MADE IN THE USA

Dalton AG PRODUCTS

# OPERATING & PARTS MANUAL

## MODEL 3000 SERIES – 3 POINT TOOLBAR

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LENOX, IOWA 50801
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## SPECIAL NOTICE

The information and suggestions in this manual will help you obtain the highest performance, dependability, and efficiency from your new DALTON AG implement.

Whether your new DALTON AG implement is delivered assembled or unassembled, it is recommended that you become familiar with the contents of this manual. A basic understanding of how it is assembled and operated will be of value to you as a reference and parts manual.

## HOW TO ORDER REPLACEMENT PARTS

The parts assembly drawings in this manual are provided as an aid in assembling your DALTON AG equipment and as a repair and replacement parts guide. The numbers beside each part are DALTON AG numbers. Use these numbers when ordering replacement parts.

## WHO TO CONTACT FOR HELP - 800-342-7498

In event you experience trouble in assembly, operation, or in ordering parts, contact:

Dalton Ag Products
Customer Service Department
Lenox, IA. 50851

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Fax - 641-333-4429
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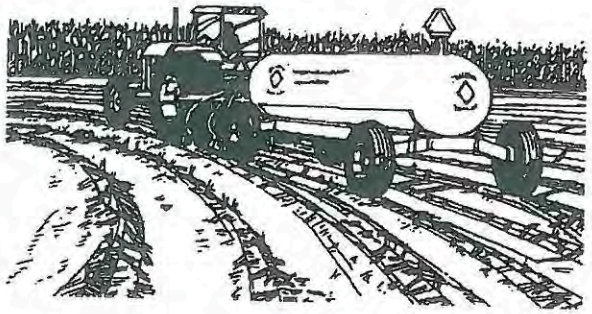
# Using Anhydrous Ammonia Safely on the Farm

**John M. Shutske**



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## Introduction

*Note:* The information provided in this bulletin is based on current Minnesota conditions and regulatory requirements at the time of this revision. Consult your local authorities and with your ammonia and equipment dealer for additional operational and safety information.

**Anhydrous ammonia is compressed into a clear, colorless liquid when used for an agricultural fertilizer.**

Anhydrous ammonia is an efficient and widely used source of nitrogen fertilizer. Anhydrous ammonia has several advantages, including its relatively easy application and ready availability.

However, there are also disadvantages and potential dangers involved in handling anhydrous ammonia. It must be stored and handled under high pressure, requiring specially designed and well-maintained equipment. In addition, to ensure their safety, workers must be adequately educated about the procedures and personal protective equipment required to safely handle this product.

What is anhydrous ammonia, and why is it so risky to handle? It is a chemical made up of one part nitrogen and three parts hydrogen. The properties of this fertilizer make it one of the most potentially dangerous chemicals used in agriculture. Ammonia gas is colorless and has a sharp, penetrating odor. When used as an agricultural fertilizer, it is compressed into a liquid. In the liquid state, it is stored in specially designed tanks strong enough to withstand internal pressures of at least 250 pounds per square inch (psi). As the outside temperature increases, the temperature of the liquid in the tank increases and the liquid expands, causing the vapor pressure in the tank to increase. For example, at 60°F, the pressure is 93 psi and at 100°F, the pressure is nearly 200 psi.

| Temperature of Ammonia | Vapor Pressure |
|---|---|
| 60°F | 93 psi |
| 100°F | 197 psi |

**During warm weather the temperature of the liquid anhydrous ammonia increases, causing it to expand and increasing the vapor pressure in the tank.**

If a hose ruptures or a valve is unintentionally opened, the high pressure from the tank can cause ammonia to spray into your eyes, face, and other parts of your body before you can react. When pressure is released, liquid anhydrous ammonia quickly converts to a gas.

To protect yourself and other workers, you must be aware of the hazardous properties of anhydrous ammonia. The word "anhydrous" means without water. Consequently, when anhydrous ammonia comes in contact with any moisture, the water and ammonia rapidly combine. When injected into the soil, the liquid ammonia expands into a gas and is readily absorbed in the soil moisture. Similarly, in contact with your eyes, skin, or mucous membranes, ammonia will cause rapid dehydration and severe burns as it combines with the moisture of the body.

**Anhydrous ammonia expands into a gas as it is injected into the soil where it rapidly combines with soil moisture.**

Anhydrous ammonia boils at minus 28°F. It must be kept under pressure to be stored as a liquid above this temperature. Thus, when liquid ammonia strikes the skin, it can instantly freeze exposed tissue.

Anhydrous ammonia is caustic and causes severe chemical burns. Body tissues that contain a high percentage of water, such as the eyes, skin, and respiratory tract, are very easily burned. Victims exposed to even small amounts of ammonia require immediate treatment with large quantities of water to minimize the damage.

Ammonia is also corrosive to certain metals, such as copper and zinc, and their alloys. Galvanized pipe must not be used for storing or applying ammonia because it contains zinc. Containers should be made of special high-strength steel or other approved material.

## Operator protection

Because of the hazards associated with handling anhydrous ammonia, operator protection must receive top priority at all times. Chemical-proof goggles, rubber gloves, and a heavy-duty long-sleeved shirt are required for anyone handling anhydrous ammonia. In case of exposure, first aid must be administered immediately. Plenty of water for flushing a person who has been accidently exposed to ammonia should be available at all times.

**Personal protective equipment such as goggles, rubber gloves, and long-sleeved shirts are essential when handling anhydrous ammonia.**

It is important to wear tight-fitting, chemical-proof goggles when handling ammonia. Regular glasses provide virtually no protection. Another option is to wear an approved full-face respirator that combines eye and lung protection. Never wear contact lenses when working with ammonia. Anhydrous ammonia can get under the lens and cause permanent eye damage before the lens can be removed.

Rubber gloves that are impervious to ammonia are required for handling anhydrous. The gloves should have an extended cuff that can be turned down at the elbow to prevent the chemical from running down your sleeve when your arms are raised. Gloves should have a fairly loose fit so they can be removed quickly in an emergency, but should fit tightly enough to provide adequate protection.

You can further protect your arms from ammonia spray by wearing coveralls or a heavy work shirt that covers the arms. Thin dress shirts or short sleeves do not provide protection.

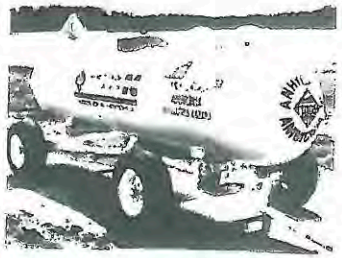
Regulations require that all anhydrous ammonia nurse tanks and applicator tanks carry at least one five-gallon container of clean water. This must be readily available for flushing the eyes and skin in case of exposure. The water should be changed daily to ensure a clean supply. It is also recommended that a second five-gallon container of water be kept on the tractor. This will provide the operator with another source of water for first aid in case the operator is unable to reach the one on the nurse or applicator tank. Handlers of ammonia should also carry an eight-ounce eye wash plastic water bottle at all times in case an accidental exposure occurs.

**Be sure the emergency first aid water tank is full of clean water.**

If you store bulk quantities of anhydrous ammonia, additional protective equipment is required. A rainsuit and two gas masks with currently dated ammonia canisters must be available for emergency work. The protection from a gas mask is limited, and a mask should only be used in low concentrations. If a serious leak occurs, call your local fire department for assistance. Firefighters have the proper training and equipment, including a self-contained breathing apparatus and protective suit, to deal with major leaks.

The operator's manual for anhydrous ammonia equipment should include instructions on proper procedures to follow when handling the product. Review this information before operating the equipment.

Note all decals on the equipment that identify valves and gauges involved in transferring ammonia. Decals should clearly identify the first aid water and other protective measures.




**Paint anhydrous ammonia tanks white to prevent rusting and to help keep the temperature and pressure down inside the tank during warm weather.**

## Container and system requirements

The specially fabricated and designed equipment for handling the high pressures encountered with anhydrous ammonia should meet the appropriate design guidelines provided by the American National Standards Institute (ANSI). All parts and contact surfaces must withstand a minimum working pressure of 250 psi. This includes such things as pressure welds, safety valves, gauges, fittings, hoses, and metering

devices. Any repair or service work on tanks must be done by a firm with an appropriate repair stamp certification. Fitting, valve, and other component repairs must be done by a qualified technician with training and experience in repairing anhydrous ammonia equipment. All welding on anydrous ammonia piping must be done by a welder with appropriate ASME-based welding qualifications.

**The safety valve is designed to relieve excess pressure from the vapor space of the tank at a predetermined start-to-discharge setting.**

All containers used for storing ammonia must be painted white or silver. Light colors reflect heat, helping to keep the temperature and pressure inside the tank at an acceptable level during warm weather.

Regularly scheduled maintenance is necessary to ensure that the tank and other components are ready for ammonia service. As nurse and applicator tanks become older, the hazards increase. Before using ammonia equipment, perform a walk-around inspection to locate any defects. Safety checklists are available from many anhydrous ammonia suppliers. Any parts found defective must be replaced or repaired. If this is not possible, the unit must be taken out of service.

Proper care of the pressure relief valve is an important part of maintenance. This valve is designed to relieve excess pressure from the vapor space of the tank at a predetermined pressure setting. Pressure relief valves must be replaced within five years of their installation date, or if you discover any leakage or other defects during an inspection.

**Hoses are considered the weakest link in the ammonia handling system and should be checked carefully before each use.**

Ammonia hoses are considered the weakest link in the ammonia handling system. Hoses must be checked carefully before each use to make sure they can be safely used. You should replace hoses if you find bulges, cracks, cuts, soft spots, or blisters. Also, replace any hose that has begun to slip near the coupling. Use only hoses designed for anhydrous ammonia. Each hose should be marked with the words "anhydrous ammonia." In addition, the maximum working pressure, the manufacturer's name and trademark, and the year of manufacture and expiration date should be stamped on the hose.

Hoses are made with a variety of reinforcement materials and should be replaced accordingly. Hoses reinforced with nylon and stainless steel should be replaced at four and six years respectively, from the date of manufacture, unless defects show up before this time.

Remember, safety while using ammonia is controlled by the judgement of the operator. If you find a defect, call your distributor for advice. Do not try to undertake a repair yourself. Again, only trained and qualified personnel should make repairs on anhydrous ammonia equipment.

**Safety in the field is under the control of the operator. Defective equipment should be tagged and taken out of service until repaired by qualified personnel.**

## Ammonia transfer

Many ammonia accidents involve improper handling procedures. Your first step should always be to wear the proper personal protective equipment! Read your owner's manual and follow instructions. Do not leave the area during the transfer procedure. Check with your dealer if you are not absolutely sure of the correct procedure. Ask for instructions when renting or borrowing equipment.

Review the procedures with any hired or family farm workers before allowing them to handle equipment to assure their safety. Make sure they fully understand the importance of protective equipment. Note that it is against federal law to hire any person below the age of 16 to transport, transfer or apply anhydrous ammonia.

When filling a nurse or applicator tank, be thoroughly familiar with the equipment and procedures prior to transfer. Because most accidents occur when transferring ammonia, it is very important to wear goggles and rubber gloves during these procedures. Make sure the five-gallon container is full of clean water and that you have a small squirt bottle in your shirt pocket.

**Carry the hose by the valve body or coupling. This reduces the chance of the valve wheel opening by accident and spraying ammonia.**

Park the nurse tank on level ground, downwind from the filling operation. Locate the nurse tank close to the source tank to eliminate stretching or bending the hose. Avoid parking too close to obstacles that would make evacuation difficult, such as fences, buildings, or ditches. Block the wagon's wheels and set the parking brake of the towing vehicle to prevent movement of the nurse tank. A serious situation could develop if the tank moves and a hose tears loose during the filling operation.
Before connecting the hose, make sure the coupling and connections are free from dirt and other foreign material. Visually check to make sure that the threads are not damaged. This will reduce the chance of an ammonia leak under pressure.

Workers should carry the filler hose only by the valve body or coupling, not the valve wheel. This will reduce the chance of the valve wheel opening and spraying ammonia. Remember that the valve wheel and fitting are designed to be closed by hand pressure only. Do not use a wrench to close the valve wheel, since this can easily damage the fitting.

If you are using a compressor to transfer ammonia, follow recommended instructions in your operator's manual. Generally, these include maintaining a vapor pressure of five to ten pounds lower in the tank being filled to keep a forward flow.

The 85 percent fill bleeder valve should be open to keep a check on the liquid level when filling.

Fill only to the 85 percent level of the liquid capacity of the tank.

Do not overfill the nurse or applicator tank. Carefully monitor the liquid level by opening the 85 percent fill bleeder valve. A white fog will appear near the valve when it reaches this level. As a part of the normal loading procedure, check the liquid level float gauge accuracy by comparing it with the fixed liquid level gauge.

Maintain break-away couplers in good condition, as they provide protection if the equipment separates accidentally.

It is important to fill only to 85 percent or less of the total liquid capacity of the tank. Otherwise, as the outside temperature increases, the temperature of the liquid increases, causing the liquid to expand. This causes the vapor pressure in the tank to rise to a potentially dangerous level. If the tank is overfilled and no vapor space is available, the safety relief valve might fail, causing the tank to rupture or explode.

After the filling operation is completed, secure the hose in its storage position for transit. Take a final walk around the nurse or applicator tank to confirm that all steps have been taken.

A trailing nurse tank and tool bar are commonly used to apply anhydrous ammonia. Recommended safety precautions must also be used for this equipment. Provide a break-away coupler in the ammonia line that runs to the tool bar. Make sure this coupler is in good working order. This provides protection if the equipment separates accidentally. The valves in the coupler will stop the ammonia gas from escaping in both the upstream and downstream lines. Before reconnecting the coupler, remove the internal pressure from the lines both up and downstream of the coupler. This is done by opening the bleeder valves on each line. Failure to release this pressure could expose you to pressurized ammonia.

Special precautions are necessary when removing dirt from clogged applicator tubes. Because pressure can build up in the tubes if they become clogged, a rush of anhydrous ammonia can be expected when they are unclogged. Wear your goggles, gloves, and a long-sleeved shirt while unclogging tubes. Position yourself upwind from the clogged tube. You can use a long piece of heavy-gauge wire to remove soil and other debris from the tube.

## First aid

The subzero temperatures of anhydrous ammonia can freeze exposed skin instantly when sprayed accidentally.

Even a small blast of anhydrous ammonia can be extremely harmful to the skin, eyes, and mucous membranes in the nose, mouth, and throat. When ammonia contacts the skin or eyes, tissue damage occurs rapidly. This damage results from a combination of dehydration, freezing, and caustic action. If a person's skin has been exposed to ammonia, move the victim to a safe area, and flush the exposed area immediately with clean water for at least 15 minutes. Remove contaminated clothing as soon as possible. Do not apply salves, creams, or ointments, since these may seal residual ammonia in the skin and contribute to further damage. Contact a doctor immediately after administering emergency first aid treatment.

Even if small amounts of ammonia enter the eyes, flush them immediately with water for 15 minutes or more. Hold the eyelids

Skin exposed to ammonia should be flushed immediately with water. Remove contaminated clothes as soon as possible.

open during irrigation to ensure water contact with all parts of the eye. This can be difficult and painful, but it is an important step to minimize the damage caused by ammonia. Immediate first aid is very important to avoid partial or total loss of vision. Again, consult a doctor after giving emergency first aid.

Ammonia vapors are easily detected because of their pungent odor, allowing them to be detected even in low concentrations. Inhalation of ammonia can irritate the respiratory tract and lungs. At high concentrations, ammonia that combines with moisture in the lungs may damage the lung lining. This can dramatically reduce the lungs' ability to transfer oxygen to the bloodstream.

If a person has inhaled ammonia, move the victim to a safe area. Exposures to low concentrations of ammonia for a short period of time may not require treatment. Exposure to higher concentrations may cause convulsive coughing and respiratory spasms. Provide cardiopulmonary resuscitation if the victim is not breathing, and summon emergency medical assistance.

If ammonia is swallowed, contact a doctor immediately. If the person is conscious, have him/her drink large amounts of water to dilute the chemical. Never give fluids to or induce vomiting in a victim who is in shock or unconscious. If vomiting occurs, keep the head lower than the hips to prevent vomitus from entering the lungs.

## Road safety

Towing a nurse tank presents problems different from normal highway travel because anhydrous ammonia is a hazardous material. An accident with a nurse tank on the highway could result in serious injuries, costly repairs, and liabilities. It is very important to check with your state authorities to obtain information on your state's rules and regulations that apply to anhydrous ammonia equipment being moved on roadways.

In many states, nurse tanks mounted for transport are considered "implements of husbandry" when used for agricultural purposes. They must conform to state regulations for travel on public roads. Nurse tanks must have the words "anhydrous ammonia" and "nonflammable" in large green lettering on both sides and on each end. All four sides of the tank must also have a placard displaying the "1005" identification number, and must have the words "inhalation hazard" on two sides. Applicator tanks must have markings identical to those on nurse tanks. These markings allow other motorists to easily identify an ammonia tank. Anhydrous ammonia tanks should also display a slow-moving vehicle sign clearly visible from the rear.

Anhydrous ammonia wagons towed on highways must be equipped with a slow-moving vehicle emblem.

All anhydrous tank wagons must be securely attached to the towing vehicle by a drawbar, hitch pin and safety clip, and suitable safety chains. Be sure to check these parts to see that they are secure before each trip on the highway.

Anhydrous ammonia wagons are designed to follow smoothly in the path of the towing vehicle. Tanks can readily overturn or collide with another vehicle if the wagon swerves from side to side. Make sure your tank wagon is hitched properly to prevent swaying. Check to see that wheel lug nuts are tight and tires are in good shape and properly inflated.

When towing a nurse tank, drive at speeds of 25 mph or less. In Minnesota, anhydrous ammonia tanks and other implements of husbandry with a gross weight exceeding 6,000 pounds must not be towed faster than 25 mph, unless the wagon is equipped with brakes. The potential for a serious accident increases at higher speeds because the operator may lack sufficient braking capacity to safely control the wagon. Hauling more than one loaded nurse tank is a violation of the law in most states. Because farm implement tires are designed for low-speed travel, allow sufficient time to reach your destination.

In most states, the law has additional requirements if a nurse tank or applicator tank is towed between the hours of sunset and sunrise, and any other times when driver visibility is impaired. For example, in Minnesota, state law currently requires that anhydrous ammonia wagons be equipped with two red reflectors at the extreme left and right rear sides of the end of the wagon. Also, the widest portion of the towing vehicle/wagon combination must display a red or amber light at the extreme left end of the combination visible from the rear, and an amber or white light visible from the front. This means that if the wagon is wider than the towing vehicle, the wagon must be equipped with lights during low-light conditions. Ideally, all anydrous ammonia wagons should be equipped with lights when towed on the highway regardless of the lights present on the towing vehicle.

## Other uses for anhydrous ammonia

Besides being a common source of nitrogen fertilizer, anhydrous ammonia has other purposes on the farm. It has been used with high moisture grains to control mold growth. When using anhydrous ammonia with grain, use the same precautions as you would when applying it as fertilizer. The same hazards exist whenever you handle ammonia under pressure.

Anhydrous ammonia is also used to add nonprotein nitrogen to corn silage. The ammonia is contained under pressure up to a cooling reactor in this application. Goggles, rubber gloves, and heavy-duty clothing, including long-sleeved shirts, must be worn during the process of connecting and disconnecting the ammonia hose and fitting.

## Summary

Anhydrous ammonia is one of the more dangerous chemicals handled on the farm. It can be handled safely when proper procedures are followed. Make sure you wear personal protective equipment and provide plenty of clean water for first aid. Keep equipment in good condition and observe proper procedures when transferring ammonia. When transporting ammonia on the highway, travel at a safe speed, and have a safety chain and a safety clip on the hitch pin. By following recommended procedures you can reduce your chance of having an accident.

# Ammonia Emergencies: $NH_3$ Medical Response

by James E. Lessenger, M.D.

The use of anhydrous ammonia is so commonplace among retailers that its transport, storage, and application are often viewed—and dangerously so—as routine, even hazard-free operations. More and more retail employees are coming in contact with some phase of ammonia handling, thus increasing potential risks. Promoting a safety ethic at your business may help avoid needless injuries and fatalities caused by ammonia mishaps. Understanding ammonia properties (*see box*) and their effect on the body will also help you respond to an emergency if it does occur.

### Potential For Injury

An anhydrous emergency can occur at any step during the manufacture, storage, transportation, transfer, or use of the chemical. The greatest volume of release occurs during transportation accidents, especially rail car accidents where the rupture of a tank can form millions of cubic feet of ammonia vapor clouds.

On the other hand, transfer procedures in fields or at distribution sites are the greatest source of accidents, due primarily to the large number of transfers and the carelessness of workers involved. However, ruptured pipes, explosions of overpressurized storage tanks, and fires can also lead to a release.

In industry, there are two basic means of exposure: spray and gas. A spray of an ammonia stream from a ruptured tank or line can be expected to cause primarily eye and skin damage, while a gas cloud will cause varying degrees of lung injury and, depending on the concentration, eye and skin damage as well.

### Impact on the Body

Anhydrous ammonia is an alkali. Compared to acids, which tend to burn and seal-off a wound, alkalis cause liquefaction of tissue. In other words, alkalis turn tissue into a sticky "goo" and mix with this tissue, causing further damage. As a result, anhydrous ammonia burns keep spreading until the chemical is diluted.

In addition to liquefaction, supercooled anhydrous spray causes a freeze-dry effect like frostbite when it hits skin. The spray is also capable of freezing clothing to skin so that, if the clothing is incorrectly removed, whole sections of skin can be torn off. Other circumstances of injury in anhydrous emergencies include: blast effects from exploding tanks, burns from high temperature explosions, and chemical injection injuries.

As already mentioned, anhydrous primarily affects three areas of the body: the lungs, eyes, and skin. In the lungs, anhydrous causes destruction of delicate respiratory tissue, resulting in pulmonary and respiratory distress. The effect on the eyes depends on whether a spray or gas is involved, but everything from mild irritation to eye destruction can occur. Again, skin damage depends upon the length and concentration of exposure, and can range from mild irritation, to a darkened freeze-dry burn, to tissue destruction.

### Immediate Response Steps

The specific response to an anhydrous ammonia emergency will depend upon the situation, of course, but there are some common steps to follow. In most instances, it will be possible to perform these steps in rapid succession or simultaneously. The four steps are: evacuation, cardiopulmonary resuscitation, decontamination (flushing), and alert.

- *Evacuation.* The victimized worker must be removed from the source of the problem. This may simply mean pointing a nozzle away or turning off the valve to a ruptured line. However, it could mean being caught up in an expanding cloud of gas. Workers exposed to such a cloud should drop to the ground, put on respirators, and move upwind and upgrade if possible. A moist handkerchief over the nose and mouth can also be helpful. Fellow workers should not try to enter an ammonia cloud without protective equipment or they will risk becoming additions to the casuality list, thus compounding the problem. The source should be immediately shut off, if this can be done quickly and easily.

- *Cardiopulmonary Resuscitation.* If the worker has stopped breathing, mouth-to-mouth resuscitation should be attempted as soon as safely possible. If there is no pulse, closed chest massage should be started. Prepare your workers for such an emergency by arranging CPR instruction from the local Red Cross.

- *Flushing/Decontamination.* As quickly as possible, and simultaneously with first aid or CPR, decontaminate the victim. Starting with the eyes, the whole body or exposed area must be flushed with generous amounts of water; this includes the hair, ears, underchin, and armpits. Any water source is acceptable, such as showers, hoses, or irrigation canals. Contaminated clothing should be removed—but only after careful flushing and warming, to prevent the already-mentioned problem of skin sticking to the clothing.

  A special point on skin burns, regardless of severity: creams, ointments or jellies should not be used for the first 24 hours because they "lock in" the ammonia in liquefied skin and extend the injury.

- *Alert.* Call for help. Notify firefighters and ambulance personnel immediately and warn them about the type of hazard to which they are responding (*see accompanying story*). At the same time, tell them the safest approach route so response can be both rapid and free of mishap. In some situations the accident site may be so far from emergency teams that it would be quicker to bring the victim to the hospital. If that's the case, remember to decontaminate the victim before accompanying him in a closed vehicle.

  Pre-planning for each of the four emergency response steps can help avoid life-threatening indecision if an ammonia mishap occurs. Also, it is a good policy to have any exposed worker examined by a physician, regardless of the degree of injury. Certainly any worker with extensive skin damage, eye injury or breathing problems needs to be seen in a hospital emergency department as rapidly as possible.

### The Aftermath

While engineers determine what caused the accident, safety people need to critically evaluate the emergency response. A meeting with ambulance personnel, workers, victims, nurses, and physicians can be valuable in identifying the heroes of the day who should be thanked or awarded. It can also be valuable in identifying breakdowns in emergency response procedures in need of improvement.

Aggressive rehabilitation of an injured worker is good policy; and it is probably best to return him or her to work as soon as possible, even if on limited duty.

### Preparing For the Worst

Training and prior planning are the keys to a successful emergency response, just as aggressive safety policies are the keys to prevention.

It is important to train employees on what to do if exposed to anhydrous ammonia, especially the need for quick and aggressive decontamination. It is equally important to plan escape routes and practice response procedures so that responding medical personnel can quickly and safely care for possible victims. ■

## Knowing $NH_3$ Properties

At room temperature, ammonia is a pungent colorless gas, but when pressurized or refrigerated in nurse or storage tanks, it is a colorless liquid. When released from its container, ammonia forms an expanding white cloud which is usually lighter than air and easily follows air currents.

With an expansion ratio of 850 to 1, a given volume of liquid ammonia will expand 850 times to encompass a potentially extensive area. Because liquid ammonia boils at minus 28 degrees, the expanding gas has the potential to freeze both equipment and flesh.

Ammonia is, under most conditions, a stable compound, but under conditions of high temperature and contact with certain metals or fuels, it can be explosive and may burn. Its inflammability limits are 16 to 25 percent by volume in air and its ignition temperature is 1,200 degrees.

Most anhydrous ammonia is manufactured by a process in which natural gas, air, and steam are reacted in the presence of a catalyst and pressure to produce ammonia. In this process, water is excluded, thus the term "anhydrous."

Anhydrous ammonia is easily absorbed by water—at a ratio of 1,176 to 1 at 32 degrees. That is, one volume of water can absorb 1,176 volumes of ammonia, a factor that aids firefighters in controlling ammonia clouds. But, it also contributes to human toxicity, since ammonia will keep spreading across contacted skin until the chemical is diluted by skin moisture. □

## Emergency Team Actions

Paramedics or ambulance crews responding to ammonia emergencies will continue and complete rescue procedures already begun by workers at the accident site. Before loading the victim in the ambulance, they will pay careful attention to thorough decontamination of the victim.

Clothing saturated with ammonia, for example, can release a cloud of gas within the closed confines of the ambulance and disable the crew. Therefore, following extensive flushing with water, exposed clothing will be removed, with careful attention to avoid removing skin with it.

In mass casuality situations, a triage scheme, based on wartime disasters, can be used to select those patients needing immediate care. In severe injuries, airways need to be established, intravenous lines started, and pulmonary problems aggressively treated.

Tetanus shots must be given if indicated and eye care begun at once. Specialized treatment units, like burn units and intensive care wards, may be utilized.

In less severely injured patients, X-rays, special laboratory tests, and careful examinations can be helpful in determining whether or not hospitalization or further treatment is necessary.

Many areas of the United States and Canada now have an Emergency Medicine Service system that organizes emergency response. Plant medical and safety people need to be aware of this system and should make prior arrangements for proper integration of responses. □

# OPERATING AND INSTALLATION INSTRUCTIONS FOR THE A-HFC-114 HIGH FLOW TOOL BAR COUPLING

## CAUTION DANGER

**PLEASE READ THIS ENTIRE MANUAL AND FOLLOW THE INSTRUCTIONS CAREFULLY. FAILURE TO READ AND FOLLOW ALL OF THE INSTRUCTIONS AND WARNINGS IN THIS MANUAL MIGHT RESULT IN A DANGEROUS RELEASE OF ANYDROUS AMMONIA AND CAUSE SERIOUS BODILY INJURY.**



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## CAUTION DANGER

**ALLWAYS FOLLOW MANUFACTURES INSTRUCTIONS WHEN INSTALLING, DISCONNECTING OR RECONNECTING THE QUICK COUPLING. FAILURE TO DO SO MAY CAUSE BODILY INJURY.**

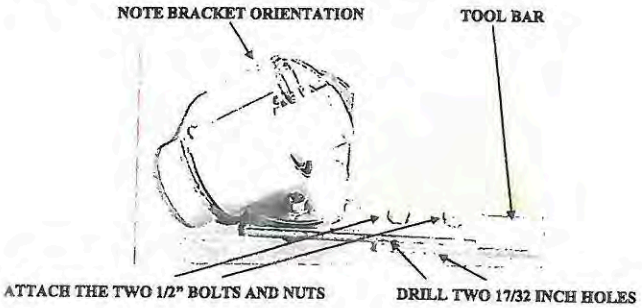
**ALWAYS FOLLOW STEPS 1-3 BELOW BEFORE PERFORMING MAINTENANCE, INSTIALLATION, RECONNECTING OR DISCONNECTING THE QUICK COUPLING**

1. **ALLWAYS WEAR GOGGLES AND GLOVES AND HAVE EMERGENCY WATER AVAILABLE.**
2. **CLOSE ALL VALVES.**
3. **OPEN ALL BLEED VALVES AND DRAIN ALL OF THE AMMONIA FROM THE HOSES ATTACHED TO THE TANK AND THE APPLICATOR. ALWAYS BE CAREFUL WHEN OPENING A BLEED VALVE TO MAKE SURE THE OUTLET IS POINTING IN A SAFE DIRECTION AND AWAY FROM YOU OR ANYONE ELSE. DO NOT PROCEED UNTIL YOU HAVE MADE SURE ALL OF THE AMMONIA HAS BEEN DRAINED FROM ALL OF THE HOSES.**



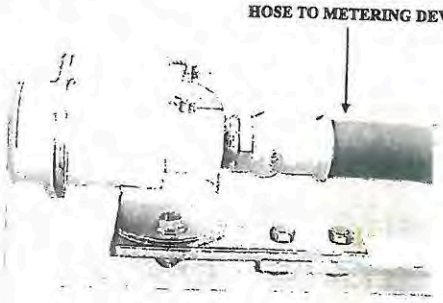
## NEW INSTALLATION INSTRUCTIONS

1. **ALLWAYS WEAR GOGGLES AND GLOVES AND HAVE EMERGENCY WATER AVAILABLE.**
2. **CLOSE ALL VALVES.**
3. **OPEN ALL BLEED VALVES AND DRAIN ALL OF THE AMMONIA FROM THE HOSES ATTACHED TO THE TANK AND THE APPLICATOR. ALWAYS BE CAREFUL WHEN OPENING A BLEED VALVE TO MAKE SURE THE OUTLET IS POINTING IN A SAFE DIRECTION AND AWAY FROM YOU OR ANYONE ELSE. DO NOT PROCEED UNTIL YOU HAVE MADE SURE ALL OF THE AMMONIA HAS BEEN DRAINED FROM ALL OF THE HOSES.**
4. **ATTACH THE MOUNTING CLAMP ON TO THE TOOL BAR BY DRILLING TWO 17/32 INCH HOLES ON 2" CENTERS. MAKE SURE IT IS MOUNTED ONTO A PORTION OF THE TOOL BAR THAT IS ATLEAST 1/4" THICK. ATTACH THE TWO 1/2" BOLTS AND NUTS SECURELY TO THE CLAMP AND TOOL BAR AND TIGHTEN FIRMLY. THE FEMALE SIDE OF THE COUPLING WILL ALREADY BE ATTACHED TO THE MOUNTING BRACKET BUT MAKE SURE THE COUPLING IS INSTALLED ON THE CORRECT SIDE OF THE BRACKET AS SHOWN IN THE PHOTO BELOW.**






5. **SCREW THE APPLICATOR HOSE INTO THE FEMALE END OF THE COUPLING AND MAKE SURE TO USE PIPE THREAD SEALANT AS SHOWN IN THE PHOTO BELOW**



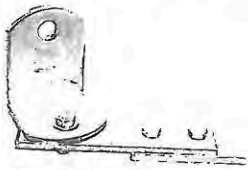

6. **IF YOUR SUPPLY HOSE IS ATTACHED TO THE NURSE TANK, SCREW AN ACME ADAPTOR INTO THE 1-1/4" FNPT OF THE MALE END OF THE COUPLING. MAKE SURE TO USE PIPE THREAD SEALANT AS SHOWN IN THE PHOTO BELOW**

7. **IF YOUR SUPPLY HOSE IS ATTACHED TO THE TOOL BAR THEN SCREW THE SUPPLY HOSE INTO THE 1-1/4" FNPT SIDE OF THE MALE END OF THE COUPLING. AS SHOWN IN THE PHOTO BELOW.**

8. **ATTACH THE OPERATING INSTRUCTION DECAL TO THE TOOL BAR AS CLOSE TO THE A-HFC-114 AS POSSIBLE**
9. **FOR CONNECTING THE MALE AND FEMALE ENDS OF THE COUPLING TOGETHER SEE THE "RECONNECTION INSTRUCTIONS" SECTION BELOW.**

## RETRO-FIT INSTALLATION INSTRUCTIONS

1. ALLWAYS WEAR GOGGLES AND GLOVES AND HAVE EMERGENCY WATER AVAILABLE.
2. CLOSE ALL VALVES.
3. OPEN ALL BLEED VALVES AND DRAIN ALL OF THE AMMONIA FROM THE HOSES ATTACHED TO THE TANK AND THE APPLICATOR. ALWAYS BE CAREFUL WHEN OPENING A BLEED VALVE TO MAKE SURE THE OUTLET IS POINTING IN A SAFE DIRECTION AND AWAY FROM YOU OR ANYONE ELSE. DO NOT PROCEED UNTIL YOU HAVE MADE SURE ALL OF THE AMMONIA HAS BEEN DRAINED FROM ALL OF THE HOSES.
4. REMOVE THE OLD COUPLING AND THE LAST "L" SHAPED BRACKET FROM THE UNIT AS SHOWN IN THE PHOTO BELOW.



5. THERE ARE 2 DIFFERENT SIZE BRACKETS THAT PIONEER HAS USED WITH THEIR COUPLING. THE OLDER BRACKET HAS A 1/2" BOLT HOLE AND THE NEWER ONE HAS A 3/4" BOLT HOLE. AS SHOWN IN THE PHOTO BELOW.

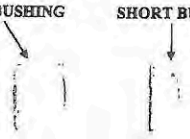
SMALL 1/2" BOLT HOLE BRACKET

BIG 3/4" BOLT HOLE BRACKET

6. IF YOU HAVE THE 1/2" BOLT HOLE BRACKET USE THE SHORT BUSHING, IF YOU HAVE THE 3/4" BOLT HOLE BRACKET USE THE LONG BUSHING AS SHOWN IN THE PHOTO BELOW.

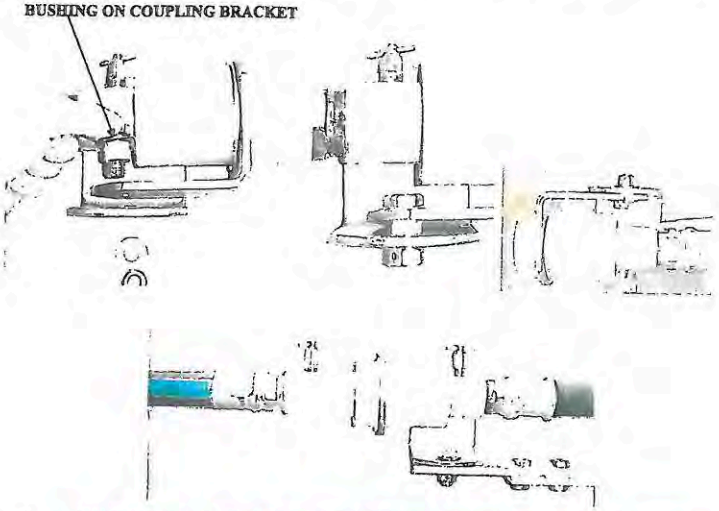
LONG BUSHING

SHORT BUSHING



7. ATTACH THE BRACKET WITH THE 1/2" BOLT, WASHERS AND NUT WITH THE CORRECT BUSHING AS SHOWN IN THE PHOTO BELOW AND TIGHTEN FRIMLY. MAKE SURE YOU PUT THE BUSHING ON THE COUPLER BRACKET NOT THE MIDDLE BRACKET AS SHOWN IN THE PHOTO.

BUSHING ON COUPLING BRACKET



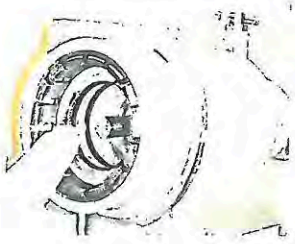
8. ****IMPORTANT**** MAKE SURE THE BRACKET SWIVELS UP AND DOWN AND SIDE TO SIDE. THIS IS VERY IMPORTANT, IF IT DOES NOT SWIVEL UP AND DOWN AND SIDE TO SIDE THEN IT WILL NOT FUNCTION PROPERLY.



9. AFTER YOU HAVE INSTALLED YOUR NEW COUPLING SEE THE "RECCONECTION INSTRUCTIONS" SECTION ABOVE TO CONNECT THE MALE END.

## RECONNECTION INSTRUCTIONS

1. ALLWAYS WEAR GOGGLES AND GLOVES AND HAVE EMERGENCY WATER AVAILABLE.
2. CLOSE ALL VALVES.
3. OPEN ALL BLEED VALVES AND DRAIN ALL OF THE AMMONIA FROM THE HOSES ATTACHED TO THE TANK AND THE APPLICATOR. ALWAYS BE CAREFUL WHEN OPENING A BLEED VALVE TO MAKE SURE THE OUTLET IS POINTING IN A SAFE DIRECTION AND AWAY FROM YOU OR ANYONE ELSE. DO NOT PROCEED UNTIL YOU HAVE MADE SURE ALL OF THE AMMONIA HAS BEEN DRAINED FROM ALL OF THE HOSES.
4. INSPECT THE ORINGS TO MAKE SURE THEY ARE IN GOOD CONDITION. NEVER LOOK DIRECTLY INTO THE OPENING OF THE MALE OR FEMALE SIDE OF THE QUICK COUPLING. HOLD IT AT AN ANGLE AWAY FROM YOU TO DO THE INSPECTION SO IF ANY AMMONIA IS LEFT IN THE HOSE IT WILL NOT SPRAY ON YOU OR ANYONE ELSE GREASE O-RINGS IF NECESSARY. SEE PHOTO BELOW

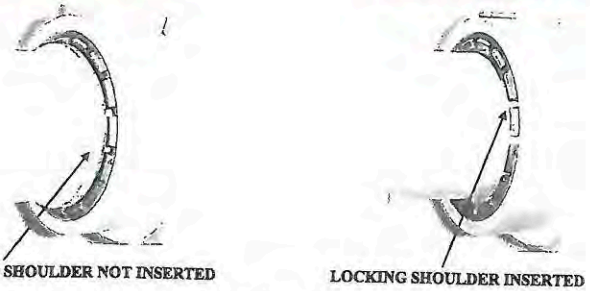




5. SLOWLY INSERT THE MALE END OF THE QUICK COUPLING THAT IS ATTACHED TO THE NURSE TANK HOSE INTO THE FEMALE END OF THE QUICK COUPLING THAT IS ATTACHED TO THE APPLICATOR. IT HELPS SOMETIMES TO TWIST THE MALE END WHEN INSERTING IT TO GET THE MALE TIP PAST THE ORINGS. THEN HOLD THE BRACKET ON THE FEMALE END FIRMLY WITH ONE HAND AND PUSH THE MALE END IN FIRMLY WITH THE OTHER HAND SO IT IS COMPLETELY ATTACHED BY CHECKING TO MAKE SURE THE LOCKING SHOULDER ON THE MALE END IS FULLY INSERTED INTO THE FEMALE END OF THE COUPLING. SEE PHOTO BELOW.

NOT INSTALLED CORRECTLY

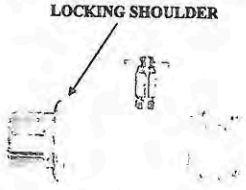
INSTALLED CORRECTLY



LOCKING SHOULDER NOT INSERTED

LOCKING SHOULDER INSERTED

LOCKING SHOULDER



COMPLETELY INSTALLED UNIT

6. SHAKE HOSE TO MAKE SURE IT IS SECURELY ATTACHED.
7. CLOSE ALL BLEED VALVES

## DISCONNECTION INSTRUCTIONS

1. ALLWAYS WEAR GOGGLES AND GLOVES AND HAVE EMERGENCY WATER AVAILABLE.
2. CLOSE ALL VALVES.
3. OPEN ALL BLEED VALVES AND DRAIN ALL OF THE AMMONIA FROM THE HOSES ATTACHED TO THE TANK AND THE APPLICATOR. ALWAYS BE CAREFUL WHEN OPENING A BLEED VALVE TO MAKE SURE THE OUTLET IS POINTING IN A SAFE DIRECTION AND AWAY FROM YOU OR ANYONE ELSE. DO NOT PROCEED UNTIL YOU HAVE MADE SURE ALL OF THE AMMONIA HAS BEEN DRAINED FROM ALL OF THE HOSES.
4. PULL THE NURSE TANK HOSE FIRMLY TO DISCONNECT THE MALE END OF THE QUICK COUPLING FROM THE FEMALE END.

## MAINTENANCE INSTRUCTIONS

1. ALLWAYS WEAR GOGGLES AND GLOVES AND HAVE EMERGENCY WATER AVAILABLE.
2. CLOSE ALL VALVES.
3. OPEN ALL BLEED VALVES AND DRAIN ALL OF THE AMMONIA FROM THE HOSES ATTACHED TO THE TANK AND THE APPLICATOR. ALWAYS BE CAREFUL WHEN OPENING A BLEED VALVE TO MAKE SURE THE OUTLET IS POINTING IN A SAFE DIRECTION AND AWAY FROM YOU OR ANYONE ELSE. DO NOT PROCEED UNTIL YOU HAVE MADE SURE ALL OF THE AMMONIA HAS BEEN DRAINED FROM ALL OF THE HOSES.
4. PULL THE NURSE TANK HOSE FIRMLY TO DISCONNECT THE MALE END OF THE QUICK COUPLING FROM THE FEMALE END.
5. REMOVE THE HOSES FROM BOTH THE FEMALE END AND MALE END OF THE QUICK COUPLING SO THAT THE QUICK COUPLING IS NOT CONNECTED TO ANY HOSES.
6. INSPECT THE 2 O-RINGS IN THE FEMALE SIDE OF THE COUPLING FOR CUTS OR PITS IN THE O-RING. REPLACE THEM IF THERE ARE ANY CUTS OR PITS OR SEAM TO BE DRYED OUT OR AGING. IF THEY ARE IN GOOD SHAPE APPLY SOME GREASE TO THEM TO ENSURE THEY REMAIN IN GOOD CONDTION. NEVER LOOK DIRECTLY INTO THE OPENING OF THE MALE OR FEMALE SIDE OF THE QUICK COUPLING. HOLD IT AT AN ANGLE AWAY FROM YOU TO DO THE INSPECTION SO IF ANY AMMONIA IS LEFT IN THE COUPLING IT WILL NOT SPRAY ON YOU OR ANYONE ELSE.
7. INSPECT THE CHECK VALVES IN THE MALE AND FEMALE ENDS OF THE QUICK COUPLING BY PRESSING IN ON THE CHECK VALVE WITH YOUR THUMB TO MAKE SURE THEY MOVE IN AND OUT FREELY.
8. CLEAN ANY DIRT OR DEBRIS THAT YOU FIND IN EITHER END OF THE COUPLING.



9. SPIN THE LOCKING COLLET IN THE FEMALE END OF THE QUICK COUPLING WITH YOUR FINGER TO MAKE SURE IT MOVES FREELY. USE WD-40 OR A SIMILAR PRODUCT IF NECESARY TO GET IT TO MOVE FREELY.
10. RECONNECT THE HOSES THAT WERE REMOVED AND FOLLOW THE "RECCONECTION INSTRUCTIONS" SECTION ABOVE TO RECCONECT THE QUICK COUPLING.

## IF YOU HAVE ANY QUESTIONS PLEASE CALL US AT 800-537-5642

## MAINTENANCE INSTRUCTIONS

11. FOLLOW STEPS 1-3 FIRST
12. PULL THE NURSE TANK HOSE FIRMLY TO DISCONNECT THE MALE END OF THE QUICK COUPLING FROM THE FEMALE END.
13. REMOVE THE HOSES FROM BOTH THE FEMALE END AND MALE END OF THE QUICK COUPLING SO THAT THE QUICK COUPLING IS NOT CONNECTED TO ANY HOSES.
14. INSPECT THE 2 O-RINGS IN THE FEMALE SIDE OF THE COUPLING FOR CUTS OR PITS IN THE O-RING. REPLACE THEM IF THERE ARE ANY CUTS OR PITS OR SEAMED TO BE DRIED OUT OR AGING. IF THEY ARE IN GOOD SHAPE APPLY SOME GREASE TO THEM TO ENSURE THEY REMAIN IN GOOD CONDITION. NEVER LOOK DIRECTLY INTO THE OPENING OF THE MALE OR FEMALE SIDE OF THE QUICK COUPLING. HOLD IT AT AN ANGLE AWAY FROM YOU TO DO THE INSPECTION SO IF ANY AMMONIA IS LEFT IN THE COUPLING IT WILL NOT SPRAY ON YOU OR ANYONE ELSE.
15. INSPECT THE CHECK VALVES IN THE MALE AND FEMALE ENDS OF THE QUICK COUPLING BY PRESSING IN ON THE CHECK VALVE WITH YOUR THUMB TO MAKE SURE THEY MOVE IN AND OUT FREELY.
16. CLEAN ANY DIRT OR DEBRIS THAT YOU FIND IN EITHER END OF THE COUPLING.
17. SPIN THE LOCKING COLLET IN THE FEMALE END OF THE QUICK COUPLING WITH YOUR FINGER TO MAKE SURE IT MOVES FREELY. USE WD-40 OR A SIMILAR PRODUCT IF NECESSARY TO GET IT TO MOVE FREELY.
18. RECONNECT THE HOSES THAT WERE REMOVED AND FOLLOW STEPS 1-8 TO RECONNECT THE QUICK COUPLING.

IF YOU HAVE ANY QUESTIONS PLEASE CALL US AT
800-537-5642



## ATTACH THIS STICKER TO THE TOOL BAR NEXT TO THE HIGH FLOW COUPLER

ALWAYS FOLLOW MANUFACTURES INSTRUCTIONS WHEN INSTALLING, DISCONNECTING OR RECONNECTING THE QUICK COUPLING. FAILURE TO DO SO MAY CAUSE BODILY INJURY.

## ALWAYS FOLLOW STEPS 1-3 BEFORE PERFORMING MAINTENANCE, RECONNECTING OR DISCONNECTING THE QUICK COUPLING

1. ALWAYS WEAR GOGGLES AND GLOVES AND HAVE EMERGENCY WATER AVAILABLE.
2. CLOSE ALL VALVES.
3. OPEN ALL BLEED VALVES AND DRAIN ALL OF THE AMMONIA FROM THE HOSES ATTACHED TO THE TANK AND THE APPLICATOR. ALWAYS BE CAREFUL WHEN OPENING A BLEED VALVE TO MAKE SURE THE OUTLET IS POINTING IN A SAFE DIRECTION AND AWAY FROM YOU OR ANYONE ELSE. DO NOT PROCEED UNTIL YO HAVE MADE SURE ALL OF THE AMMONIA HAS BEEN DRAINED FROM ALL OF THE HOSES.

## ⚠ CAUTION DANGER ⚠

## RECONNECTION INSTRUCTIONS

4. FOLLOW STEPS 1-3 FIRST
5. INSPECT THE O-RINGS TO MAKE SURE THEY ARE IN GOOD CONDITION. NEVER LOOK DIRECTLY INTO THE OPENING OF THE MALE OR FEMALE SIDE OF THE QUICK COUPLING. HOLD IT AT AN ANGLE AWAY FROM YOU TO DO THE INSPECTION SO IF ANY AMMONIA IS LEFT IN THE HOSE IT WILL NOT SPRAY ON YOU OR ANYONE ELSE. GREASE O-RINGS IF NECESSARY.
6. SLOWLY INSERT THE MALE END OF THE QUICK COUPLING THAT IS ATTACHED TO THE NURSE TANK HOSE INTO THE FEMALE END OF THE QUICK COUPLING THAT I ATTACHED TO THE APPLICATOR. IT HELPS SOMETIMES TO TWIST THE MALE END WHEN INSERTING IT TO GET THE MALE TIP PAST THE O-RINGS. THEN HOLD THE BRACKET ON THE FEMALE END FIRMLY WITH ONE HAND AND PUSH THE MALE END IN FIRMLY WITH THE OTHER HAND SO IT IS COMPLETELY ATTACHED.
7. SHAKE HOSE TO MAKE SURE IT IS SECURELY ATTACHED.
8. CLOSE ALL BLEED VALVES.

## DISCONNECTION INSTRUCTIONS

9. FOLLOW STEPS 1-3 FIRST
10. PULL THE NURSE TANK HOSE FIRMLY TO DISCONNECT THE MALE END OF THE QUICK COUPLING FROM THE FEMALE END.

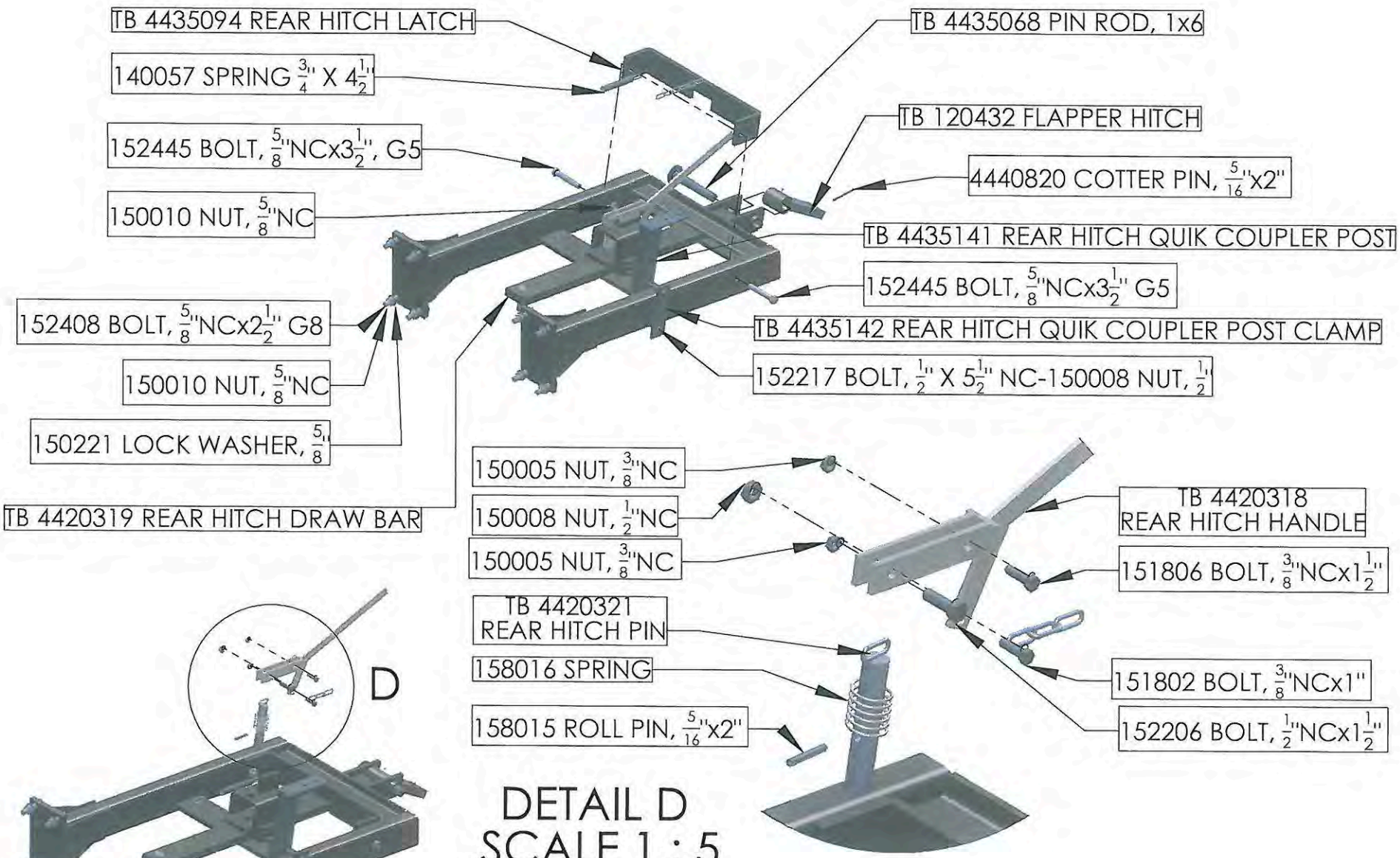
## PURGING INSTRUCTIONS FOR REPHASING CYLINDERS

To properly purge air from the system cylinders should be fully extended the rephrasing mode. Hold the cylinders in the fully extended mode for approximately 30 seconds, retract the cylinders and repeat until all air is purged from the system. Make sure tractor RPM is moderate so the hydraulic pump is at its full capacity.

Initial system startup should be done with the rod end of the cylinders unpinned, making sure to support the rod and watch that the rod will not interfere with any framework or other objects. During initial startup the seals may need a few cycles to seat themselves for a good seal.

Patience is the key and air is the worst enemy. NEVER loosen a fitting to bleed off the system! This can be dangerous!

To maintain the rephrasing system during normal operating, the cylinders should always be cycled to the full extent of their stroke each time they are operated.




# DETAIL D
# SCALE 1 : 5

**PROPRIETARY AND CONFIDENTIAL**

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DRAWN BY RICH SMOTHERS 7/17/2008
FILE TB 4410226 REAR HITCH ASSEMBLY, 2009
PRINT DATE 3/7/2012
TITLE: TB 4410226 REAR HITCH ASSEMBLY, 2009

602 E. VAN BUREN ST., LENOX, IA 50851

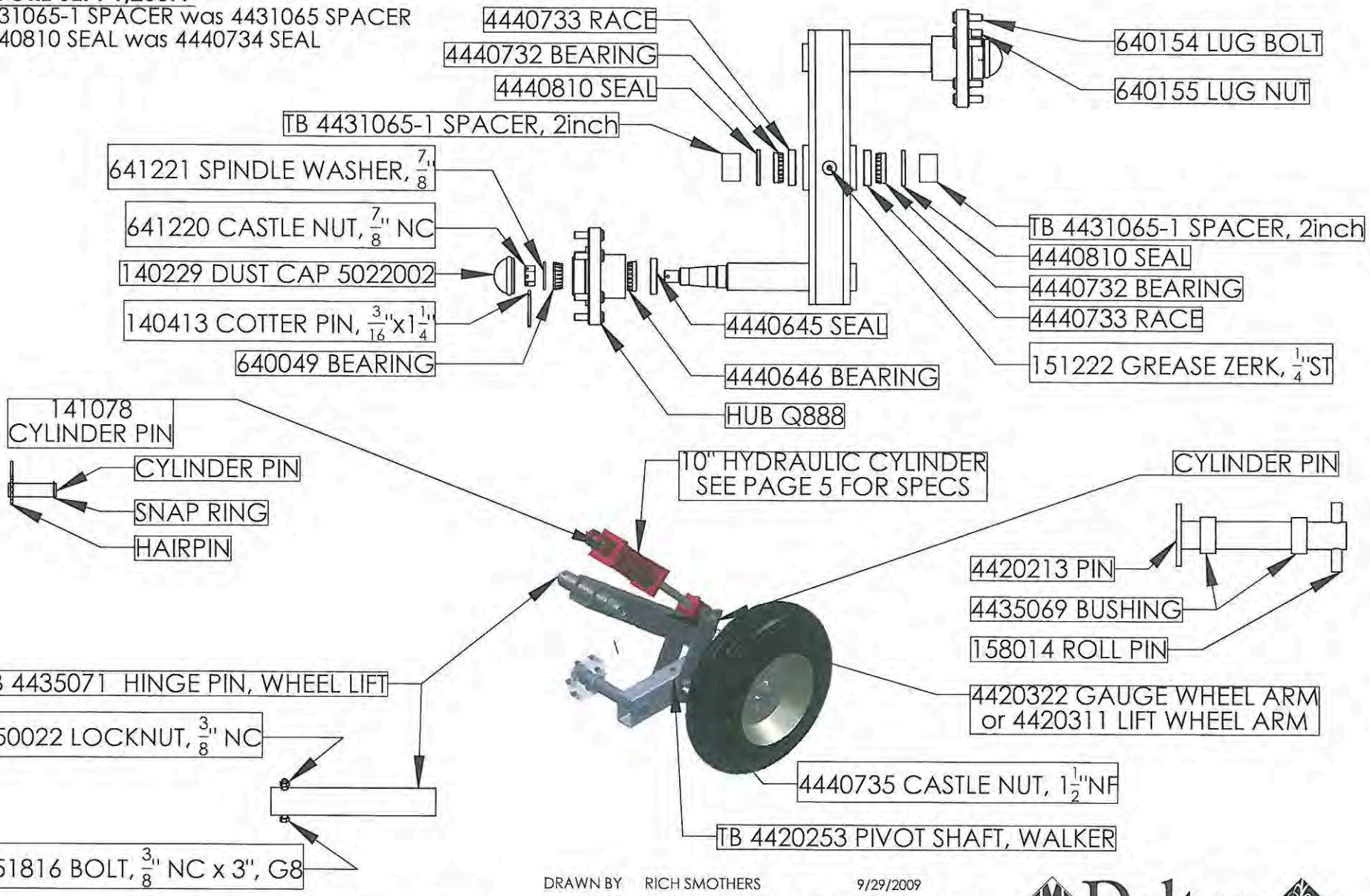
SIZE A | DWG. NO. PG4-REAR HITCH | REV A

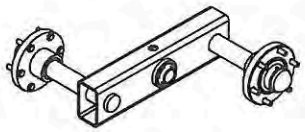
**TO ORDER PARTS, CALL 1-800-342-7498**

SCALE: 1:15 SHEET 4 OF 7

5 4 3 2 1

**BEFORE SEPT 1,2007:**
4431065-1 SPACER was 4431065 SPACER
4440810 SEAL was 4440734 SEAL



**PROPRIETARY AND CONFIDENTIAL**
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DRAWN BY RICH SMOTHERS 9/29/2009
FILE TB LIFT WHEELS AND LUG, RIGHT SIDE FORWARD
PRINT DATE 3/7/2012
TITLE: TB LIFT WHEELS AND LUG, RIGHT SIDE FORWARD

Dalton AG PRODUCTS
602 E. VAN BUREN ST., LENOX, IA 50851

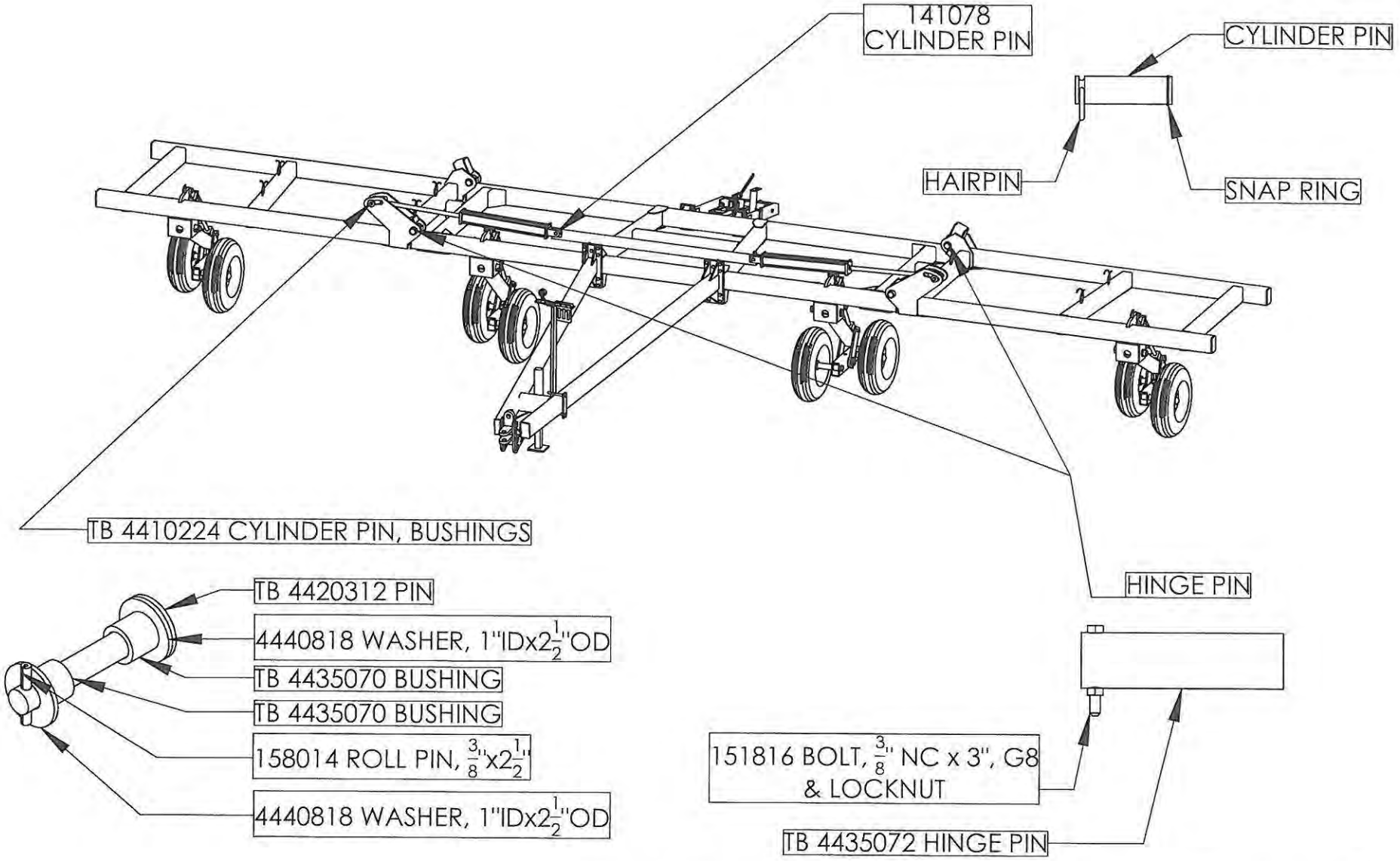
SIZE A | DWG. NO. PG5-LIFT WHEEL | REV A

**TO ORDER PARTS, CALL 1-800-342-7498**

SCALE: 1:20



5 4 3 2 1




**PROPRIETARY AND CONFIDENTIAL**

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DRAWN BY RICH SMOTHERS 4/23/2009
FILE TB DW 6035 15K ASSEMBLY
PRINT DATE 3/7/2012
TITLE: TB DW 6035 15K ASSEMBLY

Dalton AG PRODUCTS
602 E. VAN BUREN ST., LENOX, IA 50851

SIZE A | DWG. NO. PG6 PIN CALLOUT | REV A

**TO ORDER PARTS, CALL 1-800-342-7498**

SCALE: 1:50 SHEET 6 OF 7

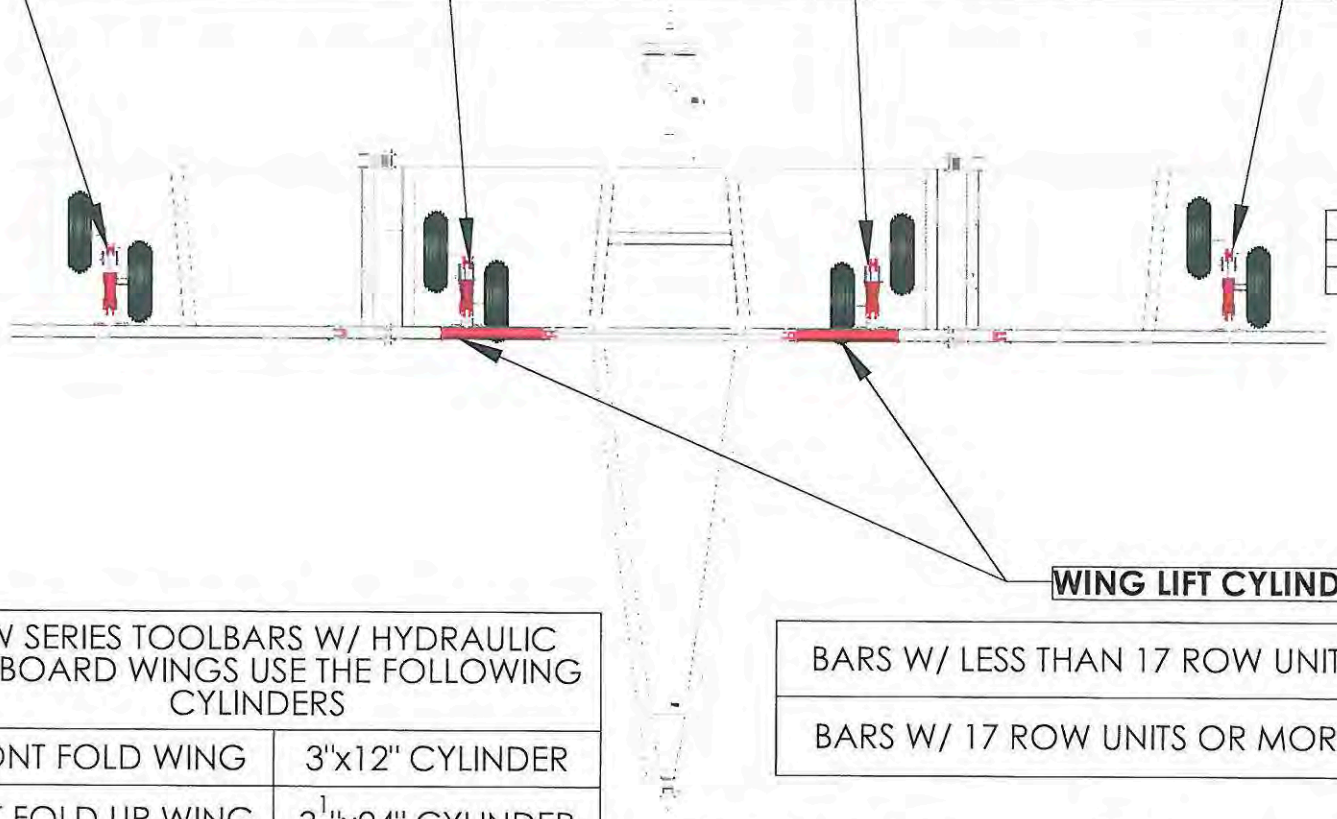
5 4 3 2 1

## OPTIONAL HEAVY DUTY LIFT CYLINDER SIZES

| | | | |
|---|---|---|---|
| $3\frac{1}{2}$"x10"REPHASE CYL | $3\frac{3}{4}$"x10"REPHASE CYL | 4"x10"REPHASE CYL | $3\frac{1}{4}$"x10"REPHASE CYL |

## STANDARD CYLINDER SIZES

| | | | |
|---|---|---|---|
| 3"x10" REPHASE CYL | $3\frac{1}{4}$"x10" REPHASE CYL | $3\frac{1}{2}$"x10" REPHASE CYL | $2\frac{3}{4}$"x10" REPHASE CYL |



| CYLINDER LOCKUPS | |
|---|---|
| 4410231-10 | 10" LOCKUP |
| 4410231-12 | 12" LOCKUP |

**WING LIFT CYLINDERS**

| DW SERIES TOOLBARS W/ HYDRAULIC OUTBOARD WINGS USE THE FOLLOWING CYLINDERS | |
|---|---|
| FRONT FOLD WING | 3"x12" CYLINDER |
| FLAT FOLD UP WING | $3\frac{1}{2}$"x24" CYLINDER |

| | |
|---|---|
| BARS W/ LESS THAN 17 ROW UNITS | $3\frac{1}{2}$"x30" CYLINDER |
| BARS W/ 17 ROW UNITS OR MORE | 4"x30" CYLINDER |

**PROPRIETARY AND CONFIDENTIAL**

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DRAWN BY RICH SMOTHERS 4/23/2009
FILE TB DW 6035 15K ASSEMBLY
PRINT DATE 3/7/2012
TITLE: TB DW 6035 15K ASSEMBLY

Dalton AG PRODUCTS
602 E. VAN BUREN ST., LENOX, IA 50851

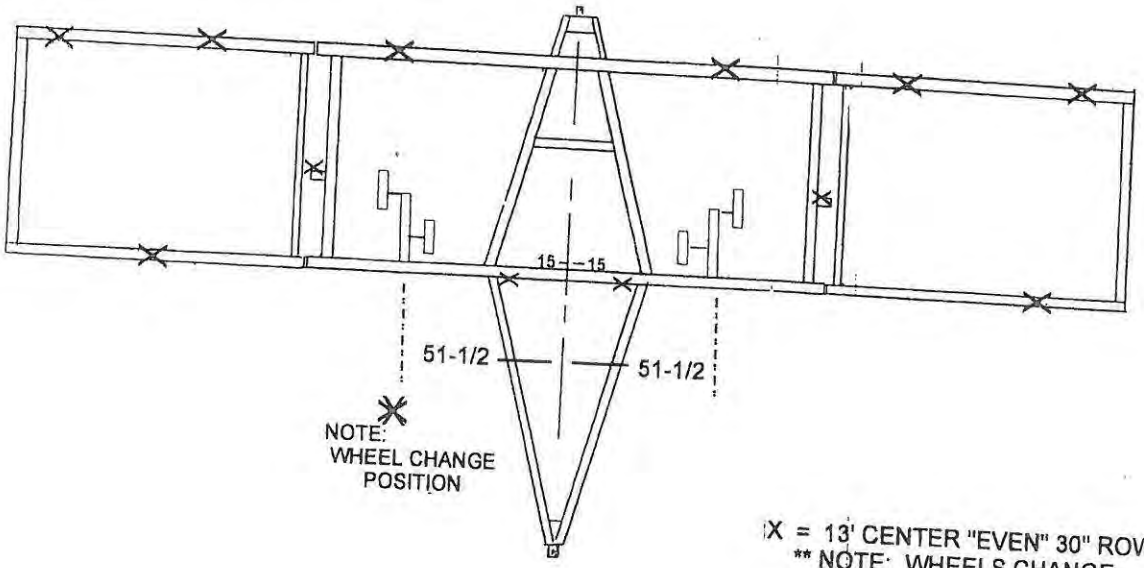
SIZE A | DWG. NO. PG7-CYLINDER CALLOUT | REV A

**TO ORDER PARTS, CALL 1-800-342-7498**

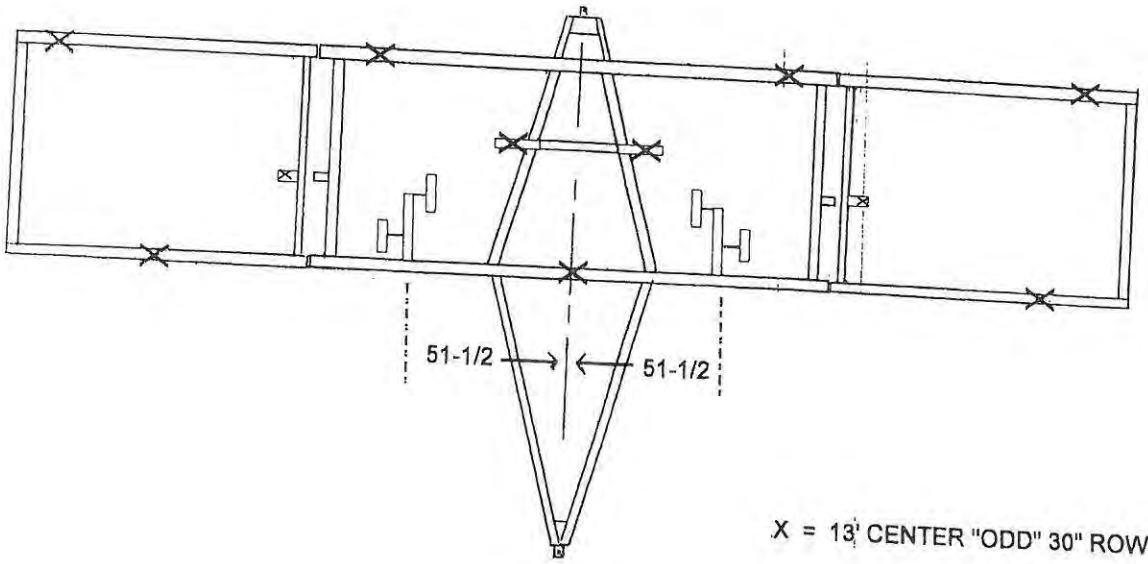
SCALE: 1:60



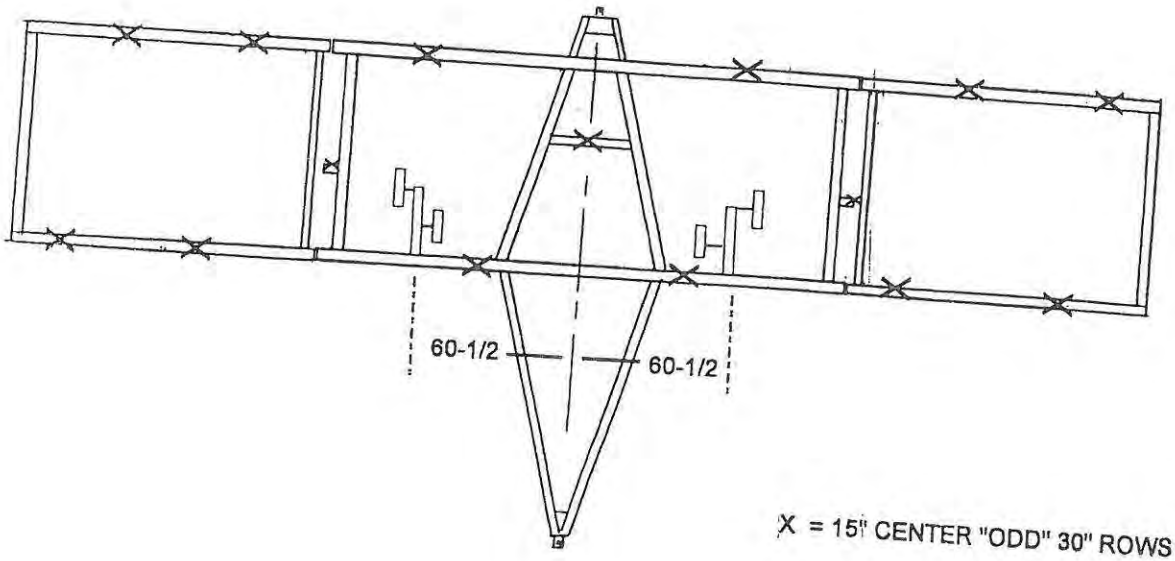
5 4 3 2 1



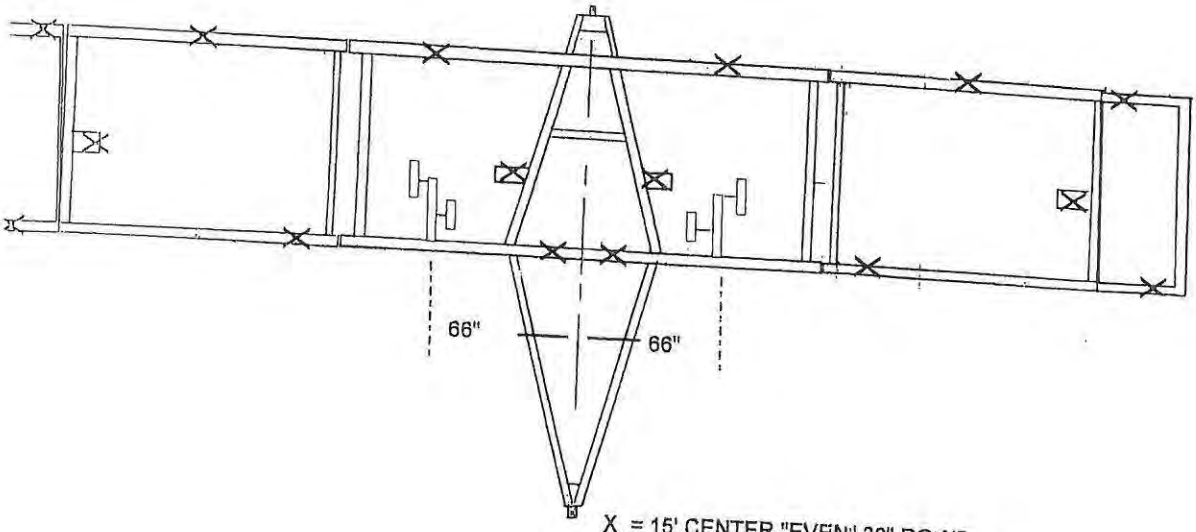

X = 13' CENTER "EVEN" 30" ROWS
** NOTE: WHEELS CHANGE POSITION




X = 13' CENTER "ODD" 30" ROWS



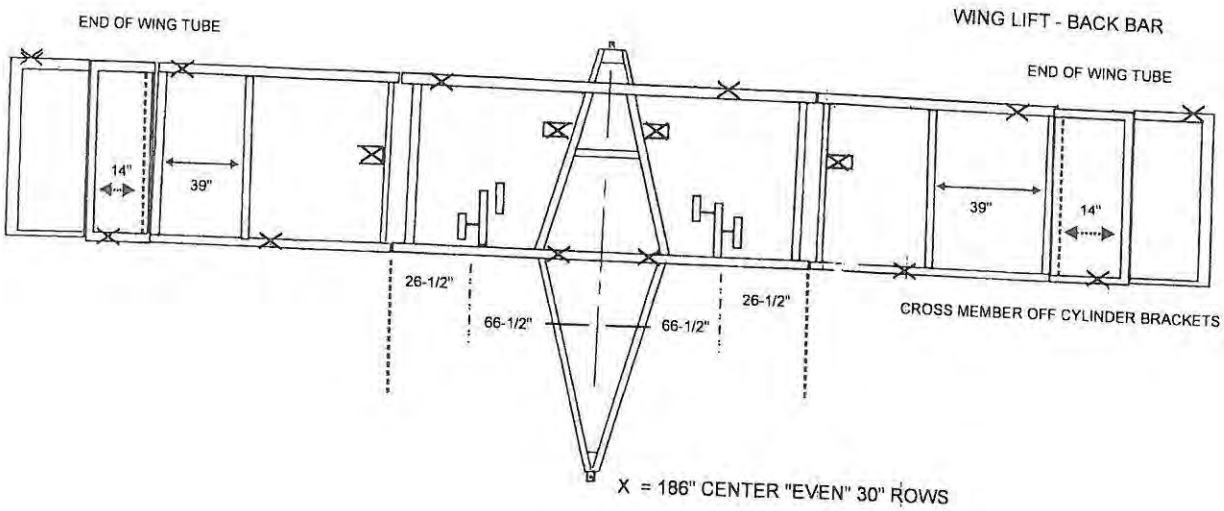

X = 15' CENTER "ODD" 30" ROWS




X = 15' CENTER "EVEN" 30" ROWS

16 ROW

186" CENTER, 85" INNER WING, 50" OUTER WING



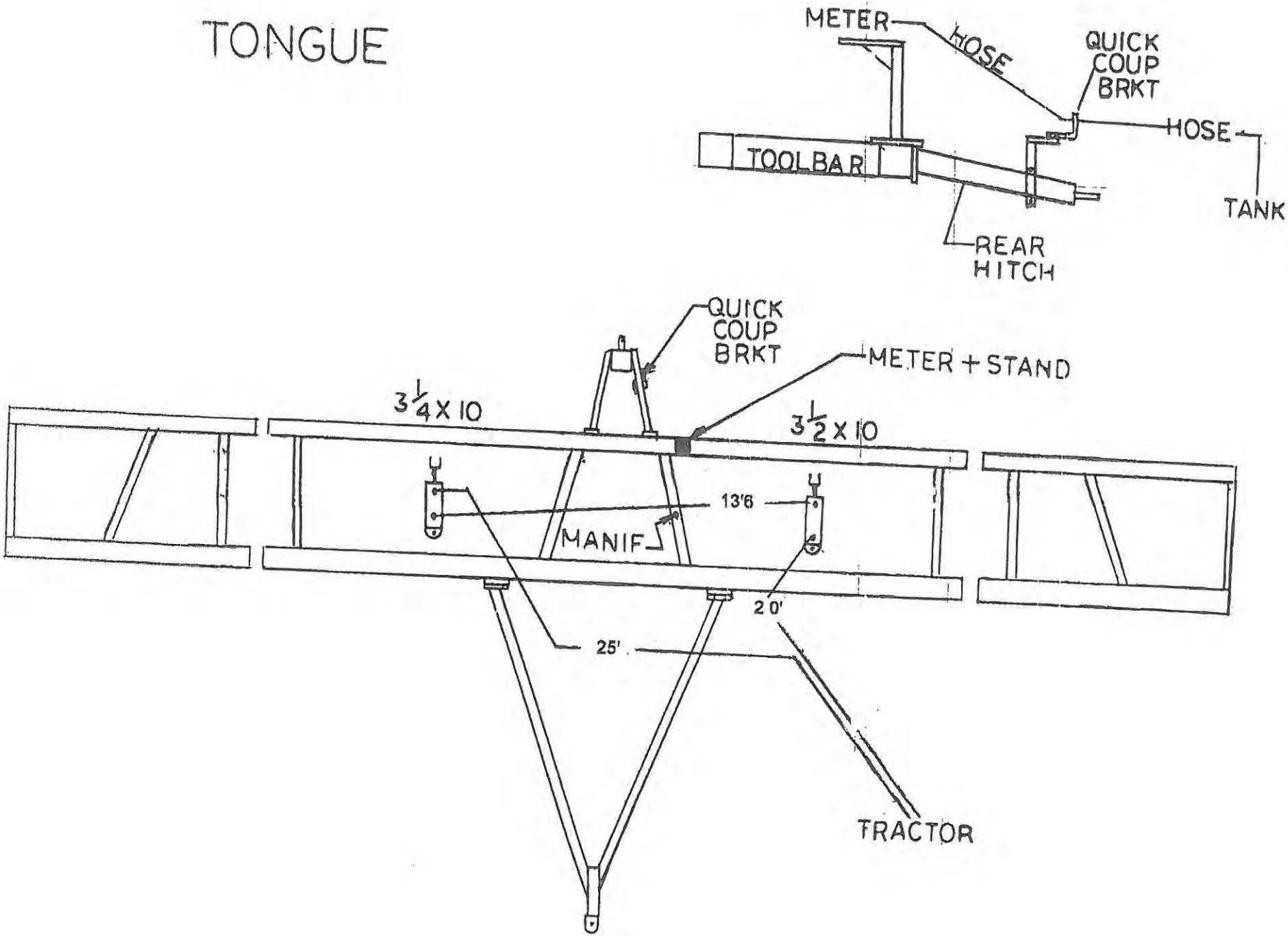

X = 186" CENTER "EVEN" 30" ROWS

16 ROW

186" CENTER, 90" INNER WING, 48" OUTER WING

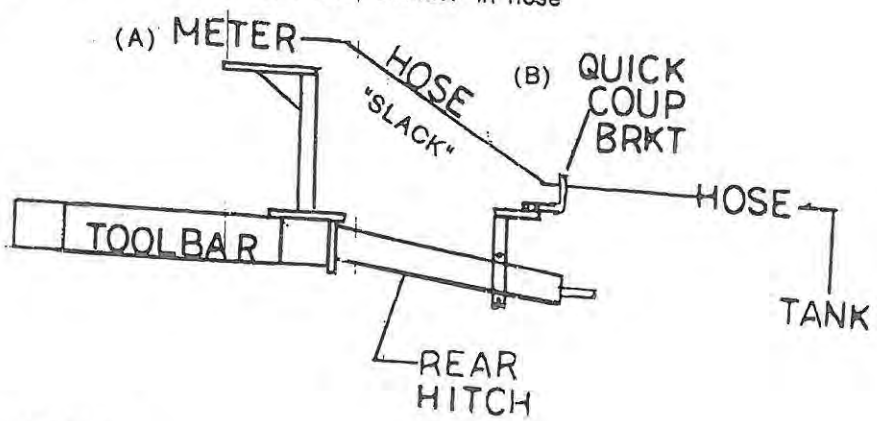
WITH SPRING CUSHION BRACKETS
"OR" STANDARD BRACKETS

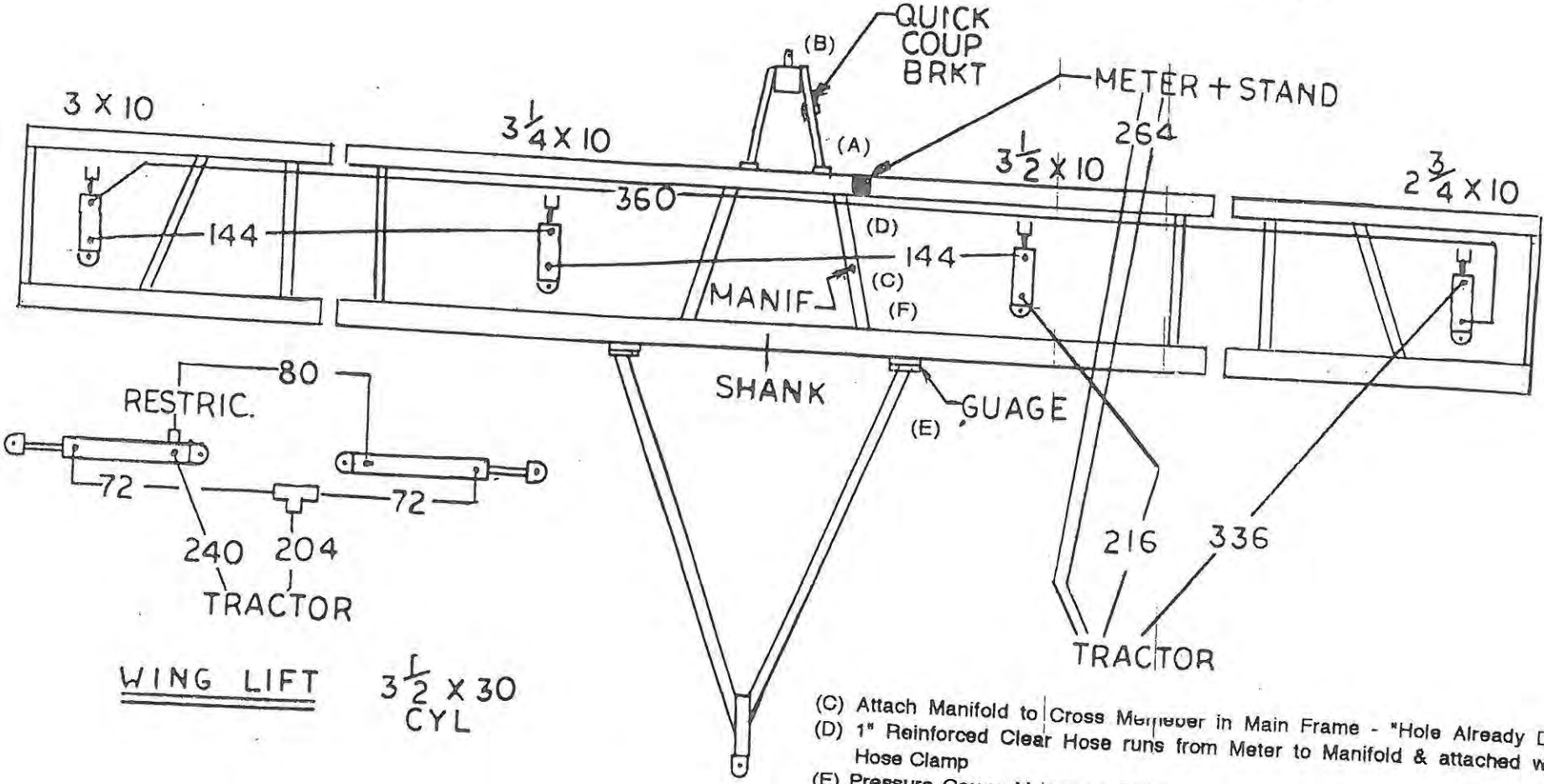
# TONGUE


METER
HOSE
QUICK COUP BRKT
HOSE
TOOLBAR
TANK
REAR HITCH
QUICK COUP BRKT
METER + STAND
3 1/4 X 10
3 1/2 X 10
13'6
MANIF
20'
25'
TRACTOR

# DW6032
# TOOLBAR
## 15 ET CENTER
## 13 SHANK

and Quick Coupler hose to rear & attach
(B) to Quick Coupler bracket on rear hitch - be sure to leave "SLACK" in hose so Breakaway can work

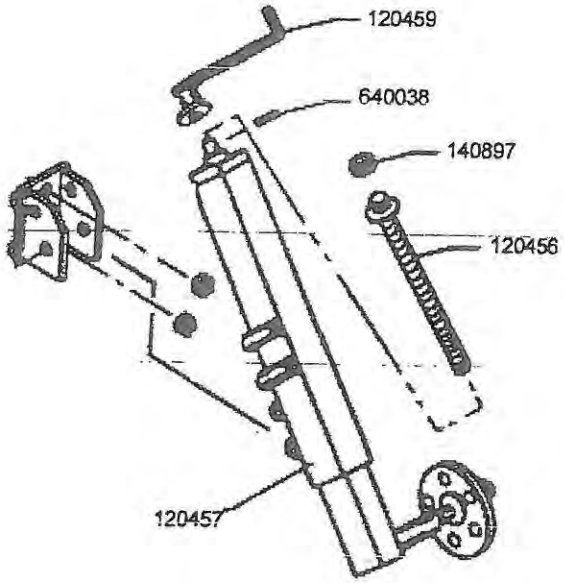


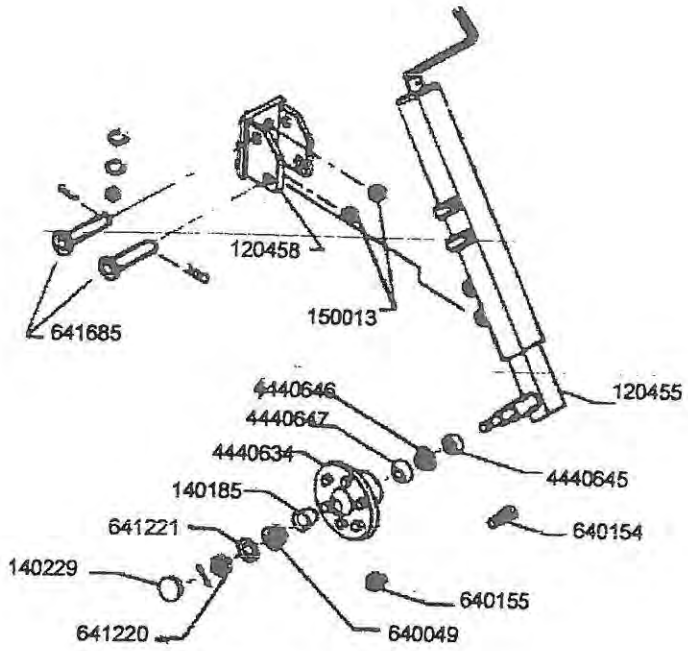

WING LIFT 3 1/2 X 30 CYL

(C) Attach Manifold to Cross Member in Main Frame - "Hole Already Drilled"
(D) 1" Reinforced Clear Hose runs from Meter to Manifold & attached with Hose Clamp
(E) Pressure Gauge Mounts to Bracket on Left Side of Main Tongue and
(F) 3/8" Clear Hose from Gauge is to be attached to One Outlet on Manifold

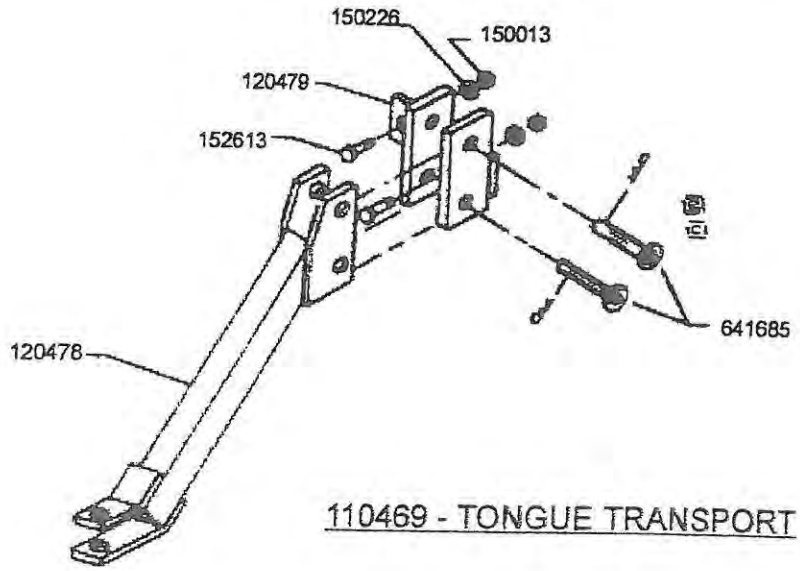
# INLINE TRANSPORT ASSEMBLY




110463 - GA WHEEL - LH.




110462 - GA WHEEL - RH.




110469 - TONGUE TRANSPORT

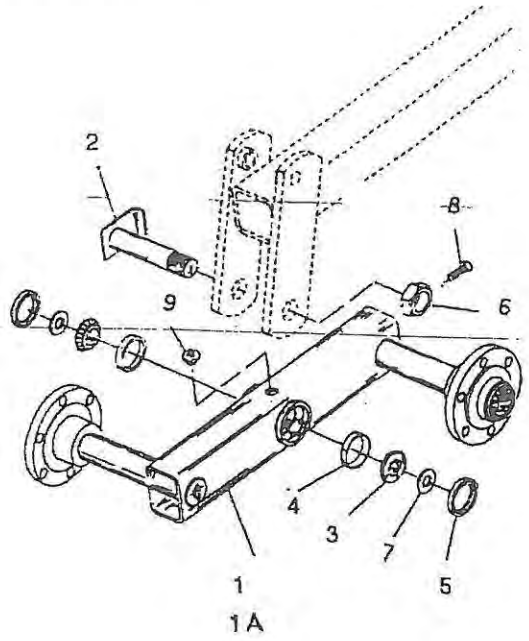
P.O. BOX 70
602 EAST VAN BUREN
LENOX, IA 50851

CMC Dalton AG PRODUCTS
Manufacturers of Fertilizer Application Equipment

PH. 1-641-333-4518
FAX 1-641-333-4429
1-800-342-7498

# WALKING AXLE ASSEMBLY

| NO. | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1A | 4410148 | WALKING AXLE ASSMY. W/HUBS | 1 |
| 1 | 4420252 | WALKING AXLE ASSMY. W/O HUBS | 1 |
| 2 | 4420253 | AXLE PIVOT PIN | 1 |
| 3 | 4440732 | BEARING CONE | 2 |
| 4 | 4440733 | BEARING CUP | 2 |
| 5 | 4440734 | SEAL | 2 |
| 6 | 4440735 | 1/2" SLOTTED NUT NF | 1 |
| 7 | 4431065 | SPACER | 2 |
| 8 | 4440736 | 3/16" X 3 COTTER PIN | 1 |
| 9 | 151222 | 1/4" ST DRIVE GREASE FITTING | 1 |



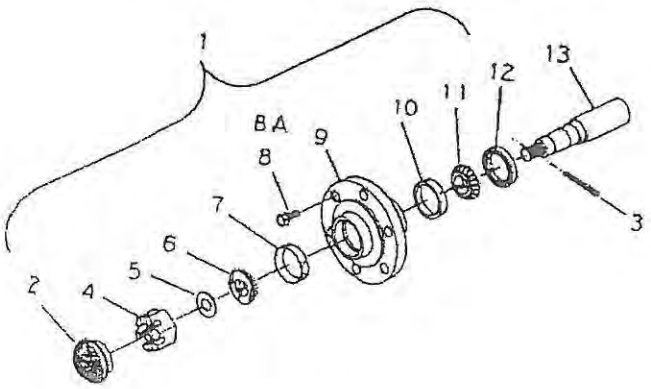
1A

*** As of Sept. 1, 2007
(#5) new Seal 4440810

140235 - U-bolt for walker (wing)

# 888 HUB & SPINDLE

NOTE: CHECK HUB NO. BEFORE ORDERING PARTS
IMPORTANT: TORQUE 1/2" WHEEL BOLTS TO 100 FT.-LBS.



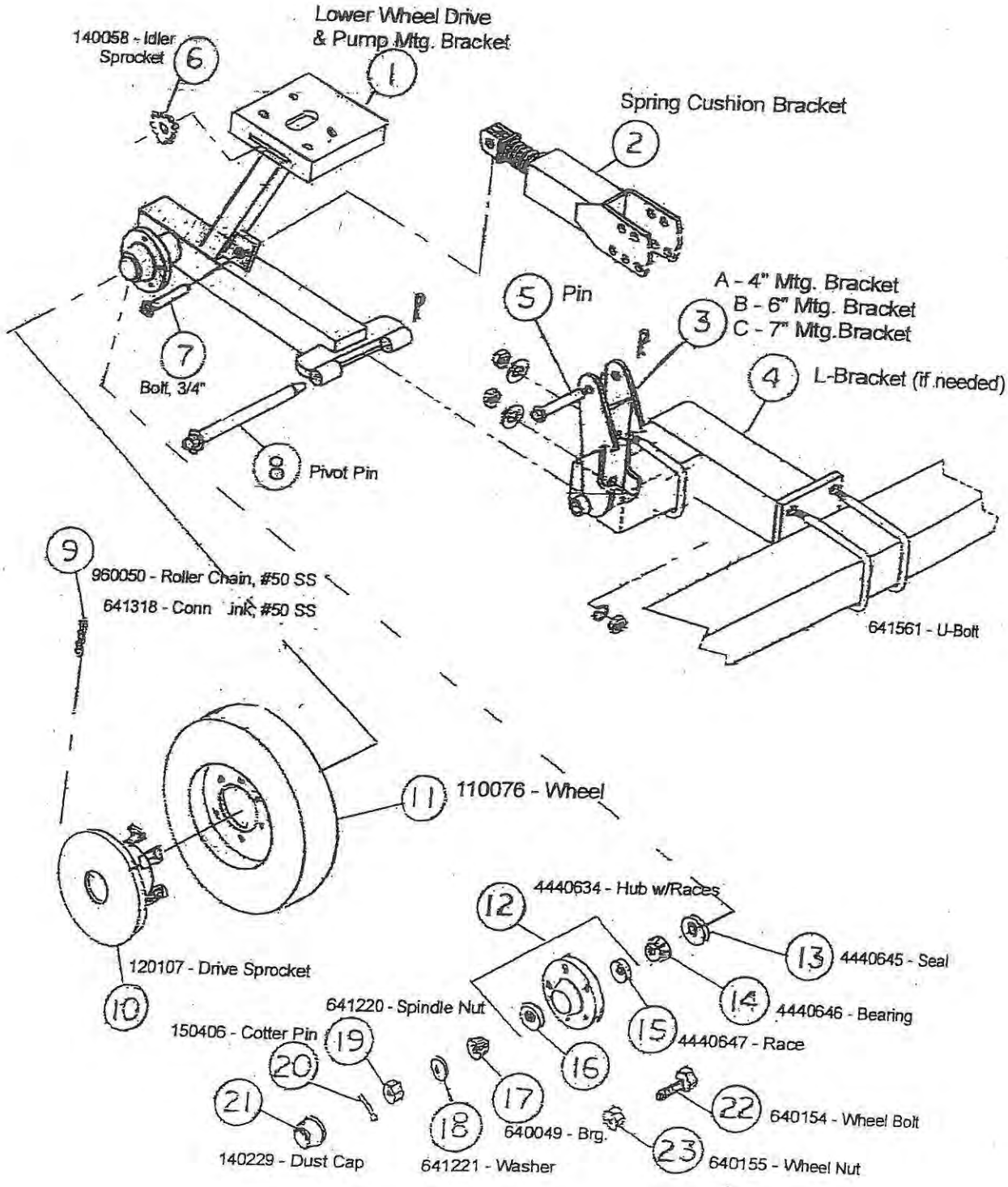

| NO. | PART NO. | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 4410086 | 888 - 6 BOLT HUB ASSMY COMPLETE | 1 |
| 2 | 140229 | HUB CAP | 1 |
| 3 | 150413 | 5/32" X 1-1/4" COTTER PIN | 1 |
| 4 | 641220 | 7/8" NF SLOTTED NUT FULL | 1 |
| 5 | 641221 | 7/8" WASHER | 1 |
| 6 | 640049 | BEARING CONE | 1 |
| 7 | 140185 | BEARING CUP | 1 |
| 8 | P101301 | 1/2" X 1" NF LUG BOLT | 6 |
| 8A | 640154 | DRIVE-IN LUG-BOLT | 6 |
| | 640155 | 1/2" LUG NUT | 6 |
| 9 | 4440634 | HUB WITH RACES | 1 |
| 10 | 4440647 | BEARING CUP | 1 |
| 11 | 4440646 | BEARING CONE | 1 |
| 12 | 4440645 | SEAL | 1 |
| 13 | 4440633 | SPINDLE, 2" X 14" | 1 |

P.O. BOX 70
602 EAST VAN BUREN
LENOX, IA 50851

Dalton
AG PRODUCTS, INC.
Manufacturers of Fertilizer Application Equipment

PH. 1-641-333-4518
FAX 1-641-333-4429
1-800-342-7498

# 4410116 - GROUND DRIVE ASSMY - (LESS PUMP) WITH LUG TIRE



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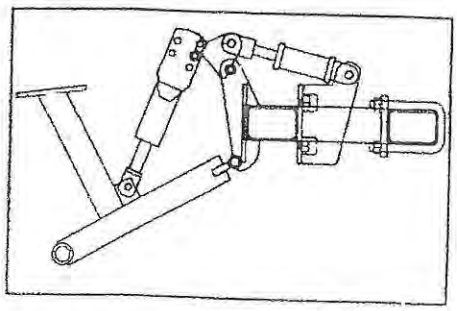
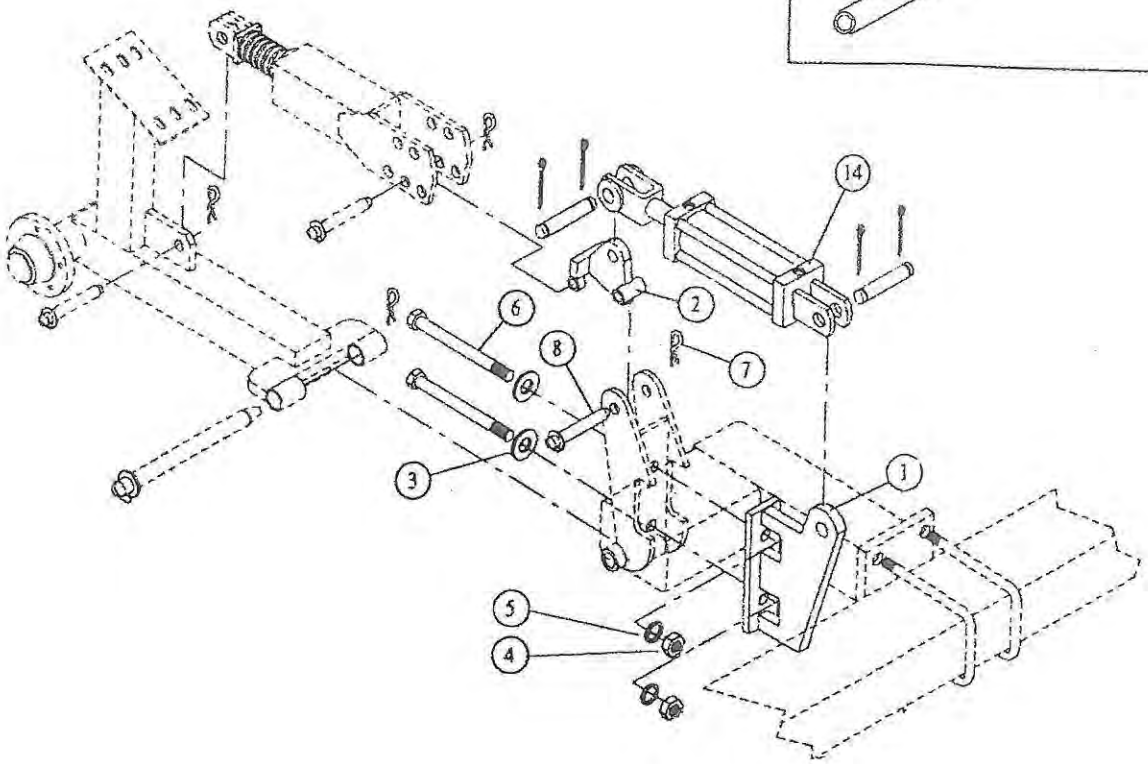
AG PRODUCTS, INC.
Manufacturers of Fertilizer Application Equipment

PH. 1-641-333-4518
FAX 1-641-333-4429
1-800-342-7498

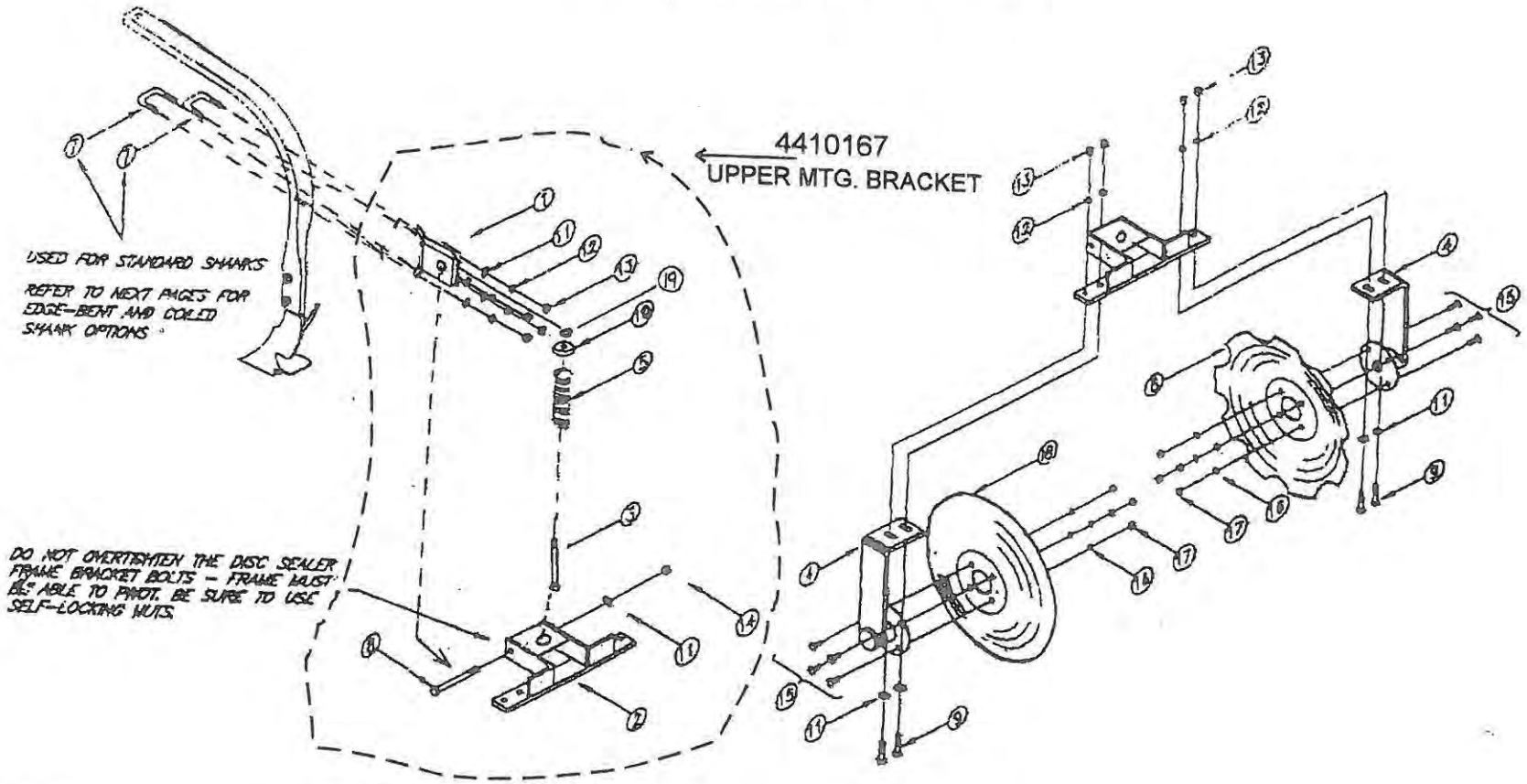
# GROUND DRIVE ASSMY - (LESS PUMP) WITH LUG TIRE & HYDRAULIC LIFT OPTION






(3/28/02)

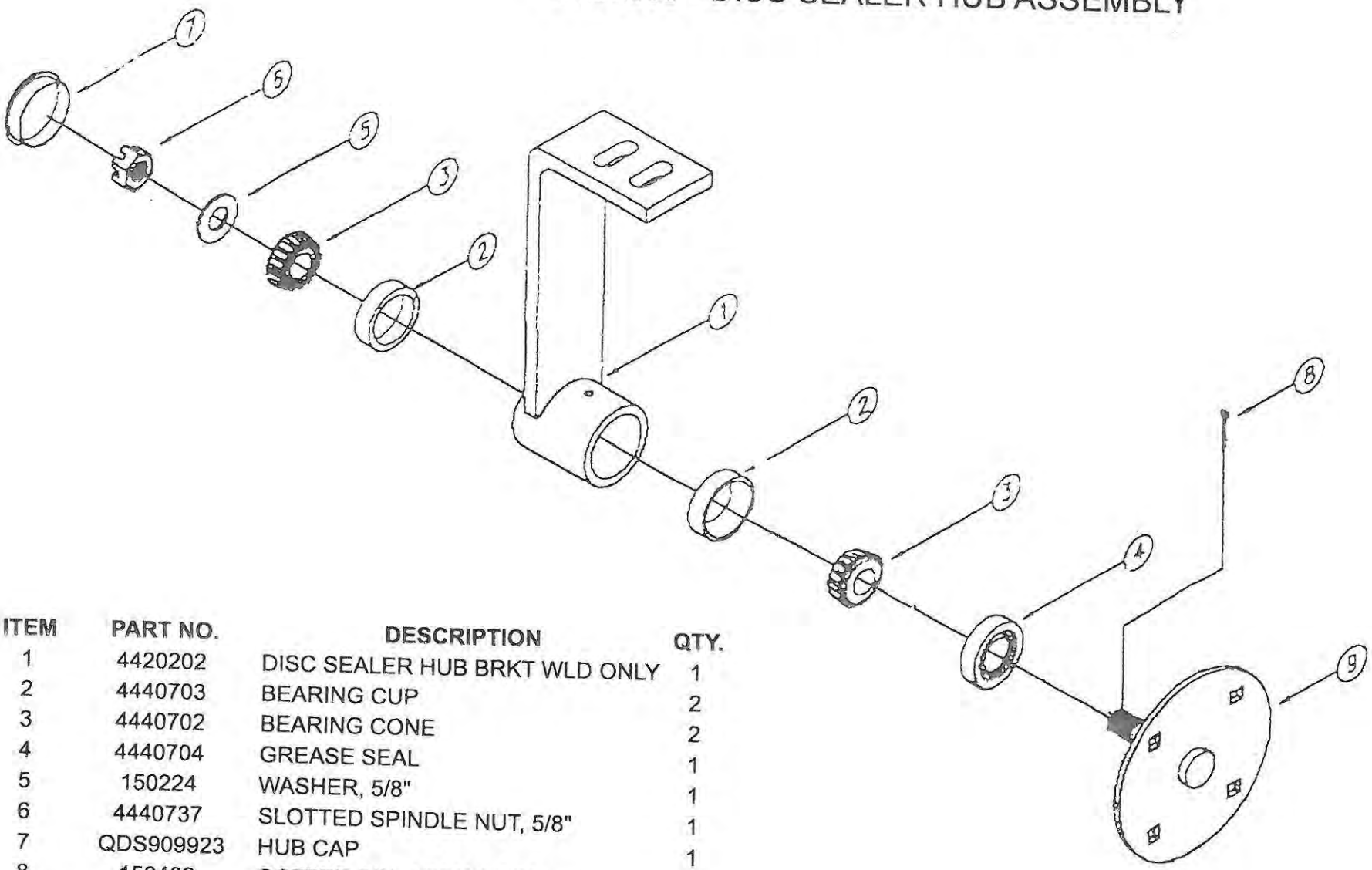
# 4410124 - DISC SEALER, SMOOTH
# 4410149 - DISC SEALER, NOTCHED 18"




| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 4420200 | SHANK MOUNTING BRACKET | 1 |
| 2 | 4420204 | DISC SEALER FRAME BRACKET | 1 |
| 3 | 140974 | SPRING PIVOT BOLT, 5/8" X 8" | 1 |
| 4 | 4420203 | SEALER ARM ASSEMBLY | 2 |
| 5 | 4440787 | COMPRESSION SPRING | 1 |
| 6 | 4440785 | DISC SEALER, 18" NOTCHED | 2 |
| 7 | 4440788 | U-BOLT, 1/2-13 X 2" X 2-1/2" | 2 |
| 8 | | HEX BOLT, 9/16" X 4-1/2" | 1 |
| 9 | 152223 | HEX BOLT, 1/2"-13 X 2" | 4 |

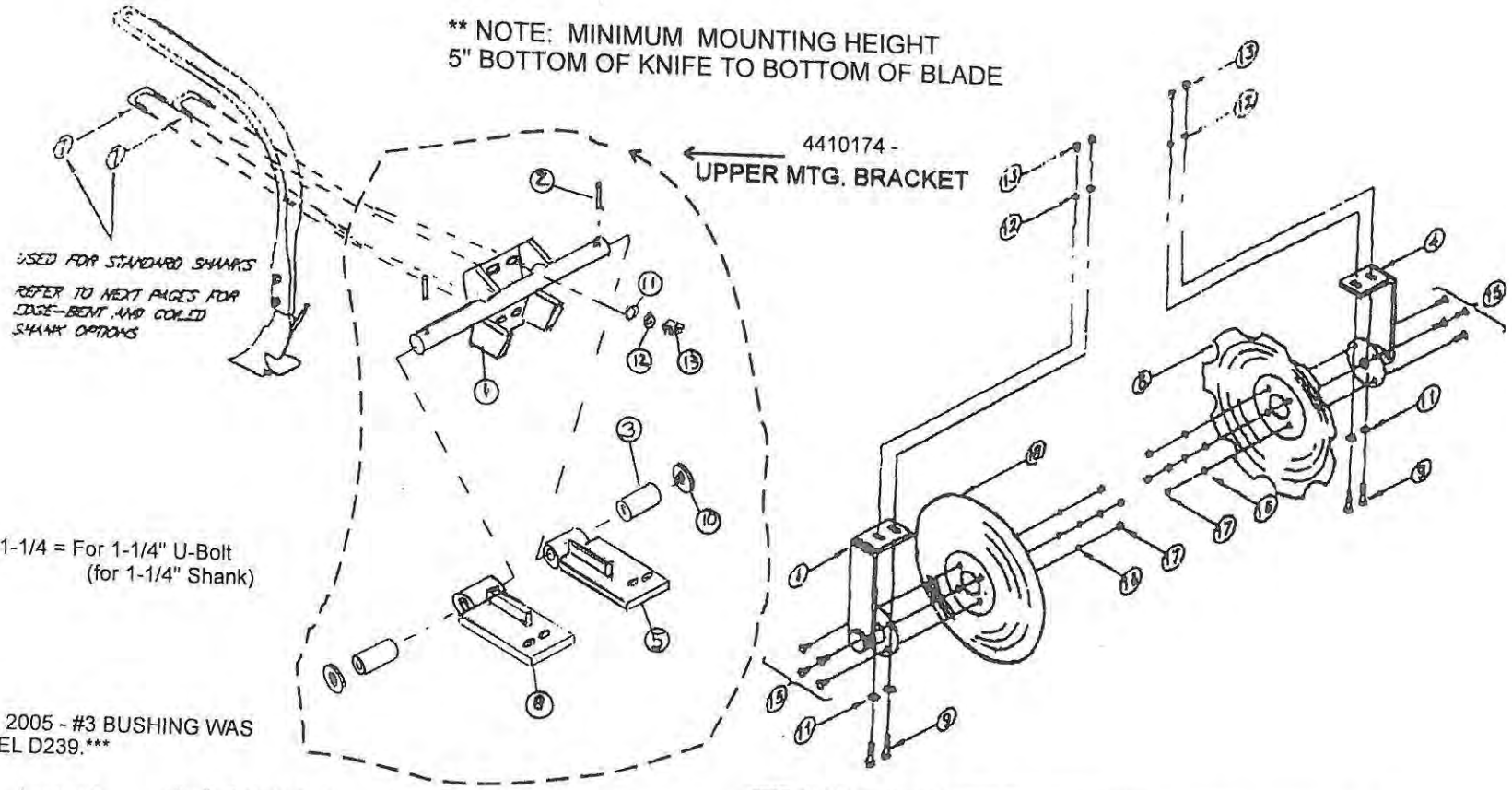
| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 10 | 150222 | WASHER, 5/8" PLTD | 3 |
| 11 | 150220 | FLATWASHER, 1/2" PLTD | 8 |
| 12 | 150218 | LOCKWASHER, 1/2" PLTD | 8 |
| 13 | 150008 | HEX NUT, 1/2" -13 PLTD | 8 |
| 14 | | HEX NUT, SELFLOCKING, 9/16" PLTD. | 1 |
| 15 | 151831 | BOLT, 3/8"-15 X 1" | 8 |
| 16 | 150210 | LOCKWASHER, 3/8" PLTD | 8 |
| 17 | 150057 | HEX NUT, 3/8" PLTD NF | 8 |
| 18 | 4440706 | SMOOTH BLADE - INLIEU OF NOTCHED | 2 |
| 19 | 150011 | NUT, 5/8" NC PLTD | 1 |

# 4420203 - DISC SEALER HUB ASSEMBLY



| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 4420202 | DISC SEALER HUB BRKT WLD ONLY | 1 |
| 2 | 4440703 | BEARING CUP | 2 |
| 3 | 4440702 | BEARING CONE | 2 |
| 4 | 4440704 | GREASE SEAL | 1 |
| 5 | 150224 | WASHER, 5/8" | 1 |
| 6 | 4440737 | SLOTTED SPINDLE NUT, 5/8" | 1 |
| 7 | QDS909923 | HUB CAP | 1 |
| 8 | 150409 | COTTER PIN, 1/8" X 1-1/2" | 1 |
| 9 | 4420201 | SPINDLE ASSEMBLY | 1 |
| 10 | 151222 | DRIVE IN GREASE ZERK | 1 |

# 4410171 - DISC SEALER, INDEPENDENT STYLE, 18" NOTCHED



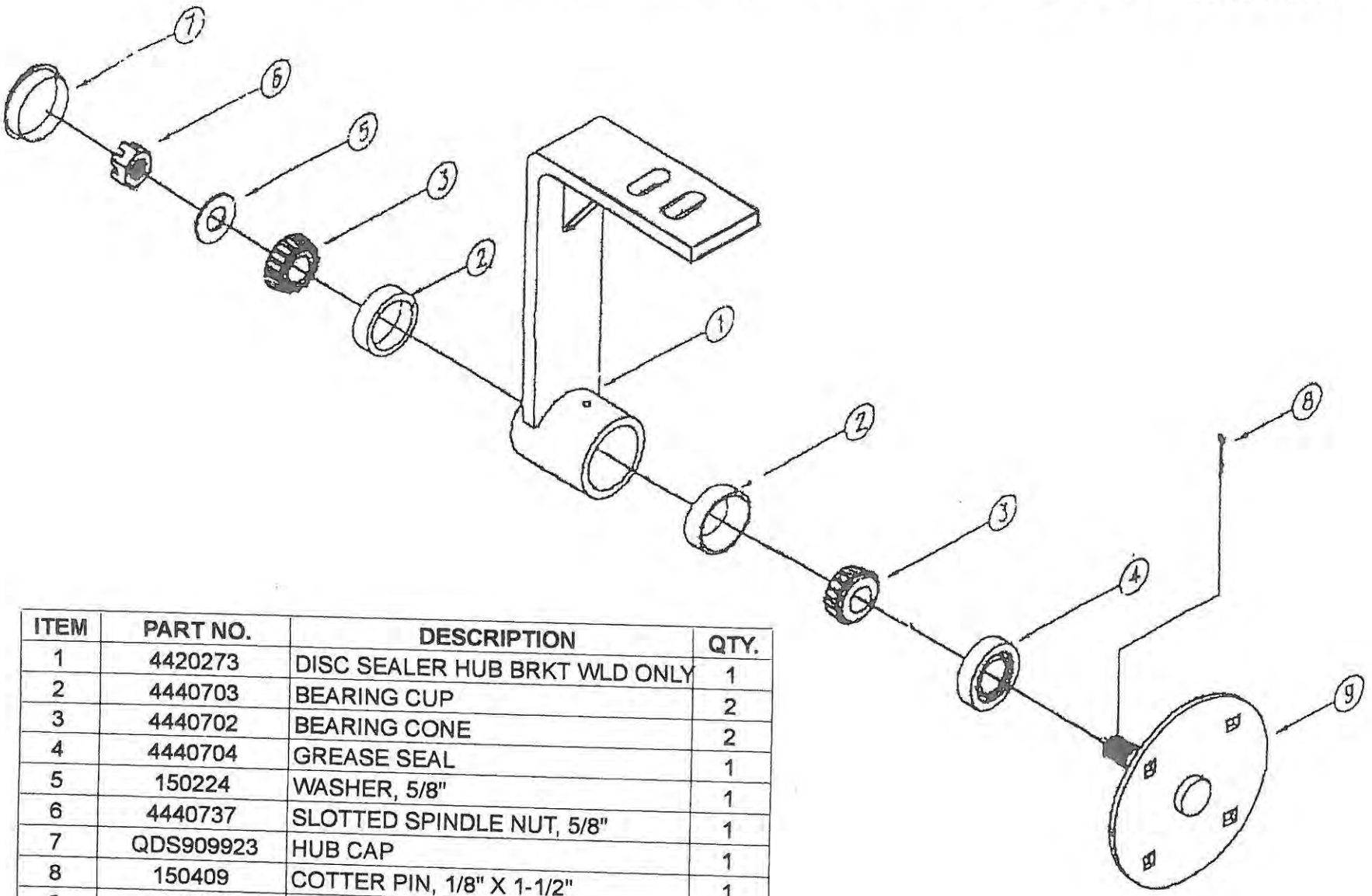

** AS OF NOV. 1, 2005 - #3 BUSHING WAS CHANGED TO REL D239.***

| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 4420271 | SHANK MOUNTING BRACKET | 1 |
| 2 | | ROLL PIN, 3/8" X 2 | 2 |
| 3 | AA3238-32 | BUSHING OIL LITE | 4 |
| 4 | 4420277 | SEALER ARM ASSEMBLY | 2 |
| 5 | 4420274 | PIVOT ARM, WLD, RH | 1 |
| 6 | 4440785 | DISC SEALER, 18" NOTCHED | 2 |
| 7 | 4440788 | U-BOLT, ½-13 X 2" X 2-1/2" | 2 |
| 8 | 4420272 | PIVOT ARM WLD, LH | 1 |
| 9 | 152223 | HEX BOLT, ½"-13 X 2" | 4 |

| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 10 | 150251 | WASHER, 1-1/4" ID X 1-7/8"OD X 14 GA | 3 |
| 11 | 150220 | FLATWASHER, ½" PLTD | 8 |
| 12 | 150218 | LOCKWASHER, ½" PLTD | 8 |
| 13 | 150008 | HEX NUT, ½" -13 PLTD | 8 |
| 14 | 150212 | FLATWASHER, 3/8" | 16 |
| 15 | 151831 | BOLT, 3/8"-15 X 1" | 8 |
| 16 | 150210 | LOCKWASHER, 3/8" PLTD | 8 |
| 17 | 150004 | HEX NUT, 3/8" PLTD | 8 |
| 18 | 4440706 | SMOOTH BLADE - INLIEU OF NOTCHED | 2 |
| 19 | 150011 | NUT, 5/8" NC PLTD | 1 |

11/24/03

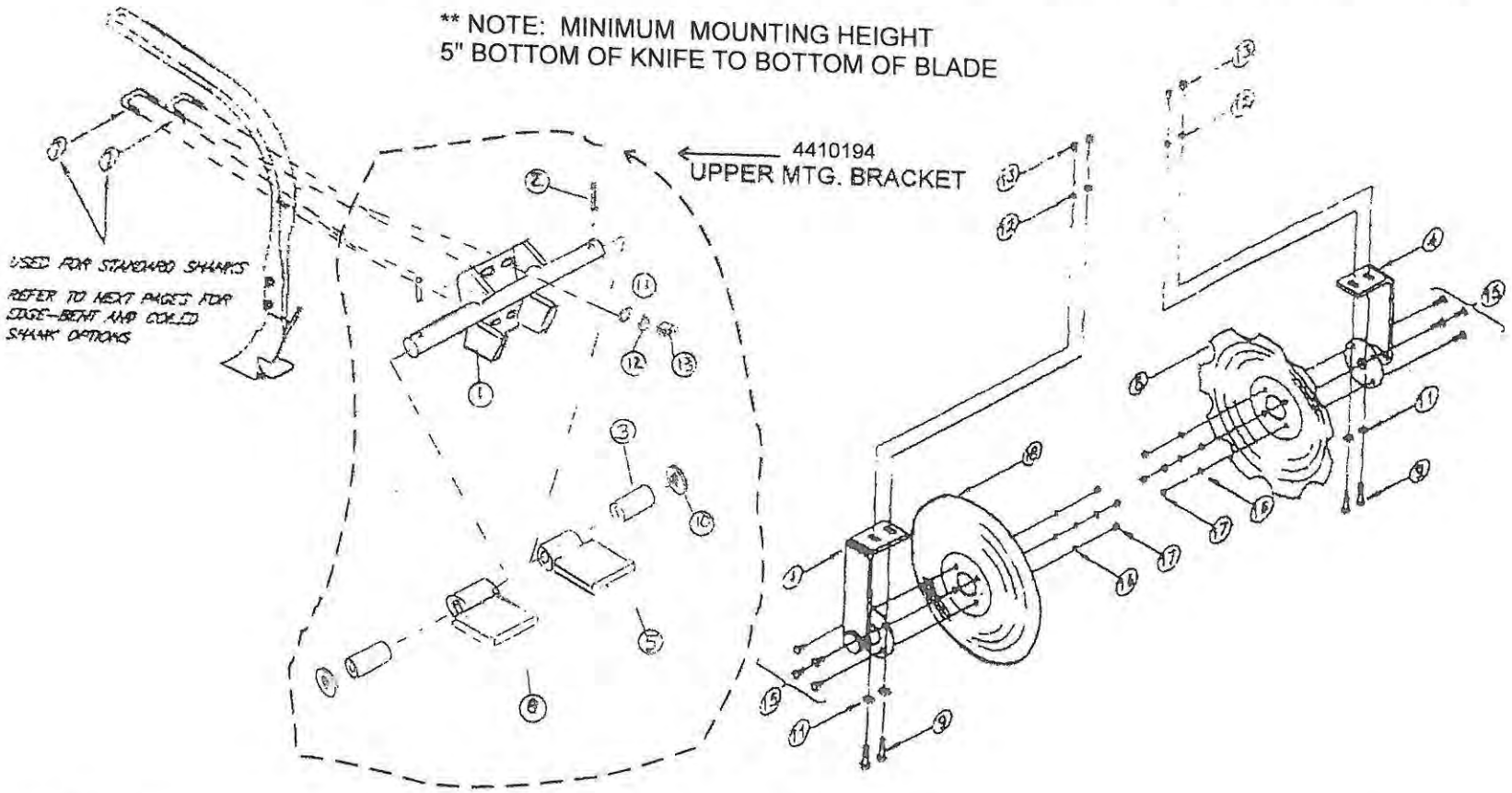
# 4420277 - DISC SEALER, INDEPENDENT STYLE, HUB ASSEMBLY




| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 4420273 | DISC SEALER HUB BRKT WLD ONLY | 1 |
| 2 | 4440703 | BEARING CUP | 2 |
| 3 | 4440702 | BEARING CONE | 2 |
| 4 | 4440704 | GREASE SEAL | 1 |
| 5 | 150224 | WASHER, 5/8" | 1 |
| 6 | 4440737 | SLOTTED SPINDLE NUT, 5/8" | 1 |
| 7 | QDS909923 | HUB CAP | 1 |
| 8 | 150409 | COTTER PIN, 1/8" X 1-1/2" | 1 |
| 9 | 4420201 | SPINDLE ASSEMBLY | 1 |
| 10 | 151222 | DRIVE IN GREASE ZERK | 1 |

11/24/03

# 4410190 - DISC SEALER, INDEPENDENT STYLE, 14" NOTCHED - (short arm)

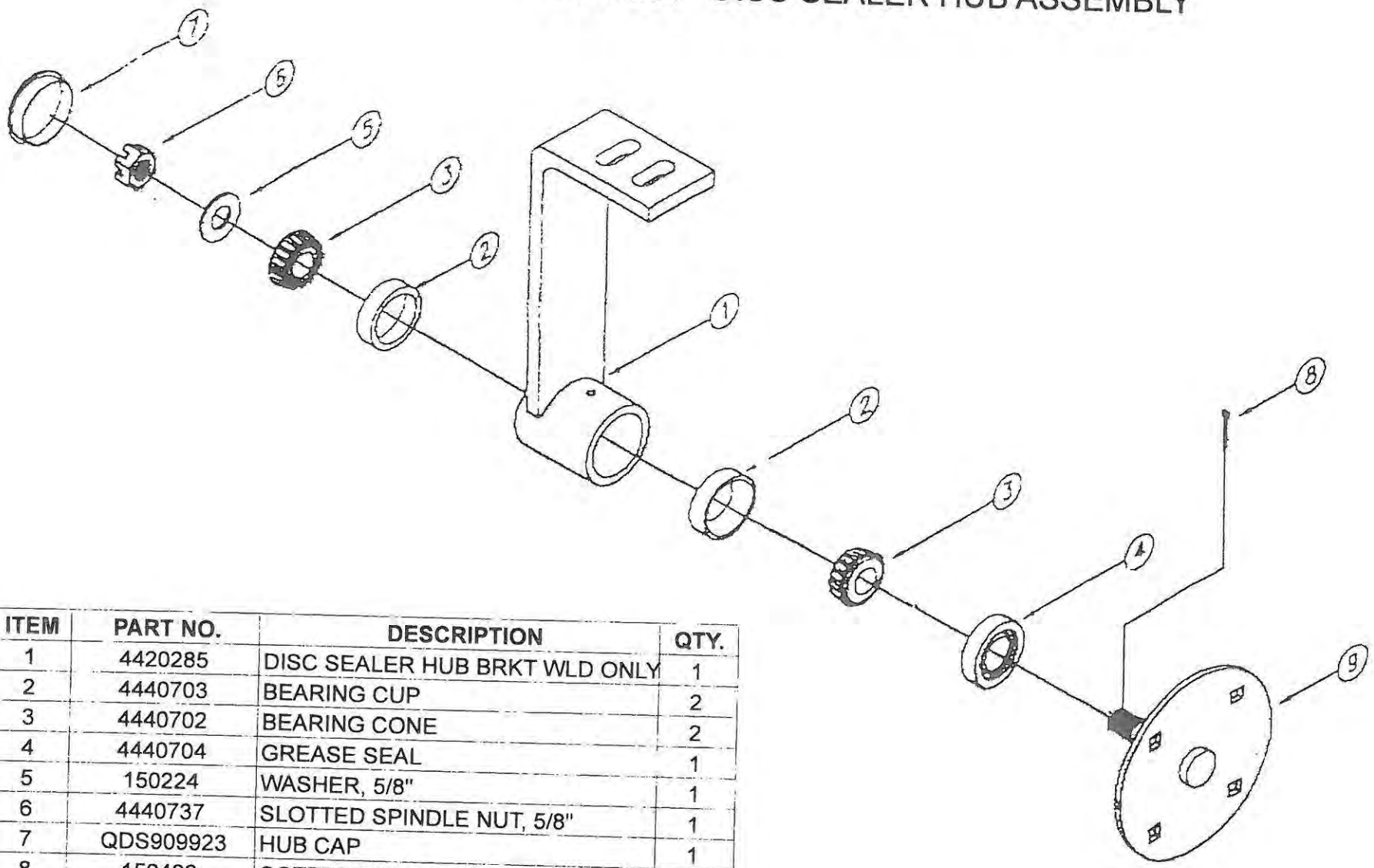



| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 4420283 | SHANK MOUNTING BRACKET | 1 |
| 2 | | ROLL PIN, 3/8" X 2 | 2 |
| 3 | REL D239 | BUSHING OIL LITE | 1 |
| 4 | 4420284 | SEALER ARM ASSEMBLY | 2 |
| 5 | 4420285 | PIVOT ARM, WLD, RH | 1 |
| 6 | 4440808 | BLADE, 14" NOTCHED | 2 |
| 7 | 4440788 | U-BOLT, ½-13 X 2" X 2-1/2" | 2 |
| 8 | 4420286 | PIVOT ARM WLD, LH | 1 |
| 9 | 152223 | HEX BOLT, ½"-13 X 2" | 4 |

| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 10 | 150251 | WASHER, 1-1/4" ID X 1-7/8"OD X 14 GA | 3 |
| 11 | 150220 | FLATWASHER, ½" PLTD | 8 |
| 12 | 150218 | LOCKWASHER, ½" PLTD | 8 |
| 13 | 150008 | HEX NUT, ½" -13 PLTD | 8 |
| 14 | 150212 | FLATWASHER, 3/8" | 16 |
| 15 | 151831 | BOLT, 3/8"-15 X 1" | 8 |
| 16 | 150210 | LOCKWASHER, 3/8" PLTD | 8 |
| 17 | 150004 | HEX NUT, 3/8" PLTD | 8 |
| 18 | n/a | SMOOTH BLADE - not available | n/a |
| 19 | 150011 | NUT, 5/8" NC PLTD | 1 |

6/7/05

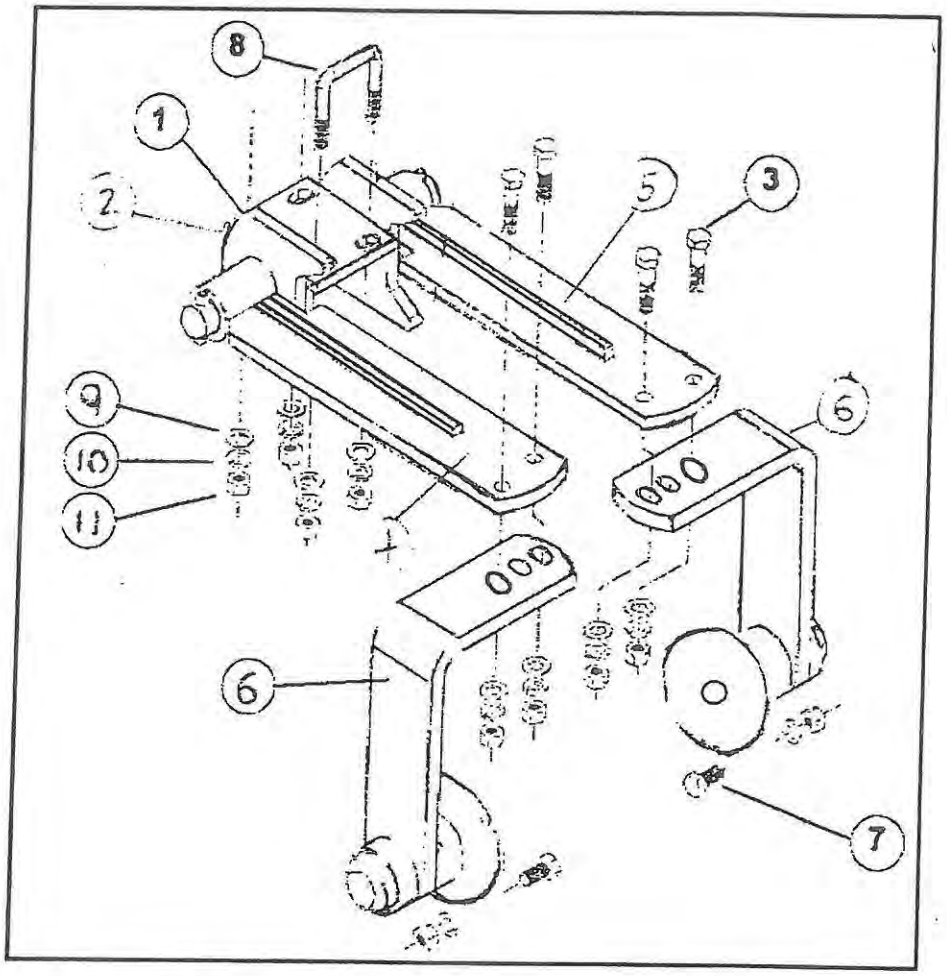
# 4420284 - DISC SEALER HUB ASSEMBLY



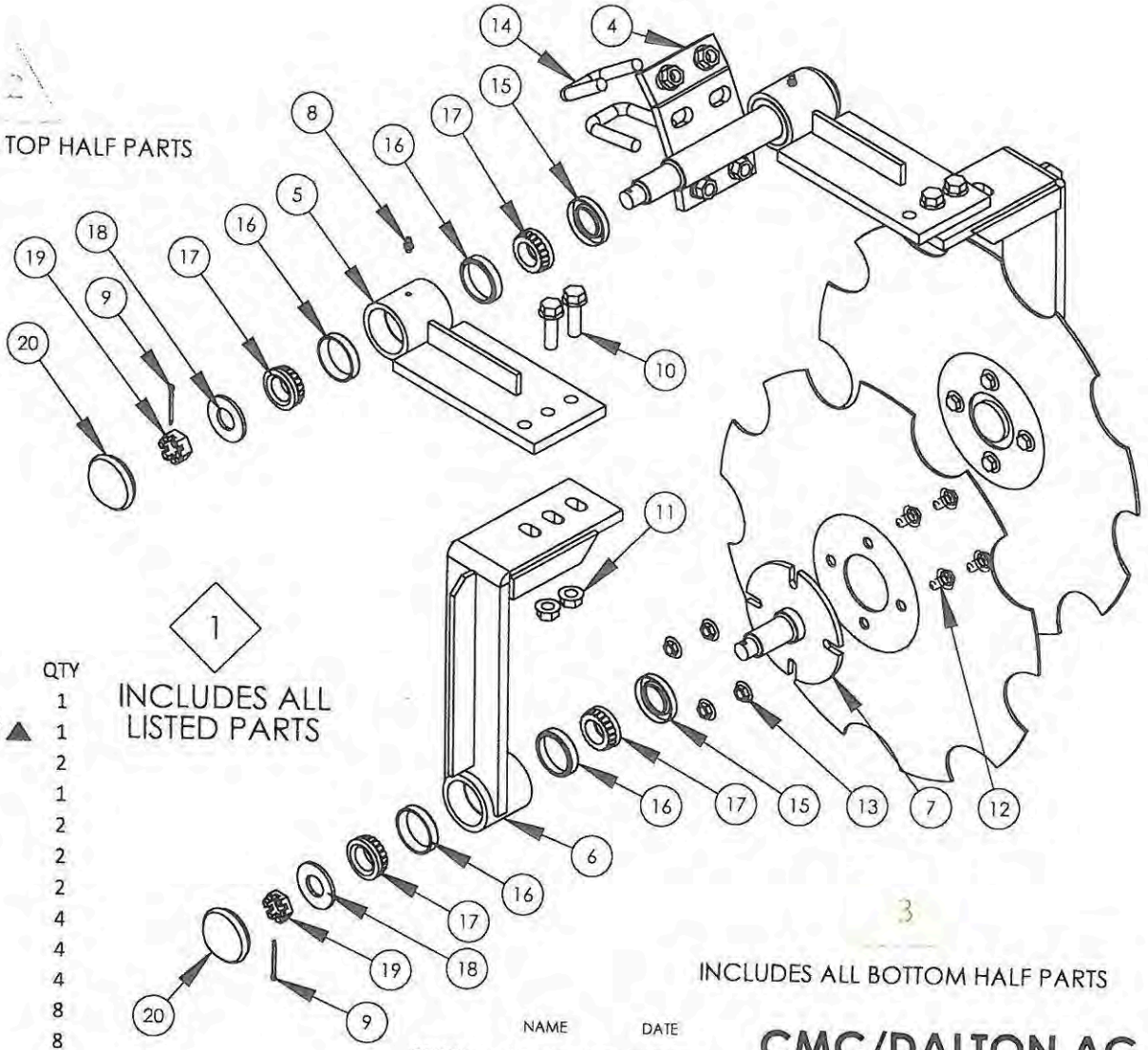

| ITEM | PART NO. | DESCRIPTION | QTY. |
|---|---|---|---|
| 1 | 4420285 | DISC SEALER HUB BRKT WLD ONLY | 1 |
| 2 | 4440703 | BEARING CUP | 2 |
| 3 | 4440702 | BEARING CONE | 2 |
| 4 | 4440704 | GREASE SEAL | 1 |
| 5 | 150224 | WASHER, 5/8" | 1 |
| 6 | 4440737 | SLOTTED SPINDLE NUT, 5/8" | 1 |
| 7 | QDS909923 | HUB CAP | 1 |
| 8 | 150409 | COTTER PIN, 1/8" X 1-1/2" | 1 |
| 9 | 4420201 | SPINDLE ASSEMBLY | 1 |
| 10 | 151222 | DRIVE IN GREASE ZERK | 1 |

**4410185** – DISC SEALER, INDEPENDENT STYLE, 18" NOTCHED WITH 14-1/2" ARM, WIDE MTG. BRACKET, MTG. UNDER SHANK

2 of 1-08 w/ assmy w/ 3 holes




| ITEM | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 4410195 | UPPER MOUNTING BRACKET ASSMY. |
| 2 | 4420287 | UPPER MOUNTING BRACKET, WELDMENT |
| 3 | REL D239 | BUSHING |
| 4 | 4420288 | PIVOT ARM WLD, LH |
| 5 | 4420289 | PIVOT ARM WLD, RH |
| 6 | 4420277 | HUB ASSEMBLY |
| 7 | 151831 | BOLT, 3/8-15 X 1" |
| 8 | 4440788 | U-BOLT, ½-13 X 2 X 2-1/2 |
| 9 | 150220 | FW, ½" PLTD. |
| 10 | 150218 | LW, ½" PLTD. |
| 11 | 150008 | HEX NUT, ½-13 PLTD. |




2

INCLUDES ALL TOP HALF PARTS

1

INCLUDES ALL LISTED PARTS

3

INCLUDES ALL BOTTOM HALF PARTS

| ITEM # | DESCRIPTION | QTY |
|---|---|---|
| 1 | 4410223 HD INDEPENDENT DISC SEALER ◆ | 1 |
| 2 | 4420310 HD INDEPENDENT UPPER MOUNT ASSEMBLY ▲ | 1 |
| 3 | 4420309 HD HUB ASSEMBLY ▲ | 2 |
| 4 | 4420302 HD SHANK MOUNT BRACKET | 1 |
| 5 | 4420303 HD PIVOT ARM | 2 |
| 6 | 4420304 HD HUB (BRACKET ONLY) | 2 |
| 7 | 4420305 HD SPINDLE | 2 |
| 8 | 151224 GREASE ZERK, 1/4" SELF TAPPING | 4 |
| 9 | 150409 COTTER PIN, 1/8" x 1-1/2" | 4 |
| 10 | 158006 FLANGE BOLT, 1/2" NC x 1-3/4" | 4 |
| 11 | 158007 FLANGE NUT, 1/2" NC | 8 |
| 12 | 158004 FLANGE BOLT, 3/8"NC x 3/4" | 8 |
| 13 | 158005 FLANGE NUT, 3/8"NC | 8 |
| 14 | 4440788 U-BOLT, 2"x2-1/2"x1/2"NC | 2 |
| 15 | 4440815 SEAL, 2" | 4 |
| 16 | 4440817 RACE | 8 |
| 17 | 4440816 BEARING | 8 |
| 18 | 158012 SPINDLE WASHER | 4 |
| 19 | 158002 CASTLE NUT, 3/4"NC | 4 |
| 20 | 4440814 DUST CAP, 2" | 4 |

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| | NAME | DATE |
|---|---|---|
| DRAWN | RICH SMOTHERS | 12/30/08 |
| CHECKED | | |
| ENG APPR. | | |
| MFG APPR. | | |
| Q.A. | | |
| COMMENTS: | | |

**ALL DIMENSIONS IN INCHES**

**CMC/DALTON AG**

602 E. VAN BUREN ST., LENOX, IA 50851

TITLE:

# HD DISC SEALER

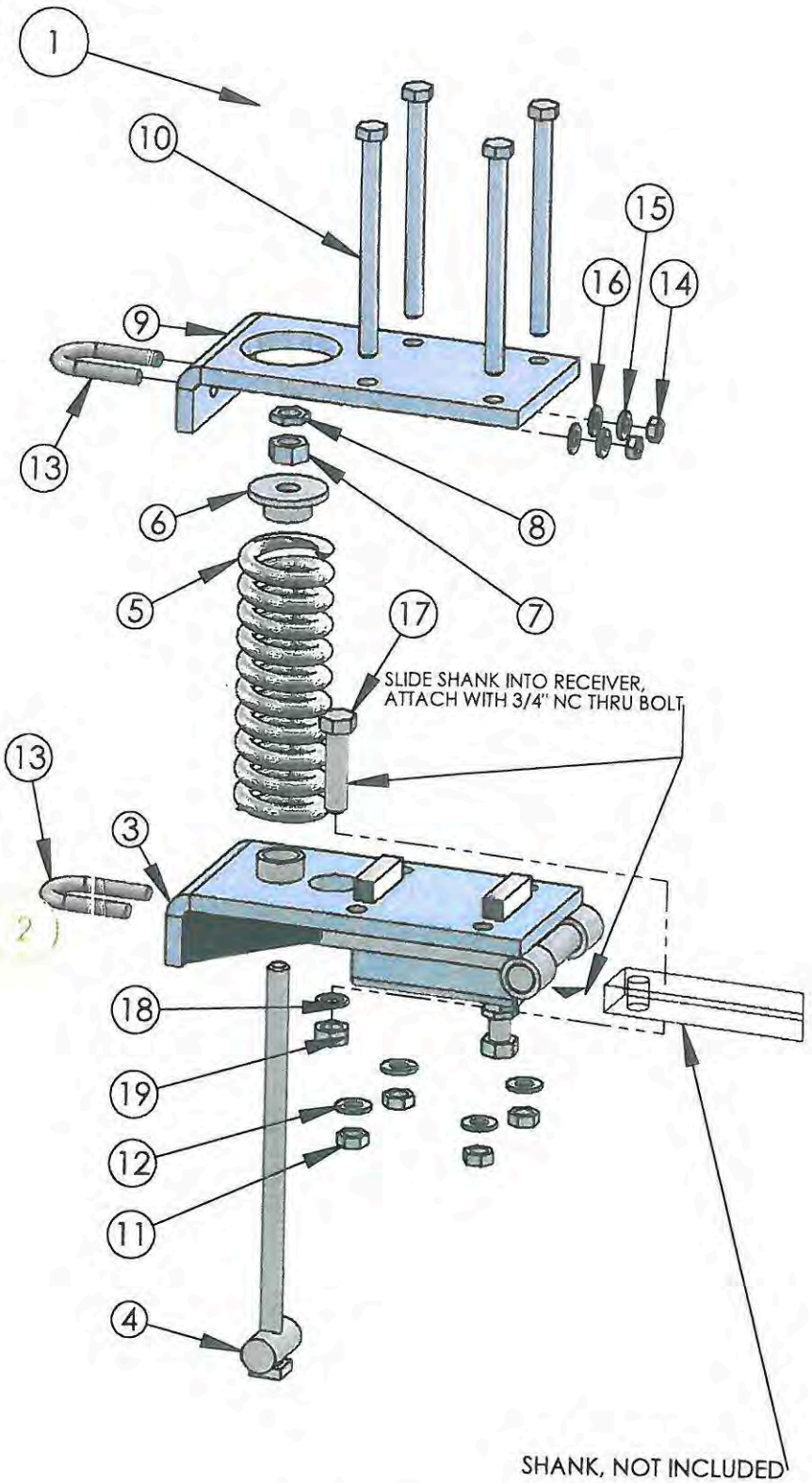
APPLICATION: HD DISC SEALER

| SIZE | DWG. NO. | REV |
|---|---|---|
| A | 4410223 | A |

SCALE1:7 SHEET 1 OF 1

5 4 3 2 1

| ITEM NO. | PART NUMBER | QTY. |
|---|---|---|
| 1 | S1264SL COMPLETE SPRING LOADED SHANK CLAMP | 1 |
| 2 | 4410218 S1264SL WITHOUT TOP BRACKET AND BOLTS | 1 |
| 3 | 4420281 SHANK PIVOT BRACKET | 1 |
| 4 | 4420282 SPRING BOLT | 1 |
| 5 | 641480 SPRING | 1 |
| 6 | 4420280 SPRING GUIDE CAP | 1 |
| 7 | 158000 NUT, $\frac{3}{4}$" NF | 1 |
| 8 | 158001 JAM NUT, $\frac{3}{4}$" NF | 1 |
| 9 | 4431072 TOP BRACKET | 1 |
| 10 | 152422 BOLT, $\frac{5}{8}$" NC x 8" | 4 |
| 11 | 150011 NUT, $\frac{5}{8}$" NC | 4 |
| 12 | 150221 LOCK WASHER, $\frac{5}{8}$" | 4 |
| 13 | 4440789 U-BOLT, $1\frac{1}{2}$" x 3" x $\frac{1}{2}$" NC, ROUND HEAD | 2 |
| 14 | 150008 NUT, $\frac{1}{2}$" NC | 4 |
| 15 | 150218 LOCK WASHER, $\frac{1}{2}$" Pltd | 4 |
| 16 | 150220 FLAT WASHER, $\frac{1}{2}$" PLATED | 4 |
| 17 | 152611 BOLT, $\frac{3}{4}$" NC x 3" | 1 |
| 18 | 150226 LOCK WASHER, $\frac{3}{4}$" | 1 |
| 19 | 150013 NUT, $\frac{3}{4}$" NC | 1 |

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| | NAME | DATE |
|---|---|---|
| DRAWN | RICH SMOTHERS | 4/16/2009 |
| CHECKED | | |
| ENG APPR. | | |
| MFG APPR. | | |
| Q.A. | | |
| COMMENTS: | | |

CMC-DALTON AG
602 E. VAN BUREN ST., LENOX, IA 50851

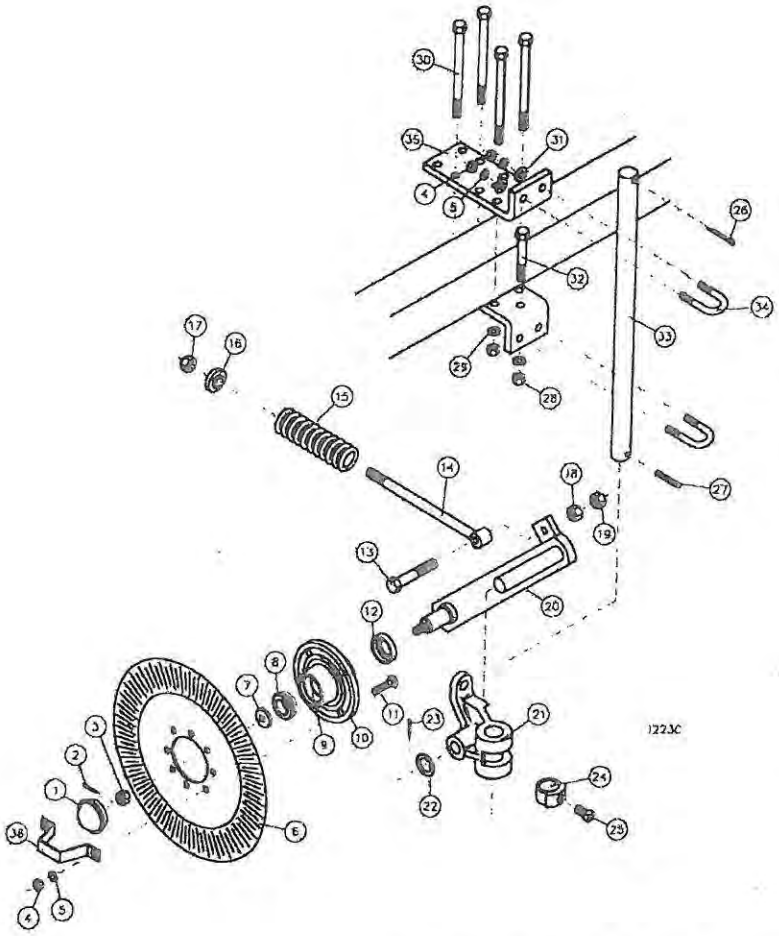
TITLE

# SPRING LOADED SHANK CLAMP

SIZE A | DWG. NO. S1264SL | REV.

SCALE:1:6 | SHEET 1 OF 1

# 2930 SERIES WITH STRAIGHT SHANK



2930-020/2931-020
20" SPRING CUSHION DISC CHISEL COULTER

| Key | Qty | Part No. | Description |
|---|---|---|---|
| 1 | 1 | 2570-375 | HUB CAP |
| 2 | 1 | 2531-102 | 1/8 X 1 1/4 COTTER PIN BLACK |
| 3 | 1 | 2520-469 | 5/8-1/ SLOTTED HEX NUT, BLACK |
| 4 | 8 | 2320-352 | 1/2-13 HEX NUT ZP |
| 5 | 8 | 2525-352 | 1/2 MED LOCKWASHER ZP |
| 6 | 1 | 2571-168 | .157 X 20" MULTI HOLE FLUTED |
| 7 | 1 | 2526-449 | 5/8 FLATWASHER, 1/4 ±.010 THK |
| 8 | 2 | 2550-027 | CONE, LM67048 |
| 9 | 2 | 2550-029 | CUP (PRE-ASSEM. W/ NO. 10) |
| 10 | 1 | 2900-102 | HUB SUB-ASSEMBLY |
| 11 | 4 | 2505-350 | 1/2-13 X 1 1/2 CAR BLT GR 5 ZP |
| 12 | 1 | 2550-068 | TRIPLE LIP SEAL, NTI #1812-4 |
| 13 | 1 | 2502-410 | 3/4-16 X 3" HHCS GR 5 ZP |
| 14 | 1 | 2370-125 | PRESSURE ROD, 9 3/8" EYEBOLT |
| 15 | 1 | 2550-708 | 7/16 WIRE 2 1/8 OD X 1 1/4 ID X 7 1/4 C SPRING |
| 16 | 1 | 2555-112 | 2910 SPRING BUSHING CASTING |
| 17 | 1 | 2520-515 | 3/4-10 LOCK HEX NUT ZP |
| 18 | 1 | 2520-508 | 3/4-16 HEX NUT ZP |
| 19 | 1 | 2520-511 | 3/4-16 LOCK HEX NUT ZP |
| 20 | 1 | 2910-201 | COULTER ARM W.A. |
| 21 | 1 | 2910-320 | PIVOT CASTING ASS'Y |
| 22 | 1 | 2525-961 | 1 17/64ID X 1 7/8OD X 14GA MS BL |
| 23 | 1 | 2531-125 | 1/4 X 1 3/4 COTTER PIN ZP |
| 24 | 1 | 2910-301 | LOCKING COLLAR PLOW COULTER |
| 25 | 1 | 2503-379 | 5/8-11 X 1 SQ HCPSS GR 5 ZP |
| 26 | 1 | 2531-161 | 5/16 X 2 1/2 COTTER PIN ZP |
| 27 | 1 | 2530-208 | 3/8 X 2 1/2 ROLL PIN ZP |
| 28 | 5 | 2520-452 | 5/8-11 HEX NUT ZP |
| 29 | 5 | 2525-451 | 5/8" MED LOCKWASHER ZP |
| 30 | 4 | 2502-384 | 5/8-11 X 6" HHCS GR. 5 ZP |
| 31 | 4 | 2502-348 | 5/8-11 X 11" HHCS GR. 5 ZP |
| 32 | 1 | 2526-351 | 1/2" STD. FLATWASHER ZP |
| 33 | 1 | 2502-385 | 5/8-11 X 3-1/4" HHCS GR. 5 ZP |
| 34 | 2 | 3010-303 | STRAIGHT COULTER SHANK |
| 35 | 2 | 3010-304 | SHANK U-BOLT ZP |
| 36 | 2 | 3010-301 | SHANK BRACKET |
| | 2 | 3010-306 | SHANK BRACKET, 5X7 OR 7X7 BAR |
| | 1 | 2987-301 | HUB CAP RETAINER |

UPDATED 03/18/08

## INSTALLATION AND OPERATING INSTRUCTIONS

Before assembling the brackets, mark your bar for the spacing of the coulters. Select part numbers 3010-301, 2525-451, 2520-452, 2520-394 and mount them loose on the bar as shown in the figure above. If installing a chisel or coil shank, slide it under the tool bar and bolt to bottom shank bracket with 5/8"-11 x 3-1/4" bolt (2502-385) and 5/8" nuts and washers as shown. Align the brackets on the marks on the tool bar and tighten. (Be sure brackets remain square with the bar to assure shank will be straight when installing.)

Install u-bolts (3010-304) into shank brackets using the ½" flat washer, lock washers, and nuts. (Leave the u-bolts loose to allow straight shank to go through the u-bolts.) Drive roll pin (2530-208) into one end of the straight shank (3010-303) until it is centered in the shank. Drop the shank down through the top of the u-bolts until the roll pin is resting on the top u-bolt. Set the shank at the proper depth and tighten the ½" nuts on the u-bolts. An additional roll pin is supplied for the bottom hole in the shank AFTER the coulter is installed.

*PERIODICALLY CHECK ALL NUTS TO BE SURE THEY ARE TIGHT.*

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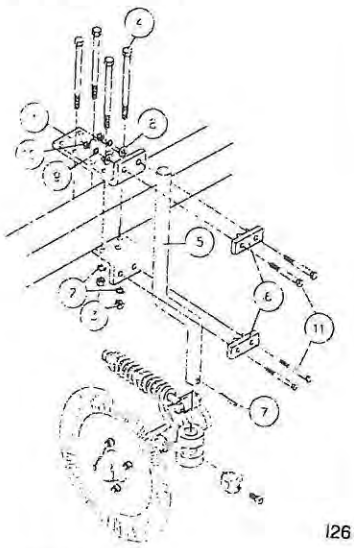
2565-185 03/08 Great River Printing, Hamilton, IL

Yetter
. . . for land's sake

# 2950 SERIES WITH OFFSET SHANK

## DISC-CHISEL COULTER BRACKET KIT W/OFFSET SHANK

| *Key* | *Qty* | *Part No.* | *Description* |
|---|---|---|---|
| 1 | 2 | 3010-301 | Shank Bracket |
| | 2 | 3010-305 | Shank Bracket (3 Pt. Special) |
| | 2 | 3010-306 | Shank Bracket 5x7, 7x7 Bar |
| | 2 | 2950-300 | No Till Shank Bracket |
| 2 | 4 | 2525-451 | 5/8" Med. Lockwasher ZP |
| 3 | 4 | 2520-452 | 5/8"–11 Hex Nut ZP |
| 4 | 4 | 2502-395 | 5/8"–11 x 6 1/2" HHCS Gr. 5 ZP |
| | 4 | 2502-394 | 5/8"–11 x 8" HHCS Gr. 5 ZP |
| | 4 | 2502-333 | 5/8"–11 x 9" HHCS Gr. 5 ZP |
| 5 | 1 | 3011-302 | Offset Coulter Shank, 5 1/2" |
| 6 | 2 | 3011-201 | Clamp W.A. |
| 7 | 2 | 2530-208 | 3/8" x 2 1/2" Roll Pin ZP |
| 8 | 4 | 2526-351 | 1/2" Std. Flatwasher ZP |
| 9 | 4 | 2525-352 | 1/2" Med. Lockwasher ZP |
| 10 | 4 | 2520-352 | 1/2"–13 Hex Nut ZP |
| 11 | 4 | 2502-364 | 1/2"–13 x 4" HHCS Gr. 5 ZP |



I26

## INSTALLATION AND OPERATING INSTRUCTIONS

The 2950 Offset Disc Chisel coulter is designed with two mounting arrangements in mind. The bracket assembly can be attached to the frame beside existing shank brackets or can replace the shank brackets. Before beginning to assemble, choose the method needed and follow instructions for that method.

**Installing New Brackets**

Before assembling the brackets, mark your bar for the spacing of the coulters. Select parts numbered 3010-301, 2525-451, 2520-452, and 2502-394 and mount them loose on the bar as shown. If installing a chisel or coil shank, slide it under the tool bar and bolt to bottom shank bracket with 5/8"–11x3-1/4" bolt (2502-385) and 5/8" nuts and washers. Align the brackets on the marks on the tool bar and tighten. (Be sure brackets remain square with the bar to assure shank will be straight when installed.) Offset shank can now be installed. (See below)

**Installing Beside Existing Brackets**

If mounting brackets next to existing brackets select part numbers 3010-301, 2525-451, 2520-452, and 2502-395 and mount as shown. Slide the assembly as close as possible to the existing brackets and tighten 5/8" bolts and nuts. Offset shank can now be installed.

**Installing Offset Shank**

Install clamp weld assemblies (3011-201) into shank brackets using the 1/2" flatwashers, lockwashers, nuts, and 4" bolts. (Leave the clamp weld assemblies loose to allow shank to go thru the assembly.) Raise the shank up thru the bottom until shank is thru both clamp weld assemblies. Set the shank at the proper depth and tighten the 1/2" nuts and bolts.

Before going to the field all coulters should first be set to operate at the same depth. To adjust the depth of each coulter, the clamp w.a. holding the 1-1/2" shank must be loosened. The 1-1/2" shank can then be slipped up or down to give the desired depth and/or clearance. At this time turn the offset shank to position the coulter in front of the chise. or coil shank. (NOTE: The depth of the coulters should he set so the hub of each coulter is always above ground level when in use.)

*PERIODICALLY CHECK ALL NUTS TO BE SURE THEY ARE TIGHT.*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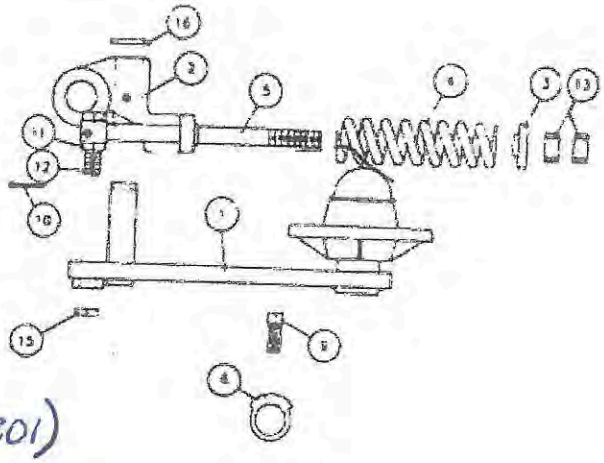
Dalton
AG PRODUCTS, INC.
Manufacturers of Fertilizer Application Equipment

PH. 1-641-333-4518
FAX 1-641-333-4429
1-800-342-7498

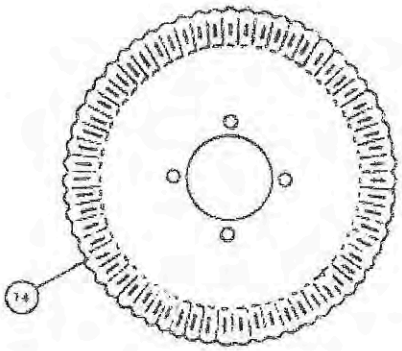
# 2910 SERIES YETTER COULTER

* 2910-127 - ALL ITEM EXCEPT NO. 14

* 2910-127 A - INCLUDES: NOS. 2, 3, 4, 5, 10, 11,12, 13 & 14



1. 4440629 (2910-201) - COULTER ARM W.A.
   4440630 (2910-119) - ARM & HUB ASSMY.
   4440631 (2910-127) - SPRING CUSHIONED BRKT & HUB ASSMY.
   2910-127 BB - SPRING CUSHIONED BRKT & HUB ASSMY. (BLACK)
2. 4440576 (2910-320) - HINGE CASTING
3. 4440578 (2910-302) - SPRING BUSHING
4. 4440574 (2910-311) - SPRING
5. 2910-121 - PUSH ROD ASSEBMLY (New style 2910-201)
6. 4440521 (2910-301) - LOCKING COLLAR(RED)
   2910-301 BB - LOCKING COLLAR (BLACK)
9. 4440625 (2503-379) - 5/8"-11 X 1 SQ. HCSS
10. 2531-151 - COTTER KEY, 1/4" X 1-3/4" (BLACK)
11. 2520-312 - JAM NUT, 3/4"-16 ZP
12. 2502-410 - HHCS, 3/4"-16 X 3" GR. 5 ZP
13. 2520-504 - HEX NUT, 3/4" - 16 ZP.
14. 4440782 - 20" NOTCHED BLADE
    4440783 - 20" FLUTED BLADE
    4440784 - 20" SMOOTH BLADE
15. 2520-510 - LOCK HEX NUT, 3/4"-16 ZP
16. 2526-561 - BUSHING, 1-17/64" ID X 7/8" X 14 GA MACHINERY (BLACK)
17. 4440626 (2900-108) - COULTER SPINDLE (NOT SHOWN)



* 2571-168 - FLUTED MULTI-PUNCH, 20"

(1/23/02)

# Wesbar.

# INSTALLATION INSTRUCTIONS for AG LIGHTS

Congratulations on your purchase of the only light(s) designed for the most rigorous field conditions in the Ag industry. Installed correctly, it will provide reliable, durable, and safe lighting under adverse environmental and weather conditions.

The American Society of Agricultural Engineers, ASAE, has established minimum marking recommendations for agricultural field equipment that is towed on or across public highways. These standards include:

- Implements which obscure the rear tractor lighting; or are more than 13 ft. wide; or extend to the left or right of the tractor center by 79 inches and beyond the left or right extremity of the tractor; or extend more than 33 ft. to the rear of the tractor hitchpoint should have the following lighting to meet minimum safety standards:

  a. One red tail lamp mounted to the rear of the implement and as far to the left as possible. This must face rearward only.

  b. Two amber flashing lights, visible from front and rear, and as far to the left and right as possible. These should be mounted to within 16 in. of extremities and within 39 in. to 10 ft. in height.

  c. Non-symmetrical equipment, such as moldboard plows or windrowers, extending only to the left or right may have one amber flashing light mounted to within 16 in. of the extremity.

2. Implements extending more than 4 ft. to the left of the center of the tractor should have at least one amber reflector visible to the front, located to the extreme left of the implement.

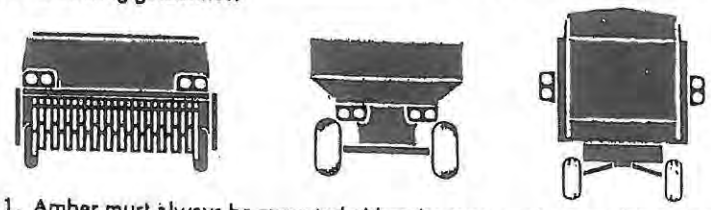
3. Implements extending more than 10 ft. behind the hitch point should have at least two amber reflectors visible from both the left and right sides. Reflectors should be spaced no more than 5 ft. apart, starting from the hitch. The rearmost reflector should be positioned as far to the rear as possible.

- Implements extending more than 4 ft. to the rear of the hitchpoint or more than 4 ft. to the left or right of the center of the tractor should have at least two red reflectors visible to the rear.



## LOCATION

Dual and single lamp units can be mounted in a variety of locations and positions using the following guidelines:



1. Amber must always be mounted either the top or outer-most left or right position. It should be able to be seen from both the front or rear of the implement at all times.

2. Single lamps may be used in place of a dual lamp, if mounting is a problem.

3. If the amber lamp cannot be seen from both front and rear of the implement at the same time, a second lamp is necessary and should be positioned as far forward as possible.

4. Red is to face rearward only.

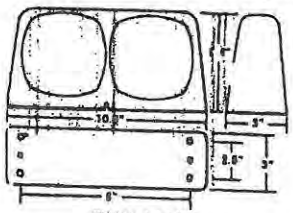
Note: All lamps can be mounted horizontally, vertically, upright or inverted. However, care should be taken to adequately protect the base from excess water buildup when inverting.

## MOUNTING

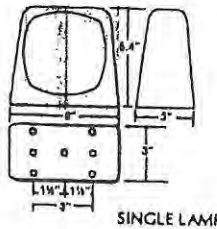
All units have provisions for multiple mounting. The outermost holes will accept 1/4" machine or lag screws and will allow thru-panel bolting. The inner holes are designed to accept 1/4" lag or self-drilling screws only. Maximum length not to exceed 1" beyond panel. A 9/32" dia. hole size is recommended.

If holes are required to route wires and connectors from lamp units, a 3/4" diameter hole is recommended.

The diagram below should be used as a guide for mounting hole placement:




DUAL LAMP



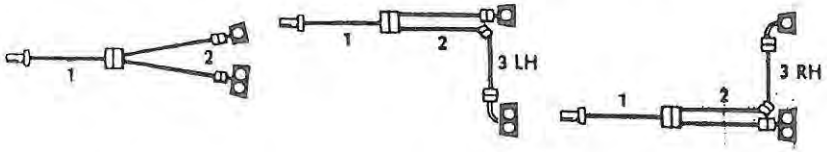

SINGLE LAMP

## WIRING

Your lamps are provided with molded connectors which plug together for ease of assembly and maintenance.

Wesbar harness components are available in various lengths to permit a variety of wiring configurations..

The diagrams below should be used as a guide for determining the correct harness components for your application.




Note: Approximately 5' of cable should extend beyond hitch point for adequate reach to tractor connector.

For proper protection of wiring all connections should be placed in a shielded position to reduce snagging. Wesbar #2810 cable clamps spaced approximately 36" apart will protect wire from sagging.

## CIRCUIT TESTING

| Wire Color Code: | Wire Color | 7-Pin Connector Terminal # | Circuit |
|---|---|---|---|
| | White | | Ground |
| | Yellow | 3 | LH Turn & Flash |
| | Green | 5 | RH Turn & Flash |
| | Brown | 6 | Tail Lamps |

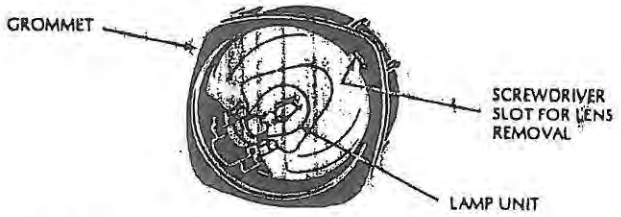
Your tractor should be previously wired for a standard 7-pin connector. If provided from the factory or dealer installed, you need only to plug your implement harness in and check operation with your tractor flashers and signals.

Should your lights not work in unison with tractor lighting, check tractor plug for correct wire code, or consult your dealer for the proper routing of connections.

If your tractor is not equipped with a 7-pin connector, please contact your local dealer for installation to your tractor manufacturer specifications.

## REPLACEMENT COMPONENTS

In the event that replacement of bulbs or other components need to be removed, use the following diagram as a reference:




1. Rear of light (facing away from implement) contains #2 phillips screws.
2. If your light is mounted through the outside holes, remove the 2 rear bolts. If installed with bolts from the bottom through the center portion of the light housing, it is necessary to remove the light entirely from mounting brackets.
3. Remove the phillips screws, and pry apart housing.
4. Insert small screwdriver in slot in rubber grommet between lens and grommet. Using a circular motion, lens will lift from grommet.
5. Replace bulb with standard automotive #1157 bulb.
6. Place lens over grommet. Roll rubber away from lens in a circular motion while pushing lens into groove.
7. If grommet was removed from housing, replace by positioning into cavity with wires routed in same manner as they were removed.
8. Replace housing making sure that wires are not pinched and grommet is protruding from housing approximately 1/16" all around its periphery.
9. Reassemble with phillips screws and reattach to mounting bracket.

Wesbar® CORPORATION
P.O. Box 577 • 4201 County Highway P • West Bend, WI 53095

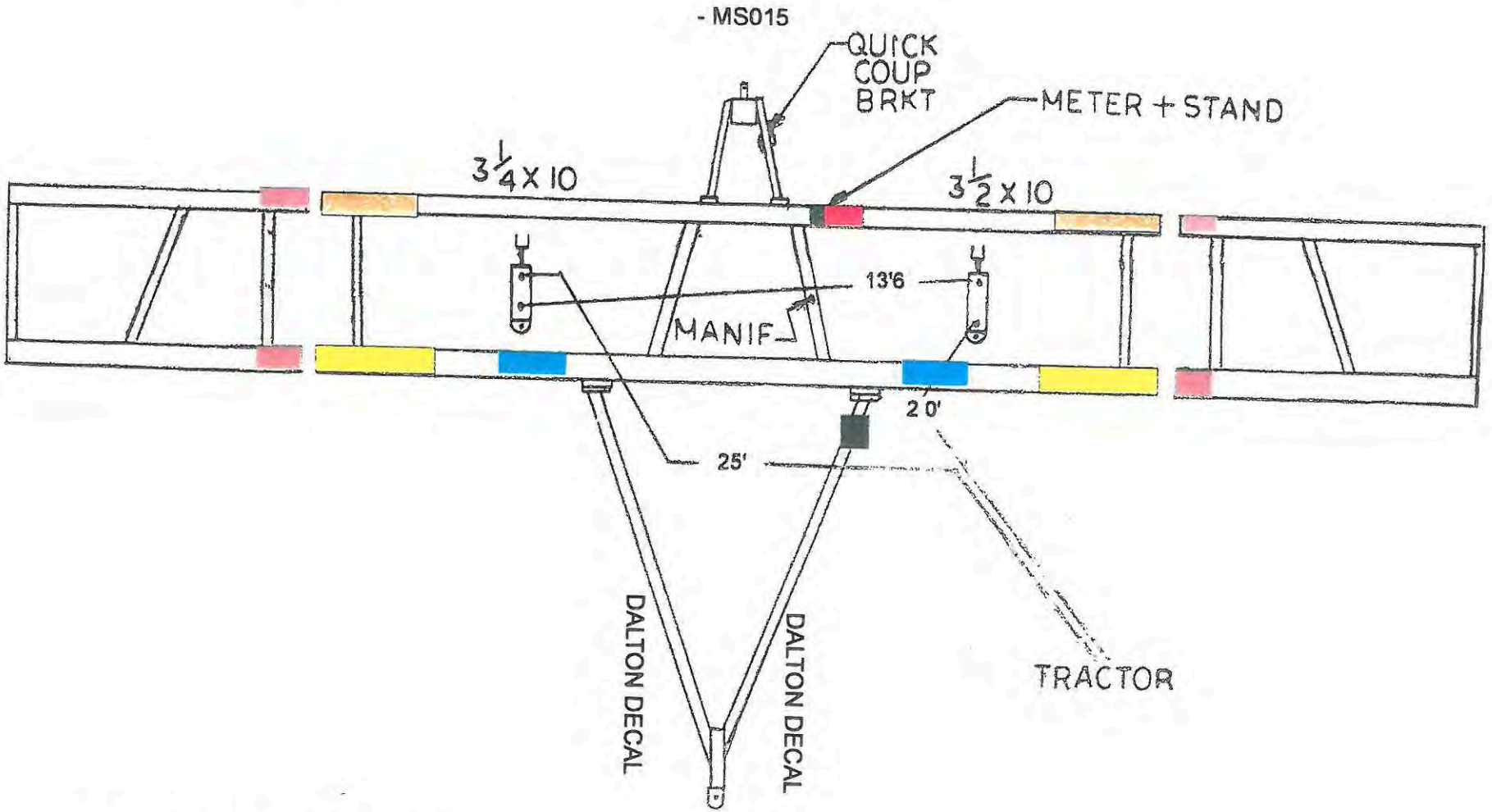
Form #105435-5M

1 SERIAL TAG - 140203

4 CAUTION - STAND CLEAR OF WINGS - MS013

2 OPER. & SAFETY INSTRUCTION - MSO11 & MS010

2 DAMAGE TO HYD. CYLINDER




# DECAL SETUP

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FAX: 641-333-4429
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Office@DaltonAg.com

## LIMITED WARRANTY

Cox Manufacturing Company dba Dalton Ag Products warrants all products, including all equipment and accessories, manufactured by CMC - Dalton Ag Products to be free from defects in material and workmanship if the product is operated and serviced according to the manufacturer's instruction manual. This warranty shall remain effective for twelve months from the date of delivery to the original purchaser.

CMC - Dalton Ag Products obligation under this warranty is limited to the repair of replacement of parts (not including labor) which have been returned to CMC - Dalton Ag Products factory freight prepaid, and after inspection, are deemed by CMC - Dalton Ag Products to be defective. In no event shall CMC - Dalton Ag Products be liable for special or consequential damages except as may be approved by CMC - Dalton Ag Products in advance in writing. This warranty shall not apply to components parts which are not manufactured by CMC - Dalton Ag Products. Neither shall this warranty apply to any parts or components which are expendable and are expected to wear out in normal service during the course of this warranty.

The provisions of this warranty shall not apply to any CMC - Dalton Ag Products product which has been subject to misuse, negligence, alteration or accident, or which shall have been repaired in any way so as, in the reasonable judgment of CMC - Dalton Ag Products to affect adversely its performance and reliability.

This warranty is expressly in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose, and of any other obligations for liability on the part of CMC - Dalton Ag Products and CMC - Dalton Ag Products neither assumes nor authorizes any other person to assume for it any other liability in connection with such products.

## COMPANY POLICY

1. Specify catalog numbers, sizes and all other information necessary to properly fill the order.
2. Check merchandise immediately upon receipt. If received in bad condition or there is a shortage of bundles or boxes, do not fail to note this fact on the carrier promptly. Shortages must be reported within fifteen days.
3. Returned goods will not be accepted without our consent. All returned merchandise is subject to 10% restocking charge.
4. Goods returned for credit must be prepaid and accompanied by CMC - Dalton Ag bill of lading or letter of explanation giving order numbers, invoice number, date purchased and reason for returning merchandise. If error is made by CMC - Dalton Ag, we will accept merchandise freight collect if returned by lowest transportation cost. Goods must be returned within sixty days after purchase.
5. Our warranty does not cover the use of chemicals harmful to equipment of the operator. It does cover defective material or workmanship, and is limited to value of material only.
6. Cutting or welding on merchandise without our approval voids the warranty.
7. Special orders require deposits and are not subject to cancellation without our consent.