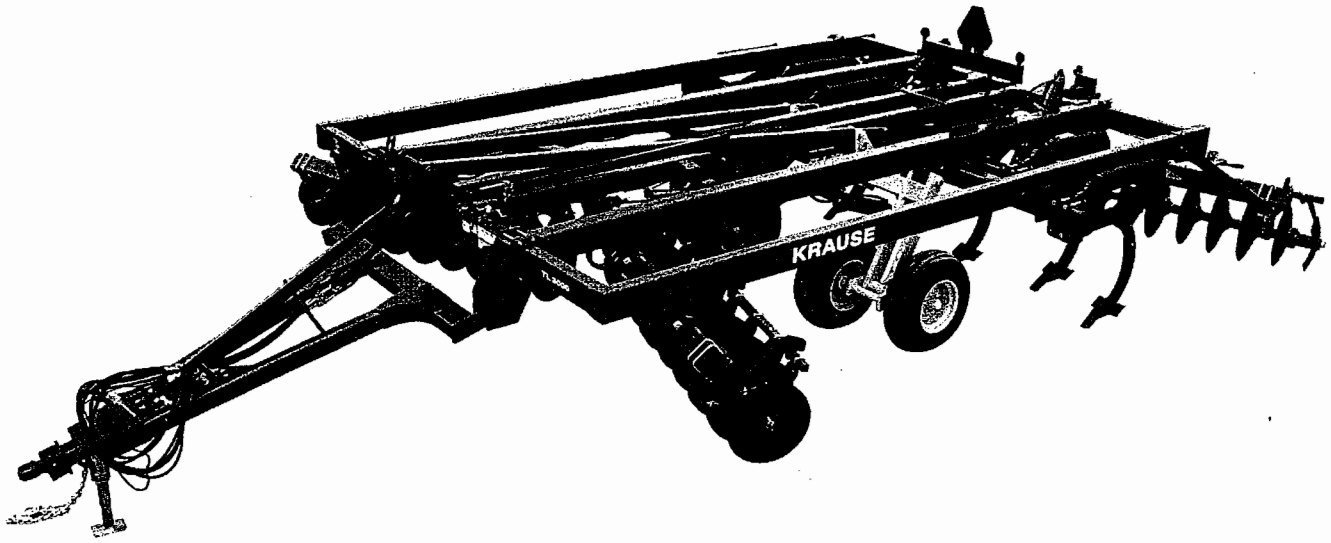
TL 3000-1

**OWNER'S MANUAL**

**TL 3000**




# DISC RIPPER

# TL 3000 SERIES

**KRAUSE**

305 SOUTH MONROE STREET / P.O. BOX 2707 HUTCHINSON, KANSAS 67504-2707

# *Congratulations*

You have just purchased a quality designed and manufactured Krause tillage tool. Advanced features have been designed into the implement for modern farming operations. As with any investment, a return is expected, and the return received from this investment will be in the form of maximum tillage performance during many years of dependable service.

In order to maintain quality performance of the new Krause implement, it is important that all of the information in the manual be reviewed and studied carefully before operation. The contents provide operating instructions, maintenance instructions, and information on how to make adjustments.

## SAFETY ALERT SYMBOL

**BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY. THIS SYMBOL IDENTIFIES IMPORTANT SAFETY MESSAGES. CAREFULLY READ THE MESSAGE THAT FOLLOWS.**

MODEL NUMBER_____ SERIAL NUMBER_____

PURCHASE RECORD -- DATE _____

# A note to our customers, parts managers and dealers:

This manual has been prepared to assist you in the proper use, daily care, and operation of your new Krause equipment. It contains specific information on the many built-in features of your equipment, the accessories and options that are available, general specifications, and instructions for making minor adjustments.

Read this manual carefully before operating your Krause equipment, and keep it in a convenient location for later reference.

In order to ensure that you have the most current owner's manual available for your implement, we have added a revision code to each manual. Please note the information listed below and specify when placing service calls or ordering parts.

Manual for Model: TL 3000

This manual covers models beginning with Serial No. 1001

Owner's Manual #: TL 3000-1

Parts Manual #: TL 3000-2

Rev.:

| ISSUED TO: | ISSUED BY: |
|---|---|
| *Owner's Name* | *Krause Dealer* |
| *Mailing Address* | *City* |
| *City* | *State* |
| *State* | *Date of Purchase* |

# Warranty Policy

(Krause Serial Numbered Wholegoods purchased subsequent to 7/1/99)

Note: All warranty work must be accomplished by a Krause Corporation Authorized Service Center rated to perform maintenance on Krause Corporation Products.

## A. KRAUSE CORPORATION ("KRAUSE") LIMITED WARRANTY.

(1) Subject to the limitations and conditions hereinafter set forth, Krause warrants, at the time of delivery by Krause to be free from (i) defects in materials or workmanship, and (ii) defects in design that in the view of the state of the art as of the date of manufacture should have been foreseen provided, however, that the defect must be discovered and reported to Krause within the periods specified as follows. For a period of one year all new serial numbered production agricultural units covered by this warranty; for a period of thirty-six (36) months the tongue weldment, center frame weldment, wing frame weldments, disc harrow gang bearings and K-Tine field cultivator shanks.

(2) Krause does not warrant disc blades, shanks, hydraulic cylinders, accessories and other parts not manufactured by it, but supplied with or as a part of its products. Krause will, however, obtain and pass on any adjustments provided by the manufacturers of such parts under these manufacturer's warranties. Tires supplied on Krause products, will be warranted by the tire manufacturer's retail outlets.

(3) The entire extent of Krause's liability shall be limited to that of either reimbursing Buyer for its costs of purchasing a rebuilt, over-hauled or repaired part from either Krause or a proper Krause Authorized Service Center or, at Krause's election, reimbursing buyer for its costs of having the part repaired at a proper Krause Authorized Service Center. If Krause elects not to repair the part and if neither a rebuilt, over-hauled or repaired part is, in Krause's opinion, timely available then Krause will reimburse buyer for its costs of purchasing a new part from either Krause or a proper Krause Authorized Service Center. The labor necessary to remove from the product such part or parts and to install in the product such part or parts, as well as any repair made as the result of improper installations by Krause, shall be covered by this warranty, provided the work is performed at a proper Krause Authorized Service Center.★ If return of the defective part is required, it must be returned shipping prepaid to Krause. Krause's limited warranty will apply to any part repaired or replaced by a proper Krause Authorized Service Center pursuant to Krause's Limited Warranty: however, the applicable warranty for such part repaired or replaced shall be limited to the unexpired portion of Krause's Limited Warranty described in paragraph (1) or (2) above, as applicable. In other words, the warranty period of the part repaired or replaced does not start over from the date of reinstallation.

★[Krause Corporation will repair or replace, free of charge, any part of the product found to be defective, within the specified warranty periods, after an inspection of the part has deemed it to be defective. Inspection must be performed by an authorized agent of Krause Corporation, or returned to the Krause factory for inspection and disposition. Warranty labor will be considered during the first year of warranty only. Krause Corporation will establish and publish an hourly flat rate for shop labor and reimbursement during the first year of the warranty period. Krause Corporation does not allow credit for the cost of travel time, mileage or hauling as a warranty allowance. During the remaining second and third year, when applicable, Krause will repair or replace the defective part, without consideration of labor charges.]

(4) Routine services (such as inspections, field settings, adjustments, etc.) and replacement of items which deteriorate from expected normal wear and tear or exposure (such as paint, tires, hoses, blades, sweeps, etc.) are not covered by this Limited Warranty. Such routine services and replacements required during the course of operation are not considered to be the result of any defect in the product.

## B. LIMITATIONS APPLICABLE TO KRAUSE'S LIMITED WARRANTY.

(1) Krause will be relieved of all obligations and liability under this warranty if:

(i) The alleged defect in the part is due to misuse or neglect on the part of someone other than Krause; or

(ii) Krause's identification mark or name or serial number has been removed from the part in question; or

(iii) The product and/or equipment have not been maintained, operated or stored either in accordance with applicable manuals, communications or other written instructions of Krause or any manufacturer of the part involved, or in accordance with applicable regulations and advisory circulars unless buyer shows that such maintenance, operation or storage was not a contributory cause of the defect; or

(iv) The part in question has been modified or altered after delivery other than by the manufacturer or in accordance with a modification or alternation scheme approved in writing by the manufacturer; or

(v) The product is used for purposes other than conventional owner/operator usage. Usage not considered conventional owner/operator includes, but is not limited to, operation conditions that consist of rocks or other obstructions.

(2) For the purpose of this Warranty, no part of the product or equipment will be regarded as breaching the limited warranty merely because, subsequent to its delivery, some modification or alteration becomes necessary for product improvements or in order to meet a change in the requirements of any applicable regulation.

(3) TO THE EXTENT ALLOWED BY APPLICABLE LAW, BUYER WAIVES AS TO KRAUSE ALL OTHER WARRANTIES, WHETHER OF MERCHANTABILITY, FITNESS OR OTHERWISE, THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACT HEREOF.

(4) TO THE EXTENT ALLOWED BY APPLICABLE LAW, THE OBLIGATIONS OF KRAUSE SET FORTH HEREIN SHALL BE THE EXCLUSIVE REMEDIES FOR ANY BREACH OF WARRANTY HEREUNDER, AND, TO THE SAME EXTENT, KRAUSE SHALL NOT BE LIABLE FOR ANY GENERAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, ANY DAMAGES FOR DIMINUTION OF MARKET VALUE, LOSS OF USE OR LOSS OF PROFITS, OR ANY DAMAGES TO THE PRODUCT CLAIMED BY BUYER OR ANY OTHER PERSON OR ENTITY UPON THE THEORIES OF NEGLIGENCE OR STRICT LIABILITY IN TORT.

(5) ANY ACTION BY BUYER FOR BREACH OF THIS WARRANTY BY EITHER KRAUSE OR SELLER MUST BE COMMENCED WITHIN (1) YEAR AFTER THE CAUSE OF ACTION ACCRUES.

# Establishing Customer Warranty

## Dealer's Obligation

1. It is the responsibility of the dealer to complete a **Delivery Report and Warranty Registration** form. The form should contain the model, serial number, delivery date, along with the complete dealer and customer address. This form must be signed by the dealer and customer upon physical delivery of the product to the customer. The dealer must complete the **pre-delivery check list** provided on the Delivery Report and Warranty Registration form.

2. Dealer will review the **Predelivery Check List** located in the front of the operation manual with the customer and / or operator. This should be signed by the dealer at time of delivery to the retail customer.

3. The dealer will review the **Customer Review Sheet** located at the front of the operation manual with the customer and / or operator. This should be signed by the dealer representative and the customer.

4. An authorized Krause dealer will submit **warranty claims** on behalf of the customer. All claims must be handled through the dealer. They will then be given to the Krause District Manager for inspection and approval. Warranty requests must be filed within 60 days from completion of the repair for consideration.

5. It is the dealer's responsibility to **service** the warranty on products sold through said dealership.

# Establishing Customer Warranty

## Customer's Obligation

1. The customer is responsible for reading the operation manual supplied with each serial numbered unit. The manual describes the safe and correct operating procedures of the specific product. The operation manual will also instruct the user on recommended lubrication and maintenance of the product.

2. The customer will advise the dealer of the anticipated start date of the product so a dealer representative can be on hand to make necessary field adjustments.

3. The owner is also responsible for inspecting the product during and after use. If a part has failed or is in need of repair, it should be replaced. When continued use of the product would result in excessive wear of other components, the part should be replaced before operation is continued. Continued use of the product may void warranty on other parts damaged from this condition. The user must make the machine available to the dealer for a warranty repair.

4. It is the customer's responsibility to deliver his machine to an authorized Krause dealer for completion of a warranty repair. If the dealer agrees to make a service trip to the customer's residence, it is an agreement between the dealer and the customer. Krause will not allow warranty credit for the cost of travel, mileage, or hauling.

5. Warranty labor consideration will only be given during the first year of warranty. Any labor charge for the 2nd or 3rd year on the limited warranty will be at the customer's expense.

This warranty gives you specific rights, and you may also have other rights which vary from state to state.

# TL 3000 SERIES DISC RIPPER
# DEALER PREDELIVERY CHECK SHEET

TO BE CHECKED BY DEALER

CUSTOMER_____ DATE_____

ADDRESS_____

DEALER_____

ADDRESS_____

MODEL_____ SERIAL NUMBER_____

DEALER CHECK:

1. ____Check to see that all rocker shaft bolts are tight.
2. ____Check to see that hydraulic cylinders are full of oil (air bled out of cylinders). Clevis pins with cotter pins should be in place and spread.
3. ____Examine hydraulic hoses to see that they are protected from damage.
4. ____Bolts attaching the spindle weldments to the rocker shaft should be tight. Check to see that bearings have been adjusted and greased.
5. ____Check lug bolts and nuts holding wheels to the hub to see that they are torqued as follows: 9/16" Wheel Bolts to 120 Ft. Lbs. (6-Bolt Wheels)
   5/8" Wheel Nuts to 145 Ft. Lbs. (8-Bolt Wheels)
6. ____The correct size of tires should be on the implement with proper inflation:
   12.5L x 15, 12-Ply = 52 PSI
   12.5L x 15, FI = 90 PSI
   16.5L x 16, FI - 60 PSI
7. ____Check to see that bolts attaching tongue to frame and bolts attaching hitch to tongue are in place and secured.
8. ____Jack should be operational for support of tongue when implement is not attached to a tractor.
9. ____All decals are in place per page P47 of this owner's manual.
10. ____Transport Lock Valve is correctly installed and operates satisfactorily.
11. ____Customer review sheet filled out and signed.
12. ____Review lighting requirements. Light kits are standard.
13. ____Check to see that Owner's Manual is in the storage canister.
14. ____Check to see that the SMV emblem is clean and in place.

DELIVERED BY_____

DATE_____

# TL 3000 SERIES DISC RIPPER
# CUSTOMER REVIEW SHEET

CUSTOMER _____ DATE _____

ADDRESS _____

DEALER _____

ADDRESS _____

MODEL _____ SERIAL NUMBER _____

1. ____ Owner's manual provided.

2. ____ Warranty card filled out and mailed.

3. ____ Review safety warnings and cautions as listed in this owner's manual.

4. ____ Review recommended maximum road speed, width, and height for this implement.

5. ____ Review field operation speeds, horsepower, depth and rock conditions.

6. ____ Demonstrate the proper use of road lock.

7. ____ Explain the operation of the hydraulic depth control.

8. ____ Review limitations of additional weight and transport speed when adding attachments.

9. ____ Explain the importance of maintaining the implement through lubrication, checking that bolts are kept tight, and replacement of worn or broken parts.

10. ____ Recommend that a safety chain be used with the implement.

11. ____ Check wheel lug bolts frequently until they become set.

12. ____ Check walking beam pivot bearings frequently until they become set.

13. ____ Explain lighting requirements for your area.

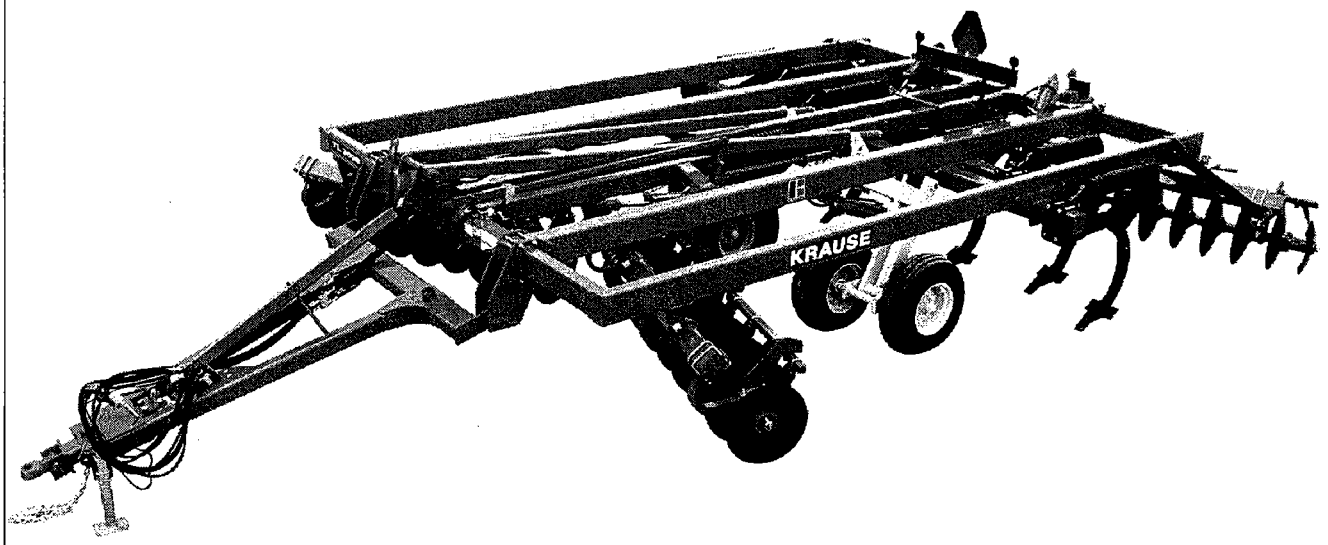
DEALER _____ DATE _____

CUSTOMER _____ DATE _____

# Table of Contents

6/02

# TL 3000 DISC RIPPER SPECIFICATIONS




M4881-76

## TL 3000 DISC RIPPER

7/02

| MODEL | SHANK SPACING 30" | ★ SHANK CLEARANCE | FRAME TYPE | WORKING WIDTH | TRANSPORT | |
|---|---|---|---|---|---|---|
| | | | | | WIDTH | HEIGHT |
| **5 SHANK** | 30" | 40" | RIGID | 12' 6" | 15' 0" | 6' 5" |
| **7 SHANK** | 30" | 40" | RIGID | 17' 6" | 20' 4" | 6' 5" |
| **7 SHANK** | 30" | 40" | FOLDING | 17' 6" | 13' 9" | 12' 3" |
| **9 SHANK** | 30" | 40" | FOLDING | 22' 6" | 13' 9" | 14' 5" |

★ **VERTICAL DISTANCE FROM POINT TO BOTTOM SIDE OF FRAME.**

# GENERAL INFORMATION

FRAME MUST BE LEVEL FROM FRONT TO BACK DURING THE PLOWING OPERATION. FRAME MAY NOT BE LEVEL IN THE RAISED POSITION. ESTABLISH PLOW DEPTH. THEN ADJUST THE TURNBUCKLE TO OBTAIN FRONT-TO-REAR LEVELING.

CONTINUALLY CHECK WHEEL BOLTS AND TORQUE FROM 90 TO 95 FT. LBS. UNTIL FIRMLY SEATED.

**WARNING**

*Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.*

*Search for possible leaks with a piece of cardboard. Protect hands and body from high pressure fluids.*

*If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.*

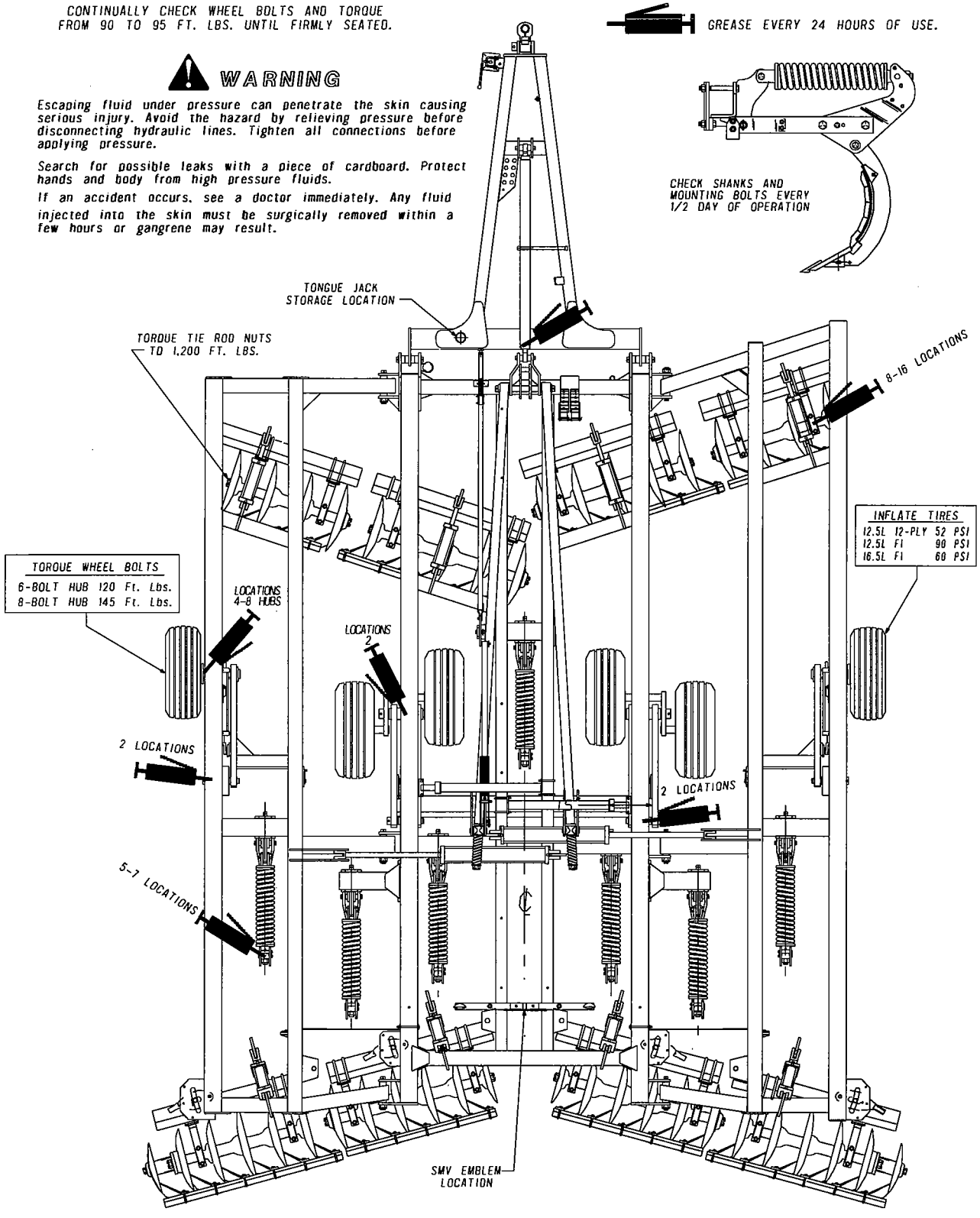
ALWAYS PIN THE TRACTOR DRAWBAR BEFORE TRANSPORTING. USE A SAFETY CHAIN WITH THE TENSILE STRENGTH EQUAL TO THE GROSS WEIGHT OF THE LOAD BEING TOWED.

ROAD AT A REASONABLE SPEED. DO NOT EXCEED 15 M.P.H.

OPERATING SPEEDS SHOULD NOT EXCEED 6-1/2 M.P.H.

GREASE EVERY 24 HOURS OF USE.

CHECK SHANKS AND MOUNTING BOLTS EVERY 1/2 DAY OF OPERATION




M4881-104

# SAFETY DECALS

**⚠ WARNING**

Escaping fluid under pressure can penetrate the skin causing serious injury or death. Relieve pressure before disconnecting hydraulic lines, tighten all connections before applying pressure, and inspect all lines before each use. See "Safety" section in operation manual for additional information.

If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

205-8735 74-276

**⚠ WARNING**

**DO NOT OPERATE OR WORK ON THIS MACHINE UNLESS YOU HAVE READ AND UNDERSTAND THE INSTRUCTIONS AND WARNINGS IN THE OPERATION AND MAINTENANCE MANUALS.**

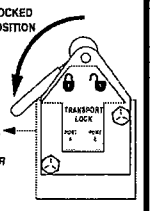
**FAILURE TO FOLLOW THE INSTRUCTIONS OR HEED THE WARNINGS COULD RESULT IN INJURY OR DEATH. CONTACT YOUR DEALER FOR REPLACEMENT MANUALS.**

**PROPER CARE IS YOUR RESPONSIBILITY.**

205-8740 74-570

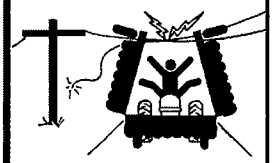
**⚠ WARNING**

TO AVOID INJURY DUE TO ACCIDENTAL LOWERING OF IMPLEMENT, MOVE LEVER TO LOCKED POSITION BEFORE TRANSPORTING OR SERVICING IMPLEMENT.




205-8738 74-485

**⚠ WARNING**



**CONTACT WITH A POWER LINE OR OTHER OBSTRUCTION CAN CAUSE DAMAGE, SERIOUS BODILY INJURY OR DEATH.**

**Be aware of implement transport width and height.**

Rear attachments will add to transport height, and transport width on some implements. See Operation Manual.

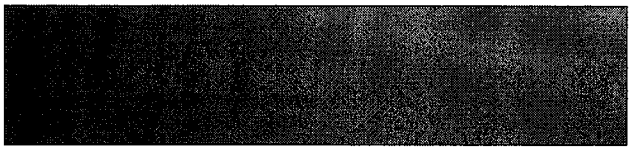
205-8734 74-121

**⚠ WARNING**

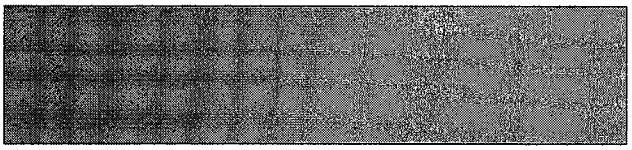
**AIR TRAPPED INSIDE HYDRAULIC CYLINDERS CAN ALLOW IMPLEMENT OR WINGS TO FALL AND CAUSE SERIOUS BODILY INJURY OR DEATH.**

**Purge air from hydraulic system by following detailed steps in the Operation Manual.**

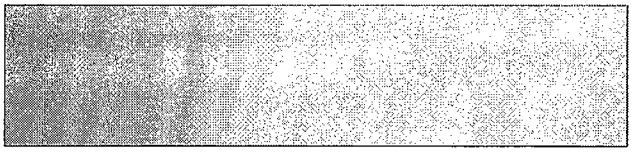
205-0923 74-113



74-575 RED REFLECTIVE TAPE



74-576 ORANGE FLUORESCENT TAPE



74-577 YELLOW REFLECTIVE TAPE

***NOTICE***

**MAINTENANCE LOCK**

**See Operation Manual for instructions.**

205-8737 74-387

***NOTICE***

Check wheel bolts frequently during initial transport and operation.

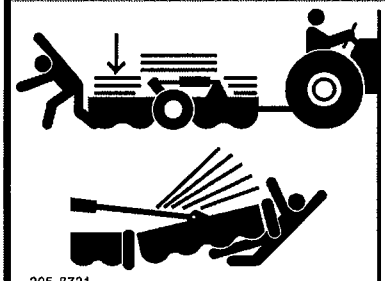
**Torque Wheel Nuts (5/8") to: 145 FT. LBS.**

**Torque Wheel bolts (9/16") to: 120 FT. LBS.**

See Operation Manual for proper tire inflation pressure.

202-4351 74-109

**⚠ WARNING**



**FAILURE OF HYDRAULIC COMPONENTS OR ACCIDENTAL OPERATION OF HYDRAULIC CONTROLS CAN ALLOW IMPLEMENT OR WINGS TO FALL AND CAUSE SERIOUS BODILY INJURY OR DEATH!**

1. Install all maintenance locks when working on or under implement. See operation manual.
2. Keep everyone clear when raising or lowering implement.
   Check for adequate overhead and side to side clearance before raising or lowering wings.
   Make certain all hydraulic systems are full of oil and free of air before raising or lowering wings or implement. Check operation manual for detailed instructions.

205-8731 74-102

See page P47 in this manual for proper location on implement.

# OPERATING SECTION

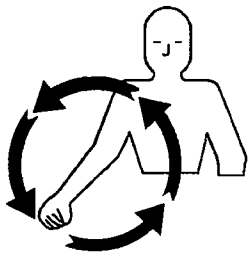
# SAFETY ALERT SYMBOL

BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY.

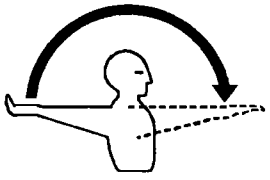
THIS SYMBOL IDENTIFIES IMPORTANT SAFETY MESSAGES.

CAREFULLY READ THE MESSAGE THAT FOLLOWS.

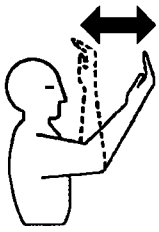
## TEN MOST COMMON HAND SIGNALS USED IN THE FIELD



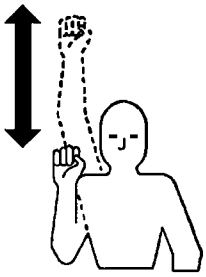
START THE ENGINE



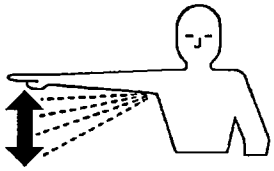
MOVE OUT OR TAKE OFF



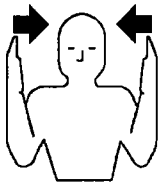
MOVE TOWARD ME



SPEED IT UP



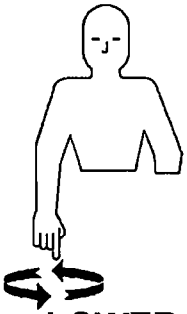
SLOW IT DOWN



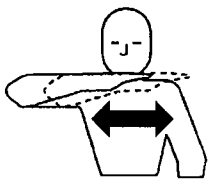
THIS FAR TO GO

STOP

RAISE THE EQUIPMENT



LOWER THE EQUIPMENT



STOP THE ENGINE

# OPERATING INSTRUCTIONS

Elimination of the hazards listed in this manual should not be construed as providing guarantees that the equipment will meet or exceed all standards or regulations, or will be completely safe to all personnel. The operator should inspect and review the implement after it is in his possession.

**READ ALL OF THE SAFETY DECALS ON THE DISC RIPPER AND REVIEW THE SAFETY FIRST SUGGESTIONS ON THE BACK COVER OF THIS MANUAL TO REFRESH YOUR MEMORY. WATCH FOR THE SAFETY SYMBOL AND READ THE INFORMATION. THIS IS FOR YOUR OWN SAFETY.**

## ABOUT YOUR DISC RIPPER

This DISC RIPPER was designed for deep fallow tillage or stubble-mulch tillage. Your disc ripper will operate over a wide range of speeds, ranging from 3 to 6-1/2 miles per hour. Exercise caution in rocky or extremely hard conditions. If rocky conditions exist in your fields, operate at a slow speed and equip your DISC RIPPER with spring shanks.

Horsepower requirements generally will range from 35 to 50 HP per shank (do not exceed 50 HP per shank.)

Adding attachments should be limited to Krause original equipment options or attachments that weigh no more than 90 pounds per foot of cut.

## PREPARING THE DISC RIPPER FOR OPERATION

1. Check that the transport lock valve is closed, the tongue jack is supporting the tongue, and the hydraulic cylinders are pinned and full of oil.
2. Check for loose bolts and tighten if needed. Check again for loose bolts after the first half day of operation.
3. Check the tire pressure and correct if necessary. Inflate 8-ply tires to 45 PSI.

   **Caution: Frequently check to see that wheel lug bolts are torqued to proper tightness (6-Bolt wheels to 120 Ft./Lbs.; 8-Bolt wheels to 145 Ft./Lbs.), particularly during the initial transporting and operation of the tillage tool. The bolts may work loose resulting in the loss of a wheel and subsequent loss of control of the tool and / or tractor.**

4. Make sure that all grease zerk locations have been sufficiently greased. Grease zerks will be found on the rocker shaft pivots, disc bearings, walking beams and wheel hubs. USE EXTREME CAUTION WHEN WORKING AROUND SHARP DISC RIPPER POINTS, AND DISC BLADES.
5. Check and adjust tightness of wheel bearings and walking beam bearings before operation, after the first week, and periodically thereafter. (See Service Section of this book)

## PREPARING THE TRACTOR

Read your tractor owner's manual. It will describe safe methods of operation. Make sure your tractor has proper added ballast, and that its hydraulic system if full of oil and working properly. Check tractor brakes and warning lights, make sure they are in working order.

# HYDRAULIC SYSTEM

Inspect the hydraulic system for tell-tale leaks and loose fittings. Tighten if needed. If you are plumbing the implement with JIC/O-Ring fittings it is not necessary to use a tape type or liquid sealer. MAKE SURE THE RESTRICTORS ARE IN THE ROD END PORTS OF THE WING LIFT CYLINDERS. If not previously filled, 5 & 7 Rigid Shank Models will require 7 Quarts / 6.6 Liters of your tractor manufacturer's recommended oil; 7 & 9 Shank Folding Models will require 43 Quarts / 40.7 Liters. Read the "HYDRAULIC SAFETY" section below before filling the system.

**⚠ Caution: Air in hydraulic system could allow disc ripper or wings to drop suddenly.**

**Do not operate the wing hydraulics until you have read wing lift and lock operating instructions under "TRANSPORTING".**

# UNDERSTANDING YOUR DISC RIPPER

The TL 3000 Series 7 & 9 Shank Disc Ripper uses a master and slave system for depth control.

As oil is pumped into the base of the master cylinder, oil is forced out of the rod end and into the base end of its slave cylinder. In turn, this forces oil out of the slave cylinder which then returns to the tractor hydraulic reservoir.

Since there is a smaller volume of oil which passes from the rod end of the master cylinder to the base end of each slave cylinder, the cylinders must be progressively smaller in diameter. The 7 and 9 Shank Folding Models use depth control master cylinders which are 4-1/2" Diameter; the wing slaves are 4" in diameter. All of the rocker cylinders have a 16" stroke length.

When the disc ripper is raised completely out of the ground, these specially designed cylinders are synchronized for uniform lifting by holding the tractor remote hydraulic control lever in the raise position for a few seconds. This allows a small volume of oil to bypass from the base of the master cylinder to the base end of the slave cylinder, and back to the tractor. Consequently, all of the cylinders are fully extended simultaneously. To maintain a precise working depth, it may be necessary to synchronize the slave cylinders once or twice during each hour of use. This can be easily done when the unit is being raised to make a turn. The disc gang cylinders are synchronized by fully raising the gangs and holding the lever.

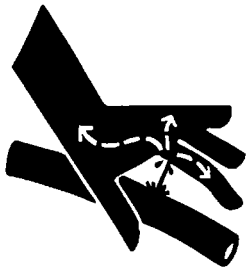
When working with this kind of arrangement, be sure all of the cylinders are mounted in proper sequence. Hoses must be attached in the proper order, and all air bled from the hoses and the cylinders.

REPAIR OF HYDRAULIC CYLINDERS SHOULD BE MADE BY AN AUTHORIZED KRAUSE DEALER ONLY.

HYDRAULIC HOSE AND CYLINDER DRAWINGS CAN BE FOUND ON PAGES P26 THROUGH P43 OF THE PARTS SECTION IN THIS MANUAL.

# HYDRAULIC SAFETY (PLEASE READ CAREFULLY)

If the implement hydraulic system has never been used, stored over a period of time or disassembled for any reason, unpin the rod ends of the cylinders and support the cylinders so the rod ends will clear frame members when fully extended. Back the tractor to the front of the implement and connect the hydraulic hoses. Check the tractor hydraulic reservoir and make sure it is full of the manufacturer's recommended oil. If you are sure the implement hydraulic hose connections are tight, begin filling the system by extending and retracting the cylinders. Hold the control lever open and pause at the end of each stroke to bleed the air from the system. Continue the cycles until the cylinders respond with immediate solid actuation. When you are sure the systems are free of air, pin the rod ends of the cylinders to the implement cylinder lugs.



**Warning:** **Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.**

**Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.**

**If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.**

## AVOID HEATING NEAR PRESSURIZED HYDRAULIC HOSES

Flammable spray can be generated by heating near pressurized hydraulic hoses, resulting in severe burns to yourself and bystanders. Do not heat by welding, or using a torch near hoses. Hose can be accidentally cut when heat goes beyond the immediate flame area.

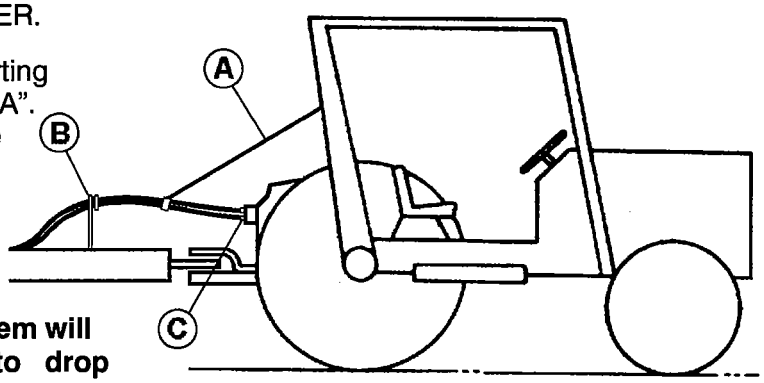
THE FOLLOWING **WARNINGS** PERTAIN TO THE MORE COMMON ABUSES OF HYDRAULIC HOSE:

1. **INSPECT** the hose assembly before each use.
2. **REPLACE** the hose assembly immediately if:
   - A. The jacket of the hose appears abnormal.
   - B. You have reason to believe it may be abnormal.
   - C. There is any fluid leakage.
   - D. The couplings are damaged.
   - E. The hose is damaged or kinked.
   - F. The reinforcement is visible through the jacket.
3. **DO NOT EXCEED** the maximum recommended working pressure of the hose.
4. **DO NOT KINK** the hose assembly.
5. **DO NOT BEND** the hose assembly beyond its minimum bend radius of 3.25 inches.
6. **DO NOT EXPOSE** to temperatures in excess of 225° Fahrenheit.
7. **DO NOT USE AS A STRENGTH MEMBER** for pulling or lifting equipment.

**Caution:** **If replacing hydraulic hose, use only hose that meets of exceeds 3,000 PSI working pressure.**

IMPORTANT: REPAIR OF HYDRAULIC CYLINDERS SHOULD BE MADE BY AN AUTHORIZED KRAUSE DEALER.

Prevent damage to trail hoses by supporting them from the tractor with an elastic strap "A". Avoid having excess hose between the implement support "B" and the tractor connection "C" . Either reposition the hose farther back on the implement or request a shorter hose from your dealer.




**Caution:** **Air in the hydraulic system will allow DISC RIPPER to drop suddenly.**

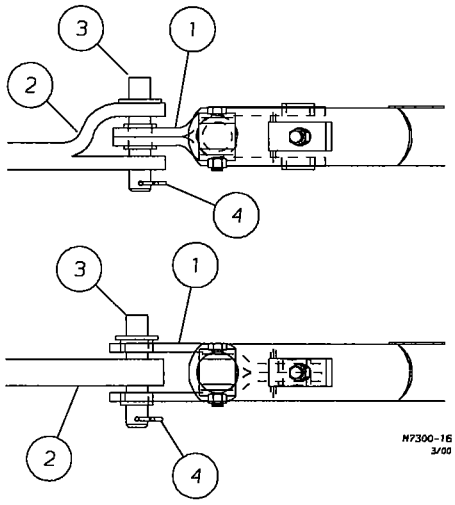
## HITCHING AND UNHITCHING

**Caution:** **Do not allow any person to stand between the tractor and the implement while backing into position. Sudden loss of control could cause serious injury or death to a person caught between the tractor and implement. Tell your helper to wait until you give him the signal that the tractor is in park or neutral and the hand brake is set and engine is shut off.**

**Note: Hydraulic hose grips are color coded as shown below.**

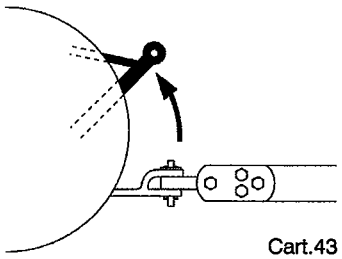
| | |
|---|---|
| **Black / Black** ..... Lower Unit | **Red / Black** ..... Raise Unit |
| **Yellow / Yellow** .... Lower Wings | **Red / Yellow** ..... Raise Wings |
| **Gray / Gray** ..... Lower Front Disc Gangs | **Red / Gray** ..... Raise Front Disc Gangs |
| **Blue / Blue** ..... Lower Rear Disc Gangs | **Red / Blue** ..... Raise Rear Disc Gangs |

## HITCHING TO TRACTOR




A. The implement must be in a raised position and the transport lock valve in place before hitching to the tractor.
B. Unpin the tractor drawbar so it can be moved from side to side.
C. Back the tractor to the implement.
D. Attach the clevis① to the tractor drawbar② with clevis pin③ that fits the hole size in the tractor drawbar. Make sure pin is locked or bolted④ in place to prevent loss.
E. Connect hydraulic hoses to the tractor.
F. Place tongue jack in storage position.
G. Attach the safety chain. See page O5.

IMPORTANT: BEFORE MOVING THE IMPLEMENT BE SURE THAT THE LOWER ARMS OF THE THREE POINT HITCH HAVE BEEN RAISED TO THE TOP AND SECURED TO PREVENT DAMAGE TO THE CLEVIS AND TONGUE WHEN MAKING TURNS.



Cart.43

## UNHITCHING FROM THE TRACTOR

If the implement is not to be used for the remainder of the day, select a good parking place that will permit the lowering of the wings (7 and 9 Shank Folding Models ONLY). The implement should be parked in the storage position with the transport lock valve closed. If the implement is to remain parked for storage over a long period of time, be sure to read the storage suggestions listed on page O11.

1. To unhitch the implement from the tractor, place the tractor in park or neutral and set the hand brake. If you are not parking on level ground, block the implement tires to prevent damage to the jack.
2. Close Transport Lock Valve, turn off the tractor power and relieve any pressure that might be in the implement hydraulic system by moving the tractor control lever back and forth.
3. Using the tongue jack, raise the tongue height until the clevis pin can be removed.

   NOTE: If rear attachments have been added, and the implement is tail-heavy, lower the unit close to the ground before closing transport lock valve. This will transfer weight to the tongue.

4. Disconnect the hydraulic hoses, and the tractor may be moved away.

**⚠ Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.**

**Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.**

**If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.**

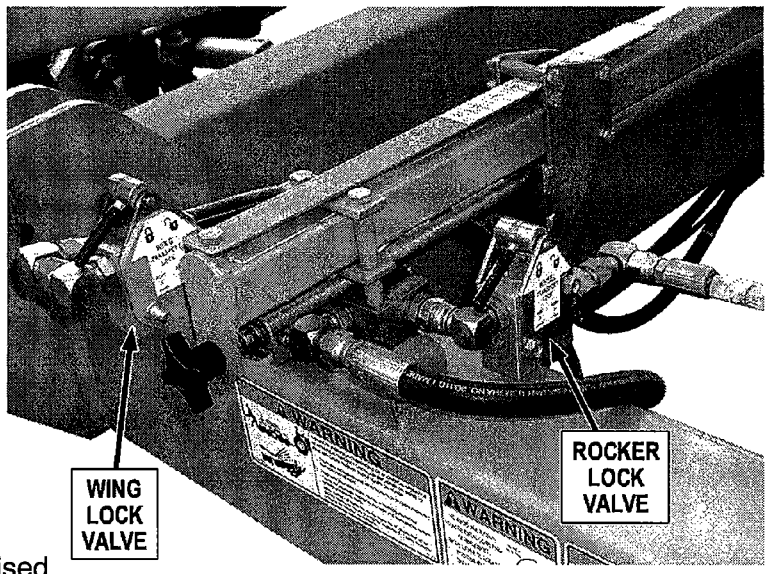
**⚠ Caution: Do not stand on or straddle the tongue when unhitching. If rear attachments have been added to the rear of the implement, it may affect the balance of the implement, causing the tongue to raise up suddenly when unhitching.**

# TRANSPORTING

**Caution: Always close both transport lock valves when transporting to prevent unit from falling due to hydraulic failure, or accidental activation of the operator's control. Lowering of the tool during transport could result in loss of control of implement and/or tractor. The tractor drawbar must always be pinned for transport.**

## TRANSPORT LOCK VALVES

The road locks are hydraulic valves. Turning the handle to release the poppet (handle towards the tractor) will close the valve. Turning the handle to engage the poppet (handle towards the implement) will open the road lock for field use. **NOTE: The road lock will allow the unit to be raised when in the transport position, but will not allow the unit to be lowered.**



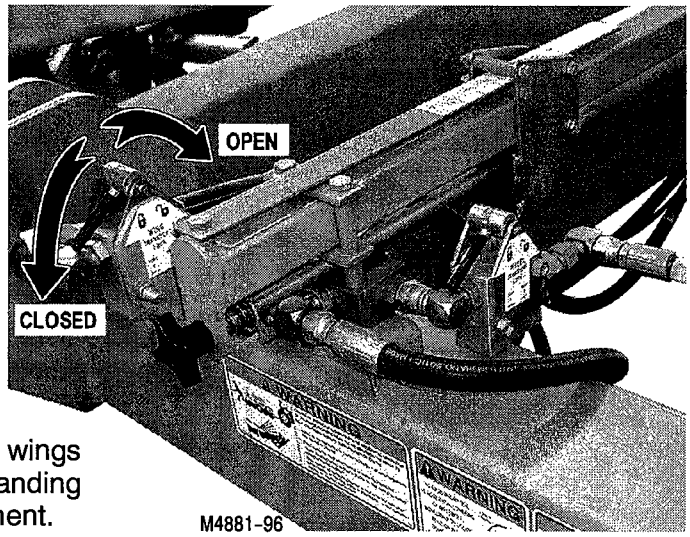

M4881-97

## RAISING THE WINGS

The implement should be in the raised position with the transport lock valve closed. If the system is full of oil, you are ready to raise the wings. The wings will be secured in the raised position with a transport lock valve.

**Warning: Always stand clear of wings when they are in the raised position. A hydraulic failure or activation of hydraulic controls by someone could result in serious injury to anyone under the wings.**

MOVE VALVE HANDLE TO CLOSED (LOCKED POSITION) BEFORE TRANSPORTING IMPLEMENT




M4881-96

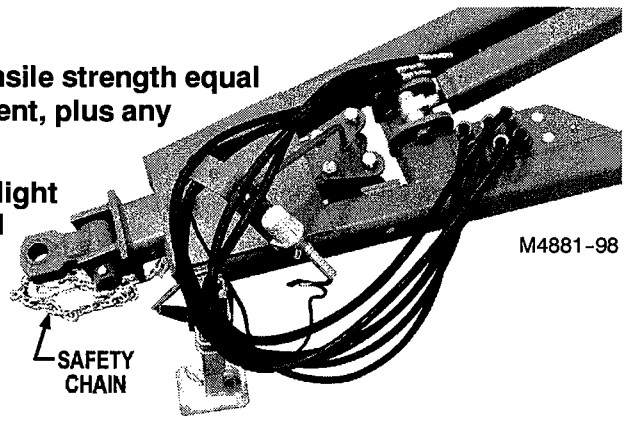
## LOWERING THE WINGS

Open the wing lock valve to unlock both wings then lower the wings with all persons standing at a safe distance away from the implement.

## TRANSPORT SAFETY

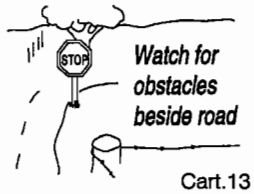
**Warning: Always use a safety chain with tensile strength equal to the gross weight of the implement, plus any attachments, when transporting.**

**NOTE: A safety chain, SMV emblem, and a light kit were furnished as standard equipment with your implement. Make sure they are in place, clean and in working order.**




M4881-98

Insert the ASAE Slow-Moving-Vehicle (SMV) emblem into the bracket provided. The emblem is to be mounted point up, in a plane perpendicular to the direction of travel ±10°. It shall be placed centrally at the rear of the vehicle unobscured, and 2' to 6' (0.61 to 1.8m) above the ground, measured from the lower edge of the emblem. The SMV emblem should be wiped clean before entering the road or highway.



Cart.13

Comply with state and local laws pertaining to lighting and road widths. Turn on flashing lights whenever traveling on a highway except where it is prohibited by law. If the implement obscures the tractor warning lamp, a lamp must be added to the left of the implement. Transport during daylight hours only. Watch your clearance. Be aware of obstacles on the side of the road that might be caught by the implement when passing by. Pull over to the side of the road to permit safe clearance for oncoming traffic and passing vehicles. Keep the red, orange and yellow reflectors clean and visible. Replace reflectors if they become faded or damaged. Watch for pedestrians on the side of the road that need to be warned of your presence.

**Caution: Always check the conditions of transport lock valves, tires, wheels, hubs, safety chain, hitch bolts, and clevis pin before transporting the implement.**

Check specification page and be aware of the transport height and width of your implement.

**Danger: Do not exceed 15 m.p.h. in transport on best surface. Exceeding this speed can result in failure in wheel hubs or spindles and loss of control of implement and/or tractor. Do not tow this implement if its weight exceeds 1-1/2 times the weight of the towing unit. Pin tractor drawbar to prevent side sway during transport.**

## FIELD ADJUSTMENTS

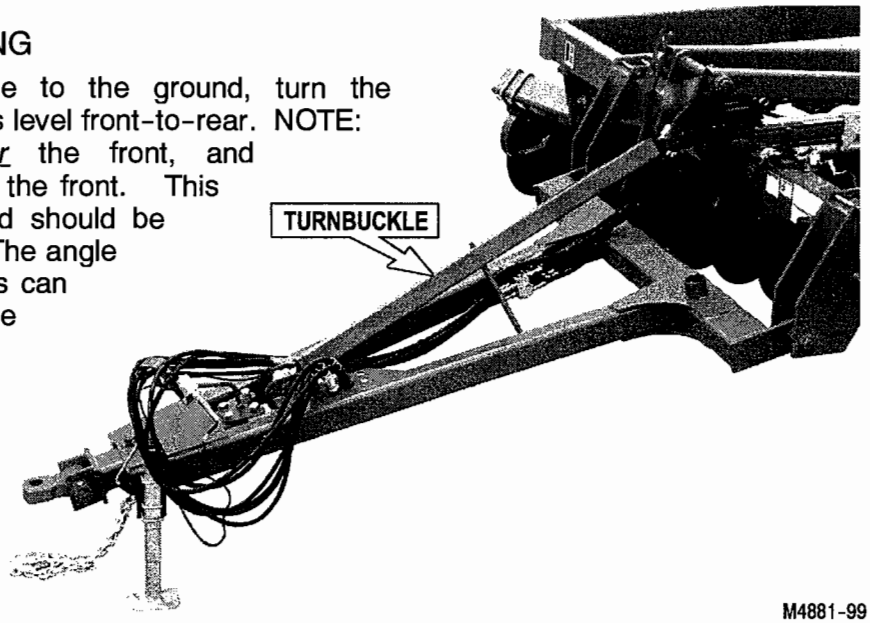
THERE ARE (3) IMPORTANT RULES TO FOLLOW FOR PROPER FIELD ADJUSTMENT:

1. LEVEL THE IMPLEMENT FROM FRONT TO REAR.
2. LEVEL THE IMPLEMENT FROM SIDE TO SIDE.
3. SET THE HYDRAULIC STOP ON THE CYLINDER, AND CARRY SOME OF THE WEIGHT OF THE IMPLEMENT ON THE WHEELS.

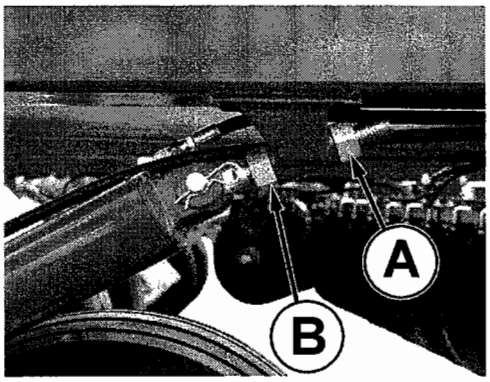
A level implement in the working position will give the most uniform penetration and field leveling possible. Leveling the implement for the first time should be performed on as level of a surface as is possible. Hitch the tractor to the clevis and lower the wings and extend the wing lift cylinders to the maximum stroke.

### FRONT TO REAR LEVELING

With the implement close to the ground, turn the turnbuckle until the frame is level front-to-rear. NOTE: Turn clockwise to *lower* the front, and counter-clockwise to *raise* the front. This is an average position and should be readjusted at field depth. The angle of the front frame members can give the illusion that the front is running deeper than the back. When checking the front to rear leveling in the field, always stand well away from the unit and view the frames from frame height.



M4881-99




M3990-33

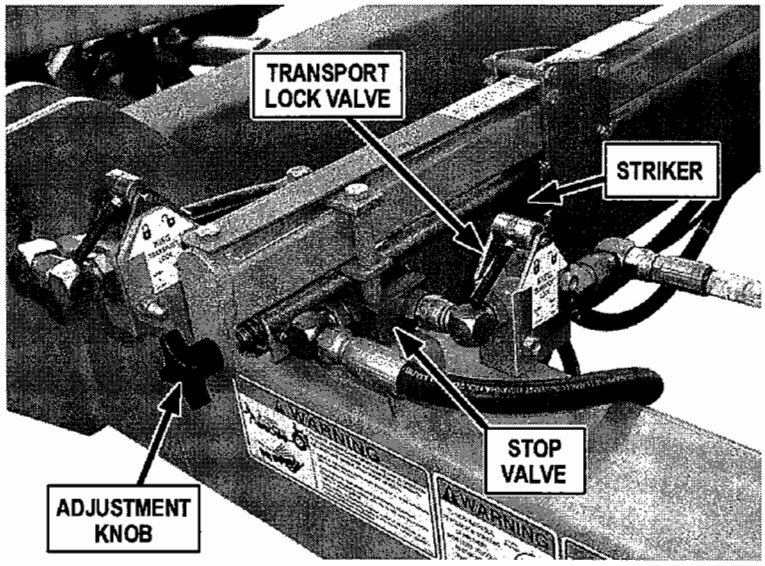
## SIDE TO SIDE LEVELING

If the wing is too high, loosen the outside NUT A, and thread down NUT B until the wing is level with the center section, and then re-tighten NUT A. (See photograph to the left.)

## HYDRAULIC DEPTH CONTROL ADJUSTMENT

The STOP VALVE controls the unit depth. when a depth change is required, turn the knob to move the striker closer to the valve to decrease depth or further away from the valve to increase depth.

If the unit depth varies during field operation, see the "Problem Solving" section in this manual.

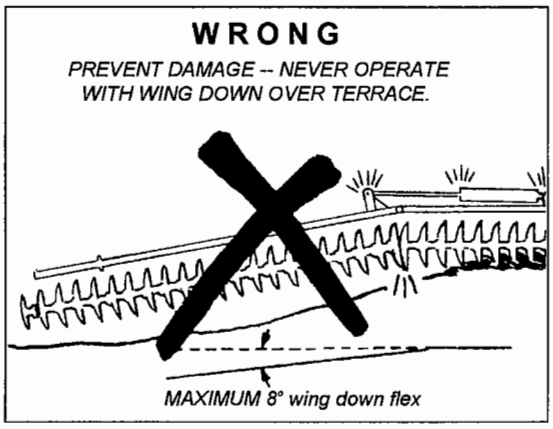


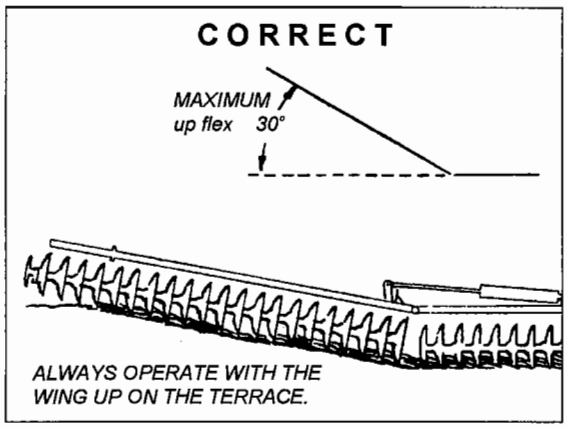

M4881-103

## FLEXIBILITY

ALWAYS WORK WITH WINGS DOWN: Major damage may occur to disc blades if used with the wings up. For maximum flexibility, make sure the wing hydraulic cylinders are fully extended after the wing is down.

When working terraced ground, place the wing up on the terrace, not down over the terrace, as the wings are limited in their downward movement, but not in the upward movement.



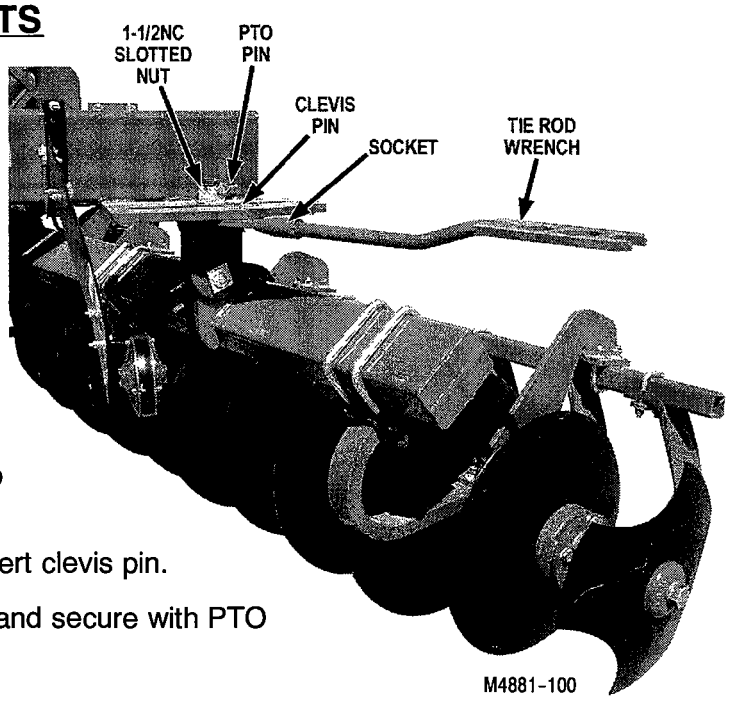



## DISC GANG ANGLE ADJUSTMENTS

The rear disc gangs can be set at a 10°, 15° or 20° angle.

Use the maximum angle to move more soil and to bury more residue.

Use the minimum angle in wet conditions or when more surface residue is desired. To change the angle of the disc gangs:



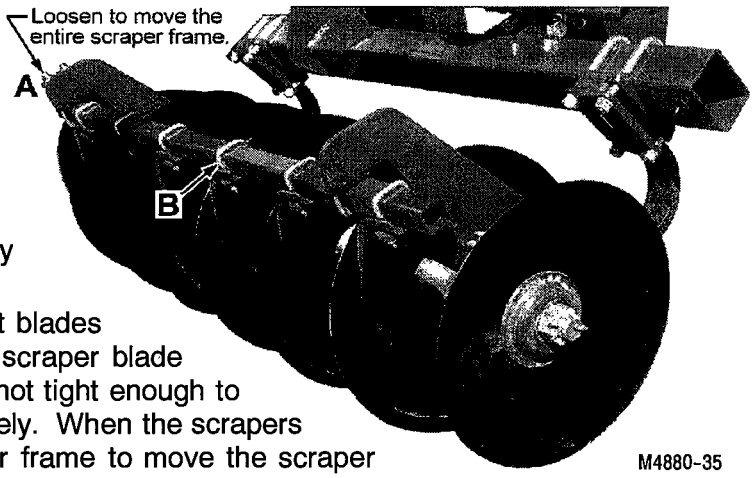
M4881-100

1. Use the tie rod wrench to loosen the 1-1/2NC Slotted Hex Nut.
2. Insert handle of the tie rod wrench into socket and remove clevis pin.
3. Move gang to desired position and insert clevis pin.
4. Tighten the 1-1/2NC Slotted Hex Nut and secure with PTO Pin.

## DISC GANG DEPTH ADJUSTMENT

The depth of the front and rear disc gangs are controlled by hydraulic cylinders. Do not set the blades deeper than the depth required to slice the crop residue. Caution must be used to prevent excessive loading of the disc gangs. This will cause the unit to have erratic depth, not remain level, and limit its ability to absorb shock loads when striking rocks or stumps.

### RIGID SCRAPER ADJUSTMENT



M4880-35

A. Scrapers can be adjusted by moving the entire assembly from side to side at the bracket locations.

B. Also, each scraper blade can be adjusted individually along its mounting frame.

When scrapers are required, adjust blades so that the scraping edge of each scraper blade is flush against the disc blade, but not tight enough to prevent the gang from revolving freely. When the scrapers are not required, adjust the scraper frame to move the scraper blades away from the disc blades. Under most conditions, scrapers should be positioned approximately 1/8" from the surface of the disc blades.

Each field may require some individual scraper adjustment. Moving scrapers one way or the other will help solve your individual scraper problems. Frequent examination will prevent damage to scraper assemblies and spacer spools.

### TURNING IN THE FIELD

Short turns at working depth may result in driving the outside disc blades deeper into the ground, causing damage to disc blades or bearings. If short turns must be executed, raise the implement out of the ground and complete the turn before engaging the tool for further tilling.

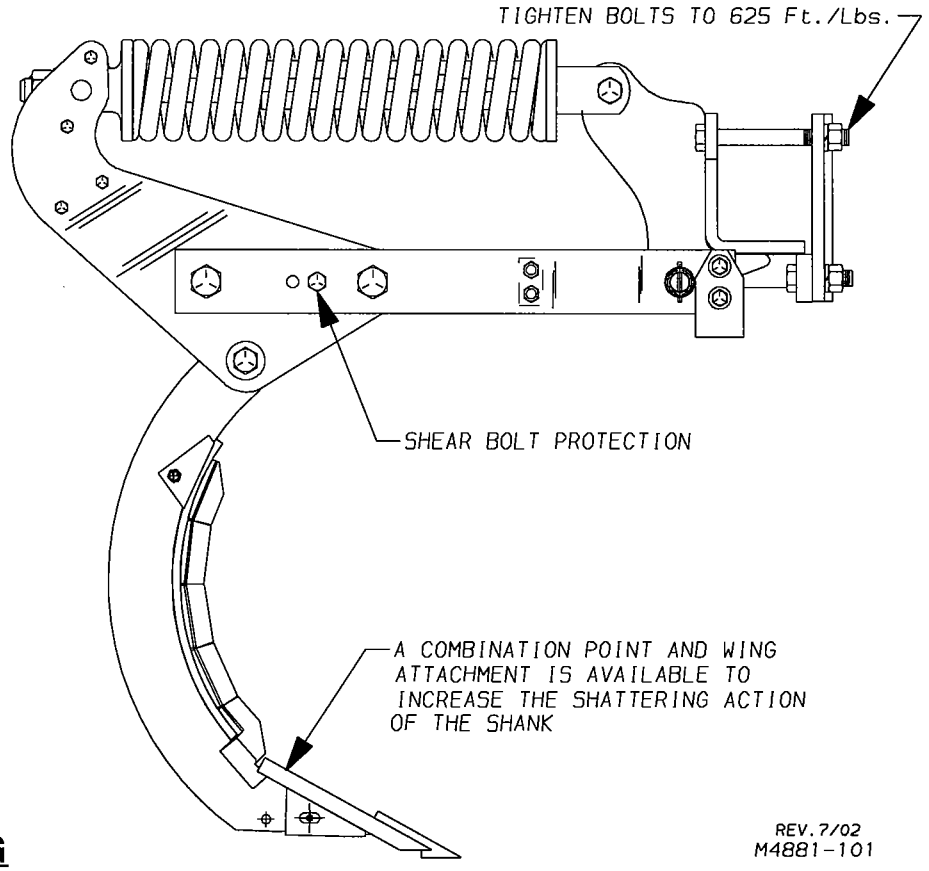
When lifting the implement completely out of the ground, hold the tractor hydraulic valve open for a second or two to resynchronize the slave cylinders.

IMPORTANT: 4-WHEEL DRIVE TRACTORS CAUSE SEVERE SIDE STRAIN ON TONGUE AND CLEVIS UNLESS THE DRAWBAR IS ALLOWED SOME FREEDOM TO SWING DURING FIELD OPERATION. DRAWBAR MUST BE PINNED FOR TRANSPORT.

## SUBSOIL SHANKS

Inspect shanks daily for loose bolts and excessive wear on ground engaging components and the trip mechanism.

**Warning: DO NOT ATTEMPT TO DISASSEMBLE THE SPRING ASSEMBLY. THE SPRING IS PRE-LOADED INTO THIS POSITION AND WILL REACT VIOLENTLY IF RELEASED. SERIOUS BODILY INJURY OR DEATH COULD RESULT.**
**NO individual repair parts are available for the spring assembly.**




## SERVICING

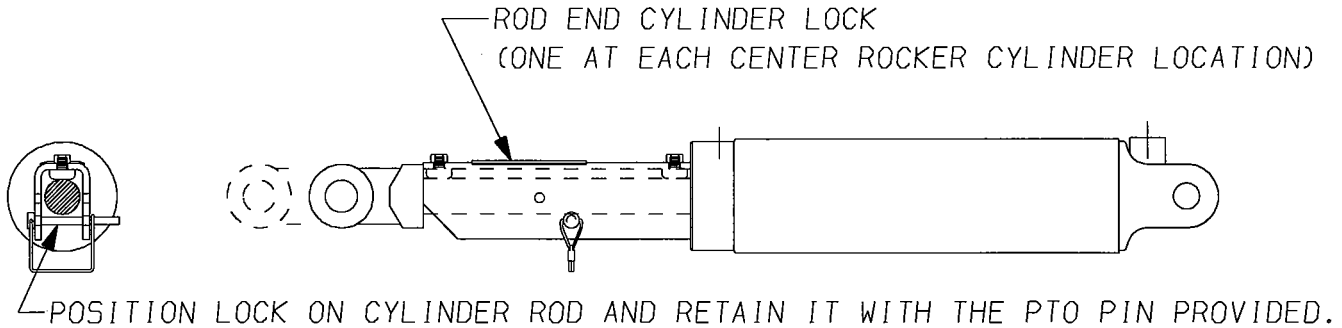
### GENERAL MAINTENANCE

All bolts should be checked and tightened after the first half day's operation and periodically thereafter.

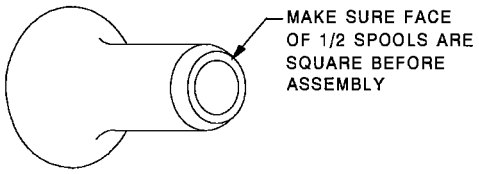
### DISC GANGS

Before attempting to work on the disc gang components, assemble maintenance locks (4830-117-0) on each of the two center rocker cylinder rods, block the tires, and close the transport lock valve.

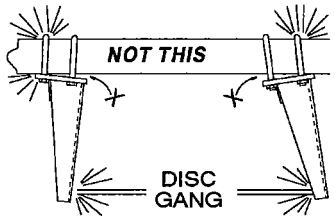
NOTE: 5 & 7 Shank Rigid Models: Attach the maintenance locks to the depth control link for storage when not in use (see illustration on page P8). 7& 9 Shank Folding Models: Attach the maintenance locks to the wing stop weldments for storage (see illustration on page P2).




Check the disc gang tie rods frequently. To tighten, attach a 5-1/2 ft. pipe over the tie rod wrench handle. Tighten the nut to 1,200 Ft. Lbs. by applying approximately 200 lbs. of weight to the end of the pipe.




CART25




BE SURE THE BEARING ARM FITS FLAT AGAINST THE GANG BEFORE TIGHTENING THE U-BOLTS.

**Caution: Be sure that the disc gang is locked with a tie rod wrench on the opposite end before force is applied.**

**Danger: Due to their sharpness and weight, serious injury can be inflicted by disc blades and gangs if not handled safely. Watch for unsafe conditions, Keep co-workers safety in mind. Should personal injury occur, have medical treatment administered immediately.**

Use the same procedure as described when setting up a new unit. Make sure the top of the bearing arms are parallel with the bottom of the frame before tightening the U-Bolts.

## LUBRICATION

The initial lubrication of all grease fittings will assure long life and satisfactory performance from the implement. Use a multi-purpose type grease at all grease zerk locations after each 24 hours of operation. Points of lubrication are: walking tandem bearings, shanks, and wheel hubs. Disc gang bearing should be greased with a high quality multi-purpose type grease after each use and after long periods of storage. The disc bearings cannot be overgreased and should be greased until grease is visible past the seals.

## WHEEL BEARINGS

Grease wheel bearings every 24 hours of use. Check for excessive end play each time that the bearings are greased. Once a year, clean and repack the wheel bearings with EP#2 Grease. Replace seals each time that the bearings are removed. Replace any worn or damaged parts. Use light oil on the seal surface and use extreme care when pushing seal over the spindle. Install outer bearings, flat washer, and slotted nut. Tighten nut while turning hub until there is resistance to rotation. Then back off nut 1 to 2 slots until hub turns freely without end play. Secure nut with clinched cotter pin.

WALKING BEAMS

Grease the walking beam bearing every 24 hours of use. When greasing the bearings, lower the unit onto the points and raise the walking beams off the ground. Check each walking beam for any slack in the pivot bearings. When slack is found tighten the axle nut until slack is eliminated and tighten 5 to 10 ft. lbs. of preload on the bearings. DO NOT BACK THE AXLE NUT OFF. Check, clean, and repack the walking beam bearings each year in a procedure that is similar to that of the wheel bearings.

## GENERAL INFORMATION

If problems are encountered in the field, and the operator requires aid or a possible remedy for the problem, a special troubleshooting section titled "Possible Remedies for Field Problems" has been added at the end of this section.

## STORAGE SUGGESTIONS

Make sure transport lock valve is in the closed position. For long term storage, coat disc blades and hydraulic cylinder rods with rust preventative. For added safety, lower the implement to the ground. Cylinder rods may also be unpinned and retracted to protect the polished rod surfaces. Inspect the implement for worn or damaged parts and replace as necessary to avoid delays the next season.

REPAIR PARTS

Refer to the Assembly Section of this book when repairing or replacing parts, and follow the same procedure as used when assembling a new unit. Reverse this procedure for disassembly. The Parts Section of this manual will show a breakdown of assemblies, location of parts, and part numbers.

It is recommended that KRAUSE replacement parts be used. KRAUSE PARTS WERE DEVELOPED AND TESTED FOR THESE IMPLEMENTS.

⚠ **Caution: If replacing hydraulic hose, use only hose that meets of exceeds 3,000 PSI working pressure.**

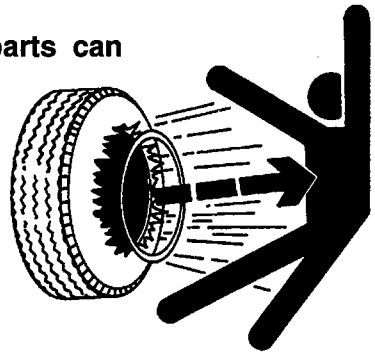
IMPORTANT: REPAIR OF HYDRAULIC CYLINDERS SHOULD BE MADE BY AN AUTHORIZED KRAUSE DEALER.

### AVOID HEATING NEAR PRESSURIZED FLUID LINES

Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders. Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials. Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area.

⚠ **Caution: Explosive separation of a tire and rim parts can cause serious injury or death.**

**Always maintain the correct tire pressure. Do not inflate the tires above the recommended pressure. Inspect tires and wheels daily. Do not operate with low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.**



# SUGGESTED REMEDIES FOR POSSIBLE FIELD PROBLEMS

| PROBLEM | POSSIBLE CAUSE | SUGGESTED REMEDY |
|---|---|---|
| Implement does not follow directly behind tractor | Points are different lengths | Replace or turn |
| | Bent shanks | Replace or straighten |
| | Bent rocker shaft | Straighten or replace |
| | Incorrect tire size or air pressure | All tires should have the same air pressure as reflected on page 3 Specifications Chart |
| | | All tires should be within ±1/2" diameter |
| | Wing Frame deeper | Adjust wings |
| Implement is not level from side to side | Incorrect tire size or air pressure | All tires should have the same air pressure as reflected on page 3 Specifications Chart |
| | | All tires should be within ±1/2" diameter |
| | Bent or twisted rocker shaft or wheel arm | Straighten or replace. |
| Plugging | Straw is dragging | Work deeper |
| | | Change working angle with respect to row direction |
| | 'Bunched' trash | Work shallow first time |
| | Field is too wet | Allow field to dry |
| | Front gangs too shallow | Increase depth |
| | Discs plugging | Remove scraper at bearing arm location |
| Implement not level from front to rear | Clevis height not adjusted when depth changed | Use wheels to gauge depth and adjust turnbuckle with unit in working position |
| Implement leaves excessive ridges | Frame not level | Level frame at operating depth as described in the Operating Instructions |
| | Bent shank | Straighten or replace |
| | Points with old residue will cause soil build-up and prevent necessary scouring for even flow | Remove trash and residue. Clean the disc ripper after operation. Before storing use a rust preventative. |
| | Rear gangs too shallow | Increase depth |
| Implement will not lower | Road lock | Open road lock |
| | Remote depth valve plumbed backwards | Check plumbing to hydraulic schematic |
| Wheels have excessive wobble | Loose wheel bolts | Stop. Torque wheel bolts from to proper tightness. See Dealer Check Sheet. |
| | Loose spindle nut | Tighten spindle nut, then turn back one notch and pin |
| Unit settling or continually going deeper while working | Hydraulic System. | Use depth valve |
| **WARNING: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines.** **Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.** **If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a new hours or gangrene may result.** | | Check for leaks in system |
| | | Install new O-Ring in depth valve |
| | | Install new cylinder seal kit |
| | | Tractor valve is leaking |
| Implement will not penetrate | Ground is too hard | Wait for moisture |
| | Excessive field speed | Slow to 5 MPH or less |
| | Incorrect stroke control setting on depth cylinder | Readjust hydraulic actuator stop |
| | Discs set too deep | Raise gangs |

***ATTENTION: DO NOT REMOVE SHANKS**

* NOTE: Removing shanks to obtain additional depth will cause the remaining shanks and frame members on which these shanks are mounted, to be overloaded. This could cause bent shanks, broken bolts or clamps, or twisted frame members.

| PROBLEM | POSSIBLE CAUSE | SUGGESTED REMEDY |
|---|---|---|
| Leaving center ridge | Excessive speed | Reduce speed |
| | Rear gangs cutting too deep | Shorten turnbuckle on tongue |
| | | Reduce depth of rear gangs |
| Leaving center furrow | Discing too slowly | Increase speed, not to exceed 6 m.p.h., 5 m.p.h. in rocky conditions |
| | Rear gang not cutting deep enough | Increase depth of rear gangs |
| Leaving untilled center strip | Discing too shallow | Increase depth |
| Leaving furrow on outside | Rear running too deep | Readjust turnbuckle on tongue |
| | Extension disc blade incorrect size | Decrease size of extension disc blade |
| Leaving ridge on outside | Front running too deep | Adjust turnbuckle on tongue |
| | Not enough overlap | Move tractor toward plowed ground |
| | Wing section running too deep | Adjust wing rocker shaft leveling screw |
| | Excessive speed | Reduce speed |
| Center section not level from side to side | Incorrect air pressure in tires | Inflate tires to correct P.S.I. see Dealer Check Sheet |
| Wing not level from side to side | Wing too high | To lower wing, shorten wing adjustment screw |
| | Wing too low | To raise wing, lengthen wing adjustment screw |
| | Wing lift cylinder not fully extended | Extend cylinder to maximum length and hold open briefly |
| | Slave cylinders out of phase | Raise unit out of ground and hold control lever open until all cylinder are completely extended |
| Implement not level front to rear during field operation | Tongue turnbuckle | Lengthen turnbuckle to raise front; Shorten turnbuckle to lower front |
| Gangs plugging | Extremely wet conditions | Decrease depth of work or allow field to dry if possible |
| | Worn or improper adjustment of scraper blades | Readjust scrapers, replace worn parts |

| PROBLEM | POSSIBLE CAUSE | SUGGESTED REMEDY |
|---|---|---|
| Gang does not revolve | Obstruction in disc gang | Check for rocks, mud, roots, etc. |
| | Scrapers | Check for scrapers adjusted too tight to the disc blades |
| | Seized bearing | Replace |
| | Plugging at bearing arm | Try removing scraper at this location |
| Wing will not flex down far enough | Wing lift cylinder | Make sure cylinders are fully extended |
| Disc will not penetrate or penetrates too much | Stroke control settings on wheel control cylinders | Readjust depth control striker |
| Wheels have excessive wobble | Loose wheel bolts | See Dealer Check sheet for proper torque values. |
| | Loose spindle nut | Tighten nut until tight, then turn back one notch and pin |
| Discs have excessive wobble | Tie rod nut too loose | Retorque nut on tie rod to 1,200 Ft. Lbs. |
| Disc will not lower or wings will not lower | Transport locks engaged | Open transport lock valves |
| Wings will not raise to transport position | Plugged restrictor | Remove restrictors from ends of cylinder and check orifice for foreign material |
| | Insufficient hydraulic pressure | Check tractor hydraulic system |
| Inadequate transport clearance | Wheel control cylinders not extended | Extend cylinders |
| | Tire pressure low | Inflate tires to proper P.S.I. See Dealer Check Sheet |
| | Disc not level from front to rear | Adjust turnbuckle on tongue |

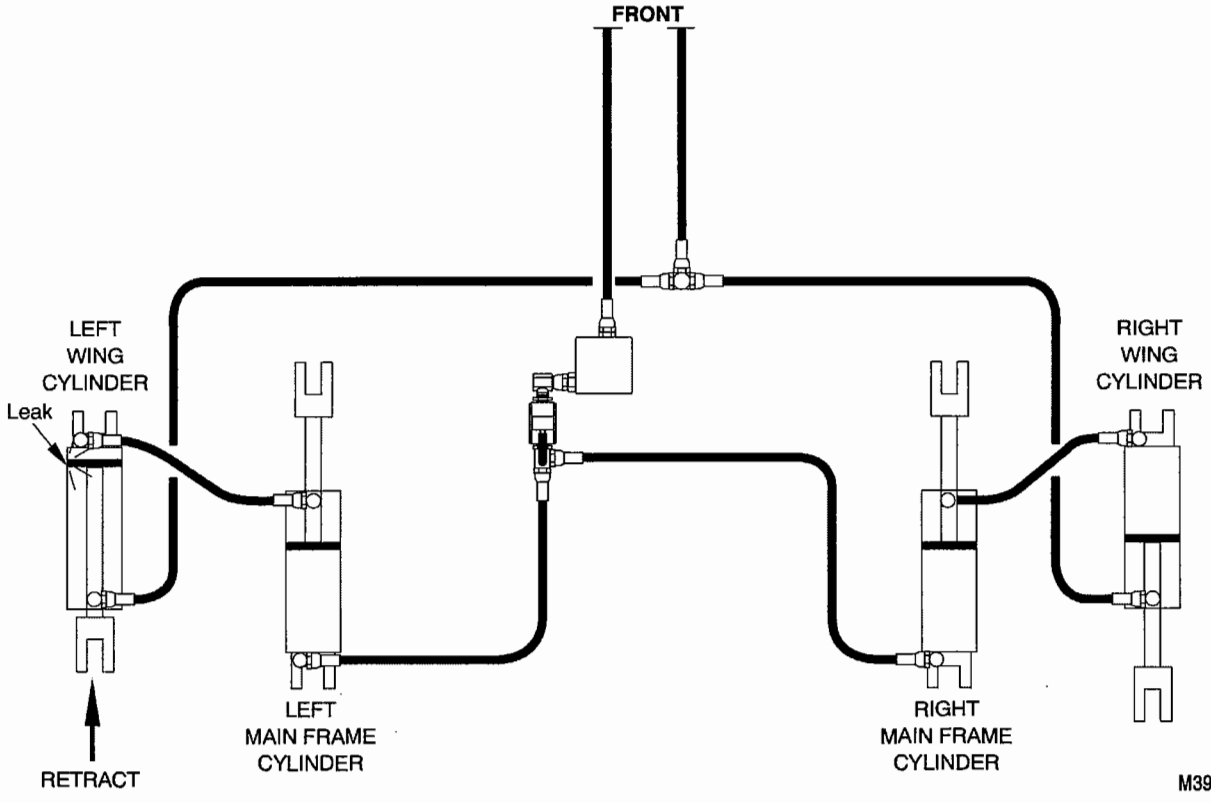
# TEST PROCEDURE TO LOCATE INTERNAL LEAKING CYLINDER IN A REPHASING SYSTEM

## 7 & 9 SHANK FOLDING MODELS

1. Raise the unit until the points are 4" to 5" above the ground, but do not fully extend the cylinder.
2. Measure the length of the four rocker cylinders and record those lengths.
3. Allow the unit to sit for a period of time until there is a measurable change in one of the cylinder lengths. This may require an hour or two (preferably overnight).
4. Measure the length of each cylinder again and note whether or not the cylinder extended or retracted.
5. Match your results to one of the five case studies shown on the following pages to locate the leaking cylinder.

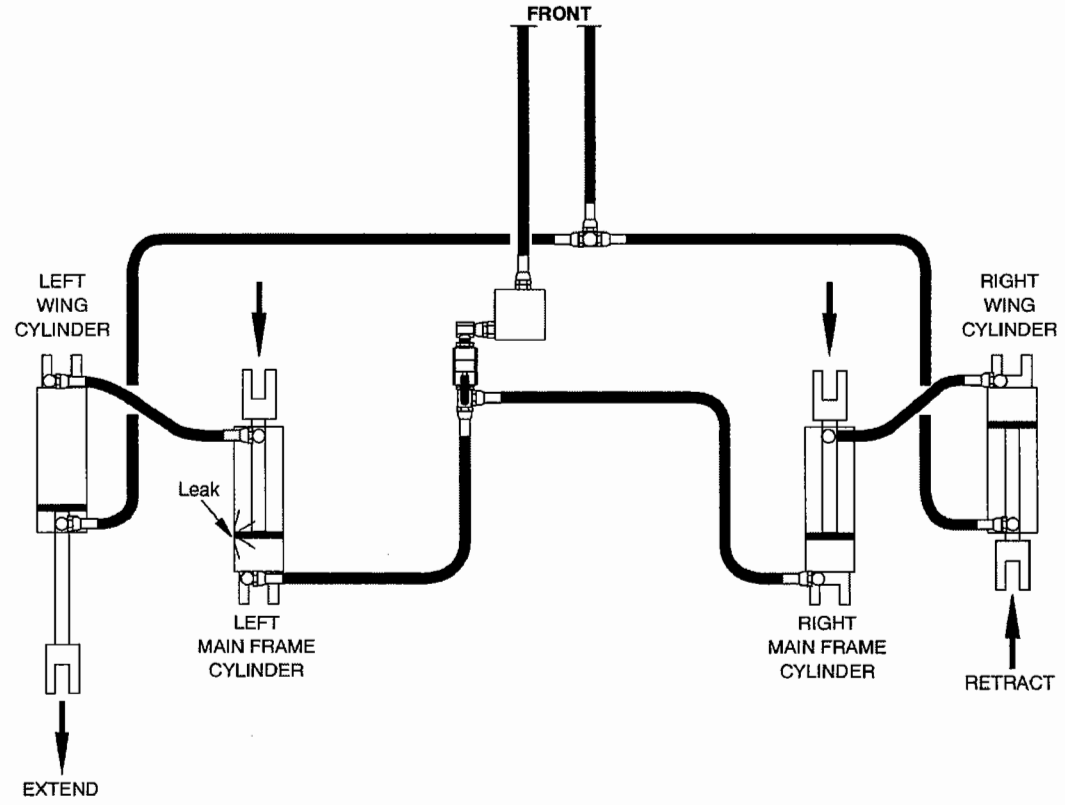
**CASE 1:**

| | |
|---|---|
| Symptom: | Left wing lowering as the implement is pulled in the field |
| Probable Cause: | Left wing cylinder piston seal leak |
| Test Result: | (See page O15) Left wing cylinder retracts, all other cylinders do not change |
| Leak Location: | Left Wing Rocker Cylinder |



**CASE 2:**

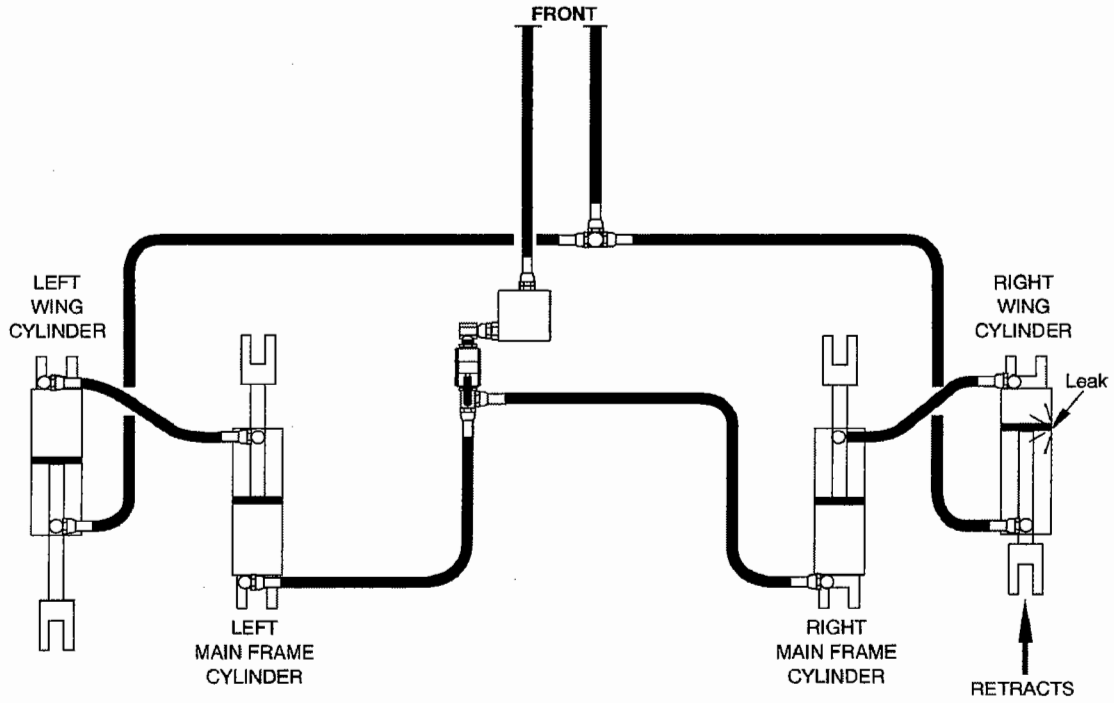
Symptom: Left wing raising as the implement is pulled in the field
Probable Cause: Left main frame cylinder piston seal leak
Test Result: (See page O15) Left wing cylinder extends, all other cylinders retract
Leak Location: Left Main Frame Rocker Cylinder




M3990-42

**CASE 3:**

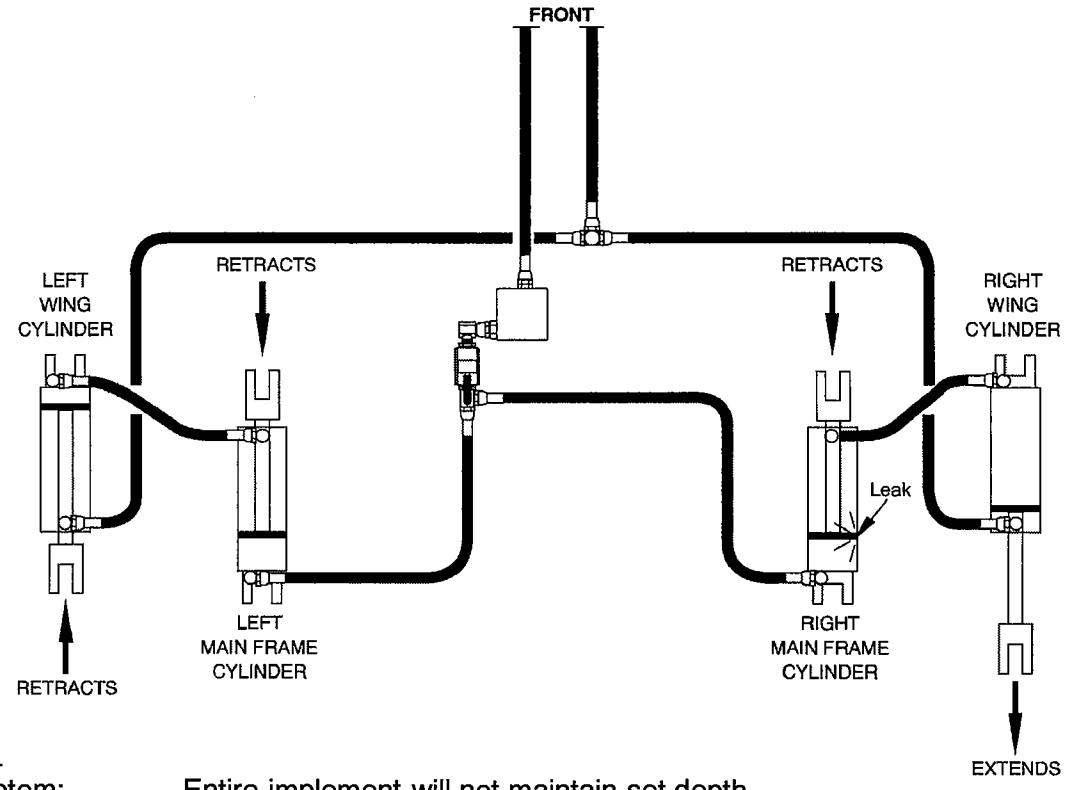
Symptom: Right wing lowering as the implement is pulled in field
Probable Cause: Right wing cylinder piston seal leak
Test Result: (See page O15) Wing cylinder retracts, all other cylinders do not change
Leak Location: Right Wing Rocker Cylinder




M3990-43

**CASE 4:**

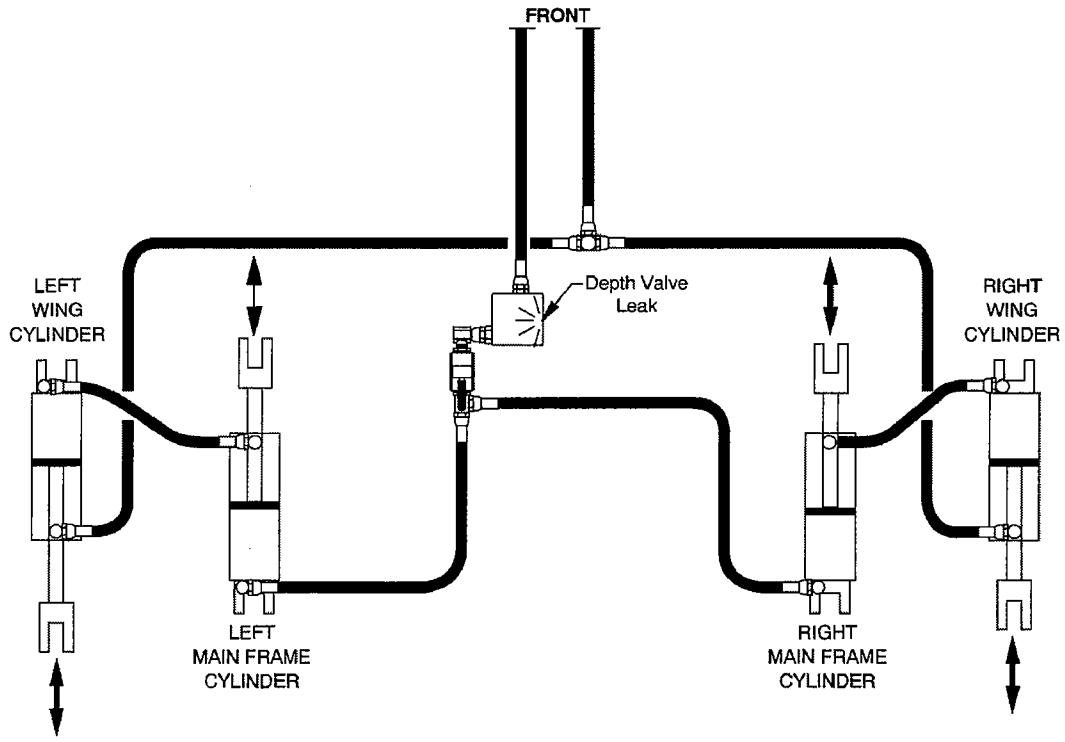
Symptom: Right wing raising as the implement is pulled in field
Probable Cause: Right main frame cylinder piston seal leak
Test Result: (See page O15) Right wing cylinder extends, all other cylinders retract
Leak Location: Right Main Frame Rocker Cylinder




M3990-44

**CASE 5:**

Symptom: Entire implement will not maintain set depth
Probable Cause: Depth Valve Leak
Test Result: (See page O15) All cylinders are retractor or extending at the same time
Leak Location: If all cylinders are extending at the same rate, the tractor valve is leaking. IF all cylinders are retracting at the same rate, the leak could be in the stroke control valve or the tractor valve.



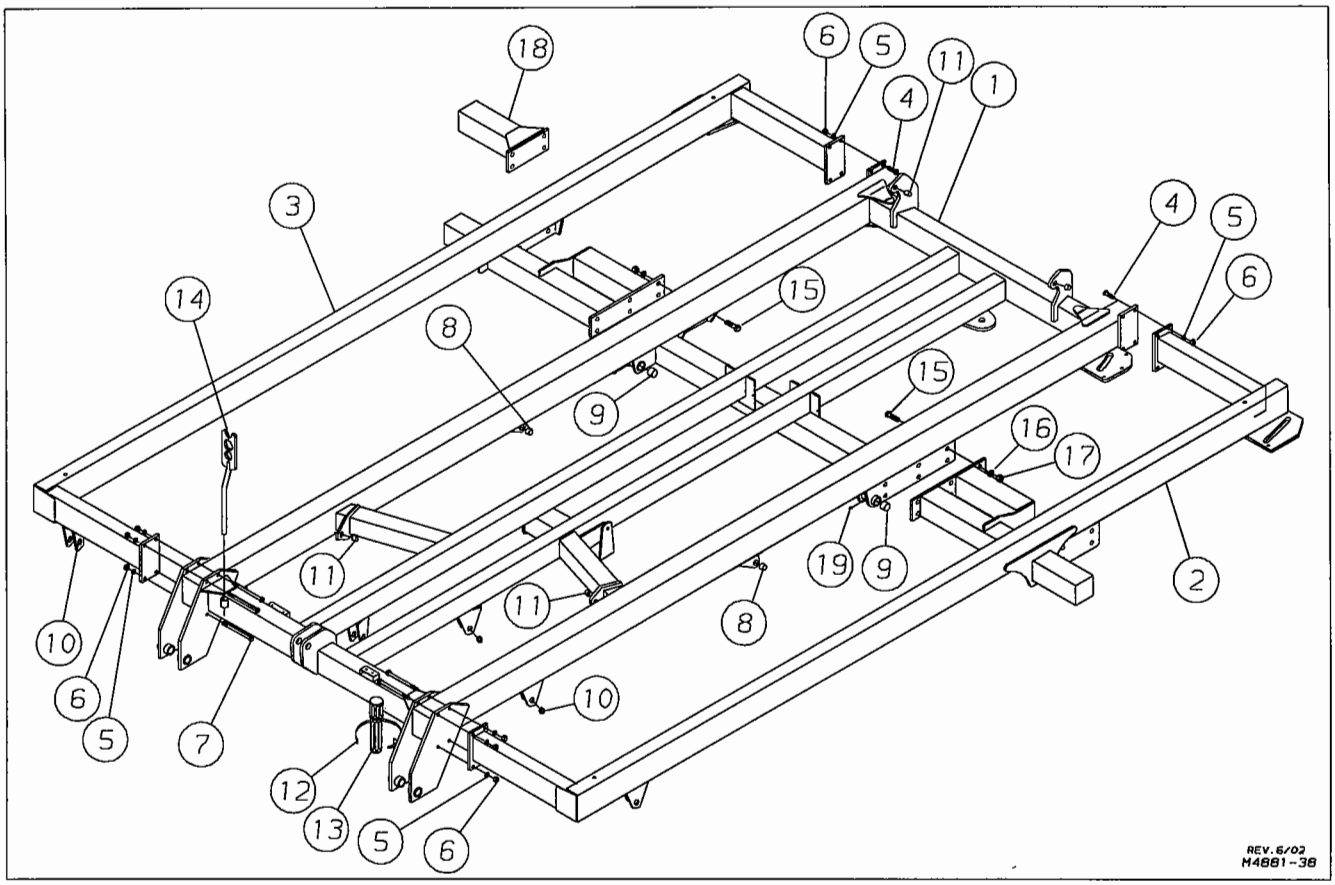

M3990-45

**This page intentionally left blank.**

# PARTS SECTION

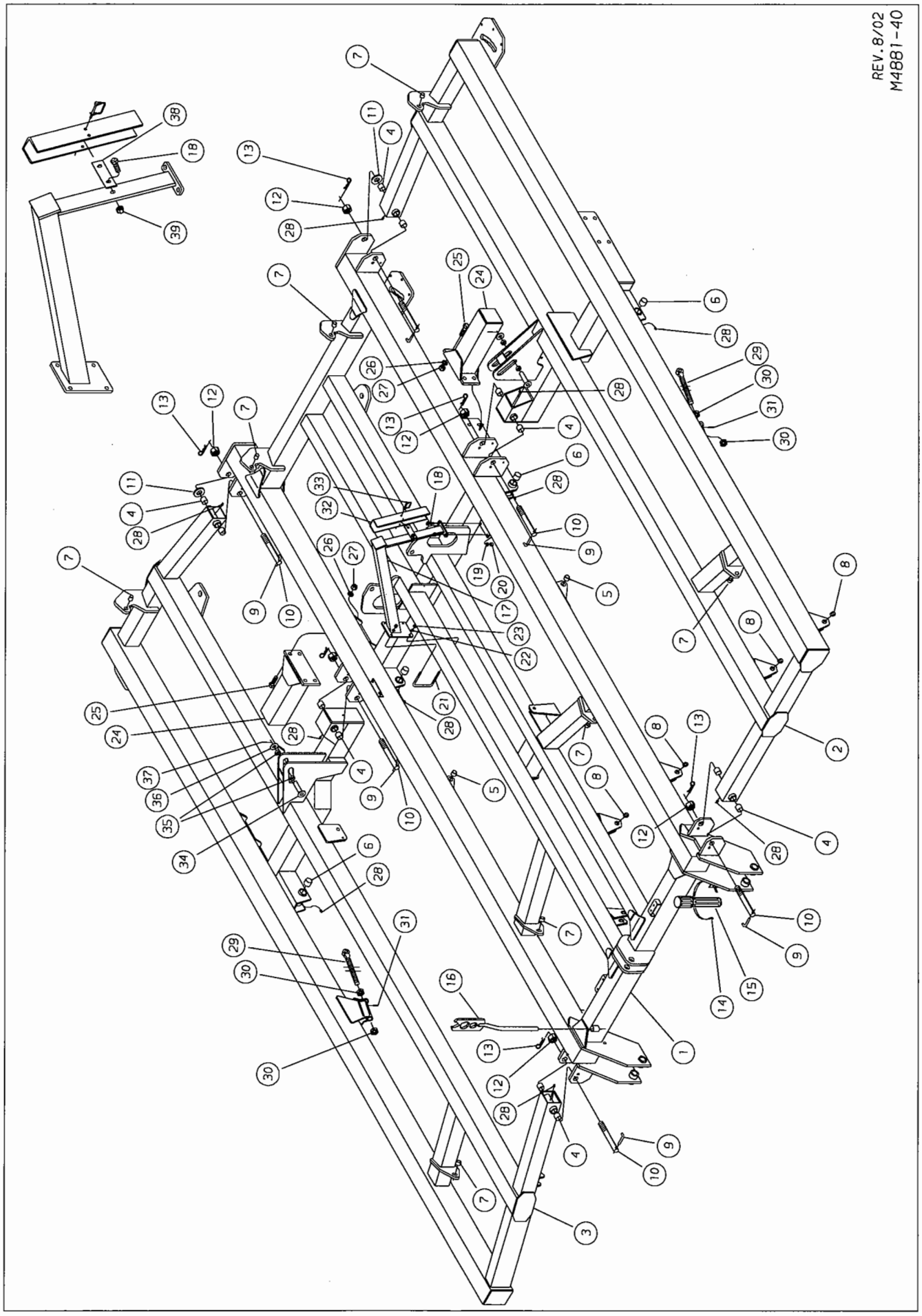
THE FOLLOWING ILLUSTRATED PARTS SECTION HAS BEEN COMPILED TO REFLECT PART NUMBERS REQUIRED TO ORDER PARTS, AND TO SUPPORT THE ASSEMBLY SECTION FOR DIMENSIONS AND DESCRIPTIONS OF ALL PARTS, BOLTS, PINS, ETC. THE OPERATOR CAN ALSO IDENTIFY PART NAMES TO CLARIFY PROPER OPERATIONAL STEPS.

# CENTER FRAME ASSEMBLY




**FOR MODELS -** TL3000 5 SHANK, 7 SHANK 8/27/02

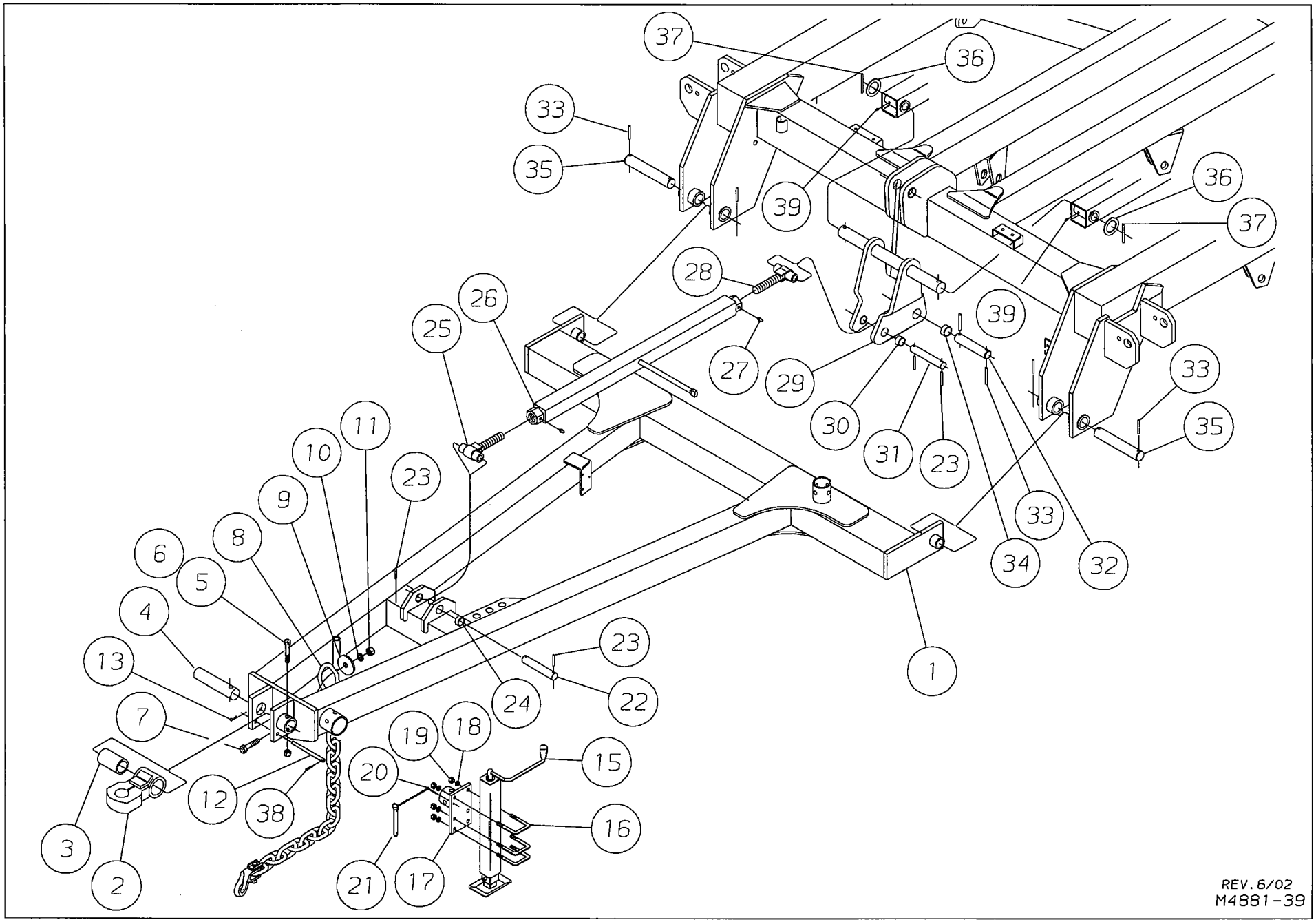
| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-5001-0A | 5 & 7 Center Frame Weldment | 1 |
| 2 | ★ 4881-7018-0 | 7 Shank Left Frame End Weldment | 1 |
| 3 | ★ 4881-7020-0 | 7 Shank Right Frame End Weldment | 1 |
| 4 | 62-195 | 3/4NC x 2-1/2" GD5 Cap Screw | 8 |
| 5 | 64-112 | 3/4"STD. Lock Washer | 16 |
| 6 | 63-112 | 3/4NC Hex Nut | 16 |
| 7 | 62-222 | 3/4NC x 9-1/2" Machine Bolt | 8 |
| 8 | 53-101 | Wear Bushing, 1.50 od x 1.28 id x 1.00 | 4 |
| 9 | 53-110 | Wear Bushing, 2.00 od x 1.81 id x 1.50 | 4 |
| 10 | 53-109 | Wear Bushing, 1.50 od x 1.28 id x .50 | 12 |
| 11 | 53-102 | Wear Bushing, 1.25 od x 1.02 id x 1.00 | 4 |
| 12 | 25-1163 | Hose Clamp | 1 |
| 13 | 99-218 | Owner's Manual Canister (Black) | 1 |
| 14 | 2191-35-0 | Tie Rod Wrench | 1 |
| 15 | 62-237 | 1NC x 3" Cap Screw | 8/12 |
| 16 | 64-118 | 1" STD. Lock Washer | 8/12 |
| 17 | 63-117 | 1NC Hex Nut | 8/12 |
| 18 | ■ 4881-7070-0 | Extension Weldment | 2 |
| 19 | 65-101 | 1/8" STD. Zerk | 2 |
| ★ 7 Shank Unit ONLY | | | |
| ■ 5 Shank Unit ONLY | | | |


REV.8/02
M4881-40

# CENTER AND WING FRAMES

**FOR MODELS -** TL3000 7 SHANK, TL3000 9 SHANK 8/27/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 4881-9001-0A | 7 & 9 Center Frame Weldment | 1 |
| 2 | 4881-9018-0A | Left Wing Frame Weldment | 1 |
| 3 | 4881-9020-0A | Right Wing Frame Weldment | 1 |
| 4 | 53-118 | Wear Bushing | 12 |
| 5 | 53-101 | Wear Bushing, 1.50 od x 1.28 id x 1.00 | 4 |
| 6 | 53-110 | Wear Bushing, 2.00 od x 1.81 id x 1.50 | 8 |
| 7 | 53-102 | Wear Bushing, 1.25 od x 1.02 id x 1.00 | 8 |
| 8 | 53-109 | Wear Bushing, 1.50 od x 1.28 id x .50 | 16 |
| 9 | 5430-0-24 | Hinge Lock Pin | 4 |
| 10 | 4881-0000-2 | Hinge Pin | 6 |
| 11 | 64-145 | Wear Washer, 2.50 od x 1.62 id | 2 |
| 12 | 63-181 | 1-1/2NC GD5 Slotted Hex Nut | 6 |
| 13 | 60-711 | 1/4"DIA. x 3" Cotter Pin | 6 |
| 14 | 25-1163 | Hose Clamp | 1 |
| 15 | 99-218 | Owner's Manual Canister (Black) | 1 |
| 16 | 2191-35-0 | Tie Rod Wrench | 1 |
| 17 | 4881-9044-0 | Wing Stop Weldment | 2 |
| 18 | 62-424 | 5/8NC x 1-1/2" GD5 Cap Screw | 6 |
| 19 | 64-109 | 5/8" STD. Lock Washer | 4 |
| 20 | 63-109 | 5/8NC Hex Nut | 4 |
| 21 | 61-244 | U-Bolt, .50"DIA. x 6.06 W x 5.25" L | 4 |
| 22 | 64-107 | 1/2" STD. Lock Washer | 8 |
| 23 | 63-106 | 1/2NC Hex Nut | 8 |
| 24 | 4881-7070-0 | Extension Weldment | 2/4 |
| 25 | 62-237 | 1NC x 3" Cap Screw | 8/16 |
| 26 | 64-118 | 1" STD. Lock Washer | 8/16 |
| 27 | 63-117 | 1NC Hex Nut | 8/16 |
| 28 | 65-100 | 1/8" x 45° Zerk | 10 |
| 29 | 4881-1070-0 | 1-1/4" Eyebolt | 2 |
| 30 | 63-124 | 1-1/4NC Hex Jam Nut | 4 |
| 31 | 60-613 | Roll Pin, 3/8" DIA. x 1-1/2" | 2 |
| | 4830-117-0 | Cylinder Lock Assembly (Includes ★ Items) | |
| 32 | ★ 4830-117-1 | Cylinder Lock | 2 |
| 33 | ★ 60-103 | PTO Lock Pin | 2 |
| 34 | 3131-77-0 | Cylinder Clevis Pin | 2 |
| 35 | 53-109 | Wear Sleeve | 4 |
| 36 | 64-126 | 1-1/4" STD. Flat Washer | 2 |
| 37 | 60-606 | 1/4" DIA. x 2" Roll Pin | 2 |
| 38 | 4881-0000-37 | Bolt Plate | 2 |
| 39 | 63-110 | 5/8NC Lock Nut | 2 |
| | | | |
| | | | |
| | | | |
| | | | |

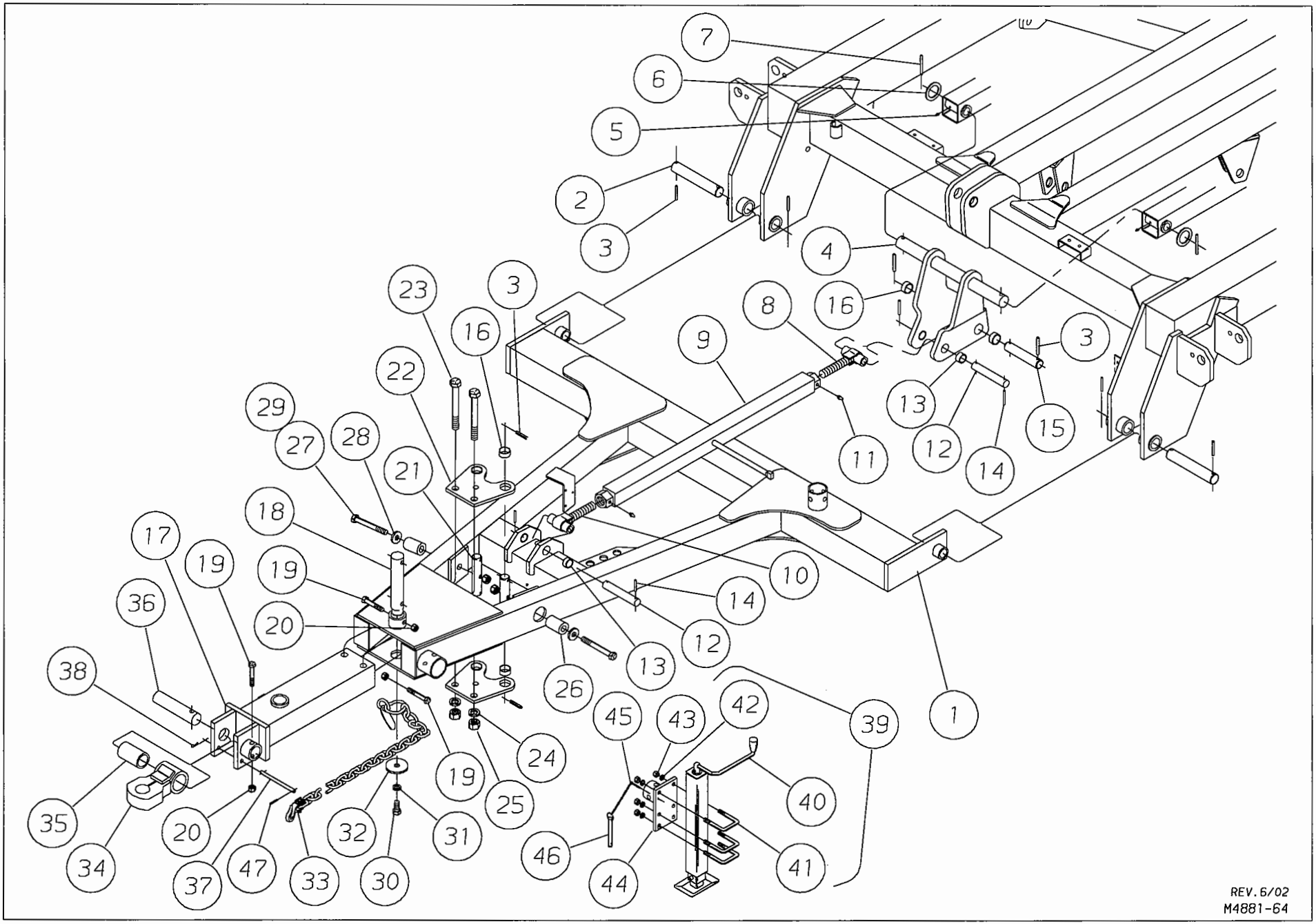



REV. 6/02
M4881-39

# TONGUE ASSEMBLY

**FOR MODELS -** TL3000 5, 7, 9 SHANK 6/02

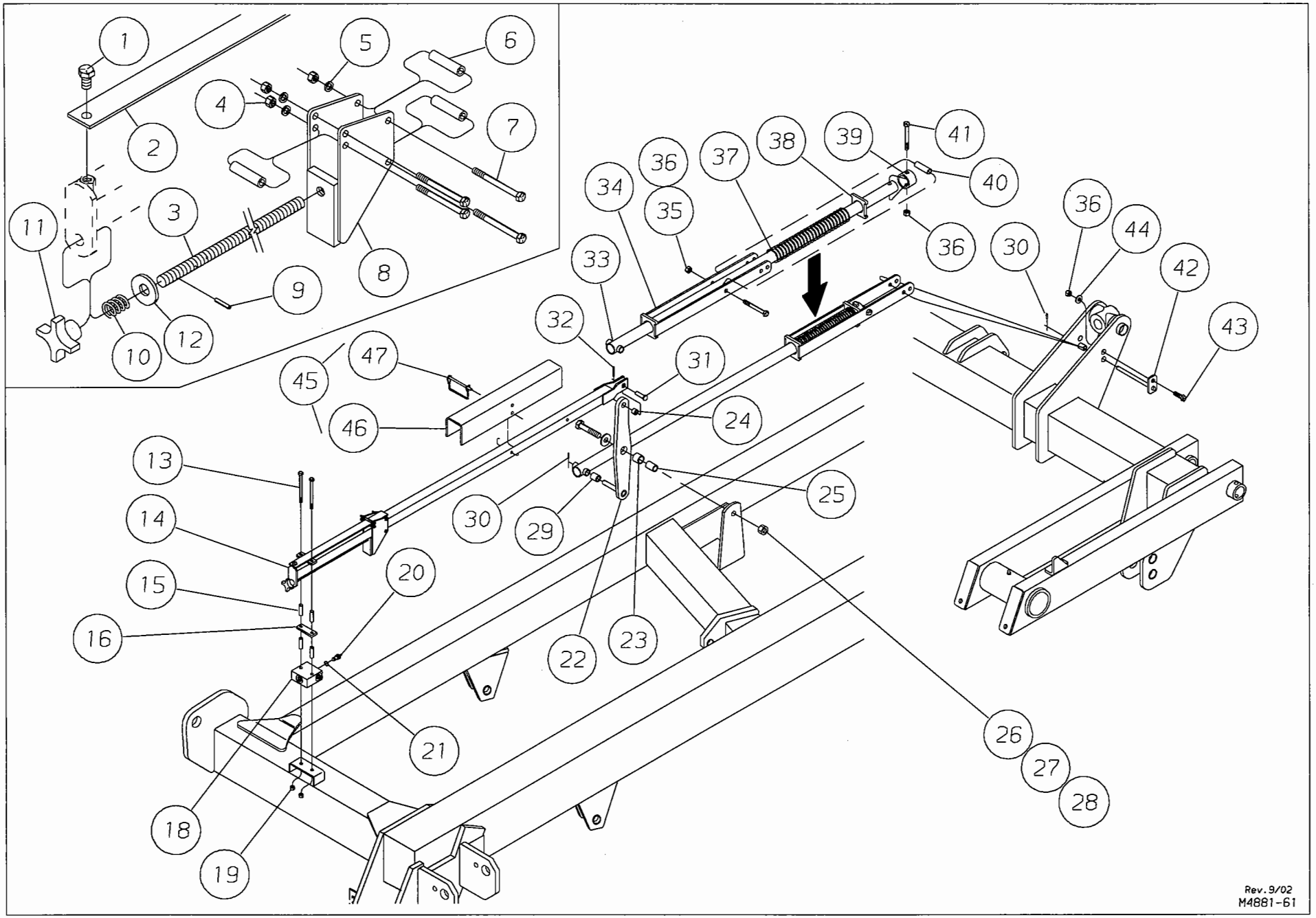
| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 4881-7030-0 | Tongue Weldment | 1 |
| 2 | 2135-54-0 | Hitch Weldment | 1 |
| 3 | 4885-0-6 | Hitch Bushing | 1 |
| 4 | 4885-0-5 | Hitch Pin | 1 |
| 5 | 62-176 | 5/8NC x 3-1/2" GD5 Cap Screw | 1 |
| 6 | 63-110 | 5/8NC Lock Nut | 1 |
| 7 | 62-197 | 3/4NC x 3" GD5 Cap Screw | 1 |
| 8 | 72-352 | 20,000# Safety Chain (5 & 7 Shank Rigid Models) | 1 |
| | 72-356 | 30,000# Safety Chain (7 & 9 Shank Folding Models) | 1 |
| 9 | 64-147 | Special Washer, 3-1/2 od x 13/16 id x 1/4" | 1 |
| 10 | 64-112 | 3/4" STD. Lock Washer | 1 |
| 11 | 63-162 | 3/4NC Nylon-Top Lock Nut | 1 |
| | 6200-90-0 | Pin Assembly (Includes • Items) | 1 |
| 12 | • 6200-90-1 | Pin | 1 |
| 13 | • 60-716 | Hair Pin Cotter | 1 |
| 14 | 4956-56-0 | Jack Assembly (Includes ★ Items) | 1 |
| 15 | ★ 73-111 | Jack Assembly | 1 |
| 16 | ★ 61-172 | U-Bolt, .50 DIA. x 2.56 W x 3.75 L | 3 |
| 17 | ★ 4956-55-0A | Jack Mount Weldment | 1 |
| 18 | ★ 64-107 | 1/2" STD. Lock Washer | 6 |
| 19 | ★ 63-106 | 1/2NC Hex Nut | 6 |
| 20 | ★ 60-702 | Cotter Pin, 3/16"DIA. x 1-1/2" | 1 |
| 21 | ★ 60-106 | Fas Pin | 1 |
| 22 | 6127-0-11 | Pin, 1-1/4" DIA. x 6-3/4" | 2 |
| 23 | 60-606 | Roll Pin, 1/4" DIA. x 2" | 4 |
| 24 | 53-135 | Wear Sleeve | 2 |
| 25 | 6142-82-0 | Right Hand Threaded End | 1 |
| 26 | 4830-35-0 | Turnbuckle Weldment | 1 |
| 27 | 65-114 | 1/4" Drive Zerk | 2 |
| 28 | 6142-83-0 | Left Hand Threaded End | 1 |
| 29 | 4881-7071-0 | Pivot Weldment | 1 |
| 30 | 53-113 | Wear Bushing | 2 |
| 31 | 4881-0000-5 | Pivot Pin | 2 |
| 32 | 4881-0000-4 | Pin, 1-1/2" x 6-3/4" | 1 |
| 33 | 60-616 | Roll Pin, 3/8" DIA. x 2-1/4" | 6 |
| 34 | 53-166 | Wear Bushing, 1.75 od x 1.53 id x .75 | 2 |
| 35 | 4885-0-4A | Tongue Pin, 1-3/4" DIA. x 9-1/2" | 2 |
| 36 | 64-154 | Machine Bushing, 3.125 od x 2.125 id x 10 Ga. | 2 |
| 37 | 60-621 | Roll Pin, 1/2" DIA. x 2-1/2" | 2 |
| 38 | • 60-626 | 3/16" DIA. x 1-1/2" Roll Pin | 1 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |


REV. 6/02
M4881-64

# CUSHION TONGUE ASSEMBLY (OPTIONAL)

**FOR MODELS -** TL3000 5, 7, 9 SHANK 6/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 4881-9030-0 | Tongue Weldment | 1 |
| 2 | 4885-0-4A | Tongue Pin, 1-3/4" DIA. x 9-1/2" | 2 |
| 3 | 60-616 | Roll Pin, 3/8" DIA. x 2-1/4" | 10 |
| 4 | 4881-7071-0 | Pivot Weldment | 1 |
| 5 | 65-101 | 1/8" STD. Zerk | 2 |
| 6 | 64-154 | Machine Bushing, 3-1/8" O.D. x 2-1/8" I.D. x 10 Ga. | 2 |
| 7 | 60-621 | Roll Pin, 1/2" DIA. x 2-1/2" | 2 |
| 8 | 6142-83-0 | Left Hand Threaded End | 1 |
| 9 | 4830-35-0 | Turnbuckle Weldment | 1 |
| 10 | 6142-82-0 | Right Hand Threaded End | 1 |
| 11 | 65-114 | 1/4" Drive Zerk | 2 |
| 12 | 6127-0-11 | Pin, 1-1/4" DIA. x 6-3/4" | 2 |
| 13 | 53-113 | Wear Sleeve | 4 |
| 14 | 60-606 | Roll Pin, 1/4" DIA. x 2" | 4 |
| 15 | 4881-0000-4 | Pin, 1-1/2" DIA. x 6-3/4" | 1 |
| 16 | 53-166 | Wear Sleeve | 6 |
| 17 | 4881-9032-0 | Swing Hitch Weldment | 1 |
| 18 | 4881-0000-3 | Hitch Pin | 1 |
| 19 | 62-176 | 5/8NC x 3-1/2" GD5 Cap Screw | 3 |
| 20 | 63-110 | 5/8NC Lock Nut | 3 |
| 21 | 4881-0000-5 | Pivot Pin | 2 |
| 22 | 4881-7086-0 | Hitch Shock Mount (Includes Wear Sleeves) | 2 |
| 23 | 62-250 | 1NC x 6-1/2" Cap Screw | 2 |
| 24 | 64-118 | 1" STD. Lock Washer | 2 |
| 25 | 63-117 | 1NC Hex Nut | 2 |
| 26 | 76-231 | Urethane Spring | 2 |
| 27 | 62-821 | 3/4NC x 8" GD8 Cap Screw | 2 |
| 28 | 64-215 | Special Washer | 2 |
| 29 | 63-113 | 3/4NC Hex Jam Nut | 2 |
| 30 | 62-191 | 3/4NC x 1-1/2" GD5 Cap Screw | 1 |
| 31 | 64-112 | 3/4" STD. Lock Washer | 1 |
| 32 | 64-147 | Special Washer, 3-1/2" O.D. x 13/16" I.D. x 1/4" | 1 |
| 33 | 72-352 | 20,000# Safety Chain (5 & 7 Shank Rigid Models) | |
| | 72-356 | 30,000# Safety Chain (7 & 9 Shank Folding Models) | 1 |
| 34 | 2135-54-0 | Hitch Weldment | 1 |
| 35 | 4885-0-6 | Hitch Bushing | 1 |
| 36 | 4885-0-5 | Hitch Pin | 1 |
| | 6200-90-0 | Pin Assembly (Includes • Items) | 1 |
| 37 | • 6200-90-1 | Pin | 1 |
| 38 | • 60-716 | Hair Pin Cotter | 1 |
| 39 | 4956-56-0 | Jack Assembly (Includes ★ Items) | 1 |
| 40 | ★ 73-111 | Jack | 1 |
| 41 | ★ 61-172 | U-Bolt, 1/2" DIA. x 2-9/16"W x 3-3/4"L | 3 |
| 42 | ★ 64-107 | 1/2" STD. Lock Washer | 6 |
| 43 | ★ 63-106 | 1/2NC Hex Nut | 6 |
| 44 | ★ 4956-55-0A | Jack Mount Weldment | 1 |
| 45 | ★ 60-702 | Cotter Pin, 3/16" DIA. x 1-1/2" | 1 |
| 46 | ★ 60-106 | Fas Pin w/ Chain | 1 |
| 47 | • 60-626 | 3/16" DIA. x 1-1/2" Roll Pin | 1 |
| | | | |


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
Rev. 9/02
M4881-61

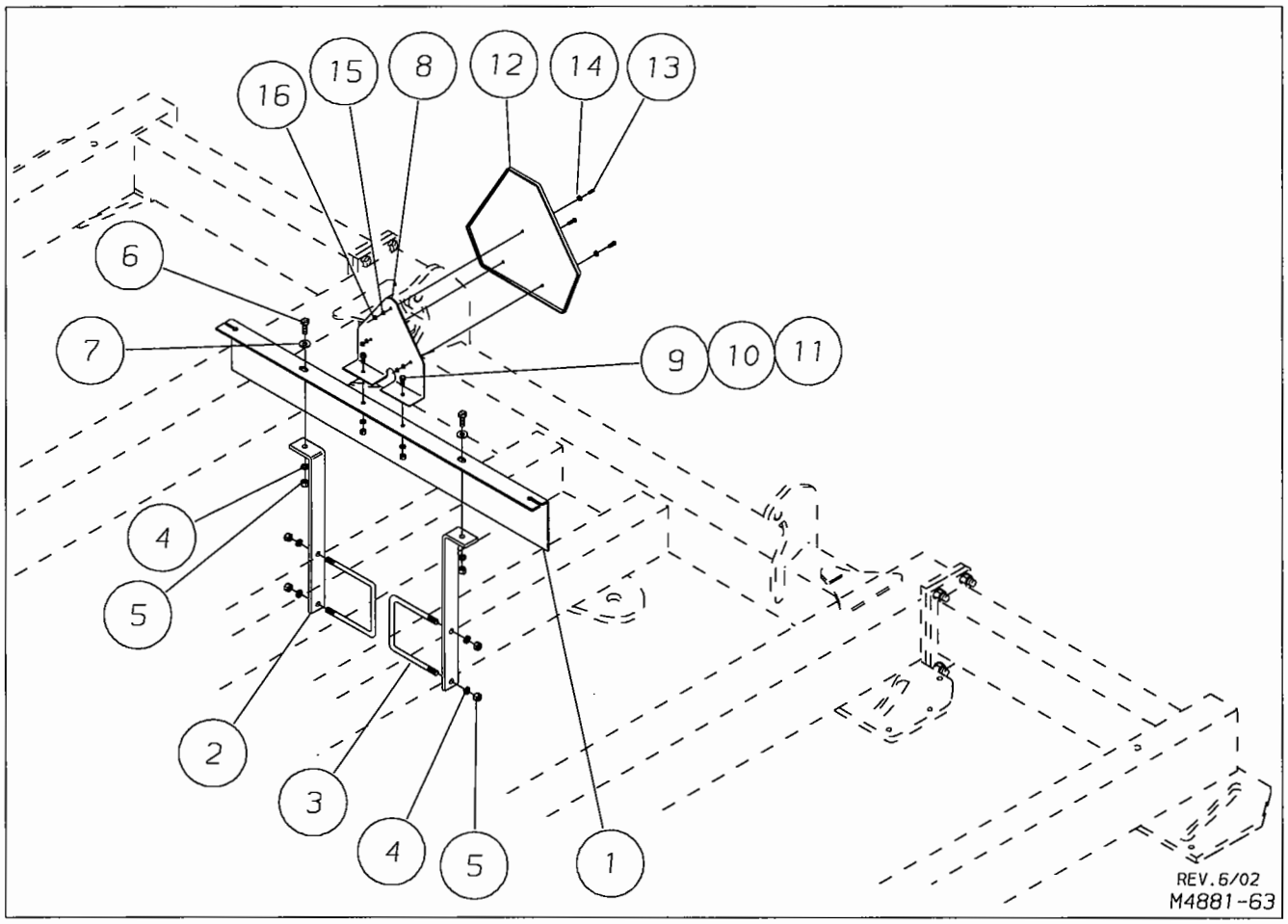
# DEPTH LINKAGE ASSEMBLY

**FOR MODELS -** ALL 9/5/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 62-635 | 3/8NF x 5/8" Cap Screw | 1 |
| 2 | 7300-83-5 | Gauge Slide | 1 |
| 3 | 7300-87-1 | Threaded Rod | 1 |
| 4 | 63-100 | 1/4NC Hex Nut | 4 |
| 5 | 64-100 | 1/4" STD. Lock Washer | 4 |
| 6 | 7300-83-3 | Striker Spacer | 4 |
| 7 | 62-385 | 1/4NC x 2-1/2" GD5 Cap Screw | 4 |
| 8 | 7300-84-0 | Striker Weldment | 1 |
| 9 | 60-632 | 5/32" DIA. x 3/4" Roll Pin | 1 |
| 10 | 76-102 | Spring | 1 |
| 11 | 99-215 | Knob | 1 |
| 12 | 64-162 | 1/2"SAE Flat Washer | 1 |
| 13 | 62-636 | 3/8NC x 6" GD5 Cap Screw | 2 |
| 14 | 4881-1084-0 | Linkage Weldment | 1 |
| 15 | 3112-69-1 | Valve Spacer | 4 |
| 16 | 3112-69-2 | Bolt Strap | 2 |
| 17 | | | |
| 18 | 25-2474 | Stop Housing Assembly | 1 |
| 19 | 63-134 | 3/8NC Nylon-Top Lock Nut | 2 |
| 20 | 25-2475 | Cartridge Assembly | 1 |
| 21 | 25-2476 | O-Ring | 1 |
| 22 | 4881-1081-0 | Pivot Arm Weldment | 1 |
| 23 | 53-102 | Wear Sleeve 1.25 O.D. x 1.012 I.D. x 1.00 | 1 |
| 24 | 53-126 | Wear Sleeve .75 O.D. x .51 I.D. x .50 | 1 |
| 25 | 53-137 | Wear Sleeve - 1.00 OD x .760 ID x 1.19 | 1 |
| 26 | 62-199 | 3/4NC x3-1/2" GD5 Cap Screw | 1 |
| 27 | 64-113 | 3/4" STD. Flat Washer | 1 |
| 28 | 63-162 | 3/4NC Nylon-Top Lock Nut | 1 |
| 29 | 4881-0000-36 | Spacer | 1 |
| 30 | 60-602 | 3/16" DIA. x 1" Roll Pin | 2 |
| 31 | 60-211 | 1/2" DIA. x 1-1/2" Clevis Pin | 1 |
| 32 | 60-725 | 5/32" DIA. x 1-1/2" Cotter Pin | 1 |
| 33 | 4881-1085-0 | Spring Tube Weldment | 1 |
| 34 | 4881-1083-0 | Spring Clevis Weldment | 1 |
| 35 | 62-377 | 1/2NC x 4" GD5 Cap Screw | 1 |
| 36 | 63-108 | 1/2NC Nylon-Top Lock Nut | 3 |
| 37 | 76-232 | Spring | 1 |
| 38 | 4881-1083-2 | "H" Plate | 1 |
| 39 | 4881-1080-3 | Collar | 1 |
| 40 | 4881-1080-2 | Bushing | 1 |
| 41 | 62-151 | 1/2NC x 3" GD5 Cap Screw | 1 |
| 42 | 4881-1086-0 | Pin Weldment | 1 |
| 43 | 62-569 | 1/2NC x 1-1/2" GD5 Cap Screw | 1 |
| 44 | 64-108 | 1/2" STD. Flat Washer | 1 |
| 45 | ★ 4830-117-0 | Maintenance Lock Assembly (Includes ■ Items) | 2 |
| 46 | ■ 4830-117-1 | Cylinder Lock | 1 |
| 47 | ■ 60-103 | P.T.O. Pin | 1 |
| | ■ 74-387 | Decal (not shown) | 1 |
| | | | |
| | | | |

★ Storage location for 5 Shank & 7 Shank Rigid Models ONLY

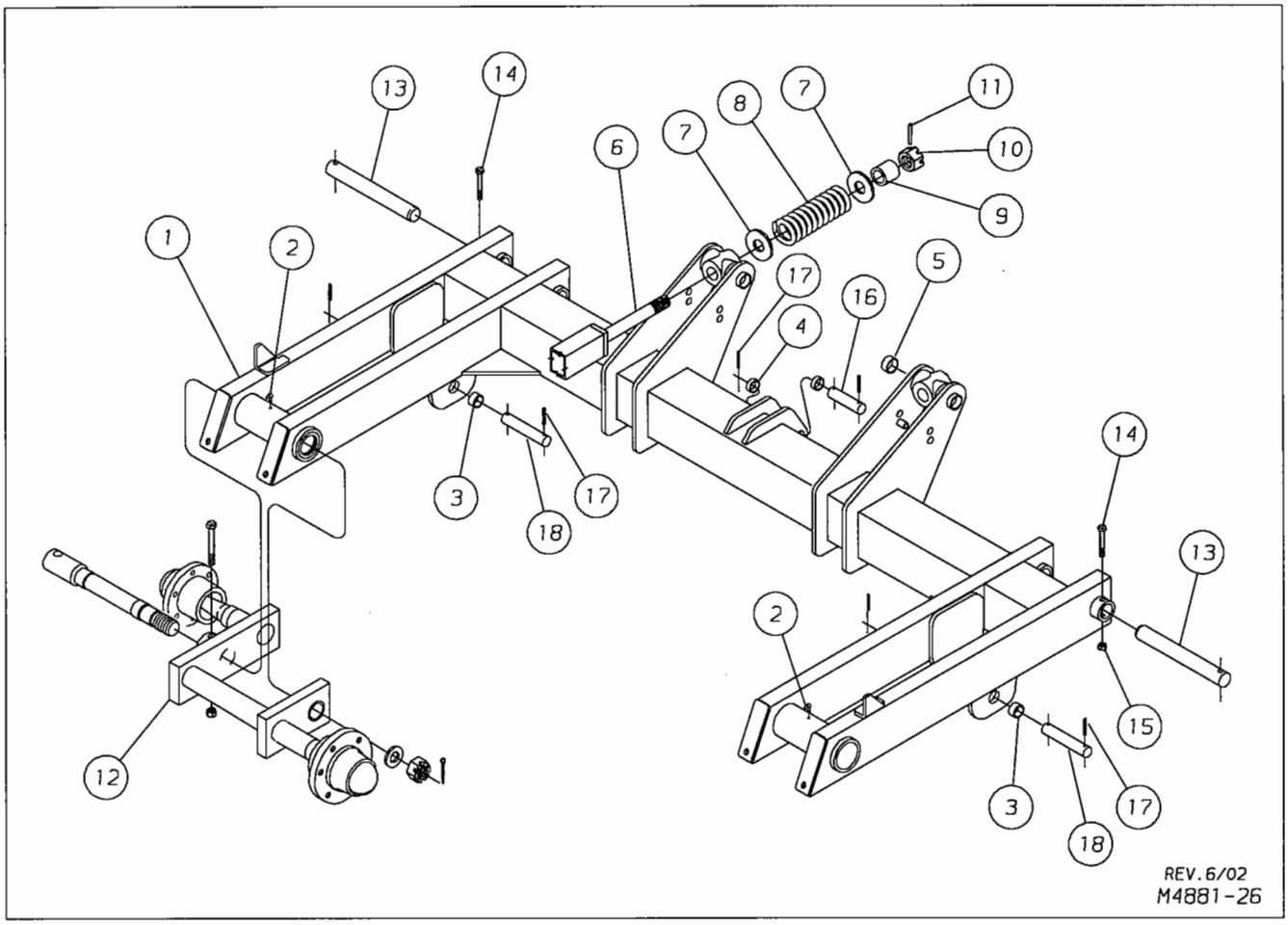
# DECAL & SMV MOUNT




**FOR MODELS** - ALL 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-0-2 | Decal & SMV Mount | 1 |
| 2 | 4881-0-1 | Mounting Bracket | 2 |
| 3 | 61-244 | U-Bolt, 1/2" DIA. x 6-1/16" W x 5-1/4"L | 2 |
| 4 | 64-107 | 1/2" STD. Lock Washer | 6 |
| 5 | 63-106 | 1/2NC Hex Nut | 6 |
| 6 | 62-420 | 1/2NC x 1-1/4" GD5 Cap Screw | 2 |
| 7 | 64-108 | 1/2" STD. Flat Washer | 2 |
| 8 | 5630-0-34 | SMV Bracket | 1 |
| 9 | 62-493 | 3/8NC x 3/4" | 2 |
| 10 | 64-103 | 3/8" STD. Lock Washer | 2 |
| 11 | 63-102 | 3/8NC Hex Nut | 2 |
| 12 | 74-487 | SMV Sign | 1 |
| 13 | 62-507 | 1/4NC x 3/4" GD5 Cap Screw | 3 |
| 14 | 64-101 | 1/4" STD. Flat Washer | 3 |
| 15 | 64-100 | 1/4" STD. Lock Washer | 3 |
| 16 | 63-100 | 1/4NC Hex Nut | 3 |
| | | | |
| | | | |
| | | | |
| | | | |

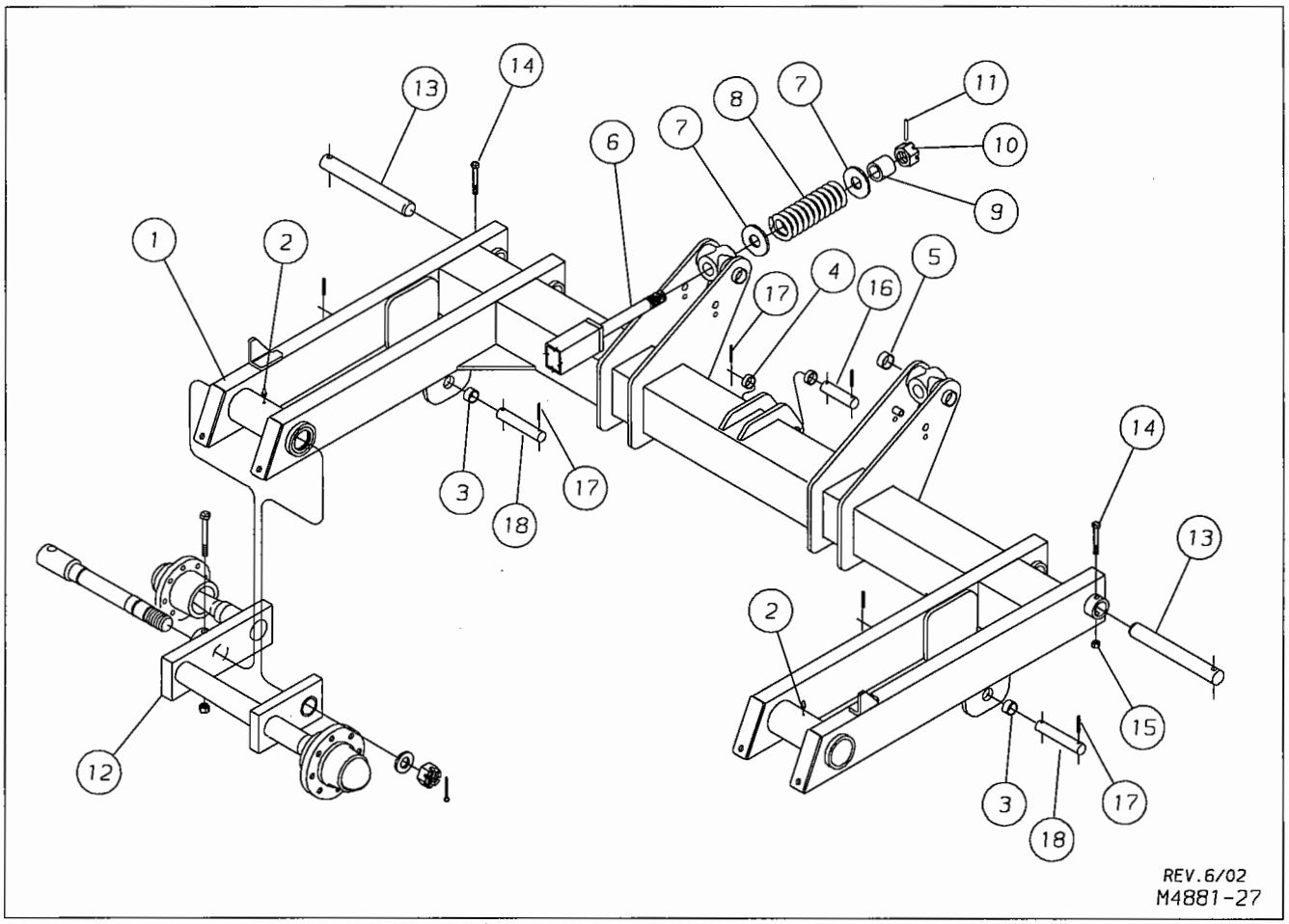
# CENTER ROCKER ASSEMBLY




**FOR MODELS -** 5 & 7 RIGID SHANK 8/20/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-9010-0A | Center Rocker Weldment | 1 |
| 2 | 65-101 | 1/8 STD. Zerk | 2 |
| 3 | 53-113 | Wear Sleeve | 4 |
| 4 | 53-109 | Wear Sleeve | 2 |
| 5 | 53-166 | Wear Sleeve | 4 |
| 6 | 4881-7084-0A | Link Weldment | 1 |
| 7 | 64-129 | 1-1/2" STD. Flat Washer | 2 |
| 8 | 76-164 | Spring | 1 |
| 9 | 4881-0000-12 | Spacer | 1 |
| 10 | 63-181 | 1-1/2NC Slotted Hex Nut | 1 |
| 11 | 60-617 | 3/8"DIA. x 2-1/2" Roll Pin | 1 |
| 12 | see page P16 | Walking Beam | 2 |
| 13 | 4987-0-1 | Rocker Pivot Pin | 2 |
| 14 | 62-154 | 1/2NC x 3-1/2" GD5 Cap Screw | 2 |
| 15 | 63-107 | 1/2NC Lock Nut | 2 |
| 16 | 4881-0000-33 | Rocker Pivot Pin | 1 |
| 17 | 60-606 | 1/4" DIA. x 2" Roll Pin | 6 |
| 18 | 4716-0-10 | Cylinder Link Pin | 2 |
| | | | |

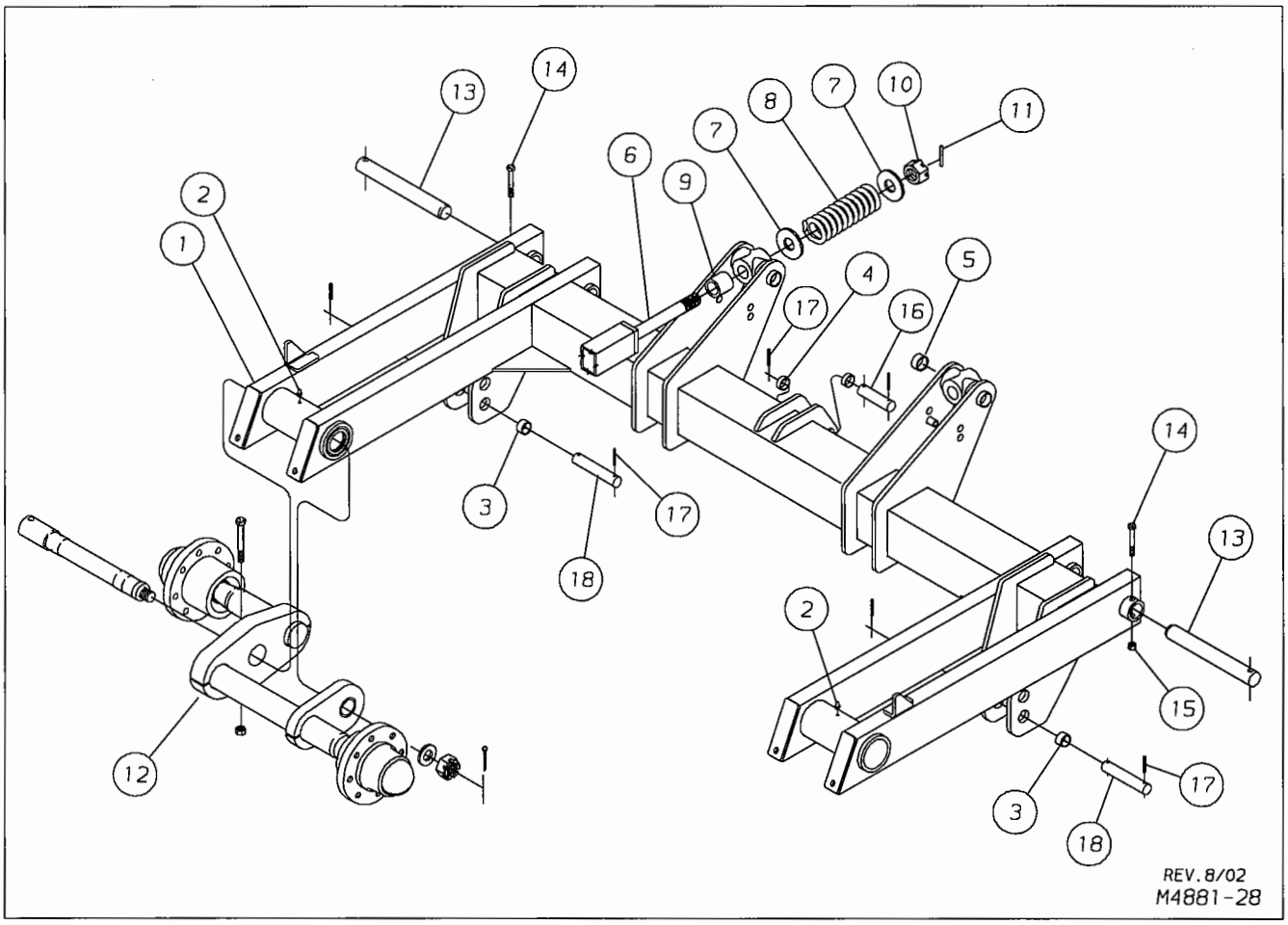
# CENTER ROCKER ASSEMBLY




**FOR MODELS -** 7 SHANK FOLDING 8/20/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-9010-0A | Center Rocker Weldment | 1 |
| 2 | 65-101 | 1/8 STD. Zerk | 2 |
| 3 | 53-113 | Wear Sleeve | 4 |
| 4 | 53-109 | Wear Sleeve | 2 |
| 5 | 53-166 | Wear Sleeve | 4 |
| 6 | 4881-7084-0A | Link Weldment | 1 |
| 7 | 64-129 | 1-1/2" STD. Flat Washer | 2 |
| 8 | 76-164 | Spring | 1 |
| 9 | 4881-0000-12 | Spacer | 1 |
| 10 | 63-181 | 1-1/2NC Slotted Hex Nut | 1 |
| 11 | 60-617 | 3/8"DIA. x 2-1/2" Roll Pin | 1 |
| 12 | see page P17 | Walking Beam | 2 |
| 13 | 4987-0-1 | Rocker Pivot Pin | 2 |
| 14 | 62-154 | 1/2NC x 3-1/2" GD5 Cap Screw | 2 |
| 15 | 63-107 | 1/2NC Lock Nut | 2 |
| 16 | 4881-0000-33 | Rocker Pivot Pin | 1 |
| 17 | 60-606 | 1/4" DIA. x 2" Roll Pin | 6 |
| 18 | 4716-0-10 | Cylinder Link Pin | 2 |
| | | | |

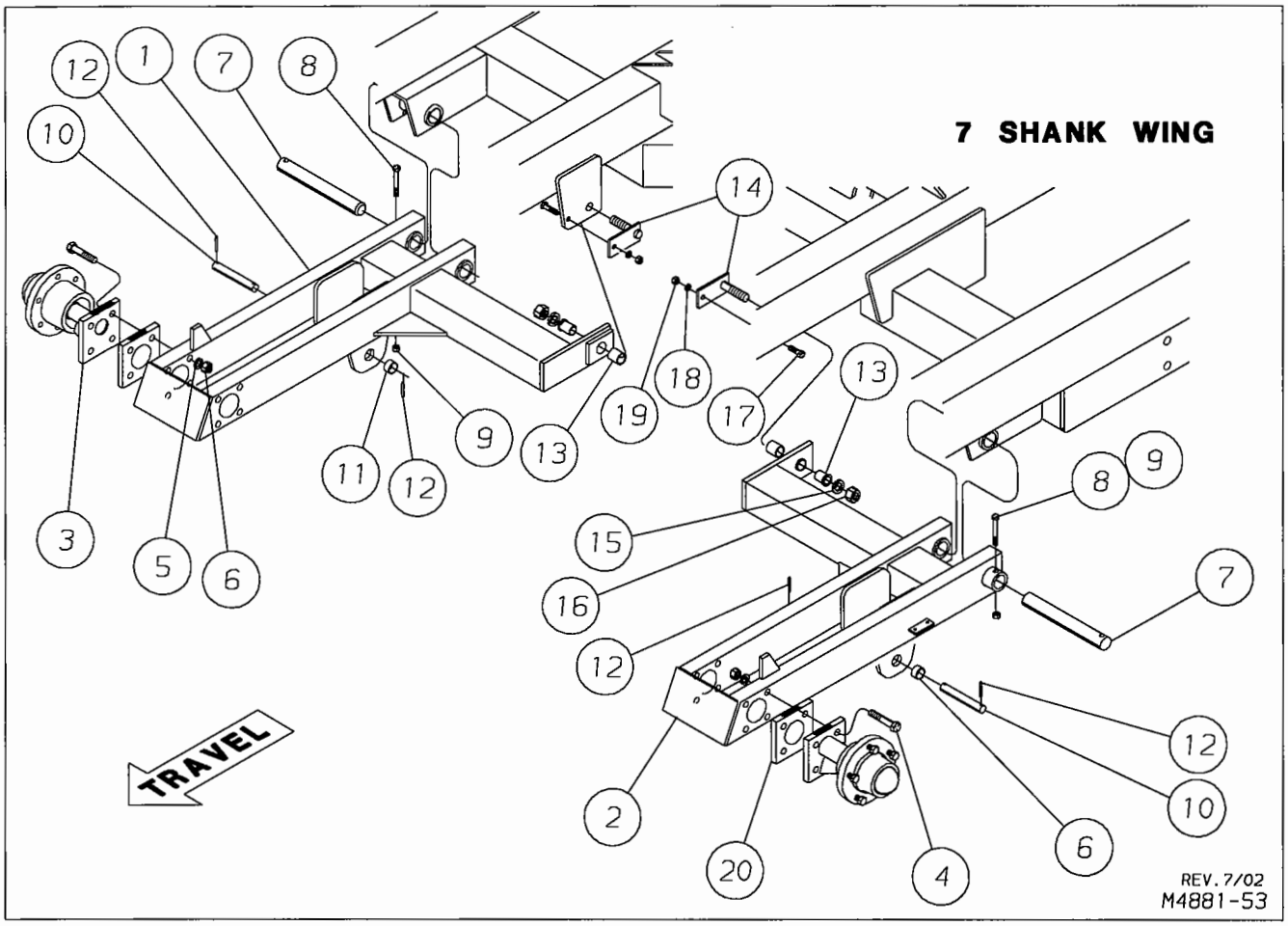
# CENTER ROCKER ASSEMBLY




**FOR MODELS -** 9 SHANK FOLDING 8/20/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-1010-0 | Center Rocker Weldment | 1 |
| 2 | 65-101 | 1/8 STD. Zerk | 2 |
| 3 | 53-113 | Wear Sleeve | 8 |
| 4 | 53-109 | Wear Sleeve | 2 |
| 5 | 53-166 | Wear Sleeve | 4 |
| 6 | 4881-7084-0A | Link Weldment | 1 |
| 7 | 64-129 | 1-1/2" STD. Flat Washer | 2 |
| 8 | 76-164 | Spring | 1 |
| 9 | 4881-0000-12 | Spacer | 1 |
| 10 | 63-181 | 1-1/2NC Slotted Hex Nut | 1 |
| 11 | 60-617 | 3/8"DIA. x 2-1/2" Roll Pin | 1 |
| 12 | see page P18 | Walking Beam | 2 |
| 13 | 4987-0-1 | Rocker Pivot Pin | 2 |
| 14 | 62-154 | 1/2NC x 3-1/2" GD5 Cap Screw | 2 |
| 15 | 63-107 | 1/2NC Lock Nut | 2 |
| 16 | 4881-0000-33 | Rocker Pivot Pin | 1 |
| 17 | 60-606 | 1/4" DIA. x 2" Roll Pin | 6 |
| 18 | 4716-0-10 | Cylinder Link Pin | 2 |
| | | | |

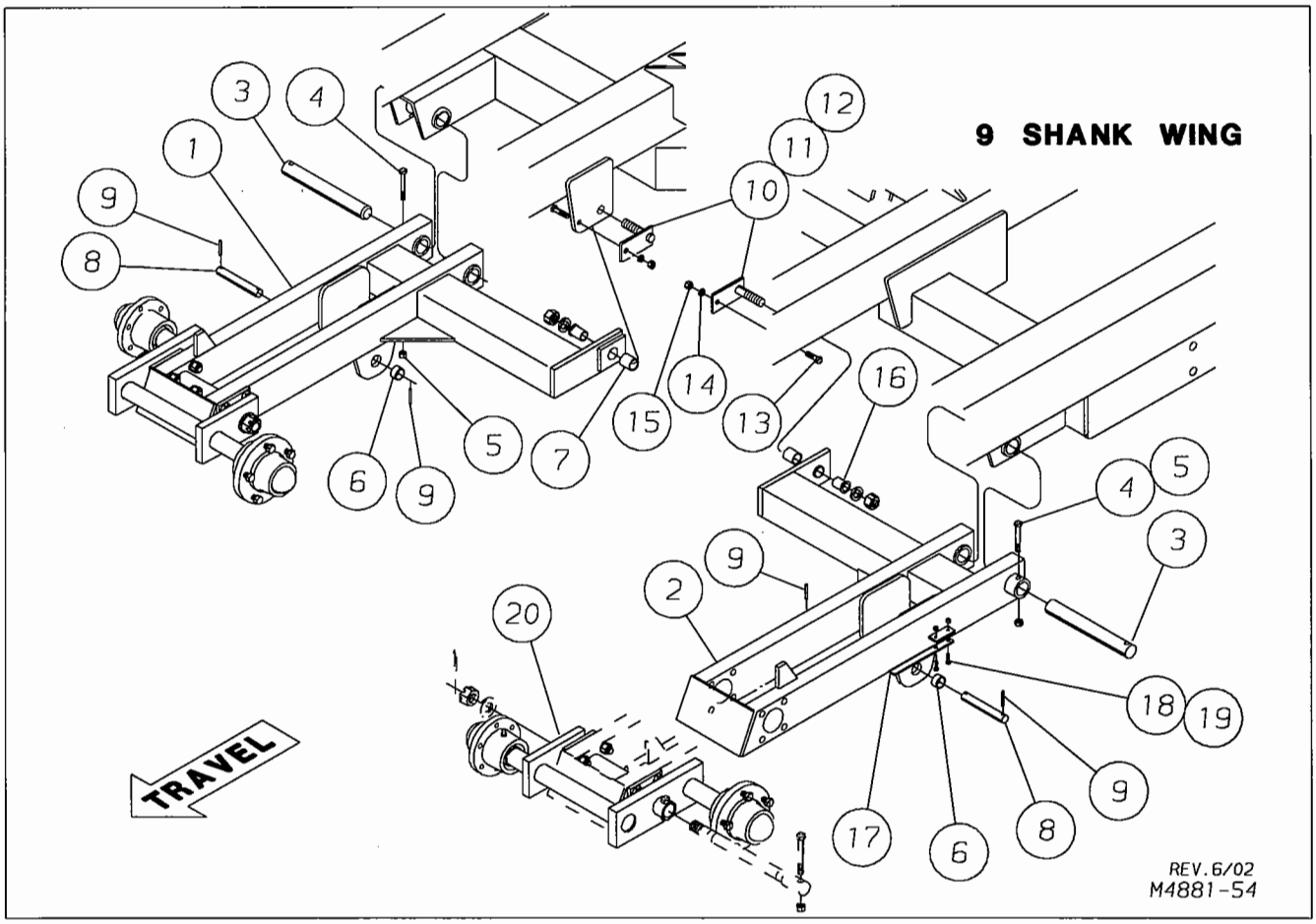
# WING ROCKER ASSEMBLY




**FOR MODELS** - TL3000 7 SHANK 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-9013-0 | Left Wing Rocker Weldment | 1 |
| 2 | 4881-9012-0 | Right Wing Rocker Weldment | 1 |
| 3 | See page P19 | Hub Assembly - 6 Bolt | 2 |
| 4 | 62-203 | 3/4NC x 4-1/2" GD5 Cap Screw | 8 |
| 5 | 64-112 | 3/4" STD. Lock Washer | 8 |
| 6 | 63-112 | 3/4NC Hex Nut | 8 |
| 7 | 4987-0-1 | Rocker Pivot Pin | 2 |
| 8 | 62-154 | 1/2NC x 3-1/2" GD5 Cap Screw | 2 |
| 9 | 63-107 | 1/2NC Lock Nut | 2 |
| 10 | 4716-0-10 | Cylinder Pin | 2 |
| 11 | 53-113 | Wear Sleeve | 4 |
| 12 | 60-606 | 1/4" DIA. x 2" Roll Pin | 4 |
| 13 | 53-149 | Wear Sleeve | 2 |
| 14 | 4815-44-0 | Stud Weldment | 2 |
| 15 | 64-118 | 1" STD. Lock Washer | 2 |
| 16 | 63-117 | 1NC Hex Nut | 2 |
| 17 | 62-569 | 1/2NC x 1-1/2" GD5 Cap Screw | 2 |
| 18 | 64-107 | 1/2" STD. Lock Washer | 2 |
| 19 | 63-106 | 1/2NC Hex Nut | 2 |
| 20 | 4881-7000-1 | Spacer Plate | 2 |

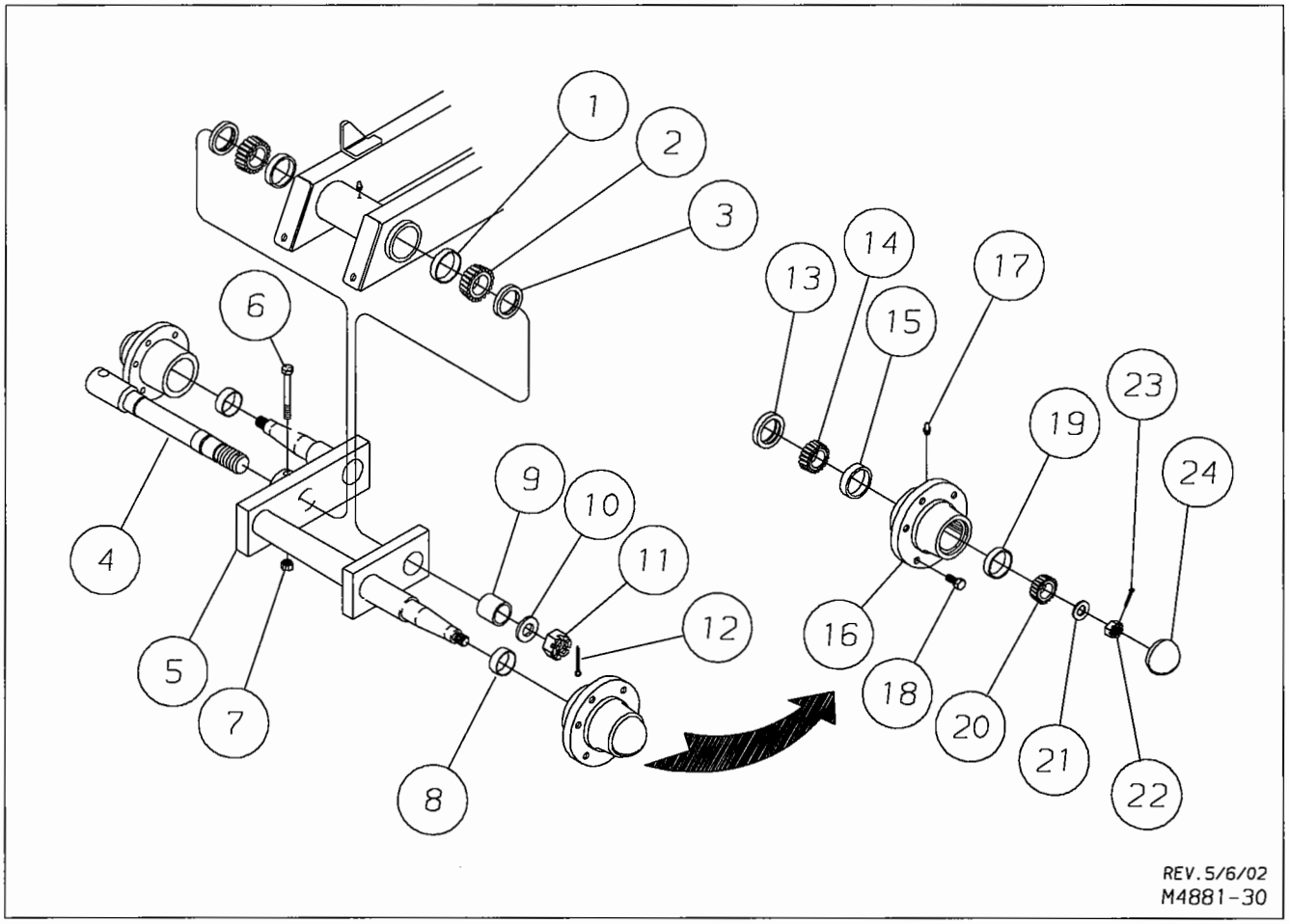
# WING ROCKER ASSEMBLY




**FOR MODELS** - TL3000 9 SHANK 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-9013-0 | Left Wing Rocker Weldment | 1 |
| 2 | 4881-9012-0 | Right Wing Rocker Weldment | 1 |
| 3 | 4987-0-1 | Rocker Pivot Pin | 2 |
| 4 | 62-154 | 1/2NC x 3-1/2" GD5 Cap Screw | 2 |
| 5 | 63-107 | 1/2NC Lock Nut | 2 |
| 6 | 53-113 | Wear Sleeve | 4 |
| 7 | 53-149 | Wear Sleeve | 2 |
| 8 | 4716-0-10 | Cylinder Pin | 2 |
| 9 | 60-606 | 1/4" DIA. x 2" Roll Pin | 4 |
| 10 | 4815-44-0 | Stud Weldment | 2 |
| 11 | 64-118 | 1" STD. Lock Washer | 2 |
| 12 | 63-117 | 1NC Hex Nut | 2 |
| 13 | 62-569 | 1/2NC x 1-1/2" GD5 Cap Screw | 2 |
| 14 | 64-107 | 1/2" STD. Lock Washer | 2 |
| 15 | 63-106 | 1/2NC Hex Nut | 2 |
| 16 | 53-108 | Wear Sleeve | 2 |
| 17 | 4881-0000-11 | Flat Spring | 2 |
| 18 | 62-432 | 5/16NC x 1" GD5 Cap Screw | 4 |
| 19 | 63-167 | 5/16NC Nylon-Top Lock Nut | 4 |
| 20 | See Page P20 | Walking Beam | 2 |

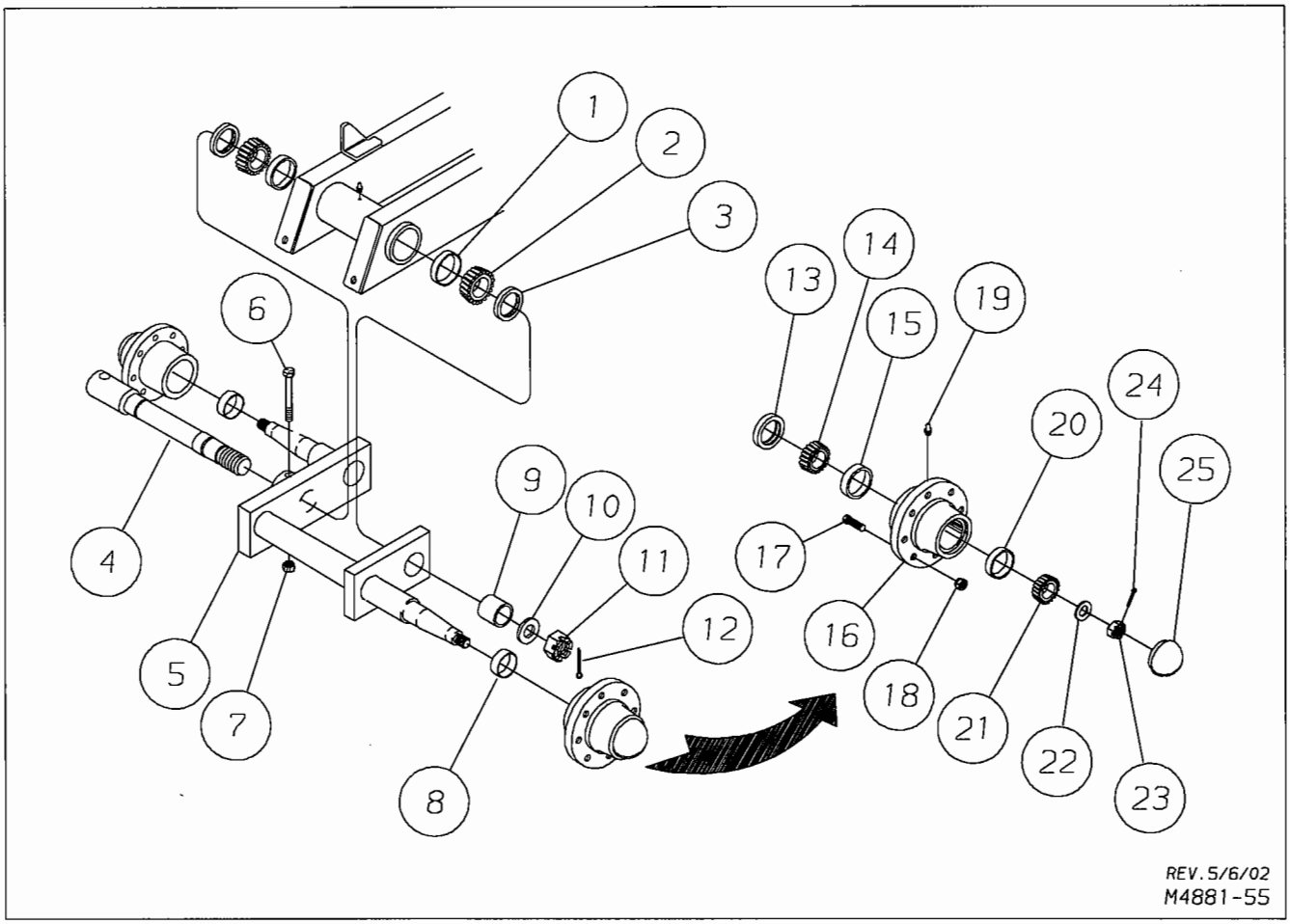
# WALKING BEAM ASSEMBLY




**FOR MODELS** - TL3000 5 & 7 SHANK RIGID CENTER SECTION 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.★* |
|---|---|---|---|
| 1 | 41-210 | Cup | 2 |
| 2 | 41-114 | Cone | 2 |
| 3 | 42-131 | Clark Seal | 2 |
| 4 | 4987-9-1 | Pivot Spindle | 1 |
| 5 | 4987-54-0 | Walking Beam Weldment (Includes Item 8 Wear Sleeves) | 1 |
| 6 | 62-178 | 5/8NC x 4" GD5 Cap Screw | 1 |
| 7 | 63-110 | 5/8NC Lock Nut | 1 |
| 8 | 53-108 | Wear Sleeve | 2 |
| 9 | 2490-90-3 | Bushing | 1 |
| 10 | 64-167 | Special Washer | 1 |
| 11 | 63-231 | 1-1/4NF Slotted Hex Nut | 1 |
| 12 | 60-710 | 1/4" DIA. x 2-1/2" Cotter Pin | 1 |
| 13 | 42-109 | Seal | 2 |
| 14 | 41-114 | Cone | 2 |
| 15 | • 41-210 | Cup | 2 |
| 16 | • 2135-14-0A | Repair Hub - 6 Bolt (Includes 1 ea. of • Items) | 2 |
| 17 | • 65-122 | 1/4 x 65° Drive Zerk | 4 |
| 18 | • 62-295 | Wheel Bolt - 9/16NF x 1-1/8" GD5 | 12 |
| 19 | • 41-208 | Cup | 2 |
| 20 | 41-112 | Cone | 2 |
| 21 | 64-120 | 1" SAE Flat Washer | 2 |
| 22 | 63-204 | 1NF Slotted Hex Nut | 2 |
| 23 | 60-702 | 3/16" DIA. x 1-1/2" Cotter Pin | 2 |
| 24 | 52-302 | Hub Cap | 2 |
| ★ | NOTE: Quantites shown are for ONE Walking Beam | | |

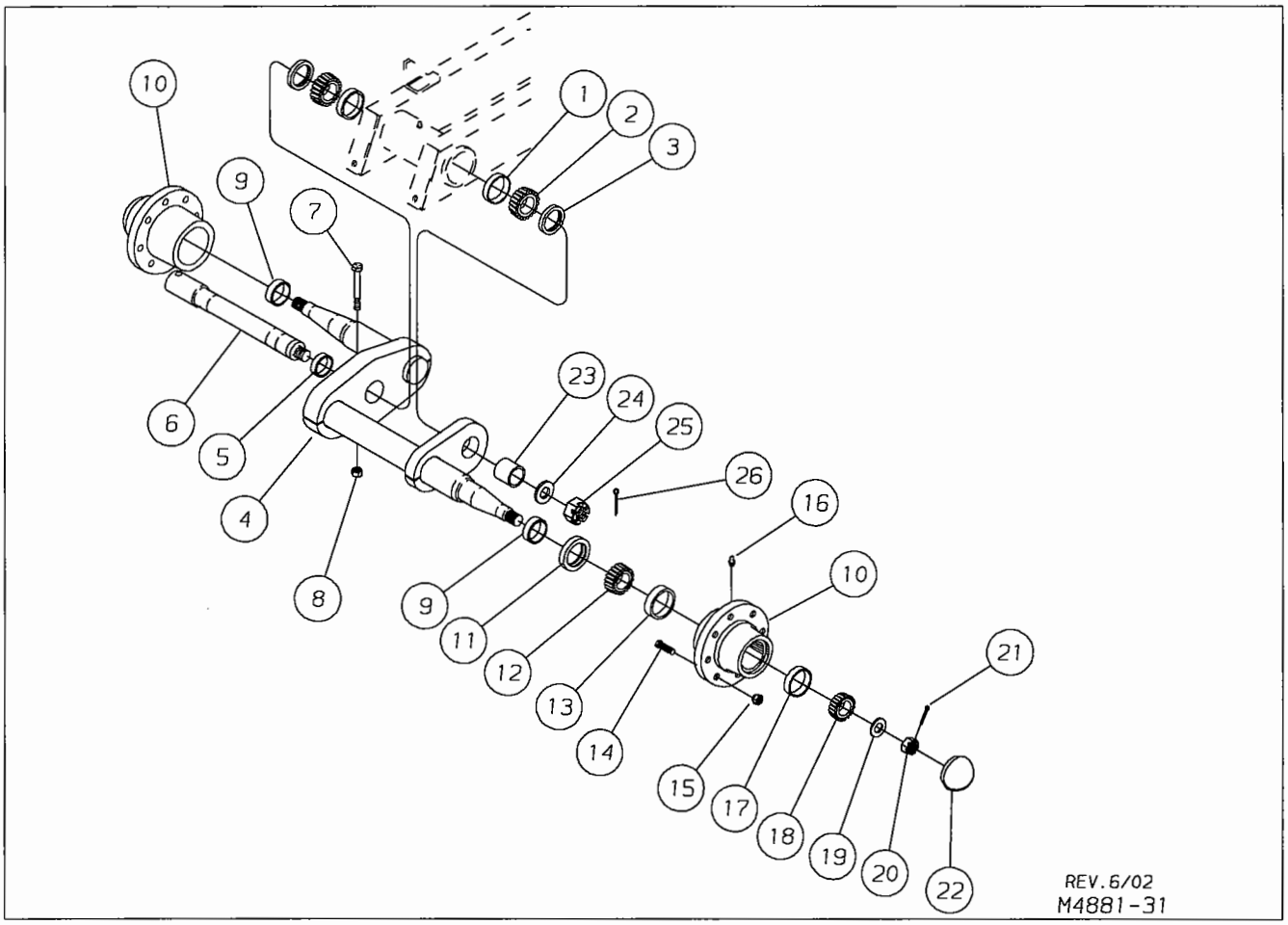
# WALKING BEAM ASSEMBLY




**FOR MODELS** - TL3000 7 SHANK FOLD - CENTER SECTION 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.★* |
|---|---|---|---|
| 1 | 41-210 | Cup | 2 |
| 2 | 41-114 | Cone | 2 |
| 3 | 42-131 | Clark Seal | 2 |
| 4 | 4987-9-1 | Pivot Spindle | 1 |
| 5 | 4987-54-0 | Walking Beam Weldment (Includes Item 8 Wear Sleeves) | 1 |
| 6 | 62-178 | 5/8NC x 4" GD5 Cap Screw | 1 |
| 7 | 63-110 | 5/8NC Lock Nut | 1 |
| 8 | 53-108 | Wear Sleeve | 2 |
| 9 | 2490-90-3 | Bushing | 1 |
| 10 | 64-167 | Special Washer | 1 |
| 11 | 63-231 | 1-1/4NF Slotted Hex Nut | 1 |
| 12 | 60-710 | 1/4" DIA. x 2-1/2" Cotter Pin | 1 |
| 13 | 42-109 | Seal | 2 |
| 14 | 41-114 | Cone | 2 |
| 15 | • 41-210 | Cup | 2 |
| 16 | • 2490-96-0 | Repair Hub - 8 Bolt (Includes 1 ea. of • Items) | 2 |
| 17 | • 62-311 | Wheel Bolt - 5/8NF x 2-1/4" GD5 | 16 |
| 18 | • 63-208 | 5/8NF Lug Nut | 16 |
| 19 | • 65-122 | 1/4 x 65° Drive Zerk | 4 |
| 20 | • 41-208 | Cup | 2 |
| 21 | 41-112 | Cone | 2 |
| 22 | 64-120 | 1" SAE Flat Washer | 2 |
| 23 | 63-204 | 1NF Slotted Hex Nut | 2 |
| 24 | 60-702 | 3/16" DIA. x 1-1/2" Cotter Pin | 2 |
| 25 | 52-302 | Hub Cap | 2 |
| ★ | NOTE: Quantites shown are for ONE Walking Beam | | |

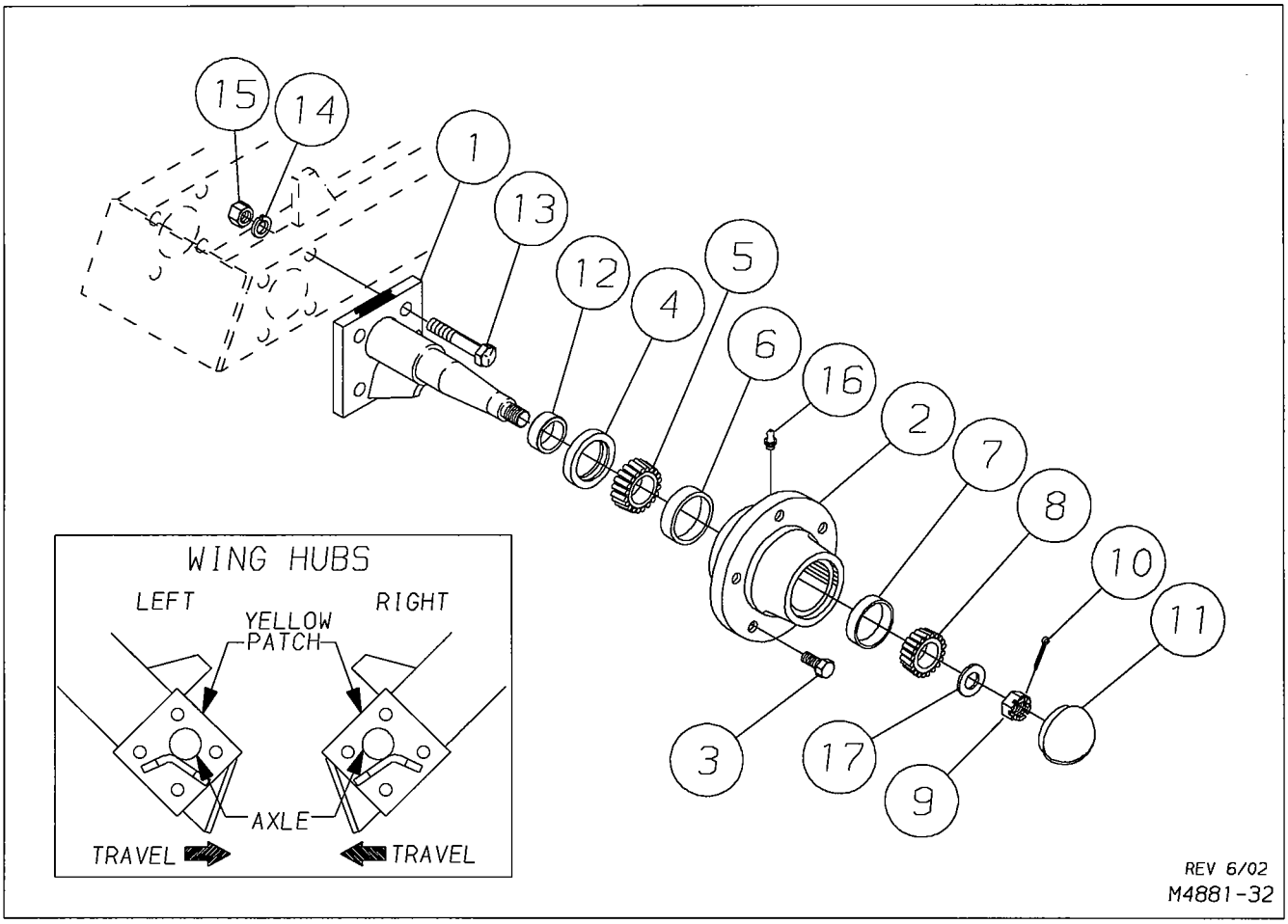
# WALKING BEAM ASSEMBLY




**FOR MODELS** - TL3000 9 SHANK FOLD - CENTER 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.★* |
|---|---|---|---|
| 1 | 41-220 | Cup | 2 |
| 2 | 41-122 | Cone | 2 |
| 3 | 42-135 | Seal | 2 |
| 4 | 4881-1054-0 | Walking Beam Weldment | 1 |
| 5 | 53-175 | Wear Sleeve | 1 |
| 6 | 4881-1009-1 | Spindle | 1 |
| 7 | 62-178 | 5/8NC x 4" GD5 Cap Screw | 1 |
| 8 | 63-110 | 5/8NC Lock Nut | 1 |
| 9 | 53-174 | Wear Sleeve | 2 |
| 10 | • 4881-1096-0 | Repair Hub Assembly (Includes 1 ea of • items) | 2 |
| 11 | 42-136 | Seal | 2 |
| 12 | 41-124 | Cone | 2 |
| 13 | • 41-222 | Cup | 2 |
| 14 | • 62-311 | 5/8NF x 2-1/4" Wheel Bolt | 16 |
| 15 | • 63-208 | 5/8NF Lug Nut | 16 |
| 16 | • 65-122 | 1/4 x 65° Drive Zerk | 4 |
| 17 | • 41-221 | Cup | 2 |
| 18 | 41-123 | Cone | 2 |
| 19 | 64-138 | Special Washer | 2 |
| 20 | 63-205 | 1-1/4NF Slotted Hex Nut | 2 |
| 21 | 60-708 | 1/4" DIA. x 1-3/4" Cotter Pin | 2 |
| 22 | 52-302 | Hub Cap | 2 |
| 23 | 4881-1009-2 | Bushing | 1 |
| 24 | 64-167 | Special Washer | 1 |
| 25 | 63-231 | 1-1/4NF Slotted Hex Nut | 1 |
| 26 | 60-710 | 1/4" DIA. x 2-1/2" Cotter Pin | 1 |
| ★ NOTE: Quantities shown are for ONE Walking Beam | | | |

# HUB ASSEMBLY



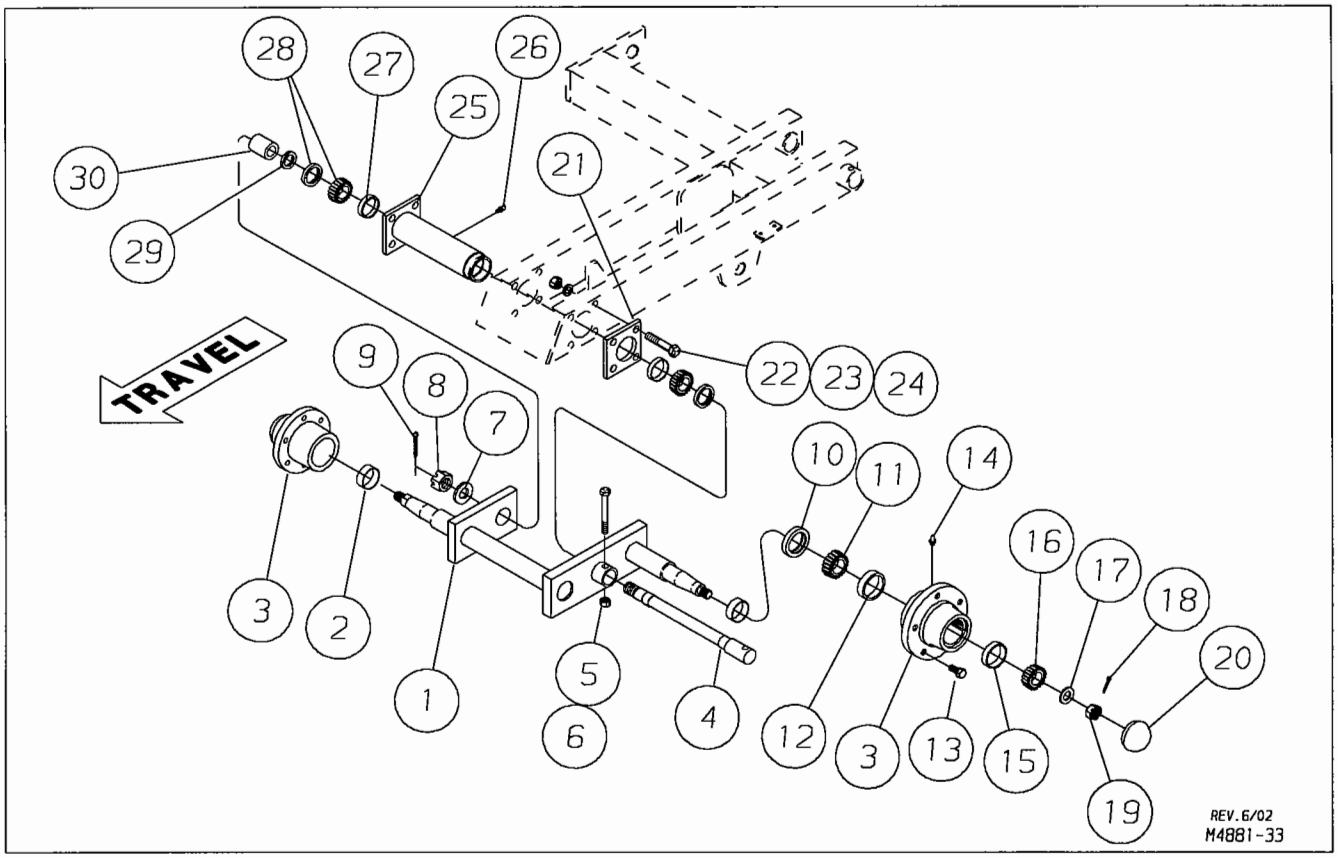

**FOR MODELS** - TL3000 7 SHANK FOLD - WING 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.★* |
|---|---|---|---|
| 1 | 2135-12-0 | Stub Axle Weldment | 1 |
| 2 | ● 2135-14-0A | Repair Hub (Includes ● Items) | 1 |
| 3 | ● 62-295 | 9/16NF Wheel Bolt | 6 |
| 4 | 42-109 | Seal | 1 |
| 5 | 41-114 | Cone | 1 |
| 6 | ● 41-210 | Cup | 1 |
| 7 | ● 41-208 | Cup | 1 |
| 8 | 41-112 | Cone | 1 |
| 9 | 63-204 | 1-1/4NF Slotted Hex Nut | 1 |
| 10 | 60-702 | 3/16" DIA. x 1-1/2" Cotter Pin | 1 |
| 11 | 52-302 | Hub Cap | 1 |
| 12 | 53-108 | Wear Bushing | 1 |
| 13 | ■ 64-203 | 3/4NC x 4-1/2" GD5 Cap Screw | 4 |
| 14 | ■ 64-112 | 3/4" STD. Lock Washer | 4 |
| 15 | ■ 63-112 | 3/4NC Hex Nut | 4 |
| 16 | ● 65-122 | 1/4 x 65° Drive Zerk | 2 |
| 17 | 64-120 | 1" SAE Black Flat Washer | 1 |
| | | | |
| | | | |

■ Not included in Hub Assembly

★ NOTE: Quantities shown are for (1) Hub Assembly

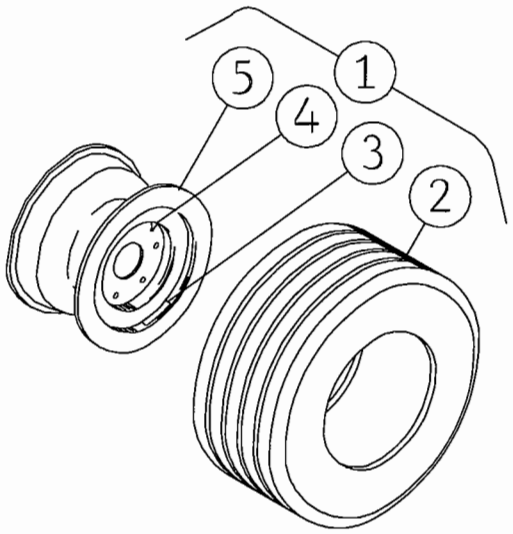
# WALKING BEAM ASSEMBLY




**FOR MODELS** - TL3000 9 SHANK - WING 8/20/02

| *Item* | *Part Number* | *Part Description* | *Qty.★* |
|---|---|---|---|
| 1 | 4987-49-0 | Walking Beam Weldment | 1 |
| 2 | 53-105 | Wear Sleeve | 2 |
| 3 | • 1918-14-0A | Repair Hub Assembly (Includes 1 Ea. of • Items) | 2 |
| 4 | 4987-29-1 | Pivot Spindle | 1 |
| 5 | 62-509 | 5/8NC x 3" GD5 Cap Screw | 2 |
| 6 | 63-110 | 5/8NC Lock Nut | 1 |
| 7 | 64-167 | Special Washer | 1 |
| 8 | 63-231 | 1-1/4NF Slotted Hex Nut | 1 |
| 9 | 60-710 | 1/4" DIA. x 2-1/2" Cotter Pin | 1 |
| 10 | 42-108 | Seal | 2 |
| 11 | 41-113 | Cone | 2 |
| 12 | • 41-209 | Cup | 2 |
| 13 | • 62-295 | Wheel Bolt | 12 |
| 14 | • 65-122 | 1/4 x 65° Drive Zerk | 4 |
| 15 | • 41-208 | Cup | 2 |
| 16 | 41-112 | Cone | 2 |
| 17 | 64-120 | 1" SAE Black Flat Washer | 2 |
| 18 | 60-702 | 3/16" DIA. x 1-1/2" Cotter Pin | 2 |
| 19 | 63-204 | 1NF Slotted Hex Nut | 2 |
| 20 | 52-302 | Hub Cap | 2 |
| 21 | 4987-53-2 | Plate | 1 |
| 22 | 62-199 | 3/4NC x 3-1/2" GD5 Cap Screw | 8 |
| 23 | 64-112 | 3/4" STD. Lock Washer | 8 |
| 24 | 63-112 | 3/4NC Hex Nut | 8 |
| 25 | 4987-53-0 | Walking Beam Hub | 1 |
| 26 | 65-101 | 1/8NPT STD. Zerk | 1 |
| 27 | 41-208 | Cup | 2 |
| 28 | 41-121 | Cone Assembly | 2 |
| 29 | 4218-13-3 | Special Washer | 1 |
| 30 | 4987-29-2 | Bushing | 1 |
| ★ NOTE: Quantities shown are for ONE Walking Beam | | | |

# WHEELS & TIRES



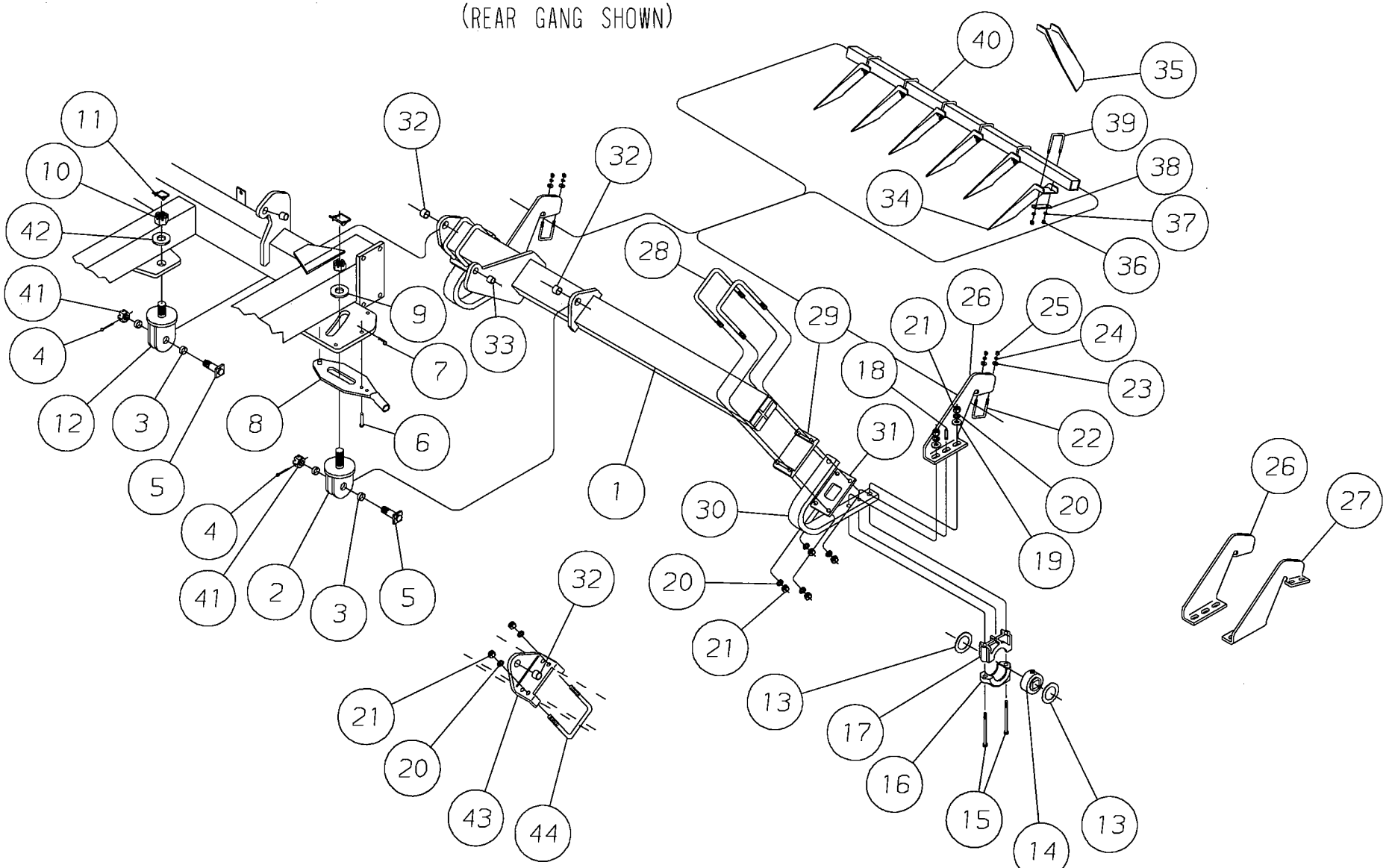

M4881-11
4-01

**FOR MODELS - ALL** 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 1000-10580-0 | Wheel and Tire Assembly, 6-Bolt | Specify |
| 2 | 51-103 | Tire - 10.00x 15, 8-Ply | 1 |
| 3 | 74-109 | Decal | 1 |
| 4 | 51-107 | #415 Valve Stem | 1 |
| 5 | 52-103 | Wheel - 15 x 10, 6-Bolt | 1 |
| | | | |
| 1 | 1000-12520-01 | Wheel and Tire Assembly, 8-Bolt, 12.5L | Specify |
| 2 | 51-103 | Tire - 12.5L x 15, 12-Ply | 1 |
| 3 | 74-109 | Decal | 1 |
| 4 | 51-107 | #415 Valve Stem | 1 |
| 5 | 52-103 | Wheel - 15 x 10, 8-Bolt | 1 |
| | | | |
| 1 | 1000-12540-01 | Wheel and Tire Assembly, 8-Bolt, 12.5L | Specify |
| 2 | 51-132 | Tire - 12.5L x 15, Load Range F, Highway Service | 1 |
| 3 | 74-109 | Decal | 1 |
| 4 | 51-107 | #415 Valve Stem | 1 |
| 5 | 52-114 | Wheel - 15 x 10, 8-Bolt | 1 |
| | | | |
| 1 | 1000-16540-01 | Wheel and Tire Assembly, 8-Bolt, 16.5L | Specify |
| 2 | 51-134 | Tire - 16.5L x 16.1 Load Range FI | 1 |
| 3 | 74-109 | Decal | 1 |
| 4 | 51-107 | #415 Valve Stem | 1 |
| 5 | 52-115 | Wheel - 16.1 x 14, 8-Bolt Non-Rev. | 1 |
| | | | |

# GANG BEAM ASSEMBLY

(REAR GANG SHOWN)




**MODEL 7R ONLY**

Rev. 8/13/01
M4881-5

# GANG BEAM ASSEMBLY

**FOR MODELS** - TL3000 5, 7, 9 SHANK

8/20/02

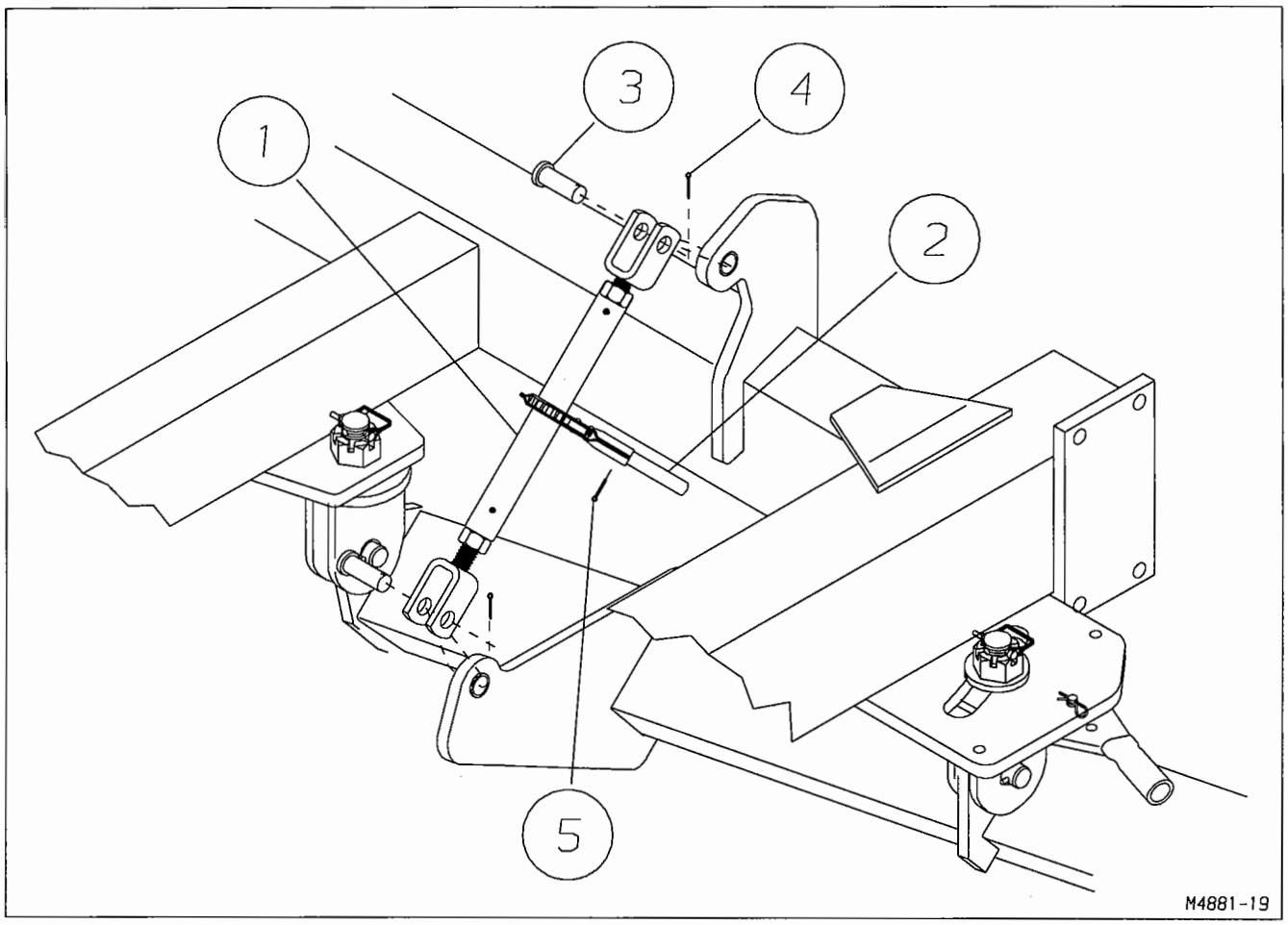
| Item | Part Number | Part Description | Qty |
|---|---|---|---|
| 1 | 4881-5034-0 | 5 Shank Rt. Front Beam | 1 |
| | 4881-5035-0 | 5 Shank Lt. Front Beam | 1 |
| | 4881-5036-0 | 5 Shank Rt. Rear Beam | 1 |
| | 4881-5037-0 | 5 Shank Lt. Rear Beam | 1 |
| | 4881-7134-0 | 7 Shank Rt. Front Beam | 1 |
| | 4881-7135-0 | 7 Shank Lt. Front Beam | 1 |
| | 4881-7136-0 | 7 Shank Rt. Rear Beam | 1 |
| | 4881-7137-0 | 7 Shank Lt. Rear Beam | 1 |
| | 4881-7034-0 | 7 & 9 Shank Front Beam | 2 |
| | 4881-7036-0 | 7 & 9 Shank Rt. Rear Beam | 1 |
| | 4881-7037-0 | 7 & 9 Shank Lt. Rear Beam | 1 |
| | 4881-7038-0 | 7 Shank Rt. Front Wing Beam | 1 |
| | 4881-7039-0 | 7 Shank Lt. Front Wing Beam | 1 |
| | 4881-7040-0A | 7 Shank Rt. Rear Wing Beam | 1 |
| | 4881-7041-0A | 7 Shank Lt. Rear Wing Beam | 1 |
| | 4881-9038-0 | 9 Shank Rt. Front Wing Beam | 1 |
| | 4881-9039-0 | 9 Shank Lt. Front Wing Beam | 1 |
| | 4881-9040-0 | 9 Shank Rt. Rear Wing Beam | 1 |
| | 4881-9041-0 | 9 Shank Lt. Rear Wing Beam | 1 |
| 2 | ★ 4881-7028-0 | Outside Pivot Weldment | 4 |
| 3 | ★ 53-109 | Wear Sleeve | 16/32 |
| 4 | 60-710 | Cotter Pin, 1/4 x 2-1/2 | 8/16 |
| 5 | 4881-78-0 | Pin Weldment | 8/16 |
| 6 | ★ 60-212 | Clevis Pin, 1/2 x 2 | 2/4 |
| 7 | ★ 60-716 | #3 Hair Pin Cotter | 2/4 |
| 8 | ★ 4881-5026-0 | Slide Arm Weldment | 2/4 |
| | 4881-7026-0 | 7 Shank Slide Arm Weldment | 2 |
| 9 | ★ 4885-0-9 | 1-1/2" Heavy Washer | 2/4 |
| 10 | ★ 63-181 | 1-1/2NC Slotted Nut | 4/8 |
| 11 | ★ 60-103 | PTO Lock Pin | 2/4 |
| 12 | ★ 4881-7024-0 | Inside Pivot Weldment | 2/4 |
| 13 | 45-106 | Side Ring | |
| 14 | 40-166 | Bearing Assm., Sq. Bore | |
| 15 | 62-217 | 3/4NC x 7-1/2"GD5 Cap Screw | |
| 16 | 2410-10-2 | Lower Brg. Housing | |
| 17 | 2410-10-1 | Upper Brg. Housing | |

| Item | Part Number | Part Description | Qty |
|---|---|---|---|
| 18 | 65-123 | 1/8NPT Extended Zerk | |
| 19 | 64-113 | 3/4" Flat Washer | |
| 20 | 64-112 | 3/4" Lock Washer | |
| 21 | 63-112 | 3/4NC Hex Nut | |
| 22 | 61-119 | U-Bolt, 5/8 | |
| 23 | 64-110 | 5/8" Flat Washer | |
| 24 | 64-109 | 5/8" Lock Washer | |
| 25 | 63-109 | 5/8NC Hex Nut | |
| 26 | 4885-0-1A | Lt. Scraper Arm | |
| 27 | 4885-0-2A | Rt. Scraper Arm | |
| 28 | 61-111 | U-Bolt, 3/4D x 6.06W x 7.50L | |
| 29 | 2410-0-1 | Shank Base | |
| 30 | 31-185 | Shank, 1-1/4 x 2-1/2" | |
| 31 | 2410-0-2 | Bolt Plate | |
| 32 | 53-101 | Wear Sleeve | |
| 33 | 53-102 | Wear Sleeve | |
| 34 | 32-114 | Scraper Blade (Lt. Fr. - Rt. Rr.) | |
| 35 | 32-115 | Scraper Blade (Rt. Fr. - Lt. Rr.) | |
| 36 | 63-106 | 1/2NC Hex Nut | |
| 37 | 64-107 | 1/2" Lock Washer | |
| 38 | 4907-186-3 | Clamp | |
| 39 | 61-145 | U-Bolt, .50D x 2.06W x 3.50L | |
| 40 | 2008-1-625 | 62-1/2" Scraper Tube | |
| | 2008-1-705 | 70-1/2" Scraper Tube | |
| | 2008-1-104 | 104" Scraper Tube | |
| | 2008-1-1085 | 108-1/2" Scraper Tube | |
| | 2008-1-535 | 53-1/2" Scraper Tube | |
| | 2007-1-370 | 37" Scraper Tube | |
| | 2008-1-545 | 54-1/2" Scraper Tube | |
| 41 | 63-125 | 1-1/4NC Slotted Hex Nut | 8/16 |
| 42 | 64-129 | 1-1/2"STD Flat Washer | |
| 43 | • 4881-7035-0 | Bolt On Lug | 2 |
| 44 | • 61-120 | 3/4" DIA. U-Bolts | 4 |
| | | | |
| | | | |

★ Rear Gangs ONLY

• Used for 7 Shank Rigid Models ONLY

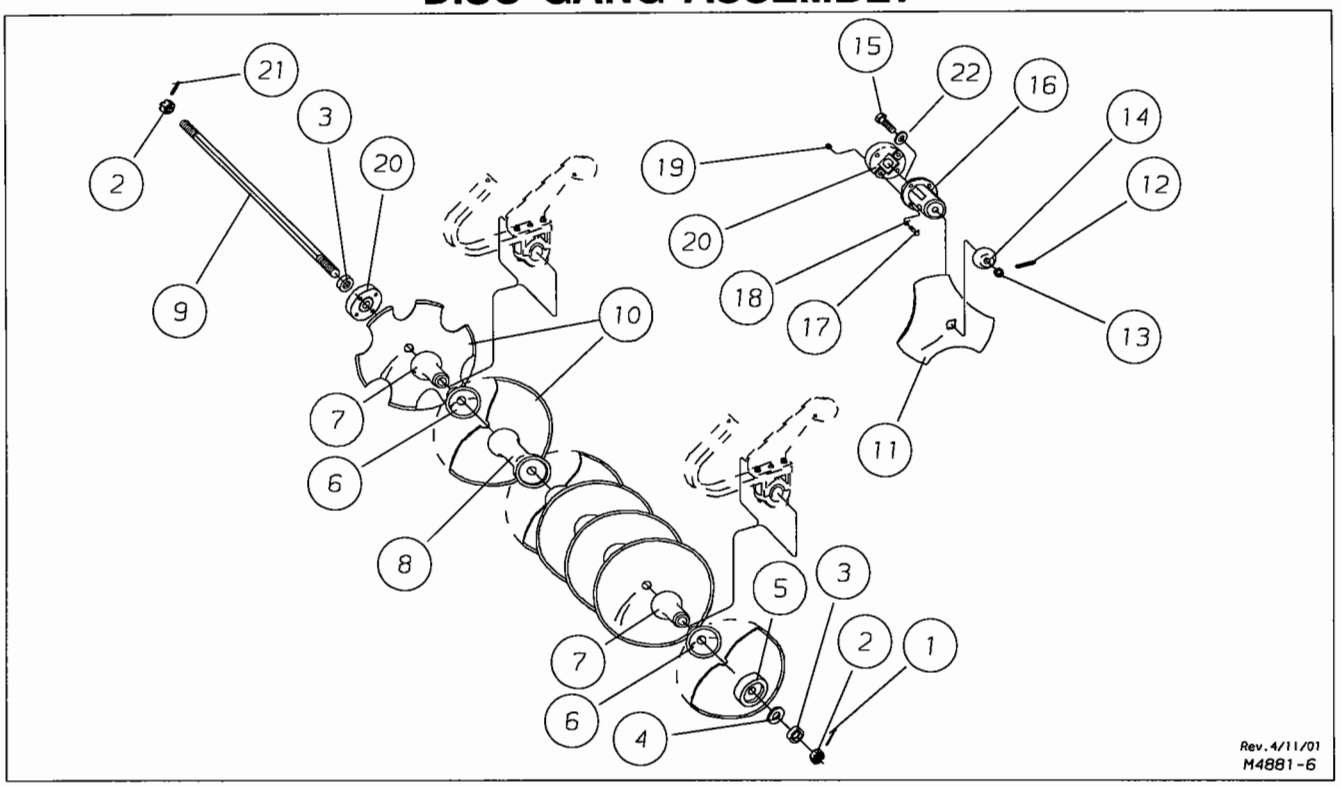
# ADJUSTMENT GROUP DEPTH (RATCHET JACK)




**FOR MODELS** - TL3000 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 70-212 | Ratchet Jack | 1 |
| 2 | 70-212-1 | 7" Jack Handle | 1 |
| 3 | 60-200 | 1" DIA. x 2-1/2" Clevis Pin | 2 |
| 4 | 60-703 | 3/16" DIA. x 1-3/4" Cotter Pin | 2 |
| 5 | 60-708 | 1/4" DIA. x 1-3/4" Cotter Pin | 1 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

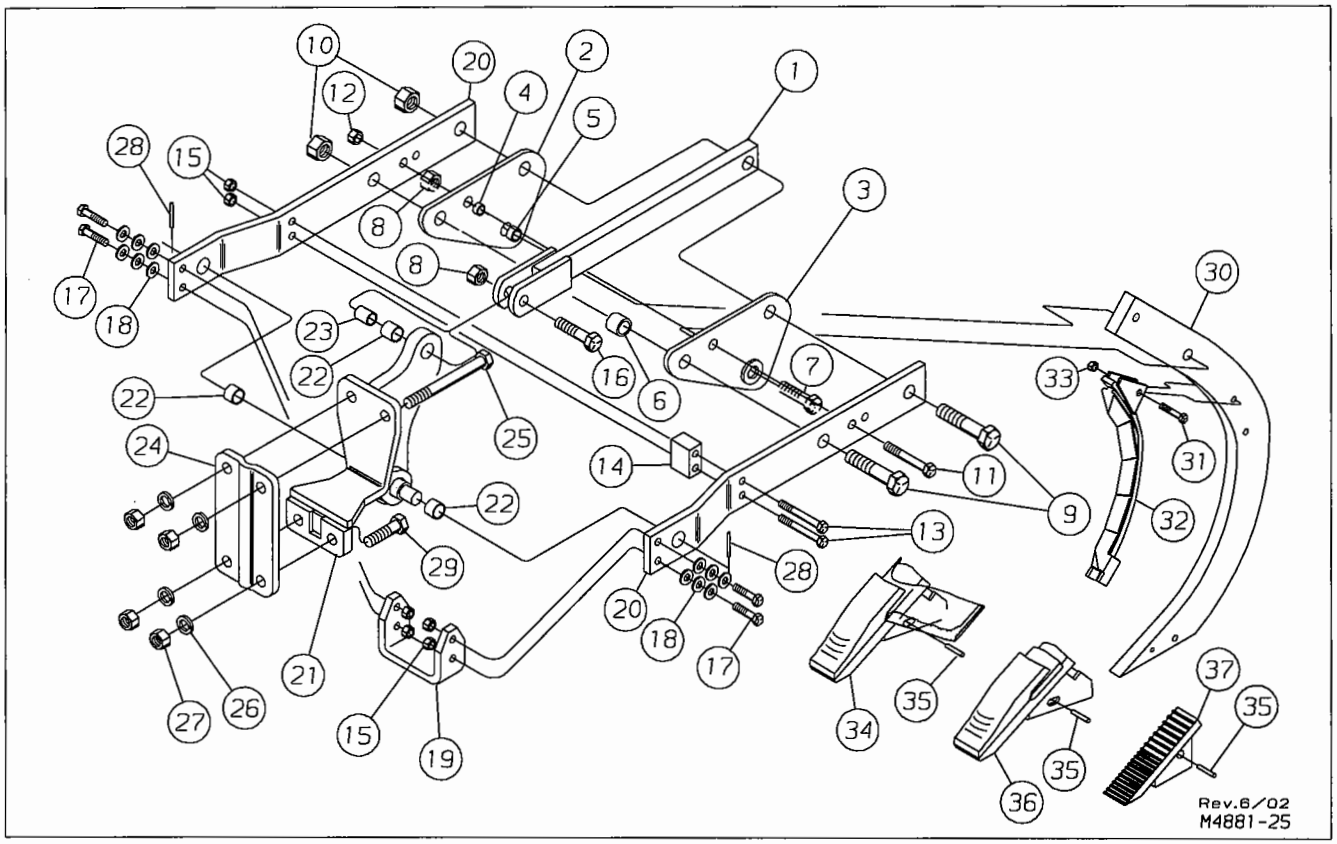
# DISC GANG ASSEMBLY




**FOR MODELS** - TL3000 5, 7, 9 SHANK 6/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 60-714 | 3/8" DIA. x 3-1/2" Cotter Pin | 1 |
| 2 | 63-181 | 1-1/2NC GD5 Slotted Hex Nut | 2 |
| 3 | 1441-0-17 | End Spacer | 2 |
| 4 | 64-136 | Washer | 1 |
| 5 | 1441-0-15 | End Washer | 1 |
| 6 | 4881-0000-21 | Short Half Spool, 13" Spacing | Spec |
| | 1441-0-14D | Short Half Spool, 11" Spacing | Spec |
| 7 | 4881-0000-15 | Long Half Spool, 11" & 13" Spacing | Spec |
| 8 | 4881-0-7 | 13" Spacer Spool | Spec |
| | 4881-0-8 | 11" Spacer Spool | Spec |
| 9 | 4881-0000-25 | Tie Rod, 1-1/2" sq. x 72-1/2" | |
| | 4881-0000-29 | Tie Rod, 1-1/2" sq. x 73-5/8" | |
| | 4881-0000-26 | Tie Rod, 1-1/2" sq. x 111-1/2" | |
| | 4881-0000-28 | Tie Rod, 1-1/2" sq. x 107-1/4" | |
| | 4881-0000-27 | Tie Rod, 1-1/2" sq. x 59-1/2" | |
| | 4881-0000-30 | Tie Rod, 1-1/2" sq. x 46-3/8" | |
| | 4881-0000-32 | Tie Rod, 1-1/2" sq. x 51-3/4" | |
| | 4881-0000-24 | Tie Rod, 1-1/2" sq. x 40-9/16" | |
| | 4881-0000-20 | Tie Rod, 1-1/2" sq. x 62" | |
| 10 | 30-241 | 22" x 1/4" Plain Sharp Blade | Spec |
| | 30-220 | 24" x 1/4" Plain Sharp Blade | Spec |
| | 30-221 | 24" x 1/4" Notched Sharp Blade | Spec |
| | 30-242 | 22" x 1/4" Notched Sharp Blade | Spec |
| 11 | 30-149 | 20" x 7 Ga. Cut-Out Disc Blade | Spec |
| 12 | 60-709 | 1/4 x 2" Roll Pin | 1 |
| 13 | 63-180 | 1-1/8NC Slotted Hex Jam Nut | 1 |
| 14 | 142-19-1 | Spool Washer | 1 |
| 15 | 62-270 | 1-1/8NC x 3-1/2" Special Bolt | 1 |
| 16 | 1050-45-1 | Extension Spool | 1 |
| 17 | 62-167 | 5/8NC x 1-3/4" GD5 Cap Screw | 4 |
| 18 | 64-109 | 5/8" STD. Lock Washer | 4 |
| 19 | 63-109 | 5/8NC Hex Nut | 4 |
| 20 | 1441-0-16 | End Washer | 1 |
| 21 | 60-617 | 3/8 x 2-1/2 Roll Pin | 1 |
| 22 | 64-124 | 1-1/8" SAE Flat Washer | 1 |

# SUBSOIL SHANK ASSEMBLY



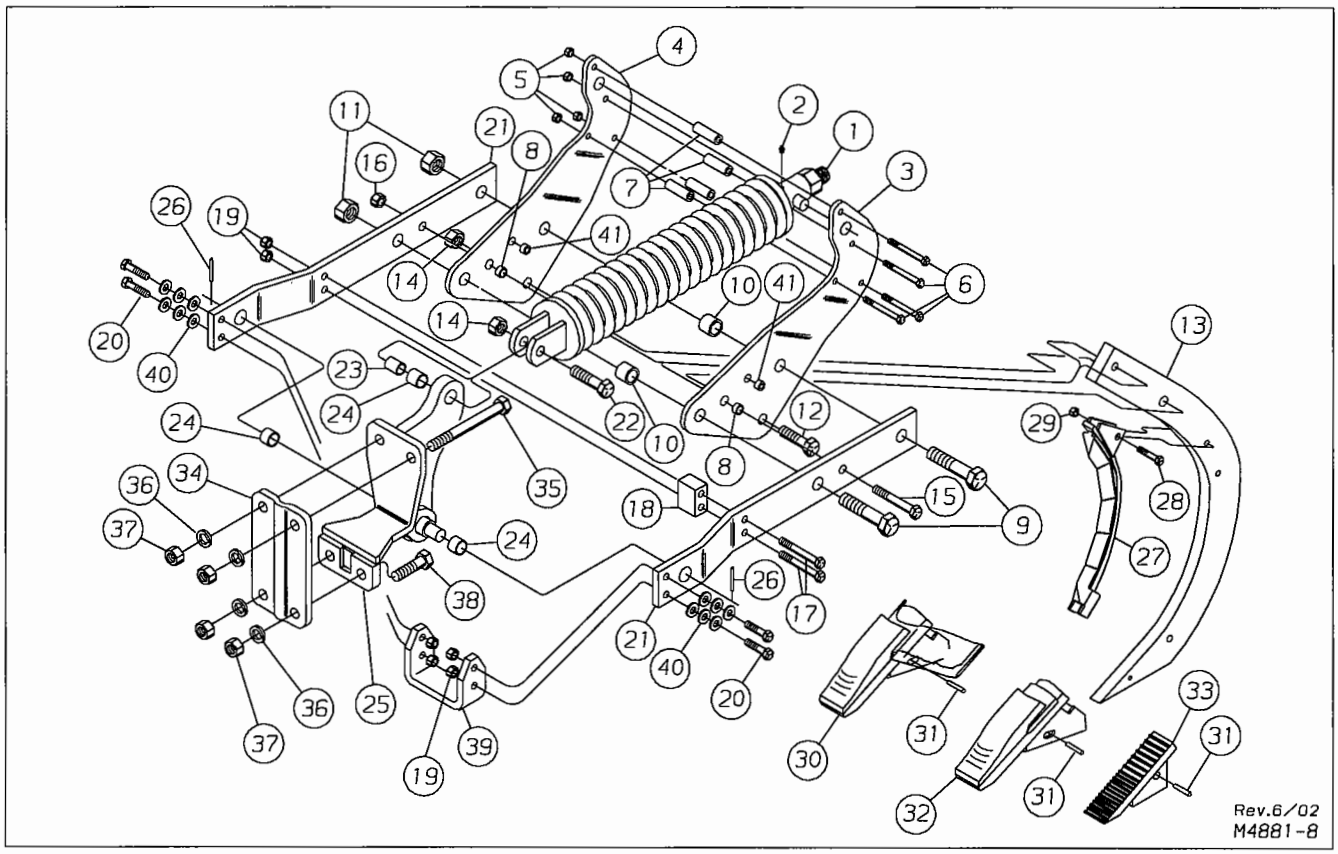

**FOR MODELS -** ALL

Rev.6/02

| Item | Part Number | Part Description | Qty |
|---|---|---|---|
| 1 | 4885-93-0 | Link Weldment | 1 |
| 2 | 4885-98-0 | Right Shear Plate Weldment | 1 |
| 3 | 4885-97-0 | Left Shear Plate Weldment | 1 |
| 4 | 53-136 | Wear Sleeve, 1.00 od x .76 id x .50 | 2 |
| 5 | 53-103 | Wear Sleeve | 2 |
| 6 | 4885-80-2 | Spacer Tube | 1 |
| 7 | 4885-80-3 | 1NC x 4" Special Bolt | 1 |
| 8 | 63-119 | 1NC Lock Nut | 2 |
| 9 | 62-742 | 1-1/4NC x 5-1/2 GD5 Cap Screw | 2 |
| 10 | 63-126 | 1-1/4NC Lock Nut | 2 |
| 11 | 62-205 | 3/4NC x 5 GD5 Cap Screw | 1 |
| 12 | 63-162 | 3/4NC Nylon-Top Lock Nut | 1 |
| 13 | 62-339 | 5/8NC x 4-1/2 GD5 Cap Screw | 2 |
| 14 | 4808-26-3 | Spacer Block | 1 |
| 15 | 63-110 | 5/8NC Lock Nut | 6 |
| 16 | 62-242 | 1NC x 4 GD5 Cap Screw | 1 |
| 17 | 62-441 | 5/8NC x 2-1/2" GD5 Cap Screw | 4 |
| 18 | 64-110 | 5/8" STD. Flat Washer | 12 |
| 19 | 4885-76-1 | Doubler | 1 |
| 20 | 31-190 | Shank Arm | 2 |
| 21 | 4881-9090-0 | Shank Mount Weldment | 1 |
| 22 | 53-101 | Wear Sleeve, 1.50 od x 1.28 id x 1.00 | 3 |

| Item | Part Number | Part Description | Qty |
|---|---|---|---|
| 23 | 53-117 | Wear Sleeve, 1.25 od x 1.02 id x 1.25 | 1 |
| 24 | 4881-0000-10 | Bolt Plate | 1 |
| 25 | 62-651 | 1NC x 9 GD5 Machine Bolt | 2 |
| 26 | 64-118 | 1 Lock Washer | 4 |
| 27 | 63-117 | 1NC Hex Nut | 4 |
| 28 | 60-608 | Roll Pin, 1/4 DIA. x 2-1/2 | 2 |
| 29 | 62-817 | 1NC x 3-1/2" GD8 Cap Screw | 2 |
| 30 | 31-203 | Subsoil Shank | 1 |
| 31 | 62-372 | 1/2NC x 2-1/2 GD5 Cap Screw | 1 |
| 32 | 4885-96-0 | Wear Bar Weldment | 1 |
| 33 | 63-107 | 1/2NC Lock Nut | 1 |
| 34 | 33-206 | Subsoil Point w/ Wing | 1 |
| 35 | 60-127 | Spiral Expansion Pin, 3/8 x 2-1/2" | 1 |
| 36 | 33-207 | Subsoil Point | 1 |
| 37 | 33-203 | Hard Faced Subsoil Point w/Boot | 1 |

# SUBSOIL SHANK ASSEMBLY

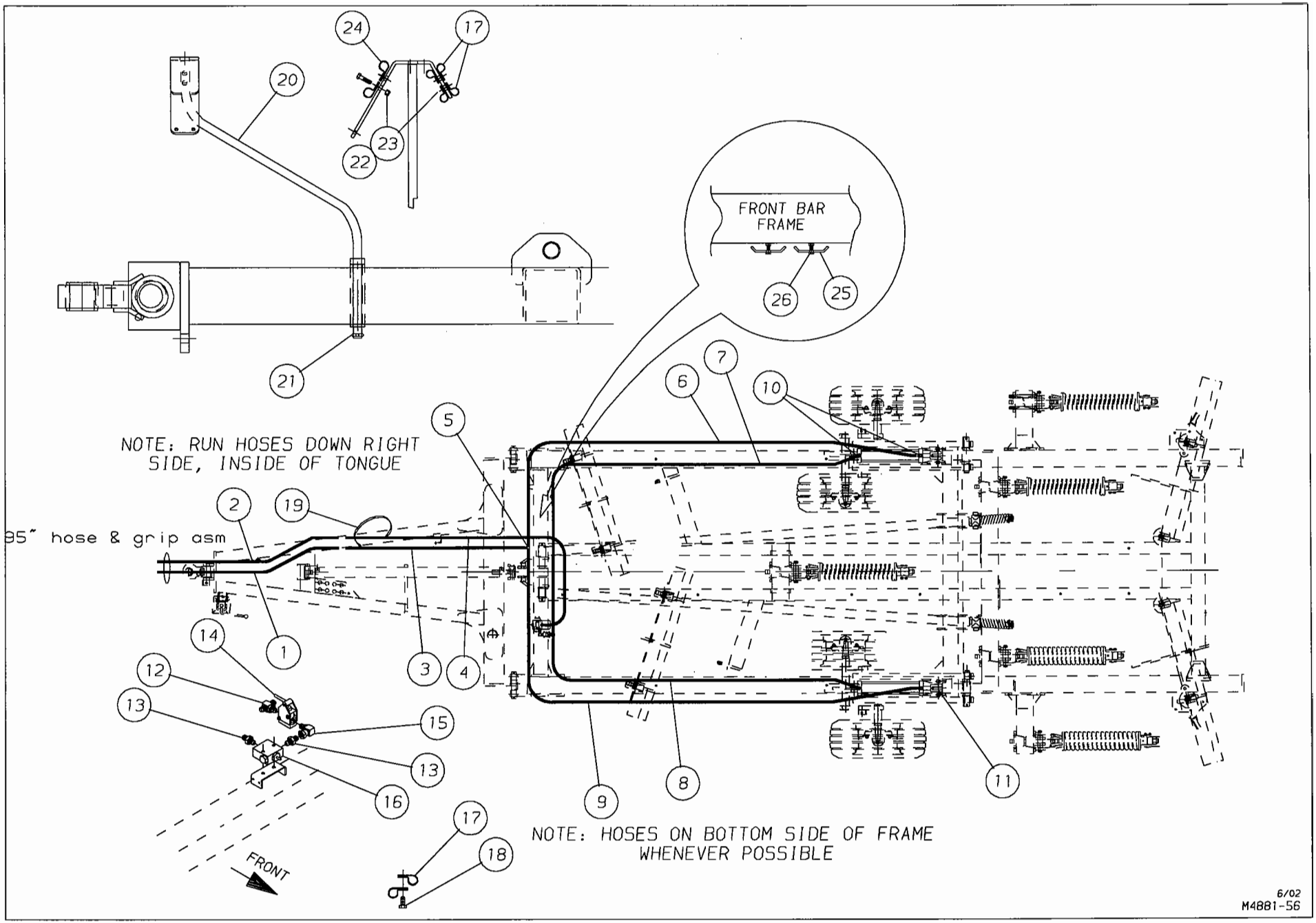



**FOR MODELS -** ALL

6/02

| Item | Part Number | Part Description | Qty |
|---|---|---|---|
| 1 | 4885-90-0A | Spring Assembly | 1 |
| 2 | 65-110 | 1/8 Drive Zerk | 1 |
| 3 | 4885-87-0C | Lt. Trunnion Bracket Assembly | 1 |
| 4 | 4885-88-0C | Rt. Trunnion Bracket Assembly | 1 |
| 5 | 63-107 | 1/2NC Lock Nut | 4 |
| 6 | 62-351 | 1/2NC x 4-1/2 GD5 Cap Screw | 4 |
| 7 | 4885-80-1 | Spacer Tube | 4 |
| 8 | 53-136 | Wear Sleeve, 1.00 od x .76 id x .50 | 2 |
| 9 | 62-742 | 1-1/4NC x 5-1/2 GD5 Cap Screw | 2 |
| 10 | 4885-80-2 | Spacer Tube | 2 |
| 11 | 63-126 | 1-1/4NC Lock Nut | 2 |
| 12 | 4885-80-3 | 1NC x 4" Special Bolt | 1 |
| 13 | 31-203 | Subsoil Shank | 1 |
| 14 | 63-119 | 1NC Lock Nut | 2 |
| 15 | 62-205 | 3/4NC x 5 GD5 Cap Screw | 1 |
| 16 | 63-162 | 3/4NC Nylon-Top Lock Nut | 1 |
| 17 | 62-339 | 5/8NC x 4-1/2 GD5 Cap Screw | 2 |
| 18 | 4808-26-3 | Spacer Block | 1 |
| 19 | 63-110 | 5/8NC Lock Nut | 6 |
| 20 | 62-441 | 5/8NC x 2-1/2"GD5 Bolt | 4 |
| 21 | 31-190 | Shank Arm | 2 |
| 22 | 62-242 | 1NC x 4 GD5 Cap Screw | 1 |
| 23 | 53-148 | Wear Sleeve, 1.25 od x 1.02 id x 1.50 | 1 |

| Item | Part Number | Part Description | Qty |
|---|---|---|---|
| 24 | 53-101 | Wear Sleeve | 3 |
| 25 | 4881-9090-0 | Shank Mount Weldment | 1 |
| 26 | 60-608 | Roll Pin, 1/4 DIA. x 2-1/2 | 2 |
| 27 | 4885-96-0 | Wear Bar Weldment | 1 |
| 28 | 62-372 | 1/2NC x 2-1/2 GD5 Cap Screw | 1 |
| 29 | 63-107 | 1/2NC Lock Nut | 1 |
| 30 | 33-206 | Subsoil Point w/ Wing | 1 |
| 31 | 60-127 | Spiral Expansion Pin, 3/8 x 2-1/2" | 1 |
| 32 | 33-203 | Hard Faced Subsoil Point w/Boot | 1 |
| 33 | 33-207 | Subsoil Point | 1 |
| 34 | 4881-0000-10 | Bolt Plate | 1 |
| 35 | 62-651 | 1NC x 9 GD5 Machine Bolt | 2 |
| 36 | 64-118 | 1 Lock Washer | 4 |
| 37 | 63-117 | 1NC Hex Nut | 4 |
| 38 | 62-817 | 1NC x 3-1/2" GD8 Cap Screw | 2 |
| 39 | 4885-76-1 | Doubler | 1 |
| 40 | 64-110 | 5/8" STD. Flat Washer | 12 |
| 41 | 53-170 | Wear Sleeve .815 od x .51 id x .50 | 2 |


24
17
20
23
22
FRONT BAR FRAME
26
25
21
NOTE: RUN HOSES DOWN RIGHT SIDE, INSIDE OF TONGUE
7
6
10
5
2
19
85" hose & grip asm
14
12
13
15
13
16
1
3
4
9
8
11
17
18
FRONT
NOTE: HOSES ON BOTTOM SIDE OF FRAME WHENEVER POSSIBLE

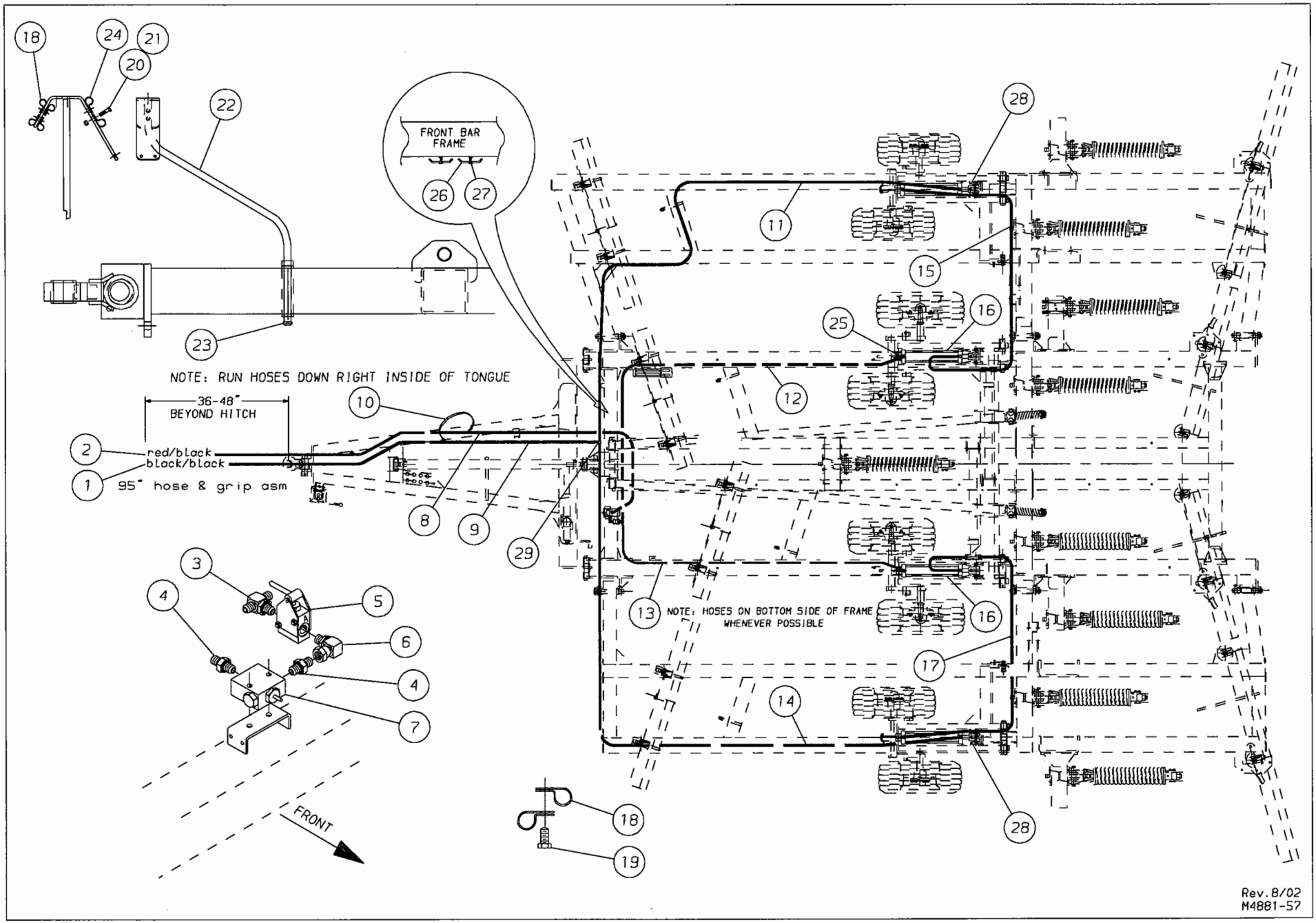
6/02
M4881-56

# DEPTH HYDRAULIC ASSEMBLY

## FOR MODELS - TL3000 5 & 7 SHANK RIGID

8/02

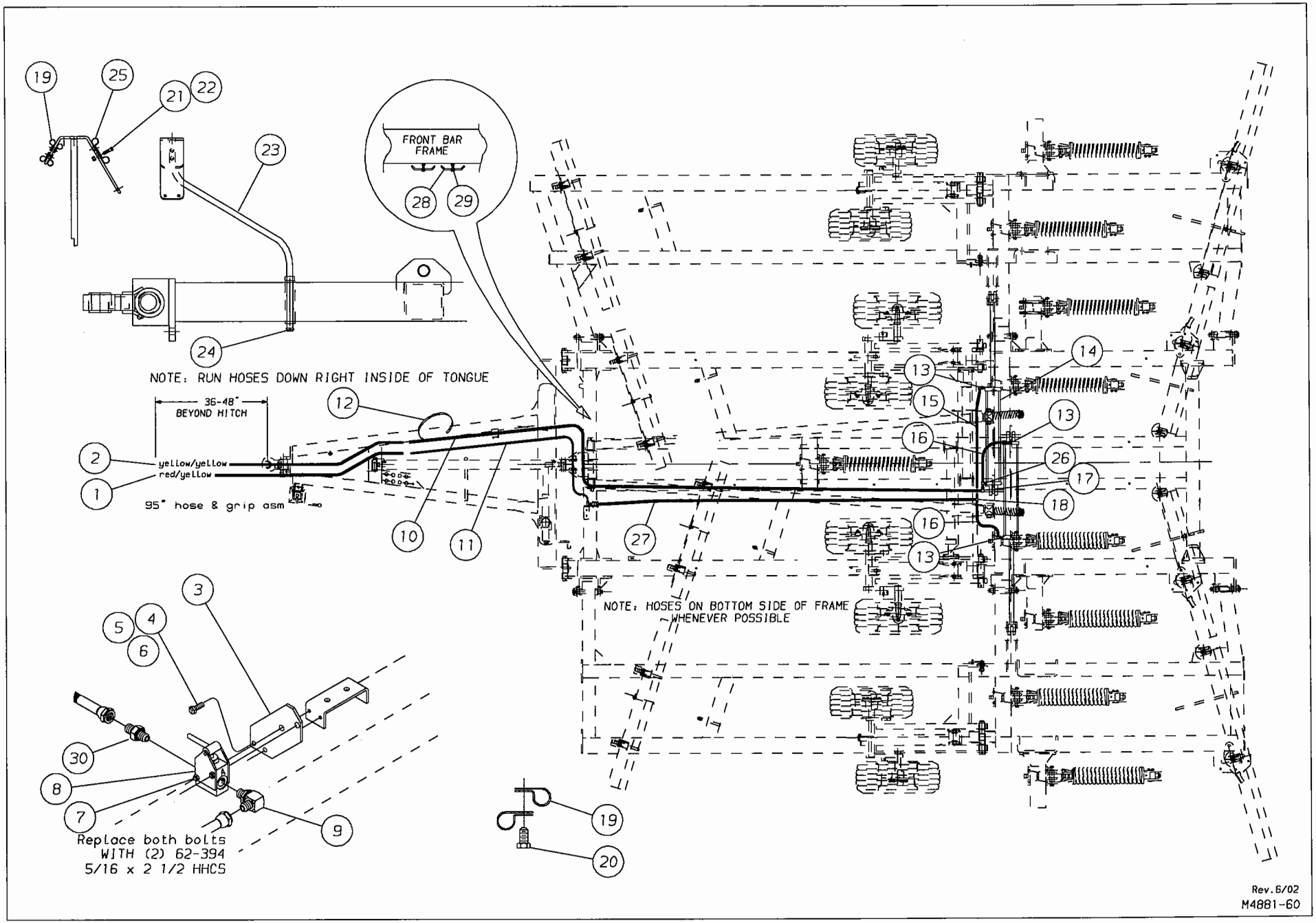
| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 4881-71-0 | 1/2 x 95 Hose, Black/Black Hose Grip | 1 |
| 2 | 4881-77-0 | 1/2 x 95 Hose, Red/Black Hose Grip | 1 |
| 3 | 24-314R | 1/2 x 90 Hose | 1 |
| 4 | 24-337R | 1/2 x 122 Hose | 1 |
| 5 | 25-303 | 3/4(M) JIC Tee | 1 |
| 6 | 24-2100R | 3/8 x 164 Hose | 1 |
| 7 | 24-231R | 3/8 x 176 Hose | 1 |
| 8 | 24-223R | 3/8 x 128 Hose | 1 |
| 9 | 24-297R | 3/8 x 181 Hose | 1 |
| 10 | 25-301 | Hyd Fit 3/4M O/R - 3/4M JIC 90° | 4 |
| 11 | 21-1028 | 4 x 16 Hydraulic Cylinder | 2 |
| 12 | 25-309 | Hyd Fit O/R 37° Flare Tee | 1 |
| 13 | 25-300 | Hyd Fit 3/4M O/R to 3/4M JIC | 2 |
| 14 | 25-2272 | Transport Lock | 1 |
| 15 | 25-320 | Hyd Fit O/R 37° Flare 90° F | 1 |
| 16 | 25-2474 | Remote Valve | 1 |
| 17 | 25-1153 | Hose Clamp - 5/8" | Spec. |
| 18 | 62-491 | 3/8NF x 3/4 GD5 Cap Screw | Spec. |
| 19 | 25-128 | Steel Hose Wrap | 1 |
| 20 | 4881-5040-0 | Hose Stand | 1 |
| 21 | 60-708 | 1/4 x 1-3/4 Cotter Pin | 1 |
| 22 | 64-134 | 3/8NC Nylon-Top Lock Nut | 4 |
| 23 | 62-111 | 3/8 x 1-1/2 Cap Screw | 4 |
| 24 | 25-127 | Hose Clamp | 4 |
| 25 | 2426-170-5 | Hose Bracket | 2 |
| 26 | 62-692 | 3/8NF x 1" GD5 Cap Screw | 2 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |


18
24
21
20
22
23
FRONT BAR FRAME
26
27
NOTE: RUN HOSES DOWN RIGHT INSIDE OF TONGUE
36-48" BEYOND HITCH
2
red/black
black/black
1
95" hose & grip asm
10
8
9
29
3
4
5
6
4
7
FRONT
18
19
28
11
15
25
16
12
13
NOTE: HOSES ON BOTTOM SIDE OF FRAME WHENEVER POSSIBLE
16
17
14
28
Rev.8/02
M4881-57

# DEPTH HYDRAULIC ASSEMBLY

**FOR MODELS -** TL3000 7 SHANK, 9 SHANK FOLDING 8/02

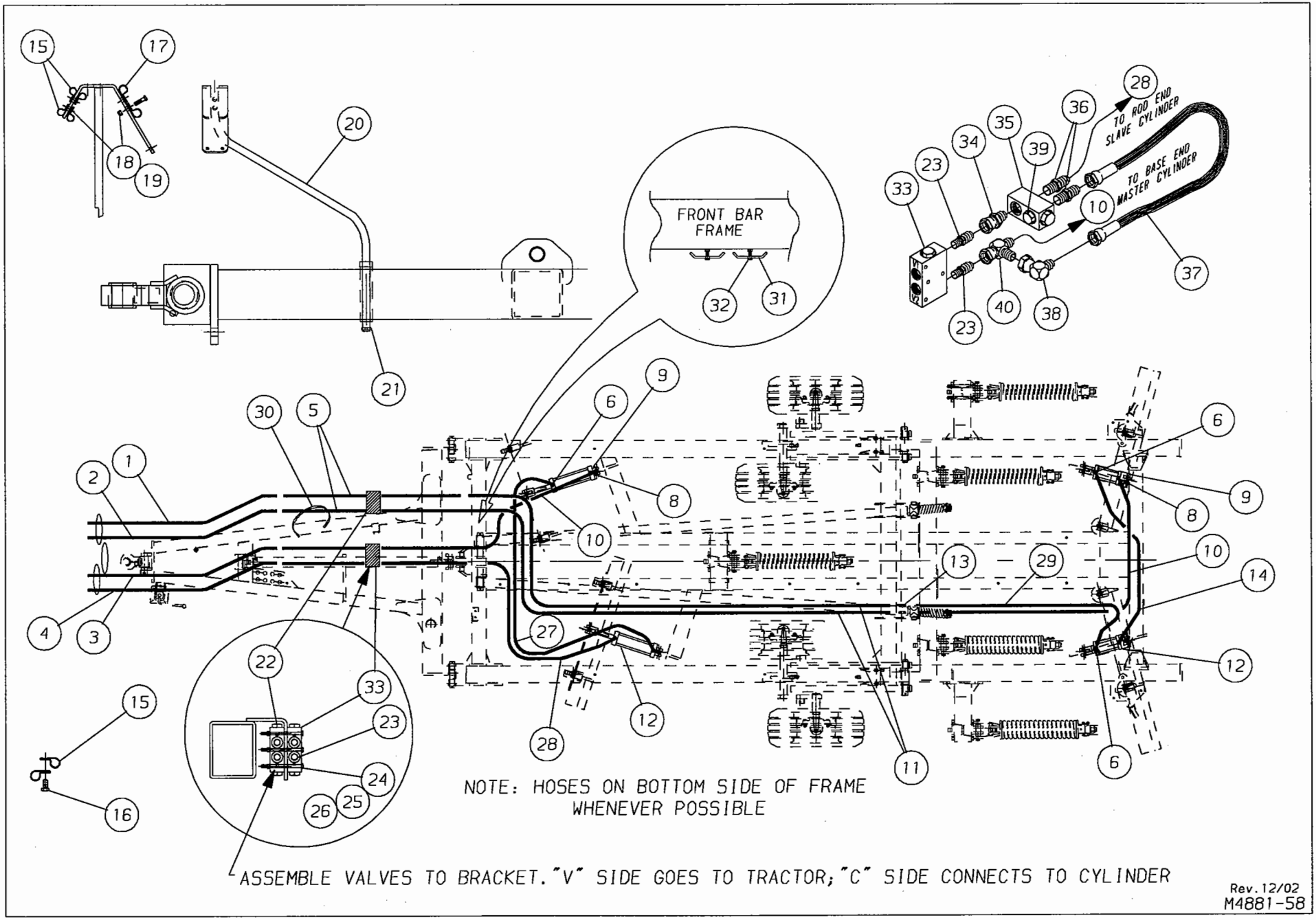
| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-71-0 | 1/2 x 95 Hose, Black/Black | 1 |
| 2 | 4881-77-0 | 1/2 x 95 Hose, Red/Black | 1 |
| 3 | 25-309 | Hyd Fit O/R 37° Flare Tee | |
| 4 | 25-300 | 3/4M O/R to 3/4M JIC Adapter | |
| 5 | 25-2272 | Transport Lock | 1 |
| 6 | 25-320 | Hyd Fit O/R 37° Flare 90° F | |
| 7 | 25-2474 | Remote Valve | |
| 8 | 24-337R | 1/2 x 122 Hose | 1 |
| 9 | 24-314R | 1/2 x 90 Hose | 1 |
| 10 | 25-128 | Steel Hose Wrap | 1 |
| 11 | 24-238R | 3/8 x 192 Hose | 1 |
| 12 | 24-231R | 3/8 x 176 Hose | 1 |
| 13 | 24-223R | 3/8 x 128 Hose | 1 |
| 14 | 24-2103R | 3/8 x 250 Hose | 1 |
| 15 | 24-259R | 3/8 x 202 Hose | 1 |
| 16 | 21-1029 | 4-1/2 x 16 Hyd Cyl | 2 |
| 17 | 24-2100R | 3/8 x 164 Hose | |
| 18 | 25-1153 | 5/8 ID Hose Clamp | Spec |
| 19 | 62-491 | 3/8NF x 3/4 GD5 Cap Screw | Spec |
| 20 | 62-111 | 3/8NC x 1-1/2 GD5 Cap Screw | 4 |
| 21 | 63-134 | 3/8NC Nylon-Top Lock Nut | 4 |
| 22 | 4881-5040-0 | Hose Stand Weldment | 1 |
| 23 | 60-708 | 1/4 x 1-3/4 Cotter Pin | 1 |
| 24 | 25-127 | Hose Clamp | 2 |
| 25 | 25-301 | Hyd Fit 3/4M O/R - 3/4M JIC 90° | 8 |
| 26 | 2426-170-5 | Hose Bracket | 2 |
| 27 | 62-692 | 3/8NF x 1" GD5 Cap Screw | 2 |
| 28 | 21-1028 | 4" x 16" Series Hydraulic Cylinder | 2 |
| 29 | 25-303 | 37° Flare 3/4(M) Tee Hydraulic Fitting | 1 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |


FRONT BAR FRAME
NOTE: RUN HOSES DOWN RIGHT INSIDE OF TONGUE
36-48" BEYOND HITCH
yellow/yellow
red/yellow
95" hose & grip asm
NOTE: HOSES ON BOTTOM SIDE OF FRAME WHENEVER POSSIBLE
Replace both bolts WITH (2) 62-394 5/16 x 2 1/2 HHCS
Rev.6/02
M4881-60

# WING FOLD HYDRAULICS ASSEMBLY

**FOR MODELS** - TL3000 7 SHANK FOLD, 9 SHANK 6/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 4881-70-0 | 3/8 x 95 Hose, Red/Yellow | |
| 2 | 4881-76-0 | 3/8 x 95 Hose, Yellow/Yellow | |
| 3 | 4881-0000-22 | Mounting Plate | |
| 4 | 62-507 | 1/4NC x 3/4 GD5 Cap Screw | |
| 5 | 64-100 | 1/4 Lock Washer | |
| 6 | 63-100 | 1/4NC Hex Nut | |
| 7 | 62-394 | 5/16NC x 2-1/2 GD5 Cap Screw | |
| 8 | 25-2272 | Transport Lock | |
| 9 | 25-301 | Hyd Fit 3/4M O/R - 3/4M JIC 90° | |
| 10 | 24-2117R | 3/8 x 259 Hose | |
| 11 | 24-2109R | 3/8 x 114 Hose | |
| 12 | 25-128 | Steel Hose Wrap | |
| 13 | 4956-75-0 | 90° Restrictor w/ Tag | |
| 14 | 21-189 | 5 x 32 Hyd Cyl | |
| 15 | 24-272R | 3/8 x 45 Hose | |
| 16 | 24-246R | 3/8 x 28 Hose | |
| 17 | 25-310 | Hyd Fit 3/4M JIC to 3/4F JIC 90° Swivel | |
| 18 | 25-303 | Hyd Fit 37° Flare 3/4M Tee | |
| 19 | 25-1153 | 5/8 ID Hose Clamp | |
| 20 | 62-491 | 3/8NF x 3/4 GD5 Cap Screw | |
| 21 | 62-111 | 3/8NC x 1-1/2 GD5 Cap Screw | |
| 22 | 63-134 | 3/8NC Nylon-Top Lock Nut | |
| 23 | 4881-5040-0 | Hose Stand Weldment | |
| 24 | 60-708 | 1/4 x 1-3/4 Cotter Pin | |
| 25 | 25-127 | Hose Clamp | |
| 26 | 25-306 | O-Ring 37° Flare Tee Restrictor | |
| 27 | 24-2115R | 3/8 x 156" Hose | |
| 28 | 2426-170-5 | Hose Bracket | 2 |
| 29 | 62-692 | 3/8NF x 1" GD5 Cap Screw | 2 |
| 30 | 25-300 | 3/4M O/R to 3/4M JIC Adapter | |



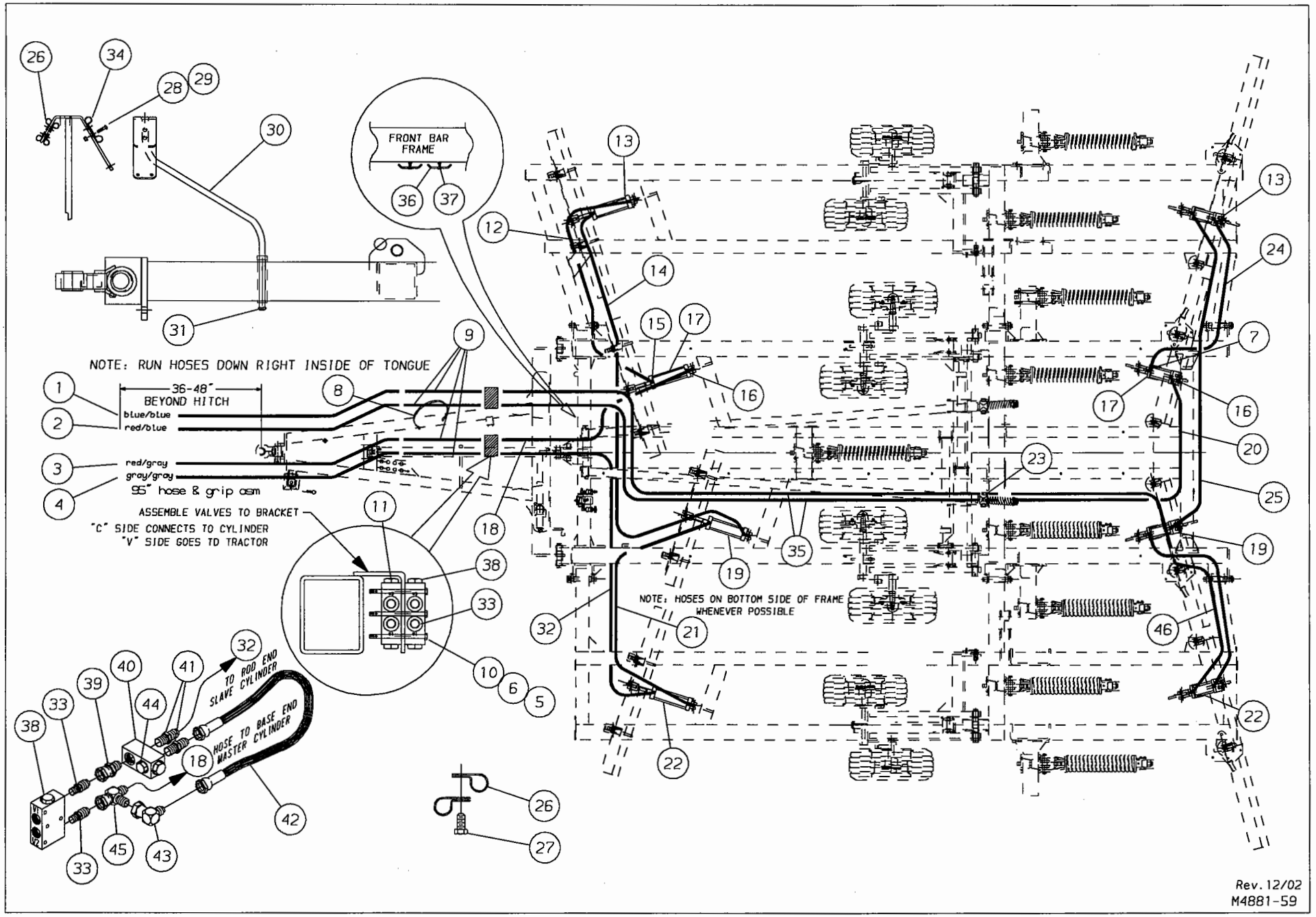

Rev. 12/02
M4881-58

# HYDRAULIC GANG ASSEMBLY

## FOR MODELS - TL3000 5 SHANK, 7 SHANK RIGID

6/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 4881-72-0 | 3/8 x 95 Hose, Blue/Blue Hose Grip | 1 |
| 2 | 4881-73-0 | 3/8 x 95 Hose, Red/Blue Hose Grip | 1 |
| 3 | 4881-74-0 | 3/8 x 95 Hose, Red/Gray Hose Grip | 1 |
| 4 | 4881-75-0 | 3/8 x 95 Hose, Gray/Gray Hose Grip | 1 |
| 5 | 24-272R | 3/8 x 45 Hose | 4 |
| 6 | 25-301 | Hyd Fit 3/4M O/R - 3/4M JIC 90° | 6 |
| 7 | 25-320 | Hyd Fit O/R 37° Flare 90° F | 1 |
| 8 | 4956-75-0 | Hyd Fit, Restrictor Elbow 90° | 2 |
| 9 | 21-1003 | 4 x 8 Cylinder | 2 |
| 10 | 24-218R | 3/8 x 100 Hose | 2 |
| 11 | 24-249R | 3/8 x 238 Hose | |
| 12 | 21-1002 | 3-3/4 x 8 Cylinder | 2 |
| 13 | 25-304 | Hyd Fit 37° Flare Male Coupler | 2 |
| 14 | 24-212R | 3/8 x 79 Hose | |
| 15 | 25-1153 | Hose Clamp - 5/8" | Spec |
| 16 | 62-491 | 3/8NF x 3/4 GD5 Cap Screw | Spec |
| 17 | 25-127 | Hose Clamp - 3/4" | Spec |
| 18 | 62-111 | 3/8 x 1-1/2 Cap Screw | 4 |
| 19 | 63-134 | 3/8NC Nylon-Top Lock Nut | 4 |
| 20 | 4881-5040-0 | Hose Stand | 1 |
| 21 | 60-708 | 1/4 x 1-3/4 Cotter Pin | |
| 22 | 25-2278 | Hydraulic Lock Valve (to Rear Disc Gangs) | 1 |
| 23 | 25-328 | Hyd Fit 9/16 O/R to 3/4M JIC | 8 |
| 24 | 62-806 | 1/4 x 3-1/2 GD5 Cap Screw | |
| 25 | 64-100 | 1/4 Lock Washer | |
| 26 | 63-100 | 1/4NC Hex Nut | |
| 27 | 24-241R | 3/8 x 154" Hose | 1 |
| 28 | 24-225R | 3/8 x 140" Hose | 1 |
| 29 | 24-206R | 3/8 x 57" Hose | 1 |
| 30 | 25-128 | Steel Hose Wrap | |
| 31 | 2426-170-5 | Hose Bracket | 2 |
| 32 | 62-692 | 3/8NF x 1" GD5 Cap Screw | 2 |
| 33 | 25-2278 | Hydraulic Lock Valve (to Front Disc Gangs) | 1 |
| 34 | 25-314 | O-Ring 37° Female Flare Hydraulic Fitting | 1 |
| 35 | 25-151 | 2000 PSI Relief Valve | 1 |
| 36 | 25-300 | 3/4(M)O-Ring to 3/4(M)JIC Hydraulic Fitting | 2 |
| 37 | 24-235R | 3/8 x 16 Black 2W Hose Assembly | 1 |
| 38 | 25-310 | 3/4(M)JIC to 3/4(F)JIC 90° Swivel Hydraulic Fitting | 1 |
| 39 | 25-317 | 3/4 O-Ring Plug | 1 |
| 40 | 25-307 | 37° Flare Male / Female Tee Hydraulic Fitting | 1 |
| | | | |
| | | | |

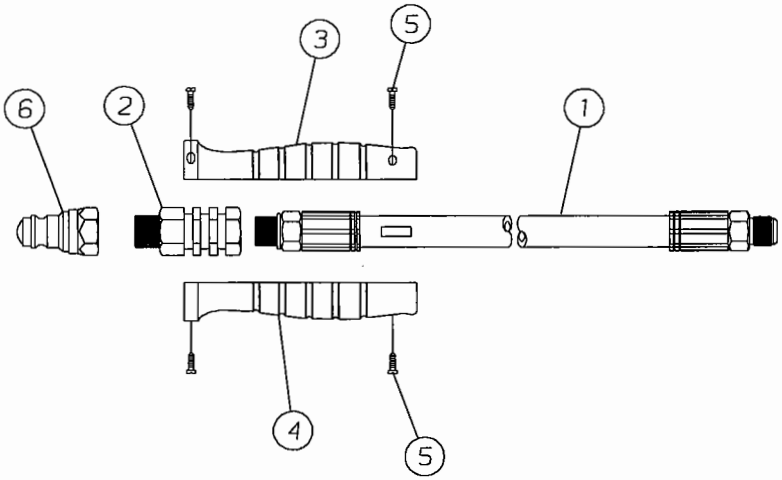

FRONT BAR FRAME
NOTE: RUN HOSES DOWN RIGHT INSIDE OF TONGUE
36-48" BEYOND HITCH
blue/blue
red/blue
red/gray
gray/gray
95" hose & grip asm
ASSEMBLE VALVES TO BRACKET
"C" SIDE CONNECTS TO CYLINDER
"V" SIDE GOES TO TRACTOR
NOTE: HOSES ON BOTTOM SIDE OF FRAME WHENEVER POSSIBLE
TO ROD END SLAVE CYLINDER
HOSE TO BASE END MASTER CYLINDER
Rev. 12/02
M4881-59

# DISC GANG HYDRAULIC ASSEMBLY

**FOR MODELS** - TL3000 7 SHANK FOLD, 9 SHANK 6/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 4881-72-0 | 3/8 x 95 Hose, Blue/Blue | |
| 2 | 4881-73-0 | 3/8 x 95 Hose, Red/Blue | |
| 3 | 4881-74-0 | 3/8 x 95 Hose, Red/Gray | |
| 4 | 4881-75-0 | 3/8 x 95 Hose, Gray/Gray | |
| 5 | 64-100 | 1/4 Lock Washer | |
| 6 | 63-100 | 1/4NC Hex Nut | |
| 7 | 25-301 | Hyd Fit 3/4M O/R - 3/4M JIC 90° | |
| 8 | 25-128 | Steel Hose Wrap | |
| 9 | 24-272R | 3/8 x 45 Hose | |
| 10 | 62-806 | 1/4NC x 3-1/2 GD5 Cap Screw | |
| 11 | 25-2278 | Hydraulic Lock Valve (to Rear Disc Gangs) | 1 |
| 12 | 24-240R | 3/8 x 107 Hose | |
| 13 | 21-1004 | 4-1/4 x 8 Hyd Cyl | |
| 14 | 24-250R | 3/8 x 196 Hose | |
| 15 | 25-301 | Hyd Fit 3/4M O/R - 3/4M JIC 90° | |
| 16 | 4956-75-0 | 90° Restrictor w/ Tag | |
| 17 | 21-1005 | 4-1/2 x 8 Hyd Cyl | |
| 18 | 24-218R | 3/8 x 100 Hose | |
| 19 | 21-1003 | 4 x 8 Hyd Cyl | |
| 20 | 24-223R | 3/8 x 128 Hose | |
| 21 | 24-265R | 3/8 x 135 Hose | |
| 22 | 21-1002 | 3-3/4 x 8 Hyd Cyl | |
| 23 | 25-304 | Hyd Fit 37° Flare Male Coupler | |
| 24 | 24-2116R | 3/8 x 96" Hose | 2 |
| 25 | 24-225R | 3/8 x 140 Hose | |
| 26 | 25-1153 | 5/8 ID Hose Clamp | |
| 27 | 62-491 | 3/8NF x 3/4 GD5 Cap Screw | |
| 28 | 62-111 | 3/8NC x 1-1/2 GD5 Cap Screw | |
| 29 | 63-134 | 3/8NC Nylon-Top Lock Nut | |
| 30 | 4881-5040-0 | Hose Stand Weldment | |
| 31 | 60-708 | 1/4 x 1-3/4 Cotter Pin | |
| 32 | 24-230R | 3/8 x 172 Hose | |
| 33 | 25-328 | Hyd Fit 9/16M O/R to 3/4M JIC | |
| 34 | 25-127 | Hose Clamp | |
| 35 | 24-263R | 3/8 x 227" Hose | |
| 36 | 2426-170-5 | Hose Bracket | 2 |
| 37 | 62-692 | 3/8NF x 1" GD5 Cap Screw | 2 |
| 38 | 25-2278 | Hydraulic Lock Valve (to Front Disc Gangs) | 1 |
| 39 | 25-314 | O-Ring 37° Female Flare Fitting | 1 |
| 40 | 25-151 | 2000 PSI Relief Valve | 1 |
| 41 | 25-300 | 3/4(M) O-Ring to 3/4(M) JIC Hydraulic Fitting | 2 |
| 42 | 24-235R | 3/8 x 16" Black 2W Hose Assembly | 1 |
| 43 | 25-310 | 3/4(M)JIC to 3/4(F)JIC 90°Swivel Hydraulic Fitting | 1 |
| 44 | 25-317 | 3/4 O-Ring Plug | 1 |
| 45 | 25-307 | 37°Flare Male / Female Tee Hydraulic Fitting | 1 |
| 46 | 24-230R | 3/8" x 172" Hose | 1 |

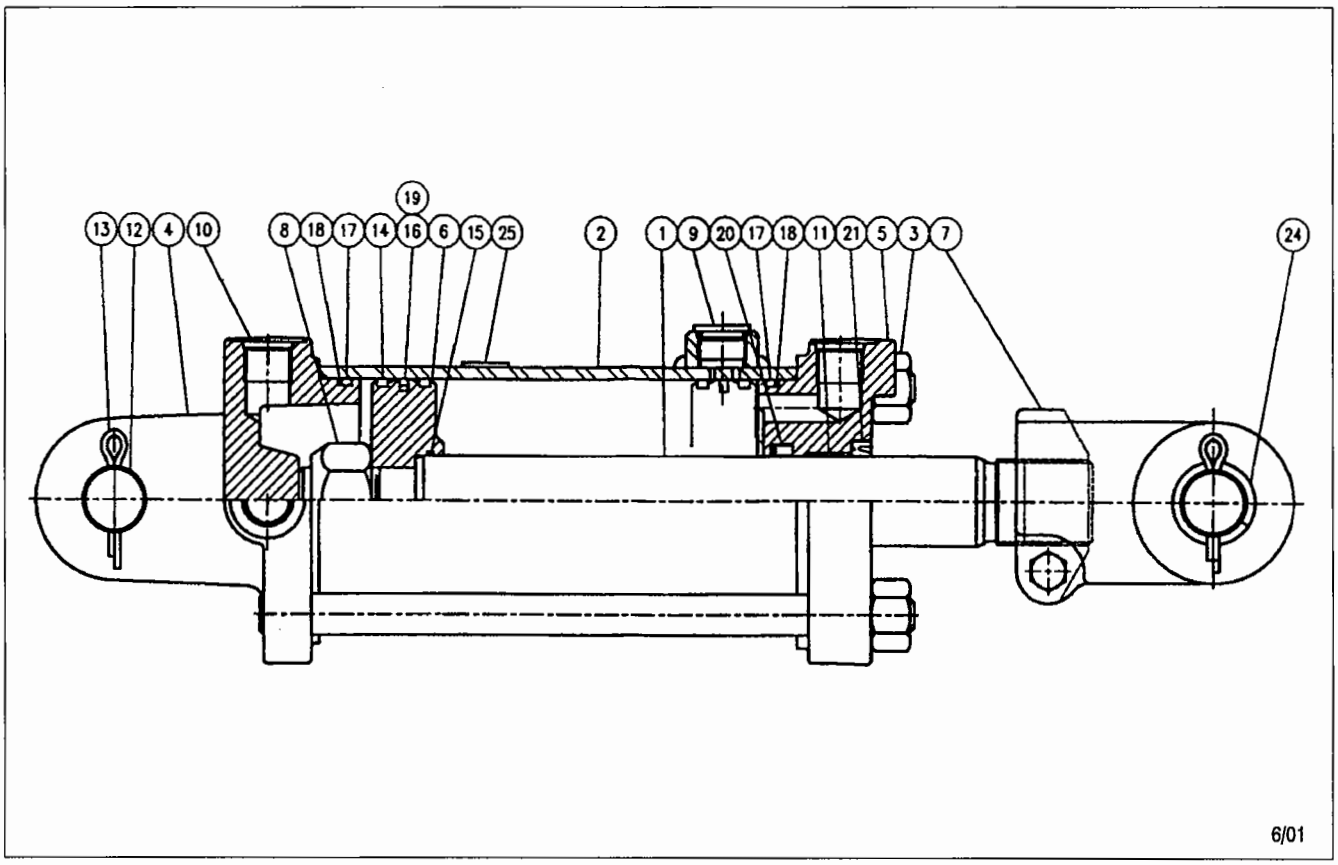
# HYDRAULIC HOSE WITH PLASTIC GRIP ASSEMBLIES




REV 7/01
M4881-23

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| | 4881-70-0 | 3/8" x 95" 100R2 Hose with Red/Yellow Grip Assembly | 1 |
| 1 | 24-2105R | 3/8" x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2289 | Hose Grip Half - Red | 1 |
| 4 | 25-2290 | Hose Grip Half - Yellow | 1 |
| 5 | 62-656 | Screw | 4 |
| | 4881-71-0 | 1/2" x 95" 100R2 Hose with Black/Black Grip Assembly | 1 |
| 1 | 24-330R | 1/2" DIA. x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2291 | Hose Grip Half - Black | 1 |
| 4 | 25-2291 | Hose Grip Half - Black | 1 |
| 5 | 62-656 | Screw | 4 |
| | 4881-72-0 | 3/8" x 95" 100R2 Hose with Blue/Blue Grip Assembly | 1 |
| 1 | 24-2105R | 3/8" x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2509 | Hose Grip Half - Blue | 1 |
| 4 | 25-2509 | Hose Grip Half - Blue | 1 |
| 5 | 62-656 | Screw | 4 |
| | 4881-73-0 | 3/8" x 95" 100R2 Hose with Red/Blue Grip Assembly | 1 |
| 1 | 24-2105R | 3/8" x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2289 | Hose Grip Half - Red | 1 |
| 4 | 25-2509 | Hose Grip Half - Blue | 1 |
| 5 | 62-656 | Screw | 4 |
| | 4881-74-0 | 3/8" x 95" 100R2 Hose with Red/Gray Grip Assembly | 1 |
| 1 | 24-2105R | 3/8" x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2289 | Hose Grip Half -Red | 1 |
| 4 | 25-2510 | Hose Grip Half - Gray | 1 |
| 5 | 62-656 | Screw | 4 |
| | 4881-75-0 | 3/8" x 95" 100R2 Hose with Gray/Gray Grip Assembly | 1 |
| 1 | 24-2105R | 3/8" x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2510 | Hose Grip Half - Gray | 1 |
| 4 | 25-2510 | Hose Grip Half - Gray | 1 |
| 5 | 62-656 | Screw | 4 |
| | 4881-77-0 | 1/2" x 95" 100R2 Hose with Red/Black Grip Assembly | 1 |
| 1 | 24-330R | 1/2" x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2289 | Hose Grip Half - Red | 1 |
| 4 | 25-2291 | Hose Grip Half - Black | 1 |
| 5 | 62-656 | Screw | 4 |
| | 4881-76-0 | 3/8" x 95" 100R2 Hose with Yellow/Yellow Grip Assembly | 1 |
| 1 | 24-2105R | 3/8" DIA. x 95" JIC/ORB 100R2 Hose | 1 |
| 2 | 25-2295 | 3/4 ORB to 1/2 NPT Hydraulic Fitting | 1 |
| 3 | 25-2290 | Hose Grip Half - Yellow | 1 |
| 4 | 25-2290 | Hose Grip Half - Yellow | 1 |
| 5 | 62-656 | Screw | 4 |
| 6 | ★ 25-221 | Male Coupler (Not Included in Assemblies above) | |
| ★ | Not Included in Hose and Grip Assemblies | | |

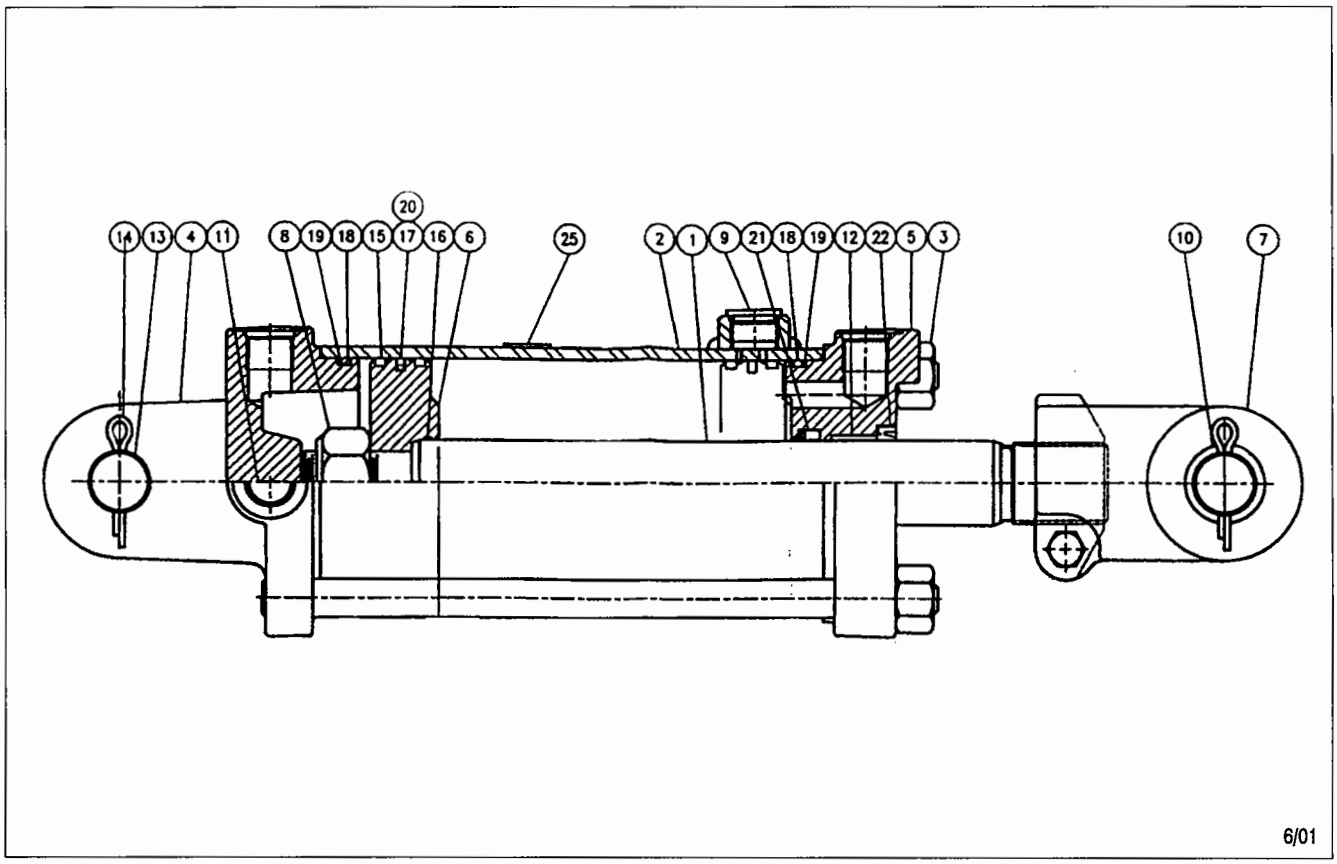
# PRINCE HYDRAULIC CYLINDER




**21-1002 3-3/4" X 8" PRINCE HYDRAULIC CYLINDER ASSEMBLY (Series) 6/02**
**Retracted - 20-1/4" Extended - 28-1/4" Stroke - 8" Rod Diameter - 1-3/8"**

| *Item* | *Krause Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 21-2128 | Piston Rod | 1 |
| 2 | 21-694 | Tube Assembly | 1 |
| 3 | 21-272 | Tie Rod Assembly | 4 |
| 4 | 21-2105 | Butt | 1 |
| 5 | 21-803 | Gland Assembly | 1 |
| 6 | 21-804 | Piston | 1 |
| 7 | 21-2126 | Clevis Assembly | 1 |
| 8 | 21-225 | Lock Nut | 1 |
| 9 | 21-702 | Port Plug | 1 |
| 10 | 21-404 | Port Plug | 3 |
| 11 | 21-807 | Bushing | 1 |
| 12 | 21-260 | Clevis Pin | 2 |
| 13 | | 3/16" DIA. x 1-3/4" Cotter Pin | 4 |
| 14 | ★ | Bearing Ring | 2 |
| 15 | ★ | O-Ring | 1 |
| 16 | ★ | O-Ring | 1 |
| 17 | ★ | O-Ring | 2 |
| 18 | ★ | Back-Up Washer | 2 |
| 19 | ★ | Teflon Seal | 1 |
| 20 | ★ | U-Cup | 1 |
| 21 | ★ | Wiper | 1 |
| 22 | | | |
| 23 | | | |
| 24 | 21-2127 | Bushing | 2 |
| 25 | 74-113 | Cylinder WARNING Decal | 1 |
| | 21-808 | Seal Kit ( ★ Items Included in Kit) | |

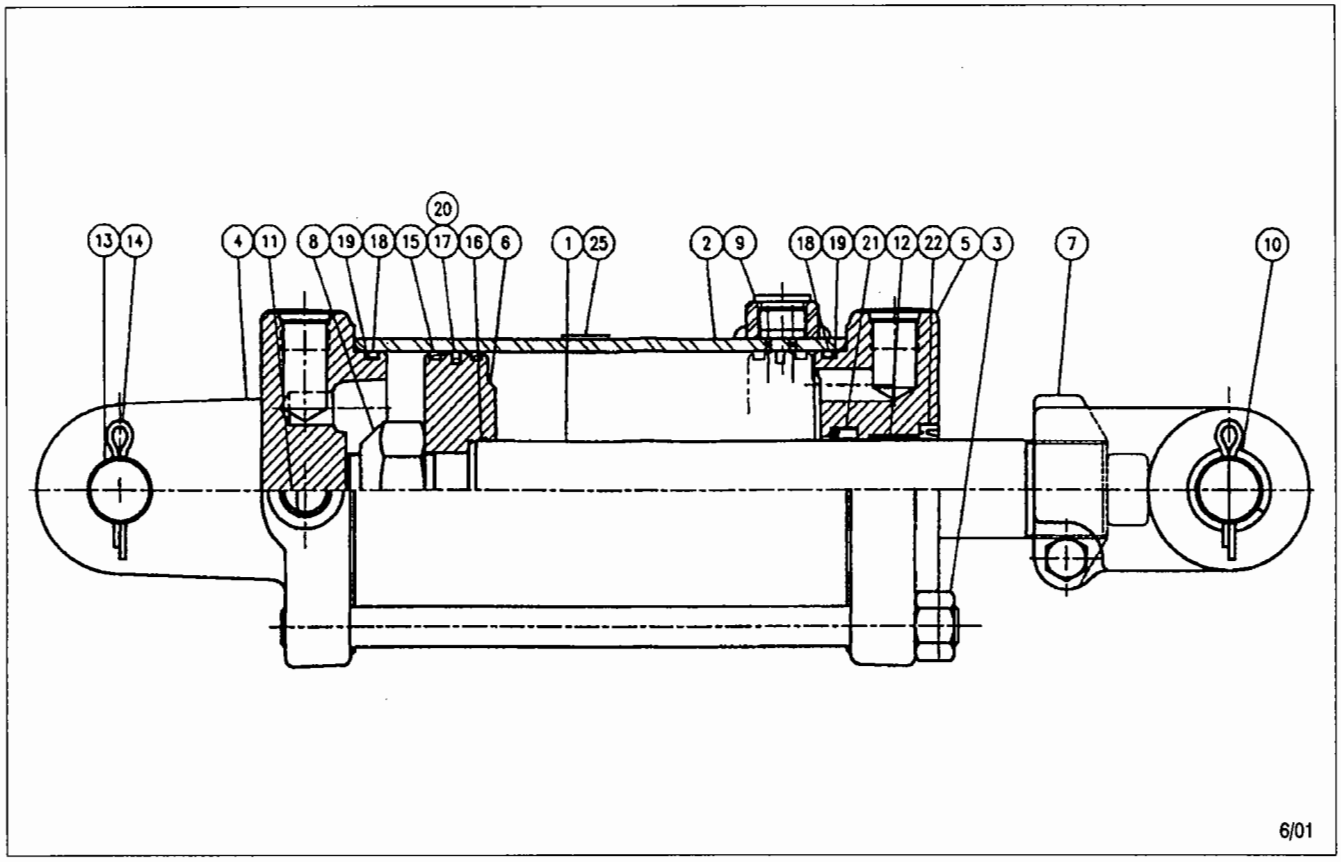
# PRINCE HYDRAULIC CYLINDER




**21-1003 4" X 8" PRINCE HYDRAULIC CYLINDER ASSEMBLY (Series) 6/02**
**Retracted - 20-1/4" Extended - 28-1/4" Stroke - 8" Rod Diameter - 1-3/8"**

| *Item* | *Krause Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 21-2128 | Piston Rod | 1 |
| 2 | 21-704 | Tube Assembly | 1 |
| 3 | 21-272 | Tie Rod Assembly | 4 |
| 4 | 21-882 | Butt | 1 |
| 5 | 21-810 | Gland Assembly | 1 |
| 6 | 21-811 | Piston | 1 |
| 7 | 21-2126 | Clevis Assembly | 1 |
| 8 | 21-225 | Lock Nut | 1 |
| 9 | 21-702 | Port Plug | 1 |
| 10 | 21-807 | Bushing | 1 |
| 11 | 21-404 | Port Plug | 3 |
| 12 | 21-2127 | Bushing | 2 |
| 13 | 21-260 | Clevis Pin | 2 |
| 14 | | 3/16" DIA. x 1-3/4" Cotter Pin | 4 |
| 15 | ★ | Bearing Ring | 2 |
| 16 | ★ | O-Ring | 1 |
| 17 | ★ | O-Ring | 1 |
| 18 | ★ | O-Ring | 2 |
| 19 | ★ | Back-Up Washer | 2 |
| 20 | ★ | Teflon Seal | 1 |
| 21 | ★ | U-Cup | 1 |
| 22 | ★ | Wiper | 1 |
| 23 | | | |
| 24 | | | |
| 25 | 74-113 | Cylinder WARNING Decal | 1 |
| | 21-2059 | Seal Kit (★ Items Included in Kit) | |

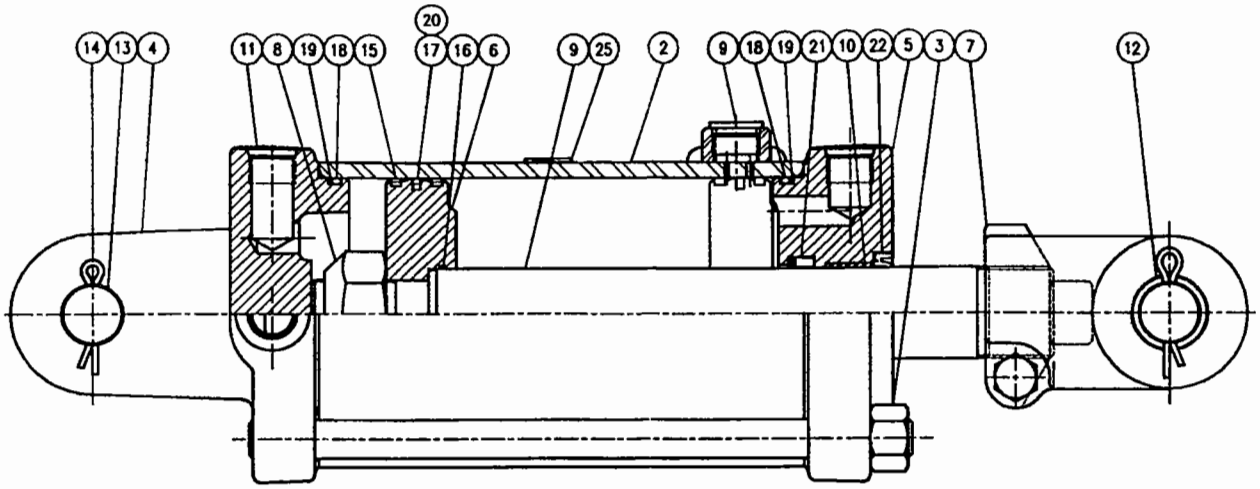
# PRINCE HYDRAULIC CYLINDER




**21-1004 4-1/4" X 8" PRINCE HYDRAULIC CYLINDER ASSEMBLY (Series) 6/02**
**Retracted - 20-1/4" Extended - 28-1/4" Stroke - 8" Rod Diameter - 1-1/2"**

| *Item* | *Krause Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 21-2122 | Piston Rod | 1 |
| 2 | 21-2065 | Tube Assembly | 1 |
| 3 | 21-381 | Tie Rod Assembly | 4 |
| 4 | 21-2072 | Butt | 1 |
| 5 | 21-2073 | Gland | 1 |
| 6 | 21-2074 | Piston | 1 |
| 7 | 21-2125 | Clevis Assembly | 1 |
| 8 | 21-819 | Lock Nut | 1 |
| 9 | 21-702 | Port Plug | 1 |
| 10 | 21-2127 | Bushing | 2 |
| 11 | 21-404 | Port Plug | 3 |
| 12 | 21-2069 | Bushing | 1 |
| 13 | 21-260 | Clevis Pin | 2 |
| 14 | | 3/16" DIA. x 1-3/4" Cotter Pin | 4 |
| 15 | ★ | Bearing Ring | 2 |
| 16 | ★ | O-Ring | 1 |
| 17 | ★ | O-Ring | 1 |
| 18 | ★ | O-Ring | 2 |
| 19 | ★ | Back-Up Washer | 2 |
| 20 | ★ | Teflon Seal | 1 |
| 21 | ★ | U-Cup | 1 |
| 22 | ★ | Wiper | 1 |
| 23 | | | |
| 24 | | | |
| 25 | 74-113 | Cylinder WARNING Decal | 1 |
| | 21-2060 | Seal Kit (★ Items Included in Kit) | |

# PRINCE HYDRAULIC CYLINDER

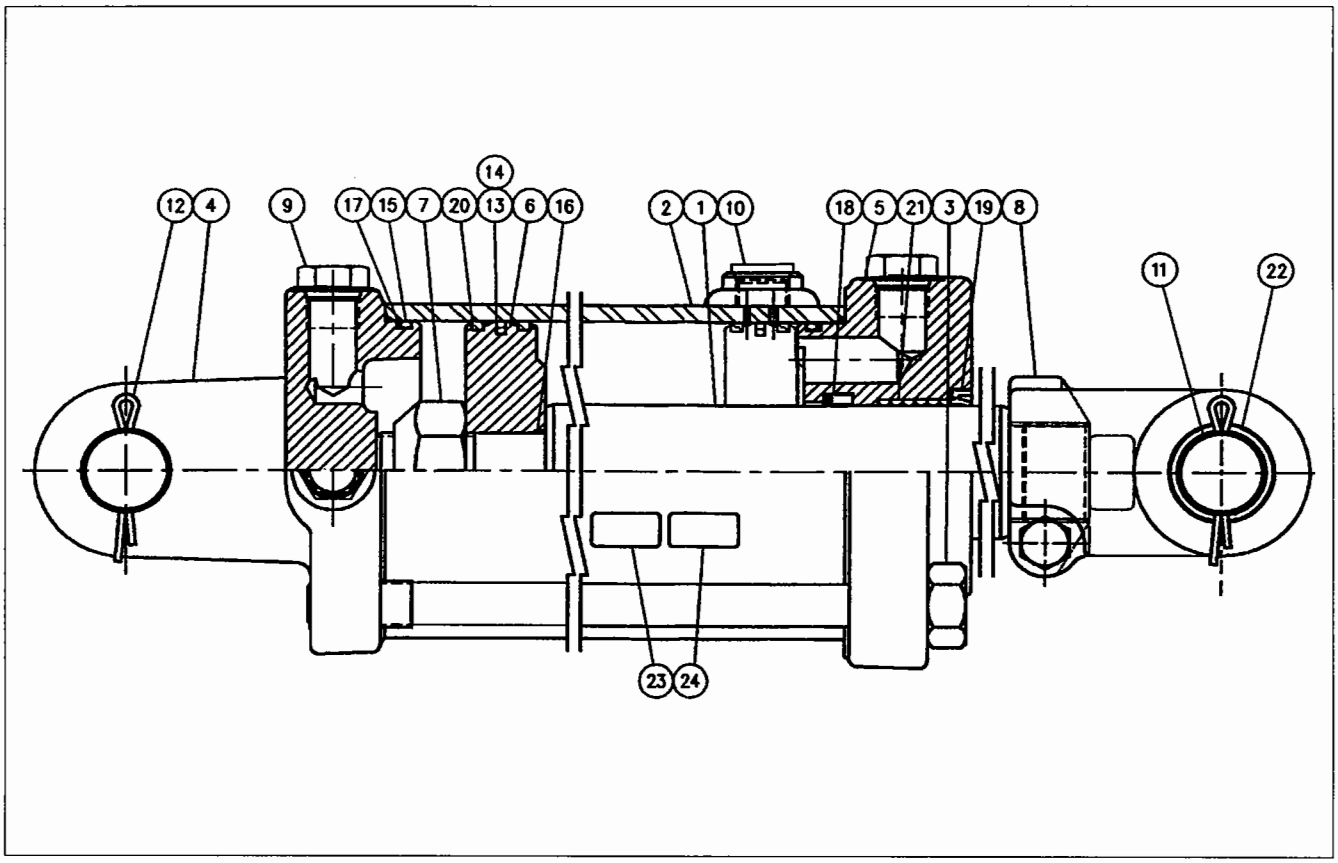



6/01

**21-1005 4-1/2" X 8" PRINCE HYDRAULIC CYLINDER ASSEMBLY (SERIES) 6/02**
**Retracted - 20-1/4" Stroke - 8" Extended - 28-1/4" Rod Diameter - 1-1/2"**

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 21-2122 | Piston Rod | 1 |
| 2 | 21-2140 | Tube Assembly | 1 |
| 3 | 21-715 | Tie Rod Assembly | 4 |
| 4 | 21-2083 | Butt | 1 |
| 5 | 21-2084 | Gland | 1 |
| 6 | 21-2085 | Piston | 1 |
| 7 | 21-2125 | Clevis Assembly | 1 |
| 8 | 21-819 | Lock Nut | 1 |
| 9 | 21-702 | Plug ORB | 1 |
| 10 | 21-2069 | Bushing | 2 |
| 11 | 21-404 | Port Plug | 3 |
| 12 | 21-2127 | Bushing | 1 |
| 13 | 21-260 | Clevis Pin | 2 |
| 14 | 21-639 | 3/16" DIA. x 1-3/4" Cotter Pin | 4 |
| 15 | ★ | Bearing Ring | 1 |
| 16 | ★ | O-Ring | 1 |
| 17 | ★ | O-Ring | 1 |
| 18 | ★ | O-Ring | 2 |
| 19 | ★ | Back-Up Washer | 2 |
| 20 | ★ | Teflon Seal | 1 |
| 21 | ★ | U-Cup | 1 |
| 22 | ★ | Wiper | 1 |
| 23 | | | |
| 24 | | | |
| 25 | 74-113 | Cylinder Warning Decal | 1 |
| | 21-2080 | Seal Kit ( ★ Items Included in Kit) | |

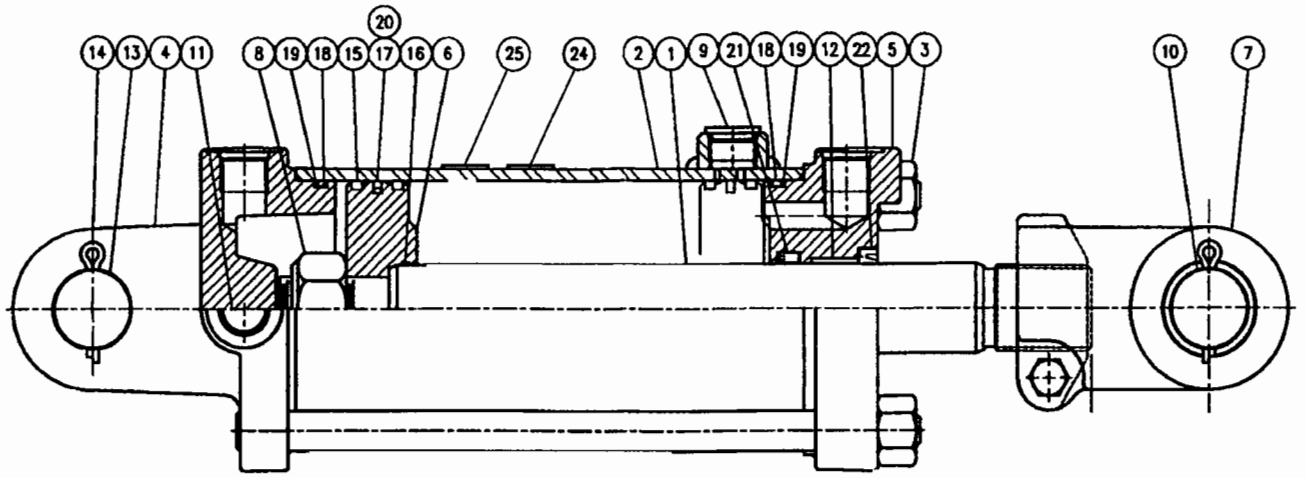
# PRINCE HYDRAULIC CYLINDER




**21-1029 4-1/2" X 16" PRINCE HYDRAULIC CYLINDER ASSEMBLY (SERIES)** **8/02**
**Retracted - 31-1/2" Extended - 47-1/2" Stroke - 16" Rod Diameter - 2"**

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 21-2159 | Piston Rod | 1 |
| 2 | 21-2161 | Tube Assembly | 1 |
| 3 | 21-2164 | Tie Rod Assembly | 4 |
| 4 | 21-2163 | Butt | 1 |
| 5 | 21-2162 | Gland Assembly | 1 |
| 6 | 21-2160 | Piston | 1 |
| 7 | 21-819 | Lock Nut | 1 |
| 8 | 21-2154 | Clevis Assembly | 1 |
| 9 | 21-404 | ORB Plug | 1 |
| 10 | 21-702 | Socket Head Plug | 3 |
| 11 | 21-296 | Clevis Pin | 2 |
| 12 | | 3/16" DIA. x 1-3/4" Cotter Pin | 4 |
| 13 | ★ | Teflon Seal | 1 |
| 14 | ★ | O-Ring | 1 |
| 15 | ★ | O-Ring | 2 |
| 16 | ★ | O-Ring | 1 |
| 17 | ★ | Back-Up Washer | 2 |
| 18 | ★ | U-Cup | 1 |
| 19 | ★ | Wiper | 1 |
| 20 | ★ | Bearing Ring | 2 |
| 21 | 21-2158 | Bushing (included in Item 5) | 1 |
| 22 | 21-2157 | Bushing (included in Item 8) | 2 |
| 23 | 21-443 | Series Decal | 1 |
| 24 | 74-113 | Cylinder Warning Decal | 1 |
| | 21-2143 | Seal Kit ( ★ Items Included in Kit) | |

# PRINCE HYDRAULIC CYLINDER

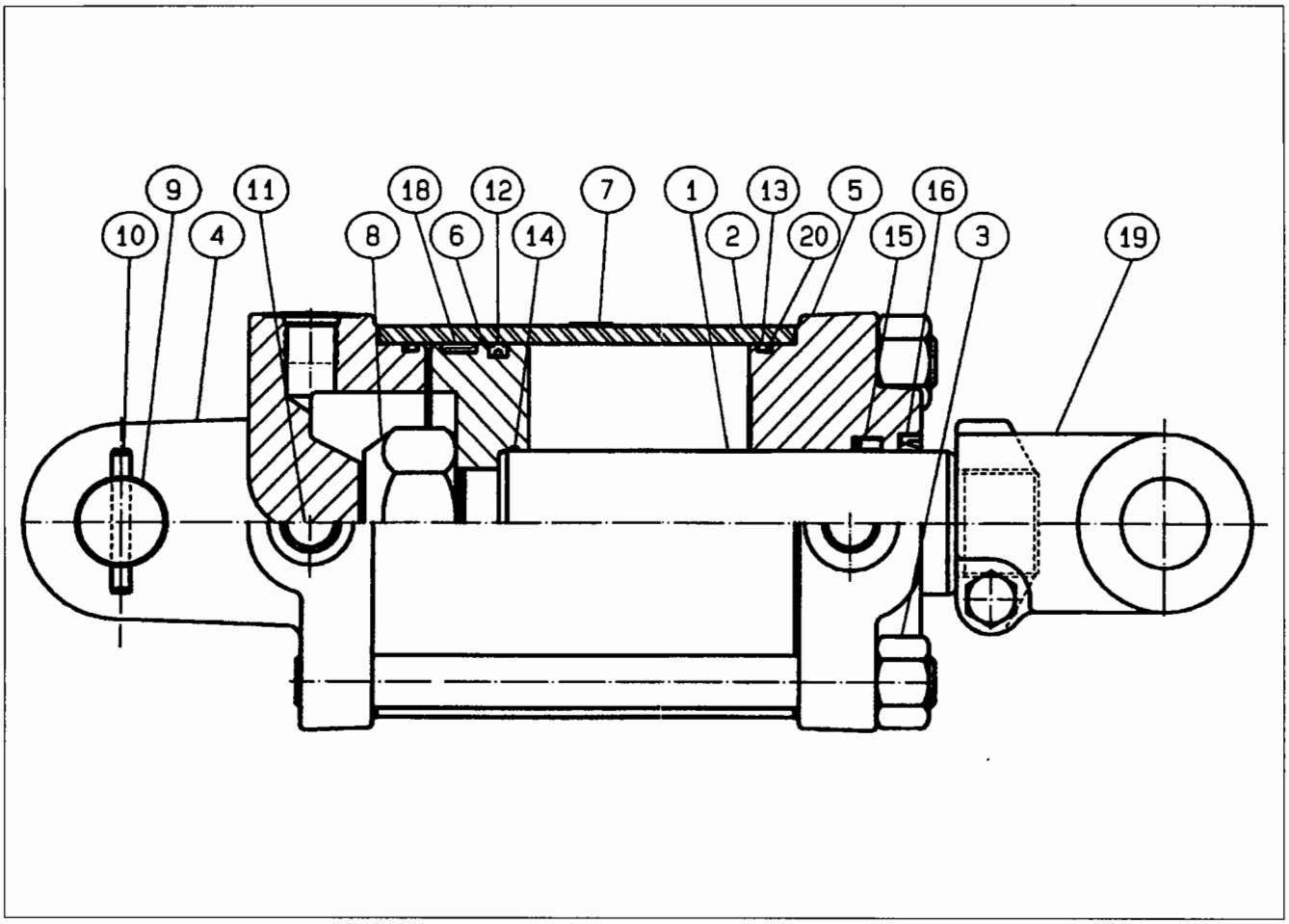



6/01

**21-1028 4" X 16" PRINCE HYDRAULIC CYLINDER ASSEMBLY (SERIES) 6/02**
**Retracted - 28-1/4" Extended - 44-1/4" Stroke - 16" Rod Diameter - 1-3/4"**

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 21-2151 | Piston Rod | 1 |
| 2 | 21-2102 | Tube Assembly | 1 |
| 3 | 21-396 | Tie Rod | 4 |
| 4 | 21-882 | Butt | 1 |
| 5 | 21-2152 | Gland Assembly | 1 |
| 6 | 21-2153 | Piston | 1 |
| 7 | 21-2154 | Clevis Assembly | 1 |
| 8 | 21-819 | Lock Nut | 1 |
| 9 | 21-702 | Port Plug | 1 |
| 10 | 21-2157 | Bushing (included in Item 7) | 2 |
| 11 | 21-404 | Port Plug | 3 |
| 12 | 21-2156 | Bushing (included in Item 5) | 1 |
| 13 | 21-296 | Clevis Pin | 2 |
| 14 | | 3/16" DIA. x 1-3/4" Cotter Pin | 4 |
| 15 | ★ | Bearing Ring | 2 |
| 16 | ★ | O-Ring | 1 |
| 17 | ★ | O-Ring | 1 |
| 18 | ★ | O-Ring | 2 |
| 19 | ★ | Back-Up Washer | 2 |
| 20 | ★ | Teflon Seal | 1 |
| 21 | ★ | U-Cup | 1 |
| 22 | ★ | Wiper | 1 |
| 23 | | | |
| 24 | | | |
| 25 | 74-113 | Cylinder Warning Decal | 1 |
| | 21-2142 | Seal Kit ( ★ Items Included in Kit) | |

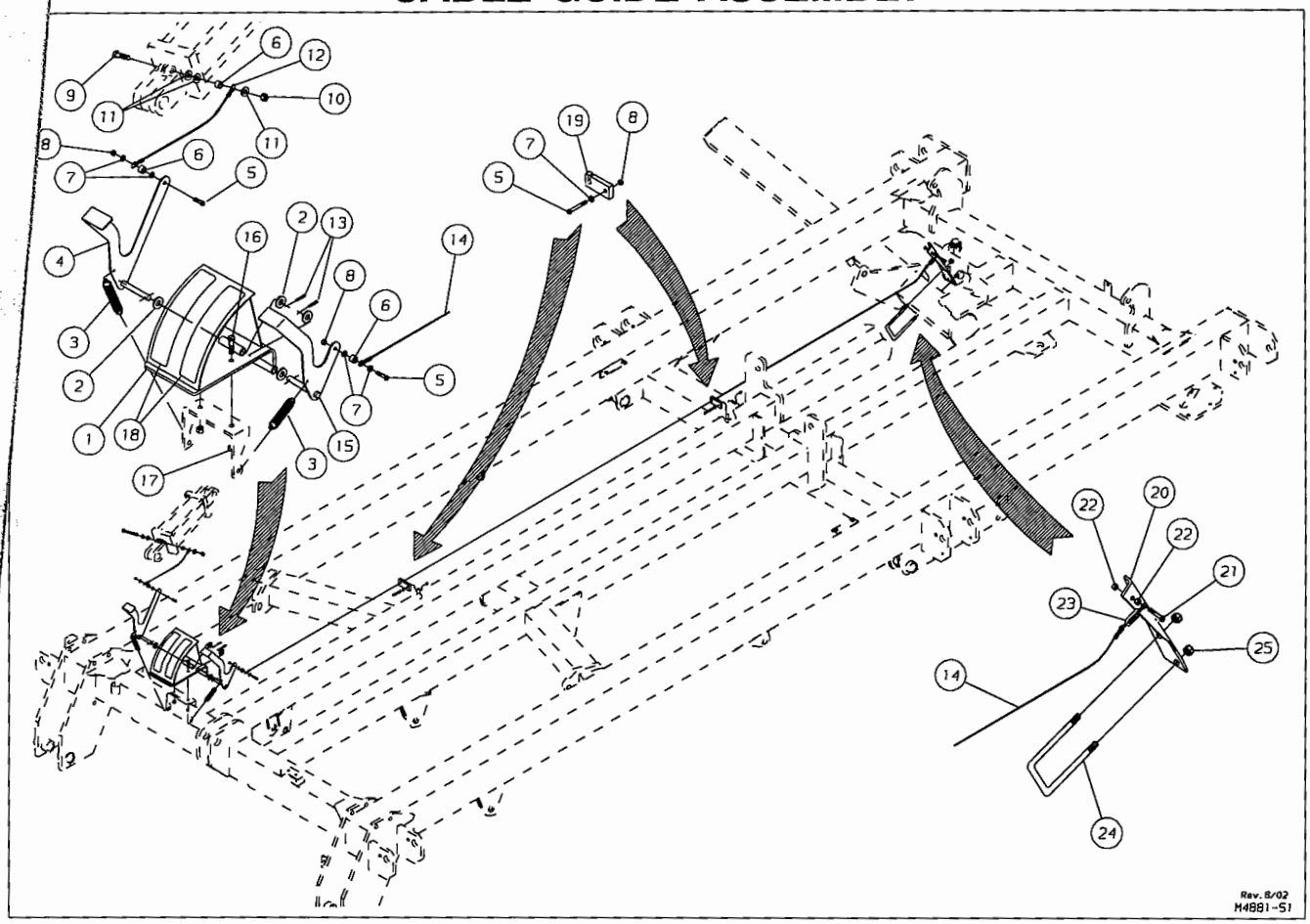
# PRINCE HYDRAULIC CYLINDER




**21-189 5" X 32" PRINCE HYDRAULIC CYLINDER ASSEMBLY** **6/02**
**Retracted - 43-3/4" Stroke - 32" Extended - 75-3/4" Rod Diameter - 2"**

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 21-917 | Piston Rod | 1 |
| 2 | 21-918 | Tube | 1 |
| 3 | 21-919 | Tie Rod Assembly | 4 |
| 4 | 21-868 | Butt | 1 |
| 5 | 21-869 | Gland | 1 |
| 6 | 21-870 | Piston | 1 |
| 7 | 74-113 | Cylinder Warning Decal | 1 |
| 8 | 21-871 | Lock Nut | 1 |
| 9 | 21-872 | Clevis Pin | 2 |
| 10 | | 1/4" DIA. x 2" Roll Pin | 4 |
| 11 | 21-404 | Port Plug | 3 |
| 12 | ★ | Crown Seal | 1 |
| 13 | ★ | O-Ring | 2 |
| 14 | ★ | O-Ring | 1 |
| 15 | ★ | U-Cup | 1 |
| 16 | ★ | Wiper | 1 |
| 17 | | | |
| 18 | ★ | Bearing Ring | 1 |
| 19 | 21-507 | Clevis Assembly | 1 |
| 20 | ★ | Back-Up Washer | 2 |
| | | | |
| | • 21-858 | Seal Kit ( ★ Items Included in Kit) | |
| • Not Included in Cylinder Assembly | | | |

# CABLE GUIDE ASSEMBLY

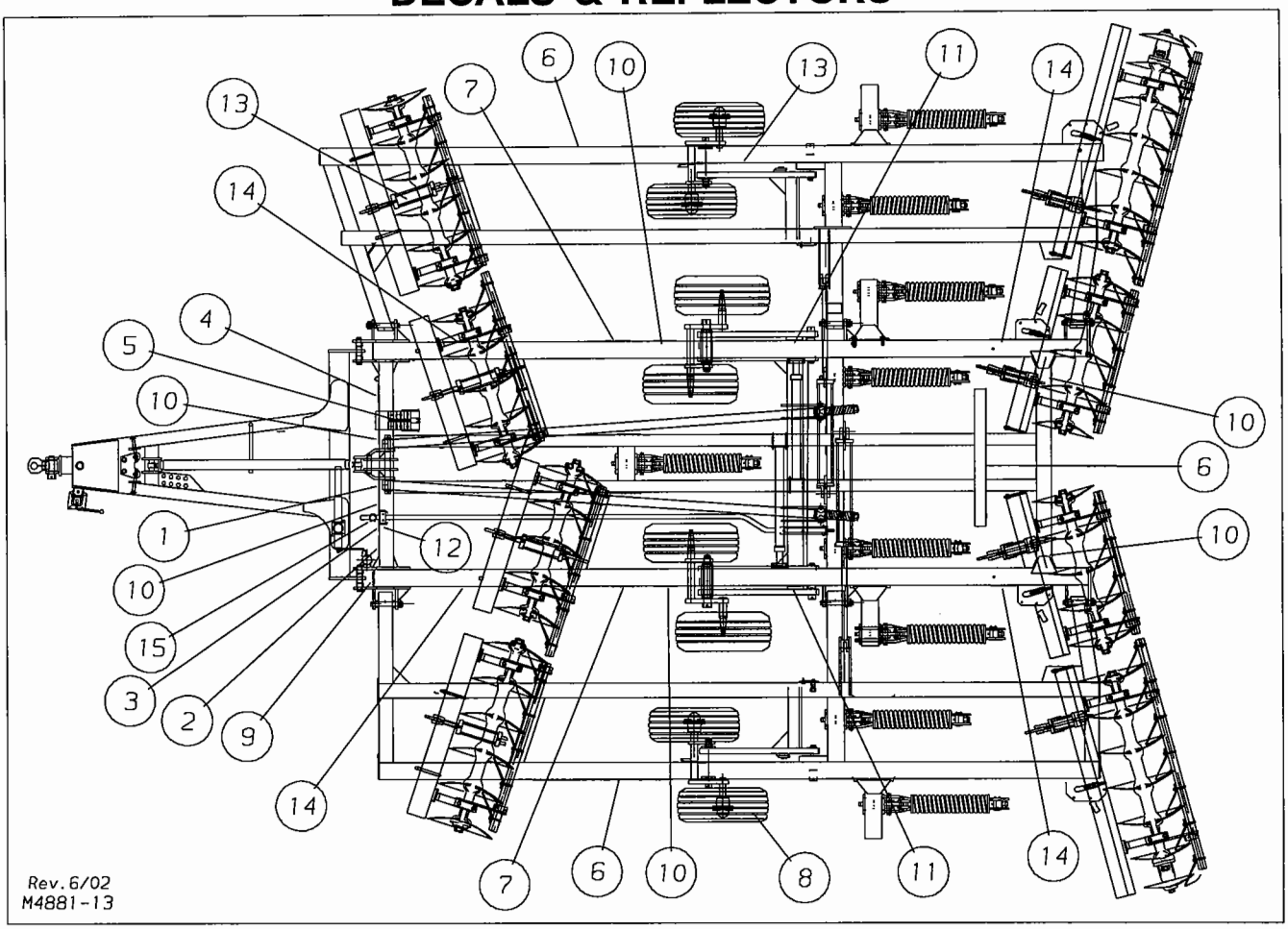



## FOR MODELS - TL3000 5, 7, 9 SHANK w/ HYDRAULIC DISC GANGS

8/20/02

| *Item* | *Part Number* | *Part Description* | *Qty.* |
|---|---|---|---|
| 1 | 4881-5051-0 | Gauge Weldment | 1 |
| 2 | 64-162 | 1/2" SAE Flat Washer | 4 |
| 3 | 76-198 | Spring | 2 |
| 4 | 4881-5053-0 | Left Gauge Pivot Weldment | 1 |
| 5 | 62-422 | 1/4NC x 1-1/4" GD5 Cap Screw | 4 |
| 6 | 4881-0000-7 | Cable Spacer | 3 |
| 7 | 64-101 | 1/4" STD. Flat Washer | 6 |
| 8 | 63-164 | 1/4NC Lock Nut | 4 |
| 9 | 62-120 | 3/8NC x 3" GD5 Cap Screw | 1 |
| 10 | 63-103 | 3/8NC Lock Nut | 1 |
| 11 | 64-104 | 3/8" STD. Flat Washer | 3 |
| 12 | 72-133 | Cable Assembly, Front | 1 |
| 13 | 60-602 | 3/16" DIA. x 1" Roll Pin | 2 |
| 14 | 72-134 | Cable Assembly, Rear | 1 |
| 15 | 4881-5052-0 | Right Gauge Pivot Weldment | 1 |
| 16 | 62-111 | 3/8NC x 1-1/2" GD5 Cap Screw | 2 |
| 17 | 63-134 | 3/8NC Nylon-Top Lock Nut | 2 |
| 18 | 74-530 | Decal, Depth Gauge | 2 |
| 19 | 4881-0000-50 | Cable Guide | 2 |
| 20 | 4881-0000-18 | Lever Arm | 1 |
| 21 | 62-459 | 5/16NC x 1-1/2" GD5 Cap Screw | 1 |
| 22 | 63-167 | 5/16NC Lock Nut | 2 |
| 23 | 70-217 | Turnbuckle Assembly | 1 |
| 24 | 61-263 | U-Bolt, 1/2" DIA. x 4.06W x 7.25L | 1 |
| 25 | 63-107 | 1/2NC Lock Nut | 2 |

# DECALS & REFLECTORS

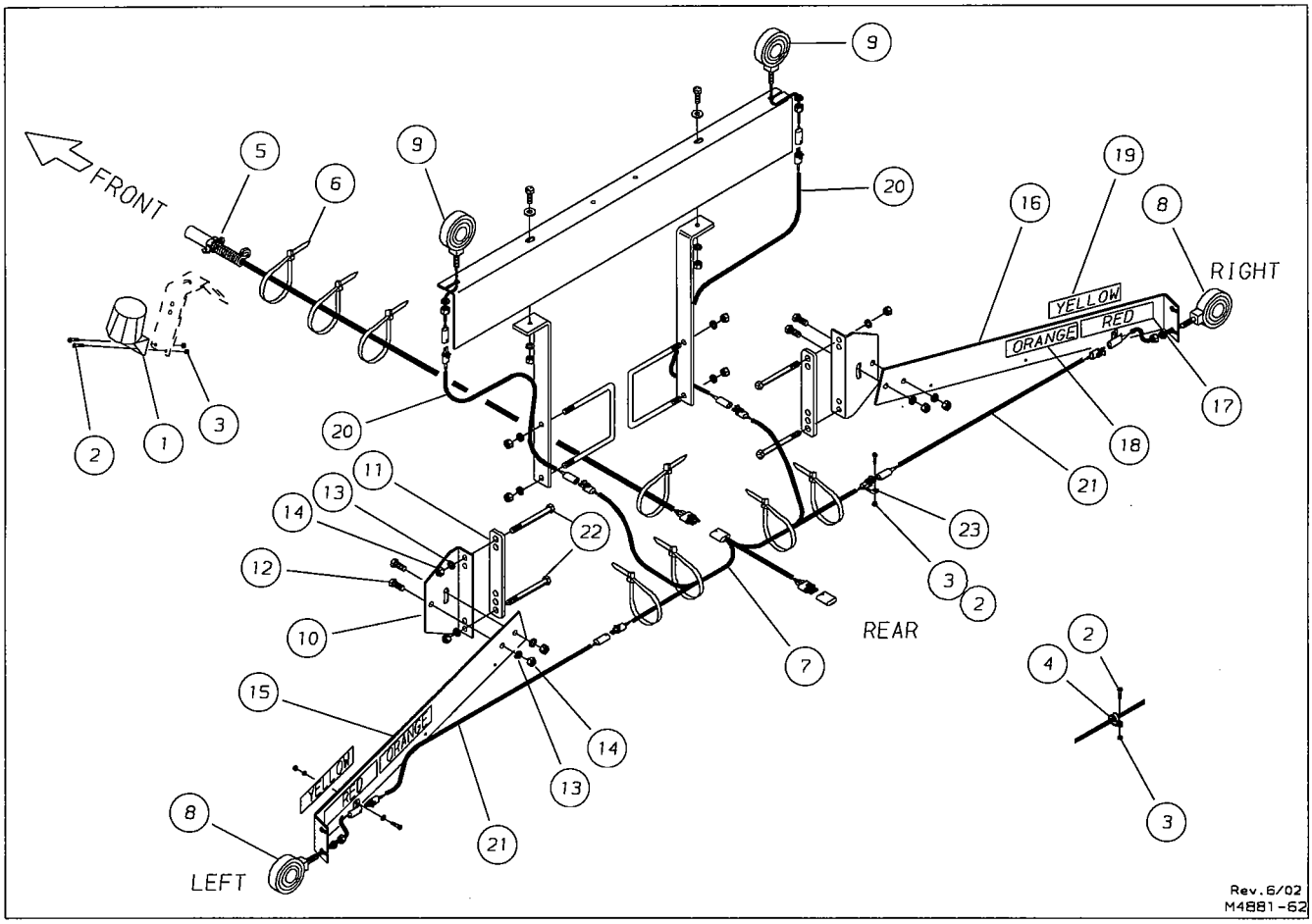



**FOR MODELS - ALL** 6/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 74-276 | Decal, Warning High Pressure | 1 |
| 2 | 74-570 | Decal, Warning Universal | 1 |
| 3 | 74-465 | Decal, Transport Lock | 1 |
| 4 | 74-604 | Decal, TL 3000 | 1 |
| 5 | 74-530 | Decal, Depth | 2 |
| 6 | 74-602 | Decal, KRAUSE | 3 |
| 7 | 74-606 | Decal, Trademark | 2 |
| 8 | 74-109 | Decal, Notice Tighten Wheel Bolts | 4/6/8 |
| 9 | 74-121 | Decal, Warning Transport Width-Height | 1 |
| 10 | 74-102 | Decal, Warning Stand Clear | 6 |
| 11 | 74-387 | Decal, Notice Maintenance Lock | 2 |
| 12 | 74-571 | Decal, Transport Lock Wing (Rt) | 1 |
| | 74-572 | Decal, Transport Lock Wing (Lt) | 1 |
| | 74-573 | Decal, Transport Lock Wheel (Rt) | 1 |
| | 74-574 | Decal, Transport Lock Wheel (Lt) | 1 |
| 13 | 74-113 | Decal, Purge Cylinders | 6/14 |
| 14 | 74-577 | Amber Reflective Tape 2 x 9 | 6 |
| 15 | 74-489 | Decal, Depth Setting | 1 |

**NOTE: Additional Reflective Decals are part of light kit**

# LIGHT KIT ASSEMBLY




**FOR MODELS - ALL** 6/02

| Item | Part Number | Part Description | Qty. |
|---|---|---|---|
| 1 | 79-397 | Plug Receptacle | 1 |
| 2 | 62-507 | 1/4NC x 3/4" GD5 Cap Screw | 10 |
| 3 | 63-164 | 1/4NC Nylon-Top Lock Nut | 10 |
| 4 | 79-297 | Loom Clamp | 6 |
| 5 | 79-553 | Wire Harness, Tractor - 36' | 1 |
| 6 | 25-126 | Stay Strap | 8 |
| 7 | 79-546 | Center Harness | 1 |
| 8 | 79-394 | Amber Light Assembly | 2 |
| 9 | 79-395 | Red Light Assembly | 2 |
| 10 | 4881-0000-9 | Light Mount Bracket | 2 |
| 11 | 4800-170-3 | Strap | 2 |
| 12 | 62-420 | 1/2NC x 1-1/4" GD5 Cap Screw | 4 |
| 13 | 64-107 | 1/2" STD. Lock Washer | 8 |
| 14 | 63-106 | 1/2NC Hex Nut | 8 |
| 15 | 4881-9173-0 | Left Light Bracket Assembly (Includes Items 16-18 Tape Decals) | 1 |
| 16 | 4881-9174-0 | Right Light Bracket Assembly (Includes Items 16-18 Tape Decals) | 1 |
| 17 | 74-575 | Red Reflective Tape 2 x 9 | 1 |
| 18 | 74-576 | Orange Reflective Tape 2 x 9 | 1 |
| 19 | 74-577 | Amber Reflective Tape 2 x 9 | 1 |
| 20 | 79-549 | Wire Harness, Extension - 2' | 2 |
| 21 | 79-551 | Wire Harness, Extension - 4' | 2 |
| 22 | ★ 62-352 | 1/2NC x 5-1/2" GD5 Cap Screw | 4 |
| | 62-162 | 1/2NC x 7-1/2" GD5 Cap screw | 4 |
| 23 | 79-552 | Wire Harness, Retaining Clip | 7 |
| 24 | 62-417 | 1NC x 1" GD5 Cap Screw | 4 |
| ★ Model 730 Rigid Unit ONLY | | | |

# ASSEMBLY SECTION

THE FOLLOWING SECTION ILLUSTRATES A GENERAL METHOD FOR THE ASSEMBLY OF THIS SERIES KRAUSE TILLAGE TOOL. YOU MUST KNOW THE MODEL NUMBER OF THE UNIT BEING ASSEMBLED WHENEVER MAKING REFERENCE TO THIS SECTION. THE FOLLOWING PICTURES AND DRAWINGS WILL SHOW BOLTS, PINS, NUTS AND ETC., WITH THE DESCRIPTIVE SIZE AND LENGTHS IN THE ACCOMPANYING PARAGRAPH AND A PARTS LISTING REFERENCE PAGE NUMBER. IF ANY DIFFICULTY SHOULD BE ENCOUNTERED DURING THE ASSEMBLY, RECHECK THE ILLUSTRATIONS, ASSEMBLY STEPS AND PARTS LIST DRAWINGS.

# PROPER BOLT USE

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

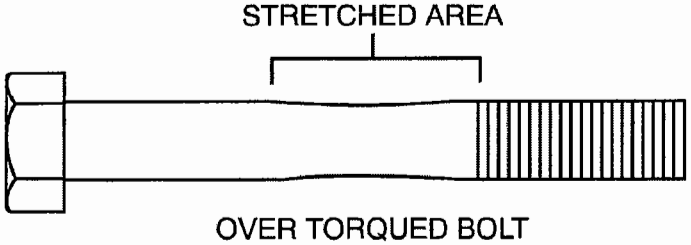
Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical grade.

Fasteners should be replaced with the same or higher grade. If higher grade fasteners are used, these should only be tightened to the strength of the original.

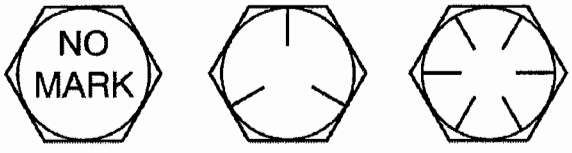
Tighten plastic insert or crimped steel-type lock nuts to approximately 110 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

*NOTE: "Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.* ***Tighten lubricated bolts to approximately 80% of dry bolts.***

| BOLT SIZE | WRENCH SIZE | BLACK OR PLATED BOLTS | | |
|---|---|---|---|---|
| | | GRADE 2 | GRADE 5 | GRADE 8 |
| 3/8" | 9/16" | 20 | 33 | 45 |
| 7/16" | 5/8" | 32 | 52 | 70 |
| 1/2" | 3/4" | 50 | 80 | 105 |
| 5/8" | 15/16" | 100 | 150 | 210 |
| 3/4" | 1-1/8" | 160 | 260 | 375 |
| 7/8" | 1-5/16" | 175 | 415 | 600 |
| 1" | 1-1/2" | 250 | 625 | 880 |
| 1-1/8" | 1-11/16" | 375 | 850 | 1400 |
| 1-1/4" | 1-7/8" | 530 | 1100 | 1765 |
| 1-1/2" | 2-1/4" | 930 | 1400 | 2540 |




OVER TORQUED BOLT




SAE GRADE 2

SAE GRADE 5

SAE GRADE 8

KRAUSE

# ASSEMBLY INSTRUCTIONS

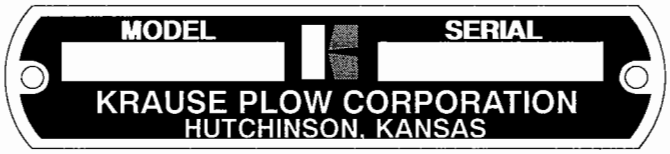
Shown here one method of assembly that can be accomplished with a small crew of assemblers. Each step of assembly is accompanied with a picture or shown by the parts illustration with the part names and bolt sizes listed.

**Warning: Always attach chains securely. If a chain would break, the recoil action could cause the loose end to whip in any direction and injure any person nearby.**

**Proof load rating of chain must equal or exceed 5 times the weight being lifted.**

THE HEAVIEST COMPONENT TO BE LIFTED INTO PLACE IS THE LARGE CENTER FRAME WHICH WEIGHS 3,200 LBS.

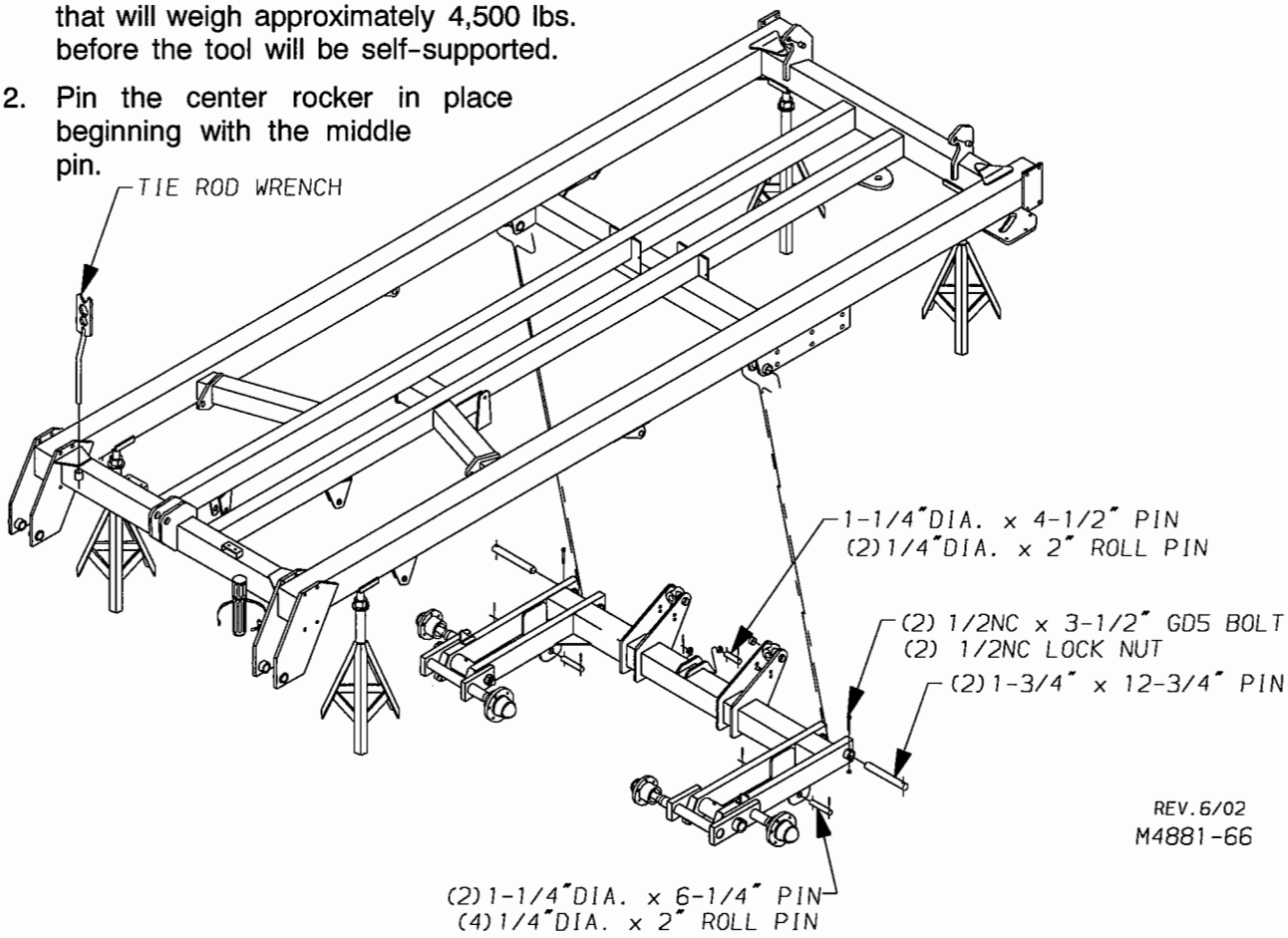
## MODEL NUMBERS

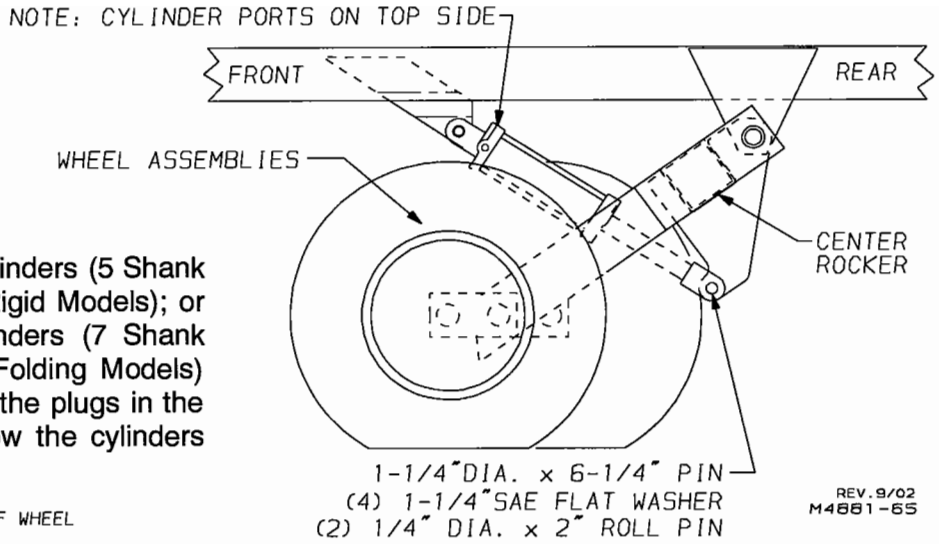



Know the model number of the field cultivator being assembled. Use the Model number whenever referring to the assembly, parts pages, or the placement pages. The number is stamped on the NAME PLATE located on the front frame member.

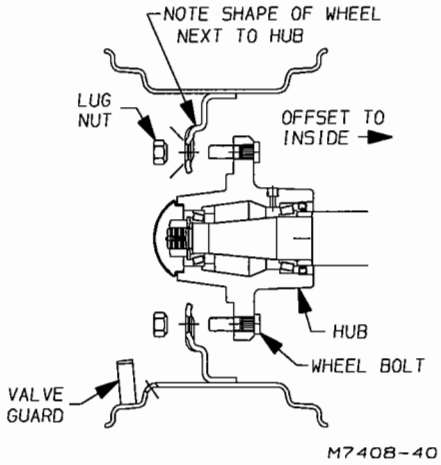
## I. CENTER FRAME & ROCKER ASSEMBLY

1. Place the center frame assembly on stands approximately 36" high in the center of the assembly area in a direction that will permit future hitching to a tractor. NOTE: The stands will be required to support the assembly that will weigh approximately 4,500 lbs. before the tool will be self-supported.
2. Pin the center rocker in place beginning with the middle pin.





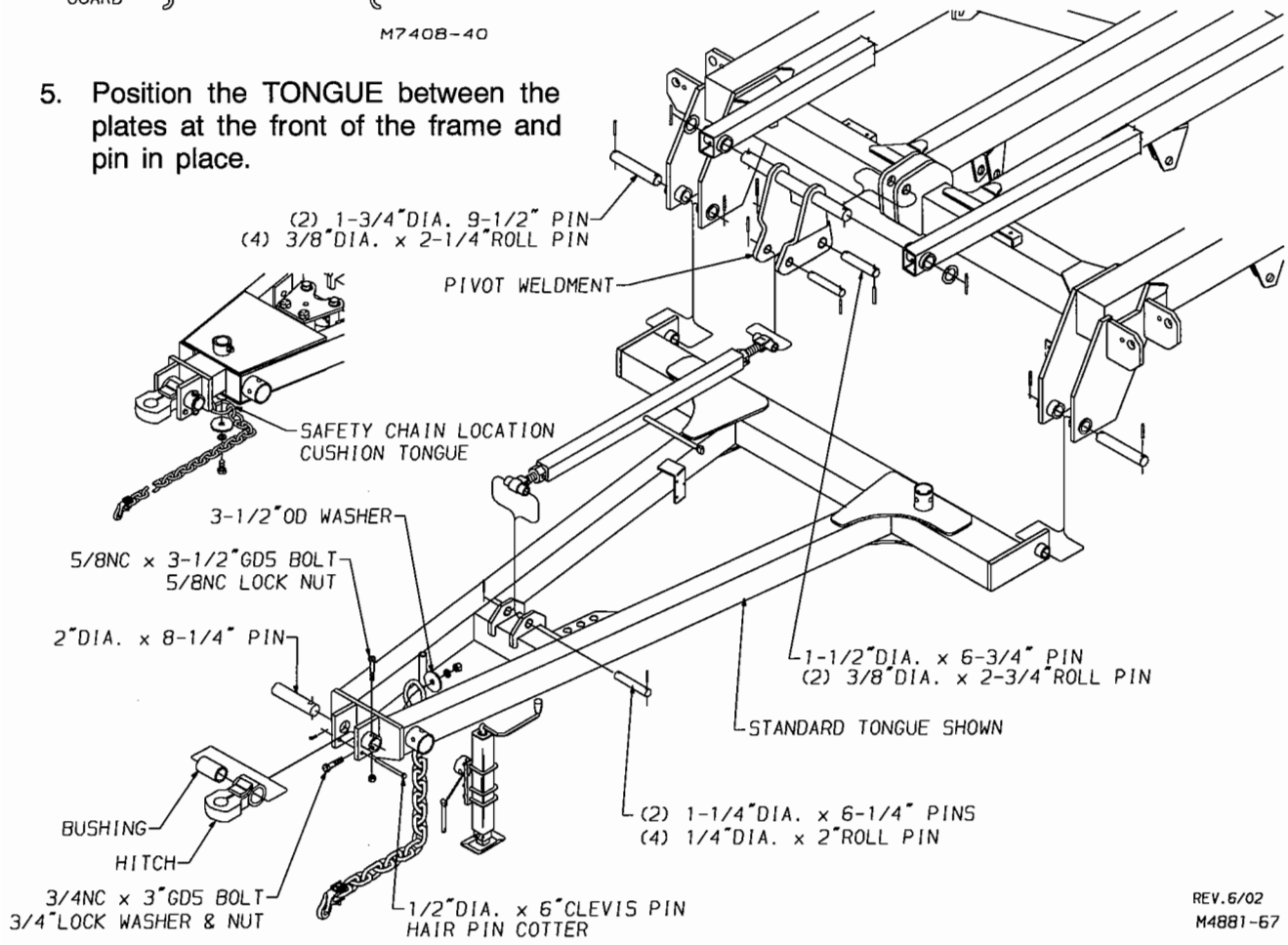

3. Pin the (2) 4 x 16 Cylinders (5 Shank Rigid and 7 Shank Rigid Models); or (2) 4-1/2 x 16 Cylinders (7 Shank Folding & 9 Shank Folding Models) to the lugs. Loosen the plugs in the cylinder ports to allow the cylinders to be extended.




4. Assemble (4) Tire and Wheel Assemblies to the rocker shaft wheel arms. 5 Shank Rigid and 7 Shank Rigid use 12.5L x 15, 12 Ply Tires on 6-Bolt Rims. 7 Shank Folding Model uses 12.5L x 15 FI Tires on 8-Bolt Rims. 9 Shank Folding Model uses 16.5L x 16 FI Tires on 8-Bolt Rims.

| **Check Tire Inflation:** | **Wheel Bolt Torque Values:** |
|---|---|
| 12.5L x 15, 12-Ply = 52 PSI | 6-BOLT = 120 Ft. / Lbs. |
| 12.5L x 15, FI = 90 PSI | 8-BOLT = 145 Ft. / Lbs. |
| 16.5L x 16, FI - 60 PSI | |

5. Position the TONGUE between the plates at the front of the frame and pin in place.

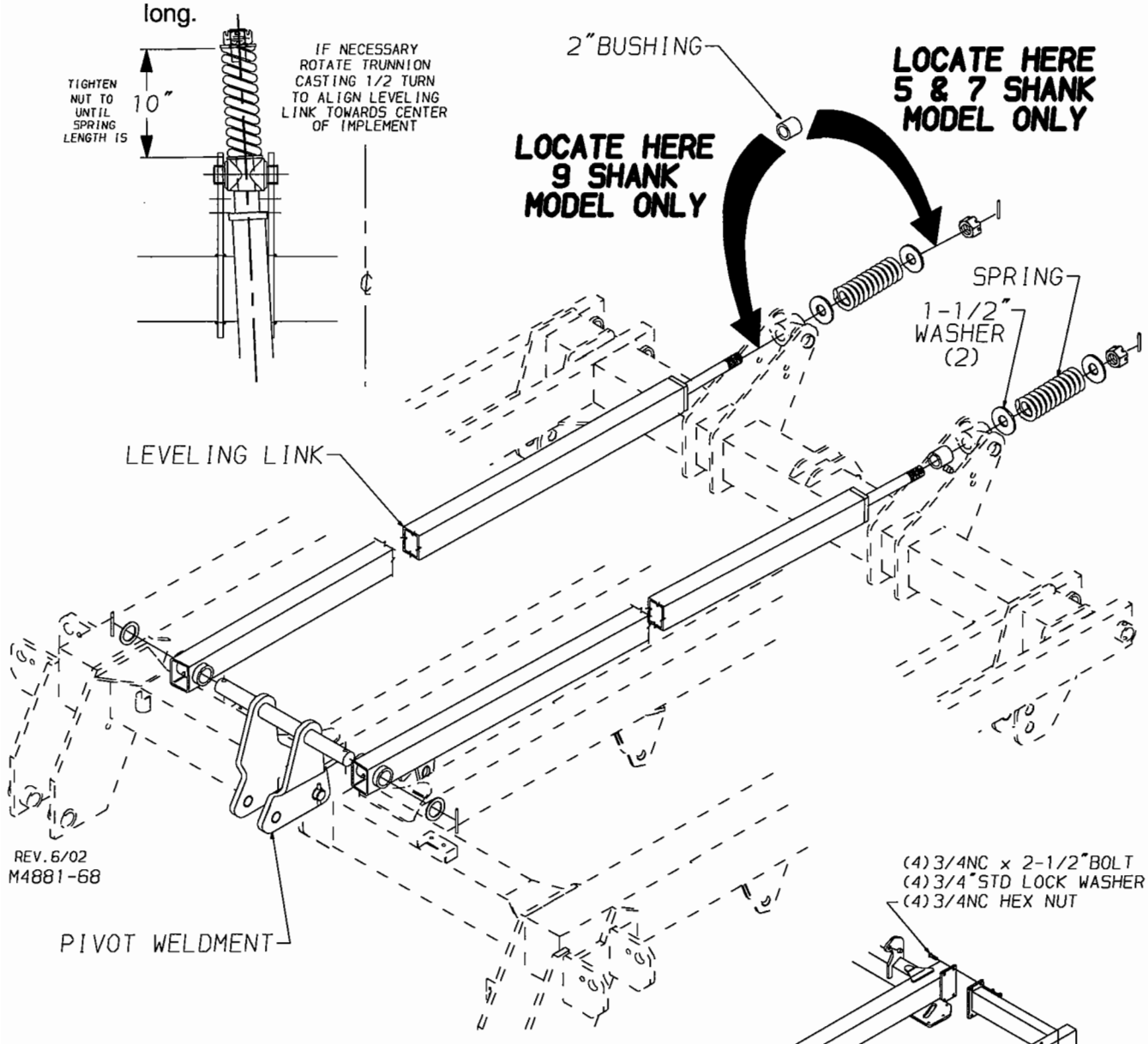


6. 5 Shank Rigid and 7 Shank Rigid Models: Install (2) LEVELING LINKS through trunnions on rocker shaft. Trunnion must be rotated to angle the Leveling Link towards the center.

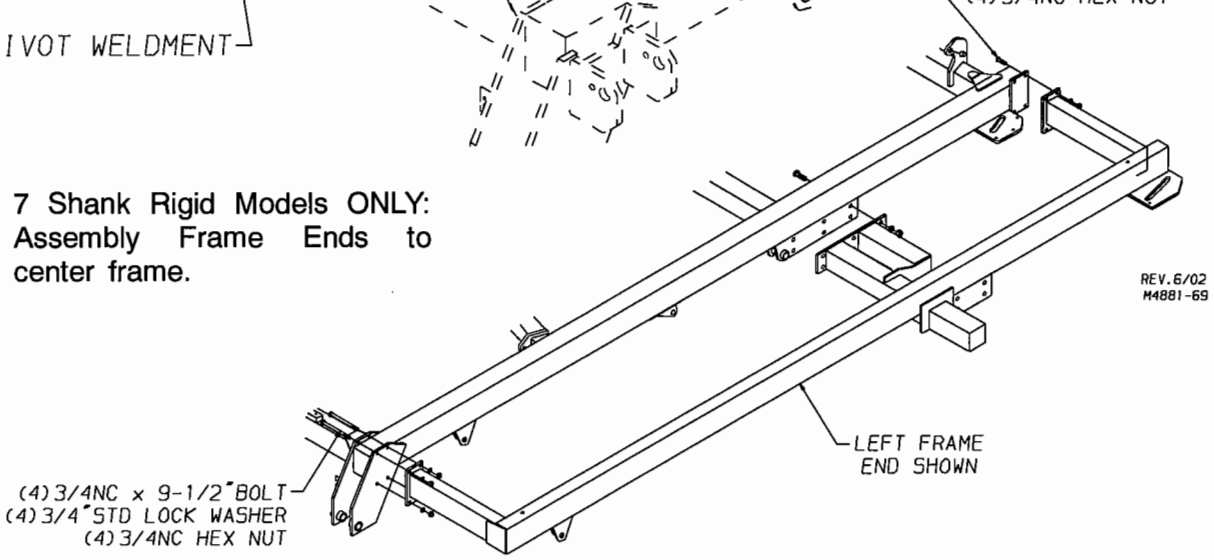
   9 Shank Models: Place 2" BUSHING on the Leveling Link BEFORE installing through the trunnion.

   A.) Place leveling links over ends of pivot weldment, retain with 2" Machine Bushings and 1/2" DIA. x 2-1/2" Roll Pins.

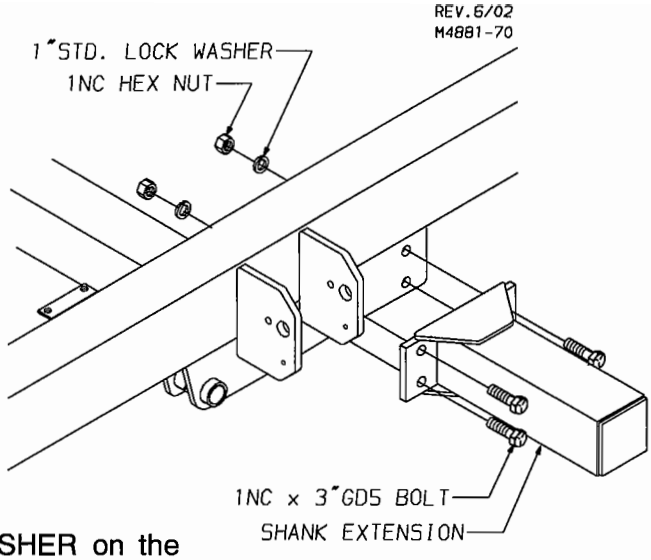
   B.) Assemble spring, washers, and slotted nut to leveling link. Tighten nut until spring is 10" long.




7. 7 Shank Rigid Models ONLY: Assembly Frame Ends to center frame.



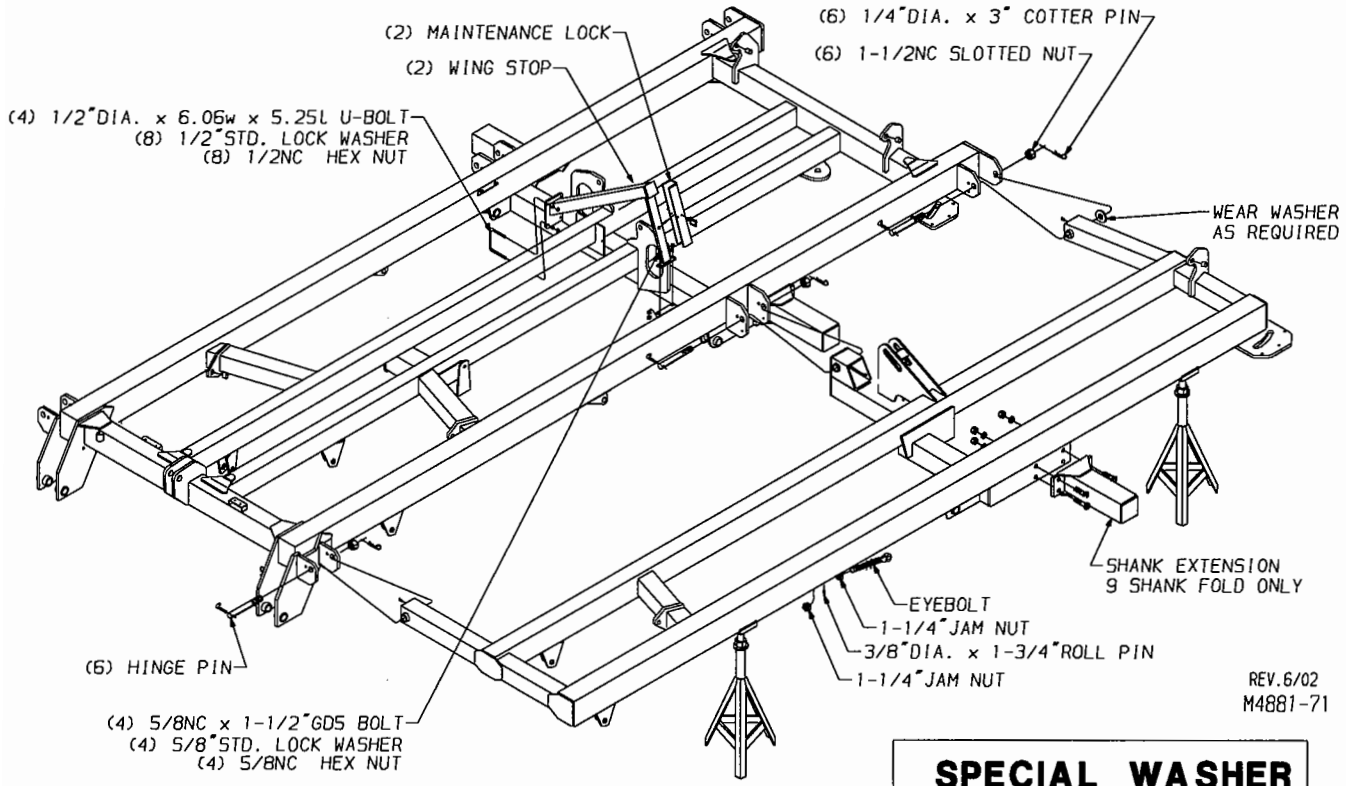
8. <u>5 Shank Rigid, 7 Shank Folding & 9 Shank Folding Models</u>:
   Bolt (2) Shank Extensions to the center frame as shown.




# II. WING ASSEMBLY

1. 7F & 9F MODEL WING FRAME ASSEMBLY

   A.) Bolt WING FRAMES to Center Frame with (6) Hinge Bolts. Slide Wing Frame rearward and check thrust contact at each hinge. Insert a WEAR WASHER on the thrust side, if clearance allows it.

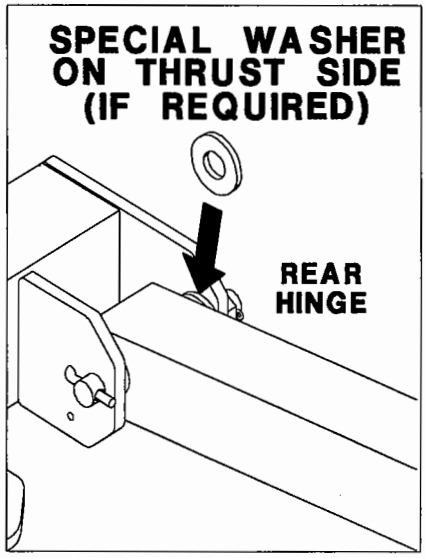



   B.) Push the pin and lock through the hinge and special washer until the lock is firmly engaged in the hinge clevis hole.

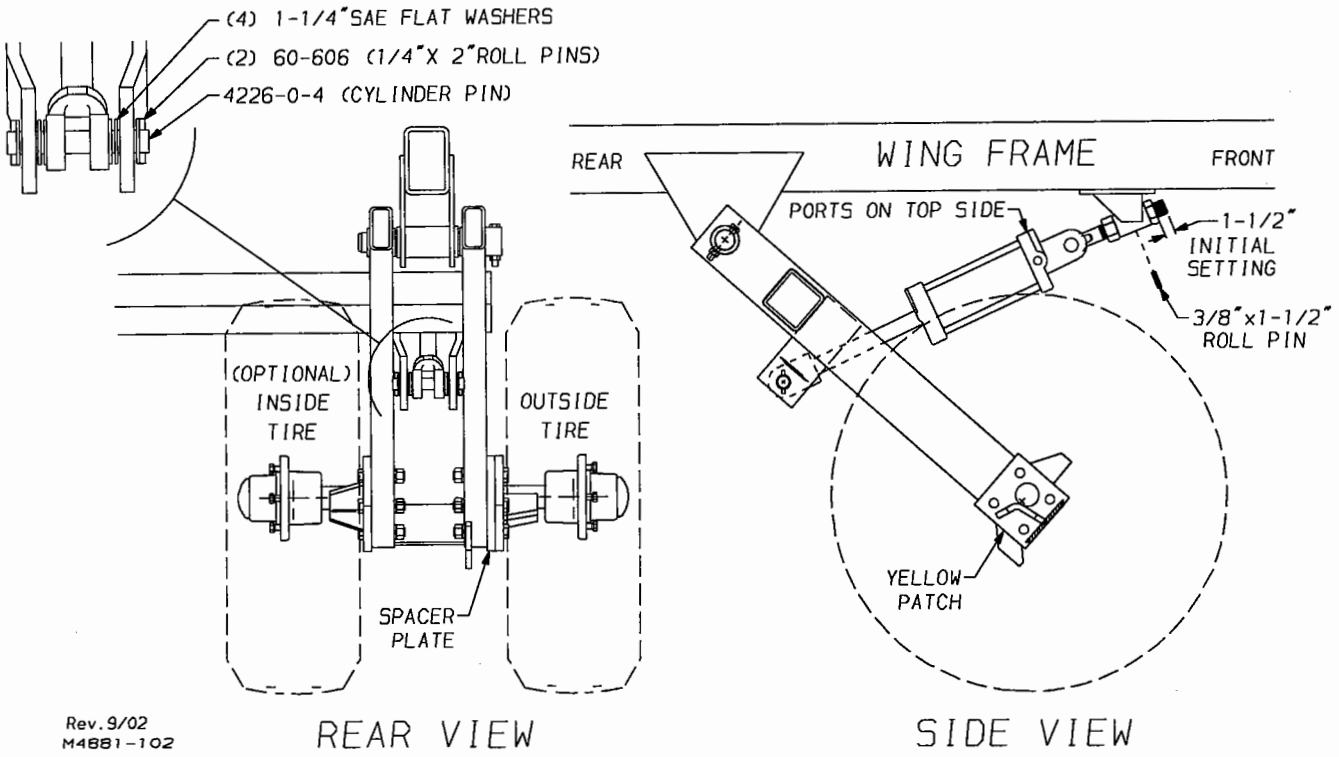
   C.) Secure the hinge pins with 1-1/2NC Slotted Hex Nuts. After tightening the slotted nut, turn the nut back until a slot in the nut is in alignment with the hole in the hinge pin for the 1/4"DIA. x 3" Cotter Pin.

   D.) Install (2) WING STOPS using 1/2" DIA. U-Bolts and 5/8NC x 1-1/2" GD5 Cap Screws.

   E.) Install WING ROCKERS.



# WING ROCKER ASSEMBLY- 7 & 9 SHANK FOLDING

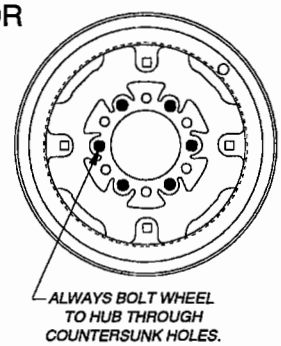


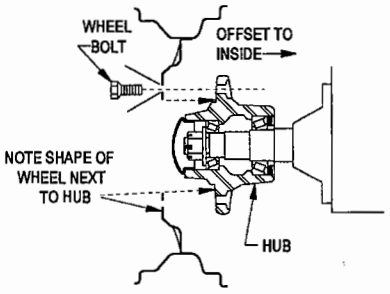

1. Fasten the wing rocker adjustment Eyebolt to the wing frame with 1-1/4NC Hex JAM Nuts. Lock in place with a 3/8" x 1-3/4" Roll Pin. For initial setting there should be 1-1/2" of thread showing.
2. Assemble a 4" x 16" Cylinder to each wing rocker with a (4226-0-4) 1" DIA. x 6-3/8" Pin in the rod end. There are (8) 1" SAE FLat Washers required, (3) on each side of the rod end clevis and (1) on the outside of each rocker lug.
3. Single / Dual Wheels -- Attach the wheel hub assembly to to the wheel arms using 3/4NC x 4" GD5 Bolts, Lock Washers and Hex Nuts.

   Be sure that the yellow patch on the spindle plate is positioned on the bottom.
4. Attach the wing wheels to the wing wheel arms. Torque the wheel bolts to 120 Ft. Lbs.

   IMPORTANT: CHECK THE HUBS FOR EXCESSIVE END PLAY. IF NECESSARY, ADJUST THE WHEEL HUB AT THIS TIME IN ASSEMBLY.

   DO NOT ALLOW DIRT AND DUST TO ENTER THE HUBS. DIRT IN THE HUBS MAY RESULT IN BEARING FAILURE DURING OPERATION.

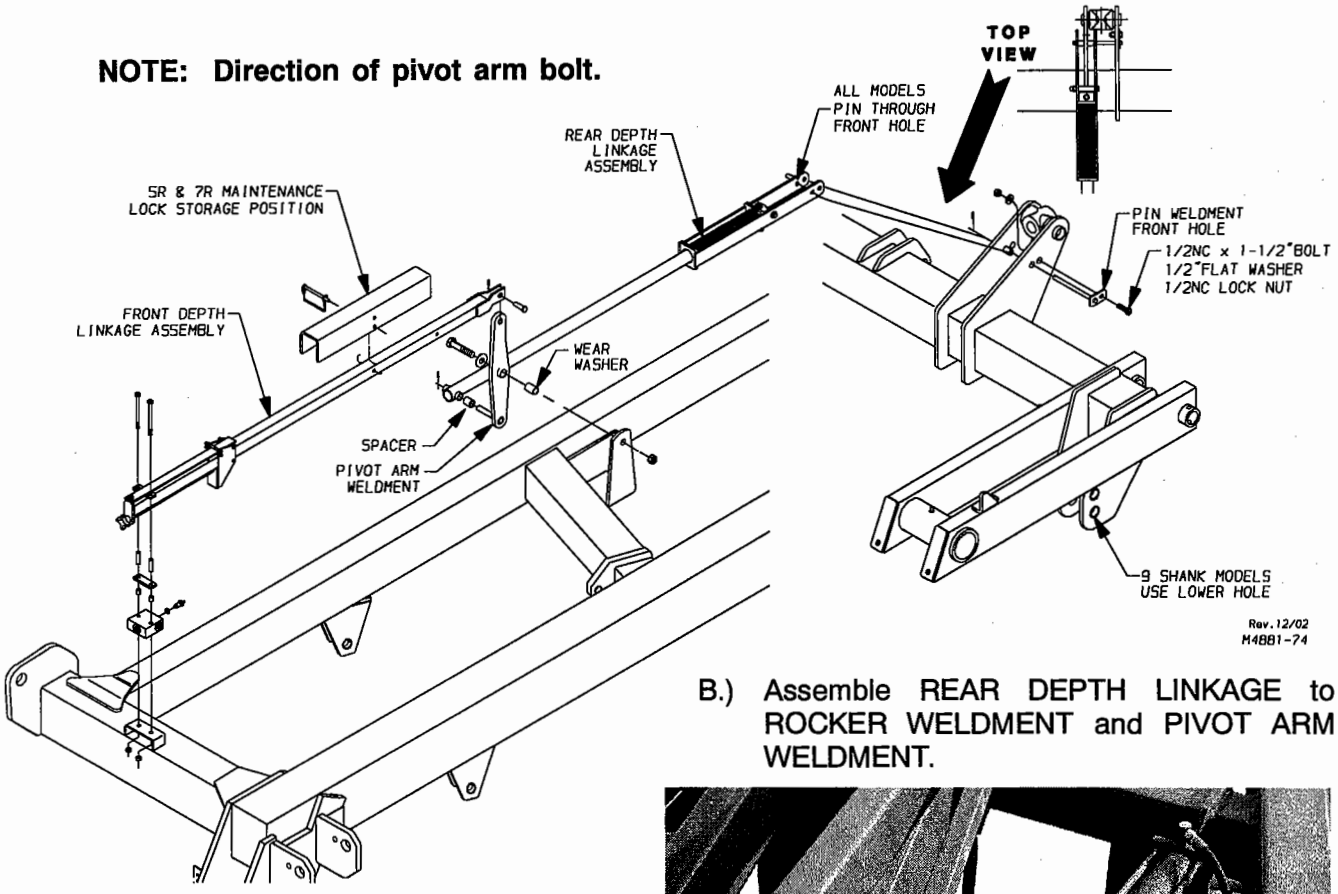


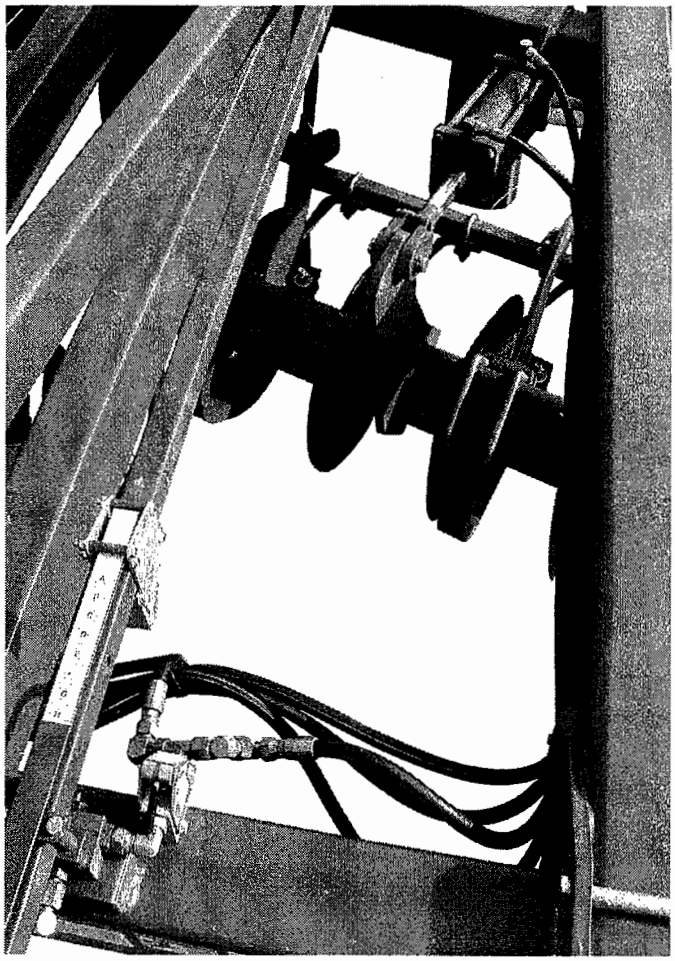

5. DEPTH CONTROL ASSEMBLY

   A.) Bolt PIVOT ARM WELDMENT to frame with 3/4NC x 3-1/2" GD5 Cap Screw, 1" O.D. x .76" I.D. x 1.19" Long Wear Sleeve, 3/4" STD.. Flat Washer, 3/4" STD. Lock Washer and 3/4NC Hex Nut.

**NOTE: Direction of pivot arm bolt.**




B.) Assemble REAR DEPTH LINKAGE to ROCKER WELDMENT and PIVOT ARM WELDMENT.

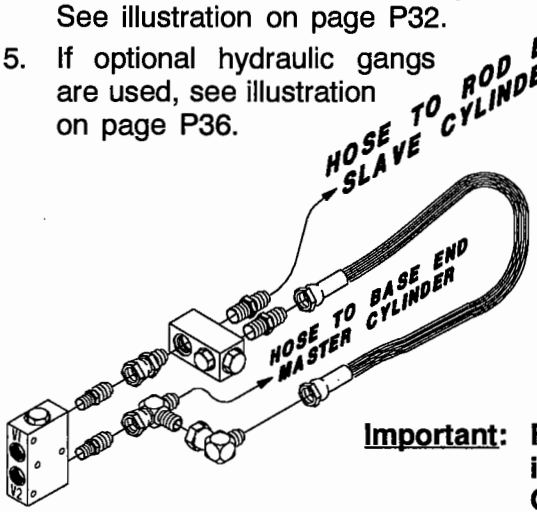


M4881-80

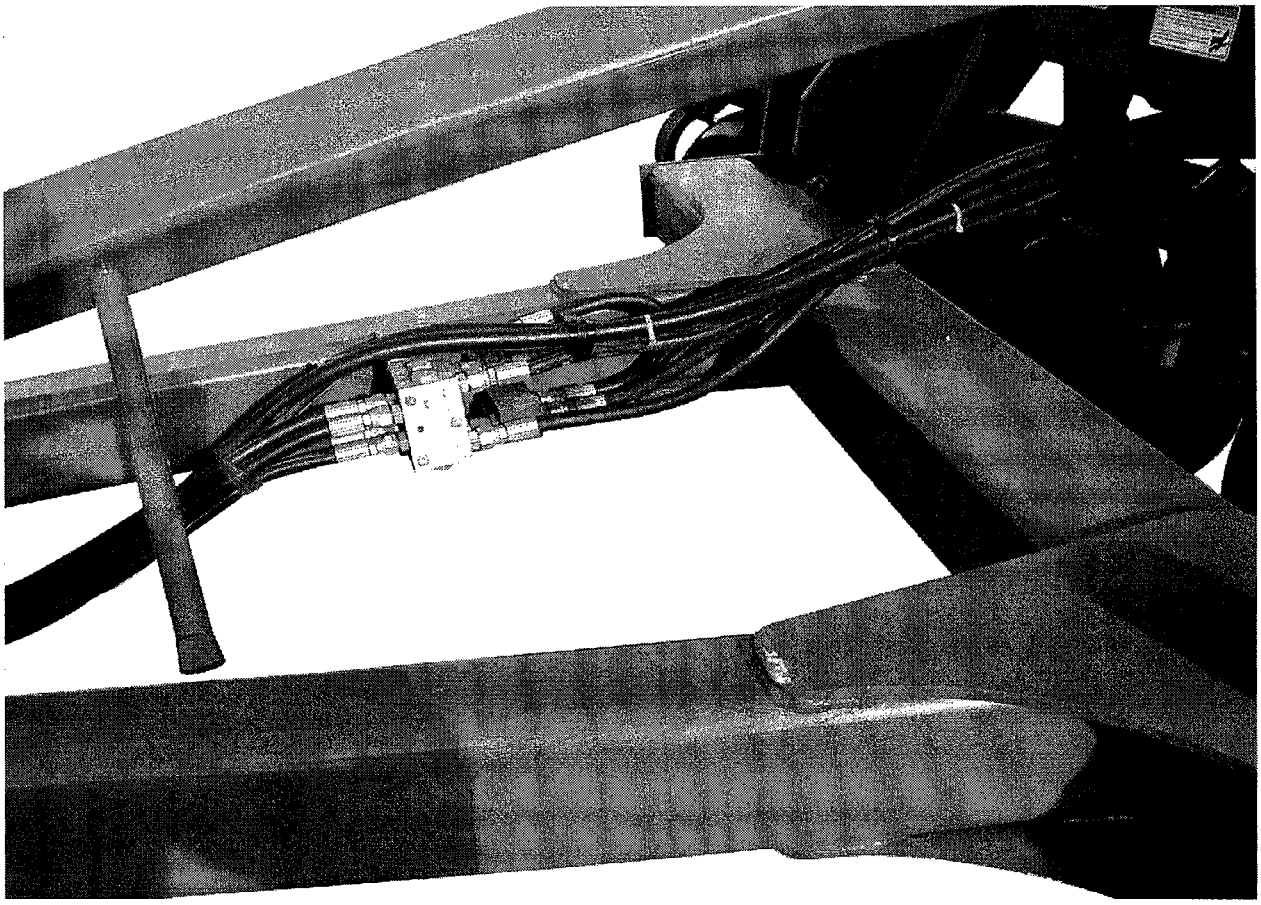
## III. HYDRAULIC ASSEMBLY

**Caution: Use only hose that meets or exceeds 3,000 PSI working pressure.**

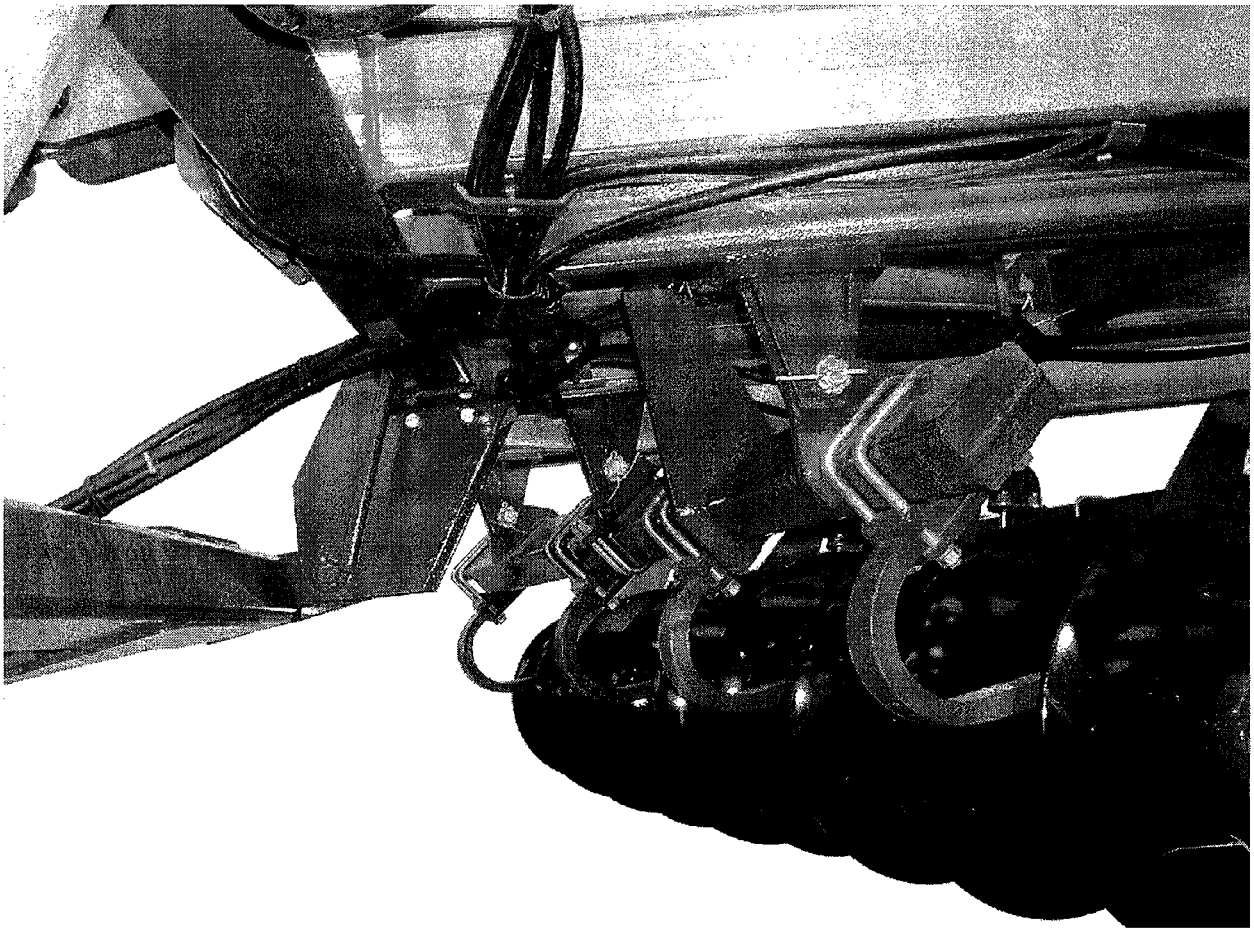
1. 5R & 7R: Install main rocker hydraulics. See illustration on page P28.
2. If optional hydraulic gangs are used, see illustration on page P34.
3. 7F & 9F: Install rocker hydraulics. See illustration on page P30.
4. 7F & 9F: Install wing fold hydraulics. See illustration on page P32.
5. If optional hydraulic gangs are used, see illustration on page P36.



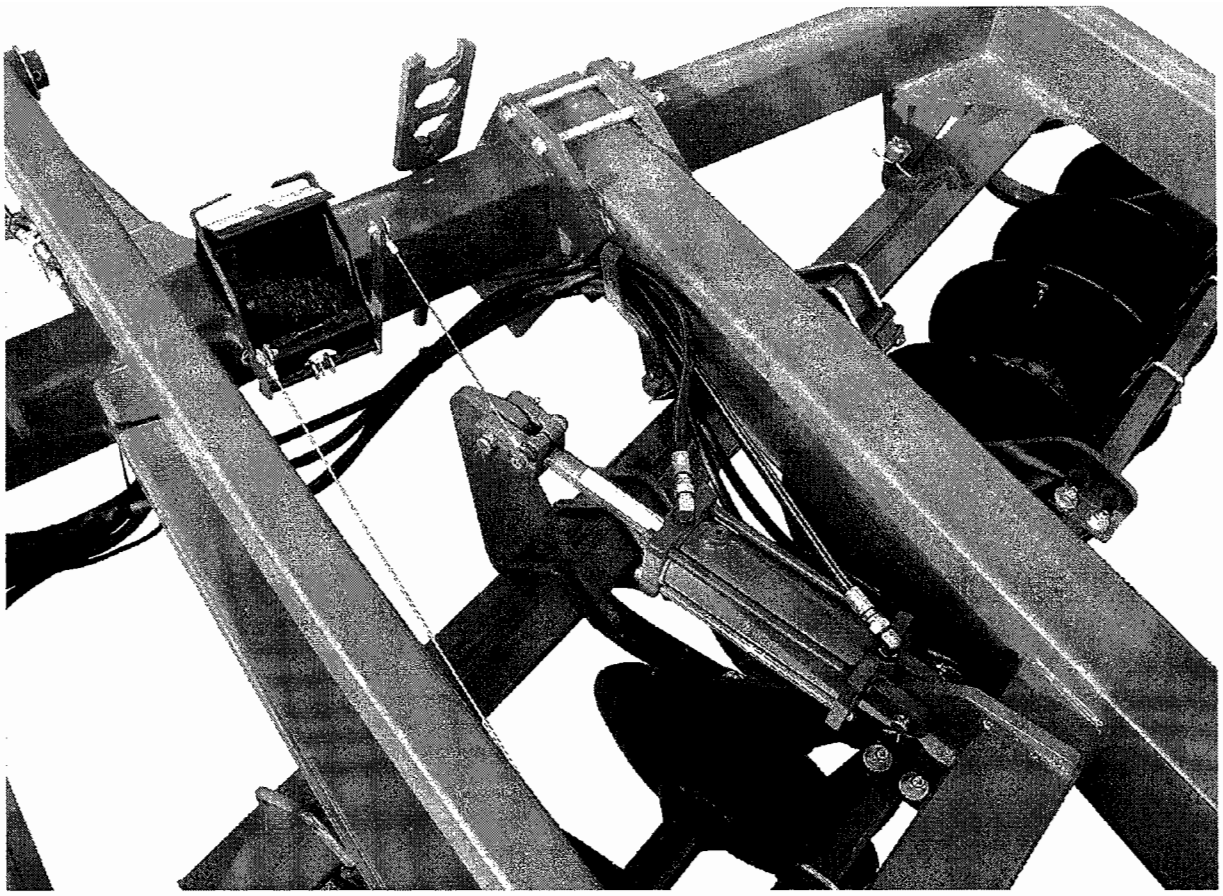

**Important: For disc gang hydraulic relief, hydraulic hoses must be installed as shown in illustration to the left. See Disc Gang Hydraulics on pages P34 & P36.**



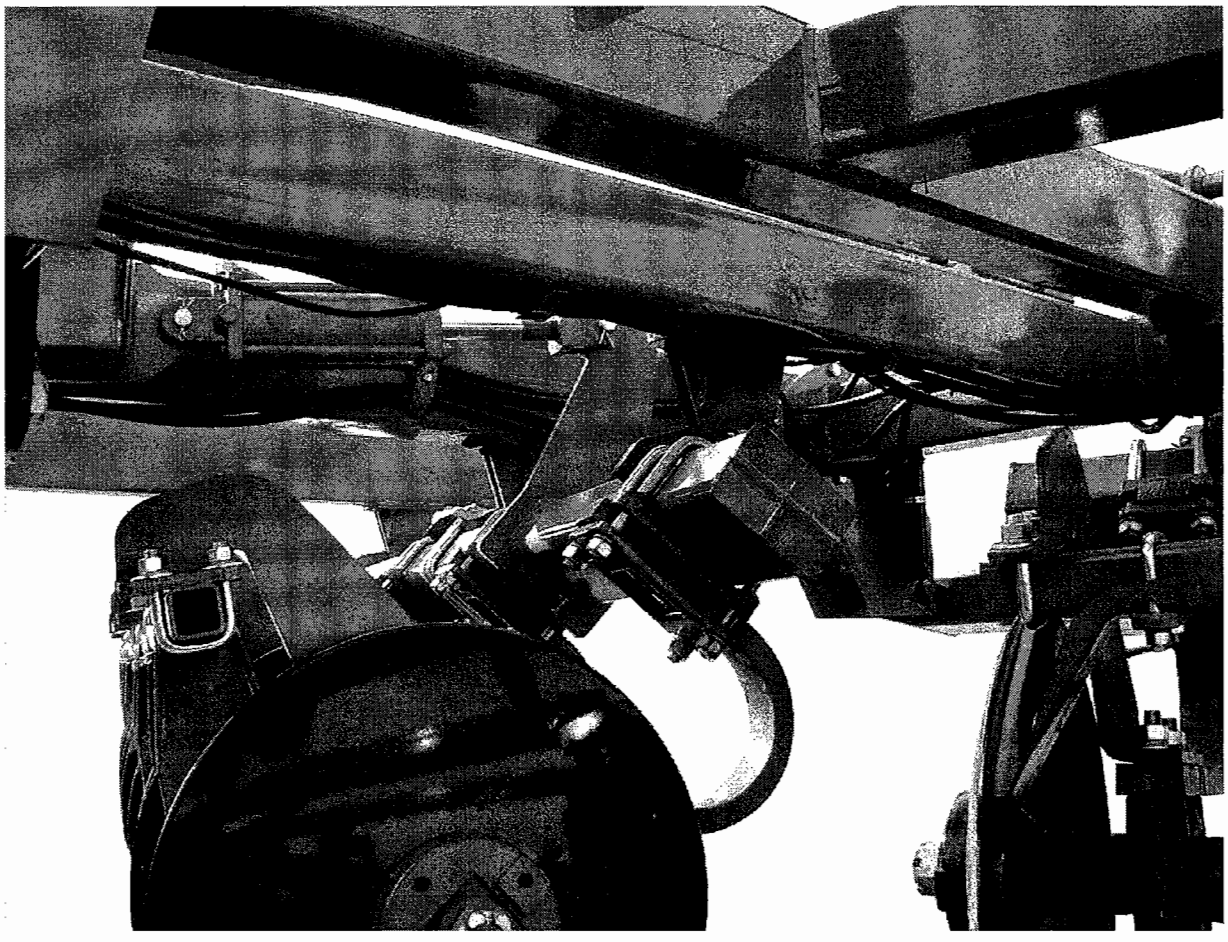
M4881-82



M4881-84



M4881-80



M4881-88

## IV. CHARGING THE CYLINDERS

1. Attach the hydraulic hoses to the tractor. Check the tractor hydraulic reservoir and make sure it is full of the tractor manufacturer's recommended oil.

**Warning: Escaping fluid under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic lines. Tighten all connections before applying pressure.**

**Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.**

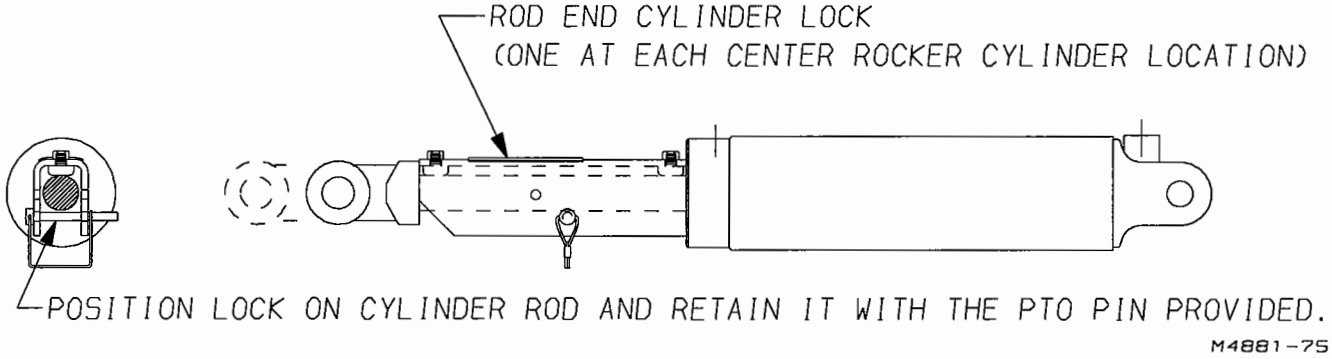
**If an accident occurs, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.**

When you are sure all connections are tight and leakproof, open the road lock valve and raise the unit. Hold the tractor lever in the raised position to fill each rocker shaft cylinder.

2. Cycle the hydraulic cylinders until all air is purged from the system. When cycling the cylinders, hold the lever for 30 to 45 seconds in the fully raised position to rephase the cylinders.

   Continue the cycles until the cylinders respond with immediate solid actuation.

3. When the cylinders are fully extended, install the cylinder locks on the center rocker cylinders.




4. Close the transport lock valve.
5. Remove the stands. The center frame should be free-standing on its own tires.

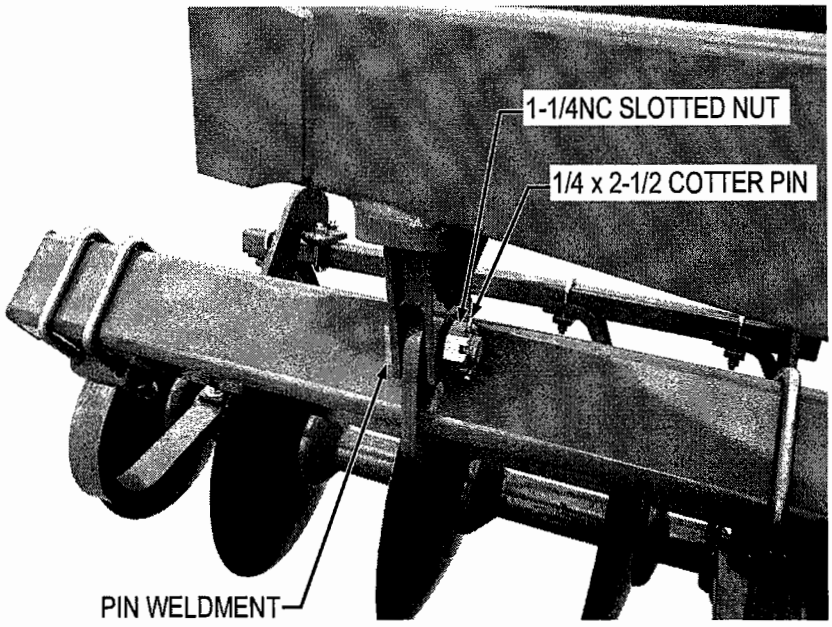
**Warning: Have all persons stand clear before removing the frame stands.**

## V. DISC GANG ASSEMBLY

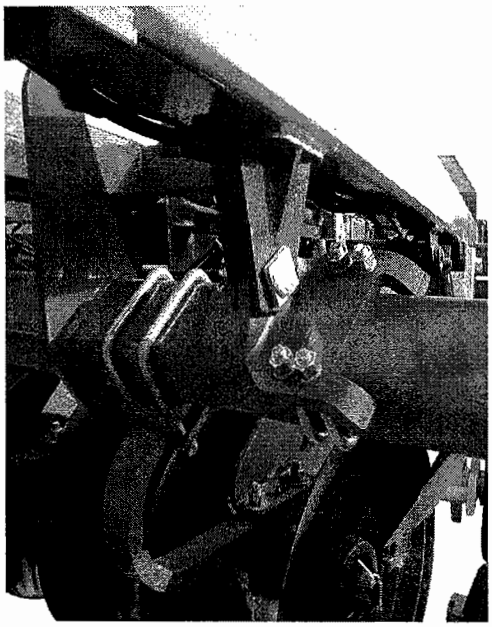
**Danger: Due to their sharpness and weight, serious injury can be inflicted by the disc blades and disc gangs if not handled safely. Keep your co-workers safety in mind. Should personal injury occur, have medical treatment administered immediately.**

1. Refer to the placement pages at the back of this manual to help select the correct location for each gang assembly.

2. Roll the FRONT Gangs under the frame with the scrapers on top and to the rear. Raise the disc gang and pin in place with Pin Weldment. Tighten Pin Weldment until slack is removed and lock nut in place with cotter pin. Install all front disc gangs in a similar fashion.



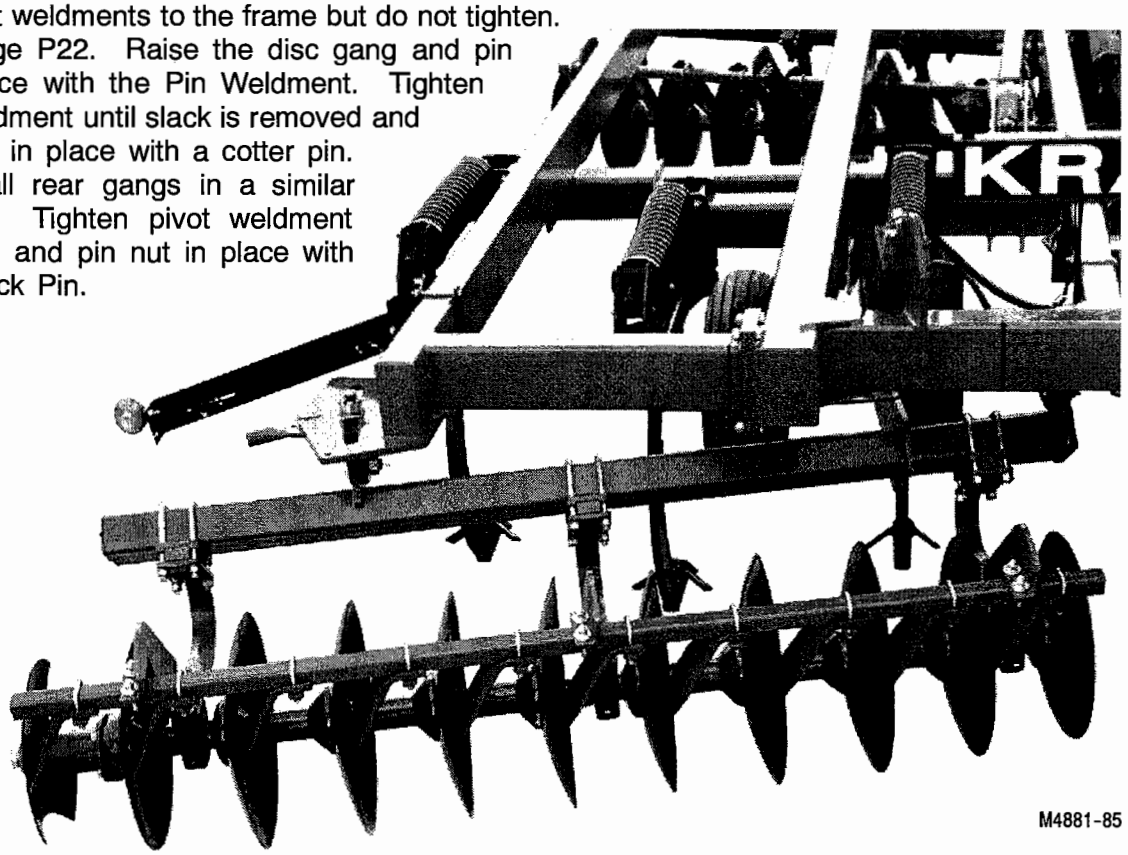

**FRONT GANGS**




**7 SHANK RIGID MODEL ONLY**

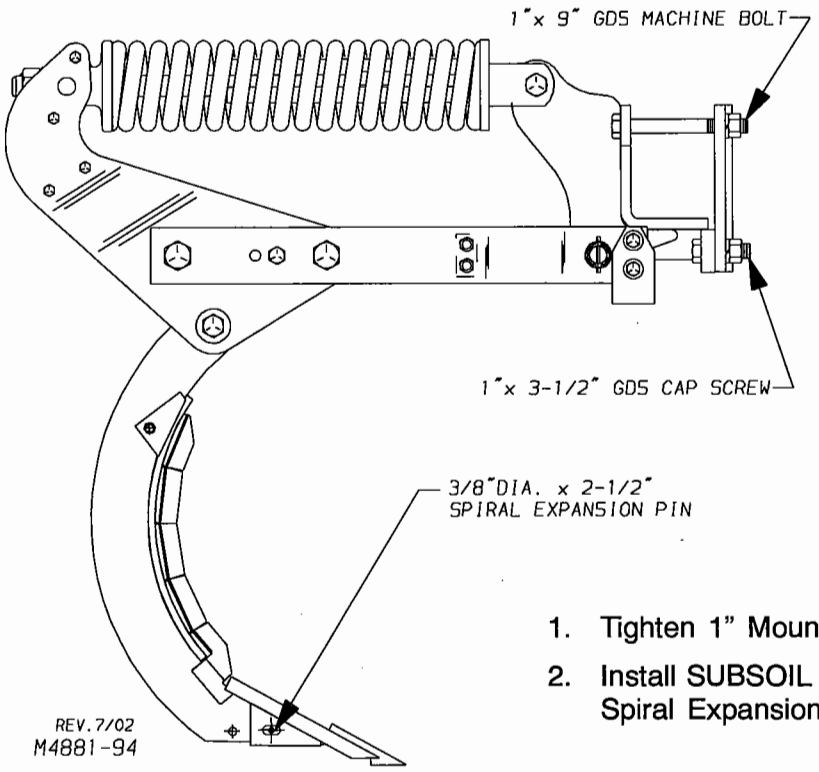
7 Shank Rigid Model: Uses a bolt-on lug at the middle pivot location as shown above.

3. Roll the REAR Gangs under the frame with the scrapers on top and to the rear. Assemble the pivot weldments to the frame but do not tighten. See page P22. Raise the disc gang and pin it in place with the Pin Weldment. Tighten Pin Weldment until slack is removed and lock nut in place with a cotter pin. Install all rear gangs in a similar fashion. Tighten pivot weldment securely and pin nut in place with PTO Lock Pin.




**REAR GANGS**

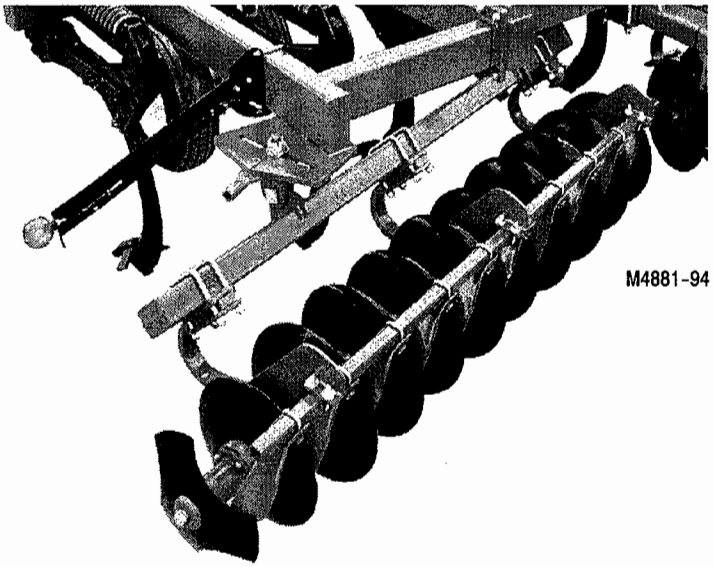
## VI. SUBSOIL SHANK ASSEMBLY



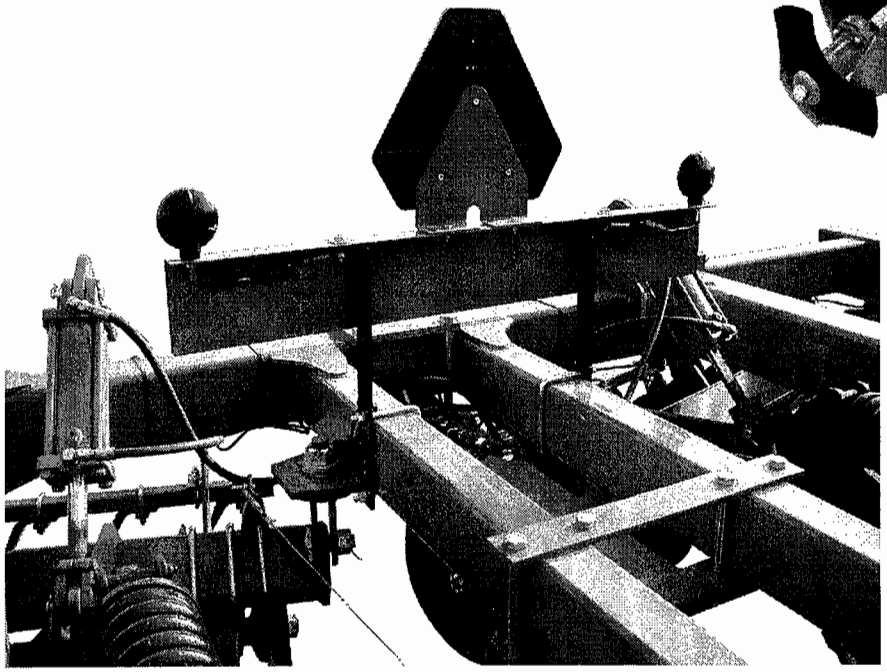

1. Tighten 1" Mounting Bolts to 625 Ft. Lbs.
2. Install SUBSOIL POINTS with 3/8"DIA x 2-1/2" Spiral Expansion Pins.

## VII. LIGHT KIT

Always comply with state and local laws pertaining to lighting. Install the light kit as shown in photos to the right and below.



M4881-94



M4881-90

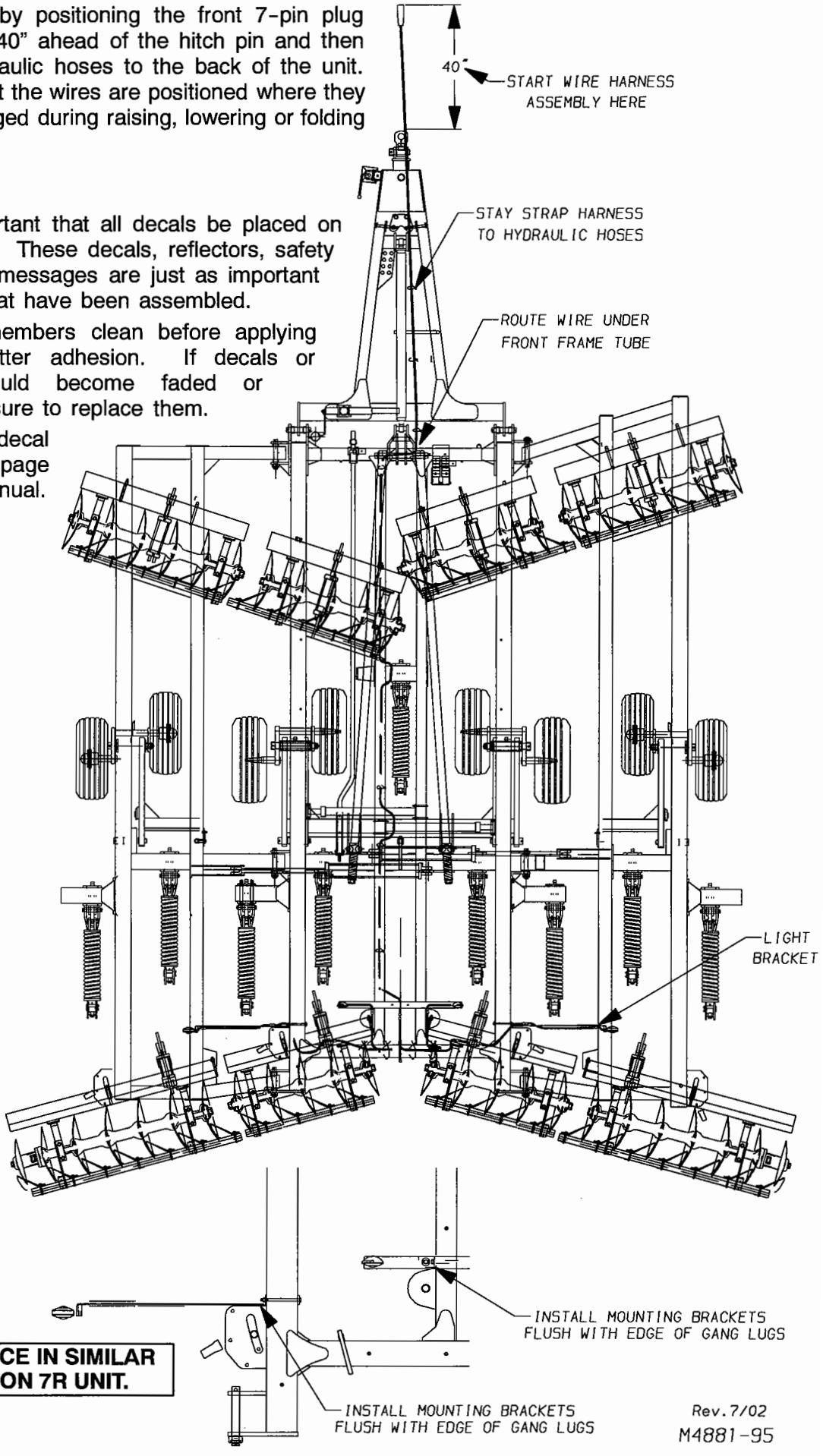
NOTE: Start by positioning the front 7-pin plug approximately 40" ahead of the hitch pin and then follow the hydraulic hoses to the back of the unit. Make sure that the wires are positioned where they won't be damaged during raising, lowering or folding of the unit.

## VIII. DECALS

It is very important that all decals be placed on the implement. These decals, reflectors, safety and operating messages are just as important as the parts that have been assembled.

Wipe frame members clean before applying decals for better adhesion. If decals or reflectors should become faded or damaged, be sure to replace them.

NOTE: See decal illustration on page P47 of this manual.




**NOTE: PLACE IN SIMILAR LOCATION ON 7R UNIT.**

# MODEL TL3000 5-SHANK

## 1-1/2" TIE RODS

| LOCATION | TIE ROD NUMBER | LENGTH |
|---|---|---|
| LEFT FRONT | 4881-0000-25 | 70-1/2" |
| RIGHT FRONT | 4881-0000-25 | 70-1/2" |
| LEFT REAR | 4881-0000-29 | 73-5/8" |
| RIGHT REAR | 4881-0000-29 | 73-5/8" |

## SCRAPER BARS

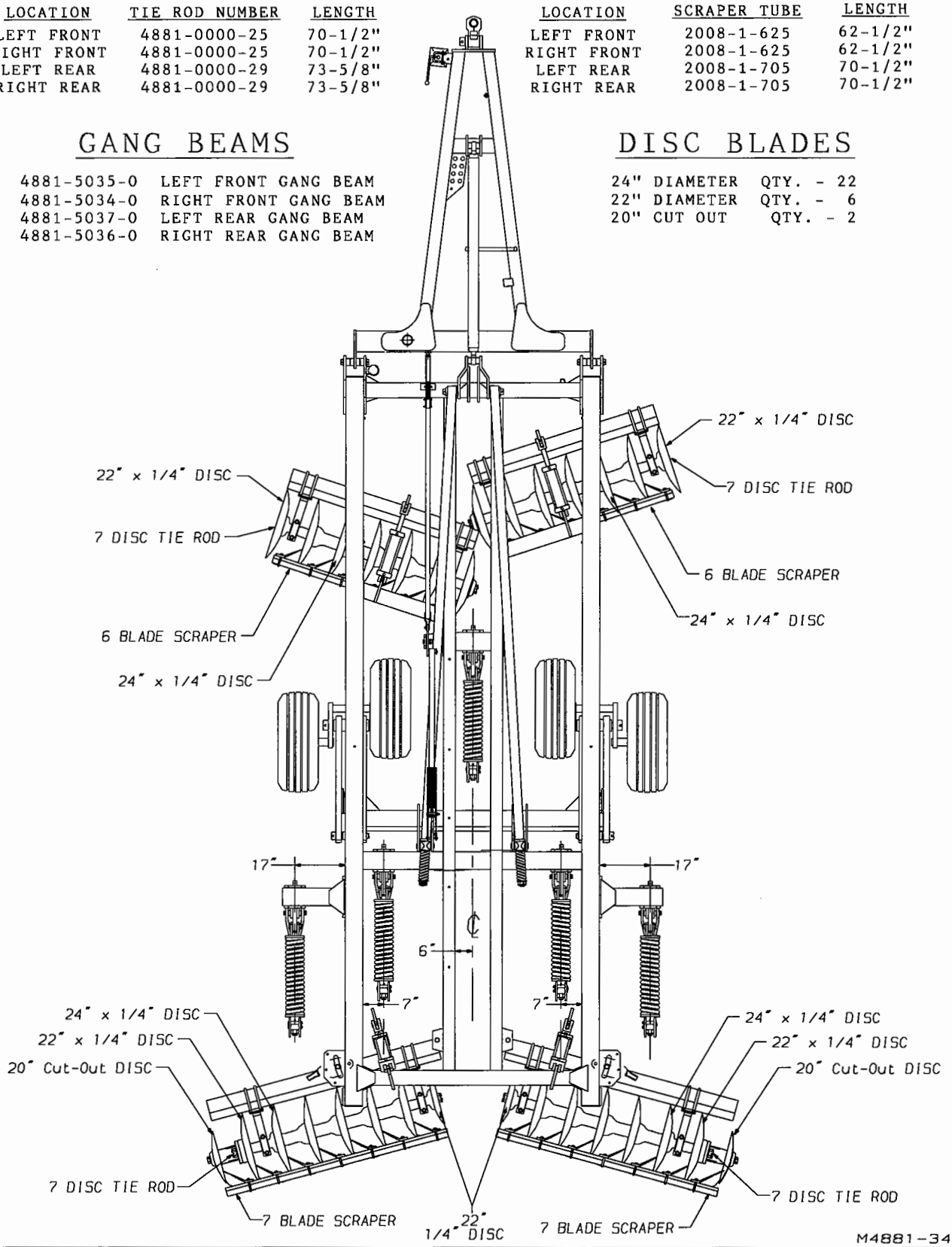
| LOCATION | SCRAPER TUBE | LENGTH |
|---|---|---|
| LEFT FRONT | 2008-1-625 | 62-1/2" |
| RIGHT FRONT | 2008-1-625 | 62-1/2" |
| LEFT REAR | 2008-1-705 | 70-1/2" |
| RIGHT REAR | 2008-1-705 | 70-1/2" |

## GANG BEAMS

4881-5035-0 LEFT FRONT GANG BEAM
4881-5034-0 RIGHT FRONT GANG BEAM
4881-5037-0 LEFT REAR GANG BEAM
4881-5036-0 RIGHT REAR GANG BEAM

## DISC BLADES

24" DIAMETER QTY. - 22
22" DIAMETER QTY. - 6
20" CUT OUT QTY. - 2



# MODEL TL3000 7R-SHANK

## 1-1/2" TIE RODS

| LOCATION | TIE ROD NUMBER | LENGTH |
|---|---|---|
| LEFT FRONT CTR | 4881-0000-27 | 59-1/2" |
| RIGHT FRONT CTR | 4881-0000-27 | 59-1/2" |
| LEFT FRONT | 4881-0000-30 | 46-3/8" |
| RIGHT FRONT | 4881-0000-30 | 46-3/8" |
| RIGHT REAR | 4881-0000-28 | 107-1/4" |
| RIGHT REAR | 4881-0000-28 | 107-1/4" |

## SCRAPER BARS

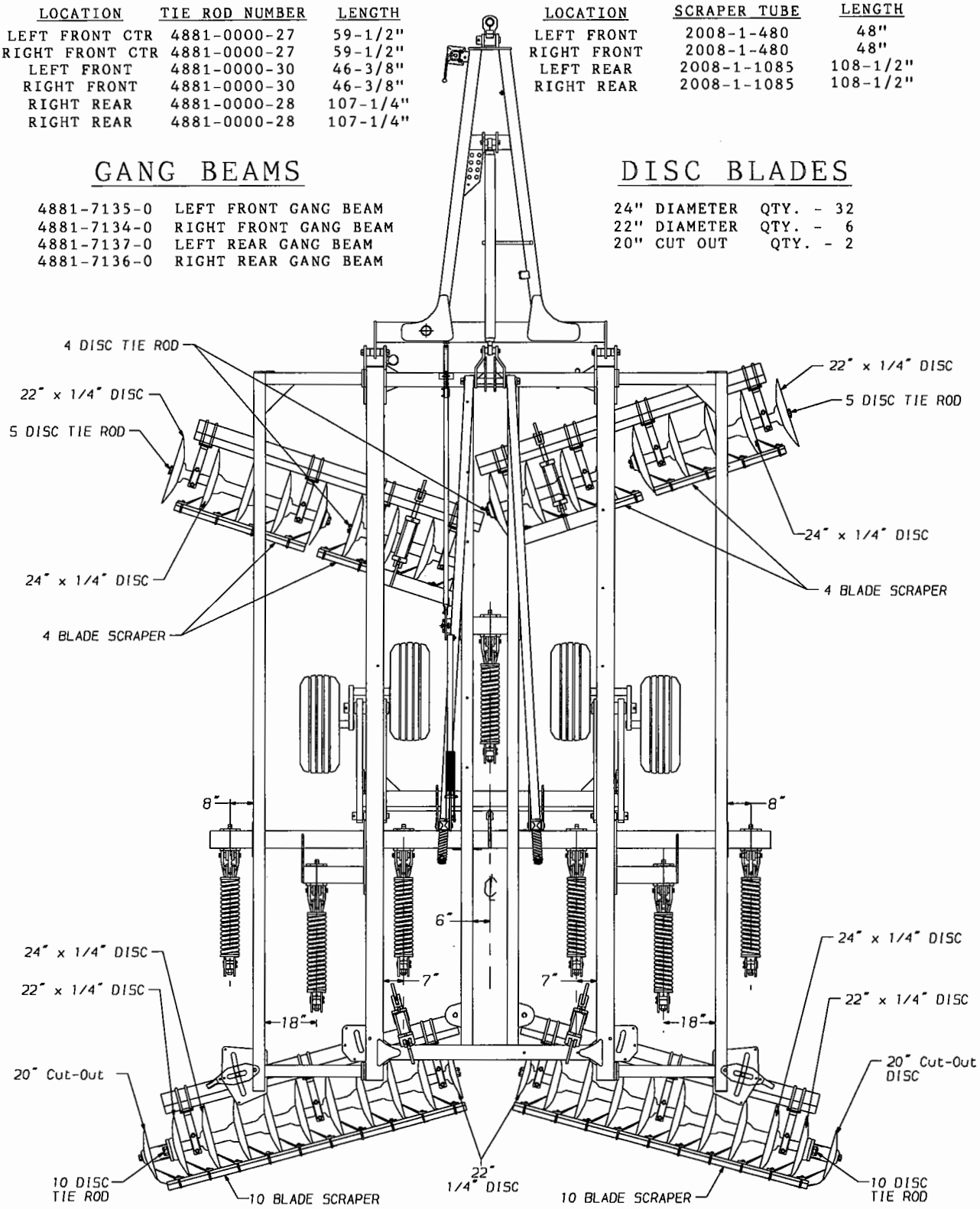
| LOCATION | SCRAPER TUBE | LENGTH |
|---|---|---|
| LEFT FRONT | 2008-1-480 | 48" |
| RIGHT FRONT | 2008-1-480 | 48" |
| LEFT REAR | 2008-1-1085 | 108-1/2" |
| RIGHT REAR | 2008-1-1085 | 108-1/2" |

## GANG BEAMS

| | |
|---|---|
| 4881-7135-0 | LEFT FRONT GANG BEAM |
| 4881-7134-0 | RIGHT FRONT GANG BEAM |
| 4881-7137-0 | LEFT REAR GANG BEAM |
| 4881-7136-0 | RIGHT REAR GANG BEAM |

## DISC BLADES

| | |
|---|---|
| 24" DIAMETER | QTY. - 32 |
| 22" DIAMETER | QTY. - 6 |
| 20" CUT OUT | QTY. - 2 |




M4881-35

# MODEL TL3000 7F-SHANK

## 1-1/2" TIE RODS

| LOCATION | TIE ROD NUMBER | LENGTH |
|---|---|---|
| LEFT FRONT CTR | 4881-0000-27 | 59-1/2" |
| RIGHT FRONT CTR | 4881-0000-27 | 59-1/2" |
| LEFT REAR CTR | 4881-0000-20 | 62-5/8" |
| RIGHT REAR CTR | 4881-0000-20 | 62-5/8" |
| LEFT FRONT WING | 4881-0000-30 | 46-3/8" |
| RIGHT FRONT WING | 4881-0000-30 | 46-3/8" |
| LEFT REAR WING | 4881-0000-32 | 51-3/4" |
| RIGHT REAR WING | 4881-0000-32 | 51-3/4" |

## SCRAPER BARS

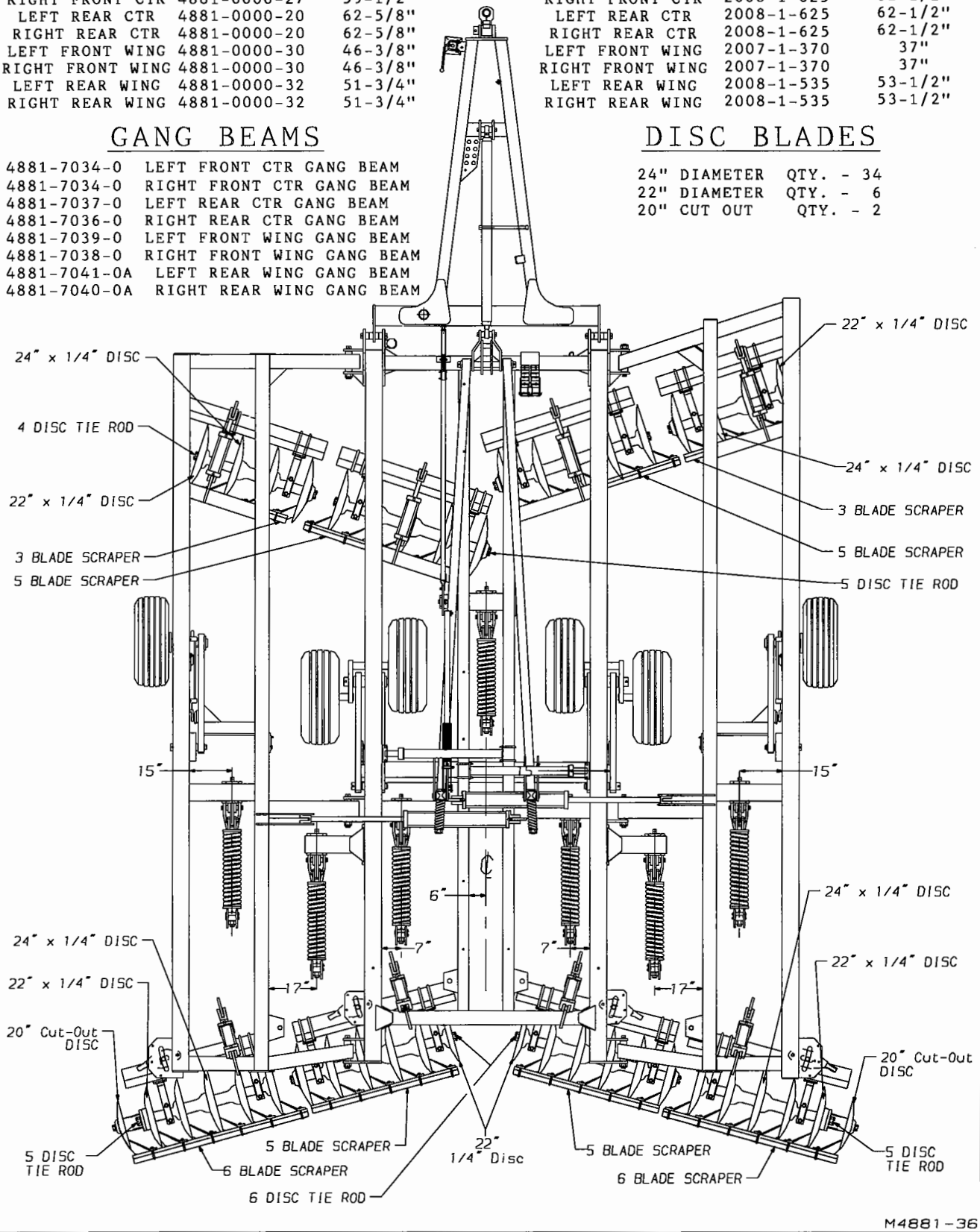
| LOCATION | SCRAPER TUBE | LENGTH |
|---|---|---|
| LEFT FRONT CTR | 2008-1-625 | 62-1/2" |
| RIGHT FRONT CTR | 2008-1-625 | 62-1/2" |
| LEFT REAR CTR | 2008-1-625 | 62-1/2" |
| RIGHT REAR CTR | 2008-1-625 | 62-1/2" |
| LEFT FRONT WING | 2007-1-370 | 37" |
| RIGHT FRONT WING | 2007-1-370 | 37" |
| LEFT REAR WING | 2008-1-535 | 53-1/2" |
| RIGHT REAR WING | 2008-1-535 | 53-1/2" |

## GANG BEAMS

| | |
|---|---|
| 4881-7034-0 | LEFT FRONT CTR GANG BEAM |
| 4881-7034-0 | RIGHT FRONT CTR GANG BEAM |
| 4881-7037-0 | LEFT REAR CTR GANG BEAM |
| 4881-7036-0 | RIGHT REAR CTR GANG BEAM |
| 4881-7039-0 | LEFT FRONT WING GANG BEAM |
| 4881-7038-0 | RIGHT FRONT WING GANG BEAM |
| 4881-7041-0A | LEFT REAR WING GANG BEAM |
| 4881-7040-0A | RIGHT REAR WING GANG BEAM |

## DISC BLADES

24" DIAMETER QTY. - 34
22" DIAMETER QTY. - 6
20" CUT OUT QTY. - 2




M4881-36

# MODEL TL3000 9F-SHANK

## 1-1/2" TIE RODS

| LOCATION | TIE ROD NUMBER | LENGTH |
|---|---|---|
| LEFT FRONT CTR | 4881-0000-27 | 59-1/2" |
| RIGHT FRONT CTR | 4881-0000-27 | 59-1/2" |
| LEFT REAR CTR | 4881-0000-20 | 63-5/8" |
| RIGHT REAR CTR | 4881-0000-20 | 63-5/8" |
| LEFT FRONT WING | 4881-0000-25 | 72-1/2" |
| RIGHT FRONT WING | 4881-0000-25 | 72-1/2" |
| LEFT REAR WING | 4881-0000-29 | 73-5/8" |
| RIGHT REAR WING | 4881-0000-29 | 73-5/8" |

## SCRAPER BARS

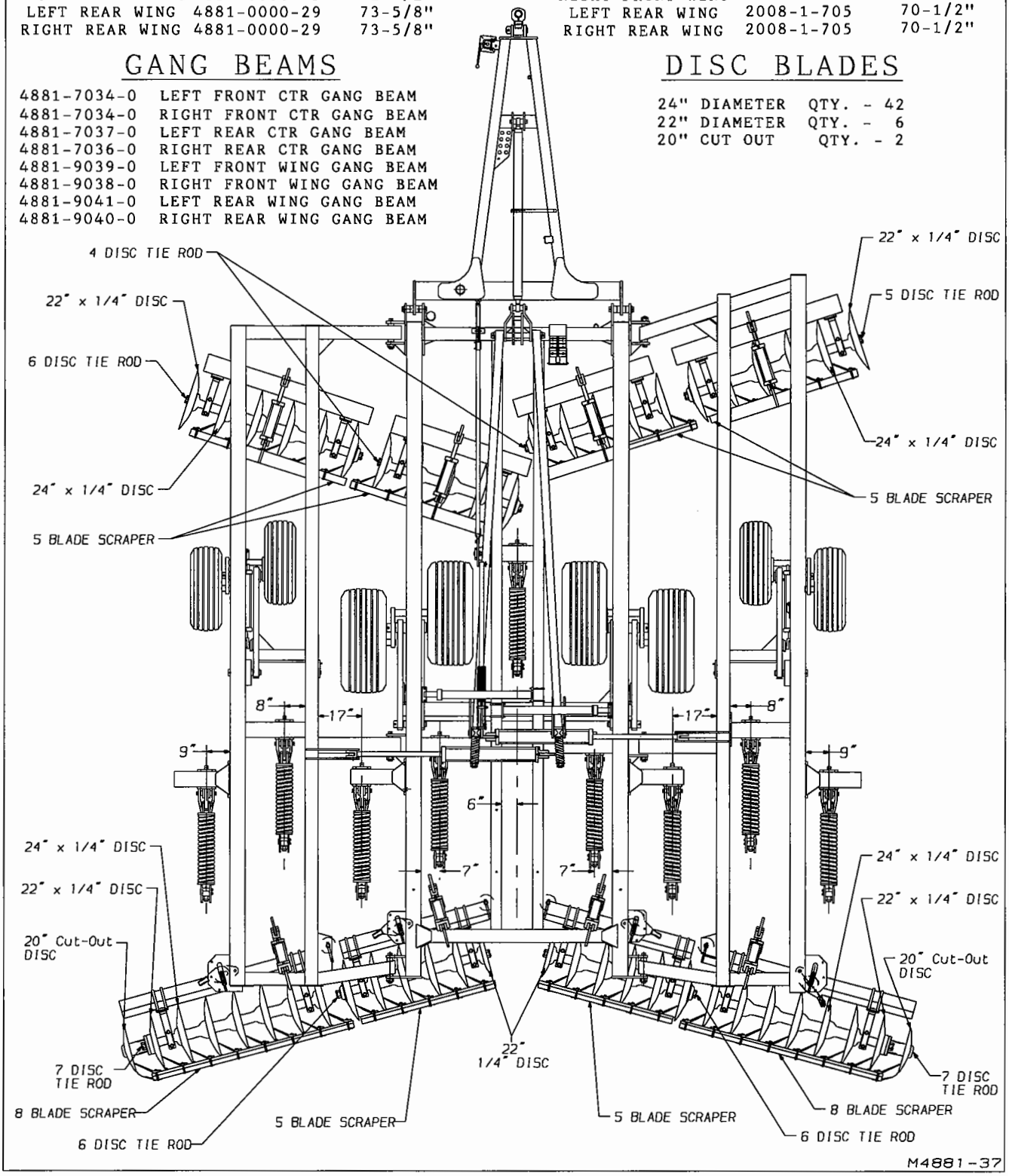
| LOCATION | SCRAPER TUBE | LENGTH |
|---|---|---|
| LEFT FRONT CTR | 2008-1-625 | 62-1/2" |
| RIGHT FRONT CTR | 2008-1-625 | 62-1/2" |
| LEFT REAR CTR | 2008-1-535 | 53-1/2" |
| RIGHT REAR CTR | 2008-1-535 | 53-1/2" |
| LEFT FRONT WING | 2008-1-625 | 62-1/2" |
| RIGHT FRONT WING | 2008-1-625 | 62-1/2" |
| LEFT REAR WING | 2008-1-705 | 70-1/2" |
| RIGHT REAR WING | 2008-1-705 | 70-1/2" |

## GANG BEAMS

| | |
|---|---|
| 4881-7034-0 | LEFT FRONT CTR GANG BEAM |
| 4881-7034-0 | RIGHT FRONT CTR GANG BEAM |
| 4881-7037-0 | LEFT REAR CTR GANG BEAM |
| 4881-7036-0 | RIGHT REAR CTR GANG BEAM |
| 4881-9039-0 | LEFT FRONT WING GANG BEAM |
| 4881-9038-0 | RIGHT FRONT WING GANG BEAM |
| 4881-9041-0 | LEFT REAR WING GANG BEAM |
| 4881-9040-0 | RIGHT REAR WING GANG BEAM |

## DISC BLADES

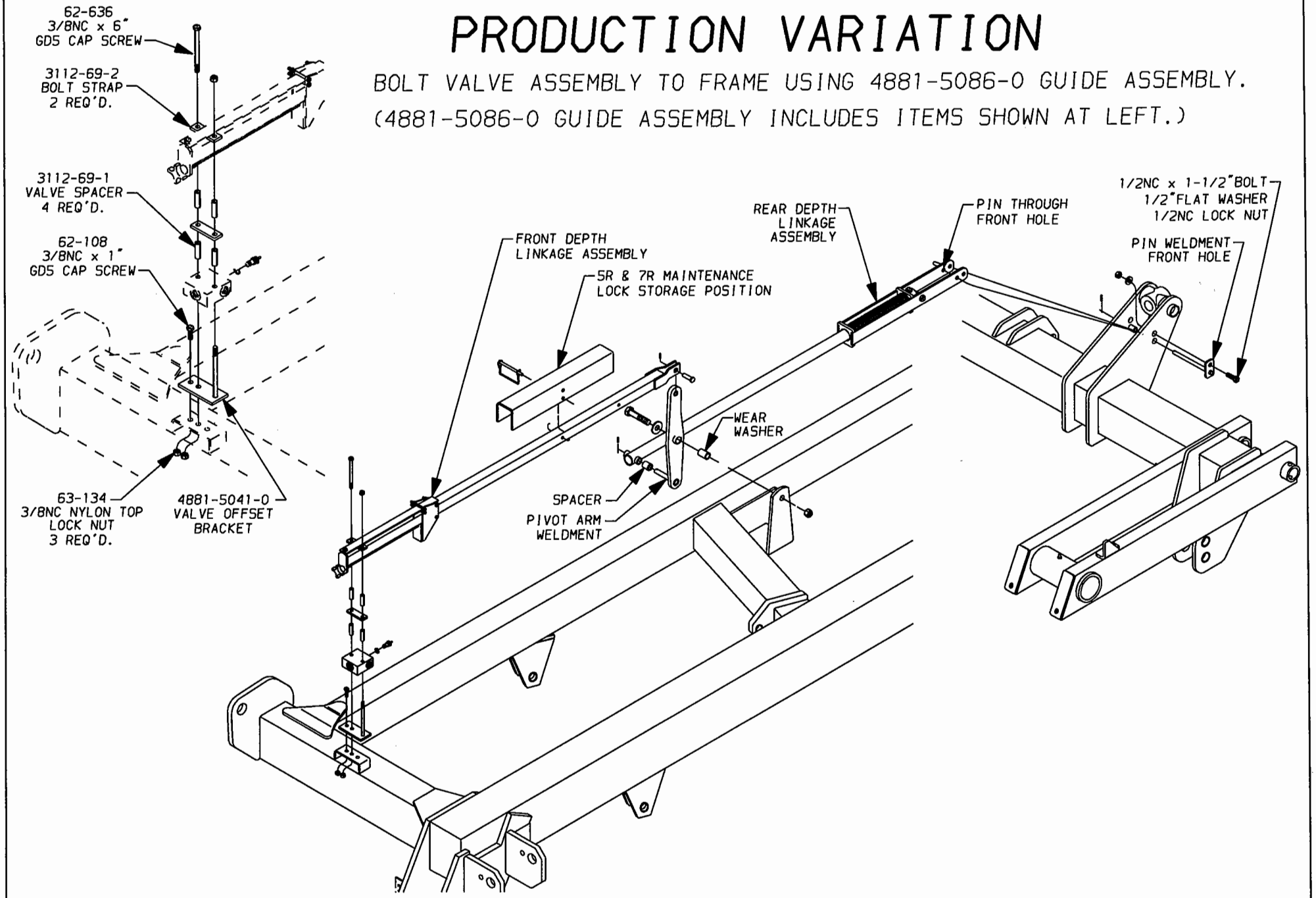
24" DIAMETER QTY. - 42
22" DIAMETER QTY. - 6
20" CUT OUT QTY. - 2



**This page intentionally left blank.**

# PRODUCTION VARIATION

BOLT VALVE ASSEMBLY TO FRAME USING 4881-5086-0 GUIDE ASSEMBLY.
(4881-5086-0 GUIDE ASSEMBLY INCLUDES ITEMS SHOWN AT LEFT.)




Rev.8/02

M4881-106