

# **OPERATOR'S MANUAL**

**ASSEMBLY, OPERATING & PARTS** 

# MOUNTED ROW CROP CULTIVATOR



PO Box 1030 Wahpeton, ND 58074 PH (701) 642-2621 Fax (701) 642-3372 Parts Fax (701) 642-3819

Printed in USA (74286) 3/07 WJS

#### WARRANTY

The only warranty Wil-Rich gives and the only warranty the dealer is authorized to give is as follows:

We warrant products sold by us to be in accordance with our published specifications or those specifications agreed to by us in writing at time of sale. Our obligation and liability under this warranty is expressly limited to repairing, or replacing, at our option, within 12 months after date of retail delivery, any product not meeting the specifications. We make no other warranty, express or implied and make no warranty of merchantability or of fitness for any particular purpose. Our obligation under the warranty shall not include any transportation charges or costs or installation or any liability for direct, indirect or consequential damage or delay. If requested by us, products or parts for which a warranty claim is made are to be returned transportation prepaid to our factory. Any improper use, operation beyond rated capacity, substitution of parts not approved by us, or any alteration or repair by others in such manner as in our judgment affects the product materially and adversely shall void this warranty. No employee or representative is authorized to change this warranty in any way or grant any other warranty.

Wil-Rich reserves the right to make improvement changes on any of our products without notice.

When warranty limited or not applicable: Warranty on hoses, cylinders, hubs, spindles, engines, valves, pumps or other trade accessories are limited to the warranties made by the respective manufactures of these components. Rubber tires and tubes are warranted directly by the respective tire manufacturer only, and not by Wil-Rich.

Warranty does not apply to any machine or part which has been repaired or altered in any way so as in the our judgment to affect its reliability, or which has been subject to misuse, negligence or accident.

A Warranty Validation and Delivery Report Form must be filled out and received by Wil-Rich to initiate the warranty coverage.

#### WARRANTY CLAIMS PROCEDURE

- 1. The warranty form must be returned to Wil-Rich within fifteen (15) working days from the repair date.
- 2. Parts returned to Wil-Rich without authorization will be refused. The parts must be retained at the dealership for ninety (90) days after the claim has been filed. If the Service Department would like to inspect the parts, a packing slip will be mailed to the dealer. The packing slip must be returned with the parts. The parts must be returned prepaid within thirty (30) days of receiving authorization. After the parts are inspected and warranty is verified, credit for the return freight will be issued to the dealer.
- 3. Parts that will be scrapped at the dealership will be inspected by a Wil-Rich Sales Representative, District Sales Manager or Service Representative within the ninety (90) day retaining period.

## TO THE OWNER

It is the responsibility of the user to read the Operator's Manual and comply with the safe and correct operating procedures as pertains to the operation, lubrication and maintenance of the product according to the information outlined in the Operator's Manual.

If this machine is used by an employee or is loaned or rented, make certain that the operator(s), prior to operating, is instructed in safe and proper use and reviews and understands the Operator's Manual.

The user is responsible for inspecting his/her machine and for having parts repaired or replaced when continued use of this product would cause damage or excessive wear to the other parts. The word NOTE is used to convey information that is out of context with the manual text; special information such as specifications, techniques, reference information of supplementary nature.

WIL-RICH Wahpeton, ND	LLC
Serial Number:	
	Made in USA

When in need of parts, always specify the model and serial number. Write this number in the space provided. The serial number plate is on the left main toolbar located on the left side of the lower 7x7.

#### **MODIFICATIONS**

It is the policy of Wil-Rich 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 obligation to make such changes, improvements on any equipment sold previously.

#### **TRADEMARKS**

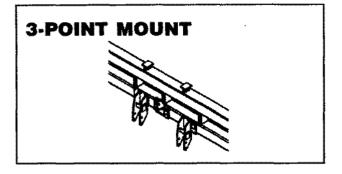
Other product and company names mentioned herein may be trademarks of their respective owners. The use of these names are for reference only, Wil-Rich uses the names only to aid in distinguishing different setups of the Cultivator Bar.

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## **SPECIFICATIONS**

#### R = Rigid Toolbar





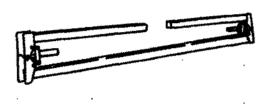
F = 180 Fold



2-POINT MOUNT



If the cultivator is used with the lift assist wheels, it must be operated as a semi-mounted cultivator to prevent damage to the 3-point hitch components. Remove the upper link mast and attach the cultivator to the lower 3-point hitch links only. Lift assist wheels will always carry part of the cultivator weight.



FR = 180 Fold Reinforced Double Bar



Size	Toolbar	Transport Width	Weight Kg
8Row70cm	R	5.9m	4171
12Row45cm	R	5.7m	5714
12Row22in	R	7.0m	5762
8Row70cm	F	3.4m	7927
12Row45cm	F	3.4m	9259
12Row22in	F	3.9m	8782
12Row70cm	FR	5.1m	10969
18Row45cm	FR	5.1 m	12967

# SAFETY RULES ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

#### TRAINING

■ Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information.

Fallure to follow instructions or safety rules can result in serious injury or death.

- If you do not understand any part of this manual and need assistance, see your dealer.
- M Know your controls and how to stop engine and attachment quickly in an emergency.
- Operators must be instructed in and be capable of the safe operation of the equipment, its attachments, and all controls. Do not allow anyone to operate this equipment without proper instructions.
- M Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.
- Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.
- Never allow children or untrained persons to operate equipment.

#### **PREPARATION**

- Check that all hardware is properly installed. Always tighten to torque chart specifications unless instructed otherwise in this manual.
- Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.
- Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.
- Always wear relatively tight and beited clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- When attaching a pull-type unit to the tractor drawbar, always use a high-strength drawbar pin. The drawbar pin must have a device that will lock it into position.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.
- Make sure all safety decals are Installed. Replace if damaged. (See Safety Decals section for location.)
- A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment.

  Do not estimate.

# SAFETY RULES ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



#### OPERATION

- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- m Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.
- Keep bystanders away from equipment.
- Do not operate equipment while under the influence of alcohol or drugs.
- Operate only in daylight or good artificial light.
- Keep hands, feet, hair, and clothing away from equipment while engine is running. Stay clear of all moving parts.
- Always comply with all state and local lighting and marking requirements.
- Never allow riders on power unit or attachment.
- Power unit must be equipped with ROPS or ROPS cab and seat belt. Keep seat belt securely fastened. Falling off power unit can result in death from being run over or crushed. Keep foldable ROPS systems in "locked up" position at all times.
- Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting tractor engine.
- Look down and to the rear and make sure area is clear before operating in reverse.
- Do not operate on steep slopes.
- Do not stop, start, or change directions suddenly on slopes.
- Use extreme care and reduce ground speed on slopes and rough terrain.
- Watch for hidden hazards on the terrain during operation.
- Stop tractor and implement immediately upon striking an obstruction. Turn off engine, remove key, inspect, and repair any damage before resuming operation.
- AVOID INJURY OR DEATH FROM POWER LINES:
  - Stay away from power lines.
  - Electrocution can occur without direct con-

#### tect.

- · Check clearances before raising implement.
- Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.
- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.
- Implement can tip over and crush if attached, removed, or stored improperly.
  - Read and follow instructions and safety rules for procedures and use of parking stands.
  - Front parking stands must be on all cultivators.
  - Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
  - Parking stands must be kept in good condition and replaced if damaged.
  - · Remove on solid, level ground.
  - Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
  - Keep all bystanders away.
- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
  - Service work does not require going undernexts.
  - Read Operator's Manual for service instructions or have service performed by a qualified dealer.

(Safety Rules continued on next page)

# SAFETY RULES ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



(Safety Rules continued from previous page)

■ Before servicing, unfold completely to operating position. Do not service with wings in any other position.

#### MAINTENANCE

- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Before servicing, unfold completely to operating position. Do not service with wings in any other position.
- NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
  - Service work does not require going underneath.
  - Read Operator's Manual for service instructions or have service performed by a qualified dealer.
- Do not modify or alter or permit anyone else to modify or alter the equipment or any of its components in any way.
- Your dealer can supply original equipment hydraulic accessories and repair parts. Substitute parts may not meet original equipment specifications and may be dangerous.

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Make sure attachment is properly secured, adjusted, and in good operating condition.
- Make sure hydraulic hoses and cylinders are fully purged of air before putting into service. Keep all persons away. Fill the system by raising and lowering all functions several times. Air in the system can allow components to fall unexpectedly.
- Keep all persons away from operator control area while performing adjustments, service, or maintenance.
- Do not handle blades with bare hands. Careless or improper handling may result in serious injury.
- Tighten all bolts, nuts and screws to torque chart specifications. Check that all cotter pins are installed securely to ensure equipment is in a safe condition before putting unit into service.
- Make sure all safety decais are installed. Replace if damaged. (See Safety Decais section for location.)
- Do not disconnect hydraulic lines until machine is securely blocked or placed in lowest position and system pressure is released by operating valve levers.

#### STORAGE

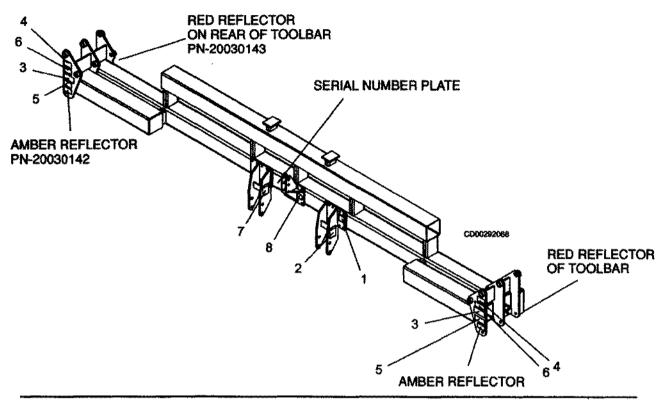
- Block equipment securely for storage.
- Keep children and bystanders away from storage area.

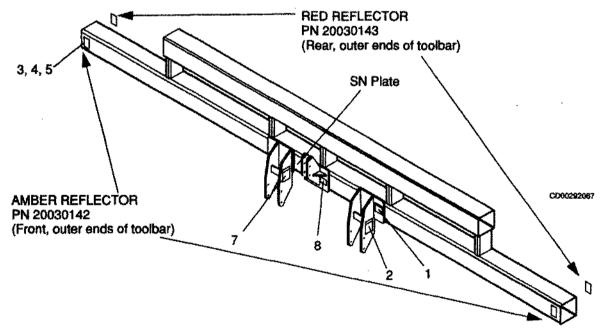


## **SAFETY & INSTRUCTIONAL DECALS** ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Replace Immediately If Damaged!





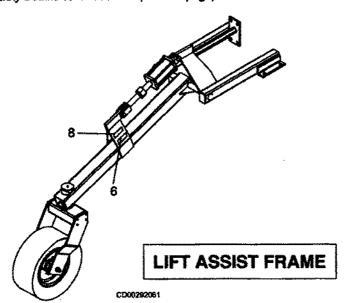
(Safety Decals continued on next page)

# SAFETY & INSTRUCTIONAL DECALS ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!



Replace Immediately If Damaged!

(Safety Decals continued from previous page)



#### 1 - PN 20033911

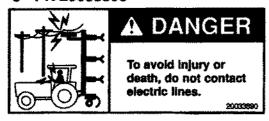
## **A WARNING**

#### TO AVOID SERIOUS INJURY OR DEATH:

- Read Operator's Manual before operating, servicing or repairing equipment. Follow all safety rules and instructions. (Manuals are available from dealer or, in the United States and Canada, call 1-877-275-8714.)
- Operate from tractor seat only.
- Lower equipment to ground, stop engine, remove key and set brake before dismounting tractor.
- Allow no children or untrained persons to operate equipment.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN INJURY OR DEATH.

#### 3 - PN 20033890



#### 7 - PN 20033891

## WARNING

# IMPLEMENT CAN TIP OVER AND CRUSH IF ATTACHED, REMOVED OR STORED IMPROPERLY.

- Read and follow Operator's Manual instructions and safety rules for procedures and use of parking stands.
- Front parking stands must be on all cultivators.
- Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
- Parking stands must be kept in good condition or replaced if damaged.
- Remove on solid, level ground.
- Cuitivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops before removing from tractor.
- # Keep all bystanders away.

Failure to follow these instructions can result in serious injury or death. 2005561

#### 2- PN 20033887

# A WARNING

#### FALLING OFF CAN RESULT IN BEING RUN OVER.

- # Tractor must be equipped with ROPS (or ROPS CAB) and seat belt. Keep foldsbie ROPS systems in "locked up" position at all times.
- # Buckle Up! Keep seat belt securely fastened.
- M Allow no riders.

#### RAISED IMPLEMENT CAN DROP AND CRUSH.

- Never go undermeath relised implement which can drop from equipment or tractor 3-point hitch hydraulic leak down, hydraulic system failures, movement of control levers or mechanical linkage failures.
- Service work does not require going underneath implement. Read manual instructions.

FALLING OFF OR GOING UNDERNEATH IMPLEMENT CAN RESULT IN SERIOUS INJURY OR DEATH.

20033887

## **SAFETY & INSTRUCTIONAL DECALS**

#### ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! Replace Immediately If Damaged!



#### 4 - PN 20033889

#### A WARNING

Air in hydraulic systems can allow wings or other components to fall rapidly when being raised or lowered. Before operating or allowing anyone to approach the equipment, purge all air from the system by operating all hydraulic functions several times.

#### 8 - PN 20033893

#### **IMPORTANT**

Do not use upper 3-point top link when cultivator is equipped with rear lift assist. Damage will occur to equipment.

20033693

#### 6 - PN 50630195



#### WARNING

Check for leaks with cardboard; never use hand. Before loosening fittings: lower load, release pressure, and be sure oil is cool.

Consult physician immediately if skin penetration occurs.

#### 5 - PN 20033888



### WARNING

To avoid inkery or death, stand clear of machine when wings are being folded or unfolded. Mechanical fallure, hydraulic system fallure, or air in hydraulic system can allow wings to fall rapidly.

#### 10 - PN 20034030



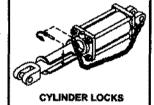
#### WARNING

#### RAISED EQUIPMENT CAN-**DROP AND CRUSH**

install looks before transporting or working underneath raised implement.

Locks must be installed correctly, kept in good condition, and stored on implement. Read and follow manual instructions.

**FAILURE TO FOLLOW INSTRUCTIONS CAN** RESULT IN SERIOUS INJURY OR DEATH.



20034030

#### **ASSEMBLY**

#### **DEALER SET-UP INSTRUCTIONS**

#### **A** WARNING

- Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.
- Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES, DO NOT DELAY.
- M Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.
- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.
- Never allow children or untrained persons to operate equipment.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.

#### **A** WARNING

■ Do not handle blades with bare hands. Careless or improper handling may result in serious injury.

#### **A** CAUTION

Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

Assembly of this cultivator is the responsibility of the Alloway dealer. The cultivator should be delivered to the owner completely assembled, lubricated, and adjusted for normal conditions.

Cultivators are shipped disassembled. When you receive shipment, examine the unit carefully for any hidden damage during shipment. Before assembling the unit, check and compare the parts, bundles, and cartons against the packing list to identify any shortages. If any parts shortages are noted, contact Alloway immediately.

- 1. Select an assembly location that is clean and level with a firm, dry surface. The area must not have any overhead power lines or obstructions and must be large enough to work safety around the unit and to accommodate the unit when fully assembled.
- 2. Remove cultivator from the carton. Open the parts box and lay parts out for easy identification. Refer to the parts lists and exploded view drawings in this manual.

## PRE-DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

inspect the equipment thoroughly after assembly to make sure that it is set up properly before delivering it to the customer.

The following check lists are a reminder of points to inspect. Check off each item as it is found satisfactory or after proper adjustment is made.

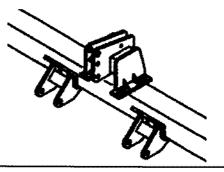
- Check that all safety decals are installed and in good condition. Replace if damaged.
- \_\_\_\_ Properly attach implement to tractor and make all necessary adjustments.
- Check all bolts to be sure they are properly torqued.
- \_\_\_\_ Check wheel bolts for proper torque.
  - Check that all cotter pins and safety pins are properly installed. Replace if damaged.
  - Check and grease all lubrication points as identified in Servicing Intervals, page 31 and page 32.
  - Check that hydraulic reservoir has been serviced and that hydraulic system and all functions have been operated through full cylinder stroke to purge air from system.

## DELIVERY CHECK LIST (DEALER'S RESPONSIBILITY)

- Show customer how to make adjustments.
- \_\_\_\_ Instruct customer how to lubricate and explain the importance of lubrication.
- Point out the safety decals. Explain their meaning and the need to keep them in place and in good condition. Emphasize the increased safety hazards when instructions are not followed.
- Present Operator's Manual and request that customer and all operators read it before operating equipment. Point out the manual safety rules, explain their meanings and emphasize the increased safety hazards that exist when safety rules are not followed.
- Explain to customer the potential crushing hazards of going underneath raised equipment.

  Instruct customer that service work does not require going underneath unit and never to do so.
- Show customer the safe, proper procedures to be used when mounting, dismounting, and storing equipment.
- For mounted units, add wheel weights, ballast in front tires, and/or front tractor weight to enhance front end stability. A minimum 20% of tractor and equipment gross weight must be on front tractor wheels. When adding weight to attain 20% of tractor and equipment weight on front tractor wheels, you must not exceed the ROPS weight certification. Weigh the tractor and equipment. Do not estimate!
- Explain to customer that when equipment is transported on a road or highway, a Slow Moving Vehicle (SMV) sign should be used to provide adequate warning to operators of other vehicles.
- Make customer aware of optional equipment available so that customer can make proper choices as required.

This is the heavy hitch, used with the Reinforced Double Bar. It mounts on the toolbar centerline and the lower points are spaced the same as shown on the following page, standard hitch. However, because this hitch is used with the double bar, back to back mounting with the gang is not a complication.



#### **Assembly Cont'd**

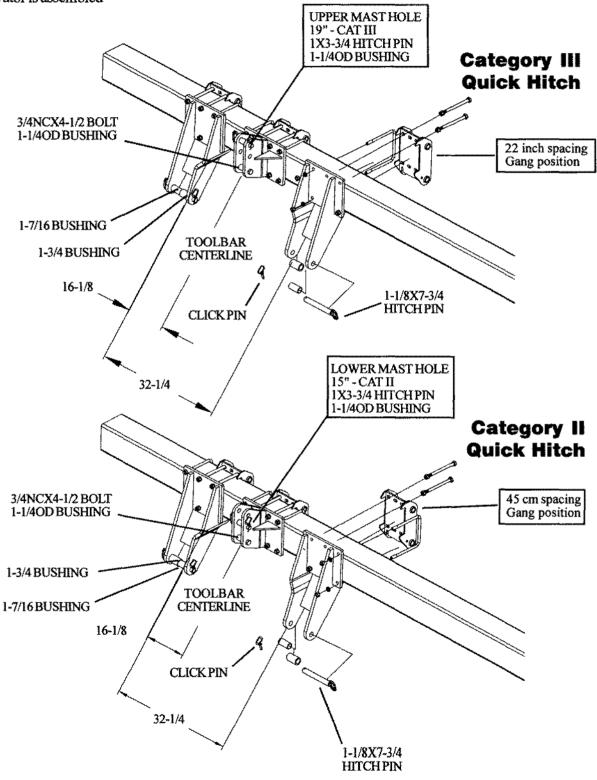
#### MOUNT HITCH (CONT'D)

#### Install 3-Piece Mast

**NOTE:** Do not tighten bolts until entire cultivator is assembled

#### **IMPORTANT**

m If the cultivator if used with lift assist wheels, it must be operated as a semi-mounted unit to prevent damage to the 3-point hitch components. Remove the upper link mast and attach the cultivator to the lower 3-point hitch links only. Lift assist wheels will always carry part of the cultivator weight.



#### **Assemble Toolbar**

- 1. On toolbars with 180-degree folding wings, assemble the cylinder yoke assembly when mounting the wings.
- 2. Use the longest pins on 7" x 7" toolbars. The ports on the cylinder should face toward the tractor side of the cultivator.
- 3. Secure the hinge pins with 5/16 x 2-1/2" bolts and lock nuts.
- 4. Assemble 3/4" jam nuts onto the 3/4" x 2-1/2" bolts and turn them into the hinge plates, located at the underside of the hinge. The bolt head faces the wings.

NOTE: On double toolbars, make sure the short side of wings are on the tractor side of the toobar or the bolts used to level the wings will not be in the proper place.

- 5. Assemble grease zerks in cylinder linkage bars.
- 6. Mount the linkage bars to the wings, using medium-length pins. The grease zerks should point outward from the hinge.
- 7. Secure the linkage bar pins with 5/16" x 2-1/2" bolts and lock nuts.
- 8. Assemble the linkage bars to the cylinder casting, using welded head pins and snap ring pins as shown in Figure 9. The snap ring pins go through the pin on the tractor side of the cylinder.

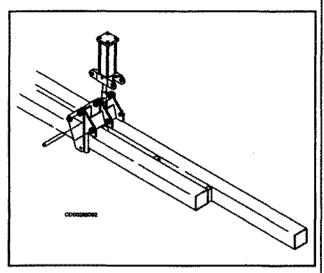


Figure 8 Mounting Wings

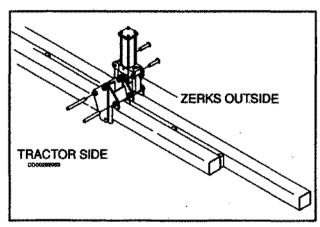


Figure 9 Mounting Cylinder Linkage Bars

#### **Mount Hydraulics**

#### **WARNING**

- M Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or allowing anyone to approach the equipment.
- Make sure all hydraulic hoses, fittings, and valves are in good condition and not leaking before starting power unit or using equipment. Check and route hoses carefully to prevent damage. Hoses must not be twisted, bent sharply, kinked, frayed, pinched, or come into contact with any moving parts. Operate moveable components through full operational range to check clearances. Replace any damaged hoses immediately.



- 2. Attach 90-degree elbows to adapters. Point elbows downwards and toward the center of the cultivator.
- 3. Fasten the long hoses to the upper ports on cylinders and medium hoses to the lower ports on cylinders.
- 4. Run the hoses to the center of the toolbar and fasten the two long hoses and two shorter hoses together.
- After cultivator is completely assembled, fasten two 60" hoses to the toobar, using the plastic cable ties.
- 6. Fasten the wing rests to the center section, using 5/8" U-bolts, nuts, and lock washers (not required on TRF) as shown in Figure 11. Locate wing rests by measuring from the hinge pin. Make sure there is no interference with gang assemblies when folded.

NOTE: Do not tighten wing rests until entire cultivator has been assembled. They may need to be moved to avoid other components boited to the center toolbar or wings.

7. Install hydraulic tips and attach 3-point hitch to front of toolbar.

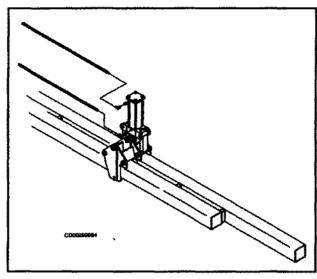


Figure 10 Installing Hydraulic Fittings

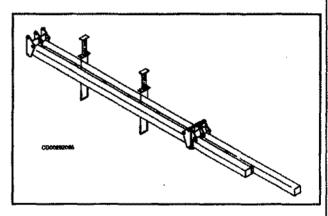


Figure 11 Wing Rest

8. Torque hydraulic fittings according to specifications given below.

Fitting	Required Torque
3/8 Flare JIC	17 - 19 lbsft.
3/8 O-Ring Boss	24 - 26 lbsft.
1/2 O-Ring Boss	50 - 60 lbsft.

#### Make Final Adjustments

- 1. Attach to tractor and slowly fold and unfold; then make final adjustments.
- 2. On folding toolbars, charge the hydraulic cylinders by raising the wings 1 foot and unfolding several times to make sure hydraulic cylinders are completely filled with oil.

#### **IMPORTANT**

- Fallure to charge hydraulic cylinders will cause damage to the cultivator and possible personal injury as wings will "free fall" into transport position. Stay clear of folding toolbars when folding.
- 3. Level wings to the center toolbar, using 3/4 x 2-1/2" hex bolts and jam nuts. These may need to be readjusted after cultivator is completely assembled.

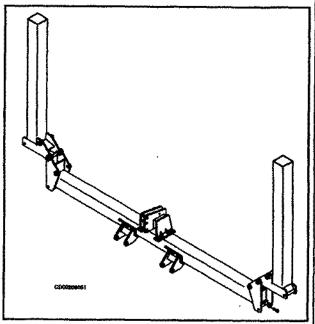


Figure 12 Leveling Wings

#### **Mount Row Units**

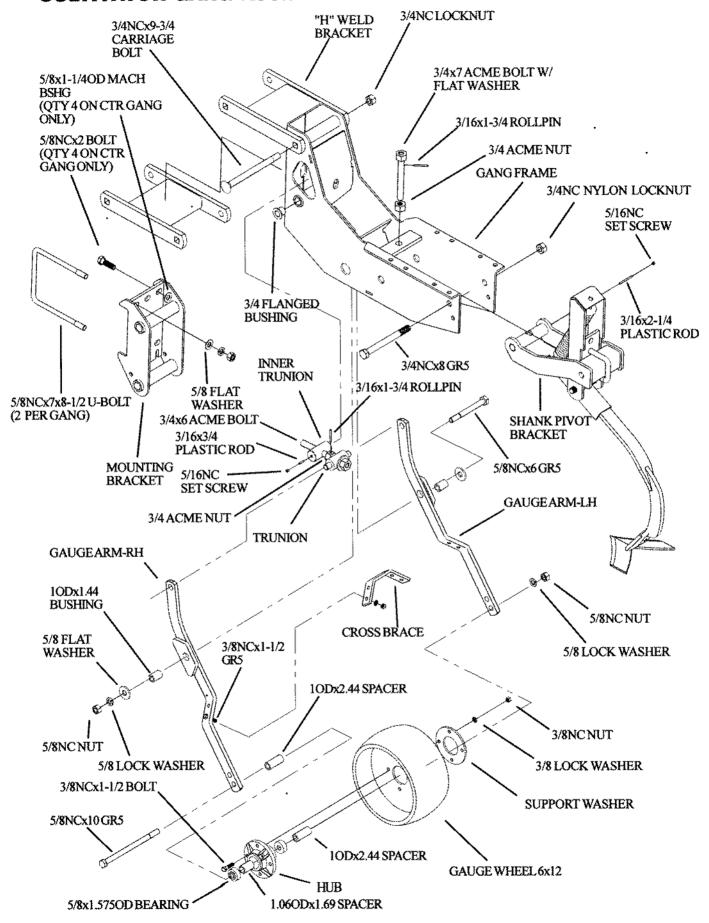
1. Locate the center of the toolbar and mark it. Mark off the row spacings on both sides of the center mark.

Example: On even row units (8 or 12 rows), if the cultivator will be used for 30-inch rows, mark off every 30 inches on both sides of the center mark.

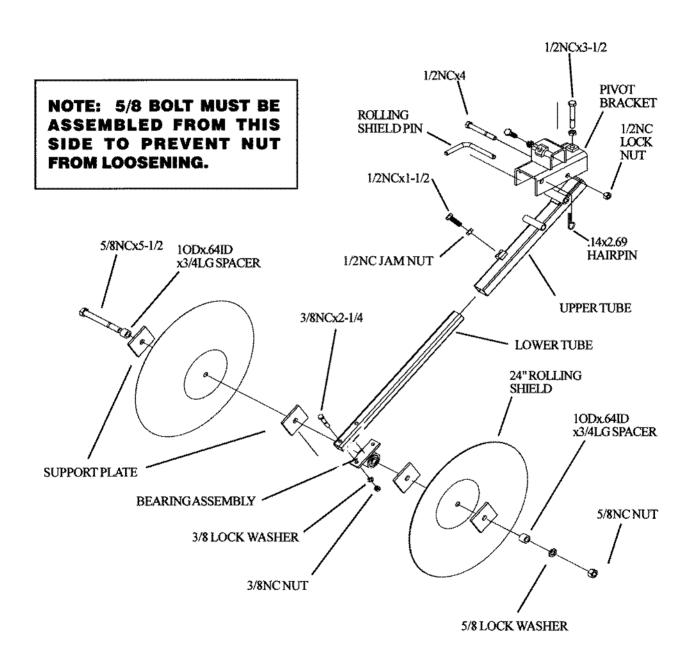
 Center the linkage assemblies over the marks made on the toolbar and fasten them, using 5/8" U-bolts

NOTE: Linkages attached to the 3-point brackets use 5/8 NC bolts and the linkage.

#### **CULTIVATOR GANG ASSEMBLY**

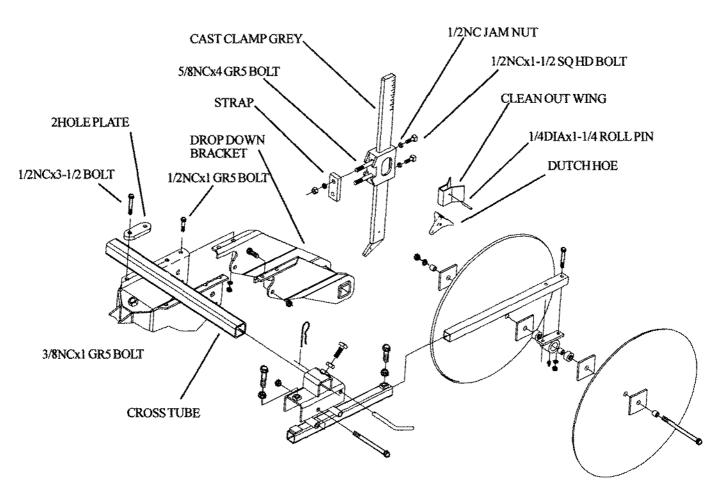


#### **ROLLING SHIELD - SHORT**



#### **ROLLING SHIELD & CLEAN OUT MOUNT**

#### CLEAN OUT SHANK WELDMENT



#### **Attaching Adjustable Support Wheels**

#### **Mount Pivot Arm**

1. Attach pivot arm, using pin and two 5/16 x 1-5/8° roll pins as shown in Figure 28.

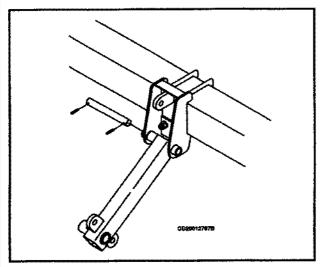


Figure 28 Mounting Pivot Arm

#### Attach Screwjack

2. Attach screwjack, using two 1 x 3" hex bolts, lock washers, and hex nuts as shown in Figure 29.

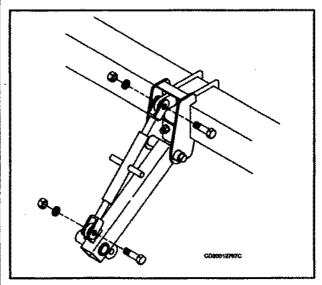


Figure 29 Attaching Screwjack

#### Fasten Hub & Spindle Assembly

3. Fasten hub and spindle assembly, using 1/2 x 3" hex bolt, lock washer, and hex nut as shown in Figure 30.

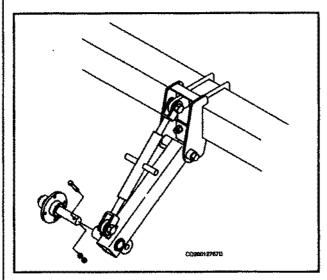


Figure 30 Fastening Hub & Spindle Assembly

#### Fasten Tire & Rim Assembly

- 4. Fasten tire and rim assembly, using bolts provided in hub as shown in Figure 31.
- 5. If you have a support wheel, be sure tire is centered over the guide marks; then tighten U-bolts on mount.

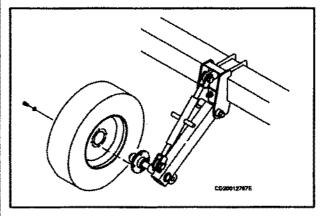


Figure 31 Fastening Tire & Rim Assembly

#### **Mount Front Parking Stands**

Two front parking stands are included with all cultivators.

- 1. Install front parking stands at each end of the toolbar center section as shown in Figure 34.
- 2. R and F toolbars: Position parking stand assembly between row units and fasten to front side of toolbar as shown in Figure 35, using 5/8" U-bolts and flanged nuts.

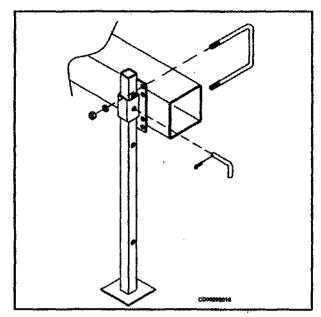


Figure 34 Mounting Parking Stand

#### **Rear Parking Stands**

Rear parking stands are included with all folding toolbar cultivators
Rear parking stands must be used for all folding toolbar cultivators not equipped with lift assist wheels.

1. Install parking stands at each end of the toolbar center section as shown in Figure 35.

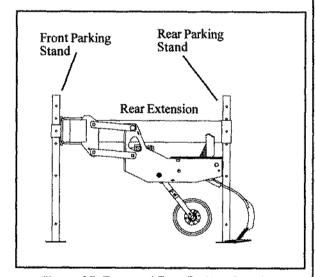


Figure 35 Front and Rear Parking Stands

#### Mounting Adjustable Support Wheels

#### **A** WARNING

- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.

## Measure Support Wheel Location (Figure 36)

Support wheels may need to be adjusted to prevent interference with some tractor cabs or accessories when folding and unfolding the cultivator.

Reposition support wheels following these steps:

- 1. Measure and record distance A from wing hinge pin to the tractor obstruction (operator cab, etc.).
- 2. Measure and mark the same distance from hinge pin to a point on wing B. Support wheels may be positioned on cultivator wings inside that point.
- 3. DO NOT position support wheels beyond this point, as shown in shaded area in Figure 36.

#### **IMPORTANT**

- These wheels may not be used behind tractor tires.
- When using adjustable support wheels, measure tractor and cultivator carefully. Position support wheels so that they will not hit tractor cab when toolbar is folded.

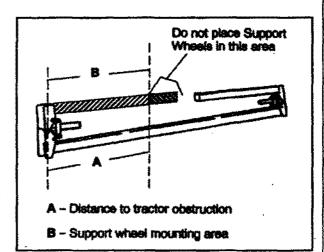


Figure 36 Measuring for Support Wheels

#### Lift Assist

#### Fasten Assembly to Toolbar

- 1. Fasten frame assembly to toolbar, using 7/8" bolts, lock washers, and hex nuts as shown in Figure 60.
- 2. Fasten top support to TRF bars with 3/4" U-bolts.

#### Fasten Hydraulic Cylinder

- 3. Remove clevis from rod end of hydraulic cylinder and attach depth stop nut as shown in Figure 60.
- 4. Replace clevis.
- 5. Fasten hydraulic cylinder to ears on frame and fasten, using pins provided with cylinder.

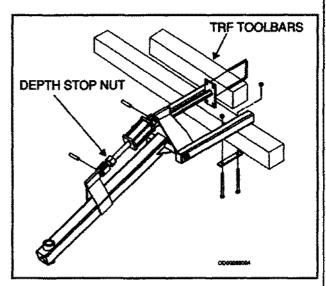


Figure 60 Fastening Lift Assist to Toolbar

#### **Faster Caster Assembly**

- 1. Remove cap, 1/2 x 1" hex bolt, and lock washer from top of caster assembly as shown in Figure 61.
- 2. Slide assembly through bushings in frame assembly and fasten, using cap, bolt, and lock washer.
- 3. Tighten all lift assist bolts to specifications in the Bolt Torque Chart.

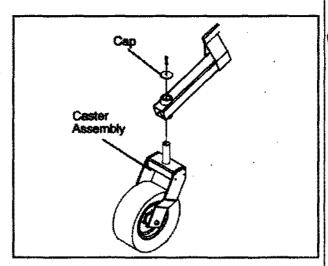


Figure 61 Caster Assembly

#### **Assembly** Cont'd

#### Lift Assist (Cont'd)

#### **Mount Hydraulics**

- 1. Attach 6FJIC x 8MORB to hydraulic cylinder.
- 2. Attach 6FJIC x 6MJIC elbow.
- 3. Attach hoses to 6FJIC x 6MJIC elbow as shown in Figure 62.
- 4. When using double lift assist, run 115" hose and 100" hose up to cylinder. Longer hoses go to rod end ports.
- 5. Run hoses to center of toolbar and fasten tees to hoses as shown in Figure 63.

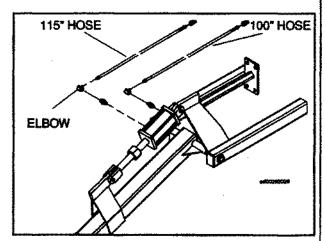


Figure 62 Mounting Hydraulics

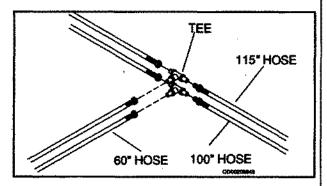
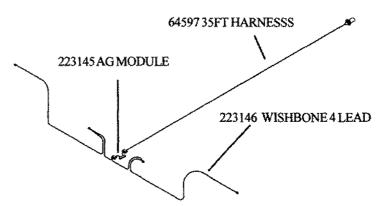


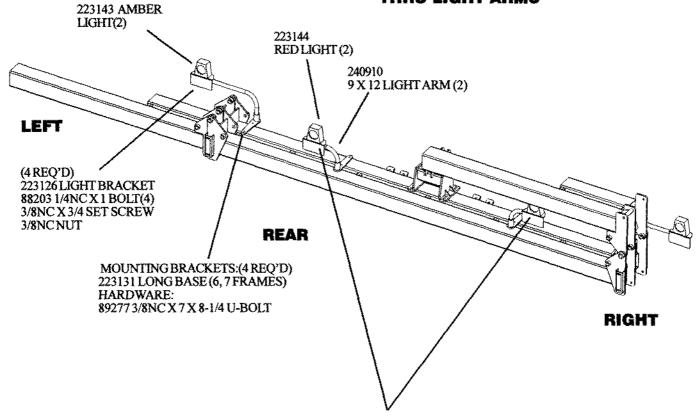
Figure 63 Fastening Tees

#### SAFETY LIGHT ASSEMBLY

NOTE: MOUNT AMBER LIGHTS AS WIDE AS POSSIBLE. THE AMBER LIGHTS MUST BE MOUNTED NO MORE THAN 16" FROM THE IMPLEMENT EXTREMITIES.



<u>NOTE:</u> ROUTE LIGHT HARNESS THRU LIGHT ARMS



NOTE: MOUNT THE RED LIGHTS AS REARWARD AS PRACTICAL ON THE CENTER FRAME. SPACE EVENLY, 2' TO 5' FROM THE MACHINE CENTER. RED LIGHTS FACE THE REAR.

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#### **OPERATION**

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by an operator's single careless act.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, judgement, and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said "The best safety device is an informed, careful operator." We ask you to be that kind of operator.

#### **A** WARNING

■ Safety instructions are important! Read all attachment and power unit manuals; follow all safety rules and safety decal information.

Failure to follow instructions or safety rules can result in serious injury or death.

- M Know your controls and how to stop engine and attachment quickly in an emergency.
- Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CONTACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.
- Never allow children or untrained persons to operate equipment.
- Keep bystanders away from equipment.
- A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.

#### **WARNING**

- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Implement can tip over and crush if attached, removed, or stored improperly.
  - Read and follow instructions and safety rules for procedures and use of parking stands.
  - Front parking stands must be on all cultivators.
  - Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
  - Parking stands must be kept in good condition and replaced if damaged.
  - Remove on solid, level ground.
  - Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
  - · Keep all bystanders away.
- NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
  - Service work does not require going undernests.
  - Read Operator's Manual for service instructions or have service performed by a qualified dealer.
- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.

#### **A** CAUTION

- Always wear relatively tight and belted clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.
- M Always sit in tractor seat when operating controls or starting engine. Securely fasten seat belt, place transmission in neutral, engage brake, and ensure all other controls are disengaged before starting tractor engine.
- Always comply with all state and local lighting and marking requirements.

#### A DANGER

- AVOID INJURY OR DEATH FROM POWER LINES:
  - · Stay away from power lines.
  - Electrocution can occur without direct contact.
  - Check clearances before raising implement.
  - Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.

## PRE-OPERATION CHECK LIST (OWNER'S RESPONSIBILITY)

#### **IMPORTANT**

- This Pre-Operation Check List is provided for the operator. It is important to follow for both personal safety and maintenance of the row crop cultivator.
- \_\_\_\_ Review and follow all safety rules and safety decal instructions
  - Check that all safety decais are installed and in good condition. Replace if damaged.
- Check that all hardware and cotter pins are properly installed and secured.
- Check that equipment is properly and securely attached to tractor.
- \_\_\_ Check all lubrication points and grease as instructed in "Service, lubrication information."
  - Check hydraulic reservoir level.

- Check that all hydraulic hoses and fittings are in good condition and not leaking before starting tractor. Check that hoses are not twisted, bent sharply, kinked, frayed or pulled tight. Replace any damaged hoses immediately.
- Raise and lower equipment and wings to make sure air is purged from hydraulic cylinder and hose.
- Make sure tractor 3-point lift links do not interfere with hydraulic hoses.
- Make sure tractor ROPS or ROPS cab and seat belt are in good condition. Keep seat belt securely fastened during operation.
- Before starting engine, operator must be in tractor seat with seat belt fastened. Place transmission in neutral or park, engage brake and disengage tractor PTO.

#### **Attaching Cultivator (Quick Hitch)**

1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.

NOTE: Before attaching tractor to cultivator, be sure hitch pins and spacers are completely assembled to match the hitch configuration of your tractor as shown in

- 2. Set the height of the 3-point hitch so that quick hitch coupler is lower than the mounting pins.
- 3. Make sure the lower links on the tractor are set in the free-float position (see tractor manual for details).
- Make sure 3-point hitch is set in the sway position (see tractor manual for details).
- 5. Align the couplers under the mounting pins while backing up.

NOTE: Use the proper size bushings for lower link mounting pins and the correct upper link pin location:

6. Clear the area of bystanders, especially children.



- Keep bystanders away from equipment.
  - 7. Carefully back up the tractor until the coupler hooks align with the cultivator hitch pins.
  - 8. When the coupler is under the pins, slowly raise the 3-point hitch. Be sure each of the mounting pins seat in their respective coupler hook.
  - Stop engine, set parking brake, wait for all moving parts to stop. Remove the ignition key before dismounting.
  - **10.** Release the coupler retainer locks to secure the mounting pins in the coupler.

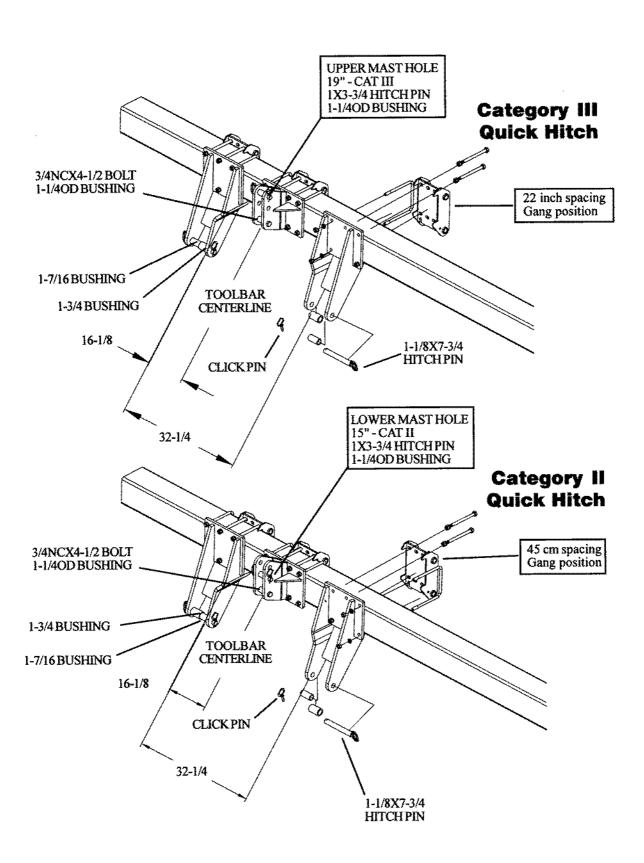
11. Clean the hydraulic couplers and fittings to avoid oil contamination.



- Air in hydraulic systems can cause erratic operation and allow loads or equipment components to drop unexpectedly. When connecting equipment or hoses or performing any hydraulic maintenance, purge any air in hydraulic system by operating all hydraulic functions several times. Do this before putting into service or ellowing anyone to approach the equipment.
  - 12. Connect hydraulic couplings. Couplings must be completely engaged.
  - 13. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.
  - 14. Connect lift assist hydraulic lines to the tractor #2 hydraulic couplers. Couplers must be connected so that pushing the control lever forward lowers the cultivator and pulling the lever rearward raises the cultivator.
  - 15. Connect 7-pin electrical connector to the tractor.
  - Raise the tool bar slightly.
  - 17. Stop engine, set parking brake, wait for all moving parts to stop. Remove the ignition key before dismounting.
  - 18. Raise all parking stands to upper position. Install pin through parking stands and bracket.

#### **IMPORTANT**

- To prevent damage, raise parking stands to upper position before moving cultivator, parking stands must be replaced if bent or damaged.
- To prevent damage to cultivator, do not drop. Lower slowly. Dropping cultivator could result in damage to gauge wheel.



#### Removing Cultivator from Tractor

Rigid Cultivators or Wing Cultivators Removed in Operating Position (WINGS UNFOLDED)

#### **A** WARNING

- Implement can tip over and crush if attached, removed, or stored improperly.
  - Read and follow instructions and safety rules for procedures and use of parking stands.
  - Front parking stands must be on all cultivators.
  - Rear parking stands must be on all folding cultivators unless cultivator has rear lift assist.
  - Parking stands must be kept in good condition and replaced if damaged.
  - · Remove on solid, level ground.
  - Before removing from tractor, cultivator must be level and stable with parking stands properly positioned and rear lift assist (when equipped) lowered to rest on cylinder stops.
  - Keep all bystanders away.



- 1. Park cultivator on a solid, level, dry area that is free from debris and other foreign objects.
- Make sure bystanders are clear from working area.
- 3. Lower lift assist wheels (if equipped) to rest on cylinder stops.
- 4. Lower cultivator so that sweeps and gauge or guide wheels rest on the ground. Position toolbar in the operating position so that cultivator linkage is nearly horizontal. See Figure 5.
- 5. Stop engine, set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.
- 6. Lower front parking stands to the ground and pin in position so that parking stands will be vertical when the tractor is removed. See Figure 6.
- 7. Relieve hydraulic pressure in wing told and lift assist cylinders (if equipped).
- 8. Adjust center link as necessary to remove load from hitch.
- 9. With Quick-Hitch: Release coupler latches and lower hitch to release hitch pins.
- 10. Without Quick-Hitch: Remove hitch pins from upper and lower hitch links.

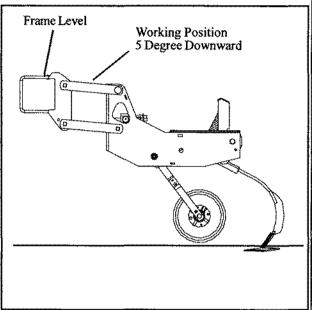


Figure 5 Operating Position

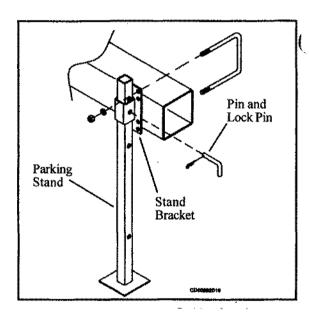


Figure 6 Front Parking Stand Lowered and Pinned

- 11. Disconnect hydraulic couplers and electrical connector from tractor.
- 12. Start engine and slowly drive away from cultivator.

#### Front Parking Stands

Front parking stands are supplied with all cultivators. Front stands must be installed to support the cultivator whenever it is removed from the tractor.

1. Lower front parking stands to the ground and pin in position so that parking stands will be vertical when the tractor is removed. See Figure 13.

#### Rear Parking Stands

Rear parking stands are supplied with all folding toolbar cultivators without rear lift assist wheels. Either rear parking stands or lift assist wheels must be installed to support the cultivator whenever it is removed in the folded transport position.

1. Lower rear parking stands (folding cultivators without lift assist) to the ground and pin in position so that parking stands will be vertical when tractor is removed. Front and rear stands should be pinned in the same hole position as shown in Figure 13.

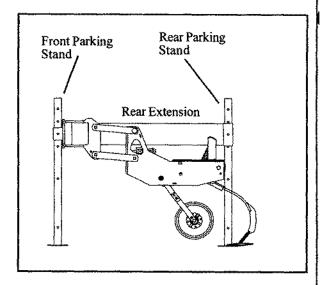


Figure 13 Front & Rear Parking Stands (type F toolbar)

#### Folding the Cultivator

#### **A** WARNING

- Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical failures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.
- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or tires.
  - 1. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.

#### A DANGER

- **AVOID INJURY OR DEATH FROM POWER LINES:** 
  - · Stay away from power lines.
  - Electrocution can occur without direct contact.
  - Check clearances before raising implement.
  - Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.
  - 2. Position the tractor and cultivator in a level area, free of overhead obstacles.
  - 3. Use the tractor 3-point hitch and lift assist wheels (if equipped) or pull-type hitch to raise the cultivator to a level position off the ground.
  - 4. Activate fold control lever rearward and move the cultivator wings until they contact the wing rests that are attached to the main frame. Raise the cultivator into transport position.

#### **Unfolding the Cultivator**

#### **A** WARNING

- Never walk, stand, or place yourself or others under a raised wing or in the path of a lowering wing. Hydraulic system leak-down, hydraulic system failures, mechanical fallures, or movement of control levers can cause wings to drop unexpectedly and cause severe injury or death.
- Before folding or unfolding cultivator:
  - Make sure you have adequate clearance on each side and overhead.
  - Make sure wing cylinder restrictor fittings are properly installed.
  - Make sure wing-mounted gauge wheels and guide coulters will not contact tractor cab or times.
  - 1. Connect wing fold hydraulic lines to the tractor #1 hydraulic couplers. Couplers must be connected so that pushing the control lever forward moves (unfolds) the wings to operating position and pulling the lever rearward moves (folds) the wings to transport position.
  - 2. Position the tractor and cultivator in a level area, free of overhead obstacles and with enough clear area to permit the cultivator to unfold.

#### A DANGER

- AVOID INJURY OR DEATH FROM POWER LINES:
  - · Stay away from power lines.
  - Electrocution can occur without direct contact.
  - Check clearances before raising implement.
  - Do not leave the operator's seat if any part of the tractor or implement contacts electric lines.

- 3. Use the tractor 3-point hitch and lift assist wheels (if equipped) or pull-type hitch to raise the cultivator to a level position off the ground.
- Activate fold control lever forward and move the cultivator wings off wing rests into operating position.
- 5. Move tractor into position for cultivating.

#### **Connecting Lift Assist**

3-Point Hitch Semi-Mounted Cultivator

#### IMPORTANT

■ If the cultivator is used with lift assist wheels, it must be operated as a semi-mounted unit to prevent damage to the 3-point hitch components. Remove the upper link mast and attach the cultivator to the lower 3-point hitch links only. Lift assist wheels will always carry part of the cultivator weight.

- Connect lift assist hydraulic lines to the tractor #2 hydraulic couplers. Couplers must be connected so that pushing the control lever forward lowers the cultivator and pulling the lever rearward raises the cultivator.
- 2. Use the adjustment nuts on the lift assist cylinders to level and control the operating position of the rear of the cultivator.
- 3. When storing the folding cultivator in the transport position, lower lift assist wheels to rest on the cylinder stops and front parking stands installed as described in Removing Cultivator from Tractor, page 18.

#### **FIELD OPERATION**

#### **WARNING**

■ A minimum 20% of tractor and equipment weight must be on the tractor front wheels when attachments are in transport position. Without this weight, tractor could tip over, causing personal injury or death. The weight may be attained with a loader, front wheel weights, ballast in tires or front tractor weights. Weigh the tractor and equipment. Do not estimate.

#### **IMPORTANT**

- Raise cultivator out of the ground when making sharp turns.
- Do not back up with sweeps or tools in the ground.
- 1. Enter the field and straddle rows in the same direction of planter travel.
- 2. Make sure no one is near the cultivator when raising or lowering wings.
- 3. Unfold into operating position.
- 4. Lower cultivator slowly and move forward approximately 20 feet.

#### **IMPORTANT**

- m To prevent damage to cultivator, do not drop. Lower slowly. Dropping cultivator could result in damage to gauge wheel.
- 5. Check shovel working depth by brushing worked soil aside to determine the amount of ground penetration. Shovel depth is adjusted by raising or lowering the gauge wheel on each gang. Gangs behind tractor wheels are often adjusted deeper to loosen compacted soil.

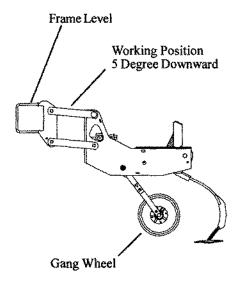


Figure 14 . Operating Position

- 6. If necessary, readjust tine placement for proper coverage.
- 7. After establishing working depth, it may be necessary to reset the 3-point lever stop and adjust the support wheels or to adjust the stops on pull-type wheel cylinders to maintain operating position

#### STORAGE

#### **A** WARNING

- Block equipment securely for storage.
- Keep children and bystanders away from storage area.

At the end of the season, the cultivator should be thoroughly inspected and prepared for storage. Repair or replace any worm or damage components to prevent unnecessary down time at the beginning of the next season.

To ensure a long, trouble-free life, prepare the unit for storage by carrying out the following procedure:

- 1. Clear the area of bystanders, especially children.
- 2. On solid, level ground, lower unit to rest in a stable level position with parking stands properly positioned.
- 3. Stop engine; set parking brake, and wait for all moving parts to stop. Remove ignition key before dismounting.
- 4. Thoroughly wash the unit, using a pressure washer to remove all dirt, mud, debris, and residue.
- 5. Repair or replace damaged parts. Remove any entangled material.
- 6. Inspect all hydraulic hoses, lines, couplers, and fittings. Tighten all loose fittings. Replace any hose that is badly cut, nicked, abraded, or separating from the crimped end of a fitting.

- 7. Lubricate all grease fittings. Make sure all grease cavities have been filled with grease to remove any water residue from pressure washing. Touch up all paint nicks and scratches to prevent rust.
- 8. Move to storage area. Select a dry area free of debris. Store in an area away from human activity.
- 9. Unhook from tractor

NOTE: Do not deflate tires.

- 10. Store the unit away from human activity
- 11. Do not allow children to play on or around the stored unit.

#### TRANSPORTING

#### **A** CAUTION

- Afways comply with all state and local lighting and marking requirements.
  - 1. Make sure all bystanders are clear of the unit.
  - 2. Make sure the unit is securely attached to the tractor and all retainer pins are installed.
  - 3. Make sure safety chain is installed on pull-type model.
  - 4. Raise the unit.
  - 5. Check the tire pressure. Be sure tires are at specified pressure.
  - 6. Install transport locks on pull-type cultivator.

- 7. Make sure you are in compliance with all applicable lighting and marking regulations when transporting. Check with your local authorities.
- 8. Never transport the unit faster than 10 mph (16 kmph).
- 9. Know the transport height and width of your unit.
- 10. Stay clear of overhead power lines when folding and unfolding unit. Electrocution can occur without direct contact.

#### **MAKING ADJUSTMENTS**

#### **Leveling Toolbar Wings**

- 1. Level wings to center toolbar, using leveling bolts.
- 2. Tighten jam nuts when wings are level.

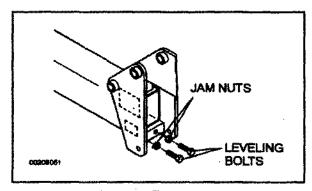


Figure 15 Toolbar Wings

#### **Adjusting Support Wheels**

#### Center Frame Support Wheels

The toolbar weight should be split between the tractor 3-point and the support wheels. To provide level operation of the toolbar, adjust the support wheels mounted on rigid toolbars or on the center section of folding toolbars.

Use field conditions and desired cultivator performance to set support wheel operating height.

 Shorten the screwjack to lower to toolbar. Lengthen the screwjack to raise the toolbar. See Figure 18.

#### Wing Support Wheels

To maintain a proper working height at the outer end of the toolbar's wings, position and adjust the support wheels. Re-adjust the wing support wheels if the center frame operating position is changed.

 Shorten the screwjack to lower to toolbar. Lengthen the screwjack to raise the toolbar. See Figure 18.

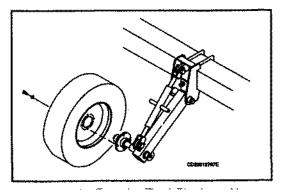


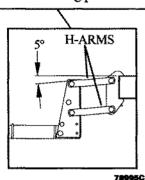
Figure 18 Adjusting Support Wheels

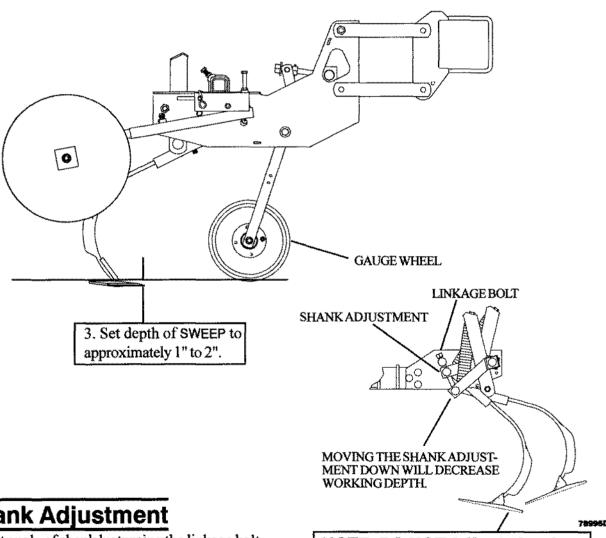
## **GANG ADJUSTMENTS**

Note: Gauge wheels carry a restricted portion of the machines weight. The gauge wheels stabilize the Row Crop from side to side and maintain a working depth for the individual gangs.

1. With tractor setting on a level surface, lower cultivator bar to it's working position.

2. Optimal toolbar height is reached; when H-Arms are 5° downward in working position.





## Shank Adjustment

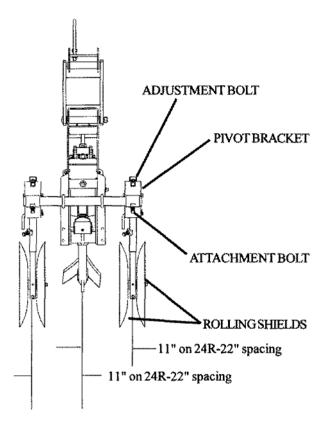
Adjust angle of shank by turning the linkage bolt. Turning the linkage bolt down will give the shank a more aggressive angle of attack, but will also make the shank run shallower. Adjust all shanks evenly to prevent tracking problems.

**NOTE: DO NOT Adjust shank to** a point where the shovel would point up. This will cause cultivator to skid on surface and possibly damage cultivator.

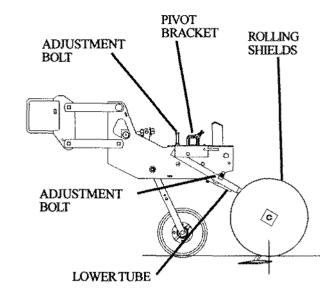
# **Rolling Shields**

The rolling shield depth should be set to where the shields just touch the ground.

The front to back measurement should be set to where the dirt is not being thrown onto the plant. Adjust the lower tube length for correct adjustment.



Note: The rolling shields can be spaced further apart to accommodate plant growth. Spacers are SET on the outside of shields from factory



### **SERVICE**

## **A** WARNING

- m NEVER GO UNDERNEATH EQUIPMENT. Never place any part of the body underneath equipment or between moveable parts even when the engine has been turned off. Hydraulic system leak down, hydraulic system failures, mechanical failures, or movement of control levers can cause equipment to drop or rotate unexpectedly and cause severe injury or death.
  - Service work does not require going underneath.
  - Read Operator's Manual for service instructions or have service performed by a qualified dealer.
- Know your controls and how to stop engine and attachment quickly in an emergency.
- Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid under pressure can easily penetrate skin and will cause serious injury or death.
- Make sure that all operating and service personnel know that if hydraulic fluid penetrates skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury, or death will result. CON-

## TACT A PHYSICIAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES, DO NOT DELAY.

- Never allow children or untrained persons to operate equipment.
- Do not allow bystanders in the area when operating, attaching, removing, assembling, or servicing equipment.
- Before dismounting power unit or performing any service or maintenance, follow these steps: disengage power to implement, lower the 3-point hitch and all raised components to the ground, operate valve levers to release any hydraulic pressure, set parking brake, stop engine, remove key, and unfasten seat belt.
- Before servicing, unfold completely to operating position. Do not service with wings in any other position.

## **A** CAUTION

- If you do not understand any part of this manual and need assistance, see your dealer.
- Always wear relatively tight and beited clothing to avoid entanglement in moving parts. Wear sturdy, rough-soled work shoes and protective equipment for eyes, hair, hands, hearing, and head.

#### Greasing

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance. An SAE multi-purpose lithium-based grease is also acceptable.

- 1. Use a hand-held grease gun for all greasing.
- 2. Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
- 3. Replace and repair broken fittings immediately.
- 4. If fittings will not take grease, remove and clean thoroughly. Also clean lubricant passageway. Replace fitting if necessary.

#### Storing Lubricants

Your unit can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contaminants.

The recommended lubrication intervals are based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.

### Service & Maintenance Cont'd

### Servicing Intervals

#### 10 Hours

Lubricate 180-degree folding toolbar (Figure 21).

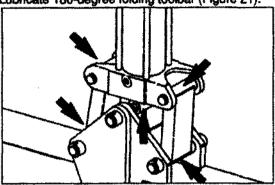


Figure 21

#### 25 Hours

Lubricate guide wheel screw jacks (Figure 22 & Figure 24).

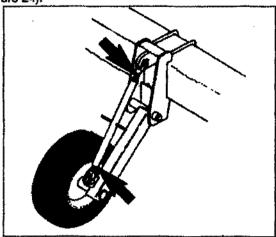


Figure 22

#### 25 Hours

Lubricate lift assist assemblies (Figure 23)

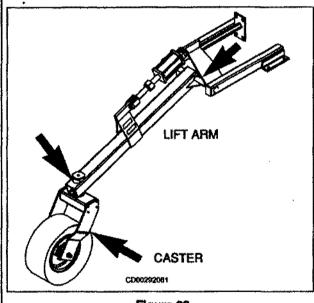
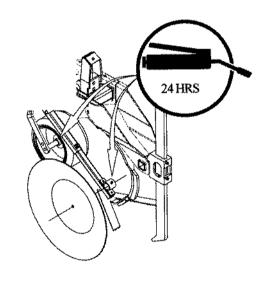
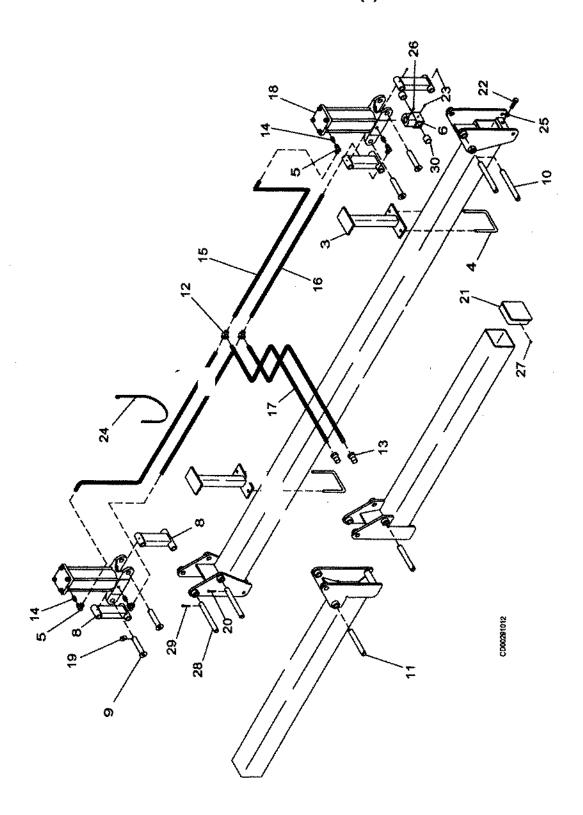


Figure 23



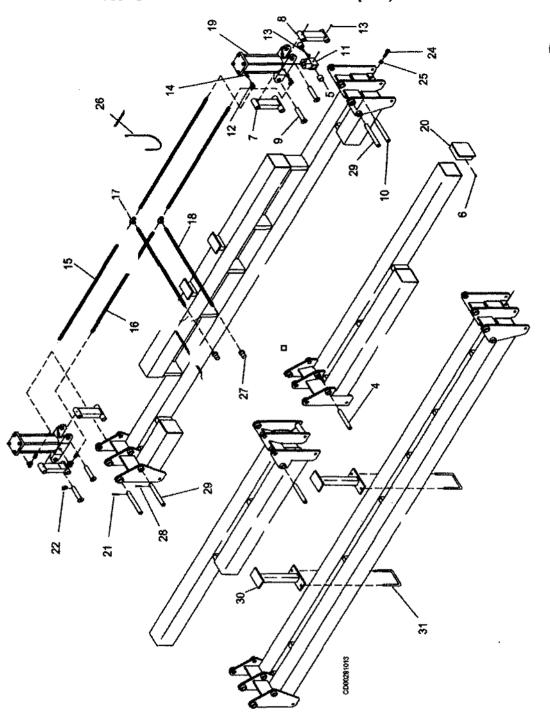
### 180° FOLD TOOLBAR (F)



## 180° FOLD TOOLBAR (F) PARTS LIST

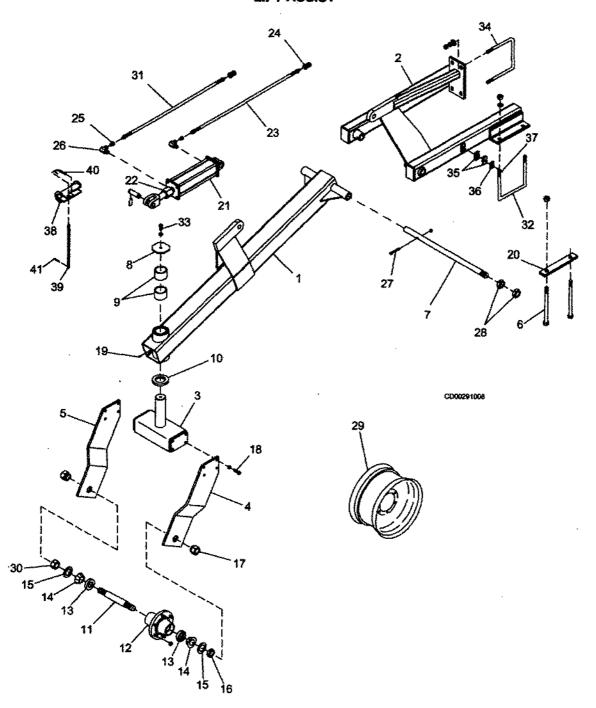
REF	PART	QTY	DESCRIPTION	REF	PART	QTY	DESCRIPTION
				17	90519146	2	3/8" Hose x 6 FJIC x 8 MORB x 60"
				18	20020503	2	5 x 12 Cylinder complete with clevis
				18	20020500	2	5 x 12 Cylinder less clevis
3	20020321	2	Wing rest	18	90521263	1	Seal kit, 5 x 12 cylinder
4	20020321		5/8" U-Bolt for 7 x 7 beam	19	90025010	4	1/4 x 1-1/4 Klik pin
•	90503163			20	90001071	4	5/16 x 2-1/2 Hex bolt GR5
5			Elbow, 6 MJIC x 6 FJIC x 90°	21	20032636	2	Rubber tube cap, 7 x 7
6 6	20033324 20021776	_	Clevis assy., 1-1/2" I.D.	22	90003024	4	3/4 NC x 2-1/2 Hex bolt GR5 full thread
7	20020317	2	Cylinder linkage, wing	23	90515024	10	Zerk, 1/4-28 UNF Straight
8	20020316	2	Cylinder linkage, center	24	90507086	6	32" Plastic cable tie
9	20021371	4	Cylinder pin	25	90006282	4	3/4 NC Jam nut
10	20030513	4	Cylinder pin 1-1/4" x 11-1/4" long	26	90016033	2	3/4 NC x 1 Sq. head set screw
11	20030526	2	Pin 1-1/4 x 9-5/8" long	27	90016897	4	#6 x 3/4 Pan head sheet metal screw
12	90503112	2	Tee, 6 MJIC	28	20033431	2	Hinge pin, 1-1/2 x 11-1/4
13	90519126	2	Quick coupler, male tip	29	90001125		3/8 x 3 Hex bolt GR5
14	90503162	4	6 MJIC x 8 MORB Restrictor, 1/16"	30	20033285	_	Garmax bushing, 1-1/2" I.D.
15	90519119	2	3/8" Hose x 6 FJIC x 6 FJIC x 100"				
15	90519147	2	3/8" Hose x 6 FJIC x 6 FJIC x 111"				
15	90519121	2	3/8" Hose x 6 FJIC x 6 FJIC x 120"				
15	90519148	2	3/8" Hose x 6 FJIC x 6 FJIC x 142"				
16	90519152	2	3/8" Hose x 6 FJIC x 6 FJIC x 82"				
16	90519119	2	3/8" Hose x 6 FJIC x 6 FJIC x 100"				
16	90519147	2	3/8" Hose x 6 FJIC x 6 FJIC x 111"				
16	90519151	2	3/8" Hose x 6 FJIC x 6 FJIC x 134"				

## 180° SINGLE REINFORCED TOOLBAR (TRF)



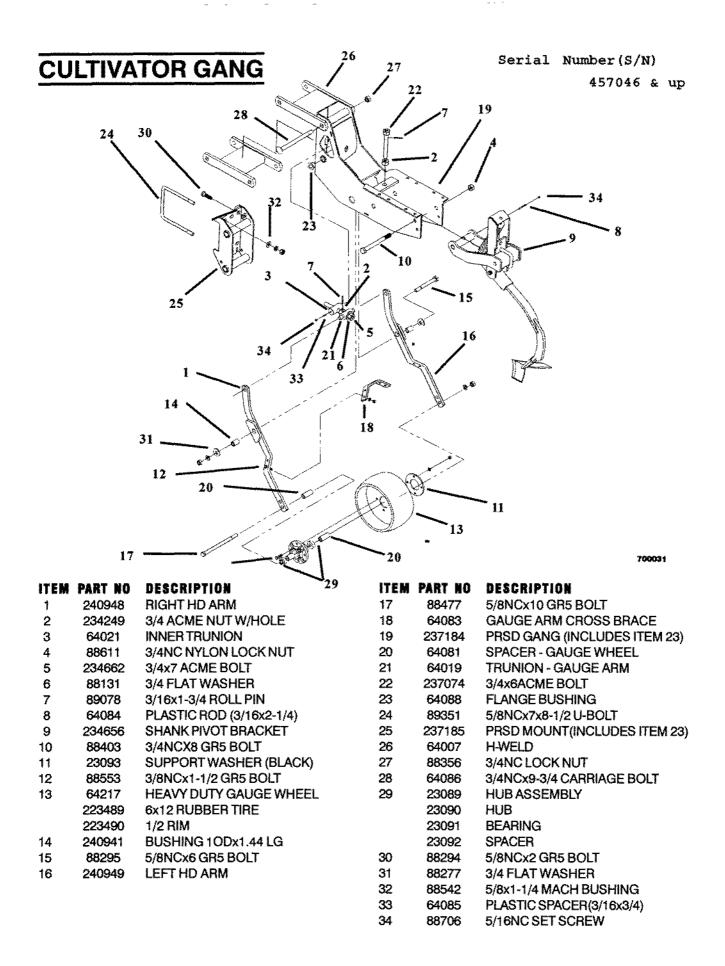
### 180° FOLD TOOLBAR (TRF) PARTS LIST

765	PART	QTY	DESCRIPTION	REF	PA	RT QTY		DESCRIPTION
4	20030526	3 1	Pin, 1-1/4 x 9-5/8" long		19	90521384	1	5 x 12 Cylinder cap
5	20033285	5 4	1-1/2" Garmax bushing		19	20021564	1	6 x 12 Cyl complete w/clevis
5	20033355	5 4	1-1/4" Garmax bushing		19	905-21413		Tie Rod Bolt, 6x12
6	90016897	7 4	#6 x 3/4 Pan head sheet metal		19	90521410	4	6 x 12 Cylinder less clevis
			screw		19	90521411	1	6 x 12 Cylinder rod piston
7	20020316	3 2	Cylinder linkage, center		19	90521387	1	6 x 12 Cylinder rod cap
8	20020317	7 2	Cylinder linkage, wings		19	90521412	1	6 x 12 Cylinder cap
9	20021611	4	Pin, cylinder linkage		19	90521368	1	Seal kit, 6 x 12 cylinder
10	20032450	) 4	Hinge pin, 1-1/4" x 19-3/4" long		19	20021762	1	Clevis assy. (1-1/4 pin)
11	20033324	2	Clevis		19	90521385	1	1-1/4" Nut
11	20021776	3 2	Clevis assembly, 1-1/2" I.D.		20	20032636	4	Rubber tube caps, 7 x 7
			with bushings (Ref. Figure 5 & Figure 10)		21	90001071	6	5/16 x 2-1/2 Hex bolt GR5
12	90503163	3 4	Elbow, 6 MJIC x 6 FJIC 90°		22	90025010	4	1/4 x 1-1/4 Klik pin
13	90515024		Zerk, 1/4-28 UNF, straight		24	90003024	4	3/4 NC x 2-1/2 Hex bolt GR5
14	90503162		6 MJIC x 8 MORB Restrictor		25	90006282	4	3/4 NC Jam nut
15	90519147		3/8* Hose x 6 FJIC x 6 FJIC x		26	90507085	6	15" Plastic cable ties
1.0	30010141	_	111" (184" center)		27	90519126	2	Quick coupler
15	90519121	1 2	3/8" Hose x 6 FJIC x 6 FJIC x 120" (202" center, 198" center)		28	90001071	2	5/16 NC x 2-1/2 Hex bolt GR5 (1-1/4" Hinge pin)
15	90519148	3 2	3/8" Hose x 6 FJIC x 6 FJIC x 142" (242" center)	:	28	90001125	2	3/8 NC x 3 Hex bolt GR5 (1-1/2" Hinge pin)
15	90519149	2	3/8" Hose x 6 FJIC x 6 FJIC x 152" (264" center)		29	20033170	2	Hinge pin, 1-1/2" x 19-3/4" long
15	90519150	2	3/8" Hose x 6 FJIC x 6 FJIC x .160" (286" center)		30 31	20020321 20030344	2 2	Stand Wing rest U-bolt
16	90519119	2	3/8" Hose x 6 FJIC x 6 FJIC x 100"				-	1 F 12
16	90519147	7 2	3/8" Hose x 6 FJIC x 6 FJIC x 111"					
16	90519151	2	3/8" Hose x 6 FJIC x 6 FJIC x 134"					
16	90519148	3 2	3/8" Hose x 6 FJIC x 6 FJIC x 142"					
16	90519149	2	3/8" Hose x 6 FJIC x 6 FJIC x 152"					
17	90503112	2 2	Tee, 6 MJIC					
18	90519146	3 2	3/8" Hose x 6 FJIC x 60"					
19 19	20020503 905-21250		5 x 12 Cyl complete w/clevis Tie Rod Bolt, 5x12					
19	20020500	2	5 x 12 Cylinder less clevis					
19	90521263	3 1	Seal kit, 5 x 12 cylinder					
19	90521382	2 1	5 x 12 Cylinder rod					
19	90521383	3 1	5 x 12 Cylinder rod cap					

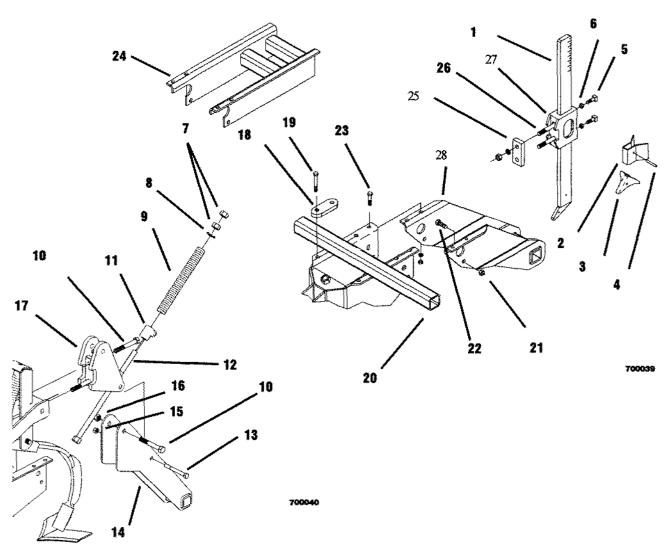


### LIFT ASSIST PARTS LIST

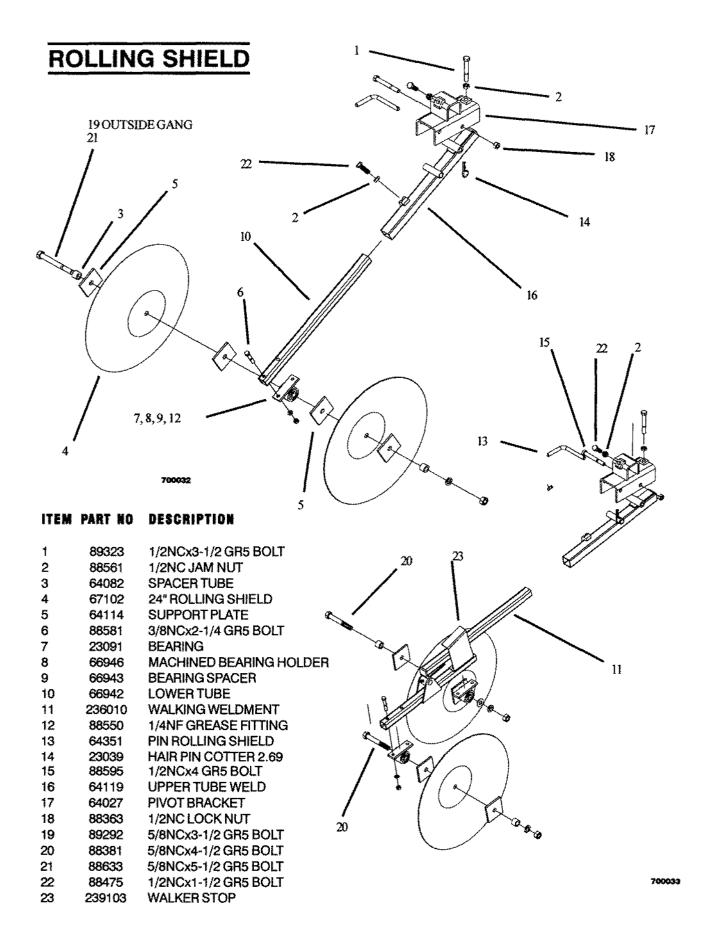
REF	PART	QTY	DESCRIPTION	FEF	PART	QTY	DESCRIPTION
1	20021957	1	Tube weldment	20	20033964	2	Strap, Ft reinforced tool bar,
2	20021955	1	Mount weld, TRF folding to ol-				24 row, 3 holes
			bars	21	90521391	1	Hydraulic cylinder 3 x 10 stroke
2	20022091	1	Mount weld, flat fold/rigid	22	90521305	1	Depth stop nut
			toolbars	23	90519154	1	Hose 6 FJIC x 6 MORB x 115*
2	20022101	1	Mount weld, FR folding too lbars, 24 row	24	90519126	2	Quick coupler, male tip
•	20020689		,	25	90503162	2	Restrictor 6 MJIC x 8 MORB
3			Caster pivot wekiment	26	90503137	2	Elbow 6 MJIC x 6 FJIC
4	20032622	1	Side plate RH	27	90001121	1	3/8 NC x 2-1/2 Hex bolt GR5
5	20032621		Side plate LH	28	90006291	2	1-1/4 NF Jam nut
6	90003039		7/8 x 10 Hex bolt	29	90509077	1	6-Hole rim 15" x 6"
7	20032799	1	Pin	30	90006024	1	1-1/4 NF Hex mut
8	20031219	1	Retainer plate	31	90519130	1	Hose, 6 FJIC x 6 MORB x 100"
9	20031766		Bushing	32	20030345	2	U-Bolt , 3/4 NC x 7" I nside x
10	20031233	1	Thrust bearing				9-1/8" Ln, Pre '99"
11	20031240	1	Spindle	33	90001221	1	1/2 NC x 1 Hex bolt GR5
12	90509082	1	Hub with curps	34	20030344		U-Bolt,5/8 NC x 7" i nside x
13	90101148	2	Bearing cup				8-1/2* long
14	90101149	2	Bearing cone	35	90031069	3	Clamp bod y
15	90109127	2	Seal	36	90030168	3	Cover plate
16	20032726	1	Nut, short 1-1/4 NF	37	90003459	3	5/16 NC x 1-3/8 Hex bolt GR5
17	20031847	2	1-1/4 NF Shoulder nut	38	20022059	1	Cylinder, stop weld
18	90001225	8	1/2 NC x 1-1/2 Hex bolt GR5	39	12030472	1	Chain
20	20030970	2	Strap	. 40	90042055	1	Lock pin
19	90515024	1	1/4-28 UNF Straight zer k	41	90023043	4	Cotte r pin



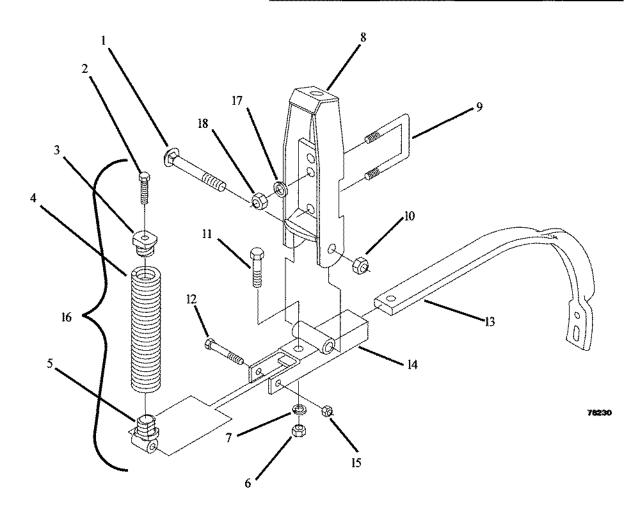
# **ROW CLEANOUT**



ITEM	PART NO	DESCRIPTION	ITEM	PART NO	DESCRIPTION
1	64053	CLEAN OUT SHANK (34IN)	16	88369	5/8NC LOCK NUT
	236695	CLEANOUT SHANK (24IN)	17	237080	MTG BRACKET
2	64382	CLEAN OUT WING	18	239105	2 HOLE PLATE
3	59891	DUTCH HOE	19	88507	1/2NCx3-1/2GR5
4	88648	1/4DIAx1-1/4 ROLL PIN	20	64120	26IN CROSS TUBE (SHOWN)
5	88454	1/2NCx1-1/2 SQ HD BOLT		69619	18IN CROSS TUBE
6	88561	1/2NC JAM NUT		239181	14IN CROSS TUBE
7	88110	3/4NC NUT	21	89064	1/2NC LOCK NUT
8	88548	3/4 SAE FLAT WASHER	22	89015	1/2NCx1 GR5 BOLT
9	68581	CMPRSN SPRING	23	89034	3/8NCx1 GR5 BOLT
10	88381	5/8NCx4-1/2 GR5	24	64397	SET BACK WELDMENTS
11	221981	MOUNT CASTING			(S-SHANK)
12	67076	3/4NCx16-1/2 SPECIAL BOLT	25	65412	STRAP
13	88382	1/2NCx4-1/2 GR5	26	88298	5/8NCx4 GR5 BOLT
14	237083	CLEANOUT ARM	27	66972	CAST CLAMP GREY
15	88363	1/2NC LOCK NUT	28	222271	DROP DOWN BRACKET

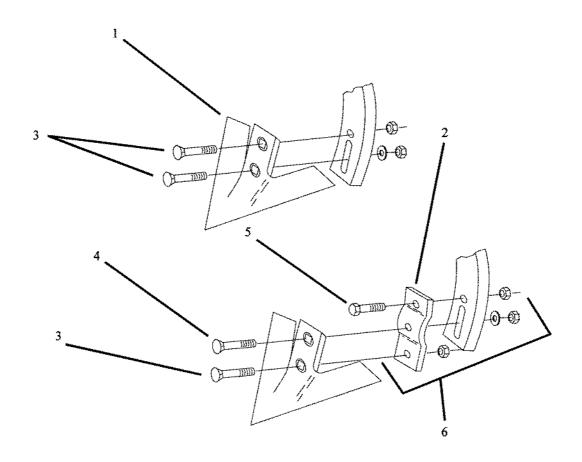


# STANDARD SHANK ASSEMBLY



ITEM	PART NO	DESCRIPTION	ITEM	PART NO	DESCRIPTION
	53475	3/8 SPR EDGE SHANK w/HDWE	10	22463	3/4NF LOCK NUT
	53404	3/8 SPRING EDGE FORMED	11	88294	5/8NCx2 GR5 BOLT
		FC SHANK ASSEMBLY	12	20637	1/2NFx3 BOLT
		(INCLUDES 1-8, 10-16)	13	53408	EDGE FORMED SHANK
1	68575	SHANK CARRIAGE BOLT	14	11509	SHANK HOLDER
2	23153	1/2NCx2 BOLT	15	88304	1/2NF LOCK NUT
3	11398	SPRING PLUG	16	11540	SPRING & PLUG ASSEMBLY
4	11510	3/8DIA WIRE SPRING			(REF. ITEMS 3-5)
5	11397	SPRING HANDLE	17	88129	5/8 LOCK WASHER
6	88126	5/8NC NUT	18	88126	5/8NC NUT
7	88129	5/8 LOCK WASHER			.,
8	11512	SHANKBRACKET			
9	88311	5/8NCx2-1/2x3-3/4 U-BOLT			

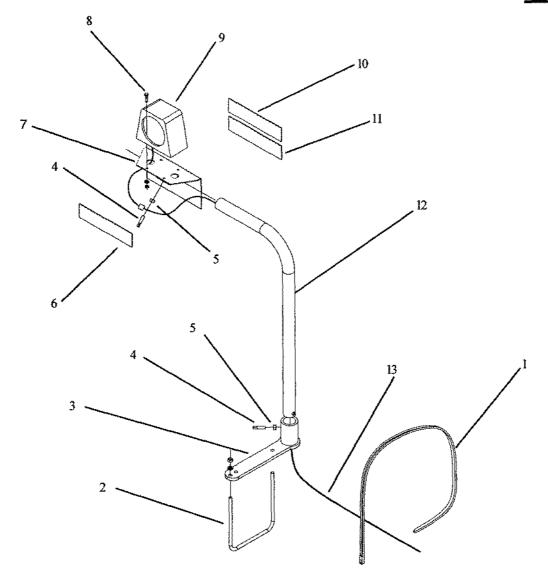
# **SHOVELS & EXTENSIONS**



#### ITEM PART NO DESCRIPTION

1	64362	PEANUT SWEEP PACKAGE
	64352	14" PEANUT SWEEP - 47 °
	88152	7/16 FLAT WASHER
	88344	7/16NC HEAVY NUT
	88599	7/16NCx1-1/2 No. 3 PLOW BOLT
2	41575	FC SHANK EXTENSION
3	88599	7/16NCx1-1/2 PLOW BOLT
4	88464	7/16NCx2-1/4 PLOW BOLT
5	88392	7/16NCx1-1/2 GR5 BOLT
6	16339	FC SHOVEL EXTENSION KIT
		(CONTAINS 4 EXTENSIONS W/HDWE)

# **LIGHTS**



ITEM	PART NO	DESCRIPTION			
	223165	LIGHTING KIT			
1	13479	4" SQUARE TIE LOOP			
2	89277	3/8NCx7x8-1/4 U-BOLT	ITEM	PART NO	DESCRIPTION
3	223131	LONG BASE PIVOT	11	223118	RED/ORANGE FLUORESCENT
4	88702	3/8NCx3/4 SQ HEAD SET SCREW			DECAL
5	88103	3/8NC NUT	12	223158	12x26 LIGHT ARM
6	22372	YELLOW DECAL		240910	9X12 LIGHT ARM
7	223126	LIGHT/REFLECTOR BRACKET	13	223330	AG LIGHT KIT
8	88203	1/4NCx1 BOLT			INCLUDES THE FOLLOWING ITEMS
9	223143	AMBER LIGHT		22314	5 AG MODULE
	223144	RED LIGHT		22314	6 WISHBONE 4 LEAD
10	22371	RED DECAL		64597	30' HARNESS
				22314	3 AMBER LIGHT (2)
				22314	4 RED LIGHT (2)

### **PARKING STANDS**

