Building on a
Art's-Way
Tradition of Quality

OPERATOR'S MANUAL

Art's-Way Manufacturing Co., Inc.

Model 166
Moldboard Plow

Operator's Manual
519560

Issued February 2004

This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED. The message that follows the symbol contains important information about your safety. Carefully read the message. Make sure you fully understand the causes of possible injury or death.

IF THIS MACHINE IS USED BY AN EMPLOYEE, IS LOANED, OR IS RENTED, MAKE SURE THAT THE OPERATOR UNDERSTANDS THE TWO INSTRUCTIONS BELOW

BEFORE THE OPERATOR STARTS THE ENGINE:

1. GIVE INSTRUCTIONS TO THE OPERATOR ON SAFE AND CORRECT USE OF THE MACHINE.
2. MAKE SURE THE OPERATOR READS AND UNDERSTANDS THE OPERATOR'S MANUAL FOR THIS MACHINE.

WARNING

IMPROPER OPERATION OF THIS MACHINE CAN CAUSE INJURY OR DEATH.

BEFORE STARTING THE ENGINE, DO THE FOLLOWING:

1. READ THE OPERATOR'S MANUAL.
2. READ ALL SAFETY DECALS ON THE MACHINE.
3. CLEAR THE AREA OF OTHER PERSONS.

LEARN AND PRACTICE SAFE USE OF MACHINE CONTROLS IN A SAFE AND CLEAR AREA BEFORE YOU OPERATE THIS MACHINE ON AJOB SITE.

It is your responsibility to observe pertinent laws and regulations and to follow manufacturer's instructions on machine operation and maintenance.

See your Authorized Art's-Way Manufacturing Co., Inc. dealer or Art's-Way Manufacturing Co., Inc. for additional operator's manuals, illustrated parts catalogs, and service manuals.

TO THE OWNER

Congratulations on the purchase of your new Art's-Way 166 Moldboard Plow. You have selected a top quality machine that is designed and built with pride to ensure you have many years of efficient and reliable service.

Many people have worked on the design, production, and delivery of this harvester. The information in this Manual is based on the knowledge, study, and experience through years of specializing in the manufacturing of farm machinery. This Manual is designed to provide you with important information regarding safety, maintenance, and machine operation so you can and will get the best possible performance from your 166 Moldboard Plow.

Even if you are an experienced operator of this or similar equipment, we ask that you read this manual before operating this harvester. The way you operate, adjust, and maintain this unit will have much to do with its successful performance. Any further questions you may have about this product of Art's-Way equipment should be directed to your local Art's-Way dealer or to Art's-Way Manufacturing Co., Inc., Armstrong, Iowa, 50514, (712) 864-3131.

Specification And Design Are Subject To Change WIthout Notice

Art's-Way Manufacturing Co., Inc. is continually making product improvements. In doing so, we reserve the right to make changes and/or add improvements to our products without obligation for the equipment previously sold. Modifications to this 166 Moldboard Plow may effect the performance, function, and safety of its operation. Therefore, no modification are to be made without the written permission of Art's-Way Manufacturing Co., Inc. Any modification made without the written permission of Art's-Way Mfg. Co. shall void the warranty of this product. In the interest of continued safe operation of this 166 Moldboard Plow, pay particular attention to the safety alert symbol(s) throughout this Manual.

Art's-Way Manufacturing Co., Inc. Statement Of Product Liability

Art's-Way Manufacturing Co., Inc. recognizes its responsibility to provide customers with a safe and efficient product. Art's-Way Manufacturing Co., attempts to design and manufacture its products in accordance with all accepted engineering practices effective at the date of design. This statement should not be interpreted to mean that our products will protect against the user's own carelessness or failure to follow common safety practices nor will Art's-Way Manufacturing Co., be liable for any such act. In addition, Art's-Way Manufacturing Co., assumes no liability for any altered.

Important Warranty Information

The warranty for this 166 Moldboard Plow appears on page 5 of this Manual. In order to establish proper warranty registration, the Warranty Registration and Dealer Pre-Delivery Checklist must be completed and returned to the factory. Failure to comply with this requirement may result in reduced warranty allowances.

Limitations Of This Manual

This Manual contains operating instructions for your 166 Moldboard Plow only. Any mention of other machinery in this manual other than the 166 Moldboard Plow is for reference only. This manual does not replace nor is it to be used for any machinery that may be attached to or used in conjunction with the 166 Moldboard Plow.

PARTS & SERVICE

As the new purchaser of your 166 Moldboard Plow, it is very important to consider the following factors:

A. Original Quality
B. Availability of Service Parts
C. Availability of Adequate Service Facilities

Art's-Way Manufacturing Co., Inc. has an excellent dealership network ready to answer any questions you may have about your Moldboard Plow. Parts for your machine may be ordered through our dealers. When placing a parts order, please have the ***model*** and ***serial number*** ready. This will allow the dealer to fill your order as quickly as possible.

For your convenience, we have provided this space for you to record your model number, serial number, and the date of purchase, as well as your dealer's name and address.

Owner's Name: _____

Owner's Address: _____

Purchase Date: _____

Dealership Name: _____

Dealership Address: _____

Dealership Phone No.: _____

Machine Serial Number

Enter the serial number and model number of your 166 moldboard plow in the space provided above.

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Limited Warranty

Art's-Way Manufacturing Co., Inc. warrants the products it sells to be free from defects in material and workmanship for a period of one (1) year after the date of delivery to the first (original) purchaser, subject to the following conditions:

- Art's-Way Manufacturing Co., Inc. obligation and liability under this warranty is to repair or replace (at the company's option) any parts that upon manufacture were defective in material or workmanship.

- All parts and repairs under this warranty shall be supplied at Art's-Way Manufacturing Co., Inc. or an authorized Art's-Way Manufacturing Co., Inc. dealer, at the option of Art's-Way Manufacturing Co., Inc.

- Art's-Way Manufacturing Co., Inc. warranty does not extend to parts and elements not manufactured by Art's-Way Manufacturing Co., Inc. and which carry the warranty of other manufacturers.

- Transportation or shipping to an authorized dealer for necessary repairs is at the expense of the purchaser.

- Art's-Way Manufacturing Co., Inc. makes no other warranty expressed or implied and makes no warranty of merchantability or fitness for any particular purpose beyond that expressly stated in this warranty. Art's-Way Manufacturing Co., Inc. liability is limited to the terms set forth in this warranty and does not include any liability for direct, indirect, incidental or consequential damages or expenses of delay and the Company's liability is limited to repair or replacement of defective parts as set forth herein.

- Any improper use and/or maintenance, including operation after discovery of defective or worn parts, operation beyond the rated capacity, substitution of parts not approved by Art's-Way Manufacturing Co., Inc., or any alternation or repair by other than an authorized Art's-Way Manufacturing Co., Inc. dealer which affects the product materially and adversely, shall void the warranty.

- No dealer, employee or representative is authorized to change this warranty in any way or grant any other warranty unless such change is made in writing and signed by an officer of Art's-Way Manufacturing Co., Inc.

- Some states do not allow limitations on how long an implied warranty lasts or exclusions of, or limitations on relief such as incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you the specific legal rights and you may have other rights that vary from state to state.

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SAFETY FIRST

"A careful operator is the best insurance against an accident."

(National Safety Council)

Most accidents can be prevented if the operator:
- Fully understands how the machine functions.
- Can anticipate situations which may produce problems.
- Can make necessary corrections before problems develop.

THIS SYMBOL MEANS ATTENTION!

BECOME ALERT!

YOUR SAFETY IS INVOLVED!

The American Society of Agricultural Engineers has adopted the ***Universal Safety Alert Symbol*** as a way to identify areas of potential danger if the equipment is not operated correctly. ***Please be alert whenever you see this symbol in the manuals or on your Moldboard Plow.***

Art's-Way Manufacturing Co., Inc. strives to make our equipment as safe as possible. The Art's-Way Moldboard Plow conforms to applicable safety standards at the time of manufacturing. A safety conscious equipment operator makes an effective accident-prevention program complete.

Safety features and instructions for the Moldboard Plow are detailed elsewhere in the Operator's Manual. It is the responsibility of the owner to ensure that all operators read and understand the manual before they are allowed to operate the Moldboard Plow. ***(Occupational Safety and Health Administration (OSHA) regulations 1928.57.)***

Notices of Danger, Warning, and Caution

Signal Words: Note the use of signal words DANGER, WARNING and CAUTION on the Moldboard Plow and in this manual. The appropriate signal word for each has been selected using the following guidelines:

DANGER: Immediate and specific hazard *will* result in server personal injury or death if proper precautions are not taken.

WARNING: Specific hazard or unsafe practice *could* result in severe personal injusry or death if proper precautions are not taken.

CAUTION: A reminder of good safety practices. Personal injury *could* result if proper procedures are not followed.

WORK SAFETY

Instructions given with this symbol are for personal safety. Be sure you and your workers follow them.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT

CAUTION! Before handling ANY equipment, READ the OPERATOR'S MANUAL.

Before handling any equipment, read the operator's manual.

BEFORE OPERATING

Misuse or modification of this machine can cause:
- Mechanical breakdown
- Property damage
- Injury or death

Always use proper safety precautions. Tell your workers how to work safely

Do not wear loose-fitting clothing that may catch in moving parts.

Use extreme care when making adjustments.

Always use the proper tolls or equipment for the job at hand.

When working under or around the plow, always support the plow frame.

Before lowering the plow for unhitching, lower and secure the parking stand.

After servicing, be sure all tools, parts or servicing equipment are removed from the plow.

Use only metric tools on metric fasteners.

Make sure that here is no one near the plow just before and during operation.

DURING OPERATION

No one other than the operator should ride on the tractor. Never allow anyone to ride on the plow at any time.

INSPECT all hydraulic hoses for leaks, cracks and abrasions once a year. Tighten fittings or replace hoses as needed.

Hydraulic fluid escaping under pressure can have enough force to penetrate the skin. Hydraulic fluid may also infect a minor cut or opening in the skin. If injured by escaping fluid, see a doctor at once. Serious infection or reaction can result in medical treatment is not given immediately. Make sure all connections are tight and that hoses and lines are in good condition before applying pressure to the system. To find a leak under pressure use a small piece of cardboard or wood. Never use hands.

Do not attempt to remove any obstruction while the plow is in motion.

Keep hands, feet, clothing and other objects away from moving parts.

When adjusting or servicing hydraulic reset or spring trip units, be sure to keep hands and fingers away from pivot linkages and joints.

Use extreme care when operating close to ditches, fences or on hillsides.

ON-HIGHWAY OPERATION

Always place the plow in the transport position.

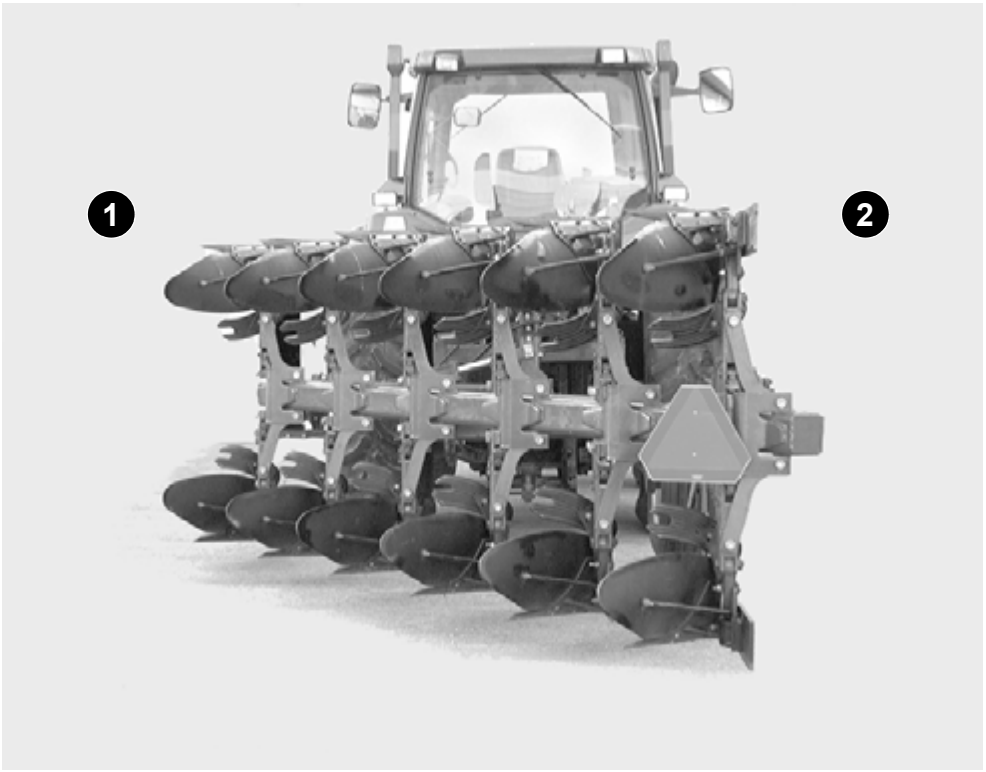
The tractor required for proper road transporting of this plow, should equal the size and have the horsepower rating of the tractor used for field operation.

Comply with your state and local laws governing highway safety and with regulations when moving machinery on a highway.

Drive at a reasonable speed, not in excess of 20 mph (32 km/h) to maintain complete control of the tractor and implement at all times.

LEFT AND RIGHT SIDE OF IMPLEMENT

When you are behind the plow and looking toward the tractor, the left hand and right hand side of the plow are the same as your left and right hand.

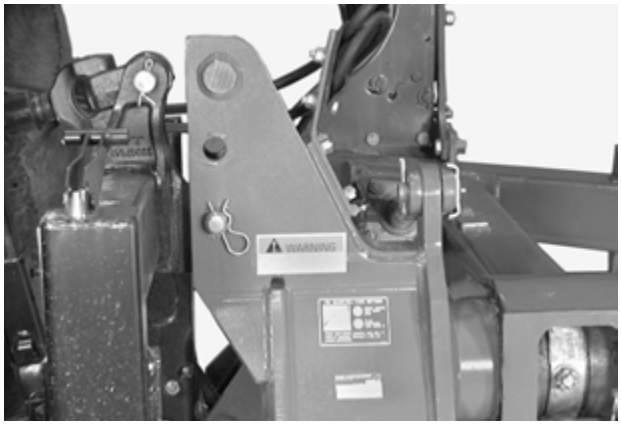


1. LEFT SIDE
2. RIGHT SIDE

DECALS

IMPORTANT: *Install new decals if the old decals are destroyed, lost, painted over or can not be read. When parts are replaced that have decals, make sure you install a new decal with each new part.*

NOTE: *New decals are available from your dealer.*



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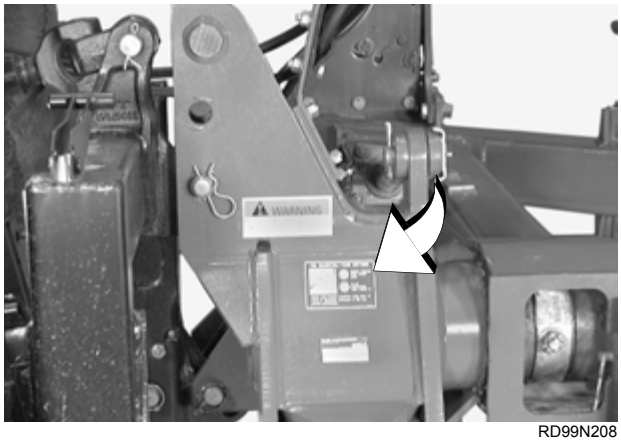
Decal Part Number - I220321A1

220321A1



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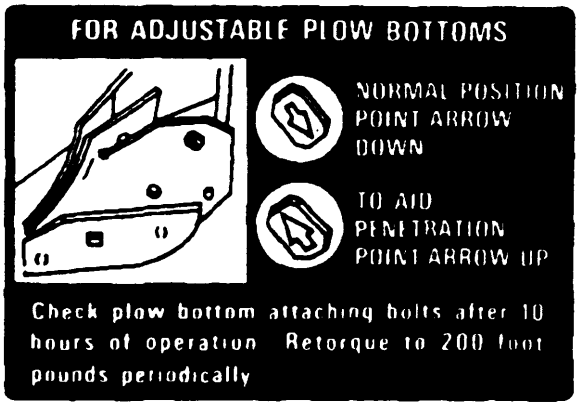

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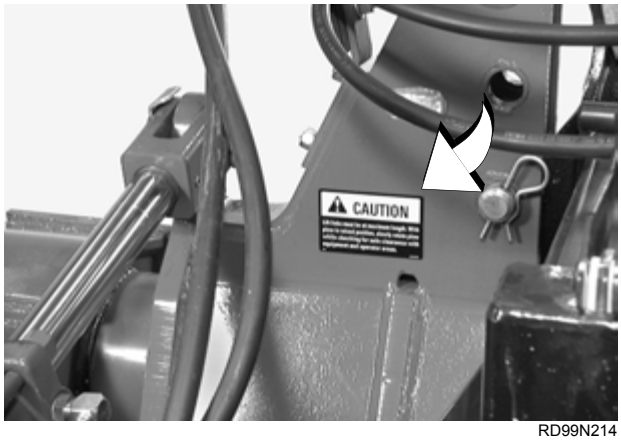

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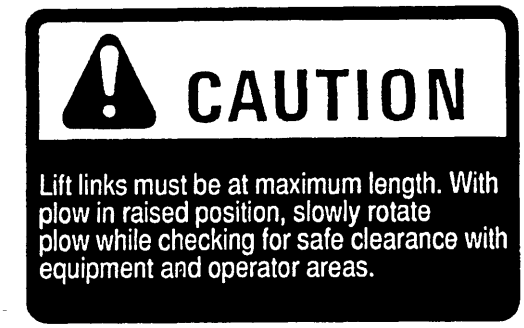
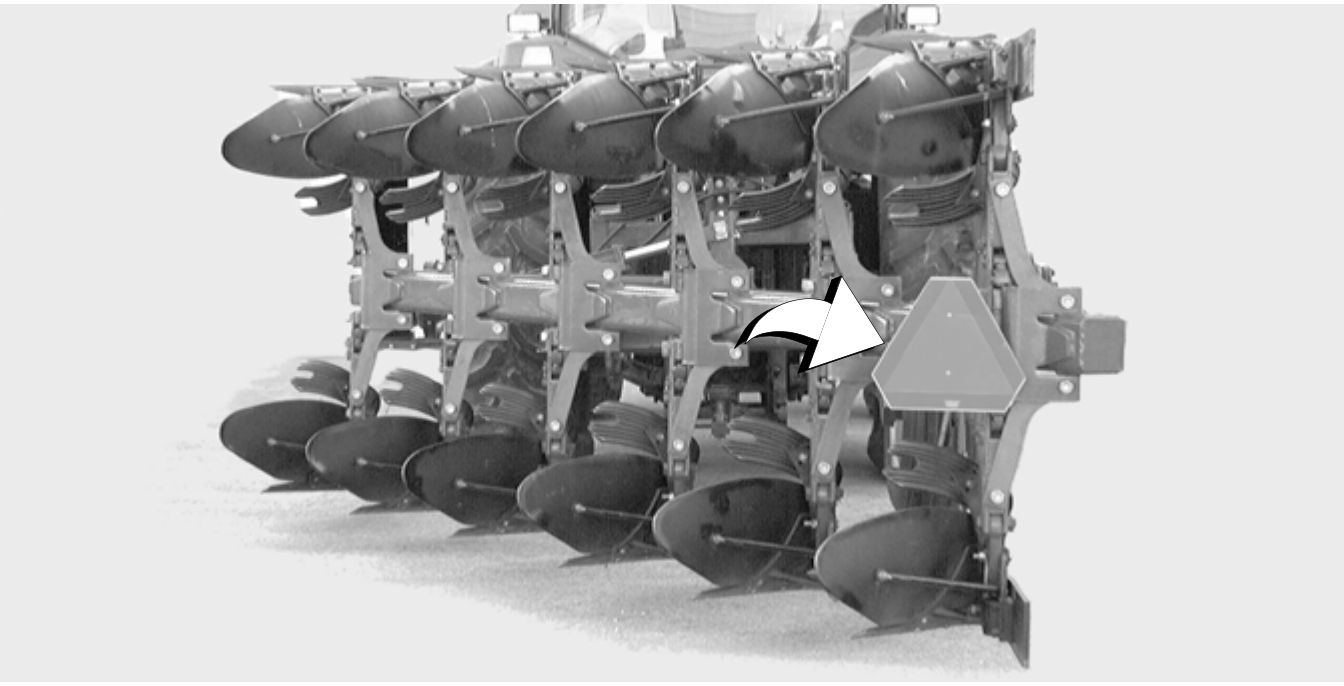


Decal Part Number - I543301R1

RS00A029

SLOW MOVING VEHICLE (SMV) EMBLEM



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A slow moving vehicle emblem must be ordered from your dealer and installed on your plow when transporting on roads.

The emblem mounting bracket is installed on the rear of the main frame. See Slow Moving Emblem installation instructions in this manual.

WARNING: *Use warning devices (i.e. flags, SMV emblem, lights, etc.) which are approved for use by your local government agencies, when moving equipment on public roads. Keep these devices clean and in good working condition.* M230A

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MACHINE SPECIFICATIONS

Tractor Requirements

Hitch ..... 3-point Cat II, Cat III or Cat IV; Quick Coupler
Remote Valves ..... One Pair Minimum Required

Frame and Hitch

Frame ..... Heavy Duty Rectangular Steel Box Type Frame
Hitch ..... 3-point Combination

Hydraulics

3-1/2 x 12 inch double acting cylinders

Wheels and Tires

Gauge Wheel ..... 9.5L-15, 8 ply Tubeless
Furrow Wheel (optional) .....

Weight

Rigid Beam

5 Furrow - 16 Inch ..... 2 480 lb (1 125 Kg)
5 Furrow - 18 Inch ..... 3 524 lb (1 598 Kg)
6 Furrow - 18 Inch ..... 4 174 lb (1 894 Kg)

Spring Trip

4 Furrow - 18 Inch ..... 3 428 lb (1 555 Kg)
5 Furrow - 16 Inch ..... 2 922 lb (1 325 Kg)
5 Furrow - 18 Inch ..... 3 926 lb (1 781 Kg)
6 Furrow - 18 Inch ..... 4 715 lb (2 139 Kg)

Transport Size

Vertical Clearance ..... 30 inches (762 mm)
Fore/Aft Clearance - 16 Inch Plow ..... 24 inches (610 mm)
Fore/Aft Clearance - 18 Inch Plow ..... 27 inches (686 mm)

Plow Type

Fully mounted; two way, for tractor on-land operation

Trash Clearance

16 Inch Fore/Aft ..... 24 Inches (610 mm)
18 Inch Fore/Aft ..... 27 Inches (686 mm)
Vertical ..... 30 inches (76 cm)

Plow Depth

14 Inches (35.6 cm)

Plow Bottoms

4, 5 and 6 Furrow ..... Super Chief heavy duty
4, 5 and 6 Furrow ..... Super Chief deep tillage with upset share (requires rear landside)

Plow Bottom Size

Five furrow ..... 16 inch (40.6 cm)
Four, five and six furrow ..... 18 inch (45.7 cm)

Rear Landside and Rear Furrow Wheels

4, 5 and 6 Furrow ..... Wide adjustable style rear landside
4, 5 and 6 Furrow ..... Adjustable rigid, rear furrow steel wheel
(requires rear beam stop attachment on spring trip beam plow)

Colters

4, 5 and 6 Furrow ..... 17 Inch and 20 Inch Rippled edge blade

Lateral Stability

Regular ..... Adjustable wide rear landside and padded front style
Optional ..... Rear furrow wheel
Optional ..... Dual padded landside

Beam Type

Spring Trip or Rigid

Leveling Control

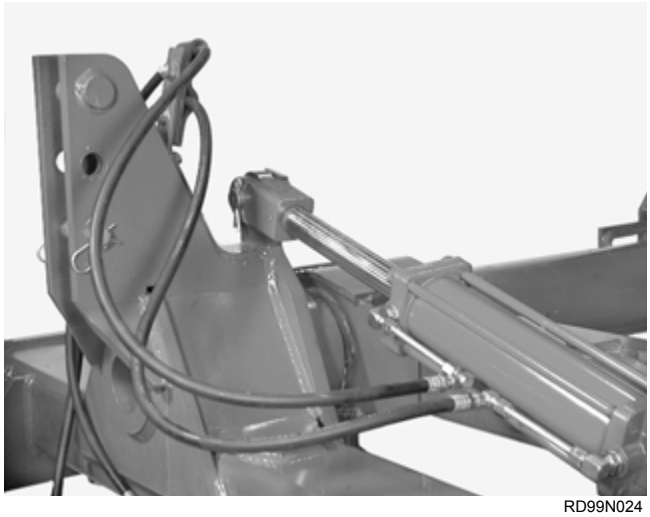
Leveling pin with spacers

BEFORE OPERATING THE PLOW

Before operating the plow, perform the following:

1. Refer to the Lubrication section in this manual and lubricate the plow accordingly.
2. Refer to the Maintenance section in this manual and perform the Pre-Season checklist.
3. Check the routing of hydraulic hoses and electrical wiring to prevent damage during operation.

READ AND UNDERSTAND the operating instructions in this manual.



RD99N024

HYDRAULIC ROLLOVER SYSTEM

Use care when initially raising and lowering the plow. The lift links should be set short enough to allow sufficient ground clearance for proper operation.

> **WARNING:** *Operate this machine only when all persons are safely clear of moving parts.* M455

To rotate the plow for each successive pass in the field, raise the plow, then operate the control lever as far as it will go and release it.

NOTE: *If the tractor remote lever is equipped with "FLOAT" lockout, lock this lever out of the "FLOAT" position. Refer to the Tractor Operators Manual for information to lock out the "FLOAT" position on the lever.*

Rollover of the plow is controlled from the tractor using the hydraulic control lever. When the plow hydraulic cylinder is collapsed, the plow will have rotated more than half way, immediately move the hydraulic control lever in the opposite direction as far as it will go and release it. The plow will now rotate to the proper operating position and the control lever will automatically return to the neutral position.

TRACTOR PREPARATION

Tractor Stability

Refer to Tractor Operators manual and check to see that front and rear tractor weights are sufficient to ensure stability for field operation and road transport.

Add tractor weights as necessary as recommended in the tractor operators manual. **DO NOT** exceed recommended weights.

Tractor Wheel Weight

It is recommended that the tractor rear wheels carry added weight for increased traction. Adding weight saves wear on the tires and also serves to stabilize the tractor for plowing on rough or hillside fields. For this purpose, liquid such as calcium chloride solution can be placed in the rear tires or one or two weights (available from your dealer) may be bolted on each rear wheel. In loose soil, it may be necessary to use both the liquid and the weights to prevent excessive tire slippage.

NOTE: *See your Tractor Operator Manual for the correct ballast for your tractor.*

IMPORTANT: *The mixing and filling of tires with a calcium chloride solution can be dangerous. This service should be performed by your dealer or local tire distributor.*

Tractor Rear Wheel Settings

While plowing, the tractor will be driven with all wheels “on the land”. After the first pass across the field the tractor must be driven in relation to the furrow wall so as to determine the width of cut made by the plow front bottom. Note that the overall width of the tractor, including dual rear wheels must be kept to 133 inches (338 cm) or less for 4 and 5 furrow plows and 144 inches (366 cm) or less for 6 furrow plows.

Refer to your operators manual and to the instructions pertaining to the use of dual wheels.

Tractor Tire Inflation

The use of the proper air pressure is the most important factor in satisfactory performance and maintenance of tractor or implement tires.

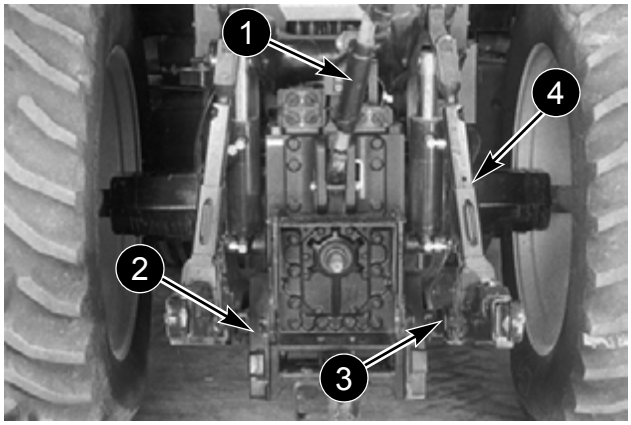
Check the air pressure every two or three weeks to maintain the pressure within the recommended air pressure range.

NOTE: *Refer to your tractor operators manual for more detailed data.*

Three-Point Hitch Adjustment

With Cam Sway Limiters

NOTE: *The below illustration is a typical tractor hitch, refer to your Tractor Operators Manual for hitch.*



RP98G006

1. UPPER LINK
2. SWAY LIMITER
3. ADJUSTMENT BLOCK
4. LOWER LINK

The upper link should be installed in the upper hole of the tractors attaching bracket.

Use either or both turnbuckles to level the hitch with the ground. See your operator manual for information.

Place the turnbuckle in their locked position. This prevents the turnbuckles from turning out of adjustment.

Be sure to set the swinging drawbar in its storage position (refer to tractor manual). The swinging drawbar may be removed from the tractor, if preferred.

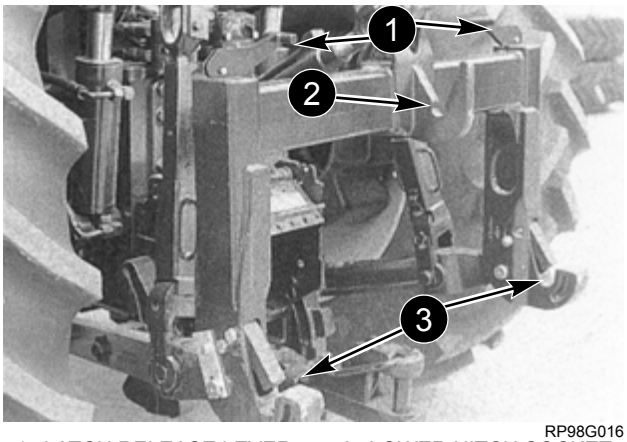
Be certain that the lower links are set in the sway position before operation.

NOTE: *For tractors equipped with 3 point hitch and 4 position control valve. When lowering the plow for field operation, be sure to move the control lever to the full down (float) position to prevent possible down pressure and damage to the plow.*

Category III 3-Point Hitch with Cam Sway Limiter in Sway Position

Never operate this plow with the cam sway limiter set in the extra sway position.

Quick Coupler



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1. LATCH RELEASE LEVER
2. UPPER HITCH SOCKET
3. LOWER HITCH SOCKET

Hitching

With the quick coupler in position, back the tractor up to the plow with the quick coupler positioned below and in line with the plow hitching pins. Raise the hitch so the coupler upper hook engages the upper hitching pin and while continuing to raise the hitch, the lower sockets engage the lower hitching pins. As the plow weight forces the lower hitch pins into place, the spring loaded latches lock the pins in place.

Unhitching

The spring loaded latches must be released to unhitch the plow. Raise the plow to the transport position. Then, while seated on the tractor, move the latch control levers to the release position by pulling the levers past the detent position.

With the latches in the released position, lower the plow to the ground. Further lowering of the hitch disengages the three coupler hooks from the hitching pins on the plow. Disconnect the hydraulic hoses and drive the tractor away from the plow.

Transporting on the Highway

The tractor required for the correct road transporting of this plow, must equal the size and have the horsepower rating of the tractor used for field operation.

The bracket for a slow moving vehicle (SMV) emblem must be attached as near to the rear and center of the plow as possible. The SMV emblem must be in a plane perpendicular to the direction of travel (plus or minus 10 degrees) and be placed centrally at the rear of the vehicle, unobstructed and two to six feet above the ground measured from the lower edge of the emblem.

The SMV emblem must be used at all times while on a public road. Comply with all state and local laws governing highway safety and with regulations which cover moving machinery on the highway. Drive at a reasonable speed (not in excess of 20 mph) to maintain complete control of the tractor and implement at all times.

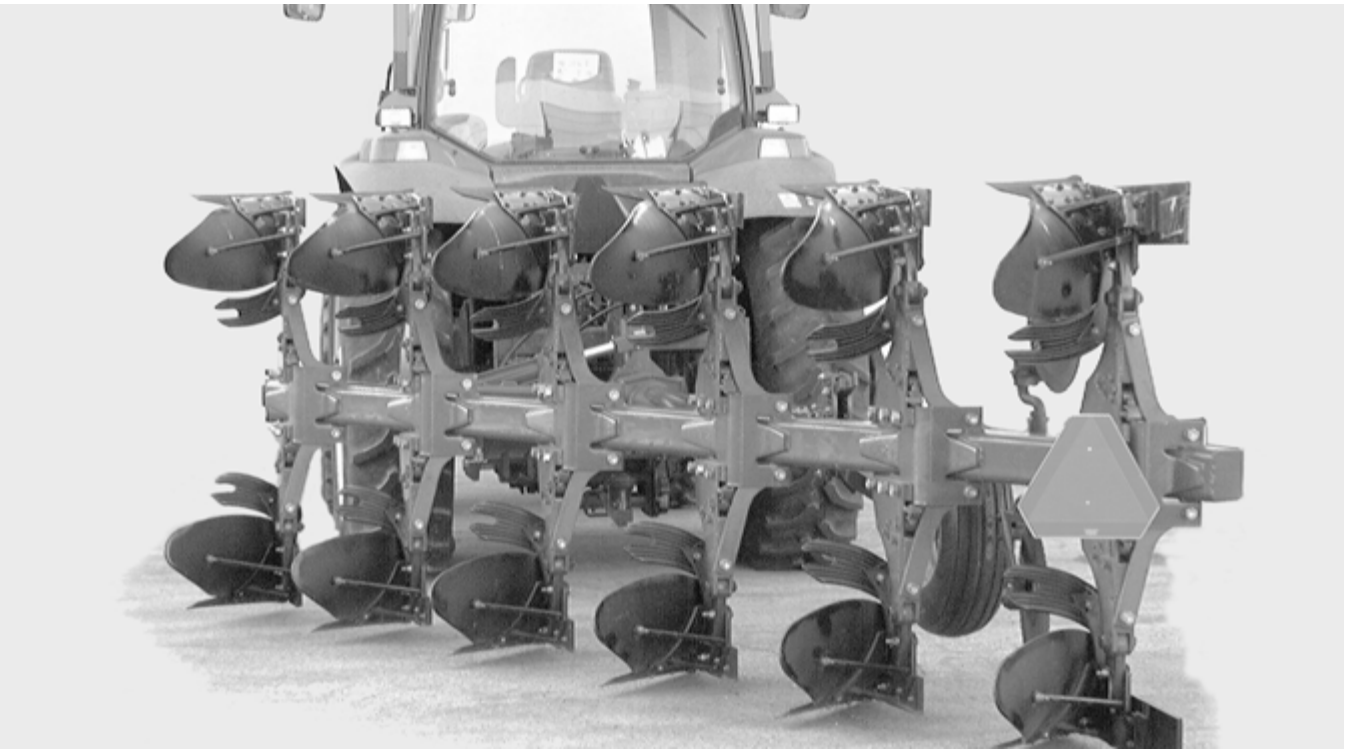
IMPORTANT: *Always transport the plow at the 18 inch width setting and install the cylinder safety channel on both lift cylinders.*

Always keep the front and rear end of the plows main frame at equal heights from the ground, to get the correct transporting stability.

WARNING: *When transporting or in the field, slow down before turning. Do not use individual tractor wheel braking to make short turns. The plow has limit stops which do not allow pivot turns.* M338

WARNING: *Make sure that the weight of a trailed vehicle that is not equipped with brakes, NEVER EXCEEDS the weight of the machine that is towing the vehicle. Stopping distance increases with increasing speed as the weight of the towed load increases, especially on hills and slopes.* M114B

TRACTOR/PLOW CONNECTION



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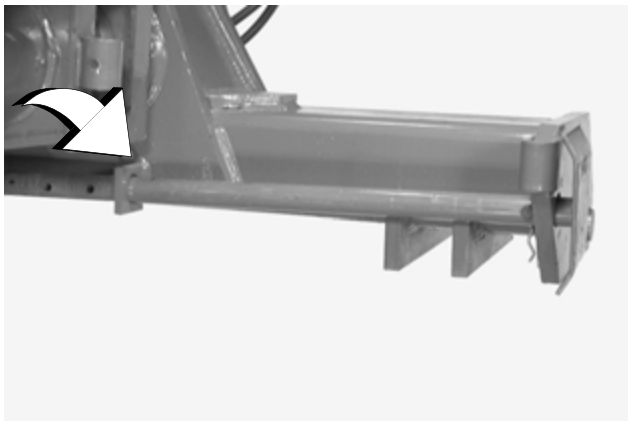
Before connecting the plow to the tractor,

> **WARNING:** *Make sure that the weight of a trailed vehicle that is not equipped with brakes, NEVER EXCEEDS the weight of the machine that is towing the vehicle. Stopping distance increases with increasing speed as the weight of the towed load increases, especially on hills and slopes.* M114B

After connecting the plow to the tractor, place the parking stand in the storage position on the hitch frame as shown at right.



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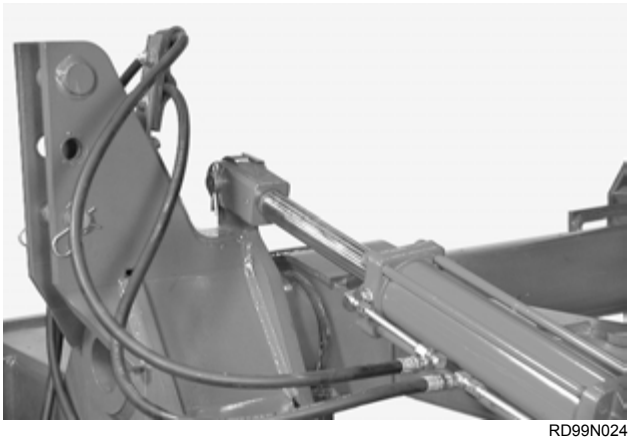
Hydraulic Connections

Male couplers, adapters and hydraulic grips for connecting the rollover cylinder hydraulic hoses to the tractor remote hydraulic system are included with the plow.



RD99N024

For convenient tractor control operation, connect the plow rollover hoses (red hydraulic grips) to the tractor remote coupler number 1.

Assemble the hydraulic grips according to the instructions in the package. Torque all fittings according to torque chart in Maintenance section of this manual.

If the plow does not operate as specified above, reverse the appropriate circuit hoses in the tractor remote coupler ports.

NOTE: *After initial setup or replacement of any hydraulic component, air must be removed from the plow hydraulic system. Refer to Detail Index for System Air Removal procedure.*

WARNING: *The implement should be lowered to the ground before uncoupling of the remote hydraulic hoses.* M134A

WARNING: *Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury.*
To Prevent Personal Injury:
Relieve all pressure, before disconnecting fluid lines or working on the hydraulic system.
Before applying pressure, make sure all connections are tight and components are in good condition.
Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose.
If injured by leaking fluid, see your doctor immediately. M149C

PLOW PREPARATION

General

When starting to plow with a new plow or a plow which has been stored, check to see that all bolts and set screws are tight and that all cotter pins are spread to keep them from falling out. It is especially important that the bolts holding the plow bottoms be tightened to a torque of 200 lb ft (271 Nm) and periodically checked to maintain this torque.

Removing Protective Coating from Plow Bottoms

Plow bottoms are finished and coated to prevent rusting before leaving the factory. Good field work cannot be accomplished until this coating is removed.

WARNING: *Keep work areas well ventilated when using cleaning solvents to remove the protective coating.* M336

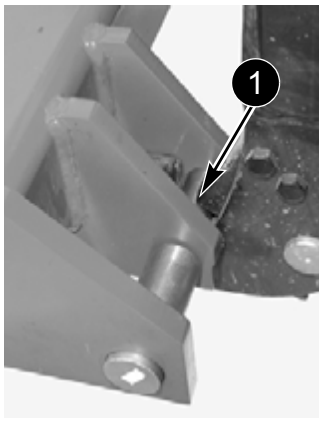
The black, protective coating on the plow bottoms will quickly wear away in most soils. For soils which scour with difficulty, it is recommended to remove the coating before attempting to plow. Use a noncombustible cleaning solvent for this purpose. If necessary, use a stronger solvent such as paint remover to remove the protective coating.

If the plow is not to be used for long periods of time, scrape off the dirt. Clean and protect the polished surface of the plow bottoms with a liberal coating of a rust corrosion preventive, available from your dealer. Heavy grease can be used to protect the plow bottoms for short periods of time.

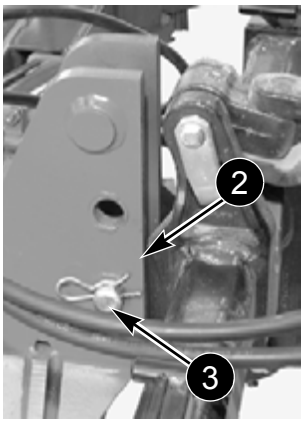
Plow Tire Inflation

Gauge Wheel Tire ..... 44 PSI (276 kPa)

Hitching Position



RD99N033



RD99N034

1. LOWER HITCH POINT
2. UPPER HITCH POINT
3. UPPER HITCH PIN

NOTE: *On some Quick Hitch Couplers it may be necessary to move the upper hitch pin into the upper pin hole.*

TRANSPORT POSITION

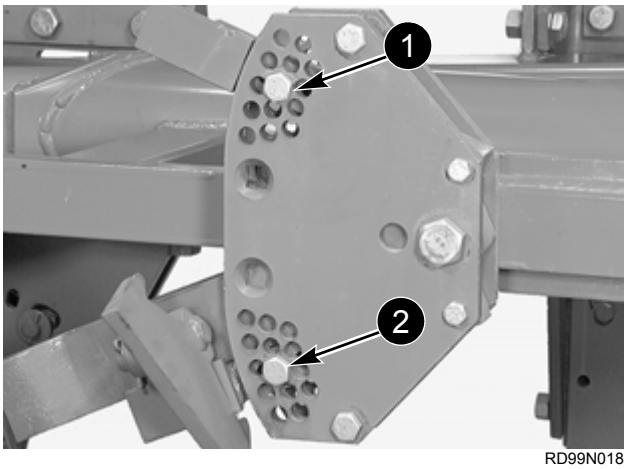
RD99N036

Transport the plow in the highest raised position and with the right hand bottoms down to provide proper orientation for the Slow Moving Vehicle (SMV) Emblem. During transport, the plow can be damaged if lowered by accident.

> **WARNING:** *Travel speed should be such that complete control and machine stability is maintained at all times. Where possible, avoid operating near ditches, embankments and holes. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.* M109B

Prepare the plow for transport as follows:

1. Stop the tractor and raise the plow to maximum height. Shut the tractor off and remove the key.
2. Lock the wheel axle in transport position by installing gauge pins in the transport hole.



RD99N018

1. UPPER GAUGE PIN 2. LOWER GAUGE PIN

JACK STAND

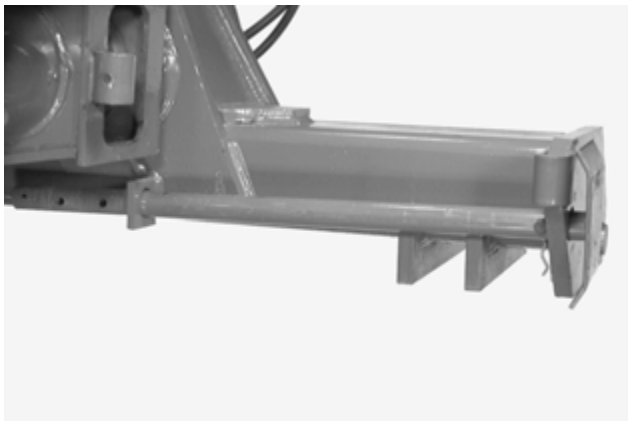
Use the jack stand to support the plow when connecting and disconnecting the plow from the tractor.

Also use the jack stand to support the plow when the plow is in storage.

RD99N029R

OPERATING POSITION

Keep the jack stand in the storage position on the hitch frame when not in use.



RD99N030

STORAGE POSITION

WARNING: *The parking stand must be used at all times, while the plow is not connected to the tractor.* M770

GAUGE WHEEL

The gauge wheel serves to stabilize the plowing depth set by the hitch. The adjusting bolts locate the stops according to desired plowing depth. Set the stops for the same setting on both sides.

RD99N009

REAR LANDSIDE

Spacers are used between the landside and the brace to correct plow “tailing”. Spacers are added until the plow runs straight behind the tractor.

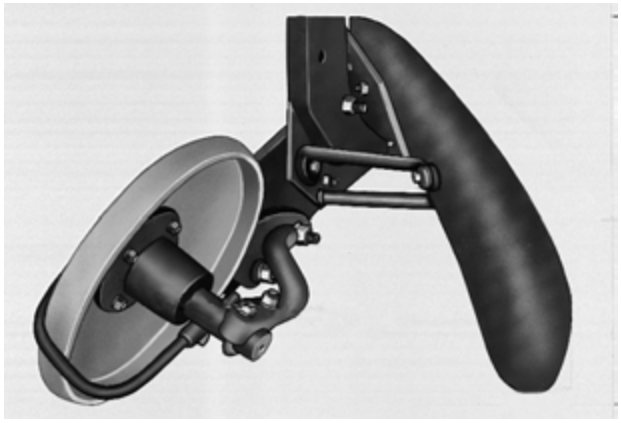
RD99N017

REAR FURROW WHEEL

This furrow wheel is designed to permit the wheel to carry both the vertical and side loads.

Move the wheel arm down to carry more load or move it up to carry less vertical load.

A beam limit stop is required on the rear bottom trip beams to prevent damage to the rear furrow wheel when the bottom is tripped.



MA12025

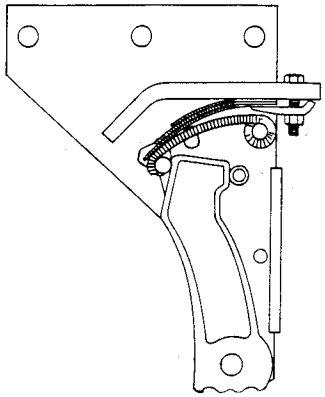
SPRING TRIP BEAM

The beam trips are factory set for average soil conditions. This setting is slightly higher than the minimum load limit.

Should conditions require an increase in the trip load, tighten either the adjusting bolt or the nut while holding the opposite end with a second wrench. Tighten the adjusting bolt and nut until the frequency of tripping does not handicap the plowing operation.

Tightening the adjusting bolt and nut increases the load limit and reduces the frequency of tripping in hard ground, alfalfa, etc., but will at the same time increase the possibility of bottom damage.

Loosening this same adjusting bolt and nut reduces the load limit and may increase the tripping action, but will minimize bottom damage.



RB99N030

BEAM TRIP

Beam Trip Pivot Bolt

The 1 inch slotted nut which secures the pivot bolts must be kept tight at all times. If this is not done, the bottom will be loose and tend to overcut and wear unevenly. Tighten the slotted nut enough to eliminate all shake but at the same time see that the bottom can be rotated by hand on the beam pivot bolt. This precaution serves to prevent unnecessary tripping in hard ground due to a “walking action” of the trip mechanism. After plowing the first couple of acres, it will be necessary to tighten the pivot bolt nut due to the “wear in” of the mating parts.

It is not necessary to disturb the adjustment of the helper springs when the trip unit is opened for examination or cleaning.

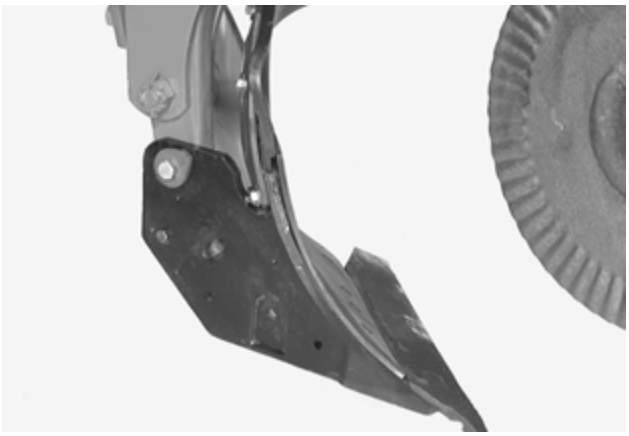
Opening the Beam Trip

The recommended method is to insert a bar through the access hole in the plate and pry up on the spring. This will free the beam in a manner which will not disturb the setting of the helper springs.

It is recommended that each trip be opened as described above before placing the plow in operation. Remove any accumulation of dried paint but do not lubricate the spring, notch or roller. Do this again at the beginning of each plowing season and remove any dirt or rust which may interfere with operation. Open and close the unit several times to check the trip action.

PLOW BOTTOM

The replaceable shin, landside and share provide a quick and economical means for renewing the points that have maximum wear. The shares are the throwaway type designed for replacement instead of sharpening or renewal. Shares are available in regular, upset and deep-suck styles.



RD99N014

SHARES

General

All shares are interchangeable. The bottoms can be changed from regular cut to undercut or overcut, depending on the size of shares used.

Share, shins and landsides are held to the frog by plow bolts. When replacing these parts, be sure the bolts are tightened securely. After plowing for awhile, raise the plow bottoms and tighten the bolts that are loose.

NOTE: *The plow share bolts have left hand threads.*

Special attention should be given to the three 5/8 inch bolts that attach the plow bottoms to the beams. These must be checked periodically to maintain a torque of 200 lb ft (270 Nm).

Never let the plow share, shin or landside show wear so that the frog is exposed. When plowing in abrasive soil, check the condition of these parts frequently. Plowing with worn, bent or broken shares can result in the plow working inefficiently and increased fuel costs.

Flat Share

The flat shares give the lowest cost plowing in most soil conditions.

Heavy-Duty Upset Share

The heavy-duty upset share has thickness throughout the whole front portion for added strength when used in rocky conditions and for more wear in extremely abrasive soil.

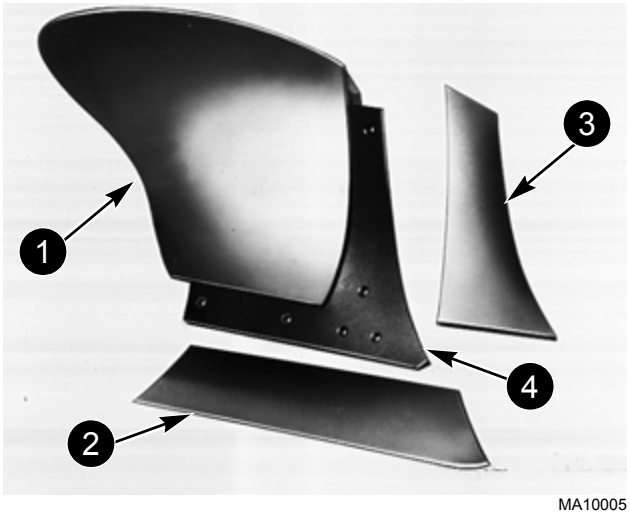
Deep Suck Share

The deep suck share has a point designed for more aggressive action, giving quicker entry and more stable plowing depths in hard ground.

Deep suck and upset shares are available with factory applied hard surfacing. Note however, that hard surfacing is not recommended for rocky conditions.

NOTE: *To reduce landside pad wear, twin pad landside is available. This is also effective in solving plow over cutting. Contact your dealer for further information.*

The landside wear pad can be reversed by removing its two attaching bolts and reinstalling the top side of the wear pad down.



MA10005

1. MOLDBOARD
2. SOLID STEEL, THROW AWAY SHARE
3. REPLACEABLE SHIN
4. RUGGED WELDED STEEL FROG

The stop or landside block is recommended for rocky ground. Be sure the landside block fits tightly against the landside.

The Adjustable Pitch Feature (eccentric washer) is provided on all Super Chief plow bottoms to help penetration with worn shares thereby increasing the life of a share. This feature also provides more suck for additional penetration when required. Caution must be taken to see that this feature is used correctly. When new shares are being used, the plow bottom must be set in the normal position.

ROLLING COLTER (OPTIONAL)

Do not run the colters too deep in hard ground as this will ride the plow out of the ground. Slightly loosen the colter shank clamp and turn the shank with a wrench to swing the colter so the blade will run approximately 3/4 inches (1.9 cm) from the left side of the landside for average soil conditions. See that the colter blade is parallel with the landside when the measurement is made. In soft, crumbly ground a wider setting is necessary in order to obtain a clean furrow wall; in sod or firmer soil, the colters can sometimes be set narrower.

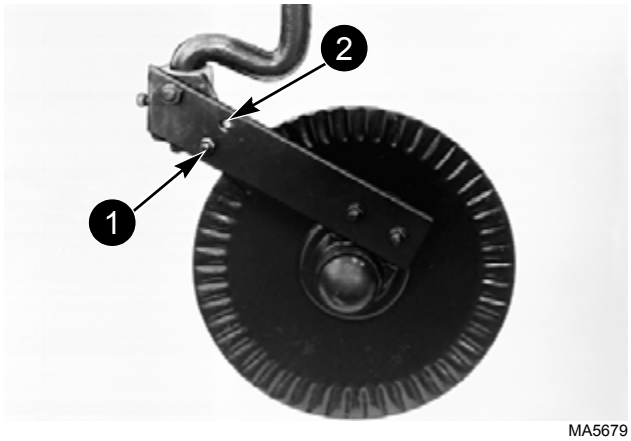
A set collar is provided in the colter yoke to prevent the colter from swinging completely around.

This set collar should be set on the colter shank so it will allow the colter to swing approximately the same distance on each side of the point of the share. The colter can then pivot when the plow is turned to the right or left.

RD99N210

SIDE ARM COLTER (OPTIONAL)

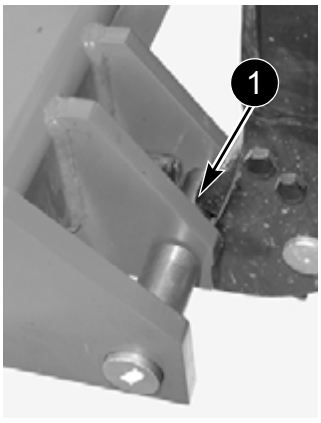
Adjustment has been provided to allow for additional penetration of colter blade at shallow plowing depths. Remove 7/16 inch bolt (1) and allow colter arm to swing downward until the bolt can be inserted in hole (1).



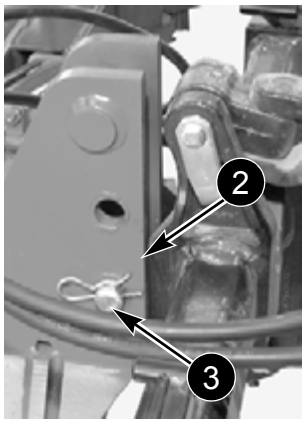
MA5679

PLOW OPERATION

Hitching Positions



RD99N033



RD99N034

1. LOWER HITCH POINT
2. UPPER HITCH POINT
3. UPPER HITCH PIN

NOTE: *On some Quick Hitch Couplers it may be necessary to move the upper hitch pin into the upper pin hole.*

Rollover Action

Use care when initially raising and lowering the plow. The lift links should be set short enough to allow sufficient ground clearance for proper operation.

WARNING: *Operate this machine only when all persons are safely clear of moving parts.* M455

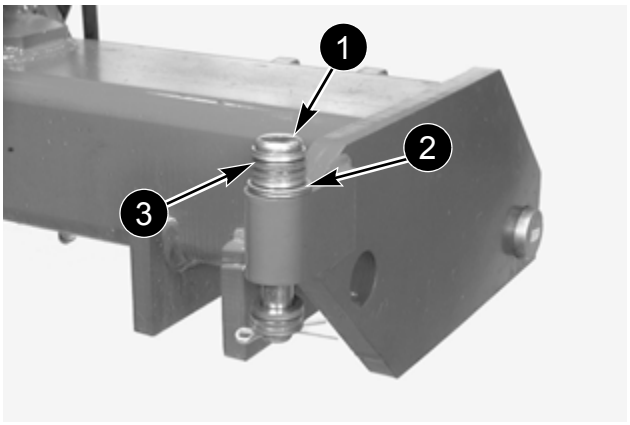
To rotate the plow for each successive pass in the field, raise the plow, then operate the control lever as far as it will go and release it.

NOTE: *If the tractor remote lever is equipped with "FLOAT" lockout, lock this lever out of the "FLOAT" position. Refer to the Tractor Operators Manual for information to lock out the "FLOAT" position on the lever.*

Rollover of the plow is controlled from the tractor using the hydraulic control lever. When the plow hydraulic cylinder is collapsed, the plow will have rotated more than half way, immediately move the hydraulic control lever in the opposite direction as far as it will go and release it. The plow will now rotate to the proper operating position and the control lever will automatically return to the neutral position.

Leveling the Bottoms

Before proceeding with the leveling adjustment, make sure the lift links are the same length and the lower links are level as described in "Hitch Adjustment" in this manual. The furrow bottom should be level and the plow beam should be vertical to the ground. Note that it is better to have the wing of the share a little high than too low.



RD99N028

1. PIN
2. LARGE SPACER
3. SMALL SPACER

Leveling is a accomplished by adding or removing spacers under the head of the pin as shown at (1) in the illustration located on each side of the front frame. The largest (1-3/4 inch diameter hardened steel) spacer on either side as shown at (2) should be kept in this position against the frame at all times. Smaller spacers (if required) as shown at (3) should be inserted between the head of the pin and the large spacer.

When the bottoms being used are properly leveled, make the same adjustment for the opposite bottoms. Identical setting may be made by counting the spacers under pin head.

DO NOT use the hitch leveling screws for leveling the plow.

Scouring

If the plow bottoms do not scour immediately, it is because the soil is rather sticky and you will have to wait until the bottoms have taken a land polish. This may require a few rounds or in very sticky soil, a few days. To obtain this land polish, it is recommended that you run the plow rather shallow and fast. It is also advisable to set the colters far to the outside of the landside and not too deep. Sometimes it is necessary to remove the colters entirely so as to obtain the maximum pressure on the plow bottom which aids in scouring.

Disconnecting The Plow From The Tractor

Select a level floor or solid level ground. Before lowering the plow, install the parking stand, then lower the plow until its entire weight rests evenly on all the bottoms.

> **WARNING:** *The implement must be lowered to the ground and the control lever set to neutral/float position before uncoupling of the remote hydraulic hoses.* M525

When the plow is connected to the tractor and ready for operating or just before transporting, the parking stand should be placed in the storage position.

GENERAL INFORMATION

Before operating the plow, perform the following:

1. Refer to the Lubrication section in this manual and lubricate the plow accordingly.
2. Refer to the Maintenance section in this manual and perform the Pre-Season checklist.
3. Check the routing of hydraulic hoses and electrical wiring to prevent damage during operation.
4. **READ AND UNDERSTAND** the operating instructions in this manual.

Check all bolts and nuts. Tighten/torque as necessary. Refer to Maintenance section in this manual for torque data.

RD99N037

TRACTOR OPERATION

Tractor Hitch Control

Draft control is that operation of the tractor hitch which responds to variations in draft and does it quick enough to maintain a nearly constant load on the tractor. When the load on the hitch increases, the hitch responds by shallowing (raising) the plow which transfers increased weight to the tractor, thus increasing traction. Two methods of draft control are available.

Position Control - Modified (Recommended)

This method is useful in fields with extreme soil variations, providing all the draft control advantages. This method sets a depth limit, so the plow will not go too deep when lighter soil conditions are encountered. Refer to your Tractor Operators Manual for more information on Position Control.

Load Control

Load Control is a tractor function that adjusts the load on the tractor. The hitch system will automatically adjust the hitch position to maintain a constant implement load on the tractor as the implement travels through varying soil conditions and terrain. Refer to your Tractor Operators Manual for more information on Load Control.

PLOW OPERATION

Hitch Position

Describe adjustment of hitch if necessary while operating in field.

Spacer Locations

Describe adjustment of spacers, if necessary while operating in the field.

Depth Adjustment

Hitch adjustment

Adjust the hitch. The hitch setting will determine the plowing depth while the gauge wheel serves to stabilize the selection.

Gauge Wheel Adjustment

Adjust the gauge wheel to maintain the selected depth after hitch setting. While the hitch setting will determine the plowing depth, the gauge wheel will stabilize the selected depth. The gauge wheel should carry appreciable weight, however if it makes a deep track in the ground and that plowing depth is satisfactory, then the gauge wheel setting depth should be raised slightly.

Leveling the Bottoms

NOTE: *Before proceeding with the leveling adjustment, make sure the lift links are the same length and the lower links are level.*

The furrow bottom should be level and the plow beam should be vertical to the ground. It is better to have the wing of the share a little higher than too low.

Leveling is accomplished by adding or removing spacers under the head of the pins on each side of the frame. (Refer to the illustration below). The largest spacer, 1-3/4 inch diameter, on either side of the plow should be kept between the head of the pin and the plow beam. Smaller washers are added between the frame and the bottom of the large spacer. A cotter pin is used to secure the spacers in place. The same number of spacers is used on each side of the frame to maintain the same level settings.

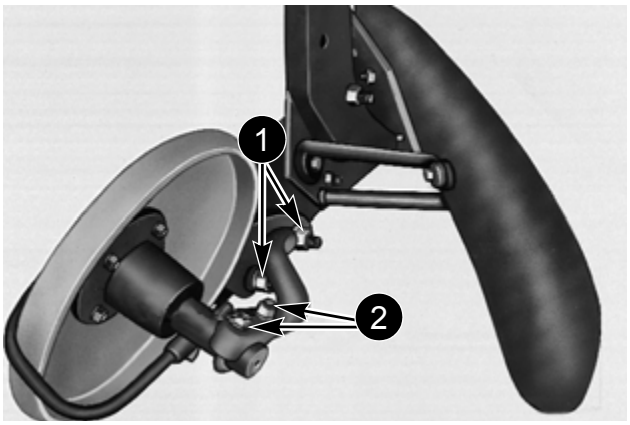
IMPORTANT: *Do not use tractor hitch leveling screws to level the plow.*

Rear Landside Adjustment

Spacers can be added between the landside and the brace if the plow tails too far toward the unplowed ground or the tractor front tires pull toward the furrow. Up to three spacers can be added to each landside.

Rear Furrow Wheel (If Equipped)

The rear furrow wheel is designed to permit the wheel to carry both vertical and side loads. To carry more load move the wheel arm down. To carry less load, move the wheel arm up.



MA12025

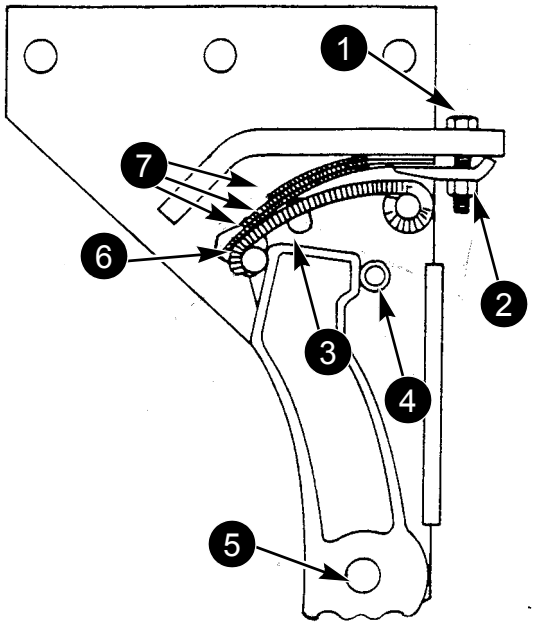
1. VERTICAL LOAD CAP SCREWS
2. SIDE LOAD CAP SCREWS

Adjust the Rear Furrow Wheels as follows:

1. Vertical load; loosen the cap screws (1). Adjust wheel up or down then, tighten the cap screws.
2. Side Load; Loosen the bolts (2) and adjust the wheel sideways, so the landside clears the furrow wall by approximately 1/4 inch (6.35 mm). Tighten the bolts.
3. Recheck these adjustments periodcially while operating in the field.

Spring Trip Beam

The beam trips are factory set and are slightly higher than minimum load limit.



RB99N030

1. ADJUSTING BOLT
2. LOCK NUT
3. ACCESS HOLE
4. BEAM STOP
5. PIVOT BOLT
6. MAIN SPRING
7. HELPER SPRINGS

If soil conditions change within or from field to field, adjust the trip load as follows:

I**ncrease the trip load**; while holding the opposite end with another wrench, tighten the adjusting bolt (1) or nut (2) until the frequency of tripping does not hinder plowing operation. This reduces the frequency of tripping in hard ground, but will also increase the possibility of bottom damage.

Decrease the trip load; while holding the opposite end with another wrench, loosen the adjusting bolt (1) or nut (2) until the frequency of tripping increases. This increase in tripping will reduce the load limit and will minimize the bottom damage.

Deep Suck Share

Share, shins and landsides are held to the frog by plow bolts. After plowing for awhile, raise the plow bottoms and check the bolts to see if they are loose. Tighten all bolts as necessary.

NOTE: *Plow bolts have left hand threads.*

The plow bottoms are attached to the beams with 5/8 inch bolts. These bolts must be checked periodically and torqued to 200 lb ft (270 Nm).

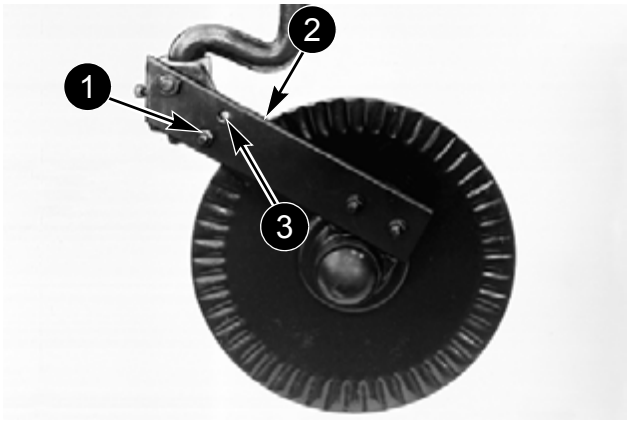
If the plow is equipped with the stop or landside block, ensure it fits tightly against the landside. Periodically check the stop or landside block while plowing.

Rolling Colter (If equipped)

Check the distance from the colter blade to the left side of the landside. It should be approximately 3/4 inch (19 mm) for average soil conditions. To adjust the colter, loosen the colter shank clamp and turn the shank with a wrench to swing the colter blade. Make sure the colter blade is parallel with the landside when making measurements. A set collar is provided to prevent the colter from swinging completely around. The colter will pivot when turning left or right.

Side Arm Colter (If equipped)

Adjustment to the colter blade can be made using the 7/16 inch bolt for shallow plowing depth or additional penetration. Remove the bolt (1) from the shallow plowing depth. Allow the colter arm (2) to swing downward until the bolt can be inserted in the second hole (3) for additional penetration.



MA5679

1. BOLT
2. CLOTER ARM
3. SECOND HOLE

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LUBRICATION

Lubrication Guide

1. Be certain that all lubrication fittings are assembled in place. Refer to the following chart and illustrations to locate all fittings.
2. Always lubricate the plow thoroughly before taking it to the field. Use a pressure lubricating gun as necessary.
3. Be sure all fittings are free from dirt and paint so the lubricant is certain to enter the bearing.
4. Always force the lubricant through the full length of each bearing until it emerges at the end, carrying with it the worn lubricant and any dirt that may have entered the bearing.
5. Miscellaneous working parts not provided with a lubrication fitting should be oiled daily with a good grade of lubricating oil.
6. Keep your supply of lubricating oil and grease stored in clean covered containers to protect it from dirt and dust.
7. Keep lubricating gun nozzle clean and wipe excess dirt from grease fitting before applying lubricant.

Lubrication Chart

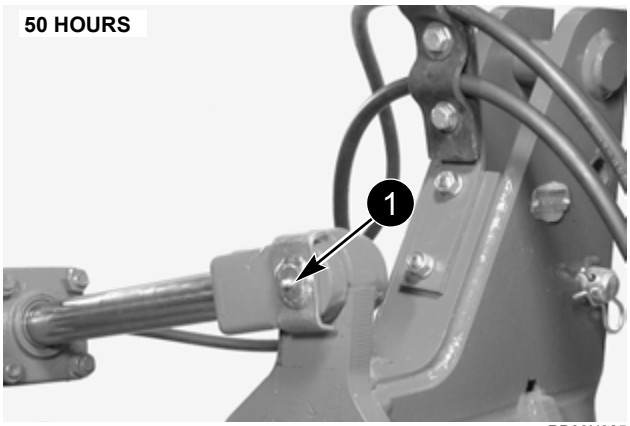
LOCATION	SERVICE POINTS	NO. OF POINTS	FREQUENCY IN HOURS				
			GREASE	OIL	CHECK	CLEAN	CHANGE
1	Rollover Frame Pivot - Left Side	2	50				
2	Hydraulic Rollover Cylinder	1	50				
3	Gauge Wheel Hub Bearing	1	200				
4	Furrow Wheel Bearing (if equipped) (Note 1)	X	10				
5	Colter Bearing (Note 2)	X	100				

Use NGLI No. 2 Multipurpose Lithium grease or equivalent .

Note 1: The number of points will vary with the number of furrows.

Note 2: The wheel bearing on each wheel must be disassembled, cleaned and lubricated once each year or every 500 hours of operation.

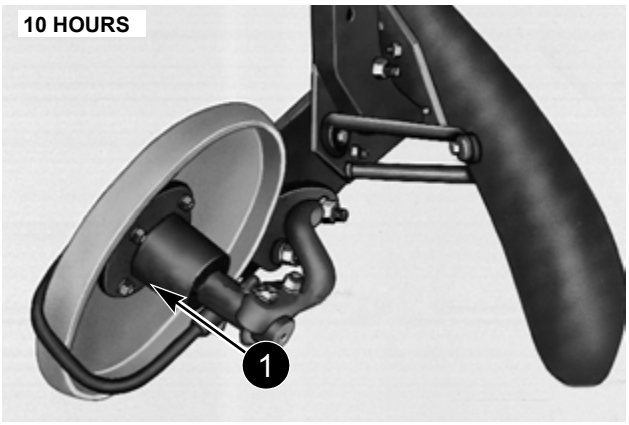
ROLLOVER CYLINDER



RD99N025

1. GREASE FITTING

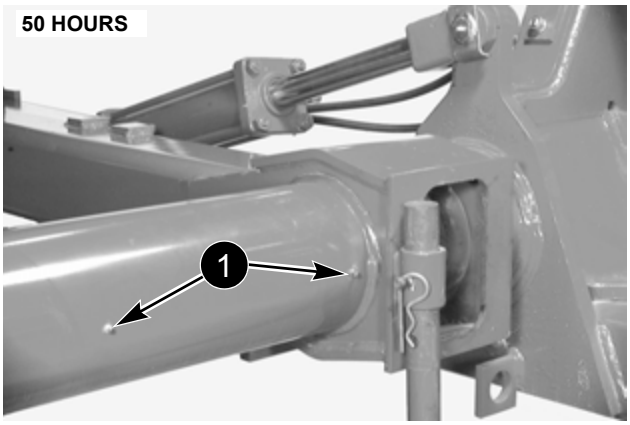
FURROW WHEEL (OPTIONAL)



MA12025

1. GREASE FITTING

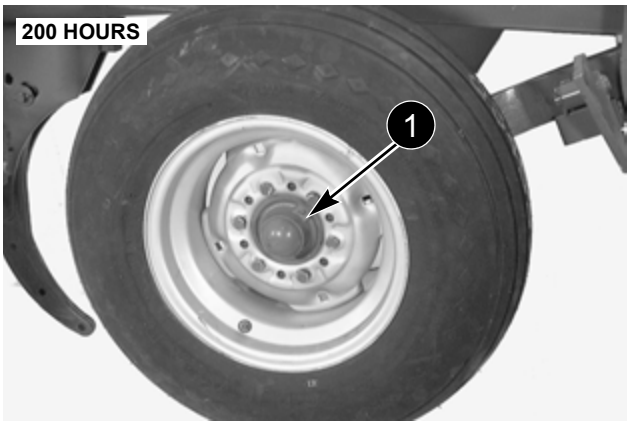
ROLLOVER PIVOT



RD99N026

1. GREASE FITTING

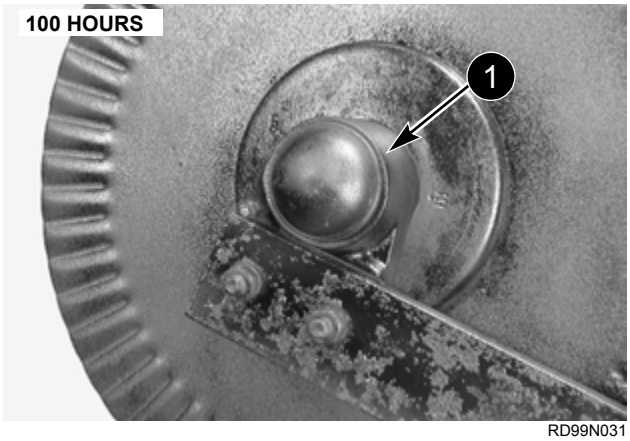
GAUGE WHEEL



RD99N009

1. HAND LUBRICATE

COULTER



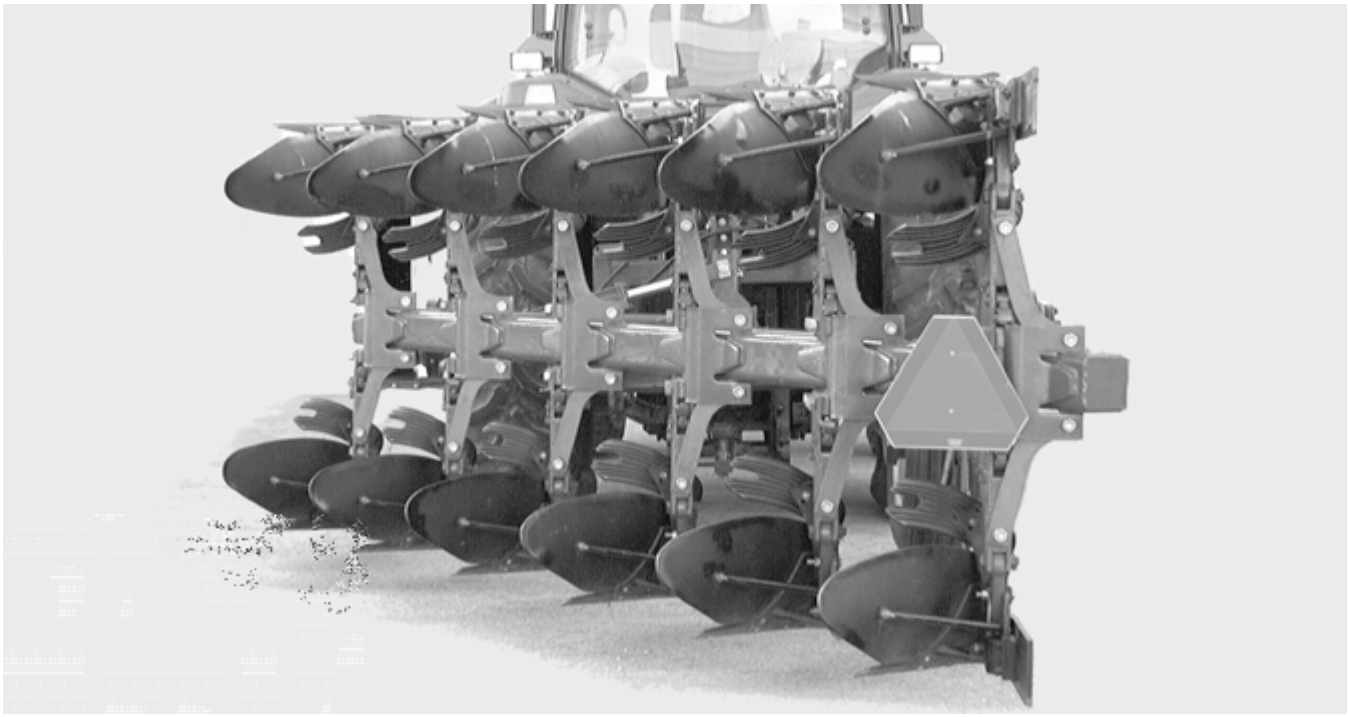
RD99N031

1. GREASE FITTING

GENERAL PREVENTIVE MAINTENANCE

Make sure your 166 Plow is ready to go to the field when you are. Perform service and maintenance procedures recommended in this section to prepare your plow for the field.

NOTE: *Procedures for plow adjustments are included in the Operating and Field Operations section of this manual.*



RD99N035

1. Carefully clean the plow completely.
2. Replace any worn, missing or broken parts.
3. Check all nuts and bolts. Refer to the Torque Data charts in this section and torque all nuts and bolts to specified torque values.
4. Refer to Lubrication section in this manual and lubricate the plow as indicated.
5. Check air pressure in all tires. Refer to Specifications section in this manual and inflate tires to correct tire pressure as indicated.
6. Check all wheel bolt lugs. Refer to Specification section in this manual and torque as indicated.
7. Check all hydraulic connections and fittings. Refer to Standard Torque Data for Hydraulic Tube and Fittings table in this manual and torque connections as indicated.
8. Make sure all cylinder rods are clean before operating plow.
9. Connect Plow to tractor and check operation of hydraulic lift system.

NOTE: *Make sure the area around the plow is clear of people and obstructions before operating the hydraulic system.*

Refer to Operation Instructions and Field Operations sections in this manual and make adjustments to plow as necessary.

FASTENER TORQUE DATA

SAE FASTENER TORQUE CHART

NOTE: Use these torques, unless special torques are specified. Values are for UNC and UNF thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, molydisulphide or other extreme pressure lubricant is used.

SAE Grade No.	2				5				8*			
Bolt head identification (See Note 1)												
Bolt Size	LB FT		Nm		LB FT		Nm		LB FT		Nm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	5	6	7	8	9	11	12	15	12	15	16	20
5/16	10	12	14	16	17	20.5	23	28	24	29	33	39
3/8	20	23	27	31	35	42	48	57	45	54	61	73
7/16	30	35	41	47	54	64	73	87	70	84	95	114
1/2	45	52	61	70	80	96	109	130	110	132	149	179
9/16	65	75	88	102	110	132	149	179	160	192	217	260
5/8	95	105	129	142	150	180	203	244	220	264	298	358
3/4	150	185	203	251	270	324	366	439	380	456	515	618
7/8	160	200	217	271	400	480	542	651	600	720	814	976
1	250	300	339	406	580	696	787	944	900	1080	1220	1464
1-1/8					800	880	1085	1193	1280	1440	1736	1953
1-1/4					1120	1240	1519	1681	1820	2000	2468	2712
1-3/8					1460	1680	1980	2278	2380	2720	3227	3688
1-1/2					1940	2200	2631	2983	3160	3560	4285	4827

NOTE 1: Bolt head identification marks as per grade. Manufacturing marks will vary. *Thick nuts must be used with Grade 8 bolts

METRIC FASTENER (ISO) TORQUE CHART

NOTE: Use these torques, unless special torques are specified. Values are for coarse thread fasteners, plated or unplated, as received from supplier. Fasteners can be dry or lubricated with normal engine oil. Values do not apply if graphite, molydisulphide or other extreme pressure lubricant is used.

ISO Class No.	8.8				10.9				12.9			
Bolt head identification (See Note 1)												
Bolt Size	Nm		LB FT		Nm		LB FT		Nm		LB FT	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
M4	3	4	2	3	4	5	3	4				
M5	6.5	8	5	6	9.5	11	7	8				
M6	10.5	12	8	9	15	17.5	11	13				
M8	26	31	19	23	37	43	27	32				
M10	52	61	38	45	73	87	54	64				
M12	90	107	66	79	125	150	93	112				
*M14	144	172	106	127	200	245	149	179				
M16	217	271	160	200	310	380	230	280				
M20	434	515	320	380	610	730	450	540				
M24	675	815	500	600	1050	1275	780	940				
M30	1250	1500	920	1100	2000	2400	1470	1770				
M36	2175	2600	1600	1950	3500	4200	2580	3090				

Because of the low ductility of these fasteners, the torque range is to be determined individually for each application. As a general rule, the torque ranges specified for grade 10.9 fasteners can be used satisfactorily on 12.9 fasteners.

*M14 is not a preferred size

NOTE: Bolt head identification marks as per grade. Manufacturing marks will vary.

STANDARD TORQUE DATA FOR HYDRAULIC TUBES AND FITTINGS

TUBE NUTS FOR 37° FLARED FITTINGS								O-RING BOSS PLUGS, ADJUSTABLE FITTING LOCK NUTS, SWIVEL JIC - 37° SEATS			
SIZE	TUBING O.D.		THREAD SIZE	LB FT		Nm		LB FT		Nm	
	Inches	mm		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
4	1/4	6.4	7/16-20	9	12	12	16	6	10	8	14
5	5/16	7.9	1/2-20	12	15	16	20	10	15	14	20
6	3/8	9.5	9/16-18	21	24	29	33	15	20	20	27
8	1/2	12.7	3/4-18	35	40	47	54	25	30	34	41
10	5/8	15.9	7/8-14	53	58	72	79	35	40	47	54
12	3/4	19.1	1-1/16-12	77	82	104	111	60	70	81	95
14	7/8	22.2	1-3/16-12	90	100	122	136	70	80	95	109
16	1	25.4	1-5/16-12	110	120	149	163	80	90	108	122
20	1-1/4	31.8	1-5/8-12	140	150	190	204	95	115	129	156
24	1-1/2	38.1	1-7/8-12	160	175	217	237	120	140	163	190
32	2	50.8	2-1/2-12	225	240	305	325	250	300	339	407

Above torque figures are recommended for plain, cadmium or zinc plated fittings, dry or wet installations and swivel nuts either swagged or brazed. These torques are not recommended for tubes 1/2 inch (12.7 mm) O.D. and larger with wall thickness of 0.035 inch (0.889 mm) or less. The torque is specified for 0.035 inch (0.889 mm) wall tubes on each application individually.

WARNING: *Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury.*
To Prevent Personal Injury:
Relieve all pressure, before disconnecting fluid lines or working on the hydraulic system.
Before applying pressure, make sure all connections are tight and components are in good condition.
Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose.
If injured by leaking fluid, see your doctor immediately. M149C

SPECIAL TORQUES

Wheel Lug Bolts ..... 80 to 100 lb ft (109 to 136 Nm)

Plow Bottom Bolts ..... 200 lb ft (271 Nm)

TIRE PRESSURE

For extended tire service life and improved performance during field operation and road transport, keep the tires inflated to the specified pressure. Over or under inflation will affect the service life of the tires.

Tire Inflation Procedure

WARNING: *A tire can explode during inflation and cause serious injury or death. Never increase air pressure beyond 35 PSI (2.4 bar) to seat the bead on the rim. Replace a tire if it has a defect. Replace a wheel rim which has cracks, wear or severe rust. Make sure that all the air is removed from a tire before removing the tire from the rim. Never use force on an inflated or partially inflated tire. Make sure the tire is correctly seated before inflating.* M170B

DO NOT inflate tire that has had a complete loss of air. If the tire has lost all air pressure, have a qualified tire mechanic service the tire.

To ADD air to a partially inflated tire, use the following procedure:

1. Use an air hose with a remote shut off valve and a self-locking air chuck.
2. Stand behind the tread of the tire and make sure all persons are away from the side of the tire before you start to add air.

Inflate the tire to the recommended air pressure. **DO NOT** inflate the tire more than the recommended pressure.

WHEEL LUG BOLTS

Check wheel lug bolts after the first 50 hours of operation and periodically there after.

Wheel lug bolt torque for 9.5L - 15 inch 8 ply tires is 80 to 100 lb ft (109 to 136 Nm).

RD99N010

PREPARING THE PLOW FOR STORAGE

Store the machine in a dry place, if the building has a dirt floor and the plow is being stored in the operating (lowered) position, place boards under the bottoms to prevent them from entering the dirt.

Prior to disconnecting the plow hydraulic hoses from the tractor, stop the tractor engine and cycle the tractor hydraulic levers to relieve hydraulic pressure.

Scrape or brush off any dirt on the machine and remove all weeds and trash before storing. Apply Case TILCOTE to the bottoms and colter blades. Grease or paint all exposed hydraulic cylinder rods to prevent rust.

Paint or thoroughly grease any surface that can rust

Inspect the machine for any worn, damaged or broken parts. Replace as necessary.

DO NOT let tires stand on oil or grease or come in contact with manure or fertilizer, as these items may destroy rubber tires.

Inspect all hydraulic hoses for leaks, abrasions or cracks. Check all fittings. Replace hoses or fittings as necessary.

REMOVING THE PLOW FROM STORAGE

Using a solvent, remove TILCOTE and grease from the plow bottoms and cylinder rod.

Assemble any parts removed for storage or reconditioning. Check for loose bolts and cotter pins

Refer to the Lubrication section of this manual and lubricate plow as required.

Refer to the Maintenance section of this manual and perform the General Preventive Maintenance checklist.

Refer to the Maintenance section of this manual and tighten/torque bolts and nuts as indicated.

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PROBLEMS AND THEIR PROBABLE CAUSES

Most plow problems are caused by improper adjustment. When you encounter problems in the field, make a systematic check of all plow adjustments. Checking and correcting adjustments will usually correct the problem. If it does not, follow the troubleshooting guidelines listed below.

If the problem can not be corrected, contact you dealer for further assistance.

SYMPTOM	PROBABLE CAUSE	SOLUTION
Bottoms do not penetrate ground	Ground too hard	Slow ground speed Check hitch leveling Adjust bottoms to maximum pitch
Excessive trip beam tripping	Trip load not properly set	Adjust trip load higher
Plow overcuts, tails to left/right	Plow not level	Level plow
	Plow bottom running too deep	Check depth of plow bottom
	Front plow bottom over cutting	Reduce tractor to furrow wall dimension
	Incorrect landsides	Check for correct landsides
	Landside pads worn	Replace landside pads
	Landside not properly set	Adjust landside by adding spacer
	Rear furrow wheel not properly adjusted vertically	Adjust rear furrow downward
	Rear furrow wheel not adjusted to furrow wall	Adjust rear furrow wheel closer to furrow wall
	Hitch not set correctly	Set hitch to correct setting Check to see tractor hitch has lateral freedom
Front plow bottom overcutting	Tractor operation	Keep tractor close to furrow wall
Front plow bottom undercutting	Tractor operation	Keep tractor further away from furrow wall
Plow Overcuts	Rear landside or wheel worn or not properly adjusted	Adjust landside or replace if worn, adjust rear wheel
Plow Undercuts	Rear landside or wheel not properly adjusted	Adjust landside by removing spacer or adjust wheel
Front of plow runs shallow	Upper link of tractor hitch to long	Shorten upper link
Rear of plow runs shallow	Upper link of tractor hitch to short	Lengthen upper link
Tractor front wheels pull toward furrow	Tractor hitch not set to move laterally	Adjust hitch for lateral movement
	Rear landside or wheel incorrectly set	Correct adjustment toward furrow wall on landside or wheel

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GENERAL INFORMATION

RD99N036

This section provides set-up instructions for the 166 Plow.

Lubricate all pins, bearings and moving parts during assembly and see that they work freely.

Wherever the terms “right” or “left” are used, it should be understood to mean from a position behind and facing the machine.

Tighten all bolts and nuts to the torques indicated in the standard torque tables, unless otherwise specified.

Tighten all hydraulic fittings to the torques indicated in the standard hydraulic fitting torque specification tables, unless otherwise.

Before the initial set up is started, it is recommended that the set up person become acquainted with the instructions found in the attachment packages for any attachment which will be installed on the plow

WARNING: *Wear safety glasses and be careful when cutting wires and steel bands as they are under tension and will spring back when cut.* M201A

When beginning to assemble the plow, it is recommended that the plow frame be placed over supports about 34 inches (86.4 cm) high, until the hitch and support wheels are installed.

Metric (SI) Measurements

A system of measurement know as International System of Units (SI) has been adopted for worldwide use. English Units followed by Metric Units in parentheses are used throughout the manual.

FASTENER TORQUE DATA

SAE FASTENER TORQUE CHART

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M5	6.5	8	5	6	9.5	11	7	8				
M6	10.5	12	8	9	15	17.5	11	13				
M8	26	31	19	23	37	43	27	32				
M10	52	61	38	45	73	87	54	64				
M12	90	107	66	79	125	150	93	112				
*M14	144	172	106	127	200	245	149	179				
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M24	675	815	500	600	1050	1275	780	940				
M30	1250	1500	920	1100	2000	2400	1470	1770				
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6	3/8	9.5	9/16-18	21	24	29	33	15	20	20	27
8	1/2	12.7	3/4-18	35	40	47	54	25	30	34	41
10	5/8	15.9	7/8-14	53	58	72	79	35	40	47	54
12	3/4	19.1	1-1/16-12	77	82	104	111	60	70	81	95
14	7/8	22.2	1-3/16-12	90	100	122	136	70	80	95	109
16	1	25.4	1-5/16-12	110	120	149	163	80	90	108	122
20	1-1/4	31.8	1-5/8-12	140	150	190	204	95	115	129	156
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Above torque figures are recommended for plain, cadmium or zinc plated fittings, dry or wet installations and swivel nuts either swagged or brazed. These torques are not recommended for tubes 1/2 inch (12.7 mm) O.D. and larger with wall thickness of 0.035 inch (0.889 mm) or less. The torque is specified for 0.035 inch (0.889 mm) wall tubes on each application individually.

WARNING: *Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury.*
To Prevent Personal Injury:
Relieve all pressure, before disconnecting fluid lines or working on the hydraulic system.
Before applying pressure, make sure all connections are tight and components are in good condition.
Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose.
If injured by leaking fluid, see your doctor immediately. M149C

SPECIAL TORQUE

Wheel Mounting Bolts..... 80 to 100 lb ft (109 to 136 Nm)

Plow Bottom Attaching Bolts..... 200 lb ft (272 Nm)

REQUIRED BUILDING AND EQUIPMENT

The 166 Plow is available in widths from 7.7 to 12 feet. Ten feet of space is required on each side of the machine during set up procedures.

The door of the building in which the plow is set up must be of a width which will let the plow pass through when in the transport position.

The door height must be at least 12 feet.

The building ceiling height must be at least 20 feet.

The building floor must be level and hard.

The instructions in this manual show the assembly of the machine inside a building. The methods and equipment that are shown permit you to unload the truck and assemble the machine using standard shop procedures. If you use other equipment than what is shown, make sure that your equipment has the capacity to do the job safely.

Put the packages in a clean work area. Check all equipment carefully for damage.

The photos in this manual show the use of lifting equipment and jack stands. The following is a list of the equipment and capacity ratings.

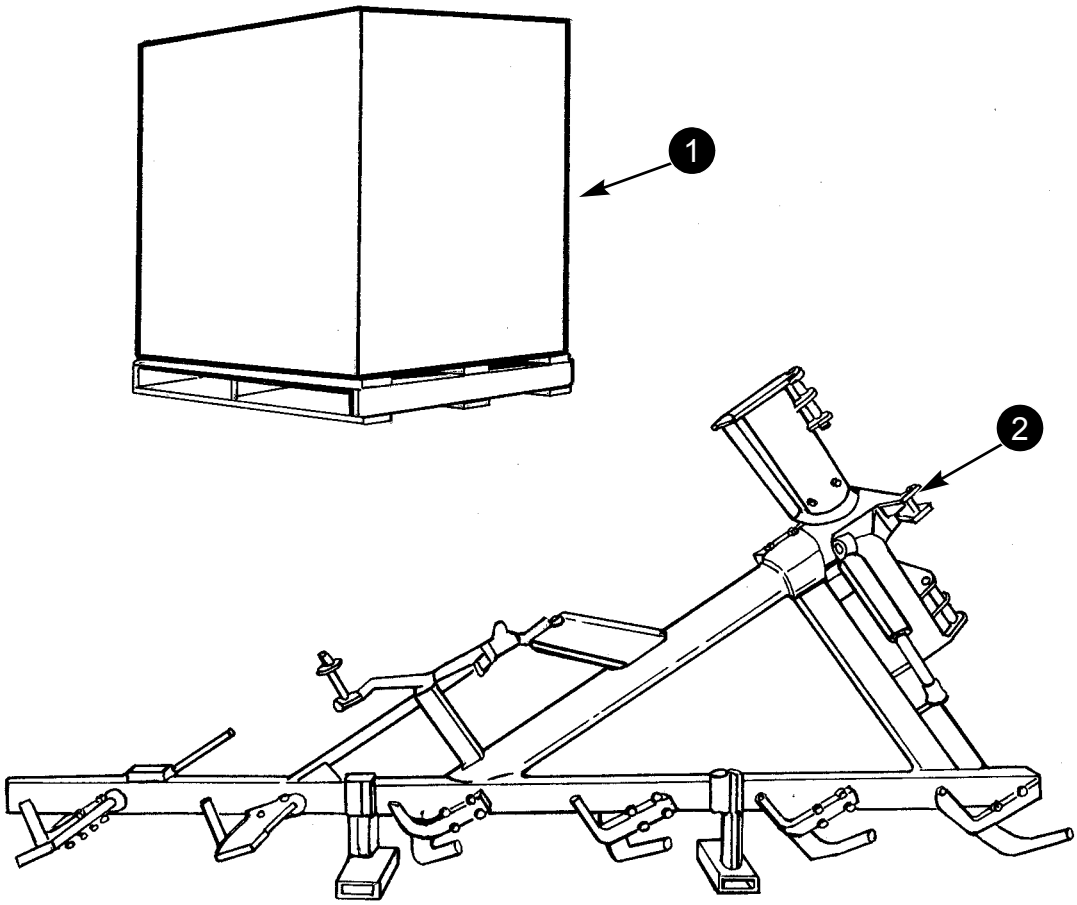
- Forklift ..... 6,000 pound
- Lifting Chain ..... 10,000 pound
- Jack Stands ..... 10,000 pound
- Chain Hoist ..... 8,000 pound
- Lifting Strap ..... 8,000 pound
- Hand Tools
- Lb Ft Torque Wrench

NOTE: *The contents of the specific packages will vary depending on the type and size of the plow.*

WARNING: *Hydraulic oil or diesel fuel leaking under pressure can penetrate the skin and cause infection or other injury.*
To Prevent Personal Injury:
Relieve all pressure, before disconnecting fluid lines or working in the hydraulic system.
Before applying pressure, make sure all connections are tight and components are in good condition.
Never use your hand to check for suspected leaks under pressure. Use a piece of cardboard or wood for this purpose.
If injured by leaking fluid, see your doctor immediately. M149B

WARNING: *Wear safety glasses and be careful when cutting wires and steel bands as they are under tension and will spring back when cut.*
M201A

SET-UP PREPARATION



RB99N022

1. COMPLETING PACKAGE
2. MAIN FRAME PACKAGE

Material List

Main Frame Package

The main frame package consists of the frame with the rear furrow, gauge wheel axle and hub, and the hitch jackstand.

Completing Package

The rest of the parts required to assemble the plow are shipped in a carton. The contents of the carton will depend on the type and size of the plow. Parts required to complete the machine include:

Hitch and Carrier Frame

Plow Bottoms

Beams

Trip Units (If Equipped)

Hydraulic Cylinders and Hoses

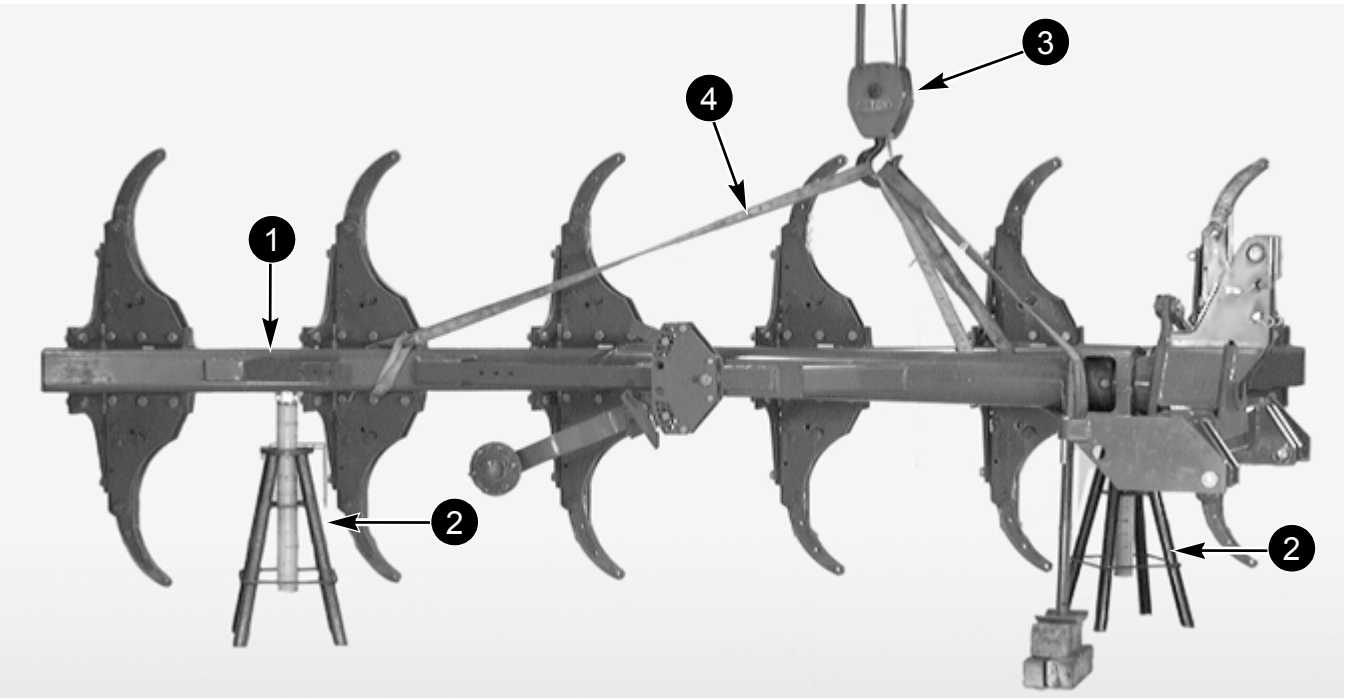
Wheel and Tire

Hardware, pins and clamps

NOTE: *The contents of the specific packages may vary depending on the type and size of the plow.*

After removal from shipping container, place the packages in a clean work area. Check material against packing list and report any missing or broken parts to your Art's-Way Manufacturing Co., Inc. dealer for replacement.

PLOW BEAM ASSEMBLY

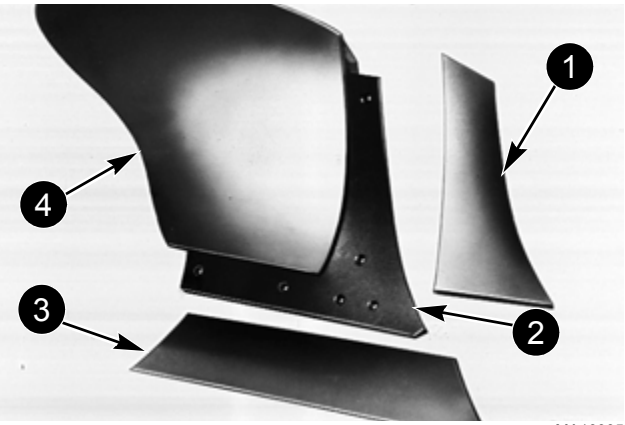


RD99N001

1. PLOW BEAM ASSEMBLY
2. SAFETY STAND
3. CHAIN HOIST
4. SAFETY STRAP

Use a chain hoist and lifting strap to place the plow beam assembly on certified safety stands.

Bottom Assembly and Installation

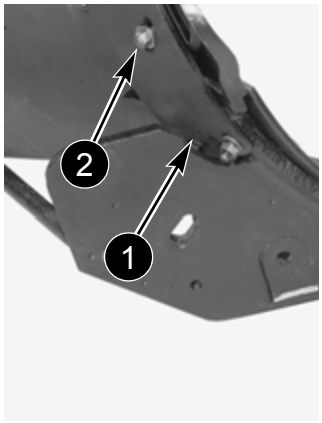


MA10005

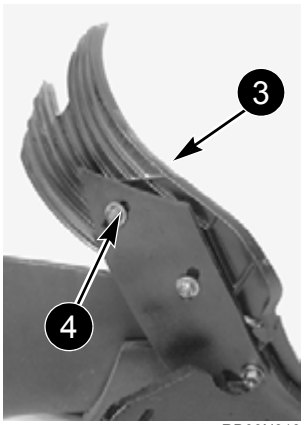
1. SHIN
2. STEEL FROG
3. THROW AWAY SHARE
4. MOLDBOARD

Assemble the moldboard, shin and share to the steel frog. Tighten all bolts to the specified torque in the torque chart.

TRASH PLATE (OPTIONAL)



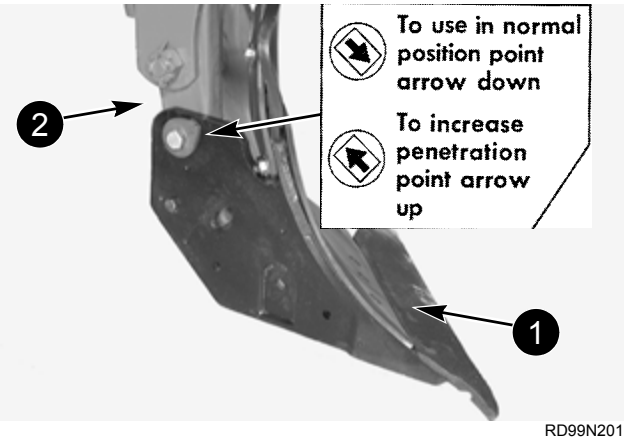
RD99N012



RD99N013

1. TRASH PLATE BRACKET
2. BRACKET BOLTS
3. TRASH PLATE
4. TRASH PLATE BOLTS

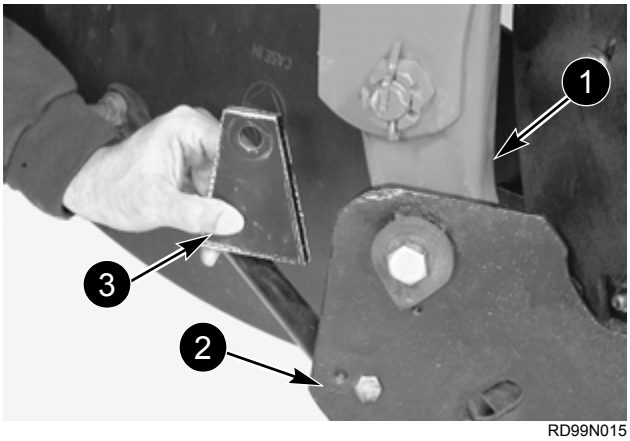
Install the trash plate bracket on the steel frog and tighten the bolts a small amount. Install the trash plate and the trash plate bolts. Tighten all bolts to the torque specified in the torque chart.



RD99N201

1. BOTTOM ASSEMBLY
2. PLOW BEAM

Install the plow bottom assembly on the plow beams. Point the arrow to the normal position.

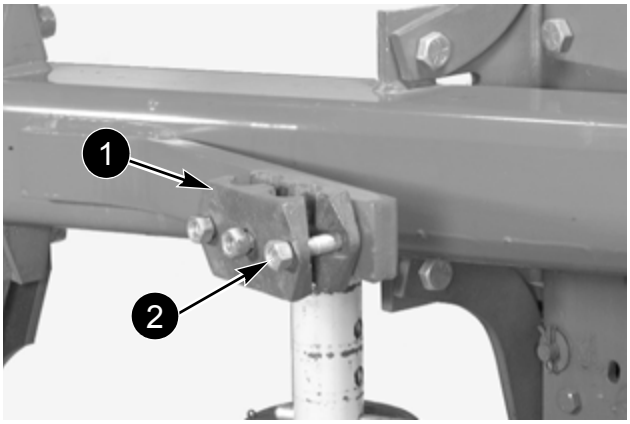


RD99N015

1. SHIN
2. STEEL FROG
3. THROW AWAY SHARE
4. MOLDBOARD

Install the bottom lock on the rear bottom and tighten the bolts to the specified torque in the torque chart.

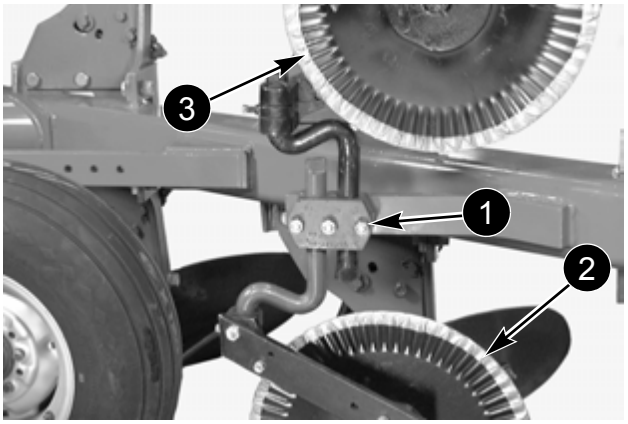
Colter Installation



RD99N006

1. COULTER BRACKET
2. BARCKET BOLT

Install the colter bracket and bolts.

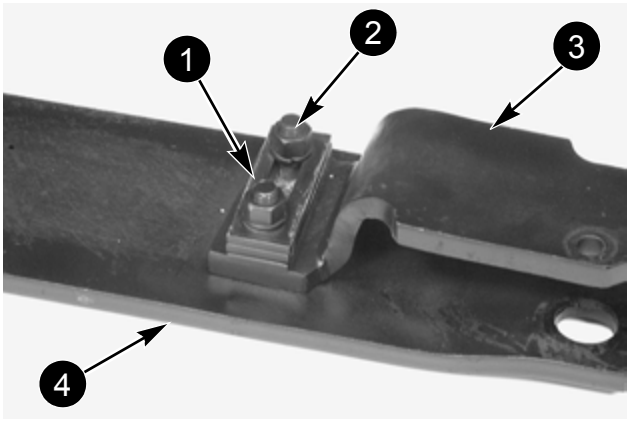


RD99N210

1. BRACKET BOLTS
2. COULTER
3. COULTER

Install the colters and tighten the bolts.

ADJUSTABLE LANDSIDE



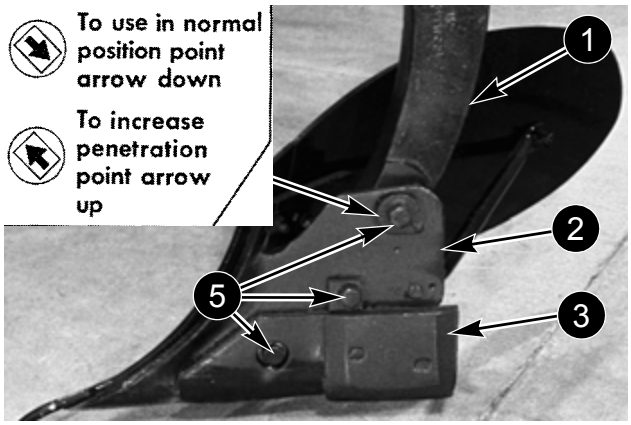
RD99NO16

1. ADJUSTMENT SPACERS
2. BOLTS
3. BRACKET
4. REAR LANDSIDE

Assemble the rear landside.

RD99N017

Install the rear landside (long in length) on the plow.



A12368

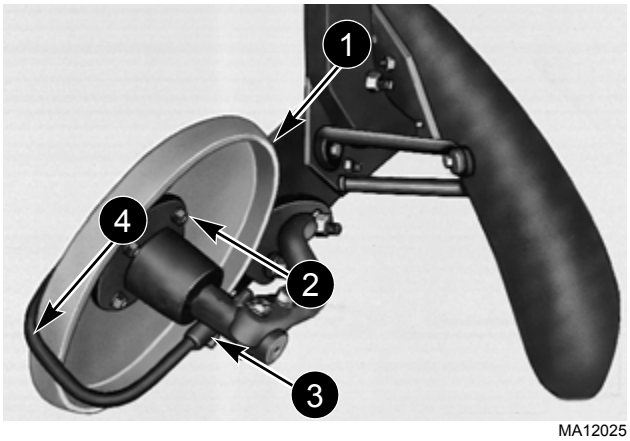
1. BEAM
2. FROG
3. LANDSIDE
4. WEAR PADS
5. BOLTS

Install the remaining landsides and tighten the bolts to the specified torque in the torque chart.

The landside wear bar is recommended for rocky ground. Make sure that the landside block fits tight on the landside.

The adjustable pitch feature is provided on all plow bottoms to help penetration with worn shares thereby increasing the life of the share. This feature also provides more suction for additional penetration when required. Caution must be taken to see that this feature is used correctly. When new shares are used, the plow bottom must be must be set in the normal position.

Furrow Wheel (Optional)



MA12025

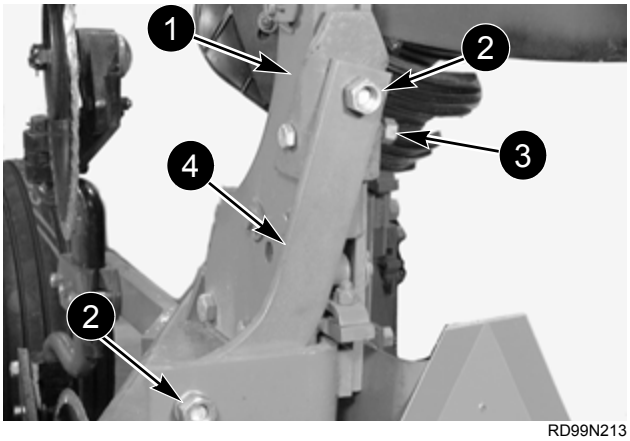
1. FURROW WHEEL
2. PLOW BOLTS
3. SET SCREW
4. SCRAPER

Install the rear furrow wheels and tighten the bolts to the specified torque in the torque chart.

Adjust the scrapers so they touch the furrow wheels.

NOTE: *On models equipped with a rear furrow wheel there is not a rear landside.*

(Beam Stop, Trip Beam Only)



RD99N213

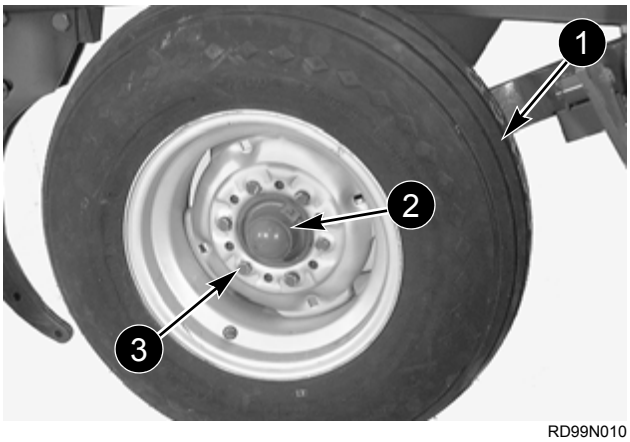
1. BEAM STOP
2. BOLT
3. BOLT
4. BRACE

Install the beam stop for rear trip beam. Tighten the bolts to the specified torque in the torque chart.

IMPORTANT: *On trip beam plows equipped with rear furrow wheels you must install a beam stop on each rear beam.*

GAUGE WHEEL

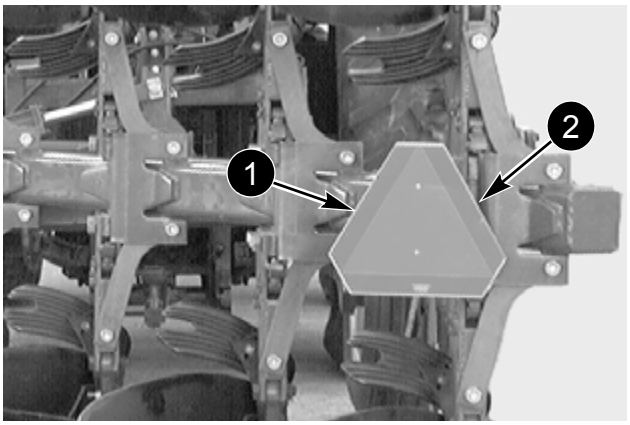
Install the gauge wheel to the hub and tighten the bolts.



RD99N010

1. GAUGE WHEEL
2. HUB
3. WHEEL BOLTS

SLOW MOVING VEHICLE (SMV) EMBLEM



RD99N032

1. BRACKET
2. SMV EMBLEM

Assemble the bracket to the plow frame and install the Slow Moving Vehicle (SMV) Emblem to the bracket and tighten the bolts.

ART'S-WAY MANUFACTURING CO., INC. TECHNICAL MANUALS

Manuals are available from your local dealer or Art's-Way Manufacturing Co., Inc. for the operation, service and repair of your machine. For prompt convenient service, contact your local dealer for assistance in obtaining the manuals for your machine.

Your local dealer can expedite your order for operator manuals, illustrated parts catalogs, service manuals, and maintenance records.

Always give the Machine Name, Model and Serial Number so your local dealer can provide the correct manuals for your machine.

NOTE: Art's-Way Manufacturing Co., Inc. reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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