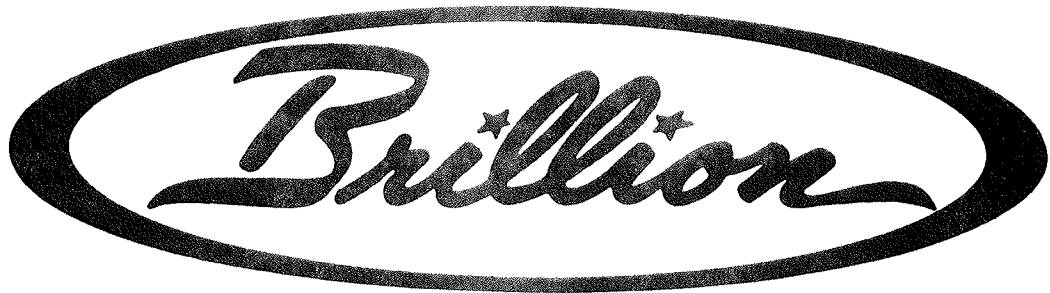
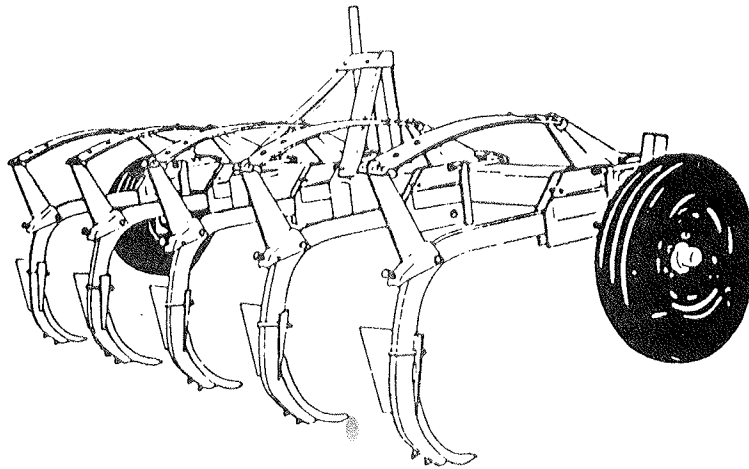


**ASSEMBLY INSTRUCTIONS  
OPERATOR'S MANUAL**



**AUTOMATIC RESET  
DEEP TILL**



**BRILLION IRON WORKS, INC.  
BRILLION, WISCONSIN 54110**

## CONTENTS

Introduction .....	3
Location Reference .....	3
Parts Ordering .....	3
Safety Suggestions .....	4
Assembly .....	5
Main Frame Assembly .....	5
Single Beam Frame Assembly .....	6
Shank Assembly .....	7
Trash Cutter Assembly .....	8
Spring Coultter Assembly .....	9
15" Shank Spacing Chart .....	10
30" Shank Spacing Chart .....	11
Single Beam Shank Spacings .....	12
Hydraulic System .....	13
Pole Hitch .....	15
Optional Equipment .....	15
Extensions .....	15
Operation and Service .....	16
Tractor Preparation .....	16
Implement Preparation .....	16
Charging Hydraulic System .....	16
Implement Transport .....	16
Cylinder Transport Lock .....	17
Pole Hitch Operation .....	17
3 Point Hitch Operation .....	17
Lubrication .....	17

## INTRODUCTION

To obtain maximum benefits from the BRILLION Automatic Reset Deep Till, please study this manual carefully before starting assembly or operation. A special section "Assembly Instructions", is included.



This Safety Alert symbol is used to call your attention to instructions concerning personal safety. Federal law requires you to explain the safety and operating instructions furnished with this machine to all employees before they are allowed to operate the machine. These must be repeated to the employees at the beginning of each season. Be sure to observe and follow the instructions for the safety of anyone operating or near the machine.

### Location Reference

Right hand, left hand and forward designations are those related to the operator when sitting in the operating position.

### Parts Ordering

When ordering parts for this machine, include the complete model number and serial number. Refer to the name plate on the rear of the main frame. Please record these numbers upon taking delivery of the machine.

Deep Till Model \_\_\_\_\_

Serial Number \_\_\_\_\_

Date Purchased \_\_\_\_\_

Be sure to read the warranty card which is shipped with the machine. Return the proper part of the card for recording at the factory.



## SAFETY SUGGESTIONS

Investigation has shown that nearly one third of all farm accidents are caused by careless use of machinery. You can do your part in improving safety by observing the following suggestions. Insist that all people working with you or for you abide by them.

1. Do not lubricate, adjust or repair when machine is in motion.
2. Do not tow or transport faster than 15 MPH.
3. Do not ride or allow others to ride on the machine.
4. Block up all hydraulically or mechanically raised components to prevent unintended lowering or lower the machine to the ground to make adjustments or repairs or when not in use.
5. Keep all persons away from machine during hitching and operating.
6. Slow down before making sharp turns or using the brakes. Drive slowly over rough ground, side hills, and around curves to avoid tipping.
7. Comply with all laws when transporting the machine on public roadways.
8. Instruct all operators in the safe operation of the machine. Review the Operator's Manual for correct procedures.

## ASSEMBLY

### Main Frame Assembly

Set the frame on stands for ease in assembly. Assembly should be carried out in an open and flat area.

Locate the center of the chisel plow frame and mark it. Assemble the center mast over the center mark. Loosely attach the center mast to the frame using 2 - 2/3 x 8 1/2 x 5 x 8 1/2" bolts, lock washers and nuts. On the left side of the center mast attach the parking stand using the center mast u-bolts. Do not tighten bolts yet.

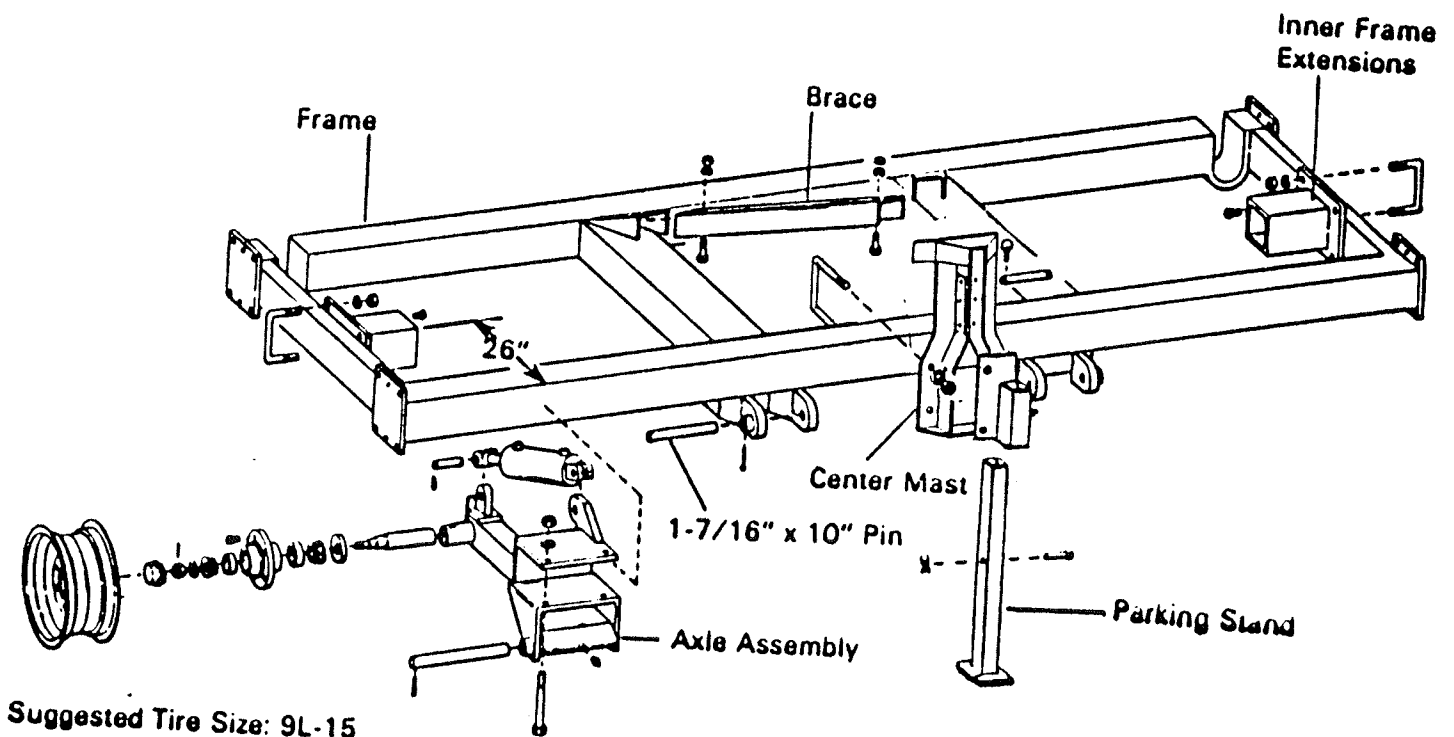
NOTE: The right and left hand side of the unit is designated when facing the direction of travel when in operation.

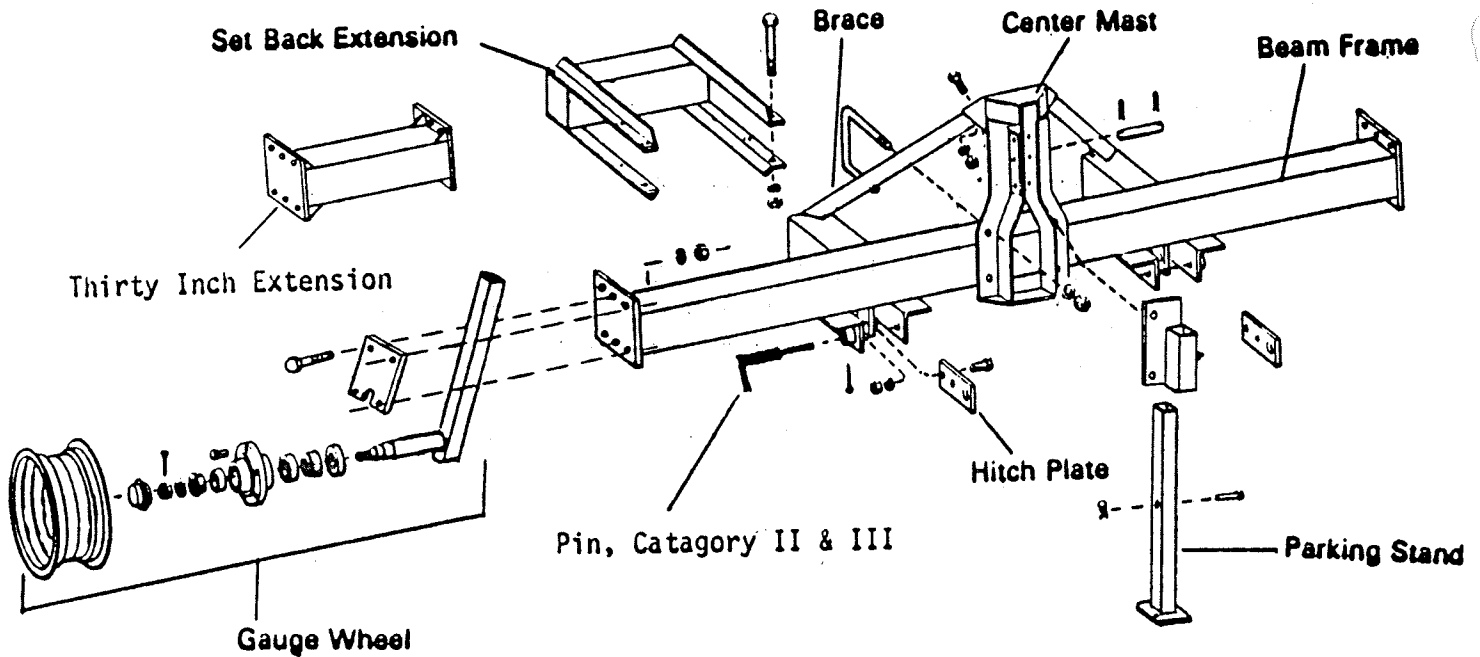
Assemble the center mast braces to the main frame and center mast using four 5/8" x 1-1/2" carriage bolts, lock washers, and nuts. Repeat for the other brace. Tighten all bolts at this time.

### For 15" Spacing Models

Mount the inside frame extensions to the end bars of the frame as shown. The shank mounting tube should be 26" from the front frame member to the front of mounting tube.

Assembly the axle mounting bracket to the front frame member. Loosely bolt in place with two 3/4" x 7" bolts, lock washers and nuts. Mount the rim to the axle hub. Refer to the shank spacing chart as to location of the wheels. Mount the wheels within 1/4" of the frame and the extensions as shown in shank spacing chart.





Single Beam Frame Assembly 3, 5, 7, Shank

Set the beam frame on stands, 7" side on bottom, for ease in assembly. Assembly should be carried out in an open area.

Locate the center of the beam and mark it. Mount the center mast over the center mark. Attach center mast to beam using 2 - 3/4 x 8 1/2 x 5 x 8 1/2" u-bolts, lock washers and nuts. On the left side of the center mast mount the parking stand using the center mast u-bolt. Do not tighten bolts securely.

Assemble the center mast braces to the center mast and beam using 5/8" x 1-1/2" bolts, lock washers and nuts. Tighten all bolts at this time.

Mount the gauge wheels to the end of the beam as shown using 5/8" x 3-1/2" x 3" x 3-1/2" u-bolts, lock washers and nuts. Mount the rims to the axle hubs. Suggested tire size is 6.70 x 15.

Assemble the shank assemblies to the frame as needed for your spacing. Single beam shank spacings are 20" or 30".

When used, mount the set-back extension to frame as shown. One set-back extension behind each center mast brace.

### Shank Assembly

Refer to the shank spacing chart for correct placement of each shank. The shanks are on 15" or 30" spacings.

Assemble shank mounting bracket using 3/4" x 7" hex bolts. Front plate must be installed between hex bolts and main frame. Tighten set screws.

Attach the shank to the mounting bracket using a 1" x 4" king pin and lock nut. Mount the rear arm to the shank. Place the leaf spring between the arms using 5/8" x 7" carriage bolts and lock nuts.

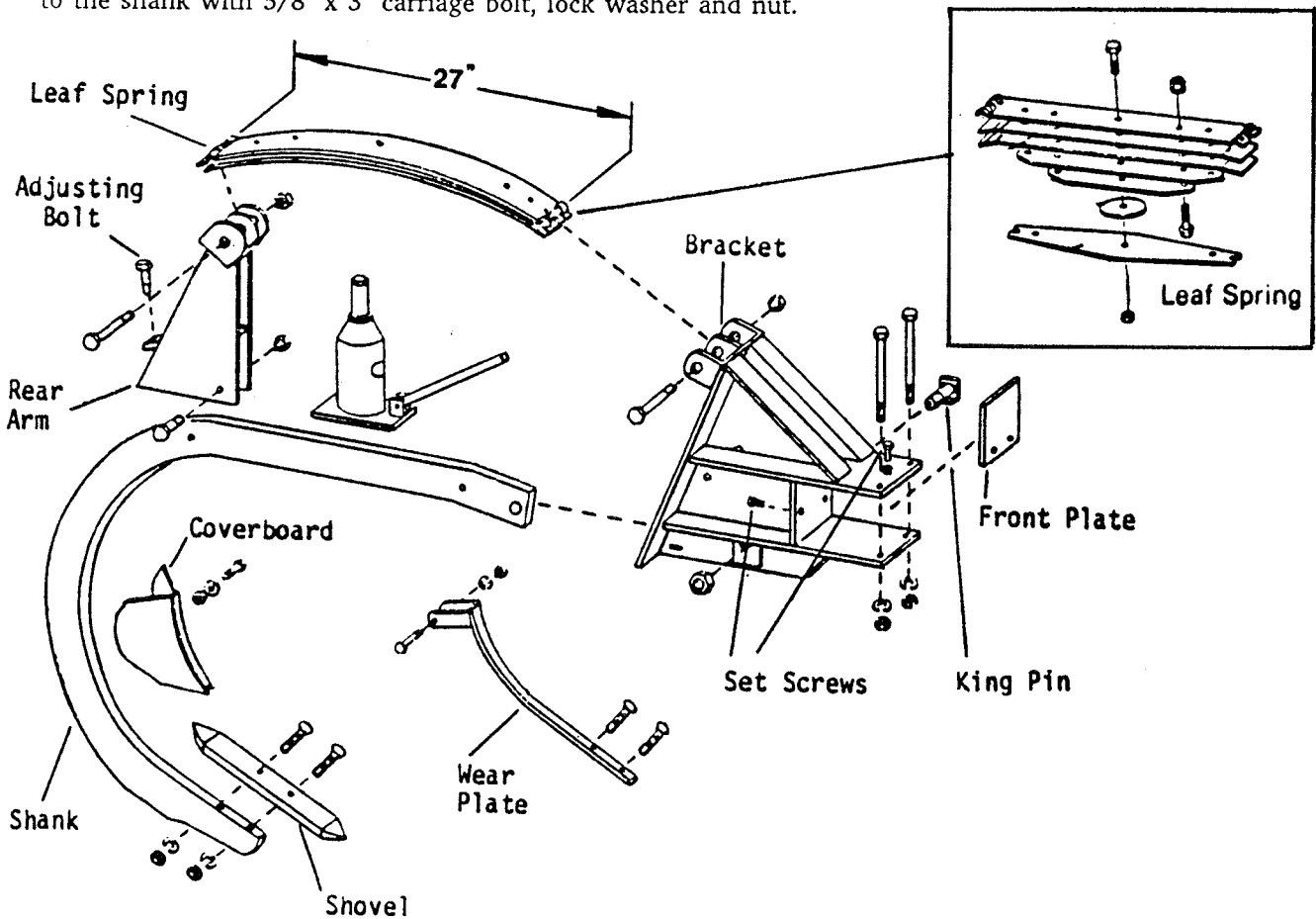
To adjust the spring pressure turn the adjusting bolt located in the rear leaf spring arm to obtain correct pressure. Camber must be 27" from center of pin to center of pin. Repeat this procedure for each shank mounting.

#### IMPORTANT!

Place hydraulic jack on top of the shank and under leaf spring when cambering spring to prevent stripping of adjustment bolt.

Use 5/8" lock nuts. DO NOT TIGHTEN spring holder clevis tightly to spring for spring must move freely.

Assemble the shovel to shank with clipped head plow bolts and nuts. Mount the cover blade assembly to the shank with 5/8" x 3" carriage bolt, lock washer and nut.



Adjustable cover board can be moved up and down for more thrash cover.

## Trash Cutter Assembly

When mounting trash cutter to single beam frame, first remove the center mast and center mast braces from single beam. You will use the center mast on the trash cutter frame.

Assemble the trash cutter frame to the single beam frame using  $3/4"$  x  $2"$  bolts, lock washers and nuts. Position the center frame mount between frames as shown. Use  $3/4"$  u-bolts to mount and place the center mast in front of the brace using  $3/4"$  x  $9-1/2"$  bolts to mount.

Attach the center mast braces, left and right, to the center mast and to single beam frame using  $5/8"$  x  $1-1/2"$  bolts to mount. You will have to drive the rear mounting brace down to attach the rear of the mast brace to mounting brace.

Slide the disk gang under the frame as shown. Slide brackets into disk gang frame tube. Mount brackets to trash cutter frame using  $3/4"$  u-bolts. Repeat for other side. Attach the spring leaf group to frame with a  $3/4"$  x  $8"$  bolt and nut. Connect the rear of the spring leaf group to disk frame arm, using  $5/8"$  x  $8-1/2"$  bolt and nut to secure.

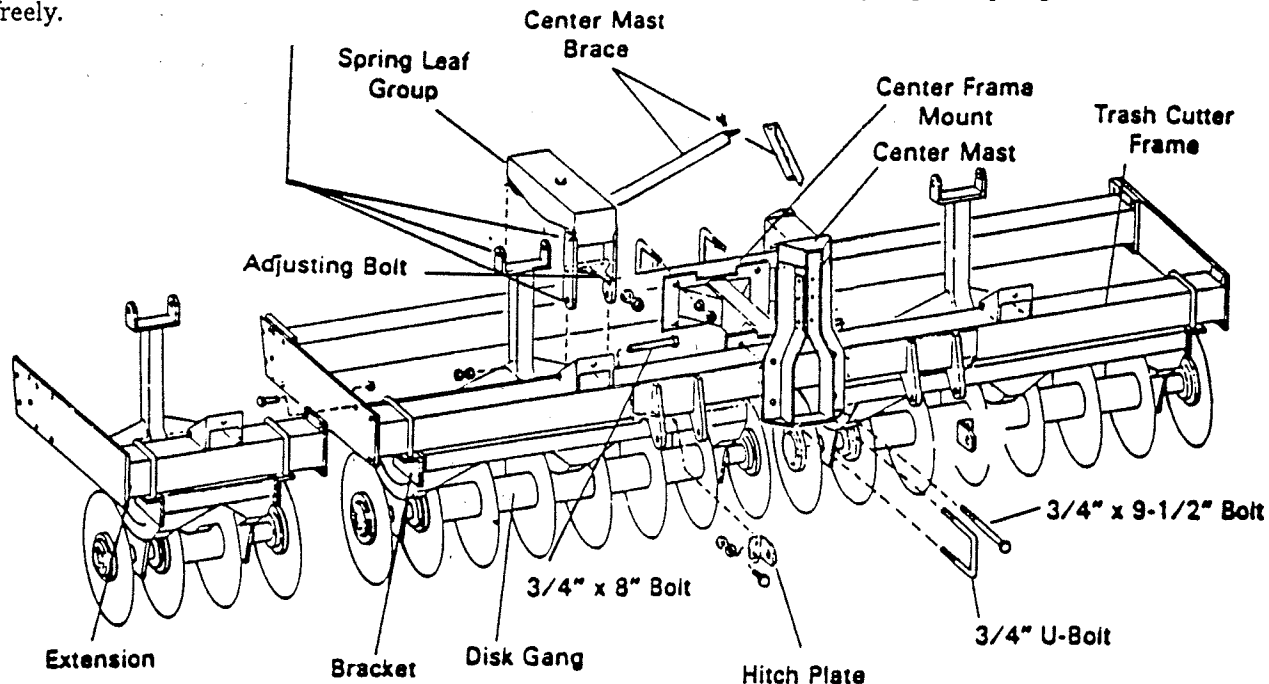
Adjust the spring leaf camber by turning adjusting bolts up or down until the center of bolt to center of bolt is  $27"$ . Set the blade depth at  $3"$  by turning the adjusting bolt.

Mount the gauge wheel to the end of the beam using  $5/8"$  x  $3-1/2"$  x  $3"$  x  $3-1/2"$  u-bolts, lock washers and nuts. Mount the rims to axle hubs. Suggested tire size is  $6.70$  x  $15$ .

Assemble extension to the trash cutter frame with  $3/4"$  x  $3"$  bolts. Assemble the disk group as before.

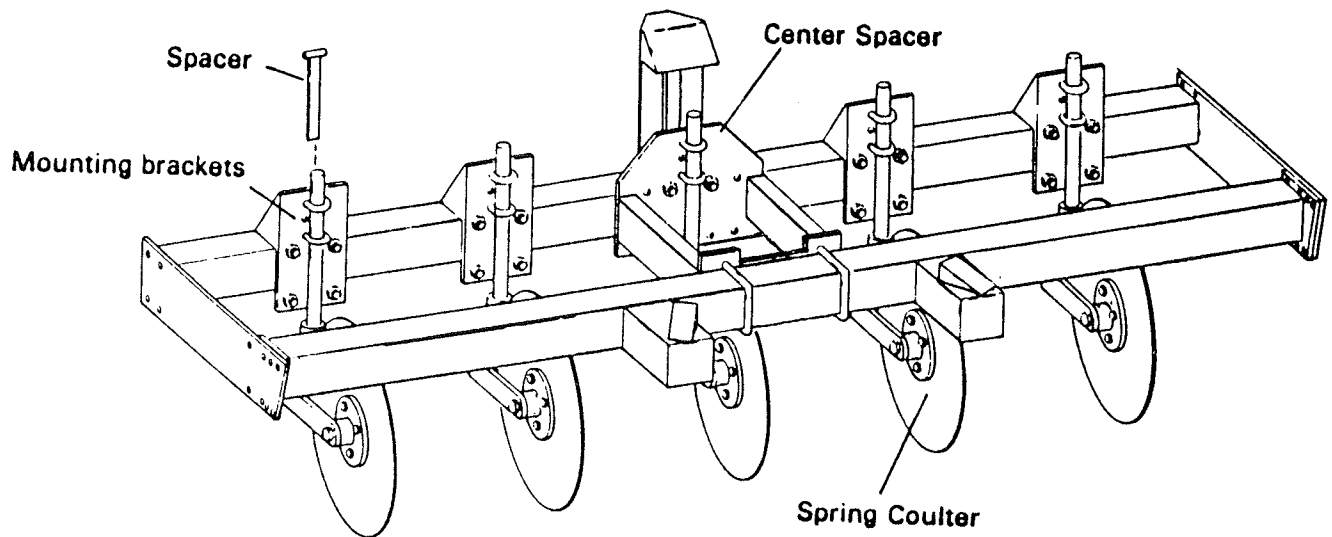
### CAUTION!

Use  $5/8"$  lock nuts. **DO NOT TIGHTEN** spring holder clevis tightly to spring for spring must move freely.



Mount Cat. II and III hitch plate to plate between hitch arms, using  $5/8"$  x  $1-1/2"$  bolts, lock washers and nuts. Mount one way for Cat. II and turn over for Cat. III.





### Spring Couler Assembly

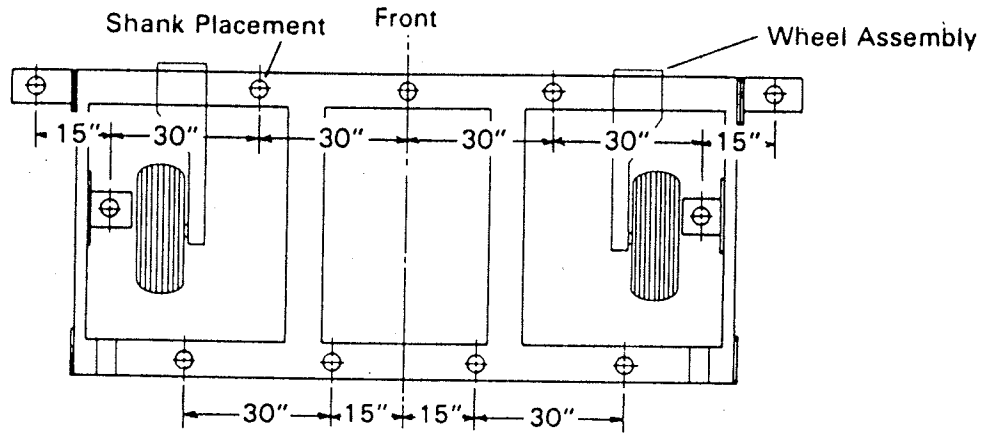
Assemble the center spacer between frame members as shown. Use u-bolts to mount. Before attaching to front frame member, remove the center hitch mast. Reattach the center hitch mast to front frame member using center spacer and bolts.

Attach the center mast braces, left and right, to the center mast and to single beam frame using 3/4" x 1-1/2" bolts to mount. You will have to drive the rear mounting brace down to attach the rear of the mast brace to mounting brace.

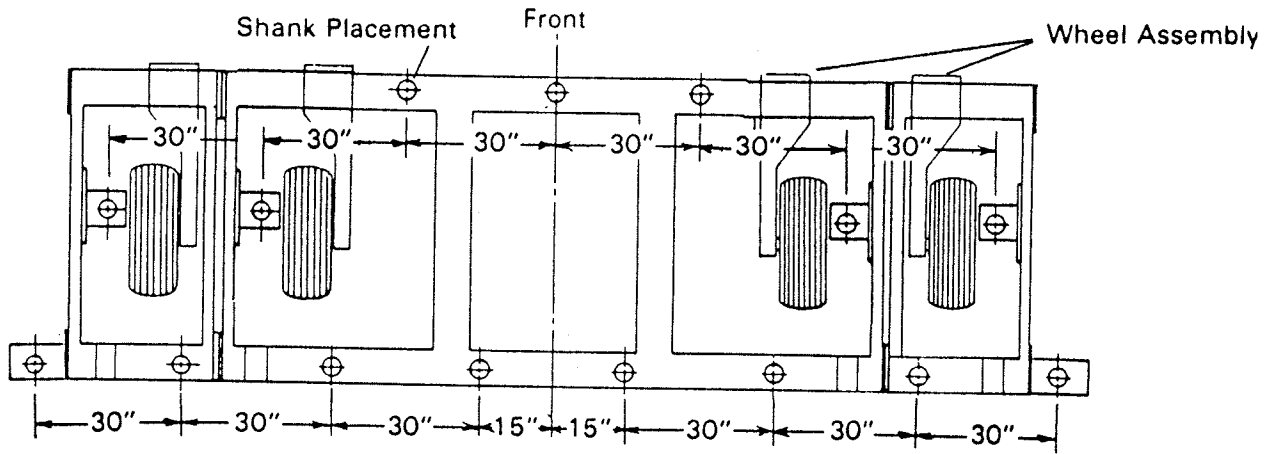
Mount the spring couler mounting brackets to rear of front frame member using 8 1/2 x 5 x 8 1/2" u-bolts, lock washers and nuts. Space couler mounting brackets out equally across the frame member. Mount a spring couler assembly to the center spacer using u-bolts, spacer, lock washers and nuts. Attach spring coulers to mounting brackets using u-bolts and spacers. Place spacer between bracket and spring couler shaft. Adjust all coulers to desired depth setting by sliding up or down and tightening in position with u-bolts.

# 15" SHANK SPACING CHART

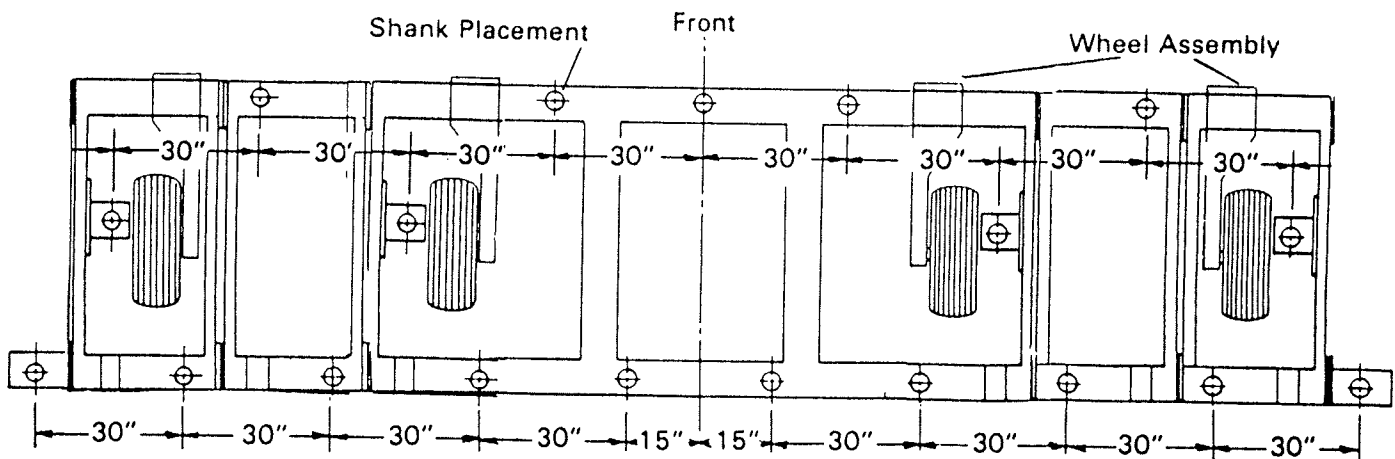
## 7, 9, 11 Shank Models



## 13, 15 Shank Models

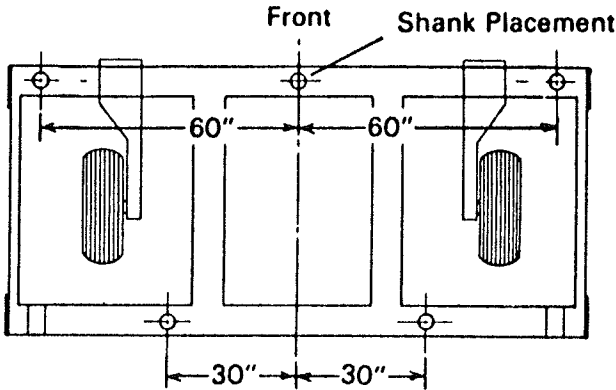


## 17, 19 Shank Models

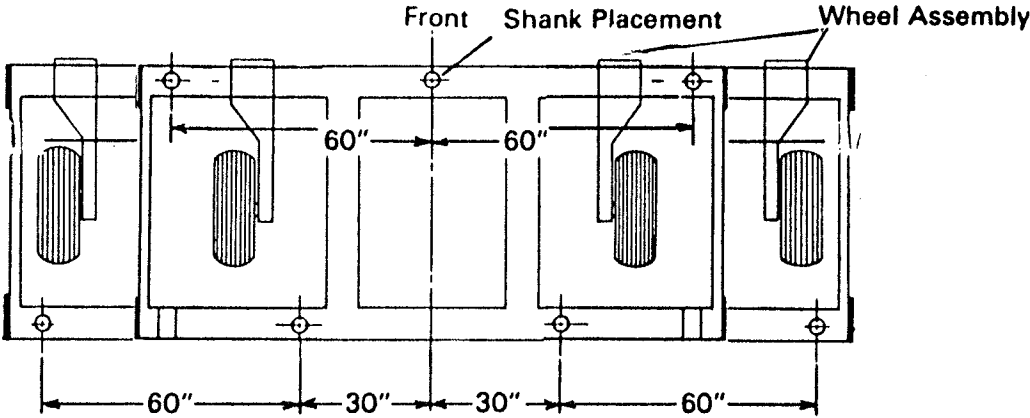


# 30" SHANK SPACING CHART

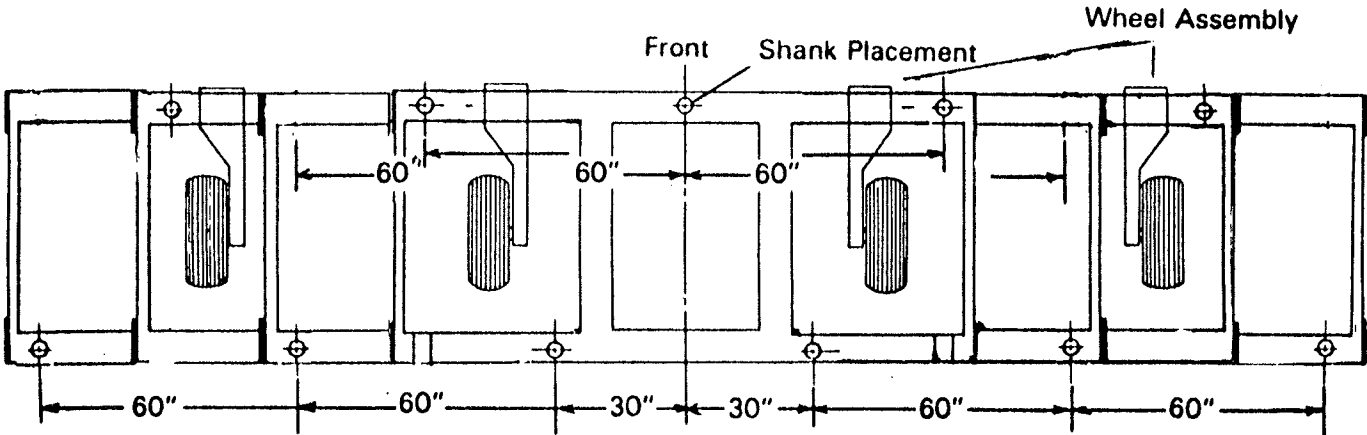
## 5 Shank Model



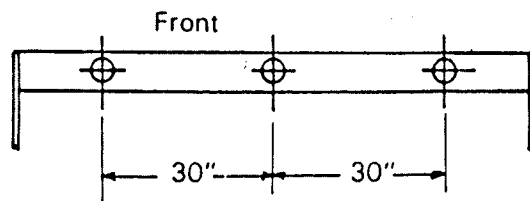
## 7 Shank Models



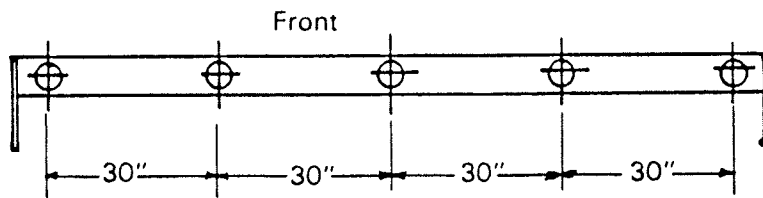
## 9, 11 Shank Model



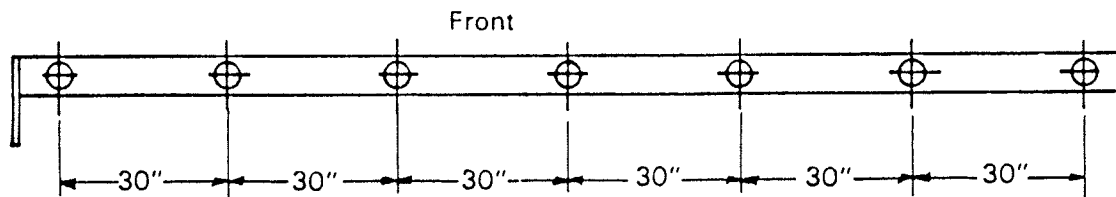
# SINGLE BEAM SHANK SPACINGS



**3 SHANK MODELS**



**5 SHANK MODELS**



**7 SHANK MODELS**

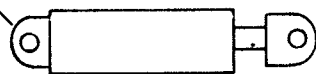
## HYDRAULIC SYSTEM

The chisel plow is equipped with a slave system hydraulic system. Refer to the charts for placement of cylinders and hoses. Mount the cylinders to the axles with cylinder pins and hairpin cotters. Place the cylinder in order of size on the chisel plow. Use the street elbows to connect the hoses to the cylinders. Use a good grade of sealant on all fittings to prevent leaking. The swivel hoses are used between each cylinder. Clamp the hoses to the frame when completed with the tie straps provided.

On pull type models an additional two couplers and 2 - 102" hoses are provided.

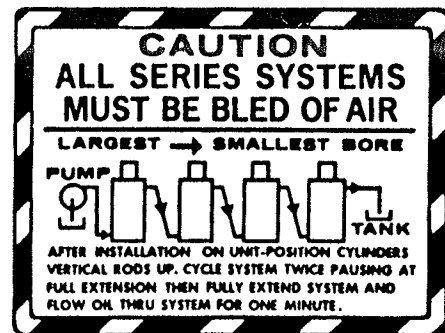
**IMPORTANT:** When raising the chisel plow, the cylinder must be extended completely — this activates poppet valve in the cylinder to equalize the unit.

Cylinder #  
Stamped Here

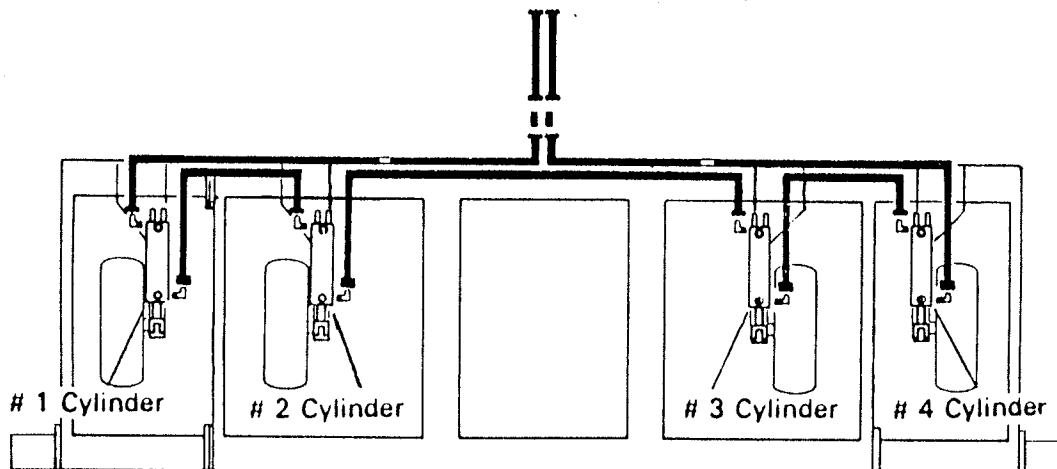


## IMPORTANT

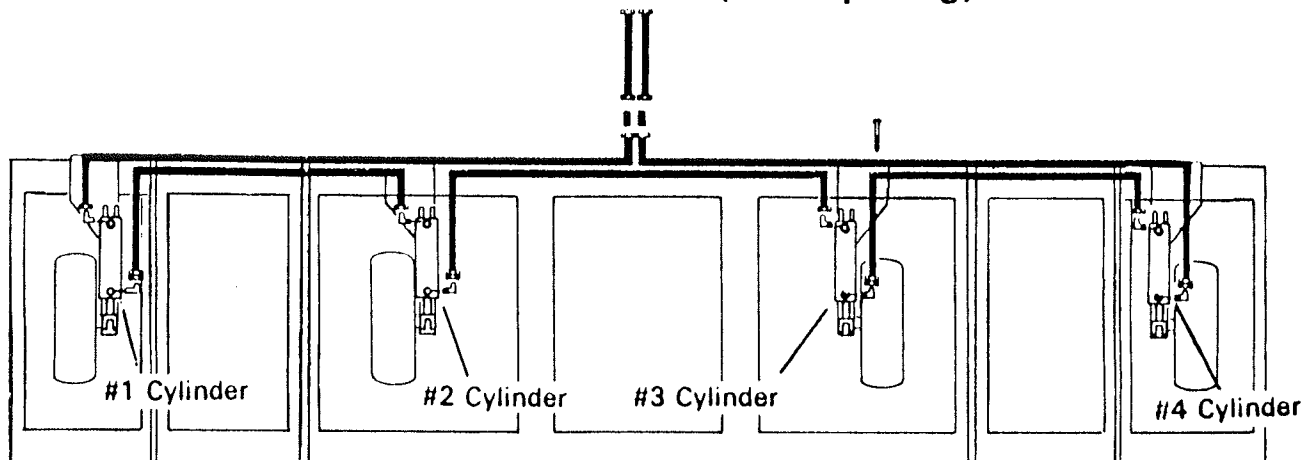
Learn about the series cylinder system before operating because it is different than other hydraulic systems. Purge cylinders well before operating machine by raising and lowering machine, possibly as many as ten (10) times to free system from all air pockets. The oil is fed from large #1 cylinder to small #2 cylinder, etc. There are poppet valves at the top of all cylinders to equalize any difference of oil. Therefore, it is necessary to raise machine all the way out of the ground at each end so as to equalize cylinders again.



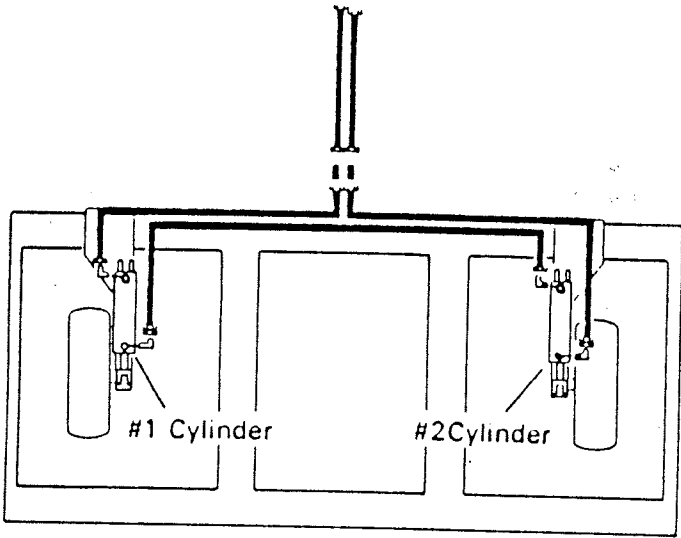
### 13,15 Shank Models (15" Spacing)



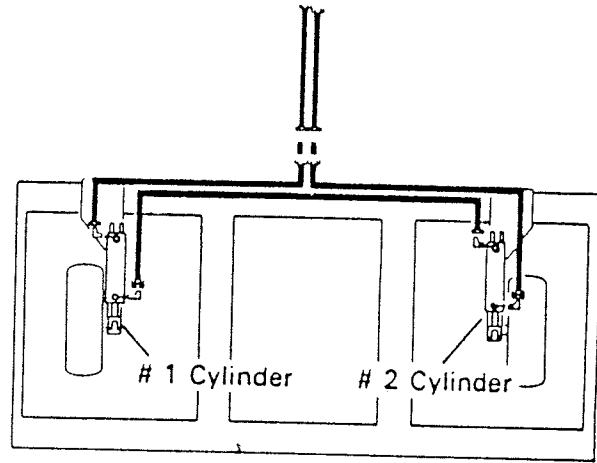
### 17, 19 Shank Models (15" Spacing)



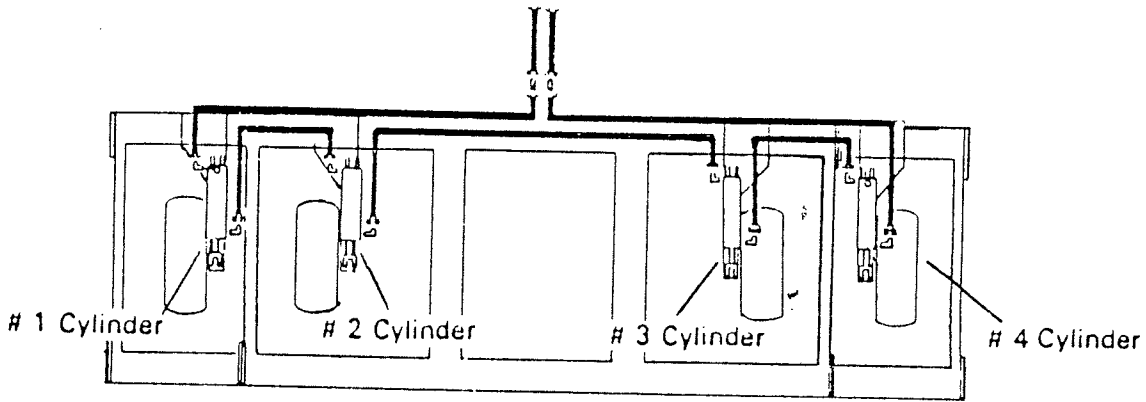
# 7, 9, 11 Shank Models (15" Spacing)



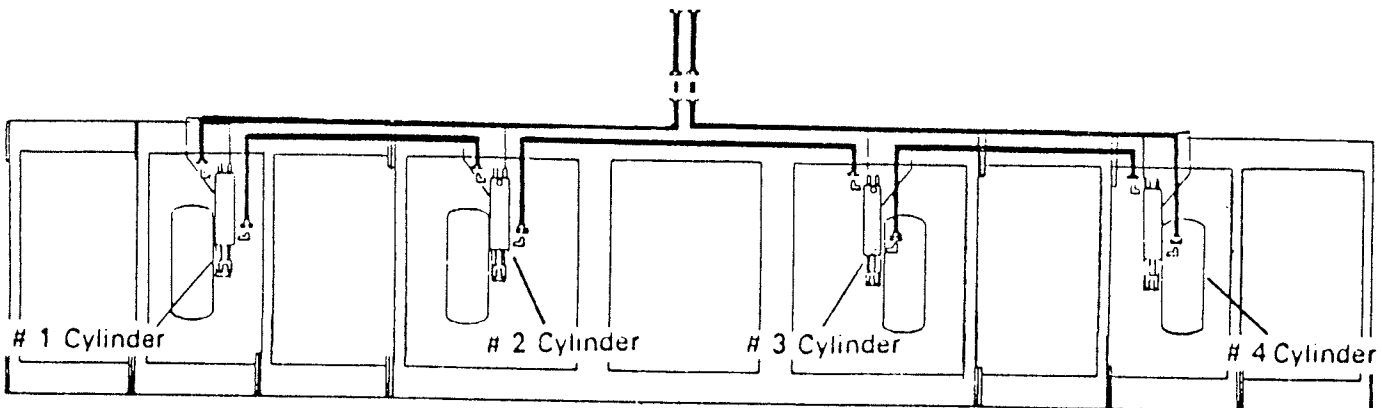
# 5 Shank Model (30" Spacing)



# 9,11 Shank Models (30" Spacing)



# 9,11 Shank Models (30" Spacing)



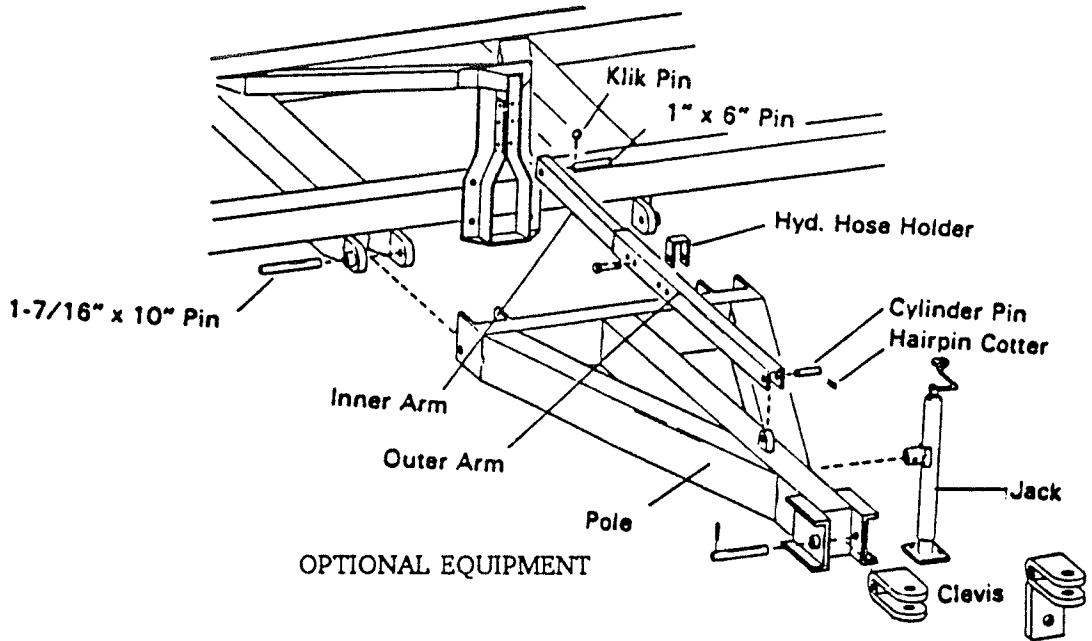
## Pole Hitch

Mount the pole to the frame using two 1-7/16" x 10" pins. Connect the arms between the hitch mast and the pole lug. Use a cylinder pin and two hairpin cotters on the pole lug. A 1" x 6" pin and klik pin is used in the hitch mast.

Mount jack to pole with pin. Fold jack up when in storage position and turn down and lock to use in working position.

Adjust the pole to the correct height for tractor drawbar by sliding the arms together. Secure the arms in position with two 5/8" x 3-1/2" bolts, lock washers and nuts. The frame should be level in field position.

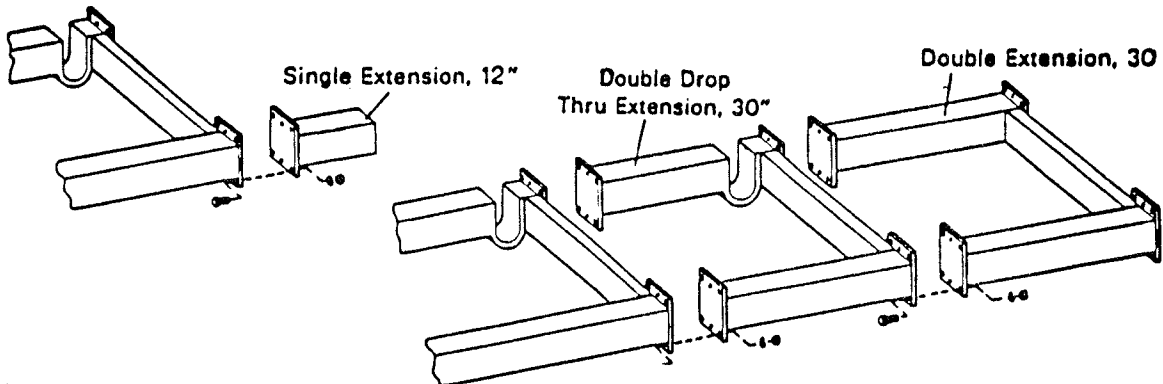
The clevis mounts to the pole with a 1-7/16" x 10" clevis pin and 3/8" x 2-1/4" roll pin.



## Extensions

Extensions are available to increase your basic frame to a size that fits your tractor power. The 11 shank model requires mounting of single extensions to the front frame plate.

There are two types of double extensions. On the 13 shank models only the double drop through extension is required. Mount to the frame plates. The 15 and 17 shank models require mounting of both double extensions. Mount the double drop through extensions to the frame and connect the double extensions to the double drop through extensions. The 19 shank models require mounting of the single extension to the rear plate of the double extensions.



# OPERATION AND SERVICE

## TRACTOR PREPARATION

The rear tractor tires should be inflated and ballast added according to the tractor operators manual. The tractor drawbar should be locked in the center position for road transport but free to swing during field operation. Check the tractor hydraulic oil reservoir and add oil as required.

## IMPLEMENT PREPARATION

To hitch your tractor to the deep till, use the following procedure:

"Carefully" back your tractor into place and attach the clevis to drawbar. Use the correct size drawpin for the clevis.

Clean all hydraulic couplings and connect to the tractor couplings. **NOTE: Use all one style tractor couplings to prevent system lock up.** The deep till should "raise" when the hydraulic lever is moved "forward" and "lower" when moved "back".

Before raising and lowering the deep till be certain that the lift cylinders are functioning properly, fittings are not leaking, and there is no air left in the hydraulic system.

## CHARGING THE HYDRAULIC SYSTEM

**IMPORTANT:** When first using or transporting the deep till, it is necessary to charge the hydraulic lines and cylinders with approximately five to ten gallons of hydraulic oil as follows:

A) Charging a new deep till which has not been previously charged with hydraulic oil.

- 1) Charge the wheel cylinders by holding the tractor hydraulic lever rearward until the unit raises up on its wheels. (Note: This is a slave hydraulic system. It is necessary to hold the tractor lever rearward for 30-60 seconds to allow oil to flow through the complete system.) Lower the unit by moving hydraulic level forward. Repeat this procedure several times to insure the slave system is purged of air. Check the tractor hydraulic reservoir and add oil as required.

B) Recharging the hydraulic system of a machine which has been previously charged but has been in storage or disconnected from the tractor.

- 1) Raise the unit onto its wheels and hold the tractor hydraulic lever rearward for 30-60 seconds to purge the slave system of air.



**CAUTION:** All hydraulically or mechanically elevated components must be blocked to prevent accidental lowering or must be lowered to the ground when adjustments or repairs are made or when not in use.

## IMPLEMENT TRANSPORT

Prior to transporting the deep till, the wheel cylinders should be recharged, and the transport safety locks installed as follows. The tractor operator himself should perform the locking operations and he should be the only person in the tractor cab or around the unit for safety. Begin by raising the unit on its wheels and holding the tractor hydraulic lever rearward for 30-60 seconds to purge air from the slave system. Install the main axle safety locks.

**NOTE:** Never transport a trail type implement with the tractor drawbar free to swing.

**IMPORTANT:** Prior to transporting the unit always check wheel lug bolt tightness. Lug bolts should be torqued to 85-90 ft/lbs. When unit is new, the lug bolts should be retorqued every 4 or 5 miles or road transport until they are properly seated.



**ALWAYS COMPLY WITH ALL STATE, FEDERAL AND LOCAL LAWS WHEN TRANSPORTING THE FIELD CULTIVATOR ON THE PUBLIC ROADWAYS.**

**DRIVE AT REASONABLE SPEEDS TO INSURE YOUR SAFETY. SLOW DOWN BEFORE MAKING SHARP TURNS OR USING THE BRAKES. DRIVE SLOWLY OVER ROUGH GROUND, SIDE HILLS, AND AROUND CURVES TO AVOID TIPPING.**

## S.M.V. SYMBOL

The SMV bracket (Slow Moving Vehicle) is a recommended attachment that must be added to your deep till. Check state and local laws regarding the placement and use. When transporting over public roadways, the SMV symbol must be used for protection of both the tractor and motor vehicle operators.

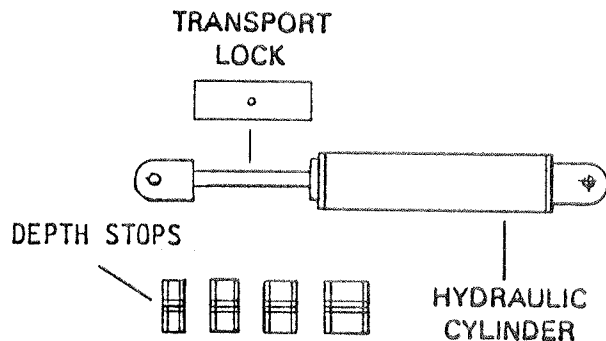


USE THE SMV (SLOW MOVING VEHICLE) EMBLEM FOR WARNING VEHICLES APPROACHING FROM THE REAR. PROTECT THE SMV SYMBOL AND KEEP IT CLEAN.

## CYLINDER TRANSPORT LOCK AND DEPTH CONTROL

**Transport Locks:** To lock in transport position, extend cylinders and place transport lock over cylinder rod. Lock in place with cotter pin and hairpin.

**Depth Control:** One set of donut type Depth Stops are provided for each machine. One set equals 4 different length stops. Depth stops must be placed on the #1 cylinder. The #1 cylinder is the master and the other cylinders do not need them. When your Deep Till has more than 2 cylinders, 2 sets of stops will be provided. These should be placed on the #1 cylinder and also on the opposite end cylinder to provide assured depth control.




Determine operating depth and use stops accordingly.

## FIELD OPERATION

**INSTRUCT ALL OPERATORS OF THE PROPER AND SAFE OPERATION OF THE MACHINE. REVIEW THE OPERATOR'S MANUAL FOR CORRECT PROCEDURES.**

## POLE HITCH OPERATION

 In preparation for field use the transport safety locks must be disengaged. The tractor operator himself should perform the disengaging of the transport safety locks. For safety, the tractor operator should be the only person around the field cultivator or in the tractor cab. First move the tractor lever which controls the axle cylinders rearward to fully extend those cylinders and relieve the transport lock pins so they may be easily removed.

Move the hydraulic lever to lower the cultivator to the ground until teeth are running at the desired depth. Adjust the hitch so the frame is parallel with the ground and all teeth are cutting the same depth. Select proper speed (3½ to 5 MPH) for best results.

**NOTE:** The axles are synchronized for raising and lowering the unit when the system is charged with oil. Should the axles become irregular in depth in field operation causing uneven depth of tillage, raise the unit and hold the tractor hydraulic lever until all axle lift cylinders are fully extended. This will return the axle cylinders to their proper synchronization.

Speed should be reduced at the ends of the field and when turning. Do not make high speed turns at anytime, either in the field or in transport.

**NOTE:** When pulling this implement in the field, always allow the tractor drawbar to swing free.

**NOTE:** Always raise the deep till completely out of the ground when making turns in operation.

## 3 PT. HITCH OPERATION

Lower the chisel plow into the ground and pull it a few feet at the approximate depth. Check the frame for levelness from front to rear. Level the frame on 3 pt. models by adjusting the upper linkage until all teeth are cutting level.

Set the depth by adjusting the gauge wheels on the chisel plow. The gauge wheels should apply a slight pressure against the soil.



**CAUTION: NEVER ALLOW ANYONE TO RIDE ON THE DEEP TILL.**

It is important to keep all bolts tight at all times. Check them frequently during the first few hours of operation. After break-in period, check them periodically.

## LUBRICATION

Proper lubrication of moving parts is essential in maintaining the proper operation of the deep till. Carry out the following procedures to insure proper lubrication.

1. Repack all wheel bearings once a year with a lithium base grease.
2. Inspect all bearing seals for cracks or signs of wear. Replace seals that are not in good order.
3. Lubricate the axle bearings daily with a lithium base grease.
4. Lubricate the shank assembly daily with a lithium base grease.

