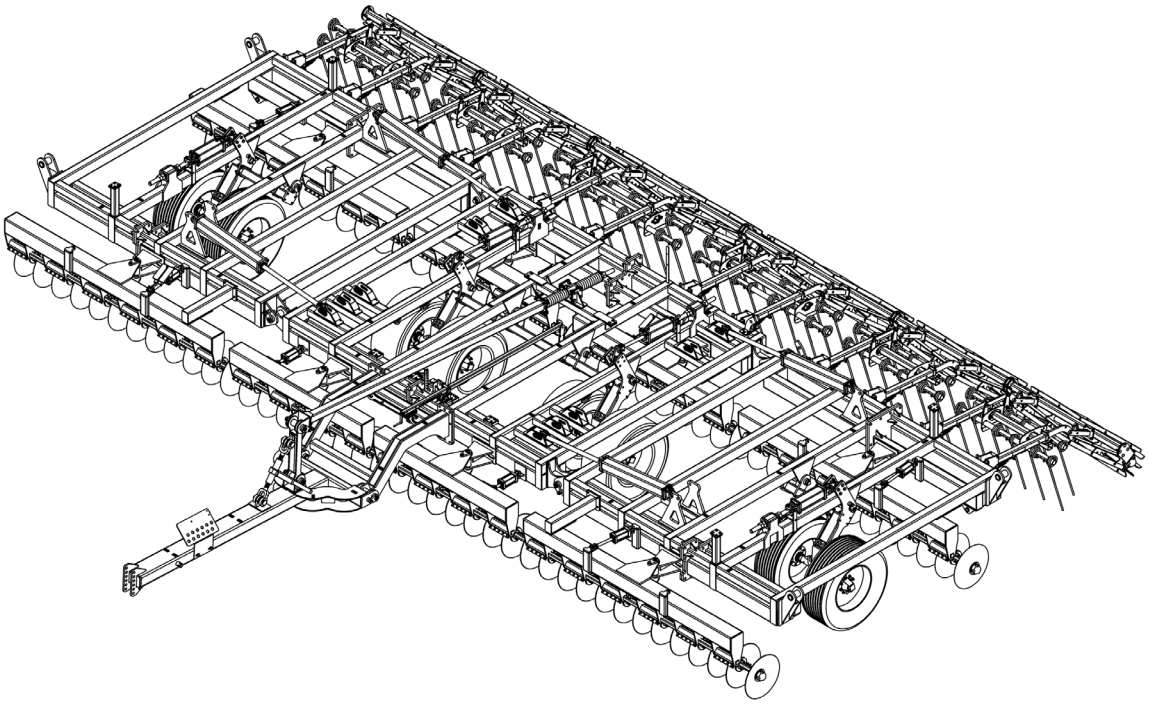
GATES MANUFACTURING®

Magnum Coulter Disk



Operator's Manual

124756

June 2014

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Preface

This Operator and Parts Manual contains information pertaining to the operation, maintenance and adjustments of your Gates Manufacturing product. To obtain the maximum service, read the manual provided thoroughly. Your Gates Manufacturing product is designed to give you years of satisfaction. Taking the time to protect it against rust, wear and by replacing worn parts will add longer life and trade-in value to your product.

Disclaimer

Gates Manufacturing, Inc.'s policy is to improve and develop our products on a continuing basis. We reserve the right to make changes or add improvements at anytime without incurring any obligation to make such changes on machines previously sold.

Gates Manufacturing, Inc. recommends that operators READ and UNDERSTAND the Operator's Manual before using the machine and should review the machine's Operator's Manual annually.

Contact Information

Gates Manufacturing, Inc.
8710 33rd Ave. NW
Lansford, ND 58750

Phone: 701.784.5434
Fax: 701.784.5444
E-mail: info@gatesmfg.net

www.gatesmfg.net

Owner Registration Information

Bring this information when ordering parts.

Name_____

Address_____

City_____

State/Prov._____

Mail Code_____

Size_____

Serial Number_____

Date Purchased_____

Dealer_____

WARRANTY

Gates Manufacturing, Inc. warrants its new, unused agricultural equipment, to be free of defects in material and workmanship, when properly assembled, at time of delivery to the first retail purchaser.

Basic Warranty Repair Period

Gates will repair or replace, at its option, without charge for parts any Gates Manufactured part that is found to be defective for a period of two years. Return of the defective part will be the responsibility of the customer to the dealer or Gates Manufacturing. It is the dealer's responsibility to hold the part for inspection by Gates Manufacturing.

Replacement parts are warranted for a period of one year from date of purchase, providing the bill of sale accompanies warranty claim.

Labor is covered during the first year of warranty only, and at a reasonable rate to be determined by Gates Manufacturing, Inc. Labor during the second year is not covered.

Exceptions to this Warranty

In no event shall the owner be entitled to recover for incidental, special or consequential damages such as, but not limited to; loss of profit or revenue, inconvenience of cost of rental of replacement equipment.

Hydraulic hose will be one warranty only.

Blades and springs will be one year warranty only prorated by wear subject to Gates Manufacturing appraisal.

Tires and cylinders will be the manufacturers responsibility.

The buyer of a Serial Numbered Gates product must be reported to Gates Manufacturing, Inc. by the dealer to initiate warranty.

Use of Gates Manufacturing products for rental units will be warranted for a one year period only.

Mileage and travel time.

Hydraulic Oil.

Repair, maintenance, and service items not related to defects.

- Loss or damage during shipment.
- Failure resulting from lack of or improper maintenance.
- Damage caused by operator abuse, negligence or improper operation.
- Damage due to accidents.

Gates® Manufacturing, Inc.
Lansford, ND 58750

Gates Coulter Disk Features

The Gates Coulter Disk is a primary tillage tool designed to cut and chop heavy residue at higher rates of speed. It accomplishes this task by using two full ranks of coulter blades set at offset angles adjusted by the operator, which allow for varying field conditions.

The coulter gangs of the Gates Coulter Disk are adjustable to handle varying field conditions and farming practices. Gangs are easily adjustable from 0 to 15 degrees to allow for minimal soil disturbance or aggressive soil and residue mixing. This feature accommodates no till operation to conventional till, and any degree in between. When optional Gates Mounted Harrows and Rolling Baskets are added to the machine, it becomes an excellent, high speed seedbed preparation tool.

Other features were designed into the Gates Coulter Disk to enhance its performance. Highway service tires are used on bogie wheel arrangements for maximum flotation in wet conditions. Master-slave hydraulics with rephasing cylinders are used for single point depth control.

The Gates Coulter Disk is available in varying widths of 24', 32', 36', 40', 48', 52' and 56' with over-center folding wings for safe transport.

Safety Information

This safety alert symbol is used to denote possible danger and care should be taken to prevent bodily injury. When you see this symbol is means: ATTENTION!, BECOME ALERT! and/or YOUR SAFETY IS INVOLVED!

WARNING: Safe practices must be followed when assembling this equipment. All personnel involved must:

- Read and understand the instructions and manuals for this machine.
- Be instructed in the safe use of tools and all lifting devices involved in the assembly of this equipment.
- Clear the area of all personnel not involved in the assembly of this machine.

General Safety Practices

1. READ and UNDERSTAND the Operator's Manual before using any equipment. Review at least annually thereafter.
2. VERIFY all safety devices and shields are in place before using any equipment.
3. KEEP hands, feet, hair and clothing away from moving parts.
4. STOP engine, place all controls in neutral, set parking brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or maintaining.
5. BE CAREFUL when working around high pressure hydraulic system.
6. DO NOT ALLOW RIDERS.
7. NEVER allow anyone unfamiliar, untrained or complacent operate the implement.
8. ESCAPING FLUID HAZARD: Escaping hydraulic fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting the hydraulic lines.
    - Check/tighten all connections BEFORE applying pressure
    - Use a piece of cardboard or paper to search for leaks.
    - NEVER use your hand.
    - IF ANY fluid is injected into the skin, seek immediate attention.

Safety During Transportation

1. ONLY TOW at a safe speed do not exceed speeds higher than 25 mph (40 km/h). Use caution when making corners and meeting traffic.
2. ALWAYS use a safety chain between tractor drawbar and implement hitch when transporting on public roads.
3. ALWAYS use transport locks when transporting on public roads.
4. BE SURE implement hitch is securely fastened to hitch equipped with hammer strap on large tractor before operating hydraulics.
5. COMPLY with local lighting, marking and oversize regulations when transporting on highways.
6. FREQUENTLY check for traffic from rear, especially during turns.
7. BE CERTIAN tractor weight is equal to or greater than coulter disk weight.
8. ALWAYS be certain that no one is behind or around implement before moving.
9. BE SURE no upward pressure is exerted on tractor by coulter disk tongue before disconnecting from tractor.
10. NEVER subject the implement to steep sides / grades while in transport position.

Safety During Servicing

1. SHUT DOWN TRACTOR ENGINE remove key from tractor ignition and be certain all moving parts have stopped before servicing harrow drawbar.
2. DO NOT OVERINFLATE tires. NEVER lean over tire while inflating it.
3. ALWAYS USE proper mounting procedures when mounting a tire to wheel or rim. A tire not seated properly may explode when being inflated causing injury or death.
4. ONLY service coulter disk when in full field position.

Safety Decals

Indicates an immediate hazardous situation that will result in death or serious injury. The color associated with Danger is RED.

Indicates a potentially hazardous situation that could result in death or serious injury. The color associated with Warning is ORANGE.

Indicates a potentially hazardous situation that may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

The Notice decals and statements in this manual are to inform the operator of the correct fluids, or operational practices for this machine. Failure to follow these notices will result in damage to the machine. The color associated with Notice is BLUE.

1. Keep safety signs clean and legible at all times.
2. Replace safety signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current sign.
4. Safety signs are available from your dealer parts department or the factory.

How to install safety signs:

1. Be sure that the installation area is clean and dry.
2. Be sure the temperature is above 50°F (10°C).
3. Decide on the exact position before removing the backing paper.
4. Remove the smallest portion of the split backing paper.
5. Align the sign over the specified area and carefully press the small portion with the exposed sticky backing in place.
6. Slowly peel back the remaining paper and carefully smooth the remaining portion of the sign in place.
7. Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

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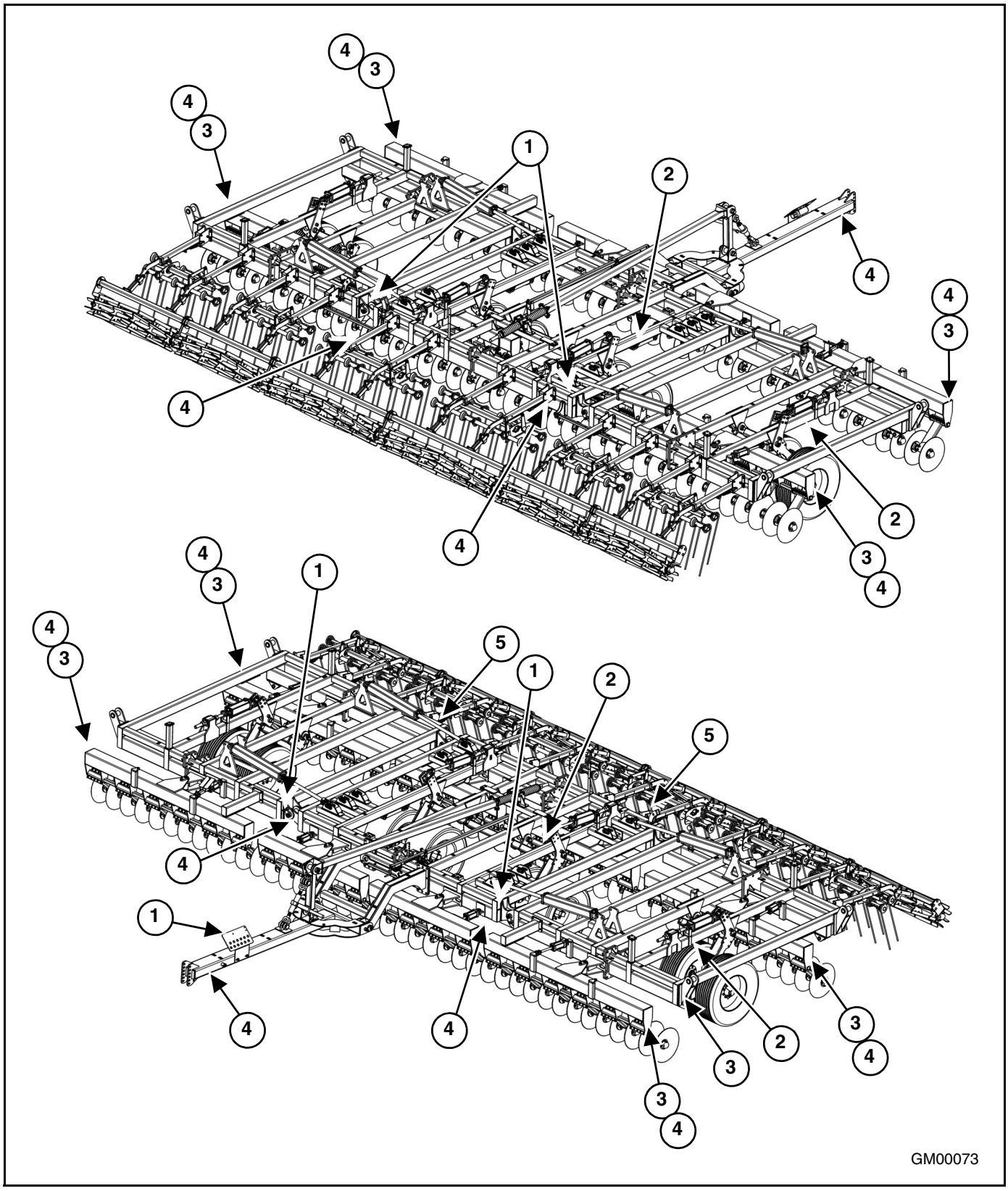
Safety Decal Location



Safety Decal Location

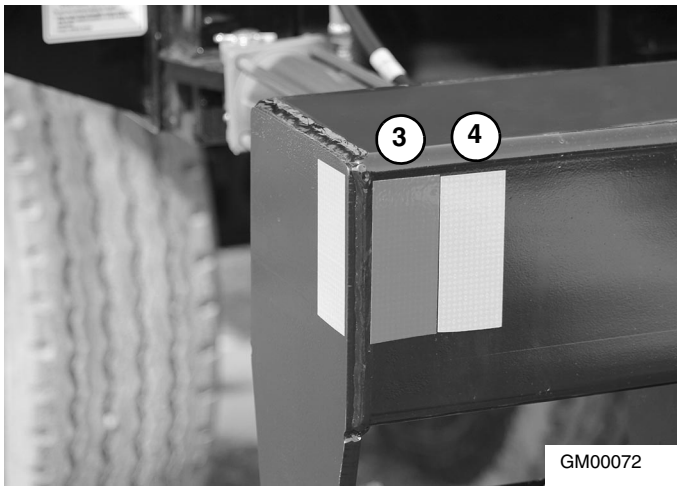
The types of safety signs and locations on the equipment are shown in the illustration. Familiarize yourself with the various safety signs, the type of WARNING and the area or particular function related to that area, that requires your SAFETY AWARNESS.

IMPORTANT: If Safety Signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.

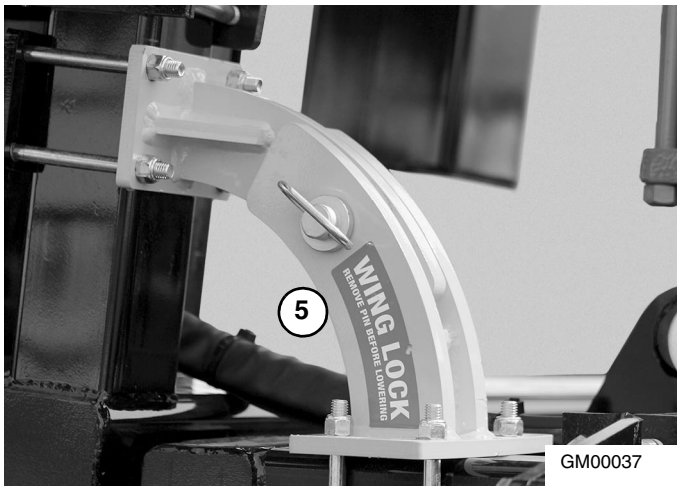
Safety Decals

Wing Lift

Wheel Lift Lock

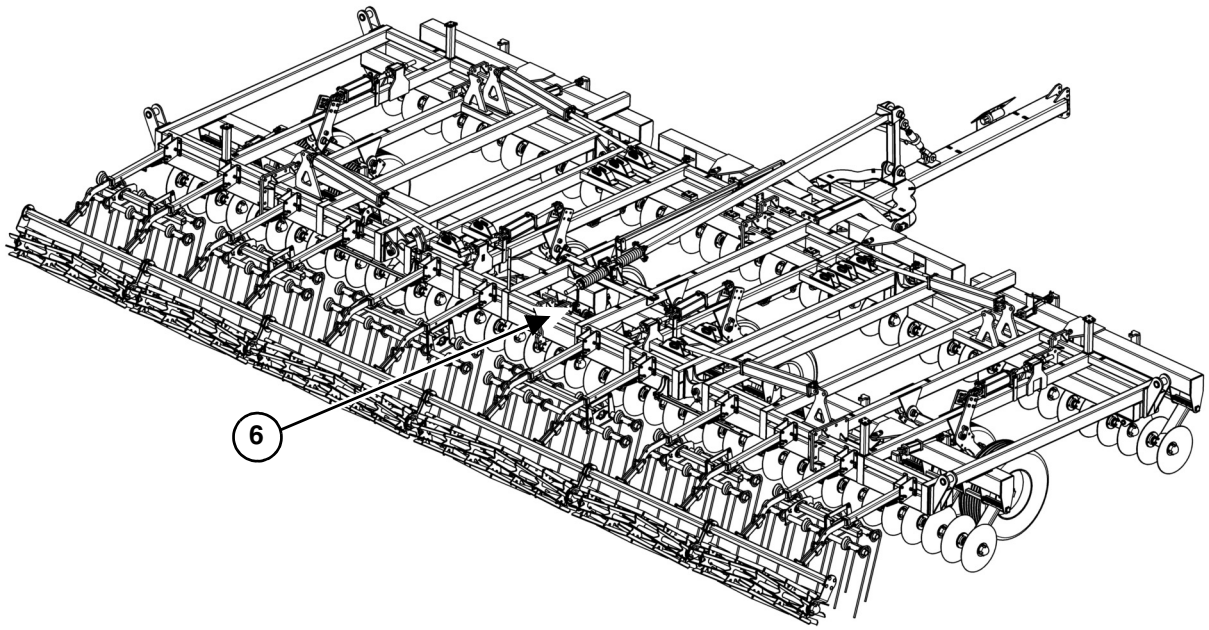


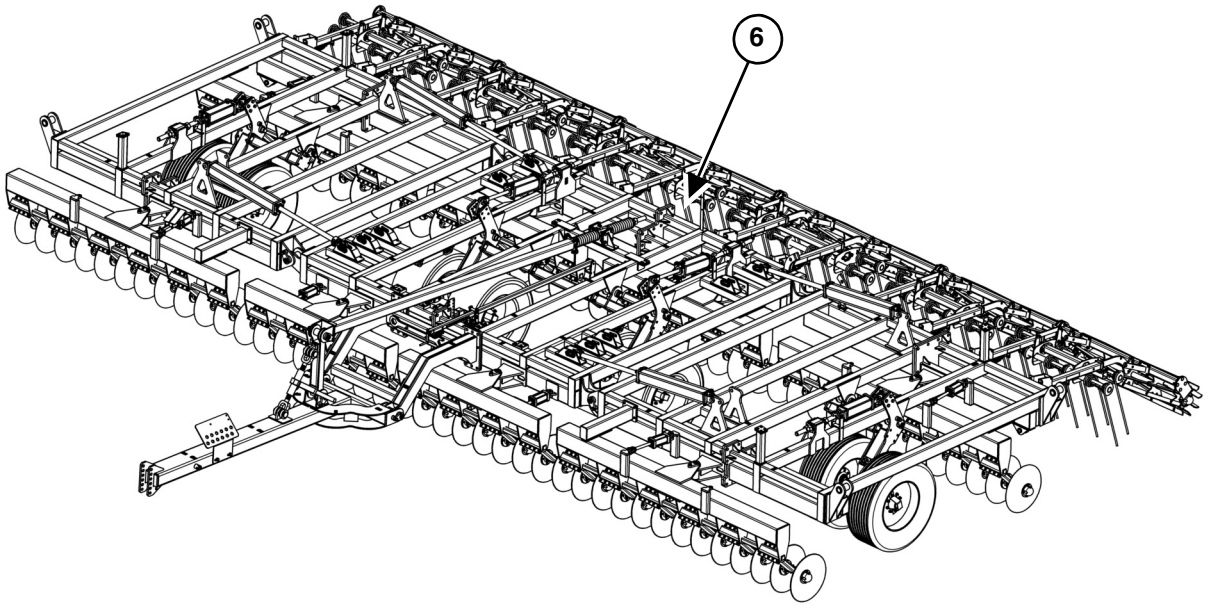
Clearance Decal Red (item 3) and **Yellow** (item 4)



Wing Lock

Safety Decal Location (cont'd)





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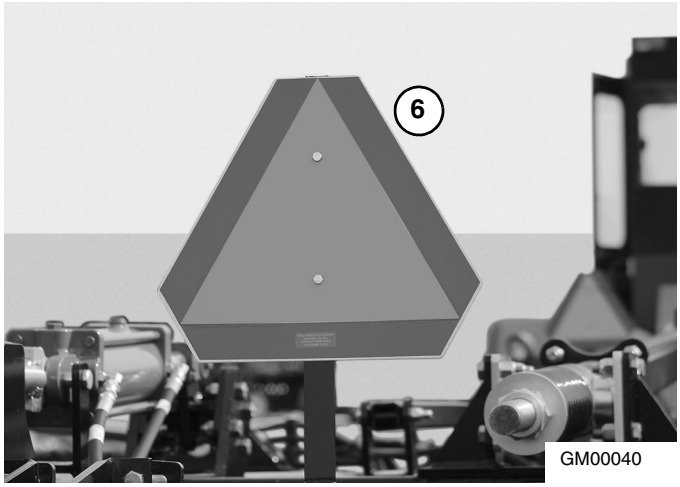
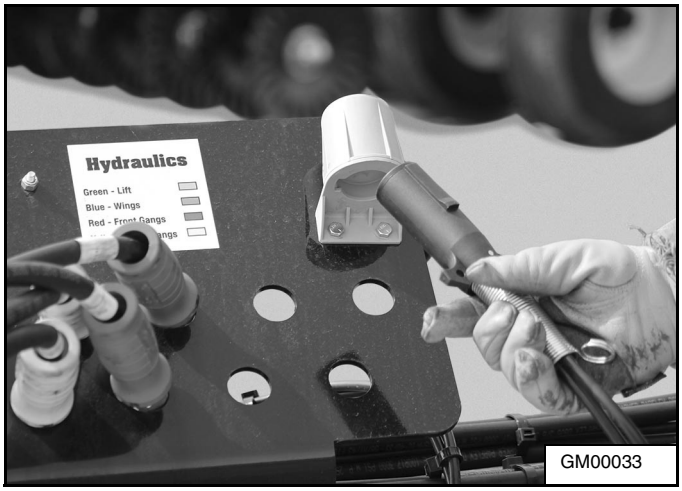
Safety Decal Location (cont'd)



SMV (Slow Moving Vehicle) Sign

Safety Light Operation

Figure 1



The Safety Light Kit is equipped with a 7-pin connector. To protect the 7-pin connector, store in dust cap when not attached to towing vehicle.

Tractor Connection

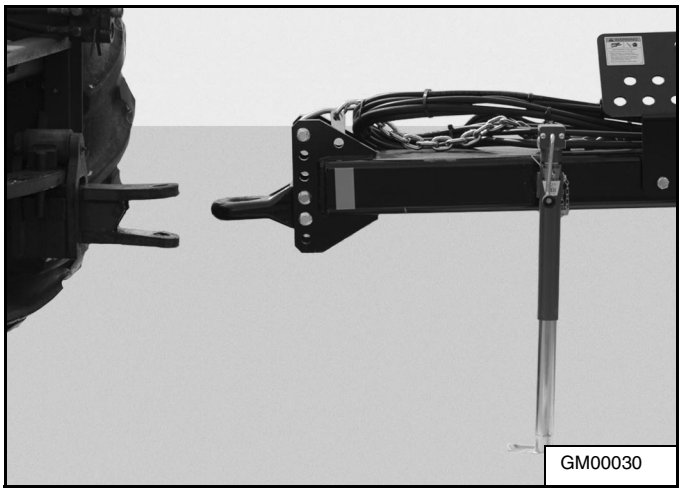
NOTE: Only tow at safe speed. Use caution when making corners or meeting traffic.

Turn on flashing warning lights when traveling on public roads except where such use is prohibited by law.

To prevent accidental disconnection, use a safety chain between tractor and implement when transporting on public roads.

Ensure that a Slow Moving Vehicle (SMV) sign is at the rear of the implement in clear view of overtaking traffic.

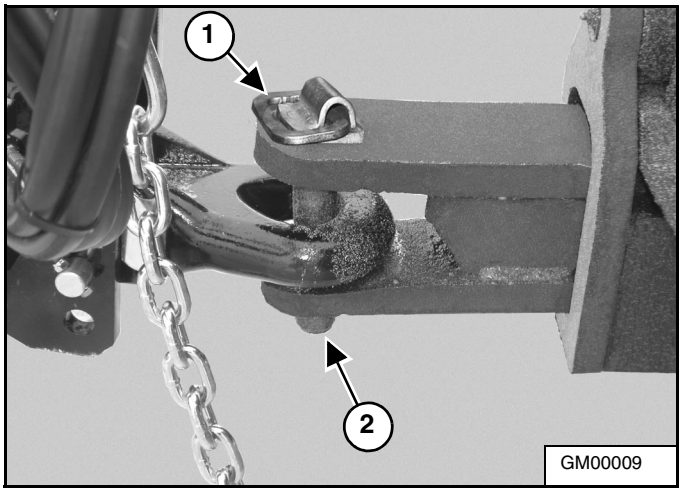
Figure 2



Lock tractor drawbar in center position, be sure hammer strap is properly secured on the tractor drawbar.

Using the jack supplied, adjust the height of the implement tongue to the approximate clevis opening height of the tractor drawbar.

Figure 3



Back tractor until holes of both hitches align.

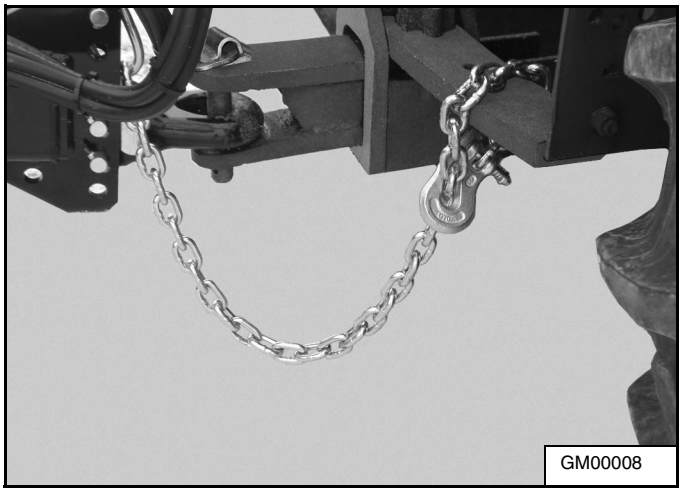
Attach implement hitch to tractor hitch with a draw pin (item 1) locked in place with a hair or D-ring pin (item 2).

CAUTION: Use caution when backing tractor up to implement hitch. Always have all persons in clear view before proceeding to back up. Always take tractor out of gear and set park brake before anyone goes behind tractor to insert drawbar pin.

CAUTION: Do not lower implement with the jack in the down position while attached to the tractor hitch or structural damage will result.

Tractor Connection (Cont'd)

Figure 4

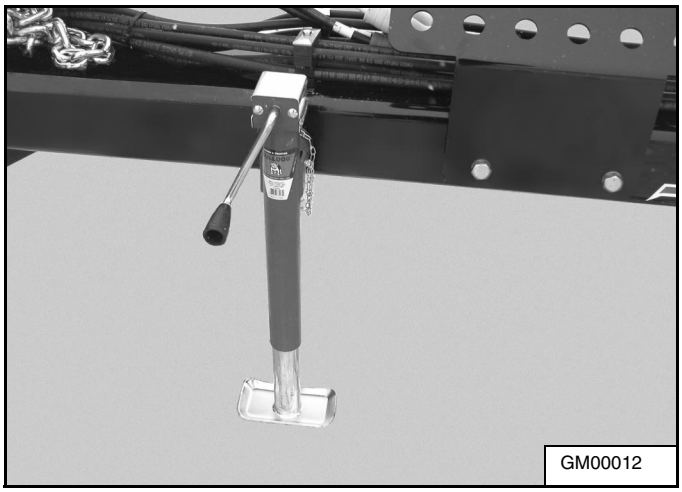


Install the safety chain on the tractor hitch.

Figure 5

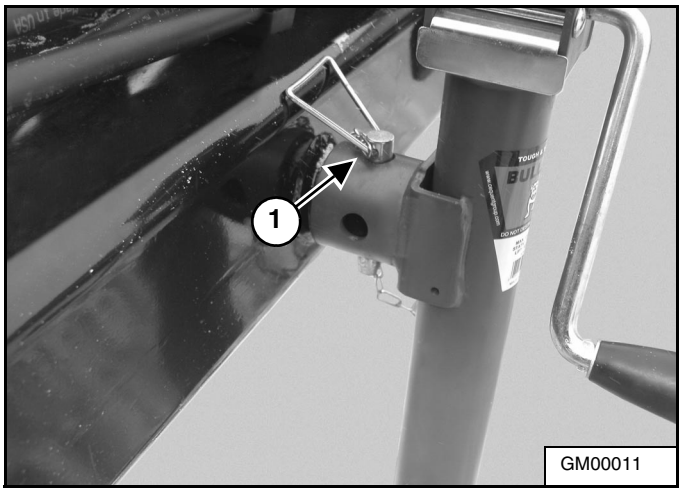
Be sure the safety lock is in the position shown.

Figure 6



Lower the drawbar to release pressure from the jack.

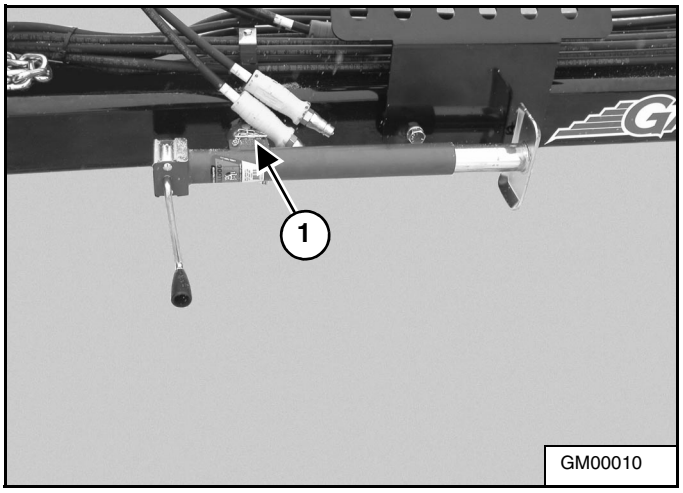
Figure 7



Remove the retainer pin (item 1).

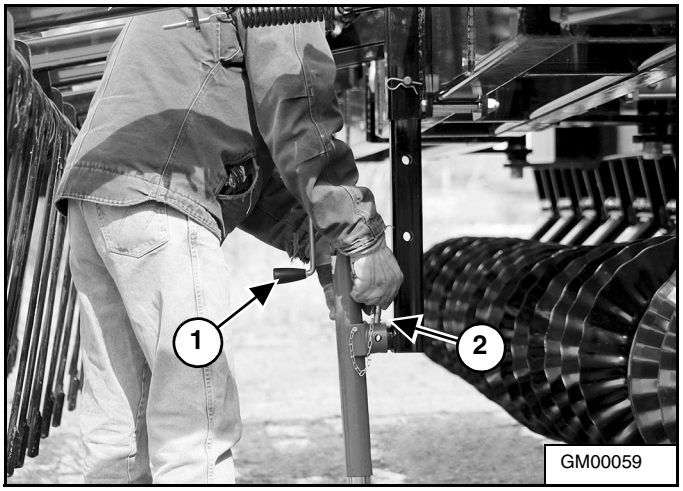
Tractor Connection (Cont'd)

Figure 8



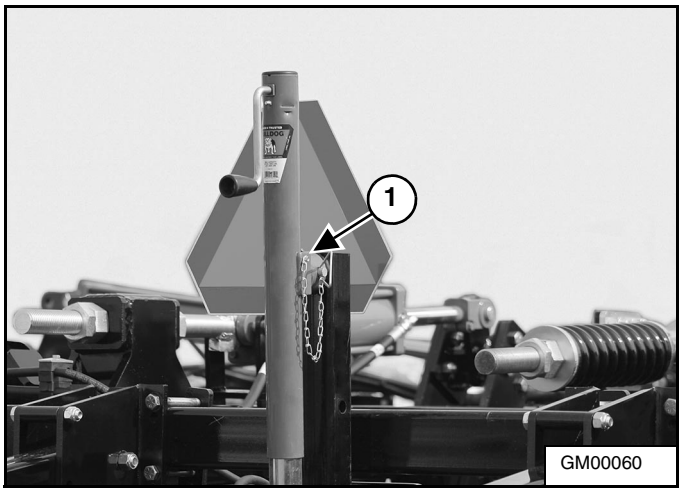
Rotate the jack to the storage position and install the retainer pin (item 1).

Figure 9



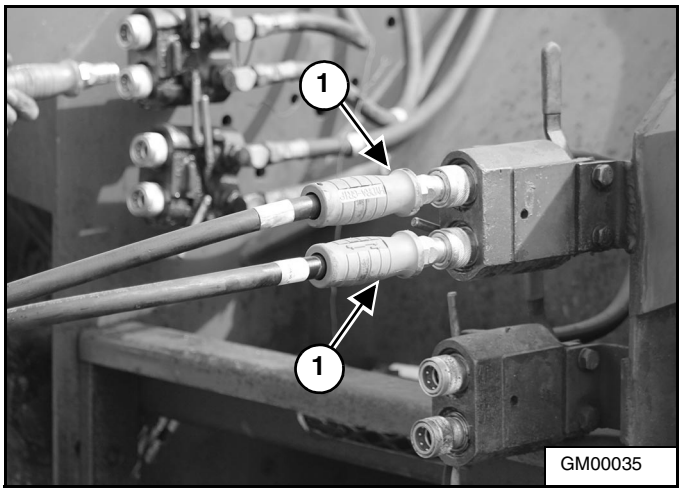
Turn the crank (item 1) to relieve the pressure on the rear jack. Remove the retaining pin (item 2).

Figure 10



Move the jack to the storage position and install the retaining pin (item 1).

Figure 11



Connect the implement hydraulic lines to tractor hydraulic circuit. The hose ends are color coded according to function as listed on the chart on the hose storage bracket.

NOTE: Be sure the hydraulic hose ends on the implement and female hydraulic couplers on the tractor are clean before connecting hydraulics.

Tractor Connection (Cont'd)

CAUTION: Escaping hydraulic fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting the hydraulic lines. Check / Tighten all connections BEFORE applying pressure. Use a piece of cardboard or paper to search for leaks. NEVER use your hand. IF ANY fluid is injected into the skin seek immediate medical attention.

Transport to Field Position

Figure 12

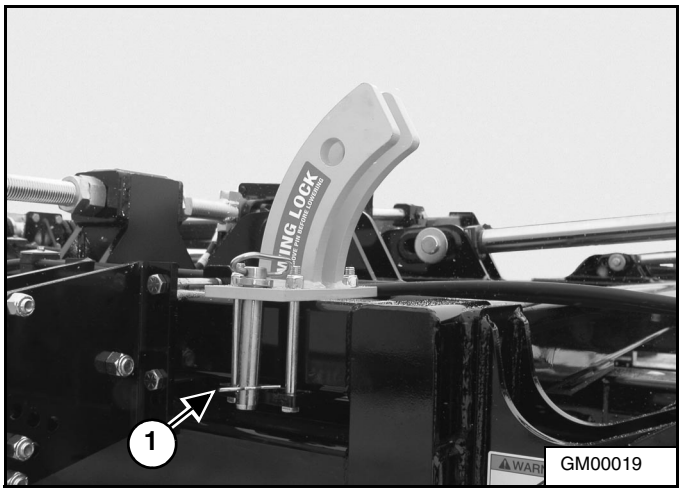


Figure 13

Remove the retaining pins from the wing locks (item 1) and lift locks (item 2).

Transport to Field Position (Cont'd)

Figure 14

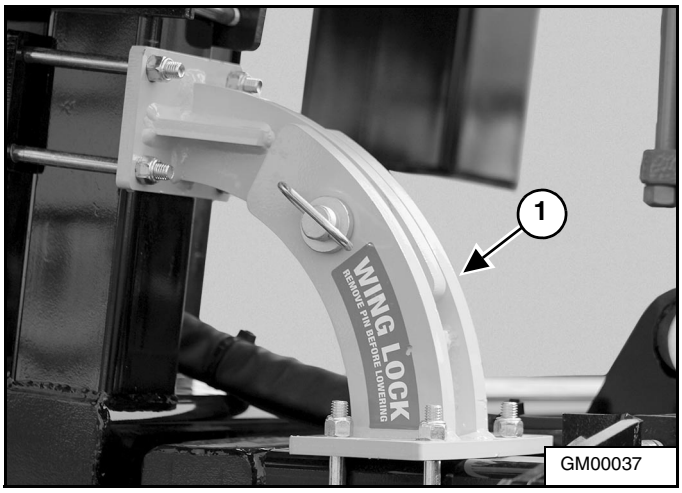


Figure 15

Raise the implement to maximum height. Raise the wings. Install the wings locks (item 1) and lift locks (item 2).

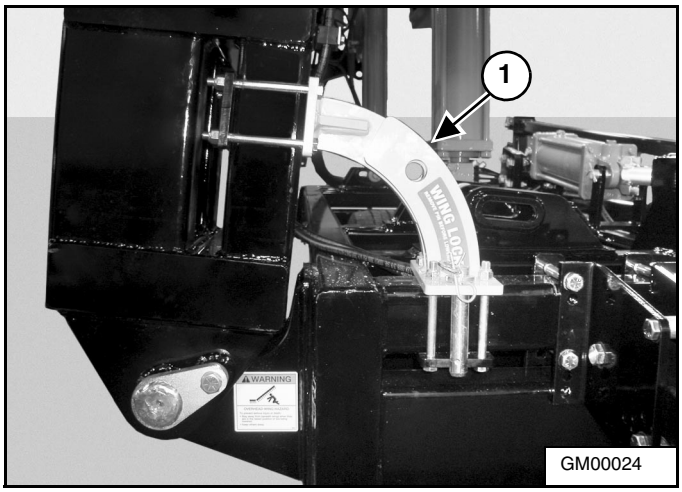
Install the retaining pins.

CAUTION: Stand clear of implement when wings are being raised or lowered. Hydraulic or mechanical failure may result in rapid uncontrolled falling of wings. Failure to follow these instructions may result in serious injury or death.

Start-Up And Hydraulic Operation

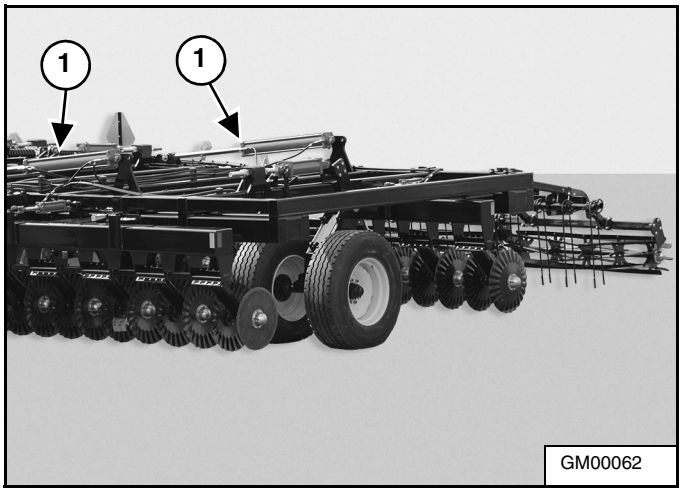
Initial Start-up Procedure for Disk Lift Hydraulic Cylinders

Figure 16



Before lowering the wings, remove the safety lock pins (item 1) and place them in the storage positions.

Figure 17

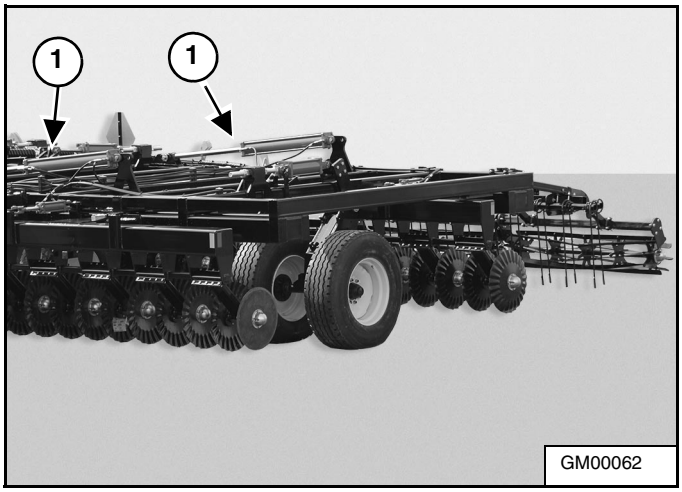


After wings are lowered, extend the cylinders (item 1) fully.

Start-Up And Hydraulic Operation (Cont'd)

Initial Start-up Procedure for Wing Lift Hydraulic Cylinders (cont'd)

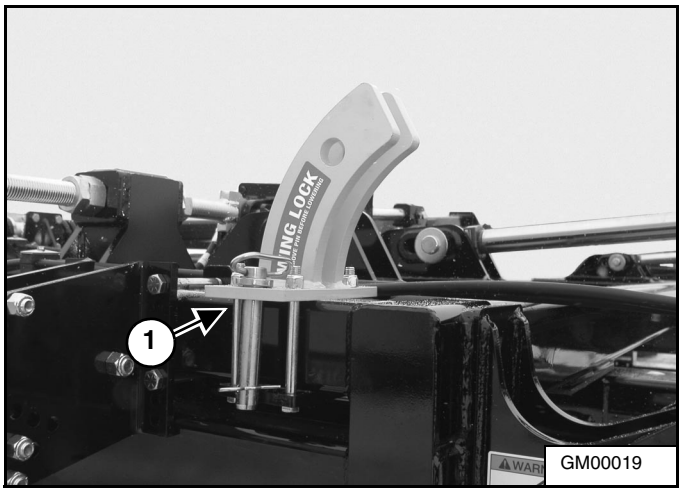
Figure 18



This disk has a Master Slave Hydraulic Lift System. Fully extend hydraulic cylinders (item 1) and maintain hydraulic pressure for 30 seconds to insure all air is purged from the system.

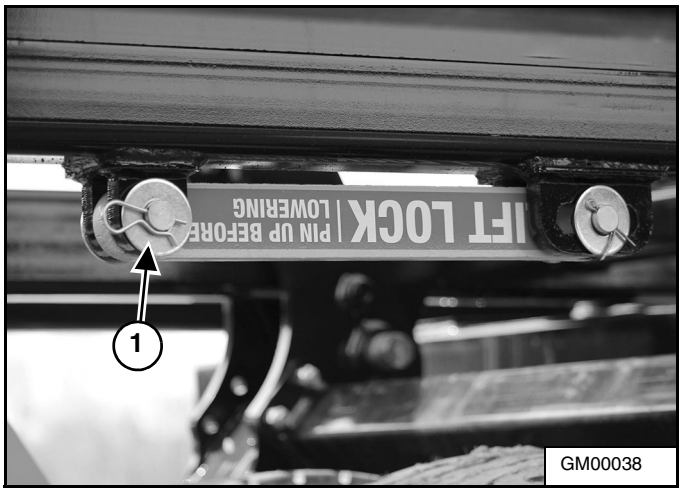
NOTE: As oil is pumped into the base end of master cylinder, oil is forced out of the rod end into the base end of each slave cylinder. To compensate for the smaller volume of oil in the rod end of the master cylinder, each slave cylinder is 1/2" smaller in diameter. When cylinders are fully extended, oil will bypass through a rephasing slot on each cylinder in order to equalize the system. The tractor SCV lever must be held for a few seconds to accomplish this passage of oil through the system.

Figure 19



Install the wing lock pins (item 1) in the storage holder.

Figure 20



Raise the implement to maximum height. Remove the lock pins and move the wheel locks to the storage position and install the lock pins (item 1).

Start-Up And Hydraulic Operation (Cont'd)

Before Initial Operation

1. After receiving or assembling your disk, it is a good practice to double check the entire machine so that all bolts are securely tightened.

2. Make sure all grease fittings are in place and greased properly.

3. Inflate all lift tires to the recommended inflation pressure of 120 PSI and check wheel bolts. See page 24 for specifications.

After First Two Hours of Operation

1. Re-check wheel bolts for tightness and tighten spindle nuts if any side play is evident in the bearings.

2. Check coulter hubs for any side play in the bearings and tighten the spindle nuts if necessary.

Maintenance

DANGER: Stand clear of the implement when wings are being raised or lowered. Hydraulic or mechanical failure may result in rapid uncontrolled falling of wings. Failure to follow these instructions may result in serious injury or death.

CAUTION: Tractor engine should be stopped and wheels blocked to prevent any movement during servicing.

CAUTION: Escaping hydraulic fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting the hydraulic lines. Check / Tighten all connections BEFORE applying pressure. Use a piece of cardboard or paper to search for leaks. NEVER use your hand. IF ANY fluid is injected into the skin seek immediate medical attention.

NOTE: For maximum bearing life, add grease when bearings are at operating temperature.

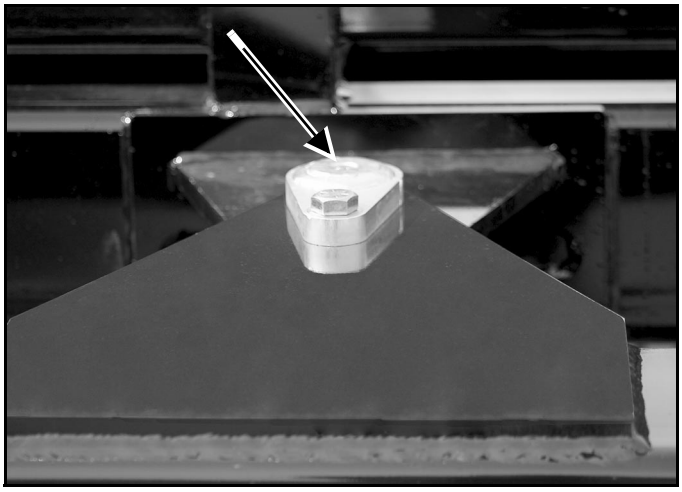
Maintenance (Cont'd)

General Zerk Locations

Figure 21

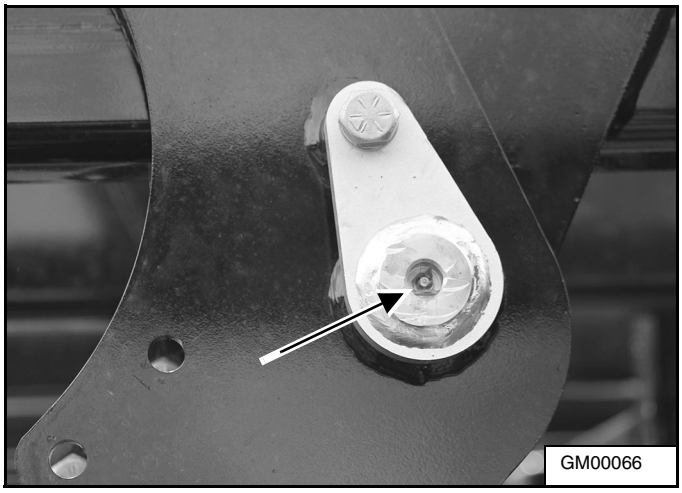
Wing Lift Pivot Pin

Figure 22



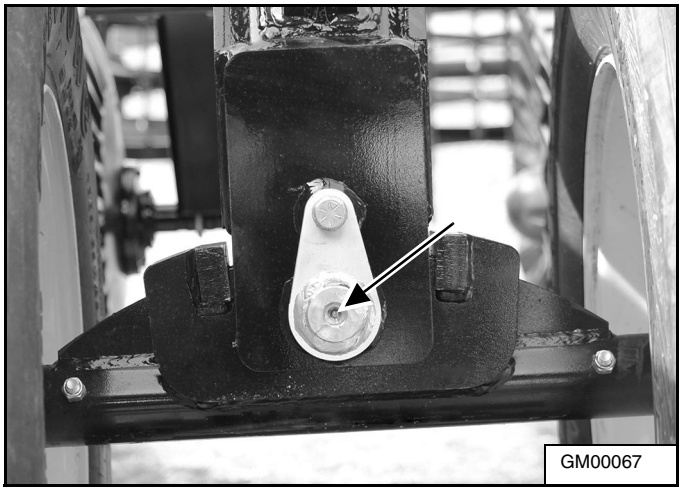
Coulter Gang Pivot Pin

Figure 23



Wheel Lift Arm Pivot Pin

Figure 24

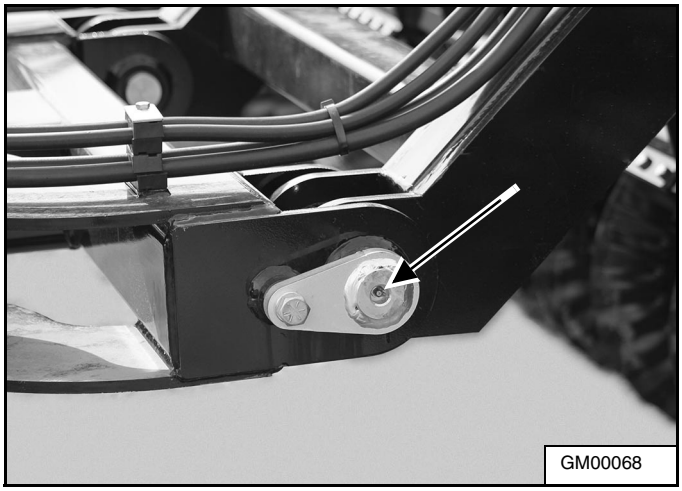


Wheel Tilt Pivot Pin

Maintenance (Cont'd)

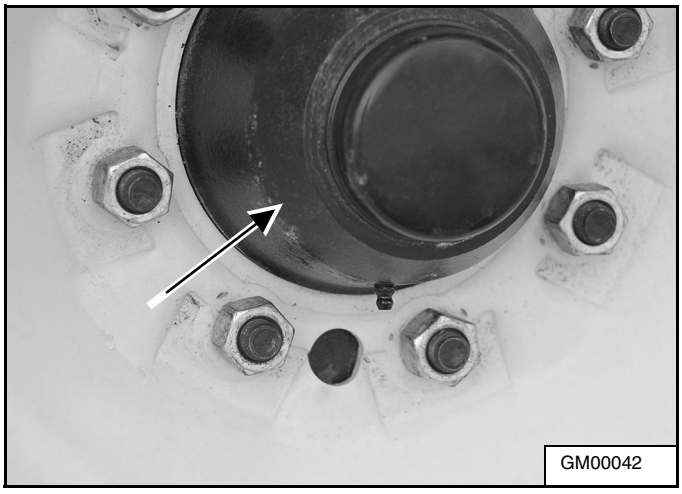
General Zerk Locations (cont'd)

Figure 25



HItch Pivot Pin

Figure 26

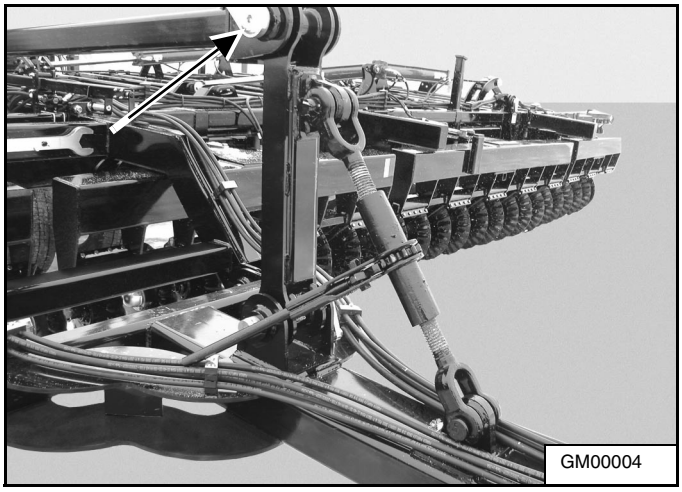


Wheel Hub

Figure 27

Coulter Disk Hub

Figure 28



Levelling Adjustment Pivot Pin

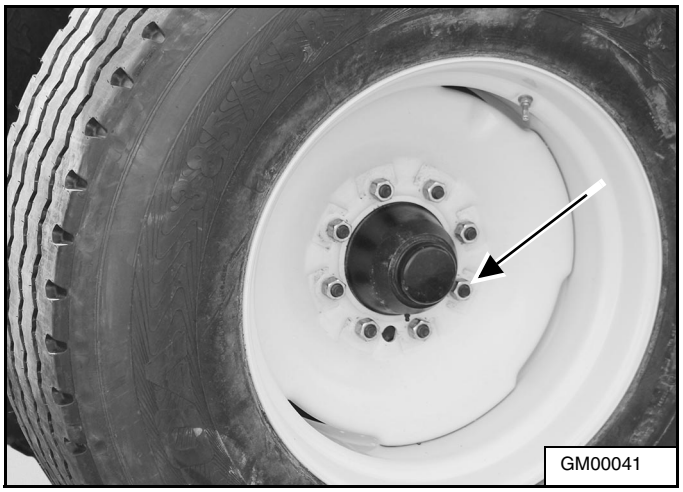
Maintenance (Cont'd)

General

Daily (10 hours):

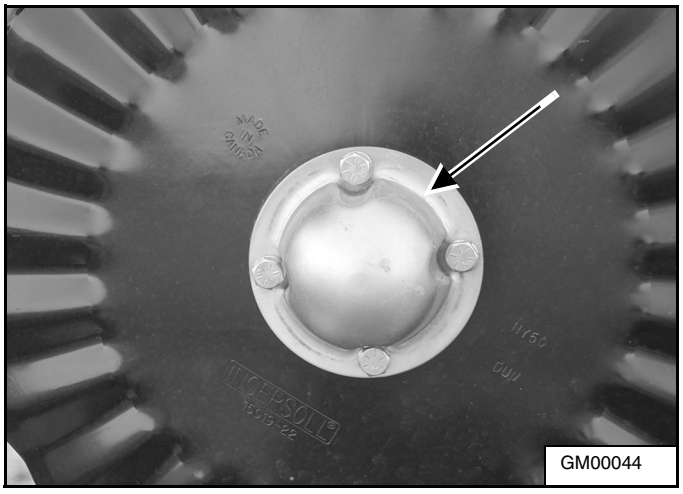
- Grease all pivot pins located on wing lift, disk lift arms, hitch, wheels and wheel lifts.

Figure 29



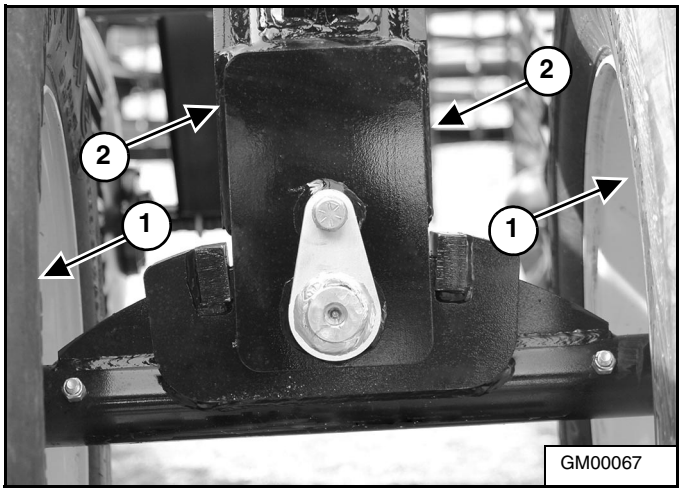
- Check all wheel nuts for tightness. The recommended torque is 110 lb-ft (149 N•m).

Figure 30



- Visually inspect coulter hubs for looseness. Tighten if necessary.

Figure 31



- Remove mud from between wheels (item 1) and lift arms (item 2) which may dry and cut into the side wall of the tires.

- Check for loose fasteners and tighten securely.

Seasonally (100 hours):

- Grease wheel and coulter hubs and inspect for looseness.

- Grease all pivot pins.

- Check and adjust tire pressure.

Tire Inflation

Recommended tire inflation is 120 PSI.

Post Operational Storage or Before Storage:

- Perform or check items listed under daily and seasonal maintenance.Inspect the implement to be sure all components are field ready. Replace worn coulters.

- When placing the coulter disk in storage for more than one month, coat all exposed ram surfaces with a thick oil or grease to protect them from nature's elements.

- Install lift locks & wing locks if stored raised.

Field Operation

The following procedure should be used for field operation.

Figure 32

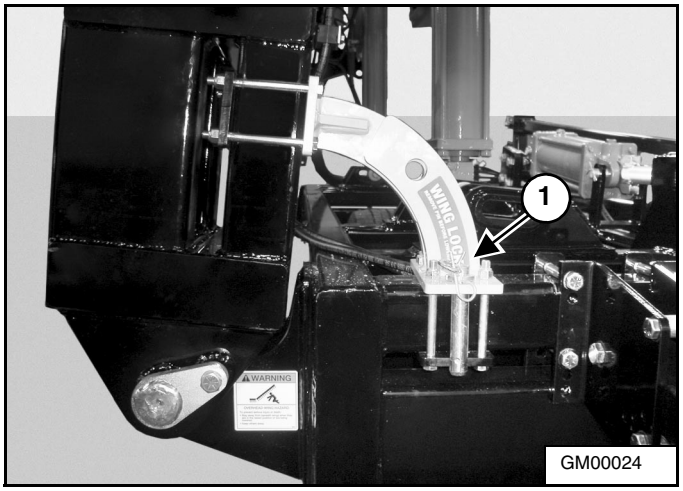
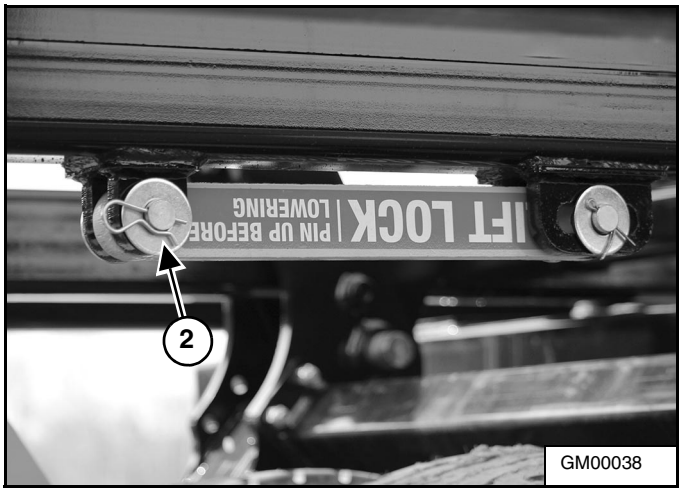
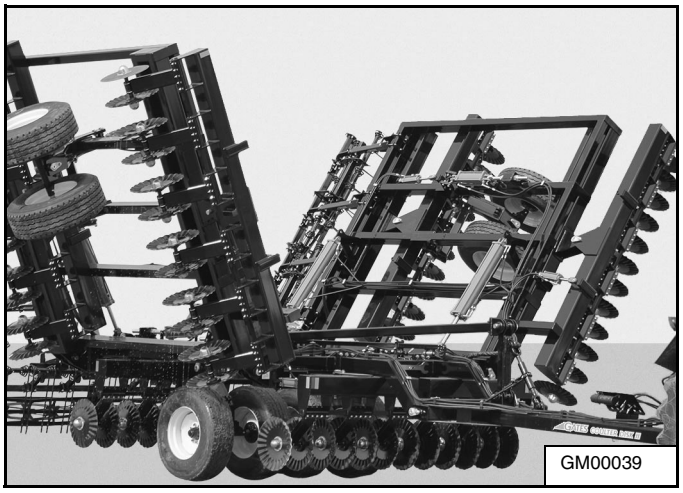


Figure 33



Remove wing safety lock pins (item1) and transport locks (item 2) and place in their storage positions.

Figure 34



Lower the wings for field operation.

Figure 35

NOTE: Levelling the disk should be done in a level area of the field.

IMPORTANT: All pressure must be removed from the cylinders before adjusting the eyebolts. Rest Disk on top of the ground, shut tractor off and relieve pressure by cycling remote lever.

Side to Side Levelling

Figure 36

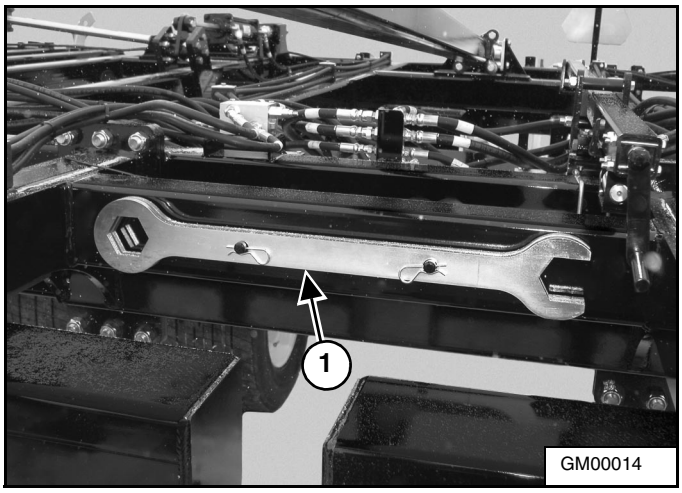
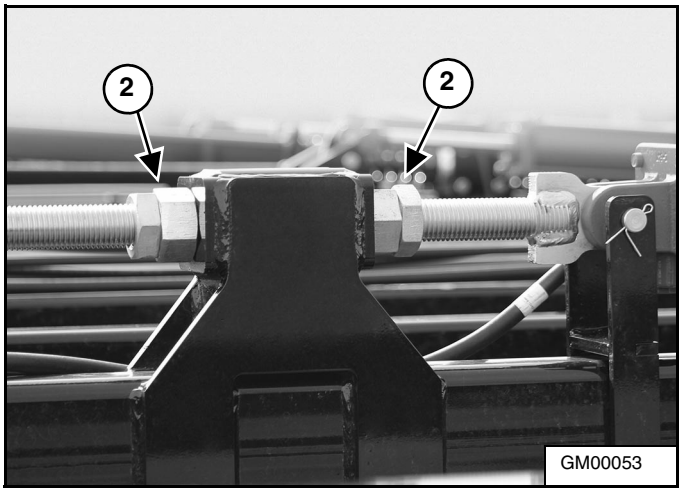


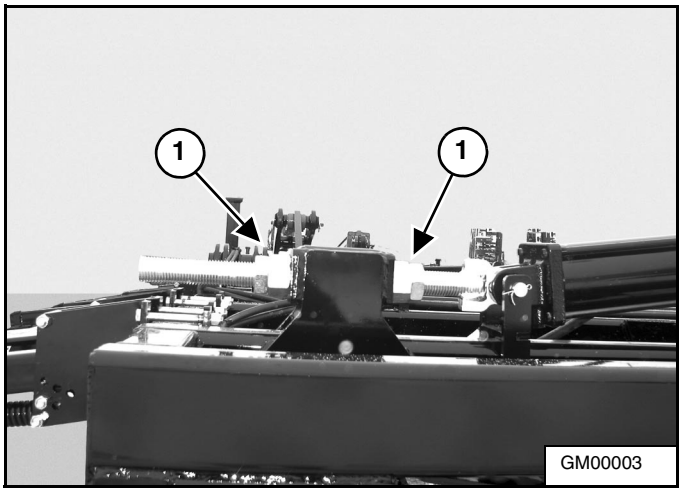
Figure 37



In the field, drive forward at the approximate working speed and lower the implement to its working depth. Stop and shut off the tractor.

Compare the cuts of the main frame front row outer coulter blades. If the cuts are not even use the wrench (item 1), mounted on the front of the main frame, on the wheel lift cylinder adjustment nuts (item 2) to level the main frame.

Figure 38

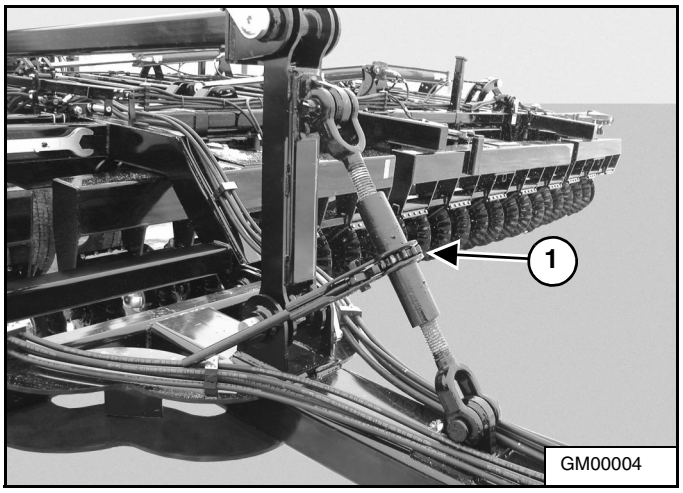


Raise the implement, drive forward and lower the implement to working depth. Stop and shut off the tractor.

Compare the cuts on the outer coulters of the wings with the main frame coulters. If the cuts are not even adjust the wing cylinders lift wheels (item 1).

Front to Back Levelling

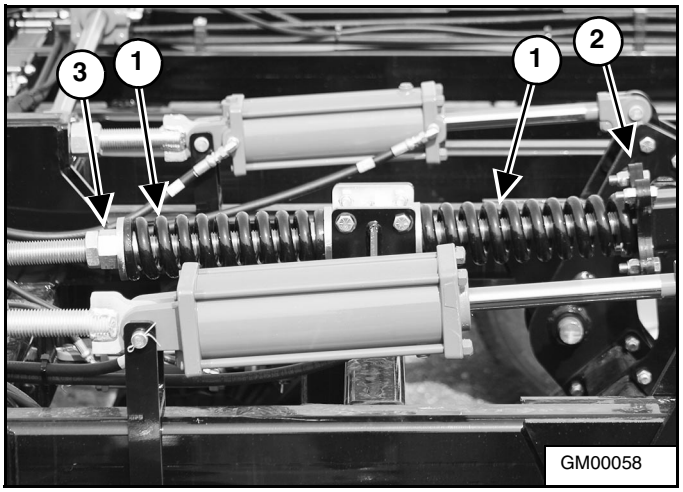
Figure 39



When the machine is leveled side to side, raise the machine and drive forward at working speed and lower the implement to its working depth.

Compare the front coulters to the back coulters. Use the ratcheting turn buckle (item 1) on the front hitch to level the front and back coulters.

Figure 40



The front to back levelling is dampened by the springs (item 1) on the rear of the adjusting bar (item 2). The dampening can be increased or decreased according to field conditions by tightening on loosening the adjusting nuts (item 3).

Coulter Gang Angle Adjustments

Figure 41

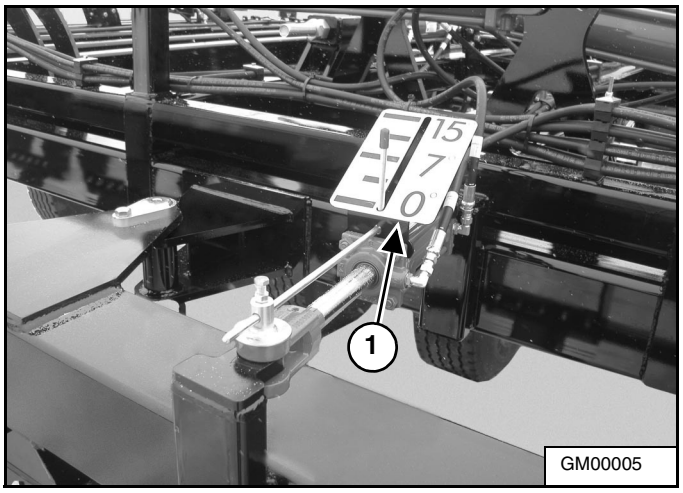
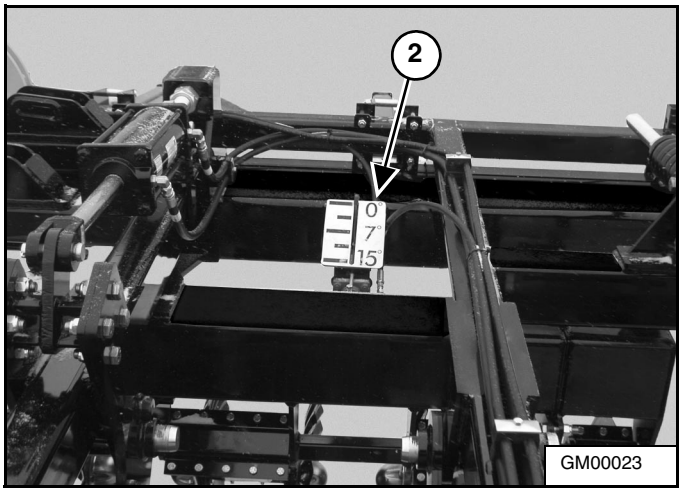


Figure 42

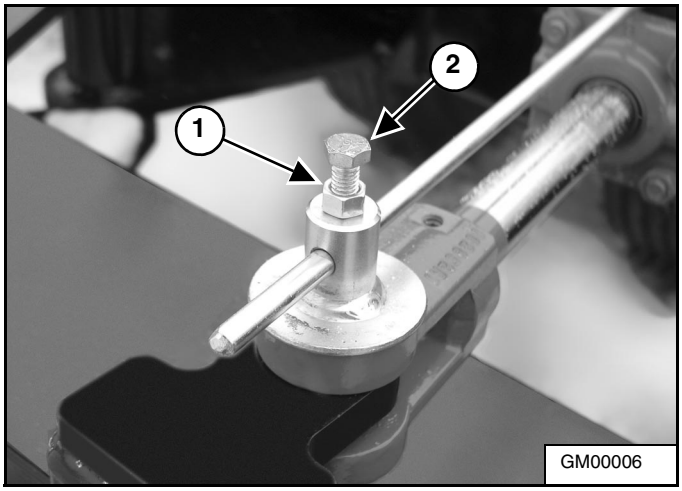


The coulter gang angle adjustments can be made with the remote hydraulic levers in the tractor. The remotes that are connected to the **red** coded hoses, control the front gangs. The remotes that are connected to the **yellow** hoses, control the rear gangs.

The gangs are hydraulically adjusted from 0 to 15 degrees as shown on the front (item 1) and rear (item 2) indicators.

Coulter Gang Angle Adjustments (Cont'd)

Figure 43



The indicators are factory set, but if adjustment is necessary, loosen the jam nut (item 1) and set screw (item 2) to move the indicator rod.

Working Depth Adjustment

Figure 44

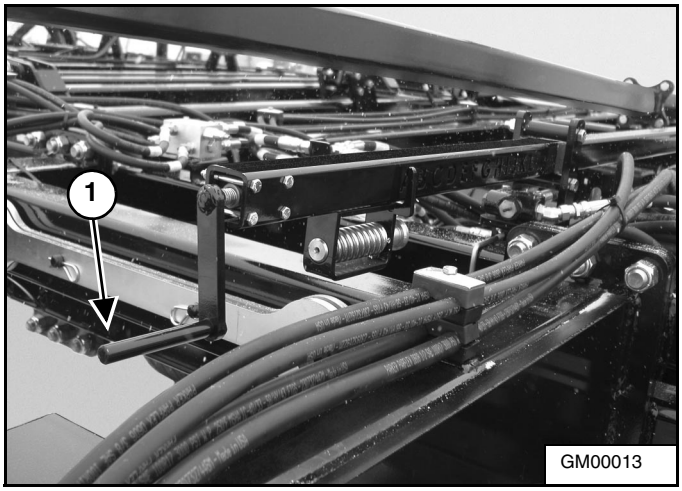
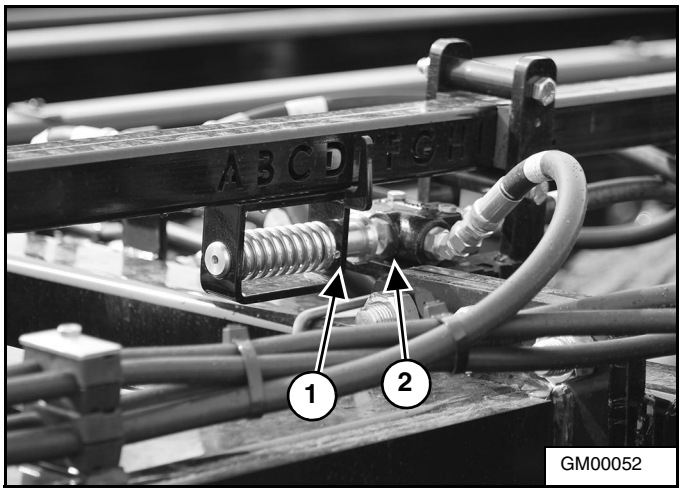


Figure 45



The working depth is set using the crank (item 1) above the main section hitch.

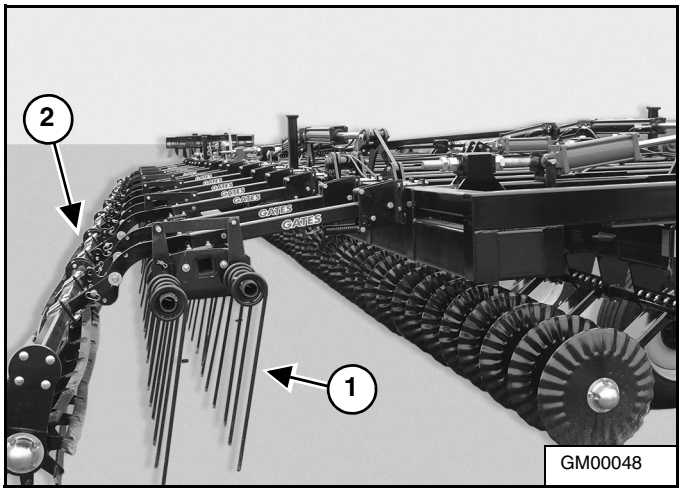
Raise the implement fully and hold the control lever (green hoses) for five seconds to rephase the wheel lift cylinders. Drive forward at working speed and lower the implement to approximate working depth. Stop and shut off the tractor.

Turn the crank (item 1) until the stop (item 2) contacts the depth stop valve (item 3). Start the tractor and raise the implement. Drive forward and lower the implement until it stops dropping. Stop and shut off the tractor and check the working depth.

NOTE: It may take several tries to get the exact depth desired, but once it is set it will return to that depth everytime depending on field conditions.

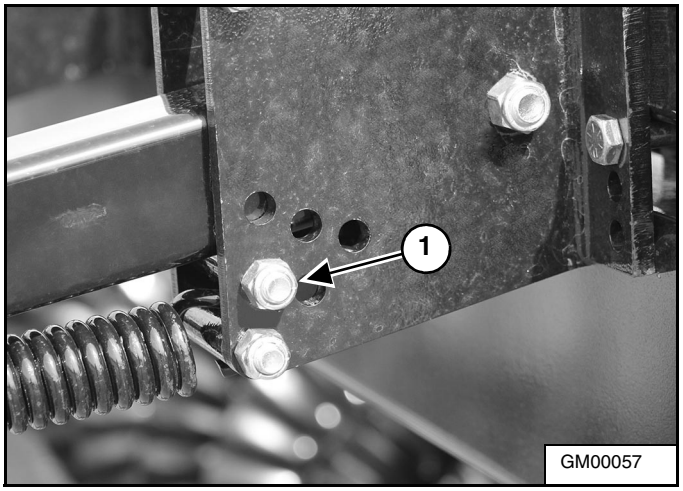
Optional Harrow and Rolling Basket Adjustment

Figure 46



If equipped with the optional harrow (item 1) and/or rolling baskets (item 2). The harrow and basket assemblies are free floating when the implement is at working depth. Adjustments can be made with the following procedures.

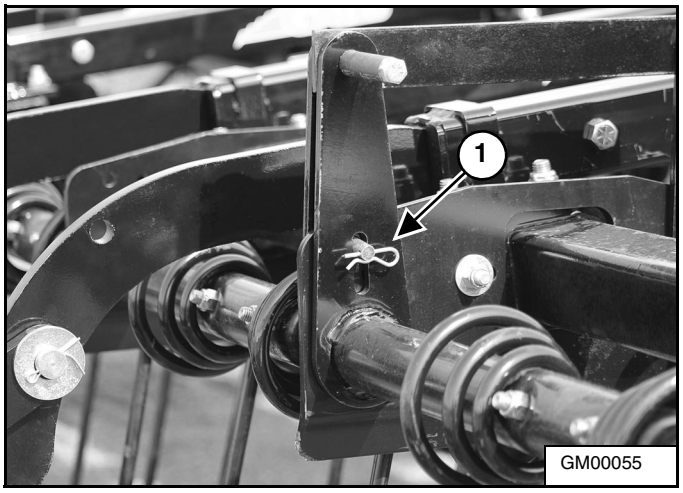
Figure 47



The lift stop bolt (item 1) can be moved to adjust the lower limit of the float range.

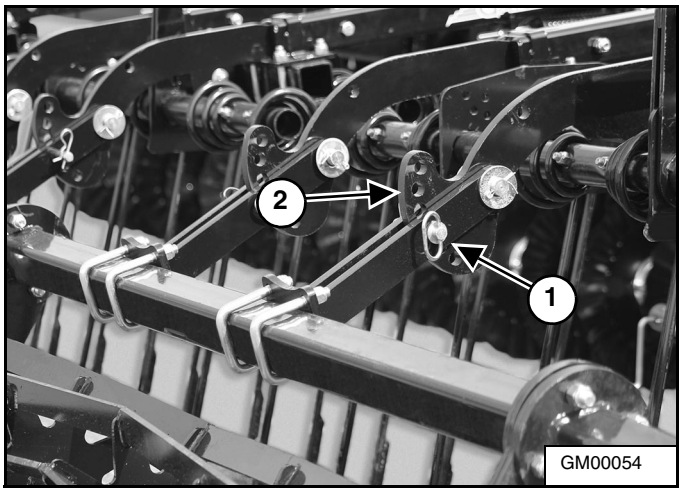
NOTE: The lower the stop bolt the higher the implement must be raised to lift the harrow assemblies from contact with the ground.

Figure 48



The angle of the harrow tine gangs can be changed by removing the hair pin clip (item 1) and moving the pin to another hole setting.

Figure 49

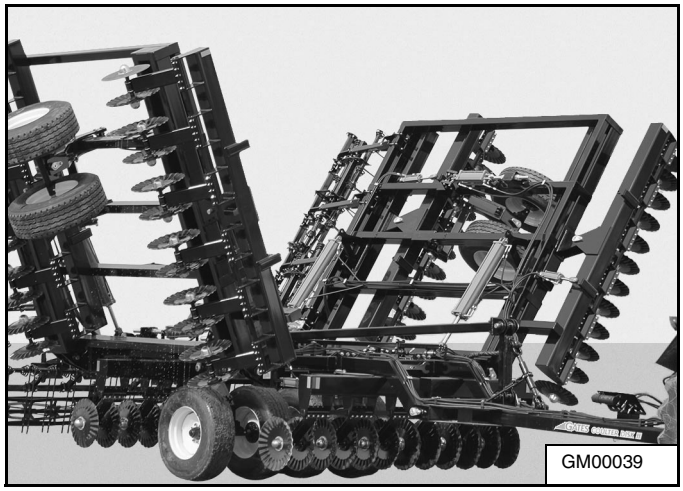


If equipped with rolling baskets the balance between harrow and basket down pressure can be adjusted by moving the pins (item 1) to one of six adjustment holes (item 2).

Transporting from the Field

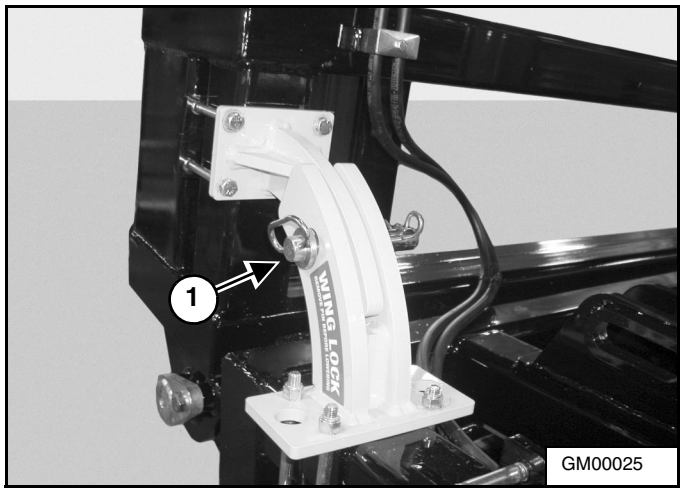
The implement is equipped with manual wing and main frame wheel lift cylinder locks. The following procedure should be used to prepare the disk for transport.

Figure 50



1. Raise the implement and lift the wings.

Figure 51



2. Install the wing lock pins (item 1) as shown.

Figure 52

3. Install the safety locks (item 1) on the main frame wheel lift cylinders.

Transporting from the Field (Cont'd)

Figure 53

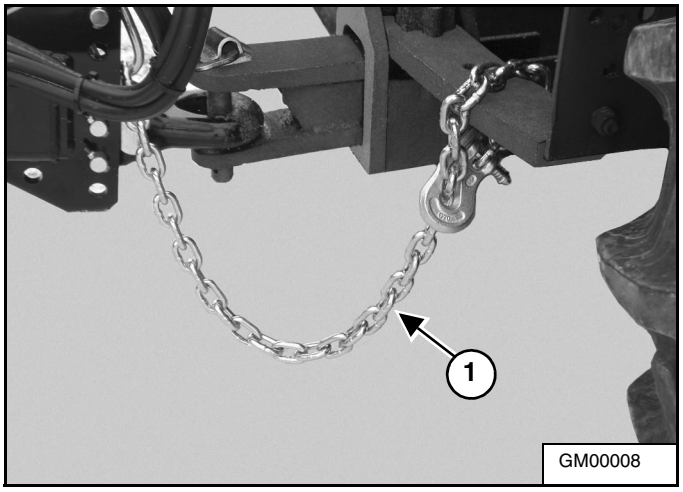
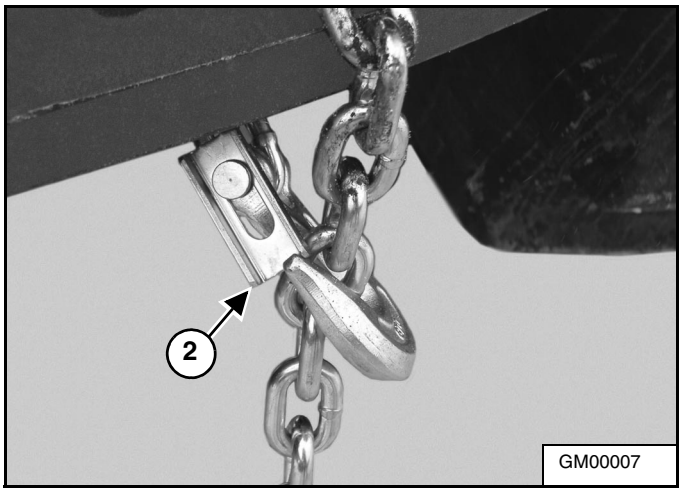


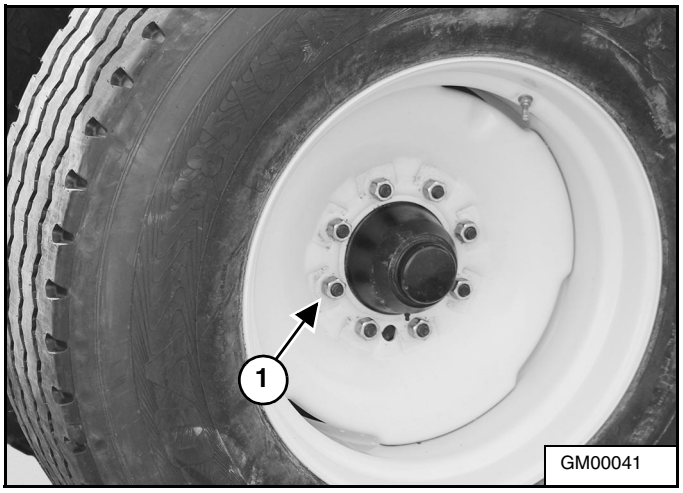
Figure 54



4. USE a safety chain (item 1) between the tractor drawbar and disk hitch when transporting on public roads.

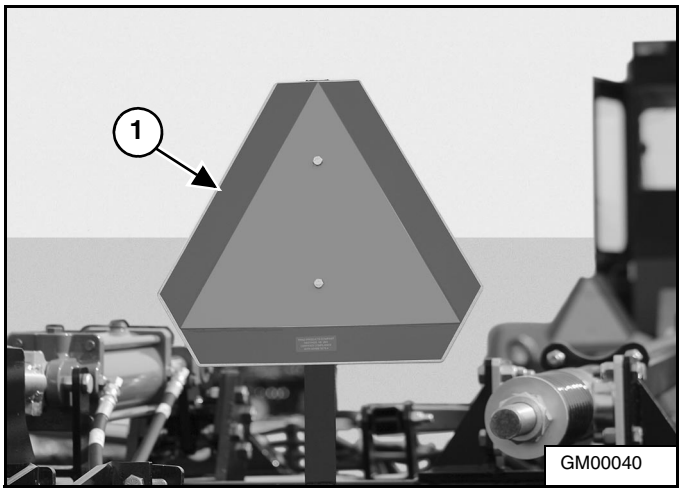
NOTE: Be sure the safety lock (item 2) is in position on the chain hook.

Figure 55



5. Check wheel nuts (item 1) after the first 20 miles of transport and every 60 miles there after.

Figure 56



Always use an ASAE Slow Moving Vehicle (SMV) emblem (item 1) and safety lights when transporting on a road or highway. Comply with your state and local laws governing lighting and maximum width regulations. Transport during daylight hours only.

Storage

Proper rust prevention treatment of equipment before placing in storage will not only lengthen its life, but will assist in maintaining optimum performance when put back into service.

The following list contains suggestions for preparing your implement for storage.

- Clean entire machine. Remove all dirt and excessive grease implement.
- Check disk over thoroughly for damaged or worn parts, cracked or broken blades and loose bolts.
- Wheel bearings should be cleaned and repacked each year.
- Grease all zerks on implement.
- Block up to remove weight from tires.
- If implement is lowered to the ground, place boards under blades.
- Disconnect rods and fully retract the cylinders to prevent rusting of shafts and subsequent seal damage. If left extended, coat rods with grease to prevent corrosion. Remove grease prior to retracting cylinders.
- For safety, **do not** store implement with wings folded up.
- Clean and place a protective coating of heavy oil or grease on earth working parts to prevent rusting.
- Touch-up any spots where paint has been scratched or worn off.

Coulter Disk Specifications

Feature	Specification
Frame	8” x 4” x 1/4” HSS
	6” x 4” x 1/4” HSS
Gangs	2 Rows, Offset Configuration Fully Adjustable (0° - 15° degrees)
Gang Mounting	Rubber Torsion Arms (2 Coulters per Arm)
Coulter Blades	17” Straight (standard)
	20” Straight (optional)
	22” Notched
	27” Side Winder
Coulter Spacing	6” at 0° angle
Wheels	Bogie Wheel Arrangement 8-bolt with grease fitting
Tires	
Hydraulic System	Master-Slave System
Power Requirements	4 - 6 hp / ft.
Optional Equipment	2 bar, 5/8” x 30” Mounted Harrow

Coulter Disk Dimensions

Feature	Dimension	
	32’	**40’**
Working Width	32’	40’
Transport Height	14’	16’ 4”
Transport Width	16’ 6”	19’
Number of Coulters	65	81

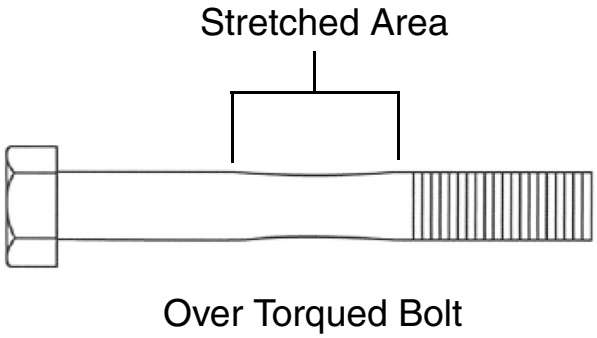
Troubleshooting Chart

PROBLEM	CAUSE	CORRECTION
Leaving center valley.	Rear gangs cutting too deep.	Level disk using threaded adjustment bolts above each cylinder/wheel assembly.
Gangs plugging.	Extremely wet field conditions.	Allow to dry if possible.
		Adjust machine to run rear gangs deeper.
Poor penetration, center section.	Disk not running level from front to rear.	Level disk using threaded adjustment bolts above each cylinder/wheel assembly.
	Wheels are holding disk out of the ground.	Retract hydraulic cylinders for desired depth.
Hydraulic cylinders not synchronized.	Hydraulics have drifted or air has entered the system.	Hold hydraulic control lever with the hydraulic cylinders fully extended 15 seconds to synchronize rephasing cylinders.
Leaving ridge 2-4 feet from disk center.	Side drift.	Level disk using threaded adjustment bolts above each cylinder/wheel assembly.
		Recheck gang spacing.
Plugging at disk front center.	Wet conditions or extremely high residue conditions.	Level disk using threaded adjustment bolts above each cylinder/wheel assembly.
Wings do not penetrate.	Dry/hard conditions.	Adjust wing cylinders to lift wheels off ground.

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

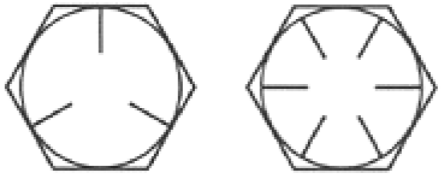
BOLT SIZE	WRENCH SIZE	GRADE 5		GRADE 8	
		lb-ft	N•m	lb-ft	N•m
1/4 in.	7/16 in. or 3/8 in.	7	9.5	12	17
5/16 in.	1/2 in.	15	20	25	34
3/8 in.	9/16 in.	30	41	45	61
7/16 in.	5/8 in. or 11/16 in.	45	61	70	95
1/2 in.	3/4 in.	70	95	105	142
9/16 in. wheel bolts	7/8 in.	170	231	-	-
5/8 in.	15/16 in.	170	231	210	285
5/8 in. wheel nuts	1-1/16 in.	240	325	-	-
3/4 in.	1-1/16 in.* or 1-1/8 in.*	250	339	375	509
7/8 in.	1-5/16 in.	350	475	600	814
1 in.	1-1/2 in.	450	610	880	1193
1-1/4 in.	1-7/8 in.	500	678	-	-
1-1/2 in.	2-3/4 in.	570	773	-	-
2 in.	3-1/8 in.	1200	1627	-	-

* Nylon Lock Nuts



Over Torqued Bolt

SM00012



SAE Grade 5

SAE Grade 8

SM00013

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