



WIL-RICH

# OPERATOR'S MANUAL

## WIL-RICH STANDARD ROLLING PLOW DISK

R P S  
20 Series

10'

12'

14'

16'



**WIL-RICH**

FARM EQUIPMENT DIVISION  
LEAR SIEGLER, INC.

Box 1013, Wahpeton, ND 58075

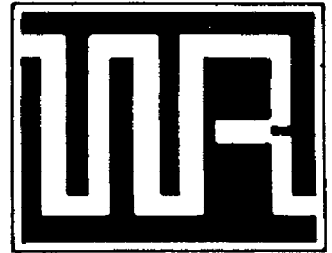
PRINTED IN U.S.A. (74012) 4/84-200



**WIL-RICH**  
FARM EQUIPMENT DIV.  

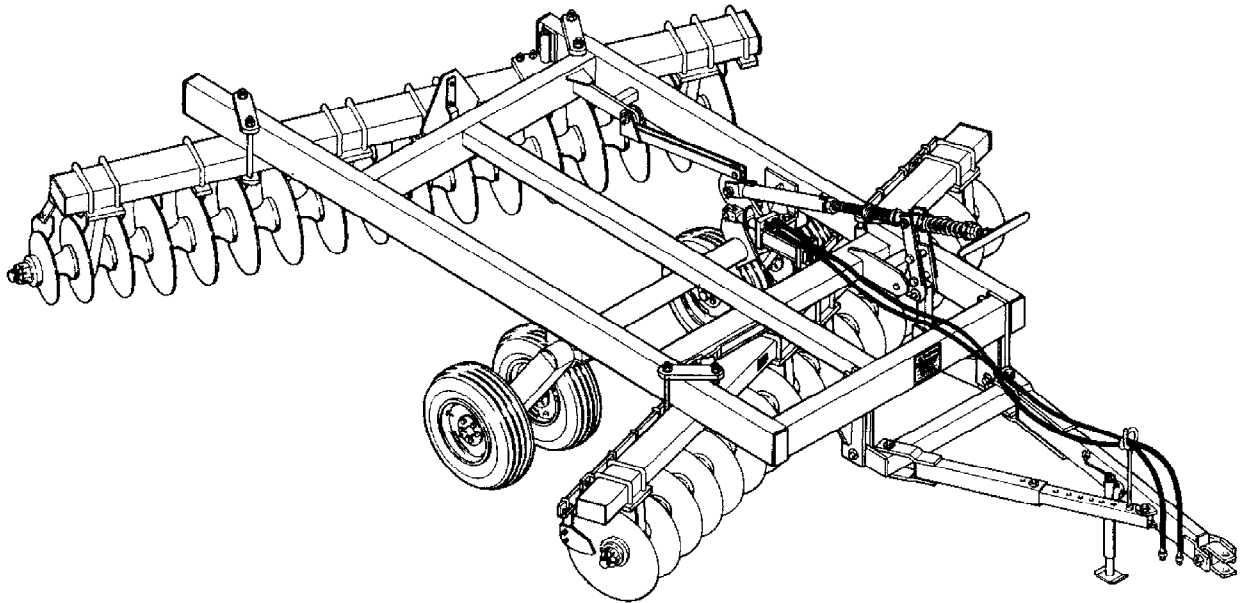
---

**LEAR SIEGLER, INC.**



---

## **RP-S20 SERIES**



Printed in U.S.A.

---

# TABLE OF CONTENTS

Safety Alert Symbol.....	3
General Information Page .....	4
Operator's Qualification and Responsibilities .....	5
Sign-Off Sheet .....	5
Specifications.....	6 - 8
Standard Equipment .....	6
Hydraulic System .....	7
Serial Plate .....	7
Decals .....	8
General Safety Instructions .....	9
General Operating Instructions.....	9
Hitching Instructions.....	10
Towing Instructions .....	11 - 12
Field Operations .....	12 - 15
General Maintenance .....	16 - 20
Lubrication .....	16 - 17
Gang Bolt Wrench.....	17
Gang Bearings .....	18
Wheel Bearings .....	19
Storage.....	19
Disk Blade Maintenance.....	20
Trouble Shooting .....	20
Assembly Instructions .....	21
Bolt Information .....	21
Frame Position .....	22
Axle and Wheels .....	23
Leveling Assembly and Lockout.....	24
Hitch and Jack .....	25
Hydraulic Cylinder .....	27
Gang Beams.....	28 - 29
Slow Moving Emblem and Decal .....	31
Gang Assemblies Location .....	32 - 34

## SAFETY ALERT SYMBOL

The Symbol Shown Below Is Used To Call Your Attention To Instructions Concerning Your Personal Safety. Watch This Symbol - It Points Out Important Safety Precautions. It Means "ATTENTION! - Become Alert! Your Personal Safety Is Involved!" Read The Message That Follows And Be Alert To The Possibility Of Personal Injury Or Death.



---

# BE ALERT!

 Your Safety Is Involved.

### WARNING

Anyone who will operate or work around a Rolling Plow shall first read this manual! Failure to read this manual and its safety instructions is a misuse of the equipment.

# **GENERAL INFORMATION**

## **TO THE OWNER**

Your new Wil-Rich RPS-20 Series Rolling Plow has been designed and manufactured to give years of dependable service. The care you give your machine will greatly affect the satisfaction and service you will obtain from it. By using this manual as a guide and observing the instructions and suggestions we have recommended, you should receive satisfactory service for many years. Should you require additional aid or information, please contact us.

## **RECEIVING MERCHANDISE & FILING CLAIMS**

When receiving merchandise it is important to check both the number of parts and their description with the bill of lading. All claims for freight damage or shortage must be made by the consignee within 10 days from date of delivery. In the event of freight damage the consignee should accept the shipment after noting the damage on the delivery receipt, reorder replacement parts, and file claim to cover the loss.

When the material leaves the factory it becomes the property of the consignee. It is the responsibility of the consignee to file claim on any possible damage or loss.

## **WARRANTY**

Wil-Rich Operations guarantees all equipment to be of good workmanship, to be made of sound materials and to do the work for which intended, when set up and operated according to instructions. Wil-Rich shall not be responsible for more than the cost of the defective part. Wil-Rich agrees to replace free of charge any part which proves defective within 12 months from the date of purchase, to the original purchaser only. The company is to be notified in writing within 30 days from date of failure and the defective part returned prepaid. This warranty covers only such parts that are manufactured by Wil-Rich and does not extend to component parts used in equipment.

## **MODIFICATIONS**

It is the policy of Wil-Rich Operations to improve its products whenever possible and practical to do so. We reserve the right to make changes, improvements, and modifications at any time without incurring the obligation to make such changes, improvements, and modifications on any equipment sold previously.

## **TERMS "RIGHT HAND" AND "LEFT HAND"**

"Right Hand" and "Left Hand" sides of this machine are determined by standing at the rear of the unit and facing in the direction of forward travel.

## **REPLACEMENT PARTS**

When replacement parts are needed, check with your local Wil-Rich dealer.

# OPERATOR QUALIFICATIONS AND RESPONSIBILITIES

Operation of this machine shall be limited to competent and experienced persons. In addition, anyone who will operate or work around a RP-S20 Series Rolling PLOW must use good common sense. It is your responsibility as an owner or operator or supervisor, to know what specific requirements, precautions, and work hazards exist and to make these known to all other personnel working with the equipment or in the area, so that they too may take any necessary safety precautions that may be required. In order to be qualified, he must also know and meet all other requirements, such as:



1. Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know that these regulations are in your own area or situation.



2. Current OSHA regulations state in part: "At the time of initial assignment and at least annually thereafter, the employer shall instruct **every** employee in the safe operation and servicing of all equipment with which the employee is, or will be involved."\*



3. It shall be the duty of all operators to see that children and/or other persons stay out of the work area! Trespass into the work area by anyone not involved in the actual operation, or trespass into a hazard area by anyone, shall result in an immediate shut down by the operator.



4. A person who has not read and understood all operating and safety instructions is not qualified to operate the machine.

\*Federal Occupational Safety & Health Standards for Agriculture Subpart D, Section 1928.57 (a) (6)

## SIGN OFF SHEET



As a requirement of OSHA it is necessary for the employer to train the employee in the safe operation and safety procedures with this disk. We include this sign off sheet for your convenience and personal recordkeeping.

DATE	EMPLOYER SIGNATURE	EMPLOYEE SIGNATURE

## RP-S20 - ROLLING PLOW - SPECIFICATIONS

MODEL NUMBER	WIDTH OF CUT	BLADE SPACING		BLADE DIAMETER	NUMBER OF BEARINGS	NUMBER OF BLADES	APPROX. WEIGHT
		FRONT	REAR				
S10-2499R-6SS	10' 5"	9	9	24" dia.	6	27	4435
S10-2490R-6SS	10' 6"	9	10½	x 6 ga. thick	6	25	4380
S10-2499R-HSS	10' 5"	9	9	24" dia.	6	27	4610
S10-2490R-HSS	10' 6"	9	10½	x ¼" thick	6	25	4545
S10-2690R-HSS	10' 7"	9	10½	26" dia.	6	25	4570
S10-2600R-HSS	10' 7"	10½	10½	x ¼" thick	6	23	4400
S12-2499R-6SS	12' 7"	9	9	24" dia.	8	33	5465
S12-2490R-6SS	12' 10"	9	10½	x 6 ga. thick	8	31	5408
S12-2499R-HSS	12' 7"	9	9	24" dia.	8	33	5685
S12-2490R-HSS	12' 10"	9	10½	x ¼" thick	8	31	5627
S12-2690R-HSS	12' 10"	9	10½	26" dia.	8	31	5655
S12-2600R-HSS	12' 10"	10½	10½	x ¼" thick	8	29	5375
S14-2499R-6SS	14' 1"	9	9	24" dia.	8	37	5910
S14-2490R-6SS	14' 6"	9	10½	x 6 ga. thick	8	35	5745
S14-2499R-HSS	14' 1"	9	9	24" dia.	8	37	6358
S14-2490R-HSS	14' 6"	9	10½	x ¼" thick	8	35	6195
S14-2690R-HSS	16' 5"	9	10½	24" dia.	8	35	6215
S14-2600R-HSS	16' 5"	10½	10½	x ¼" thick	8	33	5845
S16-2499R-6SS	16' 1"	9	9	24" dia.	12	41	6630
S16-2490R-6SS	16' 4"	9	10½	x 6 ga. thick	12	39	6555
S16-2499R-HSS	16' 1"	9	9	24" dia.	12	41	6910
S16-2490R-HSS	16' 4"	9	10½	x ¼" thick	12	39	6835
S16-2690R-HSS	16' 5"	9	10½	24" dia.	12	39	7075
S16-2600R-HSS	16' 5"	10½	10½	x ¼" thick	12	37	6645

## STANDARD EQUIPMENT

### Choice of Blade

- 24 x 6 gauge Blade, Smooth or Notched
- 24 x ¼" Blade, Smooth or Notched
- 26 x ¼" Blade, Smooth or Notched

### MAIN FRAME - 4" x 8" x ¼" Tubing

### GANG BEAMS - 4" x 8" x ¼" Tubing

1½" I.D, Triple Seal Regreaseable

Gang Bearing in Cast Housing.

Constant Level, Spring Loaded, Leveling Adjustments.

Hitch Jack.

9" or 10½" Cast Iron Spools.

Tapered Leveling Blades.

Hydraulic Systems with Hoses to tractor.

Moldboard Scraper (Adjustable)

Hydraulic Hose Carrier.

Rigid Bearing Stand.

Transport Lockout Device.

3/8" Wall Axle Tube (5½" O.D.)

Gang Wrench.

1½" SQ. Gang Shaft.

## OPTIONAL EQUIPMENT

Hi Flotation Tires - 11 x 15 x 6 ply.

Single Tongue Hitch Clevis

Extra Bearing Stands.

Dual Wheels for 10' size.

Flex Bearing Stand.

# SPECIFICATIONS

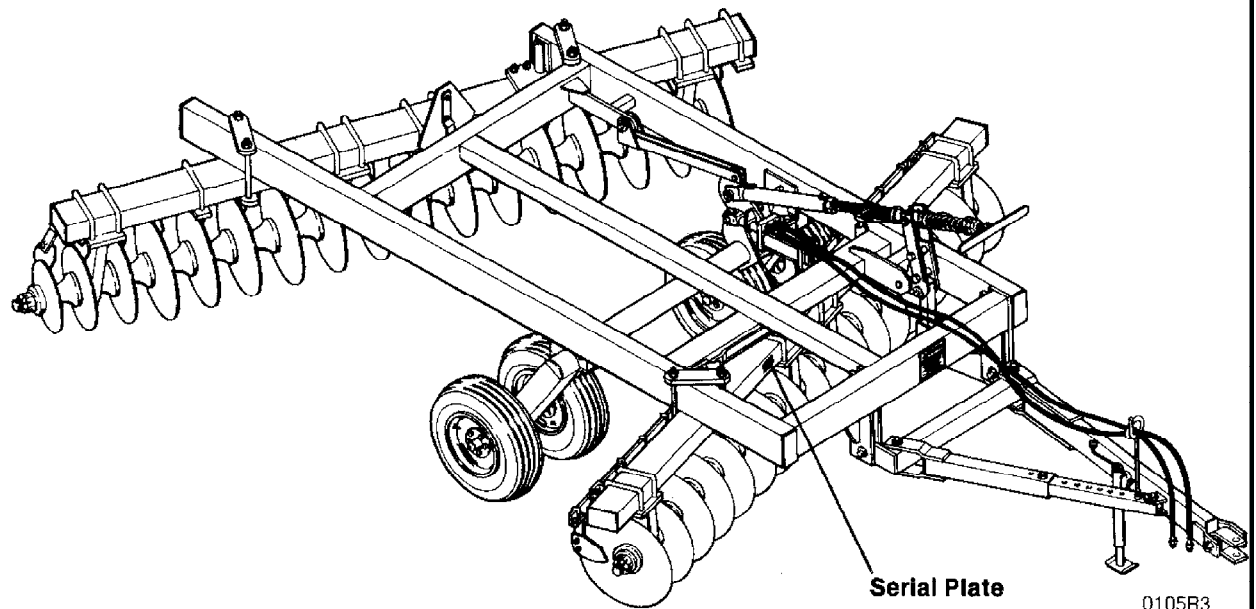
## HYDRAULIC CYLINDERS

The hydraulic components received with your machine were selected to deliver the most efficient and economical use. Any parts for replacement should be replaced with parts of the same type and size. Replace any hoses or fittings which develop leaks.

Standard equipment for your machine includes all hydraulic cylinders, fittings, and hoses from the cylinders to the tractor, with the exception of fittings required to attach hoses to tractor. The fittings include restrictors that limit the speed of operation of the hydraulic cylinders. The hydraulic cylinders are provided with O-ring ports. Hoses and fittings are provided that attach to these cylinders. The remaining fittings and hose ends are "JIC" fittings (**not pipe thread**) except the 1/2" male pipe fitting at the end of the hose leading to the tractor.

The lifting system uses one 4" bore x 8" stroke "tie rod" type cylinder.

Operation of the hydraulic system axle unit requires a tractor with hydraulic pressure capability of 1800 - 2000 P.S.I..



### FIGURE 1

## SERIAL PLATE

To insure efficient and prompt service furnish us with the model and serial number of your RP-S20 Series Rolling Plow in all correspondence or other contacts. The serial plate is located in the middle of the front gang beam at the front of the machine. (See Figure 1)

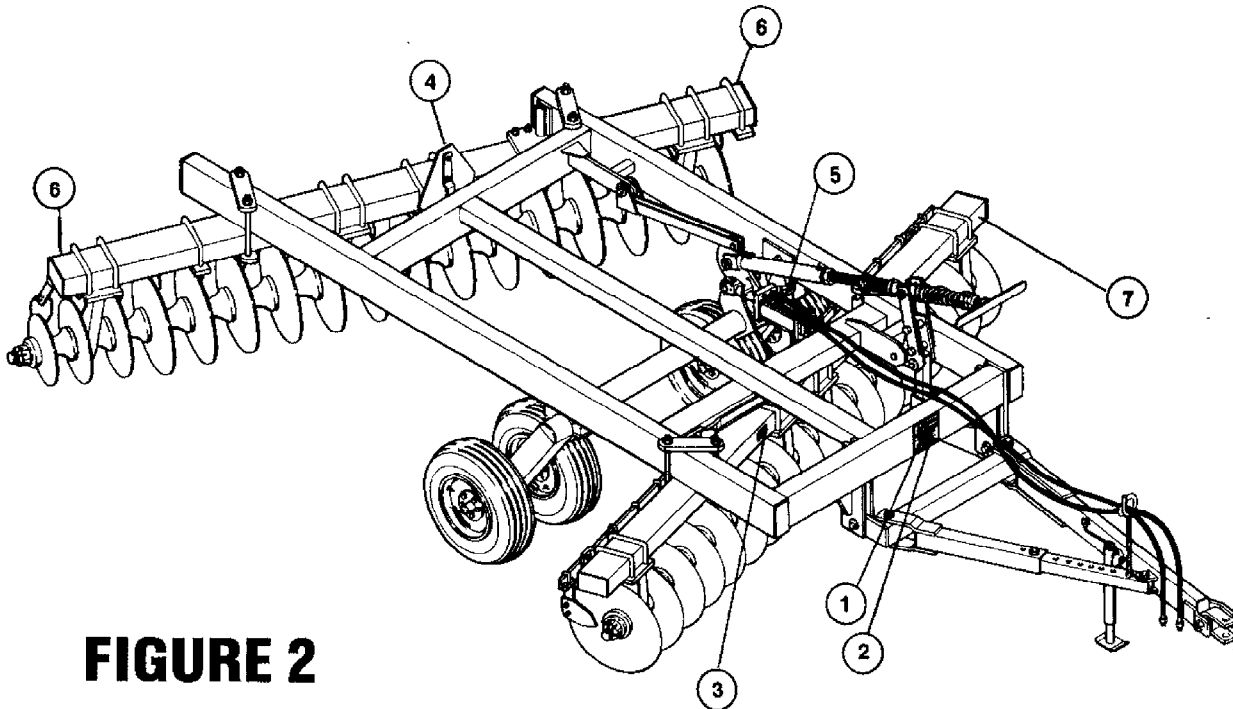


# SPECIFICATIONS (CONT'D)

## DECALS AND REFLECTORS



**CAUTION** Keep all safety decals and reflectors clean, readable and in good condition. If a decal or reflector cannot be easily read or seen for any reason, or has been painted over, replace it immediately. Decals and reflectors may be ordered through your Wil-Rich dealer.



**FIGURE 2**

0105R3

REF. NO.	QTY.	DESCRIPTION/LOCATION
1	1	Operator WARNING decal. Locate at center of front side of main frame. Black on yellow background. Refer to page 9 for illustration.
2	1	Gang bearing lubrication reminder decal. Locate on front panel of hitch frame directly below operator WARNING decal. Black on white background. Refer to page 17 for illustration.
3	1	Serial Number/Product Identification Number plate. Locate on middle of front gang beam. Black on silver background.
4	1	Slow Moving Vehicle emblem ( <b>not furnished</b> ). See page 11 for illustration.
5	1	Assembly and Operator Hydraulic Cylinder CAUTION decal. Locate on port side of cylinder barrel. Black on yellow background. Refer to page 26 for illustration.
6	2	Red reflector. Locate on rear of left and right rear gang beams, flush with end of beams. (2.95 in. x 4.25 in., 74mm x 110mm)
7	1	Amber reflector. Locate on front of left front gang beam, flush with end of beam. (2.95 in. x 4.25 in., 74mm x 110mm)

**Decals that cannot be read and reflectors that are damaged should be replaced.**

# GENERAL SAFETY INSTRUCTIONS

## **WARNING**

- 1. BEFORE OPERATING — STUDY OPERATORS MANUAL, SAFETY MESSAGES AND SAFE OPERATING PROCEDURES, READ SAFETY SIGNS ON THIS MACHINE.**
- 2. TRANSPORT ON PUBLIC ROADS — OBSERVE FEDERAL, STATE AND LOCAL REGULATIONS; DISPLAY SMV EMBLEM; ATTACH PROPER STRENGTH IMPLEMENT SAFETY CHAIN; AND LIMIT MAXIMUM SPEED TO 20mph (32 km/h).**
- 3. LOWER OR BLOCK ALL ELEVATED COMPONENTS BEFORE SERVICING OR LEAVING THIS MACHINE.**

321-6625

## GENERAL OPERATING INSTRUCTIONS

For economical and efficient operating, the operator must be aware of all the adjustments which should be considered for the best results. The operator should know what adjustment must be made for different conditions.

### HITCHING INSTRUCTIONS FOR TRACTOR DRAWBAR

Best results will be obtained by using a free-swinging drawbar on the tractor. It is the characteristic of the off-set disk to swing the drawbar to the left of center when in operation. The drawbar movement may be limited to the left half of the total swing in order to gain the maximum clearance with the tractor tire from the hitch when making sharp right turns. The drawbar should be locked in the center of its swing for road travel.

### JACK

The Rolling Plow is equipped with a telescoping screw type jack. The jack has a pin that holds the jack either in a vertical or horizontal position. To change the position of the jack, pull the pin and rotate the jack until the pin can be inserted again. (See Figure 3)

To operate the jack, turn the handle clockwise to extend and counter-clockwise to retract.

Refer to next page for jack shown in folded position.



**FIGURE 3**

# GENERAL OPERATING INSTRUCTIONS (CONT'D)

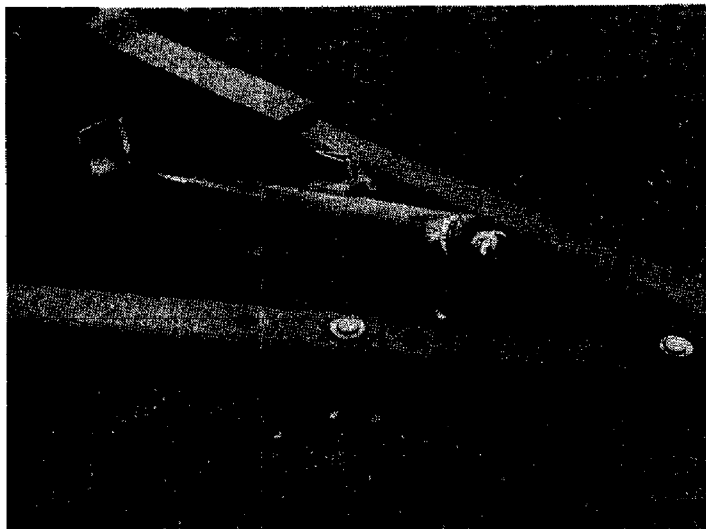
## HITCHING INSTRUCTIONS (CONT'D)

The JACK is shown here in the folded transport position: (Figure 4)



**CAUTION** Before retracting or folding the jack, the hitch clevis should be secured to the drawbar to prevent the hitch from falling to the ground.

**IMPORTANT** When working the disk, jack should be in folded transport position.



**FIGURE 4**

### HITCH PIN

The recommended hitch pin size is 1-1/4" in diameter and should be securely attached so that the pin can not inadvertently come out.



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

### HYDRAULIC FITTINGS

All fittings for the hydraulic hoses are provided except for fittings at the end of the hoses leading to the tractor. The operator will need to furnish the hydraulic couplers that will match the 1/2" male pipe fittings and his tractor couplers.

**CAUTION** Do not connect or disconnect hydraulic components when there is pressure within the system. Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues and cause serious injury. Use a piece of wood or cardboard when looking for leaks. Never use the hands or other parts of the body. When reassembling, make absolutely certain that all connections are tight. If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious infection or reaction may occur if medical attention is not received at once.

# GENERAL OPERATING INSTRUCTIONS (CONT'D)

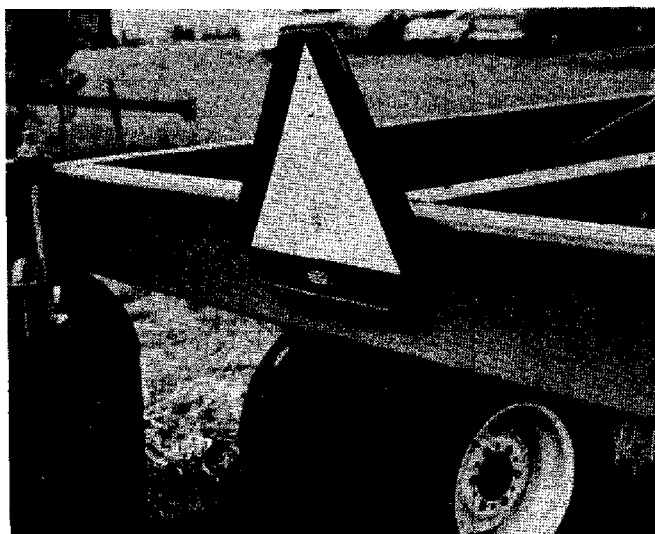
## TOWING INSTRUCTIONS



**CAUTION** Observe safe driving practices; comply with your local and state laws regarding length, width, and lighting. Be aware of low and narrow passages both in the field and on the road.

### SMV EMBLEM

When trailing the disk on public roads the SMV emblem must be used, for protection of tractor and motor vehicle operators. (See Figure 5)



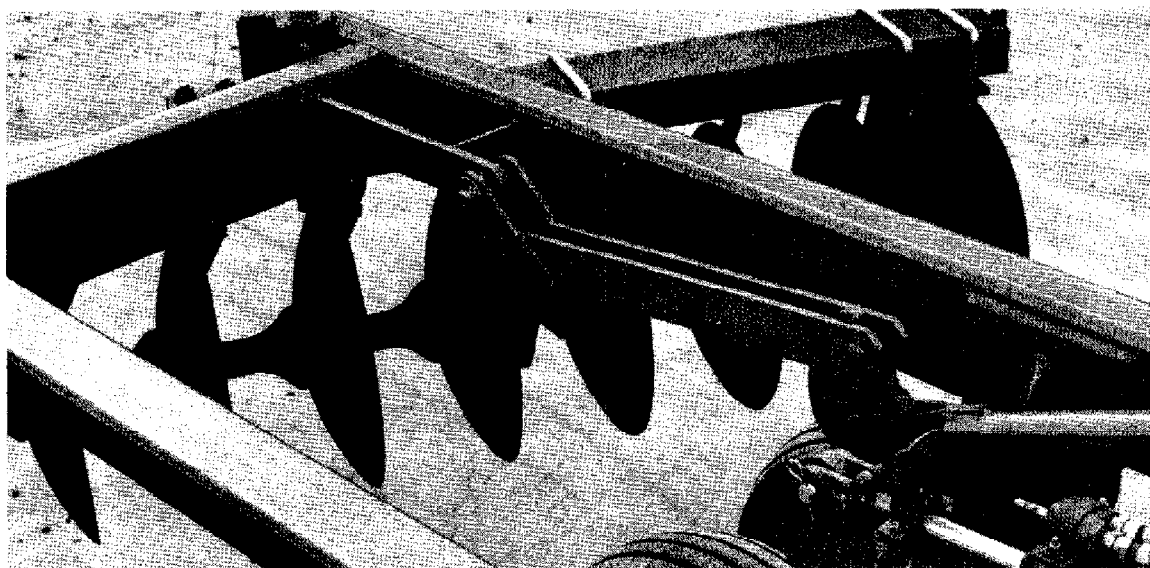
**FIGURE 5**

### LIFT LOCKOUT

When transporting or working on the machine in a lift position, the lift lockout should be used to prevent machine from falling in case of a failure of any of the hydraulic components. The lockout is engaged by swinging it down over the axle post.

Figure 6 shows lockout engaged.

Figure 7 shows lockout disengaged on next page.



**FIGURE 6**

# **GENERAL OPERATING INSTRUCTIONS (CONT'D)**

## **TOWING INSTRUCTIONS (CONT'D)**

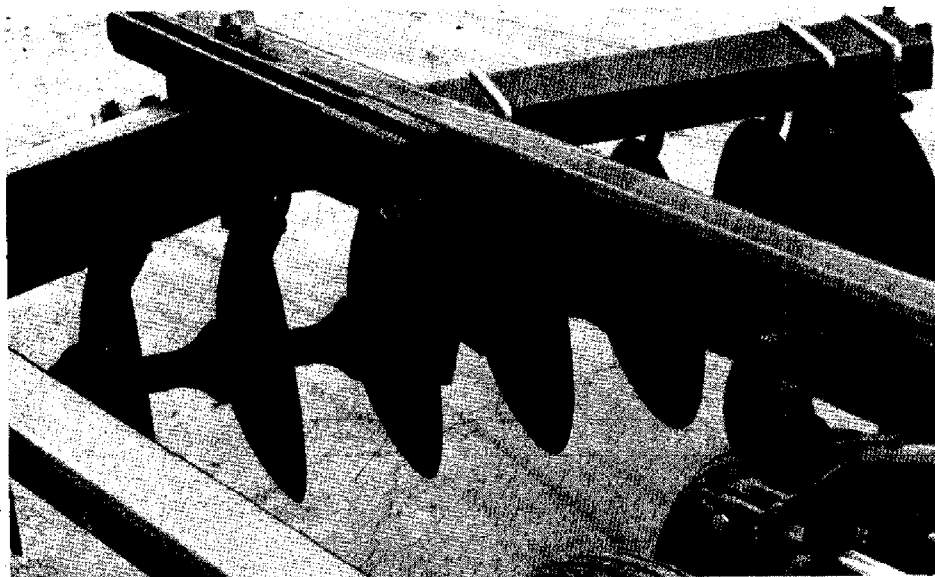


Figure 7 shows lock-out disengaged.



### **CAUTION:**

Secure transport lock-out when transporting.

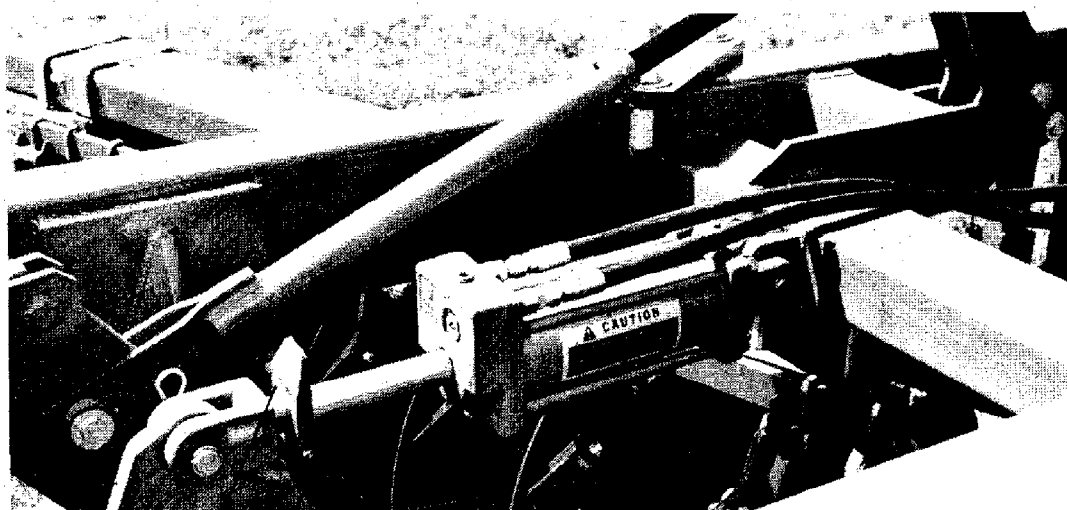
## **FIGURE 7**

## **FIELD OPERATION INSTRUCTIONS**

To achieve the best performance from your Rolling Plow, there are a number of adjustments which can be made. These include controlling the depth and level of your machine as well as changing the gang angles. When making these adjustments use the following procedures:

### **DEPTH CONTROL**

The lift cylinder is equipped with a depth control system to adjust the cutting depth of the disk. The location of the control paddle determines the length of cylinder stroke. Moving the control paddle closer to the cylinder decreases disk depth; moving the control paddle away from the cylinder increases disk depth. See Figure 8.



CONTROL PADDLE

## **FIGURE 8**

# GENERAL OPERATING INSTRUCTIONS (CONT'D)

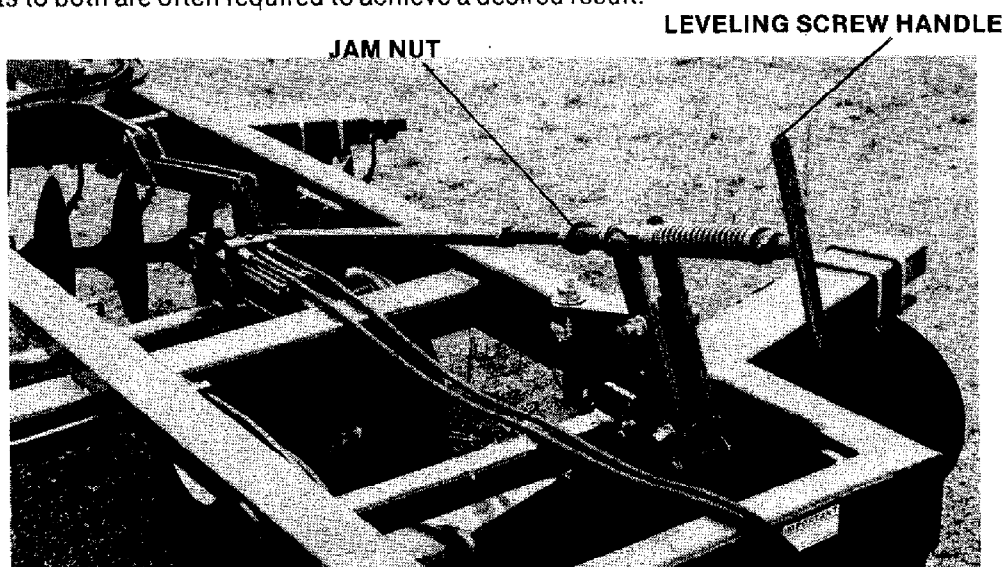
## FIELD OPERATING INSTRUCTIONS (CONT'D)

### ADJUSTMENT FOR LEVELING DISK

The front to rear leveling control and depth adjustment screw is located on the left front of the machine. Turning this screw handle to the left (counter-clockwise) lowers the front gang which makes the rear of the machine swing to the left. Turning the screw to the right lowers the rear gang which results in the rear of the machine swinging to the right. The objective is to control how much the right end blades of the rear gang lap over and level out the ridge made by the front gang.

This adjustment will vary depending on soil conditions. Normally best results are achieved when the rear gang is set approximately 1½" deeper than the front gang.

The gang angle adjustment and the leveling screw adjustment should be considered together since adjustments to both are often required to achieve a desired result.



**FIGURE 9**

### GANG ANGLE ADJUSTMENT

The gang sections can be locked at any angle from nearly straight to a maximum of 22° on the front and 27° on the rear section. The cutting and penetrating ability of the machine is increased with the increase in angle of the sections. More angle in the rear section is desirable.

Figure 10 shows the gang sections at a suggested angle position for most soil conditions. This setting would be for heavy cutting. Too much front gang angle can cause the rear of the machine to trail to the left. Too much rear gang angle without sufficient front gang angle will cause the rear of the machine to trail to the right.

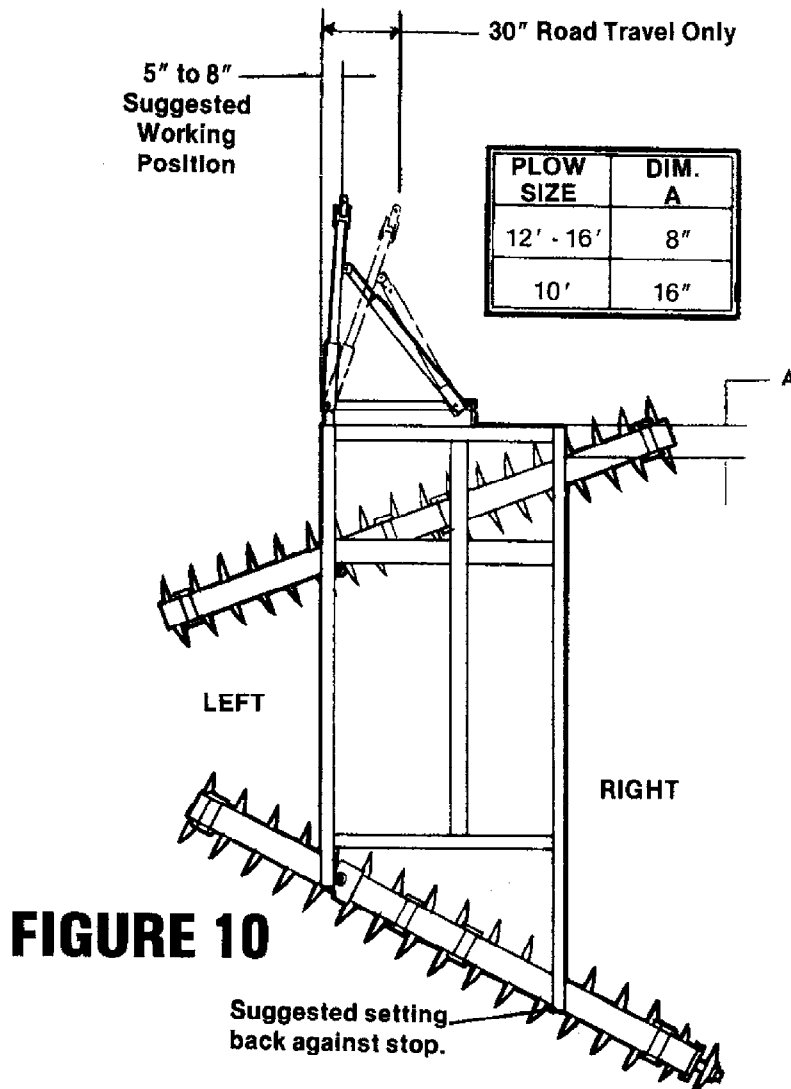
To change gang angle raise the machine. Loosen clamp bolts holding the gang to the right side and left side of the frame. Slide the gangs to the desired position. Tighten clamp bolts. Make sure the gangs do not slide to the side during adjustment.

# GENERAL OPERATING INSTRUCTIONS (CONT'D)

## FIELD OPERATING INSTRUCTIONS (CONT'D)

### MACHINE HITCH ADJUSTMENT

The off-set disk hitch assembly can be adjusted to the left and right by pin placement in a selected hole in hitch adjusting member. The extreme right position is for road travel only. Field operation in this position will generally cause considerable side draft on the tractor. That is, swing the tractor drawbar bar to the left. Figure 10 shows the off-set disk hitch in road position as well as a suggested working position. Machine hitch adjustment is a matter of choice depending on soil conditions which will influence performance at a particular setting. As a general rule, a hitch setting more to the left will reduce the left swing of the tractor drawbar.



**FIGURE 10**

### OPERATING CLEARANCE

It is important for the operator to allow a clearance whenever operating the disk. Both in the field and on the road the operator should be aware of the overall size of both his tractor and disk.

Lift machine out of ground when making turns.



**CAUTION** Observe safe driving and operating practices in respect to the overall width and length of the disk. Be aware of low and narrow passages both in the field and on the road.

# GENERAL OPERATING INSTRUCTIONS (CONT'D)

## FIELD OPERATING INSTRUCTIONS

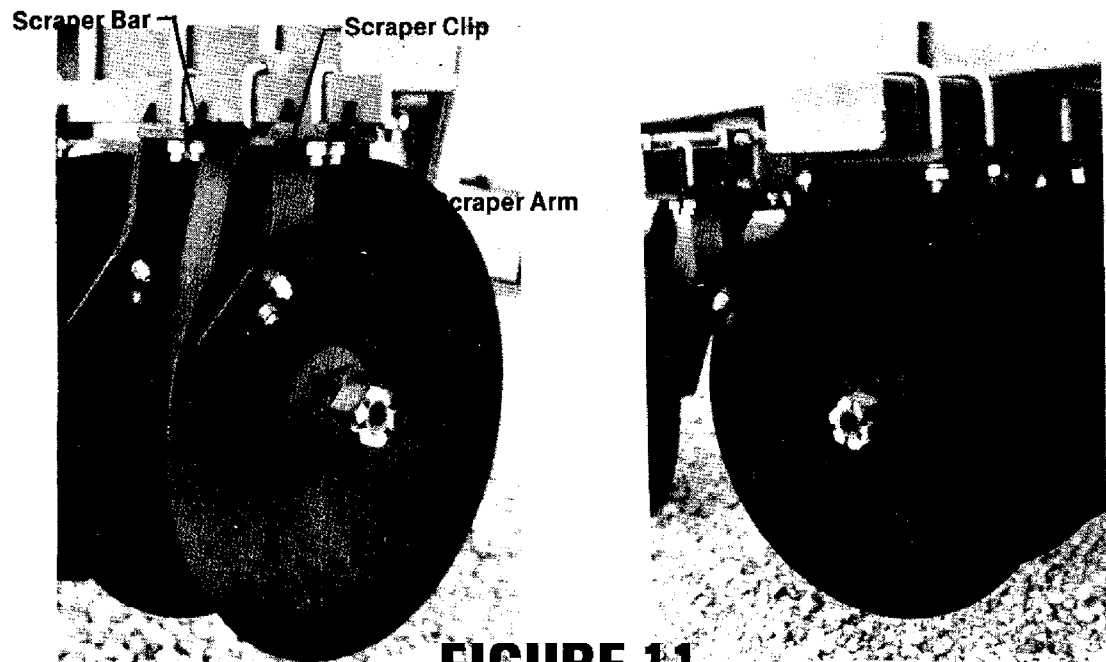
### SCRAPER

The moldboard type scrapers provide a continuous cleaning action when properly adjusted. It is important that the clearance be checked daily under normal soil tilling conditions and more often in extremely trashy disking.

Scraper should be adjusted to run approximately 1/16" to 1/8" from disk blade. Scraper has two adjustments: slots on the scraper arm allow adjustment of the scraper point and placement of the scraper arm on the scraper bar allows lateral movement of the scraper blade. (See Figure 11)

The pitch of the scraper blade can also be adjusted by loosening the blade bolts and moving the blade in the slotted holes in the scraper arm.

When disking in trashy conditions, trash will occasionally build up on the scraper blades. This condition can sometimes be alleviated by moving the scraper away from the disc blades.



**FIGURE 11**



**CAUTION** When working on disk, care should be exercised in handling or tightening bolts near disk blades to avoid injury.

### ROCKY SOIL

Soil containing rocks, tree stumps or other similar foreign objects may cause mechanical damage to the unit which is not covered by warranty.

### OPERATING SPEED

Best results will be achieved when operating speed of 4 to 6 miles per hour is maintained. Speed in excess of 6 miles per hour can cause uneven disking. High speed will increase the chance of damage to the machine when striking foreign objects such as rocks or stumps.

Lift machine out of ground when making turn. This avoids serious ridging and high stresses on the machine.



## GENERAL MAINTENANCE

**REMEMBER:** Accidents don't always happen to the other guy  
so take great care when performing maintenance.

Periodic preventative maintenance such as tightening bolts, replacing worn pins, and proper lubrication will do much to extend the useful trouble-free life of the Rolling Plow and provide the owner with the maximum operational performance.

After two hours and again after the first eight hours of operation the following checks and adjustments should be made.

1. **CHECK AND TIGHTEN IF NECESSARY, ALL GANG SHAFT NUTS. TIGHTEN TO 1200 FOOT POUNDS, WHICH IS 200 POUNDS ON THE END OF A 6 FT. LONG WRENCH.**
2. **Tighten all bolts, especially the bearing stand bolts. Tighten all bolts to the torques specified in chart on page 21. When bolts are replaced, be sure they are replaced with bolts of equal strength. See bolt head markings on bolt chart.**
3. **Check wheel bearings and tighten if necessary. Check and tighten wheel lug bolts.**
4. **Check all keys and pins to see they are securely fastened.**
5. **Check and adjust scrapers. Scrapers should be adjusted to run approximately 1/16" to 1/8" from disk blades.**
6. **Lubricate various components that require lubrication as outlined in operation manual -- pages 13 to 16.**
7. **Check all hydraulic components and connections for leaks. Replace any hoses or fittings that develop leaks.**

Use the above list as a general guide for later checks and adjustments.



**CAUTION** Never clean, adjust or lubricate a disk that is in motion.

For economical and efficient operation, the proper lubrication of the disk is important. The following will detail the parts needing lubrication and the various conditions which determine the time span.

There are two axle bearing castings which are in need of lubrication daily during regular use. (See Fig. 12)

The leveling screw has two places which should be lubricated, the trunion and the leveling screw tube. These should be lubricated daily or as necessary. The treads on the leveling screw should be coated with oil occasionally to prevent rust and for a smoother operation.

Be sure the grease fittings are free of dirt or paint before using grease gun. Replace any damaged or missing fittings. Use a good grade of gun grease.

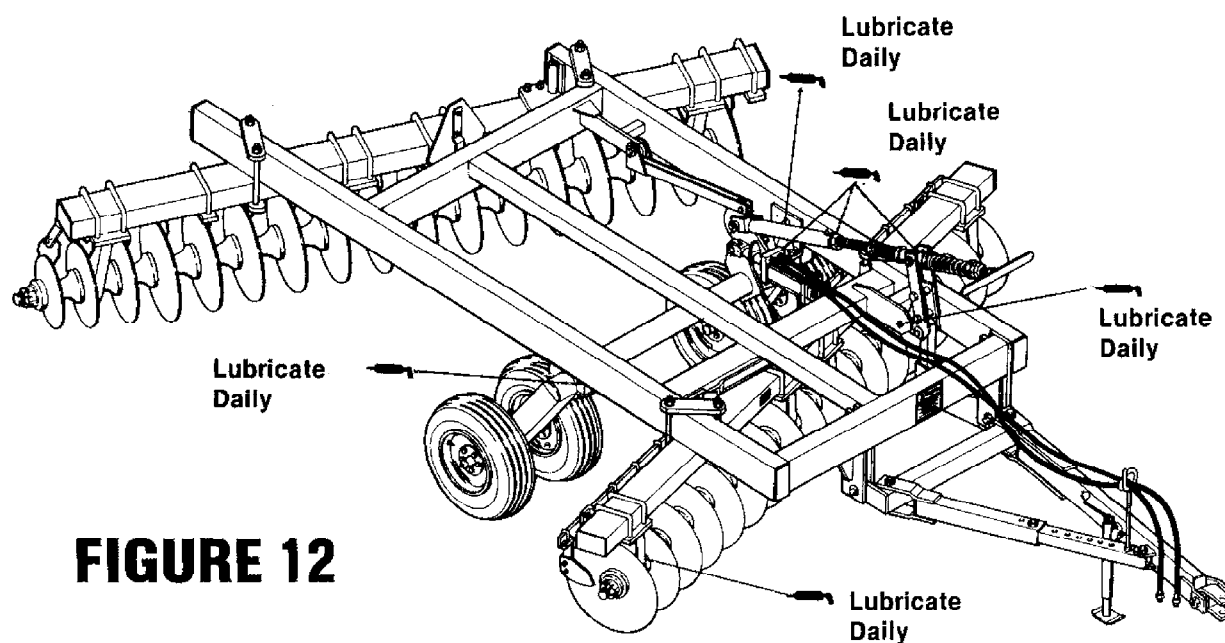


**CAUTION** When machine is idle or when making adjustments, all hydraulic components must be locked to prevent accidental lowering.

The leveling pivot (teardrop) is the part that connects the leveling screw to the frame. There is a grease fitting located on the leveling pivot to allow the pin that fastens to the frame to be greased. This should be lubricated daily during regular use.

# GENERAL MAINTENANCE (CONT'D)

## LUBRICATION (CONT'D)

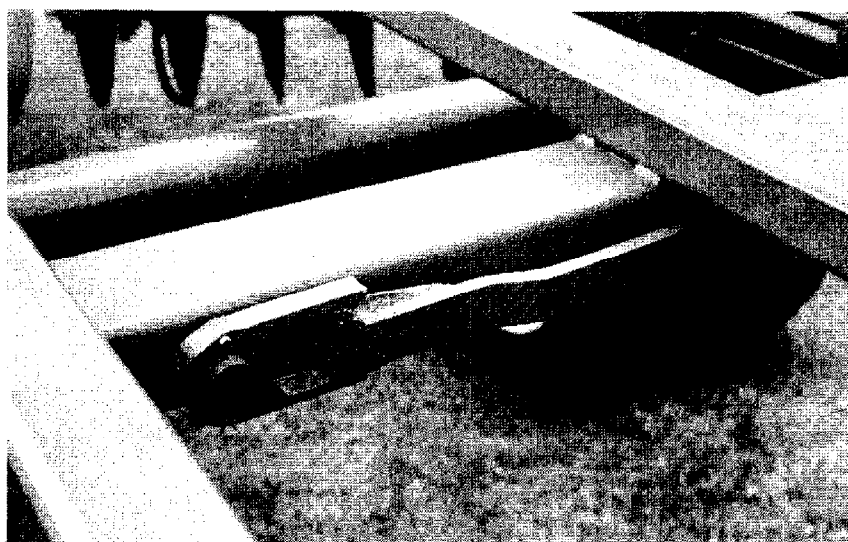


**FIGURE 12**

## GANG BOLT WRENCH

The wrench, stored on the inside of the frame is a useful tool for tightening or loosening gang shaft nuts.  
**NOTE:** Use a pipe on the wrench to obtain the necessary foot pounds torque, when tightening shaft nuts.

When storing gang wrench on frame use spring clip provided to hold gang wrench to the stud on frame. See Figure 13 for location.



**FIGURE 13**

# GENERAL MAINTENANCE (CONT'D)

## GANG BEARINGS

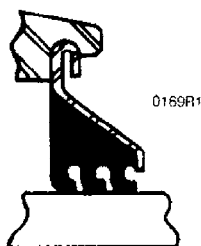
On the Rolling Plow the gangs are supported by alignable, triple lip sealed, (see Figure 14) ball bearings with lubrication fittings. The gang bearings have been lubricated at the factory, but the operator should lubricate all bearings until a little grease appears from the seals before operating the machine for the first time. Triple lip seals allow frequent lubrication without fear of damaging seal.

There is no adjustment to be made to the bearings, but to check that the brackets are firmly fastened. **During use the gang bearings should be lubricated daily.** They should also be lubricated at the start of each season and especially at the end of the season to protect against corrosion during storage.

Only use a hand grease gun. Wipe dirt from all grease fittings before lubricating. If a grease fitting is missing, replace it immediately.



**CAUTION:** When working on disk, care should be exercised in handling or tightening bolts near disk blades to avoid injury.



CROSS SECTION VIEW  
OF TRIPLE LIP SEAL

**FIGURE 14**

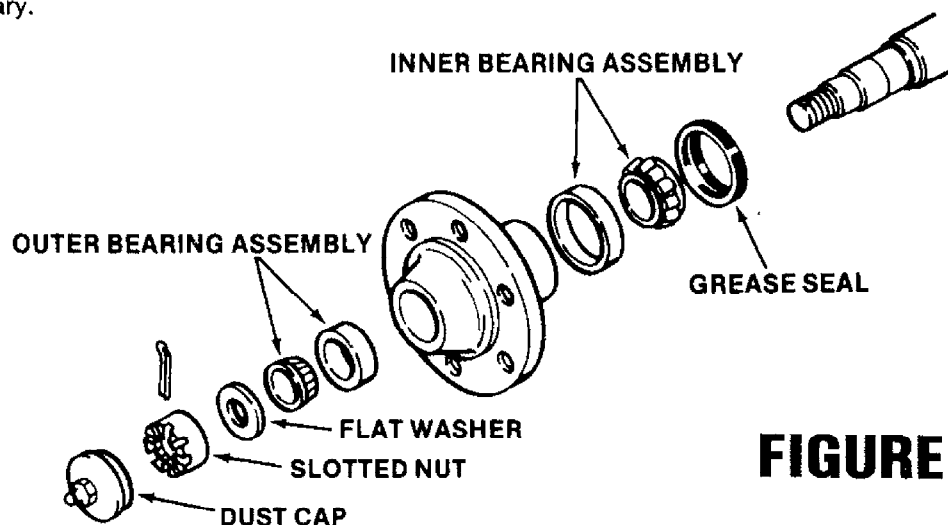


# GENERAL MAINTENANCE (CONT'D)

## WHEEL BEARINGS

It is important that wheel bearings be repacked with grease and adjusted annually. Under hard working conditions, wheel bearings should be inspected more frequently - with occasional checks for excessive end play. Occasional lubrication of the wheel, using the grease zerk located in the hub cap, is recommended.

Care must be used in dismantling wheel bearing assembly. See Figure 15. First remove the dust cap by prying around the edges of it. Remove the cotter pin, slotted nut, and flat washer. Carefully remove the hub and bearings from the spindle. Inspect all parts for wear or damage and replace with new one if necessary.



**FIGURE 15**

When reassembling the hub, repack both bearing cones with grease and fill the hub cavity 1/3 full. Place inner bearing assemblies into the hub, and then press grease seal into hub and carefully reinstall the hub on the spindle. When placing hub on spindle be careful not to damage the lip of the grease seal. Install outer bearing assembly into the hub, and place flat washer and slotted nut. Then tighten the slotted nut to seal the bearings until the hub binds as you rotate hub. Back off the slotted nut to the next slot and place a new cotter pin in. Replace dust cap. Use a 1/8" cotter 1-1/2" long.

## STORAGE

Proper storage will add to the life of your disk and assure its being in good condition for the next season. The following procedure is recommended.

**Clean off all foreign matter, and thoroughly lubricate the disk.**

**Coat the disk blades and hydraulic cylinder rods with a good rust preventative.**

**Repaint the disk where the original paint has worn off.**

**Whenever disk blades or bearings are replaced, the gang shaft nuts must be torqued to 1200 foot pounds, which is 200 pounds on the end of a 6 foot wrench.**

**Carefully rotate each gang and check for worn or damaged blades, bent gang shafts, worn scrapers, damaged bearings and other parts which may need replacing.**

**Tighten loose bolts and replace any damaged or missing parts.**

**Store in a dry place, with the gangs resting on boards to protect the disk blades and remove weight from the tires. Keep direct sunlight off the tires.**

**Support wheels off the ground to prolong the life of the tires.**

# GENERAL MAINTENANCE (CONT'D)

## DISK BLADES MAINTENANCE

Do **NOT** run with loose disk blades. Keep gang bolts tight! Tighten to 1200 foot pounds, which is 200 pounds at the end of a six foot long wrench. Use the gang bolt wrench furnished with the machine.

Rust and corrosion are the chief enemies of the disk. Spending a little time and effort protecting the disk blades will reward you with longer service, easier operation and higher resale value. Dirt and trash will hold moisture, causing rust. Apply a good rust preventative to all land polished surfaces.

If the disk blades, bearings and spools must be replaced on the gang bolt, be sure to keep them in order when removing from the gang bolt so they can be replaced properly. The illustrations on pages 32 - 34 will show the proper location of the disk blades and bearings on the gang shaft. Remember the disk blades on the front gangs must be assembled to throw the soil out. The disk blades on the rear right gang are assembled to throw the soil in. Be sure to put each gang assembly back in the same location on the frame from which it was removed. Be certain that the grease fitting is placed pointing up, so as to prevent it from being knocked off.

## TROUBLE SHOOTING

<u>PROBLEM</u>	<u>POSSIBLE CAUSES</u>	<u>POSSIBLE REMEDY</u>	<u>PAGE</u>
<b>Soil Ridging</b>	Rear of machine trailing to far to the left.	Use leveling adjustment to lower rear gang.	13
		Reduce front gang angle.	13
		Increase rear gang angle.	13
	Rear of machine trailing to far to the right.	Use leveling adjustment to raise rear gang.	13
		Increase rear gang angle.	13
		Reduce rear gang angle.	13
<b>Gang Plugging</b>	Gang Positioned incorrectly on frame.	See Chart on Page 30 for proper setting.	30
	Extremely wet field.	Allow to dry if possible or disk shallow once to aid drying process.	0
	Scraper adjusted improperly or severely worn.	Adjust, service and/or replace scrapers as required.	15
<b>Cylinder Stalling</b>	Hydraulic reservoir low.	Add hydraulic oil to reservoir - See tractor manual for type and amount.	0
	Faulty plumbing. Improper connections to tractor.	Check the routing of the hydraulic hoses - be sure there is no cross-up in the lines. See pages 26 - 27 for proper installation.	26 - 27
	Lockout engaged.	Disengage lockout.	11

# ASSEMBLY INSTRUCTIONS








It is very important that a new Rolling Plow be properly set-up, adjusted and lubricated before delivery. Follow the illustrations on these pages for proper set-up. Remove paint from grease fittings and replace any that are damaged or missing.

## BOLT INFORMATION

To insure alignment of assemblies, insert all bolts, leaving the nuts loose until completion of assembly. Use lockwashers or flat washers where called for. Spread all cotter pins.

All bolts should be tightened to the torques recommended in the table below. When bolts are replaced, be sure they are replaced with bolts of equal strength. See bolt head markings in table below.

**NOTE:** When hardware is plated, reduce torque values by 25%.

GENERAL TORQUE SPECIFICATION TABLE (Revised 2-74)													
USE THE FOLLOWING TORQUES WHEN SPECIAL TORQUES ARE NOT GIVEN													
NOTE: These values apply to fasteners as received from supplier, dry, or when lubricated with normal engine oil. They do not apply if special graphited or moly-disulphide greases or other extreme pressure lubricants are used. This applies to both UNF and UNC threads.													
SAE Grade No.		2				5				8 *			
Bolt head identification marks as per grade NOTE: Manufacturing Marks Will Vary						  				  			
Bolt Size		Torque				Torque				Torque			
		Foot Pounds		Newton-Meters		Foot Pounds		Newton-Meters		Foot Pounds		Newton-Meters	
Inches	Millimeters	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	6.35	5	6	6.8	8.13	9	11	12.2	14.9	12	15	16.3	20.3
5/16	7.94	10	12	13.6	16.3	17	20.5	23.1	27.8	24	29	32.5	39.3
3/8	9.53	20	23	27.1	31.2	35	42	47.5	57.0	45	54	61.0	73.2
7/16	11.11	30	35	40.7	47.4	54	64	73.2	86.8	70	84	94.9	113.9
1/2	12.70	45	52	61.0	70.5	80	96	108.5	130.2	110	132	149.2	179.0
9/16	14.29	65	75	88.1	101.6	110	132	149.2	179.0	160	192	217.0	260.4
5/8	15.88	95	105	128.7	142.3	150	180	203.4	244.1	220	264	298.3	358.0
3/4	19.05	150	185	203.3	250.7	270	324	366.1	439.3	380	456	515.3	618.3
7/8	22.23	160	200	216.8	271.0	400	480	542.4	650.9	600	720	813.6	976.3
1	25.40	250	300	338.8	406.5	580	696	786.5	943.8	900	1080	1220.4	1464.5
1-1/8	25.58					800	880	1084.8	1193.3	1280	1440	1735.7	1952.6
1-1/4	31.75					1120	1240	1518.7	1681.4	1820	2000	2467.9	2712.0
1-3/8	34.93					1460	1680	1979.8	2278.1	2380	2720	3227.3	3688.3
1-1/2	38.10					1940	2200	2630.6	2983.2	3160	3560	4285.0	4827.4

\* Thick nuts must be used with Grade 8 bolts

\* Thick nuts must be used with Grade 8 bolts

## PINS

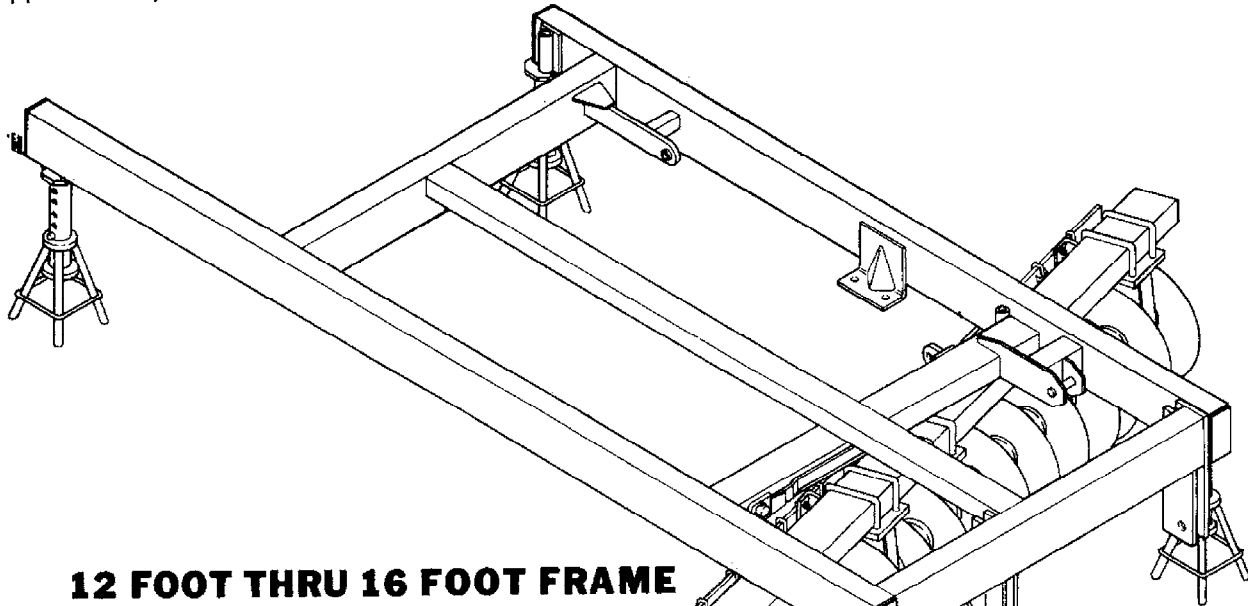
All pins are dimensioned to total length.

The pins are prelocated in the holes in which they are to be used.

## ASSEMBLY INSTRUCTIONS (CONT'D)

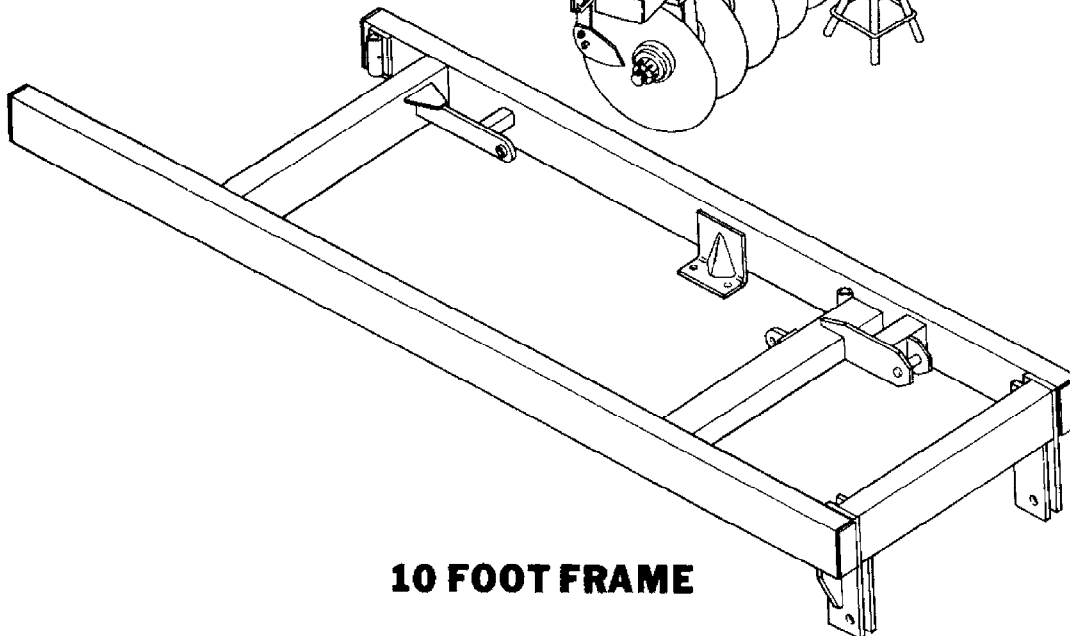
### Step 1

Place frame on sturdy stands at least 30" high, to clear front gang. Position front gang under frame in approximate position.



**12 FOOT THRU 16 FOOT FRAME**

096R1



**10 FOOT FRAME**

097R1



**CAUTION** When working on disk, care should be exercised in handling or tightening bolts near disk blades to avoid injury.

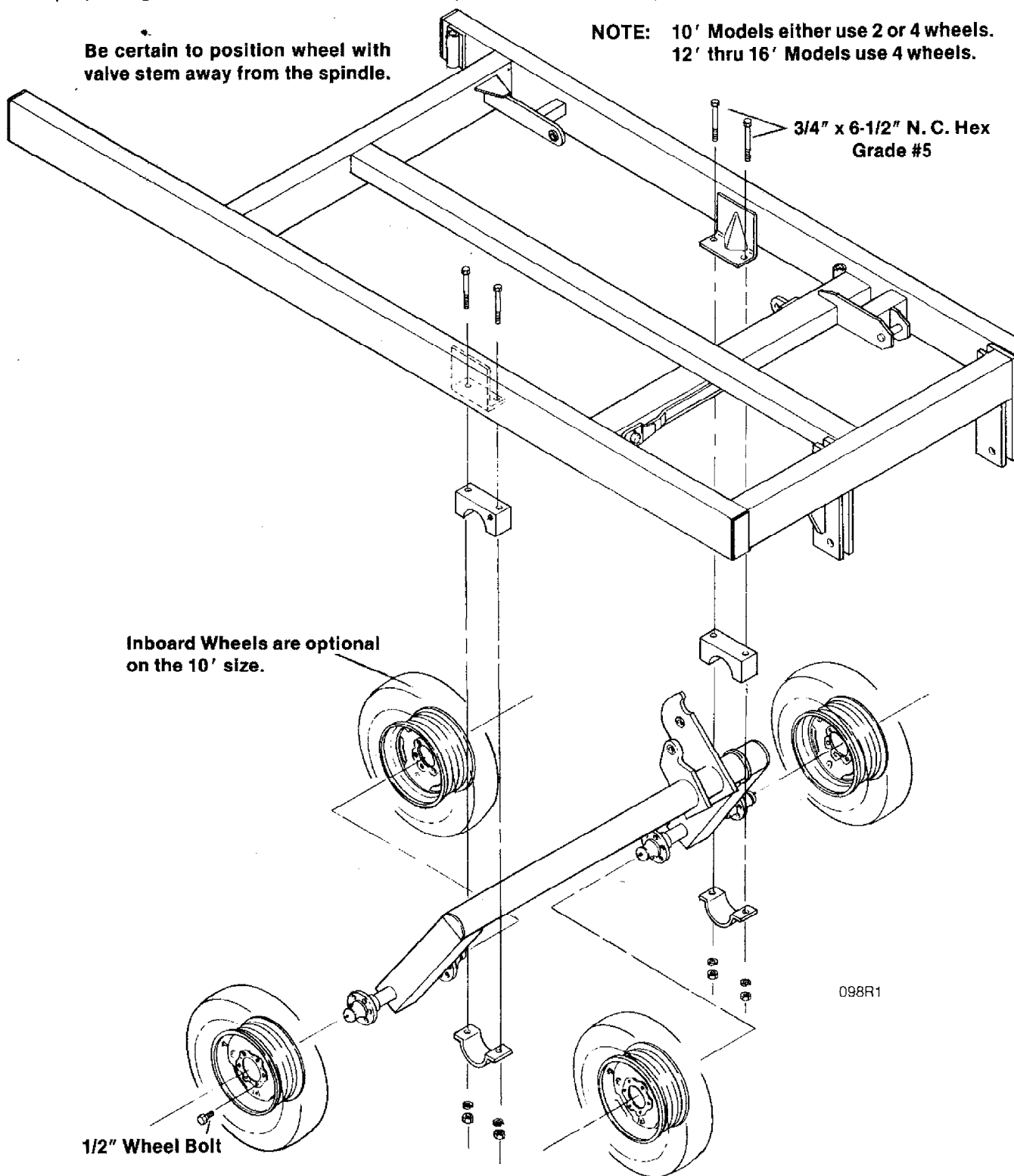
# ASSEMBLY INSTRUCTIONS (CONT'D)

## Step 2

Attach axle assembly to frame and bolt the wheels to the hubs. Tighten wheel bolts evenly to assure proper alignment of wheels. Use 11L x 15 implement rib thread tires on 15 x 8 wheels.

Be certain to position wheel with valve stem away from the spindle.

**NOTE:** 10' Models either use 2 or 4 wheels.  
12' thru 16' Models use 4 wheels.

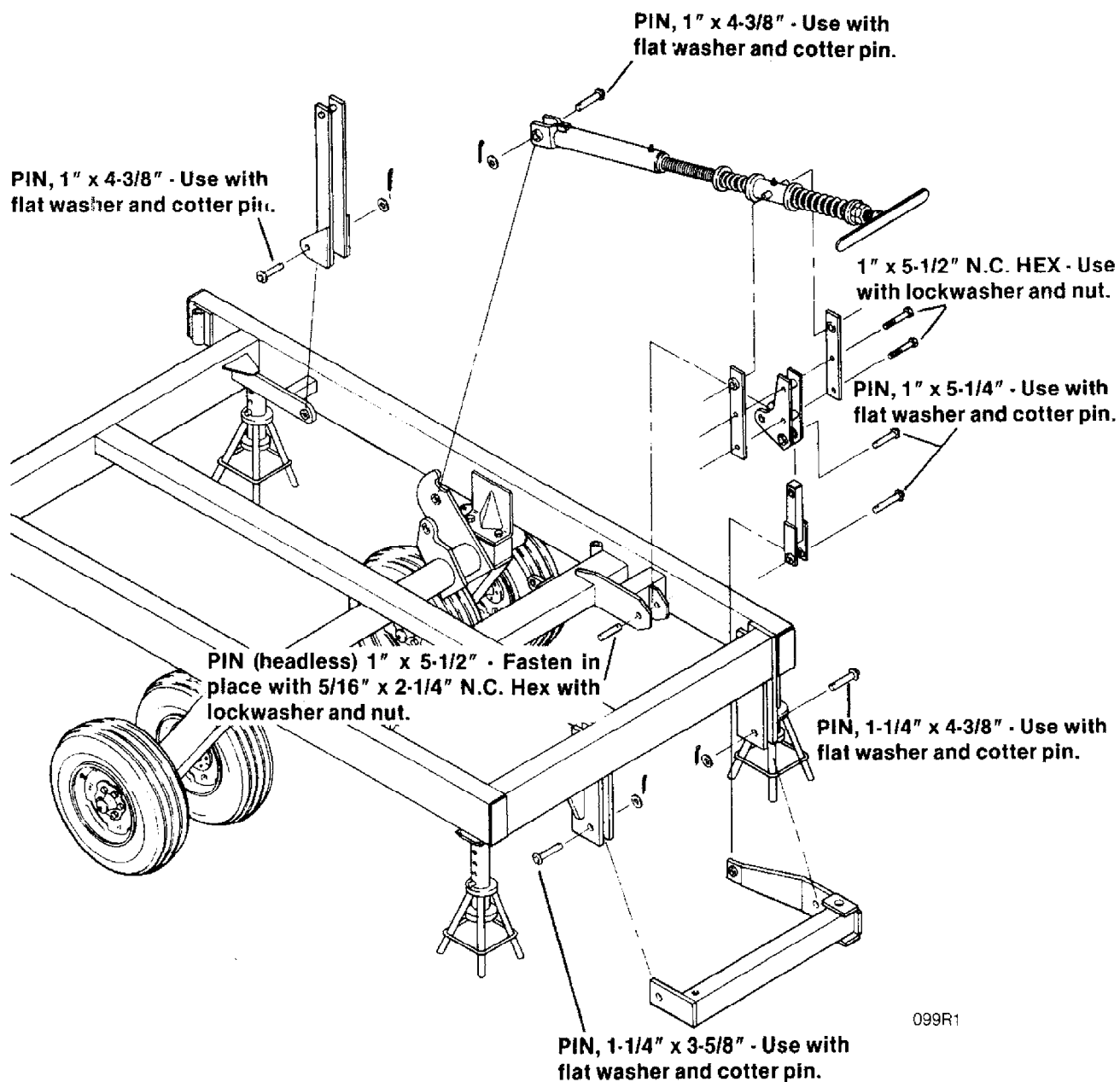




## ASSEMBLY INSTRUCTIONS (CONT'D)

### Step 3

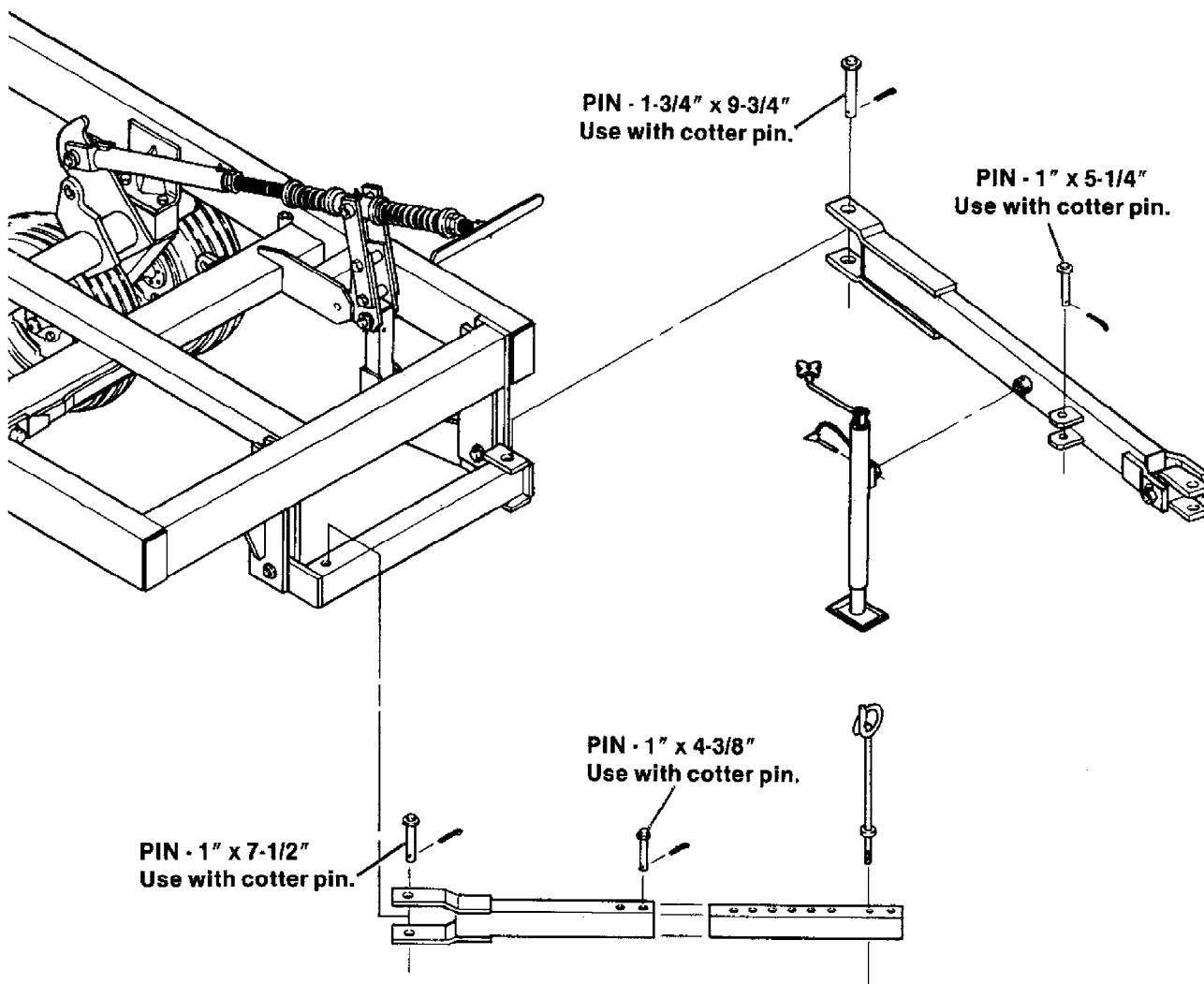
- A. Attach transport lockout to rear of frame.
- B. Attach hitch leveling arm to front of frame.
- C. Assemble leveling screw, trunions, leveling pivots and leveling connector tube to frame.



# ASSEMBLY INSTRUCTIONS (CONT'D)

## Step 4

Install hitch, hitch jack, hose carrier and hitch adjustment linkage.



0100R2

# ASSEMBLY INSTRUCTIONS (CONT'D)

## Step 5

### INSTALLATION INSTRUCTIONS FOR INTERNAL DEPTH CONTROL HYDRAULIC CYLINDER

1. Attach 3/16" flow restrictor to the port behind the plunger on the hydraulic cylinder. (This fitting will be tagged to avoid mix-up.)
2. Attach the two 13' long hydraulic hoses into these fittings.  
(NOTE: There is a 1/2" male pipe fitting at the end of the hoses leading to the tractor. The fittings required to attach the hoses to the tractor are NOT furnished.)



3. **STROKE CYLINDER TO FULL LENGTH SEVERAL TIMES TO ALLOW OIL TO FILL BOTH CYLINDER AND HOSES. OTHERWISE CYLINDER MAY DROP LOAD WHEN FIRST USED.**  
Operation of the hydraulic system requires a tractor with hydraulic pressure capability of 1800 - 2000 PSI.
4. Check all hydraulic components and connections for leaks. Replace any hoses or fittings that develop leaks.
5. Install hydraulic cylinder to the machine. Be sure the spring clips of the mounting pins are securely on the pin to prevent the pin from falling out.



**CAUTION** Do not connect or disconnect hydraulic components when there is pressure within system. Hydraulic systems are highly pressurized. Escaping hydraulic oil, even an invisible pinhole leak, can penetrate body tissues and cause serious injury. Use a piece of wood or cardboard when looking for leaks. Never use the hands or other parts of the body. When reassembling, make absolutely certain that all connections are tight. If injured by hydraulic oil escaping under pressure, see a doctor immediately. Serious infection or reaction may occur if medical attention is not received at once.

# ASSEMBLY INSTRUCTIONS (CONT'D)

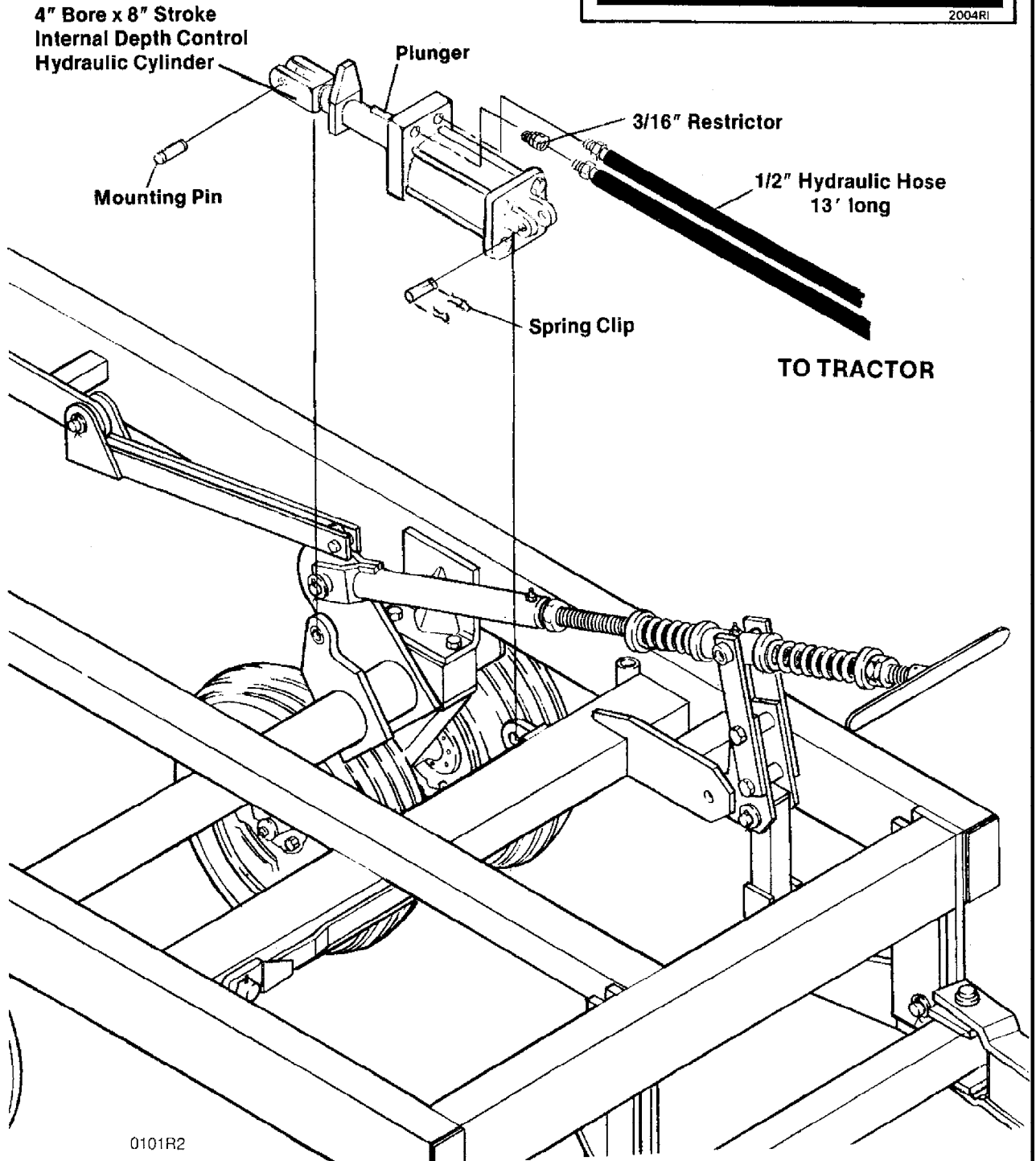
## Step 5



### CAUTION

BEFORE ATTACHING CYLINDERS TO DISK STROKE CYLINDERS TO FULL LENGTH SEVERAL TIMES TO ALLOW OIL TO FILL BOTH CYLINDERS AND HOSES. OTHERWISE CYLINDERS MAY DROP LOAD WHEN FIRST USED.

2004RI



## ASSEMBLY INSTRUCTIONS

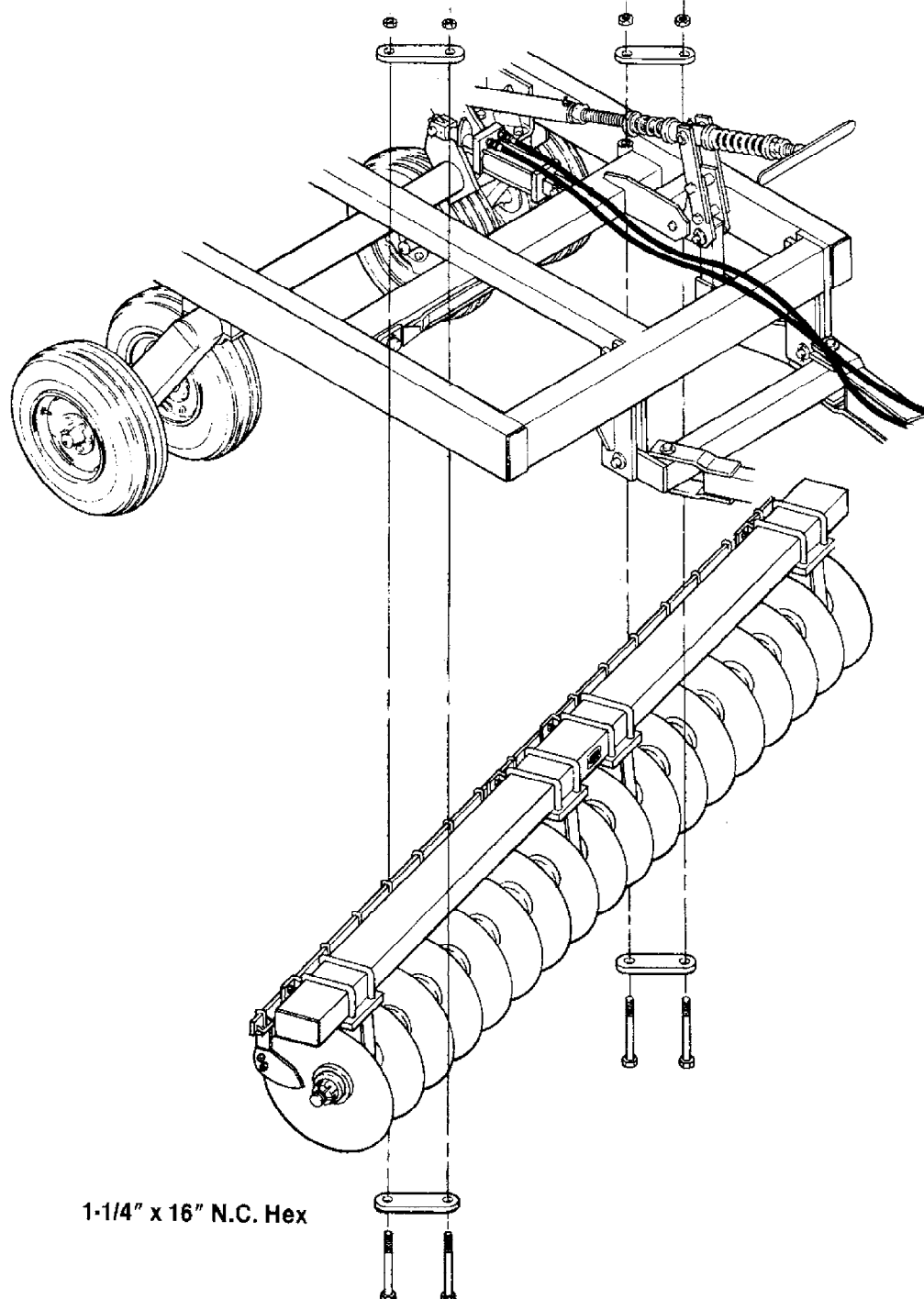
### Step 6

Attach hitch to tractor drawbar and connect hydraulic lines to tractor. Raise main frame from stands with tractor hydraulics. Lower main frame to front gang and attach gang to frame.

The clamp bolts should be close along side the frame before tightening.

**CAUTION:** Do not install rear gangs on a section before front gangs. A dangerous tipping situation could result.

**NOTE:** See Page 30 for suggested working position of gang beam to frame.



1-1/4" x 16" N.C. Hex

# ASSEMBLY INSTRUCTIONS (CONT'D)

## Step 7

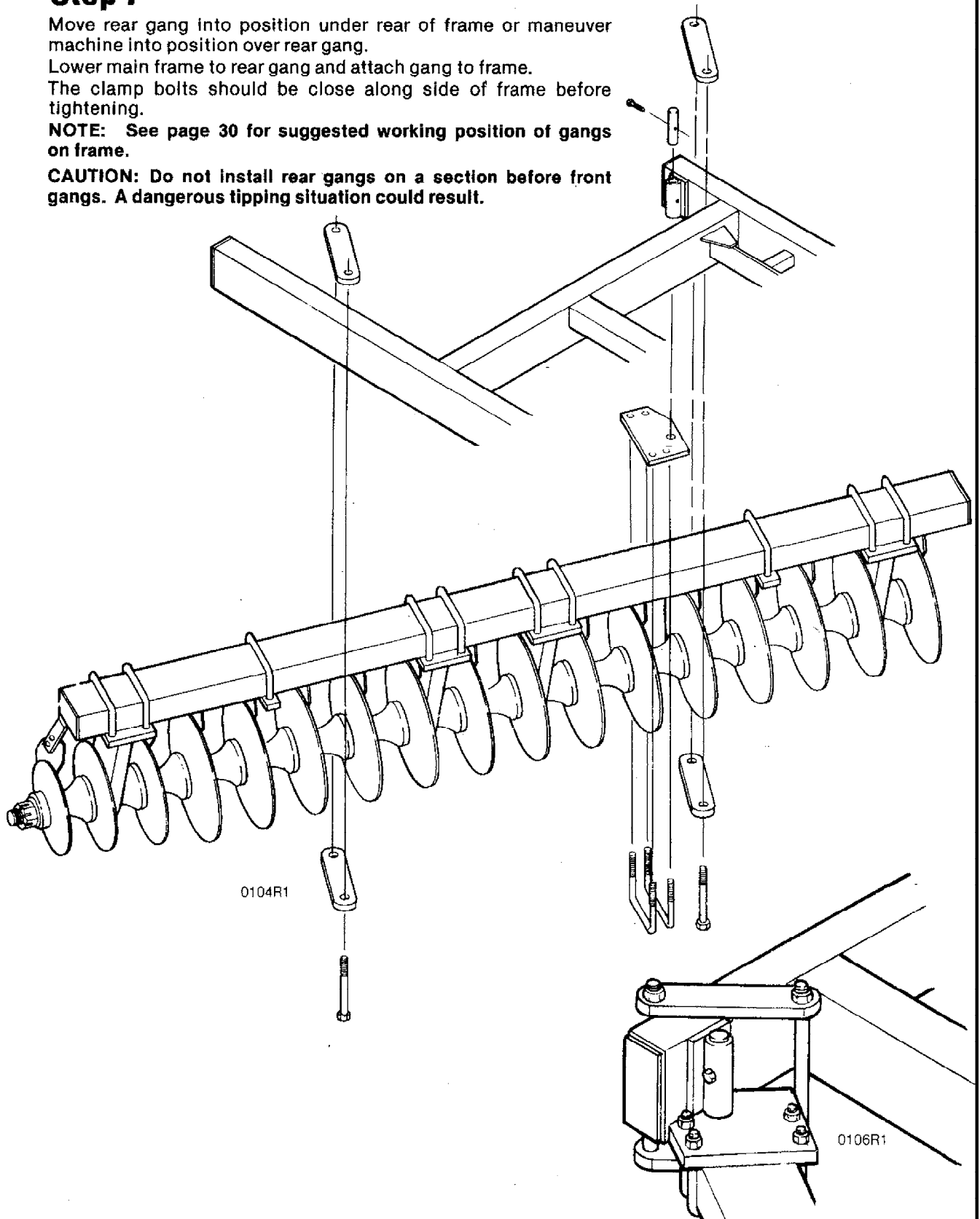
Move rear gang into position under rear of frame or maneuver machine into position over rear gang.

Lower main frame to rear gang and attach gang to frame.

The clamp bolts should be close along side of frame before tightening.

**NOTE:** See page 30 for suggested working position of gangs on frame.

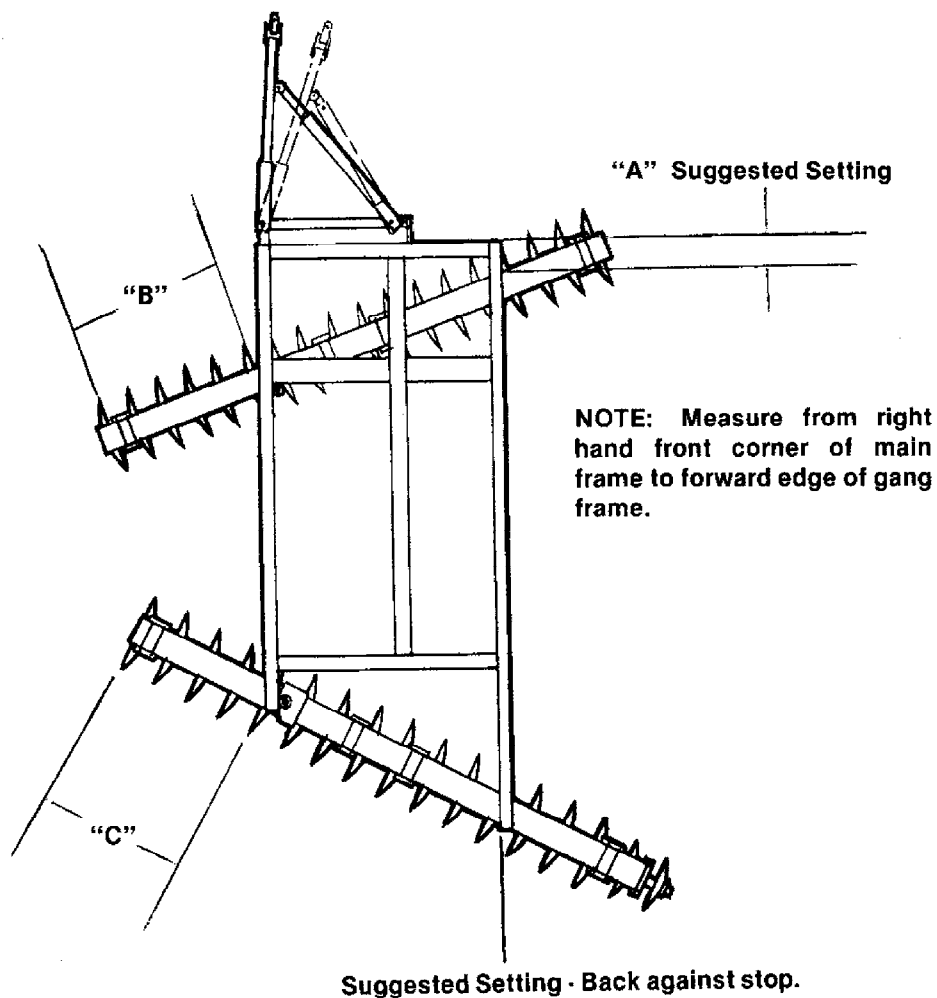
**CAUTION:** Do not install rear gangs on a section before front gangs. A dangerous tipping situation could result.



# ASSEMBLY INSTRUCTIONS

## SUGGESTED WORKING POSITION

MODEL	DIM. "A"	DIM. "B"	DIM. "C"
10 Foot	16"	40½"	26"
12 Foot	8"	46½"	32"
14 Foot	8"	55½"	41"
16 Foot	8"	66½"	52"
18 Foot	8"	75½"	61"
20 Foot	8"	85½"	71"

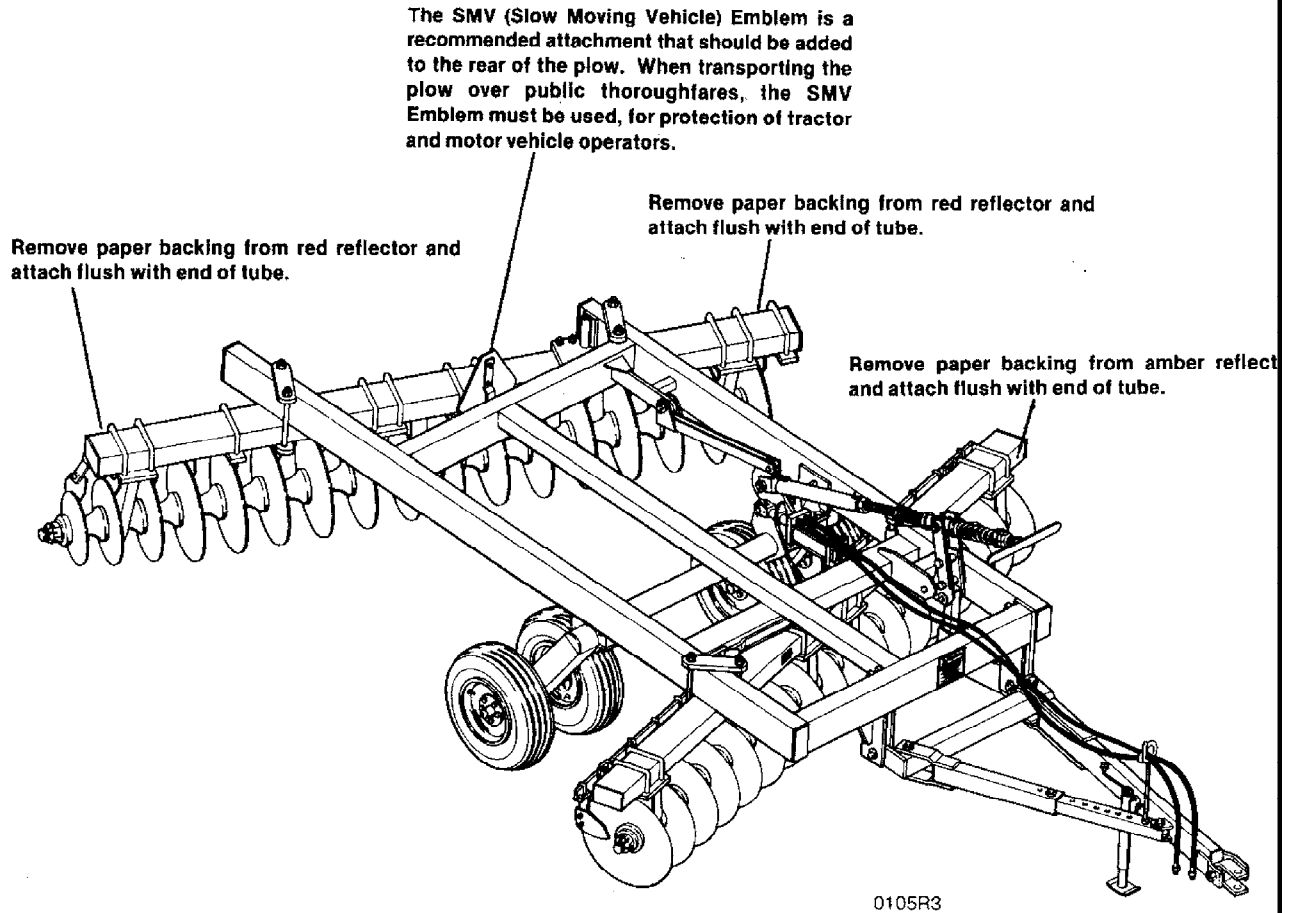


The scrapers should be adjusted to run approximately 1/16 to 1/8 inch maximum from the disk blades. Each scraper may be adjusted by loosening the scraper bar bracket U-bolt, and sliding the assembly along the scraper bar.

Do not allow the scrapers to rub on the blades. Rotate the blades a full turn to check this.

## Step 8

Install reflectors and decals. Clean surface where decals and reflectors are to be applied. Remove the paper backing and apply decals and reflectors to area indicated below.



**NOTE:** Replace any safety decals that become worn or difficult to read; replace all safety decals when repainting.



**CAUTION:** WHEN TRAILING THE DISK ON PUBLIC ROADS THE SMV EMBLEM MUST BE USED, FOR PROTECTION OF TRACTOR AND MOTOR VEHICLE OPERATORS.



**CAUTION:** WHEN TRANSPORTING MACHINERY OVER PUBLIC ROADS, COMPLY WITH YOUR LOCAL AND STATE LAWS REGARDING LENGTH, WIDTH, AND LIGHTING.



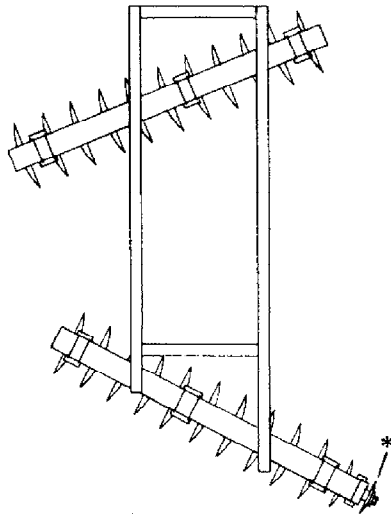
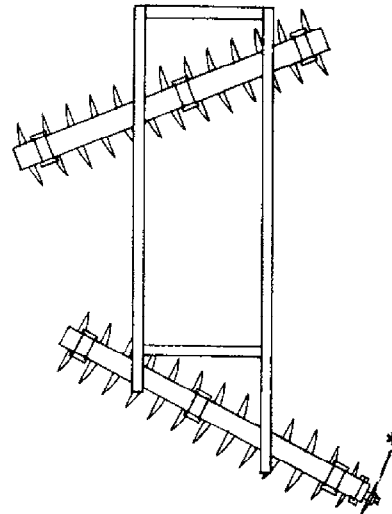
## 10' RP-S20 SERIES - GANG INFORMATION

### Front Gang - 9" Spacing

TOTAL BLADES - 13  
SCRAPER BAR - 9' 8" Long  
1-1/2" SQ. GANG SHAFT - 117-1/4" Long

### Rear Gang - 9" Spacing

TOTAL BLADES - 14  
SCRAPER BAR - 10' 4" Long  
1-1/2" SQ. GANG SHAFT - 126-1/4" Long



### Front Gang - 10 1/2" Spacing

TOTAL BLADES - 11  
SCRAPER BAR - 9' 8" Long  
1-1/2" SQ. GANG SHAFT - 113-3/4" Long

### Rear Gang - 10 1/2" Spacing

TOTAL BLADES - 12  
SCRAPER BAR - 10' 4" Long  
1-1/2" SQ. GANG SHAFT - 124-1/4" Long

0108R1

NOTE: \*Indicates Location of Scraper Bar Bracket.

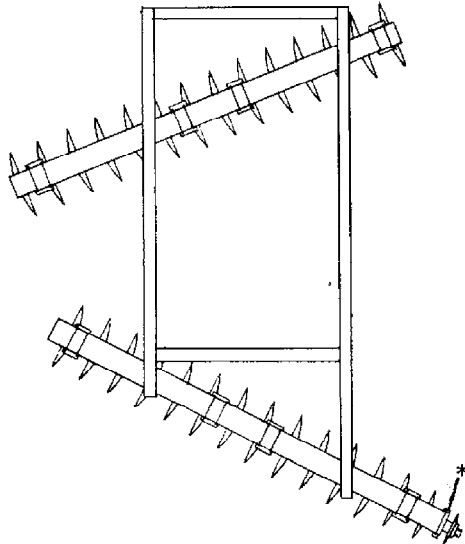
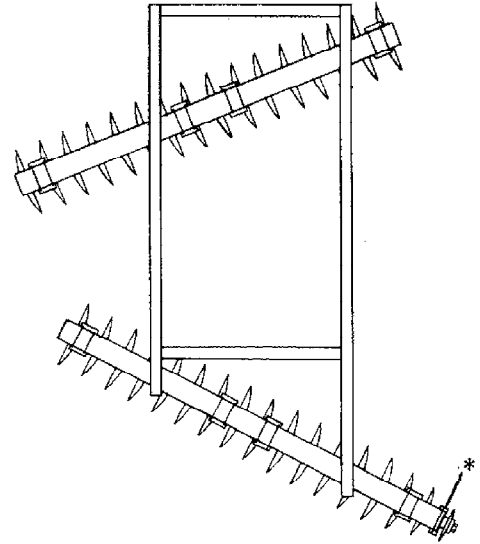
## 12' RP-S20 SERIES - GANG INFORMATION

### Front Gang - 9" Spacing

TOTAL BLADES- 16  
 SCRAPER BAR - 11' 10" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 71-1/2" Long  
 RIGHT: - 71-1/2" Long

### Rear Gang - 9" Spacing

TOTAL BLADES- 17  
 SCRAPER BAR - 12' 10" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 71-1/2" Long  
 RIGHT: - 80-3/4" Long



### Front Gang - 10 1/2" Spacing

TOTAL BLADES- 14  
 SCRAPER BAR - 11' 10" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 71-1/4" Long  
 RIGHT: - 71-1/4" Long

### Rear Gang - 10 1/2" Spacing

TOTAL BLADES- 15  
 SCRAPER BAR - 12' 10" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 71-1/2" Long  
 RIGHT: - 82-1/4" Long

0109R1

NOTE: \*Indicates Locations of Scraper Bar Brackets.

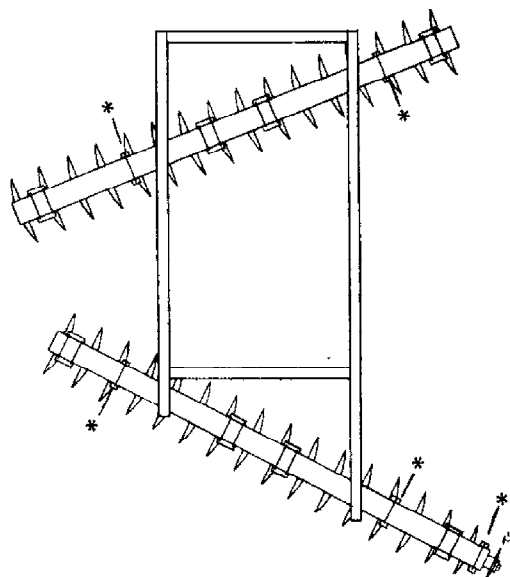
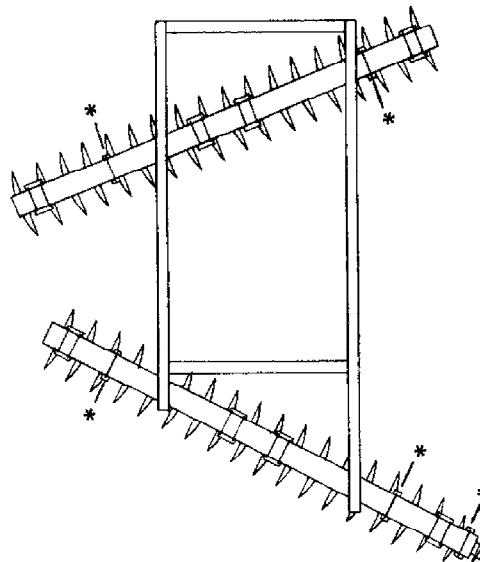
## 14' RP-S20 SERIES - GANG INFORMATION

### Front Gang - 9" Spacing

TOTAL BLADES - 18  
SCRAPER BAR - 13' 8" Long  
TWO 1-1/2" SQ. GANG SHAFTS  
LEFT: - 80-3/4" Long  
RIGHT: - 80-3/4" Long

### Rear Gang - 9" Spacing

TOTAL BLADES - 19  
SCRAPER BAR - 14' 8" Long  
TWO 1-1/2" SQ. GANG SHAFTS  
LEFT: - 80-3/4" Long  
RIGHT: - 89-3/4" Long



### Front Gang - 10 1/2" Spacing

TOTAL BLADES - 16  
SCRAPER BAR - 13' 8" Long  
TWO 1-1/2" SQ. GANG SHAFTS  
LEFT: - 82-1/4" Long  
RIGHT: - 82-1/4" Long

### Rear Gang - 10 1/2" Spacing

TOTAL BLADES - 17  
SCRAPER BAR - 14' 8" Long  
TWO 1-1/2" SQ. GANG SHAFTS  
LEFT: - 82-1/4" Long  
RIGHT: - 92-3/4" Long

0110R1

NOTE: \*Indicates Locations of Scraper Bar Brackets.

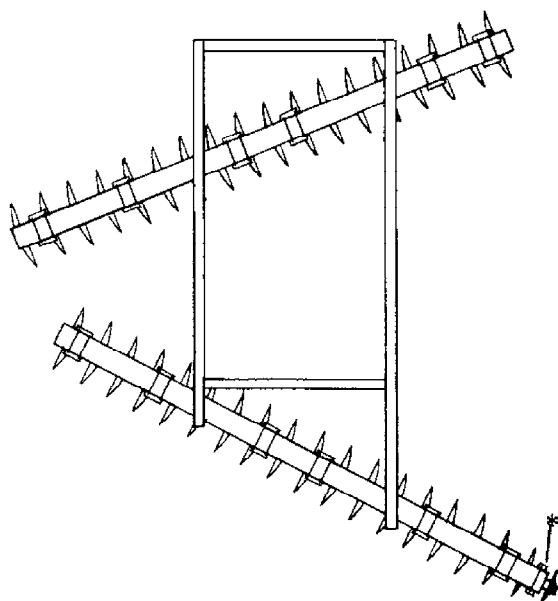
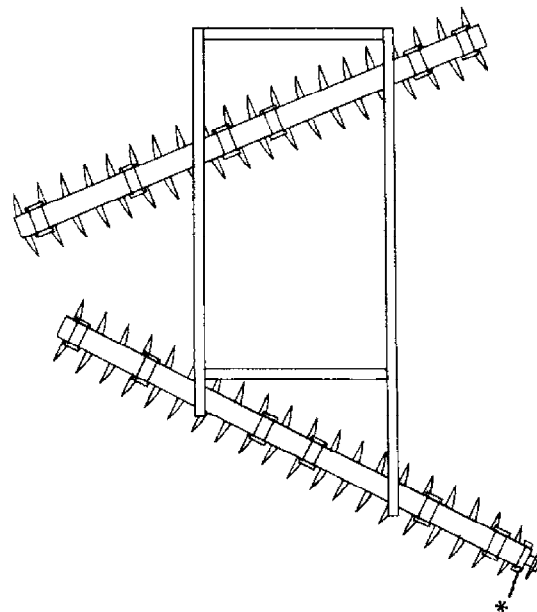
## 16' RP-S20 SERIES GANG INFORMATION

### Front Gang - 9" Spacing

TOTAL BLADES - 20  
 SCRAPER BAR - 15' 4" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 89-3/4" Long  
 RIGHT: - 89-3/4" Long

### Rear Gang - 9" Spacing

TOTAL BLADES - 21  
 SCRAPER BAR - 16' 5" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 89-3/4" Long  
 RIGHT: - 99" Long



### Front Gang - 10 1/2" Spacing

TOTAL BLADES - 18  
 SCRAPER BAR - 15' 4" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 92-3/4" Long  
 RIGHT: - 92-3/4" Long

### Rear Gang - 10 1/2" Spacing

TOTAL BLADES - 19  
 SCRAPER BAR - 16' 5" Long  
 TWO 1-1/2" SQ. GANG SHAFTS  
 LEFT: - 92-3/4" Long  
 RIGHT: - 103-1/2" Long

NOTE: \*Indicates Locations of Scraper Bar Brackets.