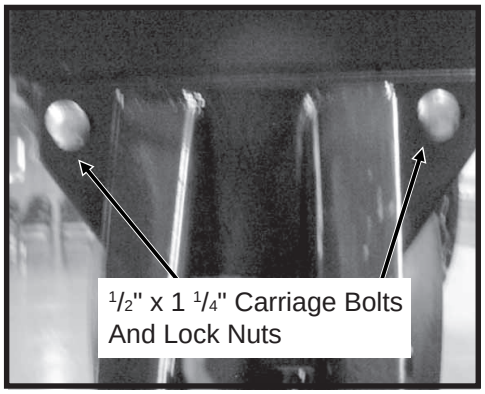
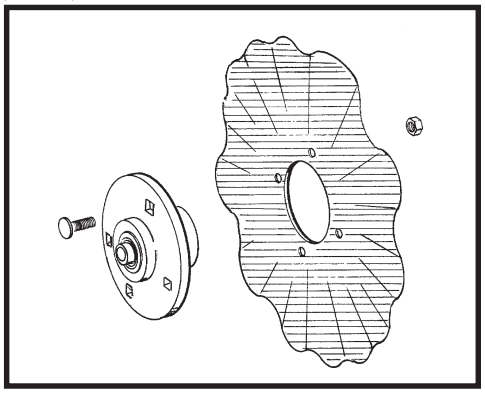


Shown Installed On Push Row Unit

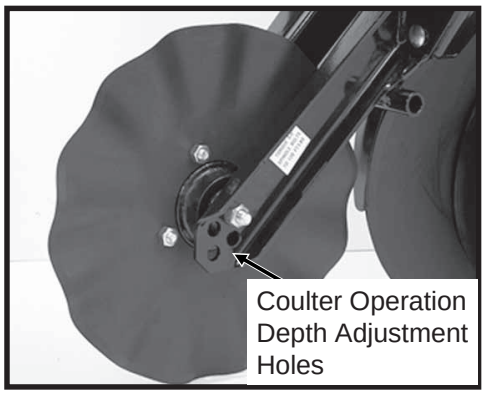
STEP 2 Remove 5/8" x 4" cap screw and remove hub from forked arms. Install coulter blade onto hub using carriage bolts and lock nuts. Tighten hardware alternately to avoid distorting the blade.

(RU102d)



STEP 3 Install hub and coulter blade assembly into the top adjustment hole in the forked arms using 5/8" x 4" cap screw and lock nut. (If bearing adapters have been removed from hub, reinstall into hub before installing hub into forked arms.) Torque 5/8" spindle bolts to 120 ft. lbs.

LF212299-19a



STEP 4 Shift coulter arm assembly within the limits of the adjustment slots (See photo in STEP 1) until coulter is aligned with row unit double disc openers. Torque 1/2" bolts to 57 ft. lbs.

Row Unit Mounted No Till Coulter

STEP 5 On the inboard side of the R.H. and L.H. parallel arms, install the additional springs supplied in the package. (a) Install spring onto inside of lower parallel arm at spring tab with open end of spring facing toward seed hopper. (b) Remove pin from spring mount on upper parallel arm and rotate mount forward. (c) Position spring onto spring mount at tab. (d) Rotate spring mount down until mount aligns with hole in parallel arm and install pin.

There are 4 positions for spring tension adjustment. For additional spring tension adjustment information, see the Operator & Parts Manual.

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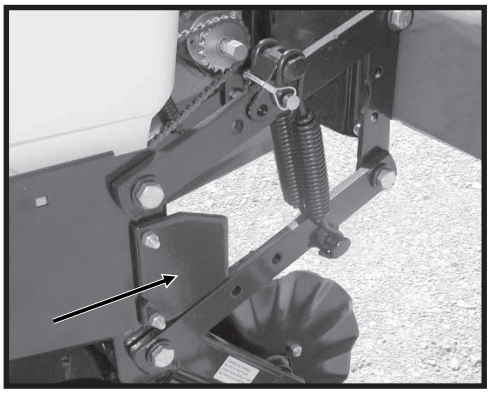

Pull Row Unit

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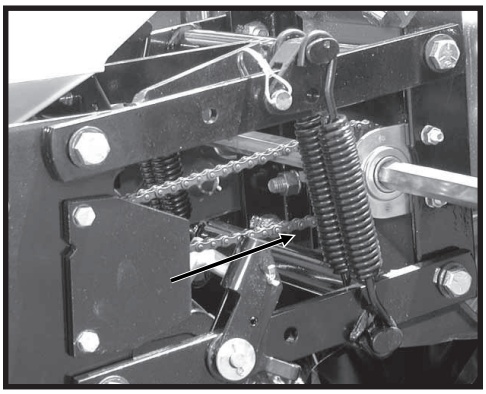


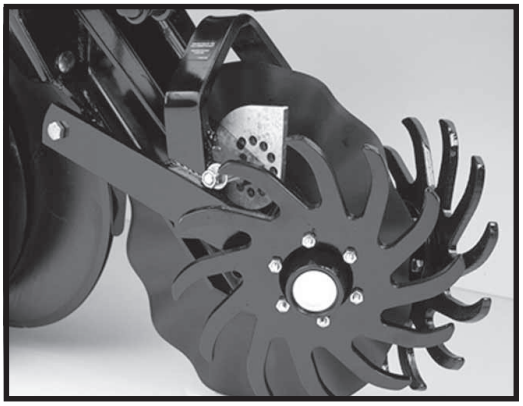
Push Row Unit

NOTE: It is necessary for the operator to adjust springs according to field conditions. If springs are adjusted for too much down pressure for field conditions, it is possible for the row units to lift the planter to the extent that the drive wheels do not make sufficient contact.

STEP 6 Remove support stands and lower planter to the ground.

Coulter Mounted Residue Wheel (Pull Row Unit And Push Row Unit)

LF212299-23



Coulter Mounted, Residue Wheels Attachment - 700-01069

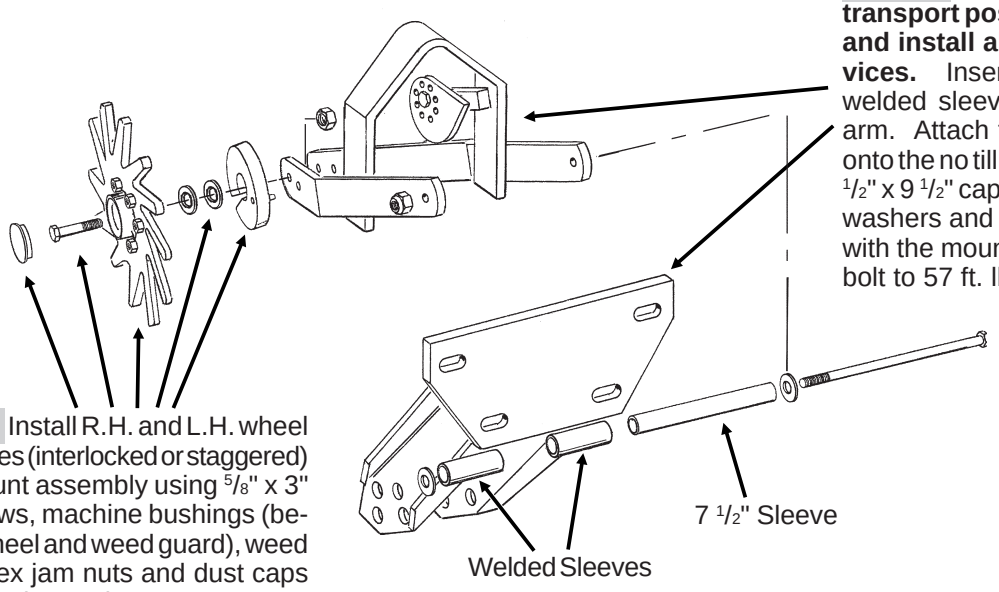
(1)A7413 Wheel Mount Assembly
(1)A7446 Wheel Assembly, R.H.
(1)A7445 Wheel Assembly, L.H.
(1)A7414 Hardware Bag
(4)10213 Machine Bushing, 5/8" (.030" Thick)
(2)A8760 Weed Guard W/Roll Pin
(2)D1132 Dust Cap
(2)10010 Cap Screw, 5/8"-11 x 3"
(2)10503 Hex Jam Nut, 5/8"-11, Grade 2

The Coulter Mounted Residue Wheel Attachment is attached to the Row Unit Mounted No Till Coulter Attachment using one 1/2" x 9" cap screw, sleeve and lock nut which allows the unit to free-float. Two holes in each residue wheel mounting bracket arm allow the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in 1/4" increments. A high point on the cam allows the wheels to be locked up so they do not contact the ground.

Model 3000 planters equipped with Coulter Mounted Residue Wheels **and HD Single Disc Fertilizer Openers** require the use of row unit extension brackets (Order Code 700-01072 for 1 row) on **all rear row units**. **Model 3140 planters** equipped with Coulter Mounted Residue Wheels require the use of row unit extension brackets (Order Code 700-01072 for 1 row) on the **row units located on the planter wings**. **Model 3500 and 3600 planters** require the use of row unit extension brackets (Order Code 700-01071 for 4 rows) on the **4 center row units** if the machine is equipped with Coulter Mounted Residue Wheels. **Model 3700 planters** with 20" row spacing require the use of row unit extension brackets (8 each of Order Code 700-01072 for 1 row) **at the wing lift wheel arms** when the planter is equipped with Coulter Mounted Residue Wheels. **Model 3800 planters** equipped with Coulter Mounted Residue Wheels and Notched Single Disc Fertilizer Openers require the use of row unit extension brackets (Order Code 700-01072 for 1 row) on **all row units**. **Model 3800 planters** equipped with Coulter Mounted Residue Wheels only require the use of row unit extension brackets (Order Code 700-01072 for 1 row) on the **6 center section rows** to provide clearance at axle rock shaft.

DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

(RU104r)



STEP 1 **Raise the planter to transport position (except 3140) and install all safety lockup devices.** Insert 7 1/2" sleeve into welded sleeves on no till coulter arm. Attach the mount assembly onto the no till coulter arm using the 1/2" x 9 1/2" cap screw, 1/2" hardened washers and 1/2" lock nut supplied with the mount assembly. Torque bolt to 57 ft. lbs.

STEP 2 Install R.H. and L.H. wheel assemblies (interlocked or staggered) onto mount assembly using 5/8" x 3" cap screws, machine bushings (between wheel and weed guard), weed guard, hex jam nuts and dust caps supplied in the Hardware Bag. Torque bolts to 110 ft. lbs.

NOTE: Opening in weed guard must point down.

Row Unit Mounted Disc Furrower (Pull Row Unit Only)

Row Unit Mounted Disc Furrower With Solid Disc Blades - 700-01037 (7181X)

(1)A5718 Support Arm
(1)A5896 Mounting Bracket Assembly
- (1)10585 Cap Screw, 1/2"-13 x 3 1/4"
- (1)10536 Pin
- (4)10216 Washer, 1/2"
- (5)10111 Lock Nut, 1/2"-13
- (4)10017 Cap Screw, 1/2"-13 x 1 1/2"
- (1)10503 Jam Nut, 5/8"-11
- (4)D7889 Bushing
- (2)D7890 Link
- (1)10597 Set Screw, 5/8"-11 x 2 1/4"
- (1)A5715 Anchor
- (1)A5719 Mounting Bracket

(1) A5897 Hardware Bag
- (2)D7817-01 Spacer, 3/4"
- (2)D7817-04 Spacer, 1/2"
- (2)10039 Cap Screw, 1/2"-13 x 1 3/4"
- (2)10318 Cap Screw, 5/8"-11 x 4 1/2"
- (2)D7805 Washer, 5/8"
- (2)10107 Lock Nut, 5/8"-11
- (2)D7889 Bushing
- (2)10111 Lock Nut, 1/2"-13
- (2)10216 Washer, 1/2"

(2)D1132 Dust Cap
(2)A5926 Solid Disc/Hub Assembly
- (6)10106 Hex Nut, 5/16"-18
- (6)10572 Slotted Machine Screw
- (1)D7823 Solid Disc Blade
- (1)A5654 Hub Assembly

Row Unit Mounted Disc Furrower With Notched Disc Blades - 700-01029 (7148X)

(1)A5718 Support Arm
(1)A5896 Mounting Bracket Assembly
- (1)10585 Cap Screw, 1/2"-13 x 3 1/4"
- (1)10536 Pin
- (4)10216 Washer, 1/2"
- (5)10111 Lock Nut, 1/2"-13
- (4)10017 Cap Screw, 1/2"-13 x 1 1/2"
- (1)10503 Jam Nut, 5/8"-11
- (4)D7889 Bushing
- (2)D7890 Link
- (1)10597 Set Screw, 5/8"-11 x 2 1/4"
- (1)A5715 Anchor
- (1)A5719 Mounting Bracket

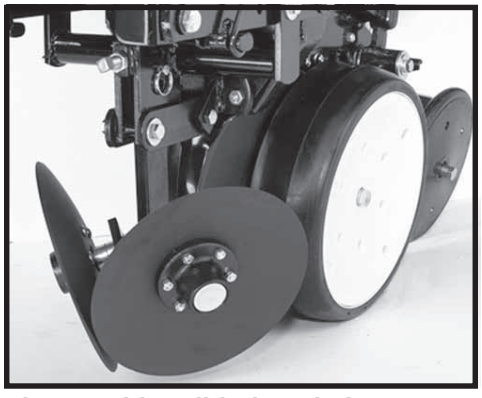
(1) A5897 Hardware Bag
- (2)D7817-01 Spacer, 3/4"
- (2)D7817-04 Spacer, 1/2"
- (2)10039 Cap Screw, 1/2"-13 x 1 3/4"
- (2)10318 Cap Screw, 5/8"-11 x 4 1/2"
- (2)D7805 Washer, 5/8"
- (2)10107 Lock Nut, 5/8"-11
- (2)D7889 Bushing
- (2)10111 Lock Nut, 1/2"-13
- (2)10216 Washer, 1/2"

(2)D1132 Dust Cap
(2)A5655 Notched Disc/Hub Assembly
- (6)10106 Hex Nut, 5/16"-18
- (6)10572 Slotted Machine Screw
- (1)D8307 Notched Disc Blade
- (1)A5654 Hub Assembly

The row unit mounted disc furrower may be equipped with either 12" solid or 12" notched disc blades. One package is required per row.

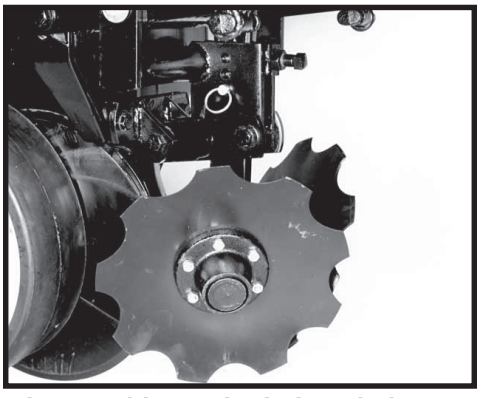
DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

LF212299-22



Shown With Solid Disc Blades

61658-37



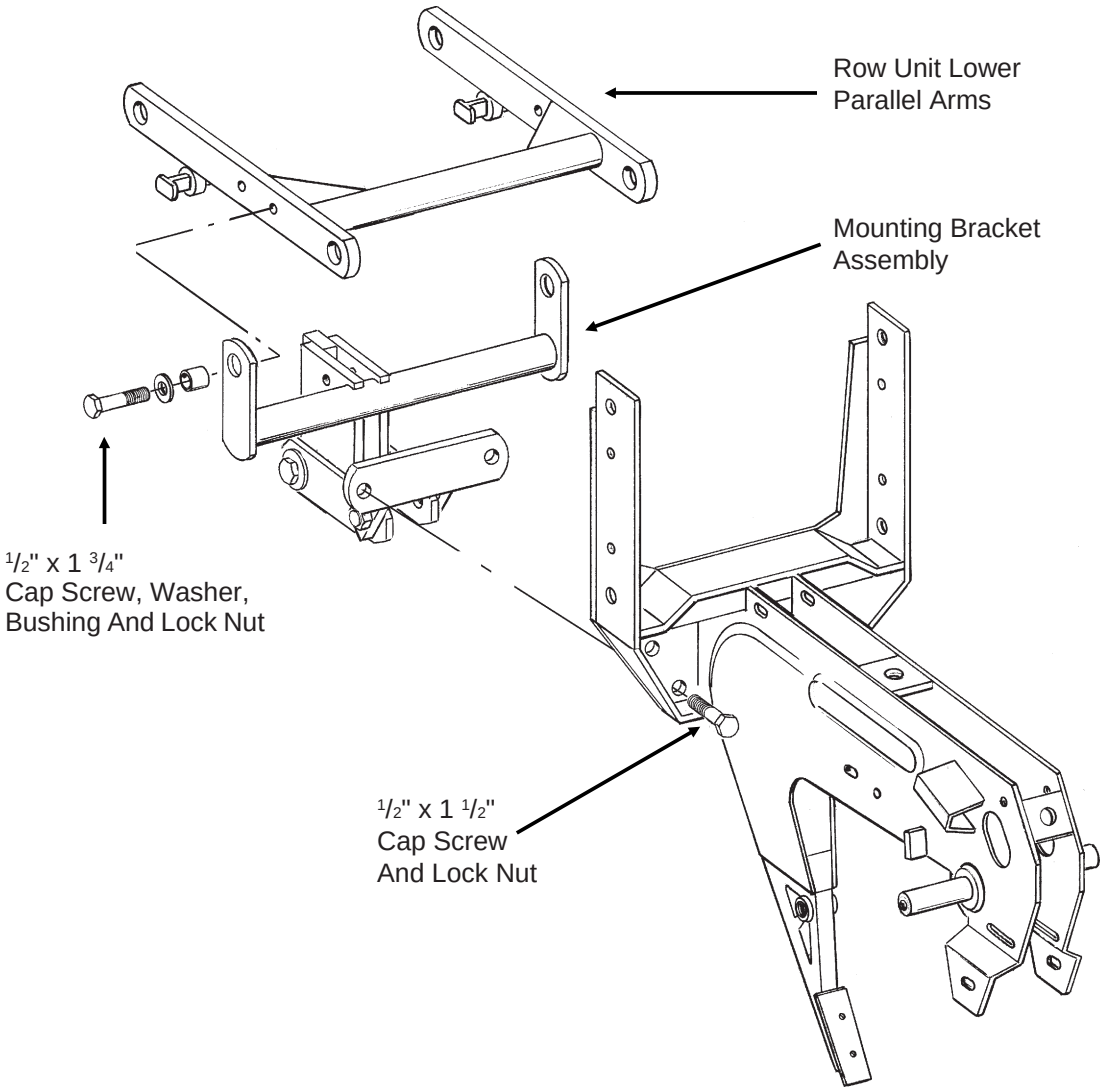
Shown With Notched Disc Blades

Row Unit Mounted Disc Furrower

STEP 1 **Raise the planter until the bottom of the toolbar is approximately 30" above the floor. Install support stands to safely support the planter until assembly is complete.**

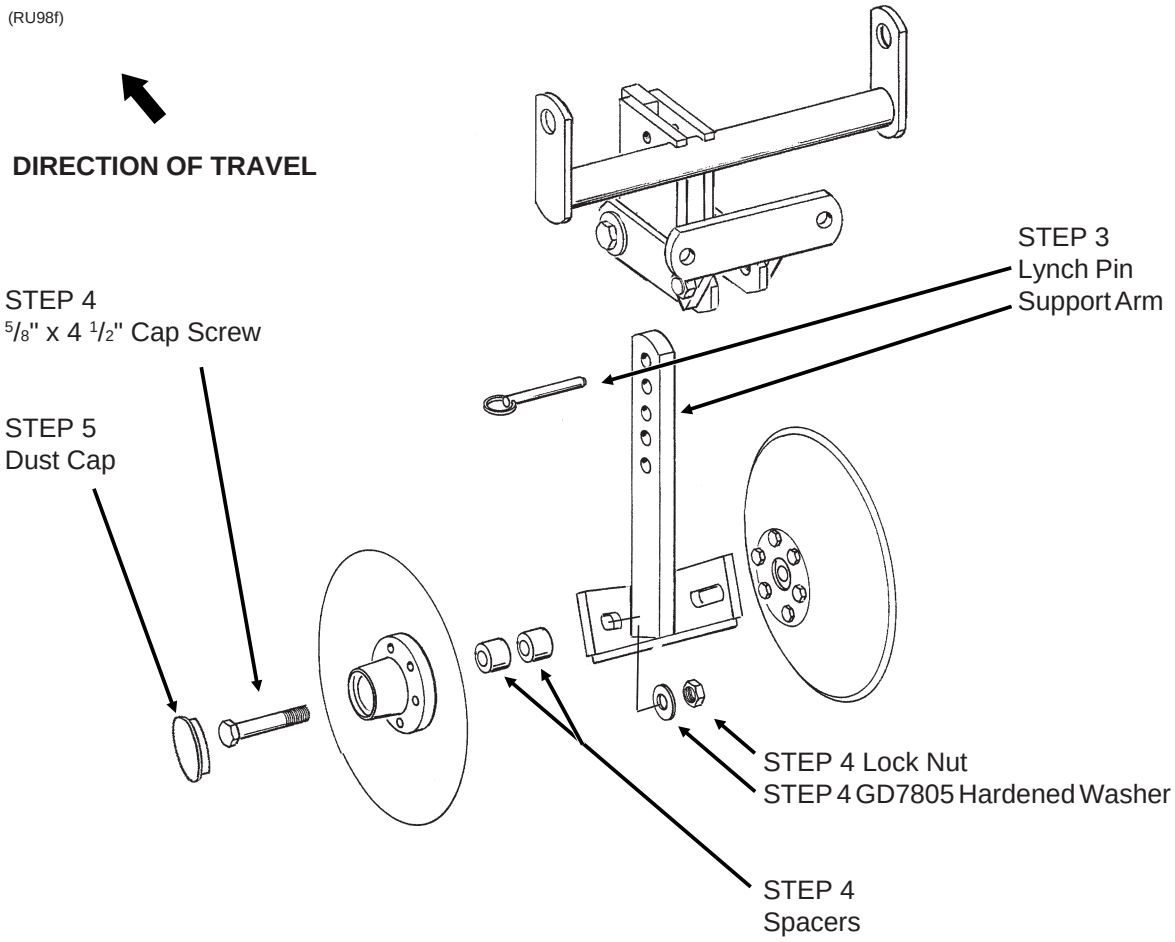
STEP 2 Attach lower anchor portion of mounting bracket assembly to row unit face plate using two 1/2" x 1 1/2" cap screws and lock nuts. Torque to 57 ft. lbs. Attach upper portion of mounting bracket assembly using rear hole in the row unit lower parallel arms. On each lower parallel arm install one 1/2" x 1 3/4" cap screw and washer supplied in Hardware Bag through mounting bracket then through hole in lower parallel arm. Install bushing and 1/2" lock nut. Torque to 57 ft. lbs.

(RU99a)



DIRECTION OF TRAVEL

STEP 3 Remove lynch pin from shipping storage position in mounting bracket assembly and slide support arm into place in mounting bracket assembly with the "V" in the angle pointed forward. Install lynch pin to secure support arm in shallowest position. See Operator & Parts Manual for additional information.



STEP 4 Using 5/8" x 4 1/2" cap screws, hardened washers (GD7805), 1/2" and 3/4" spacers and lock nuts from Hardware Bag, install disc blade/hub assembly onto each side of "V" angle. Disc blades can be installed edge to edge or with R.H. or L.H. blade leading. If using leading set-up, use an equal number of R.H. and L.H. attachments to minimize draft. Adjust all blades equally and torque mounting hardware to specs. See Operator & Parts Manual for additional information.

STEP 5 Install dust cap onto each hub assembly.

STEP 6 Remove support stands and lower planter to the ground.

Row Unit Mounted Bed Leveler (Pull Row Unit Only)

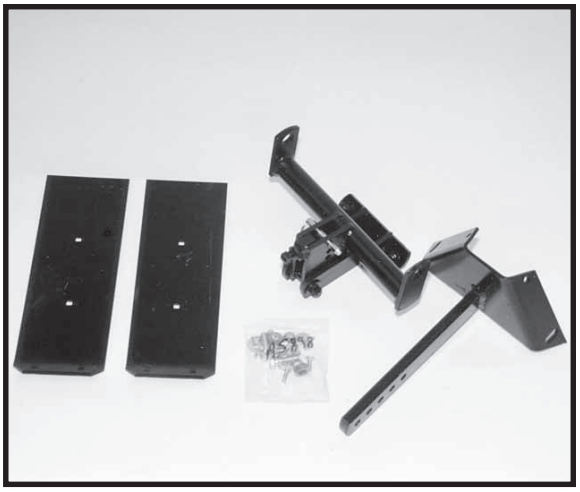
Row Unit Mounted Bed Leveler - 700-07108 (7171X)

(1)A5892 Leveler Arm
(1)A5896 Mounting Bracket Assembly
- (1)10585 Cap Screw, 1/2"-13 x 3 1/4"
- (1)10536 Pin
- (4)10216 Washer, 1/2"
- (5)10111 Lock Nut, 1/2"-13
- (4)10017 Cap Screw, 1/2"-13 x 1 1/2"
- (1)10503 Jam Nut, 5/8"-11
- (4)D7889 Bushing
- (2)D7890 Link
- (1)10597 Set Screw, 5/8"-11 x 2 1/4"
- (1)A5715 Anchor
- (1)A5719 Mounting Bracket

(1) A5898 Hardware Bag
- (6)10303 Carriage Bolt, 5/16"-18 x 1"
- (6)10109 Lock Nut, 5/16"-18
- (4)10219 Washer, 5/16"
- (2)D7889 Bushing
- (2)10111 Lock Nut, 1/2"-13
- (2)10216 Washer, 1/2"
- (2)10039 Cap Screw, 1/2"-13 x 1 3/4"

(2)D8266 Blade

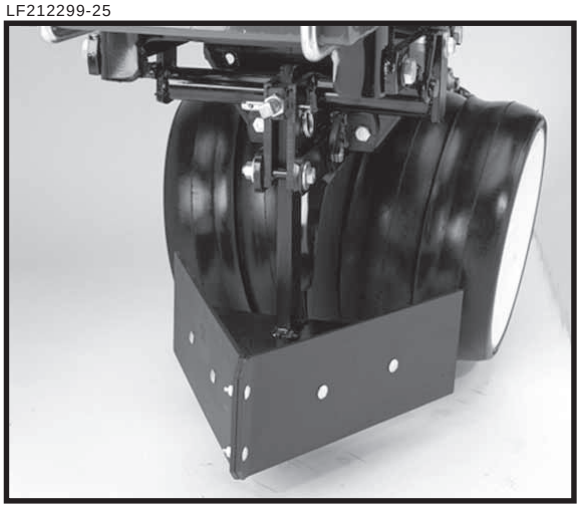
72814-2



The row unit mounted bed leveler is installed in front of the pull row unit. One package is required per row.

DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

LF212299-25



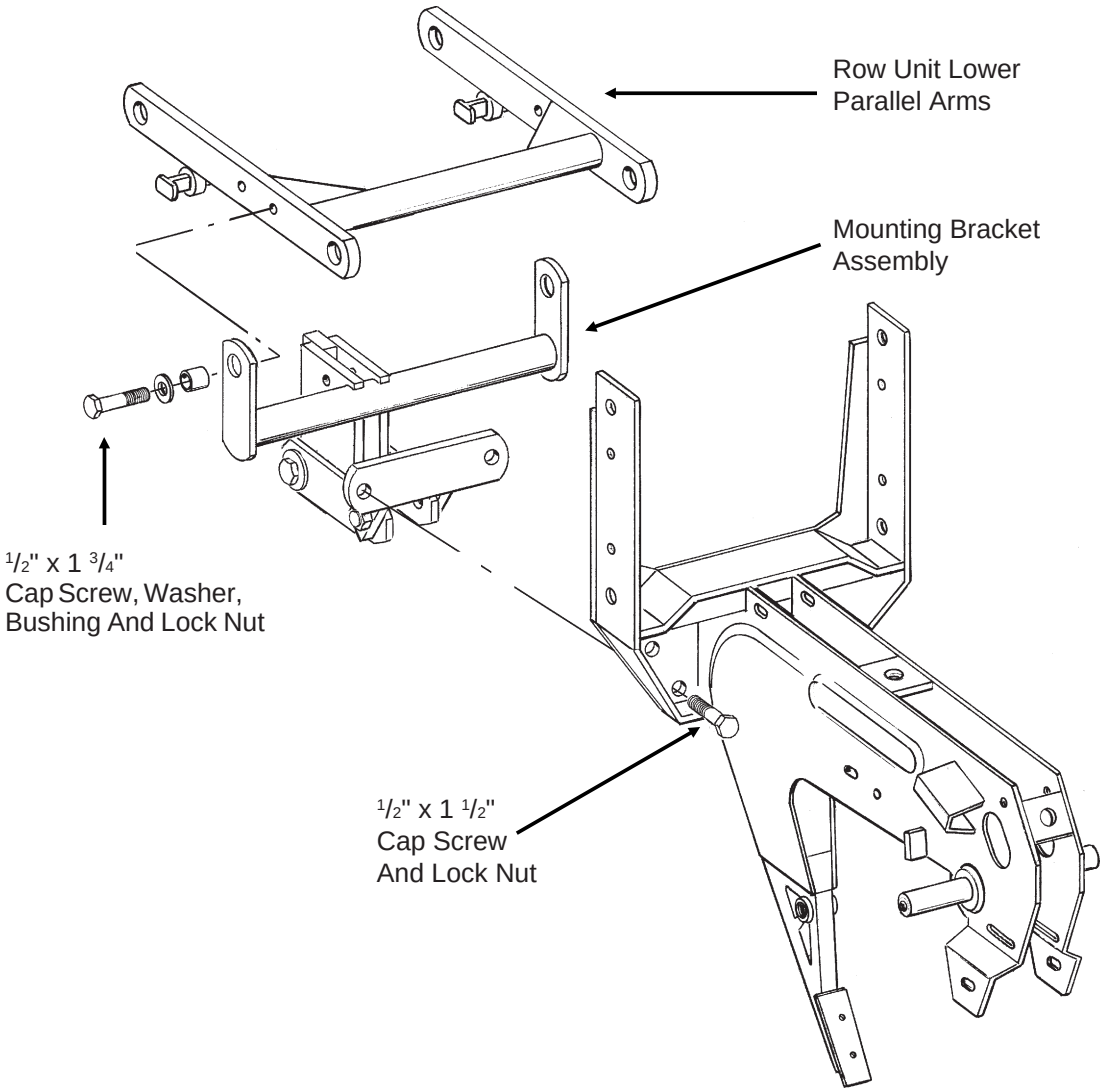
Shown With Dual Gauge Wheels

Row Unit Mounted Bed Leveler

STEP 1 **Raise the planter until the bottom of the toolbar is approximately 30" above the floor. Install support stands to safely support the planter until assembly is complete.**

STEP 2 Attach lower anchor portion of mounting bracket assembly to row unit face plate using two 1/2" x 1 1/2" cap screws and lock nuts. Torque to 57 ft. lbs. Attach upper portion of mounting bracket assembly using rear hole in the row unit lower parallel arms. On each lower parallel arm install one 1/2" x 1 3/4" cap screw and washer supplied in Hardware Bag through mounting bracket then through hole in lower parallel arm. Install bushing and 1/2" lock nut. Torque to 57 ft. lbs.

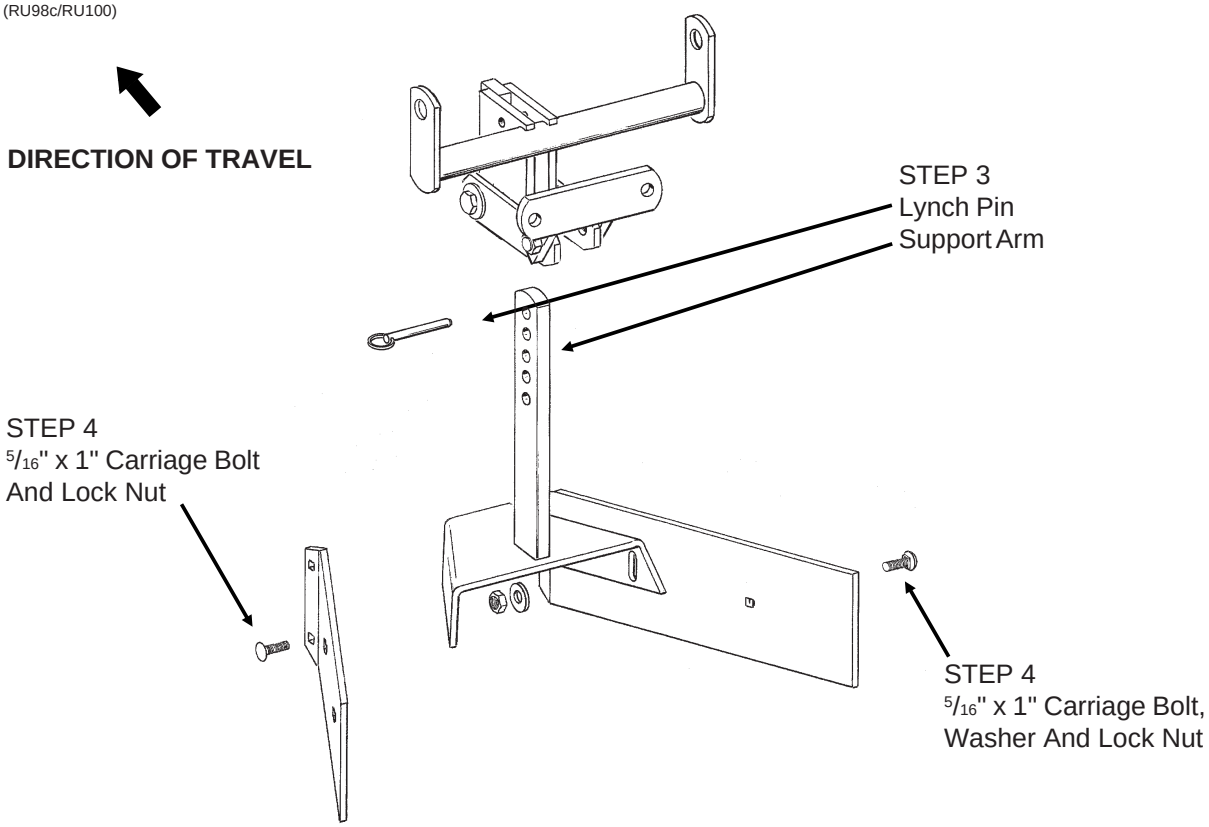
(RU99a)



DIRECTION OF TRAVEL

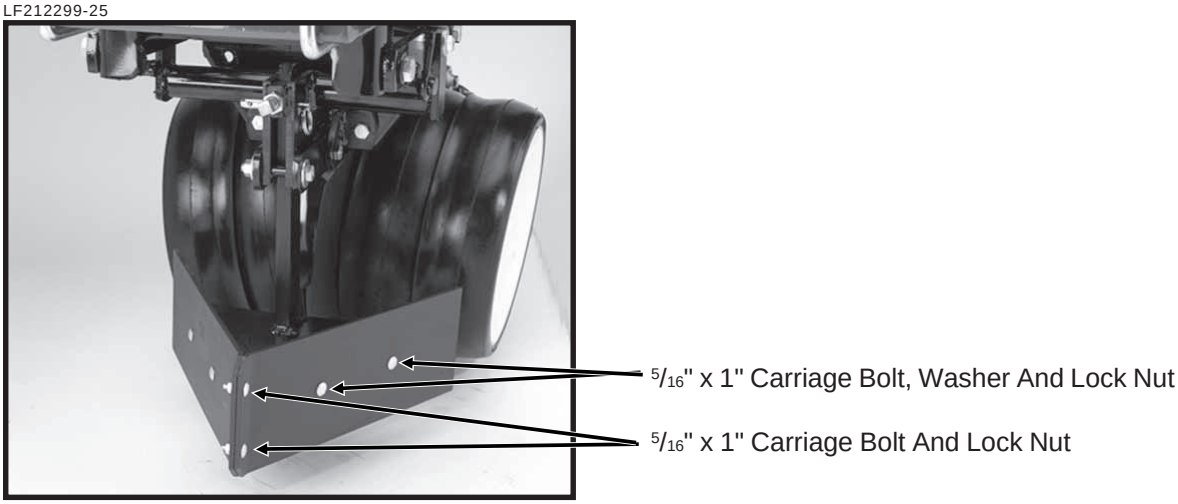
STEP 3 Remove lynch pin from shipping storage position in mounting bracket assembly and slide support arm into place in mounting bracket assembly with the "V" in the angle pointed forward. Install lynch pin to secure support arm in shallowest position. See Operator & Parts Manual for additional information.

(RU98c/RU100)



STEP 4 Using 5/16" x 1" carriage bolts, washers and lock nuts from hardware bag, install blade onto each side of "V" angle as shown. Adjust all blades equally and torque mounting hardware to specs. See Operator & Parts Manual for additional information.

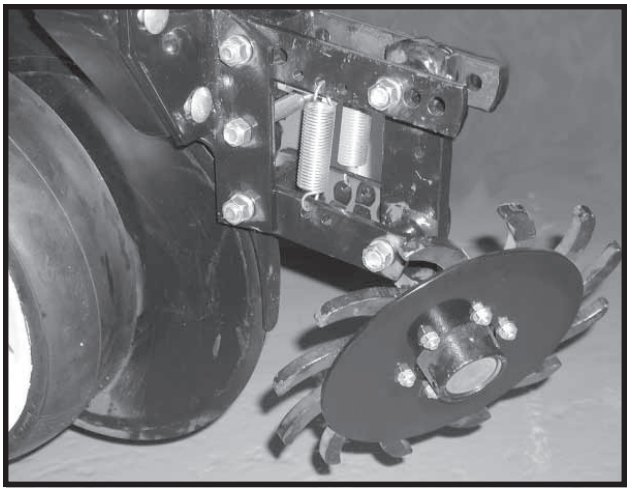
LF212299-25



STEP 5 Remove support stands and lower planter to the ground.

Row Unit Mounted Residue Wheel Attachment
(Pull Row Unit And Push Row Unit)

D101701113



Row Unit Mounted Residue Wheel Attachment - 700-01064 (A6841)

The row unit mounted residue wheel attachment is installed in front of the pull row unit and/or push row unit. One package is required per row.

DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

STEP 1 **Raise the planter until the bottom of the toolbar is approximately 30" above the floor. Install support stands to safely support the planter until assembly is complete.** Attach row unit mounted residue wheel attachment to row unit face plate using 1/2" carriage bolts and lock nuts supplied with the attachment. Center residue wheel ahead of double disc openers.

STEP 2 Torque bolts to 57 ft. lbs.

STEP 3 Remove support stands and lower planter to the ground.

See “Row Unit Mounted Residue Wheel” in the row unit operation section in the Operator & Parts Manual for additional information.

OPTIONAL ATTACHMENTS
Frame Mounted Coulter (Pull Row Unit Only)

Frame Mounted Coulter
With 1" Bubbled Blade - 700-01088
(1)A9135 Frame Mounted Coulter
(1)D7804 1" Bubbled Blade

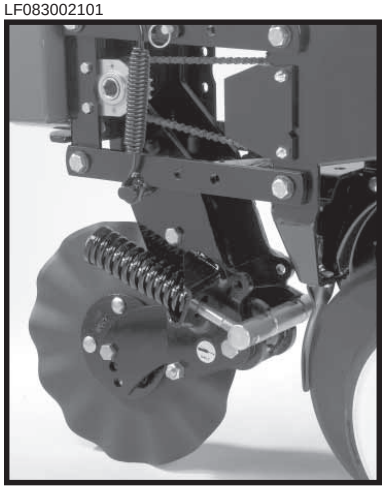
Frame Mounted Coulter
With 1" Fluted Blade - 700-01087
(1)A9135 Frame Mounted Coulter
(1)D7803 1" Fluted Blade (8 Flutes)

Frame Mounted Coulter
With 3/4" Fluted Blade - 700-01086
(1)A9135 Frame Mounted Coulter
(1)D9254 3/4" Fluted Blade (13 Flutes)

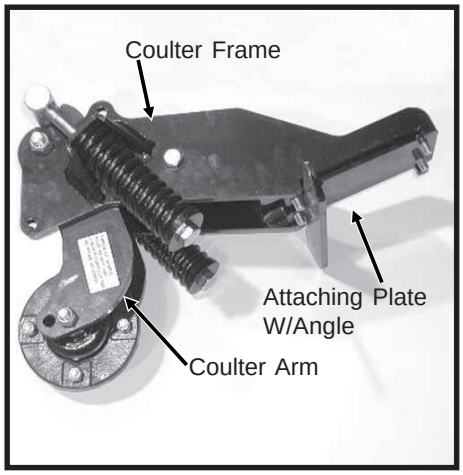
The frame mounted coulter is designed to allow required spring down pressure on the coulter for maximum penetration while exerting less shock load on the row unit.

DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

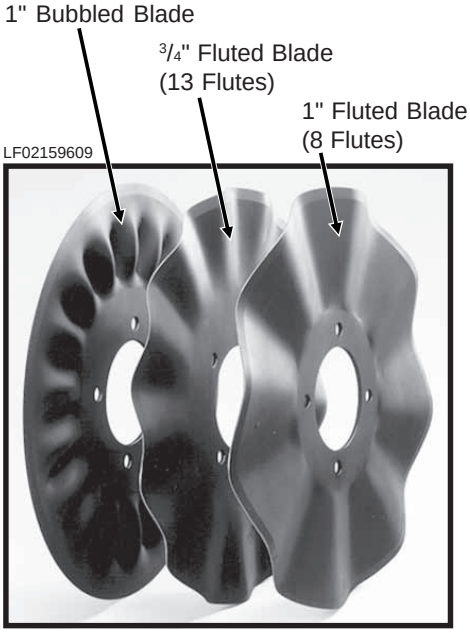
LF083002101



D03210204b



LF02159609

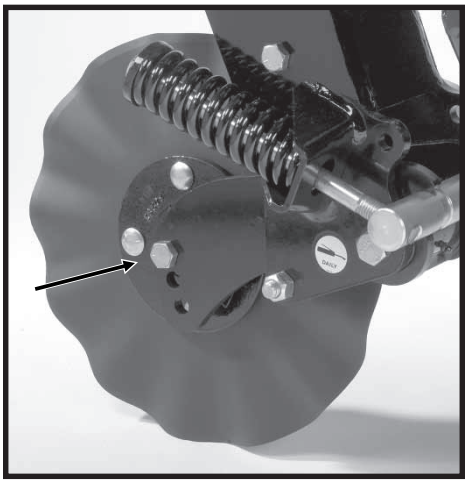


STEP 1 **Raise the planter until the bottom of the toolbar is approximately 23" above the floor.** Remove seed hopper from row unit to allow easier installation of coulter.

STEP 2 Remove the hub assembly from the coulter assembly and install blade.

D03210207b

LF083002101



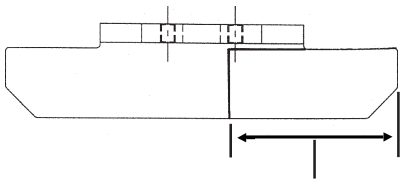
STEP 3 Reinstall hub/blade assembly into the coulter arm using the top hole. Torque to 120 ft. lbs.

D03210203a

STEP 4 Remove the attaching plate w/angle from the coulter assembly.

NOTE: On Model 3600 and 3650 planters, a portion of the angle on the attaching plate will need to be trimmed on the first row out from each wing hinge as shown below. 36"/38" spacings applicable to 3600 only.

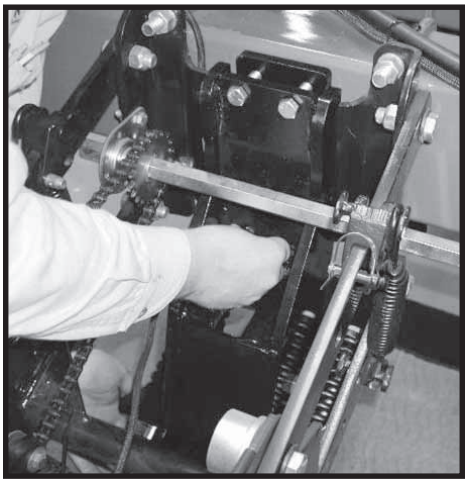
(A9844)



30" Row Spacing Trim 5 1/2"
36" Row Spacing Trim 5 1/2"
38" Row Spacing Trim 1"

R.H. Side Shown

D03060306a



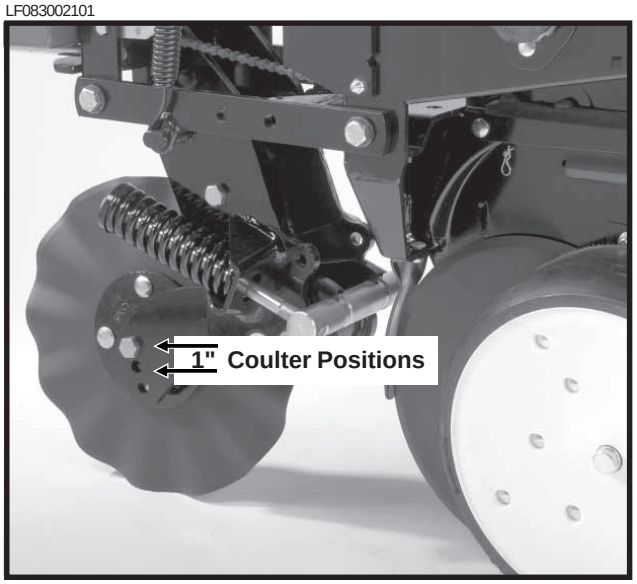
STEP 5 Using an overhead crane or hoist, position the coulter assembly onto the row unit mounting support plate. Slide the attaching plate w/angle up in between the toolbar and the existing row unit mounting support plate. Install the four 1/2"-13 x 1 3/4" hex head cap screws.

STEP 6 Center coulter blade with row unit opener blades and tighten bolts evenly. Torque mounting bolts to 57 ft. lbs.

Frame Mounted Coulter (Pull Row Unit Only)

FRAME MOUNTED COULTER OPERATION

LF083002101

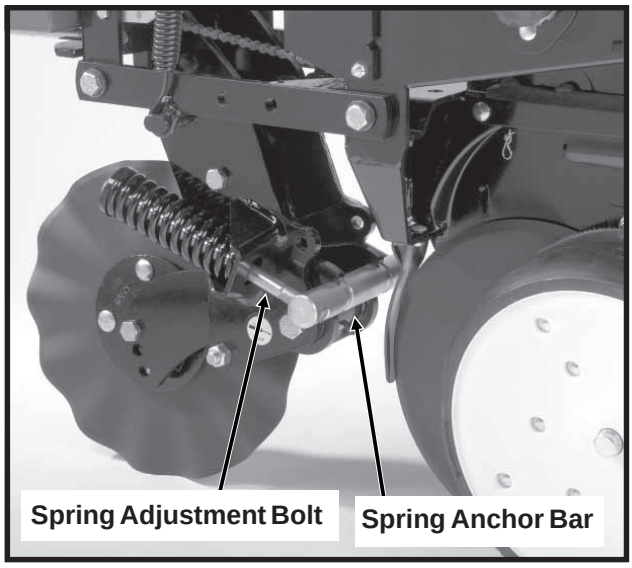


Frame mounted coulters with 1" bubbled, 1" fluted (8 flutes) or 3/4" fluted (13 flutes) blades may be used on pull row units only. (Not compatible with push row units.)

The frame mounted coulter is designed to allow required spring down pressure on the coulter for maximum penetration while exerting less shock load on the row unit.

The initial location of the coulter blade is in the top hole. The blade can be relocated to one of the lower two holes (1" increments) as wear occurs or if a deeper operation of the blade is desired.

LF083002101



DOWN PRESSURE ADJUSTMENT

Down force adjustment is made by tightening or loosening the two spring adjustment bolts. With the planter in raised position, turn the bolts clockwise to increase down pressure or counterclockwise to decrease down force. Set both springs the same.

Down force on the blade is shown below in lbs.

End Of Spring Adjustment Bolt Flush With Spring Anchor Bar (Shown Above)	End Of Spring Adjustment Bolt Extended 1/2" Through Spring Anchor Bar	All Threads Used (Maximum)
275 Lbs.	400 Lbs.	500 Lbs.

NOTE: Avoid setting down pressure higher than is required for consistent soil penetration. Excessive pressure will increase the chances of damage to coulter components if the coulter should strike an obstacle.

Residue Wheels For Use On Frame Mounted Coulter

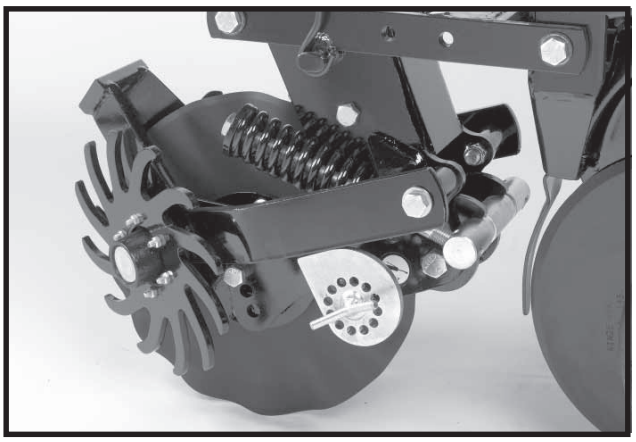
(Pull Row Unit Only)

Residue Wheels - 700-01089
(For Use With Frame Mounted Coulter

(1)A9866 Wheel Mount Assembly
(1)A7446 Wheel Assembly, R.H.
(1)A7445 Wheel Assembly, L.H.
(1)A9863 Hardware Bag
- (4)10213 Bushing
- (2)10010 Cap Screw, 5/8"-11 x 3"
- (2)10503 Hex Jam Nut, 5/8"-11, Grade 2
- (1)10011 Cap Screw, 5/8"-11 x 5 1/2"
- (1)10005 Cap Screw, 5/8"-11 x 1 3/4"
- (2)D1132 Dust Cap
- (2)A9862 Weed Guard W/Spring Pin
- (1)B0218 Bushing

(1)A9898 Cam Assembly

LF083002102

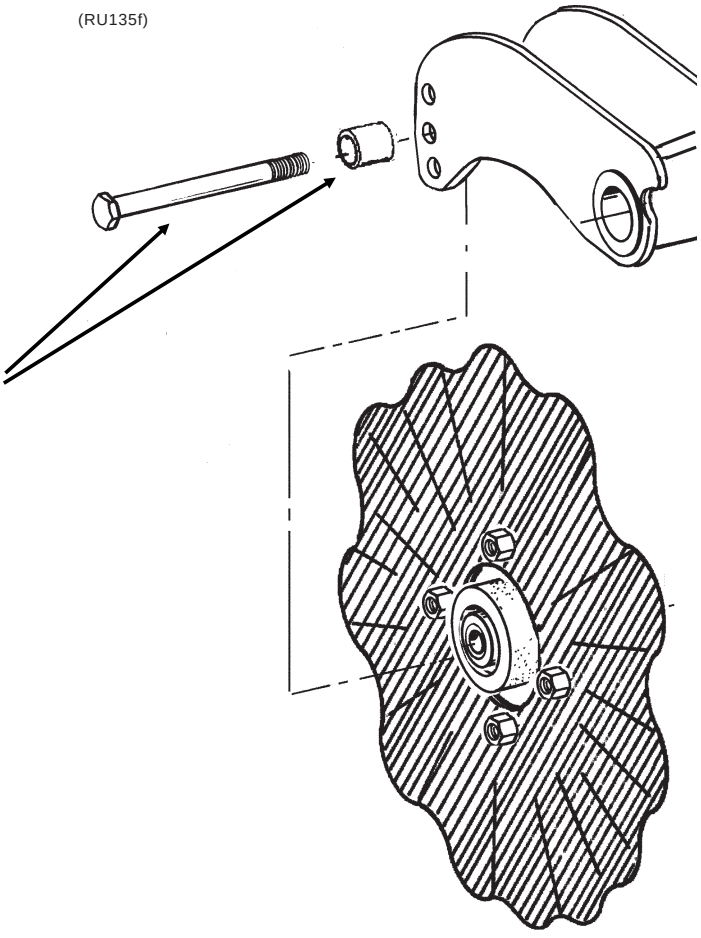


This package is designed to be installed on the frame mounted coulter attachment.

IMPORTANT: The forward mounting position of the tined wheel should not be used on the four rows behind the axle on 3500/3600 planters.

DANGER: Always install all safety lockup devices or lower machine to the ground before working under or around the machine.

(RU135f)



STEP 1 **Raise the planter to transport position (except 3140) and install all safety lockup devices.**

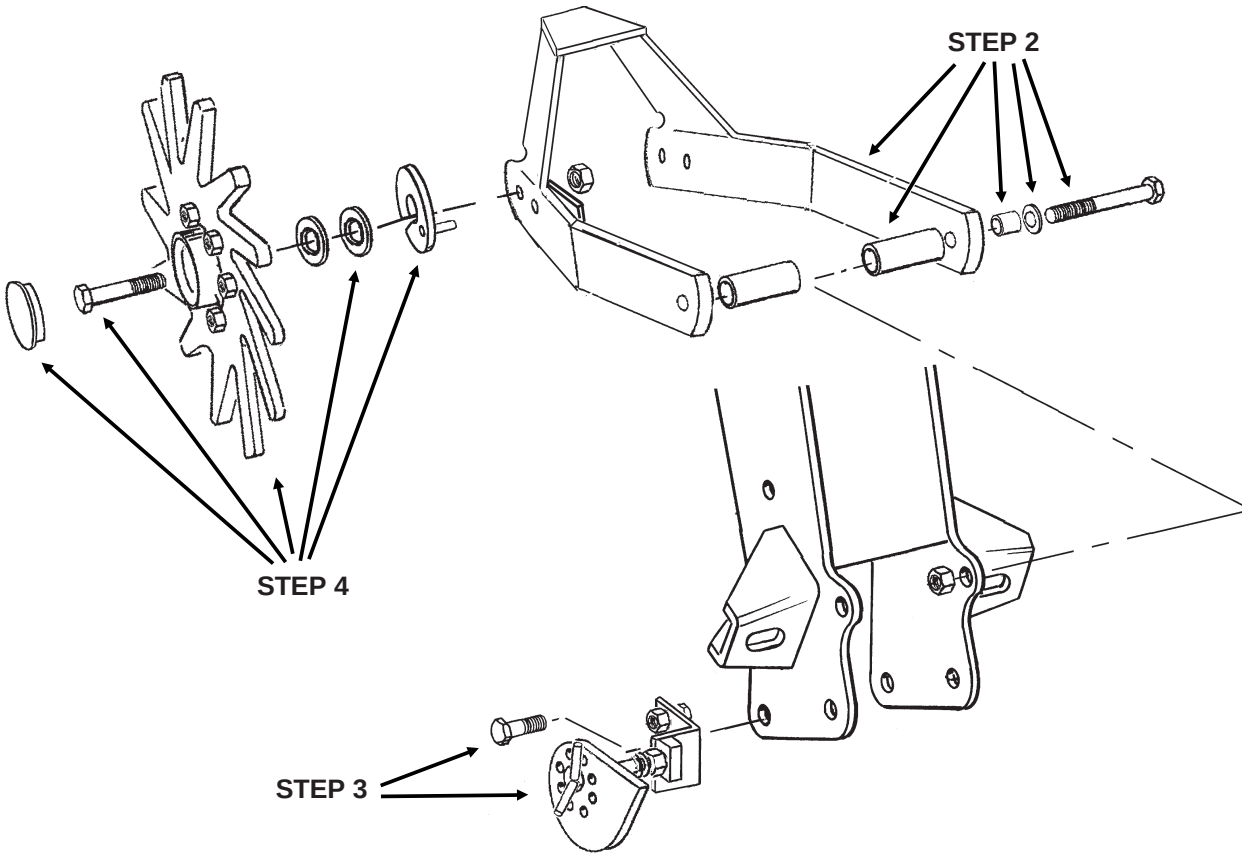
Remove the 5/8" x 5" cap screw that attaches the disc blade and replace it with the 5/8" x 5 1/2" cap screw and bushing supplied in the Hardware Bag. Bushing must be installed on L.H. side of coulter arm. Reuse existing lock nut.

Residue Wheels For Use On Frame Mounted Coulter

(Pull Row Unit Only)

STEP 2 Install wheel mount assembly onto frame mounted coulter as shown below using hardware, sleeves and bushings supplied with the wheel mount assembly.

(RU135i)



STEP 3 Install cam assembly onto frame mounted coulter located as shown above using $^{5}/_{8}$" x 1 $^{3}/_{4}$" cap screw supplied in Hardware Bag. Reuse existing lock nut.

STEP 4 Install wheel assembly, machine bushings and weed guard onto each side of wheel mount assembly as shown above using $^{5}/_{8}$" x 3" cap screws, machine bushings and hex jam nuts supplied in Hardware Bag. Install dust cap supplied in Hardware Bag.

NOTE: Opening in weed guard must point down.

Residue Wheels For Use On Frame Mounted Coulter

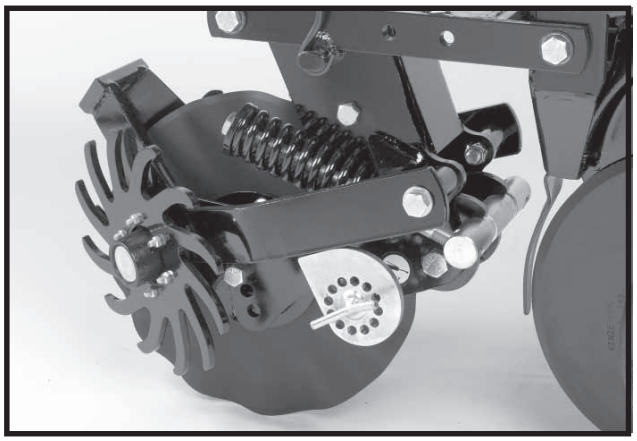
(Pull Row Unit Only)

RESIDUE WHEELS OPERATION

(For Use With Frame Mounted Coulter)

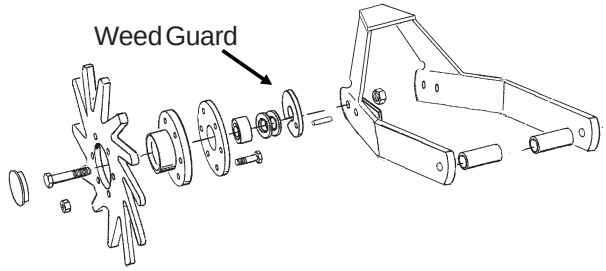
The residue wheels for use with the frame mounted coulter may be used on pull row units only.

LF083002102



The residue wheels are attached to the frame mounted coulter with two cap screws and sleeves allowing the unit to free-float. A 2-position spindle bolt mounting allows the tined wheels to be mounted interlocked or staggered. Depth adjustment is made using a spring-loaded cam and pin with 11 positions in 1/4" increments. A high point on the cam allows the wheels to be locked up so they do not contact the ground. A weed guard, located on the inboard side of each wheel, aids in the prevention of weed wrap which can cause premature bearing failure.

(RU135j)



NOTE: Opening in weed guard must point down.

- ❑ Lubricate per instructions. (See Operator & Parts Manual.)
- ❑ Check for loose bolts, nuts, etc.
- ❑ Check all drive chains for proper alignment.
- ❑ Make sure all drive shafts rotate freely.
- ❑ Make sure all row units are mounted correctly, properly spaced and that they are squared on the toolbar.
- ❑ Align drive clutch to meter on each row.

Refer to planter assembly manual for additional information and Predelivery/Delivery Checklist.

DELIVERY CHECKLIST

At the time the planter is delivered, the following checklist is to be used as a reminder of very important information which should be conveyed to the customer. Check off each item as it is fully explained to the customer.

- ❑ Advise the customer that the life expectancy of this or any other machine is dependent on regular lubrication as directed in the Operator & Parts Manual.
- ❑ Tell the customer about all applicable safety precautions.
- ❑ Along with the customer, check to be sure the reflective decals and SMV sign are clearly visible with the planter in transport position and attached to the tractor. Check to be sure safety/warning lights are in working condition. Tell the customer to check federal, state/provincial and local regulations before towing or transporting on a road or highway.
- ❑ Give the Operator & Parts Manual to the customer and explain all operating adjustments.
- ❑ Read warranty to customer.
- ❑ Complete Warranty And Delivery Report form.

AFTER DELIVERY CHECKLIST

The following is a list of items we suggest to check during the first season of use of the equipment.

- ❑ Check with the customer as to the performance of the planter.
- ❑ Review with the customer the importance of proper maintenance and adherence with all safety precautions.
- ❑ Check for parts that may need to be adjusted or replaced.
- ❑ Check to be sure all safety warning signs (decals), reflective decals and SMV sign are correctly located and legible. Replace if damaged or missing.
- ❑ Check to be sure safety/warning lights are working properly.