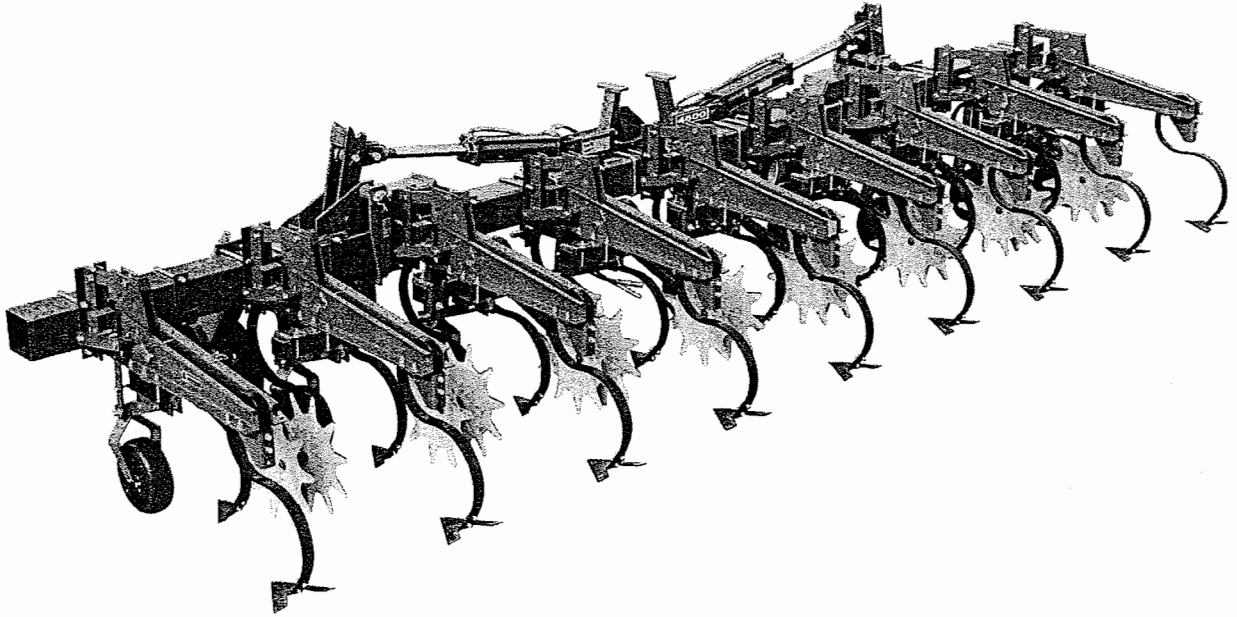


OWNER'S MANUAL

4600



ROW CROP CULTIVATOR

4600 SERIES

Serial No.

3061

REVISED

NOV 1998

KRAUSE

305 SOUTH MONROE STREET HUTCHINSON, KANSAS 67501

Warranty

KRAUSE PLOW CORPORATION Hutchinson, Kansas

The Krause Plow Corporation, Hutchinson, Kansas, expressly warrants each new product manufactured by it to be free from defects in material and workmanship under normal use and service for a period of one year after delivery to the original retail purchaser or first user of the product.

Krause's obligation under this warranty is limited to repairing and/or replacing, at its option, any part or parts within the applicable one year period, as set out above, which shall be returned by the owner or any Krause authorized dealer to the factory and which upon examination shall disclose to Krause's satisfaction to be defective.

Krause may, at its option, elect to grant adjustments in the field through an authorized representative and may thereby elect to waive the requirement that parts be returned to Krause's factory.

A new warranty period is not established for replacements. Replacements are warranted for the remaining portion of the one year original warranty period. The repair or replacement of defective parts under this warranty will be made without charge to the owner except for transportation.

Krause does not warrant disc blades, tires, chisel shanks, hydraulic cylinders, accessories and other parts not manufactured by it, but supplied with or as a part of its products. Krause will, however, obtain and pass on any adjustments provided by the manufacturers of such parts under these manufacturer's warranties.

The provisions of this warranty do not apply to any product or parts which have been subject to misuse, negligence or accident, or which have been repaired or altered outside of Krause's factory in any way so as in the judgement of Krause to affect adversely its performance and reliability. Neither does this warranty apply to normal maintenance service and parts, or to normal deterioration due to wear and exposure.

To the extent allowed by applicable law, this warranty is expressly in lieu of other warranties, expressed or implied, in fact or by law, including any implied warranty of merchantability or fitness for a particular purpose. The remedies of repair or replacement as set forth are the only remedies under this warranty. Krause disclaims any obligations or liability for loss of time, inconvenience, commercial loss or direct, consequential, special or incidental damages. This warranty is in lieu of any other obligation or liability of Krause of any nature whatsoever by reason of the manufacture, sale, lease or use of such products and Krause neither assumes, nor authorizes anyone to assume for it, any other obligation or liability in connection with such products.

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4600 SERIES ROW CROP CULTIVATOR DEALER PREDELIVERY CHECK SHEET

TO BE CHECKED BY DEALER

CUSTOMER _____ DATE _____

ADDRESS _____

DEALER _____

ADDRESS _____

MODEL _____ SERIAL NUMBER _____

DEALER CHECK:

1. ___ Gang frames are level and at the correct height.
2. ___ Row spacings of gangs are correct for row widths to be cultivated.
3. ___ Sweeps are set correctly.
4. ___ Gangs have been greased and work freely.
5. ___ Stabilizer discs have been assembled correctly.



Caution: Interference between tractor cab or fenders is possible on folding models. Stabilizer discs and tool bar gauge wheels must be installed as shown in the placement drawings. 3-Point arms must be adjusted downward until an adequate cab / fender clearance is obtained.

6. ___ Tool bar gauge wheels have been assembled correctly.
7. ___ 3-Point hitch brackets are in the correct location and tightened properly.
8. ___ Attachments are installed correctly.
9. ___ Check to see that wing fold hydraulic cylinders are full of oil (air bled out of cylinders). Cylinders require 7 Quarts / 6.5 Liters of oil.
10. ___ Examine hydraulic hoses to see that they are protected from damage.
11. ___ Restrictors are installed in all wing lift cylinder ports.
12. ___ All decals are in place. See decal placement drawing on page P28 of this manual.
13. ___ Customer review sheet is filled out and signed.
14. ___ Review lighting requirements. Light kits are standard.
15. ___ Check to be sure that Owner's Manual is in the storage canister.
16. ___ Make sure that the Slow-Moving-Vehicle emblem is clean and in place.

DELIVERED BY _____

DATE _____

4600 ROW CROP CULTIVATOR CUSTOMER REVIEW SHEET

CUSTOMER _____ DATE _____

ADDRESS _____

DEALER _____

ADDRESS _____

MODEL _____ SERIAL NUMBER _____

1. ____ Owner's manual provided.
2. ____ Warranty card filled out.
3. ____ Review safety warnings and cautions as listed in this owner's manual.
4. ____ Review recommended maximum road speed and width for implement.
5. ____ Review the field operational speeds, horsepower, depth, and rock conditions.
6. ____ Explain the depth control system including how to set the individual gang gauge wheels.
7. ____ Explain that this unit will add a considerable weight to the rear of the tractor in the raised position. Sufficient front end ballast must be added to the tractor for safe operation. (See operating information under "PREPARING THE TRACTOR FOR OPERATION".)
8. ____ Explain the importance of maintaining the tool through proper lubrication, checking the bolts to see that they are tight, and through the replacement of worn or broken parts.
9. ____ Explain lighting requirements.

DEALER _____ DATE _____

CUSTOMER _____ DATE _____

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Revised 12/96

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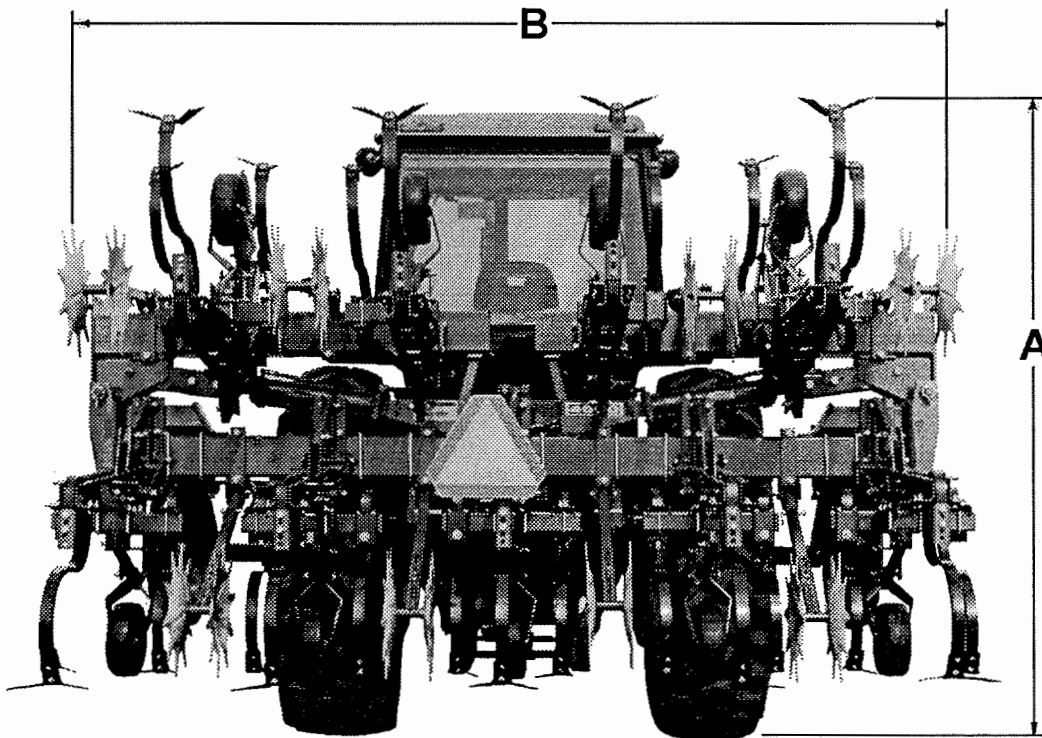
4600 ROW CROP CULTIVATOR SPECIFICATIONS

10/94

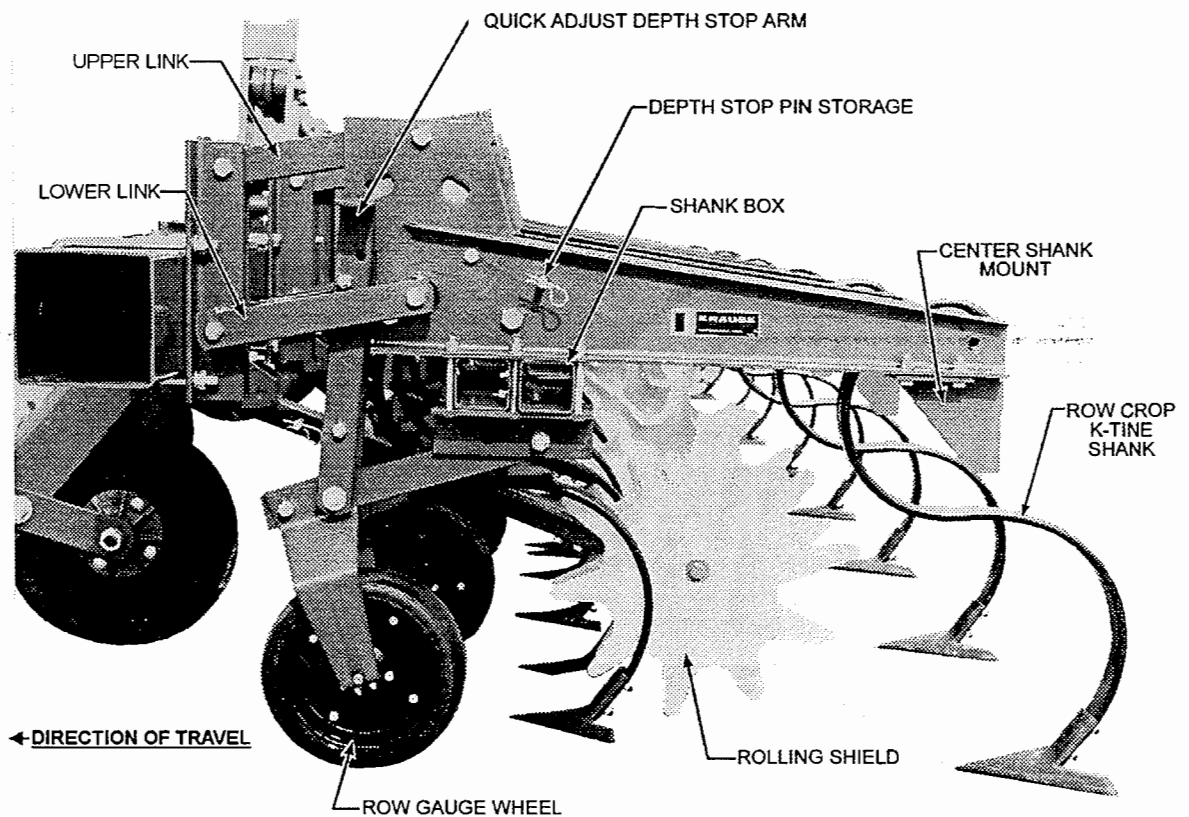
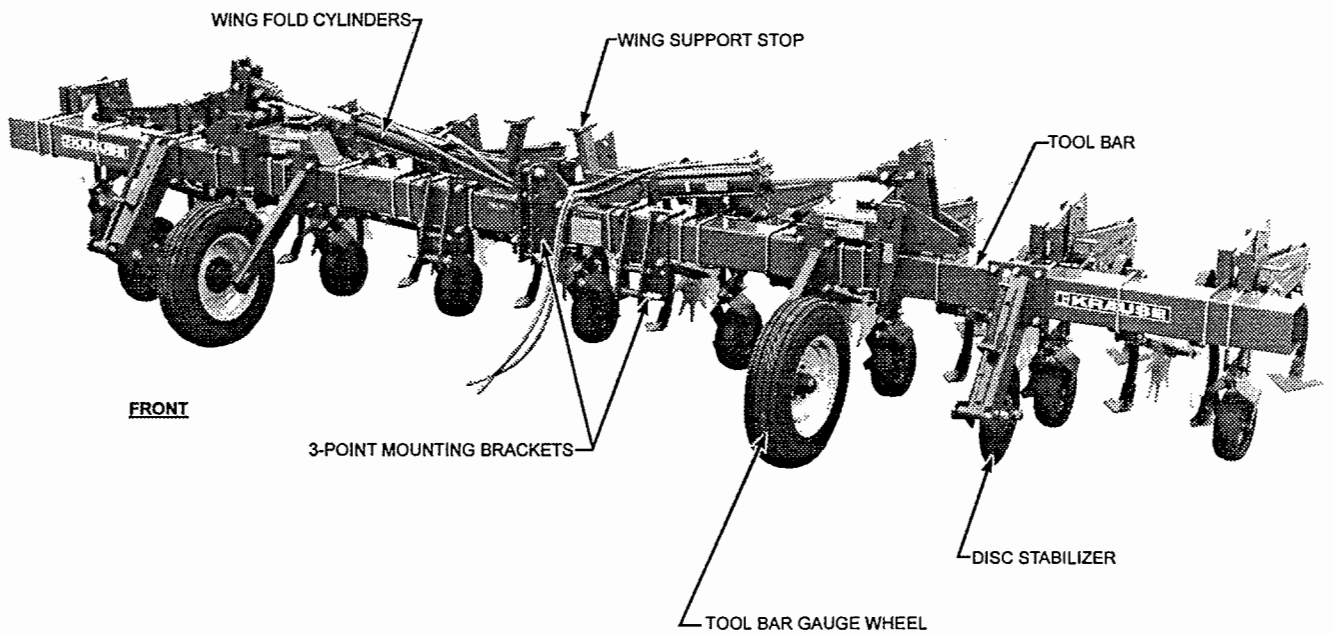
MODELS	ROWS	SPACING	TOTAL GANGS	NUMBER SHANKS	CENTER TOOL BAR LENGTH	WING TOOL BAR LENGTH
4604-0R3	4	28" - 30"	5	13	130"	—
4604-0R4	4	36" - 40"	5	21	172"	—
4606-0R3	6	28" - 30"	7	19	190"	—
4606-0R4	6	36" - 40"	7	31	250"	—
4606-0F4	6	36" - 40"	7	31	134-1/4"	63-1/2"
4608-0R3	8	28" - 30"	9	25	250"	—
4608-0F3	8	28" - 30"	9	25	134-1/4"	63-1/2"
4608-0F4	8	36" - 40"	9	41	174-1/4"	77-1/2"
4612-0F3	12	28" - 30"	13	37	194-1/4"	87-1/2"
4612-0F4	12	36" - 40"	13	61	262-1/4"	113-1/2"
4616-0F3	16	28" - 30"	17	49	262-1/4"	113-1/2"

TRANSPORT HEIGHT AND WIDTH

MODELS	TRANSPORT HEIGHT "A"	TRANSPORT WIDTH "B"
4604-0R3	4' 8"	10' 10"
4604-0R4	4' 8"	14' 4"
4606-0R3	4' 8"	15' 10"
4606-0R4	4' 8"	20' 10"
4606-0F4	7' 6"	11' 10"
4608-0R3	4' 8"	20' 10"
4608-0F3	7' 6"	11' 10"
4608-0F4	7' 6"	14' 11"
4612-0F3	7' 6"	16' 7"
4612-0F4	7' 6"	22' 3"
4616-0F3	7' 6"	22' 3"



M4600-1



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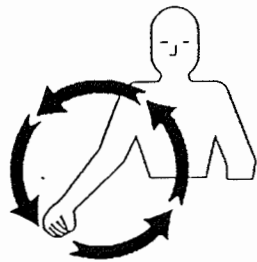
OPERATING SECTION

SAFETY ALERT SYMBOL

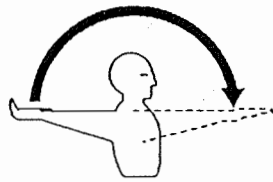


BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY.
THIS SYMBOL IDENTIFIES IMPORTANT SAFETY MESSAGES.
CAREFULLY READ THE MESSAGE THAT FOLLOWS.

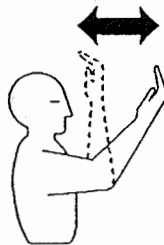
TEN MOST COMMON HAND SIGNALS USED IN THE FIELD



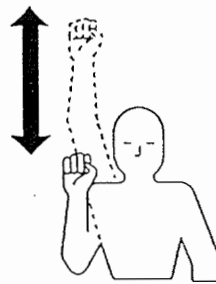
START
THE
ENGINE



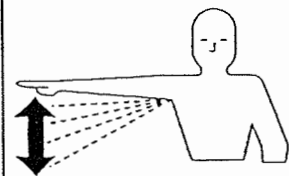
MOVE OUT
OR
TAKE OFF



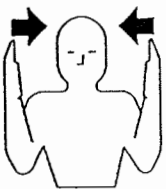
MOVE
TOWARD
ME



SPEED
IT UP



SLOW IT
DOWN



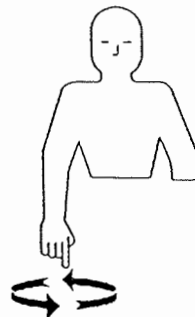
THIS FAR
TO GO



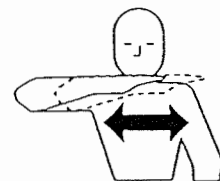
STOP



RAISE
THE
EQUIPMENT



LOWER
THE
EQUIPMENT



STOP
THE
ENGINE

Notes



A series of horizontal lines for writing, spanning the width of the page. There are 20 lines in total, starting from the top margin and ending at the bottom margin.



SAFETY FIRST



WATCH FOR THIS SYMBOL AND CAREFULLY READ THE MESSAGE.

1. Read and understand the owner's manual before operating the machine.
2. Be sure safety decals and reflectors are clean and in place.
3. Do not climb or walk on gangs, frames, or tires.
4. Never position yourself under any portion of the implement unless the entire unit is lowered to the ground.
5. Stop engine and set parking brake before leaving the operator's position to adjust, lubricate, clean or unclog the machine.
6. Do not stand between the implement and the tractor unless the tractor brakes are locked and the engine is shut off.
7. Always store this implement with the wings down.
8. Never operate unit until hydraulic cylinders and lines are full of oil and free of air. (See operating instructions)
9. Use a Slow-Moving-Vehicle (SMV) emblem when transporting.
10. Do not road an implement over 15 miles per hour on the best surface conditions. Reduce speed when going up or down hills or when approaching ditches or corners.
11. Make sure there is sufficient ballast on the front of the tractor for safe operation. See "Preparing Tractor For Operation".
12. Make sure the wing stabilizers and tool bar gauge wheels are assembled correctly to prevent possible interference with tractor cab or fenders.

Elimination of the hazards listed above should not be construed as providing guarantees that the equipment will meet or exceed all standards or regulations or will be completely safe to all personnel. The operator should inspect and review the implement after it is in his possession for adequacy in safety for the function for which it will be used.

OPERATING INSTRUCTIONS



READ ALL THE SAFETY DECALS ON THE IMPLEMENT AND REVIEW THE SAFETY FIRST SUGGESTIONS ON THE BACK OF THIS MANUAL TO REFRESH YOUR MEMORY. WATCH FOR THE SAFETY SYMBOL, AND READ THE INFORMATION THAT FOLLOWS. THIS IS FOR YOUR OWN PROTECTION.

PREPARING THE TRACTOR FOR OPERATION

Read your tractor owner's manual. It will describe safe methods of operation. Make sure your tractor has proper added ballast, and that its hydraulic system is full of oil and working properly. Check tractor brakes and warning lights, and make sure that they are in working order.

IMPORTANT: THE 3-POINT MOUNTED CULTIVATOR WILL ADD A CONSIDERABLE AMOUNT OF WEIGHT BEHIND THE REAR AXLE OF YOUR TRACTOR. CALCULATE THE WEIGHT OF YOUR MODEL OF CULTIVATOR INCLUDING ALL ACCESSORIES. REFER TO YOUR TRACTOR OWNER'S MANUAL AND DETERMINE THE 3-POINT HITCH LIFT CAPACITY AND THE BALLAST REQUIRED FOR THE FRONT OF YOUR TRACTOR. ADD THE NECESSARY FRONT BALLAST AND CHECK THE INFLATION PRESSURES OF ALL TIRES ON THE TRACTOR BEFORE HITCHING TO CULTIVATOR.

Set the tractor wheels for the desired row spacing so the wheels are centered between the rows.

Place the sway blocks in the widest setting to prevent cultivator side sway during transport.

NOTE: An SMV emblem and a light kit were furnished as standard equipment with your implement. Make sure they are in place, clean and in working order.

ATTACHING THE CULTIVATOR TO THE TRACTOR

Caution: Do not allow any person to stand between the tractor and the cultivator while backing into position. Sudden loss of control could cause serious injury or death to a person caught between the tractor and the cultivator. Tell your helper to wait until you give him the signal that the tractor is in park or neutral and that the hand brake is set and the engine is shut off.

Before attaching the cultivator to the tractor, be sure that the hitch pins and spacers are completely assembled to match the tractor. See page O3

NOTE: The lower hitch bracket legs may have to be turned inward or outward to allow room for rolling shield assembly on certain spacings. See Assembly Section for models affected.

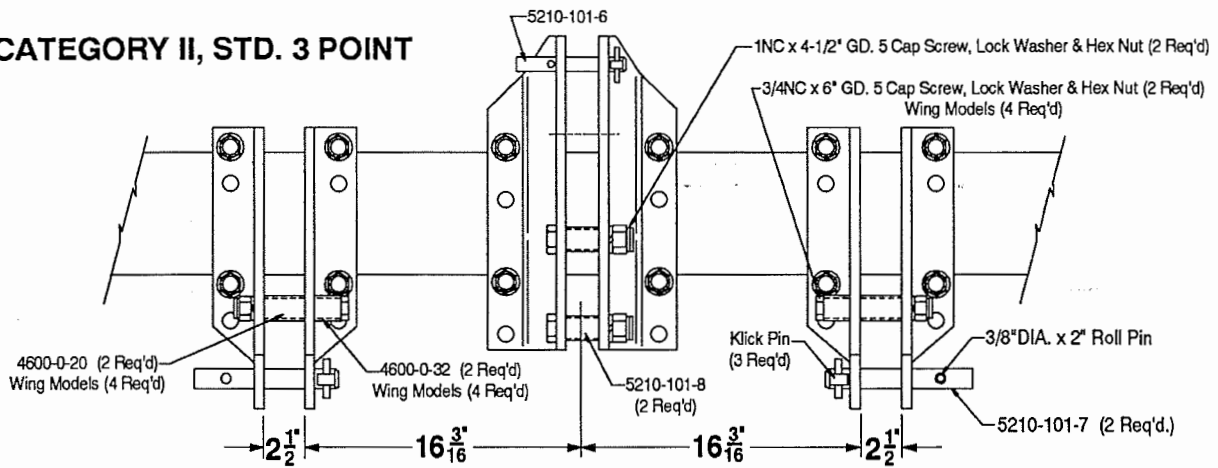
TRACTOR WITHOUT QUICK COUPLER

Back tractor and position the draft links in front of and in line with hitch pins. Stop engine and set brakes. Extend draft links and adjust length of lift links to enable installation of hitch pins. Install pins and secure with click pins. Adjust length of center link, and pin in place.

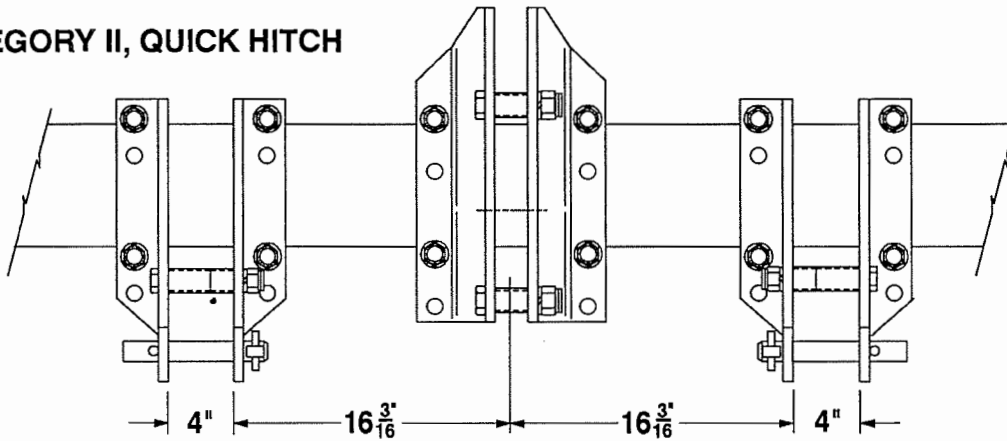
TRACTOR WITH QUICK COUPLER

Lower coupler to allow jaws to pass under cultivator mast spacer and hitch pins. Back the tractor, raise coupler to firmly seat coupler jaws, then lock latch levers. Be sure the spring-loaded latches in the lower coupler jaws are extended above the hitch pins.

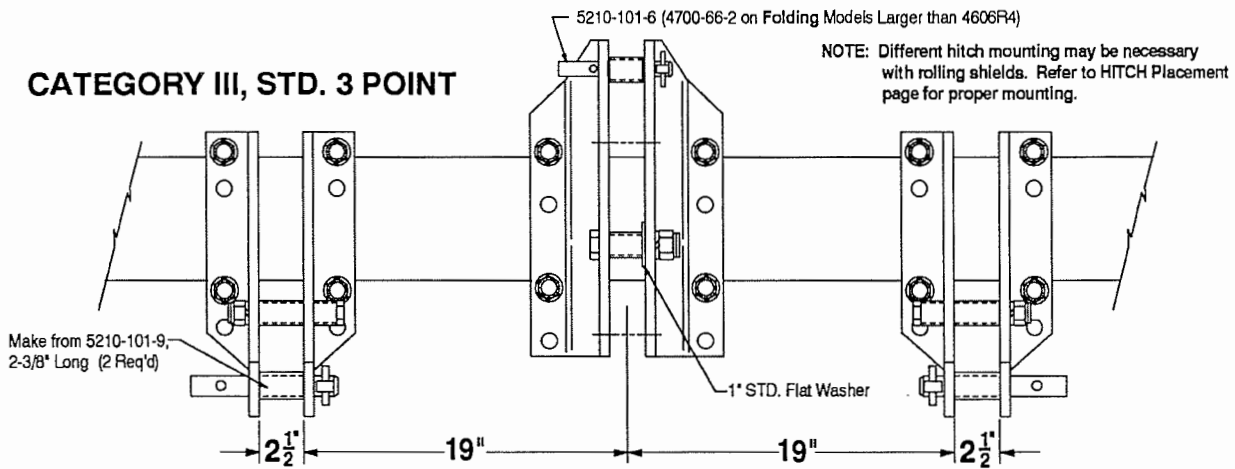
CATEGORY II, STD. 3 POINT



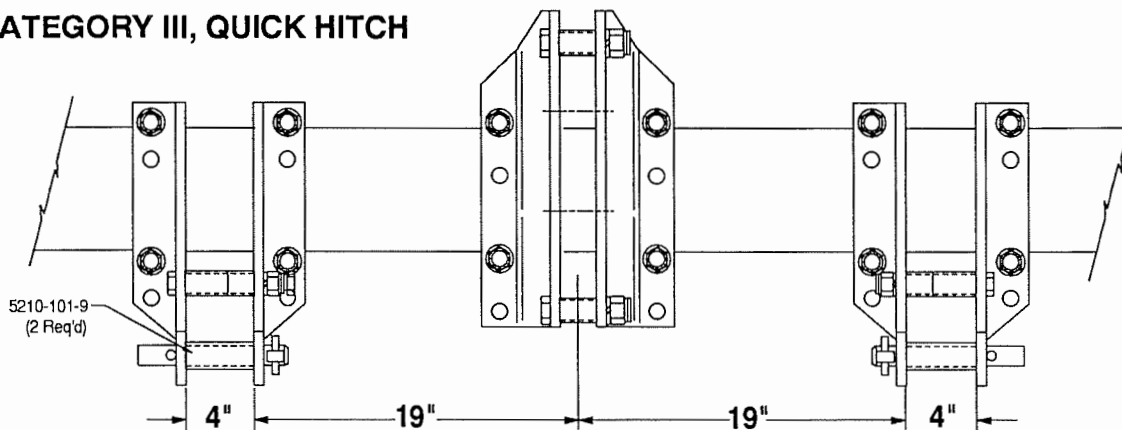
CATEGORY II, QUICK HITCH



CATEGORY III, STD. 3 POINT



CATEGORY III, QUICK HITCH



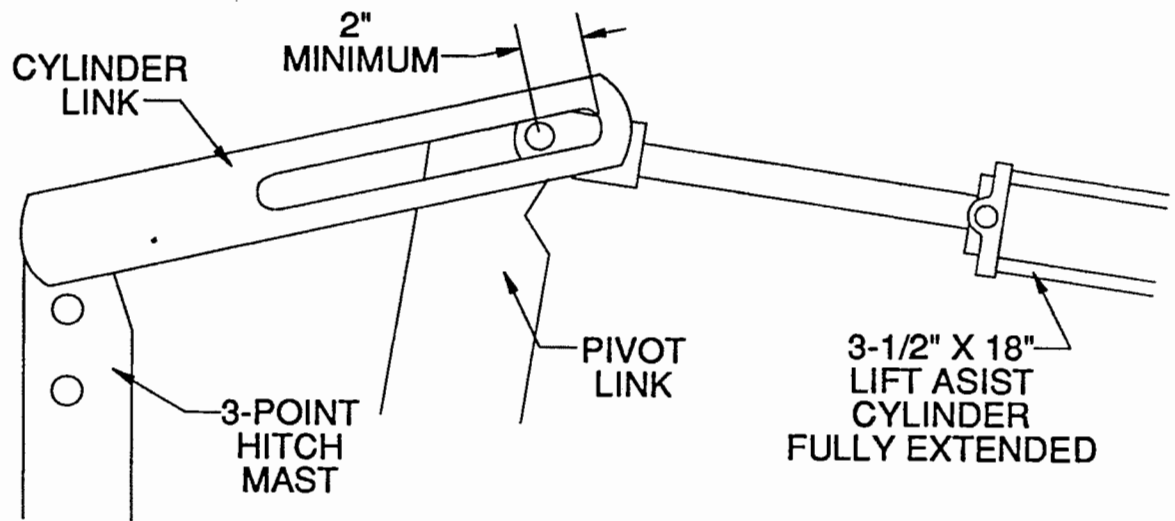
REAR LIFT ASSIST WHEEL (OPTIONAL)

The rear assist wheel and the 3-Point Top Link have been connected to provide a unique lift assist design. The top link is released when the assist wheel cylinder is extended so that the cultivator is only being carried by the lower 3-Point arms and the rear assist wheel. Since there is no load being carried by the top 3-Point link, the unit can go over a hill or through a ditch, and the rear wheel will carry a constant load without a need for large springs or expensive hydraulic accumulators.

When the cultivator is lowered to the field operating position, the assist wheel cylinder locks the top 3-Point mast against the wheel frame stops, raises the assist wheel above the ground, and holds it in this position while cultivating.

TRACTOR 3-POINT UPPER LIMIT ADJUSTMENT

Adjust the upper limit on the tractor 3-Point Hitch until there is at least 2 inches from the pin to the end of the slot with the cultivator on level ground, and the lift assist cylinder fully extended.



M4600-28

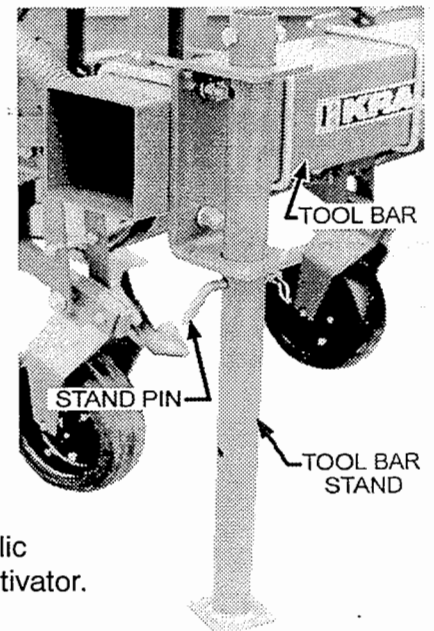
DETACHING THE CULTIVATOR FROM THE TRACTOR

On the smaller rigid model cultivators that do not have disc stabilizers or tool bar gauge wheels, it is necessary to lower the tool bar stand (see photo to the right), and pin it into place before detaching the cultivator.

Lower cultivator onto a level surface. Loosen center link as necessary to remove load from the hitch. Release pressure from center link, and remove pin before removing lower hitch plates.

On Quick Coupler hitches, simply release Quick Coupler latch levers and detach tractor from the cultivator.

For folding model cultivators, follow the procedures as listed above **making sure** that you have disconnected the hydraulic hoses before attempting to move the tractor away from the cultivator.



M4600-26

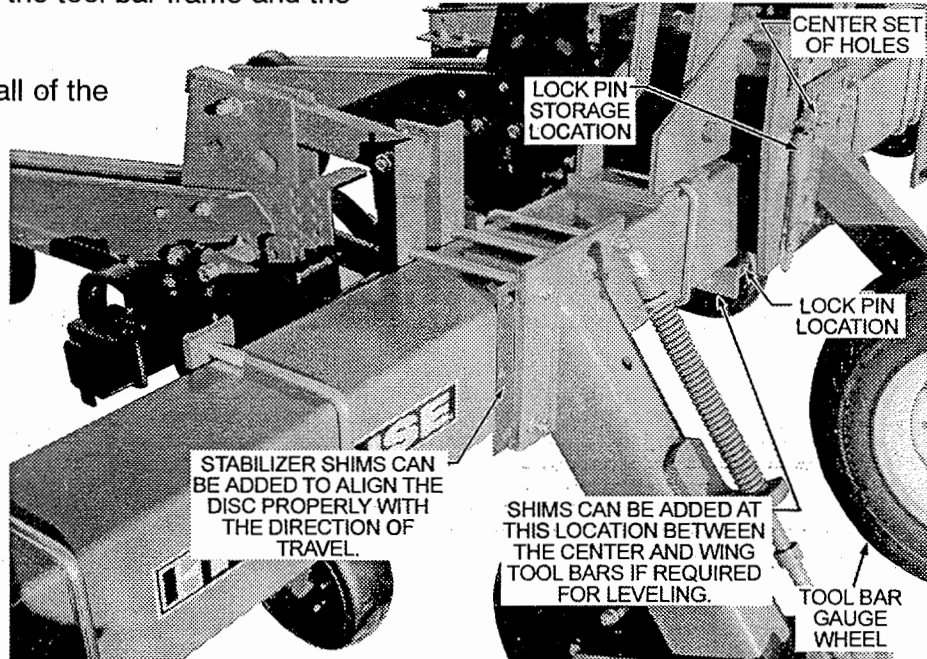
LEVELING THE FRAME

Adjust the lift links to level the cultivator frame from side to side. Set the tractor depth stop so that there is 24 inches between the tool bar frame and the ground.

Adjust the center link until all of the cultivator sweeps are level from front to rear with unit resting on the ground.

On the wing models, shims can be added to the lower end of the wing hinge to level the wings to the center tool bar.

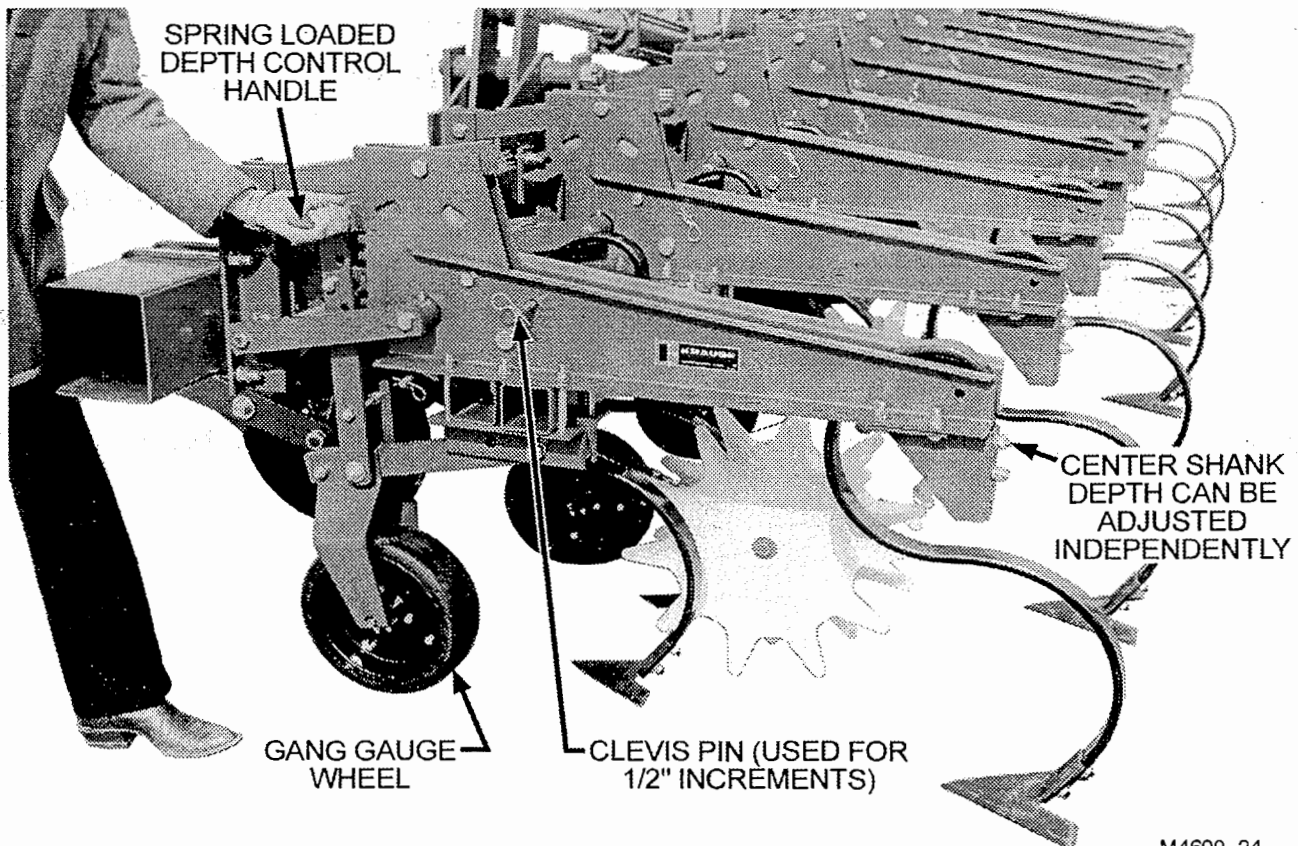
The tool bar gauge wheel mounting plate should normally be attached through the center set of holes as shown in the photograph.



M4600-23

On 6-Row wide folding models where the gauge wheel is located on the wing, it is necessary to lock the wings down during field operation to prevent the center tool bar from lowering.

GANG DEPTH CONTROL



M4600-24

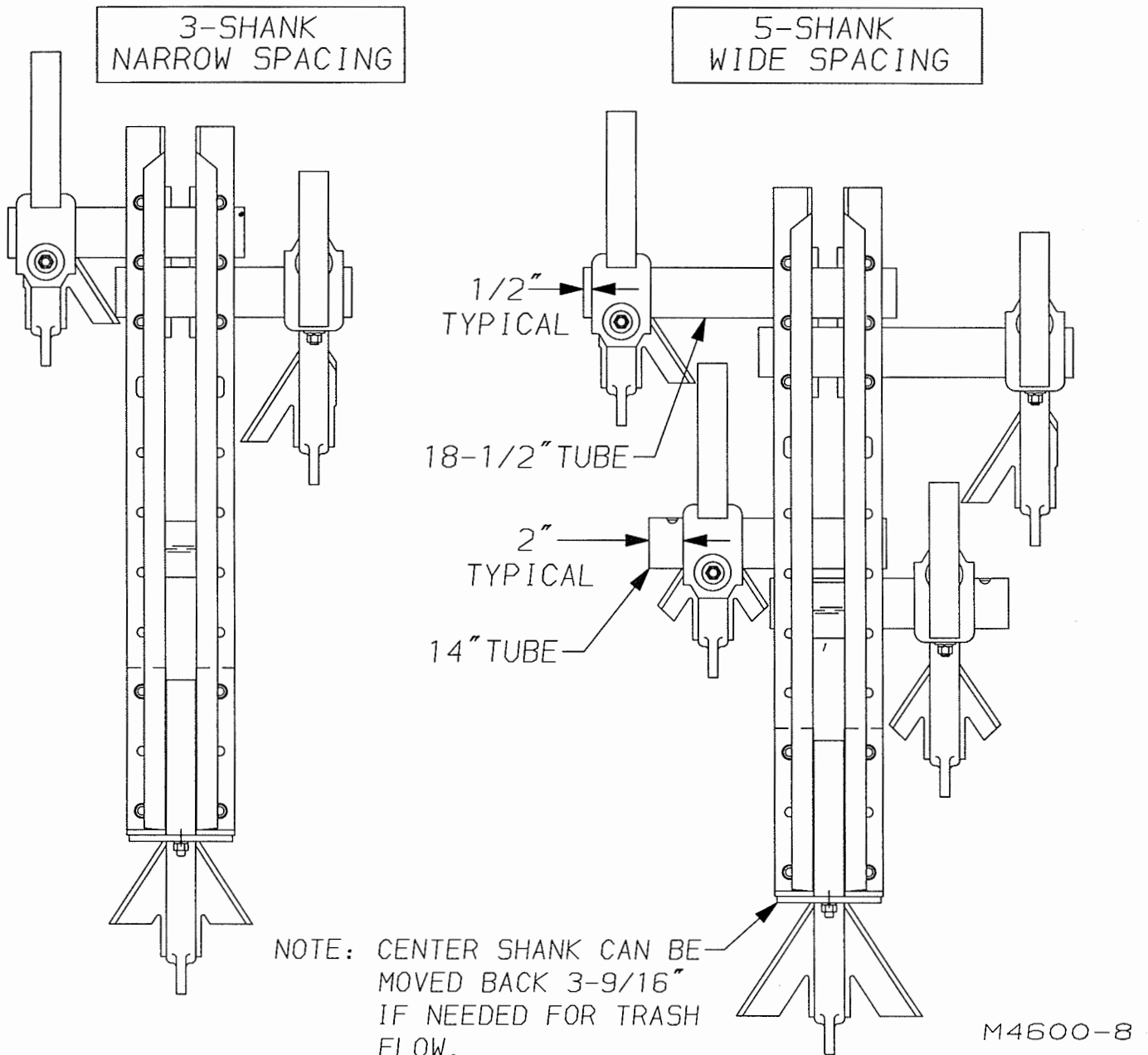
Gauge wheels are required on each gang to determine cultivating or working depth.

The depth on each row can be changed by pulling the SPRING-LOADED DEPTH CONTROL HANDLE forward out of the notches and moving the gauge wheel up or down to the desired depth. (See photograph at the bottom of the preceding page.) Each notch will change the depth by approximately 1". If 1/2" increments are desired, pull the handle forward and insert the clevis pin provided through one of the holes in the depth strap handle.

SHANK PLACEMENT

See pages A18 through A26 in the assembly section for shank and sweep locations for the various spacings of row crop cultivators.

The two front shanks on the 5-Shank gang should be mounted on the front side of the tube for maximum trash flow. (See the illustration below)



DISC STABILIZER ADJUSTMENT

The disc stabilizer is pre-assembled at the factory for average depth and spring pressure.

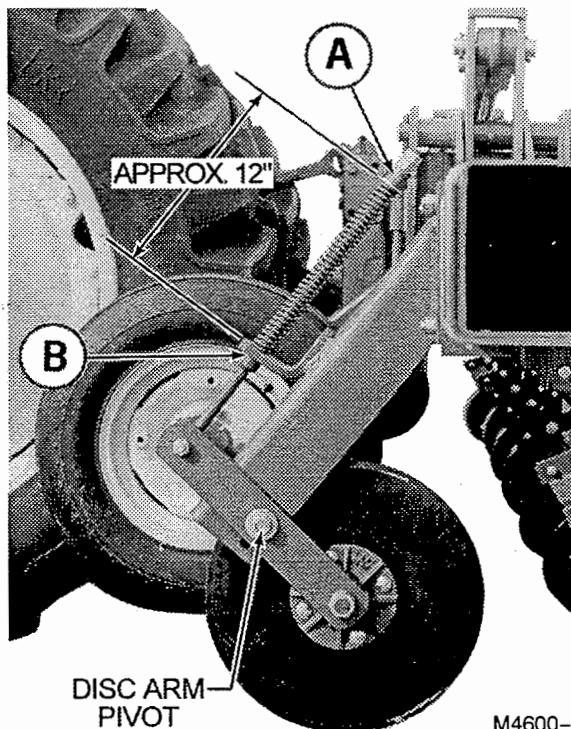
Each disc stabilizer should be adjusted so that it runs deep enough to prevent side sway, but not so deep that trash builds up at the hubs.

To raise the disc stabilizer, move the spacer from location 'A' to location 'B'.

To lower the disc stabilizer, move the disc arm pivot to the end holes.

Stabilizer disc shims can be inserted between the mounting plate and the tool bar so that the disc will align properly with the direction of travel.

See photograph at the top of page O5.

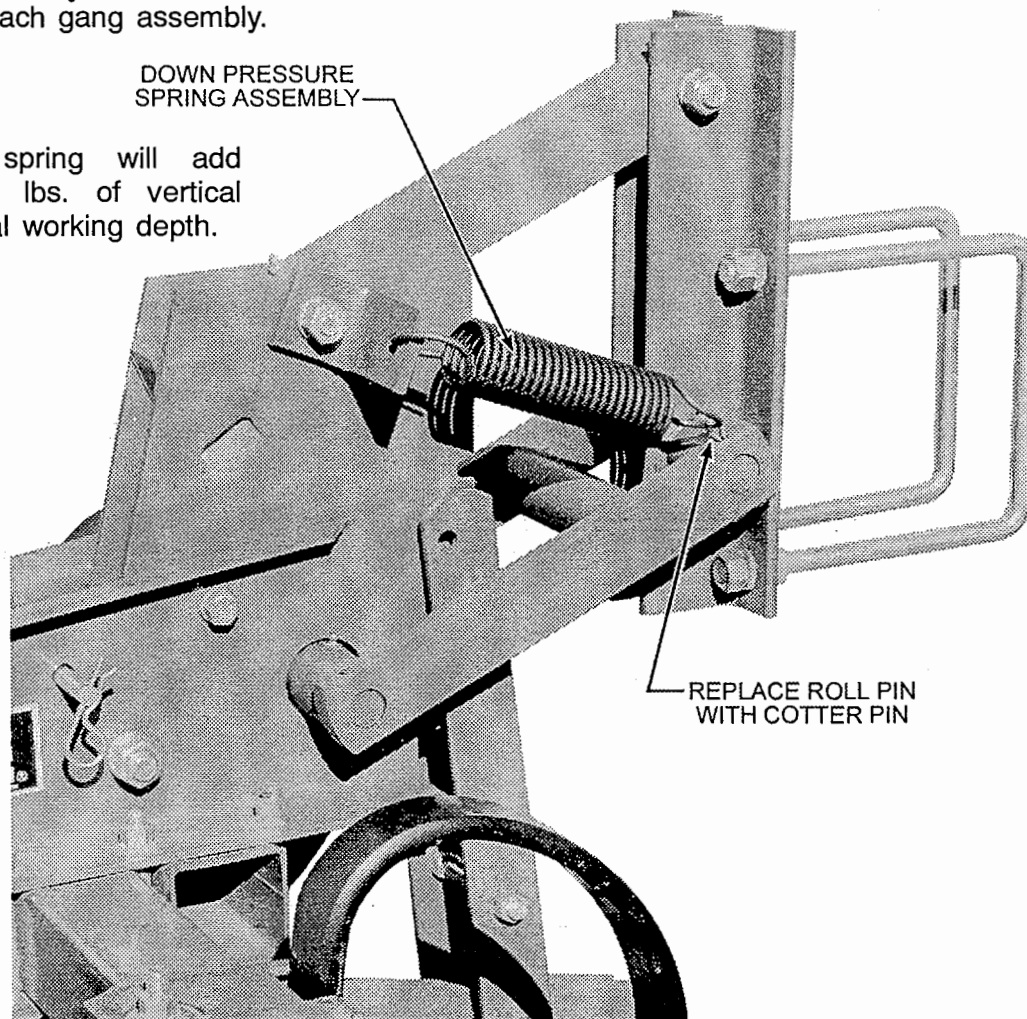


M4600-21

DOWN PRESSURE SPRINGS

Optional down pressure spring assemblies can be added on the right side of each gang assembly.

Each pressure spring will add approximately 50 lbs. of vertical pressure at normal working depth.



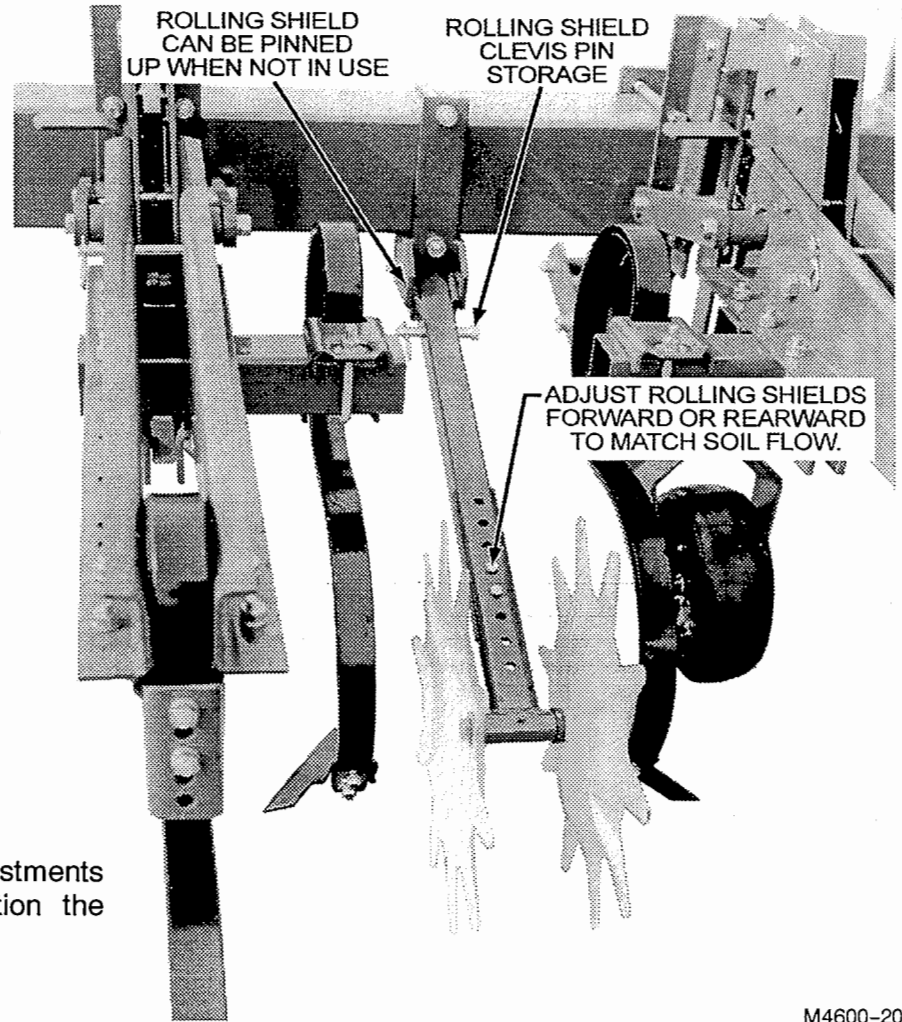
M4600-18

ROLLING SHIELDS

Make sure that each rolling shield is mounted precisely on the desired row spacing.

Adjust the rolling shield forward or rearward by removing the two 3/8" Bolts in the arm and then relocating to the desired position.

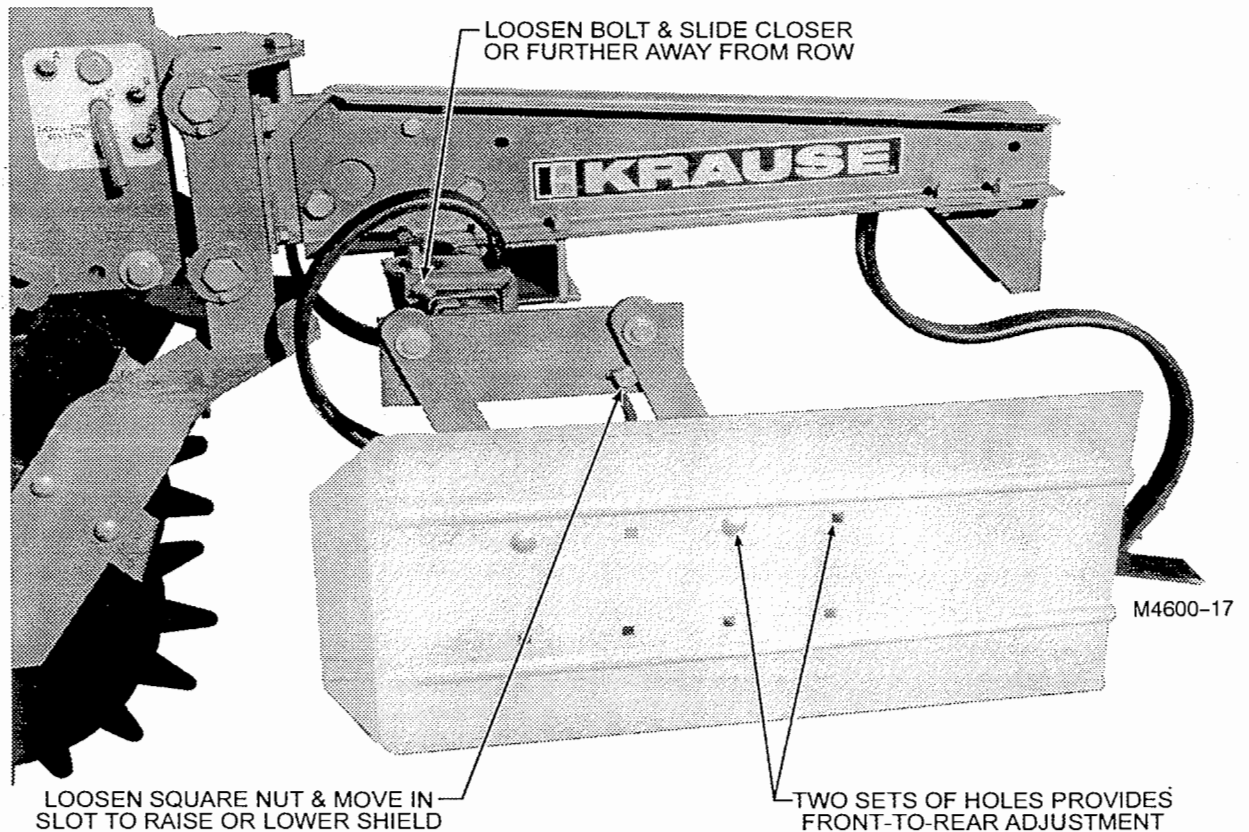
NOTE: The shanks on either side of the rolling shield should be in alignment.



OPEN TOP SHIELDS

There are three basic adjustments that can be made to position the shield.

See the photograph below.



M4600-20

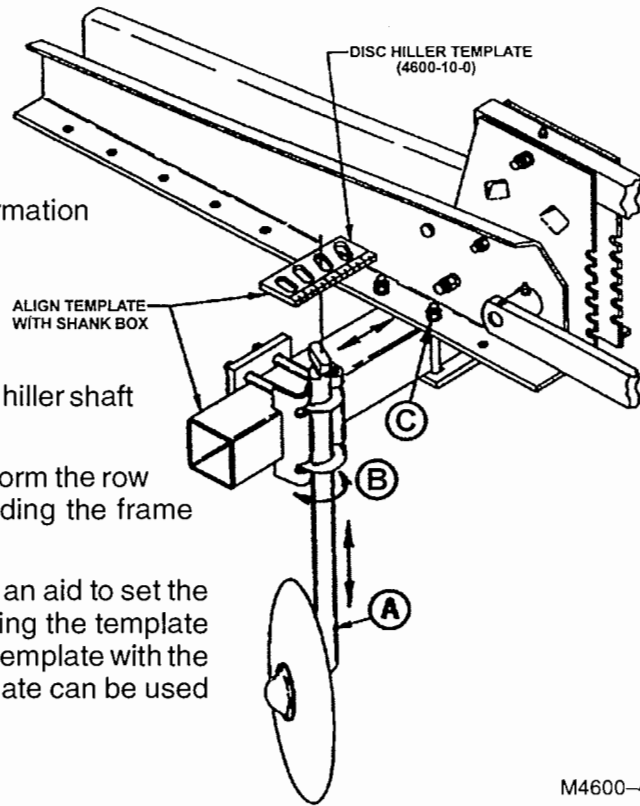
M4600-17

DISC HILLER

The Disc Hiller is an option or an accessory depending on row spacing or hiller assembly location. It can be used to move soil toward or away from the planted row.

See pages P14–15 and A18–26 for detailed information on assembly and disc location.

- The disc hiller depth can be adjusted by loosening the nuts on the U-Bolts and sliding the shaft up or down.
- The Disc Angle can be changed by rotating the hiller shaft in the U-Bolts.
- The Disc Hiller can be moved toward or away from the row by loosening the mounting tube bolts and sliding the frame box in or out.
- A Disc Hiller template has been developed as an aid to set the disc hillers. The angle can be set by positioning the template over the end of the hiller shaft and aligning the template with the shank box. The scale on the side of the template can be used to set the depth consistently.



M4600-4

SERVICING

GENERAL MAINTENANCE

All bolts should be checked and tightened after the first half day of operation and periodically thereafter.

LUBRICATION

The initial lubrication of all grease fittings will assure long life and satisfactory performance from the implement. Use multi-purpose type grease at all grease zerk locations after each 24 hours of operation. Points of lubrication include: gang pivot points, stabilizer disc hubs, tool bar gauge wheel hubs, and wing hinge pivots.

HYDRAULIC SAFETY & HYDRAULIC SYSTEM

Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.



Before removing any hydraulic parts, always relieve hydraulic pressure by turning off tractor engine and moving tractor control lever(s) back and forth.

AVOID HEATING NEAR PRESSURIZED HYDRAULIC HOSES

Flammable spray can be generated by heating near pressurized hydraulic hoses, resulting in severe burns to yourself and bystanders. Do not heat by welding, or using a torch near hoses. Hose can be accidentally cut when heat goes beyond the immediate flame area.

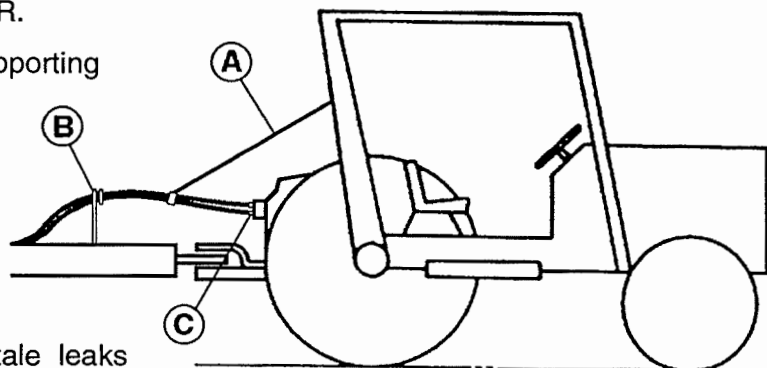
THE FOLLOWING *WARNINGS* PERTAIN TO THE MORE COMMON ABUSES OF HYDRAULIC HOSE:

1. **INSPECT** the hose assembly before each use.
2. **REPLACE** the hose assembly immediately if:
 - a.) The jacket of the hose appears abnormal.
 - b.) You have reason to believe it may be abnormal.
 - c.) There is any fluid leakage.
 - d.) The couplings are damaged.
 - e.) The hose is damaged or kinked.
 - f.) The reinforcement is visible through the jacket.
3. **DO NOT EXCEED** the maximum recommended working pressure.
4. **DO NOT KINK** the hose assembly.
5. **DO NOT BEND** the hose hose assembly beyond its maximum recommended bend radius of 3.25 inches.
6. **DO NOT EXPOSE** to temperatures in excess of 225° Fahrenheit.
7. **DO NOT USE AS A STRENGTH MEMBER** for pulling or lifting equipment.

⚠ Caution: If replacing hydraulic hose, use only hose that meets or exceeds 3,000 PSI working pressure.

IMPORTANT: REPAIR OF HYDRAULIC CYLINDERS SHOULD BE MADE BY AN AUTHORIZED KRAUSE DEALER.

Prevent damage to trail hoses by supporting them from the tractor with an elastic strap 'A'. Avoid having excess hose between the implement and the tractor connection 'C'. Either reposition the hose farther back on the implement or request a shorter hose from your dealer.



Inspect the hydraulic system for tell-tale leaks and loose fittings. Tighten if needed. When assembling your hydraulic system, if JIC and O-Ring fittings and hoses are to be used, the use of a tape or liquid sealer is not necessary. **MAKE SURE** a restrictor (YELLOW COLOR) is installed in the each port of the wing lift cylinders.

⚠ Caution: Air in hydraulic system will allow implement or wings to drop suddenly.

⚠ Warning: Do not operate the hydraulics until you have read 'Hydraulics' in the service section of this manual.

WHEEL BEARINGS

Grease wheel bearings every 24 hours of use. Check for excessive end play each time bearings are greased. Once a year, clean and repack wheel bearings. Replace seals each time bearings are removed. Replace any worn or damaged parts. After repacking, replace hub with seal and rear bearing already assembled. Use light oil on the seal surface and use extreme care when pushing seal over the spindle. Install front bearing, flat washer, and slotted hex nuts. Tighten nut while turning hub until there is resistance to rotation. Then back off nut 1 to 2 notches until the hub turns freely without end play. Install a new cotter pin and the hub cap.

STORAGE

Select a level area, lower the wings and set the implement down on blocks to prevent sweeps and disc stabilizer blades from settling into the ground. Coat the sweeps, disc stabilizer blades, and wing lift cylinder rods with rust preventative. Inspect for worn or damaged parts and replace as needed to avoid delays the next season. Check to be sure hydraulic hose couplers are stored on top of the frame and not left laying on the ground.

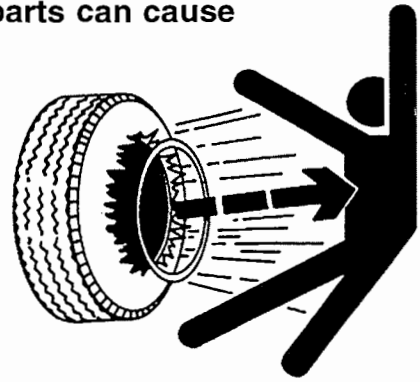
REPAIR PARTS

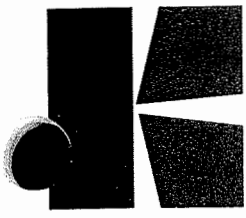
Refer to the assembly section of this manual when repairing or replacing parts, and follow the same procedure as used when assembling a new unit. Reverse this procedure for disassembly. The Parts Section of this book will show a breakdown of assemblies, locations of parts, and part numbers. Krause parts were developed and tested for these units, therefore, it is recommended that Krause replacement parts be used.

⚠ Caution: If replacing hydraulic hose, use only hose that meets or exceeds 3,000 PSI working pressure.

⚠ Caution: Explosive separation of tire and rim parts can cause serious injury or death.

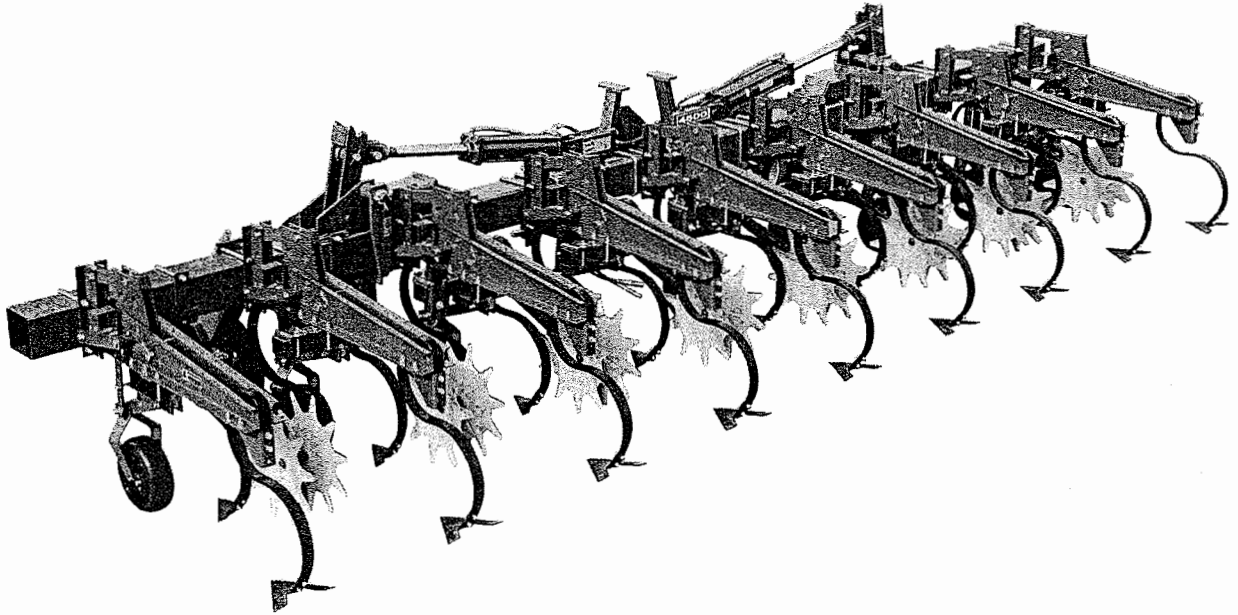
Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Inspect tires and wheels daily. Do not operate with low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.





OWNER'S MANUAL

4600



**ROW CROP
CULTIVATOR
4600 SERIES**

Serial No.

3061

REVISED

NOV 1998

KRAUSE

305 SOUTH MONROE STREET HUTCHINSON, KANSAS 67501

Warranty

KRAUSE PLOW CORPORATION Hutchinson, Kansas

The Krause Plow Corporation, Hutchinson, Kansas, expressly warrants each new product manufactured by it to be free from defects in material and workmanship under normal use and service for a period of one year after delivery to the original retail purchaser or first user of the product.

Krause's obligation under this warranty is limited to repairing and/or replacing, at its option, any part or parts within the applicable one year period, as set out above, which shall be returned by the owner or any Krause authorized dealer to the factory and which upon examination shall disclose to Krause's satisfaction to be defective.

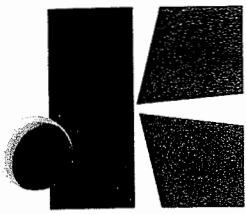
Krause may, at its option, elect to grant adjustments in the field through an authorized representative and may thereby elect to waive the requirement that parts be returned to Krause's factory.

A new warranty period is not established for replacements. Replacements are warranted for the remaining portion of the one year original warranty period. The repair or replacement of defective parts under this warranty will be made without charge to the owner except for transportation.

Krause does not warrant disc blades, tires, chisel shanks, hydraulic cylinders, accessories and other parts not manufactured by it, but supplied with or as a part of its products. Krause will, however, obtain and pass on any adjustments provided by the manufacturers of such parts under these manufacturer's warranties.

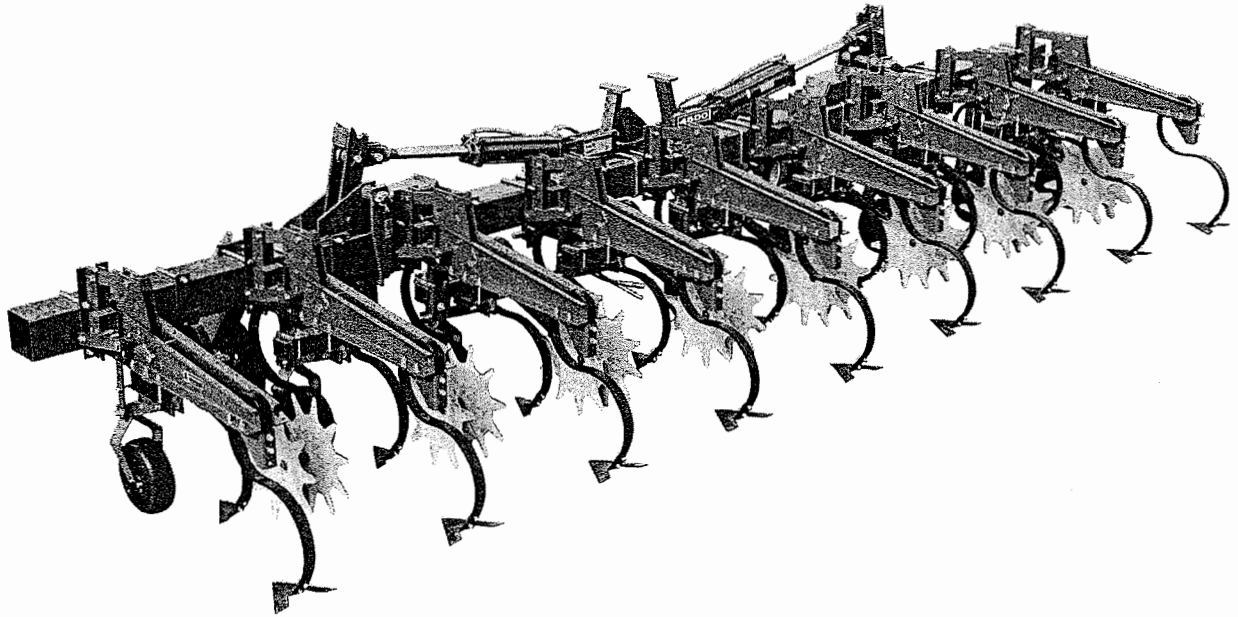
The provisions of this warranty do not apply to any product or parts which have been subject to misuse, negligence or accident, or which have been repaired or altered outside of Krause's factory in any way so as in the judgement of Krause to affect adversely its performance and reliability. Neither does this warranty apply to normal maintenance service and parts, or to normal deterioration due to wear and exposure.

To the extent allowed by applicable law, this warranty is expressly in lieu of other warranties, expressed or implied, in fact or by law, including any implied warranty of merchantability or fitness for a particular purpose. The remedies of repair or replacement as set forth are the only remedies under this warranty. Krause disclaims any obligations or liability for loss of time, inconvenience, commercial loss or direct, consequential, special or incidental damages. This warranty is in lieu of any other obligation or liability of Krause of any nature whatsoever by reason of the manufacture, sale, lease or use of such products and Krause neither assumes, nor authorizes anyone to assume for it, any other obligation or liability in connection with such products.



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To the extent allowed by applicable law, this warranty is expressly in lieu of other warranties, expressed or implied, in fact or by law, including any implied warranty of merchantability or fitness for a particular purpose. The remedies of repair or replacement as set forth are the only remedies under this warranty. Krause disclaims any obligations or liability for loss of time, inconvenience, commercial loss or direct, consequential, special or incidental damages. This warranty is in lieu of any other obligation or liability of Krause of any nature whatsoever by reason of the manufacture, sale, lease or use of such products and Krause neither assumes, nor authorizes anyone to assume for it, any other obligation or liability in connection with such products.

THE UNIVERSITY OF CHICAGO

PHILOSOPHY DEPARTMENT

PHILOSOPHY 101: INTRODUCTION TO PHILOSOPHY
Lecturer: [Name]

PHILOSOPHY 102: ETHICS
Lecturer: [Name]

PHILOSOPHY 103: LOGIC
Lecturer: [Name]

PHILOSOPHY 104: METAPHYSICS
Lecturer: [Name]

PHILOSOPHY 105: EPISTEMOLOGY
Lecturer: [Name]

PHILOSOPHY 106: POLITICAL PHILOSOPHY
Lecturer: [Name]

PHILOSOPHY 107: PHILOSOPHY OF LANGUAGE
Lecturer: [Name]

PHILOSOPHY 108: PHILOSOPHY OF MIND
Lecturer: [Name]

PHILOSOPHY 109: PHILOSOPHY OF SCIENCE
Lecturer: [Name]

4600 SERIES ROW CROP CULTIVATOR DEALER PREDELIVERY CHECK SHEET

TO BE CHECKED BY DEALER

CUSTOMER _____ DATE _____

ADDRESS _____

DEALER _____

ADDRESS _____

MODEL _____ SERIAL NUMBER _____

DEALER CHECK:

1. ___ Gang frames are level and at the correct height.
2. ___ Row spacings of gangs are correct for row widths to be cultivated.
3. ___ Sweeps are set correctly.
4. ___ Gangs have been greased and work freely.
5. ___ Stabilizer discs have been assembled correctly.



Caution: Interference between tractor cab or fenders is possible on folding models. Stabilizer discs and tool bar gauge wheels must be installed as shown in the placement drawings. 3-Point arms must be adjusted downward until an adequate cab / fender clearance is obtained.

6. ___ Tool bar gauge wheels have been assembled correctly.
7. ___ 3-Point hitch brackets are in the correct location and tightened properly.
8. ___ Attachments are installed correctly.
9. ___ Check to see that wing fold hydraulic cylinders are full of oil (air bled out of cylinders). Cylinders require 7 Quarts / 6.5 Liters of oil.
10. ___ Examine hydraulic hoses to see that they are protected from damage.
11. ___ Restrictors are installed in all wing lift cylinder ports.
12. ___ All decals are in place. See decal placement drawing on page P28 of this manual.
13. ___ Customer review sheet is filled out and signed.
14. ___ Review lighting requirements. Light kits are standard.
15. ___ Check to be sure that Owner's Manual is in the storage canister.
16. ___ Make sure that the Slow-Moving-Vehicle emblem is clean and in place.

DELIVERED BY _____

DATE _____

4600 ROW CROP CULTIVATOR CUSTOMER REVIEW SHEET

CUSTOMER _____ DATE _____

ADDRESS _____

DEALER _____

ADDRESS _____

MODEL _____ SERIAL NUMBER _____

1. ____ Owner's manual provided.
2. ____ Warranty card filled out.
3. ____ Review safety warnings and cautions as listed in this owner's manual.
4. ____ Review recommended maximum road speed and width for implement.
5. ____ Review the field operational speeds, horsepower, depth, and rock conditions.
6. ____ Explain the depth control system including how to set the individual gang gauge wheels.
7. ____ Explain that this unit will add a considerable weight to the rear of the tractor in the raised position. Sufficient front end ballast must be added to the tractor for safe operation. (See operating information under "PREPARING THE TRACTOR FOR OPERATION".)
8. ____ Explain the importance of maintaining the tool through proper lubrication, checking the bolts to see that they are tight, and through the replacement of worn or broken parts.
9. ____ Explain lighting requirements.

DEALER _____ DATE _____

CUSTOMER _____ DATE _____

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Revised 12/96

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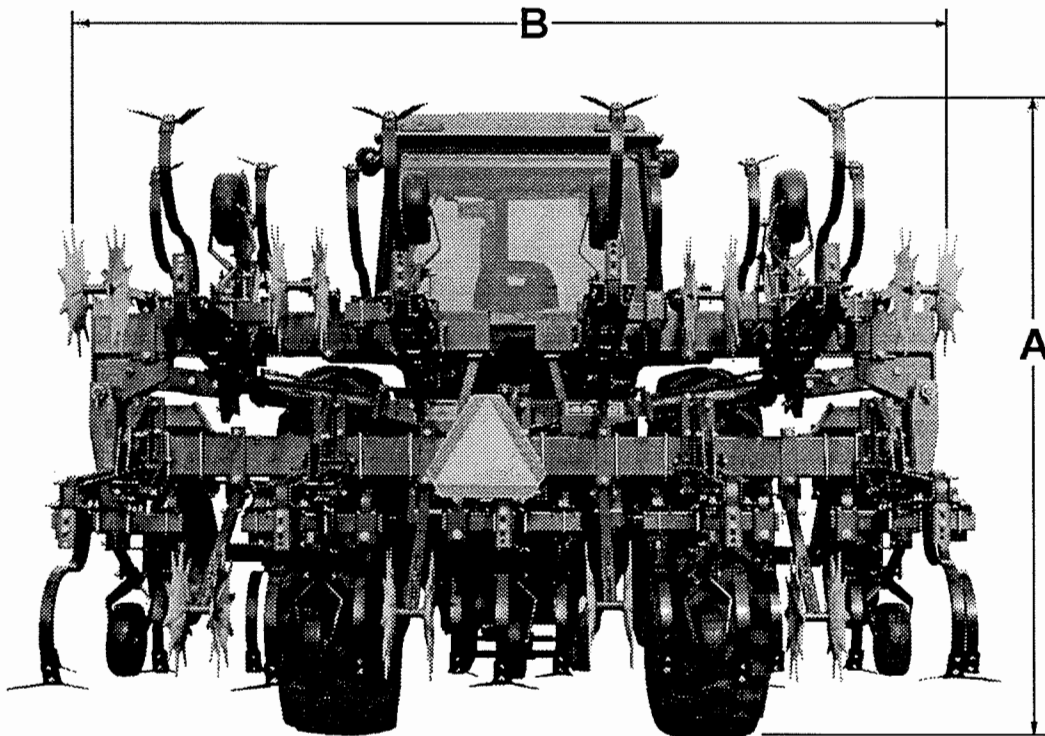
4600 ROW CROP CULTIVATOR SPECIFICATIONS

10/94

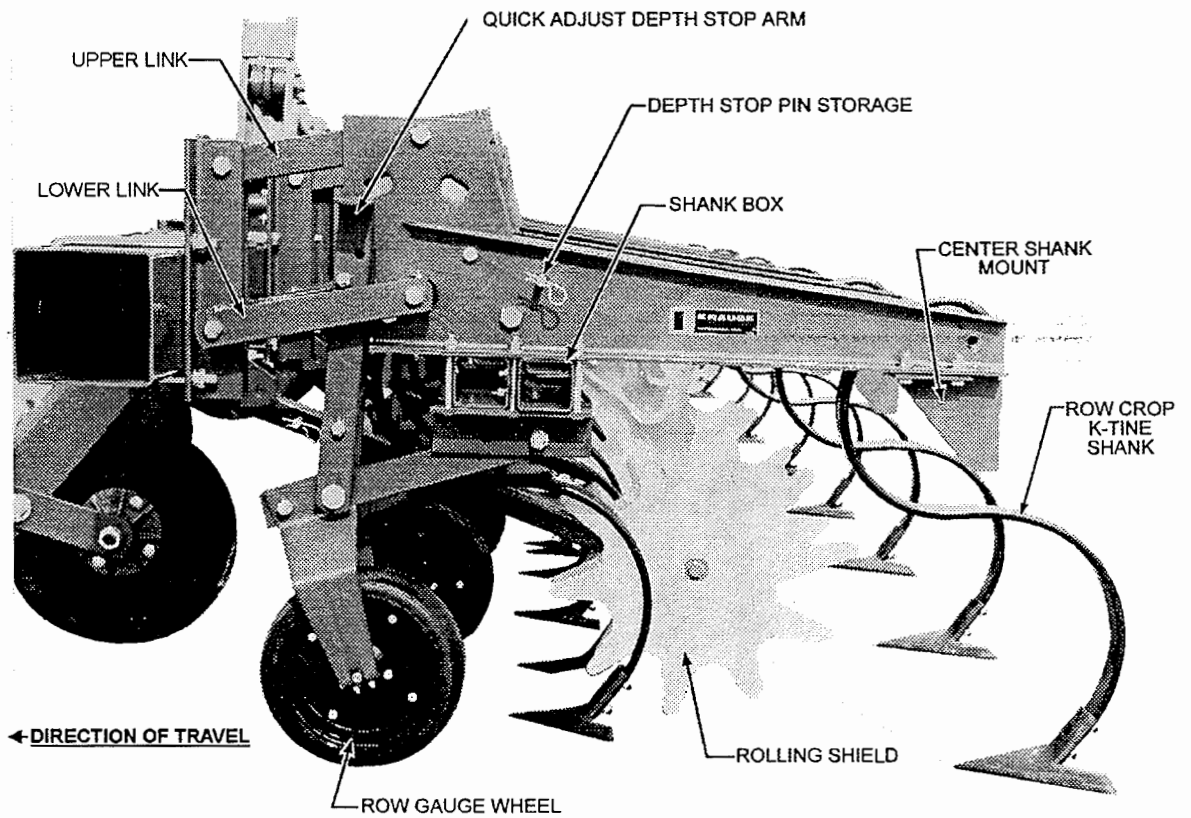
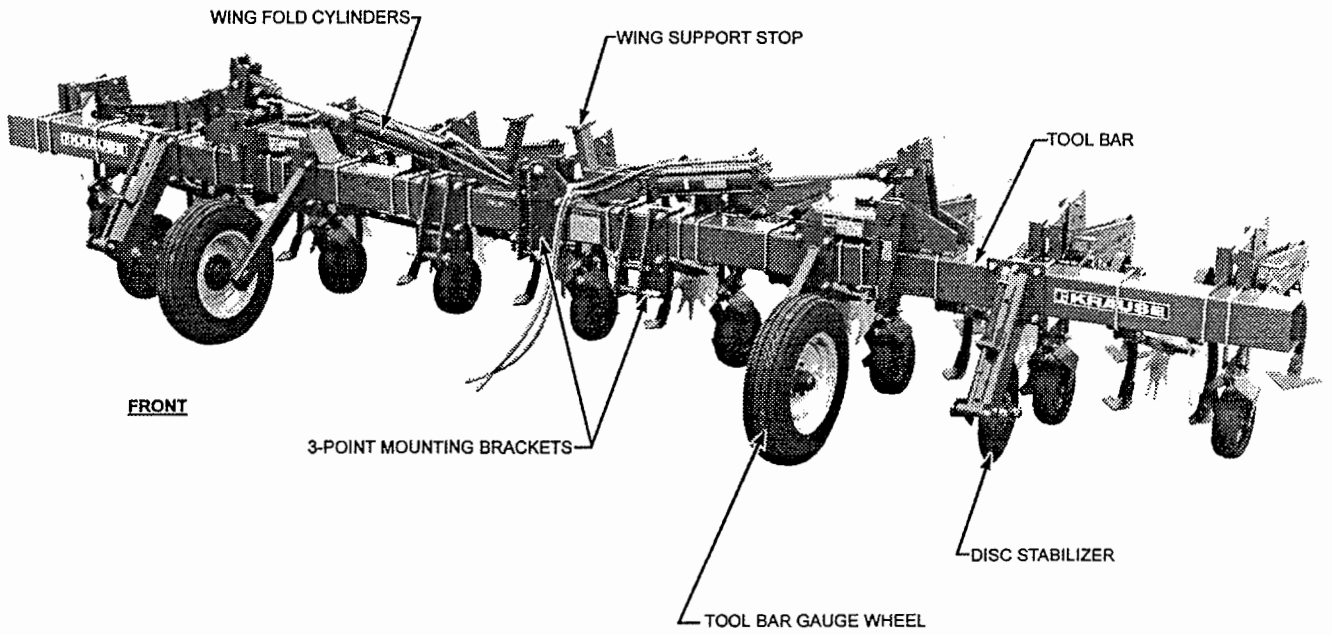
MODELS	ROWS	SPACING	TOTAL GANGS	NUMBER SHANKS	CENTER TOOL BAR LENGTH	WING TOOL BAR LENGTH
4604-0R3	4	28" - 30"	5	13	130"	————
4604-0R4	4	36" - 40"	5	21	172"	————
4606-0R3	6	28" - 30"	7	19	190"	————
4606-0R4	6	36" - 40"	7	31	250"	————
4606-0F4	6	36" - 40"	7	31	134-1/4"	63-1/2"
4608-0R3	8	28" - 30"	9	25	250"	————
4608-0F3	8	28" - 30"	9	25	134-1/4"	63-1/2"
4608-0F4	8	36" - 40"	9	41	174-1/4"	77-1/2"
4612-0F3	12	28" - 30"	13	37	194-1/4"	87-1/2"
4612-0F4	12	36" - 40"	13	61	262-1/4"	113-1/2"
4616-0F3	16	28" - 30"	17	49	262-1/4"	113-1/2"

TRANSPORT HEIGHT AND WIDTH

MODELS	TRANSPORT HEIGHT "A"	TRANSPORT WIDTH "B"
4604-0R3	4' 8"	10' 10"
4604-0R4	4' 8"	14' 4"
4606-0R3	4' 8"	15' 10"
4606-0R4	4' 8"	20' 10"
4606-0F4	7' 6"	11' 10"
4608-0R3	4' 8"	20' 10"
4608-0F3	7' 6"	11' 10"
4608-0F4	7' 6"	14' 11"
4612-0F3	7' 6"	16' 7"
4612-0F4	7' 6"	22' 3"
4616-0F3	7' 6"	22' 3"



M4600-1



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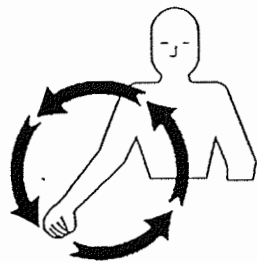
OPERATING SECTION

SAFETY ALERT SYMBOL

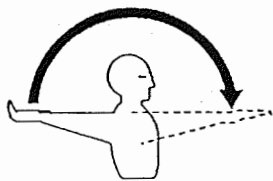


BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY.
THIS SYMBOL IDENTIFIES IMPORTANT SAFETY MESSAGES.
CAREFULLY READ THE MESSAGE THAT FOLLOWS.

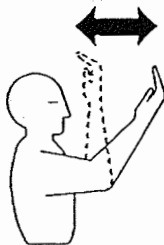
TEN MOST COMMON HAND SIGNALS USED IN THE FIELD



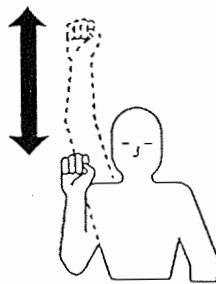
START
THE
ENGINE



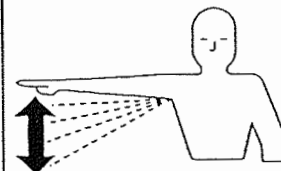
MOVE OUT
OR
TAKE OFF



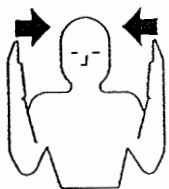
MOVE
TOWARD
ME



SPEED
IT UP



SLOW IT
DOWN



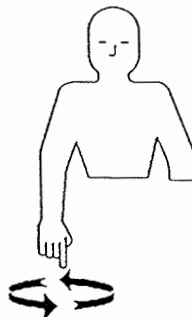
THIS FAR
TO GO



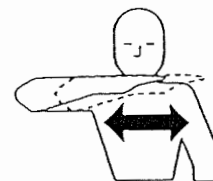
STOP



RAISE
THE
EQUIPMENT



LOWER
THE
EQUIPMENT



STOP
THE
ENGINE

Notes



A series of horizontal lines for writing, spanning the width of the page. There are 20 lines in total, providing ample space for notes.

SAFETY FIRST



WATCH FOR THIS SYMBOL AND CAREFULLY READ THE MESSAGE.

1. Read and understand the owner's manual before operating the machine.
2. Be sure safety decals and reflectors are clean and in place.
3. Do not climb or walk on gangs, frames, or tires.
4. Never position yourself under any portion of the implement unless the entire unit is lowered to the ground.
5. Stop engine and set parking brake before leaving the operator's position to adjust, lubricate, clean or unclog the machine.
6. Do not stand between the implement and the tractor unless the tractor brakes are locked and the engine is shut off.
7. Always store this implement with the wings down.
8. Never operate unit until hydraulic cylinders and lines are full of oil and free of air. (See operating instructions)
9. Use a Slow-Moving-Vehicle (SMV) emblem when transporting.
10. Do not road an implement over 15 miles per hour on the best surface conditions. Reduce speed when going up or down hills or when approaching ditches or corners.
11. Make sure there is sufficient ballast on the front of the tractor for safe operation. See "Preparing Tractor For Operation".
12. Make sure the wing stabilizers and tool bar gauge wheels are assembled correctly to prevent possible interference with tractor cab or fenders.

Elimination of the hazards listed above should not be construed as providing guarantees that the equipment will meet or exceed all standards or regulations or will be completely safe to all personnel. The operator should inspect and review the implement after it is in his possession for adequacy in safety for the function for which it will be used.

OPERATING INSTRUCTIONS



READ ALL THE SAFETY DECALS ON THE IMPLEMENT AND REVIEW THE SAFETY FIRST SUGGESTIONS ON THE BACK OF THIS MANUAL TO REFRESH YOUR MEMORY. WATCH FOR THE SAFETY SYMBOL, AND READ THE INFORMATION THAT FOLLOWS. THIS IS FOR YOUR OWN PROTECTION.

PREPARING THE TRACTOR FOR OPERATION

Read your tractor owner's manual. It will describe safe methods of operation. Make sure your tractor has proper added ballast, and that its hydraulic system is full of oil and working properly. Check tractor brakes and warning lights, and make sure that they are in working order.


IMPORTANT: THE 3-POINT MOUNTED CULTIVATOR WILL ADD A CONSIDERABLE AMOUNT OF WEIGHT BEHIND THE REAR AXLE OF YOUR TRACTOR. CALCULATE THE WEIGHT OF YOUR MODEL OF CULTIVATOR INCLUDING ALL ACCESSORIES. REFER TO YOUR TRACTOR OWNER'S MANUAL AND DETERMINE THE 3-POINT HITCH LIFT CAPACITY AND THE BALLAST REQUIRED FOR THE FRONT OF YOUR TRACTOR. ADD THE NECESSARY FRONT BALLAST AND CHECK THE INFLATION PRESSURES OF ALL TIRES ON THE TRACTOR BEFORE HITCHING TO CULTIVATOR.

Set the tractor wheels for the desired row spacing so the wheels are centered between the rows.

Place the sway blocks in the widest setting to prevent cultivator side sway during transport.

NOTE: An SMV emblem and a light kit were furnished as standard equipment with your implement. Make sure they are in place, clean and in working order.

ATTACHING THE CULTIVATOR TO THE TRACTOR

 **Caution:** Do not allow any person to stand between the tractor and the cultivator while backing into position. Sudden loss of control could cause serious injury or death to a person caught between the tractor and the cultivator. Tell your helper to wait until you give him the signal that the tractor is in park or neutral and that the hand brake is set and the engine is shut off.

Before attaching the cultivator to the tractor, be sure that the hitch pins and spacers are completely assembled to match the tractor. See page O3

NOTE: The lower hitch bracket legs may have to be turned inward or outward to allow room for rolling shield assembly on certain spacings. See Assembly Section for models affected.

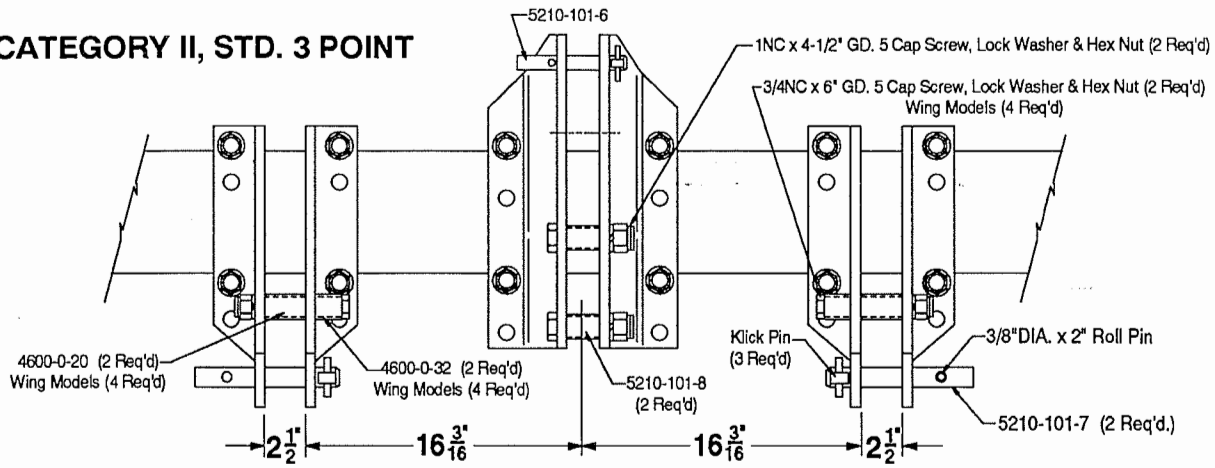
TRACTOR WITHOUT QUICK COUPLER

Back tractor and position the draft links in front of and in line with hitch pins. Stop engine and set brakes. Extend draft links and adjust length of lift links to enable installation of hitch pins. Install pins and secure with klick pins. Adjust length of center link, and pin in place.

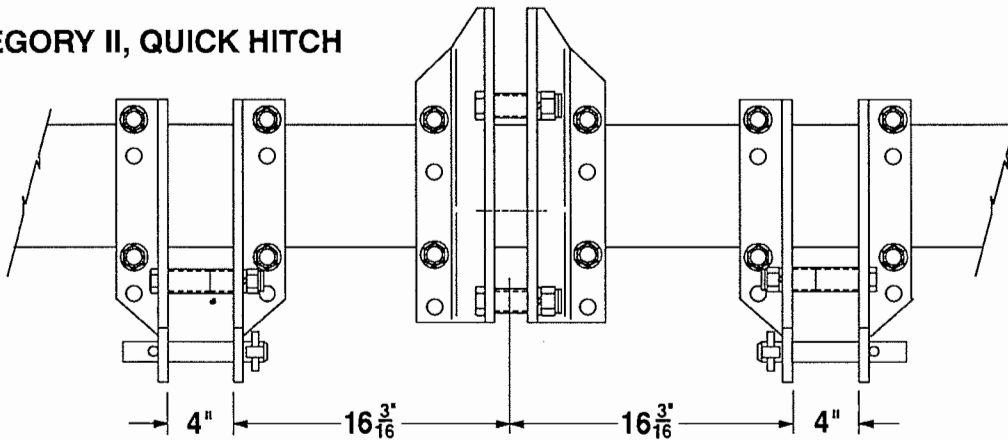
TRACTOR WITH QUICK COUPLER

Lower coupler to allow jaws to pass under cultivator mast spacer and hitch pins. Back the tractor, raise coupler to firmly seat coupler jaws, then lock latch levers. Be sure the spring-loaded latches in the lower coupler jaws are extended above the hitch pins.

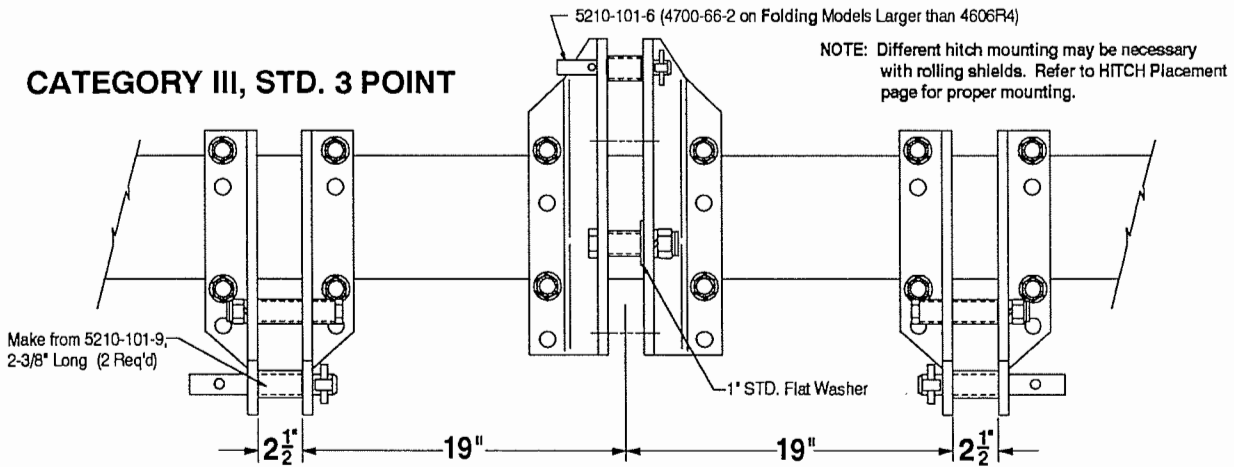
CATEGORY II, STD. 3 POINT



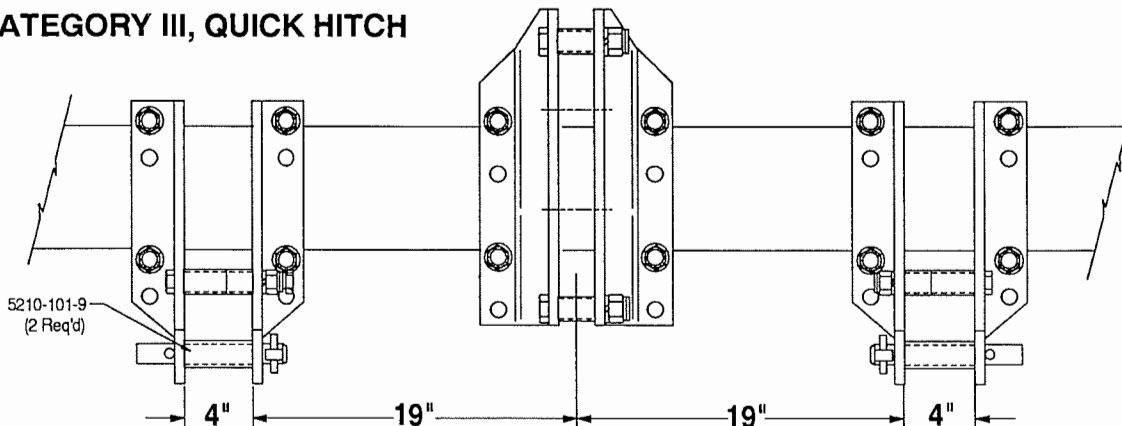
CATEGORY II, QUICK HITCH



CATEGORY III, STD. 3 POINT



CATEGORY III, QUICK HITCH



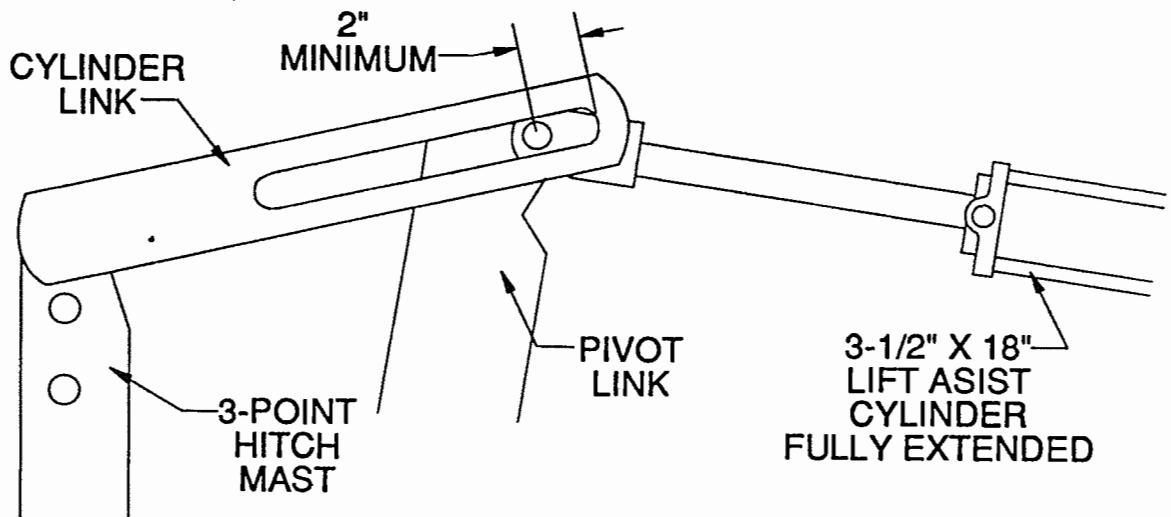
REAR LIFT ASSIST WHEEL (OPTIONAL)

The rear assist wheel and the 3-Point Top Link have been connected to provide a unique lift assist design. The top link is released when the assist wheel cylinder is extended so that the cultivator is only being carried by the lower 3-Point arms and the rear assist wheel. Since there is no load being carried by the top 3-Point link, the unit can go over a hill or through a ditch, and the rear wheel will carry a constant load without a need for large springs or expensive hydraulic accumulators.

When the cultivator is lowered to the field operating position, the assist wheel cylinder locks the top 3-Point mast against the wheel frame stops, raises the assist wheel above the ground, and holds it in this position while cultivating.

TRACTOR 3-POINT UPPER LIMIT ADJUSTMENT

Adjust the upper limit on the tractor 3-Point Hitch until there is at least 2 inches from the pin to the end of the slot with the cultivator on level ground, and the lift assist cylinder fully extended.



M4600-28

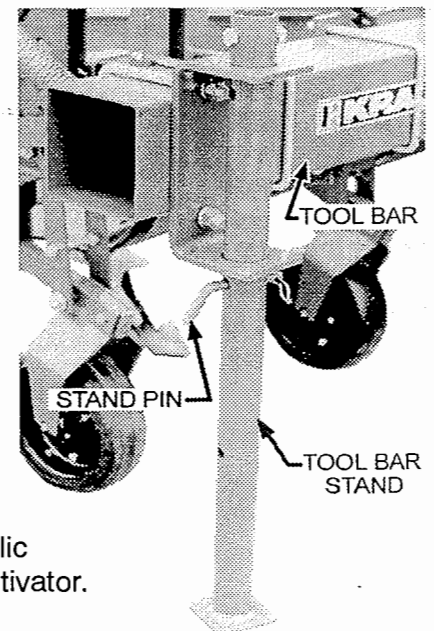
DETACHING THE CULTIVATOR FROM THE TRACTOR

On the smaller rigid model cultivators that do not have disc stabilizers or tool bar gauge wheels, it is necessary to lower the tool bar stand (see photo to the right), and pin it into place before detaching the cultivator.

Lower cultivator onto a level surface. Loosen center link as necessary to remove load from the hitch. Release pressure from center link, and remove pin before removing lower hitch plates.

On Quick Coupler hitches, simply release Quick Coupler latch levers and detach tractor from the cultivator.

For folding model cultivators, follow the procedures as listed above **making sure** that you have disconnected the hydraulic hoses before attempting to move the tractor away from the cultivator.



M4600-26

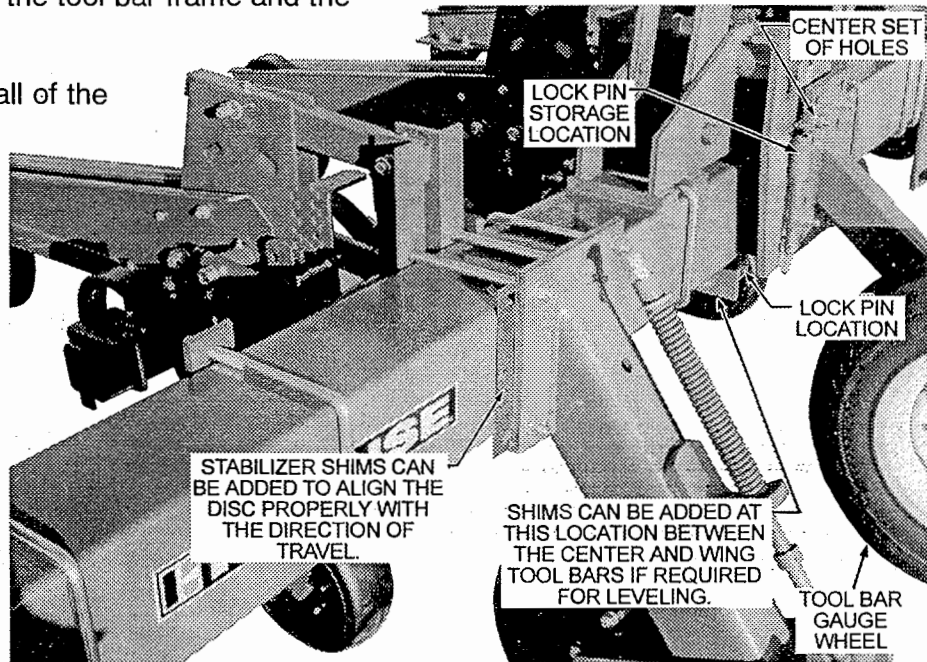
LEVELING THE FRAME

Adjust the lift links to level the cultivator frame from side to side. Set the tractor depth stop so that there is 24 inches between the tool bar frame and the ground.

Adjust the center link until all of the cultivator sweeps are level from front to rear with unit resting on the ground.

On the wing models, shims can be added to the lower end of the wing hinge to level the wings to the center tool bar.

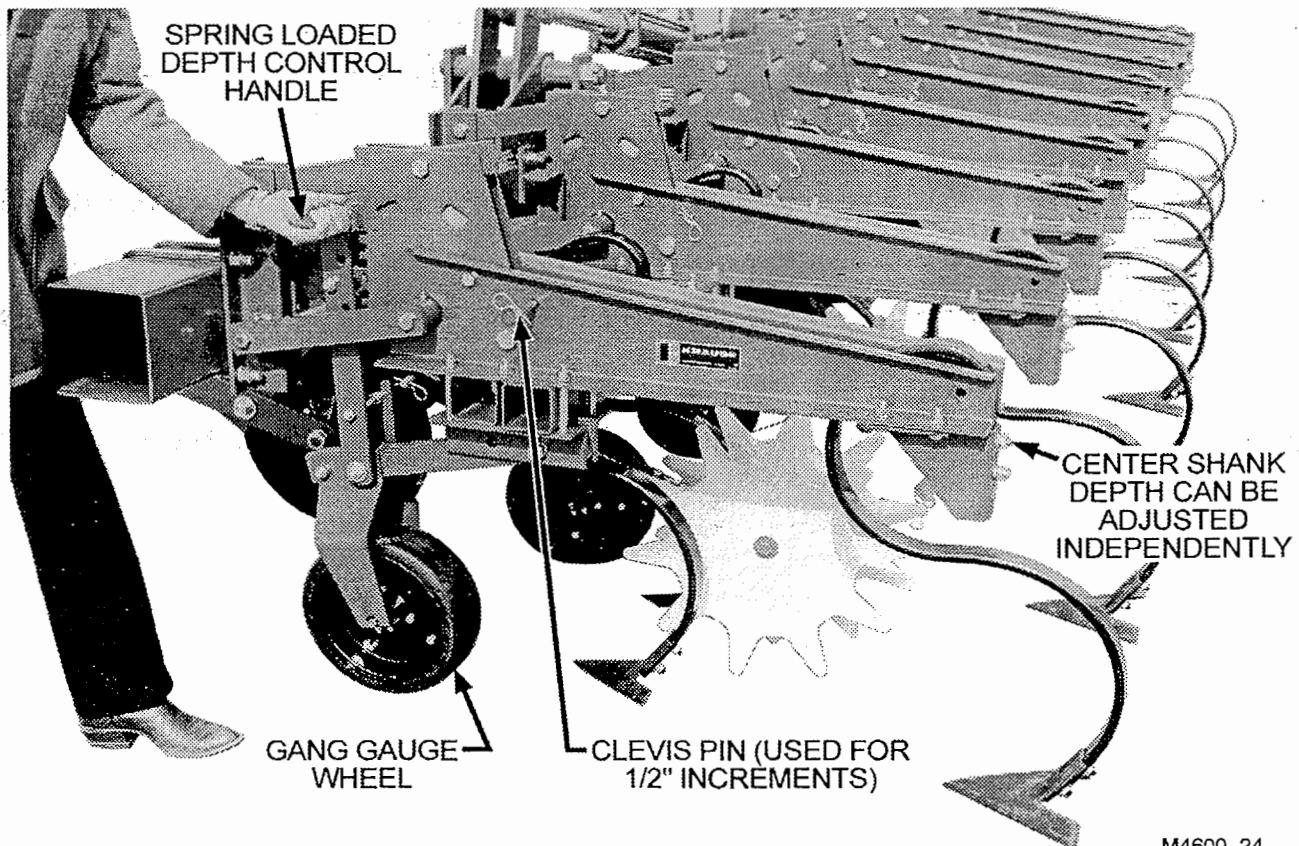
The tool bar gauge wheel mounting plate should normally be attached through the center set of holes as shown in the photograph.



M4600-23

On 6-Row wide folding models where the gauge wheel is located on the wing, it is necessary to lock the wings down during field operation to prevent the center tool bar from lowering.

GANG DEPTH CONTROL



M4600-24

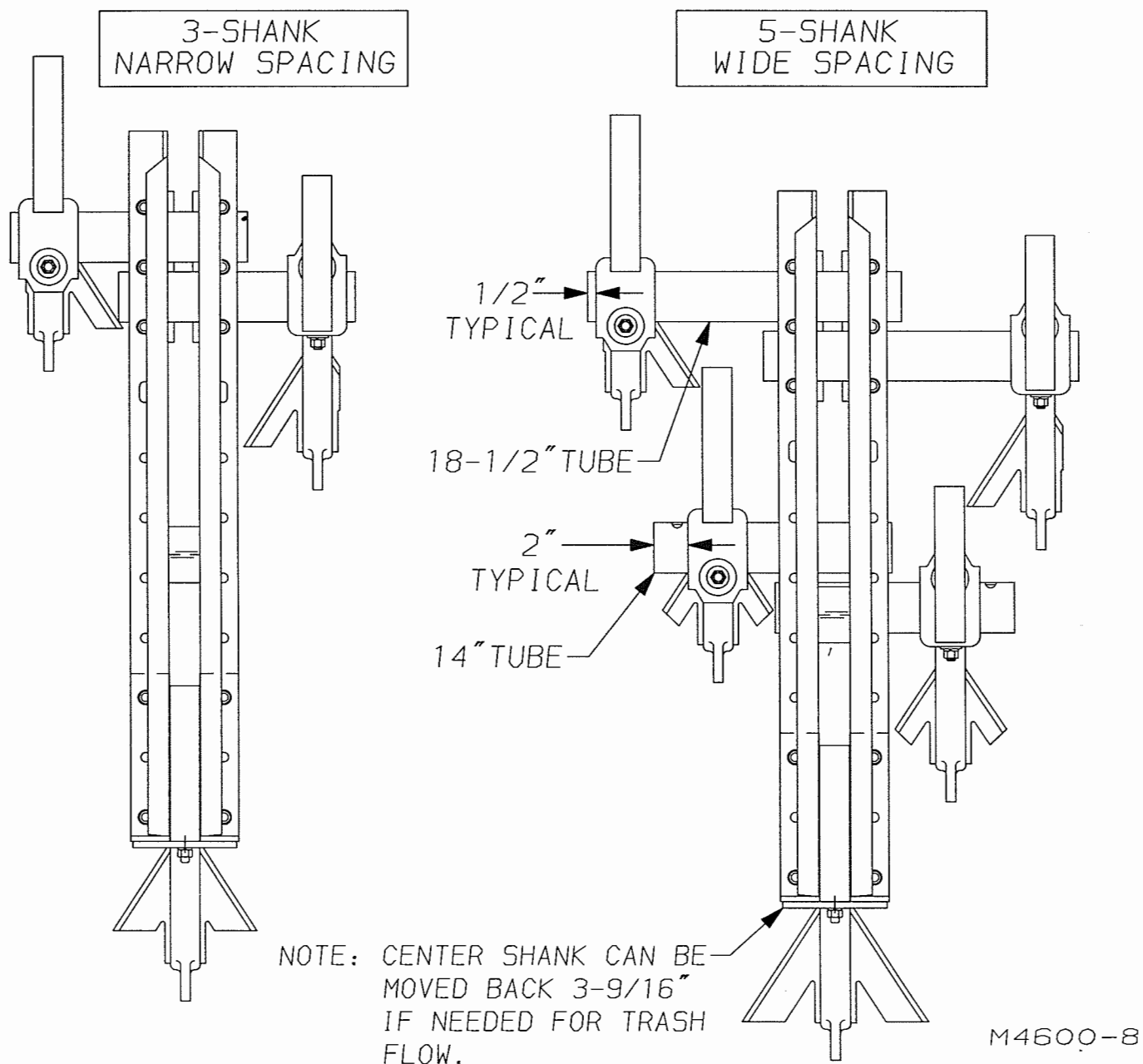
Gauge wheels are required on each gang to determine cultivating or working depth.

The depth on each row can be changed by pulling the SPRING-LOADED DEPTH CONTROL HANDLE forward out of the notches and moving the gauge wheel up or down to the desired depth. (See photograph at the bottom of the preceding page.) Each notch will change the depth by approximately 1". If 1/2" increments are desired, pull the handle forward and insert the clevis pin provided through one of the holes in the depth strap handle.

SHANK PLACEMENT

See pages A18 through A26 in the assembly section for shank and sweep locations for the various spacings of row crop cultivators.

The two front shanks on the 5-Shank gang should be mounted on the front side of the tube for maximum trash flow. (See the illustration below)



DISC STABILIZER ADJUSTMENT

The disc stabilizer is pre-assembled at the factory for average depth and spring pressure.

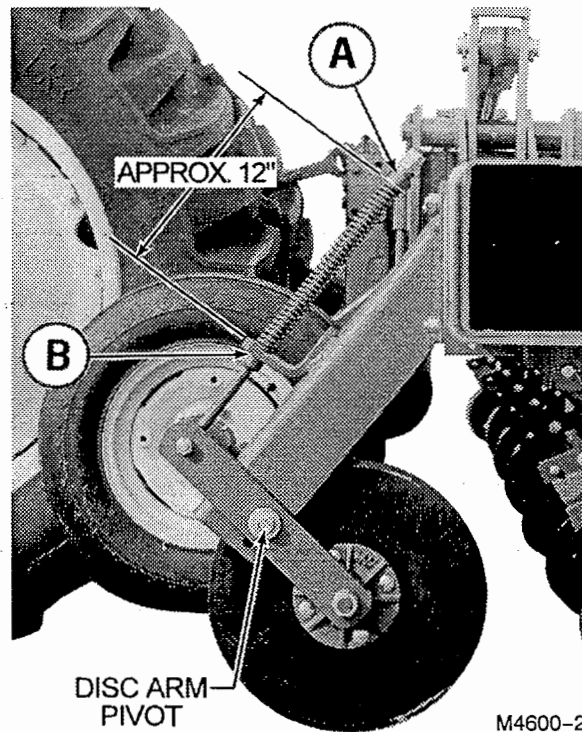
Each disc stabilizer should be adjusted so that it runs deep enough to prevent side sway, but not so deep that trash builds up at the hubs.

To raise the disc stabilizer, move the spacer from location 'A' to location 'B'.

To lower the disc stabilizer, move the disc arm pivot to the end holes.

Stabilizer disc shims can be inserted between the mounting plate and the tool bar so that the disc will align properly with the direction of travel.

See photograph at the top of page O5.

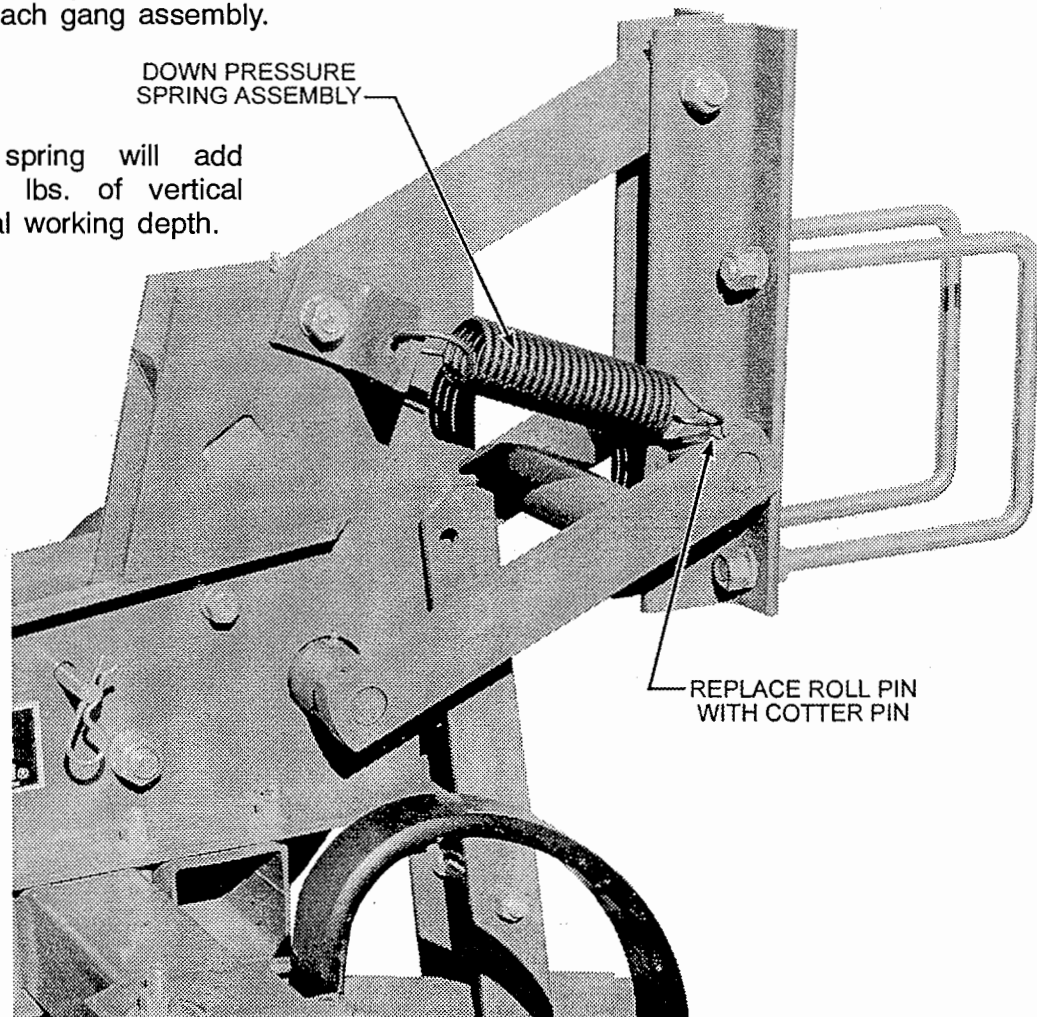


M4600-21

DOWN PRESSURE SPRINGS

Optional down pressure spring assemblies can be added on the right side of each gang assembly.

Each pressure spring will add approximately 50 lbs. of vertical pressure at normal working depth.



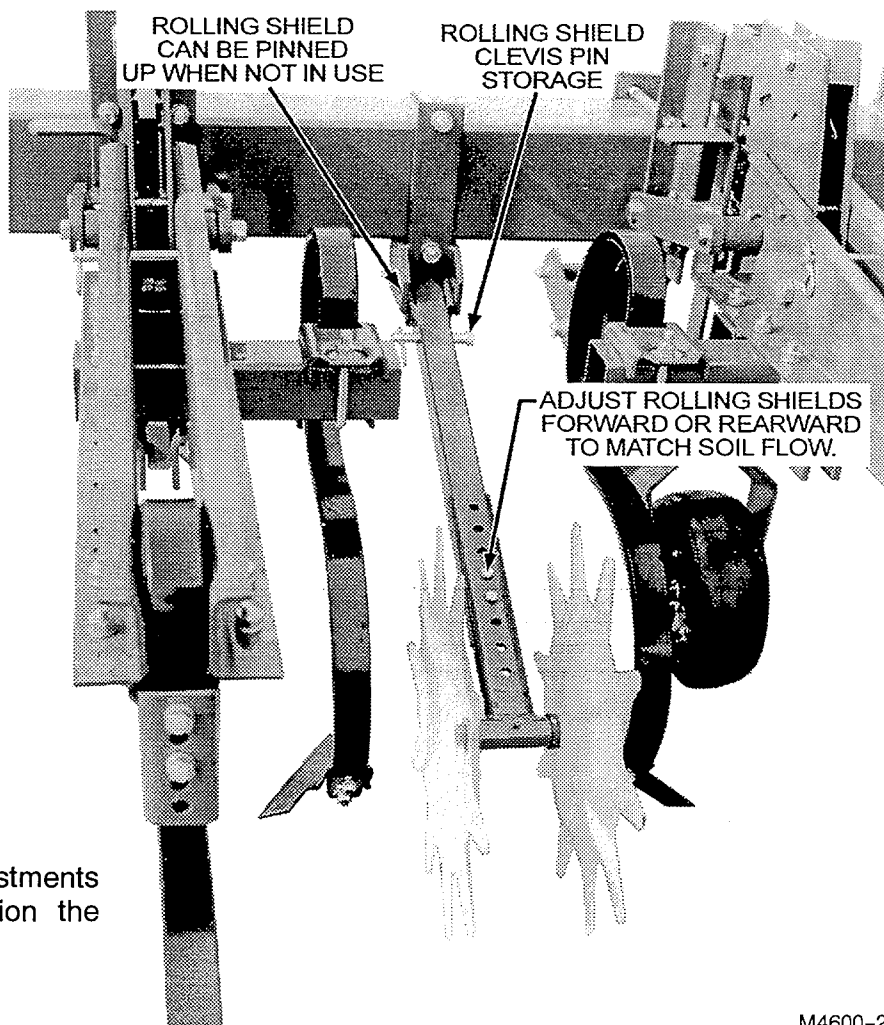
M4600-18

ROLLING SHIELDS

Make sure that each rolling shield is mounted precisely on the desired row spacing.

Adjust the rolling shield forward or rearward by removing the two 3/8" Bolts in the arm and then relocating to the desired position.

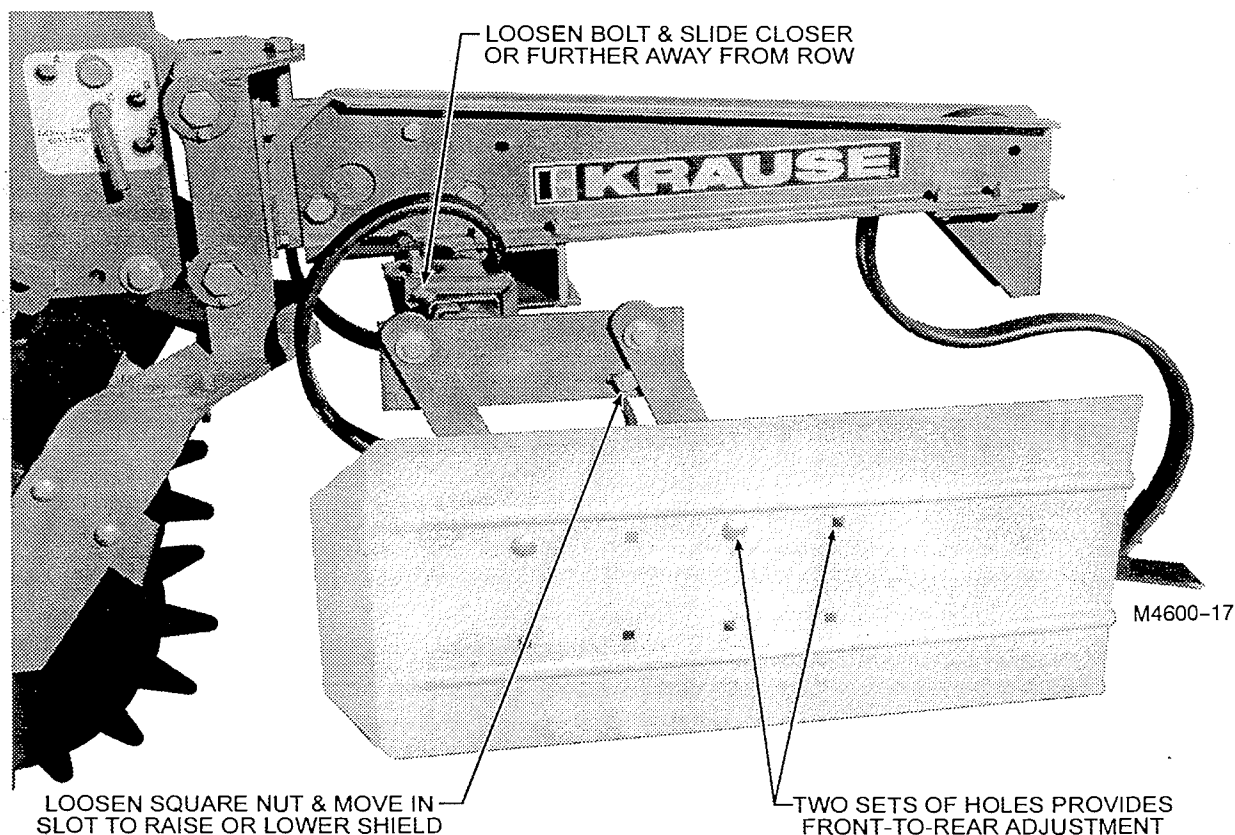
NOTE: The shanks on either side of the rolling shield should be in alignment.



OPEN TOP SHIELDS

There are three basic adjustments that can be made to position the shield.

See the photograph below.

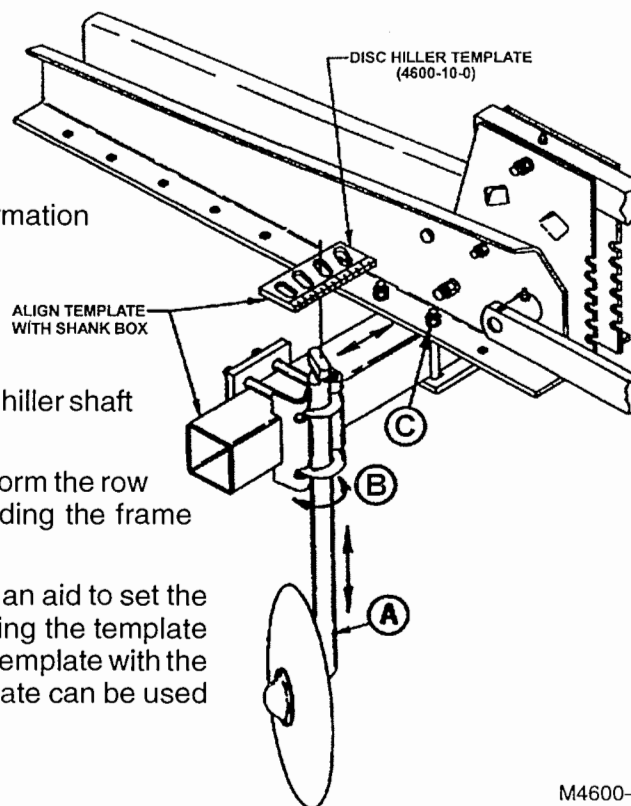


DISC HILLER

The Disc Hiller is an option or an accessory depending on row spacing or hiller assembly location. It can be used to move soil toward or away from the planted row.

See pages P14–15 and A18–26 for detailed information on assembly and disc location.

- The disc hiller depth can be adjusted by loosening the nuts on the U-Bolts and sliding the shaft up or down.
- The Disc Angle can be changed by rotating the hiller shaft in the U-Bolts.
- The Disc Hiller can be moved toward or away from the row by loosening the mounting tube bolts and sliding the frame box in or out.
- A Disc Hiller template has been developed as an aid to set the disc hillers. The angle can be set by positioning the template over the end of the hiller shaft and aligning the template with the shank box. The scale on the side of the template can be used to set the depth consistently.



M4600-4

SERVICING

GENERAL MAINTENANCE

All bolts should be checked and tightened after the first half day of operation and periodically thereafter.

LUBRICATION

The initial lubrication of all grease fittings will assure long life and satisfactory performance from the implement. Use multi-purpose type grease at all grease zerk locations after each 24 hours of operation. Points of lubrication include: gang pivot points, stabilizer disc hubs, tool bar gauge wheel hubs, and wing hinge pivots.

HYDRAULIC SAFETY & HYDRAULIC SYSTEM

Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.



Before removing any hydraulic parts, always relieve hydraulic pressure by turning off tractor engine and moving tractor control lever(s) back and forth.

AVOID HEATING NEAR PRESSURIZED HYDRAULIC HOSES

Flammable spray can be generated by heating near pressurized hydraulic hoses, resulting in severe burns to yourself and bystanders. Do not heat by welding, or using a torch near hoses. Hose can be accidentally cut when heat goes beyond the immediate flame area.

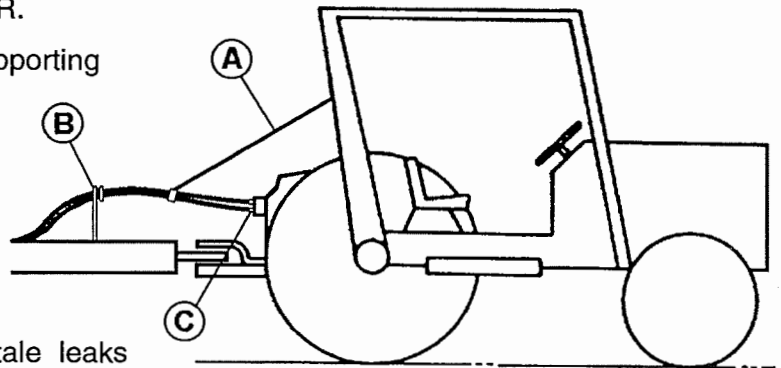
THE FOLLOWING WARNINGS PERTAIN TO THE MORE COMMON ABUSES OF HYDRAULIC HOSE:

1. **INSPECT** the hose assembly before each use.
2. **REPLACE** the hose assembly immediately if:
 - a.) The jacket of the hose appears abnormal.
 - b.) You have reason to believe it may be abnormal.
 - c.) There is any fluid leakage.
 - d.) The couplings are damaged.
 - e.) The hose is damaged or kinked.
 - f.) The reinforcement is visible through the jacket.
3. **DO NOT EXCEED** the maximum recommended working pressure.
4. **DO NOT KINK** the hose assembly.
5. **DO NOT BEND** the hose hose assembly beyond its maximum recommended bend radius of 3.25 inches.
6. **DO NOT EXPOSE** to temperatures in excess of 225° Fahrenheit.
7. **DO NOT USE AS A STRENGTH MEMBER** for pulling or lifting equipment.

⚠ Caution: If replacing hydraulic hose, use only hose that meets or exceeds 3,000 PSI working pressure.

IMPORTANT: REPAIR OF HYDRAULIC CYLINDERS SHOULD BE MADE BY AN AUTHORIZED KRAUSE DEALER.

Prevent damage to trail hoses by supporting them from the tractor with an elastic strap 'A'. Avoid having excess hose between the implement and the tractor connection 'C'. Either reposition the hose farther back on the implement or request a shorter hose from your dealer.



Inspect the hydraulic system for tell-tale leaks and loose fittings. Tighten if needed. When assembling your hydraulic system, if JIC and O-Ring fittings and hoses are to be used, the use of a tape or liquid sealer is not necessary. **MAKE SURE** a restrictor (YELLOW COLOR) is installed in the each port of the wing lift cylinders.

⚠ Caution: Air in hydraulic system will allow implement or wings to drop suddenly.

⚠ Warning: Do not operate the hydraulics until you have read 'Hydraulics' in the service section of this manual.

WHEEL BEARINGS

Grease wheel bearings every 24 hours of use. Check for excessive end play each time bearings are greased. Once a year, clean and repack wheel bearings. Replace seals each time bearings are removed. Replace any worn or damaged parts. After repacking, replace hub with seal and rear bearing already assembled. Use light oil on the seal surface and use extreme care when pushing seal over the spindle. Install front bearing, flat washer, and slotted hex nuts. Tighten nut while turning hub until there is resistance to rotation. Then back off nut 1 to 2 notches until the hub turns freely without end play. Install a new cotter pin and the hub cap.

STORAGE

Select a level area, lower the wings and set the implement down on blocks to prevent sweeps and disc stabilizer blades from settling into the ground. Coat the sweeps, disc stabilizer blades, and wing lift cylinder rods with rust preventative. Inspect for worn or damaged parts and replace as needed to avoid delays the next season. Check to be sure hydraulic hose couplers are stored on top of the frame and not left laying on the ground.

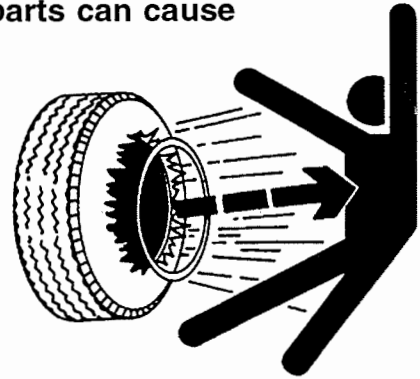
REPAIR PARTS

Refer to the assembly section of this manual when repairing or replacing parts, and follow the same procedure as used when assembling a new unit. Reverse this procedure for disassembly. The Parts Section of this book will show a breakdown of assemblies, locations of parts, and part numbers. Krause parts were developed and tested for these units, therefore, it is recommended that Krause replacement parts be used.

⚠ Caution: If replacing hydraulic hose, use only hose that meets or exceeds 3,000 PSI working pressure.

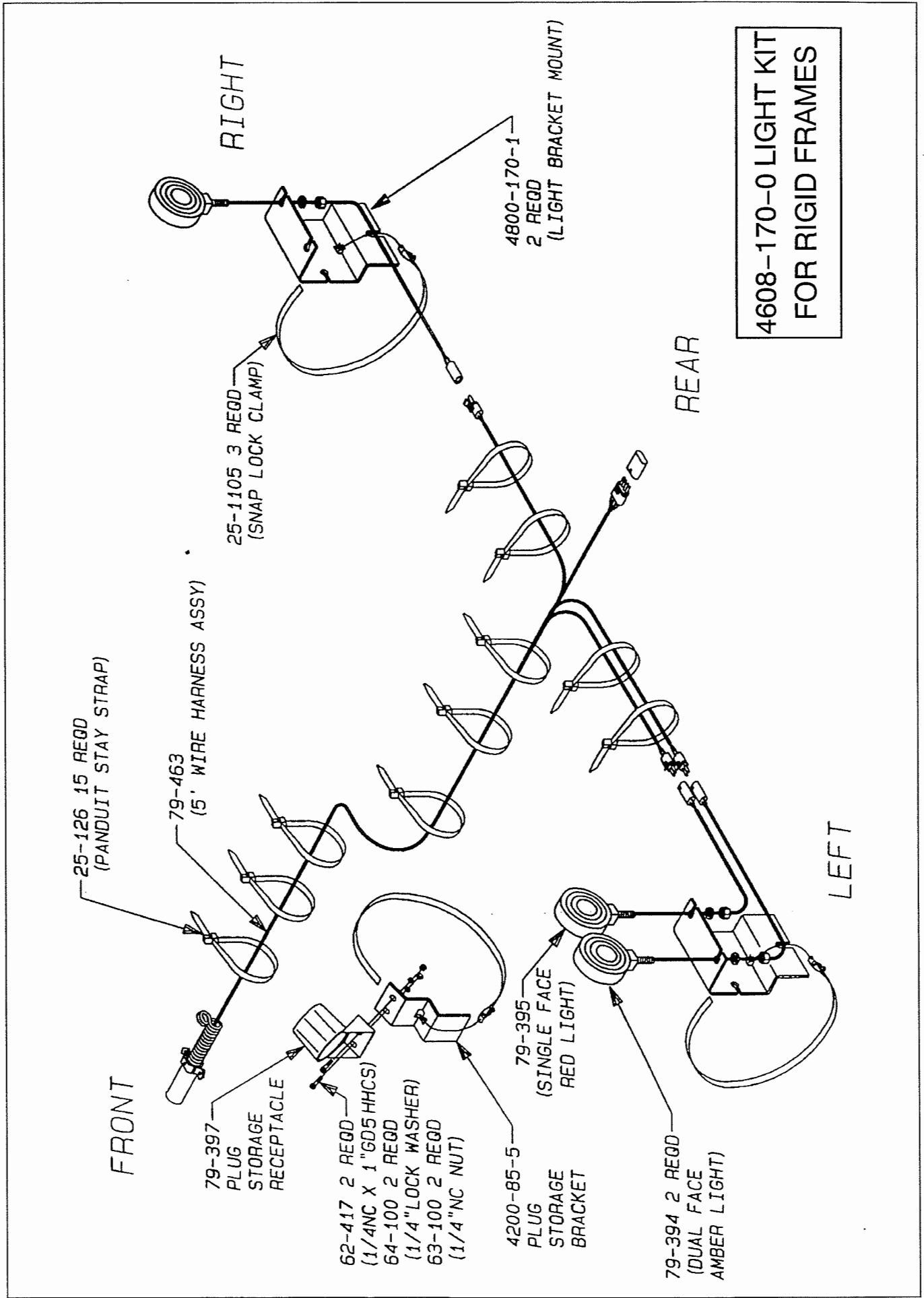
⚠ Caution: Explosive separation of tire and rim parts can cause serious injury or death.

Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Inspect tires and wheels daily. Do not operate with low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



PARTS SECTION

THE FOLLOWING ILLUSTRATED PARTS SECTION HAS BEEN COMPILED TO REFLECT PART NUMBERS REQUIRED TO ORDER PARTS, AND TO SUPPORT THE ASSEMBLY SECTION FOR DIMENSIONS AND DESCRIPTIONS OF ALL PARTS, BOLTS, PINS, ETC. THE OPERATOR CAN ALSO IDENTIFY PART NAMES TO CLARIFY PROPER OPERATIONAL STEPS.



4608-170-0 LIGHT KIT
FOR RIGID FRAMES

FRONT

RIGHT

REAR

LEFT

25-126 15 REQD
(PANDUIT STAY STRAP)

79-463
(5' WIRE HARNESS ASSY)

25-1105 3 REQD
(SNAP LOCK CLAMP)

4800-170-1
2 REQD
(LIGHT BRACKET MOUNT)

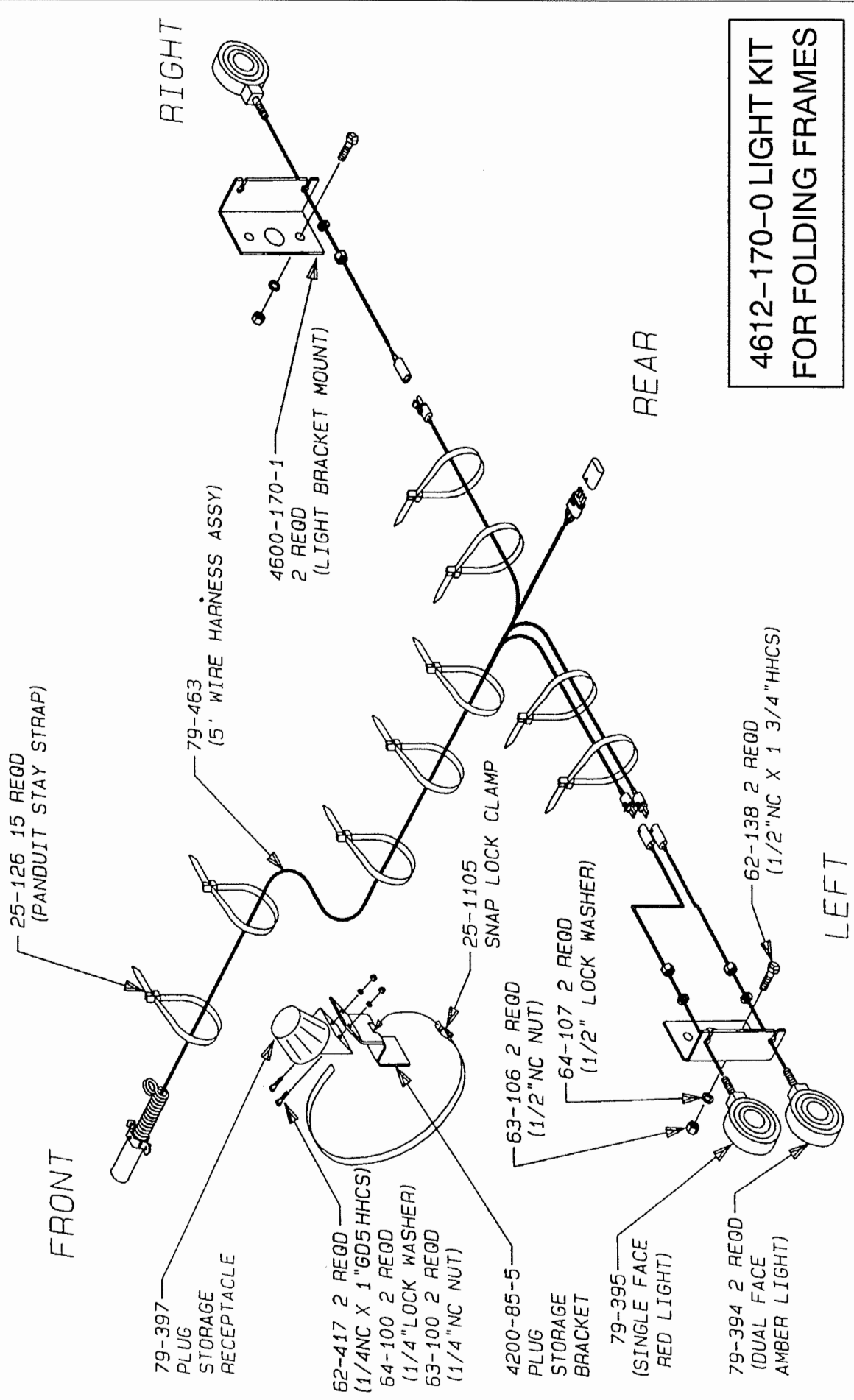
79-397
PLUG
STORAGE
RECEPTACLE

62-417 2 REQD
(1/4" X 1" GD5 HHCS)
64-100 2 REQD
(1/4" LOCK WASHER)
63-100 2 REQD
(1/4" NC NUT)

4200-85-5
PLUG
STORAGE
BRACKET

79-394 2 REQD
(DUAL FACE
AMBER LIGHT)

79-395
(SINGLE FACE
RED LIGHT)



4612-170-0 LIGHT KIT
FOR FOLDING FRAMES

25-126 15 REGD
(PANDUIT STAY STRAP)

79-397
PLUG
STORAGE
RECEPTACLE

79-463
(5' WIRE HARNESS ASSY)

4600-170-1
2 REGD
(LIGHT BRACKET MOUNT)

62-417 2 REGD
(1/4"NC X 1"GD5 HHCS)
64-100 2 REGD
(1/4"LOCK WASHER)
63-100 2 REGD
(1/4"NC NUT)

4200-85-5
PLUG
STORAGE
BRACKET

25-1105
SNAP LOCK CLAMP

63-106 2 REGD
(1/2"NC NUT)

64-107 2 REGD
(1/2" LOCK WASHER)

79-395
(SINGLE FACE
RED LIGHT)

REAR

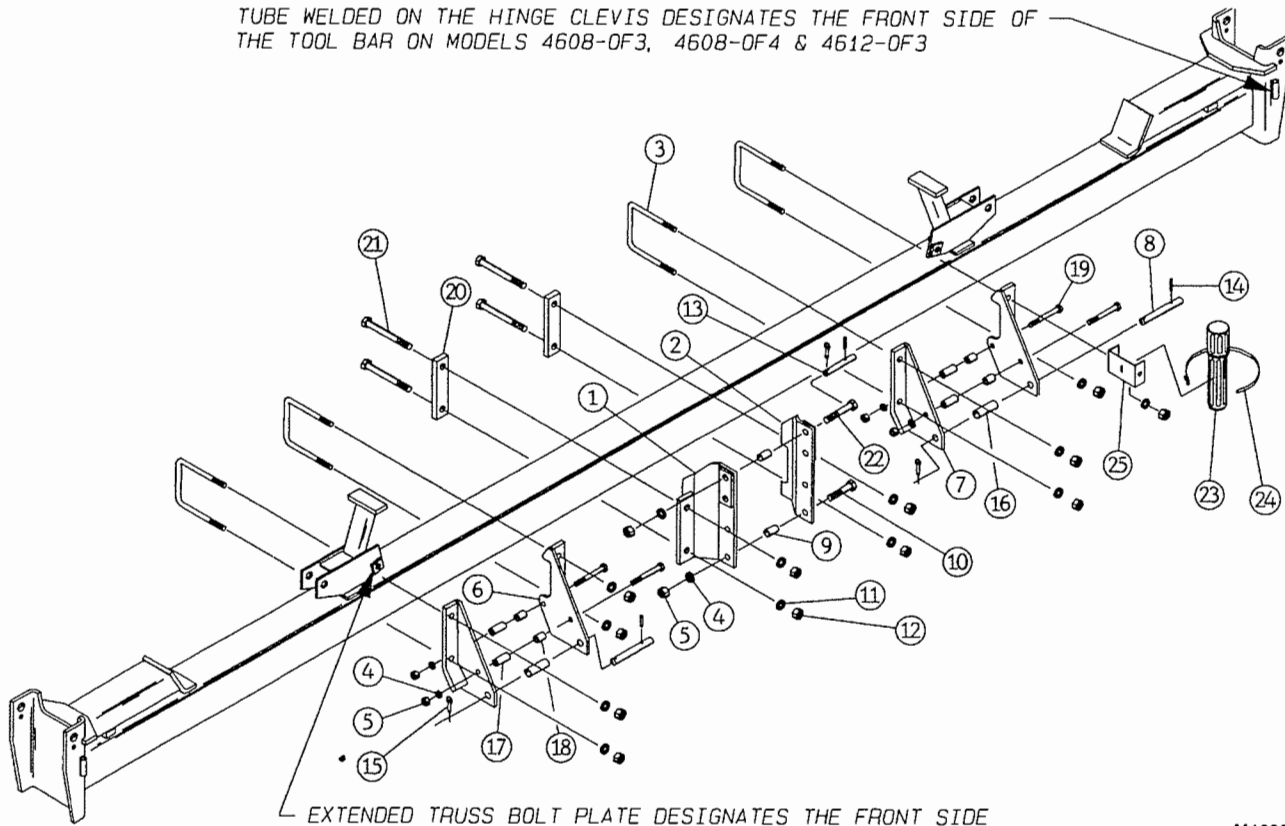
79-394 2 REGD
(DUAL FACE
AMBER LIGHT)

62-138 2 REGD
(1/2"NC X 1 3/4"HHCS)

LEFT

3-POINT MAST

TUBE WELDED ON THE HINGE CLEVIS DESIGNATES THE FRONT SIDE OF THE TOOL BAR ON MODELS 4608-OF3, 4608-OF4 & 4612-OF3



EXTENDED TRUSS BOLT PLATE DESIGNATES THE FRONT SIDE OF THE TOOL BAR ON MODELS 4612-OF4 & 4616-OF3

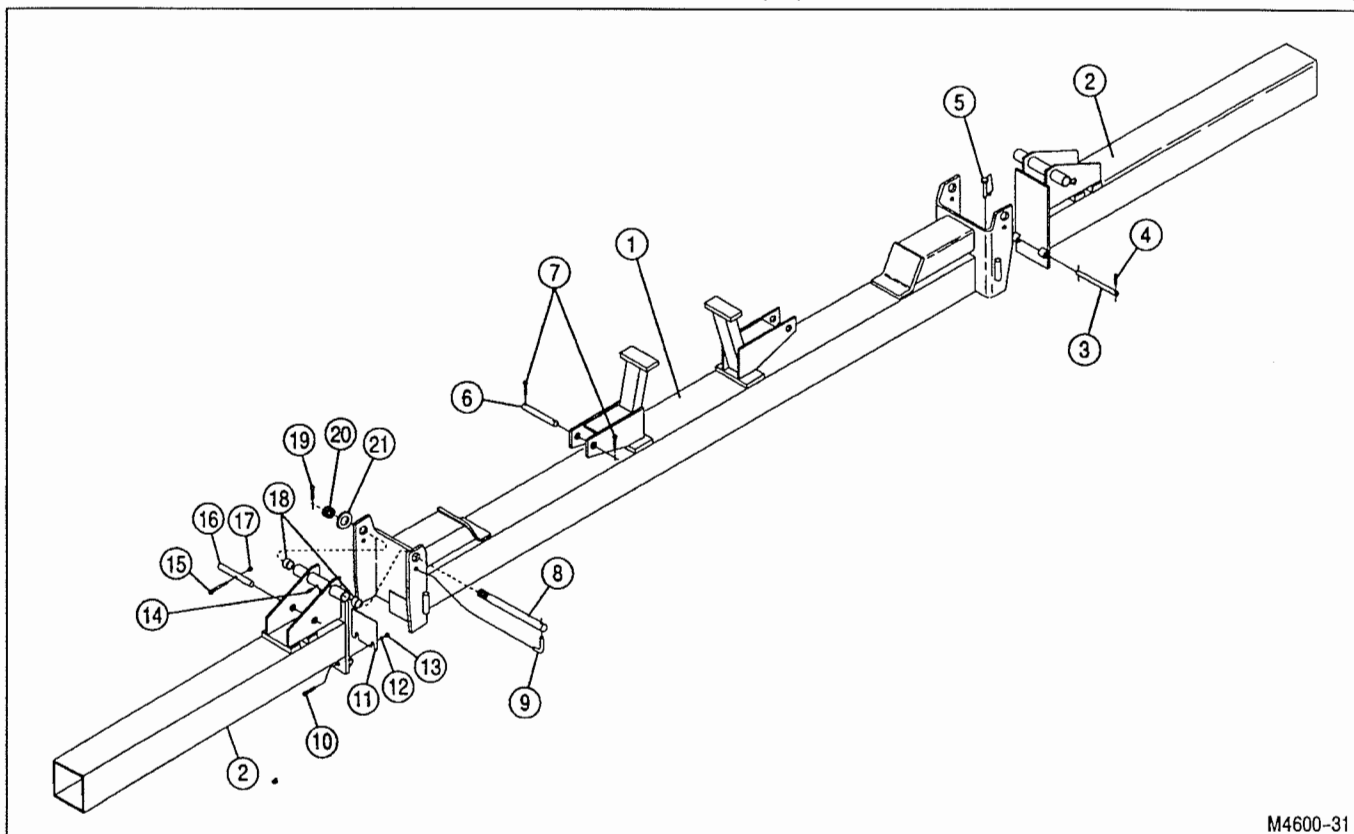
M4600-16
Rev. 4/96

FOR MODELS - 4608-OF3, 4608-OF4, 4612-OF3, 4612-OF4, 4616-OF3

4/96

Item	Part Number	Part Description	Qty.
1	4616-12-0	Right Top Hitch Weldment	1
2	4616-11-0	Left Top Hitch Weldment	1
3	61-206	1" DIA. U-Bolt	4
4	64-112	3/4" STD. Lock Washer	4
5	63-112	3/4NC Hex Nut	4
6	4616-40-0	Bottom Hitch Weldment - Right	2
7	4616-41-0	Bottom Hitch Weldment - Left	2
8	5210-101-7	Pin, Hitch	2
9	5210-101-8	Bushing - Top Link	2
10	62-481	1NC x 4-1/2" GD. 5 Cap Screw	1
11	64-118	1" STD. Lock Washer	14
12	63-117	1NC Hex Nut	14
13	4700-66-2	Pin - Top Link (For STD. Hitch)	1
14	60-615	3/8" DIA. x 2" Roll Pin	3
15	60-102	Klick Pin	3
16	5210-101-9	Bushing, Hitch	2
17	4600-0-20	Long Spacer	4
18	4600-0-32	Short Spacer	4
19	62-210	3/4NC x 6" GD. 5 Cap Screw	4
20	4700-0-18	Bolt Plate	2
21	62-601	1NC x 10" GD. 5 Machine Bolt	4
22	62-504	1NC x 5-1/2" GD. 5 Cap Screw	1
23	99-192	Owner's Manual Storage Canister	1
24	25-1163	Hose Clamp	1
25	4600-0-39	Manual Bracket	1

WING MODEL TOOL BAR



M4600-31

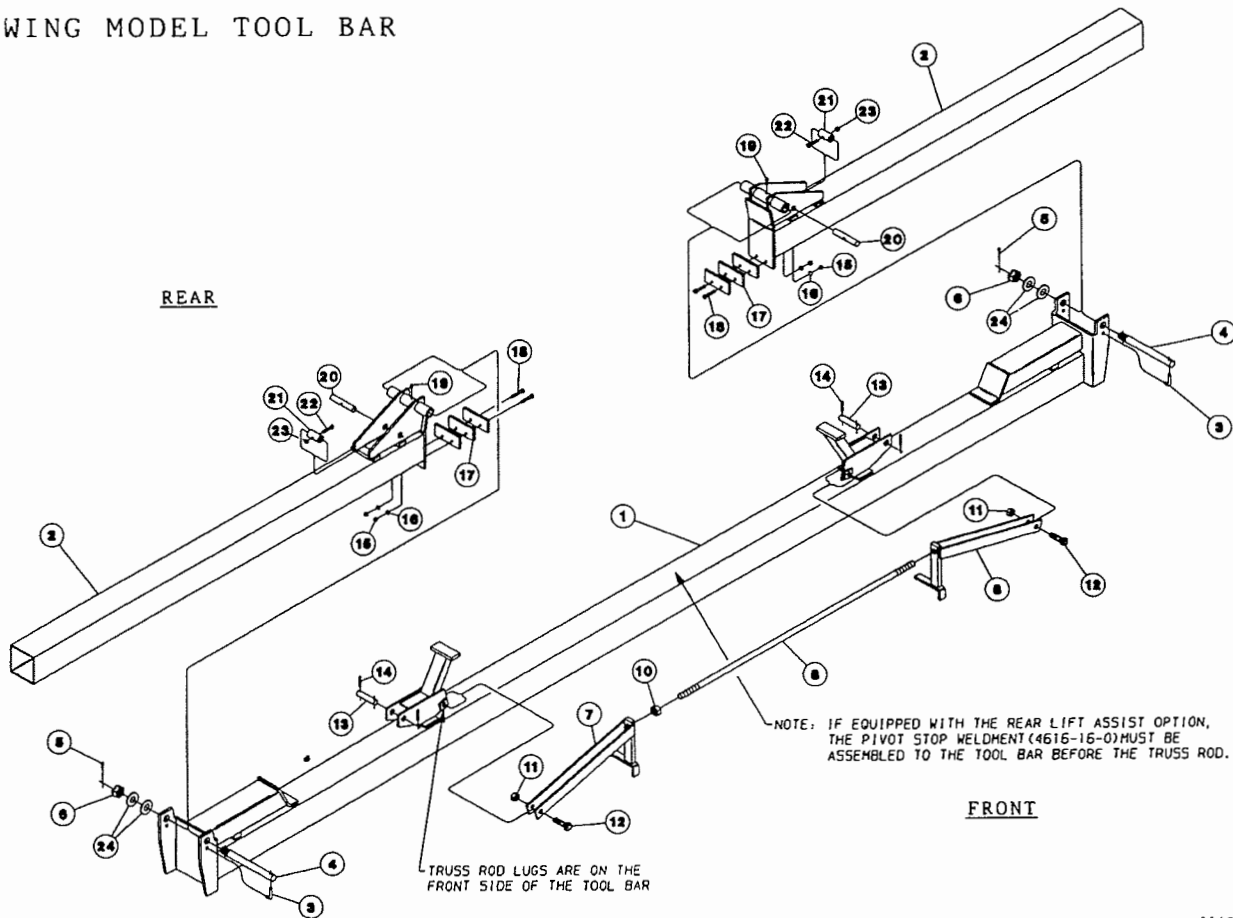
FOR MODELS - 4606-0F4, 4608-0F3, 4608-0F4, 4612-0F3

12/96

Item	Part Number	Part Description	Qty.
1	4606-2-0	Center Tool Bar 134-1/4" Long	1
	4608-2-0	Center Tool Bar 174-1/4" Long	1
	4612-2-0	Center Tool Bar 194-1/4" Long	1
2	4606-20-0	Wing Tool Bar 63-1/2" Long	2
	4608-20-0	Wing Tool Bar 77-1/2" Long	2
	4612-20-0	Wing Tool Bar 87-1/2" Long	2
	4606-23-0	Wing Lock Pin Assembly (For 4606-0F4 & 4606-0F3)	2
3	4606-23-1	Wing Lock Pin	2
4	60-618	3/8" DIA. x 3" Roll Pin	2
5	60-103	5/16" DIA. P.T.O. Pin	2
6	4330-0-5	Short Pin	2
7	60-617	3/8" DIA. x 2-1/2" Roll Pin	4
8	4600-0-25A	Wing Hinge Pin	2
9	1901-0-2	Hinge Lock Pin	2
10	62-569	1/2NC x 1-1/2" GD.5 Cap Screw	4
11	4600-0-24	Hinge Shim (Use as needed)	6
12	64-107	1/2" STD. Lock Washer	4
13	63-106	1/2NC Hex Nut	4
14	65-101	1/8NPT STD. Zerk	4
15	62-372	1/2NC x 2-1/2" GD. 5 Cap Screw	2
16	4600-0-26	Wing Lift Pin	2
17	63-107	1/2NC Self Locking Nut	2
18	53-118	Wear Sleeve	4
19	60-711	1/4" DIA. x 3" Cotter Pin	2
20	63-128	1-1/2NC Slotted Nut	2
21	64-129	1-1/2" STD. Flat Washer	4

WING MODEL TOOL BAR

WING MODEL TOOL BAR

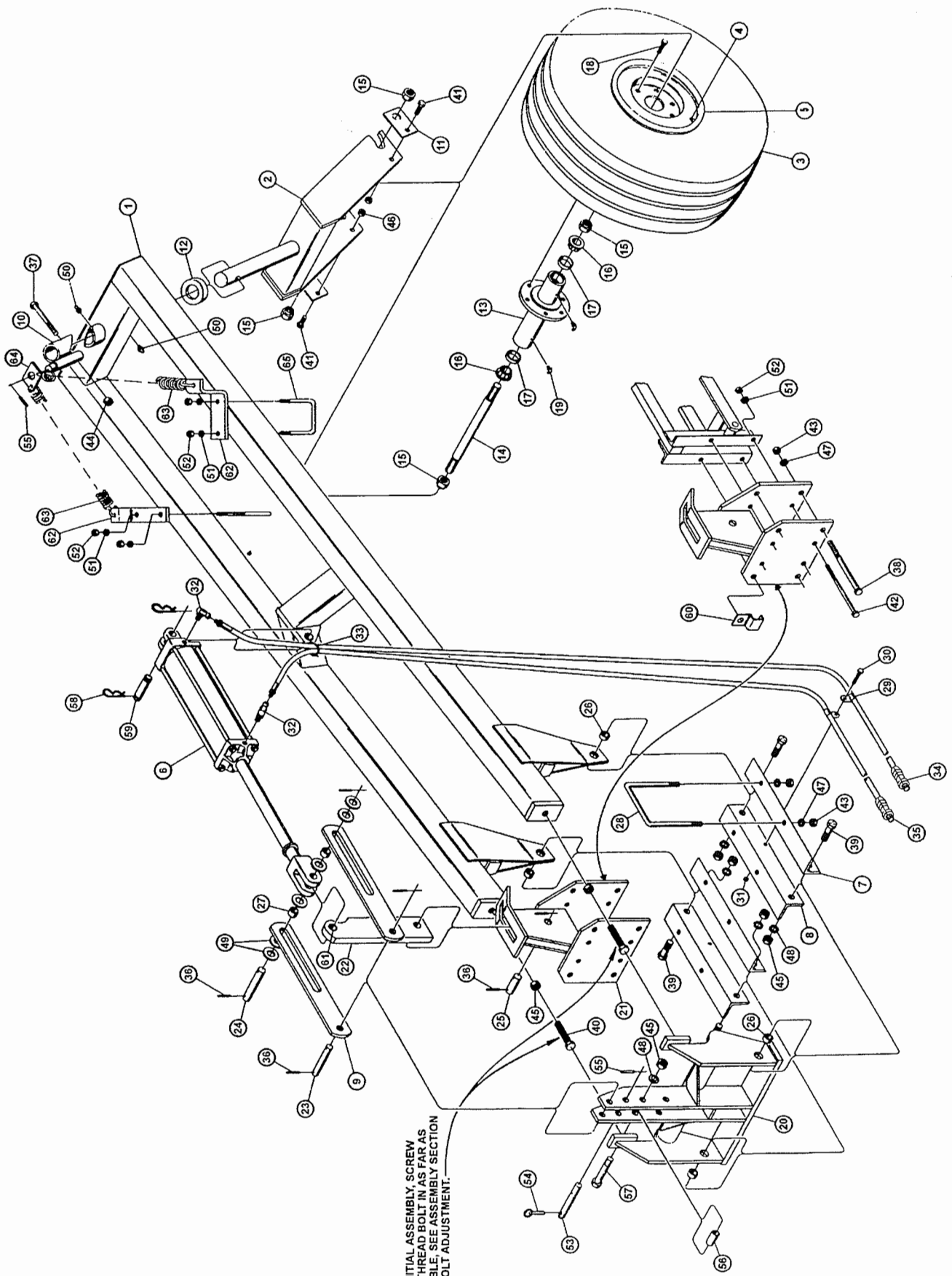


M4600-32

FOR MODELS - 4612-0F4, 4616-0F3

12/96

Item	Part Number	Part Description	Qty.
1	4616-2-0	Tool Bar Weldment	1
2	4616-20-0	Wing Tool Bar Weldment	2
3	1901-0-2	Hinge Lock Pin	2
4	4600-0-25A	Hinge Pin	2
5	60-711	1/4" DIA. x 3" Cotter Pin	2
6	63-128	1-1/2NC Slotted Hex Nut	2
7	4616-22-0	Right Truss Rod Weldment	1
8	4616-21-0	Left Truss Rod Weldment	1
9	4616-0-15	Truss Rod	1
10	63-123	1-1/4NC Hex Nut	1
11	63-119	1NC Self Locking Nut	2
12	62-238	1NC x 3" GD. 5 Cap Screw	2
13	4330-0-5	Short Pin	2
14	60-617	3/8" DIA. x 2-1/2" Roll Pin	4
15	63-106	1/2NC Hex Nut	4
16	64-107	1/2" STD. Lock Washer	4
17	4616-0-2	Shim Plate	6
18	62-151	1/2NC x 3" GD.5 Cap Screw	4
19	65-101	1/8NPT STD. Zerk	2
20	4600-0-26	Wing Lift Pin	2
21	4616-0-1	Spacer Tube	2
22	62-372	1/2NC x 2-1/2" GD. 5 Cap Screw	2
23	63-107	1/2NC Self Locking Nut	2
24	64-129	1-1/2" STD. Flat Washer	4



FOR INITIAL ASSEMBLY, SCREW
 FULL THREAD BOLT IN AS FAR AS
 POSSIBLE. SEE ASSEMBLY SECTION
 FOR BOLT ADJUSTMENT.

REAR ASSIST WHEEL ASSEMBLY

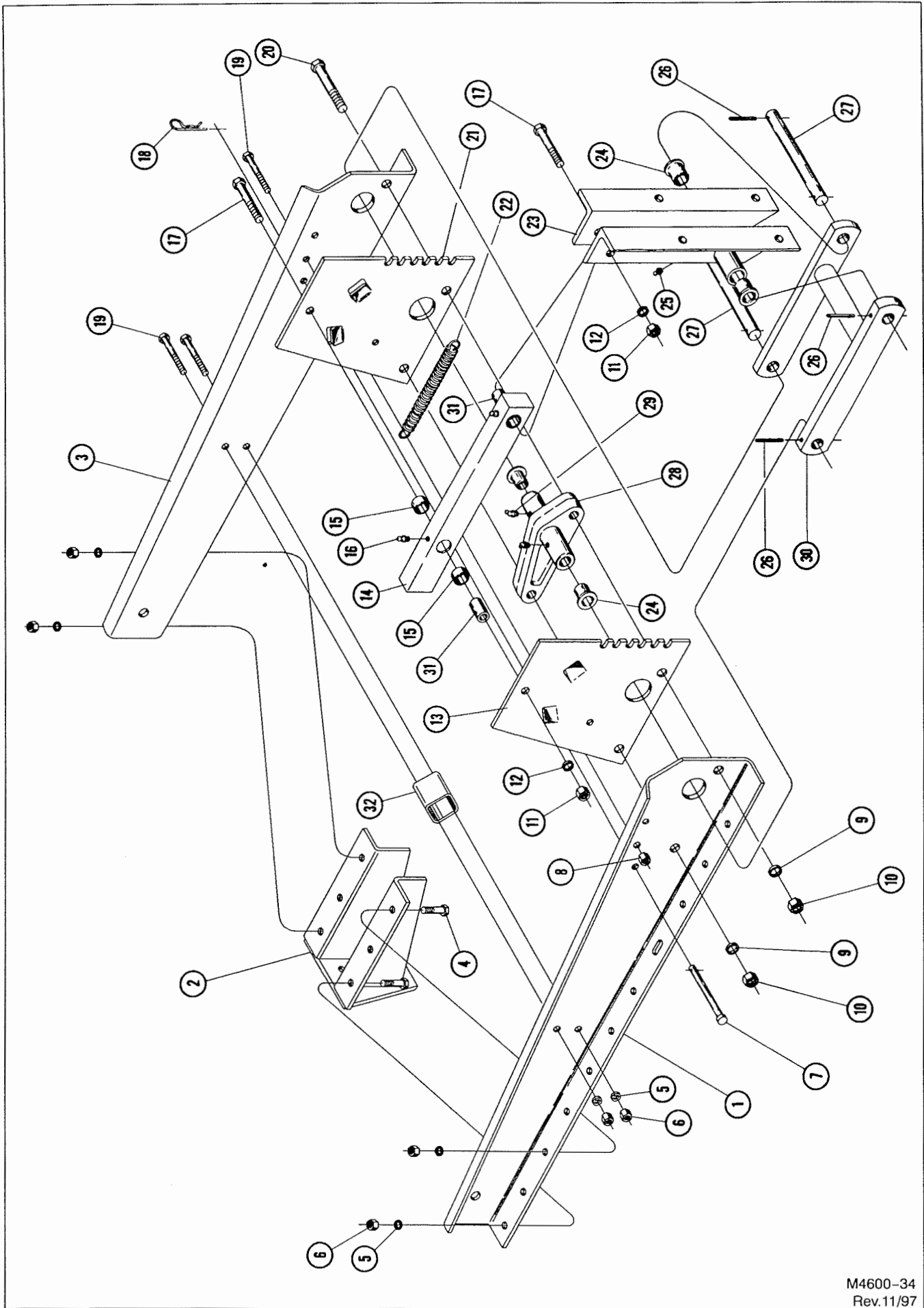
FOR MODELS – Optional for 4612-0F3, 4612-0F4, 4616-0F3

12/96

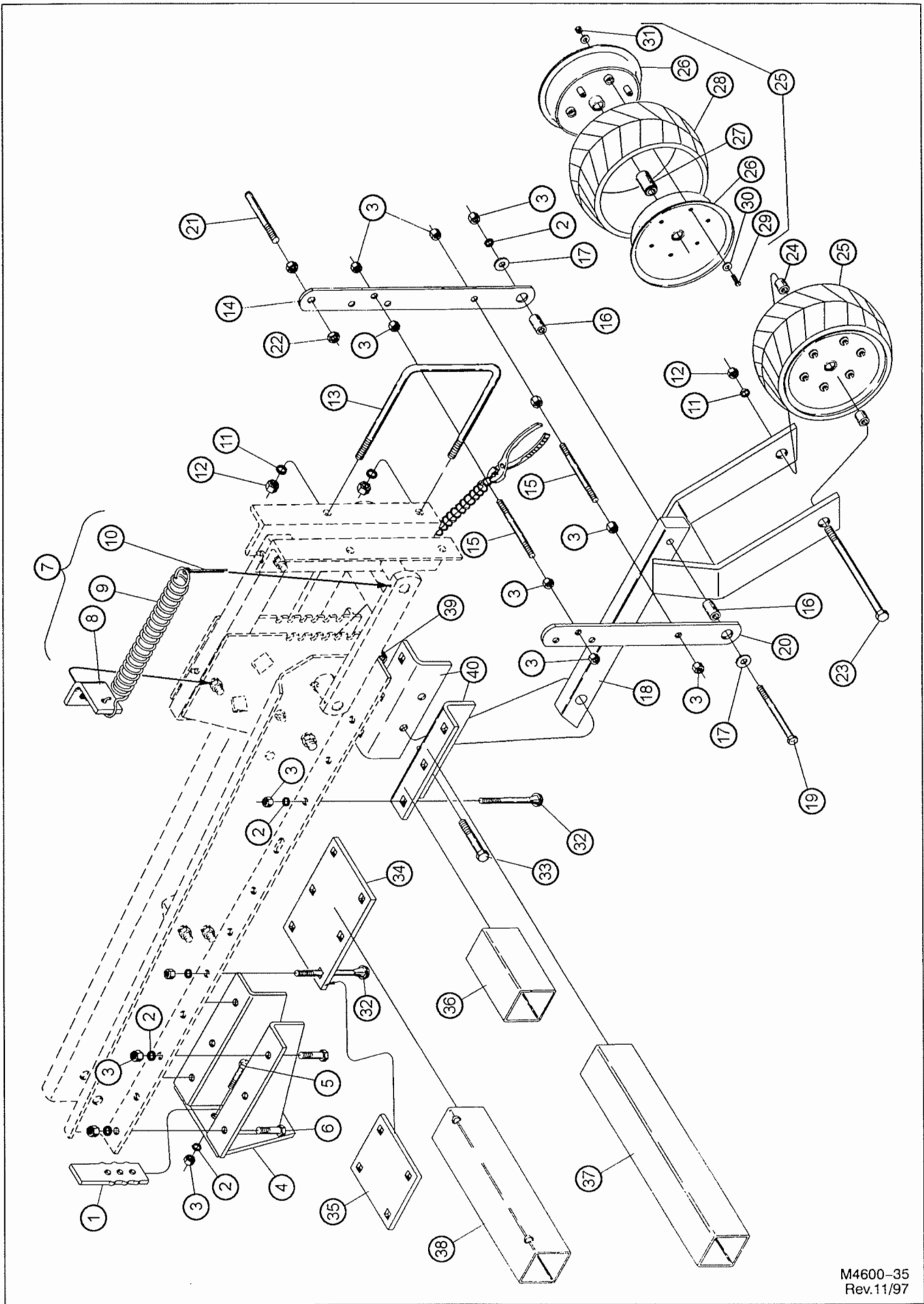
Item	Part Number	Part Description	Qty.
1	4616-13-0	Assist Wheel Frame Weldment	1
2	4616-19-0A	Castor Wheel Frame Weldment	1
	1000-10580-0	Wheel Assembly	1
3	51-103	10.00 x 15, 8-Ply Tire	1
4	51-107	Valve Stem	1
5	52-103	15" x 10" Wheel	1
6	21-157	3-1/2" x 18" Hydraulic Cylinder	1
7	4616-0-3	Angle, Right	2
8	4616-0-4	Angle, Left	2
9	4616-0-6	Cylinder Link	2
10	4616-23-0	Spring Lock Weldment	1
11	4616-0-8	Axle Plate	2
12	4616-0-9	Load Spacer Casting	1
	4616-9-0	Hub and Axle Assembly	1
13	4616-8-0	Hub Weldment	1
14	4616-9-1	Spindle	1
15	4616-9-2	Special Nut 1-1/4NF	4
16	41-121	Cone / Seal Assembly (Timken #LM-48500LA)	2
17	41-208	Cup (Timken #LM-48510)	2
18	62-295	9/16NF GD. 5 Wheel Bolt	6
19	65-104	1/4NPT x 67-1/2 Zerk	2
20	4616-14-0A	Top Hitch Frame Weldment	1
21	4616-16-0	Pivot Stop Weldment	1
22	4616-17-0	Pivot Link Assembly	1
23	4616-0-12A	Top Link Pin	1
24	4616-0-13	Cylinder Link Pin	1
25	4616-0-14	Link Pivot Pin	1
26	4616-0-5	Spacer	4
27	53-103	Wear Sleeve	2
28	61-190	3/4" DIA. U-Bolt	4
29	25-127	3/4" I.D. Hose Clamp	2
30	62-544	3/8NC x 2" GD.5 Cap Screw	1
31	63-134	3/8NC Nylon-Top Lock Nut	1
32	25-320	O-Ring 37° Flare 90° Female Fitting	2
33	25-126	27.5" Black Panduit Stay Strap	2
34	☆ 4990-75-0	1/2" x 92" Hose w/Grip Ass'm.	1
35	☆ 4990-76-0	1/2" x 92" Hose w/Grip Ass'm.	1
36	60-606	1/4" DIA. x 2" Roll Pin	6
37	62-210	3/4NC x 6" GD. 5 Cap Screw	1
38	62-262	1NC x 9-1/2" GD. 5 Cap Screw	4
39	62-236	1NC x 2-1/2" GD. 5 Cap Screw	4
40	62-243	1NC x 4" Full Thread Bolt	2
41	62-424	5/8NC x 1-1/2" GD. 5 Bolt	2

Item	Part Number	Part Description	Qty.
42	62-546	5/8NC x 9-1/2" GD. 5 Bolt	4
43	63-112	3/4NC Hex Nut	8
44	63-114	3/4NC Lock Nut	2
45	63-117	1NC Hex Nut	11
46	63-152	5/8NC Nylon-Top Lock Nut	2
47	64-112	3/4" STD. Lock Washer	8
48	64-118	1" STD. Lock Washer	9
49	64-119	1" STD. Flat Washer	6
50	65-101	1/8NPT STD. Zerk	2
51	64-109	5/8" STD. Lock Washer	8
52	63-109	5/8NC Hex Nut	8
53	5210-101-6	Pin - Top Link	1
54	60-102	Klick Pin	1
55	60-615	3/8" DIA. x 2" Roll Pin	2
56	5210-101-8	Bushing - Top Link	1
57	62-481	1NC x 4-1/2" GD. 5 Cap Screw	1
58	21-219	Hair Pin Clip	2
59	21-376	Clevis Pin	1
60	4616-0-16	Hose Clamp	1
61	53-102	Wear Sleeve (Pressed in 4616-17-0)	1
62	4616-0-17	Spring Bracket	2
63	4616-0-19	Extension Spring	2
64	4616-0-18	Spring Pivot	1
65	61-223	5/8" DIA. U-Bolt	2

☆ See page P29 for parts listing



M4600-34
Rev.11/97



M4600-35
Rev.11/97

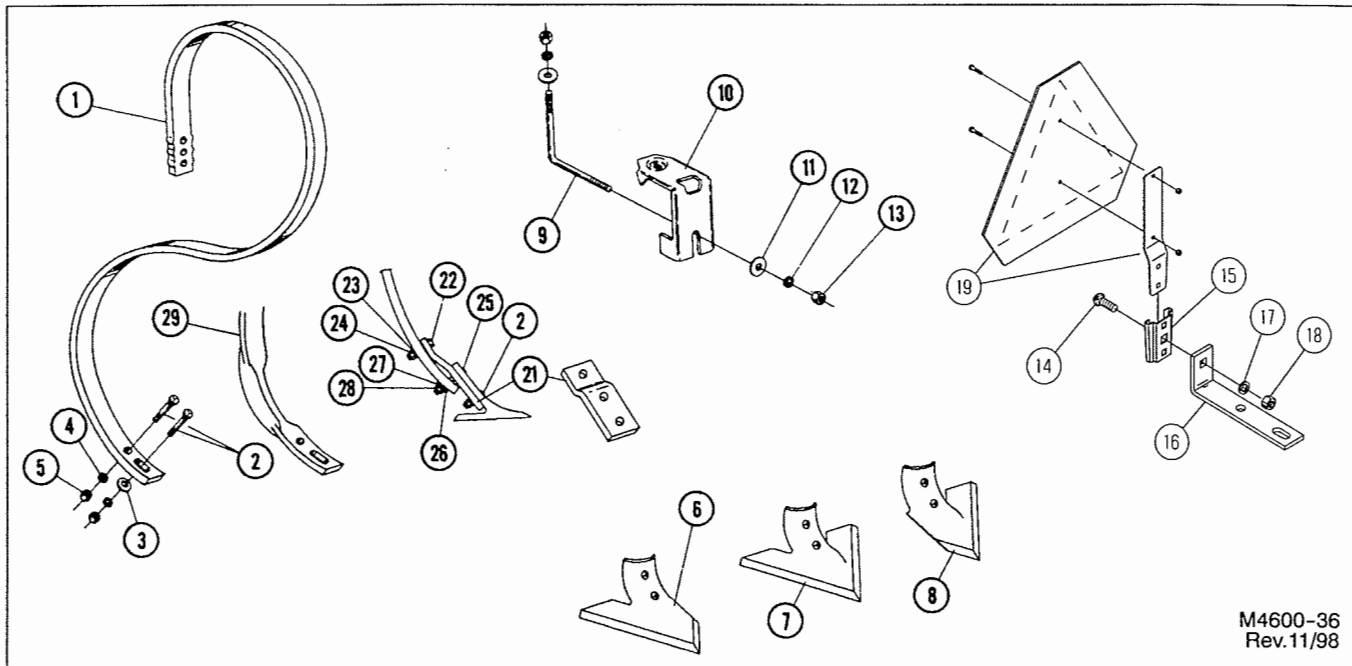
MISCELLANEOUS GANG PARTS

FOR MODELS - ALL

3/98

Item	Part Number	Part Description	Qty.
1	31-151	Reinforcement Plate	1
2	64-107	1/2" STD. Lock Washer	20
3	63-106	1/2NC Hex Nut	28
4	4600-54-0	Shank Mount Weldment	1
5	62-343	1/2NC x 2" GD. 5 Cap Screw	2
6	62-569	1/2NC x 1-1/2" GD.5 Cap Screw	4
7	4600-55-0A	Pressure Spring Assembly (ACCESSORY)	1
8	4600-55-1A	Spring Mount	1
9	76-174	Spring - Extension	1
10	60-710	1/4" DIA. x 2-1/2" Cotter Pin	1
11	64-109	5/8" STD. Lock Washer	4
12	63-108	5/8NC Hex Nut	5
13	61-204	5/8" DIA. U-Bolt (Fits 7" x 7" Box)	2
14	4600-0-36	Depth Strap - Right	1
15	62-464	1/2NC x 4-3/4" Stud Bolt	2
16	4600-134-1	Spacer	2
17	64-108	1/2" STD. Flat Washer	2
18	4600-5-0	Wheel Arm Weldment	1
19	62-458	1/2NC x 5" GD.5 Cap Screw	1
20	4600-0-15	Depth Strap - Left	1
21	62-554	5/8NC x 4-1/2" Stud	1
22	63-154	5/8NC Hex Jam Nut	2
23	62-563	5/8NC x 8" GD.5 Bolt	1
24	4700-41-1	Spacer	2
25	52-519	4 x 12 Presswheel Assembly - Chevron Tread	1
26	52-410	Presswheel Half - 4 x 12 Nylon	2
27	40-156	40mm Hollow Bore Bearing	1
28	51-212	Presswheel - Chevron 4 x 12	1
29	62-103	1/4NC x 2" GD.5 Cap Screw	6
30	64-101	1/4" STD. Flat Washer	12
31	63-101	1/4NC Lock Nut	6
32	62-482	1/2NC x 4-1/2" GD. 5 Carriage Bolt	12
33	62-409	5/8NC x 3" GD.5 Cap Screw	1
34	4600-0-3	Bolt Plate (Wide Spacing Full Gangs ONLY)	1
35	4600-0-22	Bolt Plate (Wide Spacing Half Gangs ONLY)	1
36	4600-0-21	Bolt Spacer - 6" Long (Serial No. 1001-2970 ONLY)	1
37	4600-0-11	Shank Box - 18-1/2" Long (Wide Spacing Gangs ONLY)	1
38	4600-0-10B	Shank Box - 14" Long	1
39	63-110	5/8NC Self Locking Nut	1
40	4600-0-18	Mounting Angle	2

TINE SHANK & LAMP BRACKET ASSEMBLY



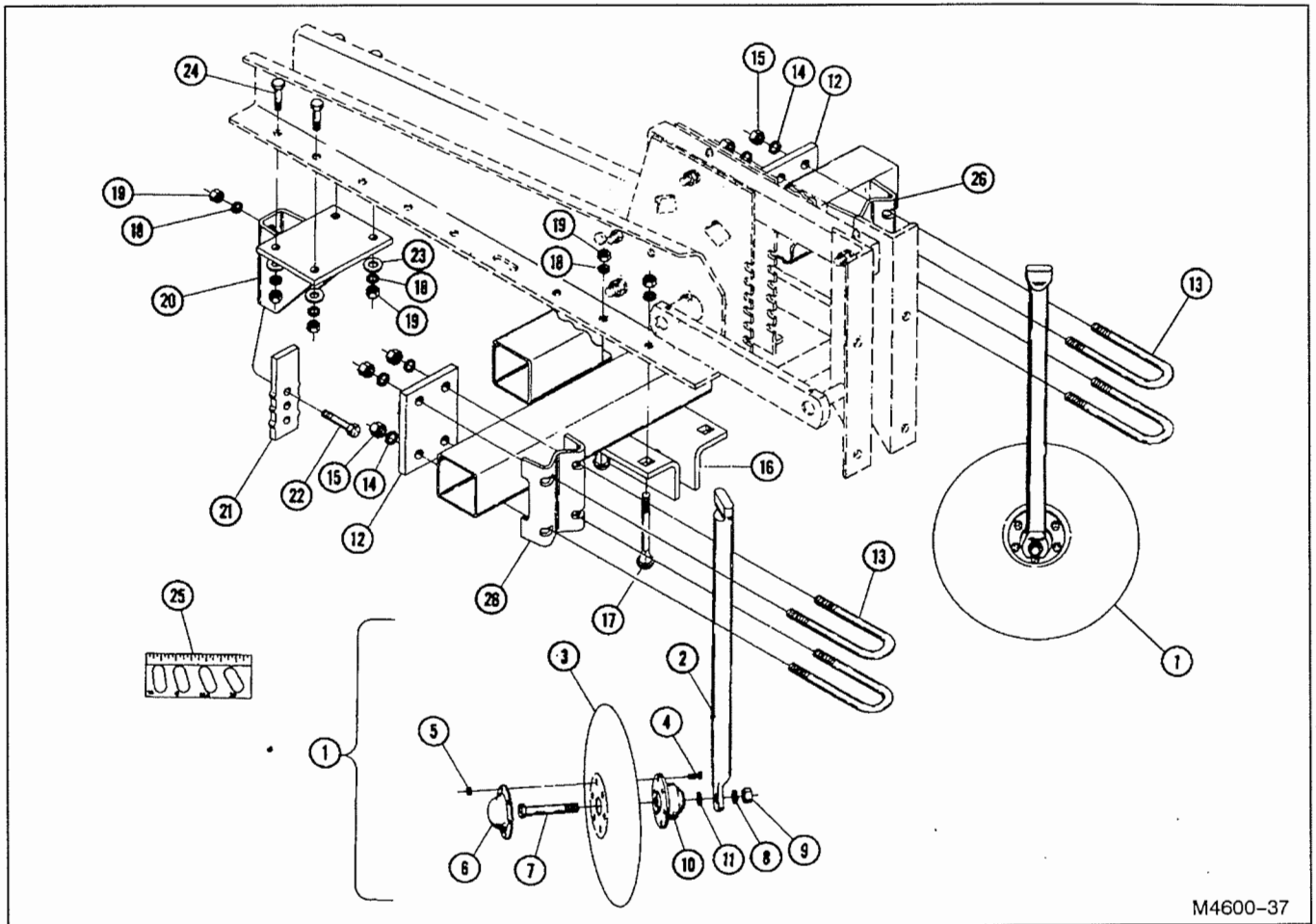
M4600-36
Rev.11/98

FOR MODELS - ALL

11/98

Item	Part Number	Part Description	Qty.
1	31-164	21" K-Tine Shank (Optional)	1
2	62-317	7/16NC x 1-1/2"GD. 5 #3 Plow Bolt	2
3	64-106	7/16" STD. Flat Washer	1
4	64-105	7/16" STD. Lock Washer	2
5	63-104	7/16NC Hex Nut	2
6	33-150	55° Sweep - Right Half	1
7	33-153	55° 6" Sweep	1
	33-152	55° 8" Sweep	1
	33-149	55° 10" Sweep	1
8	33-151	55° Sweep - Left Half	1
9	61-202	1/2"DIA. L-Bolt	1
10	4600-0-9	K-Tine Clamp	1
11	64-108	1/2" STD. Flat Washer	2
12	64-107	1/2" STD. Lock Washer	2
13	63-106	1/2NC Hex Nut	2
	4606-59-0	Lamp Bracket Assembly	1
14	62-131	7/16NC x 1" Carriage Bolt	1
15	74-144	Socket Lamp Bracket	1
16	4606-59-1	Lamp Bracket	1
17	64-105	7/16"STD. Lock Washer	1
18	63-104	7/16NC Hex Nut	1
19	5250-175-0	SMV Sign Assembly w/ Hardware	1
	4100-10-0	Shank Extension & Bolt Ass'm.	1
20	4100-0-9	Shank Extension	1
21	62-407	7/16NC x 1-1/2" GD. 5 Cap Screw	1
22	64-105	7/16" STD. Lock Washer	1
23	63-104	7/16NC Hex Nut	1
24	62-406	3/8NC x 2-1/4" GD. 5 #3 Plow Bolt	1
25	64-104	3/8" STD. Flat Washer	1
26	64-103	3/8" STD. Lock Washer	1
27	63-102	3/8NC Hex Nut	1
28	31-167	21" Edge-On K-Tine Shank 55° (Standard)	1

CONVENTIONAL DISC HILLER ASSEMBLY



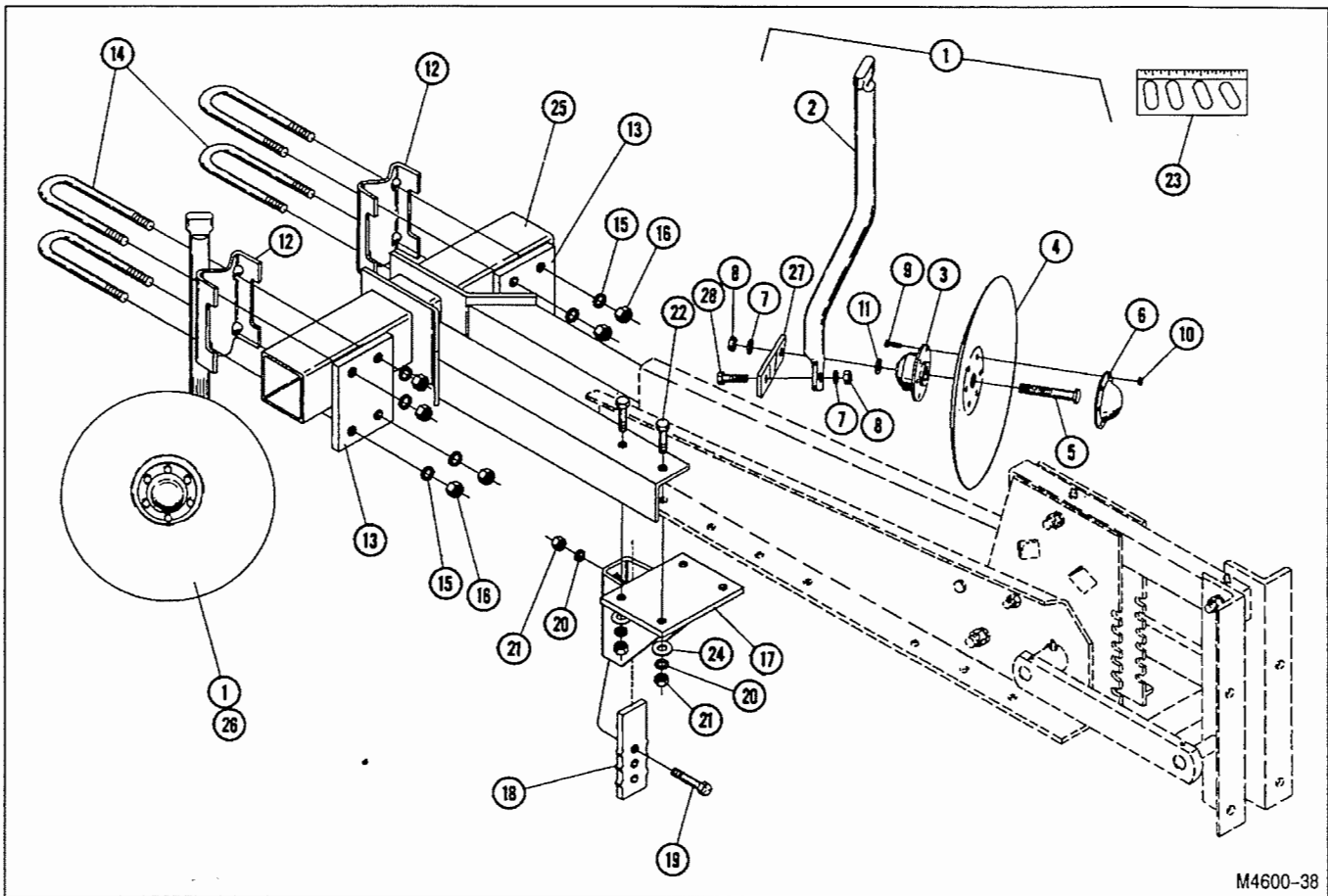
M4600-37

FOR MODELS - ALL

12/96

Item	Part Number	Part Description	Qty.
1	4600-25-0A	Conventional Disc Hiller Assembly	2
2	4600-25-1A	Conventional Disc Arm	2
3	30-206	16" Disc Blade	2
4	62-502	1/4NC x 5/8" GD. 5 Cap Screw	12
5	63-101	1/4NC Self Locking Nut	12
6	4600-25-2	Disc Bearing Cap	2
7	62-176	5/8NC x 3-1/2" GD. 5 Cap Screw	2
8	64-109	5/8" STD. Lock Washer	2
9	63-109	5/8NC Hex Nut	2
10	40-153	Bearing Disc Angle	2
11	64-152	Machinery Bushing	2
12	4604-51-2	Bolt Plate	2
13	61-209	5/8" DIA. U-Bolt	4
14	64-109	5/8" STD. Lock Washer	8
15	63-109	5/8NC Hex Nut	8
16	4600-0-18	Mounting Angle	2
17	62-482	1/2NC x 4-1/2" GD. 5 Carriage Bolt	6
18	64-107	1/2" STD. Lock Washer	11
19	63-106	1/2NC Hex Nut	11
20	4600-34-0	Shank Mount Weldment	1
21	31-151	Shank Reinforcement Plate	1
22	62-343	1/2NC x 2" GD. 5 Cap Screw	1
23	64-108	1/2" STD. Flat Washer	4
24	62-569	1/2NC x 1-1/2" GD.5 Cap Screw	4
25	4600-10-0	Disc Hiller Template (Includes #74-341 Decal)	1
26	4604-51-1	Disc Mounting Clamp	2

CENTER REAR DISC HILLER ASSEMBLY



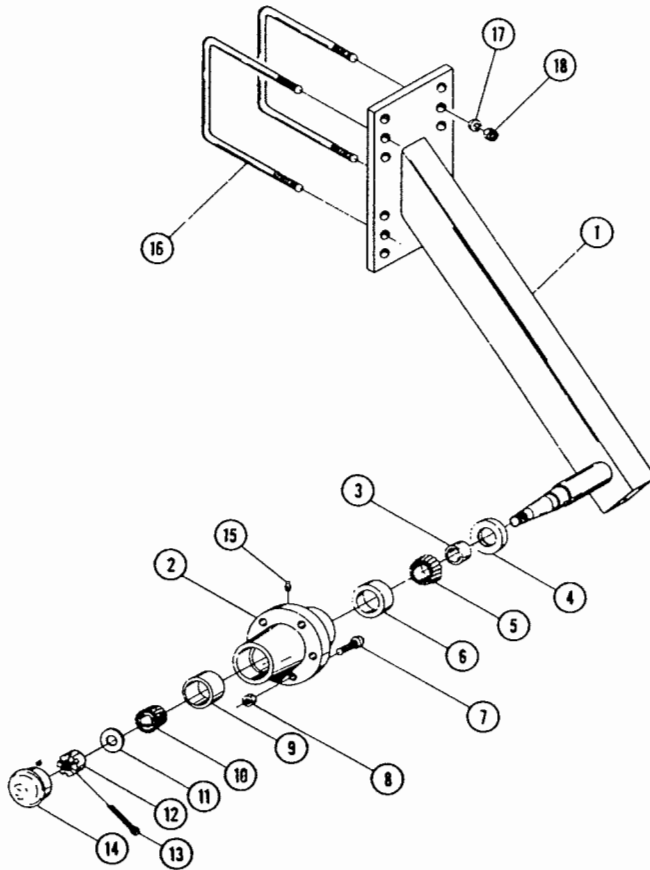
M4600-38

FOR MODELS - ALL

12/96

Item	Part Number	Part Description	Qty.
1	4600-24-0	Center Rear Disc Hiller Assembly	2
2	4600-24-1	Rear Center Disc Arm	2
3	40-153	Bearing Disc Flange	2
4	30-206	16" Disc Blade	2
5	62-176	5/8NC x 3-1/2" GD. 5 Cap Screw	2
6	4600-25-2	Disc Bearing Cap	2
7	64-109	5/8" STD. Lock Washer	2
8	63-109	5/8NC Hex Nut	2
9	62-502	1/4NC x 5/8" GD. 5 Cap Screw	6
10	63-101	1/4NC Self Locking Nut	6
11	64-152	Machinery Bushing	1
12	4604-51-1	Disc Mounting Clamp	2
13	4604-51-2	Bolt Plate	2
14	61-209	5/8" DIA. U-Bolt	4
15	64-109	5/8" STD. Lock Washer	8
16	63-109	5/8NC Hex Nut	8
17	4600-34-0	Shank Mount Weldment	1
18	31-151	Shank Reinforcement Plate	1
19	62-343	1/2NC x 2" GD. 5 Cap Screw	2
20	64-107	1/2" STD. Lock Washer	6
21	63-106	1/2NC Hex Nut	6
22	62-569	1/2NC x 1-1/2" GD.5 Cap Screw	4
23	4600-10-0	Disc Hiller Template with Decal (#74-341)	1
24	64-108	1/2" STD. Flat Washer	4
25	4600-28-0	Rear Disc Hiller Extension Weldment	1
26	4600-26-2	Right Tilt Bracket	1
27	4600-26-1	Left Tilt Bracket	1
28	62-169	5/8NC x 2" GD. 5 Cap Screw	1

GAUGE WHEEL ASSEMBLY



M4600-40
Rev.11/97

FOR MODELS - ALL

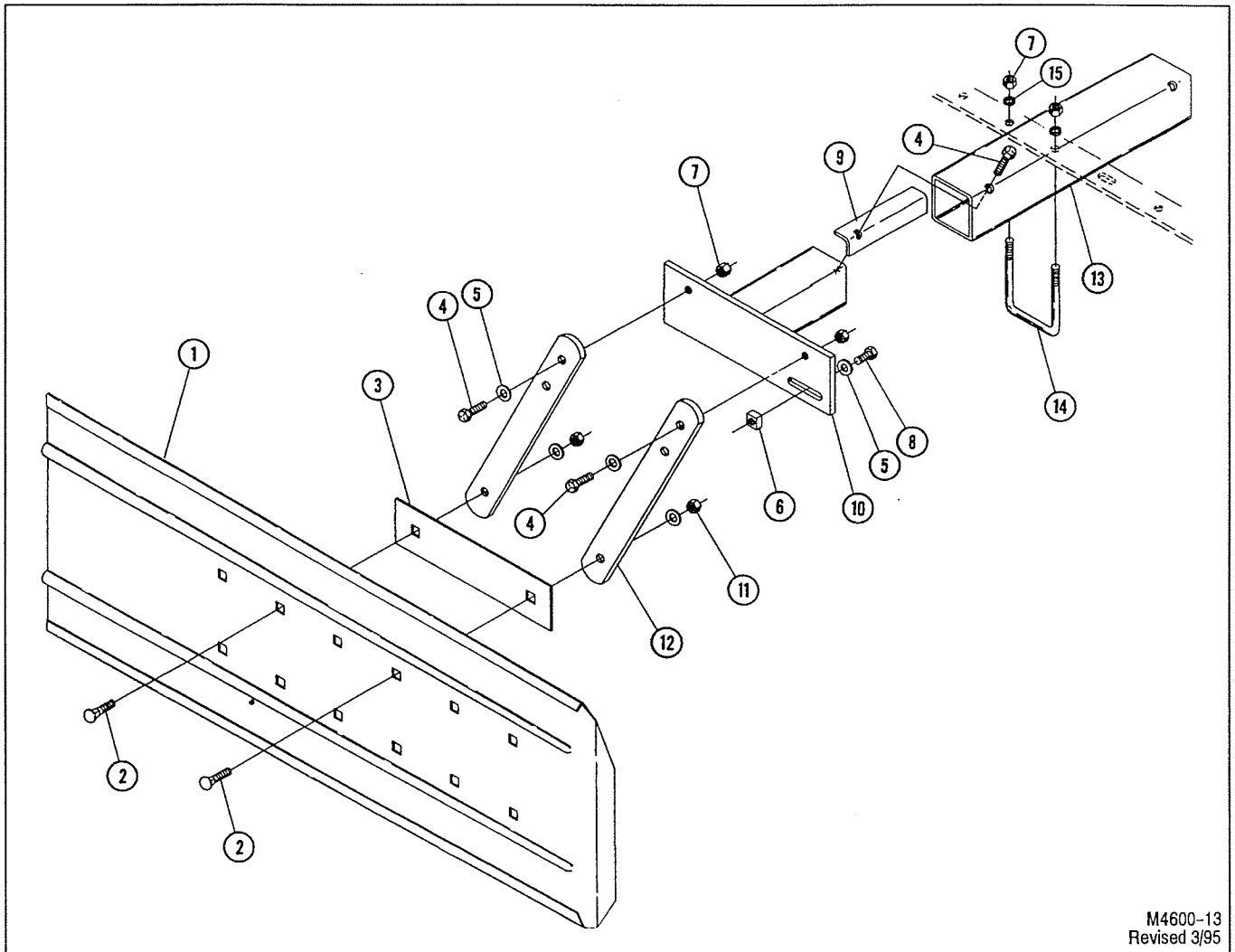
11/97

Item	Part Number	Part Description	Qty.
	★ 4600-50-0A	Right Gauge Wheel and Hub Assembly	1
	★ 4600-51-0A	Left Gauge Wheel and Hub Assembly	1
	● 4616-50-0	Right Gauge Wheel and Hub Assembly	1
	● 4616-52-0	Left Gauge Wheel and Hub Assembly	1
1	★ 4600-216-0	Repair Right Wheel Arm (Shown)	1
	★ 4600-215-0	Repair Left Wheel Arm (Opposite)	1
	● 4616-216-0	Repair Right Wheel Arm (Shown)	1
	● 4616-215-0	Repair Left Wheel Arm (Opposite)	1
2	4990-114-0	Repair Hub Assembly (Includes Items 6, 7, 8, 9, 15)	1
3	53-111	Wear Sleeve	1
4	42-115	Seal	1
5	41-112	Cone - Rear	1
6	41-208	Cup - Rear	1
7	62-498	Wheel Bolt	5
8	63-209	1/2NF Lug Nut	5
9	41-215	Cup - Front	1
10	41-117	Cone - Front	1
11	64-161	3/4" Heat Treated Flat Washer (Black)	1
12	63-201	3/4NF Slotted Hex Nut	1
13	60-725	5/32" DIA. x 1-1/2" Cotter Pin	1
14	52-305	Hub Cap	1
15	65-101	1/8 STD. Zerk	1
16	61-204	5/8" DIA. U-Bolt (For 7" x 7" Box)	2
17	64-109	5/8" STD. Lock Washer	4
18	63-109	5/8NC Hex Nut	4

★ Center Tool Bar Gauge Wheel

● Wing Tool Bar Gauge Wheel on Models 4612-0F4 & 4616-0F3

OPEN TOP SHIELD ASSEMBLY

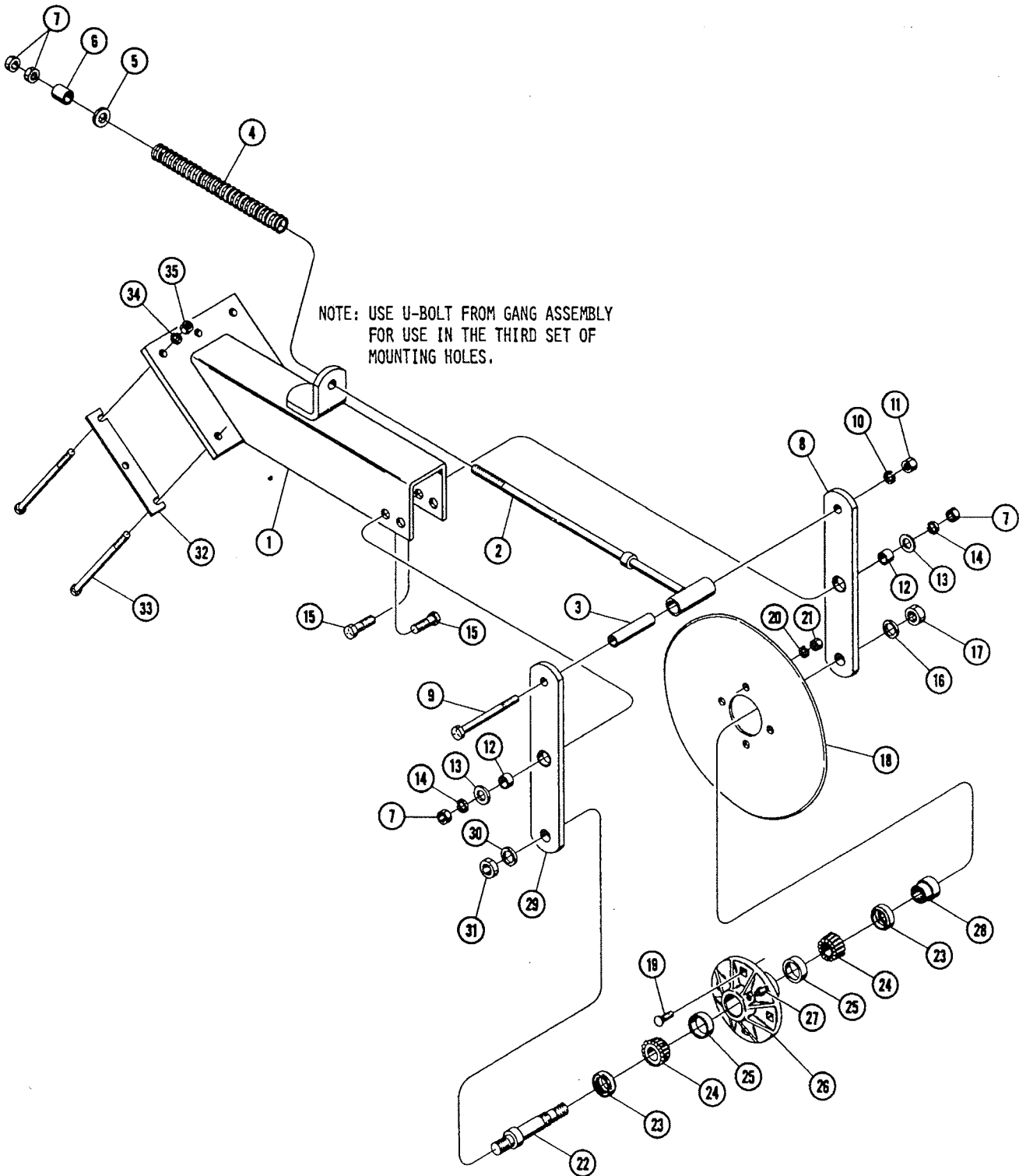


M4600-13
Revised 3/95

FOR MODELS - ALL

3/95

Item	Part Number	Part Description	Qty.
1	4650-0-34	Open Top Shield (3 Ft.)	1
	4650-0-37	Open Top Shield (4 Ft.) Shown	1
2	62-442	1/2NC x 1-1/2" Carriage Bolt	2
3	4650-0-36	Bolt Plate	1
4	62-420	1/2NC x 1-1/4" GD. 5 Cap Screw	3
5	64-108	1/2" STD. Flat Washer	5
6	63-159	1/2NC Square Nut	1
7	63-106	1/2NC Hex Nut	4
8	62-300	1/2NC x 1" GD 5 Cap Screw	1
9	4650-0-38	Adjustment Angle	1
10	4650-50-0	Left Mounting Weldment	1
	4650-51-0	Right Mounting Weldment	1
11	63-108	1/2NC Nylon-Top Lock Nut	2
12	4650-0-35A	Shield Arm	2
13	4600-0-37	Mounting Tube	1
14	61-210	1/2" DIA. U-Bolt	2
15	64-107	1/2" STD. Lock Washer	4

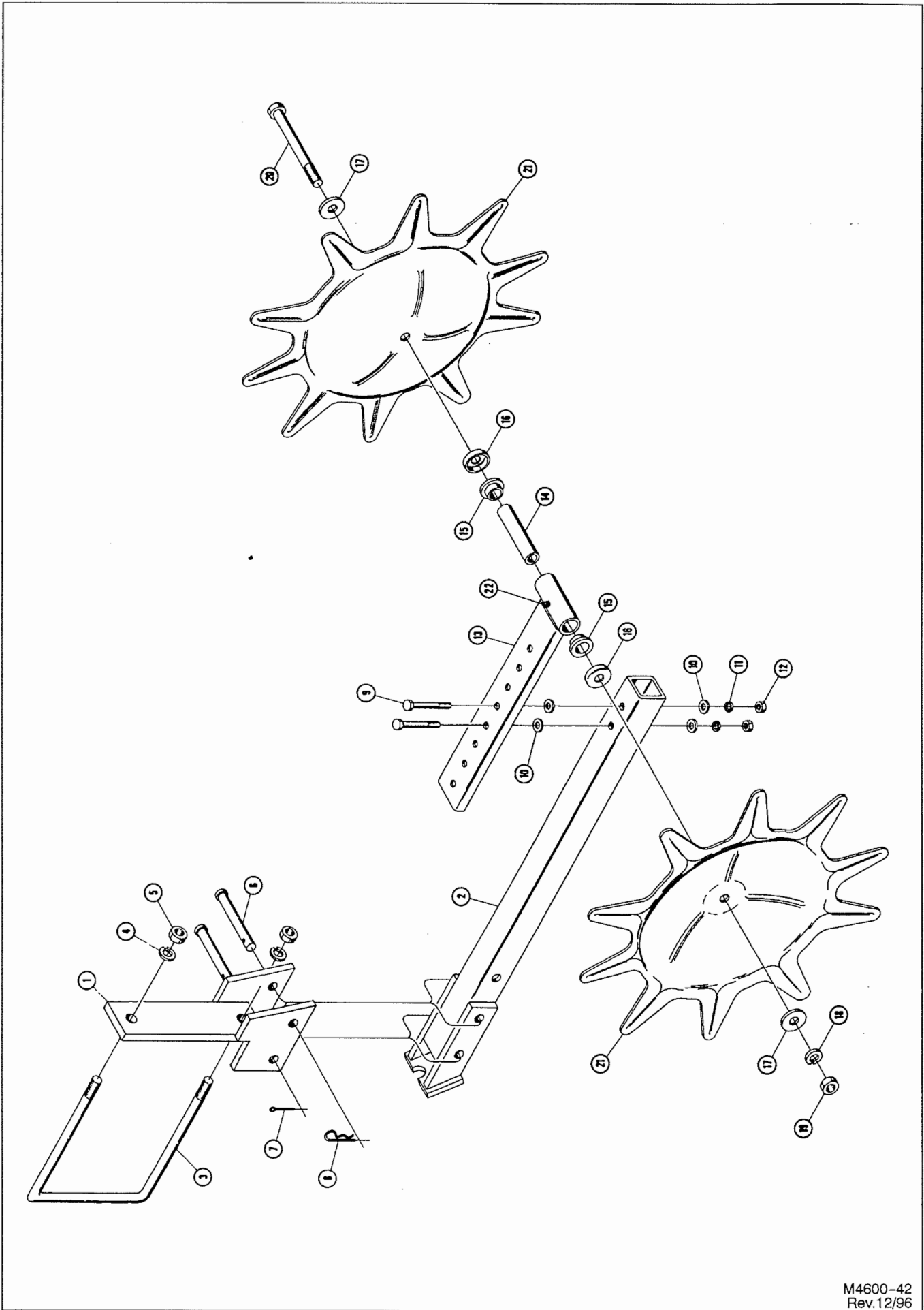


DISC STABILIZER ASSEMBLY

FOR MODELS - ALL

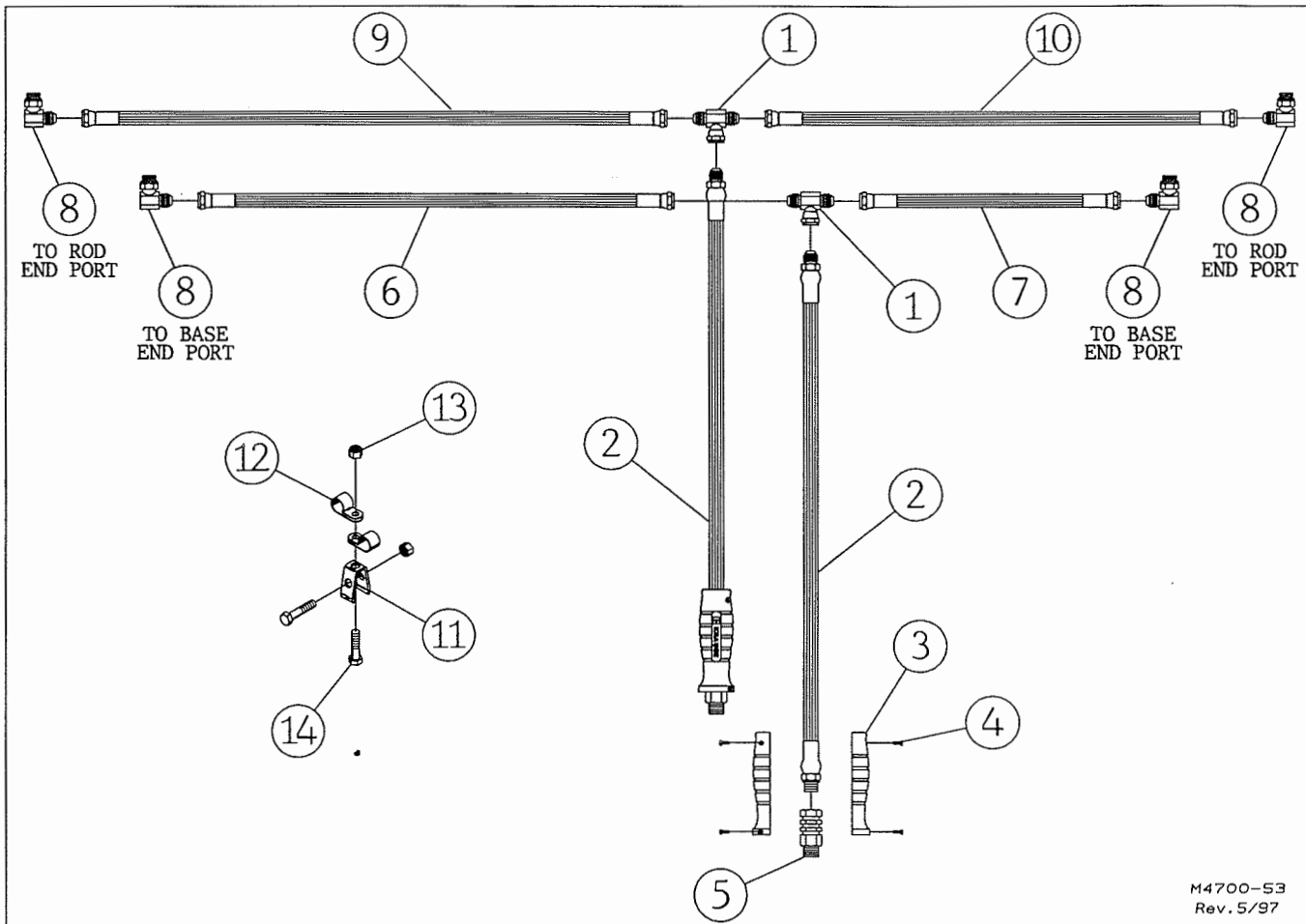
12/96

Item	Part Number	Part Description	Qty.
	4600-36-0	Disc Stabilizer Assembly	1
1	4600-37-0	Stabilizer Channel Weldment	1
2	4600-38-0	Spring Guide Rod Weldment	1
3	4600-36-3	Spacer (1" O.D. x 4-1/8" Long)	1
4	76-106	Spring	1
5	64-113	3/4" STD. Flat Washer	1
6	4600-36-2	Spacer (1-1/4" O.D. x 1-1/4" Long)	1
7	63-112	3/4NC Hex Nut	4
8	4600-39-0	Link Arm Assembly	1
9	62-393	5/8NC x 6" GD. 5 Cap Screw	1
10	64-109	5/8" STD. Lock Washer	1
11	63-109	5/8NC Hex Nut	1
12	4600-36-1	Spacer (1-1/4" O.D. x 5/8" Long)	2
13	64-113	3/4" STD. Flat Washer	2
14	64-112	3/4" STD. Lock Washer	2
15	62-421	3/4NC x 2" GD. 5 Cap Screw	2
16	63-118	1NC Jam Nut	1
17	64-118	1" STD. Lock Washer	1
18	30-201	Coulter Blade	1
19	62-474	1/2NC x 1-1/2" GD. 5 Carriage Bolt	4
20	64-107	1/2" STD. Lock Washer	4
21	63-106	1/2NC Hex Nut	4
	4600-40-0	Hub Assembly	1
22	4600-40-1	Spindle	1
23	42-125	Seal	2
24	41-117	Cone	2
25	41-215	Cup	2
26	5210-445-1	Coulter Hub Casting	1
27	65-101	1/8NPT STD. Zerk	1
28	4600-40-2	Threaded Bushing	1
29	4600-39-0	Link Arm Assembly	1
30	64-118	1" STD. Lock Washer	1
31	63-118	1NC Jam Nut	1
32	4600-0-23	Shim - Disc Stabilizer	Spec.
33	62-484	5/8NC x 9" GD. 5 Cap Screw (For 7" x 7" Tool Bar)	4
34	64-109	5/8" STD. Lock Washer	4
35	63-109	5/8NC Hex Nut	4



M4600-42
Rev.12/96

HYDRAULIC HOSE KIT



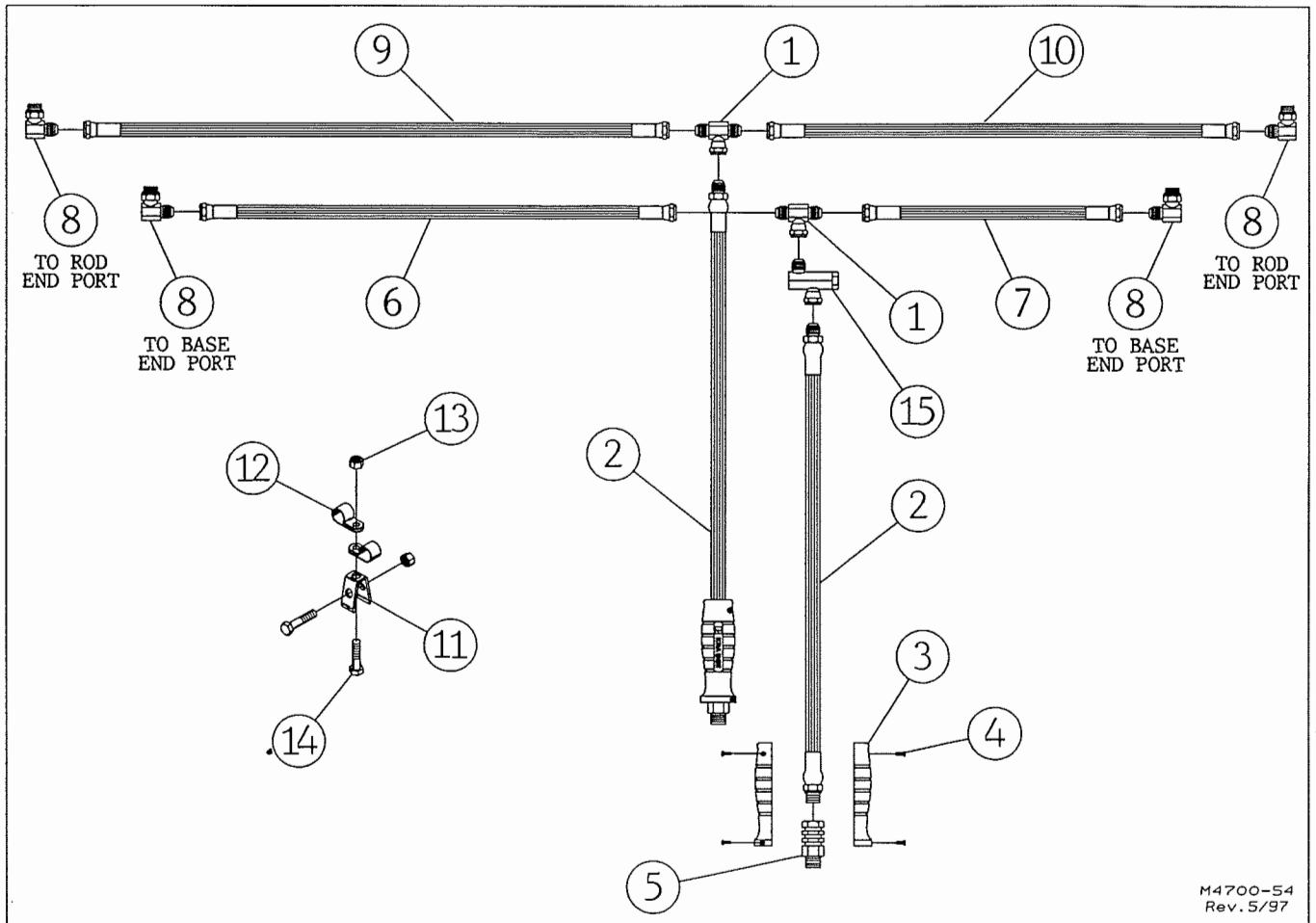
M4700-53
Rev. 5/97

FOR MODELS - 4606-0F4, 4608-0F3, 4608-0F4, 4712-0F3

5/97

Item	Part Number	Part Description	Qty.
1	25-373	JIC Male to Female Swivel Branch Tee	2
2	24-2104R	Hose Assembly 3/8" x 57" 100R2 Rubber 3/4JIC to 3/4ORB	2
3	25-2289	Hose Grip Half, Red	1
	25-2290	Hose Grip Half, Yellow	1
	25-2291	Hose Grip Half, Black	2
4	62-656	Hose Grip Screw	8
5	24-2295	Hose Grip Core Fitting	2
6	24-246R	JIC Hose 3/8" DIA. x 28" (4606F4 & 4608F3)	1
	24-256R	JIC Hose 3/8" DIA. x 48" (4608F4)	1
	24-207R	JIC Hose 3/8" DIA. x 58" (4612F3)	1
7	24-235R	JIC Hose 3/8" DIA. x 16" (4606F4 & 4608F3)	1
	24-202R	JIC Hose 3/8" DIA. x 36" (4608F4)	1
	24-239R	JIC Hose 3/8" DIA. x 46" (4612F3)	1
8	4956-75-0	Restrictor Assembly	4
9	24-256R	JIC Hose 3/8" DIA. x 48" (4606F4 & 4608F3)	1
	24-209R	JIC Hose 3/8" DIA. x 68" (4608F4)	1
	24-212R	JIC Hose 3/8" DIA. x 79" (4612F3)	1
10	24-202R	JIC Hose 3/8" DIA. x 36" (4606F4 & 4608F3)	1
	24-205R	JIC Hose 3/8" DIA. x 55" (4608F4)	1
	24-208R	JIC Hose 3/8" DIA. x 65" (4612F3)	1
11	5210-0-18	Hose Clip (Clips to any Tool Bar U-Bolt)	1
12	25-127	3/4" I.D. Hose Clamp	2
13	63-134	3/8NC Nylon-Top Lock Nut	2
14	62-111	3/8NC x 1-1/2" GD.5 Cap Screw	2

HYDRAULIC HOSE KIT



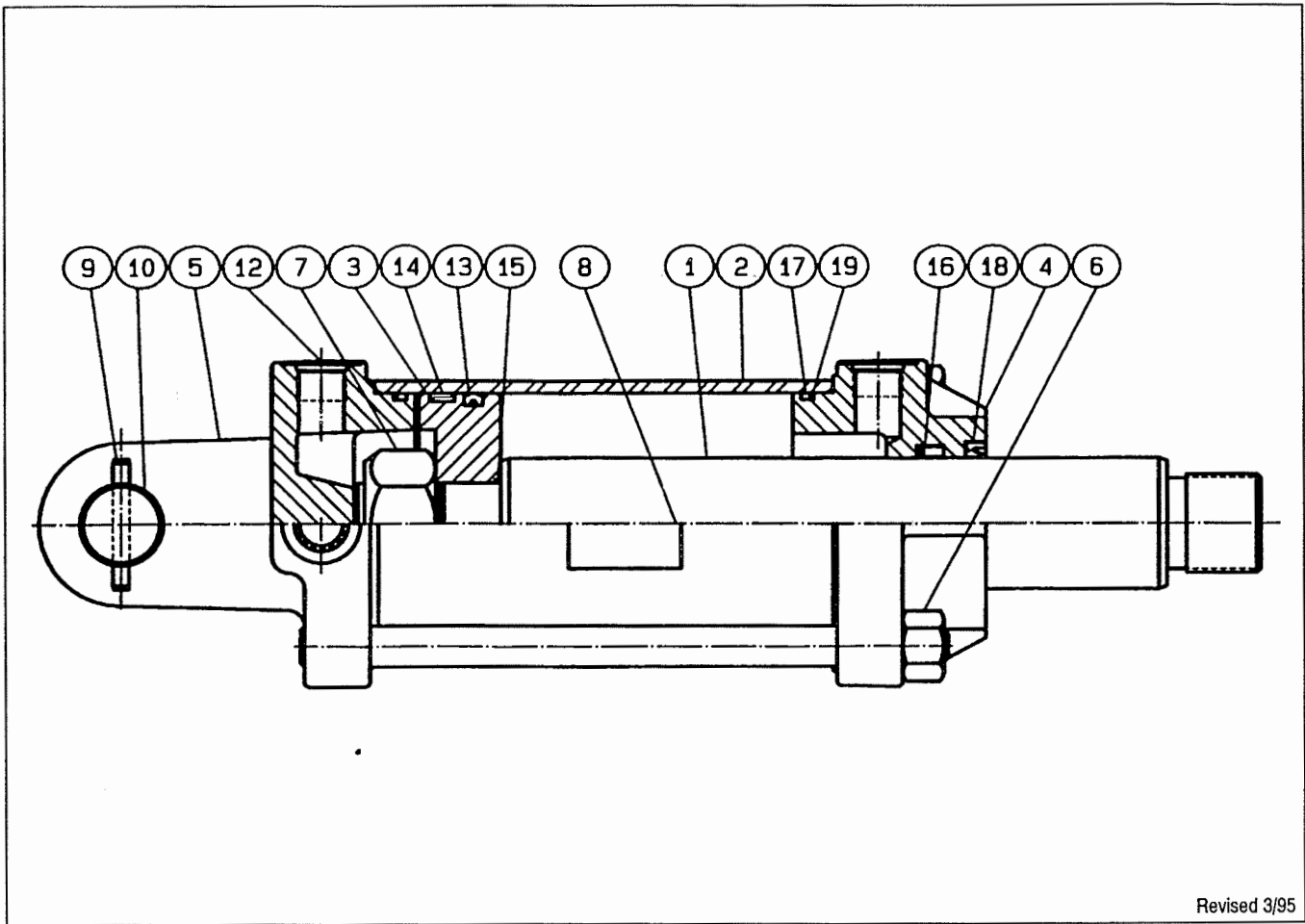
M4700-54
Rev. 5/97

FOR MODELS - 4612-0F4, 4616-0F3

5/97

Item	Part Number	Part Description	Qty.
1	25-373	JIC Male to Female Swivel Branch Tee	2
2	24-2104R	Hose Assembly 3/8" x 57" 100R2 Rubber 3/4JIC to 3/4ORB	2
3	25-2289	Hose Grip Half, Red	1
	25-2290	Hose Grip Half, Yellow	1
	25-2291	Hose Grip Half, Black	2
4	62-656	Hose Grip Screw	8
5	25-2295	Hose Grip Core Fitting	2
6	24-285R	JIC Hose 3/8" DIA. x 82"	1
7	24-210R	JIC Hose 3/8" DIA. x 74"	1
8	4956-75-0	Restrictor Assembly	4
9	24-220R	JIC Hose 3/8" DIA. x 110"	1
10	24-218R	JIC Hose 3/8" DIA. x 100"	1
11	5210-0-18	Hose Clip (Clips to any Tool Bar U-Bolt)	2
12	25-127	3/4" I.D. Hose Clamp	4
13	63-134	3/8NC Nylon-Top Lock Nut	4
14	62-111	3/8NC x 1-1/2" GD.5 Cap Screw	4
15	25-324	In-Line Restrictor	1

PRINCE HYDRAULIC CYLINDER ASSEMBLY



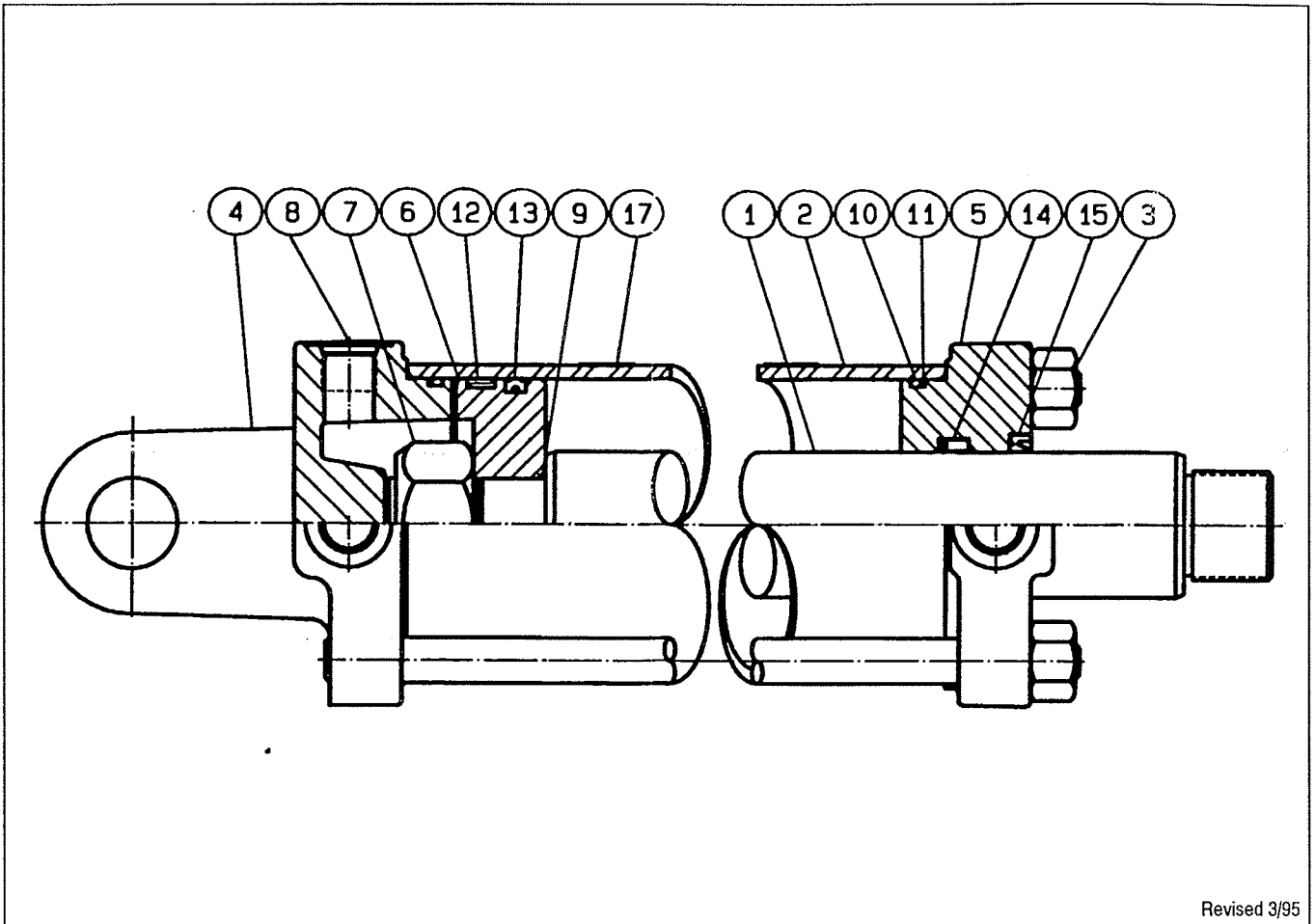
Revised 3/95

21-175 4" x 16" Prince Hydraulic Cylinder Assembly (NO CLEVIS) 16" Stroke

5/97

Item	Part Number	Part Description	Qty.
1	21-931	Piston Rod	1
2	21-282	Tube	1
3	21-879	Piston	1
4	21-894	Gland	1
5	21-738	Butt	1
6	21-288	Tie Rod	4
7	21-286	Lock Nut	1
8	74-113	Decal - Cylinder WARNING	1
9	21-860	Roll Pin	2
10	21-872	Clevis Pin	1
11			
12	21-831	Port Plug	3
13	★	Crown Seal	1
14	★	Bearing Ring	1
15	★	O-Ring	1
16	★	U-Cup	1
17	★	O-Ring	2
18	★	Wiper	1
19	★	Back-Up Washer	2
	21-895	Seal Kit (★ Items Included in Kit)	

PRINCE HYDRAULIC CYLINDER ASSEMBLY



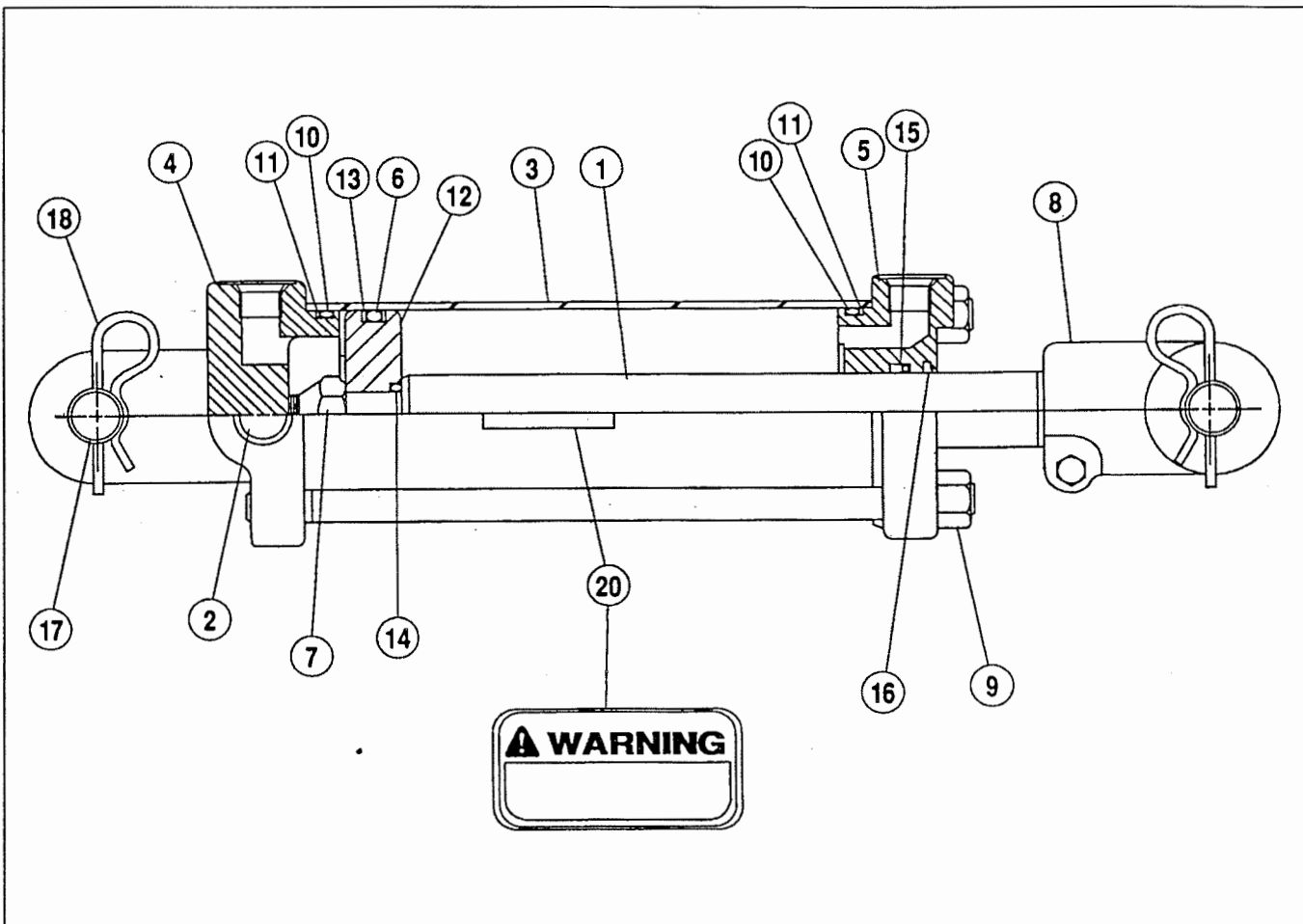
Revised 3/95

21-174 4" x 24" Prince Hydraulic Cylinder Assembly (NO CLEVIS) 24" Stroke Rod - 2"DIA.

5/97

Item	Part Number	Part Description	Qty.
1	21-896	Piston Rod	1
2	21-222	Tube	1
3	21-897	Tie Rod	4
4	21-738	Butt Casting	1
5	21-898	Gland Casting	1
6	21-879	Piston	1
7	21-286	Lock Nut	1
8	21-831	Port Plug	4
9	★	O-Ring	2
10	★	O-Ring	1
11	★	Back-Up Washer	2
12	★	Bearing Ring	1
13	★	Crown Seal	1
14	★	U-Cup	1
15	★	Wiper	1
16			2
17	74-113	Decal - Cylinder WARNING	1
	21-895	Seal Kit (★ Items Included in Kit)	

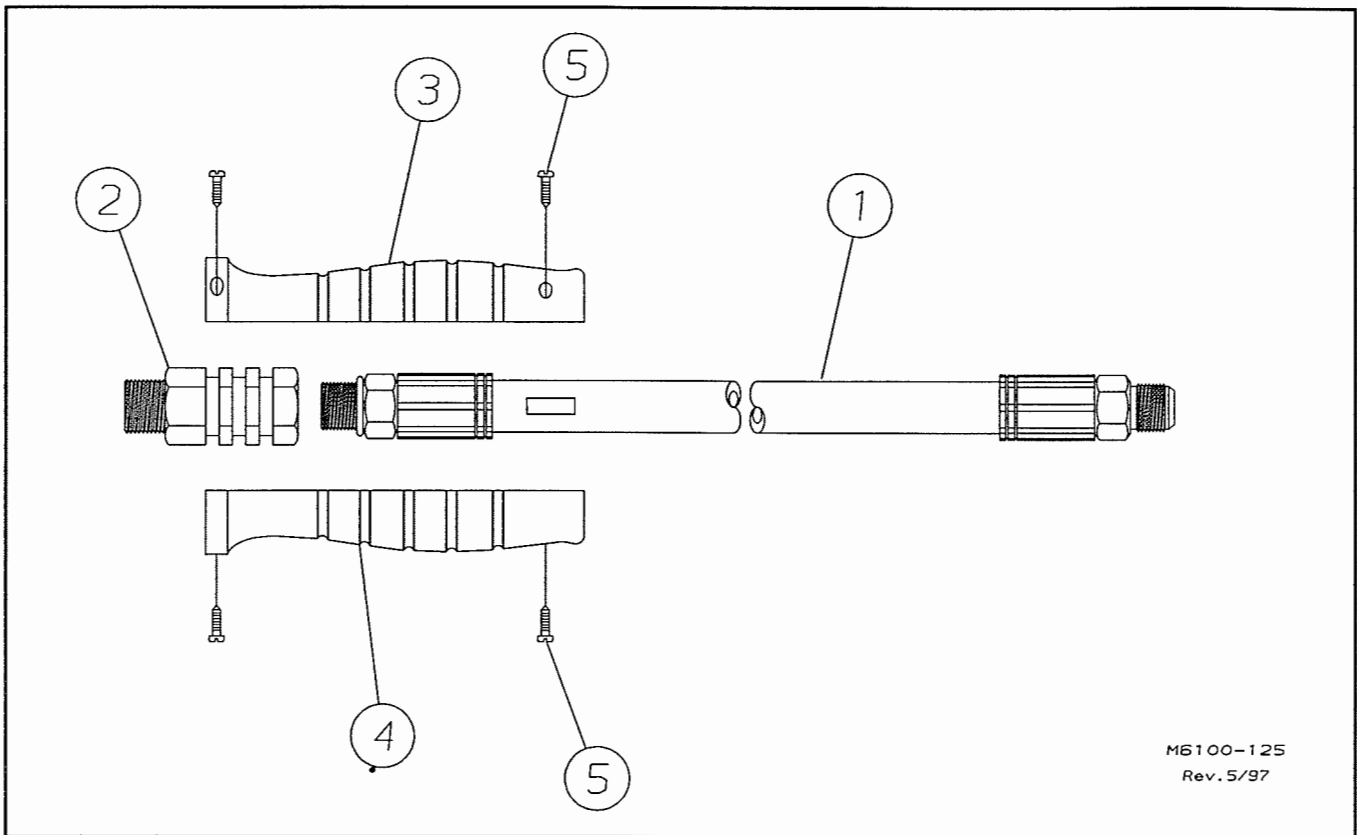
PRINCE HYDRAULIC CYLINDER ASSEMBLY



21-157 3-1/2" x 18" Prince Hydraulic Cylinder Assembly 5/97
 Retracted - 28-1/4" Extended - 46-1/4" Stroke - 18" Rod Dia. - 1-3/8"

Item	Part Number	Part Description	Qty.
1	21-724	Piston Rod	1
2	21-404	#8 SAE Plug	1
3	21-725	Tube	1
4	21-421	Butt Casting	1
5	21-727	Gland Casting	1
6	*	O-Ring	1
7	21-463	Lock Nut	1
8	21-374	Clevis Assembly	1
9	21-726	Tie Rod	4
10	*	O-Ring	2
11	*	Back-Up Washer	2
12	21-728	Piston	1
13	*	Back-Up Washer	2
14	*	O-Ring	1
15	*	U-Cup	1
16	*	Wiper	1
17	21-376	Clevis Pin	2
18	21-219	Hair Pin Clip	4
19			
20	74-113	Decal - Cylinder WARNING	1
	21-733	Seal Kit (* Items Included in Kit)	

HYDRAULIC HOSE WITH PLASTIC GRIP ASSEMBLIES



M6100-125
Rev. 5/97

5/97

Item	Part Number	Part Description	Qty.
	★ 4990-75-0	1/2" x 92" Hose with Red/Red Grip Assembly	1
1	24-330R	1/2" DIA. x 92" Black 2W JIC/ORB Hose	1
2	25-2295	3/4" ORB to 1/2 NPT Hydraulic Fittings	1
3	25-2289	Hose Grip Half - Red	1
4	25-2289	Hose Grip Half - Red	1
5	62-656	Screw	4
	★ 4990-76-0	1/2" x 92" Hose with Yellow/Yellow Grip Assembly	1
1	24-330R	1/2" DIA. x 92" Black 2W JIC/ORB Hose	1
2	25-2295	3/4" ORB to 1/2 NPT Hydraulic Fitting	1
3	25-2290	Hose Grip Half - Yellow	1
4	25-2290	Hose Grip Half - Yellow	1
5	62-656	Screw	4
	4600-77-0	3/8" x 57" Hose with Red/Black Grip Assembly	1
1	24-2104R	3/8" DIA. x 57" 2W Black JIC/ORB Hose	1
2	25-2295	3/4" ORB to 1/2 NPT Hydraulic Fitting	1
3	25-2289	Hose Grip Half - Red	1
4	25-2291	Hose Grip Half - Black	1
5	62-656	Screw	4
	4600-78-0	3/8" x 57" Hose with Yellow/Black Grip Assembly	1
1	24-2104R	3/8" DIA. x 57" 2W Black JIC/ORB Hose	1
2	25-2295	3/4" ORB to 1/2 NPT Hydraulic Fitting	1
3	25-2290	Hose Grip Half - Yellow	1
4	25-2291	Hose Grip Half - Black	1
5	62-656	Screw	4
★ Used for Rear Wheel Assist ONLY			

ASSEMBLY SECTION

THE FOLLOWING SECTION ILLUSTRATES A GENERAL METHOD FOR THE ASSEMBLY OF THIS SERIES KRAUSE TILLAGE TOOL. YOU MUST KNOW THE MODEL NUMBER OF THE UNIT BEING ASSEMBLED WHENEVER MAKING REFERENCE TO THIS SECTION. THE FOLLOWING PICTURES AND DRAWINGS WILL SHOW BOLTS, PINS, NUTS AND ETC., WITH THE DESCRIPTIVE SIZE AND LENGTHS IN THE ACCOMPANYING PARAGRAPH AND A PARTS LISTING REFERENCE PAGE NUMBER. IF ANY DIFFICULTY SHOULD BE ENCOUNTERED DURING THE ASSEMBLY, RECHECK THE ILLUSTRATIONS, ASSEMBLY STEPS AND PARTS LIST DRAWINGS.

PROPER BOLT USE

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

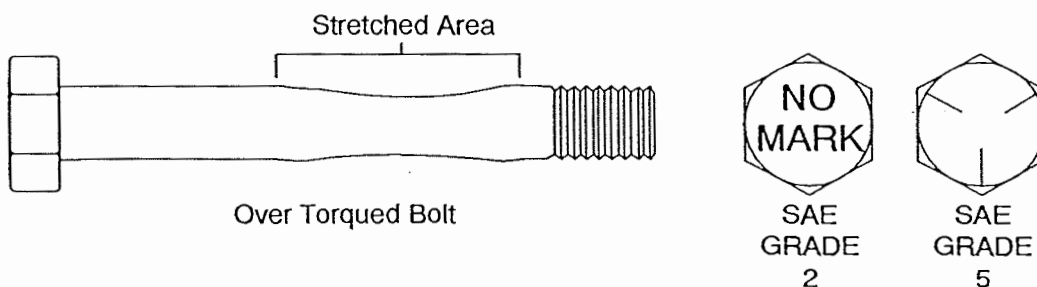
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

Tighten plastic insert or crimped steel-type lock nuts to approximately 110 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

NOTE: "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.

BOLT SIZE	BLACK OR PLATED BOLTS		OILED BOLTS	
	GRADE 2	GRADE 5	GRADE 2	GRADE 5
3/8"	20	33	16	26
7/16"	32	52	26	41
1/2"	50	80	39	63
5/8"	100	160	78	125
3/4"	175	280	140	225
7/8"	175	450	140	360
1"	270	675	210	540
1-1/8"	375	850	300	675
1-1/4"	530	1200	425	950
1-1/2"	930	1400	725	1250
TIE ROD TIGHTENING TORQUE				
1-1/2" Dia. Rods		1000 Ft. Lbs.		
1-3/4" Dia. Rods		1400 Ft. Lbs.		
2" Dia. Rods		1600 Ft. Lbs.		



ASSEMBLY INSTRUCTIONS

STUDY THE NAMES AND LOCATIONS OF THE PARTS AND FAMILIARIZE YOURSELF WITH THE ROW CROP CULTIVATOR BEFORE STARTING THE ASSEMBLY. READING THE STEP BY STEP INSTRUCTIONS THAT FOLLOW WILL BE HELPFUL.

SAFETY



READ ALL THE SAFETY DECALS ON THE IMPLEMENT AND REVIEW THE SAFETY FIRST SUGGESTIONS ON THE BACK OF THIS MANUAL TO REFRESH YOUR MEMORY. WATCH FOR THE SAFETY SYMBOL IN THIS MANUAL AND READ THE INFORMATION THAT FOLLOWS. THIS IS FOR YOUR OWN PROTECTION.

ASSEMBLY

Select an area for the assembly that will be large enough to accommodate the completed row crop cultivator. The surface of the work area should be as level as possible. Use the proper hand tools to insure proper bolt tightness. Refer to the preceding page titled "Proper Bolt Use" for the recommended torque values for different sizes of bolts.


PART LOCATIONS

FRONT – The front of the frame can be determined by the location of the name plate that has been attached to the front side of the tool bar.

RIGHT and LEFT sides can be established by standing behind the frame and looking forward toward the front, or the direction of travel.

ASSEMBLY STEPS

Shown here is one method of assembly that can be accomplished with a small crew of assemblers. Each step of assembly is accompanied by a photograph or illustration with part names and bolt sizes listed.

 **Warning:** Always attach chains securely. If a chain would break, the recoil action could cause the loose end to whip in any direction and injure any person nearby.

Proof load rating of chain must equal or exceed 5 times the weight of the chain being used.

MODEL NUMBER

Know the model number of the row crop cultivator being assembled. Use the model number whenever referring to the assembly, parts listing pages or placement drawings. The number is stamped on the NAME PLATE which is located on the front side of the tool bar.



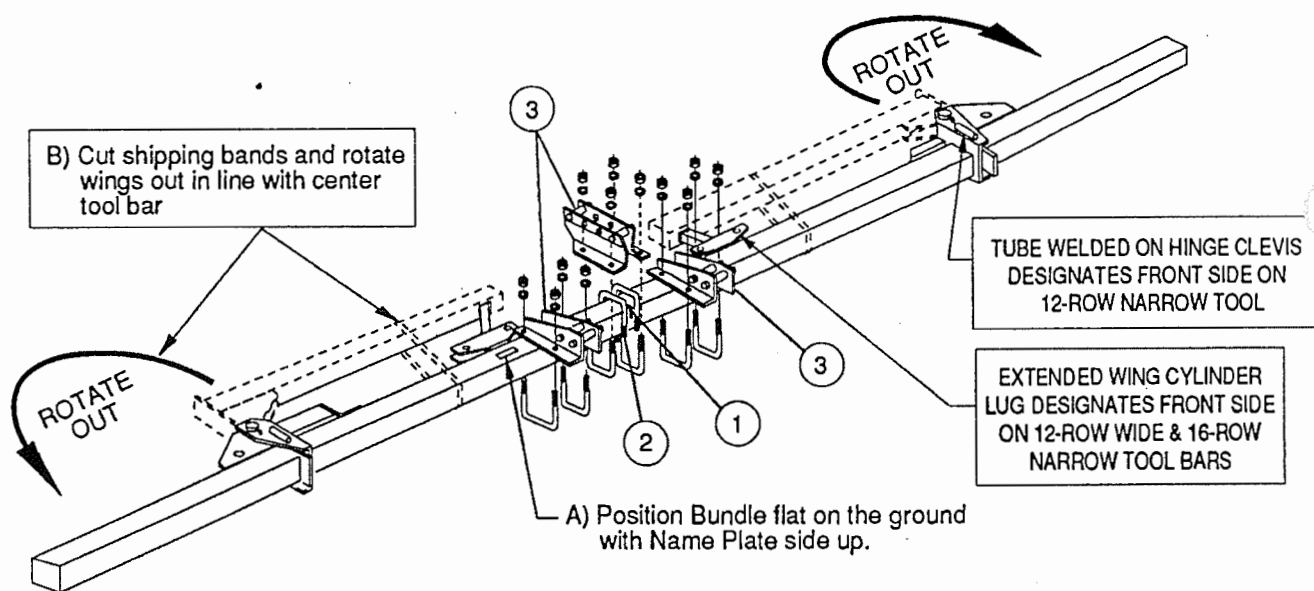
cart.42

I. 3-POINT HITCH AND TOOL BAR MOUNTED ON TRACTOR

! Caution: Follow this procedure for Wing Models:

- a) Set the tool bar bundle flat on the ground with the nameplate side up.
- b) Cut the shipping bands and rotate the wings out in line with the center tool bar before attaching 3-Point hitch.

NOTE: 12-Row and 16-Row Center Tool Bars have a slight bow built in to compensate for deflection during field operation.

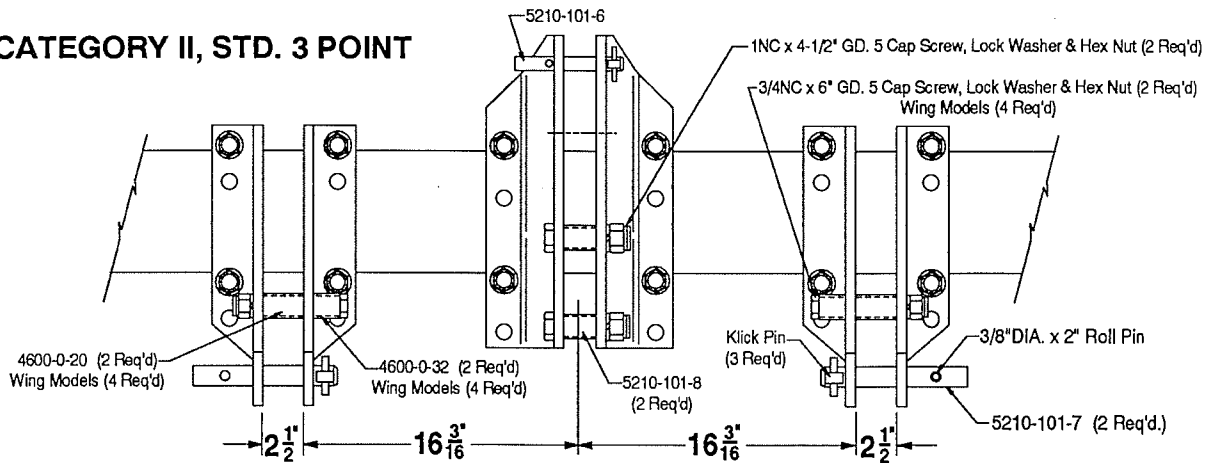


M4600-66

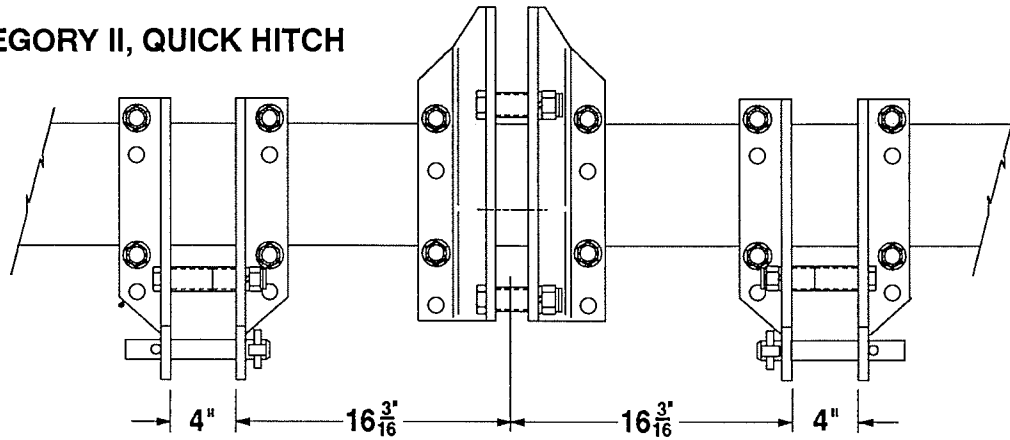
1. Make a mark at the center of the tool bar for 3-Point assembly. NOTE: The 3-Point Hitch is mounted on the same side as the name plate.
2. Position TWO 5/8" DIA. Gang U-Bolts onto the tool bar before attaching the Top Hitch Brackets.
3. Refer to page A4 for the correct locations and parts for the Category II or III tractors with or without quick hitch.

NOTE: If the cultivator is equipped with rolling shields, the lower hitch brackets are reversed on some row spacings.

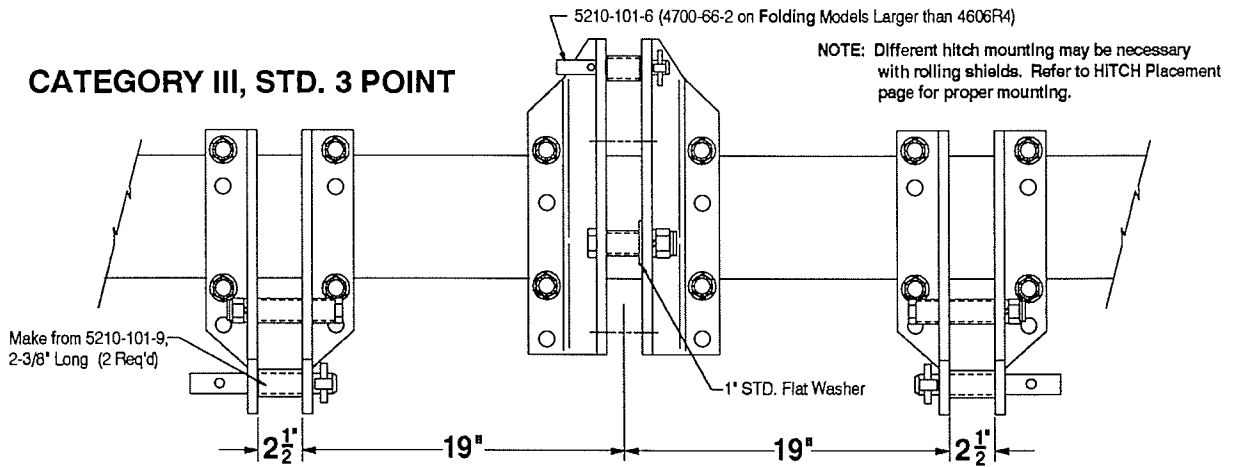
CATEGORY II, STD. 3 POINT



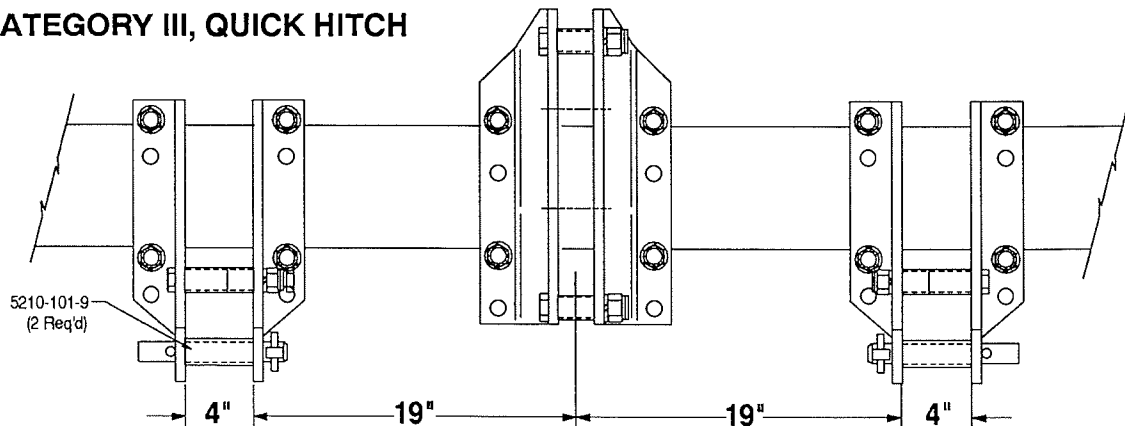
CATEGORY II, QUICK HITCH



CATEGORY III, STD. 3 POINT

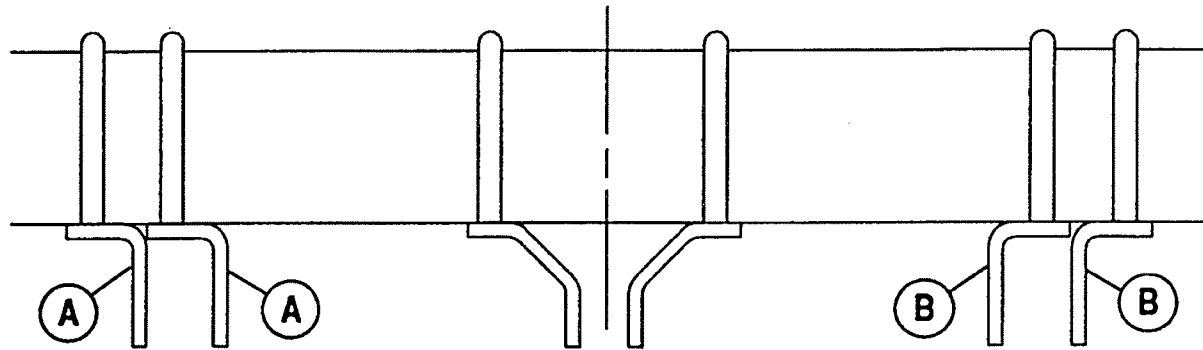


CATEGORY III, QUICK HITCH

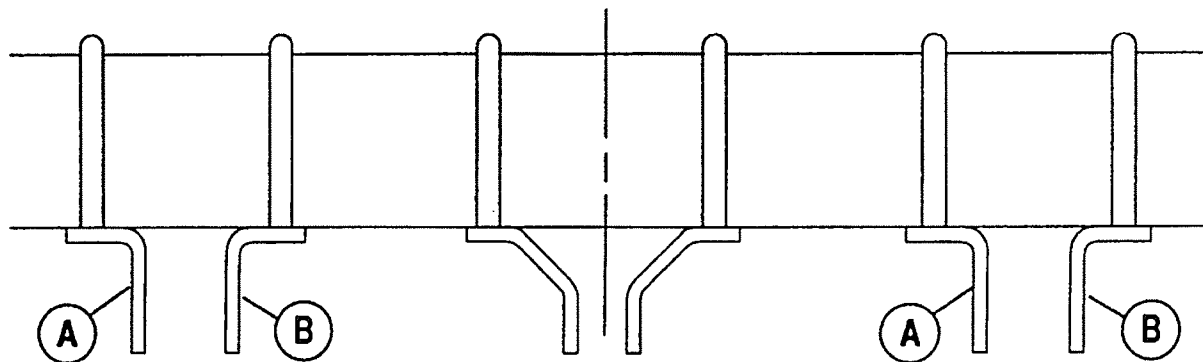


HITCH PLACEMENT WITH ROLLING SHIELDS

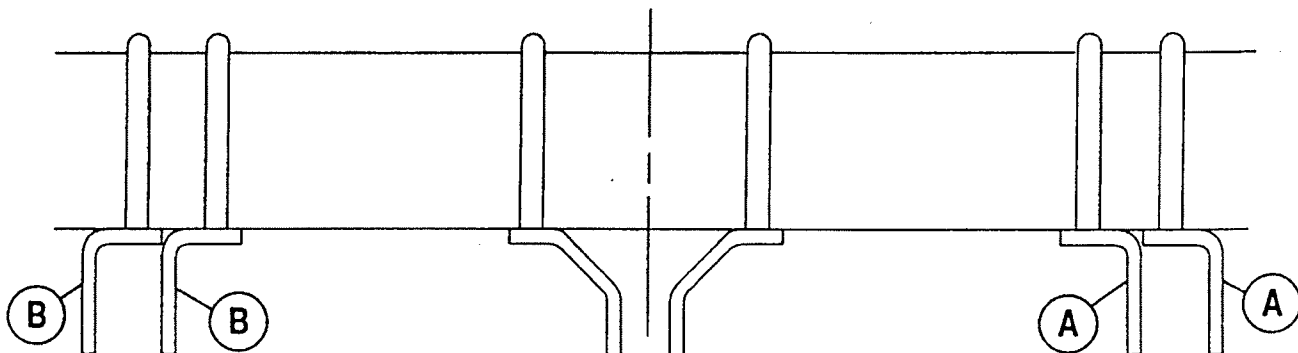
- 28", 30" SPACING WITH CATEGORY II QUICK HITCH
- 28", 30" SPACING WITH CATEGORY II STD. 3-POINT
- 36" SPACING WITH CATEGORY III QUICK HITCH
- 36" SPACING WITH CATEGORY III STD. 3-POINT



- 36", 38", 40" SPACING WITH CATEGORY II QUICK HITCH
- 36" SPACING WITH CATEGORY II STD. 3-POINT
- 28", 30", 38", 40" SPACING WITH CATEGORY III QUICK HITCH
- 28", 30", 38", 40" SPACING WITH CATEGORY III STD. 3-POINT



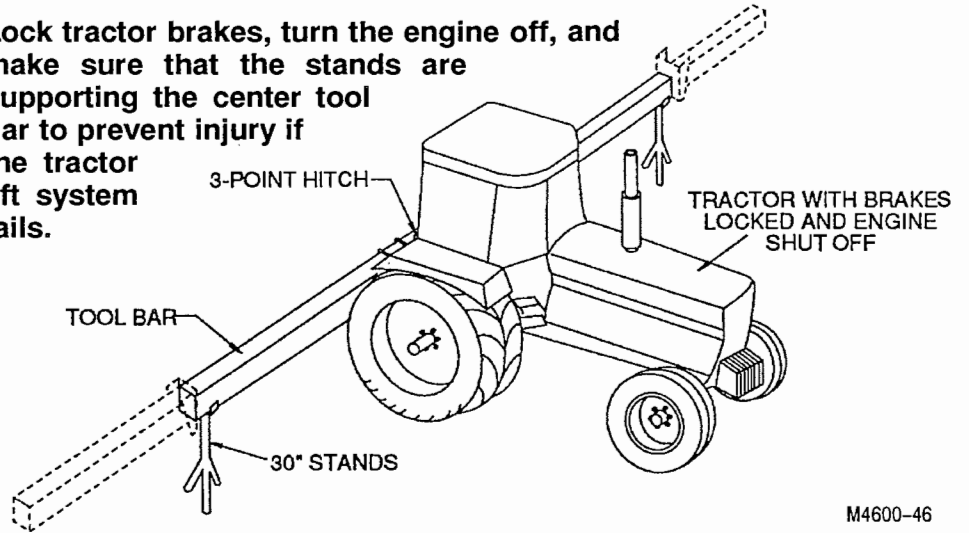
- 38", 40" SPACING WITH CATEGORY III STD. 3-POINT



- Mount the tool bar to a tractor 3-Point Hitch and support the center tool bar (not wings) with stands.



Caution: Lock tractor brakes, turn the engine off, and make sure that the stands are supporting the center tool bar to prevent injury if the tractor lift system fails.

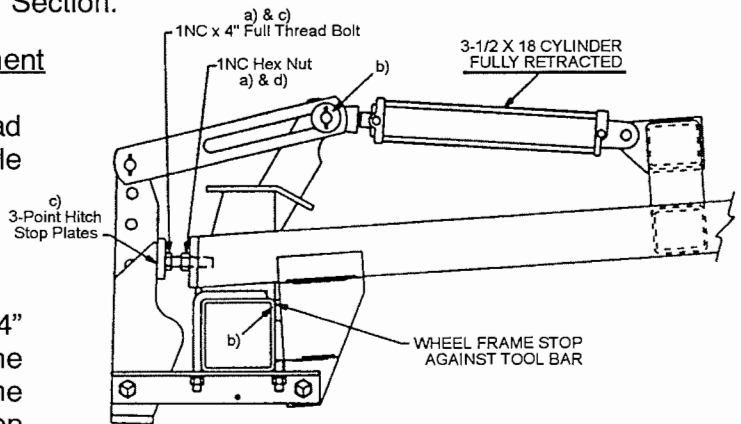


- Rear Assist Wheel (OPTIONAL) For Models 4612-0F4 & 4616-0F3

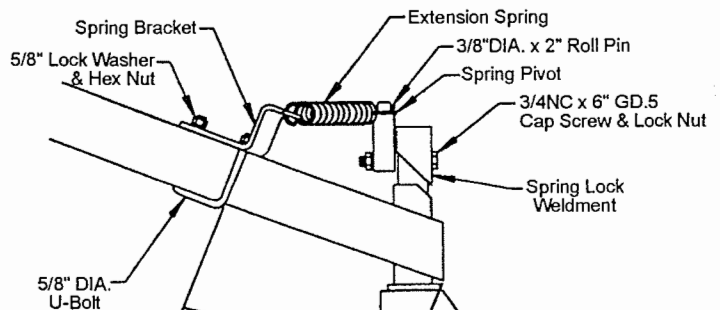
Assemble the top 3-Point Mast and the Rear Assist Frame and Castor Wheel as shown on page P16 & P17 in the Parts Section.

3-Point Hitch Stop Bolt Adjustment

- Screw the 1NC x 4" Full Thread Hex Bolts in as far as possible into the 1NC Nuts and threaded end caps on the wheel frame.
- Fully retract the 4" x 24" Hydraulic Cylinder so that the clevis pin is at the end of the slot and the wheel frame stop is tight against the tool bar.



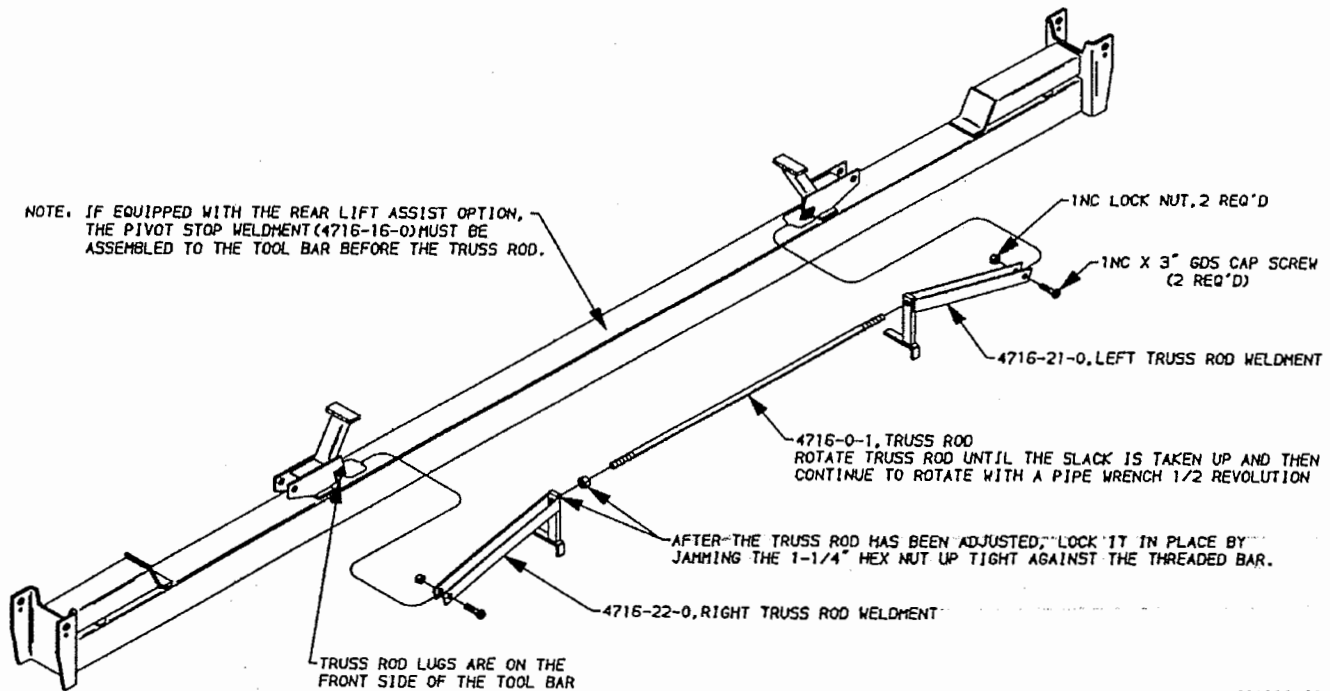
- Unscrew both of the 1NC Full Thread Bolts until they are tight against 3-Point Hitch Stops.
- Lock the 1NC Hex Nuts against the threaded end caps.



- CASTOR WHEEL SPRING ASSEMBLY**
See illustration to the right.

M4600-45

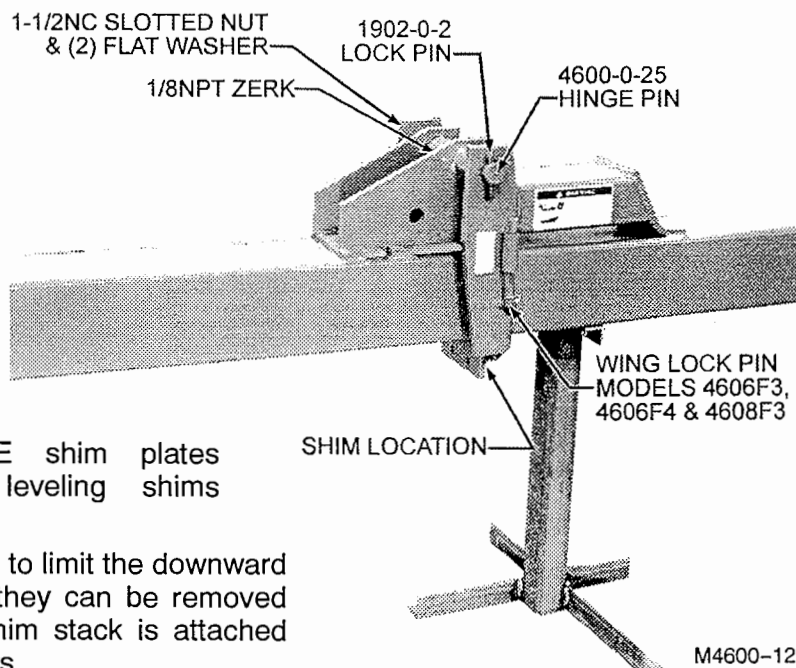
7. Truss Rod Assembly Models 4712-0F4 & 4716-0F3 ONLY



M4600-63

II. HINGE ASSEMBLY (WING MODELS ONLY)

1. Check hinge pin for correct assembly and screw in 1/8NPT Zerk.
2. 4600-0-12 SHIMS can be added if needed to level the wings to the center tool bar. Use TWO 1/2NC x 1-1/2" Cap Screws, Lock Washers and Hex Nuts to attach the shims at each wing hinge.
3. Assemble (4606-23-0) WING LOCK PIN ASSEMBLY in the storage location.
4. Model 4616 has THREE shim plates (4616-0-2) along with leveling shims (4600-0-24).



M4600-12

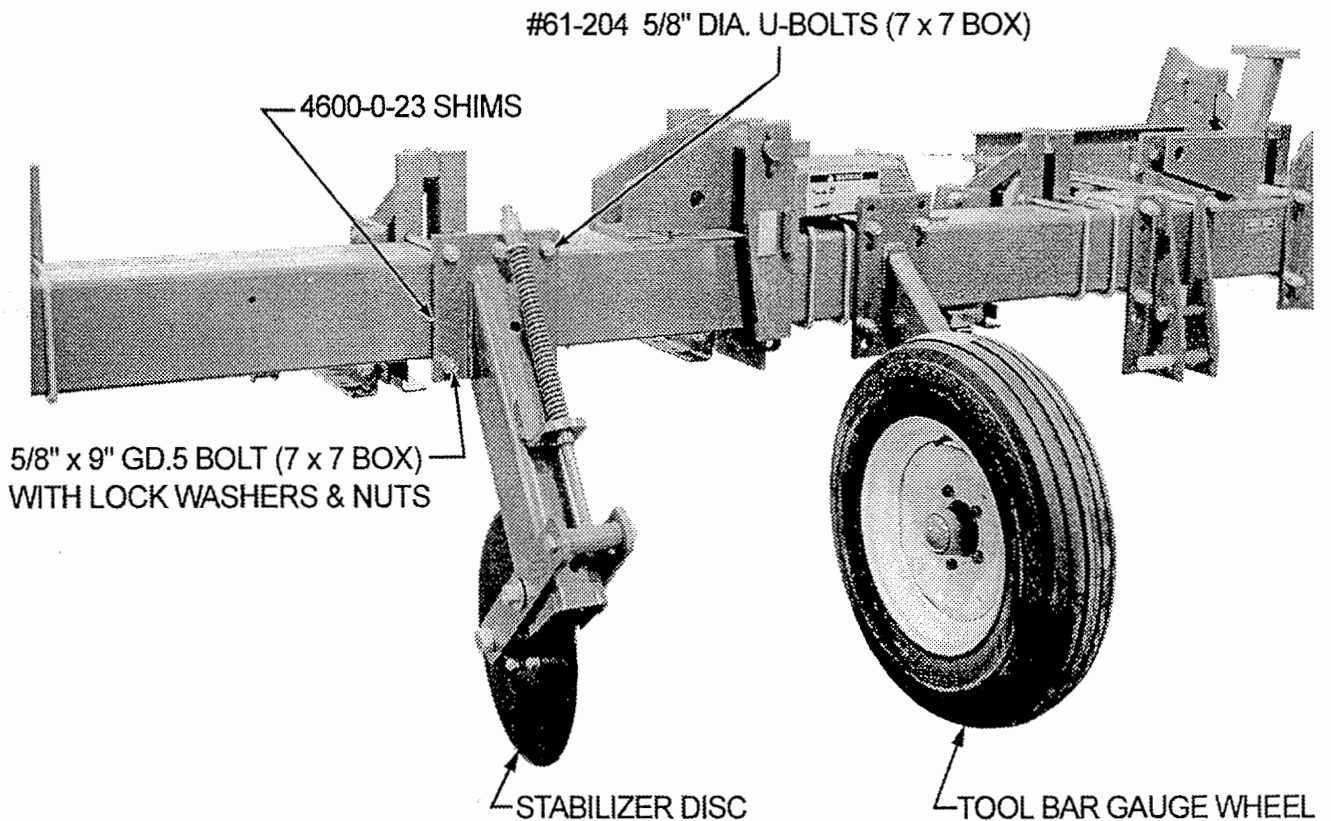
The shim plates can be used to limit the downward movement of the wings or they can be removed to allow wing float. The shim stack is attached with 1/2NC x 3" Cap Screws.

III. STABILIZER DISC AND TOOL BAR GAUGE WHEEL ASSEMBLY

1. Refer to the placement drawings on the following pages for the locations of the stabilizer discs and right and left tool bar gauge wheels. Assemble stabilizer discs and gang assemblies at the same time.

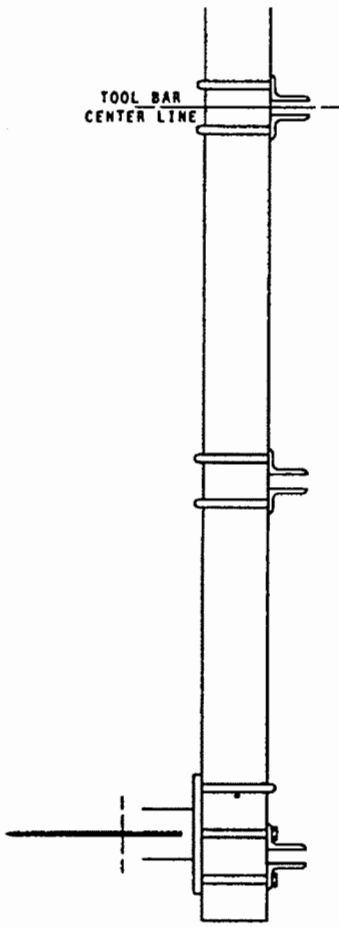
IMPORTANT: INTERFERENCE BETWEEN THE TRACTOR CAB AND FENDERS IS POSSIBLE. STABILIZER DISC AND TOOL BAR GAUGE WHEELS MUST BE INSTALLED AS SHOWN IN PLACEMENT DRAWINGS.

⚠ Danger: Serious Injury can be inflicted by the stabilizer disc blade if not handled safely. Watch for unsafe conditions and be aware of the unexpected. Keep your co-workers safety in mind.

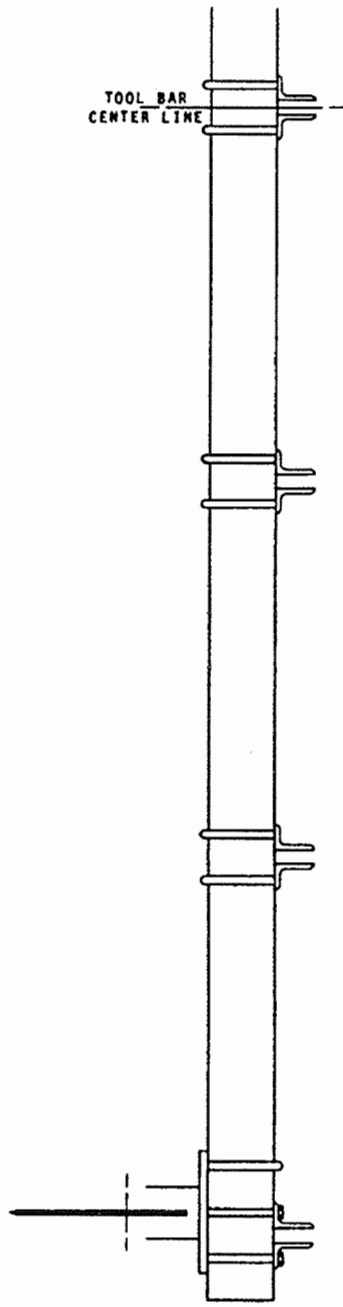


M4600-27

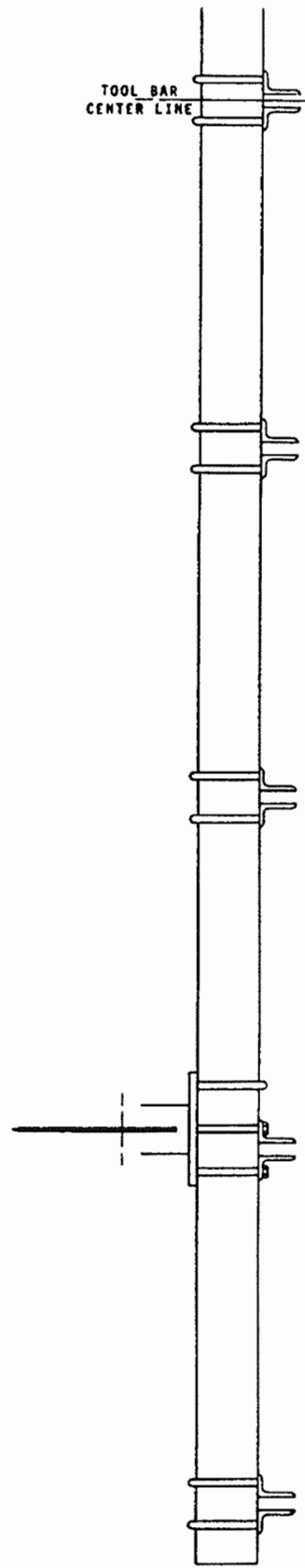
GANG AND STABILIZER DISC ASSEMBLY



RIGID 4 ROW



RIGID 6 ROW

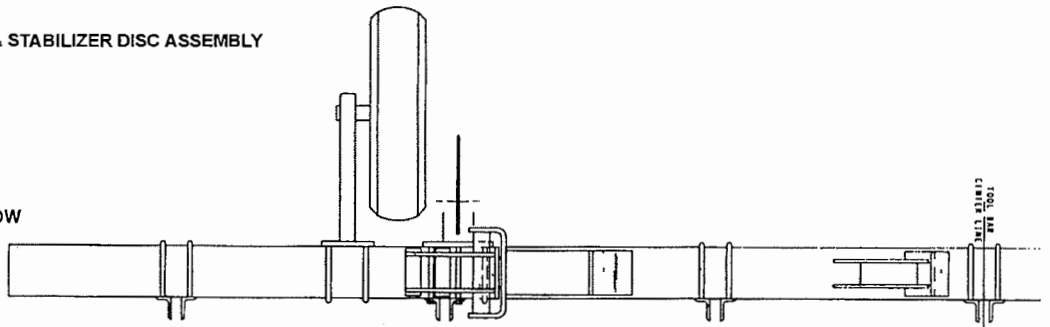


RIGID 8 ROW

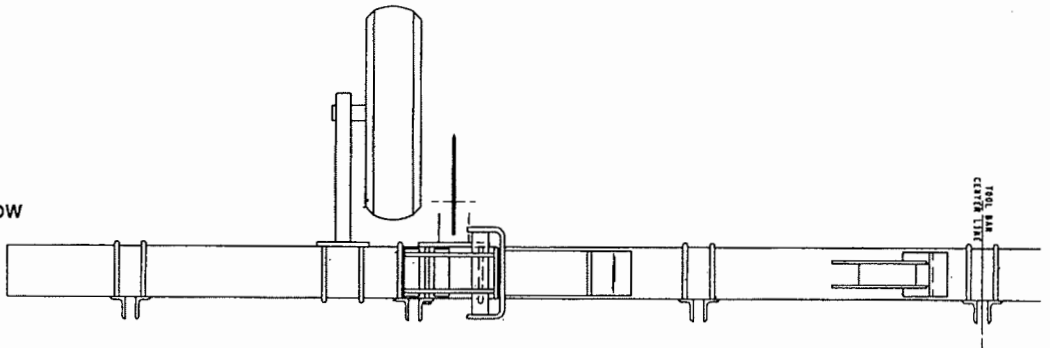
M4600-48

GAUGE WHEEL, GANG & STABILIZER DISC ASSEMBLY

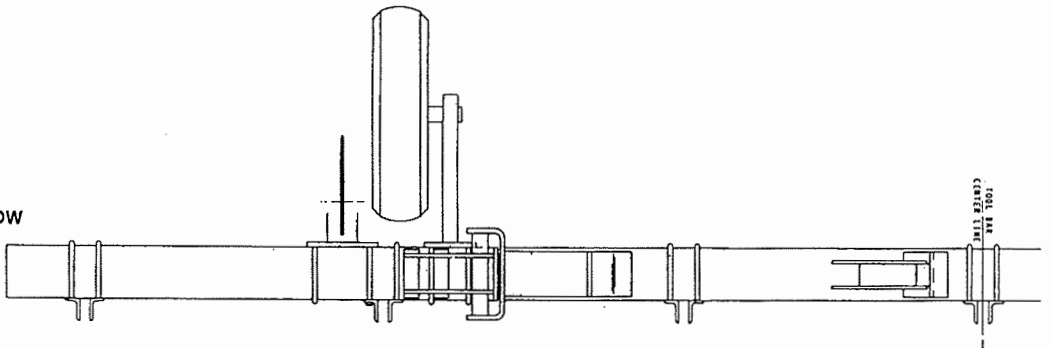
36" SPACING, FOLDING 6 ROW



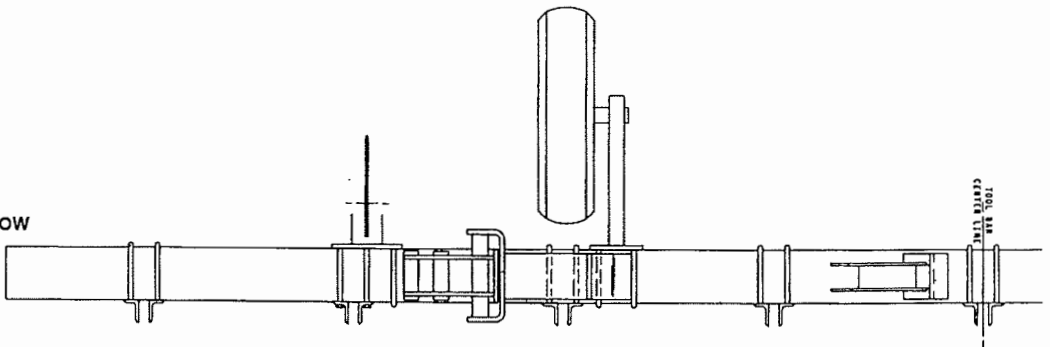
38" SPACING, FOLDING 6 ROW



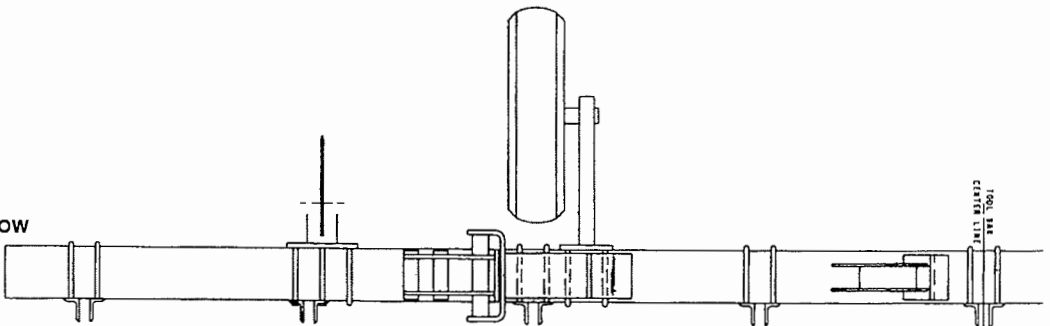
40" SPACING, FOLDING 6 ROW



28" SPACING, FOLDING 8 ROW

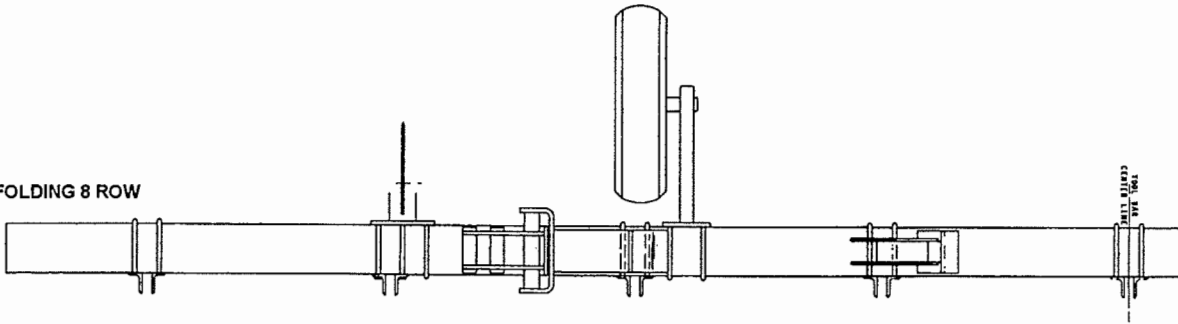


30" SPACING, FOLDING 8 ROW

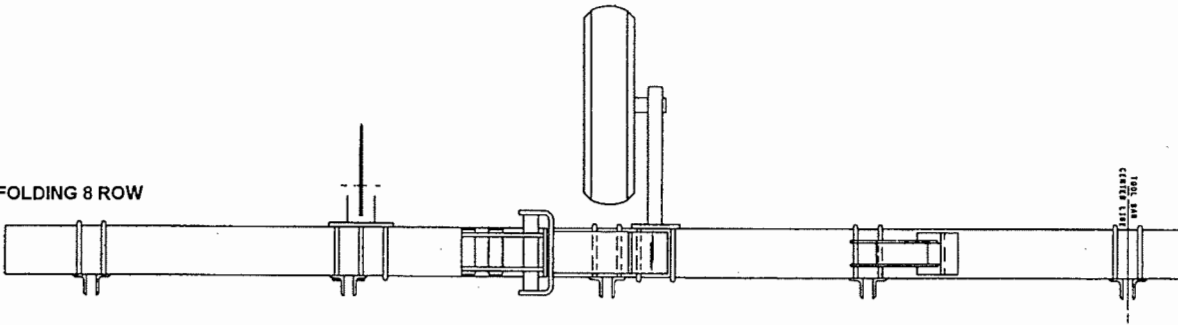


GAUGE WHEEL, GANG & STABILIZER DISC ASSEMBLY

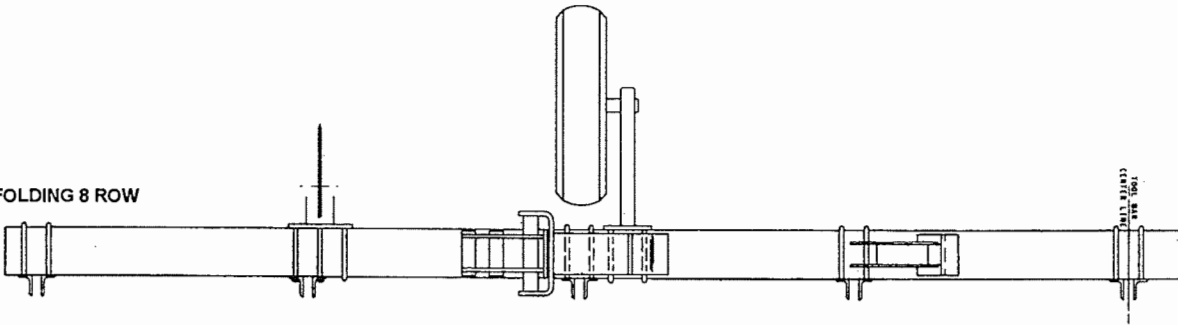
36" SPACING, FOLDING 8 ROW



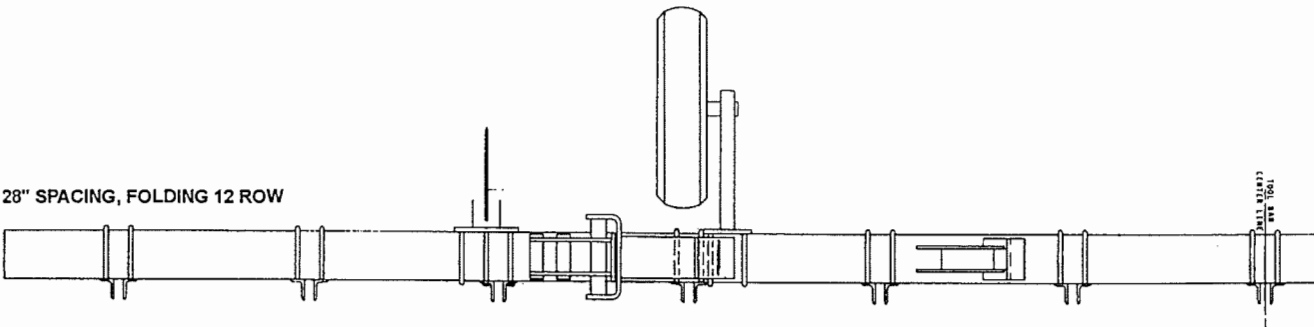
38" SPACING, FOLDING 8 ROW



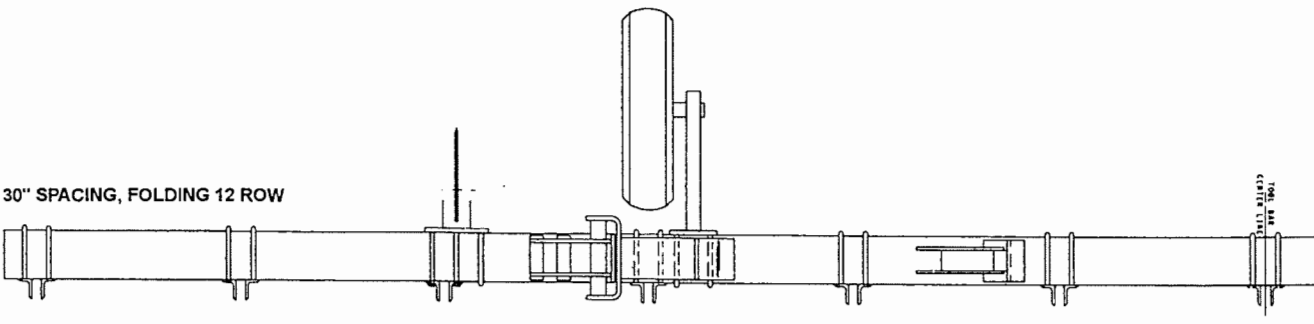
40" SPACING, FOLDING 8 ROW



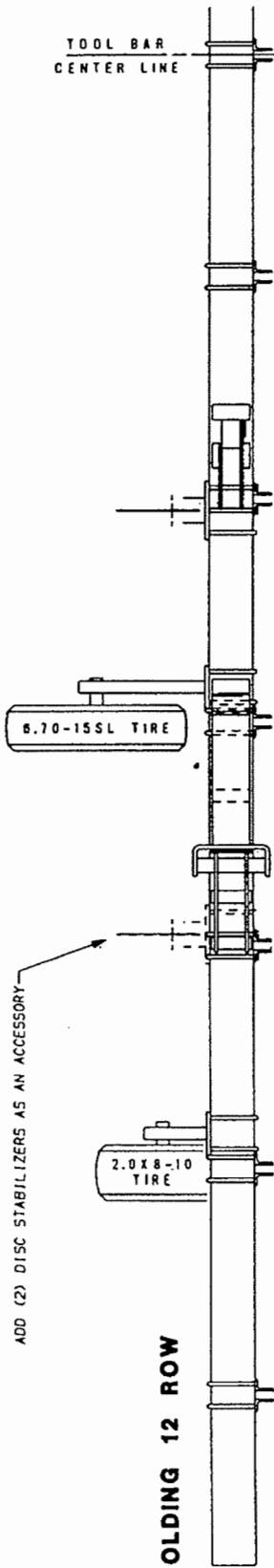
28" SPACING, FOLDING 12 ROW



30" SPACING, FOLDING 12 ROW



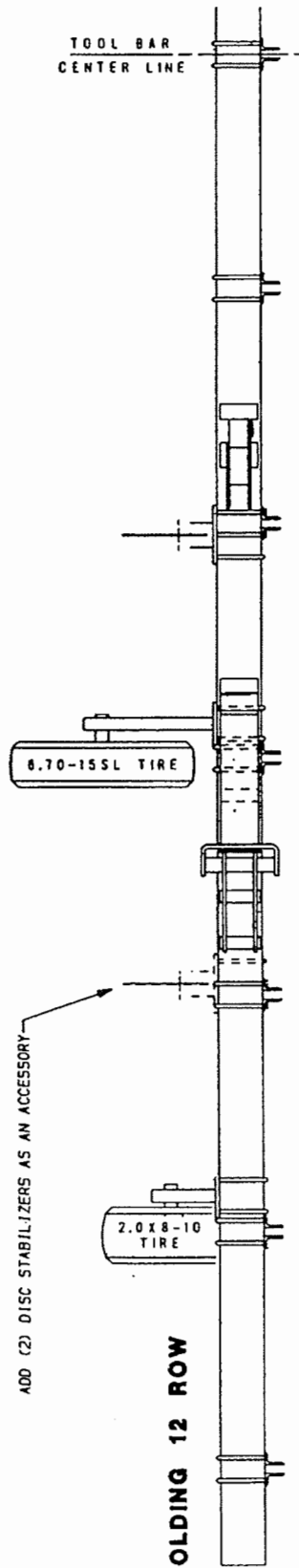
TOOL BAR
CENTER LINE



36" SPACING, FOLDING 12 ROW

ADD (2) DISC STABILIZERS AS AN ACCESSORY

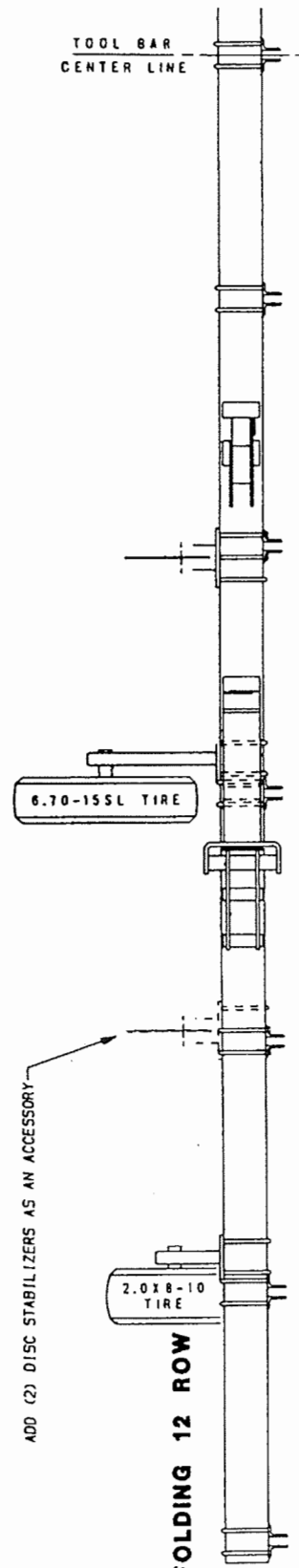
TOOL BAR
CENTER LINE



38" SPACING, FOLDING 12 ROW

ADD (2) DISC STABILIZERS AS AN ACCESSORY

TOOL BAR
CENTER LINE



40" SPACING, FOLDING 12 ROW

ADD (2) DISC STABILIZERS AS AN ACCESSORY

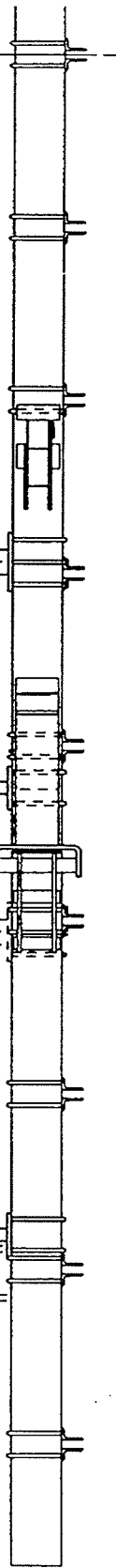
TOOL BAR
CENTER LINE

6.70-15SL TIRE

ADD (2) DISC STABILIZERS AS AN ACCESSORY

2.0 X 8-10
TIRE

28" SPACING, FOLDING 16 ROW



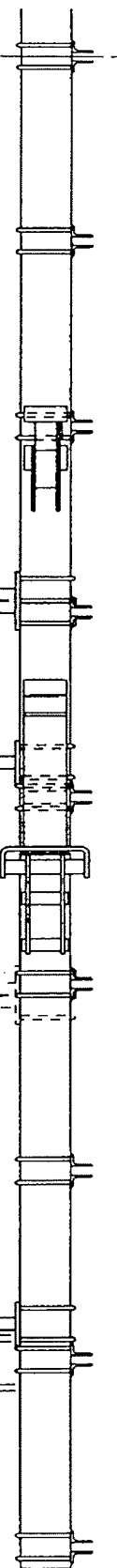
TOOL BAR
CENTER LINE

6.70-15SL TIRE

ADD (2) DISC STABILIZERS AS AN ACCESSORY

2.0 X 8-10
TIRE

30" SPACING, FOLDING 16 ROW



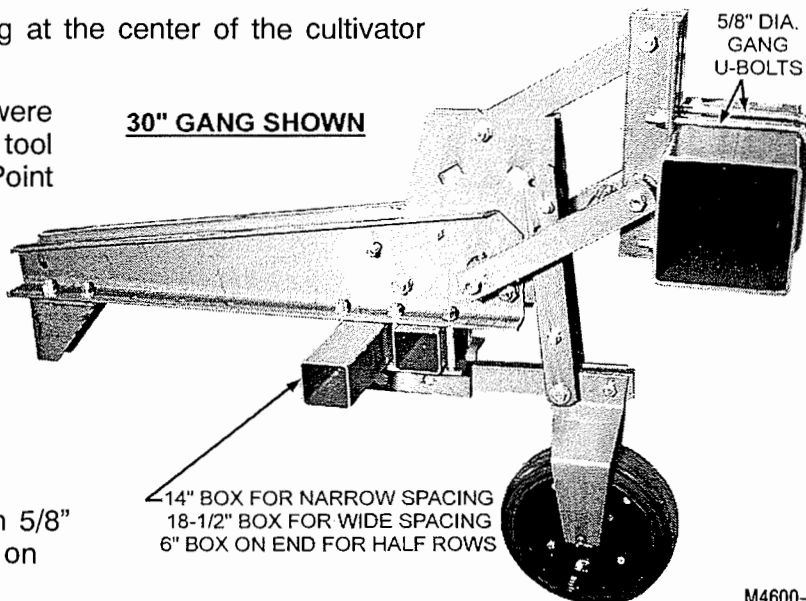
IV. GANG ASSEMBLY

1. Assemble the first full gang at the center of the cultivator with 5/8" DIA. U-Bolts.

NOTE: These U-Bolts were positioned on the tool bar during 3-Point Hitch assembly.

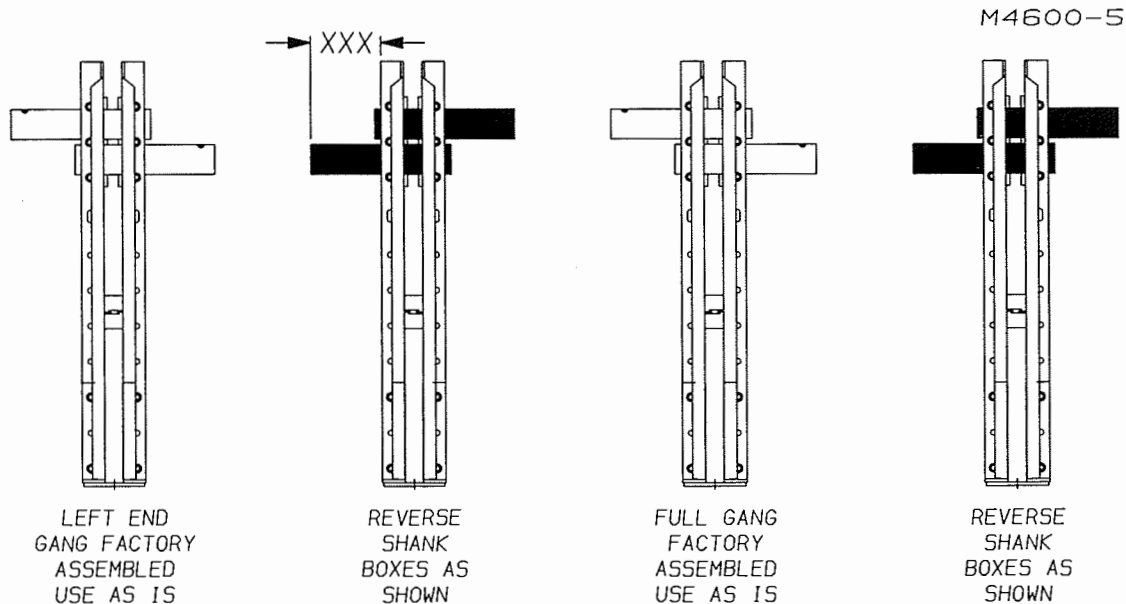
2. Determine the row spacing and make a mark at each gang location measuring left and right from the center gang.

NOTE: Gangs at disc stabilizer locations will mount with 5/8" DIA. U-Bolts as shown on pages A9 -A10.



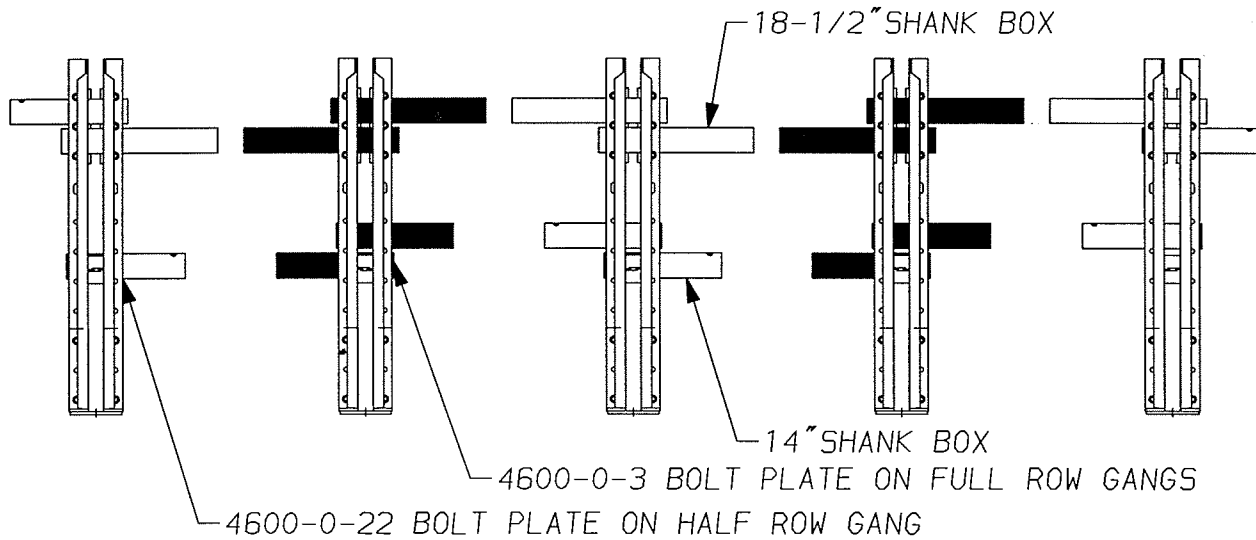
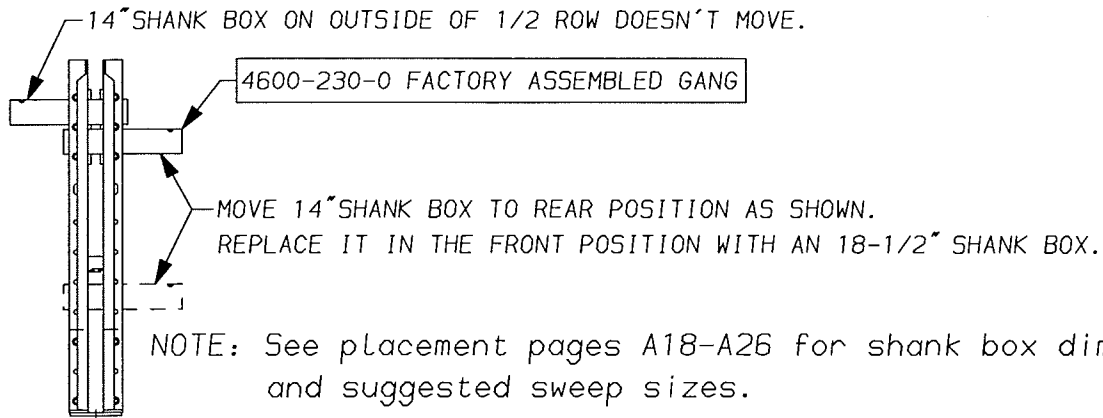
M4600-11

3. Attach the remaining gangs to the tool bar at the locations marked with 5/8" DIA. U-Bolts.
4. For maximum trash flow, the shank boxes on every other gang need to be reversed from factory assembled position as shown on the placement pages starting on page A18.
 - a) Start at the left end.
 - b) The left end gang is not changed except for dimension adjustment.
 - c) The next full gang should be reversed as shown below.
 - d) To provide for open top shields, assemble all shank boxes with the hole on the front side, 1-3/8" from the outer end.



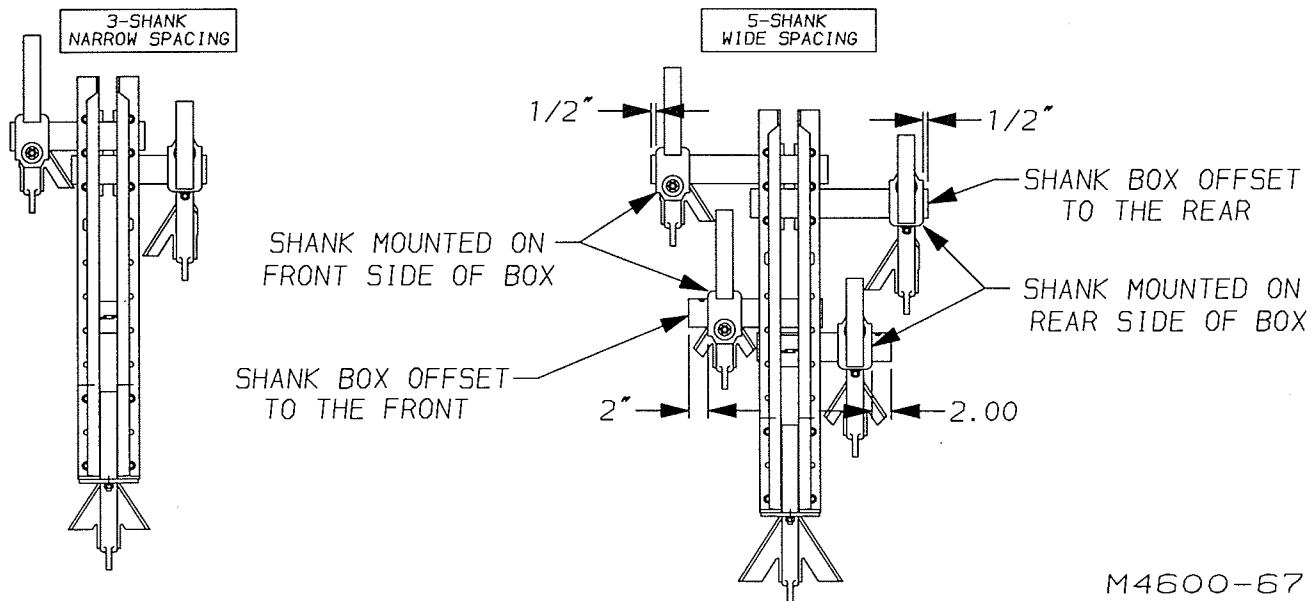
NOTE: See placement pages A18-A26 for shank box dimensions and suggested sweep sizes.

WIDE SPACING 5-SHANK GANG ASSEMBLY



V. K-TINE PLACEMENT

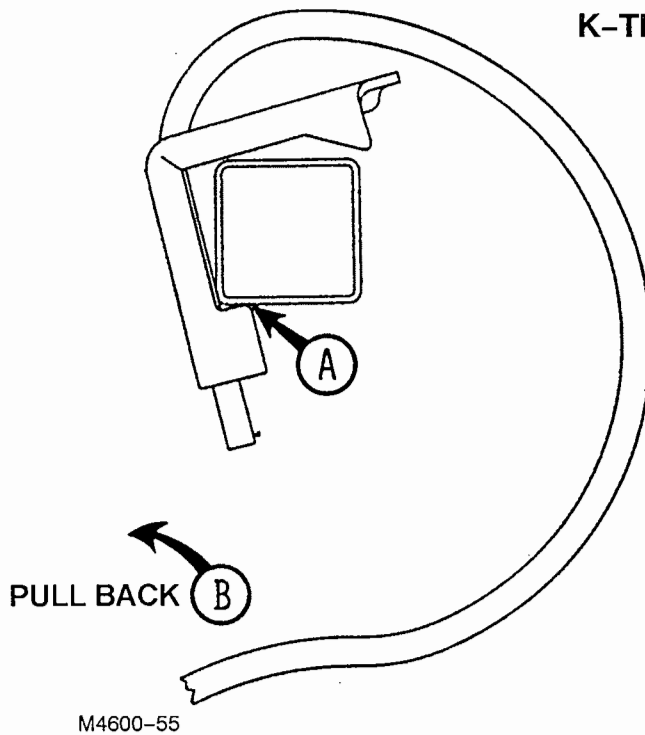
1. Mount the K-Tine on the front side of the shank box if the shank box is offset to the front. (See illustration below.)
2. Mount the K-Tine on the back side of the shank box if the box is offset to the rear.



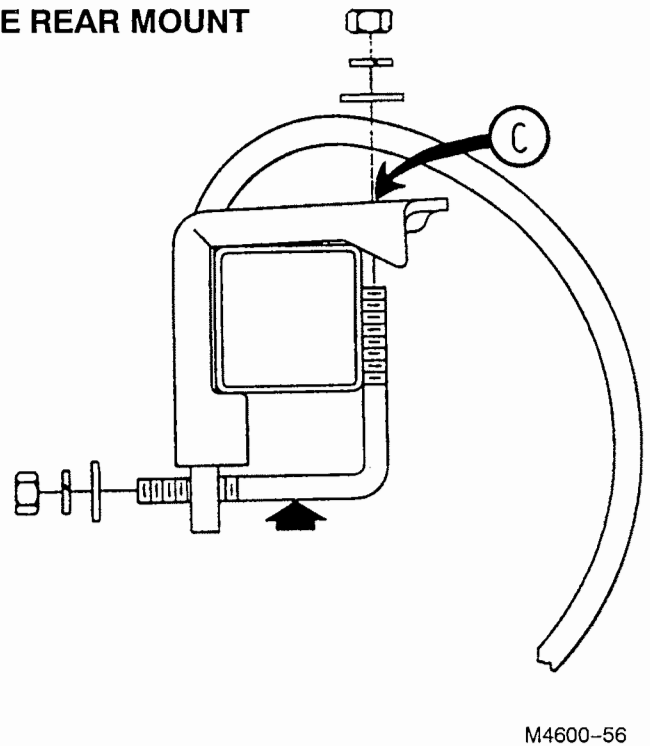
M4600-67

VI. K-TINE SHANK AND SWEEP ASSEMBLY

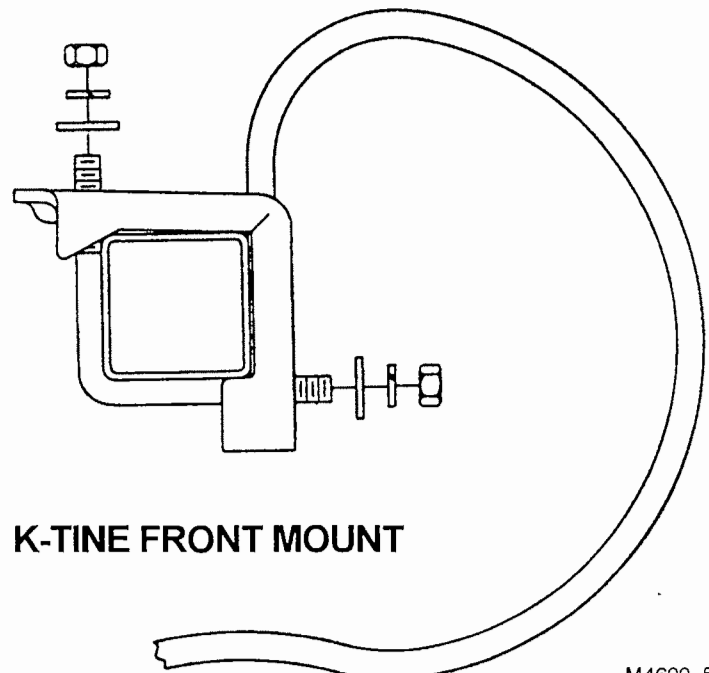
1. Mount the K-Tine Shank by placing the shank through the slot in the shank clamp and locating the assembly against the lower rear section of the mounting beam A. Hold the assembly right against the beam and pull back on the shank B. Sometimes the clamp may need to be tapped toward the mounting beam before the clamp seats properly.
2. Allow the shank to drop down in the holder and assemble the L-Bolt in shank end first, then pull up on the shank and place the L-Bolt through the front hole in the shank clamp C. Tighten the top nut first.



K-TINE REAR MOUNT

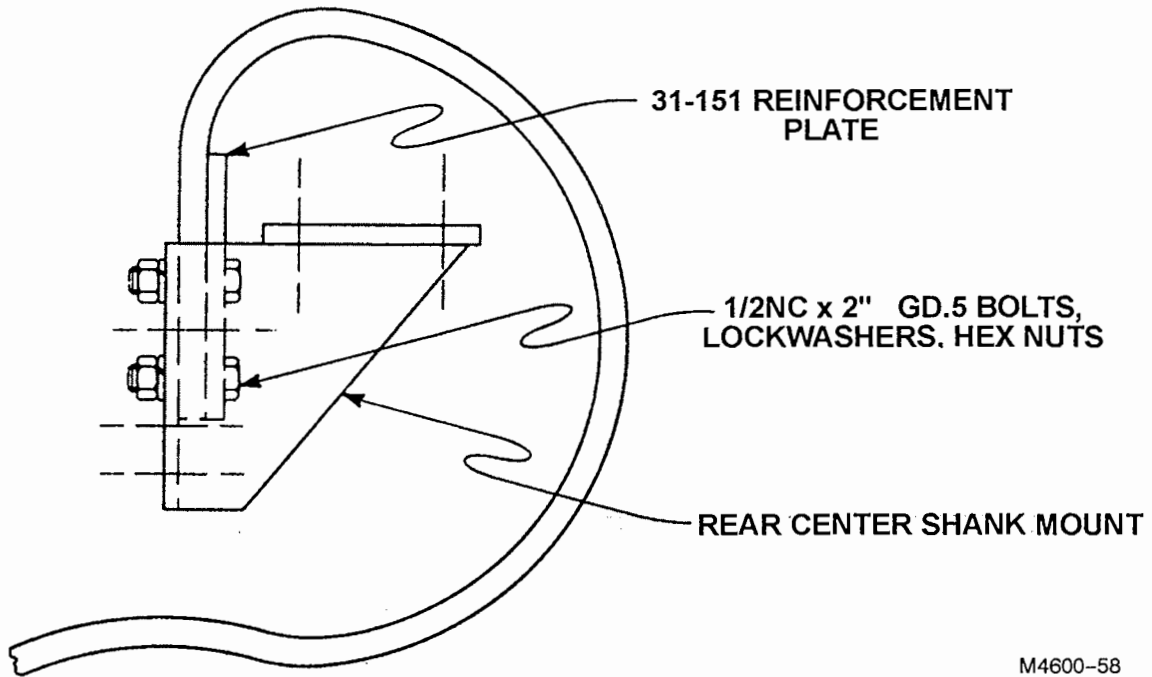


3. Steps 1 and 2 describe the K-Tine REAR Mount. The K-Tine FRONT Mount is assembled by reversing the shank clamp.

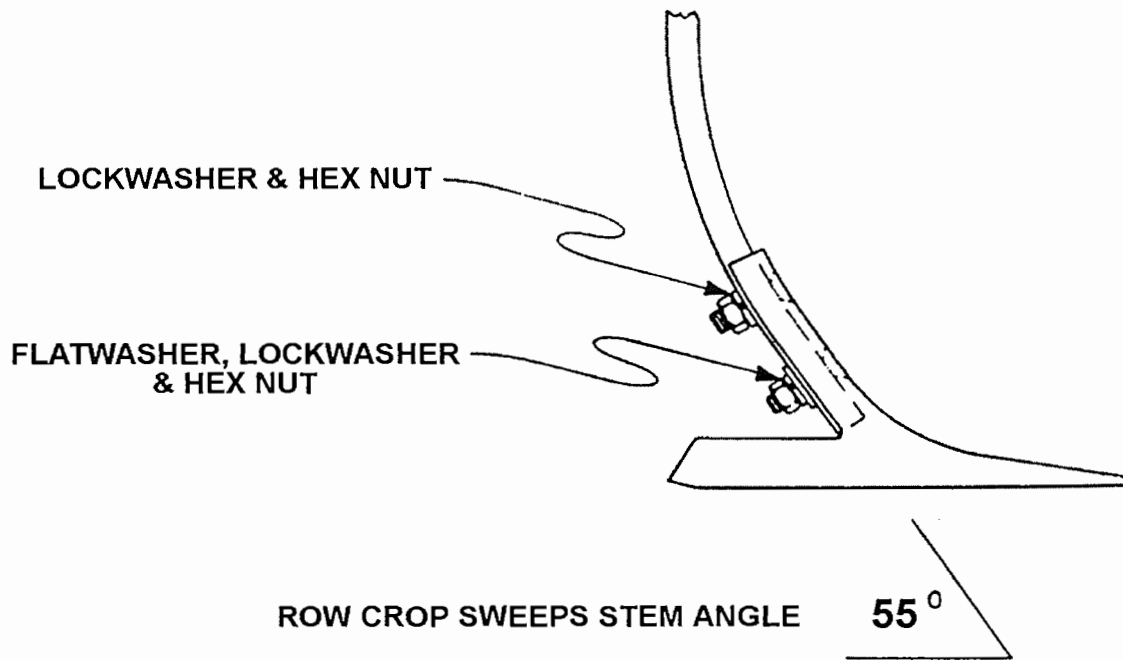


K-TINE FRONT MOUNT

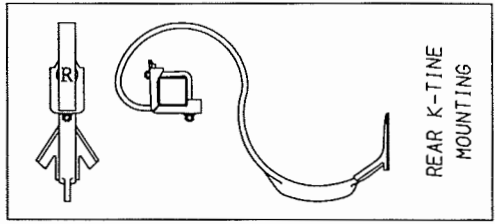
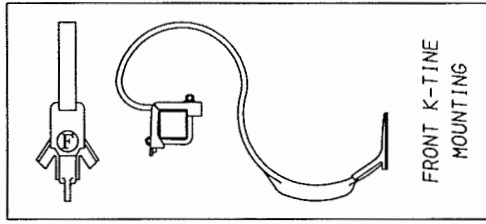
4. Assemble the K-Tine with a 31-151 Reinforcement Plate and TWO 1/2NC x 2" GRADE 5 Bolts, Lock Washers and Hex Nuts.



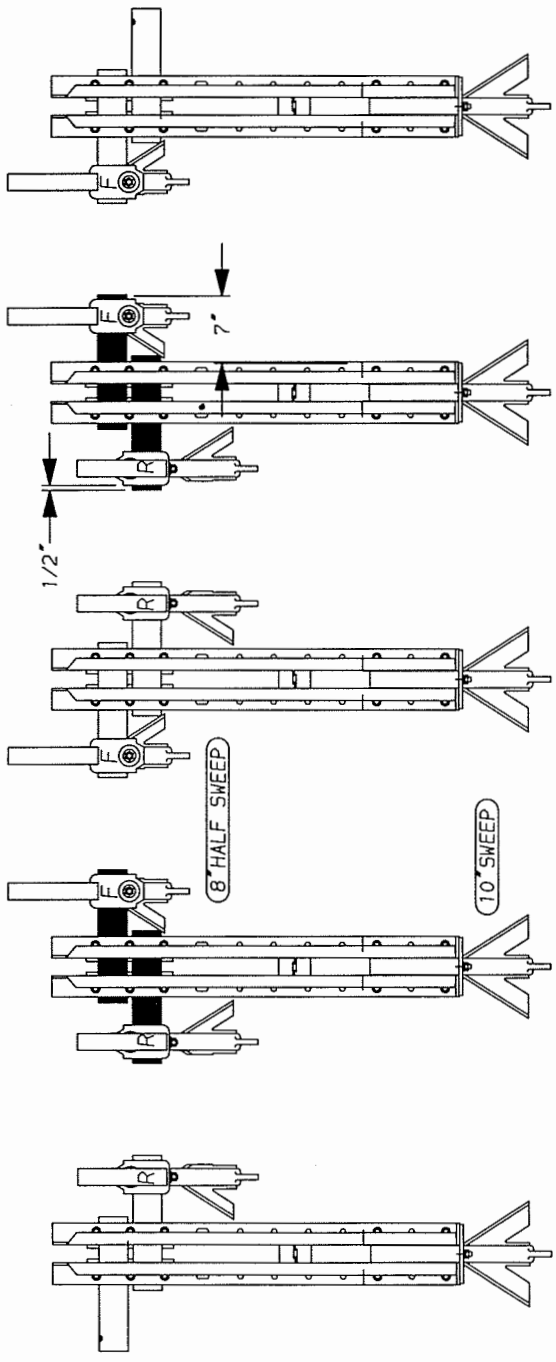
5. Attach each sweep with 3/8NC GRADE 8 Plow Bolts as shown in the illustration below.



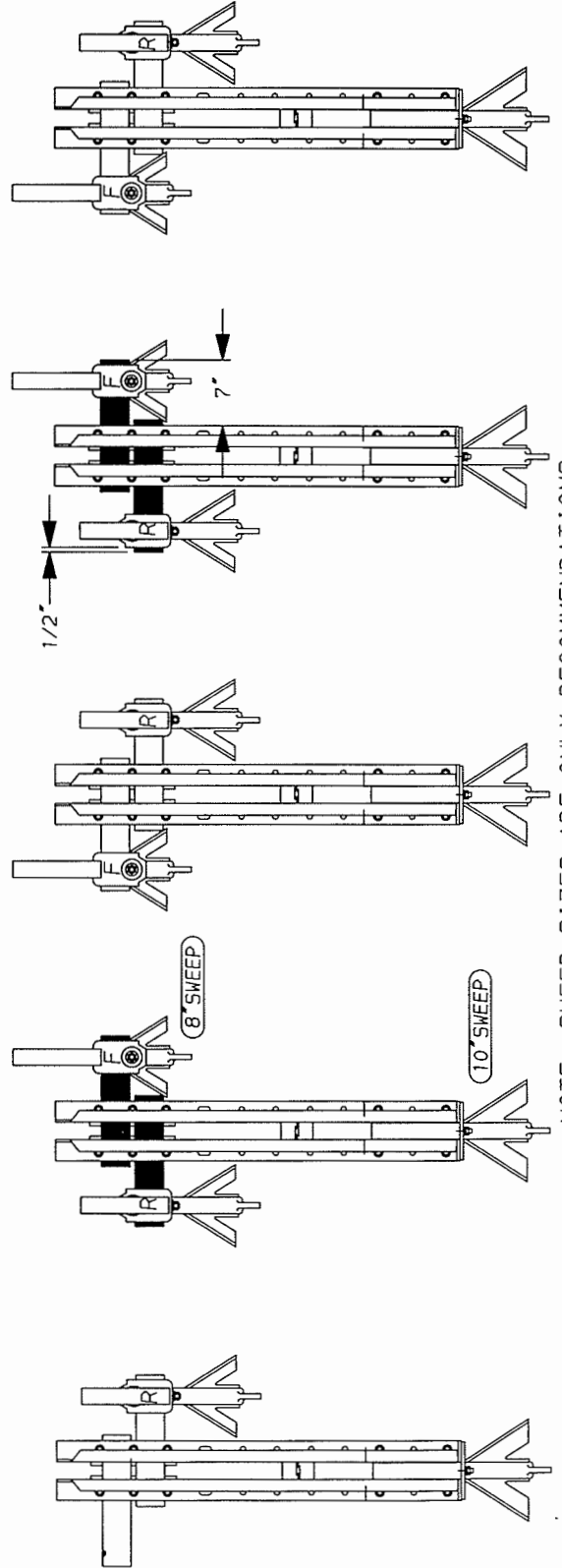
M4600-59



28" & 30" GANG SPACING 3 SHANK STD.

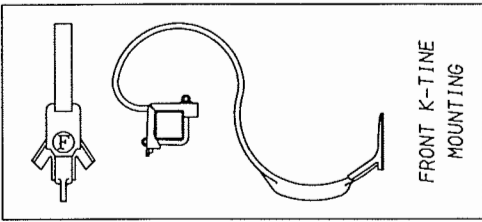
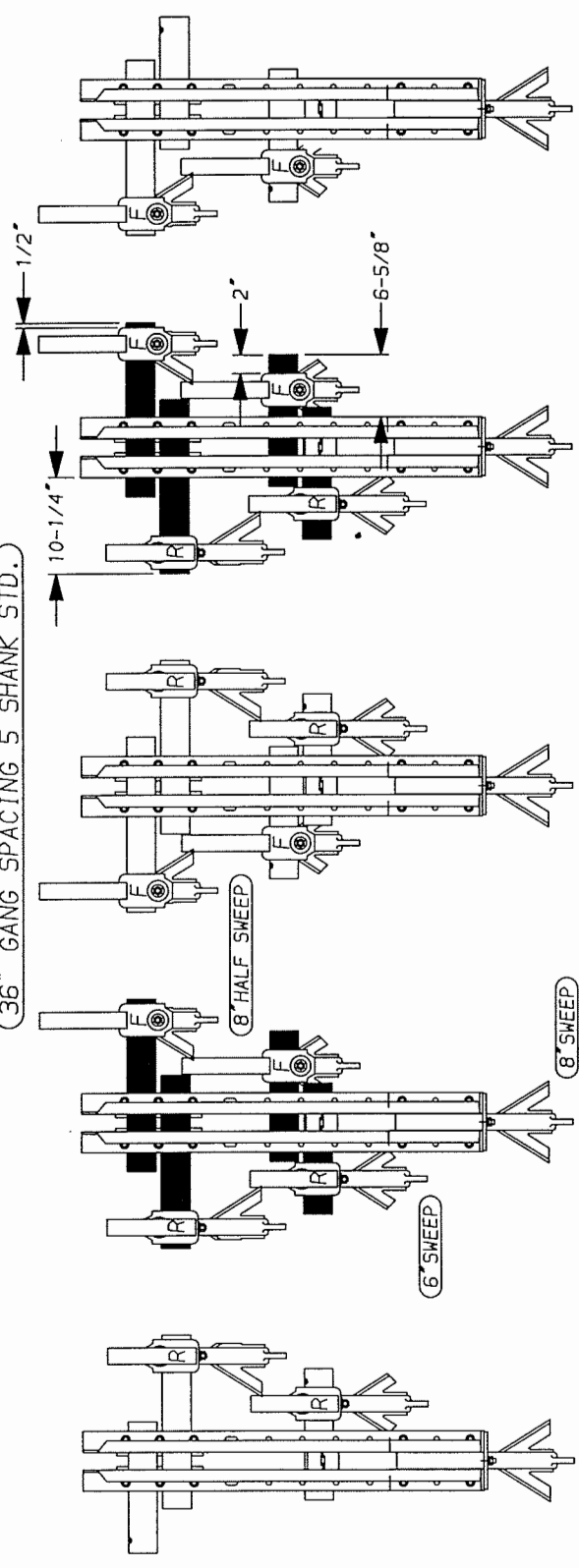


36" GANG SPACING-3 SHANK OPTION

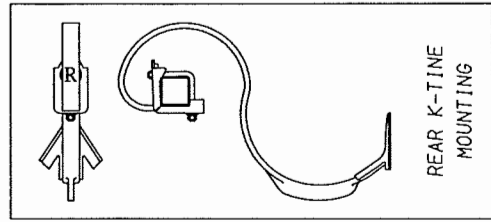
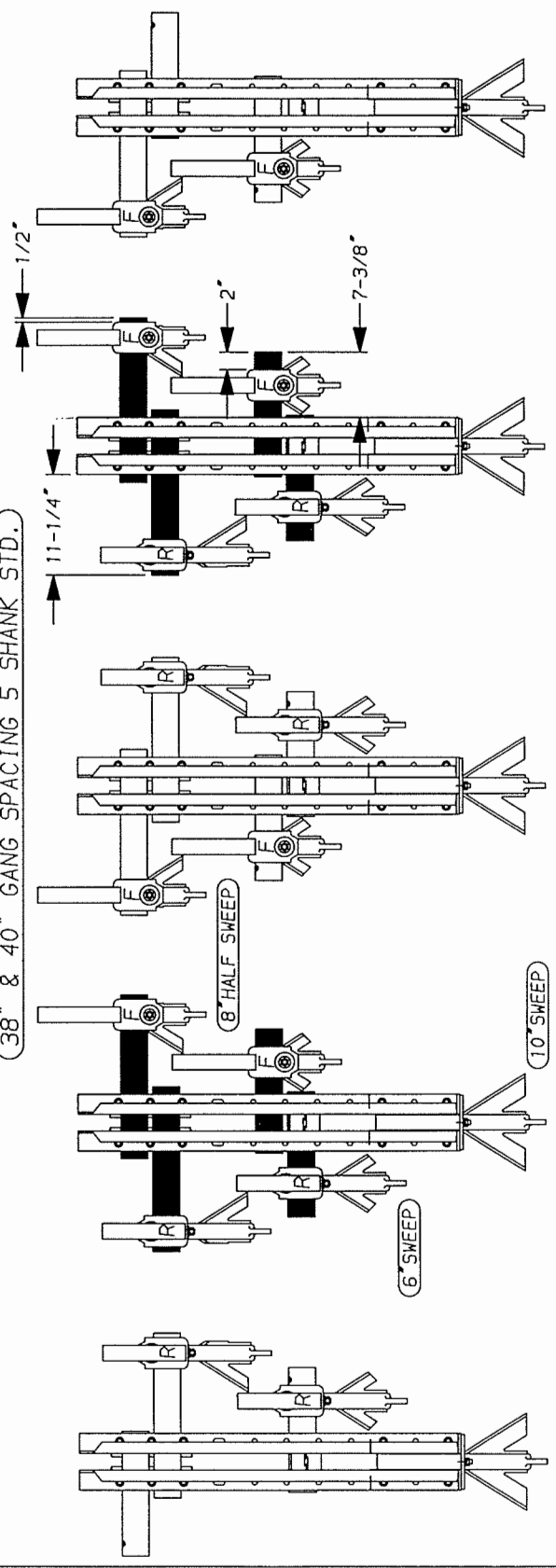


NOTE: SWEEP SIZES ARE ONLY RECOMMENDATIONS

36" GANG SPACING 5 SHANK STD.

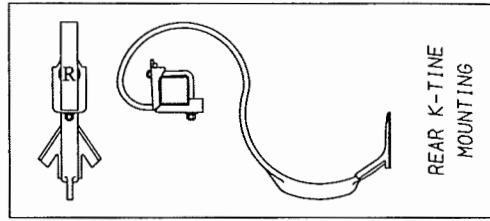
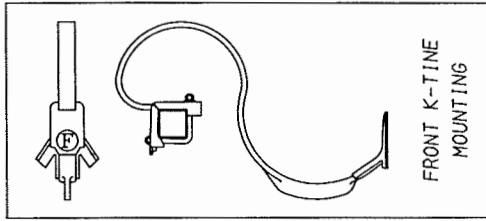


38" & 40" GANG SPACING 5 SHANK STD.

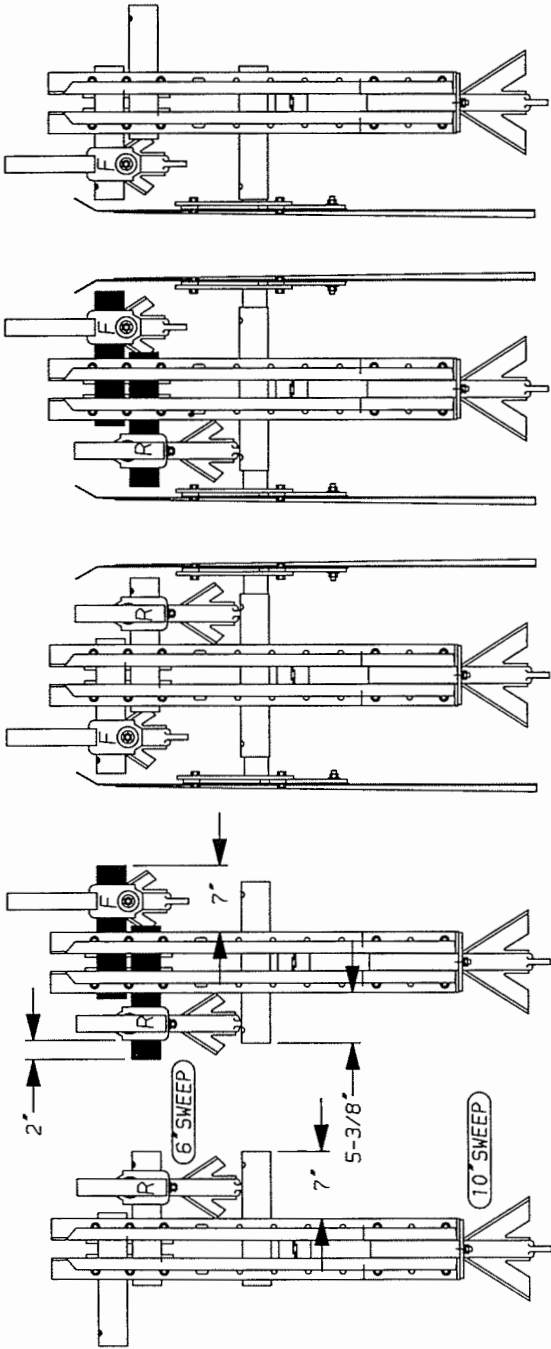


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Rev.11/97

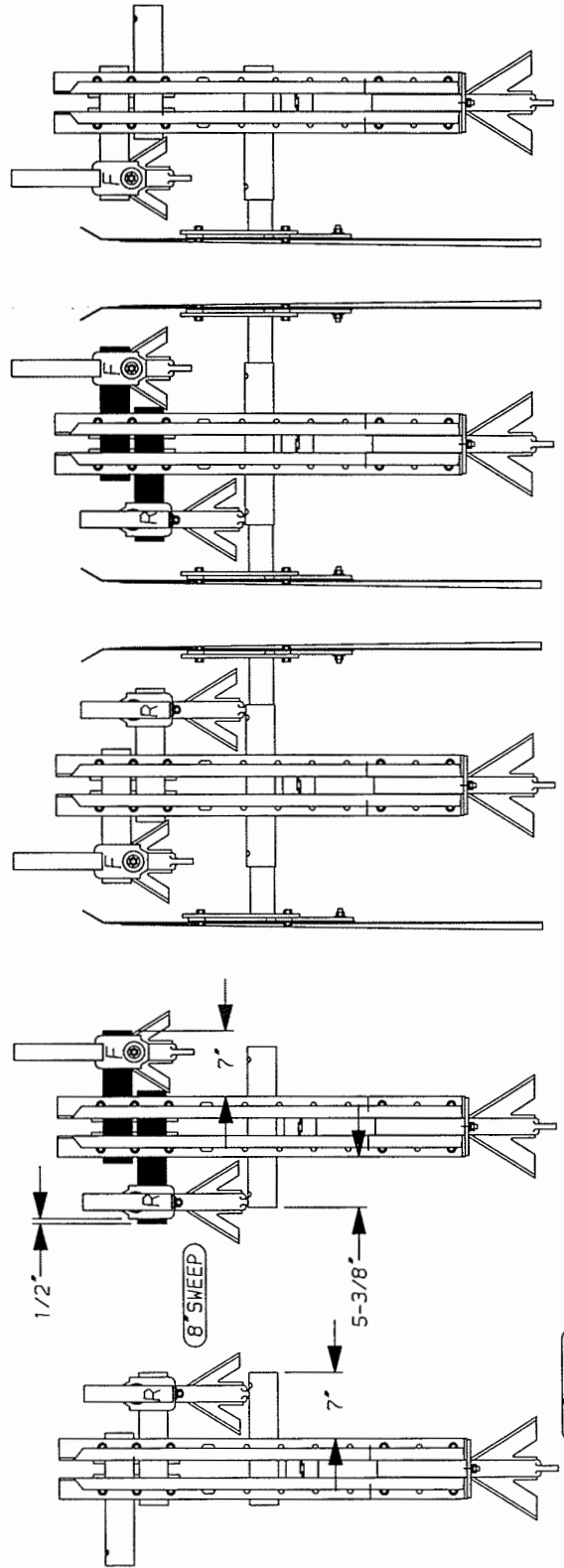
NOTE: SWEEP SIZES ARE ONLY RECOMMENDATIONS



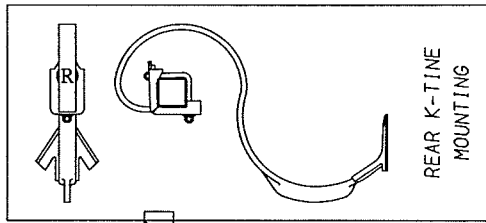
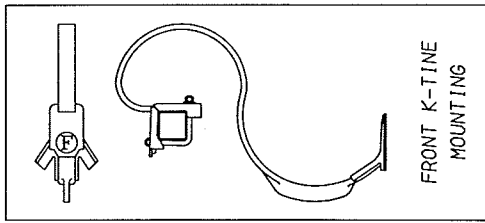
28" & 30" GANG SPACING WITH 4' OPEN TOP SHIELD



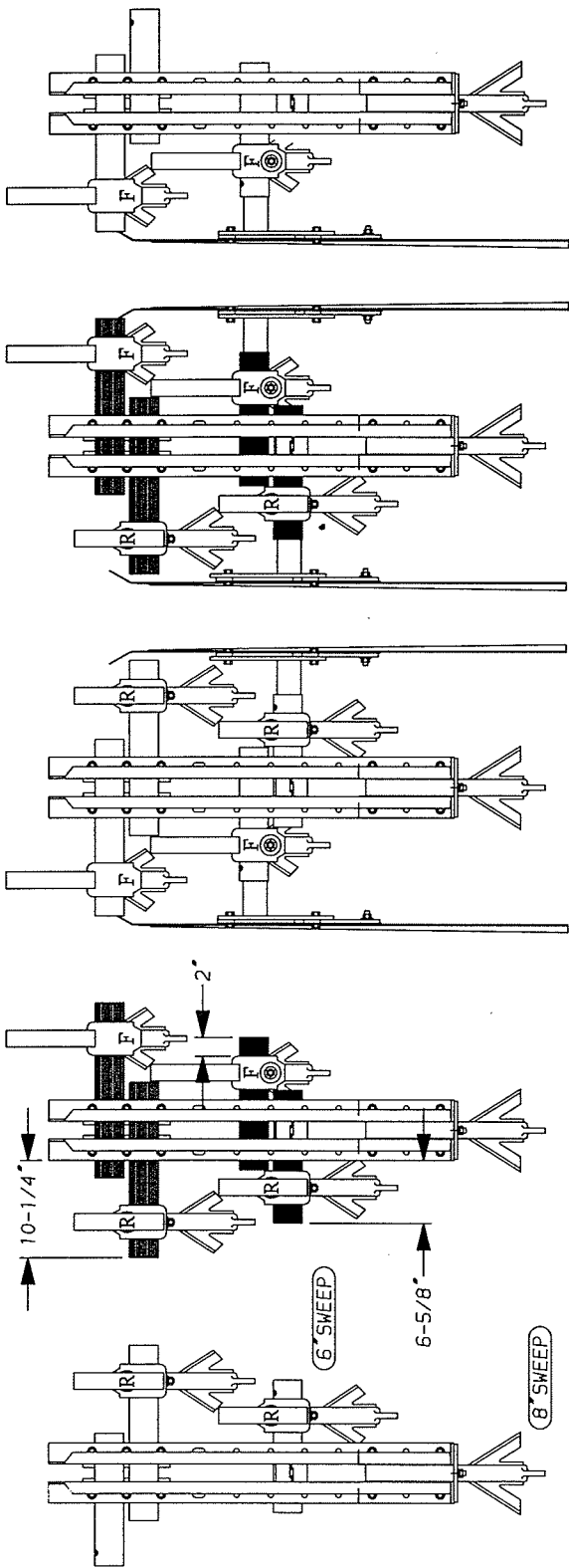
36" GANG SPACING-3 SHANK OPTION WITH 4' OPEN TOP SHIELD



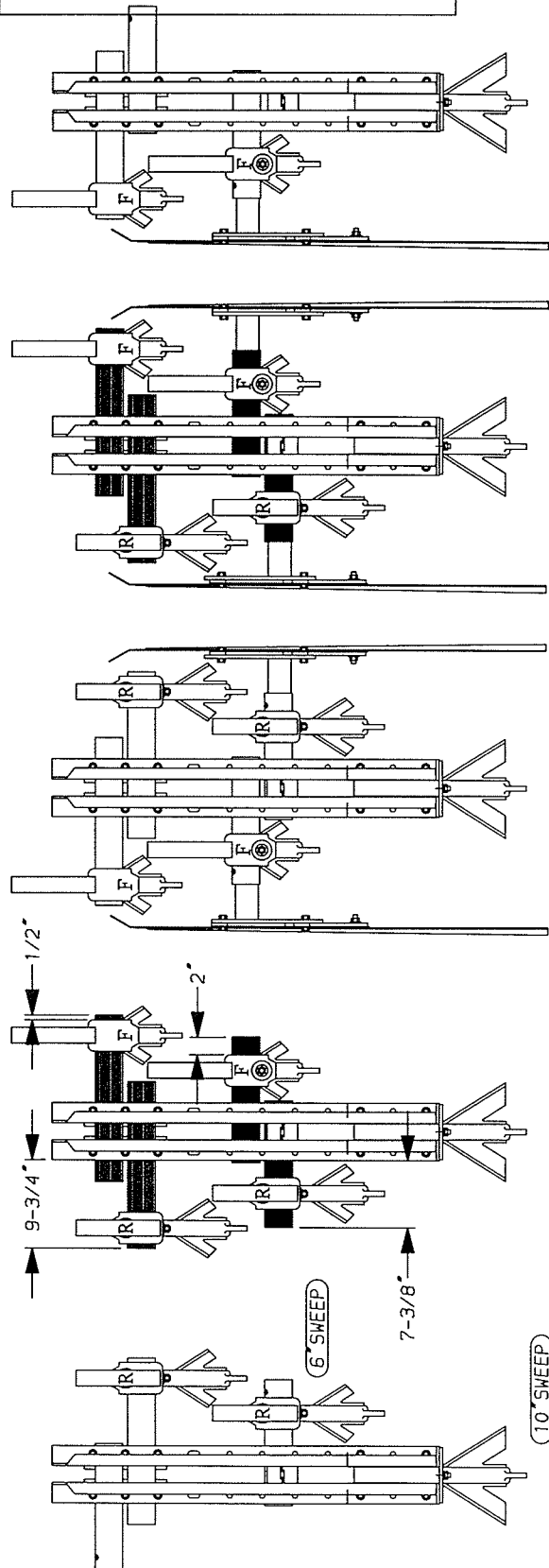
NOTE: SWEEP SIZES ARE ONLY RECOMMENDATIONS



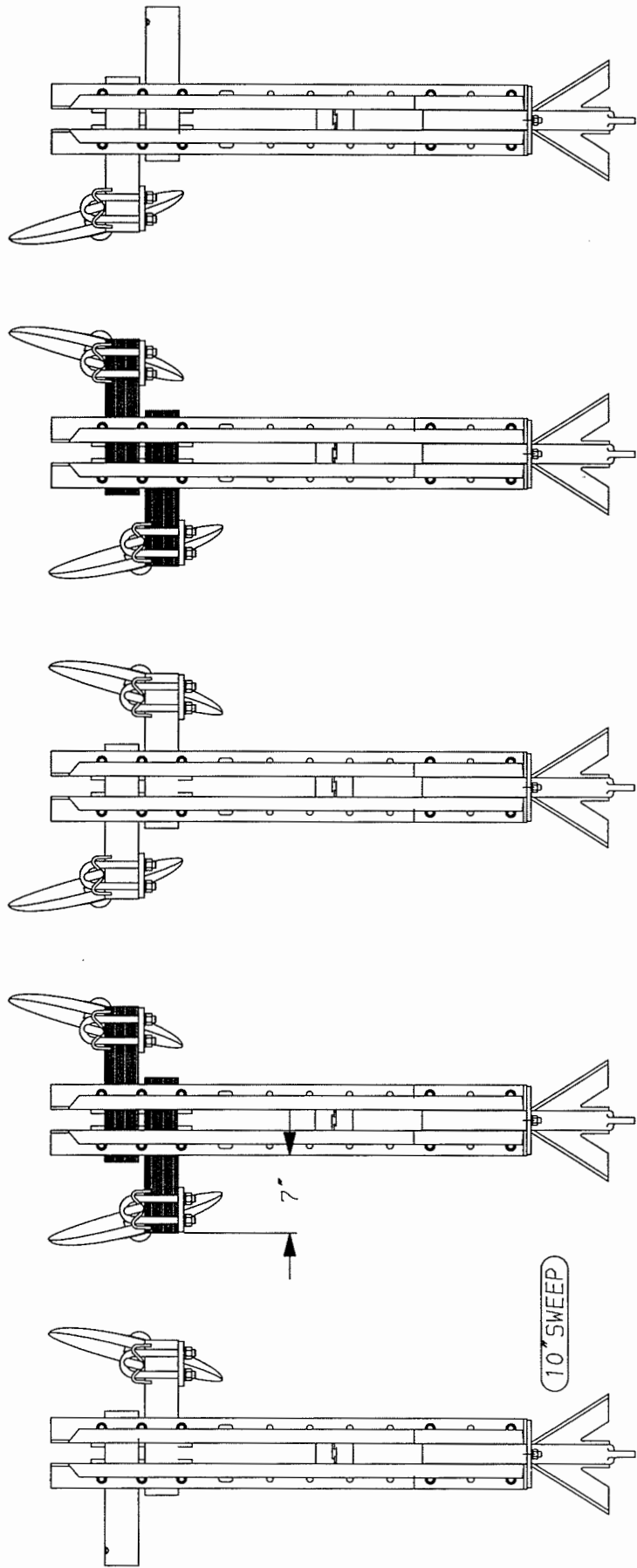
36" GANG SPACING WITH 4' OPEN TOP SHIELDS



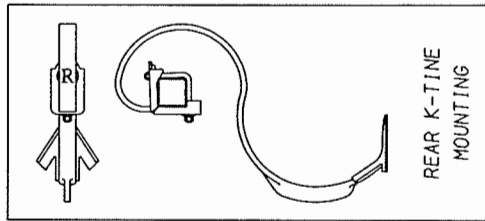
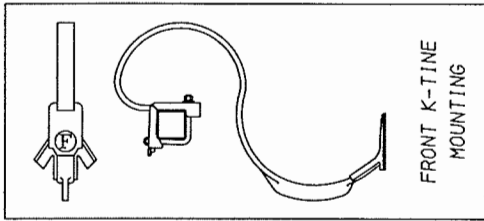
38" & 40" GANG SPACING WITH 4' OPEN TOP SHIELDS



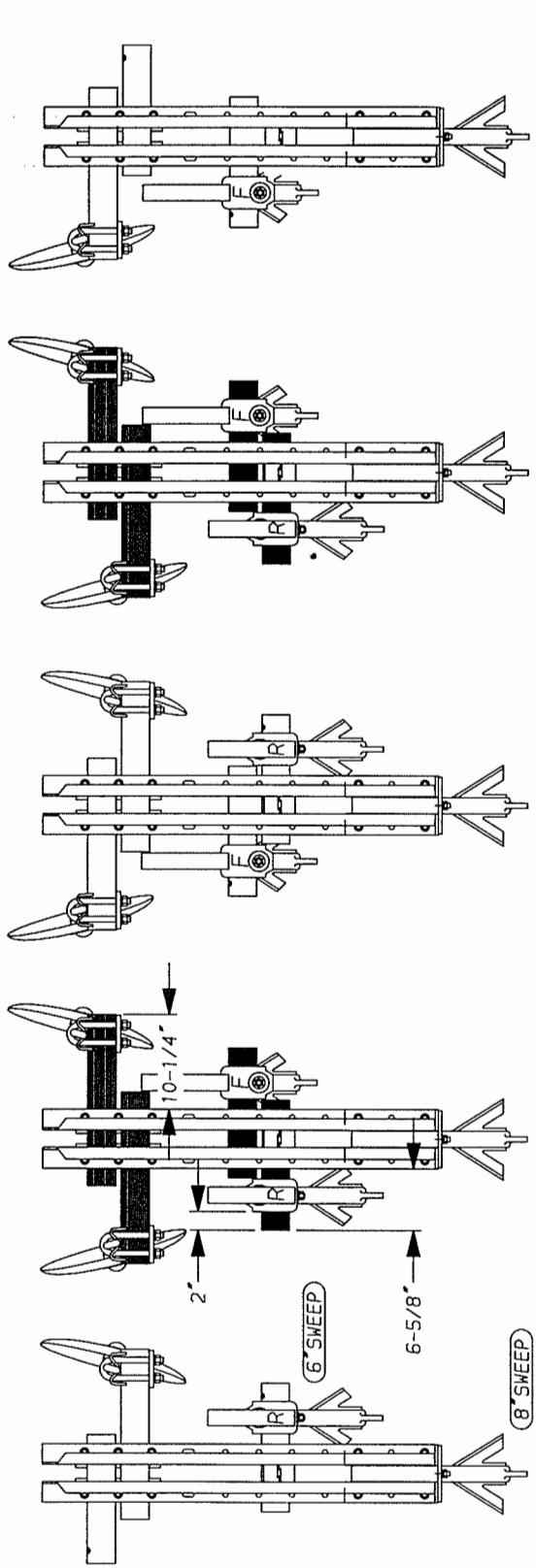
28" & 30" GANG SPACING WITH DISC HILLER



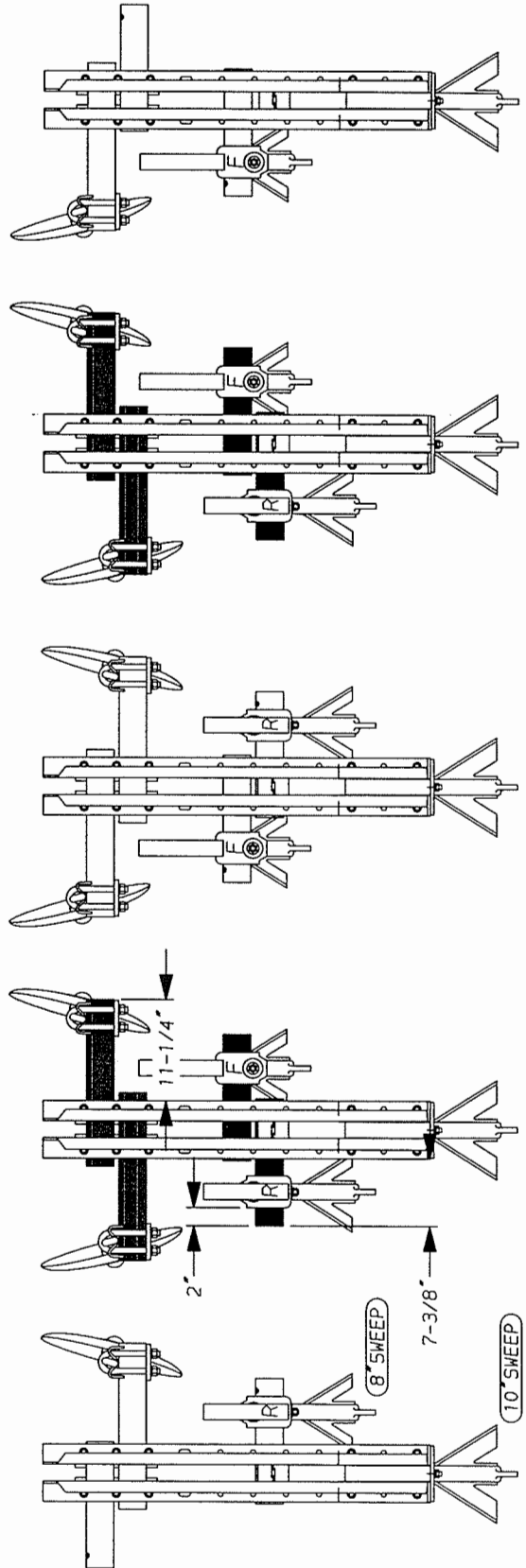
NOTE: SWEEP SIZES ARE ONLY RECOMMENDATIONS



36" GANG SPACING WITH DISC HILLERS

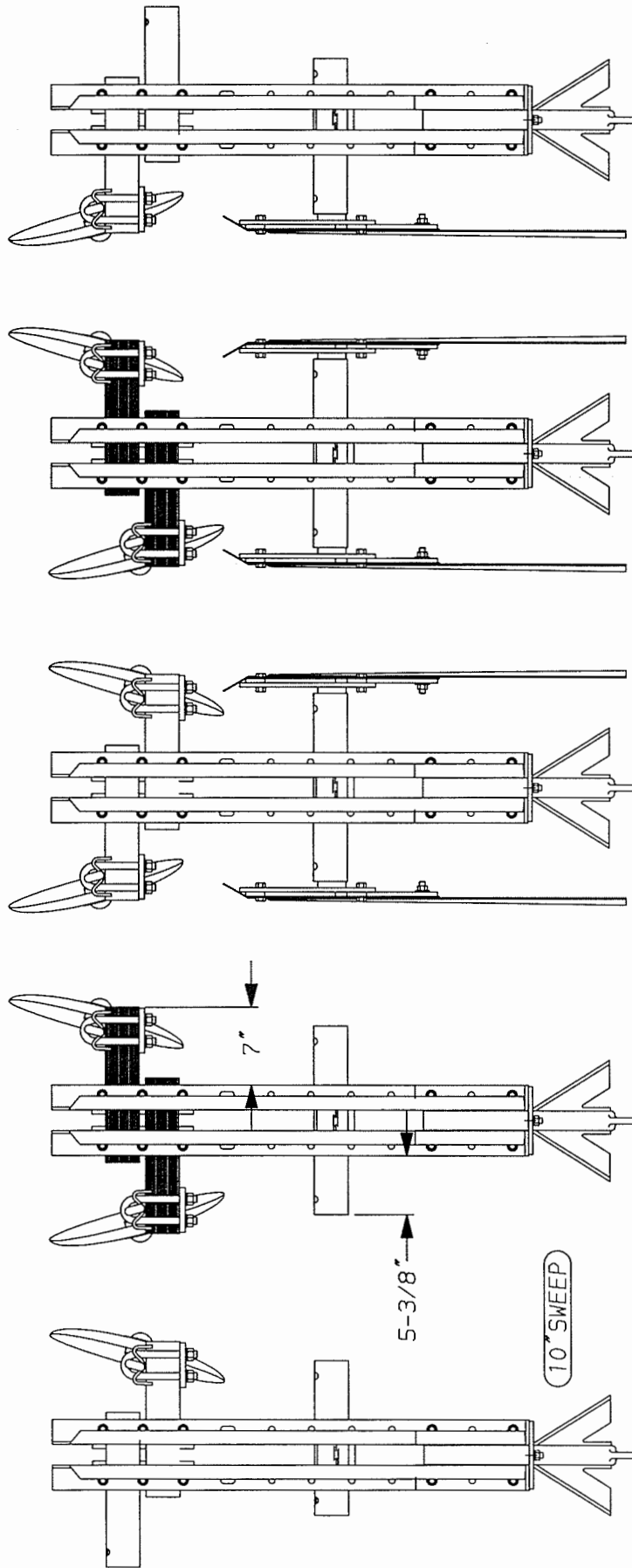


38" & 40" GANG SPACING WITH DISC HILLERS



NOTE: SWEEP SIZES ARE ONLY RECOMMENDATIONS

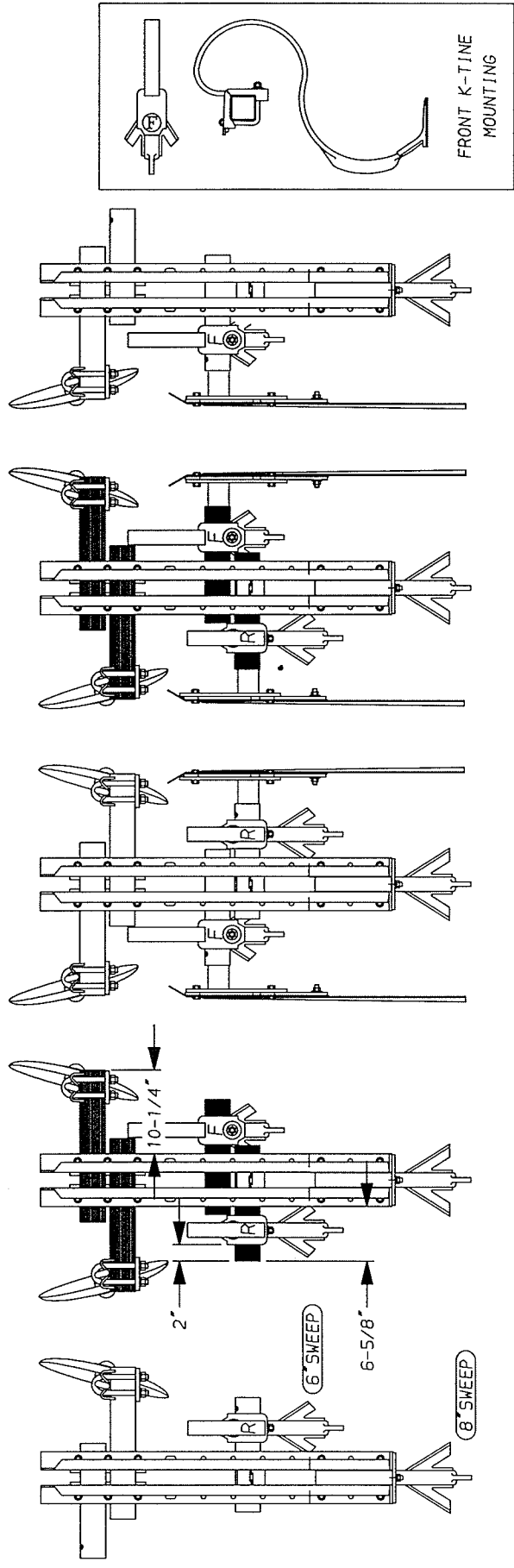
28" & 30" GANG SPACING WITH DISC HILLERS & 3' OPEN TOP SHIELDS



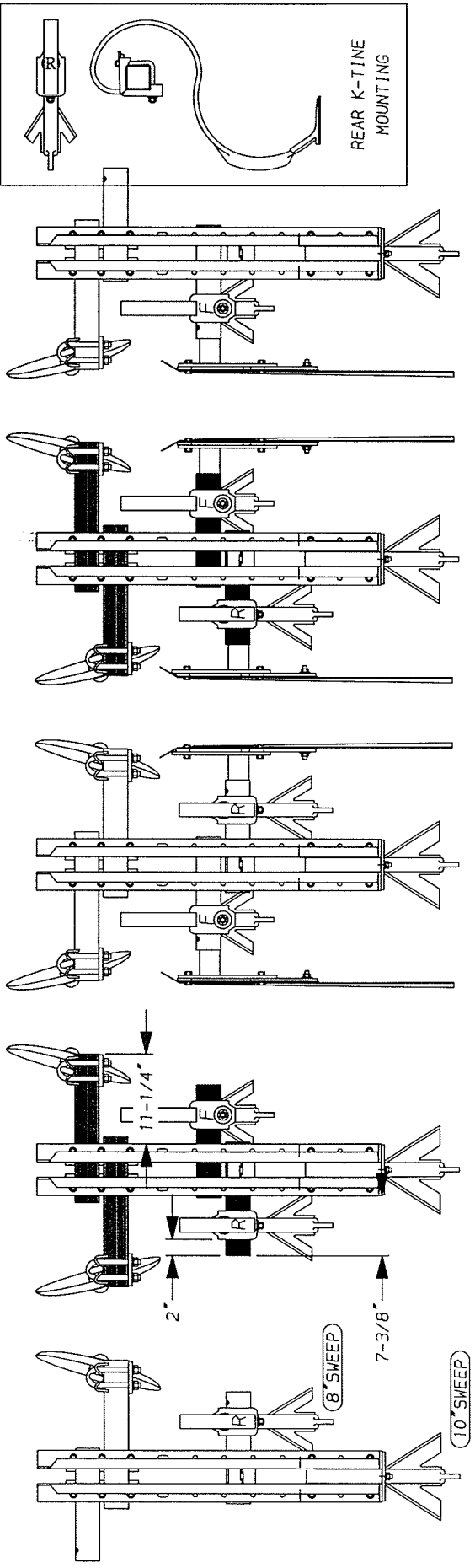
10" SWEEP

NOTE: SWEEP SIZES ARE ONLY RECOMMENDATIONS

36" GANG SPACING WITH DISC HILLERS & 3' OPEN TOP SHIELDS

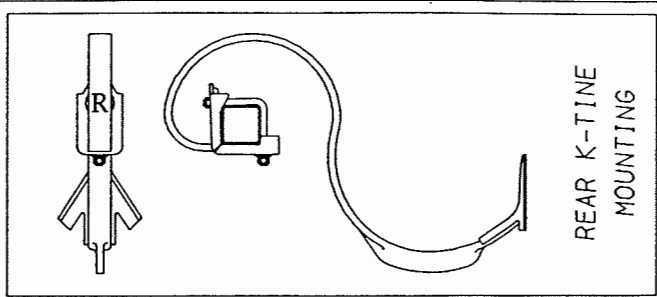
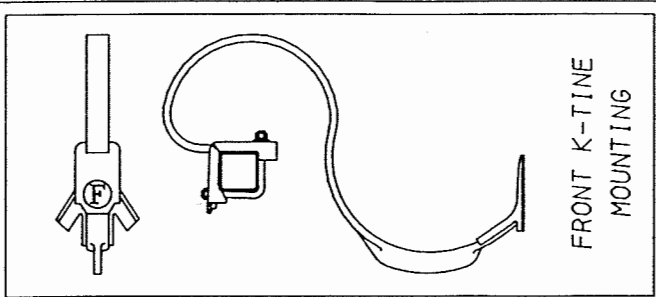
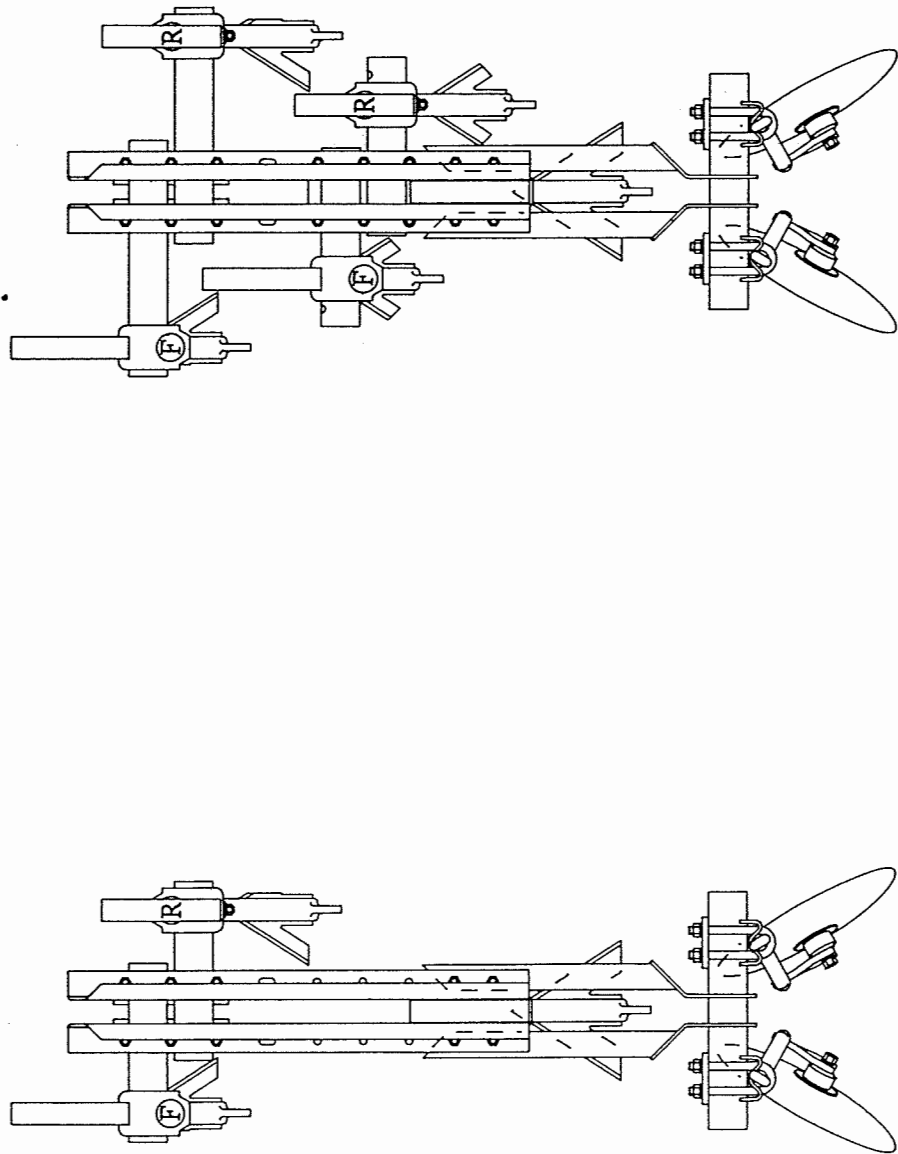


38" & 40" GANG SPACING WITH DISC HILLERS & 3' OPEN TOP SHIELDS



NOTE: SWEEP SIZES ARE ONLY RECOMMENDATIONS

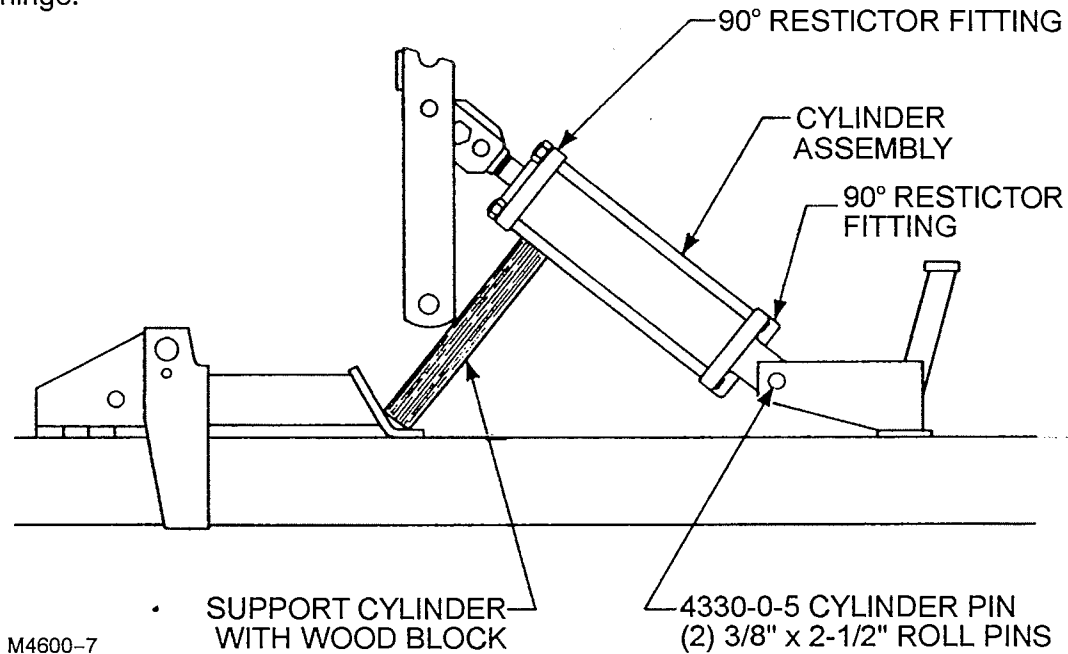
3 & 5 SHANK STD. GANG WITH REAR CENTER DISC HILLER



REFER TO PLACEMENT PAGES A18 & A19 FOR SHANK LOCATIONS AND SWEEP SIZES 11/90

VII. HYDRAULICS (FOLDING MODELS ONLY)

1. Attach the base end of the wing lift cylinders with Cylinder Pins (4330-0-5) and secure them in place with 3/8" DIA. x 2-1/2" Roll Pins. Support the cylinders on wood blocks as shown in the illustration below. Make sure that the rod end arm is high enough to clear the hinge.



2. Refer to the Parts Section page P23 and P24 for proper assembly of hydraulic hoses and fittings.

IMPORTANT: MAKE SURE THE RESTRICTOR ELLS ARE ASSEMBLED INTO ALL CYLINDER PORTS.



Warning:

Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.

Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

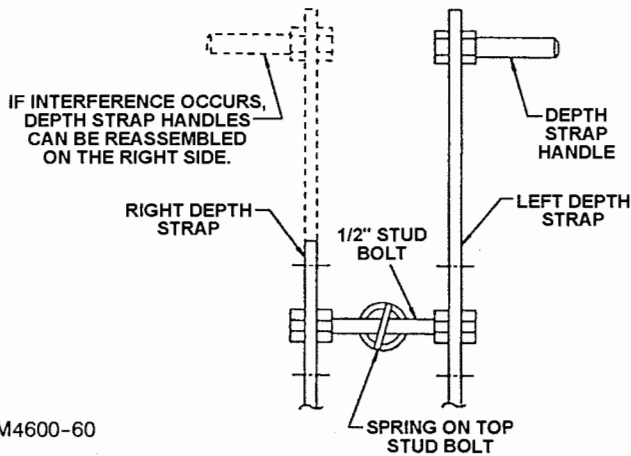
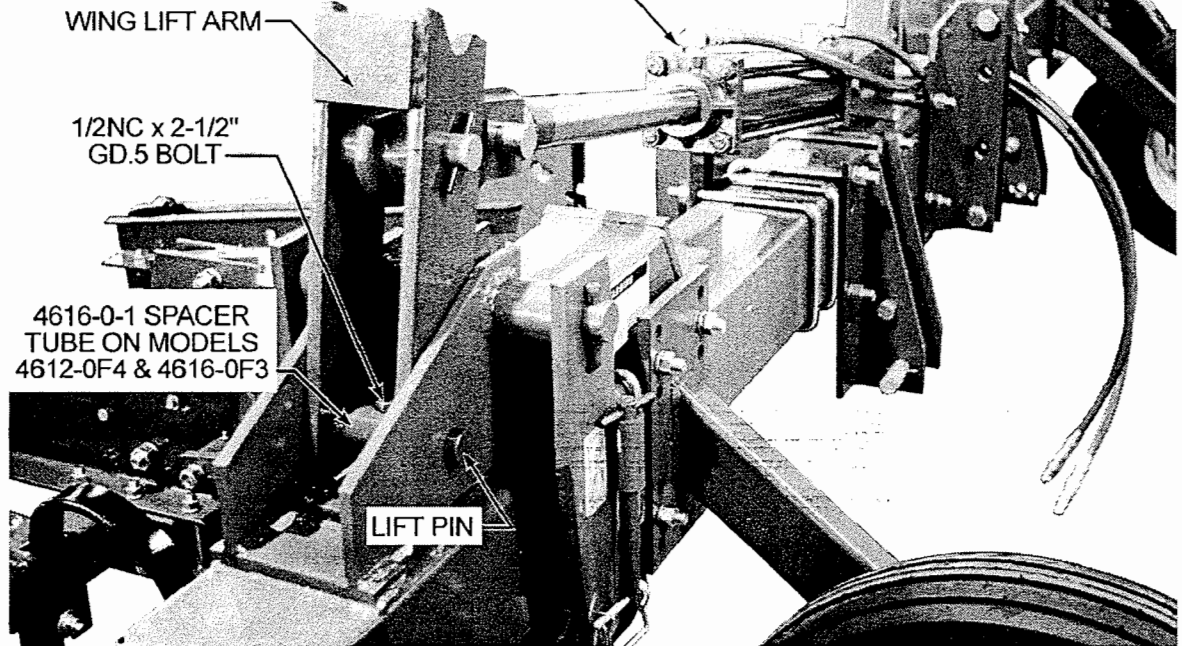
3. Attach couplers to the tractor and start filling the hydraulic system. After the cylinders are completely extended, hold the valve open for a few seconds, forcing any air out and oil in. Run the cylinders through their complete cycles several times. When you are sure the system is full of oil, extend the rods and use cardboard or paper to check for any leaks in the hose connections.

NEVER USE YOUR BARE HANDS: SEE WARNING ABOVE!

4. Fasten the Wing Lift Arm to the wing with a Wing Lift Pin (4600-0-26). Retain the Wing Lift Pin in place with a 1/2NC x 2-1/2" GRADE 5 Cap Screw and Self Locking Nut.

NOTE: PORTS TO FRONT
ON MODELS
4612-0F4 & 4616-0F3

M4600-22
Rev.3/98



M4600-60

5. The depth straps are assembled at the factory as shown to the right.

On some row spacings, there can be interference between the depth strap handles when the wings are folded.

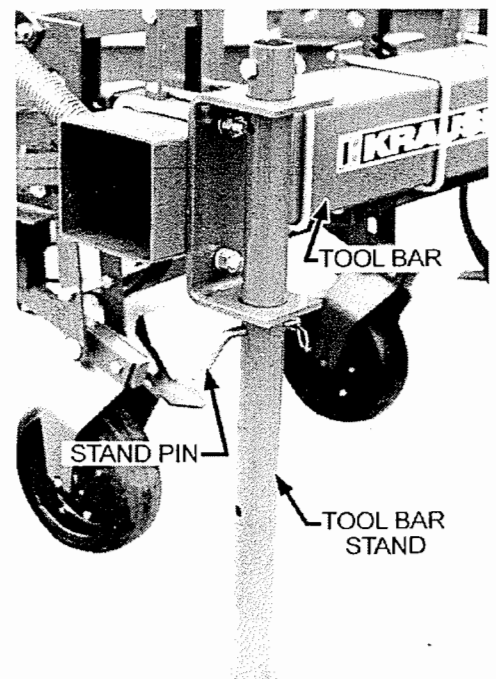
This problem can be corrected by moving the depth strap handle to the right side of the gang on the wing affected.

VIII. PARKING STAND, DOWN PRESSURE SPRINGS, ROLLING SHIELDS, DISC HILLERS & OPEN TOP SHIELDS

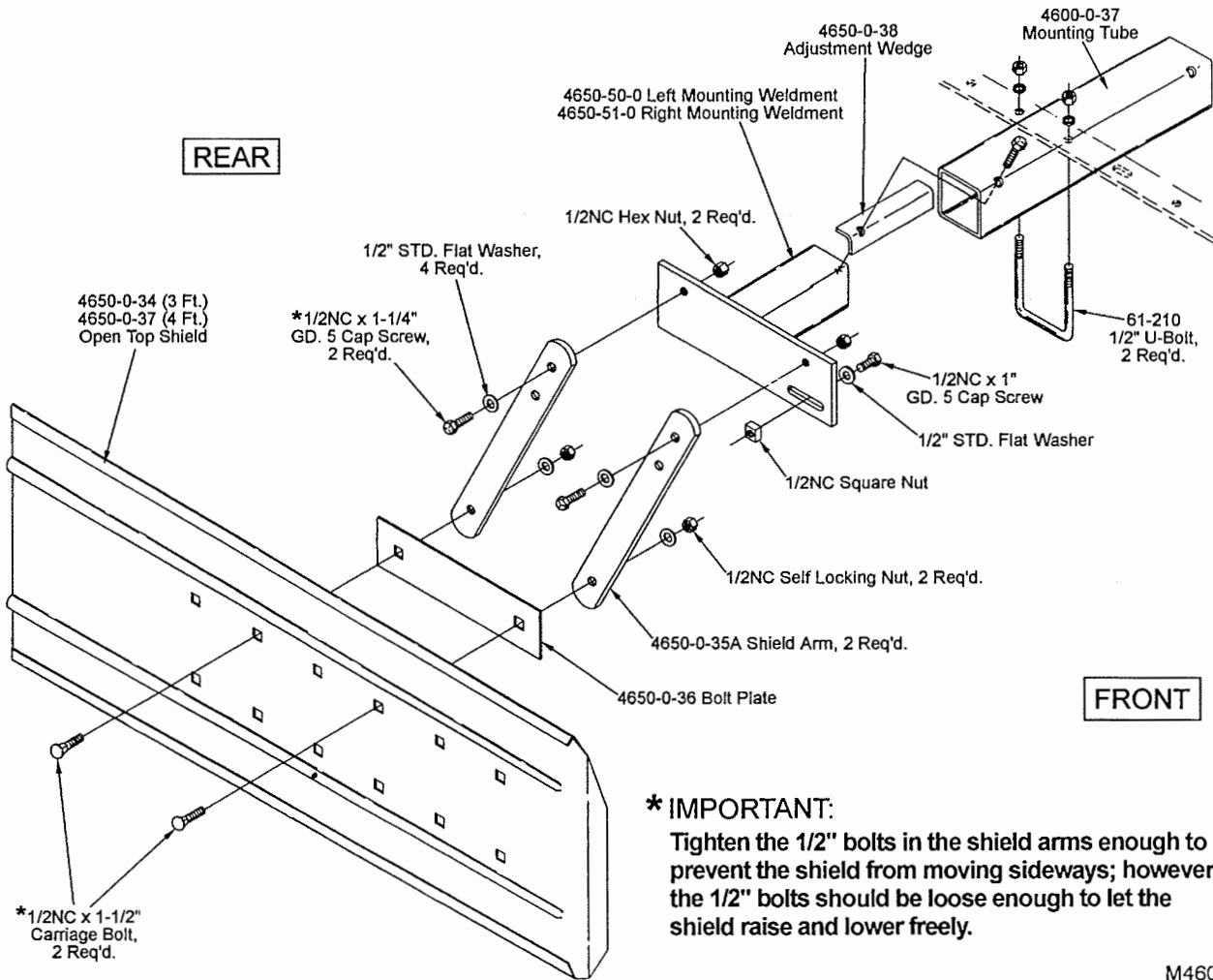
1. If ONE Parking Stand is used, position it as close to the center of the tool bar as is practical.

If TWO Parking Stands are used, position one stand at each end of the tool bar.

2. Fasten the Parking Stand Bracket to the tool bar with a 3/4" DIA. U-Bolt, Lock Washers and Hex Nuts.



M4600-26



*** IMPORTANT:**
Tighten the 1/2" bolts in the shield arms enough to prevent the shield from moving sideways; however, the 1/2" bolts should be loose enough to let the shield raise and lower freely.

M4600-14
Revised 3/95

IX. DECALS

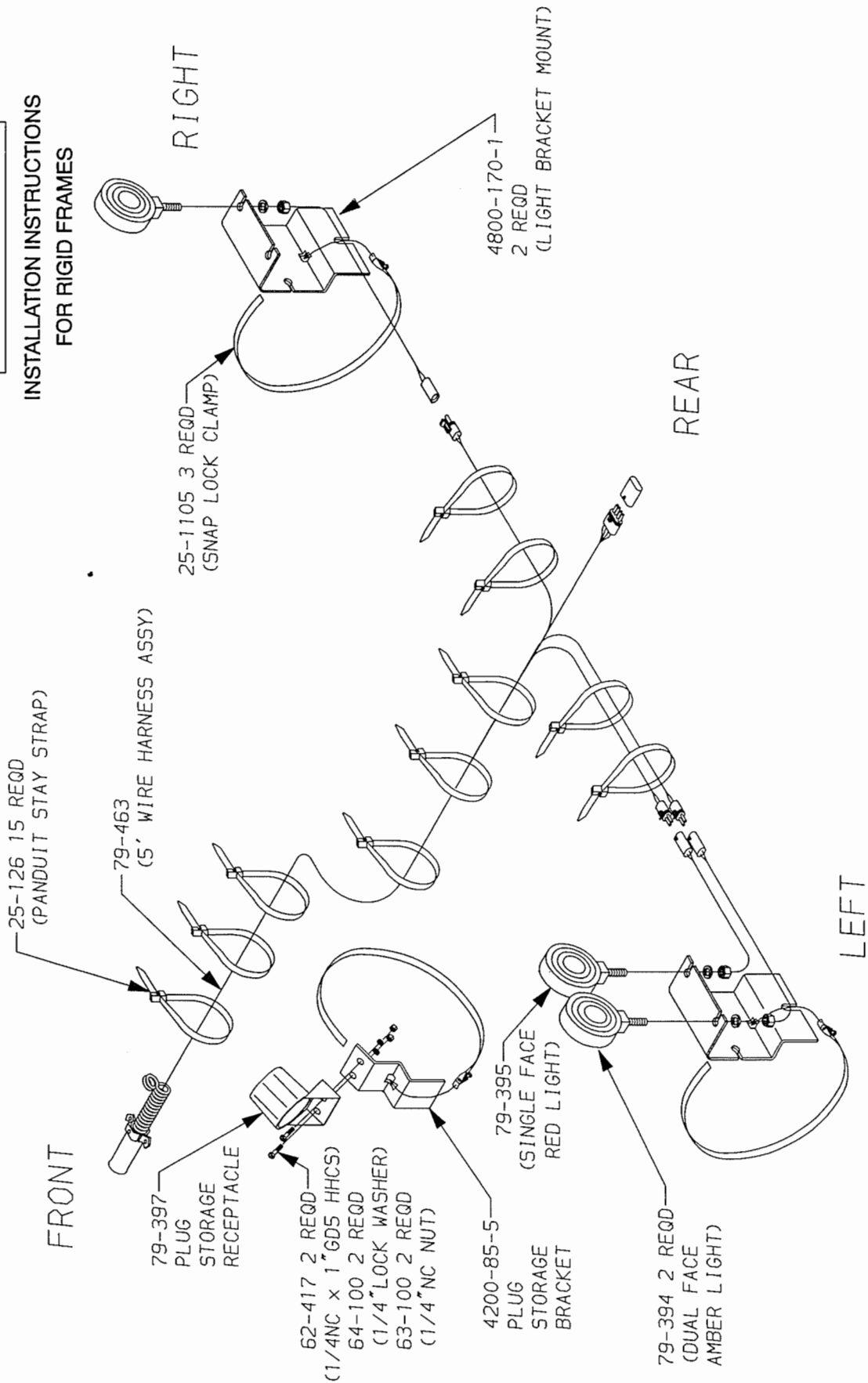
The DECALS are important to the safety of the operators and to others and must be installed at the proper locations. Some DECALS are applied at the factory; however, these locations should be checked (see page P28 in the Parts Section of this manual). *Make sure that the decals have not been damaged in shipment, and replace them if necessary.

X. LIGHT KIT

Always comply with state and local laws pertaining to lighting. Install light kit as shown on pages P0 and P1 in the Parts Section of this manual as well as pages A32 and A33 that follow.

**4608-170-0
LIGHT KIT**

**INSTALLATION INSTRUCTIONS
FOR RIGID FRAMES**



- 62-417 2 REQD
(1/4NC x 1" GD5 HHCS)
- 64-100 2 REQD
(1/4" LOCK WASHER)
- 63-100 2 REQD
(1/4" NC NUT)

4612-170-0
LIGHT KIT

INSTALLATION INSTRUCTIONS
FOR FOLDING FRAMES

