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 A JOB 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 7501 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 7501 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 7501 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 7501 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 7501 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 7501 Moldboard Plow only. Any mention of other machinery in this manual other than the 7501 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 7501 Moldboard Plow.
PARTS & SERVICE
As the new purchaser of your 7501 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 7501 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 alteration 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 severe personal injury or death if proper precautions are not taken.

WARNING: Specific hazard or unsafe practice could result in severe personal injury 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

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT

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

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 tools 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 there 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.
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. New decals are available from your dealer.

On-Land

Decal Part Number - I1986119C1

WARNING


Decal Part Number - I2753543R2

WARNING

1. Stand clear of automatic plow trip at all times.  
2. When adjusting or servicing automatic toggle trip units, be sure to keep hands and fingers away from pivot linkages and joints.  
3. Before working under or around the plow, set safety stands and block up the plow.  
4. Do not ride on the plow.  
5. See operator's manual for other safety information.

Decal Part Number - I122878C1
In-The-Furrow

Decal Part Number - I1986119C1

Decal Part Number - I2753543R2

Decal Part Number - I122878C1

WARNING

WARNING
1. Stand clear of automatic plow trip at all times.
2. When adjusting or servicing automatic toggle trip units, be sure to keep hands and fingers away from pivot linkages and joints.
3. Before working under or around the plow, set safety stands and block up the plow.
4. Do not ride on the plow.
5. See operator's manual for other safety information.

Decal Part Number - I122878C1
Before moving spreader, see Operator's manual for instructions on drive link assembly and how to prevent damage to shifting linkage.

Decal Part Number - I1986120C1
**REFLECTORS**

**IMPORTANT:** Replace reflectors that are damaged or missing. When parts are replaced that have reflectors, make sure the reflectors are installed again. Red and amber reflectors are retroreflective. New reflectors are available from your dealer.

**On-Land**

Red Reflector

Orange Fluorescent

Amber Reflector

**NOTE:** Trim Orange reflector at point A.
In-The-Furrow

Red Reflector

Orange Fluorescent

Amber Reflector
SLOW MOVING VEHICLE (SMV) EMBLEM

A slow moving vehicle emblem must be placed on your plow prior to road transportation.

The emblem mounting bracket is installed on the rear of the center mounting bracket of the plow.

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.
HITCH

Quick Attach
Set the tractor 3-Point hitch upper link as short as possible.

Hitch Coupler
Set the tractor 3-Point hitch upper link as short as possible.

JACK STAND

Before lowering the plow for separation from the tractor, remove the jack stand from the storage position. Place the jack stand in the operating position and secure with pin.

In-The-Furrow

On - Land

Storage Position

Storage Position

Operating Position

Operating Position
MACHINE SPECIFICATION

Tractor Requirements

Hitch ........................................................................................................................................... 3-point Hitch Cat II or Cat III; 3-point Quick Hitch
Remote Valves ........................................................................................................................................ On-Land; Three remote valves maximum
In-The-Furrow; Two remote valves maximum
Horsepower (Drawbar) .......................................................................................................................... 13 DBHP per foot cut @ 5 mph

Frame and Hitch

Main Frame ................................................................................................................................... 6 x 8 Inch (152 mm x 203 mm), 0.375 Inch (9.5 mm) thick Rectangular Tube
In-The-Furrow Hitch .................................................................................................................................. Mechanical, Hydraulic and Auto Draft
(Auto Draft not recommended for 4 Furrow Plows without extensions)
On-Land Hitch ........................................................................................................................................... Mechanical and Hydraulic

Hydraulics

In-The-Furrow...................................................................................................................................... One 3 inch x 8 inch, double acting, with a breather, used as a single acting for Rear Lift
Two 3-1/2 x 8 inch double acting, special rephasing used for Auto-Draft
or One 3 x 8 inch double acting, used for Hydraulic Width of Cut with rigid hitch
On-Land.................................................................................................................................................. One 3 x 8 Inch, double acting for Front Lift cylinder
One 3 x 8 Inch double acting, used as single acting, for Rear Lift cylinder
One 3 x 8 Inch double acting for Hydraulic Width of Cut cylinder

Wheels and Tires

In-The-Furrow
Gauge Wheel ........................................................................................................................................ 9.5L-15, 8 PR
Rear Furrow Wheel .................................................................................................................................. 11L-15 FI F LR

On-Land
Gauge Wheel ........................................................................................................................................ 9.5L-15, 8 PR
Front Furrow Wheel ............................................................................................................................... 9.5L-15, 12 PR
Rear Furrow Wheel .................................................................................................................................. 11L-15, FI F LR

Plow Tire Inflation

Rear Furrow Wheel Tires .......................................................................................................................... 60 psi (413 kPa)
Gauge Wheel Tires .................................................................................................................................. 44 psi (303 kPa)
Front Furrow Wheel Tire .......................................................................................................................... 60 psi (413 kPa)

Weight

In-The-Furrow Hitch, Toggle Trip
4 Furrow ................................................................................................................................................. 3 320 lb (1 506 Kg)
5 Furrow ................................................................................................................................................. 3 785 lb (1 717 Kg)
6 Furrow (non-expandable) ..................................................................................................................... 4 250 lb (1 928 Kg)

In-The-Furrow Hitch, Automatic Reset
4 Furrow ................................................................................................................................................. 3 580 lb (1 624 Kg)
5 Furrow ................................................................................................................................................. 4 110 lb (1 864 Kg)
6 Furrow (non-expandable) ..................................................................................................................... 4 640 lb (2 105 Kg)

On-Land Toggle Hitch, Trip
5 Furrow (expandable to 6 Furrow) ........................................................................................................ 4 650 lb (2 109 Kg)
6 Furrow (expandable to 7 Furrow) ........................................................................................................ 5 025 lb (2 279 Kg)
7/6 Furrow (non-expandable) ................................................................................................................ 5 500 lb (2 495 Kg)
### On-Land Automatic Reset Hitch

<table>
<thead>
<tr>
<th>Furrow Configuration</th>
<th>Load Capacity</th>
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<tr>
<td>5 Furrow (expandable to 6 Furrow)</td>
<td>4,900 lb (2,223 Kg)</td>
</tr>
<tr>
<td>6 Furrow (expandable to 7 Furrow)</td>
<td>5,450 lb (2,472 Kg)</td>
</tr>
<tr>
<td>7/6 Furrow (non-expandable)</td>
<td>5,950 lb (2,699 Kg)</td>
</tr>
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### Transport Size

#### In-The-Furrow

<table>
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<th>Width/Length</th>
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<tr>
<td>4 Furrow</td>
<td>7.7 ft (2.35 m)/19.3 ft (5.88 m)</td>
</tr>
<tr>
<td>5 Furrow</td>
<td>8.9 ft (2.7 m)/22.3 ft (6.8 m)</td>
</tr>
<tr>
<td>6 Furrow</td>
<td>10.1 ft (3.1 m)/25.3 ft (7.7 m)</td>
</tr>
</tbody>
</table>

#### On-Land

<table>
<thead>
<tr>
<th>Width/Length</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Furrow</td>
<td>9.2 ft (2.8 m)/28 ft (8.53 m)</td>
</tr>
<tr>
<td>5 Furrow</td>
<td>10.4 ft (3.2 m)/31 ft (9.5 m)</td>
</tr>
<tr>
<td>6 Furrow</td>
<td>11.6 ft (3.5 m)/34 ft (10.4 m)</td>
</tr>
</tbody>
</table>

### Plow Type

Semi-Mounted, steerable, variable width of cut..................14 inch through 22 inch cut

### Plow Size

#### In-The-Furrow

4, 5 and 6 furrow; extendable on the four and five furrow
Non-reducible unless equipped with an extension frame

#### On-Land

5, 6 and 7 furrow, expandable on the five and six furrow
seven reducible to six when equipped with extension

### Beam Type

Both Plows............................................................................Automatic or Toggle Trip

### Plow Bottoms

4, 5, 6, and 7 Furrow .................................................................Heavy-Duty Super Chief with High Speed Moldboard and Upset Share with Landside (General Purpose)

4, 5, 6, and 7 Furrow .................................................................High-Speed European Style Moldboard and Replacement point (not recommended for plowing depths over 10 Inches (254 mm))

4, 5, 6, and 7 Furrow .................................................................Heavy-Duty Deep Tillage Super Chief with High Speed Moldboard and Upset Share with Landside

### Coulters

4, 5, 6 and 7 Furrow ..................................................17 Inch (432 mm) Rippled Edge RH, Cast Arm, Cushion Type

4, 5, 6 and 7 Furrow ..................................................20 and 22 Inch (508 and 559 mm) Rippled Blade Cushion Type, Cast Arm

4, 5, 6 and 7 Furrow ..................................................20 Inch (508 mm) RH Concave, Crimp Center Disk Blade, Cushion Type with Cast Arm

### Plow Trash Clearance

<table>
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<th>Cut Width</th>
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<tr>
<td>14 Inch</td>
<td>37 Inch (940 mm) fore and aft</td>
</tr>
<tr>
<td>18 Inch</td>
<td>35 Inch (889 mm) fore and aft</td>
</tr>
<tr>
<td>22 Inch</td>
<td>32 Inch (813 mm) fore and aft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vertical Under Main Frame</th>
<th>Description</th>
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<tbody>
<tr>
<td></td>
<td>34 Inch (864 mm)</td>
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</table>
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. READ AND UNDERSTAND the operating instructions in this manual.
   Refer to Detail Index for Removal From Storage procedure.

On-Land

In-The-Furrow
HYDRAULIC LIFT SYSTEM

The hydraulic lift system is used to adjust the plow depth, adjust the width of cut and raise the plow for transport to and from work fields.

For In-The-Furrow plows, two rephasing cylinders are used for Auto Draft.

Always raise the plow when making short turns in the field or when transporting to and from the fields.

On-Land

In-The-Furrow
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.

Add tractor weights as necessary and 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.

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 with Sway Limiter
Position the lower links in the Rigid Position to give minimum side to side movement in both the working and transport position of the hitch.

NOTE: The headed pins must be installed through the outside of the sway blocks and the quick attaching cotter pins must be installed inside the drawbar support.

Use the lower link mechanical float lock pins to prevent the lower links from moving up or down. Refer to the Tractor Operators Manual for more information on setting the lower links.

IMPORTANT: Be sure to position a swinging drawbar in its storage position (all the way to the left) or remove the drawbar to prevent damage to the hydraulic hoses and hitch of the plow. Refer to the Tractor Operators Manual for more information.

Quick Attaching Coupler
Set the 3-point hitch upper link as short as possible.
Hydraulic Connections
Male couplers, adapters and hose grips for connecting the plow to the tractor remote hydraulic system are included with the harrow.

Connect the hydraulic hoses for lift circuits to the tractor remote number 1.

**WARNING:** When remote cylinders are connected to the hydraulic system, move the auxiliary valve lever to the RAISE position and hold it to allow the system to purge air from the master/slave cylinder and hoses. With air in the system raised equipment can drop accidentally and cause a personal injury or machine damage.

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

**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 performing work 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.
BEFORE OPERATING THE PLOW

Before operating the harrow, perform the following:

1. Check all hardware for wear. Replace as necessary.
2. Check to see all hardware is tight. Refer to Maintenance section in this manual for correct torque requirements.
3. Check all tires for correct air pressure and wear.
4. Check all safety equipment.
5. Check hydraulic hoses for wear and leaking. Replace as necessary.
6. Check all hydraulic fittings for proper connection.

**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 performing work 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.

**Tractor Rear Wheel Settings (In-The-Furrow)**
Measure from the center of the power take off shaft to the inside edge of the right rear tire and set the tire at 28 or 30 inches for 4 furrow plow, or set to 30 or 32 inches for 5 or 6 furrow plows. Set the left rear wheel for the same distance.

**NOTE:** For greater tractor stability or hillside plowing, the left wheel can be set slightly wider.

**Tire Inflation**
Check tires for proper inflation. Refer to Specifications section in this manual and inflate tires to indicated pressure before operating the plow.
Parking Stand
After connecting the plow to the tractor, remove the parking stand from the plow frame and place in the storage position.

In-The-Furrow

On-Land

Storage Position

Operating Position

Storage Position

Operating Position
TRANSPORTING

Transport the plow at the narrowest width setting. For both On-Land and In-The-Furrow plows, set the plow width to 14 inches.

The Slow Moving Vehicle symbol (SMV) must be installed as near to the rear and center of the plow as possible. It must have an unobstructed view from the rear and be at least two to six feet above the ground when measured from the lower edge of the emblem.

The SMV symbol must be displayed at all times when transporting the plow on public highways.

Install the cylinder stop to extend the cylinder rod and keep the plow bottoms raised so that the bottoms will not come in contact with the road surface. Always keep the front and rear end of the plows main frame at equal heights above the ground. This will assure correct transport stability.

**NOTE:** Always install the cylinder safety channel on both lift cylinders before transporting the plow.

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**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.

**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.

**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.
TRACTOR PREPARATION

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

Position Control - Modified (In-The-Furrow) (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 (In-The-Furrow)
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.

Tractor Hitch Control (On-Land)
The draft control should be locked completely out, refer to the Tractor Operators Manual for this procedure. Set the hitch to a height that levels the plow during operation. This will change with a change in the plow depth setting as controlled by the front furrow wheel and gauge wheel. The lower links on the 3-point hitch should be set in a laterally rigid position, the lift links in vertical rigid setting and the upper link should be stored. The tractor hitch, front furrow cylinder and the tail wheel cylinder will need to be activated in that order when making end row turns or going in to transport. The same order should be used when entering the ground, if a relatively square head land is desired.

WARNING: Never park the plow in the raised position. Moving the control lever will lower the plow even though the engine is not running. If it is necessary to service the plow in the raised position, use jackstands to safety support the plow in position, also use the safety stop provided on the lift cylinder.

PLOW PREPARATION

Safety Channel Storage
Remove the cylinder safety channels from the transport position and place them in the storage location before operating the plow.
Plow Bottom

Plows are shipped from the factory with a black protective coating on the plow bottoms. Remove the black protective coating from the plow bottom before attempting to use the plow for the first time. To remove the black protective coating, use a noncombustible cleaning solvent such as paint remover.

If the plow is being removed from storage for field work, remove the coating from the plow bottom.

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

Klik Pin Shield

Use the klik pin shield ahead of the klik pins to prevent klik pins from being dislodged from the plow hitch pins. Contact your dealer for klik pin shields.
Gauge Wheel

To set the gauge wheel for initial plowing depth, use the adjustment tool provided and move the gauge wheel assembly up or down as required. After setting the gauge wheel assembly, secure gauge wheel assembly with a retaining pin and quick pin.

Full adjustment, approximately 1-1/4 inch, can be made by moving the gauge wheel assembly either up or down one hole on the bracket.

Half adjustments, approximately 5/8 inch, can be made by positioning the retaining pin and quick pin in the hole below the bracket.

**IMPORTANT:** Failure to install the retaining pin and quick pin properly will result in damage to the retaining pin or plow frame.
Rear Furrow Wheel - Axle Adjustment

The rear furrow wheel adjustment for plowing in hard or difficult soils can be used to take part of the thrust of the plow bottom landside against the furrow wall by locating the bolt (1) in one of several positions on the axle shaft (2). Adjusting the wheel closer to the furrow wall can help in taking side thrust and help in reducing plow bottom landside wear and keep plow from over cutting. Make sure the tire pressure is 40 psi (276 kPa) before making adjustments.

IMPORTANT: Use caution when moving the tire closer to the furrow, the tire may contact the rear linkage on sharp turns.

WARNING: Always support the plow, using jack stands (or their equivalent) and install the safety collar on the rear lift cylinder when the plow is in the raised position.

Rear Furrow Wheel - Lead Adjustment

To adjust the rear furrow wheel lead perform the following:

1. Loosen the threaded eyebolt jam nut (1) on the steering tube (2).
2. Remove the nut and bolt (3) retaining the steering tube to the steering arm (4).
3. Turn the eyebolt (5) in or out until the rear furrow wheel angles slightly towards the plowed ground during field operation.

NOTE: The distance from the center of the threaded eyebolt to the front face of the nut welded to the steering tube is factory preset.

IMPORTANT: After making a change in length of the eyebolt, use caution when making sharp turns as the rear stop may engage before the front stop. Damage to linkage components may occur.
Rear Steering Arm Adjustment
For normal steering, connect the rear steering linkage (1) to the outside hole (2) of the bracket (3). For faster steering, the linkage may be connected to the inner hole (4) of the bracket. If linkage is connected to inner hole of bracket, when turning, the rear steering stop may engage before the front steering stop. Refer to Detail Index for Steering Stop Checks.

Front Steering Pivot Plate (On-Land)
Install the plow steering tube (1) to the top hole (2) only, DO NOT USE BOTTOM HOLE. The top hole is for slower steering. Steering speed increases as the steering tube is moved further down. Initial set up for 5, 6 and 7 furrow plow is indicated in illustration.

IMPORTANT: Use caution when making turns of 16 feet or less turning radius, especially using articulated tractors. Damage to tractor hitch or plow hitch components may occur. If plow crossbar contacts steering stops on the pull beam, decrease the angle of turn and pull out of bind. Make the turn using a larger turning radius.

Steering Stop Bar Adjustment (In-The-Furrow)
The steering stop bar (1) is factory preset with the part number stamp facing upward. To restrict the steering, remove one bolt (2) and nut (3) securing steering stop bar to frame (4) and reverse the steering stop bar so the part number faces downward. Secure the steering stop bar (1) to frame (4) using bolt (2) and nut (3) previously removed. Refer to torque tables in the Maintenance section of this manual and torque nut to standard torque.
Rear Furrow Wheel Vertical Adjustment

The rear furrow wheel may be used to carry some of the rear end weight of the plow. Cylinder collars are used as a depth control for the rear furrow wheel when plowing across uneven ground or to help take side thrust with furrow wheels. During field operation the lift cylinder (1) must be fully collapsed against the cylinder collars (2). To install collars the lift cylinder must be fully extended. Normally collars are not installed on rear wheels to allow the plow to float over obstacles without raising the rear of the plow. This is very important when using auto trip plows. The gauge wheel can be set to maintain a desired depth. Cylinder collars are available from your Art's-Way Manufacturing Co., Inc. dealer.

Automatic Reset Trip Beam

The automatic reset trip beam (1) is designed to trip by moving directly back and up when the plow bottom encounters an obstruction in the ground. The plow bottom then reenters the ground at the correct plowing angle without a reduction in forward speed. A vertical relief feature is incorporated which allows the plow bottom share point to glide up and over sloping obstructions.

The ability of the plow bottoms to maintain the correct plowing depth is dependent upon the suction of the plow bottom. In fields where penetration is a problem, the suction on the plow bottom must be increased by replacing worn shares or by using shares with better penetration qualities such as deep suck or upset shares. Under some soil conditions it is advantageous to use the adjustable pitch feature (eccentric washer) on the plow bottom.

NOTE: After every ten hours of operation, torque the two spring bolts (2) to 90 lb ft (122.4 Nm).
Load Adjusting Block

The load adjusting block can be removed when excessive tripping is encountered due to adverse soil conditions.

**IMPORTANT:** *Removal of the load adjusting blocks subjects the tripping mechanism to its maximum load capacity thus minimizing implement protection.*

The adjusting block must be installed when adverse soil conditions no longer exist.

For areas having extreme surface rock, install the block and engage the thick side of the block to reduce the tripping load, which will provide maximum protection for the plow. The block can be reversed by engaging the thin side of the block when excessive tripping is encountered.

A thicker reversible load adjusting block is available from your Art's-Way Manufacturing Co., Inc. dealer.

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**WARNING:** *Automatic Recovery Shanks operate very rapidly and are potentially dangerous to be near while in operation.*

**WARNING:** *The spring tubes arc and whip at a fast rate forward, making it dangerous to ride anywhere on the machine.*

**WARNING:** *Should dirt or trash cause a unit to “hang up”, stay clear of the area near the unit. To remove the obstruction use a long pole or hook.*

**WARNING:** *When adjusting or servicing automatic or toggle trip units, be sure to keep hands and fingers away from pivot linkages and joints.*
Toggle Trip Beam
The trip unit is reset by raising the plow using the hydraulic lift cylinder. This allows the plow bottom to gradually drop into the plowing position by means of its own weight.

Excessive Tripping
If excessive tripping is occurring, perform the following:

1. Loosen the bolt lock nut (1).
2. Turn the bolt (2) counterclockwise 1/4 turn.
3. Tighten the bolt lock nut (1).

IMPORTANT: Turning the bolt 1/4 turn increases the trip load approximately 500 lb. DO NOT turn the trip load adjustment bolt more than 1/4 turn.

NOTE: The load trip adjustment bolt is factory preset and staked to the casting. Removing the bolt maximizes the trip load thus minimizing the implement protection. After adjustment, tighten the bolt to a torque of 90 lb ft (122.4 Nm) and stake the bolt to the casting.

WARNING: Keep hands and fingers away from toggle trip linkage when making adjustments.

Plow Bottom Service
The toggle trip beam can be retained in the raised position, allowing for a safer and convenient way to change shares, etc.

To retain the trip beam in the raised position:

1. Raise the plow to the fully raised position.
2. Install the rear cylinder transport safety channel on the cylinder rod.
3. Release the toggle trip and lift the plow bottom all the way up.
4. Install a 1/2 inch minimum diameter pin or bolt as shown.

WARNING: Make sure the bolt or pin that is used is long enough to properly engage the trip unit bracket. Also make sure that the rear cylinder transport safety channel is in position on the cylinder rod.
Spreader Adjustment (In-The-Furrow)

Hitch clearance is preset at the factor for normal operating conditions. If more hitch clearance is required, remove four bolts and move the spreader from position “A” (1) to position “B” (2).

**NOTE:** Moving the hitch to a higher point may result in failure of the rear of the plow to maintain constant depth under severe operating conditions.

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Vertical Hitch Adjustment

For normal field operating conditions, the hitch pin must be installed in the middle hole. Ensure that the hitch pins are tightened to a torque of 700 lb ft (952 Nm).

If the front of the plow runs shallow, it may be necessary to remove the hitch pin and install it in the upper hole.

If the rear of the plow runs shallow, it may be necessary to remove the hitch pin and install it in the lower hole.

**NOTE:** When making changes to plow depth, it is necessary to consider the rear gauge wheel setting along with hitch depth setting. The rear gauge wheel must carry appreciable weight. However, if the rear gauge wheel makes a deep track in the ground and the plowing depth is satisfactory, then the hitch setting must be raised slightly.
Horizontal Hitch Adjustment - Hydraulic (In-The-Furrow)

The recommended horizontal hitch setting for the 4 and 5 furrow plows is 4.6 inches (116.8 mm). The recommended horizontal hitch setting for 6 furrow plows is 6.8 inches (172.7 mm). The dimension is measured from the center of the bolt in the shift adjustment bar (1) to the center of the cylinder rod end headed pin (2).

**NOTE:** The settings shown are for average conditions. A change can be required because of variable factors such as soil conditions, plowing depth or tractor wheel tread. The shift adjusting bar is reversible so that variable settings can be obtained. Make sure that the front plow bottom cuts the correct width.

Refer to Troubleshooting section in this manual to correct Overcutting and Undercutting of Front Plow Bottom.

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Horizontal Hitch Adjustment - Manual (In-The-Furrow)

It may be necessary to readjust the hitch for different soil conditions. To adjust the hitch:

1. Lower the plow to release hitch pins from tractor hitch.

2. Loosen, but do not remove, the crossbar nuts (1) on the U-bolt (2).

3. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Setting” chart and move the hitch crossbar in either direction until proper dimension for “C” is achieved.

4. Tighten crossbar nuts and torque to 290 lb ft (393 Nm).

**NOTE:** Plow shown removed from tractor hitch for clarity.
HYDRAULIC CYLINDER/TURNBUCKLE SETTING ILLUSTRATION

DIRECTION OF TRAVEL

1. DIMENSION A
2. DIMENSION B
3. DIMENSION C
## Hydraulic Cylinder/Turnbuckle Settings

### 4-5-6 Row In-The-Furrow Plows

<table>
<thead>
<tr>
<th>Width Of Cut - Inches (mm)</th>
<th>14 (355.6)</th>
<th>16 (406.4)</th>
<th>18 (457.2)</th>
<th>20 (508)</th>
<th>22 (558.8)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4 Furrow</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimension “A” - Hydraulic Cylinder or Turnbuckle</td>
<td>20 (508)</td>
<td>22.6 (574)</td>
<td>24.6 (624.8)</td>
<td>26.8 (680.7)</td>
<td>28.1 (713.7)</td>
</tr>
<tr>
<td>Dimension “B” - Landing Turnbuckle</td>
<td>20 (508)</td>
<td>20.3 (515.6)</td>
<td>22.4 (569.9)</td>
<td>24.8 (629.9)</td>
<td>27.6 (701)</td>
</tr>
<tr>
<td>Dimension “C” - Category 2 or 3 Crossbar</td>
<td>2.4 (60.9)</td>
<td>2.6 (66.0)</td>
<td>4.5 (114.3)</td>
<td>5.7 (144.8)</td>
<td>8.5 (215.9)</td>
</tr>
<tr>
<td>Dimension “C” - Category 3 Crossbar</td>
<td>5.1 (129.5)</td>
<td>5.3 (134.6)</td>
<td>7.3 (185.4)</td>
<td>8.5 (215.9)</td>
<td>11.2 (284.5)</td>
</tr>
</tbody>
</table>

| **5 Furrow**               |            |            |            |          |            |
| Dimension “A” - Hydraulic Cylinder or Turnbuckle | 20 (508) | 22.6 (574) | 24.6 (624.8) | 26.8 (680.7) | 28.1 (713.7) |
| Dimension “B” - Landing Turnbuckle | 20.3 (515.6) | 20.5 (515.6) | 22.4 (569.9) | 24.8 (629.9) | 27.6 (701) |
| Dimension “C” - Category 2 or 3 Crossbar | 2.4 (60.9) | 2.6 (66.0) | 4.5 (114.3) | 5.7 (144.8) | 8.5 (215.9) |
| Dimension “C” - Category 3 Crossbar | 5.1 (129.5) | 5.3 (134.6) | 7.3 (185.4) | 8.5 (215.9) | 11.2 (284.5) |

| **6 Furrow**               |            |            |            |          |            |
| Dimension “A” - Hydraulic Cylinder or Turnbuckle | 20 (508) | 22.6 (574) | 24.6 (624.8) | 26.8 (680.7) | 28.1 (713.7) |
| Dimension “B” - Landing Turnbuckle | 20.3 (515.6) | 20.7 (525.7) | 22.6 (574) | 25 (635) | 28.1 (713.7) |
| Dimension “C” - Category 2 or 3 Crossbar (This Setting Not Recommended) | 4.1 (104.1) | 4.7 (119.4) | 6.5 (165.1) | 7.1 (180.3) | - |
| Dimension “C” - Category 3 Crossbar | 4.9 (124.5) | 7.5 (190.5) | 9.2 (233.7) | 13 (330.2) | 13 (330.2) |

**NOTE:** If after adjustments have been made, the front plow bottom overcuts or undercuts, a minor adjustment can be made by moving the crossbar (changing Dimension “C”).
## Hydraulic Cylinder/Turnbuckle Settings
### On-Land Plow

<table>
<thead>
<tr>
<th>Plow Type and Rear Tire Overall Width</th>
<th>Width of cut</th>
<th>Spreader</th>
<th>Cylinder/Turnbuckle</th>
<th>Hitch Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Furrow - 124 inch (3149.6 mm)</td>
<td>14 Inch (355.6 mm)</td>
<td>52.75 Inches (1344 mm)</td>
<td>20.08 Inches (510 mm)</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>16 Inch (406.4 mm)</td>
<td>52.75 Inches (1344 mm)</td>
<td>21.65 Inches (550 mm)</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>18 Inches (457.2 mm)</td>
<td>52.75 Inches (1344 mm)</td>
<td>24.21 Inches (615 mm)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>20 Inches (508 mm)</td>
<td>52.75 Inches (1344 mm)</td>
<td>26.77 Inches (680 mm)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>22 Inches (558.8 mm)</td>
<td>52.75 Inches (1344 mm)</td>
<td>28.35 Inches (720 mm)</td>
<td>A</td>
</tr>
<tr>
<td>5 Furrow - 133 Inch (3378.2 mm)</td>
<td>14 Inch (355.6 mm)</td>
<td>55.5 Inches (1410 mm)</td>
<td>20.08 Inches (510 mm)</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>16 Inch (406.4 mm)</td>
<td>55.5 Inches (1410 mm)</td>
<td>21.25 Inches (540 mm)</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>14 Inch (355.6 mm)</td>
<td>55.5 Inches (1410 mm)</td>
<td>23.82 Inches (605 mm)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>20 Inches (508 mm)</td>
<td>55.5 Inches (1410 mm)</td>
<td>25.78 Inches (655 mm)</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>22 Inches (558.8 mm)</td>
<td>55.5 Inches (1410 mm)</td>
<td>27.95 Inches (710 mm)</td>
<td>B</td>
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<tr>
<td>5 Furrow - 144 Inch (3657.6 mm)</td>
<td>14 Inch (355.6 mm)</td>
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<td>N/A</td>
<td>N/A</td>
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<tr>
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<td>16 Inch (406.4 mm)</td>
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<td>N/A</td>
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<tr>
<td></td>
<td>20 Inches (508 mm)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td></td>
<td>22 Inches (558.8 mm)</td>
<td>58.25 Inches (1480 mm)</td>
<td>27.95 Inches (710 mm)</td>
<td>B</td>
</tr>
<tr>
<td>6 Furrow - 124 Inch (3149.6 mm)</td>
<td>14 Inch (355.6 mm)</td>
<td>52.75 Inches (1344 mm)</td>
<td>20.08 Inches (510 mm)</td>
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<td>Plow Type and Rear Tire Overall Width</td>
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<td>-------------------------------------</td>
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</tr>
<tr>
<td>6-Furrow 124 Inch (3149.6 mm) (cont)</td>
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<tr>
<td>6 Furrow - 144 Inch (3657.6 mm)</td>
<td>14 Inch (355.6 mm)</td>
<td>58.25 Inches (1480 mm)</td>
<td>20.07 Inches (510 mm)</td>
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<td>22 Inches (558.8 mm)</td>
<td>58.25 Inches (1480 mm)</td>
<td>27.95 Inches (710 mm)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>6 Furrow - 154 Inch (3911.6 mm)</td>
<td>14 Inch (355.6 mm)</td>
<td>N/A</td>
<td>N/A</td>
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</tr>
<tr>
<td>16 Inch (406.4 mm)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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</tr>
<tr>
<td>18 Inches (457.2 mm)</td>
<td>61 Inches (1550 mm)</td>
<td>22.83 Inches (580 mm)</td>
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</tr>
<tr>
<td>20 Inches (508 mm)</td>
<td>61 Inches (1550 mm)</td>
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<tr>
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<tr>
<td>7 Furrow - 124 Inch (3149.6 mm)</td>
<td>14 Inch (355.6 mm)</td>
<td>52.75 Inches (1344 mm)</td>
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<td>Width of cut</td>
<td>Spreader</td>
<td>Cylinder/ Turnbuckle</td>
<td>Hitch Position</td>
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<tr>
<td>7 Furrow - 124 Inch (3149.6 mm) (cont)</td>
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<td>52.75 Inches (1344 mm)</td>
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<td></td>
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<td>58.25 Inches (1480 mm)</td>
<td>27.95 Inches (710 mm)</td>
<td>A</td>
</tr>
<tr>
<td>7 Furrow - 154 Inch (3911.6 mm)</td>
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<td></td>
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<td>61 Inches (1550 mm)</td>
<td>27.95 Inches (710 mm)</td>
<td>A</td>
</tr>
</tbody>
</table>
**Auto-Draft Adjustment (In-The-Furrow)**

Auto-draft provides the best operating performance for the tractor and the plow. It is not necessary to stop or raise the plow to use this feature.

The width of cut can be adjusted while operating in the field by simply actuating the tractor hydraulic remote lever and viewing the decal (1) on the top of the plow frame, shown at right. The width of cut is indexed on the decal.

The illustration below shows the setting for 14 inch cut width. This was selected to illustrate that regardless of what cut width setting is chosen, the optimum line of draft is automatically adjusted to pass through the plow pivot post.
Line of Draft Adjustment - Mechanical and Hydraulic (In-The-Furrow)

Line of draft adjustment provides the best operating performance for the tractor and the plow. The tractor and plow must be stopped in order to make this adjustment.

If after this adjustment has been made and the front plow bottom overcuts or undercuts, a minor adjustment to the horizontal hitch crossbar can be made. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Settings” chart and adjust the landing turnbuckle for dimension “B” as indicated for number of Furrows.

Cutting Width Adjustment

The cutting width of the plow can be changed either Mechanically or Hydraulically.

**Mechanical Version**

To change the cutting width, loosen the turnbuckle jam nut (1). Turn the turnbuckle (2) in or out until the desired width of cut is obtained. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Settings” chart and turn the turnbuckle in or out to set dimension “A” in the chart. Tighten the jam nut (1). The turnbuckle can be replaced with a hydraulic cylinder.

**Hydraulic Version**

The hydraulic cylinder simplifies the width of cut adjustments and lets the operator reduce the plow width to the minimum for transporting. When making width of cut adjustments hydraulically, the line of draft is not automatically maintained. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Settings” chart and extend or retract the cylinder and set the dimension to correspond to dimension “A” in the chart.

This feature provides an easy way to:

1. Match plow cutting widths and tractor horsepower.
2. Get improved plowing results.
3. Reduce transport width.

When a change is made in the plow cutting width the line of draft is changed. If the line of draft is not correctly readjusted, performance will be affected.
Plow Bottoms
All shares are interchangeable. The bottoms can be changed from regular cut to undercut or overcut depending on the size of shares used.

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

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

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

Heavy Duty Upset Share
The heavy duty upset share has a 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. This style of share is also available with factory applied hard surfacing. Hard surfacing is not recommended for rocky conditions.
Special attention must be given to the three 5/8 inch bolts (1) that attach the plow bottoms to the beams (2). These bolts must be checked periodically to maintain a torque of 200 lb ft (272 Nm).

Never let the plow share, shin or landside (3) show wear so that the frog (4) is exposed. Check the condition of these parts frequently when plowing in abrasive soil. Plowing with worn, bent or broken shares can result in the plow working inefficiently and increased fuel costs.

**NOTE:** To reduce landside pad wear, a twin pad landside is available from your dealer. This is also effective in solving plow over cutting.

The landside wear pad (5) can be reversed by removing two attaching bolts (6) and reinstalling the top side of the wear pad down.

The landside (stop) block (7) is recommended for rocky ground. Make sure that the landside block fits tightly on the landside.

The adjustable pitch feature, eccentric washer, (8) 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.
Coulter Adjustment
A set collar (1) is located in the coulter yoke to prevent the coulter (2) from swinging completely around. This set collar must be set on the coulter shank (3) so that it will let the coulter swing approximately the same distance on each side of the point of the share. The coulter can then pivot when the plow is turned to the right or left. All colters must be set the same.

Do not run the coulters too deep in hard ground as this will ride the plow out of the ground. Loosen the coulter shank clamps (4) and turn the shank with a wrench to swing the coulter so that the blade will run approximately 1/2 inch from the left side of the landside for average soil conditions. Make sure that the coulter blade is parallel with the landside when the measurement is made. In soft, crumbly ground, a wider setting is necessary in order to get a clean furrow wall. In sod or firmer soil, the colters can sometimes be set narrower.

The clamps holding the coulter shanks to the frame rails can be used in two positions. The clamps holding the coulter shanks to the frame rails on the High Speed European Style (HSES) bottoms must be used on the front hole position and for the Super Chief Series bottoms, the rear hole position must be used. If a severe scouring plow bottom is encountered, raise the coulters to the maximum height. This increases pressure on the moldboards.

Cushion Spring Coulter
Cushion spring coulters are especially recommended for use with automatic trip beams and rocky soil. These coulters must be set lower to provide for spring deflection. Tighten the adjustment nut (1) on the spring rod (2) if a greater amount of down pressure is desired.
With the proper setup, adjustments and equipment, the plow will run a straight cut the proper overall width, not adversely affect tractor steering and minimum draft will be required.

Refer to Detail Index for the Cylinder/Turnbuckle Settings chart for optimal setting for a given tractor tire width and plow size. A minimum clearance between the furrow wall and the outside of the tractor wheels is given to prevent crushing the furrow wall.

**NOTE:** Do not make more that a 45 degree turn with the plow in the ground. Do Not make sharp end row turns where the crossbar contacts the limit stop heavily. This can damage the plow or the tractor hitches.

When crop debris is heavy, the plow will cut the trash better when operated at an angle to the rows of trash.

The plow operates best at 4 to 6 mph (6.5 to 9.6 km/h). The higher speed increases the mixing action of the soil and crop debris.

Excessive speed may cause ridging.

Reduce speed when operating in ground containing rocks or stumps.

**NOTE:** Remember the following items:

1. The plow hitch must be adjusted properly to provide optimum performance.
2. The plow frame must be level.
3. Operate only deep enough to do the desired plowing.

**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
Tractor Rear Wheel Settings - In The-Furrow

Measure from the center of the power take off shaft to the inside edge of the right rear tire and set the tire at 28 or 30 inches for 4 furrow plow, or set to 30 or 32 inches for 5 or 6 furrow plows. Set the left rear wheel for the same distance.

**NOTE:** For greater tractor stability or hillside plowing, the left wheel can be set slightly wider.

Tractor Hitch Control (In-The-Furrow)

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

Position Control - Modified (In-The-Furrow) (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 (In-The-Furrow)

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.

Tractor Hitch Control (On-Land)

The draft control should be locked completely out, refer to the Tractor Operators Manual for this procedure. Set the hitch to a height that levels the plow during operation. This will change with a change in the plow depth setting as controlled by the front furrow wheel and gauge wheel. The lower links on the 3-point hitch should be set in a laterally rigid position, the lift links in vertical rigid setting and the upper link should be stored. The tractor hitch, front furrow cylinder and the tail wheel cylinder will need to be activated in that order when making end row turns or going in to transport. The same order should be used when entering the ground, if a relatively square head land is desired.

**WARNING:** Never park the plow in the raised position. Moving the control lever will lower the plow even though the engine is not running. If it is necessary to service the plow in the raised position, use jackstands to safety support the plow in position, also use the safety stop provided on the lift cylinder.
Gauge Wheel

To set the gauge wheel for initial plowing depth, use the adjustment tool provided and move the gauge wheel assembly up or down as required. After setting the gauge wheel assembly, secure gauge wheel assembly with a retaining pin and quick pin.

Full adjustment, approximately 1-1/4 inch, can be made by moving the gauge wheel assembly either up or down one hole on the bracket.

Half adjustments, approximately 5/8 inch, can be made by positioning the retaining pin and quick pin in the hole below the bracket.

**IMPORTANT:** Failure to install the retaining pin and quick pin properly will result in damage to the retaining pin or plow frame.
Rear Furrow Wheel - Axle Adjustment

The rear furrow wheel adjustment for plowing in hard or difficult soils can be used to take part of the thrust of the plow bottom landside against the furrow wall by locating the bolt (1) in one of several positions on the axle shaft (2). Adjusting the wheel closer to the furrow wall can help in taking side thrust and help in reducing plow bottom landside wear and keep plow from over cutting. Make sure the tire pressure is 40 psi (276 kPa) before making adjustments.

**IMPORTANT:** Use caution when moving the tire closer to the furrow, the tire may contact the rear linkage on sharp turns.

**WARNING:** Always support the plow, using jack stands (or their equivalent) and install the safety collar on the rear lift cylinder when the plow is in the raised position.

Rear Furrow Wheel - Lead Adjustment

To adjust the rear furrow wheel lead perform the following:

1. Loosen the threaded eyebolt jam nut (1) on the steering tube (2).

2. Remove the nut and bolt (3) retaining the steering tube to the steering arm (4).

3. Turn the eyebolt (5) in or out until the rear furrow wheel angles slightly towards the plowed ground during field operation.

**NOTE:** The distance from the center of the threaded eyebolt to the front face of the nut welded to the steering tube is factory preset.

**IMPORTANT:** After making a change in length of the eyebolt, use caution when making sharp turns as the rear stop may engage before the front stop. Damage to linkage components may occur.
Rear Steering Arm Adjustment
For normal steering, connect the rear steering linkage (1) to the outside hole (2) of the bracket (3). For faster steering, the linkage may be connected to the inner hole (4) of the bracket. If linkage is connected to inner hole of bracket, when turning, the rear steering stop may engage before the front steering stop. Refer to Detail Index for Steering Stop Checks.

Front Steering Pivot Plate (On-Land)
Install the plow steering tube (1) to the top hole (2) only, **DO NOT USE BOTTOM HOLE**. The top hole is for slower steering. Steering speed increases as the steering tube is moved further down. Initial setup for 5, 6 and 7 furrow plow is indicated in illustration.

**IMPORTANT**: Use caution when making turns of 16 feet or less turning radius, especially using articulated tractors. Damage to tractor hitch or plow hitch components may occur. If plow crossbar contacts steering stops on the pull beam, decrease the angle of turn and pull out of bind. Make the turn using a larger turning radius.

Automatic Reset Trip Beam
The automatic reset trip beam (1) is designed to trip by moving directly back and up when the plow bottom encounters an obstruction in the ground. The plow bottom then reenters the ground at the correct plowing angle without a reduction in forward speed. A vertical relief feature is incorporated which allows the plow bottom share point to glide up and over sloping obstructions.

The ability of the plow bottoms to maintain the correct plowing depth is dependent upon the suction of the plow bottom. In fields where penetration is a problem, the suction on the plow bottom must be increased by replacing worn shares or by using shares with better penetration qualities such as deep suck or upset shares. Under some soil conditions it is advantageous to use the adjustable pitch feature (eccentric washer) on the plow bottom.

**IMPORTANT**: After every ten hours of operation, torque the spring bolts (2) to 90 lb ft (122.4 Nm).
**Toggle Trip Beam**

The trip unit is reset by raising the plow using the hydraulic lift cylinder. This allows the plow bottom to gradually drop into the plowing position by means of its own weight.

**Excessive Tripping**

If excessive tripping is occurring, perform the following:

1. Loosen the bolt lock nut (1).
2. Turn the bolt (2) counterclockwise 1/4 turn.
3. Tighten the bolt lock nut (1).

**IMPORTANT:** Turning the bolt 1/4 turn increases the trip load approximately 500 lb. DO NOT turn the trip load adjustment bolt more than 1/4 turn.

**NOTE:** The load trip adjustment bolt is factory preset and staked to the casting. Removing the bolt maximizes the trip load thus minimizing the implement protection. After adjustment, tighten the bolt to a torque of 90 lb ft (122.4 Nm) and stake the bolt to the casting.

**Spreader Adjustment (In-The-Furrow)**

Hitch clearance is preset at the factor for normal operating conditions. If more hitch clearance is required, remove four bolts and move the spreader from position "A" (1) to position "B" (2).

**NOTE:** Moving the hitch to a higher point may result in failure of the rear of the plow to maintain constant depth under severe operating conditions.
Vertical Hitch Adjustment
For normal field operating conditions, the hitch pin must be installed in the middle hole. Ensure that the hitch pins are tightened to a torque of 700 lb ft (952 Nm).

If the front of the plow runs shallow, it may be necessary to remove the hitch pin and install it in the upper hole.

If the rear of the plow runs shallow, it may be necessary to remove the hitch pin and install it in the lower hole.

NOTE: When making changes to plow depth, it is necessary to consider the rear gauge wheel setting along with hitch depth setting. The rear gauge wheel must carry appreciable weight. However, if the rear gauge wheel makes a deep track in the ground and the plowing depth is satisfactory, then the hitch setting must be raised slightly.

NOTE: Plow shown removed from tractor hitch for clarity.

Horizontal Hitch Adjustment - Hydraulic (In-The-Furrow)
The recommended horizontal hitch setting for the 4 and 5 furrow plows is 4.6 inches (116.8 mm). The recommended horizontal hitch setting for 6 furrow plows is 6.8 inches (172.7 mm). The dimension is measured from the center of the shift adjustment bar bolt (1) to the center of the cylinder rod end headed pin (2).

NOTE: The settings shown are for average conditions. A change can be required because of variable factors such as soil conditions, plowing depth or tractor wheel tread. The shift adjusting bar is reversible so that variable settings can be obtained. Make sure that the front plow bottom cuts the correct width.

Refer to Troubleshooting section in this manual to correct Overcutting and Undercutting of Front Plow Bottom.

NOTE: Plow shown removed from tractor hitch for clarity.
Horizontal Hitch Adjustment - Manual (In-The-Furrow)

It may be necessary to readjust the hitch for different soil conditions. To adjust the hitch:

1. Lower the plow.
2. Loosen, but do not remove, the crossbar nuts (1) on the U-bolt (2).
3. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Setting” chart and move the hitch crossbar in either direction until proper dimension for “C” is achieved.
4. Tighten crossbar nuts and torque to 290 lb ft (393 Nm)

Auto-Draft Adjustment (In-The-Furrow)

Auto-draft provides the best operating performance for the tractor and the plow. It is not necessary to stop or raise the plow to use this feature.

The width of cut can be adjusted while operating in the field by simply actuating the tractor hydraulic remote lever and viewing the decal (1) on the top of the plow frame, shown at right. The width of cut is indexed on the decal.

The illustration below shows the setting for 14 inch (355.6 mm) cut width. This was selected to illustrate that regardless of what cut width setting is chosen, the optimum line of draft is automatically adjusted to pass through the plow pivot post.
Line of Draft Adjustment - Mechanical and Hydraulic (In-The-Furrow)

Line of draft adjustment provides the best operating performance for the tractor and the plow. The tractor and plow must be stopped in order to make this adjustment.

If after this adjustment has been made and the front plow bottom overcuts or undercuts, a minor adjustment to the horizontal hitch crossbar can be made. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Settings” chart and adjust the landing turnbuckle for dimension “B” as indicated for number of Furrows.

Cutting Width Adjustment

The cutting width of the plow can be changed either Mechanically or Hydraulically.

Mechanical Version

To change the cutting width, loosen the turnbuckle jam nut (1). Turn the turnbuckle (2) in or out until the desired width of cut is obtained. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Settings” chart and turn the turnbuckle in or out to set dimension “A” in the chart. Tighten the jam nut (1). The turnbuckle can be replaced with a hydraulic cylinder.

Hydraulic Version

The hydraulic cylinder simplifies the width of cut adjustments and lets the operator reduce the plow width to the minimum for transporting. When making width of cut adjustments hydraulically, the line of draft is not automatically maintained. Refer to the Detail Index for the “Hydraulic Cylinder/Turnbuckle Settings” chart and extend or retract the cylinder end and set the dimension to correspond to dimension “A” in the chart.

This feature provides an easy way to:

1. Match plow cutting widths with tractor horsepower.
2. Get improved plowing results.
3. Reduce transport width.

When a change is made in the plow cutting width the line of draft is changed. If the line of draft is not correctly readjusted, performance will be affected.
Coulter Adjustment

A set collar (1) is located in the coulter yoke to prevent the coulter (2) from swinging completely around. This set collar must be set on the coulter shank (3) so that it will let the coulter swing approximately the same distance on each side of the point of the share. The coulter can then pivot when the plow is turned to the right or left. All coulters must be set the same.

Do not run the coulters too deep in hard ground as this will ride the plow out of the ground. Loosen the coulter shank clamps (4) and turn the shank with a wrench to swing the coulter so that the blade will run approximately 1/2 inch (12.7 mm) from the left side of the landside for average soil conditions. Make sure that the coulter blade is parallel with the landside when the measurement is made. In soft, crumbly ground, a wider setting is necessary in order to get a clean furrow wall. In sod or firmer soil, the coulters can sometimes be set narrower.

The clamps holding the coulter shanks to the frame rails can be used in two positions. The clamps holding the coulter shanks to the frame rails on the High Speed European Style (HSES) bottoms must be used on the front hole position and for the Super Chief Series bottoms, the rear hole position must be used. If a severe scouring plow bottom is encountered, raise the coulters to the maximum height. This increases pressure on the moldboards.

Cushion Spring Coulter

Cushion spring coulters are especially recommended for use with automatic trip beams and rocky soil. These coulters must be set lower to provide for spring deflection. Tighten the adjustment nut (1) on the spring rod (2) if a greater amount of down pressure is desired.
## LUBRICATION

### Lubrication Chart (On-Land)

<table>
<thead>
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<th>LOCATION</th>
<th>SERVICE POINTS</th>
<th>NO. OF POINTS</th>
<th>FREQUENCY IN HOURS</th>
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<td>2</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Rear Furrow Wheel - Axle Outer (Top) and Link LH Rear Pivot Pin</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Rear Furrow Wheel - Axle Inner (Lever)</td>
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<td>Rear Furrow Wheel - Cylinder and Link LH Rear Pivot Pin</td>
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<tr>
<td>5</td>
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<td>13</td>
<td>Front Furrow Wheel Upper and Lever Links - Front</td>
<td>2</td>
<td>10</td>
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<td>14</td>
<td>Front Furrow Wheel Upper Link</td>
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<td>15</td>
<td>Steering Linkage - Rear Pivot</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>16</td>
<td>Rear Steering Arm</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>17</td>
<td>Front Steering Arm</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>18</td>
<td>Plow Auto Trip</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>19</td>
<td>Hitch Crossbar - (Note 1)</td>
<td>1</td>
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<tr>
<td>20</td>
<td>Wheel Bearings</td>
<td>3</td>
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<td>21</td>
<td>Coulter Lower Pivot</td>
<td>1</td>
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<td>22</td>
<td>Front Furrow Wheel Lower Link - Rear</td>
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## Lubrication Chart (In-The-Furrow)

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>SERVICE POINTS</th>
<th>NO. OF POINTS</th>
<th>FREQUENCY IN HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hydraulic Hitch Crossbar Wear Plate</td>
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<tr>
<td>2</td>
<td>Hitch Pivot Pin (Upper &amp; Lower)</td>
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<tr>
<td>3</td>
<td>Hitch Crossbar Pivot Frame</td>
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<tr>
<td>4</td>
<td>Automatic Trip Toggle and Upper Pivot</td>
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<tr>
<td>5</td>
<td>Plow Beam Automatic Trip and Lower Pivot</td>
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<td>6</td>
<td>Plow Bottom Toggle Trip Pivot and Horizontal Pivot</td>
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<td>7</td>
<td>Rear Wheel Assembly Bottom Vertical Pivot</td>
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<td>8</td>
<td>Coulter Upper Pivot</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Steering Center Pivot (5 and 6 Furrow Plows)</td>
<td>1</td>
<td>10</td>
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<tr>
<td>10</td>
<td>Rear Steering Plate Pivot</td>
<td>1</td>
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<tr>
<td>11</td>
<td>Rear Furrow Wheel Cylinder Pivot</td>
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<tr>
<td>12</td>
<td>Rear Furrow Wheel Upper Link and Rear Pivot</td>
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<td>10</td>
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<tr>
<td>13</td>
<td>Rear Furrow Wheel Lower Link - Rear</td>
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<td>10</td>
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<tr>
<td>14</td>
<td>Coulter Hub Pivot</td>
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<td>50</td>
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<tr>
<td>15</td>
<td>Wheel Bearing</td>
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<td>50</td>
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<td>16</td>
<td>Steering Linkage - Rear Pivot</td>
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<td>10</td>
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<tr>
<td>17</td>
<td>Rear Steering Arm</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>18</td>
<td>Front Steering Arm</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>19</td>
<td>Plow Automatic Trip</td>
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<td>20</td>
<td>Spreader Bar</td>
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<tr>
<td>21</td>
<td>Upper and Lower Link Front Pivot Pin</td>
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</table>
SERVICE POINTS

On-Land

Location Number 1

Location Number 2

Location Number 3

Location Number 4
8 - LUBRICATION

Location Number 17

Location Number 18

Location Number 19

Location Number 20

Location Number 21

Location Number 22
Location Number 1

Location Number 2

Location Number 3

Location Number 4
8 - LUBRICATION

Location Number 11

Location Number 12

Location Number 13

Location Number 14

Location Number 15

Location Number 16
8 - LUBRICATION

Location Number 17

Location Number 18

Location Number 19

Location Number 20
GENERAL PREVENTIVE MAINTENANCE

Make sure your 7501 Vari-Width 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 Operation section of this manual.

1. Carefully clean the plow completely.
2. Replace any worn 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 requirements.
4. Refer to the 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 Specifications section in this manual and torque as necessary.
7. Check all electrical connections for cleanliness and mating. Replace as necessary.
8. Check all hydraulic connections and fittings. Refer to Standard Torque Data For Hydraulic Tubes and Fittings table in this section and torque connections and fitting as indicated.
9. Make sure all cylinder rods are clean before operating the plow.
10. Connect the tractor to the plow 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 section 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.

<table>
<thead>
<tr>
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<th>2</th>
<th>5</th>
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<tbody>
<tr>
<td>Bolt head identification (See Note 1)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bolt Size</td>
<td>LB FT</td>
<td>Nm</td>
<td>LB FT</td>
</tr>
<tr>
<td>1/4</td>
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<td>7</td>
</tr>
<tr>
<td>5/16</td>
<td>10</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>3/8</td>
<td>20</td>
<td>23</td>
<td>27</td>
</tr>
<tr>
<td>7/16</td>
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<td>41</td>
</tr>
<tr>
<td>1/2</td>
<td>45</td>
<td>52</td>
<td>61</td>
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<td>9/16</td>
<td>65</td>
<td>75</td>
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<tr>
<td>5/8</td>
<td>95</td>
<td>105</td>
<td>129</td>
</tr>
<tr>
<td>3/4</td>
<td>150</td>
<td>185</td>
<td>203</td>
</tr>
<tr>
<td>7/8</td>
<td>160</td>
<td>200</td>
<td>217</td>
</tr>
<tr>
<td>1</td>
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<td>339</td>
</tr>
<tr>
<td>1-1/8</td>
<td>800</td>
<td>880</td>
<td>1085</td>
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<tr>
<td>1-1/4</td>
<td>1120</td>
<td>1240</td>
<td>1519</td>
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<tr>
<td>1-3/8</td>
<td>1460</td>
<td>1680</td>
<td>1980</td>
</tr>
<tr>
<td>1-1/2</td>
<td>1940</td>
<td>2200</td>
<td>2631</td>
</tr>
</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>ISO Class No.</th>
<th>8.8</th>
<th>10.9</th>
<th>12.9</th>
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<tbody>
<tr>
<td>Bolt head identification (See Note 1)</td>
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<td>10.9</td>
<td>12.9</td>
</tr>
<tr>
<td>Bolt Size</td>
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<td>LB FT</td>
<td>Nm</td>
</tr>
<tr>
<td>M4</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>M5</td>
<td>6.5</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>M6</td>
<td>10.5</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>M8</td>
<td>26</td>
<td>31</td>
<td>19</td>
</tr>
<tr>
<td>M10</td>
<td>52</td>
<td>61</td>
<td>38</td>
</tr>
<tr>
<td>M12</td>
<td>90</td>
<td>107</td>
<td>66</td>
</tr>
<tr>
<td>*M14</td>
<td>144</td>
<td>172</td>
<td>106</td>
</tr>
<tr>
<td>M16</td>
<td>217</td>
<td>271</td>
<td>160</td>
</tr>
<tr>
<td>M20</td>
<td>434</td>
<td>515</td>
<td>320</td>
</tr>
<tr>
<td>M24</td>
<td>675</td>
<td>815</td>
<td>500</td>
</tr>
<tr>
<td>M30</td>
<td>1250</td>
<td>1500</td>
<td>920</td>
</tr>
<tr>
<td>M36</td>
<td>2175</td>
<td>2600</td>
<td>1600</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>TUBING O.D.</th>
<th>THREAD SIZE</th>
<th>LB FT</th>
<th>Nm</th>
<th>O-RING BOSS PLUGS, ADJUSTABLE FITTING LOCK NUTS, SWIVEL JIC - 37° SEATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>1/4</td>
<td>6.4</td>
<td>7/16-20</td>
<td>9</td>
<td>12</td>
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<td>5</td>
<td>5/16</td>
<td>7.9</td>
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<td>6</td>
<td>3/8</td>
<td>9.5</td>
<td>9/16-18</td>
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<td>8</td>
<td>1/2</td>
<td>12.7</td>
<td>3/4-18</td>
<td>35</td>
<td>40</td>
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<tr>
<td>10</td>
<td>5/8</td>
<td>15.9</td>
<td>7/8-14</td>
<td>53</td>
<td>58</td>
</tr>
<tr>
<td>12</td>
<td>3/4</td>
<td>19.1</td>
<td>1-1/16-12</td>
<td>77</td>
<td>82</td>
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<tr>
<td>14</td>
<td>7/8</td>
<td>22.2</td>
<td>1-3/16-12</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>25.4</td>
<td>1-5/16-12</td>
<td>110</td>
<td>120</td>
</tr>
<tr>
<td>20</td>
<td>1-1/4</td>
<td>31.8</td>
<td>1-5/8-12</td>
<td>140</td>
<td>150</td>
</tr>
<tr>
<td>24</td>
<td>1-1/2</td>
<td>38.1</td>
<td>1-7/8-12</td>
<td>160</td>
<td>175</td>
</tr>
<tr>
<td>32</td>
<td>2</td>
<td>50.8</td>
<td>2-1/2-12</td>
<td>225</td>
<td>240</td>
</tr>
</tbody>
</table>

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 performing work 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
<table>
<thead>
<tr>
<th>Item</th>
<th>Torque Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheel Lug Bolts</td>
<td>80 to 100 lb ft (109 to 136 Nm)</td>
</tr>
<tr>
<td>Hitch Bolts</td>
<td>380 to 456 lb ft (517 to 620 Nm)</td>
</tr>
<tr>
<td>Hitch Pins</td>
<td>700 lb ft (952 Nm)</td>
</tr>
<tr>
<td>Landside</td>
<td>70 lb ft (95.2 Nm)</td>
</tr>
<tr>
<td>Plow Bottom Attaching Bolts</td>
<td>200 lb ft (272 Nm)</td>
</tr>
<tr>
<td>Automatic Trip Spring Bolts</td>
<td>90 lb ft (122.4 Nm)</td>
</tr>
<tr>
<td>Toggle Trip Beam Load Adjustment Bolt</td>
<td>90 lb ft (122.4 Nm)</td>
</tr>
<tr>
<td>Trash Plate Mounting Bolts</td>
<td>70 lb ft (95.2 Nm)</td>
</tr>
<tr>
<td>U-bolt Nuts</td>
<td>270 to 320 lb ft (367 to 435 Nm)</td>
</tr>
</tbody>
</table>
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 lowered position, support the plow blades on boards to prevent the blades from entering the dirt.

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

Scrape or brush off any dirt on the machine and remove all weeds and trash. Before storing, apply Case TILCOTE to all surfaces of the plow bottoms. Apply grease, TILCOTE or paint to all exposed cylinder rods.

Paint any surface that can rust.

Inspect the machine for any worn or broken parts and replace parts as needed.

Do not let the tires stand on oil or grease or come in contact with manure or fertilizer, as these items will destroy rubber tires.

Once a year, inspect all hydraulic hoses for leaks, cracks, and abrasion. Tighten the fittings, refer to hydraulic tubes and fittings torque tables for torque data. Replace hoses as needed.

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

M134A

REMOMING THE PLOW FROM STORAGE

Using solvent, remove the protective TILCOTE and grease from the surfaces of the bottoms and hydraulic cylinder rods.

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

Refer to Lubrication section in this manual and lubricate as required.

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

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

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

M336
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.

<table>
<thead>
<tr>
<th>SYMPTOM</th>
<th>PROBABLE CAUSE</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shares do not penetrate ground</td>
<td>Ground too hard</td>
<td>Slow ground speed&lt;br&gt;Check hitch leveling&lt;br&gt;Adjust bottoms to maximum pitch</td>
</tr>
<tr>
<td>Excessive trip beam tripping</td>
<td>Trip load not properly set</td>
<td>Adjust trip load higher</td>
</tr>
<tr>
<td>Plow overcuts, tails to left (In-The-Furrow)</td>
<td>Plow not level&lt;br&gt;Plow bottom running too deep&lt;br&gt;Front plow bottom over cutting&lt;br&gt;Incorrect landsides&lt;br&gt;Landside pads worn&lt;br&gt;Rear furrow wheel lead not properly adjusted&lt;br&gt;Rear furrow wheel not adjusted to furrow wall&lt;br&gt;Hitch not set correctly&lt;br&gt;Pull frame not set correctly</td>
<td>Level plow&lt;br&gt;Check depth of plow bottom&lt;br&gt;Check/adjust front plow bottom cut&lt;br&gt;Check for correct landsides&lt;br&gt;Replace landside pads&lt;br&gt;Adjust rear furrow lead&lt;br&gt;Adjust rear furrow wheel closer to furrow wall&lt;br&gt;Set hitch to correct setting&lt;br&gt;Move pull frame to the right (will require crossbar adjustment or change in tractor wheel tread)</td>
</tr>
<tr>
<td>Plow Overcuts (On-Land)</td>
<td>Plow frame not properly set</td>
<td>Move plow frame one position to the right (Adjustment of turnbuckle may be required)</td>
</tr>
<tr>
<td>Plow Undercuts (On-Land)</td>
<td>Plow frame not properly set</td>
<td>Move plow frame one position to the left (Adjustment of turnbuckle may be required)</td>
</tr>
<tr>
<td>Front of plow runs shallow</td>
<td>Hitch height not properly set</td>
<td>Install hitch pin in upper hole</td>
</tr>
<tr>
<td>Rear of plow runs shallow</td>
<td>Hitch height not properly set</td>
<td>Install hitch pin in lower hole&lt;br&gt;Retract rear cylinder</td>
</tr>
<tr>
<td>Plow not laterally level (On Land)</td>
<td>Draft sensing not locked out on tractor hitch</td>
<td>Lockout draft sensing from tractor hitch and set hitch to level plow laterally</td>
</tr>
<tr>
<td>Tractor front wheels pull toward furrow</td>
<td>Crossbar not properly set</td>
<td>Move crossbar to the right</td>
</tr>
</tbody>
</table>
GENERAL SET-UP INFORMATION

Plow Size
(In-The-Furrow)
4 furrow............................. 7.7 ft wide, 19.3 ft long
                                        (2.35 m wide, 5.9 m long)
5 Furrow ............................. 8.9 ft wide, 22.3 ft long
                                        (2.7 m wide, 6.8 m long)
6 Furrow ............................. 10.1 ft wide, 25.3 ft long
                                        (3.1 m wide, 7.7 m long)

(On-Land)
5 Furrow ............................. 9.2 ft wide, 28 ft long
                                        (2.8 m wide, 8.5 m long)
6 Furrow ............................. 10.4 ft wide, 31 ft long
                                        (3.2 m wide, 9.5 m long)
7 Furrow ............................. 11.6 ft wide, 34 ft long
                                        (3.5 m wide, 10.4 m long)

General Assembly Information
Lubricate all pins, bearings and moving parts during assembly and make sure that all parts work freely.

Refer to Torque Data table in this manual and tighten all bolts to the torques shown in the table, unless otherwise specified.

Refer to Hydraulic Tubes and Fitting Torque table in this manual and tighten all hydraulic fittings to the torques shown in the table, unless otherwise specified.

Refer to Special Torques section in this manual and tighten nuts on U-bolts to specifications indicated.
### 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.

<table>
<thead>
<tr>
<th>SAE Grade No.</th>
<th>Bolt head identification (See Note 1)</th>
<th>Bolt Size</th>
<th>LB FT</th>
<th>Nm</th>
<th>LB FT</th>
<th>Nm</th>
<th>LB FT</th>
<th>Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4</td>
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<td>5/16</td>
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<td>6</td>
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**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.

<table>
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**NOTE:** Bolt head identification marks as per grade. Manufacturing marks will vary.

*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*
STANDARD TORQUE DATA FOR HYDRAULIC TUBES AND FITTINGS

<table>
<thead>
<tr>
<th>TUBE NUTS FOR 37° FLARED FITTINGS</th>
<th>O-RING BOSS PLUGS, ADJUSTABLE FITTING LOCK NUTS, SWIVEL JIC - 37° SEATS</th>
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<td>SIZE</td>
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</tr>
<tr>
<td>32</td>
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</table>

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 performing work 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.

SPECIAL TORQUES

Wheel Mounting Bolts................................................................. 80 to 100 lb ft (109 to 136 Nm)
Hitch Bolts .................................................................................. 380 to 456 lb ft (517 to 620 Nm)
Hitch Pin Nuts..................................................................................... 700 lb ft (952 Nm)
Landside Mounting Bolts .............................................................................. 70 lb ft (95.2 Nm)
Plow Bottom Attaching Bolts.......................................................... 200 lb ft (272 Nm)
Automatic Trip Spring Bolts .......................................................... 90 lb ft (122.4 Nm)
Toggle Trip Beam Load Adjustment Bolt ........................................... 90 lb ft (122.4 Nm)
Trash Plate Mounting Bolts.............................................................. 70 lb ft (95.2 Nm)
U-bolt Nuts...................................................................................... 270 to 320 lb ft (367 to 435 Nm)
The 7501 In-The-Furrow Plow has a maximum width of 10 foot and the 7501 On-Land Plow has a maximum width of 12 feet. Ten feet of space is required on each side of the machine during set up procedures.

If set-up is performed indoors, 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.

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

⚠️ **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 (In-The-Furrow)

1. MAIN FRAME PACKAGE

2. COMPLETING PACKAGE

Material List

Main Frame Package
The main frame package consists of the frame with the rear furrow and 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:

• Plow bottoms.

• Hitch crossbar.

• Turnbuckles, hydraulic hoses and fittings.

• Wheels and tires.

• Hardware, pins, clamps, tires, nuts and bolts.

• Attachments (if equipped) that were ordered. This will include the frame extension with automatic or toggle trip beams, colters, trash plates and hitch.

Place the packages in a clean work area. Check all package contents carefully for damage.

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

Option 1: Auto-Draft Version

1. HYDRAULIC WIDTH OF CUT AND AUTOMATIC LINE OF DRAFT ADJUSTMENT
2. HYDRAULIC HITCH

Option 2: Hydraulic Version

1. HYDRAULIC WIDTH OF CUT ADJUSTMENT
2. MECHANICAL LINE OF DRAFT ADJUSTMENT
Option 3: Mechanical Version

1. MECHANICAL WIDTH OF CUT ADJUSTMENT
2. MECHANICAL LINE OF DRAFT ADJUSTMENT
STEP 1

Place main frame assembly and completing package in a clean work area.

STEP 2

Lift the plow frame assembly with a fork lift truck. Remove the bands for shipping that secure the rear furrow and gauge wheel axle and hub assemblies. Remove the shipping stands from the frame assembly.

Position the assembly over safety stands under the frame assembly. Remove the three wooden wedges between the plow beam and the main frame tube.

**NOTE:** If you have a frame extension refer to the Detail Index for Frame Extension Installation steps.

**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
STEP 3

Position the rear furrow wheel frame (1) to the main frame (2). Install the pin assembly (3) through the frame and secure with a snap ring and washer on each pin.

**IMPORTANT:** Make sure that the pin assembly is installed as shown from the left hand side of the wheel frame.

STEP 4

Install the hydraulic cylinder (1) to the rear furrow wheel frame (2). Secure with two headed pins (3), one on each end, and cotter pins.

**NOTE:** The cylinder rod must be toward the rear furrow wheel frame and the hydraulic connections located as shown. The cylinder rod can be retracted by hand for cylinder installation.

STEP 5

Install the rear furrow wheel axle (1) with heat treated washer (2) through the frame. Install the rear steering arm (3) with soft washer(s) as required (4). The axle hub (5) and the rear steering arm (3) must be toward the RH side of the frame. Secure with two headed (6) and cotter pins.

**NOTE:** It may be necessary to remove the paint from the top of the axle for easy installation.

STEP 6

Install the rear furrow wheel (1) on the axle hub (2). Tighten the eight bolts to a torque of 80 to 100 lb ft (109 to 136 Nm).
**STEP 7**

1. REAR STEERING LINK
2. REAR STEERING ARM
3. HARDENED WASHER
4. BOLT
5. NUT
6. SMV EMBLEM BRACKET
7. BOLT
8. SMV EMBLEM
9. BOLT AND NUT

Install the rear steering link (1) to the top of the rear steering arm (2). Secure rear steering link to steering arm with a hardened washer (3), bolt (4) and nut (5).

**NOTE:** Use the outer hole for initial set-up.

Install the SMV emblem bracket (6) to the rear steering arm (2) and secure with bolt (7). Install SMV Emblem (8) on bracket and secure with two bolts and nuts (9).

**STEP 8**

1. QA PIN
2. J PIN
3. GAUGE WHEEL AXLE
4. FRAME

Remove the QA pin (1) and "J" pin (2) that positions the gauge wheel axle (3) to the frame (4). Remove the axle and change the position of the axle so that the wheel hub is facing outwards.

**STEP 9**

1. J PIN
2. GAUGE WHEEL AXLE
3. FRAME
4. QA PIN

Install the “J” pin (1), to secure the gauge wheel axle (2) to the frame (3). Secure the “J” pin with QA pin (4). Tighten the wheel bolts to a torque of 80 to 100 lb ft (109 to 136 Nm).

**IMPORTANT:** Failure to install the gauge wheel as shown will result in damage to "J" pin or plow frame.
**STEP 10  Auto-Draft Version**

The front parallel plate (1) must be positioned inside the parallel bar assembly (2). Install the shift linkage bar (3) to the pull frame (4) and to the front parallel plate (1). The shift linkage bar must lay on top of the parallel bar assembly and under the ear of the parallel plate as shown at right. Secure front parallel plate, shift linkage bar to pull frame (4) with a two headed pins (5). Secure headed pins with cotter pins.

**NOTE:** Refer to the illustrations below for the correct shift bar assembly.

**NOTE:** The shift linkage arm is installed on all three versions of the plow. The shift linkage arm is not required for the auto-draft version. For auto-draft version, the shift linkage arm may be removed after the plow is completely assembled. Refer to illustration below.

**NOTE:** The following illustrations refer to shift linkage bar installation for Auto Draft with different furrow sizes and hitch categories.

1. FRONT PARALLEL PLATE
2. PARALLEL BAR ASSEMBLY
3. SHIFT LINKAGE BAR
4. PULL FRAME
5. HEADED PIN

1. PARALLEL BAR ASSEMBLY 2. BOLT

6 Furrow Or 5 Furrow With Extension - Category III Hitch

5 Furrow and 5 Furrow with Extension - Category II Hitch

6 Furrow and 5 Furrow With Extension - Category II or III Narrow Hitch
STEP 11  Hydraulic Line Of Draft

Install the hydraulic cylinder (1) to the spreader bar (2) and pull frame (3). Secure cylinder with two headed pins (4), one on each end. Secure headed pins with cotter pins (5).

NOTE: The rod end of the cylinder must be attached to the pull frame. Make sure that the two hydraulic fittings on the cylinder are facing towards the cylinder rod end.

Refer to the illustration below for correct spreader bar installation.
STEP 12 Mechanical Line Of Draft

Install a turnbuckle (1) between the spreader bar (2) and pull frame (3). Secure the turnbuckle to the spreader bar and pull frame with two headed pins (4), one on each end. Secure both headed pins with cotter pins (5).

NOTE: Make sure that the pull frame spreader bar is correctly positioned to the frame. Refer to the previous illustration for the correct spreader bar assembly.

STEP 13 Mechanical Width of Cut

Install a turnbuckle (1) to the pull frame (2) and shift linkage assembly (3). Secure the turnbuckle with two headed pins (4), one on each end. Secure the headed pins with cotter pins (5).

STEP 14 Hydraulic Width Of Cut

Install the hydraulic cylinder (1) to the pull frame (2) and shift linkage assembly (3). Secure hydraulic cylinder with two headed pins (4), one on each end. Secure the headed pins with cotter pins (5). The rod end of the cylinder must be connected to the shift linkage assembly. The two hydraulic fittings (6) on the cylinder must be facing toward the front of the plow.

STEP 15

The hitch pins (1) are installed at the factory reversed in the holes. Remove hitch pins from factory position and install the hitch pins facing outward. Place one washer (2) between the hitch pin nuts (3) and frame (4). Torque the hitch pin nuts to 700 lb ft (952 Nm).
STEP 16 Mechanical Horizontal Hitch

Install the hitch crossbar (1) into the hitch crossbar pivot (2). Install the two wear plates (3). Loosely secure crossbar and wear plates with two 3/4 x 5-1/2 inch hex bolts (4), lock washers (5) and nuts (6). Install the U-bolt assembly bar (7).

STEP 17

Install remaining two 3/4 x 5-1/2 inch hex bolts (1), lock washers (2) and nuts (3) to secure hitch crossbar (4) to crossbar pivot (5). Secure U-bolt assembly (6) with lock washers (7) and nuts (8). Tighten the 3/4 inch bolts to a torque of 380 to 456 lb ft (517 to 620 Nm) and the U-bolt nuts to a torque of 270 to 320 lb ft (367 to 435 Nm).

STEP 18 Hydraulic Horizontal Hitch

Install the hitch crossbar (1) into the hitch crossbar pivot (2). Make sure that the hitch pins in the crossbar are towards the front of the plow. Install the wear plate (3), with the two grease fittings, into the crossbar pivot (2). Shims may be required between the bottom of the wear plate and hitch crossbar. Loosely secure side wear plate (3) and shims to crossbar pivot (2) with two 3/4 x 4-3/4 inch hex bolts (4), lock washers (5) and nuts (6), (second bolt, lock washer and nut are located under the anchor bracket (7) in illustration above). Install the hydraulic cylinder anchor bracket (7) to the RH side of the crossbar pivot (2) using two 3/4 x 6 inch hex bolts (8), lock washers (9) and nuts (10). Tighten the nuts to a torque of 380 to 456 lb ft (517 to 620 Nm).

NOTE: The hitch pins are installed at the factory reversed in the holes. Refer to Step 12 for hitch pin installation.
STEP 19

Install the shift adjustment bar (1) to the hitch crossbar (2). Secure with a 3/4 x 1-1/2 inch hex bolt (3), lock washer (4) and nut (5). Connect the rod end of the hydraulic cylinder (6) to the shift adjustment bar (1) with a 1 x 1-3/4 inch headed pin (7) and cotter pin (8). Connect the other end of the hydraulic cylinder (6) to the anchor bracket (9) with a 1 x 3-1/2 inch headed pin (10). Secure the headed pin with a cotter pin (11).

NOTE: When installing the shift adjustment bar to the hitch crossbar the dimension from the center of the shift adjustment bar hex bolt to the center of the cylinder rod headed pin must be 4.6 inch for a 4 furrow or 5 furrow plow and 6.8 inch for a 6 furrow plow. The shift adjustment bar is reversible so that these settings can be made.

STEP 20 Super Chief Plow

Install the right landside (1) to the frog (2) and secure with one 7/16 x 1-3/32 hex bolt and nut (3). Install the landside wear pad (4) on the landside (1) and secure with one 7/16 x 1-3/32 inch bolt and nut (5) and one 7/16 x 2 inch bolt and nut (6). Refer to torque chart in this manual and torque all the 7/16 bolts to standard torque as indicated.
STEP 21

Install the eccentric washer (1) on the frog (2) with the arrow pointing down. Refer to the illustration below for eccentric washer orientation. Secure the eccentric washer (1) with a 5/8 x 4 inch bolt and nut (3). Secure landside stop block (4) to frog (2) with one 5/8 x 3 inch bolt and nut (5). Tighten all the 5/8 bolts to a torque of 200 lb ft (271 Nm).

STEP 22

Install the right landside (1) to the frog (2) and secure with one 7/16 x 1-3/32 hex bolt and nut (3). Install two landside wear pads (4) on the landside (1) and secure with three 7/16 x 1-3/32 inch bolts and nuts (5) and one 7/16 x 1-3/16 inch bolt and nut (6). Install the eccentric washer (7) on the frog (2) with the arrow pointing down. Secure the eccentric washer (7) with a 5/8 x 4 inch bolt and nut (8). Refer to illustration at right for eccentric washer orientation. Secure landside stop block (9) to frog (2) with one 5/8 x 3 inch bolt and nut (10). Tighten all the 5/8 bolts to a torque of 200 lb ft (271 Nm). Refer to torque chart in this manual and torque all the 7/16 bolts to standard torque as indicated. Tighten all the 5/8 bolts to a torque of 200 lb ft (271 Nm).
STEP 23  Coulter

Install the coulter clamp (1) and cap (2) to the coulter rail (3). The three holes in the coulter rail provide a forward and rearward position. Install each coulter shank (4) in the rearward position on the coulter rail (3) with the offset in the shank extending forward as shown. Push the shank (4) all the way up between the clamp (1) and cap (2). The top of the shank must be parallel to the rail.

NOTE: For plows with HSES bottoms the coulter shank must be installed in the forward position.

Slide the coulter yoke (5) up over the shank (4) with the set collar (6) in place. Install the cotter pin (7) through the bottom of the shank (4). Tighten the set screw in the set collar (6) so that the coulter will run straight and at the same time be free to swing from side to side as limited by the set collar.

Refer to the Detail Index for adjustment of the coulter blades.

Trash Plates

STEP 24  Super Chief except HSCS and HSCU

Remove the upper two 3/8 inch nuts and washers (1) that secure the frog (2) to the plow bottom (3). Bolts do not need to be removed from frog.

STEP 25

Install the trash plate (1) so that the point of the trash plate is behind the shin (2) of the plow bottom and the trash plate is behind the moldboard.
STEP 26

Install the trash plate bracket (1) against the frog (2). Install the trash plate (3) against the front of the frog (2). Secure the trash plate (3) and trash plate bracket (1) with the 3/8 inch nuts and washers (3) previously removed. Tighten the bolts to a torque of 70 lb ft (95.2 Nm).

STEP 27 HSES

Remove the upper two 7/16 inch nuts and washers (1) that secure the frog (2) to the plow bottom (3). Bolts do not need to be removed from frog.

STEP 28

Install the trash plate (1) so the point of the trash plate is behind the moldboard (2).

STEP 29

Install the trash plate bracket (1) on the backside of the frog (2). Secure the trash plate (3), trashplate bracket (2) to the frog (2) with one 12 x 30 mm bolt (4) and one 7/16 inch bolt (5) and nuts (6). Tighten bolts to a torque of 70 lb ft (95.2 Nm).
Frame Extension (If Equipped)

STEP 30

Place an appropriate support device under the rear wheel frame assembly. Disconnect the steering linkage tube (1) from the rear pivot plate (2). Disconnect the width of cut straps (3) from the rear wheels frame assembly (4). Remove five 3/4 x 2-1/2 inch bolts and nuts (5) that retain the rear wheels frame assembly (4) to the main frame (6). Push the rear wheels frame assembly rearward.

STEP 31

Install the frame extension (1) on the main frame (2) and secure with five 3/4 x 2-1/2 inch bolts and nuts (3). Secure the other end of frame extension (1) to rear wheel frame assembly (4) with five 3/4 x 2-1/2 inch bolts and nuts previously removed.

STEP 32

Install the width of cut linkage straps (1) as shown, on the existing straps (2) and triangle plates (3). Use a 1/2 x 4 inch bolt and nut (4) at the front of the straps, a 1 x 3-1/4 inch headed pin with a cotter pin (5) next, then two 1/2 x 2-3/4 inch bolts and nuts (6). Install the existing 1 x 2-3/4 inch headed pin with the cotter pin (7) at the rear of the straps.
Hydraulic Hose Routing, In The Furrow, Hydraulic Hitch and Mechanical Width of Cut

1. REAR WHEEL CYLINDER
2. 90 DEGREE ELBOW (QUANTITY 4)
3. O-RING (QUANTITY 4)
4. HOSE, 4 FURROW, 260 INCH (6 604 mm) (QTY 2)
5. HOSE, 5 FURROW, 305 INCH (7 747 mm) (QTY 2)
6. HOSE, 6 FURROW, 340 INCH (8 636 mm) (QTY 2)
7. HOSE, 4, 5 AND 6 FURROW, 55 INCH (1 397 mm) WITH ORIFICE
8. HOSE, 4, 5 AND 6 FURROW 75 INCH (1 905 mm)
9. HYDRAULIC HITCH CYLINDER
10. WIDTH OF CUT CYLINDER
11. PIVOT PIN
12. CABLE CLAMP
13. HYDRA-GRIP, RED (QTY 2)
14. HYDRA-GRIP, GRAY (QTY 2)

STEP 33
Route hydraulic hoses on plow frame as indicated in the above illustration. Allow two inch (50.8 mm) slack in hose at point A for rear wheel cylinder. Route hose under pull frame at point B and around pivot pin (11) to prevent damage to hose.

STEP 34
Install cable clamps on frame as shown. Quantities for each frame are as follows: 4 Furrow - 5 cable clamps; 5 Furrow - 6 cable clamps; 6 Furrow - 7 cable clamps. Allow slack in hoses at point C for frame pivot.
Hydraulic Hose Routing, In The Furrow, Mechanical Hitch and Hydraulic Width of Cut

**STEP 35**
Route hydraulic hoses on plow frame as indicated in the above illustration. Allow two inch (50.8 mm) slack in hose at point A for rear wheel cylinder. Route hose under pull frame at point B and around pivot pin (9) to prevent damage to hose. Run hoses inside pull frame and around pivot pin (9) at point C.

**STEP 36**
Install cable clamps (10) on frame as shown. Quantities for each frame are as follows: 4 Furrow - 5 cable clamps; 5 Furrow - 6 cable clamps; 6 Furrow - 7 cable clamps. Allow slack in hoses at point D for frame pivot.

**NOTE:** Hose routing for Mechanical Width of Cut is same as hydraulic version except that hydraulic cylinder (9) is replaced by turnbuckle.

**IMPORTANT:** Clean hydraulic fluid must be used throughout the entire system. Failure to use clean hydraulic fluid will result in damage to the hydraulic components and will reduce machine performance.

**STEP 37**
Refer to Standard Torque Data For Hydraulic Tubes and Fittings chart in this manual and tighten all hydraulic fittings to torque values shown, unless otherwise specified.

**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 performing work 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.
**Pre-Delivery Steering Check**

1. Check the setting for the adjustable steering tube. See the illustration below for the correct overall length.

2. Actuate the hydraulic cylinder, or screw the turnbuckle, to adjust the cutting width to the maximum (22 inch) setting.

3. Turn the crossbar, or tractor, to the right until the front steering stop is engaged.

4. Check the rear steering stop. Make sure the rear steering stop is not engaged. If necessary, either change the adjustment in Step 1, or change the mounting position of the rear steering tube or steering stop bar.

5. Actuate the hydraulic cylinder, or screw the turnbuckle, to adjust the cutting width to the minimum (14 inch) setting.

6. Turn the crossbar, or tractor, to the left until the front steering stop is engaged.

7. Check the rear steering stop. Make sure the rear steering stop is not engaged. If necessary, either change the adjustment in Step 1, or change the mounting position of the rear steering tube or steering stop bar.

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**Steering Tube Diagram**

1. 6, 5 AND 5 FURROW WITH EXTENSION

2. 4 AND 4 FURROW WITH EXTENSION

3. 5 FURROW REDUCIBLE TO 4 FURROW - 4854 mm (191.1 INCHES)

4. 4 FURROW EXTENDABLE TO 5 FURROW - 3880 mm (152.8 INCHES)

5. 6 FURROW REDUCIBLE TO 5 FURROW (REAR TUBE) - 2676 mm (105.3 INCHES)

6. 5 FURROW EXTENDABLE TO 6 FURROW (REAR TUBE) - 1679 mm (66.1 INCHES)

7. 5 TO 6 AND 6 TP 5 REQUIRED (FRONT TUBE) 3204 mm (126.1 INCHES)

8. RAER LINKAGE - 1285 mm (50.6 INCHES)
SET-UP PREPARATION (On - Land)

Material List

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

Completing Package
The remaining 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:

- Plow bottoms.
- Hitch crossbar.
- Turnbuckles, hydraulic hoses and fittings.
- Wheels and tires.
- Hardware, pins, clamps, tires, nuts and bolts.
- Attachments (if equipped) that were ordered. This will include the frame extension with automatic or toggle trip beams, colters, trash plates and hitch.

Place the packages in a clean work area. Check all package contents carefully for damage.

NOTE: The contents of the specific packages will vary depending on the type and size of the plow.
**STEP 1**

Place the frame assembly and completing package on a clean work area. Remove all of the components banded to the main frame. Remove shipping stands. Remove pivot pin and install pull beam to main frame.

**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

**STEP 2**

Lift the plow frame assembly with overhead hoist or a fork lift and position on-safety stands under the main frame and pull beam. Remove the two wooden wedges between the plow beam and the main frame tube.

**NOTE:** If you have a frame extension refer to the Detail Index for Frame Extension Installation steps.
**STEP 3**

Position the rear furrow wheel frame (1) to the main frame (2). Install the pin assembly (3) through the frame and install a snap ring and washer (4) on each pin.

**IMPORTANT:** Make sure that the pin assembly is installed as shown from the left hand side of the wheel frame.

**STEP 4**

Install the hydraulic cylinder (1) to the rear furrow wheel frame (2). Secure using two headed pins and cotter pins (3). The cylinder rod must be toward the rear furrow wheel frame, and the hydraulic connections must be toward the ground.

**NOTE:** The cylinder rod can be retracted by hand for cylinder installation.

**STEP 5**

Install the rear furrow wheel axle (1) with heat treated washer (2) through the frame. Install the rear steering arm (3) with soft washer(s) (4) as required. The axle hub (5) and the rear steering arm (3) must be toward the RH side of the frame. Install the headed pins and cotter pins (6).

**NOTE:** It may be necessary to remove the paint from the top of the axle for easy installation.

**STEP 6**

Install the rear furrow wheel (1) on the axle hub (2). Tighten the eight bolts to a torque of 80 to 100 lb ft (109 to 136 Nm).
**STEP 7**

Install the rear steering link (1) on top of the rear steering arm (2). Secure rear steering link to steering arm with a hardened washer (3), bolt (4), and nut (5).

**NOTE:** Use the outer hole for initial set-up

Install the Slow Moving Vehicle (SMV) emblem bracket (6) to the rear steering arm (2) and secure with bolt (7). Install the Slow Moving Vehicle (SMV) emblem (8) on the bracket and secure with two bolts and nuts (9).

**STEP 8**

Remove the QA pin (1) and "J" pin (2) that positions the gauge wheel axle (3) to the frame (4). Remove the axle and change the position of the axle so that the wheel hub is facing outwards.

**STEP 9**

Install the "J" pin (1), to secure the gauge wheel axle (2) to the frame (3). Secure the "J" pin with a QA pin (4) Tighten the wheel bolts (5) to a torque of 80 to 100 lb ft (109 to 136 Nm).

**IMPORTANT:** Failure to install the gauge wheel as shown will result in damage to "J" pin or plow frame.
STEP 10

Install spreader bar U-Bracket (1) on pull beam (2). Secure using a clamp bar (3) and two 3/4 x 8-1/2 inch bolts (4) and nuts (5). Install a spacer (6) and spreader bar (7) on the U-bracket (1) and secure using a 3/4 x 3 inch bolt (8) and nut (9). The end of the U-bracket with the horizontal holes must face the front furrow wheel.

NOTE: Refer to Detail Index for Spreader Bar set up for plow sizes.

IMPORTANT: Be sure to install spreader bar U-Bracket (1) as shown above to prevent damage to the steering tube.

STEP 11 Hydraulic Width Of Cut

Install the hydraulic cylinder (1) to the pull frame (2) and shift linkage assembly (3). Secure hydraulic cylinder with two headed pins (4), one on each end. Secure the headed pins with cotter pins (5). The rod end of the cylinder must be connected to the shift linkage assembly. The two hydraulic fittings (6) on the cylinder must be facing upward. Refer to the Detail Index for Hydraulic Cylinder/Turnbuckle Setting chart for On-Land version and set hitch according to chart.

NOTE: For mechanical width of cut, install turnbuckle in lace of hydraulic cylinder. Refer to Detail Index for Hydraulic Cylinder/Turnbuckle Setting chart for correct hitch setting.

STEP 12

After either mechanical or hydraulic width of cut installation and setting of cutting width, observe position of pointer on main frame and use pointer as reference for future adjustments.
STEP 13  Hitch Crossbar

Remove two 3/4 x 3-3/4 inch bolts (1) and self-locking nuts (2) securing hitch pivot pin (3) to crossbar yoke (4) and yoke support (5). Remove one cotter pin (6) from hitch pivot pin (3) and remove hitch pivot pin (3). Separate pull frame (7) from yoke support (5). Remove two 3/4 x 1-3/4 inch bolts (8) and self-locking nuts (9) securing yoke support (5) to crossbar yoke (4). Remove yoke support.

STEP 14

Spread grease on front wear surface (A) of the hitch crossbar (1) in the area of the three crossbar pin locations.

STEP 15

Push the crossbar pivot pin (1) through the yoke support (2) and secure with flat washer (3) and slotted lock nut (4). Place a 1/8 x 2 inch cotter pin (5) through hole in slotted lock nut (4) to secure slotted lock nut (5) to crossbar pivot pin (1).
STEP 16

Install pull frame (1) on yoke support (2). Install hitch pivot pin (3) through crossbar yoke (4), yoke support (2) and pull frame (1). Install cotter pin (5) through hitch pivot pin (4).

STEP 17 Steering Links

Connect rear steering link (1) to steering arm (2) using a 3/4 x 5-1/2 inch hex bolt (3), flat washer (4) and self-locking nut (5). Install bolt from bottom side upward through steering link. Install flat washer (4) between rear steering link (1) and steering arm (2).

STEP 18

Connect other end of rear steering link (1) to center steering plate (2) using a 3/4 x 5-1/2 inch hex bolt (3), flat washer (4) and self-locking nut (5). Install flat washer between steering link (1) and center plate (2).

STEP 19

Connect inside steering tube (1) to center steering tube plate (2) using a 3/4 x 5-1/2 inch hex bolt (3), flat washer (4) and self-locking nut (5). Install the steering tube with the adjustable link (6) at the center steering tube plate.
NOTE: It may be necessary to remove a bolt and nut from the steering tube to extend and connect the tube to the center steering arm in the next step.

**STEP 20**

Connect the outside center steering tube (1) to the center steering arm (2) using a 3/4 x 3-1/4 in hex bolt (3), two flat washers (4), one between steering tube and steering plate, and self-locking nut (5). Install the steering arm to center steering tube as indicated for size of plow. DO NOT install steering tube on farthest outside hole in center steering arm.

**NOTE:** If the bolt and nut were removed from the outside center steering tube to make installation to center steering arm, install bolt and nut in outside center steering tube. Adjustment of link may be necessary to match holes in outside and inside steering tubes. Further adjustment of steering tubes is described later in this manual.

**STEP 21**

Connect front steering tube (1) to center steering arm (2) using a 3/4 x 3-1/4 inch hex bolt (3), two flat washers (4) and self-locking nut (5). Install bolt from bottom side upward through steering link.

**STEP 22**

Connect other end of front steering tube (1) to hitch pivot (2) using a 3/4 x 3-1/4 inch hex bolt (3), two flat washers (4) and self-locking nut (5). Install flat washers between hex bolt (4) and steering tube (1) and steering tube (1) and hitch pivot (2).
Set spreader bar width in accordance with the following table.

<table>
<thead>
<tr>
<th>FURROW SIZE</th>
<th>LOCATION</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIAL SETTING</td>
<td>POSITION 1</td>
<td>1 340 mm (52.4 inches)</td>
</tr>
<tr>
<td>5 FURROW</td>
<td>POSITION 2</td>
<td>1 410 mm (52.75 inches)</td>
</tr>
<tr>
<td>6 FURROW</td>
<td>POSITION 3</td>
<td>1 480 mm (58.25 Inches)</td>
</tr>
<tr>
<td>7 FURROW</td>
<td>POSITION 4</td>
<td>1 550 mm (61 Inches)</td>
</tr>
</tbody>
</table>
Install bolt and nut in center steering tube and adjust steering tube length as indicated in the following table.

<table>
<thead>
<tr>
<th>FURROW SIZE</th>
<th>TURNBUCKLE LENGTH (Dim A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Furrow</td>
<td>1 486 mm (58.5 inch)</td>
</tr>
<tr>
<td>6 Furrow</td>
<td>2 467.5 mm (97.5 inch)</td>
</tr>
<tr>
<td>7 Furrow</td>
<td>3 4667 mm (136.5 inch)</td>
</tr>
</tbody>
</table>
Set the pull frame to the hitch and crossbar settings for wheel spacings as indicated in the table below.

<table>
<thead>
<tr>
<th>PLOW SIZE</th>
<th>TRACTOR TIRE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DUAL 116 INCH MAX</td>
</tr>
<tr>
<td>5 FURROW</td>
<td>SETTING 2</td>
</tr>
<tr>
<td>6 FURROW</td>
<td></td>
</tr>
<tr>
<td>7 FURROW</td>
<td></td>
</tr>
</tbody>
</table>
**STEP 26  Super Chief Plow**

1. RIGHT LANDSIDE
2. FROG
3. 7/16 X 1-3/32 INCH BOLT AND NUT

Install the right landside (1) to the frog (2) and secure with one 7/16 x 1-3/32 hex bolt and nut (3). Install the landside wear pad (4) on the landside (1) and secure with one 7/16 x 1-3/32 inch bolt and nut (5) and one 7/16 x 2 inch bolt and nut (6). Refer to torque chart in this manual and torque all the 7/16 bolts to standard torque as indicated.

**STEP 27**

1. ECCENTRIC WASHER
2. FROG
3. 5/8 X 4 INCH BOLT AND NUT
4. LANDSIDE STOP BLOCK
5. 5/8 X 3 INCH BOLT AND NUT

Install the eccentric washer (1) on the frog (2) with the arrow pointing down. Refer to the illustration at right for eccentric washer orientation. Secure the eccentric washer (1) with a 5/8 x 4 inch bolt and nut (3).

Secure landside stop block (4) to frog (2) with one 5/8 x 3 inch bolt and nut (5). Tighten all the 5/8 bolts to a torque of 200 lb ft (271 Nm).
STEP 28  HSES Plow

Install the right landside (1) to the frog (2) and secure with one 7/16 x 1-3/32 inch hex bolt and nut (3). Install two landside wear pads (4) on the landside (1) and secure with three 7/16 x 1-3/32 inch bolts and nuts (5) and one 7/16 x 1-3/16 inch bolt and nut (6). Install the eccentric washer (7) on the frog (2) with the arrow pointing down. Secure the eccentric washer (7) with a 5/8 x 4 inch bolt and nut (8). Refer to illustration at right for eccentric washer orientation. Secure landside stop block (9) to frog (2) with one 5/8 x 3 inch bolt and nut (10). Tighten all the 5/8 bolts to a torque of 200 lb ft (271 Nm). Refer to torque chart in this manual and torque all the 7/16 bolts to standard torque as indicated. Tighten all the 5/8 bolts to a torque of 200 lb ft (271 Nm).

STEP 29  Couler

Install the couler clamp (1) and cap (2) to the couler rail (3). The three holes in the couler rail provide a forward and rearward position. Install each couler shank (4) in the rearward position on the couler rail (3) with the offset in the shank extending forward as shown. Push the shank (4) all the way up between the clamp (1) and cap (2). The top of the shank must be parallel to the rail.

NOTE: For plows with HSES bottoms the couler shank must be installed in the forward position.

Slide the couler yoke (5) up over the shank (4) with the set collar (6) in place. Install the cotter pin (7) through the bottom of the shank (4). Tighten the set screw in the set collar (6) so that the couler will run straight and at the same time be free to swing from side to side as limited by the set collar. Refer to the Detail Index for adjustment of the couler blades.
Trash Plates

**STEP 30**  Super Chief except HSCS and HSCU

Remove the upper two 3/8 inch nuts and washers (1) that secure the frog (2) to the plow bottom (3). Bolts do not need to be removed from frog.

**STEP 31**

Install the trash plate (1) so that the point of the trash plate is behind the shin (2) of the plow bottom and the trash plate is behind the moldboard.

**STEP 32**

Install the trash plate bracket (1) against the frog (2). Install the trash plate (3) against the front of the frog (2). Secure the trash plate (3) and trash plate bracket (1) with the 3/8 inch nuts and washers (3) previously removed. Tighten the bolts to a torque of 70 lb ft (95.2 Nm).

**STEP 33**  HSES

Remove the upper two 7/16 inch nuts and washers (1) that secure the frog (2) to the plow bottom (3). Bolts do not need to be removed from frog.
**STEP 34**

Install the trash plate (1) so the point of the trash plate is behind the moldboard (2).

**Frame Extension (If Equipped)**

**STEP 36**

Place an appropriate support device under the rear wheel frame assembly. Disconnect the steering linkage tube (1) from the rear pivot plate (2). Disconnect the width of cut straps (3) from the rear wheels frame assembly (4). Remove five 3/4 x 2-1/2 inch bolts and nuts (5) that retain the rear wheels frame assembly (4) to the main frame (6). Push the rear wheels frame assembly rearward.

**STEP 37**

Install the frame extension (1) on the main frame (2) and secure with five 3/4 x 2-1/2 inch bolts and nuts (3). Secure the other end of frame extension (1) to rear wheel frame assembly (4) with five 3/4 x 2-1/2 inch bolts and nuts previously removed.
STEP 38

Install the width of cut linkage straps (1) as shown, on the existing straps (2) and triangle plates (3). Use a 1/2 x 4 inch bolt and nut (4) at the front of the straps, a 1 x 3-1/4 inch headed pin with a cotter pin (5) next, then two 1/2 x 2-3/4 inch bolts and nuts (6). Install the existing 1 x 2-3/4 inch headed pin with the cotter pin (7) at the rear of the straps.
STEP 39 Hydraulic Hose Routing, On-Land

1. HYDRAULIC HOSE, 39 INCH (7/6 FURROW ONLY) (QTY 2)
2. HYDRAULIC HOSE, 165 INCH (ALL MODELS) (QTY 2)
3. HYDRAULIC HOSE, 210 INCH (ALL MODELS) (NOTE 1)
4. HYDRAULIC HOSE, 225 INCH (ALL MODELS) (NOTE 1)
5. UNION (QTY 2, 5 AND 6 FURROW)
6. UNION (QTY 4, 7/6 FURROW)
7. HYDRAULIC HOSE, 185 INCH (QTY 2, 5 FURROW)
8. HYDRAULIC HOSE, 230 INCH (QTY 2, 6 AND 7/6 FURROW)
9. HYDRAULIC CYLINDER, 3X8 (QTY 3)
10. HOSE CLAMP, 1/2 INCH (QTY 10, 5 FURROW) (QTY 6, 6 AND 7/6 FURROW)
11. HOSE CLAMP, 3/8 (QTY 32)
12. HYDRA-GRIP, RED (QTY 2)
13. HYDRA-GRIP, GRAY (QTY 2)
14. HYDRA-GRIP, BLACK (QTY 2)

NOTE 1: One additional hose each for front wheel and hydraulic cut cylinder.

STEP 40
Route hydraulic hoses on plow frame as indicated in the above illustration. Allow two inch (50.8 mm) slack in hose at point “A” for rear wheel cylinder.

STEP 41
Route hose under pull frame at point “B” to prevent damage to hose. Install cable clamps on frame. Quantities indicated in table.

NOTE: Hose routing for Mechanical Width of Cut is same as hydraulic version except that hydraulic cylinder is replaced by turnbuckle.

IMPORTANT: Clean hydraulic fluid must be used throughout the entire system. Failure to use clean hydraulic fluid will result in damage to the hydraulic components and will reduce machine performance.

STEP 42
Refer to Standard Torque Data For Hydraulic Tubes And Fittings chart in this manual and tighten all hydraulic fittings to torque values shown, unless otherwise specified.

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 performing work 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.
Pre-Delivery Steering Check

1. Check the setting for the adjustable steering tube. See the illustration below for the correct overall length.

2. Actuate the hydraulic cylinder, or screw the turnbuckle, to adjust the cutting width to the maximum (22 inch) setting.

3. Turn the crossbar, or tractor, to the right until the front steering stop is engaged.

4. Check the rear steering stop. Make sure the rear steering stop is not engaged. If necessary, either change the adjustment in Step 1, or change the mounting position of the rear steering tube or steering stop bar.

5. Actuate the hydraulic cylinder, or screw the turnbuckle, to adjust the cutting width to the minimum (14 inch) setting.

6. Turn the crossbar, or tractor, to the left until the front steering stop is engaged.

7. Check the rear steering stop. Make sure the rear steering stop is not engaged. If necessary, either change the adjustment in Step 1, or change the mounting position of the rear steering tube or steering stop bar.

Steering Tube Diagram

1. ALL ON LAND FURROW PLOWS
2. FRONT STEERING TUBE - 4478mm (176.3 INCHES)
3. 7 FURROW REDUCIBLE TO 6 FURROW - 3467 mm (136.5 INCHES)
4. 6 FURROW EXTENDABLE TO 7 FURROW - 3467 mm (136.5 INCHES)
5. 6 FURROW REDUCIBLE TO 5 FURROW - 2476 mm (97.5 INCHES)
6. 5 FURROW EXTENDABLE TO 6 FURROW - 1486 mm (58.5 INCHES)
7. REAR LINKAGE - 1285 mm (50.6 INCHES)
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.